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SPECTRUM MANAGEMENT

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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.

(USAFE-AFAFRICA) This instruction implements and extends the guidance of DAFI17-220, *Cyberspace Operations Spectrum Operations*. This publication applies to the Regular Air Force, the United States Space Force, the Air Force Reserve, and the Air National Guard. Ensure all records generated as a result of processes prescribed in this publication adhere to 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 OPR using the DAF Form 847, *Recommendation for Change of Publication*; route DAF Forms 847 from the field through the appropriate functional chain of command. The authorities to waive wing/unit level requirements in this publication are identified with a Tier number ("T-0, T-1, T-2, T-3") following the compliance statement. Submit requests for waivers through the chain of command to the appropriate Tier waiver authority, or alternately, to the publication OPR for non-tiered compliance items. See DAFMAN 90-161, *Publishing Processes and Procedures*, for a description of the authorities associated with the Tier numbers. This publication may be supplemented or further implemented or extended.

SUMMARY OF CHANGES

This publication has been substantially revised and needs 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)).

(USAFE-AFAFRICA) This publication has been substantially revised and needs to be completely reviewed. Significant additions have been made, as several responsibilities and process have been defined. Changes include the establishment of lead-times, Installation Spectrum

Manager responsibilities, exercise support processes, and Electromagnetic Spectrum Visualization and Reporting System integration.

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.

1.2. 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.

1.3. 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.

2. ROLES AND RESPONSIBILITIES.

2.1. Department of the Air Force Spectrum Operations.

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.

2.1.2. 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.

2.1.3. 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:

2.1.3.1. 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:

2.1.4.1. 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.

2.1.4.17.1. **(Added-USAFE-AFAFRICA)** All Spectrum requirements (Temporary and Permanent) within the EUCOM and AFRICOM AOR require 90 days of lead-time. This lead-time starts when the USAFE- AFAFRICA Spectrum Operations Management Office receives the request. Additional time must be allotted to ensure the request is processed through the ISM. Requests with less than 90 days of lead-time will require a late letter signed by the units Commanding Officer (above O6) or the first O6 in the chain. Requests received with less than 20 days lead-time will require a late letter signed by an O-7 or higher to meet the requirements described in EUCOM Manual (ECM) 6901.01, United States European Command (USEUCOM) Spectrum Management Manual.

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.

2.1.4.24. **(Added-USAFE-AFAFRICA)** The USAFE-AFAFRICA Command SMO will assist the ISM when performing base-wide emitter surveys on all main operating base when requested. USAFE- AFAFRICA SMO will track, and coordinate required corrective actions documented in the emitter survey report. ISMs will perform the surveys every 5 years referencing emitter survey checklist (see **Attachment 3**).

2.1.4.25. **(Added-USAFE-AFAFRICA)** The USAFE-AFAFRICA SMO will provide all additional duty ISMs, which are non-Spectrum XXI data exchanging clients, with a current spawned data file from Spectrum XXI of all unclassified frequencies assigned to the installation and those outlying facilities hosted by the installation. Data files must be provided at least quarterly.

2.1.4.26. **(Added-USAFE-AFAFRICA)** The USAFE-AFAFRICA SMO will provide installation and maintenance of the Electromagnetic Spectrum Visualization and Reporting System (EVRS).

2.1.4.27. **(Added-USAFE-AFAFRICA)** USAFE-AFAFRICA SMO conducts Spectrum Operations for the U.S. Air Force (USAF) and United States Space Force (USSF) in the USEUCOM and AFRICOM AOR. The USAFE-AFAFRICA SMO is responsible for all matters pertaining to the selection, assignment, and protection of USAF and USSF EMS within the USEUCOM, AFRICOM AOR.

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:

2.1.5.1. 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)**

2.1.5.4.2. **(USAFE-AFAFRICA)** Within the European Command (EUCOM) and African Command (AFRICOM) AOR normal frequency coordination flows are as follows:

2.1.5.4.2.1. **(Added-USAFE-AFAFRICA)** Units participating in in-garrison training, USAFE- AFAFRICA directed exercises or missions, or requiring permanent frequencies will submit all requirements to their ISM. The process will then flow from the ISM to the USAFE-AFAFRICA SMO, from the USAFE- AFAFRICA SMO to EUCOM Joint Frequency Management Office (JFMO) (EUCOM/ECJ63) and from EUCOM JFMO to Host Nation (HN).

Information flows in reverse order upon approval or denial of request.

2.1.5.4.2.2. **(Added-USAFE-AFAFRICA)** Units participating in AFFOR-directed exercises, contingencies and wartime operations will submit all frequency requirements to their ISM. The process will then flow from the ISM to the USAFE-AFAFRICA SMO, from the USAFE-AFAFRICA SMO to EUCOM JFMO (EUCOM/ECJ63) and from EUCOM JFMO to HN. Information flows in reverse order upon approval or denial of request.

2.1.5.4.2.3. **(Added-USAFE-AFAFRICA)** Units conducting exercises or missions within the AFRICOM AOR will submit all frequency requirements to their ISM. The process will then flow from the ISM to the USAFE-AFAFRICA SMO, from the USAFE-AFAFRICA SMO to AFRICOM JFMO and from AFRICOM JFMO to HN as applicable. Information flows in reverse order upon approval or denial of request.

2.1.5.4.2.4. **(Added-USAFE-AFAFRICA)** USAFE-AFAFRICA units will submit frequency requests through their ISM or USAFE-AFAFRICA SMO as appropriate. Visiting units from outside the Command must route frequency requests through the appropriate MAJCOM for forwarding to USAFE-AFAFRICA SMO.

2.1.5.4.2.5. **(Added-USAFE-AFAFRICA)** American Force Network (AFN) frequency management is the responsibility of USAREUR SMO. All AFN requests or requirements within the EUCOM AOR must be routed through USAREUR SMO.

2.1.5.4.3. **(Added-USAFE-AFAFRICA)** Within the European Command (EUCOM) and African Command (AFRICOM) AOR normal frequency coordination flows are as follows:

2.1.5.4.3.1. **(Added-USAFE-AFAFRICA)** Units participating in in-garrison training, USAFE- AFAFRICA directed exercises or missions, or requiring permanent frequencies will submit all requirements to their ISM. The process will then flow from the ISM to the USAFE-AFAFRICA SMO, from the USAFE- AFAFRICA SMO to EUCOM Joint Frequency Management Office (JFMO) (EUCOM/ECJ63) and from EUCOM JFMO to Host Nation (HN). Information flows in reverse order upon approval or denial of request.

2.1.5.4.3.2. **(Added-USAFE-AFAFRICA)** Units participating in AFFOR-directed exercises, contingencies and wartime operations will submit all frequency requirements to their ISM. The process will then flow from the ISM to the USAFE-AFAFRICA SMO, from the USAFE-AFAFRICA SMO to EUCOM JFMO (EUCOM/ECJ63) and from EUCOM JFMO to HN. Information flows in reverse order upon approval or denial of request.

2.1.5.4.3.3. **(Added-USAFE-AFAFRICA)** Units conducting exercises or missions within the AFRICOM AOR will submit all frequency requirements to their ISM. The process will then flow from the ISM to the USAFE-AFAFRICA SMO, from the USAFE-AFAFRICA SMO to AFRICOM JFMO and from AFRICOM JFMO to HN as applicable. Information flows in reverse order upon

approval or denial of request.

2.1.5.4.3.4. **(Added-USAFE-AFAFRICA)** USAFE-AFAFRICA units will submit frequency requests through their ISM or USAFE-AFAFRICA SMO as appropriate. Visiting units from outside the Command must route frequency requests through the appropriate MAJCOM for forwarding to USAFE-AFAFRICA SMO.

2.1.5.4.3.5. **(Added-USAFE-AFAFRICA)** American Force Network (AFN) frequency management is the responsibility of USAREUR SMO. All AFN requests or requirements within the EUCOM AOR must be routed through USAREUR SMO.

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:

2.1.6.1. 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:

2.1.7.1. 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:

2.1.8.1. 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:

2.1.9.1. 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)**

2.1.9.3.1. **(Added-USAFE-AFAFRICA)** Meets with all unit POC at least every 6 months to discuss current spectrum management issues and conduct customer education.

2.1.9.3.2. **(Added-USAFE-AFAFRICA)** When conducting frequency assignment reviews, use the USAFE- AFAFRICA Frequency Assignment Review Checklist as a guide (**Attachment 2**) ISMs must send all the review information to USAFE-AFAFRICA SMO for processing.

2.1.9.3.3. **(Added-USAFE-AFAFRICA)** When operating within the EUCOM and AFRICOM AOR, the only frequencies that do not require a specific assignment for US forces are those emergency and distress frequencies defined in International Telecommunication Union (ITU) Radio Regulation Article 31.

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)**.

2.1.9.17.3. **(USAFE-AFAFRICA)** Utilizing EVRS, provide spectrum baseline data to include all frequencies detected with power level and bandwidth from a given location. Additionally, provide generic identification of unknown signals

identified during baseline efforts**.**

2.1.9.17.4. **(Added-USAFE-AFAFRICA)** Notify the weapons safety officer when new signals are detected. Provide frequency, power, bandwidth, and the location the signal was detected from.

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:

2.1.10.1. 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-USAFE-AFAFRICA)** Utilization of the Electromagnetic Spectrum Visualization and Reporting System (EVRS):

2.1.11.1. **(Added-USAFE-AFAFRICA)** Within 90 days of appointment, the ISM will conduct a baseline survey utilizing EVRS.

2.1.11.2. **(Added-USAFE-AFAFRICA)** Within 180 days of appointment, the ISM will locate all unknown transmitters identified within initial baseline survey.

2.1.11.3. **(Added-USAFE-AFAFRICA)** The ISM will keep an Active Emitter List spreadsheet up-to-date and readily available.

2.1.11.4. **(Added-USAFE-AFAFRICA)** The ISM will utilize EVRS to assist with investigation of any electromagnetic interference within their respective AOR.

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

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)**

2.2.1.1. **(Added-USAFE-AFAFRICA)** US Federal Communications Commission (FCC) approved non-licensed devices are not approved for usage within the EUCOM and AFRICOM AOR. The majority of these devices (i.e. baby monitors, wireless phones, or walkie talkie radios) will cause harmful interference to HN emergency responders and should not be used in this AOR.

2.2.1.2. **(Added)** Any such device that requires usage within Germany must have a COTS worksheet completed (**Attachment 4**) with an EU letter of conformity attached (**Attachment 5**). Forward completed paperwork to USAFE-AFAFRICA SMO for processing. 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)**

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

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)**

2.2.5. 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).**

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

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

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

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)**

2.2.10. 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)**

2.2.11. 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)**

2.2.15. **(Added-USAFE-AFAFRICA)** AGILE COMBAT EMPLOYMENT (ACE) OPERATIONS:

2.2.15.1. **(Added-USAFE-AFAFRICA)** To ensure effective spectrum access and avoid interference during ACE operations, units will designate a Trusted Agent for Spectrum Management who will serve as the primary point of contact for all spectrum-related requirements.

2.2.15.2. **(Added-USAFE-AFAFRICA)** The Trusted Agent will notify the USAFE-AFAFRICA SMO of any potential ACE deployments requiring spectrum support as soon as identifiable, regardless of deployment timeline.

2.2.15.3. **(Added-USAFE-AFAFRICA)** Spectrum requests for exercise support must adhere to lead times. Failure to comply with lead times may result in spectrum support being denied. These situations will be handled on a case-by-case basis with the Host Nation.

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).

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.

3.1.1. 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)**

3.1.1.1. **(Added-USAFE-AFAFRICA)** Any such device that requires usage within Germany must have a COTS worksheet completed (**Attachment 4**) with an EU letter of conformity attached (**Attachment 5**). Forward completed paperwork to USAFE-AFAFRICA SMO for processing.

3.1.1.2. **(Added-USAFE-AFAFRICA)** Any such device that requires usage in all other USAFE-AFAFRICA nations must be handled on a case-by-case basis through USAFE-AFAFRICA SMO. Sole decision authority rests with the HN.

3.1.1.3. **(Added-USAFE-AFAFRICA)** Host nation spectrum supportability coordination in EUCOM AOR is required in accordance within the ECM 6901.01, USEUCOM Spectrum Management Manual.

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)**

3.1.3. 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.

3.1.4. 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)**

3.1.5. **(Added-USAFE-AFAFRICA)** Equipment exempt from Spectrum Certification: in EUCOM and AFRICOM. The following categories of equipment in the EUCOM and AFRICOM Area of Responsibility (AOR) are exempt from the spectrum certification process:

3.1.5.1. **(Added-USAFE-AFAFRICA)** Signal generators.

3.1.5.2. **(Added-USAFE-AFAFRICA)** Bench test or antenna-testing equipment.

3.1.5.3. **(Added-USAFE-AFAFRICA)** Electronic fuses that activate detonation devices.

3.1.5.4. **(Added-USAFE-AFAFRICA)** Unmodified European Conformity (CE) approved Commercial off-the-shelf (COTS) Family Radio Service (FRS) transceivers.

3.1.5.5. **(Added-USAFE-AFAFRICA)** Unmodified CE approved COTS low power cordless telephones.

3.1.5.6. **(Added-USAFE-AFAFRICA)** Cellular telephones used to access a commercial service provider.

3.1.5.7. **(Added-USAFE-AFAFRICA)** International Maritime Satellite (INMARSAT) terminals.

3.1.5.8. **(Added-USAFE-AFAFRICA)** Infrared and ultraviolet systems used, among other things, to measure heat intensity and spectral signatures of various targets.

3.1.5.9. **(Added-USAFE-AFAFRICA)** Lasers and other systems that operate above 3000 Gigahertz (GHz).

3.1.5.10. **(Added-USAFE-AFAFRICA)** Global Positioning System receivers universally marketed for civil, industrial, private, and military applications.

3.1.5.11. **(Added-USAFE-AFAFRICA)** Radio and radar control heads, bus units, and software or hardware devices that interface with transmitting and receiving equipment, but by themselves do not radiate nor receive electromagnetic energy, except wireless RF modem devices.

3.1.5.12. **(Added-USAFE-AFAFRICA)** Antennas that do not radiate RF energy, unless excited from a separate transmitting source.

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)**

3.2.1. 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)**

3.2.2. 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)**

3.2.3. 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*.

3.3. 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)**

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

(USAFE-AFAFRICA)

JASON P. KANE, Colonel, USAF
Director, Communications and CIO

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

(Added-USAFE-AFAFRICA) AEMP-01 NATO, *Title*, 1 Mar 2020

(Added-USAFE-AFAFRICA) ECM 6901.01, USEUCOM Spectrum Management Manual, 31 Jan 2018

(Added-USAFE-AFAFRICA) ITU Radio Regulation Article 31, (*Current Edition*)

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

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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

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(Added-USAFE-AFAFRICA) AFMAN13-116, *Tactical Data Link Planning and Operations*, 13 Aug 2020

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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

(**Added-USAFE-AFAFRICA**) AF Form 2519, *All Purpose Checklist*

AF Form 847, *Recommendation for Change of Publication*

(**Added-USAFE-AFAFRICA**) DD1494, *Application for Equipment Frequency Allocation*

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

Abbreviations and Acronyms

(Added-USAFE-AFAFRICA) ACE—Agile Combat Employment

ACP—Allied Communications Publication

AFI—Air Force Instruction

(Added-USAFE-AFAFRICA) AOR—Area of Responsibility

(Added-USAFE-AFAFRICA) CE—European Compliance

CJCSM—Chairman of the Joint Chiefs of Staff Manual

(Added-USAFE-AFAFRICA) COTS—Commercial Off-The-Shelf

(Added-USAFE-AFAFRICA) DLMC—Data Link Management Cells

DoDI—Department of Defense Instruction

E3—Electromagnetic Environmental Effects

(Added-USAFE-AFAFRICA) EMS—Electromagnetic Spectrum

(Added-USAFE-AFAFRICA) EVRS—Electromagnetic Visualization and Reporting System

(Added-USAFE-AFAFRICA) FCA—Frequency Clearance Agreement

(Added-USAFE-AFAFRICA) FCC—Federal Communications Commission

(Added-USAFE-AFAFRICA) HN—Host Nation

(Added-USAFE-AFAFRICA) IPF—Interference Protection Features

(Added-USAFE-AFAFRICA) ISM—Installation Spectrum Manager

(Added-USAFE-AFAFRICA) ITU—International Telecommunication Union

ITU RR—International Telecommunication Union Radio Regulation

(Added-USAFE-AFAFRICA) JFMO—Joint Frequency Management Office

JP—Joint Publication

(Added-USAFE-AFAFRICA) JTIDS—Joint Tactical Information Distribution System

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

NTIA—National Telecommunications and Information Administration

(Added-USAFE-AFAFRICA) SMO—Spectrum Management Office

(Added-USAFE-AFAFRICA) TSDF—Time Slot Duty Factor

(Added-USAFE-AFAFRICA) USEUCOM—United States European Command

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.

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.

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

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.

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

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.

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

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.

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.

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.

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.

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.

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-USAFE-AFAFRICA)

FREQUENCY ASSIGNMENT REVIEW CHECKLIST

Figure A2.1. (USAFE-AFAFRICA) Frequency Assignment Review Checklist.

ALL PURPOSE CHECKLIST		PAGE 1 OF 1 PAGES		
TITLE/SUBJECT/ACTIVITY/FUNCTIONAL AREA Frequency Assignment Review Checklist		OPR USAFE A6/ONF	DATE	
NO.	ITEM *(Assign a paragraph number to each item. Draw a horizontal line between each major paragraph.)*	Yes	No	N/A
1	Print out a copy of the frequency assignment in complete Standard Frequency Action Format (SFAF).	☐	☐	☐
2	Contact user and determine if frequency is still being used.	☐	☐	☐
3	If frequency is not being used, initiate delete action and forward through SXXI to "USAFE - HQ OFFICIAL". Note if deletion is required obtain email confirmation from POC.	☐	☐	☐
4	If frequency is being used, set up time with user to validate requirements.	☐	☐	☐
5	During survey, at a minimum, accomplish the following:	☐	☐	☐
	5.1 Take precise GPS latitude and longitude coordinates and height reading of antenna being used.	☐	☐	☐
	5.2 Annotate equipment name and nomenclature being used to include applicable antenna data/ nomencalture.	☐	☐	☐
	5.3 Verify power output of transmitter.	☐	☐	☐
	5.4 Verify equipment is being used for function listed on assignment.	☐	☐	☐
	5.5 Review all other line items for accuracy.	☐	☐	☐
	5.6 Ensure POC information is updated and valid.	☐	☐	☐
	5.7 If frequency is being used for Air Traffic Control (ATC) function, verify whether or not frequency should be listed in the current Flight Information Publication (FLIP) (as applicable), If frequency should be listed, but is not, advise user to submit NOTAM to have FLIP updated.	☐	☐	☐
6	Update all changes using Spectrum XXI and referencing MCEB Publication along with USAFE Standard Frequency Action Format (SFAF) guide.	☐	☐	☐
7	Run compliance functions within Spectrum XXI and make corrections as necessary.	☐	☐	☐
8	Send completed proposal, in full Standard Frequency Action Format (SFAF), to "USAFE - HQ OFFICIAL".	☐	☐	☐

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Attachment 3 (Added-USAFE-AFAFRICA)

EMITTER SURVEY CHECKLIST

Figure A3.1. (USAFE-AFAFRICA) Emitter Survey Checklist.

ALL PURPOSE CHECKLIST	PAGE 1 OF 1 PAGES
TITLE/SUBJECT/ACTIVITY/FUNCTIONAL AREA Emitter Survey Checklist	OPR USAFE CSS/SCMF DATE

NO.	ITEM (Assign a paragraph number to each item. Draw a horizontal line between each major paragraph.)	Yes	No	N/A
1.	Obtain updated copy of installation radio frequency inventory from USAFE FMO.	☐	☐	☐
2.	Obtain copy of all flying squadrons' local flight information publications or "smart packs" (usually maintained by STAN EVAL). This listing will have all frequencies the squadron is actually using.	☐	☐	☐
	2.1. Ensure all frequencies are listed in Spectrum XXI database for use by that squadron. If they are, proceed using Attachment 3, Frequency Assignment Review Checklist.	☐	☐	☐
	2.2. If frequency(ies) is/are not listed in Spectrum XXI, proceed to task number 7.1.	☐	☐	☐
3.	Obtain large current copy of the installation grid map from appropriate agency (usually CE squadron).	☐	☐	☐
4	Divide the installation into easily manageable sections on the map.	☐	☐	☐
5.	Personally survey the area contained in the selected grid or section. View each building, mast, pole, or any other structure with that section, looking for antenna-like structures (these include satellite dishes, yagi-arrays, long-wire, dipole, etc.)	☐	☐	☐
6.	Obtain entry into each building on which an antenna is discovered or antenna lead appears to enter. Obtain information about any RF radiating or receiving equipment connected to subject antenna.	☐	☐	☐
7.	Determine if the equipment and frequency are listed in the Spectrum XXI database for that installation. If it is, proceed using Attachment 3, Frequency Assignment Review Checklist.	☐	☐	☐
	7.1. If the equipment and/or frequency are NOT listed in the Spectrum XXI database for the installation, advise the user that they may have to cease operation of the equipment until such time as proper authority to transmit can be obtained. Follow steps 8 onwards of this checklist.	☐	☐	☐
8.	Obtain full information about discovered system using, as a minimum, the following:	☐	☐	☐
	8.1. Take precise GPS latitude and longitude coordinates and height reading of antenna being used.	☐	☐	☐
	8.2. Annotate equipment type and nomenclature being used to include applicable antenna data.	☐	☐	☐
	8.3. Time and personnel permitting, determine power output of transmitter.	☐	☐	☐
	8.4. Determine for what function the equipment is being used.	☐	☐	☐
	8.5. In conjunction with USAFE FMO, determine if discovered equipment has documented host nation spectrum supportability.	☐	☐	☐
9.	If the equipment has documented supportability, continue this checklist from step 10.	☐	☐	☐
	9.1. If discovered equipment DOES NOT have documented supportability, advise the user of this fact. Working with the user and USAFE FMO, attempt to obtain host nation spectrum supportability.	☐	☐	☐
10.	Create full SFAF frequency proposal using Spectrum XXI and referencing MCEB Publication 7.	☐	☐	☐
11.	Run compliance function within Spectrum XXI and make corrections as necessary.	☐	☐	☐
12.	Send completed proposal in full SFAF to USAFE FMO.	☐	☐	☐

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Attachment 4 (Added-USAFE-AFAFRICA)

COTS WORKSHEET FOR GERMANY EXAMPLE

Table A4.1. (USAFE-AFAFRICA) COTS WORKSHEET FOR GERMANY EXAMPLE.

Datenblatt zur Beantragung der Frequenzverfügbarkeit für am Markt verfügbare Produkte		
Data Sheet for Requesting Frequency Supportability for Commercial Off- the-Shelf Equipment		
1. Antragstitel – Request title:		
2. Name des Herstellers – Manufacturer's name:		
3. Ort des Kaufs – Place of purchase:		
☐ Deutschland – Germany		
☐ außerhalb Deutschlands – outside Germany:		
4. Anschrift des Herstellers/der Vertriebsfirma – Address of manufacturer/distributor:		
Manufacture:		
Distributor:		
5. Konformitätserklärung – Declaration of conformity:	ja – yes ☐	nein – no ☐
6. Frequenzzuteilung erforderlich? – Assignment of frequencies required?	ja – yes ☐	nein – no ☐
7. Kennzeichnung – System identifier: z.B. – e.g. CE:		
8. Einbauort – Installation:		
9. Zuständige Dienststelle – Responsible agency:		
10. Ansprechpartner vor Ort – Local point of contact:		
11. Vorgesehener **Nutzungszeitraum** – Intended period of use:		
12. Anzahl der Geräte... – Number of equipments:		
- die für die Nutzung[1] vorgesehen sind – are planned for use:		
- die im gleichen elektromagnetischen Umfeld eingesetzt werden – operated in the same electromagnetic environment:		
13. Technische Eigenschaften des Senders – Transmitter equipment characteristics:		
- Betriebsfrequenz(en) – Operating frequency (frequencies):		
- Abstimmbereich€ – *Tuning* range(s):		
- Modulationsart – Modulation type:		
AM ☐ FM ☐ andere – other: ☐		
Bezeichnung der Aussendung(en) (gemäß VO-Funk) – Emission designation (i.a.w. ITU):		
- HF-Kanaleinteilung – HF channeling:		
- Sendebandbreite – Transmission bandwidth:		
- mittlere Leistung – Mean output:		
- Spitzenleistung – Peak output:		
- Leistung regelbar – Power adjustable:	ja – yes ☐	nein – no ☐
wenn ja, von ... bis – if yes, from ... to:		
- durchstimmbar – tunable:	ja – yes ☐	nein – no ☐
- schrittweise – gradually:	ja – yes ☐	nein – no ☐
- effektive Reichweite (in Metern) – effective range(in meters):		

- Spreizspektrum – Spread Spectrum:	ja – yes ☐	nein – no ☐
- Direktsequenz-Spreizspektrum – Direct Sequence Spread Spectrum (DSSS): ja – yes ☐ nein – no ☐		
- Frequenzsprungverfahren-Spreizspektrum – Frequency Hopping Spread Spectrum: ja – yes ☐ nein – no ☐		
- andere (ist zu spezifizieren) – other (to be specified):		
14. Technische Eigenschaften des Empfängers – Receiver equipment characteristics:		
- Empfängername – Receiver nomenclature:		
- Abstimmbereich(e) – Tuning range(s):		
- Bezeichnung der empfangenen Aussendung(en) (gemäß VO-Funk) – Received emission designation (i.a.w. ITU):		
15. Technische Eigenschaften der Antenne – Antenna equipment characteristics:		
- Antennenname – Antenna nomenclature:		
- Frequenzbereich – Frequency range:		
Antennentyp (z.B. Dipol oder λ/4-Stab) – Antenna type (e.g. dipole or quarter-wave stub):		
- Antennengewinn – Antenna gain:		
- Polarisation – Polarization:		
16. Einsatz-/Verwendungszweck – Purpose:		
- Art der Funkstelle – Station class:		
- Beschreibung von Funktion und Zweck – Description of function and purpose:		
stationär – fixed:	ja – yes ☐	nein – no ☐
transportabel – transportable:	ja – yes ☐	nein – no ☐
mobil – mobile:	ja – yes ☐	nein – no ☐
luftgestützt – airborne:	ja – yes ☐	nein – no ☐
seegestützt – maritime:	ja – yes ☐	nein – no ☐
bodengestützt – groundbased:	ja – yes ☐	nein – no ☐
17. Weitere Informationen – Additional information:		
- Wird bestehendes Gerät ersetzt? Wenn ja, welches? – Will be an equipment replaced?		
If yes, which one?		
- Wie viele Frequenzen werden pro Gerät benötigt? – How many frequencies does one equipment use?		
18. Bemerkungen – Remarks:		
19. Anlagen – Attachments:		
Kopie des Antennendiagramms – Copy of antenna pattern:	ja – yes ☐	nein – no ☐
Prinzipskizze der Funkstrecken – Line diagram:	ja – yes ☐	nein – no ☐
Kopie der Gerätebeschreibung/Begleitunterlagen – Copy of equipment description/ documentation: ja – yes ☐ nein – no ☐		
Kopie der Konformitätserklärung[2] – Copy of declaration of conformity: ja – yes ☐ nein – no ☐		

[2]Existiert eine Schnittstellenbeschreibung (SSB), so muss die jeweilige SSB-Nummer in der Konformitätserklärung aufgeführt sein. – If an interface description (SSB) exists, then the respective SSBnumber must be specified in the declaration of conformity
Kopie der Steuerradzulassung der MarED[3] – Copy of Wheelmark Certificate from MarED: ja – yes ☐ nein – no ☐
Kopie der Bestätigung, dass das Gerät den Regularien des Satellitenbetreibers entspricht.[4] ja – yes ☐ nein – no ☐
Command Line 20. Used by EUCOM to put an identifying control number on request.
Examples: First two digits = Year of submission
USAREUR 11 means year of request, followed by 00X Request control number for that Command.
USAFE 11 means year of request, followed by 00X Request control number for that Command.
NAVEUR All components will use this procedure.
The last three numbers of Command Line 20; will be assigned by EUCOM, for tracking, and control.
NOTE: Line 20. Entry should be put on reach page for tracking, control purposes.. Use top right of page for entry for ease of finding, locating records...
[3]Schiffsausrüstung gemäß der EU-Richtlinie 96/98/EG muss in der Datenbank der Marine Equipment Directive (MarED) eingetragen sein. – Ship equipment which is conforming to EU Council Directive 96/98/EC has to be registered in the Database of the Marine Equipment Directive (MarED).
[4]Zum Beispiel eine Bestätigung von INMARSAT. – For example a certificate from INMARSAT.

Attachment 5 (Added-USAFE-AFAFRICA)

EU DECLARATION OF CONFORMITY EXAMPLE

Figure A5.1. (USAFE-AFAFRICA) EU DECLARATION OF CONFORMITY EXAMPLE.

EC Declaration of Conformity

In accordance with EN ISO 17050-1:2004

We Acme Widget Ltd

of Unit 1, Wall Farm, Ind. Est., Walsall, W. Midlands, B1 23B

in accordance with the following Directive(s):

2006/95/EC	The Low Voltage Directive
2004/108/EC	The Electromagnetic Compatibility Directive
98/37/EC	The Machinery Directive

hereby declare that:

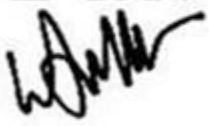
Equipment	Widget manufacturing machine
Model number	Super 77
Serial Number	001236

is in conformity with the applicable requirements of the following documents

Ref. No.	Title	Edition/date
BS EN 746-1	Industrial thermoprocessing equipment. Common safety requirements for industrial thermoprocessing equipment	1997
EN 60204-1	Safety of machinery. Electrical equipment of machines. General requirements	2006
BS EN 61000-6-1	Electromagnetic compatibility (EMC). Generic standards. Immunity for residential, commercial and light-industrial environments	2001
BS EN 61000-6-3	Electromagnetic compatibility (EMC). Generic standards. Emission standard for residential, commercial and light-industrial environments	2001

I hereby declare that the equipment named above has been designed to comply with the relevant sections of the above referenced specifications. The unit complies with all applicable Essential Requirements of the Directives.

Signed:



Name:	Nigel Watkins
Position:	Technical Director
Walsall	Walsall
On	1 April 2009

CE09

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