

# Kennedy NASA Procedural Requirements

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# KSC Radio Frequency Spectrum Management Procedural Requirements

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National Aeronautics and  
Space Administration

John F. Kennedy Space Center

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## Preface

### P.1 PURPOSE

This requirement implements the requirements of [NPD 2570.5, NASA Electromagnetic Spectrum Management](#), by assigning responsibilities and defining procedures pertaining to radio frequency spectrum management at the Kennedy Space Center (KSC).

### P.2 APPLICABILITY

- a. These procedural requirements apply to all NASA organizational elements under KSC jurisdiction, including associated contractors, tenants, transients, principal investigators, and visitors.
- b. In this directive, all mandatory actions (i.e., requirements) are denoted by statements containing the term “shall.” The terms: “may” or “can” denote discretionary privilege or permission, “should” denotes a good practice and is recommended, but not required, “will” denotes expected outcome, and “are/is” denotes descriptive material.
- c. In this directive, all document citations are assumed to be the latest version unless otherwise noted.

### P.3 AUTHORITY

[NPD 2570.5, NASA Electromagnetic Spectrum Management](#).

### P.4 APPLICABLE DOCUMENTS AND FORMS

- a. [Office of Management and Budget \(OMB\) Circular](#) – OMB Circular A-11, Preparation, Submission and Execution of the Budget (7/21/2010), Sections 33.4 and 33.5.
- b. National Telecommunications and Information Administration, U.S. Department of Commerce, [Manual of Regulations and Procedures for Federal Radio Frequency Management](#)
- c. [NPR 2570.1, NASA Radio Frequency \(RF\) Spectrum Management Manual](#)
- d. [KNPR 1860.2, KSC Nonionizing Radiation Protection Program](#)
- e. [KDP-KSC-P-1519, KSC Purchase Request Process](#)

### P.5 MEASUREMENT/VERIFICATION

None

**P.6 CANCELLATION/SUPERSESSION**

This revision supersedes KNPR 2570.1, Rev. A, KSC Radio Frequency Spectrum Management Procedural Requirements, dated February 18, 2009.

*/original signed by/*

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## **PROCEDURES**

### **Chapter 1. SPECTRUM MANAGER FUNCTIONAL RESPONSIBILITIES**

#### **1.1 Goal**

This requirement describes the Kennedy Space Center (KSC) radio frequency spectrum management program including responsibilities, Radio Frequency Authorization (RFA) procedures, and Radio Frequency Interference (RFI) reporting procedures. These provisions apply to all organizational and user elements under the jurisdiction or direction of NASA at KSC, the Cape Canaveral Air Force Station (CCAFS), Patrick Air Force Base (PAFB), and other offsite locations.

#### **1.2 Objective**

The use of all radio frequencies required at KSC or any other location/facility under the purview of KSC shall be authorized and controlled in accordance with the provisions of this directive.

#### **1.3 Heads of Organizations**

Heads of Primary Organizations are responsible for:

- a. Submitting all radio frequency authorization requests for use at KSC or any other location under the purview of KSC to the KSC Spectrum Manager.
- b. Complying with paragraphs 1(a) and 1(b) of [NPD 2570.5](#) when initiating action for either the development or procurement of communications electronic systems requiring the use of the radio frequency spectrum.
- c. Promptly reporting RFI in accordance with the procedures in Chapter 3 of this KNPR.
- d. Assuring compliance with this requirement in requesting and utilizing radio frequency assignments.

#### **1.4 KSC Spectrum Manager**

The KSC Spectrum Manager is the single point of contact responsible for:

- a. Coordinating spectrum usage with the Director of Safety and Mission Assurance; Director of Public Affairs; ISS Ground Processing and Research Project Office; Director of Launch Vehicle Processing; Manager of Launch Services Program Office; Director of Information Technology and Communications Services; Director of Ground Processing; Director of Engineering and Technology; and the Director of Center Operations.
- b. Monitoring and coordinating all activities pertaining to radio frequencies used at KSC and those NASA-KSC activities operating at the CCAFS, PAFB, and other offsite locations.
- c. Preparing, managing, and maintaining records pertaining to frequency assignment, allocation, utilization, and interference.

- d. Assigning call signs for NASA radio nets, as required.
- e. Coordinating and evaluating requests for NASA frequency authorizations at KSC, CCAFS, PAFB, and other offsite locations, and subsequently issuing authorization.
- f. Submitting radio frequency assignment requests to the appropriate national-level authority in accordance with current procedures.

### **1.5 Director of Center Operations**

The Director of Center Operations is responsible for assisting the Spectrum Manager in enforcement of the provisions of this KNPR by:

- a. Enforcing transmission restrictions which may be required to prevent RFI problems.
- b. Performing project reviews of proposed structures which may interfere with existing structures and equipment.
- c. Performing line-of-sight compatibility studies of proposed equipment/structures which may cause interference to existing emitters/receivers.
- d. Ensuring emitters do not present a danger to pyrotechnics or other electronic equipment from the standpoint of power, antenna pattern location, or lightning attraction.

### **1.6 Director of Engineering and Technology**

The Director of Engineering and Technology is responsible for providing technical assistance to the Spectrum Manager, as required, including electromagnetic compatibility analysis and RFI resolution.

### **1.7 Contracting Officers**

Contracting Officers are responsible for ensuring the affected contractors are apprised of, and comply with, the provisions of this KNPR.

## **Chapter 2. ADMINISTRATIVE PROVISIONS FOR RADIO FREQUENCY SPECTRUM MANAGEMENT**

### **2.1 RFA**

- a. A RFA shall be issued by the Spectrum Manager prior to the purchase of new, or operation of existing, communications or electronic equipment that intentionally radiates radio frequency signals. A RFA does not necessarily constitute authorization to transmit. Additional approval from the KSC Radiation Protection Officer, KSC Electromagnetic Environmental Effects Ground Operations Working Group, and other cognizant authorities may also be required.
- b. Cellular telephones, two-way pagers, cordless telephones, and Family Radio Service (FRS) radios are authorized as a class of stations. Although users do not have to request individual RFAs, there are restrictions on the use of these devices. See section 2.4 for details.
- c. Tenants who are not eligible to use Government Furnished Equipment (GFE) radio stations and wish to use their own FCC licensed devices shall obtain both a KSC RFA and an appropriate radio station license from the Federal Communications Commission prior to operating any transmitters at KSC.

### **2.2 RFA Requests**

RFAs are obtained by completing an online RFA Request form and submitting it to the Spectrum Manager. RFA Request forms are available on the [KSC Spectrum Management Web site](http://spectrum.ksc.nasa.gov) (<http://spectrum.ksc.nasa.gov>). Depending on the frequencies requested, RFAs can take up to several months to be approved. Consequently, requests shall be submitted as soon as requirements are known.

### **2.3 Procurement Authorization**

- a. It is NASA policy, in accordance with national policy, that pending assurance of the availability of the appropriate RF spectrum support, no funds shall be obligated for the research, development, or acquisition of components; for modification of major communications and electronics equipment or systems; or for the selection, procurement, and deployment of space or terrestrial radio stations and facilities when such items require RF spectrum support.
- b. Approved RF requirements shall be made a part of the specifications included with the procurement request or requisition. This policy was adopted to prevent the purchase of equipment that is not compatible with the existing frequency allocation.
- c. All purchase requests (including credit card purchases) of any radio frequency transmitting equipment for use at KSC and for KSC-responsible activities at offsite locations by Civil Service or contractor personnel shall be approved by the KSC Spectrum Manager prior to submission to the applicable procurement office.

## 2.4 Use of FCC Licensed Devices

a. In the United States, the National Telecommunications and Information Administration (NTIA) manages the Federal Government's use of the radio frequency spectrum while the Federal Communications Commission (FCC) manages all other uses. To allow the two agencies to effectively manage the spectrum for their respective users, there are specific frequency allocations for Federal use and non-Federal use. All radio stations operated by or for the Federal Government receive frequency assignments from the NTIA and shall operate in the portions of the spectrum that are allocated for Federal Government use. Radio stations not operated by or for the Federal Government receive operating licenses issued by the FCC for frequencies in the non-Government spectrum allocations. FCC licensed devices may be used at KSC subject to the following restrictions:

- (1) Because they are employees of the Federal Government, civil service personnel may not normally utilize devices that operate in the non-Government spectrum in the performance of their official duties. Exceptions can be made when it is necessary for Government and non-Government users to communicate on the same frequency.
- (2) Equipment purchased with Government funds, either outright or GFE, is considered to be a Government Radio Station and shall not be operated on frequencies within non-Government (i.e., FCC) spectrum allocations unless a RFA has been issued for that purpose.
- (3) When the use of FCC licensed devices is permitted, the user shall possess a valid FCC license and receive a RFA from the Spectrum Manager prior to using the devices.
- (4) Users who violate FCC Rules and Regulations shall lose their privilege to operate at KSC.
- (5) The devices shall not cause interference to NASA's official use communications systems. If interference occurs, use of the devices must be discontinued until the cause of the interference is resolved.
- (6) Resolution of RFI caused to an FCC licensed device is the responsibility of the user.

b. Contractors who are not eligible to use GFE radio stations and wish to use their own FCC licensed devices shall request RFAs through the cognizant contracting officer. All FCC licensed devices must be retained by the contractor when the contract is terminated.

c. Use of FCC-licensed devices by the broadcast media and film/video production companies requires a RFA.

d. Use of hand-held and mobile voice communications equipment by private individuals who hold a valid FCC license in the Amateur Radio Service, Citizen's Radio Service, or General Mobile Radio Service does not require a RFA. The use of fixed stations does require a RFA.

e. Use of equipment in the FRS or the Multi-Use Radio Service is permitted in accordance with FCC regulations.

- f. FCC licensed devices may not be used to perform activities that normally would be required to take place on Government frequencies.
- g. Operation of Public Mobile Radio Services (cellular, paging, etc.) base transmitters at KSC requires a RFA.
- h. The use of devices that retransmit cell phone signals (“boosters” or “repeaters”) is prohibited.

## **2.5 Use of Nonlicensed Devices**

- a. Use of nonlicensed devices (also known as “Part 15” devices) at KSC, including wireless local area networks and wireless microphones, is permitted, provided that the devices meet the requirements of Part 15 of the FCC Rules and Regulations ([47 CFR 15](#)) and Annex K of the NTIA Manual.
- b. Part 15 devices (exclusive of institutional wireless networks) must be registered on the KSC Spectrum Management web site.
- c. All Part 15 devices to be operated by organizational and user elements under the jurisdiction or direction of NASA at the Cape Canaveral Air Force Station require a RFA. To protect Range radars, 802.11 a/h/j wireless access points being operated at CCAFS shall be configured to operate no higher than channel 64.
- d. Operation of nonlicensed devices is on a noninterference basis to authorized users. Upon notification by spectrum management personnel that the device is causing interference, the operator of the nonlicensed device shall cease all radiations from the device until the interference is eliminated.
- e. Nonlicensed devices will not receive protection from harmful interference from other users. These devices must accept any interference from an authorized Federal or non-Federal radio system, other nonlicensed device, or industrial, scientific, or medical (“ISM”) equipment.

## **2.6 KSC Spectrum Management Web Site**

The [KSC Radio Frequency Spectrum Management Web site](#) provides information about KSC spectrum management procedures, online RFA request forms, and answers to frequently asked questions. The site can be accessed at: <http://spectrum.ksc.nasa.gov>.

### Chapter 3. REPORTING RFI

The probability of radio frequency interference increases as more and more demands for frequency channels are placed on the RF spectrum. To meet these demands and to optimize the use of the spectrum, the space between channels is reduced as new communication equipment is developed; the same frequencies are often shared by users separated geographically; or the same frequencies may be assigned to two or more users on a time-share basis. Because of this, some interference must be expected and tolerated since clear channels are rarely available. If interference is so severe it cannot be tolerated, the frequency user shall take the following action:

- a. Immediately report the interference to the KSC Spectrum Manager (321-867-2520).
- b. Promptly document the interference including date, time, and location.
- c. Thoroughly check the affected equipment to ensure the RFI is not being generated internally or onsite and the equipment is operating properly.
- d. If possible, identify the source of the interference by call sign or other identification.
- e. Determine the frequency being affected by the interference.
- f. Determine the type of emission and the type of traffic being transmitted.
- g. Measure the bandwidth (highest and lowest frequencies) and signal strength of the interfering signal and note the type of equipment used for measurement.
- h. Determine the severity of the interference. Note the impact to operations, including the data loss or data degradation due to interference.
- i. Obtain any additional information that may be useful in identifying and clearing the interference (e.g., audio recordings or spectrum analyzer screen captures).

## **APPENDIX A. DEFINITIONS**

**Frequency Allocation:** A specific portion of the radio frequency spectrum set aside for use by a particular radio service.

**Frequency Assignment:** The authorization for the use of a particular frequency for either Government or non-Government operations.

**Industrial, scientific, and medical (ISM) equipment:** Equipment or appliances designed to generate and use locally RF energy for industrial, scientific, medical, domestic or similar purposes, excluding applications in the field of telecommunication.

**Radio Frequency Authorization (RFA):** The authorization for use of specific radio equipment on assigned frequencies.

**Spectrum Management:** This term includes, but is not limited to, the following:

- a. Consultation with potential RF system users prior to procurement of new equipment so equipment purchased will operate in the appropriate portion of the radio spectrum.
- b. Coordination of frequency usage.
- c. Allocation of frequencies.
- d. Assignment of frequencies.
- e. Efficient use of the radio frequency spectrum.
- f. Reducing radio frequency interference (RFI).