BY ORDER OF THE
SECRETARY OF THE AIR FORCE

AIR FORCE INSTRUCTION 33-118

18 JULY 2005

Communications and Information

ELECTROMAGNETIC SPECTRUM MANAGEMENT

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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Supersedes AFI 33-118, 3 April 2002. Pages: 46
Distribution: F

This instruction implements Department of Defense Directive (DODD) 4650.1, *Policy for Management and Use of the Electromagnetic Spectrum,* June 8, 2004; Department of Commerce (DOC), National Telecommunications and Information Administration (NTIA) *Manual of Regulations and Procedures for Federal Radio Frequency Management* (NTIA Manual Revisions); Air Force Policy Directive (AFPD) 33-1, *Command, Control, Communications, and Computer (C4) Systems*; and the procedures established by the United States Military Communications-Electronics Board (USMCEB). Air Force Manual (AFMAN) 33-120, *Radio Frequency (RF) Management,* (will become *Electromagnetic Spectrum Management*), provides supporting material. It identifies responsibilities for Air Force management of the electromagnetic spectrum and provides procedures for implementing its use. This publication applies to the Air National Guard (ANG). Refer technical questions or comments on content of this instruction through appropriate command channels to the Air Force Frequency Management Agency (AFFMA/XP), 2461 Eisenhower Avenue, Suite 1203, Alexandria VA 22331-1500. Refer recommended changes and conflicts between this and other publications to Headquarters Air Force Communications Agency (HQ AFCA/EASD), 203 W. Losey Street, Room 1100, Scott AFB IL 62225-5222, using AF Form 847, **Recommendation for Change of Publication**. Ensure that all records created as a result of processes prescribed in this instruction are maintained in accordance with AFMAN 37-123, *Management of Records* (will become AFMAN 33-363), and disposed of in accordance with the Air Force Web-RIMS Records Disposition Schedule (RDS) located at **https://webrims.amc.af.mil/rds/index.cfm**. The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force. See **Attachment 1** for a glossary of references and supporting information.

SUMMARY OF REVISIONS

This revision changes the title from "Radio Frequency Spectrum Management" to "Electromagnetic Spectrum Management. It modifies responsibilities in **Chapter 1**; updates **Chapter 3** and **Chapter 4**; clarifies the type of frequency assignments, paragraph **3.2.**; expands paragraph **3.12.**, and eliminates subparagraphs, changes the title in **Chapter 4** to "Systems/Service Guidance;" clarifies the United States and

its Possessions (US&P) Operations, paragraph 4.2.3.; updates and expands the Abbreviations and Acronyms list.

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Chapter 1

MANAGING THE RADIO FREQUENCY (RF) SPECTRUM

1.1. General. Both national and international regulatory bodies require effective and efficient use of the electromagnetic spectrum. Effective and efficient use is defined as applying design or operational techniques that conservatively use electromagnetic spectrum in a compatible (i.e., non-interference) manner. Mark, store, control, and transmit security classification of Air Force frequency records, DD Form 1494, **Application for Equipment Frequency Allocation**, or other related documents according to DOD 5200.1-R, *Information Security Program*, January 1997; AFI 31-401, *Information Security Program Management*: and USMCEB-M-019-98, *DOD Frequency Assignment Classification Reference* (see **Attachment 2**).

1.2. International Spectrum Management. The International Telecommunications Union (ITU) is the international body responsible for international frequency allocations, worldwide telecommunications standards and telecommunications development activities.

1.2.1. The United States (US) is one member of the nations that make up the ITU. International agreements signed by the President and ratified by the US Senate gain treaty status.

1.2.2. The electromagnetic spectrum is a natural resource independently managed by each sovereign nation within their boundaries. This basic consideration of international spectrum management becomes extremely important when US military forces operate abroad. Units must obtain host nation approval to use frequencies before US forces can legally operate.

1.3. US National Spectrum Management. Title 47, United States Code (U.S.C.), *Telegraphs, Telephones, and Radiotelegraphs*, Section 151 et seq., *The Communications Act of 1934*, established separate control of federal (government) and non-federal (civilian) use of the electromagnetic spectrum. Under this act, the only government agencies that assign and control the use of frequencies in the US are the NTIA and the Federal Communications Commission (FCC) (**Figure 1.1.**).

1.3.1. The NTIA assigns and regulates frequencies for federal users. The NTIA Manual written by the NTIA governs all federal (including military) use of the electromagnetic spectrum within the United States and its Possessions (US&P).

1.3.2. The FCC assigns and regulates frequencies for non-federal users. Non-federal users include private citizens, companies, and state and local government users.

1.3.3. The electromagnetic spectrum is allocated between federal and non-federal users with portions of the spectrum shared (see NTIA Manual). Federal users must utilize frequency bands allocated for government or shared use. A government frequency assignment may be authorized in a non-government band provided the request is coordinated and granted approval by the FCC.

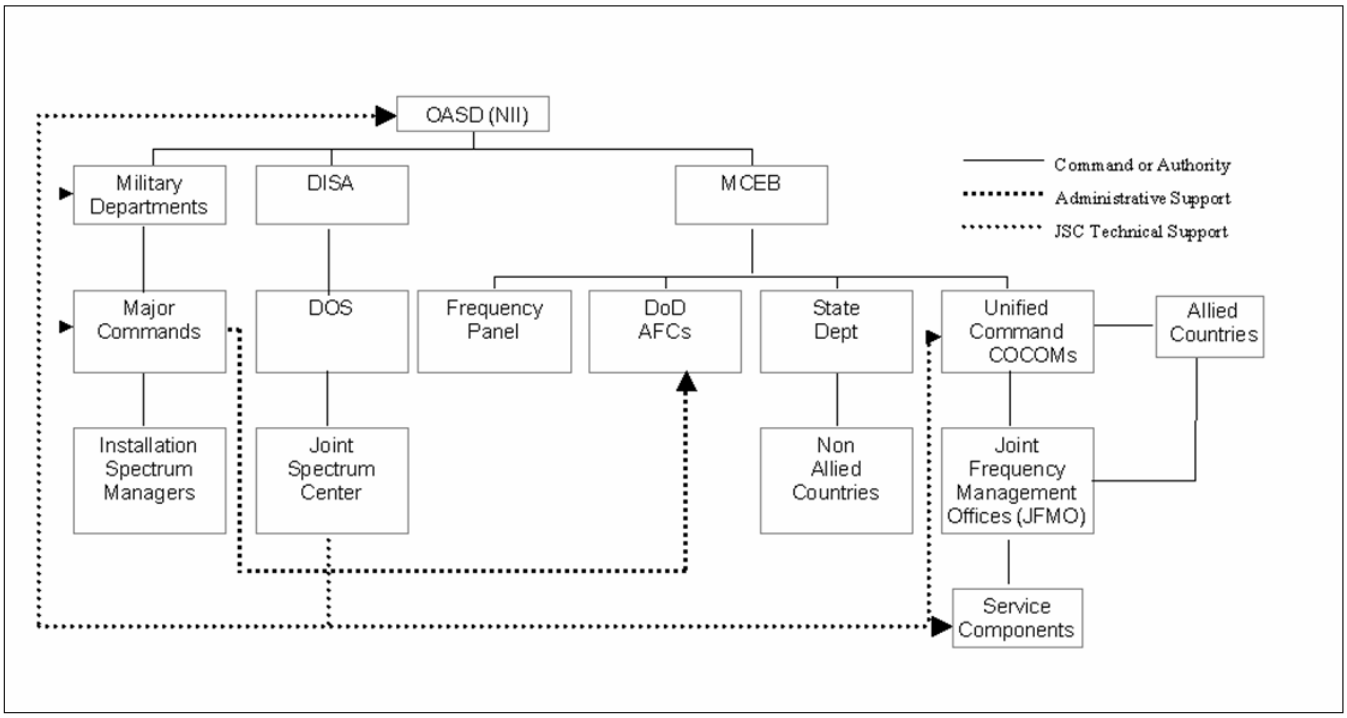
Figure 1.1. US National Spectrum Management.

1.4. Department of Defense Spectrum Management. The Under Secretary of Defense for Acquisition, Technology and Logistics (USD [AT&L]) sets policy for acquiring systems that use the electromagnetic spectrum and ensures compliance with electromagnetic spectrum support procedures. The Assistant Secretary of Defense develops overall DOD policy for managing and using the electromagnetic spectrum. DOD activities involved in frequency management (see **Figure 1.2.**) are:

1.4.1. US Military Communications Electronics-Board (USMCEB). The USMCEB develops joint policy and provides direction in military communications-electronics (C-E) matters.

1.4.1.1. The USMCEB Joint Frequency Panel (JFP). The USMCEB JFP develops electromagnetic spectrum certification guidance for US military operations.

Figure 1.2. DOD Spectrum Management.



1.4.1.2. DOD Area Frequency Coordinator (AFC). The DOD AFCs are responsible for ensuring successful frequency coordination in the areas that lie within, are adjacent to, or are within radio line-of-sight to any range spectrum dependent system, including all systems brought to a national test range or other designated complex. Activities must coordinate all military frequency use within a DOD AFC area of responsibility (AOR) with the appropriate DOD AFC before starting operations. DOD AFCs are directly responsible to their military department for administrative purposes and to the USMCEB for policy guidance. The Allied Communications Publication (ACP) 190/US Supp 1, (C) *Guide to Frequency Planning* (U), contains specific policy guidance. Refer to NTIA Manual, Appendix D for a list of the DOD AFC geographic descriptions, addresses, and phone numbers.

1.4.1.2.1. Air Force-Sponsored Department of Defense Area Frequency Coordinators. The Air Force provides DOD AFC services at the following locations:

1.4.1.2.1.1. Headquarters Air Force Materiel Command (HQ AFMC) provides support to the Gulf AFC at Eglin AFB FL.

1.4.1.2.1.2. Headquarters Air Force Space Command provides support to the Eastern AFC at Patrick AFB FL.

1.4.1.2.1.3. Headquarters Air Combat Command (HQ ACC) provides support to the Nellis AFC at Nellis AFB NV.

1.4.1.2.2. Air Force-sponsored DOD AFCs:

1.4.1.2.2.1. Manage and coordinate the use of frequencies for the range commanders according to ACP 190/US SUPP 1 and the NTIA Manual.

1.4.1.2.2.2. Ensure compliance with DOD electromagnetic compatibility (EMC) program.

1.4.1.2.2.3. Ensure compliance of range and range-hosted spectrum dependent systems with national and DOD spectrum management regulations, policies, and procedures.

1.4.1.2.2.4. Make temporary frequency assignments supporting range operations within the scope of the NTIA Manual.

1.4.1.2.2.5. Review new or changed DD Form 1494s for impact on range electromagnetic spectrum use, and provide comments to the AFFMA, when appropriate.

1.4.1.2.2.6. Advise the range or area commander, and all affected organizations, of RF interference that may result from scheduled operations and tests, and recommend solutions. Mutual resolution of conflicts is the responsibility of the commanders concerned.

1.4.1.2.2.7. Review and evaluate frequency assignment requests proposed for use within their areas of operations. The evaluation will establish the compatibility of proposed frequencies with national and service test and training ranges within line-of-sight of any operations.

1.4.1.2.2.8. Refer unresolved problems on electromagnetic spectrum management practices, technical comments, or recommended operating conditions for resolution through Air Force command channels to AFFMA according to AFI 10-707, *Spectrum Interference Resolution Program*.

1.4.1.2.2.9. Coordinate and deconflict all range electromagnetic spectrum operations under their purview with military, federal, or civil spectrum users, to include within line-of-sight of any ground or airborne system.

1.4.1.2.2.10. Coordinate spectrum use for any airborne system operations where the line-of-sight radio horizon can extend over multiple DOD AFC geographical boundaries.

1.4.2. Defense Information Systems Agency (DISA).

1.4.2.1. Defense Spectrum Office (DSO). The DSO, under DISA, is the DOD focal point on electromagnetic spectrum management issues. DSO ensures consistent enforcement of DOD spectrum management policy and procedures. DSO performs technical analysis of all government legislation that may affect DOD access to the federal spectrum.

1.4.2.2. Joint Spectrum Center (JSC). The JSC provides technical support to the unified commands, military department frequency management offices, and other DOD agencies. It serves as the DOD focal point for EMC analysis matters and maintains the DOD Frequency Resource Record System (FRRS) database.

1.4.3. Military Department Spectrum Management Offices. There are three offices responsible for carrying out spectrum policy within the military services, the US Army Spectrum Management Office, the Navy/Marine Corps Spectrum Center and the AFFMA.

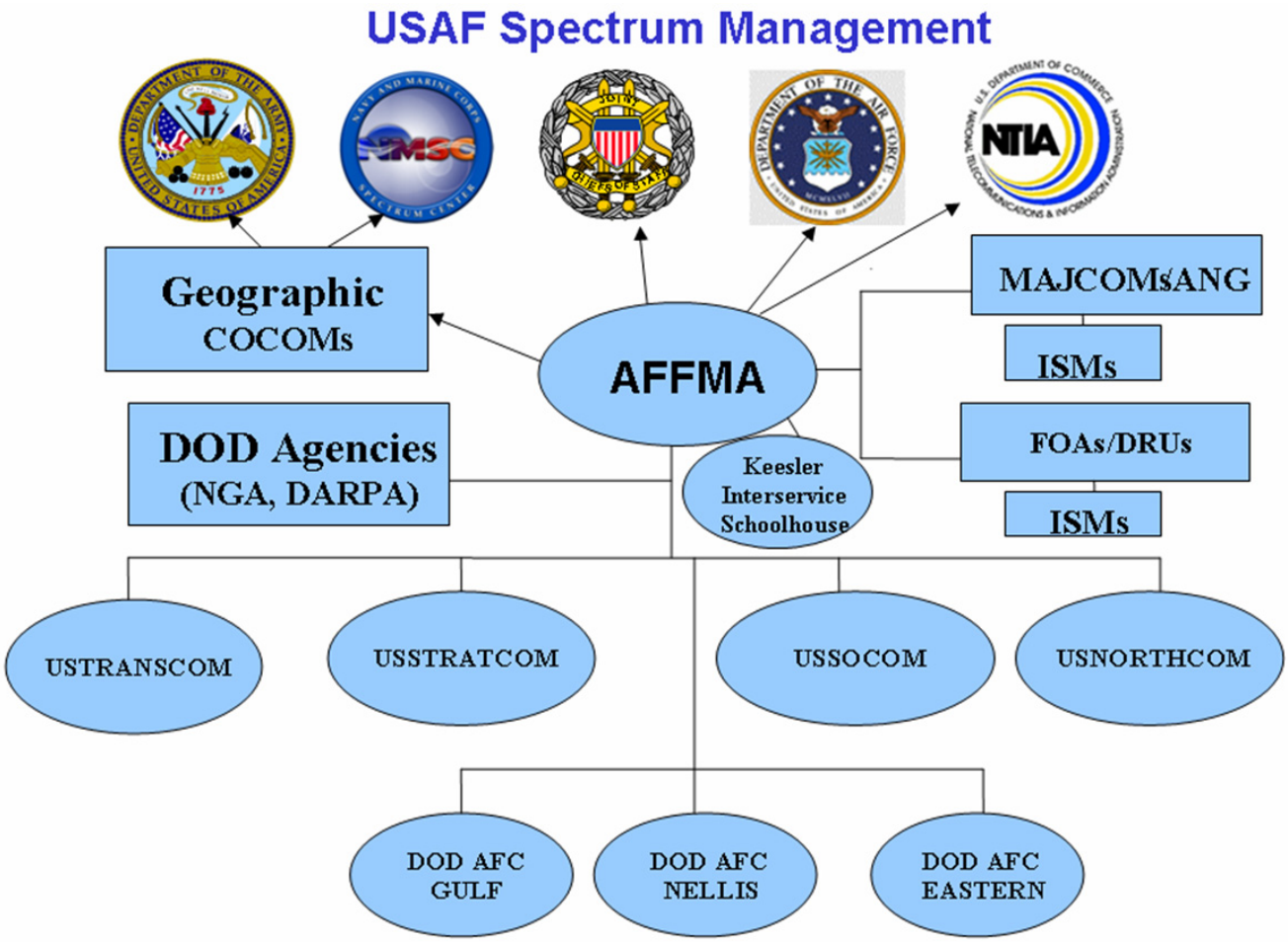
1.4.4. Request overseas operations through the combatant commander (COCOM).

1.4.4.1. The COCOM frequency management office will obtain host nation approval for spectrum use according to the host nation's spectrum management policies and procedures.

1.5. Air Force Spectrum Management. The Secretary of the Air Force, Office of Warfighting Integration and Chief Information Officer (SAF/XC) is the senior Air Force officer responsible for electromagnetic spectrum management. The SAF/XC sets policy for managing electromagnetic spectrum use to support the Air Force mission and exercises control over the frequency management process through AFFMA.

1.5.1. AFFMA represents Air Force users in the federal spectrum management process. AFFMA processes frequency requests for the major commands (MAJCOM) for use at locations within the US&P. This section lists responsibilities for each level of Air Force spectrum management (see **Figure 1.3.**).

Figure 1.3. Air Force Levels of Spectrum Management.



1.5.1.1. Air Force Frequency Management Agency (AFFMA):

1.5.1.1.1. Carry out Air Force electromagnetic spectrum management policy.

1.5.1.1.2. Evaluate Air Force plans for needed electromagnetic spectrum support.

1.5.1.1.3. Represent and defend Air Force electromagnetic spectrum technical interests in committees, groups, and organizations that address electromagnetic spectrum management matters.

1.5.1.1.4. Negotiate at the departmental, national, and international levels to obtain frequency allocations and assignments to satisfy Air Force and MAJCOM exercises, crises, contingencies, wartime, and day-to-day RF requirements for use of the spectrum.

1.5.1.1.5. Provide functional guidance to Air Force-sponsored DOD AFCs.

1.5.1.1.6. Assist in resolution of interference problems with Air Force-assigned frequencies.

1.5.1.1.7. Provide guidance on using the electromagnetic spectrum to developers and users of all Air Force systems that requires electromagnetic spectrum access or whose performance can be influenced by radio frequency energy. This includes communications and information systems, electronic warfare operations, intelligence and weapons systems, commercial-off-the-shelf (COTS) equipment, and any other equipment that relies on the electromagnetic spectrum.

1.5.1.1.8. Determine the impact of electromagnetic spectrum dependent systems on Air Force's current or planned operational use of the electromagnetic spectrum.

1.5.1.1.9. Provide assistance to Air Force activities requiring JSC services.

1.5.1.1.10. Assist Air Force activities to obtain frequency engineering and high frequency propagation services.

1.5.1.1.11. Provide curriculum input and support to the Electromagnetic Spectrum Management Course and the Advance Joint Task Force (JTF) Spectrum Management Course under the Air Education and Training Command.

1.5.1.1.12. Provide electromagnetic support to the following COCOMS (US Transportation Command, US Strategic Command , US Southern Command, and US Northern Command) according to the Unified Command Plan.

1.5.2. Major Command (MAJCOM) Spectrum Management.

1.5.2.1. Carry out Air Force policy, practices, and procedures for managing the use of the electromagnetic spectrum.

1.5.2.2. Assist organizations from degrading friendly systems or operations during command, control, and communications countermeasures training activities.

1.5.2.3. Be actively involved in communications/information planning, and assist in coordinating and obtaining frequency support to meet the MAJCOM mission.

1.5.2.4. Ensure incorporation of wartime and contingency electromagnetic spectrum management procedures into the appropriate operation plan/contingency plan appendices.

1.5.2.5. Provide electromagnetic spectrum guidance to the MAJCOM acquisition, logistics, intelligence, operations, and communications planning staffs.

1.5.2.6. Manage electromagnetic spectrum use in the concept, planning, deployment, operation, and evaluation phases of MAJCOM-supported exercises and operations.

1.5.2.7. Process and obtain frequency assignments and allocations for spectrum-dependent systems in support of operational requirements.

1.5.2.8. Provide guidance on using the electromagnetic spectrum early in the concept, exploration, demonstration, and validation phases of the acquisition process.

1.5.2.9. Ensure subordinate entities (Numbered Air Force, Wing, Center, Installation Spectrum Manager, etc.) assist program/project offices to obtain spectrum supportability guidance through the USMCEB JFP before the program/project offices enter into a contractual obligation for the full-scale development, production or procurement of RF systems.

1.5.2.10. Review USMCEB JFP host-nation supportability comments. Report USMCEB JFP host-nation supportability findings to program/project offices before they enter into a contractual obligation for the full-scale development, production or procurement of RF systems.

1.5.2.11. Review the subordinate unit electromagnetic spectrum management programs and perform staff assistance visits as required.

1.5.2.12. Ensure frequency assignment records in the Government Master File (GMF) and FRRS are up-to-date as outlined in paragraph **3.9.**

1.5.2.13. Ensure subordinate entity (Numbered Air Force, Wing, Center, Installation Spectrum Manager [ISM], etc.) provides appropriate frequency assignments and guidance to the users.

1.5.2.14. Provide ISMs with the necessary spectrum management training required to perform as the ISM.

1.5.2.15. If the ISM has the capability to receive and store classified material, then provide the ISM with a current data file containing classified frequency assignments.

1.5.2.16. Write and publish supplements to this instruction, AFMAN 33-120, and AFI 10-707, as required.

1.5.2.17. Provide the AFFMA with curriculum input recommendations for the Electromagnetic Spectrum Management Course and the JTF Spectrum Management Course.

1.5.3. Installation Commander.

1.5.3.1. Responsible for all electromagnetic radiation emanating from the installation and from those outlying activities hosted by the installation.

1.5.3.2. Ensures a viable RF management program is in place and supports installation requirements. The installation commander can prohibit any RF emitter from operating (cease and desist) when anticipating or resolving interference to mission essential electromagnetic equipment.

1.5.4. Communications Squadron Commander.

1.5.4.1. Appoint in writing, a primary and alternate ISM to organize and carry out the spectrum management program.

1.5.4.2. Ensure the ISM serve a minimum of 12 months in the position.

1.5.4.3. Ensure the parent MAJCOM Spectrum Management Office (SMO) receives the ISM appointment letters.

1.5.4.4. Ensure the ISM receives the necessary spectrum management training.

1.5.4.5. Ensure the ISM is assigned duties that do not interfere with spectrum management duties.

1.5.5. Installation Spectrum Manager.

1.5.5.1. Ensure using activities understand the parameters of their assigned frequencies.

1.5.5.2. Maintain current frequency management records of all frequencies assigned to the installation and outlying activities hosted by the installation. Provide all using activities with a frequency site license.

1.5.5.3. Conduct a spectrum management customer education program.

1.5.5.3.1. Meet with all unit points of contact (POC) annually to discuss current spectrum management issues and conduct customer education.

1.5.5.4. Process frequency proposals and applications for equipment frequency allocations, and ensure submission through the appropriate command channels.

1.5.5.5. Provide spectrum management assistance and interpret guidance to host installation and tenant activities.

1.5.5.6. Review installation operation plans and requirements documents, and obtain frequency support through command channels. Additionally, ISMs must contact monthly:

1.5.5.6.1. Deployable units to identify upcoming exercises and contingencies.

1.5.5.6.2. The wing plans and programs office (XP) and other planning offices to obtain information about new equipment and installations.

1.5.5.7. Ensure contractor activities using Air Force frequencies to support Air Force requirements follow Air Force policies for electromagnetic spectrum use.

1.5.5.8. In cooperation with using activities, verify frequency assignment requirements, validate existing frequency assignment parameters and submit appropriate modifications, renewal or deletion actions according to AFMAN 33-120, and USMCEB PUB 7, *Frequency Resource Record (FRRS) Standard Frequency Action Format (SFAF)*, through the appropriate MAJCOM.

1.5.5.9. Submit frequency deletions according to AFMAN 33-120 and USMCEB PUB 7 through the appropriate MAJCOM spectrum management office (SMO) for frequency assignments no longer needed.

1.5.5.10. Coordinate spectrum use with the DOD AFCs for any system, including airborne operations, within the AFC's AOR. Particular attention is given to the radio horizon where it extends into the DOD AFC geographical boundaries.

1.5.5.11. The ISM is responsible to maintain and keep current their respective records in the FRRS.

1.5.5.12. Will draft spectrum management portion of any memorandums of understanding (MOU) or memorandums of agreements (MOA) and ensure all MOUs and MOAs are on file.

1.5.5.13. Maintain a current POC listing (name, unit, electronic mail [E-mail], address, and phone number) for each unit.

1.5.5.14. Write and publish installation instructions or supplements to this instruction, AFMAN 33-120, and AFI 10-707, as required. Draft copies should be sent to the parent MAJCOM for review before publishing. Once published, a copy of the final publication should be sent to the MAJCOM and kept on file as long as it is valid.

1.5.5.15. Ensure using activities, program/project offices, etc. obtain spectrum supportability guidance prior to entering into a contractual obligation for all electromagnetic spectrum dependent systems.

1.5.5.16. Comply with the requirements of the Frequency Review Program (see **Chapter 3**).

1.5.6. Program/Project/Acquisition Offices of Using Activities. Each organization operating a RF emitting device will:

1.5.6.1. Ensure the appropriate spectrum supportability requirements are obtained prior to purchasing any RF equipment or entering into any contractual obligations involving the use of RF dependent devices to include providing correct technical data for systems not downward directed by higher level organizations.

1.5.6.2. Obtain a frequency assignment before using devices that intentionally emit RF energy.

1.5.6.3. Maintain a copy of frequency authorizations received from the ISM.

1.5.6.4. Request the minimum number of frequencies necessary to accomplish the mission.

1.5.6.5. Request the minimum transmitter power and antenna gain/height necessary to ensure adequate coverage.

1.5.6.6. Ensure electromagnetic radiating equipment operations comply with authorized parameters identified in the frequency assignment notification.

1.5.6.7. Act promptly to report and resolve incidents of interference according to AFI 10-707.

1.5.6.8. Use radiation-suppression devices (dummy loads) as much as possible when tuning, testing, or experimenting with any equipment that emits radio frequencies.

1.5.6.9. Provide, in writing to the ISM, the name, E-mail address, and phone number of a POC for unit frequency matters and provide updated information when the POC changes.

1.5.6.10. Notify the ISM, in writing, immediately when frequencies are no longer required.

1.5.6.11. Obtain approval from the ISM before modifying any existing emitters or antennas (i.e., increase power, change antenna height or gain), if outside of the assigned parameters of the frequency authorization.

1.5.6.12. Assist ISM in reviewing and verifying equipment parameters during mandatory and periodic reviews.

1.5.7. Headquarters Air Force Communications Agency (AFCA). Confirm the frequency needs of the Military Affiliate Radio System (MARS) and other HQ AFCA-controlled systems (see AFI 33-106, *Managing High Frequency Radios, Personal Wireless Communication Systems, and the Military Affiliate Radio System*).

1.5.8. Headquarters Air Mobility Command (HQ AMC/A6). Confirm the frequency needs of the Global Command and Control System (see AFI 33-106).

Chapter 2

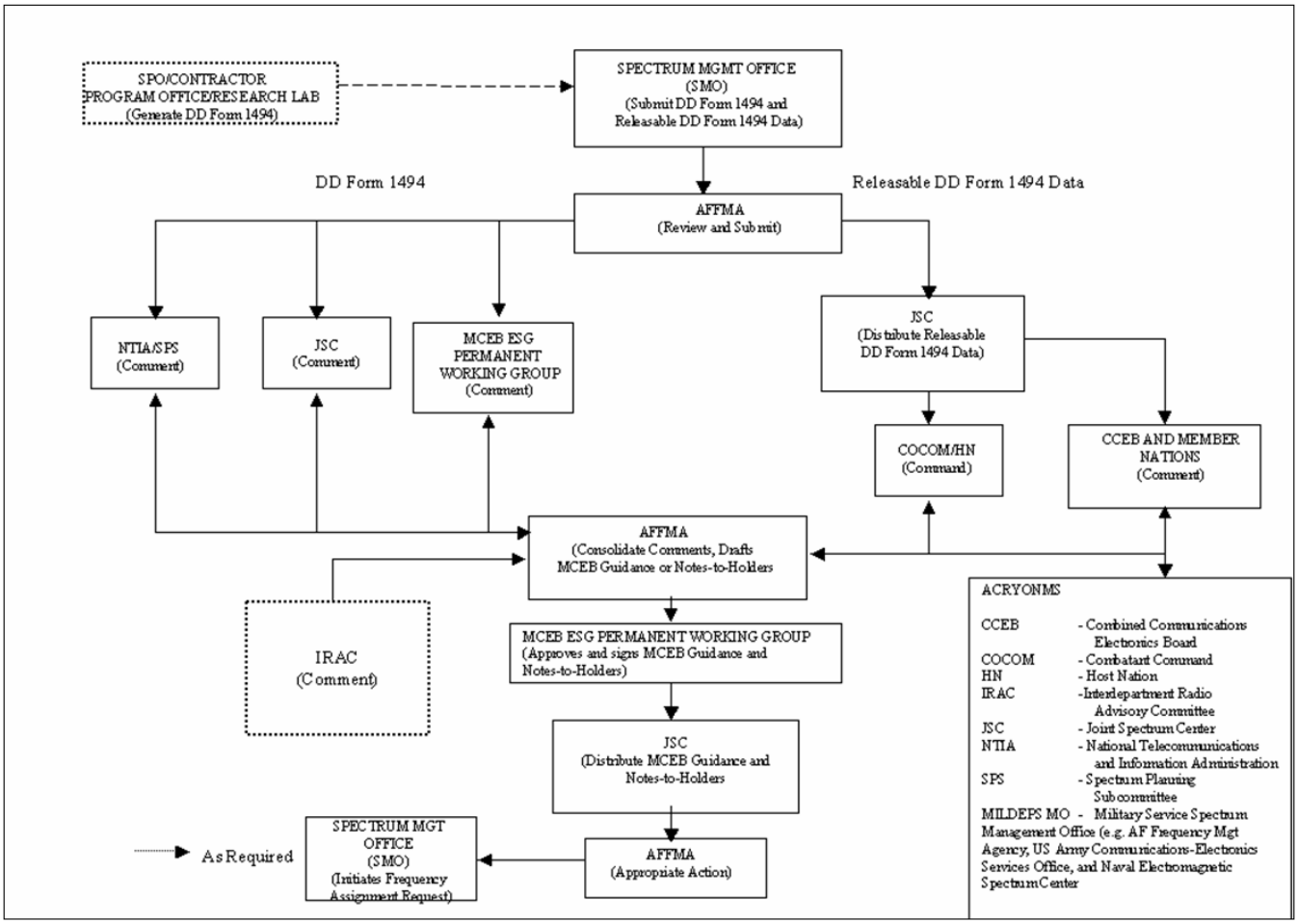
SPECTRUM CERTIFICATION

2.1. Process and Guidance. Spectrum certification is the process of reviewing the equipment characteristics to determine realistic supportability expectations to include conformance with the international and national allocation tables, and EMC standards (see **Figure 2.1.**). This process, often referred to as equipment certification, is required for all RF emitters (transmitters or receivers) including COTS and non-developmental items purchased, unless specifically exempt, as stated in the NTIA Manual. Following the certification process, obtain a frequency assignment approval for each discrete frequency required in order to have authority to operate. AFMAN 33-120 details the specifics and requirements of the process.

2.1.1. DODD 4650.1 requires all DOD components to obtain RF guidance (spectrum certification) for communications-electronics systems from the USMCEB. Components must obtain guidance before assuming contractual obligations for the full-scale development, production, or procurement of those systems. Perform spectrum certification by submitting a DD Form 1494.

2.2. Allocation Tables. Frequency allocation tables represent the general electromagnetic spectrum use plan nationally and internationally (each nation that manages their RF resources has a national table). Separate the allocation tables based on type of service (i.e., fixed service, aeronautical mobile service, etc.). Make every effort to plan equipment design, and use the electromagnetic spectrum in accordance with the allocation tables. Any frequency use not in compliance with the allocation tables requires proof that interference with authorized users will not occur before a nation will grant access. The Air Force, as a US Government body, must use US Government allocated bands. Use of non-government bands must be justified and assessed for compatibility. The NTIA Manual contains international and national allocation tables. NTIA manual will reflect known and probable future changes in the allocation tables. Systems that do not comply with the allocation tables will not receive primary use status.

Figure 2.1. Spectrum Certification Flowchart.



2.3. Electromagnetic Compatibility (EMC) Standards. Air Force agencies developing, procuring, or modifying equipment using the electromagnetic spectrum must do everything possible to meet applicable international, national, military, and host-nation EMC standards. Noncompliance may result in the denial of frequency authorization or severe operational restrictions.

2.3.1. National EMC Standards. The NTIA Manual contains the Radio Frequency Spectrum Standards. All communications-electronics systems will comply with the standards in the NTIA Manual. If compliance is not technically possible, proof that noncompliance will not cause unintended electromagnetic interference (EMI) is required. Operations may be authorized on a non-interference basis. As stated in the NTIA Manual, "In any instance of harmful interference caused by nonconformance with the provisions of this chapter, the responsibility for eliminating the harmful interference normally shall rest with the agency operating in nonconformance."

2.3.2. Military EMC Standards. Include military EMC standards in equipment design specifications according to the EMC guidance and DOD Manual 4120.24-M, *DOD Standardization Program (DSP) Policies and Procedures*, March 2000. Request waivers to EMC standards through program management channels according to DODD 3222.3/AFSUP 1, *Department of Defense Electromagnetic Compatibility Program (EMCP) (Air Force Electromagnetic Environmental Effects Program)*.

2.3.3. Host-Nation EMC Standards. Host-nation authorities consider host nation EMC standards during the DD Form 1494 coordination process.

2.4. Equipment Exempt from Spectrum Certification. The following categories of equipment in the US&P are exempt from the spectrum certification process. If any devices listed below are to be used outside US&P, spectrum certification is required prior to procurement.

2.4.1. Code of Federal Regulations (CFR), Title 47, U.S.C. Part 15, *Radio Frequency Devices*.

2.4.2. CFR, Title 47, U.S.C. Part 18, *Industrial Scientific and Medical Equipment*.

2.4.3. CFR, Title 47, U.S.C. Part 95, *Personal Radio Service*.

2.4.4. RF devices and Built-in Test equipment that does not exceed the technical criteria outlined in the NTIA manual.

2.4.5. Signal generators.

2.4.6. Bench test or antenna-testing equipment.

2.4.7. Electronic fuzes that activate detonation devices.

2.4.8. Unmodified COTS Family Radio Service (FRS) transceivers.

2.4.9. Unmodified COTS Citizens' Band radios, and low power radios that operate for short distances on the frequencies 27575 and 27585 kilohertz (kHz).

2.4.10. Unmodified COTS low power cordless telephones.

2.4.11. COTS cellular telephones used to access a commercial service provider.

2.4.12. International Maritime Satellite (Inmarsat™) terminals.

2.4.13. Airborne Radio Telephone System radios that operate on leased channels in the 800 megahertz (MHz) band.

2.4.14. Infrared and ultraviolet systems used, among other things, to measure heat intensity and spectral signatures of various targets.

2.4.15. Lasers and other systems that operate above 3000 gigahertz (GHz).

2.4.16. Global Positioning System receivers universally marketed for civil, industrial, private, and/or military applications.

2.4.17. Radio receivers used for reception of radio navigation signals from licensed ground stations, such as Distance Measuring Equipment, Very High Frequency (VHF) Omni directional Range, Instrument Landing System, etc.

2.4.18. Unmodified COTS airborne transceivers certified and registered for radio navigation operations within the civil national and international airspace management systems.

2.4.19. Radio and radar control heads, buss units, and software/hardware devices that interface with transmitting and receiving equipment but, by themselves, do not radiate or receive electromagnetic energy; except RF modem devices.

2.4.20. Requirements for systems submitted directly to AFFMA for processing that are not owned by an agency of the military service (e.g., radio, radar, and telemetry sets), but are owned by or leased

from a contractor or provider; and those networks owned or leased by the contractor or provider to meet any corporate requirements.

2.4.21. Antennas that do not radiate RF energy unless excited (or interrogated) from a separate transmitting source.

2.5. DD Form 1494 Submission. Using Activities, program/project offices or acquisition activities must generate and submit the DD Form 1494 to their local system centers, logistics centers, installation or facility SMO for further processing in support of the development, modification or acquisition of wireless RF devices including COTS, government-off-the-shelf, or non-developmental items. Data for the application can be obtained from the originator through any available sources, i.e., contractor support, manufacturer, etc. The local SMO will submit a complete and accurate application to their applicable MAJCOM SMO. The MAJCOM SMO will then send the completed application directly to AFFMA/DON. Using activities, program/project offices or acquisition activities without local or MAJCOM SMOs will submit the application directly to AFFMA/DON.

2.5.1. The DD Form 1494 is processed in stages that closely parallel standard Air Force acquisition milestones via the following four stages. The System Program Office, with contractor support, submits the DD Form 1494 for the appropriate stage as it matures into an operational status. These stages are:

2.5.1.1. Stage 1. Conceptual: Initial system planning has been completed. This stage advises on the feasibility of getting spectrum support and recommends modifications or changes in frequency bands.

2.5.1.2. Stage 2. Experimental: Preliminary system design has been completed. Certification at this stage provides guidance for assuring spectrum support in later stages, and is needed before obtaining frequency assignments for experimental testing.

2.5.1.3. Stage 3. Developmental: Major system design has been completed. As the system design is nearly finalized, this stage provides guidelines for assuring spectrum support needed before obtaining frequency assignments for developmental testing.

2.5.1.4. Stage 4. Operational: System development is complete. Certifies availability of spectrum support and identifies operating restrictions before making operational frequency assignments.

2.6. DD Form 1494. Submit a DD Form 1494 for each stage of development using the following lead times:

2.6.1. Stage 1. Planning or Conceptual:

2.6.1.1. Space Systems. Not earlier than seven years and not later than two years before satellite launch.

2.6.1.2. All Other Systems. Not less than one year before initial testing begins.

2.6.2. Stage 2. Experimental:

2.6.2.1. Space Systems. Not less than one year prior to planned operation.

2.6.2.2. All Other Systems. Not less than one year before procuring equipment.

2.6.3. Stage 3. Developmental:

2.6.3.1. Space Systems. No later than three years before satellite launch.

2.6.3.2. All Other Systems. Not less than one year prior to the Milestone B Decision or contractual obligations for development, or modification activities involving wireless RF devices.

2.6.4. Stage 4. Operational:

2.6.4.1. Space Systems. No later than two years before satellite launch.

2.6.4.2. All Other Systems. Not less than nine months prior to the Milestone C Decision or contractual obligations for operational procurement or acquisition activities involving wireless RF devices.

2.7. Note-to-Holders. Use the USMCEB Note-to-Holders for amendments and updates to approved DD Form1494 documents and USMCEB memoranda. Distribute host nation comments to applications by a Note-to-Holder.

2.7.1. A Note-to-Holders to distribute host nation and COCOM comments received about an application is created by the AFFMA, approved by the USMCEB Equipment Spectrum Guidance Permanent Working Groups, and distributed to the USMCEB J-12 distribution list.

2.7.2. Send requests for Note-to-Holders through established frequency management channels to the AFFMA.

2.8. Acknowledgment of USMCEB Guidance. The program office or using activity must acknowledge receipt of the USMCEB guidance within 60 days of receipt and notify the supporting MAJCOM of any concerns. Silence procedures apply.

2.9. Additional Guidance for use Outside the US&P.

2.9.1. Foreign Disclosure. Obtain foreign disclosure in advance of coordinating host-nation spectrum support for Air Force systems designed or planned to operate outside the US&P. The field-level foreign disclosure office (FDO), the MAJCOM FDO, or the Secretary of the Air Force (SAF/IAPD) disclosure office provides disclosure guidelines according to AFI 16-201, (C) *Disclosure of Military Information to Foreign Governments* (U).

2.9.1.1. Mark the DD Form 1494 Foreign Coordination page with the appropriate releasability statement provided by the FDO. “This information is furnished upon condition that it will not be released to another nation without specific authority of the Department of the Air Force of the United States, that it will be used for military purposes only, that individual or corporate rights originating the information, whether patented or not, will be respected, that the recipient will report promptly to the United States any known or suspected compromise, and that the information will be provided substantially the same degree of security afforded it by DOD of the United States.”

2.9.1.2. The local SMO ensures that foreign disclosure approval is obtained, including the field-level FDO case number and provides a copy of the approval release with the DD Form 1494 through the chain of command to AFFMA. If field-level disclosure approval is not received due to lack of delegated disclosure authority at the field level, notify the MAJCOM SMO.

2.9.1.3. To ensure timely program implementation; host nation coordination must begin at stage 1 or stage 2 if sufficient data is available, and not later than (NLT) stage 3.

2.10. Spectrum Planning Subcommittee (SPS) Review. All major systems used in the US receive USMCEB review and NTIA certification. Other than the systems listed below, the AFFMA determines which DD Form 1494s require SPS review.

2.10.1. New systems or subsystems and major modifications to existing systems.

2.10.2. All new systems or subsystems and major modifications to existing systems previously reviewed by the SPS if there is a significant impact on the electromagnetic spectrum when considering geographical location and frequency availability.

2.10.3. Land mobile radio (LMR) trunked systems.

2.10.4. Other systems or facilities that the NTIA, Interdepartment Radio Advisory Committee (IRAC), or other government agencies refer to the SPS.

Chapter 3

FREQUENCY ACTIONS

3.1. Frequency Assignment Guidance. The installation commander can prohibit use of **ANY** RF emitter (cease and desist) when anticipating or resolving interference to mission essential electromagnetic equipment. All RF emitters must have a frequency assignment prior to operation. Before making a permanent or temporary frequency assignment, the USMCEB must review the RF equipment via a DD Form 1494, unless specifically exempted in paragraph **2.4.** Frequency assignment parameters must match the technical characteristics of the equipment as recommended in the USMCEB guidance. AFMAN 33-120 details the specifics and requirements of this process.

3.2. Types of Frequency Assignments. There are four types of frequency assignments:

3.2.1. Regular: A frequency assignment for an unspecified period of time; however, a periodic review of the assignment is required. Regular assignments will have a Standard Frequency Action Format (SFAF) item 142 (Review date).

3.2.2. Temporary: A frequency assignment for a specified period of time, more than 90 days but less than five years. Temporary assignments with a SFAF item 141 (Expiration date) may be renewed for additional periods, if necessary. Coordinate this type of assignment at the national level and submit to the Frequency Assignment Subcommittee (FAS) for approval and recommendation to the NTIA for assignment. The assignment with an appropriate expiration date is entered into the GMF.

3.2.2.1. Short-Term-Temporary: Air Force users may apply for a short-term, limited, temporary assignment up to 90 days. This type of temporary assignment is not entered into the GMF and is renewable up to a total of 180 days from the initial date of assignments. Limit short-term, temporary assignments to urgent requirements (i.e., exercises, contingencies, short training periods, or to test/evaluate experimental equipment).

3.2.3. Trial: A frequency assignment for the purpose of selecting a suitable specific operating frequency for regular assignment.

3.2.4. Group: A frequency assignment made only to terrestrial stations and provides authority to operate but does not represent continuing operations, or provide an assignment for planning purposes. There are two types:

3.2.4.1. Authority to operate - this type does not represent continuing operations. Note S322 shall be used in SFAF line number 500.

3.2.4.2. Planning - this type represents continuing or definitely anticipated requirements. Note S321 shall be used in SFAF line 500. The following applies to such assignments:

3.2.4.2.1. Such assignments shall not exceed three years.

3.2.4.2.2. The technical particulars of these assignments shall describe the intended use of the frequency to the maximum extent practical at the time of this application.

3.2.4.2.3. Operations conducted under the authority of this type of assignment shall be limited to such uses as site surveys and path testing associated with the intended use. This type of assignment shall not be considered operational but strictly as a planning assignment set aside

to satisfy an identified future requirement. However, all S321 assignments are accorded protection and may be coordinated with Canada at the option of the applicant.

3.3. Frequency Applications. An application is used for the following frequency assignment actions (SFAF 010), refer to NTIA Manual.

3.3.1. New (N): To apply for a new frequency assignment.

3.3.2. Modification (M): Used to apply for the addition, subtraction, or removal of information contained in an existing frequency assignment.

3.3.3. Serial Replace Action: Used to delete an existing assignment from GMF and simultaneously replacing it with a new one.

3.3.4. Renewal (R): To apply for the extension of a TEMPORARY or TRIAL assignment and to simultaneously update other particulars of the assignment.

3.3.5. Administrative (A): This action is similar to a Modification (M) action; however, it is used to make three specific types of changes. The review date (Data Item 142) will not be automatically changed if an Administrative Modification action is used.

3.3.5.1. Changes due to typographical errors in the authorizing document.

3.3.5.2. Changes in administrative data items (e.g., 200 series).

3.3.5.3. Mass changes required for compliance with international, national, or DOD rules and regulations.

3.3.6. Deletion (D): To apply for the cancellation of a frequency assignment and the removal of all its particulars from the GMF and FRRS database.

3.3.7. Temporary (N): To apply for a short-term (less than 90 days) assignment.

3.4. Lead-times. Lead-times provide federal agencies and overseas commands and host countries with the time necessary to coordinate and process applications for frequency actions. If the following lead-times are not met, the frequency request must include a mission impact statement if the assignment is not granted by the date requested. Limit such requests to safety of life or urgent matters of national security. In all cases, requesting commands must document when the requirement does not meet the required lead-time.

3.4.1. AFFMA lead-times for operations in the US&P. The lead-times below start when the AFFMA receives the request and does not include time required by the MAJCOM or intermediate agencies.

3.4.1.1. Regular Assignments. Sixty days. In most cases, additional lead-time is required for actions requiring coordination with the FCC or the Federal Aviation Administration (FAA). Requirements that are not in accordance with the national table of allocations, or have unusual technical parameters, may require additional engineering time or study. It is not uncommon for such requests to take more than six months at the national-level.

3.4.1.2. Temporary, Trial, and Group Assignments. Sixty days. For those types of temporary assignments requiring more than 90 days but less than five years for entry into the GMF. Additional lead-time is needed for all actions requiring coordination with the FCC or FAA. Requirements not in accordance with the national table of allocations, or have unusual technical

parameters may require additional engineering time or study, consequently requiring even longer lead-times.

3.4.1.2.1. Temporary assignments (short-term) of less than 90 days require at least 30 days lead-time.

3.4.2. For operations outside the US&P. Unified commands set lead-times for frequency actions based on agreements with host governments. Generally, theater COCOM Joint Frequency Management Offices (JFMO) requires a minimum of 90 days lead-time to process overseas requirements. The 90-day time starts when the COCOM JFMO receives the request. Refer to theater instructions for specific lead-times.

3.5. Frequency Coordination. The DOD does not own spectrum exclusively for military use. In fact, spectrum is not owned by any organization, it is "allotted" and assigned. Either the FCC (state, local, public and private users) or the DOC, NTIA (federal users) manages all spectrum. The DOD manages the spectrum between 225 MHz and 399.9 MHz for the federal government (NTIA) and through the Military Assignment Group. When it is necessary for the Air Force to use frequencies managed by another federal department or agency, the Air Force must coordinate with the appropriate agency prior to submitting a frequency request to the NTIA for assignment action. Coordinate frequency actions as outlined in paragraphs **3.5.1.** through **3.5.9.** and include a statement of completed coordination and comments with the frequency action.

3.5.1. Federal Communications Commission (FCC). Refer to the NTIA Manual for the civil frequency bands requiring coordination. The AFFMA completes final coordination with the FCC national office before submitting the request to the FAS for assignment action.

3.5.2. Federal Aviation Administration (FAA). The FAA manages certain frequency bands through the Aeronautical Assignment Group (AAG), a working group of the FAS. Coordination with the FAA regional office is required for all new and existing assignment modifications with changes in technical parameters prior to submitting the proposal to the AFFMA for national-level approval. Refer to AFMAN 33-120 for the appropriate FAA regional office, their corresponding AOR, and the frequency bands requiring coordination. The AFFMA, a member of the AAG, completes final coordination with the AAG before submitting the request to the FAS for assignment action.

3.5.3. DOD Area Frequency Coordinators (AFC). Coordinate frequency actions at, among, and within radio line-of-sight of ranges according to ACP 190, US SUPP-1, and the NTIA Manual. Refer to AFMAN 33-120 for the appropriate DOD AFC and a description of their corresponding AOR.

3.5.4. Aerospace and Flight Test Radio Coordinating Council (AFTRCC). Coordinate all frequency requirements that fall within the 1435-1525 and 2360-2390 MHz band with the appropriate AFC prior to submission. The AFC coordinates with the AFTRCC coordinator. Refer to AFMAN 33-120 for the appropriate AFC and their corresponding areas of responsibility.

3.5.5. Army. Coordinate all Air Force frequency requirements on an Army installation with the appropriate Army frequency coordinator prior to submission. Refer to AFMAN 33-120 for the appropriate Army AFC and their corresponding AOR.

3.5.6. Navy. Coordinate all Air Force frequency requirements on a Navy installation with the appropriate Navy frequency coordinator prior to submission. Refer to AFMAN 33-120 for the appropriate Navy AFC and their corresponding AOR.

3.5.7. Canadian border. Coordination prior to assigning frequencies is required with Canada within 80 kilometers (approximately) of the US/Canadian border for terrestrial communications requirements and 250 nautical miles for aeronautical communications requirements. The NTIA coordinates the frequency proposal requirements with Canada. Refer to the NTIA Manual for specific guidance.

3.5.8. Mexican border. Coordination prior to assigning frequencies is required with Mexico within 75 kilometers (approximately) of the US/Mexican border for terrestrial communications requirements and 250 nautical miles (approximately) for aeronautical communications requirements. The NTIA coordinates the necessary requirements with Mexico. Refer to the NTIA Manual for specific guidance

3.5.9. Outside US&P. MAJCOMs coordinate frequency actions according to theater policies and procedures through the appropriate Air Force component command.

3.6. Frequency Application and Approval Channels.

3.6.1. Air Force Organizations in the US&P.

3.6.1.1. Installation Spectrum Manager (ISM). The ISM is responsible to the installation commander for managing all frequency use on the installation. Therefore, all units/organizations assigned to the installation submit their frequency application proposals to the ISM. The ISM sends these proposals as follows:

3.6.1.1.1. Submit proposals for host installation units to the host MAJCOM.

3.6.1.1.2. Submit proposals for tenant units, when the requirement supports the host installation mission, to the host MAJCOM (even if the tenant is the sole user of the frequency) with a copy to the tenant unit's MAJCOM.

3.6.1.1.3. Submit proposals for tenant units, when the requirements are not in support of the host installation mission, to the supported unit's MAJCOM with a copy to the host and tenant unit MAJCOMs, e.g., as described below:

3.6.1.1.3.1. Submit frequency requirements for a HQ ACC maintenance expediter net on a HQ AMC installation to HQ ACC with a copy to HQ AMC.

3.6.1.1.3.2. Submit frequency requirements for a HQ AFMC unit in support of HQ ACC on a HQ AMC installation to HQ ACC with a copy to HQ AFMC and HQ AMC.

3.6.1.2. US-based MAJCOMs send frequency actions in SFAF for their units deploying outside the US&P to the Air Force component of the theater unified command. For example, HQ ACC sends frequency actions to the Pacific Air Forces (PACAF) for a fighter wing deploying to the Pacific Area COCOM, Pacific Command. PACAF, in turn, processes these actions according to theater procedures.

3.6.1.3. Air National Guard (ANG) and Headquarters Air Force Reserve Command (HQ AFRC) units will:

3.6.1.3.1. Submit actions to support day-to-day operations, training requirements, fixed air traffic control, and navigational aids at operating bases and permanent training sites, through appropriate channels to the ANG Readiness Center (ANGRC) or HQ AFRC, respectively. The ANGRC or HQ AFRC sends the actions to AFFMA.

3.6.1.3.2. Submit requests in support of exercise or readiness inspections through the tasking agency to AFFMA.

3.6.1.3.3. The ANG units submit actions to support state-levied mission requirements through appropriate channels to HQ ANG. The Adjutant General sends them according to state directives, to the FCC Safety and Special Radio Services Bureau.

3.6.1.4. USAF Military Affiliate Radio System (MARS) activities:

3.6.1.4.1. Submit actions for MARS VHF nets on a military installation or on outlying locations hosted by an installation through the host-installation spectrum manager to the host MAJCOM. MAJCOMs coordinate with the Chief, USAF MARS (HQ AFCA/ECFP, 203 W. Losey St., Room 3100, Scott AFB IL 62225-5222) to ensure the net is authorized before sending the action to AFFMA.

3.6.1.4.2. Civilian affiliate stations send frequency actions to the state MARS director. The state MARS director sends actions to the region communications manager, who, in turn, sends it to the Chief, USAF MARS (HQ AFCA/ECFP). If approved, the Chief, USAF MARS sends the frequency action to AFFMA.

3.6.1.4.3. The Chief, USAF MARS and AFFMA coordinate high frequency (HF) actions. HF assignments are made on a regional basis. The authority for station operation is AFI 33-106. No formal action is required.

3.6.1.5. Civil Air Patrol (CAP). The CAP is an auxiliary of the Air Force under Title 10, U.S.C., *Armed Forces*, Chapter 909, *Civil Air Patrol*. AFI 10-2701, *Organization and Function of the Civil Air Patrol*, outlines Air Force support to the CAP. CAP units submit frequency actions that support Air Force operations and training, whether in whole or in part, to CAP National Headquarters (CAP-DOKF), 105 South Hansell Street, Maxwell AFB AL 36112-6332. CAP National Headquarters sends the frequency actions to Headquarters Air Education and Training Command (HQ AETC CSS/SCYC), 61 Main Circle, Suite 3, Randolph AFB TX 78150- 4546, who in turn, sends them to AFFMA.

3.6.1.5.1. AFFMA may assign CAP frequencies for Air Force units to communicate with the CAP during operational missions.

3.6.1.5.2. Air Force units may allow CAP to use their assigned frequencies to communicate with other Air Force units during operational missions.

3.6.1.5.3. CAP units give the ISM a list of frequencies used on the installation. A number of these should appear in the installation data pull.

3.6.2. Air Force Organizations outside the US&P. Overseas units submit frequency requests according to unified command policy. The regional COCOM is responsible for military use of frequencies within the command's geographical area.

3.7. Contractor Use of Frequencies.

3.7.1. Air Force Contracts. Contractors must submit frequency requests in direct support of Air Force contracts through the Air Force representative (normally the ISM if on an Air Force base or if at an Acquisition Center, the Program Office responsible for the contract), to the MAJCOM responsible for

administering the contract. The contractor must obtain frequency assignments from the FCC for requirements not in direct support of the contract.

3.7.2. Multiple Service Contracts. Contractors must submit frequency requests in support of a multiple service contract through the appropriate SMO channels to the military department that is the executive service for the contract. The contractor must obtain frequency assignments from the FCC for requirements not in direct support of the contract.

3.7.3. Foreign Military Sales, Direct Commercial Sales, and Hybrid programs. If the intention is to radiate within the US&P, you must go through the US&P process (e.g., certification and assignment). However, Hybrid programs will be handled case-by-case.

3.8. Shared-Use Facilities. Users submit frequency requests for shared-use facilities through the electromagnetic spectrum management channels of the agency that maintains the equipment.

3.9. Frequency Review Program. The purpose of the Frequency Review Program is to ensure the GMF and FRRS accurately reflect current operations. Users submit reviews NLT 90 days before the date shown in SFAF Item 142 to ensure the frequency assignment is updated and current by the review date. During the review process, the ISM, with cooperation of the user, will verify the frequency is in use and still required to meet mission requirements. In addition, the ISM reviews all the technical parameters of the assignment, for accuracy of information.

3.10. Nonlicensed Devices. A nonlicensed device is a low power intentional, unintentional or incidental radiator or device that meets the technical specifications prescribed in FCC CFR, Title 47, Part 15 or the NTIA Manual Annex K. Nonlicensed devices are afforded no protection from interference; if interference is caused to an authorized service, the nonlicensed device must cease operation. Because of this, Air Force activities must exercise caution in procuring and using nonlicensed devices. Examples of nonlicensed devices are wireless local area networks, wireless microphones, and cordless telephones. Using activities will not use nonlicensed devices for critical command and control applications essential for mission success, protection of human life or high value assets.

3.11. Frequencies Not Requiring Specific Assignment. International distress and emergency frequencies do not need specific assignments for use. AFMAN 33-120 lists these and other frequencies not requiring assignment for use in the US&P. Outside the US&P, theater commanders and host nations determine frequencies that do not need specific assignment.

3.12. Emergency Frequency-Sharing Notification. Under emergency conditions, several government agencies (i.e., Federal Emergency Management Agency operations) may operate on, or near, frequencies assigned to Air Force organizations. When this occurs, one of the involved agencies should coordinate with the affected Air Force organization to arrange frequency sharing during the emergency. Air Force units will cooperate fully during emergencies unless frequency sharing would jeopardize mission-essential operations. To properly coordinate at the national level, a representative for the local Air Force units must up-channel the information concerning the emergency situation. Ideally, this information should flow through command channels to notify AFFMA. If this is not possible, then pass the information directly:

3.12.1. During normal duty hours contact AFFMA at commercial 703-428-1503/44 or DSN 328-1503/44.

3.12.2. During non-duty hours notify the parent MAJCOM, who in turn will inform AFFMA.

3.13. Air Force Spectrum Interference Resolution (AFSIR) Program. Electromagnetic Interference (EMI) is any electromagnetic disturbance that interrupts, obstructs, or otherwise degrades or limits the effective performance of electronics and electrical equipment. It 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. The AFSIR program, as discussed in AFI 10-707, contains guidance for Air Force units experiencing EMI that must be resolved on a case-by-case basis.

Chapter 4

SYSTEMS/SERVICE GUIDANCE

4.1. Electronic Fuzes. Installation commanders set local coordination procedures for installation and tenant activities that develop, design, or use electronic fuzes. Electronic fuzes that activate detonation devices do not require a DD Form 1494. Units that develop, design, or use electronic fuzes must:

4.1.1. Research, determine, and evaluate existing frequency assignments for compatibility with the intended electromagnetic environment.

4.1.2. Contact the applicable spectrum managers (MAJCOM or DOD AFC) to select fuze frequencies.

4.1.3. Limit fuze-triggering transmitter emissions to the narrowest bandwidth possible.

4.1.4. Reduce the level of unnecessary emissions.

4.1.5. Use equipment tunable on more than one frequency.

4.1.6. Provide protection from accidental triggering by other RF emissions through coding, improving receiver selectivity, shielding components, or other techniques.

4.2. Federal and FCC Non-Licensed Devices.

4.2.1. Non-licensed devices operating in the US&P must conform to the FCC rules or the technical criteria in the NTIA Manual. These devices include, but are not limited to: wireless local area networks, wireless barcode readers, bio-medical telemetry, and cordless telephones. Air Force activities will not, without prior written permission from the Communications Squadron commander, use non-licensed equipment for critical tactical or strategic command and control applications essential for mission success, protection of human life, or protection of high-value assets, as they offer no protection of spectrum use in support of operational requirements.

4.2.1.1. This equipment must accept interference from any federal, non-federal, or civilian electronic system, non-licensed device, or industrial, scientific, and medical application.

4.2.1.2. Air Force activities operating a non-licensed device that causes interference to an authorized radio service shall promptly take steps to eliminate the interference.

4.2.1.3. Upon notification by cognizant spectrum management personnel that the device is causing interference, the operator of the non-licensed device shall cease all radiation from the device until the interference is eliminated.

4.2.1.4. Non-licensed devices subject to FCC certification, notification, or verification shall bear the appropriate FCC statement of limitations to operations.

4.2.1.5. Users will not modify, modernize, enhance, or change the equipment's power, antenna, waveform, or information transfer characteristics in any manner that would cause it to violate the NTIA criteria for non-licensed devices or the device's FCC type certification.

4.2.2. International. US non-licensed devices require host nation approval to operate. These devices include but are not limited to; wireless local area networks, wireless barcode readers, biomedical telemetry, and cordless telephones.

4.2.3. US&P Operations. Non-licensed devices operating within the US&P do not require a DD Form 1494 and may be operated officially without a NTIA approved frequency assignment; however, DOD requires a frequency assignment registered in the FRRS. This is accomplished through the local spectrum management office.

4.2.4. Outside US&P Operations. Theater commanders and host nations decide if frequency support is available and the requirements for frequency assignments. Users must submit a DD Form 1494 through the supporting spectrum manager for equipment that intentionally radiates and will be deployed outside the US&P. After obtaining favorable host nation guidance, users may request frequency assignment.

4.3. Commercial Satellite Use. All satellite terminals capable of accessing commercial satellites in the Fixed Satellite Service must comply with the CFR Title 47, Part 25, *Satellite Communications*. Submit proof of Part 25 compliance as part of the DD Form 1494 package through frequency management channels to the AFFMA. Request required frequency assignments once the NTIA and the FCC have granted support. Refer to AFMAN 33-120 for additional information.

4.4. Spacecraft and Balloon Systems. Spacecraft and balloon systems developed or operated by the Air Force must be capable of on and off control of emissions by telecommand.

4.5. Narrowband Operations. The NTIA mandated narrowband channelization for frequency bands 138-150.8, 162-174, and 406.1-420 MHz. In the US&P, all Air Force-owned or leased LMR equipment operating in the US&P must be narrowband capable by the following dates:

4.5.1. All systems in the 162-174 MHz band must be narrowband compliant by 1 January 2005, according to the NTIA Manual. Anyone not narrowband compliant will operate on a non-interference basis (NIB) to all other narrowband users.

4.5.2. All systems in the 138-144, 148-150.8 and 406.1-420 MHz bands must be narrowband compliant by 1 January 2008, according to the NTIA Manual. Anyone not narrowband compliant will be NIB to all other narrowband users.

4.5.3. All LMR systems in the 380-399.9 MHz band will operate in a narrowband standard.

4.6. Trunked Land Mobile Radio (TLMR) Systems. All TLMR systems require SPS approval prior to the application for frequency assignment. Installation of a TLMR requires consolidation of all TLMR nets. Federal agencies managing TLMRs shall allow access by other federal agencies where such access is technically and operationally feasible. All TLMR proposal requests for operation in the US&P must include a current SPS and IRAC docket number. Delete wideband frequencies as you receive approval for the new narrowband frequencies.

4.7. Receive-Only Systems. Although these systems do not require USMCEB allocations, submit a DD Form 1494 to:

4.7.1. Provide interference protection, update the SXXI, and conduct EMC studies.

4.7.2. Process coordination contours for the NTIA Manual for operational (Stage 4) receive-only satellite communications terminals.

4.8. Commercial Antennas on Federal Property. Commercial vendors may request the installation of commercial antennas on Air Force property. To ensure no adverse impacts to DOD systems, commanders and/or agency directors shall coordinate requests through the Base Communications-Electronic (C-E) Real Property Office for the placement of new telecommunications services on Air Force property. The vendor will provide information to JSC for an electromagnetic interference radiation hazard analysis at his or her own expense. The ISM may facilitate in these procedures. Refer to AFI 32-9003, *Granting Temporary Use of Air Force Real Property*, for additional information (**https://private.afca.af.mil/pwcs**).

4.9. Built-In Test Equipment. This equipment does not require a DD Form 1494 unless it exceeds the technical criteria in the NTIA Manual or if the intended use is outside the US&P. Frequency assignments are required for built-in test equipment.

4.10. Family Radio Service (FRS). Air Force entities are authorized to purchase and operate radios certified by the FCC in the FRS, pursuant to Part 95, Subpart B of the FCC Rules and Regulations (Title 47, Code of Federal Regulations). Air Force users will be accorded the same privileges as non-federal users. Because FRS users must share each channel and no user is assured protection from interference caused by another authorized user. User assumes those limitations when this equipment is purchased and operated. Air Force entities may not purchase and operate FRS radios for planned communications operations that safeguard human life or property. No license or frequency assignment is required or can be obtained in the US&P. Possession and use of FRS radios outside the US&P is subject to host country and international regulations. Air Force FRS users must comply with the following conditions:

4.10.1. Find regulations governing the use of FRS in CFR, Title 47, Part 95, Subpart 95.191, *Eligibility and Responsibility*; Subpart 95.192, *Authorized Locations*; Subpart 95.193, *Types of Communications*; Subpart 95.194, *FRS Units*.

4.10.2. Possession of FRS devices outside the US&P is subject to host country and international regulations. Air Force members or employees are not authorized to use FRS radios outside the US&P without host nation approval. Unified command directives apply. Coordinate FRS use with the appropriate Air Force component spectrum management office.

4.10.3. Air Force members and employee users are responsible for all communications using FRS radio equipment. Use must comply with federal, state, and local law.

4.10.4. The installation commander may prohibit FRS when interference to mission essential electromagnetic equipment is anticipated or to resolve a suspected RFI problem.

4.10.5. Air Force members and employees using FRS radios must relinquish channel use for emergency communication messages concerning the immediate safety of life or the immediate protection of property.

4.10.6. Use only FCC-certified FRS. Any modification to the equipment to boost power, add a different antenna, or to increase the gain of the current antenna, cancels the FCC certification and voids authority. Illegal FRS equipment is subject to confiscation.

4.10.7. FRS devices are not authorized for classified, sensitive but unclassified, command and control, squadron operational, aircraft/flight line maintenance, fire crash, explosive ordinance disposal, security forces, emergency/disaster response, tactical or training operations, and/or medical communications.

4.10.8. Under no circumstance will FRS radios be permitted for use in controlled areas without express written consent of the installation commander and full compliance with all security directives.

4.10.9. Use of FRS cannot be protected from harmful interference. FRS radios may not cause interference to any licensed device and must accept all interference from licensed devices.

4.10.10. The FCC may restrict use of the FRS radios if the station is located within the National Radio Quiet Zone (areas of MD, VA, and WV bounded by 39°15'N 78°30'W, 39°15'N 80°30'W, 37°30'N 78°30'W, 37°30'N 80°30'W).

4.10.11. Air Force members and employees who belong to non-appropriated fund activities and some appropriated fund activities may use FRS radios, as follows: To communicate with non-government users during Air Force supported or sponsored community activities, i.e., scouts, Special Olympics, youth activities/sporting events, civil disasters, funeral details for deceased military veterans, etc. In addition, FRS radios may be used for administrative purposes when communicating in warehouses, commissaries, base exchanges, billeting areas, work crews, etc. FRS radios may also be used on Air Force installations where the public is permitted entrance and in family housing areas.

4.11. Inter-Squad Radio (ISR). The ISR is the military FRS radio operating in the 380 - 399.975 MHz sub-band. The ISR is the military FRS radio and is recommended over the commercial FRS for Air Force members and employees. Because it is in the government RF band and the potential for RF interference is less, ISRs can be used to transmit information determined by the Designated Approving Authority to be publicly releasable. Unless appropriately encrypted, ISRs cannot be used to transmit classified, sensitive, command and control, fire/crash, security, and/or emergency response/medical communications. Refer to AFI 33-201, *Communications Security*, for guidance on protecting these types of communication.

4.11.1. Do not modify the ISR.

4.11.2. Only Air Force members, employees, and contractors providing support to military operations will use the ISR.

4.11.3. Do not use the ISR for personal use.

4.11.4. Possession of ISR devices outside the US&P is subject to host country and international regulations. Air Force members, employees, or contractors are not authorized to use ISR devices outside the US&P without host nation approval. Unified command directives apply. Coordinate ISR use with the appropriate Air Force component spectrum management office. Additional restrictions may be imposed in different AORs (i.e., Tactical and Training LMRs require NSA type 1 encryption).

4.12. General Mobile Radio Service (GMRS). The GMRS is a personal two-way voice communications service used to facilitate the activities of an individual and their immediate family. GMRS cannot be used by government agencies under any circumstances. Title 47, U.S.C. Part 95 provides regulatory guidance.

4.13. International Maritime Satellite (Inmarsat™). Inmarsat™ is a commercial satellite system subject to international law and treaty and can only be used for peaceful purposes. Inmarsat™ uses a satellite link to interface with terrestrial telephone systems or other Inmarsat™ terminals. Neither spectrum certification nor frequency assignments are required; however, special procedures exist for the purchase and use of Inmarsat™ terminals. Users must contact HQ AFCA/ECWM, through command channels, for guidance. Obtain additional information at **https://private.afca.af.mil.mss/Inmarsat.htm**

4.14. Leased Services. Refer to AFMAN 33-120.

4.15. Electronic Warfare (EW). The EW operations can be airborne, ground, or both. There are no frequency bands allocated for EW training operations. Therefore, special procedures have been established for coordinating and using FCC and FAA controlled frequency bands. Submit frequency clearance requests for electronic attack (EA) operations outside the US&P and Canada according to theater policies and procedures.

4.15.1. Submit airborne clearance requests for use in US&P and Canada through Air Force channels to AFFMA according to Chairman of the Joint Chiefs of Staff Manual (CJCSM) 3212.02B, *Performing Electronic Attack in the United States and Canada for Tests, Training and Exercises*.

4.15.2. Ground threat simulators. Submit frequency assignment actions according to AFMAN 33-120 and USMCEB PUB 7.

4.16. Commercial-Off-the-Shelf (COTS). COTS devices must remain unmodified as procured to maintain the definition. Paragraph **2.4.18.** identifies COTS exempt from frequency process. Process all others through the normal DOD spectrum approval process. DOD requires a frequency assignment registered in the FRRS.

4.17. Joint Tactical Information Distribution System/Multifunctional Information Distribution System (JTIDS/MIDS). JTIDS/MIDS, a communication component of Link 16, is a secure, jam-resistant, tactical, radio navigation and communications system that uses the JTIDS/MIDS terminal as its communications component. It operates in the 960-1215 MHz band over 51 frequencies with the Identification Friend or Foe (IFF) 1030 and 1090 MHz RF bands notched.

4.17.1. Frequency assignments and operations must be in strict adherence with Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 6232.01B, *LINK-16 Spectrum Deconfliction within the United States and Possessions,* and the Joint Spectrum Users Guide located on the HQ ACC web site at **https://totn.acc.af.mil** or **https://totn.acc.af.mil/3_Jtids/Documents/6232-01b.pdf**.

4.17.2. Due to increased reliance on this portion of the spectrum, the DOD and the Department of Transportation (DOT) entered into a MOA to protect continued use of this vital spectrum. Details of the MOA are at **Attachment 3**.

Chapter 5

INFORMATION COLLECTIONS, RECORDS, AND FORMS AND INFORMATION MANAGEMENT TOOLS

5.1. Information Collections, Records, and Forms and Information Management Tools.

5.1.1. Information Collections. No information collections are created by this publication.

5.1.2. Records. Maintain and dispose of frequency management records, paragraph **1.5.5.2.**, according to AFMAN 37-123 (will become AFMAN 33-363), Tables 33-12 and 33-13 and dispose of in accordance with the Air Force RDS located at **https://webrims.amc.af.mil/rds/index.cfm**.

5.1.3. Forms and IMTs (Adopted and Prescribed).

5.1.3.1. Adopted Forms and IMTs: DD Form 1494, **Application for Equipment Frequency Allocation**, and AF Form 847, **Recommendation for Change of Publication**.

5.1.3.2. Prescribed Forms and IMTs: No forms or IMTs are prescribed by this publication.

WILLIAM T. HOBBINS, Lt Gen, USAF,
DCS, Warfighting Integration
Acting Chief, Warfighting Integration and Chief Information Officer

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

CFR Title 5, U.S.C., Section 552, (b)(1), *Government Organizations and Employees*

CFR Title 10, U.S.C., *Armed Forces*, Chapter 909, *Civil Air Patrol*

CFR Title 47, U.S.C., *Telegraphs, Telephones, and Radiotelegraphs*, Section 151 et seq., *The Communications Act of 1934*

CFR Title 47, U.S.C., Part 15, *Radio Frequency Devices*

CFR Title 47, U.S.C., Part 18, *Industrial Scientific and Medical Equipment*

CFR Title 47, U.S.C., Part 25, *Satellite Communications*

CFR Title 47, U.S.C., Part 95, *Personal Radio Services*

CFR Title 47, U.S.C., Part 95, Subpart 95.191, *Eligibility and Responsibility*

CFR Title 47, U.S.C., Part 95, Subpart 95.192, *Authorized Locations*

CFR Title 47, U.S.C., Part 95, Subpart 95.193, *Types of Communications*

CFR Title 47, U.S.C., Part 95, Subpart 95.194, *FRS Units*

ACP 190/US SUPP-1, (C) *Guide to Frequency Planning* (U), **http://wireless.fcc.gov/rules.html**

NTIA, *Manual of Regulations and Procedures for Federal Radio Frequency Management,* **http://www.ntia.doc.gov/osmhome/redbook/redbook.html**

CJCSI 6232.01B, *LINK-16 Spectrum Deconfliction within the United States and Possessions*

CJCSM 3212.02B, *Performing Electronic Attack in the United States and Canada for Tests, Training and Exercises*

DODD 4650.1, *Policy for Management and Use of the Electromagnetic Spectrum*, June 8, 2004

DOD 5200.1-R, *Information Security Program*, January 1997

DOD 4120.24-M, *Defense Standardization Program (DSP) Policies and Procedures*, March 2000

DODD 3222.3/AFSUP 1, *Department of Defense Electromagnetic Compatibility Program (EMCP) (Air Force Electromagnetic Environmental Effects Program)*

USMCEB PUB 7, *Frequency Resource Record System (FRRS) Standard Frequency Action Format (SFAF),* **http://www.jsc.mil/Documents/DNLD/PUB7.pdf**

USMCEB-M-019-98, *DOD Frequency Assignment Classification Reference*

AFPD 33-1, *Command, Control, Communications, and Computer (C4) Systems*

AFI 10-707, *Spectrum Interference Resolution Program*

AFI 10-2701, *Organization and Function of the Civil Air Patrol*

AFI 16-201, (C) *Disclosure of Military Information to Foreign Governments* (U)

AFI 31-401, *Information Security Program Management*

AFI 32-9003, *Granting Temporary Use of Air Force Real Property*

AFI 33-106, *Managing High Frequency Radios, Personal Wireless Communication Systems, and the Military Affiliate Radio System*

AFMAN 33-120, *Radio Frequency (RF) Spectrum Management* (will become *Electromagnatic Spectrum Management*)

AFMAN 37-123, *Management of Records* (will become AFMAN 33-363)

Abbreviations and Acronyms

AAG—Aeronautical Assignment Group

ACP—Allied Communications Publication

AFC—area frequency coordinator

AFFMA—Air Force Frequency Management Agency

AFI—Air Force Instruction

AFMAN—Air Force Manual

AFPD—Air Force Policy Directive

AFSIR—Air Force Spectrum Interference Resolution

AFTRCC—Aerospace and Flight Test Radio Coordinating Council

ANG—Air National Guard

ANGRC—ANG Readiness Center

AOR—area of responsibility

CAP—Civil Air Patrol

CD—compact disk

C-E—Communications-Electronic

CFR—Code of Federal Regulations

CJCSI—Chairman of the Joint Chiefs of Staff Instruction

CJCSM—Chairman of the Joint Chiefs of Staff Manual

COCOM—combatant commander

COTS—commercial-off-the-shelf

DISA—Defense Information Systems Agency

DOC—Department of Commerce

DOD—Department of Defense

DODD—Department of Defense Directive

DOT—Department of Transportation

DSO—Defense Spectrum Office

E-mail—electronic mail

EA—electronic attack

EMC—electromagnetic compatibility

EMI—electromagnetic interference

EW—electronic warfare

FAA—Federal Aviation Administration

FAS—Frequency Assignment Subcommittee

FCC—Federal Communications Commission

FDO—Field Disclosure Office

FRRS—Frequency Resource Records System

FRS—Family Radio Service

GHz—gigahertz

GMF—Government Master File

GMRS—General Mobile Radio Service

HF—high frequency

HQ ACC—Headquarters Air Combat Command

HQ AETC—Headquarters Air Education and Training Command

HQ AFCA—Headquarters Air Force Communications Agency

HQ AFMC—Headquarters Air Force Materiel Command

HQ AFRC—Headquarters Air Force Reserve Command

HQ AMC—Headquarters Air Mobility Command

HQ USAF—Headquarters United States Air Force

IFF—identification friend or foe

IRAC—Interdepartment Radio Advisory Committee

ISM—installation spectrum manager

ISR—inter-squad radio

ITU—International Telecommunications Union

JFMO—Joint Frequency Management Office

JFP—Joint Frequency Panel

JSC—Joint Spectrum Center

JTF—joint task force

JTIDS—Joint Tactical Information Distribution System

kHz—kilohertz

LMR—land mobile radio

MAJCOM—Major Command

MARS—Military Affiliate Radio System

MHz—megahertz

MIDS—Multifunctional Information Distribution System

MOA—memorandum of agreement

MOU—memorandum of understanding

NIB—non-interference basis

NLT—not later than

NTIA—National Telecommunications and Information Administration

PACAF—Pacific Air Forces

POC—point of contact

RDS—records disposition schedule

RF—radio frequency

RFA—radio frequency authorization

RR—International Telecommunications Union Radio Regulations

SAF—Secretary of the Air Force

SFAF—standard frequency action format

SMO—Spectrum Management Office

SPS—Spectrum Planning Subcommittee

SXXI—Spectrum XXI

TLMR—trunked land mobile radio

US—United States

U.S.C.—United States Code

USD [AT&L])—The Under Secretary of Defense for Acquisition, Technology and Logistics

US&P—United States and its Possessions

USMCEB—United States Military Communications-Electronics Board

VHF—very high frequency

Terms

NOTE: The following definitions of frequency management terms were extracted from international, national, and DOD regulations and directives. Where appropriate, the source is given in parentheses following each definition: **(RR)**--*International Telecommunications Union Radio Regulations*, **(NTIA)**--*National Telecommunications and Information Administration Manual of Regulations and Procedures for Federal Radio Frequency Management.*

Allocation—(of a frequency band) Entry in the Table of Frequency Allocations of a given frequency band for its use by one or more (terrestrial or space) radio communication services or the radio astronomy service under specified conditions. This term also applies to the frequency band concerned. **(RR)**

Assignment—(of a radio frequency or radio frequency channel) Authorization given by an administration for a radio station to use a radio frequency or radio frequency channel under specified conditions. **(RR)**

Commercial-Off-the-Shelf (COTS)—Communications-Electronic (C-E) equipment that can be procured by the general public wholesale or retail.

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.

Electromagnetic Compatibility (EMC)— (1) The condition that prevails when telecommunications equipment is performing its individually designed function in a common electromagnetic environment without causing or suffering unacceptable degradation due to unintentional EMI to or from other equipment in the same environment. **(NTIA) (2)** DOD: The ability of systems, equipment, and devices that utilize the electromagnetic spectrum to operate in their intended operational environments without suffering unacceptable degradation or causing unintentional degradation because of electromagnetic radiation or response. It involves the application of sound electromagnetic spectrum management; system, equipment, and device design configuration that ensures interference-free operation; and clear concepts and doctrines that maximize operational effectiveness. (Joint Publication [JP] 1-02).

Electromagnetic Interference (EMI)—Any electromagnetic disturbance that interrupts, obstructs, or otherwise degrades or limits the effective performance of electronics or electrical equipment. It 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.

Foreign Disclosure—The approval to release technical information from the DD Form 1494.

Frequency Assignment—The authorization given by an administration for a radio station to use a radio frequency or radio frequency channel under specified conditions. (RR)

Frequency Assignment, Group—A frequency assignment made only to terrestrial stations and provides authority to operate but does not represent continuing operations, or provide an assignment for planning purposes. (**3.2.4.**) **(NTIA)**

Frequency Assignment, Temporary—A frequency assignment for a specified period of time, more than 90 days but less than five years. Temporary assignments will have a SFAF item 141 (Expiration date), but may be renewed for additional periods, if necessary. Coordinate this type of assignment at the national level and submit to the FAS for approval and recommendation to the NTIA for assignment. The assignment is entered into the Government Master File (GMF) with an appropriate expiration date. Air

Force users may apply for a short-term, limited, temporary assignment up to 90 days. This type of short-term, temporary assignment is not entered into the GMF. Short-term, temporary assignments are renewable up to a total of 180 days from the initial date of assignment. Limit short-term, temporary assignments to urgent requirements (i.e., exercises, contingencies, short training periods, or to test/evaluate experimental equipment). (NTIA)

Frequency Coordination—The process of obtaining approval to use the radio frequency spectrum via arrangements and technical liaison for the purpose of minimizing harmful interference through cooperative use of the radio frequency spectrum. To be effective, the coordination must extend through the planning, proposal, and actual in use phases of radio frequency utilization.

Harmful Interference—Interference that endangers the functioning of a radio navigation service or of other services, or seriously degrades, obstructs, or repeatedly interrupts a radio communications service operating in accordance with the ITU Radio Regulations. **(RR)**

Identification Friend or Foe (IFF)—A system using electromagnetic transmissions to which equipment carried by friendly forces automatically responds, for example, by emitting pulses, thereby distinguishing themselves from enemy forces.

Industrial, Scientific, and Medical Applications—(of radio frequency energy) Operation of equipment or appliances designed to generate and use local radio-frequency energy for industrial, scientific, medical, domestic, or similar purposes, excluding applications in the field of telecommunications. **(RR)**

Interference—The effect of unwanted energy due to one or a combination of emissions, radiations, or inductions upon reception in a radio communication system, manifested by any performance degradation, misinterpretation, or loss of information that could be extracted in the absence of such unwanted energy. **(RR)**

Low Power—Devices that operate according to the specifications listed in the NTIA Manual, Annex K.

NTIA Manual—A DOC Manual of Regulations and Procedures for Federal Radio Frequency Management.

Radio Frequency Spectrum—The RF spectrum includes the frequencies from 3.0 kHz to 400 GHz. The presently allocated spectrum is from 9 kHz to 300 GHz.

Range Commander—In this instruction, the commander of an Air Force test or tactical range.

Shared-Use Facilities—Any site or installation that has more than one DOD department, agency, or unit. The facilities frequency concerns should be filtered through the “host” agency.

Spurious Emission—Emission on a frequency or frequencies that are outside the necessary bandwidth and the level of which may be reduced without affecting the corresponding transmission of information. Spurious emissions include harmonic emissions, parasitic emissions, intermodulation products and frequency conversion products, but exclude out-of-band emissions. **(RR)**

Telecommunication—Any transmission, emission, or reception of signs, signals, writings, images, and sounds or information of any nature by wire, radio, visual or other electromagnetic systems. **(RR)**

Attachment 2

FREQUENCY ASSIGNMENT CLASSIFICATION REFERENCE

A2.1. Security Classification. This attachment is a reference used for Air Force specific frequency assignment requirements. As a reference it explains the handling and retention of the classification of frequency assignments, whereas the DOD 5200.1R and AFI 31-401 are general in nature. This attachment is reference only and is not to be used as a classification source.

A2.1.1. Primarily the association with the function they support determines security classification of DOD and Federal Government frequency assignments and the information in them. Classify individual data items according to DOD 5200.1-R and AFI 31-401.

A2.2. Individual Air Force Frequency Assignments.

A2.2.1. The following frequency assignment information, standing alone or in combination and not associated with any other assignment information, is UNCLASSIFIED. Mark these items as (U) in the SFAF.

A2.2.1.1. Overall classification of the frequency assignment (SFAF Item 005).

A2.2.1.2. Security classification modification (SFAF Item 006).

A2.2.1.3. Type of action (SFAF Item 010).

A2.2.1.4. Agency serial number (SFAF Item 102).

A2.2.1.5. IRAC docket number (SFAF Item 103).

A2.2.1.6. List serial number (SFAF Item 105).

A2.2.1.7. Serial replaced, delete date (SFAF Item 106).

A2.2.1.8. Docket number of older authorizations (SFAF Item 108).

A2.2.1.9. Operating frequency or frequency band and excluded frequency or frequency band (SFAF Items 110 and 111).

A2.2.1.10. Agency (SFAF Item 200).

A2.2.1.11. Command (SFAF Item 204).

A2.2.1.12. IRAC Notes (SFAF Item 500).

A2.2.1.13. Frequency action officer (SFAF Item 701).

A2.2.1.14. Control/request number (SFAF Item 702).

A2.2.2. Classify other assignment information, standing alone or in combination with other information (including **A2.2.1.**), according to DOD 5200.1-R and AFI 31-401 by the appropriate classification authority. Include the appropriate classification marking with the corresponding SFAF item.

A2.3. Lists of Air Force Frequency Assignments.

A2.3.1. Although most individual frequency assignment records in the Air Force Radio Frequency Authorization (RFA) are individually unclassified, classify the total RFA according to the highest

classification level of the assignments it contains. Lists (two or more frequencies) of unclassified frequency assignment records in a given range of frequencies, or in a given area, can be categorized as sensitive, but unclassified because they may provide information leading to the disclosure of military or national security-related operations and scientific and technological matters relating to national security. These lists can indicate the overall strategic telecommunications capabilities of the US, and their disclosure could cause damage to national security. The continued protection of this information is essential to national security because it pertains to communications security and reveals vulnerabilities and capabilities. **Its unauthorized disclosure can reasonably be expected to result in nullifying the effectiveness of telecommunications networks and the capability of the US**.

A2.3.2. The USMCEB-M-019-98 gives guidance on classifying compilations of frequency assignment records. Based on this guidance:

A2.3.2.1. Classify RFAs or frequency lists at the highest level of any individual frequency assignment it contains.

A2.3.2.2. When RFAs or frequency lists contain the aggregation of UNCLASSIFIED DOD, MILDEP, or NSA frequency assignment records, classify it CONFIDENTIAL, except as exempted by paragraph **A2.5.**

A2.3.2.3. A RFA or frequency list containing only UNCLASSIFIED assignments of one unit or location is considered UNCLASSIFIED. For example, to select all records where SFAF data item 200 (Agency) = USAF would result in a CONFIDENTIAL aggregate list; whereas, select all records where SFAF item 301 (Transmitter Location) or 401 (Receiver Location) = Hill would result in an UNCLASSIFIED aggregate list. Users that plan to operate in an UNCLASSIFIED environment should select from the FRRS only UNCLASSIFIED records applicable to their operational requirements.

A2.4. Marking.

A2.4.1. All DOD frequency assignment material must contain proper warnings/markings, as outlined, whether computer-generated or manually applied. Mark DOD data extracted from frequency assignment databases with one of the following warning statements, depending upon which category is applicable.

A2.4.2. Mark documents/material containing UNCLASSIFIED frequency assignment records/data classified CONFIDENTIAL under Section 3 of the USMCEB-M-019-98 CONFIDENTIAL and carry markings according to existing DOD security regulations and AFI 31-401. For example:

Derived From: DOD Frequency Assignment Security Classification Guide

Source Dated: 1 January 1998

Declassify on: Source marked X4

A2.4.3. The documents/material will have the following warning attached:

A2.4.3.1. **WARNING --** This document/listing has been classified CONFIDENTIAL according to DOD Frequency Assignment Security Classification Guide. The UNCLASSIFIED frequency assignment records/data must be protected according to Section 3 of the DOD Frequency Assignment Security Classification Guide.

A2.4.3.2. The destruction of UNCLASSIFIED records/data in this document must be according to existing directives governing destruction of classified material.

A2.4.3.3. This document contains records/data that are exempt from public release under the provisions of Title 5, U.S.C., Section 552(b)(1), *Public information; agency rules, opinions, orders, records, and proceedings*. The release of any records to any non-DOD organization requires approval of the authority (agency) that made the assignment.

A2.4.4. Mark material containing SECRET or CONFIDENTIAL frequency assignment records and, either UNCLASSIFIED DOD frequency assignment records that meet the aggregation criteria set forth in Section 3 of the USMCEB-M-019-98 or UNCLASSIFIED DOD frequency assignment records/data extracted from the aggregated lists according to current security directives and contain the following warning statement:

A2.4.4.1. **WARNING –** In addition to SECRET or CONFIDENTIAL data, this document contains UNCLASSIFIED frequency assignment records/data that must be protected according to Section 3 of the DOD Frequency Assignment Security Classification Guide.

A2.4.4.2. Destroy UNCLASSIFIED records/data in this document according to existing directives governing destruction of classified material.

A2.4.4.3. This document contains records/data that are exempt from public release under the provisions of the Title 5 U.S.C., Section 552(b)(1). The release of any records to any non-DOD organization requires approval of the authority (agency) that made the assignment.

A2.4.5. Mark documents/material containing one or more UNCLASSIFIED frequency assignment record/data extracted from aggregated lists that are classified CONFIDENTIAL as set forth in Section 3 of the USMCEB-M-019-98 UNCLASSIFIED and contain the following warning:

A2.4.5.1. **WARNING –** This document/listing is UNCLASSIFIED; however, it contains frequency assignment records/data that you must protect according to Section 3 of the USMCEB-M-019-98.

A2.4.5.2. Destroy UNCLASSIFIED records/data in this document according to existing directives governing destruction of classified material.

A2.4.5.3. This document contains records/data that are exempt from public release under the provisions of the Title 5, U.S.C., Section 552(b)(1). The release of any records to any non-DOD organization requires approval of the authority (agency) that made the assignment.

A2.5. Exemptions.

A2.5.1. The following types of frequency assignment records are exempt from the classification requirements listed in paragraph **A2.3.2.2.**:

A2.5.1.1. Lists of UNCLASSIFIED frequency assignments to government users that are not intended to be public (i.e., travelers information stations, weather broadcast stations, certain stations in the maritime radio navigation and maritime mobile services, and stations in the international broadcast services).

A2.5.1.2. Lists of aeronautical station frequencies under the purview of the Aeronautical Assignment Group when used in the National Airspace System.

A2.5.1.3. Lists of UNCLASSIFIED frequency assignment records that operate on frequencies authorized to non-government stations, where such use is necessary to intercommunicate with non-government stations for coordination with non-government activities.

A2.5.1.4. Lists of frequencies in NTIA or DOD channel plans when specific location, technical parameters, and organization are not collectively included in the channel plan.

Attachment 3

MEMORANDUM OF AGREEMENT BETWEEN DEPARTMENT OF DEFENSE AND DEPARTMENT OF TRANSPORTATION REGARDING THE 960-1215 MHZ FREQUENCY BAND

Recognizing the increasing use of radio frequency (RF) spectrum for commercial, civil and military purposes and its vital importance to both national defense and air traffic safety, the Department of Defense (DoD) and Department of Transportation (DoT) enter into this Memorandum of Agreement (MOA).

The 960-1215 MHz band is used by DoD for the Joint Tactical Information Distribution System (JTIDS), the Multifunctional Information Distribution System (MIDS) and other similar systems (termed collectively "Link-16" in this agreement) as a critical element of its Command and Control infrastructure. Continuing restrictions for training and operations within the United States and its Possessions (US&P) would adversely affect DoD's ability to support national security objectives.

DoT interest in this band is based on its importance for aeronautical radionavigation and supporting systems. Rapid growth in commercial and civil aviation during the 21st century will increase the importance of assuring spectrum supportability for existing and new systems that enhance air traffic safety.

In 1978 the National Telecommunications and Information Administration (NTIA) directed the Federal Aviation Administration (FAA) and DoD to work cooperatively to assure spectrum access and mutual compatibility between Link-16 and civil/commercial aeronautical radionavigation systems populating the 960-1215 MHz band. This memorandum of agreement is in conformity with the 1978 NTIA directive and takes into account technological developments, regulatory practices, and new DoT and DoD requirements.

Supporting aviation safety, national defense, and efficient use of government resources, DoT will assure spectrum access for Link-16 systems; DoD will incorporate terminal engineering features to improve those systems' compatibility in accordance with the specifications contained in this and other applicable documents; and both agencies will work cooperatively to support NTIA action to protect both Link-16 and civil/commercial aeronautical systems sharing this portion of the RF spectrum.

Recognizing a mutual interest in assuring spectrum access for critical systems, we enter into this agreement to protect use of the band in the US&P and internationally, and to advocate strongly for the tenets of this agreement as specified in Appendix A in national and international negotiations.

Paul D. Wolfowitz
Deputy Secretary of Defense

NOV 18 2002

Michael P. Jackson
Deputy Secretary of Transportation

DEC 31 2002

Appendix A

RECOGNIZING:

Treaties of the International Telecommunication Union (ITU) fully recognize the sovereign right of each State to regulate its telecommunications including all transmissions, emissions, and receptions of radio frequency signals subject to that State's jurisdiction.

Customary international law and bilateral and multilateral international agreements recognize that military aircraft, vessels and spectrum-dependent systems are treated differently from civil and commercial aircraft, vessels and spectrum-dependent systems. For example, the 1944 Convention on International Civil Aviation states expressly in Article 3 that it shall be applicable only to civil aircraft and shall not be applicable to state aircraft.

The 960-1215 MHz band is allocated by the Radio Regulations for Aeronautical Radionavigation Service (ARNS) and Radionavigation Satellite Service (RNSS) systems, and the development of electronic aids to navigation.

The Joint Tactical Information Distribution System (JTIDS), the Multifunctional Information Distribution System (MIDS), and other similar systems are critical to Department of Defense (DoD) missions associated with command and control and radionavigation.

FAA and DoD systems dependent upon the 960-1215 MHz spectrum must be coordinated to assure mutuals spectrum access.

APPLICABILITY:

This agreement applies to MIDS terminals including MIDS Low Volume Terminal (LVT) variants (LVT-l, LVT-2. and LVT-3/Fighter Data Link); Integrated Communications Navigation and Identification Avionics (ICNIA); ITIDS terminals including ITIDS Class 1, Class 2, Class 2M, and Class 2H; and future systems incorporating the JTIDS/lMIDS waveform implementation (e.g., the Joint Tactical Radio System). For the purposes of this agreement, all these systems will be collectively referred to as "Link-16."

SPECIFICATIONS:

1. DoT and DoD will support appropriate service allocation and station class designations for systems meeting the minimum technical/regulatory requirements as specified by the NTIA and international spectrum usage agreements. Both agencies will work cooperatively to protect civil and military systems sharing the 960-1215 MHz.

2. DoD will limit uncoordinated Link-16 operations in accordance with the spectrum restrictions outlined in the NTIA Spectrum Certification as approved by the NTIA Office of Spectrum Management (OSM). Associate Administrator. Relaxation of these restrictions in the 1030-1215 MHz band on a system-by-system, case-by-case, or other appropriate basis may be approved

Appendix A

based on Interdepartment Radio Advisory Committee (IRAC) review of testing/documentation that concludes relaxation will not result in harmful interference to authorized users of the band.[1]

3. Upon final certification approval, DoT will support a permanent United States and its Possessions (US&P) assignment for Link-16 operations within the constraints identified in the NTIA spectrum certification.

4. DoD will ensure that by 2020, all Link-16 terminals are capable of remapping frequencies from below 1030 MHz to the sub-band above 1030 MHz. Any Link-I6 terminal produced after July 1, 2007 will be capable of remapping. These terminals are expected to begin fielding no later than January 1, 2009. All fielded Link 16 terminals will incorporate the remapping capability by 2020. Inclusion of the remapping capability in Link-I6 terminals produced prior to July 1, 2007 (ITIDS terminals excluded) will be handled when the systems are brought in for depot maintenance and/or are scheduled for other system updates to the Link-l6 terminal. DoT and DoD will meet annually to review the progress of this effort with the goal ,of ensuring maximum compatibility between Link 16 and aviation systems. DoD will utilize this capability as required within the US&P to prevent harmful interference to aviation systems approved by NTIA via a stage 4 spectrum support certification for operation in the 960-1215 MHz band and implemented below 1030 MHz. This capability will be utilized to remap the minimum number of frequencies required to preclude harmful interference based on approval by NTIA through the SPS process. DoD will not use the requirement to remap frequencies from the Link-16 “hopset” as a rationale for objecting to such aviation systems.

5. DoT will work with the NTIA and other Federal Agencies to ensure aviation systems subject to US Government regulation using frequencies above 1030 MHz (including Galileo, Global Positioning System (GPS) L52, and other systems with global availability) will be designed to satisfy their minimum performance standards in their intended electromagnetic environment, including Link-16 operations complying with conditions and restrictions reflected in the Link-16 NTIA spectrum certification or any subsequent certifications. DoT will also work with the Department of State, the Federal Communications Commission, the NTIA, and DoD to support the US Government’s efforts to ensure aviation systems not under US jurisdiction whose receivers may operate in the US&P (including Galileo and other systems with global availability) will be designed to the same standard outlined in the preceding text.

6. DoT will ensure that future aeronautical radionavigation systems, electronic aids to air navigation, or other systems subject to its jurisdiction that are to be implemented using spectrum

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[1] Such relaxations might include higher Time Slot Duty Factor (TSDF) (in excess of 100%) and reduced geographic areas (less than 100 nm).

[2] In the event that the mitigation strategies defined in the Interagency GPS Executive Board (IGEB) “Implementation of a Third Civil GPS Signal” Final Report should prove insufficient to protect civil use of the GPS L5 signal, the option to require remapping Link-16 carriers in the 1164-1188 MHz band in lieu of a like number of below-1030 MHz Link- 16 carriers (the total number of frequencies remapped to accommodate DoT systems shall not exceed 14) will be retained. Studies to support such an option will be developed within the Spectrum Planning Subcommittee and approved by NTIA. Conclusion of this agreement satisfies the intent of the IGEB Final Report, which states “The DoD will include a priced option in the full-rate production MIDS request for proposal (RFP) to remap up to seven selectable. contiguous MIDS frequencies in the 960-1215 MHz band.”

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in the 1030-1215 MHz band will be designed to satisfy their minimum performance standards in their intended electromagnetic environment, including Link-16 systems operating in conformance with the approved IRAC spectrum certification. DoT will also ensure future aeronautical radionavigation systems approved by NTIA via a stage 4 spectrum support certification for operation in the 960-1215 MHz band and implemented below 1030 MHz will take into account Link-16 operations within the constraints of the NTIA spectrum certification or any subsequent spectrum certifications on Link-16 frequencies not subject to remapping.

7. DoT will authorize operations exceeding the terms of this agreement on a case-by-case basis. DoT and DOD will develop coordination procedures to accommodate Link-16 training exercises involving 51-channel operations, operations exceeding approved spectrum certification criteria, and operations involving non-US and new Link-16 terminals/platforms.

8. DoT and DoD will develop 51-channel coordination procedures regionally, taking into account the expected aviation system density and services and the DoD operating areas in that geographic location.[3]

9. DoT will not require compatibility between Link-l 6 and Universal Access Transceiver (UAT) receivers on military platforms. UAT transmitters may be required on military platforms.

10. Only those electromagnetic compatibility (EMC) features directly affected by the engineering change will be subject to re-certification.[4] It is expected that the monitoring function can be accomplished by a suitable revision to the uniform frequency monitor.

11. DoT will not require new EMC testing or additional restrictions with regard to existing ARNS systems (Mode S, Air Traffic Control Radar Beacon System, Traffic Alert and Collision Avoidance System, Distance Measuring Equipment (DME)/N and DMFJP, and/or the 1090 Automatic Dependent Surveillance-Broadcast extended squitter) and RNSS systems (GPS L5 and Galileo) as a result of remapping.

12. DoT will promote the development of robust aviation systems that lend themselves to improved compatibility with 51-frequency JTIDS terminals through cooperation with RTCA Inc., industry, and DoD.

13. DoT and DoD will jointly submit to NTIA a recommended specification and methodology to facilitate the terminal EMC features certification of Link-16 systems operating in the 960-1215 MHz band, within 30 days of the signature of this MOA. Subsequent to NTIA approval of the specification and a successful demonstration of the implementation of the

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[3] Intent is to ensure the entire US&P is not restricted for a projected operational environment that exists only in the vicinity of high-density air traffic areas like Los Angeles International Airport.

[4] Thebaseline for all EMCFeatures monitoring methodology, periodic verification requirements, and procedures for the performance of EMC Features Demonstrations must be mutually established by DoD and FAA for all MIDS production and fol1ow-on terminals.

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specification/methodology DoT will endorse DoD's certifying all future Link-16 terminals' compliance, eliminating the need for future NTIA EMC features demonstrations.

14. DoD and DoT will promote the terms of this agreement in international forums (e.g.,DoD will encourage North Atlantic Treaty Organization (NATO) and other international Link-16 users to implement a similar, compatible remapping capability, and DoT will work with the International Civil Aviation Organization (lCAO) and other civil aviation organizations to ensure new systems will recognize that they face environments in some countries which include Link-16 electromagnetic environments as specified in the NTIA spectrum certification.

15. DoD and DoT win seek to implement all the terms of this agreement in good faith. If circumstances change, both DoD and DoT will work together to resolve any disputes. The failure by one Department to comply with the terms of the agreement may be a basis for the other Department to terminate the agreement.