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SECRETARY OF THE AIR FORCE**

**DEPARTMENT OF THE AIR FORCE
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SPECTRUM

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This publication implements Department of the Air Force Policy Directive 17-2, *Cyber Warfare Operations* and is consistent with the guidance established with National Telecommunications and Information Administration (NTIA), *Manual of Regulations and Procedures for Federal Radio Frequency Management* (also known as “Redbook”) and the Joint Staff J6 Military Command, Control, Communications, and Computers Executive Board (MC4EB) Frequency Panel. It identifies various levels of responsibilities for Department of the Air Force spectrum management and use of the electromagnetic spectrum. This publication applies to all civilian employees and uniformed members of Regular Air Force, the Air Force Reserve, the Air National Guard, the United States Space Force, those who are contractually obligated to comply with Department of the Air Force publications, and the Civil Air Patrol when conducting missions as the official Air Force Auxiliary. Ensure all records generated as a result of processes prescribed in this publication adhere to Air Force Instruction (AFI) 33-322, *Records Management and Information Governance Program*, and are disposed in accordance with the Air Force Records Disposition Schedule which is located in the Air Force Records Information Management System. Refer recommended

changes and questions about this publication to the office of primary responsibility using the Air Force Form 847, *Recommendation for Change of Publication*; route Air Force Forms 847 from the field through the appropriate functional chain of command. This publication may be supplemented at any level, but all supplements must be routed to the office of primary responsibility of this publication for coordination prior to certification and approval. The authorities to waive wing unit-level requirements in this publication are identified with a tier (“T-0, T-1, T-2, T-3”) number following the compliance statement. See Department of the Air Force Instruction 33-360, *Publications and Forms Management*, for a description of the authorities associated with the tier numbers. Submit requests for waivers through the chain of command to the appropriate tier waiver approval authority, or alternately, to the requestor’s commander for non-tiered compliance items. The use of the name or mark of any specific manufacturer, commercial product, commodity, or service does not imply endorsement by the Department of the Air Force. Compliance with the attachment in this publication is not mandatory.

(JBA) This supplement applies to all activities operating on Joint Base Andrews and associated units as specified in the host-tenant support agreements, and public/private organizations that wish to operate Federal Communication Commission (FCC) radio frequency licenses/regulating stations within the Joint Base Andrews complex.

(JBA) Refer recommended changes and questions about this publication to the OPR listed above using the AF Form 847, *Recommendation for Change of Publication*; route AF Forms 847 from the field through the appropriate chain of command. Requests for waivers must be submitted to the OPR listed above for consideration and approval. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of in accordance with Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS). 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.

SUMMARY OF CHANGES

This publication has been substantially revised and needs to be completely reviewed. Significant reductions have been made and several chapters and process-oriented areas eliminated. Guidance for those chapters is available in other publications (e.g., NTIA Manual, Department of Defense Instructions (DoDI), Department of Defense Directives, and Allied Communications Publications (ACP)).

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1. OVERVIEW.

1.1. The electromagnetic spectrum is the range of frequencies of electromagnetic radiation extending from zero to infinity, measured in hertz (cycles per second). The radio frequency spectrum is the group of frequency sub-bands within the allocated electromagnetic spectrum associated with radio wave propagation between 9 kilohertz and 275 gigahertz. This instruction provides for the Department of the Air Force’s responsibilities in the conduct of peacetime electromagnetic spectrum management.

1.1. **(JBA)** The electromagnetic spectrum is the range of frequencies of electromagnetic radiation extending from zero to infinity, measured in hertz (cycles per second). The radio frequency spectrum is the group of frequency sub-bands within the allocated electromagnetic spectrum associated with radio wave propagation between 9 kilohertz and 275 gigahertz as shown on [Attachment 4](#). This instruction provides for Joint Base Andrew’s responsibilities in the conduct of peacetime electromagnetic spectrum management.

1.2. International law, domestic law, and implementing regulations require effective management and use of the electromagnetic spectrum. Within the United States, the electromagnetic spectrum is allocated between federal and non-federal users with portions of the spectrum being shared as noted in the NTIA Manual national table of allocations. The Department of Commerce’s NTIA Manual regulates federal operations and the Federal Communications Commission regulates non-federal operations. Federal users must utilize frequency bands allocated for government or shared use in accordance with NTIA Manual. **(T-0)** A government frequency assignment is authorized in a non-government allocated frequency band, providing the Federal Communications Commission approves the request.

1.2. **(JBA)** International law, domestic law, and implementing regulations require effective management and use of the electromagnetic spectrum. Within the United States, the electromagnetic spectrum is allocated between federal and non-federal users with portions of the spectrum being shared as noted in the National Telecommunications and Information Administration (NTIA) Manual, National Table of Allocations, and the International Telecommunication Union, Radio Regulations (ITU RR). The Department of Commerce’s NTIA Manual regulates federal operations, and the Federal Communications Commission (FCC) regulates non-federal operations. Federal users must utilize frequency bands allocated

for government or shared use in accordance with NTIA Manual. **(T-0)** A government frequency assignment is authorized in a non-government allocated frequency band, provided that the FCC approves the request.

1.3. Sovereign nations exercise control over the use of the electromagnetic spectrum within their own territory. This basic consideration of international spectrum management becomes extremely important when United States military forces operate abroad. In nearly all circumstances, it is necessary to obtain host nation approval to conduct electromagnetic spectrum operations before United States military forces operate any spectrum-dependent system in a foreign nation. Misuse of spectrum resources or unauthorized electromagnetic spectrum use within a host nation may be a violation of international treaties, international law, or national laws and regulations. Seek assistance from the servicing staff judge advocate with understanding international treaties, regulations, and host nation laws, where applicable.

1.3. **(JBA)** The Installation Spectrum Manager's spectrum monitoring equipment has the capability to intercept and direction-find communications over unencrypted radio channels. IAW DoDI 8560.01, COMSEC Monitoring, all emitters, telecommunications, and information systems are subject to periodic spectrum monitoring at any time by the 744th Communications Squadron (CS) Installation Spectrum Manager (ISM) office (SCX), or as directed by the 316th Wing. Communications and radio transmissions on Joint Base Andrews, are not private, are subject to routine monitoring, interception, and search, and may be disclosed or used for any U.S. Government-authorized purpose. This includes security measures (e.g., authentication and access controls) to protect U.S. Government interests—not for personal benefit or privacy.

1.4. **(Added-JBA)** Joint Base Andrews (JBA) Commanders and all tenant organizations must efficiently manage assigned radio frequencies to meet operational mission requirements. Spectrum Operations planning and coordination with proper command authority through the 744 CS ISM is essential for all radio frequency and electromagnetic compatibility matters to provide an environment free from communications interference and protect users in and around the installation against any unintentional communications equipment jamming. The 744 CS ISM contact phone number is: DSN 981-6900, Commercial (301) 981-6900, or e-mail 744CS.JBA.Spectrum@us.af.mil

2. ROLES AND RESPONSIBILITIES.

2.1. Department of the Air Force Spectrum Operations.

2.1. **(JBA)** JBA Spectrum Defense Operations. The lead service at any Joint DoD installation designates a spectrum manager to provide spectrum support for the common functions. At JBA, service requirements are processed through national command channels after approval from the 744 CS ISM. The 744 CS ISM is responsible to the Host Installation Commander (316th Wing Commander) through their chain of command, for managing all spectrum use on the installation and areas under control of the installation commander. The 744 CS ISM will be the responsible office for fulfilling all JBA's tenant organization's spectrum requirements as appointed by the 316th Wing Commander. The 744 CS ISM will:

2.1.1. Deputy Chief of Staff, Intelligence, Surveillance, Reconnaissance, and Cyber Effects Operations (AF/A2/6). In accordance with the Department of the Air Force Policy Directive 17-2, AF/A2/6 provides policy, guidance, resource advocacy and oversight for Air Force electromagnetic spectrum management in support of the Department of the Air

Force mission and retains responsibility for policy, as well as oversight of lead command implementation of DoDI 4650.01 and DoDI 8320.05.

2.1.1. **(JBA)** Process frequency proposals and applications for equipment spectrum certification using the End-to-End Supportability System and SPECTRUM XXI respectively, and ensure submissions are processed through appropriate command channels.

2.1.2. Director, Cyberspace Operations and Warfighter Communications (AF/A2/6C). AF/A2/6C is responsible for integrating cyberspace warfare capabilities into the joint mission and provides oversight and control for electromagnetic spectrum management in support of the Department of the Air Force mission.

2.1.2. **(JBA)** Update JBA frequency records. 744 CS ISM is responsible for actions such as adding, modifying, deleting, or renewing frequency assignments in the Frequency Resource Record System (FRRS) accessed through SPECTRUM XXI.

2.1.3. Chief, Department of the Air Force Spectrum Management (AF/A2/6CO). AF/A2/6CO represents the United States Air Force and United States Space Force electromagnetic spectrum use at the national and international levels. Processes Department of the Air Force spectrum supportability and frequency assignment requests through the NTIA for use within the United States and its possessions. The AF/A2/6CO represents the United States Space Force, as a service, at the MC4EB Frequency Panel until the United States Space Force has established its spectrum offices. AF/A2/6CO will:

2.1.3. **(JBA)** Educate spectrum users and review unit organization proposals of purchasing spectrum-dependent devices prior to any contractual obligation of the purchase in order to evaluate spectrum supportability. If the system will be deployed outside of the United States, DAF policy requires pre-coordinated host nation coordination in accordance with DoDI 4650.01.

2.1.3.1. Implement national, international, and joint staff electromagnetic spectrum management policy in accordance with the NTIA Manual; International Telecommunication Union, *Radio Regulations* (ITU RR), DoD, Joint Staff, and MC4EB publications. **(T-0)**

2.1.3.2. Evaluate Department of the Air Force plans for needed electromagnetic support per DoDI 4650.01, *Policy and Procedures for Management and Use of the Electromagnetic Spectrum*. **(T-0)**

2.1.3.3. Represent and defend Department of the Air Force electromagnetic technical interests in national-level committees, groups, and organizations that address electromagnetic spectrum management matters in accordance with DoDI 4650.01. **(T-0)**

2.1.3.4. Negotiates at the departmental and national levels to obtain spectrum certification, host nation coordination through combatant commands, frequency assignments, electromagnetic attack training authorizations. Participates, as an invited member, of the US delegation led by the State Department and NTIA for Satellite Bilateral coordination and the World Radiocommunication Conference for the

International Telecommunication Union (ITU) radio regulation changes. Obtains ITU satellite registration to satisfy the Department of the Air Force's orbital slots and radio frequency requirements for use in the electromagnetic spectrum in accordance with the NTIA Manual and ITU RR. **(T-0)**

2.1.3.5. Provide spectrum guidance to Department of the Air Force sponsored Department of Defense area frequency coordinators in accordance with ACP 190 US SUPP-1(D), *Guide to Frequency Planning*. **(T-0)**

2.1.3.6. Assist in resolution of interference problems involving the Department of the Air Force's assigned frequencies, per AFI 17-221, *Spectrum Interference Resolution Program*.

2.1.3.7. Provide guidance through appropriate command channels on electromagnetic spectrum to developers and users of all Department of the Air Force systems that require electromagnetic spectrum access or whose performance is influenced by radio frequency energy. This includes communications and information systems, electromagnetic warfare operations, test and training, intelligence and weapons systems, commercial-off-the-shelf equipment, and any other spectrum-dependent systems that rely on the electromagnetic spectrum.

2.1.3.8. Assist major and field commands, as requested, to conduct staff assistance visits to ensure subordinate units are meeting compliance with national procedures and policy for federal spectrum management.

2.1.3.9. Evaluate and determine the impact of spectrum-dependent systems on current or planned operational use of the electromagnetic spectrum.

2.1.3.10. Provide assistance to Department of the Air Force activities requiring Joint Spectrum Center services like electromagnetic environmental effects engineering and interference resolution.

2.1.3.11. Provide curriculum input and support to the formal technical spectrum courses when requested by the Joint Staff, representing combatant commands to the Air Force Career Functional Manager.

2.1.3.12. In accordance with the Department of the Air Force's role as the Combatant Command Support Agent, within the United States and its possessions, provide spectrum management support to the following: United States Transportation Command, United States Strategic Command, United States Cyber Command, United States Central Command, United States Northern Command, and United States Special Operations Command IAW Department of Defense Directive 5100.03, Support of the Headquarters of Combatant and Subordinate Unified Command, and ACP 190 US SUPP-1(D). **(T-0)**

2.1.3.13. Develop, coordinate and publish a Department of the Air Force Management Internal Control Toolkit checklist in accordance with AFI 90-201, *The Air Force Inspection System*, and respond to comments related to this Department of the Air Force Instruction as required.

2.1.3.14. Conduct an annual spectrum operations workshop, within funding constraints, open to all levels of Department of the Air Force spectrum operations.

- 2.1.3.15. Review each spectrum supportability risk assessment ensuring each required assessment component has been accurately completed and presented in accordance with DoDI 4650.01. **(T-0)**
- 2.1.4. Major and Field Command Spectrum Operations Manager. The manager will:
- 2.1.4. **(JBA)** Ensure using organizations understand the technical parameters and any imposed operational restrictions of their assigned frequencies.
- 2.1.4.1. Carry out Air Force policy, practices, and procedures for managing the use of the electromagnetic spectrum. **(T-1)**
- 2.1.4.2. Ensure compliance with the NTIA frequency assignment review program as required by NTIA Manual, Annex F. **(T-0)**
- 2.1.4.3. Incorporate wartime and contingency electromagnetic spectrum management procedures into the appropriate operational or contingency plan appendices.
- 2.1.4.4. Provide electromagnetic spectrum guidance to the commands' acquisition, logistics, intelligence, operations, and communications planning staffs. **(T-1)**
- 2.1.4.5. Manage electromagnetic spectrum use in the concept, planning, deployment, operation, and evaluation phases of commands' supported exercises and operations. **(T-1)**
- 2.1.4.6. Process and obtain frequency assignments, spectrum certifications, and International Telecommunication Union satellite registration for spectrum-dependent systems in support of operational requirements in accordance with NTIA Manual and DoDI 4650.01. **(T-0)**
- 2.1.4.7. Provide guidance on the use of the electromagnetic spectrum early in the concept, exploration, demonstration, and validation phases of the acquisition process.
- 2.1.4.8. Ensure coordination with the appropriate agencies (i.e., Department of Defense area frequency coordinators) is accomplished prior to frequency assignment in accordance with NTIA Manual and ACP 190 US SUPP-1(D). **(T-0)**
- 2.1.4.9. Review the subordinate unit electromagnetic spectrum management programs.
- 2.1.4.10. Assist organizations to ensure there is no degradation of friendly systems or operations during command, control, and communications electromagnetic attack training activities.
- 2.1.4.11. Ensure subordinates have spectrum processes in place to provide operational support and guidance to users.
- 2.1.4.12. Provide subordinate spectrum operations personnel with necessary training and guidance required to perform their assigned spectrum duties.
- 2.1.4.13. Ensure subordinate spectrum operations technicians have current SPECTRUM XXI data.
- 2.1.4.14. Provide assistance to major or field command's Inspector General's inspecting subordinate organizations to ensure critical compliance items are identified

- and complied with when accomplishing self-inspections and compliance inspections in accordance with AFI 90-201.
- 2.1.4.15. Ensure all spectrum-dependent systems employed during sponsored exercises to include foreign military equipment, have approved frequency assignments from an appropriate authority in accordance with the NTIA Manual and ACP 190 US SUPP-1(D). **(T-0)**
- 2.1.4.16. Compile all components of the Federal Aviation Administration exercise package 150 days before exercise start date with foreign platform participation, in accordance with Federal Aviation Administration, *Interim Guide for Coordinating Identification, Friend or Foe (IFF) Missions*. **(T-0)** Exercise packages include: frequency proposals; participants and platforms; spectrum certifications and/or identification friend or foe; interrogator certification or letter of recommendation; area of responsibilities; and exercise flight schedule.
- 2.1.4.17. Contact appropriate combatant command for theater specific lead-time criteria.
- 2.1.4.18. Provide AF/A2/6CO with a schedule of planned exercises within United States and its possessions annually to include dates, times and locations of related planning conferences.
- 2.1.4.19. Provide quality control and updates to frequency records in the Frequency Resource Record System.
- 2.1.4.20. Assist in the reporting and resolution of interference events involving assigned frequencies in accordance with AFI 17-221.
- 2.1.4.21. Review each subordinate unit's spectrum supportability risk assessment submissions ensuring each required assessment component has been properly and accurately completed and presented in accordance with DoDI 4650.01. **(T-0)**
- 2.1.4.22. Provide administrative support to the Department of the Air Force's Department of Defense area frequency coordinator in accordance with ACP 190 US SUPP-1(D). **(T-0)**
- 2.1.4.23. Be actively involved in communications and information planning and assist in coordinating and obtaining frequency support to meet the commands' mission.
- 2.1.5. Numbered Air Force Spectrum Operations Manager. The manager will carry out Department of the Air Force policy, practices, and procedures for managing use of the electromagnetic spectrum. **(T-2)** Numbered Air Force Spectrum Operations Manager will:
- 2.1.5. **(JBA)** Assist deployable units with identifying spectrum requirements for exercises and contingencies.
- 2.1.5.1. Participate in communications and information planning, assist in coordinating, and obtaining frequency support to meet the major command, air component, and/or combatant command missions.
- 2.1.5.2. Provide major command spectrum supportability guidance to the planning staff functions that includes the Department of the Air Force spectrum certification and radio frequency assignment processes and requirements.

- 2.1.5.3. Evaluate and coordinate spectrum use during the concept, planning, deployment, operation, and evaluation phases of exercises and operations.
- 2.1.5.4. Obtain frequency assignments and spectrum certifications for spectrum-dependent systems in accordance with the NTIA Manual and DoDI 4650.01, in support of installation infrastructures, exercises, contingencies, or wartime operational requirements. **(T-0)**
- 2.1.5.4.1. Ensure all frequency requirements and allotment requests for operations within the United States and its possessions are coordinated with the appropriate Department of Defense area frequency coordinator, major command, and/or service spectrum management office with jurisdiction in the proposed area of use. **(T-2)**
- 2.1.5.4.2. Ensure all frequency requirements and allotment requests for operations outside the United States and its possessions are coordinated with the appropriate combatant command Joint Frequency Management Office in accordance with procedures outlined in Chairman of the Joint Chiefs of Staff Manual (CJCSM) 3320.01C, *Joint Electromagnetic Spectrum Operations in the Electromagnetic Operational Environment*, and combatant command guidance. **(T-0)**
- 2.1.5.5. Maintain current editions of the frequency management publications.
- 2.1.5.6. Maintain an accurate SPECTRUM XXI database of all frequency assignments.
- 2.1.5.7. Ensure frequency assignments are reviewed according to guidance provided in the NTIA Manual, Annex F. **(T-0)**
- 2.1.6. Major and Field Command, Subordinate Unit Commander. A unit commander assigned to the Department of the Air Force test and training ranges, groups, etc. will:
- 2.1.6. **(JBA)** Review and validate using organizations frequency assignment requirements, validate existing frequency assignment parameters, and submit modifications, renewal, or deletion actions through command channels in accordance with the NTIA Manual, Annex F. All temporarily assigned frequencies for JBA Unit Organizations will be reviewed 90 days prior to their expiration date, updated to ensure accuracy of the assignment, and submitted for renewal no later than 30 days prior to the expiration date. Temporary assignments on loan from 744 CS ISM will be reviewed annually, or one week prior to expiration, whichever is more appropriate for the condition of the loan.
- 2.1.6.1. Carry out Department of the Air Force policy, practices, and procedures for managing the use of the electromagnetic spectrum within their area of responsibility. **(T-2)**
- 2.1.6.2. Assist organizations and users within their control regarding communications and information planning, coordinating, and obtaining frequency support to meet the mission.
- 2.1.6.3. Ensure contingency electromagnetic spectrum management procedures are placed in operational and contingency plans and appendices as appropriate.
- 2.1.6.4. Provide electromagnetic spectrum guidance to users in acquisition, logistics, intelligence, operations, and communications planning staffs. **(T-2)**

- 2.1.6.5. Manage electromagnetic spectrum use in the concept, planning, deployment, operation, and evaluation phases, of supported exercises.
- 2.1.6.6. Provide electromagnetic spectrum guidance to program managers early in the conceptual, exploration, demonstration, and validation phases of the acquisition process. **(T-3)**
- 2.1.6.7. Review and update frequency assignment records in accordance with guidance found in NTIA Manual, Annex F. **(T-0)**
- 2.1.7. Host Installation Commander or Director. The commander or director is responsible for all electromagnetic radiation emanating from their installation and from those outlying activities hosted by the installation in accordance with DoDI 4650.01. **(T-0)** Host installation commanders or directors will:
- 2.1.7. **(JBA)** Maintain a current point of contact list for JBA Unit Organizations. Contact list includes: name, unit, date of positive contact, e-mail address, and phone number. These contacts are also known as the Unit Spectrum Monitor.
- 2.1.7.1. Ensure a viable spectrum operations program for the site and areas under the control of the host installation. **(T-2)**
- 2.1.7.2. Deconflict all spectrum-dependent systems to resolve potential interference to mission essential electromagnetic equipment in accordance with NTIA Manual and DoDI 4650.01. **(T-0)**
- 2.1.7.3. Appoint a full-time spectrum operations specialist (i.e., 3D1X4) to organize and carry out the spectrum operations program and notify the parent command, appropriate spectrum operations office and the Department of the Air Force Spectrum Management Office. **(T-2)** **Note:** Air National Guard and Air Force Reserve units may identify a full-time member to serve and fulfill the installation spectrum manager role. The use of spectrum operations specialist personnel for Air National Guard and Air Force Reserve Command units is at the Commander's discretion. Non-spectrum operations specialist personnel must receive installation spectrum manager training from the Headquarters Air National Guard or Headquarters Air Force Reserve Command. **(T-2)**
- 2.1.7.4. Ensure hosted spectrum-dependent systems comply with the NTIA Manual and MC4EB Frequency Panel spectrum policy and guidance. **(T-0)**
- 2.1.7.5. Ensure spectrum is considered as part of installation encroachment considerations to identify potential mission sustainment hazards in accordance with AFI 90-2001, *Mission Sustainment*. **(T-3)**
- 2.1.7.6. Ensure appropriate real property procedures are in place and followed (e.g., documentation, competition, fair market value) in order to execute a real estate agreement in accordance with AFI 32-9003, *Granting Temporary Use of Air Force Real Property*, to support deployment of wireless technologies along with other wireless requirements in compliance with Public Law 104-104, *Telecommunications Act of 1996*. **(T-0)** This includes compliance with the requirement that the installation spectrum manager ensures that an electromagnetic compatibility site analysis is performed and the proposed commercial spectrum-dependent system will not

- negatively impact Department of the Air Force missions in accordance with the AFI 32-9003. **(T-0)**
- 2.1.7.7. Ensure compliance with the requirements of the Frequency Assignment Review Program described in NTIA Manual, Annex F. **(T-0)**
- 2.1.8. Installation Communications Commander or Director. The commander or director will:
- 2.1.8. **(JBA)** Act on behalf of the Host Installation Commander to immediately resolve all electromagnetic radio frequency interference issues and prohibit any radio frequency emitters from operating (cease and desist) when anticipating or noting electromagnetic interference to approved mission essential electromagnetic equipment. 744 CS ISM is delegated authority to represent the 316th Wing Commander in areas of Spectrum Operations. See **Paragraph 4** of this document for more details on the Spectrum Interference Resolution Program.
- 2.1.8.1. Ensure the installation spectrum manager has, or is able to attain, the security clearance as indicated on the unit manning document required to perform spectrum operations duties. **(T-2)**
- 2.1.8.2. Ensure the installation spectrum manager has Secret Internet Protocol Router Network access with SPECTRUM XXI and data exchange capability. **(T-3)**
- 2.1.8.3. Evaluate the complexity of the electromagnetic environment by conducting threat assessments against mission needs using available spectrum analyzers. **(T-3)**
- 2.1.8.4. Publish an installation spectrum operations instruction and forward draft copies to the parent command for review before publishing. **(T-2)** The local instruction includes:
- 2.1.8.4.1. Assessment of local purchase or government purchase card orders for spectrum-dependent systems to determine spectrum supportability prior to the obligation of funds; specifically, if the system is deployed outside the continental United States in accordance with ACP 190 US SUPP-1(D), **Chapter 3**. **(T-0)**
- 2.1.8.4.2. Review of memoranda of understandings or memoranda of agreements that pertain to the use of spectrum-dependent systems. **(T-3)**
- 2.1.9. Installation and Garrison Spectrum Manager. The spectrum manager is responsible to the installation commander, through their chain of command, for managing all spectrum use on the sites and areas under the control of the installation commander. The spectrum manager will:
- 2.1.9. **(JBA)** Submit a follow-up action report of all spectrum interference findings to the Mid-Atlantic Area Frequency Coordinator (AFC) for interference resolution, to the affected user, and to the appropriate chain of command. See **Attachment 5** for AFC and **Paragraph 4** of this document for more details on the Spectrum Interference Resolution Program.
- 2.1.9.1. Ensure using organizations understand the technical parameters and any imposed operational restrictions of their assigned frequencies. **(T-3)**

- 2.1.9.2. Maintain current frequency management records of all frequencies assigned to the sites and areas hosted by the installation and provide using organizations with a spectrum authorization (license) for their records. **(T-3)**
- 2.1.9.3. Meet with all using organizations annually to conduct customer education and discuss current spectrum operations issues. **(T-3)**
- 2.1.9.4. Process frequency proposals and applications for equipment spectrum certification using the End-to-End Supportability System and SPECTRUM XXI respectively, and ensure submissions are processed through the appropriate command channels. **(T-2)**
- 2.1.9.5. Provide spectrum operations assistance and guidance to tenant activities. **(T-3)**
- 2.1.9.6. Support local exercise coordination requirements. **(T-3)**
- 2.1.9.7. Review operational plans and requirement documents, and obtain frequency support through command channels. **(T-3)**
- 2.1.9.8. Assist deployable units with identifying spectrum requirements for exercises and contingencies. **(T-3)**
- 2.1.9.9. Review and validate using organizations frequency assignment requirements, validate existing frequency assignment parameters, and submit modifications, renewal, or deletion actions through command channels in accordance with the NTIA Manual, Annex F. **(T-0)**
- 2.1.9.10. Update frequency records in the Frequency Resource Record System. **(T-3)**
- 2.1.9.11. Maintain a current point of contact list for using activities. **(T-3)** Contact list includes: name, unit, e-mail address, and phone number. **(T-3)**
- 2.1.9.12. Ensure contractor activities using the Department of the Air Force's frequency assignments follow federal and MC4EB Pub 7, *Frequency Resource Record System (FRRS) Standard Frequency Action Format (SFAF)*, for electromagnetic spectrum policies and guidelines. **(T-0)**
- 2.1.9.13. Educate spectrum users on the importance of obtaining spectrum supportability guidance and validation prior to entering into a contractual obligation for all spectrum-dependent systems in accordance with the NTIA Manual and DoDI 4650.01. **(T-0)**
- 2.1.9.14. Perform emitter surveys, based on resource availability, as required with assistance from the parent command to ensure spectrum-dependent systems are operated in accordance with frequency licenses. **(T-3)**
- 2.1.9.15. Coordinate new and renewal requirements with appropriate Department of Defense area frequency coordinator in accordance with NTIA Manual and ACP 190 US SUPP-1(D). **(T-0)**
- 2.1.9.16. Immediately notify appropriate Department of Defense area frequency coordinator and command spectrum manager requesting interference resolution

- assistance to initiate an investigation to locate and determine the offending source and report the interference in accordance with AFI 17-221. **(T-1)**
- 2.1.9.17. Coordinate with the safety office and weapons safety officer to support the hazard of electromagnetic radiation to ordnance program and provide frequency assignment records for antenna locations in accordance with AFI 91-208, *Hazards of Electromagnetic Radiation to Ordnance (HERO) Certification and Management*. **(T-1)**
- 2.1.9.17.1. Provide parametric data for spectrum-dependent systems. **(T-3)**
- 2.1.9.17.2. Coordinate spectrum-dependent system relocation or parametric data changes with the user and safety office. **(T-3)**
- 2.1.9.17.3. Coordinate with the installation safety office to identify any hazard of electromagnetic radiation to fuel and the bioenvironmental engineering flight to support health hazard evaluations and inventory accuracy in accordance with AFI 48-109, *Electromagnetic Field Radiation (EMFR) Occupational and Environmental Health Program*. **(T-1)**
- 2.1.9.18. Submit proposals for units through command spectrum channels. **(T-2)**
- 2.1.9.19. Submit proposals for tenant units supporting the host mission to the host's and tenant's commands respectively. **(T-2)**
- 2.1.9.20. Submit proposals for tenant units not supporting the host mission to the supported unit's parent command with a copy to the host and tenant unit spectrum commands. **(T-2)** See examples below:
- 2.1.9.20.1. Submit frequency requirements for a Headquarters Air Combat Command maintenance expediter net on a Headquarters Air Mobility Command installation to Headquarters Air Combat Command with a copy to Headquarters Air Mobility Command.
- 2.1.9.20.2. Submit frequency requirements for a Headquarters Air Force Materiel Command unit in support of Air Combat Command on an Air Mobility Command installation to Headquarters Air Combat Command with a copy to Air Force Materiel Command and Air Mobility Command.
- 2.1.9.21. Ensure all electromagnetic attack events for test, training, and exercises are processed in accordance with CJCSM 3212.02E, *Performing Electronic Attack in the United States and Canada for Tests, Training, and Exercises* or CJCSM 3212.03A, *Performing Tests, Training, and Exercises Impacting the Global Positioning System (GPS)*. **(T-0)**
- 2.1.10. Joint Base Spectrum Operations. The lead service designates a spectrum manager to provide spectrum support for the common functions. The service spectrum manager ensures the Joint Base Spectrum Manager is aware of their spectrum-dependent systems within the boundaries of the Joint Base. Service requirements are processed through national command channels after approval from the Joint Base Spectrum Manager. The Department of the Air Force Joint Base Spectrum Manager will:

2.1.10. **(JBA)** Provide JBA organizations to JBA Spectrum Operations resources and training references.

2.1.10.1. Pre-coordinate all temporary and permanent frequency proposals with the installation spectrum manager prior to submission to the national level for processing. **(T-2)**

2.1.10.2. Conduct periodic frequency assignment reviews and coordinate modifications on joint frequency assignments prior to submission to the national level in accordance with NTIA Manual, Annex F. **(T-0)**

2.1.10.3. Obtain spectrum certification for joint spectrum-dependent systems prior to submitting any frequency proposal in accordance with the NTIA Manual, Chapter 10 and DoDI 4650.01. **(T-0)**

2.1.11. **(Added-JBA)** Issue Radio Frequency Authorizations and/or Temporary Frequency Authorizations (RFAs/TFAs) authorizing the use of assigned RF spectrum within the Joint Base Andrews area of responsibility. Copies of the approved RFAs/TFAs will be provided to the Project Officer and unit POC. Other copies will be provided as required. The RFAs/TFAs issued by 744 CS ISM will contain an expiration date on which the authorization expires.

2.1.12. **(Added-JBA)** Maintain a current log of all registered FCC non-licensed devices being operated on Joint Base Andrews. This will be accomplished by the 744 CS ISM through the SPECTRUM XXI registration process with a Standard Frequency Action Format (SFAF) proposal line item 144 with U as the indication on the proposal IAW the Joint Staff J6 Military Command, Control, Communications, and Computers Executive Board (MC4EB) Pub 7, FRRS.

2.1.13. **(Added-JBA)** Coordinate with the safety office and weapons safety officer to support the hazard of electromagnetic radiation to ordnance program and provide frequency assignment records for antenna locations IAW AFI 91-208, *Hazards of Electromagnetic Radiation to Ordnance (HERO) Certification and Management*.

2.1.14. **(Added-JBA)** Perform emitter surveys based on resource availability, as required, with assistance from the parent command to ensure spectrum-dependent systems are operated in accordance with frequency licenses.

2.1.15. **(Added-JBA)** Provide customer education, guidance, resources, and training for JBA Spectrum Defense Operations upon request to JBA Unit Organizations. This could include, but not limited to, spectrum allocation processes, electromagnetic spectrum (EMS) briefings, local and external spectrum coordination processes, spectrum interference resolutions, Electronic Warfare (EW), Electronic Attack (EA), Counter-small Unmanned Aerial Systems (C-sUAS), emitter surveys, etc. The 744 CS ISM will make training availabilities upon request to provide customer education or any relative spectrum information as deemed necessary by the 316th Wing Commander, the 744th Communications Squadron Commander, or as requested by any other JBA Unit Organization.

2.2. User Organization. User organizations, to include but not limited to acquisition, program, operational, test, and tenant units will:

2.2. **(JBA)** Unit Organizations. Unit Organizations activities include, but are not limited to acquisition, program, operational, test, and tenant units of JBA. Unit Organizations shall:

2.2.1. Obtain spectrum certification prior to purchasing a spectrum-dependent system or entering into any contractual obligations for the use of spectrum-dependent devices in accordance with the NTIA Manual, paragraph 10.1.2 and DoDI 4650.01. **(T-0)**

2.2.1. **(JBA)** Provide a point of contact, also known as a Unit Spectrum Monitor, to the 744 CS ISM office for program continuity via e-mail or unit letterhead IAW [paragraph 2.1.7](#) of this document. Units are individually responsible for maintaining an updated contact list for the Unit Spectrum Monitor in the event of personnel changes, contact info updates, or unavailability of the unit POC.

2.2.2. Obtain a frequency assignment through the installation spectrum manager prior to operation of any spectrum-dependent devices that radiate radio frequency energy per NTIA Manual, Chapter 8. **(T-0)**

2.2.2. **(JBA)** Assist the 744 CS ISM in reviewing and verifying equipment parameters during mandatory and periodic reviews, IAW NTIA Manual, Annex F.

2.2.3. Maintain a copy of frequency authorizations received from the installation spectrum manager. **(T-3)**

2.2.3. **(JBA)** Obtain a frequency assignment through the installation spectrum manager prior to operation of any spectrum-dependent devices that radiate radio frequency energy. To meet this requirement, the requesting unit will submit a Frequency Request Form (Contact ISM for a copy).

2.2.4. Ensure spectrum-dependent system operations comply with authorized parameters identified in the frequency assignment notification in accordance with NTIA Manual, Chapter 8. **(T-0)**

2.2.4. **(JBA)** In the event a mandated, standardized frequency request application is published by a higher command (AFDW, AFSMO, HAF, NTIA, etc.) that would replace the Frequency Request form, [paragraph 2.2.3](#) is null and void, and each JBA Unit Organization and the 744 CS ISM will use the published application instead.

2.2.5. Act promptly to notify the installation spectrum manager to report and assist in resolving incidents of interference in accordance with AFI 17-221. **(T-1)**

2.2.5. **(JBA)** Submit a Purchase Approval Request through either the 844th COMM411 site or send the request to the 744 CS/SCX Flight prior to purchasing any spectrum-dependent equipment, including non-licensed devices.

2.2.6. Use radiation-suppression devices when tuning, testing, or experimenting with any equipment that emits radio frequency. **(T-3)**

2.2.6. **(JBA)** Verify that emitter information for equipment does or does not exist in the FCC ID database. When a Purchase Approval Request is submitted IAW [para 2.2.5](#), include as much information as possible about any spectrum-dependent device (e.g., FCC ID number, manufacturer, make, model number, frequency range, power level, etc.). Identify the owning/using organization, as well as the name and phone number of the submitting requestor's unit point of contact.

2.2.7. Maintain and identify a point-of-contact to the installation spectrum manager for unit frequency matters. **(T-3)**

2.2.7. **(JBA)** Contact the 744 CS ISM at least annually to discuss spectrum supportability for existing RFAs or any other projected emitter planning requirements (e.g., OPLANs, exercisable UTCs, HUREVAC plans, etc.). This information will be reviewed annually.

2.2.8. Document and forward documentation for frequency assignment deletions to the installation or garrison spectrum manager. **(T-3)**

2.2.8. **(JBA)** Contact the 744 CS ISM prior to physically changing any antenna locations or parameters. The 316 Civil Engineering Squadron (CES) and/or 744th Communications Squadron will require Unit Organizations to contact 744 CS ISM regarding removing, adding, or modifying any emitter, antenna, location of the antenna, or antenna structure for any spectrum-dependent system on Joint-Base Andrews.

2.2.9. Obtain approval from the installation spectrum manager before modifying any existing spectrum-dependent systems or antennas (i.e., increase power, change antenna height or gain), if outside of the assigned parameters of the frequency authorization in accordance with the NTIA Manual, Chapter 10. **(T-0)**

2.2.9. **(JBA)** Review any agreements between 316 CES, the 316th Contracting Squadron, and the 744 CS at least annually to ensure the spectrum acquisition and other processes in place are adequate to satisfy the following requirements:

2.2.9.1. **(Added-JBA)** Verify DAFI 17-220, Spectrum Operations, paragraph 2.1.8.4.1.: Assessment of local purchase or government purchase card orders for spectrum-dependent systems to determine spectrum supportability prior to the obligation of funds; specifically, if the system is deployed outside the continental United States in accordance with ACP 190 US SUPP-1(D), Chapter 3. **(T-0)**

2.2.9.2. **(Added-JBA)** Verify DAFI 17-220, Spectrum Operations, paragraph 2.1.8.4.2.: Review of memoranda of understandings or memoranda of agreements that pertain to the use of spectrum-dependent systems. **(T-3)**

2.2.10. Assist the installation spectrum manager in reviewing and verifying equipment parameters during mandatory and periodic reviews, in accordance with NTIA Manual, Annex F. **(T-0)**

2.2.10. **(JBA)** Contact the 744 CS ISM prior to submitting the purchase request for electromagnetic spectrum-dependent equipment and/or devices. Contractual obligations to procure/develop or use spectrum-dependent equipment that utilizes electromagnetic energy shall not be assumed until a frequency certification has been obtained and the availability of appropriate frequency assignment support is assured.

2.2.11. Contact the installation spectrum manager for interpretation or guidance of any national or military-level spectrum management policy. **(T-3)**

2.2.12. Process spectrum supportability risk assessments in accordance with DoDI 4650.01. **(T-0)**

2.2.13. Submit host nation coordination requests to the installation spectrum manager in accordance with CJCSM 3320.01C. **(T-0)**

2.2.14. Obtain electromagnetic attack authorizations from the Department of the Air Force Spectrum Management Office prior to test, training, or exercises in accordance with CJCSM 3212.02E or CJCSM 3212.03A. **(T-0)**

2.3. The Department of Defense Area Frequency Coordinator. The coordinator is 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 in accordance with NTIA Manual, Chapter 8. **(T-0)** The Joint Staff, MC4EB Frequency Panel provides spectrum policy and guidance in accordance with DoDI 4650.01 and ACP 190 US SUPP-1(D).

2.3. **(JBA)** Unit Organizations with a Valid RFA.

2.3.1. **(Added-JBA)** If the using unit has a valid frequency authorization for the device, and the organizations will use the communications equipment IAW the RFA parameters, no further action is required.

2.4. **(Added-JBA)** Unit Organizations that Require an RFA.

2.4.1. **(Added-JBA)** If the Unit Organization does not have an active frequency authorization for an emitter or radio equipment, or if the equipment will be used not in accordance with the active RFA, then the organization must submit a new frequency request proposal to the 744 CS ISM and are advised not to proceed with any purchase or contractual obligation. The Unit Organization will use a Frequency Request Form, when submitting the request to the 744 CS ISM. The form can be obtained by contacting the ISM.

2.4.2. **(Added-JBA)** If the Unit Organization's POC information changes, or any proposed modifications to existing emitters become a new planning requirement, that unit is required to contact the 744 CS ISM for continuity and future spectrum project planning efforts.

2.5. **(Added-JBA)** Victim Organization Experiencing Spectrum Interference. Attempt to resolve spectrum interference at the lowest level, with or without the 744 CS ISM's assistance. Unit Organizations will:

2.5.1. **(Added-JBA)** Prohibit any RF emitters from operating (cease and desist) when anticipating or noting electromagnetic interference to approved mission essential electromagnetic equipment.

2.5.2. **(Added-JBA)** Start documenting any known or unknown sources for spectrum interferences within two hours of experiencing the issue on the DAFI 17-220 Attachment 2 form provided by the 744 CS ISM. See **Paragraph 4** of this document for more details of JBA's Spectrum Interference Resolution program.

2.5.3. **(Added-JBA)** Assist in resolving interference by performing a visual verification of antenna, radios equipment, and all other emitters. Assistance from the Unit Organization may include, but is not limited to, performing emitter surveys and providing site access while escorting the 744 CS ISM office (SCX) through secure areas. The 744 CS ISM may be required in order to identify and resolve spectrum interference, with the assistance from the Unit Organization experiencing spectrum interference. Please see **Paragraph 4** of this document for more details.

2.5.4. **(Added-JBA)** Become familiar with how to properly document and report a spectrum interference on JBA. JBA Unit Organizations can find standard operating procedures on [Paragraph 4](#) of this document.

3. SPECTRUM SUPPORTABILITY ACTIONS.

3.1. Spectrum Certification. Spectrum certification is the statutory process whereby national regulatory bodies, NTIA and Federal Communications Commission review telecommunications systems for compliance with national spectrum standards and determine electromagnetic compatibility. This applies to spectrum-dependent and commercial-off-the-shelf systems, unless specifically exempt, in accordance with the NTIA Manual, Chapter 10.

3.1. **(JBA)** Federal and FCC non-licensed devices. All JBA Unit Organizations should review section 7.8 of the NTIA Manual, Annex K regarding the use of Federal and FCC non-licensed devices. Examples of non-licensed devices are wireless routers, wireless or lapel microphones, Family Radio Service (FRS) radios ([paragraph 3.2](#) of this document), cell phone boosters ([paragraph 3.3](#) of this document), and cordless telephones. The following caveats and warnings may apply:

3.1.1. Local purchases of spectrum-dependent systems will be reviewed by the installation spectrum manager to evaluate spectrum supportability prior to the obligation of funds. If the system will be deployed outside the United States, DAF policy is that host nation coordination is required in accordance with the DoDI 4650.01. **(T-0)**

3.1.1. **(JBA)** DoD activities should not 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. Non-licensed devices operate on a non-interference basis, which includes accepting any interference from any federal or non-federal authorized radio station, other non-licensed device, or industrial, scientific, and medical equipment. Essentially, non-licensed devices must not cause interference to licensed stations.

3.1.2. The NTIA, Spectrum Planning Subcommittee, may approve out-of-band requirements with an analysis and justification. Out-of-band operations are operated on a strict non-interference basis. Program offices provide justification for non-compliant systems in accordance with NTIA Manual, Chapter 10. **(T-0)**

3.1.2. **(JBA)** 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 it can be proven that further use will no longer cause interference.

3.1.3. To protect receive only systems (e.g. global/weather broadcast receivers) supporting a critical operation, national level spectrum certification is required. The certification application should contain a narrative that describes the criticality of the operation at a specified location. Once spectrum certification is approved, an assignment request is submitted to the NTIA to protect the receive frequency.

3.1.3. **(JBA)** 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.

3.1.4. Electromagnetic attack systems are exempt from the national spectrum certification process and are supported through the Joint Staff, MC4EB, Equipment Supportability Permanent Working Group. Systems that are operated outside the United States and its possessions are coordinated through the appropriate combatant command in accordance with DoDI 4650.01. **(T-0)**

3.2. Spectrum Supportability Risk Assessment. An assessment must be performed by the Department of the Air Force acquisition programs and materiel developers to identify risk as early as possible and affect design and procurement decisions for all spectrum-dependent systems. Review these risks at each milestone decision point as outlined in DoDI 4650.01. **(T-0)**

3.2. **(JBA)** FRS is an FCC unlicensed, low-powered service that provides coverage up to 2 miles using frequencies within the FRS frequency pool. FRS radios may be used on any of the 14 FRS channels (typically channels 8-14, check owner's manual for FRS channels), which are shared between all FRS users. This reduces confusion between multiple conversations on the same channel. Privacy codes allow the FRS users to limit the transmissions received to those users on the same channel and privacy code (check owner's manual). Note that any FRS user can listen to any ongoing conversation and can legally break into that conversation. Federal government entities are authorized to purchase and operate radios certified by the FCC in the FRS pursuant to the Code of Federal Regulation (CFR), Title 47, Telecommunication, Part 95 – PERSONAL RADIO SERVICES, Subpart B - Family Radio Service. Federal users will be accorded the same privileges as non-federal users. FRS users must share each channel and no user is assured protection from interference caused by another authorized user. FRS users may not purchase and operate FRS radios for planned communications operations that safeguard human life or property. FRS users must comply with the following conditions:

3.2.1. Department of the Air Force acquisition or materiel development programs, including electromagnetic attack systems, will submit spectrum supportability risk assessment at each milestone decision point in accordance with DoDI 4650.01. **(T-0)**

3.2.1. **(JBA)** The provisions of CFR, Title 47, Part 95 and Section 7.5.8. of the NTIA Manual.

3.2.2. Quick response programs enter at Milestone C (production and deployment) and go directly to initial operational test and evaluation in accordance with DoDI 4650.01. **(T-0)**

3.2.2. **(JBA)** Federal users and contractors are responsible for all communications using FRS radio equipment. Use must comply with federal, state, and local laws.

3.2.3. The program manager will insert the NTIA certification stage and number, and approval date into the Information Technology Investment Portfolio System in accordance with AFI 17-110, *Information Technology Portfolio Management and Capital Planning and Investment Control*.

3.2.3. **(JBA)** The installation commander may prohibit FRS when interference to mission essential spectrum dependent systems/spectrum dependent equipment is anticipated, or to resolve a suspected interference problem.

3.2.4. **(Added-JBA)** Federal users and contractors using FRS radios must relinquish channel use for emergency communication messages concerning the immediate safety of life or the immediate protection of property.

3.2.5. **(Added-JBA)** Use only FCC certified FRS. Any modification to the equipment cancels the FCC certification and voids authority. Illegal FRS equipment is subject to confiscation.

3.2.6. **(Added-JBA)** Units may use FRS devices to communicate with non-government users during AF 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.

3.2.7. **(Added-JBA)** 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.

3.3. Department of Defense Electromagnetic Compatibility Standards. Military-Standard-464, *Electromagnetic Environmental Effects (E3) Requirements for Systems*, provides important electromagnetic compatibility and electromagnetic environmental effects standards for Department of Defense spectrum-dependent systems. The Department of the Air Force spectrum programs will adhere to Military-Standard-464 and DoDI 3222.03, *DoD Electromagnetic Environmental Effects (E3) Program*. **(T-0)**

3.3. **(JBA)** Consumer Signal Booster (Cell Repeater). Consumer signal boosters are permitted on JBA; however, 744 CS ISM approval must be granted prior to any contractual agreements with service providers. In addition, a study performed by the Joint Spectrum Center (JSC) must be completed to ensure there will be no radio frequency (RF) interference to federal systems. If no harmful interference is predicted in the JSC study, use of a consumer signal booster is permitted at the discretion of the 744 CS ISM provided the power levels are maintained at/below FCC class B Part 15 requirements and are acquired from wireless providers. The repeater may not be modified from the manufacturer's specifications. Use/location of repeaters must be approved by the appropriate local cybersecurity personnel. Repeaters do not require certification and are provided no protection from interference other than what may be experienced in the non-federal bands. These devices can only be used if the following conditions are met:

3.3.1. **(Added-JBA)** The subscriber obtains some form of licensee consent to operate the booster, registered with its provider, meets the Network Protection Standard, FCC certified, operated on a secondary, non-interference basis, and must be shut down if it causes harmful interference to a licensed station.

3.3.2. **(Added-JBA)** Cellular boosters need to be entered into an FCC database. The 744 CS ISM and/or the owning organization must obtain the account required to register the equipment as part of registering the equipment, so they are aware of the registration requirement with reference to [paragraph 2.2.5](#) above.

4. (Added-JBA) SPECTRUM INTERFERENCE RESOLUTION PROGRAM.

4.1. (Added-JBA) The focus of the spectrum interference program is to resolve electromagnetic interference at the lowest level. JBA Unit Organizations experiencing spectrum interference will:

4.1.1. (Added-JBA) Begin documenting and reporting information to the 744 CS ISM to initiate safeguards and seek solutions at the lowest level possible. Notification of any electromagnetic radio frequency interference must be reported to the 744 CS ISM within two (2) hours of the start of the event.

4.1.2. (Added-JBA) Start producing their interference reports based off the instructions listed in DAFI 17-221, Spectrum Interference Resolution, Attachments 2 and 3 respectively. The Unit Organizations must evaluate the security sensitivity of the interference on the affected system and classify the report accordingly. Guidelines for classifying interference incidents are contained in CJCSI 3320.02F, *Joint Spectrum Interference Resolution*.

4.2. (Added-JBA) Exceptions to Unit Organizations for Reporting Interference.

4.2.1. (Added-JBA) Do not report an incident when the event is transient electromagnetic interference from natural sources (e.g., lightning, rain, etc.)

4.2.2. (Added-JBA) Do not report when the interference only affects training frequencies assigned on a non-interference basis (NIB) for training purposes.

4.3. (Added-JBA) 744 CS ISM Interference Reporting Instructions.

4.3.1. (Added-JBA) The 744 CS ISM will work in conjunction with the affected DOD Unit Organizations, non-DOD users, the Area Frequency Coordinator (AFC) office, and the AFDW Spectrum Management Office to attempt to resolve the interference at the lowest level possible. More instructions are in [Attachment 6](#) of this document.

4.3.2. (Added-JBA) In the event the interference persists and cannot be identified or resolved, the MAJCOM Spectrum Management Office can request assistance directly from the 85th Engineering Installation Squadron (EIS) at Keesler AFB MS for an initial assessment of the problem, obtain consultation, and recommendations regarding actions, coordination, and techniques that can be used to identify the source and resolve the interference. The 85th EIS provides Quick Fix Interference Reduction Capability (QFRIC) to all Air Force units affected by non-hostile electromagnetic interference.

5. (Added-JBA) DAFI 17-220 JBANDREWS SUPPLEMENT DISSEMINATION.

5.1. (Added-JBA) Copies of this document will be filed with each of the appropriate spectrum stakeholders of the Joint Base Andrews Spectrum Defense Operations Program and any other pertinent DoD organizations agencies listed here, but not limited to: AFDW/A6O, 316 Wg/CC, 316 CES, 316 CONS, and 844 CG.

5.2. (Added-JBA) If you have any questions, please contact primary point of contact 744 CS ISM, at any of the following methods: DSN: 981-2009, COMM: (301) 981-2009, or the 744 CS ISM office (SCX) organizational email at 744CS.JBA.Spectrum@us.af.mil.

MARY F. O'BRIEN, Lt Gen, USAF
Deputy Chief of Staff, Intelligence, Surveillance,
Reconnaissance and Cyber Effects Operations

(JBANDREWS)

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Commander, 316TH Wing

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

(Added-JBA) CJCSI 3320.02F, *Joint Spectrum Interference Resolution*

(Added-JBA) Code of Federal Regulation (CFR), Title 47, Telecommunication, Part 95 – PERSONAL RADIO SERVICES, Subpart B - *Family Radio Service (FRS)*

(Added-JBA) DoDI 3222.03, *DoD Electromagnetic Environmental Effects (E3) Program*, 25 August 2014, Incorporating Change 2, 10 October 2017

(Added-JBA) DoDI 4650.01, *Policy and Procedures for Management and Use of the Electromagnetic Spectrum*, 9 January 2009, Incorporating Change 1, 17 October 2017

Public Law 104-104, *Telecommunications Act of 1996*, 8 February 1996

DoDI 3222.03, *DoD Electromagnetic Environmental Effects (E3) Program*, 25 August 2014

DoDI 4650.01, *Policy and Procedures for Management and Use of the Electromagnetic Spectrum*, 9 January 2009

DoDD 5100.03, *Support of the Headquarters of Combatant and Subordinate Unified Commands*, 9 February 2011

MIL-STD-464, *Electromagnetic Environmental Effects (E3) Requirements for Systems*, 25 August 2014

CJCSM 3212.02E, *Performing Electronic Attack in the United States and Canada for Tests, Training, and Exercises*, 17 June 2019

CJCSM 3212.03A, *Performing Tests, Training, and Exercises Impacting the Global Positioning System (GPS)*, 8 November 2013

CJCSM 3320.01C, *Joint Electromagnetic Spectrum Management Operations in the Electromagnetic Operational Environment*, 14 December 2012

JP 3-85, *Joint Electromagnetic Spectrum Operations*, 22 May 2020

DAFPD 17-2, *Cyber Warfare Operations*, 27 October 2020

AFI 17-110, *Information Technology Portfolio Management and Capital Planning and Investment Control*, 23 May 2018

AFI 17-221, *Spectrum Interference Resolution Program*, 11 May 2018

AFI 32-9003, *Granting Temporary Use of Air Force Real Property*, 24 October 2018

AFI 33-322, *Records Management and Information Governance Program*, 23 March 2020

DAFI 33-360, *Publications and Forms Management*, 1 December 2015

(Added-JBA) AFI 33-322, *Records Management and Information Governance Program*, 23 March 2021 Incorporating Change 1, 28 July 2021

AFI 48-109, *Electromagnetic Field Radiation (EMFR) Occupational and Environmental Health Program*, 1 August 2014

AFI 90-201, *The Air Force Inspection System*, 20 November 2018

AFI 91-208, *Hazards of Electromagnetic Radiation to Ordnance (HERO) Certification and Management*, 24 October 2019

AFI 90-2001, *Mission Sustainment*, 31 July 2019

(Added-JBA) DAFI 17-220, *Spectrum Operations*, 8 June 2021

International Telecommunication Union, *Radio Regulations*, Edition 2020

Manual of Regulations and Procedures for Federal Radio Frequency Management, National Telecommunication and Information Administration, September 2017

ACP 190 US SUPP-1(D), *Guide to Frequency Planning*, January 2015

Federal Aviation Administration, *Interim Guide for Coordinating Identification, Friend or Foe (IFF) Missions*, 30 November 2015

https://usaf.dps.mil/b:s/afspcafsmo/SpectrumSupportDirectorate/SQA/ET2Bly1CStpHiHC_K05UOYQBcgq5RBwMu3_qMVHUP3-lsQ?e=hZgvw2

Prescribed Forms

None

Adopted Forms

AF Form 847, *Recommendation for Change of Publication*

(Added-JBA) DAF Form 847, 14 Apr 2022

MC4EB Pub 7, *Frequency Resource Record System (FRRS) Standard Frequency Action Format (SFAF)*

Abbreviations and Acronyms

ACP—Allied Communications Publication

(Added-JBA) AFC—Area Frequency Coordinator

(Added-JBA) AFDPO—Air Force Departmental Publishing Office

(Added-JBA) AFDW—Air Force District of Washington

AFI—Air Force Instruction

(Added-JBA) CIPS—Cyberspace Infrastructure Planning System

(Added-JBA) CJCSI—Chairman of the Joint Chiefs of Staff Instructions

CJCSM—Chairman of the Joint Chiefs of Staff Manual

(Added-JBA) COMSEC—Communications Security

(Added-JBA) CS—Communications Squadron

DoDI—Department of Defense Instruction

E3—Electromagnetic Environmental Effects

(Added-JBA) **FCC**—Federal Communications Commission

(Added-JBA) **FRRS**—Frequency Resource Record System

(Added-JBA) **FRS**—Family Radio Service

(Added-JBA) **HERO**—Hazards of Electromagnetic Radiation to Ordnance

(Added-JBA) **ISM**—Installation Spectrum Manager

ITU RR—International Telecommunication Union Radio Regulation

(Added-JBA) **ITU RR**—International Telecommunications Union Radio Regulation

(Added-JBA) **JBA**—Joint Base Andrews

JP—Joint Publication

MC4EB—Military Command, Control, Communications, and Computers Executive Board

NTIA—National Telecommunications and Information Administration

(Added-JBA) **RFA**—Radio Frequency Authorization

(Added-JBA) **RFAT**—Temporary Radio Frequency Authorization

(Added-JBA) **SFAF**—Standard Frequency Action Format

Terms

Allotment (of a radio frequency or radio frequency channel)—Entry of a designated frequency channel in an agreed plan, adopted by a component conference, for use by one or more administrations for a (terrestrial or space) radio communication service in one or more identified countries or geographical areas and under specified conditions. Source: ITU RR.

(Added-JBA) **Allotment (of a radio frequency or radio frequency channel)** —Entry of a designated frequency channel in an agreed plan, adopted by a component conference, for use by one or more administrations for a (terrestrial or space) radio communication service in one or more identified countries or geographical areas and under specified conditions. Source: ITU 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. Source: ITU RR.

(Added-JBA) **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. Source: ITU RR.

Commercial—off-the-Shelf—Spectrum-dependent systems that can be procured by the general public wholesale or retail. Source: National Institute of Standards and Technology.

(Added-JBA) **Commercial—off-the-Shelf** — Spectrum-dependent systems that can be procured by the general public wholesale or retail. Source: National Institute of Standards and Technology.

Electromagnetic Attack—Division of electromagnetic warfare involving the use of electromagnetic energy, directed energy, or anti-radiation weapons to attack personnel, facilities, or equipment with the intent of degrading, neutralizing, or destroying enemy combat capability and is considered a form of fires. Source: JP 3-85.

(Added-JBA) Electromagnetic Attack—Division of electromagnetic warfare involving the use of electromagnetic energy, directed energy, or anti-radiation weapons to attack personnel, facilities, or equipment with the intent of degrading, neutralizing, or destroying enemy combat capability and is considered a form of fires. Source: JP 3-85.

Electromagnetic Compatibility—(1) The condition that prevails when telecommunications equipment is performing its individually designed function in a common electromagnetic without causing or suffering unacceptable degradation due to unintentional electromagnetic interference to or from other equipment in the same environment. Source: NTIA. (2) The ability of systems, equipment, and devices that use the electromagnetic spectrum to operate in their intended environments without causing or suffering unacceptable or unintentional degradation because of electromagnetic radiation or response. Source: JP 3-85

(Added-JBA) Electromagnetic Compatibility—(1) The condition that prevails when telecommunications equipment is performing its individually designed function in a common electromagnetic without causing or suffering unacceptable degradation due to unintentional electromagnetic interference to or from other equipment in the same environment. Source: NTIA. (2) The ability of systems, equipment, and devices that use the electromagnetic spectrum to operate in their intended environments without causing or suffering unacceptable or unintentional degradation because of electromagnetic radiation or response. Source: JP 3-85

Electromagnetic Environmental Effects (E3)—The impact of the electromagnetic operational environment upon the operational capability of military forces, equipment, systems, and platforms. E3 encompasses the electromagnetic effects addressed by the disciplines of electromagnetic compatibility, electromagnetic interference, electromagnetic vulnerability, electromagnetic pulse, electromagnetic protection, electrostatic discharge, and electromagnetic radiation hazards to personnel, ordnance, and fuels and volatile materials. E3 includes the affects generated by all electromagnetic environment contributors including radio frequency systems, ultra-wideband devices, high-powered microwave systems, lightning, and precipitation static. Source: DoDI 3222.03.

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Electromagnetic Spectrum Management—The operational, engineering, and administrative procedures to plan, and coordinate operations within the electromagnetic operational environment. Source: JP 3-85.

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Electromagnetic Spectrum Operations—Coordinated military actions to exploit, attack, protect, and manage the electromagnetic environment. Source: JP 3-85.

(Added-JBA) Electromagnetic Spectrum Operations—Coordinated military actions to exploit, attack, protect, and manage the electromagnetic environment. Source: JP 3-85.

Electromagnetic Warfare—Military action involving the use of the electromagnetic and directed energy to control the electromagnetic spectrum or to attack the enemy. Source: JP 3-85.

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Frequency Assignment—see Assignment (of a radio frequency or radio frequency channel). Source: ITU RR.

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Frequency Coordination—(1) 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. Source: NTIA. (2) Rules and mechanisms that control how to use the electromagnetic spectrum in specified dimensions (i.e., spatial, time, frequency, power, waveform. Source: JP 3-85. To be effective, the coordination must extend through the planning, proposal, and actual in use phases of radio frequency utilization.

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Interference—(1) 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. Source: ITU RR. (2) Any electromagnetic disturbance, induced intentionally or unintentionally, that interrupts, obstructs, or otherwise degrades or limits the effective performance of electromagnetic spectrum-dependent systems and electrical equipment. Also referred to as electromagnetic interference. Source: JP 3-85.

(Added-JBA) Interference—(1) 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. Source: ITU RR. (2) Any electromagnetic disturbance induced intentionally or unintentionally, that interrupts, obstructs, or otherwise degrades or limits the effective performance of electromagnetic spectrum-dependent systems and electrical equipment. Also referred to as electromagnetic interference. Source: JP 3-85.

(Added-JBA) National Table of Allocations—Entry in the federal 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. Source: NTIA.

Radio Frequency Spectrum—The radio frequency spectrum includes the frequencies from 3.0 kilohertz to 400 gigahertz. The presently allocated spectrum is from 9 kilohertz to 275 gigahertz. Also called electromagnetic spectrum. Source: NTIA.

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Spectrum Supportability Risk Assessment—An assessment performed by Department of the Defense for all spectrum-dependent systems to identify risk as early as possible and affect design and procurement decisions. These risks are reviewed at acquisition milestones and managed throughout the system's life cycle. Source: DoDI 4650.01.

National Table of Allocations—Entry in the federal 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. Source: NTIA.

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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. Source: ITA RR.

(Added-JBA) 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. Source: ITU RR.

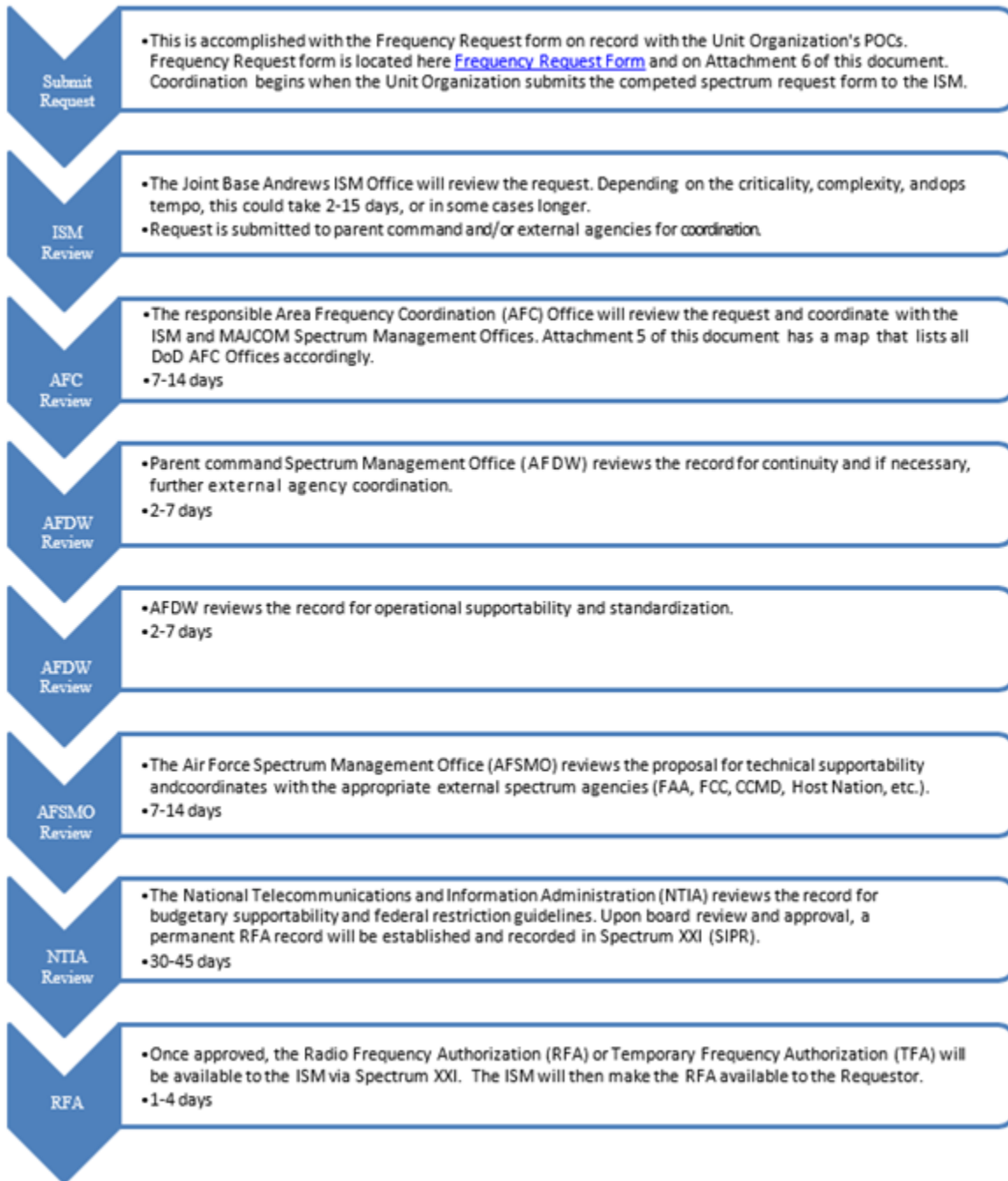
United States and its Possessions—Includes the 50 States, District of Columbia, the Commonwealth of Puerto Rico, and the territories and possessions (but less the Canal Zone) Source: NTIA.

(Added-JBA) United States and its Possessions—Includes the 50 States, District of Columbia, the Commonwealth of Puerto Rico, and the territories and possessions (but less the Canal Zone) Source: NTIA.

Attachment 2 (Added-JBA)

CONUS PERMANENT RADIO FREQUENCY AUTHORIZATION TIMELINE FOR JBA UNIT ORGANIZATIONS: LEAD TIME ~ 90 DAYS

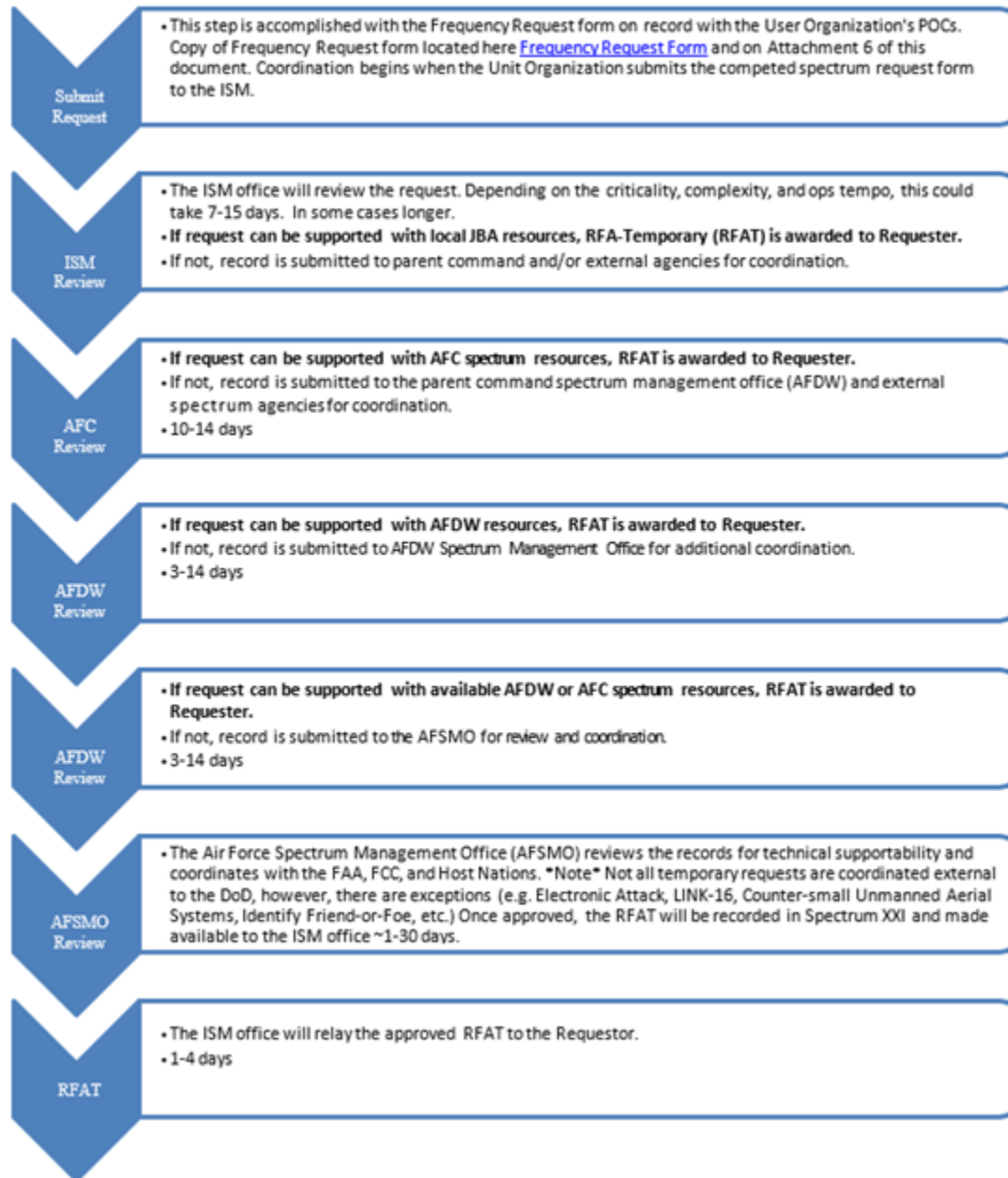
Figure A2.1. (Added-JBA) CONUS Permanent RFA Timeline.



Attachment 3 (Added-JBA)

CONUS TEMPORARY RADIO FREQUENCY AUTHORIZATION TIMELINE FOR
JBA ORGANIZATIONS: LEAD TIME ~ 30 TO 90 DAYS

Figure A3.1. (Added-JBA) CONUS Temporary RFA Timeline.



Attachment 4 (Added-JBA)

FREQUENCY BANDS

Figure A4.1. (Added-JBA) Frequency Bands.

ITU Band	Radar/IEEE Band	Frequency Ranges	NATO/EW Band	
ELF	---	Less than 3 kHz	---	
VLF	---	3 - 30 kHz	---	
LF	---	30 - 300 kHz	---	
MF	---	300 - 3000 kHz	---	
HF	HF	3 - 30 MHz	---	
VHF	VHF	30 - 250 MHz	A	
		250 - 300 MHz	B	
UHF	UHF	300 - 500 MHz	C	
		500 - 1000 MHz		
	L	1 - 2 GHz		D
SHF	S	2 - 3 GHz	E	
	C	3 - 4 GHz	F	
		4 - 6 GHz	G	
	X	6 - 8 GHz	H	
		8 - 10 GHz	I	
	Ku	10 - 12 GHz	J	
		12 - 18 GHz		
	K	18 - 20 GHz	K	
20 - 27 GHz				
EHF	Ka	27 - 30 GHz	L	
	V	30 - 40 GHz		
		40 - 60 GHz		
	W	60 - 75 GHz		M
		75 - 100 GHz		N
mm	100 - 110 GHz			
	110 - 200 GHz	O		
200 - 300 GHz				

KHz = Kilo Hertz
MHz = Mega Hertz
GHz = Giga Hertz

ELF = Extremely Low Frequency **VHF = Very High Frequency**
VLF = Very Low Frequency **UHF = Ultra High Frequency**
LF = Low Frequency **SHF = Super high Frequency**
MF = Medium Frequency **EHF = Extremely High Frequency**
HF = High Frequency

Attachment 5 (Added-JBA)

AREA FREQUENCY COORDINATOR (AFC) MAP

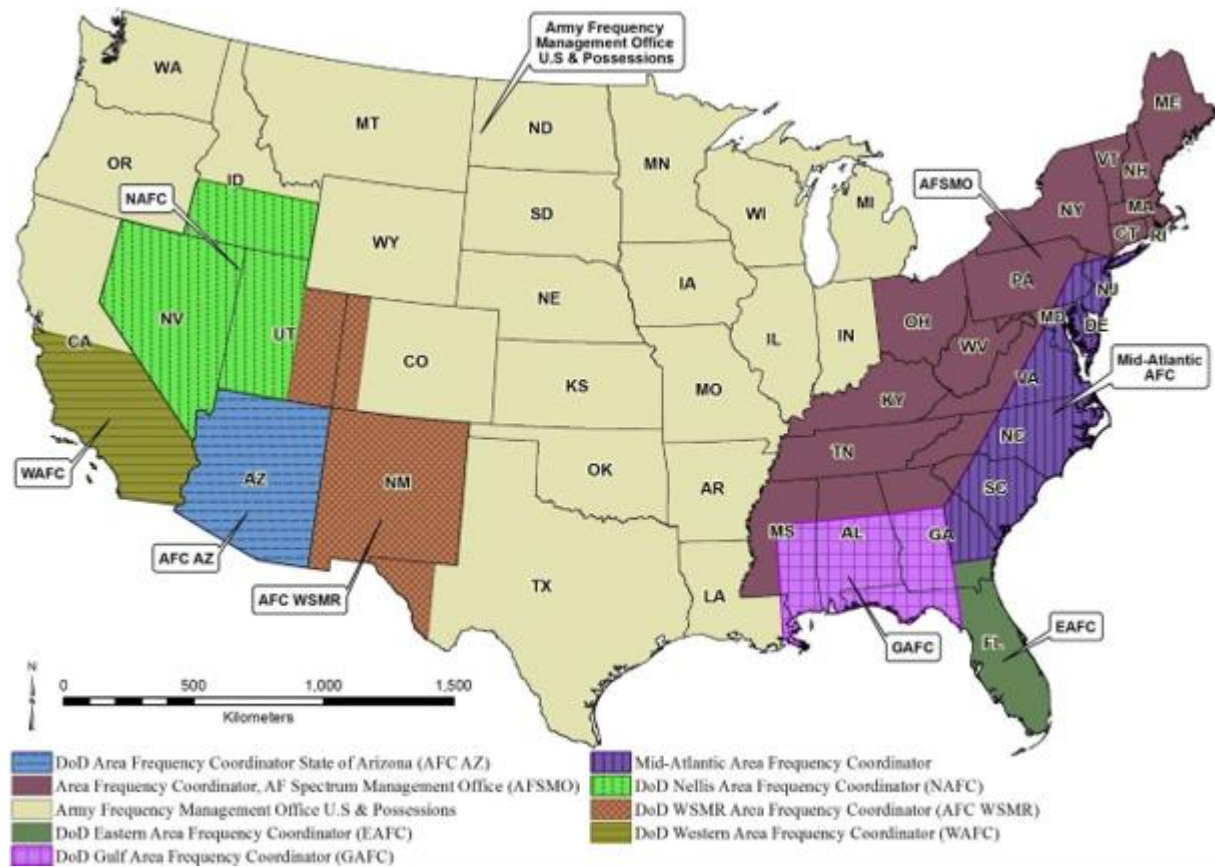
Figure A5.1. (Added-JBA) DOD Area Frequency Coordinators.

AFCs can be reached by requesting POC info through any ISM or MAJCOM Spectrum Offices. The AFC directly responsible for the National Capitol Region is the **Mid-Atlantic AFC**.

USN Mid-Atlantic Area Frequency Coordinator

Naval Air Warfare Center Aircraft Division, Atlantic Test Ranges
 23013 Cedar Point Road, Code 5.2.2.2, Unit 4, Bldg. 2118
 Patuxent River, MD 20670-1883
 DSN Number 342-1194
 Comm Number 301-342-1194
 FAX 342-1200
 NIPR Org Box midlantaafc_paxriver@navy.mil

Area Frequency Coordinator's Area of Responsibility



Attachment 6 (Added-JBA)**JBA SPECTRUM INTERFERENCE REPORTING AND RESOLUTION**

Spectrum interference resolution starts with data collection from the victim organization and must be solved at the lowest level possible. Do not report an incident when the event is transient electromagnetic interference from natural sources (e.g., lightning, rain, etc.). Do not report when the interference only affects training frequencies assigned on a non-interference basis (NIB) for training purposes.

Once the JBA Unit Organization has determined (or could not determine) the source of the interference, the victim organization experiencing the event must start documenting a detailed report, with or without the 744 CS ISM's assistance, within two (2) hours. Victim organizations will follow the steps below:

Step 1: The victim organization experiencing spectrum interference is required to complete the DAFI 17-220 **Attachment 2, Victim Interference Characterization Checklist** form experiencing the communications anomaly. **Attachment 2** is MANDATORY and is required to be completed by the victim organization, with or without the ISM's assistance, in the event of electromagnetic interference.

Step 2: Once completed, the form will be relayed to the JBA 744 CS ISM office (SCX). The victim organization(s) must evaluate the security sensitivity of the interference on the affected system and classify the report accordingly. Guidelines for classifying interference incidents are contained in CJCSI 3320.02F, *Joint Spectrum Interference Resolution*.

Step 3 (ISM responsibility): Prepare an official Joint Spectrum Interference Report (JSIR) on SIPR and submit to the MAJCOM Spectrum Management Office for continuity and tracking. This step may or may not be necessary. If so, then the JSIR will require inputs from each of the ISM, MAJCOM, AFC, and the victim organizations.