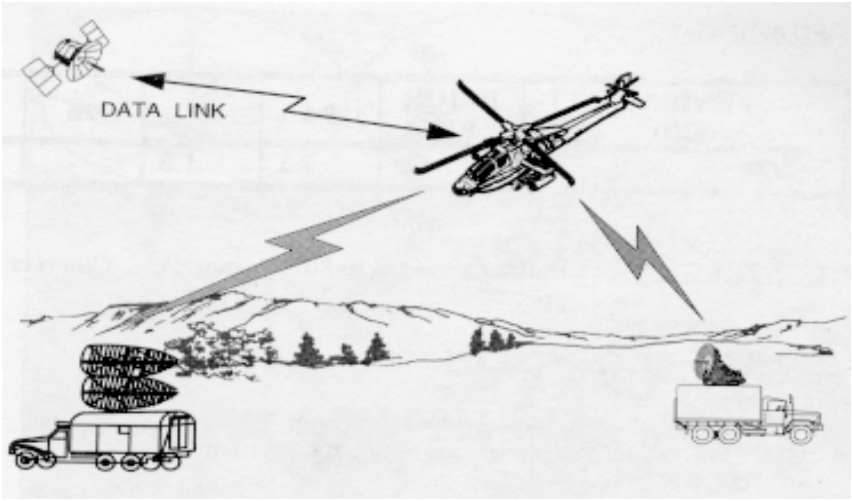
TB 43–0133

TECHNICAL BULLETIN

HAZARD CONTROLS FOR CECOM RADIOFREQUENCY AND OPTICAL RADIATION PRODUCING EQUIPMENT



HEADQUARTERS, DEPARTMENT OF THE ARMY

15 NOVEMBER 2000

LIST OF EFFECTIVE PAGES

INSERT LATEST CHANGED PAGES, DESTROY SUPERSEDED PAGES

NOTE: The portion of the text affected by the changes is indicated by a vertical line in the outer margins of the page. Changes to illustrations are indicated by miniature pointing hands. Changes to wiring diagrams are indicated by shaded areas.

Dates of issue for original and changed pages are:

Original . . . . 0 . . . . . 15 November 2000

TOTAL NUMBER OF PAGES IS 292, CONSISTING OF THE FOLLOWING:

Page No.	*Change No.	Page No.	*Change No.	Page No.	*Change No.
Cover 1/ (Cover 2 blank)	0				
LOEP/(blank)	0				
i - ii	0				
Introduction-1 – Introduction-20	0				
Index-1 – Index-18	0				
Equipment-1 – Equipment-218	0				
A-1 – A-2	0				
B-1 – B-4	0				
C-1 – C-6	0				
D-1 – D-3/ (D-4 blank)	0				
E-1/(E-2 blank)	0				
F-1 – F-3/ (F-4 blank)	0				
G-1 – G-3/ (G-4 blank)	0				
Authentication/ (blank))	0				
Cover 3 (blank)/ Cover 4)	0				

* Zero in this column indicates an original page.

Technical Bulletin

No. 43–0133

HEADQUARTERS,
DEPARTMENT OF THE ARMY
Washington, DC 15 November 2000

HAZARD CONTROLS FOR CECOM RADIOFREQUENCY AND OPTICAL RADIATION PRODUCING EQUIPMENT

REPORTING OF ERRORS

You can improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to: Commander, U.S. Army Communications–Electronics Command and Fort Monmouth, ATTN: AMSEL–LC–LEO–D–CS–CFO, Fort Monmouth, New Jersey 07703–5006. You may also submit your recommended changes by E–mail to: AMSEL–LC–LEO–PUBS–CHG@mail1.monmouth.army.mil

A reply will be furnished to you.

TABLE OF CONTENTS

*ThisTechnical Bulletin supersedes TB 43–0133, dated 1 April 1999

TABLE OF CONTENTS – *continued*

Illustrations

CECOM Directorate for Safety
Fort Monmouth, NJ

INTRODUCTION

1. Acknowledgment. This Technical Bulletin (TB) would not be possible without the assistance provided by the Laser/Optical & Radiofrequency (RF) Programs of the United States Army Center for Health Promotion and Preventive Medicine (USACHPPM), Aberdeen Proving Ground, Maryland.

2. Purpose and Scope. This TB identifies U.S. Army Communications–Electronics Command (CECOM) equipment and systems which have the potential to produce radiofrequency (RF) and/or optical radiation. It also contains limited information on additional equipment and systems managed by other Army commands and DoD agencies. Logistics Assistance Representatives (LAR), Safety Managers & technicians, equipment operators, maintenance personnel, and other concerned individuals, should use the information in this TB to assess the potential non-ionizing radiation hazards and health risks associated with the various RF and/or optical equipment systems they use in order to take the necessary precautions to avoid any potentially hazardous exposures from these systems. This TB summarizes the non-ionizing radiation safety controls required for the RF and/or optical radiation producing systems listed and serves as a quick reference for personnel in the field. Ancillary safety concerns such as electrical safety, battery safety, noise, heat, and ionizing radiation safety are NOT covered. Consult your Equipment Technical Manual (TM) for specific precautions concerning these safety topics. *TB 43–0116, "Identification of Radioactive Items in the Army", 15 April 98, is a source to determine if your item has a radioactive commodity incorporated into the system*. Although a substantial effort has been made to include all potentially hazardous CECOM radiofrequency and laser/optical radiation producing equipment, some fielded systems may not be included. If your equipment is not listed, please notify us so that we can include your equipment in the next update to this publication. Our telephone number is DSN 992–9723 or COM (732) 532–9723. **The hazard controls described are for standard equipment configurations**. Nonstandard configurations (*i.e*., using a different transmitter, antenna, power amplifier, etc.) will result in a system with unique hazard criteria which may not agree with the controls presented in this TB. ***NOTE:*** **All new equipment configurations must be studied by USACHPPM before hazard control information can be provided.**

3. General. This TB is to be used in conjunction with the applicable Equipment TMs. The TMs list more specific information for the equipment, including minor differences between different versions of each system. If the equipment is not listed in this TB, consult the equipment TM for specific safety information.

4. How to Use this Publication. To find a specific system, refer to the "**INDEX of SYSTEMS by TYPE DESIGNATION/NOMENCLATURE**" and proceed to the page number given for the system. The hazard information tables are arranged by ascending Type Designation/Nomenclature assigned to the equipment or system. If the equipment Na-

tional Stock Number (NSN) or Line Item Number (LIN) is known and the Type Designation/Nomenclature is not, refer to Appendices C or D to convert to the Type Designator.

Radiofrequency producing systems are identified under **TYPE** in the **INDEX of SYSTEMS.** They are also identified in the Tables by a double-waved line that underlines the System Nomenclature.

Optical/LASER producing systems are identified under **TYPE** in the **INDEX of SYSTEMS.** They are also identified in the Tables by a line resembling a beam that underlines the System Nomenclature.

Systems that are neither a Radiofrequency or Optical/LASER hazard, but could be interpreted as such, are identified in the Tables by a double-solid line that underlines the System Nomenclature.

a. Appendices.

Appendix A is a list of references.

Appendix B lists abbreviations used in this TB.

Appendix C cross references the National Stock Number (NSN) to the Type Designation/Nomenclature.

Appendix D cross references the Line Item Number (LIN) to the Type Designation/Nomenclature**.**

Appendix E explains the Joint Electronics Type Designation System.

Appendix F contains a sample RF/LASER Standing Operating Procedure (SOP)

Appendix G is a Glossary of Terms.

b. Format. Both the Radiofrequency (RF) Tables and Laser/Optical Tables are divided into 6 sections (*SYSTEM, SYSTEM DESCRIPTION, SYSTEM PARAMETERS, SYSTEM HAZARDS and HAZARD CONTROLS (to reduce or eliminate risk) and REFERENCES)* as explained below.

(1) **Radiofrequency (RF) Tables**. Listed first, is the Type Designation/Nomenclature of the *SYSTEM.* The *SYSTEM DESCRIPTION* section contains a brief description of the system, its subcomponents, and the known types of antennas. The *SYSTEM PARAMETERS* section contains the transmitting frequency(ies) and the power level. The *SYSTEM HAZARDS* section contains the non-ionizing system hazards associated with each system (i.e. Power Density Levels (PDL), hazard distance from the antenna, open/cracked waveguides and RF shock/burn concerns). If a given hazard is

not present, it will NOT be listed. The *HAZARD CONTROLS (to reduce or eliminate risk)* section contains specific information on procedures required to control or eliminate the specific risk associated with the *System Hazards*. The statement *"Establish a Non-ionizing Radiation Protection Program IAW guidelines provided in this TB"* means that the non-ionizing exposure to personnel can be controlled by administrative/procedural actions listed at paragraph 5.***b.*** These guidelines are primarily intended for personnel using the equipment but may include limited guidelines for maintenance personnel. Finally, an equipment/system *REFERENCE* is listed, if available.

AN/XXX–123 Radiofrequency Radiation Producing System	
SYSTEM DESCRIPTION	**SYSTEM PARAMETERS**
The AN/XXX–123 is a ...	Frequency: ### MHz; Power: ## W; ## W PEP
SYSTEM HAZARDS	**HAZARD CONTROLS (to reduce or eliminate risk)**
Power Density Levels (PDL)	All system antennas are able to radiate potentially hazardous PDLs in their main beams. Establish a Non-ionizing Radiation Protection Program (IAW guidelines provided in this TB).
Hazard distance from antenna	Exclude personnel from the area directly in front of the antenna to a distance of ... Exclude personnel from ... when the antenna is radiating. When operated on level terrain there is no potential radiation hazard for personnel on the ground. Check the ... interlock routinely for proper operation.
Open/cracked waveguides	Do not permit operation of this system with any cracked, broken, or open waveguide.
RF shock/burn	Observe standard RF shock precautions. Do not touch antenna when energized.
Other	Consult the equipment Technical Manual for other operator and/or maintenance hazards.
REFERENCE: TM ##– #### – ###–##; CHPPM Study ## – #### – ##	

(2) **Laser/Optical Tables**. Listed first is the Type Designation/Nomenclature of the *SYSTEM.* The *SYSTEM DESCRIPTION section* contains a brief description of the system and its subcomponents. The *SYSTEM PARAMETERS* section contains the type (*i.e*. Ruby, Nd:YAG), the operating wavelength, and the output power of the laser. The *SYSTEM HAZARDS* section contains the non-ionizing system hazards associated with each system (*i.e*., laser classification, hazard distances, ocular injury concerns (use of protective eyewear), and outdoor range operations). If any given hazard is not present, it will NOT be listed. The *HAZARD CONTROLS (to reduce or eliminate risk)* section contains specific information on procedures required to control or eliminate the specific risk associated with the *System Hazards*. The statement *"Establish a Non-ionizing Radi-*

ation Protection Program IAW guidelines provided in this TB" means that the non-ionizing exposure to personnel can be controlled by administrative/ procedural actions listed at paragraph 6.c. These guidelines are primarily intended for personnel using the equipment but, may include limited guidelines for maintenance personnel. Finally, an equipment/system *REFERENCE* is listed, if available.

AN/XXX–123 LASER/OPTICAL Radiation Producing System	
SYSTEM DESCRIPTION	**SYSTEM PARAMETERS**
The AN/XXX–123 is a ...	Type: ... Wavelength: ## nm
SYSTEM HAZARDS	**HAZARD CONTROLS (to reduce or eliminate risk)**
Laser Classification	This system contains a Class…… laser and requires an established laser safety program to ensure its safe use. Develop a written Local Standing Operating Procedure (SOP) IAW guidelines provided in this TB.
Hazard distance	Do not permit personnel to view the laser from within the beam at distances less than ……. for unaided viewing or ……..when viewing the laser through magnifying optical instruments.
Ocular injury	Use protective eyewear that filter at ... nm with a minimum OD of ... for unaided viewing and a minimum OD of ... for viewing through magnifying optical instruments.
Outdoor range operations	Eliminate all specular surfaces (man made and natural) capable of producing potentially hazardous reflections. Control unauthorized personnel access to controlled area. Appoint a qualified Laser Range Safety Officer.
Other	Consult the equipment Technical Manual for other operator and/or maintenance hazards.
REFERENCE: TM # – ### – ##; CHPPM Study ## – #### – ##	

5. **Radiofrequency Radiation Producing Equipment**. The information that follows provides general guidance for the safe use of RF radiation producing equipment. It is based on the guidance of a number of regulations, and on a "common sense" approach to safety. For more details, consult Technical Bulletin, Medical (TB MED) 523, and Department of Defense Instruction (DoDI) 6055.11. The DoDI is primarily based on an industry standard: Institute of Electrical and Electronics Engineers (IEEE) C95.1–1991, Standard for Safety levels with Respect to Human Exposure to Radio Frequency Electromagnetic fields, 3 kHz to 300 GHz.

***a. Safety Standards Description*.** Both the DoDI and the IEEE documents referenced above are formulated around the concept of Specific Absorption Rate (SAR) for human tissue. As electromagnetic energy enters human tissue, it does so at some rate. Any effects caused by exposure to electromagnetic fields will be related to several factors including frequency (or wavelength), power level, and the exposure time. The

higher the levels of the absorbed energy and the longer the exposure time, the more the concern for potential tissue and/or organ damage. The scientific community has concluded that as the SAR approaches 4.0 Watts per kilogram mass or 4.0 Watts per 2.2 pounds of tissue mass, potential health risks must be addressed, primarily because at or about this rate there is more energy being absorbed than the body can safely remove through perspiration, exhalation, etc. As a result, the body's thermal regulatory system becomes overloaded. This over–abundance of heat energy may cause hyperthermia, and is of serious concern. This can be further aggravated by other seemingly unrelated variables, such as the ambient temperature, the relative humidity and the atmospheric pressure (the elevation where the potential overexposure occurs). If the individual has recently raised his or her own body temperature from strenuous activity, the added stress of the impending energy will further increase one's chances for hyperthermia. In certain frequency ranges and/or power levels, various organs may be more susceptible to damage than the body as a whole. The human eye and the male testes are very sensitive to heat buildup since there is not much blood flow in these particular organs to carry away excess heat. An analogy to the importance of good blood flow is that of an automobile engine. When an automobile radiator malfunctions because of a leak or clog, the engine will eventually overheat.

The safety standard for RF radiation is expressed as the Permissible Exposure Limit (PEL). PELs are based on a Whole–Body (WB) Specific Absorption Rate (SAR) of 0.4 and 0.08 Watts per kilogram (W/kg) for controlled and uncontrolled environments, respectively. This incorporates a safety factor of 10 and 50 below the threshold of 4.0 W/kg of mass for occurrence of potential biological effects. This is the minimum rate at which a person is overexposed to RF radiation. The amount of RF radiation absorbed by the human body depends principally upon two factors: the intensity (*i.e*., power density level present) and the frequency of the radiation. The power density level is commonly expressed in power per unit area or milliwatts per square centimeter (mW/cm^2).

(1) Controlled Environment. In a controlled environment, personnel are aware of the potential for RF exposure as a consequence of employment. Individuals knowingly enter areas where higher levels of RF energy can be reasonably anticipated. Additionally, it includes personnel who may be exposed during transient passage. For this environment, the "limits" or permissible exposure levels (PELs) are actually based on one–tenth of the previously mentioned 4.0 Watts per kilogram level or 0.4 Watts per kilogram of tissue mass.

(2) Uncontrolled Environment. In an uncontrolled environment, unsuspecting personnel or the general public could be exposed to electromagnetic radiation. For this environment, the established PELs are based on a much tighter restriction (1/50) or 0.08 Watts per kilogram, thus ensuring a much larger margin of safety.

In DoDI 6055.1, the SAR is converted to a quantity that can be more easily measured: power density. Power density is measured in terms of mW/cm^2 or power per unit area.

The relationship of power per unit area is similar to the relationship of pounds per square inch or pressure. Both relate to force per unit area. The larger the force per unit area, the greater the potential for injury. Power density can be measured directly or inferred by taking measurements of either the electric field strength in Volts per meter, the magnetic field in Amps per meter, or both. The tables at DoDI 6055.11, Enclosure 6, list the safety standards and PELs for personnel working with RF radiation in controlled and uncontrolled environments. Additionally, it lists the RF induced current standard, which relates to the current density in small cross–sectional areas of the body such as the ankle area and at various other joints. The exclusions or relaxation to the PEL limits, are found at Enclosure 6 to DoDI 6055.11. The Partial Body exposure rule is at paragraph B.6.a; the SAR Exclusion Rule for controlled and uncontrolled environments is addressed in paragraphs B.6.b.(1) and B.6.b.(2), respectively; and the Low–Power Device Exclusion is at paragraph B.6.c in DoDI 6055.11.

b. Radiofrequency Program Guidelines. The following guidelines are offered to assist commanders in setting up and maintaining a complete radiofrequency radiation protection program. Incorporate these guidelines into your local non-ionizing radiation protection programs and procedures as applicable:

(1) Maintain an inventory and description of all potentially hazardous RF radiation producing equipment (AR 40–5, Paragraph 9–9.a.(2)(f)).

(2) Prepare an SOP describing the local RF radiation protection program for each area or activity using potentially hazardous RF sources (AR 40–5, paragraph 9–9.a.(2)(a)). Post the SOP conspicuously in the vicinity of the RF operations (DoDI 6055.11, Enclosure 5, paragraph 10.; AR 40–5, paragraphs 9–9.a.(2)(b) and 9–9.a.(2)(e); CECOM–R 385–17, paragraph 7.b).

(3) Perform periodic surveys of potentially hazardous RF sources to ensure compliance with applicable regulations and TMs (CECOM–R 385–17, paragraph 8.j).

(4) Assure that all RF radiation workers attend annual RF safety briefings. These briefings shall discuss the nature of RF radiation, the hazards associated with RF sources and the means by which personnel can avoid potentially hazardous exposures (DoDI 6055.11, Enclosure 5, paragraph 6; and CECOM–R 385–17, Paragraph 6.f.6)).

(5) Include appropriate personnel in a medical surveillance program in accordance with (IAW) Department of Army Surgeon General (DASG) Memorandum, 11 April 1994, paragraphs 4 through 6; and TB MED 523, paragraph 5.

(6) Assure first aid personnel with appropriate training and equipment are available at a level commensurate with the associated RF hazards (i.e., electrical shock, RF exposure, etc.) (CECOM–R 385–17, Paragraphs 7.c and 10.a).

(7) Transmit RF radiation into dummy loads instead of free space radiating, whenever possible (CECOM–R 385–17, paragraph 8.a).

(8) When the mission requires free space radiation, do not direct the radiated beam toward occupied areas where the resulting power density levels in those areas could equal or exceed the applicable safety standards. “Occupied” areas include military and civilian buildings, encampments, elevated structures, etc. (CECOM–R 385–17, paragraph 8.b).

(9) For training purposes, operate at the minimum output power level necessary to perform the training mission (CECOM–R 385–17, paragraph 8.i).

(10) When the mission requires operating near occupied areas, keep potentially hazardous radiated beams at a safe distance from these areas through the use of interlocks, antenna sector blanking, fences, or other positive means (CECOM–R 385–17, paragraph 8.c).

(11) Inspect interlocks, antenna sector blanking systems, and other beam restriction devices periodically. Keep a permanent record of these inspections on file for reference (CECOM–R 385–17, paragraph 8.d).

(12) Only authorized personnel may set up, adjust, or operate RF systems. Prohibit the use of these systems by unnecessary or unauthorized personnel for periods of time beyond that which are absolutely necessary (CECOM–R 385–17, paragraph 8.e).

(13) Exclude personnel from the beam path at all points where the power density level of the beam could potentially exceed the safety standard. Keep the potentially hazardous beam path under surveillance to ensure it remains clear of personnel (CECOM–R 385–17, paragraph 8.f).

(14) Prepare signs IAW ANSI C95.2–1982, 5 August 1981.

(15) Post signs to indicate the nature of the RF hazard. (DoDI 6055.11, enclosure 5, paragraph 3.; ANSI C95.2–1982, 5 August 1981). Figure 1, below, is an example of a typical RF hazard posting.

(16) Post signs where warning lights are employed to inform personnel that the lights, when energized, are an indication that a potential health hazard is present, and when interlocks have been overridden (CECOM–R 385–17, paragraph 8.h). Maintain an operational log for each piece of equipment to annotate overrides/bypasses (AR 40–5, paragraph 9–9.a.(2)(b)5).

(17) With the transmitter disabled, periodically inspect potentially hazardous waveguides, especially flexible waveguides. Look for cracks in the waveguides. Ensure

Figure 1. RF Warning Sign.

that waveguide flanges are properly connected. Keep a permanent record of these inspections on file for reference (CECOM–R 385–17, paragraph 8.j).

(18) On many RF systems the area between the feed horn and the antenna reflector is extremely dangerous. Permanently exclude personnel from this area for such systems.

(19) Take precautions to prevent electrical shock hazards to personnel. Do not lean against or touch any doublet or whip antennas when the transmitter is energized/transmitting. Ensure that vehicle mounted whip antennas will not come into contact with power lines. When unsure, tie the antenna down to the vehicle (CECOM–R 385–17, paragraphs 8.k and 8.l).

(20) Potentially hazardous X–radiation may exist near certain transmitters and transmitter cabinets. These units must be appropriately labeled to warn personnel (CECOM–R 385–17, paragraph 8.m).

(21) Familiarize maintenance personnel with the potential hazards associated with the RF equipment they maintain (CECOM–R 385–17, paragraph 9.a).

(22) Maintenance personnel should use dummy loads or closed loop configurations rather than generating potentially hazardous free space radiation indoors during testing. If free space radiation is required, mount the antenna either on the roof or at a height such that the antenna and potentially hazardous beam are inaccessible to personnel. Consult the applicable TM for more information (CECOM–R 385–17, paragraphs 9.b and 9.c).

(23) Designate individual(s) to be notified in the event of emergencies (*i.e.*, equipment or safety device malfunction, potential exposures, or suspected accidental exposures), (AR 40–5, paragraphs 9–9.a.2.(e)).

(24) Review, coordinate and ensure investigations pertaining to reports of accidents or incidents involving RF radiation producing equipment are performed and reported (DoDI 6055.11, Enclosure 5, Paragraphs 5.a through 5.c; DASG Memorandum, 11 April 1994, paragraph 8.; AR 40–5, paragraphs 9–9.a.(2)(b)3, and 9–12.a through 9–12.c).

6. Laser/Optical Radiation Producing Equipment. The following provides general guidance for the safe use of optical and laser radiation producing equipment. It is based upon the guidance of a number of regulations, and upon a “common sense” approach to safety. For more details, consult the applicable references listed in Appendix A.

a. Laser/High Intensity Optical Radiation Hazards. Lasers and equipment generating high intensity optical radiation can be a hazard to personnel. The radiant intensities typically produced by lasers are of magnitudes that could previously be approached only by the sun, nuclear weapons, burning magnesium, or arc lights (TB MED 524, paragraph 2–1). The type of hazard present depends upon both the intensity and the wavelength of the light. Skin damage can occur at wavelengths between 315 nanometers (nm) and 1 millimeter (mm) (TB MED 524, paragraph 2–1). Dependent upon the intensity of the exposure, anything from skin reddening to blistering and charring can occur. The most vulnerable organ to injury is the eye. Once again, the kind of potential damage depends upon the wavelength and intensity of the radiation. Because lasers can concentrate light into a very narrow beam of radiation, the potential for injury from them is greater than that from a high intensity optical radiation source of the same output power. A brief description of the hazards associated with the different wavelength ranges follows:

(1) Ultraviolet (UV) Radiation (200 – 400 nm). UV radiation is the most common cause of light induced ocular injury. It is invisible to the human eye (Occupational Health, The Soldier and the Industrial Base, 1993, pages 272 – 273). The primary hazards from this wavelength range are: damage to either the lens or the cornea of the eye. Long term, low level and short term, high level exposures can cause corneal and

lens opacities (cataracts) or inflammation of the eye. UV radiation can also cause photokeratitis, which feels like a sunburn to the cornea for a period of time (TB MED 524, paragraphs 2–3.a and 2–3.c; Field Manual (FM) 8–50, paragraph 1.c).

(2) Visible Light (400 – 700 nm) and Near–Infrared (IR–A) Radiation (700 – 1400 nm). The primary hazard from this wavelength range is damage to the retina of the eye. Depending on the level of the exposure, the damage may be temporary or permanent. (TB MED 524, paragraph 2–3.a and 2–3.b; Occupational Health, The Soldier and the Industrial Base).

(3) Far–Infrared Radiation (1,400 nm – 1 mm). Absorption of radiation in this frequency range will result in the production of heat with resultant effects on both the cornea and the lens of the eye ranging from welders flash and photokeratitis, to thermal burns to all layers of the cornea (TB MED 524, paragraph 2–3.a and 2–3.d; Occupational Health, The Soldier and the Industrial Base, 1993).

b. ***Laser Hazard Classifications***. The classification of lasers is dependent mainly on the following factors: wavelength(s), output power/energy, whether the laser is continuous wave (CW) or pulsed, and the pulse characteristics. Class 1 lasers are those devices not capable of emitting hazardous laser radiation under any operating or viewing condition, and are therefore exempt from any controls. Classes 2, 2a, 3a, 3b, and 4 lasers are increasingly more hazardous and require SOP(s). Class 3b and 4 lasers require special precautions to ensure safe use. For a more technical description of the hazard classifications, consult ANSI Z136.1–1993 paragraph 3 (for user); Title 21 Code of Federal Regulations (CFR) Part 1040.10 (b)5. through 1040.10 (b)11. (for manufacturer)

c. Laser Program Guidelines. The following general guidelines are offered to assist commanders in setting up and maintaining a complete laser and high intensity optical radiation protection program. Incorporate these guidelines into your local radiation protection programs and procedures as applicable:

(1) Maintain records and descriptions of all potentially hazardous lasers, military exempt lasers and high intensity optical radiation sources (DoDI 6055.11, Enclosure 5, paragraph 13; AR 40–5, paragraph 9–9.a.(2)(f); CECOM 385–10 paragraph 6.d.(10)).

(2) Ensure that an SOP is prepared and is conspicuously posted in each facility using potentially hazardous sources. One SOP may cover multiple systems in the same facility. Each SOP will list the procedures to be used to operate systems in a safe manner and include operational procedures as well as procedures to use in a particular room or on a laser range, as applicable (AR 40–5, paragraph 9–9 a.(2)(a); AR 40–46, paragraph 1–5. d.(2); CECOM 385–10, paragraphs 6.f.(2) and 7.c and Mil Handbook 828).

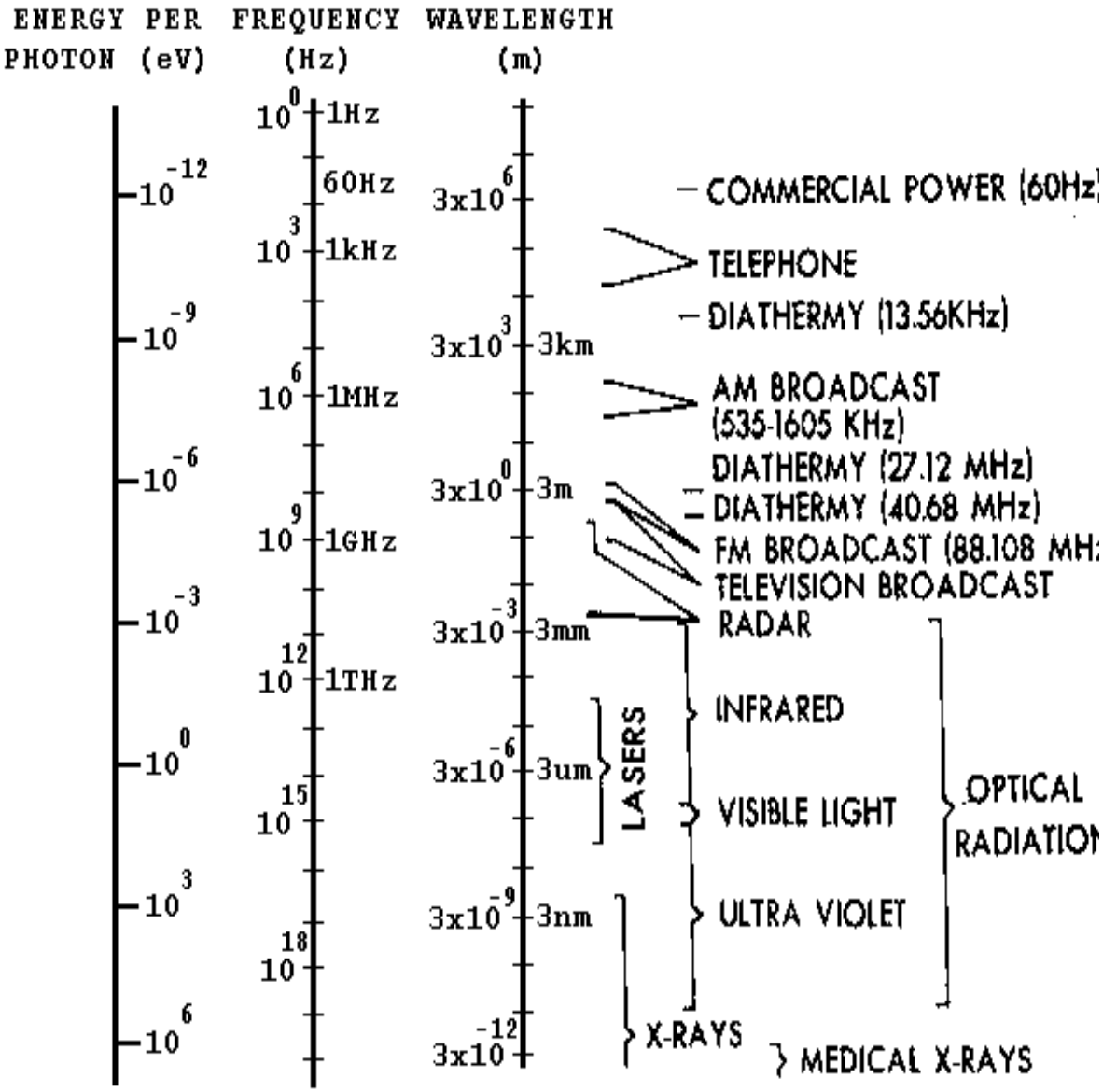


Figure 2. Electromagnetic Spectrum.

(3) Perform periodic inspections of potentially hazardous systems to ensure compliance with applicable regulations (CECOM 385–10, paragraph 6.d.(5)).

(4) Conduct periodic safety briefings for workers who use or maintain laser and high intensity optical radiation sources. These briefings will include a background on the associated hazards, and the means by which personnel can avoid potentially hazardous exposures. Maintain a record of these briefings for reference (AR 40–5, paragraph 9–9 a.(2)(b), 9–9.a.(2)(b)1. and 9–9.a.(2)(b)2; TB MED 524, paragraph 3–17; CECOM–R 385–10, paragraph 6.d.(7)).

LASER WAVELENGTHS

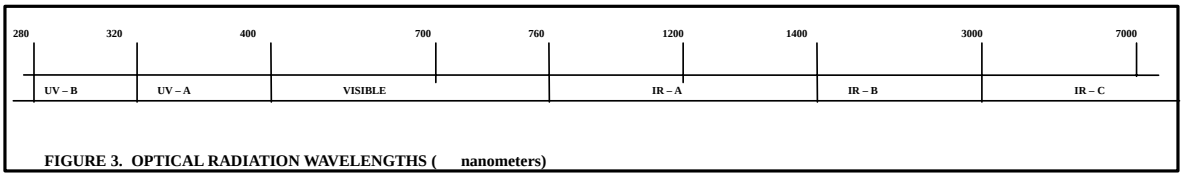


FIGURE 3. OPTICAL RADIATION WAVELENGTHS (nanometers)

UV–A	VISIBLE	IR – A	IR – B & IR – C
Argon	HeNe	Semiconductor	CO
Nitrogen	Ruby	Nd :YAG	CO_2
Excimer	Argon	Nd :Glass	
	Dye		
	Krypton		
	Doubled Nd :YAG		

Figure 3. Laser wavelengths and typical types of lasers.

(5) Ensure that appropriate personnel are included in an ocular surveillance program (DASG Memorandum, 11 April 1994, paragraphs 4., 5., and 7.; ANSI Z136.1–1993 paragraph 6.; AR 40–46 paragraph 1–6.; CECOM 385–10 paragraph 6.d.(6)).

(6) Never direct laser beams at personnel (CECOM 385–10 paragraph 8.b).

(7) Do not look into the laser beam or specular reflections of the beam since power or energy densities may exceed the safety standards (CECOM 385–10, paragraph 8.b).

(8) All personnel who could be reasonably expected to be exposed to harmful levels of laser or optical radiation will wear appropriate protective eyewear. Ensure that all laser protective eyewear provides the adequate optical density protection for the wavelength(s) of any laser being used (TB MED 524, paragraphs 3–23, 3–27.b and 3–27.c; TG–081; FM 8–50, paragraph 4.a; CECOM–R 385–10, paragraphs 7.e and 8.e).

(9) Avoid aiming a laser with the naked eye. This prevents looking along the axis of the beam and decreases the hazard from any potentially hazardous reflections of the beam (FM 8–50, paragraph 4.b).

(10) Work with lasers will be done in areas of high general illumination when possible (except for night operations and any other operation which requires low light

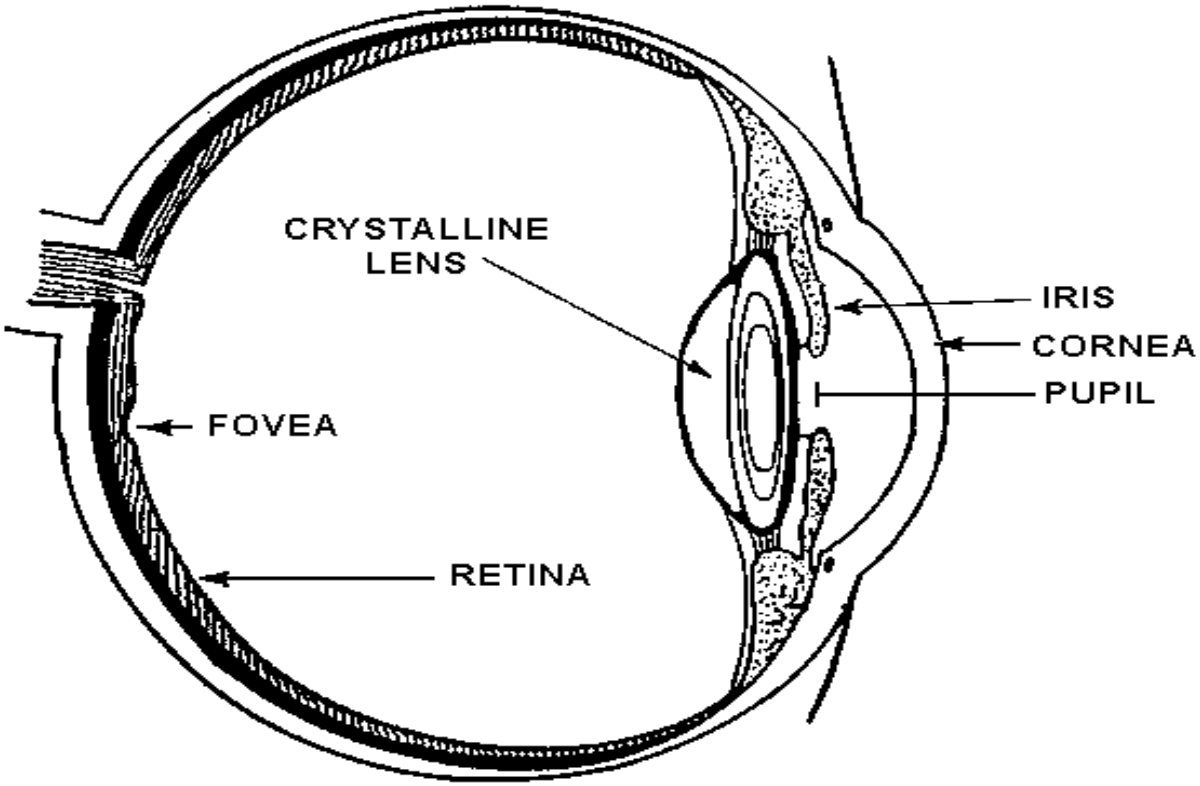


Figure 4. Anatomy of the Eye.

conditions) (CECOM–R 385–10, paragraph 8.d). The pupil of the eye is open wider at times of lower illumination increasing exposure to the inside of the eye.

(11) Terminate high energy laser beams capable of producing a fire, with a backstop containing the appropriate thickness of earth, firebrick, or other fire–resistant materials (use of asbestos is prohibited) (TB MED 524, paragraphs 3–6.a.(5) through (7) and 3–19.b; CECOM–R 385–10, paragraph 8.f).

(12) Set up lasers so that the beam path is not at normal eye level, *i.e*., below 3 feet or above 7 feet (ANSI Z136.1–1993 paragraph 4.3.10.1(6); CECOM–R 385–10, paragraph 8.i).

(13) Postings. All equipment except for class 1 lasers, need to be labeled IAW 21 CFR 1040. Areas containing Class 3a should, and Class 3b and 4 shall, be posted IAW ANSI Z136.1–1993, paragraph 4.3.15. Design of the signs shall be IAW ANSI Z136.1–1993, paragraphs 4.7.1 and 4.7.2. Signal words shall follow the requirements listed in subparagraphs of ANSI Z136.1–1993 paragraph 4.7.3. Figures 5a and 5b are examples of typical postings.

(14) Eliminate all reflective material from the vicinity of the beam path (TB MED 524, paragraphs 3–18, 3–22.b and 3–27.a; CECOM–R 385–10, paragraph 8.l).

(15) Interlocks shall be installed into Class 4 laser laboratory facilities in order to prevent exposure of personnel entering the lab. Equip door interlocks with a positive action manual reset device to preclude accidental restart of the laser when the door is again closed (ANSI Z136.1–1993 paragraph 4.3.10.2).

(16) ANSI Z136.1–1993 paragraph 4.4.1; TB MED 524 paragraphs 3–18 and 3–19; AR 385–63, and MIL–HDBK 828 have detailed safety procedures for an outdoor laser range. Local SOPs will prescribe, at a minimum, the following procedures:

(a) Conduct outdoor laser operations at an approved laser range (ANSI Z136.1–1993, paragraph 3.4.3; TB MED 524, paragraphs 3–5.a and 3–5.b).

(b) Appoint a Laser Range Safety Officer (LRSO) for each laser range (ANSI Z136.1–1993, paragraph 1.3.1; TB MED 524, paragraph 3–4).

(c) Only those personnel and objects approved by the LRSO are permitted on a laser range between the laser and the target (ANSI Z136.1–1993, paragraph 1.3.2.7; TB MED 524, paragraphs 3–4, 3–5.a and 3–5.b).

Figure 5. Laser Warning signs.

(d) Only authorized personnel may set up, adjust, or operate a laser on a laser range. Use of a laser is prohibited for unnecessary or unauthorized purposes, or for periods of time beyond that which is absolutely necessary. All personnel within the laser hazard area must wear laser safety eyewear designed for the specific wavelength of the laser and with an adequate optical density (ANSI Z136.1–1993, paragraph 4.3.11.1; TB MED 524, paragraphs 3–15 through 3–23).

(e) Exclude unprotected personnel from the beam path at all points where the laser beam exceeds the appropriate laser safety standard. Accomplish this by the use of physical barriers, administrative controls, interlocks, and limiting beam traverse (ANSI Z136.1–1993, paragraphs 4.3.10.1 and 4.3.10.2; TB MED 524, paragraph 3–5.b(1)).

(f) Tracking of non–target vehicular traffic or aircraft with a laser is prohibited (ANSI Z136.1–1993, paragraph 4.3.11.1(7); TB MED 524, paragraph 3–5.b(2)).

(g) Clear the beam path of all specular surfaces (man made and natural) capable of producing potentially hazardous reflections (TB MED 524, paragraphs 3–5.b(3) and 3–5.c, respectively and 3–18).

(h) Lasing into populated areas is prohibited (MIL–HDBK 828, paragraph 6.1.5a).

(i) Inspect the anticipated beam path to ensure that unauthorized personnel and all animals are out of the field of fire (TB MED 524, paragraph 3–18).

(j) Publish a laser range SOP. In addition to the above precautions, the SOP should list procedures for placement of temporary or permanent warning signs around the perimeter of the range. It should also list procedures to ensure that the laser beam will not leave the boundaries of the laser range (ANSI Z136.1–1993, paragraph 4.3.11.1(9); TB MED 524, paragraph 3–17).

(17) Review and coordinate investigations pertaining to reports of accidents or incidents involving potentially hazardous systems (DoDI 6055.11, Enclosure 5, paragraphs 5.a through 5.c; DASG Memorandum, 11 April 1994, paragraph 8; AR 40–5, paragraphs 9–9.a(2)(b)3, and 9–12.a through 9–12.c; TB MED 524, paragraph 5–1).

(18) When performing maintenance on lasers the following is required:

(a) Perform testing in controlled areas, with barriers and signs installed as appropriate (TB MED 524, paragraph 3–29 a).

(b) Personnel will wear laser protective eyewear as necessary (TB MED 524, paragraph 4–1).

(c) Control personnel access to testing areas (TB MED 524, paragraph 3–29.c).

(d) Personnel performing maintenance functions on lasers will receive training commensurate with the specific hazards of the systems that they maintain (ANSI Z136.1–1993, Appendix D6.1).

(e) Ground and discharge live circuit points prior to performing maintenance procedures (ANSI Z136.1–1993, Appendix F1.1).

(19) Potentially hazardous X–ray radiation may exist near certain high–voltage power supply tubes. Adequate shielding shall be employed where necessary (ANSI Z136.1–1993, paragraph 7.4.1).

(20) Use shorting devices on large capacitor banks and high power supplies, to drain off high voltage charges once power to the unit has been removed.

(21) Personnel will be aware of fire hazards associated with laser systems (ANSI Z136.1–1993, paragraph 7.5).

(22) Have first aid personnel with appropriate training and equipment available at a level commensurate with the associated laser hazards (electrical, thermal, chemical, cryogenic, etc.) (CECOM–R 385–10, paragraph 7.f).

(23) Medical examinations for laser users will be performed prior to working with the laser, following any suspected laser injury, and upon termination/relocation, in accordance with (IAW) DASG Policy Letter, Vision and Ocular Assessments of Personnel in Laser and Radiofrequency Radiation Environments, 11 April 1994.

(24) Interlocks. Overriding of the laser protective systems (i.e. interlocks) requires the development of a temporary laser controlled area. That area shall be posted and meet all safety requirements inside and outside (ANSI Z136.1–1993, paragraph 4.3.12).

7. **Hazard Evaluations**. As part of the safety release process for all standard CECOM items of supply, USACHPPM performs hazard evaluation surveys on all radiofrequency and optical radiation producing equipment. All CECOM equipment survey requests are sent through the CECOM Directorate for Safety (DS), ATTN: AMSEL–SF–RE, Fort Monmouth, NJ 07703–5024. Hazard evaluation surveys are required for the following:

a. All newly fielded systems during the research, development, test, and evaluation (RDT&E) phase.

b. New configurations of fielded systems that change the output power or characteristics of the radiation produced.

8. Accident Reporting Procedures. In the event of a suspected overexposure from a radiofrequency or optical radiation source, the following procedures should be followed:

a. Immediately disconnect the power from the equipment that caused the potential overexposure and identify and secure the equipment. Do not alter the configuration of the equipment. In the case of an RF system, do not remove, cut, or destroy a cracked or open waveguide that has caused a potential overexposure. These items must be inspected by the authorities conducting the incident/accident investigation

b. Have the suspected victim of the overexposure examined by medical authorities within 24 hours. The protocol for these examinations are in the DASG Policy Letter, referenced in para. 23. For assistance in the treatment of laser eye injuries, the medical authority should call the Walter Reed Army Institute of Research Detachment Laser Eye Injury Hotline at 800–473–3549.

c. Notify the Radiation Protection Officer (RPO) who will ensure that the appropriate authorities are notified and an investigation of the incident is performed.

d. For the CECOM managed items in this TB, notify the CECOM DS. Our address and telephone information is listed in paragraph 10 of this TB.

e. IAW AR 385–40 you must submit a Radiological Accident/ Incident Report, RCS DD–R&E (AR) 1168, if an overexposure is suspected. Additionally, IAW AR 40–400, medical authorities who conduct the medical evaluation of the victim must submit a Special Telegraphic Report (RCS MED–16(R4)) through appropriate medical channels if a radiation overexposure is suspected, whether or not hospitalization is required. As a result of these reports a formal investigation will be conducted and a final medical report issued.

9. Proponent Agency. The CECOM Directorate for Safety is the proponent agency for this TB. Users of this TB are encouraged to submit recommended changes, suggested improvements, additions, reports of omissions and apparent errors. Comments should be forwarded directly to Commander, CECOM, ATTN: AMSEL–LC–LEO–E–ED (with a copy furnished to AMSEL–SF–RE), Fort Monmouth, New Jersey 07703–5000. Comments should be submitted on DA Form 2028 (Recommended Changes to Publications and Blank Forms) keyed to the specific page, paragraph and line of text in which the change is recommended. A brief reason for each proposed change or comment should be furnished to ensure understanding and complete evaluation.

10. Logistics and Safety Support. To obtain further information and guidance, contact the CECOM National Inventory Control Point (NICP) for logistical support, and the RPO for hazard criteria information. The points of contact as of the date of this publication are listed below:

a. ICP B16:

(1) NICP Support:

U.S. Army Communications–Electronics Command
ATTN: AMSEL–LC–MM
Fort Monmouth, New Jersey 07703–5000

DSN 992–1320, Commercial (732) 532–1320

(2) RPO Support:

U.S. Army Communications–Electronics Command
CECOM DS
ATTN: AMSEL–SF–RE
Fort Monmouth, New Jersey 07703–5024

DSN 992–9723, Commercial (732) 532–9723
Fax DSN 992–6403, Commercial (732) 532–6403
E–mail: amsel–sf@mail1.monmouth.army.mil

b. ICP B46:

NOTE: B46 is now included in NICP B16.

(1) NICP Support

U.S. Army Communications–Electronics Command
ATTN: AMSEL–LC–IEW
Fort Monmouth, New Jersey 07703–5000

DSN 992–3034, Commercial (732) 532–3034

(2) RPO Support:

U.S. Army Communications–Electronics Command
CECOM DS
ATTN: AMSEL–SF–RE
Fort Monmouth, New Jersey 07703–5024

DSN 992–9723, Commercial (732) 532–9723
Fax DSN: 992–6403, Commercial: (732) 532–6403
E–mail: amsel–sf@mail1.monmouth.army.mil

RADIOFREQUENCY AND OPTICAL RADIATION–PRODUCING SYSTEMS BY TYPE DESIGNATION/ NOMENCLATURE

INDEX of SYSTEMS by TYPE DESIGNATION/NOMENCLATURE

ADEWS (Air Defense Electronic Warfare System)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The ADEWS is mounted on a truck frame with the antenna mast mounted on top of the equipment shelter. The antenna pod is affixed to the top of a telescoping 18 m antenna mast.	Frequency: CLASSIFIED Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	All system antennas are able to radiate potentially hazardous PDLs in their main beams. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel from the area directly in front of the antenna pod to a distance of 30 m. Implement additional radiation control measures (e.g., erection of signs or barricades, warning lights, posting of guards, etc.) within a 30 m range of potentially occupied elevated terrain. Exclude personnel from the top of the vehicle when the Band 5 antenna is radiating. When operated on level terrain there is no potential radiation hazard for personnel on the ground, even with the mast at minimum height. Check the mast "vertical" interlock routinely for proper operation.
Open/cracked waveguides …..…	Do not permit operation of this system with any cracked, broken, or open waveguide.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other……..……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AH-1S Laser Rangefinder/Illuminator

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AH-1S is a helicopter-mounted laser rangefinder designator mounted on the nose of the aircraft.	Type: Nd-YAG Wavelength: 1064 nm

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification …….……..	This system contains a Class 4 laser and requires an established laser safety program to ensure its safe use. Develop a written Local Standing Operating Procedure (SOP) IAW guidelines provided in this TB.
Hazard distance ……..…..…	Do not permit personnel to view the laser from within the beam at distances less than 6.3 km for unaided viewing, or 40 km when viewing the laser through magnifying optical instruments.
Ocular injury …….…….	Use protective eyewear that filter at 1064 nm with a minimum OD of 3.8 for unaided viewing, and a minimum OD of 4.5 for viewing through magnifying optical instruments.
Outdoor range operations …..	Eliminate all specular surfaces (man made and natural) capable of producing potentially hazardous reflections. Control unauthorized personnel access to controlled area. Appoint a qualified Laser Range Safety Officer.
Other……..…….…….…	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AIM-1/D Laser Aiming Device

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AIM-1/D is a battery powered IR laser aiming device which can be fitted on a variety of weapons. The system has two modes, local and remote, with a high and low intensity setting.	Type: Gallium-Al:Arsenide Wavelength: 800 - 850 nm

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification ……...	This system contains a Class 3b laser and requires an established laser safety program to ensure its safe use. Develop a written Local Standing Operating Procedure (SOP). This laser, when used with its training filter, is a Class 1 laser device.
Hazard distance ……..……	When not using the training filter, do not permit the user to aim at unprotected personnel within 236 m or at personnel using magnifying optics within 3.55 km.
Ocular injury ……..…..…	Use protective eyewear that filter at 830 nm with a minimum OD of 2.5 for unaided and aided viewing.
Other……..…….…..……	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Do not operate the AIM-1/D without the training filter covering the exit port.

AM-7189/ARC RF Power Amplifier

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AM-7189/ARC is an aircraft-mounted RF power amplifier. It utilizes an inverted L antenna mounted above the cabin of the aircraft.	Frequency : 30 – 80 MHz Power: 6 – 25 W; PEP 40 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 2 m from the antenna. During normal operation of this system, personnel are not subjected to a radiation hazard due to the use and location of the antenna.
RF shock/burn ……	Observe RF shock precautions. Do not touch antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5821-331

AN/AAM-33 Terrain Test Set *(part of the AN/AAS-24)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/AAM-33 is a calibration indicator.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not a free space radiator and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-6625-1826-12

AN/AAM-36 Test Set Optical *(part of the AN/AAS-24)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/AAM-36 is an optical alignment test set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not a free space radiator and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-6625-1733-12

AN/AAM-38 Test Set *(part of the AN/AAS-24)*	
SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/AAM-38 is an infrared detecting test set.	
SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not subject to radiation protection control.
Other……..……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.
REFERENCES: TM 11-6625-1823-12	

AN/AAM-55 Test Set, Signal *(part of the AN/AAS-32)*	
SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/AAM-55 is an Airborne Laser Tracker (ALT) test set.	
SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification…….....	This system is not subject to radiation protection control.
Other……..……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.
REFERENCES: TM 11-6625-2638-12	

AN/AAM-56 Test Set, Optical Alignment *(part of the AN/AAS-32)*	
SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/AAM-56 is an Airborne Laser Tracker (ALT) optical alignment test set.	
SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification…….....	This system uses an eye-safe laser and is not subject to radiation protection control.
Other……..……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.
REFERENCES: TM 11-6625-2685-10	

AN/AAS-24 Infrared Detecting Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/AAS-24 is an infrared detecting set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification…….....	This system does not transmit infrared energy and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5850-241-12

AN/AAS-32 Airborne Laser Tracker (ALT)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/AAS-32 is an Airborne Laser Tracker (ALT).	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification…….....	This system contains a Class 1 laser and is not capable of producing potentially hazardous optical radiation.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5860-200-12

AN/AKT-18B Radar Data Transmitting Set *(part of the AN/UPD-2, 7)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/AKT-18B is an airborne radio system that utilizes an omnidirectional blade type antenna.	Frequency: 225 – 400 MHz Power: 30 W average; PEP 100 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL) …..	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 90 cm from the antenna. During normal operation of this system, personnel are not subjected to a radiation hazard due to the use and location of the antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……....	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5841-287-10-HR; TM 11-5841-287-12

AN/ALQ-136(V) 1, 2, 3, 4, 5 Radar Jammer

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ALQ-136 is a helicopter mounted lightweight radar jammer that utilizes a stub-blade type antenna.	Frequency: CLASSIFIED Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 1 m from the antenna when operating on the ground.
Open/cracked waveguides …..…	Do not permit operation of this system with any cracked, broken, or open waveguide. Check waveguide portion of this system periodically for breaks or cracks, especially around the coaxial cable and waveguide interfaces.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5865-247-12; TM 11-5865-202-12

AN/ALQ-144A(V) Infrared Countermeasure Pod

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ALQ-144 countermeasures set is a continuous operating, omnidirectional infrared jammer for rotary wing aircraftt	Wavelength: 1 – 5 um Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Optical……..……..	This system is capable of producing potentially hazardous infrared radiation. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance ……..….	Limit time personnel are within 3 m of the aircraft when transmitting.
Ocular injury ……..……	At distances less than 30 cm, do not look directly into the transmitter cover window for more than one minute.
Other……..…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5865-200-12; USACHPPM Study: 25-42-0363-89

AN/ALQ-151(V) 1, 2 Electronic Countermeasures Set *(used with the AN/TLQ-17)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ALQ-151 is a helicopter-mounted special pupose countermeasures set designed to identify, locate, and disrupt enemy command and control communications. In this assembly the antennas are mounted on the aircraft fuselage.	Frequency: 1.5 – 80 MHz Power: 1 kW PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna ..	Exclude personnel to a distance of 2.5 m from the antenna when operating on the ground. During normal operation of this system, personnel are not subjected to a radiation hazard due to the use and location of the antenna.
RF shock/burn ……..…	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……....	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5811-019-34-1; TM 32-5865-012-10

AN/ALQ-156(V) 1, 2, 3 Missile Approach Detection System

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ALQ-156 is a helicopter-mounted countermeasures set that uses Pulse-Doppler radar techniques and utilizes two stub-blade type antennas.	Frequency: CLASSIFIED Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna ..	PDLs in excess of the partial body exposure limit may exist within a few cm of the antenna. Exclude personnel to a distance of 1 m from the antenna when operating on the ground.
RF shock/burn ……..…	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….…….....	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5865-201-12;

AN/ALQ-162 Radar Jammer

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ALQ-162 is a helicopter-mounted continuous wave radar jamming system which utilizes one or more stub-blade type antennas.	Frequency: CLASSIFIED Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna ..	Exclude personnel to a distance of 6 ft from the antenna when operating on the ground.
RF shock/burn ..……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……..……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5865-229-12

AN/AMT-23 Radiosonde *(part of AN/TMQ-31)*	
SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/AMT-23 is a balloon-borne meteorological monitoring device used in meteorological data systems.	Frequency: 403 – 1680 MHz Power: 200 mW average 500 mW PEP
SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Hazard distance from antenna ..	Exclude personnel to a distance of 1 m from the antenna when operating on the ground.
Other…….……..…..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.
REFERENCES: TM 11-6665-667-12	

AN/APM-186 Test Set	
SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/APM-186 is a portable pre-flight test set used for checking aircraft transponders.	
SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/APM-246 Test Set *(part of the AN/APM-158)*	
SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/APM-246 is a portable radar test set.	
SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.
REFERENCES: TM 11-6625-664-12	

AN/APM-247 Test Set *(part of the AN/APM-158)*	
SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/APM-247 is a portable radar test set.	
SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.
REFERENCES: TM 11-6625-664-12	

AN/APM-323 Test Set, Radio Altimeter *(part of the AN/APN-171)*	
SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/APM-323 is a portable radio altimeter system test set.	
SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not subject to radiation protection control.
Other…….…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.
REFERENCES: TM 11-6625-1746-12	

AN/APM-378 Test Set, Transponder *(part of the AN/APX-100)*	
SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/APM-378 is a portable test set for checking aircraft transponders. The set utilizes a whip antenna.	Frequency: 1030 MHz
SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.
REFERENCES: TM 11-4920-296-10-HR	

AN/APM-424 RAMP Test Set, Transponder

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/APM-424 is used to check identification friend or foe (IFF) aircraft transponders. This system utilizes a 0 dB gain antenna.	Frequency: 1030 MHz Power: 2.5 mW average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL) …..	This system is not subject to radiation protection control.
Other…….…….…..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-6625-3090-12&P

AN/APN-22 Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/APN-22 is a radar set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL) …..	This system is not subject to radiation protection control.
Other…….……...	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-6625-3090-12&P

AN/APN-158\AN/APN-158A Radar Set *(part of MULT ACFT)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/APN-158 is an airborne weather radar that utilizes either the AS-1520 or AS-1624 parabolic dish antenna.	Frequency: 9375 MHz Power: 12 W average; PEP 15 kW 26.4 W average; PEP 20 kW (A)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the normal operating mode, this system is able to produce potentially hazardous PDLs in excess of 5 x the safety standard and requires a formal RFR safety program to ensure its safe use. While scanning, this system is not able to produce PDLs in excess of the standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	When operating the AN/APN-158, exclude personnel to a distance of 2.4 m from the AS-1520 antenna and 3.6 m from the AS-1624 antenna. When operating the AN/APN-158(A), exclude personnel to a distance of 3 m from the AS-1520 antenna and 4.7 m from the AS-1624 antenna.
Open/cracked waveguides …….	Do not permit operation of this system with any cracked, broken, or open waveguide. Check waveguide portion of this system periodically for breaks or cracks, and replace any suspect waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5841-241-12

AN/APN-171\AN/APN-171A Altimeter Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/APN-171 is an airborne, low altitude, terrain tracking and altitude sensing radar system that utilizes an antenna with a 13 dB gain. This system operates in two power modes.	Frequency: 4.3 GHz Power: Low: 35 mW average; PEP 100 W High: 390 mW average; PEP 300 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the low power mode, this system is not able to produce potentially hazardous PDLs in excess of the safety standard. In the high power mode, this system is capable of producing potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	When operating in the high power mode, exclude personnel to a distance of 10 cm from the antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5841-272-20

AN/APN-209 (V)\AN/APN-209A (V) Altimeter Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/APN-209 is an airborne radar system that utilizes a horn type antenna with a 11.5 dB gain and a 19 dB gain for system (A).	Frequency: 4.3 GHz Power: 23 mW average; PEP 50 W 1.0 W average; PEP 50 W (A)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not capable of producing potentially hazardous PDLs and is not subject to radiation protection control.
Other……..……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5841-284-23&P; TM 11-5841-292-13&P

AN/APN-215 (V) Airborne Weather Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/APN-215 is an airborne weather radar system for fixed-wing aircraft and provides a continuous display of weather intensities for a 200 nautical mile range. This system utilizes a planar array type antenna.	Frequency: 9375 MHz Power: 4.7 W ; 10 kW Peak

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	When in the scanning mode, this system is not able to produce potentially hazardous PDLs in excess of the safety standard. In the nonscanning mode, this system is capable of producing potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	When operating in the nonscanning mode, exclude personnel to a distance of 1.6 m from the antenna. Prohibit personnel in front of the radome to a distance of 2.0 m from the antenna. Restrict ground testing to isolated areas.
Other…….……..	Specify use of dummy loads for maintenance operations requiring the transmitter to be on. Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5841-289-13

AN/APQ-174 Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/APQ-174 is a radar system.	Frequency: CLASSIFIED Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the scanning mode, this system is not capable of producing potentially hazardous PDLs in excess of the safety standard. In the nonscanning mode, this system is capable of producing potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	When operating in the nonscanning mode, exclude personnel to a distance of 4 m from the antenna.
Other…….……..	Specify use of dummy loads for maintenance operations requiring the transmitter to be on. Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/APR-39A Radar Detecting Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/APR-39A is a radar signal detecting set that utilizes either an array, monopole, or horn type antenna.	Frequency: 1 - 2 GHz 8 – 10 GHz 20 – 40 GHz Power: .25 mW average; PEP 18 mW .2 mW average; PEP 74 W .15 mW average; PEP 234 mW

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not capable of producing potentially hazardous PDLs and is not subject to radiation protection control.
Other……..……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5841-294-12; TM 11-5841-300-12

AN/APR-44 (V) Radar Warning Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/APR-44 is a radar warning set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not a free space radiator and is not subject to radiation protection control.
Other……..……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5841-291-12

SM-756 Signal Simulator Test Set *(part of the AN/APR-44)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The SM-756 is a hand held radar test set that provides either of two continuous wave (CW) microwave signals for testing the AN/APR-44 Radar Warning Set. This system utilizes a 6 x 8 cm horn type antenna.	Frequency: CLASSIFIED Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not potentially hazardous and is not subject to radiation protection control.
Hazard distance from antenna	Warn personnel not to place their eyes directly in front of the radiating antenna.
Other……..……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/APX-72 Transponder Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/APX-72 is an airborne transponder providing automatic radar identification and aircraft position. It is operated in conjunction with ground based Identification Friend or Foe (IFF). It utilizes a resonant stub type antenna. The system is activated by a coded interrogation, which normally occurs only in flight, and then for short bursts.	Frequency: 1090 MHz Power: 5 W average; 500 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Dummy load the transponder during maintenance.

REFERENCE: TM 11-5895-1199-12

AN/APX-100 Transponder Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/APX-100 is an airborne transponder providing automatic radar identification and aircraft position. It is operated in conjunction with ground based Identification Friend or Foe (IFF). It utilizes a stub-blade type antenna.	Frequency: 1090 MHz Power: 5 W average; 500 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Dummy load the transponder during maintenance.

REFERENCE: TM 11-5895-1037-12&P

AN/APX-105 Transponder Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/APX-105 is an airborne transponder providing automatic radar identification and aircraft position. It is operated in conjunction with ground based Identification Friend or Foe (IFF). It utilizes a stub-blade type antenna.	Frequency: 1090 MHz Power: 5 W average; PEP 500 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
Other……..……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Dummy load the transponder during maintenance.

AN/ARC-102 Radio Set *(part of AN/TSC-61B; AN/TSQ-70)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ARC-102 is an airborne HF-AM transceiver set that utilizes a 13.7 m resonant length wire type antenna.	Frequency: 2 - 30 MHz Power: 200 W average 400 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is capable of producing potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to within 2 m of the wire antenna.
RF shock/burn ……	Follow standard RF shock precautions. Avoid contact with exposed metal surfaces of the antenna.
Other……..……..	Do not perform free space radiating indoors. Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5821-248-12

AN/ARC-114\AN/ARC-114A Radio Set SLAE *(part of AN/TSW-7A; AN/TSQ-97)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ARC-114 is an airborne VHF radio set that utilizes a omnidirectional blade or whip type antenna.	Frequency: 30 - 80 MHz Power: 10 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not capable of producing potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
Hazard distance from antenna	Avoid contact with the exposed metal surfaces of the antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5821-259-12

AN/ARC-131 Radio Set *(part of AN/ASC-15)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ARC-131 is an airborne VHF radio set that utilizes a vertically polarized omnidirectional blade or whip type antenna.	Frequency: 30 - 80 MHz Power: 10 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not capable of producing potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
Hazard distance from antenna	Avoid contact with the exposed metal surfaces of the antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

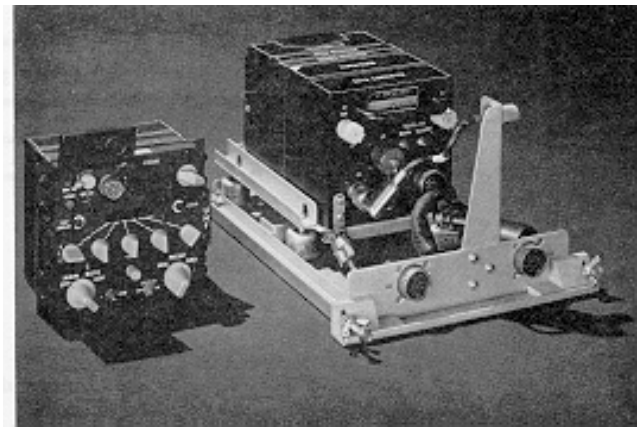
REFERENCES: TM 11-5820-670-12

AN/ARC-164 Radio Set *(part of AN/TRQ-132; AN/TSC-61B; AN/TSW-7A; AN/TYQ-40)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ARC-164 is an airborne UHF-AM radio communications set that utilizes an omnidirectional blade or whip type antenna.	Frequency: 30 - 75.95 MHz Power: 10 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not capable of producing potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
RF shock/burn ……	Avoid contact with exposed metal surfaces of the antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5841-286-13; TM 11-5841-286-10 HR



AN/ARC-186 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ARC-186 is a dual-band airborne radio set that utilizes an omnidirectional blade or whip type antenna.	Frequency: 30 - 88 MHz 116 – 152 MHz Power: 16 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not capable of producing potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
RF shock/burn ……	Avoid contact with exposed metal surfaces of the antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5821-318-12; TM 11-5841-286-10 HR

AN/ARC-199 High Frequency Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ARC-199 is an airborne radio set that utilizes a grounded-loop or wire type antenna.	Frequency: 2 - 30 MHz Power: average 75 W; PEP 150 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not capable of producing potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
RF shock/burn ……	Avoid contact with exposed metal surfaces of the antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5821-330-13&P; TM 11-5821-330-20 P

AN/ARC-201D (V) Single Channel Ground and Airborne Radio Set (SINCGARS)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ARC-201 is the aircraft version of the SINCGARS.	Frequency: 30 - 88 MHz Power: average 10 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not capable of producing potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
RF shock/burn ……	Avoid contact with exposed metal surfaces of the antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5821-333-12

AN/ARC-217 High Frequency Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ARC-217 is an airborne HF radio set used for air-to-ground and ground-to-ground communication. It utilizes an open-tube and grounded-tube antenna.	Frequency: 2 – 29.999 MHz Power: average 50 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is capable of producing potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to within 0.9 m of the antenna.
RF shock/burn ……	Avoid contact with exposed metal surfaces of the antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5821-333-12

AN/ARC-220 High Frequency Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ARC-220 is a HF airborne radio set used for air-to-ground and ground-to-ground communications. It utilizes a 14 ft shorted loop antenna.	Frequency: 2 – 30 MHz Power: average 100 W PEP 175 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not capable of producing potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
RF shock/burn ……	Avoid contact with exposed metal surfaces of the antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5821-357-20P

AN/ARN-30D\AN/ARN-30E Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ARN-30 is a radio receiving set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system does not transmit radio frequency radiation and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5826-215-12

AN/ARN-59 Direction Finder Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ARN-59 is a direction finder set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system does not transmit radio frequency radiation and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5826-217-30; TM 11-5826-217-31

AN/ARN-82A\AN/ARN-82B Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ARN-82 is a radio receiving set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system does not transmit radio frequency radiation and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5826-226-20

AN/ARN-83 Direction Finder Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ARN-83 is a direction finder set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system does not transmit radio frequency radiation and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5826-225-12

AN/ARN-89A\AN/ARN-89B Direction Finder Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ARN-89 is a direction finder set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system does not transmit radio frequency radiation and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5826-227-20

AN/ARN-103 (V) 1\AN/ARN-103 (V) 2 Navigation Set *(part of AN/ASN-86, ACFT)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ARN-103 is an aircraft navigation set that utilizes a resonant stub antenna mounted on the aircraft fuselage, fed by a coaxial transmission line.	Frequency: 1025 – 1150 MHz Power: 4.2 W average PEP 4 kW

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5826-243-20

AN/ARN-118 (V) 5 Tactical Navigation Set (TACAN) *(part of AN/ASN-86)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ARN-118 is an aircraft tactical navigation set that utilizes a AT-741/A fin antenna for transmissions.	Frequency: 1025 – 1150 MHz Power: 5 W average; 962 – 1213 MHz PEP 500 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not subject to radiation protection control.
RF shock/burn ……	Observe normal RF shock/burn hazards. Do not touch the antenna while energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5826-307-12

AN/ARN-123 (V) 1, 2, 3, 4 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ARN-123 is a radio receiving set used in the UH-60.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system does not transmit radio frequency radiation and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5826-258-20P

AN/ARN-124 Distance Measuring Equipment (DME)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ARN-124 is an airborne tranceiver set that utilizes the AT-741 antenna.	Frequency: 0.96 – 1.2 GHz Power: 25 mW average; PEP 500 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5826-300-20

AN/ARQ-31 Radio Receiving Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ARQ-31 is the airborne radar set of the Tactical Landing System. It utilizes a slotted cylinder antenna.	Frequency: 15.2 GHz Power: 2 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 6 cm from the antenna aperture.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/ARQ-33 QUICKFIX-1 *(used with AN/TLQ-17A(V) 2 countermeasures set)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ARQ-33 is a countermeasures set that utilizes an aircraft-mounted omnidirectional antenna.	Frequency: 1 - 75 MHz Power: 1000 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 2.5 m from the antenna. Operate this system while airborne to prevent unnecessary RFR exposure to personnel.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5895-776-13-1

AN/ARS-6 (V) 1, 2, 3 Personnel Locator Radio Set *(part of AN/AYD-1)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ARS-6 is a personnel locator radio set.	Frequency: 225 - 300 MHz Power: 10 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

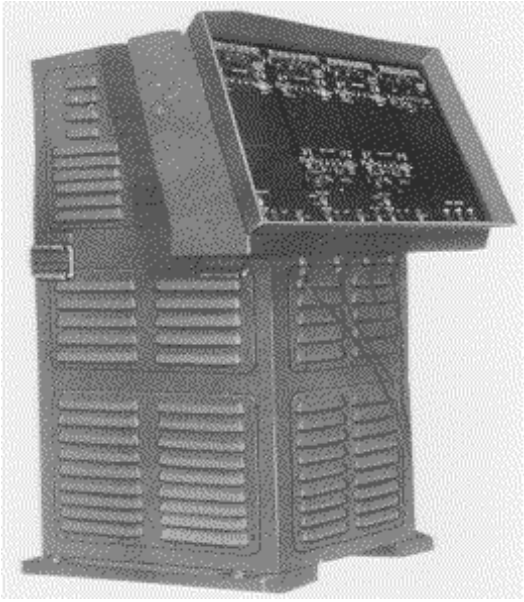
REFERENCES: TM 11-5821-342-13&P

AN/ASC-15B\AN/ASC-15B (V) 1 Electronic Command Console

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ASC-15 is an electronic command and control console that consists of transmitter/receiver equipment which enables radio communication in the HF, VHF/UHF bands and also satellite communications (SATCOM). Several antenna types are used with this system.	Frequency: HF: 1.5 – 30 MHz VHF/UHF: 30 – 400 MHz SATCOM: 225 – 400 MHz Power: HF: average 30 W VHF/UHF: 15 W; 50 W max SATCOM: average 100 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Safe use of this system is dependent on transmitter power outputs, operating frequencies, and the antenna in use. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	At HF operation, exclude personnel to a distance of 60 cm from the antenna. At VHF operation, exclude personnel to a distance of 30 cm from the antenna. At UHF operation, exclude personnel to a distance of 60 cm from the antenna. At SATCOM operation, exclude personnel to a distance of 2 m from the antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……..	Maintenance operations should terminate into dummy loads or roof-mounted antennas. Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5821-285-12



AN/ASN-43 Gyromagnetic Compass Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ASN-43 is a gyromagnetic compass set used in UH-60 and OH-58 aircraft.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system does not transmit radio frequency radiation and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-6605-202-12

AN/ASN-86 Inertial Navigation Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ASN-86 is a inertial navigation set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system does not transmit radio frequency radiation and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5826-245-20

AN/ASN-128A Doppler Navigation Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ASN-128 is a Doppler navigation radar set that utilizes a reflector type antenna.	Frequency: 13.25 GHz Power: 50 mW – 1.0 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5841-281-12; TM 11-5841-281-20P

AN/ASN-137 Doppler Navigation Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ASN-137 is a Doppler navigation radar set which determines aircraft velocity and position. The antenna generates four beams which originate at the corners of the 12-cm square antenna.	Frequency: 13.325 GHz Power: 100 mW

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5841-293-12; TM 11-5841-281-20P

AN/ASN-157 Doppler Navigational System

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ASN-157 is a Doppler navigational system which determines aircraft velocity and position. The planar-array antenna/transceiver unit is attached to the underside of the aircraft fuselage.	Frequency: 13.325 GHz Power: 50 mW

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/ASR-9 Airport Surveillance Radar (ASR)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ASR-9 is an airborne surveillance radar system that utilizes a reflector antenna mounted atop a tower.	Frequency: 2.7 – 2.9 GHz Power: 1570 W max

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	When in the normal scanning mode, this system is not able to produce potentially hazardous PDLs in excess of the safety standard. In the nonscanning mode this system is able to produce PDLs in excess of 5x the standard and requires a formal RFR safety program to ensure its safe use. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	In the nonscanning mode, exclude personnel to a distance of 50 m from the antenna. Power density levels in excess of 5x the PEL exist to 23 m from the antenna. Limit access to the transmitter and tower.
Open/cracked waveguides …….	There is a possibility of very high radiation levels from broken or open waveguides and the antenna feed horn. Exclude personnel from these areas and check waveguide portion of this system periodically for breaks or cracks, and replace any suspect waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Provide detailed SOPs for maintenance personnel.

AN/AVR-2 Laser Detection Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/AVR-2 is integrated with the AN/APR-39 radar warning receiver; the system locates and identifies laser threats for warning and target cueing. Optical emitters exist in test set (TS 3720) for the AN/AVR-2.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification…….....	This system emits optical radiation levels far below applicable protection standards and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5841-301-12

AN/CPN-4 Radar

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/CPN-4 is a mobile ground controlled approach radar that utilizes two parabolic reflector antennas (azimuth and elevation) with two modes of operation (surveillance and tracking/precision).	Frequency: 9.0 – 9.16 GHz Search mode: 2.78 – 2.82 GHz Power: 45 W average 588 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the both the scanning and nonscanning modes, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	In the nonscanning mode, exclude personnel to a distance of 27 m from the antenna. When nonscanning, direct the antenna at least 27 m from occupied structures. In the scanning mode, exclude personnel to a distance of 12 m from the antenna.
RF shock/burn ……	Observe normal RF shock precautions. Do not touch the antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/CPS-9 Radar Cloud Detection System

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/CPS-9 is a radar cloud detection system that utilizes a 2.44 m diameter parabolic reflector type antenna.	Frequency: 9.2 – 9.4 GHz Power: 230 W average 250 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 75 m from the antenna.
Open/cracked waveguides …..…	The area between the feed and the reflector and any open waveguide is potentially hazardous. Exclude personnel from these areas and do not permit operation of this system with any cracked, broken or open waveguide.
Other……..……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/FPN-16 Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/FPN-16 is a mobile ground controlled approach radar that utilizes two prime-fed parabolic reflector antennas (azimuth and elevation) with two modes of operation (surveillance and tracking/precision).	Frequency: 9.0 – 9.16 GHz Search mode: 2.78 – 2.82 GHz Power: 45 W average PEP 45 kW Search mode: 588 W PEP 700 kW

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In both the normal scanning and nonscanning modes, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	In the nonscanning mode, exclude personnel to a distance of 27 m from the antenna. In the scanning mode, exclude personnel to a distance of 12 m from the antenna.
Open/cracked waveguides …..…	The area between the feed and the reflector and any open waveguide is potentially hazardous. Exclude personnel from these areas and do not permit operation of this system with any cracked, broken or open waveguide.
Other……..……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/FPN-33 Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/FPN-33 is a ground controlled approach radar that utilizes two prime-fed parabolic reflector antennas (azimuth and elevation) with two modes of operation (surveillance and tracking/precision).	Frequency: 9.0 – 9.16 GHz Power: 180 W; 36 W average

STEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. High power density levels exist near the waveguide switch window. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 28 m from the azimuth antenna. Exclude personnel to a distance of 24 m from the elevation antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: SM SIG 7&8 616

AN/FPN-40 Radar Set *(used with AN/TPX-41 in AN/FSQ-84 system)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/FPN-40 is a ground approach radar that utilizes two prime-fed parabolic antennas (azimuth and elevation) with two modes of operation (surveillance and tracking/precision).	Frequency: 9.0 GHz Power: 180 W; 36 W average PEP 200 kW

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the scanning mode, this system is not able to produce potentially hazardous PDLs in excess of the safety standard. In the nonscanning mode this system is able to produce PDLs in excess of the standard. Establish a Nonionizing Radiation Protection Program IAW guidelines provided in this TB) .
Hazard distance from antenna	In the nonscanning mode, exclude personnel to a distance of 24.4 m from the azimuth antenna and exclude personnel to a distance of 15 m from the elevation antenna. High power density levels exist near the waveguide switch window. Do not direct antennas toward potentially occupied elevated structures within 18 m (azimuth) and 22 m (elevation) (*these control ranges are calculated*).
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Do not use the switch viewing window while the transmitter is on.

REFERENCES: TM 11-5840-293-12

AN/FPN-47 Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/FPN-47 is a radar set that utilizes a 5.18 m diameter parabolic reflector type antenna.	Frequency: 2.7 – 2.9 GHz Power: PEP 400 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL) ..	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Open/cracked waveguides..….	The area between the feed and the reflector and any open waveguide is potentially hazardous. Exclude personnel from these areas and do not permit operation of this system with any cracked, broken or open waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/FPN-62 Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/FPN-62 is a ground controlled approach radar set that utilizes split elevation and azimuth antennas. The antennas are reflectors with electronically scanned phased-array feeds.	Frequency: 9.0 – 9.8 GHz Power: 45 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	The main beams of the antennas are not subject to radiation protection control.
Open/cracked waveguides …….	Open or broken waveguides can produce high PDLs over a very short range. Exclude personnel from these areas and do not permit operation of this system with any cracked, broken or open waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Terminate all waveguide transmissions into dummy loads during maintenance operations.

AN/FPN-66 Radar Terminal Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/FPN-66 is an aircraft surveillance radar that utilizes a prime-fed parabolic reflector type antenna. This system is normally installed on an elevated tower and operates in a 360 degree continuous scan mode.	Frequency: 2.7 – 2.9 GHz Power: 600 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the normal mode of operation, this system is not subject to radiation protection control. In the nonscanning mode this system is able to produce PDLs in excess of the standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	In the nonscanning mode, exclude personnel to a distance of 25 m from the antenna. Direct the fixed beam away from potentially occupied areas within the 25 m range of control.
Open/cracked waveguides …..…	The area between the feed and the reflector and any open waveguide produce extremely high PDLs. Exclude personnel from these areas and do not permit operation of this system with any cracked, broken or open waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Terminate all waveguide transmissions into dummy loads during maintenance operations.

REFERENCES: TM 11-5840-377-13-1

AN/FPS-36 Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/FPS-36 is a surveillance radar that utilizes a truncated parabolic reflector type antenna.	Frequency: 1.22 – 1.35 GHz Power: 400 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the normal mode of operation, this system is not able to produce PDLs in excess of the standard. In the nonscanning mode this system is not able to produce PDLs in excess of the standard.
Open/cracked waveguides …..…	The area between the antenna feed horn and the reflector and any open waveguide produce extremely high PDLs. Exclude personnel from these areas and do not permit operation of this system with any cracked, broken or open waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5840-201-10

AN/FPS-71 Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/FPS-71 is a radar system that is interlocked such that with the antenna stationary, the set is operated at reduced power.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	At full power and while scanning, this system is able to produce PDLs in excess of the standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 85.4 m from the antenna.
Open/cracked waveguides …….	The area between the feed and the reflector and any open waveguide produce potentially hazardous PDLs. Periodically inspect waveguides for cracks or leaks and replace suspect waveguides.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. There is a potential x-ray hazard inside transmitter cabinet. Instruct personnel to operate system only with transmitter cabinet doors closed.

REFERENCES: TM 11-5840-252-12

AN/FRC-154 (V) 1-28 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/FRC-154 is a microwave dual-channel, full duplex transceiver.	Frequency: 4.4 – 5.0 GHz Power: 1.0 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Open/cracked waveguides …….	All open waveguides and feed horn outputs produce potentially hazardous PDLs. Exclude personnel to a distance of 6 cm from any open waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-792-14

AN/FRC-162 (V) 1, 2, 3 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/FRC-162 is a microwave line of sight radio which utilizes several various aperture type antennas.	Frequency: 7.12 – 8.40 GHz Power: 0.1 - 5.0 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Open/cracked waveguides …….	All open waveguides and feed horn outputs produce potentially hazardous PDLs in excess of the safety standard. Exclude personnel to within 10 cm of any open waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-836-14

AN/FRC-165 (V) 1, 2, 3, 4 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/FRC-165 is a microwave line of sight radio which utilizes several various aperture type antennas.	Frequency: 7.12 – 8.40 GHz Power: 0.1 - 5.0 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Open/cracked waveguides …….	All open waveguides and feed horn outputs produce potentially hazardous PDLs in excess of the safety standard. Exclude personnel to within 10 cm of any open waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-836-14

AN/FRC-170 (V) 1 - 11 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/FRC-170 is a general purpose radio set which utilizes several various aperture type antennas for line-of-sight (LOS) or troposcatter communications. The antennas are normally mounted on towers.	Frequency: 4.33 – 5.07 GHz 7.06 – 8.07 GHz Power: 0.1 - 5.0 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system, under certain configurations, is able to produce potentially hazardous PDLs in excess of the safety standard. Direct the antenna main beam away from occupied structures. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Open/cracked waveguides …….	All open waveguides and loose or open flanges produce potentially hazardous PDLs within close proximity of the break. Exclude personnel from these areas and do not permit operation of this system with any cracked, broken or open waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-863-13

AN/FRC-171 (V) 2 – 12 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/FRC-171 is a general purpose radio set which utilizes several various aperture type antennas for line-of-sight (LOS) or troposcatter communications. The antennas are normally mounted on towers.	Frequency: 7.9 – 8.4 GHz 4.33 – 5.07 GHz Power: 0.1 - 5.0 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system, under certain configurations, is able to produce potentially hazardous PDLs in excess of the safety standard. Direct the antenna main beam away from occupied structures. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Open/cracked waveguides …….	All open waveguides and loose or open flanges produce potentially hazardous PDLs within close proximity of the break. Exclude personnel from these areas and do not permit operation of this system with any cracked, broken or open waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-863-13

AN/FRC-173 (V) 1 – 12 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/FRC-173 is a general purpose radio set which utilizes several various aperture type antennas that are normally mounted on towers.	Frequency: 7.06 – 8.07 GHz 4.33 – 5.07 GHz Power: 3.5 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system, under certain configurations, is able to produce potentially hazardous PDLs in excess of the safety standard. Direct the antenna main beam away from occupied structures. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Open/cracked waveguides …….	All open waveguides and loose or open flanges produce potentially hazardous PDLs within close proximity of the break. Exclude personnel from these areas and do not permit operation of this system with any cracked, broken or open waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-863-13

AN/FRC-181 Satellite Communications Terminal *(part of Ground Command Post Terminal)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The MILSTAR AN/FRC-181 is a fixed millimeter wave satellite communications terminal that utilizes a 2.44 m diameter parabolic reflector antenna.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Open/cracked waveguides…….	The area between the feed horn and the reflector produce potentially high PDLs. All open waveguides produce potentially hazardous PDLs within 2.5 cm. Exclude personnel from these areas and check waveguide portion of this system periodically for breaks or cracks, and replace any suspect waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/FRN-23 Radio Beacon Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/FRN-23 is a radio beacon set which utilizes either a 2 element dipole, fed-in-phase collinear array, or a 1.9 m long-wire antenna.	Frequency: 75 MHz Power: 2.25 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5825-266-14-1

AN/FRN-47 (DME) Stationary Aviation System

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/FRN-47 is a stationary aviation system which can transmit and receive data from aircraft through aircraft-initiated interrogations. The system is usually enclosed in a shelter adjacent to the airfield runway. The stacked dipole antenna is mounted atop the shelter.	Frequency: 962 MHz – 1.213 GHz Power: 105 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system, under normal operations, is not able to produce potentially hazardous PDLs in excess of the safety standard. This system, under certain maintenance operations, is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
RF shock/burn ……	Observe normal RF shock precautions. Do not touch the antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Advise personnel to maintain at least 0.5 m from the antenna during maintenance procedures which require generation of false targets.

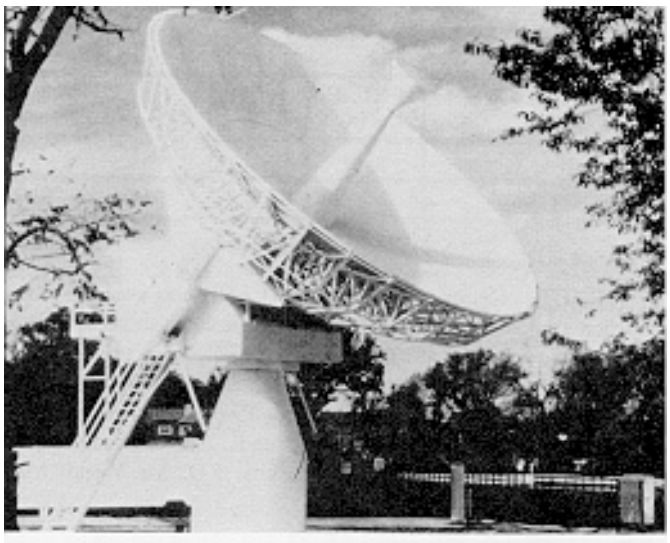
REFERENCES: TM 11-5826-313-13

AN/FSC-78B Satellite Communications Terminal (Modernized, Heavy Terminal)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/FSC-78 is a satellite communications terminal that utilizes an 18.3 m diameter parabolic dish antenna with a cassegrain feed and four traveling-wave tube HPAs.	Frequency: 7.9 – 8.4 GHz Power: 6300 W max

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in the main beam of the antenna in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Open/cracked waveguides …….	All open waveguides and loose or open flanges produce very hazardous PDLs within close proximity of the break. Exclude personnel to within 4.2 m from a fully open guide at the transmitter. (*The system uses a pressurized waveguide interlocked with the transmitter to prevent operation without adequate guide pressure).*
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5895-358-14



AN/FSC-79A Satellite Communications Terminal (Modernized, Heavy Terminal)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/FSC-79 is a satellite communications terminal that utilizes an 18.3 m diameter parabolic dish antenna with a cassegrain feed and four traveling-wave tube HPAs.	Frequency: 7.9 – 8.4 GHz Power: 6300W max

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in the main beam of the antenna in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Open/cracked waveguides …….	All open waveguides and loose or open flanges produce very hazardous PDLs within close proximity of the break. Exclude personnel to within 4.2 m from a fully open guide at the transmitter. (*The system uses a pressurized waveguide interlocked with the transmitter to prevent operation without adequate guide pressure).*
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5895-358-14

AN/FSQ-84 Radar System

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/FSQ-84 is a radar system designed to provide high resolution aircraft identification. This system consists of the AN/FPN-40 Ground Control Approach radar configured with the AN/TPX-41 Interrogator Set. This system utilizes two prime-fed parabolic antennas (azimuth and elevation).	Frequency: 9.0 – 9.16 GHz Power: 180 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the nonscanning mode, this system is able to produce potentially hazardous PDLs in the main beam of the antenna in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) . Follow hazard criteria for the AN/FPN-40 and AN/TPX-41. Prohibit directing either non-scanning main beam of the AN/FPN-40 antennas to the AN/TPX-41 shelter.
Hazard distance from antenna	When operating in the non-scanning mode, limit ground personnel to a distance of 24.4 m along the main beam of the elevation antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Instruct personnel not to use the “Switch Viewing” window while the transmitter is on.

REFERENCES: TM 11-5840-345-20

AN/FSQ-91 LA FAIRE VITE System

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/FSQ-91 is a radar system consisting of two remote RF signal collection sites, connected to an operating facility by a network of ten relay stations. The system antennas are mounted on towers with variable heights of 10-134 m.	Frequency: 9.0 – 11.0 GHz

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in the main beam of the antenna in excess of the safety standard.
Open/cracked waveguides .....…	All open waveguides and the area between the antenna feed horn and the reflector produce very hazardous PDLs within close proximity. Exclude personnel to within 10 cm of any fully open waveguide.
Other…….…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/FSQ-150 Radiofrequency Interface Subsystem (RFIS)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/FSQ-150 is a low powered switching device.	Power: 0.159 mW

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not designed to radiate and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5895-1338-15

AN/GLQ-14 Countermeasures Transmitting Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GLQ-14 is a countermeasures transmitting set that utilizes a log periodic antenna.	Frequency: 2.0 – 30.0 MHz Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard in front of the antenna and, to a lesser extent, in the region of the entire antenna curtain. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 83 m from in front of the antenna and 15 m from the sides and rear of the antenna.
RF shock/burn ……	A high shock and RF burn hazard exists in the vicinity of the balun, parallel wire antenna feed line, and antenna feed point. Exclude personnel from these areas.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/GLQ-15 Countermeasures Transmitting Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GLQ-15 is a countermeasures transmitting set that utilizes different antenna elements.	Frequency: 2.0 – 30.0 MHz Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard in front of the antenna and, to a lesser extent, in the region of the entire antenna curtain. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 13 m from in front of the antenna and from the sides and rear of the antenna to a range of 4 m (OE-317/TSC-99 antennas). Exclude personnel to a distance of 1.8 m from the antenna (AK 2205).
RF shock/burn ……	A high shock and RF burn hazard exists in the vacinity of the balun, parallel wire antenna feed line, and antenna feed point. Exclude personnel from these areas.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/GLQ-16 SHORTSTOP Electronic Protection System, Standalone Group

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GLQ-16 is an electronic countermeasures system developed to protect personnel and equipment from incoming artillery and mortar shells. This configuration consists of a core receiver/transmitter (R/T) and an elevated spiral antenna.	Frequency: CLASSIFIED Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
RF shock/burn……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/GLR-9 (V) 1-12 Countermeasures Receiving Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GLR-9 is a countermeasures receiving set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not a free space radiator and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 32-5895-203-12&P

AN/GMD-1A, B, C, D RAWIN Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GMD-1 is a transportable direction finder set which uses parabolic dish antennas to monitor signals from a weather balloon.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not a free space radiator and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/GPG-1 (T-9 Tracking Radar)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GPG-1 is a tracking radar set that utilizes a 0.81 parabolic reflector antenna.	Frequency: 8.4 – 9.6 GHz Power: 40 kW PEP 38 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 10 m from the antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/GRA-6 Receiver-Transmitter Control Group

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GRA-6 provides local and remote control for various push-to-talk radio sets.	Frequency: 8.4 – 9.6 GHz Power: 40 kW PEP 38 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	By itself, this system is not subject to radiation protection control. When connected to an RT-524/VRC Amplifier, this system is able to produce potentially hazardous PDLs in excess of the safety standard.
Hazard distance from antenna	When connected to an RT-524/VRC Amplifier, exclude personnel to a distance of 1 m from the antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5038

AN/GRA-39A, B Radio Set Control Group

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GRA-39 provides a remote radio contact through a wire to various radios in the AN/VRC and AN/PRC radio set series.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	By itself, this system is not subject to radiation protection control. When connected to an RT-524/VRC Amplifier, this system is able to produce potentially hazardous PDLs in excess of the safety standard.
Hazard distance from antenna	When connected to an RT-524/VRC Amplifier, exclude personnel to a distance of 1 m from the antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-477-12

AN/GRA-114 Sound Ranging Radio Data Link

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GRA-114 provides a radio data link and utilizes a quarter-wave omnidirectional ground plain antenna.	Frequency: 80 –85 MHz Power: 3.15 W 150 – 151 MHz 5 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5895-1095-12

AN/GRC-103 (V) 1, 2, 3, 4 Radio Set *(used in AN/TRC-145, AN/TRC-173, AN/GRC-174, AN/TRC-180)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GRC-103 is a line-of-sight UHF-FM radio set that utilizes several aperture-type antennas, i.e., corner reflector (Bands I, II, III) and 0.9 m parabolic reflector (Bands IV) antenna. For operational effectiveness, the antennas are normally mounted at least 3 m above ground.	Frequency: 220 - 405 MHz 395 – 705 MHz 695 – 1000 MHz 1350 – 1850 MHz Power: 25 W average 30 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-540-12

AN/GRC-106A Radio Set *(used in AN/VSC-2, AN/VSC-3)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GRC-106 is a two way high frequency voice communications radio system that utilizes an omnidirectional whip-type antenna. For operational effectiveness, the antenna is normally mounted on a vehicle or radio-shelter roof.	Frequency: 2 – 30 MHz Power: 200 W average 400 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 1.5 m from the antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Do not operate the system in a free space radiating mode inside of buildings.

REFERENCES: TM 11-5820-520-10

AN/GRC-122 LP/LA A, B, C, D, E Radio Teletypewriter Set *(used in AN/VSC-2, AN/VSC-3)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GRC-122 is a radio teletypewriter that utilizes an omnidirectional whip-type antenna. This system uses the AN/GRC-106 Radio Set.	Frequency: 2 – 30 MHz Power: 200 W average 400 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 1.5 m from the antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5815-334-12

AN/GRC-125 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GRC-125 is a vehicular or MANPACK FM radio set that utilizes a whip-type antenna.	Frequency: 35 – 70 MHz Power: 3 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-498-12

AN/GRC-142A, B, C, D, E Radio Teletypewriter Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GRC-142 is a radio teletypewriter that utilizes an omnidirectional whip-type antenna. This system uses the AN/GRC-106 Radio Set.	Frequency: 2 – 30 MHz Power: 200 W average 400 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 1.5 m from the antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5815-334-12

AN/GRC-144 Radio Set *(used in AN/TRC-138, AN/TRC-175)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GRC-144 is a tactical line-of-sight FM radio that utilizes a 1.4 m diameter parabolic antenna.	Frequency: 4.4 – 5.0 GHz Power: 0.25 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Open/cracked waveguides …….	All open waveguides and the feed horn aperture produce potentially hazardous PDLs within 2.5 cm. Exclude personnel from these areas and do not permit operation of this system with any cracked, broken or open waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-695-12

AN/GRC-160 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GRC-160 is a vehicular or MANPACK FM radio set that utilizes a whip-type antenna.	Frequency: 35 – 70 MHz Power: 3 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-498-12

AN/GRC-193A HF Radio Set *(used in AN/TRC-189)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GRC-193 is a HF Single Side Band (SSB) vehicular radio that utilizes a 4.88 m whip (for mobile operation) or AN/GRA-50 doublet antenna (for fixed operation).	Frequency: 2 – 30 MHz Power: 100 W ; 400 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to distances of 1.1 m (100 W) and 2.5 m (400 W) from the antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Do not operate the system in a free space radiating mode inside of buildings.

REFERENCES: TM 11-5820-924-10-HR

AN/GRC-213 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GRC-213 is a low-power MANPACK/vehicular radio set that utilizes either an dipole or monopole antenna.	Frequency: 2 – 30 MHz Power: 20 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the Partial Body safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 0.5 m from the antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-923-12

AN/GRC-215 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GRC-215 is a low-power MANPACK/vehicular radio set that utilizes a 4.88 m whip-type antenna.	Frequency: 2 – 30 MHz Power: 100 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	When operating this system in the continuous wave mode, exclude personnel to a distance of 1.3 m from the antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

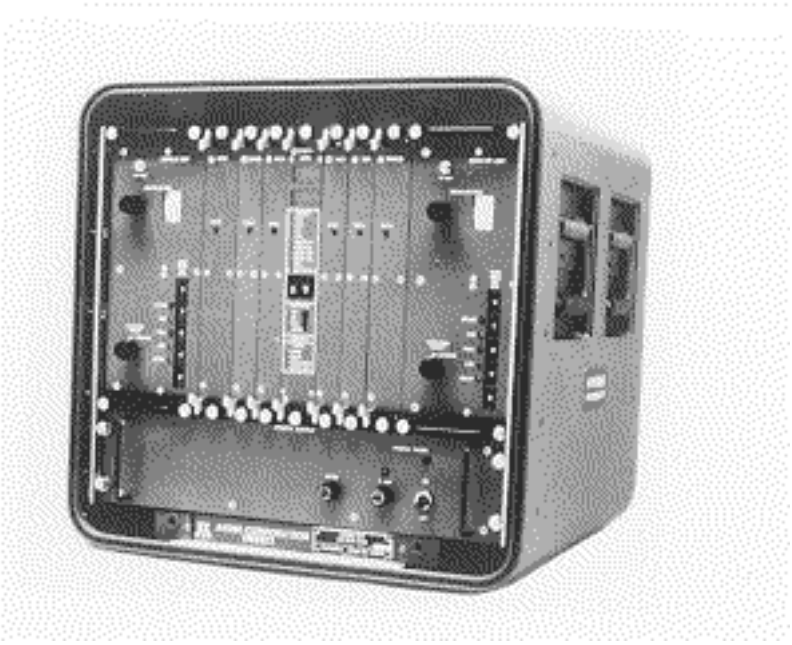
REFERENCES: TM 11-5895-1220-12

AN/GRC-222 Radio Set; High Capacity Trunk Radio (HCTR)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GRC-222 is a short range wide band digital radio set that utilizes a 0.9 m parabolic dish antenna. It consolidates the functions of the AN/GRC-144 Radio Set into one system.	Frequency: 4.4 – 5.0 GHz Power: 2.5 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Hazard distance from antenna	PDLs exceed the partial body safety standard at a distance up to 3 cm from the horn aperture, however, since the antenna is normally elevated on a 15 m mast, operators do not have access to the area between the feedhorn and the reflector.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. RF output should be terminated in a dummy load during maintenance operations.

REFERENCES: TM 11-5820-1028-13



AN/GRC-224 Radio Set (Mobile Subscriber Equipment (MSE))

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GRC-224 is a line-of-sight radio link for use with the MSE networks that utilizes a 0.6 m parabolic reflector dish antenna mounted on a 15 m telescoping mast. This set is known as the Down-the-Hill Microwave Communications Radio.	Frequency: 14.50 – 15.35 GHz Power: 0.5 W average PEP 1 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5800-216-10-1, (2), (3), (4)

AN/GRC-226 (V) 1, 2 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GRC-226 is a line-of-sight radio link for use with the MSE networks that utilizes a 1.1 x 0.9 m prime-fed reflector dish antenna mounted on a 15 m telescoping mast.	Frequency: 225 - 400 MHz (Band I) Power: 20 W (Band I) 1350 – 1850 MHz (Band II) 5 W (Band II)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	When operating in Band I, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB). When operating in Band II, this system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Hazard distance from antenna	When operating in Band I, exclude personnel to a distance of 0.4 m from the antenna. Under normal operating conditions, the location of the antenna will prevent personnel exposure to RFR.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-1029-13&P

AN/GRC-233 Communication System

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GRC-233 consists of the AN/PRC-133 and AN/URC-130 Radio Sets and utilizes a tripod-mounted cross dipole antenna.	Frequency: 2 - 30 MHz (PRC-133) Power: 125 W PEP (PRC-133) 225 - 400 MHz (URC-130) 35 W (URC-130)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	Both the AN/PRC-133 and AN/URC-130 are able to produce potentially hazardous PDLs in excess of the safety standard. Under normal operating conditions, due to low transmitter power and/or low antenna gain personnel exposure to RFR is highly improbable and this system is not subject to radiation protection controls.
Hazard distance from antenna	As a general rule, when operating the AN/PRC-133, exclude personnel to a distance of 30 cm from the antenna. As a general rule, when operating the AN/URC-130, exclude personnel to a distance of 0.9 m from the antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/GRC-240 VHF/UHF Radio

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GRC-240 is a VHF/UHF radio that utilizes a broadband vertical monopole antenna mounted on a bracket 1.8 m above ground on the left rear corner of the High Mobility Multipurpose Wheeled Vehicle (HMMWV).	Frequency: 116 - 400 MHz Power: 30 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-1148-13&P

AN/GRM-114B Radio Test Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GRM-114 is a radio test set.	Frequency: 100 Hz - 1 GHz

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-6625-3016-10-1

AN/GRN-6 Radio Beacon Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GRN-6 is used to send voice communication and/or transmission of beacon signals to aircraft. It uses a T-type antenna with counterpoise for transmissions.	Frequency: 190 - 500 kHz Power: 500 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the near field, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB).
Hazard distance from antenna	Exclude personnel from the immediate area around the antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5825-02-12

AN/GRQ-23 Radiofrequency Switching Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GRQ-23 is a radiofrequency switching set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not a free space radiator and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 32-5895-753-14&P

AN/GRT-21 Transmitting Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GRT-21 is a single channel, crystal-controlled, VHF transmitter designed for standard rack mounting in control towers at fixed airfields. It utilizes a monopole or dipole type antenna.	Frequency: 116 - 150 MHz Power: 50 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the near field, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB).
Hazard distance from antenna	Exclude personnel to a distance of 28 cm from the antenna. (This range is too close to the antenna to consider any exposure as "whole body.")
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-806-14

AN/GRT-22 Transmitting Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GRT-22 is a single channel, crystal controlled, VHF transmitter designed for standard rack mounting in control towers at fixed airfields. It utilizes a monopole or dipole type antenna and provides a transmitting capability of 3,500 UHF channels.	Frequency: 116 - 150 MHz Power: 50 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the near field, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB).
Hazard distance from antenna	Exclude personnel to a distance of 28 cm from the antenna. (This range is too close to the antenna to consider any exposure as "whole body.")
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-806-14

AN/GSC-39 (V) 1, 2 Satellite Communications Terminal (Modernized, Medium Terminal)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GSC-39 is a satellite communications ground terminal that utilizes a 11.6 m diameter parabolic dish antenna.	Frequency: 7.9 – 8.4 GHz Power: 10 kW PEP 70 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	At high power outputs, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB).
Hazard distance from antenna	At maximum power output, do not direct the antenna within 1578 m of potentially occupied areas or elevated structures. Maintain a positive elevation angle to prevent RFR exposure to personnel.
Open/cracked waveguides …..…	All open waveguides and feed horn outputs produce hazardous PDLs at close range. Exclude personnel to a distance of 4.2 m from any open waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Test all interlocks periodically. Specify the use of a dummy load for maintenance procedures requiring the transmitter to be on.

REFERENCES: TM 11-5895-1050-12; TM 11-5895-1043-12

AN/GSC-40 Satellite Communications System

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GSC-40 is a satellite communications system that utilizes a quad-array or dipole-fed reflector dish antenna mounted on a 2 m mast.	Frequency: 225 – 400 MHz Power: 500 W PEP 100 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB).
Hazard distance from antenna	Exclude personnel to a distance of 7.0 m from the antenna feed plane. In the Emergency Action Mode (EAM), exclude personnel to a distance of 10 m from the antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

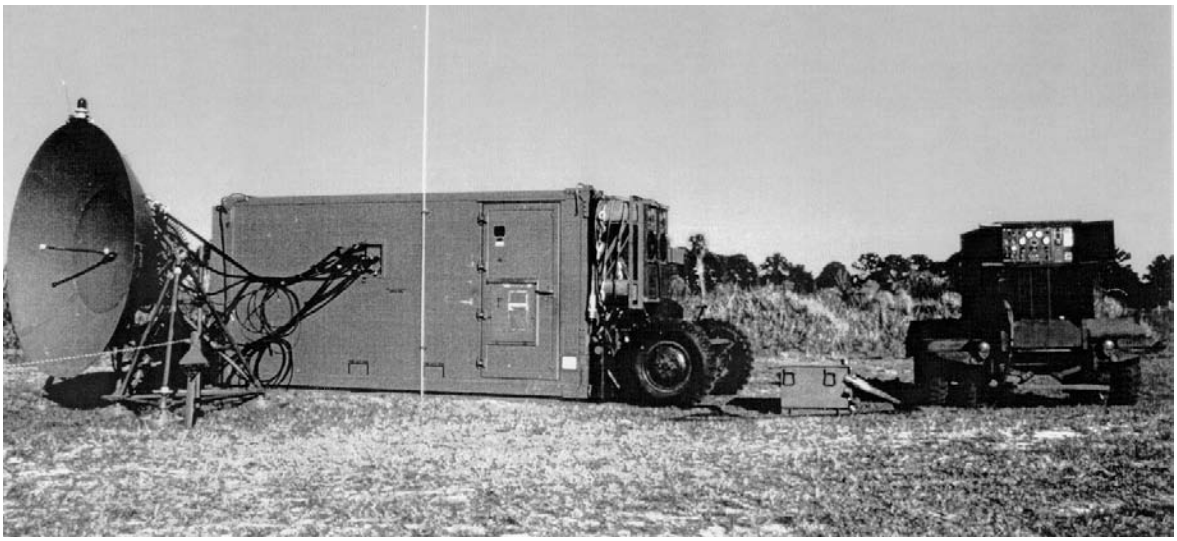
REFERENCES: TM 11-5895-1114-12

AN/GSC-49 (V) 1, 2 Jam Resistant Secure Communications Terminal

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GSC-49 is a satellite communications terminal that utilizes either of two antennas configurations; a 6.1 m or 2.4 m parabolic reflector dish antenna.	Frequency: 7.25 – 8.4 GHz Power: 2 – 3 kW PEP 1.9 kW average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	Using either antenna, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Using the 2.4 m antenna under high power, this system is able to produce potentially hazardous PDLs in excess of 5x the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB).
Hazard distance from antenna	When utilizing the 6.1 m antenna at maximum power, exclude personnel to a distance of 490 m from the antenna beam. When utilizing the 2.4 m antenna at maximum power, exclude personnel to a distance of 196 m from the antenna beam.
Open/cracked waveguides …….	All open waveguides and feed horn outputs produce potentially hazardous PDLs at close range. Operating at high power, exclude personnel to a distance of 3.0 m from any open waveguide.
Other……..……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5895-1162-10

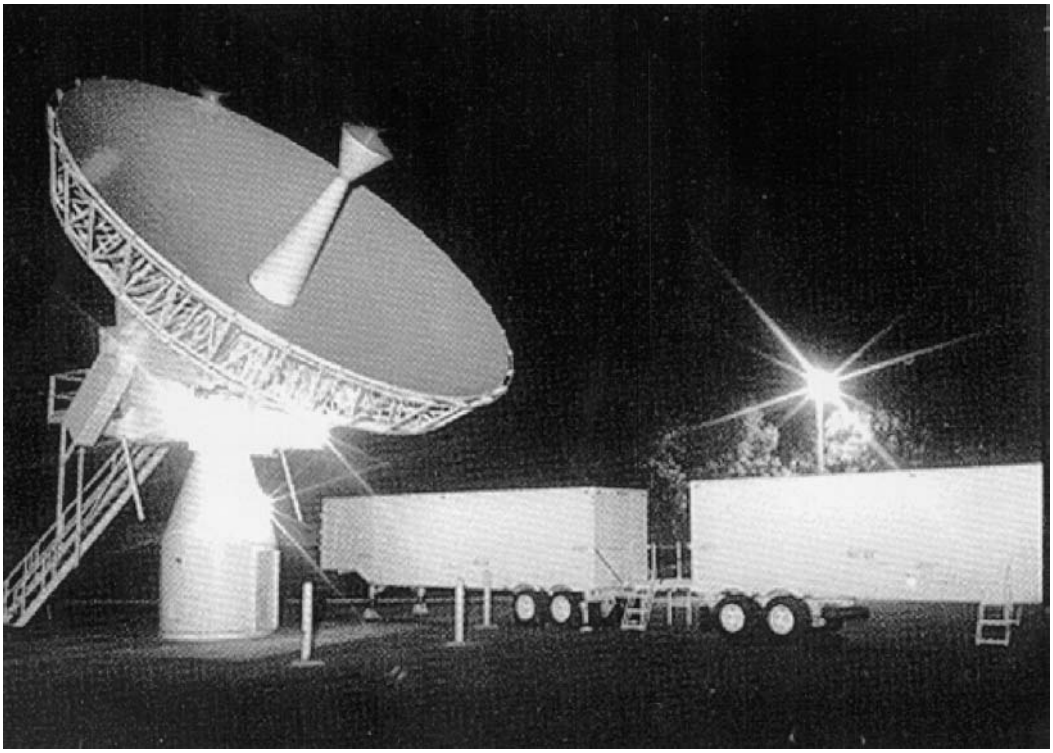


AN/GSC-52 (V) 1, 2 Satellite Communications Terminal

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GSC-52 is a satellite communications terminal that utilizes a 11.6 m diameter parabolic dish antenna.	Frequency: 7.9 – 8.4 GHz Power: 0 – 3.2 kW 70 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs slightly in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB).
Hazard distance from antenna ..	At maximum power output, do not direct the antenna within 1.02 km of potentially occupied areas or elevated structures and 1.4 m for uncontrolled areas. Maintain a positive elevation angle specified for SATCOM systems to prevent RFR exposure to personnel.
Open/cracked waveguides…..…	All open waveguides and feed horn outputs produce hazardous PDLs at close range (0.4 m). Exclude personnel to a distance of 2.9 m from any open waveguide.
Other…….…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify the use of a dummy load for maintenance procedures requiring the transmitter to be on.

REFERENCES: TM 11-5895-1196-13



AN/GSG-10 Tactical Fire Detection System (TACFIRE)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GSG-10 uses the AN/VRC-46 Radio Set for communication purposes via a vehicular and/or fixed short range FM radio set. It utilizes a resonant length whip antenna.	Frequency: 30 – 76 MHz Power: 35 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB).
Hazard distance from antenna	Exclude personnel to a distance of 1.0 m from the antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-7440-242-40-P

AN/GSS-1 Radar Surveillance Central

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GSS-1 uses the AN/TPS-1D radar set in a truck mounted shelter, with the radar antenna on the forward end of the shelter roof. It utilizes a 4.57 m wide parabolic section antenna.	Frequency: 1.22 – 1.35 GHz Power: 615 kW PEP 492 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	While scanning, this system is not able to produce potentially hazardous PDLs in excess of the safety standard. While nonscanning, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB).
Hazard distance from antenna	While nonscanning, exclude personnel to a distance of 15.0 m from the antenna. In the high power mode, exclude personnel to a distance of 17 m from the antenna. Extremely high PDLs exceeding 5x the safety standard exist in the region between the feed horn and the reflector. Exclude personnel from these areas.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Direct main beam from occupied areas during servo alignment procedure.

REFERENCES: TM 11-5840-244-20-P

AN/GSS-7 Radar Surveillance Central

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GSS-7 uses the AN/TPS-1D radar set in a truck mounted shelter, with the radar antenna on the forward end of the shelter roof. It utilizes a 4.57 m wide parabolic section antenna.	Frequency: 1.22 – 1.35 GHz Power: 615 kW PEP 492 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	While scanning, this system is not able to produce potentially hazardous PDLs in excess of the safety standard. While nonscanning, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB).
Hazard distance from antenna	While nonscanning, exclude personnel to a distance of 15.0 m from the antenna. In the high power mode, exclude personnel to a distance of 17 m from the antenna. Extremely high PDLs exceeding 5x the safety standard exist in the region between the feed horn and the reflector. Exclude personnel from these areas.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Direct main beam from occupied areas during servo alignment procedure.

REFERENCES: TM 11-5840-244-20-P

AN/GSS-14A, B Visible Light-Infrared Searchlight

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GSS-14 is a infrared searchlight with a power of 100 – 150 million candlepower.	Type: Xenon-short arc lamp

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification ……...	This system does not contain a laser. This system contains a high intensity visible/invisible infrared light source and is potentially severely hazardous to the eye.
Hazard distance ……..……	Do not permit personnel to look directly into the beam at distances less than 200 m while the searchlight is activated.
Ocular injury ……..…..……	Personnel may experience temporary flash-blindness by viewing beam at ranges in excess of 200 m. Instruct personnel to avoid making eye contact with the main beam.
Other……..……..……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-6230-219-12

AN/GVS-5 Laser Infrared Observation Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/GVS-5 is a infrared laser observation device designed to accurately determine distances between the operator and selected targets.	Type: Nd-YAG Wavelength: 1064 nm

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification ……..…..	This system contains a Class 3b or 4 laser and requires an established laser safety program to ensure its safe use. Develop a written Local Standing Operating Procedure (SOP) IAW guidelines provided in this TB.
Hazard distance ……..……	Do not permit personnel to view the laser from within the beam at distances less than 2.7 km for unaided viewing or 13 km when viewing the laser through magnifying optical instruments. Utilizing a red filter (OD = 1.9), do not permit personnel to view the laser from within the beam at distances less than 290 m for unaided viewing or 1.8 km when viewing the laser through magnifying optical instruments. Utilizing a yellow filter (OD = 2.9), do not permit personnel to view the laser from within the beam at distances less than 56 m for unaided viewing or 550 m when viewing the laser through magnifying optical instruments.
Ocular injury ……..……	Use protective eyewear that filter at 1064 nm with a minimum OD of 3.8 for unaided viewing and a minimum OD of 4.4 for viewing through magnifying optical instruments. *Utilize caution when operating or maintaing this device. Several accidents have occurred at close range, resulting in permanent eye damage.*
Outdoor range operations …..	Eliminate all specular surfaces (man made and natural) capable of producing potentially hazardous reflections. Control unauthorized personnel access to controlled area. Use a 10 mrad buffer zone when training with the laser. Appoint a qualified Laser Range Safety Officer.
Other……..…….…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5860-201-10

AN/MPQ-4A Mortar Locator Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/MPQ-4 is a mortar locator radar set that uses a dual-beam scanning parabolic cylindrical antenna system.	Frequency: 16 GHz Power: 50 kW PEP 87.5 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	While scanning, this system is not able to produce potentially hazardous PDLs in excess of the safety standard. While nonscanning, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB).
Hazard distance from antenna	While nonscanning, exclude personnel to a distance of 40 m from the antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. When performing adjustments in azimuth orientation do not stand erect as not to place oneself in the center of the main beam to eye level; approach the telescope from a stooped position.

REFERENCES: TM 11-5840-208-10

AN/MPQ-33 HAWK Low Power Illuminator (LPI) Radar

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/MPQ-33 is a low power illuminator radar set that uses a 1.2 m diameter prime-fed parabolic antenna.	Frequency: 10.0 – 10.25 GHz Power: 450 W 125 W min

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of 5 x the safety standard and requires a formal RFR program to ensure its safe use. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB).
Hazard distance from antenna	When the elevation angle is positive, no hazard exists for personnel standing on level ground. When the elevation angle is minimal (-200 mils), exclude personnel to a distance of greater than 15 m and less than 55 m from the antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/MPQ-46 HAWK High Power Illuminator (HIPIR) Radar

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/MPQ-46 is a high power illuminator radar set.	Frequency: CLASSIFIED Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess 5x the safety standard and requires a formal RFR protection program to ensure its safe use. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB).
Hazard distance from antenna	When the elevation angle is positive (+ 0 mils), no hazard exists to personnel on level ground. When the elevation angle is minimal (-200 mils), exclude personnel to a distance of greater than 15 m and less than 112 m from the antenna.
Open/cracked waveguides …….	All open waveguides and loose or open flanges produce very hazardous PDLs within close proximity of the break. Exclude personnel to within 2.2 m from a fully open guide at the transmitter. Check waveguide portion of this system periodically for breaks or cracks, and replace any suspect waveguide.
Other……..……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Shelters erected around this equipment may cause potentially hazardous reflections of RF energy. Post areas accordingly.

REFERENCES: TM 9-1425-525-12-4

AN/MPQ-48 HAWK Improved Continuous Wave Acquisition Radar (ICWAR)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/MPQ-48 is a continuous wave radar set of the HAWK Air Defense System.	Frequency: CLASSIFIED Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the nonscanning mode, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB). In the scanning mode, this system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Hazard distance from antenna	In the nonscanning mode, exclude personnel to a distance of 21 m from the antenna. With the antenna positioned at a fixed positive elevation angle, no hazard exists for personnel on level terrain.
Open/cracked waveguides …….	All open waveguides and loose or open flanges produce potentially hazardous PDLs. Check waveguide portion of this system periodically for breaks or cracks, and replace any suspect waveguide.
Other……..……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 9-1425-525-12-4

AN/MPQ-49 Forward Area Acquisition Radar (FAAR) Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/MPQ-49 is a forward area alerting radar set equipped with an IFF for locating and identifying aircraft.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the nonscanning mode, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB). In the scanning mode, this system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Hazard distance from antenna	In the nonscanning mode, exclude personnel to a distance of 7.5 m from the antenna. Exclude personnel from the shelter roof when the antenna is in its lowest operational position.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 9-1430-588-10

AN/MPQ-50 HAWK Pulse Acquisition Radar (PAR\IPAR)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/MPQ-50 is the Pulse Acquisition Radar (PAR) of the HAWK Air Defense System. It provides target range and azimuth information for the system. The PAR antenna is a 1.6 x 6.7 m cosecant-squared, prime-fed, parabolic reflector which operates in a continuous scan only mode.	Frequency: CLASSIFIED Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the nonscanning mode, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB). In the scanning mode, this system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Hazard distance from antenna	In the nonscanning mode, exclude personnel to a distance of 53 m from the antenna. Maintain visual surveillance of the fixed-beam controlled zone. Exclude personnel from the shelter roof when the antenna is in its lowest operational position.
Open/cracked waveguides …….	All open waveguides and the feed horn aperture produce potentially hazardous PDLs within 1.0 m. Exclude personnel from these areas and do not permit operation of this system with any cracked, broken or open waveguide. Exclude personnel from the area on top of the PAR antenna, between the antenna feed and the reflector.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. The stabillitron tube in the transmitter circuit can produce X-radiation.

REFERENCES: TM 9-1425-525-12-4

AN/MPQ-51 HAWK Range Only Radar (ROR\IROR)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/MPQ-51 is part of the HAWK Air Defense System. It provides target range information for the system. The ROR antenna is a 1.22 m parabolic reflector which operates in a continuous scan only mode.	Frequency: CLASSIFIED Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB).
Hazard distance from antenna	Exclude personnel to a distance of 45 m from the antenna. Do not direct the main beam toward potentially occupied areas. With the antenna positioned at a fixed positive elevation angle (+0 mils), no hazard exists for personnel on level terrain.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 9-1425-525-12-4

AN/MPQ-53 PATRIOT Missile System

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/MPQ-53 replaces the HAWK Air Defense System. It provides (Phased Array Tracking to Intercept Of Target (PATRIOT)).	Frequency: CLASSIFIED Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB). Prohibit fixed beam operation of the main beam.
Hazard distance from antenna	Exclude personnel to a distance of 120 m from the antenna. Do not direct the main beam toward potentially occupied areas. Prohibit personnel from occupying the roof, ladder, and the door-platform work areas of the radar system during operation. Exclude personnel to within 2 m of the sides of the radar system. The feed horn area in front of the main beam is extremely hazardous and can cause serious injury. Exclude personnel from this area.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Test interlocks periodically. Publish detailed SOPs for operation and maintenance. Specify use of dummy loads during maintenance operations.

REFERENCES: TM 9-1430-600-12; TM 9-1430-601-10

AN/MPQ-55 HAWK Continuous Wave Acquisition Radar (CWAR\ICWAR)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/MPQ-55 is a continuous wave radar set of the HAWK Air Defense System. It provides target range and azimuth information and utilizes a split-parabolic cylinder reflector antenna.	Frequency: CLASSIFIED Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the nonscanning mode, this system is able to produce potentially hazardous PDLs in excess of 5x the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB). In the scanning mode, this system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Hazard distance from antenna	In the nonscanning mode, exclude personnel to a distance of 88 m from the antenna. With the antenna positioned at a fixed positive elevation angle, no hazard exists for personnel on level terrain. Do not operate the radar within 36 m (5 x PEL) of potentially occupied areas.
Open/cracked waveguides …..…	All open waveguides and loose or open flanges produce potentially hazardous PDLs to within 1 m. Exclude personnel from these areas and do not permit operation of this system with any cracked, broken or open waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 9-1425-525-12

AN/MPQ-57 HAWK High Power Illuminator Radar (HIPIR)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/MPQ-57 is a high power illuminator radar set of the HAWK Air Defense System used for automatic target tracking and illumination. It utilizes a parabolic reflector antenna.	Frequency: CLASSIFIED Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess 5x the safety standard and requires a formal RFR protection program to ensure its safe use. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB).
Hazard distance from antenna	When the elevation angle is minimal (-200 mils), exclude personnel to a distance of greater than 15 m and less than 112 m from the antenna. With the antenna positioned at elevation angles above 0 mils, no hazard exists for personnel on level terrain.
Open/cracked waveguides …..…	All open waveguides and loose or open flanges produce very hazardous PDLs within close proximity of the break. Exclude personnel to within 2 - 3 m from a fully open guide at the transmitter. Check waveguide portion of this system periodically for breaks or cracks, and replace any suspect waveguide.
Other……..……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 9-1430-1533-12

AN/MPQ-60 HAWK High Power Illuminator Radar (HIPIR)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/MPQ-60 is a high power illuminator radar set of the HAWK Air Defense System used for automatic target tracking and illumination. It utilizes a parabolic reflector antenna.	Frequency: CLASSIFIED Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess 5x the safety standard and requires a formal RFR protection program to ensure its safe use. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB).
Hazard distance from antenna	When the elevation angle is minimal (-200 mils), exclude personnel to a distance of greater than 15 m and less than 112 m from the antenna. With the antenna positioned at elevation angles above 0 mils, no hazard exists for personnel on level terrain.
Open/cracked waveguides …..…	All open waveguides and loose or open flanges produce very hazardous PDLs within close proximity of the break. Exclude personnel to within 2 - 3 m from a fully open guide at the transmitter. Check waveguide portion of this system periodically for breaks or cracks, and replace any suspect waveguide.
Other……..……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/MPQ-61 HAWK High Power Illuminator Radar (HIPIR)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/MPQ-61 is a high power illuminator radar set of the HAWK Air Defense System used for automatic target tracking and illumination. It utilizes a parabolic reflector antenna.	Frequency: CLASSIFIED Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess 5x the safety standard and requires a formal RFR protection program to ensure its safe use. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB).
Hazard distance from antenna	When the elevation angle is minimal (-200 mils), exclude personnel to a distance of greater than 15 m and less than 112 m from the antenna. With the antenna positioned at elevation angles above 0 mils, no hazard exists for personnel on level terrain.
Open/cracked waveguides …….	All open waveguides and loose or open flanges produce very hazardous PDLs within close proximity of the break. Exclude personnel to within 2 - 3 m from fully open or broken waveguides. Check waveguide portion of this system periodically for breaks or cracks, and replace any suspect waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 9-1430-2533-12-1; TM 9-1430-2533-24P

AN/MPS-19 Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/MPS-19 is a radar system that utilizes a 2.44 m diameter parabolic reflector antenna.	Frequency: 2.7 – 3.1 GHz Power: 1 mW PEP 750-800 W average 1400 W max

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB).
Hazard distance from antenna	Exclude personnel to a distance of 45 m from the antenna. In the high power mode, exclude personnel to a distance of 59 m from the antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/MPS-25 Tracking Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/MPS-25 is a mobile radar system used for tracking targets and evaluating their performance on test ranges. It utilizes a 3.66 m diameter parabolic reflector antenna.	Frequency: 5.45– 5.83 GHz Power: 1 mW PEP 750-800 W average 1000 W max

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB).
Hazard distance from antenna	Exclude personnel to a distance of 157 m from the antenna. With the antenna raised and positioned at elevation angles above 0 mils, no hazard exists for personnel on level terrain.
Open/cracked waveguides …….	All open waveguides and loose or open flanges produce very hazardous PDLs within close proximity of the break. Exclude personnel to within 1 - 2 m from a fully open or broken waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/MPS-26 Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/MPS-26 is a modified AN/SCR-584 radar system .	Frequency: 5.4– 5.9 GHz Power: 250 kW PEP 425 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	When nonscanning in the normal mode, this system is not able to produce potentially hazardous PDLs in excess of the safety standard. When nonscanning and operating at average power, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB). While scanning, this system is not potentially hazardous.
Hazard distance from antenna	When nonscanning and operating at average power, exclude personnel to a distance of 75 m from the antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/MPS-36 Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/MPS-36 is a mobile radar for tracking aircraft and artillery projectiles. It utilizes a 3.66 m diameter parabolic antenna.	Frequency: 5.4 – 5.9 GHz Power: 1 MW Peak 640 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	When operating at maximum power, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection program (IAW guidelines provided in this TB). .
Hazard distance from antenna	When operating at maximum power, exclude personnel to a distance of 90 m from the antenna. This system normally operates at positive elevation levels which ensures personnel at ground level are not subject to PDLs in excess of the safety standard.
Open/cracked waveguides …….	All open waveguides and loose or open flanges produce very hazardous PDLs within close proximity of the break. Exclude personnel to within 1 - 2 m from a fully open or broken waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

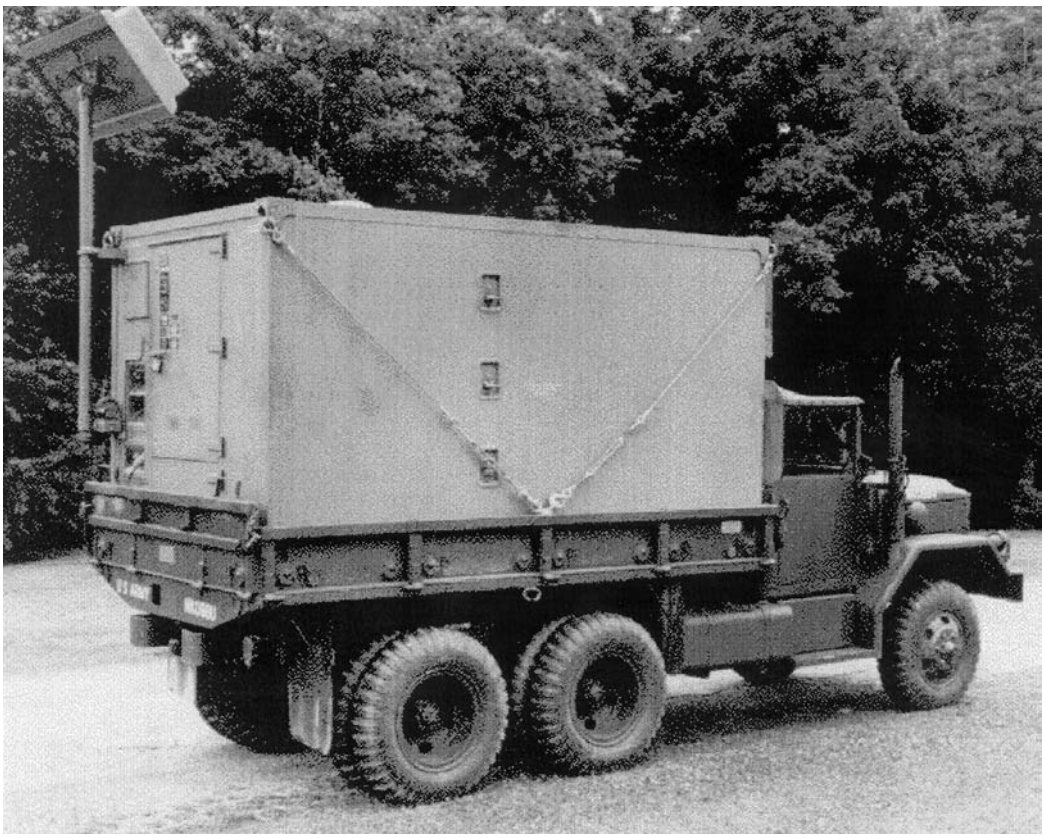
.

AN/MSC-64 (V) 1, 2, 3 Satellite Communications Terminal

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/MSC-64 is a UHF satellite communications terminal. It utilizes either a low-gain omni-directional loop antenna or a high-gain eight-element array antenna.	Frequency: 225– 400 MHz Power: 10 – 100 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	Using either antenna, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB).
Hazard distance from antenna	When using the loop antenna, exclude personnel to a distance of 1 m from the antenna. When using the array antenna, exclude personnel to a distance of 2.5 m from the antenna. Do not transmit with personnel on the shelter roof.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify use of dummy loads during maintenance operations.

REFERENCES: TM 11-5895-1104-10



AN/MSQ-103C Special Purpose Receiving System

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/MSQ-103 is a receiving set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not a free-space radiator and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 32-5811-030-10-1

AN/MSQ-114 Satellite Communications Control

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/MSQ-114 is a mobile satellite communications terminal. Its primary function is to continuously monitor the transmission of the communication satellite to ensure that all ground mobile forces network terminals are operating within the proper limits of frequency, power output and channel capacity. It utilizes a 6.1 m parabolic reflector antenna.	Frequency: 7.9 – 8.4 GHz Power: 400 – 500 W max 1 kW average (AM-7069)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard in the main beam.
Open/cracked waveguides …….	The area between the feed and the reflector and any open waveguide produce potentially hazardous PDLs. Periodically inspect waveguides for cracks or leaks and replace suspect waveguides. Where possible, replace flexible waveguides with rigid or semirigid guides in fixed station configuration.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify use of dummy loads during maintenance operations.

REFERENCES: TM 11-5895-1136-10

AN/MSQ-126 Satellite Communications Terminal: Crash-Outpackages (COPS)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/MSQ-126 is a satellite communications terminal that utilizes a 6.1 m parabolic reflector antenna.	Frequency: C, X, Ku bands Power: C band: 85 W max av X band: 110 W max av Ku band: 100 W max av

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard in the main beam.
Open/cracked waveguides …….	The area between the feed and the reflector and any open waveguide produce potentially hazardous PDLs. Periodically inspect waveguides for cracks or leaks and replace suspect waveguides.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/PAQ-3 Modular Universal Laser Equipment (MULE)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/PAQ-3 is a laser rangefinder/designator set that performs target location and laser designation for engagement by laser-guided munitions.	Type: Nd-YAG Wavelength: 1064 nm

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification ……..	This system contains a Class 4 laser and requires an established laser safety program to ensure its safe use. Develop a written Local Standing Operating Procedure (SOP) IAW guidance provided in this TB.
Hazard distance ……..……	In the designator mode, do not permit personnel to view the laser from within the beam at distances less than 12 km for single pulse unaided viewing, 20 km for multi-pulse unaided viewing or up to 78 km when viewing the laser through magnifying optical instruments. In the rangefinder mode, do not permit personnel to view the laser from within the beam at distances less than 12 km for unaided viewing (single pulse and multipulse) or up to 60 km when viewing the laser through magnifying optical instruments. Utilizing the 12 dB attenuation filter with the system, the hazard distances decreases to 3.3 km (single pulse and multipulse unaided viewing) and up to 31 km for magnifying optics in the rangefinder mode.
Ocular injury ……..……	This laser is hazardous to the naked eye for a distance of 20 km in designator mode and 12 km in rangefinder mode. Use protective eyewear that filter at 1064 nm with a minimum OD of 3.9 for unaided viewing and 5.6 nm for aided viewing.
Outdoor range operations …..	Eliminate all specular surfaces (man made and natural) capable of producing potentially hazardous reflections. Control unauthorized personnel access to controlled area. Use only on an approved laser range or training area. Appoint a qualified Laser Range Safety Officer.
Other……..……..……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: DMWR 9-1260-478-1&2; TB 9-380-101-9

AN/PAQ-4A, B, C Infrared Aiming Light

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/PAQ-4 is a hand-held infrared aiming light.	Type: LED Wavelength: 830 nm Power: 130 *u*W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification ……..…..	This system contains a Class 1 laser that emits optical energy which does not exceed the exposure standard.
Other……..…….…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5855-301-12&P

AN/PEQ-2 Infrared Target Illuminator/Aiming Light (ITPAIL)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/PEQ-2 is a target illuminator/aiming light that can be gun-mounted or hand-held.	Wavelength: 820 - 860 nm

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification ……..…..	This system contains a Class 3b laser and requires an established laser safety program to ensure its safe use. Develop a written Local Standing Operating Procedure (SOP) IAW provided guidance in this TB.
Hazard distance ……..……	In the dual low mode, do not permit personnel to view the laser from within the beam at distances less than 50 m for unaided viewing or 410 m when viewing the laser through magnifying optical instruments. In the dual high mode, do not permit personnel to view the laser from within the beam at distances less than 91 m for unaided viewing or 640 m when viewing the laser through magnifying optical instruments. In the aim high mode, do not permit personnel to view the laser from within the beam at distances less than 70 m for unaided viewing or 500 m when viewing the laser through magnifying optical instruments. In the illuminator high mode, do not permit personnel to view the laser from within the beam at distances less than 50 m for unaided viewing or 410 m when viewing the laser through magnifying optical instruments.
Ocular injury ……..…..…	Avoid direct exposure to beam. Use protective eyewear that filter at 800-860 nm with minimum OD of 1.8.
Outdoor range operations …..	Eliminate all specular surfaces (man made and natural) capable of producing potentially hazardous reflections. Control unauthorized personnel access to controlled area. Use a 10 mrad buffer zone when training with the laser. Use only on an approved laser range or training area. Appoint a qualified Laser Range Safety Officer.
Other……..…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: USA CHPPM Study: 25-42-4745-96

AN/PEQ-2A Target Pointer Illuminator/Aiming Light (TPIAL)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/PEQ-2A is a target illuminator/aiming light.	Wavelength: 820 - 860 nm

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification …..……..	This system contains a Class 3b laser and requires an established laser safety program to ensure its safe use. Develop a written Local Standing Operating Procedure (SOP) IAW guidance provided in this TB.
Hazard distance ……..……	Do not permit personnel to view the laser from within the beam at distances less than 25 m for unaided viewing or 160 m when viewing the laser through magnifying optical instruments.
Ocular injury ……..…..…	Avoid direct exposure to beam. Use protective eyewear that filter at 800-860 nm with minimum OD of 0.5.
Outdoor range operations …..	Eliminate all specular surfaces (man made and natural) capable of producing potentially hazardous reflections. Control unauthorized personnel access to controlled area. Use only on an approved laser range or training area. Appoint a qualified Laser Range Safety Officer. The "Safety Block" should be installed for all exercises, unless use of the tactical/high power mode is required.
Other……...……..……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/PPM-4 Test Set Beacon

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/PPM-4 is a low-powered test set which provides simulated interrogation signals to the AN/PPN-20 Beacon Transponder and evaluates response to those signals. It utilizes horn type antennas.	Frequency: X band: 9.3 GHz Power: 2 mW Ku band: 16.2 GHz PEP 1 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/PPN-19 (V) 1, 2 Multifunction Radar Transponder Beam (MRTB) Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/PPN-19 is a radar transponder beam set. It utilizes either a omni-directional antenna or directional antenna, or can radiate out an open waveguide.	Frequency: 8 - 20 GHz Power: 1 W average PEP 400 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB).
Hazard distance from antenna	Exclude personnel to a distance of 12 cm from either antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify use of dummy loads during maintenance operations.

REFERENCES: TM 11-5840-367-12

AN/PPN-20 Test Set Mini Multiband Beacon

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/PPN-20 is a portable beacon transponder which transmits a response signal when interrogated by an incoming signal. It utilizes a 10.2 x 10.2 cm flat plate, microstrip type antenna.	Frequency: X band: 9.3 GHz Ku band: 16.2 GHz Power: 29 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/PPQ-2 Radar

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/PPQ-2 is a compact, light weight radar that provides early warning/alertingand directional orientation to aid air defense weapon system gunners in acquiring and engaging hostile aircraft. It utilizes a rotating, planar, phased-array type antenna.	Frequency: 1.2 – 1.4 GHz Power: 50 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs slightly in excess of the partial body safety standard.
Hazard distance from antenna	Ensure against eye exposures by excluding personnel within 20 cm from the face of the antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 9-1430-775-10

AN/PPS-4A, B Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/PPS-4 is a light weight, portable, ground surveillance radar that utilizes a 36.8 cm parabolic, reflecting antenna.	Frequency: 8.9 – 9.4 GHz Power: 0.3 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Open/cracked waveguides …….	Periodically inspect waveguides for cracks or leaks and replace suspect waveguides
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify use of dummy loads during maintenance operations. Do not operate this system if disassembled.

REFERENCES: TM 11-5840-211-12; TM 750-5-4

AN/PPS-5A, B Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/PPS-5 is a light weight, portable, ground surveillance radar for detecting moving targets at short range. It utilizes a parabolic contour, elliptical outline antenna.	Frequency: 16.0 – 16.5 GHz Power: 1.0 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Open/cracked waveguides …….	The area between the feed and the reflector and any open waveguide produce potentially hazardous PDLs to a range of 3 cm. Periodically inspect waveguides for cracks or leaks and replace suspect waveguides.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5840-298-12

AN/PPS-15A, B Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/PPS-15 is a portable, tripod-mounted, ground surveillance radar set. It utilizes a vertically polarized slot array antenna.	Frequency: 10.3 GHz Power: 94 mW average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5840-347-13; TM 11-5820-292-10

AN/PRC-8A Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/PRC-8 is a two-way VHF backpack radio. It utilizes a whip or steel tape antenna.	Frequency: 20 – 28 MHz Power: 1.2 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-292-10

AN/PRC-9A Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/PRC-9 is a two-way VHF backpack radio. It utilizes a whip or steel tape antenna.	Frequency: 27 – 39 MHz Power: 1.0 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-292-10

AN/PRC-68A Small Unit Transceiver

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/PRC-68 is a small unit transceiver.	Frequency: 30 – 79.95 MHz Power: 1.0 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-882-10-1

AN/PRC-74A, B, C Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/PRC-74 is a short range, MANPACK, portable radio set.	Frequency: 2 – 12 MHz (A) Power: 15 W PEP 2 – 18 MHz (B, C)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-590-12; TM 11-5820-590-12-1

AN/PRC-77 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/PRC-77 is a short range, man-pack, portable radio set. It utilizes a 1 m semi-rigid or 3 m whip antenna.	Frequency: 30 – 52.95 MHz 53 – 75.95 MHz Power: 4 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-667-12

AN/PRC-90 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/PRC-90 is a UHF–AM radio which is an emergency locator transceiver. It utilizes a dipole antenna.	Frequency: 243 MHz; 283 MHz Power: 0.5 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

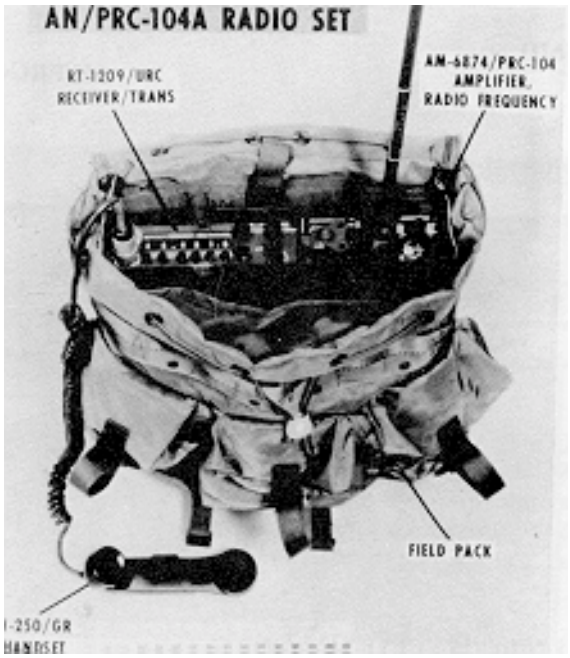
REFERENCES: TM 11-5820-800-13&P

AN/PRC-104A, B High Frequency Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/PRC-104 is a low power, short range, portable radio set to provide single sideband command and control communications for tactical units. It has either a MANPACK or vehicular configuration that utilizes a whip antenna.	Frequency: 2 - 30 MHz Power: 20 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation control.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-919-12; TM 11-5820-1046-12



AN/PRC-119 MANPACK Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/PRC-119 is a MANPACK SINCGARS radio. This system replaces the AN/PRC-77 and AN/PRC-25 Radio Sets. It utilizes a flexible metal-tape antenna that extends the transceiver 1 m vertically behind the soldier.	Frequency: 30 - 88 MHz Power: 4 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-890-10-1

AN/PRC-126 Small Unit Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/PRC-126 is a small hand-held radio. The unit is sheathed in a belt pouch and utilizes a compact helical antenna.	Frequency: 30 - 88 MHz Power: 1 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-1025-10

AN/PRC-137F Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/PRC-137 is a voice or data communications radio. The radio set utilizes a long wire whip antenna.	Frequency: 20 - 60 MHz Power: 2 W average 10 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/PRM-32A Radio Test Set *(part of AN/PRC-90)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/PRM-32 is a radio test set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not a free space radiator and is not subject to radiation control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-6625-2632-14-1

AN/PRM-34 Portable Radio Test Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/PRM-34 is a radio test set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not a free space radiator and is not subject to radiation control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-6625-3015-14

AN/PSC-3 TACSAT Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*	
The AN/PSC-3 is a portable UHF satellite communications set. This system utilizes a crossed-dipole antenna (SATCOM mode) or a whip antenna (LOS mode).	Frequency: 225 – 400 MHz	Power: 44 W average (SATCOM) 2 W (LOS)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation control.
RF shock/burn ……	Observe standard RF shock precautions. In the SATCOM mode, do not touch the antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify use of dummy loads during maintenance operations indoors.

REFERENCES: TM 11-5895-1180-10

AN/PSC-5 Enhanced MANPACK UHF Terminal (EMUT)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The EMUT is a battery-powered, manpack line-of-sight, half-duplex satellite (SATCOM) radio which operates in the UHF frequency band and incorporates demand assignment multiple access (DAMA) and embedded communications security (COMSEC) capabilities. In this configuration, the EMUT utilizes two antennas: one tripod-mounted crossed dipole (SATCOM mode) or flexible monopole in a manpack configuration or placed on the ground (LOS mode).	Frequency: 225 – 400 MHz (LOS mode) 225 - 240 MHz (SATCOM mode) Power: 0.25 - 18 W adjustable 22 W Peak

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the LOS mode, this system is not able to produce potentially hazardous PDLs in excess of the safety standard. In the SATCOM mode, this system is able to produce potentially hazardous PDLs in excess of the partial-body safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB).
Hazard distance from antenna	When operating at maximum power, exclude personnel to a distance of 25 cm from the front of the SATCOM antenna.
RF shock/burn ……	Observe standard RF shock precautions. In the SATCOM mode, do not touch the antenna or crossed-dipole elements when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

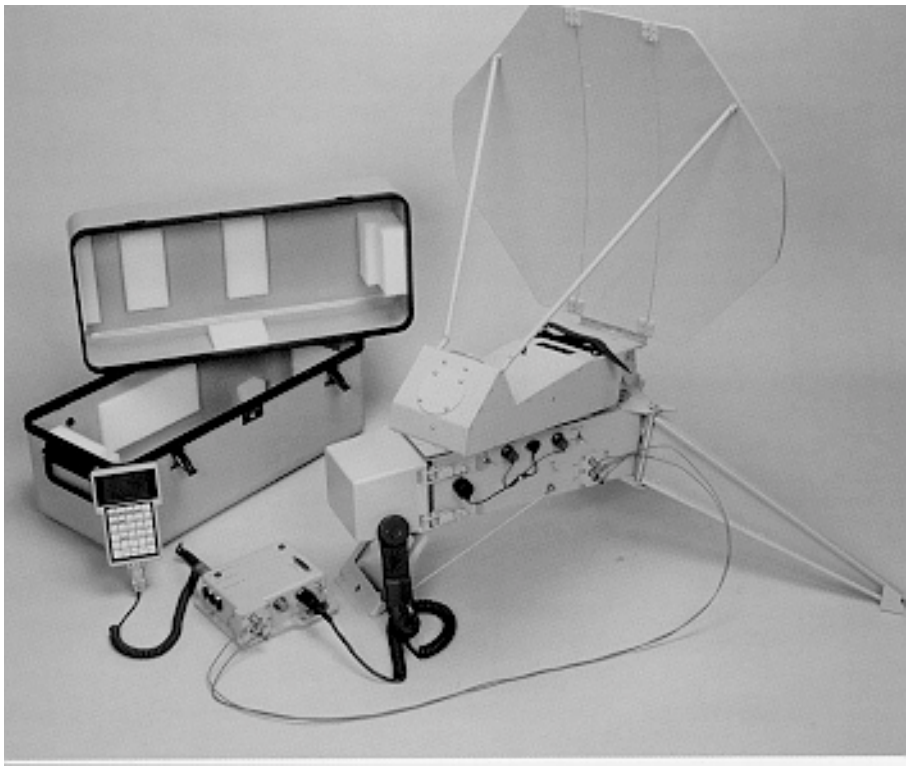
REFERENCES: USA CHPPM Study: 69-37-4560-96

AN/PSC-11 Single Channel Anti-Jam Manportable (SCAMP) Terminal

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The SCAMP terminal is a Milstar compatible satellite ground terminal which provides digital data communications services. The receiver/transmitter (RT-1770/PSC-11) is a primary component of the terminal; containing the upconverter, amplifier, and antenna subsystrems. The antenna is a parabolic reflector with off-set feed.	Frequency: 44.5 GHz Power: 2 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in the main beam in excess of the safety standard.
Open/cracked waveguides …….	The area between the feed and the reflector and any open waveguide produce potentially hazardous PDLs to within 4 inches. Periodically inspect waveguides for cracks or leaks and replace suspect waveguides.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-1157-10*;* USA CHPPM Study: 24-ME-6962-97



AN/PVS-6 Mini-Eyesafe LASER Infrared Observation Set (MELIOS)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/PVS-6 is a restricted eye-safe laser observation set primarily used by infantry forward observers to accurately measure distance.	Wavelength: 1540 nm Type: Nd:YAG

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification ……..…..	This system contains a Class 3a laser and requires an established laser safety program to ensure its safe use.
Hazard distance ……..…..…	Do not permit the MELIOS to be aimed at unprotected personnel using magnifying optics within 18 m.
Ocular injury ……..……	No eye protection is required for unaided viewing. The system is considered safe and suitable for use during force-on-force exercises.
Other……..…….…..……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 111-5855-296-10; TM 11-5860-202-10

AN/SPN-11X,Y, Z Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*	
The AN/SPN-11 is a shipboard navigation system that utilizes a horn-fed parabolic section reflector antenna.	Frequency: 9.32 – 9.43 GHz	Power: 12 W average 30 kW PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the scanning mode, this system is not able to produce potentially hazardous PDLs in excess of the safety standard. Do not operate this system in the radiate mode while the vessel is in port.
Hazard distance from antenna	In the nonscanning mode, the area between the horn and reflector is extremely hazardous. Exclude personnel from this area.
Open/cracked waveguides …….	Periodically inspect waveguides for cracks or leaks and replace suspect waveguides.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-1535

AN/SPN-41 Aircraft Approach Guidance

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*	
The AN/SPN-41 transmits glideslope and centerline deviation information to approaching aircraft. This system utilizes two antennas; an azimuth pillbox-parabolic reflector and elevation pillbox parabolic reflector antenna.	Frequency: 15.412 – 15.688 GHz	Power: 7.5 W average 2 kW PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the scanning mode, this system is not able to produce potentially hazardous PDLs in excess of the safety standard. In the nonscanning mode, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB).
Hazard distance from antenna	In the nonscanning mode, exclude personnel to a distance of 2.8 m from the azimuth antenna and a distance of 1.7 m from the elevation antenna.
Open/cracked waveguides …….	Periodically inspect waveguides for cracks or leaks and replace suspect waveguides.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/SPN-43 Air Traffic Control Radar

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/SPN-43 is a air traffic control radar used on medium and large aircraft carriers. This system utilizes a reflector CSC^2 antenna.	Frequency: 3.59 – 3.7 GHz Power: 860 W average 850 kW PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of 5x the safety standard and requires a formal RFR safety program to ensure its safe use. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Direct the antenna beam away from occupied areas to a distance of 33 m. While the antenna is scanning, maintain a distance of 15 m from the main beam of the antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/SPS-48A Air Surveillance Primary 3-D Radar

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/SPS-48 is a air surveillance 3-D radar providing, range, azimuth and elevation data for aircraft control and missile system designation aboard surface ships. This system utilizes a phased-planar, travelling-wave antenna.	Frequency: 2.9 – 3.1 GHz Power: 726 W average 2.2 mW PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the nonscanning mode, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) . In the scanning mode, this system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Hazard distance from antenna	In the nonscanning mode, maintain a distance of 64 m from the main beam of the antenna.
Open/cracked waveguides …….	Periodically inspect waveguides for cracks or leaks and replace suspect waveguides
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/SPS-59 (V) 1 Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/SPS-59 is a marine surveillance radar used for detecting surface obstacles or other vessels and utilizes a slotted linear waveguide array with a 1.22 m antenna. This system is normally installed on the highest elevated structure on the vessel and operates in a continuous scan mode.	Frequency: 9.375 GHz Power: 6.25 W average 10 kW PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the normal operating mode, this system is not able to produce potentially hazardous PDLs in excess of the safety standard. In nonstandard operational modes, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	In the nonscanning mode, maintain a minimum distance of 1 m from the main beam of the antenna.
Open/cracked waveguides …….	Periodically inspect waveguides for cracks or leaks and replace suspect waveguides. Exclude personnel from within 5 cm of any broken or open waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify the use of dummy loads during maintenance operations.

AN/SPS-64 (V) 11, XX Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/SPS-64 is a surface and navigational ship radar system and utilizes several antenna configurations; V (11) 2 m rotating boom type, line array, and V (XX), 4 m rotating boom type, line array. This system is normally installed on the highest elevated structure on the vessel and operates in a continuous scan mode.	Frequency: 5 - 11 GHz Power: 14 W PEP 20 kW PEP V(11) 60 kW PEP V(XX)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	The V and X X versions of this system are not able to produce potentially hazardous PDLs in excess of the safety standard and are not subject to RFR control. The V(11) version is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in TB)
Hazard distance from antenna ..	For the V (11) version, exclude personnel to a distance of 30 cm from the antenna. For both versions of the system, exclude personnel from the antenna radome.
Other…….…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify the use of dummy loads during maintenance operations.

REFERENCES: TM 11-5840-360-14

AN/SRD-18 Direction Finder Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/SRD-18 is a direction finder set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not a free space radiator and is not subject to radiation protection control.
Other…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5825-261-12

AN/TGR-1 Teletype Receiving Central

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TGR-1 is a teletype receiving set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not a free space radiator and is not subject to radiation protection control.
Other…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 32-5815-206-14&P

AN/TLQ-17A (V)1, 2, 3 Countermeasures Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TLQ-17 is a countermeasures set designed to identify, locate, and disrupt enemy command and control communications. This system is adapted for a truck-mounted shelter. The HF Band uses a 15m, top-loaded whip antenna; the VHF Band uses a log-periodic antenna mounted on a mast or whip antenna.	Frequency: 1.5 – 20 MHz 20 – 80 MHz Power: 550 W max

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard in the HF Band. This system is able to produce potentially hazardous PDLs in excess of the safety standard in the VHF Band. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 5 m from the front of the LP antenna (VHF) and 2 m from the VHF whip antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify use of dummy loads during maintenance operations.

REFERENCES: TM 32-5865-005-10

AN/TMQ-40 Integrated Meteorological System (IMETS)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The IMETS is a tactical automated weather data system used for receiving, processing, and disseminating information to provide timely weather forecasts. The AN/TMQ-40 RF sources are two Harris Model 5000 HF transceivers and one Single Channel Ground and Air Radio System (SINCGARS). It utilizes two 9.75 m whip antennas mounted atop the Standard Integrated Command Post Shelter.	Frequency: 30 - 88 MHz Power: 50 W (SINCGARS) 1.6 – 30 MHz 125 W (Harris 5000)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	The SINCGARS is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control. The Harris series transceiver is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 1.2 m from the whip antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/TPM-25A Radar Test Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TPM-25 is a radar test set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels PDL)....	The system uses a very low output power and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-6625-2610-12

AN/TPN-18A Radar Set *(utilized in AN/TSQ-71, AN/TSQ-72)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TPN-18 is a transportable radar system used at airstrips and heliports for air traffic control and ground control approach of aircraft. This system utilizes an azimuth and elevation antenna configuration.	Frequency: 9 – 9.6 GHz Power: 192 W average 200 kW PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)...	In the scanning mode, this system is not able to produce potentially hazardous PDLs in excess of the safety standard. In the non scanning mode, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna.	In the nonscanning mode, exclude personnel to a distance of 25 m from the azimuth antenna and 11 m from the elevation antenna. Do not operate main beam in potentially occupied areas.
Open/cracked waveguides..….	All open waveguides and feed horn outputs produce potentially hazardous PDLs within close proximity. Exclude personnel from these areas and check waveguide portion of this system periodically for breaks or cracks, and replace any suspect waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5840-281-12; TM 11-5840-281-12-1

AN/TPQ-36 (V)1, (V)3, (V)5 Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TPQ-36 is a mortar locating radar of the Firefinder System and utilizes a planar phased array antenna.	Frequency: CLASSIFIED Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)....	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna...	In the scanning mode, exclude personnel to a distance of 1 m from the antenna. In the nonscanning mode, exclude personnel to a distance of 107 m from the antenna. Maintain visual surveillance of the area whenever the system is operated in a fixed-beam mode.
Open/cracked waveguides…..…	All open waveguides and feed horn outputs produce potentially hazardous PDLs. Periodically inspect waveguides for cracks or leaks and replace suspect waveguides.
Other……..…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify use of dummy loads in maintenance or test modes that require the system to transmit without free-space radiating.

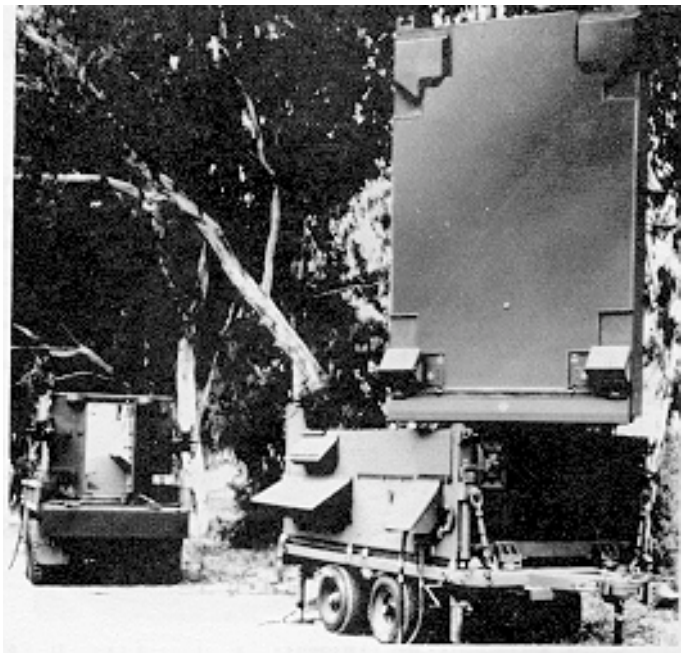
REFERENCES: TM 11-5840-354-10

AN/TPQ-37 (V) 1, 2, 3, 4, 5, 6 Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TPQ-37 is an artillery locating radar of the Firefinder System and utilizes a planar phased array antenna.	Frequency: CLASSIFIED Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)....	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna...	In the scanning mode, exclude personnel to a distance of 5 m from the antenna. In the nonscanning mode, exclude personnel to a distance of 141 m from the antenna. Maintain visual surveillance of the area whenever the system is operated in a fixed-beam mode.
Open/cracked waveguides…..…	All open waveguides and feed horn outputs produce potentially hazardous PDLs. Periodically inspect waveguides for cracks or leaks and replace suspect waveguides.
Other……..…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify use of dummy loads in maintenance or test modes that require the system to transmit without free-space radiating.

REFERENCES: TM 11-5840-355-10



AN/TPQ-T4 Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TPQ-T4 is a tactical radar threat generator (TRTG) which simulates signals from anti-aircraft gun radars and surface-to-air missile radars. This system utilizes a parabolic antenna and is mounted to the roof of the system shelter.	Frequency: 14.9 GHz Power: 29.5 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)....	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna...	Exclude personnel to a distance of 5 m in the direction of the main beam.
Other……..…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify use of dummy loads in maintenance operations.

REFERENCES: TM 11-6940-216-14-1

AN/TPS-1D, 1G, 1GLP Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TPS-1 is a high-power transportable air-search radar set used for detecting aircraft and determining their azimuth and range. This system utilizes a 4.57 m parabolic antenna.	Frequency: 1220 - 1350 MHz Power: 492 W average 615 kW PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)....	In the scanning mode, this system is not able to produce potentially hazardous PDLs in excess of the safety standard. In the non scanning mode, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna...	Exclude personnel to a distance of 5 m in the direction of the main beam. Since the antenna is above ground level, personnel on the ground are not exposed to potentially hazardous PDLs.
Other……..…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5840-222-15

AN/TPS-25A, LP Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TPS-25 is a battlefield surveillance radar which may be operated in either of two modes; search or track. This system utilizes a 1 x 0.5 m parabolic reflector antenna.	Frequency: 9.375 GHz Power: 43 W average 45 kW PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)....	This system is able to produce potentially hazardous PDLs in excess of 5x the safety standard and requires a formal RFR program to ensure its safe use. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) . Operate this system at reduced power when practical.
Hazard distance from antenna...	Exclude personnel to a distance of 16 m in the direction of the main beam. Locate the antenna outside the shop with the main beam directed away from occupied areas.
Open/cracked waveguides..…	All open waveguides and feed horn outputs produce potentially hazardous PDLs within close proximity. Exclude personnel from these areas and check waveguide portion of this system periodically for breaks or cracks, and replace any suspect waveguide.
Other……..…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify the use of dummy loads during maintenance operations.

REFERENCES: TM 11-5840-217-10

AN/TPS-33A Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TPS-33 is a ground surveillance radar which utilizes a reflector antenna.	Frequency: 9.375 GHz Power: 4.5 W average 7 kW PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)....	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna...	Exclude personnel to a distance of 1.5 m in the direction of the main beam.
Open/cracked waveguides..…	All open waveguides and feed horn outputs produce potentially hazardous PDLs within close proximity. Exclude personnel from these areas and check waveguide portion of this system periodically for breaks or cracks, and replace any suspect waveguide.
Other……..…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5840-229-15

AN/TPS-43 Tactical Air Control Radar

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TPS-43 is a tactical air control radar which utilizes a parabolic sector (2.3 high x 6.2 m wide) antenna.	Frequency: 2.4 – 2.9 GHz Power: 4.9 kW average 3 mW PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)....	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna...	In the nonscanning mode, exclude personnel to a distance of 125 m in the direction of the main beam. In the scanning mode, exclude personnel to a distance of 56 m in the direction of the main beam. The height of the antenna normally precludes ground personnel from being exposed to RFR.
Open/cracked waveguides..…	All open waveguides and feed horn outputs produce potentially hazardous PDLs within close proximity. Exclude personnel from these areas and check waveguide portion of this system periodically for breaks or cracks, and replace any suspect waveguide.
Other……..…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/TPS-58A, B Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TPS-58 is a radar set used for general surveillance and artillery burst detection. This set utilizes a truncated parabolic reflector (65 x 52 cm) antenna.	Frequency: 9.5 – 9.6 GHz Power: 5.5 – 7.0 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)....	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna...	Exclude personnel to a distance of 3.5 m in the direction of the main beam.
Open/cracked waveguides..…	All open waveguides and feed horn outputs produce potentially hazardous PDLs. Exclude personnel from these areas and check waveguide portion of this system periodically for breaks or cracks, and replace any suspect waveguide.
Other……..…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/TPS-59 Phased Array Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TPS-59 is a phased array radar set used primarily in a surveillance mode. This set utilizes a rectangular phased array antenna.	Frequency: 1.2 – 1.4 GHz Power: 60 kW PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)....	This system is able to produce potentially hazardous PDLs in excess of 5 x the safety standard and requires a formal RFR protection program to ensure its safe use. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna...	In the scanning mode, exclude personnel to a distance of 130 m in the direction of the main beam. In the non scanning mode, exclude personnel to a distance of 293 m in the direction of the main beam. Locate the radar on elevated terrain where possible.
Open/cracked waveguides..…	All open waveguides and feed horn outputs produce potentially hazardous PDLs. Exclude personnel from these areas and check waveguide portion of this system periodically for breaks or cracks, and replace any suspect waveguide.
Other…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Maintenance personnel should maintain a distance of 0.5 m in front of the active antenna elements during the single-row testing.

AN/TPW-2A Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TPW-2 is a radar set that utilizes a 81.3 cm diameter parabolic reflector antenna.	Frequency: 9.285 GHz Power: 1.3 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)....	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to RFR control.
Other…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/TPW-3 Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TPW-3 is a radar set that utilizes a 1.83 m diameter parabolic reflector antenna.	Frequency: 9.285 GHz Power: 1.3 W average 5 kW PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)....	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to RFR control.
Other…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/TPX-41 Interrogator Set *(part of AN/FSQ-84)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TPX-41 is a high resolution aircraft identification system equipped with identification friend or foe (IFF). This set is operated with the AN/FPN-40 Radar Set.	Frequency: 990 – 1040 MHz Power: 1.3 W average 1.5 kW PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)....	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to RFR control..
Other…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5895-479-12

AN/TPX-44 Interrogator Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TPX-44 is a high resolution aircraft identification system equipped with identification friend or foe (IFF). This set is operated with the AN/TPN-18 Radar Set.	Frequency: 990 – 1040 MHz Power: 1.5 kW PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)....	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to RFR control.
Other…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5895-468-12

AN/TPX-46 (V), A(V) Interrogator Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TPX-46 is a high resolution aircraft identification system equipped with identification friend or foe (IFF). It utilizes either a 2.1 m or 4.2 m diameter dipole antenna.	Frequency: 1030 MHz Power: 1.0 kW PEP 10 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)....	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to RFR control.
Other…….…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5895-532-12; TM 11-5895-824-12; TM 11-5895-824-12-HR

AN/TPX-50A Interrogator Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TPX-50 is a high resolution aircraft identification system equipped with identification friend or foe (IFF).	Frequency: 1030 MHz Power: 360 W PEP <1.0 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)....	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to RFR control.
Other…….…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5895-687-12

AN/TRC-24 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRC-24 is a transportable VHF/UHF-FM radio set which operates in six frequency bands. Various antennas are used as required for the different frequency bands.	Frequency: 50 - 1875 MHz Power: 10 – 20 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 6.3 m from the antenna. The height of the antenna normally precludes the potential for personnel exposure to RFR.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify use of dummy loads for maintenance operations

REFERENCES: TM 11-5820-287-12

AN/TRC-29 LP Radio Set *(used in AN/TRC-38, AN/TRC-39, AN/TRC-40, AN/TRC-41)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRC-29 is a transportable, tactical microwave AM-FM radio set. The set utilizes a 2.44 m diameter parabolic dish antenna.	Frequency: 1.7 – 2.4 GHz Power: 10 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to RFR control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-238-20P

AN/TRC-36 Radio Relay Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRC-36 is a transportable VHF/UHF-FM radio set which operates in six frequency bands. Various antennas are required for the different frequency bands.	Frequency: 50 - 1875 MHz Power: 10 – 120 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 6.3 m from the antenna. The height of the antenna normally precludes the potential for personnel exposure to RFR.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify use of dummy loads for maintenance operations.

REFERENCES: TM 11-5820-287-12

AN/TRC-68A Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRC-68 is a fixed station VHF/UHF-AM radio set that utilizes a discone antenna with two radiator assemblages.	Frequency: 225 – 400 MHz Power: 16 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 50 cm from the antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-222-10

AN/TRC-138C Radio Repeater Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRC-138 is a tactical microwave line-of-sight (LOS) FM radio, consisting of three AN/GRC-144 Radio Sets, mounted in a 21/2 ton truck. The set utilizes a 1.4 m diameter parabolic antenna.	Frequency: 4.4 – 5.0 GHz Power: 0.25 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Open/cracked waveguides…….	All open waveguides and the feed horn aperture produce potentially hazardous PDLs within 2.5 cm. Exclude personnel from these areas and check waveguide portion of this system periodically for breaks or cracks, and replace any suspect waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-773-15; TM 11-5820-926-10-HR

AN/TRC-143 Radio Terminal Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRC-143 is a radio terminal set which utilizes the AN/GRC-50 Radio Set. The set utilizes a single horn antenna.	Frequency: 601.5 – 999.5 MHz (low) Power: 8 - 20 W (low) 1350.5 – 1849.5 MHz (high) 15 - 30 W (high)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Operating in the low band, exclude personnel to a distance of 2 m from the antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5895-453-24 P

AN/TRC-145 (V)1, (V)2, (V)3, {A, B} Radio Terminal Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRC-145 is a compact, line-of-sight radio terminal set operating over four frequency ranges which utilizes two AN/GRC-103 Radio Sets. The set utilizes a dipole and corner reflector antenna.	Frequency: 220 – 405 MHz 395 – 705 MHz 695 – 1000 MHz 1350 – 1850 MHz Power: 30 W PEP 25 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5895-453-24 P; TM 11-5895-453-14-2

AN/TRC-170 (V) 1, 2, 3 Radio Terminal Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRC-170 is a transportable radio terminal set used for troposcatter communications. This set utilizes two parabolic reflector (2.9 m or 1.8 m diameter) antennas.	Frequency: 4.4 – 5.0 GHz Power: 2.0 kW PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of 5x the safety standard and requires a formal RFR program to ensure its safe use. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	When using the 2.9 m antenna, exclude personnel to a distance of 140 m from the antenna (controlled area) or 255 m for uncontrolled areas. When using the 1.8 m antenna, exclude personnel to a distance of 92 m from the antenna (controlled area) or 168 m for uncontrolled areas.
Open/cracked waveguides…….	The area between the feed and the reflector and any open waveguide produce potentially hazardous PDLs. Periodically inspect waveguides for cracks or leaks and replace suspect waveguides. Exclude personnel to within 2 m of any open waveguides.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards

REFERENCES: TM 11-5820-1139-13&P; TM 11-6115-475-14

AN/TRC-173 Radio Terminal Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRC-173 is a compact, line-of-sight radio terminal set operating over four frequency ranges which utilizes two AN/GRC-103 Radio Sets. The set utilizes a dipole and corner reflector antenna.	Frequency: 220 – 405 MHz 395 – 705 MHz 695 – 1000 MHz 1350 – 1850 MHz Power: 30 W PEP 25 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch antenna when energized
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-865-12-1; TM 11-5820-865-12-1

AN/TRC-174 Radio Repeater Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRC-174 is a compact, communications terminal set operating over four frequency ranges which utilizes the AN/GRC-103 Radio Set. The set utilizes a dipole and corner reflector antenna.	Frequency: 220 – 405 MHz 395 – 705 MHz 695 – 1000 MHz 1350 – 1850 MHz Power: 30 W PEP 25 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-931-12-1; TM 11-5820-931-12-2

AN/TRC-175 Radio Terminal Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRC-175 compact, communications terminal set which utilizes two AN/GRC-144 Radio Sets. The terminal set utilizes a 1.44 m diameter reflector antenna.	Frequency: 4.4 – 5.0 GHz Power: 2.0 kW PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Open/cracked waveguides…….	All open waveguides produce potentially hazardous PDLs within 2.5 cm. Exclude personnel from these areas and check waveguide portion of this system periodically for breaks or cracks, and replace any suspect waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-931-12-1; TM 11-5820-931-12-2

AN/TRC-179 (V)1, 2 Communications Terminal Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRC-179 is a communications terminal set that uses three transmitters. The terminal set utilizes separate spiral elements antennas supported by a 9 m mast.	Frequency: 2 – 30 MHz Power: 400 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 1.3 m from the antenna elements.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify the use of dummy loads for maintenance operations.

REFERENCES: TM 11-5895-1218-10HR; TM 11-5895-1219-10HR

AN/TRC-180 Radio Terminal Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRC-180 is a compact, communications terminal set operating over four frequency ranges which utilizes three AN/GRC-103 Radio Sets. The set utilizes a dipole and corner reflector antenna.	Frequency: 220 – 405 MHz 395 – 705 MHz 695 – 1000 MHz 1350 – 1850 MHz Power: 30 W PEP 25 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-1017-14

AN/TRC-189 Net Radio Interface (NRI) System

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRC-189 consists of one AN/VRC-46 VHF Radio Set (10 m whip antenna), two AN/VSC-7 UHF Satellite Communications Sets (tripod mounted LP antenna), and two AN/GRC-193 HF Radio Sets (15 m whip antenna). A sloping V or a dipole antenna can be used in place of either of the whip antenna to increase the effective range of communications.	Frequency: 30 – 76 MHz 225 – 400 MHz 2 – 30 MHz Power: 5 W average; PEP 35 W 35 W\2W average 100W\400W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	For the AN/GRC-193 radio set, exclude personnel to distances of 1.1 m (100 W) and 2.5 m (400 W) from the antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch any system antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Do not operate the AN/GRC-193 Radio Set in a free space radiating mode inside of buildings.

AN/TRC-190 (V) 1 Line-of-Sight (LOS) Multichannel Radio Terminal

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRC-190 line-of-sight radio link is a mobile subscriber equipment (MSE) assemblage that utilizes the AN/GRC-226 Radio Set. The MSE utilizes a whip antenna.	Frequency: 225 - 400 MHz (Band I) Power: 20 W (Band I) 610 – 960 MHz (Band II) 10W (Band II) 1350 – 1850 MHz (Band III) 5 W (Band III)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	When operating in Band I, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB). When operating in Bands II & III, this system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Hazard distance from antenna	When operating in Band I, exclude personnel to a distance of 0.4 m from the antenna. Under normal operating conditions, the location of the antenna will prevent personnel exposure to RFR.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other……..……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-1023-13-1; TM 11-5820-1023-13-2

AN/TRC-194 (V) 2 MILSTAR Ground Command Post Terminal

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The MILSTAR AN/TRC-194 is a transportable millimeter wave satellite communications terminal. The EHF portion of the system utilizes a 2.44 m diameter parabolic reflector antenna. The UHF portion of the system utilizes a transmitter and a phased array antenna of five dipoles mounted on a tower.	Frequency: 225 – 400 MHz (UHF) Power: 100 W (UHF)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	The EHF portion of the system is able to produce potentially hazardous PDLs in excess of the safety standard between the antenna feed and the reflector. The UHF portion of the system is not able to produce potentially hazardous PDLs in excess of the safety standard in the antenna main beam.
Open/cracked waveguides…..…	For the EHF portion, the area between the antenna feed and the reflector produce potentially high PDLs. All open waveguides produce potentially hazardous PDLs within 2.5 cm. Exclude personnel from these areas and check waveguide portion of this system periodically for breaks or cracks, and replace any suspect waveguide.
RF shock/burn…….	Observe standard RF shock precautions. Do not touch either antenna when energized.
Other……..……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-1105-12&P

AN/TRD-15A Direction Finder Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRD-15 is a direction finder set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not a free-space radiator and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5825-231-10

AN/TRD-23A Direction Finder Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRD-23 is a direction finder set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not a free-space radiator and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5825-231-10

AN/TRN-30 (V) 1, 2 Radio Beacon Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRN-30 is a radio beacon for aircraft direction finding sets.	Frequency: 200 – 536 kHz 1605 – 1751 kHz Power: 28 – 180 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to RFR control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5825-255-12

AN/TRN-45 Mobile Microwave Landing System (MMLS)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRN-45 is a portable, ground-based, landing system which guides aircraft to a safe landing strip. The MMLS has three radiating components that transmit elevation, azimuth, and range information to approaching aircraft. The system utilizes a phased array antenna and stacked collinear 1 m dipole antenna.	Frequency: 5 GHz (azimuth/elevation) 0.979 – 1.143 GHz (DME/P) Power: 4.83 W average; 1.3 W; PEP 10 kW 2.0 W; PEP 100 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to RFR control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/TRN-70 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRN-70 is a radio set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to RFR control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/TRQ-25A Demultiplexer Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRQ-25 is a demultiplexer set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not a free space radiator and is not subject to RFR control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 32-5815-201-14&P

AN/TRQ-32 (V)1, (V)2 Radio Receiving Set (TEAMMATE)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
TEAMMATE is a tactical ground based communications intercept, processing and direction finding system. The AN/TRQ-32 uses a standard VRC radio set with the RT-524 transmitter and an AN/ARC-164 Radio Set. This set utilizes a vertical monoplole antenna (AN/VRC series) and a vertical quad-dipole phased array antenna (AN/ARC-164).	Frequency: 30 – 80 MHz Power: 35 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to RFR control.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 32-5895-070-10; TM 32-5895-070-24&P

AN/TRQ-33 Tactical Landing System

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRQ-33 is a tactical landing system which guides aircraft to a safe landing strip. It transmits glideslope, centerline deviation, range and height information to approaching aircraft. The system utilizes several antennas; a pillbox-parabolic reflector (localizer); a pillbox-parabolic reflector (glidescope); and a flared horn antenna (DME).	Frequency: 15.412 – 15.688 GHz Power: 2.0 kW PEP 3.3 W av (localizer) 1.1 W av (glidescope) 3.3 W av (DME)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	In the nonscanning mode, exclude personnel from within 1.5 m of the localizer antenna. In the nonscanning mode, exclude personnel from within 0.5 m of the glidescope antenna. In the nonscanning mode, exclude personnel from within 0.3 m of the DME antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/TRQ-138 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRQ-138 is a radio set that operates in the UHF\FLASHNET\Ionospheric modes and utilizes several antenna types.	Frequency: 225 – 400 MHz Power: 50 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Using the UHF communications antenna, exclude personnel from within 1.1 m of the antenna. Using the FLASHNET antenna, exclude personnel from within 4.9 m of the antenna. Using the ionospheric, exclude personnel from within 1.5 m of the antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/TRR-20 Radio Receiving Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRR-20 is a radio receiving set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not a free space radiator and is not subject to RFR control..
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 32-5820-201-14&P

AN/TRR-33 Radio Monitoring Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRR-33 is a radio monitoring set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not a free space radiator and is not subject to RFR control..
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 32-5895-263-14&P

AN/TRS-2 (V)1 - 10 Platoon Early Warning System (PEWS)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRS-2 is a tactical early warning set. It consists of ten detector anti-intrusion devices, two radio receivers, and two interface wire links packaged in two carrying bags.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not a free space radiator and is not subject to RFR control..
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5895-1047-10; TM 11-5895-1047-23P

AN/TRX-1 Radio Identification Control

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TRX-1 is a radio identification control set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not a free space radiator and is not subject to RFR control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5895-218-14&P

AN/TSC-26A Communications Central

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSC-26 is a radio communications set that utilizes a long-wire antenna which is strung close to the ground over some of its length.	Frequency: 3 – 30 MHz Power: 2.5 kW

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 3.2 m from the antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch antenna when energized. Clearly identify the long-wire antenna and feed hazardous area on the ground.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify the use of dummy loads for maintenance operations.

REFERENCES: TM 11-5895-482-12

AN/TSC-61B Flight Coordination Central

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSC-61 is an air traffic control system. This system consists of one AN/ARC-102 Transceiver (13.7 m resonant length wire antenna), three AN/ARC-115A Transceivers (omnidirectional blade/whip antenna) and three AN/ARC-164 Transceivers (omnidirectional blade/whip antenna).	Frequency: 2 – 30 MHz (AN/ARC-102) 116 – 149.975 MHz (AN/ARC-115A) 220 – 400 MHz (AN/ARC-164) Power: 220 W average; 400 W PEP (AN/ARC-102) 10 W minimum (AN/ARC-115A) 25 W (AN/ARC-164)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	For the AN/ARC-102 Radio Set, exclude personnel to distances of 2.0 m from the antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch any system antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Do not operate the AN/GRC-102 Radio Set in a free space radiating mode inside of buildings.

REFERENCES: TM 11-5895-469-12

AN/TSC-76 Communications Patching Central

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSC-76 is a radio communications patching system.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not a free space radiator and is not subject to RFR control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5805-583-15

AN/TSC-85A, B Satellite Communications Terminal

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSC-85 is a transportable satellite communications (SATCOM) terminal that utilizes a 2.44 m diameter parabolic reflector antenna.	Frequency: 7.9 – 8.4 GHz Power: 600 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	When operating at maximum power, exclude personnel to a distance of 105 m from the antenna. Maintain surveillance of all RFR controlled areas.
Open/cracked waveguides…..…	At maximum power the antenna feed and all open waveguides produce potentially hazardous PDLs to within 1.4 m. Exclude personnel from these areas. Periodically inspect waveguides for cracks or leaks and replace suspect waveguides. Support flexible waveguides with a cable to reduce stress at the waveguide flanges.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify the use of dummy loads for maintenance operations.

REFERENCES: TM 11-5895-845-14; TM 11-5895-1128-10; TM 11-5895-845-13

AN/TSC-86 Satellite Communications Terminal

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSC-86 is a transportable satellite communications (SATCOM) terminal that utilizes both a 2.4 m or a 6.1 m diameter parabolic reflector antenna.	Frequency: 7.9 – 8.4 GHz Power: 1000 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of 5x the safety standard and requires a formal RFR protection program to ensure its safe use. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	At maximum power and utilizing the 2.4 m antenna, exclude personnel to a distance of 133 m from the antenna. Maintain surveillance of all RFR controlled areas. If the power output is less than 93 W, this system is not able to produce PDLs in excess of the safety standard. At maximum power and utilizing the 6.1 m antenna, exclude personnel to a distance of 338 m from the antenna. Maintain surveillance of all RFR controlled areas. If the power output is less than 585W, this system is not able to produce PDLs in excess of the safety standard.
Open/cracked waveguides…..…	At maximum power the antenna feed and all open waveguides produce potentially hazardous PDLs. Exclude personnel from these areas. Periodically inspect waveguides for cracks or leaks and replace suspect waveguides.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify the use of dummy loads for maintenance operations.

REFERENCES: TM 11-5895-846-14

AN/TSC-92 Satellite Communications System

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSC-92 is a portable SATCOM system used for telecommunications. The set utilizes a 4.5 cm diameter parabolic antenna.	Frequency: K-Band

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/TSC-93A, B Satellite Communications Terminal

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSC-93 is a transportable satellite communications (SATCOM) terminal that utilizes both a 2.4 m diameter parabolic reflector antenna.	Frequency: 7.9 – 8.4 GHz Power: 600 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of 5x the safety standard and requires a formal RFR protection program to ensure its safe use. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	At maximum power, exclude personnel to a distance of 105 m from the antenna. Maintain surveillance of all RFR controlled areas. If the power output is less than 93 W, this system is not able to produce PDLs in excess of the safety standard.
Open/cracked waveguides…….	At maximum power the antenna feed and all open waveguides produce potentially hazardous PDLs. Periodically inspect waveguides for cracks or leaks and replace suspect waveguides. Exclude personnel to a distance of 1.5 m from any open or broken waveguide. Support flexible waveguides with a cable to reduce stress at the waveguide flanges.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify the use of dummy loads for maintenance operations.

REFERENCES: TM 11-5895-1127-10; TM 11-5895-1127-13; TM 11-5895-8784

AN/TSC-94A(V)1, A(V)2 Satellite Communications Terminal

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSC-94 is a transportable satellite communications (SATCOM) terminal that utilizes a 2.44 m diameter parabolic reflector antenna.	Frequency: 7.9 – 8.4 GHz Power: 600 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of 5x the safety standard and requires a formal RFR program to ensure its safe use. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	At maximum power, exclude personnel to a distance of 110 m from the antenna. Maintain surveillance of all RFR controlled areas. If the power output is less than 93 W, this system is not able to produce PDLs in excess of the safety standard.
Open/cracked waveguides…….	At maximum power the antenna feed and all open waveguides produce potentially hazardous PDLs to within 1.4 m. Exclude personnel from these areas. Periodically inspect waveguides for cracks or leaks and replace suspect waveguides.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify the use of dummy loads for maintenance operations.

REFERENCES: TM 11-5895-1217-14; TM 11-595-1217-24P; DMWR11-5895-1131

AN/TSC-99 Communications Central

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSC-99 is a radio communications set that utilizes a long wire-fed log-periodic antenna which is vertically polarized.	Frequency: 2 – 30 MHz Power: 1.0 kW (4 ea.)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 2.0 m radius from the antenna feed.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch antenna when energized. Clearly identify the long-wire antenna and antenna feed hazardous areas.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify the use of dummy loads for maintenance operations.

REFERENCES: TM 11-5895-1160-10

AN/TSC-124 (SCOTT Terminal)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSC-124 is a satellite communications (SATCOM) terminal which accesses the communication service provided by the MILSTAR Satellite Communications System. The SCOTT consists of a modified shelter assembly, a trailer assembly, and an antenna/RF group. It utilizes a parabolic reflector antenna with an offset parabolic feedhorn.	Frequency: 43.5 – 45.5 GHz Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in the main beam in excess of the safety standard.
Open/cracked waveguides…..…	The antenna feed and all open waveguides produce potentially hazardous PDLs to within close proximity. Exclude personnel from these areas. Periodically inspect waveguides for cracks or leaks and replace suspect waveguides.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: CHPPM Study 24-42-0764-90

AN/TSC-125 Commanders Tactical Terminal (CTT-3)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSC-125 is a digital data/voice communications system that utilizes several fielded antenna types depending on the host system. The system is used for intelligence network communications.	Frequency: 225 – 400 MHz Power: 100 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	Under normal conditions, this system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to RFR control.
Hazard distance from antenna	Exclude personnel to a distance of 50 cm from the antenna to prevent any unnecessary partial-body exposure to RFR.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify the use of dummy loads for maintenance operations.

AN/TSC-152 Lightweight Multiband Satellite Terminal (LMST) Transit Case

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSC-152 is a transportable tactical satellite communications (SATCOM) terminal which can transmit and receive satellite data in three frequency bands. The system electronics are enclosed in seven separate carrying cases. Each LMST Transit Case antenna is equipped with three interchangeable feed horn assemblies which are fed by three separate waveguides. The system utilizes a continuous wave antenna (transit case) and an external field-mounted continuous wave antenna.	Frequency: 6135 MHz (C-Band) 8150 MHz (X-Band) 14.25 GHz (Ku-Band) Power: 290 W (C-Band) 356 W (X -Band) 267 W (Ku-Band)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard in all three transmit frequency bands. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	When operating in the C-Band, exclude personnel to a distance of 54 m (whole-body) and 38 m (partial-body) from the antenna. When operating in the X-Band, exclude personnel to a distance of 85 m (whole-body) and 60 m (partial-body) from the antenna. When operating in the Ku-Band, exclude personnel to a distance of 115 m (whole-body) and 82 m (partial-body) from the antenna. Construct an RFR control area of 35 m long by 10 m wide when the LMST Transit Case System is installed in a remote location. Maintain surveillance of the area.
Open/cracked waveguides…….	At maximum power the antenna feed horn, parabolic reflector, and all open waveguides produce potentially hazardous PDLs. Periodically inspect waveguides for cracks or leaks and replace suspect waveguides. Support all flexible waveguide runs with a cable to prevent stress at the waveguide flange. Exclude personnel to a distance of 1-2 m from any open or broken waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify the use of dummy loads for maintenance operations.

REFERENCES: TM 11-5895-1588-12&P; CHPPM Study 24-ME-7010-97

AN/TSQ-30 Operational Central Facility

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSQ-30 is a telecommunications set configured in a tower.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not a free-space radiator and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/TSQ-70A, LP Aircraft Control Central

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSQ-70 is an air and ground transportable system that provides air traffic control facilities for an airfield. This system consists of one AN/ARC-102 transceiver (13.7 m resonant length wire antenna), three AN/ARC-73A transceivers (omnidirectional blade/whip antenna) and three AN/ARC-51BX transceivers (omnidirectional blade/whip antenna).	Frequency: 2 – 30 MHz (AN/ARC-102) 116 – 150 MHz (AN/ARC-73A) 225 – 400 MHz (AN/ARC-51BX) Power: 200 W average; 400 W PEP (AN/ARC-102) 25 W (AN/ARC-73A) 25 W (AN/ARC-51BX)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	For the AN/ARC-102 radio set, exclude personnel to distances of 2.0 m from the antenna. For the AN/ARC-73 radio set, exclude personnel to distances that are greater than 1.0 m from the antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch any system antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Do not operate the AN/GRC-102 radio set in a free space radiating mode inside of buildings.

REFERENCES: TM 11-5895-579-12

AN/TSQ-71A, B Landing Control Central

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSQ-71 is used to direct aircraft in a tactical environment and to provide ground control approach (GCA) capabilities. This system consists of one AN/TPN-18 radar set (azimuth/elevation dish antennas), two AN/VRC-46 radio sets (whip-type antenna), three AN/ARC-73A transceivers (omnidirectional blade/whip antenna) and three AN/ARC-51BX transceivers (omnidirectional blade/whip antenna).	Frequency: 9 – 9.6 GHz (AN/TPN-18) 116 – 150 MHz (AN/ARC-73A) 225 – 400 MHz (AN/ARC-51BX) 30 – 76 MHz (AN/VRC-46) Power: 192 W average; 200 kW PEP (AN/TPN-18) 25 W (AN/ARC-73A) 25 W (AN/ARC-51BX) 5 W Average, 35 W PEP (AN/VRC-46)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna ..	For the AN/VRC-46 radio set, exclude personnel to distances of 1.0 m from the antenna. For the AN/ARC-73 radio set, exclude personnel to distances that are greater than 1.0 m from the antenna. For the AN/TPN-18, in the nonscanning mode, exclude personnel to a distance of 25 m from the azimuth antenna and 11 m from the elevation antenna. Do not operate the main beam of the AN/TPN–18 in potentially occupied areas.
Open/cracked waveguides…..…	For the AN/TPN-18, all open waveguides and feed horn outputs produce potentially hazardous PDLs within close proximity. Exclude personnel from this area and do no permit operation of this system with any cracked, broken or open waveguide.
RF shock/burn ……...……	Observe standard RF shock precautions. Do not touch any system antenna (excluding AN/TPN-18) when energized.
Other…….…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5895-474-12

AN/TSQ-72A Landing Control Central

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSQ-71 is used to direct aircraft in a tactical environment and to provide ground control approach (GCA) capabilities. This system consists of one AN/TPN-18 radar sets (azimuth/elevation dish antennas), two AN/VRC-46 radio sets (whip-type antenna), three AN/ARC-73A transceivers (omnidirectional blade/whip antenna) and three AN/ARC-51BX transceivers (omnidirectional blade/whip antenna) and one AN/TPX-44 IFF.	Frequency: 9 – 9.6 GHz (AN/TPN-18) 116 – 150 MHz (AN/ARC-73A) 225 – 400 MHz (AN/ARC-51BX) 30 – 76 MHz (AN/VRC-46) 990 – 1040 MHz (AN/TPX-44) Power: 192 W average; 200 kW PEP (AN/TPN-18) 25 W (AN/ARC-73A) 25 W (AN/ARC-51BX) 5 W Average, 35 W PEP (AN/VRC-46) 1.5 W PEP (AN/TPX-44)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna...	For the AN/VRC-46 radio set, exclude personnel to distances of 1.0 m from the antenna. For the AN/ARC-73 radio set, exclude personnel to distances that are greater than 1.0 m from the antenna. For the AN/TPN-18, in the nonscanning mode, exclude personnel to a distance of 25 m from the azimuth antenna and 11 m from the elevation antenna. Do not operate the main beam of the AN/TPN–18 in potentially occupied areas.
Open/cracked waveguides…….	For the AN/TPN-18, all open waveguides and feed horn outputs produce potentially hazardous PDLs within close proximity. Exclude personnel from this area and do not permit operation of this system with any cracked, broken or open waveguide.
RF shock/burn ……..……	Observe standard RF shock precautions. Do not touch any system antenna (excluding AN/TPN-18) when energized.
Other…….…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/TSQ-97 Air Traffic Control Facility

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSQ-97is a portable air traffic control system for use to forward areas. This system consists of one AN/ARC-114A transceiver (omnidirectional blade/whip antenna) and one AN/ARC-115A transceiver (omnidirectional blade/whip antenna).	Frequency: 30 – 75.95 MHz (AN/ARC-114A) 116 – 149.975 MHz (AN/ARC-115A) Power: 10 W minimum (AN/ARC-114A) 10 W minimum (AN/ARC-115A)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
RF shock/burn ..……..……	Observe standard RF shock precautions. Do not touch any system antenna when energized.
Other…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5895-800-12

AN/TSQ-114A, B Special Purpose Detecting Set (TRAILBLAZER Radio Set)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSQ-114is a portable radio set for use to forward areas. This system consists of one AN/ARC-164 radio set (omnidirectional blade/whip antenna) and one AN/VRC-12 radio set (whip antenna).	Frequency: 30 – 76 MHz (AN/VRC-12) 220 – 400 MHz (AN/ARC-164) Power: 5 W average; 35 W PEP (AN/VRC-12) 25 W (AN/ARC-164)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna ..	For the AN/VRC-12 radio set, exclude personnel to distances of 1.0 m from the antenna.
RF shock/burn ……..…..……	Observe standard RF shock precautions. Do not touch any system antenna when energized.
Other…….……...…..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5811-900-14; TM 32-5811-022-12; TM 32-5811-022-12-1

AN/TSQ-144 GUARDRAIL V Remote Relay System

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSQ-144 consists of two elements, the Mobile Relay Facility (MRF) and the Ground Processor Interface. The MRF has eight radiating elements associated with it; five "Fat Dipoles", two log periodic antennas, and one whip antenna. All of the antennas, with the exception of the whip, are mounted on 10 m masts. The whip is roof-edge mounted on the transmitter control van.	Power: 10 W; 35 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	When utilizing the whip antenna, exclude personnel to distances of 50 cm from the antenna. When utilizing the other seven antennas, exclude personnel to distances of 60 cm from the antenna. Because of the placement of antennas in this system, no radiation hazard will exist in normally occupied areas.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5895-1362-13

AN/TSQ-152 TRACKWOLF

SYSTEM DESCRIPTION

The AN/TSQ-152 is a mobile information collection system consists of two subsystems; the Collection and Processing Subsystem (CPS) and the Direction Finding Subsystem (DFS). The CPS consists of eight Signal Control Shelters (AN/TRR-36), two Command and Control Shelters (AN/TSY-1), and two Signal Analysis Shelters (AN/TSX-1) which utilize an omnidirectional antenna. The DFS consists of four Operational Shelters (AN/TRD-27) and four Communications/Chirpsounder Shelters (AN/TRQ-41) which are configured in pairs. These systems utilize a collinear array and omnidirectional antenna; and a dual-element vee, Harris RT-1446, whip and RT-1288 antenna, respectively.

SYSTEM PARAMETERS

Frequency: 225 – 400 MHz (AN/TRD-27) (DFS)
30 – 70 MHz (AN/VRC-46) (CPS)
2 – 30 MHz (chirpsounder mode)
1.6 – 30 MHz (communications mode)

Power: 8 or 35 W average (CPS)
30 or 100 W average (AN/TRD-27) (CPS)
8 or 35 W average (AN/VRC-46)
100 W (chirpsounding mode)
150 W (communications mode)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna...	When utilizing the RT-1288 UHF antenna, exclude personnel to distances of 1 m from the antenna. When utilizing the RT-1446 antenna, exclude personnel to distances of 4 m from the antenna. When utilizing the chirpsounder antenna, exclude personnel to distances of 0.5 m from the antenna. Because of the placement of antennas in this system, no radiation hazard will exist in normally occupied areas.
RF shock/burn ……..……	Observe standard RF shock precautions. Do not touch any system antenna when energized.
Other…….……..……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 32-5811-704-20

AN/TSQ-164 (V)1 DRAGONFIX

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSQ-164 is a HF radio communications system utilizing a field-erected horizontal dipole with the antenna (RF-1912) 8 m above the ground.	Frequency: 1.6 – 30 MHz Power: 125 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to distances of 1.4 m from the antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the system antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/TSQ-171 MOPOT (TVS-5)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSQ-171 consists of an Electronic News Gathering facility (ENG) consisting of two line-of-sight (LOS) systems, a control facility, and a television (TV) broadcasting system. The system is housed in two shelters. The TV transmitter portion of the TV system utilizes consists of eight corner reflector antennas mounted on a triangular mast in varying configurations. The antenna for the ENG is also mounted on a mast.	Frequency: 176 – 214 MHz (TV) 2 – 7 GHz (LOS) Power: 5 kW (TV) 3 W average; 10 W max (LOS)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to distances of 34 m from the TV Broadcast antenna. Exclude personnel to distances of 2.8 m from the LOS system antenna. Because of the placement of antennas in this system, no radiation hazard will exist to personnel on the ground.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/TSQ-175 Tactical Intelligence Generation and Evaluation Relay (TIGER) Radio Repeater Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSQ-175 is a radio repeater set utilizing a 1.25 m long monopole antenna mounted on a telescopic mast. It utilizes the RT 1288/ARC –164 Radio Receiver/Transmitter.	Frequency: 220 - 400 MHz Power: 100 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to distances of 126 cm from the antenna. Because of the placement of antennas in this system, no radiation hazard will exist to personnel on the ground.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the system antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 32-5820-900-12

AN/TSQ-179 Joint STARS Common Ground Station (CGS)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSQ-179 is a ground-to-satellite communications system. It has the capability of line-of-sight (LOS) communications. It consists of the AN/PSC-5 (V) 5 EMUT as used with the AM-7175D Power Amplifier. The EMUT is equipped with two antennas; one remote Satellite Communications (SATCOM) and one hemispherical (or dome).	Frequency: 290 – 400 MHz (EMUT) Power: 200 – 250 W (EMUT)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	When operating at maximum power output, exclude personnel to distances of 1.5 m from the front of the remote SATCOM antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch any system antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: CHPPM Study 24-ME-7328-97

AN/TSQ-190 (V) Satellite Communications Terminal: TROJAN SPIRIT

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSQ-190 is a satellite communications terminal. It utilizes a 2.44 m parabolic reflector antenna mounted on a trailer.	Frequency: 3.9 – 6.2 GHz (C Band) Power: 50 W (C) 12.4 – 18 GHz (Ku Band) 16 W (Ku)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	In the C Band, exclude personnel to distances of 50 cm from the antenna feed aperture. In the Ku Band, exclude personnel to distances of 25 cm from the antenna feed aperture.
Open/cracked waveguides …….	The area between the feed and the reflector and any open waveguide produce potentially hazardous PDLs. Periodically inspect waveguides for cracks or leaks and replace suspect waveguides.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/TSQ-198 Tactical Terminal Control System (TTCS)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSQ-198 is a mobile air traffic control facility which provides air traffic services at remote landing, drop, and pick-up zones. The communications package to be utilized is the AN/GRC-206 and is mounted on a HMMWV. This system consists of two AN/VRC-83 radios, one AN/VRC-101 radio, and one AN/VRS-91 radio.	Frequency: 116 - 150 MHz/ 225 - 400 MHz (AN/VRC -83) 2 - 30 MHz (AN/VRC-101) 30 – 88 MHz (AN/VRS-91) Power: 30 W PEP (AN/VRC-83) 150 W PEP (AN/VRC-101) 50 W PEP (AN/VRS-91)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna ..	For the AN/VRC-101 radio set, exclude personnel to distances of 1.1 m from the antenna.
RF shock/burn ……...……	Observe standard RF shock precautions. Do not touch any system antenna when energized.
Other…….…….….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/TSQ-199 Enhanced TRACKWOLF

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSQ-199 is an automated, soldier portable, high frequency communications intercept, collection, and emitter location system. The system consists of three AN/TSQ-205 stations. The stations are equipped with the AN/PRC-119A Radio Set and LST-5E Satellite Communications (SATCOM) Transceiver. The LST-5E SATCOM transceiver utilizes a crossed-dipole antenna that is mounted on a tripod located on the ground.	Frequency: 30 – 88 MHz (AN/PRC-119A) 225 – 400 MHz (LST-5E) Power: 4 W average (AN/PRC-119A) 18 W average max (LST-5E)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	The AN/PRC-119A Radio Set system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control. The LST-5E Transceiver is able to produce potentially hazardous PDLs in excess of the partial-body safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna...	Exclude personnel to a distance of 30 cm from the SATCOM antenna.
RF shock/burn ……..……	Observe standard RF shock precautions. Do not touch the antenna and crossed-dipole elements of the SATCOM antenna when energized.
Other…….……..……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: CHPPM Study 69-37-4632-96

AN/TSS-11 Night Vision Sight Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSS-11 is a night vision sight set that utilizes a UHF communications antenna.	Frequency: 225 - 400 MHz Power: 50 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna ..	Exclude personnel to distances of 1.1 m from the antenna.
Other…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/TSW-7 Air Traffic Control Central

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TSW-7 is an air and ground transportable air traffic center. It utilizes three AN/ARC-114A radio sets, (omnidirectional blade/whip antenna) three AN/ARC-115A radio sets, (omnidirectional blade/whip antenna) one AN/ARC–102 radio set, (resonant length wire), and three AN/ARC-164 radio sets (omnidirectional blade/whip antenna).	Frequency: 225 – 400 MHz (AN/ARC-164) 30 – 70.5 MHz (AN/ARC-114) 116 – 149.975 MHz (AN/ARC-115) 2 – 30 MHz (AN/ARC-102) Power: 25 W (AN/ARC-164) 10 W minimum (AN/ARC-115) 10 W minimum (AN/ARC-114) 100 W average (AN/ARC-102)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	When utilizing the AN/ARC-102, exclude personnel to distances of 4.2 m from the wire antenna. Due to the use and placement of antennas in this system, no radiation hazard will exist in normally occupied areas.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch any system antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5895-801-10

AN/TTR-1A Telephone Monitoring Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TTR-1 is a telecommunications monitoring set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL....	This system is not a free-space radiator and is not subject to radiation protection control.
Other…….……....	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 32-5805-201-14&P

AN/TVQ-2 Ground/Vehicular Laser Locator Designator (G/VLLD)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TVQ-2 is the primary ground laser rangefinder/designator set and provides long-range designation for laser-guided munitions.	Type: Nd:YAG Wavelength: 1064 nm

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification ……..…..	This system utilizes a Class 4 laser and requires an established laser safety program to ensure its safe use. Develop a written Local Standing Operating Procedure (SOP) IAW guidance provided in this TB.
Hazard distance ……..……	Utilizing the 10 dB attenuation filter with the system and in the rangefinder mode, the hazard distances for viewing the laser is 3.1 km with the naked eye and 22 km with magnifying optics.
Ocular injury ……..…..…	This laser is hazardous to the naked eye for a distance of 8 km and 40 km for viewing with magnifying optics. Use protective eyewear that filter at 1064 nm with a minimum OD of 5.5.
Outdoor range operations …..	Eliminate all specular surfaces (man made and natural) capable of producing potentially hazardous reflections. Control unauthorized personnel access to controlled area. Use only on an approved laser range or training area. Appoint a qualified Laser Range Safety Officer.
Other……..……..…..……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 9-1260-477-12; TM 9-6940-477-14

AN/TYK-10A Data Analysis Central

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TYK-10 is a data analysis system.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL) …	This system is not a free-space radiator and is not subject to radiation protection control.
Other…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 32-5895-219-14&P

AN/TYK-11 Data Analysis Central

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TYK-11 is a data analysis system.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not a free-space radiator and is not subject to radiation protection control.
Other…….……..……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 32-5895-220-14

AN/TYQ-5 Data Analysis Central

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TYQ-5 is a data analysis system.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not a free-space radiator and is not subject to radiation protection control.
Other…….……..…	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 32-5895-248-14&P

AN/TYQ-40 All Source Analysis System/ Forward Sensor Interface Control (ASAS/FSIC)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/TYQ-40 consists of one AN/ARC-164 UHF Radio Set (omnidirectional blade/whip antenna) and four AN/VRC-46 VHF Radio Sets (resonant length whip antenna).	Frequency: 30 – 76 MHz (AN/VRC-46) 220 – 400 MHz (AN/ARC-164) Power: 5 W average; 35 W PEP (AN/VRC-46) 25 W (AN/ARC-164)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL) ..	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna.	For the AN/VRC-46 radio set, exclude personnel to distances of 1.0 m from the antenna. Due to the placement of the system antenna, in normal operations, no radiation hazard will exist to personnel.
RF shock/burn ..……..…	Observe standard RF shock precautions. Do not touch system antennas when energized.
Other…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5895-1497-10-2

AN/UAS-9 Laser Rangefinder/Designator

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/UAS-9 is a laser rangefinder/designator set.	Type: Nd-YAG Wavelength: 1064 nm

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification ……...	This system contains a Class 3b laser and requires an established laser safety program to ensure its safe use. Develop a written Local Standing Operating Procedure (SOP) IAW guidance provided in this TB.
Hazard distance ……..……	In the designator mode, do not permit personnel to view the laser from within the beam at distances less than 9.7 km with the naked eye. In the rangefinder mode, do not permit personnel to view the laser from within the beam at distances less than 5.5 km with the naked eye. Viewing the laser through magnifying optical instruments will be considerably shorter.
Ocular injury ……..…..…	This laser is hazardous to the naked eye for a distance of 5.5 km. Use protective eyewear that filter at 1064 nm with a minimum OD of 5.0.
Outdoor range operations …..	Eliminate all specular surfaces (man made and natural) capable of producing potentially hazardous reflections. Control unauthorized personnel access to controlled area. Use only on an approved laser range or training area. Appoint a qualified Laser Range Safety Officer.
Other……..…….…..……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/ULQ-13 Microwave Test Van

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ULQ-13 is a microwave testing van. Two antennas are utilized by this system; a parabolic reflector for the lower frequency range and a horn for the higher frequency range.	Frequency: 2 – 6 GHz ; 7 – 10 GHz

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	In the nonscanning mode, exclude personnel to distances of 6.0 m from the antenna. In the scanning mode, exclude personnel to distances of 3.0 m from the antenna. Prohibit access of to the roof of the van during transmissions. Use the scanning mode for operations whenever practical.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify the use of dummy loads during maintenance operations.

AN/ULQ-19 (V) 1, 2 Communications Jamming System

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/ULQ-19 is a jeep-mounted tactical VHF signal jamming system for use in the forward combat zone. It utilizes a roof-mounted omnidirectional whip antenna.	Frequency: 20 – 80 MHz Power: 250 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to distances of 1.5 m from the antenna. Due to the placement of the system antenna, in normal operations, no radiation hazard will exist to personnel.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify the use of dummy loads during maintenance operations.

REFERENCES: TM 11-5865-256-13

AN/UPD-7 PIP Radar Surveillance System

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/UPD-7 is an airborne sideways-looking array radar (SLAR). It utilizes two identical antennas mounted on each side of the aircraft fuselage.	Frequency: 9.1 – 9.4 GHz Power: 22 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard near the antenna radome. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Open/cracked waveguides …….	All open waveguides and the antenna radome produce potentially hazardous PDLs. Exclude personnel to a distance of 30 cm from the antenna radome. Periodically inspect waveguides for cracks or leaks and replace suspect waveguides.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Prohibit system free-space radiating with the randome removed.

AN/UPM-60A Radar Test Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/UPM-60 is a radar test set.	Frequency: 15.7 – 16.3 GHz Power: low

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not subject to radiation protection control.
Other……..……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-6625-228-12

AN/UPM-98A, B, C, D Radar Test Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/UPM-98 is a radar test set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not a free-space radiator and is not subject to radiation protection control.
Other……..……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-6625-403-14; TM 11-6625-403-15-1

AN/UPM-135 Radar Test Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/UPM-135 is a radar test set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not subject to radiation protection control.
Other……..……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-6625-1729-15

AN/UPQ-3 Improved GUARDRAIL

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/UPQ-3 consists of a Ground Tracker and an Airborne WideBand Data Link. The Ground Tracker utilizes a 1.8 m diameter cassegrain antenna and the Airborne Band utilizes a 20 cm diameter parabolic antenna.	Frequency: 9.6 – 9.95 GHz/ 14.5 – 15.5 GHz (Ground Tracker) 15 – 15.35 GHz (Airborne Band) Power: 70 W (Ground Tracker) 70 W (Airborne Band)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	In the Ground Tracker nonscanning mode, exclude personnel to distances of 12 m from the antenna. In the Airborne Band, exclude personnel to distances of 6 m from the antenna.
Open/cracked waveguides …..…	All open waveguides and the antenna radome produce potentially hazardous PDLs. Exclude personnel to a distance of 50 cm from the antenna radome. Periodically inspect waveguides for cracks or leaks and replace suspect waveguides.
Other…….……....	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/URC-94 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/URC-94 is a HF automatic tuned radio set that utilizes a whip antenna.	Frequency: 1.5 – 30 MHz; 30 – 80 MHz Power: 100 W; 50 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
RF shock/burn …..……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/URC-104 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/URC-104 is a HF automatically tuned radio set that utilizes a dipole antenna.	Frequency: 30 - 150 MHz; 225 - 400 MHz Power: 5 W; 20 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
RF shock/burn ……..……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……..……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5895-1195-10

AN/URC-122 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/URC-94 is a HF automatically tuned radio set that utilizes a dipole antenna.	Frequency: 2 - 30 MHz Power: 50 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
RF shock/burn ……..……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-582-1036-12

AN/URM-113A Radio Test Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/URM-113 is a radio test set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not a free-space radiator and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-6625-206-12; TM 11-6625-206-35

AN/URM-157A Radio Set Test Harness *(part of AN/ARC-102)*	
SYSTEM DESCRIPTION The AN/URM-157 is a radio set test harness.	*SYSTEM PARAMETERS*
SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not a free-space radiator and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.
REFERENCES: TM 11-6625-622-12	

AN/URM-172 RF Radio Test Set *(part of AN/URC-10)*	
SYSTEM DESCRIPTION The AN/URM-172 is a radio test set.	*SYSTEM PARAMETERS*
SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not subject to radiation protection control.
Other…….…….…	Consult the equipment Technical Manual for other operator and/or maintenance hazards.
REFERENCES: TM 11-6625-1698-15	

AN/USC-60 Flyaway Triband Satellite (FTSAT) Terminal

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/USC-60 is a lightweight commercial satellite communications terminal. It utilizes a 1.8 m parabolic reflector antenna. The FTSAT consists of a receiver group, transmitter group, antenna group, baseband group, power group, auxiliary equipment group, and control group.	Frequency: 5850 – 6426 MHz (C-Band) 7900 – 8400 MHz (K-Band) 14.0 – 14.5 GHz (Ku-Band) Power: 500 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard in the main beam.
Hazard distance from antenna...	When operating in the C-Band, exclude personnel to a distance of 26 m from the antenna. When operating in the X-Band, exclude personnel to a distance of 44 m from the antenna. When operating in the Ku-Band, exclude personnel to a distance of 105 m from the antenna. When operating the antenna at elevations of +5 and +10 degrees, personnel should observe a distance of at least 12 m and 6 m, respectively, from the front of the antenna.
Open/cracked waveguide …..…	The area between the antenna feedhorn and the reflector and any open waveguide produce potentially hazardous PDLs. Exclude personnel from these areas. Periodically inspect waveguides for cracks or leaks and replace suspect waveguides.
Other…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/USM-306 Radio Test Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/USM-306 is a radio test set.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not a free-space radiator and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-6625-1748-12

AN/USQ-140 (V) 1 Multifunctional Information Distribution System (MIDS) – Low Volume Terminal (MIDS-LVT(2))

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/USQ-140 is a communications terminal. The shelterized version uses an AN/GSQ-240A (C) digital radio transceiver. The system utilizes an omnidirectional vertical dipole antenna.	Frequency: 969 – 1206 MHz Power: 200 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to RFR control.
Other…….…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/UXC-4 Tactical Digital Facsimile (TDF) Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/UXC-4 provides simultaneous pictorial reading and facsimile generation.	Type: He-Ne Wavelength: 632.8 nm

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification ……..	During normal operation, no laser power exists outside the TDF enclosure.
Hazard distance ……..……	Operate the TDF only with the front cover in place.
Ocular injury ……..……	This laser is potentially hazardous to the naked eye if the laser is operated at a power level above 1 mW. Use protective eyewear that filter at 632.8 nm with a minimum OD of 1.0 unless the power output is below 1 mW.
Other……..…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/VIC-4 Vehicular Intra/Inter Communications System (VIICS)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VIC-4 is a communication and data distribution system that provides intra and inter vehicular communications. The VIICS is installed in the Command and Control Vehicle Mission Module System (C2V-MMS) and enables all crew members to communicate with one another and access all radio sets in the C2V. The VIICS consists of the Crew Access Unit (CAU) and the Communications Interface Unit (CIU).	Frequency: 410 MHz Power: 4 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/VLQ-4T Electronics Countermeasures Training Device

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VLQ-4 is an jeep-mounted VHF electronic countermeasures training device that utilizes a log periodic antenna, manually rotated with a rope lanyard.	Frequency: 30 – 75.95 MHz Power: 300 - 1200 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard in close proximity of the antenna. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to distances of very close proximity (3 cm) from the antenna. Due to the elevation of the antenna, personnel are normally not exposed to RFR.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Do not operate this system in a nonstandard configuration or with the antenna improperly erected.

AN/VLQ-11 SHORTSTOP Electronic Protection System, Vehicle Group

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VLQ-11 is an electronic countermeasures system developed to protect personnel and equipment from incoming artillery and mortar shells. This configuration consists of a core receiver/transmitter (R/T) and an elevated spiral antenna	Frequency: CLASSIFIED Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL) ….	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
RF shock/burn …..……..	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/VPS-2A Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VPS-2 is a fire control radar set for the Vulcan Defense System. This set utilizes a 0.6 m diameter parabolic reflector antenna.	Frequency: 9.205 – 9.245 GHz Power: 10.4 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)....	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna...	Exclude personnel to a distance of 4.0 m in the direction of the main beam.
Open/cracked waveguides…..…	All open waveguides and feed horn outputs produce potentially hazardous PDLs. Exclude personnel from this area and do no permit operation of this system with any cracked, broken or open waveguide.
Other…….…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify the use of dummy loads in maintenance operations. Instruct personnel not to place eyes near the RF power indicator lamp located in the waveguide of earlier systems.

REFERENCES: TM 9-1285-210-30

AN/VRC-12 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VRC-12 is a vehicular and/or fixed short range FM radio set which utilize the RT-246 and/or RT-524 transceiver set. The set utilizes either a vehicular or shelter-mounted whip antenna, depending on the configuration.	Frequency: 30 - 76 MHz Power: 5 W average; 35 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
RF shock/burn ……..	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….…….….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-401-12

AN/VRC-24A Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VRC-24 is an aircraft ground-to-air radio communications set which utilizes a center-fed, broadband vertical dipole antenna.	Frequency: 225 - 400 MHz Power: 16 W 2 W max av

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
RF shock/burn ……..……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-222-10

AN/VRC-29 Radio Teletypewriter Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VRC-29 is a armored personnel carrier mounted version of the AN/GRC-46 radio set. This set is a HF-AM teletypewriter radio utilizing the AN/GRC-19 radio set and utilizes a 4.6 m whip or doublet antenna.	Frequency: 1.5 – 20.0 MHz Power: 100 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to distances of 1.0 m from the antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5815-204-10

AN/VRC-34 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VRC-34 is a radio set which utilizes a vertical whip antenna.	Frequency: 6.6 – 12.0 MHz (Band 1) Power: 15 W 3.6 – 6.0 MHz (Band 2) 2.0 – 3.6 MHz (Band 3)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-453-10

AN/VRC-43 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VRC-43 is a vehicular and/or fixed short range FM radio set that utilizes the RT-246 and/or RT-524 transceiver set. The set utilizes either a vehicular or shelter-mounted whip antenna, depending on the configuration.	Frequency: 30 - 76 MHz Power: 5 W average; 35 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-401-12; TM 11-5820-401-10

AN/VRC-44 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VRC-44 is a vehicular and/or fixed short range FM radio set which utilize the RT-246 and/or RT-524 transceiver set. The set utilizes either a vehicular or shelter-mounted whip antenna, depending on the configuration.	Frequency: 30 - 76 MHz Power: 5 W average; 35 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-401-12; TM 11-5820-401-10

AN/VRC-45 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VRC-45 is a vehicular and/or fixed short range FM radio set which utilize the RT-246 and/or RT-524 transceiver set. The set utilizes either a vehicular or shelter-mounted whip antenna, depending on the configuration.	Frequency: 30 - 76 MHz Power: 5 W average; 35 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
RF shock/burn ……..	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-401-10

AN/VRC-46 Radio Set *(used in AN/TRC-189, AN/TSQ-71, AN/TSQ-72, AN/TYQ-40)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VRC-46 is a vehicular and/or fixed short range FM radio set which utilize the RT-246 and/or RT-524 transceiver set. The set utilizes either a vehicular or shelter-mounted whip antenna, depending on the configuration.	Frequency: 30 - 76 MHz Power: 5 W average; 35 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-401-10; TM 11-5820-401-12

AN/VRC-47 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VRC-47 is a vehicular and/or fixed short range FM radio set which utilize the RT-246 and/or RT-524 transceiver set. The set utilizes either a vehicular or shelter-mounted whip antenna, depending on the configuration.	Frequency: 30 - 76 MHz Power: 5 W average; 35 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-401-12; TM 11-5820-401-10

AN/VRC-48 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VRC-48 is a vehicular and/or fixed short range FM radio set which utilize the RT-246 and/or RT-524 transceiver set. The set utilizes either a vehicular or shelter-mounted whip antenna, depending on the configuration.	Frequency: 30 - 76 MHz Power: 5 W average; 35 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
RF shock/burn ……..	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……. .	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-401-12; TM 11-5820-401-10

AN/VRC-49 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VRC-49 is a vehicular and/or fixed short range FM radio set which utilize the RT-246 and/or RT-524 transceiver set. The set utilizes either a vehicular or shelter-mounted whip antenna, depending on the configuration.	Frequency: 30 - 76 MHz Power: 5 W average; 35 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-401-12; TM 11-5820-401-10

AN/VRC-64 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VRC-64 is a vehicular and/or fixed short range FM radio set which utilizes a whip antenna.	Frequency: 30 - 76 MHz Power: 3 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
RF shock/burn ……..	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-498-12

AN/VRC-83 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VRC-83 is a vehicular and/or fixed short range FM radio set which utilizes a whip antenna.	Frequency: 116 – 150 MHz (Low Band) 225 – 400 MHz (High Band) Power: 30W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
RF shock/burn ……..	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-1149-14&P

AN/VRC-86 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VRC-86 is a vehicular and/or fixed short range FM radio set which utilizes a whip antenna.	Frequency: 2 – 30 MHz Power: 150 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
RF shock/burn ……..……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-927-13&P

AN/VRC-87 Vehicular Short Range Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VRC-87 is a low power version of the Single Channel Ground and Air Radio System (SINCGARS) which utilizes a whip antenna.	Frequency: 30 – 88 MHz Power: 5 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
RF shock/burn ……..……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-890-10-1

AN/VRC-88 Vehicular Short Range Dismountable Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VRC-88 is a low power version of the Single Channel Ground and Air Radio System (SINCGARS) which utilizes a whip antenna.	Frequency: 30 – 88 MHz Power: 50 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-890-10-1

AN/VRC-89 Vehicular Long Range Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VRC-89 is a full power version of the Single Channel Ground and Air Radio System (SINCGARS) which utilizes a whip antenna.	Frequency: 30 – 88 MHz Power: 50 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
RF shock/burn ……...	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……. .	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-890-10-1

AN/VRC-90 Vehicular Long Range Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VRC-89 is a full power version of the Single Channel Ground and Air Radio System (SINCGARS) which utilizes a whip antenna.	Frequency: 30 – 88 MHz Power: 50 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
RF shock/burn ……..	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-890-10-1

AN/VRC-91 Vehicular Short/Long Range Dismountable Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VRC-91 is a full power version of the Single Channel Ground and Air Radio System (SINCGARS) which utilizes either a whip or metal tape antenna, depending on the function.	Frequency: 30 – 88 MHz Power: 4 W (MANPACK) 4 W (short range) 50 W (long range)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
RF shock/burn ……...	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-890-10-1

AN/VRC-92 Vehicular Long Range Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VRC-92 is a full power version of the Single Channel Ground and Air Radio System (SINCGARS) which utilizes a whip antenna.	Frequency: 30 – 88 MHz Power: 50 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
RF shock/burn ……..	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-890-10-1; TM 11-5820-890-10

AN/VRC-97 Mobile Subscriber Equipment (MSE) Radio Terminal

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VRC-97 is a radio/telephone terminal which utilizes a whip antenna.	Frequency: 33 – 88 MHz Power: 18 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
RF shock/burn ……..……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5800-216-10; TM 11-5820-1021-10

AN/VRC-100 HF Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VRC-100 is a HF radio set which utilizes a 1.8 m whip and long wire cross dipole antenna.	Frequency: 2 - 30 MHz Power: 100 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In nonstandard operating conditions (100 W for greater than 2 minutes), this system is able to produce potentially hazardous PDLs in excess of the safety standard.
Hazard distance from antenna ..	In nonstandard operating conditions, exclude personnel to a distance of 1.0 m from the whip antenna.
RF shock/burn …..……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……..…..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/VRC-101 HF Single Side Band (SSB) AM Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VRC-101 is a HF AM radio set.	Frequency: 2 - 30 MHz Power: 150 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna...	Exclude personnel to a distance of 25 cm from the whip antenna.
RF shock/burn ……..……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/VRC-104 HF Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VRC-104 is a battery powered HF radio set which provides short range, two-way, radiotelephone communications. This set utilizes a monopole antenna.	Frequency: 2 – 30 MHz Power: 20 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AN/VSC-2A HF Single Side Band (SSB) AM Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VSC-2 is a HF radio teletypewriter set which utilizes a omnidirectional, 4.57 m whip antenna usually mounted on a vehicle or radio-shelter surface.	Frequency: 2 - 30 MHz Power: 200 W; 400 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 1.5 m from the whip antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5815-331-14

AN/VSC-3A HF Single Side Band (SSB) AM Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VSC-3 is a HF radio teletypewriter set which utilizes a omnidirectional, 4.57 m whip antenna usually mounted on a vehicle or radio-shelter surface.	Frequency: 2 - 30 MHz Power: 200 W; 400 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna...	Exclude personnel to a distance of 1.5 m from the whip antenna.
RF shock/burn ……..……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5815-332-15

AN/VSC-7 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VSC-7 is a vehicular-mounted satellite communications (SATCOM) radio set which utilizes a crossed log-periodic antenna in the SATCOM mode and a whip antenna in the line-of-sight (LOS) mode.	Frequency: 225 - 400 MHz Power: 35 W average (whip) 2 W average (LP)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
RF shock/burn ……..	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5895-1181-10

AN/VSQ-2 (V) Enhanced Position Location Reporting System (EPLRS)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VSQ-2 is a vehicular tactical data system which handles simplex/duplex data transmissions in the UHF band. Two variations of the EPLRS are the Very High Speed Integrated Circuit (VHSIC) and the System Improvement Program (SIP). The EPLRS utilizes a vertical monoplole antenna in the vehicular, airborne, or manpack configuration, depending on the mission.	Frequency: 420 – 450 MHz Power: 0.4 -100 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
RF shock/burn ……..	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: CHPPM Study 24-ME-6410-96

AN/VSS-1, (V)1, (V)2, 1 A-E, Infrared Searchlight Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VSS-1 is a infrared-visible searchlight set with a power of 100 – 150 million candlepower.	Type: Xenon-short lamp

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification …….....	This system does not contain a laser. It contains a high intensity visible/invisible light source.
Hazard distance …….…..…	Do not permit personnel to view the direct beam at distances within 200 m.
Ocular injury …….…..…	Viewing the direct beam may cause severe eye injury. Personnel may receive temporary flash blindness viewing the direct beam at ranges in excess of 200 m.
Other……..…….…..……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-6230-219-12; TM 11-5855-250-12&P

AN/VSS-2A Infrared Searchlight Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VSS-2 is a infrared invisible searchlight set with a power of 100 – 150 million candlepower.	Type: Xenon-short lamp

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification ……..…..	This system does not contain a laser. It does contain a high intensity invisible light source.
Hazard distance ……...……	Do not permit personnel to view the direct beam at distances within 200 m.
Ocular injury ……...……	Viewing the direct beam may cause severe eye injury. Personnel may receive temporary flash blindness viewing the direct beam at ranges in excess of 200 m.
Other……..……..……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-6230-219-12

AN/VSS-3A Infrared Searchlight Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AN/VSS-3 is a infrared invisible searchlight set with a power of 100 – 150 million candlepower.	Type: Xenon-short lamp

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification ……..…..	This system does not contain a laser. This system contains both an infrared and a high intensity invisible light source.
Hazard distance ……...……	Do not permit personnel to view the direct beam at distances within 320 m.
Ocular injury ……..…….……	Viewing the direct beam may cause permanent severe eye injury. Personnel may receive temporary flash blindness viewing the direct beam at ranges in excess of 3000 m. Do not permit personnel to look into the main beam with magnifying optics.
Other……..…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5855-217-12; TM 11-5855-217-12-1

ASTAMIDS (Airborne Standoff Minefield Detection System) {LASER & RFR}

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The ASTAMIDS is mounted on an unmanned aerial vehicle and uses active or passive sensors to detect mines from standoff distances. The Surrogate Data Link (SDL) is a subsystem of the ASTAMIDS. It is a two way data link between the Surrogate Minefield Detection System (SMDS) and the Surrogate Air Test Vehicle (SATV). This system utilizes a vertical parabolic reflector and vertical dipole antenna.	SDL Frequency: 4.3 – 5.0 GHz SDL Power: 3 W; 10 W Laser sensor wavelength: 808 nm

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification...……..	This system uses a potentially hazardous continuous wave laser sensor. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Power Density Levels (PDL) ..	The SDL uplink/downlink is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
Laser Hazard distance ….……	In the scanning mode, do not permit personnel to view the direct beam at distances within 55 m for unaided viewing and 400 m when viewing through magnifying optical instruments. In the nonscanning mode, do not permit personnel to view the direct beam at distances within 170 m for unaided viewing and 850 m when viewing through magnifying optical instruments.
Ocular injury ……..…….……	Viewing the direct beam may cause retinal burn/eye injury. Skin exposure limits may also be exceeded; do not permit unprotected personnel to enter the area of the beam path. Use protective eyewear that filter the at 808 nm with a minimum OD of 4.0.
Open/cracked waveguide ...…	The area between the antenna feedhorn and the reflector and any open waveguide produce potentially hazardous PDLs. Periodically inspect waveguides for cracks or leaks and replace suspect waveguides.
Other……..…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

ASTRO XTS 3000 (I), (III) Radio

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The ASTRO XTS 3000 is a 48/255 channel digital portable VHF/800 MHz band transceiver. The unit utilizes a vertical dipole antenna.	Frequency: 136 - 174 MHz (VHF) 806 – 824 MHz (800 MHz) 851 – 870 MHz (800 MHz) Power: 5/1 W (VHF) 3 W (800 MHz)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
Hazard distance from antenna	Ensure personnel do not operate the radio with the antenna within 2.5 cm from the body.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

ATIRCM/CMWS (Advanced Threat Infrared Countermeasures/Common Missile Warning System)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The ATIRCM is designed for actual combat and certain system characteristics are CLASSIFIED.	Type: Diode Pumped-Arc Lamp

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification…….…….	This system uses a potentially hazardous laser. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Laser Hazard distance ….……	Safe viewing distances are IAW Technical Manual. Do not operate system while on the ground.
Ocular injury ……..…….……	Use protective eyewear during operation, training, and testing of the laser.
Other……..…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AVENGER

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AVENGER laser system is a high-mobility muti-purpose wheeled vehicle (HMMWV) mounted laser rangefinder.	Type: Carbon Dioxide Wavelength: 10.6 um

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification…….…….	The AVENGER utilizes a Class 1 laser. Under normal conditions, this system laser beam is below the MPE level and is considered to be safe. There is no hazard for 10 second or less viewing of the laser.
Ocular injury ……..…….……	Instruct personnel not to stare into the beam.
Other……..…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

AWC (All Weather Chaparral System) Radar

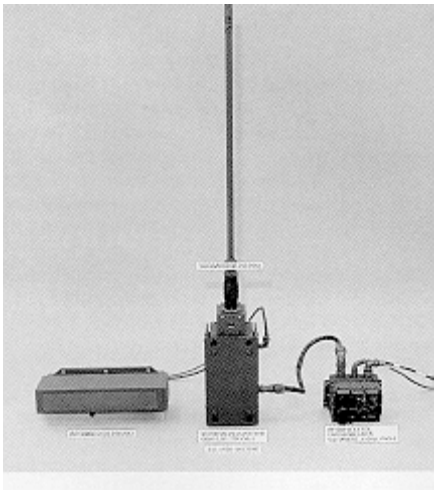
SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The AWC consist of the DN-181 Radar which is self-contained on a small, single-axle trailer, and the Command Transmitter, which is mounted on the tracked vehicle missile launcher. The DN-181 Radar utilizes a cassegrain system with a subreflector for scanning and a 1.35m x 0.91 m parabolic reflector antenna. The Command Transmitter utilizes two antennas; a 60 cm diameter parabolic reflector and an 8 cm diameter horn antenna, mounted above the reflector.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 7.5 m from the Command Transmitter antenna.
Open/cracked waveguides …..…	The area between the DN-181 Radar antenna feed and the subreflector or hyperbola produce potentially hazardous PDLs. Instruct personnel to avoid these areas.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

BCIS (Battlefield Combat Identification System) *(part of BFIST)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The BCIS is composed of a transponder/interrogator assembly which is used to identify friendly forces during combat. This system utilizes a directional narrow-beam slotted-waveguide array antenna and an omnidirectional resonant dipole antenna. Both antennas are positioned atop the vehicle turret.	Frequency: 38 GHz Power: 60 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Other……..……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.



BENDIX Model RDR – 160 (commercial)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The RDR-160 is an airborne weather radar set for fixed wing aircraft. It can be used with either a 25 or 30 cm parabolic reflector dish antenna.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the scanning mode, this system is not able to produce potentially hazardous PDLs in excess of the safety standard. In the nonscanning mode, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	In the nonscanning mode and using the 25 cm antenna, exclude personnel to a distance of 75 cm from the dish antenna. In the nonscanning and using the 30 cm antenna, exclude personnel to a distance of 90 cm from the dish antenna.
Open/cracked waveguides …..…	All open waveguides and feed horn outputs produce potentially hazardous PDLs. Exclude personnel from this area and do no permit operation of this system with any cracked, broken or open waveguide.
Other…….……..	Consult the manufacturer's equipment Technical Manual for other operator and/or maintenance hazards.

BENDIX Model RDR – 1200

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The RDR-1200 is an airborne weather radar set for fixed wing aircraft. It utilizes a 30 cm parabolic reflector dish antenna which is usually located on the nose of the aircraft.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the scanning mode, this system is not able to produce potentially hazardous PDLs in excess of the safety standard. In the nonscanning mode, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	In the nonscanning mode, exclude personnel to a distance of 2.0 m from the dish antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 55-6115-498-40

BENDIX Model RDR – 1206 (commercial)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The RDR-1206 is an airborne weather radar set for fixed wing aircraft. It utilizes a 30 cm parabolic reflector dish antenna which is usually located on the nose of the aircraft.	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the scanning mode, this system is not able to produce potentially hazardous PDLs in excess of the safety standard. In the nonscanning mode, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	In the nonscanning mode, exclude personnel to a distance of 2.0 m from the dish antenna.
Other…….……..	Consult the manufacturer's equipment Technical Manual for other operator and/or maintenance hazards.

BENDIX Model RDR – 1500

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The RDR-1500 is a continuous display airborne weather radar set for fixed wing aircraft. It utilizes a 46 cm diameter planar array antenna.	Frequency: 9.375 GHz Power: 4.7 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the scanning mode, this system is not able to produce potentially hazardous PDLs in excess of the safety standard. In the nonscanning mode, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	In the nonscanning mode, exclude personnel to a distance of 2.0 m from the antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

BENDIX King Radio Model EPH – 5202X

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The EPH – 5202X is a hand-held VHF//FM transceiver that is used shipboard for bridge-to-bridge, bridge-to-dock or deck and general ship-to-shore communications.	Frequency: 150.8 – 174.0 MHz Power: 5 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

BFIST (Bradley Fire Support Team Vehicle)

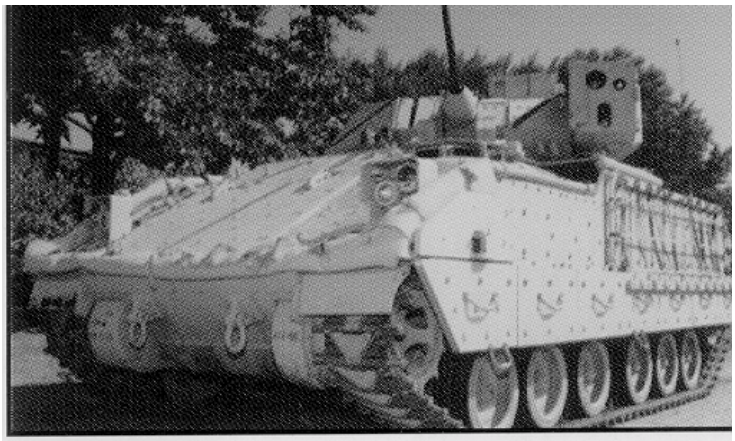
SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The BFIST provides automated enhanced surveillance, target identification and acquisition, tracking position, location and communications in tactical maneuvering. The sources of RFR are the Battlefield Combat Identification System (BCIS), which utilizes a omnidirectional resonant dipole and slotted waveguide array antenna, and either the vehicular or MANPACK version of the Single Channel Ground and Airborne Radio System (SINCGARS), which utilizes a whip antenna.	Frequency: 38 GHz (BCIS) 30 - 88 MHz (SINCGARS) Power: 60 mW average (BCIS) 5 W average; 50 W PEP (SINCGARS)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	The BCIS and SINCGARS systems are not able to produce potentially hazardous PDLs in excess of the safety standard.
RF shock/burn ……...……	Observe standard RF shock precautions. Do not touch the SINCGARS whip antenna when energized.
Other…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

BFIST (Bradley Fire Support Team Vehicle)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The BFIST provides automated enhanced surveillance, target identification and acquisition, tracking position, location and communications in tactical maneuvering. The BFIST utilizes three sources of optical radiation. These sources are the AN/TVQ-2 or G/VLLD Laser Rangefinder/designator, the Bradley Laser Rangefinder (BLRF), and the Missile Countermeasure Device (MCD).	Type: Nd:Yag (G/VLLD) Wavelength: 1064 nm (AN/TVQ-2) 1540 nm (G/VLLD) CLASSIFIED (MCD)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification…….…….	The G/VLLD system contains a Class 4 laser and requires an established laser safety program to ensure its safe use. Develop a written Local Standing Operating Procedure (SOP) IAW guidance provided in this TB. The BLRF contains a Class 1 laser and is considered safe. The MCD is CLASSIFIED and is not considered an occupational health hazard.
Laser Hazard distance ….……	Utilizing the 10 dB attenuation filter with the G/VLLD and in the rangefinder mode, the hazard distances for viewing the laser is 3.1 km with the naked eye and 22 km with magnifying optics.
Ocular injury ……..…….……	This G/VLLD laser is hazardous to the naked eye for a distance of 8 km and 40 km for viewing with magnifying optics. Use protective eyewear that filter at 1064 nm with a minimum OD of 5.5.
Outdoor range operations …..	When using the G/VLLD, eliminate all specular surfaces (man made and natural) capable of producing potentially hazardous reflections. Control unauthorized personnel access to controlled area. Use only on an approved laser range or training area. Appoint a qualified Laser Range Safety Officer.
Other……..…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.



Bradley Fire Support Team Vehicle (BFIST) Provides artillery support and target acquisition by day or night.

BRWL (Bistatic Radar for Weapons Location)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The BRWL is a 3-D bistatic radar used to detect and track artillery. It utilizes a 1.1 m x 0.6 m antenna.	Frequency: 450 MHz Power: 4000 W average 200 kW PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	In the scanning mode, exclude personnel to a distance of 19 m from the antenna. In the nonscanning mode, exclude personnel to a distance of 60 m in front of the antenna and 1 m behind the antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

Carbine Visible Laser (CVL)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The CVL is a small visible laser mounted on a M4A1 carbine weapon.	Wavelength: 630 nm (+/- 15 nm)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification…….…….	The CVL system contains a Class 3a laser and requires an established laser safety program to ensure its safe use. Develop a written Local Standing Operating Procedure (SOP) IAW guidance provided in this TB.
Laser Hazard distance ….……	Utilizing the CVL with a 10 second exposure and no filter, the hazard distances for viewing the laser is 50 m with the naked eye and 350 m with magnifying optics. Utilizing the CVL with a 100 second exposure and no filter, the hazard distances for viewing the laser is 80 m with the naked eye and 550 m with magnifying optics
Ocular injury ……..…….……	Use protective eyewear for viewing the CVL laser with the naked eye or with magnifying optics. Use protective eyewear that filter at 630 nm with a minimum OD of 1.1.
Outdoor range operations …..	When using the CVL, eliminate all specular surfaces (man made and natural) capable of producing potentially hazardous reflections. Control unauthorized personnel access to controlled area.
Other……..…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

CELT (Coherent Emitter Location Testbed System)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The CELT is part of the Communications High Accuracy Airborne Location System. It consists of three Distance Measuring Equipment (DME) Sets, three remote DMEs, and a Ground Control DME. These subcomponents utilize High Speed Data Links (HSDL).	

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 30 cm from the antenna. Instruct personnel to remain in the fuselage when the hatch is open and the HSDL is radiating.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

(CLD) Compact Laser Designator

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The CLD is a lightweight, man-portable, miniature target marker used by forward observers of target hand-off to laser-guided ordnance and laser-tracker-equipped aircraft. The CLD also includes a rangefinder capability.	Type: Nd:YAG Wavelength: 1064 um

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification…….…….	The CLD utilizes a Class 4 laser and requires an established laser safety program to ensure its safe use. Develop a written Local Standing Operating Procedure (SOP) IAW guidance provided in this TB.
Laser Hazard distance ….……	Do not permit personnel to view the beam at distances less than 9.7 m for unaided viewing. Do not permit personnel to view the beam at distances less than 38 km for 5 cm magnifying optics, 48 km for 8 cm magnifying optics, and 58 km for 12 cm magnifying optics.
Ocular injury ……..…….……	When viewing the CLD laser with the naked eye, use protective eyewear that filter at 1064 nm with a minimum O.D. of 4.5. When viewing the CLD laser with magnifying optics, use protective eyewear that filter at 1064 nm with a minimum O.D. of 5.4.
Other……..…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

CO2 Laser Radar

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The CO2 Laser Radar is mounted on an aircraft and operates in the far-infrared region.	Type: CO2 Wavelength: 10.6 um

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification…….…….	The C02 laser radar system is considered safe. The laser wavelength is absorbed at the surface of most materials, such as glass or plastic. It is also absorbed at the surface of the eye or skin.
Laser Hazard distance ….……	Do not expose unprotected eyes or skin for durations longer than; one second at distances less than 90 m, five seconds at distances less between 90 and 210 m, and ten seconds at distances between 210 and 350 m.
Ocular injury ……..…….……	The CO2 laser radar is not a retinal burn hazard.
Other……..…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

Collins HF-8014A Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The Collins HF-8014A is a HF radio set that utilizes a whip or long wire antenna.	Frequency: 2 - 30 MHz Power: 1 kW

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna...	Exclude personnel to a distance of 1.5 m from either antenna.
RF shock/burn ……..……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

Collins U1000 Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The Collins U1000 is a UHF aircraft communications transceiver.	Power: 1 kW

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna...	Exclude personnel to a distance of 4.0 m from the antenna.
RF shock/burn ……..……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

Collins MW 518 Communications Terminal

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The Collins MW 158 is a microwave line-of-sight (LOS) communications set.	Frequency: 7 – 8 GHz Power: 100 mW – 5 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Open/cracked waveguides…..…	The antenna feed horn outputs and all open waveguides produce potentially hazardous PDLs within short ranges (3 – 4 cm). Instruct personnel to avoid these areas.
Other…….…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

C2V-MMS (Command and Control Vehicle Mission Module System)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The C2V is a track vehicle which houses the following radios: the AN/VRC-97 Mobile Subscriber Radio Telephone (MSRT), the Enhanced Position Locator Reporting System (EPLRS), user unit, the vehicular Single Channel Ground and Airborne Radio System (SINCGARS), the AN/VSC-7 Tactical Satellite (TACSAT) Radio Set, the Frequency Hopping Multiplexer (FHMUX), the AN/GRC-193A HF Radio Set and the Vehicular Intra/Inter Communications System (VIICS).	Frequency: 2 – 30 MHz (AN/GRC-193) 30 - 88 MHz (SINCGARS) 33 – 88 MHz (AN/VRC-7) 410 MHz (VIICS) 420 – 450 MHz (EPLRS) Power: 100 W; 400 W (AN/GRC-193) 5 W average; 50 W PEP (SINCGARS) 18 W (AN/VRC-7) 4 W average (VIICS) 0.4 – 100 W (EPLRS)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	The TACSAT, EPLRS, VIICS, and SINCGARS systems are not able to produce potentially hazardous PDLs in excess of the safety standard. The AN/GRC-193 Radio Set is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna...	For the AN/GRC-193 Radio Set, exclude personnel to distances of 1.1 m (100 W) and 2.5 m (400 W) from the antenna.
RF shock/burn ……...……	Observe standard RF shock precautions. Do not touch the EPLRS, AN/GRC-193, SINCGARS, or AN/VRC-7 antennas when energized.
Other…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5830-264-12

Dark Invader Model 3020-I Night Vision System

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The 3020-I consists of a second-generation night vision image intensifying system combined with a 135 P/ 2.8 lens. The intended use of the device is to observe persons engaged in simulated combat at night.	Type: diode laser Wavelength: 830 um

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification…….…….	The CLD utilizes a Class 3b laser and requires an established laser safety program to ensure its safe use. Develop a written Local Standing Operating Procedure (SOP) IAW guidance provided in this TB.
Laser Hazard distance ….……	For extended viewing times, do not permit personnel to view the beam at distances less than 60 m for unaided viewing and 700 m when viewing with magnifying optics. For ten second viewing times, do not permit personnel to view the beam at distances less than 30 m for unaided viewing and 400 m when viewing with magnifying optics. For one second or less viewing times, do not permit personnel to view the beam at distances less than 80 m for unaided viewing and 250 m when viewing with magnifying optics.
Outdoor range operations ……	When using the CLD, eliminate all specular surfaces (man made and natural) capable of producing potentially hazardous reflections. Control unauthorized personnel access to controlled area.
Other……..…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

DRAKE Model TR-7A Radio Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The TR-7A radio set is a commercially available system that utilizes several antenna types; log-periodic, a vertical whip and doublet.	Frequency: 38 GHz Power: 100 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna...	Exclude personnel to a distance of 0.3 m from the antenna.
Other…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

DSBCIS (Dismounted Soldier Battlefield Combat Identification System)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The DSBCIS is a rifle and soldier-mounted version of the BCIS. This system is composed of a transponder/interrogator assembly which is used to identify friendly forces during combat. This system utilizes a patch-array antenna attached to the soldier's rifle and an transponder omnidirectional resonant dipole antenna is attached to the soldier helmet.	Frequency: 38 GHz Power: 38 mW average 316 mW PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Other……..…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

DWSR–88C Weather Radar

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The DWSR–88C is a fixed-station Doppler weather radar. It utilizes either of three parabolic reflector dish antennas; 3.7 m, 4.3 m, or 6.1 m.	Frequency: 5.6 GHz Power: 125 W average; 250 kW PEP 275 W (Doppler mode)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	When utilizing the 4.3 m or 6.1 m antenna, this system is not able to produce potentially hazardous PDLs in excess of the safety standard. When utilizing the 3.7 m antenna, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	When utilizing the 3.7 m antenna, exclude personnel to a distance of 47 m from the dish antenna.
Open/cracked waveguides…...…	The area between the antenna feed horn and reflector and any open waveguides produce potentially hazardous PDLs within short ranges. Exclude personnel from this area and do no permit operation of this system with any cracked, broken or open waveguide.
Other…….……..	Consult the manufacturer's equipment Technical Manual for other operator and/or maintenance hazards.

(EPLRS) Enhanced Position Location Reporting System

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The EPLRS is a vehicular tactical data system which handles simplex/duplex data transmissions in the UHF band. Two variations of the EPLRS are the Very High Speed Integrated Circuit (VHSIC) and the System Improvement Program (SIP). The EPLRS utilizes a vertical monoplole antenna.	Frequency: 420 – 450 MHz Power: 0.4 -100 W; 20 mW average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
RF shock/burn ……..	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

FST-2000 Flyaway Satellite Terminal *(part of GUARDRAIL System)*

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The FST-2000 Terminal transmits information obtained at a remote site via satellite to the main GUARDRAIL Relay System. This Terminal will utilize a cassegrain-fed, log periodic reflector antennas with diameters of 4.5 m for transportability and 11 m for fixed-station usage.	Frequency: 5.925 – 6.425 GHz (C Band) 7.9 – 8.4 GHz (X Band) 14.0 – 14.5 GHz (Ku Band) Power: 400 W PEP (C Band) 350 W PEP (X Band) 300 W PEP (Ku Band)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to distances of 1.0 m from the antenna feed sub-assembly.
Open/cracked waveguides…...…	The area between the antenna feed horn and reflector and any open waveguides produce potentially hazardous PDLs within short ranges. Instruct personnel to avoid these areas. Inspect semi-rigid waveguides and quick-disconnect flange portions periodically for breaks or cracks, and replace any suspect waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

(GCP-1) Ground Commanders Pointer

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The GCP-1 laser pointer is a hand-held infrared (IR) laser illuminator for night vision device users. It is designed to provide target marking and illumination for combat operations.	Type: Gallium:Arsenide Wavelength: 825 nm

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification…….…….	The GCP-1 utilizes a Class 3b laser and requires an established laser safety program to ensure its safe use. Develop a written Local Standing Operating Procedure (SOP) IAW guidance provided in this TB. This laser when used with its training filter is a Class 1 laser device.
Laser Hazard distance ….……	When not using the training filter, do not permit the user to aim at unprotected personnel within 120 m or at personnel using magnifying optics within 830 m.
Ocular injury ……..…….……	The GCP-1 is capable of causing ocular injury at close range. Do not look into the lens with the naked eye.
Other……..…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Do not operate the GCP-1 without the training filter covering the laser exit port.

GECKO Unmanned Ground Vehicle

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The GECKO is comprised of an industrial grade skid-steer vehicle and a portable operator control unit (OCU). The RF link between the vehicle and the OCU is the Arlan A620 Radio Set. The height of both system antennas is approx. 5 m above ground.	Power: 3.5 W 1 W (Arlan A620 Radio Set)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

GUARDRAIL/Common Sensor Ground Station (GRCS)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The GRCS consists of three Interoperable Data Links (IDL), a Low Band Antenna (LBA) Field, an Integrated Processing Facility (IPF), a Remote Relay System (RRS)/the FST-2000, and a support building to house the GRCS. The FST-2000 Terminal utilizes a cassegrain-fed, log periodic reflector antennas with diameters of 4.5 m for transportability and 11 m for fixed-station usage. The LBA and IPF utilize a Low-Band Horizontal Dipole antenna, a Low-Band Vertical Monopole/Monocone antenna, Mid and High-Band antenna masts, and ARF antennas mounted on the aircraft.	Frequency: CLASSIFIED (IDL) 5.925 – 6.425 GHz (C Band) (FST-2000) 7.9 – 8.4 GHz (X Band) (FST-2000) 14 .0 – 14.5 GHz (Ku Band) (FST-2000) Power: 70 W max (IDL) 400 W PEP (C Band) (FST-2000) 350 W PEP (X Band) (FST-2000) 300 W PEP (Ku Band) (FST-2000)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
Open/cracked waveguides…..…	The area between the IDL and FST-2000 antenna feed horn and reflector and any open waveguides produce potentially hazardous PDLs within short ranges (2.0 –2.5 m for the FST-2000). Instruct personnel to avoid these areas. Inspect FST-2000 semi-rigid waveguides periodically for breaks or cracks, and replace any suspect waveguide.
RF shock/burn ……..…..…	Observe standard RF shock precautions. Do not touch any LBA antennas when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

GRIZZLY (Breacher Combat Mobility Vehicle)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The GRIZZLY is a combat support system that breaches manmade and natural obstacles, creating a lane for tracked vehicles to follow. The Breacher Vehicle is equipped with the Terrain Mapping System and a SINCGARS radio for short and long-range communications. It utilizes two vertical whip antennas.	Frequency: 30 – 88 MHz (SINCGARS) Power: 5 W average (SINCGARS low mode) 5 0 W average (SINCGARS high mode)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	The SINCGARS radio system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
RF shock/burn ……..……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

HGSS (HELLFIRE Ground Support Simulator)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The HGSS is a component of the Air-to-Ground Engagement System II (AGES II) Simulator System.	Type: Ga:As Wavelength: 914 nm Erbium Glass 1540 nm

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification…….…….	This system lasers are considered Class 3a. They are considered safe if the operators are informed of the hazards and use appropriate precautions.
Ocular injury ……..…….……	Intentional viewing of the erbium glass laser is avoided due to normal glass absorption in magnifying optics. Do not permit personnel to view the gallium-arsenide laser beam within 200 m with unprotected optics. Optical systems which have a built-in (or added) OD of 0.7 or greater will provide adequate protection for both lasers at any viewing distance.
Other……..…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: CHPPM Study 25-42-DT33-92

Individual Soldier Radio (ISR)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The ISR is a mobile VHF/UHF transceiver. The unit utilizes a screw-type vertical dipole antenna.	Frequency: 136 - 150 MHz Power: 5.0 W PEP 1.0 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
Hazard distance from antenna	Ensure personnel do not operate the radio with the antenna within 2.5 cm from the body.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES:

JAVELIN FTT (Field Tactical Trainer)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The JAVELIN FTT is a man-portable training system for the shoulder-fired JAVELIN Antitank Tactical Weapon System. The FTT is used in a tactical environment to practice weapon employment and real target engagements.	Type: Gallium:Aluminum:Arsenide Wavelength: 905 nm

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification…….…….	The JAVELIN FTT utilizes a Class 3b laser and requires an established laser safety program to ensure its safe use. Develop a written Local Standing Operating Procedure (SOP) IAW guidance provided in this TB.
Laser Hazard distance ….……	Do not permit the user to aim at unprotected personnel within 12 m or within 20 m at personnel using 5 cm magnifying optics.
Ocular injury ……..…….……	When viewing the JAVELIN FTT laser with the naked eye, use protective eyewear that filter at 905 nm with a minimum O.D. of 1.0. When viewing the JAVELIN FTT laser with magnifying optics, use protective eyewear that filter at 905 nm with a minimum O.D. of 1.1.
Other……..…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

Joint Surveillance Target Attack Radar System (Joint STARS) Light Ground Station Module (LGSM)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The LGSM is a ground-based element of the Joint STARS integrated battlefield intelligence and target acquisition system. The LGSM is equipped with several types of data link and communications systems, which include the Surveillance Control Data Link (SCDL) Ground Data Terminal (GDT); two AN/VRC-92A Single Channel Ground and Air Radio System (SINCGARS) radio sets; one AN/VRC-83 VHF/UHF radio set; and the GSM UHF SATCOM System. The SCDL GDT utilizes a radome-covered, directional antenna which can be mounted on a mast or a tripod on the ground. The AN/VRC-92A utilizes a whip antenna mounted on a shelter. The AN/VRC-83 utilizes a dipole antenna mounted on a shelter. The GSM UHF SATCOM System utilizes a portable tripod-mounted, crossed-dipole antenna.	Frequency: 225 - 400 MHz (AN/VRC-83) CLASSIFIED (SCDL) 30 – 88 MHz (AN/VRC-92A) 240 – 400 MHz (GSM UHF) Power: 30 W (AN/VRC-83) 1.67 W average; 40 W PEP (SCDL) 50 W average (AN/VRC-92A) 200 W max (GSM UHF)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	The SCDL GDT, AN/VRC-92A, and the AN/VRC-83 do not produce potentially hazardous PDLs in excess of the safety standard and are not subject to radiation protection controls. The GSM UHF SATCOM System is able to produce PDLs in excess of the safety standard close to the antenna. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to distances of 2.0 m from the GSM UHF SATCOM antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the AN/VRC-92A, AN/VRC-83, or the GSM UHF SATCOM antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

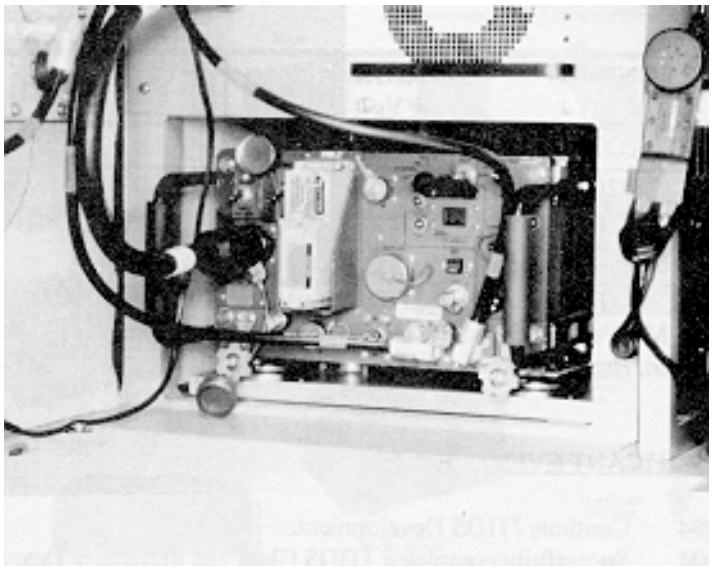
REFERENCES: CHPPM Study 24-83-0882-94

Joint Tactical Information Distribution System (JTIDS) Class II M Terminal

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The JTIDS Class II M Terminal is a communications terminal. The shelterized version uses an AN/GSQ-240A (C) digital radio transceiver. The system utilizes an omnidirectional vertical dipole antenna.	Frequency: 969 – 1206 MHz Power: 200 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to RFR control.
Other…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: CHPPM Study 24-ME-6651-97



JSTARS (Joint Surveillance Target Attack Radar System) (CGS)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
JSTARS is a ground-to-satellite communications system. It has the capability of line-of-sight (LOS) communications. It consists of the AN/PSC-5 (V) 5 EMUT as used with the AM-7175D Power Amplifier. The EMUT is equipped with two antennas; one remote Satellite Communications (SATCOM) and one hemispherical (or dome).	Frequency: 290 – 400 MHz (EMUT) Power: 200 – 250 W (EMUT)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard near the antenna. Establish a Nonionizing Radiation Protection (IAW guidelines provided in this TB).
Hazard distance from antenna	When operating at maximum power output, exclude personnel to a distance of 1.5 m from the front of the remote SATCOM antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch any system antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: CHPPM Study 24-ME-7328-97

King Color Weather Radar

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The King Color is a commercially available, fixed-station weather radar.	Frequency: 9.375 GHz Power: 3 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the scanning mode, this system is not able to produce potentially hazardous PDLs in excess of the safety standard. In the nonscanning mode, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing RADIATION (IAW guidelines provided in this TB) .
Hazard distance from antenna	In the nonscanning mode, exclude personnel to a distance of 1 m from the antenna.
Open/cracked waveguides…...…	The area between the antenna feed horn and reflector and any open waveguides produce potentially hazardous PDLs within short ranges. Exclude personnel from this area and do no permit operation of this system with any cracked, broken or open waveguide.
Other…….……..	Consult the manufacturer's equipment Technical Manual for other operator and/or maintenance hazards.

LAAT (Laser Augmented Airborne TOW)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The LAAT laser system is a helicopter-mounted rangefinder that provides fire control for the AH-1S helicopter.	Type: Nd:YAG Wavelength: 1064 nm

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification…….…….	The LAAT utilizes a Class 3b laser and requires an established laser safety program to ensure its safe use. Develop a written Local Standing Operating Procedure (SOP) IAW guidance provided in this TB.
Laser Hazard distance ….……	Do not permit the user to aim at unprotected personnel within 7.7 k m or to within 33 km of personnel with magnifying optics.
Ocular injury ……..…….……	When viewing the LAAT laser with the naked eye, use protective eyewear that filter at 1064 nm with a minimum O.D. of 5.8.
Outdoor range operations ……	When using the LAAT, eliminate all specular surfaces (man made and natural) capable of producing potentially hazardous reflections. Control unauthorized personnel access to controlled area.
Other……..…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

Land Warrior "Soldier" Radio System

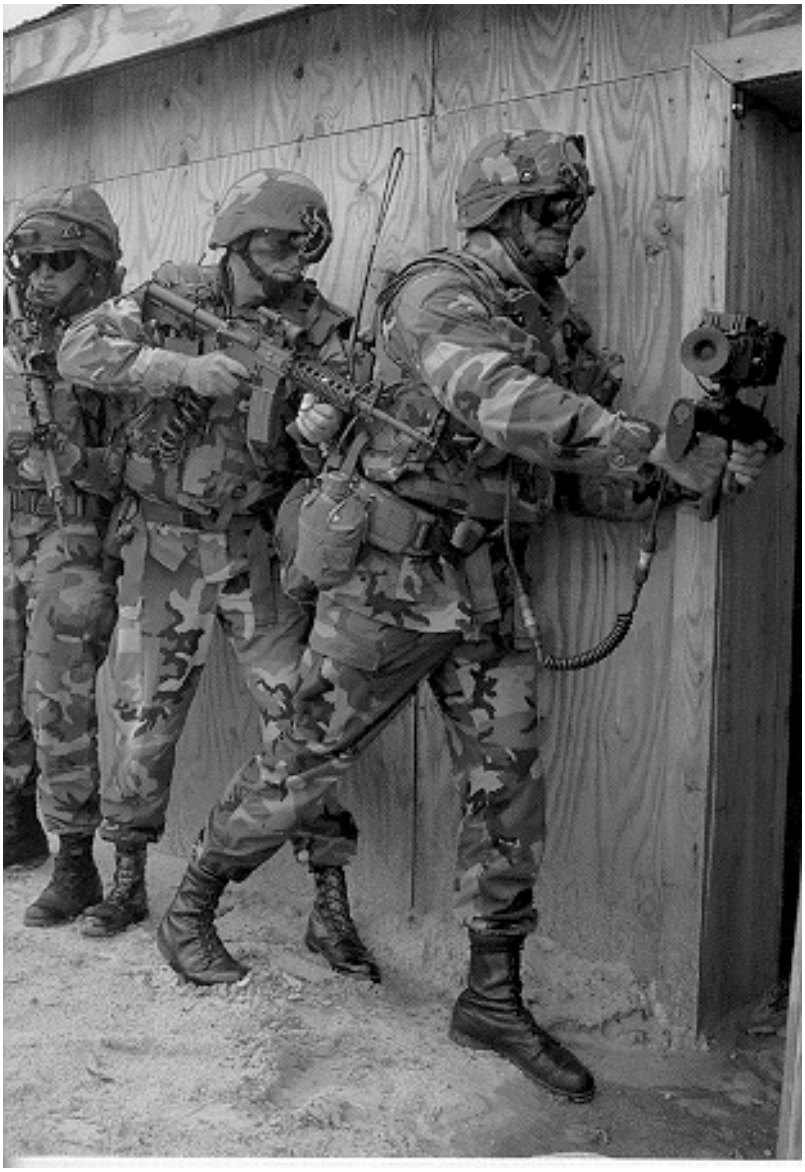
SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The Land Warrior "Soldier" Radio System is a portable radio set which utilizes a dipole antenna mounted head high on the soldiers shoulder.	Frequency: 1.755 – 1.85 GHz Power: 1 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
Other…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

Land Warrior "Squad" Radio System

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The Land Warrior "Squad" Radio System is a portable radio set which utilizes a base loaded, end fed, blade antenna mounted waist high on the soldier.	Frequency: 30 – 88 GHz Power: 2 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
Other……..…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.



LAV-AD (Light Armored Vehicle Air Defense)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The LAV-AD is a light armored vehicle-mounted laser rangefinder. It is used in a tactical environment for weapon employment and real target engagements.	Type: CO2 Wavelength: 1064 nm

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification…….…….	The LAV-AD utilizes a Class 1 laser and is considered safe.
Ocular injury ……..…….……	When viewing the LAV-AD laser with the naked eye, use plastic protective eyewear to prevent exposure to scattered laser energy.
Other……..…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Provide eye protectors for maintenance personnel.

LOPAR (Low Power Acquisition Radar)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The LOPAR is a surveillance radar which normally operates with the antenna scanning.	Frequency: CLASSIFIED Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the scanning mode, this system is not able to produce potentially hazardous PDLs in excess of the safety standard. In the nonscanning mode, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	In the nonscanning mode, exclude personnel to a distance of 53 m from the main beam of the antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

LSDIS (Light & Special Division Interim Sensor)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The LSDIS is a lightweight short range air defense sensor which utilizes a 4 x 8 element dipole array antenna mounted on a tripod.	Frequency: 1.22 – 1.4 GHz Power: 50 W average; 1.25 kW PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
Other……..…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

LST-5 Satellite Communications Radio Terminal

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The LST-5 is a satellite communications radio terminal which operates in two modes; a SATCOM and alternate line-of-sight (LOS) communications mode. The LOS mode utilizes a compact helix antenna.	Frequency: 225 - 400 MHz Power: 35 W average (SATCOM) 2 W (LOS)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch the antenna when energized
Other……..……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

LST-5C Satellite Communications Radio Terminal

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The LST-5C is a MANPACK satellite comunications radio terminal which utilizes either a log periodic (SE-77) or log conical-spiral antenna compact helix (WSC-3) antenna.	Frequency: 210 - 317 MHz

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 4.5 m from the SE-77 antenna and 9 m from the WSC-3 antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch either antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

LWLR/DCA (Land Warrior Laser Rangefinder/Digital Compass Assembly)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The LWLR/DCA mounts to the modular weapon and contains two lasers; the Laser Rangefinder (LRF) and the Boresight Light (BSL). The Laser Mandrel/Borelight is used to boresight the Thermal Weapon Sight to the various weapons systems they may be attached to.	Type: Er:Glass (LRF) Laser diode (BSL) Laser diode (Mandrel) Wavelength: 1533 nm (LRF) 655 nm (BSL) 635 nm (Mandrel)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification…….…….	The Laser Rangefinder utilizes a Class 1 laser and is considered safe. The Boresight Light utilizes a Class 2 laser and is considered safe. The Mandrel/Borelight utilizes a Class 3a laser and requires an established laser safety program to ensure its safe use. Develop a written Local Standing Operating Procedure (SOP) IAW guidance provided in this TB.
Laser Hazard distance ….……	Do not permit personnel to look into the Mandrel/Borelight direct beam.
Other……..…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

M-33 Tracking Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The M-33 is a radar tracking set.	Frequency: 8.5 – 9.6 GHz Power: 40 W average; 160 kW PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)....	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Hazard distance from antenna...	Exclude personnel to a distance of 125 cm from the antenna aperture.
Open/cracked waveguides…..…	All open waveguides and feed horn outputs produce extremely hazardous PDLs. Extremely high PDLs exist very close to the antenna.
Other…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

M-36 Tracking Radar Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The M-36 is a radar set.	Frequency: 8.5 – 9.6 GHz Power: 40 W average; 160 kW PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)....	This system is not able to produce potentially hazardous PDLs in excess of the safety standard.
Open/cracked waveguides..…..	All open waveguides and feed horn outputs produce potentially hazardous PDLs in close proximity (5 cm). Exclude personnel from this area and do no permit operation of this system with any cracked, broken or open waveguide.
Other…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

MDV (Mine Detection Vehicle)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The MDV is a four-wheeled, tractor-type vehicle which sweeps out in front of other modules and travels between 20 and 35 km/hr for fast sweeps or 10 km/hr for slower sweeps. The MDV uses pulse induction-type mine detectors to locate and mark mines for clearing by EOD personnel.	Frequency: 3 kHz – 300 GHz Power: 1.0 kW PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
Other……..……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5895-458-14

MILSTAR Ground Command Post Terminal

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The MILSTAR Ground Command Post Terminal is a transportable millimeter satellite communications terminal. The UHF portion of the system utilizes a transmitter and a phased array antenna of five dipoles mounted on a tower. The EHF portion of the system utilizes a 2.44 m diameter parabolic reflector antenna.	Frequency: 225 – 400 MHz (UHF) Power: 100 W (UHF)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	The EHF portion of the system is able to produce potentially hazardous PDLs in excess of the safety standard between the antenna feed and the reflector. The UHF portion of the system is not able to produce potentially hazardous PDLs in excess of the safety standard in the antenna main beam.
Open/cracked waveguides..…...	For the EHF portion of the system, the area between the antenna feed and the reflector produce potentially high PDLs. All open waveguides produce potentially high PDLs within 2.5 cm. Exclude personnel from these areas and check waveguide portion of this system periodically for breaks or cracks, and replace any suspect waveguide.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch either antenna when energized.
Other……..……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-1105-12&P

MMS (Mast Mounted Site Simulators)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The MMS is a component of the Air-to-Ground Engagement System II (AGES II) Simulator System.	Type: Ga:As Wavelength: 904 nm Erbium Glass 1540 nm

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification…….…….	This system lasers are considered Class 3a. They are considered safe if the operators are informed of the hazards and use appropriate precautions.
Ocular injury ……..…….……	Intentional viewing of the erbium glass laser is avoided due to normal glass absorption in magnifying optics. Do not permit personnel to view the gallium-arsenide laser beam within 260 m with unprotected optics. Optical systems which have a built-in (or added) OD of 1.0 or greater at 904 nm will provide adequate protection at any viewing distance.
Other……..…..…..……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: CHPPM Study 25-42-D1XC-94

MP Series Radio

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The MP Series is a 32 channel scanning portable VHF/UHF band transceiver. The unit utilizes a vertical dipole antenna.	Frequency: 136 - 174 MHz (VHF) 403 – 430 MHz (UHF) 450 – 480 MHz (UHF) Power: 5/1 W (VHF) 4/1 W (UHF)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
Hazard distance from antenna	Ensure personnel do not operate the radio with the antenna within 2.5 cm from the body.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

M-RK (I), (II), (II SCAN) Radio

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The M-RK is a switchable portable conventional VHF/UHF band transceiver. The unit utilizes a vertical dipole antenna.	Frequency: 136 - 160 MHz (VHF) 150 – 174 MHz (VHF) 403 – 430 MHz (UHF) 440 – 500 MHz (UHF) Power: 0.5 - 6 W (VHF/UHF)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
Hazard distance from antenna	Ensure personnel do not operate the radio with the antenna within 2.5 cm from the body.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

Multiple Integrated Laser Engagement System (MILES) Extended Tube Launched Optically Tracked Wire Guided TOW System

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The Extended TOW laser system provides simulated training for the Improved Acquisition Target System.	Type: Ga:As Wavelength: 905 nm

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification…….…….	The Extended TOW utilizes a Class 3a laser and requires an established laser safety program to ensure its safe use. Develop a written Local Standing Operating Procedure (SOP) IAW guidance provided in this TB.
Laser Hazard distance ….……	Do not permit the user to aim at unprotected personnel to within 6 m .
Ocular injury ……..…….……	When viewing the Extended TOW laser with the naked eye, use protective eyewear that filter at 905 nm with a minimum O.D. of 0.12.
Other……..…..…..……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 9-1265-368-10-2

Multiple Threat Emitter Simulator (MUTE)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The MUTE is equipped with AN/MST-T1A and AN/TPQ-43 transmitter sets. The AN/MST-T1A is able to operate up to four transmitters simultaneously. The system utilizes several parabolic antennas that are mounted on a pedestal attached to the transmitter shelter.	Frequency: 8.5 – 9.6 GHz (AN/TPQ-43) 50 MHz – 15.4 GHz (AN/MST-T1A) Power: 102 W max average (AN/TPQ-43) 25 - 825 W average (AN/MST-T1A)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	The MUTE produces potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 11 m from the main beam of the AN/TPQ-43 antenna. Exclude personnel to an approximate distance of 50 m from the main beam of the AN/MST-T1A antenna *(see CHPPM Study ME-8096-98).* When operating four transmitters at the highest operating frequency and at maximum power, exclude personnel to a distance of 150 m from the main beam of the AN/MST-T1A antenna.
Open/cracked waveguides..…..	All open waveguides and areas between the feed horn and reflector outputs produce potentially hazardous PDLs. Exclude personnel from this area and do no permit operation of this system with any cracked, broken or open waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: CHPPM Study ME-8096-98

NIGHTSTALKER Universal Boresight Laser

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The NIGHTSTALKER Universal Boresight Laser uses a laser light to aid in the proper alignment and sighting of a variety of weapons systems.	Type: Continuous-wave Wavelength: 639 nm Power: 1.17 mW

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification…….…….	The NIGHTSTALKER utilizes a Class 2 laser and is considered safe. *(The laser would be classified as a 3a laser with only a small power increase of 0.01 mW).* Develop a written Local Standing Operating Procedure (SOP) IAW guidance provided in this TB.
Laser Hazard distance ….……	Do not permit personnel within 75 m of the boresight to view the laser beam with binoculars or other collecting optics with protection level less than 0.32 OD at the 639 nm wavelength. Avoid any unnecessary laser exposure
Other……..…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: CHPPM Study: 25-MC-8514-98

NIKE–HERCULES Radar Systems

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The NIKE–HERCULES radar system is used for target acquisition, tracking, and surveillance. The system consists of the Low Power Acquisition Radar (LOPAR), the Missile Tracking Radar (MTR), and Target Tracking Radar (TTR).	Frequency: CLASSIFIED Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the scanning mode, this system is not able to produce potentially hazardous PDLs in excess of the safety standard. In the nonscanning mode, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	In the nonscanning mode, exclude personnel to a distance of 53 m from the main beam of the LOPAR antenna. In the AJAX mode, exclude personnel to a distance of 38.4 m from the front of the MTR antenna. In the long pulse mode, exclude personnel to a distance of 70 m from the front of the TTR antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 9-1430-250-10

NVL-11 (Night Fire Control Scope)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The NVL-11 is a night fire control scope.	Wavelength: 850 nm

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification…….…….	In the Low Power mode, the LAV-AD utilizes a Class 1 laser and is considered safe. In the High Power mode, the LAV-AD utilizes a Class 3b laser and requires an established laser safety program to ensure its safe use. Develop a written Local Standing Operating Procedure (SOP) IAW guidance provided in this TB.
Ocular injury ……..…….……	When viewing the NVL-11 laser, use protective eyewear that filter at 850 nm with an O.D. of 1 or 2.
Outdoor range operations ……	When using the NVL-11, eliminate all specular surfaces (man made and natural) capable of producing potentially hazardous reflections. Control unauthorized personnel access to controlled area.
Other……..…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

ORSMC (Off-Route Smart Mine Clearance System)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The ORSMC is a remotely-piloted, Highly Mobile Multi-Purpose Wheeled Vehicle (HMMWV) that incorporates decoy technologies that cause smart mine sensors to misfire the munition or fire on a dummy target. It consists of a telemetry radio that utilizes a vertical whip antenna and a video transmitter that utilizes a vertical dipole antenna.	Frequency: 928 MHz (telemetry radio) 800 – 935 MHz (video transmitter) Power: 11 W (video transmitter) 150 mW (telemetry radio)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
RF shock/burn ……..……	Observe standard RF shock precautions. Do not touch the either antenna when energized.
Other…….…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

PATHFINDER Radar System

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The PATHFINDER is a marine surveillance radar that utilizes an end-fed, slotted, linear array antenna.	Frequency: 9.375 GHz Power: 10 W

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	In the nonscanning mode, this system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	In the nonscanning mode, exclude personnel to a distance of 2.5 m from the main beam of the antenna.
Open/cracked waveguides…...…	All open or broken waveguides produce potentially hazardous PDLs in close proximity of the break (12 cm). Exclude personnel from this area and do no permit operation of this system with any cracked, broken or open waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

PATRIOT Test Console 2221/2234

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The PATRIOT Test Console uses a small signal generator and spectrum analyzer to check the analog racks for the PATRIOT Radar System. These consoles utilize a closed loop configurated antenna.	Power: <100 mW

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	These systems are not able to produce potentially hazardous PDLs in excess of the safety standard.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

RACAL RJR3100 Countermeasures Set

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The RACAL is an electronic countermeasures training device which utilizes a transmitter and whip antenna mounted on the roof of a jeep.	Frequency: 30 - 76 MHz Power: 35 W PEP 5 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
RF shock/burn ……..	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….…….	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-401-12

R40X Radar System

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The R40X is a marine surveillance radar that is comprised of a transceiver, a 61 cm diameter antenna, and a display unit.	Frequency: 9.4 GHz Power: 4.0 kW PEP 1.5 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REGENCY NET

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The REGENCY NET consists of the AN/GRC-215 Team Terminal and the AN/TRC-179 Force Terminal. The AN/GRC-215 utilizes a 4.88 m whip antenna and the AN/TRC-179 utilizes three spiral whip antennas supported by 9 m masts.	Frequency: 2 - 30 MHz Power: 100 W PEP (AN/GRC-215) 400 W PEP (AN/TRC-179)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	Both system terminals are able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) . The MANPACK version of the AN/GRC-215 is unable to produce potentially hazardous PDLs in excess of the safety standard.
Hazard distance from antenna	When operating the AN/GRC-215 in the continuous wave mode, exclude personnel to a distance of 1.3 m from the antenna. When operating the AN/TRC-179 at 100% duty cycle, exclude personnel to a distance of 1.3 m from the antenna elements.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify the use of dummy loads during maintenance operations.

RTS – RSS (Radar Target Simulator – Radar System Simulator)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The RTS-RSS is designed to simulate either a continuous wave (CW) or pulsed radar. The system has one CW and one pulsed transmitter, each of which utilize a standard gain horn antenna.	Frequency: 6 - 18 GHz (CW) 10 – 18 GHz (pulsed wave) Power: 40 W (CW) 20 W average; 400 W PEP (pulsed wave)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Extremely high PDLs exist very close to the antenna; exclude personnel to a distance of 1.3 m from the antenna.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards. Specify the use of dummy loads during maintenance operations.

SCHWARTZ Electro-Optics Small Arms Transmitter

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The SCHWARTZ laser transmitter is a computer programmable weapons simulator used to simulate any weapon or firing rate.	Type: Ga:As Wavelength: 905 nm

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification…….…….	The SCHWARTZ transmitter utilizes a Class 1 laser and is considered safe.
Ocular injury ……..…….……	During maintenance operations, or when viewing the SCHWARTZ laser is required, use protective eyewear that filter at 905 nm with an O.D. of 1.0.
Other……..…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

SCOTT (Single Channel Objective Tactical Terminal)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
SCOTT is a satellite communications terminal which accesses the communication services provided by the MILSTAR Satellite Communications System. The system utilizes a 1.7 m diameter parabolic dish with an offset parabolic feedhorn. The antenna is positioned 1.5 m above the ground.	Frequency: 43.5 – 45.5 GHz Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL) ….	This system is not able to produce potentially hazardous PDLs in excess of the safety standard in the main beam of the antenna.
Open/cracked waveguides..…….	The area between the antenna feedhorn and the reflector and any open or broken waveguide produce potentially hazardous PDLs. Exclude personnel from this area and do no permit operation of this system with any cracked, broken or open waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5895-1008-13

SEPS (SHORTSTOP Electronic Protection System)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
SEPS is an electronic countermeasures system developed to protect personnel and equipment from incoming artillery and mortar shells. The SEPS consists of three different configurations; MANPACK, vehicle, and stand-alone.	Frequency: CLASSIFIED Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL) ….	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
RF shock/burn …..……..	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

SIMLAS (Simulated Laser Target Marking System)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The SIMLAS is an laser aiming light to identify friend or foe (IFF).	Type: Ga:As Wavelength: 830 nm

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification…….…….	The SIMLAS utilizes a Class 1 laser and is considered safe.
Ocular injury ……..…….……	The SIMLAS does not pose a potential for injury. Avoid unnecessary viewing of laser at beam output.
Other……..…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

SINCGARS (Single Channel Ground and Airborne Radio Systems)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
SINCGARS is a series of VHF-FM combat net radios which provide the primary means of command and control for infantry, armor, and artillery units. SINCGARS is designed on a modular basis to interface with various ground and airborne systems. These systems utilizes whip antennas. *(see AN/VRC-87 through ANVRC-92 and AN/PRC-119)*	Frequency: 30 – 88 M Power: 4 W (MANPACK) 4 W (short range) 50 W (long range)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	The MANPACK and Vehicular Short Range Systems are not able to produce potentially hazardous PDLs in excess of the safety standard. The Vehicular Long Range System is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 0.7 m from the Vehicular Long Range antenna.
RF shock/burn ……	Observe standard RF shock precautions. Do not touch antenna when energized.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: TM 11-5820-890-10-1; TM 11-5820-890-10

SMART - T (Secure Mobile Anti-Jam Reliable Tactical Terminal)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
SMART-T is an anti-jam tactical satellite terminal that is mounted on a vehicle. The system utilizes a offset-fed Gregorian antenna with a 1.4 m diameter parabolic reflector, positioned on top of a pallet.	Frequency: 43.5 – 45.5 GHz Power: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL) ….	This system is not able to produce potentially hazardous PDLs in excess of the safety standard in the main beam of the antenna.
Open/cracked waveguides..…….	The area between the antenna feedhorn and the reflector and any open or broken waveguide produce potentially hazardous PDLs. Exclude personnel from this area and do no permit operation of this system with any cracked, broken or open waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: FM 11-1

TADS (Target Acquisition and Designation System)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The TADS is a component of the Air-to-Ground Engagement System II (AGES II) Simulator System.	Type: Ga:As Wavelength: 904 nm Erbium Glass 1540 nm

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification…….…….	This system lasers are considered Class 3a. They are considered safe if the operators are informed of the hazards and use appropriate precautions.
Ocular injury ……..…….……	Intentional viewing of the erbium glass laser is avoided due to normal glass absorption in magnifying optics. Do not permit personnel to view the gallium-arsenide laser beam within 260 m with unprotected optics. Optical systems which have a built-in (or added) OD of 1.0 or greater at 904 nm will provide adequate protection at any viewing distance.
Other……..…..…..……	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

REFERENCES: CHPPM Study 25-42-D1XC-94

TLOS (Target Location and Observation System)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The TLOS is a man-portable day/night target location system used to detect enemy threat optical/electro-optical sensors and targeting systems. The TLOS consists of an Augmented Optical Sight (AOS) which is typically mounted on a M-16 rifle.	Type: Ga:Al:As diode array Wavelength: CLASSIFIED

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Laser Classification…….…….	The TLOS is a Class 3b laser with the training filter in position. The TLOS laser emits optical radiation that exceeds the current protection standard. The TLOS is considered safe if operators are informed of the hazards and use appropriate precautions.
Laser Hazard distance ….……	With the training filter in position, do not permit unprotected personnel to enter the beam path at distances less than 2.5 m for unaided viewing and 15 m for optically aided viewing. Do not permit unprotected personnel to enter the beam path at distances less than 25 m from the direct beam.
Ocular injury ……..…….……	The TLOS is capable of causing marginal damage to the unprotected eye. Use eye protection with a minimum OD of 2.5 at the laser wavelength for aided and unaided intrabeam viewing at any range.
Other……..…….……	Consult the equipment Technical Manual for other operator and/or maintenance hazards. To prevent accidental lasing do not remove the eye cup interlock.

REFERENCES: CHPPM Study 25-MC-6811-97

TDAR Radar

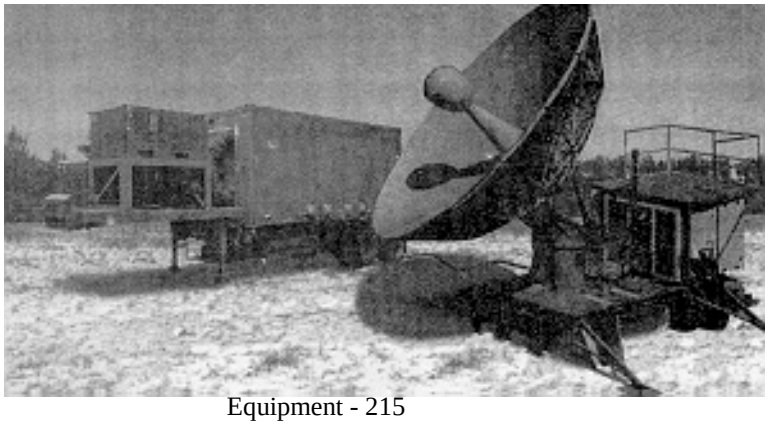
SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
TDAR is a portable surveillance radar for detecting targets within 20 km of the radar. The antenna is a four element, slotted waveguide array, with eleven slots per element. The antenna is mounted on a tripod and is normally operated while scanning.	Frequency: 1.215 – 13 GHz Power: 10 W average 115 W PEP

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard in the main beam of the antenna.
Hazard distance from antenna	Exclude personnel to a distance of 5 cm from the antenna array.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

Tri-Band Satellite Communications (SATCOM) Subsystem (TSS)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The Triband SATCOM Sub is a transportable satellite earth station capable of operating in three satellite frequency bands. It utilizes a 6.248 m diameter parabolic reflector antenna.	Frequency: 5.85 – 6.425 GHz (C Band) 14 – 14.5 GHz (Ku Band) 7 7.9 – 8.4 GHz (X Band) Power: 290 W (C Band) 290 W (Ku Band) 356 W (X Band) 10 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard in the main beam of the antenna.
Hazard distance from antenna	Exclude personnel to a distance of 0.5 m from the antenna.
Open/cracked waveguides …….	The area between the antenna feed horn and the reflector and any open waveguide produce potentially hazardous PDLs. Exclude personnel from these areas and periodically inspect waveguides for cracks or leaks and replace suspect waveguides.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.



TTTS (Triplex Telemetry Tracking System)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The TTTS automatically acquires and transmits data for airborne test platforms, such as remotely piloted vehicles, and other mission needs. It utilizes standard gain horn antennas. The C Band receiver utilizes a parabolic reflector antenna.	Frequency: L;C Bands Power: 50 W (L Band) 100 W (C Band)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 2.0 m from the antenna.
Open/cracked waveguides …….	The antenna feed horn and any open waveguide produce potentially hazardous PDLs. Exclude personnel from this area and do no permit operation of this system with any cracked, broken or open waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

Vehicular Intra/Inter Communications System (VIICS)

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The VIICS is a communication and data distribution system that provides intra and inter vehicular communications. The VIICS is installed in the Command and Control Vehicle Mission Module System (C2V-MMS) and enables all crew members to communicate with one another and access all radio sets in the C2V. The VIICS consists of the Crew Access Unit (CAU) and the Communications Interface Unit (CIU).	Frequency: 410 MHz Power: 4 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

VISAR Radio

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The VISAR is a 16 channel hand-held transceiver available for VHF/UHF or 800 MHz bands. The unit utilizes a vertical compact helix antenna.	Frequency: 136 - 178 MHz (VHF) 403 – 520 MHz (UHF) 806-866 MHz (800 MHz) Power: 5/1 W (VHF) 4/1 W (UHF) 3 W (800 MHz)

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL)	This system is not able to produce potentially hazardous PDLs in excess of the safety standard and is not subject to radiation protection control.
Hazard distance from antenna	Ensure personnel do not operate the radio with the antenna within 2.5 cm from the body.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

WINDFINDER WF-100-4-85 Radar

SYSTEM DESCRIPTION	*SYSTEM PARAMETERS*
The WINDFINDER is used to determine wind direction. It utilizes 1.8 m diameter parabolic reflector antenna with the centerline 3.0 m above ground level.	Frequency: 9.375 GHz Power: 90 W PEP 22 W average

SYSTEM HAZARDS	*HAZARD CONTROLS (to reduce or eliminate risk)*
Power Density Levels (PDL) …..	This system is able to produce potentially hazardous PDLs in excess of the safety standard. Establish a Nonionizing Radiation Protection Program (IAW guidelines provided in this TB) .
Hazard distance from antenna	Exclude personnel to a distance of 30 m from the antenna.
Open/cracked waveguides …..…	The antenna feed horn and any open waveguide produce potentially hazardous PDLs. Exclude personnel from this area and do no permit operation of this system with any cracked, broken or open waveguide.
Other…….……..	Consult the equipment Technical Manual for other operator and/or maintenance hazards.

APPENDIX A

REFERENCES

Publication	Title
(AMDF) The Army Master Data File	Published by the USAMC Catalog Data Activity, New Cumberland Army Depot, New Cumberland, PA
AMCR 385–29	Laser Safety, 26 August 1986
ANSI C95.2–1982	American National Standard Instiute Radio Frequency Radiation Hazard Warning Symbol, 5 August 1981
ANSI Z136.1–1993	American National Standard Institute for the Safe Use of Lasers, 5 February 1993
AR 11–9	The Army Radiation Safety Program, 28 May 1999
AR 385–63	Policies and Procedures for Firing Ammunition for Training, Target Practice and Combat, 15 November 1983
AR 40–10	Health Hazard Assessment Program in Support of the Army Materiel Acquisition Decision Process, 15 October 1983
AR 385–40	Accident Reporting and Records, 1 November 1994
AR 40–46	Control of Health Hazards from Lasers and Other High Intensity Optical Sources, 15 March 1974
AR 40–5	Preventive Medicine, 1 June 1985
CECOM–R 385–10	Lasers and Laser Support Equipment, 2 December 1988
CECOM–R 385–17	Radiofrequency and Microwave Radiation Producing Equipment, 7 December 1988
DASG Policy Letter	Department of the Army Surgeon General Vision and Ocular Assessments of Personnel in Laser and Radiofrequency Radiation Environments, 11 April 1994
Department of Defense Instruction (DoDI) 6055.11	Protection of DoD Personnel from Exposure to Radiofrequency Radiation, 21 February 1995
FM 8–50	Prevention and Medical Management of Laser Injuries, August 1990
FM 24–24	Radio and Radar Reference Manual, 12 December 1983
IEEE C95.1–1991	Institute of Electrical and Electronics Engineeres Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHZ, 27 April 1992
MIL–HDBK–828	Military Handbook Laser Range Safety, 15 April 1993
MIL–STD–1425	Military Standard Safety Design Requirements for Military Lasers and Associated Support Equipment, 13 December 1983
Technical Bulletin (TB) MED 523	Control of Hazards to Health from Microwave and Radio Frequency Radiation and Ultrasound, 15 July 1980
Technical Bulletin (TB) MED 524	Control of Hazards to Health from Laser Radiation, 20 June 1985

Publication	Title
TG–081	Technical Guide Laser Protective Eyewear, April 1993
Title 21, Code of Federal Regulations	Part 1030, Performance Standards for Microwave and Radiofrequency Emitting Products

APPENDIX B
ABBREVIATIONS

Abbreviation	Definition
A	Amperes
Al	Aluminum
ALT	Airborne Laser Tracker
AM	Amplitude Modulated
ANSI	American National Standards Institute
ASIT	Adaptable Surface Interface Terminal (AN/TSC–110)
ASR	Airport Surveillance Radar
ASAS/FSIC	All Source Analysis System/Forward Sensor Interface Control (AN/TYQ–40)
CECOM	U.S. Army Communications–Electronics Command
CHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
cm	centimeter (1 cm = 1/100 of one meter)
CW	Continuous Wave
DASG	Department of Army Surgeon General
dB	Decibel
DME/P	Precision distance measuring equipment
E	Electric field
EMF	Electromagnetic Field
EMP	Electromagnetic Pulse
f	Frequency
FIREFINDER	AN/TPQ–36, AN/TPQ–37
FM	Field Manual or Frequency Modulated
g	gram (basic metric unit for measuring mass)
G/VLLD	Ground/Vehicular LASER Locater Designator (AN/TVQ–2)
Ga	Gallium
GUARDRAIL	GUARDRAIL V Remote Relay System (AN/TSQ–144)
GCA	Ground Control Approach (AN/TSQ–71)
GHz	Gigahertz (1 GHz = 1 billion (10) Hz)
H	Magnetic field
HE–EXJAM	Hand Emplaced Expendable Jammer (AN/PLT–1)
HF	High Frequency
HIPIR	(AN/MPQ–57, AN/MPQ–60, AN/MPQ–61)
HPA	High Power Amplifier
HCTR	High Capacity Trunk Radio (AN/GRC–222)
HMMWV	High Mobility Multipurpose Wheeled Vehicle

Abbreviation	Definition
Hz	Hertz (1 Hz = one per second)
IAW	In Accordance With
ICTT	Improved Commander's Tactical Terminal (AN/TSC–116)
ICP	Inventory Control Point
IEEE	Institute of Electrical and Electronics Engineers
IFF	Identification Friend or Foe (AN/TPX–27, AN/TPX–41, AN/TPX–44, AN/TPX–46, AN/TPX–50)
IR	Infrared
IR–A	Near Infrared
INMARSAT	International Maritime Satellite
J	Joule, a unit of energy
JTIDS	Joint Tactical Data Information System (AN/TSC–110)
JSTAR	(AN/TSQ–32)
kg	Kilogram (1 Kg = 1 thousand grams = 2.2 lbs)
kHz	Kilohertz (1 kHz = 1 thousand Hz)
km	Kilometer (1 km = 1 thousand meters)
kV	Kilovolts (1 kV = 1 thousand volts)
kW	Kilowatts (1 kW = 1 thousand Watts)
LASER	Light Amplification by the Stimulated Emission of Radiation
lbs	pounds
LIN	Line Item Number
LOS	Line of Sight
LP	Log Periodic
LTHF	Ultra High Frequency
m	meter(s)
μm	micrometer (1 m = 1 one millionth (10^6) of a meter)
m^2	square meter
mA	Milliamperes (1 mAmpere = 1/1,000th of an Ampere)
FWHM	Full Width, Half Maximum
MHz	Megahertz (1 MHz = 1 million (10^6) Hz)
MIL–HDBK	Military Handbook
mJ	Millijoule (1 mJ = 1/1,000th of a Joule)
MMLS	Mobile Microwave Landing System (AN/TRN–45)
MRTB	Multifunction Radar Transponder Beam (AN/PPN–19)
mrad	Millirad (1 mrad = 1/1,000th of a rad)
MSE	Mobile Subscriber Equipment (AN/VRC–97)
MTR	Nike Hercules
MULE	Modular Universal Laser Equipment (AN/PAQ–3)

Abbreviation	Definition
MW	Megawatt (1 MW = 1 million (10^6) Watts)
mW	Milliwatt (1 mW = 1/1,000th of a Watt)
mW/cm^2	Milliwatts per square centimeter
Nd:YAG	Neodymium Yettrium–Aluminum–Garnet
HD	Hazard Distance
NICP	National Inventory Control Point
NIIN	National Item Identification Number
nm	nanometer (1 mμ = 10^{-9} m)
NRI	Net Radio Interface System (AN/TRC–189)
nsec	nanosecond (1 nsec = 10^{-9} s
NSN	National Stock Number
OD	Optical Density
PB	Partial Body
PEL	Permissible Exposure Level
PEP	Peak Envelope Power
pps	Pulses per Second
PRF	Pulse Repetition Frequency
PW	Pulse Width
QUICKFIX	(AN/ARQ–33)
RF	Radio Frequency
RFR	Radio Frequency Radiation
RDTE	Research, development, test, and evaluation
RPO	Radiation Protection Officer
S	Power Density
s or sec	second (unit of time)
SAR	Specific Absorption Rate
SATCOM	Satellite Communications
SCIC	Special Control Item Code
SEBA	Small Efficient Broadband Antenna
SINCGARS	Single Channel Ground and Airborne Radio Systems (AN/PRC–119, AN/VRC–88, AN/VRC–89)
SLAR	Side Looking Array Radar
SOP	Standing Operating Procedure
SSB	Single Side Band
TACAN	Tactical Navigational
TACSATCOM	Tactical Satellite Communications
TB	Technical Bulletin
TB MED	Technical Bulletin Medical

Abbreviation	Definition
TDF	Tactical Digital Facsimile (AN/UXC–4)
TG	Technical Guide
TM	Technical Manual
TRTG	Tactical Radar Threat Generator (AN/TPQ–T4)
TTR	Nike Hercules
TWF	Traveling Wave Tube
USAMC	United States Army Materiel Command
µsec	Microseconds (1 sec, = 1 one millionth of a second)
UV	Ultraviolet
V	volts
VHF	Very High Frequency
W	Watt
WB	Whole–Body
W/kg	watts per kilogram

APPENDIX C
NATIONAL STOCK NUMBER (NSN) to TYPE DESIGNATOR CROSS REFERENCE

National Stock Number (NSN)	Type Designator
1260–01–046–2843	AN/TVQ–2
1260–01–122–5234	AN/TVQ–2
1260–01–122–8735	AN/PAQ–3
1265–01–077–6083	MILES
1285–00–087–4746	AN/VPS–2
1285–00–179–4218	AN/VPS–2
1285–01–092–7500	AN/VPS–2
1285–01–224–2583	AN/VPS–2
1420–01–032–3808	C–BAND RADAR
1430–00–135–0267	AN/MPQ–48
1430–00–178–8453	AN/MPQ–50
1430–00–178–8454	AN/MPQ–51
1430–00–179–4199	AN/MPQ–49
1430–00–782–9816	AN/MPQ–46
1430–01–042–4907	AN/MPQ–55
1430–01–042–4908	AN/MPQ–50
1430–01–078–9643	AN/MPQ–57
1430–01–087–6330	AN/MPQ–53
1430–01–191–8780	AN/MPQ–61
1430–01–347–7673	AN/PPQ–2
1430–01–423–3379	AVENGER
1520–00–504–9122	AH–1S
4920–01–186–3225	AN/ALQ–136
5805–00–421–4156	AN/TTR–1
5811–01–008–6312	AN/TSQ–114
5811–01–188–8941	AN/MSQ–103
5811–01–309–6176	AN/TSQ–152
5815–00–139–5007	AN/TRQ–25
5815–00–167–7998	AN/GRC–122
5815–00–168–1556	AN/GRC–142
5815–00–224–8129	AN/VSC–2
5815–00–224–8130	AN/VSC–3
5815–00–401–9719	AN/GRC–122
5815–00–401–9720	AN/GRC–142
5815–00–401–9721	AN/VRC–29
5815–00–443–5511	AN/GRC–142
5815–00–868–8242	AN/GRC–122
5815–00–935–8049	AN/TRQ–25
5815–00–937–5295	AN/GRC–122
5815–00–937–8527	AN/TGR–1
5815–01–095–1211	AN/GRC–122
5815–01–095–1212	AN/GRC–122
5815–01–095–6258	AN/GRC–142

National Stock Number (NSN)	Type Designator
5815–01–096–0428	AN/GRC–122
5815–01–098–2587	AN/VSC–2
5815–01–100–6815	AN/GRC–142
5815–01–102–5916	AN/VSC–3
5815–01–104–7264	AN/GRC–142
5815–01–140–9312	AN/GRC–122
5815–01–142–3079	AN/GRC–142
5815–01–262–5769	AN/UXC–4
5820–00–082–3998	AN/GRA–39
5820–00–082–4276	AN/FRC–93
5820–00–086–7536	AN/GRC–125
5820–00–116–6029	AN/GRC–103
5820–00–116–6030	AN/GRC–103
5820–00–123–3938	AN/GRT–21
5820–00–123–3952	AN/GRT–22
5820–00–133–8841	AN/TRC–138
5820–00–137–7922	AN/SRC–38
5820–00–137–8969	AN/FRC–162
5820–00–148–8367	AN/FRC–162
5820–00–148–8368	AN/FRC–162
5820–00–167–7936	AN/PSG–2
5820–00–177–1641	AN/PRC–74
5820–00–222–4637	AN/FRC–154
5820–00–223–7411	AN/GRC–125
5820–00–223–7412	AN/VRC–12
5820–00–223–7412	RACAL
5820–00–223–7413	AN/VRC–24
5820–00–223–7414	AN/VRC–34
5820–00–223–7415	AN/VRC–43
5820–00–223–7417	AN/VRC–44
5820–00–223–7418	AN/VRC–45
5820–00–223–7433	AN/VRC–46
5820–00–223–7434	AN/VRC–47
5820–00–223–7435	AN/VRC–48
5820–00–223–7437	AN/VRC–49
5820–00–223–7473	AN/GRC–160
5820–00–223–7475	AN/VRC–64
5820–00–223–7548	AN/GRC–106
5820–00–340–1241	AN/FRC–154
5820–00–402–2263	AN/GRC–106
5820–00–402–2264	AN/VRC–24
5820–00–451–5523	AN/TRC–145
5820–00–451–5565	AN/TRC–145

National Stock Number (NSN)	Type Designator
5820–00–451–5590	AN/TRC–145
5820–00–451–5605	AN/TRC–145
5820–00–451–5618	AN/TRC–145
5820–00–451–5619	AN/TRC–145
5820–00–461–0733	AN/FRC–154
5820–00–461–0736	AN/FRC–154
5820–00–461–0738	AN/FRC–154
5820–00–461–0739	AN/FRC–154
5820–00–461–0740	AN/FRC–154
5820–00–461–0741	AN/FRC–154
5820–00–461–0742	AN/FRC–154
5820–00–461–0751	AN/FRC–154
5820–00–461–0752	AN/FRC–154
5820–00–461–0765	AN/FRC–154
5820–00–461–0821	AN/FRC–154
5820–00–461–0842	AN/FRC–154
5820–00–461–0844	AN/FRC–154
5820–00–461–0856	AN/FRC–154
5820–00–461–0857	AN/FRC–154
5820–00–461–0858	AN/FRC–154
5820–00–461–0859	AN/FRC–154
5820–00–461–0860	AN/FRC–154
5820–00–461–0861	AN/FRC–154
5820–00–461–0862	AN/FRC–154
5820–00–461–0864	AN/FRC–154
5820–00–461–0865	AN/FRC–154
5820–00–461–0866	AN/FRC–154
5820–00–461–0867	AN/FRC–154
5820–00–461–0868	AN/FRC–154
5820–00–472–4003	AN/FRC–154
5820–00–503–1123	AN/TRC–22
5820–00–503–1133	AN/TRC–24
5820–00–503–2581	AN/TRC–29
5820–00–532–3988	AN/TRC–36
5820–00–532–3989	AN/TRC–24
5820–00–557–5656	AN/PRC–8
5820–00–569–0031	AN/TRC–36
5820–00–644–4554	AN/GRA–6
5820–00–665–1217	AN/PRC–8
5820–00–669–7018	AN/PRC–9
5820–00–682–2718	AN/TRC–68
5820–00–761–1844	AN/TRR–20
5820–00–782–5308	AN/PRC–90
5820–00–791–3365	AN/TRC–145
5820–00–813–6560	AN/FRC–154
5820–00–832–4743	AN/GRC–160
5820–00–868–8137	AN/GRC–103

National Stock Number (NSN)	Type Designator
5820–00–889–3860	AN/GRA–39
5820–00–889–4276	AN/VRC–34
5820–00–892–0865	AN/VRC–49
5820–00–892–0867	AN/VRC–45
5820–00–892–0871	AN/VRC–46
5820–00–892–3470	AN/PSG–2
5820–00–892–3723	AN/TRC–68
5820–00–912–3991	AN/PRC–74
5820–00–925–6248	AN/TRC–29
5820–00–926–7282	AN/PRC–74
5820–00–926–7356	AN/GRC–144
5820–00–930–3724	AN/PRC–77
5820–00–935–0030	AN/PRC–74
5820–00–935–0096	AN/TRC–29
5820–00–935–4931	AN/GRC–103
5820–00–949–9909	AN/GRA–39
5820–00–987–6601	COLLINS HF8014A
5820–01–027–9071	AN/PRC–104
5820–01–028–2691	AN/FRC–165
5820–01–028–2692	AN/FRC–165
5820–01–028–2693	AN/FRC–165
5820–01–028–2694	AN/FRC–165
5820–01–061–7029	AN/GRC–144
5820–01–067–8359	AN/GRC–193
5820–01–079–9260	AN/PRC–68
5820–01–081–0055	COLLINS MW 158
5820–01–081–8866	AN/GRC–103
5820–01–090–0614	COLLINS U1000
5820–01–090–5449	AN/VSC–7
5820–01–099–3577	AN/TRC–145
5820–01–099–3578	AN/TRC–145
5820–01–099–7798	AN/GRC–144
5820–01–100–3303	AN/GRC–144
5820–01–104–4748	AN/TRC–145
5820–01–107–4121	AN/FRC–170
5820–01–107–4122	AN/FRC–170
5820–01–107–4123	AN/FRC–170
5820–01–107–5115	AN/FRC–170
5820–01–107–7164	AN/FRC–170
5820–01–107–7165	AN/FRC–170
5820–01–107–7166	AN/FRC–170
5820–01–107–7167	AN/FRC–170
5820–01–107–7168	AN/FRC–170
5820–01–107–7169	AN/FRC–170
5820–01–108–1087	AN/FRC–173
5820–01–108–1088	AN/FRC–173

National Stock Number (NSN)	Type Designator
5820–01–108–2015	AN/FRC–173
5820–01–108–2016	AN/FRC–173
5820–01–108–2017	AN/FRC–173
5820–01–108–2372	AN/FRC–173
5820–01–108–2373	AN/FRC–173
5820–01–108–3684	AN/FRC–171
5820–01–108–3685	AN/FRC–171
5820–01–108–3686	AN/FRC–171
5820–01–108–3687	AN/FRC–171
5820–01–108–3688	AN/FRC–171
5820–01–108–3689	AN/FRC–171
5820–01–108–3690	AN/FRC–171
5820–01–108–3691	AN/FRC–171
5820–01–108–3692	AN/FRC–171
5820–01–108–3693	AN/FRC–171
5820–01–108–5278	AN/FRC–171
5820–01–108–5279	AN/FRC–173
5820–01–108–9279	AN/FRC–171
5820–01–108–9280	AN/FRC–173
5820–01–108–9281	AN/FRC–173
5820–01–108–9282	AN/FRC–173
5820–01–108–9283	AN/FRC–173
5820–01–128–3935	AN/GRC–213
5820–01–131–5674	AN/URC–104
5820–01–141–7953	AN/PRC–104
5820–01–145–4943	AN/PSC–3
5820–01–148–3976	AN/TRC–170
5820–01–151–9915	AN/PRC–119
5820–01–151–9916	AN/VRC–87
5820–01–151–9917	AN/VRC–88
5820–01–151–9918	AN/VRC–89
5820–01–151–9919	AN/VRC–90
5820–01–151–9920	AN/VRC–91
5820–01–151–9921	AN/VRC–92
5820–01–161–9419	AN/TRC–138
5820–01–161–9420	AN/TRC–174
5820–01–161–9421	AN/TRC–175
5820–01–161–9422	AN/TRC–173
5820–01–180–8943	AN/PRC–68
5820–01–196–0204	AN/GRA–39
5820–01–199–8624	AN/VRC–86
5820–01–215–6181	AN/PRC–126
5820–01–246–6818	AN/VRC–97
5820–01–247–0982	AN/TRC–190
5820–01–250–6254	AN/GRC–224
5820–01–251–9555	AN/ARS–6
5820–01–251–9556	AN/ARS–6

National Stock Number (NSN)	Type Designator
5820–01–252–5441	AN/ARS–6
5820–01–252–9765	AN/GRC–226
5820–01–254–0658	AN/GRC–226
5820–01–255–4150	AN/TRC–189
5820–01–260–9945	AN/GRC–222
5820–01–262–9548	AN/GRC–213
5820–01–262–9550	AN/PRC–104
5820–01–270–5103	AN/GRC–193
5820–01–291–5415	AN/PSG–5
5820–01–291–5415	AN/VRC–83
5820–01–350–8551	AN/PVS–6
5820–01–366–8919	AN/PPX–3
5820–01–407–1228	AN/GRC–240
5821–00–050–8255	AN/ARC–102
5821–00–165–2970	AN/ARC–114
5821–00–935–5071	AN/ARC–114
5821–00–937–4686	AN/ARC–131
5821–01–071–5624	AN/ARC–164
5821–01–086–6243	AN/ARC–186
5821–01–092–4907	AN/ARC–186
5821–01–122–7094	AN/ARC–164
5821–01–145–5102	AM–7189/ARC
5821–01–167–8296	AN/ARC–199
5821–01–413–4232	AN/ARC–220
5821–01–413–4233	AN/ARC–220
5825–00–069–8763	AN/TRD–15
5825–00–148–6194	AN/SRD–18
5825–00–167–7983	AN/GRN–6
5825–00–405–4510	AN/TRN–30
5825–00–423–1654	AN/TRN–30
5825–00–491–5253	AN/TRD–23
5825–00–491–5254	AN/TRD–15
5825–00–677–1476	AN/FRN–23
5825–01–083–9521	AN/TRD–23
5825–01–326–9749	AN/TRN–45
5825–01–373–6889	AN/TSQ–164
5825–01–418–2243	AN/VRC–101
5826–00–151–2685	AN/ARN–89
5826–00–167–1026	AN/ARN–103
5826–00–167–1027	AN/ARN–103
5826–00–168–8699	AN/ARN–82
5826–00–168–9420	AN/ARN–103
5826–00–402–5318	AN/ARN–82
5826–00–519–6967	AN/ARN–59
5826–00–543–0451	AN/ARN–30
5826–00–543–0451	AN/ARN–30
5826–00–752–5814	AN/ARN–30

National Stock Number (NSN)	Type Designator
5826–00–790–6453	AN/ARN–89
5826–00–892–1056	AN/ARN–30
5826–00–912–4415	AN/ARN–83
5826–01–016–2761	AN/ARN–123
5826–01–016–2762	AN/ARN–123
5826–01–021–3289	AN/ARN–89
5826–01–058–6800	AN/ARN–123
5826–01–063–6605	AN/ARN–124
5826–01–064–9738	AN/ASN–128
5826–01–070–4066	AN/ARN–82
5826–01–070–4067	AN/ARN–123
5826–01–257–3214	AN/ARN–118
5826–01–388–4112	AN/FRN–47
5826–01–388–4142	AN/FRN–47
5840–00–082–3953	AN/PPS–4
5840–00–082–4079	AN/TPS–33
5840–00–082–4128	AN/PPX–3
5840–00–082–4128	AN/TPS–25
5840–00–097–0040	AN/PPS–15
5840–00–110–5773	AN/FSQ–84
5840–00–168–1566	AN/PPS–4
5840–00–168–1567	AN/PPS–5
5840–00–238–9366	AN/PPS–5
5840–00–309–3222	AN/MPQ–4
5840–00–320–8670	AN/MPS–19
5840–00–409–9074	AN/TPS–58
5840–00–503–1078	AN/GSS–1
5840–00–503–3529	AN/SPN–11
5840–00–503–3531	AN/SPN–11
5840–00–503–3532	AN/SPN–11
5840–00–505–0920	AN/FPN–16
5840–00–519–7609	AN/TPS–1
5840–00–542–7113	AN/TPS–25
5840–00–543–0750	AN/MPQ–4
5840–00–543–0759	AN/MPQ–4
5840–00–562–6274	AN/FPN–33
5840–00–562–8903	AN/FPS–36
5840–00–620–0013	AN/TPS–1
5840–00–679–1284	AN/TPS–1
5840–00–752–0602	AN/MPQ–4
5840–00–752–0603	AN/FPN–40
5840–00–752–5293	AN/TPS–33
5840–00–855–9279	AN/FPS–71
5840–00–935–8063	AN/FPS–71
5840–00–943–6625	AN/GSS–1
5840–00–944–2452	AN/TPN–18
5840–00–999–6090	AN/TPS–1
5840–01–009–4939	AN/PPS–5
5840–01–017–2798	AN/SPS–59

National Stock Number (NSN)	Type Designator
5840–01–034–3946	AN/SPS–64
5840–01–043–4257	AN/TPQ–36
5840–01–043–4258	AN/TPQ–37
5840–01–044–3935	AN/TPS–58
5840–01–051–3067	AN/PPS–15
5840–01–055–8967	AN/PPS–15
5840–01–070–3849	AN/TPQ–37
5840–01–070–9415	AN/TPN–18
5840–01–084–5373	AN/TPQ–37
5840–01–084–5374	AN/TPQ–37
5840–01–092–4134	AN/PPS–15
5840–01–109–9494	AN/TSQ–114
5840–01–164–9986	AN/TSQ–114
5840–01–185–4243	AN/TPQ–37
5840–01–185–4244	AN/TPQ–36
5840–01–186–9125	AN/TPQ–37
5840–01–200–9686	AN/SPS–64
5840–01–229–1276	AN/TPQ–36
5840–01–270–5100	AN/TPQ–37
5840–01–270–5101	AN/TPQ–37
5840–01–320–3687	AN/FPN–66
5840–01–372–4369	DSWR–88C
5841–00–316–0362	AN/APN–171
5841–00–505–0751	AN/APN–22
5841–00–788–5223	AN/AKT–18
5841–00–791–3731	AN/APN–171
5841–01–018–2869	AN/AKT–18
5841–01–020–2281	AN/APN–209
5841–01–023–1211	AN/APN–209
5841–01–047–5398	AN/APR–44
5841–01–047–5400	AN/APR–44
5841–01–054–8540	AN/URM–172
5841–01–070–4408	AN/AKT–18
5841–01–093–1493	AN/APN–215
5841–01–098–4339	AN/APN–209
5841–01–099–1796	AN/APN–209
5841–01–110–6665	AN/AVR–2
5841–01–114–6007	AN/APN–209
5841–01–134–3346	AN/APN–215
5841–01–236–8951	AN/APR–39A
5841–01–406–3715	AN/ASN–128
5855–00–058–1293	AN/VSS–3
5855–00–137–7696	AN/VSS–1
5855–00–137–8289	AN/VSS–1
5855–00–177–3529	AN/VSS–3
5855–00–189–6076	AN/VSS–2
5855–00–221–9435	AN/GSS–14
5855–00–405–0404	AN/VSS–3
5855–00–790–6992	AN/GSS–14

National Stock Number (NSN)	Type Designator
5855–00–878–4299	AN/VSS–2
5855–00–901–8639	AN/VSS–1
5855–00–901–9436	AN/VSS–1
5855–01–083–9052	AN/TSS–11
5855–01–107–5925	AN/PAQ–4
5855–01–361–1362	AN/PAQ–4
5855–01–398–4315	AN/PAQ–4
5855–01–420–0849	GCP–1
5855–01–420–0851	GCP–1
5860–00–179–8429	AN/AAS–24
5860–01–062–3543	AN/GVS–5
5860–01–070–3841	AN/AAS–32
5860–01–070–3842	AN/AAM–55
5860–01–070–3843	AN/AAM–56
5865–00–021–2777	AN/GLR–9
5865–00–137–6006	AN/GLR–9
5865–00–186–6307	AN/GLR–9
5865–00–244–1870	AN/GLR–9
5865–00–443–1167	AN/GLR–9
5865–00–443–1168	AN/GLR–9
5865–00–763–7655	AN/GLR–9
5865–00–763–7656	AN/GLR–9
5865–00–763–7665	AN/GLR–9
5865–00–937–7877	AN/TLQ–17
5865–01–004–1098	AN/TLQ–17
5865–01–008–4430	AN/GLR–9
5865–01–008–6350	AN/ALQ–151
5865–01–037–1334	AN/ALQ–144
5865–01–037–7366	AN/GLR–9
5865–01–037–7869	AN/GLR–9
5865–01–037–7869	AN/PPS–9
5865–01–069–3791	AN/TLQ–17
5865–01–098–7105	AN/ALQ–144
5865–01–127–6880	AN/ALQ–136
5865–01–132–1303	AN/ALQ–151
5865–01–145–5197	AN/ALQ–156
5865–01–156–0459	AN/ALQ–156
5865–01–156–0460	AN/ALQ–156
5865–01–166–3594	AN/TSQ–144
5865–01–186–9128	AN/ALQ–136
5865–01–186–9129	AN/ALQ–136
5865–01–186–9130	AN/ALQ–136
5865–01–187–4729	AN/ALQ–162
5865–01–188–3309	AN/ULQ–19
5865–01–219–2097	AN/ULQ–19
5865–01–275–2137	AN/TLQ–17
5865–01–376–7710	AN/GLQ–14
5865–01–376–7711	AN/GLQ–15
5895–00–004–0973	AN/TSQ–71

National Stock Number (NSN)	Type Designator
5895–00–011–3878	AN/TSC–61
5895–00–054–9366	AN/TSQ–70
5895–00–067–8914	AN/TRQ–32
5895–00–076–6729	AN/FPN–47
5895–00–089–6481	AN/TRC–143
5895–00–115–1490	AN/TPX–46
5895–00–137–8548	AN/TSQ–97
5895–00–143–4194	AN/ASC–15
5895–00–168–1477	AN/TSC–26
5895–00–168–1565	AN/PPS–4
5895–00–168–1573	AN/TSC–61
5895–00–168–1574	AN/TSC–76
5895–00–168–1576	AN/TSQ–70
5895–00–168–1577	AN/TSQ–70
5895–00–168–1579	AN/TSQ–72
5895–00–168–9564	AN/TRR–33
5895–00–205–0514	AN/GRQ–23
5895–00–237–2489	AN/PSG–2
5895–00–256–6330	AN/TYK–10
5895–00–404–3273	AN/TSQ–72
5895–00–406–1603	AN/TPX–41
5895–00–423–1693	AN/TPX–46
5895–00–423–1694	AN/TPX–46
5895–00–423–1696	AN/TPX–46
5895–00–423–1700	AN/TPX–46
5895–00–423–1702	AN/TPX–46
5895–00–782–5296	AN/TPX–50
5895–00–856–2991	AN/GSS–7
5895–00–879–0211	AN/APX–72
5895–00–935–8098	AN/TSQ–71
5895–00–937–8529	AN/TRX–1
5895–00–937–8530	AN/TYQ–5
5895–00–944–1314	AN/TPX–44
5895–00–947–0167	AN/TSQ–72
5895–00–988–0342	AN/TYK–11
5895–01–007–9401	AN/FSC–78
5895–01–007–9401	AN/FSC–79
5895–01–018–1246	AN/TSW–7A
5895–01–018–4092	AN/TYQ–5
5895–01–042–9859	AN/TSC–85
5895–01–042–9860	AN/TSC–93
5895–01–051–9427	AN/TSC–86
5895–01–054–3796	AN/TSC–94
5895–01–057–3968	AN/TSC–61
5895–01–057–6262	AN/GRA–114
5895–01–063–8103	AN/TRS–2
5895–01–063–8104	AN/TRS–2

National Stock Number (NSN)	Type Designator
5895–01–068–6747	AN/TRS–2
5895–01–068–6748	AN/TRS–2
5895–01–068–6749	AN/TRS–2
5895–01–070–5685	AN/GSC–39
5895–01–073–9032	AN/TRS–2
5895–01–077–6249	AN/GSC–39
5895–01–083–6891	AN/TSC–86
5895–01–088–2679	AN/MSC–64
5895–01–088–9270	AN/GSC–40
5895–01–092–5988	AN/APX–100
5895–01–098–7378	AN/ASN–137
5895–01–102–6307	AN/MSQ–114
5895–01–112–5836	AN/MSC–64
5895–01–112–5838	AN/MSC–64
5895–01–113–5343	AN/TSC–85
5895–01–113–5344	AN/TSC–93
5895–01–121–4485	AN/TSC–99
5895–01–121–9558	AN/GSC–49
5895–01–126–9198	AN/GSC–49
5895–01–146–3874	AN/GSC–40
5895–01–146–3875	AN/GSC–40
5895–01–156–0411	AN/TRC–179
5895–01–156–0412	AN/TRC–179
5895–01–156–0456	AN/GRC–215
5895–01–162–5237	AN/TPX–46
5895–01–162–5239	AN/TPX–46
5895–01–162–5240	AN/TPX–46
5895–01–163–1235	AN/TPX–46
5895–01–163–3646	AN/TPX–46
5895–01–164–6853	AN/TSC–94
5895–01–165–4930	AN/TSC–94
5895–01–167–7655	AN/TRQ–32
5895–01–167–7656	AN/TRQ–32
5895–01–168–7286	AN/TPX–46
5895–01–168–9607	AN/GSC–52
5895–01–168–9608	AN/GSC–52
5895–01–174–0272	AN/GSC–52
5895–01–178–3833	AN/TRS–2
5895–01–188–3332	AM–7189/ARC
5895–01–189–9885	AN/TSC–116
5895–01–195–1199	AN/PPN–19
5895–01–208–6159	AN/PPN–19
5895–01–219–2244	AN/TPX–50
5895–01–254–6309	AN/TRC–180
5895–01–266–7618	AN/URC–122
5895–01–277–4806	AN/VSQ–2
5895–01–277–4806	EPLRS
5895–01–301–4042	AN/TYQ–40
5895–01–323–9060	AN/GRC–233

National Stock Number (NSN)	Type Designator
5895–01–359–9279	LST–5
5895–01–388–1454	AN/TSQ–198
5895–01–415–1246	FST–2000
5905–00–847–6213	F–117
6110–01–440–1491	GCP–1
6115–00–942–2094	BENDIX RDR–1200
6230–00–933–4468	AN/GSS–14
6350–01–168–1168	AN/TRS–2
6350–01–168–1169	AN/TRS–2
6350–01–168–1170	AN/TRS–2
6605–00–069–8762	AN/ASN–43
6605–00–179–8441	AN/ASN–86
6605–01–323–9061	AN/ASN–157
6615–01–189–1788	AN/TRC–170
6625–00–134–1533	AN/APM–378
6625–00–236–1557	AN/URM–157
6625–00–403–1070	AN/AAM–33
6625–00–403–7990	AN/UPM–98
6625–00–408–5040	AN/AAM–36
6625–00–459–3402	AN/AAM–38
6625–00–459–8568	AN/USM–306
6625–00–491–0580	AN/APM–323
6625–00–569–0266	AN/UPM–60
6625–00–580–3771	AN/UPM–98
6625–00–585–5946	AN/URM–113
6625–00–766–4685	AN/URM–157
6625–00–908–9577	AN/APM–247
6625–00–912–0429	AN/UPM–98
6625–00–912–0429	AN/UPM–98
6625–00–935–1342	AN/UPM–135
6625–00–935–6914	AN/URM–113
6625–00–943–2059	AN/APM–246
6625–01–013–9900	AN/PRM–32
6625–01–045–9988	AN/TPM–25
6625–01–094–5646	AN/PRM–34
6625–01–144–4481	AN/GRM–114
6625–01–152–6705	AN/APM–424
6660–00–224–6137	AN/GMD–1
6660–00–505–2093	AN/CPS–9
6660–00–599–8252	AN/GMD–1
6660–01–072–9995	AN/GMD–1
6660–01–077–7797	AN/GMD–1
6660–01–399–6884	AN/TMQ–40
6940–01–046–2850	AN/TVQ–2
6940–01–104–0821	AN/VLQ–4
6940–01–138–4746	AN/TPQ–T4
7010–01–017–4040	AN/GSG–10

APPENDIX D

LINE ITEM NUMBER (LIN) TO TYPE DESIGNATOR CROSS REFERENCE

Line Item Number (LIN)	Type Designator
A06352	AN/AVS–7
A06420	AN/AVS–6
A06420	AN/AVS–7
A23371	AN/ARN–103
A27159	AN/TSQ–97
A27624	AN/TSW–7A
A27874	AN/FSC–92
A28833	AN/TSQ–70
A34938	AN/PAQ–4
A34938	AN/PAQ–4
A35192	AN/AAM–56
A41666	AN/TPQ–37
A78151	AN/GRA–50
B03393	AN/ASW–12
B50731	AN/FRN–23
B50869	AN/GRN–6LP
B51098	AN/TRN–30
B51099	AN/TRN–30
C20404	AN/ALQ–136
C20472	AN/ALQ–162
C20722	AN/ALQ–136
C20831	AN/ALQ–156
C20899	AN/ALQ–156
C30607	AN/TLQ–17
C31350	AN/ALQ–156
C59125	AN/TSQ–198
C60164	AN/TSC–99
C60444	AN/GSC–49
C60504	AN/GSC–49
D02454	AN/TSQ–114
D03159	AN/APR–39
D04638	AN/AVR–2
D77692	AN/TYK–10
D77886	AN/TSC–76
D78075	AN/MYQ–4A
D78325	AN/MYQ–4A
E58601	AN/ASC–15
E59768	AN/TSC–26
E59881	AN/TRR–33
F21093	AN/TLQ–17
F77627	AN/TYK–11
F77644	AN/TYQ–5
F92600	AN/TRQ–25
G01940	AN/AAS–24
G11492	AN/ARN–59
G11697	AN/ARN–83
G11703	AN/ARN–89
G13273	AN/TRD–15
G13475	AN/TRD–23
H76352	AN/TSC–61
J01781	AN/ALQ–144
J32063	AN/GRC–193
J70228	AN/TSC–116
J98501	AN/PPX–3
J99167	AN/TPX–46
J99737	AN/ASN–43
K22900	AN/PAS–13
K29694	AH–1S
K47021	AN/GYK–29
K66245	AN/TRX–1
K99094	AN/TPX–46
K99095	AN/TPX–46
K99096	AN/TPX–46
K99097	AN/TPX–50
K99098	AN/TPX–46
K99099	AN/TPX–46
L36402	AN/TSQ–71
L36405	AN/TSQ–72
L69442	AN/TRC–190
LA0063	AN/GVS–5
M95191	AN/ASN–86
N05050	AN/TSS–11
P06148	AN/TRS–2
P49587	AN/VSQ–2
Q13862	AN/AKT–18
Q13907	AN/APN–22
Q14318	AN/FPN–33
Q14318	AN/FPN–33
Q14455	AN/FPN–40
Q14729	AN/FPS–16
Q14866	AN/FPS–36
Q15140	AN/FPS–71
Q15414	AN/MPQ–4
Q16040	AN/MPQ–57
Q16044	AN/MPQ–55
Q16046	AN/MPQ–49
Q16048	AN/MPQ–50
Q16050	AN/MPQ–51
Q16100	AN/PPS–4
Q16110	AN/PPS–5
Q16173	AN/PPS–15
Q17195	AN/TPS–1
Q17332	AN/TFS–25
Q17332	AN/TPS–25
Q17469	AN/TPS–33
Q17503	AN/TPS–58
Q18067	AN/FSQ–84
Q18702	AN/GSS–1
Q25978	AN/ARC–102
Q25990	AN/ARC–114
Q25990	AN/ARC–114
Q25991	AN/ARC–186
Q26007	AN/ARC–131
Q27081	AN/FRC–154
Q27082	AN/FRC–154
Q27085	AN/FRC–154
Q27086	AN/FRC–154
Q27089	AN/FRC–154
Q27090	AN/FRC–154
Q27091	AN/FRC–154
Q27092	AN/FRC–154
Q27093	AN/FRC–154
Q27094	AN/FRC–154
Q27095	AN/FRC–154
Q27096	AN/FRC–154
Q27097	AN/FRC–154
Q27098	AN/FRC–154
Q27099	AN/FRC–154
Q27100	AN/FRC–154
Q27103	AN/FRC–154
Q27104	AN/FRC–154
Q27105	AN/FRC–154
Q27106	AN/FRC–154
Q27107	AN/FRC–154
Q27150	AN/FRC–162
Q27151	AN/FRC–162
Q27152	AN/FRC–162
Q32687	AN/GRC–103
Q32688	AN/GRC–103

Line Item Number (LIN)	Type Designator
Q32689	AN/GRC–103
Q32756	AN/GRC–106
Q34308	AN/GRC–125
Q34308	AN/GRC–160
Q35591	AN/PRC–8
Q36002	AN/PRC–9
Q38296	AN/PRC–74
Q38299	AN/PRC–77
Q38335	AN/PRC–90
Q39232	AN/FRC–154
Q39232	COLLINS HF8014A
Q39233	AN/SRC–6
Q40448	AN/TRC–24
Q40859	AN/TRC–29
Q41407	AN/TRC–68
Q45779	AN/VRC–12
Q45779	RACAL
Q50421	AN/VRC–24
Q51339	AN/VRC–34
Q52072	AN/VRC–43
Q52394	AN/VRC–44
Q52716	AN/VRC–45
Q53001	AN/VRC–46
Q54174	AN/VRC–47
Q54829	AN/VRC–48
Q55114	AN/VRC–49
Q56783	AN/VRC–64
Q78282	AN/GRA–39
Q90100	AN/GRC–122
Q90120	AN/GRC–142
Q90337	AN/VRC–29
Q91301	AN/VSC–2
Q91302	AN/VSC–3
Q92891	AN/TRC–143
R14148	AN/TPQ–36
R16476	AN/GMD–1
R18815	AN/MPQ–53
R22467	AN/GRA–114
R27315	AN/FRC–171
R27383	AN/FRC–171
R27451	AN/FRC–171
R27519	AN/FRC–171

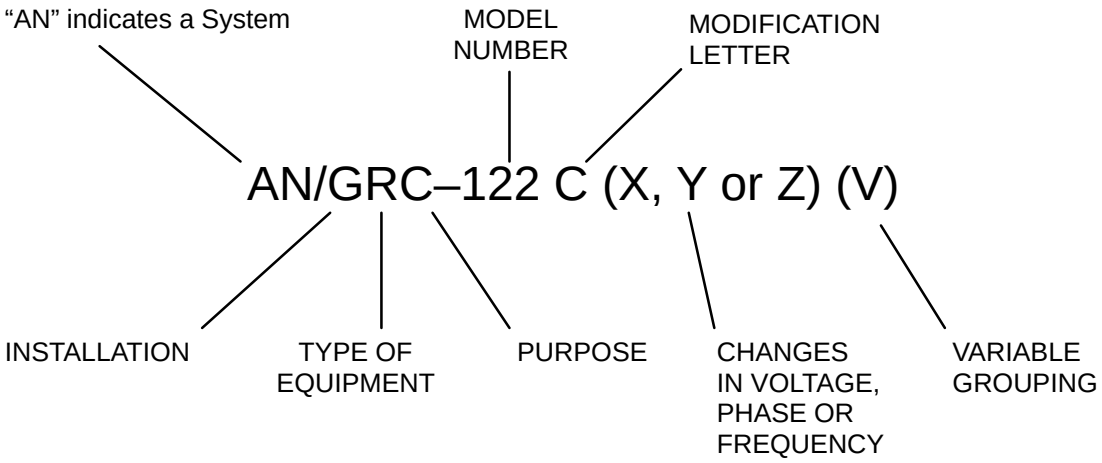
Line Item Number (LIN)	Type Designator
R27587	AN/FRC–171
R30662	AN/GRA–6
R30895	AN/GRC–213
R30963	AN/GRC–224
R30963	AN/GRC–226
R35664	AN/TGR–1
R36050	AN/GLR–9
R36854	AN/TRQ–32
R36946	AN/ARN–30
R37151	AN/ARN–82
R38403	AN/PSC–3
R39452	AN/TRC–173
R39520	AN/TRC–174
R39588	AN/TRC–175
R39656	AN/TRC–180
R40872	AN/FRC–165
R40974	AN/FRC–171
R41042	AN/FRC–171
R41110	AN/FRC–171
R41482	AN/FRC–171
R41550	AN/FRC–171
R41618	AN/FRC–171
R44571	AN/APR–44
R44639	AN/APR–44
R44659	AN/VRC–87
R44727	AN/VRC–88
R44795	AN/VRC–89
R45203	AN/VRC–90
R45271	AN/VRC–91
R45339	AN/VRC–92
R55200	AN/PRC–104
R55268	AN/PRC–119
R55336	AN/PRC–126
R57843	AN/VSC–7
R78048	AN/TRC–138
R78116	AN/TRC–138
R78487	AN/TSQ–164
R87124	AN/ULQ–19
R92962	AN/TRC–145
R92996	AN/TRC–145
R93030	AN/TRC–145
R93035	AN/TRC–170
R93169	AN/PRM–34

Line Item Number (LIN)	Type Designator
S34509	AN/MSQ–114
S34759	AN/FSC–78
S34759	AN/FSC–79
S34827	AN/TSC–86
S34895	AN/TSC–93
S34963	AN/TSC–93
S35145	AN/MSC–64
S49073	AN/GRC–233
S49073	AN/GRC–233
S51390	AN/GSC–39
S52242	AN/TSC–85
S52310	AN/GSC–39
S67375	AN/GSS–14
S78466	AN/TSC–85
S83585	AN/PRC–68
S88334	MILES
T08843	AN/TPQ–T4
T13751	AN/AAM–55
T22676	AN/PPN–19
T26207	AN/PAQ–1
T26457	AN/TVQ–2
T29125	AN/FRN–41
T29125	AN/FRN–41
T49324	AN/APM–378
T49460	AN/APM–424
T55957	AN/VRC–97
T87468	AN/GRM–114
V62066	AN/URM–157
V80868	AN/AAM–38
V82238	AN/AAM–36
V83667	AN/APM–246
V83668	AN/APM–247
V84021	AN/TPM–25
V84602	AN/UPM–60
V84876	AN/UPM–98
V86011	AN/APM–323
V87599	AN/PRM–32
V87753	AN/URM–113
V87958	AN/USM–306
V89601	AN/URM–172
V99020	AN/AAM–33
X20375	AN/GRT–21
X20375	AN/GRT–21

Line Item Number (LIN)	Type Designator
X20375	AN/GRT–22
X20376	AN/GRT–21
X20376	AN/GRT–22
X20376	AN/GRT–22
X22568	AN/APX–72
Z04721	AN/TYQ–40
Z44171	AN/TTR–1
Z52435	AN/TPN–18
Z65224	AN/GSC–51
Z65292	AN/GSC–51

APPENDIX E

THE JOINT TYPE DESIGNATOR SYSTEM



SET OR EQUIPMENT LETTERS

INSTALLATION (1st Letter)		EQUIPMENT TYPE (2nd letter)		PURPOSE (3rd Letter)	
A	Airborne, Piloted Craft	A	Invisible Light, Heat Radiation	A	Auxiliary Assemblies
B	Underwater Mobile	B	Pigeon	B	Bombing
C	Air Transportable	C	Carrier (wire)	C	Communications
D	Pilotless Carrier	D	Radiac	D	Direction Finding
F	Fixed Ground	F	Photographic	E	Ejection and/or Release
G	Ground, General Use	G	Telegraph or Teletype	G	Fire control or Searchlight Directing
K	Amphibious	I	Interphone/Public Address	H	Recording/Reproducing
M	Ground, Mobile Use	J	Electromechanical	K	Computing
P	Pack or Portable	K	telemetering	L	Searchlight Control
S	Water Surface Craft	L	Countermeasures	M	Maintenance and Test Assemblies
T	Ground, Transportable	M	Meteorological	N	Navigational Aids
U	General Utility	N	Sound in Air	P	Reproducing
V	Ground, Vehicular	P	Radar	Q	Special or Combination Purposes
W	Water Surface and Underwater Purposes	Q	Sonar and Underwater Sound	R	Receiving, Passive Detecting
Z	Piloted and Pilotless Airborne Vehicle Combination	R	Radio	S	Detecting and/or Range and Bearing, search
		S	Special Types	T	Transmitting
		T	Telephone (wire)	W	Automatic Flight or Remote Control
		V	Visual and Visible Light	X	Identification And Recognition
		W	Armament	Y	Surveillance and Control
		X	Facsimile or Television		
		Y	Data Processing		

APPENDIX F

SAMPLE RF/LASER SOP

Regulation DoDI 6055.11, Enclosure 5, paragraphs 6 and 10 require that all organizations that utilize RF and laser devices have an SOP, reviewed and approved by the Laser/ Microwave Safety Officer, posted in each lab/facility. Although it is a requirement, an SOP is also a very useful tool to ensure that safe practices are being used and that a healthy work environment is being maintained.

Sample Format for RF/Laser SOP:

Directorate: Building:

Branch: Room No.:

Office Symbol:

(The location of the lab/room for which the SOP applies, and the Directorate and Branch which is responsible for its operation should be clearly stated on the first page of the SOP. If preferred, the information can be contained in the Scope paragraph rather than as shown above)

1. Purpose: The purpose of the SOP is to prevent personnel overexposure to RF/laser radiation. It should establish definitive policies, procedures, and responsibilities for a local safety program.

2. Scope: List the particular room/lab and the equipment contained therein for which the SOP applies. It is recommended to have one SOP for each lab that contains potentially hazardous laser/RF systems. If there is an excessive amount of equipment, an attachment can be referenced and the list included there.

3. Objectives:

a. To make personnel aware of the potential hazards associated with RF/laser devices.

b. To provide a safe and healthy working environment.

c. To define safe working practices and necessary controls.

d. To establish procedures for accident reporting.

4. Authorized Users/Maintainers: List all personnel authorized to use the above–mentioned equipment or facilities. Again, if necessary, an attachment can be referenced here. This should be kept current, and all authorized users should read and sign the SOP annually indicating that they are aware of its contents.

5. Policy: State your policy here. For example: It is our policy to ensure that personnel are not exposed to harmful intensities of RF/laser radiation. All personnel are expected to refrain from unsafe acts and conform to safety rules and regulations defined/referenced herein.

6. Responsibilities: Specify the person(s) responsible for the overall safety program; for maintaining the SOP and ensuring that it is properly posted and adhered to; for ensuring that

an accident is properly reported; for maintaining an inventory of all equipment and where it is permitted to be used; and for ensuring that all workers attend the mandatory annual training sessions provided by the Laser/Microwave Safety Officer. Be sure to include a telephone extension and mailing symbol for each person listed.

7. Procedures:

a. Provide a description of the facilities to include ambient light conditions, target area, ventilation, warning signs and lights, interlocks, etc. Address what types of hazards may be present: RF, laser, ionizing radiation, toxic materials, cryogenics, noise, etc.

b. Discuss safety precautions to be taken when operating each piece of equipment in the lab, or outside the lab (if outdoor testing is conducted). Include a brief paragraph concerning the exposure criteria and control procedures associated with each system. If protective eyewear/clothing is required, be specific as to what is needed and when it is required to be worn.

c. State what pre–operational procedures may be required, including personnel control, pre–fire warning procedures, equipment checks, boresighting procedures, etc. Also provide a listing of sequential steps of operation and shutdown procedures.

d. Access to areas that may be hazardous should be controlled in some manner. Instructions as to how to obtain admittance should be included in the SOP and should also be posted just outside the controlled area. (What specific controls are in place to keep unauthorized personnel from entering the lab or testing area outside?)

e. If the lab and/or equipment have safety interlocks associated with them, describe how they operate and how often they should be tested. If it is necessary to bypass them for any reason, state under what conditions it is permitted and what alternate controls are necessary. All testing and bypassing of interlocks should be documented in a log book of some kind and maintained on site at the lab.

f. If maintenance is performed on site, specify what procedures are permitted and what is not. Are special controls needed above and beyond what is normally present? Are only certain personnel qualified to maintain the systems?

g. Require that all authorized users attend annual safety briefings conducted by the Laser/Microwave Safety Officer.

h. Delineate steps to be taken in the event of a suspected overexposure to RF/laser radiation. This listing should also include current phone numbers. At a minimum, the following shall be done:

1. Remove power from and secure the equipment which caused the suspected overexposure; do not alter it’s configuration or its control settings other than removing power from the item.

2. Notify your immediate supervisor and internal chain of command.

3. Ensure that the potentially exposed individual receives medical attention within 24 hours of the incident.

4. Receive written statements from any persons present at the time of the incident, and make copies of any pertinent information from maintenance log books, etc.

5. Within 24 hours, contact the Laser/Microwave Safety Officer, CECOM Directorate of Safety Risk Management, (732) 532–9723, DSN 992–9723.

6. Also within 24 hours, contact the U.S. Army Center for Health Promotion and Preventive Medicine:

Laser/Optical Program, DSN 584–3002/3932

RF Program, DSN 584–3353

(The CECOM Directorate of Safety Risk Management can do this once they are notified).

8. References: The following references are required to be kept on site at all permanent facilities utilizing RF and/or laser devices. Other references can be added at your preference. Always include the title and date of the regulation for quick reference.

All RF facilities must have the following:

a. Department of Defense Instruction (DoDI) 6055.11 Protection of DoD Personnel from Exposure to Radiofrequency Radiation, 21 February 1995.

b. ANSI C95.2–1982 American National Standard Institute Radio Frequency Radiation Hazard Warning Symbol, 5 August 1981.

c. TB Med 523 (Control of Hazards to Health from Microwave and Radiofrequency Radiation and Ultrasound), July 1980.

All laser facilities must have the following:

a. Department of Defense Instruction (DoDI) 6055.11 Protection of DoD Personnel from Exposure to Radiofrequency Radiation, 21 February 1995.

b. ANSI Z136.1–1993, American National Standard for the Safe Use of Lasers, 5 February 1993.

c. AMC–R 385–29, Laser Safety, 26 August 1986.

d. TB Med 524, Control of Hazards to Health from Laser Radiation, June 1985.

To obtain copies of the above references, see your Publications Officer/Coordinator.

APPENDIX G

GLOSSARY

Amplifier	An electronic device that increases the amplitude of the input signal without changing its frequency.
Antenna	The system component that is used to radiate or receive electromagnetic energy into/from space.
Antenna Array	A system of antennas coupled together to enhance the response of a single antenna element.
Attenuation	A decrease in the intensity of any signal as it passes through an absorbing or scattering medium.
Average Power	The time–averaged rate of energy transmission. For pulsed emissions, the product of the duty cycle and the peak power.
Averaging Time	The time period, often 6 minutes, which is used in assessing the potential for overexposure when one is evaluating RF fields.
Balun Transformer	A device which provides coupling and matching between a balanced line and an unbalanced (i.e. coaxial) line.
Band	The continuous range of frequencies extending between two specified limiting frequencies.
Continuous Wave (CW)	A RF transmission in which the carrier is transmitted continuously, without any breaks. Pertaining to a laser when irradiance is constant for periods in excess of 0.25 seconds.
Controlled Area	An area where the occupancy and activity of those within are subject to control and supervision for the purpose of protection from radiation hazards.
Cornea	The outermost structure of the eye that interfaces with the environment.
Diffuse Reflection	Takes place when different parts of a beam incident on a surface are reflected over a wide range of angles.
Dipole Antenna	A horizontal antenna, typically linear in design, which has its length related to the wavelength of the signal and where the signal is typically fed at its center.
Dummy Load	A dissipative device used at the end of a transmission line or waveguide to convert RF energy into heat so that free space radiation is prevented.
Duty Cycle	The ratio of the system “on time” to “on + off time” or total exposure duration.
Electromagnetic Radiation	The propagation of varying electric and magnetic fields through space at some velocity depending on the medium through which it is travelling.
Feed	The part of an antenna which couples RF energy to the antenna or reflector from the transmission line.
Frequency	The number of cycles per second of a periodic oscillation.
Hazard Distance	The distance personnel should be from the transmission main “beam” (optics) or field (RF antenna).
Hertz (Hz)	The unit of frequency or cycles per second. (see also frequency)
Horn Antenna	An antenna consisting of a waveguide section whose cross–sectional area increases toward the open end through which electromagnetic energy is radiated or received.
Infrared Radiation (IR)	Electromagnetic radiation with wavelengths which lie within the range 0.7 μm to 1000 μm. This region is often broken down into three spectral bands by wavelength: IR–A (.7 – 1.4 μm), IR–B (1.4 – 3.0 μ), and IR–C (3 μm – 1000 μm).
Interlock	A device used to interrupt the operation of a potentially hazardous RF/ELF or laser source.

Intrabeam	Viewing a laser source from within the beam. The beam may be direct or specularly reflected.
Iris	A colored membrane separating the cornea and lens of the eye, responsible for controlling the incoming light by contraction and dilation of the papillary opening.
Irradiance	The power per unit area on a given surface, in units of Watts–per–square–centimeter (W/cm^2).
Isotropic	A spherically uniform distribution of electromagnetic energy in space. Also, a uniform response pattern for a detection system, usually an array of three orthogonal antennas.
Joule (J)	A unit of energy (1 Watt–second).
$Joule/cm^2$	A unit of radiant exposure used in measuring the amount of energy per unit area of absorbing surface, or per unit area of a laser beam.
Laser	Acronym for "Light Amplification by the Stimulated Emission of Radiation." A source of intense, coherent and directional optical radiation. It is composed of an active lasing medium, an energy source, a resonant optical cavity, and an output coupler.
Lens (of the eye)	Structure of the eye that serves to focus light on the retina.
LF	Low frequency; the band of frequencies between approximately 30 and 300 kHz.
Micrometer (μm)	A measure of length equal to 10^{-6} meter.
Microwave (uW)	Electromagnetic frequencies between 300 MHz and 300 GHz.
Monopole Antenna	A vertical linear antenna electrically fed at its base.
Nanometer (nm)	A measure of length equal to 10^{-9} meter.
Optical Density (OD)	A logarithmic expression for the attenuation provided by an optical attenuating medium, such as an eye protection filter.
Overexposure	Exposure above the applicable exposure limit for a time period equal to or exceeding the appropriate averaging time.
Partial Body (PB) Exposure	Refers to a non–uniform RF field exposure over the body. The limits for PB exposure do not apply for direct exposure of the eyes or testes.
Permissible Exposure Limit (PEL)	The safety standard for RF radiation. The PEL is dependent on the frequency of operation and the exposure time.
Phased Array Antenna	An antenna composed of two or more active elements where the radiation pattern of the beam is enhanced in one or more directions (see also Antenna Array).
Power	The time rate at which energy is transmitted or used by a system; also, the rate at which work is done. The unit is the Watt.
Power Density Level (PDL)	The intensity of radiofrequency radiation expressed in units of milliwatt per square centimeter (mW/cm^2) or power per unit area.
Pulse Duration	Duration of a pulse; the time interval between the half–peak–power points on the leading and trailing edges of the pulse.
Pulsed Laser	A laser that delivers its energy in short pulses, as distinct from a continuous wave (CW) laser which is on continuously.
RADAR	Acronym for RAdio Detection And Ranging. A system that transmits a pulse–modulated signal toward some target and evaluates the return (reflected) signal to determine some characteristic of that target such as speed and/or distance.
Radiant Energy	Energy in the form of electromagnetic waves usually expressed in units of joules. Commonly used to describe the output of pulsed lasers.

Radiant Exposure	The energy per unit area incident upon a given surface in a given time interval. It is used to express exposure dose to pulsed laser radiation and is commonly expressed in J/cm^2.
Radiant Power	The time rate of flow of radiant energy (expressed in Watts). Commonly used to describe the output of CW lasers or the average radiant output power of repetitively pulsed lasers.
Radiofrequency	Electromagnetic energies between 3 kHz and 300 GHz.
Radome	An RF transparent cover that is used to protect an antenna from the environment.
Repetitively Pulsed Laser	A pulsed laser with reoccurring pulsed output. The frequency of the pulses is termed pulse repetition frequency (PRF).
Retina	A structure of the eye composed of layers of neural tissue, including photoreceptors, responsible for absorbing incoming photons and converting their energy to an electrical impulse.
Scotoma	Loss of vision in part of the visual field; blind spot.
Slot Antenna	An antenna with a long narrow aperture that is normally one half wavelength long.
Specific Absorption Rate (SAR)	Used as the fundamental parameter in biological effects studies and in the human exposure criteria. The units are watts per kilogram.
Specular Reflection	A mirror–like reflection.
Transceiver	A communications device capable of both transmitting and receiving radiofrequency radiation.
Transmitter	A circuit used to produce and/or tansmit a radiofrequency signal into space.
UHF	Ultra–high Frequency; the band of frequencies between 300 and 3000 MHz.
Uncontrolled Area	An area where individuals who have no knowledge or expectations that they may be RF exposed.
Ultraviolet Radiation	Electromagnetic radiation with wavelengths between soft x–rays and visible light. This region is broken down into 3 spectral bands by wavelength: UV–A (315–400 nm); UV–B (280–315 nm); UV–C (200–280 nm).
VHF	Very high frequency; the band of frequencies between 30 and 300 MHz.
Visible Radiation	Electromagnetic radiation that can be detected by the human eye. It is commonly used to describe wavelengths that lie between 400 and 700 nm.
Watt	The unit of power or radiant flux; 1 joule–per–second. Used principally with continuous wave (CW) lasers.
$Watt/cm^2$	A unit of measure expressing energy applied per unit time over some area.
Waveguide	A transmission line capable of confining and guiding electromagnetic energy from a generator or amplifier to some other location.
Wavelength	The distance between two points in a periodic wave that have the same phase.
Whole Body (WB) Exposure	Refers to a uniform RF field over the entire body.

By Order of the Secretary of the Army:

ERIC K. SHINSEKI
General, United States Army
Chief of Staff

Official:

JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
0029102

DISTRIBUTION:

To be distributed in accordance with the initial distribution number (IDN) 344391 requirements for TB 43-0133.

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

THEN...JOT DOWN THE DOPE ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL.

SOMETHING WRONG WITH PUBLICATION

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE

BE EXACT PIN-POINT WHERE IT IS

PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.

IN THIS SPACE, TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT.

PRINTED NAME, GRADE OR TITLE AND TELEPHONE NUMBER	SIGN HERE

TEAR ALONG PERFORATED LINE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE.

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.356	metric tons	short tons	1.102
pound-inches	newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

PIN: 055673-000