



Industry
Canada

Industrie
Canada

SP - 462/467 MHz
March 2004

Spectrum Management and Telecommunications Policy

Spectrum Utilization Policy

Spectrum Provisions for Introducing Licence-Exempt Radios in the Land Mobile Frequency Sub-bands 462/467 MHz

Department of Industry

Radiocommunication Act

Notice No. DGTP-001-04 - Spectrum Provisions for Introducing Licence-Exempt Radios in the Land Mobile Frequency Sub-bands 462/467 MHz

The purpose of this Notice is to announce the release of a spectrum policy that outlines the Department's intention and process to permit the operation of General Mobile Radio Service (GMRS) radios in Canada as early as September 2004. These radios will be permitted on a licence-exempt basis in a designated set of frequencies in the frequency range 462/467 MHz. As part of this spectrum policy, the Department has established a process to notify and deal with certain incumbent land mobile licensees in the frequencies designated for GMRS before these radios are certified for sale in Canada.

To Obtain Copies

Copies of the document are available electronically on the [Spectrum Management and Telecommunications Web site](http://strategis.gc.ca/spectrum) at: <http://strategis.gc.ca/spectrum>.

Official printed copies of this Notice can be obtained from the [Canada Gazette Web site](http://canadagazette.gc.ca/subscription-e.html) at: <http://canadagazette.gc.ca/subscription-e.html> or by calling the sales counter of Canadian Government Publishing at (819) 941-5995 or 1 800 635-7943.

March 19, 2004

Larry Shaw
Director General
Telecommunications Policy Branch

Jan Skora
Director General
Radiocommunications and Broadcasting
Regulatory Branch

Table of Contents

	Page
1. Intent	1
2. Background	1
3. The Impact of GMRS Radios on Existing Land Mobile Service Users	3
3.1 Technical Analysis	4
4. Spectrum Policy Provisions to Permit the GMRS Radios in Canada	5
4.1 Spectrum Designation	5
4.2 Notification to Incumbent Land Mobile Licensees	6
4.3 GMRS Alliance Program and Certification of GMRS Radios	6
4.4 Land Mobile Licensing Moratorium and Status	7
5. Supplementary Information	7
6. Implementation	7

1. Intent

The purpose of this policy paper, announced in Canada Gazette Notice DGTP-001-04, is to outline the Department's intention and process to permit the operation of General Mobile Radio Service (GMRS) radios on a licence-exempt basis and to designate a set of frequencies in the frequency range 462/467 MHz. The Department has established a process to notify and deal with incumbent land mobile licensees in the frequencies designated for GMRS before these radios can be certified for sale in Canada.

The availability of GMRS radios will provide Canadian consumers with a choice of enhanced and innovative licence-exempt wireless products. GMRS radios are similar to Family Radio Service (FRS) radios. They can be used for many outdoor recreational and work-related activities, but with increased power that provides an extended range of communication.

2. Background

In April 2000, the Department designated 14 frequencies in the frequency range 462/467 MHz for Family Radio Service (FRS) mass-market and consumer-based radio products in Canada. An important aspect of designating frequencies for these radios was the arrangement undertaken by Canadian distributors, under the auspices of Electro-Federation Canada, to accommodate those land mobile licensees most likely to receive interference. A period of time was provided for all land mobile licensees to move to other frequencies. The opening of the Canadian market for licence-exempt FRS radios was successfully carried out and resulted in the sale of over two million devices.

The success of FRS radios has demonstrated that there is a strong demand for mass-market and consumer-based radio products. Hence, the designation of frequencies for FRS has served the public interest and resulted in the spectrum being put to its best and highest use.

In general, Canadians expect to have access to the same range of electronic and wireless products and services that are available elsewhere in North America. The Department is aware of the need to accommodate an increasing number of new mass-market and consumer-based radio products in a timely fashion. However, freeing frequencies for these wireless consumer products often poses a number of challenges. One of the primary challenges is that often, the desired spectrum is already in use. This means that incumbent licensees need a reasonable notification period to move to other frequencies to avoid interference to their radio service.

Frequency Designations for GMRS Radios in the U.S. Market

In the United States, the Federal Communications Commission (FCC) has designated 16 new frequencies for GMRS radios. Also, GMRS radios are permitted to use 7 of the 14 frequencies already designated for FRS radios. The FCC defines GMRS as a land-mobile radio service providing short range communications similar to applications provided by FRS radios. In addition, there is a strong likelihood that most, if not all, mass-market and consumer-based GMRS radios will be manufactured to an output power of 2 watts, or less, Effective Radiated Power (ERP). While GMRS radios are permitted to have an

output power of up to 5 watts ERP, such higher power will likely be more suited to business applications. This increased power of GMRS compared to FRS, affords a greater distance for communication among users.

The FCC has designated 8 frequency pairs at 462 MHz and 467 MHz (16 frequencies in total) for GMRS radios. In addition, the FCC has designated the lower 7 frequencies at 462 MHz (channels 1-7) to accommodate GMRS operation. GMRS users are also permitted to transmit on the frequency 467.675 MHz to communicate through a mobile repeater station re-transmitting on the frequency 462.675 MHz. In total, there are 23 frequencies designated for GMRS radios. Table 1 illustrates the combined FRS and GMRS frequency plan in the United States.

Opportunities for the Canadian Market

Industry Canada believes that by opening new frequencies for GMRS radios, Canadian consumers will benefit from a new generation of radio products with new features and a larger communication coverage area.

GMRS radios should be accommodated in a timely fashion, as the market has shown a strong demand for a diversity of mass-market and consumer-based radio products. The reality is that Canadians will demand these new wireless radios and in the absence of a policy which permits GMRS distribution and sale, a gray market of illegal GMRS radios would emerge.

In June 2000, with the release of a spectrum policy for FRS radios¹, the Department was able to develop a successful arrangement with Canadian distributors and suppliers of FRS radios to accommodate the most critical land mobile licensees and to assist in their displacement to other frequencies. This was successful in accelerating the date which the Department could certify FRS radios and permit distribution and sale in Canada.

Potential distributors of GMRS radios, through the sponsorship of Electro-Federation Canada (EFC), met with the Department to develop an arrangement similar to the FRS process established in 2000. One aspect of an arrangement is to accommodate the most critical land mobile licensees, so that GMRS radios can be authorized for sale in Canada in a more timely manner. Over the course of several months EFC and the interested distributors formed the GMRS Alliance (GMRSA), to plan the introduction of new GMRS radios. An important aspect of this GMRS Alliance plan has been to assist those land mobile licensees who provide critical radio applications in these frequency bands (i.e. those licensees who provide communications for hospital, public safety, public utility and transportation purposes).

¹ Spectrum Utilization Policy to Permit Licence-Exempt Family Radio Devices in the Land Mobile Frequency Sub-bands 462/467 MHz (SP-462 MHz) - Notice No. DGTP-004-2000.

Table 1 - GMRS and FRS Frequencies

462.550	GMRS	467.550	GMRS
462.5625 (1-FRS)	GMRS/FRS Shared	467.5625 (8-FRS)	
462.5750	GMRS	467.5750	GMRS
462.5875 (2-FRS)	GMRS/FRS Shared	467.5875 (9-FRS)	
462.6000	GMRS	467.6000	GMRS
462.6125 (3-FRS)	GMRS/FRS Shared	467.6125 (10-FRS)	
462.6250	GMRS	467.6250	GMRS
462.6375 (4-FRS)	GMRS/FRS Shared	467.6375 (11-FRS)	
462.6500	GMRS	467.6500	GMRS
462.6625 (5-FRS)	GMRS/FRS Shared	467.6625 (12-FRS)	
462.6750	GMRS	467.6750	GMRS
462.6875 (6-FRS)	GMRS/FRS Shared	467.6875 (13-FRS)	
462.7000	GMRS	467.7000	GMRS
462.7125 (7-FRS)	GMRS/FRS Shared	467.7125 (14-FRS)	
462.7250	GMRS	467.7250	GMRS

3. The Impact of GMRS Radios on Existing Land Mobile Service Users

The frequencies set out in Table 1 for GMRS radios, are currently assigned to the land mobile service.² The 16 new frequencies identified for GMRS radios currently accommodate a large number of land mobile. The Department's licensing database indicates that there are approximately 127 mobile licensees across Canada, operating 108 base stations and 4590 mobile devices on the 16 newly-designated proposed GMRS frequencies.³

² *Spectrum Utilization Policy for the Mobile, Broadcasting and Amateur Services in the Frequency Range 30-896 MHz (SP 30-896 MHz Part II)*. These frequencies are assigned according to the Standard Radio System Plan 501, *Technical Requirements for Land Mobile and Fixed Radio Services Operating in the Bands 406.1-430 MHz and 450-470 MHz (SRSP-501)*. Channels are assigned on a separation basis of 25 kHz starting at the center frequency 450.0125 kHz in the 450-470 MHz band.

³ These figures represent the total number of licensees and stations operating on the *GMRS candidate frequencies* across Canada. Of this total, some 30 percent would be classified as critical to public safety.

The existing land mobile users in the 16 new frequencies include those licensees who provide critical communication services for hospital, public safety, public utility and transportation purposes. In the case of hospitals and health care facilities these frequencies are used for medical telemetry purposes such as heart monitors. Consequently, the Department has sent a notice to hospitals and health centres to advise of the potential for interference to medical telemetry equipment from gray market GMRS radios.

Due to the relatively high transmission power of GMRS radios, a displacement plan was needed to move those land mobile licensees that provide critical radio services. The Department first determined who these land mobile users were in these frequencies and encouraged the GMRS Alliance to develop a displacement plan to accommodate them before GMRS radios are permitted for sale in Canada. This plan, approved by the Department, provides notification and sufficient time for all land mobile users to choose either to migrate to other frequencies or, stay on current frequencies on a secondary basis and accept interference with no protection.

3.1 Technical Analysis

GMRS radios, will operate in the 16 new frequencies identified for GMRS and in 7 shared frequencies with FRS as shown in Table 1. GMRS radios will transmit and receive on each of these 23 frequencies in a “push-to-talk” mode. As such, GMRS radios could transmit as much as 2 watts ERP in any of these frequencies. Of particular concern to the land mobile service, is interference from GMRS transmissions into these 16 new frequencies. In summary, there are three interference scenarios that could occur. These scenarios are interference from GMRS into the:

- (1) land mobile radio receiver (receiving communications from a land mobile base station);
- (2) land mobile radio receiver (receiving communications from another land mobile radio); and
- (3) land mobile base-station receiver (receiving communications from a land mobile radio).

(1) GMRS Transmissions Causing Interference into a Land Mobile Radio Receiver (Receiving Communications from a Land Mobile Base-Station)

In this scenario, based on the Egli propagation model, any GMRS radio transmitting at 2 watts ERP within 2.6 km of a land mobile radio will create interference to the communication. This distance for GMRS interference may be less when the land mobile radio is close to its base station or when the signal from the GMRS radio is blocked by an obstacle.

(2) GMRS Transmissions Causing Interference into a Land Mobile Radio Receiver (Receiving Communications with Another Land Mobile Radio)

In this scenario, using the Egli propagation model, the coverage of land mobile radio-to-radio communication is estimated to be 5 km with a power of 30 watts ERP. A GMRS radio transmitting at 2 watts ERP within 2.6 km from the land mobile radio will interfere with this communication.

Land mobile and GMRS radios sharing a channel and using the same tone signalling will be able to hear each other. This means that one of the users has to wait until the channel becomes clear before communicating. If the tone signalling is different or one of the users is operating a digital system, the

resulting unintentional interference could be disruptive. However, the level of interference will vary because of the mobility of these radios. This mobility will result in varying signal strengths between the two radios which will also be affected by the quality of the radio path between them (i.e. either a clear or blocked path because of intervening terrain and buildings).

(3) GMRS Transmission Causing Interference into a Land Mobile Base-Station Receiver (Receiving Communications from a Land Mobile Radio)

The interference from GMRS radios transmitting into the land mobile base-station receiver can be significant. Base-station receivers are typically located at high elevations, such as on top of buildings or mountains, to provide coverage throughout a service area. The land mobile radio operates at 30 watts ERP and the GMRS radio operates at 2 watts ERP. Land mobile base-station receivers would experience interference from GMRS transmission units operating within a distance of 5 km from the base-station in an urban area or 8.5 km in a suburban area, based on the Okumura-Hata propagation model.

Taking into account the previously described interference scenarios, as GMRS radios are sold in large quantities, the occurrence of interference will greatly increase. This means that the land mobile service will no longer be able to operate within a relatively interference-free environment.

4. Spectrum Policy Provisions to Permit the GMRS Radios in Canada

As previously-recognized, Canadians expect to have access to the same wide range of mass-market and consumer-based radios that are available elsewhere in the North American marketplace. These wireless products such as FRS, wireless Internet access products, cordless phones and other devices continue to benefit Canadian consumers and businesses.

The Department has concluded that it is in the public interest to designate a set of frequencies for GMRS radios in Canada. The Department sent notification letters in September 2003, to all land mobile licensees to advise them of the future introduction of GMRS radios. In order to shorten the period within which GMRS radios are permitted, the Department has approved a process where the GMRS Alliance, under the sponsorship of Electro-Federation Canada, will accommodate the most critical land mobile licensees in other frequencies. This approach was used with FRS and proved to be successful.

4.1 Spectrum Designation

GMRS radios will be permitted to operate, as licence-exempt devices and not to exceed 2 watts ERP in accordance with technical standards outlined in Radio System Standard 210, *Low Power Licence-Exempt Radiocommunication Devices (All Frequency Bands)* (RSS-210) and in the frequencies set out in Table 1 in the range 462/467 MHz. This designated spectrum is for GMRS radios. At this time, the use of GMRS repeaters to further extend the coverage of GMRS communications and devices that exceed 2 watts ERP, will not be permitted. The main reason is to facilitate the migration of land mobile users to other frequencies before GMRS repeaters and higher powered devices are given further consideration.

4.2 Notification to Incumbent Land Mobile Licensees

In September 2003, the Department sent notification letters to all land mobile licensees informing them that:

- (a) a set of 16 new frequencies in the bands 462/467 MHz will be designated to licence-exempt GMRS radios;
- (b) GMRS radios could be certified and sold in Canada as early as September 2004 with the accommodation of the most critical land mobile installations;
- (c) GMRS radios will cause interference to the land mobile service at different levels and licensees may want to consider relocating to other frequencies;
- (d) upon the opening of the GMRS market, land mobile licensees will have equivalent status to licence-exempt GMRS radios and will not be able to claim protection from interference; and
- (e) the Department will assist in finding new frequencies for land mobile licensees.

In addition, the GMRS Alliance is working with those land mobile licensees that provide critical radio services to accommodate them in other frequencies. The progress with which these licensees are accommodated, will determine whether GMRS radios will be permitted for sale in Canada as early as September 2004.

4.3 GMRS Alliance Program and Certification of GMRS Radios

An important aspect for timing the introduction of GMRS radios is the impact the introduction will have on existing land mobile users. An industry consortium of GMRS distributors (the GMRS Alliance) was established under Electro-Federation Canada and is committed to accommodating the displacement of the most critical land mobile users. Distributors of GMRS radios in Canada will be required to participate in the GMRS Alliance program, to assist the most critical land mobile users, in order to have their radios certified for sale in Canada. The Department will open up the equipment certification process to non-GMRS Alliance participants, after a sufficient period of GMRS sale and distribution has taken place, which will enable cost recovery of the GMRS Alliance program. Such a period is anticipated to be 12 months.

The Department will establish appropriate technical limits for these frequencies in RSS-210 in accordance with the policy provisions herein and only those participants in the GMRS Alliance program to accommodate the most critical land mobile users will be eligible for GMRS equipment certification during an anticipated period of 12 months. The GMRS Alliance will be open for other distributors to join in the program which assists critical land mobile licensees in migrating to other land mobile frequencies.

The application for certification of GMRS radios must be accompanied by a letter from Electro-Federation Canada (EFC), stating that the applicant has made a commitment to participate in the GMRS Alliance, to ensure that the GMRS radios which are to be distributed and/or sold in Canada will

mitigate potential interference to those affected land mobile base stations that provided critical radio applications in frequency bands designated for GMRS.⁴ Electro-Federation Canada which operates the GMRSA can be reached at the following address:

[GMRSA](#)

5800 Explorer Drive

Mississauga, Ontario

L4W 5J3

Canada

Tel: (905) 602-8877

Fax: (905) 602-5686

e-mail: kelsey@electrofed.com

4.4 Land Mobile Licensing Moratorium and Status

In anticipation of GMRS radios being permitted for sale in Canada, the Department has ceased licensing the land mobile service in the frequencies identified in Table 1 for GMRS radios. With the release of this policy, the Department is officially announcing a licensing moratorium for the land mobile service in those 16 frequencies. Upon the introduction of GMRS radios, mobile service operation in these frequencies will have similar status to licence-exempt GMRS radios. As such, land mobile licensees that choose to remain in these frequencies may receive interference and may not claim protection.

5. Supplementary Information

RDP 100-500 MHz	<i>Redeployment Plan for Spectrum Efficient Land Mobile Equipment in the Frequency Range 100-500 MHz</i>
RSS-210	<i>Low Power Licence-Exempt Radiocommunication Devices (All Frequency Bands)</i>
SP 30-896 MHz Part II	<i>Spectrum Allocation and Utilization in Certain Bands in the Range 30-896 MHz</i>
SRSP-501	<i>Technical Requirements for Land Mobile and Fixed Radio Services Operating in the Bands 406.1-430 MHz and 450-470 MHz</i>

6. Implementation

The district offices of Industry Canada will discuss with land mobile licensees any plan to move to other frequencies to avoid interference from future GMRS radios. The district offices will take all practical steps to assist the GMRS Alliance in finding appropriate frequencies for the re-tuning program. In addition, they will explain, as necessary, the process to affected mobile licensees so that licensees fully understand the September 2003 notification date and its impact on their land mobile radio systems with

⁴ See the current version of RSS-210.

the September 2004 market opening for GMRS radios in Canada. The GMRS Alliance, under the auspices of Electro-Federation Canada, will work to accommodate the most critical land mobile licensees during the initial period. Depending on the progress of the GMRS Alliance, GMRS radios will be certified for sale in Canada as early as September 2004.

Parties interested in the implementation of these spectrum policy provisions should contact a spectrum manager in the nearest Industry Canada local office.

Issued under the authority
of the Radiocommunication Act

Larry Shaw
Director General
Telecommunications Policy Branch

Jan Skora
Director General
Radiocommunications and Broadcasting
Regulatory Branch