



Department of Defense DIRECTIVE

NUMBER 4650.1

June 8, 2004

ASD(NII)

SUBJECT: Policy for Management and Use of the Electromagnetic Spectrum

- References:
- (a) DoD Directive 4650.1, "Management and Use of the Radio Frequency Spectrum," June 24, 1987 (hereby canceled)
 - (b) Section 305 and Chapter 8 of title 47, United States Code
 - (c) Office of Management and Budget (OMB), Circular A-11, Part 2¹ (as amended)
 - (d) Title 47, Code of Federal Regulations, Chapter III, Part 300, U.S. Department of Commerce, National Telecommunications and Information Administration (NTIA), "Manual of Regulations and Procedures for Federal Radio Frequency Management," as amended, current edition
 - (e) through (k), see enclosure 1

1. REISSUANCE AND PURPOSE

This Directive:

1.1. Reissues reference (a) to update the policy and responsibilities for electromagnetic spectrum management and use by the Department of Defense.

1.2. Implements the provisions of references (b), (c), and (d) within the Department of Defense.

¹ Available in paper copy from the Office of Management and Budget, 725 17th Street, NW, Washington, DC 20503 or via Internet at www.whitehouse.gov/omb.

2. APPLICABILITY

This Directive applies to the Office of the Secretary of Defense, the Military Departments, the Chairman of the Joint Chiefs of Staff, the Combatant Commands, the Office of the Inspector General of the Department of Defense, the Defense Agencies, DoD Field Activities, and all other organizational entities in the Department of Defense (hereafter referred to collectively as "the DoD Components").

3. DEFINITIONS

Terms used in this Directive are defined in enclosure 2.

4. POLICY

It is DoD policy that:

4.1. The electromagnetic spectrum (hereafter referred to as "spectrum") is a critical, finite national resource. Access to the spectrum is vital to the support of military operations. Proper management and use of the spectrum available to the Department shall be an integral part of, and essential to, military planning, research, development, testing, and operations involving spectrum-dependent systems.

4.2. The spectrum management function shall be accomplished at a level thoroughly familiar with, and immediately responsive to, the requirements of the operating forces and sufficiently close to major policy-making offices to facilitate referral of issues requiring consideration by these offices.

4.3. Spectrum policy and spectrum management functions shall be guided by the following five core principles:

4.3.1. Support a U.S. spectrum policy that balances national and economic security, with national security as the first priority.

4.3.2. Ensure the U.S. warfighter has sufficient spectrum access to support military capabilities.

4.3.3. Use the spectrum as efficiently and effectively as possible and give due regard to the rights of other spectrum users.

4.3.4. Commit to continue investing in new, spectrum-efficient technologies, and use new technology to support the increasing demand for additional spectrum.

4.3.5. Actively support U.S. policies and interests in international spectrum bodies and in international and bilateral negotiations for spectrum allocation and use.

4.4. Spectrum requirements shall be based on current and projected military operational requirements, and spectrum available to the Department shall be utilized in a manner to provide the greatest overall benefit to DoD missions.

4.5. The DoD Component that is developing or acquiring spectrum-dependent equipment or systems shall make a written determination, with the concurrence of the DoD Component or Component Chief Information Officer (CIO), that there is reasonable assurance of spectrum supportability. Efforts to obtain spectrum supportability for spectrum-dependent equipment or systems being developed shall be initiated as early as possible during the Technology Development Phase.

4.5.1. No spectrum-dependent systems being developed shall proceed into the System Development and Demonstration Phase without such a spectrum supportability determination unless specific authorization to proceed is granted by the Milestone Decision Authority (MDA). (See subparagraph 5.4.2.5.)

4.5.2. No spectrum-dependent system shall proceed into the Production and Deployment Phase without such a spectrum supportability determination unless specific authorization to proceed is granted by the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) or a waiver is granted by the Assistant Secretary of Defense for Networks and Information Integration (ASD(NII)). (See subparagraph 5.4.2.5.)

4.5.3. No spectrum-dependent "off-the-shelf" or other non-developmental system shall be purchased or procured without such a spectrum supportability determination.

4.6. Consideration shall be given, in accordance with existing Federal regulatory procedures, toward sharing the spectrum with other Federal Agencies and with commercial spectrum users. The sharing of the electromagnetic spectrum used by the Department with other Federal Agencies and or commercial spectrum users shall be accomplished only under the following conditions:

4.6.1. Without degradation to the Department's mission.

4.6.2. In a manner that provides current and future DoD users with sufficient regulatory protection; and

4.6.3. With minimal risk that such sharing will result in loss of access to the spectrum necessary to perform the DoD mission.

5. RESPONSIBILITIES

5.1. Pursuant to DoD Directive 5137.1 (reference (e)), the Assistant Secretary of Defense for Networks and Information Integration/Department of Defense Chief Information Officer (ASD(NII)/DoD CIO), as the Principal Staff Assistant on spectrum matters, both within the Department and for Departmental spectrum matters presented before international, regional, and national spectrum management forums, shall:

5.1.1. Provide direction and guidance within the Department of Defense for managing and using the electromagnetic spectrum, including implementation of applicable provisions of references (b) through (d) and DoD Directive 3222.3 (reference (f)).

5.1.2. Direct the establishment and maintenance of a capability to analyze and make recommendations concerning whether spectrum-dependent systems, either being acquired or procured, have, or will have, spectrum supportability.

5.1.3. When appropriate, issue specific authorization for acquisitions and acquisition programs to proceed without spectrum supportability under subparagraphs 4.5.1. and 4.5.2., above.

5.1.4. Provide direction and guidance for the development of DoD positions for, and DoD participation in, international and regional spectrum forums, including all related national, regional, and international preparatory activities for the International Telecommunication Union World Radio Communication Conferences.

5.1.5. Develop and maintain a Strategic Plan for management and use of the spectrum that establishes goals, objectives, measures, and responsibilities to ensure DoD spectrum needs are met and that the Department is making the most efficient and effective use of available spectrum.

5.1.6. Promote coordination and cooperation between the Department and other Federal Agencies, the civilian community, and other domestic, regional, and international organizations and forums to ensure that DoD spectrum needs and issues are addressed adequately.

5.1.7. Direct the establishment and maintenance of a capability to document and manage existing spectrum assets and to perform required electromagnetic compatibility (EMC) analyses and studies to support effective use of spectrum-dependent systems in electromagnetic environments and accomplish national security and military objectives in accordance with reference (f).

5.1.8. For Major Defense Acquisition Programs and Major Automated Information System acquisition programs, provide an assessment of spectrum supportability to the MDA at acquisition milestones.

5.2. The Under Secretary of Defense, Acquisition, Technology, and Logistics (USD(AT&L)) shall:

5.2.1. In coordination with the ASD(NII), establish policy for acquiring spectrum-dependent systems and ensure compliance with spectrum supportability requirements within the acquisition process (DoD Directive 5000.1 and DoD Instruction 5000.2 (references (g) and (h))).

5.2.2. When appropriate, issue specific authorization for acquisitions and acquisition programs to proceed without spectrum supportability under subparagraphs 4.5.1. and 4.5.2., above.

5.2.3. Promote innovative technologies to optimize use and effectiveness of available spectrum resources, to include advanced concept development, international cooperation, and evolutionary acquisitions.

5.2.4. Provide support and oversight as necessary, prior to and through the developmental test and evaluation phase of systems, to require and verify that spectrum supportability requirements have been addressed.

5.3. The Director, Operational Test and Evaluation (DOT&E), shall:

5.3.1. Monitor and review test and evaluation (T&E) of spectrum-dependent equipment or systems to ensure the DoD Components developing spectrum-dependent equipment have requested and implemented, as applicable, spectrum supportability guidance prior to T&E. (See DoD Directive 5141.2 (reference (i)).)

5.3.2. Assess, prior to the commencement of T&E, the adequacy of spectrum resources required for T&E and provide recommendations in respect thereof for programs under DOT&E oversight.

5.4. The Heads of the DoD Components shall:

5.4.1. Implement within their organizations applicable provisions of references (b), (c), and (d) and DoD issuances regarding spectrum management.

5.4.2. For spectrum-dependant systems for which they or their organizations have responsibility:

5.4.2.1. Promote the use of innovative spectrum-efficient technologies.

5.4.2.2. Submit, through appropriate channels to the Military Communications - Electronics Board (MCEB), requests for a spectrum supportability assessment as early as possible prior to the development or procurement of any spectrum-dependent equipment or system and fully address MCEB guidance and recommendations. Requests for spectrum supportability assessments shall include identification of those Host Nations into which deployment is likely or planned.

5.4.2.3. Not procure or purchase off-the-shelf or other non-developmental spectrum-dependent systems without first requesting spectrum supportability guidance from the MCEB, fully considering that guidance and making the determination required by paragraph 4.5.

5.4.2.4. Require that MDAs and or Component Acquisition Executives (CAEs) within their organizations obtain spectrum supportability when acquiring spectrum-dependent equipment or systems and promote use of innovative spectrum efficient technologies.

5.4.2.5. Provide a justification and plan to obtain spectrum supportability to the USD(AT&L), the ASD(NII), the DOT&E, and the Chair, MCEB, whenever a spectrum-dependent system that has not obtained spectrum supportability is authorized to proceed into the System Development and Demonstration Phase or into the Production and Deployment Phase under subparagraphs 4.5.1. or 4.5.2.

5.4.2.6. Obtain and address MCEB spectrum supportability guidance during the developmental and operational T&E of spectrum-dependent equipment and systems.

5.5. The Chairman of the Joint Chiefs of Staff and the MCEB shall:

5.5.1. Represent the interests of the Commanders of the Combatant Commands related to operational spectrum management matters in accordance with DoD Directive 5158.1 (reference (j)).

5.5.2. Recommend policies to the ASD(NII) and procedures in accordance with DoD Directive 5100.35 (reference (k)).

5.5.3. Provide, on behalf of the Commanders of the Combatant Commands, operational direction for spectrum management-related issues to the Commander, Joint Spectrum Center to include, but not be limited to spectrum databases, analytical tools, and operational-spectrum requirements.

5.6. The Secretaries of the Military Departments shall:

5.6.1. Implement spectrum management within their respective Military Departments in accordance with this and other applicable directives.


5.6.2. Provide members to the Interdepartment Radio Advisory Committee (IRAC) and its substructure, as defined in reference (d), to represent their respective departmental interests.

5.6.3. Provide, when requested or authorized by the ASD(NII)/DoD CIO, representation to U.S. delegations at non-IRAC national and/or international spectrum-related forums.

5.6.4. Ensure their respective Department's spectrum management interests are represented within the MCEB and its panels and working groups (reference (k)).

6. EFFECTIVE DATE

This Directive is effective immediately.



Paul Wolfowitz
Deputy Secretary of Defense

Enclosures - 2

- E1. References, continued
- E2. Definitions

E1. ENCLOSURE 1

REFERENCES, continued

- (e) [DoD Directive 5137.1](#), "Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (ASD(C3I))," February 12, 1992
- (f) [DoD Directive 3222.3](#), "Department of Defense Electromagnetic Compatibility Program (EMCP)," August 20, 1990
- (g) [DoD Directive 5000.1](#), "The Defense Acquisition System," May 12, 2003
- (h) [DoD Instruction 5000.2](#), "Operation of the Defense Acquisition System," May 12, 2003
- (i) [DoD Directive 5141.2](#), "Director of Operational Test and Evaluation (DOT&E)," May 25, 2000
- (j) [DoD Directive 5158.1](#), "Organization of the Joint Chiefs of Staff and Relationships with the Office of the Secretary of Defense," May 1, 1985
- (k) [DoD Directive 5100.35](#), "Military Communications-Electronics Board," March 10, 1998

E2. ENCLOSURE 2

DEFINITIONS

E2.1.1. Component Acquisition Executive (CAE). The individual responsible for overall acquisition management in his or her respective organization and their respective Component. The Secretaries of the Military Departments or the Heads of Agencies with authority to re-delegate are the CAEs for each of the Components.

E2.1.2. Electromagnetic Compatibility (EMC). The ability of systems, equipment, and devices that utilize the electromagnetic spectrum to operate in their intended operational environments without suffering unacceptable degradation or causing unintentional degradation because of electromagnetic radiation or response. It involves the application of sound electromagnetic spectrum management; system, equipment, and device design configuration that ensures interference-free operation; and clear concepts and doctrines that maximize operational effectiveness.

E2.1.3. Electromagnetic (EM) Environment (EME). The resulting product of the power and time distribution, in various frequency ranges, of the radiated or conducted electromagnetic emission levels that may be encountered by a military force, system, or platform when performing its assigned mission in its intended operational environment. It is the sum of electromagnetic interference, electromagnetic pulse, hazards of electromagnetic radiation to personnel, ordnance, and volatile materials, and natural phenomena effects of lightning and precipitation static.

E2.1.4. Electromagnetic Spectrum. The range of frequencies of EM radiation from zero to infinity. For the purposes of this Directive, "electromagnetic spectrum" shall be defined to be the range of frequencies of EM radiation that has been allocated for specified services under the U.S. and international tables of frequency allocation (reference (d)), together with the EM spectrum outside the allocated frequency range where use of unallocated frequencies could cause harmful interference with the operation of any services within the allocated frequency range. The terms "electromagnetic spectrum," "radio frequency spectrum," and "spectrum" shall be synonymous.

E2.1.5. Equipment Spectrum Certification. The statement(s) of adequacy received from authorities of sovereign nations after their review of the technical characteristics of a spectrum-dependent equipment or system regarding compliance with their national spectrum management policy, allocations, regulations, and technical standards. Equipment Spectrum Certification is alternately called "spectrum certification."²

E2.1.6. Host Nations (HNs). Those sovereign nations, including the United States, in which the Department of Defense plans or is likely to conduct military operations with the permission of that nation.

E2.1.7. Milestone Decision Authority (MDA). The designated individual responsible for an acquisition program. The MDA shall have the authority to approve the entry of an acquisition program into the next phase of the acquisition process and shall be accountable for cost, schedule, and performance reporting to higher authority, including Congressional reporting.

E2.1.8. Spectrum-Dependent Systems. Those electronic systems, subsystems, devices and/or equipment that depend on the use of the electromagnetic spectrum for the acquisition or acceptance, processing, storage, display, analysis, protection, disposition, and transfer of information.

E2.1.9. Spectrum Management. The planning, coordinating, and managing of the joint use of the electromagnetic spectrum through operational, engineering, and administrative procedures. The objective of spectrum management is to enable electronic systems to perform their functions in the intended environment without causing or suffering unacceptable interference.

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

E2.1.10. Spectrum Supportability. The assessment as to whether the electromagnetic spectrum necessary to support the operation of a spectrum-dependent equipment or system during its expected life cycle is, or will be, available (that is, from system development, through developmental and operational testing, to actual operation in the electromagnetic environment). The assessment of "spectrum supportability" requires, at a minimum, receipt of equipment spectrum certification, reasonable assurance of the availability of sufficient frequencies for operation from HNs, and a consideration of EMC.³

³ While an actual determination of spectrum supportability for a spectrum-dependent system within a particular country (i.e., Host Nation) may be possible based upon "spectrum supportability" (e.g., equipment spectrum certification) comments provided by that host nation, the overall determination of whether a spectrum-dependent system has spectrum supportability is the responsibility of the MDA based upon the totality of spectrum supportability comments returned from those host nations whose comments were solicited.