

# Kennedy NASA Procedural Requirements

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**Responsible Office:** Information Technology and Communications Services

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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 \(EM\) Spectrum Management](#), by assigning responsibilities and defining procedures pertaining to radio frequency spectrum management at the Kennedy Space Center (KSC).

### **P.2 APPLICABILITY**

These procedural requirements apply to all NASA organizational elements under KSC jurisdiction, including associated contractors, tenants, transients, principal investigators, and visitors.

### **P.3 AUTHORITY**

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

### **P.4 APPLICABLE DOCUMENTS**

- a. [KNPR 1860.2, KSC Nonionizing Radiation Protection Program](#)
- b. [KDP-KSC-P-1519, Purchase Request Process](#)
- c. National Telecommunications and Information Administration, U.S. Department of Commerce, "Manual of Regulations and Procedures for Federal Radio Frequency Management"
- d. [NPD 2570.5, NASA Electromagnetic \(EM\) Spectrum Management](#)
- e. [NPR 2570.1, NASA Radio Frequency \(RF\) Spectrum Management Manual](#)
- f. Office of Management and Budget (OMB) Circular No. A-11, Sections 33.4 and 33.5.

### **P.5 CANCELLATION/SUPERSESION**

This revision supersedes KNPR 2570.1, Rev. Basic, KSC Radio Frequency Spectrum Management.

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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 procedures, and radio frequency interference 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 paragraph 1(a) 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. Notifying the Spectrum Manager of previously authorized FCC radio frequencies prior to usage at KSC or any other location under the purview of KSC and withholding usage until approved by the KSC Spectrum Manager and until local authority has been issued.
- d. Promptly reporting RFI in accordance with the procedures in Section 5 of this KNPR.
- e. 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 External Relations; Director of ISS and Spacecraft Processing; Director of Launch Vehicle Processing; Manager of Launch Services Program Office; Director of Information Technology and Communications Services; Director of Engineering; 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 radio frequency interference problems.
- b. Performing project reviews of proposed structures which may interfere with existing structures and equipment.
- c. Performing RFI line-of-sight compatibility studies of proposed equipment/structures which may cause interference to existing emitters/receivers.
- d. Coordinating with the Spectrum Manager on all matters regarding user's compliance with the provisions of [KNPR 1860.2](#) prior to issuance of Radio Frequency Authorizations.
- e. 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 Manager of Launch Services Program Office**

The Manager of Launch Services Program Office 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 Radio Frequency Authorization (RFA)**

- a. A Radio Frequency Authorization (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 and other cognizant authorities may also be required.
- b. Cellular telephones, two-way pagers, cordless telephones, Family Radio Service (FRS) radios, and FCC Part 15 devices 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 and 2.5 for details.

### **2.2 Radio Frequency Authorization 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>). 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 RFA 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 RFA spectrum support. Approved RFA 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.
- b. 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. All other users receive operating licenses issued

by the FCC for frequencies in the non-Government spectrum allocations. Non-Government users (contractors, private individuals, etc.) may use FCC licensed devices 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 Government Furnished Equipment (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 shall 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 shall 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 shall request RFAs through the cognizant contracting officer. All FCC licensed devices shall 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 and all nonvoice communications equipment (radio control, data transmission, etc.) 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. Operation of Public Mobile Radio Services (cellular, paging, etc.) base transmitters at KSC requires a RFA.

## **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. 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.
- c. Operation of nonlicensed devices is on a noninterference basis (NIB) 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.
- d. 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. In the event that a nonlicensed device experiences harmful interference, the user shall resolve the problem administratively.

## **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 RADIO FREQUENCY INTERFERENCE**

The probability of radio frequency interference increases as more and more demands for frequency channels (assignments) are placed on the RFI spectrum. In an attempt 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 even tolerated) since clear channels are rarely available within the overcrowded frequency spectrum. If interference is so severe it cannot be tolerated, the frequency user shall take the following action:

- a. Immediately report the interference to KSC Frequency Control and Analysis (321-867-3192). During nonduty hours, contact the Patrick Air Force Base Command Post (321-494-7001).
- 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 of the interfering signal (highest and lowest frequencies) and note the type of equipment used for measurement.
- h. Measure the interference signal strength with a high quality field strength meter, if available.
- i. Determine the severity of the interference. Note the impact to operations, including the data loss or data degradation due to interference.
- j. 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**

A.1 Frequency Allocation: A specific portion of the radio frequency spectrum set aside for use by a particular radio service.

A.2 Frequency Assignment: The authorization for the use of a particular frequency for either Government or non-Government operations.

A.3 Radio Frequency Authorization (RFA): The authorization for use of specific radio equipment on assigned frequencies.

A.4 Spectrum Management: For the purpose of this directive, this term includes, but is not limited to, the following:

1. 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.
2. Coordination of frequency usage.
3. Allocation of frequencies.
4. Assignment of frequencies.
5. Efficient use of the radio frequency spectrum.
6. Reducing radio frequency interference (RFI).