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NIST  
PUBLICATIONS



National  
Voluntary  
Laboratory  
Accreditation  
Program

# DIRECTORY OF ACCREDITED LABORATORIES

NIST Special Publication 810  
2002 Edition

**NIST**

National Institute of  
Standards and Technology  
Technology Administration  
U.S. Department of Commerce

AUTHENTICATED  
U.S. GOVERNMENT  
INFORMATION



**T**he National Institute of Standards and Technology was established in 1988 by Congress to “assist industry in the development of technology . . . needed to improve product quality, to modernize manufacturing processes, to ensure product reliability . . . and to facilitate rapid commercialization . . . of products based on new scientific discoveries.”

NIST, originally founded as the National Bureau of Standards in 1901, works to strengthen U.S. industry’s competitiveness; advance science and engineering; and improve public health, safety, and the environment. One of the agency’s basic functions is to develop, maintain, and retain custody of the national standards of measurement, and provide the means and methods for comparing standards used in science, engineering, manufacturing, commerce, industry, and education with the standards adopted or recognized by the Federal Government.

As an agency of the U.S. Commerce Department’s Technology Administration, NIST conducts basic and applied research in the physical sciences and engineering, and develops measurement techniques, test methods, standards, and related services. The Institute does generic and precompetitive work on new and advanced technologies. NIST’s research facilities are located at Gaithersburg, MD 20899, and at Boulder, CO 80303. Major technical operating units and their principal activities are listed below. For more information contact the Publications and Program Inquiries Desk, 301-975-3058.

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- Manufacturing Systems Integration

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- Building Materials
- Building Environment
- Fire Research

### **Information Technology Laboratory**

- Mathematical and Computational Sciences<sup>2</sup>
- Advanced Network Technologies
- Computer Security
- Information Access
- Convergent Information Systems
- Information Services and Computing
- Software Diagnostics and Conformance Testing
- Statistical Engineering

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<sup>1</sup>At Boulder, CO 80303.

<sup>2</sup>Some elements at Boulder, CO.

NIST Special Publication 810, 2002 Edition

**National  
Voluntary  
Laboratory  
Accreditation  
Program**

**DIRECTORY OF  
ACCREDITED LABORATORIES**

Vanda R. White, Editor  
National Voluntary Laboratory Accreditation Program  
Office of Standards Services  
Technology Services

March 2002

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U.S. Department of Commerce  
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Technology Administration  
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National Institute of Standards and Technology  
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#### NVLAP AND THE NVLAP LOGO

The term *NVLAP* (represented by the NVLAP logo) is a federally registered certification mark of the National Institute of Standards and Technology and the federal government, who retain exclusive rights to control the use thereof. Permission to use the term and/or logo is granted to NVLAP-accredited laboratories for the limited purposes of announcing their accredited status, and for use on reports that describe only testing and calibration within the scope of accreditation. NIST reserves the right to control the quality of the use of the term *NVLAP* and of the logo itself.



## FOREWORD

The 2002 edition of NIST Special Publication 810, *NVLAP Directory of Accredited Laboratories*, lists laboratories that have been found competent by NVLAP to perform specific tests or calibrations, or types of tests or calibrations. Laboratory accreditation provides formal recognition to competent laboratories, thus providing a ready means for customers to find reliable testing and calibration services able to meet their needs. NVLAP-accredited laboratories have the technical foundation needed to meet the requirements of public and private sector regulators, manufacturers, and buyers. They find ready acceptance of their test reports and calibration certificates by both domestic and foreign accrediting bodies that have Mutual Recognition Arrangements with NVLAP.

A description of the NVLAP program is found on pages 1 through 5 of this directory, followed by a summary of the number of current accreditations for each field of testing or calibration. Pages 7 and 8 contain instructions on how to use the directory and describe its organizational structure and content.

The 2002 edition supersedes and replaces the 2001 edition of NIST Special Publication 810.

Potential customers of the laboratories listed in this directory should verify that a laboratory has retained its accreditation at the time its services are to be provided. Current information on the accreditation status of a laboratory can be obtained by contacting NVLAP as follows:

- (1) Mailing address: National Voluntary Laboratory Accreditation Program  
National Institute of Standards and Technology  
100 Bureau Drive, Stop 2140  
Gaithersburg, MD 20899-2140
- (2) Phone: 301-975-4016
- (3) Fax: 301-926-2884
- (4) E-mail: [nvlap@nist.gov](mailto:nvlap@nist.gov)
- (5) Web site: <http://www.nist.gov/nvlap> (updated quarterly).



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## PROGRAM DESCRIPTION

The National Institute of Standards and Technology (NIST) administers the National Voluntary Laboratory Accreditation Program (NVLAP). NVLAP is comprised of a series of laboratory accreditation programs (LAPs) which are established on the basis of requests and demonstrated need. Each LAP includes specific calibration and/or test standards and related methods and protocols assembled to satisfy the unique needs for accreditation in a field of testing or calibration. NVLAP accredits public and private laboratories based on evaluation of their technical qualifications and competence to carry out specific tests or calibrations. Accreditation criteria are published in NIST Handbook 150:2001, *NVLAP Procedures and General Requirements*, and encompass the requirements of ISO/IEC 17025:1999 and the relevant requirements of ISO 9002:1994. Accreditation is granted following successful completion of a process that includes submission of an application and payment of fees by the laboratory, an on-site assessment, resolution of any deficiencies identified during the on-site assessment, participation in proficiency testing, and technical evaluation. The accreditation is formalized through issuance of a Certificate of Accreditation and Scope of Accreditation (fig. 1) and publicized by announcement in various government and private media.

NVLAP accreditation is available to commercial laboratories; manufacturers' in-house laboratories; university laboratories; and federal, state, and local government laboratories. Foreign-based laboratories may also be accredited if they meet the same requirements as domestic laboratories and pay any additional fees required for travel expenses.

NVLAP provides an unbiased third party evaluation and recognition of performance, as well as expert technical guidance to upgrade laboratory performance. NVLAP accreditation signifies that a laboratory has demonstrated that it operates in accordance with NVLAP management and technical requirements for accreditation, which include requirements in the areas of quality systems, personnel, accommodation and environmental conditions, test and calibration methods and method validation, equipment, measurement traceability, sampling, handling of test and calibration items, assuring the quality of test and calibration results, and reporting results. NVLAP accreditation does not imply any guarantee (certification) of laboratory performance or test/calibration data; it is solely a finding of laboratory competence. A laboratory may cite its accredited status and use the NVLAP logo on reports, stationery, and in business and trade publications provided that this use does not imply product certification.

This directory of laboratories is published annually and lists the name, address, contact person, phone and fax numbers, e-mail and URL addresses (if available), accreditation renewal date, and scope of accreditation for each laboratory. An updated listing of laboratories is published quarterly on NVLAP's web site: <http://www.nist.gov/nvlap>.

### ***Accreditation Renewal Date***

A laboratory accreditation is valid for one year and commences on one of four dates: January 1, April 1, July 1, or October 1. An accreditation will expire after one year unless renewed by the laboratory. Users of this directory who are considering selection of accredited laboratories should be aware of the renewal date and verify that the laboratory has retained its accreditation at the time its services are to be provided.



## *On-Site Assessment*

Before initial accreditation, an on-site assessment of each laboratory is conducted to determine compliance with the NVLAP criteria. After accreditation is granted, an on-site assessment must be conducted during the first renewal year and every two years thereafter in order for the laboratory to maintain accreditation. An assessment is conducted by one or more NVLAP assessors selected on the basis of their expertise in the field of testing or calibration to be reviewed. They may be engineers or scientists currently active in the field, consultants, college professors or retired persons. Their services are generally contracted as required.

For most programs, assessors use checklists provided by NVLAP so that each laboratory receives an assessment comparable to that received by others. However, assessors have some latitude to make judgments about a laboratory's compliance with the NVLAP criteria.

An assessment normally takes one to five days depending on the extent of the laboratory's application. Every effort is made to conduct an assessment with as little disruption as possible to the normal operations of the laboratory. During the assessment, the assessor carries out the following functions:

- meets with management and supervisory personnel responsible for the laboratory's activities to review the assessment process and to set the assessment agenda;
- examines the laboratory's quality system, selects and traces the history of one or more samples from receipt to final issuance of reports, evaluates the training program, examines notebooks or records pertaining to the samples, checks sample identification and tracking procedures, determines whether the appropriate environmental conditions are maintained, and examines copies of completed reports;
- reviews records of internal audits and management reviews, use of check samples or participation in round-robin testing or other similar programs, personnel records including resumes and job descriptions of key personnel, competency evaluations for all staff members who routinely perform the testing or calibration for which accreditation is sought, calibration or verification records for apparatus used, reports, and sample control records;
- observes demonstrations of laboratory techniques and discusses them with the technical personnel to assure their understanding of the procedures; and
- examines major equipment, apparatus, and facilities.

At the conclusion of the assessment, the assessor will conduct an exit briefing with responsible laboratory staff to discuss observations and any deficiencies. The assessor will forward a written assessment report to NVLAP and leave a copy with the laboratory.

If the on-site assessment reveals deficiencies that pertain to NVLAP requirements, the laboratory must respond in writing to NVLAP within 30 days of the date of the report. The response must provide documentation, signed by the Authorized Representative, that the specified deficiencies have either been corrected or include a plan of corrective actions.

### ***Monitoring Visits***

Monitoring visits may be conducted at any time during the accreditation period for cause or on a random selection basis. These visits serve to verify reported changes in the laboratory's personnel, facilities, or operations, or to explore possible reasons for poor performance in proficiency testing. The scope of a monitoring visit may range from checking a few designated items to a complete review.

### ***Proficiency Testing***

Proficiency testing is an integral part of the NVLAP accreditation process. On-site demonstration of appropriate facilities, equipment, personnel, etc., is essential, but may not be sufficient for the continuing evaluation of laboratory competence. The production of test/calibration data using special proficiency testing samples or artifacts provides NVLAP with a means to determine the overall competence of the laboratory. Information obtained from proficiency testing helps to identify problems in a laboratory. When problems are found, NVLAP works with the laboratory staff to solve them.

Most fields of accreditation have proficiency testing requirements. Data submitted by the laboratories in response to specific NVLAP requirements are analyzed and reports of the results are made known to the participants. Summary results are available upon request to other interested parties; e.g., professional societies and standards writing bodies. The identity and performance of individual laboratories are kept confidential.

Satisfactory participation is based on specially tailored exercises designed to evaluate the ability of the laboratory to produce the services for which it is accredited. Some methods define pass/fail criteria; in other cases, individual laboratory results must fall within statistically acceptable limits of overall group performance. In a number of programs, NVLAP requires satisfactory participation in proficiency testing as a condition of initial, as well as continuing, accreditation.

### ***Technical Evaluation***

To determine if all technical requirements have been fulfilled by a laboratory, a final technical evaluation is performed by NVLAP. The evaluation is based on a review of the record of the laboratory as a whole, including:

- information provided on the application;
- results of quality system documentation review;
- on-site assessment reports;
- actions taken by the laboratory to correct deficiencies;
- results of proficiency testing; and
- information from any monitoring visits to the laboratory.

If the technical evaluation reveals additional deficiencies, written notification of the deficiencies will be sent to the laboratory. The laboratory must respond as specified in the previous section, *On-Site Assessment*. All deficiencies must be resolved to NVLAP's satisfaction before accreditation can be granted.

### ***Accreditation Actions***

After the technical evaluation has been completed and all financial and administrative requirements have been satisfied, NVLAP takes one of the following accreditation actions:

***Accreditation*** The laboratory is issued a Certificate of Accreditation and a Scope of Accreditation.

***Denial*** The laboratory is notified of a proposal to deny accreditation and the reason(s).

If an accredited laboratory is found to be out of compliance with the NVLAP criteria, NVLAP may take one of the following actions:

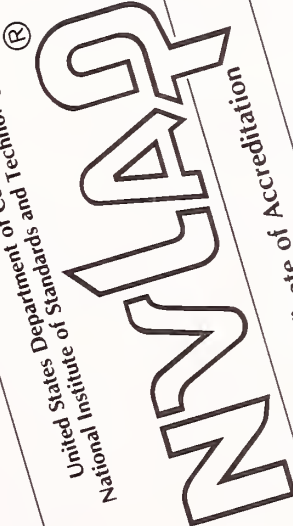
***Suspension*** Suspension is a temporary removal of the accredited status of a laboratory when it is found to be out of compliance with the terms of its accreditation. The laboratory will be notified of the reasons for and conditions of the suspension and the action(s) that the laboratory must take to have the accreditation reinstated.

Examples of reasons for suspension are loss of key personnel, loss of major equipment, damage to laboratory by fire, changing laboratory location, and proficiency test failure.

***Revocation*** Revocation is the removal of the accredited status of a laboratory when it is found to have violated the terms of its accreditation. The laboratory will be notified of the reasons for proposed revocation and the procedure for appealing such a decision. If accreditation is revoked, the laboratory may be given the option of voluntarily terminating the accreditation. A laboratory whose accreditation has been revoked must return its Certificate and Scope of Accreditation and cease use of the NVLAP logo on any of its reports, correspondence, or advertising.

Examples of reasons for revocation are obtaining accreditation through fraud, refusal to resolve deficiencies, and no longer providing the type of calibration or testing service for which accreditation was granted.

If denial or revocation has been proposed, the laboratory may appeal the decision to the Director of NIST. If an appeal is not requested, the action becomes final upon the expiration of the 30-day period following receipt of the notification.

  
 National Institute of Standards and Technology  
 Department of Commerce

**Certificate of Accreditation**  
 LABORATORY NAME  
 ANYTOWN, USA

ISO/IEC 17025:1999  
 ISO 9002:1994

  
 DEPARTMENT OF COMMERCE  
 UNITED STATES OF AMERICA

**Scope of Accreditation**  
 ELECTROMAGNETIC COMPATIBILITY AND  
 TELECOMMUNICATIONS

NVLAP LAB CODE 100000-0  
 Page 1 of 1

LABORATORY NAME  
 Anytown, USA 00000-0000  
 Mr. John Doe  
 Phone: 000-000-0000 Fax: xxx-xxx-xxxx  
 E-Mail: jdoe@labname.com  
 URL: www.labname.com

Code      Designation/Description  
 Test Methods:  
 IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment  
 FCC Method - 47 CFR Part 15 - Digital Devices  
 Conducted Emissions, Power Lines, 450 KHz to 30 MHz  
 Radiated Emissions  
 AS/NZS 3548: Electromagnetic Interference - Limits and Methods of Measurement of Information Technology Equipment

NVLAP LAB CODE: 100000-0  
 For the National Institute of Standards and Technology  
 David F. Alderman  
 December 31, 2XXX  
 Effective through

NVLAP-QTS (06-01)

Figure 1. NVLAP Certificate and Scope of Accreditation (sample)



## LABORATORY ACCREDITATION SUMMARY

The following table summarizes laboratory accreditations by field of testing or calibration as of the date this directory was prepared for publication. Since some laboratories are accredited in more than one field, the total number of laboratories listed by field of accreditation (see Index B) is greater than the number of laboratories in the system (see Index A).

| <b><i>PROGRAM GROUP/Field of Accreditation</i></b>                  |                 | <b><i>Number of Accreditations</i></b> |
|---------------------------------------------------------------------|-----------------|----------------------------------------|
| <b>CALIBRATION LABORATORIES GROUP</b>                               |                 |                                        |
| Dimensional                                                         |                 | 20                                     |
| Electromagnetics - DC/Low Frequency                                 |                 | 15                                     |
| Electromagnetics - RF/Microwave                                     |                 | 6                                      |
| Ionizing Radiation                                                  |                 | 7                                      |
| Mechanical                                                          |                 | 29                                     |
| Optical Radiation                                                   |                 | 2                                      |
| Thermodynamic                                                       |                 | 15                                     |
| Time and Frequency                                                  |                 | 13                                     |
| <b>CHEMICAL CALIBRATION LABORATORIES GROUP</b>                      |                 |                                        |
| NIST Traceable Reference Materials (NTRMs)                          |                 | 1                                      |
| Providers of Proficiency Testing (PPT)                              |                 | 11                                     |
| <b>DOSIMETRY GROUP/Ionizing Radiation Dosimetry</b>                 |                 | 35                                     |
| <b>ELECTROMAGNETIC COMPATIBILITY &amp; TELECOMMUNICATIONS GROUP</b> |                 | 188                                    |
| <b>ENVIRONMENTAL GROUP/Asbestos Fiber Analysis:</b>                 | PLM test method | 251                                    |
|                                                                     | TEM test method | 77                                     |
| <b>FASTENERS AND METALS GROUP</b>                                   |                 | 40                                     |
| <b>INFORMATION TECHNOLOGY SECURITY TESTING GROUP</b>                |                 |                                        |
| Common Criteria Testing                                             |                 | 6                                      |
| Cryptographic Module Testing                                        |                 | 6                                      |
| <b>PRODUCT TESTING GROUP</b>                                        |                 |                                        |
| Acoustical Testing Services                                         |                 | 24                                     |
| Carpet and Carpet Cushion                                           |                 | 9                                      |
| Commercial Products Testing                                         |                 | 8                                      |
| (Paints, Paper, Plastics, Plumbing, Roofing, Seals/Sealants)        |                 |                                        |
| Construction Materials Testing                                      |                 | 17                                     |
| Efficiency of Electric Motors                                       |                 | 15                                     |
| Energy Efficient Lighting Products                                  |                 | 12                                     |
| Thermal Insulation Materials                                        |                 | 13                                     |
| Wood Based Products                                                 |                 | 5                                      |
| <b>TOTAL ACCREDITATIONS</b>                                         |                 | 825                                    |



## HOW TO USE THIS DIRECTORY

This directory lists laboratories accredited by NVLAP. It consists of six indexes which are cross-referenced by NVLAP Lab Code, a unique identifier assigned to each laboratory; e.g., 100000-0. The directory enables the user to locate name, address, contact, and accreditation information about laboratories of interest. The user should contact the laboratories directly to get information beyond that provided here.

**INDEX A, LISTING BY LABORATORY NAME**, lists all laboratories in alphabetical order by laboratory name. The name of each laboratory is listed as it appears on its application for accreditation.

**INDEX B, LISTING BY FIELD OF ACCREDITATION**, lists all laboratories in alphabetical order by laboratory name within field of accreditation. The index is organized by PROGRAM GROUPS, which are groups of Laboratory Accreditation Programs (LAPs) assembled in categories of technical fields for efficiency in management (see page 6). Listed under each PROGRAM GROUP are the technical fields of accreditation managed within that GROUP. Laboratories accredited in more than one field will have more than one listing in this index.

**INDEX C, LISTING BY STATE/COUNTRY**, lists all laboratories in alphabetical order by laboratory name within state. The states are designated by the standard two-letter postal abbreviations. Laboratories located outside of the United States are listed at the end of the index. Index C also indicates the field of accreditation for each laboratory.

**INDEX D, LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE**, lists all testing laboratories in numerical order by NVLAP Lab Code. There is only one listing per Lab Code in Index D.

**INDEX E, LISTING OF CALIBRATION LABORATORIES BY NVLAP LAB CODE**, lists calibration laboratories in numerical order by NVLAP Lab Code. There is only one listing per Lab Code in Index E.

**INDEX F, LISTING OF CHEMICAL CALIBRATION LABORATORIES BY NVLAP LAB CODE**, lists chemical calibration laboratories in numerical order by NVLAP Lab Code. There are two fields of accreditation listed in Index F: NIST Traceable Reference Materials (NTRMs) and Providers of Proficiency Testing (PPT).

### INFORMATION CONTAINED IN INDEXES D, E, AND F

Each laboratory receives a Certificate of Accreditation and a Scope of Accreditation when accreditation is granted or renewed. The Scope of Accreditation details the methods and services for which accreditation has been granted to a laboratory. Indexes D, E, and F present a condensation of the Scope(s) of Accreditation for testing, calibration, and chemical calibration laboratories, respectively.

The following information is presented for each laboratory listed in Indexes D, E, or F:

- (a) NVLAP Lab Code;
- (b) Laboratory name and address;
- (c) Authorized representative (contact);
- (d) Phone number;
- (e) Fax number;
- (f) E-mail address (if available);
- (g) URL (web site) address (if available);
- (h) Field of accreditation;
- (i) Accreditation expiration date; and

- (j) Scope of accreditation.

## HOW TO LOCATE SPECIFIC INFORMATION

### *For a laboratory whose name is known*

Refer to Index A and note the laboratory's NVLAP Lab Code. Look up the Lab Code in Index D, E or F to obtain specific information about the laboratory; e.g., address, phone number, Scope of Accreditation, etc.

### *For a laboratory in a particular geographic area*

Determine the states (or country) included in the geographic area of interest. Refer to Index C to obtain the NVLAP Lab Code of a laboratory within the selected geographic area for a given field of accreditation. Look up the Lab Code in Index D, E, or F to obtain specific information about the laboratory; e.g., address, phone number, Scope of Accreditation, etc.

### *For a laboratory in a particular field of accreditation*

Choose the field of accreditation from the list on page 6. Refer to Index B and note the name and Lab Code of each laboratory of interest. Index B is organized by field of accreditation within major program group. Look up the Lab Code in Index D, E, or F to obtain specific information about the laboratory; e.g., address, phone number, Scope of Accreditation, etc.

## SPECIAL NOTE ABOUT LABORATORIES ACCREDITED IN ASBESTOS FIBER ANALYSIS

The test method designations for Bulk Asbestos Analysis (PLM) and Airborne Asbestos Analysis (TEM) are as follows:

| <b><i>NVLAP<br/>Code</i></b> | <b><i>Program Title/Test Method Designation</i></b>                                                                                                                                                                                                                                                                               |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 18/A01                       | BULK ASBESTOS ANALYSIS (PLM)<br><br>U.S. Environmental Protection Agency (EPA) "Interim Method for the Determination of Asbestos in Bulk Insulation Samples" as found in 40 Code of Federal Regulations (CFR), Part 763, Subpart F, Appendix A, or the current U.S. EPA method for the analysis of asbestos in building material. |
| 18/A02                       | AIRBORNE ASBESTOS ANALYSIS (TEM)<br><br>U.S. Environmental Protection Agency (EPA) "Interim Transmission Electron Microscopy Analytical Methods—Mandatory and Nonmandatory—and Mandatory Section to Determine Completion of Response Actions" as found in 40 Code of Federal Regulations (CFR), Part 763, Subpart E, Appendix A.  |

**INDEX**

**A**

**LISTING BY  
LABORATORY  
NAME**





# INDEX A. LISTING BY LABORATORY NAME

| LABORATORY NAME                                                     | NVLAP<br>LAB CODE | CITY             | STATE/<br>COUNTRY |
|---------------------------------------------------------------------|-------------------|------------------|-------------------|
| <b>3</b>                                                            |                   |                  |                   |
| 3M Product Safety EMC Laboratory                                    | 200033-0          | St. Paul         | MN                |
| <b>A</b>                                                            |                   |                  |                   |
| A & B Environmental Services, Inc.                                  | 101793-0          | Houston          | TX                |
| A-Pex International Co., Ltd. Yamakita<br>Laboratory                | 200441-0          | Ashigarakami-gun | JAPAN             |
| A-Pex International Co., Ltd. Yokowa<br>Laboratory                  | 200109-0          | Mie-ken          | JAPAN             |
| A.E.S.L. Environmental Laboratory                                   | 200303-0          | Tempe            | AZ                |
| A.O. Smith (Lexington) Engineering<br>Laboratory                    | 200053-0          | Lexington        | TN                |
| Absolute Standards, Inc.                                            | 200390-0          | Hamden           | CT                |
| Accredited Environmental Technologies, Inc.                         | 101051-0          | Media            | PA                |
| AccuStandard, Inc.                                                  | 200389-0          | New Haven        | CT                |
| ACM Environmental, Inc.                                             | 101977-0          | South Bend       | IN                |
| Acoustic Systems Acoustical Research<br>Facility                    | 100286-0          | Austin           | TX                |
| Adirondack Environmental Services Inc.                              | 200552-0          | Albany           | NY                |
| Advance Data Technology Corporation                                 | 200102-0          | Taipei Hsien     | TAIWAN            |
| Advance Data Technology Corporation Hsin<br>Chu EMC Laboratory      | 200376-0          | Hsin Chu Hsien   | TAIWAN            |
| Advance Testing Company Inc.                                        | 200514-0          | Campbell Hall    | NY                |
| Advanced Compliance Laboratory                                      | 200101-0          | Hillsborough     | NJ                |
| Advanced Energy, Industrial Energy<br>Laboratory                    | 200081-0          | Raleigh          | NC                |
| Advanced Industrial Hygiene Services, Inc.                          | 101006-0          | Miami            | FL                |
| Advantest Analysis Laboratory Ltd. EMC<br>Center                    | 200477-0          | Gunma            | JAPAN             |
| Aearo Company, E-A-RCAL Acoustical<br>Laboratory                    | 100374-0          | Indianapolis     | IN                |
| Aerospace NYLOK - a subsidiary of the<br>NYLOK Fastener Corporation | 200271-0          | Hawthorne        | NJ                |
| AES International                                                   | 200051-0          | Santurce         | PR                |
| AGX, Inc.                                                           | 101578-0          | Wexford          | PA                |
| AHD                                                                 | 200129-0          | Dowagiac         | MI                |
| Air Quality Laboratories                                            | 101580-0          | Oklahoma City    | OK                |
| Aires Consulting Group, Inc.                                        | 101014-0          | Batavia          | IL                |
| Airtek Environmental Corp.                                          | 102011-0          | New York         | NY                |
| Akzo Nobel K.K. Kawasaki Technical Center                           | 200300-0          | Kawasaki         | JAPAN             |
| Akzo Nobel K.K., Kakegawa EMC Test Site                             | 100290-2          | Shizuoka         | JAPAN             |
| Akzo Nobel K.K., Kashima EMC Site                                   | 100290-0          | Ibaraki          | JAPAN             |
| Akzo Nobel K.K., Matsuda EMC Test Site                              | 100290-4          | Kanagawa         | JAPAN             |
| Akzo Nobel K.K., Nagano EMC Test Site                               | 100290-3          | Nagano           | JAPAN             |
| Akzo Nobel K.K., Tochigi EMC Test Site                              | 100290-5          | Tochigi          | JAPAN             |
| ALAC                                                                | 200323-0          | New York         | NY                |
| Alpine Consulting, Inc.                                             | 102089-0          | Colorado Springs | CO                |
| AMA Analytical Services, Inc.                                       | 101143-0          | Lanham           | MD                |
| Ambient Group, Inc.                                                 | 101618-0          | Glen Cove        | NY                |
| AMEC Earth & Environmental, Inc., PLM<br>LAB                        | 200444-0          | Phoenix          | AZ                |
| AmerenUE, Callaway Plant                                            | 100502-0          | Fulton           | MO                |
| American Asbestos Laboratories, Inc.                                | 101775-0          | Miami Lakes      | FL                |
| American Electric Power (AEP), Dolan                                | 102102-0          | Groveport        | OH                |



# INDEX A. LISTING BY LABORATORY NAME - continued

| LABORATORY NAME                             | NVLAP<br>LAB CODE | CITY                | STATE/<br>COUNTRY |
|---------------------------------------------|-------------------|---------------------|-------------------|
| Chemical Laboratory                         |                   |                     |                   |
| American Medical Laboratories, Inc.         | 101136-0          | Chantilly           | VA                |
| American Testing Laboratories, Inc.         | 100146-0          | Lancaster           | PA                |
| Analytica Solutions, Inc.                   | 101086-0          | Thornton            | CO                |
| Analytical Environmental Services           | 101735-0          | Austin              | TX                |
| Analytical Environmental Services, Inc.     | 102082-0          | Atlanta             | GA                |
| Analytical Labs San Francisco, Inc.         | 101909-0          | San Francisco       | CA                |
| Analytical Products Group, Inc.             | 200384-0          | Belpre              | OH                |
| AnalyticaLab                                | 101727-0          | Willow Springs      | IL                |
| Analytics Corporation                       | 101004-0          | Richmond            | VA                |
| Anritsu Customer Services Ltd. EMC Center   | 200550-0          | Kanagawa-Prf.       | JAPAN             |
| APA - The Engineered Wood Association       | 100423-0          | Tacoma              | WA                |
| Research Center                             |                   |                     |                   |
| Apex Research, Inc.                         | 102118-0          | Whitmore Lake       | MI                |
| Apollo Environmental, Inc.                  | 101871-0          | Gibsonton           | FL                |
| Apple Computer, Inc., EMC Compliance        | 200071-0          | Cupertino           | CA                |
| Laboratory                                  |                   |                     |                   |
| Applied Environmental, Inc.                 | 101611-0          | Reston              | VA                |
| Applied Laboratory Services, LLC            | 200515-0          | Norfolk             | VA                |
| Arca Systems SEAL Common Criteria           | 200429-0          | Columbia            | MD                |
| Testing Laboratory                          |                   |                     |                   |
| Architectural Testing Inc.                  | 200361-0          | York                | PA                |
| Arizona Department of Weights and           | 200381-0          | Glendale            | AZ                |
| Measures Metrology Laboratory               |                   |                     |                   |
| Arizona Public Service Co., Palo Verde      | 100536-0          | Tonopah             | AZ                |
| Nuclear Generating Station                  |                   |                     |                   |
| Armstrong Acoustic Labs, Armstrong World    | 100228-0          | Lancaster           | PA                |
| Ind., Inc. Innov. Center                    |                   |                     |                   |
| ASBESTECH                                   | 101442-0          | Carmichael          | CA                |
| Asbestos Analysis and Information Service,  | 101261-0          | Four Oaks           | NC                |
| Inc.                                        |                   |                     |                   |
| Asbestos Consulting & Testing (ACT)         | 101649-0          | Lenexa              | KS                |
| Asbestos TEM Laboratories, Inc.             | 101891-0          | Berkeley            | CA                |
| Asbestos TEM Laboratories, Inc.             | 200104-0          | Sparks              | NV                |
| ASC geoscience, inc.                        | 200567-0          | Fort Myers          | FL                |
| Assaigai Analytical Laboratories, Inc.      | 101457-0          | Albuquerque         | NM                |
| AST International Environmental Consultants | 200474-0          | Spring Valley       | CA                |
| Inc.                                        |                   |                     |                   |
| ATC Associates Inc.                         | 101187-0          | New York            | NY                |
| ATC Associates, Inc.                        | 102031-0          | Englewood           | CO                |
| Athenica Environmental Services, Inc.       | 101958-0          | Long Island City    | NY                |
| Atlan Laboratories                          | 200492-0          | McLean              | VA                |
| Atomic Energy Industrial Laboratory of the  | 100556-0          | Houston             | TX                |
| Southwest, Inc.                             |                   |                     |                   |
| Auditory Systems Laboratory, ISE            | 200479-0          | Blacksburg          | VA                |
| Department, Virginia Tech                   |                   |                     |                   |
| Audix Technology (Shanghai) Co., Ltd.       | 200371-0          | Shanghai            | CHINA             |
| AUDIX Technology (Shenzhen) Co., Ltd.       | 200372-0          | Shenzhen, Guangdong | CHINA             |

## B

|                                           |          |              |    |
|-------------------------------------------|----------|--------------|----|
| BAE Systems                               | 200425-0 | Nashua       | NH |
| BAE Systems Controls, Inc. EMI Laboratory | 200142-0 | Johnson City | NY |
| Baldor Motor Design Lab                   | 200537-0 | Fort Smith   | AR |
| Batta Laboratories, Inc.                  | 101032-0 | Newark       | DE |
| Battelle - Pacific Northwest National     | 200216-0 | Richland     | WA |

**INDEX A. LISTING BY LABORATORY NAME - continued**

| <b>LABORATORY NAME</b>                                          | <b>NVLAP<br/>LAB CODE</b> | <b>CITY</b>                | <b>STATE/<br/>COUNTRY</b> |
|-----------------------------------------------------------------|---------------------------|----------------------------|---------------------------|
| Laboratory                                                      |                           |                            |                           |
| Bay Area Air Quality Management District                        | 102090-0                  | San Francisco              | CA                        |
| Bay Area Compliance Laboratory Corp.                            | 200167-0                  | Sunnyvale                  | CA                        |
| BCAG Fastener Quality Test Lab Everett Site                     | 200292-0                  | Seattle                    | WA                        |
| Beaulieu of America - Carpet Testing Lab                        | 100190-0                  | Dalton                     | GA                        |
| Bechtel BWXT Idaho, Standards and Calibration Lab               | 200115-0                  | Idaho Falls                | ID                        |
| Belgo-Mineira Chemical Laboratory                               | 200497-0                  | 35.930-900 Joao Monlevade, | BRAZIL                    |
| Bella Donna Labs Inc.                                           | 101868-0                  | Wauwatosa                  | WI                        |
| Benesol Corp.                                                   | 200438-0                  | Sagamihara-shi, Kanagawa   | JAPAN                     |
| Bentley Prince Street Testing Laboratory                        | 100288-0                  | City of Industry           | CA                        |
| Best Laboratory                                                 | 200484-0                  | Taipei Hsein               | TAIWAN                    |
| Binder Metal Products, Inc.                                     | 200321-0                  | Gardena                    | CA                        |
| Boeing - St. Louis Electromagnetic Compatibility Laboratory     | 200382-0                  | St. Louis                  | MO                        |
| BPB America, Inc.                                               | 200520-0                  | Clearwater                 | FL                        |
| Braun Intertec Corporation                                      | 101234-0                  | Minneapolis                | MN                        |
| <b>C</b>                                                        |                           |                            |                           |
| C.I.M.D. Engr. Dev. Lab                                         | 200522-0                  | Fort Wayne                 | IN                        |
| CA Laboratories, L.L.C.                                         | 200452-0                  | Baton Rouge                | LA                        |
| California Screw Products                                       | 200183-0                  | Paramount                  | CA                        |
| Calvert Cliffs Nuclear Power Plant, Inc.                        | 100501-0                  | Lusby                      | MD                        |
| CAM Environmental Services                                      | 200240-0                  | Pasadena                   | TX                        |
| Canon D5 RF Anechoic Chamber; FCC Part 15; CISPR 22/AS/NZS 3548 | 200478-0                  | Ibaraki                    | JAPAN                     |
| Cape Environmental Management, Inc.                             | 102111-0                  | Atlanta                    | GA                        |
| Carolina Environmental, Inc.                                    | 101768-0                  | Cary                       | NC                        |
| Carolina Power & Light Company, Harris Energy & Enviro. Center  | 100517-0                  | New Hill                   | NC                        |
| Casey Products, Inc.                                            | 200278-0                  | Lisle                      | IL                        |
| CBS Fasteners, Inc.                                             | 200253-0                  | Anaheim                    | CA                        |
| CDRH X-Ray Calibration Laboratory                               | 105018-0                  | Rockville                  | MD                        |
| Chatfield Technical Consulting Limited                          | 101103-0                  | Mississauga Ontario        | CANADA                    |
| Chemitox EMC Research, Inc.                                     | 200120-0                  | Yamanashi-ken              | JAPAN                     |
| ChemScope, Inc.                                                 | 101061-0                  | North Haven                | CT                        |
| Chomerics Test Services (CTS)                                   | 100296-0                  | Woburn                     | MA                        |
| Chrisope Technologies, A Division of Remel                      | 200388-0                  | Lake Charles               | LA                        |
| Cisco Systems, Inc.                                             | 200114-0                  | San Jose                   | CA                        |
| City of Los Angeles Department of Water and Power               | 101111-0                  | Los Angeles                | CA                        |
| City of San Jose, Materials Testing Laboratory                  | 100325-0                  | San Jose                   | CA                        |
| Clark Seif Clark, Inc.                                          | 200324-0                  | Chatsworth                 | CA                        |
| Clayton Group Services                                          | 101106-0                  | Seattle                    | WA                        |
| Clayton Group Services                                          | 101125-0                  | Kennesaw                   | GA                        |
| COACT Inc. CAFE Laboratory                                      | 200416-0                  | Columbia                   | MD                        |
| Commercial Testing Company                                      | 100120-0                  | Dalton                     | GA                        |
| Communication Certification Laboratory                          | 100272-0                  | Salt Lake City             | UT                        |
| Compaq Computer Corp. EMC Test Facility                         | 200078-0                  | Colorado Springs           | CO                        |
| Compaq Computer Corp. Emissions Control Lab                     | 200058-0                  | Houston                    | TX                        |
| Compaq Corporate Metrology                                      | 200154-0                  | Houston                    | TX                        |
| Compaq Regulatory Compliance Engineering - East                 | 100413-0                  | Marlboro                   | MA                        |

# INDEX A. LISTING BY LABORATORY NAME - continued

| LABORATORY NAME                                                         | NVLAP<br>LAB CODE | CITY                  | STATE/<br>COUNTRY |
|-------------------------------------------------------------------------|-------------------|-----------------------|-------------------|
| Compatible Electronics, Inc.                                            | 200063-0          | Agoura                | CA                |
| Compatible Electronics, Inc.                                            | 200527-0          | Silverado/Lake Forest | CA                |
| Compatible Electronics, Inc.                                            | 200528-0          | Brea                  | CA                |
| Compliance Eng. Svces, Inc., Compliance<br>Certification Services       | 200065-0          | Morgan Hill           | CA                |
| Composite Panel Association (CPA)                                       | 100418-0          | Gaithersburg          | MD                |
| Comprehensive Health<br>Services-Environmental Health PLM<br>Laboratory | 101759-0          | Kennedy Space Center  | FL                |
| Computer Sciences Corporation                                           | 200426-0          | Annapolis Junction    | MD                |
| Concord Analysis, Inc.                                                  | 101884-0          | Chatsworth            | CA                |
| Connecticut Department of Public Health<br>Laboratory                   | 101237-0          | Hartford              | CT                |
| Continental Envirotech, Inc.                                            | 200080-0          | Mesa                  | AZ                |
| Converse Consultants                                                    | 102091-0          | Reno                  | NV                |
| Cooper Lighting - Metalux Research<br>Laboratories                      | 200050-0          | Americus              | GA                |
| Cosmos Corporation                                                      | 200151-0          | Watarai-gun Mie       | JAPAN             |
| Covino Environmental Associates, Inc.                                   | 101781-0          | Woburn                | MA                |
| Crisp Analytical Laboratory                                             | 200349-0          | Carrollton            | TX                |
| Criterion Laboratories, Inc.                                            | 102046-0          | Bensalem              | PA                |
| Criterion Technology Corp.                                              | 100396-0          | Rollinsville          | CO                |
| CSA International                                                       | 100322-0          | Toronto Ontario       | CANADA            |
| CTL Environmental Services                                              | 101216-0          | Harbor City           | CA                |
| Cygnacom Solutions, Inc. An Entrust<br>Company                          | 200002-0          | McLean                | VA                |

## D

|                                                                    |          |                 |        |
|--------------------------------------------------------------------|----------|-----------------|--------|
| D.L.S. Electronic Systems, Inc.                                    | 100276-0 | Wheeling        | IL     |
| DataChem Laboratories                                              | 101917-0 | Cincinnati      | OH     |
| David L. Ellis Co., Incorporated                                   | 200127-0 | Acton           | MA     |
| Davis & Floyd, Inc.                                                | 101410-0 | Greenwood       | SC     |
| Davis Environmental Labs, Inc.                                     | 101039-0 | Chicago         | IL     |
| Daybrite Lighting (Genlyte Thomas Group)<br>Photometric Laboratory | 200016-0 | Tupelo          | MS     |
| Dayton T. Brown, Inc.                                              | 200422-0 | Bohemia         | NY     |
| DCM Science Laboratory, Inc.                                       | 101258-0 | Wheat Ridge     | CO     |
| Deka Scale, Inc., Scales and Balances                              | 200400-0 | Toledo          | OH     |
| Dell Regulatory Test Laboratories                                  | 200052-0 | Round Rock      | TX     |
| Denver Instrument Co. Weight Lab                                   | 200106-0 | Arvada          | CO     |
| Design for Health Environmental Services                           | 101864-0 | San Diego       | CA     |
| Detroit Edison, Fermi 2 Dosimetry<br>Laboratory                    | 100529-0 | Newport         | MI     |
| Dexter Fastener Technologies, Inc.                                 | 200144-0 | Dexter          | MI     |
| DH Analytical Services                                             | 102086-0 | Stafford        | TX     |
| DHMH-Air Quality Laboratory                                        | 101523-0 | Baltimore       | MD     |
| Digital EMC., Ltd.                                                 | 200559-0 | Kyunggi-Do      | KOREA  |
| Diviersified T.E.S.T. Technologies, Inc.                           | 200340-0 | Groton          | NY     |
| Dixon Information Inc.                                             | 101012-0 | South Salt Lake | UT     |
| DL Labs, Inc.                                                      | 100252-0 | New York        | NY     |
| Dodge-Regupol, Inc. Laboratory                                     | 200030-0 | Lancaster       | PA     |
| Dominion Nuclear Connecticut, Inc.                                 | 100540-0 | Waterford       | CT     |
| DOMUS Information Technology Security<br>Laboratory                | 200017-0 | Ottawa Ontario  | CANADA |
| Dove Environmental Corporation                                     | 102053-0 | Miami           | FL     |

**INDEX A. LISTING BY LABORATORY NAME - continued**

| <b>LABORATORY NAME</b>                                               | <b>NVLAP<br/>LAB CODE</b> | <b>CITY</b>     | <b>STATE/<br/>COUNTRY</b> |
|----------------------------------------------------------------------|---------------------------|-----------------|---------------------------|
| Dow Chemical N. America Foam Products<br>Research, Prod. Perf. Lab.  | 100103-0                  | Midland         | MI                        |
| Duke Engineering and Services<br>Environmental Laboratory            | 100524-0                  | Westborough     | MA                        |
| Duke Power Company Dosimetry Laboratory                              | 100505-0                  | Charlotte       | NC                        |
| Dwight D.I.C., Inc.                                                  | 200405-0                  | Lyndhurst       | NJ                        |
| <b>E</b>                                                             |                           |                 |                           |
| E. M. Analytical, Inc.                                               | 101902-0                  | Dania           | FL                        |
| EA Group                                                             | 101019-0                  | Mentor          | OH                        |
| EAI, Inc.                                                            | 102114-0                  | Jersey City     | NJ                        |
| Eastern Analytical Services, Inc.                                    | 101646-0                  | Elmsford        | NY                        |
| Eastern Materials Testing Lab a division of<br>Jaworski Geotech      | 100315-0                  | Berlin          | CT                        |
| Eastman Kodak Co.- EMC Facility                                      | 200313-0                  | Rochester       | NY                        |
| Eaton Corporation Innovation Center                                  | 200182-0                  | Southfield      | MI                        |
| Eaton E3 Laboratory                                                  | 100382-0                  | Southfield      | MI                        |
| EcoSystems Environmental, Inc.                                       | 101162-0                  | Carrollton      | TX                        |
| Electro Magnetic Test, Inc.                                          | 200147-0                  | Mountain View   | CA                        |
| Electronic Automation                                                | 200410-0                  | Grand Rapids    | MI                        |
| Electronic Research & Service<br>Organization/ITRI                   | 200118-0                  | Chutung Hsinchu | TAIWAN                    |
| Electronics Test Centre                                              | 200282-0                  | Kanata, Ont.    | CANADA                    |
| Electronics Testing Center, Taiwan                                   | 200133-0                  | Taoyuan Hsien   | TAIWAN                    |
| Elite Electronic Engineering Inc.                                    | 100278-0                  | Downers Grove   | IL                        |
| Elliott Laboratories, Inc.                                           | 200069-0                  | Sunnyvale       | CA                        |
| EMC Compliance Mgmt Group, dba<br>Turntech Scientific & Instr., Inc. | 200068-0                  | Mountain View   | CA                        |
| EMC Corporation                                                      | 100339-0                  | Westboro        | MA                        |
| EMCE Engineering, Inc.                                               | 200092-0                  | Fremont         | CA                        |
| EMS Laboratories, Inc.                                               | 101218-0                  | Pasadena        | CA                        |
| EMSL Analytical Inc. Bulk And Airborne<br>Asbestos Fiber Analysis    | 200399-0                  | Chicago         | IL                        |
| EMSL Analytical Inc. Mobile Laboratory                               | 200481-0                  | Westmont        | NJ                        |
| EMSL Analytical, Inc.                                                | 101048-0                  | Westmont        | NJ                        |
| EMSL Analytical, Inc.                                                | 101048-1                  | Atlanta         | GA                        |
| EMSL Analytical, Inc.                                                | 101048-2                  | Piscataway      | NJ                        |
| EMSL Analytical, Inc.                                                | 101048-3                  | Milpitas        | CA                        |
| EMSL Analytical, Inc.                                                | 101048-4                  | Ann Arbor       | MI                        |
| EMSL Analytical, Inc.                                                | 101048-9                  | New York        | NY                        |
| EMSL Analytical, Inc.                                                | 101048-10                 | Carle Place     | NY                        |
| EMSL Analytical, Inc.                                                | 101151-0                  | Orlando         | FL                        |
| EMSL Analytical, Inc.                                                | 102104-0                  | Greensboro      | NC                        |
| EMSL Analytical, Inc.                                                | 102106-0                  | Houston         | TX                        |
| EMSL Analytical, Inc.                                                | 200019-0                  | Minneapolis     | MN                        |
| EMSL Analytical, Inc.                                                | 200034-0                  | Dallas          | TX                        |
| EMSL Analytical, Inc.                                                | 200056-0                  | Depew           | NY                        |
| EMSL Analytical, Inc.                                                | 200188-0                  | Indianapolis    | IN                        |
| EMSL Analytical, Inc.                                                | 200204-0                  | N. Miami Beach  | FL                        |
| EMSL Analytical, Inc.                                                | 200293-0                  | Beltsville      | MD                        |
| EMSL Analytical, Inc.                                                | 200333-0                  | Elmsford        | NY                        |
| EMSL Analytical, Inc.                                                | 200375-0                  | Baton Rouge     | LA                        |
| ENCORP                                                               | 200013-0                  | El Segundo      | CA                        |
| Enterasys Networks Inc.                                              | 200121-0                  | Nashua          | NH                        |
| Entergy Nuclear Northeast                                            | 100538-0                  | Buchanan        | NY                        |



## INDEX A. LISTING BY LABORATORY NAME - continued

| LABORATORY NAME                                        | NVLAP<br>LAB CODE | CITY           | STATE/<br>COUNTRY |
|--------------------------------------------------------|-------------------|----------------|-------------------|
| Enviro-Probe, Inc.                                     | 101222-0          | Bronx          | NY                |
| Envirocheck, Inc.                                      | 200548-0          | Garden Grove   | CA                |
| EnviroHealth Technologies, Inc.                        | 200374-0          | St. Louis      | MO                |
| EnviroMed Services, Inc.                               | 101514-0          | New Haven      | CT                |
| Environmental and EMC Test Centre                      | 200304-0          | Kent           | UNITED KINGDOM    |
| Environmental Enterprise Group(EEG), Inc.              | 101587-0          | Russellville   | AR                |
| Environmental Hazards Services, L.L.C.                 | 101882-0          | Richmond       | VA                |
| Environmental Health Laboratories                      | 101506-0          | Clayton        | MO                |
| Environmental Management Consultants, Inc.             | 101926-0          | Scottsdale     | AZ                |
| Environmental Resource Associates (ERA)                | 200386-0          | Arvada         | CO                |
| Environmental Science Services, Inc.                   | 200424-0          | Lockeford      | CA                |
| Environmental Testing and Monitoring<br>Services, Inc. | 200131-0          | Virginia Beach | VA                |
| Environmental Testing, Inc.                            | 101848-0          | Middletown     | DE                |
| EnvironMETeo Services Inc.                             | 101807-0          | Waipahu        | HI                |
| Enviroscience Consultants, Inc.                        | 200531-0          | Ronkonkoma     | NY                |
| Envirotest, Inc.                                       | 101595-0          | Houston        | TX                |
| ERI Consulting Engineers, Inc.                         | 101232-0          | Tyler          | TX                |
| ESG Laboratories                                       | 102029-0          | Indianapolis   | IN                |
| EWA - Canada Ltd, IT Security Evaluation<br>Facility   | 200556-0          | Ottawa Ontario | CANADA            |

## F

|                                                        |          |                        |        |
|--------------------------------------------------------|----------|------------------------|--------|
| Fairfield Testing Laboratory, Inc.                     | 100317-0 | Stamford               | CT     |
| Fairway Testing Company, Inc.                          | 100340-0 | Stony Point            | NY     |
| Family Analytical Laboratory Services, Inc.            | 200448-0 | Denver                 | CO     |
| Fastener Innovation Technology, Inc.                   | 200179-0 | Gardena                | CA     |
| Fiberquant, Inc.                                       | 101031-0 | Phoenix                | AZ     |
| Fibertec, Inc.                                         | 101510-0 | Holt                   | MI     |
| Flextronics Compliance Laboratories                    | 200094-0 | Youngsville            | NC     |
| Florida Power & Light Company                          | 100544-0 | Juno Beach             | FL     |
| Fluke Corporation Primary Standards<br>Laboratory      | 105016-0 | Everett                | WA     |
| Fluor Fernald, Inc., Analytical Laboratory<br>Services | 102010-0 | Cincinnati             | OH     |
| Fong Prean Industrial Co., Ltd.                        | 200288-0 | Kaohsiung Hsien        | TAIWAN |
| Forensic Analytical                                    | 101459-0 | Hayward                | CA     |
| Forensic Analytical Specialties, Inc.                  | 101459-1 | Rancho Dominguez       | CA     |
| Fort Polk Environmental Laboratory                     | 200523-0 | Fort Polk              | LA     |
| FRS Geotech, Inc.                                      | 102078-0 | Denver                 | CO     |
| Fuji Buhin Industries Inc.                             | 200203-0 | Ohta Gunma             | JAPAN  |
| Fuji Component Parts USA, Inc.                         | 200180-0 | Indianapolis           | IN     |
| Fujitsu Evaluation Engineering Laboratory              | 200281-0 | Numazu, Shizuoka-Pref. | JAPAN  |
| Fujitsu General EMC Laboratory                         | 200373-0 | Kawasaki               | JAPAN  |

## G

|                                                   |          |               |    |
|---------------------------------------------------|----------|---------------|----|
| Galson Laboratories                               | 101375-0 | East Syracuse | NY |
| Garwood Laboratories, Inc.                        | 200119-0 | Placentia     | CA |
| GE Industrial Systems                             | 200029-0 | Rome          | NY |
| GE Lighting- Product Testing                      | 100398-0 | Cleveland     | OH |
| GE Owensboro Test Laboratory                      | 200305-0 | Owensboro     | KY |
| Gelles Laboratories, Division, CC<br>Technologies | 101170-0 | Dublin        | OH |
| General Dynamics Decision Systems                 | 100405-0 | Scottsdale    | AZ |
| General Dynamics, Electric Boat                   | 100560-0 | Groton        | CT |

# INDEX A. LISTING BY LABORATORY NAME - continued

| LABORATORY NAME                                                 | NVLAP<br>LAB CODE | CITY          | STATE/<br>COUNTRY |
|-----------------------------------------------------------------|-------------------|---------------|-------------------|
| GeoCorp Industrial Controls, Inc.                               | 200496-0          | Huron         | OH                |
| Georgia Power Company/Enviro. Affairs,<br>Enviro. Lab-Dosimetry | 100551-0          | Smyrna        | GA                |
| Geoscience Ltd.                                                 | 100142-0          | San Diego     | CA                |
| Ginna Nuclear Station                                           | 100514-0          | Ontario       | NY                |
| GLE Associates, Inc.                                            | 102003-0          | Tampa         | FL                |
| Global EMC Standard Tech. Corp.                                 | 200085-0          | Taipei County | TAIWAN            |
| Global Testing                                                  | 200436-0          | Santa Ana     | CA                |
| Globetech Group, Inc.                                           | 200541-0          | Honolulu      | HI                |

## H

|                                                  |          |                |        |
|--------------------------------------------------|----------|----------------|--------|
| Harris Corporation GCSO EMI Test<br>Laboratory   | 200500-0 | Melbourne      | FL     |
| Hart Scientific Calibration Laboratory           | 200348-0 | American Fork  | UT     |
| Health Science Associates                        | 101384-0 | Los Alamitos   | CA     |
| Henry Troemner, LLC                              | 105013-0 | Thorofare      | NJ     |
| Hewlett Packard, Product Test Lab, San<br>Diego  | 200138-0 | San Diego      | CA     |
| Hi-Tech Environmental and Laboratory<br>Services | 102013-0 | Cypress        | CA     |
| HIH Laboratory, Inc.                             | 101233-0 | Webster        | TX     |
| Hillmann Environmental Group, L.L.C.             | 101421-0 | Union          | NJ     |
| Hitachi Information Technology Co., Ltd.         | 200186-0 | Kanagawa       | JAPAN  |
| Holmes Environmental, Inc.                       | 200467-0 | Norfolk        | VA     |
| HomeTek Technology Inc.                          | 200331-0 | Taipei Shien   | TAIWAN |
| Honeywell FM&T Metrology                         | 200108-0 | Kansas City    | MO     |
| Houston Analytical Laboratory                    | 200473-0 | Houston        | TX     |
| Howard Leight Acoustical Testing<br>Laboratory   | 200475-0 | San Diego      | CA     |
| Hubbell Lighting Photometric Laboratory          | 200020-0 | Christiansburg | VA     |
| Hufcor Acoustical Laboratory                     | 100239-0 | Janesville     | WI     |
| Hygeia Laboratories Inc.                         | 102116-0 | Sierra Madre   | CA     |
| Hygeia Laboratories, Inc.                        | 102087-0 | Marietta       | GA     |
| Hygeia Laboratories, Inc.                        | 200335-0 | Miami          | FL     |
| HYGENIX, INC.                                    | 101199-0 | Stamford       | CT     |
| Hygieneering, Inc.                               | 101997-0 | Willowbrook    | IL     |
| Hygienetics Laboratory Services                  | 101147-0 | Boston         | MA     |

## I

|                                                                   |          |                        |       |
|-------------------------------------------------------------------|----------|------------------------|-------|
| IAPMO Testing and Services, L.L.C.                                | 200460-0 | Walnut                 | CA    |
| IBM Austin EMC                                                    | 200112-0 | Austin                 | TX    |
| IBM Endicott EMC Lab                                              | 200418-0 | Endicott               | NY    |
| IBM Hudson Valley Acoustics Laboratory                            | 100323-0 | Poughkeepsie           | NY    |
| IBM Poughkeepsie EMC Laboratory                                   | 200435-0 | Poughkeepsie           | NY    |
| IBM Rochester EMC Lab                                             | 200091-0 | Rochester              | MN    |
| IBM RTP PSG EMC Test Labs                                         | 200200-0 | Research Triangle Park | NC    |
| IBM Shock and Vibration Laboratory                                | 200503-0 | Poughkeepsie           | NY    |
| IBM Yamato EMC Engineering                                        | 200198-0 | Yamato Kanagawa        | JAPAN |
| ICN Worldwide Dosimetry Service, Div. of<br>ICN Biomedicals, Inc. | 100555-0 | Costa Mesa             | CA    |
| IIT Research Institute/R&B Operation                              | 100280-0 | West Conshohocken      | PA    |
| Independent Materials Testing Laboratories,<br>Inc.               | 100316-0 | Plainville             | CT    |
| Independent Textile Testing Service, Inc.                         | 100166-0 | Dalton                 | GA    |
| Indiana Division of Weights and Measures                          | 200421-0 | Indianapolis           | IN    |

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| LABORATORY NAME                                                      | NVLAP<br>LAB CODE | CITY              | STATE/<br>COUNTRY |
|----------------------------------------------------------------------|-------------------|-------------------|-------------------|
| Industrial Acoustics Company, Inc.,<br>Aero-Acoustics Laboratory     | 100404-0          | Bronx             | NY                |
| Industrial Laboratory                                                | 102115-0          | Portsmouth        | VA                |
| INEEL Materials Testing Lab CFA 602                                  | 200415-0          | Idaho Falls       | ID                |
| InFocus Systems, Inc.                                                | 200152-0          | Wilsonville       | OR                |
| InfoGard Laboratories, Inc.                                          | 100432-0          | San Luis Obispo   | CA                |
| Ingersoll Fasteners                                                  | 200208-0          | Ingersoll Ontario | CANADA            |
| Inland Foundation Engineering, Inc.                                  | 100406-0          | San Jacinto       | CA                |
| Institute for Environmental Assessment                               | 101249-0          | Brooklyn Park     | MN                |
| Instron Field Calibration Laboratory                                 | 200301-0          | Canton            | MA                |
| Instron Force Calibration Laboratory                                 | 105023-0          | Canton            | MA                |
| Integrex Testing Systems -Acoustic &<br>Thermal Testing Laboratories | 100109-0          | Granville         | OH                |
| Interface Testing Laboratory                                         | 200402-0          | LaGrange          | GA                |
| Intermec Technologies Corporation                                    | 100269-0          | Cedar Rapids      | IA                |
| International Asbestos Testing Laboratory                            | 101165-0          | Mt. Laurel        | NJ                |
| International Standards Laboratory                                   | 200234-0          | Tao Yaun County   | TAIWAN            |
| International Technology Company (ITC)                               | 200172-0          | Sunol             | CA                |
| Interocean EMC Technology Corp.                                      | 200458-0          | Taipei County     | TAIWAN            |
| Intertek Testing Services                                            | 200201-0          | Menlo Park        | CA                |
| Intertek Testing Services NA Inc.                                    | 100274-0          | Lexington         | KY                |
| Intertek Testing Services NA Inc.                                    | 100402-0          | Cortland          | NY                |
| Intertek Testing Services NA Inc.                                    | 200297-0          | Laguna Niguel     | CA                |
| Intertek Testing Services NA, Inc.                                   | 200049-0          | Oakdale           | MN                |
| Inventec Corp. (Taoyuan) EMC Labs                                    | 200140-0          | Taoyuan           | TAIWAN            |
| Iowa Environmental Services, Inc.                                    | 101990-0          | Des Moines        | IA                |
| IPS Corporation                                                      | 200012-0          | Nagano            | JAPAN             |
| Ivaco Rolling Mills, Chemistry Laboratory                            | 200143-0          | L'Orignal Ontario | CANADA            |
| <b>J</b>                                                             |                   |                   |                   |
| J3 Resources, Inc.                                                   | 200525-0          | Houston           | TX                |
| Japan Quality Assurance Org. Chubu Testing<br>Center Shikatsu Branch | 200190-0          | Aichi             | JAPAN             |
| Japan Quality Assurance Org. Safety & EMC<br>Ctr. Tsuru EMC Branch   | 200192-0          | Yamanashi         | JAPAN             |
| Japan Quality Assurance Organization                                 | 200191-0          | Osaka             | JAPAN             |
| Kita-Kansai Testing Center                                           |                   |                   |                   |
| Japan Quality Assurance Organization Safety<br>& EMC Center          | 200189-0          | Tokyo             | JAPAN             |
| JLC Environmental Consultants, Inc.                                  | 101953-0          | New York          | NY                |
| JMR Compliance Engineering                                           | 200413-0          | Chatsworth        | CA                |
| JMR Environmental Services Inc.                                      | 200067-0          | San Diego         | CA                |
| JMS Environmental Associates, Ltd.                                   | 102012-0          | Westmont          | IL                |
| Johns Manville Technical Center                                      | 100425-0          | Littleton         | CO                |
| <b>K</b>                                                             |                   |                   |                   |
| KAM Consultants                                                      | 102047-0          | Long Island City  | NY                |
| Kansai Electronic Industry Development<br>Center, Ikoma Testing Lab. | 200207-0          | Ikoma Nara        | JAPAN             |
| Kellco Services, Inc.                                                | 101331-0          | Hayward           | CA                |
| Kevco Services, Inc.                                                 | 101941-0          | Butler            | PA                |
| Key Tronic Corp.                                                     | 200096-0          | Spokane           | WA                |
| Kingston Environmental Laboratory                                    | 200041-0          | Lee's Summit      | MO                |
| Knauf Fiber Glass Research Laboratory                                | 100248-0          | Shelbyville       | IN                |
| Kobelco Research Institute, Inc. Stock                               | 200169-0          | Kobe 657-0863     | JAPAN             |

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| <b>LABORATORY NAME</b>                                            | <b>NVLAP<br/>LAB CODE</b> | <b>CITY</b>            | <b>STATE/<br/>COUNTRY</b> |
|-------------------------------------------------------------------|---------------------------|------------------------|---------------------------|
| Company                                                           |                           |                        |                           |
| KSL                                                               | 200442-0                  | Jackson                | CA                        |
| Kyowa Kogyosyo Co., Ltd. Test Laboratory                          | 200274-0                  | Komatsu City, Ishikawa | JAPAN                     |
| Kyushu Matsushita Electric Test Lab EMC Center                    | 200364-0                  | Tosu-shi Saga-ken      | JAPAN                     |
| <b>L</b>                                                          |                           |                        |                           |
| LA Testing                                                        | 200232-0                  | S. Pasadena            | CA                        |
| Lab/Cor, Inc.                                                     | 101920-0                  | Seattle                | WA                        |
| Laird Group PLC                                                   | 200076-0                  | Delaware Water Gap     | PA                        |
| Landauer, Inc.                                                    | 100518-0                  | Glenwood               | IL                        |
| Larron Laboratory                                                 | 101415-0                  | Cape Girardeau         | MO                        |
| Law Engineering and Environmental Services, Inc.                  | 101066-0                  | Birmingham             | AL                        |
| Law Engineering and Environmental Services, Inc.                  | 101515-0                  | Tampa                  | FL                        |
| Law Engineering and Environmental Services, Inc.                  | 101515-1                  | Miami Lakes            | FL                        |
| Law Engineering and Environmental Services, Inc.                  | 102035-0                  | Phoenix                | AZ                        |
| Legend Technical Services, Inc.                                   | 102081-0                  | St. Paul               | MN                        |
| Leland-Powell Fasteners, Inc. Fastener Testing Laboratory         | 200171-0                  | Martin                 | TN                        |
| Levecque Technical Center                                         | 100101-0                  | Blue Bell              | PA                        |
| LEX Scientific Inc.                                               | 101949-0                  | Guelph Ontario         | CANADA                    |
| LG Electronics, Inc., Quality and Reliability Center              | 200040-0                  | Seoul                  | KOREA                     |
| Liberty Labs, Inc.                                                | 200123-0                  | Kimballton             | IA                        |
| Lighting Research Center Lighting Products                        | 200480-0                  | Troy                   | NY                        |
| Litetronics International                                         | 200504-0                  | Alsip                  | IL                        |
| Lithonia Testing Laboratories                                     | 200007-0                  | Conyers                | GA                        |
| Loflin Environmental Services, Inc.                               | 102044-0                  | Houston                | TX                        |
| Los Angeles Unified School District                               | 101505-0                  | Los Angeles            | CA                        |
| Louisiana Department of Environmental Quality Microanalytical Lab | 102000-0                  | Baton Rouge            | LA                        |
| Lucent Technologies, Global Product Compliance Lab                | 100275-0                  | Holmdel                | NJ                        |
| <b>M</b>                                                          |                           |                        |                           |
| m.a.c. Paran Consulting Services, Inc.                            | 102108-0                  | Amelia                 | OH                        |
| MAC Fasteners, Inc.                                               | 200141-0                  | Ottawa                 | KS                        |
| MacLean Fasteners - QC Laboratory                                 | 200153-0                  | Mundelein              | IL                        |
| MacLean Maynard Laboratory Services                               | 200451-0                  | Chesterfield Township  | MI                        |
| MACS Lab, Inc.                                                    | 101948-0                  | Santa Clara            | CA                        |
| Maine Metrology Department of Agriculture                         | 200414-0                  | Augusta                | ME                        |
| Mallinckrodt, Inc.                                                | 100503-0                  | Maryland Heights       | MO                        |
| Marathon Electric - Wausau Engineering Lab.                       | 200134-0                  | Wausau                 | WI                        |
| Marlin Manufacturing Corporation                                  | 200512-0                  | Cleveland              | OH                        |
| Materials Analytical Services, Inc.                               | 101235-0                  | Suwanee                | GA                        |
| Materials Testing, Inc.                                           | 100320-0                  | Milford                | CT                        |
| Matsushita EMC Center                                             | 100428-0                  | Sasayama, Hyogo        | JAPAN                     |
| McCall and Spero Environmental, Inc.                              | 101895-0                  | Louisville             | KY                        |
| McGill AirFlow Corp. Airflow and Acoustical Testing Laboratory    | 200463-0                  | Westerville            | OH                        |
| McKee Environmental Health, Inc.                                  | 101135-0                  | Friendswood            | TX                        |



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| <b>LABORATORY NAME</b>                                               | <b>NVLAP<br/>LAB CODE</b> | <b>CITY</b>               | <b>STATE/<br/>COUNTRY</b> |
|----------------------------------------------------------------------|---------------------------|---------------------------|---------------------------|
| MDS Nordion Dosimetry Laboratory                                     | 200370-0                  | Kanata Ontario            | CANADA                    |
| MET Laboratories Incorporated                                        | 200445-0                  | Union City                | CA                        |
| MET Laboratories, Inc.                                               | 100273-0                  | Baltimore                 | MD                        |
| Metrology Concepts Inc., dba Tri-State<br>Calibration                | 200505-0                  | Antioch                   | IL                        |
| Metroplex Metrology Lab, Inc.                                        | 200262-0                  | Fort Worth                | TX                        |
| Michael & Associates                                                 | 100427-0                  | State College             | PA                        |
| Michigan Dept. of Agriculture, E.C. Heffron<br>Metrology Laboratory  | 200408-0                  | Williamston               | MI                        |
| Micro Air of Texas, Inc.                                             | 102008-0                  | Houston                   | TX                        |
| Micro Air, Inc.                                                      | 101221-0                  | Indianapolis              | IN                        |
| Micro Analytical Laboratories, Inc.                                  | 101872-0                  | Emeryville                | CA                        |
| Micro Analytical, Inc.                                               | 101247-0                  | Milwaukee                 | WI                        |
| Microcheck, Inc.                                                     | 200391-0                  | Northfield                | VT                        |
| Micron Environmental Labs                                            | 200294-0                  | Arcadia                   | CA                        |
| Microscopic Analysis, Inc.                                           | 101037-0                  | St. Louis                 | MO                        |
| Midwest Laboratories, Inc.                                           | 101894-0                  | Countryside               | IL                        |
| Minebea Co., Ltd. Fujisawa Manufacturing<br>Unit                     | 200229-0                  | Fujisawa, Kanagawa        | JAPAN                     |
| Minnesota Metrology Laboratory                                       | 105003-0                  | St. Paul                  | MN                        |
| Minolta Co., Ltd. Toyokawa EMC Lab                                   | 200434-0                  | Toyokawa, Aichi           | JAPAN                     |
| Missouri Department of Transportation,<br>Chemical Laboratory        | 200544-0                  | Jefferson City            | MO                        |
| Mitsubishi Digital Electronics America, Inc.<br>EMC Test Lab         | 200498-0                  | Irvine                    | CA                        |
| Modern Plating Corporation                                           | 200320-0                  | Freeport                  | IL                        |
| Mohawk Industries, Inc.- Lyerly Plant                                | 100156-0                  | Lyerly                    | GA                        |
| Motor Test Lab of Toshiba Industrial<br>Products Manufacturing Corp. | 200529-0                  | Asahi-cho Mie-gun Mie-ken | JAPAN                     |
| Motorola Test Lab Services                                           | 200005-0                  | Mansfield                 | MA                        |
| Mountain Laboratories                                                | 101890-0                  | Spokane                   | WA                        |
| Murata Mfg. Co., Ltd. Yokohama Technical<br>Center EMM Office        | 200263-0                  | Kanagawa                  | JAPAN                     |
| Mystic Air Quality Consultants, Inc.                                 | 101282-0                  | Groton                    | CT                        |
| <b>N</b>                                                             |                           |                           |                           |
| NAHB Research Center, Inc.                                           | 100104-0                  | Upper Marlboro            | MD                        |
| NASA John H. Glenn Research Center at<br>Lewis Field                 | 200130-0                  | Cleveland                 | OH                        |
| National Econ Corporation                                            | 102062-0                  | Tustin                    | CA                        |
| National Econ Corporation                                            | 200047-0                  | Memphis                   | TN                        |
| National Environmental Reference<br>Laboratory                       | 101593-0                  | Denver                    | CO                        |
| National Technical Systems                                           | 100347-0                  | Boxborough                | MA                        |
| National Technical Systems                                           | 200245-0                  | Plano                     | TX                        |
| Naval Dosimetry Center                                               | 100504-0                  | Bethesda                  | MD                        |
| Naval Nuclear Propulsion Program<br>Directorate, Washington, DC      | 100565-0                  | Bremerton                 | WA                        |
| NAWC-Aircraft Div. Lakehurst<br>Electromagnetic Interference Lab.    | 200222-0                  | Lakehurst                 | NJ                        |
| NAWCAD 5.1.7.4. EMI Lab                                              | 100408-0                  | Patuxent River            | MD                        |
| NCR Corp. San Diego EMC Lab                                          | 200383-0                  | San Diego                 | CA                        |
| NEC Access Technica, Ltd. EMC Center                                 | 200488-0                  | Shizuoka-ken              | JAPAN                     |
| NEC Kofu, Ltd., EMC Center                                           | 200433-0                  | Yamanashi                 | JAPAN                     |
| Nemko Dallas, Inc.                                                   | 100426-0                  | Lewisville                | TX                        |

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| <b>LABORATORY NAME</b>                                               | <b>NVLAP<br/>LAB CODE</b> | <b>CITY</b>           | <b>STATE/<br/>COUNTRY</b> |
|----------------------------------------------------------------------|---------------------------|-----------------------|---------------------------|
| Nemko EESI, Inc.                                                     | 200116-0                  | San Diego             | CA                        |
| Netzsch Instruments, Inc.                                            | 100113-0                  | Bedford               | MA                        |
| Neutron Engineering Inc.                                             | 200145-0                  | Taipei                | TAIWAN                    |
| Newport News Shipbuilding Radiological<br>Control Department         | 100561-0                  | Newport News          | VA                        |
| NGC Testing Services, National Gypsum<br>Research Center             | 200291-0                  | Buffalo               | NY                        |
| Niigata Fuji Xerox Manufacturing Co., Ltd.<br>EMC Group              | 200490-0                  | Niigata               | JAPAN                     |
| Nortel Networks BVW Lab                                              | 200098-0                  | Belleville, Ontario   | CANADA                    |
| Northern Analytical Laboratories, Inc.                               | 101292-0                  | Billings              | MT                        |
| Northern Industrial Hygiene, Inc.                                    | 200511-0                  | Burien                | WA                        |
| Northern Testing Laboratories, Inc.                                  | 101463-0                  | Fairbanks             | AK                        |
| Northwest EMC, Inc.                                                  | 200059-0                  | Hillsboro             | OR                        |
| Nova Consulting Group, Inc.                                          | 101545-0                  | Chaska                | MN                        |
| NOVA Machine Products                                                | 200202-0                  | Middleburg Heights    | OH                        |
| Nowicki & Associates, Inc.                                           | 200322-0                  | Federal Way           | WA                        |
| NSI Solutions, Inc.                                                  | 200440-0                  | Raleigh               | NC                        |
| NVL Laboratories, Inc.                                               | 102063-0                  | Seattle               | WA                        |
| NY Environmental & Analytical Labs, Inc.                             | 101967-0                  | Port Washington       | NY                        |
| NYLOK Fastener Corporation                                           | 200272-0                  | Anaheim               | CA                        |
| NYS DOH Environmental Laboratory<br>Approval Program                 | 200387-0                  | Albany                | NY                        |
| <b>O</b>                                                             |                           |                       |                           |
| O & K Company Limited, Osaka Test Center                             | 200166-0                  | Osaka-Shi             | JAPAN                     |
| O'Brien & Gere Laboratories, Inc.                                    | 101343-0                  | Syracuse              | NY                        |
| Oak Ridge Metrology Center                                           | 105000-0                  | Oak Ridge             | TN                        |
| Occupational Health Conservation, Inc.                               | 102050-0                  | Jacksonville          | FL                        |
| Ohio E.M.A. Radiological Instrument<br>Calibration Facility          | 200419-0                  | Columbus              | OH                        |
| Ohtama Co., Ltd. Yamanashi EMC Test Site                             | 200175-0                  | Yamanashi             | JAPAN                     |
| Okawa Laboratory                                                     | 200296-0                  | Naka-gun, Ibaraki-ken | JAPAN                     |
| Oki Engineering Co., Ltd. EMC Honjo<br>Center                        | 200519-0                  | Honjo-shi, Saitama    | JAPAN                     |
| Oklahoma Bureau of Standards                                         | 200396-0                  | Oklahoma City         | OK                        |
| Olympus EMC Laboratory                                               | 200472-0                  | Tokyo                 | JAPAN                     |
| Omega Environmental Services                                         | 101289-0                  | Hackensack            | NJ                        |
| Omni Environmental, Inc.                                             | 102061-0                  | Austin                | TX                        |
| Orfield Laboratories, Inc.                                           | 200248-0                  | Minneapolis           | MN                        |
| ORIX Rentec EMC Center; Electromagnetic<br>Compatibility             | 200404-0                  | Aiko-Gun, Kanagawa    | JAPAN                     |
| Osram Sylva, Applications &<br>Measurements Laboratory               | 100403-0                  | Beverly               | MA                        |
| <b>P</b>                                                             |                           |                       |                           |
| PA DEP Bureau of Laboratories                                        | 101323-0                  | Harrisburg            | PA                        |
| Pacific Gas & Electric Company, Diablo<br>Canyon Nuclear Power Plant | 100537-0                  | Avila Beach           | CA                        |
| Pacific Northwest National Laboratory /<br>Battelle                  | 105020-0                  | Richland              | WA                        |
| Pacific Rim Environmental, Inc.                                      | 101631-0                  | Tukwila               | WA                        |
| Palmetto Laboratory, Inc.                                            | 102077-0                  | St. Petersburg        | FL                        |
| Paradigm Environmental Services, Inc.                                | 200530-0                  | Rochester             | NY                        |
| Paradyne Corporation                                                 | 200125-0                  | Largo                 | FL                        |

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| <b>LABORATORY NAME</b>                                                | <b>NVLAP<br/>LAB CODE</b> | <b>CITY</b>            | <b>STATE/<br/>COUNTRY</b> |
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| Patriot Environmental Laboratory Services,<br>Inc.                    | 200358-0                  | Garden Grove           | CA                        |
| PB Fasteners                                                          | 200139-0                  | Gardena                | CA                        |
| PCI Industries Acoustical Testing<br>Laboratories                     | 200453-0                  | Fort Worth             | TX                        |
| PCTEST Engineering Laboratory, Inc.                                   | 100431-0                  | Columbia               | MD                        |
| PDE Laboratories                                                      | 200082-0                  | San Clemente           | CA                        |
| PEP Testing Laboratory                                                | 200097-0                  | Taipei Hsien           | TAIWAN                    |
| PFS Corporation                                                       | 100421-0                  | Madison                | WI                        |
| PFU TECHNOCONSUL EMC Center                                           | 200259-0                  | Ishikawa-Ken           | JAPAN                     |
| Philip Environmental Services Corp.                                   | 101192-0                  | Columbia               | IL                        |
| Philip Morris Standards and Calibration<br>Laboratory                 | 200359-0                  | Richmond               | VA                        |
| Philips Electronics Industries (TAIWAN)<br>Ltd.                       | 200137-0                  | Chungli, Taoyuan       | TAIWAN                    |
| Philips Lighting Corporate Calibration &<br>Standards Laboratory      | 100399-0                  | Salina                 | KS                        |
| Philips Testing Service                                               | 200409-0                  | Knoxville              | TN                        |
| Pinchin Environmental Ltd.                                            | 101270-0                  | Mississauga Ontario    | CANADA                    |
| PMK Group, Inc.                                                       | 101301-0                  | Cranford               | NJ                        |
| PPL Susquehanna, LLC                                                  | 100554-0                  | Allentown              | PA                        |
| Pratt & Whitney Materials Control<br>Lab/Quality & Standards Lab      | 200336-0                  | East Hartford          | CT                        |
| Professional Service Industries, Inc.,<br>Pittsburgh Test. Lab. Div.  | 100430-0                  | Eugene                 | OR                        |
| Professional Testing (EMI), Inc.                                      | 200062-0                  | Round Rock             | TX                        |
| Professional Testing Laboratory, Inc.                                 | 100297-0                  | Dalton                 | GA                        |
| ProScience Analytical Services, Inc.                                  | 200090-0                  | Woburn                 | MA                        |
| Prospect Testing Labs, Inc.                                           | 200328-0                  | Des Plaines            | IL                        |
| Protocol Analytical Supplies, Inc.                                    | 200395-0                  | Middlesex              | NJ                        |
| Prottsa, S.A. de C.V.                                                 | 200261-0                  | Mexico City            | MEXICO                    |
| Proxtronic, Inc.                                                      | 100573-0                  | Springfield            | VA                        |
| PSC Analytical Services                                               | 101262-0                  | Reading                | PA                        |
| PSI                                                                   | 101350-0                  | Pittsburgh             | PA                        |
| Puget Sound Naval Shipyard                                            | 101539-0                  | Bremerton              | WA                        |
| PWC Environmental Laboratory, Pearl<br>Harbor                         | 200369-0                  | Pearl Harbor           | HI                        |
| Pyromation Inc. Metrology Laboratory                                  | 200502-0                  | Fort Wayne             | IN                        |
| <b>Q</b>                                                              |                           |                        |                           |
| QuanTEM Laboratories, LLC                                             | 101959-0                  | Oklahoma City          | OK                        |
| Quest Engineering Solutions, Inc.                                     | 200036-0                  | N. Billerica           | MA                        |
| Quest MicroAnalytics                                                  | 200249-0                  | Dallas                 | TX                        |
| Quietek Corporation                                                   | 200347-0                  | Hsin-Chu Country       | TAIWAN                    |
| Quitek Corporation                                                    | 200533-0                  | Lin Kou Shiang, Taipei | TAIWAN                    |
| <b>R</b>                                                              |                           |                        |                           |
| R & D Services, Inc.                                                  | 200265-0                  | Cookeville             | TN                        |
| R. Robinson Analytical Services, Inc.                                 | 102041-0                  | Pensacola              | FL                        |
| Radiation Detection Company                                           | 100512-0                  | Gilroy                 | CA                        |
| Radiation Laboratory, Taiwan Power<br>Company                         | 100562-0                  | Shihmen, Taipei        | TAIWAN                    |
| Ram Industries Motor Test Laboratory                                  | 200542-0                  | Leesport               | PA                        |
| Raytheon Electronic Systems, California<br>Engineering EEE Laboratory | 200431-0                  | El Segundo             | CA                        |

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| <b>LABORATORY NAME</b>                                          | <b>NVLAP<br/>LAB CODE</b> | <b>CITY</b>  | <b>STATE/<br/>COUNTRY</b> |
|-----------------------------------------------------------------|---------------------------|--------------|---------------------------|
| Raytheon Technical Services Co. EMI Laboratory                  | 200317-0                  | Indianapolis | IN                        |
| RCM Laboratories, Inc.                                          | 101853-0                  | Countryside  | IL                        |
| Regal Beloit Motor Technologies Group - Grafton Engineering Lab | 200483-0                  | Grafton      | WI                        |
| Reservoirs Environmental Services, Inc.                         | 101896-0                  | Denver       | CO                        |
| RESL - DOE Laboratory Accreditation Program                     | 200366-0                  | Idaho Falls  | ID                        |
| Resource Technology Corporation (RTC)                           | 200393-0                  | Laramie      | WY                        |
| Retlif Testing Laboratories                                     | 100267-0                  | Ronkonkoma   | NY                        |
| Retlif Testing Laboratories                                     | 100267-1                  | Goffstown    | NH                        |
| Rhein Tech Laboratories, Inc.                                   | 200061-0                  | Herndon      | VA                        |
| RI Analytical Laboratories, Inc.                                | 101440-0                  | Warwick      | RI                        |
| Rice Lake Weighing Systems                                      | 105001-0                  | Rice Lake    | WI                        |
| Ricoh Company LTD. Ohmori Acoustics Test Site                   | 200345-0                  | Tokyo        | JAPAN                     |
| Ricoh Company, Ltd. Ohmori EMC Center                           | 200163-0                  | Tokyo        | JAPAN                     |
| Riverbank Acoustical Laboratories                               | 100227-0                  | Geneva       | IL                        |
| RJ Lee Group, Inc.                                              | 101208-0                  | Monroeville  | PA                        |
| RJ Lee Group, Inc.                                              | 101208-2                  | San Leandro  | CA                        |
| RJ Lee Group, Inc.                                              | 101208-3                  | Manassas     | VA                        |
| RMS EMI Laboratory MIL-STD 462C/D                               | 200489-0                  | Tucson       | AZ                        |
| Rockford Bolt & Steel Co.                                       | 200255-0                  | Rockford     | IL                        |
| Rogers Labs, Inc.                                               | 200087-0                  | Louisburg    | KS                        |
| Roy F. Weston, Inc.                                             | 101254-0                  | Auburn       | AL                        |
| Ruska Calibration Laboratory                                    | 200491-0                  | Houston      | TX                        |

**S**

|                                                                  |          |                          |        |
|------------------------------------------------------------------|----------|--------------------------|--------|
| S&ME, Inc.                                                       | 102075-0 | Charlotte                | NC     |
| S. Himmelstein and Company                                       | 200487-0 | Hoffman Estates          | IL     |
| Safe Environment of America, Inc.                                | 102021-0 | Auburn                   | WA     |
| SAIC Accredited Lab Center for Evaluation & Testing (SALCET)     | 200427-0 | Columbia                 | MD     |
| Samsung Electronics EMC Laboratory                               | 200447-0 | Suwon, Kyungki Do        | KOREA  |
| San Shing Hardware Works Co., Ltd. Test Laboratory               | 200158-0 | Tainan                   | TAIWAN |
| Sandia National Laboratories                                     | 105002-0 | Albuquerque              | NM     |
| Sanmina Homologation Services                                    | 100411-0 | San Jose                 | CA     |
| Saturn Fasteners, Inc.                                           | 200327-0 | Burbank                  | CA     |
| Schneider Laboratories, Inc.                                     | 101150-0 | Richmond                 | VA     |
| Scientific Laboratories, Inc.                                    | 101904-0 | Midlothian               | VA     |
| Scientific Laboratories, Inc.                                    | 101904-1 | New York                 | NY     |
| Scientific Laboratories, Inc.                                    | 200546-0 | New York                 | NY     |
| SCILAB BOSTON, Inc.                                              | 102079-0 | East Weymouth            | MA     |
| SCILAB California, Inc.                                          | 200346-0 | Carson                   | CA     |
| SE Laboratories, Inc.                                            | 200338-0 | Santa Clara              | CA     |
| Seiko Epson Corporation                                          | 200157-0 | Shiojiri-City Nagano     | JAPAN  |
| SGS U.S. Testing Company, Inc.                                   | 100416-0 | Tulsa                    | OK     |
| Shanghai Testing & Inspection Institute for Electrical Equipment | 200407-0 | Shanghai                 | CHINA  |
| Sharp Nara EMC Center, EMI Measurement for ITE                   | 200457-0 | Yamatokooryama-shi Nara  | JAPAN  |
| Shaw Industries, Inc., Central Laboratory Operations             | 100193-0 | Dalton                   | GA     |
| SK Tech Co., LTD.                                                | 200220-0 | Namyangju-si, Kyunggi-Do | KOREA  |



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| <b>LABORATORY NAME</b>                                               | <b>NVLAP<br/>LAB CODE</b> | <b>CITY</b>                  | <b>STATE/<br/>COUNTRY</b> |
|----------------------------------------------------------------------|---------------------------|------------------------------|---------------------------|
| Small IAC Test Laboratory                                            | 200287-0                  | Peterborough, ON             | CANADA                    |
| SNB Laboratory                                                       | 200308-0                  | Cumberland                   | RI                        |
| Solar Environmental Services, Inc.                                   | 102006-0                  | Anchorage                    | AK                        |
| Sony Electronics Inc. Product Quality<br>Division EMC Group          | 200312-0                  | San Diego                    | CA                        |
| Sony EMCS Corp. Kohda TEC                                            | 200398-0                  | Nukata-gun Aichi             | JAPAN                     |
| Sony EMCS Corporation Minokamo TEC                                   | 200368-0                  | Gifu-Pref.                   | JAPAN                     |
| Sony EMCS Saotama TEC EMC Test<br>Laboratory                         | 200456-0                  | Saitama-ken                  | JAPAN                     |
| Sony Kisarazu EMC Test Laboratory                                    | 200432-0                  | Kisarazu Chiba               | JAPAN                     |
| Sony Nagano EMC Test Laboratory                                      | 200553-0                  | Nagano-ken                   | JAPAN                     |
| South Coast Air Quality Management District                          | 101567-0                  | Diamond Bar                  | CA                        |
| South Texas Project Dosimetry Laboratory                             | 100519-0                  | Wadsworth                    | TX                        |
| Southern California Edison Company                                   | 105014-0                  | Westminster                  | CA                        |
| Special Testing Laboratories, Inc.                                   | 100308-0                  | Bethel                       | CT                        |
| Spectrum Research & Testing Laboratory,<br>Inc.                      | 200099-0                  | Chung-Li, Taoyuan            | TAIWAN                    |
| Spex Certiprep Inc.                                                  | 200392-0                  | Metuchen                     | NJ                        |
| Sporton International, Inc.                                          | 200079-0                  | Taipei Hsien                 | TAIWAN                    |
| St. of California, Bur. of Home Furnishings<br>& Thermal Insulation  | 100251-0                  | North Highlands              | CA                        |
| STAT Analysis Corporation                                            | 101202-0                  | Chicago                      | IL                        |
| State of Virginia Metrology Lab                                      | 105007-0                  | Richmond                     | VA                        |
| STERIS-Isomedix Services                                             | 200235-0                  | Morton Grove                 | IL                        |
| Steve Moody Micro Services, Inc.                                     | 102056-0                  | Carrollton                   | TX                        |
| Storagtek Open Area Test Site                                        | 200251-0                  | Louisville                   | CO                        |
| Stork-Twin City Testing Corporation                                  | 200046-0                  | St. Paul                     | MN                        |
| Strategic Weapons Fac. Pacific Cal. Lab.<br>Oper. by Lockheed Martin | 200406-0                  | Silverdale                   | WA                        |
| Strom Environmental                                                  | 200450-0                  | Denver                       | CO                        |
| STS Consultants, Ltd.                                                | 100191-0                  | Vernon Hills                 | IL                        |
| Sumitomo Metals (Kokura), Ltd. Quality<br>System Section             | 200215-0                  | Kitakyushu                   | JAPAN                     |
| Sun City Analytical, Inc.                                            | 101870-0                  | El Paso                      | TX                        |
| Sun Microsystems, Inc. EMC Testing                                   | 200363-0                  | Palo Alto                    | CA                        |
| Sundram Fasteners Limited (Inhouse test<br>laboratory)               | 200212-0                  | Chennai (Madras), Tamil Nadu | INDIA                     |
| Sundram Fasteners Limited Chemical Testing<br>Laboratory             | 200256-0                  | Andhra Pradesh               | INDIA                     |
| SWFLANT Calibration Laboratory Operated<br>by Lockheed Martin        | 200403-0                  | Kings Bay                    | GA                        |
| Syonan Site Testing Laboratory as Conducted<br>& Radiated Emissions  | 200482-0                  | Kanagawa                     | JAPAN                     |
| <b>T</b>                                                             |                           |                              |                           |
| Taiwan Tokin EMC Eng. Corp.                                          | 200077-0                  | Taipei                       | TAIWAN                    |
| Taylor Environmental Group, Inc.                                     | 102101-0                  | Floral Park                  | NY                        |
| TDK Corporation's 10m Anechoic Chamber<br>& 3m Anechoic Chamber      | 200309-0                  | Ichikawa-shi, Chiba-ken      | JAPAN                     |
| TDK Corporation's Chikumagawa Open Site                              | 200319-0                  | Saku-shi, Nagano-ken         | JAPAN                     |
| TDK RF Solutions Inc.                                                | 200430-0                  | Cedar Park                   | TX                        |
| TEAC Corporation EMC Center                                          | 200362-0                  | Saitama-ken 358-8510         | JAPAN                     |
| TEC-AN, Inc.                                                         | 200325-0                  | Oklahoma City                | OK                        |
| Technical Calibration Labs, Inc.                                     | 200459-0                  | Monroe                       | NY                        |
| TECO Electric & Machinery Co., Ltd.                                  | 200378-0                  | Taoyuan                      | TAIWAN                    |

**INDEX A. LISTING BY LABORATORY NAME - continued**

| <b>LABORATORY NAME</b>                                             | <b>NVLAP<br/>LAB CODE</b> | <b>CITY</b>               | <b>STATE/<br/>COUNTRY</b> |
|--------------------------------------------------------------------|---------------------------|---------------------------|---------------------------|
| Teco Industry (Malaysia) SDN. BHD.                                 | 200476-0                  | Penang                    | MALAYSIA                  |
| TEM, Incorporated                                                  | 101130-0                  | Glen Ellyn                | IL                        |
| Tennessee Valley Authority External<br>Dosimetry Service           | 100516-0                  | Soddy-Daisy               | TN                        |
| Test Site Services, Inc.                                           | 100419-0                  | Marlboro                  | MA                        |
| Test-Con Incorporated                                              | 200018-0                  | Danbury                   | CT                        |
| Testing Mechanics Corp.                                            | 102001-0                  | Seaford                   | NY                        |
| Testwell Laboratories, Inc./Testwell<br>Industries, Inc.           | 200083-0                  | Ossining                  | NY                        |
| The Dow Chemical Company- NA System<br>House-Joliet                | 100210-0                  | Joliet                    | IL                        |
| The Scott Lawson Group, Ltd.                                       | 101228-0                  | Concord                   | NH                        |
| Thermo Spectronic                                                  | 200462-0                  | Cambridge                 | UNITED KINGDOM            |
| Timberco, Inc.- dba TECO                                           | 100420-0                  | Eugene                    | OR                        |
| Tokin EMC Engineering Co., Ltd. Kawasaki<br>Facility               | 200217-0                  | Kawasaki-city, Kanagawa   | JAPAN                     |
| Tokin EMC Engineering Co., Ltd. Nagoya<br>Testing Laboratory       | 200219-0                  | Daian-cho, Inabe-gun, Mie | JAPAN                     |
| Tokin EMC Engineering Co., Ltd. Osaka<br>Testing Laboratory        | 200218-0                  | Sanda-city, Hyogo         | JAPAN                     |
| Tokin EMC Engineering Co., Ltd. Tsukuba<br>Testing Laboratory      | 200221-0                  | Tsukuba-city, Ibaraki     | JAPAN                     |
| TolTest, Inc.                                                      | 101594-0                  | Toledo                    | OH                        |
| Toshiba Corp., Ome Operations                                      | 200107-0                  | Ome Tokyo                 | JAPAN                     |
| Toshiba/Houston Test Laboratory                                    | 200088-0                  | Houston                   | TX                        |
| Training Research Co., Ltd.                                        | 200174-0                  | Taipei Hsien              | TAIWAN                    |
| TRC Environmental Corporation                                      | 101424-0                  | Windsor                   | CT                        |
| Tremco, Inc. - Roofing Division, An RPM<br>Company                 | 101188-0                  | Beachwood                 | OH                        |
| Tri-State Materials Testing Lab, Inc.                              | 200010-0                  | Wallingford               | CT                        |
| Triad Environmental Consulting, Inc.                               | 102073-0                  | Huntington                | WV                        |
| Troxler Radiation Monitoring Svc. a div. of<br>Troxler Elect. Labs | 100559-0                  | Research Triangle Park    | NC                        |
| TSi, Testing Services, Inc.                                        | 100108-0                  | Dalton                    | GA                        |
| TUV Product Service, Inc.                                          | 100268-0                  | San Diego                 | CA                        |
| TUV Product Service, Inc.                                          | 100271-1                  | Boulder                   | CO                        |
| TUV Product Service, Inc.- A Division of<br>TUV America Inc.       | 100271-0                  | New Brighton              | MN                        |
| TUV Rheinland of North America, Inc.                               | 200111-0                  | Newtown                   | CT                        |
| TUV Telecom Services, Inc.                                         | 200039-0                  | St. Paul                  | MN                        |
| TUViT, IT Security Laboratory                                      | 200428-0                  | Austin                    | TX                        |
| Twin Ports Testing, Inc.                                           | 102083-0                  | Superior                  | WI                        |
| TXU Electric - Comanche Peak Steam<br>Electric Station             | 100528-0                  | Glen Rose                 | TX                        |

**U**

|                                                                  |          |                         |        |
|------------------------------------------------------------------|----------|-------------------------|--------|
| U.S. Army Center for Health Promotion and<br>Preventive Medicine | 200044-0 | Aberdeen Proving Ground | MD     |
| U.S. Army Radiation Standards & Dosimetry<br>Laboratory          | 100539-0 | Redstone Arsenal        | AL     |
| U.S. EPA - National Enforcement<br>Investigations Center         | 101703-0 | Denver                  | CO     |
| UltraTech Engineering Labs Inc.                                  | 200093-0 | Oakville, Ontario       | CANADA |
| Underwriters Laboratories                                        | 200252-0 | Santa Clara             | CA     |
| Underwriters Laboratories Inc.                                   | 100414-0 | Northbrook              | IL     |

# INDEX A. LISTING BY LABORATORY NAME - continued

| LABORATORY NAME                                                     | NVLAP<br>LAB CODE | CITY                   | STATE/<br>COUNTRY |
|---------------------------------------------------------------------|-------------------|------------------------|-------------------|
| Underwriters Laboratories Inc.                                      | 200214-0          | Camas                  | WA                |
| Underwriters Laboratories Inc.                                      | 200535-0          | Sunol                  | CA                |
| Underwriters Laboratories, Inc.                                     | 100255-0          | Melville               | NY                |
| Underwriters Laboratories, Inc.                                     | 200246-0          | Research Triangle Park | NC                |
| United Analytical Services, Inc.                                    | 101732-0          | Downers Grove          | IL                |
| United States Dosimetry Technology, Inc.                            | 100571-0          | Richland               | WA                |
| United States Technologies, Inc.                                    | 200162-0          | Alpharetta             | GA                |
| United Steel and Fasteners Inc.                                     | 200341-0          | Itasca                 | IL                |
| United Testing Sys. Canada, Ltd., Dynamic<br>Testing Sys. Int. Inc. | 200311-0          | Concord Ontario        | CANADA            |
| Universal Compliance Laboratories                                   | 200117-0          | San Jose               | CA                |
| University (State) Hygienic Laboratory                              | 101288-0          | Iowa City              | IA                |
| University of Alabama Asbestos Laboratory                           | 102005-0          | Tuscaloosa             | AL                |
| Unviersity of Wisconsin Radiation<br>Calibration Laboratory         | 200470-0          | Madison                | WI                |
| US Air Force Center for Radiation Dosimetry                         | 100548-0          | Brooks AFB             | TX                |
| USEM de Mexico, S.A. de C.V.                                        | 200506-0          | Apodaca NL             | MEXICO            |
| USG Research - Construction Systems<br>Laboratory                   | 200132-0          | Libertyville           | IL                |

## V

|                                               |          |                     |        |
|-----------------------------------------------|----------|---------------------|--------|
| Verizon Logistics, Electronic Repair Services | 200352-0 | Fort Wayne          | IN     |
| Vermont Fasteners Manufacturing               | 200254-0 | Swanton             | VT     |
| Vibro-Acoustics Laboratory                    | 100424-0 | Scarborough Ontario | CANADA |
| VLSI Standards, Inc.                          | 200302-0 | San Jose            | CA     |
| Volz Environmental Services, Inc.             | 101269-0 | Pittsburgh          | PA     |

## W

|                                                                    |          |                 |       |
|--------------------------------------------------------------------|----------|-----------------|-------|
| W.R. Grace & Co.                                                   | 200258-0 | Cambridge       | MA    |
| Washington Laboratories, Ltd.                                      | 200066-0 | Gaithersburg    | MD    |
| Washington State Department of Agriculture<br>Metrology Laboratory | 200446-0 | Tumwater        | WA    |
| Wave Corporation                                                   | 200549-0 | Tano-gun, Gunma | JAPAN |
| Wayne Langston, Inc.                                               | 200021-0 | League City     | TX    |
| Webber Gage Division / L.S. Starrett Co.                           | 200038-0 | Cleveland       | OH    |
| Western Analytical Laboratory, Inc.                                | 200037-0 | Arleta          | CA    |
| Western Electro-Acoustic Lab., Inc.                                | 100256-0 | Santa Clarita   | CA    |
| White Environmental Consultants Inc.                               | 200124-0 | Anchorage       | AK    |
| White Environmental Consultants, Inc.                              | 200350-0 | Honolulu        | HI    |
| White Environmental Consultants, Inc.                              | 200509-0 | Tigard          | OR    |
| Willamette Industries, Inc. West Coast<br>Development Lab          | 200045-0 | Wilsonville     | OR    |
| Windermere Info. Tech. Sys.                                        | 200084-0 | Annapolis       | MD    |
| Military/Commercial Compliance Lab.                                |          |                 |       |
| Wisconsin Occupational Health Laboratory                           | 101109-0 | Madison         | WI    |
| WKP Laboratories, Inc.                                             | 101950-0 | New York City   | NY    |
| Wolverine Plating Corp.                                            | 200230-0 | Roseville       | MI    |
| Wonder Makers Environmental Inc.                                   | 102065-0 | Kalamazoo       | MI    |

## Y

|                   |          |                          |       |
|-------------------|----------|--------------------------|-------|
| Yamaha EMC Center | 200455-0 | Tenryu-shi, Shizuoka-ken | JAPAN |
|-------------------|----------|--------------------------|-------|

## Z

|                                                         |          |                       |       |
|---------------------------------------------------------|----------|-----------------------|-------|
| Zacta Technology Corporation Yonezawa<br>Testing Center | 200306-0 | Yonezawa-shi Yamagata | JAPAN |
|---------------------------------------------------------|----------|-----------------------|-------|

**INDEX**

**B**

**LISTING BY  
FIELD OF  
ACCREDITATION**





## INDEX B. LISTING BY FIELD OF ACCREDITATION

| LABORATORY NAME                                                  | NVLAP<br>LAB CODE | CITY            | STATE/<br>COUNTRY |
|------------------------------------------------------------------|-------------------|-----------------|-------------------|
| <b>CALIBRATION LABORATORIES GROUP</b>                            |                   |                 |                   |
| <i><b>Dimensional</b></i>                                        |                   |                 |                   |
| Bechtel BWXT Idaho, Standards and Calibration Lab                | 200115-0          | Idaho Falls     | ID                |
| Dwight D.I.C., Inc.                                              | 200405-0          | Lyndhurst       | NJ                |
| GE Industrial Systems                                            | 200029-0          | Rome            | NY                |
| Honeywell FM&T Metrology                                         | 200108-0          | Kansas City     | MO                |
| Indiana Division of Weights and Measures                         | 200421-0          | Indianapolis    | IN                |
| Instron Field Calibration Laboratory                             | 200301-0          | Canton          | MA                |
| Metroplex Metrology Lab, Inc.                                    | 200262-0          | Fort Worth      | TX                |
| Michigan Dept. of Agriculture, E.C. Heffron Metrology Laboratory | 200408-0          | Williamston     | MI                |
| Minnesota Metrology Laboratory                                   | 105003-0          | St. Paul        | MN                |
| Oak Ridge Metrology Center                                       | 105000-0          | Oak Ridge       | TN                |
| Oklahoma Bureau of Standards                                     | 200396-0          | Oklahoma City   | OK                |
| Philip Morris Standards and Calibration Laboratory               | 200359-0          | Richmond        | VA                |
| Sandia National Laboratories                                     | 105002-0          | Albuquerque     | NM                |
| Southern California Edison Company                               | 105014-0          | Westminster     | CA                |
| State of Virginia Metrology Lab                                  | 105007-0          | Richmond        | VA                |
| Strategic Weapons Fac. Pacific Cal. Lab.                         | 200406-0          | Silverdale      | WA                |
| Oper. by Lockheed Martin                                         |                   |                 |                   |
| SWFLANT Calibration Laboratory Operated by Lockheed Martin       | 200403-0          | Kings Bay       | GA                |
| United Testing Sys. Canada, Ltd., Dynamic Testing Sys. Int. Inc. | 200311-0          | Concord Ontario | CANADA            |
| VLSI Standards, Inc.                                             | 200302-0          | San Jose        | CA                |
| Webber Gage Division / L.S. Starrett Co.                         | 200038-0          | Cleveland       | OH                |
| <i><b>Electromagnetics - DC/Low Frequency</b></i>                |                   |                 |                   |
| Bechtel BWXT Idaho, Standards and Calibration Lab                | 200115-0          | Idaho Falls     | ID                |
| Compaq Corporate Metrology                                       | 200154-0          | Houston         | TX                |
| Eaton Corporation Innovation Center                              | 200182-0          | Southfield      | MI                |
| Electronic Automation                                            | 200410-0          | Grand Rapids    | MI                |
| Fluke Corporation Primary Standards Laboratory                   | 105016-0          | Everett         | WA                |
| GE Industrial Systems                                            | 200029-0          | Rome            | NY                |
| Hart Scientific Calibration Laboratory                           | 200348-0          | American Fork   | UT                |
| Marlin Manufacturing Corporation                                 | 200512-0          | Cleveland       | OH                |
| Pyromation Inc. Metrology Laboratory                             | 200502-0          | Fort Wayne      | IN                |
| Sandia National Laboratories                                     | 105002-0          | Albuquerque     | NM                |
| SE Laboratories, Inc.                                            | 200338-0          | Santa Clara     | CA                |
| Southern California Edison Company                               | 105014-0          | Westminster     | CA                |
| Strategic Weapons Fac. Pacific Cal. Lab.                         | 200406-0          | Silverdale      | WA                |
| Oper. by Lockheed Martin                                         |                   |                 |                   |
| SWFLANT Calibration Laboratory Operated by Lockheed Martin       | 200403-0          | Kings Bay       | GA                |
| Verizon Logistics, Electronic Repair Services                    | 200352-0          | Fort Wayne      | IN                |

**INDEX B. LISTING BY FIELD OF ACCREDITATION - continued**

| <b>LABORATORY NAME</b>                                               | <b>NVLAP<br/>LAB CODE</b> | <b>CITY</b>     | <b>STATE/<br/>COUNTRY</b> |
|----------------------------------------------------------------------|---------------------------|-----------------|---------------------------|
| <b><i>Electromagnetics - RF/Microwave</i></b>                        |                           |                 |                           |
| Compaq Corporate Metrology                                           | 200154-0                  | Houston         | TX                        |
| Honeywell FM&T Metrology                                             | 200108-0                  | Kansas City     | MO                        |
| IPS Corporation                                                      | 200012-0                  | Nagano          | JAPAN                     |
| Liberty Labs, Inc.                                                   | 200123-0                  | Kimballton      | IA                        |
| Sandia National Laboratories                                         | 105002-0                  | Albuquerque     | NM                        |
| SE Laboratories, Inc.                                                | 200338-0                  | Santa Clara     | CA                        |
| <b><i>Ionizing Radiation</i></b>                                     |                           |                 |                           |
| CDRH X-Ray Calibration Laboratory                                    | 105018-0                  | Rockville       | MD                        |
| MDS Nordion Dosimetry Laboratory                                     | 200370-0                  | Kanata Ontario  | CANADA                    |
| Ohio E.M.A. Radiological Instrument<br>Calibration Facility          | 200419-0                  | Columbus        | OH                        |
| Pacific Northwest National Laboratory /<br>Battelle                  | 105020-0                  | Richland        | WA                        |
| RESL - DOE Laboratory Accreditation<br>Program                       | 200366-0                  | Idaho Falls     | ID                        |
| Sandia National Laboratories                                         | 105002-0                  | Albuquerque     | NM                        |
| STERIS-Isomedix Services                                             | 200235-0                  | Morton Grove    | IL                        |
| <b><i>Mechanical</i></b>                                             |                           |                 |                           |
| Arizona Department of Weights and<br>Measures Metrology Laboratory   | 200381-0                  | Glendale        | AZ                        |
| Bechtel BWXT Idaho, Standards and<br>Calibration Lab                 | 200115-0                  | Idaho Falls     | ID                        |
| David L. Ellis Co., Incorporated                                     | 200127-0                  | Acton           | MA                        |
| Deka Scale, Inc., Scales and Balances                                | 200400-0                  | Toledo          | OH                        |
| Denver Instrument Co. Weight Lab                                     | 200106-0                  | Arvada          | CO                        |
| Eaton Corporation Innovation Center                                  | 200182-0                  | Southfield      | MI                        |
| Henry Troemner, LLC                                                  | 105013-0                  | Thorofare       | NJ                        |
| Honeywell FM&T Metrology                                             | 200108-0                  | Kansas City     | MO                        |
| Indiana Division of Weights and Measures                             | 200421-0                  | Indianapolis    | IN                        |
| Instron Field Calibration Laboratory                                 | 200301-0                  | Canton          | MA                        |
| Instron Force Calibration Laboratory                                 | 105023-0                  | Canton          | MA                        |
| Maine Metrology Department of Agriculture                            | 200414-0                  | Augusta         | ME                        |
| Metrology Concepts Inc., dba Tri-State<br>Calibration                | 200505-0                  | Antioch         | IL                        |
| Metroplex Metrology Lab, Inc.                                        | 200262-0                  | Fort Worth      | TX                        |
| Michigan Dept. of Agriculture, E.C. Heffron<br>Metrology Laboratory  | 200408-0                  | Williamston     | MI                        |
| Minnesota Metrology Laboratory                                       | 105003-0                  | St. Paul        | MN                        |
| Oak Ridge Metrology Center                                           | 105000-0                  | Oak Ridge       | TN                        |
| Oklahoma Bureau of Standards                                         | 200396-0                  | Oklahoma City   | OK                        |
| Philip Morris Standards and Calibration<br>Laboratory                | 200359-0                  | Richmond        | VA                        |
| Rice Lake Weighing Systems                                           | 105001-0                  | Rice Lake       | WI                        |
| Ruska Calibration Laboratory                                         | 200491-0                  | Houston         | TX                        |
| S. Himmelstein and Company                                           | 200487-0                  | Hoffman Estates | IL                        |
| Sandia National Laboratories                                         | 105002-0                  | Albuquerque     | NM                        |
| Southern California Edison Company                                   | 105014-0                  | Westminster     | CA                        |
| State of Virginia Metrology Lab                                      | 105007-0                  | Richmond        | VA                        |
| Strategic Weapons Fac. Pacific Cal. Lab.<br>Oper. by Lockheed Martin | 200406-0                  | Silverdale      | WA                        |

## INDEX B. LISTING BY FIELD OF ACCREDITATION - continued

| LABORATORY NAME                                                      | NVLAP<br>LAB CODE | CITY            | STATE/<br>COUNTRY |
|----------------------------------------------------------------------|-------------------|-----------------|-------------------|
| SWFLANT Calibration Laboratory Operated<br>by Lockheed Martin        | 200403-0          | Kings Bay       | GA                |
| United Testing Sys. Canada, Ltd., Dynamic<br>Testing Sys. Int. Inc.  | 200311-0          | Concord Ontario | CANADA            |
| Washington State Department of Agriculture<br>Metrology Laboratory   | 200446-0          | Tumwater        | WA                |
| <b><i>Optical Radiation</i></b>                                      |                   |                 |                   |
| Electronic Automation                                                | 200410-0          | Grand Rapids    | MI                |
| Technical Calibration Labs, Inc.                                     | 200459-0          | Monroe          | NY                |
| <b><i>Thermodynamic</i></b>                                          |                   |                 |                   |
| Bechtel BWXT Idaho, Standards and<br>Calibration Lab                 | 200115-0          | Idaho Falls     | ID                |
| Electronic Automation                                                | 200410-0          | Grand Rapids    | MI                |
| Fluke Corporation Primary Standards<br>Laboratory                    | 105016-0          | Everett         | WA                |
| GE Industrial Systems                                                | 200029-0          | Rome            | NY                |
| GeoCorp Industrial Controls, Inc.                                    | 200496-0          | Huron           | OH                |
| Hart Scientific Calibration Laboratory                               | 200348-0          | American Fork   | UT                |
| Marlin Manufacturing Corporation                                     | 200512-0          | Cleveland       | OH                |
| Metroplex Metrology Lab, Inc.                                        | 200262-0          | Fort Worth      | TX                |
| Minnesota Metrology Laboratory                                       | 105003-0          | St. Paul        | MN                |
| Oak Ridge Metrology Center                                           | 105000-0          | Oak Ridge       | TN                |
| Philip Morris Standards and Calibration<br>Laboratory                | 200359-0          | Richmond        | VA                |
| Pyromation Inc. Metrology Laboratory                                 | 200502-0          | Fort Wayne      | IN                |
| Ruska Calibration Laboratory                                         | 200491-0          | Houston         | TX                |
| Sandia National Laboratories                                         | 105002-0          | Albuquerque     | NM                |
| State of Virginia Metrology Lab                                      | 105007-0          | Richmond        | VA                |
| <b><i>Time &amp; Frequency</i></b>                                   |                   |                 |                   |
| Bechtel BWXT Idaho, Standards and<br>Calibration Lab                 | 200115-0          | Idaho Falls     | ID                |
| Compaq Corporate Metrology                                           | 200154-0          | Houston         | TX                |
| Electronic Automation                                                | 200410-0          | Grand Rapids    | MI                |
| Fluke Corporation Primary Standards<br>Laboratory                    | 105016-0          | Everett         | WA                |
| Honeywell FM&T Metrology                                             | 200108-0          | Kansas City     | MO                |
| Indiana Division of Weights and Measures                             | 200421-0          | Indianapolis    | IN                |
| Maine Metrology Department of Agriculture                            | 200414-0          | Augusta         | ME                |
| Oak Ridge Metrology Center                                           | 105000-0          | Oak Ridge       | TN                |
| Sandia National Laboratories                                         | 105002-0          | Albuquerque     | NM                |
| SE Laboratories, Inc.                                                | 200338-0          | Santa Clara     | CA                |
| State of Virginia Metrology Lab                                      | 105007-0          | Richmond        | VA                |
| Strategic Weapons Fac. Pacific Cal. Lab.<br>Oper. by Lockheed Martin | 200406-0          | Silverdale      | WA                |
| SWFLANT Calibration Laboratory Operated<br>by Lockheed Martin        | 200403-0          | Kings Bay       | GA                |



**INDEX B. LISTING BY FIELD OF ACCREDITATION - continued**

| <b>LABORATORY NAME</b>                                               | <b>NVLAP<br/>LAB CODE</b> | <b>CITY</b>      | <b>STATE/<br/>COUNTRY</b> |
|----------------------------------------------------------------------|---------------------------|------------------|---------------------------|
| <b>CHEMICAL CALIBRATION GROUP</b>                                    |                           |                  |                           |
| <i><b>NIST Traceable Reference Materials</b></i>                     |                           |                  |                           |
| Thermo Spectronic                                                    | 200462-0                  | Cambridge        | UNITED KINGDOM            |
| <i><b>Providers of Proficiency Testing</b></i>                       |                           |                  |                           |
| Absolute Standards, Inc.                                             | 200390-0                  | Hamden           | CT                        |
| AccuStandard, Inc.                                                   | 200389-0                  | New Haven        | CT                        |
| Analytical Products Group, Inc.                                      | 200384-0                  | Belpre           | OH                        |
| Chrisope Technologies, A Division of Remel                           | 200388-0                  | Lake Charles     | LA                        |
| Environmental Resource Associates (ERA)                              | 200386-0                  | Arvada           | CO                        |
| Microcheck, Inc.                                                     | 200391-0                  | Northfield       | VT                        |
| NSI Solutions, Inc.                                                  | 200440-0                  | Raleigh          | NC                        |
| NYS DOH Environmental Laboratory<br>Approval Program                 | 200387-0                  | Albany           | NY                        |
| Protocol Analytical Supplies, Inc.                                   | 200395-0                  | Middlesex        | NJ                        |
| Resource Technology Corporation (RTC)                                | 200393-0                  | Laramie          | WY                        |
| Spex Certiprep Inc.                                                  | 200392-0                  | Metuchen         | NJ                        |
| <b>DOSIMETRY GROUP</b>                                               |                           |                  |                           |
| <i><b>Ionizing Radiation Dosimetry</b></i>                           |                           |                  |                           |
| AmerenUE, Callaway Plant                                             | 100502-0                  | Fulton           | MO                        |
| Arizona Public Service Co., Palo Verde<br>Nuclear Generating Station | 100536-0                  | Tonopah          | AZ                        |
| Atomic Energy Industrial Laboratory of the<br>Southwest, Inc.        | 100556-0                  | Houston          | TX                        |
| Battelle - Pacific Northwest National<br>Laboratory                  | 200216-0                  | Richland         | WA                        |
| Calvert Cliffs Nuclear Power Plant, Inc.                             | 100501-0                  | Lusby            | MD                        |
| Carolina Power & Light Company, Harris<br>Energy & Enviro. Center    | 100517-0                  | New Hill         | NC                        |
| Detroit Edison, Fermi 2 Dosimetry<br>Laboratory                      | 100529-0                  | Newport          | MI                        |
| Dominion Nuclear Connecticut, Inc.                                   | 100540-0                  | Waterford        | CT                        |
| Duke Engineering and Services<br>Environmental Laboratory            | 100524-0                  | Westborough      | MA                        |
| Duke Power Company Dosimetry Laboratory                              | 100505-0                  | Charlotte        | NC                        |
| Entergy Nuclear Northeast                                            | 100538-0                  | Buchanan         | NY                        |
| Entergy Operations, Inc.                                             | 100535-0                  | Killona          | LA                        |
| Florida Power & Light Company                                        | 100544-0                  | Juno Beach       | FL                        |
| General Dynamics, Electric Boat                                      | 100560-0                  | Groton           | CT                        |
| Georgia Power Company/Enviro. Affairs,<br>Enviro. Lab-Dosimetry      | 100551-0                  | Smyrna           | GA                        |
| Ginna Nuclear Station                                                | 100514-0                  | Ontario          | NY                        |
| ICN Worldwide Dosimetry Service, Div. of<br>ICN Biomedicals, Inc.    | 100555-0                  | Costa Mesa       | CA                        |
| Landauer, Inc.                                                       | 100518-0                  | Glenwood         | IL                        |
| Mallinckrodt, Inc.                                                   | 100503-0                  | Maryland Heights | MO                        |
| Naval Dosimetry Center                                               | 100504-0                  | Bethesda         | MD                        |
| Naval Nuclear Propulsion Program<br>Directorate, Washington, DC      | 100565-0                  | Bremerton        | WA                        |
| Newport News Shipbuilding Radiological                               | 100561-0                  | Newport News     | VA                        |

## INDEX B. LISTING BY FIELD OF ACCREDITATION - continued

| LABORATORY NAME                                                      | NVLAP<br>LAB CODE | CITY                   | STATE/<br>COUNTRY |
|----------------------------------------------------------------------|-------------------|------------------------|-------------------|
| Control Department                                                   |                   |                        |                   |
| Pacific Gas & Electric Company, Diablo<br>Canyon Nuclear Power Plant | 100537-0          | Avila Beach            | CA                |
| PPL Susquehanna, LLC                                                 | 100554-0          | Allentown              | PA                |
| Proxtronic, Inc.                                                     | 100573-0          | Springfield            | VA                |
| Radiation Detection Company                                          | 100512-0          | Gilroy                 | CA                |
| Radiation Laboratory, Taiwan Power<br>Company                        | 100562-0          | Shihmen, Taipei        | TAIWAN            |
| South Texas Project Dosimetry Laboratory                             | 100519-0          | Wadsworth              | TX                |
| Tennessee Valley Authority External<br>Dosimetry Service             | 100516-0          | Soddy-Daisy            | TN                |
| Troxler Radiation Monitoring Svc. a div. of<br>Troxler Elect. Labs   | 100559-0          | Research Triangle Park | NC                |
| TXU Electric - Comanche Peak Steam<br>Electric Station               | 100528-0          | Glen Rose              | TX                |
| U.S. Army Radiation Standards & Dosimetry<br>Laboratory              | 100539-0          | Redstone Arsenal       | AL                |
| United States Dosimetry Technology, Inc.                             | 100571-0          | Richland               | WA                |
| University of Wisconsin Radiation<br>Calibration Laboratory          | 200470-0          | Madison                | WI                |
| US Air Force Center for Radiation Dosimetry                          | 100548-0          | Brooks AFB             | TX                |

## ELECTROMAGNETIC COMPATIBILITY & TELECOMMUNICATIONS

### *Electromagnetic Compatibility & Telecommunications*

|                                                                |          |                          |        |
|----------------------------------------------------------------|----------|--------------------------|--------|
| 3M Product Safety EMC Laboratory                               | 200033-0 | St. Paul                 | MN     |
| A-Pex International Co., Ltd. Yamakita<br>Laboratory           | 200441-0 | Ashigarakami-gun         | JAPAN  |
| A-Pex International Co., Ltd. Yokowa<br>Laboratory             | 200109-0 | Mie-ken                  | JAPAN  |
| Advance Data Technology Corporation                            | 200102-0 | Taipei Hsien             | TAIWAN |
| Advance Data Technology Corporation Hsin<br>Chu EMC Laboratory | 200376-0 | Hsin Chu Hsien           | TAIWAN |
| Advanced Compliance Laboratory                                 | 200101-0 | Hillsborough             | NJ     |
| Advantest Analysis Laboratory Ltd. EMC<br>Center               | 200477-0 | Gunma                    | JAPAN  |
| AHD                                                            | 200129-0 | Dowagiac                 | MI     |
| Akzo Nobel K.K. Kawasaki Technical Center                      | 200300-0 | Kawasaki                 | JAPAN  |
| Akzo Nobel K.K., Kakegawa EMC Test Site                        | 100290-2 | Shizuoka                 | JAPAN  |
| Akzo Nobel K.K., Kashima EMC Site                              | 100290-0 | Ibaraki                  | JAPAN  |
| Akzo Nobel K.K., Matsuda EMC Test Site                         | 100290-4 | Kanagawa                 | JAPAN  |
| Akzo Nobel K.K., Nagano EMC Test Site                          | 100290-3 | Nagano                   | JAPAN  |
| Akzo Nobel K.K., Tochigi EMC Test Site                         | 100290-5 | Tochigi                  | JAPAN  |
| Anritsu Customer Services Ltd. EMC Center                      | 200550-0 | Kanagawa-Prf.            | JAPAN  |
| Apple Computer, Inc., EMC Compliance<br>Laboratory             | 200071-0 | Cupertino                | CA     |
| Audix Technology (Shanghai) Co., Ltd.                          | 200371-0 | Shanghai                 | CHINA  |
| AUDIX Technology (Shenzhen) Co., Ltd.                          | 200372-0 | Shenzhen, Guangdong      | CHINA  |
| BAE Systems                                                    | 200425-0 | Nashua                   | NH     |
| BAE Systems Controls, Inc. EMI Laboratory                      | 200142-0 | Johnson City             | NY     |
| Bay Area Compliance Laboratory Corp.                           | 200167-0 | Sunnyvale                | CA     |
| Benesol Corp.                                                  | 200438-0 | Sagamihara-shi, Kanagawa | JAPAN  |
| Best Laboratory                                                | 200484-0 | Taipei Hsein             | TAIWAN |

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| <b>LABORATORY NAME</b>                                            | <b>NVLAP<br/>LAB CODE</b> | <b>CITY</b>            | <b>STATE/<br/>COUNTRY</b> |
|-------------------------------------------------------------------|---------------------------|------------------------|---------------------------|
| Boeing - St. Louis Electromagnetic Compatibility Laboratory       | 200382-0                  | St. Louis              | MO                        |
| Canon D5 RF Anechoic Chamber; FCC Part 15; CISPR 22/AS/NZS 3548   | 200478-0                  | Ibaraki                | JAPAN                     |
| Chemitox EMC Research, Inc.                                       | 200120-0                  | Yamanashi-ken          | JAPAN                     |
| Chomerics Test Services (CTS)                                     | 100296-0                  | Woburn                 | MA                        |
| Cisco Systems, Inc.                                               | 200114-0                  | San Jose               | CA                        |
| Communication Certification Laboratory                            | 100272-0                  | Salt Lake City         | UT                        |
| Compaq Computer Corp. EMC Test Facility                           | 200078-0                  | Colorado Springs       | CO                        |
| Compaq Computer Corp. Emissions Control Lab                       | 200058-0                  | Houston                | TX                        |
| Compaq Regulatory Compliance Engineering - East                   | 100413-0                  | Marlboro               | MA                        |
| Compatible Electronics, Inc.                                      | 200063-0                  | Agoura                 | CA                        |
| Compatible Electronics, Inc.                                      | 200527-0                  | Silverado/Lake Forest  | CA                        |
| Compatible Electronics, Inc.                                      | 200528-0                  | Brea                   | CA                        |
| Compliance Eng. Svces, Inc., Compliance Certification Services    | 200065-0                  | Morgan Hill            | CA                        |
| Cosmos Corporation                                                | 200151-0                  | Watarai-gun Mie        | JAPAN                     |
| Criterion Technology Corp.                                        | 100396-0                  | Rollinsville           | CO                        |
| CSA International                                                 | 100322-0                  | Toronto Ontario        | CANADA                    |
| D.L.S. Electronic Systems, Inc.                                   | 100276-0                  | Wheeling               | IL                        |
| Dayton T. Brown, Inc.                                             | 200422-0                  | Bohemia                | NY                        |
| Dell Regulatory Test Laboratories                                 | 200052-0                  | Round Rock             | TX                        |
| Digital EMC., Ltd.                                                | 200559-0                  | Kyunggi-Do             | KOREA                     |
| Diviersified T.E.S.T. Technologies, Inc.                          | 200340-0                  | Groton                 | NY                        |
| Eastman Kodak Co.- EMC Facility                                   | 200313-0                  | Rochester              | NY                        |
| Eaton E3 Laboratory                                               | 100382-0                  | Southfield             | MI                        |
| Electro Magnetic Test, Inc.                                       | 200147-0                  | Mountain View          | CA                        |
| Electronic Research & Service Organization/ITRI                   | 200118-0                  | Chutung Hsinchu        | TAIWAN                    |
| Electronics Test Centre                                           | 200282-0                  | Kanata, Ont.           | CANADA                    |
| Electronics Testing Center, Taiwan                                | 200133-0                  | Taoyuan Hsien          | TAIWAN                    |
| Elite Electronic Engineering Inc.                                 | 100278-0                  | Downers Grove          | IL                        |
| Elliott Laboratories, Inc.                                        | 200069-0                  | Sunnyvale              | CA                        |
| EMC Compliance Mgmt Group, dba Turntech Scientific & Instr., Inc. | 200068-0                  | Mountain View          | CA                        |
| EMC Corporation                                                   | 100339-0                  | Westboro               | MA                        |
| EMCE Engineering, Inc.                                            | 200092-0                  | Fremont                | CA                        |
| Enterasys Networks Inc.                                           | 200121-0                  | Nashua                 | NH                        |
| Environmental and EMC Test Centre                                 | 200304-0                  | Kent                   | UNITED KINGDOM            |
| Flextronics Compliance Laboratories                               | 200094-0                  | Youngsville            | NC                        |
| Fujitsu Evaluation Engineering Laboratory                         | 200281-0                  | Numazu, Shizuoka-Pref. | JAPAN                     |
| Fujitsu General EMC Laboratory                                    | 200373-0                  | Kawasaki               | JAPAN                     |
| Garwood Laboratories, Inc.                                        | 200119-0                  | Placentia              | CA                        |
| General Dynamics Decision Systems                                 | 100405-0                  | Scottsdale             | AZ                        |
| Global EMC Standard Tech. Corp.                                   | 200085-0                  | Taipei County          | TAIWAN                    |
| Global Testing                                                    | 200436-0                  | Santa Ana              | CA                        |
| Harris Corporation GCSD EMI Test Laboratory                       | 200500-0                  | Melbourne              | FL                        |
| Hewlett Packard, Product Test Lab, San Diego                      | 200138-0                  | San Diego              | CA                        |

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| LABORATORY NAME                                                   | NVLAP<br>LAB CODE | CITY                   | STATE/<br>COUNTRY |
|-------------------------------------------------------------------|-------------------|------------------------|-------------------|
| Hitachi Information Technology Co., Ltd.                          | 200186-0          | Kanagawa               | JAPAN             |
| HomeTek Technology Inc.                                           | 200331-0          | Taipei Shien           | TAIWAN            |
| IBM Austin EMC                                                    | 200112-0          | Austin                 | TX                |
| IBM Endicott EMC Lab                                              | 200418-0          | Endicott               | NY                |
| IBM Poughkeepsie EMC Laboratory                                   | 200435-0          | Poughkeepsie           | NY                |
| IBM Rochester EMC Lab                                             | 200091-0          | Rochester              | MN                |
| IBM RTP PSG EMC Test Labs                                         | 200200-0          | Research Triangle Park | NC                |
| IBM Yamato EMC Engineering                                        | 200198-0          | Yamato Kanagawa        | JAPAN             |
| IIT Research Institute/R&B Operation                              | 100280-0          | West Conshohocken      | PA                |
| InFocus Systems, Inc.                                             | 200152-0          | Wilsonville            | OR                |
| Intermec Technologies Corporation                                 | 100269-0          | Cedar Rapids           | IA                |
| International Standards Laboratory                                | 200234-0          | Tao Yaun County        | TAIWAN            |
| International Technology Company (ITC)                            | 200172-0          | Sunol                  | CA                |
| Interocan EMC Technology Corp.                                    | 200458-0          | Taipei County          | TAIWAN            |
| Intertek Testing Services                                         | 200201-0          | Menlo Park             | CA                |
| Intertek Testing Services NA Inc.                                 | 100274-0          | Lexington              | KY                |
| Intertek Testing Services NA Inc.                                 | 200297-0          | Laguna Niguel          | CA                |
| Intertek Testing Services NA, Inc.                                | 200049-0          | Oakdale                | MN                |
| Inventec Corp. (Taoyuan) EMC Labs                                 | 200140-0          | Taoyuan                | TAIWAN            |
| IPS Corporation                                                   | 200012-0          | Nagano                 | JAPAN             |
| Japan Quality Assurance Org. Chubu Testing Center Shikatsu Branch | 200190-0          | Aichi                  | JAPAN             |
| Japan Quality Assurance Org. Safety & EMC Ctr. Tsuru EMC Branch   | 200192-0          | Yamanashi              | JAPAN             |
| Japan Quality Assurance Organization                              | 200191-0          | Osaka                  | JAPAN             |
| Kita-Kansai Testing Center                                        |                   |                        |                   |
| Japan Quality Assurance Organization Safety & EMC Center          | 200189-0          | Tokyo                  | JAPAN             |
| JMR Compliance Engineering                                        | 200413-0          | Chatsworth             | CA                |
| Kansai Electronic Industry Development Center, Ikoma Testing Lab. | 200207-0          | Ikoma Nara             | JAPAN             |
| Key Tronic Corp.                                                  | 200096-0          | Spokane                | WA                |
| Kyushu Matsushita Electric Test Lab EMC Center                    | 200364-0          | Tosu-shi Saga-ken      | JAPAN             |
| Laird Group PLC                                                   | 200076-0          | Delaware Water Gap     | PA                |
| LG Electronics, Inc., Quality and Reliability Center              | 200040-0          | Seoul                  | KOREA             |
| Lucent Technologies, Global Product Compliance Lab                | 100275-0          | Holmdel                | NJ                |
| Matsushita EMC Center                                             | 100428-0          | Sasayama, Hyogo        | JAPAN             |
| MET Laboratories Incorporated                                     | 200445-0          | Union City             | CA                |
| MET Laboratories, Inc.                                            | 100273-0          | Baltimore              | MD                |
| Minolta Co., Ltd. Toyokawa EMC Lab                                | 200434-0          | Toyokawa, Aichi        | JAPAN             |
| Mitsubishi Digital Electronics America, Inc. EMC Test Lab         | 200498-0          | Irvine                 | CA                |
| Motorola Test Lab Services                                        | 200005-0          | Mansfield              | MA                |
| Murata Mfg. Co., Ltd. Yokohama Technical Center EMM Office        | 200263-0          | Kanagawa               | JAPAN             |
| National Technical Systems                                        | 100347-0          | Boxborough             | MA                |
| National Technical Systems                                        | 200245-0          | Plano                  | TX                |
| NAWC-Aircraft Div. Lakehurst Electromagnetic Interference Lab.    | 200222-0          | Lakehurst              | NJ                |



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| <b>LABORATORY NAME</b>                                                | <b>NVLAP<br/>LAB CODE</b> | <b>CITY</b>              | <b>STATE/<br/>COUNTRY</b> |
|-----------------------------------------------------------------------|---------------------------|--------------------------|---------------------------|
| NAWCAD 5.1.7.4. EMI Lab                                               | 100408-0                  | Patuxent River           | MD                        |
| NCR Corp. San Diego EMC Lab                                           | 200383-0                  | San Diego                | CA                        |
| NEC Access Technica, Ltd. EMC Center                                  | 200488-0                  | Shizuoka-ken             | JAPAN                     |
| NEC Kofu, Ltd., EMC Center                                            | 200433-0                  | Yamanashi                | JAPAN                     |
| Nemko Dallas, Inc.                                                    | 100426-0                  | Lewisville               | TX                        |
| Nemko EESI, Inc.                                                      | 200116-0                  | San Diego                | CA                        |
| Neutron Engineering Inc.                                              | 200145-0                  | Taipei                   | TAIWAN                    |
| Niigata Fuji Xerox Manufacturing Co., Ltd.<br>EMC Group               | 200490-0                  | Niigata                  | JAPAN                     |
| Nortel Networks BVW Lab                                               | 200098-0                  | Belleville, Ontario      | CANADA                    |
| Northwest EMC, Inc.                                                   | 200059-0                  | Hillsboro                | OR                        |
| Ohtama Co., Ltd. Yamanashi EMC Test Site                              | 200175-0                  | Yamanashi                | JAPAN                     |
| Oki Engineering Co., Ltd. EMC Honjo<br>Center                         | 200519-0                  | Honjo-shi, Saitama       | JAPAN                     |
| Olympus EMC Laboratory                                                | 200472-0                  | Tokyo                    | JAPAN                     |
| ORIX Rentec EMC Center; Electromagnetic<br>Compatibility              | 200404-0                  | Aiko-Gun, Kanagawa       | JAPAN                     |
| Paradyne Corporation                                                  | 200125-0                  | Largo                    | FL                        |
| PCTEST Engineering Laboratory, Inc.                                   | 100431-0                  | Columbia                 | MD                        |
| PDE Laboratories                                                      | 200082-0                  | San Clemente             | CA                        |
| PEP Testing Laboratory                                                | 200097-0                  | Taipei Hsien             | TAIWAN                    |
| PFU TECHNOCONSUL EMC Center                                           | 200259-0                  | Ishikawa-Ken             | JAPAN                     |
| Philips Electronics Industries (TAIWAN)<br>Ltd.                       | 200137-0                  | Chungli, Taoyuan         | TAIWAN                    |
| Philips Testing Service                                               | 200409-0                  | Knoxville                | TN                        |
| Professional Testing (EMI), Inc.                                      | 200062-0                  | Round Rock               | TX                        |
| Quest Engineering Solutions, Inc.                                     | 200036-0                  | N. Billerica             | MA                        |
| Quietek Corporation                                                   | 200347-0                  | Hsin-Chu Country         | TAIWAN                    |
| Quitek Corporation                                                    | 200533-0                  | Lin Kou Shiang, Taipei   | TAIWAN                    |
| Raytheon Electronic Systems, California<br>Engineering EEE Laboratory | 200431-0                  | El Segundo               | CA                        |
| Raytheon Technical Services Co. EMI<br>Laboratory                     | 200317-0                  | Indianapolis             | IN                        |
| Retlif Testing Laboratories                                           | 100267-0                  | Ronkonkoma               | NY                        |
| Retlif Testing Laboratories                                           | 100267-1                  | Goffstown                | NH                        |
| Rhein Tech Laboratories, Inc.                                         | 200061-0                  | Herndon                  | VA                        |
| Ricoh Company, Ltd. Ohmori EMC Center                                 | 200163-0                  | Tokyo                    | JAPAN                     |
| RMS EMI Laboratory MIL-STD 462C/D                                     | 200489-0                  | Tucson                   | AZ                        |
| Rogers Labs, Inc.                                                     | 200087-0                  | Louisburg                | KS                        |
| Samsung Electronics EMC Laboratory                                    | 200447-0                  | Suwon, Kyungki Do        | KOREA                     |
| Sanmina Homologation Services                                         | 100411-0                  | San Jose                 | CA                        |
| Seiko Epson Corporation                                               | 200157-0                  | Shiojiri-City Nagano     | JAPAN                     |
| Sharp Nara EMC Center, EMI Measurement<br>for ITE                     | 200457-0                  | Yamatokooriyama-shi Nara | JAPAN                     |
| SK Tech Co., LTD.                                                     | 200220-0                  | Namyangju-si, Kyunggi-Do | KOREA                     |
| Sony Electronics Inc. Product Quality<br>Division EMC Group           | 200312-0                  | San Diego                | CA                        |
| Sony EMCS Corp. Kohda TEC                                             | 200398-0                  | Nukata-gun Aichi         | JAPAN                     |
| Sony EMCS Corporation Minokamo TEC                                    | 200368-0                  | Gifu-Pref.               | JAPAN                     |
| Sony EMCS Saotama TEC EMC Test<br>Laboratory                          | 200456-0                  | Saitama-ken              | JAPAN                     |
| Sony Kisarazu EMC Test Laboratory                                     | 200432-0                  | Kisarazu Chiba           | JAPAN                     |

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| LABORATORY NAME                                                     | NVLAP<br>LAB CODE | CITY                      | STATE/<br>COUNTRY |
|---------------------------------------------------------------------|-------------------|---------------------------|-------------------|
| Sony Nagano EMC Test Laboratory                                     | 200553-0          | Nagano-ken                | JAPAN             |
| Spectrum Research & Testing Laboratory,<br>Inc.                     | 200099-0          | Chung-Li, Taoyuan         | TAIWAN            |
| Sporton International, Inc.                                         | 200079-0          | Taipei Hsien              | TAIWAN            |
| Storagtek Open Area Test Site                                       | 200251-0          | Louisville                | CO                |
| Sun Microsystems, Inc. EMC Testing                                  | 200363-0          | Palo Alto                 | CA                |
| Syonan Site Testing Laboratory as Conducted<br>& Radiated Emissions | 200482-0          | Kanagawa                  | JAPAN             |
| Taiwan Tokin EMC Eng. Corp.                                         | 200077-0          | Taipei                    | TAIWAN            |
| TDK Corporation's 10m Anechoic Chamber<br>& 3m Anechoic Chamber     | 200309-0          | Ichikawa-shi, Chiba-ken   | JAPAN             |
| TDK Corporation's Chikumagawa Open Site                             | 200319-0          | Saku-shi, Nagano-ken      | JAPAN             |
| TDK RF Solutions Inc.                                               | 200430-0          | Cedar Park                | TX                |
| TEAC Corporation EMC Center                                         | 200362-0          | Saitama-ken               | JAPAN             |
| Test Site Services, Inc.                                            | 100419-0          | Marlboro                  | MA                |
| Tokin EMC Engineering Co., Ltd. Kawasaki<br>Facility                | 200217-0          | Kawasaki-city, Kanagawa   | JAPAN             |
| Tokin EMC Engineering Co., Ltd. Nagoya<br>Testing Laboratory        | 200219-0          | Daian-cho, Inabe-gun, Mie | JAPAN             |
| Tokin EMC Engineering Co., Ltd. Osaka<br>Testing Laboratory         | 200218-0          | Sanda-city, Hyogo         | JAPAN             |
| Tokin EMC Engineering Co., Ltd. Tsukuba<br>Testing Laboratory       | 200221-0          | Tsukuba-city, Ibaraki     | JAPAN             |
| Toshiba Corp., Ome Operations                                       | 200107-0          | Ome Tokyo                 | JAPAN             |
| Training Research Co., Ltd.                                         | 200174-0          | Taipei Hsien              | TAIWAN            |
| TUV Product Service, Inc.                                           | 100268-0          | San Diego                 | CA                |
| TUV Product Service, Inc.                                           | 100271-1          | Boulder                   | CO                |
| TUV Product Service, Inc.- A Division of<br>TUV America Inc.        | 100271-0          | New Brighton              | MN                |
| TUV Rheinland of North America, Inc.                                | 200111-0          | Newtown                   | CT                |
| TUV Telecom Services, Inc.                                          | 200039-0          | St. Paul                  | MN                |
| UltraTech Engineering Labs Inc.                                     | 200093-0          | Oakville, Ontario         | CANADA            |
| Underwriters Laboratories                                           | 200252-0          | Santa Clara               | CA                |
| Underwriters Laboratories Inc.                                      | 100414-0          | Northbrook                | IL                |
| Underwriters Laboratories Inc.                                      | 200214-0          | Camas                     | WA                |
| Underwriters Laboratories Inc.                                      | 200535-0          | Sunol                     | CA                |
| Underwriters Laboratories, Inc.                                     | 100255-0          | Melville                  | NY                |
| Underwriters Laboratories, Inc.                                     | 200246-0          | Research Triangle Park    | NC                |
| United States Technologies, Inc.                                    | 200162-0          | Alpharetta                | GA                |
| Universal Compliance Laboratories                                   | 200117-0          | San Jose                  | CA                |
| Washington Laboratories, Ltd.                                       | 200066-0          | Gaithersburg              | MD                |
| Wave Corporation                                                    | 200549-0          | Tano-gun, Gunma           | JAPAN             |
| Wayne Langston, Inc.                                                | 200021-0          | League City               | TX                |
| Windermere Info. Tech. Sys.                                         | 200084-0          | Annapolis                 | MD                |
| Military/Commercial Compliance Lab.                                 |                   |                           |                   |
| Yamaha EMC Center                                                   | 200455-0          | Tenryu-shi, Shizuoka-ken  | JAPAN             |
| Zacta Technology Corporation Yonezawa<br>Testing Center             | 200306-0          | Yonezawa-shi Yamagata     | JAPAN             |

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| LABORATORY NAME                                             | NVLAP<br>LAB CODE | CITY             | STATE/<br>COUNTRY |
|-------------------------------------------------------------|-------------------|------------------|-------------------|
| <b>ENVIRONMENTAL GROUP</b>                                  |                   |                  |                   |
| <i>Asbestos Fiber Analysis (PLM Test Method)</i>            |                   |                  |                   |
| A & B Environmental Services, Inc.                          | 101793-0          | Houston          | TX                |
| A.E.S.L. Environmental Laboratory                           | 200303-0          | Tempe            | AZ                |
| Accredited Environmental Technologies, Inc.                 | 101051-0          | Media            | PA                |
| ACM Environmental, Inc.                                     | 101977-0          | South Bend       | IN                |
| Adirondack Environmental Services Inc.                      | 200552-0          | Albany           | NY                |
| Advanced Industrial Hygiene Services, Inc.                  | 101006-0          | Miami            | FL                |
| AES International                                           | 200051-0          | Santurce         | PR                |
| AGX, Inc.                                                   | 101578-0          | Wexford          | PA                |
| Air Quality Laboratories                                    | 101580-0          | Oklahoma City    | OK                |
| Aires Consulting Group, Inc.                                | 101014-0          | Batavia          | IL                |
| Airtek Environmental Corp.                                  | 102011-0          | New York         | NY                |
| ALAC                                                        | 200323-0          | New York         | NY                |
| Alpine Consulting, Inc.                                     | 102089-0          | Colorado Springs | CO                |
| AMA Analytical Services, Inc.                               | 101143-0          | Lanham           | MD                |
| Ambient Group, Inc.                                         | 101618-0          | Glen Cove        | NY                |
| AMEC Earth & Environmental, Inc., PLM<br>LAB                | 200444-0          | Phoenix          | AZ                |
| American Asbestos Laboratories, Inc.                        | 101775-0          | Miami Lakes      | FL                |
| American Electric Power (AEP), Dolan<br>Chemical Laboratory | 102102-0          | Groveport        | OH                |
| American Medical Laboratories, Inc.                         | 101136-0          | Chantilly        | VA                |
| Analytica Solutions, Inc.                                   | 101086-0          | Thornton         | CO                |
| Analytical Environmental Services                           | 101735-0          | Austin           | TX                |
| Analytical Environmental Services, Inc.                     | 102082-0          | Atlanta          | GA                |
| Analytical Labs San Francisco, Inc.                         | 101909-0          | San Francisco    | CA                |
| AnalyticaLab                                                | 101727-0          | Willow Springs   | IL                |
| Analytics Corporation                                       | 101004-0          | Richmond         | VA                |
| Apex Research, Inc.                                         | 102118-0          | Whitmore Lake    | MI                |
| Apollo Environmental, Inc.                                  | 101871-0          | Gibsonton        | FL                |
| Applied Environmental, Inc.                                 | 101611-0          | Reston           | VA                |
| Applied Laboratory Services, LLC                            | 200515-0          | Norfolk          | VA                |
| ASBESTECH                                                   | 101442-0          | Carmichael       | CA                |
| Asbestos Analysis and Information Service,<br>Inc.          | 101261-0          | Four Oaks        | NC                |
| Asbestos Consulting & Testing (ACT)                         | 101649-0          | Lenexa           | KS                |
| Asbestos TEM Laboratories, Inc.                             | 101891-0          | Berkeley         | CA                |
| Asbestos TEM Laboratories, Inc.                             | 200104-0          | Sparks           | NV                |
| Assaigai Analytical Laboratories, Inc.                      | 101457-0          | Albuquerque      | NM                |
| AST International Environmental Consultants<br>Inc.         | 200474-0          | Spring Valley    | CA                |
| ATC Associates Inc.                                         | 101187-0          | New York         | NY                |
| ATC Associates, Inc.                                        | 102031-0          | Englewood        | CO                |
| Athenica Environmental Services, Inc.                       | 101958-0          | Long Island City | NY                |
| Batta Laboratories, Inc.                                    | 101032-0          | Newark           | DE                |
| Bay Area Air Quality Management District                    | 102090-0          | San Francisco    | CA                |
| Bella Donna Labs Inc.                                       | 101868-0          | Wauwatosa        | WI                |
| Braun Intertec Corporation                                  | 101234-0          | Minneapolis      | MN                |
| CA Laboratories, L.L.C.                                     | 200452-0          | Baton Rouge      | LA                |
| CAM Environmental Services                                  | 200240-0          | Pasadena         | TX                |

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| <b>LABORATORY NAME</b>                                                  | <b>NVLAP<br/>LAB CODE</b> | <b>CITY</b>          | <b>STATE/<br/>COUNTRY</b> |
|-------------------------------------------------------------------------|---------------------------|----------------------|---------------------------|
| Cape Environmental Management, Inc.                                     | 102111-0                  | Atlanta              | GA                        |
| Carolina Environmental, Inc.                                            | 101768-0                  | Cary                 | NC                        |
| Chatfield Technical Consulting Limited                                  | 101103-0                  | Mississauga Ontario  | CANADA                    |
| ChemScope, Inc.                                                         | 101061-0                  | North Haven          | CT                        |
| City of Los Angeles Department of Water<br>and Power                    | 101111-0                  | Los Angeles          | CA                        |
| Clark Seif Clark, Inc.                                                  | 200324-0                  | Chatsworth           | CA                        |
| Clayton Group Services                                                  | 101106-0                  | Seattle              | WA                        |
| Clayton Group Services                                                  | 101125-0                  | Kennesaw             | GA                        |
| Comprehensive Health<br>Services-Environmental Health PLM<br>Laboratory | 101759-0                  | Kennedy Space Center | FL                        |
| Concord Analysis, Inc.                                                  | 101884-0                  | Chatsworth           | CA                        |
| Connecticut Department of Public Health<br>Laboratory                   | 101237-0                  | Hartford             | CT                        |
| Continental Envirotech, Inc.                                            | 200080-0                  | Mesa                 | AZ                        |
| Converse Consultants                                                    | 102091-0                  | Reno                 | NV                        |
| Covino Environmental Associates, Inc.                                   | 101781-0                  | Woburn               | MA                        |
| Crisp Analytical Laboratory                                             | 200349-0                  | Carrollton           | TX                        |
| Criterion Laboratories, Inc.                                            | 102046-0                  | Bensalem             | PA                        |
| CTL Environmental Services                                              | 101216-0                  | Harbor City          | CA                        |
| DataChem Laboratories                                                   | 101917-0                  | Cincinnati           | OH                        |
| Davis & Floyd, Inc.                                                     | 101410-0                  | Greenwood            | SC                        |
| Davis Environmental Labs, Inc.                                          | 101039-0                  | Chicago              | IL                        |
| DCM Science Laboratory, Inc.                                            | 101258-0                  | Wheat Ridge          | CO                        |
| Design for Health Environmental Services                                | 101864-0                  | San Diego            | CA                        |
| DH Analytical Services                                                  | 102086-0                  | Stafford             | TX                        |
| DHMH-Air Quality Laboratory                                             | 101523-0                  | Baltimore            | MD                        |
| Dixon Information Inc.                                                  | 101012-0                  | South Salt Lake      | UT                        |
| Dove Environmental Corporation                                          | 102053-0                  | Miami                | FL                        |
| EA Group                                                                | 101019-0                  | Mentor               | OH                        |
| EAI, Inc.                                                               | 102114-0                  | Jersey City          | NJ                        |
| Eastern Analytical Services, Inc.                                       | 101646-0                  | Elmsford             | NY                        |
| EcoSystems Environmental, Inc.                                          | 101162-0                  | Carrollton           | TX                        |
| EMS Laboratories, Inc.                                                  | 101218-0                  | Pasadena             | CA                        |
| EMSL Analytical Inc. Bulk And Airborne<br>Asbestos Fiber Analysis       | 200399-0                  | Chicago              | IL                        |
| EMSL Analytical Inc. Mobile Laboratory                                  | 200481-0                  | Westmont             | NJ                        |
| EMSL Analytical, Inc.                                                   | 101048-0                  | Westmont             | NJ                        |
| EMSL Analytical, Inc.                                                   | 101048-1                  | Atlanta              | GA                        |
| EMSL Analytical, Inc.                                                   | 101048-2                  | Piscataway           | NJ                        |
| EMSL Analytical, Inc.                                                   | 101048-3                  | Milpitas             | CA                        |
| EMSL Analytical, Inc.                                                   | 101048-4                  | Ann Arbor            | MI                        |
| EMSL Analytical, Inc.                                                   | 101048-9                  | New York             | NY                        |
| EMSL Analytical, Inc.                                                   | 101048-10                 | Carle Place          | NY                        |
| EMSL Analytical, Inc.                                                   | 101151-0                  | Orlando              | FL                        |
| EMSL Analytical, Inc.                                                   | 102104-0                  | Greensboro           | NC                        |
| EMSL Analytical, Inc.                                                   | 102106-0                  | Houston              | TX                        |
| EMSL Analytical, Inc.                                                   | 200019-0                  | Minneapolis          | MN                        |
| EMSL Analytical, Inc.                                                   | 200034-0                  | Dallas               | TX                        |
| EMSL Analytical, Inc.                                                   | 200056-0                  | Depew                | NY                        |
| EMSL Analytical, Inc.                                                   | 200188-0                  | Indianapolis         | IN                        |



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| LABORATORY NAME                                        | NVLAP<br>LAB CODE | CITY             | STATE/<br>COUNTRY |
|--------------------------------------------------------|-------------------|------------------|-------------------|
| EMSL Analytical, Inc.                                  | 200204-0          | N. Miami Beach   | FL                |
| EMSL Analytical, Inc.                                  | 200293-0          | Beltsville       | MD                |
| EMSL Analytical, Inc.                                  | 200333-0          | Elmsford         | NY                |
| EMSL Analytical, Inc.                                  | 200375-0          | Baton Rouge      | LA                |
| ENCORP                                                 | 200013-0          | El Segundo       | CA                |
| Enviro-Probe, Inc.                                     | 101222-0          | Bronx            | NY                |
| Envirocheck, Inc.                                      | 200548-0          | Garden Grove     | CA                |
| EnviroHealth Technologies, Inc.                        | 200374-0          | St. Louis        | MO                |
| EnviroMed Services, Inc.                               | 101514-0          | New Haven        | CT                |
| Environmental Enterprise Group(EEG), Inc.              | 101587-0          | Russellville     | AR                |
| Environmental Hazards Services, L.L.C.                 | 101882-0          | Richmond         | VA                |
| Environmental Health Laboratories                      | 101506-0          | Clayton          | MO                |
| Environmental Management Consultants, Inc.             | 101926-0          | Scottsdale       | AZ                |
| Environmental Science Services, Inc.                   | 200424-0          | Lockeford        | CA                |
| Environmental Testing and Monitoring<br>Services, Inc. | 200131-0          | Virginia Beach   | VA                |
| Environmental Testing, Inc.                            | 101848-0          | Middletown       | DE                |
| EnvironMETeo Services Inc.                             | 101807-0          | Waipahu          | HI                |
| Envirotest, Inc.                                       | 101595-0          | Houston          | TX                |
| ERI Consulting Engineers, Inc.                         | 101232-0          | Tyler            | TX                |
| ESG Laboratories                                       | 102029-0          | Indianapolis     | IN                |
| Family Analytical Laboratory Services, Inc.            | 200448-0          | Denver           | CO                |
| Fiberquant, Inc.                                       | 101031-0          | Phoenix          | AZ                |
| Fibertec, Inc.                                         | 101510-0          | Holt             | MI                |
| Fluor Fernald, Inc., Analytical Laboratory<br>Services | 102010-0          | Cincinnati       | OH                |
| Forensic Analytical                                    | 101459-0          | Hayward          | CA                |
| Forensic Analytical Specialties, Inc.                  | 101459-1          | Rancho Dominguez | CA                |
| Fort Polk Environmental Laboratory                     | 200523-0          | Fort Polk        | LA                |
| FRS Geotech, Inc.                                      | 102078-0          | Denver           | CO                |
| Galson Laboratories                                    | 101375-0          | East Syracuse    | NY                |
| Gelles Laboratories, Division, CC<br>Technologies      | 101170-0          | Dublin           | OH                |
| GLE Associates, Inc.                                   | 102003-0          | Tampa            | FL                |
| Globetec Group, Inc.                                   | 200541-0          | Honolulu         | HI                |
| Health Science Associates                              | 101384-0          | Los Alamitos     | CA                |
| Hi-Tech Environmental and Laboratory<br>Services       | 102013-0          | Cypress          | CA                |
| HIH Laboratory, Inc.                                   | 101233-0          | Webster          | TX                |
| Hillmann Environmental Group, L.L.C.                   | 101421-0          | Union            | NJ                |
| Holmes Environmental, Inc.                             | 200467-0          | Norfolk          | VA                |
| Houston Analytical Laboratory                          | 200473-0          | Houston          | TX                |
| Hygeia Laboratories Inc.                               | 102116-0          | Sierra Madre     | CA                |
| Hygeia Laboratories, Inc.                              | 102087-0          | Marietta         | GA                |
| Hygeia Laboratories, Inc.                              | 200335-0          | Miami            | FL                |
| HYGENIX, INC.                                          | 101199-0          | Stamford         | CT                |
| Hygieneering, Inc.                                     | 101997-0          | Willowbrook      | IL                |
| Hygienetics Laboratory Services                        | 101147-0          | Boston           | MA                |
| Industrial Laboratory                                  | 102115-0          | Portsmouth       | VA                |
| Institute for Environmental Assessment                 | 101249-0          | Brooklyn Park    | MN                |
| International Asbestos Testing Laboratory              | 101165-0          | Mt. Laurel       | NJ                |
| Iowa Environmental Services, Inc.                      | 101990-0          | Des Moines       | IA                |

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| <b>LABORATORY NAME</b>                                               | <b>NVLAP<br/>LAB CODE</b> | <b>CITY</b>      | <b>STATE/<br/>COUNTRY</b> |
|----------------------------------------------------------------------|---------------------------|------------------|---------------------------|
| J3 Resources, Inc.                                                   | 200525-0                  | Houston          | TX                        |
| JLC Environmental Consultants, Inc.                                  | 101953-0                  | New York         | NY                        |
| JMR Environmental Services Inc.                                      | 200067-0                  | San Diego        | CA                        |
| JMS Environmental Associates, Ltd.                                   | 102012-0                  | Westmont         | IL                        |
| KAM Consultants                                                      | 102047-0                  | Long Island City | NY                        |
| Kellco Services, Inc.                                                | 101331-0                  | Hayward          | CA                        |
| Kevco Services, Inc.                                                 | 101941-0                  | Butler           | PA                        |
| Kingston Environmental Laboratory                                    | 200041-0                  | Lee's Summit     | MO                        |
| KSL                                                                  | 200442-0                  | Jackson          | CA                        |
| LA Testing                                                           | 200232-0                  | S. Pasadena      | CA                        |
| Larron Laboratory                                                    | 101415-0                  | Cape Girardeau   | MO                        |
| Law Engineering and Environmental<br>Services, Inc.                  | 101066-0                  | Birmingham       | AL                        |
| Law Engineering and Environmental<br>Services, Inc.                  | 101515-0                  | Tampa            | FL                        |
| Law Engineering and Environmental<br>Services, Inc.                  | 101515-1                  | Miami Lakes      | FL                        |
| Law Engineering and Environmental<br>Services, Inc.                  | 102035-0                  | Phoenix          | AZ                        |
| Legend Technical Services, Inc.                                      | 102081-0                  | St. Paul         | MN                        |
| LEX Scientific Inc.                                                  | 101949-0                  | Guelph Ontario   | CANADA                    |
| Loflin Environmental Services, Inc.                                  | 102044-0                  | Houston          | TX                        |
| Los Angeles Unified School District                                  | 101505-0                  | Los Angeles      | CA                        |
| Louisiana Department of Environmental<br>Quality Microanalytical Lab | 102000-0                  | Baton Rouge      | LA                        |
| m.a.c. Paran Consulting Services, Inc.                               | 102108-0                  | Amelia           | OH                        |
| MACS Lab, Inc.                                                       | 101948-0                  | Santa Clara      | CA                        |
| Materials Analytical Services, Inc.                                  | 101235-0                  | Suwanee          | GA                        |
| McCall and Spero Environmental, Inc.                                 | 101895-0                  | Louisville       | KY                        |
| McKee Environmental Health, Inc.                                     | 101135-0                  | Friendswood      | TX                        |
| Micro Air of Texas, Inc.                                             | 102008-0                  | Houston          | TX                        |
| Micro Air, Inc.                                                      | 101221-0                  | Indianapolis     | IN                        |
| Micro Analytical Laboratories, Inc.                                  | 101872-0                  | Emeryville       | CA                        |
| Micro Analytical, Inc.                                               | 101247-0                  | Milwaukee        | WI                        |
| Micron Environmental Labs                                            | 200294-0                  | Arcadia          | CA                        |
| Microscopic Analysis, Inc.                                           | 101037-0                  | St. Louis        | MO                        |
| Midwest Laboratories, Inc.                                           | 101894-0                  | Countryside      | IL                        |
| Missouri Department of Transportation,<br>Chemical Laboratory        | 200544-0                  | Jefferson City   | MO                        |
| Mountain Laboratories                                                | 101890-0                  | Spokane          | WA                        |
| Mystic Air Quality Consultants, Inc.                                 | 101282-0                  | Groton           | CT                        |
| NASA John H. Glenn Research Center at<br>Lewis Field                 | 200130-0                  | Cleveland        | OH                        |
| National Econ Corporation                                            | 102062-0                  | Tustin           | CA                        |
| National Econ Corporation                                            | 200047-0                  | Memphis          | TN                        |
| National Environmental Reference<br>Laboratory                       | 101593-0                  | Denver           | CO                        |
| Northern Analytical Laboratories, Inc.                               | 101292-0                  | Billings         | MT                        |
| Northern Industrial Hygiene, Inc.                                    | 200511-0                  | Burien           | WA                        |
| Northern Testing Laboratories, Inc.                                  | 101463-0                  | Fairbanks        | AK                        |
| Nova Consulting Group, Inc.                                          | 101545-0                  | Chaska           | MN                        |
| Nowicki & Associates, Inc.                                           | 200322-0                  | Federal Way      | WA                        |

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| <b>LABORATORY NAME</b>                                | <b>NVLAP<br/>LAB CODE</b> | <b>CITY</b>         | <b>STATE/<br/>COUNTRY</b> |
|-------------------------------------------------------|---------------------------|---------------------|---------------------------|
| NVL Laboratories, Inc.                                | 102063-0                  | Seattle             | WA                        |
| NY Environmental & Analytical Labs, Inc.              | 101967-0                  | Port Washington     | NY                        |
| O'Brien & Gere Laboratories, Inc.                     | 101343-0                  | Syracuse            | NY                        |
| Occupational Health Conservation, Inc.                | 102050-0                  | Jacksonville        | FL                        |
| Omega Environmental Services                          | 101289-0                  | Hackensack          | NJ                        |
| Omni Environmental, Inc.                              | 102061-0                  | Austin              | TX                        |
| PA DEP Bureau of Laboratories                         | 101323-0                  | Harrisburg          | PA                        |
| Pacific Rim Environmental, Inc.                       | 101631-0                  | Tukwila             | WA                        |
| Palmetto Laboratory, Inc.                             | 102077-0                  | St. Petersburg      | FL                        |
| Paradigm Environmental Services, Inc.                 | 200530-0                  | Rochester           | NY                        |
| Patriot Environmental Laboratory Services, Inc.       | 200358-0                  | Garden Grove        | CA                        |
| Philip Environmental Services Corp.                   | 101192-0                  | Columbia            | IL                        |
| Pinchin Environmental Ltd.                            | 101270-0                  | Mississauga Ontario | CANADA                    |
| PMK Group, Inc.                                       | 101301-0                  | Cranford            | NJ                        |
| ProScience Analytical Services, Inc.                  | 200090-0                  | Woburn              | MA                        |
| PSC Analytical Services                               | 101262-0                  | Reading             | PA                        |
| PSI                                                   | 101350-0                  | Pittsburgh          | PA                        |
| Puget Sound Naval Shipyard                            | 101539-0                  | Bremerton           | WA                        |
| PWC Environmental Laboratory, Pearl Harbor            | 200369-0                  | Pearl Harbor        | HI                        |
| QuanTEM Laboratories, LLC                             | 101959-0                  | Oklahoma City       | OK                        |
| Quest MicroAnalytics                                  | 200249-0                  | Dallas              | TX                        |
| R. Robinson Analytical Services, Inc.                 | 102041-0                  | Pensacola           | FL                        |
| RCM Laboratories, Inc.                                | 101853-0                  | Countryside         | IL                        |
| Reservoirs Environmental Services, Inc.               | 101896-0                  | Denver              | CO                        |
| RI Analytical Laboratories, Inc.                      | 101440-0                  | Warwick             | RI                        |
| RJ Lee Group, Inc.                                    | 101208-0                  | Monroeville         | PA                        |
| RJ Lee Group, Inc.                                    | 101208-2                  | San Leandro         | CA                        |
| RJ Lee Group, Inc.                                    | 101208-3                  | Manassas            | VA                        |
| Roy F. Weston, Inc.                                   | 101254-0                  | Auburn              | AL                        |
| S&ME, Inc.                                            | 102075-0                  | Charlotte           | NC                        |
| Safe Environment of America, Inc.                     | 102021-0                  | Auburn              | WA                        |
| Schneider Laboratories, Inc.                          | 101150-0                  | Richmond            | VA                        |
| Scientific Laboratories, Inc.                         | 101904-0                  | Midlothian          | VA                        |
| Scientific Laboratories, Inc.                         | 101904-1                  | New York            | NY                        |
| Scientific Laboratories, Inc.                         | 200546-0                  | New York            | NY                        |
| SCILAB BOSTON, Inc.                                   | 102079-0                  | East Weymouth       | MA                        |
| SCILAB California, Inc.                               | 200346-0                  | Carson              | CA                        |
| Solar Environmental Services, Inc.                    | 102006-0                  | Anchorage           | AK                        |
| South Coast Air Quality Management District           | 101567-0                  | Diamond Bar         | CA                        |
| STAT Analysis Corporation                             | 101202-0                  | Chicago             | IL                        |
| Steve Moody Micro Services, Inc.                      | 102056-0                  | Carrollton          | TX                        |
| Strom Environmental                                   | 200450-0                  | Denver              | CO                        |
| Sun City Analytical, Inc.                             | 101870-0                  | El Paso             | TX                        |
| Taylor Environmental Group, Inc.                      | 102101-0                  | Floral Park         | NY                        |
| TEC-AN, Inc.                                          | 200325-0                  | Oklahoma City       | OK                        |
| TEM, Incorporated                                     | 101130-0                  | Glen Ellyn          | IL                        |
| Testing Mechanics Corp.                               | 102001-0                  | Scaford             | NY                        |
| Testwell Laboratories, Inc./Testwell Industries, Inc. | 200083-0                  | Ossining            | NY                        |
| The Scott Lawson Group, Ltd.                          | 101228-0                  | Concord             | NH                        |

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| LABORATORY NAME                                                   | NVLAP<br>LAB CODE | CITY                    | STATE/<br>COUNTRY |
|-------------------------------------------------------------------|-------------------|-------------------------|-------------------|
| TolTest, Inc.                                                     | 101594-0          | Toledo                  | OH                |
| TRC Environmental Corporation                                     | 101424-0          | Windsor                 | CT                |
| Tremco, Inc. - Roofing Division, An RPM<br>Company                | 101188-0          | Beachwood               | OH                |
| Triad Environmental Consulting, Inc.                              | 102073-0          | Huntington              | WV                |
| Twin Ports Testing, Inc.                                          | 102083-0          | Superior                | WI                |
| U.S. Army Center for Health Promotion and<br>Preventive Medicine  | 200044-0          | Aberdeen Proving Ground | MD                |
| U.S. EPA - National Enforcement<br>Investigations Center          | 101703-0          | Denver                  | CO                |
| United Analytical Services, Inc.                                  | 101732-0          | Downers Grove           | IL                |
| University (State) Hygienic Laboratory                            | 101288-0          | Iowa City               | IA                |
| University of Alabama Asbestos Laboratory                         | 102005-0          | Tuscaloosa              | AL                |
| Volz Environmental Services, Inc.                                 | 101269-0          | Pittsburgh              | PA                |
| Western Analytical Laboratory, Inc.                               | 200037-0          | Arleta                  | CA                |
| White Environmental Consultants Inc.                              | 200124-0          | Anchorage               | AK                |
| White Environmental Consultants, Inc.                             | 200350-0          | Honolulu                | HI                |
| White Environmental Consultants, Inc.                             | 200509-0          | Tigard                  | OR                |
| Wisconsin Occupational Health Laboratory                          | 101109-0          | Madison                 | WI                |
| WKP Laboratories, Inc.                                            | 101950-0          | New York City           | NY                |
| Wonder Makers Environmental Inc.                                  | 102065-0          | Kalamazoo               | MI                |
| <b><i>Asbestos Fiber Analysis (TEM Test Method)</i></b>           |                   |                         |                   |
| Adirondack Environmental Services Inc.                            | 200552-0          | Albany                  | NY                |
| Aires Consulting Group, Inc.                                      | 101014-0          | Batavia                 | IL                |
| AMA Analytical Services, Inc.                                     | 101143-0          | Lanham                  | MD                |
| Analytica Solutions, Inc.                                         | 101086-0          | Thornton                | CO                |
| Analytical Environmental Services, Inc.                           | 102082-0          | Atlanta                 | GA                |
| ASBESTECH                                                         | 101442-0          | Carmichael              | CA                |
| Asbestos TEM Laboratories, Inc.                                   | 101891-0          | Berkeley                | CA                |
| ATC Associates Inc.                                               | 101187-0          | New York                | NY                |
| Athenica Environmental Services, Inc.                             | 101958-0          | Long Island City        | NY                |
| Batta Laboratories, Inc.                                          | 101032-0          | Newark                  | DE                |
| Braun Intertec Corporation                                        | 101234-0          | Minneapolis             | MN                |
| CA Laboratories, L.L.C.                                           | 200452-0          | Baton Rouge             | LA                |
| Clayton Group Services                                            | 101125-0          | Kennesaw                | GA                |
| Crisp Analytical Laboratory                                       | 200349-0          | Carrollton              | TX                |
| DataChem Laboratories                                             | 101917-0          | Cincinnati              | OH                |
| Davis Environmental Labs, Inc.                                    | 101039-0          | Chicago                 | IL                |
| E. M. Analytical, Inc.                                            | 101902-0          | Dania                   | FL                |
| Eastern Analytical Services, Inc.                                 | 101646-0          | Elmsford                | NY                |
| EMS Laboratories, Inc.                                            | 101218-0          | Pasadena                | CA                |
| EMSL Analytical Inc. Bulk And Airborne<br>Asbestos Fiber Analysis | 200399-0          | Chicago                 | IL                |
| EMSL Analytical Inc. Mobile Laboratory                            | 200481-0          | Westmont                | NJ                |
| EMSL Analytical, Inc.                                             | 101048-0          | Westmont                | NJ                |
| EMSL Analytical, Inc.                                             | 101048-1          | Atlanta                 | GA                |
| EMSL Analytical, Inc.                                             | 101048-2          | Piscataway              | NJ                |
| EMSL Analytical, Inc.                                             | 101048-3          | Milpitas                | CA                |
| EMSL Analytical, Inc.                                             | 101048-4          | Ann Arbor               | MI                |
| EMSL Analytical, Inc.                                             | 101048-9          | New York                | NY                |
| EMSL Analytical, Inc.                                             | 101048-10         | Carle Place             | NY                |
| EMSL Analytical, Inc.                                             | 101151-0          | Orlando                 | FL                |



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|-------------------------------------------------------|---------------------------|------------------|---------------------------|
| EMSL Analytical, Inc.                                 | 102104-0                  | Greensboro       | NC                        |
| EMSL Analytical, Inc.                                 | 102106-0                  | Houston          | TX                        |
| EMSL Analytical, Inc.                                 | 200019-0                  | Minneapolis      | MN                        |
| EMSL Analytical, Inc.                                 | 200034-0                  | Dallas           | TX                        |
| EMSL Analytical, Inc.                                 | 200056-0                  | Depew            | NY                        |
| EMSL Analytical, Inc.                                 | 200188-0                  | Indianapolis     | IN                        |
| EMSL Analytical, Inc.                                 | 200204-0                  | N. Miami Beach   | FL                        |
| EMSL Analytical, Inc.                                 | 200293-0                  | Beltsville       | MD                        |
| EMSL Analytical, Inc.                                 | 200333-0                  | Elmsford         | NY                        |
| EMSL Analytical, Inc.                                 | 200375-0                  | Baton Rouge      | LA                        |
| Enviroscience Consultants, Inc.                       | 200531-0                  | Ronkonkoma       | NY                        |
| Fiberquant, Inc.                                      | 101031-0                  | Phoenix          | AZ                        |
| Forensic Analytical                                   | 101459-0                  | Hayward          | CA                        |
| Gelles Laboratories, Division, CC Technologies        | 101170-0                  | Dublin           | OH                        |
| Hygeia Laboratories Inc.                              | 102116-0                  | Sierra Madre     | CA                        |
| Hygeia Laboratories, Inc.                             | 200335-0                  | Miami            | FL                        |
| Hygienetics Laboratory Services                       | 101147-0                  | Boston           | MA                        |
| International Asbestos Testing Laboratory             | 101165-0                  | Mt. Laurel       | NJ                        |
| J3 Resources, Inc.                                    | 200525-0                  | Houston          | TX                        |
| JMS Environmental Associates, Ltd.                    | 102012-0                  | Westmont         | IL                        |
| KAM Consultants                                       | 102047-0                  | Long Island City | NY                        |
| KSL                                                   | 200442-0                  | Jackson          | CA                        |
| LA Testing                                            | 200232-0                  | S. Pasadena      | CA                        |
| Lab/Cor, Inc.                                         | 101920-0                  | Seattle          | WA                        |
| Los Angeles Unified School District                   | 101505-0                  | Los Angeles      | CA                        |
| MACS Lab, Inc.                                        | 101948-0                  | Santa Clara      | CA                        |
| Materials Analytical Services, Inc.                   | 101235-0                  | Suwanee          | GA                        |
| McCall and Spero Environmental, Inc.                  | 101895-0                  | Louisville       | KY                        |
| Micro Analytical Laboratories, Inc.                   | 101872-0                  | Emeryville       | CA                        |
| Midwest Laboratories, Inc.                            | 101894-0                  | Countryside      | IL                        |
| Paradigm Environmental Services, Inc.                 | 200530-0                  | Rochester        | NY                        |
| ProScience Analytical Services, Inc.                  | 200090-0                  | Woburn           | MA                        |
| PSI                                                   | 101350-0                  | Pittsburgh       | PA                        |
| QuanTEM Laboratories, LLC                             | 101959-0                  | Oklahoma City    | OK                        |
| Reservoirs Environmental Services, Inc.               | 101896-0                  | Denver           | CO                        |
| RJ Lee Group, Inc.                                    | 101208-0                  | Monroeville      | PA                        |
| RJ Lee Group, Inc.                                    | 101208-2                  | San Leandro      | CA                        |
| RJ Lee Group, Inc.                                    | 101208-3                  | Manassas         | VA                        |
| Scientific Laboratories, Inc.                         | 101904-0                  | Midlothian       | VA                        |
| Scientific Laboratories, Inc.                         | 101904-1                  | New York         | NY                        |
| Scientific Laboratories, Inc.                         | 200546-0                  | New York         | NY                        |
| SCILAB BOSTON, Inc.                                   | 102079-0                  | East Weymouth    | MA                        |
| SCILAB California, Inc.                               | 200346-0                  | Carson           | CA                        |
| STAT Analysis Corporation                             | 101202-0                  | Chicago          | IL                        |
| Steve Moody Micro Services, Inc.                      | 102056-0                  | Carrollton       | TX                        |
| TEM, Incorporated                                     | 101130-0                  | Glen Ellyn       | IL                        |
| Testwell Laboratories, Inc./Testwell Industries, Inc. | 200083-0                  | Ossining         | NY                        |
| United Analytical Services, Inc.                      | 101732-0                  | Downers Grove    | IL                        |

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| <b>LABORATORY NAME</b> | <b>NVLAP<br/>LAB CODE</b> | <b>CITY</b> | <b>STATE/<br/>COUNTRY</b> |
|------------------------|---------------------------|-------------|---------------------------|
|------------------------|---------------------------|-------------|---------------------------|

**FASTENER & METALS GROUP**
***Fasteners & Metals***

|                                                                  |          |                              |        |
|------------------------------------------------------------------|----------|------------------------------|--------|
| Aerospace NYLOK - a subsidiary of the NYLOK Fastener Corporation | 200271-0 | Hawthorne                    | NJ     |
| BCAG Fastener Quality Test Lab Everett Site                      | 200292-0 | Seattle                      | WA     |
| Belgo-Mineira Chemical Laboratory                                | 200497-0 | 35.930-900 Joao Monlevade    | BRAZIL |
| Binder Metal Products, Inc.                                      | 200321-0 | Gardena                      | CA     |
| California Screw Products                                        | 200183-0 | Paramount                    | CA     |
| Casey Products, Inc.                                             | 200278-0 | Lisle                        | IL     |
| CBS Fasteners, Inc.                                              | 200253-0 | Anaheim                      | CA     |
| Dexter Fastener Technologies, Inc.                               | 200144-0 | Dexter                       | MI     |
| Fastener Innovation Technology, Inc.                             | 200179-0 | Gardena                      | CA     |
| Fong Prean Industrial Co., Ltd.                                  | 200288-0 | Kaohsiung Hsien              | TAIWAN |
| Fuji Buhin Industries Inc.                                       | 200203-0 | Ohta Gunma                   | JAPAN  |
| Fuji Component Parts USA, Inc.                                   | 200180-0 | Indianapolis                 | IN     |
| Ingersoll Fasteners                                              | 200208-0 | Ingersoll Ontario            | CANADA |
| Ivaco Rolling Mills, Chemistry Laboratory                        | 200143-0 | L'Orignal Ontario            | CANADA |
| Kobelco Research Institute, Inc. Stock Company                   | 200169-0 | Kobe                         | JAPAN  |
| Kyowa Kogyosyo Co., Ltd. Test Laboratory                         | 200274-0 | Komatsu City, Ishikawa       | JAPAN  |
| Leland-Powell Fasteners, Inc. Fastener Testing Laboratory        | 200171-0 | Martin                       | TN     |
| MAC Fasteners, Inc.                                              | 200141-0 | Ottawa                       | KS     |
| MacLean Fasteners - QC Laboratory                                | 200153-0 | Mundelein                    | IL     |
| MacLean Maynard Laboratory Services                              | 200451-0 | Chesterfield Township        | MI     |
| Minebea Co., Ltd. Fujisawa Manufacturing Unit                    | 200229-0 | Fujisawa, Kanagawa           | JAPAN  |
| Modern Plating Corporation                                       | 200320-0 | Freeport                     | IL     |
| NOVA Machine Products                                            | 200202-0 | Middleburg Heights           | OH     |
| NYLOK Fastener Corporation                                       | 200272-0 | Anaheim                      | CA     |
| O & K Company Limited, Osaka Test Center                         | 200166-0 | Osaka-Shi                    | JAPAN  |
| Okawa Laboratory                                                 | 200296-0 | Naka-gun, Ibaraki-ken        | JAPAN  |
| PB Fasteners                                                     | 200139-0 | Gardena                      | CA     |
| Pratt & Whitney Materials Control Lab/Quality & Standards Lab    | 200336-0 | East Hartford                | CT     |
| Prospect Testing Labs, Inc.                                      | 200328-0 | Des Plaines                  | IL     |
| Protsa, S.A. de C.V.                                             | 200261-0 | Mexico City                  | MEXICO |
| Rockford Bolt & Steel Co.                                        | 200255-0 | Rockford                     | IL     |
| San Shing Hardware Works Co., Ltd. Test Laboratory               | 200158-0 | Tainan                       | TAIWAN |
| Saturn Fasteners, Inc.                                           | 200327-0 | Burbank                      | CA     |
| SNB Laboratory                                                   | 200308-0 | Cumberland                   | RI     |
| Sumitomo Metals (Kokura), Ltd. Quality System Section            | 200215-0 | Kitakyushu                   | JAPAN  |
| Sundram Fasteners Limited (Inhouse test laboratory)              | 200212-0 | Chennai (Madras), Tamil Nadu | INDIA  |
| Sundram Fasteners Limited Chemical Testing Laboratory            | 200256-0 | Andhra Pradesh               | INDIA  |
| United Steel and Fasteners Inc.                                  | 200341-0 | Itasca                       | IL     |
| Vermont Fasteners Manufacturing                                  | 200254-0 | Swanton                      | VT     |
| Wolverine Plating Corp.                                          | 200230-0 | Roseville                    | MI     |

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| <b>LABORATORY NAME</b>                                            | <b>NVLAP<br/>LAB CODE</b> | <b>CITY</b>        | <b>STATE/<br/>COUNTRY</b> |
|-------------------------------------------------------------------|---------------------------|--------------------|---------------------------|
| <b>INFORMATION TECHNOLOGY SECURITY TESTING GROUP</b>              |                           |                    |                           |
| <i><b>Common Criteria Testing</b></i>                             |                           |                    |                           |
| Arca Systems SEAL Common Criteria Testing Laboratory              | 200429-0                  | Columbia           | MD                        |
| COACT Inc. CAFE Laboratory                                        | 200416-0                  | Columbia           | MD                        |
| Computer Sciences Corporation                                     | 200426-0                  | Annapolis Junction | MD                        |
| Cygnacom Solutions, Inc. An Entrust Company                       | 200002-0                  | McLean             | VA                        |
| SAIC Accredited Lab Center for Evaluation & Testing (SALCET)      | 200427-0                  | Columbia           | MD                        |
| TUViT, IT Security Laboratory                                     | 200428-0                  | Austin             | TX                        |
| <i><b>Cryptographic Module Testing</b></i>                        |                           |                    |                           |
| Atlan Laboratories                                                | 200492-0                  | McLean             | VA                        |
| COACT Inc. CAFE Laboratory                                        | 200416-0                  | Columbia           | MD                        |
| Cygnacom Solutions, Inc. An Entrust Company                       | 200002-0                  | McLean             | VA                        |
| DOMUS Information Technology Security Laboratory                  | 200017-0                  | Ottawa Ontario     | CANADA                    |
| EWA - Canada Ltd, IT Security Evaluation Facility                 | 200556-0                  | Ottawa Ontario     | CANADA                    |
| InfoGard Laboratories, Inc.                                       | 100432-0                  | San Luis Obispo    | CA                        |
| <b>PRODUCT TESTING GROUP</b>                                      |                           |                    |                           |
| <i><b>Acoustical Testing Services</b></i>                         |                           |                    |                           |
| Acoustic Systems Acoustical Research Facility                     | 100286-0                  | Austin             | TX                        |
| Aearo Company, E-A-RCAL Acoustical Laboratory                     | 100374-0                  | Indianapolis       | IN                        |
| Architectural Testing Inc.                                        | 200361-0                  | York               | PA                        |
| Armstrong Acoustic Labs, Armstrong World Ind., Inc. Innov. Center | 100228-0                  | Lancaster          | PA                        |
| Auditory Systems Laboratory, ISE Department, Virginia Tech        | 200479-0                  | Blacksburg         | VA                        |
| BPB America, Inc.                                                 | 200520-0                  | Clearwater         | FL                        |
| Dell Regulatory Test Laboratories                                 | 200052-0                  | Round Rock         | TX                        |
| Howard Leight Acoustical Testing Laboratory                       | 200475-0                  | San Diego          | CA                        |
| Hufcor Acoustical Laboratory                                      | 100239-0                  | Janesville         | WI                        |
| IBM Hudson Valley Acoustics Laboratory                            | 100323-0                  | Poughkeepsie       | NY                        |
| Industrial Acoustics Company, Inc., Aero-Acoustics Laboratory     | 100404-0                  | Bronx              | NY                        |
| Integrex Testing Systems -Acoustic & Thermal Testing Laboratories | 100109-0                  | Granville          | OH                        |
| Johns Manville Technical Center                                   | 100425-0                  | Littleton          | CO                        |
| McGill AirFlow Corp. Airflow and Acoustical Testing Laboratory    | 200463-0                  | Westerville        | OH                        |
| Michael & Associates                                              | 100427-0                  | State College      | PA                        |
| NGC Testing Services, National Gypsum Research Center             | 200291-0                  | Buffalo            | NY                        |
| Orfield Laboratories, Inc.                                        | 200248-0                  | Minneapolis        | MN                        |

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| <b>LABORATORY NAME</b>                                       | <b>NVLAP<br/>LAB CODE</b> | <b>CITY</b>         | <b>STATE/<br/>COUNTRY</b> |
|--------------------------------------------------------------|---------------------------|---------------------|---------------------------|
| PCI Industries Acoustical Testing Laboratories               | 200453-0                  | Fort Worth          | TX                        |
| Ricoh Company LTD. Ohmori Acoustics Test Site                | 200345-0                  | Tokyo               | JAPAN                     |
| Riverbank Acoustical Laboratories                            | 100227-0                  | Geneva              | IL                        |
| Stork-Twin City Testing Corporation                          | 200046-0                  | St. Paul            | MN                        |
| USG Research - Construction Systems Laboratory               | 200132-0                  | Libertyville        | IL                        |
| Vibro-Acoustics Laboratory                                   | 100424-0                  | Scarborough Ontario | CANADA                    |
| Western Electro-Acoustic Lab., Inc.                          | 100256-0                  | Santa Clarita       | CA                        |
| <b><i>Carpet and Carpet Cushion</i></b>                      |                           |                     |                           |
| Beaulieu of America - Carpet Testing Lab                     | 100190-0                  | Dalton              | GA                        |
| Bentley Prince Street Testing Laboratory                     | 100288-0                  | City of Industry    | CA                        |
| Commercial Testing Company                                   | 100120-0                  | Dalton              | GA                        |
| Independent Textile Testing Service, Inc.                    | 100166-0                  | Dalton              | GA                        |
| Interface Testing Laboratory                                 | 200402-0                  | LaGrange            | GA                        |
| Mohawk Industries, Inc.- Lyerly Plant                        | 100156-0                  | Lyerly              | GA                        |
| Professional Testing Laboratory, Inc.                        | 100297-0                  | Dalton              | GA                        |
| Shaw Industries, Inc., Central Laboratory Operations         | 100193-0                  | Dalton              | GA                        |
| TSi, Testing Services, Inc.                                  | 100108-0                  | Dalton              | GA                        |
| <b><i>Commercial Products Testing</i></b>                    |                           |                     |                           |
| CSA International                                            | 100322-0                  | Toronto Ontario     | CANADA                    |
| DL Labs, Inc.                                                | 100252-0                  | New York            | NY                        |
| Dodge-Regupol, Inc. Laboratory                               | 200030-0                  | Lancaster           | PA                        |
| IAPMO Testing and Services, L.L.C.                           | 200460-0                  | Walnut              | CA                        |
| IBM Shock and Vibration Laboratory                           | 200503-0                  | Poughkeepsie        | NY                        |
| NAHB Research Center, Inc.                                   | 100104-0                  | Upper Marlboro      | MD                        |
| SGS U.S. Testing Company, Inc.                               | 100416-0                  | Tulsa               | OK                        |
| Willamette Industries, Inc. West Coast Development Lab       | 200045-0                  | Wilsonville         | OR                        |
| <b><i>Construction Materials Testing</i></b>                 |                           |                     |                           |
| Advance Testing Company Inc.                                 | 200514-0                  | Campbell Hall       | NY                        |
| American Testing Laboratories, Inc.                          | 100146-0                  | Lancaster           | PA                        |
| ASC geoscience, inc.                                         | 200567-0                  | Fort Myers          | FL                        |
| City of San Jose, Materials Testing Laboratory               | 100325-0                  | San Jose            | CA                        |
| Eastern Materials Testing Lab a division of Jaworski Geotech | 100315-0                  | Berlin              | CT                        |
| Fairfield Testing Laboratory, Inc.                           | 100317-0                  | Stamford            | CT                        |
| Fairway Testing Company, Inc.                                | 100340-0                  | Stony Point         | NY                        |
| Independent Materials Testing Laboratories, Inc.             | 100316-0                  | Plainville          | CT                        |
| INEEL Materials Testing Lab CFA 602                          | 200415-0                  | Idaho Falls         | ID                        |
| Inland Foundation Engineering, Inc.                          | 100406-0                  | San Jacinto         | CA                        |
| Materials Testing, Inc.                                      | 100320-0                  | Milford             | CT                        |
| Special Testing Laboratories, Inc.                           | 100308-0                  | Bethel              | CT                        |
| STS Consultants, Ltd.                                        | 100191-0                  | Vernon Hills        | IL                        |
| Test-Con Incorporated                                        | 200018-0                  | Danbury             | CT                        |
| Testwell Laboratories, Inc./Testwell Industries, Inc.        | 200083-0                  | Ossining            | NY                        |



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| LABORATORY NAME                                                   | NVLAP<br>LAB CODE | CITY                      | STATE/<br>COUNTRY |
|-------------------------------------------------------------------|-------------------|---------------------------|-------------------|
| Tri-State Materials Testing Lab, Inc.                             | 200010-0          | Wallingford               | CT                |
| W.R. Grace & Co.                                                  | 200258-0          | Cambridge                 | MA                |
| <b><i>Efficiency of Electric Motors</i></b>                       |                   |                           |                   |
| A.O. Smith (Lexington) Engineering Laboratory                     | 200053-0          | Lexington                 | TN                |
| Advanced Energy, Industrial Energy Laboratory                     | 200081-0          | Raleigh                   | NC                |
| Baldor Motor Design Lab                                           | 200537-0          | Fort Smith                | AR                |
| C.I.M.D. Engr. Dev. Lab                                           | 200522-0          | Fort Wayne                | IN                |
| GE Owensboro Test Laboratory                                      | 200305-0          | Owensboro                 | KY                |
| Marathon Electric - Wausau Engineering Lab.                       | 200134-0          | Wausau                    | WI                |
| Motor Test Lab of Toshiba Industrial Products Manufacturing Corp. | 200529-0          | Asahi-cho Mie-gun Mie-ken | JAPAN             |
| Ram Industries Motor Test Laboratory                              | 200542-0          | Leesport                  | PA                |
| Regal Beloit Motor Technologies Group - Grafton Engineering Lab   | 200483-0          | Grafton                   | WI                |
| Shanghai Testing & Inspection Institute for Electrical Equipment  | 200407-0          | Shanghai 200063           | CHINA             |
| Small IAC Test Laboratory                                         | 200287-0          | Peterborough, ON          | CANADA            |
| TECO Electric & Machinery Co., Ltd.                               | 200378-0          | Taoyuan                   | TAIWAN            |
| Teco Industry (Malaysia) SDN. BHD.                                | 200476-0          | Penang                    | MALAYSIA          |
| Toshiba/Houston Test Laboratory                                   | 200088-0          | Houston                   | TX                |
| USEM de Mexico, S.A. de C.V.                                      | 200506-0          | Apodaca NL                | MEXICO            |
| <b><i>Energy Efficient Lighting Products</i></b>                  |                   |                           |                   |
| Bay Area Compliance Laboratory Corp.                              | 200167-0          | Sunnyvale                 | CA                |
| Cooper Lighting - Metalux Research Laboratories                   | 200050-0          | Americus                  | GA                |
| Daybrite Lighting (Genlyte Thomas Group) Photometric Laboratory   | 200016-0          | Tupelo                    | MS                |
| GE Lighting- Product Testing                                      | 100398-0          | Cleveland                 | OH                |
| Hubbell Lighting Photometric Laboratory                           | 200020-0          | Christiansburg            | VA                |
| Intertek Testing Services NA Inc.                                 | 100402-0          | Cortland                  | NY                |
| Lighting Research Center Lighting Products                        | 200480-0          | Troy                      | NY                |
| Litetronics International                                         | 200504-0          | Alsip                     | IL                |
| Lithonia Testing Laboratories                                     | 200007-0          | Conyers                   | GA                |
| Osram Sylvania, Applications & Measurements Laboratory            | 100403-0          | Beverly                   | MA                |
| Philips Lighting Corporate Calibration & Standards Laboratory     | 100399-0          | Salina                    | KS                |
| Underwriters Laboratories, Inc.                                   | 100255-0          | Melville                  | NY                |
| <b><i>Thermal Insulation Materials</i></b>                        |                   |                           |                   |
| Dow Chemical N. America Foam Products Research, Prod. Perf. Lab.  | 100103-0          | Midland                   | MI                |
| Geoscience Ltd.                                                   | 100142-0          | San Diego                 | CA                |
| Integrex Testing Systems -Acoustic & Thermal Testing Laboratories | 100109-0          | Granville                 | OH                |
| Johns Manville Technical Center                                   | 100425-0          | Littleton                 | CO                |
| Knauf Fiber Glass Research Laboratory                             | 100248-0          | Shelbyville               | IN                |
| Levecque Technical Center                                         | 100101-0          | Blue Bell                 | PA                |
| NAHB Research Center, Inc.                                        | 100104-0          | Upper Marlboro            | MD                |
| Netsch Instruments, Inc.                                          | 100113-0          | Bedford                   | MA                |

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| <b>LABORATORY NAME</b>                                               | <b>NVLAP<br/>LAB CODE</b> | <b>CITY</b>     | <b>STATE/<br/>COUNTRY</b> |
|----------------------------------------------------------------------|---------------------------|-----------------|---------------------------|
| R & D Services, Inc.                                                 | 200265-0                  | Cookeville      | TN                        |
| SGS U.S. Testing Company, Inc.                                       | 100416-0                  | Tulsa           | OK                        |
| St. of California, Bur. of Home Furnishings<br>& Thermal Insulation  | 100251-0                  | North Highlands | CA                        |
| The Dow Chemical Company- NA System<br>House-Joliet                  | 100210-0                  | Joliet          | IL                        |
| Underwriters Laboratories Inc.                                       | 100414-0                  | Northbrook      | IL                        |
| <b><i>Wood Based Products</i></b>                                    |                           |                 |                           |
| APA - The Engineered Wood Association<br>Research Center             | 100423-0                  | Tacoma          | WA                        |
| Composite Panel Association (CPA)                                    | 100418-0                  | Gaithersburg    | MD                        |
| PFS Corporation                                                      | 100421-0                  | Madison         | WI                        |
| Professional Service Industries, Inc.,<br>Pittsburgh Test. Lab. Div. | 100430-0                  | Eugene          | OR                        |
| Timberco, Inc.- dba TECO                                             | 100420-0                  | Eugene          | OR                        |



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## INDEX C. LISTING BY STATE/COUNTRY

| LABORATORY NAME                                                   | NVLAP<br>LAB CODE | CITY             | STATE/<br>COUNTRY | FIELD           |
|-------------------------------------------------------------------|-------------------|------------------|-------------------|-----------------|
| <b>AK</b>                                                         |                   |                  |                   |                 |
| Northern Testing Laboratories, Inc.                               | 101463-0          | Fairbanks        | AK                | PLM             |
| Solar Environmental Services, Inc.                                | 102006-0          | Anchorage        | AK                | PLM             |
| White Environmental Consultants Inc.                              | 200124-0          | Anchorage        | AK                | PLM             |
| <b>AL</b>                                                         |                   |                  |                   |                 |
| Law Engineering and Environmental Services, Inc.                  | 101066-0          | Birmingham       | AL                | PLM             |
| Roy F. Weston, Inc.                                               | 101254-0          | Auburn           | AL                | PLM             |
| U.S. Army Radiation Standards & Dosimetry Laboratory              | 100539-0          | Redstone Arsenal | AL                | Dosimetry       |
| University of Alabama Asbestos Laboratory                         | 102005-0          | Tuscaloosa       | AL                | PLM             |
| <b>AR</b>                                                         |                   |                  |                   |                 |
| Baldor Motor Design Lab                                           | 200537-0          | Fort Smith       | AR                | Electric Motors |
| Environmental Enterprise Group(EEG), Inc.                         | 101587-0          | Russellville     | AR                | PLM             |
| <b>AZ</b>                                                         |                   |                  |                   |                 |
| A.E.S.L. Environmental Laboratory                                 | 200303-0          | Tempe            | AZ                | PLM             |
| AMEC Earth & Environmental, Inc., PLM LAB                         | 200444-0          | Phoenix          | AZ                | PLM             |
| Arizona Department of Weights and Measures Metrology Laboratory   | 200381-0          | Glendale         | AZ                | Calibration     |
| Arizona Public Service Co., Palo Verde Nuclear Generating Station | 100536-0          | Tonopah          | AZ                | Dosimetry       |
| Continental Envirotech, Inc.                                      | 200080-0          | Mesa             | AZ                | PLM             |
| Environmental Management Consultants, Inc.                        | 101926-0          | Scottsdale       | AZ                | PLM             |
| Fiberquant, Inc.                                                  | 101031-0          | Phoenix          | AZ                | PLM             |
| Fiberquant, Inc.                                                  | 101031-0          | Phoenix          | AZ                | TEM             |
| General Dynamics Decision Systems                                 | 100405-0          | Scottsdale       | AZ                | EC&T            |
| Law Engineering and Environmental Services, Inc.                  | 102035-0          | Phoenix          | AZ                | PLM             |
| RMS EMI Laboratory MIL-STD 462C/D                                 | 200489-0          | Tucson           | AZ                | EC&T            |
| <b>CA</b>                                                         |                   |                  |                   |                 |
| Analytical Labs San Francisco, Inc.                               | 101909-0          | San Francisco    | CA                | PLM             |
| Apple Computer, Inc., EMC Compliance Laboratory                   | 200071-0          | Cupertino        | CA                | EC&T            |
| ASBESTECH                                                         | 101442-0          | Carmichael       | CA                | PLM             |
| ASBESTECH                                                         | 101442-0          | Carmichael       | CA                | TEM             |
| Asbestos TEM Laboratories, Inc.                                   | 101891-0          | Berkeley         | CA                | PLM             |
| Asbestos TEM Laboratories, Inc.                                   | 101891-0          | Berkeley         | CA                | TEM             |
| AST International Environmental Consultants Inc.                  | 200474-0          | Spring Valley    | CA                | PLM             |
| Bay Area Air Quality Management District                          | 102090-0          | San Francisco    | CA                | PLM             |
| Bay Area Compliance Laboratory Corp.                              | 200167-0          | Sunnyvale        | CA                | EC&T            |
| Bay Area Compliance Laboratory Corp.                              | 200167-0          | Sunnyvale        | CA                | Lighting        |
| Bentley Prince Street Testing Laboratory                          | 100288-0          | City of Industry | CA                | Carpet          |
| Binder Metal Products, Inc.                                       | 200321-0          | Gardena          | CA                | Fasteners       |
| California Screw Products                                         | 200183-0          | Paramount        | CA                | Fasteners       |
| CBS Fasteners, Inc.                                               | 200253-0          | Anaheim          | CA                | Fasteners       |
| Cisco Systems, Inc.                                               | 200114-0          | San Jose         | CA                | EC&T            |

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| <b>LABORATORY NAME</b>                                            | <b>NVLAP<br/>LAB CODE</b> | <b>CITY</b>           | <b>STATE/<br/>COUNTRY</b> | <b>FIELD</b>  |
|-------------------------------------------------------------------|---------------------------|-----------------------|---------------------------|---------------|
| City of Los Angeles Department of Water and Power                 | 101111-0                  | Los Angeles           | CA                        | PLM           |
| City of San Jose, Materials Testing Laboratory                    | 100325-0                  | San Jose              | CA                        | Construction  |
| Clark Seif Clark, Inc.                                            | 200324-0                  | Chatsworth            | CA                        | PLM           |
| Compatible Electronics, Inc.                                      | 200063-0                  | Agoura                | CA                        | EC&T          |
| Compatible Electronics, Inc.                                      | 200527-0                  | Silverado/Lake Forest | CA                        | EC&T          |
| Compatible Electronics, Inc.                                      | 200528-0                  | Brea                  | CA                        | EC&T          |
| Compliance Eng. Svces, Inc., Compliance Certification Services    | 200065-0                  | Morgan Hill           | CA                        | EC&T          |
| Concord Analysis, Inc.                                            | 101884-0                  | Chatsworth            | CA                        | PLM           |
| CTL Environmental Services                                        | 101216-0                  | Harbor City           | CA                        | PLM           |
| Design for Health Environmental Services                          | 101864-0                  | San Diego             | CA                        | PLM           |
| Electro Magnetic Test, Inc.                                       | 200147-0                  | Mountain View         | CA                        | EC&T          |
| Elliott Laboratories, Inc.                                        | 200069-0                  | Sunnyvale             | CA                        | EC&T          |
| EMC Compliance Mgmt Group, dba Turntech Scientific & Instr., Inc. | 200068-0                  | Mountain View         | CA                        | EC&T          |
| EMCE Engineering, Inc.                                            | 200092-0                  | Fremont               | CA                        | EC&T          |
| EMS Laboratories, Inc.                                            | 101218-0                  | Pasadena              | CA                        | PLM           |
| EMS Laboratories, Inc.                                            | 101218-0                  | Pasadena              | CA                        | TEM           |
| EMSL Analytical, Inc.                                             | 101048-3                  | Milpitas              | CA                        | PLM           |
| EMSL Analytical, Inc.                                             | 101048-3                  | Milpitas              | CA                        | TEM           |
| ENCORP                                                            | 200013-0                  | El Segundo            | CA                        | PLM           |
| Envirocheck, Inc.                                                 | 200548-0                  | Garden Grove          | CA                        | PLM           |
| Environmental Science Services, Inc.                              | 200424-0                  | Lockeford             | CA                        | PLM           |
| Fastener Innovation Technology, Inc.                              | 200179-0                  | Gardena               | CA                        | Fasteners     |
| Forensic Analytical                                               | 101459-0                  | Hayward               | CA                        | PLM           |
| Forensic Analytical                                               | 101459-0                  | Hayward               | CA                        | TEM           |
| Forensic Analytical Specialties, Inc.                             | 101459-1                  | Rancho Dominguez      | CA                        | PLM           |
| Garwood Laboratories, Inc.                                        | 200119-0                  | Placentia             | CA                        | EC&T          |
| Geoscience Ltd.                                                   | 100142-0                  | San Diego             | CA                        | Thermal Insl. |
| Global Testing                                                    | 200436-0                  | Santa Ana             | CA                        | EC&T          |
| Health Science Associates                                         | 101384-0                  | Los Alamitos          | CA                        | PLM           |
| Hewlett Packard, Product Test Lab, San Diego                      | 200138-0                  | San Diego             | CA                        | EC&T          |
| Hi-Tech Environmental and Laboratory Services                     | 102013-0                  | Cypress               | CA                        | PLM           |
| Howard Leight Acoustical Testing Laboratory                       | 200475-0                  | San Diego             | CA                        | Acoustics     |
| Hygeia Laboratories Inc.                                          | 102116-0                  | Sierra Madre          | CA                        | PLM           |
| Hygeia Laboratories Inc.                                          | 102116-0                  | Sierra Madre          | CA                        | TEM           |
| IAPMO Testing and Services, L.L.C.                                | 200460-0                  | Walnut                | CA                        | Commercial    |
| ICN Worldwide Dosimetry Service, Div. of ICN Biomedicals, Inc.    | 100555-0                  | Costa Mesa            | CA                        | Dosimetry     |
| InfoGard Laboratories, Inc.                                       | 100432-0                  | San Luis Obispo       | CA                        | Cryptographic |
| Inland Foundation Engineering, Inc.                               | 100406-0                  | San Jacinto           | CA                        | Construction  |
| International Technology Company (ITC)                            | 200172-0                  | Sunol                 | CA                        | EC&T          |
| Intertek Testing Services                                         | 200201-0                  | Menlo Park            | CA                        | EC&T          |
| Intertek Testing Services NA Inc.                                 | 200297-0                  | Laguna Niguel         | CA                        | EC&T          |
| JMR Compliance Engineering                                        | 200413-0                  | Chatsworth            | CA                        | EC&T          |
| JMR Environmental Services Inc.                                   | 200067-0                  | San Diego             | CA                        | PLM           |
| Kellco Services, Inc.                                             | 101331-0                  | Hayward               | CA                        | PLM           |

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| LABORATORY NAME                                                    | NVLAP<br>LAB CODE | CITY            | STATE/<br>COUNTRY | FIELD         |
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| KSL                                                                | 200442-0          | Jackson         | CA                | PLM           |
| KSL                                                                | 200442-0          | Jackson         | CA                | TEM           |
| LA Testing                                                         | 200232-0          | S. Pasadena     | CA                | PLM           |
| LA Testing                                                         | 200232-0          | S. Pasadena     | CA                | TEM           |
| Los Angeles Unified School District                                | 101505-0          | Los Angeles     | CA                | PLM           |
| Los Angeles Unified School District                                | 101505-0          | Los Angeles     | CA                | TEM           |
| MACS Lab, Inc.                                                     | 101948-0          | Santa Clara     | CA                | PLM           |
| MACS Lab, Inc.                                                     | 101948-0          | Santa Clara     | CA                | TEM           |
| MET Laboratories Incorporated                                      | 200445-0          | Union City      | CA                | EC&T          |
| Micro Analytical Laboratories, Inc.                                | 101872-0          | Emeryville      | CA                | PLM           |
| Micro Analytical Laboratories, Inc.                                | 101872-0          | Emeryville      | CA                | TEM           |
| Micron Environmental Labs                                          | 200294-0          | Arcadia         | CA                | PLM           |
| Mitsubishi Digital Electronics America, Inc.                       | 200498-0          | Irvine          | CA                | EC&T          |
| EMC Test Lab                                                       |                   |                 |                   |               |
| National Econ Corporation                                          | 102062-0          | Tustin          | CA                | PLM           |
| NCR Corp. San Diego EMC Lab                                        | 200383-0          | San Diego       | CA                | EC&T          |
| Nemko EESI, Inc.                                                   | 200116-0          | San Diego       | CA                | EC&T          |
| NYLOK Fastener Corporation                                         | 200272-0          | Anaheim         | CA                | Fasteners     |
| Pacific Gas & Electric Company, Diablo Canyon Nuclear Power Plant  | 100537-0          | Avila Beach     | CA                | Dosimetry     |
| Patriot Environmental Laboratory Services, Inc.                    | 200358-0          | Garden Grove    | CA                | PLM           |
| PB Fasteners                                                       | 200139-0          | Gardena         | CA                | Fasteners     |
| PDE Laboratories                                                   | 200082-0          | San Clemente    | CA                | EC&T          |
| Radiation Detection Company                                        | 100512-0          | Gilroy          | CA                | Dosimetry     |
| Raytheon Electronic Systems, California Engineering EEE Laboratory | 200431-0          | El Segundo      | CA                | EC&T          |
| RJ Lee Group, Inc.                                                 | 101208-2          | San Leandro     | CA                | PLM           |
| RJ Lee Group, Inc.                                                 | 101208-2          | San Leandro     | CA                | TEM           |
| Sanmina Homologation Services                                      | 100411-0          | San Jose        | CA                | EC&T          |
| Saturn Fasteners, Inc.                                             | 200327-0          | Burbank         | CA                | Fasteners     |
| SCILAB California, Inc.                                            | 200346-0          | Carson          | CA                | PLM           |
| SCILAB California, Inc.                                            | 200346-0          | Carson          | CA                | TEM           |
| SE Laboratories, Inc.                                              | 200338-0          | Santa Clara     | CA                | Calibration   |
| Sony Electronics Inc. Product Quality Division EMC Group           | 200312-0          | San Diego       | CA                | EC&T          |
| South Coast Air Quality Management District                        | 101567-0          | Diamond Bar     | CA                | PLM           |
| Southern California Edison Company                                 | 105014-0          | Westminster     | CA                | Calibration   |
| St. of California, Bur. of Home Furnishings & Thermal Insulation   | 100251-0          | North Highlands | CA                | Thermal Insl. |
| Sun Microsystems, Inc. EMC Testing                                 | 200363-0          | Palo Alto       | CA                | EC&T          |
| TUV Product Service, Inc.                                          | 100268-0          | San Diego       | CA                | EC&T          |
| Underwriters Laboratories                                          | 200252-0          | Santa Clara     | CA                | EC&T          |
| Underwriters Laboratories Inc.                                     | 200535-0          | Sunol           | CA                | EC&T          |
| Universal Compliance Laboratories                                  | 200117-0          | San Jose        | CA                | EC&T          |
| VLSI Standards, Inc.                                               | 200302-0          | San Jose        | CA                | Calibration   |
| Western Analytical Laboratory, Inc.                                | 200037-0          | Arleta          | CA                | PLM           |
| Western Electro-Acoustic Lab., Inc.                                | 100256-0          | Santa Clarita   | CA                | Acoustics     |

## CO

|                           |          |                  |    |     |
|---------------------------|----------|------------------|----|-----|
| Alpine Consulting, Inc.   | 102089-0 | Colorado Springs | CO | PLM |
| Analytica Solutions, Inc. | 101086-0 | Thornton         | CO | PLM |
| Analytica Solutions, Inc. | 101086-0 | Thornton         | CO | TEM |



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| LABORATORY NAME                                                  | NVLAP<br>LAB CODE | CITY             | STATE/<br>COUNTRY | FIELD         |
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| ATC Associates, Inc.                                             | 102031-0          | Englewood        | CO                | PLM           |
| Compaq Computer Corp. EMC Test Facility                          | 200078-0          | Colorado Springs | CO                | EC&T          |
| Criterion Technology Corp.                                       | 100396-0          | Rollinsville     | CO                | EC&T          |
| DCM Science Laboratory, Inc.                                     | 101258-0          | Wheat Ridge      | CO                | PLM           |
| Denver Instrument Co. Weight Lab                                 | 200106-0          | Arvada           | CO                | Calibration   |
| Environmental Resource Associates (ERA)                          | 200386-0          | Arvada           | CO                | PPT           |
| Family Analytical Laboratory Services, Inc.                      | 200448-0          | Denver           | CO                | PLM           |
| FRS Geotech, Inc.                                                | 102078-0          | Denver           | CO                | PLM           |
| Johns Manville Technical Center                                  | 100425-0          | Littleton        | CO                | Acoustics     |
| Johns Manville Technical Center                                  | 100425-0          | Littleton        | CO                | Thermal Insl. |
| National Environmental Reference<br>Laboratory                   | 101593-0          | Denver           | CO                | PLM           |
| Reservoirs Environmental Services, Inc.                          | 101896-0          | Denver           | CO                | PLM           |
| Reservoirs Environmental Services, Inc.                          | 101896-0          | Denver           | CO                | TEM           |
| Storagtek Open Area Test Site                                    | 200251-0          | Louisville       | CO                | EC&T          |
| Strom Environmental                                              | 200450-0          | Denver           | CO                | PLM           |
| TUV Product Service, Inc.                                        | 100271-1          | Boulder          | CO                | EC&T          |
| U.S. EPA - National Enforcement<br>Investigations Center         | 101703-0          | Denver           | CO                | PLM           |
| <b>CT</b>                                                        |                   |                  |                   |               |
| Absolute Standards, Inc.                                         | 200390-0          | Hamden           | CT                | PPT           |
| AccuStandard, Inc.                                               | 200389-0          | New Haven        | CT                | PPT           |
| ChemScope, Inc.                                                  | 101061-0          | North Haven      | CT                | PLM           |
| Connecticut Department of Public Health<br>Laboratory            | 101237-0          | Hartford         | CT                | PLM           |
| Dominion Nuclear Connecticut, Inc.                               | 100540-0          | Waterford        | CT                | Dosimetry     |
| Eastern Materials Testing Lab a division of<br>Jaworski Geotech  | 100315-0          | Berlin           | CT                | Construction  |
| EnviroMed Services, Inc.                                         | 101514-0          | New Haven        | CT                | PLM           |
| Fairfield Testing Laboratory, Inc.                               | 100317-0          | Stamford         | CT                | Construction  |
| General Dynamics, Electric Boat                                  | 100560-0          | Groton           | CT                | Dosimetry     |
| HYGENIX, INC.                                                    | 101199-0          | Stamford         | CT                | PLM           |
| Independent Materials Testing Laboratories,<br>Inc.              | 100316-0          | Plainville       | CT                | Construction  |
| Materials Testing, Inc.                                          | 100320-0          | Milford          | CT                | Construction  |
| Mystic Air Quality Consultants, Inc.                             | 101282-0          | Groton           | CT                | PLM           |
| Pratt & Whitney Materials Control<br>Lab/Quality & Standards Lab | 200336-0          | East Hartford    | CT                | Fasteners     |
| Special Testing Laboratories, Inc.                               | 100308-0          | Bethel           | CT                | Construction  |
| Test-Con Incorporated                                            | 200018-0          | Danbury          | CT                | Construction  |
| TRC Environmental Corporation                                    | 101424-0          | Windsor          | CT                | PLM           |
| Tri-State Materials Testing Lab, Inc.                            | 200010-0          | Wallingford      | CT                | Construction  |
| TUV Rheinland of North America, Inc.                             | 200111-0          | Newtown          | CT                | EC&T          |
| <b>DE</b>                                                        |                   |                  |                   |               |
| Batta Laboratories, Inc.                                         | 101032-0          | Newark           | DE                | PLM           |
| Batta Laboratories, Inc.                                         | 101032-0          | Newark           | DE                | TEM           |
| Environmental Testing, Inc.                                      | 101848-0          | Middletown       | DE                | PLM           |

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| <b>LABORATORY NAME</b>                                                  | <b>NVLAP<br/>LAB CODE</b> | <b>CITY</b>          | <b>STATE/<br/>COUNTRY</b> | <b>FIELD</b> |
|-------------------------------------------------------------------------|---------------------------|----------------------|---------------------------|--------------|
| <b>FL</b>                                                               |                           |                      |                           |              |
| Advanced Industrial Hygiene Services, Inc.                              | 101006-0                  | Miami                | FL                        | PLM          |
| American Asbestos Laboratories, Inc.                                    | 101775-0                  | Miami Lakes          | FL                        | PLM          |
| Apollo Environmental, Inc.                                              | 101871-0                  | Gibsonton            | FL                        | PLM          |
| ASC geoscience, inc.                                                    | 200567-0                  | Fort Myers           | FL                        | Construction |
| BPB America, Inc.                                                       | 200520-0                  | Clearwater           | FL                        | Acoustics    |
| Comprehensive Health<br>Services-Environmental Health PLM<br>Laboratory | 101759-0                  | Kennedy Space Center | FL                        | PLM          |
| Dove Environmental Corporation                                          | 102053-0                  | Miami                | FL                        | PLM          |
| E. M. Analytical, Inc.                                                  | 101902-0                  | Dania                | FL                        | TEM          |
| EMSL Analytical, Inc.                                                   | 101151-0                  | Orlando              | FL                        | PLM          |
| EMSL Analytical, Inc.                                                   | 101151-0                  | Orlando              | FL                        | TEM          |
| EMSL Analytical, Inc.                                                   | 200204-0                  | N. Miami Beach       | FL                        | PLM          |
| EMSL Analytical, Inc.                                                   | 200204-0                  | N. Miami Beach       | FL                        | TEM          |
| Florida Power & Light Company                                           | 100544-0                  | Juno Beach           | FL                        | Dosimetry    |
| GLE Associates, Inc.                                                    | 102003-0                  | Tampa                | FL                        | PLM          |
| Harris Corporation GCSD EMI Test<br>Laboratory                          | 200500-0                  | Melbourne            | FL                        | EC&T         |
| Hygeia Laboratories, Inc.                                               | 200335-0                  | Miami                | FL                        | PLM          |
| Hygeia Laboratories, Inc.                                               | 200335-0                  | Miami                | FL                        | TEM          |
| Law Engineering and Environmental<br>Services, Inc.                     | 101515-0                  | Tampa                | FL                        | PLM          |
| Law Engineering and Environmental<br>Services, Inc.                     | 101515-1                  | Miami Lakes          | FL                        | PLM          |
| Occupational Health Conservation, Inc.                                  | 102050-0                  | Jacksonville         | FL                        | PLM          |
| Palmetto Laboratory, Inc.                                               | 102077-0                  | St. Petersburg       | FL                        | PLM          |
| Paradyne Corporation                                                    | 200125-0                  | Largo                | FL                        | EC&T         |
| R. Robinson Analytical Services, Inc.                                   | 102041-0                  | Pensacola            | FL                        | PLM          |
| <b>GA</b>                                                               |                           |                      |                           |              |
| Analytical Environmental Services, Inc.                                 | 102082-0                  | Atlanta              | GA                        | PLM          |
| Analytical Environmental Services, Inc.                                 | 102082-0                  | Atlanta              | GA                        | TEM          |
| Beaulieu of America - Carpet Testing Lab                                | 100190-0                  | Dalton               | GA                        | Carpet       |
| Cape Environmental Management, Inc.                                     | 102111-0                  | Atlanta              | GA                        | PLM          |
| Clayton Group Services                                                  | 101125-0                  | Kennesaw             | GA                        | PLM          |
| Clayton Group Services                                                  | 101125-0                  | Kennesaw             | GA                        | TEM          |
| Commercial Testing Company                                              | 100120-0                  | Dalton               | GA                        | Carpet       |
| Cooper Lighting - Metalux Research<br>Laboratories                      | 200050-0                  | Americus             | GA                        | Lighting     |
| EMSL Analytical, Inc.                                                   | 101048-1                  | Atlanta              | GA                        | PLM          |
| EMSL Analytical, Inc.                                                   | 101048-1                  | Atlanta              | GA                        | TEM          |
| Georgia Power Company/Enviro. Affairs,<br>Enviro. Lab-Dosimetry         | 100551-0                  | Smyrna               | GA                        | Dosimetry    |
| Hygeia Laboratories, Inc.                                               | 102087-0                  | Marietta             | GA                        | PLM          |
| Independent Textile Testing Service, Inc.                               | 100166-0                  | Dalton               | GA                        | Carpet       |
| Interface Testing Laboratory                                            | 200402-0                  | LaGrange             | GA                        | Carpet       |
| Lithonia Testing Laboratories                                           | 200007-0                  | Conyers              | GA                        | Lighting     |
| Materials Analytical Services, Inc.                                     | 101235-0                  | Suwanee              | GA                        | PLM          |
| Materials Analytical Services, Inc.                                     | 101235-0                  | Suwanee              | GA                        | TEM          |
| Mohawk Industries, Inc.- Lyerly Plant                                   | 100156-0                  | Lyerly               | GA                        | Carpet       |
| Professional Testing Laboratory, Inc.                                   | 100297-0                  | Dalton               | GA                        | Carpet       |

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| LABORATORY NAME                                                   | NVLAP<br>LAB CODE | CITY           | STATE/<br>COUNTRY | FIELD        |
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| Shaw Industries, Inc., Central Laboratory<br>Operations           | 100193-0          | Dalton         | GA                | Carpet       |
| SWFLANT Calibration Laboratory Operated<br>by Lockheed Martin     | 200403-0          | Kings Bay      | GA                | Calibration  |
| TSi, Testing Services, Inc.                                       | 100108-0          | Dalton         | GA                | Carpet       |
| United States Technologies, Inc.                                  | 200162-0          | Alpharetta     | GA                | EC&T         |
| <b>HI</b>                                                         |                   |                |                   |              |
| EnvironMETeo Services Inc.                                        | 101807-0          | Waipahu        | HI                | PLM          |
| Globetec Group, Inc.                                              | 200541-0          | Honolulu       | HI                | PLM          |
| PWC Environmental Laboratory, Pearl<br>Harbor                     | 200369-0          | Pearl Harbor   | HI                | PLM          |
| White Environmental Consultants, Inc.                             | 200350-0          | Honolulu       | HI                | PLM          |
| <b>IA</b>                                                         |                   |                |                   |              |
| Intermec Technologies Corporation                                 | 100269-0          | Cedar Rapids   | IA                | EC&T         |
| Iowa Environmental Services, Inc.                                 | 101990-0          | Des Moines     | IA                | PLM          |
| Liberty Labs, Inc.                                                | 200123-0          | Kimballton     | IA                | Calibration  |
| University (State) Hygienic Laboratory                            | 101288-0          | Iowa City      | IA                | PLM          |
| <b>ID</b>                                                         |                   |                |                   |              |
| Bechtel BWXT Idaho, Standards and<br>Calibration Lab              | 200115-0          | Idaho Falls    | ID                | Calibration  |
| INEEL Materials Testing Lab CFA 602                               | 200415-0          | Idaho Falls    | ID                | Construction |
| RESL - DOE Laboratory Accreditation<br>Program                    | 200366-0          | Idaho Falls    | ID                | Calibration  |
| <b>IL</b>                                                         |                   |                |                   |              |
| Aires Consulting Group, Inc.                                      | 101014-0          | Batavia        | IL                | PLM          |
| Aires Consulting Group, Inc.                                      | 101014-0          | Batavia        | IL                | TEM          |
| AnalyticaLab                                                      | 101727-0          | Willow Springs | IL                | PLM          |
| Casey Products, Inc.                                              | 200278-0          | Lisle          | IL                | Fasteners    |
| D.L.S. Electronic Systems, Inc.                                   | 100276-0          | Wheeling       | IL                | EC&T         |
| Davis Environmental Labs, Inc.                                    | 101039-0          | Chicago        | IL                | PLM          |
| Davis Environmental Labs, Inc.                                    | 101039-0          | Chicago        | IL                | TEM          |
| Elite Electronic Engineering Inc.                                 | 100278-0          | Downers Grove  | IL                | EC&T         |
| EMSI Analytical Inc. Bulk And Airborne<br>Asbestos Fiber Analysis | 200399-0          | Chicago        | IL                | PLM          |
| EMSI Analytical Inc. Bulk And Airborne<br>Asbestos Fiber Analysis | 200399-0          | Chicago        | IL                | TEM          |
| Hygienecing, Inc.                                                 | 101997-0          | Willowbrook    | IL                | PLM          |
| JMS Environmental Associates, Ltd.                                | 102012-0          | Westmont       | IL                | PLM          |
| JMS Environmental Associates, Ltd.                                | 102012-0          | Westmont       | IL                | TEM          |
| Landauer, Inc.                                                    | 100518-0          | Glenwood       | IL                | Dosimetry    |
| Litronics International                                           | 200504-0          | Alsip          | IL                | Lighting     |
| MacLean Fasteners - QC Laboratory                                 | 200153-0          | Mundelein      | IL                | Fasteners    |
| Metrology Concepts Inc., dba Tri-State<br>Calibration             | 200505-0          | Antioch        | IL                | Calibration  |
| Midwest Laboratories, Inc.                                        | 101894-0          | Countryside    | IL                | PLM          |
| Midwest Laboratories, Inc.                                        | 101894-0          | Countryside    | IL                | TEM          |
| Modern Plating Corporation                                        | 200320-0          | Freeport       | IL                | Fasteners    |
| Philip Environmental Services Corp.                               | 101192-0          | Columbia       | IL                | PLM          |
| Prospect Testing Labs, Inc.                                       | 200328-0          | Des Plaines    | IL                | Fasteners    |

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| <b>LABORATORY NAME</b>                                           | <b>NVLAP<br/>LAB CODE</b> | <b>CITY</b>     | <b>STATE/<br/>COUNTRY</b> | <b>FIELD</b>    |
|------------------------------------------------------------------|---------------------------|-----------------|---------------------------|-----------------|
| RCM Laboratories, Inc.                                           | 101853-0                  | Countryside     | IL                        | PLM             |
| Riverbank Acoustical Laboratories                                | 100227-0                  | Geneva          | IL                        | Acoustics       |
| Rockford Bolt & Steel Co.                                        | 200255-0                  | Rockford        | IL                        | Fasteners       |
| S. Himmelstein and Company                                       | 200487-0                  | Hoffman Estates | IL                        | Calibration     |
| STAT Analysis Corporation                                        | 101202-0                  | Chicago         | IL                        | PLM             |
| STAT Analysis Corporation                                        | 101202-0                  | Chicago         | IL                        | TEM             |
| STERIS-Isomedix Services                                         | 200235-0                  | Morton Grove    | IL                        | Calibration     |
| STS Consultants, Ltd.                                            | 100191-0                  | Vernon Hills    | IL                        | Construction    |
| TEM, Incorporated                                                | 101130-0                  | Glen Ellyn      | IL                        | PLM             |
| TEM, Incorporated                                                | 101130-0                  | Glen Ellyn      | IL                        | TEM             |
| The Dow Chemical Company- NA System<br>House-Joliet              | 100210-0                  | Joliet          | IL                        | Thermal Insl.   |
| Underwriters Laboratories Inc.                                   | 100414-0                  | Northbrook      | IL                        | EC&T            |
| Underwriters Laboratories Inc.                                   | 100414-0                  | Northbrook      | IL                        | Thermal Insl.   |
| United Analytical Services, Inc.                                 | 101732-0                  | Downers Grove   | IL                        | PLM             |
| United Analytical Services, Inc.                                 | 101732-0                  | Downers Grove   | IL                        | TEM             |
| United Steel and Fasteners Inc.                                  | 200341-0                  | Itasca          | IL                        | Fasteners       |
| USG Research - Construction Systems<br>Laboratory                | 200132-0                  | Libertyville    | IL                        | Acoustics       |
| <b>IN</b>                                                        |                           |                 |                           |                 |
| ACM Environmental, Inc.                                          | 101977-0                  | South Bend      | IN                        | PLM             |
| Aearo Company, E·A·RCAL Acoustical<br>Laboratory                 | 100374-0                  | Indianapolis    | IN                        | Acoustics       |
| C.I.M.D. Engr. Dev. Lab                                          | 200522-0                  | Fort Wayne      | IN                        | Electric Motors |
| EMSL Analytical, Inc.                                            | 200188-0                  | Indianapolis    | IN                        | PLM             |
| EMSL Analytical, Inc.                                            | 200188-0                  | Indianapolis    | IN                        | TEM             |
| ESG Laboratories                                                 | 102029-0                  | Indianapolis    | IN                        | PLM             |
| Fuji Component Parts USA, Inc.                                   | 200180-0                  | Indianapolis    | IN                        | Fasteners       |
| Indiana Division of Weights and Measures                         | 200421-0                  | Indianapolis    | IN                        | Calibration     |
| Knauf Fiber Glass Research Laboratory                            | 100248-0                  | Shelbyville     | IN                        | Thermal Insl.   |
| Micro Air, Inc.                                                  | 101221-0                  | Indianapolis    | IN                        | PLM             |
| Pyromation Inc. Metrology Laboratory                             | 200502-0                  | Fort Wayne      | IN                        | Calibration     |
| Raytheon Technical Services Co. EMI<br>Laboratory                | 200317-0                  | Indianapolis    | IN                        | EC&T            |
| Verizon Logistics, Electronic Repair Services                    | 200352-0                  | Fort Wayne      | IN                        | Calibration     |
| <b>KS</b>                                                        |                           |                 |                           |                 |
| Asbestos Consulting & Testing (ACT)                              | 101649-0                  | Lenexa          | KS                        | PLM             |
| MAC Fasteners, Inc.                                              | 200141-0                  | Ottawa          | KS                        | Fasteners       |
| Philips Lighting Corporate Calibration &<br>Standards Laboratory | 100399-0                  | Salina          | KS                        | Lighting        |
| Rogers Labs, Inc.                                                | 200087-0                  | Louisburg       | KS                        | EC&T            |
| <b>KY</b>                                                        |                           |                 |                           |                 |
| GE Owensboro Test Laboratory                                     | 200305-0                  | Owensboro       | KY                        | Electric Motors |
| Intertek Testing Services NA Inc.                                | 100274-0                  | Lexington       | KY                        | EC&T            |
| McCall and Spero Environmental, Inc.                             | 101895-0                  | Louisville      | KY                        | PLM             |
| McCall and Spero Environmental, Inc.                             | 101895-0                  | Louisville      | KY                        | TEM             |



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| <b>LA</b>                                                            |                   |                    |                   |               |
| CA Laboratories, L.L.C.                                              | 200452-0          | Baton Rouge        | LA                | PLM           |
| CA Laboratories, L.L.C.                                              | 200452-0          | Baton Rouge        | LA                | TEM           |
| Chrisope Technologies, A Division of Remel                           | 200388-0          | Lake Charles       | LA                | PPT           |
| EMSL Analytical, Inc.                                                | 200375-0          | Baton Rouge        | LA                | PLM           |
| EMSL Analytical, Inc.                                                | 200375-0          | Baton Rouge        | LA                | TEM           |
| Entergy Operations, Inc.                                             | 100535-0          | Killona            | LA                | Dosimetry     |
| Fort Polk Environmental Laboratory                                   | 200523-0          | Fort Polk          | LA                | PLM           |
| Louisiana Department of Environmental<br>Quality Microanalytical Lab | 102000-0          | Baton Rouge        | LA                | PLM           |
| <b>MA</b>                                                            |                   |                    |                   |               |
| Chomerics Test Services (CTS)                                        | 100296-0          | Woburn             | MA                | EC&T          |
| Compaq Regulatory Compliance Engineering<br>- East                   | 100413-0          | Marlboro           | MA                | EC&T          |
| Covino Environmental Associates, Inc.                                | 101781-0          | Woburn             | MA                | PLM           |
| David L. Ellis Co., Incorporated                                     | 200127-0          | Acton              | MA                | Calibration   |
| Duke Engineering and Services<br>Environmental Laboratory            | 100524-0          | Westborough        | MA                | Dosimetry     |
| EMC Corporation                                                      | 100339-0          | Westboro           | MA                | EC&T          |
| Hygienetics Laboratory Services                                      | 101147-0          | Boston             | MA                | PLM           |
| Hygienetics Laboratory Services                                      | 101147-0          | Boston             | MA                | TEM           |
| Instron Field Calibration Laboratory                                 | 200301-0          | Canton             | MA                | Calibration   |
| Instron Force Calibration Laboratory                                 | 105023-0          | Canton             | MA                | Calibration   |
| Motorola Test Lab Services                                           | 200005-0          | Mansfield          | MA                | EC&T          |
| National Technical Systems                                           | 100347-0          | Boxborough         | MA                | EC&T          |
| Netsch Instruments, Inc.                                             | 100113-0          | Bedford            | MA                | Thermal Insl. |
| Osram Sylvania, Applications &<br>Measurements Laboratory            | 100403-0          | Beverly            | MA                | Lighting      |
| ProScience Analytical Services, Inc.                                 | 200090-0          | Woburn             | MA                | PLM           |
| ProScience Analytical Services, Inc.                                 | 200090-0          | Woburn             | MA                | TEM           |
| Quest Engineering Solutions, Inc.                                    | 200036-0          | N. Billerica       | MA                | EC&T          |
| SCILAB BOSTON, Inc.                                                  | 102079-0          | East Weymouth      | MA                | PLM           |
| SCILAB BOSTON, Inc.                                                  | 102079-0          | East Weymouth      | MA                | TEM           |
| Test Site Services, Inc.                                             | 100419-0          | Marlboro           | MA                | EC&T          |
| W.R. Grace & Co.                                                     | 200258-0          | Cambridge          | MA                | Construction  |
| <b>MD</b>                                                            |                   |                    |                   |               |
| AMA Analytical Services, Inc.                                        | 101143-0          | Lanham             | MD                | PLM           |
| AMA Analytical Services, Inc.                                        | 101143-0          | Lanham             | MD                | TEM           |
| Arca Systems SEAL Common Criteria<br>Testing Laboratory              | 200429-0          | Columbia           | MD                | Common        |
| Calvert Cliffs Nuclear Power Plant, Inc.                             | 100501-0          | Lusby              | MD                | Dosimetry     |
| CDRH X-Ray Calibration Laboratory                                    | 105018-0          | Rockville          | MD                | Calibration   |
| COACT Inc. CAFE Laboratory                                           | 200416-0          | Columbia           | MD                | Common        |
| COACT Inc. CAFE Laboratory                                           | 200416-0          | Columbia           | MD                | Cryptographic |
| Composite Panel Association (CPA)                                    | 100418-0          | Gaithersburg       | MD                | Wood Prod.    |
| Computer Sciences Corporation                                        | 200426-0          | Annapolis Junction | MD                | Common        |
| DHMH-Air Quality Laboratory                                          | 101523-0          | Baltimore          | MD                | PLM           |
| EMSL Analytical, Inc.                                                | 200293-0          | Beltsville         | MD                | PLM           |
| EMSL Analytical, Inc.                                                | 200293-0          | Beltsville         | MD                | TEM           |
| MET Laboratories, Inc.                                               | 100273-0          | Baltimore          | MD                | EC&T          |

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| LABORATORY NAME                                                     | NVLAP<br>LAB CODE | CITY                    | STATE/<br>COUNTRY | FIELD         |
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| NAHB Research Center, Inc.                                          | 100104-0          | Upper Marlboro          | MD                | Commercial    |
| NAHB Research Center, Inc.                                          | 100104-0          | Upper Marlboro          | MD                | Thermal Insl. |
| Naval Dosimetry Center                                              | 100504-0          | Bethesda                | MD                | Dosimetry     |
| NAWCAD 5.1.7.4. EMI Lab                                             | 100408-0          | Patuxent River          | MD                | EC&T          |
| PCTEST Engineering Laboratory, Inc.                                 | 100431-0          | Columbia                | MD                | EC&T          |
| SAIC Accredited Lab Center for Evaluation<br>& Testing (SALCET)     | 200427-0          | Columbia                | MD                | Common        |
| U.S. Army Center for Health Promotion and<br>Preventive Medicine    | 200044-0          | Aberdeen Proving Ground | MD                | PLM           |
| Washington Laboratories, Ltd.                                       | 200066-0          | Gaithersburg            | MD                | EC&T          |
| Windermere Info. Tech. Sys.                                         | 200084-0          | Annapolis               | MD                | EC&T          |
| Military/Commercial Compliance Lab.                                 |                   |                         |                   |               |
| <b>ME</b>                                                           |                   |                         |                   |               |
| Maine Metrology Department of Agriculture                           | 200414-0          | Augusta                 | ME                | Calibration   |
| <b>MI</b>                                                           |                   |                         |                   |               |
| AHD                                                                 | 200129-0          | Dowagiac                | MI                | EC&T          |
| Apex Research, Inc.                                                 | 102118-0          | Whitmore Lake           | MI                | PLM           |
| Detroit Edison, Fermi 2 Dosimetry<br>Laboratory                     | 100529-0          | Newport                 | MI                | Dosimetry     |
| Dexter Fastener Technologies, Inc.                                  | 200144-0          | Dexter                  | MI                | Fasteners     |
| Dow Chemical N. America Foam Products<br>Research, Prod. Perf. Lab. | 100103-0          | Midland                 | MI                | Thermal Insl. |
| Eaton Corporation Innovation Center                                 | 200182-0          | Southfield              | MI                | Calibration   |
| Eaton E3 Laboratory                                                 | 100382-0          | Southfield              | MI                | EC&T          |
| Electronic Automation                                               | 200410-0          | Grand Rapids            | MI                | Calibration   |
| EMSL Analytical, Inc.                                               | 101048-4          | Ann Arbor               | MI                | PLM           |
| EMSL Analytical, Inc.                                               | 101048-4          | Ann Arbor               | MI                | TEM           |
| Fibertec, Inc.                                                      | 101510-0          | Holt                    | MI                | PLM           |
| MacLean Maynard Laboratory Services                                 | 200451-0          | Chesterfield Township   | MI                | Fasteners     |
| Michigan Dept. of Agriculture, E.C. Heffron<br>Metrology Laboratory | 200408-0          | Williamston             | MI                | Calibration   |
| Wolverine Plating Corp.                                             | 200230-0          | Roseville               | MI                | Fasteners     |
| Wonder Makers Environmental Inc.                                    | 102065-0          | Kalamazoo               | MI                | PLM           |
| <b>MN</b>                                                           |                   |                         |                   |               |
| 3M Product Safety EMC Laboratory                                    | 200033-0          | St. Paul                | MN                | EC&T          |
| Braun Intertec Corporation                                          | 101234-0          | Minneapolis             | MN                | PLM           |
| Braun Intertec Corporation                                          | 101234-0          | Minneapolis             | MN                | TEM           |
| EMSL Analytical, Inc.                                               | 200019-0          | Minneapolis             | MN                | PLM           |
| EMSL Analytical, Inc.                                               | 200019-0          | Minneapolis             | MN                | TEM           |
| IBM Rochester EMC Lab                                               | 200091-0          | Rochester               | MN                | EC&T          |
| Institute for Environmental Assessment                              | 101249-0          | Brooklyn Park           | MN                | PLM           |
| Intertek Testing Services NA, Inc.                                  | 200049-0          | Oakdale                 | MN                | EC&T          |
| Legend Technical Services, Inc.                                     | 102081-0          | St. Paul                | MN                | PLM           |
| Minnesota Metrology Laboratory                                      | 105003-0          | St. Paul                | MN                | Calibration   |
| Nova Consulting Group, Inc.                                         | 101545-0          | Chaska                  | MN                | PLM           |
| Orfield Laboratories, Inc.                                          | 200248-0          | Minneapolis             | MN                | Acoustics     |
| Stork-Twin City Testing Corporation                                 | 200046-0          | St. Paul                | MN                | Acoustics     |
| TUV Product Service, Inc.- A Division of<br>TUV America Inc.        | 100271-0          | New Brighton            | MN                | EC&T          |
| TUV Telecom Services, Inc.                                          | 200039-0          | St. Paul                | MN                | EC&T          |

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| LABORATORY NAME                                                     | NVLAP<br>LAB CODE | CITY                   | STATE/<br>COUNTRY | FIELD           |
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| <b>MO</b>                                                           |                   |                        |                   |                 |
| AmerenUE, Callaway Plant                                            | 100502-0          | Fulton                 | MO                | Dosimetry       |
| Boeing - St. Louis Electromagnetic<br>Compatibility Laboratory      | 200382-0          | St. Louis              | MO                | EC&T            |
| EnviroHealth Technologies, Inc.                                     | 200374-0          | St. Louis              | MO                | PLM             |
| Environmental Health Laboratories                                   | 101506-0          | Clayton                | MO                | PLM             |
| Honeywell FM&T Metrology                                            | 200108-0          | Kansas City            | MO                | Calibration     |
| Kingston Environmental Laboratory                                   | 200041-0          | Lee's Summit           | MO                | PLM             |
| Larron Laboratory                                                   | 101415-0          | Cape Girardeau         | MO                | PLM             |
| Mallinckrodt, Inc.                                                  | 100503-0          | Maryland Heights       | MO                | Dosimetry       |
| Microscopic Analysis, Inc.                                          | 101037-0          | St. Louis              | MO                | PLM             |
| Missouri Department of Transportation,<br>Chemical Laboratory       | 200544-0          | Jefferson City         | MO                | PLM             |
| <b>MS</b>                                                           |                   |                        |                   |                 |
| Daybrite Lighting (Genlyte Thomas Group)<br>Photometric Laboratory  | 200016-0          | Tupelo                 | MS                | Lighting        |
| <b>MT</b>                                                           |                   |                        |                   |                 |
| Northern Analytical Laboratories, Inc.                              | 101292-0          | Billings               | MT                | PLM             |
| <b>NC</b>                                                           |                   |                        |                   |                 |
| Advanced Energy, Industrial Energy<br>Laboratory                    | 200081-0          | Raleigh                | NC                | Electric Motors |
| Asbestos Analysis and Information Service,<br>Inc.                  | 101261-0          | Four Oaks              | NC                | PLM             |
| Carolina Environmental, Inc.                                        | 101768-0          | Cary                   | NC                | PLM             |
| Carolina Power & Light Company, Harris<br>Energy & Enviro. Center   | 100517-0          | New Hill               | NC                | Dosimetry       |
| Duke Power Company Dosimetry Laboratory                             | 100505-0          | Charlotte              | NC                | Dosimetry       |
| EMSL Analytical, Inc.                                               | 102104-0          | Greensboro             | NC                | PLM             |
| EMSL Analytical, Inc.                                               | 102104-0          | Greensboro             | NC                | TEM             |
| Flextronics Compliance Laboratories                                 | 200094-0          | Youngsville            | NC                | EC&T            |
| IBM RTP PSG EMC Test Labs                                           | 200200-0          | Research Triangle Park | NC                | EC&T            |
| NSI Solutions, Inc.                                                 | 200440-0          | Raleigh                | NC                | PPT             |
| S&ME, Inc.                                                          | 102075-0          | Charlotte              | NC                | PLM             |
| Troxler Radiation Monitoring Svc. a div. of<br>Troxler Elect. Labs  | 100559-0          | Research Triangle Park | NC                | Dosimetry       |
| Underwriters Laboratories, Inc.                                     | 200246-0          | Research Triangle Park | NC                | EC&T            |
| <b>NH</b>                                                           |                   |                        |                   |                 |
| BAE Systems                                                         | 200425-0          | Nashua                 | NH                | EC&T            |
| Enterasys Networks Inc.                                             | 200121-0          | Nashua                 | NH                | EC&T            |
| Retlif Testing Laboratories                                         | 100267-1          | Goffstown              | NH                | EC&T            |
| The Scott Lawson Group, Ltd.                                        | 101228-0          | Concord                | NH                | PLM             |
| <b>NJ</b>                                                           |                   |                        |                   |                 |
| Advanced Compliance Laboratory                                      | 200101-0          | Hillsborough           | NJ                | EC&T            |
| Aerospace NYLOK - a subsidiary of the<br>NYLOK Fastener Corporation | 200271-0          | Hawthorne              | NJ                | Fasteners       |
| Dwight D.I.C., Inc.                                                 | 200405-0          | Lyndhurst              | NJ                | Calibration     |
| EAI, Inc.                                                           | 102114-0          | Jersey City            | NJ                | PLM             |

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| LABORATORY NAME                                                   | NVLAP<br>LAB CODE | CITY             | STATE/<br>COUNTRY | FIELD        |
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| EMSL Analytical Inc. Mobile Laboratory                            | 200481-0          | Westmont         | NJ                | PLM          |
| EMSL Analytical Inc. Mobile Laboratory                            | 200481-0          | Westmont         | NJ                | TEM          |
| EMSL Analytical, Inc.                                             | 101048-0          | Westmont         | NJ                | PLM          |
| EMSL Analytical, Inc.                                             | 101048-0          | Westmont         | NJ                | TEM          |
| EMSL Analytical, Inc.                                             | 101048-2          | Piscataway       | NJ                | PLM          |
| EMSL Analytical, Inc.                                             | 101048-2          | Piscataway       | NJ                | TEM          |
| Henry Troemner, LLC                                               | 105013-0          | Thorofare        | NJ                | Calibration  |
| Hillmann Environmental Group, L.L.C.                              | 101421-0          | Union            | NJ                | PLM          |
| International Asbestos Testing Laboratory                         | 101165-0          | Mt. Laurel       | NJ                | PLM          |
| International Asbestos Testing Laboratory                         | 101165-0          | Mt. Laurel       | NJ                | TEM          |
| Lucent Technologies, Global Product<br>Compliance Lab             | 100275-0          | Holmdel          | NJ                | EC&T         |
| NAWC-Aircraft Div. Lakehurst<br>Electromagnetic Interference Lab. | 200222-0          | Lakehurst        | NJ                | EC&T         |
| Omega Environmental Services                                      | 101289-0          | Hackensack       | NJ                | PLM          |
| PMK Group, Inc.                                                   | 101301-0          | Cranford         | NJ                | PLM          |
| Protocol Analytical Supplies, Inc.                                | 200395-0          | Middlesex        | NJ                | PPT          |
| Spex Certiprep Inc.                                               | 200392-0          | Metuchen         | NJ                | PPT          |
| <b>NM</b>                                                         |                   |                  |                   |              |
| Assaigai Analytical Laboratories, Inc.                            | 101457-0          | Albuquerque      | NM                | PLM          |
| Sandia National Laboratories                                      | 105002-0          | Albuquerque      | NM                | Calibration  |
| <b>NV</b>                                                         |                   |                  |                   |              |
| Asbestos TEM Laboratories, Inc.                                   | 200104-0          | Sparks           | NV                | PLM          |
| Converse Consultants                                              | 102091-0          | Reno             | NV                | PLM          |
| <b>NY</b>                                                         |                   |                  |                   |              |
| Adirondack Environmental Services Inc.                            | 200552-0          | Albany           | NY                | PLM          |
| Adirondack Environmental Services Inc.                            | 200552-0          | Albany           | NY                | TEM          |
| Advance Testing Company Inc.                                      | 200514-0          | Campbell Hall    | NY                | Construction |
| Airtek Environmental Corp.                                        | 102011-0          | New York         | NY                | PLM          |
| ALAC                                                              | 200323-0          | New York         | NY                | PLM          |
| Ambient Group, Inc.                                               | 101618-0          | Glen Cove        | NY                | PLM          |
| ATC Associates Inc.                                               | 101187-0          | New York         | NY                | PLM          |
| ATC Associates Inc.                                               | 101187-0          | New York         | NY                | TEM          |
| Athenica Environmental Services, Inc.                             | 101958-0          | Long Island City | NY                | PLM          |
| Athenica Environmental Services, Inc.                             | 101958-0          | Long Island City | NY                | TEM          |
| BAE Systems Controls, Inc. EMI Laboratory                         | 200142-0          | Johnson City     | NY                | EC&T         |
| Dayton T. Brown, Inc.                                             | 200422-0          | Bohemia          | NY                | EC&T         |
| Diversified T.E.S.T. Technologies, Inc.                           | 200340-0          | Groton           | NY                | EC&T         |
| DL Labs, Inc.                                                     | 100252-0          | New York         | NY                | Commercial   |
| Eastern Analytical Services, Inc.                                 | 101646-0          | Elmsford         | NY                | PLM          |
| Eastern Analytical Services, Inc.                                 | 101646-0          | Elmsford         | NY                | TEM          |
| Eastman Kodak Co.- EMC Facility                                   | 200313-0          | Rochester        | NY                | EC&T         |
| EMSL Analytical, Inc.                                             | 101048-9          | New York         | NY                | PLM          |
| EMSL Analytical, Inc.                                             | 101048-9          | New York         | NY                | TEM          |
| EMSL Analytical, Inc.                                             | 101048-10         | Carle Place      | NY                | PLM          |
| EMSL Analytical, Inc.                                             | 101048-10         | Carle Place      | NY                | TEM          |
| EMSL Analytical, Inc.                                             | 200056-0          | Depew            | NY                | PLM          |
| EMSL Analytical, Inc.                                             | 200056-0          | Depew            | NY                | TEM          |
| EMSL Analytical, Inc.                                             | 200333-0          | Elmsford         | NY                | PLM          |
| EMSL Analytical, Inc.                                             | 200333-0          | Elmsford         | NY                | TEM          |



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|------------------------------------------------------------------|---------------------------|------------------|---------------------------|--------------|
| Entergy Nuclear Northeast                                        | 100538-0                  | Buchanan         | NY                        | Dosimetry    |
| Enviro-Probe, Inc.                                               | 101222-0                  | Bronx            | NY                        | PLM          |
| Enviroscience Consultants, Inc.                                  | 200531-0                  | Ronkonkoma       | NY                        | TEM          |
| Fairway Testing Company, Inc.                                    | 100340-0                  | Stony Point      | NY                        | Construction |
| Galson Laboratories                                              | 101375-0                  | East Syracuse    | NY                        | PLM          |
| GE Industrial Systems                                            | 200029-0                  | Rome             | NY                        | Calibration  |
| Ginna Nuclear Station                                            | 100514-0                  | Ontario          | NY                        | Dosimetry    |
| IBM Endicott EMC Lab                                             | 200418-0                  | Endicott         | NY                        | EC&T         |
| IBM Hudson Valley Acoustics Laboratory                           | 100323-0                  | Poughkeepsie     | NY                        | Acoustics    |
| IBM Poughkeepsie EMC Laboratory                                  | 200435-0                  | Poughkeepsie     | NY                        | EC&T         |
| IBM Shock and Vibration Laboratory                               | 200503-0                  | Poughkeepsie     | NY                        | Commercial   |
| Industrial Acoustics Company, Inc.,<br>Aero-Acoustics Laboratory | 100404-0                  | Bronx            | NY                        | Acoustics    |
| Intertek Testing Services NA Inc.                                | 100402-0                  | Cortland         | NY                        | Lighting     |
| JLC Environmental Consultants, Inc.                              | 101953-0                  | New York         | NY                        | PLM          |
| KAM Consultants                                                  | 102047-0                  | Long Island City | NY                        | PLM          |
| KAM Consultants                                                  | 102047-0                  | Long Island City | NY                        | TEM          |
| Lighting Research Center Lighting Products                       | 200480-0                  | Troy             | NY                        | Lighting     |
| NGC Testing Services, National Gypsum<br>Research Center         | 200291-0                  | Buffalo          | NY                        | Acoustics    |
| NY Environmental & Analytical Labs, Inc.                         | 101967-0                  | Port Washington  | NY                        | PLM          |
| NYS DOH Environmental Laboratory<br>Approval Program             | 200387-0                  | Albany           | NY                        | PPT          |
| O'Brien & Gere Laboratories, Inc.                                | 101343-0                  | Syracuse         | NY                        | PLM          |
| Paradigm Environmental Services, Inc.                            | 200530-0                  | Rochester        | NY                        | PLM          |
| Paradigm Environmental Services, Inc.                            | 200530-0                  | Rochester        | NY                        | TEM          |
| Retlif Testing Laboratories                                      | 100267-0                  | Ronkonkoma       | NY                        | EC&T         |
| Scientific Laboratories, Inc.                                    | 101904-1                  | New York         | NY                        | PLM          |
| Scientific Laboratories, Inc.                                    | 101904-1                  | New York         | NY                        | TEM          |
| Scientific Laboratories, Inc.                                    | 200546-0                  | New York         | NY                        | PLM          |
| Scientific Laboratories, Inc.                                    | 200546-0                  | New York         | NY                        | TEM          |
| Taylor Environmental Group, Inc.                                 | 102101-0                  | Floral Park      | NY                        | PLM          |
| Technical Calibration Labs, Inc.                                 | 200459-0                  | Monroe           | NY                        | Calibration  |
| Testing Mechanics Corp.                                          | 102001-0                  | Seaford          | NY                        | PLM          |
| Testwell Laboratories, Inc./Testwell<br>Industries, Inc.         | 200083-0                  | Ossining         | NY                        | Construction |
| Testwell Laboratories, Inc./Testwell<br>Industries, Inc.         | 200083-0                  | Ossining         | NY                        | PLM          |
| Testwell Laboratories, Inc./Testwell<br>Industries, Inc.         | 200083-0                  | Ossining         | NY                        | TEM          |
| Underwriters Laboratories, Inc.                                  | 100255-0                  | Melville         | NY                        | EC&T         |
| Underwriters Laboratories, Inc.                                  | 100255-0                  | Melville         | NY                        | Lighting     |
| WKP Laboratories, Inc.                                           | 101950-0                  | New York City    | NY                        | PLM          |
| <b>OH</b>                                                        |                           |                  |                           |              |
| American Electric Power (AEP), Dolan<br>Chemical Laboratory      | 102102-0                  | Groveport        | OH                        | PLM          |
| Analytical Products Group, Inc.                                  | 200384-0                  | Belpre           | OH                        | PPT          |
| DataChem Laboratories                                            | 101917-0                  | Cincinnati       | OH                        | PLM          |
| DataChem Laboratories                                            | 101917-0                  | Cincinnati       | OH                        | TEM          |
| Deka Scale, Inc., Scales and Balances                            | 200400-0                  | Toledo           | OH                        | Calibration  |
| EA Group                                                         | 101019-0                  | Mentor           | OH                        | PLM          |
| Fluor Fernald, Inc., Analytical Laboratory                       | 102010-0                  | Cincinnati       | OH                        | PLM          |

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|-------------------------------------------------------------------|---------------------------|--------------------|---------------------------|---------------|
| <b>Services</b>                                                   |                           |                    |                           |               |
| GE Lighting- Product Testing                                      | 100398-0                  | Cleveland          | OH                        | Lighting      |
| Gelles Laboratories, Division, CC Technologies                    | 101170-0                  | Dublin             | OH                        | PLM           |
| Gelles Laboratories, Division, CC Technologies                    | 101170-0                  | Dublin             | OH                        | TEM           |
| GeoCorp Industrial Controls, Inc.                                 | 200496-0                  | Huron              | OH                        | Calibration   |
| Integrex Testing Systems -Acoustic & Thermal Testing Laboratories | 100109-0                  | Granville          | OH                        | Acoustics     |
| Integrex Testing Systems -Acoustic & Thermal Testing Laboratories | 100109-0                  | Granville          | OH                        | Thermal Insl. |
| m.a.c. Paran Consulting Services, Inc.                            | 102108-0                  | Amelia             | OH                        | PLM           |
| Marlin Manufacturing Corporation                                  | 200512-0                  | Cleveland          | OH                        | Calibration   |
| McGill AirFlow Corp. Airflow and Acoustical Testing Laboratory    | 200463-0                  | Westerville        | OH                        | Acoustics     |
| NASA John H. Glenn Research Center at Lewis Field                 | 200130-0                  | Cleveland          | OH                        | PLM           |
| NOVA Machine Products                                             | 200202-0                  | Middleburg Heights | OH                        | Fasteners     |
| Ohio E.M.A. Radiological Instrument Calibration Facility          | 200419-0                  | Columbus           | OH                        | Calibration   |
| TolTest, Inc.                                                     | 101594-0                  | Toledo             | OH                        | PLM           |
| Tremco, Inc. - Roofing Division, An RPM Company                   | 101188-0                  | Beachwood          | OH                        | PLM           |
| Webber Gage Division / L.S. Starrett Co.                          | 200038-0                  | Cleveland          | OH                        | Calibration   |
| <b>OK</b>                                                         |                           |                    |                           |               |
| Air Quality Laboratories                                          | 101580-0                  | Oklahoma City      | OK                        | PLM           |
| Oklahoma Bureau of Standards                                      | 200396-0                  | Oklahoma City      | OK                        | Calibration   |
| QuanTEM Laboratories, LLC                                         | 101959-0                  | Oklahoma City      | OK                        | PLM           |
| QuanTEM Laboratories, LLC                                         | 101959-0                  | Oklahoma City      | OK                        | TEM           |
| SGS U.S. Testing Company, Inc.                                    | 100416-0                  | Tulsa              | OK                        | Commercial    |
| SGS U.S. Testing Company, Inc.                                    | 100416-0                  | Tulsa              | OK                        | Thermal Insl. |
| TEC-AN, Inc.                                                      | 200325-0                  | Oklahoma City      | OK                        | PLM           |
| <b>OR</b>                                                         |                           |                    |                           |               |
| InFocus Systems, Inc.                                             | 200152-0                  | Wilsonville        | OR                        | EC&T          |
| Northwest EMC, Inc.                                               | 200059-0                  | Hillsboro          | OR                        | EC&T          |
| Professional Service Industries, Inc., Pittsburgh Test. Lab. Div. | 100430-0                  | Eugene             | OR                        | Wood Prod.    |
| Timberco, Inc.- dba TECO                                          | 100420-0                  | Eugene             | OR                        | Wood Prod.    |
| White Environmental Consultants, Inc.                             | 200509-0                  | Tigard             | OR                        | PLM           |
| Willamette Industries, Inc. West Coast Development Lab            | 200045-0                  | Wilsonville        | OR                        | Commercial    |
| <b>PA</b>                                                         |                           |                    |                           |               |
| Accredited Environmental Technologies, Inc.                       | 101051-0                  | Media              | PA                        | PLM           |
| AGX, Inc.                                                         | 101578-0                  | Wexford            | PA                        | PLM           |
| American Testing Laboratories, Inc.                               | 100146-0                  | Lancaster          | PA                        | Construction  |
| Architectural Testing Inc.                                        | 200361-0                  | York               | PA                        | Acoustics     |
| Armstrong Acoustic Labs, Armstrong World Ind., Inc. Innov. Center | 100228-0                  | Lancaster          | PA                        | Acoustics     |
| Criterion Laboratories, Inc.                                      | 102046-0                  | Bensalem           | PA                        | PLM           |
| Dodge-Regupol, Inc. Laboratory                                    | 200030-0                  | Lancaster          | PA                        | Commercial    |

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| IIT Research Institute/R&B Operation                       | 100280-0                  | West Conshohocken  | PA                        | EC&T            |
| Keveo Services, Inc.                                       | 101941-0                  | Butler             | PA                        | PLM             |
| Laird Group PLC                                            | 200076-0                  | Delaware Water Gap | PA                        | EC&T            |
| Leveeque Technical Center                                  | 100101-0                  | Blue Bell          | PA                        | Thermal Insl.   |
| Michael & Associates                                       | 100427-0                  | State College      | PA                        | Acoustics       |
| PA DEP Bureau of Laboratories                              | 101323-0                  | Harrisburg         | PA                        | PLM             |
| PPL Susquehanna, LLC                                       | 100554-0                  | Allentown          | PA                        | Dosimetry       |
| PSC Analytical Services                                    | 101262-0                  | Reading            | PA                        | PLM             |
| PSI                                                        | 101350-0                  | Pittsburgh         | PA                        | PLM             |
| PSI                                                        | 101350-0                  | Pittsburgh         | PA                        | TEM             |
| Ram Industries Motor Test Laboratory                       | 200542-0                  | Leesport           | PA                        | Electric Motors |
| RJ Lee Group, Inc.                                         | 101208-0                  | Monroeville        | PA                        | PLM             |
| RJ Lee Group, Inc.                                         | 101208-0                  | Monroeville        | PA                        | TEM             |
| Volz Environmental Services, Inc.                          | 101269-0                  | Pittsburgh         | PA                        | PLM             |
| <b>PR</b>                                                  |                           |                    |                           |                 |
| AES International                                          | 200051-0                  | Santurce           | PR                        | PLM             |
| <b>RI</b>                                                  |                           |                    |                           |                 |
| RI Analytical Laboratories, Inc.                           | 101440-0                  | Warwick            | RI                        | PLM             |
| SNB Laboratory                                             | 200308-0                  | Cumberland         | RI                        | Fasteners       |
| <b>SC</b>                                                  |                           |                    |                           |                 |
| Davis & Floyd, Inc.                                        | 101410-0                  | Greenwood          | SC                        | PLM             |
| <b>TN</b>                                                  |                           |                    |                           |                 |
| A.O. Smith (Lexington) Engineering Laboratory              | 200053-0                  | Lexington          | TN                        | Electric Motors |
| Leland-Powell Fasteners, Inc. Fastener Testing Laboratory  | 200171-0                  | Martin             | TN                        | Fasteners       |
| National Eon Corporation                                   | 200047-0                  | Memphis            | TN                        | PLM             |
| Oak Ridge Metrology Center                                 | 105000-0                  | Oak Ridge          | TN                        | Calibration     |
| Philips Testing Service                                    | 200409-0                  | Knoxville          | TN                        | EC&T            |
| R & D Services, Inc.                                       | 200265-0                  | Cookeville         | TN                        | Thermal Insl.   |
| Tennessee Valley Authority External Dosimetry Service      | 100516-0                  | Soddy-Daisy        | TN                        | Dosimetry       |
| <b>TX</b>                                                  |                           |                    |                           |                 |
| A & B Environmental Services, Inc.                         | 101793-0                  | Houston            | TX                        | PLM             |
| Acoustic Systems Acoustical Research Facility              | 100286-0                  | Austin             | TX                        | Acoustics       |
| Analytical Environmental Services                          | 101735-0                  | Austin             | TX                        | PLM             |
| Atomic Energy Industrial Laboratory of the Southwest, Inc. | 100556-0                  | Houston            | TX                        | Dosimetry       |
| CAM Environmental Services                                 | 200240-0                  | Pasadena           | TX                        | PLM             |
| Compaq Computer Corp. Emissions Control Lab                | 200058-0                  | Houston            | TX                        | EC&T            |
| Compaq Corporate Metrology                                 | 200154-0                  | Houston            | TX                        | Calibration     |
| Crisp Analytical Laboratory                                | 200349-0                  | Carrollton         | TX                        | PLM             |
| Crisp Analytical Laboratory                                | 200349-0                  | Carrollton         | TX                        | TEM             |
| Dell Regulatory Test Laboratories                          | 200052-0                  | Round Rock         | TX                        | Acoustics       |
| Dell Regulatory Test Laboratories                          | 200052-0                  | Round Rock         | TX                        | EC&T            |
| DH Analytical Services                                     | 102086-0                  | Stafford           | TX                        | PLM             |

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| EcoSystems Environmental, Inc.                      | 101162-0          | Carrollton  | TX                | PLM             |
| EMSL Analytical, Inc.                               | 102106-0          | Houston     | TX                | PLM             |
| EMSL Analytical, Inc.                               | 102106-0          | Houston     | TX                | TEM             |
| EMSL Analytical, Inc.                               | 200034-0          | Dallas      | TX                | PLM             |
| EMSL Analytical, Inc.                               | 200034-0          | Dallas      | TX                | TEM             |
| Envirotest, Inc.                                    | 101595-0          | Houston     | TX                | PLM             |
| ERI Consulting Engineers, Inc.                      | 101232-0          | Tyler       | TX                | PLM             |
| HIH Laboratory, Inc.                                | 101233-0          | Webster     | TX                | PLM             |
| Houston Analytical Laboratory                       | 200473-0          | Houston     | TX                | PLM             |
| IBM Austin EMC                                      | 200112-0          | Austin      | TX                | EC&T            |
| J3 Resources, Inc.                                  | 200525-0          | Houston     | TX                | PLM             |
| J3 Resources, Inc.                                  | 200525-0          | Houston     | TX                | TEM             |
| Loflin Environmental Services, Inc.                 | 102044-0          | Houston     | TX                | PLM             |
| McKee Environmental Health, Inc.                    | 101135-0          | Friendswood | TX                | PLM             |
| Metroplex Metrology Lab, Inc.                       | 200262-0          | Fort Worth  | TX                | Calibration     |
| Micro Air of Texas, Inc.                            | 102008-0          | Houston     | TX                | PLM             |
| National Technical Systems                          | 200245-0          | Plano       | TX                | EC&T            |
| Nemko Dallas, Inc.                                  | 100426-0          | Lewisville  | TX                | EC&T            |
| Omni Environmental, Inc.                            | 102061-0          | Austin      | TX                | PLM             |
| PCI Industries Acoustical Testing Laboratories      | 200453-0          | Fort Worth  | TX                | Acoustics       |
| Professional Testing (EMI), Inc.                    | 200062-0          | Round Rock  | TX                | EC&T            |
| Quest MicroAnalytics                                | 200249-0          | Dallas      | TX                | PLM             |
| Ruska Calibration Laboratory                        | 200491-0          | Houston     | TX                | Calibration     |
| South Texas Project Dosimetry Laboratory            | 100519-0          | Wadsworth   | TX                | Dosimetry       |
| Steve Moody Micro Services, Inc.                    | 102056-0          | Carrollton  | TX                | PLM             |
| Steve Moody Micro Services, Inc.                    | 102056-0          | Carrollton  | TX                | TEM             |
| Sun City Analytical, Inc.                           | 101870-0          | El Paso     | TX                | PLM             |
| TDK RF Solutions Inc.                               | 200430-0          | Cedar Park  | TX                | EC&T            |
| Toshiba/Houston Test Laboratory                     | 200088-0          | Houston     | TX                | Electric Motors |
| TUViT, IT Security Laboratory                       | 200428-0          | Austin      | TX                | Common          |
| TXU Electric - Comanche Peak Steam Electric Station | 100528-0          | Glen Rose   | TX                | Dosimetry       |
| US Air Force Center for Radiation Dosimetry         | 100548-0          | Brooks AFB  | TX                | Dosimetry       |
| Wayne Langston, Inc.                                | 200021-0          | League City | TX                | EC&T            |

## UT

|                                        |          |                 |    |             |
|----------------------------------------|----------|-----------------|----|-------------|
| Communication Certification Laboratory | 100272-0 | Salt Lake City  | UT | EC&T        |
| Dixon Information Inc.                 | 101012-0 | South Salt Lake | UT | PLM         |
| Hart Scientific Calibration Laboratory | 200348-0 | American Fork   | UT | Calibration |

## VA

|                                                            |          |            |    |               |
|------------------------------------------------------------|----------|------------|----|---------------|
| American Medical Laboratories, Inc.                        | 101136-0 | Chantilly  | VA | PLM           |
| Analytics Corporation                                      | 101004-0 | Richmond   | VA | PLM           |
| Applied Environmental, Inc.                                | 101611-0 | Reston     | VA | PLM           |
| Applied Laboratory Services, LLC                           | 200515-0 | Norfolk    | VA | PLM           |
| Atlan Laboratories                                         | 200492-0 | McLean     | VA | Cryptographic |
| Auditory Systems Laboratory, ISE Department, Virginia Tech | 200479-0 | Blacksburg | VA | Acoustics     |
| Cygnacom Solutions, Inc. An Entrust Company                | 200002-0 | McLean     | VA | Common        |
| Cygnacom Solutions, Inc. An Entrust Company                | 200002-0 | McLean     | VA | Cryptographic |



# INDEX C. LISTING BY STATE/COUNTRY - continued

| LABORATORY NAME                                                      | NVLAP<br>LAB CODE | CITY           | STATE/<br>COUNTRY | FIELD       |
|----------------------------------------------------------------------|-------------------|----------------|-------------------|-------------|
| Environmental Hazards Services, L.L.C.                               | 101882-0          | Richmond       | VA                | PLM         |
| Environmental Testing and Monitoring<br>Services, Inc.               | 200131-0          | Virginia Beach | VA                | PLM         |
| Holmes Environmental, Inc.                                           | 200467-0          | Norfolk        | VA                | PLM         |
| Hubbell Lighting Photometric Laboratory                              | 200020-0          | Christiansburg | VA                | Lighting    |
| Industrial Laboratory                                                | 102115-0          | Portsmouth     | VA                | PLM         |
| Newport News Shipbuilding Radiological<br>Control Department         | 100561-0          | Newport News   | VA                | Dosimetry   |
| Philip Morris Standards and Calibration<br>Laboratory                | 200359-0          | Richmond       | VA                | Calibration |
| Proxtronic, Inc.                                                     | 100573-0          | Springfield    | VA                | Dosimetry   |
| Rhein Tech Laboratories, Inc.                                        | 200061-0          | Herndon        | VA                | EC&T        |
| RJ Lee Group, Inc.                                                   | 101208-3          | Manassas       | VA                | PLM         |
| RJ Lee Group, Inc.                                                   | 101208-3          | Manassas       | VA                | TEM         |
| Schneider Laboratories, Inc.                                         | 101150-0          | Richmond       | VA                | PLM         |
| Scientific Laboratories, Inc.                                        | 101904-0          | Midlothian     | VA                | PLM         |
| Scientific Laboratories, Inc.                                        | 101904-0          | Midlothian     | VA                | TEM         |
| State of Virginia Metrology Lab                                      | 105007-0          | Richmond       | VA                | Calibration |
| <b>VT</b>                                                            |                   |                |                   |             |
| Microcheck, Inc.                                                     | 200391-0          | Northfield     | VT                | PPT         |
| Vermont Fasteners Manufacturing                                      | 200254-0          | Swanton        | VT                | Fasteners   |
| <b>WA</b>                                                            |                   |                |                   |             |
| APA - The Engineered Wood Association<br>Research Center             | 100423-0          | Tacoma         | WA                | Wood Prod.  |
| Battelle - Pacific Northwest National<br>Laboratory                  | 200216-0          | Richland       | WA                | Dosimetry   |
| BCAG Fastener Quality Test Lab Everett Site                          | 200292-0          | Seattle        | WA                | Fasteners   |
| Clayton Group Services                                               | 101106-0          | Seattle        | WA                | PLM         |
| Fluke Corporation Primary Standards<br>Laboratory                    | 105016-0          | Everett        | WA                | Calibration |
| Key Tronic Corp.                                                     | 200096-0          | Spokane        | WA                | EC&T        |
| Lab/Cor, Inc.                                                        | 101920-0          | Seattle        | WA                | TEM         |
| Mountain Laboratories                                                | 101890-0          | Spokane        | WA                | PLM         |
| Naval Nuclear Propulsion Program<br>Directorate, Washington, DC      | 100565-0          | Bremerton      | WA                | Dosimetry   |
| Northern Industrial Hygiene, Inc.                                    | 200511-0          | Burien         | WA                | PLM         |
| Nowicki & Associates, Inc.                                           | 200322-0          | Federal Way    | WA                | PLM         |
| NVL Laboratories, Inc.                                               | 102063-0          | Seattle        | WA                | PLM         |
| Pacific Northwest National Laboratory /<br>Battelle                  | 105020-0          | Richland       | WA                | Calibration |
| Pacific Rim Environmental, Inc.                                      | 101631-0          | Tukwila        | WA                | PLM         |
| Puget Sound Naval Shipyard                                           | 101539-0          | Bremerton      | WA                | PLM         |
| Safe Environment of America, Inc.                                    | 102021-0          | Auburn         | WA                | PLM         |
| Strategic Weapons Fac. Pacific Cal. Lab.<br>Oper. by Lockheed Martin | 200406-0          | Silverdale     | WA                | Calibration |
| Underwriters Laboratories Inc.                                       | 200214-0          | Camas          | WA                | EC&T        |
| United States Dosimetry Technology, Inc.                             | 100571-0          | Richland       | WA                | Dosimetry   |
| Washington State Department of Agriculture<br>Metrology Laboratory   | 200446-0          | Tumwater       | WA                | Calibration |

**INDEX C. LISTING BY STATE/COUNTRY - continued**

| <b>LABORATORY NAME</b>                                              | <b>NVLAP<br/>LAB CODE</b> | <b>CITY</b>                | <b>STATE/<br/>COUNTRY</b> | <b>FIELD</b>    |
|---------------------------------------------------------------------|---------------------------|----------------------------|---------------------------|-----------------|
| <b>WI</b>                                                           |                           |                            |                           |                 |
| Bella Donna Labs Inc.                                               | 101868-0                  | Wauwatosa                  | WI                        | PLM             |
| Hufcor Acoustical Laboratory                                        | 100239-0                  | Janesville                 | WI                        | Acoustics       |
| Marathon Electric - Wausau Engineering Lab.                         | 200134-0                  | Wausau                     | WI                        | Electric Motors |
| Micro Analytical, Inc.                                              | 101247-0                  | Milwaukee                  | WI                        | PLM             |
| PFS Corporation                                                     | 100421-0                  | Madison                    | WI                        | Wood Prod.      |
| Regal Beloit Motor Technologies Group -<br>Grafton Engineering Lab  | 200483-0                  | Grafton                    | WI                        | Electric Motors |
| Rice Lake Weighing Systems                                          | 105001-0                  | Rice Lake                  | WI                        | Calibration     |
| Twin Ports Testing, Inc.                                            | 102083-0                  | Superior                   | WI                        | PLM             |
| University of Wisconsin Radiation<br>Calibration Laboratory         | 200470-0                  | Madison                    | WI                        | Dosimetry       |
| Wisconsin Occupational Health Laboratory                            | 101109-0                  | Madison                    | WI                        | PLM             |
| <b>WV</b>                                                           |                           |                            |                           |                 |
| Triad Environmental Consulting, Inc.                                | 102073-0                  | Huntington                 | WV                        | PLM             |
| <b>WY</b>                                                           |                           |                            |                           |                 |
| Resource Technology Corporation (RTC)                               | 200393-0                  | Laramie                    | WY                        | PPT             |
| <b>BRAZIL</b>                                                       |                           |                            |                           |                 |
| Belgo-Mineira Chemical Laboratory                                   | 200497-0                  | 35.930-900 Joao Monlevade, | BRAZIL                    | Fasteners       |
| <b>CANADA</b>                                                       |                           |                            |                           |                 |
| Chatfield Technical Consulting Limited                              | 101103-0                  | Mississauga Ontario        | CANADA                    | PLM             |
| CSA International                                                   | 100322-0                  | Toronto Ontario            | CANADA                    | Commercial      |
| CSA International                                                   | 100322-0                  | Toronto Ontario            | CANADA                    | EC&T            |
| DOMUS Information Technology Security<br>Laboratory                 | 200017-0                  | Ottawa Ontario             | CANADA                    | Cryptographic   |
| Electronics Test Centre                                             | 200282-0                  | Kanata, Ont.               | CANADA                    | EC&T            |
| EWA - Canada Ltd, IT Security Evaluation<br>Facility                | 200556-0                  | Ottawa Ontario             | CANADA                    | Cryptographic   |
| Ingersoll Fasteners                                                 | 200208-0                  | Ingersoll Ontario          | CANADA                    | Fasteners       |
| Ivaco Rolling Mills, Chemistry Laboratory                           | 200143-0                  | L'Orignal Ontario          | CANADA                    | Fasteners       |
| LEX Scientific Inc.                                                 | 101949-0                  | Guelph Ontario             | CANADA                    | PLM             |
| MDS Nordion Dosimetry Laboratory                                    | 200370-0                  | Kanata Ontario             | CANADA                    | Calibration     |
| Nortel Networks BVW Lab                                             | 200098-0                  | Belleville, Ontario        | CANADA                    | EC&T            |
| Pinchin Environmental Ltd.                                          | 101270-0                  | Mississauga Ontario        | CANADA                    | PLM             |
| Small IAC Test Laboratory                                           | 200287-0                  | Peterborough, ON           | CANADA                    | Electric Motors |
| UltraTech Engineering Labs Inc.                                     | 200093-0                  | Oakville, Ontario          | CANADA                    | EC&T            |
| United Testing Sys. Canada, Ltd., Dynamic<br>Testing Sys. Int. Inc. | 200311-0                  | Concord Ontario            | CANADA                    | Calibration     |
| Vibro-Acoustics Laboratory                                          | 100424-0                  | Scarborough Ontario        | CANADA                    | Acoustics       |
| <b>CHINA</b>                                                        |                           |                            |                           |                 |
| Audix Technology (Shanghai) Co., Ltd.                               | 200371-0                  | Shanghai                   | CHINA                     | EC&T            |
| AUDIX Technology (Shenzhen) Co., Ltd.                               | 200372-0                  | Shenzhen, Guangdong        | CHINA                     | EC&T            |
| Shanghai Testing & Inspection Institute for<br>Electrical Equipment | 200407-0                  | Shanghai                   | CHINA                     | Electric Motors |

**INDEX C. LISTING BY STATE/COUNTRY - continued**

| <b>LABORATORY NAME</b>                                            | <b>NVLAP<br/>LAB CODE</b> | <b>CITY</b>               | <b>STATE/<br/>COUNTRY</b> | <b>FIELD</b>    |
|-------------------------------------------------------------------|---------------------------|---------------------------|---------------------------|-----------------|
| <b>INDIA</b>                                                      |                           |                           |                           |                 |
| Sundram Fasteners Limited (Inhouse test laboratory)               | 200212-0                  | Chennai (Madras),Tamil    | INDIA                     | Fasteners       |
| Sundram Fasteners Limited Chemical Testing Laboratory             | 200256-0                  | Andhra Pradesh            | INDIA                     | Fasteners       |
| <b>JAPAN</b>                                                      |                           |                           |                           |                 |
| A-Pex International Co., Ltd. Yamakita Laboratory                 | 200441-0                  | Ashigarakami-gun          | JAPAN                     | EC&T            |
| A-Pex International Co., Ltd. Yokowa Laboratory                   | 200109-0                  | Mie-ken                   | JAPAN                     | EC&T            |
| Advantest Analysis Laboratory Ltd. EMC Center                     | 200477-0                  | Gunma                     | JAPAN                     | EC&T            |
| Akzo Nobel K.K. Kawasaki Technical Center                         | 200300-0                  | Kawasaki                  | JAPAN                     | EC&T            |
| Akzo Nobel K.K., Kakegawa EMC Test Site                           | 100290-2                  | Shizuoka                  | JAPAN                     | EC&T            |
| Akzo Nobel K.K., Kashima EMC Site                                 | 100290-0                  | Ibaraki                   | JAPAN                     | EC&T            |
| Akzo Nobel K.K., Matsuda EMC Test Site                            | 100290-4                  | Kanagawa                  | JAPAN                     | EC&T            |
| Akzo Nobel K.K., Nagano EMC Test Site                             | 100290-3                  | Nagano                    | JAPAN                     | EC&T            |
| Akzo Nobel K.K., Tochigi EMC Test Site                            | 100290-5                  | Tochigi                   | JAPAN                     | EC&T            |
| Anritsu Customer Services Ltd. EMC Center                         | 200550-0                  | Kanagawa-Prf.             | JAPAN                     | EC&T            |
| Benesol Corp.                                                     | 200438-0                  | Sagamihara-shi, Kanagawa  | JAPAN                     | EC&T            |
| Canon D5 RF Anechoic Chamber; FCC Part 15; CISPR 22/AS/NZS 3548   | 200478-0                  | Ibaraki                   | JAPAN                     | EC&T            |
| Chemitox EMC Research, Inc.                                       | 200120-0                  | Yamanashi-ken             | JAPAN                     | EC&T            |
| Cosmos Corporation                                                | 200151-0                  | Watarai-gun Mie           | JAPAN                     | EC&T            |
| Fuji Buhin Industries Inc.                                        | 200203-0                  | Ohta Gunma                | JAPAN                     | Fasteners       |
| Fujitsu Evaluation Engineering Laboratory                         | 200281-0                  | Numazu, Shizuoka-Pref.    | JAPAN                     | EC&T            |
| Fujitsu General EMC Laboratory                                    | 200373-0                  | Kawasaki                  | JAPAN                     | EC&T            |
| Hitachi Information Technology Co., Ltd.                          | 200186-0                  | Kanagawa                  | JAPAN                     | EC&T            |
| IBM Yamato EMC Engineering                                        | 200198-0                  | Yamato Kanagawa           | JAPAN                     | EC&T            |
| IPS Corporation                                                   | 200012-0                  | Nagano                    | JAPAN                     | Calibration     |
| IPS Corporation                                                   | 200012-0                  | Nagano                    | JAPAN                     | EC&T            |
| Japan Quality Assurance Org. Chubu Testing Center Shikatsu Branch | 200190-0                  | Aichi                     | JAPAN                     | EC&T            |
| Japan Quality Assurance Org. Safety & EMC Ctr. Tsuru EMC Branch   | 200192-0                  | Yamanashi                 | JAPAN                     | EC&T            |
| Japan Quality Assurance Organization Kita-Kansai Testing Center   | 200191-0                  | Osaka                     | JAPAN                     | EC&T            |
| Japan Quality Assurance Organization Safety & EMC Center          | 200189-0                  | Tokyo                     | JAPAN                     | EC&T            |
| Kansai Electronic Industry Development Center, Ikoma Testing Lab. | 200207-0                  | Ikoma Nara                | JAPAN                     | EC&T            |
| Kobelco Research Institute, Inc. Stock Company                    | 200169-0                  | Kobe                      | JAPAN                     | Fasteners       |
| Kyowa Kogyosyo Co., Ltd. Test Laboratory                          | 200274-0                  | Komatsu City, Ishikawa    | JAPAN                     | Fasteners       |
| Kyushu Matsushita Electric Test Lab EMC Center                    | 200364-0                  | Tosu-shi Saga-ken         | JAPAN                     | EC&T            |
| Matsushita EMC Center                                             | 100428-0                  | Sasayama, Hyogo           | JAPAN                     | EC&T            |
| Minebea Co., Ltd. Fujisawa Manufacturing Unit                     | 200229-0                  | Fujisawa, Kanagawa        | JAPAN                     | Fasteners       |
| Minolta Co., Ltd. Toyokawa EMC Lab                                | 200434-0                  | Toyokawa, Aichi           | JAPAN                     | EC&T            |
| Motor Test Lab of Toshiba Industrial                              | 200529-0                  | Asahi-cho Mie-gun Mie-ken | JAPAN                     | Electric Motors |

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| <b>LABORATORY NAME</b>                                           | <b>NVLAP<br/>LAB CODE</b> | <b>CITY</b>               | <b>STATE/<br/>COUNTRY</b> | <b>FIELD</b> |
|------------------------------------------------------------------|---------------------------|---------------------------|---------------------------|--------------|
| Products Manufacturing Corp.                                     |                           |                           |                           |              |
| Murata Mfg. Co., Ltd. Yokohama Technical Center EMM Office       | 200263-0                  | Kanagawa                  | JAPAN                     | EC&T         |
| NEC Access Technica, Ltd. EMC Center                             | 200488-0                  | Shizuoka-ken              | JAPAN                     | EC&T         |
| NEC Kofu, Ltd., EMC Center                                       | 200433-0                  | Yamanashi                 | JAPAN                     | EC&T         |
| Niigata Fuji Xerox Manufacturing Co., Ltd. EMC Group             | 200490-0                  | Niigata                   | JAPAN                     | EC&T         |
| O & K Company Limited, Osaka Test Center                         | 200166-0                  | Osaka-Shi                 | JAPAN                     | Fasteners    |
| Ohtama Co., Ltd. Yamanashi EMC Test Site                         | 200175-0                  | Yamanashi                 | JAPAN                     | EC&T         |
| Okawa Laboratory                                                 | 200296-0                  | Naka-gun, Ibaraki-ken     | JAPAN                     | Fasteners    |
| Oki Engineering Co., Ltd. EMC Honjo Center                       | 200519-0                  | Honjo-shi, Saitama        | JAPAN                     | EC&T         |
| Olympus EMC Laboratory                                           | 200472-0                  | Tokyo                     | JAPAN                     | EC&T         |
| ORIX Rentec EMC Center; Electromagnetic Compatibility            | 200404-0                  | Aiko-Gun, Kanagawa        | JAPAN                     | EC&T         |
| PFU TECHNOCONSUL EMC Center                                      | 200259-0                  | Ishikawa-Ken              | JAPAN                     | EC&T         |
| Ricoh Company LTD. Ohmori Acoustics Test Site                    | 200345-0                  | Tokyo                     | JAPAN                     | Acoustics    |
| Ricoh Company, Ltd. Ohmori EMC Center                            | 200163-0                  | Tokyo                     | JAPAN                     | EC&T         |
| Seiko Epson Corporation                                          | 200157-0                  | Shiojiri-City Nagano      | JAPAN                     | EC&T         |
| Sharp Nara EMC Center, EMI Measurement for ITE                   | 200457-0                  | Yamatokooryama-shi Nara   | JAPAN                     | EC&T         |
| Sony EMCS Corp. Kohda TEC                                        | 200398-0                  | Nukata-gun Aichi          | JAPAN                     | EC&T         |
| Sony EMCS Corporation Minokamo TEC                               | 200368-0                  | Gifu-Pref.                | JAPAN                     | EC&T         |
| Sony EMCS Saotama TEC EMC Test Laboratory                        | 200456-0                  | Saitama-ken               | JAPAN                     | EC&T         |
| Sony Kisarazu EMC Test Laboratory                                | 200432-0                  | Kisarazu Chiba            | JAPAN                     | EC&T         |
| Sony Nagano EMC Test Laboratory                                  | 200553-0                  | Nagano-ken                | JAPAN                     | EC&T         |
| Sumitomo Metals (Kokura), Ltd. Quality System Section            | 200215-0                  | Kitakyushu                | JAPAN                     | Fasteners    |
| Syonan Site Testing Laboratory as Conducted & Radiated Emissions | 200482-0                  | Kanagawa                  | JAPAN                     | EC&T         |
| TDK Corporation's 10m Anechoic Chamber & 3m Anechoic Chamber     | 200309-0                  | Ichikawa-shi, Chiba-ken   | JAPAN                     | EC&T         |
| TDK Corporation's Chikumagawa Open Site                          | 200319-0                  | Saku-shi, Nagano-ken      | JAPAN                     | EC&T         |
| TEAC Corporation EMC Center                                      | 200362-0                  | Saitama-ken               | JAPAN                     | EC&T         |
| Tokin EMC Engineering Co., Ltd. Kawasaki Facility                | 200217-0                  | Kawasaki-city, Kanagawa   | JAPAN                     | EC&T         |
| Tokin EMC Engineering Co., Ltd. Nagoya Testing Laboratory        | 200219-0                  | Daian-cho, Inabe-gun, Mie | JAPAN                     | EC&T         |
| Tokin EMC Engineering Co., Ltd. Osaka Testing Laboratory         | 200218-0                  | Sanda-city, Hyogo         | JAPAN                     | EC&T         |
| Tokin EMC Engineering Co., Ltd. Tsukuba Testing Laboratory       | 200221-0                  | Tsukuba-city, Ibaraki     | JAPAN                     | EC&T         |
| Toshiba Corp., Ome Operations                                    | 200107-0                  | Ome Tokyo                 | JAPAN                     | EC&T         |
| Wave Corporation                                                 | 200549-0                  | Tano-gun, Gunma           | JAPAN                     | EC&T         |
| Yamaha EMC Center                                                | 200455-0                  | Tenryu-shi, Shizuoka-ken  | JAPAN                     | EC&T         |
| Zacta Technology Corporation Yonezawa Testing Center             | 200306-0                  | Yonezawa-shi Yamagata     | JAPAN                     | EC&T         |



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| LABORATORY NAME                                             | NVLAP<br>LAB CODE | CITY                     | STATE/<br>COUNTRY | FIELD           |
|-------------------------------------------------------------|-------------------|--------------------------|-------------------|-----------------|
| <b>KOREA</b>                                                |                   |                          |                   |                 |
| Digital EMC., Ltd.                                          | 200559-0          | Kyunggi-Do               | KOREA             | EC&T            |
| LG Electronics, Inc., Quality and Reliability Center        | 200040-0          | Seoul                    | KOREA             | EC&T            |
| Samsung Electronics EMC Laboratory                          | 200447-0          | Suwon, Kyungki Do        | KOREA             | EC&T            |
| SK Tech Co., LTD.                                           | 200220-0          | Namyangju-si, Kyunggi-Do | KOREA             | EC&T            |
| <b>MALAYSIA</b>                                             |                   |                          |                   |                 |
| Teco Industry (Malaysia) SDN. BHD.                          | 200476-0          | Penang                   | MALAYSIA          | Electric Motors |
| <b>MEXICO</b>                                               |                   |                          |                   |                 |
| Prottsa, S.A. de C.V.                                       | 200261-0          | Mexico City              | MEXICO            | Fasteners       |
| USEM de Mexico, S.A. de C.V.                                | 200506-0          | Apodaca NL               | MEXICO            | Electric Motors |
| <b>TAIWAN</b>                                               |                   |                          |                   |                 |
| Advance Data Technology Corporation                         | 200102-0          | Taipei Hsien             | TAIWAN            | EC&T            |
| Advance Data Technology Corporation Hsin Chu EMC Laboratory | 200376-0          | Hsin Chu Hsien           | TAIWAN            | EC&T            |
| Best Laboratory                                             | 200484-0          | Taipei Hsein             | TAIWAN            | EC&T            |
| Electronic Research & Service Organization/ITRI             | 200118-0          | Chutung Hsinchu          | TAIWAN            | EC&T            |
| Electronics Testing Center, Taiwan                          | 200133-0          | Taoyuan Hsien            | TAIWAN            | EC&T            |
| Fong Preat Industrial Co., Ltd.                             | 200288-0          | Kaohsiung Hsien          | TAIWAN            | Fasteners       |
| Global EMC Standard Tech. Corp.                             | 200085-0          | Taipei County            | TAIWAN            | EC&T            |
| HomeTek Technology Inc.                                     | 200331-0          | Taipei Shien             | TAIWAN            | EC&T            |
| International Standards Laboratory                          | 200234-0          | Tao Yaun County          | TAIWAN            | EC&T            |
| Interocean EMC Technology Corp.                             | 200458-0          | Taipei County            | TAIWAN            | EC&T            |
| Inventec Corp. (Taoyuan) EMC Labs                           | 200140-0          | Taoyuan                  | TAIWAN            | EC&T            |
| Neutron Engineering Inc.                                    | 200145-0          | Taipei                   | TAIWAN            | EC&T            |
| PEP Testing Laboratory                                      | 200097-0          | Taipei Hsien             | TAIWAN            | EC&T            |
| Philips Electronics Industries (TAIWAN) Ltd.                | 200137-0          | Chungli, Taoyuan         | TAIWAN            | EC&T            |
| Quietek Corporation                                         | 200347-0          | Hsin-Chu Country         | TAIWAN            | EC&T            |
| Quitek Corporation                                          | 200533-0          | Lin Kou Shiang, Taipei   | TAIWAN            | EC&T            |
| Radiation Laboratory, Taiwan Power Company                  | 100562-0          | Shihmen, Taipei          | TAIWAN            | Dosimetry       |
| San Shing Hardware Works Co., Ltd. Test Laboratory          | 200158-0          | Tainan                   | TAIWAN            | Fasteners       |
| Spectrum Research & Testing Laboratory, Inc.                | 200099-0          | Chung-Li, Taoyuan        | TAIWAN            | EC&T            |
| Sporton International, Inc.                                 | 200079-0          | Taipei Hsien             | TAIWAN            | EC&T            |
| Taiwan Tokin EMC Eng. Corp.                                 | 200077-0          | Taipei                   | TAIWAN            | EC&T            |
| TECO Electric & Machinery Co., Ltd.                         | 200378-0          | Taoyuan                  | TAIWAN            | Electric Motors |
| Training Research Co., Ltd.                                 | 200174-0          | Taipei Hsien             | TAIWAN            | EC&T            |
| <b>UNITED KINGDOM</b>                                       |                   |                          |                   |                 |
| Environmental and EMC Test Centre                           | 200304-0          | Kent                     | U. K.             | EC&T            |
| Thermo Spectronic                                           | 200462-0          | Cambridge                | U. K.             | NTRMs           |

**INDEX**

**D**

**LISTING OF  
TESTING  
LABORATORIES  
BY NVLAP  
LAB CODE**



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE****NVLAP LAB CODE 100101-0****Levecque Technical Center**

1400 Union Meeting Road  
P.O. Box 1100  
Blue Bell, PA 19422-0761  
Contact: Mr. Peter Herault  
Phone: 610-341-6376  
Fax: 610-341-6291  
E-Mail: pete.c.herault@saint-gobain.com

**Thermal Insulation Materials**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| <i>Code</i> | <i>Designation</i> |
|-------------|--------------------|
|-------------|--------------------|

**Canadian Standards (Specifications)**

|         |                                                                                                                                        |
|---------|----------------------------------------------------------------------------------------------------------------------------------------|
| 01/W03  | CAN/CGSB-51.10-92                                                                                                                      |
| 01/W04  | CAN/CGSB-51.11-92                                                                                                                      |
| 01/WNOT | Note: Scope excludes CGSB 51-GP-52M; however, ASTM E96 & ASTM D828 are included where specified in the Canadian Standards (01/W02-W04) |

**Corrosiveness**

|        |                    |
|--------|--------------------|
| 01/C02 | 16 CFR-Part 1209.5 |
|--------|--------------------|

**Flammability**

|        |                    |
|--------|--------------------|
| 01/F01 | TAPPI T461-OM      |
| 01/F05 | ASTM E136          |
| 01/F07 | 16 CFR-Part 1209.6 |
| 01/F08 | 16 CFR-Part 1209.7 |

**Mass, Density, and Dimensional Stability**

|        |                                    |
|--------|------------------------------------|
| 01/D01 | ASTM C136                          |
| 01/D02 | ASTM C167                          |
| 01/D09 | ASTM C303                          |
| 01/D11 | ASTM C356                          |
| 01/D12 | ASTM C411                          |
| 01/D24 | ASTM C739 (Sec. 12)                |
| 01/D26 | 16 CFR-Part 1209.4                 |
| 01/D27 | ASTM C739 (Sec. 8)                 |
| 01/D31 | MIL-I-22344D (Para. 4.6.3, 4.6.4.) |

**Related Material Properties**

|        |                   |
|--------|-------------------|
| 01/V04 | ASTM E96          |
| 01/V07 | ASTM C1104/C1104M |

**Strength**

|         |                     |
|---------|---------------------|
| 01/S01b | ASTM C165 (Proc. B) |
| 01/S10  | ASTM D828           |
| 01/S15  | ASTM C421           |
| 01/S16  | ASTM C1101/C1101M   |

**Thermal Resistance**

|        |           |
|--------|-----------|
| 01/T01 | ASTM C177 |
| 01/T04 | ASTM C236 |
| 01/T05 | ASTM C335 |
| 01/T06 | ASTM C518 |
| 01/T09 | ASTM C653 |
| 01/T10 | ASTM C687 |

**NVLAP LAB CODE 100103-0****Dow Chemical N. America Foam Products****Research, Prod. Perf. Lab.**

1605 Joseph Drive  
Midland, MI 48674  
Contact: Ms. Linda Hess  
Phone: 989-636-5069  
Fax: 989-636-0194  
E-Mail: linda.hess@dow.com

**Thermal Insulation Materials**

Accreditation Valid Through: December 31, 2002

**NVLAP**

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|-------------|--------------------|
|-------------|--------------------|

**Mass, Density, and Dimensional Stability**

|        |                             |
|--------|-----------------------------|
| 01/D04 | ASTM C209 (Sec. 14, 2 hour) |
| 01/D07 | ASTM C272                   |
| 01/D18 | ASTM D1622                  |
| 01/D19 | ASTM D2126                  |
| 01/D23 | ASTM D2842                  |

**Related Material Properties**

|        |          |
|--------|----------|
| 01/V04 | ASTM E96 |
|--------|----------|

**Strength**

|        |                                            |
|--------|--------------------------------------------|
| 01/S02 | ASTM C203                                  |
| 01/S06 | ASTM C209 (Sec. 13)                        |
| 01/S07 | ASTM C273                                  |
| 01/S11 | ASTM D1621 (Proc. A of ASTM Practice D618) |

**Thermal Resistance**

|        |           |
|--------|-----------|
| 01/T06 | ASTM C518 |
|--------|-----------|

**NVLAP LAB CODE 100104-0****NAHB Research Center, Inc.**

400 Prince George's Boulevard  
Upper Marlboro, MD 20774-8731  
Contact: Mr. Robert L. Hill, P.E.  
Phone: 301-430-6244  
Fax: 301-430-6184  
E-Mail: bhill@nahbrc.org  
URL: <http://www.nahbrc.org>

**Thermal Insulation Materials**

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|-------------|--------------------|

**Mass, Density, and Dimensional Stability**

|        |                    |
|--------|--------------------|
| 01/D02 | ASTM C167          |
| 01/D13 | ASTM C519          |
| 01/D27 | ASTM C739 (Sec. 8) |

**Thermal Resistance**

|        |           |
|--------|-----------|
| 01/T06 | ASTM C518 |
| 01/T09 | ASTM C653 |
| 01/T10 | ASTM C687 |

**Commercial Products Testing**

Accreditation Valid Through: December 31, 2002

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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****Paints and Related Coatings and Materials**

09/A20 ASTM D2244

**Plastics**

15/A01 ASTM D256

15/A06 ASTM D638

15/A10 ASTM D790

15/A18 ASTM D2565

15/A19 ASTM D2583

15/A31 ASTM D570

15/A32 ASTM D792

**Plumbing**

19/M01 ICC/ANSI A117.1 (Sec. 609, 610)

19/M02 ASME/ANSI A112.19.7M (Sec. 5, 7)

19/M04 ASTM F446

19/M05 ASTM F462

19/P01 ANSI Z124.1 (Sec. 4, 5, 6)

19/P02 ANSI Z124.2 (Sec. 4, 5, 6)

19/P03 ANSI Z124.3 (Sec. 4, 5, 6)

19/P03a ANSI/ICPA-SS-1 (Sec. 4, 5, 6)

19/P04 ANSI Z124.4 (Sec. 4, 5)

19/P05 ANSI Z124.4 (Sec. 2.11) per ASME  
A112.19.6M (Sec. 7.1)

19/P06 ANSI/IAPMO Z124.6 (Sec. 4, 5, 6)

19/P07 ANSI/IAPMO Z124.8 (Sec. 4, 5)

19/V01 ASME A112.19.2M (Sec. 8.1)

19/V02 ASME A112.19.2M (Sec. 8.2)

19/V03 ASME A112.19.2M (Sec. 8.3)

19/V04 ASME A112.19.2M (Sec. 8.7)

19/V06 ASME A112.19.2M (Sec. 8.5)

19/W01 ASME A112.19.6 (Sec. 7.1.2)

19/W02 ASME A112.19.6 (Sec. 7.1.3)

19/W03 ASME A112.19.6 (Sec. 7.1.4)

19/W04 ASME A112.19.6 (Sec. 7.1.5)

19/W05 ASME A112.19.6 (Sec. 7.1.6)

19/W06 ASME A112.19.6 (Sec. 7.1.7)

19/W07 ASME A112.19.6 (Sec. 7.1.8)

19/W08 ASME A112.19.6 (Sec. 7.1.9)

**NVLAP LAB CODE 100108-0****TSi, Testing Services, Inc.**

817 Showalter Avenue

P.O. Box 2041

Dalton, GA 30721

Contact: Mr. Erle W. Miles, Jr.

Phone: 706-226-1400

Fax: 706-226-6118

E-Mail: emiles@alltel.net

URL: <http://www.tsiodalton.com>**Carpet and Carpet Cushion**

Accreditation Valid Through: December 31, 2002

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|------|-------------|
|------|-------------|

**Tests Applicable to Carpet Cushion**

03/U01a ASTM D3574 (Sec. 8.2 &amp; Test A)

03/U01b ASTM D3676 (Secs. 10-12)

03/U02 ASTM D297

03/U03 ASTM D629 (Sec. 10)

03/U04 ASTM D629 (Secs. 13-22)

03/U05 ASTM D629 (Secs. 23-27)

03/U06 ASTM D1667 (Suffix B)

03/U07 ASTM D3574 (Test C)

03/U08 ASTM D3574 (Test D)

03/U09 ASTM D3574 (Test E)

03/U10 ASTM D3676 (Sec. 13)

03/U11 ASTM D3676 (Sec.14)

03/U12 ASTM D3676 (Sec.15)

03/U13 ASTM D3676 (Sec.16)

**Tests Applicable to Carpet and Carpet Cushion**

03/T01 AATCC 16 (Option E)

03/T02 ASTM D2646 (Secs. 16-24)

03/T02a ASTM D2646 (Sec. 16)

03/T04 16 CFR Part 1630 (FF-1-70)

**Tests Applicable to Carpets**

03/G01 AATCC 20

03/G02 AATCC 20A

03/G03 AATCC 134

03/G04 AATCC 165

03/G05 ASTM D418 (Sec. 8)

03/G05a ASTM D5848 (Sec. 8)

03/G06 ASTM D418 (Sec. 9)

03/G06a ASTM D5848 (Sec. 9)

03/G07 ASTM D418 (Secs. 10-11)

03/G08 ASTM D418 (Sec. 13)

03/G08a ASTM D5823

03/G09 ASTM D1335

03/G10 ASTM D3936

03/G11 ASTM D5252

03/G12 ASTM E648

03/G13 ASTM E662

03/G14 Fed Spec, DDD-C-0095A

03/G15 ASTM D6119

03/G16 CRI TM-101

**NVLAP LAB CODE 100109-0****Integrex Testing Systems -Acoustic & Thermal  
Testing Laboratories**

2790 Columbus Road, Route 16

Granville, OH 43023-1200

Contact: Mr. J. Michael Stair

Phone: 740-321-7053

Fax: 740-321-4080

E-Mail: [mike.stair@owenscorning.com](mailto:mike.stair@owenscorning.com)**Acoustical Testing Services**

Accreditation Valid Through: December 31, 2002

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08/P03 ASTM C423

08/P04 ASTM C522

08/P06 ASTM E90

08/P10 ANSI S12.31

08/P11 ISO 3744

08/P21 ISO 3745

08/P35 ASTM E1050

08/P46 ISO 3741

**Thermal Insulation Materials**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Flammability**

01/F02 ASTM E84  
01/F05 ASTM E136  
01/F07 16 CFR-Part 1209.6  
01/F08 16 CFR-Part 1209.7

**Mass, Density, and Dimensional Stability**

01/D02 ASTM C167  
01/D08 ASTM C302  
01/D09 ASTM C303  
01/D11 ASTM C356  
01/D12 ASTM C411  
01/D24 ASTM C739 (Sec. 12)  
01/D27 ASTM C739 (Sec. 8)

**Related Material Properties**

01/V04 ASTM E96  
01/V07 ASTM C1104/C1104M

**Strength**

01/S01a ASTM C165 (Proc. A)  
01/S02 ASTM C203

**Thermal Resistance**

01/T01 ASTM C177  
01/T05 ASTM C335  
01/T06 ASTM C518  
01/T09 ASTM C653  
01/T10 ASTM C687  
01/T11 ASTM C976

**NVLAP LAB CODE 100113-0**

**Netzsch Instruments, Inc.**

25 Wiggins Avenue  
Bedford, MA 01730-2323  
Contact: Mr. Timothy Kunz  
Phone: 781-275-3300 x245  
Fax: 781-275-3705  
E-Mail: tkunz@holometrix.com  
URL: <http://www.holometrix.com>

**Thermal Insulation Materials**

Accreditation Valid Through: December 31, 2002

**NVLAP**

Code Designation

**Related Material Properties**

01/V04 ASTM E96

**Thermal Resistance**

01/T01 ASTM C177  
01/T05 ASTM C335  
01/T06 ASTM C518

**NVLAP LAB CODE 100120-0**

**Commercial Testing Company**

1215 South Hamilton Street  
P.O. Box 985  
Dalton, GA 30722-0985  
Contact: Mr. Jonathan Jackson  
Phone: 706-278-3935  
Fax: 706-278-3936  
E-Mail: [jjackson@commercialtesting.com](mailto:jjackson@commercialtesting.com)  
URL: <http://www.commercialtesting.com>

**Carpet and Carpet Cushion**

Accreditation Valid Through: December 31, 2002

**NVLAP**

Code Designation

**Tests Applicable to Carpet Cushion**

03/U01a ASTM D3574 (Sec. 8.2 & Test A)  
03/U01b ASTM D3676 (Secs. 10-12)  
03/U02 ASTM D297  
03/U06 ASTM D1667 (Suffix B)  
03/U07 ASTM D3574 (Test C)  
03/U08 ASTM D3574 (Test D)  
03/U09 ASTM D3574 (Test E)  
03/U10 ASTM D3676 (Sec. 13)  
03/U11 ASTM D3676 (Sec. 14)  
03/U12 ASTM D3676 (Sec. 15)  
03/U13 ASTM D3676 (Sec. 16)

**Tests Applicable to Carpet and Carpet Cushion**

03/T01 AATCC 16 (Option E)  
03/T02 ASTM D2646 (Secs. 16-24)  
03/T02a ASTM D2646 (Sec. 16)  
03/T03 ASTM E84  
03/T04 16 CFR Part 1630 (FF-1-70)

**Tests Applicable to Carpets**

03/G01 AATCC 20  
03/G02 AATCC 20A  
03/G03 AATCC 134  
03/G04 AATCC 165  
03/G05 ASTM D418 (Sec. 8)  
03/G05a ASTM D5848 (Sec. 8)  
03/G06 ASTM D418 (Sec. 9)  
03/G06a ASTM D5848 (Sec. 9)  
03/G07 ASTM D418 (Secs. 10-11)  
03/G08 ASTM D418 (Sec. 13)  
03/G08a ASTM D5823  
03/G09 ASTM D1335  
03/G10 ASTM D3936  
03/G12 ASTM E648  
03/G13 ASTM E662  
03/G17 ISO 2551

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 100142-0****Geoscience Ltd.**

6260-B Marindustry Drive  
San Diego, CA 92121-2560  
Contact: Dr. H. F. Poppendiek  
Phone: 858-453-5483  
Fax: 858-453-4694

URL: <http://geoscienceltd.com>

**Thermal Insulation Materials**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Flammability**

|        |           |
|--------|-----------|
| 01/F05 | ASTM E136 |
|--------|-----------|

**Related Material Properties**

|        |          |
|--------|----------|
| 01/V04 | ASTM E96 |
|--------|----------|

**Thermal Resistance**

|        |           |
|--------|-----------|
| 01/T01 | ASTM C177 |
|--------|-----------|

|        |           |
|--------|-----------|
| 01/T04 | ASTM C236 |
|--------|-----------|

**NVLAP LAB CODE 100146-0****American Testing Laboratories, Inc.**

784 Flory Mill Road  
P.O. Box 4014  
Lancaster, PA 17604-4014  
Contact: Mr. John S. Kassee  
Phone: 717-569-0488  
Fax: 717-569-3429

**Construction Materials Testing**

Accreditation Valid Through: March 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Concrete**

|        |          |
|--------|----------|
| 02/A01 | ASTM C39 |
|--------|----------|

|        |           |
|--------|-----------|
| 02/A02 | ASTM C617 |
|--------|-----------|

|        |            |
|--------|------------|
| 02/A43 | ASTM C1064 |
|--------|------------|

|        |          |
|--------|----------|
| 02/A45 | ASTM C42 |
|--------|----------|

|        |                              |
|--------|------------------------------|
| 02/G01 | ASTM C31/C172/C143/C138/C231 |
|--------|------------------------------|

|        |           |
|--------|-----------|
| 02/G02 | ASTM C173 |
|--------|-----------|

**Soil and Rock**

|        |           |
|--------|-----------|
| 02/L02 | ASTM D422 |
|--------|-----------|

|        |           |
|--------|-----------|
| 02/L04 | ASTM D698 |
|--------|-----------|

|        |           |
|--------|-----------|
| 02/L05 | ASTM D854 |
|--------|-----------|

|        |            |
|--------|------------|
| 02/L06 | ASTM D1140 |
|--------|------------|

|        |            |
|--------|------------|
| 02/L08 | ASTM D1557 |
|--------|------------|

|        |            |
|--------|------------|
| 02/L16 | ASTM D2487 |
|--------|------------|

|        |            |
|--------|------------|
| 02/L17 | ASTM D2488 |
|--------|------------|

|        |            |
|--------|------------|
| 02/L20 | ASTM D4318 |
|--------|------------|

|        |            |
|--------|------------|
| 02/L23 | ASTM D2922 |
|--------|------------|

|        |            |
|--------|------------|
| 02/L25 | ASTM D3017 |
|--------|------------|

**NVLAP LAB CODE 100156-0****Mohawk Industries, Inc.- Lyster Plant**

5081 Hwy. 114  
Lyster, GA 30730  
Contact: Mr. Richard Turner  
Phone: 706-895-3341 x6250  
Fax: 706-895-2346  
E-Mail: [richard\\_turner@mohawkind.com](mailto:richard_turner@mohawkind.com)

**Carpet and Carpet Cushion**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Tests Applicable to Carpet Cushion**

|         |                          |
|---------|--------------------------|
| 03/U01b | ASTM D3676 (Secs. 10-12) |
|---------|--------------------------|

|        |                       |
|--------|-----------------------|
| 03/U06 | ASTM D1667 (Suffix B) |
|--------|-----------------------|

|        |                      |
|--------|----------------------|
| 03/U10 | ASTM D3676 (Sec. 13) |
|--------|----------------------|

|        |                     |
|--------|---------------------|
| 03/U11 | ASTM D3676 (Sec.14) |
|--------|---------------------|

**Tests Applicable to Carpet and Carpet Cushion**

|        |                     |
|--------|---------------------|
| 03/T01 | AATCC 16 (Option E) |
|--------|---------------------|

|        |                          |
|--------|--------------------------|
| 03/T02 | ASTM D2646 (Secs. 16-24) |
|--------|--------------------------|

|        |                            |
|--------|----------------------------|
| 03/T04 | 16 CFR Part 1630 (FF-1-70) |
|--------|----------------------------|

**Tests Applicable to Carpets**

|        |           |
|--------|-----------|
| 03/G03 | AATCC 134 |
|--------|-----------|

|        |           |
|--------|-----------|
| 03/G04 | AATCC 165 |
|--------|-----------|

|        |                    |
|--------|--------------------|
| 03/G05 | ASTM D418 (Sec. 8) |
|--------|--------------------|

|         |                     |
|---------|---------------------|
| 03/G05a | ASTM D5848 (Sec. 8) |
|---------|---------------------|

|        |                    |
|--------|--------------------|
| 03/G06 | ASTM D418 (Sec. 9) |
|--------|--------------------|

|         |                     |
|---------|---------------------|
| 03/G06a | ASTM D5848 (Sec. 9) |
|---------|---------------------|

|        |                         |
|--------|-------------------------|
| 03/G07 | ASTM D418 (Secs. 10-11) |
|--------|-------------------------|

|        |                     |
|--------|---------------------|
| 03/G08 | ASTM D418 (Sec. 13) |
|--------|---------------------|

|         |            |
|---------|------------|
| 03/G08a | ASTM D5823 |
|---------|------------|

|        |            |
|--------|------------|
| 03/G09 | ASTM D1335 |
|--------|------------|

|        |            |
|--------|------------|
| 03/G10 | ASTM D3936 |
|--------|------------|

|        |            |
|--------|------------|
| 03/G11 | ASTM D5252 |
|--------|------------|

|        |           |
|--------|-----------|
| 03/G12 | ASTM E648 |
|--------|-----------|

|        |           |
|--------|-----------|
| 03/G13 | ASTM E662 |
|--------|-----------|

|        |                       |
|--------|-----------------------|
| 03/G14 | Fed Spec, DDD-C-0095A |
|--------|-----------------------|

|        |            |
|--------|------------|
| 03/G15 | ASTM D6119 |
|--------|------------|

|        |            |
|--------|------------|
| 03/G16 | CRI TM-101 |
|--------|------------|

**NVLAP LAB CODE 100166-0****Independent Textile Testing Service, Inc.**

1503 Murray Avenue, P.O. Box 1948  
Dalton, GA 30722-1948  
Contact: Mr. L. Kent Suddeth  
Phone: 706-278-3013  
Fax: 706-272-7057  
E-Mail: [ittslab@dalton.net](mailto:ittslab@dalton.net)  
URL: [ittslab.com](http://ittslab.com)

**Carpet and Carpet Cushion**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Tests Applicable to Carpet Cushion**

|         |                                |
|---------|--------------------------------|
| 03/U01a | ASTM D3574 (Sec. 8.2 & Test A) |
|---------|--------------------------------|

|         |                          |
|---------|--------------------------|
| 03/U01b | ASTM D3676 (Secs. 10-12) |
|---------|--------------------------|

|        |           |
|--------|-----------|
| 03/U02 | ASTM D297 |
|--------|-----------|

|        |                     |
|--------|---------------------|
| 03/U03 | ASTM D629 (Sec. 10) |
|--------|---------------------|

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|        |                         |
|--------|-------------------------|
| 03/U04 | ASTM D629 (Secs. 13-22) |
| 03/U05 | ASTM D629 (Secs. 23-27) |
| 03/U06 | ASTM D1667 (Suffix B)   |
| 03/U07 | ASTM D3574 (Test C)     |
| 03/U08 | ASTM D3574 (Test D)     |
| 03/U09 | ASTM D3574 (Test E)     |
| 03/U10 | ASTM D3676 (Sec. 13)    |
| 03/U11 | ASTM D3676 (Sec. 14)    |
| 03/U12 | ASTM D3676 (Sec. 15)    |
| 03/U13 | ASTM D3676 (Sec. 16)    |

**Tests Applicable to Carpet and Carpet Cushion**

|         |                            |
|---------|----------------------------|
| 03/T01  | AATCC 16 (Option E)        |
| 03/T02  | ASTM D2646 (Secs. 16-24)   |
| 03/T02a | ASTM D2646 (Sec. 16)       |
| 03/T04  | 16 CFR Part 1630 (FF-1-70) |

**Tests Applicable to Carpets**

|         |                         |
|---------|-------------------------|
| 03/G01  | AATCC 20                |
| 03/G02  | AATCC 20A               |
| 03/G03  | AATCC 134               |
| 03/G04  | AATCC 165               |
| 03/G05  | ASTM D418 (Sec. 8)      |
| 03/G05a | ASTM D5848 (Sec. 8)     |
| 03/G06  | ASTM D418 (Sec. 9)      |
| 03/G06a | ASTM D5848 (Sec. 9)     |
| 03/G07  | ASTM D418 (Secs. 10-11) |
| 03/G08  | ASTM D418 (Sec. 13)     |
| 03/G08a | ASTM D5823              |
| 03/G09  | ASTM D1335              |
| 03/G10  | ASTM D3936              |
| 03/G11  | ASTM D5252              |
| 03/G12  | ASTM E648               |
| 03/G13  | ASTM E662               |
| 03/G14  | Fed Spec, DDD-C-0095A   |
| 03/G15  | ASTM D6119              |
| 03/G16  | CRI TM-101              |

**NVLAP LAB CODE 100190-0****Beaulieu of America - Carpet Testing Lab**

1502 Coronet Drive  
P.O. Box 1248  
Dalton, GA 30722-1248  
Contact: Mr. E. Ronald Vinyard  
Phone: 706-259-4511 x7367  
Fax: 706-259-2211 x7893

**Carpet and Carpet Cushion**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Tests Applicable to Carpet and Carpet Cushion**

|         |                            |
|---------|----------------------------|
| 03/T01  | AATCC 16 (Option E)        |
| 03/T02  | ASTM D2646 (Secs. 16-24)   |
| 03/T02a | ASTM D2646 (Sec. 16)       |
| 03/T04  | 16 CFR Part 1630 (FF-1-70) |

**Tests Applicable to Carpets**

|         |                     |
|---------|---------------------|
| 03/G04  | AATCC 165           |
| 03/G05  | ASTM D418 (Sec. 8)  |
| 03/G05a | ASTM D5848 (Sec. 8) |
| 03/G06  | ASTM D418 (Sec. 9)  |

|         |                         |
|---------|-------------------------|
| 03/G07  | ASTM D418 (Secs. 10-11) |
| 03/G08  | ASTM D418 (Sec. 13)     |
| 03/G08a | ASTM D5823              |
| 03/G09  | ASTM D1335              |
| 03/G10  | ASTM D3936              |

**NVLAP LAB CODE 100191-0****STS Consultants, Ltd.**

750 Corporate Woods Parkway  
Vernon Hills, IL 60061  
Contact: Mr. William P. Quinn  
Phone: 847-279-2500  
Fax: 847-279-2550  
E-Mail: quinn@stsltd.com  
URL: <http://STSLTD.com>

**Construction Materials Testing**

Accreditation Valid Through: December 31, 2002

**NVLAP**

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|------|-------------|

**Aggregates**

|        |           |
|--------|-----------|
| 02/A03 | ASTM C29  |
| 02/A04 | ASTM C40  |
| 02/A06 | ASTM C88  |
| 02/A07 | ASTM C117 |
| 02/A08 | ASTM C123 |
| 02/A09 | ASTM C127 |
| 02/A10 | ASTM C128 |
| 02/A11 | ASTM C131 |
| 02/A12 | ASTM C136 |
| 02/A13 | ASTM C142 |
| 02/A15 | ASTM D75  |
| 02/A44 | ASTM C566 |
| 02/A46 | ASTM C535 |

**Cement**

|        |                      |
|--------|----------------------|
| 02/A17 | ASTM C109            |
| 02/A20 | ASTM C151            |
| 02/A51 | ASTM C780 (Annex A7) |
| 02/A52 | ASTM C1019           |

**Concrete**

|        |                              |
|--------|------------------------------|
| 02/A01 | ASTM C39                     |
| 02/A02 | ASTM C617                    |
| 02/A40 | ASTM C78                     |
| 02/A41 | ASTM C192                    |
| 02/A43 | ASTM C1064                   |
| 02/A45 | ASTM C42                     |
| 02/G01 | ASTM C31/C172/C143/C138/C231 |
| 02/G02 | ASTM C173                    |

**Geotextiles**

|        |            |
|--------|------------|
| 02/L28 | ASTM D4354 |
| 02/L33 | ASTM D4632 |
| 02/L34 | ASTM D3884 |
| 02/L35 | ASTM D4886 |
| 02/L36 | ASTM D4533 |
| 02/L37 | ASTM D4884 |
| 02/L38 | ASTM D792  |
| 02/L39 | ASTM D4491 |
| 02/L40 | ASTM D4716 |
| 02/L41 | ASTM D4751 |
| 02/L42 | ASTM D1777 |
| 02/L43 | ASTM D4437 |



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

02/L45 ASTM D4595  
02/L48 ASTM D5321  
02/L49 ASTM D6243

**Road and Paving Materials**

02/M03 ASTM D140  
02/M07 ASTM D546  
02/M09 ASTM D1074  
02/M11 ASTM D1188  
02/M12 ASTM D1559  
02/M19 ASTM D2172  
02/M24 ASTM D2041  
02/M25 ASTM D2726

**Soil and Rock**

02/L01 ASTM D4220  
02/L02 ASTM D422  
02/L03 ASTM D427  
02/L04 ASTM D698  
02/L05 ASTM D854  
02/L06 ASTM D1140  
02/L07 ASTM D1556  
02/L08 ASTM D1557  
02/L10 ASTM D1883  
02/L11 ASTM D2166  
02/L13 ASTM D2216  
02/L14 ASTM D2217  
02/L15 ASTM D2435  
02/L16 ASTM D2487  
02/L17 ASTM D2488  
02/L18 ASTM D3080  
02/L20 ASTM D4318  
02/L21 ASTM D2434  
02/L22 ASTM D2850  
02/L23 ASTM D2922  
02/L24 ASTM D2974  
02/L25 ASTM D3017  
02/L26 ASTM D4221  
02/L29 Corps of Engineers - Manual  
EM-1110-2-1906, Appendix VII, Permeability  
of Fine Grained Soils Using a Triaxial  
Apparatus  
02/L30 Corps of Engineers - Manual  
EM-1110-2-1906, Appendix X, Consolidated  
Undrained and Consolidated Drained Triaxial  
Test  
02/L46 ASTM D5084  
02/L50 ASTM D2664  
02/L51 ASTM D2938  
02/L52 ASTM D3148  
02/L53 ASTM D3967  
02/L54 ASTM D4543  
02/L55 ASTM D5407  
02/L56 ASTM D5607

**Standard Practices**

02/A38 ASTM E329  
02/A39 ASTM C1077  
02/L32 ASTM D3740  
02/M26 ASTM D3666

**NVLAP LAB CODE 100193-0****Shaw Industries, Inc., Central Laboratory  
Operations**

South Glenwood Avenue  
P.O. Box 2128  
Dalton, GA 30722-2128  
Contact: Mr. Jerry T. Wright, Jr.  
Phone: 706-275-2205  
Fax: 706-275-2221  
E-Mail: jay.wright@shawinc.com

**Carpet and Carpet Cushion**

Accreditation Valid Through: June 30, 2002

**NVLAP**

Code Designation

**Tests Applicable to Carpet and Carpet Cushion**

03/T01 AATCC 16 (Option E)  
03/T02 ASTM D2646 (Secs. 16-24)  
03/T02a ASTM D2646 (Sec. 16)  
03/T04 16 CFR Part 1630 (FF-1-70)

**Tests Applicable to Carpets**

03/G04 AATCC 165  
03/G05 ASTM D418 (Sec. 8)  
03/G05a ASTM D5848 (Sec. 8)  
03/G06 ASTM D418 (Sec. 9)  
03/G06a ASTM D5848 (Sec. 9)  
03/G07 ASTM D418 (Secs. 10-11)  
03/G08 ASTM D418 (Sec. 13)  
03/G08a ASTM D5823  
03/G09 ASTM D1335  
03/G10 ASTM D3936  
03/G11 ASTM D5252  
03/G12 ASTM E648  
03/G13 ASTM E662  
03/G16 CRI TM-101

**NVLAP LAB CODE 100210-0****The Dow Chemical Company- NA System  
House-Joliet**

2050 North Broadway  
Joliet, IL 60435-3187  
Contact: Mr. Robert Braun  
Phone: 815-727-1549  
Fax: 815-774-6542  
E-Mail: bgbraun@dow.com

**Thermal Insulation Materials**

Accreditation Valid Through: December 31, 2002

**NVLAP**

Code Designation

**Mass, Density, and Dimensional Stability**

01/D15 ASTM D756 (Proc. A)  
01/D16 ASTM D756 (Proc. B)  
01/D17 ASTM D756 (Proc. E)  
01/D18 ASTM D1622  
01/D19 ASTM D2126  
01/D23 ASTM D2842

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****Related Material Properties**

01/V04 ASTM E96

**Strength**

01/S02 ASTM C203

01/S07 ASTM C273

01/S11 ASTM D1621 (Proc. A of ASTM Practice  
D618)**Thermal Resistance**

01/T06 ASTM C518

**NVLAP LAB CODE 100227-0****Riverbank Acoustical Laboratories**

1512 S. Batavia Avenue

Geneva, IL 60134-3300

Contact: Mr. David L. Moyer

Phone: 630-232-0104

Fax: 630-232-0138

E-Mail: dmoyer@iitri.org

URL: <http://riverbank.iitri.org>**Acoustical Testing Services**

Accreditation Valid Through: March 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

08/P03 ASTM C423

08/P05 ASTM C523

08/P06 ASTM E90

08/P07 ASTM E492

08/P10 ANSI S12.31

08/P30 ASTM E1408

08/P39 ANSI S12.5

08/P44 ISO 354

08/P45 ISO 140, Part 3

08/P46 ISO 3741

08/P51 ISO 6926

**NVLAP LAB CODE 100228-0****Armstrong Acoustic Labs, Armstrong World Ind.,  
Inc. Innov. Center**

P.O. Box 3511

2500 Columbia Avenue

Lancaster, PA 17604

Contact: Mr. Robert Alan Hallman

Phone: 717-396-6225

Fax: 717-396-5865

E-Mail: Robert\_A\_Hallman@armstrong.com

**Acoustical Testing Services**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

08/P03 ASTM C423

08/P07 ASTM E492

08/P28 ASTM E1375

08/P29 ASTM E1376

08/P33 ASTM E1111

08/P34 ASTM E1414

08/P44 ISO 354

08/P49 AMA-1-II-67

08/P50 ISO 140, Part 9

**NVLAP LAB CODE 100239-0****Hufcor Acoustical Laboratory**

1017 South Jackson Street

P.O. Box 591

Janesville, WI 53547-0591

Contact: Mr. Gary R. Zigler

Phone: 608-758-8217

Fax: 608-758-8253

E-Mail: gzigler@hufcor.com

**Acoustical Testing Services**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

08/P06 ASTM E90

08/P31 ASTM E336

08/P45 ISO 140, Part 3

**NVLAP LAB CODE 100248-0****Knauf Fiber Glass Research Laboratory**

240 Elizabeth Street

Shelbyville, IN 46176-1496

Contact: Mr. Timothy R. Jonas

Phone: 317-398-4434

Fax: 317-392-8181

E-Mail: trj1@knauffiberglass.com

**Thermal Insulation Materials**

Accreditation Valid Through: March 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Corrosiveness**

01/C03 ASTM C665 (Sec. 13.8)

**Mass, Density, and Dimensional Stability**

01/D02 ASTM C167

01/D08 ASTM C302

01/D09 ASTM C303

01/D11 ASTM C356

01/D12 ASTM C411

01/D13 ASTM C519

**Related Material Properties**

01/V04 ASTM E96

**Strength**

01/S01a ASTM C165 (Proc. A)

01/S02 ASTM C203

**Thermal Resistance**

01/T01 ASTM C177

01/T05 ASTM C335

01/T06 ASTM C518

01/T09 ASTM C653

01/T10 ASTM C687

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 100251-0****St. of California, Bur. of Home Furnishings & Thermal Insulation**

3485 Orange Grove Avenue  
North Highlands, CA 95660-5595  
Contact: Dr. Stephen J. Fischer  
Phone: 916-574-2060  
Fax: 916-574-2449  
E-Mail: [steve\\_fischer@dca.ca.gov](mailto:steve_fischer@dca.ca.gov)

**Thermal Insulation Materials**

Accreditation Valid Through: June 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Corrosiveness**

|        |                    |
|--------|--------------------|
| 01/C01 | ASTM C739 (Sec. 9) |
| 01/C02 | 16 CFR-Part 1209.5 |

**Flammability**

|        |                                  |
|--------|----------------------------------|
| 01/F07 | 16 CFR-Part 1209.6               |
| 01/F08 | 16 CFR-Part 1209.7               |
| 01/F09 | ASTM C739 (Sec. 10) by ASTM E970 |
| 01/F10 | ASTM C739 (Sec. 14)              |

**Mass, Density, and Dimensional Stability**

|        |                    |
|--------|--------------------|
| 01/D02 | ASTM C167          |
| 01/D08 | ASTM C302          |
| 01/D09 | ASTM C303          |
| 01/D26 | 16 CFR-Part 1209.4 |
| 01/D27 | ASTM C739 (Sec. 8) |

**Thermal Resistance**

|        |           |
|--------|-----------|
| 01/T01 | ASTM C177 |
| 01/T05 | ASTM C335 |
| 01/T10 | ASTM C687 |

**NVLAP LAB CODE 100252-0****DL Labs, Inc.**

116 East 16th Street  
New York, NY 10003-2112  
Contact: Mr. Thomas J. Sliva  
Phone: 212-777-4445  
Fax: 212-505-8419  
E-Mail: [dllabs@aol.com](mailto:dllabs@aol.com)  
URL: <http://www.dllabs.com>

**Commercial Products Testing**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Building Seals and Sealants**

|         |                          |
|---------|--------------------------|
| 13/O01  | ASTM C510                |
| 13/O02a | ASTM C603                |
| 13/O02b | CAN2-19.0-M77, Meth. 3.1 |
| 13/O03  | ASTM C639                |
| 13/O04a | ASTM C661                |
| 13/O04b | CAN2-19.0-M77, Meth. 8.1 |
| 13/O05a | ASTM C679                |
| 13/O05b | CAN2-19.0-M77, Meth. 2.1 |
| 13/O06  | ASTM C681                |
| 13/O07  | ASTM C711                |
| 13/O08  | ASTM C712                |

|         |                           |
|---------|---------------------------|
| 13/O10  | ASTM C718                 |
| 13/O11a | ASTM C719                 |
| 13/O11b | CAN2-19.0-M77, Meth. 14.4 |
| 13/O12  | ASTM C731                 |
| 13/O13  | ASTM C732                 |
| 13/O14  | ASTM C733                 |
| 13/O15  | ASTM C734                 |
| 13/O16  | ASTM C736                 |
| 13/O17  | ASTM C741                 |
| 13/O18  | ASTM C742                 |
| 13/O19a | ASTM C792                 |
| 13/O19b | CAN2-19.0-M77, Meth. 5.1  |
| 13/O20  | ASTM C793                 |
| 13/O21  | ASTM C794                 |
| 13/O22  | ASTM C910                 |
| 13/O23  | ASTM D2202                |
| 13/O24  | ASTM D2203                |
| 13/O25  | ASTM D2376                |
| 13/O26  | ASTM D2377                |
| 13/O27  | ASTM D2450                |
| 13/O28  | ASTM D2451                |
| 13/O29  | ASTM D2452                |
| 13/O30  | ASTM D2453                |
| 13/O31  | CAN2-19.0-M77, Meth. 7.1  |
| 13/O32  | CAN2-19.0-M77, Meth. 7.3  |
| 13/O33  | CAN2-19.0-M77, Meth. 8.2  |
| 13/O34  | CAN2-19.0-M77, Meth. 11.1 |
| 13/O35  | CAN2-19.0-M77, Meth. 14.7 |
| 13/O36  | CAN2-19.0-M77, Meth. 19.2 |
| 13/O37  | ASTM C920                 |
| 13/O38  | ASTM C1241                |
| 13/O39  | ASTM C1183                |
| 13/O40  | ASTM C1246                |
| 13/O41  | CAN2-19.0-M77, Meth. 9.1  |
| 13/O42  | CAN2-19.0-M77, Meth. 9.2  |
| 13/O43  | CAN2-19.0-M77, Meth. 14.6 |
| 13/O44  | CAN2-19.0-M77, Meth. 18.2 |
| 13/O45  | ASTM C834                 |

**Paints and Related Coatings and Materials**

|        |                       |
|--------|-----------------------|
| 09/A01 | ASTM D56              |
| 09/A02 | ASTM D93 (Method A)   |
| 09/A03 | ASTM D153             |
| 09/A04 | ASTM D185             |
| 09/A05 | ASTM D281             |
| 09/A07 | ASTM D523             |
| 09/A08 | ASTM D562             |
| 09/A09 | ASTM D1005            |
| 09/A10 | ASTM D1186            |
| 09/A11 | ASTM D1200            |
| 09/A12 | ASTM D1210            |
| 09/A13 | ASTM D1212 (Method A) |
| 09/A14 | ASTM D1296            |
| 09/A15 | ASTM D1310            |
| 09/A16 | ASTM D1400            |
| 09/A17 | ASTM D1475            |
| 09/A18 | ASTM D1544            |
| 09/A19 | ASTM D1729            |
| 09/A20 | ASTM D2244            |
| 09/A21 | ASTM D3278            |
| 09/A22 | ASTM D3363            |
| 09/A23 | ASTM D3793            |
| 09/A25 | ASTM D4212            |

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|         |                                  |                 |                                                |
|---------|----------------------------------|-----------------|------------------------------------------------|
| 09/A26  | ASTM E1347                       | 09/B59          | CGSB Method 1-GP-71, Meth. 135.1               |
| 09/A28  | ASTM E313                        | 09/B60          | CGSB Method 1-GP-71, Meth. 142.1               |
| 09/A30  | CGSB Method 1-GP-71, Meth. 10.1  | 09/B61          | ASTM D412                                      |
| 09/A31  | CGSB Method 1-GP-71, Meth. 12.8  | 09/B62          | ASTM D1653                                     |
| 09/A32  | CGSB Method 1-GP-71, Meth. 45.1  | 09/B63          | ASTM D2134                                     |
| 09/A33  | ASTM D2196                       | 09/B64          | ASTM D2370                                     |
| 09/B02  | ASTM D332                        | 09/B65          | ASTM D3258                                     |
| 09/B03  | ASTM D344                        | 09/B66          | ASTM D3806                                     |
| 09/B04  | ASTM D610                        | 09/B67          | ASTM D4400                                     |
| 09/B05  | ASTM D4214                       | 09/B68          | ASTM D4541                                     |
| 09/B06  | ASTM D660                        | 09/B69          | ASTM D4707                                     |
| 09/B07  | ASTM D661                        | 09/B70          | ASTM D4946                                     |
| 09/B08  | ASTM D662                        | 09/B71          | ASTM D2794                                     |
| 09/B09  | ASTM D711                        | 09/C07          | ASTM D1133                                     |
| 09/B10  | ASTM D714                        | 09/C09          | ASTM D1259                                     |
| 09/B11  | ASTM D772                        | 09/C11          | ASTM D1353                                     |
| 09/B12  | ASTM D868                        | 09/C12          | ASTM D1364                                     |
| 09/B13a | ASTM D968                        | 09/C22          | ASTM D1644                                     |
| 09/B13b | CGSB Method 1-GP-71 Meth. 104.1  | 09/C26a         | ASTM D2369                                     |
| 09/B14  | ASTM D869                        | 09/C26b         | CGSB Method 1-GP-71, Meth. 17.1                |
| 09/B15  | ASTM D870                        | 09/C26c         | CGSB Method 1-GP-71, Meth. 19.1                |
| 09/B16  | ASTM D913                        | 09/C27          | ASTM D2371                                     |
| 09/B18  | ASTM D969                        | 09/C28          | ASTM D2697                                     |
| 09/B19a | ASTM D1308                       | 09/C29          | ASTM D2698                                     |
| 09/B19b | CGSB Method 1-GP-71, Meth. 105.1 | 09/C30          | ASTM D2832                                     |
| 09/B19c | CGSB Method 1-GP-71, Meth. 106.1 | 09/C37          | ASTM D3723                                     |
| 09/B19d | CGSB Method 1-GP-71, Meth. 107.1 | 09/C39          | ASTM D3960                                     |
| 09/B19e | CGSB Method 1-GP-71, Meth. 110.1 | 09/C40          | ASTM D4017                                     |
| 09/B20  | ASTM D1309                       | 09/C42          | CGSB Method 1-GP-71, Meth. 21.1                |
| 09/B23  | ASTM D1640                       | 09/C43          | CGSB Method 1-GP-71, Meth. 24.1                |
| 09/B24  | ASTM D522                        | 09/C44          | ASTM D5095                                     |
| 09/B25  | ASTM D2197                       | 09/C45          | CGSB Method 1-GP-71, Meth. 69.3                |
| 09/B26  | ASTM D2243                       | 09/D01          | ASTM B117                                      |
| 09/B27  | ASTM D2248                       | 09/D02          | ASTM D609                                      |
| 09/B29  | ASTM D2486                       | 09/D03          | ASTM D822                                      |
| 09/B31  | ASTM D2805                       | 09/D04          | ASTM D823 (Limited to Practices B, C, D and E) |
| 09/B32  | ASTM D3273                       | 09/D05          | ASTM D1006                                     |
| 09/B33  | ASTM D3274                       | 09/D06          | ASTM D1014                                     |
| 09/B34  | ASTM D3450                       | 09/D07          | ASTM D1654                                     |
| 09/B37  | ASTM D4060                       | 09/D13          | ASTM D3924                                     |
| 09/B38  | ASTM D4062                       | 09/D16          | ASTM G53                                       |
| 09/B39  | ASTM D4213                       | 09/D17          | ASTM D4446                                     |
| 09/B41  | Fed. Std. 141, Method 4494       | 09/D18          | ASTM D5401                                     |
| 09/B42  | Fed. Std. 141, Method 4061       | <i>Plastics</i> |                                                |
| 09/B43  | ASTM D3359                       | 15/A26          | ASTM D2240                                     |
| 09/B44  | ASTM D4828                       |                 |                                                |
| 09/B45  | CGSB Method 1-GP-71, Meth. 14.1  |                 |                                                |
| 09/B46a | ASTM D1849                       |                 |                                                |
| 09/B46b | CGSB Method 1-GP-71, Meth. 30.3  |                 |                                                |
| 09/B47  | CGSB Method 1-GP-71, Meth. 32.1  |                 |                                                |
| 09/B48  | CGSB Method 1-GP-71, Meth. 37.3  |                 |                                                |
| 09/B49  | CGSB Method 1-GP-71, Meth. 112.2 |                 |                                                |
| 09/B50  | CGSB Method 1-GP-71, Meth. 114.1 |                 |                                                |
| 09/B51  | CGSB Method 1-GP-71, Meth. 116.2 |                 |                                                |
| 09/B52  | CGSB Method 1-GP-71, Meth. 123.2 |                 |                                                |
| 09/B53  | CGSB Method 1-GP-71, Meth. 125.1 |                 |                                                |
| 09/B54  | CGSB Method 1-GP-71, Meth. 127.1 |                 |                                                |
| 09/B55  | CGSB Method 1-GP-71, Meth. 130.1 |                 |                                                |
| 09/B56  | CGSB Method 1-GP-71, Meth. 131.2 |                 |                                                |
| 09/B57  | CGSB Method 1-GP-71, Meth. 132.1 |                 |                                                |
| 09/B58  | CGSB Method 1-GP-71, Meth. 134.1 |                 |                                                |



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 100255-0****Underwriters Laboratories, Inc.**

1285 Walt Whitman Road  
Melville, NY 11747-3081  
Contact: Mr. Rick A. Titus  
Phone: 847-272-8800  
Fax: 847-509-6321  
E-Mail: Rick.A.Titus@us.ul.com  
URL: <http://www.ul.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

**NVLAP**

*Code      Designation*

**Emissions Test Methods:**

- 12/CIS14 CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions
- 12/CIS14a EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)
- 12/CIS14b AS/NZS 1044 (1995)
- 12/CIS14c CNS 13783-1
- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

**Immunity Test Methods:**

- 12/I01 IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test
- 12/I02 IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test
- 12/I03 IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test
- 12/I04 IEC 61000-4-5 (1995): Surge Immunity Test
- 12/I05 IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields
- 12/I06 IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test

IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests

**Safety Test Methods:**

- 12/T41 ACA TS-001
- 12/T50 AS/NZS 3260

**Telecommunications Test Methods:**

- 12/CS03 CS-03
- 12/T01 Terminal Equipment Network Protection Standards, FCC Method - 47 CFR Part 68 - Analog and Digital
- 12/T01a 68.302 (Par. c,d,e,f) Environmental simulation; 68.304 Leakage current limit.; 68.306 Hazardous voltage limit.; 68.308 Signal power limit.; 68.310 Longitudinal balance limit.; 68.312 On-hook impedance limit.; 68.314 Billing protection
- 12/T01b 68.316 Hearing Aid Compatibility: technical standards
- 12/T01c 68.302 Environmental simulation (Par. a,b)
- 12/T42 ACA TS-002
- 12/T44 ACA TS-004
- 12/T45 ACA TS-006
- 12/T46 ACA TS-008

**Energy Efficient Lighting Products**

Accreditation Valid Through: September 30, 2002

**NVLAP**

*Code      Designation*

**Color Measurements**

- 22/C01 IES LM-58

**Electrical Measurements**

- 22/E01 IES LM-9
- 22/E02 IES LM-45
- 22/E04 IES LM-66
- 22/E05 ANSI-C78.375

**Life Tests**

- 22/L01 IES LM-40
- 22/L04 IES LM-65

**Photometric Measurements**

- 22/P01a IES LM-9 (Total Flux)
- 22/P02a IES LM-20 (Total Flux)
- 22/P03a IES LM-45 (Total Flux)
- 22/P05a IES LM-66 (Total Flux)

**NVLAP LAB CODE 100256-0****Western Electro-Acoustic Lab., Inc.**

25132 Rye Canyon Loop  
Santa Clarita, CA 91355  
Contact: Mr. Gary E. Mange  
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E-Mail: [gmange@weal.com](mailto:gmange@weal.com)

**Acoustical Testing Services**

Accreditation Valid Through: March 31, 2002

**NVLAP**

*Code      Designation*

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

08/P03 ASTM C423  
08/P06 ASTM E90  
08/P31 ASTM E336  
08/P32 ASTM E1007  
08/P45 ISO 140, Part 3

**NVLAP LAB CODE 100267-0****Retlif Testing Laboratories**

795 Marconi Avenue  
Ronkonkoma, NY 11779-7231  
Contact: Mr. Ross A. Hansen  
Phone: 631-737-1500  
Fax: 631-737-1497  
E-Mail: rhansen@retlif.com  
URL: <http://www.retlif.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

**NVLAP**

*Code Designation*

**Emissions Test Methods:**

12/CIS14 CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions  
12/CIS14a EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)  
12/CIS14b AS/NZS 1044 (1995)  
12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment  
12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.  
12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment  
12/F01 FCC Method - 47 CFR Part 15 - Digital Devices  
12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz  
12/F01b Radiated Emissions  
12/T51 AS/NZS 3548

**Immunity Test Methods:**

12/I01 IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test  
12/I02 IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test  
12/I03 IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test  
12/I04 IEC 61000-4-5 (1995): Surge Immunity Test  
12/I05 IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced

12/I06 IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test  
12/I07 IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests

**MIL-STD-462 : Conducted Emissions:**

12/A01 MIL-STD-462 Method CE01  
12/A04 MIL-STD-462 Method CE02  
12/A06 MIL-STD-462 Method CE03  
12/A08 MIL-STD-462 Method CE04  
12/A10 MIL-STD-462 Method CE06  
12/A12 MIL-STD-462 Method CE07  
12/A13 MIL-STD-462 Version D Method CE101  
12/A14 MIL-STD-462 Version D Method CE102  
12/A15 MIL-STD-462 Version D Method CE106  
12/A16 MIL-STD-461 Version E Method CE101  
12/A17 MIL-STD-461 Version E Method CE102  
12/A18 MIL-STD-461 Version E Method CE106

**MIL-STD-462 : Conducted Susceptibility:**

12/B01 MIL-STD-462 Method CS01  
12/B02 MIL-STD-462 Method CS02  
12/B04 MIL-STD-462 Method CS03/CS04/CS05/CS08  
12/B05 MIL-STD-462 Method CS06  
12/B06 MIL-STD-462 Method CS07  
12/B07 MIL-STD-462 Method CS09  
12/B08 MIL-STD-462 Method CS10  
12/B09 MIL-STD-462 Method CS11  
12/B10 MIL-STD-462 Method CS12  
12/B11 MIL-STD-462 Method CS13  
12/B12 MIL-STD-462 Version D Method CS101  
12/B13 MIL-STD-462 Version D Method CS103  
12/B14 MIL-STD-462 Version D Method CS104  
12/B15 MIL-STD-462 Version D Method CS105  
12/B16 MIL-STD-462 Version D Method CS109  
12/B17 MIL-STD-462 Version D Method CS114  
12/B18 MIL-STD-462 Version D Method CS115  
12/B19 MIL-STD-462 Version D Method CS116  
12/B20 MIL-STD-461 Version E Method CS101  
12/B21 MIL-STD-461 Version E Method CS103  
12/B22 MIL-STD-461 Version E Method CS104  
12/B23 MIL-STD-461 Version E Method CS105  
12/B24 MIL-STD-461 Version E Method CS109  
12/B25 MIL-STD-461 Version E Method CS114  
12/B26 MIL-STD-461 Version E Method CS115  
12/B27 MIL-STD-461 Version E Method CS116

**MIL-STD-462 : Radiated Emissions:**

12/D01 MIL-STD-462 Method RE01  
12/D02 MIL-STD-462 Method RE02  
12/D03 MIL-STD-462 Method RE03  
12/D04 MIL-STD-462 Version D Method RE101  
12/D05 MIL-STD-462 Version D Method RE102  
12/D06 MIL-STD-462 Version D Method RE103  
12/D07 MIL-STD-461 Version E Method RE101  
12/D08 MIL-STD-461 Version E Method RE102  
12/D09 MIL-STD-461 Version E Method RE103

**MIL-STD-462 : Radiated Susceptibility:**

12/E01 MIL-STD-462 Method RS01  
12/E02 MIL-STD-462 Method RS02  
12/E04 MIL-STD-462 Method RS03 employing

## INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued

|        |                                                                                                   |
|--------|---------------------------------------------------------------------------------------------------|
|        | RADHAZ procedures for high level testing<br>(Consult laboratory for field strengths<br>available) |
| 12/E05 | MIL-STD-462 Method RS05                                                                           |
| 12/E07 | MIL-STD-462 Method RS06                                                                           |
| 12/E08 | MIL-STD-462 Version D Method RS101                                                                |
| 12/E09 | MIL-STD-462 Version D Method RS103                                                                |
| 12/E10 | MIL-STD-462 Version D Method RS105                                                                |
| 12/E11 | MIL-STD-461 Version E Method RS101                                                                |
| 12/E12 | MIL-STD-461 Version E Method RS103                                                                |
| 12/E13 | MIL-STD-461 Version E Method RS105                                                                |

### Telecommunications Test Methods:

|         |                                                                                                                                                                                                                                                           |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CS03 | CS-03                                                                                                                                                                                                                                                     |
| 12/T01  | Terminal Equipment Network Protection<br>Standards, FCC Method - 47 CFR Part 68 -<br>Analog and Digital                                                                                                                                                   |
| 12/T01a | 68.302 (Par. c,d,e,f) Environmental simulation;<br>68.304 Leakage current limit.; 68.306<br>Hazardous voltage limit.; 68.308 Signal power<br>limit.; 68.310 Longitudinal balance limit.;<br>68.312 On-hook impedance limit.; 68.314<br>Billing protection |
| 12/T01b | 68.316 Hearing Aid Compatibility: technical<br>standards                                                                                                                                                                                                  |
| 12/T01c | 68.302 Environmental simulation (Par. a,b)                                                                                                                                                                                                                |

### NVLAP LAB CODE 100267-1

#### Retlif Testing Laboratories

101 New Boston Road  
Goffstown, NH 03045  
Contact: John Monahan  
Phone: 631-497-4600  
Fax: 631-497-5281

URL: <http://www.retlif.com>

#### Electromagnetic Compatibility & Telecommunications

Accreditation Valid Through: September 30, 2002

#### NVLAP

| Code | Designation |
|------|-------------|
|------|-------------|

#### Emissions Test Methods:

|           |                                                                                                                                                                                                                          |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS14  | CISPR 14-1 (March 30, 2000): Limits and<br>methods of measurement of radio interference<br>characteristics of household electrical<br>appliances, portable tools and similar electrical<br>apparatus - Part 1: Emissions |
| 12/CIS14a | EN 55014-1 (1993) with Amendments A1<br>(1997) & A2 (1999)                                                                                                                                                               |
| 12/CIS14b | AS/NZS 1044 (1995)                                                                                                                                                                                                       |
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of<br>measurement of radio disturbance<br>characteristics of information technology<br>equipment                                                                                   |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of<br>measurement of radio disturbance<br>characteristics of information technology<br>equipment, Amendment 1:1995, and<br>Amendment 2:1996.                                       |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of                                                                                                                                                                                    |

|         |                                                                                             |
|---------|---------------------------------------------------------------------------------------------|
|         | Measurement of Radio Interference<br>Characteristics of Information Technology<br>Equipment |
| 12/F01  | FCC Method - 47 CFR Part 15 - Digital<br>Devices                                            |
| 12/F01a | Conducted Emissions, Power Lines, 450 KHz<br>to 30 MHz                                      |
| 12/F01b | Radiated Emissions                                                                          |
| 12/T51  | AS/NZS 3548                                                                                 |

### NVLAP LAB CODE 100268-0

#### TUV Product Service, Inc.

10040 Mesa Rim Road  
San Diego, CA 92121-1034  
Contact: Mr. R. Barry Wallen  
Phone: 619-546-3999  
Fax: 619-546-0364  
E-Mail: [bwallen@TUVps.com](mailto:bwallen@TUVps.com)  
URL: <http://www.tuvps.com>

#### Electromagnetic Compatibility & Telecommunications

Accreditation Valid Through: December 31, 2002

#### NVLAP

| Code | Designation |
|------|-------------|
|------|-------------|

#### Emissions Test Methods:

|           |                                                                                                                                                                                    |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of<br>measurement of radio disturbance<br>characteristics of information technology<br>equipment                                             |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of<br>measurement of radio disturbance<br>characteristics of information technology<br>equipment, Amendment 1:1995, and<br>Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of<br>Measurement of Radio Interference<br>Characteristics of Information Technology<br>Equipment                                               |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital<br>Devices                                                                                                                                   |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz<br>to 30 MHz                                                                                                                             |
| 12/F01b   | Radiated Emissions                                                                                                                                                                 |
| 12/T51    | AS/NZS 3548                                                                                                                                                                        |

#### Immunity Test Methods:

|        |                                                                                                                  |
|--------|------------------------------------------------------------------------------------------------------------------|
| 12/I01 | IEC 61000-4-2 (1995) and Amendment 1<br>(1998): Electrostatic Discharge Immunity Test                            |
| 12/I02 | IEC 61000-4-3 (1995) and Amendment 1<br>(1998): Radiated, Radio-Frequency<br>Electromagnetic Field Immunity Test |
| 12/I03 | IEC 61000-4-4 (1995): Electrical Fast<br>Transient/Burst Immunity Test                                           |
| 12/I04 | IEC 61000-4-5 (1995): Surge Immunity Test                                                                        |
| 12/I05 | IEC 61000-4-6 (1996): Immunity to<br>Conducted Disturbances, Induced<br>Radio-Frequency Fields                   |
| 12/I06 | IEC 61000-4-8 (1993): Power Frequency<br>Magnetic Field Immunity Test                                            |
| 12/I07 | IEC 61000-4-11 (1994): Voltage Dips, Short                                                                       |



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

Interruptions and Voltage Variations Immunity

Tests

**MIL-STD-462 : Conducted Emissions:**

|        |                                    |
|--------|------------------------------------|
| 12/A01 | MIL-STD-462 Method CE01            |
| 12/A04 | MIL-STD-462 Method CE02            |
| 12/A06 | MIL-STD-462 Method CE03            |
| 12/A08 | MIL-STD-462 Method CE04            |
| 12/A10 | MIL-STD-462 Method CE06            |
| 12/A12 | MIL-STD-462 Method CE07            |
| 12/A13 | MIL-STD-462 Version D Method CE101 |
| 12/A14 | MIL-STD-462 Version D Method CE102 |
| 12/A15 | MIL-STD-462 Version D Method CE106 |
| 12/A16 | MIL-STD-461 Version E Method CE101 |
| 12/A17 | MIL-STD-461 Version E Method CE102 |
| 12/A18 | MIL-STD-461 Version E Method CE106 |

**MIL-STD-462 : Conducted Susceptibility:**

|        |                                           |
|--------|-------------------------------------------|
| 12/B01 | MIL-STD-462 Method CS01                   |
| 12/B02 | MIL-STD-462 Method CS02                   |
| 12/B04 | MIL-STD-462 Method<br>CS03/CS04/CS05/CS08 |
| 12/B05 | MIL-STD-462 Method CS06                   |
| 12/B06 | MIL-STD-462 Method CS07                   |
| 12/B07 | MIL-STD-462 Method CS09                   |
| 12/B08 | MIL-STD-462 Method CS10                   |
| 12/B09 | MIL-STD-462 Method CS11                   |
| 12/B10 | MIL-STD-462 Method CS12                   |
| 12/B11 | MIL-STD-462 Method CS13                   |
| 12/B12 | MIL-STD-462 Version D Method CS101        |
| 12/B13 | MIL-STD-462 Version D Method CS103        |
| 12/B17 | MIL-STD-462 Version D Method CS114        |
| 12/B18 | MIL-STD-462 Version D Method CS115        |
| 12/B19 | MIL-STD-462 Version D Method CS116        |
| 12/B20 | MIL-STD-461 Version E Method CS101        |
| 12/B21 | MIL-STD-461 Version E Method CS103        |
| 12/B25 | MIL-STD-461 Version E Method CS114        |
| 12/B26 | MIL-STD-461 Version E Method CS115        |
| 12/B27 | MIL-STD-461 Version E Method CS116        |

**MIL-STD-462 : Radiated Emissions:**

|        |                                    |
|--------|------------------------------------|
| 12/D01 | MIL-STD-462 Method RE01            |
| 12/D02 | MIL-STD-462 Method RE02            |
| 12/D03 | MIL-STD-462 Method RE03            |
| 12/D04 | MIL-STD-462 Version D Method RE101 |
| 12/D05 | MIL-STD-462 Version D Method RE102 |
| 12/D06 | MIL-STD-462 Version D Method RE103 |
| 12/D07 | MIL-STD-461 Version E Method RE101 |
| 12/D08 | MIL-STD-461 Version E Method RE102 |
| 12/D09 | MIL-STD-461 Version E Method RE103 |

**MIL-STD-462 : Radiated Susceptibility:**

|        |                                                                                                                                        |
|--------|----------------------------------------------------------------------------------------------------------------------------------------|
| 12/E01 | MIL-STD-462 Method RS01                                                                                                                |
| 12/E02 | MIL-STD-462 Method RS02                                                                                                                |
| 12/E03 | MIL-STD-462 Method RS03 (Consult<br>laboratory for field strengths available)                                                          |
| 12/E04 | MIL-STD-462 Method RS03 employing<br>RADHAZ procedures for high level testing<br>(Consult laboratory for field strengths<br>available) |
| 12/E05 | MIL-STD-462 Method RS05                                                                                                                |
| 12/E07 | MIL-STD-462 Method RS06                                                                                                                |
| 12/E08 | MIL-STD-462 Version D Method RS101                                                                                                     |
| 12/E09 | MIL-STD-462 Version D Method RS103                                                                                                     |

|        |                                    |
|--------|------------------------------------|
| 12/E10 | MIL-STD-462 Version D Method RS105 |
| 12/E11 | MIL-STD-461 Version E Method RS101 |
| 12/E12 | MIL-STD-461 Version E Method RS103 |
| 12/E13 | MIL-STD-461 Version E Method RS105 |

**NVLAP LAB CODE 100269-0****Intermec Technologies Corporation**

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Fax: 319-846-2475

E-Mail: cedric.brownfield@intermec.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

*NVLAP**Code      Designation***Emissions Test Methods:**

|           |                                                                                                                                                                                    |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of<br>measurement of radio disturbance<br>characteristics of information technology<br>equipment                                             |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of<br>measurement of radio disturbance<br>characteristics of information technology<br>equipment, Amendment 1:1995, and<br>Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of<br>Measurement of Radio Interference<br>Characteristics of Information Technology<br>Equipment                                               |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital<br>Devices                                                                                                                                   |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz<br>to 30 MHz                                                                                                                             |
| 12/F01b   | Radiated Emissions                                                                                                                                                                 |
| 12/T51    | AS/NZS 3548                                                                                                                                                                        |

**NVLAP LAB CODE 100271-0****TUV Product Service, Inc.- A Division of TUV  
America Inc.**

1775 Old Hwy. 8 NW, Suite 104

New Brighton, MN 55112-1891

Contact: Mr. R. Barry Wallen

Phone: 303-402-5241

Fax: 303-449-3004

E-Mail: bwallen@tuvam.com

URL: <http://www.tuvglobal.com>**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

*NVLAP**Code      Designation***Emissions Test Methods:**

|          |                                                                                                                                        |
|----------|----------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22 | IEC/CISPR 22:1997: Limits and methods of<br>measurement of radio disturbance<br>characteristics of information technology<br>equipment |
|----------|----------------------------------------------------------------------------------------------------------------------------------------|



| <p>12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment</p> <p>12/F01 FCC Method - 47 CFR Part 15 - Digital Devices</p> <p>12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz</p> <p>12/F01b Radiated Emissions</p> <p>12/T51 AS/NZS 3548</p> <p><b>Immunity Test Methods:</b></p> <p>12/I01 IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test</p> <p>12/I02 IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test</p> <p>12/I03 IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test</p> <p>12/I04 IEC 61000-4-5 (1995): Surge Immunity Test</p> <p>12/I05 IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields</p> <p>12/I06 IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test</p> <p>12/I07 IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests</p> <p><b>MIL-STD-462 : Conducted Emissions:</b></p> <p>12/A01 MIL-STD-462 Method CE01</p> <p>12/A04 MIL-STD-462 Method CE02</p> <p>12/A06 MIL-STD-462 Method CE03</p> <p>12/A08 MIL-STD-462 Method CE04</p> <p>12/A12 MIL-STD-462 Method CE07</p> <p>12/A13 MIL-STD-462 Version D Method CE101</p> <p>12/A14 MIL-STD-462 Version D Method CE102</p> <p>12/A16 MIL-STD-461 Version E Method CE101</p> <p>12/A17 MIL-STD-461 Version E Method CE102</p> <p><b>MIL-STD-462 : Conducted Susceptibility:</b></p> <p>12/B01 MIL-STD-462 Method CS01</p> <p>12/B02 MIL-STD-462 Method CS02</p> <p>12/B05 MIL-STD-462 Method CS06</p> <p>12/B07 MIL-STD-462 Method CS09</p> <p>12/B12 MIL-STD-462 Version D Method CS101</p> <p>12/B16 MIL-STD-462 Version D Method CS109</p> <p>12/B20 MIL-STD-461 Version E Method CS101</p> <p>12/B24 MIL-STD-461 Version E Method CS109</p> <p><b>MIL-STD-462 : Radiated Emissions:</b></p> <p>12/D01 MIL-STD-462 Method RE01</p> <p>12/D02 MIL-STD-462 Method RE02</p> <p>12/D04 MIL-STD-462 Version D Method RE101</p> <p>12/D05 MIL-STD-462 Version D Method RE102</p> <p>12/D07 MIL-STD-461 Version E Method RE101</p> <p>12/D08 MIL-STD-461 Version E Method RE102</p> <p><b>MIL-STD-462 : Radiated Susceptibility:</b></p> <p>12/E01 MIL-STD-462 Method RS01</p> <p>12/E02 MIL-STD-462 Method RS02</p> <p>12/E03 MIL-STD-462 Method RS03 (Consult laboratory for field strengths available)</p> <p>12/E04 MIL-STD-462 Method RS03 employing</p> | <p>RADHAZ procedures for high level testing (Consult laboratory for field strengths available)</p> <p>12/E07 MIL-STD-462 Method RS06</p> <p>12/E08 MIL-STD-462 Version D Method RS101</p> <p>12/E09 MIL-STD-462 Version D Method RS103</p> <p>12/E11 MIL-STD-461 Version E Method RS101</p> <p>12/E12 MIL-STD-461 Version E Method RS103</p> <p><b>Safety Test Methods:</b></p> <p>12/T41 ACA TS-001</p> <p>12/T50 AS/NZS 3260</p> <hr/> <p style="text-align: right;"><b>NVLAP LAB CODE 100271-1</b></p> <p><b>TUV Product Service, Inc.</b></p> <p>5541 Central Avenue<br/>Boulder, CO 80301-2846<br/>Contact: Robert G. Creswell<br/>Phone: 303-402-5246<br/>Fax: 303-449-3004<br/>E-Mail: rcreswell@tuvam.com<br/>URL: http://www.tuvglobal.com</p> <p><b>Electromagnetic Compatibility &amp; Telecommunications Accreditation Valid Through: September 30, 2002</b></p> <p><b>NVLAP</b></p> <table border="0"> <thead> <tr> <th style="text-align: left;">Code</th> <th style="text-align: left;">Designation</th> </tr> </thead> <tbody> <tr> <td colspan="2"><b>Emissions Test Methods:</b></td> </tr> <tr> <td>12/CIS22</td> <td>IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment</td> </tr> <tr> <td>12/CIS22a</td> <td>IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.</td> </tr> <tr> <td>12/CIS22b</td> <td>CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment</td> </tr> <tr> <td>12/F01</td> <td>FCC Method - 47 CFR Part 15 - Digital Devices</td> </tr> <tr> <td>12/F01a</td> <td>Conducted Emissions, Power Lines, 450 KHz to 30 MHz</td> </tr> <tr> <td>12/F01b</td> <td>Radiated Emissions</td> </tr> <tr> <td>12/T51</td> <td>AS/NZS 3548</td> </tr> <tr> <td colspan="2"><b>Immunity Test Methods:</b></td> </tr> <tr> <td>12/I01</td> <td>IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test</td> </tr> <tr> <td>12/I02</td> <td>IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test</td> </tr> <tr> <td>12/I03</td> <td>IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test</td> </tr> <tr> <td>12/I04</td> <td>IEC 61000-4-5 (1995): Surge Immunity Test</td> </tr> <tr> <td>12/I05</td> <td>IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields</td> </tr> <tr> <td>12/I06</td> <td>IEC 61000-4-8 (1993): Power Frequency</td> </tr> </tbody> </table> | Code | Designation | <b>Emissions Test Methods:</b> |  | 12/CIS22 | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment | 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. | 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment | 12/F01 | FCC Method - 47 CFR Part 15 - Digital Devices | 12/F01a | Conducted Emissions, Power Lines, 450 KHz to 30 MHz | 12/F01b | Radiated Emissions | 12/T51 | AS/NZS 3548 | <b>Immunity Test Methods:</b> |  | 12/I01 | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test | 12/I02 | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test | 12/I03 | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test | 12/I04 | IEC 61000-4-5 (1995): Surge Immunity Test | 12/I05 | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields | 12/I06 | IEC 61000-4-8 (1993): Power Frequency |
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------------------------------------------|------|-------------|--------------------------------|--|----------|-------------------------------------------------------------------------------------------------------------------------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------|--------|-----------------------------------------------|---------|-----------------------------------------------------|---------|--------------------|--------|-------------|-------------------------------|--|--------|------------------------------------------------------------------------------------|--------|------------------------------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------|--------|-------------------------------------------|--------|------------------------------------------------------------------------------------------|--------|---------------------------------------|
| Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Designation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |      |             |                                |  |          |                                                                                                                               |           |                                                                                                                                                                        |           |                                                                                                                             |        |                                               |         |                                                     |         |                    |        |             |                               |  |        |                                                                                    |        |                                                                                                            |        |                 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| <b>Emissions Test Methods:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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| 12/CIS22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                                                                                                                                                                                                                                                                                                                                                                                                                                     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                                                    |        |                                           |        |                                                                                          |        |                                       |
| 12/CIS22a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.                                                                                                                                                                                                                                                                                                                                                                                                            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                                                    |        |                                           |        |                                                                                          |        |                                       |
| 12/CIS22b                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                                                                                                                                                                                                                                                                                                                                                                                                                                       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| 12/F01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      |             |                                |  |          |                                                                                                                               |           |                                                                                                                                                                        |           |                                                                                                                             |        |                                               |         |                                                     |         |                    |        |             |                               |  |        |                                                                                    |        |                                                                                                            |        |                                                                     |        |                                           |        |                                                                                          |        |                                       |
| 12/F01a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                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| 12/F01b                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                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| 12/T51                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | AS/NZS 3548                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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| <b>Immunity Test Methods:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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| 12/I01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                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| 12/I02                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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| 12/I03                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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| 12/I04                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | IEC 61000-4-5 (1995): Surge Immunity Test                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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| 12/I05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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| 12/I06                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | IEC 61000-4-8 (1993): Power Frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|        |                                                                                                |        |            |
|--------|------------------------------------------------------------------------------------------------|--------|------------|
|        | Magnetic Field Immunity Test                                                                   | 12/T45 | ACA TS-006 |
| 12/I07 | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests | 12/T46 | ACA TS-008 |
|        |                                                                                                | 12/T49 | ACA TS-016 |

**NVLAP LAB CODE 100272-0****Communication Certification Laboratory**

1940 West Alexander Street  
Salt Lake City, UT 84119-2039  
Contact: Mr. Scott B. Earl  
Phone: 801-972-6146  
Fax: 801-972-8432  
E-Mail: sbe@cclab.com  
URL: <http://www.cclab.com/>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

**Safety Test Methods:**

|        |             |
|--------|-------------|
| 12/T41 | ACA TS-001  |
| 12/T50 | AS/NZS 3260 |

**Telecommunications Test Methods:**

|         |                                                                                                                                                                                                                                            |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CS03 | CS-03                                                                                                                                                                                                                                      |
| 12/T01  | Terminal Equipment Network Protection Standards, FCC Method - 47 CFR Part 68 - Analog and Digital                                                                                                                                          |
| 12/T01a | 68.302 (Par. c,d,e,f) Environmental simulation; 68.304 Leakage current limit.; 68.306 Hazardous voltage limit.; 68.308 Signal power limit.; 68.310 Longitudinal balance limit.; 68.312 On-hook impedance limit.; 68.314 Billing protection |
| 12/T01b | 68.316 Hearing Aid Compatibility: technical standards                                                                                                                                                                                      |
| 12/T01c | 68.302 Environmental simulation (Par. a,b)                                                                                                                                                                                                 |
| 12/T42  | ACA TS-002                                                                                                                                                                                                                                 |
| 12/T43  | ACA TS-003                                                                                                                                                                                                                                 |
| 12/T44  | ACA TS-004                                                                                                                                                                                                                                 |

**NVLAP LAB CODE 100273-0****MET Laboratories, Inc.**

914 W. Patapsco Avenue  
Baltimore, MD 21230-3432  
Contact: Mr. Robert Frier  
Phone: 410-354-3300  
Fax: 410-354-3313  
E-Mail: rfrier@metlabs.com  
URL: <http://www.metlabs.com>

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|------|-------------|

**Emissions Test Methods:**

|           |                                                                                                                                                                                                              |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS14  | CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions |
| 12/CIS14a | EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)                                                                                                                                                      |
| 12/CIS14b | AS/NZS 1044 (1995)                                                                                                                                                                                           |
| 12/CIS14c | CNS 13783-1                                                                                                                                                                                                  |
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                                                                |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.                                       |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                                                                  |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                                                                |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                                                          |
| 12/F01b   | Radiated Emissions                                                                                                                                                                                           |
| 12/T51    | AS/NZS 3548                                                                                                                                                                                                  |

**Immunity Test Methods:**

|        |                                                                                                            |
|--------|------------------------------------------------------------------------------------------------------------|
| 12/I01 | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                         |
| 12/I02 | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test |
| 12/I03 | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                        |
| 12/I04 | IEC 61000-4-5 (1995): Surge Immunity Test                                                                  |
| 12/I05 | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields                   |

## INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued

|                                         |                                                                                                                                                                                                                                                           |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/I06                                  | IEC 61000-4-8 (1993): Power Frequency<br>Magnetic Field Immunity Test                                                                                                                                                                                     |
| 12/I07                                  | IEC 61000-4-11 (1994): Voltage Dips, Short<br>Interruptions and Voltage Variations Immunity<br>Tests                                                                                                                                                      |
| <b>Safety Test Methods:</b>             |                                                                                                                                                                                                                                                           |
| 12/T41                                  | ACA TS-001                                                                                                                                                                                                                                                |
| 12/T50                                  | AS/NZS 3260                                                                                                                                                                                                                                               |
| <b>Telecommunications Test Methods:</b> |                                                                                                                                                                                                                                                           |
| 12/CS03                                 | CS-03                                                                                                                                                                                                                                                     |
| 12/T01                                  | Terminal Equipment Network Protection<br>Standards, FCC Method - 47 CFR Part 68 -<br>Analog and Digital                                                                                                                                                   |
| 12/T01a                                 | 68.302 (Par. c,d,e,f) Environmental simulation;<br>68.304 Leakage current limit.; 68.306<br>Hazardous voltage limit.; 68.308 Signal power<br>limit.; 68.310 Longitudinal balance limit.;<br>68.312 On-hook impedance limit.; 68.314<br>Billing protection |
| 12/T01b                                 | 68.316 Hearing Aid Compatibility: technical<br>standards                                                                                                                                                                                                  |
| 12/T01c                                 | 68.302 Environmental simulation (Par. a,b)                                                                                                                                                                                                                |
| 12/T42                                  | ACA TS-002                                                                                                                                                                                                                                                |
| 12/T43                                  | ACA TS-003                                                                                                                                                                                                                                                |
| 12/T44                                  | ACA TS-004                                                                                                                                                                                                                                                |
| 12/T45                                  | ACA TS-006                                                                                                                                                                                                                                                |
| 12/T49                                  | ACA TS-016                                                                                                                                                                                                                                                |

### NVLAP LAB CODE 100274-0

#### Intertek Testing Services NA Inc.

731 Enterprise Drive  
Lexington, KY 40510-1029

Contact: Mr. Tim Scott

Phone: 859-226-1083

Fax: 859-226-1080

E-Mail: [tims@ETLSEMKO.COM](mailto:tims@ETLSEMKO.COM)

URL: <http://www.http://www.ETLSEMKO.COM>

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#### Emissions Test Methods:

|           |                                                                                                                                        |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of<br>measurement of radio disturbance<br>characteristics of information technology<br>equipment |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of<br>Measurement of Radio Interference<br>Characteristics of Information Technology<br>Equipment   |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital<br>Devices                                                                                       |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz<br>to 30 MHz                                                                                 |
| 12/F01b   | Radiated Emissions                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                            |

#### Immunity Test Methods:

|        |                                                                                                                  |
|--------|------------------------------------------------------------------------------------------------------------------|
| 12/I01 | IEC 61000-4-2 (1995) and Amendment 1<br>(1998): Electrostatic Discharge Immunity Test                            |
| 12/I02 | IEC 61000-4-3 (1995) and Amendment 1<br>(1998): Radiated, Radio-Frequency<br>Electromagnetic Field Immunity Test |
| 12/I03 | IEC 61000-4-4 (1995): Electrical Fast<br>Transient/Burst Immunity Test                                           |
| 12/I04 | IEC 61000-4-5 (1995): Surge Immunity Test                                                                        |
| 12/I05 | IEC 61000-4-6 (1996): Immunity to<br>Conducted Disturbances, Induced<br>Radio-Frequency Fields                   |
| 12/I06 | IEC 61000-4-8 (1993): Power Frequency<br>Magnetic Field Immunity Test                                            |
| 12/I07 | IEC 61000-4-11 (1994): Voltage Dips, Short<br>Interruptions and Voltage Variations Immunity<br>Tests             |

#### Safety Test Methods:

|        |             |
|--------|-------------|
| 12/T41 | ACA TS-001  |
| 12/T50 | AS/NZS 3260 |

#### Telecommunications Test Methods:

|         |                                                                                                                                                                                                                                                           |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CS03 | CS-03                                                                                                                                                                                                                                                     |
| 12/T01  | Terminal Equipment Network Protection<br>Standards, FCC Method - 47 CFR Part 68 -<br>Analog and Digital                                                                                                                                                   |
| 12/T01a | 68.302 (Par. c,d,e,f) Environmental simulation;<br>68.304 Leakage current limit.; 68.306<br>Hazardous voltage limit.; 68.308 Signal power<br>limit.; 68.310 Longitudinal balance limit.;<br>68.312 On-hook impedance limit.; 68.314<br>Billing protection |
| 12/T01b | 68.316 Hearing Aid Compatibility: technical<br>standards                                                                                                                                                                                                  |
| 12/T01c | 68.302 Environmental simulation (Par. a,b)                                                                                                                                                                                                                |
| 12/T42  | ACA TS-002                                                                                                                                                                                                                                                |
| 12/T43  | ACA TS-003                                                                                                                                                                                                                                                |
| 12/T44  | ACA TS-004                                                                                                                                                                                                                                                |
| 12/T45  | ACA TS-006                                                                                                                                                                                                                                                |
| 12/T46  | ACA TS-008                                                                                                                                                                                                                                                |
| 12/T49  | ACA TS-016                                                                                                                                                                                                                                                |

### NVLAP LAB CODE 100275-0

#### Lucent Technologies, Global Product Compliance Lab

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Holmdel, NJ 07733-3030

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#### Electromagnetic Compatibility & Telecommunications

Accreditation Valid Through: September 30, 2002

NVLAP

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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****Emissions Test Methods:**

- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

**Immunity Test Methods:**

- 12/I01 IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test
- 12/I02 IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test
- 12/I03 IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test
- 12/I04 IEC 61000-4-5 (1995): Surge Immunity Test
- 12/I05 IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields
- 12/I07 IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests

**Safety Test Methods:**

- 12/T41 ACA TS-001
- 12/T50 AS/NZS 3260

**Telecommunications Test Methods:**

- 12/T42 ACA TS-002
- 12/T44 ACA TS-004
- 12/T45 ACA TS-006
- 12/T46 ACA TS-008

**NVLAP LAB CODE 100276-0****D.L.S. Electronic Systems, Inc.**

1250 Peterson Drive  
Wheeling, IL 60090-6454  
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URL: <http://www.dlsemc.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

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**Emissions Test Methods:**

- 12/CIS14 CISPR I4-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions
- 12/CIS14a EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)
- 12/CIS14b AS/NZS 1044 (1995)
- 12/CIS14c CNS 13783-1
- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

**Immunity Test Methods:**

- 12/I01 IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test
- 12/I02 IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test
- 12/I03 IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test
- 12/I04 IEC 61000-4-5 (1995): Surge Immunity Test
- 12/I05 IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields
- 12/I06 IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test



## INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued

IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests

### NVLAP LAB CODE 100278-0

#### Elite Electronic Engineering Inc.

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Downers Grove, IL 60515-1082  
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E-Mail: [engineering@elitetest.com](mailto:engineering@elitetest.com)  
URL: <http://www.elitetest.com>

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| Code | Designation |
|------|-------------|
|------|-------------|

#### Emissions Test Methods:

- |           |                                                                                                                                                                                                              |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS14  | CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions |
| 12/CIS14a | EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)                                                                                                                                                      |
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                                                                |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.                                       |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                                                                |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                                                          |
| 12/F01b   | Radiated Emissions                                                                                                                                                                                           |
| 12/T51    | AS/NZS 3548                                                                                                                                                                                                  |

#### Immunity Test Methods:

- |        |                                                                                                            |
|--------|------------------------------------------------------------------------------------------------------------|
| 12/I01 | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                         |
| 12/I02 | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test |
| 12/I03 | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                        |
| 12/I04 | IEC 61000-4-5 (1995): Surge Immunity Test                                                                  |
| 12/I05 | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields                   |
| 12/I06 | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test                                         |
| 12/I07 | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests             |

#### MIL-STD-462 : Conducted Emissions:

- |        |                                    |
|--------|------------------------------------|
| 12/A01 | MIL-STD-462 Method CE01            |
| 12/A04 | MIL-STD-462 Method CE02            |
| 12/A06 | MIL-STD-462 Method CE03            |
| 12/A08 | MIL-STD-462 Method CE04            |
| 12/A10 | MIL-STD-462 Method CE06            |
| 12/A12 | MIL-STD-462 Method CE07            |
| 12/A13 | MIL-STD-462 Version D Method CE101 |
| 12/A14 | MIL-STD-462 Version D Method CE102 |
| 12/A15 | MIL-STD-462 Version D Method CE106 |
| 12/A16 | MIL-STD-461 Version E Method CE101 |
| 12/A17 | MIL-STD-461 Version E Method CE102 |
| 12/A18 | MIL-STD-461 Version E Method CE106 |

#### MIL-STD-462 : Conducted Susceptibility:

- |        |                                        |
|--------|----------------------------------------|
| 12/B01 | MIL-STD-462 Method CS01                |
| 12/B02 | MIL-STD-462 Method CS02                |
| 12/B04 | MIL-STD-462 Method CS03/CS04/CS05/CS08 |
| 12/B05 | MIL-STD-462 Method CS06                |
| 12/B06 | MIL-STD-462 Method CS07                |
| 12/B07 | MIL-STD-462 Method CS09                |
| 12/B08 | MIL-STD-462 Method CS10                |
| 12/B09 | MIL-STD-462 Method CS11                |
| 12/B10 | MIL-STD-462 Method CS12                |
| 12/B11 | MIL-STD-462 Method CS13                |
| 12/B12 | MIL-STD-462 Version D Method CS101     |
| 12/B13 | MIL-STD-462 Version D Method CS103     |
| 12/B14 | MIL-STD-462 Version D Method CS104     |
| 12/B15 | MIL-STD-462 Version D Method CS105     |
| 12/B16 | MIL-STD-462 Version D Method CS109     |
| 12/B17 | MIL-STD-462 Version D Method CS114     |
| 12/B18 | MIL-STD-462 Version D Method CS115     |
| 12/B19 | MIL-STD-462 Version D Method CS116     |
| 12/B20 | MIL-STD-461 Version E Method CS101     |
| 12/B21 | MIL-STD-461 Version E Method CS103     |
| 12/B22 | MIL-STD-461 Version E Method CS104     |
| 12/B23 | MIL-STD-461 Version E Method CS105     |
| 12/B24 | MIL-STD-461 Version E Method CS109     |
| 12/B25 | MIL-STD-461 Version E Method CS114     |
| 12/B26 | MIL-STD-461 Version E Method CS115     |
| 12/B27 | MIL-STD-461 Version E Method CS116     |

#### MIL-STD-462 : Radiated Emissions:

- |        |                                    |
|--------|------------------------------------|
| 12/D01 | MIL-STD-462 Method RE01            |
| 12/D02 | MIL-STD-462 Method RE02            |
| 12/D03 | MIL-STD-462 Method RE03            |
| 12/D04 | MIL-STD-462 Version D Method RE101 |
| 12/D05 | MIL-STD-462 Version D Method RE102 |
| 12/D06 | MIL-STD-462 Version D Method RE103 |
| 12/D07 | MIL-STD-461 Version E Method RE101 |
| 12/D08 | MIL-STD-461 Version E Method RE102 |
| 12/D09 | MIL-STD-461 Version E Method RE103 |

#### MIL-STD-462 : Radiated Susceptibility:

- |        |                                                                                                                               |
|--------|-------------------------------------------------------------------------------------------------------------------------------|
| 12/E01 | MIL-STD-462 Method RS01                                                                                                       |
| 12/E02 | MIL-STD-462 Method RS02                                                                                                       |
| 12/E04 | MIL-STD-462 Method RS03 employing RADHAZ procedures for high level testing (Consult laboratory for field strengths available) |
| 12/E05 | MIL-STD-462 Method RS05                                                                                                       |
| 12/E07 | MIL-STD-462 Method RS06                                                                                                       |
| 12/E08 | MIL-STD-462 Version D Method RS101                                                                                            |

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|        |                                    |
|--------|------------------------------------|
| 12/E09 | MIL-STD-462 Version D Method RS103 |
| 12/E10 | MIL-STD-462 Version D Method RS105 |
| 12/E11 | MIL-STD-461 Version E Method RS101 |
| 12/E12 | MIL-STD-461 Version E Method RS103 |
| 12/E13 | MIL-STD-461 Version E Method RS105 |

**Telecommunications Test Methods:**

|         |                                                                                                                                                                                                                                            |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CS03 | CS-03                                                                                                                                                                                                                                      |
| 12/T01  | Terminal Equipment Network Protection Standards, FCC Method - 47 CFR Part 68 - Analog and Digital                                                                                                                                          |
| 12/T01a | 68.302 (Par. c,d,e,f) Environmental simulation; 68.304 Leakage current limit.; 68.306 Hazardous voltage limit.; 68.308 Signal power limit.; 68.310 Longitudinal balance limit.; 68.312 On-hook impedance limit.; 68.314 Billing protection |
| 12/T01b | 68.316 Hearing Aid Compatibility: technical standards                                                                                                                                                                                      |
| 12/T01c | 68.302 Environmental simulation (Par. a,b)                                                                                                                                                                                                 |

**NVLAP LAB CODE 100280-0****IIT Research Institute/R&B Operation**

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URL: www.IITRI.org

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
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|------|-------------|

**Emissions Test Methods:**

|         |                                                     |
|---------|-----------------------------------------------------|
| 12/F01  | FCC Method - 47 CFR Part 15 - Digital Devices       |
| 12/F01a | Conducted Emissions, Power Lines, 450 KHz to 30 MHz |
| 12/F01b | Radiated Emissions                                  |

**MIL-STD-462 : Conducted Emissions:**

|        |                         |
|--------|-------------------------|
| 12/A01 | MIL-STD-462 Method CE01 |
| 12/A06 | MIL-STD-462 Method CE03 |
| 12/A10 | MIL-STD-462 Method CE06 |
| 12/A12 | MIL-STD-462 Method CE07 |

**MIL-STD-462 : Conducted Susceptibility:**

|        |                         |
|--------|-------------------------|
| 12/B01 | MIL-STD-462 Method CS01 |
| 12/B02 | MIL-STD-462 Method CS02 |
| 12/B05 | MIL-STD-462 Method CS06 |
| 12/B06 | MIL-STD-462 Method CS07 |
| 12/B07 | MIL-STD-462 Method CS09 |
| 12/B08 | MIL-STD-462 Method CS10 |
| 12/B09 | MIL-STD-462 Method CS11 |
| 12/B10 | MIL-STD-462 Method CS12 |
| 12/B11 | MIL-STD-462 Method CS13 |

**MIL-STD-462 : Radiated Emissions:**

|        |                         |
|--------|-------------------------|
| 12/D01 | MIL-STD-462 Method RE01 |
| 12/D02 | MIL-STD-462 Method RE02 |

**MIL-STD-462 : Radiated Susceptibility:**

|        |                                                                                                                               |
|--------|-------------------------------------------------------------------------------------------------------------------------------|
| 12/E01 | MIL-STD-462 Method RS01                                                                                                       |
| 12/E02 | MIL-STD-462 Method RS02                                                                                                       |
| 12/E04 | MIL-STD-462 Method RS03 employing RADHAZ procedures for high level testing (Consult laboratory for field strengths available) |
| 12/E05 | MIL-STD-462 Method RS05                                                                                                       |

**NVLAP LAB CODE 100286-0****Acoustic Systems Acoustical Research Facility**

415 East St. Elmo Road  
P.O. Box 3610  
Austin, TX 78764  
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Fax: 512-444-2282  
E-Mail: lab@acouticsystems.com

**Acoustical Testing Services**

Accreditation Valid Through: June 30, 2002

**NVLAP**

| Code   | Designation |
|--------|-------------|
| 08/P03 | ASTM C423   |
| 08/P06 | ASTM E90    |
| 08/P08 | ASTM E596   |
| 08/P10 | ANSI S12.31 |
| 08/P11 | ISO 3744    |
| 08/P35 | ASTM E1050  |
| 08/P40 | ISO 9296    |
| 08/P41 | ECMA 74     |
| 08/P42 | ECMA 109    |
| 08/P48 | ISO 7779    |

**NVLAP LAB CODE 100288-0****Bentley Prince Street Testing Laboratory**

14641 E. Don Julian Road  
P.O. Box 527  
City of Industry, CA 91746-3106  
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Fax: 626-333-4125  
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**Carpet and Carpet Cushion**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Tests Applicable to Carpet Cushion**

|         |                                |
|---------|--------------------------------|
| 03/U01a | ASTM D3574 (Sec. 8.2 & Test A) |
| 03/U01b | ASTM D3676 (Secs. 10-12)       |
| 03/U02  | ASTM D297                      |
| 03/U07  | ASTM D3574 (Test C)            |
| 03/U08  | ASTM D3574 (Test D)            |
| 03/U10  | ASTM D3676 (Sec. 13)           |
| 03/U11  | ASTM D3676 (Sec.14)            |
| 03/U12  | ASTM D3676 (Sec.15)            |
| 03/U13  | ASTM D3676 (Sec.16)            |

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****Tests Applicable to Carpet and Carpet Cushion**

03/T01 AATCC 16 (Option E)  
03/T04 16 CFR Part 1630 (FF-1-70)

**Tests Applicable to Carpets**

03/G04 AATCC 165  
03/G05 ASTM D418 (Sec. 8)  
03/G05a ASTM D5848 (Sec. 8)  
03/G06 ASTM D418 (Sec. 9)  
03/G07 ASTM D418 (Secs. 10-11)  
03/G08 ASTM D418 (Sec. 13)  
03/G09 ASTM D1335  
03/G10 ASTM D3936  
03/G12 ASTM E648  
03/G13 ASTM E662  
03/G14 Fed Spec, DDD-C-0095A

**NVLAP LAB CODE 100290-0****Akzo Nobel K.K., Kashima EMC Site**

1 Oaza Sunayama, Hasaki, Kashima-gun  
Ibaraki 314-02  
JAPAN  
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**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

Code Designation

**Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment  
12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.  
12/F01 FCC Method - 47 CFR Part 15 - Digital Devices  
12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz  
12/F01b Radiated Emissions  
12/T51 AS/NZS 3548

**NVLAP LAB CODE 100290-2****Akzo Nobel K.K., Kakegawa EMC Test Site**

322 Shimotaruki, Kakegawa  
Shizuoka 436-0222  
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URL: <http://www.akzoemc.co.jp>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

Code Designation

**Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment  
12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.  
12/F01 FCC Method - 47 CFR Part 15 - Digital Devices  
12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz  
12/F01b Radiated Emissions  
12/T51 AS/NZS 3548

**NVLAP LAB CODE 100290-3****Akzo Nobel K.K., Nagano EMC Test Site**

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**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

Code Designation

**Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment  
12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.  
12/F01 FCC Method - 47 CFR Part 15 - Digital Devices



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

12/F01a Conducted Emissions, Power Lines, 450 KHz  
to 30 MHz  
12/F01b Radiated Emissions  
12/T51 AS/NZS 3548

**NVLAP LAB CODE 100290-4****Akzo Nobel K.K., Matsuda EMC Test Site**

1283 Yadorigi, Matsuda, Ashigarakami-gun  
Kanagawa 258-0001  
JAPAN

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Fax: +81-465-89-2160  
E-Mail: hayashi@akzoemc.co.jp  
URL: <http://www.akzoemc.co.jp>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

*Code Designation*

**Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1997: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology  
equipment  
12/CIS22a IEC/CISPR 22:1993: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology  
equipment, Amendment 1:1995, and  
Amendment 2:1996.  
12/F01 FCC Method - 47 CFR Part 15 - Digital  
Devices  
12/F01a Conducted Emissions, Power Lines, 450 KHz  
to 30 MHz  
12/F01b Radiated Emissions  
12/T51 AS/NZS 3548

**NVLAP LAB CODE 100290-5****Akzo Nobel K.K., Tochigi EMC Test Site**

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**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

*Code Designation*

**Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1997: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology  
equipment  
12/CIS22a IEC/CISPR 22:1993: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology

equipment, Amendment 1:1995, and  
Amendment 2:1996.  
12/F01 FCC Method - 47 CFR Part 15 - Digital  
Devices

12/F01a Conducted Emissions, Power Lines, 450 KHz  
to 30 MHz  
12/F01b Radiated Emissions  
12/T51 AS/NZS 3548

**NVLAP LAB CODE 100296-0****Chomerics Test Services (CTS)**

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Fax: 781-935-2758  
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URL: <http://www.chomericstest.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

*Code Designation*

**Emissions Test Methods:**

12/CIS14 CISPR 14-1 (March 30, 2000): Limits and  
methods of measurement of radio interference  
characteristics of household electrical  
appliances, portable tools and similar electrical  
apparatus - Part 1: Emissions  
12/CIS14a EN 55014-1 (1993) with Amendments A1  
(1997) & A2 (1999)  
12/CIS14b AS/NZS 1044 (1995)  
12/CIS14c CNS 13783-1  
12/CIS22 IEC/CISPR 22:1997: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology  
equipment  
12/CIS22a IEC/CISPR 22:1993: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology  
equipment, Amendment 1:1995, and  
Amendment 2:1996.  
12/CIS22b CNS 13438:1997: Limits and Methods of  
Measurement of Radio Interference  
Characteristics of Information Technology  
Equipment  
12/F01 FCC Method - 47 CFR Part 15 - Digital  
Devices  
12/F01a Conducted Emissions, Power Lines, 450 KHz  
to 30 MHz  
12/F01b Radiated Emissions  
12/T51 AS/NZS 3548



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 100297-0****Professional Testing Laboratory, Inc.**

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Dalton, GA 30721  
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Phone: 706-226-3283  
Fax: 706-226-6787  
E-Mail: protest@alltel.net

**Carpet and Carpet Cushion**

Accreditation Valid Through: June 30, 2002

**NVLAP**

*Code Designation*

**Tests Applicable to Carpet Cushion**

|         |                                |
|---------|--------------------------------|
| 03/U01a | ASTM D3574 (Sec. 8.2 & Test A) |
| 03/U01b | ASTM D3676 (Secs. 10-12)       |
| 03/U02  | ASTM D297                      |
| 03/U03  | ASTM D629 (Sec. 10)            |
| 03/U04  | ASTM D629 (Secs. 13-22)        |
| 03/U05  | ASTM D629 (Secs. 23-27)        |
| 03/U06  | ASTM D1667 (Suffix B)          |
| 03/U07  | ASTM D3574 (Test C)            |
| 03/U08  | ASTM D3574 (Test D)            |
| 03/U09  | ASTM D3574 (Test E)            |
| 03/U10  | ASTM D3676 (Sec. 13)           |
| 03/U11  | ASTM D3676 (Sec.14)            |
| 03/U12  | ASTM D3676 (Sec.15)            |
| 03/U13  | ASTM D3676 (Sec.16)            |

**Tests Applicable to Carpet and Carpet Cushion**

|         |                            |
|---------|----------------------------|
| 03/T01  | AATCC 16 (Option E)        |
| 03/T02  | ASTM D2646 (Secs. 16-24)   |
| 03/T02a | ASTM D2646 (Sec. 16)       |
| 03/T04  | 16 CFR Part 1630 (FF-1-70) |

**Tests Applicable to Carpets**

|         |                         |
|---------|-------------------------|
| 03/G01  | AATCC 20                |
| 03/G02  | AATCC 20A               |
| 03/G03  | AATCC 134               |
| 03/G04  | AATCC 165               |
| 03/G05  | ASTM D418 (Sec. 8)      |
| 03/G05a | ASTM D5848 (Sec. 8)     |
| 03/G06  | ASTM D418 (Sec. 9)      |
| 03/G06a | ASTM D5848 (Sec. 9)     |
| 03/G07  | ASTM D418 (Secs. 10-11) |
| 03/G08  | ASTM D418 (Sec. 13)     |
| 03/G08a | ASTM D5823              |
| 03/G09  | ASTM D1335              |
| 03/G10  | ASTM D3936              |
| 03/G11  | ASTM D5252              |
| 03/G12  | ASTM E648               |
| 03/G13  | ASTM E662               |
| 03/G15  | ASTM D6119              |
| 03/G16  | CRI TM-101              |

**NVLAP LAB CODE 100308-0****Special Testing Laboratories, Inc.**

21 Henry Street  
P.O. Box 200  
Bethel, CT 06801-0200  
Contact: Mr. Richard Speciale  
Phone: 203-743-7281  
Fax: 203-791-2451

**Construction Materials Testing**

Accreditation Valid Through: December 31, 2002

**NVLAP**

*Code Designation*

**Aggregates**

|        |           |
|--------|-----------|
| 02/A03 | ASTM C29  |
| 02/A04 | ASTM C40  |
| 02/A06 | ASTM C88  |
| 02/A07 | ASTM C117 |
| 02/A09 | ASTM C127 |
| 02/A10 | ASTM C128 |
| 02/A11 | ASTM C131 |
| 02/A12 | ASTM C136 |
| 02/A15 | ASTM D75  |
| 02/A15 | ASTM D75  |
| 02/A44 | ASTM C566 |

**Concrete**

|        |                              |
|--------|------------------------------|
| 02/A01 | ASTM C39                     |
| 02/A02 | ASTM C617                    |
| 02/A41 | ASTM C192                    |
| 02/A43 | ASTM C1064                   |
| 02/A45 | ASTM C42                     |
| 02/G01 | ASTM C31/C172/C143/C138/C231 |
| 02/G02 | ASTM C173                    |

**Road and Paving Materials**

|        |            |
|--------|------------|
| 02/M25 | ASTM D2726 |
|--------|------------|

**Soil and Rock**

|        |            |
|--------|------------|
| 02/L04 | ASTM D698  |
| 02/L06 | ASTM D1140 |
| 02/L07 | ASTM D1556 |
| 02/L08 | ASTM D1557 |
| 02/L09 | ASTM D1558 |
| 02/L12 | ASTM D2168 |
| 02/L13 | ASTM D2216 |
| 02/L16 | ASTM D2487 |
| 02/L17 | ASTM D2488 |
| 02/L20 | ASTM D4318 |
| 02/L23 | ASTM D2922 |
| 02/L25 | ASTM D3017 |
| 02/L31 | ASTM D2167 |

**Standard Practices**

|        |            |
|--------|------------|
| 02/A38 | ASTM E329  |
| 02/A39 | ASTM C1077 |

**Steel Materials**

|        |                          |
|--------|--------------------------|
| 02/S02 | ASTM A370 (Sec. 14)/E190 |
| 02/S07 | ASTM E709                |
| 02/S08 | ASTM E165                |

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 100315-0****Eastern Materials Testing Lab a division of  
Jaworski Geotech**

114 Woodlawn Road  
Berlin, CT 06037  
Contact: Mr. Kevin J. Brigandi  
Phone: 800-232-3634  
Fax: 888-215-9721  
E-Mail: emtl@jgi-geo.com  
URL: <http://www.jgi-geo.com>

**Construction Materials Testing**

Accreditation Valid Through: June 30, 2002

**NVLAP**

*Code      Designation*

**Aggregates**

02/A03      ASTM C29  
02/A04      ASTM C40  
02/A06      ASTM C88  
02/A07      ASTM C117  
02/A09      ASTM C127  
02/A10      ASTM C128  
02/A12      ASTM C136  
02/A15      ASTM D75

**Cement**

02/A17      ASTM C109  
02/A21      ASTM C157  
02/A28      ASTM C227  
02/A30      ASTM C266  
02/A51      ASTM C780 (Annex A7)  
02/A52      ASTM C1019

**Concrete**

02/A01      ASTM C39  
02/A02      ASTM C617  
02/A41      ASTM C192  
02/A43      ASTM C1064  
02/A45      ASTM C42  
02/G01      ASTM C31/C172/C143/C138/C231  
02/G02      ASTM C173

**Road and Paving Materials**

02/M19      ASTM D2172  
02/M25      ASTM D2726

**Soil and Rock**

02/L02      ASTM D422  
02/L04      ASTM D698  
02/L05      ASTM D854  
02/L06      ASTM D1140  
02/L08      ASTM D1557  
02/L12      ASTM D2168  
02/L13      ASTM D2216  
02/L16      ASTM D2487  
02/L17      ASTM D2488  
02/L20      ASTM D4318  
02/L23      ASTM D2922  
02/L25      ASTM D3017  
02/L31      ASTM D2167

**Standard Practices**

02/A38      ASTM E329  
02/A39      ASTM C1077

**Steel Materials**

02/S07      ASTM E709

**NVLAP LAB CODE 100316-0****Independent Materials Testing Laboratories, Inc.**

57 N. Washington Street  
P.O. Box 745  
Plainville, CT 06062-0745  
Contact: Mr. David P. Aiudi  
Phone: 860-747-1000  
Fax: 860-747-6455

**Construction Materials Testing**

Accreditation Valid Through: March 31, 2002

**NVLAP**

*Code      Designation*

**Aggregates**

02/A03      ASTM C29  
02/A04      ASTM C40  
02/A05      ASTM C87  
02/A06      ASTM C88  
02/A07      ASTM C117  
02/A08      ASTM C123  
02/A09      ASTM C127  
02/A10      ASTM C128  
02/A11      ASTM C131  
02/A12      ASTM C136  
02/A13      ASTM C142  
02/A15      ASTM D75  
02/A44      ASTM C566  
02/A46      ASTM C535

**Cement**

02/A26      ASTM C191  
02/A31      ASTM C305  
02/A51      ASTM C780 (Annex A7)  
02/A52      ASTM C1019

**Concrete**

02/A01      ASTM C39  
02/A02      ASTM C617  
02/A40      ASTM C78  
02/A41      ASTM C192  
02/A43      ASTM C1064  
02/A45      ASTM C42  
02/G01      ASTM C31/C172/C143/C138/C231  
02/G02      ASTM C173

**Road and Paving Materials**

02/M08      ASTM D979  
02/M11      ASTM D1188  
02/M19      ASTM D2172  
02/M24      ASTM D2041  
02/M25      ASTM D2726

**Soil and Rock**

02/L01      ASTM D4220  
02/L02      ASTM D422  
02/L04      ASTM D698  
02/L05      ASTM D854  
02/L06      ASTM D1140  
02/L07      ASTM D1556  
02/L08      ASTM D1557

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

02/L10 ASTM D1883  
02/L12 ASTM D2168  
02/L13 ASTM D2216  
02/L14 ASTM D2217  
02/L16 ASTM D2487  
02/L17 ASTM D2488  
02/L20 ASTM D4318  
02/L21 ASTM D2434  
02/L23 ASTM D2922  
02/L24 ASTM D2974  
02/L25 ASTM D3017  
02/L31 ASTM D2167

**Standard Practices**

02/A38 ASTM E329  
02/A39 ASTM C1077  
02/A50 ASTM C1093  
02/L32 ASTM D3740

**Steel Materials**

02/S07 ASTM E709  
02/S08 ASTM E165

**NVLAP LAB CODE 100317-0****Fairfield Testing Laboratory, Inc.**

652 Glenbrook Road, P.O. 2310  
Stamford, CT 06906  
Contact: Mr. James E. Quill  
Phone: 203-372-1980  
Fax: 203-372-1898  
E-Mail: JQuill@aol.com

**Construction Materials Testing**

Accreditation Valid Through: March 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Concrete**

|        |                              |
|--------|------------------------------|
| 02/A01 | ASTM C39                     |
| 02/A02 | ASTM C617                    |
| 02/A43 | ASTM C1064                   |
| 02/G01 | ASTM C31/C172/C143/C138/C231 |
| 02/G02 | ASTM C173                    |

**Soil and Rock**

|        |            |
|--------|------------|
| 02/L02 | ASTM D422  |
| 02/L04 | ASTM D698  |
| 02/L08 | ASTM D1557 |
| 02/L16 | ASTM D2487 |
| 02/L17 | ASTM D2488 |
| 02/L23 | ASTM D2922 |
| 02/L25 | ASTM D3017 |

**NVLAP LAB CODE 100320-0****Materials Testing, Inc.**

200 Rowe Avenue  
Milford, CT 06460  
Contact: Mr. Frank A. Soucy  
Phone: 203-878-2765  
Fax: 203-878-1504

**Construction Materials Testing**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Aggregates**

|        |           |
|--------|-----------|
| 02/A03 | ASTM C29  |
| 02/A04 | ASTM C40  |
| 02/A06 | ASTM C88  |
| 02/A07 | ASTM C117 |
| 02/A08 | ASTM C123 |
| 02/A09 | ASTM C127 |
| 02/A10 | ASTM C128 |
| 02/A11 | ASTM C131 |
| 02/A12 | ASTM C136 |
| 02/A13 | ASTM C142 |
| 02/A15 | ASTM D75  |
| 02/A44 | ASTM C566 |
| 02/A46 | ASTM C535 |

**Cement**

|        |           |
|--------|-----------|
| 02/A17 | ASTM C109 |
|--------|-----------|

**Concrete**

|        |                              |
|--------|------------------------------|
| 02/A01 | ASTM C39                     |
| 02/A02 | ASTM C617                    |
| 02/A40 | ASTM C78                     |
| 02/A41 | ASTM C192                    |
| 02/A43 | ASTM C1064                   |
| 02/G01 | ASTM C31/C172/C143/C138/C231 |
| 02/G02 | ASTM C173                    |

**Soil and Rock**

|        |            |
|--------|------------|
| 02/L02 | ASTM D422  |
| 02/L04 | ASTM D698  |
| 02/L05 | ASTM D854  |
| 02/L06 | ASTM D1140 |
| 02/L07 | ASTM D1556 |
| 02/L08 | ASTM D1557 |
| 02/L13 | ASTM D2216 |
| 02/L20 | ASTM D4318 |
| 02/L23 | ASTM D2922 |
| 02/L31 | ASTM D2167 |

NVLAP LAB CODE 100322-0

**CSA International**

178 Rexdale Boulevard  
Toronto Ontario M9W 1R3  
CANADA  
Contact: Mr. Otto C. Krepps, P.Eng  
Phone: 416-747-2798  
Fax: 416-747-4173  
E-Mail: otto.krepps@csa-international.org

**Commercial Products Testing**

Accreditation Valid Through: March 31, 2002

*NVLAP*

*Code      Designation*

**Plumbing**

|         |                                                         |
|---------|---------------------------------------------------------|
| 19/F01  | ASME A112.18.1M (Sec. 5.2)                              |
| 19/F02  | ASME A112.18.1M (Sec. 5.14)                             |
| 19/F03  | ASME A112.18.1M (Sec. 6.2)                              |
| 19/F04  | ASME A112.18.1M (Sec. 6.4)                              |
| 19/F05  | ASME A112.18.1M (Sec. 6.5)                              |
| 19/F06  | ASME A112.18.1M (Sec. 6.6)                              |
| 19/F07  | ASME A112.18.1M (Sec. 6.7)                              |
| 19/F08  | ASME A112.18.1M (Sec. 6.8)                              |
| 19/F09  | ASME A112.18.1M (Sec. 5.13)                             |
| 19/F10  | ASME A112.18.1M (Sec. 6.3)                              |
| 19/M01  | ICC/ANSI A117.1 (Sec. 609, 610)                         |
| 19/M02  | ASME/ANSI A112.19.7M (Sec. 5, 7)                        |
| 19/M03  | ASME/ANSI A112.19.8M (Sec. 4, 5)                        |
| 19/M04  | ASTM F446                                               |
| 19/P01  | ANSI Z124.1 (Sec. 4, 5, 6)                              |
| 19/P02  | ANSI Z124.2 (Sec. 4, 5, 6)                              |
| 19/P03  | ANSI Z124.3 (Sec. 4, 5, 6)                              |
| 19/P03a | ICPA-SS-1 (Sec. 4, 5, 6)                                |
| 19/P04  | ANSI Z124.4 (Sec. 4, 5)                                 |
| 19/P05  | ANSI Z124.4 (Sec. 8) per ASME A112.19.6M (Sec. 7.1)     |
| 19/P06  | ANSI/IAPMO Z124.6 (Sec. 4, 5, 6)                        |
| 19/P07  | ANSI/IAPMO Z124.8 (Sec. 4, 5)                           |
| 19/U01  | ASME/ANSI A112.18.3M (Sec. 5.1, 12.1, 12.2, 13, 14, 16) |
| 19/V01  | ASME A112.19.2M (Sec. 8.1)                              |
| 19/V02  | ASME A112.19.2M (Sec. 8.2)                              |
| 19/V03  | ASME A112.19.2M (Sec. 8.3)                              |
| 19/V04  | ASME A112.19.2M (Sec. 8.7)                              |
| 19/V05  | ASME A112.19.2M (Sec. 8.6)                              |
| 19/V06  | ASME A112.19.2M (Sec. 8.5)                              |
| 19/W01  | ASME A112.19.6 (Sec. 7.1.2)                             |
| 19/W02  | ASME A112.19.6 (Sec. 7.1.3)                             |
| 19/W03  | ASME A112.19.6 (Sec. 7.1.4)                             |
| 19/W04  | ASME A112.19.6 (Sec. 7.1.5)                             |
| 19/W05  | ASME A112.19.6 (Sec. 7.1.6)                             |
| 19/W06  | ASME A112.19.6 (Sec. 7.1.7)                             |
| 19/W07  | ASME A112.19.6 (Sec. 7.1.8)                             |
| 19/W08  | ASME A112.19.6 (Sec. 7.1.9)                             |

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: March 31, 2002

*NVLAP*

*Code      Designation*

**Emissions Test Methods:**

|                             |                                                                                                                                                                        |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22                    | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a                   | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b                   | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01                      | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a                     | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b                     | Radiated Emissions                                                                                                                                                     |
| 12/T51                      | AS/NZS 3548                                                                                                                                                            |
| <b>Safety Test Methods:</b> |                                                                                                                                                                        |
| 12/T41                      | ACA TS-001                                                                                                                                                             |
| 12/T50                      | AS/NZS 3260                                                                                                                                                            |

NVLAP LAB CODE 100323-0

**IBM Hudson Valley Acoustics Laboratory**

Building 704, M/S P226  
522 South Road  
Poughkeepsie, NY 12601-5400  
Contact: Dr. Matthew A. Nobile  
Phone: 845-435-4959  
Fax: 845-432-9880  
E-Mail: nobile@us.ibm.com

**Acoustical Testing Services**

Accreditation Valid Through: March 31, 2002

*NVLAP*

*Code      Designation*

|        |             |
|--------|-------------|
| 08/P03 | ASTM C423   |
| 08/P10 | ANSI S12.31 |
| 08/P11 | ISO 3744    |
| 08/P13 | ANSI S12.32 |
| 08/P21 | ISO 3745    |
| 08/P24 | ANSI S12.10 |
| 08/P38 | ANSI S12.11 |
| 08/P39 | ANSI S12.5  |
| 08/P40 | ISO 9296    |
| 08/P41 | ECMA 74     |
| 08/P42 | ECMA 109    |
| 08/P44 | ISO 354     |
| 08/P46 | ISO 3741    |
| 08/P47 | ISO 3742    |
| 08/P48 | ISO 7779    |
| 08/P51 | ISO 6926    |
| 08/P56 | ANSI S12.35 |
| 08/P57 | ANSI S12.34 |



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 100325-0****City of San Jose, Materials Testing Laboratory**

Central Service Yard  
1661 Senter Road, Building A  
San Jose, CA 95112  
Contact: Mr. Gary Fones  
Phone: 408-998-6012  
Fax: 408-971-4880  
E-Mail: Gary.Fones@ci.sj.ca.us

**Construction Materials Testing**

Accreditation Valid Through: December 31, 2002

**NVLAP**

*Code      Designation*

**Aggregates**

02/A03    ASTM C29  
02/A04    ASTM C40  
02/A07    ASTM C117  
02/A09    ASTM C127  
02/A10    ASTM C128  
02/A11    ASTM C131  
02/A12    ASTM C136  
02/A13    ASTM C142  
02/A15    ASTM D75  
02/A16    ASTM D2419  
02/A44    ASTM C566

**Cement**

02/A17    ASTM C109  
02/A22    ASTM C183  
02/A52    ASTM C1019

**Concrete**

02/A01    ASTM C39  
02/A02    ASTM C617  
02/A40    ASTM C78  
02/A41    ASTM C192  
02/A42    ASTM C360  
02/A43    ASTM C1064  
02/A45    ASTM C42  
02/G01    ASTM C31/C172/C143/C138/C231  
02/G02    ASTM C173

**Road and Paving Materials**

02/M01    ASTM D5  
02/M03    ASTM D140  
02/M05    ASTM D244  
02/M07    ASTM D546  
02/M08    ASTM D979  
02/M09    ASTM D1074  
02/M11    ASTM D1188  
02/M12    ASTM D1559  
02/M13    ASTM D1560  
02/M14    ASTM D1561  
02/M15    ASTM D1856  
02/M16    ASTM D2042  
02/M18    ASTM D2171  
02/M19    ASTM D2172  
02/M20    ASTM D2872  
02/M24    ASTM D2041  
02/M25    ASTM D2726

**Soil and Rock**

02/L01    ASTM D4220  
02/L02    ASTM D422  
02/L05    ASTM D854  
02/L06    ASTM D1140  
02/L08    ASTM D1557  
02/L12    ASTM D2168  
02/L13    ASTM D2216  
02/L14    ASTM D2217  
02/L16    ASTM D2487  
02/L17    ASTM D2488  
02/L20    ASTM D4318  
02/L23    ASTM D2922  
02/L25    ASTM D3017  
02/L47    ASTM D2844

**Standard Practices**

02/A38    ASTM E329  
02/A39    ASTM C1077  
02/L32    ASTM D3740  
02/M26    ASTM D3666

**NVLAP LAB CODE 100339-0****EMC Corporation**

4400 Computer Drive  
Westboro, MA 01580  
Contact: Mr. Joseph DeMonaco  
Phone: 508-898-6051  
Fax: 508-898-7729  
E-Mail: Demonaco\_Joe@emc.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

*Code      Designation*

**Emissions Test Methods:**

12/CIS22    IEC/CISPR 22:1997: Limits and methods of  
                 measurement of radio disturbance  
                 characteristics of information technology  
                 equipment  
12/CIS22a    IEC/CISPR 22:1993: Limits and methods of  
                 measurement of radio disturbance  
                 characteristics of information technology  
                 equipment, Amendment 1:1995, and  
                 Amendment 2:1996.  
12/CIS22b    CNS 13438:1997: Limits and Methods of  
                 Measurement of Radio Interference  
                 Characteristics of Information Technology  
                 Equipment  
12/F01        FCC Method - 47 CFR Part 15 - Digital  
                 Devices  
12/F01a        Conducted Emissions, Power Lines, 450 KHz  
                 to 30 MHz  
12/F01b        Radiated Emissions  
12/T51        AS/NZS 3548

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 100340-0****Fairway Testing Company, Inc.**

Smith Street  
P.O. Box 578  
Stony Point, NY 10980  
Contact: Mr. Patsy J. Aguanno  
Phone: 845-942-2088  
Fax: 845-942-0995  
E-Mail: fairwaytesting@spyrall.net

**Construction Materials Testing**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Aggregates**

|        |            |
|--------|------------|
| 02/A03 | ASTM C29   |
| 02/A04 | ASTM C40   |
| 02/A06 | ASTM C88   |
| 02/A07 | ASTM C117  |
| 02/A08 | ASTM C123  |
| 02/A09 | ASTM C127  |
| 02/A10 | ASTM C128  |
| 02/A12 | ASTM C136  |
| 02/A13 | ASTM C142  |
| 02/A15 | ASTM D75   |
| 02/A16 | ASTM D2419 |
| 02/A44 | ASTM C566  |

**Concrete**

|        |                              |
|--------|------------------------------|
| 02/A01 | ASTM C39                     |
| 02/A02 | ASTM C617                    |
| 02/A40 | ASTM C78                     |
| 02/A41 | ASTM C192                    |
| 02/A43 | ASTM C1064                   |
| 02/G01 | ASTM C31/C172/C143/C138/C231 |
| 02/G02 | ASTM C173                    |

**Road and Paving Materials**

|        |            |
|--------|------------|
| 02/M01 | ASTM D5    |
| 02/M07 | ASTM D546  |
| 02/M08 | ASTM D979  |
| 02/M11 | ASTM D1188 |
| 02/M12 | ASTM D1559 |
| 02/M15 | ASTM D1856 |
| 02/M19 | ASTM D2172 |
| 02/M24 | ASTM D2041 |
| 02/M25 | ASTM D2726 |

**Soil and Rock**

|        |            |
|--------|------------|
| 02/L01 | ASTM D4220 |
| 02/L02 | ASTM D422  |
| 02/L04 | ASTM D698  |
| 02/L05 | ASTM D854  |
| 02/L06 | ASTM D1140 |
| 02/L07 | ASTM D1556 |
| 02/L08 | ASTM D1557 |
| 02/L13 | ASTM D2216 |
| 02/L16 | ASTM D2487 |
| 02/L17 | ASTM D2488 |
| 02/L20 | ASTM D4318 |
| 02/L21 | ASTM D2434 |
| 02/L23 | ASTM D2922 |

|        |                                                                                                                                  |
|--------|----------------------------------------------------------------------------------------------------------------------------------|
| 02/L29 | Corps of Engineers - Manual<br>EM-1110-2-1906, Appendix VII, Permeability<br>of Fine Grained Soils Using a Triaxial<br>Apparatus |
|--------|----------------------------------------------------------------------------------------------------------------------------------|

**Standard Practices**

|        |            |
|--------|------------|
| 02/A38 | ASTM E329  |
| 02/A39 | ASTM C1077 |
| 02/L32 | ASTM D3740 |
| 02/M26 | ASTM D3666 |

**Steel Materials**

|        |                          |
|--------|--------------------------|
| 02/S02 | ASTM A370 (Sec. 14)/E190 |
| 02/S07 | ASTM E709                |
| 02/S08 | ASTM E165                |

**NVLAP LAB CODE 100347-0****National Technical Systems**

1146 Massachusetts Avenue  
Boxborough, MA 01719  
Contact: Mr. Charles Nasser  
Phone: 978-266-1001  
Fax: 978-266-1073  
E-Mail: charlie@ntscorp.com  
URL: <http://www.ntscorp.com>

**Electromagnetic Compatibility & Telecommunications**

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|------|-------------|
|------|-------------|

**MIL-STD-462 : Conducted Emissions:**

|        |                         |
|--------|-------------------------|
| 12/A01 | MIL-STD-462 Method CE01 |
| 12/A04 | MIL-STD-462 Method CE02 |
| 12/A06 | MIL-STD-462 Method CE03 |
| 12/A08 | MIL-STD-462 Method CE04 |
| 12/A12 | MIL-STD-462 Method CE07 |

**MIL-STD-462 : Conducted Susceptibility:**

|        |                         |
|--------|-------------------------|
| 12/B01 | MIL-STD-462 Method CS01 |
| 12/B02 | MIL-STD-462 Method CS02 |
| 12/B05 | MIL-STD-462 Method CS06 |
| 12/B07 | MIL-STD-462 Method CS09 |

**MIL-STD-462 : Radiated Emissions:**

|        |                         |
|--------|-------------------------|
| 12/D01 | MIL-STD-462 Method RE01 |
| 12/D02 | MIL-STD-462 Method RE02 |

**MIL-STD-462 : Radiated Susceptibility:**

|        |                                                                                                                                        |
|--------|----------------------------------------------------------------------------------------------------------------------------------------|
| 12/E01 | MIL-STD-462 Method RS01                                                                                                                |
| 12/E02 | MIL-STD-462 Method RS02                                                                                                                |
| 12/E03 | MIL-STD-462 Method RS03 (Consult<br>laboratory for field strengths available)                                                          |
| 12/E04 | MIL-STD-462 Method RS03 employing<br>RADHAZ procedures for high level testing<br>(Consult laboratory for field strengths<br>available) |
| 12/E07 | MIL-STD-462 Method RS06                                                                                                                |

# INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued

## NVLAP LAB CODE 100374-0

### Aearo Company, E-A-R CAL Acoustical Laboratory

7911 Zionsville Road  
Indianapolis, IN 46268-1657  
Contact: Mr. Elliott H. Berger  
Phone: 317-692-3031  
Fax: 317-692-3116  
E-Mail: eberger@compuserve.com  
URL: <http://www.e-a-r.com>

### Acoustical Testing Services

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#### NVLAP

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|------|-------------|
|------|-------------|

|        |                              |
|--------|------------------------------|
| 08/P26 | ANSI S3.19 (ANSI S3.19-1974) |
| 08/P27 | ANSI S12.6                   |

## NVLAP LAB CODE 100382-0

### Eaton E3 Laboratory

26201 Northwestern Highway  
P.O. Box 766  
Southfield, MI 48037-0766  
Contact: Mr. Kimball Williams  
Phone: 248-354-2845  
Fax: 248-208-2018  
E-Mail: k.williams@ieee.org  
URL: <http://www.eaton.com/emc>

### Electromagnetic Compatibility & Telecommunications

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#### NVLAP

| Code | Designation |
|------|-------------|
|------|-------------|

### MIL-STD-462 : Conducted Emissions:

|        |                                    |
|--------|------------------------------------|
| 12/A01 | MIL-STD-462 Method CE01            |
| 12/A04 | MIL-STD-462 Method CE02            |
| 12/A06 | MIL-STD-462 Method CE03            |
| 12/A08 | MIL-STD-462 Method CE04            |
| 12/A12 | MIL-STD-462 Method CE07            |
| 12/A13 | MIL-STD-462 Version D Method CE101 |
| 12/A14 | MIL-STD-462 Version D Method CE102 |
| 12/A16 | MIL-STD-461 Version E Method CE101 |
| 12/A17 | MIL-STD-461 Version E Method CE102 |

### MIL-STD-462 : Conducted Susceptibility:

|        |                                    |
|--------|------------------------------------|
| 12/B01 | MIL-STD-462 Method CS01            |
| 12/B02 | MIL-STD-462 Method CS02            |
| 12/B05 | MIL-STD-462 Method CS06            |
| 12/B07 | MIL-STD-462 Method CS09            |
| 12/B12 | MIL-STD-462 Version D Method CS101 |
| 12/B17 | MIL-STD-462 Version D Method CS114 |
| 12/B20 | MIL-STD-461 Version E Method CS101 |
| 12/B25 | MIL-STD-461 Version E Method CS114 |

### MIL-STD-462 : Radiated Emissions:

|        |                                    |
|--------|------------------------------------|
| 12/D01 | MIL-STD-462 Method RE01            |
| 12/D02 | MIL-STD-462 Method RE02            |
| 12/D04 | MIL-STD-462 Version D Method RE101 |
| 12/D05 | MIL-STD-462 Version D Method RE102 |
| 12/D07 | MIL-STD-461 Version E Method RE101 |
| 12/D08 | MIL-STD-461 Version E Method RE102 |

### MIL-STD-462 : Radiated Susceptibility:

|        |                                                                                                                               |
|--------|-------------------------------------------------------------------------------------------------------------------------------|
| 12/E01 | MIL-STD-462 Method RS01                                                                                                       |
| 12/E02 | MIL-STD-462 Method RS02                                                                                                       |
| 12/E03 | MIL-STD-462 Method RS03 (Consult laboratory for field strengths available)                                                    |
| 12/E04 | MIL-STD-462 Method RS03 employing RADHAZ procedures for high level testing (Consult laboratory for field strengths available) |
| 12/E07 | MIL-STD-462 Method RS06                                                                                                       |
| 12/E08 | MIL-STD-462 Version D Method RS101                                                                                            |
| 12/E09 | MIL-STD-462 Version D Method RS103                                                                                            |
| 12/E11 | MIL-STD-461 Version E Method RS101                                                                                            |
| 12/E12 | MIL-STD-461 Version E Method RS103                                                                                            |

## NVLAP LAB CODE 100396-0

### Criterion Technology Corp.

1350 County Road I6  
P.O. Box 489  
Rollinsville, CO 80474  
Contact: Mr. Louis W. Schornack  
Phone: 303-258-0100  
Fax: 303-258-0775  
E-Mail: lschornack@criteriontech.com  
URL: [www.criteriontech.com](http://www.criteriontech.com)

### Electromagnetic Compatibility & Telecommunications

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|------|-------------|
|------|-------------|

### Emissions Test Methods:

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 100398-0****GE Lighting- Product Testing**

1975 Noble Road  
Nela Park  
Cleveland, OH 44112-6300  
Contact: Mr. Lawrence Mead  
Phone: 216-266-5520  
Fax: 216-266-3503  
E-Mail: lawrence.mead@lighting.ge.com

**Energy Efficient Lighting Products**

Accreditation Valid Through: March 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Color Measurements**

|        |           |
|--------|-----------|
| 22/C01 | IES LM-58 |
|--------|-----------|

**Electrical Measurements**

|        |              |
|--------|--------------|
| 22/E01 | IES LM-9     |
| 22/E02 | IES LM-45    |
| 22/E03 | IES LM-51    |
| 22/E04 | IES LM-66    |
| 22/E05 | ANSI-C78.375 |

**Life Tests**

|        |           |
|--------|-----------|
| 22/L01 | IES LM-40 |
| 22/L03 | IES LM-49 |
| 22/L04 | IES LM-65 |

**Photometric Measurements**

|         |                        |
|---------|------------------------|
| 22/P01a | IES LM-9 (Total Flux)  |
| 22/P01b | IES LM-9 (Intensity)   |
| 22/P02a | IES LM-20 (Total Flux) |
| 22/P02b | IES LM-20 (Intensity)  |
| 22/P03a | IES LM-45 (Total Flux) |
| 22/P03b | IES LM-45 (Intensity)  |
| 22/P04a | IES LM-51 (Total Flux) |
| 22/P05a | IES LM-66 (Total Flux) |
| 22/P05b | IES LM-66 (Intensity)  |

**NVLAP LAB CODE 100399-0****Philips Lighting Corporate Calibration & Standards Laboratory**

3861 South Ninth Street  
Salina, KS 67401  
Contact: Mr. Andrew D. Jackson  
Phone: 785-822-1540  
Fax: 785-822-1510  
E-Mail: andy.jackson@philips.com

**Energy Efficient Lighting Products**

Accreditation Valid Through: June 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Color Measurements**

|        |           |
|--------|-----------|
| 22/C01 | IES LM-58 |
|--------|-----------|

**Electrical Measurements**

|        |           |
|--------|-----------|
| 22/E01 | IES LM-9  |
| 22/E02 | IES LM-45 |
| 22/E03 | IES LM-51 |
| 22/E04 | IES LM-66 |

|        |              |
|--------|--------------|
| 22/E05 | ANSI-C78.375 |
|--------|--------------|

**Life Tests**

|        |           |
|--------|-----------|
| 22/L01 | IES LM-40 |
| 22/L03 | IES LM-49 |
| 22/L04 | IES LM-65 |

**Photometric Measurements**

|         |                        |
|---------|------------------------|
| 22/P01a | IES LM-9 (Total Flux)  |
| 22/P02a | IES LM-20 (Total Flux) |
| 22/P02b | IES LM-20 (Intensity)  |
| 22/P03a | IES LM-45 (Total Flux) |
| 22/P03b | IES LM-45 (Intensity)  |
| 22/P04a | IES LM-51 (Total Flux) |
| 22/P04b | IES LM-51 (Intensity)  |
| 22/P05a | IES LM-66 (Total Flux) |
| 22/P05b | IES LM-66 (Intensity)  |

**NVLAP LAB CODE 100402-0****Intertek Testing Services NA Inc.**

3933 U.S. Route 11  
Cortland, NY 13045-0950  
Contact: Mr. John Sabelli  
Phone: 607-758-6382  
Fax: 607-753-0439  
E-Mail: jsabelli@etlsemko.com  
URL: <http://www.etlsemko.com>

**Energy Efficient Lighting Products**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Color Measurements**

|        |           |
|--------|-----------|
| 22/C01 | IES LM-58 |
|--------|-----------|

**Electrical Measurements**

|        |              |
|--------|--------------|
| 22/E01 | IES LM-9     |
| 22/E02 | IES LM-45    |
| 22/E03 | IES LM-51    |
| 22/E04 | IES LM-66    |
| 22/E05 | ANSI-C78.375 |
| 22/E06 | ANSI-C78.386 |
| 22/E07 | ANSI-C78.387 |
| 22/E08 | ANSI-C78.388 |

**Life Tests**

|        |           |
|--------|-----------|
| 22/L01 | IES LM-40 |
| 22/L03 | IES LM-49 |
| 22/L04 | IES LM-65 |

**Photometric Measurements**

|         |                        |
|---------|------------------------|
| 22/P01a | IES LM-9 (Total Flux)  |
| 22/P02a | IES LM-20 (Total Flux) |
| 22/P02b | IES LM-20 (Intensity)  |
| 22/P03a | IES LM-45 (Total Flux) |
| 22/P03b | IES LM-45 (Intensity)  |
| 22/P04a | IES LM-51 (Total Flux) |
| 22/P05a | IES LM-66 (Total Flux) |
| 22/P05b | IES LM-66 (Intensity)  |



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 100403-0****Osram Sylvania, Applications & Measurements Laboratory**

71 Cherry Hill Dr.  
Beverly, MA 01915  
Contact: Dr. Ronald O. Daubach  
Phone: 508-750-1593  
Fax: 508-750-1794  
E-Mail: ronald.daubach@sylvania.com

**Energy Efficient Lighting Products**

Accreditation Valid Through: June 30, 2002

**NVLAP**

Code      Designation

**Color Measurements**

22/C01      IES LM-58

**Electrical Measurements**

22/E01      IES LM-9  
22/E02      IES LM-45  
22/E03      IES LM-51  
22/E04      IES LM-66  
22/E05      ANSI-C78.375  
22/E06      ANSI-C78.386  
22/E07      ANSI-C78.387  
22/E08      ANSI-C78.388

**Life Tests**

22/L01      IES LM-40  
22/L02      IES LM-47  
22/L03      IES LM-49  
22/L04      IES LM-65

**Photometric Measurements**

22/P01a      IES LM-9 (Total Flux)  
22/P01b      IES LM-9 (Intensity)  
22/P02a      IES LM-20 (Total Flux)  
22/P02b      IES LM-20 (Intensity)  
22/P03a      IES LM-45 (Total Flux)  
22/P03b      IES LM-45 (Intensity)  
22/P04a      IES LM-51 (Total Flux)  
22/P04b      IES LM-51 (Intensity)  
22/P05a      IES LM-66 (Total Flux)  
22/P05b      IES LM-66 (Intensity)

**NVLAP LAB CODE 100404-0****Industrial Acoustics Company, Inc.,  
Aero-Acoustics Laboratory**

1160 Commerce Avenue  
Bronx, NY 10462  
Contact: Mr. Jon Weinstein  
Phone: 718-931-8000  
Fax: 718-863-1138  
E-Mail: jonw@industrialacoustics.com  
URL: <http://www.industrialacoustics.com>

**Acoustical Testing Services**

Accreditation Valid Through: June 30, 2002

**NVLAP**

Code      Designation

08/P02      ASTM C384  
08/P03      ASTM C423

08/P06      ASTM E90  
08/P08      ASTM E596  
08/P30      ASTM E1408  
08/P36      ASTM E477  
08/P44      ISO 354  
08/P45      ISO 140, Part 3

**NVLAP LAB CODE 100405-0****General Dynamics Decision Systems**

8201 E. McDowell Road  
Scottsdale, AZ 85252  
Contact: Mr. Dwayne R. Awerkamp  
Phone: 480-441-3138  
Fax: 480-441-3625  
E-Mail: p09969@gd-decisionsystems.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

**NVLAP**

Code      Designation

**Emissions Test Methods:**

12/CIS22      IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment  
12/CIS22a      IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.  
12/CIS22b      CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment  
12/F01      FCC Method - 47 CFR Part 15 - Digital Devices  
12/F01a      Conducted Emissions, Power Lines, 450 KHz to 30 MHz  
12/F01b      Radiated Emissions  
12/T51      AS/NZS 3548

**Immunity Test Methods:**

12/I01      IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test  
12/I02      IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test  
12/I03      IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test  
12/I04      IEC 61000-4-5 (1995): Surge Immunity Test  
12/I05      IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields  
12/I06      IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test  
12/I07      IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests

# INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued

## MIL-STD-462 : Conducted Emissions:

|        |                                    |
|--------|------------------------------------|
| 12/A01 | MIL-STD-462 Method CE01            |
| 12/A04 | MIL-STD-462 Method CE02            |
| 12/A06 | MIL-STD-462 Method CE03            |
| 12/A08 | MIL-STD-462 Method CE04            |
| 12/A10 | MIL-STD-462 Method CE06            |
| 12/A12 | MIL-STD-462 Method CE07            |
| 12/A13 | MIL-STD-462 Version D Method CE101 |
| 12/A14 | MIL-STD-462 Version D Method CE102 |
| 12/A15 | MIL-STD-462 Version D Method CE106 |
| 12/A16 | MIL-STD-461 Version E Method CE101 |
| 12/A17 | MIL-STD-461 Version E Method CE102 |
| 12/A18 | MIL-STD-461 Version E Method CE106 |

## MIL-STD-462 : Conducted Susceptibility:

|        |                                           |
|--------|-------------------------------------------|
| 12/B01 | MIL-STD-462 Method CS01                   |
| 12/B02 | MIL-STD-462 Method CS02                   |
| 12/B04 | MIL-STD-462 Method<br>CS03/CS04/CS05/CS08 |
| 12/B05 | MIL-STD-462 Method CS06                   |
| 12/B06 | MIL-STD-462 Method CS07                   |
| 12/B07 | MIL-STD-462 Method CS09                   |
| 12/B08 | MIL-STD-462 Method CS10                   |
| 12/B09 | MIL-STD-462 Method CS11                   |
| 12/B10 | MIL-STD-462 Method CS12                   |
| 12/B11 | MIL-STD-462 Method CS13                   |
| 12/B12 | MIL-STD-462 Version D Method CS101        |
| 12/B13 | MIL-STD-462 Version D Method CS103        |
| 12/B14 | MIL-STD-462 Version D Method CS104        |
| 12/B15 | MIL-STD-462 Version D Method CS105        |
| 12/B16 | MIL-STD-462 Version D Method CS109        |
| 12/B17 | MIL-STD-462 Version D Method CS114        |
| 12/B19 | MIL-STD-462 Version D Method CS116        |
| 12/B20 | MIL-STD-461 Version E Method CS101        |
| 12/B21 | MIL-STD-461 Version E Method CS103        |
| 12/B22 | MIL-STD-461 Version E Method CS104        |
| 12/B23 | MIL-STD-461 Version E Method CS105        |
| 12/B24 | MIL-STD-461 Version E Method CS109        |
| 12/B25 | MIL-STD-461 Version E Method CS114        |
| 12/B27 | MIL-STD-461 Version E Method CS116        |

## MIL-STD-462 : Radiated Emissions:

|        |                                    |
|--------|------------------------------------|
| 12/D01 | MIL-STD-462 Method RE01            |
| 12/D02 | MIL-STD-462 Method RE02            |
| 12/D03 | MIL-STD-462 Method RE03            |
| 12/D04 | MIL-STD-462 Version D Method RE101 |
| 12/D05 | MIL-STD-462 Version D Method RE102 |
| 12/D06 | MIL-STD-462 Version D Method RE103 |
| 12/D07 | MIL-STD-461 Version E Method RE101 |
| 12/D08 | MIL-STD-461 Version E Method RE102 |
| 12/D09 | MIL-STD-461 Version E Method RE103 |

## MIL-STD-462 : Radiated Susceptibility:

|        |                                                                                                                                        |
|--------|----------------------------------------------------------------------------------------------------------------------------------------|
| 12/E01 | MIL-STD-462 Method RS01                                                                                                                |
| 12/E02 | MIL-STD-462 Method RS02                                                                                                                |
| 12/E03 | MIL-STD-462 Method RS03 (Consult<br>laboratory for field strengths available)                                                          |
| 12/E04 | MIL-STD-462 Method RS03 employing<br>RADHAZ procedures for high level testing<br>(Consult laboratory for field strengths<br>available) |
| 12/E05 | MIL-STD-462 Method RS05                                                                                                                |
| 12/E07 | MIL-STD-462 Method RS06                                                                                                                |

|        |                                    |
|--------|------------------------------------|
| 12/E09 | MIL-STD-462 Version D Method RS103 |
| 12/E10 | MIL-STD-462 Version D Method RS105 |
| 12/E11 | MIL-STD-461 Version E Method RS101 |
| 12/E12 | MIL-STD-461 Version E Method RS103 |
| 12/E13 | MIL-STD-461 Version E Method RS105 |

NVLAP LAB CODE 100406-0

## Inland Foundation Engineering, Inc.

1310 South Santa Fe Avenue  
P.O. Box 937  
San Jacinto, CA 92581-0937  
Contact: Mr. Donald O. Swenson  
Phone: 909-654-1555  
Fax: 909-654-0551

## Construction Materials Testing

Accreditation Valid Through: March 31, 2002

NVLAP

Code Designation

## Aggregates

|        |            |
|--------|------------|
| 02/A04 | ASTM C40   |
| 02/A05 | ASTM C87   |
| 02/A06 | ASTM C88   |
| 02/A07 | ASTM C117  |
| 02/A08 | ASTM C123  |
| 02/A09 | ASTM C127  |
| 02/A10 | ASTM C128  |
| 02/A11 | ASTM C131  |
| 02/A12 | ASTM C136  |
| 02/A13 | ASTM C142  |
| 02/A14 | ASTM C289  |
| 02/A15 | ASTM D75   |
| 02/A16 | ASTM D2419 |
| 02/A44 | ASTM C566  |
| 02/A46 | ASTM C535  |

## Concrete

|        |                              |
|--------|------------------------------|
| 02/A01 | ASTM C39                     |
| 02/A02 | ASTM C617                    |
| 02/A43 | ASTM C1064                   |
| 02/A45 | ASTM C42                     |
| 02/G01 | ASTM C31/C172/C143/C138/C231 |

## Road and Paving Materials

|        |            |
|--------|------------|
| 02/M03 | ASTM D140  |
| 02/M07 | ASTM D546  |
| 02/M08 | ASTM D979  |
| 02/M11 | ASTM D1188 |
| 02/M12 | ASTM D1559 |
| 02/M14 | ASTM D1561 |
| 02/M19 | ASTM D2172 |
| 02/M24 | ASTM D2041 |

## Soil and Rock

|        |            |
|--------|------------|
| 02/L01 | ASTM D4220 |
| 02/L02 | ASTM D422  |
| 02/L04 | ASTM D698  |
| 02/L05 | ASTM D854  |
| 02/L06 | ASTM D1140 |
| 02/L07 | ASTM D1556 |
| 02/L08 | ASTM D1557 |
| 02/L13 | ASTM D2216 |

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|        |            |
|--------|------------|
| 02/L17 | ASTM D2488 |
| 02/L18 | ASTM D3080 |
| 02/L20 | ASTM D4318 |
| 02/L21 | ASTM D2434 |
| 02/L22 | ASTM D2850 |
| 02/L23 | ASTM D2922 |
| 02/L25 | ASTM D3017 |
| 02/L47 | ASTM D2844 |

**Standard Practices**

|        |            |
|--------|------------|
| 02/A38 | ASTM E329  |
| 02/A39 | ASTM C1077 |
| 02/L32 | ASTM D3740 |
| 02/M26 | ASTM D3666 |

**NVLAP LAB CODE 100408-0****NAWCAD 5.1.7.4. EMI Lab**

48298 Shaw Road, Unit 4, Bldg. 1461  
Patuxent River, MD 20670-1900  
Contact: Mr. Lance Pearce  
Phone: 301-757-2508  
Fax: 301-342-5390  
E-Mail: [peacelj@navair.navy.mil](mailto:peacelj@navair.navy.mil)

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: March 31, 2002

**NVLAP**

| Code | Designation |
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**MIL-STD-462 : Conducted Emissions:**

|        |                                    |
|--------|------------------------------------|
| 12/A01 | MIL-STD-462 Method CE01            |
| 12/A04 | MIL-STD-462 Method CE02            |
| 12/A06 | MIL-STD-462 Method CE03            |
| 12/A08 | MIL-STD-462 Method CE04            |
| 12/A10 | MIL-STD-462 Method CE06            |
| 12/A13 | MIL-STD-462 Version D Method CE101 |
| 12/A14 | MIL-STD-462 Version D Method CE102 |
| 12/A15 | MIL-STD-462 Version D Method CE106 |
| 12/A16 | MIL-STD-461 Version E Method CE101 |
| 12/A17 | MIL-STD-461 Version E Method CE102 |
| 12/A18 | MIL-STD-461 Version E Method CE106 |

**MIL-STD-462 : Conducted Susceptibility:**

|        |                                           |
|--------|-------------------------------------------|
| 12/B01 | MIL-STD-462 Method CS01                   |
| 12/B02 | MIL-STD-462 Method CS02                   |
| 12/B04 | MIL-STD-462 Method<br>CS03/CS04/CS05/CS08 |
| 12/B05 | MIL-STD-462 Method CS06                   |
| 12/B08 | MIL-STD-462 Method CS10                   |
| 12/B09 | MIL-STD-462 Method CS11                   |
| 12/B12 | MIL-STD-462 Version D Method CS101        |
| 12/B13 | MIL-STD-462 Version D Method CS103        |
| 12/B14 | MIL-STD-462 Version D Method CS104        |
| 12/B15 | MIL-STD-462 Version D Method CS105        |
| 12/B17 | MIL-STD-462 Version D Method CS114        |
| 12/B18 | MIL-STD-462 Version D Method CS115        |
| 12/B19 | MIL-STD-462 Version D Method CS116        |
| 12/B20 | MIL-STD-461 Version E Method CS101        |
| 12/B21 | MIL-STD-461 Version E Method CS103        |
| 12/B22 | MIL-STD-461 Version E Method CS104        |
| 12/B23 | MIL-STD-461 Version E Method CS105        |
| 12/B25 | MIL-STD-461 Version E Method CS114        |
| 12/B26 | MIL-STD-461 Version E Method CS115        |

**MIL-STD-462 : Radiated Emissions:**

|        |                                    |
|--------|------------------------------------|
| 12/D01 | MIL-STD-462 Method RE01            |
| 12/D02 | MIL-STD-462 Method RE02            |
| 12/D03 | MIL-STD-462 Method RE03            |
| 12/D04 | MIL-STD-462 Version D Method RE101 |
| 12/D05 | MIL-STD-462 Version D Method RE102 |
| 12/D06 | MIL-STD-462 Version D Method RE103 |
| 12/D07 | MIL-STD-461 Version E Method RE101 |
| 12/D08 | MIL-STD-461 Version E Method RE102 |
| 12/D09 | MIL-STD-461 Version E Method RE103 |

**MIL-STD-462 : Radiated Susceptibility:**

|        |                                                                                                                                        |
|--------|----------------------------------------------------------------------------------------------------------------------------------------|
| 12/E01 | MIL-STD-462 Method RS01                                                                                                                |
| 12/E02 | MIL-STD-462 Method RS02                                                                                                                |
| 12/E03 | MIL-STD-462 Method RS03 (Consult<br>laboratory for field strengths available)                                                          |
| 12/E04 | MIL-STD-462 Method RS03 employing<br>RADHAZ procedures for high level testing<br>(Consult laboratory for field strengths<br>available) |
| 12/E08 | MIL-STD-462 Version D Method RS101                                                                                                     |
| 12/E09 | MIL-STD-462 Version D Method RS103                                                                                                     |
| 12/E11 | MIL-STD-461 Version E Method RS101                                                                                                     |
| 12/E12 | MIL-STD-461 Version E Method RS103                                                                                                     |

**NVLAP LAB CODE 100411-0****Sanmina Homologation Services**

355 E. Trimble Road  
San Jose, CA 95131  
Contact: Mr. John Shinn, P.E.  
Phone: 408-474-1321  
Fax: 408-474-1318  
E-Mail: [john.shinn@samina.com](mailto:john.shinn@samina.com)

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**Emissions Test Methods:**

|           |                                                                                                                                                                                    |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1993: Limits and methods of<br>measurement of radio disturbance<br>characteristics of information technology<br>equipment                                             |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of<br>measurement of radio disturbance<br>characteristics of information technology<br>equipment, Amendment 1:1995, and<br>Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of<br>Measurement of Radio Interference<br>Characteristics of Information Technology<br>Equipment                                               |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital<br>Devices                                                                                                                                   |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz<br>to 30 MHz                                                                                                                             |
| 12/F01b   | Radiated Emissions                                                                                                                                                                 |
| 12/T51    | AS/NZS 3548                                                                                                                                                                        |



**Safety Test Methods:**

12/T41 ACA TS-001  
12/T50 AS/NZS 3260

**Telecommunications Test Methods:**

12/CS03 CS-03  
12/T01 Terminal Equipment Network Protection Standards, FCC Method - 47 CFR Part 68 - Analog and Digital  
12/T01a 68.302 (Par. c,d,e,f) Environmental simulation; 68.304 Leakage current limit.; 68.306 Hazardous voltage limit.; 68.308 Signal power limit.; 68.310 Longitudinal balance limit.; 68.312 On-hook impedance limit.; 68.314 Billing protection  
12/T01b 68.316 Hearing Aid Compatibility: technical standards  
12/T01c 68.302 Environmental simulation (Par. a,b)  
12/T42 ACA TS-002  
12/T43 ACA TS-003  
12/T44 ACA TS-004  
12/T45 ACA TS-006  
12/T49 ACA TS-016

**NVLAP LAB CODE 100413-0**

**Compaq Regulatory Compliance Engineering - East**

200 Forest Street, Mail Stop MRO1-D  
Marlboro, MA 01752-3085  
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Fax: 508-467-2846  
E-Mail: diana.montvitt@compaq.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: March 31, 2002

**NVLAP**

Code Designation

**Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment  
12/F01 FCC Method - 47 CFR Part 15 - Digital Devices  
12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz  
12/F01b Radiated Emissions  
12/T51 AS/NZS 3548

**NVLAP LAB CODE 100414-0**

**Underwriters Laboratories Inc.**

333 Pfingsten Road  
Northbrook, IL 60062-2096  
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Phone: 847-272-8800 x43281  
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**Thermal Insulation Materials**

Accreditation Valid Through: December 31, 2002

**NVLAP**

Code Designation

**Corrosiveness**

01/C01 ASTM C739 (Sec. 9)  
01/C02 16 CFR-Part 1209.5

**Flammability**

01/F02 ASTM E84  
01/F07 16 CFR-Part 1209.6  
01/F08 16 CFR-Part 1209.7  
01/F09 ASTM C739 (Sec. 10) by ASTM E970  
01/F10 ASTM C739 (Sec. 14)

**Mass, Density, and Dimensional Stability**

01/D24 ASTM C739 (Sec. 12)  
01/D26 16 CFR-Part 1209.4  
01/D27 ASTM C739 (Sec. 8)

**Related Material Properties**

01/V05 ASTM C739 (Sec. 11)

**Thermal Resistance**

01/T06 ASTM C518  
01/T10 ASTM C687

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

Code Designation

**Emissions Test Methods:**

12/CIS14 CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions  
12/CIS14a EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)  
12/CIS14b AS/NZS 1044 (1995)  
12/CIS14c CNS 13783-1  
12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment  
12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.  
12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|                               |                                                                                                            |
|-------------------------------|------------------------------------------------------------------------------------------------------------|
|                               | Characteristics of Information Technology Equipment                                                        |
| 12/F01                        | FCC Method - 47 CFR Part 15 - Digital Devices                                                              |
| 12/F01a                       | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                        |
| 12/F01b                       | Radiated Emissions                                                                                         |
| 12/T51                        | AS/NZS 3548                                                                                                |
| <b>Immunity Test Methods:</b> |                                                                                                            |
| 12/I01                        | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                         |
| 12/I02                        | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test |
| 12/I03                        | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                        |
| 12/I04                        | IEC 61000-4-5 (1995): Surge Immunity Test                                                                  |
| 12/I05                        | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields                   |
| 12/I06                        | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test                                         |
| 12/I07                        | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests             |
| <b>Safety Test Methods:</b>   |                                                                                                            |
| 12/T41                        | ACA TS-001                                                                                                 |
| 12/T50                        | AS/NZS 3260                                                                                                |

**NVLAP LAB CODE 100416-0****SGS U.S. Testing Company, Inc.**

1341 North 108th East Avenue  
Tulsa, OK 74116-5637  
Contact: Mr. Dale E. Holloway  
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**Thermal Insulation Materials**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
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**Corrosiveness**

|        |                    |
|--------|--------------------|
| 01/C01 | ASTM C739 (Sec. 9) |
| 01/C02 | 16 CFR-Part 1209.5 |

**Flammability**

|        |                     |
|--------|---------------------|
| 01/F08 | 16 CFR-Part 1209.7  |
| 01/F10 | ASTM C739 (Sec. 14) |

**Mass, Density, and Dimensional Stability**

|        |                     |
|--------|---------------------|
| 01/D24 | ASTM C739 (Sec. 12) |
| 01/D26 | 16 CFR-Part 1209.4  |
| 01/D27 | ASTM C739 (Sec. 8)  |

**Related Material Properties**

|        |                     |
|--------|---------------------|
| 01/V04 | ASTM E96            |
| 01/V05 | ASTM C739 (Sec. 11) |

**Strength**

|        |           |
|--------|-----------|
| 01/S15 | ASTM C421 |
|--------|-----------|

**Commercial Products Testing**

Accreditation Valid Through: December 31, 2002

**NVLAP**

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**Plumbing**

|         |                                                        |
|---------|--------------------------------------------------------|
| 19/F01  | ASME A112.18.1M (Sec. 4.2.2.1 only)                    |
| 19/F02  | ASME A112.18.1M (Sec. 4.14) (ASSE 1016)                |
| 19/F03  | ASME A112.18.1M (Sec. 5.2)                             |
| 19/F04  | ASME A112.18.1M (Sec. 5.4)                             |
| 19/F05  | ASME A112.18.1M (Sec. 5.5)                             |
| 19/F06  | ASME A112.18.1M (Sec. 5.6)                             |
| 19/F07  | ASME A112.18.1M (Sec. 5.7)                             |
| 19/F08  | ASME A112.18.1M (Sec. 5.8)                             |
| 19/F10  | ASME A112.18.1M (Sec. 5.3)                             |
| 19/F11  | ASME A112.18.1 (Sec. 6.4.2)                            |
| 19/F12  | ASME A112.18.1 (Sec. 6.7.2)                            |
| 19/M01  | ICC/ANSI A117.1 (Sec. 609, 610)                        |
| 19/M02  | ASME/ANSI A112.19.7M (Sec. 5, 7)                       |
| 19/M03  | ASME/ANSI A112.19.8M (Sec. 4, 5)                       |
| 19/M04  | ASTM F446                                              |
| 19/M05  | ASTM F462                                              |
| 19/P01  | ANSI Z124.1 (Sec. 4, 5, 6)                             |
| 19/P02  | ANSI Z124.2 (Sec. 4, 5, 6)                             |
| 19/P03  | ANSI Z124.3 (Sec. 4, 5, 6)                             |
| 19/P03a | ANSI/ICPA-SS-1 (Sec. 4, 5, 6)                          |
| 19/P04  | ANSI Z124.4 (Sec. 4, 5)                                |
| 19/P05  | ANSI Z124.4 (Sec. 2.11) per ASME A112.19.6M (Sec. 7.1) |
| 19/P06  | ANSI/IAPMO Z124.6 (Sec. 4, 5, 6)                       |
| 19/P07  | ANSI/IAPMO Z124.8 (Sec. 4, 5)                          |
| 19/U01  | ASME/ANSI A112.18.3M (Sec. 12.1, 12.2)                 |
| 19/V01  | ASME A112.19.2M (Sec. 8.1)                             |
| 19/V02  | ASME A112.19.2M (Sec. 8.2)                             |
| 19/V03  | ASME A112.19.2M (Sec. 8.3)                             |
| 19/V04  | ASME A112.19.2M (Sec. 8.7)                             |
| 19/V05  | ASME A112.19.2M (Sec. 8.6)                             |
| 19/V06  | ASME A112.19.2M (Sec. 8.5)                             |
| 19/W01  | ASME A112.19.6 (Sec. 7.1.2)                            |
| 19/W02  | ASME A112.19.6 (Sec. 7.1.3)                            |
| 19/W03  | ASME A112.19.6 (Sec. 7.1.4)                            |
| 19/W04  | ASME A112.19.6 (Sec. 7.1.5)                            |
| 19/W05  | ASME A112.19.6 (Sec. 7.1.6)                            |
| 19/W06  | ASME A112.19.6 (Sec. 7.1.7)                            |
| 19/W07  | ASME A112.19.6 (Sec. 7.1.8)                            |
| 19/W08  | ASME A112.19.6 (Sec. 7.1.9)                            |

**NVLAP LAB CODE 100418-0****Composite Panel Association (CPA)**

18928 Premiere Court  
Gaithersburg, MD 20879-1569  
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Phone: 301-670-0604  
Fax: 301-840-1252  
E-Mail: cstout@cpamail.org

**Wood Based Products**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
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**General Wood Products**

23/G02 ASTM D1037 (Part A, Sec. 11-20)  
23/G03 ASTM D1037 (Part A, Sec. 28-33)

**Particleboard and Medium-Density Fiberboard**

23/P02 ASTM D1037 (Part A, Sec. 61-67)  
23/P03 ASTM D1037 (Part A, Sec. 68-73)  
23/P05 ASTM D1037 (Part A, Sec. 100-106)  
23/P06 ASTM D1037 (Part A, Sec. 107-110)  
23/P08 ASTM D1037 (Part A, Sec. 126-127)  
23/P09 ANSI/A208.1 (Sec. 3.4.4)  
23/T01 ASTM E1333  
23/T03 EN 120:92  
23/T04 ASTM D5582  
23/T05 ASTM D6007

**NVLAP LAB CODE 100419-0**

**Test Site Services, Inc.**

P.O. Box 766  
Marlboro, MA 01752  
Contact: Mr. Richard L. Wiedeman  
Phone: 508-481-1684  
Fax: 508-481-1684  
E-Mail: slp@ma.ultranet.com  
URL: <http://testsiteservices.com>

**Electromagnetic Compatibility & Telecommunications**

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**NVLAP**

Code Designation

**Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment  
12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.  
12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment  
12/F01 FCC Method - 47 CFR Part 15 - Digital Devices  
12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz  
12/F01b Radiated Emissions  
12/T51 AS/NZS 3548

**NVLAP LAB CODE 100420-0**

**Timberco, Inc.- dba TECO**

86305 College View Road  
Eugene, OR 97405-9631  
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**Wood Based Products**

Accreditation Valid Through: December 31, 2002

**NVLAP**

Code Designation

**General Wood Products**

23/G01 ASTM D906 (CSA 0112.0-M Series 1977)  
23/G02 ASTM D1037 (Part A, Sec. 11-20)  
23/G03 ASTM D1037 (Part A, Sec. 28-33)  
23/G04 ASTM D2395 (Method A)  
23/G05 ASTM D2718  
23/G06 ASTM D2719 (Method C)  
23/G07 ASTM D3043 (Method C)  
23/G08 ASTM D4442 (Method A)  
23/G09 ASTM D4442 (Method B)  
23/G10 ASTM E72 (Sec. 14)  
23/G11 ASTM E72 (Sec. 15)  
23/G12 ASTM E564  
23/G18 ASTM D1761 (Sec. 41-52)  
23/G20 ASTM E72 (Sec. 11, 17, 20)  
23/G21 ASTM E72 (Sec. 13, 18, 21)  
23/G23 ASTM E1803

**Hardwood Plywood**

23/H01 HP-1 (Sec. 4.3)  
23/H02 HP-1 (Sec. 4.4)  
23/H03 HP-1 (Sec. 4.6)  
23/H04 ASTM E96

**Particleboard and Medium-Density Fiberboard**

23/P01 ASTM D1037 (Part A, Sec. 21-27)  
23/P02 ASTM D1037 (Part A, Sec. 61-67)  
23/P03 ASTM D1037 (Part A, Sec. 68-73)  
23/P05 ASTM D1037 (Part A, Sec. 100-106)  
23/P06 ASTM D1037 (Part A, Sec. 107-110)  
23/P07 ASTM D1037 (Part A, Sec. 118-124)  
23/P08 ASTM D1037 (Part A, Sec. 126-127)  
23/P09 ANSI/A208.1 (Sec. 3.4.4)  
23/T01 ASTM E1333  
23/T02 FTM 1-83  
23/T04 ASTM D5582

**Sandwich Constructions**

23/X02 ATSM C297

**Structural Composite Lumber, Glulam, I-Joists, Laminated Veneer Lumber**

23/J01 ASTM D143 (Sec. 8)  
23/J02 ASTM D143 (Sec. 14)  
23/J04 ASTM D198 (Sec. 4-11)  
23/J06 ASTM D905 (CSA 0112.0-M Series 1977)  
23/J07 ASTM D1037 (Part A, Sec. 87-90)  
23/J08 ASTM D1101  
23/J09 ASTM D1761 (Sec. 1-11)  
23/J10 ASTM D2559 (Shear)

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|        |                                                      |
|--------|------------------------------------------------------|
| 23/J11 | ASTM D2559 (Delamination) (CSA 0112.0-M Series 1977) |
| 23/J12 | ASTM D4688                                           |
| 23/J13 | AITC 200 (T106)                                      |
| 23/J14 | AITC 200 (T107)                                      |
| 23/J15 | AITC 200 (T110)                                      |
| 23/J16 | AITC 200 (T114)                                      |
| 23/J17 | AITC 200 (T116)                                      |
| 23/J21 | ASTM D3535 (CSA 0112.0-M Series 1977)                |
| 23/J22 | ASTM D5572                                           |
| 23/J23 | ASTM D5751                                           |

**Structural Use Panels**

|        |                                                              |
|--------|--------------------------------------------------------------|
| 23/S02 | ASTM D3500 (Method B)                                        |
| 23/S03 | ASTM D3501 (Method B)                                        |
| 23/S04 | ASTM E661                                                    |
| 23/S05 | PS-1 (Sec. 4.5.2)                                            |
| 23/S06 | PS-1 (Sec. 4.5.3) (CAN/CSA-0325.1-88)                        |
| 23/S07 | PS-2 (Sec. 6.4.1) (CAN/CSA-0325.1-88)                        |
| 23/S08 | PS-2 (Sec. 6.4.2) (CAN/CSA-0325.1-88)                        |
| 23/S09 | PS-2 (Sec. 6.4.4) (CAN/CSA-0325.1-88)                        |
| 23/S10 | PS-2 (Sec. 6.4.7) (CAN/CSA-0325.1-88)                        |
| 23/S11 | PS-2 (Sec. 6.4.8) (CAN/CSA-0325.1-88)                        |
| 23/S12 | PS-2 (Sec. 6.4.9) (CAN/CSA-0325.1-88)                        |
| 23/S13 | PS-2 (Sec. 6.4.17) (CAN/CSA-0325.1-88)                       |
| 23/S14 | PS-2 (Sec. 6.4.18) (CAN/CSA-0325.1-88)                       |
| 23/S15 | PS-2 (Sec. 6.4.19) (Supplement No.1-92 to CAN/CSA-0325.1-88) |
| 23/S16 | PS-2 (Sec. 6.4.20) (Supplement No.1-92 to CAN/CSA-0325.1-88) |

**NVLAP LAB CODE 100421-0****PFS Corporation**

2402 Daniels Street  
Madison, WI 53718-6798  
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**Wood Based Products**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
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**General Wood Products**

|        |                                      |
|--------|--------------------------------------|
| 23/G01 | ASTM D906 (CSA 0112.0-M Series 1977) |
| 23/G02 | ASTM D1037 (Part A, Sec. 11-20)      |
| 23/G03 | ASTM D1037 (Part A, Sec. 28-33)      |
| 23/G04 | ASTM D2395 (Method A)                |
| 23/G05 | ASTM D2718                           |
| 23/G06 | ASTM D2719 (Method C)                |
| 23/G08 | ASTM D4442 (Method A)                |
| 23/G09 | ASTM D4442 (Method B)                |
| 23/G10 | ASTM E72 (Sec. 14)                   |
| 23/G11 | ASTM E72 (Sec. 15)                   |
| 23/G12 | ASTM E564                            |
| 23/G13 | ASTM E695                            |
| 23/G14 | AFG-01-84 (Sec. 3.1)                 |
| 23/G15 | AFG-01-84 (Sec. 3.2)                 |
| 23/G16 | ASTM E489                            |
| 23/G17 | ASTM E767                            |

|        |                            |
|--------|----------------------------|
| 23/G18 | ASTM D1761 (Sec. 41-52)    |
| 23/G19 | ASTM E72 (Sec. 9, 10)      |
| 23/G20 | ASTM E72 (Sec. 11, 17, 20) |
| 23/G21 | ASTM E72 (Sec. 13, 18, 21) |
| 23/G22 | ASTM D5764                 |
| 23/G23 | ASTM E1803                 |

**Hardwood Plywood**

|        |                 |
|--------|-----------------|
| 23/H01 | HP-1 (Sec. 4.3) |
| 23/H02 | HP-1 (Sec. 4.4) |
| 23/H03 | HP-1 (Sec. 4.6) |
| 23/H04 | ASTM E96        |

**Particleboard and Medium-Density Fiberboard**

|        |                                   |
|--------|-----------------------------------|
| 23/P01 | ASTM D1037 (Part A, Sec. 21-27)   |
| 23/P02 | ASTM D1037 (Part A, Sec. 61-67)   |
| 23/P03 | ASTM D1037 (Part A, Sec. 68-73)   |
| 23/P04 | ASTM D1037 (Part A, Sec. 81-86)   |
| 23/P05 | ASTM D1037 (Part A, Sec. 100-106) |
| 23/P06 | ASTM D1037 (Part A, Sec. 107-110) |
| 23/P07 | ASTM D1037 (Part A, Sec. 118-124) |
| 23/P08 | ASTM D1037 (Part A, Sec. 126-127) |
| 23/P09 | ANSI/A208.1 (Sec. 3.4.4)          |
| 23/T01 | ASTM E1333                        |
| 23/T02 | FTM 1-83                          |
| 23/T04 | ASTM D5582                        |

**Sandwich Constructions**

|        |                      |
|--------|----------------------|
| 23/X01 | ASTM C273            |
| 23/X02 | ATSM C297            |
| 23/X03 | ASTM C365 (Method A) |
| 23/X04 | ASTM C393            |
| 23/X05 | ASTM C480            |
| 23/X06 | ASTM C481            |
| 23/X07 | ASTM D1183           |

**Structural Composite Lumber, Glulam, I-Joists,****Laminated Veneer Lumber**

|        |                                                      |
|--------|------------------------------------------------------|
| 23/J01 | ASTM D143 (Sec. 8)                                   |
| 23/J02 | ASTM D143 (Sec. 14)                                  |
| 23/J03 | ASTM D143 (Sec. 16)                                  |
| 23/J04 | ASTM D198 (Sec. 4-11)                                |
| 23/J06 | ASTM D905 (CSA 0112.0-M Series 1977)                 |
| 23/J07 | ASTM D1037 (Part A, Sec. 87-90)                      |
| 23/J08 | ASTM D1101                                           |
| 23/J09 | ASTM D1761 (Sec. 1-11)                               |
| 23/J10 | ASTM D2559 (Shear)                                   |
| 23/J11 | ASTM D2559 (Delamination) (CSA 0112.0-M Series 1977) |

|        |                                       |
|--------|---------------------------------------|
| 23/J12 | ASTM D4688                            |
| 23/J13 | AITC 200 (T106)                       |
| 23/J14 | AITC 200 (T107)                       |
| 23/J15 | AITC 200 (T110)                       |
| 23/J16 | AITC 200 (T114)                       |
| 23/J17 | AITC 200 (T116)                       |
| 23/J21 | ASTM D3535 (CSA 0112.0-M Series 1977) |

**Structural Use Panels**

|        |                                       |
|--------|---------------------------------------|
| 23/S01 | ASTM D3044                            |
| 23/S03 | ASTM D3501 (Method B)                 |
| 23/S04 | ASTM E661                             |
| 23/S05 | PS-1 (Sec. 4.5.2)                     |
| 23/S06 | PS-1 (Sec. 4.5.3) (CAN/CSA-0325.1-88) |
| 23/S07 | PS-2 (Sec. 6.4.1) (CAN/CSA-0325.1-88) |
| 23/S08 | PS-2 (Sec. 6.4.2) (CAN/CSA-0325.1-88) |
| 23/S09 | PS-2 (Sec. 6.4.4) (CAN/CSA-0325.1-88) |



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|        |                                                                 |
|--------|-----------------------------------------------------------------|
| 23/S10 | PS-2 (Sec. 6.4.7) (CAN/CSA-0325.1-88)                           |
| 23/S11 | PS-2 (Sec. 6.4.8) (CAN/CSA-0325.1-88)                           |
| 23/S12 | PS-2 (Sec. 6.4.9) (CAN/CSA-0325.1-88)                           |
| 23/S13 | PS-2 (Sec. 6.4.17) (CAN/CSA-0325.1-88)                          |
| 23/S14 | PS-2 (Sec. 6.4.18) (CAN/CSA-0325.1-88)                          |
| 23/S15 | PS-2 (Sec. 6.4.19) (Supplement No.1-92 to<br>CAN/CSA-0325.1-88) |
| 23/S16 | PS-2 (Sec. 6.4.20) (Supplement No.1-92 to<br>CAN/CSA-0325.1-88) |

**NVLAP LAB CODE 100423-0****APA - The Engineered Wood Association  
Research Center**

7011 South 19th Street  
P.O. Box 11700  
Tacoma, WA 98411-0700  
Contact: Mr. Thomas G. Williamson  
Phone: 253-565-6600  
Fax: 253-565-7265  
E-Mail: tom.williamson@apawood.org  
URL: <http://www.apawood.org>

**Wood Based Products**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**General Wood Products**

|        |                       |
|--------|-----------------------|
| 23/G04 | ASTM D2395 (Method A) |
| 23/G05 | ASTM D2718            |
| 23/G06 | ASTM D2719 (Method C) |
| 23/G07 | ASTM D3043 (Method C) |
| 23/G09 | ASTM D4442 (Method B) |
| 23/G10 | ASTM E72 (Sec. 14)    |
| 23/G11 | ASTM E72 (Sec. 15)    |
| 23/G22 | ASTM D5764            |

**Structural Composite Lumber, Glulam, I-Joists,****Laminated Veneer Lumber**

|        |                                                         |
|--------|---------------------------------------------------------|
| 23/J02 | ASTM D143 (Sec. 14)                                     |
| 23/J04 | ASTM D198 (Sec. 4-11)                                   |
| 23/J05 | ASTM D198 (Sec. 28-35)                                  |
| 23/J09 | ASTM D1761 (Sec. 1-11)                                  |
| 23/J10 | ASTM D2559 (Shear)                                      |
| 23/J11 | ASTM D2559 (Delamination) (CSA 0112.0-M<br>Series 1977) |
| 23/J12 | ASTM D4688                                              |
| 23/J14 | AITC 200 (T107)                                         |
| 23/J15 | AITC 200 (T110)                                         |
| 23/J16 | AITC 200 (T114)                                         |
| 23/J17 | AITC 200 (T116)                                         |
| 23/J18 | AITC 200 (T119)                                         |
| 23/J19 | AITC 200 (T123)                                         |

**Structural Use Panels**

|        |                                       |
|--------|---------------------------------------|
| 23/S01 | ASTM D3044                            |
| 23/S02 | ASTM D3500 (Method B)                 |
| 23/S03 | ASTM D3501 (Method B)                 |
| 23/S04 | ASTM E661                             |
| 23/S07 | PS-2 (Sec. 6.4.1) (CAN/CSA-0325.1-88) |
| 23/S08 | PS-2 (Sec. 6.4.2) (CAN/CSA-0325.1-88) |
| 23/S09 | PS-2 (Sec. 6.4.4) (CAN/CSA-0325.1-88) |
| 23/S10 | PS-2 (Sec. 6.4.7) (CAN/CSA-0325.1-88) |
| 23/S11 | PS-2 (Sec. 6.4.8) (CAN/CSA-0325.1-88) |

|        |                                                                 |
|--------|-----------------------------------------------------------------|
| 23/S12 | PS-2 (Sec. 6.4.9) (CAN/CSA-0325.1-88)                           |
| 23/S13 | PS-2 (Sec. 6.4.17) (CAN/CSA-0325.1-88)                          |
| 23/S14 | PS-2 (Sec. 6.4.18) (CAN/CSA-0325.1-88)                          |
| 23/S15 | PS-2 (Sec. 6.4.19) (Supplement No.1-92 to<br>CAN/CSA-0325.1-88) |
| 23/S16 | PS-2 (Sec. 6.4.20) (Supplement No.1-92 to<br>CAN/CSA-0325.1-88) |

**NVLAP LAB CODE 100424-0****Vibro-Acoustics Laboratory**

727 Tapscott Road  
Scarborough Ontario M1X 1A2  
CANADA  
Contact: Mr. Robert Gault  
Phone: 416-291-7371  
Fax: 416-291-8049  
E-Mail: [bgault@vibro-acoustics.com](mailto:bgault@vibro-acoustics.com)

**Acoustical Testing Services**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

|        |             |
|--------|-------------|
| 08/P03 | ASTM C423   |
| 08/P10 | ANSI S12.31 |
| 08/P36 | ASTM E477   |
| 08/P44 | ISO 354     |
| 08/P46 | ISO 3741    |

**NVLAP LAB CODE 100425-0****Johns Manville Technical Center**

10100 West Ute Avenue  
P.O. Box 625005  
Littleton, CO 80162-5005  
Contact: Mr. Mark A. Albers  
Phone: 303-978-5008  
Fax: 303-978-3123  
E-Mail: [albersm@jm.com](mailto:albersm@jm.com)  
URL: <http://www.jm.com/mtc/appliedtech.html>

**Acoustical Testing Services**

Accreditation Valid Through: June 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

|        |                 |
|--------|-----------------|
| 08/P03 | ASTM C423       |
| 08/P04 | ASTM C522       |
| 08/P06 | ASTM E90        |
| 08/P09 | ASTM E756       |
| 08/P10 | ANSI S12.31     |
| 08/P13 | ANSI S12.32     |
| 08/P24 | ANSI S12.10     |
| 08/P28 | ASTM E1375      |
| 08/P29 | ASTM E1376      |
| 08/P33 | ASTM E1111      |
| 08/P34 | ASTM E1414      |
| 08/P35 | ASTM E1050      |
| 08/P36 | ASTM E477       |
| 08/P44 | ISO 354         |
| 08/P45 | ISO 140, Part 3 |
| 08/P46 | ISO 3741        |
| 08/P47 | ISO 3742        |
| 08/P48 | ISO 7779        |



## INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued

08/P54 SAE J1400

### Thermal Insulation Materials

Accreditation Valid Through: June 30, 2002

#### NVLAP

Code Designation

#### Corrosiveness

01/C03 ASTM C665 (Sec. 13.8)

#### Flammability

01/F01 TAPPI T461-OM

01/F02 ASTM E84

01/F05 ASTM E136

#### Mass, Density, and Dimensional Stability

01/D02 ASTM C167

01/D03 ASTM C209 (Sec. 7)

01/D04 ASTM C209 (Sec. 14, 2 hour)

01/D05 ASTM C209 (Sec. 14, 24 hour) by D1037  
(Sec. 100-106)

01/D08 ASTM C302

01/D09 ASTM C303

01/D11 ASTM C356

01/D12 ASTM C411

01/D13 ASTM C519

#### Related Material Properties

01/V04 ASTM E96

01/V07 ASTM C1104/C1104M

#### Strength

01/S01a ASTM C165 (Proc. A)

01/S01b ASTM C165 (Proc. B)

01/S02 ASTM C203

01/S03 ASTM C209 (Sec. 10)

01/S04 ASTM C209 (Sec. 11)

01/S05 ASTM C209 (Sec. 12)

01/S06 ASTM C209 (Sec. 13)

01/S08 ASTM C446

01/S10 ASTM D828

#### Thermal Resistance

01/T01 ASTM C177

01/T05 ASTM C335

01/T06 ASTM C518

01/T10 ASTM C687

01/T11 ASTM C976

### NVLAP LAB CODE 100426-0

#### Nemko Dallas, Inc.

802 N. Kealy

Lewisville, TX 75057-3136

Contact: Mr. Tom Tidwell

Phone: 972-436-9600

Fax: 972-436-2667

E-Mail: tom.tidwell@nemkona.com

URL: <http://www.nemkona.com>

#### Electromagnetic Compatibility & Telecommunications

Accreditation Valid Through: December 31, 2002

#### NVLAP

Code Designation

#### Emissions Test Methods:

12/CIS22 IEC/CISPR 22:1997: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology

equipment

12/CIS22b CNS 13438:1997: Limits and Methods of  
Measurement of Radio Interference  
Characteristics of Information Technology  
Equipment

12/F01 FCC Method - 47 CFR Part 15 - Digital  
Devices

12/F01a Conducted Emissions, Power Lines, 450 KHz  
to 30 MHz

12/F01b Radiated Emissions

12/T51 AS/NZS 3548

#### Immunity Test Methods:

12/I01 IEC 61000-4-2 (1995) and Amendment 1  
(1998): Electrostatic Discharge Immunity Test

12/I02 IEC 61000-4-3 (1995) and Amendment 1  
(1998): Radiated, Radio-Frequency

Electromagnetic Field Immunity Test

12/I03 IEC 61000-4-4 (1995): Electrical Fast

Transient/Burst Immunity Test

12/I04 IEC 61000-4-5 (1995): Surge Immunity Test

12/I05 IEC 61000-4-6 (1996): Immunity to

Conducted Disturbances, Induced

Radio-Frequency Fields

12/I06 IEC 61000-4-8 (1993): Power Frequency

Magnetic Field Immunity Test

12/I07 IEC 61000-4-11 (1994): Voltage Dips, Short  
Interruptions and Voltage Variations Immunity  
Tests

#### Safety Test Methods:

12/T41 ACA TS-001

12/T50 AS/NZS 3260

#### Telecommunications Test Methods:

12/CS03 CS-03

12/T01 Terminal Equipment Network Protection  
Standards, FCC Method - 47 CFR Part 68 -  
Analog and Digital

12/T01a 68.302 (Par. c,d,e,f) Environmental simulation;  
68.304 Leakage current limit.; 68.306

Hazardous voltage limit.; 68.308 Signal power  
limit.; 68.310 Longitudinal balance limit.;  
68.312 On-hook impedance limit.; 68.314

Billing protection

12/T01b 68.316 Hearing Aid Compatibility: technical  
standards

12/T01c 68.302 Environmental simulation (Par. a,b)

12/T42 ACA TS-002

12/T43 ACA TS-003

12/T44 ACA TS-004

12/T45 ACA TS-006

12/T49 ACA TS-016

NVLAP LAB CODE 100427-0

**Michael & Associates**

200 Innovation Blvd., Suite 229  
State College, PA 16803  
Contact: Mr. Kevin Michael  
Phone: 814-234-7042  
Fax: 814-235-1381  
E-Mail: Kevin@michaelassociates.com  
URL: http://www.michaelassociates.com

**Acoustical Testing Services**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code   | Designation                  |
|--------|------------------------------|
| 08/P26 | ANSI S3.19 (ANSI S3.19-1974) |
| 08/P27 | ANSI S12.6                   |

NVLAP LAB CODE 100428-0

**Matsushita EMC Center**

Yunitopia Sasayama, Yashiro  
Sasayama-City  
Sasayama, Hyogo 669-2356  
JAPAN  
Contact: Mr. Katsuo Ishihara  
Phone: 81-795-52-5681  
Fax: 81-795-52-5682  
E-Mail: PAN02796@pas.mei.co.jp

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code      | Designation                                                                                                                                                                                                  |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS14  | CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions |
| 12/CIS14a | EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)                                                                                                                                                      |
| 12/CIS14b | AS/NZS 1044 (1995)                                                                                                                                                                                           |
| 12/CIS14c | CNS 13783-1                                                                                                                                                                                                  |
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                                                                |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.                                       |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                                                                  |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                                                                |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz                                                                                                                                                                    |

**Emissions Test Methods:**

to 30 MHz

12/F01b Radiated Emissions

12/T51 AS/NZS 3548

**Immunity Test Methods:**

12/I01 IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test

12/I02 IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency

Electromagnetic Field Immunity Test  
12/I03 IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test

12/I04 IEC 61000-4-5 (1995): Surge Immunity Test

12/I05 IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields

12/I06 IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test

12/I07 IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests

NVLAP LAB CODE 100430-0

**Professional Service Industries, Inc., Pittsburgh Test. Lab. Div.**

2710 West 5th Avenue  
Eugene, OR 97402  
Contact: Mr. Ralph M. Vaughn  
Phone: 541-484-9212  
Fax: 541-344-2735  
E-Mail: ralph.vaughn@PSI.USA.com

**Wood Based Products**

Accreditation Valid Through: March 31, 2002

**NVLAP**

| Code   | Designation                       |
|--------|-----------------------------------|
| 23/G02 | ASTM D1037 (Part A, Sec. 11-20)   |
| 23/G03 | ASTM D1037 (Part A, Sec. 28-33)   |
| 23/G04 | ASTM D2395 (Method A)             |
| 23/G07 | ASTM D3043 (Method C)             |
| 23/G08 | ASTM D4442 (Method A)             |
| 23/G10 | ASTM E72 (Sec. 14)                |
| 23/G11 | ASTM E72 (Sec. 15)                |
| 23/H01 | HP-1 (Sec. 4.3)                   |
| 23/H02 | HP-1 (Sec. 4.4)                   |
| 23/H03 | HP-1 (Sec. 4.6)                   |
| 23/P02 | ASTM D1037 (Part A, Sec. 61-67)   |
| 23/P03 | ASTM D1037 (Part A, Sec. 68-73)   |
| 23/P04 | ASTM D1037 (Part A, Sec. 81-86)   |
| 23/P05 | ASTM D1037 (Part A, Sec. 100-106) |
| 23/P06 | ASTM D1037 (Part A, Sec. 107-110) |
| 23/P07 | ASTM D1037 (Part A, Sec. 118-124) |
| 23/P08 | ASTM D1037 (Part A, Sec. 126-127) |
| 23/P09 | ANSI/A208.1 (Sec. 3.4.4)          |
| 23/T01 | ASTM E1333                        |
| 23/T02 | FTM 1-83                          |

**General Wood Products**

**Hardwood Plywood**

**Particleboard and Medium-Density Fiberboard**

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****Structural Use Panels**

|        |                                                               |
|--------|---------------------------------------------------------------|
| 23/S04 | ASTM E661                                                     |
| 23/S05 | PS-1 (Sec. 4.5.2)                                             |
| 23/S06 | PS-1 (Sec. 4.5.3) (CAN/CSA-0325.1-88)                         |
| 23/S07 | PS-2 (Sec. 6.4.1) (CAN/CSA-0325.1-88)                         |
| 23/S08 | PS-2 (Sec. 6.4.2) (CAN/CSA-0325.1-88)                         |
| 23/S09 | PS-2 (Sec. 6.4.4) (CAN/CSA-0325.1-88)                         |
| 23/S10 | PS-2 (Sec. 6.4.7) (CAN/CSA-0325.1-88)                         |
| 23/S11 | PS-2 (Sec. 6.4.8) (CAN/CSA-0325.1-88)                         |
| 23/S12 | PS-2 (Sec. 6.4.9) (CAN/CSA-0325.1-88)                         |
| 23/S13 | PS-2 (Sec. 6.4.17) (CAN/CSA-0325.1-88)                        |
| 23/S14 | PS-2 (Sec. 6.4.18) (CAN/CSA-0325.1-88)                        |
| 23/S15 | PS-2 (Sec. 6.4.19) (Supplement No. 1-92 to CAN/CSA-0325.1-88) |
| 23/S16 | PS-2 (Sec. 6.4.20) (Supplement No. 1-92 to CAN/CSA-0325.1-88) |

**NVLAP LAB CODE 100431-0****PCTEST Engineering Laboratory, Inc.**

6660-B Dobbin Road  
Columbia, MD 21045-4708  
Contact: Mr. Randy Ortanez  
Phone: 410-290-6652  
Fax: 410-290-6654  
E-Mail: randy@pctestlab.com  
URL: <http://www.pctestlab.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

**Immunity Test Methods:**

|        |                                                                                                            |
|--------|------------------------------------------------------------------------------------------------------------|
| 12/I01 | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                         |
| 12/I02 | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test |
| 12/I03 | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                        |

|        |                                                                                                |
|--------|------------------------------------------------------------------------------------------------|
| 12/I04 | IEC 61000-4-5 (1995): Surge Immunity Test                                                      |
| 12/I05 | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields       |
| 12/I06 | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test                             |
| 12/I07 | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests |

**NVLAP LAB CODE 100432-0****InfoGard Laboratories, Inc.**

641 Higuera Street, Second Floor  
San Luis Obispo, CA 93401  
Contact: Mr. Mac Brinton  
Phone: 805-783-0810  
Fax: 805-783-0889  
E-Mail: [mbrinton@infogard.com](mailto:mbrinton@infogard.com)  
URL: <http://www.infogard.com>

**Cryptographic Module Testing**

Accreditation Valid Through: June 30, 2002

**NVLAP**

| Code    | Designation                                                                                                                                                                                                                  |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 17/C01  | NIST-CSTT:140-1; National Institute of Standards and Technology-Cryptographic Support Test Tool (CSTT) for the Federal Information Processing Standard 140-1 (FIPS 140-1) "Security Requirements for Cryptographic Modules." |
| 17/C01a | Test Method Group 1: All test methods derived from FIPS 140-1 and specified in the CSTT, except those listed in Group 2 and Group 3.                                                                                         |
| 17/C01b | Test Method Group 2: Test methods for Physical Security, Level 4 derived from FIPS 140-1 and specified in the CSTT                                                                                                           |
| 17/C01c | Test Method Group 3: Test methods for Software Security, Level 4 derived from FIPS 140-1 and specified in the CSTT                                                                                                           |
| 17/C02  | FIPS-Approved Cryptographic Algorithms (see < <a href="http://csrc.nist.gov/cryptval">http://csrc.nist.gov/cryptval</a> >) as required in FIPS PUB 140-1.                                                                    |

**NVLAP LAB CODE 100501-0****Calvert Cliffs Nuclear Power Plant, Inc.**

Member of Constellation Energy Group  
1650 Calvert Cliffs Parkway  
Lusby, MD 20657-4702  
Contact: Mr. Timothy J. Kirkham  
Phone: 410-495-6885  
Fax: 410-495-2618  
E-Mail: [timothy.j.kirkham@ccnppi.com](mailto:timothy.j.kirkham@ccnppi.com)

**Ionizing Radiation Dosimetry**

Accreditation Valid Through: September 30, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeter listed below through employing a Panasonic automatic reader UD710A.



## INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued

This facility is accredited to process the following dosimeter by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 through testing.

Panasonic TLD model UD802 in a Panasonic UD874A holder for ANSI-N13.11 categories I, II, IIIA, IIIB, IV, VC, VI, VII, VIII.

---

### NVLAP LAB CODE 100502-0

#### **AmerenUE, Callaway Plant**

P.O. Box 620  
Fulton, MO 65251-0620  
Contact: Mr. Christopher C. Graham  
Phone: 573-676-8380  
Fax: 573-676-4476  
E-Mail: ccgraham@cal.ameren.com

#### **Ionizing Radiation Dosimetry**

Accreditation Valid Through: March 31, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeter listed below through employing a Panasonic Automatic reader model UD710A.

This facility is accredited to process the following dosimeter by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 through testing.

Panasonic TLD model UD-802 in a Panasonic UD-874AT holder for ANSI HPS N13.11 categories I, II, IIIA, IV, VC, VI, VII, VIII.

---

### NVLAP LAB CODE 100503-0

#### **Mallinckrodt, Inc.**

2703 Wagner Place  
Maryland Heights, MO 63043  
Contact: Ms. Kay Yoder  
Phone: 314-654-7432  
Fax: 314-654-7933  
E-Mail: kay.yoder@mkkg.com

#### **Ionizing Radiation Dosimetry**

Accreditation Valid Through: September 30, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeter listed below through employing Harshaw automatic reader model 6600E.

This facility is accredited to process the following dosimeter by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 through testing.

Harshaw TLD model 8825 for ANSI-N13.11 categories II, IIIB, IV, VC, VI, VII.

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### NVLAP LAB CODE 100504-0

#### **Naval Dosimetry Center**

National Naval Medical Center  
8901 Wisconsin Ave.  
Bethesda, MD 20889-5614  
Contact: CAPT K. Mendenhall  
Phone: 301-295-0142 /5410  
Fax: 301-295-5981  
E-Mail: kmendenhall@navdoscen.med.navy.mil

#### **Ionizing Radiation Dosimetry**

Accreditation Valid Through: December 31, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeters listed below through employing the Harshaw/Bicron automatic reader models 8800PC and 6600.

This facility is accredited to process the following dosimeters by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 and ANSI HPS N13.32-1995 through testing.

Harshaw 8801 (DT 648/PD)(Harshaw 4 Chip Card, 3 TLD700, 1 TLD600) in a Harshaw/Bicron model 8802 holder for ANSI-N13.11 categories I, II, IIIA, IV, VA, VI, VII, VIII.

Bicron 8840-8841 (4 chip MCP Copper Doped Intergrated Dosimetry System) in a Harshaw/Bicron model 8840 holder for ANSI-N13.11 categories I, II, IIIA, IV, VA, VI, VII, VIII.

Bicron DXTRAD-707H finger ring for ANSI HPS N13.32 (NIST Handbook 150-4, Table 2) categories I, II, IIIA, IIIB, IVA, IVB, VA, VB, VC, VI, VII.

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### NVLAP LAB CODE 100505-0

#### **Duke Power Company Dosimetry Laboratory**

526 South Church Street  
P.O. Box 1006  
Charlotte, NC 28201-1006  
Contact: Mr. Donald N. Mei  
Phone: 704-382-7547  
Fax: 704-382-4477  
E-Mail: dnmei@duke-energy.com

#### **Ionizing Radiation Dosimetry**

Accreditation Valid Through: March 31, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeter listed below through employing a Harshaw Model 8800.

This facility is accredited to process the following dosimeter by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 through testing.



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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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Harshaw TLD card Type 8801 in a model 8814 BGN holder for ANSI-N13.11 categories I, II, IIIA, IV, VB, VI, VII, VIII.

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**NVLAP LAB CODE 100512-0****Radiation Detection Company**

8095 Camino Arroyo  
Gilroy, CA 95020  
Contact: Mr. Richard H. Holden  
Phone: 408-842-2700  
Fax: 408-847-2988

URL: <http://www.radetco.com>

**Ionizing Radiation Dosimetry**

Accreditation Valid Through: December 31, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeters listed below through employing (1) Teledyne 7300; (2) Teledyne 310 reader; (3) Harshaw 3000A and 3500 reader; (4) by manual film processing and reading on a Macbeth TD932 densitometer or ESECO T-90; (5) NE Autoscan 60 system and Ziess microscope and (6) Harshaw 6600 and 8800 TLD readers.

This facility is accredited to process the following dosimeters by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 through testing.

| DESIGNATION      | PROCESS | ANSI-N13.11 CATEGORIES                 |
|------------------|---------|----------------------------------------|
| Type 06 TLD XG   | 1,2     | II, IV                                 |
| Type 09 TLD XBG  | 1,2,3   | IV, VII                                |
| Type 22 TLD XBGN | 2,3,6   | I, IIIB, VI, VIII                      |
| Type 01 Film XBG | 4       | I, II, IIIA, IIIB, IV, VA, VB, VI, VII |
| Type 23 TLD XBGN | 2,3,5   | II, IV, VA, VII, VIII                  |

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**NVLAP LAB CODE 100514-0****Ginna Nuclear Station**

1503 Lake Road  
Ontario, NY 14519-9742  
Contact: Dr. Frederic J. Mis  
Phone: 716-771-3323  
Fax: 716-771-3905  
E-Mail: [frederic\\_mis@RGE.com](mailto:frederic_mis@RGE.com)

**Ionizing Radiation Dosimetry**

Accreditation Valid Through: September 30, 2002

This facility has been evaluated and deemed competent to process the TLD radiation dosimeters listed below through employing a Panasonic automatic reader model UD710A.

This facility is accredited to process the following dosimeters by virtue of actual demonstration of compliance with ANSI HPS-N13.11-1993 through testing.

Panasonic TLD model UD802-AS in an ISA Model 821 hanger for ANSI-N13.11 categories I, II, IIIB, IV, VA, VI, VII.

Panasonic TLD model UD812A-5 in a Panasonic UD884A-T hanger for ANSI-N13.11 categories I, II, IV, VA, VII.

Combination Panasonic TLD model UD812A-5 and UD809-AS in a Panasonic UD884A-T holder with cd shields for ANSI-N13.11 category VIII.

Rados Electronic Dosimeter RAD-51R with a Rados ADR 1000 and 2000 reader for HPS ANSI-N13.32-1995 categories II, IIIB, IV and VI.

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**NVLAP LAB CODE 100516-0****Tennessee Valley Authority External Dosimetry Service**

Sequoyah Access Road, P.O. Box 2000  
Soddy-Daisy, TN 37379-2000  
Contact: Mr. Mark A. Palmer  
Phone: 423-843-8857  
Fax: 423-843-7133  
E-Mail: [MAPALMER@TVA.GOV](mailto:MAPALMER@TVA.GOV)

**Ionizing Radiation Dosimetry**

Accreditation Valid Through: March 31, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeter listed below through employing a Panasonic automatic reader model UD710A.

This facility is accredited to process the following dosimeter by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 through testing.

Panasonic TLD model UD802 in an ISA model 820 or Polymar 1-A holder for ANSI HPS N13.11 categories I, II, IIIA, IV, VC, VI, VII, VIII.

# INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued

## NVLAP LAB CODE 100517-0

### Carolina Power & Light Company, Harris Energy & Enviro. Center

3932 New Hill-Holleman Road  
P.O. Box 327  
New Hill, NC 27562-0327  
Contact: Mr. Jeff Kiser  
Phone: 919-362-3215  
Fax: 919-362-3354

### Ionizing Radiation Dosimetry

Accreditation Valid Through: September 30, 2002

This facility has been evaluated and deemed competent to process the TLD radiation dosimeters listed below through employing a Panasonic automatic reader model UD710A.

This facility is accredited to process the following dosimeters by virtue of actual demonstration of compliance with ANSI HPS-N13.11-1993 and ANSI HPS-N13.32-1995 through testing.

Panasonic TLD model UD802 in a Panasonic closed type UD-874 ATM1 or a Polymar Configuration 1-A holder for HPS-N13.11 categories I, II, IIIA, IV, VC, VI, VII, VIII.

Panasonic extremity TLD model UD-807 in a plastic ring holder (Panasonic UD-807R) for ANSI HPS-13.32 (NIST Handbook 150-4, table 2) category IVA.

Based on equivalency, the Panasonic TLD model UD802 in a wrist holder for ANSI HPS-13.32 (NIST Handbook 150-4, table 2) categories I, II, IIIA, IV, VC, VI, VII.

Merlin Gerin DMC-100 or DMC-2000 Electronic Dosimeter (ED) with LDM-101 reader for ANSI HPS N13.11 category IV.

Based on equivalency, the DMC-100 or DMC-2000 Electronic Personal Dosimeter (EPD) in a wrist holder for ANSI HPS-13.32 (NIST Handbook 150-4, table 2) category IV.

## NVLAP LAB CODE 100518-0

### Landauer, Inc.

2 Science Road  
Glenwood, IL 60425-1586  
Contact: Dr. R. Craig Yoder  
Phone: 708-755-7000  
Fax: 708-755-7011  
E-Mail: cyoder@landauerinc.com  
URL: http://www.landauerinc.com

### Ionizing Radiation Dosimetry

Accreditation Valid Through: December 31, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeters listed below through employing (1) Landauer (Kanars Data) automatic film reader; (2) Harshaw 2000 B/D Laser reader; (3) CR-39 manual optical readers; (4) manual densitometers X-Rite, Tech/Ops model 301, Macbeth models TD504, TD931, TD904; (5) ALNOR Dosacus reader; (6) Pulsed Optically Stimulated Luminescence (POSL); (7) Harshaw 4000 single chip reader; (8) microscopes.

This facility is accredited to process the following dosimeters by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 through testing.

Landauer designation:

| DOSIMETER                                                                                     | PROCESS | ANSI N13.11<br>CATEGORY    |                             |
|-----------------------------------------------------------------------------------------------|---------|----------------------------|-----------------------------|
|                                                                                               |         | Based<br>On<br>Testing     | Based<br>On Tech.<br>Equiv. |
| TLD                                                                                           |         |                            |                             |
| K - ALNOR<br>(TLD 100 or TLD 700<br>chips) (100518 H)                                         | 5       | I,II,IIIA,IV,<br>VC,VI,VII |                             |
| W - modified - 2 chip<br>Escort with x-ray<br>filtration (100518-J)                           | 2,7     | I, II                      |                             |
| Z - K badge<br>(TLD 100 or 700<br>chips) plus Neutron<br>Track Etch Neutrak<br>144 (100518-I) | 3,5,8   | VIII                       | I-VII                       |
| F - L badge plus<br>CR-39                                                                     | 1,3     |                            | I-VIII                      |
| L - 4 chip Alnor TLD                                                                          | 5       |                            | I-VII                       |
| M - K badge<br>(TLD 700 chips)                                                                | 5       |                            | I-VII                       |
| S - K badge<br>(TLD 700 chips)<br>plus ER (100518)                                            | 3,5     | VIII                       | I-VII                       |

# INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued

## POSL

|                                                        |     |                                 |       |
|--------------------------------------------------------|-----|---------------------------------|-------|
| J - Luxel (003/POSL)<br>plus Neutrak 144<br>(100518-2) | 6,8 | VIII                            | I-VII |
| P - Luxel (003/POSL)<br>(100518-1)                     | 6   | I, II, IIIA, IV,<br>VC, VI, VII |       |

This facility has been accredited to process the extremity dosimeters listed below, by virtue of actual demonstration of compliance with ANSI-N13.32-1995 and NIST Handbook 150-4, Pg. 14, Table 2, through employing the following readers/process: (1) Landauer Custom Automated; (2) Kanars Data Custom Automated (film); (3) Alnor Dosacus Automatic Reader; (4) Harshaw 2000B/D, 4000 manual; (5) Macbeth TD504, TD904, TD931 manual; (6) Landauer Custom Luxel reader; (7) Pulsed Optically Stimulated Luminescence (POSL).

| DOSIMETER                                        | PROCESS | ANSI N13.32<br>CATEGORY                   |                               |
|--------------------------------------------------|---------|-------------------------------------------|-------------------------------|
|                                                  |         | Based<br>On<br>Testing                    | Based<br>On Tech.<br>Equiv.   |
| TLD                                              |         |                                           |                               |
| U - Ring<br>(TLD-100 chip)<br>(Finger) (100518Z) | 1,4     | I, II, IIIA,<br>IV(Cs), VA,<br>VB, VD, VI | VII                           |
| K - Modified K<br>(Wrist)<br>(100518X)           | 3,4     | IIIA and VI                               | I, II, IV, VA,<br>VB, VD, VII |

## POSL

|                                     |   |      |                               |
|-------------------------------------|---|------|-------------------------------|
| P- Luxel<br>(003/POSL)<br>(100518R) | 7 | IIIA | I, II, IV, VA,<br>VB, VI, VII |
|-------------------------------------|---|------|-------------------------------|

## NVLAP LAB CODE 100519-0

### South Texas Project Dosimetry Laboratory

P.O. Box 289  
Wadsworth, TX 77483  
Contact: Mr. G. T. Powell  
Phone: 361-972-7566  
Fax: 361-972-7757  
E-Mail: gtpowell@stpegs.com

### Ionizing Radiation Dosimetry

Accreditation Valid Through: September 30, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeters listed below through employing a Panasonic automatic reader model UD710A.

This facility is accredited to process the following dosimeters by virtue of actual demonstration of compliance with ANSI HPS-N13.11-1993 through testing.

Panasonic TLD Model UD802 in an ISA Model 830 holder for ANSI-N13.11 categories II, IV, VC, VI, VII, & VIII.

Panasonic TLD Model UD802/Neutron Pack in a Model ISA 830/ISA 810 holder for ANSI-N13.11 category VIII.

## NVLAP LAB CODE 100524-0

### Duke Engineering and Services Environmental Laboratory

29 Research Drive  
Westborough, MA 01581-3913  
Contact: Mr. Melvin W. Gmyrek  
Phone: 978-568-2522  
Fax: 978-568-2520  
E-Mail: mwgmyrek@dukeengineering.com

### Ionizing Radiation Dosimetry

Accreditation Valid Through: September 30, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeters listed below through employing a Panasonic automatic reader model 710A and a Rialto XT extremity dosimeter reader.

This facility is accredited to process the following dosimeters by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 and ANSI HPS N13.32-1995 through testing.

Panasonic TLD model UD-808 in a ISA model 830U holder for ANSI-N13.11 categories I, II, IIIA, IIIB, IV, VC, VI, VII.

Panasonic TLD model 814-AS4 in a ISA model 830U holder for ANSI-N13.11 categories I, II, IIIA, IIIB, IV,

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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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VC, VI, VII.

Panasonic TLD models UD808/UD814-AS4 combined for category VIII.

Bicron-NE extremity TLD mode 869/A/2B in a ring tape holder for HPS ANSI 13.32 (NIST Handbook 150-4, table 2) categories IVA, IVB, VA, VB and VD.

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**NVLAP LAB CODE 100528-0**

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**TXU Electric - Comanche Peak Steam Electric Station**

5 miles North of Glen Rose on Hwy. 56 N  
P.O. Box 1002  
Glen Rose, TX 76043-5315  
Contact: Mr. John R. Curtis  
Phone: 254-897-5332  
Fax: 254-897-0972  
E-Mail: jcurtis1@txu.com

**Ionizing Radiation Dosimetry**

Accreditation Valid Through: June 30, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeter listed below through employing a Panasonic automatic reader model UD710A.

This facility is accredited to process the following dosimeter by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 through testing.

Panasonic TLD model UD802-AT in an ISA model 810 holder with Mylar-window for ANSI-N13.11 categories IIIB, IV, VB, VI, VII, VIII.

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**NVLAP LAB CODE 100529-0**

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**Detroit Edison, Fermi 2 Dosimetry Laboratory**

6400 North Dixie Highway, 100 AIB  
Newport, MI 48166  
Contact: Mr. Ronald Gillmore  
Phone: 734-586-1388  
Fax: 734-586-1041  
E-Mail: gillmorer@dteenergy.com  
URL: <http://TLDLAB@DTEEnergy.com>

**Ionizing Radiation Dosimetry**

Accreditation Valid Through: September 30, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeter listed below through employing a Panasonic automatic reader model UD710A.

This facility is accredited to process the following dosimeter by virtue of actual demonstration of compliance with ANSI HPS-N13.11-1993 through testing.

Panasonic TLD model UD802-AS in an ISA-820 holder for ANSI-N13.11 categories I, II, IIIA, IV, VC, VI, VII,

VIII.

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**NVLAP LAB CODE 100535-0**

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**Entergy Operations, Inc.**

Waterford 3, 17265 River Road  
Killona, LA 70066  
Contact: Mr. Ronald C. McLendon  
Phone: 504-464-3199  
Fax: 504-464-3151  
E-Mail: [rmclend@entergy.com](mailto:rmclend@entergy.com)

**Ionizing Radiation Dosimetry**

Accreditation Valid Through: December 31, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeter listed below through employing a Panasonic automatic reader model UD710A.

This facility is accredited to process the following dosimeter by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 through testing.

Panasonic TLD model UD802-AS in a Panasonic 874A holder for ANSI-N13.11 categories I, II, IIIA, IV, VC, VI, VII, VIII.

This facility is accredited to process the following dosimeter by virtue of actual demonstration of compliance with ANSI-N13.32 through testing:

Panasonic TLD model UD807 in a Panasonic UD-807R holder for ANSI-N13.32 categories IVA and IVB.

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**NVLAP LAB CODE 100536-0**

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**Arizona Public Service Co., Palo Verde Nuclear Generating Station**

Palo Verde Nuclear  
5801 S. Wintersburg Road, Station 6107  
Tonopah, AZ 85354-7529  
Contact: Mr. Michael W. Lantz  
Phone: 623-393-5200  
Fax: 623-393-2624  
E-Mail: [mlantz@apsc.com](mailto:mlantz@apsc.com)  
URL: <http://www.apsc.com/dosim.asp>

**Ionizing Radiation Dosimetry**

Accreditation Valid Through: September 30, 2002

This facility has been evaluated and deemed competent to process the TLD radiation dosimeters listed below through employing a Panasonic automatic reader model UD710A.

This facility is accredited to process the following dosimeters by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 through testing.

Panasonic TLD model UD812(AS) in a single use holder for ANSI-N13.11 categories I, II, IIIB, IV, VC, VI, VII.



Panasonic TLD combination UD809(AS) (in UD885A-T holder)/UD812(AS) (in a single use holder) for ANSI-N13.11 category VIII.

This facility is accredited to process the following dosimeters by showing equivalence of compliance with ANSI HPS N13.11-1993. Merlin Gerlin DMC-2000 Electronic Personnel Dosimeter for ANSI-N13.11 categories IIIB, IV, VI.

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**NVLAP LAB CODE 100537-0****Pacific Gas & Electric Company, Diablo Canyon Nuclear Power Plant**

P.O. Box 56  
Avila Beach, CA 93424  
Contact: Mr. Neal Grossen  
Phone: 805-545-4033  
Fax: 805-545-6645  
E-Mail: neg1@pge.com

**Ionizing Radiation Dosimetry**

Accreditation Valid Through: September 30, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeters listed below through employing a Panasonic automatic reader model UD710A.

This facility is accredited to process the following dosimeters by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 through testing.

Panasonic TLD model UD802-AS in a Panasonic UD875AT holder for ANSI-N13.11 categories II, IIIA, IV, VA, VI, VII, VIII.

Combination Panasonic TLD model UD813-AS8 in a Panasonic UD885AT holder for ANSI-N13.11 category VIII.

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**NVLAP LAB CODE 100538-0****Entergy Nuclear Northeast**

Broadway and Bleakley Avenue  
Buchanan, NY 10511-1099  
Contact: Ms. Lori Glander  
Phone: 914-271-7118  
Fax: 914-734-5734  
E-Mail: glande@entergy.com

**Ionizing Radiation Dosimetry**

Accreditation Valid Through: June 30, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeter listed below through employing a Panasonic automatic reader model UD710A.

This facility is accredited to process the following dosimeter by virtue of actual demonstration of compliance with ANSI-HPS N13.11-1993 through testing.

Panasonic TLD model UD802 (AS or AT) in an 874 AT holder for ANSI-N13.11 categories I, II, IIIB, IV, VC, VI, VII, VIII.

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**NVLAP LAB CODE 100539-0****U.S. Army Radiation Standards & Dosimetry Laboratory**

Attn: AMSAM-TMD-SR-D, Bldg. 5417  
Redstone Arsenal, AL 35898-5000  
Contact: Mr. Patrick Kuykendall  
Phone: 256-876-3340  
Fax: 256-955-6413  
E-Mail: patrick.kuykendall@redstone.army.mil

**Ionizing Radiation Dosimetry**

Accreditation Valid Through: December 31, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeter listed below through employing a Panasonic Model 710 reader.

This facility is accredited to process the following dosimeter by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 through testing.

Panasonic Model UD802AS in a Panasonic UD-874A-T holder for ANSI-N13.11 categories I, II, IIIA, IIIB, IV, VA, VB, VC, VI, VII, VIII.

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**NVLAP LAB CODE 100540-0****Dominion Nuclear Connecticut, Inc.**

Route 156, Rope Ferry Road  
Waterford, CT 06385  
Contact: Mr. J. Eric Laine  
Phone: 860-444-5343  
Fax: 860-444-5640  
E-Mail: John\_E\_Laine@dom.com

**Ionizing Radiation Dosimetry**

Accreditation Valid Through: December 31, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeter listed below through employing a Harshaw model 8800 TLD workstation.

This facility is accredited to process the following dosimeter by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 through testing.

Harshaw TLD card model 8801N (3 TLD 700, 1 TLD 600 chips) in a Harshaw Model 8810 holder for ANSI-N13.11

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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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categories I, II, IIIB, IV, VB, VI, VII, and VIII.

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**NVLAP LAB CODE 100544-0**

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**Florida Power & Light Company**

700 Universe Blvd.  
P.O. Box 14000  
Juno Beach, FL 33408-0420  
Contact: Mr. Joseph Danek  
Phone: 561-694-4213  
Fax: 561-694-3706  
E-Mail: joe\_danek@fpl.com

**Ionizing Radiation Dosimetry**

Accreditation Valid Through: June 30, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeter listed below through employing a Panasonic automatic reader model UD716.

This facility is accredited to process the following dosimeter by virtue of actual demonstration of compliance with ANSI-N13.11-1993 through testing.

Panasonic TLD model UD802-AT or AS in a ISA 820 holder for ANSI-N13.11 categories I, II, IIIB, IV, VC, VI, VII, VIII.

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**NVLAP LAB CODE 100548-0**

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**US Air Force Center for Radiation Dosimetry**

2402 E. Drive  
Brooks AFB, TX 78235-5114  
Contact: Mr. Bruce B. Dicey  
Phone: 210-536-5569  
Fax: 210-536-5368  
E-Mail: Bruce.Dicey@Brooks.AF.MIL  
URL: <http://sg-www.satx.disa.mil/iera/sdr.htm>

**Ionizing Radiation Dosimetry**

Accreditation Valid Through: March 31, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeters listed below employing the Panasonic automatic readers model UD716AGL and UD-7900M for the whole-body dosimeters and the Harshaw 6600 Automatic TLD Reader for the EXT-RAD & DXT-RAD extremity dosimeters.

This facility is accredited to process the following dosimeters by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 through testing.

Panasonic TLD model UD802AT in model 820-C hanger for ANSI-N13.11 categories I, II, IIIA, IV, VC, VI, VII, VIII.

Panasonic TLD model UD802AT in ISA model 822 neutron hanger for ANSI-N13.11 categories IV, VIII.

Harshaw EXT-RAD extremity TLD-100 chip in a finger ring strap for ANSI HPS N-13.32-1995 (NIST Handbook 150-4, table 2) categories IV, VA, and VII.

Harshaw DXT-RAD extremity TLD-100 chip in a finger ring strap for ANSI HPS N-13.32-1995 (NIST Handbook 150-4, table 2) categories IV, VA, and VII.

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**NVLAP LAB CODE 100551-0**

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**Georgia Power Company/Enviro. Affairs, Enviro. Lab-Dosimetry**

5131 Maner Road  
Smyrna, GA 30080-7321  
Contact: Mr. Michael C. Nichols  
Phone: 404-799-2112  
Fax: 404-799-2141  
E-Mail: mcnichol@southernco.com

**Ionizing Radiation Dosimetry**

Accreditation Valid Through: March 31, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeters listed below through employing Panasonic automatic readers model UD-710A and UD-717.

This facility is accredited to process the following dosimeter by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 and ANSI HPS N13.32 through testing.

Panasonic TLD model UD802-AS or AT in a UD-874ATM1 (closed) hanger for ANSI HPS N13.11 categories II, IIIA, IV, VC, VI, VII, VIII.

Panasonic extremity TLD model UD-817 in an elastic ring holder for ANSI HPS N13.32-1995 (NIST Handbook 150-4, table 2) categories II, IV and VII.

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**NVLAP LAB CODE 100554-0**

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**PPL Susquehanna, LLC**

Two North Ninth Street  
Allentown, PA 18101-1179  
Contact: Mr. Stephen L. Ingram  
Phone: 610-774-5412  
Fax: 610-774-7205  
E-Mail: slingram@pplweb.com

**Ionizing Radiation Dosimetry**

Accreditation Valid Through: March 31, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeter listed below through employing a Panasonic automatic reader model UD710A.

This facility is accredited to process the following dosimeter by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 through testing.

Panasonic TLD model UD802-AS in a Panasonic UD874-AT or UD874-ATM1 hanger for ANSI-N13.11 categories I, II, IIIB, IV, VC, VI, VII, VIII.

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**NVLAP LAB CODE 100555-0****ICN Worldwide Dosimetry Service, Div. of ICN Biomedicals, Inc.**

3300 Hyland Ave., ICN Plaza  
Costa Mesa, CA 92626  
Contact: Ms. Sandra Nemecek  
Phone: 714-545-0100 x2297  
Fax: 714-668-3149  
E-Mail: [smnemecek@icnpharm.com](mailto:smnemecek@icnpharm.com)  
URL: <http://www.dosimetry.com>

**Ionizing Radiation Dosimetry**

Accreditation Valid Through: June 30, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeters listed below through employing the TLD automatic readers: Panasonic model UD710A, UD716, and Harshaw models 8800 and 6600; TLD manual readers: Panasonic model UD702 and Harshaw models 5500 and 3500; MacBeth TD932 densitometer, a custom automatic developer and densitometer for film processing, and a Bicon Autoscan 60 chemical etch system.

**WHOLE BODY**

This facility is accredited to process the following dosimeters by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 through testing.

Panasonic TLD model ICN UD-802/822 with a model UD-854 Sofpack custom pouch, or UD-874 hanger (ICN type 3) for ANSI-N13.11 categories I, II, IIIA, IV, VC, VI, VII, VIII.

ICN Film Badge (Kodak Type 2 film/Type 4 holder) (ICN type 1) for ANSI-N13.11 categories I, II, IIIA, IV, VA, VI, VII.

ICN Film Badge (Kodak Type 2 film/Type 4 holder with CR39) for ANSI-N13.11 category VIII by reference to TLD-760 (ICN type 15) dosimeter.

Panasonic TLD model UD-802 (854/874/Sofpack) with CR39 (ICN type 6) for ANSI-N13.11 category VIII.

ICN Remtrack (Bicon/Harshaw) TLD model 100 enclosed in a laminated polyethylene material holder (ICN type 21) for ANSI N13.11 category II and IV.

TLD-100 (ICN type 14) for ANSI-N13.11 categories I, II, IIIA, IV, VA, VI, VII.

TLD-760 (ICN type 16) for ANSI-N13.11 categories I, II, IIIA, IV, VC, VI, VII, VIII.

TLD-760 plus CR39 (ICN type 15) for ANSI-N13.11 category VIII.

**EXTREMITY**

This facility has been accredited to process the extremity dosimeters listed below by virtue of actual demonstration of compliance with ANSI HPS N13.32-1995 and NIST Handbook 150-4, Page 14, Table 2 categories.

Panasonic extremity TLD UD-807 in flex ring holder (ICN type 5), based on testing, for categories IVA, VA, and VB.

TLD-100 (Ring)(ICN type 19), based on testing, for categories I, II, IIIA, IV, VA, VB, VD, VI, and VII.

TLD-100 (Wrist), based on technical equivalence, for categories I, II, IIIA, IIIB, IV, VA, VI, VII.

TLD-100 1C (Ring), based on technical equivalence, for categories I, II, IIIA, IV, VA, VB, VD.

TLD-760 (Wrist), based on technical equivalence, for categories I, II, IIIA, IIIB, IV, VA, VI, VII.

TLD 802 (Wrist), based on technical equivalence, for categories I, II, IIIA, IV, VC, VI, VII.

TLD 803 (Wrist), based on technical equivalence, for categories I, II, IIIA, IV, VA, VI, VII.

ICN film (Wrist), based on technical equivalence, for categories I, II, IIIA, IV, VA, VI, VII.

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**NVLAP LAB CODE 100556-0****Atomic Energy Industrial Laboratory of the Southwest, Inc.**

9261 Kirby Drive  
Houston, TX 77054-2514  
Contact: Mr. Steven H. Allen  
Phone: 713-790-9719  
Fax: 713-790-0542  
E-Mail: [shallen@aeil.com](mailto:shallen@aeil.com)  
URL: <http://www.aeil.com>

**Ionizing Radiation Dosimetry**

Accreditation Valid Through: September 30, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeters listed below through employing film processing using a computerized custom densitometer.



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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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This facility is accredited to process the following dosimeters by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 through testing.

Film Badge B-4 (Kodak Type 2) for ANSI-N13.11 categories I, II, IIIA, IV, VC, VI, VII.

Film Badge N-5 (Kodak Type 2 and A) for ANSI-N13.11 category VIII.

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**NVLAP LAB CODE 100559-0****Troxler Radiation Monitoring Svc. a div. of  
Troxler Elect. Labs**

3008 Cornwallis Road  
P.O. Box 12057  
Research Triangle Park, NC 27709  
Contact: Mr. Stephen A. Browne  
Phone: 919-549-8661  
Fax: 919-549-0761  
E-Mail: troxrso@troxlerlabs.com  
URL: <http://www.troxlerlabs.com>

**Ionizing Radiation Dosimetry**

Accreditation Valid Through: June 30, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeter listed below through employing a Panasonic automatic reader model UD710A.

This facility is accredited to process the following dosimeter by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 through testing.

Panasonic TLD model UD802 with model UD854 hanger for ANSI-N13.11 category I, II, IIIA, IV, VC, VI, VII, VIIIA.

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**NVLAP LAB CODE 100560-0****General Dynamics, Electric Boat**

75 Eastern Point Road  
Groton, CT 06340-4909  
Contact: Mr. Robert D. Renza  
Phone: 860-433-3674  
Fax: 860-433-0946  
E-Mail: [rrenza@ebmail.gdeb.com](mailto:rrenza@ebmail.gdeb.com)  
URL: <http://www.gdeb.com>

**Ionizing Radiation Dosimetry**

Accreditation Valid Through: March 31, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeter listed below through employing a Harshaw manual reader model 4000.

This facility is accredited to process the following dosimeter by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 through testing.

A Harshaw TLD model 4040, CaF<sub>2</sub>Mn Bulb Dosimeter in a model 4039 holder for ANSI HPS N13.11 Category IV.

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**NVLAP LAB CODE 100561-0****Newport News Shipbuilding Radiological Control  
Department**

4101 Washington Avenue  
Newport News, VA 23607-2770  
Contact: Mr. Michael F. Smith  
Phone: 757-688-6853  
Fax: 757-380-2006  
E-Mail: [smith\\_mf@nns.com](mailto:smith_mf@nns.com)

**Ionizing Radiation Dosimetry**

Accreditation Valid Through: March 31, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeter listed below through employing a Harshaw automatic reader model 8800.

This facility is accredited to process the following dosimeter by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 through testing.

Harshaw TLD models 2276-L and LNG-0677, BG (2 TLD 700, 1 TLD 600) in a Type 80 Harshaw cardholder for ANSI HPS N13.11 category IV.

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**NVLAP LAB CODE 100562-0****Radiation Laboratory, Taiwan Power Company**

P.O. Box 7  
Shihmen, Taipei 25302  
TAIWAN  
Contact: Mr. W. W. Yeh  
Phone: +886-2-2638-1397  
Fax: +886-2-2638-2446  
E-Mail: [u706667@taipower.com.tw](mailto:u706667@taipower.com.tw)

**Ionizing Radiation Dosimetry**

Accreditation Valid Through: September 30, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeter listed below through employing a Panasonic automatic reader model UD710A.

This facility is accredited to process the following dosimeter by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 through testing.

Panasonic TLD model UD802AS in a UD-874A holder for ANSI-N13.11 categories I, II, IIIA, IV, VA, VI, VII, VIII.



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**NVLAP LAB CODE 100565-0****Naval Nuclear Propulsion Program Directorate,  
Washington, DC**

Puget Sound Naval Shipyard, Rad. Hlth  
Division, Code 105.5, 1400 Farragut Ave  
Bremerton, WA 98314-5001  
Contact: Mr. Mark S. Johnson  
Phone: 360-476-3596  
Fax: 360-476-4383

**Ionizing Radiation Dosimetry**

Accreditation Valid Through: March 31, 2002

The facility listed has been evaluated as a representative site and deemed competent to process the radiation dosimeter listed below through employing a Radiac Computer-Indicator Model No. CP-1112/PD TLD reader.

This facility is accredited to process the following dosimeter by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 through testing:

CaF<sub>2</sub>:Mn Bulb Dosimeter (DT-526/PD) for ANSI-N13.11 categories II, IV.

The accreditation is also extended to include processing performed by other facilities in the Naval Nuclear Propulsion Program which use identical equipment and procedures as listed above.

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**NVLAP LAB CODE 100571-0****United States Dosimetry Technology, Inc.**

660-A George Washington Way  
Richland, WA 99352-4246  
Contact: Mr. M. K. Winegardner  
Phone: 509-946-8738  
Fax: 509-943-2710  
E-Mail: mk\_wine@compuserve.com  
URL: <http://www.usdt.web.com>

**Ionizing Radiation Dosimetry**

Accreditation Valid Through: December 31, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeters listed below employing (1) USDT TLD Card Reader (2) Bar-Ray Film Developing System and USDT/Mini film densitometer, and (3) Harshaw Model 2000A TLD Chip Reader.

This facility is accredited to process the following dosimeters by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 through testing.

USDT-F (TLD-600) and USDT-U (TLD-700) for ANSI-N13.11 categories I, II, IIIA, IV, VA, VI, VII, VIII using (1).

USDT-3 Kodak type 2 film for ANSI-13.11 categories I, II, IIIA, IV, VA, VI, VII using (2).

This facility is accredited to process the following dosimeters by virtue of actual demonstration of compliance with ANSI N13.32 through testing:

USDT-R finger ring dosimeter for ANSI N13.32 category IV using (3).

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**NVLAP LAB CODE 100573-0****Proxtronic, Inc.**

7200 Fullerton Road, Unit B-1  
Springfield, VA 22150  
Contact: Mr. W. Guy Davis  
Phone: 703-425-4811  
Fax: 703-455-5692  
E-Mail: [sales@Proxtronic.com](mailto:sales@Proxtronic.com)  
URL: <http://www.proxtronic.com>

**Ionizing Radiation Dosimetry**

Accreditation Valid Through: June 30, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeters listed below through employing film processing using a Victoreen 07-440 densitometer and TLD processing using a Panasonic UD710A and UD717AS.

This facility is accredited to process the following dosimeters by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 through testing.

Film Badge (Kodak Type II) in Proxtronic custom holders GDS 400, for ANSI N13.11 categories IIIA, IV and VC.

Panasonic TLD model UD802-AS2 in an ISA 831, GDS 500, or UD875-ATM1 hanger for ANSI N13.11 categories I, II, IIIA, IV, VC, VI, VII, VIII.

Panasonic TLD model UD-817 in a Wallet Card Holder (Proxtronic Series 300) for ANSI N13.11 categories II and IV.

This facility has been accredited to process the extremity dosimeters listed below by virtue of actual demonstration of compliance with ANSI N13.32 - 1995 and NIST Handbook 150-4, page 14, Table 12 categories.

Panasonic extremity TLD model UD-817 in a finger ring strip holder (Proxtronic GSD 300) for categories I, II, IIIA, IVA, VA, VB, and VD.

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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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**NVLAP LAB CODE 101004-0**

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**Analytics Corporation**

8040 Villa Park Drive  
Richmond, VA 23228  
Contact: Mr. James A. Calpin, CIH  
Phone: 804-264-7100  
Fax: 804-264-8873  
E-Mail: jcalpin@ix.netcom.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101006-0**

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**Advanced Industrial Hygiene Services, Inc.**

2131 S.W. 2 Ave.  
Miami, FL 33129-1411  
Contact: Mr. Bruce Marchette  
Phone: 305-854-7554  
Fax: 305-285-0677  
E-Mail: AIHS1@AOL.COM

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101012-0**

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**Dixon Information Inc.**

78 West 2400 South  
South Salt Lake, UT 84115-3013  
Contact: Mr. Willard C. Dixon  
Phone: 801-486-0800  
Fax: 801-486-0849  
E-Mail: dixoninformation@yahoo.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101014-0**

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**Aires Consulting Group, Inc.**

1550 Hubbard  
Batavia, IL 60510  
Contact: Ms. Cynthia Darling  
Phone: 630-879-3006  
Fax: 630-879-3014  
E-Mail: cindyardling@airesconsulting.com  
URL: airesconsulting.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101019-0**

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**EA Group**

7118 Industrial Park Blvd.  
Mentor, OH 44060-5314  
Contact: Mr. Carl R. Eggebraaten  
Phone: 440-951-3514  
Fax: 440-951-3774

URL: <http://www.eagroup-ohio.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101031-0**

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**Fiberquant, Inc.**

5025 S. 33rd St.  
Phoenix, AZ 85040  
Contact: Mr. Larry S. Pierce  
Phone: 602-276-6139  
Fax: 602-276-4558  
E-Mail: FIBERQUANT@ABILNET.COM  
URL: <http://www.fiberq.com/labs/fq.htm>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101032-0**

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**Batta Laboratories, Inc.**

Delaware Industrial Park  
6 Garfield Way  
Newark, DE 19713-5817  
Contact: Mr. Naresh C. Batta  
Phone: 302-737-3376  
Fax: 302-737-5764  
E-Mail: ncbatta@battaenv.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101037-0**

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**Microscopic Analysis, Inc.**

11760 Westline Industrial Drive  
St. Louis, MO 63146-3402  
Contact: Mr. Douglas N. Nimmo  
Phone: 314-993-2212  
Fax: 314-993-3193  
E-Mail: IHSI@COMPUSERVE.COM

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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**NVLAP LAB CODE 101039-0****Davis Environmental Labs, Inc.**

333 W. Wacker Drive, Suite 1400  
Chicago, IL 60606-1226  
Contact: Mr. Aleksey Torosin  
Phone: 312-762-2937  
Fax: 312-641-0818

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 101048-0****EMSL Analytical, Inc.**

107 Haddon Avenue  
Westmont, NJ 08108-2799  
Contact: Mr. Stephen Siegel, CIH  
Phone: 856-858-4800  
Fax: 856-858-4960  
E-Mail: [ssiegel@emsl.com](mailto:ssiegel@emsl.com)  
URL: <http://www.emsl.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101048-1****EMSL Analytical, Inc.**

1770 The Exchange SE, Suite 135  
Atlanta, GA 30339  
Contact: Richard White  
Phone: 770-956-9150  
Fax: 770-956-9181  
E-Mail: [RWhite@emsl.com](mailto:RWhite@emsl.com)  
URL: <http://www.emsl.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101048-2****EMSL Analytical, Inc.**

1056 Stelton Rd.  
Piscataway, NJ 08854  
Contact: Adrian Arav  
Phone: 908-981-0550  
Fax: 908-981-0551  
E-Mail: [piscatawaylab@emsl.com](mailto:piscatawaylab@emsl.com)  
URL: <http://www.emsl.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101048-3****EMSL Analytical, Inc.**

382 South Abbott Avenue  
Milpitas, CA 95035  
Contact: Sean Fitzgerald  
Phone: 408-934-7010  
Fax: 408-934-7015

URL: <http://www.emsl.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101048-4****EMSL Analytical, Inc.**

212 S. Wagner Road  
Ann Arbor, MI 48103  
Contact: Hildegard Hohnke  
Phone: 734-668-6810  
Fax: 734-668-8532  
E-Mail: [Hhohnke@emsl.com](mailto:Hhohnke@emsl.com)  
URL: <http://www.emsl.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

NVLAP LAB CODE 101048-9

**EMSL Analytical, Inc.**

307 W. 38th Street  
New York, NY 10118  
Contact: Jose Arriaga  
Phone: 212-290-0051  
Fax: 212-290-0058  
E-Mail: jarriaga@emsl.com  
URL: http://www.emsl.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

NVLAP LAB CODE 101048-10

**EMSL Analytical, Inc.**

208 Stone Henge Road  
Carle Place, NY 11514  
Contact: Michele McGowan  
Phone: 516-997-7251  
Fax: 516-997-7528

URL: http://www.emsl.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

NVLAP LAB CODE 101051-0

**Accredited Environmental Technologies, Inc.**

28 North Pennell Road  
Media, PA 19063  
Contact: Mr. Carl Josephson  
Phone: 610-891-0114  
Fax: 610-891-0559

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

NVLAP LAB CODE 101061-0

**ChemScope, Inc.**

15 Moulthrop Street  
North Haven, CT 06473-3686  
Contact: Mr. Ronald D. Arena  
Phone: 203-865-5605  
Fax: 203-498-1610  
E-Mail: chem.scope@snet.net  
URL: http://www.chem-scope.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

NVLAP LAB CODE 101066-0

**Law Engineering and Environmental Services, Inc.**

2100 Riverchase Center, Suite 450  
Birmingham, AL 35244  
Contact: Ms. Carol Rankin  
Phone: 205-733-7671  
Fax: 205-985-2951  
E-Mail: crankin@lawco.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

NVLAP LAB CODE 101086-0

**Analytica Solutions, Inc.**

12189 Pennsylvania Street  
Thornton, CO 80241  
Contact: Mr. Steve Merritt  
Phone: 303-469-8868 x123  
Fax: 303-469-5254  
E-Mail: smerritt@Analyticagroup.com  
URL: http://www.analyticagroup.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: March 31, 2002

NVLAP LAB CODE 101103-0

**Chatfield Technical Consulting Limited**

2071 Dickson Road  
Mississauga Ontario L5B 1Y8  
CANADA  
Contact: Dr. Eric J. Chatfield  
Phone: 905-896-7611  
Fax: 905-896-1930  
E-Mail: echatfield@ejchatfield.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

NVLAP LAB CODE 101106-0

**Clayton Group Services**

4636 East Marginal Way South, Suite 215  
Seattle, WA 98134-2331  
Contact: Ms. Venetia Runnion  
Phone: 206-763-7364  
Fax: 206-763-4189  
E-Mail: vrunnion@claytongrp.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002



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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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**NVLAP LAB CODE 101109-0****Wisconsin Occupational Health Laboratory**

2601 Agriculture Drive  
P.O. Box 7996  
Madison, WI 53707-7996  
Contact: Mr. Lyle Reichmann  
Phone: 608-224-6221  
Fax: 608-224-6213  
E-Mail: lr@mail.slh.wisc.edu

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101111-0****City of Los Angeles Department of Water and Power**

Dept. of Water and Power, Env. Lab.  
PO Box 51111, 1630 N. Main St., Bldg. 7  
Los Angeles, CA 90051-0100  
Contact: Mr. Stanley M. Kung  
Phone: 213-367-7270  
Fax: 213-367-7285  
E-Mail: stanley.kung@water.ladwp.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101125-0****Clayton Group Services**

3380 Chastain Meadows Pkwy., Suite 300  
Kennesaw, GA 30144  
Contact: Mr. Alan M. Segrave  
Phone: 770-499-7500  
Fax: 770-423-4990  
E-Mail: aseg007@aol.com  
URL: <http://www.claytongrp.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101130-0****TEM, Incorporated**

443 Duane Street  
Glen Ellyn, IL 60137  
Contact: Mr. James Tuinenga  
Phone: 630-790-0880  
Fax: 630-790-0882  
E-Mail: jimtcih@ameritech.net  
URL: <http://www.tem-inc.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

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**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 101135-0****McKee Environmental Health, Inc.**

303 Westfield Lane  
Friendswood, TX 77546-6316  
Contact: Mr. Ronald S. McKee  
Phone: 281-482-3403  
Fax: 281-482-7203  
E-Mail: mehi@wt.net

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101136-0****American Medical Laboratories, Inc.**

14225 Newbrook Drive  
P.O. Box 10841  
Chantilly, VA 20153-0841  
Contact: Mr. Christopher Kase  
Phone: 703-802-6900  
Fax: 703-802-7041  
E-Mail: ckase@aml.com  
URL: <http://www.aml.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101143-0****AMA Analytical Services, Inc.**

4475 Forbes Blvd.  
Lanham, MD 20706  
Contact: Mr. Andreas Saldivar  
Phone: 301-459-2640  
Fax: 301-459-2643  
E-Mail: asaldivar@amalab.com  
URL: <http://www.amalab.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101147-0****Hygienetics Laboratory Services**

98 North Washington Street  
Boston, MA 02114  
Contact: Mr. Bryan Clark  
Phone: 617-589-0660  
Fax: 617-742-4285  
E-Mail: lab@hygienetics.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101150-0****Schneider Laboratories, Inc.**

2512 W. Cary Street  
Richmond, VA 23220-5117  
Contact: Mr. Raja F. Abouzaki  
Phone: 804-353-6778  
Fax: 804-359-1475  
E-Mail: rabouzaki@slabinc.com  
URL: <http://www.slabinc.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101151-0****EMSL Analytical, Inc.**

5125 Adanson Street, Suite 900  
Orlando, FL 32804  
Contact: Mr. A. Mark Antonelli  
Phone: 407-599-5887  
Fax: 407-599-9063

URL: <http://www.emsl.com>**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101162-0****EcoSystems Environmental, Inc.**

1408A Vantage Street  
Carrollton, TX 75006  
Contact: Mr. Bakhtiar Dargali  
Phone: 972-416-0520  
Fax: 972-416-4512

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101165-0****International Asbestos Testing Laboratory**

16000 Horizon Way, Unit 100  
Mt. Laurel, NJ 08054  
Contact: Mr. Frank E. Ehrenfeld, III  
Phone: 856-231-9449  
Fax: 856-231-9818  
E-Mail: [frankehrenfeld@iatl.com](mailto:frankehrenfeld@iatl.com)  
URL: <http://www.iatl.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101170-0****Gelles Laboratories, Division, CC Technologies**

6141 Avery Road  
Dublin, OH 43016  
Contact: Mr. Donald S. McKinney, Jr.  
Phone: 614-761-1214  
Fax: 614-761-1633  
E-Mail: [dmckinney@cctlabs.com](mailto:dmckinney@cctlabs.com)  
URL: <http://www.cctechnologies.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101187-0****ATC Associates Inc.**

104 E. 25th Street 10th Floor  
New York, NY 10010  
Contact: Ms. Milena Lowd  
Phone: 212-353-8280 x247  
Fax: 212-353-3599  
E-Mail: [Lowd15@ATC-ENVIRO.COM](mailto:Lowd15@ATC-ENVIRO.COM)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101188-0****Tremco, Inc. - Roofing Division, An RPM Company**

3735 Green Road  
Beachwood, OH 44122  
Contact: Mr. Greg Rudolph  
Phone: 216-766-5644  
Fax: 216-765-6737

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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**NVLAP LAB CODE 101192-0****Philip Environmental Services Corp.**

210 West Sandbank Road  
P.O. Box 230  
Columbia, IL 62236-0230  
Contact: Mr. Craig M. Brooks  
Phone: 618-281-7173  
Fax: 618-281-5120  
E-Mail: cbrooks@contactpsc.com  
URL: <http://www.contactpsc.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101199-0****HYGENIX, INC.**

49 Woodside Street  
Stamford, CT 06902-2411  
Contact: Mr. Arthur Morris  
Phone: 203-324-2222  
Fax: 203-324-9857

URL: <http://www.hygenix.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

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**NVLAP LAB CODE 101202-0****STAT Analysis Corporation**

2201 W. Campbell Park Dr.  
Chicago, IL 60612-3501  
Contact: Dr. Surendra N. Kumar  
Phone: 312-733-0551  
Fax: 312-733-2386

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101208-0****RJ Lee Group, Inc.**

350 Hochberg Road  
Monroeville, PA 15146-1516  
Contact: Mr. Drew R. Van Orden  
Phone: 724-325-1776  
Fax: 724-733-1799  
E-Mail: DREW@RJLG.COM  
URL: <http://www.RJLG.COM>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101208-2****RJ Lee Group, Inc.**

Bay Area Laboratory  
530 McCormick Place  
San Leandro, CA 94577  
Contact: Dr. Benedict Schiefelbein  
Phone: 510-567-0480  
Fax: 510-567-0488

URL: <http://www.RJLG.COM>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101208-3****RJ Lee Group, Inc.**

Manassas Laboratory  
10503 Battleview Parkway  
Manassas, VA 20109  
Contact: Monica McCloy  
Phone: 703-368-7880  
Fax: 703-368-7761

URL: <http://www.RJLG.COM>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101216-0****CTL Environmental Services**

24404 S. Vermont Avenue, Suite 307  
Harbor City, CA 90710  
Contact: Dr. Stuart E. Salot  
Phone: 310-530-5006  
Fax: 310-530-0792  
E-Mail: salot@ctles.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 101218-0****EMS Laboratories, Inc.**

117 West Bellevue Drive  
Pasadena, CA 91105-2503  
Contact: Ms. Bernadine M. Kolk  
Phone: 626-568-4065  
Fax: 626-796-5282  
E-Mail: emslab2@aol.com  
URL: <http://www.emslabs.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101221-0****Micro Air, Inc.**

6320 La Pas Trail  
Indianapolis, IN 46268-4104  
Contact: Dr. Morris L.V. French  
Phone: 317-293-1533  
Fax: 317-290-3566  
E-Mail: [microair@microair.com](mailto:microair@microair.com)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101222-0****Enviro-Probe, Inc.**

2917 Bruckner Boulevard  
Bronx, NY 10461  
Contact: Dr. Ved P. Kukreja  
Phone: 718-863-0045  
Fax: 718-518-7454

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

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**NVLAP LAB CODE 101228-0****The Scott Lawson Group, Ltd.**

29 River Road  
P.O. Box 3304  
Concord, NH 03302-3304  
Contact: Mr. Ernest Rocha  
Phone: 603-228-3610  
Fax: 603-228-3871

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101232-0****ERI Consulting Engineers, Inc.**

2024 Republic Drive  
P.O. Box 2024  
Tyler, TX 75701-2024  
Contact: Ms. Kathy R. Schosek  
Phone: 903-534-5001  
Fax: 903-534-8701  
E-Mail: [kathy@ericonsulting.com](mailto:kathy@ericonsulting.com)  
URL: <http://www.ericonsulting.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101233-0****HIH Laboratory, Inc.**

100 East NASA Road One, Suite 210  
P.O. Box 57727  
Webster, TX 77598  
Contact: Mr. Jerry W. Bright  
Phone: 281-338-9000  
Fax: 281-338-2351  
E-Mail: [jerry@hihlaboratory.com](mailto:jerry@hihlaboratory.com)  
URL: <http://www.hihlaboratory.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101234-0****Braun Intertec Corporation**

6875 Washington Avenue South  
P.O. Box 39108  
Minneapolis, MN 55439-0108  
Contact: Mr. Steve Felton  
Phone: 952-942-4912  
Fax: 952-942-4844  
E-Mail: [sfelton@brauncorp.com](mailto:sfelton@brauncorp.com)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101235-0****Materials Analytical Services, Inc.**

3945 Lakefield Court  
Suwanee, GA 30024  
Contact: Dr. William E. Longo  
Phone: 770-866-3200  
Fax: 770-866-3259  
E-Mail: [wlongo@mastest.com](mailto:wlongo@mastest.com)  
URL: <http://www.mastest.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101237-0****Connecticut Department of Public Health  
Laboratory**

Dept. of Public Health Laboratory  
P.O. Box 1689  
Hartford, CT 06144-1689  
Contact: Dr. Kati Kelley  
Phone: 860-509-8500  
Fax: 860-509-8697  
E-Mail: [Kati.Kelley@po.state.CT.us](mailto:Kati.Kelley@po.state.CT.us)



**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

**NVLAP LAB CODE 101247-0****Micro Analytical, Inc.**

11521 W. North Ave.  
Milwaukee, WI 53226  
Contact: Mr. Jon Yakish  
Phone: 414-771-0855  
Fax: 414-771-6570

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

**NVLAP LAB CODE 101249-0****Institute for Environmental Assessment**

9201 West Broadway, Suite 600  
Brooklyn Park, MN 55445  
Contact: Ms. Yolanda Pope  
Phone: 763-315-7900  
Fax: 763-315-7920  
E-Mail: yolandap@ieainstitute.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**NVLAP LAB CODE 101254-0****Roy F. Weston, Inc.**

1625 Pumphrey Avenue  
Auburn, AL 36832-4303  
Contact: Mr. J. Stan Strickland  
Phone: 334-826-6100  
Fax: 334-826-8232  
E-Mail: stricklj@mail.rfweston.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

**NVLAP LAB CODE 101258-0****DCM Science Laboratory, Inc.**

12421 W. 49th Ave., Unit 6  
Wheat Ridge, CO 80033  
Contact: Ms. Cindy Mefford  
Phone: 303-463-8270  
Fax: 303-463-8267  
E-Mail: dcmstilab@aol.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

**NVLAP LAB CODE 101261-0****Asbestos Analysis and Information Service, Inc.**

603 North Baker Street  
P.O. Box 837  
Four Oaks, NC 27524  
Contact: Mr. Stephen H. Westbrook  
Phone: 919-963-2898  
Fax: 919-963-2841  
E-Mail: SWESTBROOK1@NC.RR.COM

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

**NVLAP LAB CODE 101262-0****PSC Analytical Services**

4418 Pottsville Pike  
Reading, PA 19605  
Contact: Mr. Michael Salum  
Phone: 610-921-8833  
Fax: 610-921-9667  
E-Mail: msalum@contactpsc.com  
URL: <http://www.pscanalytical.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

**NVLAP LAB CODE 101269-0****Volz Environmental Services, Inc.**

1200 Gulf Lab Road  
Pittsburgh, PA 15238-1304  
Contact: Mr. George J. Skarupa  
Phone: 412-826-8480  
Fax: 412-826-8488  
E-Mail: georgeskarupa@volzenvironmental.com  
URL: <http://www.volzenvironmental.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**NVLAP LAB CODE 101270-0****Pinchin Environmental Ltd.**

5749 Coopers Ave.  
Mississauga Ontario L4Z 1R9  
CANADA  
Contact: Ms. Wendy Bunner  
Phone: 905-507-4850  
Fax: 905-507-4884  
E-Mail: wbunner@pinchin.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

**NVLAP LAB CODE 101282-0****Mystic Air Quality Consultants, Inc.**

1204 North Road  
Groton, CT 06340  
Contact: Mr. Christopher J. Eident  
Phone: 860-449-8903  
Fax: 860-449-8860  
E-Mail: MAQC2@AOL.COM  
URL: <http://www.mysticair.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 101288-0****University (State) Hygienic Laboratory**

University of Iowa  
102 Oakdale Campus, #H101 OH  
Iowa City, IA 52242-5002  
Contact: Ms. Pamela A. Kastle  
Phone: 319-335-4500  
Fax: 319-335-4555  
E-Mail: [pamela-kastle@uiowa.edu](mailto:pamela-kastle@uiowa.edu)  
URL: <http://www.uhl.uiowa.edu>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101289-0****Omega Environmental Services**

165 State Street  
Hackensack, NJ 07601  
Contact: Ms. Veronica Kero  
Phone: 201-489-8700  
Fax: 201-342-5412  
E-Mail: [Veronicaomega@att.net](mailto:Veronicaomega@att.net)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101292-0****Northern Analytical Laboratories, Inc.**

602 South 25th Street  
P.O. Box 30315  
Billings, MT 59107  
Contact: Ms. Kathleen A. Smit  
Phone: 406-254-7226  
Fax: 406-254-1389  
E-Mail: [nlabs@wtp.net](mailto:nlabs@wtp.net)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101301-0****PMK Group, Inc.**

65 Jackson Drive  
P.O. Box 5000  
Cranford, NJ 07016-5000  
Contact: Mr. Stanley Lewandowski  
Phone: 908-497-8900  
Fax: 908-497-9134  
E-Mail: [slewandowski@pmkgroup.com](mailto:slewandowski@pmkgroup.com)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101323-0****PA DEP Bureau of Laboratories**

P.O. Box 1467  
Harrisburg, PA 17105-1467  
Contact: Dr. Roger H. Carlson  
Phone: 717-787-4669  
Fax: 717-783-1502  
E-Mail: [Carlson.Roger@DEP.State.PA.US](mailto:Carlson.Roger@DEP.State.PA.US)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101331-0****Kellco Services, Inc.**

3137 Diablo Ave.  
Hayward, CA 94545-2701  
Contact: Ms. Heidi Fruhlinger  
Phone: 510-786-9751  
Fax: 510-786-9625  
E-Mail: [heidi@kellco.com](mailto:heidi@kellco.com)  
URL: <http://www.kellco.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101343-0****O'Brien & Gere Laboratories, Inc.**

5000 Brittonfield Parkway  
P.O. Box 4942  
Syracuse, NY 13221  
Contact: Mr. Michael J. Gerber  
Phone: 315-437-0200  
Fax: 315-463-7554  
E-Mail: [GerberMJ@OBG.com](mailto:GerberMJ@OBG.com)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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NVLAP LAB CODE 101350-0

**PSI**

850 Poplar Street  
Pittsburgh, PA 15220  
Contact: Mr. Wayne Dickerson  
Phone: 412-922-4010 x260  
Fax: 412-922-4014

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

NVLAP LAB CODE 101375-0

**Galson Laboratories**

6601 Kirkville Road  
P.O. Box 369  
East Syracuse, NY 13057  
Contact: Ms. Eva Galson  
Phone: 315-432-5227  
Fax: 315-437-0571  
E-Mail: [egalson@galsonlabs.com](mailto:egalson@galsonlabs.com)  
URL: <http://www.galsonlabs.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

NVLAP LAB CODE 101384-0

**Health Science Associates**

10771 Noel Street  
Los Alamitos, CA 90720-2547  
Contact: Ms. Jaime Steedman-Lyde  
Phone: 714-220-3922  
Fax: 714-220-2081  
E-Mail: [steadmanlyde@earthlink.net](mailto:steadmanlyde@earthlink.net)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

NVLAP LAB CODE 101410-0

**Davis & Floyd, Inc.**

816 East Durst Street  
P.O. Drawer 428  
Greenwood, SC 29649  
Contact: Mr. E. Carl Burrell, Jr.  
Phone: 864-229-4413  
Fax: 864-229-7119  
E-Mail: [cburrell@davisfloyd.com](mailto:cburrell@davisfloyd.com)  
URL: <http://www.davisfloyd.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

NVLAP LAB CODE 101415-0

**Larron Laboratory**

529 Broadway  
Cape Girardeau, MO 63701  
Contact: Mr. Ronald E. Farrow  
Phone: 573-334-8910  
Fax: 573-334-8910  
E-Mail: [ron.farrow@larronlab.com](mailto:ron.farrow@larronlab.com)  
URL: [www.larronlab.com](http://www.larronlab.com)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

NVLAP LAB CODE 101421-0

**Hillmann Environmental Group, L.L.C.**

1600 Route 22 East  
Union, NJ 07083-1597  
Contact: Mr. Chaiyut Sae-Lao  
Phone: 908-688-7800  
Fax: 908-686-2636  
E-Mail: [saelao@hillmannngroup.com](mailto:saelao@hillmannngroup.com)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

NVLAP LAB CODE 101424-0

**TRC Environmental Corporation**

5 Waterside Crossing  
Windsor, CT 06095  
Contact: Mr. Lance R. Cotton  
Phone: 860-298-9692  
Fax: 860-298-6399  
E-Mail: [lcotton@TRCSolutions.com](mailto:lcotton@TRCSolutions.com)  
URL: <http://www.trcsolutions.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

NVLAP LAB CODE 101440-0

**RI Analytical Laboratories, Inc.**

41 Illinois Avenue  
Warwick, RI 02888-3007  
Contact: Mr. Eric Neff  
Phone: 401-737-8500  
Fax: 401-738-1970

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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**NVLAP LAB CODE 101442-0**

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**ASBESTECH**

6825 Fair Oaks Blvd., Suite 103  
Carmichael, CA 95608  
Contact: Mr. Tommy Conlon  
Phone: 916-481-8902  
Fax: 916-481-3975  
E-Mail: asbestoslab@hotmail.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101457-0**

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**Assagai Analytical Laboratories, Inc.**

7300 Jefferson NE  
P.O. Box 90430  
Albuquerque, NM 87199-0430  
Contact: Mr. William P. Biava  
Phone: 505-822-8061  
Fax: 505-822-8063  
E-Mail: bjbiava@swcp.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101459-0**

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**Forensic Analytical**

3777 Depot Road, Suite 409  
Hayward, CA 94545-2761  
Contact: Mr. David Sandusky  
Phone: 510-887-8828  
Fax: 510-887-4218  
E-Mail: Daves@forensica.com  
URL: <http://www.forensica.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101459-1**

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**Forensic Analytical Specialties, Inc.**

2959 Pacific Commerce Drive  
Rancho Dominguez, CA 90221  
Contact: Matilde Antillon  
Phone: 310-763-2374  
Fax: 310-763-8684

URL: <http://www.forensica.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101463-0**

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**Northern Testing Laboratories, Inc.**

3330 Industrial Avenue  
Fairbanks, AK 99701-7395  
Contact: Mr. Michael R. Pollen  
Phone: 907-456-3116  
Fax: 907-456-3125  
E-Mail: [mrp@NTLALASKA.com](mailto:mrp@NTLALASKA.com)  
URL: <http://www.NTLALASKA.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101505-0**

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**Los Angeles Unified School District**

BSC Annex, Env. Health & Safety Branch  
1449 So. San Pedro Street  
Los Angeles, CA 90015  
Contact: Ms. Greta Galoustian  
Phone: 213-743-5086  
Fax: 213-749-7201  
E-Mail: [ggaloust@lausd.k12.ca.us](mailto:ggaloust@lausd.k12.ca.us)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 101506-0**

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**Environmental Health Laboratories**

St. Louis County Department of Health  
111 So. Meramec  
Clayton, MO 63105-1711  
Contact: Dr. Robert A. Nicolotti  
Phone: 314-615-6830  
Fax: 314-615-1648  
E-Mail: [robert\\_nicolotti@stlouisco.com](mailto:robert_nicolotti@stlouisco.com)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

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**NVLAP LAB CODE 101510-0**

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**Fibertec, Inc.**

4291 Veterans Way, Suite A  
Holt, MI 48842  
Contact: Mr. Phillip A. Peterson  
Phone: 517-699-0345 x201  
Fax: 517-699-0388  
E-Mail: [asbestos@fibertec-usa.com](mailto:asbestos@fibertec-usa.com)  
URL: <http://www.asbestos@fibertec-usa.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002



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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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**NVLAP LAB CODE 101514-0****EnviroMed Services, Inc.**

25 Science Park  
New Haven, CT 06511  
Contact: Mr. Joseph Pasquariello  
Phone: 203-786-5580  
Fax: 203-786-5579

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101515-0****Law Engineering and Environmental Services, Inc.**

4919 West Laurel Street  
Tampa, FL 33607  
Contact: Mr. Monte Hall  
Phone: 813-289-0750  
Fax: 813-289-5474  
E-Mail: mhall@lawco.com  
URL: <http://www.law-USA.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101515-1****Law Engineering and Environmental Services, Inc.**

5845 N.W. 158th Street  
Miami Lakes, FL 33014  
Contact: Chris DuBour  
Phone: 305-826-5588  
Fax: 305-826-1799

URL: <http://www.law-USA.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101523-0****DHMH-Air Quality Laboratory**

201 West Preston Street  
P.O. Box 2355  
Baltimore, MD 21201-2355  
Contact: Ms. Yvonne Tai-Sen-Choy  
Phone: 410-767-5948  
Fax: 410-333-5237  
E-Mail: taisenchoy@DHMH.state.md.us  
URL: <http://www.charm.net/~epi6/labs.htm>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101539-0****Puget Sound Naval Shipyard**

Code 134, Bldg. 371  
1400 Farragut Ave.  
Bremerton, WA 98314-5000  
Contact: Mr. Gary Brunson  
Phone: 360-476-8091  
Fax: 360-476-5587  
E-Mail: brunsong@psns.navy.mil

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101545-0****Nova Consulting Group, Inc.**

1107 Hazeltine Boulevard, Suite 400  
Chaska, MN 55318-1008  
Contact: Mr. Steve Cummings  
Phone: 952-448-9393  
Fax: 952-448-9572  
E-Mail: steve.cummings@novaconsulting.com  
URL: <http://www.novaconsulting.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101567-0****South Coast Air Quality Management District**

21865 E. Copley Drive  
Diamond Bar, CA 91765-4182  
Contact: Ms. Corazon B. Choa  
Phone: 909-396-2172  
Fax: 909-396-2175  
E-Mail: cchoa@aqmd.gov

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101578-0****AGX, Inc.**

207 Pine Creek Road  
Wexford, PA 15090-9228  
Contact: Mr. Daniel Winkle  
Phone: 724-934-4249  
Fax: 724-934-5677

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101580-0****Air Quality Laboratories**

4301 N.W. 63rd Street, Suite 201  
Oklahoma City, OK 73116  
Contact: Mr. Phillip Dang  
Phone: 405-767-0660  
Fax: 405-767-0661

URL: <http://www.airqualitylabs.net>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101587-0****Environmental Enterprise Group(EEG), Inc.**

220 North Knoxville, Suite 200  
Russellville, AR 72801  
Contact: Mr. Keith Zimmerman  
Phone: 501-968-6767  
Fax: 501-968-1956  
E-Mail: [KZimmerman@3wco.com](mailto:KZimmerman@3wco.com)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101593-0****National Environmental Reference Laboratory**

C/O US Geological Survey, MS PHL/NERL  
P.O. Box 25046  
Denver, CO 80225-0046  
Contact: Mr. Bruce Hills  
Phone: 303-236-3455 x500  
Fax: 303-236-3440  
E-Mail: [bhills@foh.dhhs.gov](mailto:bhills@foh.dhhs.gov)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101594-0****TolTest, Inc.**

1915 North 12th Street  
P.O. Box 2186  
Toledo, OH 43624-1305  
Contact: Ms. Susan Pellitieri  
Phone: 419-241-7175  
Fax: 419-241-1808  
E-Mail: [spellitieri@toltest.com](mailto:spellitieri@toltest.com)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101595-0****Envirotest, Inc.**

3902 Braxton  
Houston, TX 77063-6304  
Contact: Dr. James D. Murphy  
Phone: 713-782-4411  
Fax: 713-782-3428  
E-Mail: [murphy@envirotestinc.com](mailto:murphy@envirotestinc.com)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101611-0****Applied Environmental, Inc.**

11800 Sunrise Valley Drive, Suite 1200  
Reston, VA 20191  
Contact: Ms. Jana H. Ambrose  
Phone: 703-648-0822  
Fax: 703-648-0575  
E-Mail: <http://www.appenv.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 101618-0****Ambient Group, Inc.**

10 Morris Ave.  
Glen Cove, NY 11542  
Contact: Mr. William Esposito, Jr.  
Phone: 516-609-0009  
Fax: 212-944-4618

URL: <http://www.Ambientgroup.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 101631-0****Pacific Rim Environmental, Inc.**

6510 Southcenter Boulevard  
Tukwila, WA 98188  
Contact: Mr. William F. Golloway  
Phone: 206-244-8965  
Fax: 206-244-9096

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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**NVLAP LAB CODE 101646-0**

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**Eastern Analytical Services, Inc.**

4 Westchester Plaza  
Elmsford, NY 10523-1610  
Contact: Mr. Paul Stascavage  
Phone: 914-592-8380  
Fax: 914-592-8956  
E-Mail: PaulS@EASInc.com  
URL: <http://www.EASInc.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 101649-0**

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**Asbestos Consulting & Testing (ACT)**

14953 West 101st Terrace  
Lenexa, KS 66215  
Contact: Ms. Tami L. Van  
Phone: 913-492-1337  
Fax: 913-492-1392

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101703-0**

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**U.S. EPA - National Enforcement Investigations Center**

Box 25227 Bldg. 53, Denver Federal Ctr.  
Denver, CO 80225  
Contact: Ms. Peggy J. Forney  
Phone: 303-236-6079  
Fax: 303-236-5116  
E-Mail: [forney.peggy@epa.gov](mailto:forney.peggy@epa.gov)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 101727-0**

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**AnalyticaLab**

8270 Archer Avenue  
Willow Springs, IL 60480  
Contact: Mr. Justin Laughlin  
Phone: 708-839-1338  
Fax: 708-839-6970

URL: <http://www.analyticalab.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101732-0**

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**United Analytical Services, Inc.**

1515 Centre Circle Drive  
Downers Grove, IL 60515-1024  
Contact: Dr. Kevin Aikman  
Phone: 630-691-8271  
Fax: 630-691-1819  
E-Mail: [uasinc@uas1.com](mailto:uasinc@uas1.com)  
URL: <http://www.uasinc@uas1.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101735-0**

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**Analytical Environmental Services**

2105 Nathan Drive  
Austin, TX 78728-4530  
Contact: Ms. Jimmie Ann Bolton  
Phone: 512-251-8388  
Fax: 512-251-8388  
E-Mail: [jabolton@earthlink.net](mailto:jabolton@earthlink.net)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101759-0**

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**Comprehensive Health Services-Environmental Health PLM Laboratory**

Environmental Health PLM Laboratory  
CHS-022  
Kennedy Space Center, FL 32899  
Contact: Ms. Joanne W. Creech  
Phone: 321-867-9014  
Fax: 321-867-3694  
E-Mail: [joanne.creech-1@kmail.ksc.nasa.gov](mailto:joanne.creech-1@kmail.ksc.nasa.gov)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 101768-0**

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**Carolina Environmental, Inc.**

102-H Commonwealth Court  
Cary, NC 27511  
Contact: Dr. Tianbao Bai  
Phone: 919-481-1413  
Fax: 919-481-1442

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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**NVLAP LAB CODE 101775-0**

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**American Asbestos Laboratories, Inc.**

14505 Commerce Way, Suite 400  
Miami Lakes, FL 33016  
Contact: Dr. Daniel J. Cottrell  
Phone: 305-374-8300  
Fax: 305-374-9004  
E-Mail: dcottrell@eeandg.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101781-0**

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**Covino Environmental Associates, Inc.**

300 Wildwood Avenue  
Woburn, MA 01801  
Contact: Ms. Ann D. Eckmann  
Phone: 781-933-2555  
Fax: 781-932-9402  
E-Mail: aeckmann@covinoinc.com  
URL: <http://www.covinoinc.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101793-0**

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**A & B Environmental Services, Inc.**

1643 Federal Road  
Houston, TX 77015  
Contact: Mr. Robert L. Voorhies  
Phone: 713-453-6060  
Fax: 713-453-6091  
E-Mail: aandblab@flash.net  
URL: <http://www.ABLABS.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

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**NVLAP LAB CODE 101807-0**

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**EnvironMETeo Services Inc.**

94-520 Ukee Street, #A  
Waipahu, HI 96797  
Contact: Mr. Clifford How  
Phone: 808-671-8383  
Fax: 808-671-7979  
E-Mail: emet@aloha.net

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101848-0**

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**Environmental Testing, Inc.**

100 South Cass Street  
P.O. Box 138  
Middletown, DE 19709-0138  
Contact: Ms. Lee Ann Shinaberry  
Phone: 302-378-9881  
Fax: 302-378-9107  
E-Mail: LEEANN.ECSI@DEL.NET

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 101853-0**

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**RCM Laboratories, Inc.**

5400 East Avenue, Second Floor  
Countryside, IL 60525  
Contact: Mr. Thomas P. Marlin  
Phone: 708-485-8600  
Fax: 708-485-8607

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101864-0**

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**Design for Health Environmental Services**

3574 Kettner Blvd.  
San Diego, CA 92101  
Contact: Mr. Kabir Shefa  
Phone: 619-291-1777  
Fax: 619-291-4318  
E-Mail: DFHPRD@AOL.COM

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

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**NVLAP LAB CODE 101868-0**

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**Bella Donna Labs Inc.**

Environmental Consultants and Laboratory  
3031 North 114th Street  
Wauwatosa, WI 53222  
Contact: Mr. Joseph F. Anzlovar  
Phone: 312-356-5400 x148  
Fax: 312-356-5499

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 101870-0****Sun City Analytical, Inc.**

1409 Montana  
El Paso, TX 79902-5617  
Contact: Ms. Priscilla Acuna  
Phone: 915-533-8840  
Fax: 915-533-8843  
E-Mail: scai@flash.net

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 101871-0****Apollo Environmental, Inc.**

11553 U.S. Highway 41 South  
P.O. Box 239  
Gibsonton, FL 33534-9720  
Contact: Mr. Michael L. Williamson  
Phone: 813-671-3999  
Fax: 813-677-3422  
E-Mail: mwilliamson@apolloenv.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 101872-0****Micro Analytical Laboratories, Inc.**

5900 Hollis Street, Suite M  
Emeryville, CA 94608-2008  
Contact: Mr. Frank Raviola  
Phone: 510-653-0824  
Fax: 510-653-1361  
E-Mail: microlab@labmicro.com  
URL: <http://www.labmicro.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 101882-0****Environmental Hazards Services, L.L.C.**

7469 White Pine Road  
Richmond, VA 23237  
Contact: Ms. Irma Faszewski  
Phone: 804-275-4788  
Fax: 804-275-4907  
E-Mail: managerqac@leadlab.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

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**NVLAP LAB CODE 101884-0****Concord Analysis, Inc.**

9960 Canoga Ave., Suite D8  
Chatsworth, CA 91311-6704  
Contact: Ms. Johanna Fann  
Phone: 818-407-0128  
Fax: 818-882-9409

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101890-0****Mountain Laboratories**

9922 East Montgomery, Suite 1  
Spokane, WA 99206  
Contact: Ms. Karen L. Drader  
Phone: 509-924-9236  
Fax: 509-924-2287  
E-Mail: mcskaren@myavista.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 101891-0****Asbestos TEM Laboratories, Inc.**

1409 Fifth Street, Suite C  
Berkeley, CA 94710  
Contact: Mr. R. Mark Bailey  
Phone: 510-528-0108  
Fax: 510-528-0109  
E-Mail: MBaileyASB@aol.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101894-0****Midwest Laboratories, Inc.**

6246 Joliet Road, Suite 4  
Countryside, IL 60525  
Contact: Mr. James P. Hahn  
Phone: 708-354-7117  
Fax: 708-354-7142

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

**Airborne Asbestos Analysis (TEM)**

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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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**NVLAP LAB CODE 101895-0****McCall and Spero Environmental, Inc.**

13005 Middletown Industrial Blvd.  
Suite H  
Louisville, KY 40223  
Contact: Mr. R. Dale McCall  
Phone: 502-244-7135  
Fax: 502-244-7136  
E-Mail: rdmccall@mselabs.com  
URL: <http://www.mselabs.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101896-0****Reservoirs Environmental Services, Inc.**

2059 Bryant Street  
Denver, CO 80211  
Contact: Ms. Jeanne Spencer Orr  
Phone: 303-964-1986  
Fax: 303-477-4275  
E-Mail: [jeanneorr@resienv.com](mailto:jeanneorr@resienv.com)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101902-0****E. M. Analytical, Inc.**

8000 North Ocean Drive  
Dania, FL 33004-3078  
Contact: Ms. Pat Blackwelder  
Phone: 305-751-1184  
Fax: 954-921-6747  
E-Mail: [pblackwelder@rsmas.miami.edu](mailto:pblackwelder@rsmas.miami.edu)

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101904-0****Scientific Laboratories, Inc.**

13635 Genito Road  
Midlothian, VA 23112  
Contact: Dr. Thomas R. McKee  
Phone: 804-763-1200  
Fax: 804-763-1800  
E-Mail: [tmckee@scilabs.com](mailto:tmckee@scilabs.com)  
URL: <http://www.scilabs.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101904-1****Scientific Laboratories, Inc.**

117 East 30th Street  
New York, NY 10016  
Contact: Paul Mucha  
Phone: 212-679-8600  
Fax: 212-679-9392  
E-Mail: [pmucha@scilabs.com](mailto:pmucha@scilabs.com)  
URL: <http://www.scilabs.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101909-0****Analytical Labs San Francisco, Inc.**

467 Potrero Avenue  
San Francisco, CA 94110  
Contact: Ms. Olga Kist  
Phone: 415-552-4595  
Fax: 415-552-0730  
E-Mail: [alsfok@msn.com](mailto:alsfok@msn.com)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101917-0****DataChem Laboratories**

4388 Glendale-Milford Road  
Cincinnati, OH 45242-3706  
Contact: Ms. Anna Marie Ristich  
Phone: 513-733-5336  
Fax: 513-733-5347  
E-Mail: [amristich@datachemlabs.com](mailto:amristich@datachemlabs.com)

**Bulk Asbestos Analysis (PLM)**

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**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: September 30, 2002

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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**NVLAP LAB CODE 101920-0****Lab/Cor, Inc.**

7619 Sixth Avenue, NW  
Seattle, WA 98117  
Contact: Mr. John Harris  
Phone: 206-781-0155  
Fax: 206-789-8424  
E-Mail: mail@labcor.net  
URL: http://www.labcor.net

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 101926-0****Environmental Management Consultants, Inc.**

7342 East Thomas Road  
Scottsdale, AZ 85251-7216  
Contact: Mr. Kurt A. Kettler  
Phone: 480-990-2069  
Fax: 480-990-8468  
E-Mail: kkettler@earthlink.net

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101941-0****Kevco Services, Inc.**

890 Pittsburgh Road  
Butler, PA 16002-8901  
Contact: Mr. George M. Beck  
Phone: 724-586-6343  
Fax: 724-586-2172

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101948-0****MACS Lab, Inc.**

2070A Walsh Avenue  
Santa Clara, CA 95050-2531  
Contact: Mr. James A. Richards  
Phone: 408-727-9727  
Fax: 408-727-7065  
E-Mail: jrichards@macslab.com  
URL: http://www.macslab.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101949-0****LEX Scientific Inc.**

2 Quebec Street, Suite 204  
Guelph Ontario N1H 2T3  
CANADA  
Contact: Ms. Kim O'Neill  
Phone: 519-824-7082  
Fax: 519-824-5784  
E-Mail: koneill@lexscientific.com  
URL: http://www.lexscientific.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 101950-0****WKP Laboratories, Inc.**

228 E. 45th St. 10 Floor  
New York City, NY 10017  
Contact: Mr. Fabio J. Pedone  
Phone: 212-922-0077  
Fax: 212-922-0630

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 101953-0****JLC Environmental Consultants, Inc.**

200 Park Avenue South, Suite 1001  
New York, NY 10003  
Contact: Ms. Jennifer Carey  
Phone: 212-420-8119  
Fax: 212-420-6092  
E-Mail: JLCenviro@aol.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 101958-0****Athenica Environmental Services, Inc.**

45-09 Greenpoint Avenue  
Long Island City, NY 11104  
Contact: Mr. Spiro Dongaris  
Phone: 718-784-7490  
Fax: 718-784-4085

**Bulk Asbestos Analysis (PLM)**

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**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101959-0****QuanTEM Laboratories, LLC**

2033 Heritage Park Drive  
Oklahoma City, OK 73120-7579  
Contact: Mr. John E. Barnett  
Phone: 405-755-7272  
Fax: 405-755-2058  
E-Mail: [jbarnett@quantem.com](mailto:jbarnett@quantem.com)  
URL: <http://www.quantem.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 101967-0****NY Environmental & Analytical Labs, Inc.**

88 Harbor Road  
Port Washington, NY 11050  
Contact: Mr. Li Tsang  
Phone: 516-944-9500  
Fax: 516-944-9507  
E-Mail: [NYEA@YAHOO.COM](mailto:NYEA@YAHOO.COM)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101977-0****ACM Environmental, Inc.**

26598 US-20 West  
South Bend, IN 46628  
Contact: Mr. Michael A. Dials  
Phone: 219-234-8435  
Fax: 219-234-6800  
E-Mail: [lab@acmenv.com](mailto:lab@acmenv.com)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101990-0****Iowa Environmental Services, Inc.**

4801 Grand Avenue  
Des Moines, IA 50312  
Contact: Mr. Richard E. Soyler  
Phone: 515-279-8042  
Fax: 515-279-1853  
E-Mail: [ies@gateway.net](mailto:ies@gateway.net)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 101997-0****Hygieneering, Inc.**

7575 Plaza Court  
Willowbrook, IL 60521  
Contact: Ms. Jacqueline M. Cadwallader  
Phone: 630-654-2550  
Fax: 630-789-3813  
E-Mail: [jcadwallader@hygieneering.com](mailto:jcadwallader@hygieneering.com)  
URL: <http://www.hygieneering.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 102000-0****Louisiana Department of Environmental Quality  
Microanalytical Lab**

Microanalytical Lab  
8000 GSRI Avenue, Building #402  
Baton Rouge, LA 70820  
Contact: Ms. Pamela D. Ellis  
Phone: 225-765-5099  
Fax: 225-765-0048  
E-Mail: [pame@deq.state.la.us/](mailto:pame@deq.state.la.us/)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 102001-0****Testing Mechanics Corp.**

3770 Merrick Road  
Seaford, NY 11783-2815  
Contact: Mr. Kevin Tumulty  
Phone: 516-221-3800  
Fax: 516-221-3810  
E-Mail: [LITUMULTY@AOL.COM](mailto:LITUMULTY@AOL.COM)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 102003-0****GLE Associates, Inc.**

1451 Channelside Drive, Suite 200  
Tampa, FL 33605  
Contact: Ms. Jennifer Fowler  
Phone: 813-241-8350  
Fax: 813-241-8737  
E-Mail: [fowler@gleassociates.com](mailto:fowler@gleassociates.com)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002



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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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**NVLAP LAB CODE 102005-0****University of Alabama Asbestos Laboratory**

Bryant Drive - Martha Parham West  
P.O. Box 870388  
Tuscaloosa, AL 35487-0388  
Contact: Ms. Freda Griffis  
Phone: 205-348-8571  
Fax: 205-348-9878  
E-Mail: fgriffis@ccs.ua.edu  
URL: <http://bama.ua.edu/~deip/envprogs.html#LAB>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

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**NVLAP LAB CODE 102006-0****Solar Environmental Services, Inc.**

1131 E. 76th Avenue, Suite 102  
Anchorage, AK 99518  
Contact: Ms. Gracita O. Torrijos  
Phone: 907-349-7705  
Fax: 907-349-7944  
E-Mail: [sesenvir@alaska.net](mailto:sesenvir@alaska.net)  
URL: <http://www.alaska.net/~sesenvir>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 102008-0****Micro Air of Texas, Inc.**

1052 Hercules Drive  
Houston, TX 77058  
Contact: Mr. Eric Eitzen  
Phone: 281-280-9965  
Fax: 281-280-9847

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 102010-0****Fluor Fernald, Inc., Analytical Laboratory Services**

P.O. Box 538704  
Cincinnati, OH 45253-8704  
Contact: Ms. Amy Meyer  
Phone: 513-648-5423  
Fax: 513-648-5198  
E-Mail: [amy\\_meyer@fernald.gov](mailto:amy_meyer@fernald.gov)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 102011-0****Airtek Environmental Corp.**

39 West 38th Street, 12th Floor  
New York, NY 10018  
Contact: Mr. Saad Zouak  
Phone: 212-768-0516  
Fax: 212-768-0759  
E-Mail: [mzouak@airtekenv.com](mailto:mzouak@airtekenv.com)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 102012-0****JMS Environmental Associates, Ltd.**

816 Burr Oak Drive  
Westmont, IL 60559  
Contact: Mr. John Aschbacher  
Phone: 630-655-8500  
Fax: 630-655-8724  
E-Mail: [jms@starnetinc.com](mailto:jms@starnetinc.com)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 102013-0****Hi-Tech Environmental and Laboratory Services**

DBA Hi-Tech Environmental & Lab. Svcs.  
5396 Lincoln Ave., Suite A  
Cypress, CA 90630  
Contact: Ms. Gwenda Hatcher  
Phone: 714-827-0693  
Fax: 714-827-0695  
E-Mail: [Hitechol@ix.netcom.com](mailto:Hitechol@ix.netcom.com)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

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**NVLAP LAB CODE 102021-0****Safe Environment of America, Inc.**

dba Med-Tox Northwest  
3902 West Valley Highway North, Ste. 502  
Auburn, WA 98002  
Contact: Ms. Kimberly Brooks  
Phone: 253-351-0677  
Fax: 253-351-0688  
E-Mail: [medtoxnw@msn.com](mailto:medtoxnw@msn.com)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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**NVLAP LAB CODE 102029-0**

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**ESG Laboratories**

5933 W. 71st Street  
Indianapolis, IN 46278  
Contact: Ms. Mary Dunlap  
Phone: 317-290-1471  
Fax: 317-290-1670  
E-Mail: mdunlap@astburygroup.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

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**NVLAP LAB CODE 102031-0**

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**ATC Associates, Inc.**

6746 South Revere Parkway, Suite 180  
Englewood, CO 80112-6708  
Contact: Mr. Jeffrey Lomme  
Phone: 303-799-6100  
Fax: 303-799-3441

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 102035-0**

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**Law Engineering and Environmental Services, Inc.**

4634 S. 36th Place  
Phoenix, AZ 85040  
Contact: Mr. Michael A. Cook  
Phone: 602-437-0250  
Fax: 602-437-3675  
E-Mail: mcook@lawco.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 102041-0**

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**R. Robinson Analytical Services, Inc.**

1960 Peyton Drive  
Pensacola, FL 32503  
Contact: Mr. William F. Robin Robinson  
Phone: 850-438-5552  
Fax: 850-432-7394

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 102044-0**

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**Loflin Environmental Services, Inc.**

2020 Montrose, Suite 100  
Houston, TX 77006  
Contact: Mr. James Murray  
Phone: 713-521-3300  
Fax: 713-523-0829  
E-Mail: loflin1@attglobal.net

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 102046-0**

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**Criterion Laboratories, Inc.**

3370 Progress Drive, Suite J  
Bensalem, PA 19020  
Contact: Mr. Stephen J. Sieracki  
Phone: 215-244-1300 x30  
Fax: 215-244-4349  
E-Mail: ssieracki@criterionlabs.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 102047-0**

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**KAM Consultants**

35-40 36th Street  
Long Island City, NY 11106  
Contact: Mr. George Kouvaras  
Phone: 718-729-1997  
Fax: 718-729-1876  
E-Mail: gekouvaras@aol.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 102050-0**

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**Occupational Health Conservation, Inc.**

1840 Southside Blvd., Suite 3C  
Jacksonville, FL 32216-0317  
Contact: Mr. Gregory Davis  
Phone: 904-725-8279  
Fax: 904-721-2809  
E-Mail: gdavis\_phc@hotmail.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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**NVLAP LAB CODE 102053-0**

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**Dove Environmental Corporation**

4715 NW 157th Street, Suite 203  
Miami, FL 33014  
Contact: Mr. Rajendranath Ramnath  
Phone: 305-620-6050  
Fax: 305-620-6350

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 102056-0**

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**Steve Moody Micro Services, Inc.**

1510 Randolph St., Suite #602  
Carrollton, TX 75006  
Contact: Mr. Steve Moody  
Phone: 972-446-9482  
Fax: 972-446-9870  
E-Mail: SMMS1@AIRMAIL.NET

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 102061-0**

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**Omni Environmental, Inc.**

13740 Research Blvd., Suite H-5  
Austin, TX 78750  
Contact: Mr. Joseph Mink  
Phone: 512-258-9114  
Fax: 512-258-9115  
E-Mail: omnienv@austin.rr.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 102062-0**

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**National Econ Corporation**

730 El Camino Real  
Tustin, CA 92780  
Contact: Mr. Mark S. Ervin  
Phone: 714-730-9235  
Fax: 714-730-9236  
E-Mail: NationalEconCorp@earthlink.net

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

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**NVLAP LAB CODE 102063-0**

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**NVL Laboratories, Inc.**

4708 Aurora Avenue N.  
Seattle, WA 98103  
Contact: Mr. Nghiep Vi Ly  
Phone: 206-547-0100  
Fax: 206-634-1936  
E-Mail: munaf@nvllabs.com  
URL: <http://www.nvllabs.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 102065-0**

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**Wonder Makers Environmental Inc.**

2117 Lane Boulevard  
P.O. Box 50209  
Kalamazoo, MI 49005-0209  
Contact: Dr. Michael Pinto  
Phone: 616-382-4154  
Fax: 616-382-4161  
E-Mail: [info@wondermakers.com](mailto:info@wondermakers.com)  
URL: <http://www.wondermakers.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 102073-0**

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**Triad Environmental Consulting, Inc.**

309 3rd Avenue  
Huntington, WV 25701  
Contact: Mr. Brian E. Galligan  
Phone: 304-523-2195  
Fax: 304-523-2197  
E-Mail: [Duxster@earthlink.net](mailto:Duxster@earthlink.net)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 102075-0**

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**S&ME, Inc.**

9751 Southern Pine Boulevard  
P.O. Box 7668  
Charlotte, NC 28241-7668  
Contact: Ms. Jane Wasilewski  
Phone: 704-523-4726  
Fax: 704-525-3953  
E-Mail: [jwasilewski@smeinc.com](mailto:jwasilewski@smeinc.com)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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**NVLAP LAB CODE 102077-0****Palmetto Laboratory, Inc.**

2351 Fifth Avenue North  
St. Petersburg, FL 33713  
Contact: Mr. John J. Henderson  
Phone: 727-328-9850  
Fax: 727-328-9830

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

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**NVLAP LAB CODE 102078-0****FRS Geotech, Inc.**

1441 West 46th Avenue, Suite 14  
Denver, CO 80211-2338  
Contact: Mr. Joseph Fischer  
Phone: 303-477-2559  
Fax: 303-477-2580  
E-Mail: frsgeo@ix.netcom.com  
URL: <http://www.netcom.com/frsgeo>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

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**NVLAP LAB CODE 102079-0****SCILAB BOSTON, Inc.**

8 School Street  
East Weymouth, MA 02189  
Contact: Mr. John Sulkowski  
Phone: 781-337-9334  
Fax: 781-337-7642  
E-Mail: jsulkowski@scilabs.com  
URL: <http://www.SCILABS.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 102081-0****Legend Technical Services, Inc.**

775 Vandalia Street  
St. Paul, MN 55114  
Contact: Ms. Cheryl Sykora  
Phone: 651-642-1150  
Fax: 651-642-1239  
E-Mail: cas@legend-group.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 102082-0****Analytical Environmental Services, Inc.**

3125 Marjan Drive  
Atlanta, GA 30340  
Contact: Mr. Mehmet Yildirim  
Phone: 800-972-4889  
Fax: 770-457-8188

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 102083-0****Twin Ports Testing, Inc.**

1301 N. 3rd Street  
Superior, WI 54880-1131  
Contact: Mr. Greg Heinecke  
Phone: 715-392-7114  
Fax: 715-392-7163  
E-Mail: TPT@GNN.COM

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 102086-0****DH Analytical Services**

4111 Greenbriar, Suite D  
Stafford, TX 77477  
Contact: Mr. Joseph Bury  
Phone: 281-240-8111  
Fax: 281-240-8115  
E-Mail: dhanalytical@aol.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 102087-0****Hygeia Laboratories, Inc.**

1300 Williams Drive, Suite A  
Marietta, GA 30066-6299  
Contact: Mr. Clayton Call  
Phone: 770-514-6933  
Fax: 770-514-6966  
E-Mail: call67@atc-enviro.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002



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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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**NVLAP LAB CODE 102089-0**

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**Alpine Consulting, Inc.**

1706 N. Circle Drive  
Colorado Springs, CO 80909  
Contact: Mr. Kevin R. Weaver  
Phone: 719-473-2311  
Fax: 719-473-2312

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 102090-0**

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**Bay Area Air Quality Management District**

939 Ellis Street  
San Francisco, CA 94109  
Contact: Mr. James Hesson  
Phone: 415-749-4625  
Fax: 415-749-5101  
E-Mail: [jhesson@baaqmd.gov](mailto:jhesson@baaqmd.gov)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 102091-0**

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**Converse Consultants**

4840 Mill Street #5  
Reno, NV 89502  
Contact: Mr. Dan R. Dolk  
Phone: 775-856-3833  
Fax: 775-856-3513

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 102101-0**

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**Taylor Environmental Group, Inc.**

130 Jericho Turnpike  
Floral Park, NY 11001  
Contact: Mr. George Taylor  
Phone: 516-358-2955  
Fax: 516-358-1780  
E-Mail: [georget@taylorenvironmental.com](mailto:georget@taylorenvironmental.com)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

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**NVLAP LAB CODE 102102-0**

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**American Electric Power (AEP), Dolan Chemical Laboratory**

John E. Dolan Engineering Laboratories  
4001 Bixby Road  
Groveport, OH 43125-9319  
Contact: Mr. Geoffrey E. Campbell  
Phone: 614-836-4210  
Fax: 614-836-4168  
E-Mail: [Geoffrey\\_E\\_Campbell@AEP.COM](mailto:Geoffrey_E_Campbell@AEP.COM)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 102104-0**

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**EMSL Analytical, Inc.**

620-G Guilford College Road  
Greensboro, NC 27409  
Contact: Mr. Nathan Durham  
Phone: 336-297-1487  
Fax: 336-297-1676  
E-Mail: [ndurham@emsl.com](mailto:ndurham@emsl.com)  
URL: <http://www.emsl.com/>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 102106-0**

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**EMSL Analytical, Inc.**

2501 Central Parkway, Suite C-13  
Houston, TX 77092  
Contact: Mr. Darryl Neldner  
Phone: 713-686-3635  
Fax: 713-686-3645

URL: <http://www.emsl.com/>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 102108-0**

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**m.a.c. Paran Consulting Services, Inc.**

Analytical Laboratory  
4005 Bach Buxton Road  
Amelia, OH 45102  
Contact: Mr. James R. Jones  
Phone: 513-752-9111  
Fax: 513-752-7973

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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 102111-0****Cape Environmental Management, Inc.**

2302 Parklake Drive, Suite 200  
Atlanta, GA 30345-2907  
Contact: Mr. Aleksey Reznik  
Phone: 770-908-7200  
Fax: 770-908-7219

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 102114-0****EAI, Inc.**

454 Central Avenue  
Jersey City, NJ 07307  
Contact: Mr. Robert Carvalho  
Phone: 201-714-9858  
Fax: 201-714-9895  
E-Mail: robc@eaienviro.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 102115-0****Industrial Laboratory**

Norfolk Naval Shipyard  
Building 184, 3rd Fl.  
Portsmouth, VA 23709-5000  
Contact: Mrs. Barbara B. Walker  
Phone: 757-396-3207  
Fax: 757-396-3972  
E-Mail: Walkerbb@nnsy.navy.mil

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

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**NVLAP LAB CODE 102116-0****Hygeia Laboratories Inc.**

82 W. Sierra Madre Blvd.  
Sierra Madre, CA 91024-2434  
Contact: Mr. Gustavo Delgado  
Phone: 626-355-4711  
Fax: 626-355-4497  
E-Mail: gdelgado77@atc-enviro.com  
URL: <http://home.earthlink.net/delgadog>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 102118-0****Apex Research, Inc.**

8739 Main Street, Suite I  
Whitmore Lake, MI 48189  
Contact: Mr. Robert Letarte  
Phone: 734-449-9990  
Fax: 734-449-9991

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 200002-0****Cygnacom Solutions, Inc. An Entrust Company**

7927 Jones Branch Drive, Suite 100 West  
McLean, VA 22102-3305  
Contact: Dr. Santosh Chokhani  
Phone: 703-270-3520  
Fax: 703-848-0960  
E-Mail: [chokhani@cygnacom.com](mailto:chokhani@cygnacom.com)  
URL: <http://www.cygnacom.com/labs/sel.htm>

**Common Criteria Testing**

Accreditation Valid Through: September 30, 2002

*NVLAP*

| <i>Code</i> | <i>Designation</i>                                                                                                                                                                                           |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 26/A01      | ISO/IEC 15408: Info. Tech. - Security Techniques - Eval. Criteria for IT Security; Common Eval. Methodology for Info. Tech. Security, Part 1; Common Methodology for Info. Tech. Security Evaluation, Part 2 |
| 26/A01a     | APE: Protection Profile evaluation                                                                                                                                                                           |
| 26/A01b     | ASE: Security Target evaluation                                                                                                                                                                              |
| 26/A01c     | EAL1: Evaluation assurance level 1                                                                                                                                                                           |
| 26/A01d     | EAL2: Evaluation assurance level 2                                                                                                                                                                           |
| 26/A01e     | EAL3: Evaluation assurance level 3                                                                                                                                                                           |
| 26/A01f     | EAL4: Evaluation assurance level 4                                                                                                                                                                           |

**Cryptographic Module Testing**

Accreditation Valid Through: September 30, 2002

*NVLAP*

| <i>Code</i> | <i>Designation</i>                                                                                                                                                                                                           |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 17/C01      | NIST-CSTT:140-1; National Institute of Standards and Technology-Cryptographic Support Test Tool (CSTT) for the Federal Information Processing Standard 140-1 (FIPS 140-1) "Security Requirements for Cryptographic Modules." |
| 17/C01a     | Test Method Group 1: All test methods derived from FIPS 140-1 and specified in the CSTT, except those listed in Group 2 and Group 3.                                                                                         |
| 17/C01b     | Test Method Group 2: Test methods for Physical Security, Level 4 derived from FIPS 140-1 and specified in the CSTT                                                                                                           |
| 17/C01c     | Test Method Group 3: Test methods for Software Security, Level 4 derived from FIPS 140-1 and specified in the CSTT                                                                                                           |

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

17/C02 FIPS-Approved Cryptographic Algorithms  
(see <http://csrc.nist.gov/cryptval>) as required in  
FIPS PUB 140-1.

**NVLAP LAB CODE 200005-0****Motorola Test Lab Services**

20 Cabot Boulevard, M2-460  
Mansfield, MA 02048-1153  
Contact: Mr. Randel Weaner  
Phone: 508-851-8484  
Fax: 508-851-8512  
E-Mail: [randy.weaner@motorola.com](mailto:randy.weaner@motorola.com)

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

**NVLAP**

Code Designation

**Emissions Test Methods:**

- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology  
equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology  
equipment, Amendment 1:1995, and  
Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of  
Measurement of Radio Interference  
Characteristics of Information Technology  
Equipment
- 12/CIS22c EN 55022
- 12/EM01 EN 55081-1
- 12/EM02 EN 61000-3-2
- 12/EM03 EN 61000-3-3
- 12/F01 FCC Method - 47 CFR Part 15 - Digital  
Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz  
to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

**Immunity Test Methods:**

- 12/I01 IEC 61000-4-2 (1995) and Amendment 1  
(1998): Electrostatic Discharge Immunity Test
- 12/I02 IEC 61000-4-3 (1995) and Amendment 1  
(1998): Radiated, Radio-Frequency  
Electromagnetic Field Immunity Test
- 12/I03 IEC 61000-4-4 (1995): Electrical Fast  
Transient/Burst Immunity Test
- 12/I04 IEC 61000-4-5 (1995): Surge Immunity Test
- 12/I05 IEC 61000-4-6 (1996): Immunity to  
Conducted Disturbances, Induced  
Radio-Frequency Fields
- 12/I06 IEC 61000-4-8 (1993): Power Frequency  
Magnetic Field Immunity Test
- 12/I07 IEC 61000-4-11 (1994): Voltage Dips, Short  
Interruptions and Voltage Variations Immunity  
Tests

- 12/I08 EN 55024
- 12/I09 EN 55082-1
- 12/I10 EN 300386-2
- 12/I11 EN 50083-2

**NVLAP LAB CODE 200007-0****Lithonia Testing Laboratories**

1335 Industrial Blvd.  
P.O. Box A  
Conyers, GA 30012-9001  
Contact: Mr. James Hospodarsky  
Phone: 770-922-9000 x2424  
Fax: 770-929-8789  
E-Mail: [jhospodarsky@lithonia.com](mailto:jhospodarsky@lithonia.com)

**Energy Efficient Lighting Products**

Accreditation Valid Through: September 30, 2002

**NVLAP**

Code Designation

**Luminaires (Lighting Fixtures)**

- 22/F02 IES LM-31
- 22/F03 IES LM-35
- 22/F04 IES LM-41
- 22/F05 IES LM-46

**NVLAP LAB CODE 200010-0****Tri-State Materials Testing Lab, Inc.**

121 P North Plains Industrial Road  
Wallingford, CT 06492  
Contact: Mr. William Antonetti  
Phone: 203-949-7733  
Fax: 203-949-7735  
E-Mail: [billA@materials-testing.com](mailto:billA@materials-testing.com)  
URL: <http://www.materials-testing.com>

**Construction Materials Testing**

Accreditation Valid Through: September 30, 2002

**NVLAP**

Code Designation

**Aggregates**

- 02/A03 ASTM C29
- 02/A04 ASTM C40
- 02/A07 ASTM C117
- 02/A09 ASTM C127
- 02/A10 ASTM C128
- 02/A12 ASTM C136
- 02/A15 ASTM D75

**Concrete**

- 02/A43 ASTM C1064
- 02/G01 ASTM C31/C172/C143/C138/C231
- 02/G02 ASTM C173

**Road and Paving Materials**

- 02/M08 ASTM D979
- 02/M24 ASTM D2041
- 02/M25 ASTM D2726

**Soil and Rock**

- 02/L02 ASTM D422
- 02/L04 ASTM D698
- 02/L06 ASTM D1140
- 02/L08 ASTM D1557
- 02/L13 ASTM D2216



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

02/L20 ASTM D4318

**Standard Practices**

02/A38 ASTM E329

02/A39 ASTM C1077

02/M26 ASTM D3666

**NVLAP LAB CODE 200012-0****IPS Corporation**

1878-1, Harumiya Ono, Tatsuno-machi,  
Kamiina-gun, Nagano-ken, PO Box 399-0601  
Nagano 399-0601  
JAPAN

Contact: Mr. Osamu Kubota

Phone: +81-266-44-5200

Fax: +81-266-44-5300

E-Mail: kubota@ips-emc.co.jp

URL: <http://www.ips-emc.co.jp>**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

12/CIS14 CISPR 14-1 (March 30, 2000): Limits and  
methods of measurement of radio interference  
characteristics of household electrical  
appliances, portable tools and similar electrical  
apparatus - Part 1: Emissions

12/CIS14a EN 55014-1 (1993) with Amendments A1  
(1997) & A2 (1999)

12/CIS14b AS/NZS 1044 (1995)

12/CIS14c CNS 13783-1

12/CIS22 IEC/CISPR 22:1997: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology  
equipment

12/CIS22a IEC/CISPR 22:1993: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology  
equipment, Amendment 1:1995, and  
Amendment 2:1996.

12/CIS22b CNS 13438:1997: Limits and Methods of  
Measurement of Radio Interference  
Characteristics of Information Technology  
Equipment

12/F01 FCC Method - 47 CFR Part 15 - Digital  
Devices

12/F01a Conducted Emissions, Power Lines, 450 KHz  
to 30 MHz

12/F01b Radiated Emissions

12/T51 AS/NZS 3548

**NVLAP LAB CODE 200013-0****ENCORP**

615 North Nash Street, Suite 203

El Segundo, CA 90245

Contact: Mr. Roger Casillas

Phone: 310-640-9811

Fax: 310-640-9804

E-Mail: [fmateo@encorp.net](mailto:fmateo@encorp.net)URL: <http://www.encorp.net>**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

**NVLAP LAB CODE 200016-0****Daybrite Lighting (Genlyte Thomas Group)****Photometric Laboratory**

776 S. Green Street

P.O. Box 1687

Tupelo, MS 38802-1687

Contact: Dr. David W. Knoble, P.E.

Phone: 662-842-7212

Fax: 662-841-5596

E-Mail: [dknoble@genlytethomas.com](mailto:dknoble@genlytethomas.com)**Energy Efficient Lighting Products**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Luminaires (Lighting Fixtures)**

22/F01 IES LM-10

22/F03 IES LM-35

22/F04 IES LM-41

22/F05 IES LM-46

**NVLAP LAB CODE 200017-0****DOMUS Information Technology Security  
Laboratory**

2220 Walkley Road

Ottawa Ontario K1G 5L2

CANADA

Contact: Ms. Laurie L. Mack

Phone: 613-247-5505

Fax: 613-739-4936

E-Mail: [lauriem@ca.ibm.com](mailto:lauriem@ca.ibm.com)URL: <http://www.domusitsl.com>**Cryptographic Module Testing**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
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|------|-------------|

17/C01 NIST-CSTT:140-1; National Institute of  
Standards and Technology-Cryptographic  
Support Test Tool (CSTT) for the Federal  
Information Processing Standard 140-1 (FIPS  
140-1) "Security Requirements for  
Cryptographic Modules."

17/C01a Test Method Group 1: All test methods derived  
from FIPS 140-1 and specified in the CSTT,  
except those listed in Group 2 and Group 3.



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|         |                                                                                                                                                        |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 17/C01b | Test Method Group 2: Test methods for Physical Security, Level 4 derived from FIPS 140-1 and specified in the CSTT                                     |
| 17/C01c | Test Method Group 3: Test methods for Software Security, Level 4 derived from FIPS 140-1 and specified in the CSTT                                     |
| 17/C02  | FIPS-Approved Cryptographic Algorithms (see <a href="http://csrc.nist.gov/cryptval">http://csrc.nist.gov/cryptval</a> ) as required in FIPS PUB 140-1. |

**NVLAP LAB CODE 200018-0****Test-Con Incorporated**

16 East Franklin Street  
P.O. Box 3116  
Danbury, CT 06813-3116  
Contact: Mr. Chin Okwuka  
Phone: 203-748-3012  
Fax: 203-778-0633  
E-Mail: [chin@test-con.com](mailto:chin@test-con.com)  
URL: <http://www.test-con.com>

**Construction Materials Testing**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Admixtures**

|        |           |
|--------|-----------|
| 02/A35 | ASTM C233 |
|--------|-----------|

**Aggregates**

|        |           |
|--------|-----------|
| 02/A03 | ASTM C29  |
| 02/A04 | ASTM C40  |
| 02/A05 | ASTM C87  |
| 02/A06 | ASTM C88  |
| 02/A07 | ASTM C117 |
| 02/A09 | ASTM C127 |
| 02/A10 | ASTM C128 |
| 02/A12 | ASTM C136 |
| 02/A15 | ASTM D75  |
| 02/A44 | ASTM C566 |

**Cement**

|        |                      |
|--------|----------------------|
| 02/A17 | ASTM C109            |
| 02/A51 | ASTM C780 (Annex A7) |
| 02/A52 | ASTM C1019           |

**Concrete**

|        |                              |
|--------|------------------------------|
| 02/A01 | ASTM C39                     |
| 02/A02 | ASTM C617                    |
| 02/A41 | ASTM C192                    |
| 02/A43 | ASTM C1064                   |
| 02/A45 | ASTM C42                     |
| 02/G01 | ASTM C31/C172/C143/C138/C231 |
| 02/G02 | ASTM C173                    |

**Road and Paving Materials**

|        |            |
|--------|------------|
| 02/M03 | ASTM D140  |
| 02/M11 | ASTM D1188 |
| 02/M25 | ASTM D2726 |

**Soil and Rock**

|        |            |
|--------|------------|
| 02/L02 | ASTM D422  |
| 02/L04 | ASTM D698  |
| 02/L05 | ASTM D854  |
| 02/L06 | ASTM D1140 |
| 02/L07 | ASTM D1556 |

|        |            |
|--------|------------|
| 02/L08 | ASTM D1557 |
| 02/L09 | ASTM D1558 |
| 02/L13 | ASTM D2216 |
| 02/L14 | ASTM D2217 |
| 02/L16 | ASTM D2487 |
| 02/L17 | ASTM D2488 |
| 02/L20 | ASTM D4318 |
| 02/L21 | ASTM D2434 |
| 02/L22 | ASTM D2850 |
| 02/L23 | ASTM D2922 |
| 02/L24 | ASTM D2974 |
| 02/L25 | ASTM D3017 |
| 02/L31 | ASTM D2167 |

**Standard Practices**

|        |            |
|--------|------------|
| 02/A38 | ASTM E329  |
| 02/A39 | ASTM C1077 |

**NVLAP LAB CODE 200019-0****EMSL Analytical, Inc.**

14375 23rd Avenue North  
Minneapolis, MN 55447  
Contact: Ms. Rachel Travis  
Phone: 763-449-4922  
Fax: 763-449-4924  
E-Mail: [minneapolislab@emsl.com](mailto:minneapolislab@emsl.com)  
URL: <http://www.emsl.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: March 31, 2002

**NVLAP LAB CODE 200020-0****Hubbell Lighting Photometric Laboratory**

2000 Electric Way  
Christiansburg, VA 24073-2502  
Contact: Mr. Steven Regnaud  
Phone: 540-382-6111 x267  
Fax: 540-382-1544  
E-Mail: [sregnaud@hubbell-ltg.com](mailto:sregnaud@hubbell-ltg.com)  
URL: [www.hubbell-ltg.com/default.htm/photlab.html](http://www.hubbell-ltg.com/default.htm/photlab.html)

**Energy Efficient Lighting Products**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Luminaires (Lighting Fixtures)**

|        |           |
|--------|-----------|
| 22/F01 | IES LM-10 |
| 22/F02 | IES LM-31 |
| 22/F03 | IES LM-35 |
| 22/F04 | IES LM-41 |
| 22/F05 | IES LM-46 |

NVLAP LAB CODE 200021-0

**Wayne Langston, Inc.**

P.O. Box 1377  
League City, TX 77574-1377  
Contact: Mr. Wayne Langston  
Phone: 281-337-6785  
Fax: 281-337-7217  
E-Mail: langstoninc@msn.com  
URL: http://www.Waynelangstoninc.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

*NVLAP*

*Code Designation*

**Emissions Test Methods:**

- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

NVLAP LAB CODE 200030-0

**Dodge-Regupol, Inc. Laboratory**

715 Fountain Avenue  
P.O. Box 989  
Lancaster, PA 17608-0989  
Contact: Mr. Clyde T. Diffendall  
Phone: 717-295-3400 x262  
Fax: 717-295-3414  
E-Mail: ctd@regupol.com

**Commercial Products Testing**

Accreditation Valid Through: March 31, 2002

*NVLAP*

*Code Designation*

**Plastics**

- 15/A23a ASTM D412 (Test Method A - Dumbell Specimens)
- 15/A24 ASTM D573
- 15/A25a ASTM D624
- 15/A26 ASTM D2240 (Type A Durometer)
- 15/A30 ASTM D297 (Sec. 16; Para. 16.3)

NVLAP LAB CODE 200033-0

**3M Product Safety EMC Laboratory**

410 E. Fillmore Avenue  
Bldg 76-1-01  
St. Paul, MN 55144-1000  
Contact: Mr. Greg Demaray  
Phone: 612-736-4427  
Fax: 612-737-1035  
E-Mail: gedemaray@mmm.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

*NVLAP*

*Code Designation*

**Emissions Test Methods:**

- 12/CIS14 CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions
- 12/CIS14a EN 55014-1 (1993) with Ammendments A1 (1997) & A2 (1999)
- 12/CIS14b AS/NZS 1044 (1995)
- 12/CIS14c CNS 13783-1
- 12/CIS22 IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

**Immunity Test Methods:**

- 12/I01 IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test
- 12/I02 IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test
- 12/I03 IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test
- 12/I04 IEC 61000-4-5 (1995): Surge Immunity Test
- 12/I05 IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields
- 12/I06 IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test
- 12/I07 IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 200034-0****EMSL Analytical, Inc.**

Westwood Business Park 1801 Royal Lane  
Suite 908  
Dallas, TX 75229  
Contact: Mr. Darryl Neldner  
Phone: 972-831-9725  
Fax: 972-444-0884  
E-Mail: DallasLab@EMSL.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: March 31, 2002

**NVLAP LAB CODE 200036-0****Quest Engineering Solutions, Inc.**

7 Sterling Road  
P.O. Box 125  
N. Billerica, MA 01862  
Contact: Mr. Richard Ferris  
Phone: 978-667-7000 x204  
Fax: 978-667-3388  
E-Mail: r.ferris@QES.com  
URL: <http://www.QES.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: March 31, 2002

**NVLAP**

*Code      Designation*

**Emissions Test Methods:**

- 12/CIS14 CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions
- 12/CIS14a EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)
- 12/CIS14b AS/NZS 1044 (1995)
- 12/CIS14c CNS 13783-1
- 12/CIS22 IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz

- 12/F01b Radiated Emissions  
12/T51 AS/NZS 3548

**NVLAP LAB CODE 200037-0****Western Analytical Laboratory, Inc.**

12734 Branford Street, Unit #19  
Arleta, CA 91331  
Contact: Mr. Mike Maladzhikyan  
Phone: 818-899-0949  
Fax: 818-899-0399  
E-Mail: [mail@asbestostesting.com](mailto:mail@asbestostesting.com)  
URL: <http://www.asbestostesting.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

**NVLAP LAB CODE 200039-0****TUV Telecom Services, Inc.**

1775 Old Highway 8, Suite 107/108  
St. Paul, MN 55112-1891  
Contact: Mr. David A. Freemore  
Phone: 651-639-0775  
Fax: 651-639-0873  
E-Mail: [dffreemore@us.tuv.com](mailto:dffreemore@us.tuv.com)  
URL: <http://www.tuv.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: March 31, 2002

**NVLAP**

*Code      Designation*

**Telecommunications Test Methods:**

- 12/CS03 CS-03
- 12/T01 Terminal Equipment Network Protection Standards, FCC Method - 47 CFR Part 68 - Analog and Digital
- 12/T01a 68.302 (Par. c,d,e,f) Environmental simulation; 68.304 Leakage current limit.; 68.306 Hazardous voltage limit.; 68.308 Signal power limit.; 68.310 Longitudinal balance limit.; 68.312 On-hook impedance limit.; 68.314 Billing protection
- 12/T01b 68.316 Hearing Aid Compatibility: technical standards
- 12/T01c 68.302 Environmental simulation (Par. a,b)
- 12/T45 ACA TS-006
- 12/T49 ACA TS-016



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 200040-0****LG Electronics, Inc., Quality and Reliability Center**

36, Munlae-dong, 6-ga Youngdungpo-gu  
Seoul 150-096  
KOREA  
Contact: Mr. Tae-Yeong Oh  
Phone: 82 2 2630 3008  
Fax: 82 2 2630 3050  
E-Mail: tyojlight@lge.co.kr

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

*NVLAP*  
*Code      Designation*

**Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment

12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.

12/F01 FCC Method - 47 CFR Part 15 - Digital Devices

12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz

12/F01b Radiated Emissions

12/T51 AS/NZS 3548

**Immunity Test Methods:**

12/I01 IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test

12/I02 IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test

12/I03 IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test

12/I04 IEC 61000-4-5 (1995): Surge Immunity Test

12/I05 IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields

12/I07 IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests

**NVLAP LAB CODE 200041-0****Kingston Environmental Laboratory**

1600 S.W. Market  
Lee's Summit, MO 64081-3109  
Contact: Ms. Melissa McKee  
Phone: 816-246-8746  
Fax: 816-525-5027  
E-Mail: biobugs@aol.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

**NVLAP LAB CODE 200044-0****U.S. Army Center for Health Promotion and Preventive Medicine**

Attn: MCHB-TS-L, Bldg. E-2100  
5158 Blackhawk Road  
Aberdeen Proving Ground, MD 21010-5403  
Contact: Ms. Rosemary Gaffney  
Phone: 410-436-2208  
Fax: 410-436-8315

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

**NVLAP LAB CODE 200045-0****Willamette Industries, Inc. West Coast Development Lab**

9130 SW Pioneer Court, Suite D  
Wilsonville, OR 97070  
Contact: Mr. Gary Vosler  
Phone: 503-682-4995  
Fax: 503-682-4545  
E-Mail: gvosler@wii.com

**Commercial Products Testing**

Accreditation Valid Through: September 30, 2002

*NVLAP*  
*Code      Designation*

**Paper and Related Products**

09/E02 TAPPI T402-OM; ASTM D685  
09/E03 TAPPI T403-OM; ASTM D774  
09/E05 TAPPI T410-OM  
09/E06 TAPPI T411-OM  
09/E08 TAPPI T414-OM  
09/E17 TAPPI T494-OM  
09/E20 TAPPI T809-OM  
09/E21 TAPPI T818-OM  
09/E22 TAPPI T807-OM  
09/E25 TAPPI T826-PM  
09/E27 TAPPI TM 833-PM  
09/E29 TAPPI T476-OM  
09/E31 TAPPI T838-PM  
09/H01 ASTM D642; TAPPI T804-OM  
09/H24 TAPPI T802-OM  
09/H28 TAPPI T810-OM  
09/H30 TAPPI T821-OM



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

09/H31 TAPPI T825-PM

**NVLAP LAB CODE 200046-0****Stork-Twin City Testing Corporation**

662 Cromwell Avenue

St. Paul, MN 55114-1776

Contact: Mr. Matthew Horton

Phone: 651-659-7402

Fax: 651-659-7348

E-Mail: mhorton@tct.storkgroup.com

URL: <http://www.twincitytesting.com>**Acoustical Testing Services**

Accreditation Valid Through: March 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

|        |             |
|--------|-------------|
| 08/P03 | ASTM C423   |
| 08/P06 | ASTM E90    |
| 08/P10 | ANSI S12.31 |
| 08/P24 | ANSI S12.10 |
| 08/P31 | ASTM E336   |
| 08/P32 | ASTM E1007  |
| 08/P37 | ASTM E966   |
| 08/P52 | ISO 3822    |
| 08/P54 | SAE J1400   |

**NVLAP LAB CODE 200047-0****National Econ Corporation**

4515 Poplar Avenue, Suite 410

Memphis, TN 38117

Contact: Mr. Chester V. Ervin

Phone: 901-761-5431

Fax: 901-767-2466

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

**NVLAP LAB CODE 200049-0****Intertek Testing Services NA, Inc.**

7250 Hudson Blvd. Suite 100

Oakdale, MN 55128

Contact: Mr. Albert Garlatti

Phone: 651-730-1188

Fax: 651-730-1282

E-Mail: [agarlatti@itsqs.com](mailto:agarlatti@itsqs.com)URL: <http://www.worldlab.com>**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

| Code | Designation |
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|------|-------------|

**Emissions Test Methods:**

|           |                                                                                                                                                                                                              |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS14  | CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions |
| 12/CIS14a | EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)                                                                                                                                                      |
| 12/CIS14b | AS/NZS 1044 (1995)                                                                                                                                                                                           |

12/CIS14c CNS 13783-1

12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment

12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.

12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment

12/F01 FCC Method - 47 CFR Part 15 - Digital Devices

12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz

12/F01b Radiated Emissions

12/T51 AS/NZS 3548

**Immunity Test Methods:**

12/I01 IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test

12/I02 IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency

Electromagnetic Field Immunity Test

12/I03 IEC 61000-4-4 (1995): Electrical Fast

Transient/Burst Immunity Test

12/I04 IEC 61000-4-5 (1995): Surge Immunity Test

12/I05 IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced

Radio-Frequency Fields

12/I06 IEC 61000-4-8 (1993): Power Frequency

Magnetic Field Immunity Test

12/I07 IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests

**NVLAP LAB CODE 200050-0****Cooper Lighting - Metalux Research Laboratories**

1101 Southerfield Road

P.O. Box 1207

Americus, GA 31709-1207

Contact: Mr. Gregory B. Bacon

Phone: 912-924-8000

Fax: 912-924-5507

E-Mail: [gbacon@cooperlighting.com](mailto:gbacon@cooperlighting.com)URL: <http://www.cooperlighting.com/metalux/>**Energy Efficient Lighting Products**

Accreditation Valid Through: June 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Luminaires (Lighting Fixtures)**

22/F04 IES LM-41

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 200051-0****AES International**

1004 Calle Labra, 2nd Floor  
R.H. Todd Avenue  
Santurce, PR 00907  
Contact: Mr. Ady Padan  
Phone: 787-722-0220  
Fax: 787-724-5788  
E-Mail: YOTA1@bellsouth.net

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

**NVLAP LAB CODE 200052-0****Dell Regulatory Test Laboratories**

One Dell Way  
Round Rock, TX 78682  
Contact: Mr. David Staggs  
Phone: 512-728-3751  
Fax: 512-728-3653  
E-Mail: David\_Staggs@us.dell.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

- |           |                                                                                                                                                                                                              |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS14  | CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions |
| 12/CIS14a | EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)                                                                                                                                                      |
| 12/CIS14b | AS/NZS 1044 (1995)                                                                                                                                                                                           |
| 12/CIS14c | CNS 13783-1                                                                                                                                                                                                  |
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                                                                |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.                                       |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                                                                  |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                                                                |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                                                          |
| 12/F01b   | Radiated Emissions                                                                                                                                                                                           |
| 12/T51    | AS/NZS 3548                                                                                                                                                                                                  |

**Immunity Test Methods:**

- |        |                                                                                                            |
|--------|------------------------------------------------------------------------------------------------------------|
| 12/I01 | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                         |
| 12/I02 | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test |
| 12/I03 | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                        |
| 12/I04 | IEC 61000-4-5 (1995): Surge Immunity Test                                                                  |
| 12/I05 | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields                   |
| 12/I06 | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test                                         |
| 12/I07 | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests             |

**Acoustical Testing Services**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

- |        |          |
|--------|----------|
| 08/P40 | ISO 9296 |
| 08/P41 | ECMA 74  |
| 08/P42 | ECMA 109 |
| 08/P48 | ISO 7779 |

**NVLAP LAB CODE 200053-0****A.O. Smith (Lexington) Engineering Laboratory**

669 Natchez Trace Drive  
Lexington, TN 38351-4198  
Contact: Mr. Hugh Fesmire  
Phone: 901-967-4713  
Fax: 901-968-4164  
E-Mail: HFesmire@aosmith.com

**Efficiency of Electric Motors**

Accreditation Valid Through: June 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

- |        |                    |
|--------|--------------------|
| 24/M01 | IEEE 112, Method B |
|--------|--------------------|

**NVLAP LAB CODE 200056-0****EMSL Analytical, Inc.**

490 Rowley Road  
Depew, NY 14043  
Contact: Mr. Kenneth J. Najuch  
Phone: 716-651-0030  
Fax: 716-651-0394  
E-Mail: knajuch@emsl.com  
URL: <http://www.emsl.com/>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

NVLAP LAB CODE 200058-0

**Compaq Computer Corp. Emissions Control Lab**

M/C 060607  
P.O. Box 692000  
Houston, TX 77070-2000  
Contact: Mr. Steve Ortmann  
Phone: 281-514-4897  
Fax: 281-514-8029  
E-Mail: Steve.Ortmann@Compaq.Com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

NVLAP

Code Designation

**Emissions Test Methods:**

- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

**Immunity Test Methods:**

- 12/I01 IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test
- 12/I02 IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test
- 12/I03 IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test
- 12/I04 IEC 61000-4-5 (1995): Surge Immunity Test
- 12/I05 IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields
- 12/I06 IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test
- 12/I07 IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests

**Safety Test Methods:**

- 12/T41 ACA TS-001
- 12/T50 AS/NZS 3260

NVLAP LAB CODE 200059-0

**Northwest EMC, Inc.**

22975 NW Evergreen Parkway, Suite 400  
Hillsboro, OR 97124  
Contact: Mr. David Tolman  
Phone: 503-844-4066  
Fax: 503-844-3826  
E-Mail: dtolman@nwemc.com  
URL: http://www.nwemc.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

NVLAP

Code Designation

**Emissions Test Methods:**

- 12/CIS22 IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

**Immunity Test Methods:**

- 12/I01 IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test
- 12/I02 IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test
- 12/I03 IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test
- 12/I04 IEC 61000-4-5 (1995): Surge Immunity Test
- 12/I05 IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields
- 12/I06 IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test
- 12/I07 IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 200061-0****Rhein Tech Laboratories, Inc.**

360 Herndon Parkway, Suite #1400

Herndon, VA 20170-4824

Contact: Mr. Bruno Clavier

Phone: 703-689-0368

Fax: 703-689-2056

E-Mail: bclavier@rheintech.com

URL: <http://www.rheintech.com>**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
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**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

**NVLAP LAB CODE 200062-0****Professional Testing (EMI), Inc.**

1601 FM 1460, Suite B

Round Rock, TX 78664

Contact: Mr. Jeffrey A. Lenk

Phone: 512-244-3371

Fax: 512-244-1846

E-Mail: jlenk@ptitest.com

URL: <http://www.ptitest.com>**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |

|                               |                                                                                                                             |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22b                     | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment |
| 12/F01                        | FCC Method - 47 CFR Part 15 - Digital Devices                                                                               |
| 12/F01a                       | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                         |
| 12/F01b                       | Radiated Emissions                                                                                                          |
| 12/T51                        | AS/NZS 3548                                                                                                                 |
| <b>Immunity Test Methods:</b> |                                                                                                                             |
| 12/I01                        | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                                          |
| 12/I02                        | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test                  |
| 12/I03                        | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                                         |
| 12/I04                        | IEC 61000-4-5 (1995): Surge Immunity Test                                                                                   |
| 12/I05                        | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields                                    |
| 12/I06                        | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test                                                          |
| 12/I07                        | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests                              |

**NVLAP LAB CODE 200063-0****Compatible Electronics, Inc.**

2337 Troutdale Drive

Agoura, CA 91301

Contact: Mr. Jeff Klinger

Phone: 714-579-0500

Fax: 714-579-1850

E-Mail: jklinger@celectronics.com

URL: <http://celectronics.com>**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|                                         |                                                                                                                                                                                                                                            |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/F01a                                 | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                                                                                        |
| 12/F01b                                 | Radiated Emissions                                                                                                                                                                                                                         |
| 12/T51                                  | AS/NZS 3548                                                                                                                                                                                                                                |
| <b>Immunity Test Methods:</b>           |                                                                                                                                                                                                                                            |
| 12/I01                                  | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                                                                                                                                                         |
| 12/I02                                  | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test                                                                                                                                 |
| 12/I03                                  | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                                                                                                                                                        |
| 12/I04                                  | IEC 61000-4-5 (1995): Surge Immunity Test                                                                                                                                                                                                  |
| 12/I05                                  | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields                                                                                                                                                   |
| 12/I06                                  | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test                                                                                                                                                                         |
| 12/I07                                  | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests                                                                                                                                             |
| <b>Safety Test Methods:</b>             |                                                                                                                                                                                                                                            |
| 12/T41                                  | ACA TS-001                                                                                                                                                                                                                                 |
| 12/T50                                  | AS/NZS 3260                                                                                                                                                                                                                                |
| <b>Telecommunications Test Methods:</b> |                                                                                                                                                                                                                                            |
| 12/CS03                                 | CS-03                                                                                                                                                                                                                                      |
| 12/T01                                  | Terminal Equipment Network Protection Standards, FCC Method - 47 CFR Part 68 - Analog and Digital                                                                                                                                          |
| 12/T01a                                 | 68.302 (Par. c,d,e,f) Environmental simulation; 68.304 Leakage current limit.; 68.306 Hazardous voltage limit.; 68.308 Signal power limit.; 68.310 Longitudinal balance limit.; 68.312 On-hook impedance limit.; 68.314 Billing protection |
| 12/T01b                                 | 68.316 Hearing Aid Compatibility: technical standards                                                                                                                                                                                      |

**NVLAP LAB CODE 200065-0****Compliance Eng. Svcs, Inc., Compliance Certification Services**

561F Monterey Road  
Morgan Hill, CA 95037  
Contact: Mr. Scott Wang  
Phone: 408-463-0885  
Fax: 408-463-0888  
E-Mail: swang@ccsemc.com  
URL: <http://www.ccsemc.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

Code      Designation

**Emissions Test Methods:**

|          |                                                                                                                               |
|----------|-------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22 | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment |
|----------|-------------------------------------------------------------------------------------------------------------------------------|

|                               |                                                                                                                                                                        |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22b                     | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b                     | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01                        | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a                       | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b                       | Radiated Emissions                                                                                                                                                     |
| 12/T51                        | AS/NZS 3548                                                                                                                                                            |
| <b>Immunity Test Methods:</b> |                                                                                                                                                                        |
| 12/I01                        | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                                                                                     |
| 12/I02                        | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test                                                             |
| 12/I03                        | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                                                                                    |
| 12/I04                        | IEC 61000-4-5 (1995): Surge Immunity Test                                                                                                                              |
| 12/I05                        | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields                                                                               |
| 12/I06                        | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test                                                                                                     |
| 12/I07                        | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests                                                                         |

**NVLAP LAB CODE 200066-0****Washington Laboratories, Ltd.**

7560 Lindbergh Drive  
Gaithersburg, MD 20879  
Contact: Mr. Michael F. Violette  
Phone: 301-417-0220  
Fax: 301-417-9069  
E-Mail: [mikev@wll.com](mailto:mikev@wll.com)  
URL: <http://www.wll.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

**NVLAP**

Code      Designation

**Emissions Test Methods:**

|           |                                                                                                                                                                                                              |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS14  | CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions |
| 12/CIS14a | EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)                                                                                                                                                      |
| 12/CIS14b | AS/NZS 1044 (1995)                                                                                                                                                                                           |
| 12/CIS14c | CNS 13783-1                                                                                                                                                                                                  |
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of                                                                                                                                                                     |

# INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued

|                               |                                                                                                                                                                        |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                               | measurement of radio disturbance characteristics of information technology equipment                                                                                   |
| 12/CIS22a                     | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b                     | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01                        | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a                       | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b                       | Radiated Emissions                                                                                                                                                     |
| <b>Immunity Test Methods:</b> |                                                                                                                                                                        |
| 12/I01                        | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                                                                                     |
| 12/I02                        | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test                                                             |
| 12/I03                        | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                                                                                    |
| 12/I04                        | IEC 61000-4-5 (1995): Surge Immunity Test                                                                                                                              |
| 12/I05                        | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields                                                                               |
| 12/I06                        | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test                                                                                                     |
| 12/I07                        | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests                                                                         |
| <b>Safety Test Methods:</b>   |                                                                                                                                                                        |
| 12/T41                        | ACA TS-001                                                                                                                                                             |
| 12/T50                        | AS/NZS 3260                                                                                                                                                            |

## NVLAP LAB CODE 200067-0

### JMR Environmental Services Inc.

4560 Alvarado Canyon Rd., Suite 2-D  
San Diego, CA 92120  
Contact: Mr. Rick De Nisco  
Phone: 619-858-7260  
Fax: 619-858-7264

### Bulk Asbestos Analysis (PLM)

Accreditation Valid Through: September 30, 2002

## NVLAP LAB CODE 200068-0

### EMC Compliance Mgmt Group, dba Turntech Scientific & Instr., Inc.

670 National Avenue  
Mountain View, CA 94043-2244  
Contact: Mr. Paul F. Chen  
Phone: 650-988-0900  
Fax: 650-988-6647  
E-Mail: pfchen@emclab2000.com  
URL: http://www.emclab2000.com

### Electromagnetic Compatibility & Telecommunications

Accreditation Valid Through: December 31, 2002

#### NVLAP

Code Designation

#### Emissions Test Methods:

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

#### Immunity Test Methods:

|        |                                                                                                            |
|--------|------------------------------------------------------------------------------------------------------------|
| 12/I01 | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                         |
| 12/I02 | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test |
| 12/I03 | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                        |
| 12/I04 | IEC 61000-4-5 (1995): Surge Immunity Test                                                                  |
| 12/I05 | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields                   |
| 12/I06 | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test                                         |
| 12/I07 | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests             |

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 200069-0****Elliott Laboratories, Inc.**

684 West Maude Avenue  
Sunnyvale, CA 94085-3518  
Contact: Mr. Thomas H. Parker  
Phone: 408-245-7800 x236  
Fax: 408-245-3499  
E-Mail: tparker@elliottlabs.com  
URL: <http://www.elliottlabs.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

**NVLAP**

*Code      Designation*

**Emissions Test Methods:**

- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

**Immunity Test Methods:**

- 12/I01 IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test
- 12/I02 IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test
- 12/I03 IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test
- 12/I04 IEC 61000-4-5 (1995): Surge Immunity Test
- 12/I05 IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields
- 12/I06 IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test
- 12/I07 IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests

**Safety Test Methods:**

- 12/T41 ACA TS-001
- 12/T50 AS/NZS 3260

**NVLAP LAB CODE 200071-0****Apple Computer, Inc., EMC Compliance Laboratory**

1 Infinite Loop, Mailstop 26-A  
Cupertino, CA 95014-2084  
Contact: Mr. Robert Steinfeld  
Phone: 408-974-2618  
Fax: 408-862-5061  
E-Mail: steinfeld@apple.com

**Electromagnetic Compatibility & Telecommunications**

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**NVLAP**

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**Emissions Test Methods:**

- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

**NVLAP LAB CODE 200076-0****Laird Group PLC**

P.O. Box 650, Shielding Way  
Delaware Water Gap, PA 18327-0650  
Contact: Mr. Michael Lambert  
Phone: 570-424-8510  
Fax: 570-421-4227  
E-Mail: mlambert@lairdtech.com  
URL: <http://www.lairdtech.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

**NVLAP**

*Code      Designation*

**Emissions Test Methods:**

- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|                               |                                                                                                                             |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
|                               | equipment, Amendment 1:1995, and Amendment 2:1996.                                                                          |
| 12/CIS22b                     | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment |
| 12/F01                        | FCC Method - 47 CFR Part 15 - Digital Devices                                                                               |
| 12/F01a                       | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                         |
| 12/F01b                       | Radiated Emissions                                                                                                          |
| 12/T51                        | AS/NZS 3548                                                                                                                 |
| <b>Immunity Test Methods:</b> |                                                                                                                             |
| 12/I01                        | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                                          |
| 12/I02                        | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test                  |
| 12/I03                        | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                                         |
| 12/I04                        | IEC 61000-4-5 (1995): Surge Immunity Test                                                                                   |
| 12/I05                        | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields                                    |
| 12/I06                        | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test                                                          |
| 12/I07                        | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests                              |

**NVLAP LAB CODE 200077-0****Taiwan Tokin EMC Eng. Corp.**

No. 53-11, Tin-Fu, Tsun, Lin-Kou Hsiang  
Taipei 24443  
TAIWAN

Contact: Mr. Jackie Deng  
Phone: 886-2-26092133  
Fax: 886-2-26099303  
E-Mail: ttemc@tpts1.seed.net.tw  
URL: <http://www.ttemc.com.tw>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

|           |                                                                                                                                                                                                              |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS14  | CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions |
| 12/CIS14a | EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)                                                                                                                                                      |
| 12/CIS14b | AS/NZS 1044 (1995)                                                                                                                                                                                           |
| 12/CIS14c | CNS 13783-1                                                                                                                                                                                                  |
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                                                                |

|                               |                                                                                                                                                                        |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22a                     | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b                     | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01                        | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a                       | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b                       | Radiated Emissions                                                                                                                                                     |
| 12/T51                        | AS/NZS 3548                                                                                                                                                            |
| <b>Immunity Test Methods:</b> |                                                                                                                                                                        |
| 12/I01                        | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                                                                                     |
| 12/I02                        | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test                                                             |
| 12/I03                        | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                                                                                    |
| 12/I04                        | IEC 61000-4-5 (1995): Surge Immunity Test                                                                                                                              |
| 12/I05                        | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields                                                                               |
| 12/I06                        | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test                                                                                                     |
| 12/I07                        | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests                                                                         |

**NVLAP LAB CODE 200078-0****Compaq Computer Corp. EMC Test Facility**

301 Rockrimmon Blvd. South  
Colorado Springs, CO 80919-2398  
Contact: Mr. Dennis Laurence  
Phone: 719-548-2080  
Fax: 719-548-2070  
E-Mail: [dennis.laurence@compaq.com](mailto:dennis.laurence@compaq.com)

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of                                                                                                                                  |



# INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued

|                               |                                                                                                            |         |                                                     |
|-------------------------------|------------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------------|
|                               | Measurement of Radio Interference                                                                          | 12/F01a | Conducted Emissions, Power Lines, 450 KHz to 30 MHz |
|                               | Characteristics of Information Technology Equipment                                                        | 12/F01b | Radiated Emissions                                  |
| 12/F01                        | FCC Method - 47 CFR Part 15 - Digital Devices                                                              | 12/T51  | AS/NZS 3548                                         |
| 12/F01a                       | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                        |         |                                                     |
| 12/F01b                       | Radiated Emissions                                                                                         |         |                                                     |
| 12/T51                        | AS/NZS 3548                                                                                                |         |                                                     |
| <b>Immunity Test Methods:</b> |                                                                                                            |         |                                                     |
| 12/I01                        | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                         |         |                                                     |
| 12/I02                        | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test |         |                                                     |
| 12/I03                        | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                        |         |                                                     |
| 12/I04                        | IEC 61000-4-5 (1995): Surge Immunity Test                                                                  |         |                                                     |
| 12/I05                        | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields                   |         |                                                     |
| 12/I06                        | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test                                         |         |                                                     |
| 12/I07                        | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests             |         |                                                     |

## NVLAP LAB CODE 200079-0

### Sporton International, Inc.

6F, No. 106, Sec. 1, Hsin Tai Wu Road

Hsi Chih

Taipei Hsien 221

TAIWAN

Contact: Mr. W. L. Huang

Phone: 886-2-2696-2468

Fax: 886-2-2696-2255

E-Mail: kathylin@sporton.com.tw

URL: <http://www.sporton.com.tw>

### Electromagnetic Compatibility & Telecommunications

Accreditation Valid Through: December 31, 2002

#### NVLAP

| Code | Designation |
|------|-------------|
|------|-------------|

#### Emissions Test Methods:

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    |                                                                                                                                                                        |

|         |                                                     |
|---------|-----------------------------------------------------|
| 12/F01a | Conducted Emissions, Power Lines, 450 KHz to 30 MHz |
| 12/F01b | Radiated Emissions                                  |
| 12/T51  | AS/NZS 3548                                         |

## NVLAP LAB CODE 200080-0

### Continental Envirotech, Inc.

646 West Broadway Road, Suite 401

Mesa, AZ 85210-1212

Contact: Mr. Stephen P. Kovac

Phone: 480-844-1710

Fax: 480-844-1752

### Bulk Asbestos Analysis (PLM)

Accreditation Valid Through: September 30, 2002

## NVLAP LAB CODE 200081-0

### Advanced Energy, Industrial Energy Laboratory

909 Capability Drive, #2100

Raleigh, NC 27606-3870

Contact: Mr. Roy B. Miller, P.E.

Phone: 919-857-9036

Fax: 919-832-2696

E-Mail: [rmiller@advancedenergy.org](mailto:rmiller@advancedenergy.org)

URL: <http://www.advancedenergy.org>

### Efficiency of Electric Motors

Accreditation Valid Through: September 30, 2002

#### NVLAP

| Code | Designation |
|------|-------------|
|------|-------------|

|        |                    |
|--------|--------------------|
| 24/M01 | IEEE 112, Method B |
|--------|--------------------|

## NVLAP LAB CODE 200082-0

### PDE Laboratories

950 Calle Negocio

San Clemente, CA 92673-6201

Contact: Mr. Dave Farrant

Phone: 949-361-9189

Fax: 949-361-9597

E-Mail: [testsvecs@pdelabs.com](mailto:testsvecs@pdelabs.com)

### Electromagnetic Compatibility & Telecommunications

Accreditation Valid Through: September 30, 2002

#### NVLAP

| Code | Designation |
|------|-------------|
|------|-------------|

#### Emissions Test Methods:

|           |                                                                                                                                                                                                              |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS14  | CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions |
| 12/CIS14a | EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)                                                                                                                                                      |
| 12/CIS14b | AS/NZS 1044 (1995)                                                                                                                                                                                           |
| 12/CIS14c | CNS 13783-1                                                                                                                                                                                                  |
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology                                                                                          |

# INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued

|                               |                                                                                                                                                                        |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                               | equipment                                                                                                                                                              |
| 12/CIS22a                     | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b                     | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01                        | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a                       | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b                       | Radiated Emissions                                                                                                                                                     |
| 12/T51                        | AS/NZS 3548                                                                                                                                                            |
| <b>Immunity Test Methods:</b> |                                                                                                                                                                        |
| 12/I01                        | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                                                                                     |
| 12/I02                        | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test                                                             |
| 12/I03                        | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                                                                                    |
| 12/I04                        | IEC 61000-4-5 (1995): Surge Immunity Test                                                                                                                              |
| 12/I05                        | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields                                                                               |
| 12/I06                        | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test                                                                                                     |
| 12/I07                        | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests                                                                         |

## NVLAP LAB CODE 200083-0

### Testwell Laboratories, Inc./Testwell Industries, Inc.

47 Hudson Street  
Ossining, NY 10562  
Contact: Mr. V. Reddy Kancharla  
Phone: 914-762-9000  
Fax: 914-762-9638

URL: <http://www.testwelllabs.com>

### Construction Materials Testing

Accreditation Valid Through: June 30, 2002

#### NVLAP

Code Designation

#### Admixtures

02/A35 ASTM C233

#### Aggregates

02/A03 ASTM C29  
02/A04 ASTM C40  
02/A06 ASTM C88  
02/A07 ASTM C117  
02/A08 ASTM C123  
02/A09 ASTM C127  
02/A10 ASTM C128

02/A11 ASTM C131  
02/A12 ASTM C136  
02/A13 ASTM C142  
02/A15 ASTM D75  
02/A44 ASTM C566  
02/A46 ASTM C535

#### Cement

02/A17 ASTM C109  
02/A18 ASTM C114  
02/A21 ASTM C157  
02/A22 ASTM C183  
02/A26 ASTM C191  
02/A31 ASTM C305

#### Concrete

02/A01 ASTM C39  
02/A02 ASTM C617  
02/A40 ASTM C78  
02/A41 ASTM C192  
02/A43 ASTM C1064  
02/A45 ASTM C42  
02/A47 ASTM C457  
02/A48 ASTM C856  
02/G01 ASTM C31/C172/C143/C138/C231

#### Road and Paving Materials

02/M08 ASTM D979  
02/M11 ASTM D1188  
02/M12 ASTM D1559  
02/M24 ASTM D2041  
02/M25 ASTM D2726

#### Soil and Rock

02/L02 ASTM D422  
02/L04 ASTM D698  
02/L05 ASTM D854  
02/L06 ASTM D1140  
02/L07 ASTM D1556  
02/L08 ASTM D1557  
02/L13 ASTM D2216  
02/L16 ASTM D2487  
02/L17 ASTM D2488  
02/L20 ASTM D4318  
02/L23 ASTM D2922  
02/L24 ASTM D2974  
02/L25 ASTM D3017

#### Standard Practices

02/A38 ASTM E329  
02/A39 ASTM C1077

#### Steel Materials

02/S01 ASTM A370 (Sec. 5-13)/E8  
02/S05 ASTM A370 (Sec. 18)/E18  
02/S07 ASTM E709  
02/S08 ASTM E165

#### Bulk Asbestos Analysis (PLM)

Accreditation Valid Through: June 30, 2002

#### Airborne Asbestos Analysis (TEM)

Accreditation Valid Through: June 30, 2002

# INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued

## NVLAP LAB CODE 200084-0

### Windermere Info. Tech. Sys.

### Military/Commercial Compliance Lab.

401 Defense Highway

Annapolis, MD 21401

Contact: Mr. William Banchemo

Phone: 410-266-1737

Fax: 410-266-1751/1725

E-Mail: [bbanchemo@witsusa.com](mailto:bbanchemo@witsusa.com)

URL: <http://www.witsusa.com/services/test/com.html>

### Electromagnetic Compatibility & Telecommunications

Accreditation Valid Through: September 30, 2002

#### NVLAP

Code Designation

#### Emissions Test Methods:

|          |                                                                                                                               |
|----------|-------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22 | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment |
| 12/F01   | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                 |
| 12/F01a  | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                           |
| 12/F01b  | Radiated Emissions                                                                                                            |
| 12/T51   | AS/NZS 3548                                                                                                                   |

#### Immunity Test Methods:

|        |                                                                                                            |
|--------|------------------------------------------------------------------------------------------------------------|
| 12/I01 | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                         |
| 12/I02 | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test |
| 12/I03 | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                        |
| 12/I04 | IEC 61000-4-5 (1995): Surge Immunity Test                                                                  |
| 12/I05 | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields                   |
| 12/I07 | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests             |

#### MIL-STD-462 : Conducted Emissions:

|        |                                    |
|--------|------------------------------------|
| 12/A01 | MIL-STD-462 Method CE01            |
| 12/A04 | MIL-STD-462 Method CE02            |
| 12/A06 | MIL-STD-462 Method CE03            |
| 12/A08 | MIL-STD-462 Method CE04            |
| 12/A10 | MIL-STD-462 Method CE06            |
| 12/A12 | MIL-STD-462 Method CE07            |
| 12/A13 | MIL-STD-462 Version D Method CE101 |
| 12/A14 | MIL-STD-462 Version D Method CE102 |
| 12/A15 | MIL-STD-462 Version D Method CE106 |
| 12/A16 | MIL-STD-461 Version E Method CE101 |
| 12/A17 | MIL-STD-461 Version E Method CE102 |
| 12/A18 | MIL-STD-461 Version E Method CE106 |

#### MIL-STD-462 : Conducted Susceptibility:

|        |                         |
|--------|-------------------------|
| 12/B01 | MIL-STD-462 Method CS01 |
| 12/B02 | MIL-STD-462 Method CS02 |
| 12/B04 |                         |

|        |                                    |
|--------|------------------------------------|
| 12/B05 | MIL-STD-462 Method CS06            |
| 12/B06 | MIL-STD-462 Method CS07            |
| 12/B12 | MIL-STD-462 Version D Method CS101 |
| 12/B13 | MIL-STD-462 Version D Method CS103 |
| 12/B14 | MIL-STD-462 Version D Method CS104 |
| 12/B15 | MIL-STD-462 Version D Method CS105 |
| 12/B17 | MIL-STD-462 Version D Method CS114 |
| 12/B18 | MIL-STD-462 Version D Method CS115 |
| 12/B20 | MIL-STD-461 Version E Method CS101 |
| 12/B21 | MIL-STD-461 Version E Method CS103 |
| 12/B22 | MIL-STD-461 Version E Method CS104 |
| 12/B23 | MIL-STD-461 Version E Method CS105 |
| 12/B25 | MIL-STD-461 Version E Method CS114 |
| 12/B26 | MIL-STD-461 Version E Method CS115 |

#### MIL-STD-462 : Radiated Emissions:

|        |                                    |
|--------|------------------------------------|
| 12/D01 | MIL-STD-462 Method RE01            |
| 12/D02 | MIL-STD-462 Method RE02            |
| 12/D03 | MIL-STD-462 Method RE03            |
| 12/D04 | MIL-STD-462 Version D Method RE101 |
| 12/D05 | MIL-STD-462 Version D Method RE102 |
| 12/D06 | MIL-STD-462 Version D Method RE103 |
| 12/D07 | MIL-STD-461 Version E Method RE101 |
| 12/D08 | MIL-STD-461 Version E Method RE102 |
| 12/D09 | MIL-STD-461 Version E Method RE103 |

#### MIL-STD-462 : Radiated Susceptibility:

|        |                                                                            |
|--------|----------------------------------------------------------------------------|
| 12/E01 | MIL-STD-462 Method RS01                                                    |
| 12/E02 | MIL-STD-462 Method RS02                                                    |
| 12/E03 | MIL-STD-462 Method RS03 (Consult laboratory for field strengths available) |
| 12/E08 | MIL-STD-462 Version D Method RS101                                         |
| 12/E09 | MIL-STD-462 Version D Method RS103                                         |
| 12/E11 | MIL-STD-461 Version E Method RS101                                         |
| 12/E12 | MIL-STD-461 Version E Method RS103                                         |

## NVLAP LAB CODE 200085-0

### Global EMC Standard Tech. Corp.

No. 3, Pau-Tou-Tsuo Valley

Chia-Pau Tsuen, Lin Kou Hsiang

Taipei County

TAIWAN

Contact: Mr. Raymond Chang

Phone: 886-2-26035321

Fax: 886-2-26035325

E-Mail: [GESTEK@MS5.HINET.NET](mailto:GESTEK@MS5.HINET.NET)

### Electromagnetic Compatibility & Telecommunications

Accreditation Valid Through: September 30, 2002

#### NVLAP

Code Designation

#### Emissions Test Methods:

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|         |                                                                                                                             |
|---------|-----------------------------------------------------------------------------------------------------------------------------|
|         | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment |
| 12/F01  | FCC Method - 47 CFR Part 15 - Digital Devices                                                                               |
| 12/F01a | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                         |
| 12/F01b | Radiated Emissions                                                                                                          |
| 12/T51  | AS/NZS 3548                                                                                                                 |

**NVLAP LAB CODE 200087-0****Rogers Labs, Inc.**

4405 W. 259th Terrace  
Louisburg, KS 66053  
Contact: Mr. Scot D. Rogers  
Phone: 913-837-3214  
Fax: 913-837-3214  
E-Mail: rogers@micoks.net

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: March 31, 2002

**NVLAP**

*Code      Designation*

**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

**NVLAP LAB CODE 200088-0****Toshiba/Houston Test Laboratory**

13131 W. Little York Road  
Houston, TX 77041-5807  
Contact: Mr. Willard Gray  
Phone: 713-466-0277  
Fax: 713-466-8773

**Efficiency of Electric Motors**

Accreditation Valid Through: December 31, 2002

**NVLAP**

*Code      Designation*

|        |                    |
|--------|--------------------|
| 24/M01 | IEEE 112, Method B |
|--------|--------------------|

**NVLAP LAB CODE 200090-0****ProScience Analytical Services, Inc.**

22 Cummings Park  
Woburn, MA 01801-2122  
Contact: Mr. Adrian Stanca  
Phone: 781-935-3212  
Fax: 781-932-4857  
E-Mail: PASI96@aol.com  
URL: <http://www.proscience.net>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: December 31, 2002

**NVLAP LAB CODE 200091-0****IBM Rochester EMC Lab**

3605 North Highway 52, Department 515  
Rochester, MN 55901-7829  
Contact: Mr. John S. Maas  
Phone: 507-253-2426  
Fax: 507-253-1317  
E-Mail: johnmaas@us.ibm.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

*Code      Designation*

**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|         |                                                     |
|---------|-----------------------------------------------------|
| 12/F01  | FCC Method - 47 CFR Part 15 - Digital Devices       |
| 12/F01a | Conducted Emissions, Power Lines, 450 KHz to 30 MHz |
| 12/F01b | Radiated Emissions                                  |
| 12/T51  | AS/NZS 3548                                         |

**NVLAP LAB CODE 200092-0****EMCE Engineering, Inc.**

44366 South Grimmer Boulevard  
Fremont, CA 94538-6385  
Contact: Mr. Stephen A. Sawyer  
Phone: 510-490-4307  
Fax: 510-490-3441  
E-Mail: emceengrg@aol.com  
URL: <http://www.emcel.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

*Code      Designation*

**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

**Immunity Test Methods:**

|        |                                                                                                            |
|--------|------------------------------------------------------------------------------------------------------------|
| 12/I01 | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                         |
| 12/I02 | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test |
| 12/I03 | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                        |
| 12/I04 | IEC 61000-4-5 (1995): Surge Immunity Test                                                                  |
| 12/I05 | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields                   |
| 12/I06 | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test                                         |

**Telecommunications Test Methods:**

|         |                                                                                |
|---------|--------------------------------------------------------------------------------|
| 12/CS03 | CS-03                                                                          |
| 12/T01  | Terminal Equipment Network Protection Standards, FCC Method - 47 CFR Part 68 - |

|         |                                                                                                                                                                                                                                            |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         | Analog and Digital                                                                                                                                                                                                                         |
| 12/T01a | 68.302 (Par. c,d,e,f) Environmental simulation; 68.304 Leakage current limit.; 68.306 Hazardous voltage limit.; 68.308 Signal power limit.; 68.310 Longitudinal balance limit.; 68.312 On-hook impedance limit.; 68.314 Billing protection |
| 12/T01b | 68.316 Hearing Aid Compatibility: technical standards                                                                                                                                                                                      |
| 12/T01c | 68.302 Environmental simulation (Par. a,b)                                                                                                                                                                                                 |

**NVLAP LAB CODE 200093-0****UltraTech Engineering Labs Inc.**

3000 Bristol Circle  
Oakville, Ontario L6H 6G4  
CANADA  
Contact: Mr. Victor Kee  
Phone: 905-829-1570  
Fax: 905-829-8050  
E-Mail: [vic@ultratech-labs.com](mailto:vic@ultratech-labs.com)  
URL: <http://www.ultratech-labs.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

**NVLAP**

*Code      Designation*

**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 200094-0****Flextronics Compliance Laboratories**

762 Park Avenue  
Youngsville, NC 27596-9470  
Contact: Mr. Michael Cantwell, P.E.  
Phone: 919-554-0901  
Fax: 919-556-2043  
E-Mail: mike.cantwell@flextronics.com  
URL: <http://www.flextronics.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

*Code      Designation*

**Emissions Test Methods:**

- 12/CIS22 IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

**Immunity Test Methods:**

- 12/I01 IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test
- 12/I02 IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test
- 12/I03 IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test
- 12/I04 IEC 61000-4-5 (1995): Surge Immunity Test
- 12/I05 IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields
- 12/I06 IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test
- 12/I07 IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests

**NVLAP LAB CODE 200096-0****Key Tronic Corp.**

4424 N. Sullivan Road  
P.O. Box 14687  
Spokane, WA 99214-0687  
Contact: Mr. James L. Adams  
Phone: 509-927-5541  
Fax: 509-927-5258  
E-Mail: jadams1@keytronic.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: March 31, 2002

**NVLAP**

*Code      Designation*

**Emissions Test Methods:**

- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

**Immunity Test Methods:**

- 12/I01 IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test
- 12/I03 IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test

**NVLAP LAB CODE 200097-0****PEP Testing Laboratory**

12-3 FL. No. 27-1, Lane 169, Kang Ning St  
Hsi-Chi  
Taipei Hsien  
TAIWAN  
Contact: Mr. Peter Kao  
Phone: 886-2-2692-2097  
Fax: 886-2-2695-6236  
E-Mail: [peplab@ms32.hiner.net](mailto:peplab@ms32.hiner.net)

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

*Code      Designation*

**Emissions Test Methods:**

- 12/CIS14 CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions
- 12/CIS14a EN 55014-1 (1993) with Amendments A1

# INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued

|                               |                                                                                                                               |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
|                               | (1997) & A2 (1999)                                                                                                            |
| 12/CIS14b                     | AS/NZS 1044 (1995)                                                                                                            |
| 12/CIS14c                     | CNS 13783-1                                                                                                                   |
| 12/CIS22                      | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment |
| 12/F01                        | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                 |
| 12/F01a                       | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                           |
| 12/F01b                       | Radiated Emissions                                                                                                            |
| 12/T51                        | AS/NZS 3548                                                                                                                   |
| <b>Immunity Test Methods:</b> |                                                                                                                               |
| 12/I01                        | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                                            |
| 12/I02                        | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test                    |
| 12/I03                        | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                                           |
| 12/I04                        | IEC 61000-4-5 (1995): Surge Immunity Test                                                                                     |
| 12/I05                        | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields                                      |
| 12/I06                        | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test                                                            |
| 12/I07                        | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests                                |

## NVLAP LAB CODE 200098-0

### Nortel Networks BVW Lab

250 Sidney Street  
Belleville, Ontario K8P 3Z3  
CANADA  
Contact: Mrs. Seham Fawzy  
Phone: 613-967-5545  
Fax: 613-967-5417  
E-Mail: sfawzy@nortelnetworks.com

### Electromagnetic Compatibility & Telecommunications

Accreditation Valid Through: December 31, 2002

NVLAP

Code Designation

#### Emissions Test Methods:

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology                                                      |

|                               |                                                                                                            |
|-------------------------------|------------------------------------------------------------------------------------------------------------|
|                               | Equipment                                                                                                  |
| 12/F01                        | FCC Method - 47 CFR Part 15 - Digital Devices                                                              |
| 12/F01a                       | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                        |
| 12/F01b                       | Radiated Emissions                                                                                         |
| 12/T51                        | AS/NZS 3548                                                                                                |
| <b>Immunity Test Methods:</b> |                                                                                                            |
| 12/I01                        | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                         |
| 12/I02                        | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test |
| 12/I03                        | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                        |
| 12/I04                        | IEC 61000-4-5 (1995): Surge Immunity Test                                                                  |
| 12/I05                        | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields                   |
| 12/I06                        | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test                                         |
| 12/I07                        | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests             |

## NVLAP LAB CODE 200099-0

### Spectrum Research & Testing Laboratory, Inc.

No. 101-10, Ling 8, Shan-Tong Li  
Chung-Li, Taoyuan  
TAIWAN  
Contact: Mr. Cheng-Yang Ho  
Phone: 011-886-3-4987684  
Fax: 011-886-3-4986528  
E-Mail: srlab@msl7.hinet.net  
URL: http://www.srlab.com

### Electromagnetic Compatibility & Telecommunications

Accreditation Valid Through: December 31, 2002

NVLAP

Code Designation

#### Emissions Test Methods:

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

12/T51 AS/NZS 3548

**Immunity Test Methods:**

- 12/I01 IEC 61000-4-2 (1995) and Amendment 1  
(1998): Electrostatic Discharge Immunity Test
- 12/I02 IEC 61000-4-3 (1995) and Amendment 1  
(1998): Radiated, Radio-Frequency  
Electromagnetic Field Immunity Test
- 12/I03 IEC 61000-4-4 (1995): Electrical Fast  
Transient/Burst Immunity Test
- 12/I04 IEC 61000-4-5 (1995): Surge Immunity Test
- 12/I05 IEC 61000-4-6 (1996): Immunity to  
Conducted Disturbances, Induced  
Radio-Frequency Fields
- 12/I06 IEC 61000-4-8 (1993): Power Frequency  
Magnetic Field Immunity Test
- 12/I07 IEC 61000-4-11 (1994): Voltage Dips, Short  
Interruptions and Voltage Variations Immunity  
Tests

**NVLAP LAB CODE 200101-0****Advanced Compliance Laboratory**

6 Randolph Way  
Hillsborough, NJ 08844  
Contact: Mr. Wei Li  
Phone: 732-560-9010  
Fax: 732-560-9173  
E-Mail: weili2@juno.com  
URL: <http://www.ac-lab.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: March 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology  
equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology  
equipment, Amendment 1:1995, and  
Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of  
Measurement of Radio Interference  
Characteristics of Information Technology  
Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital  
Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz  
to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

**NVLAP LAB CODE 200102-0****Advance Data Technology Corporation**

No. 47, 14 Ling, Chia Pau Tsuen,  
Lin Kou Hsiang  
Taipei Hsien  
TAIWAN  
Contact: Mr. Harris W. Lai  
Phone: 886-2-26052180  
Fax: 886-2-26052943  
E-Mail: [harris@mail.adt.com.tw](mailto:harris@mail.adt.com.tw)  
URL: <http://www.adt.com.tw>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

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|------|-------------|

**Emissions Test Methods:**

- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology  
equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology  
equipment, Amendment 1:1995, and  
Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of  
Measurement of Radio Interference  
Characteristics of Information Technology  
Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital  
Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz  
to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

**NVLAP LAB CODE 200104-0****Asbestos TEM Laboratories, Inc.**

1016 Greg Street  
Sparks, NV 89431  
Contact: Mr. R. Mark Bailey  
Phone: 510-528-0108  
Fax: 510-528-0109  
E-Mail: [MBaileyASB@aol.com](mailto:MBaileyASB@aol.com)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002



# INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued

## NVLAP LAB CODE 200107-0

### Toshiba Corp., Ome Operations

2-9 Suehiro-cho  
Ome Tokyo 198-8710  
JAPAN  
Contact: Mr. Tokio Kitayoshi  
Phone: 81-428-34-1050  
Fax: 81-428-30-7911  
E-Mail: tokio.kitayoshi@toshiba.co.jp

### Electromagnetic Compatibility & Telecommunications

Accreditation Valid Through: March 31, 2002

#### NVLAP

Code Designation

#### Emissions Test Methods:

- |           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

## NVLAP LAB CODE 200109-0

### A-Pex International Co., Ltd. Yokowa Laboratory

108 Yokowa-cho, Ise-shi  
Mie-ken 516-1106  
JAPAN  
Contact: Mr. Kazunori Nishimura  
Phone: 81-596-39-1485  
Fax: 81-596-39-0232  
E-Mail: nisimura@a-pex.co.jp  
URL: <http://www.a-pex.co.jp>

### Electromagnetic Compatibility & Telecommunications

Accreditation Valid Through: March 31, 2002

#### NVLAP

Code Designation

#### Emissions Test Methods:

- |           |                                                                                                                                                                                                              |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS14  | CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions |
| 12/CIS14a | EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)                                                                                                                                                      |

- |           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS14b | AS/NZS 1044 (1995)                                                                                                                                                     |
| 12/CIS14c | CNS 13783-1                                                                                                                                                            |
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

## NVLAP LAB CODE 200111-0

### TUV Rheinland of North America, Inc.

12 Commerce Road  
Newtown, CT 06470-1607  
Contact: Mr. Timothy M. Dwyer  
Phone: 203-426-0888 x104  
Fax: 203-270-8883  
E-Mail: [tdwyer@us.tuv.com](mailto:tdwyer@us.tuv.com)  
URL: <http://www.us.tuv.com>

### Electromagnetic Compatibility & Telecommunications

Accreditation Valid Through: June 30, 2002

#### NVLAP

Code Designation

#### Emissions Test Methods:

- |           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

#### Immunity Test Methods:

- |        |                                                                                                            |
|--------|------------------------------------------------------------------------------------------------------------|
| 12/I01 | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                         |
| 12/I02 | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test |

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|        |                                                                                                |
|--------|------------------------------------------------------------------------------------------------|
|        | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                            |
| 12/I04 | IEC 61000-4-5 (1995): Surge Immunity Test                                                      |
| 12/I05 | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields       |
| 12/I06 | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test                             |
| 12/I07 | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests |

**Safety Test Methods:**

|        |             |
|--------|-------------|
| 12/T41 | ACA TS-001  |
| 12/T50 | AS/NZS 3260 |

**NVLAP LAB CODE 200112-0****IBM Austin EMC**

11400 Burnet Road, M.S. 4469  
Austin, TX 78758-3493  
Contact: Mr. Jerry W. Scibielski  
Phone: 512-838-5816  
Fax: 512-838-7101  
E-Mail: scib@us.ibm.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

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**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

**Immunity Test Methods:**

|        |                                                                                                            |
|--------|------------------------------------------------------------------------------------------------------------|
| 12/I01 | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                         |
| 12/I02 | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test |
| 12/I03 | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                        |
| 12/I04 | IEC 61000-4-5 (1995): Surge Immunity Test                                                                  |
| 12/I05 | IEC 61000-4-6 (1996): Immunity to                                                                          |

|        |                                                                                                |
|--------|------------------------------------------------------------------------------------------------|
|        | Conducted Disturbances, Induced Radio-Frequency Fields                                         |
| 12/I06 | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test                             |
| 12/I07 | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests |

**NVLAP LAB CODE 200114-0****Cisco Systems, Inc.**

170 West Tasman Drive  
San Jose, CA 95134-1706  
Contact: Ms. Daisy Poon  
Phone: 408-526-7315  
Fax: 408-526-4184  
E-Mail: dpoon@cisco.com  
URL: <http://www.cisco.com>

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|------|-------------|
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**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

**NVLAP LAB CODE 200116-0****Nemko EESI, Inc.**

11696 Sorrento Valley Road, Suite F  
San Diego, CA 92121  
Contact: Mr. John Lavery  
Phone: 858-259-4946  
Fax: 858-259-7170  
E-Mail: [j\\_lavery@eesi.com](mailto:j_lavery@eesi.com)  
URL: <http://www.eesi.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

|          |                                                                           |
|----------|---------------------------------------------------------------------------|
| 12/CIS22 | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance |
|----------|---------------------------------------------------------------------------|

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           | characteristics of information technology equipment                                                                                                                    |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

**NVLAP LAB CODE 200117-0****Universal Compliance Laboratories**

775 B Mabury Road  
San Jose, CA 95133  
Contact: Mr. Bob Cole  
Phone: 408-453-8744  
Fax: 408-453-8747

E-Mail: bob@universalcompliance.com

URL: <http://www.universalcompliance.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: March 31, 2002

**NVLAP**

*Code      Designation*

**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

**NVLAP LAB CODE 200118-0****Electronic Research & Service Organization/ITRI**

R1500 ERSO/ITRI, Bldg. 17, 195-4  
Se. 4, Chung Hsing Road  
Chutung Hsinchu 310  
TAIWAN

Contact: Mr. Paul Y. Liao

Phone: 886-3-5915994

Fax: 886-3-5825720

E-Mail: [pyla@itri.org.tw](mailto:pyla@itri.org.tw)

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: March 31, 2002

**NVLAP**

*Code      Designation*

**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

**NVLAP LAB CODE 200119-0****Garwood Laboratories, Inc.**

565 Porter Way  
Placentia, CA 92870-6454  
Contact: Mr. William Flower  
Phone: 562-949-2727  
Fax: 562-949-8757

E-Mail: [billf@garwoodtestlabs.com](mailto:billf@garwoodtestlabs.com)

URL: <http://www.garwoodtestlabs.com>

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**NVLAP**

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**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference                                                                                                |



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|                               | Characteristics of Information Technology Equipment                                                        |
|-------------------------------|------------------------------------------------------------------------------------------------------------|
| 12/F01                        | FCC Method - 47 CFR Part 15 - Digital Devices                                                              |
| 12/F01a                       | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                        |
| 12/F01b                       | Radiated Emissions                                                                                         |
| 12/T51                        | AS/NZS 3548                                                                                                |
| <b>Immunity Test Methods:</b> |                                                                                                            |
| 12/I01                        | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                         |
| 12/I02                        | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test |
| 12/I03                        | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                        |
| 12/I04                        | IEC 61000-4-5 (1995): Surge Immunity Test                                                                  |
| 12/I05                        | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields                   |
| 12/I06                        | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test                                         |
| 12/I07                        | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests             |

**MIL-STD-462 : Conducted Susceptibility:**

12/B17 MIL-STD-462 Version D Method CS114

**MIL-STD-462 : Radiated Emissions:**

12/D04 MIL-STD-462 Version D Method RE101

**MIL-STD-462 : Radiated Susceptibility:**

12/E08 MIL-STD-462 Version D Method RS101

**NVLAP LAB CODE 200120-0****Chemitox EMC Research, Inc.**14979, Egusa, Sudama-cho, Kitakoma-gun  
Yamanashi-ken 408-0103

JAPAN

Contact: Mr. Chris Grimes

Phone: 81-551-42-4411

Fax: 81-551-20-6002

E-Mail: chris\_grimes@chemitox-emc.co.jp

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: March 31, 2002

NVLAP

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference                                                                                                |

|                               | Characteristics of Information Technology Equipment                                                        |
|-------------------------------|------------------------------------------------------------------------------------------------------------|
| 12/F01                        | FCC Method - 47 CFR Part 15 - Digital Devices                                                              |
| 12/F01a                       | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                        |
| 12/F01b                       | Radiated Emissions                                                                                         |
| 12/T51                        | AS/NZS 3548                                                                                                |
| <b>Immunity Test Methods:</b> |                                                                                                            |
| 12/I01                        | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                         |
| 12/I02                        | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test |
| 12/I03                        | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                        |
| 12/I04                        | IEC 61000-4-5 (1995): Surge Immunity Test                                                                  |
| 12/I05                        | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields                   |
| 12/I06                        | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test                                         |
| 12/I07                        | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests             |

**NVLAP LAB CODE 200121-0****Enterasys Networks Inc.**

486 Amherst Street

P.O. Box 5005

Nashua, NH 03063

Contact: Mr. John Ballew

Phone: 603-337-5222

Fax: 603-337-5142

E-Mail: jballew@enterasys.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: March 31, 2002

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**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   |                                                                                                                                                                        |



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

12/F01b Radiated Emissions  
12/T51 AS/NZS 3548

**NVLAP LAB CODE 200124-0****White Environmental Consultants Inc.**

731 I Street, Suite 201  
Anchorage, AK 99501  
Contact: Mr. David O. Milton.  
Phone: 907-258-8661  
Fax: 907-258-8662  
E-Mail: dmilton@wec-laboratories.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

**NVLAP LAB CODE 200125-0****Paradyne Corporation**

8545 126th Avenue N.  
P.O. Box 2826  
Largo, FL 33773-2826  
Contact: Mr. Peter Walsh  
Phone: 727-530-8381  
Fax: 727-530-2428  
E-Mail: pwalsh@paradyne.com  
URL: <http://www.paradyne.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: March 31, 2002

**NVLAP**

Code Designation

**Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1997: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology  
equipment  
12/F01 FCC Method - 47 CFR Part 15 - Digital  
Devices  
12/F01a Conducted Emissions, Power Lines, 450 KHz  
to 30 MHz  
12/F01b Radiated Emissions  
12/T51 AS/NZS 3548

**Telecommunications Test Methods:**

12/CS03 CS-03  
12/T01 Terminal Equipment Network Protection  
Standards, FCC Method - 47 CFR Part 68 -  
Analog and Digital  
12/T01a 68.302 (Par. c,d,e,f) Environmental simulation;  
68.304 Leakage current limit.; 68.306  
Hazardous voltage limit.; 68.308 Signal power  
limit.; 68.310 Longitudinal balance limit.;  
68.312 On-hook impedance limit.; 68.314  
Billing protection  
12/T01b 68.316 Hearing Aid Compatibility: technical  
standards  
12/T01c 68.302 Environmental simulation (Par. a,b)

**NVLAP LAB CODE 200129-0****AHD**

92723 M-152  
Dowagiac, MI 49047-8824  
Contact: Mr. Edmund (Ted) Chaffee  
Phone: 616-424-7014  
Fax: 616-424-7014  
E-Mail: ahd@locallink.net  
URL: <http://www.ahde.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

Code Designation

**Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1997: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology  
equipment  
12/F01 FCC Method - 47 CFR Part 15 - Digital  
Devices  
12/F01a Conducted Emissions, Power Lines, 450 KHz  
to 30 MHz  
12/F01b Radiated Emissions  
12/T51 AS/NZS 3548

**NVLAP LAB CODE 200130-0****NASA John H. Glenn Research Center at Lewis Field**

21000 Brookpark Road, Mail Stop 6-4  
Cleveland, OH 44135-3191  
Contact: Ms. Priscilla Mobley  
Phone: 216-433-8333  
Fax: 216-433-8719  
E-Mail: priscilla.a.mobley@grc.nasa.gov

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

**NVLAP LAB CODE 200131-0****Environmental Testing and Monitoring Services, Inc.**

2425 Boward Parkway, Suite 107  
Virginia Beach, VA 23454  
Contact: Mr. Scott J. Eggleston  
Phone: 757-498-7873  
Fax: 757-498-7896

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 200132-0****USG Research - Construction Systems****Laboratory**

700 N. Highway 45  
Libertyville, IL 60048-1296  
Contact: Mr. Richard T. Kaczowski  
Phone: 847-970-5255  
Fax: 847-970-5299  
E-Mail: rkaczowski@usg.com

**Acoustical Testing Services**

Accreditation Valid Through: June 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

|        |                 |
|--------|-----------------|
| 08/P03 | ASTM C423       |
| 08/P06 | ASTM E90        |
| 08/P33 | ASTM E1111      |
| 08/P34 | ASTM E1414      |
| 08/P44 | ISO 354         |
| 08/P45 | ISO 140, Part 3 |
| 08/P50 | ISO 140, Part 9 |

**NVLAP LAB CODE 200133-0****Electronics Testing Center, Taiwan**

No.8, Lane 29, Wen-Ming Rd  
Lo-Shan Tsun, Kui-shan Hsiang  
Taoyuan Hsien 333  
TAIWAN

Contact: Mr. Win-Po Tsai  
Phone: 886-03-3276172  
Fax: 886-03-3276188  
E-Mail: winpo@etc.org.tw

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

| Code | Designation |
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**Emissions Test Methods:**

|           |                                                                                                                                                                                                              |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS14  | CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions |
| 12/CIS14a | EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)                                                                                                                                                      |
| 12/CIS14b | AS/NZS 1044 (1995)                                                                                                                                                                                           |
| 12/CIS14c | CNS 13783-1                                                                                                                                                                                                  |
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                                                                |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.                                       |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of                                                                                                                                                                        |

Measurement of Radio Interference  
Characteristics of Information Technology  
Equipment

|         |                                                     |
|---------|-----------------------------------------------------|
| 12/F01  | FCC Method - 47 CFR Part 15 - Digital Devices       |
| 12/F01a | Conducted Emissions, Power Lines, 450 KHz to 30 MHz |
| 12/F01b | Radiated Emissions                                  |
| 12/T51  | AS/NZS 3548                                         |

**Immunity Test Methods:**

|        |                                                                                                            |
|--------|------------------------------------------------------------------------------------------------------------|
| 12/I01 | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                         |
| 12/I02 | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test |
| 12/I03 | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                        |
| 12/I04 | IEC 61000-4-5 (1995): Surge Immunity Test                                                                  |
| 12/I05 | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields                   |
| 12/I06 | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test                                         |
| 12/I07 | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests             |

**NVLAP LAB CODE 200134-0****Marathon Electric - Wausau Engineering Lab.**

100 East Randolph Street  
P.O. Box 8003  
Wausau, WI 54402-8003  
Contact: Mr. Gene Sickler  
Phone: 715-675-3311 x4155  
Fax: 715-675-8032

**Efficiency of Electric Motors**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

|        |                    |
|--------|--------------------|
| 24/M01 | IEEE 112, Method B |
|--------|--------------------|

**NVLAP LAB CODE 200137-0****Philips Electronics Industries (TAIWAN) Ltd.**

5, Tze Chiang 1 Road, Chungli Ind. Park  
P.O. Box 123, Chungli  
Chungli, Taoyuan  
TAIWAN  
Contact: Mr. Ronnie Yang  
Phone: 886-2-454-9862  
Fax: 886-3-454-9887  
E-Mail: ronnie.yang@philips.com

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

*NVLAP**Code      Designation***Emissions Test Methods:**

|          |                                                                                                                               |
|----------|-------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22 | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment |
| 12/F01   | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                 |
| 12/F01a  | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                           |
| 12/F01b  | Radiated Emissions                                                                                                            |
| 12/T51   | AS/NZS 3548                                                                                                                   |

**NVLAP LAB CODE 200138-0****Hewlett Packard, Product Test Lab, San Diego**

16399 W. Bernardo Drive

San Diego, CA 92127-1899

Contact: Mr. Mike Aviano

Phone: 858-655-4478

Fax: 858-655-0374

E-Mail: mike\_aviano@hp.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: March 31, 2002

*NVLAP**Code      Designation***Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

**NVLAP LAB CODE 200139-0****PB Fasteners**

1700 W. 132nd Street

P.O. Box 1157

Gardena, CA 90249-0157

Contact: Mr. Merle Oglesby

Phone: 310-323-6222

Fax: 310-329-4685

**Fasteners & Metals**

Accreditation Valid Through: June 30, 2002

*NVLAP**Code      Designation***Chemical Analysis***Combustion analysis for carbon, sulfur, oxygen, nitrogen, and hydrogen*

FB/1167    SP 34-11

**Dimensional Inspection***Dimensions of fasteners - hexagon and double hexagon (12 point) and spline sockets*

FA/539    SAE AS 870

FA/540    MIL-STD-33787

**External thread parameters - system 21**

FA/379    ANSI/ASME B1.3M

FA/380    FED-STD-H28/20

FA/528    MIL-S-7742

FA/533    SAE AS 8879

FA/628    MIL-S-8879

FA/940    ANSI/ASME B1.2

**External thread parameters - system 22**

FA/381    ANSI/ASME B1.3M

FA/382    FED-STD-H28/20

FA/383    MIL-S-7742

FA/384    MIL-S-8879

FA/534    SAE AS 8879

FA/941    ANSI/ASME B1.2

**External thread parameters - system 23**

FA/385    ANSI/ASME B1.3M

FA/386    FED-STD-H28/20

FA/387    MIL-S-7742

FA/388    MIL-S-8879

FA/535    SAE AS 8879

FB/1169    ANSI/ASME B1.2

**Internal thread parameters - system 21**

FA/391    ANSI/ASME B1.3M

FA/392    FED-STD-H28/20

FA/529    MIL-S-7742

FA/536    SAE AS 8879

FA/629    MIL-S-8879

FA/942    ANSI/ASME B1.2

**Internal thread parameters - system 22**

FA/393    ANSI/ASME B1.3M

FA/394    FED-STD-H28/20

FA/395    MIL-S-7742

FA/396    MIL-S-8879

FA/537    SAE AS 8879



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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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FA/943 ANSI/ASME B1.2

***Internal thread parameters - system 23***

FA/397 ANSI/ASME B1.3M

FA/398 FED-STD-H28/20

FA/399 MIL-S-7742

FA/400 MIL-S-8879

FA/538 SAE AS 8879

FB/1170 ANSI/ASME B1.2

***Surface texture***

FA/439 ANSI/ASME B46.1

***Mechanical and Physical Testing and Inspection******Adhesion of metallic coatings on fasteners***

FA/532 BMS 10-85M Sec. 8.2

FA/541 QQ-P-416 Sec. 4.6.2

FB/1168 DPS 9.28

***Axial tensile strength of full-size threaded fasteners***

FA/271 MIL-STD-1312-8

***Double shear of externally threaded fasteners***

FA/257 MIL-STD-1312-13

***Fatigue of full-size threaded fasteners***

FA/183 MIL-STD-1312-11

***Hydrogen embrittlement (stress durability) of externally threaded fasteners***

FA/176 MIL-STD-1312-5

***Hydrogen embrittlement (stress durability) of internally threaded fasteners***

FA/178 MIL-STD-1312-14

***Magnetic permeability***

FA/215 MIL-I-17214

***Measurement of fastener coating thickness - dimensional change method***

FA/495 MIL-STD-1312-12

***Measurement of fastener coating thickness - eddy-current method***

FA/150 FED TM STD NO. 151 Method 520.1

FA/152 MIL-STD-1312-12

***Measurement of fastener coating thickness - microscopical method***

FA/163 MIL-STD-1312-12

***Microhardness of fasteners***

FA/189 ASTM E384

FA/193 MIL-STD-1312-6

***Permanent set test of self-locking nuts***

FA/109 MIL-N-25027

FA/110 NAS 3350

FB/1160 MIL-N-85729

FB/1161 MIL-N-85730

FB/1209 NASM 8922

FB/1210 NASM 8985

***Recess strength test in both the installation and removal directions***

FA/476 MIL-STD-1312-25

***Reusability test of self-locking internally threaded fasteners***

FA/124 MIL-N-25027

FA/125 NAS 3350

FB/1162 MIL-N-85729

FB/1163 MIL-N-85730

FB/1211 NASM 8922

FB/1212 NASM 8985

***Rockwell hardness of fasteners***

FA/201 MIL-STD-1312-6

***Rockwell superficial hardness of fasteners***

FA/209 MIL-STD-1312-6

***Salt spray testing of fasteners***

FA/166 ASTM B117

FA/168 MIL-STD-1312-1

***Single shear of externally threaded fasteners***

FA/256 MIL-STD-1312-20

***Stress rupture of fasteners***

FA/262 MIL-STD-1312-10

***Tension testing of machined specimens from externally threaded fasteners***

FA/475 ASTM E8

***Test for embrittlement of metallic coated externally threaded fasteners***

FA/525 MIL-STD-1312-5

FB/1166 QQ-P-416

***Wedge tensile strength of full-size threaded fasteners***

FB/1069 D2-2860

***Wrench torque test of externally wrenching nuts of spline and hexagon and double hexagon (1***

FA/141 MIL-N-25027

FA/142 NAS 3350

FB/1164 MIL-N-85729

FB/1165 MIL-N-85730

FB/1213 NASM 8922

FB/1214 NASM 8985

***Yield strength of full-size externally threaded fasteners***

FA/303 MIL-STD-1312-8

FA/593 ASTM E8

***Metallography******Decarburization and case depth measurement in fasteners***

FA/521 ASTM E384

***Determination of grain size of fasteners***

FA/331 ASTM E112

***Macroscopic examination of fasteners by etching***

FA/511 ASTM E340

***Microscopic examination of fasteners by etching***

FA/512 ASTM E407

***Surface discontinuities of externally threaded fasteners***

FA/357 ASTM F788/788M

***Surface discontinuities of internally threaded fasteners***

FA/865 ASTM F812/F812M

***Nondestructive Inspection******Liquid penetrant inspection of fasteners***

FA/527 ASTM E1417

***Magnetic particle inspection of fasteners***

FA/485 ASTM E1444



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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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**NVLAP LAB CODE 200140-0**

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**Inventec Corp. (Taoyuan) EMC Labs**

255, Jen-Ho Road Sec 2, Tachi

Taoyuan

TAIWAN

Contact: Mr. Steve Wang

Phone: 886-3-390-0000

Fax: 886-3-3908052

E-Mail: wang.steve@inventec.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

*NVLAP**Code      Designation***Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment

12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.

12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment

12/F01 FCC Method - 47 CFR Part 15 - Digital Devices

12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz

12/F01b Radiated Emissions

12/T51 AS/NZS 3548

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**NVLAP LAB CODE 200141-0**

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**MAC Fasteners, Inc.**

1110 Enterprise

Ottawa, KS 66067

Contact: Mr. Donald C. Krenkel

Phone: 785-242-8812

Fax: 785-242-4616

**Fasteners & Metals**

Accreditation Valid Through: December 31, 2002

*NVLAP**Code      Designation***Dimensional Inspection****External thread parameters - system 21**

FA/380 FED-STD-H28/20

**External thread parameters - system 22**

FA/382 FED-STD-H28/20

**Mechanical and Physical Testing and Inspection****Adhesion of metallic coatings on fasteners**

FA/541 QQ-P-416 Sec. 4.6.2

**Axial tensile strength of full-size threaded fasteners**

FA/799 NASM 1312-8

**Double shear of externally threaded fasteners**

FA/880 NASM 1312-13

**Intergranular corrosion susceptibility in austenitic stainless steel fasteners - nitric aci**

FA/173 ASTM A262 Sec. 15-21, Practice C

**Measurement of fastener coating thickness - dimensional change method**

FA/874 NASM 1312-12

**Measurement of fastener coating thickness - microscopical method**

FA/873 NASM 1312-12

**Microhardness of fasteners**

FA/877 NASM 1312-6

**Recess strength test in both the installation and removal directions**

FA/886 NASM 1312-25

**Rockwell hardness of fasteners**

FA/878 NASM 1312-6

**Rockwell superficial hardness of fasteners**

FB/1004 NASM 1312-6

**Metallography****Decarburization and case depth measurement in fasteners**

FA/521 ASTM E384

**Determination of grain size of fasteners**

FA/331 ASTM E112

**Macroscopic examination of fasteners by etching**

FA/511 ASTM E340

**Microscopic examination of fasteners by etching**

FA/512 ASTM E407

**Nondestructive Inspection****Liquid penetrant inspection of fasteners**

FA/527 ASTM E1417

**Magnetic particle inspection of fasteners**

FA/485 ASTM E1444

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**NVLAP LAB CODE 200142-0**

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**BAE Systems Controls, Inc. EMI Laboratory**

600 Main Street

Johnson City, NY 13790-1888

Contact: Mr. Paul Heiland

Phone: 607-770-3771

Fax: 607-770-3922

E-Mail: paul.h.heiland.jr@baesystems.com

URL: <http://www.lmcontrolsyste.ms.com>**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

*NVLAP**Code      Designation***MIL-STD-462 : Conducted Emissions:**

12/A01 MIL-STD-462 Method CE01

12/A04 MIL-STD-462 Method CE02

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

12/A06 MIL-STD-462 Method CE03  
12/A08 MIL-STD-462 Method CE04  
12/A12 MIL-STD-462 Method CE07  
12/A13 MIL-STD-462 Version D Method CE101  
12/A14 MIL-STD-462 Version D Method CE102  
12/A16 MIL-STD-461 Version E Method CE101  
12/A17 MIL-STD-461 Version E Method CE102

**MIL-STD-462 : Conducted Susceptibility:**

12/B01 MIL-STD-462 Method CS01  
12/B02 MIL-STD-462 Method CS02  
12/B05 MIL-STD-462 Method CS06  
12/B08 MIL-STD-462 Method CS10  
12/B09 MIL-STD-462 Method CS11  
12/B10 MIL-STD-462 Method CS12  
12/B11 MIL-STD-462 Method CS13  
12/B12 MIL-STD-462 Version D Method CS101  
12/B17 MIL-STD-462 Version D Method CS114  
12/B18 MIL-STD-462 Version D Method CS115  
12/B19 MIL-STD-462 Version D Method CS116  
12/B20 MIL-STD-461 Version E Method CS101  
12/B25 MIL-STD-461 Version E Method CS114  
12/B26 MIL-STD-461 Version E Method CS115  
12/B27 MIL-STD-461 Version E Method CS116

**MIL-STD-462 : Radiated Emissions:**

12/D01 MIL-STD-462 Method RE01  
12/D02 MIL-STD-462 Method RE02  
12/D04 MIL-STD-462 Version D Method RE101  
12/D05 MIL-STD-462 Version D Method RE102  
12/D07 MIL-STD-461 Version E Method RE101  
12/D08 MIL-STD-461 Version E Method RE102

**MIL-STD-462 : Radiated Susceptibility:**

12/E01 MIL-STD-462 Method RS01  
12/E02 MIL-STD-462 Method RS02  
12/E03 MIL-STD-462 Method RS03 (Consult  
laboratory for field strengths available)  
12/E04 MIL-STD-462 Method RS03 employing  
RADHAZ procedures for high level testing  
(Consult laboratory for field strengths  
available)  
12/E07 MIL-STD-462 Method RS06  
12/E08 MIL-STD-462 Version D Method RS101  
12/E09 MIL-STD-462 Version D Method RS103  
12/E11 MIL-STD-461 Version E Method RS101  
12/E12 MIL-STD-461 Version E Method RS103

**NVLAP LAB CODE 200143-0****Ivaco Rolling Mills, Chemistry Laboratory**

Highway 17, P.O. Box 322  
L'Orignal Ontario K0B 1K0  
CANADA  
Contact: Mr. William V. Berry  
Phone: 613-675-4671 x237  
Fax: 613-675-6863  
E-Mail: wberry@ivacorm.com

**Fasteners & Metals**

Accreditation Valid Through: March 31, 2002

**NVLAP**

Code Designation

**Chemical Analysis****Combustion analysis for carbon, sulfur, oxygen,  
nitrogen, and hydrogen**

FA/455 ASTM E1019

**Optical emission spectrochemical analysis**

FA/457 ASTM E415

**NVLAP LAB CODE 200144-0****Dexter Fastener Technologies, Inc.**

2110 Bishop Circle E.  
Dexter, MI 48130  
Contact: Mr. Mike Frazier  
Phone: 734-426-5200  
Fax: 734-426-5870  
E-Mail: mfrazier@dextech.textron.com

**Fasteners & Metals**

Accreditation Valid Through: September 30, 2002

**NVLAP**

Code Designation

**Chemical Analysis****Optical emission spectrochemical analysis**

FA/457 ASTM E415

**Dimensional Inspection****Dimensions of ISO grade A and B fasteners**

FA/589 JIS B1071

**Dimensions of fasteners - straightness**

FA/428 ANSI/ASME B18.2.3.5M

**External thread parameters - ISO**

FA/390 ISO 1502

**External thread parameters - system 21**

FA/379 ANSI/ASME B1.3M

**External thread parameters - system 22**

FA/381 ANSI/ASME B1.3M

**Mechanical and Physical Testing and Inspection****Axial tensile strength of full-size threaded fasteners**

FA/270 ISO 898-1 Sec. 8.2

**Fatigue of full-size threaded fasteners**

FA/182 ISO 3800-1

**Head soundness testing**

FA/614 ISO 898-1 Sec. 8.7

FA/615 JIS B1051 Sec. 4.2.6

**Measurement of fastener coating thickness - magnetic  
methods**

FA/153 ASTM B499

**Measurement of fastener coating thickness -  
microscopical method**

FA/160 ASTM B487

**Microhardness of fasteners**

FA/191 ISO 6507-2

**Proof load of full-size externally threaded fasteners**

FA/228 ISO 898-1 Sec. 8.4

**Rockwell hardness of fasteners**

FA/197 ASTM E18

FA/200 ISO 6508

## INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued

### *Rockwell superficial hardness of fasteners*

FA/205 ASTM E18

### *Salt spray testing of fasteners*

FA/166 ASTM B117

### *Tension testing of machined specimens from externally threaded fasteners*

FA/282 ISO 898-1

### *Torque-tension of full-size threaded fasteners*

FA/576 JIS B1084

### *Total extension at fracture of externally threaded fasteners*

FA/285 ASTM F606 Sec. 3.7

### *Vickers hardness - test forces from 9.807 to 1176 N (1 to 120 kgf)*

FA/571 JIS Z2244

### *Wedge tensile strength of full-size threaded fasteners*

FA/294 ISO 898-1 Sec. 8.5

### *Yield strength of full-size externally threaded fasteners*

FA/298 ASTM F606 Sec. 3.2.4

### *Metallography*

### *Decarburization and case depth measurement in fasteners*

FA/323 ASTM E1077

### *Determination of grain size of fasteners*

FA/331 ASTM E112

### *Macroscopic examination of fasteners by etching*

FA/511 ASTM E340

### *Microscopic examination of fasteners by etching*

FA/512 ASTM E407

### *Surface discontinuities of externally threaded fasteners*

FA/359 ISO 6157-1

## NVLAP LAB CODE 200145-0

### **Neutron Engineering Inc.**

132-1, Lane 329, Sec. 2 Palain Rd Shijir

P.O. Box 1-187, Neihu

Taipei

TAIWAN

Contact: Mr. George Yao

Phone: 886-2-26465426

Fax: 886-2-26466815

E-Mail: g.yao@neutron.com.tw

URL: <http://www.neutron.com.tw>

### **Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

#### *NVLAP*

*Code Designation*

### *Emissions Test Methods:*

12/CIS14 CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions

12/CIS14a EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)

12/CIS14b AS/NZS 1044 (1995)

12/CIS14c CNS 13783-1

12/CIS22 IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment

12/F01 FCC Method - 47 CFR Part 15 - Digital Devices

12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz

12/F01b Radiated Emissions

12/T51 AS/NZS 3548

## NVLAP LAB CODE 200147-0

### **Electro Magnetic Test, Inc.**

1547 Plymouth Street

Mountain View, CA 94043

Contact: Mr. Jay Gandhi

Phone: 650-965-4000

Fax: 650-965-3000

E-Mail: Jgemt@aol.com

URL: <http://www.emtllab.com>

### **Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: March 31, 2002

#### *NVLAP*

*Code Designation*

### *Emissions Test Methods:*

12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment

12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.

12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment

12/F01 FCC Method - 47 CFR Part 15 - Digital Devices

12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz

12/F01b Radiated Emissions

12/T51 AS/NZS 3548

### *Immunity Test Methods:*

12/I01 IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test

12/I02 IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency

Electromagnetic Field Immunity Test

12/I03 IEC 61000-4-4 (1995): Electrical Fast

Transient/Burst Immunity Test

12/I04 IEC 61000-4-5 (1995): Surge Immunity Test

12/I05 IEC 61000-4-6 (1996): Immunity to

Conducted Disturbances, Induced

Radio-Frequency Fields



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

12/I07 IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests

**Telecommunications Test Methods:**

12/CS03 CS-03

12/T01 Terminal Equipment Network Protection Standards, FCC Method - 47 CFR Part 68 - Analog and Digital

12/T01a 68.302 (Par. c,d,e,f) Environmental simulation; 68.304 Leakage current limit.; 68.306 Hazardous voltage limit.; 68.308 Signal power limit.; 68.310 Longitudinal balance limit.; 68.312 On-hook impedance limit.; 68.314 Billing protection

12/T01b 68.316 Hearing Aid Compatibility: technical standards

12/T01c 68.302 Environmental simulation (Par. a,b)

**NVLAP LAB CODE 200151-0****Cosmos Corporation**

319 Akeno, Obata-cho  
Watarai-gun Mie 519-0501  
JAPAN  
Contact: Mr. Kay Hamaguchi  
Phone: 81-596-37-0190  
Fax: 81-596-37-3609  
E-Mail: cosmos@mint.or.jp  
URL: <http://www.safetyweb.co.jp>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

*Code Designation*

**Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment

12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.

12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment

12/F01 FCC Method - 47 CFR Part 15 - Digital Devices

12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz

12/F01b Radiated Emissions

12/T51 AS/NZS 3548

**NVLAP LAB CODE 200152-0****InFocus Systems, Inc.**

27700B SE Parkway Avenue  
Wilsonville, OR 97070-9215  
Contact: Mr. Don Rhodes  
Phone: 503-685-8588  
Fax: 503-685-8887  
E-Mail: don.rhodes@infocus.com

**Electromagnetic Compatibility & Telecommunications**

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**NVLAP**

*Code Designation*

**Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment

12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.

12/F01 FCC Method - 47 CFR Part 15 - Digital Devices

12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz

12/F01b Radiated Emissions

12/T51 AS/NZS 3548

**NVLAP LAB CODE 200153-0****MacLean Fasteners - QC Laboratory**

1000 Allanson Road  
Mundelein, IL 60060  
Contact: Mr. Robert Hammersley  
Phone: 847-566-0010 x3568  
Fax: 847-566-2472  
E-Mail: rjh@fastener.macleam-fogg.com

**Fasteners & Metals**

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*Code Designation*

**Dimensional Inspection****Dimensions of ISO grade A and B fasteners**

FA/408 ISO 4759-1

**Dimensions of ISO grade C fasteners**

FA/410 ISO 4759-1

**Dimensions of fasteners - gaging for slotted nuts**

FA/417 ANSI/ASME B18.2.2

FA/418 ANSI/ASME B18.2.4.3M

**Dimensions of fasteners - hexagon and double hexagon (12 point) and spline sockets**

FA/843 ASME/ANSI B18.2.2

FA/945 ANSI B18.2.4.1M



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****Internal thread parameters - ISO**

FA/402 ISO 1502  
FA/948 ANSI/ASME B1.16M

**Internal thread parameters - system 21**

FA/942 ANSI/ASME B1.2  
FA/946 ANSI/ASME B1.16M

**Internal thread parameters - system 22**

FA/943 ANSI/ASME B1.2  
FA/947 ANSI/ASME B1.16M

**Mechanical and Physical Testing and Inspection****Cone proof load of internally threaded fasteners (nuts)**

FA/221 ASTM F606M Sec. 4.3  
FA/951 SAE J995

**Hardness preparation**

FA/464 ASTM F606M

**Measurement of fastener coating thickness - magnetic methods**

FA/155 ASTM E376

**Prevailing torque**

FA/217 IFI-100/107  
FA/218 ISO 2320  
FA/836 Ford WE 950  
FA/839 Ford ES-21000-S100  
FA/954 GM 9092P  
FA/956 Chrysler PF-6180  
FA/957 Chrysler PF-4666  
FA/959 Ford ESS-M1A171-B  
FA/960 Ford WZ 100

**Proof load of full-size externally threaded fasteners**

FA/229 SAE J429 Sec. 5.3  
FA/230 SAE J1216 Sec. 3.3  
FA/467 ASTM F606M Sec. 3.2.1-3.2.3

**Proof load of internally threaded fasteners (nuts)**

FA/237 ASTM F606M Sec. 4.2  
FA/239 ISO 898-2 Sec. 8.1  
FA/241 SAE J995 Sec. 5.1  
FA/242 SAE J1216 Sec. 4.2  
FB/1192 ISO 2320  
FB/1193 Chrysler PF-4666  
FB/1194 Ford ES-21000-S100  
FB/1195 Ford ESS-M1A171-B  
FB/1205 GM 510M  
FB/1206 DaimlerChrysler MS-6179

**Rockwell hardness of fasteners**

FA/197 ASTM E18  
FA/200 ISO 6508  
FA/202 SAE J417

**Rockwell superficial hardness of fasteners**

FA/205 ASTM E18  
FA/208 ISO 1024  
FA/210 SAE J417

**Torque-tension of full-size threaded fasteners**

FA/306 IFI-101  
FA/308 SAE J174  
FA/944 ISO 2320

**Metallography****Decarburization and case depth measurement in fasteners**

FA/323 ASTM E1077  
FA/329 SAE J419  
FA/330 SAE J423

**Microscopic examination of fasteners by etching**

FA/512 ASTM E407  
FA/552 ASTM E3

**Surface discontinuities of internally threaded fasteners**

FA/364 ASTM F812M  
FA/703 SAE J122

**NVLAP LAB CODE 200157-0****Seiko Epson Corporation**

80 Harashinden Hirooka  
Shiojiri-City Nagano 399-0785  
JAPAN

Contact: Mr. Atsushi Shinozaki

Phone: 81 263-52-5094

Fax: 81 263-54-5806

E-Mail: shinozaki.atsushi@exc.epson.co.jp

**Electromagnetic Compatibility & Telecommunications**

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**NVLAP**

Code Designation

**Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment

12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.

12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment

12/F01 FCC Method - 47 CFR Part 15 - Digital Devices

12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz

12/F01b Radiated Emissions

12/T51 AS/NZS 3548

**Immunity Test Methods:**

12/I01 IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test

12/I02 IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency

Electromagnetic Field Immunity Test

12/I03 IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test

12/I04 IEC 61000-4-5 (1995): Surge Immunity Test

12/I05 IEC 61000-4-6 (1996): Immunity to

Conducted Disturbances, Induced Radio-Frequency Fields

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|        |                                                                                                      |
|--------|------------------------------------------------------------------------------------------------------|
| 12/106 | IEC 61000-4-8 (1993): Power Frequency<br>Magnetic Field Immunity Test                                |
| 12/107 | IEC 61000-4-11 (1994): Voltage Dips, Short<br>Interruptions and Voltage Variations Immunity<br>Tests |

**NVLAP LAB CODE 200158-0****San Shing Hardware Works Co., Ltd. Test  
Laboratory**

Test Laboratory  
355-6,1F, Chung Shan Rd Section 3, kui-Jen  
Tainan  
TAIWAN  
Contact: Mr. Jason Yuan  
Phone: 886-6-2306611 x312  
Fax: 886-6-2306000  
E-Mail: jcg@sanshing.com.tw

**Fasteners & Metals**

Accreditation Valid Through: June 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Chemical Analysis****Optical emission spectrochemical analysis**

|        |           |
|--------|-----------|
| FA/457 | ASTM E415 |
|--------|-----------|

**Dimensional Inspection****Dimensions of fasteners - flange screw heads and flange  
nuts**

|        |                |
|--------|----------------|
| FA/566 | IFI D21 p. D21 |
|--------|----------------|

**Dimensions of fasteners - gaging for slotted nuts**

|        |                   |
|--------|-------------------|
| FA/417 | ANSI/ASME B18.2.2 |
|--------|-------------------|

**External thread parameters - ISO**

|         |              |
|---------|--------------|
| FB/1216 | ANSI B18.2.1 |
|---------|--------------|

**External thread parameters - system 21**

|        |                 |
|--------|-----------------|
| FA/379 | ANSI/ASME B1.3M |
|--------|-----------------|

|        |                |
|--------|----------------|
| FA/940 | ANSI/ASME B1.2 |
|--------|----------------|

**External thread parameters - system 22**

|        |                 |
|--------|-----------------|
| FA/381 | ANSI/ASME B1.3M |
|--------|-----------------|

|        |                |
|--------|----------------|
| FA/941 | ANSI/ASME B1.2 |
|--------|----------------|

**Internal thread parameters - ISO**

|        |                   |
|--------|-------------------|
| FA/953 | ANSI/ASME B18.2.2 |
|--------|-------------------|

**Internal thread parameters - system 21**

|        |                 |
|--------|-----------------|
| FA/391 | ANSI/ASME B1.3M |
|--------|-----------------|

|        |                |
|--------|----------------|
| FA/942 | ANSI/ASME B1.2 |
|--------|----------------|

**Internal thread parameters - system 22**

|        |                 |
|--------|-----------------|
| FA/393 | ANSI/ASME B1.3M |
|--------|-----------------|

|        |                |
|--------|----------------|
| FA/943 | ANSI/ASME B1.2 |
|--------|----------------|

**Mechanical and Physical Testing and Inspection****Axial tensile strength of full-size threaded fasteners**

|        |                            |
|--------|----------------------------|
| FA/266 | ASTM F606 Sec. 3.4.1-3.4.3 |
|--------|----------------------------|

|        |                             |
|--------|-----------------------------|
| FA/267 | ASTM F606M Sec. 3.4.1-3.4.3 |
|--------|-----------------------------|

|        |                    |
|--------|--------------------|
| FA/270 | ISO 898-1 Sec. 8.2 |
|--------|--------------------|

|        |          |
|--------|----------|
| FA/273 | SAE J429 |
|--------|----------|

**Clamp load test**

|        |          |
|--------|----------|
| FA/558 | ISO 2320 |
|--------|----------|

|        |                  |
|--------|------------------|
| FA/559 | DIN 267, Part 15 |
|--------|------------------|

**Cone proof load of internally threaded fasteners (nuts)**

|        |                    |
|--------|--------------------|
| FA/220 | ASTM F606 Sec. 4.3 |
|--------|--------------------|

|        |                     |
|--------|---------------------|
| FA/221 | ASTM F606M Sec. 4.3 |
|--------|---------------------|

**Embrittlement test of washers**

|        |          |
|--------|----------|
| FA/315 | SAE J238 |
|--------|----------|

**Measurement of fastener coating thickness - X-ray  
methods**

|        |           |
|--------|-----------|
| FA/556 | ASTM B568 |
|--------|-----------|

**Measurement of fastener coating thickness - eddy-current  
method**

|        |           |
|--------|-----------|
| FA/149 | ASTM E376 |
|--------|-----------|

**Measurement of fastener coating thickness - weight of  
coating**

|        |          |
|--------|----------|
| FA/164 | ASTM A90 |
|--------|----------|

**Microhardness of fasteners**

|        |           |
|--------|-----------|
| FA/189 | ASTM E384 |
|--------|-----------|

**Prevailing torque**

|        |             |
|--------|-------------|
| FA/217 | IFI-100/107 |
|--------|-------------|

|        |          |
|--------|----------|
| FA/218 | ISO 2320 |
|--------|----------|

|        |                  |
|--------|------------------|
| FA/557 | DIN 267, Part 15 |
|--------|------------------|

**Proof load of full-size externally threaded fasteners**

|        |                            |
|--------|----------------------------|
| FA/226 | ASTM F606 Sec. 3.2.1-3.2.3 |
|--------|----------------------------|

|        |                    |
|--------|--------------------|
| FA/228 | ISO 898-1 Sec. 8.4 |
|--------|--------------------|

|        |          |
|--------|----------|
| FA/229 | SAE J429 |
|--------|----------|

|        |                             |
|--------|-----------------------------|
| FA/467 | ASTM F606M Sec. 3.2.1-3.2.3 |
|--------|-----------------------------|

**Proof load of internally threaded fasteners (nuts)**

|        |                    |
|--------|--------------------|
| FA/236 | ASTM F606 Sec. 4.2 |
|--------|--------------------|

|        |                     |
|--------|---------------------|
| FA/237 | ASTM F606M Sec. 4.2 |
|--------|---------------------|

|        |                    |
|--------|--------------------|
| FA/239 | ISO 898-2 Sec. 8.1 |
|--------|--------------------|

|        |                   |
|--------|-------------------|
| FA/241 | SAE J995 Sec. 5.1 |
|--------|-------------------|

|         |          |
|---------|----------|
| FB/1192 | ISO 2320 |
|---------|----------|

|         |             |
|---------|-------------|
| FB/1215 | IFI-100/107 |
|---------|-------------|

**Rockwell hardness of fasteners**

|        |          |
|--------|----------|
| FA/197 | ASTM E18 |
|--------|----------|

**Rockwell superficial hardness of fasteners**

|        |          |
|--------|----------|
| FA/205 | ASTM E18 |
|--------|----------|

**Salt spray testing of fasteners**

|        |           |
|--------|-----------|
| FA/166 | ASTM B117 |
|--------|-----------|

**Torque-tension of full-size threaded fasteners**

|        |         |
|--------|---------|
| FA/306 | IFI-101 |
|--------|---------|

**Total extension at fracture of externally threaded  
fasteners**

|        |                    |
|--------|--------------------|
| FA/285 | ASTM F606 Sec. 3.7 |
|--------|--------------------|

|        |                     |
|--------|---------------------|
| FA/286 | ASTM F606M Sec. 3.7 |
|--------|---------------------|

**Vickers hardness - test forces from 9.807 to 1176 N (1 to  
120 kgf)**

|        |          |
|--------|----------|
| FA/492 | ASTM E92 |
|--------|----------|

**Wedge tensile strength of full-size threaded fasteners**

|        |                    |
|--------|--------------------|
| FA/290 | ASTM F606 Sec. 3.5 |
|--------|--------------------|

|        |                     |
|--------|---------------------|
| FA/291 | ASTM F606M Sec. 3.5 |
|--------|---------------------|

|        |                    |
|--------|--------------------|
| FA/294 | ISO 898-1 Sec. 8.5 |
|--------|--------------------|

|        |          |
|--------|----------|
| FA/468 | SAE J429 |
|--------|----------|

**Metallography****Decarburization and case depth measurement in  
fasteners**

|        |            |
|--------|------------|
| FA/323 | ASTM E1077 |
|--------|------------|

|        |         |
|--------|---------|
| FA/561 | ASTM E3 |
|--------|---------|

|        |          |
|--------|----------|
| FA/562 | ASTM G79 |
|--------|----------|

## INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued

### *Surface discontinuities of externally threaded fasteners*

FA/357 ASTM F788/788M

### *Surface discontinuities of internally threaded fasteners*

FA/865 ASTM F812/F812M

#### NVLAP LAB CODE 200162-0

### **United States Technologies, Inc.**

3505 Francis Circle

Alpharetta, GA 30004

Contact: Mr. Tim Johnson

Phone: 770-740-0717

Fax: 770-740-1508

E-Mail: [tjohnson@USTech-lab.com](mailto:tjohnson@USTech-lab.com)

URL: <http://www.ustech-lab.com>

### **Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

#### *NVLAP*

| Code | Designation |
|------|-------------|
|------|-------------|

#### *Emissions Test Methods:*

|          |                                                                                                                               |
|----------|-------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22 | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment |
|----------|-------------------------------------------------------------------------------------------------------------------------------|

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|           |                                                                                                                             |
|-----------|-----------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment |
|-----------|-----------------------------------------------------------------------------------------------------------------------------|

|        |                                               |
|--------|-----------------------------------------------|
| 12/F01 | FCC Method - 47 CFR Part 15 - Digital Devices |
|--------|-----------------------------------------------|

|         |                                                     |
|---------|-----------------------------------------------------|
| 12/F01a | Conducted Emissions, Power Lines, 450 KHz to 30 MHz |
|---------|-----------------------------------------------------|

|         |                    |
|---------|--------------------|
| 12/F01b | Radiated Emissions |
|---------|--------------------|

|        |             |
|--------|-------------|
| 12/T51 | AS/NZS 3548 |
|--------|-------------|

#### *Immunity Test Methods:*

|        |                                                                                    |
|--------|------------------------------------------------------------------------------------|
| 12/I01 | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test |
|--------|------------------------------------------------------------------------------------|

|        |                                                                        |
|--------|------------------------------------------------------------------------|
| 12/I02 | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency |
|--------|------------------------------------------------------------------------|

|  |                                     |
|--|-------------------------------------|
|  | Electromagnetic Field Immunity Test |
|--|-------------------------------------|

|        |                                                                     |
|--------|---------------------------------------------------------------------|
| 12/I03 | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test |
|--------|---------------------------------------------------------------------|

|        |                                           |
|--------|-------------------------------------------|
| 12/I04 | IEC 61000-4-5 (1995): Surge Immunity Test |
|--------|-------------------------------------------|

|        |                                   |
|--------|-----------------------------------|
| 12/I05 | IEC 61000-4-6 (1996): Immunity to |
|--------|-----------------------------------|

|  |                                 |
|--|---------------------------------|
|  | Conducted Disturbances, Induced |
|--|---------------------------------|

|  |                        |
|--|------------------------|
|  | Radio-Frequency Fields |
|--|------------------------|

|        |                                       |
|--------|---------------------------------------|
| 12/I06 | IEC 61000-4-8 (1993): Power Frequency |
|--------|---------------------------------------|

|  |                              |
|--|------------------------------|
|  | Magnetic Field Immunity Test |
|--|------------------------------|

|        |                                                                                                |
|--------|------------------------------------------------------------------------------------------------|
| 12/I07 | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests |
|--------|------------------------------------------------------------------------------------------------|

#### *Telecommunications Test Methods:*

|        |                                       |
|--------|---------------------------------------|
| 12/T01 | Terminal Equipment Network Protection |
|--------|---------------------------------------|

Standards, FCC Method - 47 CFR Part 68 -

Analog and Digital

|         |                                                 |
|---------|-------------------------------------------------|
| 12/T01a | 68.302 (Par. c,d,e,f) Environmental simulation; |
|---------|-------------------------------------------------|

|  |                                       |
|--|---------------------------------------|
|  | 68.304 Leakage current limit.; 68.306 |
|--|---------------------------------------|

|  |                                               |
|--|-----------------------------------------------|
|  | Hazardous voltage limit.; 68.308 Signal power |
|--|-----------------------------------------------|

|  |                                             |
|--|---------------------------------------------|
|  | limit.; 68.310 Longitudinal balance limit.; |
|--|---------------------------------------------|

|  |                                         |
|--|-----------------------------------------|
|  | 68.312 On-hook impedance limit.; 68.314 |
|--|-----------------------------------------|

|  |                    |
|--|--------------------|
|  | Billing protection |
|--|--------------------|

|         |                                                       |
|---------|-------------------------------------------------------|
| 12/T01b | 68.316 Hearing Aid Compatibility: technical standards |
|---------|-------------------------------------------------------|

|         |                                            |
|---------|--------------------------------------------|
| 12/T01c | 68.302 Environmental simulation (Par. a,b) |
|---------|--------------------------------------------|

#### NVLAP LAB CODE 200163-0

### **Ricoh Company, Ltd. Ohmori EMC Center**

3-6, Naka-magome 1-Chome Ohta-ku

Tokyo 143-8555

JAPAN

Contact: Mr. Masashi Odawara

Phone: 81-3-3776-6281

Fax: 81-3-3777-8317

E-Mail: [masashi.odawara@nts.ricoh.co.jp](mailto:masashi.odawara@nts.ricoh.co.jp)

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#### *Emissions Test Methods:*

|          |                                                                                                                               |
|----------|-------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22 | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment |
|----------|-------------------------------------------------------------------------------------------------------------------------------|

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|        |                                               |
|--------|-----------------------------------------------|
| 12/F01 | FCC Method - 47 CFR Part 15 - Digital Devices |
|--------|-----------------------------------------------|

|         |                                                     |
|---------|-----------------------------------------------------|
| 12/F01a | Conducted Emissions, Power Lines, 450 KHz to 30 MHz |
|---------|-----------------------------------------------------|

|         |                    |
|---------|--------------------|
| 12/F01b | Radiated Emissions |
|---------|--------------------|

|        |             |
|--------|-------------|
| 12/T51 | AS/NZS 3548 |
|--------|-------------|

#### NVLAP LAB CODE 200166-0

### **O & K Company Limited, Osaka Test Center**

8-81, Nakajima 2-Chome, Nishiyodogawa-Ku

Osaka-Shi 555-0041

JAPAN

Contact: Mr. Takao Hosokawa

Phone: 06-6471-0110

Fax: 06-6472-0554

E-Mail: [osaka@o-and-k.co.jp](mailto:osaka@o-and-k.co.jp)

URL: <http://www.o-and-k.co.jp>

### **Fasteners & Metals**

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|------|-------------|

### **Chemical Analysis**



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****Optical emission spectrochemical analysis**

FA/457 ASTM E415

**NVLAP LAB CODE 200167-0****Bay Area Compliance Laboratory Corp.**

230 Commercial Street, Suite 2

Sunnyvale, CA 94085

Contact: Mr. John Y. Chan

Phone: 408-732-9162

Fax: 408-732-9164

E-Mail: [Johnc@baclcorp.com](mailto:Johnc@baclcorp.com)URL: <http://www.baclcorp.com>**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

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Code Designation

**Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment

12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.

12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment

12/F01 FCC Method - 47 CFR Part 15 - Digital Devices

12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz

12/F01b Radiated Emissions

12/T51 AS/NZS 3548

**Safety Test Methods:**

12/T41 ACA TS-001

12/T50 AS/NZS 3260

**Telecommunications Test Methods:**

12/CS03 CS-03

12/T01 Terminal Equipment Network Protection Standards, FCC Method - 47 CFR Part 68 - Analog and Digital

12/T01a 68.302 (Par. c,d,e,f) Environmental simulation; 68.304 Leakage current limit.; 68.306 Hazardous voltage limit.; 68.308 Signal power limit.; 68.310 Longitudinal balance limit.; 68.312 On-hook impedance limit.; 68.314 Billing protection

12/T01b 68.316 Hearing Aid Compatibility: technical standards

12/T01c 68.302 Environmental simulation (Par. a,b)

12/T42 ACA TS-002

12/T44 ACA TS-004

12/T45 ACA TS-006

**Energy Efficient Lighting Products**

Accreditation Valid Through: September 30, 2002

**NVLAP**

Code Designation

**Color Measurements**

22/C01 IES LM-58

**Electrical Measurements**

22/E01 IES LM-9

22/E02 IES LM-45

22/E04 IES LM-66

22/E05 ANSI-C78.375

**Life Tests**

22/L01 IES LM-40

22/L04 IES LM-65

**Photometric Measurements**

22/P03a IES LM-45 (Total Flux)

22/P05a IES LM-66 (Total Flux)

**NVLAP LAB CODE 200169-0****Kobelco Research Institute, Inc. Stock Company**

2 Nadahama-Higashimachi, Nada-ku

Kobe 657-0863

JAPAN

Contact: Mr. Morifumi Nakamura

Phone: 81-78-882-8058

Fax: 81-78-882-8211

**Fasteners & Metals**

Accreditation Valid Through: June 30, 2002

**NVLAP**

Code Designation

**Chemical Analysis***Combustion analysis for carbon, sulfur, oxygen, nitrogen, and hydrogen*

FA/586 JIS G1211

FA/587 JIS G1215

**Optical emission spectrochemical analysis**

FA/588 JIS G1253

**Solution chemical analysis**

FA/585 JIS G1258

**NVLAP LAB CODE 200171-0****Leland-Powell Fasteners, Inc. Fastener Testing Laboratory**

8160 Highway 45 South

Martin, TN 38237

Contact: Mr. Jason Danner

Phone: 901-587-3106

Fax: 901-587-9613

E-Mail: [jason@lpf.net](mailto:jason@lpf.net)**Fasteners & Metals**

Accreditation Valid Through: December 31, 2002

**NVLAP**

Code Designation

**Dimensional Inspection**



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued*****Dimensions of fasteners - straightness***

FA/754 IFI 138

***Dimensions of general purpose fasteners and high-volume machine assembly fasteners***

FA/404 ANSI/ASME B18.18.2M

***Dimensions of special purpose fasteners and fasteners for highly specialized engineered ap***

FA/405 ANSI/ASME B18.18.3M

***External thread parameters - system 22***

FA/381 ANSI/ASME B1.3M

***Mechanical and Physical Testing and Inspection******Axial tensile strength of full-size threaded fasteners***

FA/273 SAE J429

FA/752 SAE J82

FB/1224 SAE J1224

***Drive test***

FA/248 SAE J81

FA/750 SAE J933

FB/1219 SAE J1237

***Ductility test of thread rolling and self-drilling tappings screws***

FA/250 SAE J81

FB/1220 SAE J1237

***Hydrogen embrittlement (stress durability) of externally threaded fasteners***

FA/709 SAE J81 Sec. 3.9

***Measurement of fastener coating thickness - eddy-current method***

FA/149 ASTM E376

***Proof load of full-size externally threaded fasteners***

FA/229 SAE J429 Sec. 5.3

FA/230 SAE J1216 Sec. 3.3

***Proof torque test***

FA/251 SAE J81

FB/1180 SAE J429

FB/1222 SAE J1237

***Rockwell hardness of fasteners***

FA/202 SAE J417

***Rockwell superficial hardness of fasteners***

FA/210 SAE J417

***Torque-tension of full-size threaded fasteners***

FA/308 SAE J174

FB/1181 SAE J1701

***Torsional strength test of thread rolling and self-drilling tappings screws***

FA/254 SAE J81

FA/751 SAE J933

FB/1223 SAE J1223

***Wedge tensile strength of full-size threaded fasteners***

FA/468 SAE J429 Sec. 5.5

FA/753 SAE J82

**NVLAP LAB CODE 200172-0****International Technology Company (ITC)**

9959 Calaveras Road

P.O. Box 543

Sunol, CA 94586-0543

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Fax: 925-862-9013

E-Mail: itcemc@aol.com

URL: <http://www.itcemc.com>**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

Code Designation

**Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment

12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.

12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment

12/F01 FCC Method - 47 CFR Part 15 - Digital Devices

12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz

12/F01b Radiated Emissions

12/T51 AS/NZS 3548

**Telecommunications Test Methods:**

12/CS03 CS-03

12/T01 Terminal Equipment Network Protection Standards, FCC Method - 47 CFR Part 68 - Analog and Digital

12/T01a 68.302 (Par. c,d,e,f) Environmental simulation; 68.304 Leakage current limit.; 68.306 Hazardous voltage limit.; 68.308 Signal power limit.; 68.310 Longitudinal balance limit.; 68.312 On-hook impedance limit.; 68.314 Billing protection

12/T01b 68.316 Hearing Aid Compatibility: technical standards

12/T01c 68.302 Environmental simulation (Par. a,b)

**NVLAP LAB CODE 200174-0**
**Training Research Co., Ltd.**

2, Lane 194, Huan-Ho Street Hsichih

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TAIWAN

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Phone: 886-2-2693-5155

Fax: 886-2-2693-4440

E-Mail: report@trclab.com.tw

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**Emissions Test Methods:**

|           |                                                                                                                               |
|-----------|-------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment   |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                 |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                           |
| 12/F01b   | Radiated Emissions                                                                                                            |
| 12/T51    | AS/NZS 3548                                                                                                                   |

**NVLAP LAB CODE 200175-0**
**Ohtama Co., Ltd. Yamanashi EMC Test Site**

1661 Oshuku Asigawa Higashi-Yatsushiro

Yamanashi

JAPAN

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Phone: 81-552-98-2141

Fax: 81-552-98-2125

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|-------------|--------------------|

**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology                                                      |

**Equipment**

|         |                                                     |
|---------|-----------------------------------------------------|
| 12/F01  | FCC Method - 47 CFR Part 15 - Digital Devices       |
| 12/F01a | Conducted Emissions, Power Lines, 450 KHz to 30 MHz |
| 12/F01b | Radiated Emissions                                  |
| 12/T51  | AS/NZS 3548                                         |

**NVLAP LAB CODE 200179-0**
**Fastener Innovation Technology, Inc.**

14601 So. Broadway

Gardena, CA 90248-1811

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Phone: 310-538-1111

Fax: 310-538-0531

E-Mail: JWM@fitfastener.com

 URL: <http://www.fitfastener.com>
**Fasteners & Metals**

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| <i>Code</i> | <i>Designation</i> |
|-------------|--------------------|

**Dimensional Inspection**
**Dimensions of fasteners - flange screw heads and flange nuts**

FA/712 IFI 111

FB/1139 IFI 115

**Dimensions of fasteners - hexagon and double hexagon (12 point) and spline sockets**

FA/411 ANSI/ASME B18.3

FB/1140 ANSI B18.2.1

**Dimensions of fasteners - straightness**

FA/423 ANSI/ASME B18.2.1

**Dimensions of general purpose fasteners and high-volume machine assembly fasteners**

FA/791 NAS 527

FA/854 ANSI/ASME B18.6.4

FB/1137 NAS 9800

**Dimensions of special purpose fasteners and fasteners for highly specialized engineered ap**

FB/1062 BPS-F-67

**External thread parameters - ISO**

FA/594 FED-STD-H28/21

**External thread parameters - system 21**

FA/380 FED-STD-H28/20

FA/628 MIL-S-8879

**External thread parameters - system 22**

FA/382 FED-STD-H28/20

FA/384 MIL-S-8879

**External thread parameters - system 23**

FA/386 FED-STD-H28/20

FA/388 MIL-S-8879

**Surface texture**

FA/439 ANSI/ASME B46.1

**Mechanical and Physical Testing and Inspection**
**Axial tensile strength of full-size threaded fasteners**

FA/271 MIL-STD-1312-8

FA/530 ASTM E8

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued*****Copper sulfate test - test for free iron on the surface of corrosion resistant fasteners***

FA/499 ASTM A380  
FB/1138 SAE-AMS-STD-753

***Double shear of externally threaded fasteners***

FA/257 MIL-STD-1312-13

***Elevated temperature testing capability***

FA/505 MIL-STD-1312-18

***Fatigue of full-size threaded fasteners***

FA/183 MIL-STD-1312-11

***Humidity testing of fasteners***

FA/169 MIL-STD-753 Test Method 101

***Hydrogen embrittlement (stress durability) of externally threaded fasteners***

FA/176 MIL-STD-1312-5

***Magnetic permeability***

FA/214 ASTM A342 Test Method 3

***Measurement of fastener coating thickness - dimensional change method***

FA/495 MIL-STD-1312-12

***Measurement of fastener coating thickness - microscopical method***

FA/160 ASTM B487

FA/163 MIL-STD-1312-12

***Microhardness of fasteners***

FA/189 ASTM E384

FA/193 MIL-STD-1312-6

***Proof load of full-size externally threaded fasteners***

FA/226 ASTM F606 Sec. 3.2.1-3.2.3

***Push out test of floating plate nuts, gang channel nuts, and anchor nuts***

FA/116 MIL-N-25027

***Recess strength test in both the installation and removal directions***

FA/476 MIL-STD-1312-25

***Reusability test of self-locking internally threaded fasteners***

FA/124 MIL-N-25027

***Rockwell hardness of fasteners***

FA/197 ASTM E18

FA/201 MIL-STD-1312-6

***Rockwell superficial hardness of fasteners***

FA/209 MIL-STD-1312-6

***Salt spray testing of fasteners***

FA/166 ASTM B117

FA/168 MIL-STD-1312-1

***Single shear of externally threaded fasteners***

FA/256 MIL-STD-1312-20

***Stress rupture of fasteners***

FA/262 MIL-STD-1312-10

***Tension testing of machined specimens from externally threaded fasteners***

FA/475 ASTM E8

FA/526 MIL-STD-1312-8

***Torque-out test***

FA/133 MIL-N-25027

***Total extension at fracture of externally threaded fasteners***

FA/592 ASTM E8

***Wedge tensile strength of full-size threaded fasteners***

FA/289 ASTM A370

FA/290 ASTM F606 Sec. 3.5

***Wrench torque test of externally wrenching nuts of spline and hexagon and double hexagon (1***

FA/141 MIL-N-25027

***Yield strength of full-size externally threaded fasteners***

FA/593 ASTM E8

***Metallography******Decarburization and case depth measurement in fasteners***

FA/323 ASTM E1077

FB/1047 BPS-F-67

FB/1107 BPS-F-69

***Determination of grain size of fasteners***

FA/331 ASTM E112

***Macroscopic examination of fasteners by etching***

FA/511 ASTM E340

FB/1108 BPS-F-67

FB/1109 BPS-F-69

***Microscopic examination of fasteners by etching***

FA/512 ASTM E407

FB/1118 BPS-F-67

FB/1121 BPS-F-69

***Surface discontinuities of externally threaded fasteners***

FA/357 ASTM F788/788M

***Nondestructive Inspection******Liquid penetrant inspection of fasteners***

FA/371 MIL-STD-6866

FA/527 ASTM E1417

***Magnetic particle inspection of fasteners***

FA/485 ASTM E1444

**NVLAP LAB CODE 200180-0****Fuji Component Parts USA, Inc.**

4115 West 54th Street

Indianapolis, IN 46254

Contact: Mr. Vernon Pratt

Phone: 317-347-4115 231

Fax: 317-347-4123

E-Mail: fcpfuji@ix.netcom.com

**Fasteners & Metals**

Accreditation Valid Through: March 31, 2002

**NVLAP**

Code Designation

**Chemical Analysis****Optical emission spectrochemical analysis**

FA/457 ASTM E415

**Dimensional Inspection****External thread parameters - system 21**

FA/379 ANSI/ASME B1.3M



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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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**Internal thread parameters - system 21**

FA/391 ANSI/ASME B1.3M

**Mechanical and Physical Testing and Inspection****Axial tensile strength of full-size threaded fasteners**

FA/266 ASTM F606 Sec. 3.4.1-3.4.3

**Measurement of fastener coating thickness - coulometric method**

FA/567 ASTM B504

**Microhardness of fasteners**

FA/189 ASTM E384

**Proof load of full-size externally threaded fasteners**

FA/226 ASTM F606 Sec. 3.2.1-3.2.3

**Proof load of internally threaded fasteners (nuts)**

FA/236 ASTM F606 Sec. 4.2

**Rockwell hardness of fasteners**

FA/197 ASTM E18

**Salt spray testing of fasteners**

FA/166 ASTM B117

**Wedge tensile strength of full-size threaded fasteners**

FA/290 ASTM F606 Sec. 3.5

---

**NVLAP LAB CODE 200183-0****California Screw Products**

14957 Gwenchris Court

Paramount, CA 90723-3423

Contact: Mr. Ralph Terrazas

Phone: 562-633-6626

Fax: 562-633-2082

E-Mail: ralph.terrazas@calscrew.net

**Fasteners & Metals**

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**Dimensional Inspection****Dimensions of fasteners - bearing surface squareness**

FB/1197 NAS 4002

FB/1201 NAS 4003

**Dimensions of fasteners - flange screw heads and flange nuts**

FB/1198 NAS 4002

FB/1202 NAS 4003

**Dimensions of fasteners - hexagon and double hexagon (12 point) and spline sockets**

FA/972 NAS 4002

FB/1200 NAS 4003

**Dimensions of fasteners - straightness**

FB/1196 NASM 6812

**Dimensions of general purpose fasteners and high-volume machine assembly fasteners**

FA/403 ANSI/ASME B18.18.1M

FA/404 ANSI/ASME B18.18.2M

FB/1199 NAS 4002

FB/1203 NAS 4003

**External thread parameters - SAE fastener with MJ metric screw threads**

FA/922 ANSI/ASME B1.3M

**External thread parameters - system 22**

FA/381 ANSI/ASME B1.3M

**External thread parameters - system 23**

FA/385 ANSI/ASME B1.3M

**Surface texture**

FA/439 ANSI/ASME B46.1

**Mechanical and Physical Testing and Inspection****Axial tensile strength of full-size threaded fasteners**

FA/799 NASM 1312-8

**Double shear of externally threaded fasteners**

FA/880 NASM 1312-13

**Hydrogen embrittlement (stress durability) of externally threaded fasteners**

FA/875 NASM 1312-5

**Magnetic permeability**

FA/214 ASTM A342 Test Method 3

**Measurement of fastener coating thickness - dimensional change method**

FA/874 NASM 1312-12

**Measurement of fastener coating thickness - eddy-current method**

FA/872 NASM 1312-12

**Measurement of fastener coating thickness - microscopical method**

FA/873 NASM 1312-12

**Microhardness of fasteners**

FA/877 NASM 1312-6

**Recess strength test in both the installation and removal directions**

FA/886 NASM 1312-25

**Rockwell hardness of fasteners**

FA/878 NASM 1312-6

**Single shear of externally threaded fasteners**

FA/879 NASM 1312-20

**Stress rupture of fasteners**

FA/881 NASM 1312-10

**Metallography****Decarburization and case depth measurement in fasteners**

FA/328 SAE J121

FB/1204 CSP W1-0010

**Determination of grain size of fasteners**

FA/331 ASTM E112

**Macroscopic examination of fasteners by etching**

FA/511 ASTM E340

**Microscopic examination of fasteners by etching**

FA/512 ASTM E407

**Surface discontinuities of externally threaded fasteners**

FA/357 ASTM F788/788M



NVLAP LAB CODE 200186-0

**Hitachi Information Technology Co., Ltd.**

456 Sakai, Nakai-machi, Ashigarakami-gun  
Kanagawa 259-0157  
JAPAN  
Contact: Mr. Masanori Yamaji  
Phone: 81-463-88-8090  
Fax: 81-463-87-1723  
E-Mail: myamaji@kanagawa.hitachi.co.jp

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

*NVLAP*

*Code Designation*

**Emissions Test Methods:**

- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

**Immunity Test Methods:**

- 12/I01 IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test
- 12/I02 IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test
- 12/I03 IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test
- 12/I04 IEC 61000-4-5 (1995): Surge Immunity Test
- 12/I05 IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields
- 12/I06 IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test
- 12/I07 IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests

NVLAP LAB CODE 200188-0

**EMSL Analytical, Inc.**

2001 E. 52nd Street  
Indianapolis, IN 46205  
Contact: Mr. Richard Harding  
Phone: 317-803-2997  
Fax: 317-803-3047  
E-Mail: indianapolislaboratory@emsl.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: March 31, 2002

NVLAP LAB CODE 200189-0

**Japan Quality Assurance Organization Safety & EMC Center**

1-21-25, Kinuta, Setagaya-ku  
Tokyo 157-8573  
JAPAN  
Contact: Mr. Tateo Kashiwagi  
Phone: 81-3-3416-0193  
Fax: 81-3-3416-8290  
E-Mail: JQA00091@nifty.ne.jp  
URL: <http://www/jqa.or.jp>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

*NVLAP*

*Code Designation*

**Emissions Test Methods:**

- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 200190-0****Japan Quality Assurance Org. Chubu Testing Center Shikatsu Branch**

53-1, Yamaura, Yakushiji, Shikatsu-cho  
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JAPAN

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Phone: 81-568-23-0023  
Fax: 81-568-23-0116  
E-Mail: JAQ00513@nifty.ne.jp  
URL: <http://www.jqa.or.jp>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

Code      Designation

**Emissions Test Methods:**

- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

**NVLAP LAB CODE 200191-0****Japan Quality Assurance Organization Kita-Kansai Testing Center**

7-7, Ishimaru 1-chome, Minoo-shi  
Osaka 562-0027  
JAPAN

Contact: Mr. Hiroaki Hayashi  
Phone: 81-727-29-2243  
Fax: 81-727-28-6848  
E-Mail: JQA00616@nifty.ne.jp  
URL: <http://www.jqa.or.jp/>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

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Code      Designation

**Emissions Test Methods:**

- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment

- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

**NVLAP LAB CODE 200192-0****Japan Quality Assurance Org. Safety & EMC Ctr. Tsuru EMC Branch**

2096, Ohata Tanbozawa, Tsuru-shi  
Yamanashi 402-0045  
JAPAN

Contact: Mr. Tateo Kashiwagi  
Phone: 81-3-3416-0193  
Fax: 81-3-3416-8290  
E-Mail: JQA00091@nifty.ne.jp  
URL: <http://www.jqa.or.jp>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

Code      Designation

**Emissions Test Methods:**

- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

# INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued

## NVLAP LAB CODE 200198-0

### IBM Yamato EMC Engineering

1623-14, Shimotsuruma  
Yamato Kanagawa 242-8502  
JAPAN  
Contact: Mr. Akihisa Sakurai  
Phone: 81-462-73-2613  
Fax: 81-462-73-7420  
E-Mail: [akihisa@jp.ibm.com](mailto:akihisa@jp.ibm.com)

### Electromagnetic Compatibility & Telecommunications

Accreditation Valid Through: June 30, 2002

#### NVLAP

Code Designation

#### Emissions Test Methods:

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

## NVLAP LAB CODE 200200-0

### IBM RTP PSG EMC Test Labs

3039 Cornwallis Road  
Research Triangle Park, NC 27709-2195  
Contact: Mr. Randy Smith  
Phone: 919-543-0837  
Fax: 919-254-7778  
E-Mail: [smithran@us.ibm.com](mailto:smithran@us.ibm.com)

### Electromagnetic Compatibility & Telecommunications

Accreditation Valid Through: June 30, 2002

#### NVLAP

Code Designation

#### Emissions Test Methods:

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference                                                                                                |

|         |                                                     |
|---------|-----------------------------------------------------|
|         | Characteristics of Information Technology Equipment |
| 12/F01  | FCC Method - 47 CFR Part 15 - Digital Devices       |
| 12/F01a | Conducted Emissions, Power Lines, 450 KHz to 30 MHz |
| 12/F01b | Radiated Emissions                                  |
| 12/T51  | AS/NZS 3548                                         |

## NVLAP LAB CODE 200201-0

### Intertek Testing Services

1365 Adams Court  
Menlo Park, CA 94025  
Contact: Mr. John D. Quigley  
Phone: 650-463-2948  
Fax: 650-463-2910  
E-Mail: [jquigley@itsqs.com](mailto:jquigley@itsqs.com)  
URL: <http://www.etlsemko.com>

### Electromagnetic Compatibility & Telecommunications

Accreditation Valid Through: June 30, 2002

#### NVLAP

Code Designation

#### Emissions Test Methods:

|                                         |                                                                                                                                                                                                                                            |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22                                | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                                                                                              |
| 12/CIS22a                               | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.                                                                     |
| 12/CIS22b                               | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                                                                                                |
| 12/F01                                  | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                                                                                              |
| 12/F01a                                 | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                                                                                        |
| 12/F01b                                 | Radiated Emissions                                                                                                                                                                                                                         |
| 12/T51                                  | AS/NZS 3548                                                                                                                                                                                                                                |
| <b>Telecommunications Test Methods:</b> |                                                                                                                                                                                                                                            |
| 12/CS03                                 | CS-03                                                                                                                                                                                                                                      |
| 12/T01                                  | Terminal Equipment Network Protection Standards, FCC Method - 47 CFR Part 68 - Analog and Digital                                                                                                                                          |
| 12/T01a                                 | 68.302 (Par. c,d,e,f) Environmental simulation; 68.304 Leakage current limit.; 68.306 Hazardous voltage limit.; 68.308 Signal power limit.; 68.310 Longitudinal balance limit.; 68.312 On-hook impedance limit.; 68.314 Billing protection |
| 12/T01b                                 | 68.316 Hearing Aid Compatibility: technical standards                                                                                                                                                                                      |
| 12/T01c                                 | 68.302 Environmental simulation (Par. a,b)                                                                                                                                                                                                 |



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 200202-0****NOVA Machine Products**

18001 Sheldon Road  
Middleburg Heights, OH 44130-2471  
Contact: Mr. David Nenstiel  
Phone: 216-898-8017  
Fax: 216-267-8515  
E-Mail: dnenstiel@novamachine.com  
URL: <http://www.lab@novamachine.com>

**Fasteners & Metals**

Accreditation Valid Through: December 31, 2002

**NVLAP**

Code      Designation

**Chemical Analysis****Optical emission spectrochemical analysis**

FA/457      ASTM E415  
FA/459      ASTM E1086

**Spot test analysis**

FA/748      Alloy Detector Mark II

**Dimensional Inspection****Dimensions of ISO grade A and B fasteners**

FA/738      ISO 4014  
FA/739      ISO 4017  
FA/740      ISO 4032

**Dimensions of ISO grade C fasteners**

FA/741      ISO 4016  
FA/742      ISO 4018  
FA/743      ISO 4034

**Dimensions of fasteners - bearing surface squareness**

FA/745      ANSI B18.2.1  
FA/746      ASME/ANSI B18.2.2  
FA/747      ASME/ANSI B18.3

**Dimensions of fasteners - flange screw heads and flange nuts**

FA/744      ANSI B18.2.1

**Dimensions of fasteners - gaging for slotted nuts**

FA/417      ANSI/ASME B18.2.2

**Dimensions of fasteners - hexagon and double hexagon (12 point) and spline sockets**

FA/411      ANSI/ASME B18.3

**Dimensions of fasteners - straightness**

FA/423      ANSI/ASME B18.2.1

**Dimensions of general purpose fasteners and high-volume machine assembly fasteners**

FA/403      ANSI/ASME B18.18.1M  
FA/404      ANSI/ASME B18.18.2M

**Dimensions of special purpose fasteners and fasteners for highly specialized engineered ap**

FA/405      ANSI/ASME B18.18.3M  
FA/406      ANSI/ASME B18.18.4M

**External thread parameters - ISO**

FA/728      ISO 68  
FA/729      ISO 261  
FA/730      ISO 262  
FA/731      ISO 965-1  
FA/732      ISO 965-2

**External thread parameters - system 21**

FA/379      ANSI/ASME B1.3M

**External thread parameters - system 22**

FA/381      ANSI/ASME B1.3M

**External thread parameters - system 23**

FA/385      ANSI/ASME B1.3M

**Internal thread parameters - ISO**

FA/733      ISO 68  
FA/734      ISO 261  
FA/735      ISO 262  
FA/736      ISO 965-1  
FA/737      ISO 965-2

**Internal thread parameters - system 21**

FA/391      ANSI/ASME B1.3M

**Internal thread parameters - system 22**

FA/393      ANSI/ASME B1.3M

**Internal thread parameters - system 23**

FA/397      ANSI/ASME B1.3M

**Surface texture**

FA/439      ANSI/ASME B46.1

**Mechanical and Physical Testing and Inspection****Axial tensile strength of full-size threaded fasteners**

FA/265      ASTM A370 Sec. A3.2.1.4  
FA/266      ASTM F606 Sec. 3.4.1-3.4.3  
FA/273      SAE J429  
FA/274      SAE J1216  
FA/687      ISO 6892

**Compression load of compressible-washer-type direct tension indicators**

FA/312      ASTM F959

**Cone proof load of internally threaded fasteners (nuts)**

FA/220      ASTM F606 Sec. 4.3

**Embrittlement test of washers**

FA/313      ASME B18.21.1

**Hardness preparation**

FA/482      ASTM F606

**Hydrogen embrittlement (stress durability) of externally threaded fasteners**

FA/176      MIL-STD-1312-5

**Hydrogen embrittlement (stress durability) of internally threaded fasteners**

FA/178      MIL-STD-1312-14

**Proof load of full-size externally threaded fasteners**

FA/225      ASTM A370 Sec. A3.2.1.1-A3.2.1.3  
FA/226      ASTM F606 Sec. 3.2.1-3.2.3  
FA/229      SAE J429 Sec. 5.3  
FA/230      SAE J1216 Sec. 3.3

**Proof load of internally threaded fasteners (nuts)**

FA/235      ASTM A370 Sec. A3.5.1  
FA/236      ASTM F606 Sec. 4.2  
FA/241      SAE J995 Sec. 5.1

**Recovery test of washers**

FA/726      ASME/ANSI B18.21.1

**Rockwell hardness of fasteners**

FA/196      ASTM A370 Sec. 18  
FA/197      ASTM E18  
FA/200      ISO 6508  
FA/202      SAE J417



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****Rockwell superficial hardness of fasteners**

FA/205 ASTM E18  
FA/206 ASTM A370 Sec. 18  
FA/210 SAE J417

**Temper test of lock washers**

FA/319 ASME B18.21.1

**Tension testing of machined specimens from externally threaded fasteners**

FA/278 ASTM A370  
FA/279 ASTM F606 Sec. 3.6  
FA/283 SAE J429  
FA/475 ASTM E8  
FA/580 ISO 6892

**Test for embrittlement of metallic coated externally threaded fasteners**

FA/179 ASTM F606 Sec. 7  
FA/724 ASTM A143

**Torque-tension of full-size threaded fasteners**

FA/307 MIL-STD-1312-15

**Total extension at fracture of externally threaded fasteners**

FA/285 ASTM F606 Sec. 3.7  
FA/725 ISO 6892

**Twist test of lock washers**

FA/321 ASME B18.21.1

**Wedge tensile strength of full-size threaded fasteners**

FA/289 ASTM A370  
FA/290 ASTM F606 Sec. 3.5  
FA/468 SAE J429 Sec. 5.5  
FA/469 SAE J1216 Sec. 3.6  
FA/688 ISO 6892

**Metallography****Surface discontinuities of externally threaded fasteners**

FA/357 ASTM F788/788M  
FA/359 ISO 6157-1  
FA/360 ISO 6157-3  
FA/361 SAE J123

**Surface discontinuities of internally threaded fasteners**

FA/363 ASTM F812  
FA/365 SAE J122  
FA/727 ISO 6157-2

**Nondestructive Inspection****Liquid penetrant inspection of fasteners**

FA/367 ASTM E165  
FA/370 MIL-STD-271  
FA/371 MIL-STD-6866  
FA/372 SAE J426  
FA/527 ASTM E1417

**Magnetic particle inspection of fasteners**

FA/374 ASTM E709  
FA/376 MIL-STD-271  
FA/377 MIL-STD-1949  
FA/378 SAE J420  
FA/485 ASTM E1444  
FB/1208 ASTM A275/A275M

**NVLAP LAB CODE 200203-0****Fuji Buhin Industries Inc.**

997-14 Wakiya-Cho  
Ohta Gunma 373-8501  
JAPAN  
Contact: Mr. Shinji Kanai  
Phone: 276-31-2311  
Fax: 276-31-9621  
E-Mail: info@fbk-fuji.co.jp

**Fasteners & Metals**

Accreditation Valid Through: September 30, 2002

**NVLAP**

Code Designation

**Dimensional Inspection****Internal thread parameters - system 21**

FA/621 JIS B0251  
FA/622 JIS B0252  
FA/623 JIS B1071

**Mechanical and Physical Testing and Inspection****Axial tensile strength of full-size threaded fasteners**

FA/574 JIS B1051 Sec. 4.2.2

**Measurement of fastener coating thickness - coulometric method**

FA/597 JIS H8501

**Microhardness of fasteners**

FA/620 JIS Z2244

**Prevailing torque**

FA/600 JIS B1056

**Proof load of internally threaded fasteners (nuts)**

FA/601 JIS B1052

**Rockwell hardness of fasteners**

FA/572 JIS Z2245

**Salt spray testing of fasteners**

FA/569 JIS Z2371

**Wedge tensile strength of full-size threaded fasteners**

FA/575 JIS B1051 Sec. 4.2.3

**NVLAP LAB CODE 200204-0****EMSL Analytical, Inc.**

19595 NE 10th Ave., Bay C  
N. Miami Beach, FL 33179  
Contact: Ms. Kimberly A. Wallace  
Phone: 305-650-0577  
Fax: 305-650-0578  
E-Mail: kwallace@emsl.com  
URL: <http://www.emsl.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: March 31, 2002

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 200207-0****Kansai Electronic Industry Development Center,  
Ikoma Testing Lab.**

12128 Takayama-cho

Ikoma Nara 630-0101

JAPAN

Contact: Mr. Teru Kawahara

Phone: 0743-78-0283

Fax: 0743-79-1014

URL: <http://www.kec.or.jp/>**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

NVLAP

Code      Designation

**Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1997: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology  
equipment

12/CIS22a IEC/CISPR 22:1993: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology  
equipment, Amendment 1:1995, and  
Amendment 2:1996.

12/CIS22b CNS 13438:1997: Limits and Methods of  
Measurement of Radio Interference  
Characteristics of Information Technology  
Equipment

12/F01 FCC Method - 47 CFR Part 15 - Digital  
Devices

12/F01a Conducted Emissions, Power Lines, 450 KHz  
to 30 MHz

12/F01b Radiated Emissions

12/T51 AS/NZS 3548

**NVLAP LAB CODE 200208-0****Ingersoll Fasteners**

390 Thomas Street

Ingersoll Ontario N5C 3K3

CANADA

Contact: Mr. Alan Palmer

Phone: 519-485-4610

Fax: 519-485-2435

E-Mail: [apalmer@ivaco.com](mailto:apalmer@ivaco.com)**Fasteners & Metals**

Accreditation Valid Through: June 30, 2002

NVLAP

Code      Designation

**Dimensional Inspection****Dimensions of general purpose fasteners and  
high-volume machine assembly fasteners**

FA/404 ANSI/ASME B18.18.2M

**External thread parameters - system 21**

FA/379 ANSI/ASME B1.3M

**External thread parameters - system 22**

FA/381 ANSI/ASME B1.3M

**Internal thread parameters - system 21**

FA/391 ANSI/ASME B1.3M

**Mechanical and Physical Testing and Inspection****Axial tensile strength of full-size threaded fasteners**

FA/273 SAE J429

FA/578 SAE J1216 Sec. 3.5

**Cone proof load of internally threaded fasteners (nuts)**

FA/220 ASTM F606 Sec. 4.3

**Measurement of fastener coating thickness - magnetic  
methods**

FA/153 ASTM B499

**Microhardness of fasteners**

FA/189 ASTM E384

**Proof load of full-size externally threaded fasteners**

FA/229 SAE J429 Sec. 5.3

FA/577 SAE J1216 Sec. 3.3

**Proof load of internally threaded fasteners (nuts)**

FA/241 SAE J995 Sec. 5.1

**Rockwell hardness of fasteners**

FA/197 ASTM E18

**Rockwell superficial hardness of fasteners**

FA/205 ASTM E18

**Salt spray testing of fasteners**

FA/166 ASTM B117

**Tension testing of machined specimens from externally  
threaded fasteners**

FA/278 ASTM A370

**Wedge tensile strength of full-size threaded fasteners**

FA/468 SAE J429 Sec. 5.5

FA/579 SAE J1216 Sec. 3.6

**Metallography****Decarburization and case depth measurement in  
fasteners**

FA/328 SAE J121

**Macroscopic examination of fasteners by etching**

FA/337 SAE J1061

**Microscopic examination of fasteners by etching**

FA/344 SAE J121

**Surface discontinuities of externally threaded fasteners**

FA/362 SAE J1061

**Surface discontinuities of internally threaded fasteners**

FA/363 ASTM F812

NVLAP LAB CODE 200212-0

**Sundram Fasteners Limited (Inhouse test laboratory)**

Padi  
Chennai (Madras), Tamil Nadu 600 050  
INDIA  
Contact: Mr. Sampathkumar Moorthy  
Phone: 91-44-852-1870  
Fax: 91-44-853-5435

**Fasteners & Metals**

Accreditation Valid Through: September 30, 2002

*NVLAP*

*Code      Designation*

**Dimensional Inspection**

*Dimensions of ISO grade A and B fasteners*

FA/408      ISO 4759-1

*Dimensions of ISO grade C fasteners*

FA/410      ISO 4759-1

*Dimensions of fasteners - flange screw heads and flange nuts*

FA/669      ISO 4161

FA/670      ISO 4162

*Dimensions of fasteners - gaging for slotted nuts*

FA/980      ISO 4759-2

*Dimensions of fasteners - straightness*

FA/668      ISO 4759-1

*Dimensions of general purpose fasteners and high-volume machine assembly fasteners*

FA/665      ISO 4759-1

*External thread parameters - ISO*

FA/390      ISO 1502

*External thread parameters - SAE fastener with MJ metric screw threads*

FA/389      SAE MA1566

FA/661      ISO 4759-1

FA/662      ISO 1502

*External thread parameters - system 21*

FA/659      ISO 4759-1

FA/660      ISO 1502

*Internal thread parameters - ISO*

FA/402      ISO 1502

FA/664      ISO 4759-1

*Internal thread parameters - SAE fastener with MJ metric screw threads*

FA/979      ISO 4759-1

*Surface texture*

FB/1207      IS 3073

**Mechanical and Physical Testing and Inspection**

*Axial tensile strength of full-size threaded fasteners*

FA/266      ASTM F606 Sec. 3.4.1-3.4.3

FA/270      ISO 898-1 Sec. 8.2

FA/273      SAE J429

FA/274      SAE J1216

*Brinell hardness of fasteners*

FA/466      ISO 6506

*Cone proof load of internally threaded fasteners (nuts)*

FA/220      ASTM F606 Sec. 4.3

FA/221      ASTM F606M Sec. 4.3

FA/223      SAE J122 Sec. 4.3

*Measurement of fastener coating thickness - X-ray methods*

FA/556      ASTM B568

*Microhardness of fasteners*

FA/657      ASTM E92

*Prevailing torque*

FA/217      IFI-100/107

FA/218      ISO 2320

*Proof load of full-size externally threaded fasteners*

FA/226      ASTM F606 Sec. 3.2.1-3.2.3

FA/228      ISO 898-1 Sec. 8.4

FA/229      SAE J429 Sec. 5.3

FA/230      SAE J1216 Sec. 3.3

FA/467      ASTM F606M Sec. 3.2.1-3.2.3

*Proof load of internally threaded fasteners (nuts)*

FA/236      ASTM F606 Sec. 4.2

FA/237      ASTM F606M Sec. 4.2

FA/239      ISO 898-2 Sec. 8.1

FA/240      ISO 898-6 Sec. 8.1

FA/241      SAE J995 Sec. 5.1

*Rockwell hardness of fasteners*

FA/197      ASTM E18

FA/200      ISO 6508

*Salt spray testing of fasteners*

FA/166      ASTM B117

*Tension testing of machined specimens from externally threaded fasteners*

FA/279      ASTM F606 Sec. 3.6

FA/280      ASTM F606M Sec. 3.6

FA/282      ISO 898-1

FA/283      SAE J429

*Torque-tension of full-size threaded fasteners*

FA/306      IFI-101

FA/308      SAE J174

FA/944      ISO 2320

*Vickers hardness - test forces from 9.807 to 1176 N (1 to 120 kgf)*

FA/658      ISO 6507-1

*Wedge tensile strength of full-size threaded fasteners*

FA/290      ASTM F606 Sec. 3.5

FA/291      ASTM F606M Sec. 3.5

FA/294      ISO 898-1 Sec. 8.5

FA/468      SAE J429 Sec. 5.5

FA/469      SAE J1216 Sec. 3.6

*Yield strength of full-size externally threaded fasteners*

FA/298      ASTM F606 Sec. 3.2.4

FA/300      ASTM F606M Sec. 3.2.4

**Metallography**

*Decarburization and case depth measurement in fasteners*

FA/323      ASTM E1077

FA/328      SAE J121



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|                                                                 |                 |                                                   |
|-----------------------------------------------------------------|-----------------|---------------------------------------------------|
| FA/329                                                          | SAE J419        | (1998): Radiated, Radio-Frequency                 |
| FA/330                                                          | SAE J423        | Electromagnetic Field Immunity Test               |
| <i>Determination of grain size of fasteners</i>                 |                 | 12/I03 IEC 61000-4-4 (1995): Electrical Fast      |
| FA/331                                                          | ASTM E112       | Transient/Burst Immunity Test                     |
| FA/333                                                          | SAE J418        | 12/I04 IEC 61000-4-5 (1995): Surge Immunity Test  |
| <i>Macroscopic examination of fasteners by etching</i>          |                 | 12/I05 IEC 61000-4-6 (1996): Immunity to          |
| FA/334                                                          | ISO 6157-1      | Conducted Disturbances, Induced                   |
| FA/335                                                          | ISO 6157-3      | Radio-Frequency Fields                            |
| FA/336                                                          | SAE J123        | 12/I06 IEC 61000-4-8 (1993): Power Frequency      |
| <i>Surface discontinuities of externally threaded fasteners</i> |                 | Magnetic Field Immunity Test                      |
| FA/357                                                          | ASTM F788/788M  | 12/I07 IEC 61000-4-11 (1994): Voltage Dips, Short |
| FA/361                                                          | SAE J123        | Interruptions and Voltage Variations Immunity     |
| <i>Surface discontinuities of internally threaded fasteners</i> |                 | Tests                                             |
| FA/365                                                          | SAE J122        |                                                   |
| FA/865                                                          | ASTM F812/F812M |                                                   |

**Nondestructive Inspection****Magnetic particle inspection of fasteners**

|        |           |
|--------|-----------|
| FA/374 | ASTM E709 |
| FA/378 | SAE J420  |

**NVLAP LAB CODE 200214-0****Underwriters Laboratories Inc.**

2600 N.W. Lake Road  
Camas, WA 98607-8542  
Contact: Mr. Rick A. Titus  
Phone: 847-272-8800  
Fax: 847-509-6321  
E-Mail: Rick.A.Titus@us.ul.com  
URL: <http://www.ul.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

**Immunity Test Methods:**

|        |                                                                                    |
|--------|------------------------------------------------------------------------------------|
| 12/I01 | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test |
| 12/I02 | IEC 61000-4-3 (1995) and Amendment 1                                               |

**NVLAP LAB CODE 200215-0****Sumitomo Metals (Kokura), Ltd. Quality System Section**

Quality System Section  
1, Konomi-machi, Kokurakita-ku  
Kitakyushu 803-0803  
JAPAN  
Contact: Mr. Masanori Sakamoto  
Phone: 81-93-581-3289  
Fax: 81-93-561-8099

**Fasteners & Metals**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Chemical Analysis****Combustion analysis for carbon, sulfur, oxygen, nitrogen, and hydrogen**

|         |           |
|---------|-----------|
| FA/586  | JIS G1211 |
| FA/587  | JIS G1215 |
| FB/1189 | JIS G1228 |

**Optical emission spectrochemical analysis**

|        |           |
|--------|-----------|
| FA/588 | JIS G1253 |
| FA/681 | JIS G1258 |

**Solution chemical analysis**

|         |           |
|---------|-----------|
| FA/680  | JIS G1227 |
| FB/1182 | JIS G1212 |
| FB/1183 | JIS G1213 |
| FB/1184 | JIS G1214 |
| FB/1185 | JIS G1216 |
| FB/1186 | JIS G1217 |
| FB/1187 | JIS G1218 |
| FB/1188 | JIS G1219 |
| FB/1191 | JIS G1257 |

**X-ray fluorescence (XRF) spectrochemical analysis**

|         |           |
|---------|-----------|
| FB/1190 | JIS G1256 |
|---------|-----------|



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 200216-0****Battelle - Pacific Northwest National Laboratory**

Battelle Boulevard (Mail Stop P7-02)

P.O. Box 999

Richland, WA 99352-4553

Contact: Mr. Bruce A. Rathbone

Phone: 509-376-0917

Fax: 509-373-0167

E-Mail: bruce.rathbone@pnl.gov

URL: <http://www.pnl.gov/eshs/index.html>**Ionizing Radiation Dosimetry**

Accreditation Valid Through: September 30, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeters listed below through employing the Harshaw automatic reader model 8800 and manual reader model 6600.

This facility is accredited to process the following dosimeters by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 and ANSI HPS N13.32-1995 through testing.

Harshaw Card 7776 (15, 15, 6, 15) in a Type 8825 holder for ANSI-N13.11 categories I, II, IIIA, IV, VC, VI, VII, VIII.

Harshaw Combo 7666 (15, 15, 6, 15) in a type 8816 holder for ANSI-N13.11 category VIII.

Harshaw extremity TLD XD-740 (TLD-700) in a finger ring holder for ANSI HPS N13.32 (NIST Handbook 150-4, Table 2) categories I, II, IIIA, IVA, VC.

**NVLAP LAB CODE 200217-0****Tokin EMC Engineering Co., Ltd. Kawasaki Facility**

398, Shiboguchi Takatsu-ku

Kawasaki-city, Kanagawa 213

JAPAN

Contact: Mr. Hiro Shida

Phone: 81-298-37-2400

Fax: 81-298-37-2401

E-Mail: shida@tee.tokin.co.jp

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

*NVLAP**Code      Designation***Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment

12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology

equipment, Amendment 1:1995, and

Amendment 2:1996.

12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment

12/F01 FCC Method - 47 CFR Part 15 - Digital Devices

12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz

12/F01b Radiated Emissions

12/T51 AS/NZS 3548

**NVLAP LAB CODE 200218-0****Tokin EMC Engineering Co., Ltd. Osaka Testing Laboratory**

49, Aza-Miyanowaki, Sakai

Sanda-city, Hyogo 669-14

JAPAN

Contact: Mr. Motoji Nakai

Phone: 81-795-69-1290

Fax: 81-795-69-0079

E-Mail: nakai@tee.tokin.co.jp

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

*NVLAP**Code      Designation***Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment

12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.

12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment

12/F01 FCC Method - 47 CFR Part 15 - Digital Devices

12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz

12/F01b Radiated Emissions

12/T51 AS/NZS 3548

## INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued

### NVLAP LAB CODE 200219-0

#### Tokin EMC Engineering Co., Ltd. Nagoya Testing Laboratory

1684, Nishinoda, Nyugawakami  
Daian-cho, Inabe-gun, Mie 511-0261  
JAPAN

Contact: Mr. Motoji Nakai

Phone: 81-795-69-1290

Fax: 81-795-69-0079

E-Mail: nakai@tee.tokin.co.jp

#### Electromagnetic Compatibility & Telecommunications

Accreditation Valid Through: September 30, 2002

##### NVLAP

Code Designation

##### Emissions Test Methods:

- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

### NVLAP LAB CODE 200220-0

#### SK Tech Co., LTD.

820-2, Wolmoon-Ri, WaBu-up  
Namyangju-si, Kyunggi-Do 472-900  
KOREA

Contact: Mr. Jae-Yeong Hyun

Phone: 82 31 576 2204

Fax: 82 31 576 2205

E-Mail: ktemc@unitel.co.kr

URL: <http://www.skemc.co.kr>

#### Electromagnetic Compatibility & Telecommunications

Accreditation Valid Through: September 30, 2002

##### NVLAP

Code Designation

##### Emissions Test Methods:

- 12/CIS14 CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions
- 12/CIS14a EN 55014-1 (1993) with Amendments A1

(1997) & A2 (1999)

12/CIS14b AS/NZS 1044 (1995)

12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment

12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.

12/F01 FCC Method - 47 CFR Part 15 - Digital Devices

12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz

12/F01b Radiated Emissions

12/T51 AS/NZS 3548

### NVLAP LAB CODE 200221-0

#### Tokin EMC Engineering Co., Ltd. Tsukuba Testing Laboratory

28-1, Aza-Kitahara  
Ohaza- Hanashimashinden  
Tsukuba-city, Ibaraki 305  
JAPAN

Contact: Mr. Hiro Shida

Phone: 81-298-37-2400

Fax: 81-298-37-2401

E-Mail: shida@tee.tokin.co.jp

#### Electromagnetic Compatibility & Telecommunications

Accreditation Valid Through: September 30, 2002

##### NVLAP

Code Designation

##### Emissions Test Methods:

- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

**NVLAP LAB CODE 200222-0**
**NAWC-Aircraft Div. Lakehurst Electromagnetic Interference Lab.**

Highway 547, 355-2, Code 48L500B

Lakehurst, NJ 08733-5100

Contact: Mr. Ralph Kanzler

Phone: 732-323-7051

Fax:

E-Mail: kanslerrw@lakehurst.navy.mil

URL: http://www.lakehurst.navy.mil

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

Code Designation

**MIL-STD-462 : Conducted Emissions:**

|        |                                    |
|--------|------------------------------------|
| 12/A01 | MIL-STD-462 Method CE01            |
| 12/A04 | MIL-STD-462 Method CE02            |
| 12/A06 | MIL-STD-462 Method CE03            |
| 12/A12 | MIL-STD-462 Method CE07            |
| 12/A13 | MIL-STD-462 Version D Method CE101 |
| 12/A16 | MIL-STD-461 Version E Method CE101 |

**MIL-STD-462 : Conducted Susceptibility:**

|        |                         |
|--------|-------------------------|
| 12/B01 | MIL-STD-462 Method CS01 |
| 12/B02 | MIL-STD-462 Method CS02 |
| 12/B05 | MIL-STD-462 Method CS06 |
| 12/B08 | MIL-STD-462 Method CS10 |
| 12/B09 | MIL-STD-462 Method CS11 |

**MIL-STD-462 : Radiated Emissions:**

|        |                         |
|--------|-------------------------|
| 12/D01 | MIL-STD-462 Method RE01 |
| 12/D02 | MIL-STD-462 Method RE02 |

**MIL-STD-462 : Radiated Susceptibility:**

|        |                                                                                                                                        |
|--------|----------------------------------------------------------------------------------------------------------------------------------------|
| 12/E01 | MIL-STD-462 Method RS01                                                                                                                |
| 12/E02 | MIL-STD-462 Method RS02                                                                                                                |
| 12/E04 | MIL-STD-462 Method RS03 employing<br>RADHAZ procedures for high level testing<br>(Consult laboratory for field strengths<br>available) |
| 12/E07 | MIL-STD-462 Method RS06                                                                                                                |

**NVLAP LAB CODE 200229-0**
**Minebea Co., Ltd. Fujisawa Manufacturing Unit**

1-1-1 Karase

Fujisawa, Kanagawa 251-8531

JAPAN

Contact: Mr. Yukio Shimada

Phone: 0466-23-2137

Fax: 0466-23-2173

**Fasteners & Metals**

Accreditation Valid Through: March 31, 2002

**NVLAP**

Code Designation

**Chemical Analysis**
**Combustion analysis for carbon, sulfur, oxygen,  
nitrogen, and hydrogen**

|        |            |
|--------|------------|
| FA/472 | ASTM E1447 |
|--------|------------|

**Dimensional Inspection**
**Dimensions of fasteners - bearing surface squareness**

|        |           |
|--------|-----------|
| FA/649 | JIS B1071 |
|--------|-----------|

**Dimensions of fasteners - hexagon and double hexagon  
(12 point) and spline sockets**

|        |            |
|--------|------------|
| FA/539 | SAE AS 870 |
| FA/790 | SBAC RS680 |

**Dimensions of fasteners - straightness**

|        |           |
|--------|-----------|
| FA/648 | JIS B1071 |
|--------|-----------|

**Dimensions of general purpose fasteners and  
high-volume machine assembly fasteners**

|        |           |
|--------|-----------|
| FA/607 | JIS B1071 |
| FA/791 | NAS 527   |

**External thread parameters - system 21**

|        |                 |
|--------|-----------------|
| FA/379 | ANSI/ASME B1.3M |
| FA/380 | FED-STD-H28/20  |

**External thread parameters - system 22**

|        |                 |
|--------|-----------------|
| FA/381 | ANSI/ASME B1.3M |
| FA/382 | FED-STD-H28/20  |

**External thread parameters - system 23**

|        |                 |
|--------|-----------------|
| FA/385 | ANSI/ASME B1.3M |
| FA/386 | FED-STD-H28/20  |

**Surface texture**

|        |                 |
|--------|-----------------|
| FA/439 | ANSI/ASME B46.1 |
| FA/650 | JIS B1071       |
| FA/771 | BS 1134, Part 1 |

**Mechanical and Physical Testing and Inspection**
**Axial tensile strength of full-size threaded fasteners**

|        |                            |
|--------|----------------------------|
| FA/266 | ASTM F606 Sec. 3.4.1-3.4.3 |
| FA/574 | JIS B1051 Sec. 4.2.2       |
| FA/799 | NASM 1312-8                |

**Double shear of externally threaded fasteners**

|        |              |
|--------|--------------|
| FA/880 | NASM 1312-13 |
|--------|--------------|

**Elevated temperature testing capability**

|         |              |
|---------|--------------|
| FB/1158 | NASM 1312-18 |
|---------|--------------|

**Fatigue of full-size threaded fasteners**

|        |              |
|--------|--------------|
| FA/876 | NASM 1312-11 |
|--------|--------------|

**Hardness preparation**

|        |           |
|--------|-----------|
| FA/482 | ASTM F606 |
|--------|-----------|

**Head soundness testing**

|        |                      |
|--------|----------------------|
| FA/615 | JIS B1051 Sec. 4.2.6 |
|--------|----------------------|

**Humidity testing of fasteners**

|         |             |
|---------|-------------|
| FB/1159 | AMS-QQ-P-35 |
|---------|-------------|

**Measurement of fastener coating thickness - dimensional  
change method**

|        |              |
|--------|--------------|
| FA/874 | NASM 1312-12 |
|--------|--------------|

**Measurement of fastener coating thickness - eddy-current  
method**

|        |           |
|--------|-----------|
| FA/618 | JIS H8501 |
|--------|-----------|

**Measurement of fastener coating thickness -  
microscopical method**

|        |              |
|--------|--------------|
| FA/640 | JIS H8501    |
| FA/873 | NASM 1312-12 |

**Measurement of fastener coating thickness - weight of  
coating**

|        |           |
|--------|-----------|
| FA/619 | JIS H8501 |
|--------|-----------|



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****Microhardness of fasteners**

FA/620 JIS Z2244  
FA/642 JIS B1051 Sec. 4.2.5  
FA/877 NASM 1312-6

**Proof load of full-size externally threaded fasteners**

FA/573 JIS B1051 Sec. 4.2.4

**Recess strength test in both the installation and removal directions**

FA/886 NASM 1312-25

**Rockwell hardness of fasteners**

FA/197 ASTM E18  
FA/572 JIS Z2245  
FA/707 JIS B1051 Sec. 4.2.5  
FA/765 BS EN 10109-1  
FA/878 NASM 1312-6

**Rockwell superficial hardness of fasteners**

FA/205 ASTM E18  
FA/766 BS EN 10109-1  
FB/1004 NASM 1312-6

**Salt spray testing of fasteners**

FA/166 ASTM B117  
FA/569 JIS Z2371  
FB/1032 NASM 1312-1

**Stress rupture of fasteners**

FA/260 ASTM E139  
FA/767 BS 4A 4, Part 1, Sec 3

**Tension testing of machined specimens from externally threaded fasteners**

FA/581 JIS B1051 Sec. 4.2.1  
FA/582 JIS Z2241  
FA/768 BS 4A 4, Part 1, Sec 1

**Wedge tensile strength of full-size threaded fasteners**

FA/290 ASTM F606 Sec. 3.5  
FA/575 JIS B1051 Sec. 4.2.3

**Metallography****Decarburization and case depth measurement in fasteners**

FA/645 JIS B1051  
FB/1157 NASM 1312-6

**Determination of grain size of fasteners**

FA/331 ASTM E112

**Macroscopic examination of fasteners by etching**

FA/511 ASTM E340  
FA/769 AMS 7477  
FA/780 SBAC TS21  
FA/782 SBAC TS22  
FA/783 SBAC TS23  
FA/786 SBAC TS24  
FA/787 SBAC TS25

**Microscopic examination of fasteners by etching**

FA/512 ASTM E407  
FA/770 AMS 7477  
FA/781 SBAC TS21  
FA/784 SBAC TS22  
FA/785 SBAC TS23  
FA/788 SBAC TS24  
FA/789 SBAC TS25

**Surface discontinuities of externally threaded fasteners**

FA/603 JIS B1043  
FA/646 JIS B1041

**Nondestructive Inspection****Liquid penetrant inspection of fasteners**

FA/371 MIL-STD-6866  
FA/527 ASTM E1417

**Magnetic particle inspection of fasteners**

FA/377 MIL-STD-1949  
FA/485 ASTM E1444

**NVLAP LAB CODE 200230-0****Wolverine Plating Corp.**

29456 Groesbeck Highway  
Roseville, MI 48066-1943  
Contact: Mr. Kenneth Wrobel  
Phone: 810-771-5000  
Fax: 810-771-5830  
E-Mail: wolvpltg@aol.com

**Fasteners & Metals**

Accreditation Valid Through: December 31, 2002

**NVLAP**

Code Designation

**Mechanical and Physical Testing and Inspection****Adhesion of metallic coatings on fasteners**

FA/143 ASTM B571

**Measurement of fastener coating thickness - X-ray methods**

FA/556 ASTM B568

**Salt spray testing of fasteners**

FA/166 ASTM B117

**NVLAP LAB CODE 200232-0****LA Testing**

159 Pasadena Avenue  
S. Pasadena, CA 91030  
Contact: Mr. Derrick Tanner  
Phone: 323-254-9960  
Fax: 323-254-9982

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 200234-0****International Standards Laboratory**

No. 120, Lane , 180 San Ho Tsuen  
Hsin Ho Road, Lung-Tan Hsiang  
Tao Yaun County  
TAIWAN  
Contact: Mr. Easy Lai  
Phone: 886-2-2646-2550  
Fax: 886-2-2646-4641  
E-Mail: easy\_lai@wistron.com.tw

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

**NVLAP**

Code      Designation

**Emissions Test Methods:**

|          |                                                                                                                               |
|----------|-------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22 | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment |
| 12/F01   | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                 |
| 12/F01a  | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                           |
| 12/F01b  | Radiated Emissions                                                                                                            |
| 12/T51   | AS/NZS 3548                                                                                                                   |

**NVLAP LAB CODE 200240-0****CAM Environmental Services**

312 South Richey Street  
Pasadena, TX 77506-1059  
Contact: Mr. Andrew Steranko  
Phone: 713-475-9003  
Fax: 713-472-2117  
E-Mail: andy.steranko@cam-enviro.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**NVLAP LAB CODE 200245-0****National Technical Systems**

1701 East Plano Parkway, Suite 150  
Plano, TX 75074-8127  
Contact: Mr. John Ngo  
Phone: 972-509-2566  
Fax: 972-509-0073

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

**NVLAP**

Code      Designation

**Emissions Test Methods:**

|          |                                                                                                                               |
|----------|-------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22 | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment |
|----------|-------------------------------------------------------------------------------------------------------------------------------|

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

**NVLAP LAB CODE 200246-0****Underwriters Laboratories, Inc.**

12 Laboratory Drive  
Research Triangle Park, NC 27709  
Contact: Mr. Rick A. Titus  
Phone: 847-272-8800 x43281  
Fax: 847-509-6321  
E-Mail: Rick.A.Titus@us.ul.com  
URL: <http://www.ul.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

Code      Designation

**Emissions Test Methods:**

|           |                                                                                                                                                                                                              |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS14  | CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions |
| 12/CIS14a | EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)                                                                                                                                                      |
| 12/CIS14b | AS/NZS 1044 (1995)                                                                                                                                                                                           |
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                                                                |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.                                       |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                                                                  |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                                                                |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                                                          |
| 12/F01b   | Radiated Emissions                                                                                                                                                                                           |
| 12/T51    | AS/NZS 3548                                                                                                                                                                                                  |

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****Safety Test Methods:**

12/T41 ACA TS-001  
12/T50 AS/NZS 3260

**NVLAP LAB CODE 200248-0****Orfield Laboratories, Inc.**

2709 E. 25th Street  
Minneapolis, MN 55406  
Contact: Mr. Steven J. Orfield  
Phone: 612-721-2455  
Fax: 612--721-2457  
E-Mail: [steve@orfieldlabs.com](mailto:steve@orfieldlabs.com)  
URL: <http://www.orfieldlabs.com>

**Acoustical Testing Services**

Accreditation Valid Through: June 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

|        |             |
|--------|-------------|
| 08/P03 | ASTM C423   |
| 08/P06 | ASTM E90    |
| 08/P10 | ANSI S12.31 |
| 08/P21 | ISO 3745    |
| 08/P30 | ASTM E1408  |
| 08/P31 | ASTM E336   |
| 08/P32 | ASTM E1007  |
| 08/P37 | ASTM E966   |

**NVLAP LAB CODE 200249-0****Quest MicroAnalytics**

2530 Electronic Lane, Suite 712  
Dallas, TX 75220-1229  
Contact: Ms. Jennifer Jaber  
Phone: 214-351-4441  
Fax: 214-351-4487  
E-Mail: [questmic@flash.net](mailto:questmic@flash.net)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**NVLAP LAB CODE 200251-0****Storagtek Open Area Test Site**

One Storagtek Drive  
Louisville, CO 80028-9172  
Contact: Mr. Robert B. Reinert  
Phone: 303-673-6256  
Fax: 303-661-6717  
E-Mail: [reinerb@louisville.stortek.com](mailto:reinerb@louisville.stortek.com)

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

|           |                                                                                                                               |
|-----------|-------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology           |

equipment, Amendment 1:1995, and  
Amendment 2:1996.

|           |                                                                                                                             |
|-----------|-----------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                               |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                         |
| 12/F01b   | Radiated Emissions                                                                                                          |
| 12/T51    | AS/NZS 3548                                                                                                                 |

**NVLAP LAB CODE 200252-0****Underwriters Laboratories**

1655 Scott Blvd.  
Santa Clara, CA 95050  
Contact: Mr. Rick A. Titus  
Phone: 847-272-8800 x43281  
Fax: 847-509-6321  
E-Mail: [Rick.A.Titus@us.ul.com](mailto:Rick.A.Titus@us.ul.com)  
URL: <http://www.ul.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

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**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

**Immunity Test Methods:**

|        |                                                                                                            |
|--------|------------------------------------------------------------------------------------------------------------|
| 12/I01 | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                         |
| 12/I02 | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test |
| 12/I03 | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                        |
| 12/I04 | IEC 61000-4-5 (1995): Surge Immunity Test                                                                  |
| 12/I05 | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Field                    |

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|                                         |                                                                                                                                                                                                                                                           |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/I06                                  | IEC 61000-4-8 (1993): Power Frequency<br>Magnetic Field Immunity Test                                                                                                                                                                                     |
| 12/I07                                  | IEC 61000-4-11 (1994): Voltage Dips, Short<br>Interruptions and Voltage Variations Immunity<br>Tests                                                                                                                                                      |
| <b>Safety Test Methods:</b>             |                                                                                                                                                                                                                                                           |
| 12/T41                                  | ACA TS-001                                                                                                                                                                                                                                                |
| 12/T50                                  | AS/NZS 3260                                                                                                                                                                                                                                               |
| <b>Telecommunications Test Methods:</b> |                                                                                                                                                                                                                                                           |
| 12/CS03                                 | CS-03                                                                                                                                                                                                                                                     |
| 12/T01                                  | Terminal Equipment Network Protection<br>Standards, FCC Method - 47 CFR Part 68 -<br>Analog and Digital                                                                                                                                                   |
| 12/T01a                                 | 68.302 (Par. c,d,e,f) Environmental simulation;<br>68.304 Leakage current limit.; 68.306<br>Hazardous voltage limit.; 68.308 Signal power<br>limit.; 68.310 Longitudinal balance limit.;<br>68.312 On-hook impedance limit.; 68.314<br>Billing protection |
| 12/T01b                                 | 68.316 Hearing Aid Compatibility: technical<br>standards                                                                                                                                                                                                  |
| 12/T01c                                 | 68.302 Environmental simulation (Par. a,b)                                                                                                                                                                                                                |
| 12/T42                                  | ACA TS-002                                                                                                                                                                                                                                                |
| 12/T44                                  | ACA TS-004                                                                                                                                                                                                                                                |
| 12/T45                                  | ACA TS-006                                                                                                                                                                                                                                                |
| 12/T49                                  | ACA TS-016                                                                                                                                                                                                                                                |

**NVLAP LAB CODE 200253-0****CBS Fasteners, Inc.**

1345 N. Brasher Street  
Anaheim, CA 92807  
Contact: Mr. Bill Sisler  
Phone: 714-779-6368  
Fax: 714-779-0934  
E-Mail: bill@cbsfasteners.com

**Fasteners & Metals**

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**Dimensional Inspection**

*Dimensions of fasteners - hexagon and double hexagon  
(12 point) and spline sockets*

|        |                 |
|--------|-----------------|
| FA/411 | ANSI/ASME B18.3 |
|--------|-----------------|

*Dimensions of fasteners - straightness*

|        |                   |
|--------|-------------------|
| FA/423 | ANSI/ASME B18.2.1 |
|--------|-------------------|

*Dimensions of general purpose fasteners and  
high-volume machine assembly fasteners*

|        |                     |
|--------|---------------------|
| FA/404 | ANSI/ASME B18.18.2M |
|--------|---------------------|

*External thread parameters - system 22*

|        |                |
|--------|----------------|
| FA/382 | FED-STD-H28/20 |
|--------|----------------|

*Surface texture*

|        |                 |
|--------|-----------------|
| FA/439 | ANSI/ASME B46.1 |
|--------|-----------------|

**Mechanical and Physical Testing and Inspection**

*Axial tensile strength of full-size threaded fasteners*

|        |                |
|--------|----------------|
| FA/271 | MIL-STD-1312-8 |
|--------|----------------|

*Double shear of externally threaded fasteners*

|        |                 |
|--------|-----------------|
| FA/257 | MIL-STD-1312-13 |
|--------|-----------------|

*Hydrogen embrittlement (stress durability) of externally  
threaded fasteners*

|        |                |
|--------|----------------|
| FA/176 | MIL-STD-1312-5 |
|--------|----------------|

*Magnetic permeability*

|        |                         |
|--------|-------------------------|
| FA/214 | ASTM A342 Test Method 3 |
|--------|-------------------------|

*Measurement of fastener coating thickness - dimensional  
change method*

|        |                 |
|--------|-----------------|
| FA/495 | MIL-STD-1312-12 |
|--------|-----------------|

*Measurement of fastener coating thickness -  
microscopical method*

|        |                 |
|--------|-----------------|
| FA/163 | MIL-STD-1312-12 |
|--------|-----------------|

*Microhardness of fasteners*

|        |                |
|--------|----------------|
| FA/193 | MIL-STD-1312-6 |
|--------|----------------|

*Recess strength test in both the installation and removal  
directions*

|        |                 |
|--------|-----------------|
| FA/476 | MIL-STD-1312-25 |
|--------|-----------------|

*Rockwell hardness of fasteners*

|        |                |
|--------|----------------|
| FA/201 | MIL-STD-1312-6 |
|--------|----------------|

*Rockwell superficial hardness of fasteners*

|        |                |
|--------|----------------|
| FA/209 | MIL-STD-1312-6 |
|--------|----------------|

*Single shear of externally threaded fasteners*

|        |                 |
|--------|-----------------|
| FA/256 | MIL-STD-1312-20 |
|--------|-----------------|

*Vickers hardness - test forces from 9.807 to 1176 N (1 to  
120 kgf)*

|        |                |
|--------|----------------|
| FA/671 | MIL-STD-1312-6 |
|--------|----------------|

*Wedge tensile strength of full-size threaded fasteners*

|        |                |
|--------|----------------|
| FA/295 | MIL-STD-1312-8 |
|--------|----------------|

**Metallography**

*Decarburization and case depth measurement in  
fasteners*

|        |          |
|--------|----------|
| FA/330 | SAE J423 |
|--------|----------|

|        |                   |
|--------|-------------------|
| FA/483 | ASTM A574 Sec. 12 |
|--------|-------------------|

*Determination of grain size of fasteners*

|        |           |
|--------|-----------|
| FA/638 | ASTM E112 |
|--------|-----------|

*Macroscopic examination of fasteners by etching*

|        |           |
|--------|-----------|
| FA/511 | ASTM E340 |
|--------|-----------|

|        |                |
|--------|----------------|
| FA/651 | ASTM F788/788M |
|--------|----------------|

*Microscopic examination of fasteners by etching*

|        |            |
|--------|------------|
| FA/341 | ASTM E1077 |
|--------|------------|

|        |                |
|--------|----------------|
| FA/345 | ASTM F788/788M |
|--------|----------------|

|        |           |
|--------|-----------|
| FA/351 | ASTM E112 |
|--------|-----------|

|        |           |
|--------|-----------|
| FA/512 | ASTM E407 |
|--------|-----------|

|        |         |
|--------|---------|
| FA/552 | ASTM E3 |
|--------|---------|

|        |           |
|--------|-----------|
| FA/679 | ASTM A574 |
|--------|-----------|

*Surface discontinuities of externally threaded fasteners*

|        |                |
|--------|----------------|
| FA/357 | ASTM F788/788M |
|--------|----------------|



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 200254-0****Vermont Fasteners Manufacturing**

50 Jonergin Drive  
P.O. Box 50  
Swanton, VT 05488-0050  
Contact: Mr. Pierre Gagne  
Phone: 802-868-3663  
Fax: 802-868-2089  
E-Mail: pgagne@vfm.com

**Fasteners & Metals**

Accreditation Valid Through: September 30, 2002

**NVLAP**

Code      Designation

**Dimensional Inspection****Dimensions of fasteners - straightness**

FA/423      ANSI/ASME B18.2.1

**Dimensions of special purpose fasteners and fasteners for highly specialized engineered ap**

FA/405      ANSI/ASME B18.18.3M

FA/963      ANSI B18.2.1

**External thread parameters - system 21**

FA/379      ANSI/ASME B1.3M

**External thread parameters - system 22**

FA/381      ANSI/ASME B1.3M

**Internal thread parameters - system 21**

FA/391      ANSI/ASME B1.3M

**Internal thread parameters - system 22**

FA/393      ANSI/ASME B1.3M

**Mechanical and Physical Testing and Inspection****Axial tensile strength of full-size threaded fasteners**

FA/265      ASTM A370 Sec. A3.2.1.4

FA/266      ASTM F606 Sec. 3.4.1-3.4.3

FA/267      ASTM F606M Sec. 3.4.1-3.4.3

FA/273      SAE J429

**Brinell hardness of fasteners**

FA/185      ASTM A370 Sec. 16

FA/186      ASTM E10

**Cone proof load of internally threaded fasteners (nuts)**

FA/219      ASTM F812/F812M

FA/220      ASTM F606 Sec. 4.3

FA/655      ASTM A194/A194M

**Hardness preparation**

FA/482      ASTM F606

**Measurement of fastener coating thickness - eddy-current method**

FA/149      ASTM E376

**Measurement of fastener coating thickness - magnetic methods**

FA/155      ASTM E376

**Microhardness of fasteners**

FA/654      SAE J121

**Proof load of full-size externally threaded fasteners**

FA/225      ASTM A370 Sec. A3.2.1.1-A3.2.1.3

FA/226      ASTM F606 Sec. 3.2.1-3.2.3

FA/467      ASTM F606M Sec. 3.2.1-3.2.3

**Proof load of internally threaded fasteners (nuts)**

FA/235      ASTM A370 Sec. A3.5.1

FA/236      ASTM F606 Sec. 4.2

FA/237      ASTM F606M Sec. 4.2

**Rockwell hardness of fasteners**

FA/196      ASTM A370 Sec. 18

FA/197      ASTM E18

**Rockwell superficial hardness of fasteners**

FA/205      ASTM E18

FA/206      ASTM A370 Sec. 18

**Rotational capacity of full-size fasteners**

FA/243      ASTM A325

FA/245      ASTM A563

FA/965      AASHTO M164

**Wedge tensile strength of full-size threaded fasteners**

FA/289      ASTM A370

FA/290      ASTM F606 Sec. 3.5

FA/291      ASTM F606M Sec. 3.5

FA/468      SAE J429 Sec. 5.5

**Metallography****Decarburization and case depth measurement in fasteners**

FA/328      SAE J121

FA/964      ASTM A490

**Macroscopic examination of fasteners by etching**

FA/336      SAE J123

FA/337      SAE J1061

FA/651      ASTM F788/788M

**Microscopic examination of fasteners by etching**

FA/344      SAE J121

**Surface discontinuities of externally threaded fasteners**

FA/357      ASTM F788/788M

FA/361      SAE J123

FA/362      SAE J1061

FA/652      ASTM A490

**Surface discontinuities of internally threaded fasteners**

FA/363      ASTM F812

FA/365      SAE J122

**Nondestructive Inspection****Magnetic particle inspection of fasteners**

FA/374      ASTM E709

**NVLAP LAB CODE 200255-0****Rockford Bolt & Steel Co.**

126 Mill Street  
Rockford, IL 61101  
Contact: Mr. John Petty  
Phone: 815-968-0514  
Fax: 815-968-3111  
E-Mail: rockfordbolt@voyager.net

**Fasteners & Metals**

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**Dimensional Inspection**



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****Dimensions of fasteners - straightness**

FA/423 ANSI/ASME B18.2.1

**External thread parameters - system 21**

FA/379 ANSI/ASME B1.3M

**External thread parameters - system 22**

FA/381 ANSI/ASME B1.3M

**Mechanical and Physical Testing and Inspection****Axial tensile strength of full-size threaded fasteners**

FA/266 ASTM F606 Sec. 3.4.1-3.4.3

**Hardness preparation**

FA/482 ASTM F606

**Rockwell hardness of fasteners**

FA/202 SAE J417

**Tension testing of machined specimens from externally threaded fasteners**

FA/278 ASTM A370

FA/279 ASTM F606 Sec. 3.6

**Wedge tensile strength of full-size threaded fasteners**

FA/290 ASTM F606 Sec. 3.5

**Yield strength of full-size externally threaded fasteners**

FA/298 ASTM F606 Sec. 3.2.4

FA/299 ASTM A370 Sec. A3.2.1.3(a)

**NVLAP LAB CODE 200256-0****Sundram Fasteners Limited Chemical Testing Laboratory**

1-10-63/1/3, Veer Chambers

Andhra Pradesh 500 016

INDIA

Contact: Mr. Sampathkumar Moorthy

Phone: 91-44-8521870

Fax: 91-44-853-5435

**Fasteners & Metals**

Accreditation Valid Through: September 30, 2002

**NVLAP**

Code Designation

**Chemical Analysis****Optical emission spectrochemical analysis**

FA/457 ASTM E415

**NVLAP LAB CODE 200258-0****W.R. Grace & Co.**

62 Whittemore Avenue

Cambridge, MA 02140

Contact: Mr. James J. Malone

Phone: 617-498-4518

Fax: 617-498-4360

E-Mail: james.j.malone@grace.com

**Construction Materials Testing**

Accreditation Valid Through: December 31, 2002

**NVLAP**

Code Designation

**Aggregates**

02/A03 ASTM C29

02/A04 ASTM C40

02/A07 ASTM C117

02/A09 ASTM C127

02/A10 ASTM C128

02/A12 ASTM C136

02/A15 ASTM D75

02/A44 ASTM C566

**Cement**

02/A17 ASTM C109

02/A21 ASTM C157

02/A23 ASTM C185

02/A26 ASTM C191

02/A27 ASTM C204

02/A30 ASTM C266

02/A31 ASTM C305

02/A32 ASTM C430

02/A33 ASTM C451

**Concrete**

02/A01 ASTM C39

02/A02 ASTM C617

02/A40 ASTM C78

02/A41 ASTM C192

02/A43 ASTM C1064

02/A45 ASTM C42

02/A47 ASTM C457

02/G01 ASTM C31/C172/C143/C138/C231

02/G02 ASTM C173

**Standard Practices**

02/A39 ASTM C1077

**NVLAP LAB CODE 200259-0****PFU TECHNOCONSUL EMC Center**

98-2 Nu, Unoke, Unoke-Machi, Kahoku-Gun

Ishikawa-Ken 929-1192

JAPAN

Contact: Mr. Youichi Masui

Phone: 81-76-283-8600

Fax: 81-76-283-8601

E-Mail: you1-masui@pfu.fujitsu.com

URL: <http://www.pfu.fujitsu.com/ptc/>**Electromagnetic Compatibility & Telecommunications**

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**Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment

12/F01 FCC Method - 47 CFR Part 15 - Digital Devices

12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz

12/F01b Radiated Emissions

12/T51 AS/NZS 3548

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 200261-0****Prottsa, S.A. de C.V.**

Oriente 233 No. 91 Agricola Oriental  
C.P. 08500  
Mexico City  
MEXICO  
Contact: Mr. Gilberto Laguna  
Phone: 5-558-85-77  
Fax: 5-558-25-23  
E-Mail: prottsa@dfi.telmex.net.mx

**Fasteners & Metals**

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**NVLAP**

Code      Designation

**Dimensional Inspection****Dimensions of general purpose fasteners and high-volume machine assembly fasteners**

FA/403      ANSI/ASME B18.18.1M  
FA/981      ANSI/ASME B1.3M

**Mechanical and Physical Testing and Inspection****Axial tensile strength of full-size threaded fasteners**

FA/266      ASTM F606 Sec. 3.4.1-3.4.3

**Bend test of full size eyebolts**

FA/982      AAR 4-2-15 Section 8 (1969)

**Cone proof load of internally threaded fasteners (nuts)**

FA/220      ASTM F606 Sec. 4.3

**Hardness preparation**

FA/482      ASTM F606

**Measurement of fastener coating thickness - magnetic methods**

FA/153      ASTM B499

**Proof load of full-size externally threaded fasteners**

FA/226      ASTM F606 Sec. 3.2.1-3.2.3

FA/983      AAR 4-2-15 Section 9 (1969)

**Proof load of internally threaded fasteners (nuts)**

FA/235      ASTM A370 Sec. A3.5.1

FA/236      ASTM F606 Sec. 4.2

**Rockwell hardness of fasteners**

FA/196      ASTM A370 Sec. 18

**Tension testing of machined specimens from externally threaded fasteners**

FA/279      ASTM F606 Sec. 3.6

**Torque-tension of full-size threaded fasteners**

FA/984      AAR 4-2-15 Section 13b (1969)

FA/985      ASTM A183 Section 8.2.2

FA/986      Prottsa W.I. I.030 rev. b

**Wedge tensile strength of full-size threaded fasteners**

FA/290      ASTM F606 Sec. 3.5

**Yield strength of full-size externally threaded fasteners**

FA/298      ASTM F606 Sec. 3.2.4

**NVLAP LAB CODE 200263-0****Murata Mfg. Co., Ltd. Yokohama Technical Center EMM Office**

Yokohama Technical Center  
1-18 Hakusan 1-Chome, Midori-ku Yokohama  
Kanagawa 226-006  
JAPAN  
Contact: Mr. Yuzo Katayama  
Phone: 045-939-7100  
Fax: 045-939-7156  
E-Mail: katayama@murata.co.jp

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**Emissions Test Methods:**

12/CIS22      IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment

12/CIS22a      IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.

12/F01      FCC Method - 47 CFR Part 15 - Digital Devices

12/F01a      Conducted Emissions, Power Lines, 450 KHz to 30 MHz

12/F01b      Radiated Emissions

12/T51      AS/NZS 3548

**NVLAP LAB CODE 200265-0****R & D Services, Inc.**

2594 West Broad Street  
P.O. Box 2400  
Cookeville, TN 38502-2400  
Contact: Mr. Ronald S. Graves  
Phone: 931-372-8871  
Fax: 931-525-3896  
E-Mail: rdserv2@charter.net  
URL: <http://rdservices.com>

**Thermal Insulation Materials**

Accreditation Valid Through: September 30, 2002

**NVLAP**

Code      Designation

**Corrosiveness**

01/C01      ASTM C739 (Sec. 9)

01/C02      16 CFR-Part 1209.5

**Flammability**

01/F07      16 CFR-Part 1209.6

01/F08      16 CFR-Part 1209.7

01/F09      ASTM C739 (Sec. 10) by ASTM E970

01/F10      ASTM C739 (Sec. 14)

**Mass, Density, and Dimensional Stability**

01/D02      ASTM C167

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

01/D24 ASTM C739 (Sec. 12)  
01/D26 16 CFR-Part 1209.4  
01/D27 ASTM C739 (Sec. 8)

**Related Material Properties**

01/V05 ASTM C739 (Sec. 11)

**Thermal Resistance**

01/T06 ASTM C518  
01/T10 ASTM C687

**NVLAP LAB CODE 200271-0****Aerospace NYLOK - a subsidiary of the NYLOK Fastener Corporation**

11 Thomas Road South  
Hawthorne, NJ 07507-0651  
Contact: Mr. Chet Radwan  
Phone: 973-427-8555  
Fax: 973-427-4723  
E-Mail: chester@NYLOKFASTENER.COM

**Fasteners & Metals**

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**Dimensional Inspection****Dimensions of special purpose fasteners and fasteners for highly specialized engineered ap**

FA/805 MIL-DTL-18240  
FA/806 MIL-F-18240

**Mechanical and Physical Testing and Inspection****Prevailing torque**

FA/217 IFI-100/107  
FA/794 MIL-DTL-18240  
FA/795 IFI 124  
FA/796 MIL-F-18240  
FA/797 IFI 125  
FA/798 IFI 524  
FA/833 IFI 525

**Reusability test of self-locking internally threaded fasteners**

FA/543 IFI-100/107  
FA/792 MIL-F-18240 (externally and internally threaded)  
FA/793 MIL-DTL-18240 (externally and internally threaded)

**NVLAP LAB CODE 200272-0****NYLOK Fastener Corporation**

313 North Euclid Way  
Anaheim, CA 92801-6738  
Contact: Mr. William Steinman  
Phone: 714-635-3993  
Fax: 714-635-9553  
E-Mail: sales@nylokfastener.com  
URL: http://www.nylok.com

**Fasteners & Metals**

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Code Designation

**Dimensional Inspection****Dimensions of special purpose fasteners and fasteners for highly specialized engineered ap**

FA/802 NYLOK TP-NW-5.0  
FA/805 MIL-DTL-18240  
FA/806 MIL-F-18240

**External thread parameters - system 21**

FA/379 ANSI/ASME B1.3M  
FA/380 FED-STD-H28/20

**External thread parameters - system 22**

FA/381 ANSI/ASME B1.3M  
FA/382 FED-STD-H28/20  
FA/383 MIL-S-7742  
FA/384 MIL-S-8879  
FA/534 SAE AS 8879  
FA/803 ASME B1.15

**Internal thread parameters - system 21**

FA/391 ANSI/ASME B1.3M  
FA/392 FED-STD-H28/20

**Internal thread parameters - system 22**

FA/393 ANSI/ASME B1.3M  
FA/394 FED-STD-H28/20  
FA/395 MIL-S-7742  
FA/396 MIL-S-8879  
FA/537 SAE AS 8879  
FA/804 ASME B1.15

**Mechanical and Physical Testing and Inspection****Axial tensile strength of full-size threaded fasteners**

FA/266 ASTM F606 Sec. 3.4.1-3.4.3  
FA/799 NASM 1312-8

**Hydrogen embrittlement (stress durability) of externally threaded fasteners**

FA/801 QQ-P-416  
FA/875 NASM 1312-5

**Hydrogen embrittlement (stress durability) of internally threaded fasteners**

FA/800 QQ-P-416

**Prevailing torque**

FA/217 IFI-100/107  
FA/794 MIL-DTL-18240  
FA/795 IFI 124  
FA/796 MIL-F-18240  
FA/797 IFI 125  
FA/798 IFI 524



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****Reusability test of self-locking internally threaded fasteners**

FA/792 MIL-F-18240  
FA/793 MIL-DTL-18240

**Rockwell hardness of fasteners**

FA/201 MIL-STD-1312-6

**NVLAP LAB CODE 200274-0****Kyowa Kogyosyo Co., Ltd. Test Laboratory**

1-57, Kogyo-Danchi  
Komatsu City, Ishikawa  
JAPAN

Contact: Mr. Mataichi Fukuda

Phone: 81-761-21-0531

Fax: 81-761-21-0533

**Fasteners & Metals**

Accreditation Valid Through: June 30, 2002

**NVLAP**

Code Designation

**Dimensional Inspection****Dimensions of ISO grade A and B fasteners**

FA/589 JIS B1071

**Dimensions of fasteners - bearing surface squareness**

FA/649 JIS B1071

**Dimensions of fasteners - straightness**

FA/648 JIS B1071

**External thread parameters - system 21**

FA/647 JIS B1071

**Surface texture**

FA/650 JIS B1071

**Mechanical and Physical Testing and Inspection****Axial tensile strength of full-size threaded fasteners**

FA/266 ASTM F606 Sec. 3.4.1-3.4.3

FA/574 JIS B1051 Sec. 4.2.2

**Charpy impact (u-notch) testing**

FA/845 JIS Z2242

**Hardness preparation**

FA/482 ASTM F606

**Measurement of fastener coating thickness - magnetic methods**

FA/596 JIS H8501

**Microhardness of fasteners**

FA/620 JIS Z2244

FA/642 JIS B1051 Sec. 4.2.5

**Proof load of full-size externally threaded fasteners**

FA/573 JIS B1051 Sec. 4.2.4

**Rockwell hardness of fasteners**

FA/197 ASTM E18

FA/572 JIS Z2245

FA/707 JIS B1051 Sec. 4.2.5

**Tension testing of machined specimens from externally threaded fasteners**

FA/581 JIS B1051 Sec. 4.2.1

FA/582 JIS Z2241

**Wedge tensile strength of full-size threaded fasteners**

FA/290 ASTM F606 Sec. 3.5

FA/575 JIS B1051 Sec. 4.2.3

**Metallography****Decarburization and case depth measurement in fasteners**

FA/645 JIS B1051

**Surface discontinuities of externally threaded fasteners**

FA/603 JIS B1043

**NVLAP LAB CODE 200278-0****Casey Products, Inc.**

1955 University Lane

Lisle, IL 60532-4149

Contact: Mr. Michael B. Connelly, CQE

Phone: 630-960-3360

Fax: 630-960-3419

E-Mail: mconnell@caseyproducts.com

**Fasteners & Metals**

Accreditation Valid Through: March 31, 2002

**NVLAP**

Code Designation

**Dimensional Inspection****Dimensions of ISO grade A and B fasteners**

FA/407 ISO 3269

FA/408 ISO 4759-1

**Dimensions of ISO grade C fasteners**

FA/409 ISO 3269

FA/410 ISO 4759-1

**Dimensions of fasteners - hexagon and double hexagon (12 point) and spline sockets**

FA/411 ANSI/ASME B18.3

FA/412 ANSI/ASME B18.3.1M

FA/413 ANSI/ASME B18.3.3M

FA/414 ANSI/ASME B18.3.4M

FA/415 ANSI/ASME B18.3.5M

FA/416 ANSI/ASME B18.3.6M

**Dimensions of fasteners - straightness**

FA/423 ANSI/ASME B18.2.1

FA/424 ANSI/ASME B18.2.3.1M

FA/425 ANSI/ASME B18.2.3.2M

FA/426 ANSI/ASME B18.2.3.3M

FA/427 ANSI/ASME B18.2.3.4M

FA/428 ANSI/ASME B18.2.3.5M

FA/429 ANSI/ASME B18.2.3.6M

FA/433 ANSI/ASME B18.5.2.2M

**Dimensions of general purpose fasteners and high-volume machine assembly fasteners**

FA/403 ANSI/ASME B18.18.1M

FA/404 ANSI/ASME B18.18.2M

FA/486 MIL-STD-120 (W/ Notice dtd 9 SEP 63)

FA/870 ANSI/ASME B1.16M

FA/871 ANSI/ASME B1.2

**Dimensions of special purpose fasteners and fasteners for highly specialized engineered ap**

FA/405 ANSI/ASME B18.18.3M

FA/406 ANSI/ASME B18.18.4M



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued*****External thread parameters - ISO***

FA/390 ISO 1502

***External thread parameters - SAE fastener with MJ metric screw threads***

FA/922 ANSI/ASME B1.3M

***External thread parameters - system 21***

FA/379 ANSI/ASME B1.3M

***External thread parameters - system 22***

FA/381 ANSI/ASME B1.3M

***Internal thread parameters - ISO***

FA/402 ISO 1502

***Internal thread parameters - system 21***

FA/391 ANSI/ASME B1.3M

***Internal thread parameters - system 22***

FA/393 ANSI/ASME B1.3M

***Mechanical and Physical Testing and Inspection******Axial tensile strength of full-size threaded fasteners***

FA/265 ASTM A370 Sec. A3.2.1.4

FA/266 ASTM F606 Sec. 3.4.1-3.4.3

FA/267 ASTM F606M Sec. 3.4.1-3.4.3

FA/270 ISO 898-1 Sec. 8.2

FA/273 SAE J429

FA/274 SAE J1216

***Hardness preparation***

FA/464 ASTM F606M

FA/482 ASTM F606

***Measurement of fastener coating thickness - eddy-current method***

FA/149 ASTM E376

***Measurement of fastener coating thickness - magnetic methods***

FA/155 ASTM E376

***Microhardness of fasteners***

FA/189 ASTM E384

***Prevailing torque***

FA/217 IFI-100/107

***Proof load of full-size externally threaded fasteners***

FA/225 ASTM A370 Sec. A3.2.1.1-A3.2.1.3

FA/226 ASTM F606 Sec. 3.2.1-3.2.3

FA/228 ISO 898-1 Sec. 8.4

FA/229 SAE J429 Sec. 5.3

FA/467 ASTM F606M Sec. 3.2.1-3.2.3

FA/577 SAE J1216 Sec. 3.3

***Proof load of internally threaded fasteners (nuts)***

FA/235 ASTM A370 Sec. A3.5.1

FA/236 ASTM F606 Sec. 4.2

FA/237 ASTM F606M Sec. 4.2

FA/239 ISO 898-2 Sec. 8.1

FA/241 SAE J995 Sec. 5.1

***Rockwell hardness of fasteners***

FA/196 ASTM A370 Sec. 18

FA/197 ASTM E18

***Rockwell superficial hardness of fasteners***

FA/205 ASTM E18

FA/206 ASTM A370 Sec. 18

***Test for embrittlement of metallic coated externally threaded fasteners***

FA/179 ASTM F606 Sec. 7

FA/180 ASTM F606M Sec. 7

***Total extension at fracture of externally threaded fasteners***

FA/285 ASTM F606 Sec. 3.7

FA/286 ASTM F606M Sec. 3.7

***Wedge tensile strength of full-size threaded fasteners***

FA/289 ASTM A370

FA/290 ASTM F606 Sec. 3.5

FA/291 ASTM F606M Sec. 3.5

FA/294 ISO 898-1 Sec. 8.5

FA/468 SAE J429 Sec. 5.5

FA/469 SAE J1216 Sec. 3.6

***Yield strength of full-size externally threaded fasteners***

FA/298 ASTM F606 Sec. 3.2.4

FA/300 ASTM F606M Sec. 3.2.4

***Metallography******Decarburization and case depth measurement in fasteners***

FA/323 ASTM E1077

FA/324 ISO 898-1

FA/325 ISO 898-5

FA/328 SAE J121

FA/329 SAE J419

FA/330 SAE J423

FA/483 ASTM A574 Sec. 12

FA/519 ASTM A574M

FA/520 ASTM F835

FA/758 SAE J121M

FA/866 ASTM F835M

FA/867 ASTM F912

FA/868 ASTM F912M

***Determination of grain size of fasteners***

FA/638 ASTM E112

***Macroscopic examination of fasteners by etching***

FA/484 ASTM E381

FA/511 ASTM E340

***Microscopic examination of fasteners by etching***

FA/512 ASTM E407

***Surface discontinuities of externally threaded fasteners***

FA/357 ASTM F788/F788M

FA/359 ISO 6157-1

FA/360 ISO 6157-3

FA/361 SAE J123

FA/362 SAE J1061

FA/859 ASTM A574

FA/860 ASTM A574M

FA/861 ASTM F835

FA/862 ASTM F835M

FA/863 ASTM F912

FA/864 ASTM F912M

***Surface discontinuities of internally threaded fasteners***

FA/365 SAE J122

FA/727 ISO 6157-2

FA/865 ASTM F812/F812M

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 200281-0****Fujitsu Evaluation Engineering Laboratory**

140 Miyamoto  
Numazu, Shizuoka-Pref. 410-0396  
JAPAN  
Contact: Mr. Yoshiyuki Okita  
Phone: 81-559-24-7209  
Fax: 81-559-24-6183  
E-Mail: okita@psl.fujitsu.co.jp

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

**NVLAP**

*Code      Designation*

**Emissions Test Methods:**

- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

**NVLAP LAB CODE 200282-0****Electronics Test Centre**

302 Legget Drive, Unit 100  
Kanata, Ont. K2K 1Y5  
CANADA  
Contact: Mr. Dave Scribailo  
Phone: 613-599-6800  
Fax: 613-599-7614  
E-Mail: daves@etc-mpbt.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

**NVLAP**

*Code      Designation*

**Emissions Test Methods:**

- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology

equipment, Amendment 1:1995, and Amendment 2:1996.

- 12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

**MIL-STD-462 : Conducted Emissions:**

- 12/A01 MIL-STD-462 Method CE01
- 12/A06 MIL-STD-462 Method CE03
- 12/A13 MIL-STD-462 Version D Method CE101
- 12/A14 MIL-STD-462 Version D Method CE102
- 12/A16 MIL-STD-461 Version E Method CE101
- 12/A17 MIL-STD-461 Version E Method CE102

**MIL-STD-462 : Conducted Susceptibility:**

- 12/B01 MIL-STD-462 Method CS01
- 12/B02 MIL-STD-462 Method CS02
- 12/B05 MIL-STD-462 Method CS06
- 12/B12 MIL-STD-462 Version D Method CS101
- 12/B17 MIL-STD-462 Version D Method CS114
- 12/B19 MIL-STD-462 Version D Method CS116
- 12/B20 MIL-STD-461 Version E Method CS101
- 12/B25 MIL-STD-461 Version E Method CS114
- 12/B27 MIL-STD-461 Version E Method CS116

**MIL-STD-462 : Radiated Emissions:**

- 12/D04 MIL-STD-462 Version D Method RE101
- 12/D05 MIL-STD-462 Version D Method RE102
- 12/D07 MIL-STD-461 Version E Method RE101
- 12/D08 MIL-STD-461 Version E Method RE102

**MIL-STD-462 : Radiated Susceptibility:**

- 12/E09 MIL-STD-462 Version D Method RS103
- 12/E12 MIL-STD-461 Version E Method RS103

**Safety Test Methods:**

- 12/T41 ACA TS-001
- 12/T50 AS/NZS 3260

**NVLAP LAB CODE 200287-0****Small IAC Test Laboratory**

107 Park St. N  
Peterborough, ON K9J-7B5  
CANADA  
Contact: Mr. Dhawal Shah  
Phone: 705-748-7155  
Fax: 705-748-7677  
E-Mail: dhawal.shah@indsys.ge.com

**Efficiency of Electric Motors**

Accreditation Valid Through: September 30, 2002

**NVLAP**

*Code      Designation*

- 24/M01 IEEE 112, Method B

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 200288-0****Fong Prean Industrial Co., Ltd.**

No. 6 Kung-Wei St. Tzu Hsin T'Sun  
Tzu Kuan Hsiang  
Kaohsiung Hsien  
TAIWAN  
Contact: Mr. Chang San Tien  
Phone: 886-7-6170526  
Fax: 886-7-6107610  
E-Mail: cst@ms.fongprean.com.tw

**Fasteners & Metals**

Accreditation Valid Through: March 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Dimensional Inspection****Dimensions of general purpose fasteners and high-volume machine assembly fasteners**

|        |                   |
|--------|-------------------|
| FA/854 | ANSI/ASME B18.6.4 |
| FA/855 | ISO 1479          |

**Mechanical and Physical Testing and Inspection****Drill-drive test**

|        |          |
|--------|----------|
| FA/247 | SAE J78  |
| FA/851 | DIN 7504 |

**Hardness preparation**

|        |            |
|--------|------------|
| FA/464 | ASTM F606M |
| FA/482 | ASTM F606  |

**Measurement of fastener coating thickness - X-ray methods**

|        |                 |
|--------|-----------------|
| FA/760 | ASTM A754/A754M |
|--------|-----------------|

**Microhardness of fasteners**

|        |           |
|--------|-----------|
| FA/189 | ASTM E384 |
|--------|-----------|

**Rockwell hardness of fasteners**

|        |          |
|--------|----------|
| FA/197 | ASTM E18 |
|--------|----------|

**Rockwell superficial hardness of fasteners**

|        |          |
|--------|----------|
| FA/205 | ASTM E18 |
|--------|----------|

**Salt spray testing of fasteners**

|        |           |
|--------|-----------|
| FA/166 | ASTM B117 |
|--------|-----------|

**Torsional strength test of thread rolling and self-drilling tapping screws**

|        |          |
|--------|----------|
| FA/751 | SAE J933 |
| FA/852 | ISO 2702 |
| FA/853 | DIN 7504 |

**Metallography****Decarburization and case depth measurement in fasteners**

|        |          |
|--------|----------|
| FA/330 | SAE J423 |
| FA/562 | ASTM G79 |

**Surface discontinuities of externally threaded fasteners**

|        |                |
|--------|----------------|
| FA/357 | ASTM F788/788M |
| FA/361 | SAE J123       |

**NVLAP LAB CODE 200291-0****NGC Testing Services, National Gypsum Research Center**

1650 Military Road  
Buffalo, NY 14217-1198  
Contact: Mr. Robert J. Menchetti  
Phone: 716-873-9750  
Fax: 716-873-9753  
E-Mail: email@ngctestingservices.com  
URL: http://www.ngctestingservices.com

**Acoustical Testing Services**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

|        |                 |
|--------|-----------------|
| 08/P03 | ASTM C423       |
| 08/P06 | ASTM E90        |
| 08/P07 | ASTM E492       |
| 08/P30 | ASTM E1408      |
| 08/P34 | ASTM E1414      |
| 08/P44 | ISO 354         |
| 08/P45 | ISO 140, Part 3 |
| 08/P50 | ISO 140, Part 9 |
| 08/P54 | SAE J1400       |
| 08/P58 | ASTM E1222      |

**NVLAP LAB CODE 200292-0****BCAG Fastener Quality Test Lab Everett Site**

P.O. Box 3707, MS 04-02  
Seattle, WA 98124-2207  
Contact: Mr. Eugene J. Brown  
Phone: 425-342-3888  
Fax: 425-266-4673  
E-Mail: eugene.j.brown@boeing.com

**Fasteners & Metals**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Chemical Analysis****Combustion analysis for carbon, sulfur, oxygen, nitrogen, and hydrogen**

|        |            |
|--------|------------|
| FA/472 | ASTM E1447 |
|--------|------------|

**Optical emission spectrochemical analysis**

|        |            |
|--------|------------|
| FA/456 | ASTM E327  |
| FA/457 | ASTM E415  |
| FA/458 | ASTM E607  |
| FA/459 | ASTM E1086 |
| FA/460 | ASTM E1251 |

**Spot test analysis**

|         |           |
|---------|-----------|
| FB/1076 | D1-8018-2 |
|---------|-----------|

**Dimensional Inspection****Dimensions of fasteners - bearing surface squareness**

|        |          |
|--------|----------|
| FA/911 | BPS-N-70 |
|--------|----------|

**Dimensions of fasteners - gaging for slotted nuts**

|        |                      |
|--------|----------------------|
| FA/417 | ANSI/ASME B18.2.2    |
| FA/418 | ANSI/ASME B18.2.4.3M |



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued*****Dimensions of fasteners - straightness***

FA/423 ANSI/ASME B18.2.1

***Dimensions of special purpose fasteners and fasteners for highly specialized engineered ap***

FA/405 ANSI/ASME B18.18.3M

FA/406 ANSI/ASME B18.18.4M

FB/1060 BPS-F-69

FB/1061 BPS-F-76

FB/1062 BPS-F-67

FB/1063 D-11805

FB/1064 BPS-N-70

FB/1065 BPS-F-68

***External thread parameters - system 22***

FA/381 ANSI/ASME B1.3M

FA/382 FED-STD-H28/20

FA/383 MIL-S-7742

FA/384 MIL-S-8879

***Internal thread parameters - system 21***

FA/391 ANSI/ASME B1.3M

FA/392 FED-STD-H28/20

FA/529 MIL-S-7742

***Surface texture***

FA/439 ANSI/ASME B46.1

***Mechanical and Physical Testing and Inspection******Adhesion of metallic coatings on fasteners***

FA/532 BMS 10-85M Sec. 8.2

***Axial tensile strength of full-size threaded fasteners***

FA/271 MIL-STD-1312-8

FA/799 NASM 1312-8

FB/1067 D2-2860

***Double shear of externally threaded fasteners***

FA/257 MIL-STD-1312-13

FA/880 NASM 1312-13

FB/1066 D2-2860

FB/1070 NAS 498

***Fatigue of full-size threaded fasteners***

FA/183 MIL-STD-1312-11

FA/184 NAS 1069

FA/876 NASM 1312-11

FB/1038 D2-2860

***Hardness preparation***

FB/1071 NAS 498

***Hydrogen embrittlement (stress durability) of externally threaded fasteners***

FA/176 MIL-STD-1312-5

FA/801 QQ-P-416

FA/875 NASM 1312-5

***Hydrogen embrittlement (stress durability) of internally threaded fasteners***

FA/178 MIL-STD-1312-14

FA/800 QQ-P-416

FB/1033 NASM 1312-14

***Intergranular corrosion susceptibility of austenitic stainless steel fasteners - oxalic acid***

FA/174 ASTM A262 Sec. 3-7, Practice A

***Measurement of fastener coating thickness - dimensional change method***

FA/495 MIL-STD-1312-12

FA/874 NASM 1312-12

***Measurement of fastener coating thickness - microscopical method***

FA/160 ASTM B487

FA/163 MIL-STD-1312-12

FA/873 NASM 1312-12

***Microhardness of fasteners***

FA/189 ASTM E384

***Prevailing torque***

FA/630 MIL-N-25027

FA/899 BPS-N-70

FA/902 NAS 3350

***Proof load of full-size externally threaded fasteners***

FA/691 MIL-STD-1312-8

FB/1037 NASM 1312-8

FB/1041 D2-2860

***Proof load of internally threaded fasteners (nuts)***

FB/1039 MIL-STD-1312-8

FB/1040 NASM 1312-8

FB/1042 D2-2860

***Push out test of floating plate nuts, gang channel nuts, and anchor nuts***

FA/116 MIL-N-25027

FA/891 BPS-N-70

***Recess strength test in both the installation and removal directions***

FA/886 NASM 1312-25

***Reusability test of self-locking internally threaded fasteners***

FA/124 MIL-N-25027

FA/125 NAS 3350

FA/774 BPS-N-70

***Rockwell hardness of fasteners***

FA/196 ASTM A370 Sec. 18

FA/197 ASTM E18

FA/201 MIL-STD-1312-6

FA/878 NASM 1312-6

FB/1072 BAC 5650

***Rockwell superficial hardness of fasteners***

FA/205 ASTM E18

FA/206 ASTM A370 Sec. 18

FA/209 MIL-STD-1312-6

FB/1035 NASM 1312-6

***Salt spray testing of fasteners***

FA/168 MIL-STD-1312-1

FB/1032 NASM 1312-1

***Tension testing of machined specimens from externally threaded fasteners***

FA/475 ASTM E8

FB/1043 ASTM B557

***Test for embrittlement of metallic coated externally threaded fasteners***

FA/525 MIL-STD-1312-5

FB/1034 NASM 1312-5

***Torque-out test***

FA/133 MIL-N-25027

FB/1031 BPS-N-70



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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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***Vickers hardness - test forces from 9.807 to 1176 N (1 to 120 kgf)***

FA/671 MIL-STD-1312-6  
FB/1036 NASM 1312-6

***Wedge tensile strength of full-size threaded fasteners***

FA/295 MIL-STD-1312-8  
FB/1044 NASM 1312-8  
FB/1069 D2-2860

***Wrench torque test of externally wrenching nuts of spline and hexagon and double hexagon (1***

FA/141 MIL-N-25027  
FA/142 NAS 3350  
FA/893 BPS-N-70

***Yield strength of full-size externally threaded fasteners***

FA/303 MIL-STD-1312-8  
FB/1045 NASM 1312-8  
FB/1068 D2-2860

***Metallography******Decarburization and case depth measurement in fasteners***

FA/323 ASTM E1077  
FA/904 BPS-N-70  
FB/1046 BPS-F-76  
FB/1047 BPS-F-67  
FB/1048 NAS 498  
FB/1073 BPS-F-46

***Determination of grain size of fasteners***

FA/331 ASTM E112

***Macroscopic examination of fasteners by etching***

FA/511 ASTM E340

***Microscopic examination of fasteners by etching***

FA/512 ASTM E407

***Surface discontinuities of externally threaded fasteners***

FA/357 ASTM F788/F788M  
FA/859 ASTM A574  
FB/1049 NAS 4002  
FB/1050 NAS 4003  
FB/1051 NAS 4004  
FB/1052 BPS-F-67  
FB/1053 BPS-F-69  
FB/1054 BPS-F-68  
FB/1055 BPS-F-76  
FB/1056 NAS 498  
FB/1057 FF-S-86

***Surface discontinuities of internally threaded fasteners***

FA/907 BPS-N-70

***Nondestructive Inspection******Liquid penetrant inspection of fasteners***

FA/527 ASTM E1417  
FB/1059 MIL-I-25135  
FB/1074 BAC 5423

***Magnetic particle inspection of fasteners***

FA/485 ASTM E1444  
FB/1075 BAC 5424

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**NVLAP LAB CODE 200293-0****EMSL Analytical, Inc.**

10768 Baltimore Avenue  
Beltsville, MD 20705  
Contact: Mr. Joseph Centifonti  
Phone: 301-937-5700  
Fax: 301-937-5701  
E-Mail: jcentifonti@emsl.com  
URL: <http://www.emsl.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: December 31, 2002

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**NVLAP LAB CODE 200294-0****Micron Environmental Labs**

292 E. Foothill Blvd., Suite B  
Arcadia, CA 91006  
Contact: Mr. Daniel Gamez  
Phone: 626-357-8627  
Fax: 626-256-9017  
E-Mail: [micronlabs@integrityonline7.com](mailto:micronlabs@integrityonline7.com)

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

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**NVLAP LAB CODE 200296-0****Okawa Laboratory**

6357-1 Oba, Omiya-cho  
Naka-gun, Ibaraki-ken 319-21  
JAPAN  
Contact: Mr. Katsuyoshi Okawa  
Phone: 81-2955-3-0111  
Fax: 81-2955-3-5290

**Fasteners & Metals**

Accreditation Valid Through: June 30, 2002

**NVLAP**

Code      Designation

**Dimensional Inspection*****Dimensions of general purpose fasteners and high-volume machine assembly fasteners***

FA/607 JIS B1071

***Mechanical and Physical Testing and Inspection******Axial tensile strength of full-size threaded fasteners***

FA/574 JIS B1051 Sec. 4.2.2

***Measurement of fastener coating thickness - magnetic methods***

FA/596 JIS H8501

***Proof load of full-size externally threaded fasteners***

FA/573 JIS B1051 Sec. 4.2.4

***Rockwell hardness of fasteners***

FA/572 JIS Z2245  
FA/616 JIS B1051 Sec. 4.3

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****Salt spray testing of fasteners**

FA/569 JIS Z2371

**Vickers hardness - test forces from 9.807 to 1176 N (1 to 120 kgf)**

FA/571 JIS Z2244

FA/643 JIS B1051 Sec. 4.2.5

**Metallography****Decarburization and case depth measurement in fasteners**

FA/645 JIS B1051

**Surface discontinuities of externally threaded fasteners**

FA/646 JIS B1041

**NVLAP LAB CODE 200297-0****Intertek Testing Services NA Inc.**

27611 La Paz Road, Suite C

Laguna Niguel, CA 92677

Contact: Mr. Rich Adams

Phone: 949-448-4100

Fax: 949-448-4111

E-Mail: rich@itsqs.com

URL: <http://www.etlsemko.com>**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

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| Code | Designation |
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|------|-------------|

**Emissions Test Methods:**

|          |                                                                                                                                                                                                              |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS14 | CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|           |                                                         |
|-----------|---------------------------------------------------------|
| 12/CIS14a | EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999) |
|-----------|---------------------------------------------------------|

|           |                    |
|-----------|--------------------|
| 12/CIS14b | AS/NZS 1044 (1995) |
|-----------|--------------------|

|           |             |
|-----------|-------------|
| 12/CIS14c | CNS 13783-1 |
|-----------|-------------|

|          |                                                                                                                               |
|----------|-------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22 | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment |
|----------|-------------------------------------------------------------------------------------------------------------------------------|

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|           |                                                                                                                             |
|-----------|-----------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment |
|-----------|-----------------------------------------------------------------------------------------------------------------------------|

|        |                                               |
|--------|-----------------------------------------------|
| 12/F01 | FCC Method - 47 CFR Part 15 - Digital Devices |
|--------|-----------------------------------------------|

|         |                                                     |
|---------|-----------------------------------------------------|
| 12/F01a | Conducted Emissions, Power Lines, 450 KHz to 30 MHz |
|---------|-----------------------------------------------------|

|         |                    |
|---------|--------------------|
| 12/F01b | Radiated Emissions |
|---------|--------------------|

|        |             |
|--------|-------------|
| 12/T51 | AS/NZS 3548 |
|--------|-------------|

**Immunity Test Methods:**

|        |                                      |
|--------|--------------------------------------|
| 12/I01 | IEC 61000-4-2 (1995) and Amendment 1 |
|--------|--------------------------------------|

|        |                                                                                    |
|--------|------------------------------------------------------------------------------------|
| 12/I02 | IEC 61000-4-3 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test |
|--------|------------------------------------------------------------------------------------|

|        |                                                                     |
|--------|---------------------------------------------------------------------|
| 12/I03 | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test |
|--------|---------------------------------------------------------------------|

|        |                                           |
|--------|-------------------------------------------|
| 12/I04 | IEC 61000-4-5 (1995): Surge Immunity Test |
|--------|-------------------------------------------|

|        |                                                                                          |
|--------|------------------------------------------------------------------------------------------|
| 12/I05 | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields |
|--------|------------------------------------------------------------------------------------------|

|        |                                                                    |
|--------|--------------------------------------------------------------------|
| 12/I06 | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test |
|--------|--------------------------------------------------------------------|

|        |                                                                                                |
|--------|------------------------------------------------------------------------------------------------|
| 12/I07 | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests |
|--------|------------------------------------------------------------------------------------------------|

**MIL-STD-462 : Conducted Emissions:**

|        |                                    |
|--------|------------------------------------|
| 12/A14 | MIL-STD-462 Version D Method CE102 |
|--------|------------------------------------|

|        |                                    |
|--------|------------------------------------|
| 12/A17 | MIL-STD-461 Version E Method CE102 |
|--------|------------------------------------|

**Safety Test Methods:**

|        |            |
|--------|------------|
| 12/T41 | ACA TS-001 |
|--------|------------|

|        |             |
|--------|-------------|
| 12/T50 | AS/NZS 3260 |
|--------|-------------|

**NVLAP LAB CODE 200300-0****Akzo Nobel K.K. Kawasaki Technical Center**

5-23-13 Minamikase, Saiwai-ku

Kawasaki 211-0955

JAPAN

Contact: Mr. Shuichi Kobayashi

Phone: 81-479-40-1097

Fax: 81-479-46-1788

E-Mail: shuichi.kobayashi@nifty.ne.jp

URL: <http://www.akzoemc.co.jp>**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**MIL-STD-462 : Conducted Emissions:**

|        |                         |
|--------|-------------------------|
| 12/A01 | MIL-STD-462 Method CE01 |
|--------|-------------------------|

|        |                         |
|--------|-------------------------|
| 12/A04 | MIL-STD-462 Method CE02 |
|--------|-------------------------|

|        |                         |
|--------|-------------------------|
| 12/A06 | MIL-STD-462 Method CE03 |
|--------|-------------------------|

|        |                         |
|--------|-------------------------|
| 12/A08 | MIL-STD-462 Method CE04 |
|--------|-------------------------|

|        |                                    |
|--------|------------------------------------|
| 12/A13 | MIL-STD-462 Version D Method CE101 |
|--------|------------------------------------|

|        |                                    |
|--------|------------------------------------|
| 12/A14 | MIL-STD-462 Version D Method CE102 |
|--------|------------------------------------|

|        |                                    |
|--------|------------------------------------|
| 12/A16 | MIL-STD-461 Version E Method CE101 |
|--------|------------------------------------|

|        |                                    |
|--------|------------------------------------|
| 12/A17 | MIL-STD-461 Version E Method CE102 |
|--------|------------------------------------|

**MIL-STD-462 : Conducted Susceptibility:**

|        |                         |
|--------|-------------------------|
| 12/B01 | MIL-STD-462 Method CS01 |
|--------|-------------------------|

|        |                         |
|--------|-------------------------|
| 12/B02 | MIL-STD-462 Method CS02 |
|--------|-------------------------|

|        |                         |
|--------|-------------------------|
| 12/B05 | MIL-STD-462 Method CS06 |
|--------|-------------------------|

|        |                         |
|--------|-------------------------|
| 12/B08 | MIL-STD-462 Method CS10 |
|--------|-------------------------|

|        |                         |
|--------|-------------------------|
| 12/B09 | MIL-STD-462 Method CS11 |
|--------|-------------------------|

|        |                                    |
|--------|------------------------------------|
| 12/B12 | MIL-STD-462 Version D Method CS101 |
|--------|------------------------------------|

|        |                                    |
|--------|------------------------------------|
| 12/B17 | MIL-STD-462 Version D Method CS114 |
|--------|------------------------------------|

|        |                                    |
|--------|------------------------------------|
| 12/B18 | MIL-STD-462 Version D Method CS115 |
|--------|------------------------------------|

|        |                                    |
|--------|------------------------------------|
| 12/B19 | MIL-STD-462 Version D Method CS116 |
|--------|------------------------------------|

|        |                                    |
|--------|------------------------------------|
| 12/B20 | MIL-STD-461 Version E Method CS101 |
|--------|------------------------------------|

|        |                                    |
|--------|------------------------------------|
| 12/B25 | MIL-STD-461 Version E Method CS114 |
|--------|------------------------------------|

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

12/B26 MIL-STD-461 Version E Method CS115  
12/B27 MIL-STD-461 Version E Method CS116

**MIL-STD-462 : Radiated Emissions:**

12/D01 MIL-STD-462 Method RE01  
12/D02 MIL-STD-462 Method RE02  
12/D04 MIL-STD-462 Version D Method RE101  
12/D05 MIL-STD-462 Version D Method RE102  
12/D07 MIL-STD-461 Version E Method RE101  
12/D08 MIL-STD-461 Version E Method RE102

**MIL-STD-462 : Radiated Susceptibility:**

12/E01 MIL-STD-462 Method RS01  
12/E02 MIL-STD-462 Method RS02  
12/E03 MIL-STD-462 Method RS03 (Consult  
laboratory for field strengths available)  
12/E08 MIL-STD-462 Version D Method RS101  
12/E09 MIL-STD-462 Version D Method RS103  
12/E11 MIL-STD-461 Version E Method RS101  
12/E12 MIL-STD-461 Version E Method RS103

**NVLAP LAB CODE 200303-0****A.E.S.L. Environmental Laboratory**

800 North Mary Street  
Tempe, AZ 85281-1945  
Contact: Mr. Jerry Denton  
Phone: 480-966-3714  
Fax: 480-394-0188

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

**NVLAP LAB CODE 200304-0****Environmental and EMC Test Centre**

Airport Works  
Rochester  
Kent ME1 2XX  
UNITED KINGDOM  
Contact: Mr. Frank Ewen  
Phone: 01-634-816794  
Fax: 01-634-816647  
E-Mail: frank.ewen@baesystems.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: March 31, 2002

**NVLAP**

Code Designation

**MIL-STD-462 : Conducted Emissions:**

12/A06 MIL-STD-462 Method CE03  
12/A12 MIL-STD-462 Method CE07

**MIL-STD-462 : Conducted Susceptibility:**

12/B01 MIL-STD-462 Method CS01  
12/B02 MIL-STD-462 Method CS02  
12/B05 MIL-STD-462 Method CS06

**MIL-STD-462 : Radiated Emissions:**

12/D02 MIL-STD-462 Method RE02

**MIL-STD-462 : Radiated Susceptibility:**

12/E02 MIL-STD-462 Method RS02  
12/E03 MIL-STD-462 Method RS03 (Consult  
laboratory for field strengths available)

12/E04 MIL-STD-462 Method RS03 employing  
RADHAZ procedures for high level testing  
(Consult laboratory for field strengths  
available)

**NVLAP LAB CODE 200305-0****GE Owensboro Test Laboratory**

3301 Old Hartford Road  
Owensboro, KY 42303  
Contact: Mr. Robert Riley  
Phone: 270-686-1270  
Fax: 270-686-1262

**Efficiency of Electric Motors**

Accreditation Valid Through: March 31, 2002

**NVLAP**

Code Designation

24/M01 IEEE 112, Method B

**NVLAP LAB CODE 200306-0****Zacta Technology Corporation Yonezawa Testing Center**

4149-7 Hachimanpara 5-chome  
Yonezawa-shi Yamagata 992-1128  
JAPAN  
Contact: Mr. Shin-ichi Abe  
Phone: 81-238-28-2880  
Fax: 81-238-28-2888  
E-Mail: shinichi\_abe@zacta.co.jp

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

Code Designation

**Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1993: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology  
equipment

12/CIS22a IEC/CISPR 22:1993: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology  
equipment, Amendment 1:1995, and  
Amendment 2:1996.

12/F01 FCC Method - 47 CFR Part 15 - Digital  
Devices

12/F01a Conducted Emissions, Power Lines, 450 KHz  
to 30 MHz

12/F01b Radiated Emissions

12/T51 AS/NZS 3548

**Immunity Test Methods:**

12/I01 IEC 61000-4-2 (1995) and Amendment 1  
(1998): Electrostatic Discharge Immunity Test

12/I02 IEC 61000-4-3 (1995) and Amendment 1  
(1998): Radiated, Radio-Frequency

Electromagnetic Field Immunity Test

12/I03 IEC 61000-4-4 (1995): Electrical Fast



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|        |                                                                                                      |
|--------|------------------------------------------------------------------------------------------------------|
|        | Transient/Burst Immunity Test                                                                        |
| 12/I04 | IEC 61000-4-5 (1995): Surge Immunity Test                                                            |
| 12/I05 | IEC 61000-4-6 (1996): Immunity to<br>Conducted Disturbances, Induced<br>Radio-Frequency Fields       |
| 12/I06 | IEC 61000-4-8 (1993): Power Frequency<br>Magnetic Field Immunity Test                                |
| 12/I07 | IEC 61000-4-11 (1994): Voltage Dips, Short<br>Interruptions and Voltage Variations Immunity<br>Tests |

**NVLAP LAB CODE 200308-0****SNB Laboratory**

49 Abbott Street  
P.O. Box 68  
Cumberland, RI 02864-0968  
Contact: Mr. James Faria  
Phone: 401-722-6701  
Fax: 401-722-6704

**Fasteners & Metals**

Accreditation Valid Through: March 31, 2002

**NVLAP**

Code      Designation

**Mechanical and Physical Testing and Inspection*****Axial tensile strength of full-size threaded fasteners***

FA/265    ASTM A370 Sec. A3.2.1.4  
FA/266    ASTM F606 Sec. 3.4.1-3.4.3  
FA/273    SAE J429

***Cone proof load of internally threaded fasteners (nuts)***

FA/220    ASTM F606 Sec. 4.3

***Proofload of full-size externally threaded fasteners***

FA/226    ASTM F606 Sec. 3.2.1-3.2.3  
FA/229    SAE J429 Sec. 5.3

***Proofload of internally threaded fasteners (nuts)***

FA/236    ASTM F606 Sec. 4.2

***Rockwell hardness of fasteners***

FA/197    ASTM E18

***Tension testing of machined specimens from externally threaded fasteners***

FA/278    ASTM A370  
FA/279    ASTM F606 Sec. 3.6

***Wedge tensile strength of full-size threaded fasteners***

FA/289    ASTM A370  
FA/290    ASTM F606 Sec. 3.5

***Yield strength of full-size externally threaded fasteners***

FA/298    ASTM F606 Sec. 3.2.4

**NVLAP LAB CODE 200309-0****TDK Corporation's 10m Anechoic Chamber & 3m Anechoic Chamber**

2-15-7 Higashi-Owada  
Ichikawa-shi, Chiba-ken 272-8558  
JAPAN  
Contact: Mr. Nobuyuki Ono  
Phone: 81-473-78-9190  
Fax: 81-473-78-9189  
E-Mail: onon@mb1.tdk.co.jp

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

Code      Designation

***Emissions Test Methods:***

12/CIS22    IEC/CISPR 22:1993: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology  
equipment  
12/F01      FCC Method - 47 CFR Part 15 - Digital  
Devices  
12/F01a     Conducted Emissions, Power Lines, 450 KHz  
to 30 MHz  
12/F01b     Radiated Emissions  
12/T51      AS/NZS 3548

**NVLAP LAB CODE 200312-0****Sony Electronics Inc. Product Quality Division  
EMC Group**

16450 West Bernardo Drive, Building 8  
San Diego, CA 92127-1804  
Contact: Mr. Dave Traver  
Phone: 858-942-2601  
Fax: 858-942-9231  
E-Mail: david.traver@am.sony.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

Code      Designation

***Emissions Test Methods:***

12/CIS22    IEC/CISPR 22:1993: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology  
equipment  
12/CIS22a    IEC/CISPR 22:1993: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology  
equipment, Amendment 1:1995, and  
Amendment 2:1996.  
12/F01      FCC Method - 47 CFR Part 15 - Digital  
Devices  
12/F01a     Conducted Emissions, Power Lines, 450 KHz  
to 30 MHz  
12/F01b     Radiated Emissions  
12/T51      AS/NZS 3548



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****Immunity Test Methods:**

|        |                                                                                                            |        |                                                                                                |
|--------|------------------------------------------------------------------------------------------------------------|--------|------------------------------------------------------------------------------------------------|
| 12/I01 | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                         | 12/I03 | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                            |
| 12/I02 | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test | 12/I04 | IEC 61000-4-5 (1995): Surge Immunity Test                                                      |
| 12/I03 | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                        | 12/I05 | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields       |
| 12/I04 | IEC 61000-4-5 (1995): Surge Immunity Test                                                                  | 12/I06 | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test                             |
| 12/I05 | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields                   | 12/I07 | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests |
| 12/I06 | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test                                         |        |                                                                                                |
| 12/I07 | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests             |        |                                                                                                |

**NVLAP LAB CODE 200313-0****Eastman Kodak Co.- EMC Facility**

901 Elmgrove Road  
Rochester, NY 14653-5513  
Contact: Mr. Cavan A. Kelsey  
Phone: 716-726-9549  
Fax: 716-726-7283  
E-Mail: Cavan.kelsey@kodak.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

Code      Designation

**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

**Immunity Test Methods:**

|        |                                                                                                            |
|--------|------------------------------------------------------------------------------------------------------------|
| 12/I01 | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                         |
| 12/I02 | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test |

|        |                                                                                                |
|--------|------------------------------------------------------------------------------------------------|
| 12/I03 | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                            |
| 12/I04 | IEC 61000-4-5 (1995): Surge Immunity Test                                                      |
| 12/I05 | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields       |
| 12/I06 | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test                             |
| 12/I07 | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests |

**NVLAP LAB CODE 200317-0****Raytheon Technical Services Co. EMI Laboratory**

6125 E. 21st Street, M/S 32  
Indianapolis, IN 46219-2058  
Contact: Mr. Keith Hines  
Phone: 317-306-7484  
Fax: 317-306-4949  
E-Mail: hinesk@indy.raytheon.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

Code      Designation

**MIL-STD-462 : Conducted Emissions:**

|        |                                    |
|--------|------------------------------------|
| 12/A06 | MIL-STD-462 Method CE03            |
| 12/A13 | MIL-STD-462 Version D Method CE101 |
| 12/A14 | MIL-STD-462 Version D Method CE102 |
| 12/A15 | MIL-STD-462 Version D Method CE106 |
| 12/A16 | MIL-STD-461 Version E Method CE101 |
| 12/A17 | MIL-STD-461 Version E Method CE102 |
| 12/A18 | MIL-STD-461 Version E Method CE106 |

**MIL-STD-462 : Conducted Susceptibility:**

|        |                                    |
|--------|------------------------------------|
| 12/B05 | MIL-STD-462 Method CS06            |
| 12/B12 | MIL-STD-462 Version D Method CS101 |
| 12/B13 | MIL-STD-462 Version D Method CS103 |
| 12/B14 | MIL-STD-462 Version D Method CS104 |
| 12/B15 | MIL-STD-462 Version D Method CS105 |
| 12/B16 | MIL-STD-462 Version D Method CS109 |
| 12/B17 | MIL-STD-462 Version D Method CS114 |
| 12/B18 | MIL-STD-462 Version D Method CS115 |
| 12/B19 | MIL-STD-462 Version D Method CS116 |
| 12/B20 | MIL-STD-461 Version E Method CS101 |
| 12/B21 | MIL-STD-461 Version E Method CS103 |
| 12/B22 | MIL-STD-461 Version E Method CS104 |
| 12/B23 | MIL-STD-461 Version E Method CS105 |
| 12/B24 | MIL-STD-461 Version E Method CS109 |
| 12/B25 | MIL-STD-461 Version E Method CS114 |
| 12/B26 | MIL-STD-461 Version E Method CS115 |
| 12/B27 | MIL-STD-461 Version E Method CS116 |

**MIL-STD-462 : Radiated Emissions:**

|        |                                    |
|--------|------------------------------------|
| 12/D02 | MIL-STD-462 Method RE02            |
| 12/D04 | MIL-STD-462 Version D Method RE101 |
| 12/D05 | MIL-STD-462 Version D Method RE102 |
| 12/D07 | MIL-STD-461 Version E Method RE101 |
| 12/D08 | MIL-STD-461 Version E Method RE102 |

**MIL-STD-462 : Radiated Susceptibility:**

|        |                                  |
|--------|----------------------------------|
| 12/E02 | MIL-STD-462 Method RS02          |
| 12/E03 | MIL-STD-462 Method RS03 (Consult |

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|        |                                           |
|--------|-------------------------------------------|
|        | laboratory for field strengths available) |
| 12/E08 | MIL-STD-462 Version D Method RS101        |
| 12/E09 | MIL-STD-462 Version D Method RS103        |
| 12/E11 | MIL-STD-461 Version E Method RS101        |
| 12/E12 | MIL-STD-461 Version E Method RS103        |

**NVLAP LAB CODE 200319-0****TDK Corporation's Chikumagawa Open Site**

543 Otai  
Saku-shi, Nagano-ken 385-8555  
JAPAN  
Contact: Mr. Nobuyuki Ono  
Phone: 81-473-78-9190  
Fax: 81-473-78-9189  
E-Mail: ono@mb1.tdk.co.jp

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

*Code      Designation*

**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

**NVLAP LAB CODE 200320-0****Modern Plating Corporation**

P.O. Box 838, South Hancock Avenue  
Freeport, IL 61032-0838  
Contact: Mr. Daniel James Mauer  
Phone: 815-235-3111  
Fax: 815-235-4571

**Fasteners & Metals**

Accreditation Valid Through: June 30, 2002

**NVLAP**

*Code      Designation*

**Chemical Analysis****Solution chemical analysis**

FA/969 MPC AA Work Instructions

**Dimensional Inspection****Dimensions of general purpose fasteners and****high-volume machine assembly fasteners**

FA/404 ANSI/ASME B18.18.2M

**Dimensions of special purpose fasteners and fasteners for highly specialized engineered ap**

FA/405 ANSI/ASME B18.18.3M  
FA/406 ANSI/ASME B18.18.4M

**Mechanical and Physical Testing and Inspection****Adhesion of metallic coatings on fasteners**

FA/143 ASTM B571

**Measurement of fastener coating thickness - X-ray methods**

FA/556 ASTM B568

**Measurement of fastener coating thickness - eddy-current method**

FA/148 ASTM B244

**Measurement of fastener coating thickness - magnetic methods**

FA/153 ASTM B499

**Measurement of fastener coating thickness - weight of coating**

FA/970 MPC Coating Weight Work Instructions

**Salt spray testing of fasteners**

FA/166 ASTM B117

**NVLAP LAB CODE 200321-0****Binder Metal Products, Inc.**

14909 South Broadway  
Gardena, CA 90248  
Contact: Mr. Bill Weber  
Phone: 323-321-4835  
Fax: 310-532-2936  
E-Mail: billw@bindermetal.com  
URL: http://bindermetal.com

**Fasteners & Metals**

Accreditation Valid Through: September 30, 2002

**NVLAP**

*Code      Designation*

**Dimensional Inspection****Dimensions of fasteners - flatness**

FA/975 ASME Y14.5M  
FA/976 Binder QAI 0007

**Mechanical and Physical Testing and Inspection****Hardness preparation**

FA/482 ASTM F606

**Measurement of fastener coating thickness - eddy-current method**

FA/977 Binder QAI 0005  
FB/1217 Binder QAI0005

**Rockwell hardness of fasteners**

FA/197 ASTM E18  
FA/978 Binder QAI 0006

NVLAP LAB CODE 200322-0

**Nowicki & Associates, Inc.**

33516 9th Avenue South Bldg. 6  
Federal Way, WA 98003-6322  
Contact: Mr. Ronald Nowicki  
Phone: 253-927-5233  
Fax: 253-924-0323  
E-Mail: RENOWICKI@AOL.COM

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

NVLAP LAB CODE 200323-0

**ALAC**

522 East 20th Street, Suite 6E  
New York, NY 10009  
Contact: Mr. Aleksandr Knobel  
Phone: 646-654-1473  
Fax: 646-654-1476

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

NVLAP LAB CODE 200324-0

**Clark Seif Clark, Inc.**

21732 Devonshire Street, 2nd Floor  
Chatsworth, CA 91311  
Contact: Mr. Christian Goerrissen  
Phone: 818-727-2553  
Fax: 818-727-2556  
E-Mail: cgoerrissen@csceng.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

NVLAP LAB CODE 200325-0

**TEC-AN, Inc.**

2517 S. Purdue Avenue  
Oklahoma City, OK 73128-1830  
Contact: Mr. Donald J. Nist  
Phone: 405-681-7076  
Fax: 405-681-7256  
E-Mail: tec-an@coxinet.net

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

NVLAP LAB CODE 200327-0

**Saturn Fasteners, Inc.**

425 South Varney Street  
Burbank, CA 91502  
Contact: Mr. Nicholas Karabetsos  
Phone: 818-846-7145  
Fax: 818-846-7306  
E-Mail: satengl@aol.com

**Fasteners & Metals**

Accreditation Valid Through: September 30, 2002

*NVLAP*

*Code Designation*

**Dimensional Inspection**

*Dimensions of fasteners - hexagon and double hexagon (12 point) and spline sockets*

FA/972 NAS 4002  
FA/973 NAS 624-644

*Dimensions of fasteners - straightness*

FA/974 NAS 4002

*External thread parameters - SAE fastener with MJ metric screw threads*

FA/693 FED-STD-H28/20

*External thread parameters - system 21*

FA/380 FED-STD-H28/20

*External thread parameters - system 22*

FA/382 FED-STD-H28/20

*External thread parameters - system 23*

FA/386 FED-STD-H28/20

*Surface texture*

FA/439 ANSI/ASME B46.1

**Mechanical and Physical Testing and Inspection**

*Axial tensile strength of full-size threaded fasteners*

FA/271 MIL-STD-1312-8

*Bend test of full size eyebolts*

FA/971 MIL-B-6812 Section 4.5.4

*Double shear of externally threaded fasteners*

FA/257 MIL-STD-1312-13

*Fatigue of full-size threaded fasteners*

FA/183 MIL-STD-1312-11

*Hydrogen embrittlement (stress durability) of externally threaded fasteners*

FA/176 MIL-STD-1312-5

*Magnetic permeability*

FA/214 ASTM A342 Test Method 3

*Measurement of fastener coating thickness - dimensional change method*

FA/495 MIL-STD-1312-12

*Measurement of fastener coating thickness - eddy-current method*

FA/152 MIL-STD-1312-12

*Microhardness of fasteners*

FA/189 ASTM E384

*Recess strength test in both the installation and removal directions*



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****Rockwell hardness of fasteners**

FA/201 MIL-STD-1312-6

**Rockwell superficial hardness of fasteners**

FA/209 MIL-STD-1312-6

**Tension testing of machined specimens from externally threaded fasteners**

FA/475 ASTM E8

**Wedge tensile strength of full-size threaded fasteners**

FA/290 ASTM F606 Sec. 3.5

**Metallography****Decarburization and case depth measurement in fasteners**

FA/483 ASTM A574 Sec. 12

**Determination of grain size of fasteners**

FA/331 ASTM E112

**Macroscopic examination of fasteners by etching**

FA/511 ASTM E340

**Microscopic examination of fasteners by etching**

FA/341 ASTM E1077

**Surface discontinuities of externally threaded fasteners**

FA/357 ASTM F788/788M

NVLAP LAB CODE 200328-0

**Prospect Testing Labs, Inc.**

1245 Forest Avenue

Des Plaines, IL 60018

Contact: Mr. Seung W. Lyu

Phone: 847-827-4766

Fax: 847-299-6222

**Fasteners & Metals**

Accreditation Valid Through: March 31, 2002

**NVLAP**

Code Designation

**Chemical Analysis****Optical emission spectrochemical analysis**

FA/457 ASTM E415

FA/459 ASTM E1086

FA/460 ASTM E1251

**Mechanical and Physical Testing and Inspection****Axial tensile strength of full-size threaded fasteners**

FA/266 ASTM F606 Sec. 3.4.1-3.4.3

FA/273 SAE J429

FA/530 ASTM E8

FA/799 NASM 1312-8

**Brinell hardness of fasteners**

FA/186 ASTM E10

**Hydrogen embrittlement (stress durability) of externally threaded fasteners**

FA/875 NASM 1312-5

FA/924 ASTM F606

FA/967 GM 6010M

**Hydrogen embrittlement (stress durability) of internally threaded fasteners**

FA/968 GM 6010M

**Intergranular corrosion susceptibility in austenitic stainless steel fasteners - nitric acid**

FA/173 ASTM A262 Sec. 15-21, Practice C

**Intergranular corrosion susceptibility of austenitic stainless steel fasteners - oxalic acid**

FA/174 ASTM A262 Sec. 3-7, Practice A

**Measurement of fastener coating thickness - microscopical method**

FA/160 ASTM B487

FA/873 NASM 1312-12

**Measurement of fastener coating thickness - weight of coating**

FA/164 ASTM A90

**Microhardness of fasteners**

FA/189 ASTM E384

**Proof load of full-size externally threaded fasteners**

FA/226 ASTM F606 Sec. 3.2.1-3.2.3

FA/229 SAE J429

**Proof load of internally threaded fasteners (nuts)**

FA/236 ASTM F606 Sec. 4.2

FA/241 SAE J995 Sec. 5.1

**Rockwell hardness of fasteners**

FA/197 ASTM E18

**Rockwell superficial hardness of fasteners**

FA/205 ASTM E18

**Tension testing of machined specimens from externally threaded fasteners**

FA/475 ASTM E8

**Torque-tension of full-size threaded fasteners**

FA/882 NASM 1312-15

**Torsional strength test of thread rolling and self-drilling tapping screws**

FA/252 ASTM F738M

FA/254 SAE J81

FA/751 SAE J933

FA/966 ASTM F880M

**Wedge tensile strength of full-size threaded fasteners**

FA/290 ASTM F606 Sec. 3.5

FA/468 SAE J429

**Metallography****Decarburization and case depth measurement in fasteners**

FA/323 ASTM E1077

FA/328 SAE J121

**Determination of grain size of fasteners**

FA/331 ASTM E112

**Macroscopic examination of fasteners by etching**

FA/551 ASTM E3

**Microscopic examination of fasteners by etching**

FA/552 ASTM E3

**Surface discontinuities of externally threaded fasteners**

FA/361 SAE J123

FA/362 SAE J1061

**Surface discontinuities of internally threaded fasteners**

FA/365 SAE J122



NVLAP LAB CODE 200331-0

**HomeTek Technology Inc.**

P.O Box: 13-131, Pan-Chiao City  
No. 85-5 Shir Men Rd., Tu Chen City  
Taipei Shien 236  
TAIWAN  
Contact: Mr. Grant Huang  
Phone: 886-2-22608375  
Fax: 886-2-22748013  
E-Mail: hometek@ms15.hinet.net

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

*NVLAP*

*Code Designation*

**Emissions Test Methods:**

- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

NVLAP LAB CODE 200333-0

**EMSL Analytical, Inc.**

175 Clearbrook Road  
Cross West Chester Executive Plaza  
Elmsford, NY 10523  
Contact: Mr. Robert Georgens  
Phone: 914-592-4688  
Fax: 914-592-6798  
E-Mail: elmsfordlab@emsl.com  
URL: <http://www.emsl.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

NVLAP LAB CODE 200335-0

**Hygeia Laboratories, Inc.**

9955 NW 116 Way, Suite 1  
Miami, FL 33178  
Contact: Mr. Julio Lopez  
Phone: 305-882-8200  
Fax: 305-882-1200  
E-Mail: LOPEZ31@ATC-ENVIRO.COM  
URL: <http://www.atc-enviro.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

NVLAP LAB CODE 200336-0

**Pratt & Whitney Materials Control Lab/Quality & Standards Lab**

400 Main Street, Mail Stop 114-47  
East Hartford, CT 06108  
Contact: Mr. Stanley F. Ciempa, Jr.  
Phone: 860-565-2857  
Fax: 860-565-1506  
E-Mail: ciempasf@pweh.com

**Fasteners & Metals**

Accreditation Valid Through: June 30, 2002

*NVLAP*

*Code Designation*

**Chemical Analysis**

**Combustion analysis for carbon, sulfur, oxygen, nitrogen, and hydrogen**

- FB/1024 P&W M-165
- FB/1025 P&W M-166
- FB/1026 P&W M-175

**Energy dispersive X-ray analysis**

- FB/1030 P&W N-51

**Optical emission spectrochemical analysis**

- FB/1027 P&W M-186
- FB/1028 P&W N-11

**X-ray fluorescence (XRF) spectrochemical analysis**

- FB/1029 P&W N-60

**Mechanical and Physical Testing and Inspection**

**Axial tensile strength of full-size threaded fasteners**

- FB/1018 P&W K-32

**Brinell hardness of fasteners**

- FB/1009 P&W E-O Supp C

**Charpy impact (v-notch) testing**

- FB/1014 P&W K-162

**Elevated temperature testing capability**

- FB/1135 P&W K-33

**Fatigue of full-size threaded fasteners**

- FB/1008 P&W K-317

**Flareability test of clinch and shank nuts**

- FB/1006 P&W K-309

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****Measurement of fastener coating thickness -****microscopical method**

FB/1136 P&amp;W E-23

**Microhardness of fasteners**

FB/1010 P&amp;W E-O Supp C

**Proof load of full-size externally threaded fasteners**

FB/1015 P&amp;W K-32

**Proof load of internally threaded fasteners (nuts)**

FB/1016 P&amp;W K-32

**Rockwell hardness of fasteners**

FB/1011 P&amp;W E-O Supp C

**Rockwell superficial hardness of fasteners**

FB/1012 P&amp;W E-O Supp C

**Salt spray testing of fasteners**

FB/1007 P&amp;W P-23

**Stress rupture of fasteners**

FB/1017 P&amp;W E-1107

**Vickers hardness - test forces from 9.807 to 1176 N (1 to 120 kgf)**

FB/1013 P&amp;W E-O Supp C

**Metallography****Decarburization and case depth measurement in fasteners**

FB/1019 P&amp;W E-23

**Determination of grain size of fasteners**

FA/331 ASTM E112

**Macroscopic examination of fasteners by etching**

FB/1020 P&amp;W K-76

**Microscopic examination of fasteners by etching**

FB/1021 P&amp;W E-23

**Surface discontinuities of externally threaded fasteners**

FB/1022 P&amp;W E-23

FB/1023 P&amp;W E-242

**NVLAP LAB CODE 200340-0****Diviersified T.E.S.T. Technologies, Inc.**

556 Route 222, P.O. Box 8

Groton, NY 13073

Contact: Mr. Thomas P. Sims

Phone: 607-898-4218

Fax: 607-898-4830

E-Mail: tom@dttlab.com

URL: http://www.dttlalab.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

|          |                                                                                                                               |
|----------|-------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22 | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment |
|----------|-------------------------------------------------------------------------------------------------------------------------------|

|        |                                               |
|--------|-----------------------------------------------|
| 12/F01 | FCC Method - 47 CFR Part 15 - Digital Devices |
|--------|-----------------------------------------------|

|         |                                                     |
|---------|-----------------------------------------------------|
| 12/F01a | Conducted Emissions, Power Lines, 450 KHz to 30 MHz |
|---------|-----------------------------------------------------|

|         |                    |
|---------|--------------------|
| 12/F01b | Radiated Emissions |
|---------|--------------------|

|        |             |
|--------|-------------|
| 12/T51 | AS/NZS 3548 |
|--------|-------------|

**NVLAP LAB CODE 200341-0****United Steel and Fasteners Inc.**

1500 Industrial Drive

Itasca, IL 60143

Contact: Mr. G. Perri

Phone: 630-250-0900

Fax: 630-250-0220

E-Mail: us\_f@msn.com

**Fasteners & Metals**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Dimensional Inspection****Dimensions of fasteners - bearing surface squareness**

FA/745 ANSI B18.2.1

**Dimensions of fasteners - straightness**

FA/423 ANSI/ASME B18.2.1

**Dimensions of general purpose fasteners and high-volume machine assembly fasteners**

FA/494 ANSI B18.2.1

**Mechanical and Physical Testing and Inspection****Axial tensile strength of full-size threaded fasteners**

FA/266 ASTM F606 Sec. 3.4.1-3.4.3

FA/273 SAE J429

**Hardness preparation**

FA/482 ASTM F606

**Proof load of full-size externally threaded fasteners**

FA/226 ASTM F606 Sec. 3.2.1-3.2.3

FA/229 SAE J429

**Rockwell hardness of fasteners**

FA/202 SAE J417

**Tension testing of machined specimens from externally threaded fasteners**

FA/279 ASTM F606 Sec. 3.6

FA/283 SAE J429

**NVLAP LAB CODE 200345-0****Ricoh Company LTD. Ohmori Acoustics Test Site**

3-6, 1 Chome, Nakamagome, Ohta-ku

Tokyo 143-8555

JAPAN

Contact: Mr. Yuji Noritake

Phone: 03-3777-8183

Fax: 03-3777-0811

E-Mail: yuji.noritake@nts.ricoh.co.jp

**Acoustical Testing Services**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

|        |          |
|--------|----------|
| 08/P48 | ISO 7779 |
|--------|----------|

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 200346-0****SCILAB California, Inc.**

24416 South Main Street, Suite 308

Carson, CA 90745

Contact: Ms. Heidi Hanser

Phone: 310-834-4868

Fax: 310-834-4772

E-Mail: hhanser@scilabs.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: December 31, 2002

**NVLAP LAB CODE 200347-0****Quietek Corporation**

No. 75-2 Wang-Yeh Velley, Yung-Hsing

Chiung-Lin

Hsin-Chu Country

TAIWAN

Contact: Mr. Gene Chang

Phone: 886-3-5928858

Fax: 886-3-5928859

E-Mail: gene@quietek.com

URL: <http://www.quietek.com>**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

- |           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

**NVLAP LAB CODE 200349-0****Crisp Analytical Laboratory**

2081 Hutton Drive, Suite 301

Carrollton, TX 75006

Contact: Mr. Leslie Crisp

Phone: 972-488-1414

Fax: 972-488-8006

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: September 30, 2002

**NVLAP LAB CODE 200350-0****White Environmental Consultants, Inc.**

1130 N. Nimitz Hwy. #B220

Honolulu, HI 96817

Contact: Mr. Shad Wells

Phone: 808-536-8819

Fax: 808-536-0191

E-Mail: [jayclayton@hawaii.rr.com](mailto:jayclayton@hawaii.rr.com)**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

**NVLAP LAB CODE 200358-0****Patriot Environmental Laboratory Services, Inc.**

12832 Valley View Street, Suite 107

Garden Grove, CA 92845

Contact: Mr. James Thornbrugh, II

Phone: 714-899-8900

Fax: 714-899-7098

E-Mail: [Patriotlab@earthlink.net](mailto:Patriotlab@earthlink.net)**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

**NVLAP LAB CODE 200361-0****Architectural Testing Inc.**

130 Derry Ct.

York, PA 17402

Contact: Mr. Eric J. Miller

Phone: 717-764-7700

Fax: 717-764-4129

E-Mail: [emiller@testati.com](mailto:emiller@testati.com)URL: <http://www.testati.com>**Acoustical Testing Services**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

- |        |             |
|--------|-------------|
| 08/P03 | ASTM C423   |
| 08/P06 | ASTM E90    |
| 08/P10 | ANSI S12.31 |
| 08/P30 | ASTM E1408  |
| 08/P31 | ASTM E336   |
| 08/P37 | ASTM E966   |



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

08/P43 ASTM E1425  
08/P44 ISO 354  
08/P45 ISO 140, Part 3  
08/P46 ISO 3741

**NVLAP LAB CODE 200362-0****TEAC Corporation EMC Center**

857 Koyata, Iruma-shi  
Saitama-ken 358-8510  
JAPAN  
Contact: Mr. Hirokatsu Nagashima  
Phone: 81-42-462-7159  
Fax: 81-42-963-7153  
E-Mail: hiro@ir.teac.co.jp

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

*Code Designation*

**Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment  
12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.  
12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment  
12/F01 FCC Method - 47 CFR Part 15 - Digital Devices  
12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz  
12/F01b Radiated Emissions  
12/T51 AS/NZS 3548

**NVLAP LAB CODE 200363-0****Sun Microsystems, Inc. EMC Testing**

901 San Antonio Road  
MS UMPK25-101  
Palo Alto, CA 94303-4900  
Contact: Mr. Hugh Hagel  
Phone: 650-786-3215  
Fax: 650-786-4316  
E-Mail: Hugh.Hagel@sun.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

*Code Designation*

**Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment

equipment  
12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.  
12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment  
12/F01 FCC Method - 47 CFR Part 15 - Digital Devices  
12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz  
12/F01b Radiated Emissions  
12/T51 AS/NZS 3548

**Immunity Test Methods:**

12/I01 IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test  
12/I02 IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test  
12/I03 IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test  
12/I04 IEC 61000-4-5 (1995): Surge Immunity Test  
12/I05 IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields  
12/I07 IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests

**NVLAP LAB CODE 200364-0****Kyushu Matsushita Electric Test Lab EMC Center**

441-13 Nagahasu Tateishi-cho  
Tosu-shi Saga-ken 841-8585  
JAPAN  
Contact: Mr. Hideo Hara  
Phone: 81-942-84-8472  
Fax: 81-942-84-8470  
E-Mail: PAN40452@pios.kme.mei.co.jp

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

*Code Designation*

**Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment  
12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|           |                                                                                                                             |
|-----------|-----------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                               |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                         |
| 12/F01b   | Radiated Emissions                                                                                                          |
| 12/T51    | AS/NZS 3548                                                                                                                 |

**NVLAP LAB CODE 200368-0****Sony EMCS Corporation Minokamo TEC**

9-15-22, Hongo-cho Minokamo City  
Gifu-Pref. 505-8510  
JAPAN

Contact: Mr. Yoshiki Matsuguchi  
Phone: 81-574-25-8161  
Fax: 81-574-25-9143  
E-Mail: matuguti@mkm.sony.co.jp

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

Code      Designation

**Emissions Test Methods:**

|         |                                                     |
|---------|-----------------------------------------------------|
| 12/F01  | FCC Method - 47 CFR Part 15 - Digital Devices       |
| 12/F01a | Conducted Emissions, Power Lines, 450 KHz to 30 MHz |
| 12/F01b | Radiated Emissions                                  |

**NVLAP LAB CODE 200369-0****PWC Environmental Laboratory, Pearl Harbor**

Code 343  
400 Marshall Road  
Pearl Harbor, HI 96860  
Contact: Ms. Ginger Nakamoto  
Phone: 808-474-3704 X317  
Fax: 808-471-4534  
E-Mail: nakamotogj@pwcpearl.navy.mil

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

**NVLAP LAB CODE 200371-0****Audix Technology (Shanghai) Co., Ltd.**

3F 34 Bldg. 680 Guiping Road  
Caohejing, Hi-Tech Park  
Shanghai 200233  
CHINA

Contact: Mr. Jeff Chen  
Phone: 86-21-64955500  
Fax: 86-21-64955491  
E-Mail: audixaci@audix.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: March 31, 2002

**NVLAP**

Code      Designation

**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

**Immunity Test Methods:**

|        |                                                                                                            |
|--------|------------------------------------------------------------------------------------------------------------|
| 12/I01 | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                         |
| 12/I02 | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test |
| 12/I03 | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                        |
| 12/I04 | IEC 61000-4-5 (1995): Surge Immunity Test                                                                  |
| 12/I05 | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields                   |
| 12/I06 | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test                                         |
| 12/I07 | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests             |

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 200372-0****AUDIX Technology (Shenzhen) Co., Ltd.**

No. 6 Ke Feng Road 52 Block Shenzhen

Science &amp; Industry Park, Nantou

Shenzhen, Guangdong

CHINA

Contact: Mr. Smart Tsai

Phone: 86-755-663-9496

Fax: 86-755-663-2877

E-Mail: smarttsai@ms12.hinet.net

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: March 31, 2002

**NVLAP***Code      Designation***Emissions Test Methods:**

- 12/CIS22 IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

**Immunity Test Methods:**

- 12/I01 IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test
- 12/I02 IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test
- 12/I03 IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test
- 12/I04 IEC 61000-4-5 (1995): Surge Immunity Test
- 12/I05 IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields
- 12/I06 IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test
- 12/I07 IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests

**NVLAP LAB CODE 200373-0****Fujitsu General EMC Laboratory**

1116, Suenaga, Takatsu-ku

Kawasaki 213-8502

JAPAN

Contact: Mr. Hiroyuki Shimanoe

Phone: 81-44-861-7897

Fax: 81-44-861-9890

E-Mail: shimanoe@fujitsugeneral.co.jp

URL: <http://www.fujitsugeneral.co.jp/emc/>**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP***Code      Designation***Emissions Test Methods:**

- 12/CIS14 CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions
- 12/CIS14a EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)
- 12/CIS14b AS/NZS 1044 (1995)
- 12/CIS14c CNS 13783-1
- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 200374-0****EnviroHealth Technologies, Inc.**

3830 Washington Boulevard, Suite 123

St. Louis, MO 63108-3406

Contact: Mr. William J. Lowry

Phone: 314-531-9868

Fax: 314-531-9196

E-Mail: wlowry@envirohealthtechnologies.com

URL: <http://www.envirohealthtechnologies.com>**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**NVLAP LAB CODE 200375-0****EMSL Analytical, Inc.**

11931 Industriplex, Suite 100

Baton Rouge, LA 70809

Contact: Mr. Kenneth Klutts

Phone: 225-755-1920

Fax: 225-755-1989

E-Mail: batonrouge@emsl.com

URL: <http://www.emsl.com>**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: December 31, 2002

**NVLAP LAB CODE 200376-0****Advance Data Technology Corporation Hsin Chu EMC Laboratory**

No. 81-1, Lu Liao Keng, 9 Ling, Wu Lung

Tsuen, Chiung Lin Hsiang

Hsin Chu Hsien 307

TAIWAN

Contact: Mr. Harris Lai

Phone: 886-2-26032180

Fax: 886-2-26022943

E-Mail: harris@mail.adt.com.tw

URL: [www.adt.com.tw](http://www.adt.com.tw)**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: March 31, 2002

*NVLAP**Code      Designation***Emissions Test Methods:**

- |           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |

|        |                                               |
|--------|-----------------------------------------------|
| 12/F01 | FCC Method - 47 CFR Part 15 - Digital Devices |
|--------|-----------------------------------------------|

|         |                                                     |
|---------|-----------------------------------------------------|
| 12/F01a | Conducted Emissions, Power Lines, 450 KHz to 30 MHz |
|---------|-----------------------------------------------------|

|         |                    |
|---------|--------------------|
| 12/F01b | Radiated Emissions |
|---------|--------------------|

|        |             |
|--------|-------------|
| 12/T51 | AS/NZS 3548 |
|--------|-------------|

**NVLAP LAB CODE 200378-0****TECO Electric & Machinery Co., Ltd.**

11 An Tung Road, Chung Li Ind. District

Taoyuan

TAIWAN

Contact: Mr. Arnold Wu

Phone: 02-2655-3333

Fax: 02-2655-2231

E-Mail: wu.arnold@teco.com.tw

**Efficiency of Electric Motors**

Accreditation Valid Through: March 31, 2002

*NVLAP**Code      Designation*

|        |                    |
|--------|--------------------|
| 24/M01 | IEEE 112, Method B |
|--------|--------------------|

**NVLAP LAB CODE 200382-0****Boeing - St. Louis Electromagnetic Compatibility Laboratory**

Mail Code S1065205

P.O. Box 516

St. Louis, MO 63166-0516

Contact: Mr. Randy R. Vollmer

Phone: 314-233-7798

Fax: 314-233-5478

E-Mail: randy.r.vollmer@boeing.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

*NVLAP**Code      Designation***MIL-STD-462 : Conducted Emissions:**

- |        |                                    |
|--------|------------------------------------|
| 12/A01 | MIL-STD-462 Method CE01            |
| 12/A04 | MIL-STD-462 Method CE02            |
| 12/A06 | MIL-STD-462 Method CE03            |
| 12/A08 | MIL-STD-462 Method CE04            |
| 12/A13 | MIL-STD-462 Version D Method CE101 |
| 12/A14 | MIL-STD-462 Version D Method CE102 |
| 12/A16 | MIL-STD-461 Version E Method CE101 |
| 12/A17 | MIL-STD-461 Version E Method CE102 |

**MIL-STD-462 : Conducted Susceptibility:**

- |        |                                    |
|--------|------------------------------------|
| 12/B01 | MIL-STD-462 Method CS01            |
| 12/B02 | MIL-STD-462 Method CS02            |
| 12/B05 | MIL-STD-462 Method CS06            |
| 12/B07 | MIL-STD-462 Method CS09            |
| 12/B08 | MIL-STD-462 Method CS10            |
| 12/B09 | MIL-STD-462 Method CS11            |
| 12/B10 | MIL-STD-462 Method CS12            |
| 12/B11 | MIL-STD-462 Method CS13            |
| 12/B12 | MIL-STD-462 Version D Method CS101 |
| 12/B16 | MIL-STD-462 Version D Method CS109 |
| 12/B17 | MIL-STD-462 Version D Method CS114 |
| 12/B18 | MIL-STD-462 Version D Method CS115 |



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

12/B19 MIL-STD-462 Version D Method CS116  
12/B20 MIL-STD-461 Version E Method CS101  
12/B24 MIL-STD-461 Version E Method CS109  
12/B25 MIL-STD-461 Version E Method CS114  
12/B26 MIL-STD-461 Version E Method CS115  
12/B27 MIL-STD-461 Version E Method CS116

**MIL-STD-462 : Radiated Emissions:**

12/D01 MIL-STD-462 Method RE01  
12/D02 MIL-STD-462 Method RE02  
12/D04 MIL-STD-462 Version D Method RE101  
12/D05 MIL-STD-462 Version D Method RE102  
12/D07 MIL-STD-461 Version E Method RE101  
12/D08 MIL-STD-461 Version E Method RE102

**MIL-STD-462 : Radiated Susceptibility:**

12/E01 MIL-STD-462 Method RS01  
12/E02 MIL-STD-462 Method RS02  
12/E03 MIL-STD-462 Method RS03 (Consult  
laboratory for field strengths available)  
12/E04 MIL-STD-462 Method RS03 employing  
RADHAZ procedures for high level testing  
(Consult laboratory for field strengths  
available)  
12/E07 MIL-STD-462 Method RS06  
12/E08 MIL-STD-462 Version D Method RS101  
12/E09 MIL-STD-462 Version D Method RS103  
12/E11 MIL-STD-461 Version E Method RS101  
12/E12 MIL-STD-461 Version E Method RS103

**NVLAP LAB CODE 200383-0****NCR Corp. San Diego EMC Lab**

17095 Via del Campo  
San Diego, CA 92127-1711  
Contact: Mr. Paul Rostek  
Phone: 858-485-2860  
Fax: 858-485-3788  
E-Mail: paul.rostek@ncr.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   |                                                                                                                                                                        |

|         |                    |
|---------|--------------------|
| 12/F01b | Radiated Emissions |
| 12/T51  | AS/NZS 3548        |

**NVLAP LAB CODE 200398-0****Sony EMCS Corp. Kohda TEC**

1, Aza-Suzumegairi Ohaza-Sakazaki  
Kohta-cho  
Nukata-gun Aichi 444-0194  
JAPAN  
Contact: Mr. Katsuyoshi Fukui  
Phone: 81-564-62-8948  
Fax: 81-564-62-2478  
E-Mail: kfukui@skd.sony.co.jp

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

|         |                                                     |
|---------|-----------------------------------------------------|
| 12/F01  | FCC Method - 47 CFR Part 15 - Digital Devices       |
| 12/F01a | Conducted Emissions, Power Lines, 450 KHz to 30 MHz |
| 12/F01b | Radiated Emissions                                  |

**NVLAP LAB CODE 200399-0****EMSL Analytical Inc. Bulk And Airborne****Asbestos Fiber Analysis**

706 North Aberdeen, Suite 1A  
Chicago, IL 60622  
Contact: Ms. Sandra C. Sobrino  
Phone: 312-733-0896  
Fax: 312-733-0590

URL: <http://www.emsl.com>

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: March 31, 2002

**NVLAP LAB CODE 200402-0****Interface Testing Laboratory**

1603 Executive Drive. P.O. Box 1503  
LaGrange, GA 30240-1503  
Contact: Ms. Toni Brown  
Phone: 706-812-6152  
Fax: 706-884-8669  
E-Mail: [toni.brown@us.interfaceinc.com](mailto:toni.brown@us.interfaceinc.com)

**Carpet and Carpet Cushion**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Tests Applicable to Carpet and Carpet Cushion**

|        |                            |
|--------|----------------------------|
| 03/T04 | 16 CFR Part 1630 (FF-1-70) |
|--------|----------------------------|

**Tests Applicable to Carpets**

|        |            |
|--------|------------|
| 03/G09 | ASTM D1335 |
| 03/G10 | ASTM D3936 |



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

03/G12 ASTM E648  
03/G13 ASTM E662

**NVLAP LAB CODE 200404-0****ORIX Rentec EMC Center; Electromagnetic Compatibility**

3130, Susugaya, Kiyokawa-Mura  
Aiko-Gun, Kanagawa 243-0112  
JAPAN

Contact: Mr. Katsuo Terai  
Phone: 81-462-88-2971  
Fax: 81-462-88-2961  
E-Mail: k-terai@rentec.orix.co.jp  
URL: <http://www.orixrentec.co.jp/emc/>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

|          |                                                                                                                               |
|----------|-------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22 | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment |
| 12/F01   | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                 |
| 12/F01a  | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                           |
| 12/F01b  | Radiated Emissions                                                                                                            |
| 12/T51   | AS/NZS 3548                                                                                                                   |

**NVLAP LAB CODE 200407-0****Shanghai Testing & Inspection Institute for Electrical Equipment**

505 Wu Ning Road  
Shanghai 200063  
CHINA

Contact: Mr. Chen Wei Hua  
Phone: 86-21-62577704  
Fax: 86-21-62577704  
E-Mail: chenweihua@online.sh.cn

**Efficiency of Electric Motors**

Accreditation Valid Through: June 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

|        |                    |
|--------|--------------------|
| 24/M01 | IEEE 112, Method B |
|--------|--------------------|

**NVLAP LAB CODE 200409-0****Philips Testing Service**

One Philips Drive, P.O. Box 14810  
Knoxville, TN 37914-1810  
Contact: Mr. Fred A. Fisher  
Phone: 865-521-4720  
Fax: 865-521-4786  
E-Mail: fred.fisher@philips.com  
URL: <http://www.philipstesting.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

|          |                                                                                                                               |
|----------|-------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22 | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment |
| 12/F01   | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                 |
| 12/F01a  | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                           |
| 12/F01b  | Radiated Emissions                                                                                                            |
| 12/T51   | AS/NZS 3548                                                                                                                   |

**NVLAP LAB CODE 200413-0****JMR Compliance Engineering**

20400 Plummer Street  
Chatsworth, CA 91311  
Contact: Mr. Leon Kogan  
Phone: 818-739-1122  
Fax: 818-993-9173  
E-Mail: leonk@jmr.com  
URL: <http://www.jmr.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: March 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 200415-0****INEEL Materials Testing Lab CFA 602**

BBWI CFA602 MS 4136  
P.O. Box 1625  
Idaho Falls, ID 83415-4136  
Contact: Mr. H. Craig Bean  
Phone: 208-526-9941  
Fax: 208-526-6673  
E-Mail: xhb@inel.gov

**Construction Materials Testing**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Aggregates**

|        |           |
|--------|-----------|
| 02/A07 | ASTM C117 |
| 02/A09 | ASTM C127 |
| 02/A10 | ASTM C128 |
| 02/A12 | ASTM C136 |
| 02/A44 | ASTM C566 |

**Concrete**

|        |                              |
|--------|------------------------------|
| 02/A01 | ASTM C39                     |
| 02/A02 | ASTM C617                    |
| 02/A41 | ASTM C192                    |
| 02/A43 | ASTM C1064                   |
| 02/G01 | ASTM C31/C172/C143/C138/C231 |

**Soil and Rock**

|        |            |
|--------|------------|
| 02/L02 | ASTM D422  |
| 02/L04 | ASTM D698  |
| 02/L05 | ASTM D854  |
| 02/L06 | ASTM D1140 |
| 02/L08 | ASTM D1557 |
| 02/L13 | ASTM D2216 |
| 02/L16 | ASTM D2487 |
| 02/L20 | ASTM D4318 |
| 02/L23 | ASTM D2922 |
| 02/L25 | ASTM D3017 |

**Standard Practices**

|        |           |
|--------|-----------|
| 02/A38 | ASTM E329 |
|--------|-----------|

**Steel Materials**

|        |                          |
|--------|--------------------------|
| 02/S01 | ASTM A370 (Sec. 5-13)/E8 |
|--------|--------------------------|

**NVLAP LAB CODE 200416-0****COACT Inc. CAFE Laboratory**

9140 Guilford Road, Suite L  
Columbia, MD 21046  
Contact: Mr. James McGeHee  
Phone: 301-498-0150  
Fax: 301-498-0855  
E-Mail: jom@coact.com  
URL: <http://www.coact.com>

**Cryptographic Module Testing**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

|        |                                                                                                                        |
|--------|------------------------------------------------------------------------------------------------------------------------|
| 17/C01 | NIST-CSTT:140-1; National Institute of Standards and Technology-Cryptographic Support Test Tool (CSTT) for the Federal |
|--------|------------------------------------------------------------------------------------------------------------------------|

Information Processing Standard 140-1 (FIPS 140-1) "Security Requirements for Cryptographic Modules."  
17/C01a Test Method Group 1: All test methods derived from FIPS 140-1 and specified in the CSTT, except those listed in Group 2 and Group 3.  
17/C02 FIPS-Approved Cryptographic Algorithms (see <http://csrc.nist.gov/cryptval>) as required in FIPS PUB 140-1.

**Common Criteria Testing**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

|         |                                                                                                                                                                                                              |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 26/A01  | ISO/IEC 15408: Info. Tech. - Security Techniques - Eval. Criteria for IT Security; Common Eval. Methodology for Info. Tech. Security, Part 1; Common Methodology for Info. Tech. Security Evaluation, Part 2 |
| 26/A01a | APE: Protection Profile evaluation                                                                                                                                                                           |
| 26/A01b | ASE: Security Target evaluation                                                                                                                                                                              |
| 26/A01c | EAL1: Evaluation assurance level 1                                                                                                                                                                           |
| 26/A01d | EAL2: Evaluation assurance level 2                                                                                                                                                                           |
| 26/A01e | EAL3: Evaluation assurance level 3                                                                                                                                                                           |
| 26/A01f | EAL4: Evaluation assurance level 4                                                                                                                                                                           |

**NVLAP LAB CODE 200418-0****IBM Endicott EMC Lab**

P.O. Box 5825, Union Station  
Endicott, NY 13763-5825  
Contact: Mr. David L. Fay  
Phone: 607-741-8972  
Fax: 607-741-8988  
E-Mail: fay@us.ibm.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

12/F01b Radiated Emissions  
12/T51 AS/NZS 3548

**NVLAP LAB CODE 200422-0****Dayton T. Brown, Inc.**

Church Street  
Bohemia, NY 11716  
Contact: Mr. Charles Gortakowski  
Phone: 631-244-6315  
Fax: 631-589-4046  
E-Mail: c.gortakowski@daytontbrown.com  
URL: <http://www.daytontbrown.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

Code Designation

**MIL-STD-462 : Conducted Emissions:**

12/A01 MIL-STD-462 Method CE01  
12/A04 MIL-STD-462 Method CE02  
12/A06 MIL-STD-462 Method CE03  
12/A08 MIL-STD-462 Method CE04  
12/A10 MIL-STD-462 Method CE06  
12/A12 MIL-STD-462 Method CE07  
12/A13 MIL-STD-462 Version D Method CE101  
12/A14 MIL-STD-462 Version D Method CE102  
12/A15 MIL-STD-462 Version D Method CE106  
12/A16 MIL-STD-461 Version E Method CE101  
12/A17 MIL-STD-461 Version E Method CE102  
12/A18 MIL-STD-461 Version E Method CE106

**MIL-STD-462 : Conducted Susceptibility:**

12/B01 MIL-STD-462 Method CS01  
12/B02 MIL-STD-462 Method CS02  
12/B04 MIL-STD-462 Method  
CS03/CS04/CS05/CS08  
12/B05 MIL-STD-462 Method CS06  
12/B06 MIL-STD-462 Method CS07  
12/B07 MIL-STD-462 Method CS09  
12/B08 MIL-STD-462 Method CS10  
12/B09 MIL-STD-462 Method CS11  
12/B10 MIL-STD-462 Method CS12  
12/B11 MIL-STD-462 Method CS13  
12/B12 MIL-STD-462 Version D Method CS101  
12/B13 MIL-STD-462 Version D Method CS103  
12/B14 MIL-STD-462 Version D Method CS104  
12/B15 MIL-STD-462 Version D Method CS105  
12/B16 MIL-STD-462 Version D Method CS109  
12/B19 MIL-STD-462 Version D Method CS116  
12/B20 MIL-STD-461 Version E Method CS101  
12/B21 MIL-STD-461 Version E Method CS103  
12/B22 MIL-STD-461 Version E Method CS104  
12/B23 MIL-STD-461 Version E Method CS105  
12/B24 MIL-STD-461 Version E Method CS109  
12/B27 MIL-STD-461 Version E Method CS116

**MIL-STD-462 : Radiated Emissions:**

12/D01 MIL-STD-462 Method RE01  
12/D02 MIL-STD-462 Method RE02  
12/D03 MIL-STD-462 Method RE03  
12/D04 MIL-STD-462 Version D Method RE101  
12/D05 MIL-STD-462 Version D Method RE102  
12/D06 MIL-STD-462 Version D Method RE103

12/D08 MIL-STD-461 Version E Method RE102  
12/D09 MIL-STD-461 Version E Method RE103

**MIL-STD-462 : Radiated Susceptibility:**

12/E01 MIL-STD-462 Method RS01  
12/E02 MIL-STD-462 Method RS02  
12/E03 MIL-STD-462 Method RS03 (Consult  
laboratory for field strengths available)  
12/E04 MIL-STD-462 Method RS03 employing  
RADHAZ procedures for high level testing  
(Consult laboratory for field strengths  
available)  
12/E05 MIL-STD-462 Method RS05  
12/E07 MIL-STD-462 Method RS06  
12/E08 MIL-STD-462 Version D Method RS101  
12/E09 MIL-STD-462 Version D Method RS103  
12/E10 MIL-STD-462 Version D Method RS105  
12/E11 MIL-STD-461 Version E Method RS101  
12/E12 MIL-STD-461 Version E Method RS103  
12/E13 MIL-STD-461 Version E Method RS105

**NVLAP LAB CODE 200424-0****Environmental Science Services, Inc.**

12875 East Locke Road  
Lockeford, CA 95237  
Contact: Mr. Mike Ostlund  
Phone: 209-333-6157  
Fax: 209-333-0492  
E-Mail: envssl@aol.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

**NVLAP LAB CODE 200425-0****BAE Systems**

95 Canal Street, P.O. Box 868  
Nashua, NH 03061-0868  
Contact: Mr. James A. Cirillo  
Phone: 603-885-2671  
Fax: 603-885-2919  
E-Mail: james.a.cirillo@baesystems.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

Code Designation

**MIL-STD-462 : Conducted Susceptibility:**

12/B01 MIL-STD-462 Method CS01  
12/B02 MIL-STD-462 Method CS02  
12/B04 MIL-STD-462 Method  
CS03/CS04/CS05/CS08  
12/B05 MIL-STD-462 Method CS06  
12/B07 MIL-STD-462 Method CS09  
12/B09 MIL-STD-462 Method CS11  
12/B12 MIL-STD-462 Version D Method CS101  
12/B13 MIL-STD-462 Version D Method CS103  
12/B14 MIL-STD-462 Version D Method CS104  
12/B15 MIL-STD-462 Version D Method CS105  
12/B16 MIL-STD-462 Version D Method CS109  
12/B17 MIL-STD-462 Version D Method CS114



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|        |                                    |
|--------|------------------------------------|
| 12/B18 | MIL-STD-462 Version D Method CS115 |
| 12/B19 | MIL-STD-462 Version D Method CS116 |
| 12/B20 | MIL-STD-461 Version E Method CS101 |
| 12/B21 | MIL-STD-461 Version E Method CS103 |
| 12/B22 | MIL-STD-461 Version E Method CS104 |
| 12/B23 | MIL-STD-461 Version E Method CS105 |
| 12/B24 | MIL-STD-461 Version E Method CS109 |
| 12/B25 | MIL-STD-461 Version E Method CS114 |
| 12/B26 | MIL-STD-461 Version E Method CS115 |
| 12/B27 | MIL-STD-461 Version E Method CS116 |

**MIL-STD-462 : Radiated Emissions:**

|        |                                    |
|--------|------------------------------------|
| 12/D01 | MIL-STD-462 Method RE01            |
| 12/D02 | MIL-STD-462 Method RE02            |
| 12/D04 | MIL-STD-462 Version D Method RE101 |
| 12/D05 | MIL-STD-462 Version D Method RE102 |
| 12/D07 | MIL-STD-461 Version E Method RE101 |
| 12/D08 | MIL-STD-461 Version E Method RE102 |

**MIL-STD-462 : Radiated Susceptibility:**

|        |                                                                               |
|--------|-------------------------------------------------------------------------------|
| 12/E01 | MIL-STD-462 Method RS01                                                       |
| 12/E02 | MIL-STD-462 Method RS02                                                       |
| 12/E03 | MIL-STD-462 Method RS03 (Consult<br>laboratory for field strengths available) |
| 12/E07 | MIL-STD-462 Method RS06                                                       |
| 12/E08 | MIL-STD-462 Version D Method RS101                                            |
| 12/E09 | MIL-STD-462 Version D Method RS103                                            |
| 12/E11 | MIL-STD-461 Version E Method RS101                                            |
| 12/E12 | MIL-STD-461 Version E Method RS103                                            |

**NVLAP LAB CODE 200426-0****Computer Sciences Corporation**

132 National Business Pkwy.  
Annapolis Junction, MD 20701  
Contact: Mr. James Fink  
Phone: 240-456-6227  
Fax: 240-456-4539  
E-Mail: [jfink5@csc.com](mailto:jfink5@csc.com)  
URL: <http://www.csc.com>

**Common Criteria Testing**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| <i>Code</i> | <i>Designation</i>                                                                                                                                                                                                          |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 26/A01      | ISO/IEC 15408: Info. Tech. - Security<br>Techniques - Eval. Criteria for IT Security;<br>Common Eval. Methodology for Info. Tech.<br>Security, Part 1; Common<br>Methodology for Info. Tech. Security<br>Evaluation, Part 2 |
| 26/A01a     | APE: Protection Profile evaluation                                                                                                                                                                                          |
| 26/A01b     | ASE: Security Target evaluation                                                                                                                                                                                             |
| 26/A01c     | EAL1: Evaluation assurance level 1                                                                                                                                                                                          |
| 26/A01d     | EAL2: Evaluation assurance level 2                                                                                                                                                                                          |
| 26/A01e     | EAL3: Evaluation assurance level 3                                                                                                                                                                                          |
| 26/A01f     | EAL4: Evaluation assurance level 4                                                                                                                                                                                          |

**NVLAP LAB CODE 200427-0****SAIC Accredited Lab Center for Evaluation & Testing (SALCET)**

Ctr. for Information Security Tech. SAIC  
7125 Columbia Gateway Drive, Suite 300  
Columbia, MD 21046  
Contact: Mr. Robert L. Williamson  
Phone: 410-953-6819  
Fax: 410-953-7001  
E-Mail: [robert.l.williamson.jr@saic.com](mailto:robert.l.williamson.jr@saic.com)  
URL: <http://www.saic.com/securebiz/cctl.html>

**Common Criteria Testing**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| <i>Code</i> | <i>Designation</i>                                                                                                                                                                                                          |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 26/A01      | ISO/IEC 15408: Info. Tech. - Security<br>Techniques - Eval. Criteria for IT Security;<br>Common Eval. Methodology for Info. Tech.<br>Security, Part 1; Common<br>Methodology for Info. Tech. Security<br>Evaluation, Part 2 |
| 26/A01a     | APE: Protection Profile evaluation                                                                                                                                                                                          |
| 26/A01b     | ASE: Security Target evaluation                                                                                                                                                                                             |
| 26/A01c     | EAL1: Evaluation assurance level 1                                                                                                                                                                                          |
| 26/A01d     | EAL2: Evaluation assurance level 2                                                                                                                                                                                          |
| 26/A01e     | EAL3: Evaluation assurance level 3                                                                                                                                                                                          |
| 26/A01f     | EAL4: Evaluation assurance level 4                                                                                                                                                                                          |

**NVLAP LAB CODE 200428-0****TUViT, IT Security Laboratory**

4412 Spicewood Springs Road, #801  
Austin, TX 78759  
Contact: Mr. Roland Mueller  
Phone: 512-795-0494  
Fax: 512-795-0495  
E-Mail: [roland@seculab.com](mailto:roland@seculab.com)  
URL: <http://www.seculab.com>

**Common Criteria Testing**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| <i>Code</i> | <i>Designation</i>                                                                                                                                                                                                          |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 26/A01      | ISO/IEC 15408: Info. Tech. - Security<br>Techniques - Eval. Criteria for IT Security;<br>Common Eval. Methodology for Info. Tech.<br>Security, Part 1; Common<br>Methodology for Info. Tech. Security<br>Evaluation, Part 2 |
| 26/A01a     | APE: Protection Profile evaluation                                                                                                                                                                                          |
| 26/A01b     | ASE: Security Target evaluation                                                                                                                                                                                             |
| 26/A01c     | EAL1: Evaluation assurance level 1                                                                                                                                                                                          |
| 26/A01d     | EAL2: Evaluation assurance level 2                                                                                                                                                                                          |
| 26/A01e     | EAL3: Evaluation assurance level 3                                                                                                                                                                                          |
| 26/A01f     | EAL4: Evaluation assurance level 4                                                                                                                                                                                          |



NVLAP LAB CODE 200429-0

**Arca Systems SEAL Common Criteria Testing Laboratory**

10220 Old Columbia Road, Suite G-H  
Columbia, MD 21046-2366  
Contact: Mr. Michael Weidner  
Phone: 410-309-1780  
Fax: 410-309-1781  
E-Mail: mike.weidner@exodus.net  
URL: <http://www.arca.com>

**Common Criteria Testing**

Accreditation Valid Through: September 30, 2002

*NVLAP*

| <i>Code</i> | <i>Designation</i>                                                                                                                                                                                           |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 26/A01      | ISO/IEC 15408: Info. Tech. - Security Techniques - Eval. Criteria for IT Security; Common Eval. Methodology for Info. Tech. Security, Part 1; Common Methodology for Info. Tech. Security Evaluation, Part 2 |
| 26/A01a     | APE: Protection Profile evaluation                                                                                                                                                                           |
| 26/A01b     | ASE: Security Target evaluation                                                                                                                                                                              |
| 26/A01c     | EAL1: Evaluation assurance level 1                                                                                                                                                                           |
| 26/A01d     | EAL2: Evaluation assurance level 2                                                                                                                                                                           |
| 26/A01e     | EAL3: Evaluation assurance level 3                                                                                                                                                                           |
| 26/A01f     | EAL4: Evaluation assurance level 4                                                                                                                                                                           |

NVLAP LAB CODE 200430-0

**TDK RF Solutions Inc.**

1101 Cypress Creek Road  
Cedar Park, TX 78613  
Contact: Mr. Michael E. Hill, NCE  
Phone: 512-258-9478 x135  
Fax: 512-258-0740  
E-Mail: mhill@tdkrf.com  
URL: <http://www.tdkrfsolutions.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

*NVLAP*

| <i>Code</i>                    | <i>Designation</i>                                                                                                            |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| <b>Emissions Test Methods:</b> |                                                                                                                               |
| 12/CIS22                       | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment |
| 12/F01                         | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                 |
| 12/F01a                        | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                           |
| 12/F01b                        | Radiated Emissions                                                                                                            |
| 12/T51                         | AS/NZS 3548                                                                                                                   |

NVLAP LAB CODE 200431-0

**Raytheon Electronic Systems, California Engineering EEE Laboratory**

2000 E. El Segundo Blvd.  
P.O. Box 902, Bldg. E1, M/S J131  
El Segundo, CA 90245-0902  
Contact: Mr. Ali Bahraman  
Phone: 310-647-2660  
Fax: 310-647-4582  
E-Mail: Abahramana@west.raytheon.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

*NVLAP*

| <i>Code</i>                                    | <i>Designation</i>                                                         |
|------------------------------------------------|----------------------------------------------------------------------------|
| <b>MIL-STD-462 : Conducted Emissions:</b>      |                                                                            |
| 12/A01                                         | MIL-STD-462 Method CE01                                                    |
| 12/A06                                         | MIL-STD-462 Method CE03                                                    |
| 12/A10                                         | MIL-STD-462 Method CE06                                                    |
| 12/A12                                         | MIL-STD-462 Method CE07                                                    |
| 12/A14                                         | MIL-STD-462 Version D Method CE102                                         |
| 12/A17                                         | MIL-STD-461 Version E Method CE102                                         |
| <b>MIL-STD-462 : Conducted Susceptibility:</b> |                                                                            |
| 12/B01                                         | MIL-STD-462 Method CS01                                                    |
| 12/B02                                         | MIL-STD-462 Method CS02                                                    |
| 12/B04                                         | MIL-STD-462 Method CS03/CS04/CS05/CS08                                     |
| 12/B05                                         | MIL-STD-462 Method CS06                                                    |
| 12/B09                                         | MIL-STD-462 Method CS11                                                    |
| 12/B12                                         | MIL-STD-462 Version D Method CS101                                         |
| 12/B17                                         | MIL-STD-462 Version D Method CS114                                         |
| 12/B18                                         | MIL-STD-462 Version D Method CS115                                         |
| 12/B19                                         | MIL-STD-462 Version D Method CS116                                         |
| 12/B20                                         | MIL-STD-461 Version E Method CS101                                         |
| 12/B25                                         | MIL-STD-461 Version E Method CS114                                         |
| 12/B26                                         | MIL-STD-461 Version E Method CS115                                         |
| 12/B27                                         | MIL-STD-461 Version E Method CS116                                         |
| <b>MIL-STD-462 : Radiated Emissions:</b>       |                                                                            |
| 12/D05                                         | MIL-STD-462 Version D Method RE102                                         |
| 12/D06                                         | MIL-STD-462 Version D Method RE103                                         |
| 12/D08                                         | MIL-STD-461 Version E Method RE102                                         |
| 12/D09                                         | MIL-STD-461 Version E Method RE103                                         |
| <b>MIL-STD-462 : Radiated Susceptibility:</b>  |                                                                            |
| 12/E02                                         | MIL-STD-462 Method RS02                                                    |
| 12/E03                                         | MIL-STD-462 Method RS03 (Consult laboratory for field strengths available) |
| 12/E07                                         | MIL-STD-462 Method RS06                                                    |
| 12/E09                                         | MIL-STD-462 Version D Method RS103                                         |
| 12/E12                                         | MIL-STD-461 Version E Method RS103                                         |

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 200432-0****Sony Kisarazu EMC Test Laboratory**

8-4 Shiomi  
Kisarazu Chiba 292-0834  
JAPAN  
Contact: Mr. Akihiro Arihara  
Phone: 814-383-72174  
Fax: 814-383-72495  
E-Mail: akichan@skz.co.jp

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

*Code Designation*

**Emissions Test Methods:**

- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions

**NVLAP LAB CODE 200433-0****NEC Kofu, Ltd., EMC Center**

1088-3 Ohtsu-cho, Kofu City  
Yamanashi 400-0055  
JAPAN  
Contact: Mr. Shinji Mine  
Phone: 81-55-243-4158  
Fax: 81-55-243-4229  
E-Mail: mine@comc.kofu.nec.co.jp  
URL: <http://www.nec.co.jp/kofu/emc/emc-a.html>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

*Code Designation*

**Emissions Test Methods:**

- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz

- 12/F01b Radiated Emissions  
12/T51 AS/NZS 3548

**NVLAP LAB CODE 200434-0****Minolta Co., Ltd. Toyokawa EMC Lab**

2, Higashi-Akatsuchi, Yawata-Cho  
Toyokawa, Aichi  
JAPAN  
Contact: Mr. Yasuhiro Kotera  
Phone: 81-533-88-2118  
Fax: 81-533-88-5368  
E-Mail: koteraya@ngw.minolta.co.jp

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

*Code Designation*

**Emissions Test Methods:**

- 12/CIS22 IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions  
12/T51 AS/NZS 3548

**NVLAP LAB CODE 200435-0****IBM Poughkeepsie EMC Laboratory**

M/S P932  
2455 South Road  
Poughkeepsie, NY 12601-5400  
Contact: Mr. William F. McCarthy  
Phone: 845-433-1634  
Fax: 845-432-98047  
E-Mail: wfmcc@us.ibm.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

*Code Designation*

**Emissions Test Methods:**

- 12/CIS22 IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|           |                                                                                                                               |
|-----------|-------------------------------------------------------------------------------------------------------------------------------|
|           | measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment   |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                 |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                           |
| 12/F01b   | Radiated Emissions                                                                                                            |

**NVLAP LAB CODE 200436-0****Global Testing**

1433 E. Borchard Avenue  
Santa Ana, CA 92705-4414  
Contact: Kumar Chaklashiya  
Phone: 714-550-6004  
Fax: 714-550-9424  
E-Mail: kumar@global-testing.com  
URL: <http://www.global-testing.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: March 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Telecommunications Test Methods:**

|         |                                                                                                                                                                                                                                            |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CS03 | CS-03                                                                                                                                                                                                                                      |
| 12/T01  | Terminal Equipment Network Protection Standards, FCC Method - 47 CFR Part 68 - Analog and Digital                                                                                                                                          |
| 12/T01a | 68.302 (Par. c,d,e,f) Environmental simulation; 68.304 Leakage current limit.; 68.306 Hazardous voltage limit.; 68.308 Signal power limit.; 68.310 Longitudinal balance limit.; 68.312 On-hook impedance limit.; 68.314 Billing protection |
| 12/T01b | 68.316 Hearing Aid Compatibility: technical standards                                                                                                                                                                                      |

**NVLAP LAB CODE 200438-0****Benesol Corp.**

14-15, Miyashimo, 3-Chome  
Sagamihara-shi, Kanagawa  
JAPAN  
Contact: Mr. Yukio Yamamoto  
Phone: 042-772-7947  
Fax: 042-772-7843

URL: <http://www.benesol.co.jp>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: March 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

|        |                                               |
|--------|-----------------------------------------------|
| 12/F01 | FCC Method - 47 CFR Part 15 - Digital Devices |
|--------|-----------------------------------------------|

|         |                                                     |
|---------|-----------------------------------------------------|
| 12/F01a | Conducted Emissions, Power Lines, 450 KHz to 30 MHz |
| 12/F01b | Radiated Emissions                                  |

**NVLAP LAB CODE 200441-0****A-Pex International Co., Ltd. Yamakita Laboratory**

907 Kawanishi, Yamakita-machi,  
Ashigarakami-gun Kanagawa-ken 258-0124  
JAPAN  
Contact: Mr. Osamy Watatani  
Phone: 81-465-77-1011  
Fax: 81-465-77-2112  
E-Mail: watatni@a-pex.co.jp  
URL: <http://www.a-pex.co.jp>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

|           |                                                                                                                                                                                                              |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS14  | CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions |
| 12/CIS14a | EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)                                                                                                                                                      |
| 12/CIS14b | AS/NZS 1044 (1995)                                                                                                                                                                                           |
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                                                                |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                                                                |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                                                          |
| 12/F01b   | Radiated Emissions                                                                                                                                                                                           |
| 12/T51    | AS/NZS 3548                                                                                                                                                                                                  |

**NVLAP LAB CODE 200442-0****KSL**

505-1 S. Hwy. 49, #101  
Jackson, CA 95642  
Contact: Mr. Kevin Smith  
Phone: 209-286-1822  
Fax: 209-286-0706  
E-Mail: kevinksl@earthlink.net

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: September 30, 2002



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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**NVLAP LAB CODE 200444-0****AMEC Earth & Environmental, Inc., PLM LAB**

3232 West Virginia  
Phoenix, AZ 85009-1502  
Contact: Mr. Paul W. Barbera  
Phone: 602-272-6848  
Fax: 602-272-7239  
E-Mail: paul.barbera@amec.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

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**NVLAP LAB CODE 200445-0****MET Laboratories Incorporated**

33439 Western Avenue  
Union City, CA 94587  
Contact: Mr. Robert Frier  
Phone: 510-489-6300  
Fax: 510-489-6372  
E-Mail: rfrier@metlabs.com  
URL: <http://www.metlabs.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

- |           |                                                                                                                                                                                                              |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS14  | CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions |
| 12/CIS14a | EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)                                                                                                                                                      |
| 12/CIS14b | AS/NZS 1044 (1995)                                                                                                                                                                                           |
| 12/CIS14c | CNS 13783-1                                                                                                                                                                                                  |
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                                                                |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.                                       |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                                                                  |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                                                                |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                                                          |
| 12/F01b   | Radiated Emissions                                                                                                                                                                                           |
| 12/T51    | AS/NZS 3548                                                                                                                                                                                                  |

**Telecommunications Test Methods:**

- |         |                                       |
|---------|---------------------------------------|
| 12/CS03 | CS-03                                 |
| 12/T01  | Terminal Equipment Network Protection |

Standards, FCC Method - 47 CFR Part 68 - Analog and Digital

- |         |                                                                                                                                                                                                                                            |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/T01a | 68.302 (Par. c,d,e,f) Environmental simulation; 68.304 Leakage current limit.; 68.306 Hazardous voltage limit.; 68.308 Signal power limit.; 68.310 Longitudinal balance limit.; 68.312 On-hook impedance limit.; 68.314 Billing protection |
| 12/T01c | 68.302 Environmental simulation (Par. a,b)                                                                                                                                                                                                 |

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**NVLAP LAB CODE 200447-0****Samsung Electronics EMC Laboratory**

416 Maetan Dong, Paldal Gu  
Suwon, Kyungki Do  
KOREA  
Contact: Mr. Taek J. Shin  
Phone: 82-331-200-2140  
Fax: 82-331-200-2138  
E-Mail: tjshin@samsun.co.kr

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: March 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

- |           |                                                                                                                               |
|-----------|-------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment   |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                 |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                           |
| 12/F01b   | Radiated Emissions                                                                                                            |

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**NVLAP LAB CODE 200448-0****Family Analytical Laboratory Services, Inc.**

3650 Chestnut Place  
Denver, CO 80216  
Contact: Mr. Mark W. Cooperrider  
Phone: 303-296-6022  
Fax: 303-292-1451  
E-Mail: FamilyEnviro@aol.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 200450-0****Strom Environmental**

7100 N. Broadway, Bldg. 6, Ste. S  
Denver, CO 80221  
Contact: Mr. Lars Malmstrom  
Phone: 303-487-4533  
Fax: 303-487-4534  
E-Mail: larso@uswest.net

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

**NVLAP LAB CODE 200451-0****MacLean Maynard Laboratory Services**

50855 E. Russell Schmidt Blvd.  
Chesterfield Township, MI 48051  
Contact: Mr. Char Zawadzinski  
Phone: 810-949-0471  
Fax: 810-949-7940  
E-Mail: charz@maynard.maclea-fogg.com

**Fasteners & Metals**

Accreditation Valid Through: June 30, 2002

**NVLAP**

Code      Designation

**Chemical Analysis****Optical emission spectrochemical analysis**

FA/457      ASTM E415

**Dimensional Inspection****Dimensions of fasteners - hexagon and double hexagon (12 point) and spline sockets**

FB/1140      ANSI B18.2.1

**Dimensions of general purpose fasteners and high-volume machine assembly fasteners**

FA/403      ANSI/ASME B18.18.1M

FA/404      ANSI/ASME B18.18.2M

FA/665      ISO 4759-1

**Dimensions of special purpose fasteners and fasteners for highly specialized engineered ap**

FA/405      ANSI/ASME B18.18.3M

FA/406      ANSI/ASME B18.18.4M

**External thread parameters - ISO**

FA/390      ISO 1502

**External thread parameters - system 21**

FA/940      ANSI/ASME B1.2

FB/1173      ANSI/ASME B1.1

FB/1175      ANSI/ASME B1.12

**Internal thread parameters - ISO**

FA/402      ISO 1502

**Internal thread parameters - system 21**

FA/391      ANSI/ASME B1.3M

FA/942      ANSI/ASME B1.2

FB/1172      ANSI/ASME B1.1

FB/1174      ANSI/ASME B1.12

**Mechanical and Physical Testing and Inspection****Axial tensile strength of full-size threaded fasteners**

FA/265      ASTM A370 Sec. A3.2.1.4

FA/266      ASTM F606 Sec. 3.4.1-3.4.3

FA/267      ASTM F606M Sec. 3.4.1-3.4.3

FA/270      ISO 898-1 Sec. 8.2

FA/271      MIL-STD-1312-8

FA/273      SAE J429

FA/530      ASTM E8

FA/578      SAE J1216 Sec. 3.5

FB/1089      SAE J995

**Prevailing torque**

FA/216      ANSI B18.16.1M

FA/217      IFI-100/107

**Rockwell hardness of fasteners**

FA/197      ASTM E18

FA/200      ISO 6508

FA/202      SAE J417

**Tension testing of machined specimens from externally threaded fasteners**

FA/282      ISO 898-1

FA/283      SAE J429

**Torque-tension of full-size threaded fasteners**

FA/305      ANSI B18.16.2M

FA/306      IFI-101

FA/308      SAE J174

**Wedge tensile strength of full-size threaded fasteners**

FA/290      ASTM F606 Sec. 3.5

FA/291      ASTM F606M Sec. 3.5

FA/294      ISO 898-1 Sec. 8.5

FA/295      MIL-STD-1312-8

FA/468      SAE J429

FA/469      SAE J1216 Sec. 3.6

FA/510      ASTM E8

**Yield strength of full-size externally threaded fasteners**

FA/298      ASTM F606 Sec. 3.2.4

FA/299      ASTM A370 Sec. A3.2.1.3(a)

FA/300      ASTM F606M Sec. 3.2.4

FA/885      ISO 6892

FB/1171      SAE J429

**Metallography****Decarburization and case depth measurement in fasteners**

FA/323      ASTM E1077

FA/329      SAE J419

FA/330      SAE J423

FA/561      ASTM E3

FA/562      ASTM G79

FA/758      SAE J121M

FB/1177      SAE J121M

**Macroscopic examination of fasteners by etching**

FA/511      ASTM E340

**Microscopic examination of fasteners by etching**

FA/512      ASTM E407

FB/1178      SAE J422

FB/1179      ASTM E45

**Surface discontinuities of externally threaded fasteners**

FA/357      ASTM F788/788M

FA/359      ISO 6157-1

FA/361      SAE J123

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

FA/362 SAE J1061  
*Surface discontinuities of internally threaded fasteners*  
FA/727 ISO 6157-2  
FA/865 ASTM F812/F812M  
FB/1176 IFI 533

**Nondestructive Inspection****Liquid penetrant inspection of fasteners**

FA/371 MIL-STD-6866

**NVLAP LAB CODE 200452-0****CA Laboratories, L.L.C.**

11800 Industriplex, Suite #5  
Baton Rouge, LA 70809  
Contact: Mr. Arthur Hernandez  
Phone: 225-751-5632  
Fax: 225-751-5634

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: December 31, 2002

**NVLAP LAB CODE 200453-0****PCI Industries Acoustical Testing Laboratories**

2824 N. Sylvania Avenue  
Fort Worth, TX 76111  
Contact: Mr. Mike Beaver  
Phone: 817-831-7038  
Fax: 817-831-3110  
E-Mail: mkebeaver@aol.com

**Acoustical Testing Services**

Accreditation Valid Through: March 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

|        |             |
|--------|-------------|
| 08/P10 | ANSI S12.31 |
| 08/P36 | ASTM E477   |

**NVLAP LAB CODE 200455-0****Yamaha EMC Center**

200 Minazawa  
Tenryu-shi, Shizuoka-ken 431-3422  
JAPAN  
Contact: Mr. Yoshimi Hirose  
Phone: 81-53-460-2376  
Fax: 81-53-460-2379  
E-Mail: hirose-y@post.yamaha.co.jp

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

|          |                                                                                                                               |
|----------|-------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22 | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment |
|----------|-------------------------------------------------------------------------------------------------------------------------------|

equipment

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|           |                                                                                                                             |
|-----------|-----------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment |
|-----------|-----------------------------------------------------------------------------------------------------------------------------|

|        |                                               |
|--------|-----------------------------------------------|
| 12/F01 | FCC Method - 47 CFR Part 15 - Digital Devices |
|--------|-----------------------------------------------|

|         |                                                     |
|---------|-----------------------------------------------------|
| 12/F01a | Conducted Emissions, Power Lines, 450 KHz to 30 MHz |
|---------|-----------------------------------------------------|

|         |                    |
|---------|--------------------|
| 12/F01b | Radiated Emissions |
|---------|--------------------|

|        |             |
|--------|-------------|
| 12/T51 | AS/NZS 3548 |
|--------|-------------|

**NVLAP LAB CODE 200456-0****Sony EMCS Saitama TEC EMC Test Laboratory**

1300 Tsukakoshi, Sakado-shi  
Saitama-ken 350-0209  
JAPAN  
Contact: Mr. Kazuaki Suda  
Phone: 81-49-289-2261  
Fax: 81-49-289-2275  
E-Mail: suda@bonson.sony.co.jp

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

|        |                                               |
|--------|-----------------------------------------------|
| 12/F01 | FCC Method - 47 CFR Part 15 - Digital Devices |
|--------|-----------------------------------------------|

|         |                                                     |
|---------|-----------------------------------------------------|
| 12/F01a | Conducted Emissions, Power Lines, 450 KHz to 30 MHz |
|---------|-----------------------------------------------------|

|         |                    |
|---------|--------------------|
| 12/F01b | Radiated Emissions |
|---------|--------------------|

**NVLAP LAB CODE 200457-0****Sharp Nara EMC Center, EMI Measurement for ITE**

492 Minosho-cho  
Yamatokooryama-shi Nara 639-1186  
JAPAN  
Contact: Mr. Tetsuji Mori  
Phone: 81-743-55-5082  
Fax: 81-743-55-4440  
E-Mail: mori-t@ns1.nara.sharp.co.jp

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: March 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

|          |                                                                                                                               |
|----------|-------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22 | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment |
|----------|-------------------------------------------------------------------------------------------------------------------------------|

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

**NVLAP LAB CODE 200458-0****Interocean EMC Technology Corp.**

No. 5-2, Lin 1, Tin-Fu Tsun, Lin-Kou  
Hsiang  
Taipei County 24443  
TAIWAN  
Contact: Mr. Kent Hsu  
Phone: 886-2-26006861  
Fax: 886-2-26006859  
E-Mail: kent@emchouse.com  
URL: <http://www.ietc.com.tw>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: March 31, 2002

*NVLAP*

| <i>Code</i> | <i>Designation</i> |
|-------------|--------------------|
|-------------|--------------------|

**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

**NVLAP LAB CODE 200460-0****IAPMO Testing and Services, L.L.C.**

20001 E. Walnut Drive South  
Walnut, CA 91789-2825  
Contact: Mr. Ken Wijaya  
Phone: 909-595-8449 x141  
Fax: 909-595-8819  
E-Mail: [kenwijaya@iapmo.org](mailto:kenwijaya@iapmo.org)

**Commercial Products Testing**

Accreditation Valid Through: March 31, 2002

*NVLAP*

| <i>Code</i> | <i>Designation</i> |
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|-------------|--------------------|

**Plumbing**

|        |                                                     |
|--------|-----------------------------------------------------|
| 19/F01 | ASME A112.18.1M (Sec. 5.2)                          |
| 19/F02 | ASME A112.18.1M (Sec. 5.14)                         |
| 19/F03 | ASME A112.18.1M (Sec. 6.2)                          |
| 19/F04 | ASME A112.18.1M (Sec. 6.4)                          |
| 19/F05 | ASME A112.18.1M (Sec. 6.5)                          |
| 19/F06 | ASME A112.18.1M (Sec. 6.6)                          |
| 19/F07 | ASME A112.18.1M (Sec. 6.7)                          |
| 19/F08 | ASME A112.18.1M (Sec. 6.8)                          |
| 19/F09 | ASME A112.18.1M (Sec. 5.13)                         |
| 19/F10 | ASME A112.18.1M (Sec. 6.3)                          |
| 19/M01 | ICC/ANSI A117.1 (Sec. 609, 610)                     |
| 19/M02 | ASME/ANSI A112.19.7M (Sec. 5, 7)                    |
| 19/M03 | ASME/ANSI A112.19.8M (Sec. 4, 5)                    |
| 19/M04 | ASTM F446                                           |
| 19/P01 | ANSI Z124.1 (Sec. 4, 5, 6)                          |
| 19/P02 | ANSI Z124.2 (Sec. 4, 5, 6)                          |
| 19/P03 | ANSI Z124.3 (Sec. 4, 5, 6)                          |
| 19/P04 | ANSI Z124.4 (Sec. 4, 5)                             |
| 19/P05 | ANSI Z124.4 (Sec. 8) per ASME A112.19.6M (Sec. 7.1) |
| 19/P06 | ANSI/IAPMO Z124.6 (Sec. 4, 5, 6)                    |
| 19/P07 | ANSI/IAPMO Z124.8 (Sec. 4, 5)                       |
| 19/V01 | ASME A112.19.2M (Sec. 8.1)                          |
| 19/V02 | ASME A112.19.2M (Sec. 8.2)                          |
| 19/V03 | ASME A112.19.2M (Sec. 8.3)                          |
| 19/V04 | ASME A112.19.2M (Sec. 8.7)                          |
| 19/V05 | ASME A112.19.2M (Sec. 8.6)                          |
| 19/V06 | ASME A112.19.2M (Sec. 8.5)                          |
| 19/W01 | ASME A112.19.6 (Sec. 7.1.2)                         |
| 19/W02 | ASME A112.19.6 (Sec. 7.1.3)                         |
| 19/W03 | ASME A112.19.6 (Sec. 7.1.4)                         |
| 19/W04 | ASME A112.19.6 (Sec. 7.1.5)                         |
| 19/W05 | ASME A112.19.6 (Sec. 7.1.6)                         |
| 19/W06 | ASME A112.19.6 (Sec. 7.1.7)                         |
| 19/W07 | ASME A112.19.6 (Sec. 7.1.8)                         |
| 19/W08 | ASME A112.19.6 (Sec. 7.1.9)                         |



**NVLAP LAB CODE 200463-0****McGill AirFlow Corp. Airflow and Acoustical Testing Laboratory**

200 East Broadway Avenue, Building 6  
Westerville, OH 43081  
Contact: Mr. John B. Gierzak  
Phone: 614-882-5455 x123  
Fax: 614-882-2090  
E-Mail: mcgillairfloweng@compuserve.com

**Acoustical Testing Services**

Accreditation Valid Through: June 30, 2002

**NVLAP**

| <i>Code</i> | <i>Designation</i> |
|-------------|--------------------|
|-------------|--------------------|

|        |           |
|--------|-----------|
| 08/P36 | ASTM E477 |
|--------|-----------|

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**NVLAP LAB CODE 200467-0****Holmes Environmental, Inc.**

1600 East Little Creek Road, Ste. 308  
Norfolk, VA 23518-4136  
Contact: Ms. Ethel H. Holmes  
Phone: 757-587-1164  
Fax: 757-587-1352

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**NVLAP LAB CODE 200470-0****University of Wisconsin Radiation Calibration Laboratory**

1300 University Avenue  
1530 MSC  
Madison, WI 53706  
Contact: Mr. Larry A. DeWerd  
Phone: 608-262-0376  
Fax: 608-262-5012  
E-Mail: ladewerd@facstaff.wisc.edu

**Ionizing Radiation Dosimetry**

Accreditation Valid Through: March 31, 2002

This facility has been evaluated and deemed competent to process the radiation dosimeters listed below employing the Harshaw/Bicron automatic reader model 6600.

This facility is accredited to process the following dosimeters by virtue of actual demonstration of compliance with ANSI HPS N13.11-1993 and ANSI HPS N13.32-1995 through testing.

Harshaw/Bicron 8890 BG (3 TLD100) for ANSI-N13.11 categories I, II, IIIA, IV, VA.

Harshaw/Bicron extremity TLD DXT-RAD in a finger ring holder for ANSI HPS N13.32 (NIST Handbook 150-4, Table 2) categories IIIB, IV, VC.

**NVLAP LAB CODE 200472-0****Olympus EMC Laboratory**

2951 Ishikawa-cho Hachioji  
Tokyo 192-8507  
JAPAN  
Contact: Mr. Kiyoshi Mori  
Phone: 81-426-42-2167  
Fax: 81-426-42-2017  
E-Mail: ki\_mori@ot.olympus.co.jp

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| <i>Code</i> | <i>Designation</i> |
|-------------|--------------------|
|-------------|--------------------|

**Emissions Test Methods:**

|           |                                                                                                                               |
|-----------|-------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment   |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                           |
| 12/F01b   | Radiated Emissions                                                                                                            |
| 12/T51    | AS/NZS 3548                                                                                                                   |

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**NVLAP LAB CODE 200473-0****Houston Analytical Laboratory**

888 W. Sam Houston Parkway S., Suite 288  
P.O. Box 941727  
Houston, TX 77094-8727  
Contact: Mr. Brett S. Colbert  
Phone: 832-252-7640  
Fax: 832-252-7641  
E-Mail: hal2000@ev1.net

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

**NVLAP LAB CODE 200474-0****AST International Environmental Consultants Inc.**

3705 South Cordoba Street  
Spring Valley, CA 91977-1819  
Contact: Mr. John A. Lopez  
Phone: 619-660-2838  
Fax: 619-660-2845  
E-Mail: ASTInt@aol.com



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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 200475-0****Howard Leight Acoustical Testing Laboratory**

7828 Waterville Road

San Diego, CA 92154

Contact: Dr. Vernon D. Larson

Phone: 619-671-1357

Fax: 619-661-8393

E-Mail: vlarsen@howardleight.com

**Acoustical Testing Services**

Accreditation Valid Through: June 30, 2002

*NVLAP**Code      Designation*

08/P26      ANSI S3.19 (ANSI S3.19-1974)

08/P27      ANSI S12.6

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**NVLAP LAB CODE 200476-0****Teco Industry (Malaysia) SDN. BHD.**

2600 Jalan Perusahaan Baru

Kawasan Perindustrian Prai 13600 Prai

Penang

MALAYSIA

Contact: Mr. Lim Boon Pin

Phone: 60-04-3909908

Fax: 60-04-3909901

E-Mail: teco@tm.net.my

**Efficiency of Electric Motors**

Accreditation Valid Through: June 30, 2002

*NVLAP**Code      Designation*

24/M01      IEEE 112, Method B

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**NVLAP LAB CODE 200477-0****Advantest Analysis Laboratory Ltd. EMC Center**

336-1 Ohwa Meiwa-Machi, Ohra-gun

Gunma 370-0718

JAPAN

Contact: Mr. Shinichi Kouya

Phone: 81-276-70-3300

Fax: 81-276-70-3420

E-Mail: kouya@aal.advantest.co.jp

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

*NVLAP**Code      Designation***Emissions Test Methods:**12/CIS22      IEC/CISPR 22:1997: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology  
equipment12/CIS22a      IEC/CISPR 22:1993: Limits and methods of  
measurement of radio disturbance  
characteristics of information technologyequipment, Amendment 1:1995, and  
Amendment 2:1996.12/CIS22b      CNS 13438:1997: Limits and Methods of  
Measurement of Radio Interference  
Characteristics of Information Technology  
Equipment12/F01      FCC Method - 47 CFR Part 15 - Digital  
Devices12/F01a      Conducted Emissions, Power Lines, 450 KHz  
to 30 MHz

12/F01b      Radiated Emissions

12/T51      AS/NZS 3548

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**NVLAP LAB CODE 200478-0****Canon D5 RF Anechoic Chamber; FCC Part 15;  
CISPR 22/AS/NZS 3548**

7-5-1 Hakusan Toride

Ibaraki 302-8501

JAPAN

Contact: Mr. Keiji Tsukamoto

Phone: 81-45-323-6855

Fax: 81-45-323-6857

E-Mail: todct@bl.mmtr.or.jp

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

*NVLAP**Code      Designation***Emissions Test Methods:**12/CIS22      IEC/CISPR 22:1997: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology  
equipment12/F01      FCC Method - 47 CFR Part 15 - Digital  
Devices12/F01a      Conducted Emissions, Power Lines, 450 KHz  
to 30 MHz

12/F01b      Radiated Emissions

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**NVLAP LAB CODE 200479-0****Auditory Systems Laboratory, ISE Department,  
Virginia Tech**

Virginia Tech

250 Durham Hall

Blacksburg, VA 24061

Contact: Dr. John G. Casali

Phone: 540-231-9081

Fax: 540-231-3322

E-Mail: jcasali@vt.edu

**Acoustical Testing Services**

Accreditation Valid Through: June 30, 2002

*NVLAP**Code      Designation*

08/P26      ANSI S3.19 (ANSI S3.19-1974)

08/P27      ANSI S12.6

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 200480-0****Lighting Research Center Lighting Products**

21 Union Street  
Troy, NY 12180-3352  
Contact: Mr. Conan O'Rourke  
Phone: 518-687-7182  
Fax: 518-687-7120  
E-Mail: orourc@rpi.edu

**Energy Efficient Lighting Products**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Color Measurements**

|        |           |
|--------|-----------|
| 22/C01 | IES LM-58 |
|--------|-----------|

**Electrical Measurements**

|        |          |
|--------|----------|
| 22/E01 | IES LM-9 |
|--------|----------|

|        |           |
|--------|-----------|
| 22/E02 | IES LM-45 |
|--------|-----------|

|        |           |
|--------|-----------|
| 22/E04 | IES LM-66 |
|--------|-----------|

**Photometric Measurements**

|         |                       |
|---------|-----------------------|
| 22/P01a | IES LM-9 (Total Flux) |
|---------|-----------------------|

|         |                        |
|---------|------------------------|
| 22/P03a | IES LM-45 (Total Flux) |
|---------|------------------------|

|         |                        |
|---------|------------------------|
| 22/P05a | IES LM-66 (Total Flux) |
|---------|------------------------|

**NVLAP LAB CODE 200481-0****EMSL Analytical Inc. Mobile Laboratory**

107 Haddon Avenue  
Westmont, NJ 08108-2799  
Contact: Mr. Robert DeMalo  
Phone: 856-858-4800  
Fax: 856-858-1292  
E-Mail: rdemalo@EMSL.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

**NVLAP LAB CODE 200482-0****Syonan Site Testing Laboratory as Conducted & Radiated Emissions**

1-1 Koyato 2-chome, Samukawa-machi  
Koza-gun  
Kanagawa 253-0103  
JAPAN  
Contact: Mr. Norihiro Muraoka  
Phone: 81-467-75-9001  
Fax: 81-467-75-9005  
E-Mail: te-soumy@toyocom.co.jp  
URL: <http://www.te-emc.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Emissions Test Methods:**

|          |                                                                           |
|----------|---------------------------------------------------------------------------|
| 12/CIS22 | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance |
|----------|---------------------------------------------------------------------------|

characteristics of information technology equipment

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|           |                                                                                                                             |
|-----------|-----------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment |
|-----------|-----------------------------------------------------------------------------------------------------------------------------|

|        |                                               |
|--------|-----------------------------------------------|
| 12/F01 | FCC Method - 47 CFR Part 15 - Digital Devices |
|--------|-----------------------------------------------|

|         |                                                     |
|---------|-----------------------------------------------------|
| 12/F01a | Conducted Emissions, Power Lines, 450 KHz to 30 MHz |
|---------|-----------------------------------------------------|

|         |                    |
|---------|--------------------|
| 12/F01b | Radiated Emissions |
|---------|--------------------|

|        |             |
|--------|-------------|
| 12/T51 | AS/NZS 3548 |
|--------|-------------|

**NVLAP LAB CODE 200483-0****Regal Beloit Motor Technologies Group - Grafton Engineering Lab**

2100 Washington Street  
Grafton, WI 53024-9541  
Contact: Mr. Tony Hamdan  
Phone: 262-387-5393  
Fax: 262-377-9025  
E-Mail: hamdanto@leeson.com

**Efficiency of Electric Motors**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

|        |                    |
|--------|--------------------|
| 24/M01 | IEEE 112, Method B |
|--------|--------------------|

**NVLAP LAB CODE 200484-0****Best Laboratory**

No. 336, Ba Lian Road, Sec. 1  
Hsi Chih City  
Taipei Hsein  
TAIWAN  
Contact: Mr. Jeff Chiu  
Phone: 886-2-2646-2855  
Fax: 886-2-2646-2870  
E-Mail: jeff@bestlab.com.tw

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
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|------|-------------|

**Emissions Test Methods:**

|          |                                                                                                                               |
|----------|-------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22 | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment |
|----------|-------------------------------------------------------------------------------------------------------------------------------|

|           |                                                                                                                                                      |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------|

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|           |                                                                                                                                      |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------|
|           | Amendment 2:1996.                                                                                                                    |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of<br>Measurement of Radio Interference<br>Characteristics of Information Technology<br>Equipment |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital<br>Devices                                                                                     |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz<br>to 30 MHz                                                                               |
| 12/F01b   | Radiated Emissions                                                                                                                   |
| 12/T51    | AS/NZS 3548                                                                                                                          |

**NVLAP LAB CODE 200488-0****NEC Access Technica, Ltd. EMC Center**

557-2 Yokooka, Kanaya-cho, Haibara-gun  
Shizuoka-ken 428-0004  
JAPAN  
Contact: Mr. Hidenori Muramatsu  
Phone: 81-537-22-8240  
Fax: 81-537-22-8242  
E-Mail: muramatsu@ced.sneec.nec.co.jp

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

*Code      Designation*

**Emissions Test Methods:**

|           |                                                                                                                                                                                    |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of<br>measurement of radio disturbance<br>characteristics of information technology<br>equipment                                             |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of<br>measurement of radio disturbance<br>characteristics of information technology<br>equipment, Amendment 1:1995, and<br>Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of<br>Measurement of Radio Interference<br>Characteristics of Information Technology<br>Equipment                                               |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital<br>Devices                                                                                                                                   |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz<br>to 30 MHz                                                                                                                             |
| 12/F01b   | Radiated Emissions                                                                                                                                                                 |
| 12/T51    | AS/NZS 3548                                                                                                                                                                        |

**NVLAP LAB CODE 200489-0****RMS EMI Laboratory MIL-STD 462C/D**

P.O. Box 11337  
Bldg. 842, Room A0200  
Tucson, AZ 85734-1337  
Contact: Mr. R. Michael Carr  
Phone: 520-794-5972  
Fax: 520-794-9087  
E-Mail: rmcarr@west.raytheon.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP**

*Code      Designation*

**MIL-STD-462 : Conducted Emissions:**

|        |                                    |
|--------|------------------------------------|
| 12/A01 | MIL-STD-462 Method CE01            |
| 12/A06 | MIL-STD-462 Method CE03            |
| 12/A10 | MIL-STD-462 Method CE06            |
| 12/A13 | MIL-STD-462 Version D Method CE101 |
| 12/A14 | MIL-STD-462 Version D Method CE102 |
| 12/A15 | MIL-STD-462 Version D Method CE106 |
| 12/A16 | MIL-STD-461 Version E Method CE101 |
| 12/A17 | MIL-STD-461 Version E Method CE102 |
| 12/A18 | MIL-STD-461 Version E Method CE106 |

**MIL-STD-462 : Conducted Susceptibility:**

|        |                                           |
|--------|-------------------------------------------|
| 12/B01 | MIL-STD-462 Method CS01                   |
| 12/B02 | MIL-STD-462 Method CS02                   |
| 12/B04 | MIL-STD-462 Method<br>CS03/CS04/CS05/CS08 |
| 12/B05 | MIL-STD-462 Method CS06                   |
| 12/B07 | MIL-STD-462 Method CS09                   |
| 12/B08 | MIL-STD-462 Method CS10                   |
| 12/B09 | MIL-STD-462 Method CS11                   |
| 12/B12 | MIL-STD-462 Version D Method CS101        |
| 12/B13 | MIL-STD-462 Version D Method CS103        |
| 12/B14 | MIL-STD-462 Version D Method CS104        |
| 12/B15 | MIL-STD-462 Version D Method CS105        |
| 12/B16 | MIL-STD-462 Version D Method CS109        |
| 12/B17 | MIL-STD-462 Version D Method CS114        |
| 12/B18 | MIL-STD-462 Version D Method CS115        |
| 12/B19 | MIL-STD-462 Version D Method CS116        |
| 12/B20 | MIL-STD-461 Version E Method CS101        |
| 12/B21 | MIL-STD-461 Version E Method CS103        |
| 12/B22 | MIL-STD-461 Version E Method CS104        |
| 12/B23 | MIL-STD-461 Version E Method CS105        |
| 12/B24 | MIL-STD-461 Version E Method CS109        |
| 12/B25 | MIL-STD-461 Version E Method CS114        |
| 12/B26 | MIL-STD-461 Version E Method CS115        |
| 12/B27 | MIL-STD-461 Version E Method CS116        |

**MIL-STD-462 : Radiated Emissions:**

|        |                                    |
|--------|------------------------------------|
| 12/D01 | MIL-STD-462 Method RE01            |
| 12/D02 | MIL-STD-462 Method RE02            |
| 12/D03 | MIL-STD-462 Method RE03            |
| 12/D04 | MIL-STD-462 Version D Method RE101 |
| 12/D05 | MIL-STD-462 Version D Method RE102 |
| 12/D06 | MIL-STD-462 Version D Method RE103 |
| 12/D07 | MIL-STD-461 Version E Method RE101 |
| 12/D08 | MIL-STD-461 Version E Method RE102 |
| 12/D09 | MIL-STD-461 Version E Method RE103 |



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****MIL-STD-462 : Radiated Susceptibility:**

|        |                                                                               |
|--------|-------------------------------------------------------------------------------|
| 12/E01 | MIL-STD-462 Method RS01                                                       |
| 12/E02 | MIL-STD-462 Method RS02                                                       |
| 12/E03 | MIL-STD-462 Method RS03 (Consult<br>laboratory for field strengths available) |
| 12/E08 | MIL-STD-462 Version D Method RS101                                            |
| 12/E09 | MIL-STD-462 Version D Method RS103                                            |
| 12/E11 | MIL-STD-461 Version E Method RS101                                            |
| 12/E12 | MIL-STD-461 Version E Method RS103                                            |

**NVLAP LAB CODE 200490-0****Niigata Fuji Xerox Manufacturing Co., Ltd. EMC Group**

7546 Yasuda, Kashiwazaki-City  
Niigata 945-1398  
JAPAN  
Contact: Mr. Takayoshi Suda  
Phone: 81-257-21-1112  
Fax: 81-257-21-1147  
E-Mail: takayoshi.suda@nifx.co.jp

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
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|------|-------------|

**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

**NVLAP LAB CODE 200492-0****Atlan Laboratories**

1340 Old Chain Bridge Road, Suite 401  
McLean, VA 22101  
Contact: Mr. Edward D. Morris  
Phone: 703-748-4551  
Fax: 703-748-4552  
E-Mail: emorris@atlanlabs.com  
URL: <http://www.atlanlabs.com>

**Cryptographic Module Testing**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

|         |                                                                                                                                                                                                                              |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 17/C01  | NIST-CSTT:140-1; National Institute of Standards and Technology-Cryptographic Support Test Tool (CSTT) for the Federal Information Processing Standard 140-1 (FIPS 140-1) "Security Requirements for Cryptographic Modules." |
| 17/C01a | Test Method Group 1: All test methods derived from FIPS 140-1 and specified in the CSTT, except those listed in Group 2 and Group 3.                                                                                         |
| 17/C01b | Test Method Group 2: Test methods for Physical Security, Level 4 derived from FIPS 140-1 and specified in the CSTT                                                                                                           |
| 17/C01c | Test Method Group 3: Test methods for Software Security, Level 4 derived from FIPS 140-1 and specified in the CSTT                                                                                                           |
| 17/C02  | FIPS-Approved Cryptographic Algorithms (see <a href="http://csrc.nist.gov/cryptval">http://csrc.nist.gov/cryptval</a> ) as required in FIPS PUB 140-1.                                                                       |

**NVLAP LAB CODE 200497-0****Belgo-Mineira Chemical Laboratory**

Av. Getulio Vargas, No 100  
35.930-900 Joao Monlevade, M.G.  
BRAZIL  
Contact: Mr. Jose da Luz de Souza  
Phone: 55-31-859-1401  
Fax: 55-31-852-6336  
E-Mail: jose.luz@belgomineira.com.br

**Fasteners & Metals**

Accreditation Valid Through: March 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Chemical Analysis**

**Combustion analysis for carbon, sulfur, oxygen, nitrogen, and hydrogen**

FA/455 ASTM E1019

**Optical emission spectrochemical analysis**

FA/457 ASTM E415

**X-ray fluorescence (XRF) spectrochemical analysis**

FA/461 ASTM E322



# INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued

## NVLAP LAB CODE 200498-0

### Mitsubishi Digital Electronics America, Inc. EMC Test Lab

9351 Jeronimo Road  
Irvine, CA 92618-1904  
Contact: Mr. Kevin J. Clark  
Phone: 949-465-6206  
Fax: 949-465-6288  
E-Mail: kclark@bigscreen.mea.com

### Electromagnetic Compatibility & Telecommunications

Accreditation Valid Through: September 30, 2002

#### NVLAP

Code Designation

#### Emissions Test Methods:

- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions

## NVLAP LAB CODE 200500-0

### Harris Corporation GCS D EMI Test Laboratory

P.O. Box 37 Mailstop 9-2801  
Melbourne, FL 32902-9739  
Contact: Mr. William J. Prosser  
Phone: 321-727-4031  
Fax: 321-727-4335  
E-Mail: wprosser@harris.com

### Electromagnetic Compatibility & Telecommunications

Accreditation Valid Through: March 31, 2002

#### NVLAP

Code Designation

#### MIL-STD-462 : Conducted Emissions:

- 12/A01 MIL-STD-462 Method CE01
- 12/A06 MIL-STD-462 Method CE03
- 12/A10 MIL-STD-462 Method CE06
- 12/A12 MIL-STD-462 Method CE07
- 12/A13 MIL-STD-462 Version D Method CE101
- 12/A14 MIL-STD-462 Version D Method CE102
- 12/A15 MIL-STD-462 Version D Method CE106
- 12/A16 MIL-STD-461 Version E Method CE101
- 12/A17 MIL-STD-461 Version E Method CE102
- 12/A18 MIL-STD-461 Version E Method CE106

#### MIL-STD-462 : Conducted Susceptibility:

- 12/B01 MIL-STD-462 Method CS01
- 12/B02 MIL-STD-462 Method CS02
- 12/B04 MIL-STD-462 Method CS03/CS04/CS05/CS08
- 12/B05 MIL-STD-462 Method CS06
- 12/B07 MIL-STD-462 Method CS09
- 12/B08 MIL-STD-462 Method CS10
- 12/B09 MIL-STD-462 Method CS11

- 12/B12 MIL-STD-462 Version D Method CS101
- 12/B13 MIL-STD-462 Version D Method CS103
- 12/B14 MIL-STD-462 Version D Method CS104
- 12/B15 MIL-STD-462 Version D Method CS105
- 12/B16 MIL-STD-462 Version D Method CS109
- 12/B17 MIL-STD-462 Version D Method CS114
- 12/B18 MIL-STD-462 Version D Method CS115
- 12/B19 MIL-STD-462 Version D Method CS116
- 12/B20 MIL-STD-461 Version E Method CS101
- 12/B21 MIL-STD-461 Version E Method CS103
- 12/B22 MIL-STD-461 Version E Method CS104
- 12/B23 MIL-STD-461 Version E Method CS105
- 12/B24 MIL-STD-461 Version E Method CS109
- 12/B25 MIL-STD-461 Version E Method CS114
- 12/B26 MIL-STD-461 Version E Method CS115
- 12/B27 MIL-STD-461 Version E Method CS116

#### MIL-STD-462 : Radiated Emissions:

- 12/D01 MIL-STD-462 Method RE01
- 12/D02 MIL-STD-462 Method RE02
- 12/D03 MIL-STD-462 Method RE03
- 12/D04 MIL-STD-462 Version D Method RE101
- 12/D05 MIL-STD-462 Version D Method RE102
- 12/D06 MIL-STD-462 Version D Method RE103
- 12/D07 MIL-STD-461 Version E Method RE101
- 12/D08 MIL-STD-461 Version E Method RE102
- 12/D09 MIL-STD-461 Version E Method RE103

#### MIL-STD-462 : Radiated Susceptibility:

- 12/E01 MIL-STD-462 Method RS01
- 12/E02 MIL-STD-462 Method RS02
- 12/E03 MIL-STD-462 Method RS03 (Consult laboratory for field strengths available)
- 12/E05 MIL-STD-462 Method RS05
- 12/E07 MIL-STD-462 Method RS06
- 12/E08 MIL-STD-462 Version D Method RS101
- 12/E09 MIL-STD-462 Version D Method RS103
- 12/E11 MIL-STD-461 Version E Method RS101
- 12/E12 MIL-STD-461 Version E Method RS103

## NVLAP LAB CODE 200503-0

### IBM Shock and Vibration Laboratory

MS P932, Dept 575S, Bldg. 416, Rm 10-10  
2455 South Road  
Poughkeepsie, NY 12601  
Contact: Mr. Budy Notohardjono  
Phone: 845-435-1047  
Fax: 845-432-9807  
E-Mail: budy@us.ibm.com

### Commercial Products Testing

Accreditation Valid Through: December 31, 2002

#### NVLAP

Code Designation

#### Paper and Related Products

- 09/H08 Method 5007.1; ASTM D5276; TAPPI T802-OM
- 09/H19 Method 5019.1; TAPPI T817-OM/A
- 09/H20 Method 5020.1; TAPPI T817-OM/B,C

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 200504-0****Litetronics International**

4101W 123 Street  
Alsip, IL 60803  
Contact: Mr. Sandeep Sood  
Phone: 708-389-8000  
Fax: 708-371-0627  
E-Mail: ssood@litetronics.com  
URL: <http://www.litetronics.com>

**Energy Efficient Lighting Products**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Electrical Measurements**

|        |           |
|--------|-----------|
| 22/E02 | IES LM-45 |
|--------|-----------|

**Photometric Measurements**

|         |                        |
|---------|------------------------|
| 22/P02a | IES LM-20 (Total Flux) |
|---------|------------------------|

|         |                        |
|---------|------------------------|
| 22/P03a | IES LM-45 (Total Flux) |
|---------|------------------------|

**NVLAP LAB CODE 200506-0****USEM de Mexico, S.A. de C.V.**

Blvd. Carlos Salinas de G. KM 9.5  
Apodaca NL 66600  
MEXICO  
Contact: Mr. Jose Raymundo Leal Lacavex  
Phone: 011-52-81-83-89-1356  
Fax: 011-52-81-83-89-1360  
E-Mail: Raymundo.Leal@usmotors.com

**Efficiency of Electric Motors**

Accreditation Valid Through: December 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

|        |                    |
|--------|--------------------|
| 24/M01 | IEEE 112, Method B |
|--------|--------------------|

**NVLAP LAB CODE 200509-0****White Environmental Consultants, Inc.**

12750 SW Pacific Hwy., Suite 210  
Tigard, OR 97223  
Contact: Mr. Travis Hubbard  
Phone: 503-968-2533  
Fax: 503-968-0523  
E-Mail: thubbard@wec-laboratories.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

**NVLAP LAB CODE 200511-0****Northern Industrial Hygiene, Inc.**

215 SW 153rd Street  
Burien, WA 98166  
Contact: Ms. Crystal Wright  
Phone: 206-988-1746  
Fax: 206-988-1978  
E-Mail: NIHINCLAB@AOL.COM

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

**NVLAP LAB CODE 200514-0****Advance Testing Company Inc.**

3348 Route 208  
Campbell Hall, NY 10916  
Contact: Mr. Kevin L. Patton, P.E.  
Phone: 845-496-1600  
Fax: 845-496-1398

**Construction Materials Testing**

Accreditation Valid Through: March 31, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**Aggregates**

|        |            |
|--------|------------|
| 02/A03 | ASTM C29   |
| 02/A04 | ASTM C40   |
| 02/A05 | ASTM C87   |
| 02/A06 | ASTM C88   |
| 02/A07 | ASTM C117  |
| 02/A08 | ASTM C123  |
| 02/A09 | ASTM C127  |
| 02/A10 | ASTM C128  |
| 02/A11 | ASTM C131  |
| 02/A12 | ASTM C136  |
| 02/A13 | ASTM C142  |
| 02/A15 | ASTM D75   |
| 02/A16 | ASTM D2419 |
| 02/A44 | ASTM C566  |
| 02/A46 | ASTM C535  |

**Cement**

|        |                      |
|--------|----------------------|
| 02/A17 | ASTM C109            |
| 02/A23 | ASTM C185            |
| 02/A28 | ASTM C227            |
| 02/A30 | ASTM C266            |
| 02/A31 | ASTM C305            |
| 02/A34 | ASTM C452            |
| 02/A51 | ASTM C780 (Annex A7) |
| 02/A52 | ASTM C1019           |

**Concrete**

|        |                              |
|--------|------------------------------|
| 02/A01 | ASTM C39                     |
| 02/A02 | ASTM C617                    |
| 02/A40 | ASTM C78                     |
| 02/A41 | ASTM C192                    |
| 02/A43 | ASTM C1064                   |
| 02/A45 | ASTM C42                     |
| 02/G01 | ASTM C31/C172/C143/C138/C231 |
| 02/G02 | ASTM C173                    |

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****Geotextiles**

02/L28 ASTM D4354

**Road and Paving Materials**

02/M07 ASTM D546

02/M08 ASTM D979

02/M12 ASTM D1559

02/M19 ASTM D2172

02/M24 ASTM D2041

02/M25 ASTM D2726

**Soil and Rock**

02/L01 ASTM D4220

02/L02 ASTM D422

02/L04 ASTM D698

02/L05 ASTM D854

02/L06 ASTM D1140

02/L07 ASTM D1556

02/L08 ASTM D1557

02/L10 ASTM D1883

02/L13 ASTM D2216

02/L14 ASTM D2217

02/L16 ASTM D2487

02/L17 ASTM D2488

02/L18 ASTM D3080

02/L19 ASTM D4254

02/L20 ASTM D4318

02/L21 ASTM D2434

02/L23 ASTM D2922

02/L24 ASTM D2974

02/L25 ASTM D3017

02/L26 ASTM D4221

02/L27 ASTM D4253

02/L29 Corps of Engineers - Manual  
EM-1110-2-1906, Appendix VII, Permeability  
of Fine Grained Soils Using a Triaxial  
Apparatus

02/L46 ASTM D5084

**Standard Practices**

02/A38 ASTM E329

02/A39 ASTM C1077

02/A50 ASTM C1093

02/L32 ASTM D3740

02/M26 ASTM D3666

**Steel Materials**

02/S07 ASTM E709

02/S08 ASTM E165

**NVLAP LAB CODE 200515-0****Applied Laboratory Services, LLC**

4101 Granby Street, Suite 404

Norfolk, VA 23504

Contact: Mr. Thomas L. Stokes

Phone: 757-623-0777

Fax: 757-623-2785

E-Mail: KRayALS@aol.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

**NVLAP LAB CODE 200519-0****Oki Engineering Co., Ltd. EMC Honjo Center**

1-1 Ojimaminami 4-chome

Honjo-shi, Saitama 367-8686

JAPAN

Contact: Mr. Isao Shibata

Phone: 81-3-5445-2501

Fax: 81-3-5445-2507

E-Mail: shibata587@oki.com

URL: <http://www.oeg.co.jp>**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: March 31, 2002

**NVLAP***Code Designation***Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1993: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology  
equipment

12/CIS22a IEC/CISPR 22:1993: Limits and methods of  
measurement of radio disturbance  
characteristics of information technology  
equipment, Amendment 1:1995, and  
Amendment 2:1996.

12/CIS22b CNS 13438:1997: Limits and Methods of  
Measurement of Radio Interference  
Characteristics of Information Technology  
Equipment

12/F01 FCC Method - 47 CFR Part 15 - Digital  
Devices

12/F01a Conducted Emissions, Power Lines, 450 KHz  
to 30 MHz

12/F01b Radiated Emissions

12/T51 AS/NZS 3548

**NVLAP LAB CODE 200520-0****BPB America, Inc.**

14255 49th St. N., Suite 305

Clearwater, FL 33762

Contact: Mr. William Gwynn

Phone: 727-563-5237

Fax: 727-563-5218

E-Mail: HGwynn@bpb-celotex.com

URL: <http://www.bpb-celotex.com>**Acoustical Testing Services**

Accreditation Valid Through: December 31, 2002

**NVLAP***Code Designation*

08/P03 ASTM C423

08/P04 ASTM C522

08/P06 ASTM E90

08/P34 ASTM E1414

08/P35 ASTM E1050

08/P49 AMA-1-II-67



NVLAP LAB CODE 200522-0

**C.I.M.D. Engr. Dev. Lab**

2000 Taylor Street  
Fort Wayne, IN 46801  
Contact: Mr. Gary George  
Phone: 219-439-2007  
Fax: 219-439-2429  
E-Mail: gary.george@indsys.ge.com

**Efficiency of Electric Motors**

Accreditation Valid Through: March 31, 2002

*NVLAP*

*Code Designation*

24/M01 IEEE 112, Method B

NVLAP LAB CODE 200523-0

**Fort Polk Environmental Laboratory**

1881 23rd Street, Building 2530  
Fort Polk, LA 71459-5509  
Contact: Ms. Christine Gettys Hull  
Phone: 337-531-6084  
Fax: 337-531-8950  
E-Mail: hullc@polk-emh2.army.mil

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

NVLAP LAB CODE 200525-0

**J3 Resources, Inc.**

5400 Mitchelldale, Suite A9  
Houston, TX 77092  
Contact: Mr. Lee W. Poye  
Phone: 713-290-0221  
Fax: 713-290-0248  
E-Mail: lpoye@J3Resources.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: March 31, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: March 31, 2002

NVLAP LAB CODE 200527-0

**Compatible Electronics, Inc.**

19121 El Toro Road  
Silverado/Lake Forest, CA 92676  
Contact: Mr. Jeff Klinger  
Phone: 714-579-0500  
Fax: 714-579-1850  
E-Mail: jklinger@celectronics.com  
URL: http://www.celectronics.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

*NVLAP*

*Code Designation*

**Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance

characteristics of information technology equipment

12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.

12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment

12/F01 FCC Method - 47 CFR Part 15 - Digital Devices

12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz

12/F01b Radiated Emissions

12/T51 AS/NZS 3548

**Immunity Test Methods:**

12/I01 IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test

12/I02 IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency

Electromagnetic Field Immunity Test

12/I03 IEC 61000-4-4 (1995): Electrical Fast

Transient/Burst Immunity Test

12/I04 IEC 61000-4-5 (1995): Surge Immunity Test

12/I05 IEC 61000-4-6 (1996): Immunity to

Conducted Disturbances, Induced

Radio-Frequency Fields

12/I06 IEC 61000-4-8 (1993): Power Frequency

Magnetic Field Immunity Test

12/I07 IEC 61000-4-11 (1994): Voltage Dips, Short

Interruptions and Voltage Variations Immunity Tests

**Safety Test Methods:**

12/T41 ACA TS-001

12/T50 AS/NZS 3260

NVLAP LAB CODE 200528-0

**Compatible Electronics, Inc.**

114 Olinda Drive  
Brea, CA 92823  
Contact: Mr. Jeff Klinger  
Phone: 714-579-0500  
Fax: 714-579-1850  
E-Mail: jklinger@celectronics.com  
URL: http://www.celectronics.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

*NVLAP*

*Code Designation*

**Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment

12/CIS22a IEC/CISPR 22:1993: Limits and methods of



**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

|                                         |                                                                                                                                                                                                                                            |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         | measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.                                                                                                              |
| 12/CIS22b                               | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                                                                                                |
| 12/F01                                  | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                                                                                              |
| 12/F01a                                 | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                                                                                        |
| 12/F01b                                 | Radiated Emissions                                                                                                                                                                                                                         |
| 12/T51                                  | AS/NZS 3548                                                                                                                                                                                                                                |
| <b>Immunity Test Methods:</b>           |                                                                                                                                                                                                                                            |
| 12/I01                                  | IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test                                                                                                                                                         |
| 12/I02                                  | IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test                                                                                                                                 |
| 12/I03                                  | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                                                                                                                                                                        |
| 12/I04                                  | IEC 61000-4-5 (1995): Surge Immunity Test                                                                                                                                                                                                  |
| 12/I05                                  | IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields                                                                                                                                                   |
| 12/I06                                  | IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test                                                                                                                                                                         |
| 12/I07                                  | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests                                                                                                                                             |
| <b>Telecommunications Test Methods:</b> |                                                                                                                                                                                                                                            |
| 12/CS03                                 | CS-03                                                                                                                                                                                                                                      |
| 12/T01                                  | Terminal Equipment Network Protection Standards, FCC Method - 47 CFR Part 68 - Analog and Digital                                                                                                                                          |
| 12/T01a                                 | 68.302 (Par. c,d,e,f) Environmental simulation; 68.304 Leakage current limit.; 68.306 Hazardous voltage limit.; 68.308 Signal power limit.; 68.310 Longitudinal balance limit.; 68.312 On-hook impedance limit.; 68.314 Billing protection |
| 12/T01b                                 | 68.316 Hearing Aid Compatibility: technical standards                                                                                                                                                                                      |
| 12/T01c                                 | 68.302 Environmental simulation (Par. a,b)                                                                                                                                                                                                 |

**NVLAP LAB CODE 200529-0****Motor Test Lab of Toshiba Industrial Products Manufacturing Corp.**

2121 Nao  
Asahi-cho Mie-gun Mie-ken 510-8521  
JAPAN  
Contact: Mr. Hiroaki Nagashima  
Phone: 0593-76-6072  
Fax: 0593-76-6182  
E-Mail: hiroaki1nagashima@toshiba.co.jp

**Efficiency of Electric Motors**

Accreditation Valid Through: June 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

|        |                    |
|--------|--------------------|
| 24/M01 | IEEE 112, Method B |
|--------|--------------------|

**NVLAP LAB CODE 200530-0****Paradigm Environmental Services, Inc.**

179 Lake Avenue  
Rochester, NY 14608  
Contact: Mr. Bruce Hoogesteger  
Phone: 716-647-2530  
Fax: 716-647-3311

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

**NVLAP LAB CODE 200531-0****Enviroscience Consultants, Inc.**

2150 Smithtown Ave.  
Ronkonkoma, NY 11779  
Contact: Mr. Edward Detweiler  
Phone: 631-580-3191  
Fax: 631-580-3195  
E-Mail: edetweiler@envirohealth.org

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

**NVLAP LAB CODE 200533-0****Quitek Corporation**

No. 5, Ruei-shu Valley, Ruei-ping, Tsuen  
Lin Kou Shiang, Taipei 244  
TAIWAN  
Contact: Mr. Gene Chang  
Phone: 886-2-8601-3788  
Fax: 886-2-8601-3789  
E-Mail: gene@quietek.com

**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: June 30, 2002

**NVLAP***Code      Designation***Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment

12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.

12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment

12/F01 FCC Method - 47 CFR Part 15 - Digital Devices

12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz

12/F01b Radiated Emissions

12/T51 AS/NZS 3548

**Immunity Test Methods:**

12/I01 IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test

12/I02 IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test

12/I03 IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test

12/I04 IEC 61000-4-5 (1995): Surge Immunity Test

12/I05 IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields

12/I06 IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test

12/I07 IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests

**NVLAP LAB CODE 200535-0****Underwriters Laboratories Inc.**11825 Niles Canyon Road  
Sunol, CA 94586Contact: Mr. Rick A. Titus  
Phone: 847-272-8800 x43281  
Fax: 847-509-6321

E-Mail: rick.a.titus@us.ul.com

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP***Code      Designation***Emissions Test Methods:**

12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment

12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.

12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment

12/F01 FCC Method - 47 CFR Part 15 - Digital Devices

12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz

12/F01b Radiated Emissions

12/T51 AS/NZS 3548

**Immunity Test Methods:**

12/I01 IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test

12/I02 IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test

12/I03 IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test

12/I04 IEC 61000-4-5 (1995): Surge Immunity Test

12/I05 IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields

12/I06 IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test

12/I07 IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests

**NVLAP LAB CODE 200537-0****Baldor Motor Design Lab**5711 R. S. Boreham JR Street  
P.O. Box 2400  
Fort Smith, AR 72901  
Contact: Mr. Ron Lininger  
Phone: 501-646-4711  
Fax: 501-648-5841**Efficiency of Electric Motors**

Accreditation Valid Through: June 30, 2002

**NVLAP***Code      Designation*

24/M01 IEEE 112, Method B

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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued**

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**NVLAP LAB CODE 200541-0**

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**Globetec Group, Inc.**

544 Ohohia Street, Suite #2  
Honolulu, HI 96819  
Contact: Mr. Mohammad Rouf  
Phone: 808-833-5787  
Fax: 808-833-5987  
E-Mail: mohammad@poi.net

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 200542-0**

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**Ram Industries Motor Test Laboratory**

P.O. Box 629  
Leesport, PA 19533  
Contact: Mr. Joseph J. Cala  
Phone: 610-916-3939  
Fax: 610-916-4885  
E-Mail: jcala@ramusa.com  
URL: <http://www.ramusa.com>

**Efficiency of Electric Motors**

Accreditation Valid Through: September 30, 2002

*NVLAP*

| <i>Code</i> | <i>Designation</i> |
|-------------|--------------------|
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|        |                    |
|--------|--------------------|
| 24/M01 | IEEE 112, Method B |
|--------|--------------------|

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**NVLAP LAB CODE 200544-0**

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**Missouri Department of Transportation,  
Chemical Laboratory**

Chemical Laboratory  
P.O. Box 270  
Jefferson City, MO 65102  
Contact: Mr. Ken Fryer  
Phone: 573-751-3706  
Fax: 573-526-4361  
E-Mail: schwah@mail.modot.state.mo.us

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: September 30, 2002

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**NVLAP LAB CODE 200546-0**

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**Scientific Laboratories, Inc.**

117 E. 30th Street  
New York, NY 10016  
Contact: Mr. Lance Tuckruskye  
Phone: 212-679-8600  
Fax: 212-679-2711  
E-Mail: ltuckruskye@scilabs.com

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: June 30, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: June 30, 2002

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**NVLAP LAB CODE 200548-0**

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**Envirocheck, Inc.**

7052 Orangewood Ave. #2  
Garden Grove, CA 92841  
Contact: Mr. Vanc Thomas  
Phone: 714-893-8177  
Fax: 714-891-3922

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

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**NVLAP LAB CODE 200549-0**

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**Wave Corporation**

Oosawa 575, Yoshii-machi  
Tano-gun, Gunma  
JAPAN  
Contact: Mr. Katsuyuki Arai  
Phone: 027-387-7856  
Fax: 027-387-7829  
E-Mail: katsuyuki.arai@wave-j.com  
URL: <http://www.wave-j.com>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

*NVLAP*

| <i>Code</i> | <i>Designation</i> |
|-------------|--------------------|
|-------------|--------------------|

**Emissions Test Methods:**

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                          |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996. |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                            |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                          |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                    |
| 12/F01b   | Radiated Emissions                                                                                                                                                     |
| 12/T51    | AS/NZS 3548                                                                                                                                                            |

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**INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued****NVLAP LAB CODE 200550-0****Anritsu Customer Services Ltd. EMC Center**

1800 Onna, Atsugi-shi  
Kanagawa-Prf. 243-0032  
JAPAN  
Contact: Mr. Hisashi Nakama  
Phone: 81-46-296-6744  
Fax: 81-46-296-6784  
E-Mail: Nakama.hisashi@gg.anritsu.co.jp  
URL: <http://www.anritsu.co.jp>

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

Code      Designation

**Emissions Test Methods:**

- 12/CIS22 IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions
- 12/T51 AS/NZS 3548

**Immunity Test Methods:**

- 12/I01 IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test
- 12/I02 IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test
- 12/I03 IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test
- 12/I04 IEC 61000-4-5 (1995): Surge Immunity Test
- 12/I05 IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields

**NVLAP LAB CODE 200552-0****Adirondack Environmental Services Inc.**

314 North Pearl Street  
Albany, NY 12207-1322  
Contact: Mr. Thomas K. Hare  
Phone: 518-785-0128  
Fax: 518-785-5042

**Bulk Asbestos Analysis (PLM)**

Accreditation Valid Through: December 31, 2002

**Airborne Asbestos Analysis (TEM)**

Accreditation Valid Through: December 31, 2002

**NVLAP LAB CODE 200553-0****Sony Nagano EMC Test Laboratory**

5432 Oaza Toyoshina Toyoshina-machi  
Nagano-ken 399-8282  
JAPAN  
Contact: Mr. Yoshio Takeuchi  
Phone: 81-263-72-5696  
Fax: 81-263-72-9755  
E-Mail: [takeuchi@sodp.sony.co.jp](mailto:takeuchi@sodp.sony.co.jp)

**Electromagnetic Compatibility & Telecommunications**

Accreditation Valid Through: December 31, 2002

**NVLAP**

Code      Designation

**Emissions Test Methods:**

- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions

**NVLAP LAB CODE 200556-0****EWA - Canada Ltd, IT Security Evaluation Facility**

275 Slater Street, Suite 1600  
Ottawa Ontario K1P 5H9  
CANADA  
Contact: Mr. Paul Zatychech  
Phone: 613-230-6067 x227  
Fax: 613-230-4933  
E-Mail: [pzatychech@ewa-canada.com](mailto:pzatychech@ewa-canada.com)

**Cryptographic Module Testing**

Accreditation Valid Through: December 31, 2002

**NVLAP**

Code      Designation

- 17/C01 NIST-CSTT:140-1; National Institute of Standards and Technology-Cryptographic Support Test Tool (CSTT) for the Federal Information Processing Standard 140-1 (FIPS 140-1) "Security Requirements for Cryptographic Modules."
- 17/C01a Test Method Group 1: All test methods derived



## INDEX D. LISTING OF TESTING LABORATORIES BY NVLAP LAB CODE - continued

|         |                                                                                                                                                        |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
|         | from FIPS 140-1 and specified in the CSTT, except those listed in Group 2 and Group 3.                                                                 |
| 17/C01b | Test Method Group 2: Test methods for Physical Security, Level 4 derived from FIPS 140-1 and specified in the CSTT                                     |
| 17/C01c | Test Method Group 3: Test methods for Software Security, Level 4 derived from FIPS 140-1 and specified in the CSTT                                     |
| 17/C02  | FIPS-Approved Cryptographic Algorithms (see <a href="http://csrc.nist.gov/cryptval">http://csrc.nist.gov/cryptval</a> ) as required in FIPS PUB 140-1. |

### NVLAP LAB CODE 200559-0

#### Digital EMC., Ltd.

683-2 Yubang-Dong, Yongin-Si  
Kyunggi-Do 449-080  
KOREA

Contact: Mr. Charlie Park  
Phone: 82-31-712-2662  
Fax: 82-31-712-1662  
E-Mail: [charlie@digitalemc.com](mailto:charlie@digitalemc.com)  
URL: <http://www.ditigalemc.com>

#### Electromagnetic Compatibility & Telecommunications

Accreditation Valid Through: December 31, 2002

##### NVLAP

| Code | Designation |
|------|-------------|
|------|-------------|

##### Emissions Test Methods:

|           |                                                                                                                                                                                                              |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12/CIS14  | CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions |
| 12/CIS14a | EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)                                                                                                                                                      |
| 12/CIS14b | AS/NZS 1044 (1995)                                                                                                                                                                                           |
| 12/CIS14c | CNS 13783-1                                                                                                                                                                                                  |
| 12/CIS22  | IEC/CISPR 22:1997: Limits and methods of measurement of radio disturbance characteristics of information technology equipment                                                                                |
| 12/CIS22a | IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.                                       |
| 12/CIS22b | CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment                                                                                  |
| 12/F01    | FCC Method - 47 CFR Part 15 - Digital Devices                                                                                                                                                                |
| 12/F01a   | Conducted Emissions, Power Lines, 450 KHz to 30 MHz                                                                                                                                                          |
| 12/F01b   | Radiated Emissions                                                                                                                                                                                           |
| 12/T51    | AS/NZS 3548                                                                                                                                                                                                  |

##### Immunity Test Methods:

|        |                                      |
|--------|--------------------------------------|
| 12/I01 | IEC 61000-4-2 (1995) and Amendment 1 |
|--------|--------------------------------------|

|        |                                                                                                |
|--------|------------------------------------------------------------------------------------------------|
|        | (1998): Electrostatic Discharge Immunity Test                                                  |
| 12/I03 | IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test                            |
| 12/I04 | IEC 61000-4-5 (1995): Surge Immunity Test                                                      |
| 12/I07 | IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests |

### NVLAP LAB CODE 200567-0

#### ASC geoscience, inc.

5811 Corporation Circle  
Fort Myers, FL 33905  
Contact: Mr. Anu Saxena, P.E.  
Phone: 863-644-8300  
Fax: 863-644-8203  
E-Mail: [anu@ascworldnet](mailto:anu@ascworldnet)  
URL: <http://www.ascworld.net>

#### Construction Materials Testing

Accreditation Valid Through: December 31, 2002

##### NVLAP

| Code | Designation |
|------|-------------|
|------|-------------|

##### Aggregates

|        |           |
|--------|-----------|
| 02/A03 | ASTM C29  |
| 02/A07 | ASTM C117 |
| 02/A09 | ASTM C127 |
| 02/A12 | ASTM C136 |

##### Concrete

|        |                              |
|--------|------------------------------|
| 02/A01 | ASTM C39                     |
| 02/A02 | ASTM C617                    |
| 02/A40 | ASTM C78                     |
| 02/A41 | ASTM C192                    |
| 02/A43 | ASTM C1064                   |
| 02/G01 | ASTM C31/C172/C143/C138/C231 |
| 02/G02 | ASTM C173                    |

##### Road and Paving Materials

|        |            |
|--------|------------|
| 02/M07 | ASTM D546  |
| 02/M08 | ASTM D979  |
| 02/M19 | ASTM D2172 |
| 02/M24 | ASTM D2041 |
| 02/M25 | ASTM D2726 |

##### Soil and Rock

|        |            |
|--------|------------|
| 02/L02 | ASTM D422  |
| 02/L04 | ASTM D698  |
| 02/L05 | ASTM D854  |
| 02/L06 | ASTM D1140 |
| 02/L07 | ASTM D1556 |
| 02/L08 | ASTM D1557 |
| 02/L10 | ASTM D1883 |
| 02/L12 | ASTM D2168 |
| 02/L13 | ASTM D2216 |
| 02/L16 | ASTM D2487 |
| 02/L17 | ASTM D2488 |
| 02/L20 | ASTM D4318 |
| 02/L23 | ASTM D2922 |
| 02/L25 | ASTM D3017 |

##### Standard Practices

|        |            |
|--------|------------|
| 02/M26 | ASTM D3666 |
|--------|------------|

**INDEX**

**E**

**LISTING OF  
CALIBRATION  
LABORATORIES  
BY NVLAP  
LAB CODE**



National Institute  
of Standards and Technology

NVLAP<sup>®</sup>

National Voluntary  
Laboratory Accreditation Program

ISO/IEC GUIDE 25:1990  
ANSI/NCSL Z540-1-1994  
ISO 9002:1987

Scope of Accreditation

Revised 11/20/2001

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CALIBRATION LABORATORIES

NVLAP LAB CODE 105000-0

OAK RIDGE METROLOGY CENTER

P.O. Box 2009  
Oak Ridge, TN 37831-8091  
W. T. (Bill) McKeethan  
Phone: 865-574-2707 Fax: 865-574-2802  
E-Mail: mckeethanwt@y12.doe.gov  
URL: <http://www.ornl.gov/orcmt.mfgqual>

National Institute  
of Standards and Technology

NVLAP<sup>®</sup>

National Voluntary  
Laboratory Accreditation Program

ISO/IEC GUIDE 25:1990  
ANSI/NCSL Z540-1-1994  
ISO 9002:1987

Scope of Accreditation

Revised 11/20/2001

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CALIBRATION LABORATORIES

NVLAP LAB CODE 105000-0

OAK RIDGE METROLOGY CENTER

| DIMENSIONAL             |                                               |                                                            |
|-------------------------|-----------------------------------------------|------------------------------------------------------------|
| NVLAP Code: 20/D03      |                                               |                                                            |
| Gage Blocks, Steel Only |                                               |                                                            |
| Range                   | Best Uncertainty ( $\pm y_{95\%}$ )           | Remarks                                                    |
| 0.010 to 0.090          | 2.4 $\mu\text{m}$                             | Mechanical Comparison                                      |
| 0.01 to 1.000           | 1.8 $\mu\text{m}$                             | Mechanical Comparison                                      |
| 2.0 to 4.0              | (2 $\mu\text{m}$ + 0.8L) $\mu\text{m}_{95\%}$ | Mechanical Comparison                                      |
| NVLAP Code: 20/D05      |                                               |                                                            |
| Length                  |                                               |                                                            |
| Range                   | Best Uncertainty ( $\pm y_{95\%}$ )           | Remarks                                                    |
| 0 - 1.35 m              | (0.3 + 0.4L) $\mu\text{m}_{95\%}$             | Step and End Gages using M-60 Coordinate Measuring Machine |
| 0 - 1.2 m               | (0.22 + 0.18L) $\mu\text{m}_{95\%}$           | Step and End Gages using M-48 Coordinate Measuring Machine |

March 31, 2002

Effective through

David F. Alderman

For the National Institute of Standards and Technology

|                              |                                                  |                      |
|------------------------------|--------------------------------------------------|----------------------|
| NVLAP Code: 20/D06           |                                                  |                      |
| Line Standards - Line Scales |                                                  |                      |
| Range                        | Best Uncertainty ( $\pm y_{95\%}$ )              | Remarks              |
| to 800 mm                    | (0.5 $\mu\text{m}$ + 0.14L) $\mu\text{m}_{95\%}$ | CMM (optical)        |
| NVLAP Code: 20/D09           |                                                  |                      |
| Roundness                    |                                                  |                      |
| Range                        | Best Uncertainty ( $\pm y_{95\%}$ )              | Remarks              |
| to 6" Diameter and 4" Height | 0.1 $\mu\text{m}$                                | Roundness Instrument |
| NVLAP Code: 20/D15           |                                                  |                      |
| Two Dimensional Gages        |                                                  |                      |
| Range                        | Best Uncertainty ( $\pm y_{95\%}$ )              | Remarks              |
| 0.8 m x 1.2 m                | (0.45 + 0.6L) $\mu\text{m}_{95\%}$               | M-48 CMM             |

March 31, 2002

Effective through

David F. Alderman

For the National Institute of Standards and Technology

NVLAP 2002 DIRECTORY

(See 'How To Use This Directory' on page 7.)

E3





ISO/IEC GUIDE 25:1990  
ANSI/NCSL Z540-1:1994  
ISO 9002:1987

## Scope of Accreditation

Revised 11/20/2001

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CALIBRATION LABORATORIES

NVLAP LAB CODE 105000-0

OAK RIDGE METROLOGY CENTER

NVLAP Code: 20/D18  
Gears

| Range                            | Best Uncertainty ( $\pm$ in $\mu\text{m}$ ) <sup>1</sup> | Remarks          |
|----------------------------------|----------------------------------------------------------|------------------|
| to 6" Diameter                   | 0.9 $\mu\text{m}$                                        | Involute Profile |
| to 6" Diameter and Infinite Lead | 0.8 $\mu\text{m}$                                        | Tooth Alignment  |
| to 6" Diameter and 99" Lead      | 0.9 $\mu\text{m}$                                        | Tooth Alignment  |
| to 6" Diameter and 32" Lead      | 1.1 $\mu\text{m}$                                        | Tooth Alignment  |
| to 6" Diameter and 16" Lead      | 1.2 $\mu\text{m}$                                        | Tooth Alignment  |
| to 6" Diameter and 11" Lead      | 1.4 $\mu\text{m}$                                        | Tooth Alignment  |
| to 6" Diameter (pin offset)      | 0.7 $\mu\text{m}$                                        | Pin Master       |
| to 6" Diameter (pin diameter)    | 0.5 $\mu\text{m}$                                        | Pin Master       |
| to 6" Diameter (pin roundness)   | 0.3 $\mu\text{m}$                                        | Pin Master       |

March 31, 2002

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ISO/IEC GUIDE 25:1990  
ANSI/NCSL Z540-1:1994  
ISO 9002:1987

## Scope of Accreditation

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CALIBRATION LABORATORIES

NVLAP LAB CODE 105000-0

OAK RIDGE METROLOGY CENTER

TIME AND FREQUENCY

NVLAP Code: 20/F01  
Frequency Dissemination

| Range                | Best Uncertainty ( $\pm$ in $\text{Hz}_{\text{sec}^{-1}}$ ) | Remarks              |
|----------------------|-------------------------------------------------------------|----------------------|
| 1 MHz, 5 MHz, 10 MHz | $1.01 \times 10^{-10}$                                      | Comparison using FMS |
| 1 MHz, 5 MHz, 10 MHz | $5.3 \times 10^{-10}$                                       | Comparison           |
| 1 Hz to < 1 MHz      | $(1 \times 10^{-6} + 0.1 \text{ Hz})_{\text{sec}^{-2}}$     | Direct Reading       |
| 1 MHz to 10 MHz      | $1 \times 10^{-8} \text{ sec}^{-2}$                         | Direct Reading       |
| > 10 MHz to 1 GHz    | $1 \times 10^{-7} \text{ sec}^{-2}$                         | Direct Reading       |

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CALIBRATION LABORATORIES

NVLAP LAB CODE 105000-0

MECHANICAL

NVLAP Code: 20/M08

Mass

| Range | Best Uncertainty ( $\pm$ ) <sup>1</sup> | Remarks |
|-------|-----------------------------------------|---------|
| 30 kg | 95 mg                                   |         |
| 20 kg | 41 mg                                   |         |
| 10 kg | 19.4 mg                                 |         |
| 5 kg  | 14.5 mg                                 |         |
| 2 kg  | 13.0 mg                                 |         |
| 1 kg  | 1.31 mg                                 |         |
| 500 g | 0.66 mg                                 |         |
| 200 g | 0.29                                    |         |
| 100 g | 0.136                                   |         |
| 50 g  | 0.072                                   |         |
| 20 g  | 0.038                                   |         |
| 10 g  | 0.029                                   |         |
| 5 g   | 0.0083                                  |         |
| 2 g   | 0.0052                                  |         |

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NVLAP LAB CODE 105000-0

MECHANICAL

NVLAP Code: 20/M08

Mass

| Range | Best Uncertainty ( $\pm$ ) <sup>1</sup> | Remarks |
|-------|-----------------------------------------|---------|
| 30 kg | 95 mg                                   |         |
| 20 kg | 41 mg                                   |         |
| 10 kg | 19.4 mg                                 |         |
| 5 kg  | 14.5 mg                                 |         |
| 2 kg  | 13.0 mg                                 |         |
| 1 kg  | 1.31 mg                                 |         |
| 500 g | 0.66 mg                                 |         |
| 200 g | 0.29                                    |         |
| 100 g | 0.136                                   |         |
| 50 g  | 0.072                                   |         |
| 20 g  | 0.038                                   |         |
| 10 g  | 0.029                                   |         |
| 5 g   | 0.0083                                  |         |
| 2 g   | 0.0052                                  |         |

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CALIBRATION LABORATORIES

NVLAP LAB CODE 105000-0

OAK RIDGE METROLOGY CENTER

## THERMODYNAMICS

NVLAP Code: 20/T07  
Resistance Temperature Devices

| Range                 | Best Uncertainty ( $\pm y_{95\%}$ ) | Remarks    |
|-----------------------|-------------------------------------|------------|
| 0.01 °C to 29.7646 °C | 0.001 °C                            | Comparison |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$
2. Realizable uncertainty depends on frequency being measured, customer requirements, and suitability of customer's equipment.
3. L is length in inches.
4. L is length in meters.

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CALIBRATION LABORATORIES

NVLAP LAB CODE 105001-0

## RICE LAKE WEIGHING SYSTEMS

230 West Coleman Street  
P.O. Box 272  
Rice Lake, WI 54868  
Mr. Richard Calkins  
Phone: 715-234-9171 x6113 Fax: 715-234-6967  
E-Mail: riccal@rlws.com  
URL: http://www.rlws.com

## MECHANICAL

NVLAP Code: 20/M08

| Mass | Range | Best Uncertainty ( $\pm y_{95\%}$ ) | Remarks            |
|------|-------|-------------------------------------|--------------------|
|      | 30 kg | 13.3 mg                             | Echelon 1 Facility |
|      | 20 kg | 8.0 mg                              | Echelon 1 Facility |
|      | 10 kg | 1.8 mg                              | Echelon 1 Facility |
|      | 5 kg  | 0.93 mg                             | Echelon 1 Facility |
|      | 3 kg  | 0.61 mg                             | Echelon 1 Facility |
|      | 2 kg  | 0.43 mg                             | Echelon 1 Facility |
|      | 1 kg  | 0.041 mg                            | Echelon 1 Facility |
|      | 500 g | 0.031 mg                            | Echelon 1 Facility |
|      | 300 g | 0.025 mg                            | Echelon 1 Facility |
|      | 200 g | 0.024 mg                            | Echelon 1 Facility |

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### CALIBRATION LABORATORIES

NVLAP LAB CODE 105001-0

#### RICE LAKE WEIGHING SYSTEMS

|        |            |                    |
|--------|------------|--------------------|
| 100 g  | 0.028 mg   | Echelon I Facility |
| 50 g   | 0.0142 mg  | Echelon I Facility |
| 30 g   | 0.0089 mg  | Echelon I Facility |
| 20 g   | 0.0065 mg  | Echelon I Facility |
| 10 g   | 0.0050 mg  | Echelon I Facility |
| 5 g    | 0.0032 mg  | Echelon I Facility |
| 3 g    | 0.0025 mg  | Echelon I Facility |
| 2 g    | 0.0023 mg  | Echelon I Facility |
| 1 g    | 0.0025 mg  | Echelon I Facility |
| 500 mg | 0.00224 mg | Echelon I Facility |
| 300 mg | 0.00192 mg | Echelon I Facility |
| 200 mg | 0.00190 mg | Echelon I Facility |
| 100 mg | 0.00222 mg | Echelon I Facility |
| 50 mg  | 0.00160 mg | Echelon I Facility |
| 30 mg  | 0.00128 mg | Echelon I Facility |
| 20 mg  | 0.00120 mg | Echelon I Facility |
| 10 mg  | 0.00136 mg | Echelon I Facility |
| 5 mg   | 0.00106 mg | Echelon I Facility |

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#### RICE LAKE WEIGHING SYSTEMS

|       |            |                     |
|-------|------------|---------------------|
| 3 mg  | 0.00086mg  | Echelon I Facility  |
| 2 mg  | 0.00084 mg | Echelon I Facility  |
| 1 mg  | 0.00096 mg | Echelon I Facility  |
| 50 kg | 99 mg      | Echelon II Facility |
| 30 kg | 13 mg      | Echelon II Facility |
| 20 kg | 8 mg       | Echelon II Facility |
| 10 kg | 1.8 mg     | Echelon II Facility |
| 5 kg  | 0.93 mg    | Echelon II Facility |
| 3 kg  | 0.61 mg    | Echelon II Facility |
| 2 kg  | 0.43 mg    | Echelon II Facility |
| 1 kg  | 0.04 mg    | Echelon II Facility |
| 500 g | 0.03 mg    | Echelon II Facility |
| 300 g | 0.03 mg    | Echelon II Facility |
| 200 g | 0.02 mg    | Echelon II Facility |
| 100 g | 0.028 mg   | Echelon II Facility |
| 50 g  | 0.014 mg   | Echelon II Facility |
| 30 g  | 0.009 mg   | Echelon II Facility |
| 20 g  | 0.006 mg   | Echelon II Facility |

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RICE LAKE WEIGHING SYSTEMS

|        |           |                     |
|--------|-----------|---------------------|
| 10 g   | 0.005 mg  | Echelon II Facility |
| 5 g    | 0.0032 mg | Echelon II Facility |
| 3 g    | 0.0025 mg | Echelon II Facility |
| 2 g    | 0.0023 mg | Echelon II Facility |
| 1 g    | 0.0025 mg | Echelon II Facility |
| 500 mg | 0.002 mg  | Echelon II Facility |
| 300 mg | 0.002 mg  | Echelon II Facility |
| 200 mg | 0.002 mg  | Echelon II Facility |
| 100 mg | 0.002 mg  | Echelon II Facility |
| 50 mg  | 0.002 mg  | Echelon II Facility |
| 30 mg  | 0.001 mg  | Echelon II Facility |
| 20 mg  | 0.001 mg  | Echelon II Facility |
| 10 mg  | 0.001 mg  | Echelon II Facility |
| 5 mg   | 0.001 mg  | Echelon II Facility |
| 3 mg   | 0.001 mg  | Echelon II Facility |
| 2 mg   | 0.001 mg  | Echelon II Facility |
| 1 mg   | 0.001 mg  | Echelon II Facility |

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RICE LAKE WEIGHING SYSTEMS

|         |          |                      |
|---------|----------|----------------------|
| 1000 kg | 20 g     | Echelon III Facility |
| 500 kg  | 6.3 g    | Echelon III Facility |
| 200 kg  | 2.8 g    | Echelon III Facility |
| 100 kg  | 2.7 g    | Echelon III Facility |
| 50 kg   | 100 mg   | Echelon III Facility |
| 30 kg   | 67 mg    | Echelon III Facility |
| 20 kg   | 12 mg    | Echelon III Facility |
| 10 kg   | 2.0 mg   | Echelon III Facility |
| 5 kg    | 1.2 mg   | Echelon III Facility |
| 3 kg    | 1.0 mg   | Echelon III Facility |
| 2 kg    | 0.91 mg  | Echelon III Facility |
| 1 kg    | 0.067 mg | Echelon III Facility |
| 500 g   | 0.052 mg | Echelon III Facility |
| 300 g   | 0.046 mg | Echelon III Facility |
| 200 g   | 0.045 mg | Echelon III Facility |
| 100 g   | 0.031 mg | Echelon III Facility |
| 50 g    | 0.016 mg | Echelon III Facility |
| 30 g    | 0.011 mg | Echelon III Facility |

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## RICE LAKE WEIGHING SYSTEMS

|        |          |                      |
|--------|----------|----------------------|
| 20 g   | 0.009 mg | Echelon III Facility |
| 10 g   | 0.007 mg | Echelon III Facility |
| 5 g    | 0.002 mg | Echelon III Facility |
| 3 g    | 0.002 mg | Echelon III Facility |
| 2 g    | 0.002 mg | Echelon III Facility |
| 1 g    | 0.002 mg | Echelon III Facility |
| 500 mg | 0.002 mg | Echelon III Facility |
| 300 mg | 0.002 mg | Echelon III Facility |
| 200 mg | 0.002 mg | Echelon III Facility |
| 100 mg | 0.002 mg | Echelon III Facility |
| 50 mg  | 0.002 mg | Echelon III Facility |
| 30 mg  | 0.001 mg | Echelon III Facility |
| 20 mg  | 0.001 mg | Echelon III Facility |
| 10 mg  | 0.001 mg | Echelon III Facility |
| 5 mg   | 0.001 mg | Echelon III Facility |
| 3 mg   | 0.001 mg | Echelon III Facility |
| 2 mg   | 0.001 mg | Echelon III Facility |
| 1 mg   | 0.001 mg | Echelon III Facility |

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CALIBRATION LABORATORIES

NVLAP LAB CODE 105001-0

## RICE LAKE WEIGHING SYSTEMS

| NVLAP Code: 20/M08<br>Mass Avoidupois |                                 |                      |  |
|---------------------------------------|---------------------------------|----------------------|--|
| Range                                 | Best Uncertainty ( $\pm$ years) | Remarks              |  |
| 2500 lb                               | 21 g                            | Echelon III Facility |  |
| 2000 lb                               | 8.6 g                           | Echelon III Facility |  |
| 1000 lb                               | 5.5 g                           | Echelon III Facility |  |
| 500 lb                                | 2.8 g                           | Echelon III Facility |  |
| 250 lb                                | 2.7 g                           | Echelon III Facility |  |
| 200 lb                                | 2.7 g                           | Echelon III Facility |  |
| 100 lb                                | 71 mg                           | Echelon III Facility |  |
| 50 lb                                 | 16 mg                           | Echelon III Facility |  |
| 30 lb                                 | 13 mg                           | Echelon III Facility |  |
| 25 lb                                 | 10 mg                           | Echelon III Facility |  |
| 20 lb                                 | 1.9 mg                          | Echelon III Facility |  |
| 10 lb                                 | 1.2 mg                          | Echelon III Facility |  |
| 5 lb                                  | 0.92 mg                         | Echelon III Facility |  |
| 4 lb                                  | 0.86 mg                         | Echelon III Facility |  |
| 3 lb                                  | 0.86 mg                         | Echelon III Facility |  |

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### CALIBRATION LABORATORIES

NVLAP LAB CODE 105001-0

#### RICE LAKE WEIGHING SYSTEMS

|          |          |                      |
|----------|----------|----------------------|
| 2 lb     | 0.096 mg | Echelon III Facility |
| 1 lb     | 0.058 mg | Echelon III Facility |
| 0.5 lb   | 0.044 mg | Echelon III Facility |
| 0.3 lb   | 0.048 mg | Echelon III Facility |
| 0.2 lb   | 0.020 mg | Echelon III Facility |
| 0.1 lb   | 0.016 mg | Echelon III Facility |
| 0.05 lb  | 0.009 mg | Echelon III Facility |
| 0.03 lb  | 0.008 mg | Echelon III Facility |
| 0.02 lb  | 0.007 mg | Echelon III Facility |
| 0.01 lb  | 0.002 mg | Echelon III Facility |
| 0.005 lb | 0.001 mg | Echelon III Facility |
| 0.003 lb | 0.001 mg | Echelon III Facility |
| 0.002 lb | 0.001 mg | Echelon III Facility |
| 0.001 lb | 0.001 mg | Echelon III Facility |
| 4 oz     | 0.038 mg | Echelon III Facility |
| 2 oz     | 0.012 mg | Echelon III Facility |
| 1 oz     | 0.012 mg | Echelon III Facility |
| 1/2 oz   | 0.008 mg | Echelon III Facility |

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#### RICE LAKE WEIGHING SYSTEMS

|         |          |                      |
|---------|----------|----------------------|
| 1/4 oz  | 0.007 mg | Echelon III Facility |
| 1/8 oz  | 0.006 mg | Echelon III Facility |
| 1/16 oz | 0.006 mg | Echelon III Facility |
| 1/32 oz | 0.006 mg | Echelon III Facility |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .

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NVLAP Code: 20/D06  
Line Standards

| Range      | Best Uncertainty ( $\pm y_{\text{max}}^{1,2}$ ) | Remarks                                                                                         |
|------------|-------------------------------------------------|-------------------------------------------------------------------------------------------------|
| 0 to 1.2 m | (0.4 + 0.5 L) $\mu\text{m}$                     | One-axis optical measurement on M-48 Universal Coordinate Measuring Machine (e.g., glass scale) |

NVLAP Code: 20/D07  
Thread Measuring Wires

| Range                    | Best Uncertainty ( $\pm y_{\text{max}}^{1,2}$ ) | Remarks                               |
|--------------------------|-------------------------------------------------|---------------------------------------|
| All Standard 29° and 60° | 6 $\mu\text{m}$ (0.15 $\mu\text{m}$ )           | Comparison to NIST-calibrated masters |

NVLAP Code: 20/D08  
Optical Reference Planes

| Range               | Best Uncertainty ( $\pm y_{\text{max}}^{1,2}$ ) | Remarks                               |
|---------------------|-------------------------------------------------|---------------------------------------|
| to 10 inch diameter | 1.2 $\mu\text{m}$ (30nm)                        | Comparison to NIST-calibrated masters |

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#### SANDIA NATIONAL LABORATORIES

NVLAP Code: 20/D09  
Roundness

| Range             | Best Uncertainty ( $\pm y_{\text{max}}^{1,2}$ ) | Remarks                                                                   |
|-------------------|-------------------------------------------------|---------------------------------------------------------------------------|
| to 4 in diameter  | 5.4 nm + 5.1% of value                          | Spindle error deconvolution at limited points.                            |
| to 14 in diameter | 10.6 nm + 6.8% of value                         | Spindle-compensated trace. Uncertainty will increase for large artifacts. |

NVLAP Code: 20/D11  
Spherical Diameter; Plug/Ring Gages

| Range                        | Best Uncertainty ( $\pm y_{\text{max}}^{1,2}$ ) | Remarks                                                                 |
|------------------------------|-------------------------------------------------|-------------------------------------------------------------------------|
| 0.03125 to 1 in (1 to 25 mm) | (0.23 + 1.7 L) $\mu\text{m}$                    | Gaging Balls, Calibration Spheres Comparison to NIST-calibrated masters |

NVLAP Code: 20/D12  
Surface Texture

| Range                                                      | Best Uncertainty ( $\pm y_{\text{max}}^{1,2}$ ) | Remarks                |
|------------------------------------------------------------|-------------------------------------------------|------------------------|
| 0.5 to 120 $\mu\text{m}$<br>(0.0125 to 3.0 $\mu\text{m}$ ) | 2%                                              | Step Height Standards  |
| 0.5 to 120 $\mu\text{m}$<br>(0.0125 to 3.0 $\mu\text{m}$ ) | 0.27 $\mu\text{in}$ (6.9 nm) + 1.5%             | Ra (Roughness Average) |

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|                           |                                                              |                                                                                                  |
|---------------------------|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| <b>NVLAP Code:</b> 20/D15 |                                                              |                                                                                                  |
| Two Dimensional Gages     |                                                              |                                                                                                  |
| <b>Range</b>              | <b>Best Uncertainty (<math>\pm</math>) ppm<sup>1,2</sup></b> | <b>Remarks</b>                                                                                   |
| 0 to 0.5 m                | (0.5 + 0.6 L) $\mu$ m                                        | Two-axis mechanical measurement on M-38 Universal Coordinate Measuring Machine (e.g., ring gage) |
| 0 to 0.5 m                | (0.6 + 0.6 L) $\mu$ m                                        | Two-axis optical measurement on M-48 Universal Coordinate Measuring Machine (e.g., grid plate)   |

**DC/LOW FREQUENCY**

**NVLAP Code:** 20/E01

Current/ AC-DC Difference

**Best Uncertainty ( $\pm$ ) in ppm<sup>1</sup>**

| <b>Range</b> | <b>Frequency in Hz</b> |      |
|--------------|------------------------|------|
|              | 100                    | 50 k |
| 10 mA        | 53                     | 72   |
| 25 mA        | 51                     | 73   |
| 50 mA        | 51                     | 75   |
| 100 mA       | 51                     | 108  |
| 250 mA       | 53                     | 73   |
| 0.5 A        | 51                     | 73   |

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|        |     |     |    |
|--------|-----|-----|----|
| 1.0 A  | 51  | 79  | 43 |
| 2.5 A  | 53  | 87  | 60 |
| 5.0 A  | 104 | 197 | 63 |
| 10.0 A | 101 | 154 | 91 |
| 20.0 A | 107 | 160 | 89 |

**NVLAP Code:** 20/E03

Capacitance Dividers - Pulsed High-Voltage Condition

| <b>Range</b> | <b>Best Uncertainty (<math>\pm</math>) in percent<sup>1</sup></b> |  | <b>Remarks</b>        |
|--------------|-------------------------------------------------------------------|--|-----------------------|
| 1 to 350 kV  | 2.0                                                               |  | 1 to 30 $\mu$ s Pulse |

**NVLAP Code:** 20/E05

DC Resistance

| <b>Range in ohms</b> | <b>Best Uncertainty (<math>\pm</math>) in ppm<sup>1</sup></b> |  | <b>Remarks</b> |
|----------------------|---------------------------------------------------------------|--|----------------|
|                      | 11                                                            |  |                |
| 0.0001 to 0.001      |                                                               |  | Low Resistance |
| 0.001 to 0.01        | 4                                                             |  | Low Resistance |
| 0.01 to 0.1          | 2.5                                                           |  | Low Resistance |
| 0.1 to 1             | 2                                                             |  | Low Resistance |

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|                       |       |                                   |
|-----------------------|-------|-----------------------------------|
| 1                     | 0.054 | Thomas                            |
| 1 to 10               | 1     |                                   |
| 10 to 10 <sup>4</sup> | 0.15  | Special (SR104,<br>Tinsley, etc.) |
| 10 k                  | 0.15  | SR104                             |
| 10 <sup>2</sup>       | 2     |                                   |
| 10 <sup>4</sup>       | 3     |                                   |
| 10 <sup>7</sup>       | 5     |                                   |
| 10 <sup>8</sup>       | 10    |                                   |
| 10 <sup>8</sup>       | 240   | with Teraohmeter                  |
| 10 <sup>9</sup>       | 330   | with Teraohmeter                  |
| 10 <sup>10</sup>      | 470   | with Teraohmeter                  |
| 10 <sup>11</sup>      | 670   | with Teraohmeter                  |
| 10 <sup>12</sup>      | 1400  | with Teraohmeter                  |
| 10 <sup>13</sup>      | 2000  | with Teraohmeter                  |
| 10 <sup>14</sup>      | 3300  | with Teraohmeter                  |
| 10 <sup>15</sup>      | 6700  | with Teraohmeter                  |

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|                                  |                                                  |                                                      |
|----------------------------------|--------------------------------------------------|------------------------------------------------------|
| 10 <sup>16</sup>                 | 7.0%                                             | with Teraohmeter                                     |
| Special Resistors                |                                                  |                                                      |
| 2 and 5                          | 0.5                                              | Reichsanstalt                                        |
| 28.5                             | 0.5                                              | NBS                                                  |
| Shunts                           |                                                  |                                                      |
| 100 mA to 1000 A                 | 2.5                                              |                                                      |
| NVLAP Code: 20/E06<br>DC Voltage |                                                  |                                                      |
| Range                            | Best Uncertainty ( $\pm$ ) in ppm <sup>max</sup> | Remarks                                              |
| 1.018 V                          | 0.14                                             | Josephson Array Systems<br>(Laboratory and Portable) |
| 10.0 V                           | 0.017                                            | Josephson Array Systems<br>(Laboratory and Portable) |
| 1.018 V                          | 0.21                                             | Standard Cell System                                 |
| 1.0 to 10.0 V                    | 0.26                                             | Zener Ref. System                                    |

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|                                              |                               |                                                                                                                       |
|----------------------------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Voltage dividers - Potentiometer combination |                               | Intermediate System                                                                                                   |
| 1.5 V to 1500 V                              | 2.5                           | Potentiometer only, $k=3$                                                                                             |
| x1.0 range to 1.05 V                         | 0.5 of reading +0.1 $\mu$ V   | Potentiometer only, $k=3$                                                                                             |
| x1.0 range above 1.05 V                      | 1.0 of reading +0.1 $\mu$ V   | Potentiometer only, $k=3$                                                                                             |
| x0.1 range                                   | 1.5 of reading +0.01 $\mu$ V  | Potentiometer only, $k=3$                                                                                             |
| x0.01 range                                  | 2.5 of reading +0.005 $\mu$ V | Potentiometer only, $k=3$                                                                                             |
| High Voltage                                 |                               |                                                                                                                       |
| to 100 kV                                    | 106                           | 200 kV system                                                                                                         |
| 100 kV to 200 kV                             | 140                           | 200 kV system                                                                                                         |
| to 10 kV                                     | 0.2%                          | 10 kV system                                                                                                          |
| Ratio/Bridges                                |                               |                                                                                                                       |
| 1:1 to 1:100,000                             | 0.5 x 10 <sup>7</sup> (ratio) | For ratio based on 20 step first dial ( $k=3$ ). For bridges, uncertainty combines ratio and resistance uncertainties |

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NVLAP Code: 20/E08  
Inductive Dividers  
Range  
15, 35 and 100 V  
Best Uncertainty ( $\pm$ ) in ppm<sup>nom</sup>  
55  
Remarks  
@ 60, 1 k and 10 kHz

NVLAP Code: 20/E09  
Voltage/ AC-DC Difference

| Range in Volts |    | Best Uncertainty ( $\pm$ ) in ppm <sup>nom</sup><br>Frequency in Hertz |    |    |     |     |     |     |     |     |      |
|----------------|----|------------------------------------------------------------------------|----|----|-----|-----|-----|-----|-----|-----|------|
|                |    | 10                                                                     | 20 | 50 | 100 | 200 | 500 | 1 k | 2 k | 5 k | 50 k |
| 1              | 21 | 12                                                                     | 11 | 8  | 7   | 5   | 6   | 5   | 6   | 5   | 7    |
| 2              | 16 | 16                                                                     | 10 | 8  | 6   | 5   | 8   | 7   | 15  | 13  | 6    |
| 3              | 16 | 14                                                                     | 11 | 6  | 6   | 6   | 10  | 10  | 10  | 9   | 9    |
| 4              | 18 | 13                                                                     | 11 | 7  | 6   | 6   | 8   | 6   | 6   | 7   | 8    |
| 6              | 23 | 15                                                                     | 14 | 13 | 15  | 14  | 13  | 10  | 10  | 9   | 8    |
| 10             | 17 | 13                                                                     | 11 | 8  | 10  | 7   | 11  | 11  | 13  | 13  | 12   |
| 12             | 19 | 13                                                                     | 11 | 8  | 10  | 11  | 10  | 11  | 10  | 11  | 9    |

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|      |     |    |    |    |    |    |    |    |    |    |    |    |
|------|-----|----|----|----|----|----|----|----|----|----|----|----|
| 20   | 31  | 14 | 11 | 6  | 6  | 7  | 7  | 8  | 7  | 8  | 9  | 9  |
| 30   | 19  | 15 | 11 | 8  | 6  | 8  | 8  | 9  | 8  | 8  | 9  | 12 |
| 40   | 30  | 14 | 11 | 17 | 6  | 8  | 18 | 9  | 8  | 8  | 16 | 21 |
| 60   | 20  | 14 | 13 | 7  | 7  | 9  | 8  | 8  | 8  | 8  | 9  | 12 |
| 100  | 35  | 14 | 12 | 7  | 7  | 8  | 9  | 8  | 8  | 8  | 10 | 13 |
| 120  | 102 | 23 | 21 | 22 | 21 | 9  | 10 | 9  | 9  | 9  | 11 | 15 |
| 200  | 101 | 21 | 21 | 22 | 21 | 10 | 12 | 12 | 13 | 11 | 15 | 23 |
| 300  | 101 | 21 | 21 | 21 | 21 | 12 | 14 | 14 | 11 | 11 | 14 | 24 |
| 400  | 101 | 21 | 21 | 23 | 21 | 13 | 14 | 15 | 15 | 15 | 18 | 28 |
| 600  | 102 | 22 | 21 | 21 | 21 | 16 | 16 | 15 | 16 | 15 | 21 | 32 |
| 1200 | 102 | 21 | 22 | 22 | 21 | 17 | 18 | 17 | 22 | 19 | 22 | 26 |

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NVLAP Code: 20/E09  
LF AC Voltage

| Range in Volts |    | Best Uncertainty ( $\pm$ ) in ppm <sup>res</sup> / Frequency in Hertz |       | I M |
|----------------|----|-----------------------------------------------------------------------|-------|-----|
|                |    | 200 k                                                                 | 500 k |     |
| 1              | 4  | 75                                                                    | 82    | 86  |
| 2              | 10 | 74                                                                    | 74    | 76  |
| 3              | 11 | 72                                                                    | 77    | 81  |
| 4              | 10 | 71                                                                    | 71    | 71  |
| 6              | 9  | 73                                                                    | 75    | 81  |
| 10             | 11 | 72                                                                    | 71    | 74  |
| 12             | 13 | 72                                                                    | 73    | 72  |
| 20             | 11 | 71                                                                    | 72    | 71  |
| 30             | 14 | 72                                                                    | 77    | 78  |
| 40             | 21 | 91                                                                    | 106   | 71  |
| 60             | 14 | 72                                                                    | 74    | 73  |

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|                                                    |                                                                   |                       |
|----------------------------------------------------|-------------------------------------------------------------------|-----------------------|
| 200 mH                                             | 0.02                                                              |                       |
| 500 mH                                             | 0.02                                                              |                       |
| 1 H                                                | 0.02                                                              |                       |
| 2 H                                                | 0.02                                                              |                       |
| 5 H                                                | 0.02                                                              |                       |
| 10 H                                               | 0.02                                                              |                       |
| <b>NVLAP Code: 20/E18</b>                          |                                                                   |                       |
| Resistive Dividers - Pulsed High-Voltage Condition |                                                                   |                       |
| <b>Range</b>                                       | <b>Best Uncertainty (<math>\pm</math>) in percent<sup>1</sup></b> | <b>Remarks</b>        |
| 1 to 350 kV                                        | 1.0                                                               | 1 to 30 $\mu$ s Pulse |

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|                           |                                                             |                |
|---------------------------|-------------------------------------------------------------|----------------|
| <b>TIME AND FREQUENCY</b> |                                                             |                |
| <b>NVLAP Code: 20/F01</b> |                                                             |                |
| Frequency Dissemination   |                                                             |                |
| <b>Range</b>              | <b>Best Uncertainty (<math>\pm</math>) year<sup>1</sup></b> | <b>Remarks</b> |
| 0.1 MHz                   | 1 part in 10 <sup>12</sup>                                  |                |
| 1 MHz                     | 1 part in 10 <sup>12</sup>                                  |                |
| 5 MHz                     | 1 part in 10 <sup>12</sup>                                  |                |
| 10 MHz                    | 1 part in 10 <sup>12</sup>                                  |                |

|                                          |                                                             |                |
|------------------------------------------|-------------------------------------------------------------|----------------|
| <b>IONIZING RADIATION</b>                |                                                             |                |
| <b>NVLAP Code: 20/I04</b>                |                                                             |                |
| Radioactive Sources                      |                                                             |                |
| <b>Range</b>                             | <b>Best Uncertainty (<math>\pm</math>) year<sup>1</sup></b> | <b>Remarks</b> |
| Alpha Emission Rate                      |                                                             |                |
| 1 to 2 x 10 <sup>3</sup> /s into 2 $\pi$ | 1.6 %                                                       |                |
| Beta Emission Rate                       |                                                             |                |
| 50 to 5000 /s into 2 $\pi$               | 5.0 %                                                       |                |
| Alpha Energy                             |                                                             |                |
| 3 to 8 MeV                               | 30 keV                                                      |                |

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MECHANICAL

NVLAP Code: 20/M06

Force

| Range            | Best Uncertainty ( $\pm$ ) in percent <sup>notes 1,2,4</sup> | Remarks                                            |
|------------------|--------------------------------------------------------------|----------------------------------------------------|
| 100 to 1,000     | 0.0052                                                       | Primary Standard (Deadweight)                      |
| 1,000 to 100,000 | 0.016                                                        | Secondary Standards (Proving Rings)                |
| 50 to 30,000     | 0.075                                                        | Secondary Standards (Load Cells) <sup>note 2</sup> |

NVLAP Code: 20/M08

Mass

| Range | Best Uncertainty ( $\pm$ ) percent <sup>1,2</sup> | Remarks                                    |
|-------|---------------------------------------------------|--------------------------------------------|
| 60 kg | 46.4 mg                                           | Multiple double substitution or equivalent |
| 50 kg | 41.8 mg                                           | Multiple double substitution or equivalent |
| 30 kg | 34.1 mg                                           | Multiple double substitution or equivalent |
| 25 kg | 10.5 mg                                           | Multiple double substitution or equivalent |
| 20 kg | 7.3 mg                                            | Multiple double substitution or equivalent |
| 10 kg | 1.10 mg                                           | Multiple double substitution or equivalent |
| 5 kg  | 0.55 mg                                           | Multiple double substitution or equivalent |

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|        |           |                                            |
|--------|-----------|--------------------------------------------|
| 3 kg   | 0.32 mg   | Multiple double substitution or equivalent |
| 2 kg   | 0.22 mg   | Multiple double substitution or equivalent |
| 1 kg   | 0.091 mg  | Redundant weighing design                  |
| 500 g  | 0.048 mg  | Redundant weighing design                  |
| 300 g  | 0.032 mg  | Redundant weighing design                  |
| 200 g  | 0.024 mg  | Redundant weighing design                  |
| 100 g  | 0.022 mg  | Redundant weighing design                  |
| 50 g   | 0.0132 mg | Redundant weighing design                  |
| 30 g   | 0.0095 mg | Redundant weighing design                  |
| 20 g   | 0.0083 mg | Redundant weighing design                  |
| 10 g   | 0.0087 mg | Redundant weighing design                  |
| 5 g    | 0.0049 mg | Redundant weighing design                  |
| 3 g    | 0.0036 mg | Redundant weighing design                  |
| 2 g    | 0.0029 mg | Redundant weighing design                  |
| 1 g    | 0.0031 mg | Redundant weighing design                  |
| 500 mg | 0.0021 mg | Redundant weighing design                  |
| 300 mg | 0.0016 mg | Redundant weighing design                  |
| 200 mg | 0.0015 mg | Redundant weighing design                  |

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|                                       |                                           |                                            |  |
|---------------------------------------|-------------------------------------------|--------------------------------------------|--|
| 100 mg                                | 0.0017 mg                                 | Redundant weighing design                  |  |
| 50 mg                                 | 0.00102 mg                                | Redundant weighing design                  |  |
| 30 mg                                 | 0.00076 mg                                | Redundant weighing design                  |  |
| 20 mg                                 | 0.00068 mg                                | Redundant weighing design                  |  |
| 10 mg                                 | 0.00074 mg                                | Redundant weighing design                  |  |
| 5 mg                                  | 0.00056 mg                                | Redundant weighing design                  |  |
| 3 mg                                  | 0.00048 mg                                | Redundant weighing design                  |  |
| 2 mg                                  | 0.00045 mg                                | Redundant weighing design                  |  |
| 1 mg                                  | 0.00053 mg                                | Redundant weighing design                  |  |
| NVLAP Code: 20/M08<br>Mass Avoidupois |                                           |                                            |  |
| <b>Range</b>                          | <b>Best Uncertainty<sup>nom</sup> 1.2</b> | <b>Remarks</b>                             |  |
| 100 lb                                | 142.6 µlb                                 | Multiple double substitution or equivalent |  |
| 50 lb                                 | 68.0 µlb                                  | Multiple double substitution or equivalent |  |
| 25 lb                                 | 36.2 µlb                                  | Multiple double substitution or equivalent |  |
| 20 lb                                 | 25.1 µlb                                  | Multiple double substitution or equivalent |  |
| 10 lb                                 | 12.5 µlb                                  | Multiple double substitution or equivalent |  |
| 8 lb                                  | 9.9 µlb                                   | Multiple double substitution or equivalent |  |

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|         |            |                                            |  |
|---------|------------|--------------------------------------------|--|
| 5 lb    | 6.6 µlb    | Multiple double substitution or equivalent |  |
| 4 lb    | 4.8 µlb    | Multiple double substitution or equivalent |  |
| 3 lb    | 3.6 µlb    | Multiple double substitution or equivalent |  |
| 2 lb    | 2.4 µlb    | Multiple double substitution or equivalent |  |
| 1 lb    | 1.21 µlb   | Multiple double substitution or equivalent |  |
| 500 mlb | 0.62 µlb   | Multiple double substitution or equivalent |  |
| 300 mlb | 0.38 µlb   | Multiple double substitution or equivalent |  |
| 200 mlb | 0.26 µlb   | Multiple double substitution or equivalent |  |
| 100 mlb | 0.13 µlb   | Multiple double substitution or equivalent |  |
| 50 mlb  | 0.074 µlb  | Multiple double substitution or equivalent |  |
| 30 mlb  | 0.046 µlb  | Multiple double substitution or equivalent |  |
| 20 mlb  | 0.032 µlb  | Multiple double substitution or equivalent |  |
| 10 mlb  | 0.020 µlb  | Multiple double substitution or equivalent |  |
| 5 mlb   | 0.016 µlb  | Multiple double substitution or equivalent |  |
| 3 mlb   | 0.014 µlb  | Multiple double substitution or equivalent |  |
| 2 mlb   | 0.0109 µlb | Multiple double substitution or equivalent |  |
| 1 mlb   | 0.0107 µlb | Multiple double substitution or equivalent |  |
| 0.5 mlb | 0.0095 µlb | Multiple double substitution or equivalent |  |

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|         |                 |                                            |
|---------|-----------------|--------------------------------------------|
| 0.3 mlb | 0.0106 $\mu$ lb | Multiple double substitution or equivalent |
| 0.2 mlb | 0.0095 $\mu$ lb | Multiple double substitution or equivalent |
| 0.1 mlb | 0.0083 $\mu$ lb | Multiple double substitution or equivalent |
| 10 oz   | 12.2 $\mu$ oz   | Multiple double substitution or equivalent |
| 8 oz    | 9.9 $\mu$ oz    | Multiple double substitution or equivalent |
| 5 oz    | 6.4 $\mu$ oz    | Multiple double substitution or equivalent |
| 4 oz    | 5.2 $\mu$ oz    | Multiple double substitution or equivalent |
| 3 oz    | 3.9 $\mu$ oz    | Multiple double substitution or equivalent |
| 2 oz    | 2.7 $\mu$ oz    | Multiple double substitution or equivalent |
| 1 oz    | 1.4 $\mu$ oz    | Multiple double substitution or equivalent |
| 1/2 oz  | 0.76 $\mu$ oz   | Multiple double substitution or equivalent |
| 1/4 oz  | 0.44 $\mu$ oz   | Multiple double substitution or equivalent |
| 1/8 oz  | 0.29 $\mu$ oz   | Multiple double substitution or equivalent |
| 1/16 oz | 0.21 $\mu$ oz   | Multiple double substitution or equivalent |
| 1/32 oz | 0.19 $\mu$ oz   | Multiple double substitution or equivalent |

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|                                                        |      |                    |
|--------------------------------------------------------|------|--------------------|
| RF MICROWAVE                                           |      |                    |
| NVLAP Code: 20/R05                                     |      |                    |
| HF Capacitance                                         |      |                    |
| Best Uncertainty ( $\pm$ ) in percent <sup>max 1</sup> |      |                    |
| Frequency in Hz                                        |      |                    |
| Range in pF                                            | 100  | 1 k 10 k 100 k 1 M |
| 0.01                                                   | 0.20 | 1.3                |
| 0.1                                                    | 0.05 | 1.3                |
| 1                                                      | 0.02 | 0.04               |
| 10                                                     | 0.01 | 0.02               |
| 100                                                    | 0.01 | 0.01               |
| 1000                                                   | 0.01 | 0.03               |
| 1                                                      | 0.02 | 0.2 0.30           |
| 2                                                      | 0.02 | 0.35 0.60          |
| 5                                                      | 0.02 | 0.22 0.26          |
| 10                                                     | 0.10 | 0.14 0.15          |
| 20                                                     | 0.10 | 0.13 0.11          |

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|      |      |        |      |
|------|------|--------|------|
| 50   |      | 0.03   | 0.02 |
| 100  |      | 0.02   | 0.02 |
| 200  |      | 0.01   | 0.01 |
| 500  |      | 0.02   | 0.01 |
| 1000 |      | 0.02   | 0.03 |
| 10   |      |        |      |
| 100  |      | 0.0001 |      |
|      |      | 0.0001 |      |
| 1    | 0.01 | 0.01   | 0.01 |
| 10   | 0.01 | 0.01   | 0.01 |
| 100  | 0.01 | 0.01   | 0.01 |
| 1000 | 0.01 | 0.01   | 0.01 |

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NVLAP Code: 20/R06  
HF Inductance

| Range       | Best Uncertainty ( $\pm$ ) in percent <sup>case 1</sup> |      |      |
|-------------|---------------------------------------------------------|------|------|
|             | Frequency in Hz                                         |      |      |
|             | 10 k                                                    | 1 M  | 10 M |
| 0.1 $\mu$ H | 2.19                                                    | 4.00 |      |
| 0.2 $\mu$ H | 2.03                                                    | 2.03 |      |
| 0.5 $\mu$ H | 0.80                                                    | 1.20 |      |
| 1.0 $\mu$ H | 0.56                                                    | 0.92 |      |
| 2.0 $\mu$ H | 0.31                                                    | 0.73 |      |
| 5.0 $\mu$ H | 0.25                                                    | 0.68 |      |
| 10 $\mu$ H  | 0.39                                                    | 0.63 |      |
| 25 $\mu$ H  | 0.32                                                    | 0.16 |      |
| 50 $\mu$ H  | 0.26                                                    | 0.12 |      |
| 100 $\mu$ H | 0.24                                                    | 0.11 |      |
| 250 $\mu$ H | 0.32                                                    | 0.16 |      |
| 500 $\mu$ H | 0.26                                                    | 0.09 |      |
| 1 mH        | 0.24                                                    |      |      |

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|              |      |     |     |     |  |
|--------------|------|-----|-----|-----|--|
| 2.5 mH       | 0.25 |     |     |     |  |
| 5 mH         | 0.24 |     |     |     |  |
| 10 mH        | 0.29 |     |     |     |  |
| 25 mH        | 0.25 |     |     |     |  |
| 0.25 $\mu$ H | 1.2  | 1.4 | 1.7 | 0.8 |  |
| 1 $\mu$ H    | 0.4  | 0.5 | 0.9 | 0.6 |  |
| 10 $\mu$ H   | 0.4  | 0.4 | 0.6 | 0.1 |  |
| 100 $\mu$ H  | 0.2  | 0.2 | 0.2 |     |  |

NVLAP Code: 20/R10  
Q Standards  
Range  
Selected values from 1.2 to 4.5 dependent on Q value and frequency  
95 to 607  
Remarks  
frequency range 50 kHz to 45 MHz

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|       |                 |       |      |      |       |                                                        |
|-------|-----------------|-------|------|------|-------|--------------------------------------------------------|
| Range | Frequency in Hz |       |      |      |       | Best Uncertainty ( $\pm$ ) in percent <sup>max</sup> † |
|       | 1 M             | 10 M  | 30 M | 50 M | 100 M |                                                        |
| 0.5 V | 0.042           | 0.042 | 0.16 | 0.40 | 0.86  |                                                        |
| 1 V   | 0.041           | 0.086 | 0.16 | 0.40 | 0.86  |                                                        |
| 2 V   | 0.06            | 0.11  | 0.21 | 0.51 | 1.1   |                                                        |
| 2.5 V | 0.06            | 0.10  | 0.20 | 0.51 | 1.0   |                                                        |
| 3 V   | 0.06            | 0.11  | 0.21 | 0.51 | 1.1   |                                                        |
| 5 V   | 0.06            | 0.11  | 0.20 | 0.50 | 1.0   |                                                        |
| 10 V  | 0.06            | 0.10  | 0.20 | 0.50 | 1.0   |                                                        |
| 20 V  | 0.06            | 0.10  | 0.20 | 0.50 | 1.0   |                                                        |
| 50 V  | 0.06            | 0.10  | 0.20 | -    | 1.0   |                                                        |
| 100 V | 0.06            | 0.10  | 0.21 | -    | 1.4   |                                                        |
| 200 V | 0.07            | 0.10  | 0.22 | -    | 1.5   |                                                        |

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##### RF TVC

Best Uncertainty ( $\pm$ ) in percent<sup>as 1</sup>

| Range | 300 M | 600 M | 700 M | 800 M | 900 M | 1000 M |
|-------|-------|-------|-------|-------|-------|--------|
| 1 V   | 1.3   | 1.3   | 1.3   | 1.3   | 1.3   | 1.3    |
| 2.4 V | 1.3   | 1.3   | 1.3   | 1.3   | 1.3   | 1.3    |
| 7 V   | 1.3   | 1.3   | 1.3   | 1.3   | 1.3   | 1.3    |

##### Micropotentiometers

Best Uncertainty ( $\pm$ ) in percent<sup>as 1</sup>

| Range  | 30 M | 100 M | 300 M | 600 M | 900 M |
|--------|------|-------|-------|-------|-------|
| 0.1 mV | 2.32 | 3.56  | 3.36  | 5.10  | 5.10  |
| 0.2 mV | 0.54 | 1.04  | 1.02  | 1.35  | 1.42  |
| 0.4 mV | 2.34 | 3.44  | 3.18  | 5.10  | 5.10  |
| 0.9 mV | 0.54 | 1.04  | 1.05  | 1.35  | 1.44  |
| 1 mV   | 2.24 | 3.33  | 3.21  | 5.10  | 5.10  |
| 1.5 mV | 0.59 | 1.02  | 1.02  | 1.33  | 1.33  |

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|         |      |      |      |      |      |
|---------|------|------|------|------|------|
| 4 mV    | 0.53 | 1.07 | 1.21 | 1.38 | 1.39 |
| 5 mV    | 2.24 | 3.16 | 3.17 | 5.10 | 5.10 |
| 10 mV   | 2.27 | 3.19 | 3.16 | 5.10 | 5.10 |
| 11 mV   | 2.25 | 3.17 | 3.58 | 5.10 | 5.10 |
| 25 mV   | 0.48 | 0.97 | 0.97 | 1.28 | 1.30 |
| 28.5 mV | 2.52 | 3.49 | 3.95 | 5.10 |      |
| 102 mV  | 0.53 | 0.99 | 1.08 | 1.30 | 1.28 |
| 150 mV  | 0.43 | 0.99 | 1.06 | 1.32 | 1.28 |
| 320 mV  | 2.24 | 3.23 | 3.18 | 5.10 | 5.10 |
| 330 mV  | 0.45 | 1.01 | 0.98 | 1.38 | 1.29 |

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RF/Microwave Bolometer Units

Expanded Uncertainties<sup>a</sup> 1.2.1 on Effective Efficiency & Calibration Factor of HP bolometric power sensors.

| Connector Type | Quantity             | Quantity Range | Frequency (MHz) |             |             |             |
|----------------|----------------------|----------------|-----------------|-------------|-------------|-------------|
|                |                      |                | 50-2000         | 2000-8000   | 8000-12000  | 12000-18000 |
| N              | Calibration Factor   | 0.9 to 1       | 0.004-0.006     | 0.004-0.006 | 0.005-0.007 | 0.006-0.008 |
| APC-3.5        | Calibration Factor   | 0.9 to 1       | -----           | 0.007-0.009 | 0.009-0.010 | 0.010-0.011 |
| N              | Effective Efficiency | 0.9 to 1       | 0.004-0.005     | 0.004-0.005 | 0.005-0.006 | 0.006-0.008 |
| APC-3.5        | Effective Efficiency | 0.9 to 1       | -----           | 0.007-0.008 | 0.008-0.009 | 0.009-0.010 |

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RF/Microwave Attenuators

Reflection Coefficient (or Scattering Parameter S<sub>ii</sub>)

A. Dual 6-Port Network Analyzer Certification Uncertainties<sup>a</sup> 2.1.4

| Connector Type | Quantity              | Quantity Range                                 | Frequency (MHz) |             |             |             |
|----------------|-----------------------|------------------------------------------------|-----------------|-------------|-------------|-------------|
|                |                       |                                                | 50-2000         | 2000-8000   | 8000-12000  | 12000-18000 |
| GR-900         | S <sub>ii</sub>       | 0 to 1                                         | 0.002-0.009     | 0.002-0.015 | -----       | -----       |
| N              | S <sub>ii</sub>       | 0 to 1                                         | 0.002-0.008     | 0.002-0.027 | 0.006-0.018 | 0.006-0.030 |
| APC-7          | S <sub>ii</sub>       | 0 to 1                                         | 0.002-0.006     | 0.002-0.009 | 0.003-0.018 | 0.005-0.015 |
| APC-3.5        | S <sub>ii</sub>       | 0 to 1                                         | 0.002-0.012     | 0.002-0.015 | 0.005-0.019 | 0.012-0.050 |
| GR-900         | Arg(S <sub>ii</sub> ) | 0 <  S <sub>ii</sub>   < 1<br>-180 to +180 deg | 0.120-180.0     | 0.019-180.0 | -----       | -----       |
| N              | Arg(S <sub>ii</sub> ) | 0 <  S <sub>ii</sub>   < 1<br>-180 to +180 deg | 0.360-180.0     | 0.300-180.0 | 0.600-180.0 | 0.800-180.0 |
| APC-7          | Arg(S <sub>ii</sub> ) | 0 <  S <sub>ii</sub>   < 1<br>-180 to +180 deg | 0.012-180.0     | 0.200-180.0 | 0.540-180.0 | 0.525-180.0 |
| APC-3.5        | Arg(S <sub>ii</sub> ) | 0 <  S <sub>ii</sub>   < 1<br>-180 to +180 deg | 0.360-180.0     | 0.240-180.0 | 0.540-180.0 | 0.560-180.0 |

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### B. HP8510 Vector Network Analyzer Uncertainties

#### 1. Expanded Uncertainties<sup>ANSI 12.2</sup> on one or two-port devices

| Connector Type | Quantity        | Quantity Range                         | Frequency (MHz) |             |             |
|----------------|-----------------|----------------------------------------|-----------------|-------------|-------------|
|                |                 |                                        | 2000-5000       | 8000-12000  | 12000-18000 |
| N              | $ S_{11} $      | 0 to 1                                 | 0.001-0.003     | 0.001-0.009 | 0.004-0.021 |
| APC-7          | $ S_{11} $      | 0 to 1                                 | 0.001-0.007     | 0.003-0.007 | 0.001-0.004 |
| APC-3.5        | $ S_{11} $      | 0 to 1                                 | 0.001-0.007     | 0.004-0.020 | 0.004-0.020 |
| N              | Arg( $S_{11}$ ) | $0 <  S_{11}  < 1$<br>-180 to +180 deg | 0.05-180        | 0.36-180    | 1.34-180    |
| APC-7          | Arg( $S_{11}$ ) | $0 <  S_{11}  < 1$<br>-180 to +180 deg | 0.15-180        | 0.16-180    | 0.33-180    |
| APC-3.5        | Arg( $S_{11}$ ) | $0 <  S_{11}  < 1$<br>-180 to +180 deg | 0.53-180        | 0.33-180    | 0.35-180    |

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### 2. Certification Uncertainties<sup>ANSI 2.3.4</sup> on three-port devices

| Connector Type    | Quantity   | Quantity Range | Frequency (MHz) |               |               |
|-------------------|------------|----------------|-----------------|---------------|---------------|
|                   |            |                | 50-2000         | 2000-8000     | 8000-12000    |
| N, APC-7, APC-3.5 | $ S_{11} $ | 0 to 0.3       | 0.011 - 0.075   | 0.011 - 0.075 | 0.03 - 0.09   |
| N, APC-7, APC-3.5 | $ T_{12} $ | 0 to 0.3       | 0.011 - 0.080   | 0.012 - 0.080 | 0.030 - 0.084 |

### C. HP8753 Vector Network Analyzer Certification Uncertainties<sup>ANSI 2.3.4</sup>

#### 1. One or two-port devices

| Connector Type | Quantity        | Quantity Range                         | Frequency Range |             |
|----------------|-----------------|----------------------------------------|-----------------|-------------|
|                |                 |                                        | 25-1000         | 1000-3000   |
| N              | $ S_{11} $      | 0 to 1                                 | 0.001-0.009     | 0.003-0.016 |
| APC-7          | $ S_{11} $      | 0 to 1                                 | 0.002-0.04      | 0.002-0.004 |
| APC-3.5        | $ S_{11} $      | 0 to 1                                 | 0.006-0.02      | 0.006-0.035 |
| N              | Arg( $S_{11}$ ) | $0 <  S_{11}  < 1$<br>-180 to +180 deg | 0.2-70          | 1-180       |
| APC-7          | Arg( $S_{11}$ ) | $0 <  S_{11}  < 1$<br>-180 to +180 deg | 0.3-180         | 0.2-25      |
| APC-3.5        | Arg( $S_{11}$ ) | $0 <  S_{11}  < 1$<br>-180 to +180 deg | 1-180           | 1.6-180     |

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2. Three-port devices

| Connector Type   | Quantity        | Quantity Range | 25-1000 (MHz) |
|------------------|-----------------|----------------|---------------|
| N, APC-7-APC-3.5 | $ S_{11} $      | 0 to 0.3       | 0.011 - 0.020 |
| N, APC-7-APC-3.5 | $ \Gamma_{re} $ | 0 to 0.3       | 0.01 - 0.03   |

D. Weinschel VM-4B Certification Uncertainties notes 2,3,4

| Connector Type | Quantity   | Quantity Range | Frequency (MHz)                   |             |                         |
|----------------|------------|----------------|-----------------------------------|-------------|-------------------------|
|                |            |                | 10-2000                           | 2000-8000   | 8000-12000 12000-18000  |
| N              | $ S_{11} $ | 0 to 1         | 0.025-0.080                       | 0.031-0.085 | 0.040-0.090 0.046-0.112 |
| APC-7          | $ S_{11} $ | 0 to 1         | 0.011-0.075                       | 0.015-0.080 | 0.030-0.085 0.036-0.106 |
| BNC            | $ S_{11} $ | 0 to 1         | 0.026-0.060 <small>note 5</small> | -----       | -----                   |

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Attenuation (or Scattering Parameter  $S_{ij}$ )

A. Dual 6-Port Network Analyzer Certification Uncertainties notes 2,3,4

| Connector Type | Quantity   | Quantity Range | Frequency (MHz) |             |                         |
|----------------|------------|----------------|-----------------|-------------|-------------------------|
|                |            |                | 50-2000         | 2000-8000   | 8000-12000 12000-18000  |
| GR-900         | $ S_{11} $ | 0 to 60 dB     | 0.012-0.390     | 0.015-0.410 | -----                   |
| N              | $ S_{11} $ | 0 to 60 dB     | 0.012-0.390     | 0.015-0.410 | 0.018-0.410 0.021-0.900 |
| APC-7          | $ S_{11} $ | 0 to 60 dB     | 0.012-0.390     | 0.015-0.410 | 0.020-0.410 0.021-0.900 |
| APC-3.5        | $ S_{11} $ | 0 to 60 dB     | 0.012-0.150     | 0.015-0.410 | 0.020-0.410 0.030-0.90  |

B. HP8510 Vector Network Analyzer Uncertainties

1. Expanded Uncertainties notes 1,2,3 on one or two-port devices

| Connector Type | Quantity   | Quantity Range | Frequency (MHz) |           |                        |
|----------------|------------|----------------|-----------------|-----------|------------------------|
|                |            |                | 50-2000         | 2000-8000 | 8000-12000 12000-18000 |
| N              | $ S_{11} $ | 0 to 60 dB     | 0.01-0.12       | 0.02-0.17 | 0.03-0.25 0.03-0.48    |
| APC-7          | $ S_{11} $ | 0 to 60 dB     | 0.01-0.08       | 0.01-0.13 | 0.01-0.13 0.01-0.18    |
| APC-3.5        | $ S_{11} $ | 0 to 60 dB     | 0.01-0.12       | 0.02-0.22 | 0.04-0.25 0.05-0.49    |

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| Connector Type | Quantity             | Quantity Range                                 | Frequency (MHz) |            |
|----------------|----------------------|------------------------------------------------|-----------------|------------|
|                |                      |                                                | 2000-8000       | 8000-12000 |
| N              | $\text{Arg}(S_{11})$ | $0 <  S_{11}  < 60 \text{ dB}$<br>0 to 360 deg | 0.22-1.19       | 0.32-1.27  |
|                |                      |                                                | 0.58-3.46       |            |
| APC-7          | $\text{Arg}(S_{11})$ | $0 <  S_{11}  < 60 \text{ dB}$<br>0 to 360 deg | 0.22-0.73       | 0.25-1.21  |
|                |                      |                                                | 0.41-1.70       | 0.57-2.85  |
| APC-3.5        | $\text{Arg}(S_{11})$ | $0 <  S_{11}  < 60 \text{ dB}$<br>0 to 360 deg | 0.45-0.80       | 0.35-1.39  |
|                |                      |                                                | 0.41-1.94       | 0.66-3.17  |

2. Certification Uncertainties <sup>2.1.4</sup> on three-port devices

| Connector Type    | Quantity          | Quantity Range | Frequency (MHz) |               |
|-------------------|-------------------|----------------|-----------------|---------------|
|                   |                   |                | 50-2000         | 2000-8000     |
| N, APC-7, APC-3.5 | Coupling  (dB)    | 3-40 dB        | 0.071 - 0.320   | 0.110 - 0.500 |
|                   |                   |                | 0.012 - 0.500   | 0.320 - 0.600 |
| N, APC-7, APC-3.5 | Mainline  (dB)    | 0 to 8 dB      | 0.020 - 0.221   | 0.020 - 0.221 |
|                   |                   |                | 0.131 - 290     |               |
| N, APC-7, APC-3.5 | Directivity  (dB) | 15-25 dB       | 0.19 - 9.2      | 0.53 - 9.2    |
|                   |                   |                | 0.80 - 9.2      | 1.55 - 9.2    |
| N, APC-7, APC-3.5 | Directivity  (dB) | 30-40 dB       | 1.0 - ∞         | 2.6 - ∞       |
|                   |                   |                | 5.7 - ∞         | 7.2 - ∞       |

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C. HP8753 Vector Network Analyzer Certification Uncertainties <sup>2.1.4</sup>

1. One or two-port devices

| Connector Type | Quantity             | Quantity Range                                 | Frequency (MHz) |           |
|----------------|----------------------|------------------------------------------------|-----------------|-----------|
|                |                      |                                                | 25-1000         | 1000-3000 |
| N              | $ S_{11} $           | 0 to 60 dB                                     | 0.003-0.5       | 0.004-1.2 |
| APC-7          | $ S_{11} $           | 0 to 60 dB                                     | 0.002-0.6       | 0.003-0.9 |
| APC-3.5        | $ S_{11} $           | 0 to 60 dB                                     | 0.003-0.6       | 0.003-1.0 |
| APC-3.5        | $\text{Arg}(S_{11})$ | $0 <  S_{11}  < 60 \text{ dB}$<br>0 to 360 deg | 0.4-10          | 0.4-10    |

2. Three-port devices

| Connector Type   | Quantity          | Quantity Range | Frequency (MHz) |           |
|------------------|-------------------|----------------|-----------------|-----------|
|                  |                   |                | 25-1000         | 1000-3000 |
| N, APC-7-APC-3.5 | Coupling  (dB)    | 3-20 dB        | 0.050 - 0.230   |           |
| N, APC-7-APC-3.5 | Mainline  (dB)    | 0 to 8 dB      | 0.020 - 0.050   |           |
| N, APC-7-APC-3.5 | Directivity  (dB) | 15-25 dB       | 0.9 - 3.8       |           |
| N, APC-7-APC-3.5 | Directivity  (dB) | 30-40 dB       | 4 - ∞           |           |

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| D. Weinschel VM-4B Certification Uncertainties <sup>a, b, c, d</sup> on Attenuation |                 |                |                              |                             |                             |                             |
|-------------------------------------------------------------------------------------|-----------------|----------------|------------------------------|-----------------------------|-----------------------------|-----------------------------|
| Connector Type                                                                      | Quantity        | Quantity Range | Frequency (MHz)              |                             |                             |                             |
|                                                                                     |                 |                | 10-2000                      | 2000-8000                   | 8000-12000                  | 12000-18000                 |
| N                                                                                   | S <sub>ij</sub> | 0 to 100 dB    | 0.06-0.60                    | 0.10-1.10                   | 0.25-1.52                   | 0.38-1.80                   |
| APC-7                                                                               | S <sub>ij</sub> | 0 to 100 dB    | 0.06-0.60                    | 0.10-1.00                   | 0.20-1.43                   | 0.30-1.75                   |
| BNC                                                                                 | S <sub>ij</sub> | 0 to 100 dB    | 0.10-0.90 <sup>a, c, d</sup> | -----                       | -----                       | -----                       |
| E. Power Ratio Attenuation Expanded Uncertainties <sup>a, b, c, d, e</sup>          |                 |                |                              |                             |                             |                             |
| Connector Type                                                                      | Quantity        | Quantity Range | Frequency (MHz)              |                             |                             |                             |
|                                                                                     |                 |                | 10-2000                      | 2000-8000                   | 8000-12000                  | 12000-18000                 |
| Fixed Attenuators or Step/Variable Attenuators                                      |                 |                |                              |                             |                             |                             |
| N, APC-7<br>APC-3.5                                                                 | S <sub>ij</sub> | 0 to 11 dB     | 0.008-0.014 + Mismatch Unc.  | 0.014-0.016 + Mismatch Unc. | 0.013-0.015 + Mismatch Unc. | 0.015-0.018 + Mismatch Unc. |
| Isolated Step/Variable Attenuators                                                  |                 |                |                              |                             |                             |                             |
| N, APC-7<br>APC-3.5                                                                 | S <sub>ij</sub> | 0 to 11 dB     | 0.008-0.014                  | 0.014-0.016                 | 0.013-0.015                 | 0.015-0.018                 |

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NVLAP Code: 20/R16  
Group Delay Certification Uncertainties<sup>a, b, c, d</sup>

| Connector Type    | Typical Atten. (dB) | Delay (ns) | 50-1000 (MHz) |
|-------------------|---------------------|------------|---------------|
| APC-7, N, APC-3.5 | 0.08                | 5          | 0.02 - 0.05   |
| APC-7, N, APC-3.5 | 0.21                | 15         | 0.04 - 0.13   |
| APC-7, N, APC-3.5 | 0.8                 | 50         | 0.05 - 0.12   |
| APC-7, N, APC-3.5 | 3                   | 200        | 0.15 - 0.41   |
| APC-7, N, APC-3.5 | 2.2                 | 385        | 0.46 - 0.50   |

NVLAP Code: 20/R17  
RF/Microwave Power Meters

CW Power Certification Uncertainties<sup>a, b, c, d</sup>

A. Low to Medium Power CW Microwave Power Meter Calibration at Type N Connector

| Quantity    | Quantity Range | Frequency (MHz) |               |               |                |
|-------------|----------------|-----------------|---------------|---------------|----------------|
|             |                | 1 to 2000       | 2000 to 4000  | 4000 to 12400 | 12400 to 16500 |
| Power (dBm) | -30 to -10     | .09 to .41 dB   | .13 to .41 dB | .14 to .34 dB | .16 to .46 dB  |
| Power (dBm) | -10 to 10      | .06 to .27 dB   | .10 to .25 dB | .11 to .30 dB | -----          |
| Power (dBm) | 10 to 30       | .06 to .25 dB   | .10 to .21 dB | .11 to .24 dB | -----          |

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B. Low Power, Wide Range, CW Microwave Power Meter Calibration at Type N Connector

| Quantity    | Quantity Range | Frequency (MHz) |                 |
|-------------|----------------|-----------------|-----------------|
|             |                | 4000 to 8000    | 8000 to 12400   |
| Power (dBm) | -60 to -50     | 0.20 to 0.41 dB | 0.25 to 0.43 dB |
| Power (dBm) | -50 to -40     | 0.18 to 0.29 dB | 0.23 to 0.35 dB |
| Power (dBm) | -40 to -30     | 0.14 to 0.25 dB | 0.16 to 0.32 dB |
| Power (dBm) | -30 to -20     | 0.14 to 0.23 dB | 0.16 to 0.27 dB |

C. Medium Power CW Microwave Power Meter Calibration at Type N Connector

| Quantity   | Quantity Range | Frequency (MHz) |              |
|------------|----------------|-----------------|--------------|
|            |                | 12 to 1000      | 2000 to 2500 |
| Power (mW) | 1 to 10        | 1.7 to 3.3 %    | -----        |
| Power (mW) | 1 to 100       | -----           | 3.1 to 4.3 % |
| Power (mW) | 80 to 160      | -----           | 1.9 to 2.4 % |

D. Medium Power CW Microwave Power Meter Calibrations at APC-3.5 Connector

| Quantity   | Quantity Range | Frequency (MHz) |               |
|------------|----------------|-----------------|---------------|
|            |                | 4000 to 8000    | 8000 to 18000 |
| Power (mW) | 0.1 to 8       | 2.8 to 4.0 %    | 4.0 to 5.8 %  |

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E. High Power CW Microwave Power Meter Calibrations at Type N Connector

| Quantity      | Quantity Range | Frequency (MHz) |               |
|---------------|----------------|-----------------|---------------|
|               |                | 13.6 to 300     | 300 to 3000   |
| Power (Watts) | 0.2 to 10      | 9.0 to 9.1 %    | 3.3 to 10.6 % |
| Power (Watts) | 10 to 200      | 4.4 to 10.1 %   | 9.6 to 10.6 % |

Pulse Power Certification Uncertainties <sup>max</sup> 2.3, 4

A. Pulse Power Meter Calibrations at Type N Connector

| Quantity   | Quantity Range | 2000         |
|------------|----------------|--------------|
| Power (mW) | 10 to 100      | 7.3 to 8.2 % |

THERMODYNAMICS

NVLAP Code: 20/T04  
Leak Artifacts

| Range                       | Best Uncertainty (±) in percent <sup>max</sup> |  | Remarks               |
|-----------------------------|------------------------------------------------|--|-----------------------|
| Gas Leak - PAV Technique    |                                                |  |                       |
| 1 x 10 <sup>7</sup> moles/s | 0.7                                            |  | Total Gas Measurement |
| 1 x 10 <sup>8</sup> moles/s | 0.9                                            |  | Total Gas Measurement |
| 1 x 10 <sup>9</sup> moles/s | 1.0                                            |  | Total Gas Measurement |

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|                                        |                                                                   |     |                                                                                               |
|----------------------------------------|-------------------------------------------------------------------|-----|-----------------------------------------------------------------------------------------------|
| Gas Leak - Accumulate - Dump Technique | 1 x 10 <sup>-10</sup> moles/s                                     | 1.0 | Total Gas Measurement                                                                         |
|                                        | 1 x 10 <sup>-10</sup> moles/s to<br>1 x 10 <sup>-14</sup> moles/s | 1.0 | 1 to 200 Atomic Mass<br>Units for any non-<br>reactive, non-hazardous,<br>non-radioactive gas |
| Gas Leak - Comparison Technique        |                                                                   |     |                                                                                               |
|                                        | 1 x 10 <sup>-10</sup> moles/s                                     | 2.5 | Helium                                                                                        |
|                                        | 1 x 10 <sup>-11</sup> moles/s                                     | 2.4 | Helium                                                                                        |
|                                        | 1 x 10 <sup>-12</sup> moles/s                                     | 2.3 | Helium                                                                                        |
|                                        | 1 x 10 <sup>-13</sup> moles/s                                     | 2.3 | Helium                                                                                        |
|                                        | 1 x 10 <sup>-14</sup> moles/s                                     | 7.0 | Helium                                                                                        |

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|                                                                                 |                                               |                                                                 |                |
|---------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------------------------|----------------|
| NVLAP Code: 20/T05<br>Pressure                                                  |                                               |                                                                 |                |
|                                                                                 | <b>Range</b>                                  | <b>Best Uncertainty (<math>\pm</math>) in ppm<sup>nom</sup></b> | <b>Remarks</b> |
| Pneumatic Deadweight Piston Gauges (absolute mode) - Direct Pressure Comparison |                                               |                                                                 |                |
|                                                                                 | 0.2 to 24 psia [ $\approx$ 1.4 to 170 kPa]    | 31                                                              | Nitrogen       |
|                                                                                 | 2.0 to 70 psia [ $\approx$ 14 to 480 kPa]     | 28                                                              | Nitrogen       |
|                                                                                 | 52 to 1000 psia [ $\approx$ 0.4 to 7.0 MPa]   | 46                                                              | Nitrogen       |
| Pneumatic Deadweight Piston Gauges (gauge mode) - Direct Pressure Comparison    |                                               |                                                                 |                |
|                                                                                 | 0.2 to 24 psig [ $\approx$ 1.4 to 170 kPa]    | 29                                                              | Nitrogen       |
|                                                                                 | 2.0 to 70 psig [ $\approx$ 14 to 480 kPa]     | 26                                                              | Nitrogen       |
|                                                                                 | 52 to 1000 psig [ $\approx$ 0.4 to 7.0 MPa]   | 44                                                              | Nitrogen       |
| Hydraulic Deadweight Piston Gauges (gauge mode) - Direct Pressure Comparison    |                                               |                                                                 |                |
|                                                                                 | 0.4 to 4.0 kpsig [ $\approx$ 2.8 to 28 MPa]   | 44                                                              | Oil            |
|                                                                                 | 2.0 to 20 kpsig [ $\approx$ 14 to 140 MPa]    | 61                                                              | Oil            |
|                                                                                 | 4.0 to 40 kpsig [ $\approx$ 28 to 280 MPa]    | 59                                                              | Oil            |
| Pneumatic Deadweight Piston Gauges - Cross Float (effective area)               |                                               |                                                                 |                |
|                                                                                 | 0.2 to 24 psig [ $\approx$ 14 kPa to 170 kPa] | 35                                                              | Nitrogen       |

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2.0 to 70 psig [ $\approx$  14 kPa to 480 kPa] Nitrogen

52 to 1000 psig [ $\approx$  0.4 MPa to 7.0 MPa] Nitrogen

Hydraulic Deadweight Piston Gauges - Cross Float (effective area)

0.4 to 4.0 kpsig [ $\approx$  2.8 to 28 MPa] 46 Oil

2.0 to 20 kpsig [ $\approx$  14 to 140 MPa] 67 Oil

4.0 to 40 kpsig [ $\approx$  28 to 280 MPa] 61 Oil

Secondary Pressure  
Low Range Absolute

| Pressure                      | Best Uncertainty ( $\pm$ ) in $\text{psig}^{\text{ref}}$ | Remarks  |
|-------------------------------|----------------------------------------------------------|----------|
| 0.2 psia [ $\approx$ 1.4 kPa] | 0.0013                                                   | Nitrogen |
| 1.0 psia [ $\approx$ 7.0 kPa] | 0.0013                                                   | Nitrogen |
| 6.0 psia [ $\approx$ 41 kPa]  | 0.0017                                                   | Nitrogen |
| 10 psia [ $\approx$ 70 kPa]   | 0.0021                                                   | Nitrogen |
| 15 psia [ $\approx$ 100 kPa]  | 0.0028                                                   | Nitrogen |

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Secondary Pressure  
Low Range Gauge or Absolute

| Pressure                     | Best Uncertainty ( $\pm$ ) in $\text{psig}^{\text{ref}}$ | Remarks  |
|------------------------------|----------------------------------------------------------|----------|
| 20 psi [ $\approx$ 140 kPa]  | 0.009                                                    | Nitrogen |
| 40 psi [ $\approx$ 280 kPa]  | 0.010                                                    | Nitrogen |
| 60 psi [ $\approx$ 410 kPa]  | 0.011                                                    | Nitrogen |
| 80 psi [ $\approx$ 550 kPa]  | 0.013                                                    | Nitrogen |
| 100 psi [ $\approx$ 690 kPa] | 0.014                                                    | Nitrogen |

Secondary Pressure  
Mid-Range Gauge or Absolute

| Pressure                      | Best Uncertainty ( $\pm$ ) in $\text{psig}^{\text{ref}}$ | Remarks  |
|-------------------------------|----------------------------------------------------------|----------|
| 200 psi [ $\approx$ 1.4 MPa]  | 0.137                                                    | Nitrogen |
| 500 psi [ $\approx$ 3.4 MPa]  | 0.157                                                    | Nitrogen |
| 1.0 kpsi [ $\approx$ 7.0 MPa] | 0.201                                                    | Nitrogen |
| 1.5 kpsi [ $\approx$ 10 MPa]  | 0.247                                                    | Nitrogen |
| 2.0 kpsi [ $\approx$ 14 MPa]  | 0.280                                                    | Nitrogen |

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**Secondary Pressure  
High-Range Gauge or Absolute**

|                      |     |          |
|----------------------|-----|----------|
| 4.0 kpsi [ ≈ 28 MPa] | 0.6 | Nitrogen |
| 6.0 kpsi [ ≈ 41 MPa] | 0.8 | Nitrogen |
| 8.0 kpsi [ ≈ 55 MPa] | 1.0 | Nitrogen |
| 10 kpsi [ ≈ 70 MPa]  | 1.0 | Nitrogen |

**NVLAP Code: 20/T07  
Resistance Thermometry**

| Temperature (°C) | Best Uncertainty (±) in m °C <sub>90%</sub> | Material/ Equilibrium State   |
|------------------|---------------------------------------------|-------------------------------|
| -189.3442        | 0.53                                        | Ar/Triple Point               |
| -38.8344         | 0.30                                        | Hg/Triple Point               |
| 0.01             | 0.16                                        | H <sub>2</sub> O/Triple Point |
| 29.7646          | 0.12                                        | Ga/Melting Point              |
| 156.5985         | 2.00                                        | In/Freezing Point             |
| 231.928          | 0.92                                        | Sn/Freezing Point             |
| 419.527          | 1.10                                        | Zn/Freezing Point             |
| 660.323          | 5.0                                         | Al/Freezing Point             |
| 961.78           | 10.0                                        | Ag/Freezing Point             |

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**Standard Platinum Resistance Thermometer Calibrations**

|           |      |                               |
|-----------|------|-------------------------------|
| -189.3442 | 1.1  | Ar/Triple Point               |
| -38.8344  | 0.6  | Hg/Triple Point               |
| 0.01      | 0.6  | H <sub>2</sub> O/Triple Point |
| 29.7646   | 0.6  | Ga/Melting Point              |
| 156.5985  | 2.6  | In/Freezing Point             |
| 231.928   | 1.8  | Sn/Freezing Point             |
| 419.527   | 2.0  | Zn/Freezing Point             |
| 660.323   | 5.2  | Al/Freezing Point             |
| 961.78    | 10.1 | Ag/Freezing Point             |

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Comparison Calibrations

| Temperature Range (°C) | Best Uncertainty ( $\pm$ ) in $^{\circ}\text{C}_{\text{max}}$ | Type of Device  |
|------------------------|---------------------------------------------------------------|-----------------|
| -80 to 0               | 0.10                                                          | Thermocouples   |
| 10 to 150              | 0.10                                                          | Thermocouples   |
| 150 to 660             | 0.22                                                          | Thermocouples   |
| 660 to 700             | 0.47                                                          | Thermocouples   |
| 700 to 1100            | 2.5                                                           | Thermocouples   |
| 1100 to 1300           | 2.8                                                           | Thermocouples   |
| -80 to 0               | 0.06                                                          | RTD/IPRT/PRT    |
| 10 to 150              | 0.09                                                          | RTD/IPRT/PRT    |
| 150 to 660             | 0.21                                                          | RTD/IPRT/PRT    |
| -80 to 0               | 0.05                                                          | Liquid in Glass |
| 10 to 150              | 0.06                                                          | Liquid in Glass |
| -80 to 0               | 0.06                                                          | Thermistors     |
| 10 to 150              | 0.09                                                          | Thermistors     |
| 150 to 250             | 0.21                                                          | Thermistors     |

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Thermocouple Simulator/Readout Calibration Methods

| Type | ITS-90 Temperature Range (°C) | Best Uncertainty ( $\pm$ ) in $^{\circ}\text{C}_{\text{max}}$ | NIST Monograph 175 Reference Table <sup>max</sup> 10 |
|------|-------------------------------|---------------------------------------------------------------|------------------------------------------------------|
| K    | -200 TO 1370                  | 0.10 to 0.30                                                  | 7.3.3                                                |
| J    | -200 to 1200                  | 0.08 to 0.22                                                  | 6.3.3                                                |
| E    | -240 to 1000                  | 0.07 to 0.38                                                  | 5.3.3                                                |
| T    | -240 to 400                   | 0.09 to 0.53                                                  | 9.3.3                                                |
| R    | -50 to 1750                   | 0.38 to 1.09                                                  | 3.3.3                                                |
| S    | -50 to 1750                   | 0.43 to 1.02                                                  | 4.3.3                                                |
| B    | 100 to 1750                   | 0.43 to 4.45                                                  | 2.3.3                                                |
| C    | 0 to 2300                     | 0.24 to 0.82                                                  |                                                      |

NVLAP Code: 20/T10

Vacuum

| Range                                                          | Best Uncertainty ( $\pm$ ) in percent <sup>max</sup> | Remarks                       |
|----------------------------------------------------------------|------------------------------------------------------|-------------------------------|
| Ionization Gage Reference for direct comparison                |                                                      |                               |
| $1.3 \times 10^{-6}$ Pa < reading $\leq 1.3 \times 10^{-5}$ Pa | 4.8                                                  | $\text{N}_2$ ; $10^{-8}$ Torr |
| $1.3 \times 10^{-5}$ Pa < reading $\leq 1.3 \times 10^{-4}$ Pa | 4.7                                                  | $\text{N}_2$ ; $10^{-7}$ Torr |

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|                                                                |            |                                         |
|----------------------------------------------------------------|------------|-----------------------------------------|
| $1.3 \times 10^{-4}$ Pa < reading $\leq 1.3 \times 10^{-3}$ Pa | 4.7 - 2.5  | $N_2$ ; $10^{-6}$ Torr                  |
| Spinning Rotor Gage Reference for direct comparison            |            |                                         |
| $1.3 \times 10^{-4}$ Pa < reading $\leq 1.3 \times 10^{-3}$ Pa | 4.3 - 2.1  | $N_2$ ; $10^{-6}$ Torr                  |
| $1.3 \times 10^{-3}$ Pa < reading $\leq 1.3$ Pa                | 2.1        | $N_2$ ; $10^{-5}$ Torr - $10^{-3}$ Torr |
| $1.3$ Pa $\leq$ reading $\leq 13$ Pa                           | 2.2        | $N_2$ ; $10^{-3}$ Torr                  |
| Capacitance Diaphragm Gages Reference for direct comparison    |            |                                         |
| $1.3 \times 10^{-1}$ Pa $\leq$ reading $\leq 13.3$ Pa          | 2.1 - 0.7  | $N_2$ ; 0.1 Torr range                  |
| $13.3$ Pa $\leq$ reading $\leq 133.3$ Pa                       | 0.7        | $N_2$ ; 1 Torr range                    |
| $133.3$ Pa $\leq$ reading $\leq 1.3$ kPa                       | 0.4        | $N_2$ ; 10 Torr range                   |
| $1.3$ kPa $\leq$ reading $\leq 13.3$ kPa                       | 0.2        | $N_2$ ; 100 Torr range                  |
| $13.3$ kPa $\leq$ reading $\leq 133.3$ kPa                     | 0.6 to 0.1 | $N_2$ ; 1000 Torr range                 |

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|                                                                       |              |                         |
|-----------------------------------------------------------------------|--------------|-------------------------|
| Secondary Capacitance Diaphragm Gages Reference for direct comparison |              |                         |
| $1.3 \times 10^{-1}$ Pa $\leq$ reading $\leq 13.3$ Pa                 | 2.2 to 0.9   | $N_2$ ; 0.1 Torr range  |
| $13.3$ Pa $\leq$ reading $\leq 133.3$ Pa                              | 1.1          | $N_2$ ; 1 Torr range    |
| $133.3$ Pa $\leq$ reading $\leq 1.3$ kPa                              | 0.5          | $N_2$ ; 10 Torr range   |
| $1.3$ kPa $\leq$ reading $\leq 13.3$ kPa                              | 0.5          | $N_2$ ; 100 Torr range  |
| $13.3$ kPa $\leq$ reading $\leq 133.3$ kPa                            | 0.59 to 0.11 | $N_2$ ; 1000 Torr range |

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1. Expanded uncertainty with coverage factor of  $k=2$ , unless otherwise specified.
2. Approximate value. Actual value determined by test results.
3. The uncertainty ranges are the lowest and highest uncertainty values within the specified frequency range and quantity range.
4. Uncertainty consists of an appropriate combination of the measurement uncertainty (which includes to use, environment, handling or variation with time over the certification interval).
5. Maximum frequency for BNC is 1000 MHz.
6. ASTM loading range classes (e.g., A, AA) are not used or reported.
7. Calibrations to 30,000 lbf versus load cells can be automated; other calibrations are manual.
8. Uncertainties listed are linearized forms  $(A' + B'L)$  of uncertainties calculated as root sum squares of constant and length-dependent terms  $\{A' + (BL)^{1/2}\}$ .  $A'$  and  $B'$  are calculated by fitting a straight line through the RSS uncertainty values at the upper and lower limits of range.
9. Uncertainty is dependent on the specific temperature point tested.
10. Referenced tables in NIST Monograph 175 (April, 1993) provide values for emf E output/input of the thermocouple simulator/readout and the Seebeck coefficient S for the specific temperature points within the specified ranges. The best uncertainty (at  $k=2$ ) of the emf E in  $\mu V$  is equal to the product of  $U \times S$ , where U is the best uncertainty (at  $k=2$ ) of the temperature point tested.

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MINNESOTA METROLOGY LABORATORY

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Compliant

**DIMENSIONAL**

NVLAP Code: 20/D13  
Surveying Rods and Tapes

| Range in inches | Best Uncertainty ( $\pm$ ) in inches <sup>nom</sup> | Remarks     |
|-----------------|-----------------------------------------------------|-------------|
| 1               | 0.0028                                              | Rigid Rules |
| 2               | 0.0028                                              | Rigid Rules |
| 3               | 0.0028                                              | Rigid Rules |
| 4               | 0.0028                                              | Rigid Rules |
| 5               | 0.0028                                              | Rigid Rules |
| 6               | 0.0028                                              | Rigid Rules |
| 7               | 0.0028                                              | Rigid Rules |
| 8               | 0.0028                                              | Rigid Rules |
| 9               | 0.0028                                              | Rigid Rules |

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| Range in feet | Best Uncertainty ( $\pm$ ) in inches <sup>nom</sup> | Remarks                    |
|---------------|-----------------------------------------------------|----------------------------|
| 10            | 0.0028                                              | Rigid Rules                |
| 11            | 0.0028                                              | Rigid Rules                |
| 12            | 0.0028                                              | Rigid Rules                |
| 24            | 0.0049                                              | Rigid Rules                |
| 36            | 0.0069                                              | Rigid Rules                |
| 48            | 0.0089                                              | Rigid Rules                |
| 60            | 0.0109                                              | Rigid Rules                |
| 72            | 0.0129                                              | Rigid Rules                |
| 1             | 0.0048                                              | Metal Tapes (Bench Method) |
| 2             | 0.0065                                              | Metal Tapes (Bench Method) |
| 3             | 0.0079                                              | Metal Tapes (Bench Method) |
| 4             | 0.0090                                              | Metal Tapes (Bench Method) |
| 5             | 0.0100                                              | Metal Tapes (Bench Method) |
| 6             | 0.0110                                              | Metal Tapes (Bench Method) |
| 7             | 0.0118                                              | Metal Tapes (Bench Method) |
| 8             | 0.0126                                              | Metal Tapes (Bench Method) |

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|     |        |                            |
|-----|--------|----------------------------|
| 9   | 0.0134 | Metal Tapes (Bench Method) |
| 10  | 0.0141 | Metal Tapes (Bench Method) |
| 20  | 0.0200 | Metal Tapes (Bench Method) |
| 30  | 0.0244 | Metal Tapes (Bench Method) |
| 40  | 0.0283 | Metal Tapes (Bench Method) |
| 50  | 0.0317 | Metal Tapes (Bench Method) |
| 60  | 0.0345 | Metal Tapes (Bench Method) |
| 70  | 0.0374 | Metal Tapes (Bench Method) |
| 80  | 0.0400 | Metal Tapes (Bench Method) |
| 90  | 0.0424 | Metal Tapes (Bench Method) |
| 100 | 0.0447 | Metal Tapes (Bench Method) |
| 110 | 0.0469 | Metal Tapes (Bench Method) |
| 120 | 0.0489 | Metal Tapes (Bench Method) |
| 130 | 0.0509 | Metal Tapes (Bench Method) |
| 140 | 0.0529 | Metal Tapes (Bench Method) |
| 150 | 0.0548 | Metal Tapes (Bench Method) |
| 160 | 0.0566 | Metal Tapes (Bench Method) |
| 170 | 0.0584 | Metal Tapes (Bench Method) |

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UNITED STATES OF AMERICA

CALIBRATION LABORATORIES

MINNESOTA METROLOGY LABORATORY

NVLAP LAB CODE 105003-0

| Range in feet | Best Uncertainty ( $\pm$ ) in feet <sup>nom</sup> | Remarks                   |
|---------------|---------------------------------------------------|---------------------------|
| 180           | 0.0600                                            | Metal Tape (Bench Method) |
| 190           | 0.0616                                            | Metal Tape (Bench Method) |
| 200           | 0.0632                                            | Metal Tape (Bench Method) |
| 1             | 0.0054                                            | Steel Tape (Tape-to-Tape) |
| 2             | 0.0054                                            | Steel Tape (Tape-to-Tape) |
| 3             | 0.0054                                            | Steel Tape (Tape-to-Tape) |
| 4             | 0.0054                                            | Steel Tape (Tape-to-Tape) |
| 5             | 0.0054                                            | Steel Tape (Tape-to-Tape) |
| 6             | 0.0054                                            | Steel Tape (Tape-to-Tape) |
| 7             | 0.0054                                            | Steel Tape (Tape-to-Tape) |
| 8             | 0.0054                                            | Steel Tape (Tape-to-Tape) |
| 9             | 0.0054                                            | Steel Tape (Tape-to-Tape) |
| 10            | 0.0054                                            | Steel Tape (Tape-to-Tape) |
| 20            | 0.0054                                            | Steel Tape (Tape-to-Tape) |
| 30            | 0.0054                                            | Steel Tape (Tape-to-Tape) |
| 40            | 0.0054                                            | Steel Tape (Tape-to-Tape) |

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MINNESOTA METROLOGY LABORATORY

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|     |        |                           |
|-----|--------|---------------------------|
| 50  | 0.0054 | Steel Tape (Tape-to-Tape) |
| 60  | 0.0108 | Steel Tape (Tape-to-Tape) |
| 70  | 0.0108 | Steel Tape (Tape-to-Tape) |
| 80  | 0.0108 | Steel Tape (Tape-to-Tape) |
| 90  | 0.0108 | Steel Tape (Tape-to-Tape) |
| 100 | 0.0108 | Steel Tape (Tape-to-Tape) |
| 110 | 0.0162 | Steel Tape (Tape-to-Tape) |
| 120 | 0.0162 | Steel Tape (Tape-to-Tape) |
| 130 | 0.0162 | Steel Tape (Tape-to-Tape) |
| 140 | 0.0162 | Steel Tape (Tape-to-Tape) |
| 150 | 0.0162 | Steel Tape (Tape-to-Tape) |
| 160 | 0.0215 | Steel Tape (Tape-to-Tape) |
| 170 | 0.0215 | Steel Tape (Tape-to-Tape) |
| 180 | 0.0215 | Steel Tape (Tape-to-Tape) |
| 190 | 0.0215 | Steel Tape (Tape-to-Tape) |
| 200 | 0.0215 | Steel Tape (Tape-to-Tape) |

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|    |        |                         |
|----|--------|-------------------------|
| 1  | 0.0018 | Pi Tapes (Bench Method) |
| 2  | 0.0031 | Pi Tapes (Bench Method) |
| 3  | 0.0036 | Pi Tapes (Bench Method) |
| 4  | 0.0037 | Pi Tapes (Bench Method) |
| 5  | 0.0042 | Pi Tapes (Bench Method) |
| 6  | 0.0053 | Pi Tapes (Bench Method) |
| 7  | 0.0044 | Pi Tapes (Bench Method) |
| 8  | 0.0060 | Pi Tapes (Bench Method) |
| 9  | 0.0074 | Pi Tapes (Bench Method) |
| 10 | 0.0066 | Pi Tapes (Bench Method) |

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MINNESOTA METROLOGY LABORATORY

NVLAP LAB CODE 105003-0

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|                    |                                                              |                |
|--------------------|--------------------------------------------------------------|----------------|
| MECHANICAL         |                                                              |                |
| NVLAP Code: 20/M08 |                                                              |                |
| Mass               |                                                              |                |
| <i>Range</i>       | <i>Best Uncertainty (<math>\pm</math> year<sup>-1</sup>)</i> | <i>Remarks</i> |
| 50 kg              | 101 mg                                                       | Echelon I      |
| 30 kg              | 17 mg                                                        | Echelon I      |
| 20 kg              | 11 mg                                                        | Echelon I      |
| 10 kg              | 0.65 mg                                                      | Echelon I      |
| 5 kg               | 0.28 mg                                                      | Echelon I      |
| 3 kg               | 0.17 mg                                                      | Echelon I      |
| 2 kg               | 0.11 mg                                                      | Echelon I      |
| 1 kg               | 0.040 mg                                                     | Echelon I      |
| 500 g              | 0.023 mg                                                     | Echelon I      |
| 300 g              | 0.017 mg                                                     | Echelon I      |
| 200 g              | 0.014 mg                                                     | Echelon I      |
| 100 g              | 0.013 mg                                                     | Echelon I      |
| 50 g               | 0.010 mg                                                     | Echelon I      |
| 30 g               | 0.0070 mg                                                    | Echelon I      |

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CALIBRATION LABORATORIES

MINNESOTA METROLOGY LABORATORY

|        |            |           |
|--------|------------|-----------|
| 20 g   | 0.0061 mg  | Echelon I |
| 10 g   | 0.0069 mg  | Echelon I |
| 5 g    | 0.0033 mg  | Echelon I |
| 3 g    | 0.0021 mg  | Echelon I |
| 2 g    | 0.0015 mg  | Echelon I |
| 1 g    | 0.0015 mg  | Echelon I |
| 500 mg | 0.0010 mg  | Echelon I |
| 300 mg | 0.00066 mg | Echelon I |
| 200 mg | 0.00062 mg | Echelon I |
| 100 mg | 0.00076 mg | Echelon I |
| 50 mg  | 0.00058 mg | Echelon I |
| 30 mg  | 0.00050 mg | Echelon I |
| 20 mg  | 0.00048 mg | Echelon I |
| 10 mg  | 0.00057 mg | Echelon I |
| 5 mg   | 0.00034 mg | Echelon I |
| 3 mg   | 0.00028 mg | Echelon I |
| 2 mg   | 0.00024 mg | Echelon I |
| 1 mg   | 0.00029 mg | Echelon I |

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CALIBRATION LABORATORIES

MINNESOTA METROLOGY LABORATORY

|       |           |            |
|-------|-----------|------------|
| 50 kg | 112.8 mg  | Echelon II |
| 30 kg | 34.3 mg   | Echelon II |
| 20 kg | 23.0 mg   | Echelon II |
| 10 kg | 5.1 mg    | Echelon II |
| 5 kg  | 2.64 mg   | Echelon II |
| 3 kg  | 1.72 mg   | Echelon II |
| 2 kg  | 1.04 mg   | Echelon II |
| 1 kg  | 0.571 mg  | Echelon II |
| 500 g | 0.458 mg  | Echelon II |
| 300 g | 0.373 mg  | Echelon II |
| 200 g | 0.299 mg  | Echelon II |
| 100 g | 0.057 mg  | Echelon II |
| 50 g  | 0.035 mg  | Echelon II |
| 30 g  | 0.029 mg  | Echelon II |
| 20 g  | 0.013 mg  | Echelon II |
| 10 g  | 0.012 mg  | Echelon II |
| 5 g   | 0.0086 mg | Echelon II |
| 3 g   | 0.0082 mg | Echelon II |

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CALIBRATION LABORATORIES

MINNESOTA METROLOGY LABORATORY

|          |           |                |
|----------|-----------|----------------|
| 2 g      | 0.0081 mg | Echelon II     |
| 1 g      | 0.0080 mg | Echelon II     |
| 500 mg   | 0.0018 mg | Echelon II     |
| 300 mg   | 0.0016 mg | Echelon II     |
| 200 mg   | 0.0016 mg | Echelon II     |
| 100 mg   | 0.0018 mg | Echelon II     |
| 50 mg    | 0.0014 mg | Echelon II     |
| 30 mg    | 0.0013 mg | Echelon II     |
| 20 mg    | 0.0012 mg | Echelon II     |
| 10 mg    | 0.0013 mg | Echelon II     |
| 5 mg     | 0.0012 mg | Echelon II     |
| 3 mg     | 0.0012 mg | Echelon II     |
| 2 mg     | 0.0012 mg | Echelon II     |
| 1 mg     | 0.0012 mg | Echelon II     |
| 2500 lbs | 8.6 g     | Echelon II     |
| 1000 lbs | 3.3 g     | Echelon II     |
| 500 lbs  | 2.0 g     | Echelon II     |
| 1000 kg  | 13.6 g    | Echelon II     |
|          |           | Tolerance Test |

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|        |          |                |
|--------|----------|----------------|
| 500 kg | 8.1 g    | Tolerance Test |
| 300 kg | 6.1 g    | Tolerance Test |
| 200 kg | 4.8 g    | Tolerance Test |
| 100 kg | 1.7 g    | Tolerance Test |
| 50 kg  | 359.7 mg | Tolerance Test |
| 30 kg  | 242.6 mg | Tolerance Test |
| 20 kg  | 68.3 mg  | Tolerance Test |
| 10 kg  | 46.5 mg  | Tolerance Test |
| 5 kg   | 7.78 mg  | Tolerance Test |
| 3 kg   | 5.87 mg  | Tolerance Test |
| 2 kg   | 4.43 mg  | Tolerance Test |
| 1 kg   | 2.39 mg  | Tolerance Test |
| 500 g  | 2.138 mg | Tolerance Test |
| 300 g  | 1.674 mg | Tolerance Test |
| 200 g  | 0.326 mg | Tolerance Test |
| 100 g  | 0.206 mg | Tolerance Test |
| 50 g   | 0.122 mg | Tolerance Test |
| 30 g   | 0.100 mg | Tolerance Test |

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MINNESOTA METROLOGY LABORATORY

|        |          |                |
|--------|----------|----------------|
| 20 g   | 0.067 mg | Tolerance Test |
| 10 g   | 0.056 mg | Tolerance Test |
| 5 g    | 0.049 mg | Tolerance Test |
| 3 g    | 0.047 mg | Tolerance Test |
| 2 g    | 0.045 mg | Tolerance Test |
| 1 g    | 0.045 mg | Tolerance Test |
| 500 mg | 0.022 mg | Tolerance Test |
| 300 mg | 0.022 mg | Tolerance Test |
| 200 mg | 0.022 mg | Tolerance Test |
| 100 mg | 0.020 mg | Tolerance Test |
| 50 mg  | 0.019 mg | Tolerance Test |
| 30 mg  | 0.018 mg | Tolerance Test |
| 20 mg  | 0.015 mg | Tolerance Test |
| 10 mg  | 0.014 mg | Tolerance Test |
| 5 mg   | 0.014 mg | Tolerance Test |
| 3 mg   | 0.014 mg | Tolerance Test |
| 2 mg   | 0.012 mg | Tolerance Test |
| 1 mg   | 0.012 mg | Tolerance Test |

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MINNESOTA METROLOGY LABORATORY

| NVLAP Code: 20/M12 |                                 |                         |
|--------------------|---------------------------------|-------------------------|
| Range              | Best Uncertainty ( $\pm$ years) | Remarks                 |
| 10000 ml           | 0.6248 ml                       | Gravimetric Method      |
| 1000 ml            | 0.0628 ml                       | Gravimetric Method      |
| 100 ml             | 0.00617 ml                      | Gravimetric Method      |
| 10 ml              | 0.00063 ml                      | Gravimetric Method      |
| 1 ml               | 0.00010 ml                      | Gravimetric Method      |
| 5 gal              | 0.484 in <sup>3</sup>           | Small Volume Volumetric |
| 1500 gal           | 40.87 in <sup>3</sup>           | Large Volume Volumetric |
| 1000 gal           | 27.25 in <sup>3</sup>           | Large Volume Volumetric |
| 500 gal            | 13.62 in <sup>3</sup>           | Large Volume Volumetric |
| 100 gal            | 2.72 in <sup>3</sup>            | Large Volume Volumetric |
| 25 gal             | 2.25 in <sup>3</sup>            | Large Volume Volumetric |
| 100 gal            | 7.71 in <sup>3</sup>            | LPG Volumetric          |
| 25 gal             | 2.68 in <sup>3</sup>            | LPG Volumetric          |

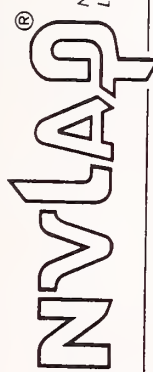
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 NVLAP LAB CODE 105003-0

MINNESOTA METROLOGY LABORATORY

| Density in the Range of 2.7 to 9.4 g/cm <sup>3</sup> |                                              |         |
|------------------------------------------------------|----------------------------------------------|---------|
| Mass Range                                           | Best Uncertainty ( $\pm$ ) <sup>year 1</sup> | Remarks |
| 5 kg                                                 | 0.00058 g/cm <sup>3</sup>                    |         |
| 3 kg                                                 | 0.00051 g/cm <sup>3</sup>                    |         |
| 2 kg                                                 | 0.00039 g/cm <sup>3</sup>                    |         |
| 1 kg                                                 | 0.00017 g/cm <sup>3</sup>                    |         |
| 500 g                                                | 0.00188 g/cm <sup>3</sup>                    |         |
| 300 g                                                | 0.00598 g/cm <sup>3</sup>                    |         |
| 200 g                                                | 0.00300 g/cm <sup>3</sup>                    |         |
| 100 g                                                | 0.00220 g/cm <sup>3</sup>                    |         |
| 50 g                                                 | 0.00170 g/cm <sup>3</sup>                    |         |
| 30 g                                                 | 0.00170 g/cm <sup>3</sup>                    |         |
| 20 g                                                 | 0.00163 g/cm <sup>3</sup>                    |         |
| 10 g                                                 | 0.00162 g/cm <sup>3</sup>                    |         |

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MINNESOTA METROLOGY LABORATORY

| THERMODYNAMICS                                |                                              |                 |
|-----------------------------------------------|----------------------------------------------|-----------------|
| NVLAP Code: 20/T03<br>Laboratory Thermometers |                                              |                 |
| Range                                         | Best Uncertainty ( $\pm$ ) <sup>year 1</sup> | Remarks         |
| Triple Point of Water (TPW)                   | 0.0303 °C                                    | Liquid-in-glass |
| 10 °C                                         | 0.0731 °C                                    | Liquid-in-glass |
| 20 °C                                         | 0.0731 °C                                    | Liquid-in-glass |
| 30 °C                                         | 0.0731 °C                                    | Liquid-in-glass |
| 40 °C                                         | 0.0731 °C                                    | Liquid-in-glass |
| 50 °C                                         | 0.0731 °C                                    | Liquid-in-glass |
| 60 °C                                         | 0.0731 °C                                    | Liquid-in-glass |
| 70 °C                                         | 0.0731 °C                                    | Liquid-in-glass |
| 80 °C                                         | 0.0731 °C                                    | Liquid-in-glass |
| 90 °C                                         | 0.0731 °C                                    | Liquid-in-glass |
| 100 °C                                        | 0.0731 °C                                    | Liquid-in-glass |
| 150 °C                                        | 0.0731 °C                                    | Liquid-in-glass |
| 200 °C                                        | 0.0760 °C                                    | Liquid-in-glass |
| 250 °C                                        | 0.0760 °C                                    | Liquid-in-glass |

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MINNESOTA METROLOGY LABORATORY

|        |           |                 |
|--------|-----------|-----------------|
| 300 °C | 0.0760 °C | Liquid-in-glass |
| 350 °C | 0.0760 °C | Liquid-in-glass |
| 400 °C | 0.0760 °C | Liquid-in-glass |
| 450 °C | 0.0760 °C | Liquid-in-glass |
| 500 °C | 0.0760 °C | Liquid-in-glass |

NVLAP Code: 20/T07  
Resistance Thermometry

| Range | Best Uncertainty ( $\pm$ ) <sup>1</sup> | Remarks     |
|-------|-----------------------------------------|-------------|
| 0 °C  | 0.0089 °C                               | Thermistors |
| 10 °C | 0.0089 °C                               | Thermistors |
| 20 °C | 0.0089 °C                               | Thermistors |
| 30 °C | 0.0089 °C                               | Thermistors |
| 40 °C | 0.0089 °C                               | Thermistors |
| 50 °C | 0.0089 °C                               | Thermistors |
| 60 °C | 0.0090 °C                               | Thermistors |
| 70 °C | 0.0093 °C                               | Thermistors |
| 80 °C | 0.0103 °C                               | Thermistors |

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MINNESOTA METROLOGY LABORATORY

|         |           |             |
|---------|-----------|-------------|
| 90 °C   | 0.0137 °C | Thermistors |
| 100 °C  | 0.0226 °C | Thermistors |
| TPW     | 0.004     | PRT         |
| Tin Fp  | 0.005     | PRT         |
| Zinc Fp | 0.007     | PRT         |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .

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ISO/IEC GUIDE 25:1990  
ANSI/NCSL Z540-1:1994  
ISO 9002:1987

## Scope of Accreditation



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### CALIBRATION LABORATORIES

NVLAP LAB CODE 105007-0

#### STATE OF VIRGINIA METROLOGY LAB

1 North 14th Street, Room 025  
Richmond, VA 23219-3691  
Mr. Michael J. Kramer  
Phone: 804-786-0479 Fax: 804-371-0351  
E-Mail: mkramer@vdaacs.state.va.us

#### DIMENSIONAL

NVLAP Code: 20/D13  
Survey Rods and Tapes

| Range          | Best Uncertainty ( $\pm$ ) <sup>year 1</sup> | Remarks                    |
|----------------|----------------------------------------------|----------------------------|
| 2 to 10 ft     | 0.0057 inches                                | Metal Tapes (Bench Method) |
| 11 to 25 ft    | 0.0085 inches                                | Metal Tapes (Bench Method) |
| 26 to 50 ft    | 0.0098 inches                                | Metal Tapes (Bench Method) |
| 51 to 75 ft    | 0.0134 inches                                | Metal Tapes (Bench Method) |
| 76 to 100 ft   | 0.017 inches                                 | Metal Tapes (Bench Method) |
| 1 to 18 inches | 0.0054 inches                                | Rigid Rules                |

September 30, 2002

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ISO/IEC GUIDE 25:1990  
ANSI/NCSL Z540-1:1994  
ISO 9002:1987

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NVLAP LAB CODE 105007-0

#### STATE OF VIRGINIA METROLOGY LAB

#### TIME AND FREQUENCY

NVLAP Code: 20/F01  
Frequency

| Range             | Best Uncertainty ( $\pm$ ) <sup>year 1</sup> | Remarks                                             |
|-------------------|----------------------------------------------|-----------------------------------------------------|
| 1000 to 10,000 Hz | 0.02 %                                       | Tuning forks at frequencies used in law enforcement |

#### MECHANICAL

NVLAP Code: 20/M08  
Mass

| Range | Best Uncertainty ( $\pm$ ) <sup>year 1</sup> | Remarks    |
|-------|----------------------------------------------|------------|
| 30 kg | 63.89 mg                                     | Echelon II |
| 20 kg | 62.92 mg                                     | Echelon II |
| 10 kg | 9.23 mg                                      | Echelon II |
| 5 kg  | 2.94 mg                                      | Echelon II |
| 3 kg  | 2.62 mg                                      | Echelon II |
| 2 kg  | 1.14 mg                                      | Echelon II |
| 1 kg  | 0.138 mg                                     | Echelon II |

September 30, 2002

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## Scope of Accreditation

ISO/IEC GUIDE 25:1990  
ANSI/ISO 2540-1-1994  
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### STATE OF VIRGINIA METROLOGY LAB

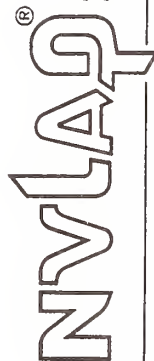
|        |          |            |
|--------|----------|------------|
| 500 g  | 0.324 mg | Echelon II |
| 300 g  | 0.323 mg | Echelon II |
| 200 g  | 0.323 mg | Echelon II |
| 100 g  | 0.036 mg | Echelon II |
| 50 g   | 0.035 mg | Echelon II |
| 30 g   | 0.025 mg | Echelon II |
| 20 g   | 0.024 mg | Echelon II |
| 10 g   | 0.012 mg | Echelon II |
| 5 g    | 0.009 mg | Echelon II |
| 3 g    | 0.008 mg | Echelon II |
| 2 g    | 0.007 mg | Echelon II |
| 1 g    | 0.013 mg | Echelon II |
| 500 mg | 0.013 mg | Echelon II |
| 300 mg | 0.013 mg | Echelon II |
| 200 mg | 0.013 mg | Echelon II |
| 100 mg | 0.006 mg | Echelon II |
| 50 mg  | 0.006 mg | Echelon II |
| 30 mg  | 0.006 mg | Echelon II |

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CALIBRATION LABORATORIES NVLAP LAB CODE 105007-0

### STATE OF VIRGINIA METROLOGY LAB

|          |           |             |
|----------|-----------|-------------|
| 20 mg    | 0.006 mg  | Echelon II  |
| 10 mg    | 0.005 mg  | Echelon II  |
| 5 mg     | 0.004 mg  | Echelon II  |
| 3 mg     | 0.004 mg  | Echelon II  |
| 2 mg     | 0.004 mg  | Echelon II  |
| 1 mg     | 0.004 mg  | Echelon II  |
| 6000 lbs | 0.063 lbs | Echelon III |
| 5000 lbs | 0.056 lbs | Echelon III |
| 4000 lbs | 0.049 lbs | Echelon III |
| 3000 lbs | 0.043 lbs | Echelon III |
| 2000 lbs | 0.036 lbs | Echelon III |
| 1000 lbs | 0.009 lbs | Echelon III |
| 500 lbs  | 0.005 lbs | Echelon III |
| 50 lbs   | 154.63 mg | Echelon III |
| 25 lbs   | 121.09 mg | Echelon III |
| 20 lbs   | 108.18 mg | Echelon III |
| 10 lbs   | 24.36 mg  | Echelon III |

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CALIBRATION LABORATORIES

NVLAP LAB CODE 105007-0

STATE OF VIRGINIA METROLOGY LAB

|           |          |             |
|-----------|----------|-------------|
| 5 lbs     | 10.15 mg | Echelon III |
| 3 lbs     | 9.76 mg  | Echelon III |
| 2 lbs     | 2.77 mg  | Echelon III |
| 1* lbs    | 0.80 mg  | Echelon III |
| 0.5 lbs   | 0.39 mg  | Echelon III |
| 0.3 lbs   | 0.32 mg  | Echelon III |
| 0.2 lbs   | 0.28 mg  | Echelon III |
| 0.1 lbs   | 0.17 mg  | Echelon III |
| 0.05 lbs  | 0.17 mg  | Echelon III |
| 0.03 lbs  | 0.16 mg  | Echelon III |
| 0.02 lbs  | 0.16 mg  | Echelon III |
| 0.01 lbs  | 0.15 mg  | Echelon III |
| 0.005 lbs | 0.07 mg  | Echelon III |
| 0.003 lbs | 0.07 mg  | Echelon III |
| 0.002 lbs | 0.07 mg  | Echelon III |
| 0.001 lbs | 0.07 mg  | Echelon III |

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CALIBRATION LABORATORIES

NVLAP LAB CODE 105007-0

STATE OF VIRGINIA METROLOGY LAB

MECHANICAL  
NVLAP Code: 20/M12  
Volume and Density

| Range           | Best Uncertainty ( $\pm$ ) <sup>1</sup> | Remarks         |
|-----------------|-----------------------------------------|-----------------|
| 1.0 fluid ounce | 1.15 minim                              | Volume Transfer |
| 1.0 gill        | 1.16 minim                              | Volume Transfer |
| 0.5 pint        | 4.06 minim                              | Volume Transfer |
| 1.0 pint        | 4.02 minim                              | Volume Transfer |
| 1.0 quart       | 6.22 minim                              | Volume Transfer |
| 0.5 gallon      | 11.70 minim                             | Volume Transfer |
| 1.0 gallon      | 11.76 minim                             | Volume Transfer |
| 10 mL           | 0.070 mL                                | Volume Transfer |
| 50 mL           | 0.072 mL                                | Volume Transfer |
| 100 mL          | 0.089 mL                                | Volume Transfer |
| 200 mL          | 0.106 mL                                | Volume Transfer |
| 500 mL          | 0.190 mL                                | Volume Transfer |
| 1 Liter         | 0.36 mL                                 | Volume Transfer |

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CALIBRATION LABORATORIES NVLAP LAB CODE 105007-0

STATE OF VIRGINIA METROLOGY LAB

|              |                        |                 |
|--------------|------------------------|-----------------|
| 2 Liter      | 0.28 mL                | Volume Transfer |
| 5 Liter      | 0.56 mL                | Volume Transfer |
| 5 gallons    | 0.421 in <sup>3</sup>  | Volume Transfer |
| 50 gallons   | 9.57 in <sup>3</sup>   | Volume Transfer |
| 100 gallons  | 12.78 in <sup>3</sup>  | Volume Transfer |
| 200 gallons  | 26.07 in <sup>3</sup>  | Volume Transfer |
| 500 gallons  | 55.19 in <sup>3</sup>  | Volume Transfer |
| 1000 gallons | 93.06 in <sup>3</sup>  | Volume Transfer |
| 1500 gallons | 131.74 in <sup>3</sup> | Volume Transfer |
| 2000 gallons | 170.68 in <sup>3</sup> | Volume Transfer |

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CALIBRATION LABORATORIES NVLAP LAB CODE 105007-0

STATE OF VIRGINIA METROLOGY LAB

## THERMODYNAMICS

NVLAP Code: 20/T03  
Laboratory Thermometers

| Range        | Best Uncertainty ( $\pm$ ) <sup>95%</sup> | Remarks         |
|--------------|-------------------------------------------|-----------------|
| -8 to 32 °C  | 0.146 °C                                  | Liquid in Glass |
| 33 to 55 °C  | 0.144 °C                                  | Liquid in Glass |
| 56 to 80 °C  | 0.193 °C                                  | Liquid in Glass |
| 81 to 105 °C | 0.081 °C                                  | Liquid in Glass |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .

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CALIBRATION LABORATORIES NVLAP LAB CODE 105013-0

HENRY TROEMNER, LLC

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Thorofare, NJ 08086-0087

Mr. Wilbert D. Abele

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E-Mail: troemner@troemner.com

URL: <http://www.troemner.com>

**MECHANICAL**

NVLAP Code: 20/M08

Mass

| Range | Best Uncertainty ( $\pm$ ) <sup>1,2</sup> | Remarks   |
|-------|-------------------------------------------|-----------|
| 30 kg | 10.0 mg                                   | Echelon I |
| 20 kg | 4.0 mg                                    | Echelon I |
| 10 kg | 0.7 mg                                    | Echelon I |
| 5 kg  | 0.3 mg                                    | Echelon I |
| 3 kg  | 0.19 mg                                   | Echelon I |
| 2 kg  | 0.14 mg                                   | Echelon I |
| 1 kg  | 0.05 mg                                   | Echelon I |
| 500 g | 0.05 mg                                   | Echelon I |
| 300 g | 0.04 mg                                   | Echelon I |
| 200 g | 0.033 mg                                  | Echelon I |

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|        |           |           |
|--------|-----------|-----------|
| 100 g  | 0.017 mg  | Echelon I |
| 50 g   | 0.010 mg  | Echelon I |
| 30 g   | 0.006 mg  | Echelon I |
| 20 g   | 0.005 mg  | Echelon I |
| 10 g   | 0.004 mg  | Echelon I |
| 5 g    | 0.002 mg  | Echelon I |
| 3 g    | 0.002 mg  | Echelon I |
| 2 g    | 0.0015 mg | Echelon I |
| 1 g    | 0.0015 mg | Echelon I |
| 500 mg | 0.0006 mg | Echelon I |
| 300 mg | 0.0006 mg | Echelon I |
| 200 mg | 0.0006 mg | Echelon I |
| 100 mg | 0.0006 mg | Echelon I |
| 50 mg  | 0.0006 mg | Echelon I |
| 30 mg  | 0.0006 mg | Echelon I |
| 20 mg  | 0.0006 mg | Echelon I |
| 10 mg  | 0.0006 mg | Echelon I |
| 5 mg   | 0.0006 mg | Echelon I |

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CALIBRATION LABORATORIES

HENRY TROEMNER, LLC

|         |           |             |
|---------|-----------|-------------|
| 3 mg    | 0.0006 mg | Echelon I   |
| 2 mg    | 0.0006 mg | Echelon I   |
| 1 mg    | 0.0006 mg | Echelon I   |
| 1000 kg | 10.34 g   | Echelon III |
| 500 kg  | 5.03 g    | Echelon III |
| 200 kg  | 3.26 g    | Echelon III |
| 100 kg  | 1.64 g    | Echelon III |
| 50 kg   | 0.087 g   | Echelon III |
| 30 kg   | 0.072 g   | Echelon III |
| 25 kg   | 0.066 g   | Echelon III |
| 20 kg   | 0.057 g   | Echelon III |
| 10 kg   | 0.024 g   | Echelon III |
| 5 kg    | 18.30 mg  | Echelon III |
| 3 kg    | 16.77 mg  | Echelon III |
| 2 kg    | 11.52 mg  | Echelon III |
| 1 kg    | 10.09 mg  | Echelon III |
| 500 g   | 10.02 mg  | Echelon III |
| 300 g   | 10.01 mg  | Echelon III |

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CALIBRATION LABORATORIES

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|         |           |             |
|---------|-----------|-------------|
| 3000 lb | 16.791 g  | Echelon III |
| 2500 lb | 13.551 g  | Echelon III |
| 2000 lb | 10.312 g  | Echelon III |
| 1000 lb | 5.178 g   | Echelon III |
| 500 lb  | 3.841 g   | Echelon III |
| 100 lb  | 0.088 g   | Echelon III |
| 50 lb   | 0.054 g   | Echelon III |
| 30 lb   | 0.046 g   | Echelon III |
| 25 lb   | 0.035 g   | Echelon III |
| 20 lb   | 0.029 g   | Echelon III |
| 10 lb   | 0.018 g   | Echelon III |
| 5 lb    | 10.572 mg | Echelon III |
| 3 lb    | 10.127 mg | Echelon III |
| 2 lb    | 10.093 mg | Echelon III |
| 1 lb    | 10.019 mg | Echelon III |
| 0.5 lb  | 10.005 mg | Echelon III |

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NVLAP LAB CODE 105013-0  
HENRY TROEMNER, LLC

|                                             |                                                              |         |
|---------------------------------------------|--------------------------------------------------------------|---------|
| NVLAP Code: 20/M12<br>Volume - Pipettes     |                                                              |         |
| Gravimetric method                          |                                                              |         |
| Test Volume in $\mu\text{L}^{\text{max 4}}$ | Best Uncertainty ( $\pm$ ) in $\mu\text{L}^{\text{max 1,3}}$ | Remarks |
| 0.2                                         | 0.0477                                                       |         |
| 0.5                                         | 0.0422                                                       |         |
| 1.0                                         | 0.0469                                                       |         |
| 2.5                                         | 0.0860                                                       |         |
| 5.0                                         | 0.0983                                                       |         |
| 10                                          | 0.32                                                         |         |
| 50                                          | 0.52                                                         |         |
| 100                                         | 0.45                                                         |         |
| 500                                         | 0.90                                                         |         |
| 1000                                        | 2.18                                                         |         |
| 2500                                        | 18.75                                                        |         |

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CALIBRATION LABORATORIES  
NVLAP LAB CODE 105013-0  
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|                                             |                                                              |         |
|---------------------------------------------|--------------------------------------------------------------|---------|
| Spectrophotometric method                   |                                                              |         |
| Test Volume in $\mu\text{L}^{\text{max 4}}$ | Best Uncertainty ( $\pm$ ) in $\mu\text{L}^{\text{max 1,3}}$ | Remarks |
| 0.1                                         | 0.0314                                                       |         |
| 0.2                                         | 0.0256                                                       |         |
| 0.5                                         | 0.0497                                                       |         |
| 1.0                                         | 0.0778                                                       |         |
| 2.5                                         | 0.1195                                                       |         |
| 5.0                                         | 0.2516                                                       |         |
| 10                                          | 0.34                                                         |         |
| 20                                          | 0.39                                                         |         |
| 50                                          | 1.87                                                         |         |
| 100                                         | 2.60                                                         |         |
| 500                                         | 13.12                                                        |         |
| 1000                                        | 16.76                                                        |         |
| 2500                                        | 23.08                                                        |         |

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CALIBRATION LABORATORIES  
NV LAP LAB CODE 105013-0

HENRY TROEMNER, LLC

| Density in the Range of 2.69 to 8.5 g/cm <sup>3</sup> |                                         |         |
|-------------------------------------------------------|-----------------------------------------|---------|
| Mass Range                                            | Best Uncertainty ( $\pm$ ) <sup>1</sup> | Remarks |
| 5 kg                                                  | 0.0056 g/cm <sup>3</sup>                |         |
| 3 kg                                                  | 0.0041 g/cm <sup>3</sup>                |         |
| 2 kg                                                  | 0.0034 g/cm <sup>3</sup>                |         |
| 1 kg                                                  | 0.0014 g/cm <sup>3</sup>                |         |
| 500 g                                                 | 0.0064 g/cm <sup>3</sup>                |         |
| 300 g                                                 | 0.0075 g/cm <sup>3</sup>                |         |
| 200 g                                                 | 0.0053 g/cm <sup>3</sup>                |         |
| 100 g                                                 | 0.0031 g/cm <sup>3</sup>                |         |
| 50 g                                                  | 0.0030 g/cm <sup>3</sup>                |         |
| 30 g                                                  | 0.0067 g/cm <sup>3</sup>                |         |
| 20 g                                                  | 0.0029 g/cm <sup>3</sup>                |         |
| 10 g                                                  | 0.0065 g/cm <sup>3</sup>                |         |
| 5 g                                                   | 0.0170 g/cm <sup>3</sup>                |         |
| 3 g                                                   | 0.0148 g/cm <sup>3</sup>                |         |
| 2 g                                                   | 0.0127 g/cm <sup>3</sup>                |         |
| 1 g                                                   | 0.0156 g/cm <sup>3</sup>                |         |

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1. Represents expanded uncertainty using a coverage factor,  $k = 2$ .
2. Approximate value. Actual value determined by the test statistics.
3. Uncertainties at specified test volumes may be greater depending on the range of the unit under test.
4. It is recommended that adjustable volume pipettes not be used below 10% of capacity.

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|       |      |
|-------|------|
| 1 k   | 0.45 |
| 10 k  | 0.50 |
| 100 k | 1.3  |
| 1 M   | 2.0  |
| 10 M  | 2.5  |

NVLAP Code: 20/E06  
 DC Voltage

| Range    | Best Uncertainty ( $\pm$ ) <sup>1,2</sup> | Remarks                              |
|----------|-------------------------------------------|--------------------------------------|
| 1.018 V  | 0.35 ppm                                  | Reference Cells                      |
| 10.00 V  | 0.28 ppm                                  |                                      |
| 1.000 V  | 0.33 ppm                                  |                                      |
| 100 mV   | 2.6 ppm                                   | Meters and Multifunction Calibrators |
| 1.0 V    | 1.1 ppm                                   |                                      |
| 10.0 V   | 1.0 ppm                                   |                                      |
| 100.0 V  | 1.1 ppm                                   |                                      |
| 1000.0 V | 1.2 ppm                                   |                                      |

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 NVLAP LAB CODE 105014-0  
 SOUTHERN CALIFORNIA EDISON COMPANY

MECHANICAL  
 NVLAP Code: 20/M05  
 Flow Rate

| Nominal Flow Rate  | Best Uncertainty ( $\pm$ ) in percent <sup>1,2</sup> |
|--------------------|------------------------------------------------------|
| 800 mL/s to 30 L/s | 0.4                                                  |
| 0.1 to 800 mL/s    | 0.5                                                  |
| 0.006 to 0.1 mL/s  | 1.0                                                  |

NVLAP Code: 20/M08

| Mass  | Best Uncertainty ( $\pm$ ) <sup>1,2</sup> | Remarks |
|-------|-------------------------------------------|---------|
| Range |                                           |         |
| 30 kg | 55 mg                                     |         |
| 20 kg | 18 mg                                     |         |
| 10 kg | 2.9 mg                                    |         |
| 5 kg  | 1.2 mg                                    |         |
| 3 kg  | 0.64 mg                                   |         |
| 2 kg  | 0.62 mg                                   |         |
| 1 kg  | 0.10 mg                                   |         |
| 500 g | 0.046 mg                                  |         |

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|        |           |
|--------|-----------|
| 300 g  | 0.050 mg  |
| 200 g  | 0.032 mg  |
| 100 g  | 0.022 mg  |
| 50 g   | 0.016 mg  |
| 30 g   | 0.015 mg  |
| 20 g   | 0.0074 mg |
| 10 g   | 0.0066 mg |
| 5 g    | 0.0038 mg |
| 3 g    | 0.0034 mg |
| 2 g    | 0.0026 mg |
| 1 g    | 0.0015 mg |
| 500 mg | 0.0014 mg |
| 300 mg | 0.0014 mg |
| 200 mg | 0.0008 mg |
| 100 mg | 0.0020 mg |
| 50 mg  | 0.0009 mg |
| 30 mg  | 0.0011 mg |
| 20 mg  | 0.0008 mg |

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CALIBRATION LABORATORIES

NVLAP LAB CODE 105014-0

SOUTHERN CALIFORNIA EDISON COMPANY

|       |           |
|-------|-----------|
| 10 mg | 0.0007 mg |
| 5 mg  | 0.0005 mg |
| 3 mg  | 0.0008 mg |
| 2 mg  | 0.0006 mg |
| 1 mg  | 0.0006 mg |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .
2. Approximate value. Actual value determined by the test statistics.
3. Dependent upon principle of operation of device being calibrated and its performance relative to standards at the time of the test.

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NVLAP LAB CODE 105016-0

**FLUKE CORPORATION PRIMARY STANDARDS LABORATORY**

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Mr. David Deaver

Phone: 425-446-6434 Fax: 425-446-5649

E-Mail: david.deaver@fluke.com

URL: [http://www.fluke.com/service/acc\\_usa.asp](http://www.fluke.com/service/acc_usa.asp)

## ELECTROMAGNETICS - DC/LOW FREQUENCY

NVLAP Code: 20/E01

### AC/DC Difference for Low Frequency Voltage

**Best Uncertainty ( $\pm$ ) in ppm<sup>note 1</sup>  
Frequency in Hertz**

| Range   | Level  | 10  | 20  | 40  | 100 | 1k  | 10k | 20k  | 50k | 100k | 300k | 500k | 800k | 1M   |
|---------|--------|-----|-----|-----|-----|-----|-----|------|-----|------|------|------|------|------|
| 222 mV  | 2 mV   | 320 | 890 | 610 | 900 | 320 | 760 | 1050 | 330 | 1110 | 1230 | 2020 | 2520 | 2900 |
| 222 mV  | 6 mV   | 220 | 260 | 130 | 120 | 190 | 150 | 130  | 310 | 510  | 700  | 900  | 330  | 370  |
| 222 mV  | 10 mV  | 90  | 220 | 70  | 160 | 230 | 110 | 120  | 190 | 330  | 220  | 630  | 350  | 380  |
| 222 mV  | 20 mV  | 80  | 65  | 60  | 60  | 60  | 60  | 60   | 160 | 260  | 350  | 500  | 330  | 360  |
| 2220 mV | 20 mV  | 110 | 110 | 76  | 67  | 60  | 60  | 66   | 140 | 240  | 280  | 400  | 450  | 580  |
| 2220 mV | 60 mV  | 75  | 80  | 57  | 45  | 32  | 33  | 38   | 60  | 120  | 230  | 280  | 330  | 370  |
| 2220 mV | 100 mV | 35  | 70  | 17  | 41  | 32  | 18  | 22   | 40  | 70   | 140  | 150  | 210  | 190  |

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NVLAP LAB CODE 105016-0

FLUKE CORPORATION PRIMARY STANDARDS LABORATORY

|         |        |     |    |    |    |    |    |    |    |    |     |     |     |     |
|---------|--------|-----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|
| 2220 mV | 200 mV | 35  | 25 | 17 | 17 | 17 | 17 | 17 | 17 | 28 | 60  | 100 | 110 | 190 |
| 700 mV  | 200 mV | 35  | 55 | 23 | 30 | 27 | 17 | 23 | 23 | 60 | 110 | 140 | 210 | 190 |
| 700 mV  | 600 mV | 20  | 68 | 17 | 7  | 16 | 6  | 7  | 10 | 10 | 80  | 80  | 80  | 80  |
| 2.2 V   | 0.6 V  | 20  | 43 | 24 | 10 | 8  | 10 | 9  | 18 | 10 | 100 | 100 | 100 | 80  |
| 2.2 V   | 1 V    | 120 | 35 | 14 | 8  | 11 | 11 | 6  | 25 | 10 | 80  | 100 | 100 | 80  |
| 2.2 V   | 2 V    | 20  | 16 | 21 | 7  | 6  | 6  | 6  | 16 | 10 | 95  | 100 | 80  | 80  |
| 7 V     | 2 V    | 25  | 37 | 26 | 18 | 14 | 14 | 14 | 26 | 12 | 100 | 110 | 100 | 100 |
| 7 V     | 3 V    | 85  | 36 | 25 | 17 | 15 | 15 | 16 | 40 | 43 | 95  | 100 | 100 | 100 |
| 7 V     | 6 V    | 25  | 17 | 15 | 8  | 6  | 7  | 7  | 22 | 15 | 100 | 100 | 80  | 80  |
| 22 V    | 6 V    | 115 | 35 | 27 | 8  | 9  | 18 | 15 | 25 | 15 | 80  | 80  | 130 | 130 |
| 22 V    | 10 V   | 20  | 42 | 13 | 8  | 7  | 7  | 8  | 10 | 15 | 80  | 100 | 100 | 100 |
| 22 V    | 20 V   | 20  | 20 | 16 | 8  | 7  | 7  | 7  | 10 | 15 | 100 | 110 | 80  | 80  |
| 70 V    | 20 V   | 30  | 41 | 24 | 19 | 12 | 10 | 16 | 35 | 50 | 130 |     |     |     |
| 70 V    | 30 V   | 80  | 36 | 24 | 18 | 19 | 17 | 22 | 40 | 56 | 100 |     |     |     |
| 70 V    | 60 V   | 25  | 20 | 17 | 10 | 10 | 13 | 10 | 40 | 20 | 80  |     |     |     |
| 220 V   | 60 V   | 120 | 40 | 19 | 17 | 17 | 18 | 30 | 40 | 50 | 120 |     |     |     |
| 220 V   | 100 V  | 140 | 45 | 19 | 12 | 10 | 10 | 10 | 40 | 20 |     |     |     |     |
| 220 V   | 200 V  | 25  | 25 | 15 | 14 | 11 | 11 | 11 | 40 | 25 |     |     |     |     |

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|        |        |     |    |    |    |    |    |    |    |    |
|--------|--------|-----|----|----|----|----|----|----|----|----|
| 1000 V | 200 V  | 160 | 45 | 37 | 18 | 15 | 18 | 20 | 20 | 35 |
| 1000 V | 600 V  | 180 | 55 | 30 | 20 | 15 | 15 | 15 | 23 | 45 |
| 1000 V | 1000 V | 55  | 25 | 20 | 19 | 18 | 18 | 19 | 26 | 50 |

NVLAP Code: 20/E01  
AC/DC Difference for High Frequency Thermal Converters

Best Uncertainty ( $\pm$ ) in Percent<sup>max</sup>  $\downarrow$   
Frequency in Hertz

| Range | 2 M  | 10 M | 20 M | 30 M | 50 M | 100 M |
|-------|------|------|------|------|------|-------|
| 0.5 V |      | 0.1  | 0.2  | 0.2  | 0.5  | 1.0   |
| 1 V   |      | 0.1  | 0.2  | 0.2  | 0.5  | 1.0   |
| 2 V   |      | 0.08 | 0.16 | 0.16 | 0.4  | 0.8   |
| 3 V   | 0.08 | 0.1  | 0.16 | 0.2  | 0.5  | 1.0   |
| 5 V   |      | 0.1  | 0.2  | 0.2  | 0.5  | 1.0   |
| 10 V  |      | 0.1  | 0.2  | 0.2  | 0.5  | 1.0   |
| 20 V  |      | 0.1  | 0.15 | 0.2  | 0.5  | 1.0   |
| 30 V  |      | 0.08 | 0.16 | 0.16 | 0.4  | 0.8   |
| 50 V  |      | 0.08 | 0.16 | 0.16 | 0.4  | 0.8   |

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NVLAP Code: 20/E01  
AC/DC Difference for Low Frequency Thermal Current Converters and Shunts

Best Uncertainty ( $\pm$ ) in ppm<sup>max</sup>  $\downarrow$   
Frequency in Hertz

| Range  | 10  | 20  | 40 | 400 | 1 k | 5 k | 10 k | 20 k | 50 k | 100 k |
|--------|-----|-----|----|-----|-----|-----|------|------|------|-------|
| 10 mA  | 200 | 80  | 80 | 80  | 80  | 80  | 80   | 80   | 120  | 200   |
| 20 mA  | 200 | 80  | 50 | 80  | 50  | 80  | 80   | 80   | 120  | 200   |
| 30 mA  | 200 | 80  | 80 | 80  | 80  | 80  | 80   | 80   | 120  | 200   |
| 50 mA  |     |     |    | 80  |     |     |      | 80   | 120  | 200   |
| 0.1 A  | 200 | 80  | 80 | 80  | 80  | 80  | 80   | 80   | 120  | 200   |
| 0.2 A  | 200 | 80  | 50 | 80  | 50  | 80  | 80   | 80   | 120  | 200   |
| 0.3 A  | 200 |     | 80 | 80  | 80  | 80  | 80   | 80   | 120  | 200   |
| 0.5 A  |     |     |    | 80  |     |     |      | 80   | 120  | 200   |
| 1.0 A  | 200 |     | 80 | 80  | 80  | 80  | 80   | 80   | 120  | 200   |
| 2.0 A  | 200 | 80  | 80 | 80  | 80  | 80  | 80   | 80   | 120  | 200   |
| 3.0 A  | 200 |     | 80 | 80  | 80  | 80  | 80   | 80   | 120  | 200   |
| 5.0 A  |     |     |    | 80  |     |     |      | 80   | 120  | 200   |
| 10.0 A | 200 | 140 | 80 | 80  | 80  | 110 | 110  | 120  |      |       |

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20.0 A 110 110 200

NVLAP Code: 20/E02  
AC Current

For Calibrators or DMMs

Best Uncertainty ( $\pm$ ) in  $\text{ppm}^{\text{acc}}$  /  
Frequency in Hertz

| Current     | 10  | 20  | 40  | 400 | 1 k | 5 k | 10 k |
|-------------|-----|-----|-----|-----|-----|-----|------|
| 19 $\mu$ A  | 250 | 200 | 200 | 200 | 200 | 250 | 250  |
| 100 $\mu$ A | 160 | 90  | 70  | 70  | 150 | 200 | 200  |
| 190 $\mu$ A | 150 | 85  | 57  | 60  | 55  | 150 | 200  |
| 1 mA        | 150 | 80  | 50  | 50  | 50  | 80  | 100  |
| 1.9 mA      | 150 | 80  | 50  | 50  | 41  | 70  | 90   |
| 10 mA       | 260 | 90  | 85  | 85  | 85  | 85  | 100  |
| 19 mA       | 260 | 85  | 51  | 85  | 51  | 85  | 100  |
| 100 mA      | 260 | 90  | 85  | 85  | 85  | 85  | 100  |
| 190 mA      | 260 | 85  | 51  | 85  | 51  | 85  | 100  |
| 1.0 A       |     | 85  | 85  | 85  | 85  | 100 | 150  |

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### FLUKE CORPORATION PRIMARY STANDARDS LABORATORY

1.9 A 85 85 85 100 150  
10 A 85 115 85 120 150

NVLAP Code: 20/E02  
AC Current

AC/DC Difference of Y5020 Shunt

Best Uncertainty ( $\pm$ ) in  $\text{ppm}^{\text{acc}}$  /  
Frequency in Hertz

| Current | 50 | 100 | 300 | 1 k | 3 k | 4 k | 5 k |
|---------|----|-----|-----|-----|-----|-----|-----|
| 10 A    | 70 | 70  | 70  | 70  | 150 | 150 | 150 |

NVLAP Code: 20/E02  
AC Current  
5500A Console

Best Uncertainty ( $\pm$ ) in  $\text{ppm}^{\text{acc}}$  /  
Frequency in Hertz

| Range      | 10 | 45 | 65 | 500 | 1 k | 5 k | 10k |
|------------|----|----|----|-----|-----|-----|-----|
| 33 $\mu$ A |    |    |    | 180 |     |     | 600 |

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NVLAP Code: 20/E02  
AC Current

At Factory Annex - Multiproduct Calibrators Similar to Fluke 5500A

Best Uncertainty ( $\pm$ ) in  $\text{ppm}^{\text{max}}$   
Frequency in Hertz

| Range             | 10  | 45  | 65 | 500 | 1 k  | 5 k | 10k  |
|-------------------|-----|-----|----|-----|------|-----|------|
| 33 $\mu\text{A}$  |     |     |    |     | 1400 |     | 2200 |
| 190 $\mu\text{A}$ |     | 270 |    |     | 360  |     | 1600 |
| 329 $\mu\text{A}$ | 380 | 220 |    |     | 270  | 560 | 1600 |
| 330 $\mu\text{A}$ |     |     |    |     | 270  | 390 |      |
| 1.9 mA            |     |     |    |     | 170  |     | 750  |
| 3.29 mA           | 320 | 140 |    |     | 140  | 260 | 730  |
| 3.3 mA            |     |     |    |     | 260  | 390 |      |
| 19 mA             |     |     |    |     | 150  |     | 750  |
| 32.9 mA           | 350 | 140 |    |     | 140  | 260 | 740  |
| 33 mA             |     |     |    |     | 260  | 390 |      |

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|        |     |     |     |     |     |      |
|--------|-----|-----|-----|-----|-----|------|
| 190 mA |     |     |     | 170 |     | 750  |
| 329 mA | 350 | 140 |     | 140 | 250 | 740  |
| 330 mA |     |     |     | 270 |     | 1300 |
| 2.19 A | 410 | 150 |     | 210 |     | 1200 |
| 2.2 A  |     |     |     | 300 | 550 |      |
| 11 A   | 110 |     | 120 | 160 | 430 |      |

NVLAP Code: 20/E02

AC Current

5520A Console

Best Uncertainty ( $\pm$ ) in  $\text{ppm}^{\text{max}}$   
Frequency in Hertz

| Range             | 10 | 45 | 65 | 500 | 1 k | 5 k | 10 k | 30 k |
|-------------------|----|----|----|-----|-----|-----|------|------|
| 33 $\mu\text{A}$  |    |    |    |     | 130 |     | 220  | 400  |
| 190 $\mu\text{A}$ |    | 60 |    |     | 60  |     | 160  | 350  |
| 329 $\mu\text{A}$ | 80 | 60 |    |     | 60  | 100 | 120  | 250  |
| 330 $\mu\text{A}$ |    |    |    |     | 90  | 150 |      | 300  |
| 1.9 mA            |    |    |    |     | 50  |     | 85   | 140  |

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|         |     |     |     |      |     |     |
|---------|-----|-----|-----|------|-----|-----|
| 3.29 mA | 70  | 55  | 55  | 75   | 85  | 140 |
| 3.3 mA  |     |     | 70  | 100  |     | 150 |
| 19 mA   |     |     | 55  |      | 70  | 150 |
| 32.9 mA | 115 | 62  | 62  | 65   | 70  | 150 |
| 33 mA   |     |     | 85  | 90   |     | 175 |
| 190 mA  |     |     | 55  |      | 70  | 150 |
| 329 mA  | 125 | 62  | 62  | 65   | 70  | 150 |
| 330 mA  |     |     | 90  | 100  |     | 150 |
| 1.09 A  | 125 | 73  | 73  | 150  | 500 |     |
| 2.99 A  | 125 | 72  | 72  | 150  | 500 |     |
| 3.3 A   |     |     | 150 | 1100 |     |     |
| 11 A    | 80  | 80  | 80  | 200  |     |     |
| 20 A    | 100 | 100 | 130 | 200  |     |     |

AC Current Factory Annex 5520A Test Console

|            |    | Frequency in Hertz |    |     |     |     |      |      |  |
|------------|----|--------------------|----|-----|-----|-----|------|------|--|
| Range      | 10 | 45                 | 65 | 500 | 1 k | 5 k | 10 k | 30 k |  |
| 33 $\mu$ A |    |                    |    | 300 |     |     | 700  | 1300 |  |

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|             |     |     |     |     |      |
|-------------|-----|-----|-----|-----|------|
| 190 $\mu$ A | 200 | 200 | 200 | 600 | 800  |
| 329 $\mu$ A | 200 | 140 | 140 | 200 | 400  |
| 330 $\mu$ A |     |     | 180 | 300 | 600  |
| 1.9 mA      |     |     | 180 | 300 | 300  |
| 3.29 mA     | 200 | 140 | 140 | 200 | 300  |
| 3.3 mA      |     |     | 180 | 200 | 400  |
| 19 mA       |     |     | 150 | 200 | 300  |
| 32.9 mA     | 200 | 130 | 130 | 140 | 200  |
| 33 mA       |     |     | 200 | 200 | 300  |
| 190 mA      |     |     | 160 | 200 | 300  |
| 329 mA      | 200 | 140 | 140 | 140 | 300  |
| 330 mA      |     |     | 180 | 500 | 1400 |
| 1.09 A      | 140 | 100 | 100 | 200 | 1000 |
| 2.99 A      | 140 | 100 | 100 | 220 | 900  |
| 3.3 A       |     |     | 200 | 140 | 2700 |
| 11 A        |     |     | 140 | 140 | 800  |
| 20 A        |     |     | 140 | 200 | 800  |

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FLUKE CORPORATION PRIMARY STANDARDS LABORATORY

NVLAP Code: 20/E02

AC Current

5725A Console

| Range(±)                     | Frequency | Best Uncertainty (±) in ppm <sup>95%</sup> |
|------------------------------|-----------|--------------------------------------------|
| 2.5 A                        | 100 Hz    | 140                                        |
| 2.5 A                        | 1 kHz     | 95                                         |
| 2.5 A                        | 5 kHz     | 150                                        |
| 2.5 A                        | 10 kHz    | 150                                        |
| 11 A                         | 100 Hz    | 40                                         |
| 11 A                         | 1 kHz     | 95                                         |
| 11 A                         | 5 kHz     | 150                                        |
| 11 A                         | 10 kHz    | 150                                        |
| Factory Annex, 5725A Console |           |                                            |
| 2.5 A                        | 100 Hz    | 150                                        |
| 2.5 A                        | 1 kHz     | 140                                        |
| 2.5 A                        | 5 kHz     | 270                                        |
| 2.5 A                        | 10 kHz    | 400                                        |

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|      |        |     |
|------|--------|-----|
| 11 A | 100 Hz | 150 |
| 11 A | 1 kHz  | 140 |
| 11 A | 5 kHz  | 270 |
| 11 A | 10 kHz | 400 |

NVLAP Code: 20/E05

DC Resistance

| Range in ohms   | Best Uncertainty (±) in ppm <sup>95%</sup> | Remarks          |
|-----------------|--------------------------------------------|------------------|
| 0.01 to <0.1    | 10                                         | Guideline Bridge |
| 0.1 to <1       | .5                                         | Guideline Bridge |
| 1 to <11        | 0.3                                        | Guideline Bridge |
| 11 to <110      | 0.35                                       | Guideline Bridge |
| 110 to <190     | 0.45                                       | Guideline Bridge |
| 190 to <11 k    | 0.4                                        | Guideline Bridge |
| 11 k to <19 k   | 0.45                                       | Guideline Bridge |
| 19 k to <110 k  | 0.4                                        | Guideline Bridge |
| 110 k to <1.1 M | 1.2                                        | Guideline Bridge |
| 1               | 0.5                                        | Low Ohm System   |

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|      |      |                |
|------|------|----------------|
| 10   | 0.6  | Low Ohm System |
| 100  | 0.75 | Low Ohm System |
| 1 k  | 0.6  | Low Ohm System |
| 10 k | 0.75 | Low Ohm System |

NVLAP Code: 20/E05  
DC Resistance

| Range in ohms | Best Uncertainty ( $\pm$ ) in ppm <sup>nom</sup> | Remarks       |
|---------------|--------------------------------------------------|---------------|
| 1             | 12                                               | 5700A Console |
| 1.9           | 10                                               | 5700A Console |
| 10            | 5                                                | 5700A Console |
| 19            | 4                                                | 5700A Console |
| 100           | 3                                                | 5700A Console |
| 190           | 2                                                | 5700A Console |
| 1 k           | 2                                                | 5700A Console |
| 1.9 k         | 2                                                | 5700A Console |
| 10 k          | 0.5                                              | 5700A Console |
| 19 k          | 1                                                | 5700A Console |

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|       |     |               |
|-------|-----|---------------|
| 100 k | 2   | 5700A Console |
| 190 k | 2.5 | 5700A Console |
| 1 M   | 3   | 5700A Console |
| 1.9 M | 3.5 | 5700A Console |
| 3 M   | 4   | 5700A Console |
| 10 M  | 4.5 | 5700A Console |
| 19 M  | 6   | 5700A Console |
| 30 M  | 15  | 5700A Console |
| 100 M | 25  | 5700A Console |
| 300 M | 60  | 5700A Console |

NVLAP Code: 20/E05  
DC Resistance

| Range in ohms | Best Uncertainty ( $\pm$ ) in ppm <sup>nom</sup> | Remarks       |
|---------------|--------------------------------------------------|---------------|
| 0             | 100                                              | 5500A Console |
| 2.0           | 55                                               | 5500A Console |
| 10.9          | 25                                               | 5500A Console |
| 11.9          | 25                                               | 5500A Console |

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|        |    |               |
|--------|----|---------------|
| 19     | 70 | 5500A Console |
| 30     | 70 | 5500A Console |
| 33     | 40 | 5500A Console |
| 109    | 21 | 5500A Console |
| 119    | 17 | 5500A Console |
| 190    | 13 | 5500A Console |
| 300    | 12 | 5500A Console |
| 330    | 11 | 5500A Console |
| 1.09 k | 10 | 5500A Console |
| 1.19 k | 10 | 5500A Console |
| 1.9 k  | 13 | 5500A Console |
| 3 k    | 12 | 5500A Console |
| 3.3 k  | 11 | 5500A Console |
| 10.9 k | 10 | 5500A Console |
| 11.9 k | 10 | 5500A Console |
| 19 k   | 12 | 5500A Console |
| 30 k   | 12 | 5500A Console |
| 33 k   | 11 | 5500A Console |

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|        |     |               |
|--------|-----|---------------|
| 109 k  | 10  | 5500A Console |
| 119 k  | 10  | 5500A Console |
| 190 k  | 24  | 5500A Console |
| 300 k  | 20  | 5500A Console |
| 330 k  | 20  | 5500A Console |
| 1.09 M | 16  | 5500A Console |
| 1.19 M | 15  | 5500A Console |
| 1.9 M  | 8   | 5500A Console |
| 3 M    | 8   | 5500A Console |
| 3.3 M  | 85  | 5500A Console |
| 10.9 M | 62  | 5500A Console |
| 11.9 M | 61  | 5500A Console |
| 19 M   | 30  | 5500A Console |
| 30 M   | 30  | 5500A Console |
| 33 M   | 550 | 5500A Console |
| 109 M  | 525 | 5500A Console |
| 119 M  | 525 | 5500A Console |
| 290 M  | 100 | 5500A Console |

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#### FLUKE CORPORATION PRIMARY STANDARDS LABORATORY

NVLAP Code: 20/E05

DC Resistance

At Factory Annex - Multifunction Calibrators Similar to Fluke 5720A

| Range in ohms | Best Uncertainty ( $\pm$ ) in ppm <sup>nom</sup> | Remarks       |
|---------------|--------------------------------------------------|---------------|
| 1             | 24.0                                             | 5720A Console |
| 1.9           | 20.0                                             | 5720A Console |
| 10            | 10.0                                             | 5720A Console |
| 19            | 8.4                                              | 5720A Console |
| 100           | 3.2                                              | 5720A Console |
| 190           | 2.6                                              | 5720A Console |
| 1 k           | 3.0                                              | 5720A Console |
| 1.9 k         | 2.5                                              | 5720A Console |
| 10 k          | 2.0                                              | 5720A Console |
| 19 k          | 2.2                                              | 5720A Console |
| 100 k         | 2.2                                              | 5720A Console |
| 190 k         | 2.4                                              | 5720A Console |
| 1 M           | 4.0                                              | 5720A Console |
| 1.9 M         | 4.7                                              | 5720A Console |

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#### FLUKE CORPORATION PRIMARY STANDARDS LABORATORY

NVLAP Code: 20/E05

DC Resistance

At Factory Annex - Multifunction Calibrators Similar to Fluke 5500A

| Range in ohms | Best Uncertainty ( $\pm$ ) in ppm <sup>nom</sup> | Remarks       |
|---------------|--------------------------------------------------|---------------|
| 2             | 100                                              | 5500A Console |
| 10.9          | 40                                               | 5500A Console |
| 11.9          | 40                                               | 5500A Console |
| 19            | 90                                               | 5500A Console |
| 30            | 90                                               | 5500A Console |
| 33            | 50                                               | 5500A Console |
| 109           | 40                                               | 5500A Console |
| 119           | 20                                               | 5500A Console |
| 190           | 20                                               | 5500A Console |
| 300           | 20                                               | 5500A Console |

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### FLUKE CORPORATION PRIMARY STANDARDS LABORATORY

|        |    |               |
|--------|----|---------------|
| 330    | 15 | 5500A Console |
| 1.1 k  | 15 | 5500A Console |
| 1.2 k  | 15 | 5500A Console |
| 1.9 k  | 15 | 5500A Console |
| 3 k    | 15 | 5500A Console |
| 3.3 k  | 15 | 5500A Console |
| 10.9 k | 15 | 5500A Console |
| 11.9 k | 15 | 5500A Console |
| 19 k   | 15 | 5500A Console |
| 30 k   | 15 | 5500A Console |
| 33 k   | 15 | 5500A Console |
| 109 k  | 15 | 5500A Console |
| 119 k  | 15 | 5500A Console |
| 190 k  | 25 | 5500A Console |
| 300 k  | 25 | 5500A Console |
| 330 k  | 25 | 5500A Console |
| 1.1 M  | 25 | 5500A Console |
| 1.2 M  | 25 | 5500A Console |

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|        |     |               |
|--------|-----|---------------|
| 1.9 M  | 25  | 5500A Console |
| 3.0 M  | 25  | 5500A Console |
| 3.3 M  | 100 | 5500A Console |
| 10.9 M | 100 | 5500A Console |
| 11.9 M | 100 | 5500A Console |
| 19 M   | 100 | 5500A Console |
| 30 M   | 100 | 5500A Console |
| 33 M   | 800 | 5500A Console |
| 109 M  | 800 | 5500A Console |
| 119 M  | 800 | 5500A Console |
| 290 M  | 800 | 5500A Console |

NVLAP Code: 20/E05  
DC Resistance

| Range in Ohms | Best Uncertainty ( $\pm$ ) in ppm <sup>res</sup> t | Remarks       |
|---------------|----------------------------------------------------|---------------|
| 0             | 20 $\mu$ ohms                                      | 5520A Console |
| 2             | 8.5                                                | 5520A Console |
| 10.9          | 2.5                                                | 5520A Console |

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|        |     |               |
|--------|-----|---------------|
| 11.9   | 2.5 | 5520A Console |
| 19     | 2.5 | 5520A Console |
| 30     | 2.8 | 5520A Console |
| 33     | 2.5 | 5520A Console |
| 109    | 2   | 5520A Console |
| 119    | 2   | 5520A Console |
| 190    | 2   | 5520A Console |
| 300    | 2.5 | 5520A Console |
| 330    | 2.5 | 5520A Console |
| 1.09 k | 2   | 5520A Console |
| 1.19 k | 2   | 5520A Console |
| 1.9 k  | 2   | 5520A Console |
| 3 k    | 2.5 | 5520A Console |
| 3.3 k  | 3.0 | 5520A Console |
| 10.9 k | 2.5 | 5520A Console |
| 11.9 k | 2.5 | 5520A Console |
| 19 k   | 2.5 | 5520A Console |
| 30 k   | 3   | 5520A Console |

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|        |     |               |
|--------|-----|---------------|
| 33 k   | 3   | 5520A Console |
| 109 k  | 3   | 5520A Console |
| 119 k  | 3   | 5520A Console |
| 190 k  | 3   | 5520A Console |
| 300 k  | 3.5 | 5520A Console |
| 330 k  | 3.5 | 5520A Console |
| 1.09 M | 4.5 | 5520A Console |
| 1.19 M | 4.5 | 5520A Console |
| 1.9 M  | 5   | 5520A Console |
| 3 M    | 6   | 5520A Console |
| 3.3 M  | 6   | 5520A Console |
| 10.9 M | 8   | 5520A Console |
| 11.9 M | 8   | 5520A Console |
| 19 M   | 20  | 5520A Console |
| 30 M   | 30  | 5520A Console |
| 33 M   | 30  | 5520A Console |
| 109 M  | 70  | 5520A Console |
| 119 M  | 70  | 5520A Console |

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|                 |      |                              |
|-----------------|------|------------------------------|
| 290 M           | 200  | 5520A Console                |
| 400 M           | 200  | 5520A Console                |
| 640 M           | 600  | 5520A Console                |
| 1.09 G          | 1000 | 5520A Console                |
| 2 to 30         |      | Factory Annex, 5520A Console |
| 33 to 109       | 12   | Factory Annex, 5520A Console |
| 119 to 1.19 M   | 7    | Factory Annex, 5520A Console |
| 1.9 M to 11.9 M | 12   | Factory Annex, 5520A Console |
| 19 M            | 25   | Factory Annex, 5520A Console |
| 30 M            | 75   | Factory Annex, 5520A Console |
| 33 M            | 75   | Factory Annex, 5520A Console |
| 109 M           | 120  | Factory Annex, 5520A Console |
| 119 M           | 150  | Factory Annex, 5520A Console |
| 290 M           | 550  | Factory Annex, 5520A Console |
| 400 M           | 800  | Factory Annex, 5520A Console |
| 640 M           | 1500 | Factory Annex, 5520A Console |
| 1090 M          | 2500 | Factory Annex, 5520A Console |

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DC Current

| Range                                  | Best Uncertainty ( $\pm$ ) in $\text{ppm}^{100^\circ\text{C}}$ | Remarks             |
|----------------------------------------|----------------------------------------------------------------|---------------------|
| to 19 $\mu\text{A}$                    | 10                                                             | Calibrators or DMMs |
| 100 $\mu\text{A}$ to 190 $\mu\text{A}$ | 4                                                              | Calibrators or DMMs |
| 1.0 mA to 1.9 mA                       | 4                                                              | Calibrators or DMMs |
| 10 mA to 19 mA                         | 9                                                              | Calibrators or DMMs |
| 100 mA to 190 mA                       | 10                                                             | Calibrators or DMMs |
| 1.0 A                                  | 11                                                             | Calibrators or DMMs |
| 1.9 A                                  | 10                                                             | Calibrators or DMMs |
| 10 A                                   | 22                                                             | Calibrators or DMMs |

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**NVLAP Code:** 20/E05  
DC Current

At Factory Annex - Multifunction Calibrators Similar to Fluke 5720A

| Range (±) in Amperes | Best Uncertainty (±) in ppm <sup>95%</sup> | Remarks       |
|----------------------|--------------------------------------------|---------------|
| 0                    | 3 (nA)                                     | 5500A Console |
| 190 μ                | 8                                          | 5500A Console |
| 1.9 m                | 7                                          | 5500A Console |
| 3.29 m               | 7                                          | 5500A Console |
| 19 m                 | 7                                          | 5500A Console |
| 32.9 m               | 7                                          | 5500A Console |
| 190 m                | 8                                          | 5500A Console |
| 329 m                | 8                                          | 5500A Console |
| 2.19 m               | 14                                         | 5500A Console |
| 11                   | 30                                         | 5500A Console |

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**NVLAP Code:** 20/E05  
DC Current

At Factory Annex - Multifunction Calibrators Similar to Fluke 5720A

| Range    | Best Uncertainty (±) in ppm <sup>95%</sup> | Remarks       |
|----------|--------------------------------------------|---------------|
| 19 μA    | 100                                        | 5720A Console |
| 190 μA   | 28                                         | 5720A Console |
| -190 μA  | 16                                         | 5720A Console |
| ± 1.9 mA | 8                                          | 5720A Console |
| ± 19 mA  | 12                                         | 5720A Console |
| 100 mA   | 12                                         | 5720A Console |
| ± 190 mA | 12                                         | 5720A Console |
| 1 A      | 19                                         | 5720A Console |
| ± 1.9 A  | 16                                         | 5720A Console |

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## FLUKE CORPORATION PRIMARY STANDARDS LABORATORY

 NVLAP Code: 20/E05  
DC Current

At Factory Annex - Multifunction Calibrators Similar to Fluke 5500A

| Range ( $\pm$ ) Amperes | Best Uncertainty ( $\pm$ ) in $\text{ppm}^{\text{max}}$ | Remarks       |
|-------------------------|---------------------------------------------------------|---------------|
| 190 $\mu$               | 58                                                      | 5500A Console |
| 1.9 m                   | 32                                                      | 5500A Console |
| 3.3 m                   | 29                                                      | 5500A Console |
| 19 m                    | 21                                                      | 5500A Console |
| 32.9 m                  | 20                                                      | 5500A Console |
| 190 m                   | 42                                                      | 5500A Console |
| 329 m                   | 40                                                      | 5500A Console |
| 2.29                    | 40                                                      | 5500A Console |
| 11                      | 65                                                      | 5500A Console |

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## FLUKE CORPORATION PRIMARY STANDARDS LABORATORY

 NVLAP Code: 20/E05  
DC Current
Range ( $\pm$ ) Amperes

| 0         | 100 (pA) | 5520A Console |
|-----------|----------|---------------|
| 190 $\mu$ | 10       | 5520A Console |
| 329 $\mu$ | 10       | 5520A Console |
| 1.9 m     | 9        | 5520A Console |
| 3.29 m    | 8        | 5520A Console |
| 19 m      | 9        | 5520A Console |
| 32.9 m    | 8        | 5520A Console |
| 190 m     | 9        | 5520A Console |
| 329 m     | 8        | 5520A Console |
| 1.09      | 19       | 5520A Console |
| 2.99      | 18       | 5520A Console |
| 11        | 30       | 5520A Console |
| 20        | 65       | 5520A Console |

190  $\mu$  to 329  $\mu$ 

Factory Annex, 5520A Console

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|          |         |                 |
|----------|---------|-----------------|
| 10.0 V   | 0.3 ppm | Transfer Method |
| 100.0 V  | 0.5 ppm | Transfer Method |
| 1000.0 V | 0.8 ppm | Transfer Method |

NVLAP Code: 20/E06  
DC Voltage

| Range (±) in Volts | Best Uncertainty (±) in ppm <sup>95%</sup> | Remarks       |
|--------------------|--------------------------------------------|---------------|
| 0                  | 0.5                                        | 5500A Console |
| 0.329              | 7.0                                        | 5500A Console |
| 3.29               | 5.5                                        | 5500A Console |
| 32.9               | 8.0                                        | 5500A Console |
| 50                 | 8.0                                        | 5500A Console |
| 329                | 8.0                                        | 5500A Console |
| 334                | 8.5                                        | 5500A Console |
| 900                | 7.0                                        | 5500A Console |
| 1020               | 7.0                                        | 5500A Console |

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NVLAP Code: 20/E06  
DC Voltage

At Factory Annex - Multifunction Calibrators Similar to Fluke 5720A

| Range     | Best Uncertainty (±) in ppm <sup>95%</sup> | Remarks       |
|-----------|--------------------------------------------|---------------|
| 100 mV    | 5.0                                        | 5720A Console |
| -100 mV   | 6.5                                        | 5720A Console |
| ±1.0 V    | 1.2                                        | 5720A Console |
| ±10.0 V   | 0.7                                        | 5720A Console |
| ±100.0 V  | 1.0                                        | 5720A Console |
| ±1000.0 V | 1.4                                        | 5720A Console |

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NVLAP Code: 20/E06  
DC Voltage

At Factory Annex - Multiproduct Calibrators Similar to Fluke 5500A

| Range (±) in Volts | Best Uncertainty (±) in ppm <sup>nom</sup> | Remarks       |
|--------------------|--------------------------------------------|---------------|
| 0.329              | 8                                          | 5500A Console |
| 3.29               | 7                                          | 5500A Console |
| 32.9               | 10                                         | 5500A Console |
| 50                 | 9                                          | 5500A Console |
| 329                | 9                                          | 5500A Console |
| 334                | 10                                         | 5500A Console |
| 900                | 9                                          | 5500A Console |
| 1020               | 9                                          | 5500A Console |

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NVLAP Code: 20/E06  
DC Voltage

| Range (±) in Volts | Best Uncertainty (±) in ppm <sup>nom</sup> | Remarks       |
|--------------------|--------------------------------------------|---------------|
| 0                  | 0.15 µV                                    | 5520A Console |
| 0.329              | 2                                          | 5520A Console |
| 1                  | 1.5                                        | 5520A Console |
| 3.29               | 16                                         | 5520A Console |
| 7                  | 6                                          | 5520A Console |
| 10                 | 1                                          | 5520A Console |
| 32.9               | 1.2                                        | 5520A Console |
| 50                 | 2                                          | 5520A Console |
| 329                | 2.2                                        | 5520A Console |
| 334                | 2.2                                        | 5520A Console |
| 900                | 2.5                                        | 5520A Console |
| 1020               | 2.2                                        | 5520A Console |

0 to 32.9  
33 to 1020

2.5  
4.5

Factory Annex, 5520A Console  
Factory Annex, 5520A Console

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FLUKE CORPORATION PRIMARY STANDARDS LABORATORY

NVLAP Code: 20/E09  
LF AC Voltage

Best Uncertainty ( $\pm$ ) in ppm<sup>nom</sup> /  
Frequency in Hertz

| Range  | 10  | 20  | 40  | 100 | 1k  | 10k | 20k  | 50k | 100k | 300k | 500k | 800k | 1 M  |
|--------|-----|-----|-----|-----|-----|-----|------|-----|------|------|------|------|------|
| 2 mV   | 500 | 970 | 720 | 980 | 500 | 850 | 1120 | 500 | 1170 | 1280 | 2060 | 2550 | 2910 |
| 6 mV   | 260 | 290 | 190 | 180 | 230 | 200 | 180  | 330 | 520  | 700  | 900  | 360  | 390  |
| 10 mV  | 130 | 230 | 110 | 180 | 250 | 140 | 140  | 210 | 340  | 240  | 640  | 360  | 390  |
| 20 mV  | 90  | 80  | 75  | 75  | 75  | 75  | 75   | 170 | 260  | 350  | 500  | 330  | 360  |
| 60 mV  | 80  | 80  | 60  | 48  | 37  | 38  | 43   | 62  | 120  | 230  | 270  | 330  | 370  |
| 100 mV | 35  | 70  | 21  | 44  | 34  | 22  | 26   | 41  | 70   | 140  | 140  | 210  | 180  |
| 200 mV | 35  | 23  | 19  | 19  | 19  | 19  | 19   | 30  | 60   | 100  | 110  | 180  | 190  |
| 600 mV | 20  | 65  | 17  | 10  | 16  | 9   | 10   | 12  | 12   | 80   | 80   | 80   | 80   |
| 1 V    | 120 | 31  | 14  | 10  | 13  | 13  | 10   | 22  | 10   | 80   | 100  | 100  | 80   |
| 2 V    | 20  | 15  | 20  | 9   | 8   | 8   | 8    | 15  | 10   | 90   | 100  | 80   | 80   |
| 6 V    | 25  | 16  | 15  | 9   | 8   | 9   | 8    | 21  | 11   | 100  | 100  | 80   | 80   |
| 10 V   | 20  | 40  | 13  | 10  | 9   | 9   | 10   | 10  | 15   | 80   | 100  | 100  | 90   |

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FLUKE CORPORATION PRIMARY STANDARDS LABORATORY

NVLAP Code: 20/E09  
LF AC Voltage

Best Uncertainty ( $\pm$ ) in ppm<sup>nom</sup> /  
Frequency in Hertz

| Range  | 10  | 20  | 40  | 100 | 1k  | 5k  | 8k   | 10k | 18k  | 20k  | 50k  | 90k  | 100k | 450k | 500k |
|--------|-----|-----|-----|-----|-----|-----|------|-----|------|------|------|------|------|------|------|
| 2 mV   | 500 | 970 | 720 | 980 | 500 | 850 | 1120 | 500 | 1170 | 1280 | 2060 | 2550 | 2910 |      |      |
| 6 mV   | 260 | 290 | 190 | 180 | 230 | 200 | 180  | 330 | 520  | 700  | 900  | 360  | 390  |      |      |
| 10 mV  | 130 | 230 | 110 | 180 | 250 | 140 | 140  | 210 | 340  | 240  | 640  | 360  | 390  |      |      |
| 20 mV  | 90  | 80  | 75  | 75  | 75  | 75  | 75   | 170 | 260  | 350  | 500  | 330  | 360  |      |      |
| 60 mV  | 80  | 80  | 60  | 48  | 37  | 38  | 43   | 62  | 120  | 230  | 270  | 330  | 370  |      |      |
| 100 mV | 35  | 70  | 21  | 44  | 34  | 22  | 26   | 41  | 70   | 140  | 140  | 210  | 180  |      |      |
| 200 mV | 35  | 23  | 19  | 19  | 19  | 19  | 19   | 30  | 60   | 100  | 110  | 180  | 190  |      |      |
| 600 mV | 20  | 65  | 17  | 10  | 16  | 9   | 10   | 12  | 12   | 80   | 80   | 80   | 80   |      |      |
| 1 V    | 120 | 31  | 14  | 10  | 13  | 13  | 10   | 22  | 10   | 80   | 100  | 100  | 80   |      |      |
| 2 V    | 20  | 15  | 20  | 9   | 8   | 8   | 8    | 15  | 10   | 90   | 100  | 80   | 80   |      |      |
| 6 V    | 25  | 16  | 15  | 9   | 8   | 9   | 8    | 21  | 11   | 100  | 100  | 80   | 80   |      |      |
| 10 V   | 20  | 40  | 13  | 10  | 9   | 9   | 10   | 10  | 15   | 80   | 100  | 100  | 90   |      |      |

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FLUKE CORPORATION PRIMARY STANDARDS LABORATORY

NVLAP Code: 20/E09  
AC Voltage

|      |      |    |    |    |    |    |    |    |     |
|------|------|----|----|----|----|----|----|----|-----|
| 3.0  | 1000 | 30 | 25 | 20 | 25 | 20 | 35 | 35 | 130 |
| 30   | 1000 | 35 | 27 | 20 | 20 | 25 | 45 | 65 |     |
| 300  |      | 36 | 25 | 25 | 25 | 25 |    |    |     |
| 1000 |      | 35 | 35 | 35 | 35 |    |    |    |     |

NVLAP Code: 20/E09  
AC Voltage

At Factory Annex - Multifunction Calibrators Similar to Fluke 5720A

Best Uncertainty ( $\pm$ ) in ppm<sup>res</sup> 1  
Frequency in Hertz

| Range  | 40 | 50 | 1 k | 20 k | 100 k | 300 k | 500 k | 1 M  |
|--------|----|----|-----|------|-------|-------|-------|------|
| 1.9 mV |    |    | 740 | 840  |       |       |       |      |
| 19 mV  | 90 | 90 | 90  | 270  | 420   |       |       | 1100 |
| 190 mV | 30 | 60 | 80  | 130  | 240   |       |       | 740  |
| 600 mV | 30 | 20 | 20  | 50   | 130   |       |       | 500  |
| 1 V    | 20 | 10 | 10  | 50   | 100   |       |       | 400  |

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|        |    |    |    |    |     |      |
|--------|----|----|----|----|-----|------|
| 2 V    |    | 20 | 20 |    |     | 400  |
| 3 V    | 30 | 20 | 20 | 50 | 180 | 670  |
| 10 V   | 20 | 10 | 10 | 40 | 140 | 400  |
| 20 V   |    | 10 | 10 |    |     | 400  |
| 30 V   | 30 | 20 | 20 | 60 | 330 | 1700 |
| 100 V  | 20 | 20 | 20 | 50 |     |      |
| 200 V  | 25 | 20 |    | 60 |     |      |
| 500 V  |    | 30 | 20 |    |     |      |
| 1100 V |    | 25 | 30 |    |     |      |

NVLAP Code: 20/E09  
AC Voltage

At Factory Annex - Multiproduct Calibrators Similar to Fluke 5500A

Best Uncertainty ( $\pm$ ) in ppm<sup>res</sup> 1  
Frequency in Hertz

| Range  | 10  | 45  | 1 k | 5 k | 10 k | 20 k | 50 k | 100 k | 500 k |
|--------|-----|-----|-----|-----|------|------|------|-------|-------|
| 0.03 V | 300 | 180 | 180 |     | 180  | 180  | 250  | 350   | 900   |
| 0.3 V  | 180 | 27  | 27  |     | 27   | 27   | 50   | 75    | 380   |

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AC Voltage

|        |     |    |    |    |    |                   |     |     |
|--------|-----|----|----|----|----|-------------------|-----|-----|
| 3.0 V  | 180 | 27 | 27 | 27 | 27 | 50                | 75  | 380 |
| 30 V   | 160 | 30 | 30 | 30 | 30 | 55                | 100 |     |
| 300 V  |     | 50 | 40 | 40 | 40 | 60                |     |     |
| 1000 V |     | 50 | 50 | 50 | 50 | 50 <sup>max</sup> |     |     |

NVLAP Code: 20/E09

AC Voltage

5520A Console

| Best Uncertainty ( $\pm$ ) in ppm <sup>max</sup> 1 |      |     |     |     |     |      |      |      |      |      |      |       |       |       |
|----------------------------------------------------|------|-----|-----|-----|-----|------|------|------|------|------|------|-------|-------|-------|
| Frequency in Hertz                                 |      |     |     |     |     |      |      |      |      |      |      |       |       |       |
| Range                                              | 9.5  | 10  | 45  | 1 k | 5 k | 10 k | 18 k | 20 k | 30 k | 50 k | 90 k | 100 k | 450 k | 500 k |
| 0.003                                              |      |     | 250 | 250 | 350 | 500  |      |      |      |      |      |       |       |       |
| 0.01                                               |      |     | 350 | 350 | 60  | 60   |      |      | 1050 |      |      |       |       |       |
| 0.03                                               | 1000 | 110 | 64  | 25  | 29  | 21   | 25   | 31   | 30   | 35   | 120  |       |       |       |
| 0.3                                                | 1000 | 45  | 25  | 16  | 16  | 16   | 16   | 20   | 40   | 40   | 18   |       |       |       |
| 3.0                                                | 1000 | 30  | 25  | 16  | 16  | 16   | 16   | 20   | 40   | 40   | 18   |       |       |       |
| 5.0                                                | 1000 | 60  | 50  | 40  | 40  | 40   | 40   | 40   | 40   | 40   | 40   |       |       |       |
| 30                                                 | 1000 | 35  | 26  | 18  | 18  | 18   | 18   | 20   | 40   | 60   |      |       |       |       |

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NVLAP Code: 20/E09

AC Voltage

Factory Annex 5520A Test Console

| Best Uncertainty ( $\pm$ ) in ppm <sup>max</sup> 1<br>Frequency in Hertz |      |     |     |     |      |      |      |       |       |
|--------------------------------------------------------------------------|------|-----|-----|-----|------|------|------|-------|-------|
| Range                                                                    | 9.5  | 10  | 45  | 1 k | 10 k | 20 k | 50 k | 100 k | 450 k |
| 0.003 V                                                                  |      |     | 400 | 400 | 400  |      |      |       |       |
| 0.03 V                                                                   | 1100 | 120 | 70  | 70  | 70   | 120  |      |       |       |
| 0.033 V                                                                  |      |     | 120 | 120 | 120  | 120  |      |       |       |
| 0.3 V                                                                    | 1100 | 50  | 35  | 32  | 32   | 32   | 50   | 90    | 250   |
| 0.33 V                                                                   |      |     | 80  | 80  | 80   | 80   | 30   | 50    | 200   |
| 3 V                                                                      | 1100 | 50  | 30  | 30  | 30   | 30   | 30   | 50    | 200   |
| 3.3 V                                                                    |      |     | 85  | 85  | 85   | 85   |      |       |       |

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### FLUKE CORPORATION PRIMARY STANDARDS LABORATORY

|                          |                                                                                                         |                                                                                                      |
|--------------------------|---------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| Two Wire                 |                                                                                                         |                                                                                                      |
| 10 pF to 1.1111 $\mu$ F  | $0.01 \cdot (0.002 \cdot C \cdot \mu F)^2 \cdot \text{kHz} + \frac{5 \cdot 10^{-17}}{C \cdot \mu F} \%$ | $0.01 \cdot (0.002 \cdot C \cdot \mu F)^2 \cdot \text{kHz} + \frac{5 \cdot 10^{-17}}{C \cdot \mu F}$ |
| 10 pF                    | 5%                                                                                                      | 5%                                                                                                   |
| 100 pF                   | 0.5%                                                                                                    | 0.5%                                                                                                 |
| 1000 pF                  | 0.06%                                                                                                   | 0.06%                                                                                                |
| 0.01 $\mu$ F             | 0.015%                                                                                                  | 0.017%                                                                                               |
| 0.1 $\mu$ F to 1 $\mu$ F | 0.015%                                                                                                  | 0.017%                                                                                               |

NVLAP Code: 20/E10  
Capacitance

| Range            | Best Uncertainty ( $\pm$ ) in ppm <sup>max</sup> | Remarks       |
|------------------|--------------------------------------------------|---------------|
| 350 pF @ 1000 Hz | 2500                                             | 5500A Console |
| 480 pF @ 1000 Hz | 2100                                             | 5500A Console |
| 600 pF @ 1000 Hz | 1300                                             | 5500A Console |
| 1 nF @ 1000 Hz   | 1000                                             | 5500A Console |
| 2 nF @ 1000 Hz   | 800                                              | 5500A Console |

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|                       |      |               |
|-----------------------|------|---------------|
| 7 nF @ 1000 Hz        | 710  | 5500A Console |
| 10.9 nF @ 1000 Hz     | 700  | 5500A Console |
| 20 nF @ 1000 Hz       | 700  | 5500A Console |
| 70 nF @ 1000 Hz       | 690  | 5500A Console |
| 200 nF @ 1000 Hz      | 690  | 5500A Console |
| 300 nF @ 1000 Hz      | 680  | 5500A Console |
| 700 nF @ 100 Hz       | 680  | 5500A Console |
| 2 $\mu$ F @ 100 Hz    | 690  | 5500A Console |
| 3 $\mu$ F @ 100 Hz    | 690  | 5500A Console |
| 7 $\mu$ F @ 100 Hz    | 690  | 5500A Console |
| 10.9 $\mu$ F @ 100 Hz | 690  | 5500A Console |
| 20 $\mu$ F @ 100 Hz   | 700  | 5500A Console |
| 30 $\mu$ F @ 100 Hz   | 710  | 5500A Console |
| 70 $\mu$ F @ 100 Hz   | 740  | 5500A Console |
| 200 $\mu$ F @ 100 Hz  | 1400 | 5500A Console |
| 300 $\mu$ F @ 100 Hz  | 1500 | 5500A Console |
| 330 $\mu$ F @ 50 Hz   | 1600 | 5500A Console |
| 1.1 mF @ 50 Hz        | 2400 | 5500A Console |

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FLUKE CORPORATION PRIMARY STANDARDS LABORATORY

NVLAP Code: 20/E10  
Capacitance  
At Factory Annex - Multiproduct Calibrators Similar to Fluke 5500A

| Range              | Best Uncertainty ( $\pm$ ) in $\text{ppm}^{\text{max}}$ | Remarks       |
|--------------------|---------------------------------------------------------|---------------|
| 350 pF @ 1000 Hz   | 3200                                                    | 5500A Console |
| 480 pF @ 1000 Hz   | 3000                                                    | 5500A Console |
| 600 pF @ 1000 Hz   | 1600                                                    | 5500A Console |
| 1 nF @ 1000 Hz     | 1600                                                    | 5500A Console |
| 2 nF @ 1000 Hz     | 1200                                                    | 5500A Console |
| 7 nF @ 1000 Hz     | 1200                                                    | 5500A Console |
| 10.9 nF @ 1000 Hz  | 1000                                                    | 5500A Console |
| 20 nF @ 1000 Hz    | 1000                                                    | 5500A Console |
| 70 nF @ 1000 Hz    | 820                                                     | 5500A Console |
| 200 nF @ 1000 Hz   | 820                                                     | 5500A Console |
| 300 nF @ 1000 Hz   | 820                                                     | 5500A Console |
| 700 nF @ 100 Hz    | 820                                                     | 5500A Console |
| 2 $\mu$ F @ 100 Hz | 850                                                     | 5500A Console |

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FLUKE CORPORATION PRIMARY STANDARDS LABORATORY

|                       |      |               |
|-----------------------|------|---------------|
| 3 $\mu$ F @ 100 Hz    | 850  | 5500A Console |
| 7 $\mu$ F @ 100 Hz    | 850  | 5500A Console |
| 10.9 $\mu$ F @ 100 Hz | 850  | 5500A Console |
| 20 $\mu$ F @ 100 Hz   | 850  | 5500A Console |
| 30 $\mu$ F @ 100 Hz   | 860  | 5500A Console |
| 70 $\mu$ F @ 100 Hz   | 900  | 5500A Console |
| 200 $\mu$ F @ 100 Hz  | 1500 | 5500A Console |
| 300 $\mu$ F @ 100 Hz  | 1550 | 5500A Console |
| 330 $\mu$ F @ 50 Hz   | 1700 | 5500A Console |
| 1.1 mF @ 50 Hz        | 2400 | 5500A Console |

NVLAP Code: 20/E10  
Capacitance

| Range            | Best Uncertainty ( $\pm$ ) in $\text{ppm}^{\text{max}}$ | Remarks       |
|------------------|---------------------------------------------------------|---------------|
| 190 pF @ 5000 Hz | 2000                                                    | 5520A Console |
| 350 pF @ 1000 Hz | 1800                                                    | 5520A Console |
| 480 pF @ 1000 Hz | 1650                                                    | 5520A Console |

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#### FLUKE CORPORATION PRIMARY STANDARDS LABORATORY

|                       |      |               |
|-----------------------|------|---------------|
| 600 pF @ 1000 Hz      | 1000 | 5520A Console |
| 1 nF @ 1000 Hz        | 900  | 5520A Console |
| 2 nF @ 1000 Hz        | 770  | 5520A Console |
| 7 nF @ 1000 Hz        | 700  | 5520A Console |
| 10.9 nF @ 1000 Hz     | 690  | 5520A Console |
| 20 nF @ 1000 Hz       | 685  | 5520A Console |
| 70 nF @ 1000 Hz       | 680  | 5520A Console |
| 109 nF @ 1000 Hz      | 680  | 5520A Console |
| 200 nF @ 1000 Hz      | 680  | 5520A Console |
| 300 nF @ 1000 Hz      | 680  | 5520A Console |
| 700 nF @ 100 Hz       | 680  | 5520A Console |
| 1.09 $\mu$ F @ 100 Hz | 680  | 5520A Console |
| 2 $\mu$ F @ 100 Hz    | 680  | 5520A Console |
| 3 $\mu$ F @ 100 Hz    | 680  | 5520A Console |
| 7 $\mu$ F @ 100 Hz    | 680  | 5520A Console |
| 10.9 $\mu$ F @ 100 Hz | 685  | 5520A Console |
| 20 $\mu$ F @ 100 Hz   | 700  | 5520A Console |
| 30 $\mu$ F @ 100 Hz   | 700  | 5520A Console |

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| 70 $\mu$ F @ 50 Hz  | 1280                     | 5520A Console                                     |
|---------------------|--------------------------|---------------------------------------------------|
| 109 $\mu$ F @ 50 Hz | 1320                     | 5520A Console                                     |
| Range               | 10 Second Charge Current | Best Uncertainty ( $\pm$ ) in ppm <sub>meas</sub> |
| 200 $\mu$ F         | 60 $\mu$ A               | 250                                               |
| 300 $\mu$ F         | 90 $\mu$ A               | 250                                               |
| 330 $\mu$ F         | 100 $\mu$ A              | 250                                               |
| 700 $\mu$ F         | 200 $\mu$ A              | 250                                               |
| 1.09 mF             | 300 $\mu$ A              | 250                                               |
| 1.1 mF              | 300 $\mu$ A              | 250                                               |
| 2 mF                | 600 $\mu$ A              | 250                                               |
| 3 mF                | 900 $\mu$ A              | 250                                               |
| 3.3 mF              | 1 mA                     | 250                                               |
| 10.9 mF             | 3 mA                     | 250                                               |
| 20 mF               | 6 mA                     | 250                                               |
| 30 mF               | 9 mA                     | 250                                               |
| 33 mF               | 10 mA                    | 250                                               |
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| Range                                | 30 mA | 250 | 5520A Console | Remarks                      |
|--------------------------------------|-------|-----|---------------|------------------------------|
| 110 mF                               |       |     |               |                              |
| 190 pF @ 5 kHz                       |       |     |               | Factory Annex, 5520A Console |
| 350 pF @ 1 kHz                       |       |     |               | Factory Annex, 5520A Console |
| 480 pF @ 1 kHz                       |       |     |               | Factory Annex, 5520A Console |
| 600 pF @ 1 kHz                       |       |     |               | Factory Annex, 5520A Console |
| 1000 pF @ 1 kHz                      |       |     |               | Factory Annex, 5520A Console |
| 2000 pF @ 1 kHz                      |       |     |               | Factory Annex, 5520A Console |
| 7000 pF @ 1 kHz                      |       |     |               | Factory Annex, 5520A Console |
| .7 $\mu$ F to 30 $\mu$ F @ 100 Hz    |       |     |               | Factory Annex, 5520A Console |
| 70 $\mu$ F to 109 $\mu$ F @ 50 Hz    |       |     |               | Factory Annex, 5520A Console |
| 200 $\mu$ F to 110 mF <sup>max</sup> |       |     |               | Factory Annex, 5520A Console |

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| Range Phase | 60   | 65   | 400  | 1 k  | 5 k  | 10 k  | Mode    |
|-------------|------|------|------|------|------|-------|---------|
| 0           |      |      |      |      |      |       | ACV/ACC |
| 0           | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.025 | ACV/ACV |
| 60          | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.025 | ACV/ACV |
| 90          | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.025 | ACV/ACV |

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### CALIBRATION LABORATORIES

#### FLUKE CORPORATION PRIMARY STANDARDS LABORATORY

| Range<br>Phase<br>(degrees) | Reference<br>Volts | Signal Amps | Frequency Hz | Best Uncertainty ( $\pm$ ) in<br>degrees <sup>msc-1</sup> | Remarks |
|-----------------------------|--------------------|-------------|--------------|-----------------------------------------------------------|---------|
| 5520 A Console              |                    |             |              |                                                           |         |
| 0                           | 0.03               | 0.3         | 65           | 0.015                                                     | ACV/ACC |
| 0                           | 0.03               | 0.3         | 1 k          | 0.025                                                     | ACV/ACC |
| 0                           | 0.03               | 0.3         | 30 k         | 0.5                                                       | ACV/ACC |
| 0                           | 0.2                | 2           | 65           | 0.015                                                     | ACV/ACC |
| 0                           | 0.05               | 5           | 65           | 0.022                                                     | ACV/ACC |
| 0                           | 0.05               | 5           | 400          | 0.025                                                     | ACV/ACC |
| 60                          | 0.03               | 0.3         | 65           | 0.015                                                     | ACV/ACC |
| 60                          | 0.2                | 2           | 65           | 0.015                                                     | ACV/ACC |
| 60                          | 0.2                | 20          | 65           | 0.015                                                     | ACV/ACC |
| 60                          | 0.2                | 20          | 400          | 0.030                                                     | ACV/ACC |
| 0                           | 3.3                | 0.3         | 65           | 0.016                                                     | ACV/ACC |

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### CALIBRATION LABORATORIES

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| Range<br>Phase<br>(degrees) | Reference<br>Volts | Signal Amps | Frequency Hz | Best Uncertainty ( $\pm$ ) in<br>degrees <sup>msc-1</sup> | Remarks |
|-----------------------------|--------------------|-------------|--------------|-----------------------------------------------------------|---------|
| 0                           | 3.3                | 2           | 65           | 0.020                                                     | ACV/ACC |
| 0                           | 3.3                | 5           | 65           | 0.016                                                     | ACV/ACC |
| 0                           | 3.3                | 5           | 400          | 0.030                                                     | ACV/ACC |
| 90                          | 3.3                | 0.3         | 65           | 0.020                                                     | ACV/ACC |
| 90                          | 3.3                | 2           | 65           | 0.018                                                     | ACV/ACC |
| 90                          | 3.3                | 20          | 65           | 0.018                                                     | ACV/ACC |
| 90                          | 3.3                | 20          | 400          | 0.030                                                     | ACV/ACC |
| 0                           | 33                 | 0.3         | 65           | 0.020                                                     | ACV/ACC |
| 0                           | 33                 | 2           | 65           | 0.018                                                     | ACV/ACC |
| 0                           | 33                 | 5           | 65           | 0.016                                                     | ACV/ACC |
| 0                           | 33                 | 5           | 400          | 0.030                                                     | ACV/ACC |
| 90                          | 33                 | 0.3         | 65           | 0.018                                                     | ACV/ACC |
| 90                          | 33                 | 2           | 65           | 0.022                                                     | ACV/ACC |
| 90                          | 33                 | 20          | 65           | 0.023                                                     | ACV/ACC |
| 90                          | 33                 | 20          | 400          | 0.030                                                     | ACV/ACC |
| 0, 60, 90                   | 3                  | 3           | 65           | 0.015                                                     | ACV/ACV |
| 0, 60, 90                   | 3                  | 3           | 400          | 0.020                                                     | ACV/ACV |
| 0, 60, 90                   | 3                  | 3           | -1 k         | 0.020                                                     | ACV/ACV |

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|           |    |   |      |       |         |
|-----------|----|---|------|-------|---------|
| 0, 60, 90 | 3  | 3 | 5 k  | 0.025 | ACV/ACV |
| 0, 60, 90 | 3  | 3 | 10 k | 0.025 | ACV/ACV |
| 0, 60, 90 | 3  | 3 | 30 k | 0.300 | ACV/ACV |
| 90        | 30 | 3 | 65   | 0.015 | ACV/ACV |
| 90        | 50 | 3 | 65   | 0.016 | ACV/ACV |

Phase  
Factory Annex, 5520A Console

| Range in degrees | Frequency in Hz | Best Uncertainty (±) in degrees <sup>m=1</sup> |
|------------------|-----------------|------------------------------------------------|
| 0 to 90          | 65 to 1 k       | 0.025                                          |
| 0 to 90          | 5 k to 10 k     | 0.1                                            |
| 0 to 90          | 30 k            | 0.5                                            |

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FLUKE CORPORATION PRIMARY STANDARDS LABORATORY

TIME AND FREQUENCY

NVLAP Code: 20/F01

| Range       | Best Uncertainty (±) <sup>m=1</sup>        | Remarks       |
|-------------|--------------------------------------------|---------------|
| 10 MHz      | 1 mHz                                      | GPS Console   |
| Range in Hz | Best Uncertainty (±) in ppm <sup>m=1</sup> | Remarks       |
| 119 to 120  | 1                                          | 5500A Console |
| 1000        | 1                                          | 5500A Console |
| 100000      | 1                                          | 5500A Console |

NVLAP Code: 20/F01

Frequency

At Factory Annex Multiproduct Calibrators Similar to Fluke 5500A

| Range in Hz | Best Uncertainty (±) in ppm <sup>m=1</sup> | Remarks       |
|-------------|--------------------------------------------|---------------|
| 119         | 5                                          | 5500A Console |
| 120         | 5                                          | 5500A Console |
| 1000        | 5                                          | 5500A Console |
| 100000      | 5                                          | 5500A Console |

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| Frequency       | Range in Hz | Best Uncertainty ( $\pm$ ) in ppm <sup>nom</sup> | Remarks                      |
|-----------------|-------------|--------------------------------------------------|------------------------------|
| 119             |             | 0.10                                             | 5520A Console                |
| 120             |             | 0.10                                             | 5520A Console                |
| 1000            |             | 0.10                                             | 5520A Console                |
| 100000          |             | 0.10                                             | 5520A Console                |
| 119 to 100000 k |             | 0.8                                              | Factory Annex, 5520A Console |

### THERMODYNAMICS

NVLAP Code: 20/T03  
Temperature

| Range in °C | Best Uncertainty ( $\pm$ ) in mK <sup>nom</sup> | Remarks |
|-------------|-------------------------------------------------|---------|
| -40 to -197 | 11                                              |         |
| -1 to -40   | 8                                               |         |
| -1 to 1     | 5                                               |         |
| 0.01        | 4.5                                             |         |
| 1 to 150    | 10                                              |         |

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| Range in °C                                                        | Best Uncertainty ( $\pm$ ) in °C <sup>nom</sup> | Remarks                                                    |
|--------------------------------------------------------------------|-------------------------------------------------|------------------------------------------------------------|
| 150 to 350                                                         | 15                                              |                                                            |
| NVLAP Code: 20/T06<br>Thermocouple Temperature                     |                                                 |                                                            |
| Simulated TC Temperature with UUT Sourcing, 5500 Console Measuring |                                                 |                                                            |
| 0                                                                  | 0.03                                            | 10 $\mu$ V/C Linear Mode, Voltage<br>Simulates Temperature |
| 100                                                                | 0.03                                            | 10 $\mu$ V/C Linear Mode, Voltage<br>Simulates Temperature |
| -100                                                               | 0.03                                            | 10 $\mu$ V/C Linear Mode, Voltage<br>Simulates Temperature |
| 1000                                                               | 0.04                                            | 10 $\mu$ V/C Linear Mode, Voltage<br>Simulates Temperature |
| -1000                                                              | 0.04                                            | 10 $\mu$ V/C Linear Mode, Voltage<br>Simulates Temperature |
| 10000                                                              | 0.08                                            | 10 $\mu$ V/C Linear Mode, Voltage<br>Simulates Temperature |
| -10000                                                             | 0.08                                            | 10 $\mu$ V/C Linear Mode, Voltage<br>Simulates Temperature |

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|        |       |                                                            |
|--------|-------|------------------------------------------------------------|
| -100   | 0.02  | 10 $\mu$ V/C Linear Mode, Voltage<br>Simulates Temperature |
| 1000   | 0.025 | 10 $\mu$ V/C Linear Mode, Voltage<br>Simulates Temperature |
| -1000  | 0.025 | 10 $\mu$ V/C Linear Mode, Voltage<br>Simulates Temperature |
| 10000  | 0.07  | 10 $\mu$ V/C Linear Mode, Voltage<br>Simulates Temperature |
| -10000 | 0.07  | 10 $\mu$ V/C Linear Mode, Voltage<br>Simulates Temperature |

### Simulated TC Temperature with UUT Measurement, 5520A Console Sourcing

|        |      |                                                            |
|--------|------|------------------------------------------------------------|
| 0      | 0.02 | 10 $\mu$ V/C Linear Mode, Voltage<br>Simulates Temperature |
| 10000  | 0.12 | 10 $\mu$ V/C Linear Mode, Voltage<br>Simulates Temperature |
| -10000 | 0.12 | 10 $\mu$ V/C Linear Mode, Voltage<br>Simulates Temperature |
| 30000  | 0.24 | 10 $\mu$ V/C Linear Mode, Voltage<br>Simulates Temperature |

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|                              |          |                                                            |
|------------------------------|----------|------------------------------------------------------------|
| -30000                       | 0.24     | 10 $\mu$ V/C Linear Mode, Voltage<br>Simulates Temperature |
| Factory Annex, 5520A Console |          |                                                            |
| Range in $^{\circ}$ C        |          |                                                            |
| 0 to $\pm$ 1000              | Function | Best Uncertainty ( $\pm$ ) in $^{\circ}$ C <sub>max</sub>  |
| $\pm$ 10000                  | Source   | 0.06                                                       |
| 0, 23                        | Source   | 0.1                                                        |
| $\pm$ 10000                  | Measure  | 0.04                                                       |
| $\pm$ 30000                  | Measure  | 0.15                                                       |
|                              | Measure  | 0.25                                                       |

1. Represents an expanded uncertainty at a level of confidence of 99%; coverage factor  $k$  is determined by the test statistics.
2. Approximate value. Actual value determined by the test statistics.
3. E = Actual Voltage.
4. 1000 V Limit is 8 kHz.
5. 500 kHz @ 0.33 V
6. 90 kHz @ 30 V
7. 18 kHz @ 300 V, 8 kHz for voltage  $> = 1000$  V
8. 5 kHz @ 1000 V
9. Above 200  $\mu$ F the method of calibration is a charge technique with charge currents ranging from 60  $\mu$ A at 200  $\mu$ F to 30 mA at 110 mF.

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ISO/IEC 17025:1999  
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**CALIBRATION LABORATORIES**

**CDRH X-RAY CALIBRATION LABORATORY**  
12720 Twinbrook Parkway, HFZ-143  
Rockville, MD 20857  
Mr. Frank Cerra  
Phone: 301-443-2536 x123 Fax: 301-443-9101  
E-Mail: fxc@cdhrh.fda.gov  
URL: <http://www.fda.gov/cdrh>

NVLAP LAB CODE 105018-0

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This facility has demonstrated compliance with the NVLAP Criteria for Calibration Laboratories under the field of Ionizing Radiation for the following:

| <i>Procedures/Instruments</i>     | <i>Radiation Types</i>                                                                                                                                                                                                          |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Calibration of Survey Instruments | X-ray Beam Codes M30, M50, L80, L100, and M100 over the Exposure Rate Range 2 mR/s to 100 mR/s, and the H50 Beam Code over the range 0.5 mR/h to 4 mR/s, with total uncertainty in the reference field value of $\pm 5$ percent |

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ISO/IEC 17025:1999  
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**CALIBRATION LABORATORIES**

**CDRH X-RAY CALIBRATION LABORATORY**

Calibration of Instruments for Diagnostic Level

X-ray Beam Codes M20, M30, M50, L80, L100, and M100 over the Exposure Rate Range 2 mR/s to 100 mR/s, with total uncertainty in the reference field value of  $\pm 3$  percent

Mammography entrance Beam Codes Mo/Mo25, Mo/Mo28, Mo/Mo30, Mo/Mo35, Mo/Rh28, Mo/Rh32, Rh/Rh30, and Rh/Rh35 over the Exposure Rate Range 5 mR/s to 200 mR/s, with total uncertainty in the reference field value of  $\pm 3$  percent

Mammography exit Beam Codes Mo/Mo25X, Mo/Mo28X, Mo/Mo30X, Mo/Mo35X, Rh/Rh30X, and Rh/Rh35X over the Exposure Rate Range 2 mR/s to 17 mR/s, with total uncertainty in the reference field value of  $\pm 3$  percent

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### CDRH X-RAY CALIBRATION LABORATORY

Calibration of Reference-Class Instruments X-ray Beam Codes M20, M30, M50, L80, L100, and M100 over the Exposure Rate Range 2 mR/s to 100 mR/s, with total uncertainty in the reference field value of  $\pm 3$  percent.

Mammography entrance Beam Codes Mo/Mo25, Mo/Mo 28, Mo/Mo 30, Mo/Mo 35, Mo/Rh 28, Mo/Rh 32, Rh/Rh 30, and Rh/Rh 35 over the Exposure Rate Range 5 mR/s to 200 mR/s, with total uncertainty in the reference field value of  $\pm 3$  percent.

Mammography exit Beam Codes Mo/Mo 25X, Mo/Mo 28X, Mo/Mo 30X, Mo/Mo 35X, Rh/Rh 30X, and Rh/Rh 35X over the Exposure Rate Range 2 mR/s to 17 mR/s, with total uncertainty in the reference field value of  $\pm 3$  percent.

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CALIBRATION LABORATORIES NVLAP LAB CODE 105020-0

### PACIFIC NORTHWEST NATIONAL LABORATORY / BATTELLE

Battelle Boulevard  
P.O. Box 999  
Richland, WA 99352  
Mr. R. Kim Piper  
Phone: 509-376-6187 Fax: 509-376-1992  
E-Mail: kim.piper@pnl.gov  
URL: <http://www.pnl.gov/eshs/>

This facility has demonstrated compliance with the NVLAP Criteria for Calibration Laboratories under the field of Ionizing Radiation for the following:

| Calibration Category              | Radiation Type or Beam Code | Nominal Intensity Range <sup>(see 1)</sup> | Uncertainty of Reference Field ( $\pm$ per $t_2$ ) |
|-----------------------------------|-----------------------------|--------------------------------------------|----------------------------------------------------|
| CALIBRATION OF SURVEY INSTRUMENTS |                             |                                            |                                                    |
| Gamma                             | <sup>241</sup> Am           | 0.125 R/h                                  | 5.2%                                               |
|                                   | <sup>137</sup> Cs           | 0.1 to 250 R/h                             | 1.5%                                               |
|                                   | <sup>60</sup> Co            | 4 to 60,000 R/h                            | 1.5%                                               |
| X-ray                             | M30                         | 3 to 500 R/h                               | 1.5%                                               |
|                                   | M50                         | 4 to 600 R/h                               | 1.5%                                               |
|                                   | M60                         | 3 to 450 R/h                               | 1.5%                                               |
|                                   | M100                        | 3 to 500 R/h                               | 1.5%                                               |
|                                   | M150                        | 4 to 550 R/h                               | 1.5%                                               |

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|         |                                   |       |
|---------|-----------------------------------|-------|
| M200    | 4 to 650 R/h                      | 1.5%  |
| S60     | 1 to 175 R/h                      | 1.5%  |
| S75     | 5 to 700 R/h                      | 1.5%  |
| H40     | 0.02 to 4 R/h                     | 1.5%  |
| H50     | 0.05 to 10 R/h                    | 1.5%  |
| H100    | 0.02 to 3 R/h                     | 1.5%  |
| H150    | 1 to 15 R/h                       | 1.5%  |
| H200    | 0.9 to 9 R/h                      | 1.5%  |
| H250    | 0.9 to 9 R/h                      | 1.5%  |
| H300    | 0.6 to 3 R/h                      | 1.5%  |
| Beta    | <sup>204</sup> Tl                 | 3.3%  |
|         | <sup>90</sup> Sr/ <sup>90</sup> Y | 3.3%  |
| Neutron | <sup>252</sup> Cf Bare            | 14.0% |
|         | <sup>252</sup> Cf Moderated       | 21.9% |

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PACIFIC NORTHWEST NATIONAL LABORATORY / BATTELLE

Calibration Category Radiation Type or Beam Code Nominal Range<sup>new 1</sup> Uncertainty of Delivered Quantity ( $\pm$ )<sup>new 1,2</sup>

IRRADIATION OF PERSONNEL DOSIMETERS

|       |                   |            |      |
|-------|-------------------|------------|------|
| Gamma | <sup>241</sup> Am | ≥ 0.002 R  | 5.4% |
|       | <sup>137</sup> Cs | ≥ 0.020 R  | 1.6% |
|       | <sup>60</sup> Co  | ≥ 0.025 R  | 1.6% |
| X-ray | M30               | ≥ 0.025 R  | 2.4% |
|       | M50               | ≥ 0.035 R  | 2.4% |
|       | M60               | ≥ 0.025 R  | 2.4% |
|       | M100              | ≥ 0.025 R  | 2.4% |
|       | M150              | ≥ 0.035 R  | 2.4% |
|       | M200              | ≥ 0.035 R  | 2.4% |
|       | S60               | ≥ 0.010 R  | 2.4% |
|       | S75               | ≥ 0.040 R  | 2.4% |
|       | H40               | ≥ 0.0002 R | 2.4% |

December 31, 2002

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CALIBRATION LABORATORIES  
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 PACIFIC NORTHWEST NATIONAL LABORATORY / BATTELLE

|         |                                |                  |       |
|---------|--------------------------------|------------------|-------|
| Beta    | H50                            | $\geq 0.0005$ R  | 2.4%  |
|         | H100                           | $\geq 0.0002$ R  | 2.4%  |
|         | H150                           | $\geq 0.008$ R   | 2.4%  |
|         | H200                           | $\geq 0.008$ R   | 2.4%  |
|         | H250                           | $\geq 0.008$ R   | 2.4%  |
|         | H300                           | $\geq 0.005$ R   | 2.4%  |
| Neutron | $^{234}\text{Tl}$              | $\geq 0.015$ rad | 3.6%  |
|         | $^{90}\text{Sr}/^{90}\text{Y}$ | $\geq 0.007$ rad | 3.6%  |
| Neutron | $^{252}\text{Cf}$ Bare         | $\geq 0.001$ rem | 14.1% |
|         | $^{252}\text{Cf}$ Moderated    | $\geq 0.002$ rem | 22.4% |

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| CALIBRATION OF REFERENCE-CLASS INSTRUMENTS |                             |                                          |                                                             |
|--------------------------------------------|-----------------------------|------------------------------------------|-------------------------------------------------------------|
| Calibration Category                       | Radiation Type or Beam Code | Nominal Intensity Range <sup>unc 3</sup> | Uncertainty of Reference Field ( $\pm$ ) <sup>unc 1,2</sup> |
| Gamma                                      | $^{241}\text{Am}$           | 0.125 R/h                                | 5.2%                                                        |
|                                            | $^{137}\text{Cs}$           | 0.1 to 250 R/h                           | 1.5%                                                        |
|                                            | $^{60}\text{Co}$            | 4 to 60,000 R/h                          | 1.5%                                                        |
| X-ray                                      | M30                         | 3 to 500 R/h                             | 1.5%                                                        |
|                                            | M50                         | 4 to 600 R/h                             | 1.5%                                                        |
|                                            | M60                         | 3 to 450 R/h                             | 1.5%                                                        |
|                                            | M100                        | 3 to 500 R/h                             | 1.5%                                                        |
|                                            | M150                        | 4 to 550 R/h                             | 1.5%                                                        |
|                                            | M200                        | 4 to 650 R/h                             | 1.5%                                                        |
|                                            | S60                         | 1 to 175 R/h                             | 1.5%                                                        |
|                                            | S75                         | 5 to 700 R/h                             | 1.5%                                                        |
|                                            | H40                         | 0.02 to 4 R/h                            | 1.5%                                                        |
|                                            | H50                         | 0.05 to 10 R/h                           | 1.5%                                                        |

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|                                   |                    |       |
|-----------------------------------|--------------------|-------|
| H100                              | 0.02 to 3 R/h      | 1.5%  |
| H150                              | 1 to 15 R/h        | 1.5%  |
| H200                              | 0.9 to 9 R/h       | 1.5%  |
| H250                              | 0.9 to 9 R/h       | 1.5%  |
| H300                              | 0.6 to 3 R/h       | 1.5%  |
| Beta                              |                    |       |
| <sup>204</sup> Tl                 | 0.9 rad/h          | 3.3%  |
| <sup>90</sup> Sr/ <sup>90</sup> Y | 0.4 to 19 rad/h    | 3.3%  |
| Neutron                           |                    |       |
| <sup>252</sup> Cf Bare            | 0.014 to 4.8 rad/h | 14.0% |
| <sup>252</sup> Cf Moderated       | 0.004 to 1.1 rad/h | 21.9% |

1. Values listed at the 95% confidence level.
2. Uncertainties are valid for nominal intensity range listed.
3. For calibration outside of the nominal intensity range shown, uncertainties would be determined commensurate with the parameters of the reference field calibration.

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CALIBRATION LABORATORIES NVLAP LAB CODE 105023-0

INSTRON FORCE CALIBRATION LABORATORY

100 Royall Street  
 Canton, MA 02021  
 Dr. Anatoly Perlov  
 Phone: 781-575-5479 Fax: 781-575-5767  
 E-Mail: Anatoly\_Perlov@instron.com  
 URL: <http://www.instron.com>

| MECHANICAL              |                                                   |  |                    |
|-------------------------|---------------------------------------------------|--|--------------------|
| NVLAP Code: 20/M06      |                                                   |  |                    |
| Force                   |                                                   |  |                    |
| Range                   | Best Uncertainty ( $\pm$ ) <sup>years 1,2,3</sup> |  | Remarks            |
| Applied Force in Pounds |                                                   |  |                    |
| 0.1 to 130000           | 0.005%                                            |  | Primary Standard   |
| 130000 to 240000        | 0.005%                                            |  | Secondary Standard |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .
2. Uncertainty of the voltage ratio is  $<0.1$  microvolt per volt.
3. Uncertainty of the measured value is determined by the statistics of the test and the artifact tested but are typically better than  $\pm 0.05\%$  for class AA instruments,  $\pm 0.25\%$  for class A instruments and  $\pm 0.1\%$  for class A1 instruments.

September 30, 2002

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## CALIBRATION LABORATORIES

NVLAP LAB CODE 200012-0

### IPS CORPORATION

1878-1, Harumiya Ono, Tatsuno-machi  
Kamiiina-gun, Nagano-ken, PO Box 399-0601  
Nagano 399-0601  
JAPAN

Mr. Osamu Kubota  
Phone: +81-266-44-5200 Fax: +81-266-44-5300  
E-Mail: kubota@ips-emc.co.jp  
URL: http://www.ips-emc.co.jp

### ELECTROMAGNETICS - RF Microwave

NVLAP Code: 20/R08  
Microwave Antenna Parameters

| Range                                        | Best Uncertainty ( $\pm$ ) <sup>year 1</sup> | Remarks                   |
|----------------------------------------------|----------------------------------------------|---------------------------|
| Dipole Antenna (such as the VHA9103/UHA9105) |                                              |                           |
| 30 to 80 MHz (tuned 80 MHz)                  | 1.1 dB                                       | Horizontal Antenna Factor |
| 30 to 300 MHz                                | 1.1 dB                                       | Horizontal Antenna Factor |
| 300 to 1000 MHz                              | 1.3 dB                                       | Horizontal Antenna Factor |
| Biconical Antenna (such as the BBA9106)      |                                              |                           |
| 30 to 300 MHz                                | 1.2 dB                                       | Horizontal Antenna Factor |
| Log-Periodic Antenna (such as the UHALP9107) |                                              |                           |
| 300 to 1000 MHz                              | 1.2 dB                                       | Horizontal Antenna Factor |

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## CALIBRATION LABORATORIES

NVLAP LAB CODE 200012-0

### IPS CORPORATION

1878-1, Harumiya Ono, Tatsuno-machi  
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JAPAN

Mr. Osamu Kubota  
Phone: +81-266-44-5200 Fax: +81-266-44-5300  
E-Mail: kubota@ips-emc.co.jp  
URL: http://www.ips-emc.co.jp

|                                       |        |                           |
|---------------------------------------|--------|---------------------------|
| Bi-log Antenna (such as the CBL6112B) |        |                           |
| 30 to 300 MHz                         | 1.4 dB | Horizontal Antenna Factor |
| 300 to 1000 MHz                       | 1.4 dB | Horizontal Antenna Factor |
| L1SN                                  |        |                           |
| 0.1 to 30 MHz                         | 0.5 dB | Impedance                 |
| 0.1 to 30 MHz                         | 0.5 dB | Insertion Loss            |
| CDN                                   |        |                           |
| 0.1 to 10 MHz                         | 1.2 dB | Impedance                 |
| 10 to 30 MHz                          | 0.7 dB | Impedance                 |
| 30 to 100 MHz                         | 0.6 dB | Impedance                 |
| 100 to 230 MHz                        | 0.8 dB | Impedance                 |
| 0.1 to 10 MHz                         | 0.5 dB | Insertion Loss            |

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CALIBRATION LABORATORIES NVLAP LAB CODE 200012-0

**IPS CORPORATION**

|                |         |                    |
|----------------|---------|--------------------|
| 10 to 230 MHz  | 0.5 dB  | Insertion Loss     |
| RF Amplifier   |         |                    |
| 10 to 1000 MHz | 1.4 dB  | Gain               |
| ESD Simulators |         |                    |
| 0 to 15 kV     | 0.6 dB  | Amplitude          |
| 0 to 15 kV     | 46.9 pS | Time at 500 pS/div |
| EFT/Burst      |         |                    |
| 0 to 2 kV      | 0.7 dB  | Amplitude          |
| 1 to 2 kV      | 46.9 pS | Time at 500 pS/div |
| EM Clamp       |         |                    |
| 0.1 to 230 MHz | 0.5 dB  | Insertion Loss     |
| Current Probe  |         |                    |
| 0.1 to 230 MHz | 0.5 dB  | Insertion Loss     |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .

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CALIBRATION LABORATORIES NVLAP LAB CODE 20029-0

**GE INDUSTRIAL SYSTEMS**

92 Otis Street  
 Rome, NY 13441  
 Mr. Timothy S. Eldred  
 Phone: 315-334-7605 Fax: 315-334-7660  
 E-Mail: Timothy.Eldred@indsys.ge.com

**DIMENSIONAL**

NVLAP Code: 20/D03

Gage Blocks - Steel and Chrome Carbide

| Range             | Best Uncertainty ( $\pm y_{\text{max}}$ ) | Remarks                          |
|-------------------|-------------------------------------------|----------------------------------|
| thru 1.0 in       | 2.8 $\mu\text{in}$                        | Laser Interferometer Height Gage |
| > 1.0 thru 2.0 in | 3.2 $\mu\text{in}$                        | Laser Interferometer Height Gage |
| > 2.0 thru 3.0 in | 3.6 $\mu\text{in}$                        | Laser Interferometer Height Gage |
| > 3.0 thru 4.0 in | 4.0 $\mu\text{in}$                        | Laser Interferometer Height Gage |

**ELECTROMAGNETICS/DC-LOW FREQUENCY**

NVLAP Code: 20/E05

DC Resistance

| Value in ohms | Best Uncertainty in ppm ( $\pm y_{\text{max}}$ ) | Remarks |
|---------------|--------------------------------------------------|---------|
| 0.1           | 1.0                                              |         |
| 1             | 1.0                                              |         |
| 10            | 1.0                                              |         |

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CALIBRATION LABORATORIES NVLAP LAB CODE 200029-0

### GE INDUSTRIAL SYSTEMS

|       |      |
|-------|------|
| 100   | 1.0  |
| 1 k   | 1.5  |
| 10 k  | 1.5  |
| 100 k | 4.0  |
| 1 M   | 4.6  |
| 10 M  | 6.2  |
| 100 M | 13.4 |

NVLAP Code: 20/E06

DC Voltage

| Range in Volts | Best Uncertainty in ppm ( $\pm$ ) <sup>1</sup> | Remarks                                                                    |
|----------------|------------------------------------------------|----------------------------------------------------------------------------|
| 0.1            | 3                                              | Zener Reference Diodes, Standard Cells,<br>High Level MM's and Calibrators |
| 1.0            | 1.5                                            | Zener Reference Diodes, Standard Cells,<br>High Level MM's and Calibrators |
| 10.0           | 1.2                                            | Zener Reference Diodes, Standard Cells,<br>High Level MM's and Calibrators |
| 100.0          | 1.5                                            | Zener Reference Diodes, Standard Cells,<br>High Level MM's and Calibrators |

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### GE INDUSTRIAL SYSTEMS

|        |     |                                                                            |
|--------|-----|----------------------------------------------------------------------------|
| 1000.0 | 2.0 | Zener Reference Diodes, Standard Cells,<br>High Level MM's and Calibrators |
|--------|-----|----------------------------------------------------------------------------|

### THERMODYNAMICS

NVLAP Code: 20/T05  
Pressure

| Range            | Uncertainty ( $\pm$ ) of reading <sup>1</sup> | Remarks   |
|------------------|-----------------------------------------------|-----------|
| 0.2 to 1000 psia | 36 ppm                                        | Inert Gas |
| 0.2 to 1000 psi  | 36 ppm                                        | Inert Gas |
| 15 to 10000 psi  | 0.02 %                                        | Inert Gas |
| 15 to 15000 psi  | 0.02 %                                        | Fluid     |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .

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CALIBRATION LABORATORIES  
NVLAP LAB CODE 200038-0

WEBBER GAGE DIVISION / L.S. STARRETT CO.

24500 Detroit Road  
Cleveland, OH 44145

Mr. David Friedel

Phone: 440-835-0001 Fax: 440-892-9555

## DIMENSIONAL

NVLAP Code: 20/D03  
Gage Blocks

| Range                     | Best Uncertainty ( $\pm$ y <sub>rate</sub> 1.2) | Remarks                      |
|---------------------------|-------------------------------------------------|------------------------------|
| Standard Size Gage Blocks | through 1.0 in                                  | Master Grade Calibration     |
|                           | through 25 mm                                   | Master Grade Calibration     |
|                           | > 1.0 thru 4.0 in                               | Master Grade Calibration     |
|                           | > 25 thru 100 mm                                | Master Grade Calibration     |
|                           | > 4.0 thru 20.0 in                              | Master Grade Calibration     |
|                           | > 100 thru 500 mm                               | Master Grade Calibration     |
|                           | through 4.0 in                                  | Commercial Grade Calibration |
|                           | through 100 mm                                  | Commercial Grade Calibration |
|                           | > 4.0 thru 20.0 in                              | Commercial Grade Calibration |
|                           | > 100 thru 500 mm                               | Commercial Grade Calibration |

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### CALIBRATION LABORATORIES

NVLAP LAB CODE 200106-0

#### DENVER INSTRUMENT CO. WEIGHT LAB

6542 Fig Street  
Arvada, CO 80004-1042  
Mr. Mark Fritz  
Phone: 303-431-7255 Fax: 303-423-4831  
E-Mail: mark.fritz@denverinstrument.com

#### MECHANICAL

NVLAP Code: 20/M08  
Mass

| Range | Best Uncertainty ( $\pm$ year <sup>-1</sup> ) | Remarks |
|-------|-----------------------------------------------|---------|
| 5 kg  | 3.8 mg                                        |         |
| 4 kg  | 2.4 mg                                        |         |
| 3 kg  | 2.4 mg                                        |         |
| 2 kg  | 0.26 mg                                       |         |
| 1 kg  | 0.24 mg                                       |         |
| 500 g | 0.068 mg                                      |         |
| 400 g | 0.071 mg                                      |         |
| 300 g | 0.067 mg                                      |         |
| 200 g | 0.055 mg                                      |         |
| 160 g | 0.033 mg                                      |         |

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### CALIBRATION LABORATORIES

NVLAP LAB CODE 200106-0

#### DENVER INSTRUMENT CO. WEIGHT LAB

|        |           |
|--------|-----------|
| 150 g  | 0.037 mg  |
| 100 g  | 0.034 mg  |
| 50 g   | 0.0149 mg |
| 40 g   | 0.0071 mg |
| 30 g   | 0.0068 mg |
| 20 g   | 0.0065 mg |
| 10 g   | 0.0065 mg |
| 5 g    | 0.0050 mg |
| 3 g    | 0.0054 mg |
| 2 g    | 0.0044 mg |
| 1 g    | 0.0045 mg |
| 500 mg | 0.0012 mg |
| 300 mg | 0.0012 mg |
| 200 mg | 0.0012 mg |
| 100 mg | 0.0012 mg |
| 50 mg  | 0.0012 mg |
| 30 mg  | 0.0012 mg |

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DENVER INSTRUMENT CO. WEIGHT LAB

20 mg 0.0012 mg  
 10 mg 0.0012 mg  
 5 mg 0.0012 mg  
 3 mg 0.0012 mg  
 2 mg 0.0012 mg  
 1 mg 0.0012 mg

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .

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CALIBRATION LABORATORIES NVLAP LAB CODE 200108-0

HONEYWELL FM&T METROLOGY

2000 East 95th Street  
 P.O. Box 419159  
 Kansas City, MO 64141-6159  
 Mr. Roger N. Burton  
 Phone: 816-997-5431 Fax: 816-997-3856  
 E-Mail: rburton@kcp.com

DIMENSIONAL

NVLAP Code: 20/D01  
 Angle Blocks

Range  
 up to 45 °

Best Uncertainty ( $\pm$ )<sup>1</sup>  
 1.1 arc seconds

Remarks  
 Comparison Method

Autocollimators

0 to 600 arc seconds

(0.3 arc seconds + 0.25% of angle)

Small Angle Generator

Index Table/Polygons

0 to 360 °  
 (in 10 ° or 30 °  
 increments)

0.6 arc seconds

3 Stack Method

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CALIBRATION LABORATORIES NVLAP LAB CODE 200108-0

HONEYWELL FM&T METROLOGY

|                                   |                                                       |                         |  |
|-----------------------------------|-------------------------------------------------------|-------------------------|--|
| Optical Comparators               |                                                       |                         |  |
| Length up to 12 in                | $(0.0002 + 30L) \text{ in}^{+0.002}$                  | Magnifications Standard |  |
| Angle 0 to 360 °                  | 0.1 °                                                 | Angle Blocks            |  |
| NVLAP Code: 20/D03<br>Gage Blocks |                                                       |                         |  |
| <b>Range</b>                      | <b>Best Uncertainty (<math>\pm y^{+0.001}</math>)</b> | <b>Remarks</b>          |  |
| up to 4 in                        | $(3.2 + 88L) \mu\text{in}^{+0.002}$                   | Comparison              |  |
| > 4 in to 20 in                   | $(5.8 + .53L) \mu\text{in}^{+0.002}$                  | Comparison              |  |
| up to 100 mm                      | $(0.081 + .88L) \mu\text{m}^{+0.002}$                 | Comparison              |  |
| > 100 mm to 500 mm                | $(0.161 + .41L) \mu\text{m}^{+0.002}$                 | Comparison              |  |

NVLAP Code: 20/D04  
Laser Frequency/Wavelength

|                   |                                            |                |
|-------------------|--------------------------------------------|----------------|
| <b>Laser Type</b> | <b>Best Uncertainty (<math>\pm</math>)</b> | <b>Remarks</b> |
| HeNe              | 0.05 ppm                                   | Comparison     |

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HONEYWELL FM&T METROLOGY

|                                     |                                       |                                                |  |
|-------------------------------------|---------------------------------------|------------------------------------------------|--|
| NVLAP Code: 20/D05<br>Length        |                                       |                                                |  |
| Stage Micrometers (Chrome on Glass) |                                       |                                                |  |
| Range                               | Best Uncertainty ( $\pm y^{+0.001}$ ) | Remarks                                        |  |
| 0 to 2 in                           | 18 $\mu$ in                           | Laser Interferometer with Laser Edge Detection |  |
| Unidirectional Step Gages           |                                       |                                                |  |
| 0 to 24 in                          | (20 $\mu$ in + 1.8L) $y^{+0.002}$     | CMM with Bi-swing Probe                        |  |
| Inspection Masters                  |                                       |                                                |  |
| 0 to 2 in                           | Length 18 $\mu$ in                    | Laser Interferometer with Laser Edge Detection |  |
| > 2 to 12 in                        | Length 32 $\mu$ in                    | Laser Interferometer with Laser Edge Detection |  |
|                                     | Perpendicularity 8 ppm                | CMM with Video Probe                           |  |

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CALIBRATION LABORATORIES NVLAP LAB CODE 200108-0

## HONEYWELL FM&amp;T METROLOGY

|                            |                                     |                                 |  |
|----------------------------|-------------------------------------|---------------------------------|--|
| Magnification Scales       |                                     |                                 |  |
| up to 24 in                | 0.0003 in                           | CMM with Video Probe            |  |
| Micrometer Masters         |                                     |                                 |  |
| 0 to 3 in                  | 60 $\mu$ m                          | Single - Axis Measuring Machine |  |
| Precision Micrometer Heads |                                     |                                 |  |
| 0 to 2 in                  | 35 $\mu$ m                          | Laser Interferometer            |  |
| (0 to 50 mm)               |                                     |                                 |  |
| 1-D Ball Plates            |                                     |                                 |  |
| up to 48 in                | (30 $\mu$ m + 2L) <sup>year 2</sup> | CMM Single - Axis Method        |  |
| Squares                    |                                     |                                 |  |
| up to 24 in by 36 in       | 30 $\mu$ m                          | CMM, Self Closing Method        |  |
| Straight Edges             |                                     |                                 |  |
| up to 48 in                | 5 $\mu$ m                           | CMM, Reversal Method            |  |
| Dial Calipers              |                                     |                                 |  |
| ≤ 12 in                    | 0.002 in                            | Gage Blocks                     |  |

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## HONEYWELL FM&amp;T METROLOGY

|                                                                          |                                              |         |                       |
|--------------------------------------------------------------------------|----------------------------------------------|---------|-----------------------|
| NVLAP Code: 20/D07<br>Thread Measuring Wires                             |                                              |         |                       |
| Range                                                                    | Best Uncertainty ( $\pm$ ) <sup>year 1</sup> | Remarks |                       |
| All 29 ° and 60 ° Wires                                                  | 8.0 $\mu$ m                                  |         | Direct Measurement    |
| NVLAP Code: 20/D08<br>Optical Reference Planes<br>Optical Flats, Mirrors |                                              |         |                       |
| Range                                                                    | Best Uncertainty ( $\pm$ ) <sup>year 1</sup> | Remarks |                       |
| 0 to 12 in                                                               | 1.2 $\mu$ m                                  |         | 3 Flat Method         |
| 0 to 12 in                                                               | 2.0 $\mu$ m                                  |         | Interferometer Method |
| 0 to 12 in                                                               | 4.0 $\mu$ m                                  |         | Comparison to Master  |
| NVLAP Code: 20/D09<br>Roundness                                          |                                              |         |                       |
| Range                                                                    | Best Uncertainty ( $\pm$ ) <sup>year 1</sup> | Remarks |                       |
| up to 18 in Diameter                                                     | 3 $\mu$ m                                    |         | Roundness Machine     |

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HONEYWELL FM&T METROLOGY

| <b>NVLAP Code:</b> 20/D11<br>Spherical Diameter<br>Master Balls |                                                     |                                                          |  |
|-----------------------------------------------------------------|-----------------------------------------------------|----------------------------------------------------------|--|
| Range                                                           | Best Uncertainty ( $\pm y_{\text{max}}$ )           | Remarks                                                  |  |
| 1/16 to 1.0 in<br>(1 to 25 mm)                                  | 9 $\mu\text{in}$                                    | Comparison to<br>Master                                  |  |
| Calibration Spheres                                             |                                                     |                                                          |  |
| to 1 in (25 mm)                                                 | 11 $\mu\text{in}$ Diameter                          | Comparison to<br>Master                                  |  |
|                                                                 | 5 $\mu\text{in}$ Sphericity                         | Roundness                                                |  |
| OD Micrometers                                                  |                                                     |                                                          |  |
| up to 3 in                                                      | (0.0002 + L/50000) $\text{in}^{\text{max}}$         | Micrometer Master                                        |  |
| <b>NVLAP Code:</b> 20/D12<br>Surface Plates                     |                                                     |                                                          |  |
| Range                                                           | Best Uncertainty ( $\pm y_{\text{max}}$ )           | Remarks                                                  |  |
| Up to 8 ft Diagonal                                             | (30 $\mu\text{in}$ + 2 $\mu\text{in}/\text{ft}^2$ ) | Moody and Least<br>Squares Method<br>with Autocollimator |  |

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HONEYWELL FM&T METROLOGY

| <b>NVLAP Code:</b> 20/D14<br>Plug Gages                                                                       |                                           |                              |  |
|---------------------------------------------------------------------------------------------------------------|-------------------------------------------|------------------------------|--|
| Range                                                                                                         | Best Uncertainty ( $\pm y_{\text{max}}$ ) | Remarks                      |  |
| 0 to 1 in                                                                                                     | 6.5 $\mu\text{in}$                        | Comparison to Master         |  |
| Threaded Plug Gages - Pitch and Major Diameter per ASME B1.2, ASME B1.16M or ASME B1.5                        |                                           |                              |  |
| up to 10 in                                                                                                   | P.D. 0.0001 in<br>M.D. 0.000035 in        | 3 - Wire P.D. Measurement    |  |
| Adj. - Thread Ring Gages - Functional Threads per ASME B1.2 (UN or UNR Thread Form), ASME B1.15 (UNJ Threads) |                                           |                              |  |
| up to 10 in                                                                                                   | P.D. 0.0002 in<br>M.D. 0.0001 in          | Set to 'W' Thread Set Master |  |
| Thread Set Plugs - Pitch and Major Diameter per ASME B1.2, ASME B1.16M or ASME B1.5                           |                                           |                              |  |
| up to 10 in                                                                                                   | P.D. 0.000035 in<br>M.D. 0.000020 in      | 3 - Wire P.D. Measurement    |  |

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HONEYWELL FM&T METROLOGY

NVLAP Code: 20/D15  
2-D Ball Plates

**Range**  
36 in x 36 in

**Best Uncertainty ( $\pm y_{\text{max}}$ )**  
(30  $\mu\text{in}$  + 2.5L) $y_{\text{max}}$

**Remarks**  
CMM Single - Axial Method

NVLAP Code: 20/D16  
Coordinate Measuring Machines

**Range**  
To 120 x 120 x 120 in

**Best Uncertainty ( $\pm y_{\text{max}}$ )**  
Axial (10 + 1.5L)  $\mu\text{in}$   
Planar (35 + 8.5L)  $\mu\text{in}$

**Remarks**  
Parametrical Calibration

To 24 in Volumetric  
Diagonals

Axial (35 + 4L)  $\mu\text{in}$   
Planar (45 + 4L)  $\mu\text{in}$   
Spatial (50 + 5L)  $\mu\text{in}$

Step Gage  
Step Gage  
Step Gage

To 56 in Volumetric  
Diagonals

Axial (60 + 3L)  $\mu\text{in}$   
Spatial (70 + 3L)  $\mu\text{in}$

1-D Ball Plates  
1-D Ball Plates

To 36 in Volumetric

Axial (50 + 5L)  $\mu\text{in}$

2-D Ball Plates

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HONEYWELL FM&T METROLOGY

Diagonals  
Planar (50 + 7L)  $\mu\text{in}$   
Spatial (50 + 9L)  $\mu\text{in}$

2-D Ball Plates

### TIME AND FREQUENCY

NVLAP Code: 20/F01

Frequency Dissemination

| Range                 | Best Uncertainty ( $\pm y_{\text{max}}$ ) | Remarks |
|-----------------------|-------------------------------------------|---------|
| Frequency<br>0.1 MHz  | 1 part in $10^9$                          |         |
| Frequency<br>1.0 MHz  | 1 part in $10^9$                          |         |
| Frequency<br>5.0 MHz  | 1 part in $10^9$                          |         |
| Frequency<br>10.0 MHz | 1 part in $10^9$                          |         |

### MECHANICAL

NVLAP Code: 20/M06

Force

| Range                    | Best Uncertainty ( $\pm$ ) in $\%_{\text{max}}$ | Remarks          |
|--------------------------|-------------------------------------------------|------------------|
| 5 thru 2400 lbf          | 0.01                                            | of Applied Force |
| > 2400 thru 100000 lbf   | 0.015                                           | of Range         |
| > 100000 thru 300000 lbf | 0.035                                           | of Range         |

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HONEYWELL FM&T METROLOGY

| NVLAP Code: 20/M08 |        |                                                 |
|--------------------|--------|-------------------------------------------------|
| Mass               | Range  | Best Uncertainty ( $\pm$ ) in $mg^{mst}$ Method |
| 5 kg               | 19.70  | Direct-Reading Weighing                         |
| 3 kg               | 15.12  | Direct-Reading Weighing                         |
| 2 kg               | 12.08  | Direct-Reading Weighing                         |
| 1 kg               | 3.832  | Direct-Reading Weighing                         |
| 500 g              | 2.168  | Direct-Reading Weighing                         |
| 300 g              | 1.410  | Direct-Reading Weighing                         |
| 200 g              | 1.040  | Direct-Reading Weighing                         |
| 100 g              | 0.598  | Direct-Reading Weighing                         |
| 50 g               | 0.4480 | Direct-Reading Weighing                         |
| 30 g               | 0.4010 | Direct-Reading Weighing                         |
| 20 g               | 0.1528 | Direct-Reading Weighing                         |
| 10 g               | 0.1002 | Direct-Reading Weighing                         |
| 5 g                | 0.0780 | Direct-Reading Weighing                         |
| 3 g                | 0.0423 | Direct-Reading Weighing                         |
| 2 g                | 0.0266 | Direct-Reading Weighing                         |

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HONEYWELL FM&T METROLOGY

|        |        |                                                     |
|--------|--------|-----------------------------------------------------|
| 1 g    | 0.0296 | Direct-Reading Weighing                             |
| 500 mg | 0.0272 | Direct-Reading Weighing                             |
| 300 mg | 0.0267 | Direct-Reading Weighing                             |
| 200 mg | 0.0265 | Direct-Reading Weighing                             |
| 100 mg | 0.0264 | Direct-Reading Weighing                             |
| 50 mg  | 0.0264 | Direct-Reading Weighing                             |
| 30 mg  | 0.0264 | Direct-Reading Weighing                             |
| 20 mg  | 0.0045 | Direct-Reading Weighing                             |
|        |        | Single Substitution Comparison to Reference Weights |
| 10 mg  | 0.0035 | Single Substitution Comparison to Reference Weights |
| 5 mg   | 0.0034 | Single Substitution Comparison to Reference Weights |
| 3 mg   | 0.0036 | Single Substitution Comparison to Reference Weights |
| 2 mg   | 0.0034 | Single Substitution Comparison to Reference Weights |
| 1 mg   | 0.0034 | Single Substitution Comparison to Reference Weights |
| 10 lb  | 19.09  | Direct-Reading Weighing                             |

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#### HONEYWELL FM&T METROLOGY

|          |        |                         |
|----------|--------|-------------------------|
| 8 lb     | 15.90  | Direct-Reading Weighing |
| 5 lb     | 12.43  | Direct-Reading Weighing |
| 4 lb     | 10.80  | Direct-Reading Weighing |
| 3 lb     | 10.11  | Direct-Reading Weighing |
| 2 lb     | 3.723  | Direct-Reading Weighing |
| 1 lb     | 1.899  | Direct-Reading Weighing |
| 0.5 lb   | 1.150  | Direct-Reading Weighing |
| 0.3 lb   | 0.821  | Direct-Reading Weighing |
| 0.2 lb   | 0.575  | Direct-Reading Weighing |
| 0.1 lb   | 0.460  | Direct-Reading Weighing |
| 0.05 lb  | 0.417  | Direct-Reading Weighing |
| 0.03 lb  | 0.1277 | Direct-Reading Weighing |
| 0.02 lb  | 0.1064 | Direct-Reading Weighing |
| 0.01 lb  | 0.0998 | Direct-Reading Weighing |
| 0.005 lb | 0.0518 | Direct-Reading Weighing |
| 0.003 lb | 0.0458 | Direct-Reading Weighing |
| 0.002 lb | 0.0290 | Direct-Reading Weighing |
| 0.001 lb | 0.0356 | Direct-Reading Weighing |

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### CALIBRATION LABORATORIES

#### HONEYWELL FM&T METROLOGY

|         |        |                         |
|---------|--------|-------------------------|
| 10 oz   | 1.253  | Direct-Reading Weighing |
| 8 oz    | 1.150  | Direct-Reading Weighing |
| 6 oz    | 0.868  | Direct-Reading Weighing |
| 5 oz    | 0.865  | Direct-Reading Weighing |
| 4 oz    | 0.815  | Direct-Reading Weighing |
| 3 oz    | 0.551  | Direct-Reading Weighing |
| 2 oz    | 0.4850 | Direct-Reading Weighing |
| 1 oz    | 0.4250 | Direct-Reading Weighing |
| 1/2 oz  | 0.1373 | Direct-Reading Weighing |
| 1/4 oz  | 0.0985 | Direct-Reading Weighing |
| 1/8 oz  | 0.0968 | Direct-Reading Weighing |
| 1/16 oz | 0.0482 | Direct-Reading Weighing |
| 1/32 oz | 0.0370 | Direct-Reading Weighing |
| 1/64 oz | 0.0356 | Direct-Reading Weighing |

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HONEYWELL FM&T METROLOGY

NVLAP Code: 20/M11  
Vibration/Acceleration

| Range                              | Best Uncertainty ( $\pm$ ) in % <sub>meas</sub> |
|------------------------------------|-------------------------------------------------|
| 0.3 g @ 10 thru 40 Hz              | 2.5                                             |
| 1 g @ 10 thru 100 Hz               | 2.5                                             |
| 2 g @ 10 thru 100 Hz               | 2.5                                             |
| 5 g @ 100 Hz                       | 2.5                                             |
| 10 g @ 30 thru < 100 Hz            | 2.5                                             |
| 10 g @ 100 thru 2000 Hz            | 1.8                                             |
| 10 g @ > 2000 thru 10000 Hz        | 2.5                                             |
| Shock                              |                                                 |
| 10 thru 10000 g @ 10 thru 10000 Hz | 3.5                                             |

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HONEYWELL FM&T METROLOGY

RF MICROWAVE

NVLAP Code: 20/R01  
Coaxial Air Line Standards

Air Lines (Air-Dielectric)

| Connector Type | Quantity          | Quantity Range | Best Uncertainty ( $\pm$ )<br>Frequency (GHz) | Best Uncertainty ( $\pm$ )<br>Frequency (GHz) |
|----------------|-------------------|----------------|-----------------------------------------------|-----------------------------------------------|
|                |                   |                | 0.05 to 8.5                                   | 8.5 to 18.0                                   |
| GR-900         | Impedance         | 50 $\Omega$    | 0.028 - 0.050 $\Omega$                        | ---                                           |
| APC-7          | Impedance         | 50 $\Omega$    | 0.044 - 0.080 $\Omega$                        | 0.060 - 0.096 $\Omega$                        |
| N              | Impedance         | 50 $\Omega$    | 0.044 - 0.080 $\Omega$                        | 0.060 - 0.096 $\Omega$                        |
| APC-3.5        | Impedance         | 50 $\Omega$    | 0.115 - 0.165 $\Omega$                        | 0.125 - 0.185 $\Omega$                        |
|                |                   |                |                                               | 0.158 - 0.200 $\Omega$                        |
| GR-900         | Electrical Length | 3 to 30 cm     | 0.0019 - 0.0081 cm                            | ---                                           |
| APC-7          | Electrical Length | 3 to 30 cm     | 0.0021 - 0.028 cm                             | 0.0021 - 0.0041 cm                            |
| N              | Electrical Length | 3 to 15 cm     | 0.0021 - 0.014 cm                             | 0.0021 - 0.0028 cm                            |
| APC-3.5        | Electrical Length | 5 to 15 cm     | 0.0026 - 0.028 cm                             | 0.0025 - 0.0036 cm                            |
|                |                   |                |                                               | 0.0025 - 0.0032 cm                            |

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HONEYWELL FM&T METROLOGY

NVLAP Code: 20/R02  
Coaxial/Waveguide Terminations  
Reflection Coefficient (Scattering Parameter  $S_{11}$ ) on the HP8510 Vector Automatic Network Analyzer

| Connector<br>Type | Quantity         | Quantity Range                   | Best Uncertainty ( $\pm$ ) <sup>year 1</sup><br>Frequency (GHz) |                |               |
|-------------------|------------------|----------------------------------|-----------------------------------------------------------------|----------------|---------------|
|                   |                  |                                  | 0.05 to 8.5                                                     | 8.5 to 18.0    | 18.0 to 26.5  |
| GR-900            | $ S_{11} $       | 0 to 1                           | 0.002 - 0.005                                                   | ---            | ---           |
| APC-7             | $ S_{11} $       | 0 to 1                           | 0.0025 - 0.004                                                  | 0.004 - 0.006  | ---           |
| N                 | $ S_{11} $       | 0 to 1                           | 0.0045 - 0.018                                                  | 0.012 - 0.030  | ---           |
| APC-3.5           | $ S_{11} $       | 0 to 1                           | 0.0045 - 0.0055                                                 | 0.0055 - 0.008 | 0.008 - 0.009 |
| GR-900            | ARG ( $S_{11}$ ) | -180 to 180°, $0 <  S_{11}  < 1$ | 0.35 - 180°                                                     | ---            | ---           |
| APC-7             | ARG ( $S_{11}$ ) | -180 to 180°, $0 <  S_{11}  < 1$ | 0.35 - 180°                                                     | 0.50 - 180°    | ---           |
| N                 | ARG ( $S_{11}$ ) | -180 to 180°, $0 <  S_{11}  < 1$ | 1.0 - 180°                                                      | 6.50 - 180°    | ---           |
| APC-3.5           | ARG ( $S_{11}$ ) | -180 to 180°, $0 <  S_{11}  < 1$ | 0.40 - 180°                                                     | 0.55 - 180°    | 1.15 - 180°   |

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HONEYWELL FM&T METROLOGY

NVLAP Code: 20/R02  
Coaxial/Waveguide Terminations  
Reflection Coefficient (Scattering Parameter  $S_{11}$ ) on the HP8753 Vector Automatic Network Analyzer

| Connector<br>Type | Quantity         | Quantity Range                   | Best Uncertainty ( $\pm$ ) <sup>year 1</sup><br>Frequency (MHz) |                 |  |
|-------------------|------------------|----------------------------------|-----------------------------------------------------------------|-----------------|--|
|                   |                  |                                  | 0.30 to 100                                                     | 100 to 3000     |  |
| GR-900            | $ S_{11} $       | 0 to 1                           | 0.004 - 0.005                                                   | 0.005 - 0.035   |  |
| APC-7             | $ S_{11} $       | 0 to 1                           | 0.0025 - 0.0075                                                 | 0.0025 - 0.0075 |  |
| N                 | $ S_{11} $       | 0 to 1                           | 0.0045 - 0.012                                                  | 0.0055 - 0.015  |  |
| APC-3.5           | $ S_{11} $       | 0 to 1                           | ---                                                             | 0.0045 - 0.018  |  |
| GR-900            | ARG ( $S_{11}$ ) | -180 to 180°, $0 <  S_{11}  < 1$ | 0.50 - 180°                                                     | 0.55 - 180°     |  |
| APC-7             | ARG ( $S_{11}$ ) | -180 to 180°, $0 <  S_{11}  < 1$ | 0.50 - 180°                                                     | 0.50 - 180°     |  |
| N                 | ARG ( $S_{11}$ ) | -180 to 180°, $0 <  S_{11}  < 1$ | 0.50 - 180°                                                     | 3.0 - 180°      |  |
| APC-3.5           | ARG ( $S_{11}$ ) | -180 to 180°, $0 <  S_{11}  < 1$ | ---                                                             | 0.50 - 180°     |  |

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NVLAP Code: 20/R12  
RF/Microwave Bolometer Units  
Thermistor Mounts at Type N Connector

| Quantity           | Power Level<br>Range | Quantity<br>Range | Best Uncertainty ( $\pm y^{unc}$ ) |                |
|--------------------|----------------------|-------------------|------------------------------------|----------------|
|                    |                      |                   | Frequency                          | 1.0 to 8.5 GHz |
| Calibration Factor | -10 to 10 dB         | 0.9 to 1.0        | 0.75 - 2.3 %                       | 1.0 - 3.1 %    |

| NVLAP Code: 20/R13<br>RF/Microwave Attenuators<br>Attenuation (Scattering Parameter $S_{11}$ ) on the HP8510 Vector Automatic Network Analyzer |            |                   |                                    |                 |
|------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------|------------------------------------|-----------------|
| Connector<br>Type                                                                                                                              | Quantity   | Quantity<br>Range | Best Uncertainty ( $\pm y^{unc}$ ) |                 |
|                                                                                                                                                |            |                   | Frequency (GHz)                    | 18.0 to 26.5    |
| APC-7                                                                                                                                          | $ S_{11} $ | 0 to 60 dB        | 0.02 - 0.50 dB                     | 0.034 - 0.30 dB |
| APC-3.5                                                                                                                                        | $ S_{11} $ | 0 to 60 dB        | 0.02 - 0.50 dB                     | 0.031 - 0.29 dB |

|         |            |            |                |                 |                 |
|---------|------------|------------|----------------|-----------------|-----------------|
|         |            |            | 0.05 to 8.5    | 8.5 to 18.0     | 18.0 to 26.5    |
| APC-7   | $ S_{11} $ | 0 to 60 dB | 0.02 - 0.50 dB | 0.034 - 0.30 dB | ---             |
| APC-3.5 | $ S_{11} $ | 0 to 60 dB | 0.02 - 0.50 dB | 0.031 - 0.29 dB | 0.044 - 0.37 dB |

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NVLAP Code: 20/R13  
RF/Microwave Attenuators  
Attenuation (Scattering Parameter  $S_{11}$ ) on the HP8753 Vector Automatic Network Analyzer

| Connector<br>Type | Quantity   | Quantity<br>Range | Best Uncertainty ( $\pm y^{unc}$ ) |              |
|-------------------|------------|-------------------|------------------------------------|--------------|
|                   |            |                   | Frequency (MHz)                    | 0.30 to 3000 |
| APC-7             | $ S_{11} $ | 0 to 60 dB        | 0.02 - 0.40 dB                     | ---          |

| NVLAP Code: 20/R16<br>Group Delay<br>Attenuation (Scattering Parameter $S_{11}$ ) on the HP8753 Vector Automatic Network Analyzer |            |                   |                                    |             |
|-----------------------------------------------------------------------------------------------------------------------------------|------------|-------------------|------------------------------------|-------------|
| Connector<br>Type                                                                                                                 | Quantity   | Quantity<br>Range | Best Uncertainty ( $\pm y^{unc}$ ) |             |
|                                                                                                                                   |            |                   | Frequency (GHz)                    | 0.05 to 2.0 |
| GR-900, APC-7, N, APC-3.5                                                                                                         | Delay (ns) | 1 to 1200         | 0.005 - 0.5                        | ---         |

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HONEYWELL FM&T METROLOGY

NVLAP Code: 20/R17

RF/Microwave Power Meters

CW Microwave Power Meter Calibration at Type N Connector

| Quantity | Quantity Range (dBm) | Best Uncertainty ( $\pm y_{\text{max}}$ )<br>Frequency |                |
|----------|----------------------|--------------------------------------------------------|----------------|
|          |                      | 0.01 to 3.0 GHz                                        | 3.0 to 8.5 GHz |
| Power    | -60 to -20 dBm       | 0.11 dB                                                | 0.13 dB        |
| Power    | -20 to +20 dBm       | 0.16 - 0.18 dB                                         | 0.10 - 0.16 dB |

NVLAP Code: 20/R17

RF/Microwave Power Meters

Peak Power Meter Calibration at Type N Connector

| Quantity | Quantity Range (dBm) | Best Uncertainty ( $\pm y_{\text{max}}$ )<br>Frequency (GHz) |        |
|----------|----------------------|--------------------------------------------------------------|--------|
|          |                      | 1.0 to 2.0 GHz                                               | 0.2 dB |
| Power    | -20 to +20 dBm       |                                                              |        |

\*Power System Calibration Procedure is MW-085

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HONEYWELL FM&T METROLOGY

NVLAP Code: 20/R17

RF/Microwave Power Wattmeters

| Quantity | Quantity Range (Watts) | Best Uncertainty ( $\pm y_{\text{max}}$ )<br>Frequency |      |
|----------|------------------------|--------------------------------------------------------|------|
|          |                        | 2 MHz to 1.2 GHz                                       | 3.4% |
| Power    | 0.1 to 1.0 k           |                                                        |      |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .

2. L is in inches.

3. L is in meters.

4. Best uncertainty is for steel blades.

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BECHTEL B&W IDAHO, STANDARDS AND CALIBRATION LAB

Idaho Falls, ID 83415-4137  
Mr. William J. Allred  
Phone: 208-526-2017 Fax: 208-526-5462  
E-Mail: wja@intel.gov

### DIMENSIONAL

NVLAP Code: 20/D03  
Gage Blocks

#### Range

0-4 in  
5-8 in  
10-12 in  
16 in  
20 in

#### Best Uncertainty ( $\pm$ year<sup>-1</sup>)

3.4 - 4.5  $\mu$ m  
4.5 - 5.9  $\mu$ m  
6.9 - 7.8  $\mu$ m  
9.8  $\mu$ m  
11.8  $\mu$ m

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### ELECTROMAGNETICS -DC/LOW FREQUENCY

NVLAP Code: 20/E05

Resistance

#### Range in Ohms

0.1  
1.0  
10.0  
100  
1 k  
10 k  
100 k  
1 M

#### Best Uncertainty ( $\pm$ year<sup>-1</sup>)

0.35 ppm  
0.3 ppm  
0.35 ppm  
0.5 ppm  
0.6 ppm  
0.5 ppm  
1.0 ppm  
5.0 ppm

NVLAP Code: 20/E06

DC Voltage

#### Range

10 volt Zener Reference

#### Best Uncertainty ( $\pm$ year<sup>-1</sup>)

0.3 ppm

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**TIME AND FREQUENCY**  
NVLAP Code: 20/F01  
Frequency Dissemination

| Range                         | Best Uncertainty ( $\pm$ ) <sup>year</sup> t | Remarks         |
|-------------------------------|----------------------------------------------|-----------------|
| 0.1 MHz, 1 MHz, 5 MHz, 10 MHz | $1 \times 10^{-11}/24$ hours                 | NIST FMS System |

**MECHANICAL**  
NVLAP Code: 20/M06  
Force

| Range in lbf     | Best Uncertainty ( $\pm$ ) % of F/S | Remarks                             |
|------------------|-------------------------------------|-------------------------------------|
| 10 - 100         | 0.0063                              | Primary Standard (Deadweight)       |
| 101 - 200        | 0.0062                              | Primary Standard (Deadweight)       |
| 201 - 1000       | 0.0061                              | Primary Standard (Deadweight)       |
| 1000 - 5000      | 0.020                               | Secondary Standards (Proving Rings) |
| 5001 - 10,000    | 0.021                               | Secondary Standards (Proving Rings) |
| 10,001 - 30,000  | 0.026                               | Secondary Standards (Proving Rings) |
| 30,001 - 50,000  | 0.023                               | Secondary Standards (Proving Rings) |
| 50,001 - 100,000 | 0.042                               | Secondary Standards (Proving Rings) |
| 100 - 1000       | 0.073                               | Secondary Standards (Load Cells)    |
| 1001 - 3000      | 0.062                               | Secondary Standards (Load Cells)    |
| 3001 - 10,000    | 0.058                               | Secondary Standards (Load Cells)    |
| 10,001 - 30,000  | 0.060                               | Secondary Standards (Load Cells)    |
| 30,001 - 50,000  | 0.063                               | Secondary Standards (Load Cells)    |
| 50,001 - 100,000 | 0.144                               | Secondary Standards (Load Cells)    |

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| Mass   | Range | Best Uncertainty ( $\pm$ ) in $\mu\text{g}^{\text{nom}}$ | Remarks                        |
|--------|-------|----------------------------------------------------------|--------------------------------|
| 1 kg   |       | 115.67                                                   | Repetitive Double Substitution |
| 500 g  |       | 66.46                                                    | Repetitive Double Substitution |
| 200 g  |       | 54.37                                                    | Repetitive Double Substitution |
| 100 g  |       | 29.80                                                    | Repetitive Double Substitution |
| 50 g   |       | 7.22                                                     | Repetitive Double Substitution |
| 20 g   |       | 6.02                                                     | Repetitive Double Substitution |
| 10 g   |       | 2.65                                                     | Repetitive Double Substitution |
| 5 g    |       | 4.19                                                     | Repetitive Double Substitution |
| 2 g    |       | 4.92                                                     | Repetitive Double Substitution |
| 1 g    |       | 3.87                                                     | Repetitive Double Substitution |
| 0.5 g  |       | 3.27                                                     | Repetitive Double Substitution |
| 0.2 g  |       | 1.59                                                     | Repetitive Double Substitution |
| 0.1 g  |       | 1.51                                                     | Repetitive Double Substitution |
| 0.05 g |       | 0.81                                                     | Repetitive Double Substitution |
| 0.02 g |       | 0.77                                                     | Repetitive Double Substitution |

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|         |      |                                |
|---------|------|--------------------------------|
| 0.01 g  | 0.21 | Repetitive Double Substitution |
| 0.005 g | 3.01 | Repetitive Double Substitution |
| 0.002 g | 0.98 | Repetitive Double Substitution |
| 0.001 g | 0.71 | Repetitive Double Substitution |

THERMODYNAMICS  
NVLAP Code: 20/T05  
Pressure

| Range in psi                                           | Best Uncertainty ( $\pm$ ) in $\text{ppm}^{\text{nom}}$ | Remarks  |
|--------------------------------------------------------|---------------------------------------------------------|----------|
| Deadweight Pressure Gauge - Direct Pressure Comparison |                                                         |          |
| 0 - 18                                                 | 41.0                                                    | Nitrogen |
| 18 - 700                                               | 56.0                                                    | Nitrogen |
| 700 - 4000                                             | 54.0                                                    | Oil      |
| 4000 - 40,000                                          | 73.0                                                    | Oil      |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .

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LIBERTY LABS, INC.  
1346 Yellowwood Road  
P.O. Box 230  
Kimballton, IA 51543

Mr. Michael W. Howard  
Phone: 712-773-2199 Fax: 712-773-2299  
E-Mail: mhoward@liberty-labs.com

ELECTROMAGNETIC - RF/MICROWAVE

ANSI C63.5-1998 is applicable to all Broadband, Dipole Horn and Rod Antenna calibrations listed below.

CISPR 16-1-Oct. 1999 for a CALTS site is applicable to all Broadband and Dipole Antenna calibrations listed below.

NVLAP Code: 20/R08

Microwave Antenna Parameters

Broadband antennas (Biconical or Log-Periodic as specified) using 3 antenna method and a spectrum analyzer on 50x80 meter ground plane.

Biconical Antennas at 3 meter distance

| Frequency Range in MHz | Polarization and Height | Best Uncertainty ( $\pm$ ) in $dB_{\text{peak}}$ | Value of K |
|------------------------|-------------------------|--------------------------------------------------|------------|
| 30 to 72.5             | Vertical at 1m          | 1.41                                             | 2          |
|                        | Vertical at 1.5m        | 1.50                                             | 2.02       |
|                        | Horizontal at 1m        | 1.39                                             | 2          |
|                        | Horizontal at 2m        | 1.38                                             | 2          |

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|              |                                         |      |      |
|--------------|-----------------------------------------|------|------|
| 72.5 to 115  | Vertical at 1m                          | 0.85 | 2.02 |
|              | Vertical at 1.5m                        | 1.04 | 2.11 |
|              | Horizontal at 1m                        | 0.81 | 2    |
|              | Horizontal at 2m                        | 0.77 | 2    |
| 115 to 157.5 | Vertical at 1m                          | 0.74 | 2.42 |
|              | Vertical at 1.5m                        | 0.94 | 2.54 |
|              | Horizontal at 1m                        | 0.38 | 2.06 |
|              | Horizontal at 2m                        | 0.32 | 2    |
| 157.5 to 200 | Vertical at 1m                          | 0.93 | 2.64 |
|              | Vertical at 1.5m                        | 1.11 | 2.71 |
|              | Horizontal at 1m                        | 0.32 | 2.11 |
|              | Horizontal at 2m                        | 0.33 | 2.06 |
| 200 to 300   | Horizontal/Vertical                     | 0.47 | 2    |
|              | Biconical Antennas at 10 meter distance |      |      |
|              | Vertical at 1m                          | 1.42 | 2    |
|              | Vertical at 1.5m                        | 0.82 | 2    |
| 30 to 72.5   | Horizontal at 1m                        | 1.39 | 2    |
|              | Horizontal at 2m                        | 1.40 | 2    |

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|              |                     |      |      |
|--------------|---------------------|------|------|
| 72.5 to 115  | Vertical at 1m      | 0.83 | 2.02 |
|              | Vertical at 1.5m    | 0.82 | 2.02 |
|              | Horizontal at 1m    | 0.78 | 2    |
|              | Horizontal at 2m    | 0.79 | 2    |
| 115 to 157.5 | Vertical at 1m      | 0.53 | 2.23 |
|              | Vertical at 1.5m    | 0.55 | 2.25 |
|              | Horizontal at 1m    | 0.37 | 2.04 |
|              | Horizontal at 2m    | 0.44 | 2.13 |
| 157.5 to 200 | Vertical at 1m      | 0.29 | 2.06 |
|              | Vertical at 1.5m    | 0.47 | 2.32 |
|              | Horizontal at 1m    | 0.30 | 2.08 |
|              | Horizontal at 2m    | 0.45 | 2.30 |
| 200 to 300   | Horizontal/Vertical | 0.47 | 2    |

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|                                           |                  |      |      |
|-------------------------------------------|------------------|------|------|
| Log-Periodic Antennas at 3 meter distance |                  |      |      |
| 200 to 300                                | Vertical at 1m   | 0.33 | 2.02 |
|                                           | Vertical at 1.5m | 0.49 | 2.20 |
|                                           | Horizontal at 1m | 0.93 | 2.54 |
|                                           | Horizontal at 2m | 0.50 | 2.22 |
| 300 to 400                                | Vertical at 1m   | 0.43 | 2.01 |
|                                           | Vertical at 1.5m | 0.55 | 2.11 |
|                                           | Horizontal at 1m | 1.23 | 2.54 |
|                                           | Horizontal at 2m | 0.57 | 2.13 |
| 400 to 500                                | Vertical at 1m   | 0.33 | 2.17 |
|                                           | Vertical at 1.5m | 0.77 | 2.61 |
|                                           | Horizontal at 1m | 1.12 | 2.74 |
|                                           | Horizontal at 2m | 0.46 | 2.36 |
| 500 to 600                                | Vertical at 1m   | 0.51 | 2.25 |
|                                           | Vertical at 1.5m | 0.64 | 2.47 |
|                                           | Horizontal at 1m | 0.89 | 2.55 |
|                                           | Horizontal at 2m | 0.47 | 2.21 |

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|--------------|------------------|------|------|
| 600 to 700   | Vertical at 1m   | 0.42 | 2.14 |
|              | Vertical at 1.5m | 0.77 | 2.47 |
|              | Horizontal at 1m | 1.03 | 2.54 |
|              | Horizontal at 2m | 0.44 | 2.16 |
| 700 to 800   | Vertical at 1m   | 0.54 | 2.48 |
|              | Vertical at 1.5m | 0.94 | 2.65 |
|              | Horizontal at 1m | 1.07 | 2.73 |
|              | Horizontal at 2m | 0.45 | 2.39 |
| 800 to 900   | Vertical at 1m   | 0.55 | 2.40 |
|              | Vertical at 1.5m | 0.96 | 2.65 |
|              | Horizontal at 1m | 1.07 | 2.69 |
|              | Horizontal at 2m | 0.44 | 2.28 |
| 900 to 10000 | Vertical at 1m   | 0.64 | 2.41 |
|              | Vertical at 1.5m | 1.23 | 2.69 |
|              | Horizontal at 1m | 1.17 | 2.67 |
|              | Horizontal at 2m | 0.66 | 2.42 |

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|                                            |            |                  |      |      |
|--------------------------------------------|------------|------------------|------|------|
| Log-Periodic Antennas at 10 meter distance | 200 to 300 | Vertical at 1m   | 0.34 | 2.02 |
|                                            |            | Vertical at 1.5m | 0.51 | 2.22 |
|                                            |            | Horizontal at 1m | 0.91 | 2.53 |
|                                            |            | Horizontal at 2m | 0.55 | 2.26 |
| 300 to 400                                 |            | Vertical at 1m   | 0.57 | 2.23 |
|                                            |            | Vertical at 1.5m | 0.59 | 2.26 |
|                                            |            | Horizontal at 1m | 0.41 | 2.06 |
|                                            |            | Horizontal at 2m | 0.57 | 2.23 |
| 400 to 500                                 |            | Vertical at 1m   | 0.61 | 2.31 |
|                                            |            | Vertical at 1.5m | 0.62 | 2.32 |
|                                            |            | Horizontal at 1m | 0.51 | 2.21 |
|                                            |            | Horizontal at 2m | 0.83 | 2.48 |
| 500 to 600                                 |            | Vertical at 1m   | 0.57 | 2.31 |
|                                            |            | Vertical at 1.5m | 0.62 | 2.37 |
|                                            |            | Horizontal at 1m | 0.37 | 2.08 |
|                                            |            | Horizontal at 2m | 0.59 | 2.34 |

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|              |                  |      |      |
|--------------|------------------|------|------|
| 600 to 700   | Vertical at 1m   | 0.61 | 2.36 |
|              | Vertical at 1.5m | 0.82 | 2.51 |
|              | Horizontal at 1m | 0.39 | 2.11 |
| 700 to 800   | Horizontal at 2m | 0.53 | 2.28 |
|              | Vertical at 1m   | 0.63 | 2.53 |
|              | Vertical at 1.5m | 0.83 | 2.64 |
|              | Horizontal at 1m | 0.61 | 2.32 |
| 800 to 900   | Horizontal at 2m | 0.90 | 2.67 |
|              | Vertical at 1m   | 0.99 | 2.66 |
|              | Vertical at 1.5m | 0.86 | 2.61 |
|              | Horizontal at 1m | 0.47 | 2.32 |
| 900 to 10000 | Horizontal at 2m | 0.63 | 2.47 |
|              | Vertical at 1m   | 1.60 | 2.77 |
|              | Vertical at 1.5m | 1.57 | 2.76 |
|              | Horizontal at 1m | 0.96 | 2.61 |
|              | Horizontal at 2m | 0.83 | 2.55 |

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Broadband antennas (Biconical or Log-Periodic as specified) using identical antenna method and a spectrum analyzer on 50x80 meter ground plane.

|                                        |            |                  |      |      |
|----------------------------------------|------------|------------------|------|------|
| Biconical Antennas at 3 meter distance | 30 to 72.5 | Vertical at 1m   | 0.72 | 2    |
|                                        |            | Vertical at 1.5m | 0.74 | 2    |
|                                        |            | Horizontal at 1m | 0.72 | 2    |
|                                        |            | Horizontal at 2m | 0.71 | 2    |
| 72.5 to 115                            |            | Vertical at 1m   | 0.31 | 20   |
|                                        |            | Vertical at 1.5m | 0.37 | 2.09 |
|                                        |            | Horizontal at 1m | 0.30 | 2.02 |
|                                        |            | Horizontal at 2m | 0.29 | 2.02 |
| 115 to 157.5                           |            | Vertical at 1m   | 0.27 | 2.22 |
|                                        |            | Vertical at 1.5m | 0.33 | 2.31 |
|                                        |            | Horizontal at 1m | 0.20 | 2.43 |
|                                        |            | Horizontal at 2m | 0.18 | 2.13 |

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|-----------------------------------------|---------------------|------|------|
| 157.5 to 200                            | Vertical at 1m      | 0.34 | 2.26 |
|                                         | Vertical at 1.5m    | 0.39 | 2.31 |
|                                         | Horizontal at 1m    | 0.24 | 2.20 |
|                                         | Horizontal at 2m    | 0.24 | 2.19 |
|                                         | Horizontal/Vertical | 0.33 | 2    |
| 200 to 300                              | Vertical at 1m      | 0.34 | 2.26 |
|                                         | Vertical at 1.5m    | 0.39 | 2.31 |
|                                         | Horizontal at 1m    | 0.24 | 2.20 |
|                                         | Horizontal at 2m    | 0.24 | 2.19 |
|                                         | Horizontal/Vertical | 0.33 | 2    |
| Biconical Antennas at 10 meter distance |                     |      |      |
| 30 to 72.5                              | Vertical at 1m      | 0.49 | 2    |
|                                         | Vertical at 1.5m    | 0.48 | 2    |
|                                         | Horizontal at 1m    | 0.48 | 2    |
|                                         | Horizontal at 2m    | 0.48 | 2    |
| 72.5 to 115                             | Vertical at 1m      | 0.32 | 2.02 |
|                                         | Vertical at 1.5m    | 0.31 | 2.02 |
|                                         | Horizontal at 1m    | 0.30 | 2.02 |
|                                         | Horizontal at 2m    | 0.31 | 2.02 |
| 115 to 157.5                            | Vertical at 1m      | 0.25 | 2.17 |
|                                         | Vertical at 1.5m    | 0.23 | 2.13 |
|                                         | Horizontal at 1m    | 0.19 | 2.12 |

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|-------------------------------------------|---------------------|------|------|
| 157.5 to 200                              | Horizontal at 2m    | 0.21 | 2.11 |
|                                           | Vertical at 1m      | 0.26 | 2.17 |
|                                           | Vertical at 1.5m    | 0.25 | 2.17 |
|                                           | Horizontal at 1m    | 0.23 | 2.22 |
|                                           | Horizontal at 2m    | 0.25 | 2.17 |
| 200 to 300                                | Horizontal/Vertical | 0.33 | 2    |
| Log-Periodic Antennas at 3 meter distance |                     |      |      |
| 200 to 300                                | Vertical at 1m      | 0.36 | 2.24 |
|                                           | Vertical at 1.5m    | 0.37 | 2.21 |
|                                           | Horizontal at 1m    | 0.42 | 2.19 |
|                                           | Horizontal at 2m    | 0.37 | 2.21 |
| 300 to 400                                | Vertical at 1m      | 0.36 | 2.23 |
|                                           | Vertical at 1.5m    | 0.37 | 2.20 |
|                                           | Horizontal at 1m    | 0.48 | 2.22 |
|                                           | Horizontal at 2m    | 0.38 | 2.20 |
| 400 to 500                                | Vertical at 1m      | 0.28 | 2.18 |
|                                           | Vertical at 1.5m    | 0.33 | 2.17 |

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|            |                  |      |      |
|------------|------------------|------|------|
| 500 to 600 | Horizontal at 1m | 0.40 | 2.25 |
|            | Horizontal at 2m | 0.29 | 2.16 |
|            | Vertical at 1m   | 0.28 | 2.16 |
|            | Vertical at 1.5m | 0.30 | 2.16 |
| 600 to 700 | Horizontal at 1m | 0.35 | 2.21 |
|            | Horizontal at 2m | 0.27 | 2.16 |
|            | Vertical at 1m   | 0.25 | 2.15 |
|            | Vertical at 1.5m | 0.31 | 2.19 |
| 700 to 800 | Horizontal at 1m | 0.33 | 2.22 |
|            | Horizontal at 2m | 0.25 | 2.15 |
|            | Vertical at 1m   | 0.36 | 2.21 |
|            | Vertical at 1.5m | 0.41 | 2.20 |
| 800 to 900 | Horizontal at 1m | 0.42 | 2.21 |
|            | Horizontal at 2m | 0.17 | 2.22 |
|            | Vertical at 1m   | 0.40 | 2.22 |
|            | Vertical at 1.5m | 0.45 | 2.20 |
|            | Horizontal at 1m | 0.47 | 2.20 |
|            | Horizontal at 2m | 0.40 | 2.24 |

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|                                            |                  |      |      |
|--------------------------------------------|------------------|------|------|
| 900 to 10000                               | Vertical at 1m   | 0.35 | 2.18 |
|                                            | Vertical at 1.5m | 0.46 | 2.24 |
|                                            | Horizontal at 1m | 0.44 | 2.23 |
|                                            | Horizontal at 2m | 0.35 | 2.18 |
| Log Periodic Antennas at 10 meter distance |                  |      |      |
|                                            | Vertical at 1m   | 0.38 | 2.20 |
|                                            | Vertical at 1.5m | 0.36 | 2.23 |
|                                            | Vertical at 1m   | 0.36 | 2.23 |
| 200 to 300                                 | Horizontal at 2m | 0.38 | 2.20 |
|                                            | Vertical at 1m   | 0.38 | 2.19 |
|                                            | Vertical at 1.5m | 0.36 | 2.22 |
|                                            | Horizontal at 1m | 0.24 | 2.43 |
| 300 to 400                                 | Horizontal at 2m | 0.38 | 2.19 |
|                                            | Vertical at 1m   | 0.30 | 2.16 |
|                                            | Vertical at 1.5m | 0.33 | 2.06 |
|                                            | Horizontal at 1m | 0.27 | 2.14 |
| 400 to 500                                 | Horizontal at 2m | 0.34 | 2.19 |
|                                            | Vertical at 1m   |      |      |
|                                            | Vertical at 1.5m |      |      |
|                                            | Horizontal at 1m |      |      |

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|            |                  |      |      |
|------------|------------------|------|------|
| 500 to 600 | Vertical at 1m   | 0.22 | 2.16 |
|            | Vertical at 1.5m | 0.32 | 2.06 |
|            | Horizontal at 1m | 0.26 | 2.19 |
|            | Horizontal at 2m | 0.29 | 2.16 |
| 600 to 700 | Vertical at 1m   | 0.28 | 2.16 |
|            | Vertical at 1.5m | 0.30 | 2.05 |
|            | Horizontal at 1m | 0.24 | 2.17 |
|            | Horizontal at 2m | 0.26 | 2.15 |
| 700 to 800 | Vertical at 1m   | 0.37 | 2.21 |
|            | Vertical at 1.5m | 0.38 | 2.12 |
|            | Horizontal at 1m | 0.34 | 2.26 |
|            | Horizontal at 2m | 0.40 | 2.20 |
| 800 to 900 | Vertical at 1m   | 0.45 | 2.20 |
|            | Vertical at 1.5m | 0.42 | 2.14 |
|            | Horizontal at 1m | 0.39 | 2.26 |
|            | Horizontal at 2m | 0.41 | 2.21 |

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|--------------|------------------|------|------|
| 900 to 10000 | Vertical at 1m   | 0.55 | 2.33 |
|              | Vertical at 1.5m | 0.37 | 2.11 |
|              | Horizontal at 1m | 0.32 | 2.23 |
|              | Horizontal at 2m | 0.32 | 2.21 |

Broadband antennas (Biconical or Log-Periodic as specified) using identical antenna method and a network analyzer on 50x80 meter ground plane.

Biconical Antennas at 3 meter distance

|             |                  |      |      |
|-------------|------------------|------|------|
| 30 to 72.5  | Vertical at 1m   | 0.15 | 2.13 |
|             | Vertical at 1.5m | 0.28 | 2.23 |
|             | Horizontal at 1m | 0.22 | 2.19 |
|             | Horizontal at 2m | 0.09 | 2    |
| 72.5 to 115 | Vertical at 1m   | 0.19 | 2.17 |
|             | Vertical at 1.5m | 0.32 | 2.24 |
|             | Horizontal at 1m | 0.14 | 2.12 |
|             | Horizontal at 2m | 0.09 | 2.02 |

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|                                         |                  |      |      |
|-----------------------------------------|------------------|------|------|
| 115 to 157.5                            | Vertical at 1m   | 0.27 | 2.23 |
|                                         | Vertical at 1.5m | 0.35 | 2.24 |
|                                         | Horizontal at 1m | 0.13 | 2.08 |
|                                         | Horizontal at 2m | 0.09 | 2.02 |
| 157.5 to 200                            | Vertical at 1m   | 0.34 | 2.25 |
|                                         | Vertical at 1.5m | 0.40 | 2.26 |
|                                         | Horizontal at 1m | 0.12 | 2.07 |
|                                         | Horizontal at 2m | 0.12 | 2.08 |
| Biconical Antennas at 10 meter distance |                  |      |      |
| 30 to 72.5                              | Vertical at 1m   | 0.24 | 2.16 |
|                                         | Vertical at 1.5m | 0.24 | 2.16 |
|                                         | Horizontal at 1m | 0.27 | 2.06 |
|                                         | Horizontal at 2m | 0.23 | 2.18 |
| 72.5 to 115                             | Vertical at 1m   | 0.17 | 2.16 |
|                                         | Vertical at 1.5m | 0.16 | 2.14 |
|                                         | Horizontal at 1m | 0.22 | 2.08 |
|                                         | Horizontal at 2m | 0.12 | 2.19 |

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|                                           |                  |      |      |
|-------------------------------------------|------------------|------|------|
| 115 to 157.5                              | Vertical at 1m   | 0.19 | 2.18 |
|                                           | Vertical at 1.5m | 0.20 | 2.19 |
|                                           | Horizontal at 1m | 0.18 | 2.13 |
|                                           | Horizontal at 2m | 0.16 | 2.14 |
| 157.5 to 200                              | Vertical at 1m   | 0.21 | 2.19 |
|                                           | Vertical at 1.5m | 0.18 | 2.16 |
|                                           | Horizontal at 1m | 0.23 | 2.20 |
|                                           | Horizontal at 2m | 0.17 | 2.16 |
| Log-Periodic Antennas at 3 meter distance |                  |      |      |
| 200 to 300                                | Vertical at 1m   | 0.10 | 2.03 |
|                                           | Vertical at 1.5m | 0.17 | 2.16 |
|                                           | Horizontal at 1m | 0.34 | 2.25 |
|                                           | Horizontal at 2m | 0.17 | 2.14 |
| 300 to 400                                | Vertical at 1m   | 0.10 | 2.04 |
|                                           | Vertical at 1.5m | 0.18 | 2.16 |
|                                           | Horizontal at 1m | 0.45 | 2.26 |
|                                           | Horizontal at 2m | 0.19 | 2.18 |

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|            |                  |      |      |
|------------|------------------|------|------|
| 400 to 500 | Vertical at 1m   | 0.13 | 2.10 |
|            | Vertical at 1.5m | 0.28 | 2.23 |
|            | Horizontal at 1m | 0.41 | 2.26 |
|            | Horizontal at 2m | 0.18 | 2.17 |
| 500 to 600 | Vertical at 1m   | 0.19 | 2.17 |
|            | Vertical at 1.5m | 0.24 | 2.21 |
|            | Horizontal at 1m | 0.33 | 2.25 |
|            | Horizontal at 2m | 0.17 | 2.16 |
| 600 to 700 | Vertical at 1m   | 0.15 | 2.13 |
|            | Vertical at 1.5m | 0.29 | 2.23 |
|            | Horizontal at 1m | 0.33 | 2.24 |
|            | Horizontal at 2m | 0.16 | 2.14 |
| 700 to 800 | Vertical at 1m   | 0.20 | 2.19 |
|            | Vertical at 1.5m | 0.34 | 2.25 |
|            | Horizontal at 1m | 0.37 | 2.25 |
|            | Horizontal at 2m | 0.17 | 2.16 |

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|                                            |                  |      |      |
|--------------------------------------------|------------------|------|------|
| 800 to 900                                 | Vertical at 1m   | 0.21 | 2.19 |
|                                            | Vertical at 1.5m | 0.35 | 2.25 |
|                                            | Horizontal at 1m | 0.39 | 2.25 |
|                                            | Horizontal at 2m | 0.17 | 2.15 |
| 900 to 10000                               | Vertical at 1m   | 0.24 | 2.22 |
|                                            | Vertical at 1.5m | 0.45 | 2.27 |
|                                            | Horizontal at 1m | 0.43 | 2.26 |
|                                            | Horizontal at 2m | 0.25 | 2.21 |
| Log-Periodic Antennas at 10 meter distance |                  |      |      |
| 200 to 300                                 | Vertical at 1m   | 0.15 | 2.11 |
|                                            | Vertical at 1.5m | 0.22 | 2.15 |
|                                            | Horizontal at 1m | 0.34 | 2.25 |
|                                            | Horizontal at 2m | 0.19 | 2.16 |
| 300 to 400                                 | Vertical at 1m   | 0.15 | 2.11 |
|                                            | Vertical at 1.5m | 0.24 | 2.16 |
|                                            | Horizontal at 1m | 0.25 | 2.55 |
|                                            | Horizontal at 2m | 0.20 | 2.18 |

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|            |                  |      |      |
|------------|------------------|------|------|
| 400 to 500 | Vertical at 1m   | 0.17 | 2.12 |
|            | Vertical at 1.5m | 0.28 | 2.24 |
|            | Horizontal at 1m | 0.38 | 2.35 |
|            | Horizontal at 2m | 0.23 | 2.16 |
| 500 to 600 | Vertical at 1m   | 0.20 | 2.16 |
|            | Vertical at 1.5m | 0.26 | 2.19 |
|            | Horizontal at 1m | 0.34 | 2.23 |
|            | Horizontal at 2m | 0.19 | 2.14 |
| 600 to 700 | Vertical at 1m   | 0.19 | 2.13 |
|            | Vertical at 1.5m | 0.29 | 2.23 |
|            | Horizontal at 1m | 0.34 | 2.22 |
|            | Horizontal at 2m | 0.18 | 2.13 |
| 700 to 800 | Vertical at 1m   | 0.22 | 2.17 |
|            | Vertical at 1.5m | 0.34 | 2.26 |
|            | Horizontal at 1m | 0.37 | 2.26 |
|            | Horizontal at 2m | 0.25 | 2.17 |

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|              |                  |      |      |
|--------------|------------------|------|------|
| 800 to 900   | Vertical at 1m   | 0.27 | 2.17 |
|              | Vertical at 1.5m | 0.34 | 2.29 |
|              | Horizontal at 1m | 0.38 | 2.27 |
|              | Horizontal at 2m | 0.20 | 2.14 |
| 900 to 10000 | Vertical at 1m   | 0.41 | 2.21 |
|              | Vertical at 1.5m | 0.29 | 2.19 |
|              | Horizontal at 1m | 0.27 | 2.21 |
|              | Horizontal at 2m | 0.27 | 2.19 |

High precision Dipole antennas (e.g., NIST Fitzgerald or NPL Chase type) at 10 meters using a spectrum analyzer on a 50x80 meter ground plane

| Frequency Range in MHz | Polarization | Best Uncertainty ( $\pm$ ) in $df_{\text{meas}}$ | Value of K |
|------------------------|--------------|--------------------------------------------------|------------|
| 30 to 60               | Horizontal   | 0.16                                             | 2.18       |
| 50 to 150              | Horizontal   | 0.18                                             | 2.16       |
| 140 to 400             | Horizontal   | 0.23                                             | 2.15       |
| 400 to 1000            | Horizontal   | 0.21                                             | 2.14       |

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Standard Dipole antennas (e.g., EMCO 3121) at 3 and 10 meters using a spectrum analyzer on a 50x80 meter ground plane

| Frequency Range in MHz | Distance            | Best Uncertainty ( $\pm$ ) in dB <sub>max</sub> | Value of K |
|------------------------|---------------------|-------------------------------------------------|------------|
| 30 to 1000             | Horizontal/Vertical | 0.40                                            | 2          |

Broadband antennas (Biconical or Log-Periodic as specified) using 3 antenna method on Site 1

| Frequency Range in MHz | Distance  | Best Uncertainty ( $\pm$ ) in dB <sub>max</sub> | Value of K |
|------------------------|-----------|-------------------------------------------------|------------|
| 30 to 70               | 3 meters  | 1.87                                            | 2.11       |
|                        | 10 meters | 1.79                                            | 2.08       |
| 70 to 200              | 3 meters  | 1.19                                            | 2.18       |
|                        | 10 meters | 0.52                                            | 2.33       |

Log-Periodic antennas

|             |           |      |      |
|-------------|-----------|------|------|
| 200 to 400  | 3 meters  | 1.01 | 2.42 |
|             | 10 meters | 0.85 | 2.33 |
| 400 to 1000 | 3 meters  | 1.13 | 2.46 |
|             | 10 meters | 1.01 | 2.40 |

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Broadband antennas (Biconical or Log-Periodic as specified) using identical antenna method on Site 1

|                    |           |      |      |  |  |
|--------------------|-----------|------|------|--|--|
| Biconical antennas |           |      |      |  |  |
| 30 to 70           | 3 meters  | 0.63 | 2.10 |  |  |
|                    | 10 meters | 0.60 | 2.07 |  |  |
| 70 to 200          | 3 meters  | 0.58 | 2.34 |  |  |
|                    | 10 meters | 0.53 | 2.28 |  |  |

Log-Periodic antennas

|             |           |      |      |
|-------------|-----------|------|------|
| 200 to 400  | 3 meters  | 0.38 | 2.20 |
|             | 10 meters | 0.35 | 2.16 |
| 400 to 1000 | 3 meters  | 0.52 | 2.18 |
|             | 10 meters | 0.50 | 2.17 |

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High precision Dipole antennas (e.g., NIST Fitzgerald or NPL Chase type) at 10 meters using a spectrum analyzer on site 1

| Frequency Range in MHz | Polarization | Best Uncertainty ( $\pm$ ) in $dB_{\text{power}}$ | Value of K |
|------------------------|--------------|---------------------------------------------------|------------|
| 30 to 60               | Horizontal   | 0.17                                              | 2.17       |
| 50 to 150              | Horizontal   | 0.23                                              | 2.25       |
| 140 to 400             | Horizontal   | 0.70                                              | 2.56       |
| 400 to 1000            | Horizontal   | 0.81                                              | 2.38       |

Standard Dipole antennas (e.g., EMCO 3121) at 3 and 10 meters using a spectrum analyzer on site 1

|            |                     |     |   |
|------------|---------------------|-----|---|
| 30 to 1000 | Horizontal/Vertical | 1.0 | 2 |
|------------|---------------------|-----|---|

Bi-log antennas at 3 and 10 meters using a spectrum analyzer on 50x80 meter ground plane.

|                  |                     |      |   |
|------------------|---------------------|------|---|
| 3 antenna method |                     |      |   |
| 20 to 1000       | Horizontal/Vertical | 0.74 | 2 |
| 1000 to 6000     | Horizontal/Vertical | 1.16 | 2 |

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Identical antenna method

|              |                     |      |   |
|--------------|---------------------|------|---|
| 20 to 1000   | Horizontal/Vertical | 0.45 | 2 |
| 1000 to 6000 | Horizontal/Vertical | 0.69 | 2 |

Antennas at frequencies above 1 GHz (e.g., EMCO 3115) up to 10 meters distance using a spectrum analyzer

| Frequency Range in GHz | Method                           | Polarization        | Best Uncertainty ( $\pm$ ) in $dB_{\text{power}}$ | Value of K |
|------------------------|----------------------------------|---------------------|---------------------------------------------------|------------|
| 1 to 18                | 3 antenna, OATS                  | Horizontal/Vertical | 0.95                                              | 2          |
| 1 to 18                | Identical antenna, OATS          | Horizontal/Vertical | 0.49                                              | 2          |
| 1 to 18                | Standard field, in anechoic room | Horizontal/Vertical | 1.37                                              | 2          |
| 1 to 18                | Substitution                     | Horizontal/Vertical | 1.25                                              | 2          |

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Antennas at frequencies above 18 GHz (e.g., EMCO 3116) up to 1 meter distance using a spectrum analyzer

|          |                                  |                     |      |   |
|----------|----------------------------------|---------------------|------|---|
| 18 to 40 | Substitution                     | Horizontal/Vertical | 1.25 | 2 |
| 18 to 40 | Standard field, in anechoic room | Horizontal/Vertical | 1.32 | 2 |

|        | Range             | Best Uncertainty ( $\pm y_{95\%}^2$ ) | Remarks        |
|--------|-------------------|---------------------------------------|----------------|
| LISN's | 10 kHz to 100 MHz | 0.3 dB                                | Insertion Loss |
|        | 10 kHz to 100 MHz | 0.3%                                  | Impedance      |

|                                 |                 |        |                |
|---------------------------------|-----------------|--------|----------------|
| Current Probes/Injection Probes | 5 Hz to 500 MHz | 0.3 dB | Insertion Loss |
|---------------------------------|-----------------|--------|----------------|

|                  |                |        |  |
|------------------|----------------|--------|--|
| Absorbing Clamps | 30 to 1000 MHz | 2.3 dB |  |
|------------------|----------------|--------|--|

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|                                |                   |                     |                             |
|--------------------------------|-------------------|---------------------|-----------------------------|
| CDN'S & 150 to 50 Ohm Adapters | 10 kHz to 230 MHz | 0.314 %<br>0.359 dB | Impedance<br>Insertion Loss |
|--------------------------------|-------------------|---------------------|-----------------------------|

|                  |                                                                         |                                      |                                                                       |
|------------------|-------------------------------------------------------------------------|--------------------------------------|-----------------------------------------------------------------------|
| Isotropic Probes | 10 kHz to 1 GHz<br>100 MHz to 18 GHz<br>10 kHz to 1 GHz<br>18 to 40 GHz | 2.4 dB<br>2.4 dB<br>1.3 dB<br>1.9 dB | GTEM, Boonton MVM<br>GTEM, PWR Sensors<br>Stripline<br>Standard Field |
|------------------|-------------------------------------------------------------------------|--------------------------------------|-----------------------------------------------------------------------|

|                    |                                      |                    |                      |
|--------------------|--------------------------------------|--------------------|----------------------|
| RF Pre-amps & Amps | 10 kHz to 18 GHz<br>18 GHz to 40 GHz | 0.37 dB<br>0.45 dB | GAIN Cal<br>GAIN Cal |
|--------------------|--------------------------------------|--------------------|----------------------|

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|                   |                  |         |                                                |
|-------------------|------------------|---------|------------------------------------------------|
| Loop Antennas     | 1 kHz to 30 MHz  | 0.75 dB | Vacuo Junction                                 |
|                   | 20 Hz to 100 kHz | 0.74 dB | Series Resistor                                |
|                   | 20 Hz to 30 MHz  | 0.90 dB | By substitution                                |
| Rod Antennas      | 100 Hz to 30 MHz | 0.5     | Using ECSM (Insertion Loss with Mfr's Fixture) |
|                   | 100 Hz to 10 kHz | 1.0     | Using NIST 1347                                |
|                   | 10 kHz to 30 MHz | 0.9     | Using NIST 1347                                |
| RF Insertion Loss | 10 kHz to 18 GHz | 0.24 dB | for use with Network Analyzers                 |
|                   | 10 kHz to 18 GHz | 3.181 % | for use with RF Power Sensors                  |
|                   | 10 kHz to 18 GHz | 0.37 dB | for use with Spectrum Analyzers                |
|                   | 18 kHz to 40 GHz | 0.45 dB | for use with Spectrum Analyzers                |

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|                                                           |         |         |               |
|-----------------------------------------------------------|---------|---------|---------------|
| ESD Simulators (0 to 25 kV)/Surge Generators (0 to 10 kV) |         |         |               |
| ESD 2 kV                                                  | 0.622 % | Contact | Air Discharge |
| ESD 4 kV                                                  | 0.657 % | Contact |               |
| ESD 6 kV                                                  | 0.708 % | Contact |               |
| ESD 8 kV                                                  | 0.681 % | Contact |               |
| ESD                                                       | 2.053 % |         |               |
| Surge/EFT                                                 |         |         |               |
| 0 to 10 kV                                                | 0.8 %   |         |               |
| .2ns to 5 seconds                                         | 0.41 %  |         |               |

1. Represents an expanded uncertainty corresponding to a 95.45 % level of confidence using a coverage factor,  $k$ . Values of  $k$  other than 2 were approximated by a t-distribution with the effective degrees of freedom  $\nu_{eff}$  obtained from the Welch-Satterthwaite formula.
2. Represents an expanded uncertainty using a coverage factor,  $k = 2$ .

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**CALIBRATION LABORATORIES**

DAVID L. ELLIS CO., INCORPORATED

310 Old High Street, P.O. Box 592  
Acton, MA 01720-0010  
Mr. Robert A. Ellis  
Phone: 978-897-1795 Fax: 978-897-0844  
E-Mail: dlellisco@aol.com  
URL: <http://www.hardness-testblocks.com>

| MECHANICAL                      | Best Uncertainty (±) in Rockwell Points <sup>9001.2</sup> | Remarks |
|---------------------------------|-----------------------------------------------------------|---------|
| <b>Hardness Scale and Range</b> |                                                           |         |
| <b>HRA Steel Scale</b>          |                                                           |         |
| 80                              | 0.13                                                      |         |
| 64                              | 0.21                                                      |         |
| <b>HRB Scale</b>                |                                                           |         |
| 84                              | 0.55                                                      |         |
| 40                              | 0.92                                                      |         |
| <b>HRC Scale</b>                |                                                           |         |
| 65                              | 0.30                                                      |         |
| 45                              | 0.32                                                      |         |
| 26                              | 0.37                                                      |         |

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**NVLAP**<sup>®</sup>
  
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**Scope of Accreditation**

ISO/IEC GUIDE 25:1990  
ANSI/NCSL Z540-1:1994  
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|                  |      |  |
|------------------|------|--|
| <b>HRD Scale</b> |      |  |
| 71               | 0.08 |  |
| 46               | 0.08 |  |
| <b>HRE Scale</b> |      |  |
| 100              | 0.54 |  |
| 77               | 0.31 |  |
| <b>HRF Scale</b> |      |  |
| 96               | 0.55 |  |
| 78               | 0.52 |  |
| <b>HRG Scale</b> |      |  |
| 91               | 0.16 |  |
| 44               | 0.67 |  |
| <b>HRH Scale</b> |      |  |
| 102              | 0.41 |  |
| 84               | 0.45 |  |

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|                  |      |
|------------------|------|
| <b>HRK Scale</b> |      |
| 96               | 0.29 |
| 54               | 0.49 |
| <b>HRL Scale</b> |      |
| 123              | 0.12 |
| 102              | 0.27 |
| <b>HRM Scale</b> |      |
| 118              | 0.41 |
| 82               | 0.52 |
| <b>HRP Scale</b> |      |
| 112              | 0.34 |
| 59               | 0.50 |
| <b>HRR Scale</b> |      |
| 127              | 0.20 |
| 113              | 0.27 |

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|                      |      |
|----------------------|------|
| <b>HRS Scale</b>     |      |
| 124                  | 0.05 |
| 100                  | 0.78 |
| <b>HRV Scale</b>     |      |
| 121                  | 0.25 |
| 87                   | 0.21 |
| <b>HR15N Scale</b>   |      |
| 91                   | 0.23 |
| 73                   | 0.34 |
| <b>HR15T Scale</b>   |      |
| 88                   | 0.22 |
| 73                   | 0.35 |
| <b>HR15W Scale</b>   |      |
| 94                   | 0.42 |
| 84                   | 0.26 |
| <b>HR15X S Scale</b> |      |
| 96                   | 0.45 |
| 83                   | 0.38 |

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|                    |      |
|--------------------|------|
| <b>HR15Y Scale</b> |      |
| 98                 | 0.14 |
| 90                 | 0.31 |
| <b>HR30N Scale</b> |      |
| 78                 | 0.16 |
| 47                 | 0.22 |
| <b>HR30T Scale</b> |      |
| 73                 | 0.17 |
| 41                 | 0.45 |
| <b>HR30W Scale</b> |      |
| 86                 | 0.40 |
| 44                 | 0.76 |
| <b>HR30X Scale</b> |      |
| 92                 | 0.16 |
| 66                 | 0.82 |
| <b>HR30Y Scale</b> |      |
| 96                 | 0.22 |
| 80                 | 0.14 |

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|                    |      |
|--------------------|------|
| <b>HR45N Scale</b> |      |
| 67                 | 0.11 |
| 27                 | 0.46 |
| <b>HR45T Scale</b> |      |
| 59                 | 0.27 |
| 10                 | 0.46 |
| <b>HR45W Scale</b> |      |
| 79                 | 0.61 |
| 18                 | 0.75 |
| <b>HR45X Scale</b> |      |
| 88                 | 0.11 |
| 49                 | 0.52 |
| <b>HR45Y Scale</b> |      |
| 94                 | 0.16 |
| 69                 | 0.44 |

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DAVID L. ELLIS CO., INCORPORATED

NVLAP Code: 20/M13

Field Service Indirect Verification of Hardness Testing Machines

Hardness Scale and Range Best Uncertainty ( $\pm$ ) in Rockwell Points<sup>600.1,2</sup>

Remarks

HRA Steel Scale

80 0.15

64 0.25

HRB Scale

84 0.61

40 0.96

HRC Scale

65 0.31

45 0.36

26 0.40

HRD Scale

71 0.10

46 0.11

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HRE Scale

100

0.70

77

0.45

HRF Scale

96

0.71

78

0.55

HRG Scale

91

0.26

44

0.84

HRH Scale

102

0.42

84

0.67

HRK Scale

96

0.38

54

0.85

HRL Scale

123

0.13

102

0.49

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|                    |      |
|--------------------|------|
| <b>HRM Scale</b>   |      |
| 118                | 0.64 |
| 82                 | 0.57 |
| <b>HRP Scale</b>   |      |
| 112                | 0.72 |
| 59                 | 0.89 |
| <b>HRR Scale</b>   |      |
| 127                | 0.22 |
| 113                | 0.41 |
| <b>HRS Scale</b>   |      |
| 124                | 0.08 |
| 100                | 0.84 |
| <b>HRV Scale</b>   |      |
| 121                | 0.28 |
| 87                 | 0.49 |
| <b>HR15N Scale</b> |      |
| 91                 | 0.25 |
| 73                 | 0.41 |

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|                      |      |
|----------------------|------|
| <b>HR15T Scale</b>   |      |
| 88                   | 0.24 |
| 73                   | 0.37 |
| <b>HR15W Scale</b>   |      |
| 94                   | 0.42 |
| 84                   | 0.26 |
| <b>HR15X S Scale</b> |      |
| 96                   | 0.45 |
| 83                   | 0.49 |
| <b>HR15Y Scale</b>   |      |
| 98                   | 0.16 |
| 90                   | 0.33 |
| <b>HR30N Scale</b>   |      |
| 78                   | 0.27 |
| 47                   | 0.27 |
| <b>HR30T Scale</b>   |      |
| 73                   | 0.20 |
| 41                   | 0.80 |

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|                    |      |
|--------------------|------|
| <b>HR30W Scale</b> |      |
| 86                 | 0.41 |
| 44                 | 1.08 |
| <b>HR30X Scale</b> |      |
| 92                 | 0.20 |
| 66                 | 0.96 |
| <b>HR30Y Scale</b> |      |
| 96                 | 0.35 |
| 80                 | 0.28 |
| <b>HR45N Scale</b> |      |
| 67                 | 0.12 |
| 27                 | 0.57 |
| <b>HR45T Scale</b> |      |
| 59                 | 0.29 |
| 10                 | 0.64 |
| <b>HR45W Scale</b> |      |
| 79                 | 0.64 |
| 18                 | 0.83 |

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|                    |      |
|--------------------|------|
| <b>HR45X Scale</b> |      |
| 88                 | 0.13 |
| 49                 | 0.73 |
| <b>HR45Y Scale</b> |      |
| 94                 | 0.18 |
| 69                 | 0.50 |

1 Represents an expanded uncertainty using a coverage factor,  $k=2$ .

2. The standardized test blocks used for verification are calibrated at the David L. Ellis Company, Inc. Hardness Calibration Laboratory in accordance with ASTM E18-00 section C using N.I.S.T. Rockwell HRC standards reference materials (SRM) 2810, 2811, and 2812. All other Rockwell scales are traceable to David L. Ellis Co., Inc. hardness levels through laboratory standardizing machines. The standardizing machines are directly verified according to ASTM E18-00 using devices that are traceable to N.I.S.T. either directly or through a NVLAP approved laboratory.

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CALIBRATION LABORATORIES

NVLAP LAB CODE 200154-0

**COMPAQ CORPORATE METROLOGY**

20555 SH 249 (MS 070110)  
 P.O. Box 692000 (MS 070110)  
 Houston, TX 77269-2000  
 Mr. Christopher H. Grachanen  
 Phone: 281-514-8486 Fax: 281-518-7275  
 E-Mail: chris.grachanen@compaq.com

**DC/LOW FREQUENCY**

NVLAP Code: 20/E17  
 Pulse Waveform

| Parameter           | Range            | Best Uncertainty ( $\pm$ ) <sup>year 1</sup> | Remarks     |
|---------------------|------------------|----------------------------------------------|-------------|
| Risetime (Generate) | < 20 ps          | 14.43 %                                      |             |
| Risetime (Measure)  | < 1 ns to 100 ps | 5.78 %                                       | Single Shot |

**Impulse Spectral Amplitude**

|                        |                   |         |            |
|------------------------|-------------------|---------|------------|
| Impulse Noise (Source) | 10 kHz to 150 kHz | 14.21 % | Band A     |
| Impulse Noise (Source) | 150 kHz to 30 MHz | 14.21 % | Band B     |
| Impulse Noise (Source) | 30 MHz to 1 GHz   | 23.43 % | Band C & D |

|              |               |        |               |
|--------------|---------------|--------|---------------|
| HV (Measure) | 1 kV to 60 kV | 0.13 % | with HVD      |
|              | 1 kV to 40 kV | 2.33 % | with HV Probe |

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**COMPAQ CORPORATE METROLOGY**

**TIME AND FREQUENCY**

NVLAP Code: 20/F03  
 Oscillator Characterization

| Parameter              | Nominal        | Best Uncertainty ( $\pm$ ) <sup>year 1</sup> | Remarks              |
|------------------------|----------------|----------------------------------------------|----------------------|
| Frequency/Period       |                |                                              |                      |
| Frequency (Source)     | 10 MHz         | $3.69 \times 10^{-11}$                       | GPS Reference Output |
| Frequency (Measure)    | 10 MHz, 1 Vrms | $6.25 \times 10^{-10}$                       | Rubidium Counter     |
| Frequency (Comparison) | 10 MHz, 1 Vrms | $8.17 \times 10^{-10}$                       | Rubidium Counter     |

**Duty Cycle/Duration**

|                     |                |                        |                  |
|---------------------|----------------|------------------------|------------------|
| @ 10s Time Interval | 10 MHz, 1 Vrms | $8.51 \times 10^{-10}$ | Rubidium Counter |
| Jitter              |                |                        |                  |
| @ 200 mV p-p        | 2 GHz          | 1.38 %                 |                  |
| @ 1Vrms             | 10 MHz         | 1.71 %                 |                  |

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#### COMPAQ CORPORATE METROLOGY

|                                   |                    |                      |                        |
|-----------------------------------|--------------------|----------------------|------------------------|
| Drift                             |                    |                      |                        |
| @ 100 s Time Interval             | 10 MHz             | $5.7 \times 10^{-9}$ |                        |
| Spectral Purity Phase Noise       |                    |                      | Noise Test Set         |
|                                   | 10 MHz to 18 GHz   | 34.3 %               |                        |
| Single Sideband Phase Noise (SSB) |                    |                      |                        |
| @ +30 to -20 dBm                  | 10 MHz to 1300 MHz | 15.10 %              | with receiver          |
| @ 0 $\geq$ -22 dBm                | 1 GHz              | 15.10 %              | with spectrum analyzer |
| Harmonic Distortion               |                    |                      |                        |
| @ 0 dBm                           | 0.2 Hz to 100 Hz   | 5.44 %               |                        |
| @ 0 dBm                           | 1 GHz              | 15.10 %              |                        |
| @ -22 dBm                         | 10 Hz to 100 kHz   | 29.91 %              |                        |

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#### COMPAQ CORPORATE METROLOGY

|                                               |                        |          |                                            |
|-----------------------------------------------|------------------------|----------|--------------------------------------------|
| Noise Figure                                  |                        |          | Noise Source,<br>Pre Amp Spectrum Analyzer |
| 0 to +30 dB                                   | 10 MHz to 2.9 GHz      | 0.828 dB |                                            |
| 0 to +30 dB                                   | 2.9 GHz to 26.5 GHz    | 0.993 dB | Noise Source,<br>Pre Amp Spectrum Analyzer |
| 2nd Order Harmonic/Intermodulation Distortion |                        |          |                                            |
| @ 0 dBm                                       | 0.24 Hz to 100 Hz      | 5.44 %   |                                            |
| @ 0 dBm                                       | 1 GHz                  | 15.10 %  |                                            |
| AM Modulation                                 |                        |          |                                            |
| AM (Source)                                   | 50 Hz to 50 kHz Rates  | 0.18 %   |                                            |
| AM (Measure)                                  | 50 Hz to 50 kHz Rates  | 1.41 %   |                                            |
| AM (Source)                                   | 33.33 % of depth       | 0.12 %   |                                            |
| FM Modulation                                 |                        |          |                                            |
| FM (Source)                                   | DC to 100 kHz Rates    | 0.16 %   |                                            |
| FM (Measure)                                  | 50 Hz to 100 kHz Rates | 1.72 %   |                                            |

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COMPAQ CORPORATE METROLOGY

FM (Source) 34 kHz Peak Deviation 0.12%

PM Modulation

PM (Measure) 150 kHz to 1300 MHz 4.77%

Spurious Content

@ 0 dBm 0.2 Hz to 100 Hz 5.44%

@ 0 dBm 1 GHz 15.10%

RF/MICROWAVE

NVLAP Code: 20/R13

Attenuators

Relative RF Power (Attenuation-Measure)

| Frequency          | Nominal           | Best Uncertainty ( $\pm$ ) <sup>year</sup> | Remarks |
|--------------------|-------------------|--------------------------------------------|---------|
| 100 kHz to 2.6 GHz | 0 dB to -20 dB    | M + 0.02 dB                                |         |
| 100 kHz to 2.6 GHz | -20 dB to -40 dB  | M + 0.03 dB                                |         |
| 100 kHz to 2.6 GHz | -40 dB to -60 dB  | M + 0.04 dB                                |         |
| 100 kHz to 2.6 GHz | -60 dB to -80 dB  | M + 0.05 dB                                |         |
| 100 kHz to 2.6 GHz | -80 dB to -100 dB | M + 0.06 dB                                |         |

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100 kHz to 2.6 GHz -100 dB to -110 dB M + 0.12 dB

100 kHz to 2.6 GHz -110 dB to -120 dB M + 0.17 dB

2.5 GHz to 26.5 GHz -0 dB to -10 dB M + 0.22 dB

2.5 GHz to 26.5 GHz -10 dB to -20 dB M + 0.09 dB

2.5 GHz to 26.5 GHz -20 dB to -30 dB M + 0.10 dB

2.5 GHz to 26.5 GHz -30 dB to -40 dB M + 0.13 dB

2.5 GHz to 26.5 GHz -40 dB to -50 dB M + 0.14 dB

2.5 GHz to 26.5 GHz -50 dB to -60 dB M + 0.16 dB

2.5 GHz to 26.5 GHz -60 dB to -70 dB M + 0.18 dB

2.5 GHz to 26.5 GHz -70 dB to -80 dB M + 0.20 dB

2.5 GHz to 26.5 GHz -80 dB to -90 dB M + 0.31 dB

2.5 GHz to 26.5 GHz -90 dB to -100 dB M + 0.32 dB

2.5 GHz to 26.5 GHz -100 dB to -110 dB M + 0.34 dB

2.5 GHz to 26.5 GHz -110 dB to -120 dB M + 0.36 dB

30 MHz 0 dB to 50 dB M + 0.07 dB

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**COMPAQ CORPORATE METROLOGY**

| Attenuation High Power (Generate)   |                         |
|-------------------------------------|-------------------------|
| DC to 2 GHz                         | 20 dB                   |
|                                     | M + 0.44 dB             |
|                                     | with Narda 766-20 ATTN  |
| DC to 2 GHz                         | 20 dB                   |
|                                     | M + 0.80 dB             |
|                                     | with Narda 769-20 ATTN  |
| Attenuation High Voltage (Generate) |                         |
| DC to 1 GHz                         | 20 dB                   |
|                                     | M + 0.30 dB             |
| DC to 2 GHz                         | 20 dB                   |
|                                     | 3M + 0.64 dB            |
| Impedance (Source)                  |                         |
| DC to 18 GHz                        | 50 ohms                 |
|                                     | 1.84 %                  |
| DC to 6 GHz                         | 50 ohms                 |
|                                     | 0.61 %                  |
| DC to 3 GHz                         | 75 ohms                 |
|                                     | 0.76 %                  |
| Impedance (Measure)                 |                         |
| 10 Hz to 500 MHz                    | 10 to 1000 ohms         |
|                                     | 8.8 %                   |
| 100 kHz to 500 MHz                  |                         |
|                                     | 2.2 %                   |
| DC to 6 GHz                         | 50 ohms                 |
|                                     | 11.79 %                 |
|                                     | Impedance Probe and VNA |
|                                     | Vector Analyzer (TDR)   |

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| Electrical Length (TDR Measure)                              |                                       |
|--------------------------------------------------------------|---------------------------------------|
| 1 GHz                                                        | 30 cm                                 |
|                                                              | 7.57 %                                |
| Scattering Parameters (Reflection) S11, S22 <sup>max 3</sup> |                                       |
| Range in LinMag                                              | Frequency Range                       |
| Best Uncertainty (±) in LinMag <sup>max 1</sup>              |                                       |
| Remarks                                                      |                                       |
| 0 to 0.333                                                   | 0.05 to 2 GHz                         |
|                                                              | 0.00693                               |
|                                                              | APC 3.5 S-Parameter Test Set, Cal Kit |
| 0 to 0.333                                                   | 2 to 26.5 GHz                         |
|                                                              | 0.00541                               |
|                                                              | APC 3.5 S-Parameter Test Set, Cal Kit |
| 0 to 0.333                                                   | 30 to 300 KHz                         |
|                                                              | 0.00327                               |
|                                                              | VNA - 7mm, Cal Kit                    |
| 0 to 0.333                                                   | 300 KHz to 1.3 GHz                    |
|                                                              | 0.00328                               |
|                                                              | VNA - 7mm, Cal Kit                    |
| 0 to 0.333                                                   | 1.3 to 3 GHz                          |
|                                                              | 0.00495                               |
|                                                              | VNA - 7mm, Cal Kit                    |
| 0 to 0.333                                                   | 3 to 6 GHz                            |
|                                                              | 0.00865                               |
|                                                              | VNA - 7mm, Cal Kit                    |

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 National Voluntary Laboratory Accreditation Program
   
 DEPARTMENT OF COMMERCE • UNITED STATES OF AMERICA

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**Scope of Accreditation**

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ISO/IEC 17025:1999  
 ISO 9002:1994

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NVLAP LAB CODE 200154-0

**CALIBRATION LABORATORIES**
  
 COMPAQ CORPORATE METROLOGY

| Scattering Parameters (Transmission) S21, S12 <sup>max 4</sup> |                    |        |                                       |
|----------------------------------------------------------------|--------------------|--------|---------------------------------------|
| 0.0031 to 0.8912                                               | 0.05 to 2 GHz      | 0.0046 | APC 3.5 S-Parameter Test Set, Cal Kit |
| 0.0031 to 0.8912                                               | 2 to 8 GHz         | 0.0019 | APC 3.5 S-Parameter Test Set, Cal Kit |
| 0.0031 to 0.8912                                               | 8 to 20 GHz        | 0.0021 | APC 3.5 S-Parameter Test Set, Cal Kit |
| 0.0031 to 0.8912                                               | 20 to 26.5 GHz     | 0.0022 | APC 3.5 S-Parameter Test Set, Cal Kit |
| 0.0031 to 0.8912                                               | 30 to 300 KHz      | 0.0021 | VNA - 7 mm, Cal Kit                   |
| 0.0031 to 0.8912                                               | 300 KHz to 1.3 GHz | 0.0019 | VNA - 7 mm, Cal Kit                   |
| 0.0031 to 0.8912                                               | 1.3 to 3 GHz       | 0.0024 | VNA - 7 mm, Cal Kit                   |
| 0.0031 to 0.8912                                               | 3 to 6 GHz         | 0.0044 | VNA - 7 mm, Cal Kit                   |

| NVLAP Code: 20/R17       |         |                                                       |         |
|--------------------------|---------|-------------------------------------------------------|---------|
| Power Meters             |         |                                                       |         |
| Frequency                | Nominal | Best Uncertainty ( $\pm \mu\text{m}$ ) <sup>1,2</sup> | Remarks |
| RF Power Sensor Transfer |         |                                                       |         |
| 10 MHz to 18 GHz         |         | M + 1.54 %                                            |         |
| 50 MHz to 26.5 GHz       |         | M + 2.90 %                                            |         |

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 COMPAQ CORPORATE METROLOGY

|                    |                  |  |             |
|--------------------|------------------|--|-------------|
| RF Power Absolute  |                  |  |             |
| 10 MHz to 18 GHz   |                  |  | M + 1.52 %  |
| 50 MHz to 26.5 GHz |                  |  | M + 2.89 %  |
| 10 kHz to 100 MHz  | 0.5 mV           |  | M + 0.20 dB |
| 100 MHz to 300 MHz | 0.5 mV           |  | M + 0.24 dB |
| 300 MHz to 1 GHz   | 0.5 mV           |  | M + 0.28 dB |
| 1 GHz to 1.2 GHz   | 0.5 mV           |  | M + 0.43 dB |
| 10 kHz to 100 MHz  | 1.0 mV           |  | M + 0.14 dB |
| 100 MHz to 1 GHz   | 1.0 mV           |  | M + 0.20 dB |
| 300 MHz to 1 GHz   | 1.0 mV           |  | M + 0.24 dB |
| 1 GHz to 1.2 GHz   | 1.0 mV           |  | M + 0.42 dB |
| 10 kHz to 100 MHz  | 10 mV to 1000 mV |  | M + 0.11 dB |
| 100 MHz to 300 MHz | 10 mV to 1000 mV |  | M + 0.11 dB |
| 300 MHz to 1 GHz   | 10 mV to 1000 mV |  | M + 0.22 dB |
| 1 GHz to 1.2 GHz   | 10 mV to 1000 mV |  | M + 0.41 dB |

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#### COMPAQ CORPORATE METROLOGY

| Tuned RF Power - Absolute |                      |             |
|---------------------------|----------------------|-------------|
| 100 kHz to 2.6 GHz        | 0 dBm to -100 dBm    | M + 0.28 dB |
| 100 kHz to 2.6 GHz        | -100 dBm to -110 dBm | M + 0.30 dB |
| 100 kHz to 2.6 GHz        | -110 dBm to -120 dBm | M + 0.32 dB |
| 2.5 GHz to 26.5 GHz       | 0 dBm to -10 dBm     | M + 0.64 dB |
| 2.5 GHz to 26.5 GHz       | -10 dBm to -40 dBm   | M + 0.61 dB |
| 2.5 GHz to 26.5 GHz       | -40 dBm to -60 dBm   | M + 0.62 dB |
| 2.5 GHz to 26.5 GHz       | -60 dBm to -80 dBm   | M + 0.63 dB |
| 2.5 GHz to 26.5 GHz       | -80 dBm to -90 dBm   | M + 0.67 dB |
| 2.5 GHz to 26.5 GHz       | -90 dBm to -110 dBm  | M + 0.68 dB |
| 2.5 GHz to 26.5 GHz       | -110 dBm to -120 dBm | M + 0.69 dB |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .
2. M = Mismatch uncertainty.
3. Assumes S21 and S12  $\geq 0.8912$  LinMag
4. Assumes S11 and S22  $\leq 0.3349$  LinMag

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### CALIBRATION LABORATORIES

NVLAP LAB CODE 200182-0

#### EATON CORPORATION INNOVATION CENTER

26201 Northwestern Highway  
P.O. Box 766  
Southfield, MI 48037-0766  
Mr. Ed Bedoun  
Phone: 248-354-5226 Fax: 248-354-6818  
E-Mail: EdABedoun@mail.dtw.etr.com

#### ELECTROMAGNETICS DC/LOW FREQUENCY

NVLAP Code: 20/E05

DC Resistance

| Range in ohms | Best Uncertainty ( $\pm$ ) in ppm <sup>max 1</sup> | Remarks           |
|---------------|----------------------------------------------------|-------------------|
| 0.001         | $\pm 115.5$                                        | Comparison Method |
| 0.01          | $\pm 11.5$                                         | Comparison Method |
| 0.1           | $\pm 11.5$                                         | Comparison Method |
| 1             | $\pm 11.5$                                         | Comparison Method |
| 10            | $\pm 11.5$                                         | Comparison Method |
| 100           | $\pm 11.5$                                         | Comparison Method |
| 1000          | $\pm 11.5$                                         | Comparison Method |
| 10,000        | $\pm 11.5$                                         | Comparison Method |
| 100,000       | $\pm 11.5$                                         | Comparison Method |
| 1,000,000     | $\pm 23.1$                                         | Comparison Method |

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|                         |                                            |                       |
|-------------------------|--------------------------------------------|-----------------------|
| 10,000,000              | ± 53.1                                     | Fluke 5700A           |
| 100,000,000             | ± 150.1                                    | Fluke 5700A           |
| NVLAP Code: 20/E06      |                                            |                       |
| DC Voltage              |                                            |                       |
| Range                   | Best Uncertainty (±) in ppm <sup>max</sup> | Remarks               |
| 10 V                    | ± 1.6                                      | Zener Reference Diode |
| NVLAP Code: 20/E09      |                                            |                       |
| LF AC Voltage           |                                            |                       |
| Remarks                 | Best Uncertainty (±) in ppm <sup>max</sup> | Remarks               |
| 2.2 mV @ 10-20 Hz       | ± (600 Output plus 5 uV)                   | Fluke 5700A           |
| 2.2 mV @ 20-40 Hz       | ± (240 Output plus 5 uV)                   | Fluke 5700A           |
| 2.2 mV @ 40-20 K Hz     | ± (120 Output plus 5 uV)                   | Fluke 5700A           |
| 2.2 mV @ 20 K-50 K Hz   | ± (410 Output plus 5 uV)                   | Fluke 5700A           |
| 2.2 mV @ 50 K-100 K Hz  | ± (950 Output plus 8 uV)                   | Fluke 5700A           |
| 2.2 mV @ 100 K-300 K Hz | ± (1300 Output plus 15 uV)                 | Fluke 5700A           |
| 2.2 mV @ 300 K-500 K Hz | ± (1800 Output plus 30 uV)                 | Fluke 5700A           |
| 2.2 mV @ 500 K-1 M K Hz | ± (3600 Output plus 30 uV)                 | Fluke 5700A           |

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|                         |                             |             |
|-------------------------|-----------------------------|-------------|
| 22 mV @ 10-20 Hz        | ± (600 Output plus 6 uV)    | Fluke 5700A |
| 22 mV @ 20-40 Hz        | ± (240 Output plus 6 uV)    | Fluke 5700A |
| 22 mV @ 40-20 K Hz      | ± (120 Output plus 6 uV)    | Fluke 5700A |
| 22 mV @ 20 K-50 K Hz    | ± (410 Output plus 6 uV)    | Fluke 5700A |
| 22 mV @ 50 K-100 K Hz   | ± (950 Output plus 8 uV)    | Fluke 5700A |
| 22 mV @ 100 K-300 K Hz  | ± (1300 Output plus 15 uV)  | Fluke 5700A |
| 22 mV @ 300 K-500 K Hz  | ± (1800 Output plus 30 uV)  | Fluke 5700A |
| 22 mV @ 500 K- 1 M Hz   | ± (3600 Output plus 30 uV)  | Fluke 5700A |
| 220 mV @ 10-20 Hz       | ± (600 Output plus 16 uV)   | Fluke 5700A |
| 220 mV @ 20-40 Hz       | ± (240 Output plus 10 uV)   | Fluke 5700A |
| 220 mV @ 40-20 K Hz     | ± (110 Output plus 10 uV)   | Fluke 5700A |
| 220 mV @ 20 K-50 K Hz   | ± (360 Output plus 10 uV)   | Fluke 5700A |
| 220 mV @ 50 K-100 K Hz  | ± (900 Output plus 30 uV)   | Fluke 5700A |
| 220 mV @ 100 K-300 K Hz | ± (1100 Output plus 30 uV)  | Fluke 5700A |
| 220 mV @ 300 K-500 K Hz | ± (1800 Output plus 40 uV)  | Fluke 5700A |
| 220 mV @ 500 K-1M Hz    | ± (3600 Output plus 100 uV) | Fluke 5700A |

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|                        |                             |             |
|------------------------|-----------------------------|-------------|
| 2.2 V @ 10-20 Hz       | ± (600 Output plus 100 uV)  | Fluke 5700A |
| 2.2 V @ 20-40 Hz       | ± (180 Output plus 30 uV)   | Fluke 5700A |
| 2.2 V @ 40-20 K Hz     | ± (85 Output plus 7 uV)     | Fluke 5700A |
| 2.2 V @ 20 K-50 K Hz   | ± (140 Output plus 20 uV)   | Fluke 5700A |
| 2.2 V @ 50 K-100 K Hz  | ± (280 Output plus 80 uV)   | Fluke 5700A |
| 2.2 V @ 100 K-300 K Hz | ± (480 Output plus 150 uV)  | Fluke 5700A |
| 2.2 V @ 300 K-500 K Hz | ± (1200 Output plus 400 uV) | Fluke 5700A |
| 2.2 V @ 500 K-1 M Hz   | ± (2400 Output plus 1 mV)   | Fluke 5700A |
| 22 V @ 10-20 Hz        | ± (600 Output plus 1 mV)    | Fluke 5700A |
| 22 V @ 20-40 Hz        | ± (180 Output plus 300 uV)  | Fluke 5700A |
| 22 V @ 40-20 K Hz      | ± (85 Output plus 70 uV)    | Fluke 5700A |
| 22 V @ 20 K-50 K Hz    | ± (140 Output plus 200 uV)  | Fluke 5700A |
| 22 V @ 50 K-100 K Hz   | ± (280 Output plus 400 uV)  | Fluke 5700A |
| 22 V @ 100 K-300 K Hz  | ± (600 Output plus 1.7 mV)  | Fluke 5700A |
| 22 V @ 300 K-500 K Hz  | ± (1400 Output plus 5 mV)   | Fluke 5700A |
| 22 V @ 500 K-1 M Hz    | ± (3000 Output plus 9 mV)   | Fluke 5700A |

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|                        |                              |             |
|------------------------|------------------------------|-------------|
| 220 V @ 10-20 Hz       | ± (600 Output Plus 10 mV)    | Fluke 5700A |
| 220 V @ 20-40 Hz       | ± (180 Output Plus 3 mV)     | Fluke 5700A |
| 220 V @ 40-20 K Hz     | ± (90 Output Plus 1 mV)      | Fluke 5700A |
| 220 V @ 20 K-50 K Hz   | ± (250 Output Plus 4 mV)     | Fluke 5700A |
| 220 V @ 50 K-100 K Hz  | ± (600 Output Plus 10 mV)    | Fluke 5700A |
| 220 V @ 100 K-300 K Hz | ± (1600 Output Plus 110 mV)  | Fluke 5700A |
| 220 V @ 300 K-500 K Hz | ± (5400 Output Plus 110 mV)  | Fluke 5700A |
| 220 V @ 500 K-1 M Hz   | ± (13000 Output Plus 220 mV) | Fluke 5700A |
| 1100 V @ 50 1 K Hz     | ± (90 Output Plus 4 mV)      | Fluke 5700A |
| 1100 V @ 40-1 K Hz     | ± (90 Output Plus 4 mV)      | Fluke 5725A |
| 1100 V @ 1 K-20 K Hz   | ± (165 Output Plus 6 mV)     | Fluke 5725A |
| 1100 V @ 20 K-30 K Hz  | ± (600 Output Plus 114 mV)   | Fluke 5725A |
| 750 V @ 30 K-50 K Hz   | ± (600 Output Plus 114 mV)   | Fluke 5725A |
| 750 V @ 50 K-100 K Hz  | ± (2300 Output Plus 45 mV)   | Fluke 5725A |

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CALIBRATION LABORATORIES NVLAP LAB CODE 200182-0

EATON CORPORATION INNOVATION CENTER

MECHANICAL

NVLAP Code: 20/M11  
Vibration

| Range             | Best Uncertainty ( $\pm$ ) in $\%_{\text{meas}}$ <sup>1</sup> | Remarks           |
|-------------------|---------------------------------------------------------------|-------------------|
| 5 Hz to 9 Hz      | $\pm 2.62\%$                                                  | Comparison Method |
| 10 Hz to 99 Hz    | $\pm 1.62\%$                                                  | Comparison Method |
| 100 Hz to 1999 Hz | $\pm 2.41\%$                                                  | Comparison Method |
| 2 K to 10 K Hz    | $\pm 2.52\%$                                                  | Comparison Method |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .

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NVLAP 2002 DIRECTORY

(See 'How To Use This Directory' on page 7.)

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CALIBRATION LABORATORIES NVLAP LAB CODE 200235-0

STERIS-ISOMEDIX SERVICES

7828 Nagle Avenue  
Morton Grove, IL 60053  
Mr. Paul Mellor  
Phone: 847-247-0970 Fax: 847-247-0882  
E-Mail: paul\_mellor@steris.com

IONIZING RADIATION

NVLAP Code: 20/102  
High Dose Dosimetry

| Source                      | Range                                                            | Best Uncertainty ( $\pm$ ) $\%_{\text{meas}}$ <sup>1</sup> |
|-----------------------------|------------------------------------------------------------------|------------------------------------------------------------|
| <sup>60</sup> Co Gamma Rays | 100 grays or more at a rate of<br>approximately 1 to 20 kGy/hour | 2.5%                                                       |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .

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ISO/IEC 17025:1999  
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## CALIBRATION LABORATORIES

NVLAP LAB CODE 200262-0

### METROPLEX METROLOGY LAB, INC.

2309 E. Loop 820 North  
Fort Worth, TX 76118-7103  
Mr. James L. Johnson  
Phone: 817-589-8300 Fax: 817-589-8311  
E-Mail: jjohnson@metroplexmetrology.com  
URL: <http://www.metroplexmetrology.com>

NVLAP Code: 20/A01 ANSI/NCSL Z540-1-1994; Part 1 Compliant

## DIMENSIONAL

NVLAP Code: 20/D01  
Angular

| Range     | Best Uncertainty ( $\pm$ ) $\mu\text{m}$ <sup>new 1</sup> | Remarks           |
|-----------|-----------------------------------------------------------|-------------------|
| All Sizes | 140 $\mu\text{m}$ per 12 in (2.4 seconds)                 | Gage Blocks       |
| All Sizes | 6 seconds                                                 | Angle Gage Blocks |

NVLAP Code: 20/D03  
Gage Blocks - Steel and Ceramic

| Remarks        | Best Uncertainty ( $\pm$ ) in $\mu\text{m}$ <sup>new 1</sup> | Remarks              |
|----------------|--------------------------------------------------------------|----------------------|
| to 1 in        | 2.2                                                          | Comparison to Master |
| > 1 in to 4 in | (0.8 + 0.8L) <sup>new 2</sup>                                | Comparison to Master |

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## CALIBRATION LABORATORIES

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### METROPLEX METROLOGY LAB, INC.

Gage Blocks - Chrome Carbide

to 1 in  
> 1 in to 4 in  
(1.0 + 4.0L)<sup>new 2</sup>

Comparison to Master  
Comparison to Master

Gage Blocks - Long Blocks

> 4.0 in to 20 in  
(8 + 2.2L)<sup>new 2</sup>

Comparison to Master

NVLAP Code: 20/D05  
Length and Diameter

| Range                                        | Best Uncertainty in $\mu\text{in}$ ( $\pm$ ) $\mu\text{m}$ <sup>new 1</sup> | Remarks                   |
|----------------------------------------------|-----------------------------------------------------------------------------|---------------------------|
| Calipers <sup>new 6</sup><br>to 72 in        | (550 + 22L) <sup>new 2</sup>                                                | Gage Blocks               |
| OD Micrometers <sup>new 6</sup><br>to 36 in  | (58 + 22.8L) <sup>new 2</sup>                                               | Gage Blocks               |
| ID Micrometers <sup>new 6</sup><br>to 1.0 in | 66                                                                          | Comparison to Gage Blocks |
| ID Micrometer Rods<br>to 30 in               | (32 + 3.6L) <sup>new 2</sup>                                                | Comparison to Gage Blocks |

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METROPLEX METROLOGY LAB, INC.

|                                       |           |                               |                           |
|---------------------------------------|-----------|-------------------------------|---------------------------|
| Micrometer End Stds.                  |           |                               | Comparison to Gage Blocks |
| Superficial                           | to 30 in  | (32 + 3.6L) <sup>note 2</sup> | Comparison to Gage Blocks |
| Flat                                  | to 30 in. | (22 + 3.8L) <sup>note 2</sup> | Comparison to Gage Blocks |
| Heights Gages <sup>note 4</sup>       | to 40 in  | (110 + 23L) <sup>note 2</sup> | Comparison to Gage Blocks |
| Dial Indicators <sup>note 4</sup>     |           |                               |                           |
| Resolution                            | 0.0010 in | 200                           | Comparison to ULM         |
|                                       | 0.0005 in | 104                           | Comparison to ULM         |
|                                       | 0.0001 in | 30                            | Comparison to ULM         |
| Radius Gages                          | All Sizes | 180                           | Optical Comparator        |
| Optical Comparators <sup>note 4</sup> |           |                               |                           |
| Linear Travel                         | to 30 in  | 224                           |                           |

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METROPLEX METROLOGY LAB, INC.

|                                          |                |                               |                                                                |                                                 |
|------------------------------------------|----------------|-------------------------------|----------------------------------------------------------------|-------------------------------------------------|
| NVLAP Code: 20/D07<br>Measuring Wires    |                |                               |                                                                |                                                 |
| Thread Wires                             | 29 ° and 60 °  | 13                            | Best Uncertainty in $\mu\text{in}$ ( $\pm y^{\text{note 1}}$ ) | Remarks<br>In accordance with<br>ANSI/ASME B1.2 |
| NVLAP Code: 20/D11<br>Spherical Diameter |                |                               |                                                                |                                                 |
| Plain Plug Gages                         | to 12 in       | (16 + 4.8L) <sup>note 2</sup> | Best Uncertainty in $\mu\text{in}$ ( $\pm y^{\text{note 1}}$ ) | Remarks<br>Comparison to Gage Blocks            |
| Plain Ring Gages                         | to 7 in        | (22 + 4.6L) <sup>note 2</sup> |                                                                | Comparison to Master Ring                       |
| Pin Gages                                | to 1 in        | 20                            |                                                                | Comparison to Gage Blocks                       |
| NVLAP Code: 20/D12<br>Surface            |                |                               |                                                                |                                                 |
| Surface Plates <sup>note 4</sup>         | to 72 X 144 in | 10 + 13D <sup>note 3</sup>    | Best Uncertainty in $\mu\text{in}$ ( $\pm y^{\text{note 1}}$ ) | Remarks<br>Laser                                |

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METROPLEX METROLOGY LAB, INC.

NVLAP Code: 20/D14

Threaded Plug and Ring Gages

Range Best Uncertainty in  $\mu\text{in}$  ( $\pm$ )<sup>year 1</sup> Remarks

Threaded Plug Gages

Pitch Diameter to 17 in

(76 + 8L)<sup>year 2</sup>

Over wire measurement

Major Diameter to 17 in

(16 + 4L)<sup>year 2</sup>

Direct Measurement

Threaded Ring Gages

Pitch Diameter to 8 in

(176 + 24L)<sup>year 2</sup>

Functional

Minor Diameter to 3 in to 8 in

120

200

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METROPLEX METROLOGY LAB, INC.

MECHANICAL

NVLAP Code: 20/M06

Force - Torque Wrenches<sup>note 4</sup>

Range Best Uncertainty ( $\pm$ ) in  $\%_{\text{meas}}$  1

to 250 lbf ft

(0.64 + 0.006T)<sup>year 4</sup>

Torque Tester

NVLAP Code: 20/M13

Hardness - Rockwell Hardness Tester Verification<sup>note 4</sup>

Range

Best Uncertainty ( $\pm$ )<sup>year 1</sup>

ASTM E-18

C Scale

1.2 Rockwell Points

Indirect Method

Temperature Range 72°F to 81 °F

THERMODYNAMICS

NVLAP Code: 20/T03

Laboratory Thermometers - Liquid-in-glass

Range

Best Uncertainty ( $\pm$ ) in  $\%_{\text{meas}}$  1

Remarks

-5°C to 125°C

0.06°C

Comparison to PRT

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## CALIBRATION LABORATORIES

NVLAP LAB CODE 200262-0

METROPLEX METROLOGY LAB, INC.

NVLAP Code: 20/T05  
Pressure Gages<sup>note 4</sup>

| Range                 | Best Uncertainty ( $\pm$ ) in % <sup>note 1</sup> | Remarks              |
|-----------------------|---------------------------------------------------|----------------------|
| 0 to 150 PSI          | (0.024 + 0.0008P) PSI <sup>note 5</sup>           | Comparison to Master |
| > 150 thru 5000 PSI   | (4 + 0.003P) PSI <sup>note 5</sup>                | Comparison to Master |
| > 5000 thru 30000 PSI | (24 + 0.0014P) PSI <sup>note 5</sup>              | Comparison to Master |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .
2. L = Length in inches
3. D = Diagonal Length in feet
4. T = Torque in LBF. FT
5. P = Pressure in PSI
6. Items available for on-site service. Based on environmental variances uncertainties will generally be greater than those listed in this scope.

March 31, 2002

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# Scope of Accreditation

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## CALIBRATION LABORATORIES

NVLAP LAB CODE 200301-0

INSTRON FIELD CALIBRATION LABORATORY

100 Royall Street  
Canton, MA 02021  
Dr. Anatoly Perlov  
Phone: 781-575-5479 Fax: 781-575-5767  
E-Mail: anatoly\_perlov@instron.com  
URL: <http://www.instron.com>

## DIMENSIONAL

NVLAP Code: 20/D05  
Length

| Range                                | Best Uncertainty ( $\pm$ ) <sup>note 1</sup>          | Remarks      |
|--------------------------------------|-------------------------------------------------------|--------------|
| Field Service Calibration of Strain: |                                                       |              |
| 0.5 in (12.5 mm) to 4.0 in (100 mm)  | 0.5 % of measured value but not less than 50 $\mu$ in | Gage Length  |
| > 0 to 10 in (254 mm)                | 0.5 % of measured value but not less than 50 $\mu$ in | Displacement |

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CALIBRATION LABORATORIES NVLAP LAB CODE 200301-0

INSTRON FIELD CALIBRATION LABORATORY

MECHANICAL

NVLAP Code: 20/M06  
Field Service Calibration of Force

| Range                                | Best Uncertainty ( $\pm$ ) <sup>1,2</sup> | Remarks     |
|--------------------------------------|-------------------------------------------|-------------|
| 1 gram to 500 ton (0.01 N to 5MN)    | 0.125% of applied force                   | Compression |
| 1 gram to 150 ton (0.01 N to 1.5 MN) | 0.125% of applied force                   | Tension     |

NVLAP Code: 20/M13  
Field Service indirect verification of hardness testing machines.

Hardness Scale and Range Best Uncertainty ( $\pm$ ) in Rockwell Points<sup>1,2</sup> Remarks

|                 |      |  |
|-----------------|------|--|
| HRA Steel Scale | 0.25 |  |
| 80 & Above      | 0.42 |  |
| Below 80        |      |  |
| HRB Scale       | 0.57 |  |
| 45 & Above      | 0.83 |  |
| Below 45        |      |  |
| HRC Scale       | 0.26 |  |
| 60 & Above      | 0.33 |  |
| Below 60        |      |  |
| HRD Scale       | 0.26 |  |
| 70.7 & Above    | 0.42 |  |
| Below 70.7      |      |  |

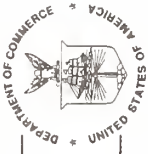
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|              |      |
|--------------|------|
| HRE Scale    | 0.58 |
| 57-100       |      |
| HRF Scale    | 0.60 |
| 57-100       |      |
| HRG Scale    | 0.45 |
| 82.5 & Above | 0.61 |
| Below 82.5   |      |
| HRH Scale    | 0.58 |
| 87-100       |      |
| HRK Scale    | 0.58 |
| 21-100       |      |
| HRL Scale    | 0.61 |
| 100-130      |      |
| HRM Scale    | 0.60 |
| 80-130       |      |
| HR15N Scale  | 0.45 |
| 90 & Above   | 0.53 |
| Below 90     |      |
| HR30N Scale  | 0.42 |
| 77.5 & Above | 0.51 |
| Below 77.5   |      |

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|              |      |
|--------------|------|
| HR45N Scale  | 0.48 |
| 66.5 & Above | 0.48 |
| Below 66.5   |      |
| HRP Scale    | 0.60 |
| 57-100       |      |
| HRR Scale    | 0.42 |
| 100-125      |      |
| HRS Scale    | 0.45 |
| 100-125      |      |
| HR15T Scale  | 0.60 |
| 75.3 & Above | 0.60 |
| Below 75.3   |      |
| HRT30T Scale | 0.58 |
| 46.2 & Above | 0.58 |
| Below 17.6   |      |
| HR45T Scale  | 0.61 |
| 17.6 & Above | 0.61 |
| Below 17.6   |      |
| HRV Scale    | 0.42 |
| 90-110       |      |
| HR15W Scale  | 0.61 |
| 70-100       |      |

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CALIBRATION LABORATORIES NVLAP LAB CODE 200301-0

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|             |      |
|-------------|------|
| HR30W Scale | 0.60 |
| 45-96       |      |
| HR45W Scale | 0.60 |
| 25-91       |      |
| HR15X Scale | 0.58 |
| 80-100      |      |
| HR30X Scale | 0.60 |
| 65-100      |      |
| HR45X Scale | 0.61 |
| 50-95       |      |
| HR15Y Scale | 0.58 |
| 85-100      |      |
| HR30Y Scale | 0.60 |
| 80-100      |      |
| HR45Y Scale | 0.58 |
| 66-106      |      |

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**INSTRON FIELD CALIBRATION LABORATORY**

1. The standardized test blocks used for verification are calibrated at the Wilson Hardness Calibration Laboratory in accordance with ASTM E18-00 section C using N.I.S.T. Rockwell HRC standard reference materials (SRM) 2810, 2811, and 2812. All other Rockwell scales are traceable to Wilson hardness levels thru laboratory standardizing machines. The standardizing machines are directly verified according to ASTM E18-00 using devices that are traceable to N.I.S.T. either directly or through a NVLAP approved laboratory.
2. Represents an expanded uncertainty using a coverage factor,  $k=2$ .

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Revised 11/14/2001 Page 1 of 3

CALIBRATION LABORATORIES NVLAP LAB CODE 200302-0

**VLSI STANDARDS, INC.**  
 3087 North First Street  
 San Jose, CA 95134-2006  
 Mr. Marco Tortonesi  
 Phone: 408-428-1800 x117 Fax: 408-428-9555  
 E-Mail: marco.tortonesi@vlsistd.com  
 URL: http://www.vlsistd.com

**DIMENSIONAL**

NVLAP Code: 20/D12  
Surface Texture

**STEP HEIGHT STANDARDS (SHS) - Thin**

| Nominal Height | Best Uncertainty ( $\pm$ ) <sup>year 1</sup> | Percentage Uncertainty ( $\pm$ ) <sup>year 2</sup> |
|----------------|----------------------------------------------|----------------------------------------------------|
| 8 nm           | 0.7 nm                                       | 8.7                                                |
| 18 nm          | 0.7 nm                                       | 3.8                                                |
| 44 nm          | 0.8 nm                                       | 1.8                                                |
| 88 nm          | 1.1 nm                                       | 1.2                                                |
| 180 nm         | 1.8 nm                                       | 1.0                                                |
| 450 nm         | 2.7 nm                                       | 0.6                                                |
| 940 nm         | 5.5 nm                                       | 0.5                                                |

June 30, 2002 David Z. Alderman

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CALIBRATION LABORATORIES NVLAP LAB CODE 200311-0

UNITED TESTING SYS. CANADA, LTD. DYNAMIC TESTING SYS. INT. INC.

225 Bradwick Drive, #21  
 Concord Ontario L4K 1K7  
 CANADA  
 Mr. Arno M. Dickertmann  
 Phone: 905-669-5327 Fax: 905-738-5051  
 E-Mail: arno@utscanada.com

**DIMENSIONAL**

NVLAP Code: 20/D05  
Length

| Range                          | Best Uncertainty ( $\pm y_{95\%}$ ) | Remarks  |
|--------------------------------|-------------------------------------|----------|
| Extensometer Linear Calibrator |                                     |          |
| 0 to 25.4 mm (0 to 1.0 in)     | 0.33 $\mu$ m                        | ASTM-E83 |
| Extensometer Gage Length       |                                     |          |
| 0 to 4.0 in                    | 0.00137 in                          | ASTM-E83 |
| 0 to 12.0 in                   | 0.00177 in                          | ASTM-E83 |

Crosshead Travel

|              |            |                    |
|--------------|------------|--------------------|
| 0 to 24.0 in | 0.00206 in | Mitutoyo Digimatic |
|--------------|------------|--------------------|

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CALIBRATION LABORATORIES NVLAP LAB CODE 200311-0

UNITED TESTING SYS. CANADA, LTD. DYNAMIC TESTING SYS. INT. INC.

Field Service Calibration or Extensometers

|           |             |          |
|-----------|-------------|----------|
| 0 to 1 in | 0.000034 in | ASTM E83 |
|-----------|-------------|----------|

**MECHANICAL**

NVLAP Code: 20/M06  
Force

| Range in lbs    | Best Uncertainty ( $\pm y_{95\%}$ ) | Remarks  |
|-----------------|-------------------------------------|----------|
| .1 to 300,000   | 0.05 %                              | ASTM E74 |
| .1 to 1,000,000 | 0.25 %                              | ASTM E4  |

Field Service Calibration of:

| Devices                  | Range in lbs | Best Uncertainty ( $\pm y_{95\%}$ ) | Remarks |
|--------------------------|--------------|-------------------------------------|---------|
| Tensile Testing Machines | to 1,000,000 | 0.25 %                              | ASTM E4 |
| Compression Testers      | to 1,000,000 | 0.25 %                              | ASTM E4 |

1 Represents an expanded uncertainty using a coverage factor,  $k=2$

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CALIBRATION LABORATORIES NVLAP LAB CODE 200338-0

SE LABORATORIES, INC.

NVLAP Code: 20/E05  
DC Resistance

| Range in ohms | Best Uncertainty ( $\pm$ ) in ppm of output <sup>note 1</sup> | Remarks           |
|---------------|---------------------------------------------------------------|-------------------|
| 1             | 95                                                            | Meter Calibration |
| 1.9           | 95                                                            | Meter Calibration |
| 10            | 23                                                            | Meter Calibration |
| 19            | 23                                                            | Meter Calibration |
| 100           | 10                                                            | Meter Calibration |
| 190           | 10                                                            | Meter Calibration |
| 1 k           | 8.5                                                           | Meter Calibration |
| 1.9 k         | 8.5                                                           | Meter Calibration |
| 10 k          | 8.5                                                           | Meter Calibration |

NVLAP Code: 20/E05  
DC Current

| Range       | Best Uncertainty ( $\pm$ ) in ppm of output + nA <sup>note 1</sup> | Remarks           |
|-------------|--------------------------------------------------------------------|-------------------|
| 220 $\mu$ A | 40 + 6                                                             | Meter Calibration |
| 2.2 mA      | 35 + 7                                                             | Meter Calibration |
| 22 mA       | 35 + 40                                                            | Meter Calibration |

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CALIBRATION LABORATORIES NVLAP LAB CODE 200338-0

SE LABORATORIES, INC.

| Range  | Best Uncertainty ( $\pm$ ) in ppm of output + $\mu$ A <sup>note 1</sup> | Remarks                                   |
|--------|-------------------------------------------------------------------------|-------------------------------------------|
| 220 mA | 45 + 7                                                                  | add ( $\pm$ ) 200 x I <sup>2</sup> in ppm |
| 2.2 A  | 80 + 12                                                                 | add ( $\pm$ ) 10 x I <sup>2</sup> in ppm  |

NVLAP Code: 20/E06  
DC Voltage

| Range in volts      | Best Uncertainty ( $\pm$ ) in ppm of output <sup>note 1,2</sup> | Remarks |
|---------------------|-----------------------------------------------------------------|---------|
| Reference Standards |                                                                 |         |

|       |      |                                   |
|-------|------|-----------------------------------|
| 1.0   | 1.68 | Zener Reference <sup>note 2</sup> |
| 1.018 | 2.13 | Zener Reference <sup>note 2</sup> |
| 10    | 3.54 | Zener Reference <sup>note 2</sup> |

Range in volts Best Uncertainty ( $\pm$ ) in ppm of output +  $\mu$ V<sup>note 1</sup>

|       |           |                   |
|-------|-----------|-------------------|
| 220 m | 7.5 + 0.4 | Meter Calibration |
| 2.2   | 5 + .07   | Meter Calibration |
| 11    | 3.5 + 2.5 | Meter Calibration |
| 22    | 3.5 + 4   | Meter Calibration |
| 220   | 5 + 40    | Meter Calibration |
| 1100  | 6.5 + 400 | Meter Calibration |

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## Scope of Accreditation

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CALIBRATION LABORATORIES NVLAP LAB CODE 200338-0

SE LABORATORIES, INC.

### ELECTROMAGNETIC - RF/MICROWAVE

NVLAP Code: 20/R08

Microwave Antenna Parameters

Range in MHz Best Uncertainty ( $\pm$ )<sup>100%</sup>

LISN's

0.010 to 100 0.3 dB

0.010 to 100 3.4 % of reading

CDN's

0.010 to 230 0.3 dB

0.010 to 230 3.4 % of reading

NVLAP Code: 20/R12

RF Microwave Bolometer Units

Power Level Range

1 microwatt to 10 milliwatts

Best Uncertainty ( $\pm$ )<sup>100%</sup>

0.5 % of reading

0.3 % of reading

Frequency<sup>nom</sup>

0.01 to 0.04 GHz

0.05 to 1.0 GHz

Remarks

Insertion Loss

Impedance

4 to 65 Ohms

Insertion Loss

Impedance

Nominal 150 Ohms

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CALIBRATION LABORATORIES NVLAP LAB CODE 200338-0

SE LABORATORIES, INC.

NVLAP Code: 20/R13

RF Microwave Attenuators

Reflection Coefficient (or Scattering Parameters  $S_{11}$ )

HP8510 Vector Network Analyzer Uncertainties

1. Expanded Uncertainties on one or two port devices

| Connector Type | Quantity        | Quantity                             | Range       | 45-2000     | Frequency (MHz) |                                        |
|----------------|-----------------|--------------------------------------|-------------|-------------|-----------------|----------------------------------------|
|                |                 |                                      |             |             | 2000-8000       | 8000-18000 20000-26500                 |
| N              | $S_{11}$        | 0-1                                  | .0063-.0204 | .0063-.0204 | .0102-.0340     | .0136-.0479                            |
| APC-7          | $S_{11}$        | 0-1                                  | .0114-.0261 | .0114-.0261 | .0114-.0325     | .0148-.0467                            |
| APC-3.5        | $S_{11}$        | 0-1                                  | .0054-.0174 | .0064-.0228 | .0056-.0149     | .0088-.0182 <sup>nom</sup> .0090-.0185 |
| N              | Arg( $S_{11}$ ) | 0 < $ S_{11} $ < 1<br>-180 + 180 deg | 1.7-180     | 1.48-180    | 6.73-180        | 8.21-180                               |
| APC-7          | Arg( $S_{11}$ ) | 0 < $ S_{11} $ < 1<br>-180 + 180 deg | 1.4-180     | 2.08-180    | 6.93-180        | 8.41-180                               |
| APC-3.5        | Arg( $S_{11}$ ) | 0 < $ S_{11} $ < 1<br>-180 + 180 deg | 1.6-180     | 1.73-180    | 5.59-180        | 6.65-180 <sup>nom</sup> 7.91-180       |

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SE LABORATORIES, INC.

NVLAP Code: 20/R13  
RF Microwave Attenuators  
Attenuation (or Scattering Parameters  $S_{ij}$ )  
HP8510 Vector Network Analyzer Uncertainties  
1. Expanded Uncertainties on one or two port devices

| Connector Type | Quantity             | Quantity Range                            | Frequency (MHz) |           |            |                                       |
|----------------|----------------------|-------------------------------------------|-----------------|-----------|------------|---------------------------------------|
|                |                      |                                           | 45-2000         | 2000-8000 | 8000-18000 | 20,000-26,500                         |
| N              | $ S_{11} $           | 0-60 dB                                   | .096-.326       | .091-.200 | .102-.258  | .174-.519                             |
| APC-7          | $ S_{11} $           | 0-60 dB                                   | .096-.326       | .058-.196 | .062-.251  | .127-.508                             |
| APC-3.5        | $ S_{11} $           | 0-60 dB                                   | .096-.326       | .079-.197 | .076-.241  | .121-.510 <sup>max</sup> <sup>a</sup> |
| N              | $\text{Arg}(S_{ij})$ | $0 <  S_{ij}  < 60$ dB<br>-180 to 180 deg | .72-10.22       | .43-1.39  | 2.39-3.68  | 5.46-7.94                             |
| APC-7          | $\text{Arg}(S_{ij})$ | $0 <  S_{ij}  < 60$ dB<br>-180 to 180 deg | .72-10.22       | .46-1.43  | 2.38-3.68  | 5.39-7.90                             |
| APC-35         | $\text{Arg}(S_{ij})$ | $0 <  S_{ij}  < 60$ dB<br>-180 to 180 deg | .72-10.22       | .43-1.41  | 2.15-3.44  | 6.21-8.92 <sup>max</sup> <sup>a</sup> |

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SE LABORATORIES, INC.

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .
2. Approximate value. Actual value determined by the test statistics.
3. Meter Calibration.
4. Maximum output is 250 V.
5. Characterization of levelled sine sources used in calibration of oscilloscope bandwidth.
6. 15 to 50 Hz only
7. 50 Hz to 1 kHz only
8. 8000 to 20000 MHz

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NVLAP LAB CODE 200348-0

## CALIBRATION LABORATORIES

## HART SCIENTIFIC CALIBRATION LABORATORY

799 E. Utah Valley Drive  
American Fork, UT 84003-9775  
Mr. Thomas J. Wiandt  
Phone: 801-763-1600 Fax: 801-763-1010  
E-Mail: [tom.wiandt@hartsscientific.com](mailto:tom.wiandt@hartsscientific.com)  
URL: <http://www.hartsscientific.com/product/cal-service.htm>

## ELECTROMAGNETICS - DC/LOW FREQUENCY

NVLAP Labcode: 20/E05

DC Resistance

| Range                           | Best Uncertainty ( $\pm y_{95\%}$ ) | Remarks       |
|---------------------------------|-------------------------------------|---------------|
| 1 $\Omega$ to 10 $\Omega$       | 0.35 ppm                            | DC Resistance |
| 10 $\Omega$ to 100 $\Omega$     | 0.45 ppm                            | DC Resistance |
| 100 $\Omega$ to 1000 $\Omega$   | 0.60 ppm                            | DC Resistance |
| 1000 $\Omega$ to 10000 $\Omega$ | 0.70 ppm                            | DC Resistance |

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NVLAP LAB CODE 200348-0

## CALIBRATION LABORATORIES

## HART SCIENTIFIC CALIBRATION LABORATORY

## THERMODYNAMICS

NVLAP Code: 20/T07

Resistance Thermometry - Calibration of Thermometric Devices

| Range                                             | Best Uncertainty ( $\pm y_{95\%}$ ) | Remarks             |
|---------------------------------------------------|-------------------------------------|---------------------|
| -197 °C (LN <sub>2</sub> )<br>(TPA: substitution) | 0.5 mK                              | Direct Comparison   |
| -38.8344 °C (TPHg)                                | 0.4 mK                              | Fixed Point         |
| 0.010 °C (TPW)                                    | 0.2 mK                              | Fixed Point         |
| 29.7646 °C (MPGa)                                 | 0.4 mK                              | Fixed Point         |
| 156.599 °C (FPIn)                                 | 0.9 mK                              | Fixed Point         |
| 231.928 °C (FPSn)                                 | 0.9 mK                              | Fixed Point         |
| 419.527 °C (FPZn)                                 | 1.1 mK                              | Fixed Point         |
| 660.323 °C (FPAl)                                 | 2.1 mK                              | Fixed Point         |
| 961.78 °C (FPAg)                                  | 10.0 mK                             | Fixed Point         |
| -200 °C                                           | 10 mK                               | Comparison Method I |
| -100 °C to -50 °C                                 | 10 mK                               | Comparison Method I |
| -50 °C to 0 °C                                    | 8 mK                                | Comparison Method I |

September 30, 2002

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HART SCIENTIFIC CALIBRATION LABORATORY

|                                                               |        |                      |
|---------------------------------------------------------------|--------|----------------------|
| 0.010 °C                                                      | 5 mK   | Comparison Method I  |
| 0 °C to 200 °C                                                | 8 mK   | Comparison Method I  |
| 200 °C to 300 °C                                              | 9 mK   | Comparison Method I  |
| 300 °C to 400 °C                                              | 10 mK  | Comparison Method I  |
| 400 °C to 550 °C                                              | 11 mK  | Comparison Method I  |
| 550 °C to 660 °C                                              | 15 mK  | Comparison Method I  |
| -197 °C (LN <sub>2</sub> )<br>(TPA <sub>r</sub> substitution) | 2.0 mK | Comparison Method II |
| -100.000 °C                                                   | 2.0 mK | Comparison Method II |
| -38.834 °C<br>(TPHg substitution)                             | 2.0 mK | Comparison Method II |
| 0.010 °C<br>(TPW substitution)                                | 2.0 mK | Comparison Method II |
| 29.765 °C<br>(MPGa substitution)                              | 2.0 mK | Comparison Method II |
| 156.599 °C<br>(FPIIn substitution)                            | 3.0 mK | Comparison Method II |

September 30, 2002

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NVLAP LAB CODE 200348-0

HART SCIENTIFIC CALIBRATION LABORATORY

|                                                 |         |                                      |
|-------------------------------------------------|---------|--------------------------------------|
| 231.928 °C<br>(FPSn substitution)               | 4.0 mK  | Comparison Method II                 |
| 419.527 °C<br>(FPZn substitution)               | 6.0 mK  | Comparison Method II                 |
| 500.000 °C                                      | 7.0 mK  | Comparison Method II                 |
| 660.323 °C<br>(FPAI substitution)               | 8.0 mK  | Comparison Method II                 |
| -20 °C to 100 °C                                | 1.5 mK  | Precision Thermistors                |
| 100 °C to 150 °C                                | 3.0 mK  | Precision Thermistors                |
| -50 °C to -20 °C                                | 5.0 mK  | Thermistors                          |
| -20 °C to 120 °C                                | 4.0 mK  | Thermistors                          |
| 120 °C to 150 °C                                | 6.0 mK  | Thermistors                          |
| Certification of Thermometric Fixed Point Cells |         |                                      |
| TPHg                                            | 0.20 mK | Direct Comparison To Reference Cells |
| TPW                                             | 0.07 mK | Direct Comparison To Reference Cells |

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HART SCIENTIFIC CALIBRATION LABORATORY

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|       |         |                                      |
|-------|---------|--------------------------------------|
| MPGa  | 0.08 mK | Direct Comparison To Reference Cells |
| FPIIn | 0.50 mK | Direct Comparison To Reference Cells |
| FPSn  | 0.60 mK | Direct Comparison To Reference Cells |
| FPZn  | 0.80 mK | Direct Comparison To Reference Cells |
| FPAI  | 1.50 mK | Direct Comparison To Reference Cells |
| FPAg  | 3.50 mK | Direct Comparison To Reference Cells |
|       |         |                                      |
| TPHg  | 0.25 mK | Direct Comparison to Working Cells   |
| TPW   | 0.10 mK | Direct Comparison to Working Cells   |
| MPGa  | 0.10 mK | Direct Comparison to Working Cells   |
| FPIIn | 0.70 mK | Direct Comparison to Working Cells   |
| FPSn  | 0.80 mK | Direct Comparison to Working Cells   |
| FPZn  | 1.00 mK | Direct Comparison to Working Cells   |
| FPAI  | 1.80 mK | Direct Comparison to Working Cells   |
| FPAg  | 4.50 mK | Direct Comparison to Working Cells   |

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HART SCIENTIFIC CALIBRATION LABORATORY

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|                                                                        |          |                     |
|------------------------------------------------------------------------|----------|---------------------|
| Digital Thermometry (readout devices that actually measure resistance) |          |                     |
| 0.25 to 4.0                                                            | 0.20 ppm | Ratio Function      |
| 1 $\Omega$                                                             | 5 ppm    | Resistance Function |
| 10 $\Omega$                                                            | 4 ppm    | Resistance Function |
| 100 $\Omega$                                                           | 1 ppm    | Resistance Function |
| 10000 $\Omega$                                                         | 2 ppm    | Resistance Function |
| 0 $\Omega$ to 400 $\Omega$                                             | 4 ppm    | Resistance Function |
| 400 $\Omega$ to 10 k $\Omega$                                          | 8 ppm    | Resistance Function |
| 10 k $\Omega$ to 100 k $\Omega$                                        | 8 ppm    | Resistance Function |
| 100 k $\Omega$ to 1 M $\Omega$                                         | 25 ppm   | Resistance Function |

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CALIBRATION LABORATORIES NVLAP LAB CODE 200348-0

HART SCIENTIFIC CALIBRATION LABORATORY

NVLAP Code: 20/T08

Thermocouples

| Range           | Best Uncertainty ( $\pm$ ) <sup>year 1</sup> | Remarks     |
|-----------------|----------------------------------------------|-------------|
| Type S & Type R | 100 mK                                       | Fixed Point |
| Au/Pt           | 20 mK                                        | Fixed Point |

Digital Thermometers

|                 |       |                                          |
|-----------------|-------|------------------------------------------|
| 0 °C to 25.0 °C | 10 mK | Internal Reference Junction Compensation |
|-----------------|-------|------------------------------------------|

Digital Thermometers (readout devices that actually measure voltage)

|                 |              |                  |
|-----------------|--------------|------------------|
| 0 mV to 50 mV   | 0.45 $\mu$ V | Voltage Function |
| 50 mV to 100 mV | 0.75 $\mu$ V | Voltage Function |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .

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CALIBRATION LABORATORIES NVLAP LAB CODE 200352-0

VERIZON LOGISTICS, ELECTRONIC REPAIR SERVICES

3301 Wayne Trace

Fort Wayne, IN 46806-1400

Mr. Jeff C. Gust

Phone: 219-428-6504 Fax: 219-424-1031

E-Mail: jeff.gust@verizon.com

URL: <http://www.vzlogistics.com>

ELECTROMAGNETICS - DC/LOW FREQUENCY

NVLAP Code: 20/E05

DC Resistance

| Range         | Best Uncertainty ( $\pm$ ) <sup>year 1</sup> | Remarks |
|---------------|----------------------------------------------|---------|
| 0.001 ohm     | 1.5 ppm                                      |         |
| 0.01 ohm      | 1 ppm                                        |         |
| 0.1 ohm       | 1 ppm                                        |         |
| 1 ohm         | 0.5 ppm                                      |         |
| 10 ohm        | 2.5 ppm                                      |         |
| 100 ohm       | 3.5 ppm                                      |         |
| 1,000 ohm     | 4.5 ppm                                      |         |
| 10,000 ohm    | 0.5 ppm                                      |         |
| 100,000 ohm   | 2.5 ppm                                      |         |
| 1,000,000 ohm | 7 ppm                                        |         |

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|                                                                                                                                           |                                            |                                                                                                                                                |                |
|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
|  <p>National Institute of Standards and Technology</p> |                                            |  <p>DEPARTMENT OF COMMERCE<br/>UNITED STATES OF AMERICA</p> |                |
| <p>ISO/IEC GUIDE 25:1990<br/>ANSI/NCSL Z540-1-1994<br/>ISO 9002:1987</p>                                                                  |                                            | <p>Scope of Accreditation</p>                                                                                                                  |                |
| <p>CALIBRATION LABORATORIES</p>                                                                                                           |                                            | <p>NVLAP LAB CODE 200352-0</p>                                                                                                                 |                |
| <p>VERIZON LOGISTICS, ELECTRONIC REPAIR SERVICE</p>                                                                                       |                                            |                                                                                                                                                |                |
| <p>10,000,000 ohm</p> <p>100,000,000 ohm</p> <p>1,000,000,000 ohm</p>                                                                     | <p>15 ppm</p> <p>35 ppm</p> <p>125 ppm</p> |                                                                                                                                                |                |
| <p>NVLAP Code: 20/E06<br/>DC Voltage</p>                                                                                                  |                                            | <p>Best Uncertainty (<math>\pm y_{95\%}</math>)</p> <p>0.5 ppm</p>                                                                             | <p>Remarks</p> |
| <p>1. Represents an expanded uncertainty using a coverage factor, <math>k=2</math>.</p>                                                   |                                            |                                                                                                                                                |                |
| <p>June 30, 2002</p>                                                                                                                      |                                            | <p>David F. Alderman</p>                                                                                                                       |                |
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|                                                                                                                                                                   |  |                                                                                                                                              |                                                              |
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| <p>ISO/IEC GUIDE 25:1990<br/>ANSI/NCSL Z540-1-1994<br/>ISO 9002:1987</p>                                                                                          |  | <p>Scope of Accreditation</p>                                                                                                                |                                                              |
| <p>CALIBRATION LABORATORIES</p>                                                                                                                                   |  | <p>NVLAP LAB CODE 200359-0</p>                                                                                                               |                                                              |
| <p>PHILIP MORRIS STANDARDS AND CALIBRATION LABORATORY</p>                                                                                                         |  |                                                                                                                                              |                                                              |
| <p>2001 East Walmsley Boulevard<br/>Richmond, VA 23234<br/>Mr. Robert R. Sichi<br/>Phone: 804-274-5657 Fax: 804-274-4540<br/>E-Mail: Robert.R.Sichi@pmusa.com</p> |  |                                                                                                                                              |                                                              |
| <p>DIMENSIONAL</p> <p>NVLAP Code: 20/D05<br/>Length and Diameter</p>                                                                                              |  | <p>Best Uncertainty (<math>\pm</math>) in <math>mm^{95\%}</math></p> <p>0.0006</p>                                                           | <p>Remarks</p> <p>Non Contact Scanning Laser Beam Method</p> |
| <p>Range in mm</p> <p>Diameter Standards</p> <p>&lt;9.7 mm</p>                                                                                                    |  |                                                                                                                                              |                                                              |
| <p>Circumference Standards</p> <p>&lt;30.4 mm</p>                                                                                                                 |  | <p>0.002</p>                                                                                                                                 | <p>Non Contact Scanning Laser Beam Method</p>                |
| <p>June 30, 2002</p>                                                                                                                                              |  | <p>David F. Alderman</p>                                                                                                                     |                                                              |
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**PHILIP MORRIS STANDARDS AND CALIBRATION LABORATORY**

2001 East Walmsley Boulevard  
 Richmond, VA 23234  
 Mr. Robert R. Sichi  
 Phone: 804-274-5657 Fax: 804-274-4540  
 E-Mail: Robert.R.Sichi@pmusa.com

**MECHANICAL**

NVLAP Code: 20/M05  
Flow Rate

| Range                                         | Best Uncertainty ( $\pm$ ) in % of value <sup>note 1</sup> | Remarks                                                              |
|-----------------------------------------------|------------------------------------------------------------|----------------------------------------------------------------------|
| 5 mL/min to 4.5 L/min                         | 0.7                                                        | Paper Permeability Standards                                         |
| 20mm to 1000mm H <sub>2</sub> O Pressure Drop | 0.4 + 0.5 mm H <sub>2</sub> O                              | Resistance to Draw<br>Complies with ISO 6565                         |
| 10% to 95% Ventilation                        | 1.0                                                        | Cigarettes<br>Determination of Ventilation<br>Complies with ISO 9512 |

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**PHILIP MORRIS STANDARDS AND CALIBRATION LABORATORY**

NVLAP Code: 20/M08

| Range  | Best Uncertainty ( $\pm$ ) in mg <sup>note 1</sup> | Remarks           |
|--------|----------------------------------------------------|-------------------|
| Mass   |                                                    |                   |
| 1 kg   | 0.434                                              | Direct Comparison |
| 500 g  | 0.232                                              | Direct Comparison |
| 200 g  | 0.135                                              | Direct Comparison |
| 100 g  | 0.024                                              | Direct Comparison |
| 50 g   | 0.016                                              | Direct Comparison |
| 20 g   | 0.016                                              | Direct Comparison |
| 10 g   | 0.015                                              | Direct Comparison |
| 5 g    | 0.011                                              | Direct Comparison |
| 2 g    | 0.009                                              | Direct Comparison |
| 1 g    | 0.009                                              | Direct Comparison |
| 500 mg | 0.009                                              | Direct Comparison |
| 200 mg | 0.009                                              | Direct Comparison |
| 100 mg | 0.009                                              | Direct Comparison |
| 50 mg  | 0.009                                              | Direct Comparison |
| 20 mg  | 0.009                                              | Direct Comparison |

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CALIBRATION LABORATORIES NVLAP LAB CODE 200359-0

PHILIP MORRIS STANDARDS AND CALIBRATION LABORATORY

|       |       |                   |
|-------|-------|-------------------|
| 10 mg | 0.009 | Direct Comparison |
| 5 mg  | 0.009 | Direct Comparison |
| 2 mg  | 0.009 | Direct Comparison |
| 1 mg  | 0.009 | Direct Comparison |

THERMODYNAMICS

NVLAP Code: 20/T07

Resistance Thermometry

| Range in °C | Best Uncertainty ( $\pm$ ) in °C <sub>95%</sub> | Remarks           |
|-------------|-------------------------------------------------|-------------------|
| 0 to 200    | 0.1                                             | Comparison Method |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .

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CALIBRATION LABORATORIES NVLAP LAB CODE 200366-0

RESL - DOE LABORATORY ACCREDITATION PROGRAM

850 Energy Drive, MS 4149

Idaho Falls, ID 83401-1563

Dr. Rick Cummings

Phone: 208-526-2765 Fax: 208-526-2548

E-Mail: cumminrfm@id.doe.gov

IRRADIATION OF PERSONNEL DOSIMETERS

| Calibration Category | Radiation Type or Beam Code | Nominal Intensity Range | Uncertainty of Delivered Quantity <sup>1</sup> |
|----------------------|-----------------------------|-------------------------|------------------------------------------------|
| Gamma                | <sup>241</sup> Am           | 0.05 to 5 rem           | 3.3%                                           |
|                      | <sup>137</sup> Cs           | 0.03 to 500 rad         | 2.3%                                           |
| X-ray                | M30 <sup>max 2</sup>        | 0.03 to 10 rem          | 2.3%                                           |
|                      | M50 <sup>max 2</sup>        | 0.03 to 10 rem          | 2.3%                                           |
|                      | M60 <sup>max 2</sup>        | 0.03 to 10 rem          | 2.3%                                           |
|                      | M100 <sup>max 2</sup>       | 0.03 to 10 rem          | 2.3%                                           |
|                      | M150 <sup>max 2</sup>       | 0.03 to 500 rad         | 2.3%                                           |
|                      | M200 <sup>max 2</sup>       | 0.03 to 10 rem          | 2.3%                                           |
|                      | M250 <sup>max 2</sup>       | 0.03 to 10 rem          | 2.3%                                           |
|                      | H50 <sup>max 2</sup>        | 0.03 to 10 rem          | 2.3%                                           |
|                      | H60 <sup>max 2</sup>        | 0.03 to 10 rem          | 2.3%                                           |

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|                                                                   |                   |      |
|-------------------------------------------------------------------|-------------------|------|
| H100 <sup>max 2</sup>                                             | 0.03 to 10 rem    | 3.0% |
| H150 <sup>max 2</sup>                                             | 0.03 to 10 rem    | 2.3% |
| H200 <sup>max 2</sup>                                             | 0.03 to 10 rem    | 2.3% |
| H250 <sup>max 2</sup>                                             | 0.03 to 10 rem    | 3.0% |
| H300 <sup>max 2</sup>                                             | 0.03 to 10 rem    | 3.0% |
| S60 <sup>max 2</sup>                                              | 0.03 to 10 rem    | 2.3% |
| NS20 <sup>max 3</sup>                                             | 0.03 to 10 rem    | 2.3% |
| NS80 <sup>max 3</sup>                                             | 0.03 to 10 rem    | 2.5% |
| NS150 <sup>max 3</sup>                                            | 0.03 to 10 rem    | 2.3% |
| WS150 <sup>max 3</sup>                                            | 0.03 to 10 rem    | 2.3% |
| Beta<br><br><sup>90</sup> Sr/ <sup>90</sup> Y<br><br>Uranium Slab | <sup>232</sup> Tl | 4.8% |
|                                                                   | 0.015 to 10 rem   | 4.8% |
|                                                                   | 0.015 to 10 rem   | 4.6% |

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1. Values listed at the 95% confidence level using a coverage factor,  $k=2$
2. NIST X-ray designation in NBS 250-16.
3. ISO X-ray designation in ISO 4037, Pt.1.

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CALIBRATION LABORATORIES NVLAP LAB CODE 200370-0

### MDS NORDION DOSIMETRY LABORATORY

447 March Road  
Kanata Ontario K2K 1X8  
Canada

Mr. Rorry Harding  
Phone: 613-592-3400 x2119 Fax: 613-592-6937  
E-Mail: rharding@mds.nordion.com

#### IONIZING RADIATION DOSIMETRY

NVLAP Code: 20/402  
High-Dose Dosimetry

Evaluation of Transfer-standard and Reference-standard Dosimeters for Production Irradiators

| Range       | Best Uncertainty ( $\pm y_{95\%}$ ) | Remarks                            |
|-------------|-------------------------------------|------------------------------------|
| 5 to 50 kGy | 4.0 %                               | Results reported as absorbed dose. |

Evaluation of Transfer-standard and Reference-standard Dosimeters for Research Irradiators

| Range        | Best Uncertainty ( $\pm y_{95\%}$ ) | Remarks                                                  |
|--------------|-------------------------------------|----------------------------------------------------------|
| 20 to 400 Gy | 2.0 %                               | Results reported as absorbed dose or absorbed-dose rate. |

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CALIBRATION LABORATORIES NVLAP LAB CODE 200370-0

### MDS NORDION DOSIMETRY LABORATORY

Irradiation of Dosimeters for Known Absorbed-dose Levels

| Range                                   | Best Uncertainty ( $\pm y_{95\%}$ ) | Remarks                                                                                                                 |
|-----------------------------------------|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Specified by the needs of the customer. | 2.3 %                               | Results reported as absorbed-dose values or may be analyzed for dosimeter response and reported as a calibration curve. |

Calibration of Routine Dosimeters using Reference-standard or Transfer-standard Dosimeters

| Range         | Best Uncertainty ( $\pm y_{95\%}$ ) | Remarks                                                                                                                 |
|---------------|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| 0.5 to 50 kGy | 4.0 %                               | Results reported as absorbed-dose values or may be analyzed for dosimeter response and reported as a calibration curve. |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .

March 31, 2002

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### CALIBRATION LABORATORIES NVLAP LAB CODE 200381-0

#### ARIZONA DEPARTMENT OF WEIGHTS AND MEASURES METROLOGY LABORATORY

4425 West Olive Avenue, Suite 134  
Glendale, AZ 85302-3844

Mrs. Keileen K. Larson  
Phone: 623-463-9949 Fax: 623-463-0440  
E-mail: [klarson@wm.state.az.us](mailto:klarson@wm.state.az.us)  
URL: <http://www.weights.az.gov>

#### MECHANICAL

NVLAP Code: 20/M08

Mass - Metric

| Range | Best Uncertainty ( $\pm y_{95\%}$ ) | Remarks    |
|-------|-------------------------------------|------------|
| 30 kg | 44 mg                               | Echelon II |
| 20 kg | 44 mg                               | Echelon II |
| 10 kg | 43.7 mg                             | Echelon II |
| 5 kg  | 1.11 mg                             | Echelon II |
| 3 kg  | 0.85 mg                             | Echelon II |
| 2 kg  | 0.74 mg                             | Echelon II |
| 1 kg  | 0.050 mg                            | Echelon II |
| 500 g | 0.029 mg                            | Echelon II |
| 300 g | 0.020 mg                            | Echelon II |
| 200 g | 0.017 mg                            | Echelon II |
| 100 g | 0.027 mg                            | Echelon II |

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### CALIBRATION LABORATORIES NVLAP LAB CODE 200381-0

#### ARIZONA DEPARTMENT OF WEIGHTS AND MEASURES METROLOGY LABORATORY

|        |           |            |
|--------|-----------|------------|
| 50 g   | 0.014 mg  | Echelon II |
| 30 g   | 0.009 mg  | Echelon II |
| 20 g   | 0.007 mg  | Echelon II |
| 10 g   | 0.010 mg  | Echelon II |
| 5 g    | 0.0057 mg | Echelon II |
| 3 g    | 0.0042 mg | Echelon II |
| 2 g    | 0.0037 mg | Echelon II |
| 1 g    | 0.0042 mg | Echelon II |
| 500 mg | 0.0033 mg | Echelon II |
| 300 mg | 0.0031 mg | Echelon II |
| 200 mg | 0.0030 mg | Echelon II |
| 100 mg | 0.0025 mg | Echelon II |
| 50 mg  | 0.0025 mg | Echelon II |
| 30 mg  | 0.0024 mg | Echelon II |
| 20 mg  | 0.0024 mg | Echelon II |
| 10 mg  | 0.0025 mg | Echelon II |
| 5 mg   | 0.0025 mg | Echelon II |
| 3 mg   | 0.0024 mg | Echelon II |

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**CALIBRATION LABORATORIES** NVLAP LAB CODE 200381-0

**ARIZONA DEPARTMENT OF WEIGHTS AND MEASURES METROLOGY LABORATORY**

|        |           |             |
|--------|-----------|-------------|
| 2 mg   | 0.0024 mg | Echelon II  |
| 1 mg   | 0.0025 mg | Echelon II  |
| 500 kg | 5.7 g     | Echelon III |
| 250 kg | 5.2 g     | Echelon III |
| 50 kg  | 126.2 mg  | Echelon III |
| 25 kg  | 90.0 mg   | Echelon III |
| 20 kg  | 89.9 mg   | Echelon III |
| 10 kg  | 88.9 mg   | Echelon III |
| 5 kg   | 2.30 mg   | Echelon III |
| 3 kg   | 1.81 mg   | Echelon III |
| 2 kg   | 1.60 mg   | Echelon III |
| 1 kg   | 0.60 mg   | Echelon III |
| 500 g  | 0.594 mg  | Echelon III |
| 300 g  | 0.592 mg  | Echelon III |
| 200 g  | 0.063 mg  | Echelon III |
| 100 g  | 0.075 mg  | Echelon III |
| 50 g   | 0.060 mg  | Echelon III |
| 30 g   | 0.056 mg  | Echelon III |

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|        |          |             |
|--------|----------|-------------|
| 20 g   | 0.055 mg | Echelon III |
| 10 g   | 0.056 mg | Echelon III |
| 5 g    | 0.011 mg | Echelon III |
| 3 g    | 0.008 mg | Echelon III |
| 2 g    | 0.007 mg | Echelon III |
| 1 g    | 0.008 mg | Echelon III |
| 500 mg | 0.007 mg | Echelon III |
| 300 mg | 0.006 mg | Echelon III |
| 200 mg | 0.006 mg | Echelon III |
| 100 mg | 0.005 mg | Echelon III |
| 50 mg  | 0.005 mg | Echelon III |
| 30 mg  | 0.005 mg | Echelon III |
| 20 mg  | 0.005 mg | Echelon III |
| 10 mg  | 0.005 mg | Echelon III |
| 5 mg   | 0.005 mg | Echelon III |
| 3 mg   | 0.005 mg | Echelon III |
| 2 mg   | 0.005 mg | Echelon III |
| 1 mg   | 0.005 mg | Echelon III |

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ARIZONA DEPARTMENT OF WEIGHTS AND MEASURES METROLOGY LABORATORY

| Mass - Avoirdupois |                                              |             |
|--------------------|----------------------------------------------|-------------|
| Range              | Best Uncertainty ( $\pm$ ) <sup>note 1</sup> | Remarks     |
| 5000 lb            | 9 g                                          | Echelon III |
| 2500 lb            | 6 g                                          | Echelon III |
| 2000 lb            | 5.3 g                                        | Echelon III |
| 1000 lb            | 3.6 g                                        | Echelon III |
| 500 lb             | 2.8 g                                        | Echelon III |
| 50 lb              | 90 mg                                        | Echelon III |
| 25 lb              | 89 mg                                        | Echelon III |
| 20 lb              | 88.9 mg                                      | Echelon III |
| 10 lb              | 2.3 mg                                       | Echelon III |
| 5 lb               | 1.60 mg                                      | Echelon III |
| 4 lb               | 0.60 mg                                      | Echelon III |
| 3 lb               | 0.60 mg                                      | Echelon III |
| 2 lb               | 0.599 mg                                     | Echelon III |
| 1 lb               | 0.594 mg                                     | Echelon III |
| 0.5 lb             | 0.592 mg                                     | Echelon III |
| 0.3 lb             | 0.078 mg                                     | Echelon III |

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|            |          |             |
|------------|----------|-------------|
| 0.2 lb     | 0.063 mg | Echelon III |
| 0.1 lb     | 0.060 mg | Echelon III |
| 0.05 lb    | 0.055 mg | Echelon III |
| 0.03 lb    | 0.057 mg | Echelon III |
| 0.02 lb    | 0.055 mg | Echelon III |
| 0.01 lb    | 0.054 mg | Echelon III |
| 0.005 lb   | 0.054 mg | Echelon III |
| 0.003 lb   | 0.053 mg | Echelon III |
| 0.002 lb   | 0.053 mg | Echelon III |
| 0.001 lb   | 0.054 mg | Echelon III |
| 4 oz       | 0.078 mg | Echelon III |
| 2 oz       | 0.062 mg | Echelon III |
| 1 oz       | 0.057 mg | Echelon III |
| 0.5 oz     | 0.058 mg | Echelon III |
| 0.25 oz    | 0.055 mg | Echelon III |
| 0.125 oz   | 0.054 mg | Echelon III |
| 0.0625 oz  | 0.054 mg | Echelon III |
| 0.03125 oz | 0.054 mg | Echelon III |

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ARIZONA DEPARTMENT OF WEIGHTS AND MEASURES METROLOGY LABORATORY

NVLAP Code: 20/M12

| Range    | Best Uncertainty ( $\pm$ ) <sup>1</sup> year <sup>-1</sup> | Remarks                 |
|----------|------------------------------------------------------------|-------------------------|
| 1 gal    | 0.416 in <sup>3</sup>                                      | Small Volume Volumetric |
| 5 gal    | 0.554 in <sup>3</sup>                                      | Small Volume Volumetric |
| 20 gal   | 1.11 in <sup>3</sup>                                       | Large Volume Volumetric |
| 25 gal   | 1.24 in <sup>3</sup>                                       | Large Volume Volumetric |
| 50 gal   | 1.76 in <sup>3</sup>                                       | Large Volume Volumetric |
| 100 gal  | 4.72 in <sup>3</sup>                                       | Large Volume Volumetric |
| 200 gal  | 6.68 in <sup>3</sup>                                       | Large Volume Volumetric |
| 500 gal  | 10.57 in <sup>3</sup>                                      | Large Volume Volumetric |
| 1000 gal | 14.93 in <sup>3</sup>                                      | Large Volume Volumetric |
| 1500 gal | 18.30 in <sup>3</sup>                                      | Large Volume Volumetric |
| 20 gal   | 1.11 in <sup>3</sup>                                       | LPG Volumetric          |
| 100 gal  | 4.72 in <sup>3</sup>                                       | LPG Volumetric          |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .

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OKLAHOMA BUREAU OF STANDARDS

2800 North Lincoln Boulevard  
Oklahoma City, OK 73105-4298

Mr. Ken Fraley

Phone: 405-522-5459 Fax: 405-521-4912

E-Mail: kfraley@oda.state.ok.us

URL: <http://www.state.ok.us/~okag/bos.htm>

#### DIMENSIONAL

NVLAP Code: 20/D13  
Surveying Rods and Tapes

| Interval in inches    | Best Uncertainty ( $\pm$ ) in inches <sup>year<sup>-1</sup></sup> | Remarks     |
|-----------------------|-------------------------------------------------------------------|-------------|
| 0 to 12               | 0.00230                                                           | Rigid Rules |
| 0 to 24               | 0.00297                                                           | Rigid Rules |
| 0 to 36               | 0.00351                                                           | Rigid Rules |
| 0 to 48               | 0.00398                                                           | Rigid Rules |
| Tape Interval in feet | Best Uncertainty ( $\pm$ ) in inches <sup>year<sup>-1</sup></sup> | Remarks     |
| 0 to 1                | 0.0037                                                            | Steel Tapes |
| 0 to 2                | 0.0038                                                            | Steel Tapes |
| 0 to 3                | 0.0038                                                            | Steel Tapes |
| 0 to 4                | 0.0038                                                            | Steel Tapes |

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|          |        |             |
|----------|--------|-------------|
| 0 to 5   | 0.0039 | Steel Tapes |
| 0 to 6   | 0.0039 | Steel Tapes |
| 0 to 7   | 0.0039 | Steel Tapes |
| 0 to 8   | 0.0039 | Steel Tapes |
| 0 to 9   | 0.0041 | Steel Tapes |
| 0 to 10  | 0.0041 | Steel Tapes |
| 0 to 20  | 0.0048 | Steel Tapes |
| 0 to 30  | 0.0054 | Steel Tapes |
| 0 to 40  | 0.0060 | Steel Tapes |
| 0 to 50  | 0.0065 | Steel Tapes |
| 0 to 60  | 0.0069 | Steel Tapes |
| 0 to 70  | 0.0074 | Steel Tapes |
| 0 to 80  | 0.0078 | Steel Tapes |
| 0 to 90  | 0.0082 | Steel Tapes |
| 0 to 100 | 0.0087 | Steel Tapes |
| 0 to 110 | 0.0090 | Steel Tapes |
| 0 to 120 | 0.0094 | Steel Tapes |
| 0 to 130 | 0.0098 | Steel Tapes |

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OKLAHOMA BUREAU OF STANDARDS

|          |        |                          |
|----------|--------|--------------------------|
| 0 to 140 | 0.0102 | Steel Tapes              |
| 0 to 150 | 0.0105 | Steel Tapes              |
| 0 to 1   | 0.0043 | Fiberglass/Plastic Tapes |
| 0 to 2   | 0.0043 | Fiberglass/Plastic Tapes |
| 0 to 3   | 0.0044 | Fiberglass/Plastic Tapes |
| 0 to 4   | 0.0044 | Fiberglass/Plastic Tapes |
| 0 to 5   | 0.0046 | Fiberglass/Plastic Tapes |
| 0 to 6   | 0.0047 | Fiberglass/Plastic Tapes |
| 0 to 7   | 0.0048 | Fiberglass/Plastic Tapes |
| 0 to 8   | 0.0049 | Fiberglass/Plastic Tapes |
| 0 to 9   | 0.0051 | Fiberglass/Plastic Tapes |
| 0 to 10  | 0.0052 | Fiberglass/Plastic Tapes |
| 0 to 20  | 0.0075 | Fiberglass/Plastic Tapes |
| 0 to 30  | 0.0100 | Fiberglass/Plastic Tapes |
| 0 to 40  | 0.0125 | Fiberglass/Plastic Tapes |
| 0 to 50  | 0.0150 | Fiberglass/Plastic Tapes |
| 0 to 60  | 0.0175 | Fiberglass/Plastic Tapes |

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|          |        |                          |
|----------|--------|--------------------------|
| 0 to 70  | 0.0200 | Fiberglass/Plastic Tapes |
| 0 to 80  | 0.0225 | Fiberglass/Plastic Tapes |
| 0 to 90  | 0.0251 | Fiberglass/Plastic Tapes |
| 0 to 100 | 0.0276 | Fiberglass/Plastic Tapes |
| 0 to 110 | 0.0301 | Fiberglass/Plastic Tapes |
| 0 to 120 | 0.0327 | Fiberglass/Plastic Tapes |
| 0 to 130 | 0.0352 | Fiberglass/Plastic Tapes |
| 0 to 140 | 0.0378 | Fiberglass/Plastic Tapes |
| 0 to 150 | 0.0403 | Fiberglass/Plastic Tapes |
| 0 to 1   | 0.0054 | Cloth Tapes              |
| 0 to 2   | 0.0055 | Cloth Tapes              |
| 0 to 3   | 0.0055 | Cloth Tapes              |
| 0 to 4   | 0.0056 | Cloth Tapes              |
| 0 to 5   | 0.0057 | Cloth Tapes              |
| 0 to 6   | 0.0057 | Cloth Tapes              |
| 0 to 7   | 0.0058 | Cloth Tapes              |
| 0 to 8   | 0.0059 | Cloth Tapes              |

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|          |        |             |
|----------|--------|-------------|
| 0 to 9   | 0.0061 | Cloth Tapes |
| 0 to 10  | 0.0062 | Cloth Tapes |
| 0 to 20  | 0.0089 | Cloth Tapes |
| 0 to 30  | 0.0116 | Cloth Tapes |
| 0 to 40  | 0.0142 | Cloth Tapes |
| 0 to 50  | 0.0167 | Cloth Tapes |
| 0 to 60  | 0.0193 | Cloth Tapes |
| 0 to 70  | 0.0219 | Cloth Tapes |
| 0 to 80  | 0.0245 | Cloth Tapes |
| 0 to 90  | 0.0270 | Cloth Tapes |
| 0 to 100 | 0.0296 | Cloth Tapes |
| 0 to 110 | 0.0321 | Cloth Tapes |
| 0 to 120 | 0.0347 | Cloth Tapes |
| 0 to 130 | 0.0372 | Cloth Tapes |
| 0 to 140 | 0.0398 | Cloth Tapes |
| 0 to 150 | 0.0424 | Cloth Tapes |

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OKLAHOMA BUREAU OF STANDARDS

**MECHANICAL**

NVLAP Code: 20/M08  
Mass - Metric

| Range | Best Uncertainty ( $\pm$ , $\mu$ sec) | Remarks   |
|-------|---------------------------------------|-----------|
| 30 kg | 22.9 mg                               | Echelon I |
| 20 kg | 13.4 mg                               | Echelon I |
| 10 kg | 8.0 mg                                | Echelon I |
| 5 kg  | 2.02 mg                               | Echelon I |
| 3 kg  | 1.02 mg                               | Echelon I |
| 2 kg  | 0.76 mg                               | Echelon I |
| 1 kg  | 0.10 mg                               | Echelon I |
| 500 g | 0.076 mg                              | Echelon I |
| 300 g | 0.045 mg                              | Echelon I |
| 200 g | 0.045 mg                              | Echelon I |
| 100 g | 0.048 mg                              | Echelon I |
| 50 g  | 0.023 mg                              | Echelon I |
| 30 g  | 0.014 mg                              | Echelon I |

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OKLAHOMA BUREAU OF STANDARDS

|        |           |           |
|--------|-----------|-----------|
| 20 g   | 0.0109 mg | Echelon I |
| 10 g   | 0.0071 mg | Echelon I |
| 5 g    | 0.0037 mg | Echelon I |
| 3 g    | 0.0026 mg | Echelon I |
| 2 g    | 0.0022 mg | Echelon I |
| 1 g    | 0.0016 mg | Echelon I |
| 500 mg | 0.0010 mg | Echelon I |
| 300 mg | 0.0007 mg | Echelon I |
| 200 mg | 0.0005 mg | Echelon I |
| 100 mg | 0.0008 mg | Echelon I |
| 50 mg  | 0.0003 mg | Echelon I |
| 30 mg  | 0.0002 mg | Echelon I |
| 20 mg  | 0.0002 mg | Echelon I |
| 10 mg  | 0.0002 mg | Echelon I |
| 5 mg   | 0.0001 mg | Echelon I |
| 3 mg   | 0.0002 mg | Echelon I |
| 2 mg   | 0.0001 mg | Echelon I |
| 1 mg   | 0.0002 mg | Echelon I |

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OKLAHOMA BUREAU OF STANDARDS

|        |           |            |
|--------|-----------|------------|
| 450 kg | 1.3 g     | Echelon II |
| 227 kg | 703.1 mg  | Echelon II |
| 30 kg  | 24.4 mg   | Echelon II |
| 20 kg  | 14.7 mg   | Echelon II |
| 10 kg  | 8.9 mg    | Echelon II |
| 5 kg   | 2.85 mg   | Echelon II |
| 3 kg   | 1.76 mg   | Echelon II |
| 2 kg   | 1.69 mg   | Echelon II |
| 1 kg   | 0.200 mg  | Echelon II |
| 500 g  | 0.198 mg  | Echelon II |
| 300 g  | 0.155 mg  | Echelon II |
| 200 g  | 0.143 mg  | Echelon II |
| 100 g  | 0.058 mg  | Echelon II |
| 50 g   | 0.030 mg  | Echelon II |
| 30 g   | 0.027 mg  | Echelon II |
| 20 g   | 0.017 mg  | Echelon II |
| 10 g   | 0.008 mg  | Echelon II |
| 5 g    | 0.0042 mg | Echelon II |

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OKLAHOMA BUREAU OF STANDARDS

|        |           |             |
|--------|-----------|-------------|
| 3 g    | 0.0031 mg | Echelon II  |
| 2 g    | 0.0027 mg | Echelon II  |
| 1 g    | 0.0018 mg | Echelon II  |
| 500 mg | 0.0017 mg | Echelon II  |
| 300 mg | 0.0012 mg | Echelon II  |
| 200 mg | 0.0009 mg | Echelon II  |
| 100 mg | 0.0009 mg | Echelon II  |
| 50 mg  | 0.0005 mg | Echelon II  |
| 30 mg  | 0.0004 mg | Echelon II  |
| 20 mg  | 0.0004 mg | Echelon II  |
| 10 mg  | 0.0003 mg | Echelon II  |
| 5 mg   | 0.0003 mg | Echelon II  |
| 3 mg   | 0.0003 mg | Echelon II  |
| 2 mg   | 0.0003 mg | Echelon II  |
| 1 mg   | 0.0003 mg | Echelon II  |
| 500 kg | 4.0 g     | Echelon III |
| 300 kg | 3.2 g     | Echelon III |

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|        |          |             |
|--------|----------|-------------|
| 200 kg | 2.1 g    | Echelon III |
| 100 kg | 1.8 g    | Echelon III |
| 50 kg  | 1.6 g    | Echelon III |
| 30 kg  | 189 mg   | Echelon III |
| 25 kg  | 182 mg   | Echelon III |
| 20 kg  | 175 mg   | Echelon III |
| 10 kg  | 151 mg   | Echelon III |
| 5 kg   | 18.0 mg  | Echelon III |
| 3 kg   | 7.54 mg  | Echelon III |
| 2 kg   | 6.84 mg  | Echelon III |
| 1 kg   | 6.08 mg  | Echelon III |
| 500 g  | 5.996 mg | Echelon III |
| 300 g  | 5.932 mg | Echelon III |
| 200 g  | 5.910 mg | Echelon III |
| 100 g  | 0.258 mg | Echelon III |
| 50 g   | 0.244 mg | Echelon III |
| 30 g   | 0.239 mg | Echelon III |
| 20 g   | 0.236 mg | Echelon III |

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|        |          |             |
|--------|----------|-------------|
| 10 g   | 0.122 mg | Echelon III |
| 5 g    | 0.121 mg | Echelon III |
| 3 g    | 0.121 mg | Echelon III |
| 2 g    | 0.121 mg | Echelon III |
| 1 g    | 0.119 mg | Echelon III |
| 500 mg | 0.022 mg | Echelon III |
| 300 mg | 0.015 mg | Echelon III |
| 200 mg | 0.013 mg | Echelon III |
| 100 mg | 0.011 mg | Echelon III |
| 50 mg  | 0.010 mg | Echelon III |
| 30 mg  | 0.010 mg | Echelon III |
| 20 mg  | 0.010 mg | Echelon III |
| 10 mg  | 0.010 mg | Echelon III |
| 5 mg   | 0.010 mg | Echelon III |
| 3 mg   | 0.010 mg | Echelon III |
| 2 mg   | 0.010 mg | Echelon III |
| 1 mg   | 0.010 mg | Echelon III |

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OKLAHOMA BUREAU OF STANDARDS

| Mass Avoirdupois | Range   | Best Uncertainty ( $\pm$ ) <sup>mass. 1</sup> | Remarks     |
|------------------|---------|-----------------------------------------------|-------------|
|                  | 1000 lb | 4.0 g                                         | Echelon III |
|                  | 500 lb  | 3.2 g                                         | Echelon III |
|                  | 250 lb  | 2.1 g                                         | Echelon III |
|                  | 200 lb  | 1.8 g                                         | Echelon III |
|                  | 100 lb  | 1.59 g                                        | Echelon III |
|                  | 50 lb   | 0.178 g                                       | Echelon III |
|                  | 25 lb   | 0.151 g                                       | Echelon III |
|                  | 20 lb   | 0.150 g                                       | Echelon III |
|                  | 12 lb   | 0.148 g                                       | Echelon III |
|                  | 10 lb   | 11.31 mg                                      | Echelon III |
|                  | 5 lb    | 6.90 mg                                       | Echelon III |
|                  | 4 lb    | 6.59 mg                                       | Echelon III |
|                  | 3 lb    | 6.36 mg                                       | Echelon III |
|                  | 2 lb    | 6.06 mg                                       | Echelon III |
|                  | 1 lb    | 5.95 mg                                       | Echelon III |
|                  | 0.5 lb  | 5.91 mg                                       | Echelon III |

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OKLAHOMA BUREAU OF STANDARDS

|           |          |             |
|-----------|----------|-------------|
| 0.3 lb    | 0.269 mg | Echelon III |
| 0.2 lb    | 0.251 mg | Echelon III |
| 0.1 lb    | 0.239 mg | Echelon III |
| 0.05 lb   | 0.236 mg | Echelon III |
| 0.03 lb   | 0.235 mg | Echelon III |
| 0.02 lb   | 0.123 mg | Echelon III |
| 0.01 lb   | 0.123 mg | Echelon III |
| 0.005 lb  | 0.152 mg | Echelon III |
| 0.003 lb  | 0.134 mg | Echelon III |
| 0.002 lb  | 0.128 mg | Echelon III |
| 0.001 lb  | 0.124 mg | Echelon III |
| 4 oz      | 0.260 mg | Echelon III |
| 2 oz      | 0.242 mg | Echelon III |
| 1 oz      | 0.237 mg | Echelon III |
| 0.5 oz    | 0.235 mg | Echelon III |
| 0.25 oz   | 0.123 mg | Echelon III |
| 0.125 oz  | 0.123 mg | Echelon III |
| 0.0625 oz | 0.123 mg | Echelon III |

December 31, 2002

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OKLAHOMA BUREAU OF STANDARDS

| 0.03125 oz                | 0.123 mg                                     | Echelon III             |
|---------------------------|----------------------------------------------|-------------------------|
| 0.015625 oz               | 0.123 mg                                     | Echelon III             |
| NVLAP Code: 20/M12 Volume |                                              |                         |
| Range                     | Best Uncertainty ( $\pm$ ) <sup>year 1</sup> | Remarks                 |
| 5 gal                     | 0.30 in <sup>3</sup>                         | Small Volume Volumetric |
| 10 gal                    | 0.60 in <sup>3</sup>                         | Small Volume Volumetric |
| 20 gal                    | 1.23 in <sup>3</sup>                         | Small Volume Volumetric |
| 25 gal                    | 1.53 in <sup>3</sup>                         | Small Volume Volumetric |
| 30 gal                    | 1.83 in <sup>3</sup>                         | Small Volume Volumetric |
| 50 gal                    | 3.06 in <sup>3</sup>                         | Small Volume Volumetric |
| 100 gal                   | 6.1 in <sup>3</sup>                          | Small Volume Volumetric |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .

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CALIBRATION LABORATORIES NVLAP LAB CODE 200400-0

DEKA SCALE, INC.  
 1144 Expressway Drive South  
 Toledo, OH 43608  
 Mr. Bernd K. Damm  
 Phone: 419-727-9731 Fax: 419-727-9735  
 E-Mail: customerservice@dekascale.com

| MECHANICAL                |                                              |                                           |                                                                          |
|---------------------------|----------------------------------------------|-------------------------------------------|--------------------------------------------------------------------------|
| NVLAP Code: 20/M03        |                                              |                                           |                                                                          |
| Mass                      |                                              |                                           |                                                                          |
| Range                     | Best Uncertainty ( $\pm$ ) <sup>year 1</sup> | Remarks                                   |                                                                          |
| 25 lb                     | 0.068 g                                      | Modified Substitution                     |                                                                          |
| 50 lb                     | 0.183 g                                      | Modified Substitution                     |                                                                          |
| 500 lb                    | 4.840 g                                      | Modified Substitution                     |                                                                          |
| 1,000 lb                  | 5.227 g                                      | Modified Substitution                     |                                                                          |
| NVLAP Code: 20/M13        |                                              |                                           |                                                                          |
| Scales                    |                                              |                                           |                                                                          |
| Class I <sup>year 1</sup> | Readability                                  | Minimum Tested Capacity <sup>year 2</sup> | Best Uncertainty ( $\pm$ ) <sup>year 3,5</sup> Remarks <sup>year 4</sup> |
| Range                     | 0.1 mg                                       | 100%                                      | ASTM I                                                                   |
| 0-250 mg                  |                                              |                                           |                                                                          |

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| Class II <sup>note 1</sup> | Range      | Readability | Minimum Tested Capacity <sup>note 2</sup> | Best Uncertainty ( $\pm$ ) <sup>note 3,5</sup> | Remarks <sup>note 4</sup> |
|----------------------------|------------|-------------|-------------------------------------------|------------------------------------------------|---------------------------|
|                            | 0-100 g    | 1.0 mg      | 100%                                      | 0.58 mg                                        | ASTM 2                    |
|                            | 0-200 g    | 2.0 mg      | 100%                                      | 1.2 mg                                         | ASTM 2                    |
|                            | 0-500 g    | 5.0 mg      | 100%                                      | 2.9 mg                                         | ASTM 2                    |
|                            | 0-1000 g   | 10.0 mg     | 100%                                      | 5.8 mg                                         | ASTM 2                    |
|                            | 0-10,000 g | 0.1 g       | 100%                                      | 58 mg                                          | ASTM 2                    |
|                            | 0-32,000 g | 0.5 g       | 100%                                      | 289 mg                                         | ASTM 2                    |
|                            | 0-64,000 g | 1.0 g       | 100%                                      | 578 mg                                         | ASTM 2                    |

| Class III <sup>note 1</sup> | Range    | Readability | Minimum Tested Capacity <sup>note 2</sup> | Best Uncertainty ( $\pm$ ) <sup>note 3,5</sup> | Remarks <sup>note 4</sup> |
|-----------------------------|----------|-------------|-------------------------------------------|------------------------------------------------|---------------------------|
|                             | 0-5 lb   | 0.0005 lb   | 100%                                      | 0.00029 lb                                     | NIST Class F              |
|                             | 0-10 lb  | 0.001 lb    | 100%                                      | 0.00057 lb                                     | NIST Class F              |
|                             | 0-20 lb  | 0.002 lb    | 100%                                      | 0.0012 lb                                      | NIST Class F              |
|                             | 0-50 lb  | 0.005 lb    | 100%                                      | 0.0029 lb                                      | NIST Class F              |
|                             | 0-100 lb | 0.01 lb     | 100%                                      | 0.0058 lb                                      | NIST Class F              |

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|             |         |       |          |                 |
|-------------|---------|-------|----------|-----------------|
| 0-200 lb    | 0.02 lb | 100%  | 0.012 lb | NIST Class F    |
| 0-500 lb    | 0.05 lb | 75%   | 0.029 lb | NIST Class F    |
| 0-1,000 lb  | 0.1 lb  | 75%   | 0.058 lb | NIST Class F    |
| 0-5,000 lb  | 0.5 lb  | 50%   | 0.29 lb  | NIST Class F    |
| 0-10,000 lb | 1.0 lb  | 50%   | 0.58 lb  | NIST Class F    |
| 0-20,000 lb | 2.0 lb  | 50%   | 1.2 lb   | NIST Class F    |
| 0-40,000 lb | 5.0 lb  | 12.5% | 2.9 lb   | NIST Class F    |
|             |         | 50%   | 5.9 lb   | By Substitution |

Class III<sup>note 1</sup>

| Range        | Readability | Minimum Tested Capacity <sup>note 2</sup> | Best Uncertainty ( $\pm$ ) <sup>note 3,5</sup> | Remarks <sup>note 4</sup>    |
|--------------|-------------|-------------------------------------------|------------------------------------------------|------------------------------|
| 0-50,000 lb  | 5.0 lb      | 12.5%                                     | 2.9 lb                                         | NIST Class F By Substitution |
|              |             | 50%                                       | 10.6 lb                                        | NIST Class F By Substitution |
| 0-100,000 lb | 10.0 lb     | 12.5%                                     | 5.8 lb                                         | NIST Class F By Substitution |
|              |             | 25%                                       | 11.7 lb                                        | NIST Class F By Substitution |

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|                                   |              |                                                    |                                                            |                                          |
|-----------------------------------|--------------|----------------------------------------------------|------------------------------------------------------------|------------------------------------------|
| 0-200,000 lb                      | 20.0 lb      | 12.5%                                              | 11.6 lb                                                    | NIST Class F<br>By Substitution          |
|                                   |              | 25%                                                | 15.4 lb                                                    | NIST Class F<br>By Substitution          |
| 0-400,000 lb                      | 50.0 lb      | 30,000 lb                                          | 28.9 lb                                                    | Railway Track<br>Scales <sup>see 6</sup> |
| <b>Class IIII<sup>see 1</sup></b> | <b>Range</b> | <b>Minimum Tested<br/>Capacity<sup>see 2</sup></b> | <b>Best Uncertainty (<math>\pm</math>)<sup>see 3</sup></b> | <b>Remarks<sup>see 4</sup></b>           |
| 0-100 lb                          | 0.01 lb      | 100%                                               | 0.06 lb                                                    | NIST Class F                             |
| 0-500 lb                          | 0.5 lb       | 75%                                                | .29 lb                                                     | NIST Class F                             |
| 0-5,000 lb                        | 5.0 lb       | 50%                                                | 2.9 lb                                                     | NIST Class F                             |
| 0-10,000 lb                       | 50.0 lb      | 50%                                                | 29.0 lb                                                    | NIST Class F                             |

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DEKA SCALE, INC.

1. Scale classifications determined by NIST Handbook 44, Scales Code, Table 3.
2. Minimum tested capacity required by NIST Handbook 44, Table 4.
3. Represents an expanded uncertainty using a coverage factor,  $k=2$ .
4. Class weights used. Suitable weight classifications determined by OIML R111, 1994, ASTM E 617-97, and NIST Handbook 105-1.
5. Uncertainty reported at capacity; full uncertainty analysis on file.
6. NIST Handbook 44, N.3.1.2 Interim Approval- A test weight load of not less than 13,500 kg (30,000 lb) and a strain-load test up to at least 25% of scale capacity may be used to return a scale into service following repairs.

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NVLAP LAB CODE 200403-0

SWFLANT CALIBRATION LABORATORY OPERATED BY LOCKHEED MARTIN

P.O. Box 47299  
 Kings Bay, GA 31547  
 Mr. David M. Catalano  
 Phone: 912-673-2927 x1850 Fax: 912-673-3609  
 E-mail: dave.catalano@lmco.com

**DIMENSIONAL**

NVLAP Code: 20/D03

Gage Blocks - Steel and Chrome Carbide

| Range in inches | Best Uncertainty ( $\pm$ ) in $\mu$ inches <sup>new 1,2</sup> | Remarks               |
|-----------------|---------------------------------------------------------------|-----------------------|
| 0.01 to 0.09375 | 4.6                                                           | Mechanical Comparison |
| 0.1 to 0.100025 | 3.9                                                           | Mechanical Comparison |
| 0.10005 to 1.0  | 3.6                                                           | Mechanical Comparison |
| 2.0 to 4.0      | 3.0 + 0.6 x 10 <sup>-6</sup> L                                | Mechanical Comparison |
| 5.0 to 20.0     | 8.8 + 0.2 x 10 <sup>-6</sup> L                                | Mechanical Comparison |

Gage Blocks - Ceramic and Tungsten Carbide

|                 |     |                       |
|-----------------|-----|-----------------------|
| 0.01 to 0.09375 | 5.6 | Mechanical Comparison |
| 0.1 to 0.100025 | 4.9 | Mechanical Comparison |
| 0.10005 to 1.0  | 4.6 | Mechanical Comparison |

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2.0 to 4.0      4.0 + 0.6 x 10<sup>-6</sup>L      Mechanical Comparison

NVLAP Code: 20/D11

Spherical Diameter, Plug/Ring Gages

| Range in inches | Best Uncertainty ( $\pm$ ) in $\mu$ inches <sup>new 1,2</sup> | Remarks                   |
|-----------------|---------------------------------------------------------------|---------------------------|
| Ring Gages      |                                                               |                           |
| 0.25 to 4.99    | 5.6 + 0.5 x 10 <sup>-6</sup> L                                | Comparison to Gage Blocks |
| 5.0 to 12.0     | 8.8 + 0.6 x 10 <sup>-6</sup> L                                | Comparison to Gage Blocks |

|             |                                |                           |
|-------------|--------------------------------|---------------------------|
| Plug Gages  |                                |                           |
| >0 to 4.99  | 6.0 + 0.6 x 10 <sup>-6</sup> L | Comparison to Gage Blocks |
| 5.0 to 12.0 | 8.8 + 0.6 x 10 <sup>-6</sup> L | Comparison to Gage Blocks |

NVLAP Code: 20/D14

Threaded Plug and Ring Gages

Threaded Plug Gages, 60° Unified

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|                | Range         | Best Uncertainty ( $\pm y^{95\%}$ )     | Remarks                       |
|----------------|---------------|-----------------------------------------|-------------------------------|
| Pitch Diameter | > 0 to 6.0 in | (61 + 0.7 x 10 <sup>-6</sup> L) $\mu$ m | Three Wire Method             |
| Major Diameter | 1.0 to 6.0 in | (35 + 1.1 x 10 <sup>-6</sup> L) $\mu$ m | Universal Measuring Machine   |
| Half Angle     | 60°           | 3 arc minutes                           | Optical Comparator Inspection |
| Pitch          | 4 to 80 TPI   | 28 $\mu$ m                              | Universal Measuring Machine   |

Threaded Ring Gages, Solid, 60° Unified

|                | Range             | Best Uncertainty ( $\pm y^{95\%}$ ) | Remarks                        |
|----------------|-------------------|-------------------------------------|--------------------------------|
| Pitch Diameter | > 0 to 3.1 in     | 55 $\mu$ m                          | Universal Measuring Machine    |
| Minor Diameter | > 0 to 0.272 in   | 55 $\mu$ m                          | Compared to Go/NoGo Plugs      |
| Minor Diameter | 0.273 to 0.499 in | 150 $\mu$ m                         | Measured with Bore Micrometers |
| Minor Diameter | 0.5 to 3.999 in   | 250 $\mu$ m                         | Measured with Bore Micrometers |

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|                |               |               |                                      |
|----------------|---------------|---------------|--------------------------------------|
| Minor Diameter | 4.0 to 8.0 in | 600 $\mu$ m   | Measured with Bore Micrometers       |
| Half Angle     | 60°           | 4 arc minutes | Optical Inspection of Thread Casting |

Threaded Ring Gages, Split, 60° Unified

|                     | Range                    | Best Uncertainty ( $\pm y^{95\%}$ ) | Remarks                           |
|---------------------|--------------------------|-------------------------------------|-----------------------------------|
| Functional Diameter | > 0 to 6 in, 4 to 80 TPI | 83 $\mu$ m                          | Fit Test with Class W Thread Plug |
| Minor Diameter      | > 0 to 0.272 in          | 55 $\mu$ m                          | Compared to Go/NoGo Plugs         |
| Minor Diameter      | 0.273 to 0.499 in        | 150 $\mu$ m                         | Measured with Bore Micrometers    |
| Minor Diameter      | 0.5 to 3.999 in          | 250 $\mu$ m                         | Measured with Bore Micrometers    |
| Minor Diameter      | 4.0 to 8.0 in            | 600 $\mu$ m                         | Measured with Bore Micrometers    |

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**ELECTROMAGNETICS - DC/LOW FREQUENCY**

NVLAP Code: 20/E02  
AC Current

| Current | Best Uncertainty ( $\pm$ ) in $\text{ppm}^{\text{norm}}$ |     |     |     |      |
|---------|----------------------------------------------------------|-----|-----|-----|------|
|         | 10                                                       | 20  | 40  | 1 k | 10 k |
| 20 mA   | 120                                                      | 120 | 110 | 110 | 110  |
| 200 mA  | 120                                                      | 120 | 110 | 110 | 110  |
| 2 A     |                                                          | 120 | 120 | 120 | 120  |
| 10 A    |                                                          | 180 | 180 | 180 | 200  |

NVLAP Code: 20/E05  
DC Current

| Range ( $\pm$ ) | Best Uncertainty ( $\pm$ ) in $\text{ppm}^{\text{norm}}$ | Remarks |
|-----------------|----------------------------------------------------------|---------|
| 200 $\mu$ A     | 22                                                       |         |
| 2.0 mA          | 22                                                       |         |
| 20 mA           | 22                                                       |         |
| 200 mA          | 22                                                       |         |

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|        |     |
|--------|-----|
| 2.0 A  | 40  |
| 3.0 A  | 120 |
| 5.0 A  | 120 |
| 10.0 A | 120 |

NVLAP Code: 20/E05  
DC Resistance

| Range in ohms | Best Uncertainty ( $\pm$ ) in $\text{ppm}^{\text{norm}}$ | Remarks                |
|---------------|----------------------------------------------------------|------------------------|
| 1.0           | 2                                                        | Using Guideline Bridge |
| 10.0          | 2                                                        | Using Guideline Bridge |
| 100.0         | 2                                                        | Using Guideline Bridge |
| 1000.0        | 2                                                        | Using Guideline Bridge |
| 10000.0       | 2                                                        | Using Guideline Bridge |
| 100000.0      | 2                                                        | Using Guideline Bridge |

0.01 0.2 (in %)

Using 242D System

0.1 200

Using 242D System

1.0 20

Using 242D System

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|          |    |                   |
|----------|----|-------------------|
| 10.0     | 10 | Using 242D System |
| 100.0    | 10 | Using 242D System |
| 1000.0   | 10 | Using 242D System |
| 10000.0  | 10 | Using 242D System |
| 100000.0 | 10 | Using 242D System |
| 1.0 M    | 10 | Using 242D System |
| 10.0 M   | 10 | Using 242D System |
| 100.0 M  | 15 | Using 242D System |

NVLAP Code: 20/E06  
DC Voltage - Generation

| Range (±) | Best Uncertainty (±) in ppm <sup>see 1</sup> | Remarks |
|-----------|----------------------------------------------|---------|
| 0.1 V     | 3.0                                          |         |
| 0.2 V     | 2.1                                          |         |
| 1.0 V     | 1.8                                          |         |
| 2.0 V     | 1.8                                          |         |
| 10.0 V    | 1.8                                          |         |
| 20.0 V    | 1.8                                          |         |

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|                          |     |
|--------------------------|-----|
| 100.0 V                  | 1.8 |
| 200.0 V                  | 2.0 |
| 1000.0 V                 | 2.0 |
| DC Voltage - Measurement |     |
| 0.1 V                    | 4.0 |
| 0.2 V                    | 3.0 |
| 1.0 V                    | 3.0 |
| 2.0 V                    | 3.0 |
| 10.0 V                   | 3.0 |
| 20.0 V                   | 3.0 |
| 100.0 V                  | 3.0 |
| 200.0 V                  | 3.0 |
| 1000.0 V                 | 3.0 |

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NVLAP Code: 20/E09  
LF AC Voltage

Best Uncertainty ( $\pm$ ) in  $\text{ppm}^{\text{max}}$   
Frequency in Hertz

| Range  | 10  | 20  | 40  | 50 | 300 | 1 k | 20 k | 50 k | 100 k | 300 k | 500 k | 1 M |
|--------|-----|-----|-----|----|-----|-----|------|------|-------|-------|-------|-----|
| 20 mV  | 110 | 100 | 100 |    | 100 | 100 | 100  | 200  | 310   | 410   | 580   | 580 |
| 200 mV | 50  | 50  | 30  | 30 | 30  | 30  | 30   | 50   | 90    | 150   | 150   | 240 |
| 2 V    | 100 | 40  | 30  | 20 | 20  | 20  | 20   | 40   | 50    | 120   | 120   | 120 |
| 20 V   | 40  | 40  | 30  | 20 | 20  | 20  | 20   | 40   | 50    | 120   | 130   | 130 |
| 200 V  | 40  | 45  | 25  | 25 | 25  | 25  | 25   | 50   | 60    |       |       |     |
| 300 V  |     |     |     |    |     |     | 40   |      |       |       |       |     |
| 600 V  |     |     |     |    |     |     |      | 60   | 80    |       |       |     |
| 1000 V |     |     | 35  | 35 | 30  | 30  | 40   | 40   |       |       |       |     |

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TIME AND FREQUENCY

NVLAP Code: 20/F01  
Frequency Dissemination

| Range                | Best Uncertainty ( $\pm$ ) $\text{year}^{-1}$ | Remarks              |
|----------------------|-----------------------------------------------|----------------------|
| 1 MHz, 5 MHz, 10 MHz | $5.0 \times 10^{-12}$                         | Comparison using FMS |

NVLAP Code: 20/F02  
Time Dissemination

| Range | Best Uncertainty ( $\pm$ ) $\text{year}^{-1}$ | Remarks            |
|-------|-----------------------------------------------|--------------------|
| n/a   | 1 $\mu$ second                                | UTC(USNO) Transfer |

MECHANICAL

NVLAP Code: 20/M06  
Force - Torque

Calibration of strain gage torque standards, increasing torque, non-adjustable, defined scale instruments.

| Range in lb-ft | Best Uncertainty ( $\pm$ ) $\text{year}^{-1}$ | Remarks                                   |
|----------------|-----------------------------------------------|-------------------------------------------|
| 10 to 100      | 0.045 % of Full Scale                         | Comparison to moment arm and dead weights |
| > 100 to 6500  | 0.025 % of Full Scale                         | Comparison to moment arm and dead weights |

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CALIBRATION LABORATORIES

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SWFLANT CALIBRATION LABORATORY OPERATED BY LOCKHEED MARTIN

NVLAP Code: 20/M08

| Mass  | Best Uncertainty ( $\pm$ ) in $mg^{95\%}$ | Remarks             |
|-------|-------------------------------------------|---------------------|
| Range |                                           |                     |
| 20 kg | 63                                        | Double Substitution |
| 10 kg | 32                                        | Double Substitution |
| 5 kg  | 17                                        | Double Substitution |
| 2 kg  | 9                                         | Double Substitution |
| 1 kg  | 5                                         | Double Substitution |
| 500 g | 3                                         | Double Substitution |
| 200 g | 1                                         | Double Substitution |
| 100 g | 0.4                                       | Double Substitution |
| 50 g  | 0.3                                       | Double Substitution |
| 20 g  | 0.1                                       | Double Substitution |
| 10 g  | 0.1                                       | Double Substitution |
| 5 g   | 0.1                                       | Double Substitution |
| 2 g   | 0.05                                      | Double Substitution |
| 1 g   | 0.03                                      | Double Substitution |

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1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .
2. L is length or diameter in inches.

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CALIBRATION LABORATORIES NVLAP LAB CODE 200405-0

DWIGHT D.I.C., INC.

10 Stuyvesant Avenue, P.O. Box 909  
Lyndhurst, NJ 07071-0909

Mr. Daniel Manning

Phone: 1-800-635-2910 Fax: 201-438-0594

E-Mail: [dwright@comcat.com](mailto:dwright@comcat.com)

URL: <http://www.dwightdic.com>

### DIMENSIONAL

NVLAP Code: 20/D03  
Gage Blocks - Steel only

| Range       | Best Uncertainty ( $\pm$ ) in $\mu$ inches <sup>nom</sup> 1,2 | Remarks    |
|-------------|---------------------------------------------------------------|------------|
| >0 to 20 in | (3.5 + 2L)                                                    | Comparison |

NVLAP Code: 20/D05  
Length

| Range                                  | Best Uncertainty ( $\pm$ ) in $\mu$ inches <sup>nom</sup> 1,2 | Remarks |
|----------------------------------------|---------------------------------------------------------------|---------|
| Micrometers - in lab and field service | (100 + 2L)                                                    |         |
| >0 to 24 in                            |                                                               |         |

Dial Indicators - in lab and field service

>0 to 2 in 50

Calipers - in lab and field service

>0 to 36 in (1000 + 20L)

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DWIGHT D.I.C., INC.

NVLAP Code: 20/D07  
Thread Measuring Wires

| Range          | Best Uncertainty ( $\pm$ ) in $\mu$ inches <sup>nom</sup> 1,2 | Remarks               |
|----------------|---------------------------------------------------------------|-----------------------|
| Up to 80 pitch | 20                                                            | Light Wave Micrometer |

NVLAP Code: 20/D11  
Spherical Diameter - Plain Rings

| Range      | Best Uncertainty ( $\pm$ ) in $\mu$ inches <sup>nom</sup> 1,2 | Remarks |
|------------|---------------------------------------------------------------|---------|
| >0 to 8 in | (50 + 5L)                                                     |         |

NVLAP Code: 20/D12  
Granite Surface Plates - in lab and field service

| Range       | Best Uncertainty ( $\pm$ ) in $\mu$ inches <sup>nom</sup> 1,2 | Remarks      |
|-------------|---------------------------------------------------------------|--------------|
| Up to 12 ft | 50 per ft                                                     | Moody Method |

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STRATEGIC WEAPONS FAC. PACIFIC CAL. LAB. OPER. BY LOCKHEED MARTIN

|      |      |                       |
|------|------|-----------------------|
| 5.0  | 9.7  | Mechanical Comparison |
| 6.0  | 10.0 | Mechanical Comparison |
| 7.0  | 10.3 | Mechanical Comparison |
| 8.0  | 10.6 | Mechanical Comparison |
| 10.0 | 11.3 | Mechanical Comparison |
| 12.0 | 12.1 | Mechanical Comparison |
| 16.0 | 14.0 | Mechanical Comparison |
| 20.0 | 16.1 | Mechanical Comparison |

|                                            |     |                       |
|--------------------------------------------|-----|-----------------------|
| Gage Blocks - Ceramic and Tungsten Carbide |     |                       |
| 0.01 to 0.09375<br>(except 0.05)           | 4.7 | Mechanical Comparison |
| 0.05                                       | 5.4 | Mechanical Comparison |
| 0.1 to 0.95<br>(except 0.35 and 0.85)      | 4.0 | Mechanical Comparison |
| 0.35                                       | 4.2 | Mechanical Comparison |
| 0.85                                       | 4.3 | Mechanical Comparison |
| 1.0                                        | 4.3 | Mechanical Comparison |

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|     |     |                       |
|-----|-----|-----------------------|
| 2.0 | 5.2 | Mechanical Comparison |
| 3.0 | 6.5 | Mechanical Comparison |
| 4.0 | 8.4 | Mechanical Comparison |

NVLAP Code: 20/D11  
Spherical Diameter, Plug Ring Gages

| Range in inches | Best Uncertainty ( $\pm$ ) in $\mu$ inches <sup>case 1</sup> | Remarks                   |
|-----------------|--------------------------------------------------------------|---------------------------|
| Ring Gages      |                                                              |                           |
| > 0 to 8.0      | 20                                                           | Comparison to Gage Blocks |

|            |    |                           |
|------------|----|---------------------------|
| Plug Gages |    |                           |
| > 0 to 3.0 | 40 | Comparison to Gage Blocks |

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NVLAP Code: 20/D14  
Threaded Plug and Ring Gages  
Threaded Plug Gages, 60°

| Range                    | Best Uncertainty ( $\pm$ ) in $\mu\text{m}$ | Remarks                       |
|--------------------------|---------------------------------------------|-------------------------------|
| Pitch Diameter           | > 0 to 6.0 in                               | Three Wire Method             |
| Major Diameter           | > 0 to 6.0 in                               | Universal Measuring Machine   |
| Half Angle               | 60°                                         | Optical Comparator Inspection |
| Pitch                    | 4 to 80 TPI                                 | Universal Measuring Machine   |
| Threaded Ring Gages, 60° |                                             |                               |
| Minor Diameter           | > 0 to 6.0 in                               | 40 $\mu\text{m}$              |

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ELECTROMAGNETICS - DC/LOW FREQUENCY  
NVLAP Code: 20/E02  
AC Current

| Range                                 | Best Uncertainty ( $\pm$ ) in $\text{ppm}^{\text{new}}$ | Frequency Range |
|---------------------------------------|---------------------------------------------------------|-----------------|
| 10 $\mu\text{A}$ to 220 $\mu\text{A}$ | 176 to 9100                                             | 10 Hz to 10 kHz |
| 220 $\mu\text{A}$ to 2.2 mA           | 148 to 4300                                             | 10 Hz to 10 kHz |
| 2.2 mA to 22 mA                       | 148 to 3500                                             | 10 Hz to 10 kHz |
| 22 mA to 220 mA                       | 144 to 1580                                             | 10 Hz to 10 kHz |
| 220 mA to 2.2 A                       | 318 to 7800                                             | 20 Hz to 10 kHz |
| 2.2 A to 11 A(w/5725A)                | 417 to 3375                                             | 40 Hz to 10 kHz |

NVLAP Code: 20/E05  
DC Current

| Range                                 | Best Uncertainty ( $\pm$ ) in $\text{ppm}^{\text{new}}$ | Remarks |
|---------------------------------------|---------------------------------------------------------|---------|
| 10 $\mu\text{A}$ to 220 $\mu\text{A}$ | 74 to 360                                               |         |
| 220 $\mu\text{A}$ to 2.2 mA           | 39 to 71                                                |         |
| 2.2 mA to 22 mA                       | 37 to 58                                                |         |
| 22 mA to 220 mA                       | 59 to 87                                                |         |

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220 mA to 2.2 A  
2.2 A to 11 A (w/5725A)

125 to 183  
388 to 558

NVLAP Code: 20/E05  
DC Resistance

Range in ohms

Best Uncertainty ( $\pm$ ) in ppm<sup>max</sup>

Remarks

|          |   |                        |
|----------|---|------------------------|
| 1.0      | 1 | Using Guildline Bridge |
| 10.0     | 1 | Using Guildline Bridge |
| 100.0    | 1 | Using Guildline Bridge |
| 1000.0   | 1 | Using Guildline Bridge |
| 10000.0  | 1 | Using Guildline Bridge |
| 100000.0 | 2 | Using Guildline Bridge |

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NVLAP Code: 20/E06  
DC Voltage

Range ( $\pm$ )

Best Uncertainty ( $\pm$ ) in ppm<sup>max</sup>

Remarks

|          |     |                                 |
|----------|-----|---------------------------------|
| 0.1 V    | 8.1 | Compared to 10 V Reference Cell |
| 1.0 V    | 1.3 | Compared to 10 V Reference Cell |
| 10.0 V   | 1.0 | Compared to 10 V Reference Cell |
| 100.0 V  | 1.0 | Compared to 10 V Reference Cell |
| 1000.0 V | 1.1 | Compared to 10 V Reference Cell |

NVLAP Code: 20/E09  
LF AC Voltage

Range

Best Uncertainty ( $\pm$ ) in ppm<sup>max</sup>

Frequency Range

|                           |              |                 |
|---------------------------|--------------|-----------------|
| 1 mV to 220 mV            | 126 to 28000 | 10 Hz to 1 Mhz  |
| 220 mV to 2.2 V           | 52 to 4409   | 10 Hz to 1 Mhz  |
| 2.2 V to 22 V             | 50 to 3200   | 10 Hz to 1 Mhz  |
| 22 V to 220 V             | 63 to 13348  | 10 Hz to 1 Mhz  |
| 220 V to 250 V            | 400 to 410   | 15 Hz to 50 Hz  |
| 220 V to 1100 V           | 79 to 100    | 50 Hz to 1 kHz  |
| 220 V to 1100 V (w/5725A) | 85 to 1360   | 40 Hz to 30 kHz |

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NVLAP Code: 20/E10

LF Capacitance

Range

10 pF to 1  $\mu$ F

Best Uncertainty ( $\pm$  y<sup>year</sup>)

0.0125%

Remarks

GR 1620-AP Bridge System

NVLAP Code: 20/E15

Phase Meters

Range

0.000° to 999.999°

Best Uncertainty ( $\pm$ ) in milli degrees<sup>year</sup> 1,2

Frequency Range in Hertz

Amplitude and  
Ratio

1 to 1 k

> 1 k to 6.25 k

> 50 k to 100 k

5 V

5

5

10

20

50mV to 100 V

5 + 0.05R

10 + 0.1R

15 + 0.15R

40 + 0.4R

100V to 120V

10 + 0.1R

20 + 0.2R

30 + 0.3R

100 + R

100:1 ratio

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TIME AND FREQUENCY

NVLAP Code: 20/F01

Frequency Dissemination

Range

0.1 MHz

1 MHz

5 MHz

10 MHz

Best Uncertainty ( $\pm$  y<sup>year</sup>)

$2 \times 10^{-12}$

$2 \times 10^{-12}$

$2 \times 10^{-12}$

$2 \times 10^{-12}$

Remarks

NVLAP Code: 20/F02

Time Dissemination

Range

1 pps

Best Uncertainty ( $\pm$  y<sup>year</sup>)

10  $\mu$ s

Remarks

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NVLAP Code: 20/F03  
Oscillator Characterization

| Range   | Best Uncertainty ( $\pm$ ) <sup>year 1</sup> | Remarks |
|---------|----------------------------------------------|---------|
| 0.1 MHz | $2 \times 10^{-12}$                          |         |
| 1 MHz   | $2 \times 10^{-12}$                          |         |
| 5 MHz   | $2 \times 10^{-12}$                          |         |
| 10 MHz  | $2 \times 10^{-12}$                          |         |

### MECHANICAL

NVLAP Code: 20/M06  
Force - Torque

| Range                 | Best Uncertainty ( $\pm$ ) <sup>year 1</sup>                                         | Remarks |
|-----------------------|--------------------------------------------------------------------------------------|---------|
| 2.0 lb-in to 20 lb-in | 0.1 % of Full Scale (FS) or<br>0.2 % of Indicated Value (IV)<br>whichever is greater |         |
| 10 lb-in to 100 lb-in | 0.1 % of Full Scale (FS) or<br>0.2 % of Indicated Value (IV)<br>whichever is greater |         |
| 10 lb-ft to 100 lb-ft | 0.1 % of Full Scale (FS) or<br>0.2 % of Indicated Value (IV)<br>whichever is greater |         |

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100 lb-ft to 1000 lb-ft  
0.1 % of Full Scale (FS) or  
0.2 % of Indicated Value (IV)  
whichever is greater

NVLAP Code: 20/M08  
Mass

| Range | Best Uncertainty ( $\pm$ ) <sup>year 1</sup> | Remarks           |
|-------|----------------------------------------------|-------------------|
| 20 kg | 28.95                                        | Accuracy Class II |
| 10 kg | 5.80                                         | Accuracy Class II |
| 5 kg  | 4.10                                         | Accuracy Class II |
| 3 kg  | 4.10                                         | Accuracy Class II |
| 2 kg  | 4.10                                         | Accuracy Class II |
| 1 kg  | 0.47                                         | Accuracy Class II |
| 500 g | 0.46                                         | Accuracy Class II |
| 300 g | 0.45                                         | Accuracy Class II |
| 200 g | 0.45                                         | Accuracy Class II |
| 100 g | 0.120                                        | Accuracy Class II |
| 50 g  | 0.088                                        | Accuracy Class II |

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|        |        |                   |
|--------|--------|-------------------|
| 30 g   | 0.087  | Accuracy Class II |
| 20 g   | 0.086  | Accuracy Class II |
| 10 g   | 0.022  | Accuracy Class II |
| 5 g    | 0.0121 | Accuracy Class II |
| 3 g    | 0.0117 | Accuracy Class II |
| 2 g    | 0.0115 | Accuracy Class II |
| 1 g    | 0.0048 | Accuracy Class II |
| 500 mg | 0.0045 | Accuracy Class II |
| 300 mg | 0.0047 | Accuracy Class II |
| 200 mg | 0.0046 | Accuracy Class II |
| 100 mg | 0.0043 | Accuracy Class II |
| 50 mg  | 0.0046 | Accuracy Class II |
| 30 mg  | 0.0044 | Accuracy Class II |
| 20 mg  | 0.0043 | Accuracy Class II |
| 10 mg  | 0.0040 | Accuracy Class II |
| 5 mg   | 0.0040 | Accuracy Class II |
| 3 mg   | 0.0041 | Accuracy Class II |

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|      |        |                   |
|------|--------|-------------------|
| 2 mg | 0.0041 | Accuracy Class II |
| 1 mg | 0.0040 | Accuracy Class II |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .
2. R is the ratio of the larger output voltage to the smaller output voltage.

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MICHIGAN DEPT. OF AGRICULTURE, E.C. HEFFRON METROLOGY LABORATORY

940 Venture Lane  
 Williamston, MI 48895  
 Mr. Ronald E. Balazs  
 Phone: 517-655-8202 X315 Fax: 517-655-8303  
 E-Mail: balazer@state.mi.us

### DIMENSIONAL

NVLAP Code: 20/D13

Surveying Rods and Tapes

| Range in inches | Best Uncertainty ( $\pm$ ) in inches <sup>95%</sup> | Remarks     |
|-----------------|-----------------------------------------------------|-------------|
| 0 to 18         | 0.0029                                              | Rigid Rules |

| Range in feet | Best Uncertainty ( $\pm$ ) in inches <sup>95%</sup> | Remarks             |
|---------------|-----------------------------------------------------|---------------------|
| 0 to 6        | 0.010                                               | Tape to Tape Method |
| 0 to 30       | 0.016                                               | Tape to Tape Method |
| 0 to 50       | 0.020                                               | Tape to Tape Method |
| 0 to 100      | 0.032                                               | Tape to Tape Method |

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MICHIGAN DEPT. OF AGRICULTURE, E.C. HEFFRON METROLOGY LABORATORY

### MECHANICAL

NVLAP Code: 20/M06

Force

| Range         | Best Uncertainty ( $\pm$ ) in lbs <sup>95%</sup> | Remarks             |
|---------------|--------------------------------------------------|---------------------|
| < = 20,000 lb | 40.0 lb                                          | Wheel Load Weighers |

NVLAP Code: 20/M08

Mass

| Range | Best Uncertainty ( $\pm$ ) in g <sup>95%</sup> | Remarks          |
|-------|------------------------------------------------|------------------|
| 20 kg | 16 mg                                          | Echelon I and II |
| 10 kg | 2.4 mg                                         | Echelon I and II |
| 5 kg  | 2.0 mg                                         | Echelon I and II |
| 3 kg  | 1.8 mg                                         | Echelon I and II |
| 2 kg  | 1.6 mg                                         | Echelon I and II |
| 1 kg  | 0.074 mg                                       | Echelon I and II |
| 500 g | 0.082 mg                                       | Echelon I and II |
| 300 g | 0.072 mg                                       | Echelon I and II |
| 200 g | 0.071 mg                                       | Echelon I and II |
| 100 g | 0.019 mg                                       | Echelon I and II |

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MICHIGAN DEPT. OF AGRICULTURE, E.C. HEFRON METROLOGY LABORATORY

|        |            |                  |
|--------|------------|------------------|
| 50 g   | 0.024 mg   | Echelon I and II |
| 30 g   | 0.018 mg   | Echelon I and II |
| 20 g   | 0.019 mg   | Echelon I and II |
| 10 g   | 0.013 mg   | Echelon I and II |
| 5 g    | 0.0095 mg  | Echelon I and II |
| 3 g    | 0.0061 mg  | Echelon I and II |
| 2 g    | 0.0044 mg  | Echelon I and II |
| 1 g    | 0.0034 mg  | Echelon I and II |
| 500 mg | 0.0028 mg  | Echelon I and II |
| 300 mg | 0.0026 mg  | Echelon I and II |
| 200 mg | 0.0022 mg  | Echelon I and II |
| 100 mg | 0.0023 mg  | Echelon I and II |
| 50 mg  | 0.0015 mg  | Echelon I and II |
| 30 mg  | 0.0015 mg  | Echelon I and II |
| 20 mg  | 0.00092 mg | Echelon I and II |
| 10 mg  | 0.0012 mg  | Echelon I and II |
| 5 mg   | 0.00086 mg | Echelon I and II |
| 3 mg   | 0.00087 mg | Echelon I and II |

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MICHIGAN DEPT. OF AGRICULTURE, E.C. HEFRON METROLOGY LABORATORY

|        |            |                  |
|--------|------------|------------------|
| 2 mg   | 0.0009 mg  | Echelon I and II |
| 1 mg   | 0.00077 mg | Echelon I and II |
| 500 kg | 3100.0 mg  | Echelon III      |
| 250 kg | 1700.0 mg  | Echelon III      |
| 50 kg  | 220.0 mg   | Echelon III      |
| 25 kg  | 140.0 mg   | Echelon III      |
| 20 kg  | 140.0 mg   | Echelon III      |
| 10 kg  | 38.0 mg    | Echelon III      |
| 5 kg   | 11.0 mg    | Echelon III      |
| 3 kg   | 11.0 mg    | Echelon III      |
| 2 kg   | 4.7 mg     | Echelon III      |
| 1 kg   | 2.6 mg     | Echelon III      |
| 500 g  | 2.2 mg     | Echelon III      |
| 300 g  | 2.2 mg     | Echelon III      |
| 200 g  | 0.22 mg    | Echelon III      |
| 100 g  | 0.052 mg   | Echelon III      |
| 50 g   | 0.042 mg   | Echelon III      |

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MICHIGAN DEPT. OF AGRICULTURE, E.C. HEFRON METROLOGY LABORATORY

|        |          |             |
|--------|----------|-------------|
| 30 g   | 0.044 mg | Echelon III |
| 20 g   | 0.044 mg | Echelon III |
| 10 g   | 0.033 mg | Echelon III |
| 5 g    | 0.027 mg | Echelon III |
| 3 g    | 0.038 mg | Echelon III |
| 2 g    | 0.038 mg | Echelon III |
| 1 g    | 0.038 mg | Echelon III |
| 500 mg | 0.010 mg | Echelon III |
| 300 mg | 0.010 mg | Echelon III |
| 200 mg | 0.010 mg | Echelon III |
| 100 mg | 0.010 mg | Echelon III |
| 50 mg  | 0.010 mg | Echelon III |
| 30 mg  | 0.010 mg | Echelon III |
| 20 mg  | 0.010 mg | Echelon III |
| 10 mg  | 0.010 mg | Echelon III |
| 5 mg   | 0.010 mg | Echelon III |
| 3 mg   | 0.010 mg | Echelon III |
| 2 mg   | 0.010 mg | Echelon III |

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|         |             |             |
|---------|-------------|-------------|
| 1 mg    | 0.010 mg    | Echelon III |
| 5000 lb | 100000.0 mg | Echelon III |
| 1000 lb | 2000.00 mg  | Echelon III |
| 500 lb  | 950.0 mg    | Echelon III |
| 100 lb  | 220.0 mg    | Echelon III |
| 50 lb   | 140.0 mg    | Echelon III |
| 25 lb   | 45.0 mg     | Echelon III |
| 20 lb   | 38.0 mg     | Echelon III |
| 10 lb   | 11.0 mg     | Echelon III |
| 5 lb    | 4.7 mg      | Echelon III |
| 3 lb    | 4.7 mg      | Echelon III |
| 2 lb    | 3.4 mg      | Echelon III |
| 1 lb    | 2.6 mg      | Echelon III |
| 0.5 lb  | 1.1 mg      | Echelon III |
| 0.3 lb  | 1.1 mg      | Echelon III |
| 0.2 lb  | 0.22 mg     | Echelon III |
| 0.1 lb  | 0.042 mg    | Echelon III |
| 0.05 lb | 0.035 mg    | Echelon III |

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|          |          |             |
|----------|----------|-------------|
| 0.03 lb  | 0.035 mg | Echelon III |
| 0.02 lb  | 0.035 mg | Echelon III |
| 0.01 lb  | 0.035 mg | Echelon III |
| 0.005 lb | 0.035 mg | Echelon III |
| 0.003 lb | 0.035 mg | Echelon III |
| 0.002 lb | 0.035 mg | Echelon III |
| 0.001 lb | 0.035 mg | Echelon III |

NVLAP Code: 20/M12  
Volume and Density

| Range       | Best Uncertainty ( $\pm$ ) <sup>you:1</sup> | Remarks         |
|-------------|---------------------------------------------|-----------------|
| 2000 gallon | 91.0 in <sup>3</sup>                        | Volume Transfer |
| 1500 gallon | 68.0 in <sup>3</sup>                        | Volume Transfer |
| 1000 gallon | 58.0 in <sup>3</sup>                        | Volume Transfer |
| 750 gallon  | 43.0 in <sup>3</sup>                        | Volume Transfer |
| 500 gallon  | 23.0 in <sup>3</sup>                        | Volume Transfer |
| 100 gallon  | 3.6 in <sup>3</sup>                         | Volume Transfer |
| 50 gallon   | 3.0 in <sup>3</sup>                         | Volume Transfer |

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MICHIGAN DEPT. OF AGRICULTURE, E.C. HEFRON METROLOGY LABORATORY

|            |                        |                    |
|------------|------------------------|--------------------|
| 25 gallon  | 2.8 in <sup>3</sup>    | Volume Transfer    |
| 5 gallon   | 0.50 in <sup>3</sup>   | Volume Transfer    |
| 25 gallon  | 0.46 in <sup>3</sup>   | Volume Gravimetric |
| 5 gallon   | 0.17 in <sup>3</sup>   | Volume Gravimetric |
| 1 gallon   | 0.030 in <sup>3</sup>  | Volume Gravimetric |
| 1/2 gallon | 0.024 in <sup>3</sup>  | Volume Gravimetric |
| 1 quart    | 0.026 in <sup>3</sup>  | Volume Gravimetric |
| 1 pint     | 0.012 in <sup>3</sup>  | Volume Gravimetric |
| 1/2 pint   | 0.0061 in <sup>3</sup> | Volume Gravimetric |
| 2 liter    | 0.17 in <sup>3</sup>   | Volume Gravimetric |
| 1 liter    | 0.019 in <sup>3</sup>  | Volume Gravimetric |
| 100 ml     | 0.014 in <sup>3</sup>  | Volume Gravimetric |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .

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CALIBRATION LABORATORIES NVLAP LAB CODE 200410-0

ELECTRONIC AUTOMATION INC.  
 2846 Three Mile Road N.W.  
 Grand Rapids, MI 49544  
 Mr. John Rittenhouse  
 Phone: 616-791-9117 Fax: 616-791-9365  
 E-mail: eajj@usa.net

**ELECTROMAGNETICS - DC LOW FREQUENCY**

NVLAP Code: 20/E02  
 AC Current

| Range               |                        | Best Uncertainty ( $\pm y^{95\%}$ ) |                        |
|---------------------|------------------------|-------------------------------------|------------------------|
| Frequency in Hertz  |                        |                                     |                        |
| 10 to 20            | 20 to 45               | 45 to 1 k                           | 1 k to 5 k             |
| 0.029 to 0.32999 mA | 0.194 % + 0.12 $\mu$ A | 0.098 % + 0.12 $\mu$ A              | 0.098 % + 0.2 $\mu$ A  |
| 0.33 to 3.2999 mA   | 0.156 % + 0.24 $\mu$ A | 0.078 % + 0.24 $\mu$ A              | 0.156 % + 0.24 $\mu$ A |
| 3.33 to 32.999 mA   | 0.156 % + 2.4 $\mu$ A  | 0.070 % + 2.4 $\mu$ A               | 0.156 % + 2.4 $\mu$ A  |
| 33 to 329.99 mA     | 0.156 % + 24 $\mu$ A   | 0.070 % + 24 $\mu$ A                | 0.156 % + 24 $\mu$ A   |
| 10 to 45            | 45 to 1 k              | 1 k to 5 k                          | 5 k to 10 k            |
| 0.33 to 2.19999 A   | 0.156 % + 234 $\mu$ A  | 0.078 % + 234 $\mu$ A               | 0.582 % + 234 $\mu$ A  |

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CALIBRATION LABORATORIES NVLAP LAB CODE 200410-0

ELECTRONIC AUTOMATION INC.

|            |                        |                        |                        |
|------------|------------------------|------------------------|------------------------|
| 25 to 11 A | 0.048 % + 1552 $\mu$ A | 65 to 500              | 500 to 1 k             |
|            |                        | 0.078 % + 1552 $\mu$ A | 0.256 % + 1552 $\mu$ A |

**ELECTROMAGNETICS - DC/LOW FREQUENCY**

NVLAP Code: 20/E05  
 DC Current

| Range           |  | Best Uncertainty ( $\pm y^{95\%}$ ) |  |
|-----------------|--|-------------------------------------|--|
| 0 to 3.29999 mA |  | 0.0102 % + 0.04 $\mu$ A             |  |
| 0 to 32.9999 mA |  | 0.0078 % + 194 $\mu$ A              |  |
| 0 to 329.999 mA |  | 0.0078 % + 2.6 $\mu$ A              |  |
| 0 to 2.19999 A  |  | 0.024 % + 36 $\mu$ A                |  |
| 0 to 11 A       |  | 0.048 % + 256 $\mu$ A               |  |

NVLAP Code: 20/E05  
 DC Resistance

| Range in ohms  |  | Best Uncertainty ( $\pm y^{95\%}$ ) |  |
|----------------|--|-------------------------------------|--|
| 0 to 10.99     |  | 0.0094 % + 0.006 ohms               |  |
| 11 to 32.999   |  | 0.0094 % + 0.008 ohms               |  |
| 33 to 109.999  |  | 0.007 % + 0.008 ohms                |  |
| 110 to 329.999 |  | 0.007 % + 0.008 ohms                |  |

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|                      |                      |
|----------------------|----------------------|
| 0.330 k to 1.09999 k | 0.007 % + 0.048 ohms |
| 1.1 k to 3.29999 k   | 0.007 % + 0.048 ohms |
| 3.3 k to 10.9999 k   | 0.007 % + 0.48 ohms  |
| 11 k to 32.9999 k    | 0.007 % + 0.48 ohms  |
| 33 k to 109.999 k    | 0.0086 % + 4.8 ohms  |
| 110 k to 329.999 k   | 0.0094 % + 4.8 ohms  |
| 0.33 M to 1.09999 M  | 0.0118 % + 44 ohms   |
| 1.1 M to 3.29999 M   | 0.0118 % + 44 ohms   |
| 3.3 M to 10.9999 M   | 0.048 % + 428 ohms   |
| 11 M to 32.9999 M    | 0.078 % + 428 ohms   |
| 33 M to 109.999 M    | 0.388 % + 4264 ohms  |
| 110 M to 330 M       | 0.388 % + 12792 ohms |

NVLAP Code: 20/E06  
DC Voltage

|                  |                                                             |
|------------------|-------------------------------------------------------------|
| <b>Range</b>     | <b>Best Uncertainty (<math>\pm</math>)<sup>year 1</sup></b> |
| 0 to 329.9999 mV | 0.0048 % + 2.4 $\mu$ V                                      |
| 0 to 3.299999 V  | 0.004 % + 4 $\mu$ V                                         |

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|                   |                         |
|-------------------|-------------------------|
| 0 to 32.99999 V   | 0.004 % + 40 $\mu$ V    |
| 30 to 329.9999 V  | 0.0044 % + 388 $\mu$ V  |
| 100 to 1000.000 V | 0.0044 % + 1164 $\mu$ V |

NVLAP Code: 20/E09  
LF AC Voltage

Best Uncertainty ( $\pm$ )<sup>year 1</sup>

Frequency in Hertz

| Range            | 10 to 45               | 45 to 10 k            | 10 k to 20 k           | 20 k to 50 k           | 50 k to 100 k           | 100 k to 500 k         |
|------------------|------------------------|-----------------------|------------------------|------------------------|-------------------------|------------------------|
| 1.0 to 32.999 mV | 0.274 % + 16 $\mu$ V   | 0.118 % + 16 $\mu$ V  | 0.156 % + 16 $\mu$ V   | 0.194 % + 16 $\mu$ V   | 0.274 % + 26 $\mu$ V    | 0.776 % + 48 $\mu$ V   |
| 33 to 329.999 mV | 0.194 % + 40 $\mu$ V   | 0.040 % + 16 $\mu$ V  | 0.078 % + 16 $\mu$ V   | 0.126 % + 32 $\mu$ V   | 0.188 % + 132 $\mu$ V   | 0.344 % + 256 $\mu$ V  |
| 330 to 329.999 V | 0.118 % + 194 $\mu$ V  | 0.024 % + 48 $\mu$ V  | 0.064 % + 48 $\mu$ V   | 0.110 % + 234 $\mu$ V  | 0.188 % + 1318 $\mu$ V  | 0.388 % + 2500 $\mu$ V |
| 3.3 to 32.9999 V | 0.118 % + 1938 $\mu$ V | 0.032 % + 466 $\mu$ V | 0.064 % + 2016 $\mu$ V | 0.148 % + 3876 $\mu$ V | 0.188 % + 13180 $\mu$ V |                        |
| 33 to 329.999 mV | 0.040 % to 5.2 mV      | 0.064 % + 12 mV       | 0.070 % + 26 mV        |                        |                         |                        |
| 330 to 1000 V    | 0.040 % to 64 mV       | 0.156 % + 78 mV       | 0.156 % + 388 mV       |                        |                         |                        |

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|                                 |                                                           |  |
|---------------------------------|-----------------------------------------------------------|--|
| NVLAP Code: 20/E10              |                                                           |  |
| Capacitance                     |                                                           |  |
| <b>Range</b>                    | <b>Best Uncertainty (<math>\pm y_{\text{max}}</math>)</b> |  |
| 0.33 nF to 0.4999 nF            | 0.388 % + 0.0078 nF                                       |  |
| 0.5 nF to 1.0999 nF             | 0.388 % + 0.0078 nF                                       |  |
| 1.1 nF to 3.2999 nF             | 0.388 % + 0.0078 nF                                       |  |
| 3.3 nF to 10.9999 nF            | 0.388 % + 0.0078 nF                                       |  |
| 11 nF to 32.9999 nF             | 0.194 % + 0.078 nF                                        |  |
| 33 nF to 109.999 nF             | 0.194 % + 0.078 nF                                        |  |
| 110 nF to 329.999 nF            | 0.194 % + 0.234 nF                                        |  |
| 0.33 $\mu$ F to 1.09999 $\mu$ F | 0.194 % + 0.78 nF                                         |  |
| 1.1 $\mu$ F to 3.29999 $\mu$ F  | 0.268 % + 2.34 nF                                         |  |
| 3.3 $\mu$ F to 10.9999 $\mu$ F  | 0.268 % + 7.8 nF                                          |  |
| 11 $\mu$ F to 32.9999 $\mu$ F   | 0.312 % + 23.4 nF                                         |  |
| 33 $\mu$ F to 109.999 $\mu$ F   | 0.388 % + 78 nF                                           |  |
| 110 $\mu$ F to 329.999 $\mu$ F  | 0.544 % + 234 nF                                          |  |
| 0.33 mF to 1.1 mF               | 0.776 % + 234 nF                                          |  |

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ELECTRONIC AUTOMATION INC.

|                      |                                                           |                    |
|----------------------|-----------------------------------------------------------|--------------------|
| NVLAP Code: 20/E12   |                                                           |                    |
| DC Wattage           |                                                           |                    |
| <b>Range in W</b>    | <b>Best Uncertainty (<math>\pm y_{\text{max}}</math>)</b> | <b>Remarks</b>     |
| 0.000108 to 330      | 0.03 %                                                    | 33 mV to 1000 V    |
| 0.01089 to 1004.5    | 0.09 %                                                    | 33 mV to 1000 V    |
| 0.1485 to 11000      | 0.07 %                                                    | 33 mV to 1000 V    |
| NVLAP Code: 20/E12   |                                                           |                    |
| AC Wattage           |                                                           |                    |
| <b>Range in W</b>    | <b>Best Uncertainty (<math>\pm y_{\text{max}}</math>)</b> | <b>Remarks</b>     |
| 0.0001089 to 0.00297 | 0.312 %                                                   | 33 mV to 329.999 V |
| 0.000297 to 0.01089  | 0.194 %                                                   | 33 mV to 329.999 V |
| 0.001089 to 0.0297   | 0.272 %                                                   | 33 mV to 329.999 V |
| 0.00297 to 0.1089    | 0.194 %                                                   | 33 mV to 329.999 V |
| 0.01089 to 0.297     | 0.272 %                                                   | 33 mV to 329.999 V |
| 0.0297 to 726        | 0.194 %                                                   | 33 mV to 329.999 V |
| 0.0726 to 1.485      | 0.272 %                                                   | 33 mV to 329.999 V |
| 0.1485 to 3.63       | 0.194 %                                                   | 33 mV to 329.999 V |
| 0.001089 to 8.999    | 0.194 %                                                   | 0.33 to 1000 V     |

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|                   |        |                |
|-------------------|--------|----------------|
| 0.00297 to 32.999 | 0.118% | 0.33 to 1000 V |
| 0.01089 to 89.99  | 0.194% | 0.33 to 1000 V |
| 0.0297 to 329.99  | 0.118% | 0.33 to 1000 V |
| 0.1089 to 899.99  | 0.194% | 0.33 to 1000 V |
| 0.297 to 2199.9   | 0.118% | 0.33 to 1000 V |
| 0.726 to 4499.9   | 0.156% | 0.33 to 1000 V |
| 1.485 to 11000    | 0.118% | 0.33 to 1000 V |

NVLAP Code: 20/E15  
Phase Angle

Frequency Range in Hz

Best Uncertainty ( $\pm$ )<sup>95% C.I.</sup>

|             |       |
|-------------|-------|
| 10 to 65    | 0.12° |
| 65 to 500   | 0.70° |
| 500 to 1 k  | 1.6°  |
| 1 k to 5 k  | 4.8°  |
| 5 k to 10 k | 7.8°  |

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TIME AND FREQUENCY

NVLAP Code: 20/F01  
Frequency

| Range in Hz        | Best Uncertainty ( $\pm$ ) <sup>95% C.I.</sup> | Remarks              |
|--------------------|------------------------------------------------|----------------------|
| 0.01 to 119.99     | 0.00194% + 0.78 mHz                            | (1.6 $\mu$ s) Jitter |
| 120.00 to 1199.9   | 0.00194% + 0.78 mHz                            | (1.6 $\mu$ s) Jitter |
| 1.200 to 10.000 k  | 0.00194% + 0.78 mHz                            | (1.6 $\mu$ s) Jitter |
| 10.001 to 11.999 k | 0.00194% + 11.8 mHz                            | (109 ns) Jitter      |
| 12.00 to 119.99 k  | 0.00194% + 11.8 mHz                            | (109 ns) Jitter      |
| 120.0 to 500.0 k   | 0.00194% + 11.8 mHz                            | (109 ns) Jitter      |

OPTICAL RADIATION

NVLAP Code: 20/O02  
Color Temperature

Range in °Kelvin

Best Uncertainty ( $\pm$ ) in °Kelvin<sup>95% C.I.</sup>

|      |      |
|------|------|
| 2300 | 19.5 |
| 2856 | 24.8 |

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**THERMODYNAMIC**

NVLAP Code: 20/T07  
Temperature RTD, °C

Simulated output in ohms

| Range in °C | Best Uncertainty (±) in °C <small>not 1, 6</small> | Type             |
|-------------|----------------------------------------------------|------------------|
| -200 to -80 | 0.040                                              | Pt385, 100 ohm   |
| -80 to 0    | 0.040                                              | Pt385, 100 ohm   |
| 0 to 100    | 0.056                                              | Pt385, 100 ohm   |
| 100 to 300  | 0.070                                              | Pt385, 100 ohm   |
| 300 to 400  | 0.078                                              | Pt385, 100 ohm   |
| 400 to 630  | 0.094                                              | Pt385, 100 ohm   |
| 630 to 800  | 0.180                                              | Pt385, 100 ohm   |
| -200 to -80 | 0.040                                              | Pt392.6, 100 ohm |
| -80 to 0    | 0.040                                              | Pt392.6, 100 ohm |
| 0 to 100    | 0.056                                              | Pt392.6, 100 ohm |
| 100 to 300  | 0.070                                              | Pt392.6, 100 ohm |
| 300 to 400  | 0.078                                              | Pt392.6, 100 ohm |

December 31, 2002

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ELECTRONIC AUTOMATION INC.

|              |       |                  |
|--------------|-------|------------------|
| 400 to 630   | 0.094 | Pt392.6, 100 ohm |
| -200 to -190 | 0.194 | Pt391.6, 100 ohm |
| -190 to -80  | 0.032 | Pt391.6, 100 ohm |
| -80 to 0     | 0.040 | Pt391.6, 100 ohm |
| 0 to 100     | 0.048 | Pt391.6, 100 ohm |
| 100 to 260   | 0.056 | Pt391.6, 100 ohm |
| 260 to 300   | 0.064 | Pt391.6, 100 ohm |
| 300 to 400   | 0.070 | Pt391.6, 100 ohm |
| 400 to 600   | 0.094 | Pt391.6, 100 ohm |
| 600 to 630   | 0.180 | Pt391.6, 100 ohm |
| -200 to -80  | 0.032 | Pt385, 200 ohm   |
| -80 to 0     | 0.032 | Pt385, 200 ohm   |
| 0 to 100     | 0.032 | Pt385, 200 ohm   |
| 100 to 260   | 0.040 | Pt385, 200 ohm   |
| 260 to 300   | 0.094 | Pt385, 200 ohm   |
| 300 to 400   | 0.102 | Pt385, 200 ohm   |
| 400 to 600   | 0.110 | Pt385, 200 ohm   |

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ELECTRONIC AUTOMATION INC.  
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|             |       |                 |
|-------------|-------|-----------------|
| 600 to 630  | 0.126 | Pt385, 200 ohm  |
| -200 to -80 | 0.032 | Pt385, 500 ohm  |
| -80 to 0    | 0.040 | Pt385, 500 ohm  |
| 0 to 100    | 0.040 | Pt385, 500 ohm  |
| 100 to 260  | 0.048 | Pt385, 500 ohm  |
| 260 to 300  | 0.064 | Pt385, 500 ohm  |
| 300 to 400  | 0.064 | Pt385, 500 ohm  |
| 400 to 600  | 0.070 | Pt385, 500 ohm  |
| 600 to 630  | 0.086 | Pt385, 500 ohm  |
| -200 to -80 | 0.024 | Pt385, 1000 ohm |
| -80 to 0    | 0.024 | Pt385, 1000 ohm |
| 0 to 100    | 0.032 | Pt385, 1000 ohm |
| 100 to 260  | 0.040 | Pt385, 1000 ohm |
| 260 to 300  | 0.048 | Pt385, 1000 ohm |
| 300 to 400  | 0.056 | Pt385, 1000 ohm |
| 400 to 600  | 0.056 | Pt385, 1000 ohm |

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|                     |                                               |                  |
|---------------------|-----------------------------------------------|------------------|
| 600 to 630          | 0.180                                         | Pt385, 1000 ohm  |
| -80 to 0            | 0.064                                         | Ni 120 ohm       |
| 0 to 100            | 0.064                                         | Ni 120 ohm       |
| 100 to 260          | 0.110                                         | Ni 120 ohm       |
| -100 to 260         | 0.234                                         | Cu427, 10 ohm    |
| Temperature, RTD °F |                                               |                  |
| Range in °F         | Best Uncertainty (±) in °F <sub>max</sub> 1.4 | Type             |
| -328 to -112        | 0.072                                         | Pt385, 100 ohm   |
| -112 to 32          | 0.072                                         | Pt385, 100 ohm   |
| 32 to 212           | 0.102                                         | Pt385, 100 ohm   |
| 212 to 572          | 0.126                                         | Pt385, 100 ohm   |
| 572 to 752          | 0.142                                         | Pt385, 100 ohm   |
| 752 to 1166         | 0.170                                         | Pt385, 100 ohm   |
| 1166 to 1472        | 0.324                                         | Pt385, 100 ohm   |
| -328 to -112        | 0.072                                         | Pt392.6, 100 ohm |

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|              |       |                  |
|--------------|-------|------------------|
| -112 to 32   | 0.072 | Pt392.6, 100 ohm |
| 32 to 212    | 0.102 | Pt392.6, 100 ohm |
| 212 to 572   | 0.126 | Pt392.6, 100 ohm |
| 572 to 752   | 0.142 | Pt392.6, 100 ohm |
| 752 to 1166  | 0.170 | Pt392.6, 100 ohm |
| -328 to -310 | 0.350 | Pt391.6, 100 ohm |
| -310 to -112 | 0.058 | Pt391.6, 100 ohm |
| -112 to 32   | 0.072 | Pt391.6, 100 ohm |
| 32 to 212    | 0.088 | Pt391.6, 100 ohm |
| 212 to 500   | 0.102 | Pt391.6, 100 ohm |
| 500 to 572   | 0.116 | Pt391.6, 100 ohm |
| 572 to 752   | 0.126 | Pt391.6, 100 ohm |
| 752 to 1112  | 0.142 | Pt391.6, 100 ohm |
| 1112 to 1166 | 0.324 | Pt391.6, 100 ohm |
| -328 to -112 | 0.058 | Pt385, 200 ohm   |
| -112 to 32   | 0.058 | Pt385, 200 ohm   |

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|              |       |                 |
|--------------|-------|-----------------|
| 32 to 212    | 0.058 | Pt385, 200 ohm  |
| 212 to 500   | 0.072 | Pt385, 200 ohm  |
| 500 to 572   | 0.170 | Pt385, 200 ohm  |
| 572 to 752   | 0.184 | Pt385, 200 ohm  |
| 752 to 1112  | 0.198 | Pt385, 200 ohm  |
| 1112 to 1166 | 0.228 | Pt385, 200 ohm  |
| -328 to -112 | 0.058 | Pt385, 500 ohm  |
| -112 to 32   | 0.072 | Pt385, 500 ohm  |
| 32 to 212    | 0.072 | Pt385, 500 ohm  |
| 212 to 500   | 0.088 | Pt385, 500 ohm  |
| 500 to 572   | 0.116 | Pt385, 500 ohm  |
| 572 to 752   | 0.116 | Pt385, 500 ohm  |
| 752 to 1112  | 0.126 | Pt385, 500 ohm  |
| 1112 to 1166 | 0.156 | Pt385, 500 ohm  |
| -328 to -112 | 0.044 | Pt385, 1000 ohm |
| -112 to 32   | 0.044 | Pt385, 1000 ohm |

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|              |       |                 |
|--------------|-------|-----------------|
| 32 to 212    | 0.058 | Pt335, 1000 ohm |
| 212 to 500   | 0.072 | Pt385, 1000 ohm |
| 500 to 572   | 0.088 | Pt385, 1000 ohm |
| 572 to 752   | 0.102 | Pt385, 1000 ohm |
| 752 to 1112  | 0.102 | Pt385, 1000 ohm |
| 1112 to 1166 | 0.324 | Pt385, 1000 ohm |
| -112 to 32   | 0.116 | Ni120, 120 ohm  |
| 32 to 212    | 0.116 | Ni120, 120 ohm  |
| 212 to 500   | 0.198 | Ni120, 120 ohm  |
| -148 to 500  | 0.422 | Cu427, 10 ohm   |

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ELECTRONIC AUTOMATION INC.

|                       |                                                |      |  |
|-----------------------|------------------------------------------------|------|--|
| NVLAP Code: 20/T08    |                                                |      |  |
| Temperature           |                                                |      |  |
| Thermocouple, °C      |                                                |      |  |
| Simulated output in V |                                                |      |  |
| Range in °C           | Best Uncertainty (±) in °C <sub>max</sub> 1.45 | Type |  |
| 600 to 800            | 0.342                                          | B    |  |
| 800 to 1000           | 0.264                                          | B    |  |
| 1000 to 1550          | 0.234                                          | B    |  |
| 1550 to 1820          | 0.256                                          | B    |  |
| 0 to 150              | 0.234                                          | C    |  |
| 150 to 650            | 0.202                                          | C    |  |
| 650 to 1000           | 0.242                                          | C    |  |
| 1000 to 1800          | 0.388                                          | C    |  |
| 1800 to 2316          | 0.652                                          | C    |  |
| -250 to -100          | 0.388                                          | E    |  |
| -100 to -25           | 0.126                                          | E    |  |

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|              |       |   |
|--------------|-------|---|
| -25 to 350   | 0.110 | E |
| 350 to 650   | 0.126 | E |
| 650 to 1000  | 0.164 | E |
| -210 to -100 | 0.210 | J |
| -100 to -30  | 0.126 | J |
| -30 to 150   | 0.110 | J |
| 150 to 760   | 0.132 | J |
| 760 to 1200  | 0.180 | J |
| -200 to -100 | 0.256 | K |
| -100 to -25  | 0.140 | K |
| -25 to 120   | 0.126 | K |
| 120 to 1000  | 0.202 | K |
| 1000 to 1372 | 0.312 | K |
| 0 to 250     | 0.442 | R |
| 250 to 400   | 0.272 | R |

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|                  |                                                    |      |
|------------------|----------------------------------------------------|------|
| 400 to 1000      | 0.256                                              | R    |
| 1000 to 1767     | 0.312                                              | R    |
| 0 to 250         | 0.366                                              | S    |
| 250 to 1000      | 0.280                                              | S    |
| 1000 to 1400     | 0.288                                              | S    |
| 1400 to 1767     | 0.358                                              | S    |
| -250 to -150     | 0.490                                              | T    |
| -150 to 0        | 0.188                                              | T    |
| 0 to 120         | 0.126                                              | T    |
| 120 to 400       | 0.110                                              | T    |
| Temperature      |                                                    |      |
| Thermocouple, °F |                                                    |      |
| Range in °F      | Best Uncertainty (±) in °F <sub>max</sub> 1.2, 4.5 | Type |
| 1112 to 1472     | 0.616                                              | B    |
| 1472 to 1832     | 0.476                                              | B    |

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|              |       |   |
|--------------|-------|---|
| 1832 to 2822 | 0.422 | B |
| 2822 to 3308 | 0.462 | B |
| 32 to 302    | 0.422 | C |
| 302 to 1202  | 0.364 | C |
| 1202 to 1832 | 0.436 | C |
| 1832 to 3272 | 0.700 | C |
| 3272 to 4201 | 1.174 | C |
| -418 to -148 | 0.700 | E |
| -148 to -13  | 0.228 | E |
| -13 to 622   | 0.198 | E |
| 622 to 1202  | 0.228 | E |
| 1202 to 1832 | 0.296 | E |
| -346 to -148 | 0.378 | J |
| -148 to -22  | 0.228 | J |
| -22 to 302   | 0.198 | J |

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|              |       |   |
|--------------|-------|---|
| 302 to 1400  | 0.238 | J |
| 1400 to 2192 | 0.324 | J |
| -328 to -148 | 0.462 | K |
| -148 to -13  | 0.252 | K |
| -13 to 248   | 0.228 | K |
| 248 to 1832  | 0.364 | K |
| 1832 to 2502 | 0.562 | K |
| 32 to 482    | 0.796 | R |
| 482 to 752   | 0.490 | R |
| 752 to 1832  | 0.462 | R |
| 1832 to 3212 | 0.562 | R |
| 32 to 482    | 0.660 | S |
| 482 to 1832  | 0.504 | S |
| 1832 to 2552 | 0.520 | S |
| 2552 to 3212 | 0.646 | S |

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#### ELECTRONIC AUTOMATION INC.

|              |       |   |
|--------------|-------|---|
| -418 to -238 | 0.882 | T |
| -238 to 32   | 0.340 | T |
| 32 to 248    | 0.228 | T |
| 248 to 752   | 0.198 | T |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .
2. The uncertainties shown are for radiometric reading only.
3. Uncertainty at 45 to 65 Hz, PF-1, only.
4. Best uncertainty does not include thermocouple error.
5. The uncertainties shown are for both generating and reading.
6. The uncertainty shown is for generating RTD equivalence only.
7. Jitter uncertainty will be treated as random and its influence will vary as to counter design.

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### CALIBRATION LABORATORIES

NVLAP LAB CODE 200414-0

#### MAINE METROLOGY DEPARTMENT OF AGRICULTURE

28 State House Station Div. QA&R  
Augusta, ME 04333-0028  
Mr. David E. Gagnon  
Phone: 207-287-2161 Fax:  
E-Mail: david.gagnon@state.me.us

### TIME AND FREQUENCY

NVLAP Code: 20/F01  
Frequency Dissemination

Best Uncertainty ( $\pm$ )  $\mu\text{s}/\text{year}$

Range in Hz

1000 to 8000

1.1 Hz

Remarks

Law Enforcement Tuning Forks

NVLAP Code: 20/F02  
Time Dissemination

Range

$\geq 3$  hrs

Best Uncertainty ( $\pm$ )  $\mu\text{s}/\text{year}$

0.14 sec

Remarks

Stop Watches

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MAINE METROLOGY DEPARTMENT OF AGRICULTURE

MECHANICAL

NVLAP Code: 20/M08

Mass - Metric

| Range | Best Uncertainty ( $\pm$ year <sup>-1</sup> ) | Remarks   |
|-------|-----------------------------------------------|-----------|
| 30 kg | 23.73 mg                                      | Echelon 1 |
| 25 kg | 21.33 mg                                      | Echelon 1 |
| 20 kg | 19.86 mg                                      | Echelon 1 |
| 10 kg | 2.87 mg                                       | Echelon 1 |
| 5 kg  | 1.72 mg                                       | Echelon 1 |
| 4 kg  | 1.56 mg                                       | Echelon 1 |
| 3 kg  | 1.38 mg                                       | Echelon 1 |
| 2 kg  | 1.10 mg                                       | Echelon 1 |
| 1 kg  | 0.060 mg                                      | Echelon 1 |
| 500 g | 0.032 mg                                      | Echelon 1 |
| 300 g | 0.022 mg                                      | Echelon 1 |
| 200 g | 0.017 mg                                      | Echelon 1 |
| 100 g | 0.017 mg                                      | Echelon 1 |
| 50 g  | 0.0093 mg                                     | Echelon 1 |

June 30, 2002

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|        |            |           |
|--------|------------|-----------|
| 30 g   | 0.0065 mg  | Echelon 1 |
| 20 g   | 0.0051 mg  | Echelon 1 |
| 10 g   | 0.0051 mg  | Echelon 1 |
| 5 g    | 0.0032 mg  | Echelon 1 |
| 3 g    | 0.0024 mg  | Echelon 1 |
| 2 g    | 0.0021 mg  | Echelon 1 |
| 1 g    | 0.0023 mg  | Echelon 1 |
| 500 mg | 0.0014 mg  | Echelon 1 |
| 300 mg | 0.0010 mg  | Echelon 1 |
| 200 mg | 0.00087 mg | Echelon 1 |
| 100 mg | 0.00093 mg | Echelon 1 |
| 50 mg  | 0.00073 mg | Echelon 1 |
| 30 mg  | 0.00061 mg | Echelon 1 |
| 20 mg  | 0.00058 mg | Echelon 1 |
| 10 mg  | 0.00067 mg | Echelon 1 |
| 5 mg   | 0.00048 mg | Echelon 1 |
| 3 mg   | 0.00040 mg | Echelon 1 |
| 2 mg   | 0.00038 mg | Echelon 1 |

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MAINE METROLOGY DEPARTMENT OF AGRICULTURE

|        |            |            |
|--------|------------|------------|
| 1 mg   | 0.00043 mg | Echelon I  |
| 30 kg* | 24 mg      | Echelon II |
| 25 kg* | 21 mg      | Echelon II |
| 20 kg* | 20 mg      | Echelon II |
| 10 kg* | 2.9 mg     | Echelon II |
| 5 kg*  | 1.7 mg     | Echelon II |
| 4 kg*  | 1.7 mg     | Echelon II |
| 3 kg*  | 1.4 mg     | Echelon II |
| 2 kg*  | 1.1 mg     | Echelon II |
| 1 kg   | 0.073 mg   | Echelon II |
| 500 g  | 0.052 mg   | Echelon II |
| 300 g  | 0.046 mg   | Echelon II |
| 200 g  | 0.044 mg   | Echelon II |
| 100 g  | 0.023 mg   | Echelon II |
| 50 g   | 0.018 mg   | Echelon II |
| 30 g   | 0.017 mg   | Echelon II |
| 20 g   | 0.016 mg   | Echelon II |

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MAINE METROLOGY DEPARTMENT OF AGRICULTURE

|        |            |            |
|--------|------------|------------|
| 10 g   | 0.0065 mg  | Echelon II |
| 5 g    | 0.0054 mg  | Echelon II |
| 3 g    | 0.0050 mg  | Echelon II |
| 2 g    | 0.0049 mg  | Echelon II |
| 1 g    | 0.0050 mg  | Echelon II |
| 500 mg | 0.0018 mg  | Echelon II |
| 300 mg | 0.0015 mg  | Echelon II |
| 200 mg | 0.0015 mg  | Echelon II |
| 100 mg | 0.0014 mg  | Echelon II |
| 50 mg  | 0.0013 mg  | Echelon II |
| 30 mg  | 0.0012 mg  | Echelon II |
| 20 mg  | 0.0012 mg  | Echelon II |
| 10 mg  | 0.0010 mg  | Echelon II |
| 5 mg   | 0.00085 mg | Echelon II |
| 3 mg   | 0.00081 mg | Echelon II |
| 2 mg   | 0.00080 mg | Echelon II |
| 1 mg   | 0.00081 mg | Echelon II |

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|       |          |             |
|-------|----------|-------------|
| 30 kg | 78 mg    | Echelon III |
| 25 kg | 76 mg    | Echelon III |
| 20 kg | 75 mg    | Echelon III |
| 10 kg | 7.4 mg   | Echelon III |
| 5 kg  | 4.3 mg   | Echelon III |
| 3 kg  | 3.1 mg   | Echelon III |
| 2 kg  | 2.6 mg   | Echelon III |
| 1 kg  | 2.1 mg   | Echelon III |
| 500 g | 2.0 mg   | Echelon III |
| 300 g | 2.0 mg   | Echelon III |
| 200 g | 2.0 mg   | Echelon III |
| 100 g | 0.13 mg  | Echelon III |
| 50 g  | 0.12 mg  | Echelon III |
| 30 g  | 0.12 mg  | Echelon III |
| 20 g  | 0.12 mg  | Echelon III |
| 10 g  | 0.029 mg | Echelon III |
| 5 g   | 0.028 mg | Echelon III |
| 3 g   | 0.028 mg | Echelon III |

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MAINE METROLOGY DEPARTMENT OF AGRICULTURE

|        |          |             |
|--------|----------|-------------|
| 2 g    | 0.028 mg | Echelon III |
| 1 g    | 0.025 mg | Echelon III |
| 500 mg | 0.025 mg | Echelon III |
| 300 mg | 0.024 mg | Echelon III |
| 200 mg | 0.024 mg | Echelon III |
| 100 mg | 0.025 mg | Echelon III |
| 50 mg  | 0.025 mg | Echelon III |
| 30 mg  | 0.025 mg | Echelon III |
| 20 mg  | 0.025 mg | Echelon III |
| 10 mg  | 0.027 mg | Echelon III |
| 5 mg   | 0.027 mg | Echelon III |
| 3 mg   | 0.027 mg | Echelon III |
| 2 mg   | 0.027 mg | Echelon III |
| 1 mg   | 0.027 mg | Echelon III |

June 30, 2002

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MAINE METROLOGY DEPARTMENT OF AGRICULTURE

| NVLAP Code: 20/M08<br>Mass - Avoirdupois |                                       |            |
|------------------------------------------|---------------------------------------|------------|
| Range                                    | Best Uncertainty ( $\pm$ , $\mu$ sec) | Remarks    |
| 1000 lb                                  | 1161 mg                               | Echelon II |
| 500 lb                                   | 707 mg                                | Echelon II |
| 50 lb                                    | 31 mg                                 | Echelon II |
| 30 lb                                    | 22 mg                                 | Echelon II |
| 25 lb                                    | 21 mg                                 | Echelon II |
| 20 lb                                    | 13 mg                                 | Echelon II |
| 10 lb                                    | 6.4 mg                                | Echelon II |
| 5 lb                                     | 3.3 mg                                | Echelon II |
| 3 lb                                     | 2.1 mg                                | Echelon II |
| 2 lb                                     | 1.4 mg                                | Echelon II |
| 1 lb                                     | 0.068 mg                              | Echelon II |
| 0.5 lb                                   | 0.036 mg                              | Echelon II |
| 0.3 lb                                   | 0.025 mg                              | Echelon II |
| 0.2 lb                                   | 0.021 mg                              | Echelon II |
| 0.1 lb                                   | 0.020 mg                              | Echelon II |

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MAINE METROLOGY DEPARTMENT OF AGRICULTURE

|             |            |            |
|-------------|------------|------------|
| 0.05 lb     | 0.011 mg   | Echelon II |
| 0.03 lb     | 0.0071 mg  | Echelon II |
| 0.02 lb     | 0.0057 mg  | Echelon II |
| 0.01 lb     | 0.0051 mg  | Echelon II |
| 0.005 lb    | 0.0032 mg  | Echelon II |
| 0.003 lb    | 0.0024 mg  | Echelon II |
| 0.002 lb    | 0.0021 mg  | Echelon II |
| 0.001 lb    | 0.0023 mg  | Echelon II |
| 0.005 lb    | 0.0014 mg  | Echelon II |
| 0.003 lb    | 0.0010 mg  | Echelon II |
| 0.002 lb    | 0.00088 mg | Echelon II |
| 0.001 lb    | 0.00093 mg | Echelon II |
| 0.00005 lb  | 0.00072 mg | Echelon II |
| 0.00003 lb  | 0.00060 mg | Echelon II |
| 0.00002 lb  | 0.00059 mg | Echelon II |
| 0.000010 lb | 0.00067 mg | Echelon II |
| 0.000005 lb | 0.00048 mg | Echelon II |
| 0.000003 lb | 0.00040 mg | Echelon II |

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MAINE METROLOGY DEPARTMENT OF AGRICULTURE

|             |            |             |
|-------------|------------|-------------|
| 0.000002 lb | 0.00038 mg | Echelon II  |
| 0.000001 lb | 0.00043 mg | Echelon II  |
| 1000 lb     | 2806 mg    | Echelon III |
| 500 lb      | 2003 mg    | Echelon III |
| 100 lb      | 103 mg     | Echelon III |
| 50 lb       | 84 mg      | Echelon III |
| 30 lb       | 80 mg      | Echelon III |
| 25 lb       | 80 mg      | Echelon III |
| 20 lb       | 78 mg      | Echelon III |
| 10 lb       | 6.9 mg     | Echelon III |
| 5 lb        | 4.1 mg     | Echelon III |
| 3 lb        | 3.2 mg     | Echelon III |
| 2 lb        | 2.8 mg     | Echelon III |
| 1 lb        | 1.8 mg     | Echelon III |
| 0.5 lb      | 1.8 mg     | Echelon III |
| 0.3 lb      | 0.18 mg    | Echelon III |
| 0.2 lb      | 0.18 mg    | Echelon III |

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MAINE METROLOGY DEPARTMENT OF AGRICULTURE

|          |          |             |
|----------|----------|-------------|
| 0.1 lb   | 0.18 mg  | Echelon III |
| 0.05 lb  | 0.18 mg  | Echelon III |
| 0.03 lb  | 0.18 mg  | Echelon III |
| 0.02 lb  | 0.18 mg  | Echelon III |
| 0.01 lb  | 0.075 mg | Echelon III |
| 0.005 lb | 0.077 mg | Echelon III |
| 0.003 lb | 0.076 mg | Echelon III |
| 0.002 lb | 0.075 mg | Echelon III |
| 0.001 lb | 0.075 mg | Echelon III |

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**MAINE METROLOGY DEPARTMENT OF AGRICULTURE**

NVLAP Code: 20/M12

| Range        | Best Uncertainty ( $\pm$ ) <sup>1</sup> | Remarks         |
|--------------|-----------------------------------------|-----------------|
| 5 gallons    | 0.13 in <sup>3</sup>                    | Gravimetric     |
| 5 gallons    | 0.35 in <sup>3</sup>                    | Volume Transfer |
| 25 gallons   | 1.4 in <sup>3</sup>                     | Volume Transfer |
| 50 gallons   | 3.2 in <sup>3</sup>                     | Volume Transfer |
| 100 gallons  | 2.7 in <sup>3</sup>                     | Volume Transfer |
| 200 gallons  | 3.1 in <sup>3</sup>                     | Volume Transfer |
| 300 gallons  | 7.8 in <sup>3</sup>                     | Volume Transfer |
| 500 gallons  | 12 in <sup>3</sup>                      | Volume Transfer |
| 1000 gallons | 27 in <sup>3</sup>                      | Volume Transfer |
| 1500 gallons | 38 in <sup>3</sup>                      | Volume Transfer |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .

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**CALIBRATION LABORATORIES** **NVLAP LAB CODE 200419-0**

**OHIO E.M.A RADIOLOGICAL INSTRUMENT CALIBRATION FACILITY**

1296 Kinnear Road  
 Columbus, OH 43212  
 Mr. Daniel Redman  
 Phone: 614-688-3363 Fax: 614-688-3362  
 E-Mail: dredman@dps.state.oh.us

**IONIZING RADIATION DOSIMETRY**

NVLAP Code: 20/101

Dosimetry of X-Rays, Gamma Rays, and Electrons

Calibration of Survey Instruments

| Calibration Category | Radiation Type or Beam Code | Nominal Intensity Range | Uncertainty of Reference Field ( $\pm$ ) <sup>1</sup> | Remarks  |
|----------------------|-----------------------------|-------------------------|-------------------------------------------------------|----------|
| Gamma                | <sup>137</sup> Cs           | 1 R/hr to 500 R/hr      | 5.0%                                                  | Source 1 |
|                      | <sup>137</sup> Cs           | > 10 mR/hr to 5 R/hr    | 5.0%                                                  | Source 2 |
|                      | <sup>137</sup> Cs           | > 10 mR/hr to 50 mR/hr  | 5.0%                                                  | Source 3 |
|                      | <sup>137</sup> Cs           | 0.1 mR/hr to 10mR/hr    | 7.0%                                                  | Source 3 |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .

September 30, 2002

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CALIBRATION LABORATORIES  
NVLAP LAB CODE 200421-0

INDIANA DIVISION OF WEIGHTS AND MEASURES  
2525 North Shadeland Avenue, Suite D3  
Indianapolis, IN 46219-1791  
Mr. Larry J. Stump  
Phone: 317-356-7078 Fax: 317-351-2877  
E-Mail: lstump@isdh.state.in.us

DIMENSIONAL

NVLAP Labcode: 20/D13  
Surveying Rods and Tapes

| Range   | Best Uncertainty ( $\pm y^{95\%}$ ) | Remarks     |
|---------|-------------------------------------|-------------|
| 0 - 18" | $\pm 0.0042"$                       | Rigid Rules |

TIME AND FREQUENCY

NVLAP Code: 20/F02  
Time Dissemination

| Range          | Best Uncertainty ( $\pm y^{95\%}$ ) | Remarks      |
|----------------|-------------------------------------|--------------|
| $\leq 3$ hours | 0.214 second                        | Stop Watches |

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INDIANA DIVISION OF WEIGHTS AND MEASURES

MECHANICAL

NVLAP Code: 20/M08  
MASS

| Range | Best Uncertainty ( $\pm y^{95\%}$ ) | Remarks    |
|-------|-------------------------------------|------------|
| 50 kg | 146.7 mg                            | Echelon II |
| 30 kg | 142.6 mg                            | Echelon II |
| 25 kg | 23.4 mg                             | Echelon II |
| 20 kg | 20.3 mg                             | Echelon II |
| 10 kg | 14.23 mg                            | Echelon II |
| 5 kg  | 7.84 mg                             | Echelon II |
| 3 kg  | 4.27 mg                             | Echelon II |
| 2 kg  | 3.92 mg                             | Echelon II |
| 1 kg  | 0.75 mg                             | Echelon II |
| 500 g | 0.391 mg                            | Echelon II |
| 300 g | 0.254 mg                            | Echelon II |
| 200 g | 0.184 mg                            | Echelon II |
| 100 g | 0.109 mg                            | Echelon II |

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#### INDIANA DIVISION OF WEIGHTS AND MEASURES

|        |           |            |
|--------|-----------|------------|
| 50 g   | 0.066 mg  | Echelon II |
| 30 g   | 0.056 mg  | Echelon II |
| 20 g   | 0.028 mg  | Echelon II |
| 10 g   | 0.020 mg  | Echelon II |
| 5 g    | 0.0107 mg | Echelon II |
| 3 g    | 0.0075 mg | Echelon II |
| 2 g    | 0.0061 mg | Echelon II |
| 1 g    | 0.0053 mg | Echelon II |
| 500 mg | 0.0050 mg | Echelon II |
| 300 mg | 0.0046 mg | Echelon II |
| 200 mg | 0.0045 mg | Echelon II |
| 100 mg | 0.0018 mg | Echelon II |
| 50 mg  | 0.0017 mg | Echelon II |
| 30 mg  | 0.0018 mg | Echelon II |
| 20 mg  | 0.0017 mg | Echelon II |
| 10 mg  | 0.0010 mg | Echelon II |
| 5 mg   | 0.0009 mg | Echelon II |

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### CALIBRATION LABORATORIES

NVLAP LAB CODE 200421-0

#### INDIANA DIVISION OF WEIGHTS AND MEASURES

|         |           |            |
|---------|-----------|------------|
| 3 mg    | 0.0009 mg | Echelon II |
| 2 mg    | 0.0009 mg | Echelon II |
| 1 mg    | 0.0010 mg | Echelon II |
| 100 lb  | 3.40 g    | Echelon II |
| 50 lb   | 23.06 mg  | Echelon II |
| 30 lb   | 14.57 mg  | Echelon II |
| 25 lb   | 12.43 mg  | Echelon II |
| 20 lb   | 9.56 mg   | Echelon II |
| 10 lb   | 4.53 mg   | Echelon II |
| 5 lb    | 4.01 mg   | Echelon II |
| 3 lb    | 3.76 mg   | Echelon II |
| 2 lb    | 0.763 mg  | Echelon II |
| 1 lb    | 0.416 mg  | Echelon II |
| 0.5 lb  | 0.300 mg  | Echelon II |
| 0.3 lb  | 0.264 mg  | Echelon II |
| 0.25 lb | 0.108 mg  | Echelon II |

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|          |           |            |
|----------|-----------|------------|
| 0.2 lb   | 0.094 mg  | Echelon II |
| 0.1 lb   | 0.060 mg  | Echelon II |
| 0.05 lb  | 0.025 mg  | Echelon II |
| 0.03 lb  | 0.021 mg  | Echelon II |
| 0.02 lb  | 0.019 mg  | Echelon II |
| 0.01 lb  | 0.008 mg  | Echelon II |
| 0.005 lb | 0.006 mg  | Echelon II |
| 0.003 lb | 0.005 mg  | Echelon II |
| 0.002 lb | 0.005 mg  | Echelon II |
| 0.001 lb | 0.005 mg  | Echelon II |
| 500 µlb  | 0.0051 mg | Echelon II |
| 300 µlb  | 0.0051 mg | Echelon II |
| 200 µlb  | 0.0025 mg | Echelon II |
| 100 µlb  | 0.0024 mg | Echelon II |
| 50 µlb   | 0.0012 mg | Echelon II |
| 30 µlb   | 0.0012 mg | Echelon II |
| 20 µlb   | 0.0012 mg | Echelon II |

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|        |           |             |
|--------|-----------|-------------|
| 10 µlb | 0.0012 mg | Echelon II  |
| 5 µlb  | 0.0008 mg | Echelon II  |
| 3 µlb  | 0.0008 mg | Echelon II  |
| 2 µlb  | 0.0008 mg | Echelon II  |
| 1 µlb  | 0.0008 mg | Echelon II  |
| 500 kg | 11.48 g   | Echelon III |
| 300 kg | 9.64 g    | Echelon III |
| 200 kg | 9.48 g    | Echelon III |
| 100 kg | 14.09 g   | Echelon III |
| 50 kg  | 342.83 mg | Echelon III |
| 30 kg  | 221.68 mg | Echelon III |
| 25 kg  | 220.92 mg | Echelon III |
| 20 kg  | 46.94 mg  | Echelon III |
| 10 kg  | 44.66 mg  | Echelon III |
| 5 kg   | 22.33 mg  | Echelon III |
| 3 kg   | 6.43 mg   | Echelon III |

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|        |           |             |
|--------|-----------|-------------|
| 2 kg   |           | Echelon III |
| 1 kg   | 6.20 mg   | Echelon III |
| 500 g  | 6.05 mg   | Echelon III |
| 300 g  | 6.01 mg   | Echelon III |
| 200 g  | 6.00 mg   | Echelon III |
| 100 g  | 0.167 mg  | Echelon III |
| 50 g   | 0.100 mg  | Echelon III |
| 30 g   | 0.066 mg  | Echelon III |
| 20 g   | 0.060 mg  | Echelon III |
| 10 g   | 0.025 mg  | Echelon III |
| 5 g    | 0.050 mg  | Echelon III |
| 3 g    | 0.001 mg  | Echelon III |
| 2 g    | 0.007 mg  | Echelon III |
| 1 g    | 0.005 mg  | Echelon III |
| 500 mg | 0.004 mg  | Echelon III |
| 300 mg | 0.0041 mg | Echelon III |
| 200 mg | 0.0037 mg | Echelon III |
|        | 0.0036 mg | Echelon III |

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|         |           |             |
|---------|-----------|-------------|
| 100 mg  | 0.0008 mg | Echelon III |
| 50 mg   | 0.0008 mg | Echelon III |
| 30 mg   | 0.0008 mg | Echelon III |
| 20 mg   | 0.0008 mg | Echelon III |
| 10 mg   | 0.0006 mg | Echelon III |
| 5 mg    | 0.0006 mg | Echelon III |
| 3 mg    | 0.0006 mg | Echelon III |
| 2 mg    | 0.0006 mg | Echelon III |
| 1 mg    | 0.0007 mg | Echelon III |
| 1000 lb | 4.80 g    | Echelon III |
| 500 lb  | 3.28 g    | Echelon III |
| 250 lb  | 1.81 g    | Echelon III |
| 200 lb  | 1.58 g    | Echelon III |
| 100 lb  | 0.227 g   | Echelon III |
| 75 lb   | 231.04 mg | Echelon III |
| 50 lb   | 191.51 mg | Echelon III |

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INDIANA DIVISION OF WEIGHTS AND MEASURES

|         |           |             |
|---------|-----------|-------------|
| 30 lb   | 155.45 mg | Echelon III |
| 25 lb   | 155.31 mg | Echelon III |
| 20 lb   | 7.11 mg   | Echelon III |
| 10 lb   | 35.519 mg | Echelon III |
| 5 lb    | 2.830 mg  | Echelon III |
| 3 lb    | 2.665 mg  | Echelon III |
| 2 lb    | 2.545 mg  | Echelon III |
| 1 lb    | 1.713 mg  | Echelon III |
| 0.5 lb  | 2.665 mg  | Echelon III |
| 0.3 lb  | 0.118 mg  | Echelon III |
| 0.25 lb | 0.098 mg  | Echelon III |
| 0.2 lb  | 0.083 mg  | Echelon III |
| 0.1 lb  | 0.072 mg  | Echelon III |
| 0.05 lb | 0.033 mg  | Echelon III |
| 0.03 lb | 0.047 mg  | Echelon III |
| 0.02 lb | 0.033 mg  | Echelon III |
| 0.01 lb | 0.008 mg  | Echelon III |

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INDIANA DIVISION OF WEIGHTS AND MEASURES

|            |          |             |
|------------|----------|-------------|
| 0.005 lb   | 0.006 mg | Echelon III |
| 0.003 lb   | 0.005 mg | Echelon III |
| 0.002 lb   | 0.005 mg | Echelon III |
| 0.001 lb   | 0.005 mg | Echelon III |
| 2 oz       | 0.310 mg | Echelon III |
| 1 oz       | 0.172 mg | Echelon III |
| 0.5 oz     | 0.114 mg | Echelon III |
| 0.25 oz    | 0.078 mg | Echelon III |
| 0.125 oz   | 0.073 mg | Echelon III |
| 0.0625 oz  | 0.088 mg | Echelon III |
| 0.03125 oz | 0.088 mg | Echelon III |
| 3 kg       | 15.60 mg | Echelon III |
| 2 kg       | 11.32 mg | Echelon III |
| 1 kg       | 7.68 mg  | Echelon III |
| 500 g      | 6.46 mg  | Echelon III |

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INDIANA DIVISION OF WEIGHTS AND MEASURES

|        |          |             |
|--------|----------|-------------|
| 300 g  | 6.20 mg  | Echelon III |
| 200 g  | 0.132 mg | Echelon III |
| 100 g  | 0.101 mg | Echelon III |
| 50 g   | 0.101 mg | Echelon III |
| 30 g   | 0.101 mg | Echelon III |
| 20 g   | 0.101 mg | Echelon III |
| 10 g   | 0.101 mg | Echelon III |
| 5 g    | 0.089 mg | Echelon III |
| 3 g    | 0.089 mg | Echelon III |
| 2 g    | 0.089 mg | Echelon III |
| 1 g    | 0.022 mg | Echelon III |
| 500 mg | 0.020 mg | Echelon III |
| 300 mg | 0.020 mg | Echelon III |
| 200 mg | 0.020 mg | Echelon III |
| 100 mg | 0.020 mg | Echelon III |
| 50 mg  | 0.020 mg | Echelon III |
| 30 mg  | 0.020 mg | Echelon III |

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**Scope of Accreditation**

ISO/IEC GUIDE 25:1990  
 ANSI/NCSL Z540-1-1994  
 ISO 9002:1987

Revised 1/7/2002

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CALIBRATION LABORATORIES

NVLAP LAB CODE 200421-0

INDIANA DIVISION OF WEIGHTS AND MEASURES

|         |           |             |
|---------|-----------|-------------|
| 20 mg   | 0.020 mg  | Echelon III |
| 10 mg   | 0.020 mg  | Echelon III |
| 5 mg    | 0.020 mg  | Echelon III |
| 3 mg    | 0.020 mg  | Echelon III |
| 2 mg    | 0.020 mg  | Echelon III |
| 1 mg    | 0.020 mg  | Echelon III |
| 5 lb    | 11.526 mg | Echelon III |
| 3 lb    | 7.118 mg  | Echelon III |
| 2 lb    | 4.904 mg  | Echelon III |
| 1 lb    | 3.103 mg  | Echelon III |
| 0.5 lb  | 3.063 mg  | Echelon III |
| 0.3 lb  | 0.107 mg  | Echelon III |
| 0.25 lb | 0.101 mg  | Echelon III |
| 0.2 lb  | 0.101 mg  | Echelon III |
| 0.1 lb  | 0.101 mg  | Echelon III |
| 0.05 lb | 0.101 mg  | Echelon III |

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CALIBRATION LABORATORIES

NVLAP LAB CODE 200421-0

INDIANA DIVISION OF WEIGHTS AND MEASURES

|            |          |             |
|------------|----------|-------------|
| 0.03 lb    | 0.101 mg | Echelon III |
| 0.02 lb    | 0.101 mg | Echelon III |
| 0.01 lb    | 0.089 mg | Echelon III |
| 0.005 lb   | 0.089 mg | Echelon III |
| 0.003 lb   | 0.089 mg | Echelon III |
| 0.002 lb   | 0.089 mg | Echelon III |
| 0.001 lb   | 0.089 mg | Echelon III |
| 2 oz       | 0.101 mg | Echelon III |
| 1 oz       | 0.101 mg | Echelon III |
| 0.5 oz     | 0.101 mg | Echelon III |
| 0.25 oz    | 0.101 mg | Echelon III |
| 0.125 oz   | 0.089 mg | Echelon III |
| 0.0625 oz  | 0.089 mg | Echelon III |
| 0.03125 oz | 0.089 mg | Echelon III |

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**Scope of Accreditation**



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CALIBRATION LABORATORIES

NVLAP LAB CODE 200421-0

INDIANA DIVISION OF WEIGHTS AND MEASURES

NVLAP Code: 20/M12  
Volume and Density

| Range  | Best Uncertainty ( $\pm$ ) <sup>year 1</sup> | Remarks                    |
|--------|----------------------------------------------|----------------------------|
| 5 gal  | 0.14 in <sup>3</sup>                         | Gravimetric Method         |
| 1 gill | 1.6 minim                                    | Gravimetric Method         |
| 25 ml  | 0.136 ml                                     | Gravimetric Method         |
| 50 gal | 2.21 in <sup>3</sup>                         | Volumetric Transfer Method |
| 5 gal  | 0.177 in <sup>3</sup>                        | Volumetric Transfer Method |
| 20 l   | 3.026 ml                                     | Volumetric Transfer Method |

1. Represents an expanded uncertainty using a coverage factor,  $k = 2$ .

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**Scope of Accreditation**

DEPARTMENT OF COMMERCE  
UNITED STATES OF AMERICA

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**CALIBRATION LABORATORIES** NVLAP LAB CODE 200446-0

WASHINGTON STATE DEPARTMENT OF AGRICULTURE METROLOGY LABORATORY  
2747 29th Avenue, SW  
Tumwater, WA 98512  
Mr. Dan Wright  
Phone: 360-753-5042 Fax: 360-586-4728  
E-Mail: dwright@agr.wa.gov

**MECHANICAL**

NVLAP Code: 20/M08

| Range | Best Uncertainty ( $\pm$ ) <sup>1</sup> | Remarks   |
|-------|-----------------------------------------|-----------|
| 30 kg | 51 mg                                   | Echelon I |
| 20 kg | 34 mg                                   | Echelon I |
| 10 kg | 18 mg                                   | Echelon I |
| 5 kg  | 7.9 mg                                  | Echelon I |
| 3 kg  | 4.9 mg                                  | Echelon I |
| 2 kg  | 3.7 mg                                  | Echelon I |
| 1 kg  | 0.10 mg                                 | Echelon I |
| 500 g | 0.057 mg                                | Echelon I |
| 300 g | 0.044 mg                                | Echelon I |
| 200 g | 0.035 mg                                | Echelon I |
| 100 g | 0.039 mg                                | Echelon I |

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**CALIBRATION LABORATORIES** NVLAP LAB CODE 200446-0

WASHINGTON STATE DEPARTMENT OF AGRICULTURE METROLOGY LABORATORY

|        |            |           |
|--------|------------|-----------|
| 50 g   | 0.027 mg   | Echelon I |
| 30 g   | 0.022 mg   | Echelon I |
| 20 g   | 0.020 mg   | Echelon I |
| 10 g   | 0.023 mg   | Echelon I |
| 5 g    | 0.012 mg   | Echelon I |
| 3 g    | 0.0080 mg  | Echelon I |
| 2 g    | 0.0060 mg  | Echelon I |
| 1 g    | 0.0053 mg  | Echelon I |
| 500 mg | 0.0029 mg  | Echelon I |
| 300 mg | 0.0020 mg  | Echelon I |
| 200 mg | 0.0016 mg  | Echelon I |
| 100 mg | 0.0015 mg  | Echelon I |
| 50 mg  | 0.00085 mg | Echelon I |
| 30 mg  | 0.00064 mg | Echelon I |
| 20 mg  | 0.00051 mg | Echelon I |
| 10 mg  | 0.00056 mg | Echelon I |
| 5 mg   | 0.00037 mg | Echelon I |
| 3 mg   | 0.00036 mg | Echelon I |

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### CALIBRATION LABORATORIES

NVLAP LAB CODE 200446-0

#### WASHINGTON STATE DEPARTMENT OF AGRICULTURE METROLOGY LABORATORY

|        |            |            |
|--------|------------|------------|
| 2 mg   | 0.00030 mg | Echelon I  |
| 1 mg   | 0.00039 mg | Echelon I  |
| 500 lb | 4.3 g      | Echelon II |
| 50 lb  | 24 mg      | Echelon II |
| 20 lb  | 11 mg      | Echelon II |
| 10 kg  | 19 mg      | Echelon II |
| 5 kg   | 12 mg      | Echelon II |
| 3 kg   | 5.4 mg     | Echelon II |
| 2 kg   | 4.4 mg     | Echelon II |
| 1 kg   | 0.19 mg    | Echelon II |
| 500 g  | 0.18 mg    | Echelon II |
| 300 g  | 0.18 mg    | Echelon II |
| 200 g  | 0.17 mg    | Echelon II |
| 100 g  | 0.077 mg   | Echelon II |
| 50 g   | 0.054 mg   | Echelon II |
| 30 g   | 0.047 mg   | Echelon II |

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### CALIBRATION LABORATORIES

NVLAP LAB CODE 200446-0

#### WASHINGTON STATE DEPARTMENT OF AGRICULTURE METROLOGY LABORATORY

|        |           |            |
|--------|-----------|------------|
| 20 g   | 0.023 mg  | Echelon II |
| 10 g   | 0.023 mg  | Echelon II |
| 5 g    | 0.014 mg  | Echelon II |
| 3 g    | 0.0078 mg | Echelon II |
| 2 g    | 0.0061 mg | Echelon II |
| 1 g    | 0.0058 mg | Echelon II |
| 500 mg | 0.0034 mg | Echelon II |
| 300 mg | 0.0026 mg | Echelon II |
| 200 mg | 0.0023 mg | Echelon II |
| 100 mg | 0.0022 mg | Echelon II |
| 50 mg  | 0.0020 mg | Echelon II |
| 30 mg  | 0.0020 mg | Echelon II |
| 20 mg  | 0.0019 mg | Echelon II |
| 10 mg  | 0.0020 mg | Echelon II |
| 5 mg   | 0.0019 mg | Echelon II |
| 3 mg   | 0.0019 mg | Echelon II |
| 2 mg   | 0.0019 mg | Echelon II |
| 1 mg   | 0.0019 mg | Echelon II |

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**Scope of Accreditation**

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CALIBRATION LABORATORIES  
 WASHINGTON STATE DEPARTMENT OF AGRICULTURE METROLOGY LABORATORY

NVLAP LAB CODE 200446-0  
 WASHINGTON STATE DEPARTMENT OF AGRICULTURE METROLOGY LABORATORY

|       |           |             |
|-------|-----------|-------------|
| 25 kg | 0.12 g    | Echelon III |
| 20 kg | 0.10 g    | Echelon III |
| 10 kg | 0.045 g   | Echelon III |
| 5 kg  | 16 mg     | Echelon III |
| 3 kg  | 5.7 mg    | Echelon III |
| 2 kg  | 4.7 mg    | Echelon III |
| 1 kg  | 2.3 mg    | Echelon III |
| 500 g | 2.3 mg    | Echelon III |
| 300 g | 1.7 mg    | Echelon III |
| 200 g | 0.83 mg   | Echelon III |
| 100 g | 0.076 mg  | Echelon III |
| 50 g  | 0.052 mg  | Echelon III |
| 30 g  | 0.045 mg  | Echelon III |
| 20 g  | 0.037 mg  | Echelon III |
| 10 g  | 0.029 mg  | Echelon III |
| 5 g   | 0.023 mg  | Echelon III |
| 3 g   | 0.0094 mg | Echelon III |

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CALIBRATION LABORATORIES  
 WASHINGTON STATE DEPARTMENT OF AGRICULTURE METROLOGY LABORATORY

NVLAP LAB CODE 200446-0  
 WASHINGTON STATE DEPARTMENT OF AGRICULTURE METROLOGY LABORATORY

|        |           |             |
|--------|-----------|-------------|
| 2 g    | 0.0081 mg | Echelon III |
| 1 g    | 0.0079 mg | Echelon III |
| 500 mg | 0.0063 mg | Echelon III |
| 300 mg | 0.0059 mg | Echelon III |
| 200 mg | 0.0058 mg | Echelon III |
| 100 mg | 0.0058 mg | Echelon III |
| 50 mg  | 0.0057 mg | Echelon III |
| 30 mg  | 0.0057 mg | Echelon III |
| 20 mg  | 0.0057 mg | Echelon III |
| 10 mg  | 0.0057 mg | Echelon III |
| 5 mg   | 0.0057 mg | Echelon III |
| 3 mg   | 0.0037 mg | Echelon III |
| 2 mg   | 0.0037 mg | Echelon III |
| 1 mg   | 0.0037 mg | Echelon III |

|         |      |             |
|---------|------|-------------|
| 4000 lb | 24 g | Echelon III |
| 3000 lb | 23 g | Echelon III |
| 2000 lb | 22 g | Echelon III |

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### CALIBRATION LABORATORIES

NVLAP LAB CODE 200446-0

#### WASHINGTON STATE DEPARTMENT OF AGRICULTURE METROLOGY LABORATORY

|         |          |             |
|---------|----------|-------------|
| 1000 lb | 4.4 g    | Echelon III |
| 500 lb  | 1.9 g    | Echelon III |
| 100 lb  | 0.10 g   | Echelon III |
| 50 lb   | 0.096 g  | Echelon III |
| 25 lb   | 0.041 g  | Echelon III |
| 20 lb   | 0.041 g  | Echelon III |
| 10 lb   | 13 mg    | Echelon III |
| 5 lb    | 3.8 mg   | Echelon III |
| 2 lb    | 2.7 mg   | Echelon III |
| 1 lb    | 1.7 mg   | Echelon III |
| 0.5 lb  | 0.84 mg  | Echelon III |
| 0.3 lb  | 0.076 mg | Echelon III |
| 0.2 lb  | 0.067 mg | Echelon III |
| 0.1 lb  | 0.075 mg | Echelon III |
| 0.05 lb | 0.045 mg | Echelon III |
| 0.03 lb | 0.037 mg | Echelon III |
| 0.02 lb | 0.025 mg | Echelon III |

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### CALIBRATION LABORATORIES

NVLAP LAB CODE 200446-0

#### WASHINGTON STATE DEPARTMENT OF AGRICULTURE METROLOGY LABORATORY

|          |           |             |
|----------|-----------|-------------|
| 0.01 lb  | 0.025 mg  | Echelon III |
| 0.005 lb | 0.0076 mg | Echelon III |
| 0.003 lb | 0.0066 mg | Echelon III |
| 0.002 lb | 0.0063 mg | Echelon III |
| 0.001 lb | 0.0046 mg | Echelon III |
| 4 oz     | 0.10 mg   | Echelon III |
| 2 oz     | 0.10 mg   | Echelon III |
| 1 oz     | 0.059 mg  | Echelon III |
| 1/2 oz   | 0.036 mg  | Echelon III |
| 1/4 oz   | 0.034 mg  | Echelon III |
| 1/8 oz   | 0.016 mg  | Echelon III |
| 1/16 oz  | 0.013 mg  | Echelon III |
| 1/32 oz  | 0.011 mg  | Echelon III |

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## Scope of Accreditation

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CALIBRATION LABORATORIES NVLAP LAB CODE 200446-0

WASHINGTON STATE DEPARTMENT OF AGRICULTURE METROLOGY LABORATORY

NVLAP Code: 20/M12

| Range   | Best Uncertainty ( $\pm$ ) <sup>year 1</sup> | Remarks                |
|---------|----------------------------------------------|------------------------|
| Volume  |                                              |                        |
| 5 gal   | 0.0011 gal                                   | Gravimetric Method     |
| 1 gal   | 0.00054 gal                                  | Gravimetric Method     |
| 0.5 gal | 0.00050 gal                                  | Gravimetric Method     |
| 750 gal | 0.25 gal                                     | Volume Transfer Method |
| 500 gal | 0.17 gal                                     | Volume Transfer Method |
| 200 gal | 0.080 gal                                    | Volume Transfer Method |
| 100 gal | 0.037 gal                                    | Volume Transfer Method |
| 50 gal  | 0.017 gal                                    | Volume Transfer Method |
| 5 gal   | 0.0026 gal                                   | Volume Transfer Method |
| 3 gal   | 0.0029 gal                                   | Volume Transfer Method |
| 2.5 gal | 0.0028 gal                                   | Volume Transfer Method |
| 1 gal   | 0.0024 gal                                   | Volume Transfer Method |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .

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## Scope of Accreditation

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CALIBRATION LABORATORIES

NVLAP LAB CODE 200459-0

TECHNICAL CALIBRATION LABS, INC.

581 Route 17M  
Monroe, NY 10950

Mr. John Tassa

Phone: 845-783-4235 Fax: 845-783-3573

E-Mail: [techni@frontier.net](mailto:techni@frontier.net)

URL: <http://www.lightbooth.com>

### OPTICAL RADIATION

NVLAP Code: 20/O02  
Color Temperature

| Range in °Kelvin | Best Uncertainty ( $\pm$ ) in °Kelvin <sup>year 1</sup> |
|------------------|---------------------------------------------------------|
| 2300             | 42                                                      |
| 2856             | 54                                                      |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .

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## Scope of Accreditation

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**CALIBRATION LABORATORIES**

**S. HIMMELSTEIN AND COMPANY**  
2490 Pembroke Avenue  
Hoffman Estates, IL 60195-2077  
Mr. Richard Tveter  
Phone: 847-843-3300 Fax: 847-843-8488  
E-Mail: rsvteter@aol.com  
URL: <http://www.himmelstein.com>

NVLAP LAB CODE 200487-0

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NVLAP LAB CODE 200491-0

**CALIBRATION LABORATORIES**

**RUSKA CALIBRATION LABORATORY**  
10311 Westpark Drive  
P.O. Box 630009  
Houston, TX 77042-5312  
Mr. Kenneth A. Kolb  
Phone: 713-975-0547 Fax: 713-975-6338  
E-Mail: [kolbk@ruska.com](mailto:kolbk@ruska.com)  
URL: <http://www.ruska.com>

**MECHANICAL**  
NVLAP Code: 20/M06  
Torque - Calibration of Torque Devices

| Full Scale Range in lb-in | Best Uncertainty ( $\pm$ ) in % <sup>1,2</sup> | Remarks <sup>3</sup>   |
|---------------------------|------------------------------------------------|------------------------|
| 24                        | 0.040                                          | 4" lever arm length    |
| 200                       | 0.030                                          | 12.5" lever arm length |
| 1,999                     | 0.030                                          | 25" lever arm length   |
| 20,000                    | 0.020                                          | 40" lever arm length   |
| 100,000                   | 0.020                                          | 100" lever arm length  |
| 349,000                   | 0.060                                          | 720" lever arm length  |
| 4,000,000                 | 0.060                                          | 50" lever arm length   |

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1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .  
 2. Represents uncertainty of full scale.  
 3. All loading is applied by dead weights except when using the 50" arm which uses a load cell.



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ISO 9002:1994

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10311 Westpark Drive  
P.O. Box 630009  
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Mr. Kenneth A. Kolb  
Phone: 713-975-0547 Fax: 713-975-6338  
E-Mail: [kolbk@ruska.com](mailto:kolbk@ruska.com)  
URL: <http://www.ruska.com>

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**CALIBRATION LABORATORIES**

**RUSKA CALIBRATION LABORATORY**  
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Phone: 713-975-0547 Fax: 713-975-6338  
E-Mail: [kolbk@ruska.com](mailto:kolbk@ruska.com)  
URL: <http://www.ruska.com>

**MECHANICAL**  
NVLAP Code: 20/M08  
Mass - Calibration in support of deadweight pressure measurements

| Range    | Best Uncertainty ( $\pm$ ) <sup>1</sup> | Remarks |
|----------|-----------------------------------------|---------|
| 17.13 kg | 85.66 mg                                |         |
| 16.80 kg | 84.00 mg                                |         |
| 11.81 kg | 59.05 mg                                |         |
| 5 kg     | 25.0 mg                                 |         |
| 3 kg     | 15.0 mg                                 |         |
| 2.36 kg  | 11.8 mg                                 |         |
| 2 kg     | 10.0 mg                                 |         |
| 1 kg     | 5.0 mg                                  |         |
| 500 g    | 2.5 mg                                  |         |
| 300 g    | 1.5 mg                                  |         |

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# Scope of Accreditation

ISO/IEC 17025:1999  
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CALIBRATION LABORATORIES NVLAP LAB CODE 200491-0

## RUSKA CALIBRATION LABORATORY

|        |        |
|--------|--------|
| 200 g  | 1.0 mg |
| 100 g  | 0.5 mg |
| 50 g   | 0.5 mg |
| 30 g   | 0.5 mg |
| 20 g   | 0.5 mg |
| 10 g   | 0.5 mg |
| 5 g    | 0.5 mg |
| 3 g    | 0.5 mg |
| 2 g    | 0.5 mg |
| 1 g    | 0.5 mg |
| 500 mg | 0.5 mg |
| 300 mg | 0.5 mg |
| 200 mg | 0.5 mg |
| 100 mg | 0.5 mg |
| 50 mg  | 0.5 mg |
| 30 mg  | 0.5 mg |
| 20 mg  | 0.5 mg |
| 10 mg  | 0.5 mg |

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# Scope of Accreditation

ISO/IEC 17025:1999  
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## RUSKA CALIBRATION LABORATORY

|      |        |
|------|--------|
| 5 mg | 0.5 mg |
| 3 mg | 0.5 mg |
| 2 mg | 0.5 mg |
| 1 mg | 0.5 mg |

## THERMODYNAMICS

NVLAP Code: 20/T05

Pressure

Pneumatic Pressure (Gauge Mode) Direct Pressure Comparison - Ultimate Capability

| Range                 | Best Uncertainty ( $\pm$ ) of reading <sup>note 1</sup> | Remarks                                                |
|-----------------------|---------------------------------------------------------|--------------------------------------------------------|
| 1 38 kPa to 345 kPa   | $7 \times 10^{-6}$ but not less than 0.07 Pa            | For Absolute Mode                                      |
| 11 72 kPa to 1400 kPa | $7 \times 10^{-6}$ but not less than 0.28 Pa            | uncertainties increase by 0.133 Pa added in quadrature |
| 14 kPa to 7 MPa       | $7.5 \times 10^{-6}$ but not less than 2.8 Pa           |                                                        |
| 700 kPa to 21 MPa     | $8.5 \times 10^{-6} + 1.7 \times 10^{-7}$ per MPa       |                                                        |

Pneumatic Pressure (Differential Mode) - Ultimate Capability

|                   |                                                      |
|-------------------|------------------------------------------------------|
| -16 kPa to 16 kPa | $1.10 \times 10^{-5} + 0.034$ Pa added in quadrature |
|-------------------|------------------------------------------------------|

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Scope of Accreditation

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CALIBRATION LABORATORIES

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RUSKA CALIBRATION LABORATORY

Pneumatic Pressure (Gauge Mode) Direct Pressure Comparison - General Capability  
20 Pa to 16 kPa 1.5 x 10<sup>-4</sup> but not less than 0.1 Pa For Absolute Mode uncertainties increase by 0.133 Pa added in quadrature  
750 Pa to 211 kPa 1.5 x 10<sup>-4</sup>  
1.38 kPa to 345 kPa 1.0 x 10<sup>-5</sup> but not less than 0.07 Pa  
11.72 kPa to 1400 kPa 1.0 x 10<sup>-5</sup> but not less than 0.28 Pa  
14 kPa to 7 MPa 1.1 x 10<sup>-5</sup> but not less than 2.8 Pa  
700 kPa to 21 MPa 1.1 x 10<sup>-5</sup> + 1.9 x 10<sup>-7</sup> per MPa  
1170 kPa to 104 MPa 3.5 x 10<sup>-5</sup>  
  
Pneumatic Pressure (Absolute Mode) - General Capabilities  
0 Pa to 133 Pa 10% but not less than 1.33 Pa  
  
Pneumatic Pressure (Differential Mode) - General Capabilities  
-16 kPa to +16 kPa 1.5 x 10<sup>-4</sup> but not less than 0.1 Pa

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RUSKA CALIBRATION LABORATORY

Hydraulic Pressure (Gauge Mode) - General Capabilities  
50 kPa to 5 MPa 2.5 x 10<sup>-5</sup> but not less than 10 Pa  
69 kPa to 6.9 MPa 2.5 x 10<sup>-5</sup> but not less than 13.8 Pa  
500 kPa to 138 MPa 3.5 x 10<sup>-5</sup>  
14 MPa to 276 MPa 7.5 x 10<sup>-5</sup>  
6.2 MPa to 500 MPa 1.0 x 10<sup>-4</sup>  
  
Hydraulic Pressure Derived Effective Area - General Capability  
50 kPa to 6.9 MPa 2.31 x 10<sup>-5</sup>  
500 kPa to 133 MPa 3.34 x 10<sup>-5</sup>  
14 MPa to 276 MPa 7.29 x 10<sup>-5</sup>  
6.2 MPa to 500 MPa 9.80 x 10<sup>-5</sup>

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## RUSKA CALIBRATION LABORATORY

Pneumatic Pressure Derived Effective Area - General Capability

|                       |                                                                       |
|-----------------------|-----------------------------------------------------------------------|
| 1.38 kPa to 345 kPa   | $8.8 \times 10^{-6}$                                                  |
| 11.72 kPa to 1400 kPa | $8.3 \times 10^{-6}$                                                  |
| 14 kPa to 7 MPa       | $1.0 \times 10^{-5} + 2.4 \times 10^{-7}$ per MPa added in quadrature |
| 700 kPa to 21 MPa     | $1.0 \times 10^{-5} + 4.8 \times 10^{-7}$ per MPa added in quadrature |
| 1170 kPa to 104 MPa   | $3.37 \times 10^{-5}$                                                 |

NVLAP Code: 20/T07  
Resistance Thermometry

| Range   | Best Uncertainty ( $\pm$ ) <sup>1</sup> | Remarks |
|---------|-----------------------------------------|---------|
| 0-100°C | 0.03°C                                  |         |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .

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## GEOCORP INDUSTRIAL CONTROLS, INC.

9010 River Road  
Huron, OH 44839  
Mr. Niel Fleetwood  
Phone: 419-433-1101 Fax: 419-433-1102  
E-Mail: nfleetwood@geocorpinc.com  
URL: http://www.geocorpinc.com

## THERMODYNAMICS

NVLAP Code: 20/T08

Thermocouples

| Range in °F | Best Uncertainty ( $\pm$ ) in °F <sup>1</sup> | Remarks <sup>2</sup> |
|-------------|-----------------------------------------------|----------------------|
| 32 to 2650  | 0.77                                          | Type B               |
| 32 to 2650  | 0.72                                          | Type C               |
| 32 to 1830  | 0.70                                          | Type E               |
| 32 to 1400  | 0.70                                          | Type J               |
| 32 to 2500  | 0.70                                          | Type K               |
| 32 to 2370  | 0.70                                          | Type N               |
| 32 to 2650  | 0.72                                          | Type R               |
| 32 to 2650  | 0.72                                          | Type S               |
| 32 to 750   | 0.69                                          | Type T               |

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GEOCORP INDUSTRIAL CONTROLS, INC.

| Range in °C | Best Uncertainty (±) in °C <sub>95%</sub> | Remarks |
|-------------|-------------------------------------------|---------|
| 0 to 1454   | 0.43                                      | Type B  |
| 0 to 1454   | 0.40                                      | Type C  |
| 0 to 1000   | 0.39                                      | Type E  |
| 0 to 760    | 0.39                                      | Type J  |
| 0 to 1372   | 0.39                                      | Type K  |
| 0 to 1300   | 0.39                                      | Type N  |
| 0 to 1454   | 0.40                                      | Type R  |
| 0 to 1451   | 0.40                                      | Type S  |
| 0 to 400    | 0.38                                      | Type T  |

- 1. Represents an expanded uncertainty using a coverage factor, k=2.
- 2. Thermocouple Types above are defined as per ANSI-MC 96.1 except for Type C. Type C is Tungsten 5% Rhenium vs. Tungsten 26% Rhenium.

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CALIBRATION LABORATORIES

PYROMATIION INC. METROLOGY LABORATORY

5211 Industrial Road  
Fort Wayne, IN 46825-5152  
Mr. Chris Moritz  
Phone: 219-484-2580 Fax: 219-482-6805  
E-Mail: [chris@pyromation.com](mailto:chris@pyromation.com)  
URL: <http://www.pyromation.com>

| DC/LOW FREQUENCY   | Best Uncertainty (±) in ohms <sub>95%</sub> | Remarks   |
|--------------------|---------------------------------------------|-----------|
| NVLAP Code: 20/E05 |                                             |           |
| DC Resistance      |                                             |           |
| Range in ohms      |                                             |           |
| 1                  | 0.006                                       | Simulated |
| 10                 | 0.007                                       | Simulated |
| 100                | 0.018                                       | Simulated |
| 1 k                | 0.122                                       | Simulated |
| 10 k               | 4                                           | Simulated |
| 100 k              | 35                                          | Simulated |
| 1 M                | 347                                         | Simulated |
| 10 M               | 4 k                                         | Simulated |
| 100 M              | 35 k                                        | Simulated |

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PYROMATION INC. METROLOGY LABORATORY

|       |        |          |
|-------|--------|----------|
| 10    | 0.0008 | Measured |
| 100   | 0.0075 | Measured |
| 1 k   | 0.06   | Measured |
| 10 k  | 0.6    | Measured |
| 100 k | 8.3    | Measured |
| 1 M   | 85     | Measured |
| 10 M  | 4.7 k  | Measured |
| 100 M | 174 k  | Measured |

NVLAP Code: 20/E05

DC Current

| Range       | Best Uncertainty ( $\pm$ $\mu$ sec) | Remarks   |
|-------------|-------------------------------------|-----------|
| 0 to 100 mA | 0.005 mA                            | Simulated |
| 10 mA       | 0.006 mA                            | Measured  |
| 100 mA      | 0.063 mA                            | Measured  |
| 1 A         | 0.97 mA                             | Measured  |
| 3 A         | 4.2 mA                              | Measured  |

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PYROMATION INC. METROLOGY LABORATORY

|                                        |                                          |           |
|----------------------------------------|------------------------------------------|-----------|
| Service provided at customer location. |                                          |           |
| 0 to 24 mA                             | 0.05 mA                                  | Simulated |
| 0 to 24 mA                             | 0.06 mA                                  | Measured  |
| NVLAP Code: 20/E06                     |                                          |           |
| DC Voltage                             |                                          |           |
| Range                                  | Best Uncertainty ( $\pm$ ) in $mV^{max}$ | Remarks   |
| 0 to 100 mV                            | 0.003                                    | Simulated |
| 100 mV                                 | 0.0058                                   | Measured  |
| 1 V                                    | 0.031                                    | Measured  |
| 10 V                                   | 0.32                                     | Measured  |
| 100 V                                  | 4.6                                      | Measured  |
| 1000 V                                 | 54                                       | Measured  |

Service provided at customer location.

|             |      |           |
|-------------|------|-----------|
| 0 to 100 mV | 0.09 | Simulated |
| 0 to 90 mV  | 0.06 | Measured  |

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PYROMATION INC. METROLOGY LABORATORY



THERMODYNAMICS

NVLAP Code: 20/T07  
Resistance Thermometry

| Range in °C | Best Uncertainty ( $\pm$ ) <sup>1</sup> | Min. Immersion | Remarks                                       |
|-------------|-----------------------------------------|----------------|-----------------------------------------------|
| -196        | 0.03°C                                  | 12 in          | Comparison Measurement against PRT            |
| -75         | 0.03°C                                  | 12 in          | Comparison Measurement against PRT            |
| -40 to 230  | 0.04°C                                  | 6 in           | Comparison Measurement against PRT            |
| 230 to 420  | 0.04°C                                  | 18 in          | Comparison Measurement against PRT            |
| 420 to 660  | 0.45°C                                  | 18 in          | Comparison Measurement against S Thermocouple |
| -196        | 0.013°C                                 | 12 in          | Comparison Measurement against SPRT           |
| -75         | 0.014°C                                 | 12 in          | Comparison Measurement against SPRT           |
| -40 to 230  | 0.026°C                                 | 6 in           | Comparison Measurement against SPRT           |

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NVLAP Code: 20/T07  
Resistance Thermometry/Digital/Analog Temperature Indicators

| Range in °C  | Best Uncertainty ( $\pm$ ) in °C <sub>90%</sub> <sup>1</sup> | Type | Remarks   |
|--------------|--------------------------------------------------------------|------|-----------|
| -270 to 1000 | 0.06                                                         | E    | Simulated |
| -210 to 1200 | 0.07                                                         | J    | Simulated |
| -270 to 1372 | 0.08                                                         | K    | Simulated |
| -270 to 1300 | 0.12                                                         | N    | Simulated |
| -270 to 400  | 0.08                                                         | T    | Simulated |
| 0 to 1820    | 0.28                                                         | B    | Simulated |
| -50 to 1768  | 0.46                                                         | R    | Simulated |
| -50 to 1768  | 0.43                                                         | S    | Simulated |
| -270 to 1000 | 0.04                                                         | E    | Measured  |
| -210 to 1200 | 0.05                                                         | J    | Measured  |

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|                                              |      |   |                    |
|----------------------------------------------|------|---|--------------------|
| -270 to 1372                                 | 0.05 | K | Measured           |
| -270 to 1300                                 | 0.08 | N | Measured           |
| -270 to 400                                  | 0.05 | T | Measured           |
| 0 to 1820                                    | 0.04 | B | Measured           |
| -50 to 1768                                  | 0.19 | R | Measured           |
| -50 to 1768                                  | 0.11 | S | Measured           |
| <b>Service provided at customer location</b> |      |   |                    |
| -270 to 1000                                 | 2.0  | E | Measured/Simulated |
| -210 to 1200                                 | 2.2  | J | Measured/Simulated |
| -270 to 1372                                 | 2.3  | K | Measured/Simulated |
| -270 to 1300                                 | 2.6  | N | Measured/Simulated |
| -270 to 400                                  | 2.1  | T | Measured/Simulated |
| 0 to 1820                                    | 2.7  | B | Measured/Simulated |
| -50 to 1768                                  | 3.2  | R | Measured/Simulated |
| -50 to 1768                                  | 3.2  | S | Measured/Simulated |

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|                               |                                              |                       |                                               |
|-------------------------------|----------------------------------------------|-----------------------|-----------------------------------------------|
| <b>NVLAP Code: 20T08</b>      |                                              |                       |                                               |
| <b>Thermocouples - Type E</b> |                                              |                       |                                               |
| <b>Range in °C</b>            | <b>Best Uncertainty (±) °C<sub>95%</sub></b> | <b>Min. Immersion</b> | <b>Remarks</b>                                |
| -196                          | 0.11                                         | 12 in                 | Comparison Measurement against PRT            |
| -75                           | 0.07                                         | 12 in                 | Comparison Measurement against PRT            |
| -40 to 230                    | 0.07                                         | 6 in                  | Comparison Measurement against PRT            |
| 230 to 420                    | 0.07                                         | 18 in                 | Comparison Measurement against PRT            |
| 420 to 1000                   | 0.67                                         | 20 in                 | Comparison Measurement against S Thermocouple |

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| Thermocouples - Type J                        |      |       |
|-----------------------------------------------|------|-------|
| -196                                          | 0.10 | 12 in |
| -75                                           | 0.07 | 12 in |
| -40 to 230                                    | 0.08 | 6 in  |
| 230 to 420                                    | 0.08 | 18 in |
| 420 to 110                                    | 0.68 | 20 in |
| 1100 to 1200                                  | 0.90 | 20 in |
| Comparison Measurement against PRT            |      |       |
| Comparison Measurement against PRT            |      |       |
| Comparison Measurement against PRT            |      |       |
| Comparison Measurement against S Thermocouple |      |       |
| Comparison Measurement against S Thermocouple |      |       |

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| Thermocouples - Type K                        |      |       |
|-----------------------------------------------|------|-------|
| -196                                          | 0.14 | 12 in |
| -75                                           | 0.09 | 12 in |
| -40 to 230                                    | 0.08 | 6 in  |
| 230 to 420                                    | 0.08 | 18 in |
| 420 to 1100                                   | 0.68 | 20 in |
| 1100 to 1200                                  | 0.90 | 20 in |
| 1200 to 1372                                  | 1.53 | 20 in |
| Comparison Measurement against PRT            |      |       |
| Comparison Measurement against PRT            |      |       |
| Comparison Measurement against PRT            |      |       |
| Comparison Measurement against S Thermocouple |      |       |
| Comparison Measurement against S Thermocouple |      |       |
| Comparison Measurement against B Thermocouple |      |       |

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| Thermocouples - Type N |      |       |                                                  |
|------------------------|------|-------|--------------------------------------------------|
| -196                   | 0.20 | 12 in | Comparison Measurement<br>against PRT            |
| -75                    | 0.12 | 12 in | Comparison Measurement<br>against PRT            |
| -40 to 230             | 0.12 | 6 in  | Comparison Measurement<br>against PRT            |
| 230 to 420             | 0.12 | 18 in | Comparison Measurement<br>against PRT            |
| 420 to 1100            | 0.68 | 20 in | Comparison Measurement<br>against S Thermocouple |
| 1100 to 1200           | 0.91 | 20 in | Comparison Measurement<br>against Thermocouple   |
| 1200 to 1300           | 1.21 | 20 in | Comparison Measurement<br>against B Thermocouple |

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| Thermocouples - Type T |      |       |                                                  |
|------------------------|------|-------|--------------------------------------------------|
| -196                   | 0.17 | 12 in | Comparison Measurement<br>against PRT            |
| -75                    | 0.09 | 12 in | Comparison Measurement<br>against PRT            |
| -40 to 230             | 0.11 | 6 in  | Comparison Measurement<br>against PRT            |
| 230 to 420             | 0.11 | 18 in | Comparison Measurement<br>against PRT            |
| Thermocouples - Type B |      |       |                                                  |
| 200 to 420             | 1.00 | 18 in | Comparison Measurement<br>against PRT            |
| 420 to 1100            | 0.84 | 20 in | Comparison Measurement<br>against S Thermocouple |
| 1100 to 1200           | 0.92 | 20 in | Comparison Measurement<br>against S Thermocouple |
| 1200 to 1450           | 1.72 | 20 in | Comparison Measurement<br>against B Thermocouple |

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| Thermocouples - Type R |      |       |                                                  |
|------------------------|------|-------|--------------------------------------------------|
| -40 to 230             | 0.44 | 6 in  | Comparison Measurement<br>against PRT            |
| 230 to 420             | 0.44 | 18 in | Comparison Measurement<br>against PRT            |
| 420 to 1100            | 0.71 | 20 in | Comparison Measurement<br>against S Thermocouple |
| 1100 to 1200           | 0.93 | 20 in | Comparison Measurement<br>against S Thermocouple |
| 1200 to 1450           | 1.73 | 30 in | Comparison Measurement<br>against B Thermocouple |

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| Thermocouples - Type S |      |       |                                                  |
|------------------------|------|-------|--------------------------------------------------|
| -40 to 230             | 0.42 | 6 in  | Comparison Measurement<br>against PRT            |
| 230 to 420             | 0.42 | 18 in | Comparison Measurement<br>against PRT            |
| 420 to 1100            | 0.71 | 20 in | Comparison Measurement<br>against S Thermocouple |
| 1100 to 1200           | 0.93 | 20 in | Comparison Measurement<br>against S Thermocouple |
| 1200 to 1450           | 1.72 | 30 in | Comparison Measurement<br>against B Thermocouple |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .

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## CALIBRATION LABORATORIES

NVLAP LAB CODE 200505-0

## METROLOGY CONCEPTS INC., DBA TRI-STATE CALIBRATION

42280 N. Center Street  
 Antioch, IL 60002  
 Mr. Robert W. Collins  
 Phone: 847-838-1903 Fax: 847-838-2134  
 E-Mail: [torque@lnd.com](mailto:torque@lnd.com)  
 URL: <http://mail.lnd.com/tricity/>

## MECHANICAL

NVLAP Code: 20/M06

Force

## Force Measuring Instruments - General

| Range         | Best Uncertainty ( $\pm$ ) <sup>power 1,2</sup> | Remarks   |
|---------------|-------------------------------------------------|-----------|
| >0 to 800 lbf | 0.002 lbf                                       | with mass |
| >0 to 3559 N  | 0.01 N                                          | with mass |
| >0 to 363 kgf | 0.001 kgf                                       | with mass |

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## METROLOGY CONCEPTS INC., DBA TRI-STATE CALIBRATION

|                  |           |  |                                  |
|------------------|-----------|--|----------------------------------|
| Compression      |           |  |                                  |
| >0 to 800 lbf    | 0.002 lbf |  | with mass                        |
| 800 to 25000 lbf | 1.99 lbf  |  | Comparison with working standard |
| 3559 to 111206 N | 8.86 N    |  | Comparison with working standard |
| 363 to 11340 kgf | 0.90 kgf  |  | Comparison with working standard |

## Torque - Standards

| Range              | Best Uncertainty ( $\pm$ ) <sup>power 1,2</sup> | Remarks                         |
|--------------------|-------------------------------------------------|---------------------------------|
| 16 to 540 inoz     | 0.004 inoz                                      | Force applied to 4 in. lever    |
| 1 to 21 inlb       | 0.0003 inlb                                     | Force applied to 4 in. lever    |
| 41 to 594 inlb     | 0.03 inlb                                       | Force applied to 12 in. lever   |
| 5 to 50 ftlb       | 0.002 ftlb                                      | Force applied to 12 in. lever   |
| 595 to 3600 inlb   | 0.15 inlb                                       | Force applied to 12 in. lever   |
| 50 to 300 ftlb     | 0.01 ftlb                                       | Force applied to 12 in. lever   |
| 166 to 2000 ftlb   | 0.03 ftlb                                       | Force applied to 3.33 ft. lever |
| 1992 to 24000 inlb | 0.04 inlb                                       | Force applied to 3.33 ft. lever |

March 31, 2002

David F. Alderman

Effective through

For the National Institute of Standards and Technology


  
 National Institute  
 of Standards and Technology

National Voluntary  
 Laboratory Accreditation Program


  
 DEPARTMENT OF COMMERCE  
 UNITED STATES OF AMERICA

**Scope of Accreditation**

ISO/IEC GUIDE 25:1990  
 ANSI/ISO 2540-1:1994  
 ISO 9002:1987

Revised 10/25/2001

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CALIBRATION LABORATORIES

NVLAP LAB CODE 200505-0

METROLOGY CONCEPTS INC., DBA TRI-STATE CALIBRATION

|                     |             |                                        |
|---------------------|-------------|----------------------------------------|
| 11.3 to 451.9 Ncm   | 0.01 Ncm    | Force applied to 4 in. lever           |
| 4.6 to 67.1 Nm      | 0.003 Nm    | Force applied to 12 in. lever          |
| 69.1 to 691.0 kgfcm | 0.03 kgfcm  | Force applied to 12 in. lever          |
| 67.2 to 406.7 Nm    | 0.02 Nm     | Force applied to 12 in. lever          |
| 692 to 4147.6 kgfcm | 0.2 kgfcm   | Force applied to 12 in. lever          |
| 225 to 2712 Nm      | 0.04 Nm     | Force applied to 3.33 ft. lever        |
| 23 to 276.5 kgfcm   | 0.004 kgfcm | Force applied to 3.33 ft. lever        |
| Torque - General    |             |                                        |
| 0.5 to 2.5 inoz     | 0.003 inoz  | Comparison to analog transfer standard |
| 2 to 10.0 inoz      | 0.0002 inoz | Comparison to analog transfer standard |
| 6 to 43 inoz        | 0.0002 inoz | Comparison to analog transfer standard |
| 30 to 215 inoz      | 0.002 inoz  | Comparison to analog transfer standard |
| 36 to 170 gncm      | 0.2 gncm    | Comparison to analog transfer standard |
| 150 to 700 gncm     | 0.01 gncm   | Comparison to analog transfer standard |
| 600 to 3000 gncm    | 0.02 gncm   | Comparison to analog transfer standard |
| 3000 to 15000 gncm  | 0.1 gncm    | Comparison to analog transfer standard |

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 DEPARTMENT OF COMMERCE  
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 ISO 9002:1987

Revised 10/25/2001

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CALIBRATION LABORATORIES

NVLAP LAB CODE 200505-0

METROLOGY CONCEPTS INC., DBA TRI-STATE CALIBRATION

|                       |            |                                        |
|-----------------------|------------|----------------------------------------|
| 1 to 2 flb            | 0.003 flb  | Comparison to digital working standard |
| 2 to 10 flb           | 0.01 flb   | Comparison to digital working standard |
| 12 to 24 inlb         | 0.04 inlb  | Comparison to digital working standard |
| 24 to 120 inlb        | 0.1 inlb   | Comparison to digital working standard |
| 192 to 384 inoz       | 0.6 inoz   | Comparison to digital working standard |
| 384 to 1920 inoz      | 1 inoz     | Comparison to digital working standard |
| 13.8 to 27.7 kgfcm    | 0.04 kgfcm | Comparison to digital working standard |
| 27.7 to 138.3 kgfcm   | 0.10 kgfcm | Comparison to digital working standard |
| 1.4 to 2.7 Nm         | 0.004 Nm   | Comparison to digital working standard |
| 2.7 to 136 Nm         | 0.01 Nm    | Comparison to digital working standard |
| 5 to 20 flb           | 0.02 flb   | Comparison to digital working standard |
| 20 to 100 flb         | 0.1 flb    | Comparison to digital working standard |
| 60 to 240 inlb        | 0.3 inlb   | Comparison to digital working standard |
| 240 to 1200 inlb      | 0.8 inlb   | Comparison to digital working standard |
| 960 to 3840 inlb      | 5 inlb     | Comparison to digital working standard |
| 3840 to 19200 inlb    | 13 inlb    | Comparison to digital working standard |
| 69.1 to 276.5 kgfcm   | 0.3 kgfcm  | Comparison to digital working standard |
| 276.5 to 1382.5 kgfcm | 0.9 kgfcm  | Comparison to digital working standard |

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|                     |            |                                        |
|---------------------|------------|----------------------------------------|
| 6.8 to 27.1 Nm      | 0.03 Nm    | Comparison to digital working standard |
| 27.1 to 135.6 Nm    | 0.1 Nm     | Comparison to digital working standard |
| 100 to 400 ftlb     | 0.3 ftlb   | Comparison to digital working standard |
| 400 to 2000 ftlb    | 1.4 ftlb   | Comparison to digital working standard |
| 1200 to 4800 inlb   | 4 inlb     | Comparison to digital working standard |
| 4800 to 24000 inlb  | 17 inlb    | Comparison to digital working standard |
| 13.8 to 55.3 kgfcm  | 0.04 kgfcm | Comparison to digital working standard |
| 55.3 to 276.5 kgfcm | 0.2 kgfcm  | Comparison to digital working standard |
| 135.6 to 542.3 Nm   | 0.4 Nm     | Comparison to digital working standard |
| 542.3 to 2711.6 Nm  | 1.9 Nm     | Comparison to digital working standard |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .
2. Represents uncertainty at full scale.
3. Represents uncertainty of reading.

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ISO 9002:1994

**Scope of Accreditation**

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UNITED STATES OF AMERICA

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CALIBRATION LABORATORIES

NVLAP LAB CODE 200512-0

MARLIN MANUFACTURING CORPORATION

12404 Triskett Road  
P.O. Box 118000  
Cleveland, OH 44111-8000  
Ms. Terry L. Halfacre  
Phone: 216-941-6200 x266 fax: 216-941-6207  
E-Mail: marlinmfg@marlinmfg.com  
URL: http://marlinmfg.com

DC/LOW FREQUENCY

NVLAP Code: 20/E06

DC Voltage

| Range       | Best Uncertainty ( $\pm$ ) % of reading <sup>max</sup> | Comments    |
|-------------|--------------------------------------------------------|-------------|
| 0 to 100 mV | 0.005                                                  | Fluke 5700A |

THERMODYNAMICS

NVLAP Code: 20/T08

Thermocouples - Type B

| Range in °C  | Best Uncertainty ( $\pm$ ) °C <sup>max</sup> | Remarks                         |
|--------------|----------------------------------------------|---------------------------------|
| 800 to 1100  | 0.8                                          | Comparison to Type B            |
| 1100 to 1450 | 1.7                                          | Platinum reference thermocouple |

December 31, 2002

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## Scope of Accreditation

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NVLAP LAB CODE 200512-0

CALIBRATION LABORATORIES

MARLIN MANUFACTURING CORPORATION

|                                   |     |                                                            |
|-----------------------------------|-----|------------------------------------------------------------|
| Thermocouples - Type E            |     |                                                            |
| -100 to 300                       | 0.4 | Comparison to Type T<br>reference thermocouple             |
| 0 to 900                          | 0.5 | Comparison to Type S<br>reference thermocouple             |
| Thermocouples - Type J            |     |                                                            |
| 0 to 300                          | 0.4 | Comparison to Type T<br>reference thermocouple             |
| 0 to 750                          | 0.5 | Comparison to Type S<br>Platinum reference<br>thermocouple |
| Thermocouples - Type K and Type N |     |                                                            |
| -100 to 300                       | 0.4 | Comparison to Type T<br>reference thermocouple             |
| 0 to 1100                         | 0.5 | Comparison to Type S<br>Platinum reference<br>thermocouple |
| 1100 to 1250                      | 1.6 | Comparison to Type S<br>Platinum reference<br>thermocouple |

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## Scope of Accreditation

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NVLAP LAB CODE 200512-0

CALIBRATION LABORATORIES

MARLIN MANUFACTURING CORPORATION

|                                   |     |                                                |
|-----------------------------------|-----|------------------------------------------------|
| Thermocouples - Type R and Type S |     |                                                |
| 0 to 1100                         | 0.5 | Comparison to Type S                           |
| 1100 to 1450                      | 1.6 | Platinum reference<br>thermocouple             |
| Thermocouples - Type T            |     |                                                |
| -100 to 300                       | 0.4 | Comparison to Type T<br>reference thermocouple |

1. Represents an expanded uncertainty using a coverage factor,  $k=2$ .

December 31, 2002

*David F. Alderman*

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**INDEX**

**F**

**LISTING OF  
CHEMICAL  
CALIBRATION  
LABORATORIES  
BY NVLAP  
LAB CODE**





**INDEX F. LISTING OF CHEMICAL CALIBRATION LABORATORIES BY NVLAP LAB CODE****NVLAP LAB CODE 200384-0****Analytical Products Group, Inc.**

2730 Washington Boulevard  
Belpre, OH 45714-1943  
Contact: Mr. Thomas V. Coyner  
Phone: 740-423-4200  
Fax: 740-423-5588  
E-Mail: t.coyner@apgqa.com  
URL: <http://www.APGQA.com>

**Providers of Proficiency Testing**

Accreditation Valid Through: September 30, 2002

**NVLAP**

| Code | Designation |
|------|-------------|
|------|-------------|

**USEPA WPCHEM**

|        |                                                         |
|--------|---------------------------------------------------------|
| 20/U29 | Minerals: Calcium, Magnesium, Potassium, and Sodium     |
| 20/U30 | Minerals: Chloride, Fluoride, and Sulfate               |
| 20/U34 | Volatile Halocarbon Compounds                           |
| 20/U35 | Volatile Aromatic Compounds                             |
| 20/U36 | Chlorinated Pesticides                                  |
| 20/U37 | Chlordane                                               |
| 20/U38 | Polychlorinated Biphenyls (PCBs) (as Aroclors) in Water |
| 20/U39 | Polychlorinated Biphenyls (PCBs) (as Aroclors) in Oil   |
| 20/U42 | Total Alkalinity (as CaCO subscript 3)                  |
| 20/U43 | Total Hardness (as CaCO subscript 3)                    |
| 20/U44 | Total Dissolved Solids                                  |
| 20/U48 | Specific Conductance                                    |

**USEPA WPCHEM/DMRQACHEM**

|        |                                             |
|--------|---------------------------------------------|
| 20/U28 | Trace Metals                                |
| 20/U31 | Nutrients                                   |
| 20/U32 | Total Residual Chlorine                     |
| 20/U33 | Cyanide                                     |
| 20/U40 | Total Phenolics                             |
| 20/U41 | Demands (Source: Glucose and glutamic acid) |
| 20/U45 | Non-Filterable Residue                      |
| 20/U46 | Oil and Grease                              |
| 20/U47 | pH                                          |

**USEPA WSCHEM**

|        |                                                |
|--------|------------------------------------------------|
| 20/U01 | Trace Metals                                   |
| 20/U02 | Sodium                                         |
| 20/U03 | Nitrate, Nitrite, Fluoride, and Orthophosphate |
| 20/U04 | Bromate, Bromide, Chlorate, and Chlorite       |
| 20/U05 | Sulfate                                        |
| 20/U06 | Residual Free Chlorine                         |
| 20/U07 | Cyanide                                        |
| 20/U09 | Volatile Organic Compounds (VOCs) Group I      |
| 20/U10 | Volatile Organic Compounds (VOCs) Group II     |
| 20/U11 | Insecticides (Pesticides)                      |
| 20/U12 | Herbicides (Pesticides)                        |
| 20/U13 | Carbamate Pesticides                           |
| 20/U14 | Polycyclic Aromatic Hydrocarbon (PAH)          |
| 20/U15 | Polychlorinated Biphenyls (PCBs/Aroclors)      |
| 20/U16 | Toxaphene and Chlordane                        |
| 20/U18 | Adipate and Phthalate Esters                   |
| 20/U19 | Haloacetic Acids                               |
| 20/U20 | Chloral Hydrate                                |
| 20/U21 | Total Organic Carbon (TOC)                     |

|        |                                        |
|--------|----------------------------------------|
| 20/U22 | Alkalinity (as CaCO subscript 3)       |
| 20/U23 | Calcium Hardness (as CaCO subscript 3) |
| 20/U24 | Total Filterable Residue               |
| 20/U25 | pH                                     |
| 20/U26 | Turbidity                              |

**NVLAP LAB CODE 200386-0****Environmental Resource Associates (ERA)**

5540 Marshall Street  
Arvada, CO 80002  
Contact: Mr. Curtis Wood  
Phone: 303-431-8454  
Fax: 303-421-0159  
E-Mail: cwood@eraqc.com  
URL: <http://www.eraqc.com>

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| Code | Designation |
|------|-------------|
|------|-------------|

|        |                                                |
|--------|------------------------------------------------|
| 20/U49 | Gamma Emitters in Water                        |
| 20/U50 | Iodine-131 in Water                            |
| 20/U51 | Gross Alpha and Gross Beta Activities in Water |
| 20/U52 | Tritium in Water                               |
| 20/U53 | Uranium-Radium in Water                        |
| 20/U54 | Strontium in Water                             |
| 20/U55 | Mixed Alpha, Beta, Gamma Emitters              |

**USEPA WPCHEM**

|        |                                                         |
|--------|---------------------------------------------------------|
| 20/U29 | Minerals: Calcium, Magnesium, Potassium, and Sodium     |
| 20/U30 | Minerals: Chloride, Fluoride, and Sulfate               |
| 20/U34 | Volatile Halocarbon Compounds                           |
| 20/U35 | Volatile Aromatic Compounds                             |
| 20/U36 | Chlorinated Pesticides                                  |
| 20/U37 | Chlordane                                               |
| 20/U38 | Polychlorinated Biphenyls (PCBs) (as Aroclors) in Water |
| 20/U39 | Polychlorinated Biphenyls (PCBs) (as Aroclors) in Oil   |
| 20/U42 | Total Alkalinity (as CaCO subscript 3)                  |
| 20/U43 | Total Hardness (as CaCO subscript 3)                    |
| 20/U44 | Total Dissolved Solids                                  |
| 20/U48 | Specific Conductance                                    |

**USEPA WPCHEM/DMRQACHEM**

|        |                                             |
|--------|---------------------------------------------|
| 20/U28 | Trace Metals                                |
| 20/U31 | Nutrients                                   |
| 20/U32 | Total Residual Chlorine                     |
| 20/U33 | Cyanide                                     |
| 20/U40 | Total Phenolics                             |
| 20/U41 | Demands (Source: Glucose and glutamic acid) |
| 20/U45 | Non-Filterable Residue                      |
| 20/U46 | Oil and Grease                              |
| 20/U47 | pH                                          |

**USEPA WSCHEM**

|        |                                                |
|--------|------------------------------------------------|
| 20/U01 | Trace Metals                                   |
| 20/U02 | Sodium                                         |
| 20/U03 | Nitrate, Nitrite, Fluoride, and Orthophosphate |
| 20/U04 | Bromate, Bromide, Chlorate, and Chlorite       |
| 20/U05 | Sulfate                                        |
| 20/U06 | Residual Free Chlorine                         |

**INDEX F. LISTING OF CHEMICAL CALIBRATION LABORATORIES BY NVLAP LAB CODE- continued**

|        |                                            |
|--------|--------------------------------------------|
| 20/U07 | Cyanide                                    |
| 20/U09 | Volatile Organic Compounds (VOCs) Group I  |
| 20/U10 | Volatile Organic Compounds (VOCs) Group II |
| 20/U11 | Insecticides (Pesticides)                  |
| 20/U12 | Herbicides (Pesticides)                    |
| 20/U13 | Carbamate Pesticides                       |
| 20/U14 | Polycyclic Aromatic Hydrocarbon (PAH)      |
| 20/U15 | Polychlorinated Biphenyls (PCBs/Aroclors)  |
| 20/U16 | Toxaphene and Chlordane                    |
| 20/U18 | Adipate and Phthalate Esters               |
| 20/U19 | Haloacetic Acids                           |
| 20/U20 | Chloral Hydrate                            |
| 20/U21 | Total Organic Carbon (TOC)                 |
| 20/U22 | Alkalinity (as CaCO subscript 3)           |
| 20/U23 | Calcium Hardness (as CaCO subscript 3)     |
| 20/U24 | Total Filterable Residue                   |
| 20/U25 | pH                                         |
| 20/U26 | Turbidity                                  |

**USEPA WSMICRO**

|        |                             |
|--------|-----------------------------|
| 20/U27 | Coliform (Presence/Absence) |
|--------|-----------------------------|

**NVLAP LAB CODE 200387-0****NYS DOH Environmental Laboratory Approval Program**

Empire State Plaza  
P.O. Box 509  
Albany, NY 12201-0509  
Contact: Dr. Kenneth W. Jackson  
Phone: 518-485-5570  
Fax: 518-485-5568  
E-Mail: [jackson@wadsworth.org](mailto:jackson@wadsworth.org)  
URL: <http://www.wadsworth.org/labcert/elap.html>

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|------|-------------|

**USEPA WPCHEM**

|        |                                                         |
|--------|---------------------------------------------------------|
| 20/U29 | Minerals: Calcium, Magnesium, Potassium, and Sodium     |
| 20/U30 | Minerals: Chloride, Fluoride, and Sulfate               |
| 20/U34 | Volatile Halocarbon Compounds                           |
| 20/U35 | Volatile Aromatic Compounds                             |
| 20/U36 | Chlorinated Pesticides                                  |
| 20/U37 | Chlordane                                               |
| 20/U38 | Polychlorinated Biphenyls (PCBs) (as Aroclors) in Water |
| 20/U42 | Total Alkalinity (as CaCO subscript 3)                  |
| 20/U43 | Total Hardness (as CaCO subscript 3)                    |
| 20/U44 | Total Dissolved Solids                                  |
| 20/U48 | Specific Conductance                                    |

**USEPA WPCHEM/DMRQACHEM**

|        |                                             |
|--------|---------------------------------------------|
| 20/U28 | Trace Metals                                |
| 20/U31 | Nutrients                                   |
| 20/U33 | Cyanide                                     |
| 20/U40 | Total Phenolics                             |
| 20/U41 | Demands (Source: Glucose and glutamic acid) |
| 20/U45 | Non-Filterable Residue                      |
| 20/U46 | Oil and Grease                              |
| 20/U47 | pH                                          |

**USEPA WSCHEM**

|        |                                                |
|--------|------------------------------------------------|
| 20/U01 | Trace Metals                                   |
| 20/U02 | Sodium                                         |
| 20/U03 | Nitrate, Nitrite, Fluoride, and Orthophosphate |
| 20/U04 | Bromate, Bromide, Chlorate, and Chlorite       |
| 20/U05 | Sulfate                                        |
| 20/U07 | Cyanide                                        |
| 20/U08 | Asbestos                                       |
| 20/U09 | Volatile Organic Compounds (VOCs) Group I      |
| 20/U10 | Volatile Organic Compounds (VOCs) Group II     |
| 20/U11 | Insecticides (Pesticides)                      |
| 20/U12 | Herbicides (Pesticides)                        |
| 20/U13 | Carbamate Pesticides                           |
| 20/U14 | Polycyclic Aromatic Hydrocarbon (PAH)          |
| 20/U15 | Polychlorinated Biphenyls (PCBs/Aroclors)      |
| 20/U16 | Toxaphene and Chlordane                        |
| 20/U17 | Dioxin (2, 3, 7, 8-TCDD)                       |
| 20/U18 | Adipate and Phthalate Esters                   |
| 20/U21 | Total Organic Carbon (TOC)                     |
| 20/U22 | Alkalinity (as CaCO subscript 3)               |
| 20/U23 | Calcium Hardness (as CaCO subscript 3)         |
| 20/U24 | Total Filterable Residue                       |
| 20/U25 | pH                                             |

**USEPA WSMICRO**

|        |                             |
|--------|-----------------------------|
| 20/U27 | Coliform (Presence/Absence) |
|--------|-----------------------------|

**NVLAP LAB CODE 200388-0****Chrisope Technologies, A Division of Remel**

3941 Ryan Street  
Lake Charles, LA 70605  
Contact: Ms. Theresa Stokeld  
Phone: 800-256-4376 x203  
Fax: 337-479-1006  
E-Mail: [tstokeld@remelinc.com](mailto:tstokeld@remelinc.com)

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**USEPA WSMICRO**

|        |                             |
|--------|-----------------------------|
| 20/U27 | Coliform (Presence/Absence) |
|--------|-----------------------------|

**NVLAP LAB CODE 200389-0****AccuStandard, Inc.**

125 Market Street  
New Haven, CT 06513-3031  
Contact: Mr. William McClain  
Phone: 203-786-5290 x102  
Fax: 203-786-5287  
E-Mail: [usa@accustandard.com](mailto:usa@accustandard.com)  
URL: <http://www.accustandard.com>

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**USEPA WPCHEM**

|        |                                                     |
|--------|-----------------------------------------------------|
| 20/U29 | Minerals: Calcium, Magnesium, Potassium, and Sodium |
| 20/U30 | Minerals: Chloride, Fluoride, and Sulfate           |
| 20/U34 | Volatile Halocarbon Compounds                       |

**INDEX F. LISTING OF CHEMICAL CALIBRATION LABORATORIES BY NVLAP LAB CODE- continued**

|                               |                                                         |
|-------------------------------|---------------------------------------------------------|
| 20/U35                        | Volatile Aromatic Compounds                             |
| 20/U36                        | Chlorinated Pesticides                                  |
| 20/U37                        | Chlordane                                               |
| 20/U38                        | Polychlorinated Biphenyls (PCBs) (as Aroclors) in Water |
| 20/U39                        | Polychlorinated Biphenyls (PCBs) (as Aroclors) in Oil   |
| 20/U42                        | Total Alkalinity (as CaCO subscript 3)                  |
| 20/U43                        | Total Hardness (as CaCO subscript 3)                    |
| 20/U44                        | Total Dissolved Solids                                  |
| 20/U48                        | Specific Conductance                                    |
| <b>USEPA WPCHEM/DMRQACHEM</b> |                                                         |
| 20/U28                        | Trace Metals                                            |
| 20/U31                        | Nutrients                                               |
| 20/U32                        | Total Residual Chlorine                                 |
| 20/U33                        | Cyanide                                                 |
| 20/U40                        | Total Phenolics                                         |
| 20/U41                        | Demands (Source: Glucose and glutamic acid)             |
| 20/U45                        | Non-Filterable Residue                                  |
| 20/U46                        | Oil and Grease                                          |
| 20/U47                        | pH                                                      |
| <b>USEPA WSCHEM</b>           |                                                         |
| 20/U01                        | Trace Metals                                            |
| 20/U02                        | Sodium                                                  |
| 20/U03                        | Nitrate, Nitrite, Fluoride, and Orthophosphate          |
| 20/U04                        | Bromate, Bromide, Chlorate, and Chlorite                |
| 20/U05                        | Sulfate                                                 |
| 20/U06                        | Residual Free Chlorine                                  |
| 20/U07                        | Cyanide                                                 |
| 20/U09                        | Volatile Organic Compounds (VOCs) Group I               |
| 20/U10                        | Volatile Organic Compounds (VOCs) Group II              |
| 20/U11                        | Insecticides (Pesticides)                               |
| 20/U12                        | Herbicides (Pesticides)                                 |
| 20/U13                        | Carbamate Pesticides                                    |
| 20/U14                        | Polycyclic Aromatic Hydrocarbon (PAH)                   |
| 20/U15                        | Polychlorinated Biphenyls (PCBs/Aroclors)               |
| 20/U16                        | Toxaphene and Chlordane                                 |
| 20/U17                        | Dioxin (2, 3, 7, 8-TCDD)                                |
| 20/U18                        | Adipate and Phthalate Esters                            |
| 20/U19                        | Haloacetic Acids                                        |
| 20/U20                        | Chloral Hydrate                                         |
| 20/U21                        | Total Organic Carbon (TOC)                              |
| 20/U22                        | Alkalinity (as CaCO subscript 3)                        |
| 20/U23                        | Calcium Hardness (as CaCO subscript 3)                  |
| 20/U24                        | Total Filterable Residue                                |
| 20/U25                        | pH                                                      |
| 20/U26                        | Turbidity                                               |

**NVLAP LAB CODE 200390-0****Absolute Standards, Inc.**

P.O. Box 5585  
Hamden, CT 06518-0585  
Contact: Mr. Stephen J. Arpie, M.S.  
Phone: 203-281-2917  
Fax: 203-281-2922  
E-Mail: absolutest@aol.com  
URL: <http://www.absoluteststandards.com>

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**USEPA WPCHEM**

|        |                                                         |
|--------|---------------------------------------------------------|
| 20/U29 | Minerals: Calcium, Magnesium, Potassium, and Sodium     |
| 20/U30 | Minerals: Chloride, Fluoride, and Sulfate               |
| 20/U34 | Volatile Halocarbon Compounds                           |
| 20/U35 | Volatile Aromatic Compounds                             |
| 20/U36 | Chlorinated Pesticides                                  |
| 20/U37 | Chlordane                                               |
| 20/U38 | Polychlorinated Biphenyls (PCBs) (as Aroclors) in Water |
| 20/U39 | Polychlorinated Biphenyls (PCBs) (as Aroclors) in Oil   |
| 20/U42 | Total Alkalinity (as CaCO subscript 3)                  |
| 20/U43 | Total Hardness (as CaCO subscript 3)                    |
| 20/U44 | Total Dissolved Solids                                  |
| 20/U48 | Specific Conductance                                    |

**USEPA WPCHEM/DMRQACHEM**

|        |                                             |
|--------|---------------------------------------------|
| 20/U28 | Trace Metals                                |
| 20/U31 | Nutrients                                   |
| 20/U32 | Total Residual Chlorine                     |
| 20/U33 | Cyanide                                     |
| 20/U40 | Total Phenolics                             |
| 20/U41 | Demands (Source: Glucose and glutamic acid) |
| 20/U45 | Non-Filterable Residue                      |
| 20/U46 | Oil and Grease                              |
| 20/U47 | pH                                          |

**USEPA WSCHEM**

|        |                                                |
|--------|------------------------------------------------|
| 20/U01 | Trace Metals                                   |
| 20/U02 | Sodium                                         |
| 20/U03 | Nitrate, Nitrite, Fluoride, and Orthophosphate |
| 20/U04 | Bromate, Bromide, Chlorate, and Chlorite       |
| 20/U05 | Sulfate                                        |
| 20/U06 | Residual Free Chlorine                         |
| 20/U07 | Cyanide                                        |
| 20/U09 | Volatile Organic Compounds (VOCs) Group I      |
| 20/U10 | Volatile Organic Compounds (VOCs) Group II     |
| 20/U11 | Insecticides (Pesticides)                      |
| 20/U12 | Herbicides (Pesticides)                        |
| 20/U13 | Carbamate Pesticides                           |
| 20/U14 | Polycyclic Aromatic Hydrocarbon (PAH)          |
| 20/U15 | Polychlorinated Biphenyls (PCBs/Aroclors)      |
| 20/U16 | Toxaphene and Chlordane                        |
| 20/U18 | Adipate and Phthalate Esters                   |
| 20/U19 | Haloacetic Acids                               |
| 20/U20 | Chloral Hydrate                                |
| 20/U21 | Total Organic Carbon (TOC)                     |



**INDEX F. LISTING OF CHEMICAL CALIBRATION LABORATORIES BY NVLAP LAB CODE- continued**

|        |                                        |
|--------|----------------------------------------|
| 20/U22 | Alkalinity (as CaCO subscript 3)       |
| 20/U23 | Calcium Hardness (as CaCO subscript 3) |
| 20/U24 | Total Filterable Residue               |
| 20/U25 | pH                                     |
| 20/U26 | Turbidity                              |

**NVLAP LAB CODE 200391-0****Microcheck, Inc.**

142 Gould Road  
Northfield, VT 05663  
Contact: Dr. Michael G. Sinclair  
Phone: 802-485-6600 X22  
Fax: 802-485-6100  
E-Mail: [mike@microcheck.com](mailto:mike@microcheck.com)  
URL: <http://www.microcheck.com>

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**USEPA WSMICRO**

|        |                             |
|--------|-----------------------------|
| 20/U27 | Coliform (Presence/Absence) |
|--------|-----------------------------|

**NVLAP LAB CODE 200392-0****Spex Certiprep Inc.**

203 Norcross Avenue  
Metuchen, NJ 08840  
Contact: Dr. Vanaja Sivakumar  
Phone: 732-549-7144 x418  
Fax: 732-494-1747  
E-Mail: [vsivakumar@spexcsp.com](mailto:vsivakumar@spexcsp.com)

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**USEPA WPCHEM**

|        |                                                     |
|--------|-----------------------------------------------------|
| 20/U29 | Minerals: Calcium, Magnesium, Potassium, and Sodium |
| 20/U30 | Minerals: Chloride, Fluoride, and Sulfate           |
| 20/U42 | Total Alkalinity (as CaCO subscript 3)              |
| 20/U43 | Total Hardness (as CaCO subscript 3)                |
| 20/U44 | Total Dissolved Solids                              |
| 20/U48 | Specific Conductance                                |

**USEPA WPCHEM/DMRQACHEM**

|        |                                             |
|--------|---------------------------------------------|
| 20/U28 | Trace Metals                                |
| 20/U31 | Nutrients                                   |
| 20/U32 | Total Residual Chlorine                     |
| 20/U33 | Cyanide                                     |
| 20/U40 | Total Phenolics                             |
| 20/U41 | Demands (Source: Glucose and glutamic acid) |
| 20/U45 | Non-Filterable Residue                      |
| 20/U46 | Oil and Grease                              |
| 20/U47 | pH                                          |

**USEPA WSCHEM**

|        |                                                |
|--------|------------------------------------------------|
| 20/U01 | Trace Metals                                   |
| 20/U02 | Sodium                                         |
| 20/U03 | Nitrate, Nitrite, Fluoride, and Orthophosphate |
| 20/U04 | Bromate, Bromide, Chlorate, and Chlorite       |
| 20/U05 | Sulfate                                        |
| 20/U06 | Residual Free Chlorine                         |

|        |                                        |
|--------|----------------------------------------|
| 20/U07 | Cyanide                                |
| 20/U21 | Total Organic Carbon (TOC)             |
| 20/U22 | Alkalinity (as CaCO subscript 3)       |
| 20/U23 | Calcium Hardness (as CaCO subscript 3) |
| 20/U24 | Total Filterable Residue               |
| 20/U25 | pH                                     |
| 20/U26 | Turbidity                              |

**NVLAP LAB CODE 200393-0****Resource Technology Corporation (RTC)**

2931 Soldier Springs Road  
P.O. Box 1346  
Laramie, WY 82070  
Contact: Mr. Robert D. Rucinski  
Phone: 307-742-5452  
Fax: 307-745-7936  
E-Mail: [RRucinski@RT-Corp.com](mailto:RRucinski@RT-Corp.com)  
URL: <http://www.rt-corp.com>

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| Code | Designation |
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|------|-------------|

**USEPA WPCHEM**

|        |                                                     |
|--------|-----------------------------------------------------|
| 20/U29 | Minerals: Calcium, Magnesium, Potassium, and Sodium |
| 20/U30 | Minerals: Chloride, Fluoride, and Sulfate           |
| 20/U42 | Total Alkalinity (as CaCO subscript 3)              |
| 20/U43 | Total Hardness (as CaCO subscript 3)                |
| 20/U44 | Total Dissolved Solids                              |
| 20/U48 | Specific Conductance                                |

**USEPA WPCHEM/DMRQACHEM**

|        |                                             |
|--------|---------------------------------------------|
| 20/U28 | Trace Metals                                |
| 20/U31 | Nutrients                                   |
| 20/U32 | Total Residual Chlorine                     |
| 20/U33 | Cyanide                                     |
| 20/U40 | Total Phenolics                             |
| 20/U41 | Demands (Source: Glucose and glutamic acid) |
| 20/U45 | Non-Filterable Residue                      |
| 20/U46 | Oil and Grease                              |
| 20/U47 | pH                                          |

**USEPA WSCHEM**

|        |                                                |
|--------|------------------------------------------------|
| 20/U01 | Trace Metals                                   |
| 20/U02 | Sodium                                         |
| 20/U03 | Nitrate, Nitrite, Fluoride, and Orthophosphate |
| 20/U04 | Bromate, Bromide, Chlorate, and Chlorite       |
| 20/U05 | Sulfate                                        |
| 20/U06 | Residual Free Chlorine                         |
| 20/U07 | Cyanide                                        |
| 20/U21 | Total Organic Carbon (TOC)                     |
| 20/U22 | Alkalinity (as CaCO subscript 3)               |
| 20/U23 | Calcium Hardness (as CaCO subscript 3)         |
| 20/U24 | Total Filterable Residue                       |
| 20/U25 | pH                                             |
| 20/U26 | Turbidity                                      |

**NVLAP LAB CODE 200395-0**
**Protocol Analytical Supplies, Inc.**

472 Lincoln Blvd.  
Middlesex, NJ 08846  
Contact: Mr. William H. Hahn, Jr.  
Phone: 732-627-0500  
Fax: 732-627-0979  
E-Mail: bhahn@prostds.com  
URL: http://prostds.com

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**USEPA WPCHEM**

|        |                                                         |
|--------|---------------------------------------------------------|
| 20/U34 | Volatile Halocarbon Compounds                           |
| 20/U35 | Volatile Aromatic Compounds                             |
| 20/U36 | Chlorinated Pesticides                                  |
| 20/U37 | Chlordane                                               |
| 20/U38 | Polychlorinated Biphenyls (PCBs) (as Aroclors) in Water |
| 20/U39 | Polychlorinated Biphenyls (PCBs) (as Aroclors) in Oil   |

**USEPA WSCHEM**

|        |                                            |
|--------|--------------------------------------------|
| 20/U09 | Volatile Organic Compounds (VOCs) Group I  |
| 20/U10 | Volatile Organic Compounds (VOCs) Group II |
| 20/U11 | Insecticides (Pesticides)                  |
| 20/U12 | Herbicides (Pesticides)                    |
| 20/U14 | Polycyclic Aromatic Hydrocarbon (PAH)      |
| 20/U15 | Polychlorinated Biphenyls (PCBs/Aroclors)  |
| 20/U16 | Toxaphene and Chlordane                    |

**NVLAP LAB CODE 200440-0**
**NSI Solutions, Inc.**

7517 Precision Dr., #101  
Raleigh, NC 27617  
Contact: Mr. Mark R. Hammersla  
Phone: 919-957-9672  
Fax: 919-957-7562  
E-Mail: mhammersla@nsi-es.com  
URL: http://www.nsi-es.com

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| Code | Designation |
|------|-------------|
|------|-------------|

**USEPA WPCHEM**

|        |                                                         |
|--------|---------------------------------------------------------|
| 20/U29 | Minerals: Calcium, Magnesium, Potassium, and Sodium     |
| 20/U30 | Minerals: Chloride, Fluoride, and Sulfate               |
| 20/U34 | Volatile Halocarbon Compounds                           |
| 20/U35 | Volatile Aromatic Compounds                             |
| 20/U36 | Chlorinated Pesticides                                  |
| 20/U37 | Chlordane                                               |
| 20/U38 | Polychlorinated Biphenyls (PCBs) (as Aroclors) in Water |
| 20/U39 | Polychlorinated Biphenyls (PCBs) (as Aroclors) in Oil   |
| 20/U42 | Total Alkalinity (as CaCO subscript 3)                  |
| 20/U43 | Total Hardness (as CaCO subscript 3)                    |

|                               |                                                |
|-------------------------------|------------------------------------------------|
| 20/U44                        | Total Dissolved Solids                         |
| 20/U48                        | Specific Conductance                           |
| <b>USEPA WPCHEM/DMRQACHEM</b> |                                                |
| 20/U28                        | Trace Metals                                   |
| 20/U31                        | Nutrients                                      |
| 20/U32                        | Total Residual Chlorine                        |
| 20/U33                        | Cyanide                                        |
| 20/U40                        | Total Phenolics                                |
| 20/U41                        | Demands (Source: Glucose and glutamic acid)    |
| 20/U45                        | Non-Filterable Residue                         |
| 20/U46                        | Oil and Grease                                 |
| 20/U47                        | pH                                             |
| <b>USEPA WSCHEM</b>           |                                                |
| 20/U01                        | Trace Metals                                   |
| 20/U02                        | Sodium                                         |
| 20/U03                        | Nitrate, Nitrite, Fluoride, and Orthophosphate |
| 20/U04                        | Bromate, Bromide, Chlorate, and Chlorite       |
| 20/U05                        | Sulfate                                        |
| 20/U06                        | Residual Free Chlorine                         |
| 20/U07                        | Cyanide                                        |
| 20/U09                        | Volatile Organic Compounds (VOCs) Group I      |
| 20/U10                        | Volatile Organic Compounds (VOCs) Group II     |
| 20/U11                        | Insecticides (Pesticides)                      |
| 20/U12                        | Herbicides (Pesticides)                        |
| 20/U13                        | Carbamate Pesticides                           |
| 20/U14                        | Polycyclic Aromatic Hydrocarbon (PAH)          |
| 20/U15                        | Polychlorinated Biphenyls (PCBs/Aroclors)      |
| 20/U16                        | Toxaphene and Chlordane                        |
| 20/U18                        | Adipate and Phthalate Esters                   |
| 20/U19                        | Haloacetic Acids                               |
| 20/U20                        | Chloral Hydrate                                |
| 20/U21                        | Total Organic Carbon (TOC)                     |
| 20/U22                        | Alkalinity (as CaCO subscript 3)               |
| 20/U23                        | Calcium Hardness (as CaCO subscript 3)         |
| 20/U24                        | Total Filterable Residue                       |
| 20/U25                        | pH                                             |
| 20/U26                        | Turbidity                                      |

**NVLAP LAB CODE 200462-0**
**Thermo Spectronic**

Mercers Row  
Cambridge CB5 8HY  
UNITED KINGDOM  
Contact: Mr. Douglas Irish  
Phone: 44 1223 446646  
Fax: 44 1223 446658  
E-Mail: doug.irish@thermospectronic.co.uk  
URL: http://www.thermospectronic.com

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**NVLAP**

| Code   | Designation        |
|--------|--------------------|
| 20/N01 | Visible Absorbance |













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