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## **CONTENTS**

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<b>1.0</b>	<b>INTRODUCTION .....</b>	<b>1</b>
<b>2.0</b>	<b>BASICS OF RADIO COMMUNICATIONS .....</b>	<b>2</b>
<b>3.0</b>	<b>RADIO COMMUNICATIONS APPLICATIONS OR USES .....</b>	<b>4</b>
3.1	User Mobility .....	4
3.2	Emergency Response .....	4
3.3	Remote Inspection, Monitoring, and Measurement .....	5
3.4	Real-Time Location Tracking .....	5
3.5	Wiring Elimination and Backup.....	5
<b>4.0</b>	<b>PLANNING FOR AND DETERMINING RADIO COMMUNICATIONS REQUIREMENTS .....</b>	<b>6</b>
<b>5.0</b>	<b>OBTAINING RADIO FREQUENCY ASSIGNMENTS .....</b>	<b>8</b>
5.1	Requirements .....	8
5.2	Procedures.....	8
<b>6.0</b>	<b>ACQUIRING RADIO COMMUNICATIONS EQUIPMENT .....</b>	<b>11</b>
	<b>GLOSSARY .....</b>	<b>G-1</b>
	<b>NDPD RADIO FREQUENCY ASSIGNMENT REQUEST (RFAR)</b>	

## **1.0 INTRODUCTION**

**Radio communications plays an extremely important role in the overall mission of the U.S. Environmental Protection Agency (EPA). Program offices rely upon radio communications systems to support many daily recurring administrative, maintenance, security, and operational functions that require rapid, two-way communications. Even more critical are the radio communications requirements supporting EPA's emergency response and environmental monitoring/survey responsibilities. These extremely important functions are performed by individuals and teams, often operating in remote field sites or disaster areas where access to fixed landline communications may be limited or, in worst-case scenarios, non-existent.**

**This guide has been developed to assist EPA programs nationwide in establishing initial radio communications capabilities or to improve an existing radio communications capability. It provides general background information on radio communications technologies, possible EPA uses or applications, and essential planning considerations. More importantly, this guide establishes the procedures that must be followed in order to obtain authorized radio frequency assignments as well as radio communications planning and technical support.**

**The Telecommunications Branch (TCB) of the National Data Processing Division (NDPD) manages and oversees Agency radio communications for the benefit of all EPA personnel nationwide. NDPD/TCB's Radio Frequency Management (RFM) staff provides, at no cost to the EPA user, expert advice and assistance in obtaining authorized radio frequencies required for any EPA radio system. Technical advice and assistance in planning and acquiring communications systems is also available on a limited no-cost basis. In addition, major communications systems planning, design, and engineering assistance may be obtained at cost on a case-by-case basis through NDPD's Telecommunications Services Contract.**

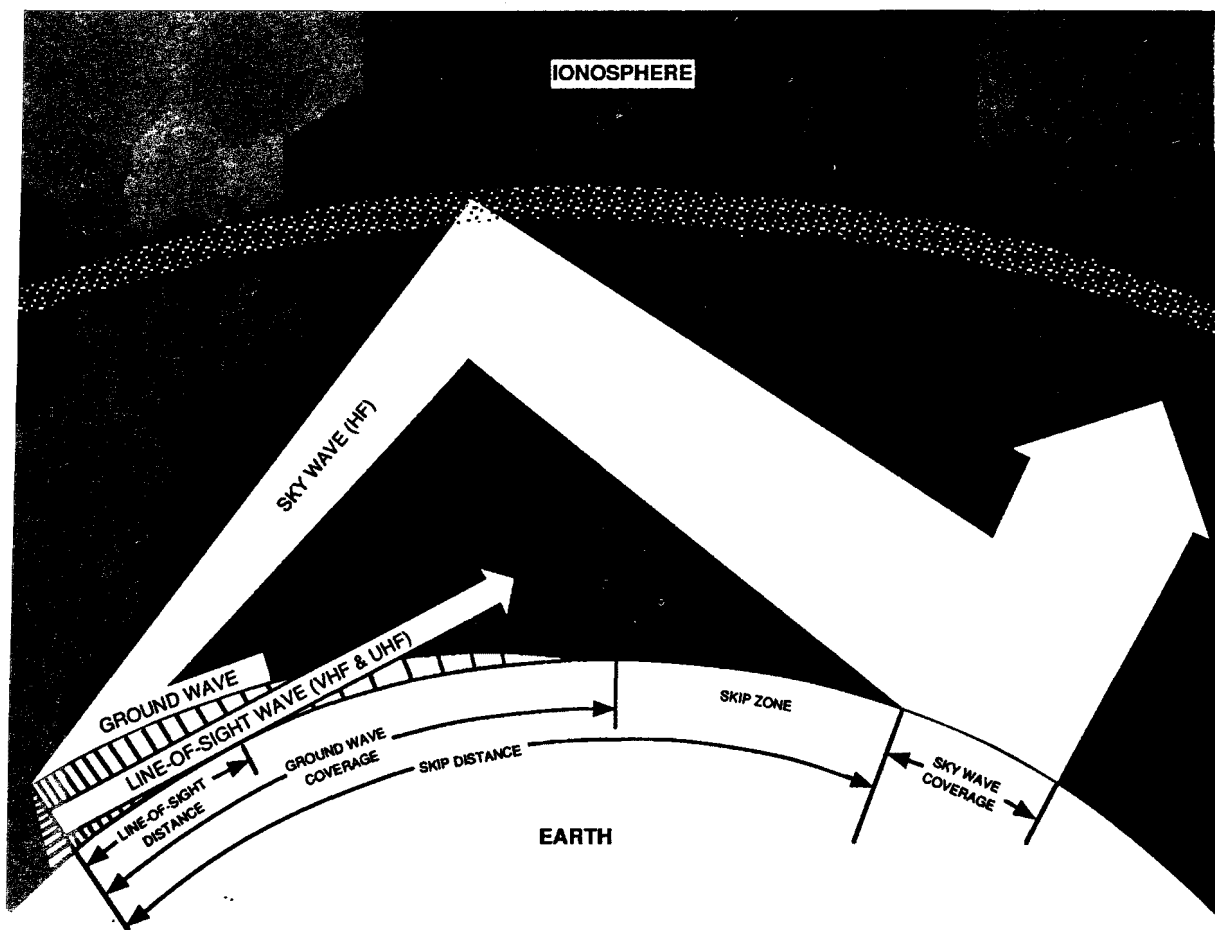
**All normal contract costs associated with the acquisition, installation, operation, and maintenance of radio communications equipment are paid by individual programs from their own fund sources. It is important to note that radio frequency assignments must be obtained from the National Telecommunications and Information Administration (NTIA), Department of Commerce, through NDPD/TCB's RFM staff, prior to procuring or operating any radio equipment or system as specified in this guide.**

**Any EPA personnel involved in the planning, operation, or acquisition of radio communications systems and radio frequencies should read and become familiar with this guide. It is particularly important for contracting officers to understand the Government radio frequency restrictions prior to committing any Government funds. Please address any recommendations or suggestions to improve this guide, as well as overall questions and concerns, to the EPA RFM Program Analyst (a contractor) at (202) 260-8365. EPA RFM activities are performed in accordance with NDPD Operational Policy 300.12, EPA Radio Frequency Management, and the NTIA Manual of Regulations and Procedures for Federal Radio Frequency Management.**

## 2.0 BASICS OF RADIO COMMUNICATIONS

Radio communications involves the transmission of voice, data, or other signals over the air by means of radio waves, rather than by copper wires or optical fibers. These electromagnetic waves, or radio waves, as they are commonly called, are classified according to the frequency at which they radiate from an antenna. Traveling at the speed of light (186,000 miles per second), these waves may travel only short distances via the line-of-sight wave or longer via a ground wave. A radio signal may also travel hundreds or even thousands of miles with sky waves that are reflected back to earth from the ionosphere. The distance a radio signal will travel, or its propagation, depends upon many factors, such as radio transmitter power, antenna type and size, and transmitting frequency.

### RADIO WAVE PROPAGATION

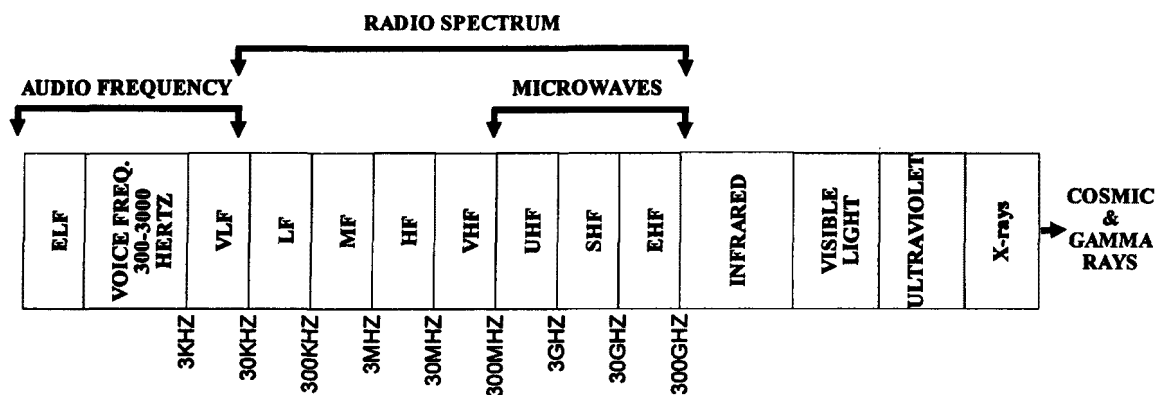




For example, amateur radio operators and commercial AM (amplitude modulated) broadcast radio stations operating in the Medium Frequency (MF) and High Frequency (HF) radio spectrum bands employ high-power transmitters and relatively large antenna systems, and they routinely communicate hundreds or even thousands of miles. Conversely, commercial FM (frequency modulated) broadcast radio and television stations operating in the Very High Frequency (VHF) band are usually limited to operating ranges of less than 50 kilometers because of their line-of-sight waves. Satellites provide the greatest communications capability, and they operate in the Ultra High Frequency (UHF), Super High Frequency (SHF), and Extremely High Frequency (EHF) bands. Propagation of radio signals through satellite networks is somewhat different than other terrestrial systems; thus, some of the general limitations or characteristics discussed may not always apply.

Although EPA radio communications requirements may fall into any of the above categories, the majority of requirements are for low power and short ranges (between 1 and 25 kilometers). More specifically, many requirements are for very short distances, such as within and immediately between office buildings. These portable systems will normally operate at less than 5 watts of power in the VHF and UHF bands of the radio frequency spectrum. The ranges are 30 MHz to 300 MHz and 300 MHz to 3000 MHz, respectively. The Federal Government allocates certain portions of these two bands for specific uses. As an example, Government allocations for Land Mobile Radio (LMR) in the VHF band fall in the range between 162 MHz and 174 MHz. UHF allocations for Government LMR are between 406.1 MHz and 420 MHz. The electromagnetic spectrum shown below illustrates the frequency bands currently utilized for radio communications.

## **THE ELECTROMAGNETIC SPECTRUM**



<b>VLF:</b>	<b>VERY LOW FREQUENCY</b>
<b>LF:</b>	<b>LOW FREQUENCY</b>
<b>MF:</b>	<b>MEDIUM FREQUENCY</b>
<b>HF:</b>	<b>HIGH FREQUENCY</b>
<b>VHF:</b>	<b>VERY HIGH FREQUENCY</b>
<b>UHF:</b>	<b>ULTRA HIGH FREQUENCY</b>
<b>SHF:</b>	<b>SUPER HIGH FREQUENCY</b>
<b>EHF:</b>	<b>EXTREMELY HIGH FREQUENCY</b>

### **3.0 RADIO COMMUNICATIONS APPLICATIONS OR USES**

**Radio communications, as a family of technologies, could have many applications at EPA. Mobility is most often associated with radio communications. This application, as well as others that can be considered, are discussed in the following sections.**

#### **3.1 User Mobility**

- ❑ **Land Mobile Radio:** Vehicular mobile and hand-held portable two-way voice radios operating in the HF/VHF/UHF frequency bands. Includes base stations to control radio nets as well as radio repeaters and amplifiers to extend operating ranges.
- ❑ **Marine Transportable Radio:** Two-way ship-to-ship and ship-to-shore communications and navigational systems.
- ❑ **Air/Ground/Air Radio:** Communications to and from Agency-owned and leased aircraft.
- ❑ **Satellite:** Portable suitcase-sized satellite terminals as well as shipboard satellite earth stations. Reliable long-range communications, including data capability. International Marine Satellite (INMARSAT) and Very Small Aperture Terminals (VSAT).
- ❑ **Cellular Telephony:** Vehicular and hand-held telephones and facsimile provide tremendous mobility. These "network services" are provided by private carriers/vendors utilizing network radio frequencies obtained from the Federal Communications Commission (FCC) and are not "user owned". The emerging "Personal Communications System/Network" technology utilizing the cellular concept may also have applications within EPA. This application is still in its infancy; therefore, policy and radio frequency requirements are not firmly established. However, services will likely be provided under a "network" concept.

#### **3.2 Emergency Response**

**Quick, flexible response to environmental emergencies over a wide geographic area.** On-site communications within the local area, as well as longer range communications through HF systems, are established. Coordination with local, state, and Federal agencies, such as the Federal Emergency Management Agency (FEMA), is essential. Sharing of radio frequencies and radio nets may be accomplished through Memoranda of Understanding (MOUs) and established Federal programs such as the HF Radio SHARED RESources (SHARES) Program.

### **3.3 Remote Inspection, Monitoring, and Measurement**

Day-to-day environmental research, mapping, monitoring, investigation, and assessment in the field. Radio communications systems must support field operations in all EPA environmental jurisdictions—land, air, lakes, rivers, estuaries, and near coastal waters. Telemetric devices (unattended sensor and radio transmitters) take measurements such as toxin levels and temperatures and transmit them back to a base station.

### **3.4 Real-Time Location Tracking**

Radio location systems can provide pinpoint real-time tracking of the latitude, longitude, and movement of people, vehicles, or any other object to which a specialized radio receiver can be attached. Signals from multiple satellites are used to calculate precise position and direction.

### **3.5 Wiring Elimination and Backup**

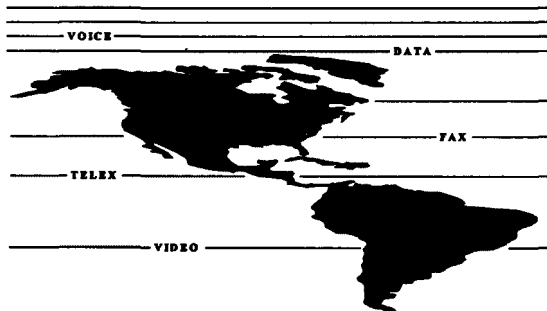
- ❑ Radio communications systems may be appropriate substitutes or supplements to existing wired, terrestrial communications networks in cases where wireline connections are unavailable, inadequate, or too expensive.
- ❑ Radio communications can function as redundant, backup links to ensure continued communications availability when wireline connections are impaired or out of service.

**NOTE:** Cellular telephones and radio paging services are radio communications applications; however, these “network services” are normally obtained without specific user-assigned frequencies. In most cases, radio frequency applications to NTIA are not required for these systems. However, some paging services that are “user-owned and operated” will require NTIA-assigned frequencies. If users are unsure as to requirements, they should consult the NDPD/TCB RFM Analyst.

## 4.0 PLANNING FOR AND DETERMINING RADIO COMMUNICATIONS REQUIREMENTS

Initial planning and needs analysis are done considering the following:

### SERVICE TYPE



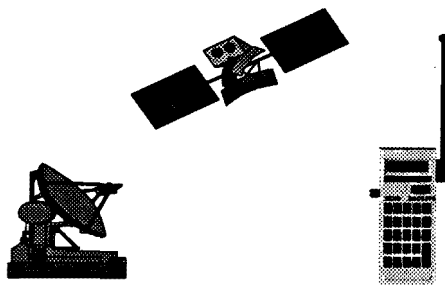
What type of traffic will be transmitted (e.g., two-way voice, data, facsimile, graphics/imaging, video)?

What type of connections will be established (e.g., point-to-point, simplex, duplex, broadcast)?

What frequencies will be required (e.g., HF, VHF, UHF, SHF)?

Will coded squelch techniques be employed to reduce unwanted radio traffic and noise?

### EQUIPMENT FUNCTION



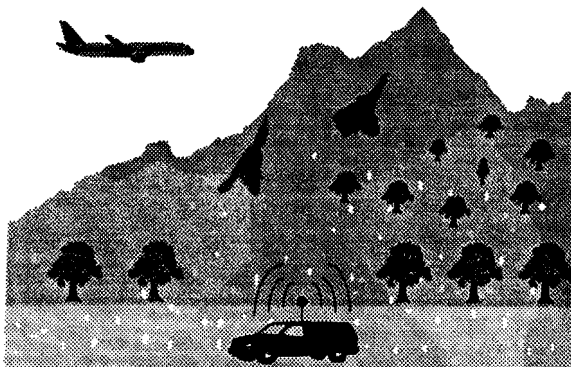
What radio system components will the program office have to acquire and operate (e.g., end terminals, base stations, repeaters, amplifiers)?

Will connectivity to wireline local or wide area networks be required?

Will wireless links be used to back up or supplement wireline networks?

Will users be mobile or stationary?

### FIELD OPERATING ENVIRONMENT



If users are mobile, what is their geographic range of operations (e.g., within a single building or group of buildings, metropolitan, intrastate, interstate)?

If users are mobile, what means of transportation will they use (e.g., on foot, vehicle, ship, airplane)? How many mobiles or portables?

Will unattended radio transmitter/receivers be installed in a remote site for an extended period (e.g., for telemetric data collection, meteorological monitoring)?



**Planning should also address the following considerations:**

- ❑ Will radio communications enhance operations and efficiency?
- ❑ Will an existing capability within the organization satisfy the requirement?
- ❑ Is there a communications capability in a related program within another Federal, state, or local agency that could be shared through a Memorandum of Understanding that would negate this requirement?
- ❑ Who will be designated the program's principal and alternate Radio Communications Contact (RCC)?
- ❑ When is the radio capability required? Radio frequencies are engineered for each application, and assignments can take anywhere from 3 to 12 months. Is the need immediate?

Initial requirements should be discussed with a radio communications vendor to obtain specific information on capabilities and costs associated with your communications requirements. Concurrently, it is suggested that the NDPD/TCB RFM Analyst be advised of your tentative plans. The RFM Analyst can assist you in your initial planning, make suggestions on types of equipment you should acquire, suggest vendors, and most importantly, ensure that you understand the radio frequency application procedures.

## **5.0 OBTAINING RADIO FREQUENCY ASSIGNMENTS**

**This section explains the procedures that must be followed in order to obtain an authorized assignment as established in NDPD Operational Policies Manual No. 300.12 and discusses some of the conditions and restrictions that apply to these assignments.**

### **5.1 Requirements**

**It should be emphasized that radio frequency assignments must be obtained prior to acquiring radio communications equipment. These frequencies—usually expressed in thousands or millions of cycles per second (otherwise known as KiloHertz and MegaHertz)—are the channels over which users are authorized to transmit and receive communications.**

NDPD/TCB staff is responsible for submitting authorized radio frequency assignment applications for all EPA programs to NTIA, Department of Commerce, which manages and polices all Federal use of the radio frequency spectrum. The NTIA establishes Federal agency requirements and application procedures and disseminates this information through the NTIA Manual of Regulations and Procedures for Federal Radio Frequency Management. All Federal radio frequency assignments are listed in the NTIA Government Master File (GMF), which is updated monthly. The NDPD/TCB RFM Analyst also maintains an NDPD/TCB-developed database called the Radio Frequency Management Tracking System (RFMTS). EPA-pertinent GMF data is reconciled with the RFMTS on a monthly basis.

**It is important to note that only NTIA can make radio frequency assignments to Federal users. The FCC manages the radio frequency spectrum only for non-Government U.S. commercial organizations. However, radio call signs for Federal users are provided by the FCC through the NTIA. Government-allocated frequency bands may be different from those allocated by the FCC; therefore, radio equipment purchased by EPA programs must be tunable to Government-allocated frequency bands.**

### **5.2 Procedures**

**STEP 1: Submit the radio frequency assignment request in a standard EPA memorandum format under the signature of the cognizant EPA program manager at that particular location, with a copy provided to the program Senior Information Resources Management official (SIRMO). The request memorandum should state the basic requirement, who will use the equipment and how, and a brief statement as to the program benefits derived from using radio communications.**

**The following attachments must be included with the memorandum:**

- **A completed Radio Frequency Assignment Request (RFAR)  
(a blank NDPD RFAR is included at the end of this document)**

- A drawing/sketch showing the desired network configuration
- Specifications for each model of radio communications equipment to be acquired (manufacturers' brochures are recommended)

Please mail the memorandum and attachments to the following NDPD official:

**Deputy Chief, Telecommunications Branch (PM-211T)  
U.S. EPA Washington Telecommunications Center  
401 M Street, SW  
Washington, DC 20460**

**STEP 2:** The NDPD RFM Analyst acknowledges receipt of the memorandum and attachments in a telephone call to the submitting program Radio Communications Contact (RCC). In that call, the Analyst will review the documents with the program RCC. The NDPD RFM Analyst will then prepare a radio frequency assignment application request and letter in accordance with the NTIA Manual. This application will be entered in the Radio Frequency Management Tracking System (RFMTS).

**STEP 3:** The NDPD RFM Analyst obtains approval and signature of the NDPD Deputy Chief, Telecommunications Branch, and submits the radio frequency application request to NTIA. The RFM Analyst will coordinate any follow-up actions, if required by NTIA frequency engineers, and provide status updates to the program RCC. The program RCC may also contact the RFM Analyst to determine the status of a frequency assignment application as desired. Note that assignments will usually take three to six months, with some special requirements taking even longer.

**STEP 4:** NTIA notifies the NDPD RFM Analyst of its decision regarding the radio frequency assignment application. Formal NTIA correspondence, including an extract of the pertinent GMF entry, is provided to NDPD/TCB within several weeks of the initial notification.

**STEP 5:** The NDPD RFM Analyst will notify the requester by phone of NTIA's decision on the frequency assignment application. In this call, the Analyst will discuss operating restrictions on the assignment. A follow-up confirmation memorandum, including copies of assignment file documents, will be sent to the RCC under the signature of the Deputy Chief, Telecommunications Branch. RCCs should keep this documentation on file at all times, since it represents the official license to operate on assigned frequencies.

**NOTE:** Procedures for obtaining satellite frequency access are different from those addressed here. Specific requirements for Government operations are outlined in the NTIA Manual of Regulations and Procedures for Federal Radio Frequency Management. The NDPD/TCB RFM Analyst can provide guidance as required for these requirements. Satellite terminals are expensive, and justification by EPA programs for such equipment must be detailed and thorough.

These are some of the operating restrictions and conditions associated with radio frequency assignments:

**ANTENNAS**

Antennas must radiate only on assigned frequencies.

Assignments specify the allowable number, locations, dimensions, orientations, polarizations, and spectral power densities of the associated antennas.

**FREQUENCY  
USAGE**

On two-way, mobile radio frequencies, users may be required to identify themselves with short, alphanumeric "call signs" articulated in the phonetic alphabet (ALPHA, BRAVO, CHARLIE).

Restrictions on operating hours and geographic coverage must be observed.

Restrictions on traffic types (e.g., public safety, navigation) that may be transmitted must be observed.

Restrictions on frequency usage, except in emergencies when no other means of communication is available, must be observed.

**INTERAGENCY  
COORDINATION**

Shared frequencies will require interagency coordination via written agreement prior to usage, if long term.

**FIVE-YEAR  
REVIEWS**

Permanent assignments made by NTIA are subject to periodic reviews. These reviews are mandatory and must be conducted as directed by NTIA, normally at five-year intervals.

## **6.0 ACQUIRING RADIO COMMUNICATIONS EQUIPMENT**

**After a radio frequency assignment has been obtained from NDPD, procurement of radio communications equipment may be initiated. Procurements should not, under any circumstances, be enacted prior to confirmation by EPA RFM staff of the NTIA frequency assignment. This requirement is clearly stated in NDPD Operational Policies Manual No. 300.12.**

Radio equipment specifications are submitted through the appropriate EPA Contracting Officer. Contracting Officers must ensure that appropriate frequency assignments have been obtained and SIRMO coordination has been completed. NDPD/TCB staff approval of Purchase Requests (PRs) for any radio communications equipment must also be obtained. This approval will ensure that not only have authorized radio frequency authorizations been obtained, but that the radio equipment will meet EPA interoperability and user needs. **A possible consequence of acquiring radio equipment that will not tune to authorized Government-allocated radio frequency bands is inability to operate the equipment because of FCC restrictions.** Requests for approval of equipment purchases should be sent to NDPD/TCB at the address given previously for radio frequency requests.

**Programs should make no commitments to radio equipment vendors prior to approval of radio frequency assignments.** Vendors may be consulted during the planning phase. However, any dialogue should be non-binding or contingent upon obtaining authorized frequencies. Note that vendors are not authorized to obtain and sell Government users radio frequencies that can be used with their equipment. Exceptions are cellular services which do not utilize "user-owned" radio frequencies. Please note that any contract written for the purchase of radio communications equipment should specify that operation in radio frequency bands allocated for Government use is mandatory. This statement will serve as a reminder to the contracts office that Government radio frequency assignments must be obtained, and it can prevent possible vendor misunderstandings.

The NDPD RFM Analyst can assist you in developing radio communications equipment specifications to be used in the acquisition process. Generally, information contained in the RFAR will be used in developing equipment specifications.

**Equipment procurements should begin well in advance of the required operation date.** As stated previously in this document, radio frequency approvals require three to six months to complete. In some cases approvals may take even longer, depending upon the type of frequency requested and the type of equipment required. Last-minute, end-of-fiscal-year procurements are at risk, if funding cannot be carried to the following year.

Implementation of radio communications systems is generally the responsibility of program RCCs through the appropriate vendor. However, guidance and vendor coordination assistance is available from the EPA RFM staff, if required.

**RCCs have the following ongoing responsibilities for operational coordination with EPA RFM staff:**

- ❑ **Report any changes in equipment number, ownership, functions, geographic coverage, program usage, and any shared frequency use with the Federal, state, or local entities to RFM staff for review and approval.**
- ❑ **Assist RFM staff in updating a current, Agency-wide inventory of all radio communications equipment and frequency assignments.**
- ❑ **Notify RFM staff of changes in EPA program interagency Memorandum of Understanding (MOU).**
- ❑ **Report and provide copies of any newly implemented MOUs for radio communications shared access to frequencies, networks, and/or equipment.**
- ❑ **Report any joint Federal/state interagency program mission participation to ensure appropriate interference resolution actions are taken if required.**

**THE NDPD/TCB RFM STAFF IS ALWAYS AVAILABLE TO ASSIST YOU!**

- ❑ **Telephone      FTS (202) 260-8365  
                         Leave a voice mail message if required**
- ❑ **Email            All-in-1 message to:  
                         "TCBRFM.ANALYST"**
- ❑ **Letter             RFM Staff (PM-211T)  
                         U.S. EPA Washington Telecommunications Center  
                         401 M Street, SW  
                         Washington, DC 20460**
- ❑ **Facsimile        FTS (202) 260-7869**



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## **GLOSSARY**

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**ALLOCATION** (of a radio frequency) - The designation of a particular band of frequencies for use by a particular radio communications service, such as non-Government Aeronautical Radionavigation or Government Land Mobile Radio (LMR). This designation provides only the range within which a specific frequency assignment may then be made.

**AMPLIFIER** - A device that increases the strength of the input signals.

**AMPLITUDE MODULATION (AM)** - A process in which the amplitude (height) of the radio carrier wave is varied above and below its normal value in accordance with the intelligence being transmitted.

**ANTENNA** - A device used to radiate or receive electromagnetic waves.

**ASSIGNMENT** (of a radio frequency) - Authorization for an Agency or station to use a specific radio frequency at a specific location or area under other specified conditions.

**BASE STATION** - A fixed radio station which normally controls other mobile and portable radios in a radio net.

**CELLULAR COMMUNICATIONS** - A mobile radio technology which divides the local calling area into a network of "cells," each having a separate radio frequency. Users passing through the network are automatically handed off to adjacent "cells" at appropriate times by a computerized switch.

**DUPLEX OPERATION** - Operating method in which transmission is possible simultaneously in both directions of a telecommunications circuit.

**ELECTROMAGNETIC WAVE** - Any wave associated with the transmission of electromagnetic energy, including radio waves, heat waves, light waves, x-rays, etc., depending upon the frequency.

**FEDERAL COMMUNICATIONS COMMISSION (FCC)** - The regulatory agency that provides radio frequency assignments to commercial/non-Federal users in the United States.

**FREQUENCY MODULATION (FM)** - The process of varying the frequency of the radio carrier wave in order to convey intelligence.

**GOVERNMENT MASTER FILE (GMF)** - A complete listing of all Federal radio frequency assignments maintained by the NTIA.

**HIGH FREQUENCY** - The band of radio frequencies in the electromagnetic spectrum from 3 MHz to 30 MHz. Normally associated with longer distance radio communications than other two-way radios operating in the VHF/UHF bands.

**IONOSPHERE** - An outer belt of the earth's atmosphere (approximately 60 kilometers from the earth's surface) comprised of several regions which contain ionized particles capable of reflecting certain radio waves.

**MOBILE RADIO** - A radio normally mounted in a conveyance, capable of transmitting and/or receiving while in motion or during brief halts at unspecified locations. Power is normally higher and communications range is greater than that of portable stations.

**NATIONAL DATA PROCESSING DIVISION (NDPD)** - The EPA program responsible for defining, acquiring, and implementing automation and telecommunications technologies for the Agency.

**NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION (NTIA)** - Operating unit of the Department of Commerce that is responsible for the development of radio frequency management policy and overall management of the radio frequency spectrum for Federal agencies.

**PERSONAL COMMUNICATIONS NETWORK/SYSTEM (PCN/PCS)** - An emerging, radio spectrum-efficient technology, similar to cellular communications, which will offer greater services to individual users.

**PORTABLE RADIO** - A-battery operated radio designed to be carried by a person and capable of transmitting and/or receiving while in motion or during brief halts at unspecified locations.

**POWER** - The rate of energy expended, measured in watts.

**PROPAGATION** - The travel of electromagnetic waves through space.

**RADIO/RADIO COMMUNICATIONS** - The art of communications in which electromagnetic waves carrying information are sent through the air and received at some distant point.

**RADIO COMMUNICATIONS CONTACT (RCC)** - An individual within an EPA program office designated as the point of contact for radio communications planning and, particularly, for radio frequency assignment requests.

**RADIO DETERMINATION/LOCATION** - The determination of the position, velocity, and /or other characteristics of an object, or the obtaining of information relating to these parameters, by means of the propagation properties of radio waves.

**RADIO FREQUENCY** - Any frequency of electrical energy capable of propagation into space that is useful for transmission of intelligence.

**RADIO FREQUENCY ASSIGNMENT REQUEST (RFAR)** - An NDPD/TCB-developed form which contains radio frequency planning data. EPA program offices are required to submit this form to NDPD/TCB RFM Analyst, who, in turn, utilizes the data to prepare NTIA radio frequency applications.

**RADIO FREQUENCY MANAGEMENT TRACKING SYSTEM (RFMTS)** - An NDPD/TCB-developed database that allows the EPA RFM staff to manage all EPA radio frequency assets.

**RADIO FREQUENCY SPECTRUM** - The range of frequencies in the electromagnetic spectrum from approximately 20 KHz to 300 GHz, usable for radio communications.

**RADIO STATION** - A station location combining both transmitter and receiver for sending and receiving messages via radio.

**RADIO WAVE** - Radio frequency energy transferred by radiation via electromagnetic wave.

**RECEIVER** - An apparatus that converts radio frequency signals into audible form.

**REPEATER** - A fixed or mobile device that boosts, regenerates, and automatically relays signals transmitted from one radio station to another, utilizing two radio frequencies. A repeater is used to overcome radio line-of-sight distance limitations and terrain obstructions.

**SENIOR INFORMATION RESOURCES MANAGEMENT OFFICIAL (SIRMO)** - The EPA official responsible for directing and managing office-wide information resources planning. Responsibilities include ensuring that information systems acquisitions within their organizations comply with Federal and EPA policies and regulations.

**SIMPLEX OPERATION** - Operating method in which transmission is made possible alternately in each direction of a telecommunications channel.

**SQUELCH** - A circuit function that acts to suppress the audio output of a receiver.

**TELEMETERING, MONITORING, AND SURVEILLANCE** - Automatic radio communications intended to indicate or record a measurable, variable quantity at a distance.

**TRANSCEIVER** - A radio transmitter and receiver combined into a single unit, generally used for portable or mobile applications.

**TRANSMITTER** - A piece of radio equipment that generates and amplifies a radio frequency signal, adds intelligence to the signal, and sends it out in the air as a radio wave.

**ULTRA HIGH FREQUENCY (UHF) - The band of radio frequencies in the electromagnetic spectrum from 300 MHz to 3000 MHz (3 GHz).**

**VERY HIGH FREQUENCY (VHF) - The band of radio frequencies in the electromagnetic spectrum from 30 MHz to 300 MHz.**

**NATIONAL DATA PROCESSING DIVISION**  
**RADIO FREQUENCY ASSIGNMENT REQUEST (RFAR)**

Date \_\_\_\_\_

**Requestor/Primary Point of Contact:** Name \_\_\_\_\_ Title \_\_\_\_\_

Address \_\_\_\_\_

Telephone \_\_\_\_\_ Facsimile \_\_\_\_\_

Program Affiliation \_\_\_\_\_

**Alternate Point of Contact:** Name \_\_\_\_\_ Title \_\_\_\_\_

Address \_\_\_\_\_

Telephone \_\_\_\_\_ Facsimile \_\_\_\_\_

**Description of requirement:** Number of frequencies required, in what tuning range; i.e., between 162 MHz and 174 MHz, or specific frequency, if required; primary users, i.e., security/admin/emergency response, etc; inter- or intra-building, and describe i.e., 9 floors

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Type of equipment to be installed/procured (Base/mobile/portable/repeater)**

**Base Station?** \_\_\_\_\_ (yes/no) If yes, complete items marked with \*.

\* **Antenna and transmitter location:** Latitude/Longitude \_\_\_\_\_ (degrees, minutes, seconds)

\* **Site Elevation (In meters above sea level):** \_\_\_\_\_

\* **Antenna Height (In meters above surrounding terrain/ground):** \_\_\_\_\_

\* **Antenna Type:** \_\_\_\_\_ **Gain:** \_\_\_\_\_

\* **Transmitter Name/manufacture:** \_\_\_\_\_ **Power:** \_\_\_\_\_ (watts)

\* **Radius of operations required from base station** \_\_\_\_\_ (kilometers)

**Mobile Equipment?** \_\_\_\_\_ (yes/no) Equipment name, manufacturer and quantity:

\_\_\_\_\_

**Portable Equipment?** \_\_\_\_\_ (yes/no) Equipment name, manufacturer and quantity:

\_\_\_\_\_

**Repeater required?** \_\_\_\_\_ (yes/no) Equipment name, manufacturer and quantity:

\_\_\_\_\_

**Receive frequencies known to be associated with repeater** \_\_\_\_\_

Special Applications/or Remarks: (Marine or air use; coded squelch or other special features to be employed)

Estimated time of usage:

1. ☐ Regularly-not limited to work week.
2. ☐ Regularly-limited to work week.
3. ☐ Occasionally-not limited to work week.
4. ☐ Occasionally-limited to work week.

Will the assignment be permanent or temporary? \_\_\_\_\_

Is this a new requirement or a modification to a previous assignment? ☐ If a modification, list original GMF serial number and date of assignment: \_\_\_\_\_

Is there a requirement to access or use other Federal, state, or local agency radio frequencies? \_\_\_\_\_ If yes, please explain: \_\_\_\_\_

Will this equipment be EPA- or contractor-owned? \_\_\_\_\_ List contractor if applicable: \_\_\_\_\_

Will this equipment be EPA- or contractor-operated? \_\_\_\_\_ List contractor if applicable: \_\_\_\_\_

Name, address, and telephone/facsimile numbers of Vendor Representative: \_\_\_\_\_

State-owned and operated Specialized Mobile Radio (SMR) used? \_\_\_\_\_ If yes, name of SMR provider: \_\_\_\_\_  
Telephone \_\_\_\_\_ Facsimile \_\_\_\_\_

Number of Units to be operated on system/Type and Model of Equipment used: \_\_\_\_\_

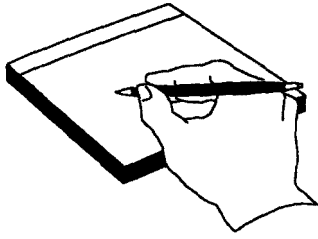
General Remarks/Comments: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Program Office Authorizing Official \_\_\_\_\_ Program Office Authorizing Official Signature \_\_\_\_\_

SIRMO Name and Title \_\_\_\_\_ SIRMO Signature \_\_\_\_\_





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**NOTES**

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