

(Nov. 5, 2009)

Tonight's training is titled

## Personal Radio Services

Personal radio services provide short-range, low power radio for personal communications, radio signaling, and business communications not provided for in other wireless services. The range of applications is wide, spanning from varied one- and two way voice communications systems to non-voice data transmission devices used for monitoring patients or operating equipment by radio control. Licensing and eligibility rules vary. Some personal radio services require a license grant from the FCC, while others require only that you use equipment that is properly authorized under the FCC's rules. I will ask John, N5TIM to post this training session as there are a number of URL's that you may want to research after tonight's training.

The personal radio services are:

**218-219 MHz Service** - One or two way communications for transmission of information to subscribers within a specific service area.

**Citizens Band (CB) Radio Service** - 1-5 mile range two-way voice communication for use in personal and business activities.

**Family Radio Service (FRS)** - 1 mile range Citizen Band service for family use in their neighborhood or during group outings

**General Mobile Radio Service (GMRS)** - 5-25 mile range Citizen Band service for family use in their neighborhood or during group outings

**Low Power Radio Service (LPRS)** - private, one-way communications providing auditory assistance for persons with disability, language translation, and in educational settings, health care, law, and AMTS coast stations.

**Medical Implant Communications Service (MICS)** - for transmitting data in support of diagnostic or therapeutic functions associated with implanted medical devices.

**Multi-Use Radio Service (MURS)** - private, two-way, short-distance voice or data communications service for personal or business activities of the general public.

**Personal Locator Beacons (PLB)** - used by hikers, and people in remote locations to alert search and rescue personnel of a distress situation.

**Radio Control Radio Service (R/C)** - one-way non-voice radio service for on/off operation of devices at places distant from the operator.

**Wireless Medical Telemetry Service (WMTS)** - for remote monitoring of patients' health through radio technology and transporting the data via a radio link to a remote location, such as a nurses' station.

Remember, all of these services are authorized by the FCC.

OK, let's start off with:

[218-219 MHz Service](#) - One or two way communications for transmission of information to subscribers within a specific service area.

## **218-219 MHz Radio Service**

The 218-219 MHz Service <sup>1</sup> is a short-distance communication service designed for licensees to transmit information, product, and service offerings to subscribers and receive interactive responses within a specified service area. Mobile operation is permitted. Rules permit common carrier and private operations, as well as one- and two-way communications. Potential applications include ordering goods or services offered by television services, viewer polling, remote meter reading, vending inventory control, and cable television theft deterrence. Although new rules are designed to allow licensees the maximum flexibility to structure services to meet market demand, the 218-219 MHz band is insufficient for the transmission of conventional full-motion video. 218-219 MHz Service channels may also be unable to support proposed operations that require large amounts of spectrum, including certain video, voice, and advanced data applications.

### **Systems**

The components of each 218-219 MHz system are its administrative apparatus, its response transmitter units (RTUs), and one or more cell transmitter stations (CTSs). RTUs may be used in any location within the service area. CTSs provide service from a fixed point, and certain CTSs must be licensed as part of a 218-219 MHz service (see 47 CFR 95.811).

### **Licensing**

The FCC issued eighteen Metropolitan Statistical Area (MSA) licenses by lottery in 1993 and conducted an auction for the remaining MSA licenses in 1994. No Rural Statistical Area (RSA) licenses have been issued to date, and no date has been set for auction. Read more about the 218-219 MHz Radio Service licensing process and licensee selection rules.

1. Until September 15, 1998, the 218-219 MHz Service was known as the Interactive Video and Data Service, or "IVDS." Many Commission documents still refer to the 218-219 MHz Service by its former name, and the term "IVDS" is still commonly used in reference to this service.

[Citizens Band \(CB\) Radio Service](#) - 1-5 mile range two-way voice communication for use in personal and business activities.

## **Citizens Band (CB)**

Citizens Band (CB) Radio Service is a private two-way voice communication service for use in personal and business activities of the general public. Its communications range is from one to five miles.

### **Licensing**

License documents are neither needed nor issued and there are no age or citizenship requirements. As long as you use only an unmodified FCC certificated CB unit, you are provided authority to operate a CB unit in places where the FCC regulates radio communications.

### **Operations**

You are provided authority to operate a CB unit in places where the FCC regulates radio communications, as long as you use only an unmodified FCC certificated CB unit. An FCC certificated unit has an identifying label placed on it by the manufacturer. Read more about restrictions of [operations](#) and [usage of channels](#).

[Family Radio Service \(FRS\)](#) - 1 mile range Citizen Band service for family use in their neighborhood or during group outings

## Family Radio Service (FRS)

Family Radio Service (FRS) is one of the Citizens Band Radio Services. It is used by family, friends and associates to communicate within a neighborhood and while on group outings and has a communications range of less than one mile. You can not make a telephone call with an FRS unit. You may use your FRS unit for business-related communications.

### Licensing

License documents are neither needed nor issued. You are provided authority to operate a FRS unit in places where the FCC regulates radio communications as long as you use only an unmodified FCC certified FRS unit. An FCC certified FRS unit has an identifying label placed on it by the manufacturer. There is no age or citizenship requirement.

### Operations

You may operate your FRS unit within the territorial limits of the fifty United States, the District of Columbia, and the Caribbean and Pacific Insular areas ("U.S."). You may also operate your FRS unit on or over any other area of the world, except within the territorial limits of areas where radio-communications are regulated by another agency of the U.S. or within the territorial limits of any foreign government.

### FRS/GMRS Dual Service Radios

Some manufacturers have received approval to market radios that are certified for use in both the Family Radio Service (FRS) and the General Mobile Radio Service (GMRS). Other manufacturers have received approval of their radios under the GMRS rules, but market them as FRS/GMRS radios on the basis that:

- Some channels are authorized to both services, or
- A user of the radio may communicate with stations in the other service.

Radios marketed as "FRS/GMRS" or "dual-service radios" are available from many manufacturers and many retail or discount stores. The manual that comes with the radio, or the label placed on it by the manufacturer, should indicate the service the unit is certified for. If you cannot determine what service the unit may be used in, contact the manufacturer.

If you operate a radio that has been approved exclusively under the rules that apply to FRS, you are not required to have a license. FRS radios have a maximum power of ½ watt (500 mill watt) effective radiated power and integral (non-detachable) antennas. If you operate a radio under the rules that apply to [GMRS](#), you must have a GMRS license. GMRS radios generally transmit at higher power levels (1 to 5 watts is typical) and may have detachable antennas.

[General Mobile Radio Service \(GMRS\)](#) - 5-25 mile range Citizen Band service for family use in their neighborhood or during group outings

## General Mobile Radio Service (GMRS)

The General Mobile Radio Service (GMRS) is a land-mobile radio service available for short-distance two-way communications to facilitate the activities of an adult individual and his or her immediate family members, including a spouse, children, parents, grandparents, aunts, uncles, nephews, nieces, and in-laws ([47 CFR 95.179](#)). Normally, as a GMRS system licensee, you and your family members would communicate among yourselves over the general area of your residence or during recreational group outings, such as camping or hiking.

The FCC grants five-year renewable licenses for GMRS Systems. The individual licensee is responsible for the proper operations of the licensed GMRS system at all times.

### FRS/GMRS Dual Service Radios

Some manufacturers have received approval to market radios that are certified for use in both the Family Radio Service (FRS) and the General Mobile Radio Service (GMRS). Other manufacturers have received approval of their radios under the GMRS rules, but market them as FRS/GMRS radios on the basis that:

- Some channels are authorized to both services, or
- A user of the radio may communicate with stations in the other service.

Radios marketed as "FRS/GMRS" or "dual-service radios" are available from many manufacturers and many retail or discount stores. The manual that comes with the radio, or the label placed on it by the manufacturer, should indicate the service the unit is certified for. If you cannot determine what service the unit may be used in, contact the manufacturer.

If you operate a radio that has been approved exclusively under the rules that apply to [FRS](#), you are not required to have a license. FRS radios have a maximum power of ½ watt (500 mill watt) effective radiated power and integral (non-detachable) antennas. If you operate a radio under the rules that apply to GMRS, you must have a GMRS license. GMRS radios generally transmit at higher power levels (1 to 5 watts is typical) and may have detachable antennas.

### Licensing

Before any station transmits on any channel authorized in the GMRS from any point within or over the territorial limits of any area where the FCC regulates radio services, the responsible party must obtain a license. The FCC usually grants GMRS system licenses for a five-year term. To apply for a GMRS system license, you may file online through the [Universal Licensing System \(ULS\)](#), or file [FCC Form 605](#) manually. New filers can learn more about ULS in its [getting started tutorials](#). See Fee Requirements for FCC Form 605 ([pdf](#)) for current licensing fee information.

[Low Power Radio Service \(LPRS\)](#) - private, one-way communications providing auditory assistance for persons with disability, language translation, and in educational settings, health care, law, and AMTS coast stations.

## **Low Power Radio Service (LPRS)**

The LPRS is a private, one-way short-distance communication service providing auditory assistance to persons with disabilities, persons who require language translation, and persons in educational settings, health care assistance to the ill, law enforcement tracking services in cooperation with a law enforcement agency, and point-to-point network control communications for Automated Marine Telecommunications System (AMTS) coast stations. Two-way voice communications are prohibited.

### **Licensing**

You do not need an FCC license to use most LPRS transmitters. To operate an LPRS transmitter for AMTS purposes, however, you must hold an AMTS license. Otherwise, provided you are not a representative of a foreign government, you are authorized by [47 C.F.R. 95.1001](#), to operate an FCC type-accepted LPRS transmitter for voice, data, or tracking signals as follows:

- Auditory assistance communications (including, but not limited to, applications such as assistive listening devices, audio description for the blind, and simultaneous language translation) for persons who:
  - Have physical or mental impairment that substantially limits one or more of the major life activities of such individuals;
  - Require language translation; or
  - May otherwise benefit from auditory assistance communications in educational settings.
- Health care related communications for the ill;
- Law enforcement tracking signals (for homing or interrogation) including the tracking of persons or stolen goods under authority or agreement with a law enforcement agency (federal, state, or local) having jurisdiction in the area where the transmitters are placed; or
- AMTS point-to-point network control communications.

### **Operations**

An LPRS transmitter may be operated within the territorial limits of the fifty United States, the District of Columbia, and the Caribbean and Pacific Insular areas ("U.S."). It may also be operated on or over any other area of the world, except within the territorial limits of areas where radio-communications are regulated by another agency of the U.S., or within the territorial limits of any foreign government. The transmitting antenna must not exceed 30.5 meters (100 feet) above ground level. This height limitation does not apply, however, to LPRS transmitter units located indoors or where the antenna is an integral part of the unit.

[Medical Implant Communications Service \(MICS\)](#) - for transmitting data in support of diagnostic or therapeutic functions associated with implanted medical devices.

## Medical Device Radiocommunications Service

The Medical Device Radio communications Service (Med Radio) is an ultra-low power, unlicensed, mobile radio service for transmitting data in support of diagnostic or therapeutic functions associated with implanted and body-worn medical devices. Med Radio permits individuals and medical practitioners to utilize ultra-low power medical implant devices, such as cardiac pacemakers and glucose monitoring devices, without causing interference to other users of the electromagnetic radio spectrum.

### Licensing

No licensing is required, but Med Radio equipment must only be operated by a duly authorized health care professional.

### Operations

Operations rules and technical regulations applicable to Med Radio transmitters are found within [47 CFR 95.601-95.673 Subpart E](#) and [47 CFR 95.1201-95.1221 Subpart I](#). See a [summary of Med Radio operations rules](#), or read more about [equipment](#) issues or [radiation testing](#).

[Multi-Use Radio Service \(MURS\)](#) - private, two-way, short-distance voice or data communications service for personal or business activities of the general public.

## Multi-Use Radio Service (MURS)

In the Memorandum Opinion and Order and Second Report and Order ([pdf](#)) released May 23, 2002, the Commission updated the service rules regarding five Industrial/Business Pool VHF frequencies known in the PLMR community as the VHF “color dot” frequencies. These frequencies were moved from Part 90 to Part 95 and became a new Citizens Band Radio Service (CB) named the Multi-Use Radio Service (MURS). The Commission defines MURS as a private, two-way, short-distance voice or data communications service for personal or business activities of the general public.

### Licensing

No licenses are issued for this service. An entity is authorized by rule to operate a MURS transmitter if it:

- is not a foreign government or a representative of a foreign government;
- uses the transmitter in accordance with [47 CFR. 95.1309](#);
- otherwise operates in accordance with the rules contained in [Sections 95.1301-95.1309](#).

### Operations

See a [summary of MURS operations rules](#), or read more about [MURS technical requirements](#).

[Personal Locator Beacons \(PLB\)](#) - used by hikers, and people in remote locations to alert search and rescue personnel of a distress situation.

## **Personal Locator Beacons (PLB)**

On July 1, 2003, the FCC authorized the use of Personal Locator Beacons (PLBs). PLBs will provide a distress and alerting capacity for use by the general public in life-threatening situations in remote environments after all other means of notifying search and rescue (SAR) responders (e.g., telephone, radio) have been exhausted. For example, if you are a hiker, camper, backpacker, kayaker, etc. and are out of cell phone range, a PLB, which is a small transmitter that sends out a personalized emergency distress signal, is a highly effective and internationally recognized way to summon help.

### **Licensing**

License documents are neither needed nor issued for Personal Locator Beacons. You are provided authority to operate a PLB in places where the FCC regulates radio communications as long as you use only an unmodified FCC certified PLB. An FCC certified PLB has an identifying label placed on it by the manufacturer. There is no age or citizenship requirement.

When you buy a PLB, it is mandatory that you register it with the National Oceanic and Atmospheric Administration (NOAA). This will provide necessary emergency information to Search and Rescue personnel to facilitate knowing who you are, where you are and how to handle any pre-existing medical problems when they reach you. The registration can be done by:

- Mailing your beacon registration form to:  
SARSAT Beacon Registration  
NOAA, NESDIS, E/SP3, RM 3320, FB-4  
5200 Auth Road, Suitland, MD 20746-4304
- Faxing the signed form to NOAA at 301-568-8649
- Registering online at [NOAA Beacon Registration](#)

### **System**

PLBs transmit distress signals on 406 MHz which is an internationally recognized distress frequency to the COSPAS-SARSAT satellite system. This system is an international program to which 36 nations belong. In the United States the 406 MHz signal is monitored by the National Oceanic and Atmospheric Administration (NOAA) and the Air Force Rescue Coordination Center (AFRCC). Once a signal is received, the satellites can "fix" on the signal using a Doppler Shift location method, or, when a PLB is hooked up to a GPS, the GPS coordinates can be instantly transmitted without waiting for an orbiting satellite. The signal is then relayed to a Local User Terminal (LUT). These small satellite tracking stations are located all over the world and provide the link between the satellites and the Mission Control Center (MCC), which in the USA is NOAA. This signal is then passed on to the Air Force to begin the Search and Rescue procedures. Each PLB is equipped with a unique identifying code which is a 15 digit alpha-numeric code. This code is transmitted in the electronic burst to the satellites and is linked to a computer database maintained by NOAA to provide your name, address, phone number and any pertinent information such as medical problems, to Search and Rescue personnel.



[Radio Control Radio Service \(R/C\)](#) - one-way non-voice radio service for on/off operation of devices at places distant from the operator.

## **Radio Control Radio Service**

Radio Control (R/C) is a one-way, short distance, non-voice radio service for on/off operation of devices at places distant from the operator. The FCC authorizes your R/C unit to transmit any non-voice emission type for the purpose of (1) the operator turning on and/or off a device at a remote location, or (2) an indicating device for the operator being turned on and/or off by a sensor at a remote location. You cannot communicate voice or data in the R/C.

### **Licensing**

License documents are neither needed nor issued. The FCC provides your authority to operate an R/C unit in places where the FCC regulates radio communications. There is no age or citizenship requirement.

### **Operations**

You may operate your R/C unit within the territorial limits of the fifty United States, the District of Columbia, and the Caribbean and Pacific Insular areas ("U.S."). You may also operate your R/C unit on or over any other area of the world, except within the territorial limits of areas where radio communications are regulated by another agency of the U.S. or within the territorial limits of any foreign government.

[Wireless Medical Telemetry Service \(WMTS\)](#) - for remote monitoring of patients' health through radio technology and transporting the data via a radio link to a remote location, such as a nurses' station.

## **Wireless Medical Telemetry**

Last, but certainly not least is the wireless medical telemetry. It is the remote monitoring of a patient's health through radio technology. The use of wireless medical telemetry gives patients greater mobility and increased comfort by freeing them from the need to be connected to hospital equipment that would otherwise be required to monitor their condition. Wireless medical telemetry also serves the goal of reducing health care costs because it permits the remote monitoring of several patients simultaneously.

All types of communications except voice and video are permitted on both a bi-directional and unidirectional basis, provided that all communications are related to the provision of medical care.