

**DEPARTMENT OF COMMERCE****Bureau of Industry and Security**

**15 CFR Parts 734, 738, 740, 742, 743, 744, 746, 748, 752, 770, 772, 774**

[Docket No. 111220789–1017–01]

RIN 0694–AF50

**Wassenaar Arrangement 2011 Plenary Agreements Implementation: Commerce Control List, Definitions, New Participating State (Mexico) and Reports**

**AGENCY:** Bureau of Industry and Security, Commerce.

**ACTION:** Final rule.

**SUMMARY:** The Bureau of Industry and Security (BIS) maintains, as part of its Export Administration Regulations (EAR), the Commerce Control List (CCL), which identifies items subject to Department of Commerce export controls. This final rule revises the CCL to implement changes made to the Wassenaar Arrangement's List of Dual-Use Goods and Technologies (Wassenaar List) maintained and agreed to by governments participating in the Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies (Wassenaar Arrangement, or WA) at the December 2011 WA Plenary Meeting (the Plenary). The Wassenaar Arrangement advocates implementation of effective export controls on strategic items with the objective of improving regional and international security and stability. To harmonize the CCL with the changes made to the Wassenaar List at the Plenary, this rule amends entries on the CCL that are controlled for national security reasons in Categories 1, 2, 3, 4, 5 Parts I & II, 6, 7, 8, and 9; revises reporting requirements; and adds, removes, and amends definitions in the EAR.

This rule raises the Adjusted Peak Performance (APP) parameter for high performance computers. President Obama sent the report required to make this change to Congress on March 16, 2012. This rule also raises the APP eligibility level for deemed exports of computers in License Exception APP.

This final rule also revises the CCL and definitions of terms used in the EAR to implement changes to the WA list that pertain to low light level (LLL) items that were agreed upon by the WA in December 2007 through 2011 at the Wassenaar Arrangement Plenary Meetings.

Additionally, this rule adds Mexico as the 41st Participating State in the list of WA members in the EAR.

**DATES:** *Effective Date:* This rule is effective: July 2, 2012.

**FOR FURTHER INFORMATION CONTACT:** For general questions contact Sharron Cook, Office of Exporter Services, Bureau of Industry and Security, U.S. Department of Commerce at 202–482–2440 or by email: *Sharron.Cook@bis.doc.gov*.

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**SUPPLEMENTARY INFORMATION:**

**Background**

The Wassenaar Arrangement (WA) on Export Controls for Conventional Arms and Dual-Use Goods and Technologies is a group of 41 like-minded states committed to promoting responsibility and transparency in the global arms trade, and preventing destabilizing accumulations of arms. As a Participating State, the United States has committed to controlling for export all items on the WA control lists. The lists were first established in 1996 and have been revised annually thereafter. Proposals for changes to the WA control lists that achieve consensus are approved by Participating States at annual December Plenary meetings. Participating States are charged with implementing the agreed list changes as soon as possible after approval. Implementation of WA list changes ensures U.S. companies have a level playing field with their competitors in other WA member states.

**Revisions to the Commerce Control List**

Out of the 44 ECCNs this rule revises, the following 28 ECCNs on the Commerce Control List (CCL) are revised to implement the changes to the Wassenaar List of Dual-Use Goods and Technologies agreed to at the December 2011 WA Plenary meeting: ECCNs 1A004, 1A005, 1C006, 1C008, 2B001, 2B008, 2B009, 2E001, 3A001, 3A002,

3B001, 3C001, 3E003, 4A003, 5A001, 5B001, 5D001, 5E001, 5A002, 6A001, 7A004, 7D002, 7D003, 7E004, 8A002, 9A012, 9D004 and 9E003.

Corresponding changes related to the addition of 5A001.i are made to ECCNs: 5A980, 5D980, and 5E980.

Corresponding changes are made to ECCN 3E002 to reflect the raising of the Adjusted Peak Performance (APP) control level of high performance computers in ECCN 4A003, in so far as these changes impact deemed export eligibility under License Exception CIV.

To complete the implementation of the December 2007, 2008, and 2009 agreed revisions to the Wassenaar List of Dual Use Goods and Technologies, this rule revises ECCNs: 0A919, 6A002, 6A003, 6D991, 6D994, 6E001, 6E002, 6E101, and 8A002, as described below.

Corrections that are not part of the WA 2011 agreements, but that are essential to the scope of control of these WA listed items, are made to the following ECCNs: 3A001.f, 3E001, 6B008, 7A003 and 7A005. These changes are described in more detail below.

The Wassenaar Arrangement Task Force on Editorial Issues (TFEI) made revisions, editorial in nature, to clarify or correct control text or remove extraneous text. The TFEI revisions (over 2,000) were agreed upon by the WA in December 2007. This rule implements those TFEI revisions that coincide with the revisions to ECCNs affected by the 2007, 2008, 2009, and 2010 WA changes to ECCNs 6A002, 6A003, 6E001, 6E002, and 8A002.

As a result of the changes made to the Technical Notes to Category 2 Product Group B and to ECCN 2B001, there are corresponding changes to ECCNs 2A201 and 2A991, as well as the definition of “positioning accuracy” in Section 772.1.

**Category 0 Nuclear Materials, Facilities, and Equipment [and Miscellaneous Items]**

*ECCN 0A919 “Military commodities”*

This rule revises paragraph 0A919.d to add reference to ECCNs 6A003.b.3 and 6A003.b.4.c. Therefore, ECCN 0A919 will control “military commodities” that incorporate one or more cameras controlled under ECCN 6A003.b.3, b.4.b, or 6A003.b.4.c. In addition, the RS control paragraph is revised to add a citation reference that states “see § 742.6(a)(3) for license requirements.” ECCN 0A919 is controlled for RS:1, AT:1 and UN for Rwanda (see Section 746.7) reasons for control. There are special RS Column 1 license requirements applicable for ECCN 0A919, found in Section

742.6(a)(3), therefore the Commerce Country Chart is not used to determine license requirements for the RS Column 1 control. The special RS:1 license requirements for ECCN 0A919 require a license for reexports to all destinations, except Canada, except when such items are being reexported as part of a military deployment by a unit of the government of Albania, Australia, Austria, Belgium, Bulgaria, Canada, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Turkey, the United Kingdom or the United States.

**Category 1 Special Materials and Related Equipment, Chemicals, “Microorganisms,” and “Toxins”**

*ECCN 1A004 (Protective and detection equipment and components)*

A Note is added after the introductory paragraph a. in the Items paragraph to clarify that the scope of the control on gas masks, filter canisters, and decontamination equipment includes Powered Air Purifying Respirators (PAPR) that are designed or modified for defense against agents or materials listed in 1A004.a.

*ECCN 1A005 (Body armor)*

The Heading and the List of Items Controlled are revised to make them clearer. The control paragraphs for “body armor” are expanded from one paragraph to two, of which the first lists “soft body armor \* \* \*” and second lists “hard body armor plates providing ballistic protection \* \* \*.”

Note 1 is revised by removing the phrase “or protective garments” to be more specific and to harmonize with the scope of the control. The revision also replaces “their” with “its” to correct the grammar in the Note.

Note 3 is added to make it clear that 1A005 controls body armor that provides ballistic protection and thus “does not apply to body armor designed to provide protection only from knife, spike, needle or blunt trauma.”

*ECCN 1C006 (Fluids and Lubricating Materials)*

A Note to paragraph 1C006.d is added so that it “does not apply to materials specified and packaged as medical products.” Some WA countries have not controlled such materials based on the medical Statement of Understanding (SOU). Other WA countries interpret the

SOU strictly as applying only to medical equipment and controlled medical materials. This note is added to clarify that these fluids and lubricating materials, when specified and packaged as medical products, are not subject to control.

*ECCN 1C008 (Non-Fluorinated Polymeric Substances)*

The Items paragraph is amended by revising paragraphs a.4 and f. to harmonize them with a glass transition temperature parameter ( $T_g$ ) that was added to the 1C008.a.2 entry for polyamide-imides (PAIs) in 2010. The value specified is 563 K (290 °C). This new value exceeded the  $T_g$  value in 1C008.a.4 for aromatic polyetherimides (PEIs) and in 1C008.f for polybiphenylenethersulphones. The polyimide family, which includes both PAI and PEI, has similar performance characteristics within its overall structure, as do Polysulphone materials, and therefore, the  $T_g$  values in 1C008.a.4 (PEI in the polyimide family) and .f (the Polysulphone family) are harmonized with the  $T_g$  values in 1C008.a.2 (PAI in the polyimide family).

**Category 1 “Special Materials and Related Equipment,” Annex “List of Explosives (See ECCNs 1A004 and 1A008)”**

Paragraph 32.g (NTDNA (2-nitrotriazole 5-dinitramide) (CAS 75393–84–9)) of the Annex is removed and reserved to implement a WA 2010 agreement to delete NTDNA (2-nitrotriazole 5-dinitramide) (CAS 75393–84–9) from its Munitions List because the CAS number of 75393–84–9 did not correspond to NTDNA (2-nitrotriazole 5-dinitramide).

**Category 2—Materials Processing**

The Notes for Category 2B are removed, as they are redundant to the Technical Notes for 2B.

The Technical Notes for 2B001 to 2B009 are amended to account for changing the year from 1988 to 2006 for ISO 230/2. In order to streamline export controls for Category 2B machine tools, BIS is going to use ISO 230/2 (2006) for 2B001 to 2B009, 2B201, 2B290 and 2B991 to 2B999. Although the Nuclear Supplier’s Group (NSG) has not yet updated the ISO standard it uses, there are plans to go in that direction. Therefore, the Heading to the Technical Note is changed to “Technical Notes for 2B001 to 2B009, 2B201, 2B290 and 2B991 to 2B999.”

Technical Note 5 is removed and Technical Note 6 is redesignated as Technical Note 5, to harmonize the EAR

with the Technical Note in the WA’s List.

Newly designated Note 5 (former Note 6) is revised by correcting capitalization, removing the word “levels”, changing the year of the ISO from “1988” to “2006”, and adding single quotes around the term ‘Stated positioning accuracy.’ WA agreed to the new ISO standard “ISO 230/2 (2006),” because the previous standard was cancelled when the new one was revised. A Note designation of “Note to paragraph 5” is added in front of “Determination of ‘Stated Positioning Accuracy’”, because this was an undesignated paragraph, which is not allowable in **Federal Register** format.

Newly designated Note to paragraph 5, paragraph b is amended by replacing the ISO year 1988 with 2006. Paragraph f of this note is amended by replacing the stated accuracy of 6 microns with 5 microns for grinding machines and 8 microns with 6.5 microns for milling and turning machines.

A Note 6 paragraph is added to the Technical Notes to state, “Measurement uncertainty for the positioning accuracy of machine tools, as defined in the International Standard ISO 230/2 (2006), shall not be considered.”

*ECCN 2B001 (Machine Tools)*

The NP control paragraph in the License Requirements section is amended by replacing 0.030 mm with 22.5  $\mu\text{m}$  to align the number with the ISO 230/2 (2006) standard.

Paragraphs 2B001.a.1, b.1.a, and c.1.a (position accuracy) are amended by replacing the word “any” with the phrase “one or more.” WA made this amendment to reflect its intent that one may not classify such machine tools by referring only to the one axis with the poorest positioning accuracy.

Paragraphs 2B001.a.1, b.1., b.3., c.1.a. and paragraph .b in the Notes to 2B001.c are amended by adding “according to ISO 230/2 (2006) wherever the term “positioning accuracy” or “positioning accuracies” is used.

Paragraphs a.1 and b.1.a are amended by replacing the positioning accuracy of “6  $\mu\text{m}$ ” with “4.5  $\mu\text{m}$ ” to align with the WA list.

Paragraphs b.3 and c.1.a, as well as paragraph b to the Note to 2B001.c are amended by replacing the positioning accuracy of “4  $\mu\text{m}$ ” with “3  $\mu\text{m}$ ” to align with the WA list.

*ECCN 2B008 (Assemblies and Units Specially Designed for Machine Tools or Dimensional Inspection or Measuring Systems and Equipment)*

This rule moves the examples of linear position feedback units in

paragraph 2B008.a and the examples of rotary position feedback units in paragraph 2B008.b into a new Note added after paragraphs .a and .b. This Note also provides a description of the types of units controlled by these paragraphs.

*ECCN 2B009 (Spin Forming Machines and Flow Forming Machines)*

Paragraph 2B009.a is amended by increasing the number of axes from “two or more” to “three or more,” which is a harmonization with the Missile Technology Control Regime (MTCR) control. In addition, the two axes machines having limited contouring capabilities are being replaced by the versatile three or more axes machines due to the technology advancement in the industry.

*ECCN 2B201 (Machine Tools)*

A new Note is added to the beginning of the Items paragraph to explain that BIS has adopted the ISO 230/2 (2006) standard for use in 2B201. BIS and the Department of Energy decided to utilize one standard to streamline export compliance and license review of all EAR controlled machine tools, and because the Nuclear Suppliers Group (NSG) will eventually adopt the new ISO 230/2 (2006) standard. The ISO 230/2 (1988 and 1997) standards were cancelled when revisions to the standard were adopted in 2006.

Paragraph 2B201.a is amended by deleting double quotes around the term “positioning accuracies.” Double quoted words in the EAR are terms that are defined in Part 772 of the EAR. Because the definition in Part 772 no longer aligns with the new ISO 230/2 (2006), this rule removes the quotes around “positioning accuracies.”

Paragraphs 2B201.a and b.1 are amended by replacing “6.0  $\mu\text{m}$ ” with “4.5  $\mu\text{m}$ ” in order to state the correct positioning accuracy for the new standard.

Paragraph 2B201.c.1 is amended by replacing “4.0  $\mu\text{m}$ ” with “3  $\mu\text{m}$ ” in order to state the correct positioning accuracy for the new standard.

Paragraph b in the Note to 2B201.b for milling machines is amended by replacing “30  $\mu\text{m}$ ” with “22.5  $\mu\text{m}$ ” in order to state the correct positioning accuracy for the new standard.

*ECCN 2B991 (Numerical Control Units for Machine Tools and “Numerically Controlled Machine Tools”)*

Paragraphs c.2.a, c.2.b, and c.2.c are amended by replacing “0.020 mm” with “15  $\mu\text{m}$ ” in order to state the correct positioning accuracy for the new ISO 230/2 (2006) standard.

**ECCN 2E001**

A Note is added to the Items paragraph to clarify that the scope of the 2E001 control includes “technology” for the integration of probe systems into coordinate measurement machines specified by 2B006.a.

**Category 3—Electronics**

Product Group A is amended by revising Notes 1, 2 and the *Nota Bene* to add a reference to a new paragraph 3A001.a.13. The Notes and the *Nota Bene* provide guidance on classifying products described in Category 3.

*ECCN 3A001 (Electronic Components and Specially Designed Components Therefor)*

The License Exception GBS paragraph is revised to add eligibility for the new paragraph 3A001.a.13.

The License Exception CIV paragraph is revised to correct a reference to 3A001.a.11.

Paragraph 3A001.a.13 is added to control Direct Digital Synthesizer (DDS) integrated circuits having specified parameters. The parameters are harmonized with those for the high performance Digital to Analog Converter in 3A001.a.5.b. This new control fills a gap between exclusively military DDS circuits and dual-use circuits developed for both civil telecommunications testing purposes and military communications, electronic countermeasures, and radar applications.

Paragraph b.10 is amended by replacing the word “designed” with “specified” because the design intent of such items is difficult to obtain with the passage of time.

Paragraphs b.11.d and b.11.e are revised, and two new paragraphs, b.11.f and b.11.g, are added to the List of Items Controlled section. These paragraphs contain parameters that describe frequency change within a frequency range for “frequency synthesizer” “electronic assemblies.” These changes extend the frequency range in 3A001.b.11 to 70 GHz and add new frequency breakouts to align with the changes made to 3A002.d.3 (Frequency synthesized signal generators—“frequency switching time”) in 2010.

Paragraph 3A001.e.1.b (high energy devices) is amended by revising the energy density parameter for “secondary cells” from 250 to 300 Wh/kg to account for advances in technology in this area.

Paragraphs 3A001.f.1 and f.2 are removed to implement a 2008 WA agreement regarding this control that was inadvertently not reflected in the rule BIS published on December 11, 2009 (74 FR 66003).

*ECCN 3A002 (General Purpose Electronic Equipment and Accessories Therefor)*

3A002.d.1 is revised by cascading the parameters into two subparagraphs. The existing parameter is moved from paragraph .d.1 to .d.1.a, and a new parameter is added to read “On/off ratio equal to or exceeding 65 dB.” The new control parameter “on/off ratio” clarifies that pulses are two-dimensional, having both width and depth.

Paragraphs 3A002.d.4, d.4.a, and d.4.b are revised. These revisions clarify that the Single Sideband (SSB) phase noise control applies anywhere within the specified frequency range. The amendments also make the grammatical structure similar to that used in other subparagraphs of 3A002.d, and also of 3A002.c, for controls based on combination of frequency and other parameters.

Technical Note 1 of paragraph d.5 is revised, and a corresponding change is made to Technical Note 2 to harmonize it with the change to 3A002.d.1. Technical Note 1 referenced the “theoretical” Nyquist factor of two (2). In engineering practice, ideal behavior cannot be achieved to generate a Radio-frequency (RF) output signal having low distortion and usable quality without using a factor larger than two. Industry’s practice is to use a factor of at least 2.5. The revision to Technical Note 1 clarifies that instruments based on Digital-to-Analog Converter/Direct Digital Synthesizer (DAC/DDS) chipsets should not be evaluated using the theoretical Nyquist value of two (2), but instead by using the industry-accepted standard value of 2.5. In addition, the sentence “Or, when oversampling is used, the maximum direct output capability is proportionately lower” incorrectly uses the term “oversampling” to refer to the sampling interval. Removing “oversampling” and specifying that a value of 2.5 should be used makes the sentence clearer. The inclusion of the term “maximum” clarifies that the sample rate equates to a maximum frequency but does not preclude operation of the instrument at lower frequencies.

Paragraph 3A002.e.1 is revised to clarify that the output power threshold applies only within the specified frequency range (43.5–70 GHz). The grammatical structure in this paragraph is also revised to harmonize it with 3A002.c and 3A002.d, which contain controls based on a combination of frequency and other parameters.

3A002.f.1 is revised by changing the maximum operating frequency from 43.5 GHz to 70 GHz. This change to the

frequency control threshold for microwave test receivers makes 3A002.f consistent with the control thresholds for other controlled microwave instruments, such as those described in 3A002.c, 3A002.d, and 3A002.e. This change also recognizes the emerging civilian uses of the ~60 GHz frequency space. Additionally, it will ensure that instruments such as network analyzers and signal analyzers that were decontrolled in prior years do not inadvertently remain controlled by 3A002.f.

*ECCN 3B001 (Equipment for the Manufacturing of Semiconductor Devices or Materials)*

WA agreed to remove 3B001.a.2 (Metal Organic Chemical Vapor Deposition (MOCVD) reactors) from the WA Sensitive List (SL). Therefore, License Exception GBS is amended by removing the eligibility exception for 3B001.a.2. License Exception CIV is also amended by adding 3B001.a.2 to the eligibility paragraph. The License Exception STA paragraph is removed from the License Exception section because 3B001.a.2 is no longer ineligible. MOCVD equipment had been added to the WA SL before 1996. The reason for the inclusion was the strategic importance of such equipment and its widespread capabilities for the manufacturing of high frequency semiconductor devices that could be useful for military radar systems, sensors, and communication devices. MOCVD equipment are now commonly used to fabricate mass market consumer products such as luminescence diodes, laser diodes, and high frequency semiconductor devices for mobile phones. Exported systems typically are dedicated to mass production. Thus, WA concluded that this type of equipment was not of such strategic importance to warrant it being on the WA SL.

Paragraph 3B001.d (Plasma enhanced Chemical Vapor Deposition (PECVD) equipment) is removed and reserved. WA determined that such equipment is widely available and does not merit control because it is overwhelmingly used in civil consumer applications. Moreover, there was no basis for controlling this one type of deposition equipment when no other types are or have been controlled.

Paragraph 3B001.e.1 is revised by this rule to remove a reference to 3B001.d.

*ECCN 3C001 (Hetero-Epitaxial Materials)*

A Note is added to paragraph 3C001.d to explain that “3C001.d does not apply to a “substrate” having one or more

P-type epitaxial layers of GaN, InGaN, AlGaN, InAlN, InAlGaN, GaP, InGaP, AlInP or InGaAlP, independent of the sequence of the elements, except if the P-type epitaxial layer is between N-type layers.” Hetero-epitaxially grown III/V compound semiconductor multi-layers have been widely used for high-speed electronic devices and light emitting devices such as laser diodes (LDs) and light-emitting diodes (LEDs). The purpose of adding the Note is to decrease controls on LEDs to accommodate the fast growing commercial LED industry, while maintaining controls on the more sensitive LDs that have non-civil applications.

*ECCN 3E001*

The national security paragraph of the License Requirements section is corrected by adding ECCN 3A003, which was inadvertently left out of the NS:1 control paragraph. Although ECCN 3E001 controls both “production” and “development” technology, there is a Note in its Items paragraph that states, “3E001 does not control “technology” for the “production” of equipment or components controlled by 3A003.” Therefore, NS:1 and AT:1 only apply to the “technology” for the “development” of equipment or components controlled by 3A003. Technology for the “development” of equipment or components controlled by 3A003 is eligible for License Exceptions TSR and STA, as well as transaction-based license exceptions as long as all the criteria for these license exceptions are met and none of the restrictions of Section 740.2 apply.

*ECCN 3E002*

The License Exception CIV paragraph in the License Exception section of ECCN 3E002 is amended by revising the word “microprocessors” to read “microprocessor cores” to more accurately describe the scope for License Exception CIV. In addition, this rule raises the eligibility level for technology and software source code for the “development” or “production” of general purpose microprocessor cores with a vector processor unit with operand length of 64-bit or less, 64-bit floating operations from “not exceeding 32 GFLOPs” to “not exceeding 50 GFLOPs”, or 16-bit or more floating-point operations from “not exceeding 32 GMACS” to “not exceeding 50 GMACS.” Deemed exports under License Exception CIV are subject to a Foreign National Review (FNR) requirement (see Section 740.5 of the EAR for more information about the FNR). License Exception CIV does not

apply to ECCN 3E002 technology also required for the development or production of items controlled under ECCNs beginning with 3A, 3B, or 3C, or to ECCN 3E002 technology also controlled under ECCN 3E003. This amendment makes it clear that classification and application determinations should be based on the performance target of the “core” and not the complete processor. It also provides relief for microprocessor manufacturers who employ foreign nationals working on future higher performance core designs.

*ECCN 3E003*

Paragraph 3E003.b is revised by adding the word “electronic.” It now reads “Hetero-structure semiconductor electronic devices \* \* \*”. The term “electronic” was added to clarify that 3E003 does not control technology for the “development” or “production” of light emitting diodes or solar cells, which is classified as EAR99.

**Category 4—Computers**

*ECCN 4A003 (“Digital Computers,” “Electronic Assemblies,” and Related Equipment)*

The Heading is corrected to insert the parenthetical phrase “(see List of Items Controlled)”.

The NS Column 2 paragraph is amended by removing the reference to 4A003.a, because 4A003.a is removed by this rule.

The upper threshold of the “Adjusted Peak Performance (APP)” in the Anti-Terrorism (AT) controls paragraph of the License Requirements section is raised from 1.5 to 3.0 Weighted TeraFLOPS (WT) to harmonize it with the change in 4A003.b.

License Requirement Note 1 is amended by revising the two references to APP levels from 1.5 to 3.0 WT to harmonize it with the change in 4A003.b.

The License Exception APP paragraph in the License Exceptions section is amended by removing the reference to 4A003.a, because 4A003.a is removed by this rule.

Paragraph 4A003.a, “designed or modified for ‘fault tolerance,’” is removed and reserved. Once a specialty feature in military aerospace applications and the telecommunication world, fault tolerance is now commonplace. Advances in semiconductor technology and computer system design have made control of fault tolerance neither warranted nor feasible.

The APP in paragraph 4A003.b is raised from 1.5 to 3.0 WT. In the spring

of 2010, two top computer processor manufacturers announced the availability of 8-core processors. These commercial processors are now being integrated into high-performance computer systems (HPCs). Today, almost all HPCs employ multi-core processors with four or more cores per processor as the compute engine. It is expected that 6-core and 8-core processors will be rapidly adopted in HPCs based on our experience with the adoption of quad-core processors in 2009. Increases in both the number of cores, and incremental clock improvements, will increase WT values with no additional changes in system architecture. Consequently, WA agreed to an adjustment of the computer threshold in 4A003.b from 1.5 to 3.0 WT.

National Defense Authorization Act (NDAA) Congressional Notification Requirement Subsections 1211(d) and (e) of the National Defense Authorization Act (NDAA) for FY 1998 (Pub. L. 105–85, November 18, 1997, 111 Stat. 1932) provide that the President must submit a report to Congress 60 days before adjusting the composite theoretical performance level above which exports of digital computers to Tier 3 countries require a license. The President sent a report to Congress on March 16, 2012 that establishes and provides justification for the 3.0 WT control level using the APP formula. The APP revisions described above were not contested by Congress and became eligible for adjustment on May 14, 2012 for exports and reexports to Computer Tier 3 countries.

#### Category 4, Product Group D

Category 4, Product Group D is amended by removing the phrase “the ‘development,’ ‘production,’ or ‘use’ of” from the Note that appears at the top of this Product Group, to clarify that this note applies to all software in Category 4.

#### “Technical Note on ‘Adjusted Peak Performance’ (‘APP’)”

Note 6 of the “Technical Note on ‘Adjusted Peak Performance’ (‘APP’)” is amended by adding a Technical Note that reads, “Aggregate all processors and accelerators operating simultaneously and located on the same die.” The change clarifies the method of calculating the APP of a digital computer that employs a mixture of general purpose processor cores and accelerators, coprocessors, or General-Purpose computation on Graphics Processing Units (GPGPUs).

#### Category 5 Part I— “Telecommunications”

*Nota Bene* 2, at the top of Category 5 Part I, is amended by adding a comma to correct its punctuation.

#### *ECCN 5A001 (Telecommunications Systems, Equipment, Components and Accessories)*

Paragraph 5A001.i is added to the NS:2 control paragraph, which requires a license to most destinations, except allied countries such as members of the North Atlantic Treaty Organization (NATO). Surreptitious Listening (SL) controls are added to control 5A001.i equipment and a license is required for all destinations, including Canada, as specified in Section 742.13 of the EAR. In addition, a cross reference to Section 740.2(a)(3) is added to the License Requirement Notes.

Although, the License Exceptions section is not revised by this rule, the addition of 5A001.i to Section 740.2(a)(3) “Restrictions on All License Exceptions” makes 5A001.i ineligible for all license exceptions, except when the equipment is consigned to and for the official use of an agency of the U.S. Government (see § 740.2(a)(3)), in which case License Exception GOV may apply for 5A001.i and 5D001 (as it applies to 5A001.i or 5E001.a (as it applies to 5A001.i or 5D001.a (as it applies to 5A001.i))). License Exception GOV does not apply for 5E001.a (as it applies to 5A001.i, or 5D001.a (as it applies to 5A001.i)).

Paragraph 5A001.b.5 (digitally controlled radio receivers) is moved from the NS:2 control paragraph to the NS:1 paragraph. It warrants worldwide controls because it is listed on both the WA Sensitive and Very Sensitive Lists.

The Note to 5A001.b.3.b is amended by adding another parameter for radio equipment that is not controlled by 5A001.b.3.b, which reads, “Fixed or mobile satellite Earth stations for commercial civil telecommunications.” This revision seeks to harmonize controls for commercial civil satellite telecommunications products and technology with civil cellular products and technology. The effect of this change will be limited to spread spectrum equipment and technology in fixed or mobile satellite earth stations for commercial civil telecommunications.

Paragraph 5A001.f (existing control on certain jamming equipment for the selective interference, denial, or degradation of mobile telecommunication services) is corrected by replacing the word “therefore” with “therefor” to harmonize it with the Wassenaar List.

This rule adds a new control in paragraph 5A001.i on “Systems or equipment, specially designed or modified to intercept and process the air interface of ‘mobile telecommunications,’ and specially designed components therefor.” The new control includes an exclusion Note for “equipment designed for ‘mobile telecommunications’ network operators, or for the “development” or “production” of ‘mobile telecommunications’ equipment or systems.” It also includes a Technical Note that defines “mobile telecommunications” as “the following telecommunications protocols or standards: GSM, GSM-R, GPRS, IMT-2000, PMR (Professional Mobile Radio), Inmarsat, Iridium, Thuraya, VSAT or ACES.” Also included is a *Nota Bene* that refers to related controls, “See also 5A001.f, 5A980, and the U.S. Munitions List.” Before this change, interception devices for mobile communications were controlled in two particular cases—when such equipment was specially designed or modified for military use, and when such equipment included a cryptanalytic functionality. This amendment establishes multilateral controls over interception devices for mobile communications that do not fit into either of these cases.

Effective with this rule, SL-controlled commodities controlled by 5A001.i, and related SL-controlled software in 5D001 (for 5A001.i equipment or to support 5E001.a “technology” for 5A001.i equipment or 5D001.a “software” (for 5A001.i equipment)), are only eligible for License Exception GOV, and only when the item is consigned to and for the official use of an agency of the U.S. Government (see Sections 740.2(a)(3) and 740.11(b)(2)(ii) of the EAR). Technology controlled under ECCN 5E001.a (for 5A001.i equipment and for 5D001.a “software” (for the 5A001.i equipment)) is not eligible for any license exceptions. As a result of adding 5A001.i, this rule makes corresponding revisions to §§ 738.3(a)(1) (Commerce Country Chart structure), 740.2(a)(3) (License exception restrictions), 742.13(a)(1) (Surreptitious listening devices), 746.7(a) (Iran) and 752.3(a)(7) (Items ineligible for Special Comprehensive License), in order to align with the existing policies the EAR had in place for surreptitious listening devices.

#### *ECCN 5A980 (Devices Primarily Useful for the Surreptitious Interception of Wire, Oral, or Electronic Communications)*

The Heading is revised to carve out 5A001.i from the scope of this entry

because WA agreed to add that equipment to the WA Basic List. That equipment is now controlled under 5A001 so that national security (NS) controls can be placed on it.

The Related Controls paragraph is revised to reference ECCNs 5A001.i, 5D980, and 5E980.

*ECCN 5B001 (Telecommunication Test, Inspection and Production Equipment, Components and Accessories)*

Paragraph 5B001.b.2.c is amended by removing the parenthetical phrase “(also called optical heterodyne or homodyne techniques)” and adding a Note and Technical Note to clarify that 5B001.b.2.c, as well as 5E001.c.2.c, control both coherent optical transmission techniques and coherent optical detection techniques, for synchronous optical detection system (systems using an optical local oscillator in the receiving side to synchronize with a carrier “laser”), but not for delay detection systems.

Paragraph 5B001.b.2.d is amended by adding an “or” to correct the grammar of the entry.

Paragraph 5B001.b.5 (equipment employing “common channel signaling”) is removed, and as a consequential change, paragraph 5B001.b.4 is amended by replacing the semi-colon with a period and removing the “or.” Paragraph 5B001.b.5 is removed because the equipment is made obsolete by technical advances in this field. Related changes to the EAR include the removal of paragraph 5E001.c.5 and the removal of the term “common signal channeling” in Section 772.1 of the EAR.

*ECCN 5D001*

The License Requirements section is amended by adding SL (Surreptitious Listening) to the Reasons for Control paragraph and by adding SL controls for the following: 5D001.a “software” for the “development,” “production,” or “use” of equipment, functions or features controlled by 5A001.i; 5D001.b “software” to support “technology” controlled by 5E001.a (for 5A001.i equipment, and for 5D001.a “software” for 5A001.i equipment); and 5D001.c “software” providing characteristics, functions or features of 5A001.i equipment. A license is required for all destinations, as specified in § 742.13 of the EAR. In addition, a cross reference to Section 740.2(a)(3) is added to the License Requirement Notes.

Although, the License Exceptions section for 5D001 is not revised by this rule, the addition of 5D001 to Section 740.2(a)(3) “Restrictions on All License Exceptions” makes 5D001 (as it applies

to 5A001.i or 5E001.a (as it applies to 5A001.i or 5D001.a (as it applies to 5A001.i))) ineligible for all license exceptions, except when the “software” is consigned to and for the official use of an agency of the U.S. Government (see § 740.2(a)(3)), in which case License Exception GOV may apply for 5D001 (as it applies to 5A001.i or 5E001.a (as it applies to 5A001.i or 5D001.a (as it applies to 5A001.i))).

The Related Controls paragraph is revised to add reference to ECCN 5D980.

*ECCN 5D980*

The Heading is revised to carve out “software” for the equipment, function, features, or characteristics controlled by 5A001.i (including “software” to support “technology” for 5A001.i controlled by 5E001.a) from the scope of 5D980 because that “software” is now controlled by various paragraphs in 5D001.

The Related Controls paragraph is revised to add references to 5D001 and 5E980.

*ECCN 5E001*

The License Requirements section is revised to add surreptitious listening (SL) controls for “technology” for the “development” or “production” of equipment, functions or features controlled by 5A001.i, or for the “development” or “production” of “software” controlled under ECCN 5D001.a (for 5A001.i equipment). A license is required for all destinations, as specified in § 742.13 of the EAR. In addition, a cross reference to Section 740.2(a)(3) is added to the License Requirement Notes.

Although, the License Exceptions section for 5E001 is not revised by this rule, the addition of 5E001.a (as it applies to 5A001.i, or 5D001.a (as it applies to 5A001.i)) to Section 740.2(a)(3) “Restrictions on All License Exceptions” makes it ineligible for all license exceptions, including License Exception GOV.

The Related Controls paragraph is revised to add a reference to 5E980.

The Note to 5E001.b.4 is amended by adding another parameter for radio equipment that is not controlled by 5E001.b.4, which reads, “Fixed or mobile satellite Earth stations for commercial civil telecommunications.” This revision seeks to harmonize controls for commercial civil satellite telecommunications products and technology with civil cellular products and technology. The effect of this change is limited to spread spectrum equipment and technology in fixed or mobile satellite earth stations for commercial civil telecommunications.

Paragraph 5E001.c.1 (technology for the development or production of equipment employing digital techniques) is amended by revising the “total digital transfer rate” from 50 Gbit/s to 120 Gbit/s. The ratification of new IEEE standards in 2010 has advanced the IEEE standards above the control threshold. Data rates are continuing to increase, with some projections indicating the rate of increase will accelerate. This amendment accounts for such developments.

Paragraph 5E001.c.2.c is amended by removing the parenthetical phrase “(also called optical heterodyne or homodyne techniques)” and adding a Note and Technical Note to clarify that 5E001.c.2.c controls “technology” for the “development” or “production” of systems using both coherent optical transmission techniques and coherent optical detection techniques, for synchronous optical detection system (systems using an optical local oscillator in the receiving side to synchronize with a carrier “laser”), but not for delay detection systems.

Paragraph 5E001.c.5 (technology for the development or production of equipment employing “common channel signaling”) is removed and reserved because the technology is made obsolete by technical advances in this field. Related changes include the removal of paragraph 5B001.b.5 and the removal of the term “common signal channeling” in Section 772.1 of the EAR.

*ECCN 5E980*

The Heading of ECCN 5E980 is revised to exclude “technology” that is controlled by 5E001.a (for 5A001.i equipment, or for 5D001.a “software” for 5A001.i equipment). In addition, the Heading is expanded to include “functions or features of equipment.” This expands the scope of 5E980 to include “technology” primarily useful for the “development,” “production,” or “use” of equipment, functions or features of equipment controlled by 5A980 or “software” controlled by 5D980.

In addition, when ECCN 5E980 was created, it was intended to control “technology” for “development,” “production” or “use” of both 5A980 equipment and 5D980 “software.” Currently, the ECCN does not reflect that control for 5D980 “software.” This rule corrects this error by expanding the Heading of 5E980 to fix this oversight.

The Related Controls paragraph is amended by adding a reference to 5E001 (for 5A001.i equipment and 5D001.a “software” (for 5A001.i equipment)).

**Category 5 Part II—“Information Security”***ECCN 5A002 (“Information Security” Systems, Equipment and Components Therefor)*

The Note to 5A002.a.8 is added to clarify that 5A002.a.8 applies only to the systems detecting physical intrusions communications at the layer 1 (physical layer) of Open Systems Interconnection (OSI) 7 layer model, and does not apply to network Intrusion Detection Systems (IDS) and Intrusion Prevention Systems (IPS) working on layer 3–7 of OSI 7 layer model. The Open Systems Interconnection model (OSI model) was a product of the Open Systems Interconnection effort at the International Organization for Standardization. It is a way of subdividing a communications system into smaller parts called layers. The physical layer defines electrical and physical specifications for devices. In particular, it defines the relationship between a device and a transmission medium, such as a copper or optical cable.

The new Note does not change the scope of the existing control on communications cable systems under paragraph 5A002.a.8.

**Category 6—Sensors and Lasers***ECCN 6A001 (Acoustic Systems, Equipment and Components)*

Paragraph 6A001.a.1.b is amended by adding the phrase, “Systems or transmitting and receiving arrays, designed for” to clarify the scope of control for object detection or location systems.

A Technical Note is added to introductory paragraphs a.2.a (following the Note) and a.2.b to clarify the terms “hydrophones” and “hydrophone group.”

Introductory paragraph a.2.e is amended by adding a hyphen between “bay” and “cable” to make “bay-cable,” as well as replacing the word “systems” with “hydrophone arrays” to clarify the scope of control.

*ECCN 6A002 (Optical Sensors)*

The MT and RS control paragraphs of the License Requirements section and License Exceptions LVS and STA paragraphs are amended by removing the reference to paragraph 6A002.e, because 6A002.e was moved to 6A002.a.1.d.

The License Exception STA ineligibility paragraph for the eight destinations listed in Section 740.20(c)(2) is amended by moving the phrase “to any of the eight destinations listed in Section 740.20(c)(2) of the

EAR” to clarify that all the text in the License Exception STA ineligibility paragraph pertains to a prohibition to apply License Exception STA to the eight (8) destinations in Section 740.20(c)(2) of the EAR. This rule also removes most of the text in the License Exception STA paragraph, as 6A002.a.2, a.3.a, a.3.b, a.3.g and .c are no longer eligible for License Exception STA. This revision leaves only 6A002.a.1.a, a.1.b or a.1.c; 6A002.a.3.c, a.3.d, a.3.e, or a.3.f; or 6A002.b in the License Exception STA ineligibility paragraph for the eight (8) countries in Section 740.20(c)(2), see also Section 740.20(b)(2)(viii).

The Items paragraph of the List of Items Controlled section is amended by removing commas from 6A002.a, a.1, a.1.a, a.1.b, a.3, a.3.a, a.3.b, a.3.c, a.3.d, a.3.e, d.2, and d.2.a to correct the punctuation as part of the TFEI revisions.

Paragraph 6A002.a is amended by removing the Note, because 6A002.a no longer controls germanium or silicon photo devices. In addition, paragraph 6A002.a is amended by removing the *Nota Bene*, because it is more appropriately placed under 6A002.a.3 and doesn't need to be repeated under 6A002.a.

Paragraph 6A002.a.1 is amended by adding a Note to explain that solid-state detectors include “focal plane arrays” (FPAs) for the purpose of 6A002.a.1.

Paragraph 6A002.e is moved to 6A002.a.1.d to ensure that for the purposes of 6A002.a.1 all FPAs are considered solid state detectors and all “space qualified” FPAs are now controlled under 6A002.a.1.

A Note is added to 6A002.a.2 to indicate that 6A002.a.2 does not control certain non-imaging photomultiplier tubes; and adding a Technical Note to define ‘charge multiplication’ and state that ‘charge multiplication’ sensors may take the form of an image intensifier tube, solid state detector or “focal plane array.”

Paragraph 6A002.a.2.a.2 (regarding microchannel plates) is moved to a.2.a.2.a, and paragraph 6A002.a.2.a.2 is revised to read “Electron image amplification using any of the following:”

Paragraph 6A002.a.2.a.2.b is added to control electron sensing devices with a non-binned pixel pitch of 500  $\mu\text{m}$  or less, specially designed or modified to achieve ‘charge multiplication’ other than by a microchannel plate.

Paragraph 6A002.a.2.a.3.a is amended by rearranging the words to clarify the control for multialkali photocathodes.

Paragraphs 6A002.a.2.a.3.c and a.2.c.3 (formerly a.2.b.3) are amended by

adding double quotes around the term “III–V compound” to indicate that this term is defined in Part 772 of the EAR.

The Note following 6A002.a.2.a.3.c is combined with the control parameter of 6A002.a.2.a.3.c to simplify the text. This is the first use of the term “radiant sensitivity” in a control paragraph; see Section 772.1 for the definition. The term is also used in: 6A002.a.2.b.3, Note to 6A002.a.2.c.3, 6A002.c, 6A002.a.3.a.2.b, a.3.g.2, paragraph (c) of Note 2 after 6A002.a.3, and Note to 6A003.b.4.c.

In addition, ECCN 6A002 is amended by:

Redesignating 6A002.a.2.b as 6A002.a.2.c in order to add a new paragraph 6A002.a.2.b to control another type of image intensifier tubes with different parameters, including those using a microchannel plate for electron image amplification;

Removing and reserving a.2.c.2 (formerly a.2.b.2 GaAs or GaInAs photocathodes) in order to combine it with a.2.c.3 (formerly a.2.b.3), as well as adding a control for transferred electron photocathodes to this paragraph, because these devices provide equivalent performance to devices controlled in this entry;

Revising the Note following 6A002.a.2.c.3 (formerly a.2.b.3) to exclude from 6A002 controls certain compound semiconductor photocathodes;

Revising the *Nota Bene* to clarify that “microbolometer” non-“space-qualified” “focal plane arrays” are only specified by 6A002.a.3.f;

Moving Technical Note 2, defining “cross scan direction” and “scan direction,” which follows 6A002.a.3 to now follow 6A002.a.3.d.2.b;

A new paragraph (c) is added to the exclusion Note 2 after 6A002.a.3 to exclude certain “focal plane arrays” specially designed or modified to achieve ‘charge multiplication’ and limited by design to have a maximum “radiant sensitivity” of 10 mA/W or less for wavelengths exceeding 760 nm to control focal plane arrays that perform outside the visible range;

Adding a Technical Note after Note 2 for 6A002.a.3 to explain “response limiting mechanism”;

Reformatting 6A002.a.3.a.2 and 6A002.a.3.b.2 to allow for flexibility to add more parameters in 6A002.a.3.a.2.b and a.3.b.2.b;

Adding capitalization to “Signal Processing In The Element” in 6A002.a.3.d.2.b because that term is followed by the acronym ‘SPRITE’, to clarify the entry as part of the TFEI revisions;

Adding an exclusion Note after 6A002.a.3.d.2.b stating “6A002.a.3.d does not control “focal plane arrays” (not to exceed 32 elements) having detector elements limited solely to germanium material”;

Adding a Technical Note for 6A002.a.3 to add the definitions for ‘cross-scan direction’ and ‘scan direction’;

Replacing a period with a semi-colon in 6A002.a.3.e and a.3.f, to correct the punctuation, as part of the TFEI revisions;

Deleting Technical Notes 2 and 3 that followed 6A002.a.3.f to harmonize with the Wassenaar Arrangement List;

Adding a new paragraph 6A002.a.3.g to control certain non-“space-qualified” “focal plane arrays”, because this component can be used in low light imagers controlled in ECCN 6A003;

Adding a comma and replacing a comma with an “and” in 6A002.b, as part of the TFEI revisions to correct the punctuation and clarify the entry;

Removing the word “Being” from 6A002.b.2, as part of the TFEI revisions to remove a superfluous word;

Replacing the word “Being” with “Having” and adding the word “characteristics” in 6A002.b.2.b, pursuant to the TFEI revisions to clarify the entry;

Replacing the period with a semi-colon in 6A002.b.2.b.2, as part of the TFEI revisions to correct the punctuation;

Adding a Note after 6A002.b.2.b.2 to explain that 6A002.b.1 does not control “monospectral imaging sensors” with certain parameters;

Adding single quotes around the term ‘Direct view,’ as part of the TFEI revisions, and removing the parameter “operating in the visible or infrared spectrum,” in 6A002.c and the Technical Note that follows 6A002.c.3;

Adding a reference to 6A002.a.2.b and removing the “or” in 6A002.c.1;

Adding an “or” in 6A002.c.2;

Adding a new paragraph 6A002.c.3 to add a new parameter to control ‘direct view’ imaging equipment incorporating “solid state detectors specified by 6A002.a.1” to close a potential loophole in the controls for this type of equipment; and

Moving 6A002.e to 6A002.a.1.d to ensure that for the purposes of 6A002.a.1 all focal plane arrays (FPAs) are considered solid state detectors and all “space qualified” FPAs are now controlled under 6A002.a.1.

#### *ECCN 6A003 (Cameras)*

The RS License Requirement paragraph is amended by adding 6A003.b.4.c. Therefore, these cameras

will require a license to all destinations, with the exception of Canada.

The Related Control Note 3 is amended to add more descriptive text and a more precise reference.

The Related Control Notes 4 and 5 are amended to add references to 6A003.b.3 and 6A003.b.4.c. Related Control Note 4 references ECCN 0A919 for foreign made military commodities that incorporate cameras described in 6A003.b.3, 6A003.b.4.b, or 6A003.b.4.c. Related Control Note 5 references Section 744.9, which imposes license requirements on cameras described in 6A003.b.3, 6A003.b.4.b, or 6A003.b.4.c if being exported for incorporation into an item controlled by ECCN 0A919 or for a military end user.

In addition, ECCN 6A003 is amended by:

Removing commas from 6A003.a.5, a.6, 6A003.b, as part of the TFEI revisions to correct the punctuation;

Replacing a period with a semi-colon in 6A003.a.5.b, a.6.b, and 6A003.b.1.b.3, as part of the TFEI revisions to correct the punctuation;

Replacing the word “in” with “by” and replacing a period with a semi-colon in 6A003.a.6.b, as part of the TFEI revisions to clarify the entry;

Adding single quotes around “camera tracking data” in 6A003.b.1.b.3 and in Technical Note 2 that follows that paragraph, as part of the TFEI revisions to indicate the term is defined in the entry;

Adding a new Note to release specific scanning cameras from 6A003.b.2 controls, because these cameras are only useful in industrial and civil applications;

Adding “or 6A002.a.2.b” in 6A003.b.3;

Removing the “or” at the end of 6A003.b.4.a to clarify the entry;

Replacing a period with a semi-colon at the end of 6A003.b.4.b and adding an “or”, as part of the TFEI revisions to correct the punctuation and make provision for a new sub-paragraph;

Adding a new sub-paragraph 6A003.b.4.c to control imaging cameras that incorporate “focal plane arrays” specified in 6A002.a.3.g;

Removing single quotes around the term “Imaging cameras” in Note 1 after 6A003.b.4.c to indicate that the term is not defined in the entry, and adding double quotes around “signal processing” in that Note to indicate that the term is defined in Part 772 of the EAR;

Replacing the text “twelve” with the number “12” and replacing a comma with an “and” in Note 2 after 6A003.b.4.c to correct the punctuation and clarify the entry;

Removing the word “characteristics” from the introductory text of Note 3 after 6A003.b.4.c to remove a superfluous word as part of the TFEI revisions;

Adding single quotes around the term “Instantaneous-Field-of-View (IFOV)” in paragraph b.1 of Note 3 after 6A003.b.4.c to indicate that this term is defined in the entry;

Adding single quotes around the term “direct view” in paragraph b.3 of Note 3 after 6A003.b.4.c to indicate that this term is defined in the entry, and replacing the comma with a semi-colon, as part of the TFEI revisions to clarify the entry and correct the punctuation;

Replacing the comma with a semi-colon in paragraphs 4.a and 4.b of Note 3 after 6A003.b.4.c, as part of the TFEI revision to correct the punctuation;

Adding single quotes around the terms “Instantaneous Field of View (IFOV),” “Horizontal FOV” and “Vertical FOV” in the Technical Note following Note 3 after 6A003.b.4.c, to indicate that the terms are defined in the entry;

Removing the word “Where” and replacing the text “three tons” with “3 tonnes” in paragraph c of Note 3 after 6A003.b.4.c, to clarify the entry;

Adding a new exclusion Note 4 to 6A003.b.4.c for ‘imaging cameras’ to indicate that these items are not controlled in this entry;

Adding a new subparagraph 3 to paragraph c of Note 4 to 6A003.b.4.c, to add a new parameter “Not specially designed or modified for underwater use,” because this decontrol note is not intended to apply to underwater cameras that were moved from 8A002.f.2 to 6A003.b.4.c;

Adding a Note after Note 4 stating “When necessary, details of the items will be provided, upon request, to the Bureau of Industry and Security (BIS) in order to ascertain compliance with the conditions described in Note 4” to clarify BIS policy; and

Adding a new paragraph 6A003.b.5 to control “Imaging cameras incorporating solid-state detectors specified by 6A002.a.1.”

ECCN 6D991 is amended by replacing the reference to 6A002.e with 6A002.a.1.d in the Heading and the RS control paragraph of the License Requirements section, in order to harmonize with revisions made by this rule.

ECCN 6D994 is removed, because the software that is unilaterally controlled by the United States in this entry is now multilaterally controlled by the member countries of the Wassenaar Arrangement, and the control for this



software is added by this rule to 6D003.c.

ECCN 6E001 is amended by:

Removing the reference to 6A002.e in the RS control paragraph of the License Requirements section, because this control is moved to 6A002.a.1.d, which is already controlled under RS:1; and

Revising the reference to 6A002.e to read 6A002.a.1.d in paragraph 2 of the TSR paragraph of the License Exception section, in order to harmonize with revisions made by this rule;

Removing “technology” for commodities controlled by 6A002.a.2, a.3.a, a.3.b, a.3.g, and .c from LE TSR eligibility in paragraph 4 of the LE TSR paragraph of the License Exception Section. Technology for these newly added low light level components warrant a higher degree of control, i.e., no list based license exceptions.

ECCN 6E002 is amended by:

Removing the reference to 6A002.e in the RS control paragraph of the License Requirements section, because this control is moved to 6A002.a.1.d, which is already controlled under RS:1;

Revising the reference to 6A002.e to read 6A002.a.1.d in the TSR paragraph of the License Exception section, in order to harmonize with revisions made by this rule; and

Removing “technology” for commodities controlled by 6A002.a.2, a.3.a, a.3.b, a.3.g, and .c from LE TSR eligibility in paragraph 4 of the LE TSR paragraph of the License Exception Section. Technology for these newly added low light level components warrant a higher degree of control, i.e., no list based license exceptions.

ECCN 6E101 is amended by removing the reference to 6A002.e in the Related Definitions paragraph of the List of Items Controlled section, in order to harmonize with revisions made by this rule. 6A002.e is moved by this rule to 6A002.a.1.d. 6A002.a.1 is already referenced in the Related Definitions of ECCN 6E101.

#### Category 7—Navigation and Avionics

##### *ECCN 7A003 (Inertial Systems and Specially Designed Components)*

The Heading is corrected by adding the parenthetical phrase “(see List of Items Controlled)” to reference the List of Items Controlled where controlled equipment is set forth.

##### *ECCN 7A004 (Gyro-Astro Compasses/ ‘Star Trackers’)*

The Heading is deleted and replaced with “‘Star trackers’ and components therefor, as follows (see List of Items Controlled).” “Star trackers” is synonymous with “gyro-astro

compasses.” “Star trackers” is, however the more common industry-standard term.

Two paragraphs are added to the List of Items Controlled section. Paragraph 7A004.a controls “‘Star trackers’ with a specified azimuth accuracy of equal to or less (better) than 20 seconds of arc throughout the specified lifetime of the equipment.” Paragraph 7A004.b is an introductory paragraph that reads “Components specially designed for equipment specified in 7A004.a as follows:” Subparagraph b.1 controls “Optical heads or baffles;” and subparagraph b.2 controls “Data processing units.” A Technical Note is also added to read, “‘star trackers’ are also referred to as stellar attitude sensors or gyro-astro compasses.” The star trackers are usually integrated in the attitude and orbit control systems for spacecraft. Their performance has a significant influence on the final accuracy of the observation satellites, as well as for telecommunication satellites for civilian and military applications. WA determined that the current threshold is too high to distinguish sensitive observation applications. BIS is therefore revising the azimuth accuracy from “equal to or less (better) than 5 seconds of arc” to “20 seconds of arc throughout the specified lifetime of the equipment.” WA also determined that the performance threshold should apply to the full duration of the mission because the applicable datasheets often refer to beginning of life (BOL) and the end of life (EOL) performance. Additionally, controls are added for specially designed components, such as, optical heads, baffles, and data processing units, which are sensitive, warrant control, and are now often sold separately.

##### *ECCN 7A005 (Global Navigation Satellite Systems (GNSS) Receiving Equipment)*

The Heading is corrected by adding the parenthetical phrase “(see List of Items Controlled)” to reference the List of Items Controlled where controlled equipment is set forth.

##### *ECCN 7D002 (“Source Code” for the “Use” of Any Inertial Navigation Equipment, Including Inertial Equipment Not Controlled by 7A003 or 7A004, or Attitude and Heading Reference Systems (‘AHRS’))*

The Heading and Related Controls paragraph 2 are amended by replacing the term “use” with “operation or maintenance.” The Wassenaar Arrangement is in the process of reviewing “use” controls in the WA Lists and determining which aspects of

“use,” if any, warrant control. This amendment is an example of the results of the “use” controls review.

##### *ECCN 7D003*

Paragraph d.7 is amended by removing the phrase “raster type head up displays or” because subsequent generations of products have introduced more advanced display technology, such as liquid crystal display (LCD) and light emitting diode (LED) technology. These more sophisticated display technologies do not use raster-scanning.

##### *ECCN 7E004*

Paragraph a.1 “Airborne automatic direction finding equipment operating at frequencies exceeding 5 MHz;” is removed and reserved because it is redundant. ECCN 7E004 (Other “technology”) was established on the Commerce Control List to cover the technology for items not specified on the List in Category 7. Airborne automatic direction-finding technology is, however, already covered by ECCNs 7E001 (“development”) and 7E002 (“production”).

#### Category 8—Marine

##### *ECCN 8A002 (Marine Systems, Equipment and Components)*

The Related Control Note is revised to add a reference to 6A003 for cameras controls that are being moved from 8A002.f to 6A003.b.

Paragraph 8A002.c is amended by adding the word “pressure” in front of “hull penetrators” and removing the words “or connectors”. This revision decontrols items commonly used for civil applications such as those in the oil and gas industry for exploration. The controls, however, remain in effect for equipment with military significance. WA determined that the crucial aspects of this control in terms of military utility are the ability to penetrate a hull at depth while maintaining hull integrity, which is not a function of connectors. This determination is reinforced with the term “pressure hull” and makes it clear that the control relates only to submersibles.

Paragraph 8A002.f is removed and reserved to move all underwater camera controls, other than those for television and film-based photographic still cameras, from Category 8 to Category 6. Specifically, electronic imaging systems specially designed or modified for underwater use incorporating image intensifier tubes specified by 6A002.a.2.a or 6A002.a.2.b are now controlled under 6A003.b.3; and electronic imaging systems specially designed or modified for underwater

use incorporating “focal plane arrays” specified by 6A002.a.3.g are now controlled under 6A003.b.4.c.

### Category 9—Aerospace and Propulsion

#### ECCN 9A012 (Non-Military “Unmanned Aerial Vehicles,” (“UAVs”))

The Heading and paragraphs a., b.1, b.2, b.3, and b.4 are amended by adding “unmanned “airships””, because of WA concerns over high-altitude airships using combustion engines.

The Note to 9A012 is amended by adding the phrase “or model “airships”” to make sure such items are not included in the control of this entry.

#### ECCN 9D004

Paragraph 9D004.d, including its Note, (“Software” in “source code”, “object code” or machine code, required for the “use” of active compensating systems for rotor blade tip clearance control) is removed and reserved. The Wassenaar Arrangement is in the process of reviewing “use” controls in the WA Lists and determining which aspects of “use,” if any, warrant control. This and similar amendments described below are examples of the results of this review.

Paragraph 9D004.e is amended by replacing “use” with “operation.” As noted above, the Wassenaar Arrangement is in the process of reviewing “use” controls in the WA Lists and determining which aspects of “use”, if any, warrant control.

Category 9, Product Group E is amended by revising the Note to remove the phrase “as “use” “technology”” and removing the phrase “rebuild and”. As noted above, the Wassenaar Arrangement is in the process of reviewing “use” controls in the WA Lists and determining which aspects of “use,” if any, warrant control.

#### ECCN 9E003

Paragraph a.2 is simplified by cascading the parameters. The parameter “average burner outlet temperature” is replaced by “combustor exit temperature” because the parameter was too general and often misunderstood. Therefore, the parameter is replaced by an industry-standard ‘combustor exit temperature’ phrase in paragraph a.2.a in association with thermally decoupled liners. In addition, a new parameter is added in a.2.d for “Liners designed to operate at ‘combustor exit temperature’ exceeding 1,883K (1,610 °C) and having holes that meet the parameters specified by 9E003.c.” A Technical Note is added to define ‘combustor exit temperature.’ A note is added to limit the “required”

technology for holes controlled in 9E003.a.2 to “the derivation of the geometry and location of the holes.” Lastly, a *Nota Bene* is added to reference 9E003.c for technology required to manufacture cooling holes.

The parameters defined in 9E003.c (i.e., hole drilling in gas turbine engine components) are specific to round holes of unvarying diameter. Cooling holes in gas turbine engine components can have oval, rectangular, or other shapes, and may vary in size as a function of depth. This rule introduces in paragraph c.1.a a new parameter, ‘Cross-Sectional Area (CSA)’ to implement WA’s recognition of the need to adapt the control parameters to account for non-circular holes. The chosen approach replaces the linear measurement of diameter, which is specific to circles, with the CSA. This CSA is defined in Technical Note 1 to 9E003.c as “the area of the hole in the plane perpendicular to the hole axis.” For a circle, the CSA is  $\pi R^2$  or  $\pi(D/2)^2$ , where  $\pi$  is the value 3.1416, R is the hole radius, and D is the hole diameter. For other hole shapes, the CSA can be calculated through geometry. CSA is well-known to the component designer because it is critical to determining cooling flow. By using CSA, a new ratio, the Hole Shape Ratio (HSR), is established.

Paragraph c.1.b introduces this new “hole shape ratio” (HSR) parameter to the ECCN. It accounts for holes of varying shapes and profiles, yet maintains the scope of control for circular holes. The HSR is defined in Technical Note 2 to 9E003.c as, “the nominal length of the axis of the hole divided by the square root of its minimum ‘cross-sectional area.’” The square root of CSA is used so that the ratio is unit-less. The HSR increases with smaller hole CSA, or greater depth.

#### Section 734.4 *De Minimis* U.S. Content

This rule revises paragraph (a)(1) by changing the Adjusted Peak Performance (APP) level from 1.5 Weighted TeraFLOPS (WT) to 3.0 WT. The effect will be that there is no *de minimis* level for the export from a foreign country of a foreign made computer with an APP exceeding 3.0 WT containing U.S.-origin controlled semiconductors (other than memory circuits) classified under ECCN 3A001 to Computer Tier 3 countries.

#### Section 738.3 Commerce Country Chart Structure

This rule revises paragraph (a)(1) by adding:

- 5A001.i,

- 5D001 (as it applies to 5A001.i or 5E001.a (as it applies to 5A001.i or 5D001.a (as it applies to 5A001.i))), and
- 5E001.a (as it applies to 5A001.i or 5D001.a (as it applies to 5A001.i)).

The result of this revision is that a license is required for all destinations for these items and that there is no license exception availability for 5E001.a (as it applies to 5A001.i or 5D001.a (as it applies to 5A001.i)). However, if the item is consigned to and for the official use of an agency of the U.S. Government (see § 740.2(a)(3)), License Exception GOV may apply for 5A001.i and 5D001 (as it applies to 5A001.i or 5E001.a (as it applies to 5A001.i or 5D001.a (as it applies to 5A001.i))).

#### Section 740.2 Restrictions on all License Exceptions

Paragraph (a)(3) is amended by adding:

- 5A001.i,
- 5D001 (as it applies to 5A001.i or 5E001.a (as it applies to 5A001.i))), and
- 5E001.a (as it applies to 5A001.i or 5D001.a (as it applies to 5A001.i)).

The result of this revision is that a license is required for all destinations for these items and that there is no license exception availability for 5E001.a (as it applies to 5A001.i or 5D001.a (as it applies to 5A001.i)). However, if the item is consigned to and for the official use of an agency of the U.S. Government (see § 740.2(a)(3)), License Exception GOV may apply for 5A001.i and 5D001 (as it applies to 5A001.i or 5E001.a (as it applies to 5A001.i or 5D001.a (as it applies to 5A001.i))). In addition, the rule adds a sentence to explain that no license exceptions apply for 5E001.a (as it applies to 5A001.i, or 5D001.a (as it applies to 5A001.i)).

Paragraph (a)(7), “space qualified” items, is amended by changing the three references to 6A002.e to 6A002.a.1, because 6A002.e was moved to 6A002.a.1.d and all the subparagraphs of 6A002.a.1 are “space qualified” solid-state detectors. Therefore, no license exception may be used for any commodities controlled under 6A002.a.1.

#### Section 740.7 License Exception APP

Paragraph (c)(3)(ii) is amended by raising the “Adjusted Peak Performance” (APP) from 1.5 to 25 Weighted TeraFLOPS (WT). This will raise the License Exception “APP” eligibility level for deemed exports of “technology” and “source code” “software” for the “development” and

“production” of computers to foreign nationals of Computer Tier 1 destinations (see Section 740.7(c)(1) for a listing of Computer Tier 1 destinations), except for the subgroup of countries listed in paragraph (c)(3)(i) that already have an unlimited APP eligibility level. Technological advances in computer technology have made it necessary to raise APP eligibility level.

Paragraph (c)(3)(iii) is amended by raising the “Adjusted Peak Performance” (APP) from 3 to 120 Weighted TeraFLOPS (WT). This will raise the License Exception “APP” eligibility level for deemed exports of “technology” and “source code” “software” for the “use” of computers to foreign nationals of Computer Tier 1 destinations (see Section 740.7(c)(1) for a listing of Computer Tier 1 destinations), except for the subgroup of countries listed in paragraph (c)(3)(i) that have an unlimited APP eligibility level. Technological advances in computer technology have made it necessary to raise APP eligibility level.

Paragraph (d)(3)(i) is amended by raising the “Adjusted Peak Performance” (APP) from 0.5 to 12 Weighted TeraFLOPS (WT). This will raise the License Exception “APP” eligibility level for deemed exports of “technology” and “source code” “software” for the “development” and “production” of computers to foreign nationals of Computer Tier 3 destinations (see Section 740.7(d)(1) for a listing of Computer Tier 3 destinations). This eligibility is subject to the restrictions in Section 740.7(b) and a Foreign National Review requirement in Section 740.7(d)(4). Technological advances in computer technology have made it necessary to raise APP eligibility level.

Paragraph (d)(3)(ii) is amended by raising the “Adjusted Peak Performance” (APP) from 0.75 to 25 Weighted TeraFLOPS (WT). This will raise the License Exception “APP” eligibility level for deemed exports of “technology” and “source code” “software” for the “use” of computers to foreign nationals of Computer Tier 3 destinations (see Section 740.7(d)(1) for a listing of Computer Tier 3 destinations). This eligibility is subject to the restrictions in Section 740.7(b) and a Foreign National Review requirement in Section 740.7(d)(4). Advances in computer technology have made it necessary to raise APP eligibility level.

#### **License Exception GOV 740.11 Supplement No. 1 to Section 740.11**

Introductory paragraph (a)(1) is amended by adding the phrase “systems

or transmitting and receiving arrays, designed for” and removing the word “systems” in the description for ECCN 6A001.a.1.b.1. This revision harmonizes it with the revisions made to 6A001.a.1.b described in the preamble.

#### **Section 740.16 Additional Permissive Reexports (APR)**

This rule limits use of License Exception APR for cameras described in ECCN 6A003.b.3 (having the characteristics listed in 6A002.a.2.a or a.2.b), 6A003.b.4.c, or components described in 6A002.a.2.a, a.2.b, a.2.c, a.3.b.2.b, or a.3.g by making such cameras and components ineligible for reexport under paragraph (a)(2) of License Exception APR—“reexports from Country Group A:1 and cooperating countries” and under paragraph (b)(2) for reexports to and among Country Group A:1 and cooperating countries.

However, paragraph (b)(3) provides for allowances from the exclusions listed in (b)(2) for reexports to among countries listed in (b)(3) under specified circumstances. Paragraph (b)(3) is amended to add cameras described in ECCN 6A003.b.3 (having the characteristics listed in 6A002.a.2.a or a.2.b) and 6A003.b.4.c.

#### **Section 740.20 License Exception Strategic Trade Authorization (STA)**

Section 740.20 is amended by adding paragraph (b)(2)(ix) to remove low light level components and related “technology” from License Exception STA eligibility. The new paragraph reads, “License Exception STA may not be used for any commodity controlled by ECCNs 6A002.a.2, a.3.a, a.3.b, a.3.g or .c, or any related “technology” controlled by 6E001 or 6E002.”

#### **Section 742.6 Regional Stability**

Paragraph (a)(1) is amended by removing all references (four references) to 6A002.e, because this paragraph was moved to 6A002.a.1.d. In addition, paragraph 6A003.b.4.c is added to paragraph (a)(1), because this new paragraph is controlled for RS:1 reasons. ECCN 6D994 is removed from paragraph (a)(1), because this ECCN is removed from the CCL (see explanation for 6D994 above).

#### **Section 742.13 Communications Intercepting Devices; Software and Technology for Communications Intercepting Devices**

Paragraph (a)(1) is amended by adding 5A001.i, 5D001.a (“software” for the “production” or “development” of 5A001.i equipment, functions or features), 5D001.b (“software” to

support 5E001.a “technology” for 5A001.i equipment or certain 5D001.a “software”), 5D001.c (“software” to provide characteristics, functions or features of 5A001.i equipment), and 5E001.a (“technology” for the “production” or “development” of 5A001.i equipment or certain 5D001.a “software”) to add license requirements for surreptitious listening (SL) reasons to all destinations, including Canada, and to apply the license policy set forth in this section to these items. License applications will generally be denied to embargoed destinations and to any end-user, except a provider of wire or electronic communication services or an officer, agent, or employee of, or person under contract with such a provider, in the normal course of the business of providing that wire or electronic communication service; or an officer, agent, or employee of, or a person under contract with, the United States, one of the 50 States, or a political subdivision thereof, when engaged in the normal course of government activities.

#### **Part 743 Special Reporting**

WA has three levels of controls as reflected in its Basic List (BL), Sensitive List (SL), and Very Sensitive List (VSL). BIS makes items on the WA BL and SL eligible for license exceptions. Because of the U.S. obligations under its agreements to the WA, the United States must report on SL items exported outside of the WA membership countries. BIS does this by gathering data from its licensing database. To collect data on exports made under license exceptions, BIS requires WA reporting on SL items exported (excluding deemed exports) under License Exceptions GBS, CIV, TSR, LVS, APP, STA, and portions of GOV. As a result of WA making changes to its SL, this rule makes corresponding changes to the reporting requirements of section 743.1 of the EAR.

Paragraph 743.1(c)(1)(iii) is amended by removing references to 3B001.a.2 (Metal Organic Chemical Vapor Deposition (MOCVD) reactors). WA agreed to remove MOCVD reactors from the WA Sensitive List because such equipment has become common and is not of any particular strategic importance.

With the addition of License Exception STA, many more Category 6 entries have become eligible for export via license exception and are therefore subject to WA reporting requirements. Therefore, many ECCNs are added to Section 743.1(c)(1)(vi). Some added entries are not eligible themselves for license exception, but are added for reference because the technology for

these ECCNs is eligible for license exception under ECCNs 6E001 and 6E002. In addition, the Notes to Section 743.1(c)(1)(vi) are reinserted and revised to harmonize with the WA Sensitive List. These Notes were inadvertently removed by the May 20, 2011 Wassenaar rule (76 FR 29619).

As a result of the changes described above, this rule adds the Note "License Requirement Notes: See § 743.1 of the EAR for reporting requirements for exports under License Exceptions." to the end of the License Requirements sections of ECCNs 6A003 and 6B008.

As a result of the change to the control level of computers in ECCN 4A003.b, this rule revises the APP from 1.5 WT to 3.0 WT in § 743.2(b) for Computer Tier 3 countries. Exporters must file post-shipment reports and keep records in accordance with recordkeeping requirements in Part 762 for high performance computer exports to destinations in Computer Tier 3, as well as exports of commodities used to enhance computers previously exported or reexported to a Computer Tier 3 destination, where the "Adjusted Peak Performance" ("APP") is greater than 3.0 Weighted TeraFLOPS (WT).

Supplement No. 1 to Part 743 is amended by adding Mexico as the 41st Participating State in the WA. This addition became effective on January 25, 2012, upon Mexico's completion of the necessary procedures for joining the WA and WA's approval of Mexico's application to be a Participating State in the WA.

#### **Section 744.9 Restriction on Certain Exports and Reexports of Cameras Controlled by ECCN 6A003.b.4.b**

Section 744.9 is amended by adding ECCNs 6A003.b.3 and 6A003.b.4.c to the Title of Section 744.9, the introductory text of paragraph (a) and in the first sentence of paragraph (b). This will impose a license requirement to all destinations except Canada if at the time of export or reexport, the exporter or reexporter knows or is informed that the item will be or is intended to be: Used by a "military end user," as defined in paragraph (d) of this section; or incorporated into a "military commodity" controlled by ECCN 0A919. Applications for licenses required by this section will be reviewed by applying the policies that would be applied under the International Traffic in Arms Regulations (22 CFR parts 120–130). Shipments subject to the prohibitions in this section that are consigned to and for the official use of the U.S. Government authorized pursuant to Section 740.11(b)(2)(ii) of the EAR may be made

under License Exception GOV. No other license exceptions apply to the prohibitions described in paragraphs (a) and (b) of this section.

#### **Section 746.7 Iran**

Paragraph (a) is amended to add license requirements for exports and reexports to Iran of 5A001.i, 5D001 (for 5A001.i or for 5E001.a (for 5A001.i, or for 5D001.a (for 5A001.i))) and 5E001.a (for 5A001.i, or for 5D001.a (for 5A001.i)). Licenses will generally be denied for such items and no license exceptions may be used to overcome this license requirement.

#### **Supplement No. 7 to Part 748 VEU List**

Supplement No. 7 to Part 748 is amended by removing the citation "3B001.d" from the "Eligible Items (by ECCN)" column for the following six entities: Applied Materials (China), Inc., Applied Materials (Xi'an) Ltd., Grace Semiconductor Manufacturing Corporation, Hynix Semiconductor China Ltd, Hynix Semiconductor (Wuxi) Ltd, Semiconductor Manufacturing International Corporation. The reason for the removal of 3B001.d is explained above under ECCN 3B001.

#### **Section 752.3 Eligible Items**

Paragraph (a)(7) is amended by adding 5A001.i, 5D001.a (for 5A001.i), 5D001.b (to support 5E001.a "technology" for 5A001.i equipment or certain 5D001.a "software"), 5D001.c (for 5A001.i), and 5E001.a (for 5A001.i equipment or certain 5D001.a "software") to the list of items ineligible for Special Comprehensive Licenses.

#### **Section 770.2 Item Interpretations**

Paragraph (l)(1) "Interpretation 12: Computers" is amended by removing two references to 4A003.a. Paragraph 4A003.a (fault tolerance) is removed by this rule.

#### **Section 772.1 Definitions of Terms as Used in the Export Administration Regulations (EAR)**

The term "airship" is added to Section 772.1, which is used in Category 9, as well as its definition, "A power-driven airborne vehicle that is kept buoyant by a body of gas (usually helium, formerly hydrogen) which is lighter than air." The preamble paragraph concerning ECCN 9A012 amendments contains an explanation for this change.

The definition (calculation) for "Average Output Power," as used in Category 6, is amended by replacing "\* \* \* laser duration in seconds." with the following:

"\* \* \* period over which a series of consecutive pulses is emitted, in seconds. For a series of uniformly spaced pulses it is equal to the total "laser" output energy in a single pulse, in joules, multiplied by the pulse frequency of the "laser", in Hertz."

The removal of "laser duration" from the definition of "peak power" would mean that the only remaining place where "laser duration" is used is in the definition of "average output power." Therefore, the term "laser duration" is removed and the definition of "laser duration" is incorporated into the definition of "average output power."

The terms "common channel signaling," "fault tolerance," and "laser duration" are removed consistent with changes to the entries that used these terms. The preamble paragraph concerning ECCN 5E001.c.5 provides an explanation regarding the deletion of the term "common channel signaling." The preamble paragraph for ECCN 4A003.a contains an explanation regarding the deletion of the term "fault tolerance." The term "laser duration" was used in the definitions of "average output power" and "peak power." As a result the term "laser duration" is no longer needed.

The definition of "peak power," used in Category 6, is revised by removing "level of" and "laser duration." The definition now is, "The highest power attained in the 'pulse duration.'" The change within the "Peak power" definition from "laser duration" to "pulse duration" removes ambiguity by making the definition pulse specific.

The definition for "positioning accuracy," used in Category 2 is removed. The position accuracy for all machine tools is determined using only the ISO 230/2 (2006). Also see the Technical Notes concerning 'stated position accuracy' set forth in Category 2 at the beginning of Product Group B. BIS, with the support of DOE, made these changes to use only one standard "ISO 230/2 (2006)" to determine "positioning accuracy" for all machine tools controlled by the EAR in order to streamline export compliance.

The definition for "pulse duration," used in Category 6, is amended by replacing the phrase "measured at Full Width Half Intensity (FWHI) levels" with the phrase "is the time between the half-power points on the leading edge and trailing edge of an individual pulse." The definition for "pulse duration" is revised because "Full Width Half Intensity" is not typically used by industry. The leading and trailing edge of laser pulses are fundamental characteristics and where the half-power points are easily identified.

### Export Administration Act

Since August 21, 2001, the Export Administration Act of 1979, as amended, has been in lapse. However, the President, through Executive Order 13222 of August 17, 2001 (3 CFR, 2001 Comp. 783 (2002)), which has been extended by successive Presidential Notices, the most recent being that of Notice of August 12, 2011, 76 FR 50661 (August 16, 2011) has continued the EAR in effect under the International Emergency Economic Powers Act (50 U.S.C. 1701 *et seq.*).

### Saving Clause

Shipments of items removed from license exception eligibility or eligibility for export without a license as a result of this regulatory action that were on dock for loading, on lighter, laden aboard an exporting carrier, or en route aboard a carrier to a port of export, on July 2, 2012, pursuant to actual orders for export to a foreign destination, may proceed to that destination under the previous license exception eligibility or without a license so long as they have been exported from the United States before August 31, 2012. Any such items not actually exported before midnight, on August 31, 2012, require a license in accordance with this regulation.

### Rulemaking Requirements

1. Executive Orders 13563 and 12866 direct agencies to assess all costs and benefits of available regulatory alternatives and, if regulation is necessary, to select regulatory approaches that maximize net benefits (including potential economic, environmental, public health and safety effects, distributive impacts, and equity). Executive Order 13563 emphasizes the importance of quantifying both costs and benefits, of reducing costs, of harmonizing rules, and of promoting flexibility. This rule has been designated to be a "significant regulatory action" although not economically significant, under Executive Order 12866. Accordingly, the rule has been reviewed by the Office of Management and Budget.

2. Notwithstanding any other provision of law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*) (PRA), unless that collection of information displays a currently valid Office of Management and Budget (OMB) Control Number. This rule involves two collections of information subject to the PRA. One of the

collections has been approved by OMB under control number 0694-0088, "Multi-Purpose Application," and carries a burden hour estimate of 58 minutes for a manual or electronic submission. The other of the collections has been approved by OMB under control number 0694-0106, "Reporting and Recordkeeping Requirements under the Wassenaar Arrangement," and carries a burden hour estimate of 21 minutes for a manual or electronic submission. Send comments regarding these burden estimates or any other aspect of these collections of information, including suggestions for reducing the burden, to OMB Desk Officer, New Executive Office Building, Washington, DC 20503; and to Jasmeet Seehra, OMB Desk Officer, by email at [Jasmeet\\_K\\_Seehra@omb.eop.gov](mailto:Jasmeet_K_Seehra@omb.eop.gov) or by fax to (202) 395-7285; and to the Office of Administration, Bureau of Industry and Security, Department of Commerce, 14th and Pennsylvania Avenue NW., Room 6622, Washington, DC 20230.

3. This rule does not contain policies with Federalism implications as that term is defined under Executive Order 13132.

4. The provisions of the Administrative Procedure Act (5 U.S.C. 553) requiring notice of proposed rulemaking, the opportunity for public participation, and a delay in effective date, are inapplicable because this regulation involves a military and foreign affairs function of the United States (5 U.S.C. 553(a)(1)). Immediate implementation of these amendments fulfills the United States' international obligation to the Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies. The Wassenaar Arrangement contributes to international security and regional stability by promoting greater responsibility in transfers of conventional arms and dual use goods and technologies, thus preventing destabilizing accumulations of such items. The Wassenaar Arrangement consists of 41 member countries that act on a consensus basis and the changes set forth in this rule implement agreements reached at the December 2011 plenary session of the WA. Since the United States is a significant exporter of the items in this rule, implementation of this provision is necessary for the WA to achieve its purpose. Any delay in implementation will create a disruption in the movement of affected items globally because of disharmony between export control measures implemented by WA members, resulting in tension between member countries. Export controls work

best when all countries implement the same export controls in a timely manner. If this rulemaking were delayed to allow for notice and comment and a 30 day delay in effectiveness, it would prevent the United States from fulfilling its commitment to the WA in a timely manner and would injure the credibility of the United States in this and other multilateral regimes.

Further, no other law requires that a notice of proposed rulemaking and an opportunity for public comment be given for this final rule. Because a notice of proposed rulemaking and an opportunity for public comment are not required to be given for this rule under the Administrative Procedure Act or by any other law, the analytical requirements of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) are not applicable. Therefore, this regulation is issued in final form. Although there is no formal comment period, public comments on this regulation are welcome on a continuing basis. Comments should be submitted to Sharron Cook, Office of Exporter Services, Bureau of Industry and Security, Department of Commerce, 14th and Pennsylvania Ave. NW., Room 2099, Washington, DC 20230.

### List of Subjects

#### 15 CFR Part 734

Administrative practice and procedure, Exports, Inventions and patents, Research science and technology.

#### 15 CFR Part 738

Exports.

#### 15 CFR Parts 740, 748 and 752

Administrative practice and procedure, Exports, Reporting and recordkeeping requirements.

#### 15 CFR Part 742

Exports, Terrorism.

#### 15 CFR Part 743

Administrative practice and procedure, Reporting and recordkeeping requirements.

#### 15 CFR Part 744

Exports, Reporting and recordkeeping requirements, Terrorism.

#### 15 CFR Parts 746 and 774

Exports, Reporting and recordkeeping requirements.

#### 15 CFR Parts 770 and 772

Exports.

Accordingly, Parts 734, 738, 740, 742, 743, 744, 746, 748, 752, 770, 772 and 774 of the Export Administration

Regulations (15 CFR parts 730–774) are amended as follows:

#### PART 734—[AMENDED]

■ 1. The authority citation for part 734 continues to read as follows:

**Authority:** 50 U.S.C. app. 2401 *et seq.*; 50 U.S.C. 1701 *et seq.*; E.O. 12938, 59 FR 59099, 3 CFR, 1994 Comp., p. 950; E.O. 13020, 61 FR 54079, 3 CFR, 1996 Comp., p. 219; E.O. 13026, 61 FR 58767, 3 CFR, 1996 Comp., p. 228; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; Notice of August 12, 2011, 76 FR 50661 (August 16, 2011); Notice of November 9, 2011, 76 FR 70319 (November 10, 2011).

■ 2. Section 734.4 is amended by removing “1.5” and adding in its place “3.0” in paragraph (a)(1).

#### PART 738—[AMENDED]

■ 3. The authority citation for part 738 continues to read as follows:

**Authority:** 50 U.S.C. app. 2401 *et seq.*; 50 U.S.C. 1701 *et seq.*; 10 U.S.C. 7420; 10 U.S.C. 7430(e); 22 U.S.C. 287c; 22 U.S.C. 3201 *et seq.*; 22 U.S.C. 6004; 30 U.S.C. 185(s), 185(u); 42 U.S.C. 2139a; 42 U.S.C. 6212; 43 U.S.C. 1354; 15 U.S.C. 1824a; 50 U.S.C. app. 5; 22 U.S.C. 7201 *et seq.*; 22 U.S.C. 7210; E.O. 13026, 61 FR 58767, 3 CFR, 1996 Comp., p. 228; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; Notice of August 12, 2011, 76 FR 50661 (August 16, 2011).

■ 4. Section 738.3 is amended by revising paragraph (a)(1) to read as follows:

##### § 738.3 Commerce Country Chart structure.

(a) \* \* \*

(1) *ECCNs 0A983, 5A001.i, 5A980, 5D001 (for 5A001.i, or for 5E001.a (for 5A001.i or for 5D001.a (for 5A001.i))), 5D980, 5E001.a (for 5A001.i, or for 5D001.a (for 5A001.i)) and 5E980.* A license is required for all destinations for items controlled under these entries. For items controlled by 0A983, 5E001.a (for 5A001.i, or for 5D001.a (for 5A001.i)) and 5E980, no license exceptions apply. For items controlled by 5A001.i, 5A980, 5D001 (for 5A001.i or for 5E001.a (for 5A001.i, or for 5D001.a (for 5A001.i))) and 5D980, License Exception GOV may apply if your item is consigned to and for the official use of an agency of the U.S. Government (see § 740.2(a)(3)). If your item is controlled by 0A983, 5A001.i, 5A980, 5D001 (for 5A001.i or for 5E001.a (for 5A001.i, or for 5D001.a (for 5A001.i))), 5D980, 5E001.a (for 5A001.i, or for 5D001.a (for 5A001.i)) or 5E980 you should proceed directly to Part 748 of the EAR for license application instructions and §§ 742.11 or 742.13 of the EAR for information on the licensing

policy relevant to these types of applications.

\* \* \* \* \*

#### PART 740—[AMENDED]

■ 5. The authority citation for part 740 continues to read as follows:

**Authority:** 50 U.S.C. app. 2401 *et seq.*; 50 U.S.C. 1701 *et seq.*; 22 U.S.C. 7201 *et seq.*; E.O. 13026, 61 FR 58767, 3 CFR, 1996 Comp., p. 228; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; Notice of August 12, 2011, 76 FR 50661 (August 16, 2011).

■ 6. Section 740.2 is amended by revising paragraphs (a)(3) and (a)(7) to read as follows:

##### § 740.2 Restrictions on all license exceptions.

(a) \* \* \*

(3) The item is primarily useful for surreptitious interception of wire, oral, or electronic communications, or related software, controlled under ECCNs 5A001.i, 5A980, 5D001 (for 5A001.i or for 5E001.a (for 5A001.i, or for 5D001.a (for 5A001.i))), or 5D980, unless the item is consigned to and for the official use of an agency of the U.S. Government (see § 740.11(b)(2)(ii) of this part, Governments (GOV)). No license exceptions apply for 5E001.a (for 5A001.i, or for 5D001.a (for 5A001.i)) or for 5E980.

\* \* \* \* \*

(7) “*Space qualified*” items. Commodities defined in 3A001.b.8 (Traveling Wave Tube Amplifiers (TWTAs) exceeding 18 GHz), 6A002.a.1, 6A008.j.1, or 6A998.b; “software” for commodities defined in 3A001.b.8 (Traveling Wave Tube Amplifiers (TWTAs) exceeding 18 GHz), 6A002.a.1, 6A008.j.1, or 6A998.b and controlled under ECCNs 3D001 (Traveling Wave Tube Amplifiers (TWTAs) exceeding 18 GHz), 6D001, 6D002, 6D991; and “technology” for commodities defined in ECCNs 3A001.b.8 (Traveling Wave Tube Amplifiers (TWTAs) exceeding 18 GHz), 6A002.a.1, 6A008.j.1, or 6A998.b and controlled under ECCNs 3E001, 6E001, 6E002, 6E101, 6E991.

\* \* \* \* \*

##### § 740.7 [Amended]

■ 7. Section 740.7 is amended by:

■ a. Removing the phrase “APP less than or equal to 1.5 Weighted TeraFLOPS (WT)” and adding in its place “APP less than or equal to 25 Weighted TeraFLOPS (WT)” in paragraph (c)(3)(ii);

■ b. Removing the phrase “with an APP less than or equal to 3 WT are eligible” and adding in its place “with an APP less than or equal to 120 WT are eligible” in paragraph (c)(3)(iii);

■ c. Removing the phrase “with a APP less than or equal to 0.5 Weighted TeraFLOPs (WT)” and adding in its place “with an APP less than or equal to 12 Weighted TeraFLOPs (WT)” in paragraph (d)(3)(i); and

■ d. Removing the phrase “with an APP less than or equal to 0.75 WT are eligible” and adding in its place “with an APP less than or equal to 25 WT are eligible” in paragraph (d)(3)(ii).

■ 8. Supplement No. 1 to § 740.11 is amended by revising the introductory text of paragraph (a)(1) to read as follows:

##### § 740.11 Governments, international organizations, international inspections under the Chemical Weapons Convention, and the International Space Station (GOV).

\* \* \* \* \*

##### Supplement No. 1 to § 740.11—Additional Restrictions on use of License Exception GOV

(a) \* \* \*

(1) Items identified on the Commerce Control List as controlled for national security (NS) reasons under Export Control Classification Numbers (ECCNs) as follows for export or reexport to destinations other than Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, or the United Kingdom: 1C001, 5A001.b.5, 5A001.h, 6A001.a.1.b.1 systems or transmitting and receiving arrays, designed for object detection and location, having a sound pressure level exceeding 210 dB (reference 1 µPa at 1 m) and an operating frequency in the band from 30 Hz to 2 kHz inclusive, 6A001.a.2.a.1, 6A001.a.2.a.2, 6A001.a.2.a.3, 6A001.a.2.a.5, 6A001.a.2.a.6, 6A001.a.2.b, 6A001.a.2.e, 6A002.a.1.c, 6B008, 8A001.b, 8A001.d, 8A002.o.3.b; and

\* \* \* \* \*

■ 9. Section 740.16 is amended by revising paragraphs (a)(2) and (b)(2), and the introductory text of paragraph (b)(3), to read as follows:

##### § 740.16 Additional permissive reexports (APR).

(a) \* \* \*

(2) The commodities being reexported are not controlled for NP, CB, MT, SI or CC reasons and are not military commodities described in ECCN 0A919 or cameras described in ECCN 6A003.b.3 (having the characteristics listed in 6A002.a.2.a or a.2.b), 6A003.b.4.b, 6A003.b.4.c, or components described in 6A002.a.2.a, a.2.b, a.2.c, a.3.b.2.b, or a.3.g; and

\* \* \* \* \*

(b) \* \* \*

(2) Except as provided in paragraph (b)(3) of this section, cameras described in ECCN 6A003.b.3 (having the characteristics listed in 6A002.a.2.a or

a.2.b), 6A003.b.4.b, 6A003.b.4.c, or components described in 6A002.a.2.a, a.2.b, a.2.c, a.3.b.2.b, or a.3.g, and “military commodities” described in ECCN 0A919 may not be exported under this paragraph (b).

(3) Cameras described in ECCN 6A003.b.3 (having the characteristics listed in 6A002.a.2.a or a.2.b), 6A003.b.4.b, or 6A003.b.4.c may be exported or reexported to and among: Albania, Australia, Austria, Belgium, Bulgaria, Canada, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Turkey, and the United Kingdom if:

\* \* \* \* \*

■ 10. Section 740.20 is amended by adding paragraph (b)(2)(ix), to read as follows:

**§ 740.20 License Exception Strategic Trade Authorization (STA).**

\* \* \* \* \*

(b) \* \* \*

(2) \* \* \*

(ix) License Exception STA may not be used for any commodity controlled by ECCNs 6A002.a.2, a.3.a, a.3.b, a.3.g or .c, or any related “technology” controlled by 6E001 or 6E002.

\* \* \* \* \*

**PART 742—[AMENDED]**

■ 11. The authority citation for part 742 continues to read as follows:

**Authority:** 50 U.S.C. app. 2401 *et seq.*; 50 U.S.C. 1701 *et seq.*; 22 U.S.C. 3201 *et seq.*; 42 U.S.C. 2139a; 22 U.S.C. 7201 *et seq.*; 22 U.S.C. 7210; Sec. 1503, Pub. L. 108–11, 117 Stat. 559; E.O. 12058, 43 FR 20947, 3 CFR, 1978 Comp., p. 179; E.O. 12851, 58 FR 33181, 3 CFR, 1993 Comp., p. 608; E.O. 12938, 59 FR 59099, 3 CFR, 1994 Comp., p. 950; E.O. 13026, 61 FR 58767, 3 CFR, 1996 Comp., p. 228; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; Presidential Determination 2003–23 of May 7, 2003, 68 FR 26459, May 16, 2003; Notice of August 12, 2011, 76 FR 50661 (August 16, 2011); Notice of November 9, 2011, 76 FR 70319 (November 10, 2011).

■ 12. Section 742.6 is amended by revising paragraph (a)(1) to read as follows:

**§ 742.6 Regional stability.**

(a) \* \* \*

(1) RS Column 1 License Requirements in General. As indicated in the CCL and in RS column 1 of the Commerce Country Chart (see Supplement No. 1 to part 738 of the EAR), a license is required to all

destinations, except Canada, for items described on the CCL under ECCNs 3A982; 3D982; 3E982; 6A002.a.1, a.2, a.3, or .c; 6A003.b.3, b.4.a, and b.4.c; 6A008.j.1; 6A998.b; 6D001 (only “software” for the “development” or “production” of items in 6A002.a.1, a.2, a.3, .c; 6A003.b.3 and .b.4; or 6A008.j.1); 6D002 (only “software” for the “use” of items in 6A002.a.1, a.2, a.3, .c; 6A003.b.3 and .b.4; or 6A008.j.1); 6D003.c; 6D991 (only “software” for the “development,” “production,” or “use” of equipment controlled by 6A002.a.1.d or 6A998.b); 6E001 (only “technology” for “development” of items in 6A002.a.1, a.2, a.3 (except 6A002.a.3.d.2.a and 6A002.a.3.e for lead selenide focal plane arrays), and .c, 6A003.b.3 and b.4, or 6A008.j.1); 6E002 (only “technology” for “production” of items in 6A002.a.1, a.2, a.3, or .c, 6A003.b.3 or b.4, or 6A008.j.1); 6E991 (only “technology” for the “development,” “production,” or “use” of equipment controlled by 6A998.b); 7A994 (only QRS11 00100 100/101 and QRS11 0050 443/569 Micromachined Angular Rate Sensors); 7D001 (only “software” for “development” or “production” of items in 7A001, 7A002, or 7A003); 7E001 (only “technology” for the “development” of inertial navigation systems, inertial equipment, and specially designed components therefor for civil aircraft); 7E002 (only “technology” for the “production” of inertial navigation systems, inertial equipment, and specially designed components therefor for civil aircraft); 7E101 (only “technology” for the “use” of inertial navigation systems, inertial equipment, and specially designed components for civil aircraft).

\* \* \* \* \*

■ 13. Section 742.13 is amended by revising the section heading and paragraph (a)(1) to read as follows:

**§ 742.13 Communications intercepting devices; software and technology for communications intercepting devices.**

(a) *License requirement.* (1) In support of U.S. foreign policy to prohibit the export of items that may be used for the surreptitious interception of wire, oral, or electronic communications, a license is required for all destinations, including Canada, for ECCNs having an “SL” under the “Reason for Control” paragraph. These items include any electronic, mechanical, or other device primarily useful for the surreptitious interception of wire, oral, or electronic communications (ECCNs 5A001.i and 5A980); and for related “software” primarily useful for the surreptitious interception of wire, oral, or electronic communications (ECCN 5D001.c and

5D980.a); and “software” primarily useful for the “development”, “production”, or “use” of devices controlled under ECCNs 5A001.i and 5A980 (ECCNs 5D001.a and 5D980.b); and for “technology” primarily useful for the “development”, “production”, or “use” of items controlled by ECCNs 5A001.i, 5D001.a (for 5A001.i), 5A980 and 5D980 (ECCNs 5E001.a and 5E980); and for “software” primarily useful to support such ECCN 5E001.a “development”, “production”, or “use” “technology” for 5A001.i equipment and certain 5D001.a “software” (ECCN 5D001.b). These licensing requirements do not supersede the requirements contained in the Omnibus Crime Control and Safe Streets Act of 1968, as amended (18 U.S.C. 2512). This license requirement is not reflected on the Commerce Country Chart (Supplement No. 1 to Part 738 of the EAR).

\* \* \* \* \*

**PART 743—[AMENDED]**

■ 14. The authority citation for part 743 continues to read as follows:

**Authority:** 50 U.S.C. app. 2401 *et seq.*; 50 U.S.C. 1701 *et seq.*; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; Notice of August 12, 2011, 76 FR 50661 (August 16, 2011).

■ 15. Section 743.1 is amended by:

■ a. Revising paragraphs (c)(1)(iii) and (c)(1)(vi); and

■ b. Adding Notes for paragraph (c)(1)(vi), to read as follows:

**§ 743.1 Wassenaar Arrangement.**

\* \* \* \* \*

(c) \* \* \*

(1) \* \* \*

(iii) Category 3: 3A002.g.1, 3D001 for “development” or “production” of 3A002.g.1, and 3E001 for “development” or “production” of 3A002.g.1;

\* \* \* \* \*

(vi) Category 6: 6A001.a.1.b (changing 10 kHz to 5 kHz and adding the text “or a sound pressure level exceeding 224 dB (reference 1 μPa at 1 m) for equipment with an operating frequency in the band from 5 kHz to 10 kHz inclusive” to the existing text in 6A001.a.1.b.1), and 6A001.a.2.d; 6A002.a.1.a, 6A002.a.1.b, 6A002.a.1.c, 6A002.a.1.d, 6A002.a.2.a (changing 350 μA/lm to 700 μA/lm in 6A002.a.2.a.3.a), 6A002.a.2.b, 6A002.a.3, 6A002.b, 6A002.c (incorporating image intensifier tubes listed in 6A002.a.2.a (having characteristics described in this paragraph) or 6A002.a.2.b, “focal plane arrays” listed in 6A002.a.3 (having characteristics described in Note 1 to

this paragraph) or solid-state detectors having the characteristics listed in 6A002.a.1); 6A003.b.3 (incorporating 6A002.a.2.a (having characteristics described in this paragraph) or 6A002.a.2.b), 6A003.b.4 (incorporating “focal plane arrays” listed in 6A002.a.3 to 6A002.a.3.e, 6A002.a.3.f, or 6A002.a.3.g, having characteristics described in this paragraph), 6A003.b.5; 6A004.c and d; 6A006.a.1, 6A006.a.2 (having a ‘sensitivity’ lower (better) than 2pT rms per square root Hz), 6A006.c.1, 6A006.d (certain items only; see Note to this paragraph), 6A006.e (incorporating magnetometers specified in 6A006.a.1 or 6A006.a.2, as described by this paragraph); 6A008.d, .h, and .k; 6B008, 6D001 (for 6A004.c and .d, 6A008.d, .h, and .k, and 6B008); 6D003.a; 6E001 (for equipment and software listed in this paragraph); and 6E002 (for equipment specified by 6A or 6B in this paragraph);

Notes to paragraph (c)(1)(vi):

**Note 1:** Reports for 6A002.a.3 exclude the following “focal plane arrays”:

- a. Platinum Silicide (PiSi) “focal plane arrays” having less than 10,000 elements;
- b. Iridium Silicide (IrSi) “focal plane arrays”;
- c. Indium Antimonide (InSb) or Lead Selenide (PbSe) “focal plane arrays” having less than 256 elements;
- d. Indium Arsenide (InAs) “focal plane arrays”;
- e. Lead Sulphide (PbS) “focal plane arrays”;
- f. Indium Gallium Arsenide (InGaAs) “focal plane arrays”;
- g. Mercury Cadmium Telluride (HgCdTe) “focal plane arrays”, as follows:
  1. ‘Scanning Arrays’ having any of the following:
    - a. 30 elements or less; or
    - b. Incorporating time delay-and-integration within the element and having 2 elements or less;
  2. ‘Staring Arrays’ less than 256 elements;

**Technical Notes:** ‘Scanning Arrays’ are defined as “focal plane arrays” designed for use with a scanning optical system that images a scene in a sequential manner to produce an image.

‘Staring Arrays’ are defined as “focal plane arrays” designed for use with a non-scanning optical system that images a scene.

- h. Gallium Arsenide (GaAs) or Gallium Aluminum Arsenide (GaAlAs) quantum well “focal plane arrays” having less than 256 elements; and
- i. Microbolometer “focal plane arrays” having less than 8,000 elements.

**Note 2:** Reports for 6A002.a.3.g do not apply to:

- a. The linear (1-dimensional) “focal plane arrays” specially designed or modified to achieve ‘charge multiplication’ having 4,096 elements or less; or
- b. The non-linear (2-dimensional) “focal plane arrays” specially designed or modified to achieve ‘charge multiplication’ having a

maximum linear dimension of 4,096 elements and a total of 250,000 elements or less.

**Note 3:** Reports for 6A006.d, are for “compensation systems” for the following:

- a. Magnetic sensors controlled in 6A006.a.2 using optically pumped or nuclear precession (proton/Overhauser) “technology” that will permit these sensors to realize a ‘sensitivity’ lower (better) than 2 pT rms per square root Hz.

b. Underwater electric field sensors controlled in 6A006.b.

c. Magnetic gradiometers controlled in 6A006.c that will permit these sensors to realize a ‘sensitivity’ lower (better) than 3 pT/m rms per square root Hz.

\* \* \* \* \*

■ 16. Section 743.2 is amended by removing “1.5” and adding in its place “3.0” in paragraph (b).

■ 17. Supplement No. 1 to part 743 is amended by adding “Mexico” in alphabetic order.

#### PART 744—[AMENDED]

■ 18. The authority citation for part 744 continues to read as follows:

**Authority:** 50 U.S.C. app. 2401 *et seq.*; 50 U.S.C. 1701 *et seq.*; 22 U.S.C. 3201 *et seq.*; 42 U.S.C. 2139a; 22 U.S.C. 7201 *et seq.*; 22 U.S.C. 7210; E.O. 12058, 43 FR 20947, 3 CFR, 1978 Comp., p. 179; E.O. 12851, 58 FR 33181, 3 CFR, 1993 Comp., p. 608; E.O. 12938, 59 FR 59099, 3 CFR, 1994 Comp., p. 950; E.O. 12947, 60 FR 5079, 3 CFR, 1995 Comp., p. 356; E.O. 13026, 61 FR 58767, 3 CFR, 1996 Comp., p. 228; E.O. 13099, 63 FR 45167, 3 CFR, 1998 Comp., p. 208; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; E.O. 13224, 66 FR 49079, 3 CFR, 2001 Comp., p. 786; Notice of August 12, 2011, 76 FR 50661 (August 16, 2011); Notice of September 21, 2011, 76 FR 59001 (September, 22, 2011); Notice of November 9, 2011, 76 FR 70319 (November 10, 2011); Notice of January 19, 2012, 77 FR 3067 (January 20, 2012).

- 19. Section 744.9 is amended by
- a. Revising the section heading to read as set forth below; and
  - b. Removing the reference “ECCN 6A003.b.4.b” and adding in its place “ECCNs 6A003.b.3, 6A003.b.4.b, or 6A003.b.4.c” in the introductory text of paragraph (a) and in the first sentence of paragraph (b).

**§ 744.9 Restrictions on certain exports and reexports of cameras controlled by ECCNs 6A003.b.3, 6A003.b.4.b, or 6A003.b.4.c.**

\* \* \* \* \*

#### PART 746—[AMENDED]

■ 20. The authority citation for part 746 continues to read as follows:

**Authority:** 50 U.S.C. app. 2401 *et seq.*; 50 U.S.C. 1701 *et seq.*; 22 U.S.C. 287c; Sec. 1503, Pub. L. 108–11, 117 Stat. 559; 22 U.S.C.

6004; 22 U.S.C. 7201 *et seq.*; 22 U.S.C. 7210; E.O. 12854, 58 FR 36587, 3 CFR, 1993 Comp., p. 614; E.O. 12918, 59 FR 28205, 3 CFR, 1994 Comp., p. 899; E.O. 13222, 3 CFR, 2001 Comp., p. 783; Presidential Determination 2003–23 of May 7, 2003, 68 FR 26459, May 16, 2003; Presidential Determination 2007–7 of December 7, 2006, 72 FR 1899 (January 16, 2007); Notice of August 12, 2011, 76 FR 50661 (August 16, 2011).

■ 21. Section 746.7 is amended by revising paragraph (a)(1) to read as follows:

#### § 746.7 Iran.

\* \* \* \* \*

(a) *License Requirements*—(1) *EAR license requirements.* A license is required under the EAR to export or reexport to Iran any item on the CCL containing a CB Column 1, CB Column 2, CB Column 3, NP Column 1, NP Column 2, NS Column 1, NS Column 2, MT Column 1, RS Column 1, RS Column 2, CC Column 1, CC Column 2, CC Column 3, AT Column 1 or AT Column 2 in the Country Chart Column of the License Requirements section of an ECCN or classified under ECCNs 0A980, 0A982, 0A983, 0A985, 0E982, 1C355, 1C395, 1C980, 1C981, 1C982, 1C983, 1C984, 2A994, 2D994, 2E994, 5A001.i, 5A980, 5D001 (for 5A001.i or for 5E001.a (for 5A001.i, or for 5D001.a (for 5A001.i))), 5D980, 5E001.a (for 5A001.i, or for 5D001.a (for 5A001.i)) or 5E980.

\* \* \* \* \*

#### PART 748—[AMENDED]

■ 22. The authority citation for part 748 continues to read as follows:

**Authority:** 50 U.S.C. app. 2401 *et seq.*; 50 U.S.C. 1701 *et seq.*; E.O. 13026, 61 FR 58767, 3 CFR, 1996 Comp., p. 228; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; Notice of August 12, 2011, 76 FR 50661 (August 16, 2011).

■ 23. Supplement No. 7 to part 748 is amended by removing the citation “3B001.d” wherever it appears in the “Eligible Items (by ECCN)” column.

#### PART 752—[AMENDED]

■ 24. The authority citation for part 752 continues to read as follows:

**Authority:** 50 U.S.C. app. 2401 *et seq.*; 50 U.S.C. 1701 *et seq.*; E.O. 13020, 61 FR 54079, 3 CFR, 1996 Comp., p. 219; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; Notice of August 12, 2011, 76 FR 50661 (August 16, 2011).

■ 24a. Section 752.3 is amended by revising paragraph (a)(7) to read as follows:

#### § 752.3 Eligible items.

(a) \* \* \*



(7) Communications intercepting devices and related software and technology controlled by ECCNs 5A001.i, 5A980, 5D001 (for 5A001.i or for 5E001.a (for 5A001.i, or for 5D001.a (for 5A001.i))), 5D980, 5E001.a (for 5A001.i, or for 5D001.a (for 5A001.i)) or 5E980 on the CCL;

\* \* \* \* \*

**PART 770 [AMENDED]**

■ 25. The authority citation for part 770 continues to read as follows:

**Authority:** 50 U.S.C. app. 2401 *et seq.*; 50 U.S.C. 1701 *et seq.*; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; Notice of August 12, 2011, 76 FR 50661 (August 16, 2011).

■ 26. Section 770.2 is amended by revising paragraph (l)(1) to read as follows:

**§ 770.2 Item interpretations.**

\* \* \* \* \*

(l) *Interpretation 12: Computers.* (1) Digital computers or computer systems classified under ECCN 4A003.b or .c, that qualify for “No License Required” (NLR) must be evaluated on the basis of Adjusted Peak Performance (APP) alone, to the exclusion of all other technical parameters. Digital computers or computer systems classified under ECCN 4A003.b or .c that qualify for License Exception APP must be evaluated on the basis of APP, to the exclusion of all other technical parameters, except for ECCN 4A003.e (equipment performing analog-to-digital conversions exceeding the limits in ECCN 3A001.a.5.a). Assemblies performing analog-to-digital conversions are evaluated under Category 3—Electronics, ECCN 3A001.a.5.a.

\* \* \* \* \*

**PART 772—[AMENDED]**

■ 27. The authority citation for part 772 continues to read as follows:

**Authority:** 50 U.S.C. app. 2401 *et seq.*; 50 U.S.C. 1701 *et seq.*; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; Notice of August 12, 2011, 76 FR 50661 (August 16, 2011).

■ 28. Section 772.1 is amended by:

- a. Adding the definition for “airship” in alphabetical order;
- b. Revising the definition for “average output power”;
- c. Removing the definitions for “common channel signalling”, “fault tolerance”, “laser duration” and “positioning accuracy”;
- d. Revising the definition for “peak power”; and
- e. Revising the definition for “pulse duration”, to read as set forth below;

**§ 772.1 Definitions of terms as used in the Export Administration Regulations (EAR).**

\* \* \* \* \*

“Airship”. (Cat 9) A power-driven airborne vehicle that is kept buoyant by a body of gas (usually helium, formerly hydrogen) which is lighter than air.

\* \* \* \* \*

“Average Output Power.” (Cat 6) The average output power is the total “laser” output energy, in joules, divided by the period over which a series of consecutive pulses is emitted, in seconds. For a series of uniformly spaced pulses it is equal to the total “laser” output energy in a single pulse, in joules, multiplied by the pulse frequency of the “laser,” in Hertz.

\* \* \* \* \*

“Peak power”. (Cat 6)—The highest power attained in the “pulse duration.”

\* \* \* \* \*

“Pulse duration.” (Cat 6)—Duration of a “laser” pulse is the time between the half-power points on the leading edge and trailing edge of an individual pulse.

\* \* \* \* \*

**PART 774—[AMENDED]**

■ 29. The authority citation for part 774 continues to read as follows:

**Authority:** 50 U.S.C. app. 2401 *et seq.*; 50 U.S.C. 1701 *et seq.*; 10 U.S.C. 7420; 10 U.S.C. 7430(e); 22 U.S.C. 287c, 22 U.S.C. 3201 *et seq.*; 22 U.S.C. 6004; 30 U.S.C. 185(s), 185(u); 42 U.S.C. 2139a; 42 U.S.C. 6212; 43 U.S.C. 1354; 15 U.S.C. 1824a; 50 U.S.C. app. 5; 22 U.S.C. 7201 *et seq.*; 22 U.S.C. 7210; E.O. 13026, 61 FR 58767, 3 CFR, 1996 Comp., p. 228; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; Notice of August 12, 2011, 76 FR 50661 (August 16, 2011).

■ 30. Supplement No. 1 to part 774, Category 0, ECCN 0A919 is amended by revising the RS paragraph in the License Requirements section, and revising paragraph d. in the Items paragraph of the List of Items Controlled section, to read as follows:

**Supplement No. 1 to Part 774—The Commerce Control List**

\* \* \* \* \*

**0A919 “Military commodities” as follows (see list of items controlled).**

**License Requirements**

\* \* \* \* \*

Control(s)	Country chart
RS applies to entire entry.	RS Column 1, see § 742.6(a)(3) for license requirements.
* * * * *	* * * * *
* * * * *	* * * * *

**List of Items Controlled**

\* \* \* \* \*

*Items:*

\* \* \* \* \*

d. Incorporate one or more cameras controlled under ECCN 6A003.b.3, .b.4.b, or .b.4.c.

\* \* \* \* \*

■ 31. In Supplement No. 1 to part 774 (the Commerce Control List), Category 1, ECCN 1A004 is amended by adding a Note to introductory paragraph .a in the Items paragraph of the List of Items Controlled section, to read as follows:

**1A004 Protective and detection equipment and components, not specially designed for military use, as follows (see List of Items Controlled).**

\* \* \* \* \*

**List of Items Controlled**

\* \* \* \* \*

*Items:*

a. \* \* \*

**Note:** 1A004.a includes Powered Air Purifying Respirators (PAPR) that are designed or modified for defense against agents or materials, listed in 1A004.a.

\* \* \* \* \*

■ 32. In Supplement No. 1 to part 774 (the Commerce Control List), Category 1, ECCN 1A005 is amended by revising the Heading, the Items paragraph, and the notes to ECCN 1A005, to read as follows:

**1A005 Body armor and components therefor, as follows (see List of Items Controlled).**

\* \* \* \* \*

**List of Items Controlled**

\* \* \* \* \*

*Items:*

- a. Soft body armor not manufactured to military standards or specifications, or to their equivalents, and specially designed components therefor;
- b. Hard body armor plates providing ballistic protection equal to or less than level IIIA (NIJ 0101.06, July 2008) or national equivalents.

**Notes to ECCN 1A005:**

1. This entry does not control body armor when accompanying its user for the user’s own personal protection.
2. This entry does not control body armor designed to provide frontal protection only from both fragment and blast from non-military explosive devices.
3. This entry does not apply to body armor designed to provide protection only from knife, spike, needle or blunt trauma.

■ 33. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1, ECCN 1C006, List of Items Controlled section is amended by adding a Note to paragraph d. (after paragraph d.4), to read as follows:

**1C006 Fluids and lubricating materials, as follows (see List of Items Controlled).**

\* \* \* \* \*

**List of Items Controlled**

\* \* \* \* \*

**Items:**

\* \* \* \* \*

d. \* \* \*

**Note:** 1C006.d does not apply to materials specified and packaged as medical products.

■ 34. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1, ECCN 1C008, the List of Items Controlled section is amended by revising paragraphs a.4. and f. in the Items paragraph, to read as follows:

**1C008 Non-fluorinated polymeric substances as follows (see List of Items Controlled).**

\* \* \* \* \*

**List of Items Controlled**

\* \* \* \* \*

**Items:**

a. \* \* \*

a.4. Aromatic polyetherimides having a 'glass transition temperature (Tg)' exceeding 563 K (290 °C);

**Note:** 1C008.a controls the substances in liquid or solid "fusible" form, including resin, powder, pellet, film, sheet, tape, or ribbon.

**N.B.:** For non-"fusible" aromatic polyimides in film, sheet, tape, or ribbon form, see ECCN 1A003.

\* \* \* \* \*

f. Polybiphenylenethersulphone having a 'glass transition temperature (Tg)' exceeding 563 K (290 °C).

**Technical Note:** The 'glass transition temperature (Tg)' for 1C008 materials is determined using the method described in ISO 11357-2 (1999) or national equivalents. In addition, for 1C008.a.2 materials, 'glass transition temperature (Tg)' is determined on a PAI test specimen having initially been cured at a minimum temperature of 310 °C for a minimum of 15 minutes.

■ 35. The Annex to Category 1 "List of Explosives (See ECCNs 1A004 and 1A008)" is amended by removing and reserving paragraph 32.g.

■ 36. Category 2 "Materials Processing", Product Group B "Test, Inspection and Production Equipment", the Notes for category 2B are amended by:

■ a. Removing the Notes for Category 2B;

■ b. Revising the "Technical Notes for 2B001 to 2B009", including the Heading, to read as follows:

**B. Test, Inspection and Production Equipment**

*Technical Notes for 2B001 to 2B009, 2B201, 2B290 and 2B991 to 2B999:*

1. *Secondary parallel contouring axes, (e.g., the w-axis on horizontal boring mills or a secondary rotary axis the center line of*

*which is parallel to the primary rotary axis) are not counted in the total number of contouring axes. Rotary axes need not rotate over 360°. A rotary axis can be driven by a linear device (e.g., a screw or a rack-and-pinion).*

2. *The number of axes which can be coordinated simultaneously for "contouring control" is the number of axes along or around which, during processing of the workpiece, simultaneous and interrelated motions are performed between the workpiece and a tool. This does not include any additional axes along or around which other relative motions within the machine are performed, such as:*

2.a. *Wheel-dressing systems in grinding machines;*

2.b. *Parallel rotary axes designed for mounting of separate workpieces;*

2.c. *Co-linear rotary axes designed for manipulating the same workpiece by holding it in a chuck from different ends.*

3. *Axis nomenclature shall be in accordance with International Standard ISO 841, "Numerical Control Machines—Axis and Motion Nomenclature".*

4. *A "tilting spindle" is counted as a rotary axis.*

5. *'Stated positioning accuracy' derived from measurements made according to ISO 230/2 (2006) may be used for each specific machine model as an alternative to individual machine tests. 'Stated positioning accuracy' means the accuracy value provided to BIS as representative of the accuracy of a specific machine model.*

**Note to paragraph 5: Determination of 'Stated Positioning Accuracy':**

a. *Select five machines of a model to be evaluated;*

b. *Measure the linear axis accuracies according to ISO 230/2 (2006);*

c. *Determine the A-values for each axis of each machine. The method of calculating the A-value is described in the ISO standard;*

d. *Determine the mean value of the A-value of each axis. This mean value A becomes the stated value of each axis for the model ( $\bar{A}x \bar{A}y * * *$ );*

e. *Since the Category 2 list refers to each linear axis there will be as many stated values as there are linear axes;*

f. *If any axis of a machine model not controlled by 2B001.a. to 2B001.c. has a stated accuracy A of 5 µm for grinding machines and 6.5 µm for milling and turning machines or better, the builder should be required to reaffirm the accuracy level once every eighteen months.*

6. *Measurement uncertainty for the positioning accuracy of machine tools, as defined in the International Standard ISO 230/2 (2006), shall not be considered.*

■ 37. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2, ECCN 2B001, the License Requirements Section,

■ a. The Reason for Control table is amended by revising the "NP" entry; and

■ b. The items paragraph is amended by:

■ i. Revising paragraphs a.1., b.1.a., b.3. and c.1.a.; and

■ ii. Revising the Notes to 2B001.c, to read as follows:

**2B001 Machine tools and any combination thereof, for removing (or cutting) metals, ceramics or "composites", which, according to the manufacturer's technical specifications, can be equipped with electronic devices for "numerical control"; and specially designed components as follows (see List of Items Controlled).**

**License Requirements**

\* \* \* \* \*

Control(s) Country chart

\* \* \* \* \*

NP applies to NP Column 1.

2B001.a, .b, .c, and .d, EXCEPT: (1) turning machines under 2B001.a with a capacity no greater than 35 mm diameter; (2) bar machines (Swissturn), limited to machining only bar feed through, if maximum bar diameter is equal to or less than 42 mm and there is no capability of mounting chucks. (Machines may have drilling and/or milling capabilities for machining parts with diameters less than 42 mm); or (3) milling machines under 2B001.b with x-axis travel greater than two meters and overall positioning accuracy according to ISO 230/2 (2006) on the x-axis more (worse) than 22.5 µm.

\* \* \* \* \*

**List of Items Controlled**

\* \* \* \* \*

**Items:**

\* \* \* \* \*

a. \* \* \*

a.1. Positioning accuracy according to ISO 230/2 (2006) with "all compensations available" equal to or less (better) than 4.5 µm along one or more linear axis; and

\* \* \* \* \*

b. \* \* \*

b.1. \* \* \*

b.1.a. Positioning accuracy according to ISO 230/2 (2006) with "all compensations available" of less (better) than 4.5 µm along one or more linear axis; and

\* \* \* \* \*

b.3. A positioning accuracy according to ISO 230/2 (2006) for jig boring machines, with "all compensations available", of less (better) than 3.0 μm along any linear axis; or

c. \* \* \*

c.1. \* \* \*

c.1.a. Positioning accuracy according to ISO 230/2 (2006) with "all compensations available" of less (better) than 3.0 μm along one or more linear axis; and

\* \* \* \* \*

Notes: 2B001.c does not control grinding machines as follows:

a. Cylindrical external, internal, and external-internal grinding machines, having all of the following:

a.1. Limited to cylindrical grinding; and

a.2. Limited to a maximum workpiece capacity of 150 mm outside diameter or length.

b. Machines designed specifically as jig grinders that do not have a z-axis or a w-axis, with a positioning accuracy according to ISO 230/2 (2006) with "all compensations available" less (better) than 3 μm.

c. Surface grinders.

■ 38. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2, ECCN 2B008, the List of Items Controlled section is amended by revising the Items paragraph to read as follows:

2B008 Assemblies or units, specially designed for machine tools, or dimensional inspection or measuring systems and equipment, as follows (see List of Items Controlled).

\* \* \* \* \*

List of Items Controlled

\* \* \* \* \*

Items:

a. Linear position feedback units having an overall "accuracy" less (better) than (800 + (600 × L × 10<sup>-3</sup>)) nm (L equals the effective length in mm);

N.B.: For "laser" systems see also 2B006.b.1.c and d.

b. Rotary position feedback units having an "accuracy" less (better) than 0.00025°;

N.B.: For "laser" systems see also 2B006.b.2.

Note: 2B008.a and 2B008.b apply to units, which are designed to determine the positioning information for feedback control, such as inductive type devices, graduated scales, infrared systems or "laser" systems.

c. "Compound rotary tables" and "tilting spindles", capable of upgrading, according to the manufacturer's specifications, machine tools to or above the levels controlled by 2B001 to 2B009.

■ 39. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2, ECCN 2B009, the List of Items Controlled section is amended by revising paragraph a. in the Items paragraph to read as follows:

2B009 Spin-forming machines and flow-forming machines, which, according to

the manufacturer's technical specifications, can be equipped with "numerical control" units or a computer control and having all of the following characteristics (see List of Items Controlled).

\* \* \* \* \*

List of Items Controlled

\* \* \* \* \*

Items:

a. Three or more axes which can be coordinated simultaneously for "contouring control"; and

\* \* \* \* \*

■ 40. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2, ECCN 2B201 is amended by revising the Items paragraph, to read as follows:

2B201 Machine tools, other than those controlled by 2B001, for removing or cutting metals, ceramics or "composites", which, according to the manufacturer's technical specifications, can be equipped with electronic devices for simultaneous "contouring control" in two or more axes.

\* \* \* \* \*

List of Items Controlled

\* \* \* \* \*

Items:

Note: The identified positioning accuracy values in this entry are based on ISO 230/2 (2006), which equates to the values based on ISO 230/2 (1988) that are used by the Nuclear Supplier's Group (NSG). For 2B201.a and b.1, this results in a change from 6 μm to 4.5 μm, in Note to 2B201.b paragraph .b the change is 30 μm to 22.5 μm, and for 2B201.c the change is from 4 μm to 3 μm.

a. Machine tools for turning, that have positioning accuracies according to ISO 230/2 (2006) with all compensations available better (less) than 4.5 μm along any linear axis (overall positioning) for machines capable of machining diameters greater than 35 mm;

Note: Item 2B201.a does not control bar machines (Swissturn), limited to machining only bar feed thru, if maximum bar diameter is equal to or less than 42 mm and there is no capability of mounting chucks. Machines may have drilling and/or milling capabilities for machining parts with diameters less than 42 mm.

b. Machine tools for milling, having any of the following characteristics:

b.1. Positioning accuracies according to ISO 230/2 (2006) with "all compensations available" equal to or less (better) than 4.5 μm along any linear axis (overall positioning); or

b.2. Two or more contouring rotary axes.

Note: 2B201.b does not control milling machines having the following characteristics:

a. X-axis travel greater than 2 m; and

b. Overall positioning accuracy according to ISO 230/2 (2006) on the x-axis more (worse) than 22.5 μm.

c. Machine tools for grinding, having any of the following characteristics:

c.1. Positioning accuracies according to ISO 230/2 (2006) with "all compensations available" equal to or less (better) than 3 μm along any linear axis (overall positioning); or

c.2. Two or more contouring rotary axes.

Note: 2B201.c does not control the following grinding machines:

a. Cylindrical external, internal, and external-internal grinding machines having all of the following characteristics:

1. Limited to cylindrical grinding;

2. A maximum workpiece outside diameter or length of 150 mm;

3. Not more than two axes that can be coordinated simultaneously for "contouring control"; and

4. No contouring c-axis.

b. Jig grinders with axes limited to x, y, c and a where c axis is used to maintain the grinding wheel normal to the work surface, and the a axis is configured to grind barrel cams;

c. Tool or cutter grinding machines with "software" specially designed for the production of tools or cutters; or

d. Crankshaft or camshaft grinding machines.

■ 41. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2, ECCN 2B991, the List of Items Controlled section is amended by revising paragraph c. in the Items paragraph, to read as follows:

2B991 Numerical control units for machine tools and "numerically controlled" machine tools, n.e.s.

\* \* \* \* \*

List of Items Controlled

\* \* \* \* \*

Items:

\* \* \* \* \*

c. "Numerically controlled" machine tools that, according to the manufacturer's technical specifications, can be equipped with electronic devices for simultaneous "contouring control" in two or more axes and that have both of the following characteristics:

c.1. Two or more axes that can be coordinated simultaneously for contouring control; and

c.2. Positioning accuracies according to ISO 230/2 (2006), with all compensations available:

c.2.a. Better than 15 μm along any linear axis (overall positioning) for grinding machines;

c.2.b. Better than 15 μm along any linear axis (overall positioning) for milling machines; or

c.2.c. Better than 15 μm along any linear axis (overall positioning) for turning machines; or

\* \* \* \* \*

■ 42. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2, ECCN 2E001, List of Items Controlled section is amended adding a Note to the end of the Items paragraph, to read as follows:

2E001 "Technology" according to the General Technology Note for the

“development” of equipment or “software” controlled by 2A (except 2A983, 2A984, 2A991, or 2A994), 2B (except 2B991, 2B993, 2B996, 2B997, or 2B998), or 2D (except 2D983, 2D984, 2D991, 2D992, or 2D994).

\* \* \* \* \*

List of Items Controlled

\* \* \* \* \*

Items: The list of items controlled is contained in the ECCN heading.

Note: ECCN 2E001 includes “technology” for the integration of probe systems into coordinate measurement machines specified by 2B006.a.

■ 43. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3 Electronics, Product Group A is amended by revising Notes 1 and 2 and the Nota Bene to read as follows:

Category 3—Electronics

A. Systems, Equipment and Components

Note 1: The control status of equipment and components described in 3A001 or 3A002, other than those described in 3A001.a.3 to 3A001.a.10, 3A001.a.12 or 3A001.a.13, which are specially designed for or which have the same functional characteristics as other equipment is determined by the control status of the other equipment.

Note 2: The control status of integrated circuits described in 3A001.a.3 to 3A001.a.9, 3A001.a.12 or 3A001.a.13 that are unalterably programmed or designed for a specific function for other equipment is determined by the control status of the other equipment.

N.B.: When the manufacturer or applicant cannot determine the control status of the other equipment, the control status of the integrated circuits is determined in 3A001.a.3 to 3A001.a.9, 3A001.a.12 and 3A001.a.13.

■ 44. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3 Electronics, ECCN 3A001 is amended by:

- a. Revising the GBS and CIV paragraphs of the License Exception section, as set forth below; and
■ b. Amending the Items paragraph of the List of Items Controlled section by:
■ 1. Adding paragraph a.13, including Technical Note;
■ 2. Revising paragraphs b.10, b.11.d, and b.11.e;
■ 3. Adding paragraphs b.11.f and b.11.g;
■ 4. Removing the note bene following paragraph b.11.e. and adding the nota bene following paragraph b.11.g;
■ 5. Revising paragraph e.1.b; as set forth below, and
■ 6. Removing paragraphs f.1 and f.2.

3A001 Electronic components and specially designed components therefor, as follows (see List of Items Controlled).

\* \* \* \* \*

License Exceptions

\* \* \* \* \*

GBS: Yes for 3A001.a.1.b, a.2 to a.13 (except .a.5.a when controlled for MT), b.2, b.8 (except for TWTAs exceeding 18 GHz), b.9., b.10, .g, and .h.

CIV: Yes for 3A001.a.3, a.7, and a.11.

List of Items Controlled

\* \* \* \* \*

Items:

- a. \* \* \*
a.13. Direct Digital Synthesizer (DDS) integrated circuits having any of the following:
a.13.a. A Digital-to-Analog Converter (DAC) clock frequency of 3.5 GHz or more and a DAC resolution of 10 bit or more, but less than 12 bit; or
a.13.b. A DAC clock frequency of 1.25 GHz or more and a DAC resolution of 12 bit or more;

Technical Note: The DAC clock frequency may be specified as the master clock frequency or the input clock frequency.

b. \* \* \*
b.10. Oscillators or oscillator assemblies, specified to operate with all of the following:

- \* \* \* \* \*
b.11. \* \* \*
b.11.d. Less than 500 μs for any frequency change exceeding 550 MHz within the synthesized frequency range exceeding 31.8 GHz but not exceeding 43.5 GHz; or
b.11.e. Less than 1 ms for any frequency change exceeding 550 MHz within the synthesized frequency range exceeding 43.5 GHz but not exceeding 56 GHz;
b.11.f. Less than 1 ms for any frequency change exceeding 2.2 GHz within the synthesized frequency range exceeding 56 GHz but not exceeding 70 GHz; or
b.11.g. Less than 1 ms within the synthesized frequency range exceeding 70 GHz;

N.B.: For general purpose “signal analyzers”, signal generators, network analyzers and microwave test receivers, see 3A002.c, 3A002.d, 3A002.e and 3A002.f, respectively.

\* \* \* \* \*

e. \* \* \*
e.1. \* \* \*
e.1.b. ‘Secondary cells’ having an ‘energy density’ exceeding 300 Wh/kg at 293 K (20 °C);

\* \* \* \* \*

■ 45. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3 Electronics, ECCN 3A002, List of Items Controlled, the Items paragraph is amended by revising paragraphs d.1., d.4., the Technical Notes of paragraph d.5., paragraphs e.1. and f.1., to read as follows:

3A002 General purpose electronic equipment and accessories therefor, as follows (see List of Items Controlled).

\* \* \* \* \*

List of Items Controlled

\* \* \* \* \*

Items:

\* \* \* \* \*

d. \* \* \*
d.1. Specified to generate pulses having all of the following, anywhere within the synthesized frequency range exceeding 31.8 GHz but not exceeding 70 GHz:

- d.1.a. ‘Pulse duration’ of less than 100 ns; and
d.1.b. On/off ratio equal to or exceeding 65 dB;

\* \* \* \* \*

d.4. Single sideband (SSB) phase noise, in dBc/Hz, specified as being all of the following:

- d.4.a. Less (better) than—(126+20 log10 F–20 log10f) for 10 Hz <F<10 kHz anywhere within the synthesized frequency range exceeding 3.2 GHz but not exceeding 70 GHz; and
d.4.b. Less (better) than—(114+20 log10 F–20 log10f) for 10 kHz ≤F<500 kHz anywhere within the synthesized frequency range exceeding 3.2 GHz but not exceeding 70 GHz; or

Technical Note: In 3A002.d.4, F is the offset from the operating frequency in Hz and f is the operating frequency in MHz.

d.5. \* \* \*

Technical Notes: 1. The maximum synthesized frequency of an arbitrary waveform or function generator is calculated by dividing the sample rate, in samples/second, by a factor of 2.5.

2. For the purposes of 3A002.d.1.a, ‘pulse duration’ is defined as the time interval between the leading edge of the pulse achieving 90% of the peak and the trailing edge of the pulse achieving 10% of the peak.

e. \* \* \*

e.1. Output power exceeding 31.62 mW (15 dBm) anywhere within the operating frequency range exceeding 43.5 GHz but not exceeding 70 GHz; or

\* \* \* \* \*

f. \* \* \*

f.1. A maximum operating frequency exceeding 70 GHz; and

\* \* \* \* \*

■ 46. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3 Electronics, ECCN 3B001 is amended by:

- a. Revising the License Exceptions section to read as set forth below;
■ b. Amending the Items paragraph in the List of Items Controlled by removing and reserving paragraph d.; and
■ c. Revising paragraph e.1 in the Items paragraph of the List of Items Controlled section, to read as follows:

3B001 Equipment for the manufacturing of semiconductor devices or materials, as follows (see List of Items Controlled) and specially designed components and accessories therefor.

\* \* \* \* \*

License Exceptions

LVS: \$500

GBS: Yes, except a.3 (molecular beam epitaxial growth equipment using gas

sources), .e (automatic loading multi-chamber central wafer handling systems only if connected to equipment controlled by 3B001. a.3, or .f), and .f (lithography equipment).

CIV: Yes for equipment controlled by 3B001.a.1 and a.2.

List of Items Controlled

\* \* \* \* \*

Items:

\* \* \* \* \*

e. \* \* \*

e.1. Interfaces for wafer input and output, to which more than two functionally different 'semiconductor process tools' controlled by 3B001.a, 3B001.b, or 3B001.c are designed to be connected; and

\* \* \* \* \*

■ 47. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3 Electronics, ECCN 3C001, List of Items Controlled, Items paragraph is amended by adding a Note to paragraph d. to read as follows:

3C001 Hetero-epitaxial materials consisting of a "substrate" having stacked epitaxially grown multiple layers of any of the following (see List of Items Controlled).

\* \* \* \* \*

List of Items Controlled

\* \* \* \* \*

Items:

\* \* \* \* \*

d. \* \* \*

Note: 3C001.d does not apply to a "substrate" having one or more P-type epitaxial layers of GaN, InGaN, AlGaIn, InAlN, InAlGaIn, GaP, InGaP, AllnP or InGaAlP, independent of the sequence of the elements, except if the P-type epitaxial layer is between N-type layers.

■ 48. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3 Electronics, ECCN 3E001, License Requirements section is amended by revising the NS paragraph to read as follows:

3E001 "Technology" according to the General Technology Note for the "development" or "production" of equipment or materials controlled by 3A (except 3A292, 3A980, 3A981, 3A991 3A992, or 3A999), 3B (except 3B991 or 3B992) or 3C (except 3C992).

License Requirements

\* \* \* \* \*

Control(s)

Country chart

NS applies to "technology" for items controlled by 3A001, 3A002, 3A003, 3B001, 3B002, or 3C001 to 3C006.

\* \* \* \* \*

\* \* \* \* \*

■ 49. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3 Electronics, ECCN 3E002, License Exception section is amended by revising the CIV paragraph to read as follows:

3E002 "Technology" according to the General Technology Note other than that controlled in 3E001 for the "development" or "production" of a "microprocessor microcircuit", "micro-computer microcircuit" and microcontroller microcircuit core, having an arithmetic logic unit with an access width of 32 bits or more and any of the following features or characteristics (see List of Items Controlled).

\* \* \* \* \*

License Exceptions

CIV: Yes, for deemed exports, as described in § 734.2(b)(2)(ii) of the EAR, of "technology" for the "development" or "production" of general purpose microprocessor cores with a vector processor unit with operand length of 64-bit or less, 64-bit floating operations not exceeding 50 GFLOPS, or 16-bit or more floating-point operations not exceeding 50 GMACS (billions of 16-bit fixed-point multiply-accumulate operations per second). Deemed exports under License Exception CIV are subject to a Foreign National Review (FNR) requirement, see § 740.5 of the EAR for more information about the FNR. License Exception CIV does not apply to ECCN 3E002 technology also required for the development or production of items controlled under ECCNs beginning with 3A, 3B, or 3C, or to ECCN 3E002 technology also controlled under ECCN 3E003.

\* \* \* \* \*

■ 50. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3 Electronics, ECCN 3E003, List of Items Controlled section the Items paragraph is amended by revising paragraph b. to read as follows:

3E003 Other "technology" for the "development" or "production" of the following (see List of Items Controlled).

\* \* \* \* \*

List of Items Controlled

\* \* \* \* \*

Items:

\* \* \* \* \*

b. Hetero-structure semiconductor electronic devices such as high electron mobility transistors (HEMT), hetero-bipolar transistors (HBT), quantum well and super lattice devices;

Note: 3E003.b does not control "technology" for high electron mobility transistors (HEMT) operating at frequencies lower than 31.8 GHz and hetero-junction bipolar transistors (HBT) operating at frequencies lower than 31.8 GHz.

\* \* \* \* \*

■ 51. Supplement No. 1 to Part 774 (the Commerce Control List), Category 4, ECCN 4A003 is amended by:

- a. Revising the Heading;
■ b. Revising the NS Column 2 and AT paragraphs in the License Requirements section;
■ c. Revising Note 1 of the License Requirements section;
■ d. Revising the APP paragraph in the License Exception section;
■ e. Removing and reserving paragraph a. of the Items paragraph in the List of Items Controlled section; and
■ f. Revising paragraph b., to read as follows:

4A003 "Digital computers", "electronic assemblies", and related equipment therefor, as follows (see List of Items Controlled) and specially designed components therefor.

License Requirements

\* \* \* \* \*

Control(s)

Country chart

NS applies to 4A003.e and .g.

NS Column 2.

AT applies to entire entry (refer to 4A994 for controls on "digital computers" with a APP > 0.0128 but ≤3.0 WT).

AT Column 1.

\* \* \* \* \*

Note 1: For all destinations, except those countries in Country Group E:1 of Supplement No. 1 to part 740 of the EAR, no license is required (NLR) for computers with an "Adjusted Peak Performance" ("APP") not exceeding 3.0 Weighted TeraFLOPS (WT) and for "electronic assemblies" described in 4A003.c that are not capable of exceeding an "Adjusted Peak Performance" ("APP") exceeding 3.0 Weighted TeraFLOPS (WT) in aggregation, except certain transfers as set forth in § 746.3 (Iraq).

License Exceptions

\* \* \* \* \*

APP: Yes, for computers controlled by 4A003.b, and "electronic assemblies" controlled by 4A003.c, to the exclusion of other technical parameters, with the exception of 4A003.e (equipment performing analog-to-digital conversions exceeding the limits of 3A001.a.5.a). See § 740.7 of the EAR.

\* \* \* \* \*

List of Items Controlled

\* \* \* \* \*

Items:

\* \* \* \* \*

b. "Digital computers" having an "Adjusted Peak Performance" ("APP") exceeding 3.0 weighted TeraFLOPS (WT);

■ 52. Supplement No. 1 to Part 774 (the Commerce Control List), Category 4, Product Group D is amended by revising the Note to read as follows:

D. Software

Note: The control status of "software" for equipment described in other Categories is dealt with in the appropriate Category.

■ 53. Supplement No. 1 to Part 774 (the Commerce Control List), Category 4, the "Technical Note on "Adjusted Peak Performance" ("APP")" is amended by revising Note 6 to read as follows:

Technical Note on "Adjusted Peak Performance" ("APP")

Note 6: "APP" values must be calculated for: (1) Processor combinations containing processors specially designed to enhance performance by aggregation, operating simultaneously and sharing memory; or (2) Multiple memory/processor combinations operating simultaneously utilizing specially designed hardware.

Technical Note: Aggregate all processors and accelerators operating simultaneously and located on the same die.

■ 54. Supplement No. 1 to Part 774 (the Commerce Control List), Category 5, Part I is amended by revising Nota Bene 2 to read as follows:

CATEGORY 5—TELECOMMUNICATIONS AND "INFORMATION SECURITY"

Part I. TELECOMMUNICATIONS

N.B.2. See also Category 5, Part 2 for equipment, components, and "software", performing or incorporating "information security" functions.

■ 55. Supplement No. 1 to Part 774 (the Commerce Control List), Category 5, Part I, ECCN 5A001 is amended by:

- a. Revising the License Requirements section;
b. Revising the Note to paragraph b.3.b;
c. Revising the introductory text of paragraph f; and
d. Adding paragraph i., and its Notes, to read as follows:

5A001 Telecommunications systems, equipment, components and accessories, as follows (see List of Items Controlled).

License Requirements

Reason for Control: NS, SL, AT

Table with 2 columns: Control(s), Country chart. Row 1: NS applies to 5A001.a, .e, .b.5, and .h. NS Column 1.

Table with 2 columns: Control(s), Country chart. Row 1: NS applies to 5A001.b (except .b.5), .c, .d, .f, .g, and .i. NS Column 2.

SL applies to 5A001.i A license is required for all destinations, as specified in § 742.13 of the EAR. According to a column specific to this control does not appear on the Commerce Country Chart (Supplement No. 1 to Part 738 of the EAR).

Note to SL paragraph: This licensing requirement does not supersede, nor does it implement, construe or limit the scope of any criminal statute, including, but not limited to the Omnibus Safe Streets Act of 1968, as amended.

AT applies to entire entry. AT Column 1.

License Requirement Notes: See § 743.1 of the EAR for reporting requirements for exports under License Exceptions. See § 740.2(a)(3) of the EAR for restrictions on the use of License Exceptions for 5A001.i.

List of Items Controlled

Related Controls: Telecommunications equipment defined in 5A001.a.1 through 5A001.a.3 for use on board satellites is subject to the export licensing authority of the Department of State, Directorate of Defense Trade Controls (22 CFR part 121). Direction finding equipment defined in 5A001.e is subject to the export licensing authority of the Department of State, Directorate of Defense Trade Controls (22 CFR part 121). See also 5A101, 5A980, and 5A991.

Items:

- a. Civil cellular radio-communications systems; or
b. Fixed or mobile satellite Earth stations for commercial civil telecommunications.

Note: 5A001.b.3.b does not control radio equipment specially designed for use with any of the following:

- a. Civil cellular radio-communications systems; or
b. Fixed or mobile satellite Earth stations for commercial civil telecommunications.

f. Jamming equipment specially designed or modified to intentionally and selectively interfere with, deny, inhibit, degrade or seduce mobile telecommunication services

and perform any of the following, and specially designed components therefor:

i. Systems or equipment, specially designed or modified to intercept and process the air interface of 'mobile telecommunications', and specially designed components therefor.

Note: 5A001.i does not apply to equipment designed for 'mobile telecommunications' network operators, or for the "development" or "production" of 'mobile telecommunications' equipment or systems.

Technical Note: For the purposes of 5A001.i, 'mobile telecommunications' refers to the following telecommunications protocols or standards: GSM, GSM-R, GPRS, IMT-2000, PMR (Professional Mobile Radio), Inmarsat, Iridium, Thuraya, VSAT or ACES.

N.B.: See also 5A001.f, 5A980, and the U.S. Munitions List (22 CFR part 121).

■ 56. Supplement No. 1 to Part 774 (the Commerce Control List), Category 5, Part I, ECCN 5A980 is amended by revising the Heading and the Related Controls paragraph of the List of Items Controlled section, to read as follows:

5A980 Devices primarily useful for the surreptitious interception of wire, oral, or electronic communications, other than those controlled under 5A001.i; and parts and accessories therefor.

List of Items Controlled

Related Controls: (1) See ECCN 5A001.i for systems or equipment, specially designed or modified to intercept and process the air interface of 'mobile telecommunications', and specially designed components therefor. (2) See ECCN 5D980 for "software" for the "development", "production" or "use" of equipment controlled by 5A980. (3) See ECCN 5E980 for the "technology" for the "development", "production", and "use" of equipment controlled by 5A980.

■ 57. Supplement No. 1 to Part 774 (the Commerce Control List), Category 5, Part I, ECCN 5B001 is amended by:

- a. Revising paragraphs b.2.c, b.2.d and b.4 in the Items paragraph of the List of Items Controlled section, to read as follows; and
b. Removing paragraph b.5.

5B001 Telecommunication test, inspection and production equipment, components and accessories, as follows (See List of Items Controlled).

List of Items Controlled

Items:

- b. Jamming equipment specially designed or modified to intentionally and selectively interfere with, deny, inhibit, degrade or seduce mobile telecommunication services

b.2.c. Employing coherent optical transmission or coherent optical detection techniques; or

**Note:** 5B001.b.2.c applies to equipment specially designed for the "development" of systems using an optical local oscillator in the receiving side to synchronize with a carrier "laser."

**Technical Note:** For the purpose of 5B001.b.2.c, these techniques include optical heterodyne, homodyne or intradyne techniques.

b.2.d. Employing analog techniques and having a bandwidth exceeding 2.5 GHz; or

**Note:** 5B001.b.2.d. does not include equipment specially designed for the "development" of commercial TV systems.

\* \* \* \* \*

b.4. Radio equipment employing Quadrature-Amplitude-Modulation (QAM) techniques above level 256.

\* \* \* \* \*

■ 58. Supplement No. 1 to Part 774 (the Commerce Control List), Category 5, Part I, ECCN 5D001 is amended by revising the License Requirements section, and the Related Controls paragraph of the List of Items Controlled section, to read as follows:

**5D001 "Software" as follows (see List of Items Controlled).**

**License Requirements**

*Reason for Control:* NS, SL, AT

<i>Control(s)</i>	<i>Country chart</i>
NS applies to entire entry.	NS Column 1.
SL applies to the entire entry as applicable for equipment, functions, features, or characteristics controlled by 5A001.i.	A license is required for all destinations, as specified in § 742.13 of the EAR. Accordingly, a column specific to this control does not appear on the Commerce Country Chart (Supplement No. 1 to Part 738 of the EAR). <i>Note to SL paragraph:</i> This licensing requirement does not supersede, nor does it implement, construe or limit the scope of any criminal statute, including, but not limited to the Omnibus Safe Streets Act of 1968, as amended.
AT applies to entire entry.	AT Column 1.

**License Requirement Notes:** See § 743.1 of the EAR for reporting requirements for exports under License Exceptions. See § 740.2(a)(3) of the EAR for restrictions on the use of License Exceptions for 5D001 (as it applies to 5A001.i or 5E001.a (as it applies

to 5A001.i or 5D001.a (as it applies to 5A001.i))).

\* \* \* \* \*

**List of Items Controlled**

\* \* \* \* \*

*Related Controls:* See also 5D980 and 5D991

\* \* \* \* \*

■ 59. Supplement No. 1 to Part 774 (the Commerce Control List), Category 5, Part I, ECCN 5D980 is amended by revising the Heading and the Related Controls paragraph of the List of Items Controlled section, to read as follows:

**5D980 Other "software", other than that controlled by 5D001 (for the equipment, functions, features, or characteristics controlled by 5A001.i, or to support certain "technology" controlled by 5E001.a), as follows (see List of Items Controlled).**

\* \* \* \* \*

**List of Items Controlled**

\* \* \* \* \*

*Related Controls:* See also 5D001.a and .c for software controls for equipment, functions, features or characteristics controlled by 5A001.i and also 5D001.b for controls on "software" specially designed or modified to support "technology" controlled by 5E001.a (for 5A001.i equipment, functions or features, and for 5D001.a "software" for 5A001.i equipment). See 5E980 for "technology" for the "development", "production", and "use" of equipment controlled by 5A980 or "software" controlled by 5D980.

\* \* \* \* \*

■ 60. Supplement No. 1 to Part 774 (the Commerce Control List), Category 5, Part I, ECCN 5E001 is amended by:

■ a. Revising the License Requirements section;

■ b. Revising the Related Controls paragraph of the List of Items Controlled;

■ c. Revising the Note to paragraph b.4, and paragraphs c.1, c.2.c, and c.4.c in the Items paragraph of the List of Items Controlled section, as set forth below; and

■ d. Removing and reserving paragraph c.5 in the Items paragraph of the List of Items Controlled section.

**5E001 "Technology" as follows (see List of Items Controlled).**

**License Requirements**

*Reason for Control:* NS, SL, AT

<i>Control(s)</i>	<i>Country chart</i>
NS applies to entire entry.	NS Column 1.

<i>Control(s)</i>	<i>Country chart</i>
SL applies to "technology" for the "development" or "production" of equipment, functions or features controlled by 5A001.i, or for the "development" or "production" of "software" controlled by ECCN 5D001.a (for 5A001.i).	A license is required for all destinations, as specified in § 742.13 of the EAR. Accordingly, a column specific to this control does not appear on the Commerce Country Chart (Supplement No. 1 to Part 738 of the EAR).

*Note to SL paragraph:* This licensing requirement does not supersede, nor does it implement, construe or limit the scope of any criminal statute, including, but not limited to the Omnibus Safe Streets Act of 1968, as amended.

AT applies to entire entry. AT Column 1.

**License Requirement Notes:** See § 743.1 of the EAR for reporting requirements for exports under License Exceptions. See § 740.2(a)(3) of the EAR for restrictions on the use of License Exceptions for 5E001.a (as it applies to 5A001.i or 5D001.a (as it applies to 5A001.i))).

**License Exceptions**

\* \* \* \* \*

**List of Items Controlled**

\* \* \* \* \*

*Related Controls:* Technology defined in 5E001.b.1, 5E001.b.2, 5E001.b.4, or 5E001.c for use on board satellites is subject to the export licensing authority of the Department of State, Directorate of Defense Trade Controls (22 CFR part 121). See also 5E101, 5E980 and 5E991.

\* \* \* \* \*

*Items:*

\* \* \* \* \*

b. \* \* \*  
b.4. \* \* \*

**Note:** 5E001.b.4 does not apply to "technology" for the "development" of any of the following:

- a. Civil cellular radio-communications systems; or
- b. Fixed or mobile satellite Earth stations for commercial civil telecommunications.

c. \* \* \*

c.1. Equipment employing digital techniques designed to operate at a "total digital transfer rate" exceeding 120 Gbit/s;

**Technical Note:** For telecommunication switching equipment the "total digital transfer rate" is the unidirectional speed of a single interface, measured at the highest speed port or line.

c.2. \* \* \*

c.2.c. Employing coherent optical transmission or coherent optical detection techniques;

Note: 5E001.c.2.c applies to "technology" specially designed for the "development" or "production" of systems using an optical local oscillator in the receiving side to synchronize with a carrier "laser."

Technical Note: For the purpose of 5E001.c.2.c, these techniques include optical heterodyne, homodyne or intradyne techniques.

\* \* \* \* \*

c.4.c. Operating in the 1.5 MHz to 87.5 MHz band and incorporating adaptive techniques providing more than 15 dB suppression of an interfering signal;

\* \* \* \* \*

61. Supplement No. 1 to Part 774 (the Commerce Control List), Category 5, Part I, ECCN 5E980 is amended by revising the Heading and the Related Controls paragraph in the List of Items Controlled section to read as follows:

5E980 "Technology", other than that controlled by 5E001.a (for 5A001.i, and for 5D001.a (for 5A001.i)), primarily useful for the "development", "production", or "use" of equipment, functions or features, of equipment controlled by 5A980 or "software" controlled by 5D980.

\* \* \* \* \*

List of Items Controlled

\* \* \* \* \*

Related Controls: See also 5D001.a and .c (for 5A001.i equipment), 5D001.b (supporting 5E001.a "technology" for 5A001.i equipment, or for 5D001.a "software" (for 5A001.i equipment)), and 5E001.a (for 5A001.i equipment, or for 5D001.a "software" for 5A001.i equipment).

\* \* \* \* \*

62. Supplement No. 1 to part 774 (the Commerce Control List), Category 5, part II, ECCN 5A002 is amended by adding a Note to paragraph a.8 in the Items paragraph of the List of Items Controlled section to read as follows:

5A002 "Information security" systems, equipment and components therefor, as follows (see List of Items Controlled).

\* \* \* \* \*

List of Items Controlled

\* \* \* \* \*

Items:

\* \* \* \* \*

- a. \* \* \*
a.8. \* \* \*

Note: 5A002.a.8 applies only to physical layer security.

\* \* \* \* \*

63. Supplement No. 1 to part 774 (the Commerce Control List), Category 6—Sensors and "Lasers", ECCN 6A001 is amended by:

a. Revising the introductory paragraph a.1.b in the Items paragraph of the List of Items Controlled section;

b. Adding a Technical Note to the introductory paragraph a.2.a (following the Note);

c. Adding a Technical Note to the introductory paragraph a.2.b;

d. Revising the introductory paragraph a.2.e., to read as follows:

6A001 Acoustic systems, equipment and components, as follows (see List of Items Controlled).

\* \* \* \* \*

List of Items Controlled

\* \* \* \* \*

Items:

- a. \* \* \*
a.1. \* \* \*
a.1.b. Systems or transmitting and receiving arrays, designed for object detection or location, having any of the following:

\* \* \* \* \*

- a.2. \* \* \*
a.2.a. \* \* \*

Technical Note: Hydrophones consist of one or more sensing elements producing a single acoustic output channel. Those that contain multiple elements can be referred to as a hydrophone group.

\* \* \* \* \*

a.2.b. Towed acoustic hydrophone arrays having any of the following:

Technical Note: Hydrophone arrays consist of a number of hydrophones providing multiple acoustic output channels.

\* \* \* \* \*

a.2.e. Bottom or bay-cable hydrophone arrays having any of the following:

\* \* \* \* \*

64. In Supplement No. 1 to part 774 (the Commerce Control List), Category, ECCN 6A002 is amended by revising the License Requirements section, the LVS and STA paragraphs of the License Exceptions sections and the Items paragraph of the List of Items Controlled section, to read as follows:

6A002 Optical sensors or equipment and components therefor, as follows (see List of Items Controlled).

License Requirements

Reason for Control: NS, MT, CC, RS, AT, UN

Control(s) Country chart

NS applies to entire entry. NS Column 2.

Table with 2 columns: Control(s) and Country chart. Rows include MT applies to optical detectors in 6A002.a.1, a.2, a.3...; RS applies to 6A002.a.1, a.2, a.3...; CC applies to police-model infrared viewers in 6A002.c; AT applies to entire entry; UN applies to 6A002.a.1, a.2, a.3 and c.

License Requirement Notes: See § 743.1 of the EAR for reporting requirements for exports under License Exceptions.

License Exceptions

LVS: \$3,000; except N/A for MT and for 6A002.a.1, a.2, a.3, and .c.

\* \* \* \* \*

STA: License Exception STA may not be used to ship to any of the eight destinations listed in § 740.20(c)(2) of the EAR any commodity in: 6A002.a.1.a, a.1.b or a.1.c; 6A002.a.3.c, a.3.d, a.3.e, or a.3.f; or 6A002.b.

\* \* \* \* \*

List of Items Controlled

\* \* \* \* \*

Items:

- a. Optical detectors as follows:
a.1. "Space-qualified" solid-state detectors as follows:

Note: For the purpose of 6A002.a.1, solid-state detectors include "focal plane arrays".

- a.1.a. "Space-qualified" solid-state detectors having all of the following:
a.1.a.1. A peak response in the wavelength range exceeding 10 nm but not exceeding 300 nm; and
a.1.a.2. A response of less than 0.1% relative to the peak response at a wavelength exceeding 400 nm;
a.1.b. "Space-qualified" solid-state detectors having all of the following:
a.1.b.1. A peak response in the wavelength range exceeding 900 nm but not exceeding 1,200 nm; and
a.1.b.2. A response "time constant" of 95 ns or less;
a.1.c. "Space-qualified" solid-state detectors having a peak response in the



wavelength range exceeding 1,200 nm but not exceeding 30,000 nm;

a.1.d. "Space-qualified" "focal plane arrays" having more than 2,048 elements per array and having a peak response in the wavelength range exceeding 300 nm but not exceeding 900 nm;

a.2. Image intensifier tubes and specially designed components therefor, as follows:

**Note:** 6A002.a.2 does not control non-imaging photomultiplier tubes having an electron sensing device in the vacuum space limited solely to any of the following:

- a. A single metal anode; or
- b. Metal anodes with a center to center spacing greater than 500  $\mu\text{m}$ .

**Technical Note:** 'Charge multiplication' is a form of electronic image amplification and is defined as the generation of charge carriers as a result of an impact ionization gain process. 'Charge multiplication' sensors may take the form of an image intensifier tube, solid state detector or "focal plane array".

a.2.a. Image intensifier tubes having all of the following:

a.2.a.1. A peak response in the wavelength range exceeding 400 nm but not exceeding 1,050 nm;

a.2.a.2. Electron image amplification using any of the following:

a.2.a.2.a. A microchannel plate with a hole pitch (center-to-center spacing) of 12  $\mu\text{m}$  or less; or

a.2.a.2.b. An electron sensing device with a non-binned pixel pitch of 500  $\mu\text{m}$  or less, specially designed or modified to achieve 'charge multiplication' other than by a microchannel plate; and

a.2.a.3. Any of the following photocathodes:

a.2.a.3.a. Multialkali photocathodes (e.g., S-20 and S-25) having a luminous sensitivity exceeding 350  $\mu\text{A}/\text{lm}$ ;

a.2.a.3.b. GaAs or GaInAs photocathodes; or

a.2.a.3.c. Other "III-V compound" semiconductor photocathodes having a maximum "radiant sensitivity" exceeding 10 mA/W;

a.2.b. Image intensifier tubes having all of the following:

a.2.b.1. A peak response in the wavelength range exceeding 1,050 nm but not exceeding 1,800 nm;

a.2.b.2. Electron image amplification using any of the following:

a.2.b.2.a. A microchannel plate with a hole pitch (center-to-center spacing) of 12  $\mu\text{m}$  or less; or

a.2.b.2.b. An electron sensing device with a non-binned pixel pitch of 500  $\mu\text{m}$  or less, specially designed or modified to achieve 'charge multiplication' other than by a microchannel plate; and

a.2.b.3. "III/V compound" semiconductor (e.g., GaAs or GaInAs) photocathodes and transferred electron photocathodes, having a maximum "radiant sensitivity" exceeding 15 mA/W;

a.2.c. Specially designed components as follows:

a.2.c.1. Microchannel plates having a hole pitch (center-to-center spacing) of 12  $\mu\text{m}$  or less;

a.2.c.2. An electron sensing device with a non-binned pixel pitch of 500  $\mu\text{m}$  or less,

specially designed or modified to achieve 'charge multiplication' other than by a microchannel plate;

a.2.c.3. "III-V compound" semiconductor (e.g., GaAs or GaInAs) photocathodes and transferred electron photocathodes;

**Note:** 6A002.a.2.c.3 does not control compound semiconductor photocathodes designed to achieve a maximum "radiant sensitivity" of any of the following:

a. 10 mA/W or less at the peak response in the wavelength range exceeding 400 nm but not exceeding 1,050 nm; or

b. 15 mA/W or less at the peak response in the wavelength range exceeding 1,050 nm but not exceeding 1,800 nm.

a.3. Non-"space-qualified" "focal plane arrays" as follows:

**N.B.:** 'Microbolometer' non-"space-qualified" "focal plane arrays" are only specified by 6A002.a.3.f.

**Technical Note:** Linear or two-dimensional multi-element detector arrays are referred to as "focal plane arrays";

**Note 1:** 6A002.a.3 includes photoconductive arrays and photovoltaic arrays.

**Note 2:** 6A002.a.3 does not control:

a. Multi-element (not to exceed 16 elements) encapsulated photoconductive cells using either lead sulphide or lead selenide;

b. Pyroelectric detectors using any of the following:

b.1. Triglycine sulphate and variants;

b.2. Lead-lanthanum-zirconium titanate and variants;

b.3. Lithium tantalate;

b.4. Polyvinylidene fluoride and variants; or

b.5. Strontium barium niobate and variants.

c. "Focal plane arrays" specially designed or modified to achieve 'charge multiplication' and limited by design to have a maximum "radiant sensitivity" of 10 mA/W or less for wavelengths exceeding 760 nm, having all of the following:

c.1. Incorporating a response limiting mechanism designed not to be removed or modified; and

c.2. Any of the following:

c.2.a. The response limiting mechanism is integral to or combined with the detector element; or

c.2.b. The "focal plane array" is only operable with the response limiting mechanism in place.

**Technical Note:** A response limiting mechanism integral to the detector element is designed not to be removed or modified without rendering the detector inoperable.

a.3.a. Non-"space-qualified" "focal plane arrays" having all of the following:

a.3.a.1. Individual elements with a peak response within the wavelength range exceeding 900 nm but not exceeding 1,050 nm; and

a.3.a.2. Any of the following:

a.3.a.2.a. A response "time constant" of less than 0.5 ns; or

a.3.a.2.b. Specially designed or modified to achieve 'charge multiplication' and having a

maximum "radiant sensitivity" exceeding 10 mA/W.

a.3.b. Non-"space-qualified" "focal plane arrays" having all of the following:

a.3.b.1. Individual elements with a peak response in the wavelength range exceeding 1,050 nm but not exceeding 1,200 nm; and

a.3.b.2. Any of the following:

a.3.b.2.a. A response "time constant" of 95 ns or less; or

a.3.b.2.b. Specially designed or modified to achieve 'charge multiplication' and having a maximum "radiant sensitivity" exceeding 10 mA/W.

a.3.c. Non-"space-qualified" non-linear (2-dimensional) "focal plane arrays" having individual elements with a peak response in the wavelength range exceeding 1,200 nm but not exceeding 30,000 nm;

**N.B.:** Silicon and other material based 'microbolometer' non-"space-qualified" "focal plane arrays" are only specified by 6A002.a.3.f.

a.3.d. Non-"space-qualified" linear (1-dimensional) "focal plane arrays" having all of the following:

a.3.d.1. Individual elements with a peak response in the wavelength range exceeding 1,200 nm but not exceeding 3,000 nm; and

a.3.d.2. Any of the following:

a.3.d.2.a. A ratio of 'scan direction' dimension of the detector element to the 'cross-scan direction' dimension of the detector element of less than 3.8; or

a.3.d.2.b. Signal PProcessing In The Element (SPRITE);

**Note:** 6A002.a.3.d does not control "focal plane arrays" (not to exceed 32 elements) having detector elements limited solely to germanium material.

**Technical Note:** For the purposes of 6A002.a.3.d, 'cross-scan direction' is defined as the axis parallel to the linear array of detector elements and the 'scan direction' is defined as the axis perpendicular to the linear array of detector elements.

a.3.e. Non-"space-qualified" linear (1-dimensional) "focal plane arrays" having individual elements with a peak response in the wavelength range exceeding 3,000 nm but not exceeding 30,000 nm;

a.3.f. Non-"space-qualified" non-linear (2-dimensional) infrared "focal plane arrays" based on 'microbolometer' material having individual elements with an unfiltered response in the wavelength range equal to or exceeding 8,000 nm but not exceeding 14,000 nm;

**Technical Note:** For the purposes of 6A002.a.3.f, 'microbolometer' is defined as a thermal imaging detector that, as a result of a temperature change in the detector caused by the absorption of infrared radiation, is used to generate any usable signal.

a.3.g. Non-"space-qualified" "focal plane arrays" having all of the following:

a.3.g.1. Individual detector elements with a peak response in the wavelength range exceeding 400 nm but not exceeding 900 nm;

a.3.g.2. Specially designed or modified to achieve 'charge multiplication' and having a maximum "radiant sensitivity" exceeding 10 mA/W for wavelengths exceeding 760 nm; and

a.3.g.3. Greater than 32 elements.

b. "Monospectral imaging sensors" and "multispectral imaging sensors", designed for remote sensing applications and having any of the following:

b.1. An Instantaneous-Field-Of-View (IFOV) of less than 200  $\mu$ rad (microradians); or

b.2. Specified for operation in the wavelength range exceeding 400 nm but not exceeding 30,000 nm and having all the following:

b.2.a. Providing output imaging data in digital format; and

b.2.b. Having any of the following characteristics:

b.2.b.1. "Space-qualified"; or

b.2.b.2. Designed for airborne operation, using other than silicon detectors, and having an IFOV of less than 2.5 mrad (milliradians);

**Note:** 6A002.b.1 does not control "monospectral imaging sensors" with a peak response in the wavelength range exceeding 300 nm but not exceeding 900 nm and only incorporating any of the following non-"space-qualified" detectors or non-"space-qualified" "focal plane arrays":

a. Charge Coupled Devices (CCD) not designed or modified to achieve 'charge multiplication'; or

b. Complementary Metal Oxide Semiconductor (CMOS) devices not designed or modified to achieve 'charge multiplication'.

c. 'Direct view' imaging equipment incorporating any of the following:

c.1. Image intensifier tubes having the characteristics listed in 6A002.a.2.a or 6A002.a.2.b;

c.2. "Focal plane arrays" having the characteristics listed in 6A002.a.3; or

c.3. Solid state detectors specified by 6A002.a.1.

**Technical Note:** 'Direct view' refers to imaging equipment that presents a visual image to a human observer without converting the image into an electronic signal for television display, and that cannot record or store the image photographically, electronically or by any other means.

**Note:** 6A002.c does not control equipment as follows, when incorporating other than GaAs or GaInAs photocathodes:

a. Industrial or civilian intrusion alarm, traffic or industrial movement control or counting systems;

b. Medical equipment;

c. Industrial equipment used for inspection, sorting or analysis of the properties of materials;

d. Flame detectors for industrial furnaces;

e. Equipment specially designed for laboratory use.

d. Special support components for optical sensors, as follows:

d.1. "Space-qualified" cryocoolers;

d.2. Non-"space-qualified" cryocoolers having a cooling source temperature below 218K (-55 °C), as follows:

d.2.a. Closed cycle type with a specified Mean-Time-To-Failure (MTTF) or Mean-Time-Between-Failures (MTBF), exceeding 2,500 hours;

d.2.b. Joule-Thomson (JT) self-regulating minicoolers having bore (outside) diameters of less than 8 mm;

d.3. Optical sensing fibers specially fabricated either compositionally or structurally, or modified by coating, to be acoustically, thermally, inertially, electromagnetically or nuclear radiation sensitive.

**Note:** 6A002.d.3 does not apply to encapsulated optical sensing fibers specially designed for bore hole sensing applications.

■ 65. In Supplement No. 1 to Part 774 (the Commerce Control List), Category, ECCN 6A003 is amended by:

■ a. Revising the Heading;

■ b. Revising the License Requirements section; and

■ c. Revising the Related Controls and Items paragraphs of the List of Items Controlled, to read as follows:

**6A003 Cameras, systems or equipment, and components therefor, as follows (see List of Items Controlled).**

**License Requirements**

*Reason for Control:* NS, NP, RS, AT, UN

Control(s)	Country chart
NS applies to entire entry.	NS Column 2.
NP applies to items controlled in paragraphs 6A003.a.2, a.3 and a.4.	NP Column 1.
RS applies to 6A003.b.3, 6A003.b.4.a, 6A003.b.4.c and to items controlled in 6A003.b.4.b that have a frame rate greater than 60 Hz or that incorporate a focal plane array with more than 111,000 elements, or to items in 6A003.b.4.b when being exported or reexported to be embedded in a civil product. (But see § 742.6(a)(2)(iii) and (v) for certain exemptions).	RS Column 1.
RS applies to items controlled in 6A003.b.4.b that have a frame rate of 60 Hz or less and that incorporate a focal plane array with not more than 111,000 elements if not being exported or reexported to be embedded in a civil product.	RS Column 2.

Control(s)	Country chart
RS applies to 6A003.b.4.b.	A license is required to export or reexport these items to Hong Kong. This license requirement does not appear in the Commerce Country Chart.
AT applies to entire entry.	AT Column 1.
UN applies to 6A003.b.3 and b.4.	Iraq and Rwanda.

*License Requirement Notes:* See § 743.1 of the EAR for reporting requirements for exports under License Exceptions.

\* \* \* \* \*

**List of Items Controlled**

*Unit:* \* \* \*

*Related Controls:* (1) See ECCNs 6E001 ("development"), 6E002 ("production"), and 6E201 ("use") for technology for items controlled under this entry. (2) Also see ECCN 6A203. (3) See ECCN 8A002.d.1 and .e for television and film-based photographic still cameras specially designed or modified for underwater use. (4) See ECCN 0A919 for foreign made military commodities that incorporate cameras described in 6A003.b.3, 6A003.b.4.b, or 6A003.b.4.c. (5) Section 744.9 imposes license requirements on cameras described in 6A003.b.3, 6A003.b.4.b, or 6A003.b.4.c if being exported for incorporation into an item controlled by ECCN 0A919 or for a military end-user.

*Related Definitions:* \* \* \*

*Items:*

a. Instrumentation cameras and specially designed components therefor, as follows:

**Note:** *Instrumentation cameras, controlled by 6A003.a.3 to 6A003.a.5, with modular structures should be evaluated by their maximum capability, using plug-ins available according to the camera manufacturer's specifications.*

a.1. High-speed cinema recording cameras using any film format from 8 mm to 16 mm inclusive, in which the film is continuously advanced throughout the recording period, and that are capable of recording at framing rates exceeding 13,150 frames/s;

**Note:** 6A003.a.1 does not control cinema recording cameras designed for civil purposes.

a.2. Mechanical high speed cameras, in which the film does not move, capable of recording at rates exceeding 1,000,000 frames/s for the full framing height of 35 mm film, or at proportionately higher rates for lesser frame heights, or at proportionately lower rates for greater frame heights;

a.3. Mechanical or electronic streak cameras having writing speeds exceeding 10 mm/ $\mu$ s;

a.4. Electronic framing cameras having a speed exceeding 1,000,000 frames/s;

a.5. Electronic cameras having all of the following:

a.5.a. An electronic shutter speed (gating capability) of less than 1 $\mu$ s per full frame; and

a.5.b. A read out time allowing a framing rate of more than 125 full frames per second;

a.6. Plug-ins having all of the following characteristics:

a.6.a. Specially designed for instrumentation cameras which have modular structures and that are controlled by 6A003.a; and

a.6.b. Enabling these cameras to meet the characteristics specified by 6A003.a.3, 6A003.a.4 or 6A003.a.5, according to the manufacturer's specifications;

b. Imaging cameras as follows:

**Note:** 6A003.b does not control television or video cameras specially designed for television broadcasting.

b.1. Video cameras incorporating solid state sensors, having a peak response in the wavelength range exceeding 10 nm, but not exceeding 30,000 nm and having all of the following:

b.1.a. Having any of the following:

b.1.a.1. More than  $4 \times 10^6$  "active pixels" per solid state array for monochrome (black and white) cameras;

b.1.a.2. More than  $4 \times 10^6$  "active pixels" per solid state array for color cameras incorporating three solid state arrays; or

b.1.a.3. More than  $12 \times 10^6$  "active pixels" for solid state array color cameras incorporating one solid state array; and

b.1.b. Having any of the following:

b.1.b.1. Optical mirrors controlled by 6A004.a.;

b.1.b.2. Optical control equipment controlled by 6A004.d.; or

b.1.b.3. The capability for annotating internally generated 'camera tracking data';

**Technical Notes:** 1. For the purposes of this entry, digital video cameras should be evaluated by the maximum number of "active pixels" used for capturing moving images.

2. For the purpose of this entry, 'camera tracking data' is the information necessary to define camera line of sight orientation with respect to the earth. This includes: 1) the horizontal angle the camera line of sight makes with respect to the earth's magnetic field direction and; 2) the vertical angle between the camera line of sight and the earth's horizon.

b.2. Scanning cameras and scanning camera systems, having all of the following:

b.2.a. A peak response in the wavelength range exceeding 10 nm, but not exceeding 30,000 nm;

b.2.b. Linear detector arrays with more than 8,192 elements per array; and

b.2.c. Mechanical scanning in one direction;

**Note:** 6A003.b.2 does not apply to scanning cameras and scanning camera systems, specially designed for any of the following:

a. Industrial or civilian photocopiers;

b. Image scanners specially designed for civil, stationary, close proximity scanning applications (e.g., reproduction of images or print contained in documents, artwork or photographs); or

c. Medical equipment.

b.3. Imaging cameras incorporating image intensifier tubes having the characteristics listed in 6A002.a.2.a or 6A002.a.2.b;

b.4. Imaging cameras incorporating "focal plane arrays" having any of the following:

b.4.a. Incorporating "focal plane arrays" controlled by 6A002.a.3.a to 6A002.a.3.e.;

b.4.b. Incorporating "focal plane arrays" controlled by 6A002.a.3.f; or

b.4.c. Incorporating "focal plane arrays" controlled by 6A002.a.3.g;

**Note 1:** Imaging cameras described in 6A003.b.4 include "focal plane arrays" combined with sufficient "signal processing" electronics, beyond the read out integrated circuit, to enable as a minimum the output of an analog or digital signal once power is supplied.

**Note 2:** 6A003.b.4.a does not control imaging cameras incorporating linear "focal plane arrays" with 12 elements or fewer, not employing time-delay-and-integration within the element and designed for any of the following:

a. Industrial or civilian intrusion alarm, traffic or industrial movement control or counting systems;

b. Industrial equipment used for inspection or monitoring of heat flows in buildings, equipment or industrial processes;

c. Industrial equipment used for inspection, sorting or analysis of the properties of materials;

d. Equipment specially designed for laboratory use; or

e. Medical equipment.

**Note 3:** 6A003.b.4.b does not control imaging cameras having any of the following:

a. A maximum frame rate equal to or less than 9 Hz;

b. Having all of the following:

1. Having a minimum horizontal or vertical 'Instantaneous-Field-of-View (IFOV)' of at least 10 mrad/pixel (milliradians/pixel);

2. Incorporating a fixed focal-length lens that is not designed to be removed;

3. Not incorporating a 'direct view' display; and

**Technical Note:** 'Direct view' refers to an imaging camera operating in the infrared spectrum that presents a visual image to a human observer using a near-to-eye micro display incorporating any light-security mechanism.

4. Having any of the following:

a. No facility to obtain a viewable image of the detected field-of-view; or

b. The camera is designed for a single kind of application and designed not to be user modified; or

**Technical Note:** 'Instantaneous Field of View (IFOV)' specified in Note 3.b is the lesser figure of the 'Horizontal FOV' or the 'Vertical FOV'.

'Horizontal IFOV' = horizontal Field of View (FOV)/number of horizontal detector elements

'Vertical IFOV' = vertical Field of View (FOV)/number of vertical detector elements.

c. The camera is specially designed for installation into a civilian passenger land vehicle of less than 3 tonnes (gross vehicle weight) and having all of the following:

1. Is operable only when installed in any of the following:

a. The civilian passenger land vehicle for which it was intended; or

b. A specially designed, authorized maintenance test facility; and

2. Incorporates an active mechanism that forces the camera not to function when it is removed from the vehicle for which it was intended.

**Note:** When necessary, details of the items will be provided, upon request, to the Bureau of Industry and Security in order to ascertain compliance with the conditions described in Note 3.b.4 and Note 3.c in this Note to 6A003.b.4.b.

**Note 4:** 6A003.b.4.c does not apply to 'imaging cameras' having any of the following characteristics:

a. Having all of the following:

1. Where the camera is specially designed for installation as an integrated component into indoor and wall-plug-operated systems or equipment, limited by design for a single kind of application, as follows:

a. Industrial process monitoring, quality control, or analysis of the properties of materials;

b. Laboratory equipment specially designed for scientific research;

c. Medical equipment;

d. Financial fraud detection equipment; and

2. Is only operable when installed in any of the following:

a. The system(s) or equipment for which it was intended; or

b. A specially designed, authorized maintenance facility; and

3. Incorporates an active mechanism that forces the camera not to function when it is removed from the system(s) or equipment for which it was intended;

b. Where the camera is specially designed for installation into a civilian passenger land vehicle of less than 3 tonnes (gross vehicle weight), or passenger and vehicle ferries having a length overall (LOA) 65 m or greater, and having all of the following:

1. Is only operable when installed in any of the following:

a. The civilian passenger land vehicle or passenger and vehicle ferry for which it was intended; or

b. A specially designed, authorized maintenance test facility; and

2. Incorporates an active mechanism that forces the camera not to function when it is removed from the vehicle for which it was intended;

c. Limited by design to have a maximum "radiant sensitivity" of 10 mA/W or less for wavelengths exceeding 760 nm, having all of the following:

1. Incorporating a response limiting mechanism designed not to be removed or modified; and

2. Incorporates an active mechanism that forces the camera not to function when the response limiting mechanism is removed; and

3. Not specially designed or modified for underwater use; or

d. Having all of the following:

1. Not incorporating a 'direct view' or electronic image display;

2. Has no facility to output a viewable image of the detected field of view;

3. The "focal plane array" is only operable when installed in the camera for which it was intended; and

4. The “focal plane array” incorporates an active mechanism that forces it to be permanently inoperable when removed from the camera for which it was intended.

**Note:** When necessary, details of the item will be provided, upon request, to the Bureau of Industry and Security in order to ascertain compliance with the conditions described in Note 4 above.

b.5. Imaging cameras incorporating solid-state detectors specified by 6A002.a.1.

■ 66. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 6, ECCN 6B008 is amended by adding the Note “License Requirement Notes: See § 743.1 of the EAR for reporting requirements for exports under License Exceptions.” to the end of the License Requirements section.

■ 67. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 6, ECCN 6D991 is amended by revising the Heading and the License Requirements section, to read as follows:

**6D991 “Software” specially designed for the “development”, “production”, or “use” of equipment controlled by 6A002.a.1.d, 6A991, 6A996, 6A997, or 6A998.**

**License Requirements**

*Reason for Control:* RS, AT

Control(s)	Country chart
RS applies to “software” for equipment controlled by 6A002.a.1.d or 6A998.b.	RS Column 1.
AT applies to entire entry, except “software” for equipment controlled by 6A991.	AT Column 1.
AT applies to “software” for equipment controlled by 6A991.	AT Column 2.
* * * * *	

■ 68. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 6 Sensors, Export Control Classification Number (ECCN) 6D994 is removed.

■ 69. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 6, ECCN 6E001 is amended by adding a “License Requirements” heading above the “Reason for Control” heading, revising the RS paragraph of the License Requirements section and the TSR paragraph of the License Exceptions section, to read as follows:

**6E001 “Technology” according to the General Technology Note for the “development” of equipment, materials or “software” controlled by 6A (except 6A991, 6A992, 6A994, 6A995, 6A996, 6A997, or 6A998), 6B (except 6B995), 6C (except 6C992 or 6C994), or 6D (except 6D991, 6D992, or 6D993).**

**License Requirements**

* * * * *	
Control(s)	Country chart
RS applies to “technology” for equipment controlled by 6A002.a.1, .a.2, .a.3, or .c, 6A003.b.3 or .b.4, or 6A008.j.1.	RS Column 1.
* * * * *	

**License Requirement Notes:** See § 743.1 of the EAR for reporting requirements for exports under License Exceptions.

\* \* \* \* \*

**License Exceptions**

\* \* \* \* \*

*TSR:* Yes, except for the following:

- (1) Items controlled for MT reasons;
- (2) “Technology” for commodities controlled by 6A002.a.1.d, 6A004.e or 6A008.j.1;
- (3) “Technology” for “software” specially designed for “space qualified” “laser” radar or Light Detection and Ranging (LIDAR) equipment defined in 6A008.j.1 and controlled by 6D001 or 6D002;
- (4) Exports or reexports to destinations outside of Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, the Netherlands, Portugal, Spain, Sweden, or the United Kingdom of “technology” for the “development” of the following: 6A001.a.1.b, 6A001.a.1.e, 6A001.a.2.a.1, 6A001.a.2.a.2, 6A001.a.2.a.3, 6A001.a.2.a.5, 6A001.a.2.a.6, 6A001.a.2.b, 6A001.a.2.d, 6A001.a.2.e., 6A002.a.1.a, 6A002.a.1.b, 6A002.a.1.c, 6A002.a.3.c through a.3.f, 6A002.b, 6A003.b.3, 6A003.b.4, 6A004.c, 6A004.d, 6A006.a.2, 6A006.c.1, 6A006.d, 6A006.e, 6A008.d, 6A008.h, 6A008.k, 6B008, 6D003.a; (b) Equipment controlled by 6A001.a.2.c or 6A001.a.2.f when specially designed for real time applications; or (c) “Software” controlled by 6D001 and specially designed for the “development” or “production” of equipment controlled by 6B008, or 6D003.a; or
- (5) Exports or reexports to Rwanda.

\* \* \* \* \*

■ 70. In Supplement No. 1 to Part 774 (the Commerce Control List), Category, ECCN 6E002 is amended by adding a “License Requirements” heading above the “Reason for Control” heading, revising the RS paragraph of the License Requirements section and the TSR paragraph of the License Exceptions section, to read as follows:

**6E002 “Technology” according to the General Technology Note for the “production” of equipment or materials controlled by 6A (except 6A991, 6A992, 6A994, 6A995, 6A996, 6A997 or 6A998),**

**6B (except 6B995) or 6C (except 6C992 or 6C994).**

**License Requirements**

* * * * *	
Control(s)	Country chart
RS applies to “technology” for equipment controlled by 6A002.a.1, .a.2, .a.3, or .c, 6A003.b.3 or .b.4, or 6A008.j.1.	RS Column 1
* * * * *	

**License Exceptions**

\* \* \* \* \*

*TSR:* Yes, except for the following:

- (1) Items controlled for MT reasons;
- (2) “Technology” for commodities controlled by 6A002.a.1.d, 6A004.e or 6A008.j.1;
- (3) Exports or reexports to destinations outside of Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, the Netherlands, Portugal, Spain, Sweden, or the United Kingdom of “technology” for the “development” of the following: (a) Items controlled by 6A001.a.1.b, 6A001.a.1.e, 6A001.a.2.a.1, 6A001.a.2.a.2, 6A001.a.2.a.3, 6A001.a.2.a.5, 6A001.a.2.a.6, 6A001.a.2.b, 6A002.a.3.c through a.3.f, 6A002.b, 6A003.b.3, 6A003.b.4, 6A004.c, 6A004.d, 6A006.a.2, 6A006.c.1, 6A006.d, 6A006.e, 6A008.d, 6A008.h, 6A008.k, 6B008; and (b) Equipment controlled by 6A001.a.2.c and 6A001.a.2.f when specially designed for real time applications; or
- (4) Exports or reexports to Rwanda.

\* \* \* \* \*

■ 71. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 6, ECCN 6E101 is amended by revising the Related Definitions paragraph of the List of Items Controlled section, to read as follows:

**6E101 “Technology” according to the General Technology Note for the “use” of equipment or “software” controlled by 6A002, 6A007.b and .c, 6A008, 6A102, 6A107, 6A108, 6B108, 6D102 or 6D103.**

\* \* \* \* \*

**List of Items Controlled**

\* \* \* \* \*

*Related Definitions:* (1) This entry only controls “technology” for equipment controlled by 6A008 when it is designed for airborne applications and is usable in “missiles”. (2) This entry only controls “technology” for items in 6A002.a.1 and a.3 that are specially designed or modified to protect “missiles” against nuclear effects (e.g., Electromagnetic Pulse (EMP), X-rays, combined blast and thermal effects), and usable for “missiles.” (3) This entry only controls “technology” for items in 6A007.b

and .c when the accuracies in 6A007.b.1 and b.2 are met or exceeded.

72. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 7, ECCN 7A003 is amended by revising the Heading to read as follows:

7A003 Inertial systems and specially designed components, as follows (see List of Items Controlled).

\* \* \* \* \*

73. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 7, ECCN 7A004 is amended by revising the Heading and the Items paragraph of the List of Items Controlled, to read as follows:

7A004 'Star trackers' and components therefor, as follows (see List of Items Controlled).

\* \* \* \* \*

List of Items Controlled

\* \* \* \* \*

Items:

- a. 'Star trackers' with a specified azimuth accuracy of equal to or less (better) than 20 seconds of arc throughout the specified lifetime of the equipment;
b. Components specially designed for equipment specified in 7A004.a as follows:
b.1. Optical heads or baffles;
b.2. Data processing units.

Technical Note: 'Star trackers' are also referred to as stellar attitude sensors or gyro-astro compasses.

74. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 7, ECCN 7A005 is amended by revising the Heading to read as follows:

7A005 Global Navigation Satellite Systems (GNSS) receiving equipment having any of the following (see List of Items Controlled) and specially designed components therefor.

\* \* \* \* \*

75. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 7, ECCN 7D002 is amended by revising the Heading and the Related Controls paragraph of the List of Items Controlled, to read as follows:

7D002 'Source code' for the operation or maintenance of any inertial navigation equipment, including inertial equipment not controlled by 7A003 or 7A004, or Attitude and Heading Reference Systems ('AHR').

\* \* \* \* \*

List of Items Controlled

\* \* \* \* \*

Related Controls: (1) See also 7D102 and 7D994. (2) This entry does not control 'source code' for the operation or maintenance of gimballed 'AHR'.

\* \* \* \* \*

76. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 7,

ECCN 7D003 is amended by revising paragraph d.7. in the Items paragraph of the List of Items Controlled to read as follows:

7D003 Other 'software' as follows (see List of Items Controlled).

\* \* \* \* \*

List of Items Controlled

\* \* \* \* \*

Items:

- \* \* \*
d. \* \* \*
d.7. Three dimensional displays;
\* \* \* \* \*

77. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 7, ECCN 7E004 is amended by removing and reserving paragraph a.1 in the Items paragraph of the List of Items Controlled.

78. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 8, ECCN 8A002 is amended by:

- a. Revising the Related Controls paragraph in the List of Items Controlled section;
b. Revising paragraph c. in the Items paragraph of the List of Items Controlled section, to read as follows; and
c. Removing and reserving paragraph f. (including the Note) in the Items paragraph of the List of Items Controlled section.

8A002 Marine systems, equipment and components, as follows (see List of Items Controlled).

\* \* \* \* \*

List of Items Controlled

Unit: \* \* \*

Related Controls: (1) See also 8A992 and for underwater communications systems, see Category 5, Part I—Telecommunications). 8A002 does not control closed and semi-closed circuit (rebreathing) apparatus that is controlled under 8A018.a. (2) See also 8A992 for self-contained underwater breathing apparatus that is not controlled by 8A002 or released for control by the 8A002.q Note. (3) For electronic imaging systems specially designed or modified for underwater use incorporating image intensifier tubes specified by 6A002.a.2.a or 6A002.a.2.b, see 6A003.b.3. (4) For electronic imaging systems specially designed or modified for underwater use incorporating 'focal plane arrays' specified by 6A002.a.3.g, see 6A003.b.4.c.

Related Definitions: \* \* \*

Items:

- \* \* \* \* \*
c. Fiber optic pressure hull penetrators;
\* \* \* \* \*

79. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 9, ECCN 9A012 is amended by revising the Heading and the Items paragraph of the List of Items Controlled section to read as follows:

9A012 Non-military 'unmanned aerial vehicles,' ('UAVs'), unmanned 'airships', associated systems, equipment and components, as follows (see List of Items Controlled).

\* \* \* \* \*

List of Items Controlled

\* \* \* \* \*

Items:

- a. 'UAVs' or unmanned 'airships', having any of the following:
a.1. An autonomous flight control and navigation capability (e.g., an autopilot with an Inertial Navigation System); or
a.2. Capability of controlled flight out of the direct visual range involving a human operator (e.g., televisual remote control);
b. Associated systems, equipment and components, as follows:
b.1. Equipment specially designed for remotely controlling the 'UAVs' or unmanned 'airships', controlled by 9A012.a.;
b.2. Systems for navigation, attitude, guidance or control, other than those controlled in Category 7, specially designed to provide autonomous flight control or navigation capability to 'UAVs' or unmanned 'airships', controlled by 9A012.a.;
b.3. Equipment or components specially designed to convert a manned 'aircraft' or a manned 'airship' to a 'UAV' or unmanned 'airship', controlled by 9A012.a.;
b.4. Air breathing reciprocating or rotary internal combustion type engines, specially designed or modified to propel 'UAVs' or unmanned 'airships', at altitudes above 50,000 feet (15,240 meters).

Note: 9A012 does not control model aircraft or model 'airships'.

80. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 9, ECCN 9D004 is amended by:

- a. Removing and reserving paragraph d. (including the Note) in the Items paragraph of the List of Items Controlled section; and
b. Revising paragraph e. in the Items paragraph of the List of Items Controlled section to read as follows:

9D004 Other 'software' as follows (see List of Items Controlled).

\* \* \* \* \*

List of Items Controlled

\* \* \* \* \*

Items:

- \* \* \* \* \*
e. 'Software' specially designed or modified for the operation of 'UAVs' and associated systems, equipment and components, controlled by 9A012;
\* \* \* \* \*

81. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 9, Product Group E is amended by revising the Note to read as follows:

E. Technology

Note: "Development" or "production" "technology" controlled by 9E001 to 9E003 for gas turbine engines remains controlled when used for repair or overhaul. Excluded from 9E001 to 9E003 control are: technical data, drawings or documentation for maintenance activities directly associated with calibration, removal or replacement of damaged or unserviceable line replaceable units, including replacement of whole engines or engine modules.

82. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 9, ECCN 9E003 is amended by revising paragraphs a.2. and c. in the Items paragraph of the List of Items Controlled section, to read as follows:

9E003 Other "technology" as follows (see List of Items Controlled).

\* \* \* \* \*

List of Items Controlled

\* \* \* \* \*

Items:

- a. \* \* \*
a.2. Combustors having any of the following:
a.2.a. Thermally decoupled liners designed to operate at 'combustor exit temperature' exceeding 1,883K (1,610 °C);
a.2.b. Non-metallic liners;
a.2.c. Non-metallic shells; or

- a.2.d. Liners designed to operate at 'combustor exit temperature' exceeding 1,883K (1,610 °C) and having holes that meet the parameters specified by 9E003.c;

Note: The "required" "technology" for holes in 9E003.a.2 is limited to the derivation of the geometry and location of the holes.

Technical Note: 'Combustor exit temperature' is the bulk average gas path total (stagnation) temperature between the combustor exit plane and the leading edge of the turbine inlet guide vane (i.e., measured at engine station T40 as defined in SAE ARP 755A) when the engine is running in a 'steady state mode' of operation at the certificated maximum continuous operating temperature.

N.B.: See 9E003.c for "technology" "required" for manufacturing cooling holes.

\* \* \* \* \*

c. "Technology" "required" for manufacturing cooling holes, in gas turbine engine components incorporating any of the "technologies" specified by 9E003.a.1, 9E003.a.2 or 9E003.a.5, and having any of the following:

- c.1. Having all of the following:
c.1.a. Minimum 'cross-sectional area' less than 0.45 mm²;
c.1.b. 'Hole shape ratio' greater than 4.52; and
c.1.c. 'Incidence angle' equal to or less than 25°; or
c.2. Having all of the following:

- c.2.a. Minimum 'cross-sectional area' less than 0.12 mm²;
c.2.b. 'Hole shape ratio' greater than 5.65; and
c.2.c. 'Incidence angle' more than 25°;

Note: 9E003.c does not apply to "technology" for manufacturing constant radius cylindrical holes that are straight through and enter and exit on the external surfaces of the component.

Technical Notes:

- 1. For the purposes of 9E003.c, the 'cross-sectional area' is the area of the hole in the plane perpendicular to the hole axis.
2. For the purposes of 9E003.c, 'hole shape ratio' is the nominal length of the axis of the hole divided by the square root of its minimum 'cross-sectional area'.
3. For the purposes of 9E003.c, 'incidence angle' is the acute angle measured between the plane tangential to the airfoil surface and the hole axis at the point where the hole axis enters the airfoil surface.
4. Techniques for manufacturing holes in 9E003.c include "laser", water jet, Electro-Chemical Machining (ECM) or Electrical Discharge Machining (EDM) methods.

\* \* \* \* \*

Dated: June 14, 2012.

Kevin J. Wolf,
Assistant Secretary for Export Administration.

[FR Doc. 2012-15079 Filed 6-29-12; 8:45 am]

BILLING CODE 3510-33-P