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NAVAL AIR SYSTEMS COMMAND
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IN REPLY REFER TO
NAVAIRINST 2400.1
AIR-4.1.13
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NAVAIR INSTRUCTION 2400.1

From: Commander, Naval Air Systems Command

Subj: ELECTROMAGNETIC ENVIRONMENTAL EFFECTS AND SPECTRUM SUPPORTABILITY POLICY AND PROCEDURES

Ref: (a) SECNAVINST 5000.2D of 16 Oct 08
(b) OPNAVINST 2400.20F of 19 Jul 07
(c) SECNAVINST 2400.1 of 6 Feb 06
(d) NTIA Manual of Regulations and Procedures for Federal Radio Frequency Management of January 08 (May 08 Rev), (NOTAL)
(e) DoD Directive 4650.1 of 9 Jan 09
(f) MIL-HDBK 237D of 20 May 05
(g) MIL-STD-461F, EMI of 10 Dec 07
(h) MIL-STD-464A, E^3 of 19 Dec 02
(i) NAVSEAINST 8020.7C, HERO of 1 Jul 99
(j) NAVSEAINST 8020.19, ESD of 13 Sep 00
(k) OPNAVINST 5100.23G of 30 Dec 05
(l) NAVSEA OP3565/NAVAlR 16- 1-529/NAVELEX 9067-LP-624-6010, Technical Manual Electromagnetic Radiation Hazards" of 15 Apr 88

Encl: (1) Definitions

1. Purpose. To establish Naval Air Systems Command (NAVAIR) policy, procedures, and assign responsibilities for controlling Electromagnetic Environmental Effects (E^3) and assuring spectrum supportability (SS) to ensure reliable, safe, and mission capable operations of all electrical systems in their intended operational Electromagnetic Environment (EME). This instruction specifies actions that are mandated by statute, regulatory requirements, national policy, and safety considerations prior to obligating or expending funds for Communication-Electronic (C-E) equipment that transmit or receive electromagnetic energy. This instruction implements the applicable provisions of references (a) through (k), and provides the necessary requirements and procedures for obtaining spectrum certification and frequency assignments.

2. Cancellation. This instruction supersedes and cancels NAVAIRINST 2450.2 of 4 Jun 99. Since this is a major revision, individual changes are not indicated and this instruction should be reviewed in its entirety.

3. Scope. This instruction applies to all personnel and sites supporting all NAVAIR and associated Program Executive Officer (PEO) programs involved with the design, development, test and evaluation, acquisition, in-service support, and disposal of naval aviation weapon systems and equipment.

4. Applicability. These E^3 and SS considerations apply to all NAVAIR platforms, weapon systems, Aircraft Launch and Recovery Equipment (ALRE) systems, Air Traffic Control (ATC) and landing systems, networks, facilities, sensors, electric or electronic equipment, ordnance, and support equipment developed, procured, acquired, leased, operated, modified or maintained by NAVAIR, including commercial off the shelf (COTS) items and non-developmental items (NDI).

5. Background/Discussion

a. Achieving system compatibility and personnel safety in the operational EME is the paramount objective of the NAVAIR E^3 Program. Controlling the effects of Electromagnetic Interference (EMI) is essential to enhance war fighting performance and maximize war fighting capability. This is accomplished through specification requirements, design techniques, validation testing, awareness training, problem mitigation, and correction of negative E^3 effects.

b. Reference (a) requires that E^3 and SS be considered part of a comprehensive, integrated, and disciplined approach to the life-cycle design of weapons and information technology systems applicable to all Department of the Navy (DON) acquisitions.

c. Reference (b) assigns top level responsibilities for E^3 and SS within the United States Navy (NAVY). This reference designates the Office of the Chief of Naval Operations Code N2/N6 (CNO (N2/N6)) as the Navy executive for SS, E^3, and Electromagnetic Pulse (EMP). It directs the Naval Network Warfare Command to establish a Frequency Management Office to act as the Navy/Marine Corps center of excellence for radio frequency and spectrum management for all NAVY and United States

Marine Corps (USMC) systems, subsystems, or equipment that intentionally transmit or receive electromagnetic energy. Reference (b) also establishes the data collection vehicle and describes DD Form 1494, Application for Equipment Frequency Allocation. It is of the utmost importance to submit this application as early as possible during the acquisition process to mitigate spectrum encroachment. The DD 1494 submission is not required for the following systems: electro-optics and fuse development, per MCEB-M-00683(C); or for non-tactical and intra-base radios, as defined in MCEB-M-549-78.

d. References (c) through (e) provide guidance with respect to electromagnetic spectrum management.

e. References (f) through (k) provide additional information concerning E^3, EMI, Information Assurance (IA), and guidance to facilitate the construction and implementation of an effective E^3 program.

6. Policy

a. E^3

(1) Control of E^3 shall be planned and incorporated into all NAVAIR platforms, weapon systems, ALRE systems, ATC and landing systems, networks, facilities, sensors, electric and electronic equipment, ordnance, and support equipment developed, procured, acquired, leased, operated, modified and/or maintained by NAVAIR, including COTS and NDI.

(2) Each program office, project, laboratory, and facility within NAVAIR is individually accountable for the implementation and adherence to Navy E^3 requirements for achieving electromagnetic compatibility and personnel safety. Within NAVAIR, E^3/SS approval and enforcement is the responsibility of the Electromagnetic Environmental Effects Division, (AIR-4.1.13).

(3) Military E^3 specifications, standards, and handbooks, which stress interface and verification requirements, establish operational performance, and specify developmental and operational test methodologies, have been developed and shall be used by all NAVAIR activities for E^3 control, in accordance with references (f), (g), and (h).

(4) Control of E^3 applies to all phases of the acquisition process, and shall be implemented as early as possible in the requirements definition, conceptual refinement, technology development, system development and demonstration (SDD), and production and deployment acquisition phases for all equipment, systems, and platforms.

(5) Prior to approval for Low Rate Initial Production or production approval for service use, all ordnance and materiel with electrically initiated devices (EIDs) shall be evaluated by the Commanding Officer, Naval Ordnance Safety and Security Activity (NOSSA) Weapons Assessment Office (Code N8) and certified for Hazards of Electromagnetic Radiation to Ordnance (HERO). If an overriding Fleet requirement exists, the Commanders of the Systems Command (SYSCOM) or the Program Executive Offices (PEOs) responsible for development and deployment of ordnance and materiel may request a waiver to this requirement. The Weapon System Explosives Safety Review Board (WSESRB) and the NOSSA (N8) must be advised of, and concur with, such a waiver before deployment, including deployments considered limited or provisional in nature. The overriding Fleet requirement supporting such a waiver shall be reviewed by the granting SYSCOM, PEO, WSESRB, and NOSSA (N8) every 12 months, and the waiver either canceled and the ordnance or materiel withdrawn from deployment, or re-issued until the item is modified, tested, and certified HERO safe.

(6) Prior to any developmental or operational testing of an electromagnetic radiation emitting system, the program manager shall determine electromagnetic field levels where personnel could receive exposures in excess of personnel exposure limits and compliance with reference (l). In addition, all electromagnetic radiation emitting systems require a safety certification, per reference (l).

(7) Ensure MIL-STD-461 EMI qualification testing conducted by public or private laboratories is accredited to current International Standards Organization (ISO)/International Exchange Commission (IEC) 17025 standards with the applicable scope of testing capability to meet the program's EMI requirements. The accreditation of a testing laboratory shall be issued by an accreditation body (AB) operating in accordance with ISO 17011, General requirements for accreditation bodies

accrediting conformity assessment bodies, and shall be an International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) signatory.

b. SS

(1) No spectrum-dependent system shall proceed into the production and deployment acquisition phase without such a spectrum supportability determination unless specific authorization to proceed is granted by the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD (AT&L)), or a waiver is granted by the Assistant Secretary of Defense for Networks and Information Integration (ASD (NII)), in accordance with references (c) through (e).

(2) No spectrum-dependent "off-the-shelf" or other non-developmental system shall be purchased or procured without such a spectrum supportability determination, in accordance with references (c) through (e).

c. Equipment Spectrum Certification

(1) The DD Form 1494, Application for Equipment Frequency Allocation, shall be initiated and submitted by developers or the procuring organizations as soon as radio frequency (RF) bands of operation are identified; shall be updated for each stage of the system life-cycle; and shall be updated again whenever changes are planned in system electromagnetic radiating characteristics or operational use, including deployment locations.

(2) Funds shall not be obligated for the research, development, procurement, or operation of C-E equipment beyond the Milestone (MS) A phase until approval of at least a Stage 1 spectrum certification has been obtained from CNO (N2/N6) per reference (b).

(3) A DD Form 1494 submission is not required for the following efforts: electro-optics and fuse development per United States Military Communications-Electronics Board (USMCEB) PUB-7; low power equipment used only in the United States and Possessions (US&P) as defined in reference (d), Annex K; or for non-tactical and intra-base radios as defined in USMCEB PUB-7. A DD Form 1494 shall be submitted for all other equipment,

systems, and platforms and C-E devices, to include Global Positioning Systems (GPS - reradiating devices), COTS, Commercial Items (CI), and Part 15 devices for approval by CNO (N2/N6).

d. Frequency Assignments

(1) Frequency assignment requests shall be initiated by system developers or testers as soon as experimental (Stage 2) or developmental (Stage 3) spectrum certification is obtained and test site data is known. Frequency assignments for operational (Stage 4) and/or training use will be requested by operational personnel as operational mission location or exercise location dictates, in accordance with reference (b).

(2) C-E transmitting equipment shall not be activated for any purpose without obtaining both spectrum certification and an approved frequency assignment.

7. Action. The following responsibilities are assigned relative to controlling E^3, assuring SS, and providing the necessary requirements and procedures for obtaining spectrum certification and frequency assignments:

a. Program Managers (PMs) for their respective programs shall:

(1) Ensure that all NAVAIR platforms, weapons systems, ALRE/support equipment systems, subsystems, and equipment address E^3 and SS as part of their systems engineering approach to achieve EMC throughout the system life-cycle.

(2) Ensure that all program planning, acquisition, maintenance, sustainment and modernization documentation include the appropriate E^3 requirements and mandatory SS requirements for C-E equipment.

(3) Budget for E^3 and spectrum engineering to ensure that EMC control is incorporated into all programs as early as possible.

(4) Establish specific roles and responsibilities within the IPT for E^3 and SS efforts.

(5) Ensure the submission of DD Forms 1494 for all RF spectrum-dependent equipment, including COTS and NDI, via the E^3 Division, to OPNAV N2/N6F1221 and the Navy/Marine Corps Spectrum Center (NMSC).

(6) Implement a HERO Safety Program, via the E^3 Division, for all electrically explosive devices or ordnance items.

b. Assistant Commander for Research and Engineering (AIR-4.0) shall: Provide support for developing and implementing plans and programs for research, exploratory and advanced development, and technology demonstrations in support of E^3 efforts.

c. Systems Engineering Department (AIR-4.1) shall:

(1) Provide overall acquisition guidance and systems engineering coordination between the program offices, Assistant Program Executive Officers (APEOs), Assistant Program Managers for Systems Engineering ((APMSEs) - class desks), and other competencies regarding the E^3 and SS responsibilities described in this instruction.

(2) Ensure that E^3 engineering practices, standards, and processes criteria are utilized throughout NAVAIR to assure aircraft, weapons systems, and support equipment can effectively operate in their intended operational EME throughout their life-cycle without causing or sustaining mission performance degradation.

(3) Validate programmatic E^3 resource requirements in order to obtain adequate budget and human capital necessary to support a comprehensive E^3 Program.

(4) Ensure E^3 policies are coordinated with joint, national, and international organizations regarding specifications, standards, and procedures.

(5) Designate a principal point of contact or technical authority (i.e., technical warrant holder) for E^3 control within NAVAIR to participate with other SYSCOMs and government organizations for the coordination and resolution of multilateral or cross-platform E^3 and SS issues.

(6) Validate requirements and establish priorities for OPNAV funding of the Air Systems EMI Corrective Action Program (ASEMICAP) for identification and correction of Fleet E^3 problems affecting NAVAIR platforms.

d. Electromagnetic Environmental Effects Engineering Division (AIR-4.1.13) shall:

(1) Establish an E^3 Program Plan (E^3PP) for all Acquisition Category (ACAT) I and ACAT II programs. For smaller programs, the development of an E^3PP is at the discretion of the individual program office with concurrence from the NAVAIR E^3 Division.

(2) Ensure qualified personnel are available to provide E^3 engineering support and implement a comprehensive E^3 control program for all NAVAIR programs.

(3) Provide E^3 systems engineering representation to the appropriate Integrated Program Teams (IPTs) to ensure compliance with applicable E^3 requirements during Systems Engineering Technical Reviews and program acquisition reviews.

(4) Review all acquisition documentation to ensure appropriate E^3 control measures have been included.

(5) Derive E^3 requirements for equipment, systems, facilities, and platforms utilizing references (f) through (k).

(6) Define specific operational EMEs for all NAVAIR platforms, systems, and equipment.

(7) Initiate, coordinate, and maintain E^3 control procedures and processes to ensure uniform practices throughout the life-cycle for all NAVAIR acquisitions; additionally, develop and maintain E^3 metrics.

(8) Ensure E^3 assessments are conducted during all acquisition phases to ensure that total system compatibility is achieved and that each system can operate without being adversely affected in the intended operational EME.

(9) Review, analyze, modify, and approve NAVAIR platform flight clearances with respect to E^3 requirements and limitations.

(10) Review, analyze, modify, and approve Engineering Change Proposals for potential impacts to E^3 performance.

(11) Review and analyze requests for deviations and waivers of contractual E^3 performance or interface requirements, and recommend disposition to the PM.

(12) Review, analyze, and recommend Naval Air Training and Operating Procedures Standardization changes/modifications regarding E^3 implications to platform operations.

(13) Ensure E^3 support/maintenance requirements are identified in the System Supportability Analysis.

(14) Provide assistance to PMs for the preparation, review, and update of requests for Application for Equipment Frequency Allocation (DD Form 1494).

(15) Provide the NAVAIR focal point for frequency allocation requests to analyze these requests for compatibility with naval systems and provide recommendations to OPNAV (N2/N6F1221) for approval.

(16) Coordinate with OPNAV (N2/N6F1221), NMSC, and Joint Spectrum Center on spectrum supportability issues for applicable equipment, systems, and platforms in support of the E^3 program objectives.

(17) Participate with other Navy SYSCOMs for the coordination and resolution of cross-mission NAVAIR E^3 and SS problems and issues.

(18) Coordinate efforts between NOSSA, NAVSEA and the appropriate NAVAIR Program Office regarding HERO certification of all ordnance and materiel with electro-explosive devices.

(19) Provide support for HERO certification testing and/or analysis and maintain records of HERO status for all NAVAIR ordnance items.

(20) Ensure efficient and effective control of Fleet EMI through the implementation and management of the ASEMICAP and the Naval Training Systems Plan (NTSP).

(21) Provide quick response capability to evaluate and correct EMI degradation reported by the Fleet involving cognizant Navy equipment, systems, and platforms.

(22) Ensure that procedures are published for the expeditious detection, reporting, assessment, and solution of operational E^3 problems occurring in naval aviation platforms, systems, subsystems, and equipment.

(23) Establish EMC-related training requirements for E^3 education of NAVAIR and Fleet personnel.

(24) Provide necessary support to develop and maintain an EMI control program within the NTSP for training aircrew, maintainers, and other Fleet personnel in coordination with Naval Sea Systems Command (NAVSEA) personnel.

(25) Coordinate NAVAIR E^3 activities and provide liaison with other Navy SYSCOMs, and applicable joint, national, and international organizations concerning specifications, standards, policies, procedures, and operations.

(26) Develop and issue interface standards and handbooks for achieving and maintaining E^3 in cognizant systems, networks, weapons, sensors, platforms, and facilities, consistent with the DoD EMC standards program.

(27) Work jointly to develop and maintain a capability to quantify the EMI degradation of existing force-level war fighting capabilities with the planned introduction of new equipment, systems, and platforms.

(28) Participate in International Standardization Activities, including North Atlantic Treaty Organization (NATO) AC/326, NATO AC/327, and the NATO Air Electrical and Electromagnetic Considerations Panel for planning and establishing multi-national technical requirements for EMC.

(29) Partner with other DoD organizations to research potential new threats and provide justification to obtain

funding to improve the test capability infrastructure and develop near-term solutions to test capability shortfalls.

(30) Establish and maintain Modeling and Simulation capabilities to predict and/or simulate various EMEs in order to assess potential EMI involving platforms, systems, subsystems, and equipment.

(31) Ensure that E^3 analyses and/or tests are conducted throughout all phases of the acquisition cycle for all equipment, systems and platforms, including commercial and NDI, to ensure that total system compatibility is achieved and that the system can operate without being adversely affected in the intended operational EME for each platform.

(32) Maintain and operate all AIR-4.1.13 E^3 laboratories.

(33) Ensure qualified E^3 personnel are available to effectively conduct E^3 tests and evaluations, verify E^3 requirements, investigate Fleet-reported EMI, troubleshoot and correct E^3 deficiencies.

(34) Ensure E^3 personnel are qualified to operate aircraft systems in a safe and proper manner and are thoroughly familiar with the operation of the system under test.

(35) Establish and coordinate safety procedures during E^3 testing to ensure no undue hazard to ground/test personnel or possible damage to aircraft or equipment exists.

(36) Establish and coordinate security requirements prior to testing to ensure appropriate protection of classified equipment, material, procedures, and test data.

(37) Review and comment on E^3 test plans and procedures to ensure all program E^3 requirements are verified, as defined in the program Test & Evaluation Master Plan (TEMP).

(38) Review and comment on all E^3 test results and reports.

(39) Ensure EMC Safety-of-Flight Tests are conducted to determine if newly installed and/or modified project equipment

causes EMI in any of the flight-essential avionics and flight control systems.

(40) Ensure personnel are protected in accordance with reference (1).

8. Review. AIR-4.1.13 shall review annually the contents herein and provide recommendations for changes and deletions to the commander.

9. Forms. The DD Form 1423, Contract Data Requirements List and DD Form 1494, Application for Equipment Frequency Allocation, can be obtained via the following web site: http://www.dtic.mil/whs/directives/infomgt/forms/formsprogram.htm.

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Distribution:
Electronic only, via NAVAIR Directives Web site:
http://directives.navair.navy.mil/.

DEFINITIONS

Air Systems Electromagnetic Interference Corrective Action Program (ASEMICAP): A non-platform-related engineering Fleet support program that provides E^3 engineering expertise with the following objectives and priorities: investigate and provide corrective action for EMI problems affecting Fleet aviation safety and readiness; provide solutions to naval aviation EMI problems in support of joint, allied, and interagency operations; update and maintain an EMI control reporting and information exchange system for feedback to NAVAIR.

Communications-Electronics (C-E): The specialized field concerned with the use of electronic devices and systems for the acquisition or acceptance, processing, storage, display, analysis, protection, disposition, and transfer of information. In this instruction, C-E systems include communications, radar, navigation, and all other systems that use the electromagnetic spectrum.

Electromagnetic Compatibility (EMC): The ability of all equipment, systems and platforms to operate and exist in their intended operational environments without causing or suffering unintentional performance degradation or harmful reactions as a result of electromagnetic interference.

Electromagnetic Environment (EME): The resulting product of the power and time distribution, in various frequency ranges, of the radiated or conducted electromagnetic emission levels that may be encountered by a military force, system, or platform when performing its assigned mission in its intended operational environment.

Electromagnetic Environmental Effects (E^3): The impact of the EME on the operational capability of military forces, equipment, systems, and platforms. It encompasses all electromagnetic disciplines, including EMC and EMI; Electromagnetic Vulnerability (EMV); Electromagnetic Pulse (EMP); Electro-Static Discharge (ESD); Hazards of Electromagnetic to Radiation (RADHAZ) to Personnel (HERP), Hazards of Electromagnetic to Ordnance (HERO), and Hazards of Electromagnetic to volatile materials (HERF); and natural phenomena effects of lightning and Precipitation Static (P-Static).

Electromagnetic Interference (EMI): Any electromagnetic disturbance that interrupts, obstructs, or otherwise degrades or limits the effective performance of electronics/electrical equipment. The EMI can be induced intentionally, as in some forms of electronic warfare, or unintentionally, as a result of spurious emissions and responses, Intermodulation products, and the like.

Electromagnetic Pulse (EMP): The electromagnetic radiation from a strong electronic pulse, most commonly caused by a nuclear explosion that may couple with electrical or electronic systems to produce damaging current and voltage surges.

Electromagnetic Radiation: Radiation made up of oscillating electric and magnetic fields and propagated with the speed of light. Includes gamma radiation, x-rays, ultraviolet, visible, and infrared radiation, and radar and radio waves.

Electro-optics: Those systems and devices that employ a useful combination of optics and electronics for which the carrier wavelength is 0.1 to 100 micrometers (3000 GHz to 3000 THz or 3×10^{12} Hertz to 3×10^{15} Hertz).

Equipment Spectrum Certification:

(1) The statement(s) of adequacy received from authorities of sovereign nations after their review of the technical characteristics of a spectrum-dependent equipment or system regarding compliance with their national spectrum management policy, allocations, regulations, and technical standards. Equipment Spectrum Certification is alternately called "spectrum certification."

(2) Within the United States and its possessions, the requirement for certification of DoD spectrum-dependent equipment is dictated by Office of Management and Budget (OMB) Circular A-11, Part 2. The NTIA "Manual of Regulations and Procedures for Federal Radio Frequency Management" (reference (d)) prescribes procedures and also applies to all equipment or systems employing satellite techniques.

Frequency Allocation:

(1) A frequency band established by national or international rules and regulations for specific categories of radio services, such as radiolocation, radio navigation, mobile or fixed communications, space telemetry, etc.

(2) As previously used in this instruction, this also was defined as the acknowledgment by Chief of Naval Operations that development and/or procurement of C-E equipment can be supported for operation on a specific frequency or within a band of frequencies within the radio frequency spectrum. In other words, frequency allocation and spectrum certification are synonymous.

Frequency Assignment: The discrete frequency or frequencies on which C-E equipment or a system is authorized to operate within its allocated frequency band at the location(s) designated and within the constraints of the authorizing assignment.

Host Nations (HNs): Those sovereign nations, including the United States, in which the Department of Defense plans, or is likely to conduct, military operations with the permission of that nation.

Milestone Decision Authority (MDA): The designated individual responsible for an acquisition program. The MDA shall have the authority to approve the entry of an acquisition program into the next phase of the acquisition process and shall be accountable for cost, schedule, and performance reporting to higher authority, including Congressional reporting.

Part 15 Device (also called low-power and non-licensed devices): In the U.S., Part 15 is an often-quoted section of Federal Communications Commission (FCC) rules and regulations, mainly regarding unlicensed transmissions. It is a part of the Code of Federal Regulations (CFR) Title 45, and regulates everything from spurious emissions to unlicensed broadcasting. It is cited as 47 CFR §15. For the purposes of this instruction, Part 15 refers to intentional low-power radiators which are governed under Part 15 and are subject to the following stipulations:

- The Navy may develop and operate "Part 15 devices" as long as they conform to sections 7.8, 7.9, and Annex K of reference (d);

- These devices have no vested or recognized right to continued use in any part of the radio frequency spectrum. These devices must accept any interference from any authorized Federal or non-Federal radio system, other non-licensed device, or industrial, scientific, or medical (ISM) equipment, and cannot claim protection; and,

- Since these devices operate on a non-interference basis, they may not provide sufficient reliability for critical radio communications functions affecting human life or property. Part 15 (non-licensed) devices, however, may provide valuable and unique supplemental or expendable radio communications services where needed. To ensure adequate regulatory protection, the Navy should rely only on devices with frequency assignments in the Government Master File as principal Radio communication systems for safeguarding human life or property.

Radio Frequency (RF): A general term applied to electromagnetic frequencies below 3000 GHz (3×10^{12} Hertz). Internationally recognized frequency bands:

- Extremely Low Frequency (ELF): Below 3 kHz
- Very Low Frequency (VLF): 3-30 kHz
- Low Frequency (LF): 30-300 kHz
- Medium Frequency (MF): 300-3000 kHz
- High Frequency (HF): 3-30 MHz
- Very High Frequency (VHF): 30-300 MHz
- Ultra High Frequency (UHF): 300-3000 MHz
- Super High Frequency (SHF): 3-30 GHz
- Extremely High Frequency (EHF): 30-300 GHz

Spectrum-Dependent Systems: Those electronic systems, subsystems, devices and/or equipment that depend on the use of the electromagnetic spectrum for the acquisition or acceptance, processing, storage, display, analysis, protection, disposition, and transfer of information.

Spectrum Management (SM): (Statutory requirement, per Public Law 102-538 and Title 47 United States Code). Planning, coordinating, and managing joint use of the electromagnetic spectrum through operational, engineering, and administrative procedures. The objective of SM is enabling spectrum-dependent systems to perform their functions in the intended environment without causing or suffering unacceptable interference.

Note: The process of SM includes both the Application for Equipment Frequency Allocation (DD Form 1494) submission and approval, i.e., spectrum certification and the frequency assignment process.

Spectrum Supportability (SS) and Spectrum Supportability Determination: The assessment as to whether the electromagnetic spectrum necessary to support the operation of a spectrum-dependent equipment or system during its expected life-cycle is, or will be, available (that is, from the concept refinement phase through developmental and operational testing, to actual operation in the electromagnetic environment). Spectrum Supportability Determination requires:

(1) Equipment Spectrum Certification;

(2) Host Nation Spectrum Supportability Assessment (including US&P)[2]; and,

(3) Electromagnetic Environmental Effects (E^3) Assessment.

Note 2: While an actual determination of spectrum supportability for a spectrum-dependent system within a particular country, i.e., host nation, may be possible based upon "spectrum supportability," e.g., equipment spectrum certification comments provided by the host nation, the overall determination of whether a spectrum-dependent system has spectrum supportability is the responsibility of the MDA, based upon the totality of spectrum supportability comments returned from those host nations whose comments we solicited.

United States and Possessions (US&P): Includes the land area, internal waters, territorial sea, and airspace of the United States, including the following:

(1) The U.S. territories, possessions, and commonwealths; and,

(2) Other areas over which the U.S. Government has complete jurisdiction and control or has exclusive authority or defense responsibility.

Waiver: A formal approval, usually written, relinquishing certain construction or performance requirements. In this instruction, waiver refers to the replacement or procurement of electromagnetic radiating or receiving equipments that deviate from the technical characteristics or service band allocations specified in national regulations and policies and international regulations and treaties.