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SP 1-3 GHz
October 1999

Spectrum Management and Telecommunications Policy

Spectrum Utilization Policies

Amendments to the Microwave Spectrum Utilization Policies in the 1-3 GHz Frequency Range

Amended by:

DGTP-007-00/ Policy and Licensing Procedures for the Auction of the Additional PCS Spectrum in the 2 GHz Frequency Range
DGRB-005-00 (June 2000)

DGTP-003-01 Revisions to the Spectrum Utilization Policy for Services in the Frequency Range 2285-2483.5 MHz (June 2001)

**INDUSTRY CANADA
RADIOCOMMUNICATION ACT
NOTICE No. DGTP-06-99**

**AMENDMENTS TO THE MICROWAVE SPECTRUM UTILIZATION POLICIES
IN THE 1-3 GHz FREQUENCY RANGE**

The purpose of this Notice is to announce a spectrum policy paper that will make spectrum utilization changes in the 1-3 GHz frequency range.

This Notice follows the August 1997 release of a spectrum utilization policy consultation paper entitled *Proposals to Provide New Opportunities for the Use of the Radio Spectrum in the 1-20 GHz Frequency Range*, Gazette Notice DGTP-006-97, which solicited comments on numerous proposals throughout the 1-20 GHz frequency range.

In response to this consultation paper, the Department has received a wide range of submissions relating to the 1-3 GHz frequency range, which were taken into consideration when developing the policy paper. In particular, the policy paper addresses the following:

- spectrum for narrowband multipoint communication systems at 1.4 GHz for fixed telemetry applications for automatic meter reading;
- a transition policy to facilitate the introduction of mobile satellite services in the bands 1990-2025 MHz and 2160-2200 MHz;
- changes to the spectrum for fixed services in the bands 2025-2110 MHz and 2200-2285 MHz for point-to-point, TV-pickup and subscriber radio systems; and
- clarification of fixed services in the band 1700-1850 MHz.

It should be noted that the designation of new spectrum at 1.4 GHz to support fixed telemetry applications for automatic meter reading will come into effect on March 1, 2000. The Department is of the view that licensing on a first-come, first-served basis will be adequate to handle the demand for spectrum within the provisions of the spectrum policy. Radio applications will begin to be considered on March 1, 2000. If there is more spectrum demand than supply in certain urban areas, the Department may proceed with a competitive licensing process after consulting with the applicants.

As well, the Department has outlined particular licensing provisions for fixed telemetry applications at 1.4 GHz in order to proceed efficiently with a first-come, first-served process.

Comments on spectrum licensing fees for narrowband multipoint communication systems at 1.4 GHz for fixed telemetry applications for automatic meter reading

Comments are welcome on the proposed spectrum licensing fees for narrowband multipoint communication systems (refer to Section 2.3.2 in this policy paper). The comments, which will be made public, should be submitted on or before December 31, 1999 to spectrum_pubs@ic.gc.ca.

This policy document is available electronically via the Internet at the following address:

World Wide Web (WWW)

<http://strategis.ic.gc.ca/spectrum>

or in hard copy, for a fee, from:

Tyrell Press Ltd.

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October 1, 1999

Michael Helm
Director General
Telecommunications Policy Branch

1.0 Intent

In August 1997, Industry Canada initiated a comprehensive spectrum policy review proposing new opportunities for radio spectrum use in the 1-20 GHz frequency range. This was based on the considerable interest in the introduction of various services such as fixed wireless access systems, multipoint communication systems, and licence-exempt voice and data equipment. Canada Gazette Notice DGTP-006-97, entitled *Proposals to Provide New Opportunities for the Use of the Radio Spectrum in the 1-20 GHz Frequency Range*, put forth a number of new spectrum policy proposals.

In response to this consultation paper, the Department has received a wide range of submissions relating to the 1-3 GHz frequency range, which were reviewed and used in the formulation of the spectrum policy utilization decisions made in this policy paper.

In August 1998, Industry Canada announced a spectrum policy entitled *Spectrum Policy and Licensing Provisions for Fixed Wireless Access Systems in Rural Areas in the Frequency Range 3400-3700 MHz* via Canada Gazette Notice DGTP-013-98. This utilization policy, as well as the modifications found in this document, supersede the utilization policy provisions for each of the respective bands contained in *Revisions to Microwave Spectrum Utilization Policies in the Range of 1-20 GHz*, released by Gazette Notice DGTP-002-95.

The intent of this policy, which was announced in Canada Gazette Notice DGTP-06-99 in October 1999, is to provide spectrum utilization changes in the 1-3 GHz frequency range, which include:

- spectrum for narrowband multipoint communication systems at 1.4 GHz for fixed telemetry applications for automatic meter reading;
- a transition policy to facilitate the introduction of mobile satellite services in the bands 1990-2025 MHz and 2160-2200 MHz;
- changes to the spectrum for fixed services in the bands 2025-2110 MHz and 2200-2285 MHz for point-to-point, TV-pickup and subscriber radio systems; and
- clarification of fixed services in the band 1700-1850 MHz.

2.0 Narrowband Multipoint Communication Systems in the Bands 1427-1452 MHz and 1492-1517 MHz

2.1 Discussion

In the spectrum review under Notice DGTP-006-97, the Department proposed to designate a modest amount of spectrum in the band 1.4 GHz for narrowband multipoint communication systems (N-MCS), focussed on fixed telemetry applications to accommodate such services as automatic meter reading (AMR).

The results from the consultation were favourable, and comments indicated that allowing automatic meter reading in this band would facilitate:

- increased competition in an open market environment for electric power distribution;
- heightened focus on developing, marketing and selling energy-related products and services; and
- greater customer value, choice, flexibility and service.

Some existing fixed users had concerns over the introduction of telemetry systems in the band 1.4 GHz. It was recommended through the comments received that N-MCS for AMR should have priority over new subscriber radio systems (SRS) in this spectrum within urban areas and their vicinities, and that SRS systems should have priority over N-MCS outside of urban areas. It was also proposed that co-ordination be carried out for new SRS and N-MCS systems where SRS base stations are located within 70 km of any of the largest urban area boundaries. Guidelines on where these major urban areas are located, including maps, can be found at the following address:

<http://spectrum.ic.gc.ca/mapinfo/mapinfo.htm#urban>.

2.2 Spectrum Designation

Taking into account industry's interest in deploying wireless meter reading services and the increasing competition in the provision of energy distribution services, the Department believes that it is in the public interest to open some spectrum at 1.4 GHz. The Department is fully aware that a number of technologies using both wireline and wireless facilities may be deployed to accommodate automatic meter reading. In terms of wireless facilities, radio facilities for mobile data communication, digital mobile and PCS networks, or licence-exempt facilities may prove to be economical solutions.

Against this backdrop, Industry Canada is designating 6 MHz in the sub-bands 1427-1430 MHz and 1493.5-1496.5 MHz, which could facilitate up to 6 N-MCS service providers. Initially, licensees will be limited to 1 MHz of spectrum per applicant in an urban

area, to begin deployment of wireless telemetry applications.

The use of the frequency sub-bands 1427-1430 MHz and 1493.5-1496.5 MHz corresponds to channels 1 and 1' of the SRS 3.5 MHz channelling plan. The spectrum contained in channels 1 and 1' will be shared on a geographical basis between SRS and N-MCS systems for rural and urban areas, respectively. Preference will normally be given to N-MCS implementations within urban areas and their vicinities. Access to this spectrum will be managed by Industry Canada's regional offices. Outside of urban areas, access to channels 1 and 1' by SRS systems will continue to be available, although Industry Canada will monitor the deployment of radio systems to ensure adequate access for future requirements of N-MCS.

Applicants who wish to use the sub-band 1493.5-1496.5 MHz should take into consideration the close proximity to the digital radio broadcasting (DRB) service operating in the band 1452-1492 MHz in Canada, and the mobile aeronautical telemetry service in the United States. Even with the 1.5 MHz guardband, N-MCS systems would have to design adequate system filtering to protect its receivers against high-powered DRB.

In addition to this, the FCC is currently looking into the option of opening up new spectrum for medical telemetry applications on a protected basis in several bands, including 1429-1432 MHz. These applications would be used mostly indoors, including hospitals. The Department believes the accommodation of medical telemetry is an important requirement and will closely monitor the FCC proceedings. To that end, the Department will not assign 1 MHz blocks at 1429-1430 MHz for wireless AMR until the spectrum requirements for medical telemetry have been considered.

Point-to-point fixed service links will be permitted, on a limited basis, where they are complementary to the deployment of an N-MCS system. There is no provision being made at this time to displace existing SRS systems operating in channels 1 and 1' in urban areas.

The decisions described herein supersede the utilization policy provisions for the related bands found in Gazette Notice DGTP-002-95, *Revisions to Microwave Spectrum Utilization Policies in the Range of 1-20 GHz*, and are defined in Annex 1.

2.3 Licensing Considerations and Provisions

Industry Canada's licensing approach for SRS systems in this band has been to process applications on a first-come, first-served (FCFS) basis. Spectrum users are required to coordinate their systems and frequency assignments in order to accommodate a large number of users and make efficient use of the limited spectrum.

Since initiating public consultation two years ago, similar spectrum (1427-1430 MHz) has been available in the U.S. on a secondary basis for wireless AMR with limited deployment to date, and only one known manufacturer producing the equipment. Furthermore, there

has been interest expressed by one potential service provider in Canada.

With the information available, the Department has not seen any indication that the demand for spectrum at 1.4 GHz for wireless AMR will exceed the supply, even with pending deregulation of the power utilities industry and the anticipated level of interest. Moreover, there are many other wireless and wireline facilities that could accommodate this requirement, including the licence-exempt bands (i.e., 902-928 MHz), as well as the integration of meter reading service on existing wireless networks, i.e., PCS, mobile data networks, etc.

For these reasons, the Department believes that the FCFS licensing process with the requirement to implement within a short period is the best approach to pursue. Since there appears to be sufficient spectrum in this band to support up to six providers, the Department will proceed in licensing these narrowband MCS systems for wireless AMR in urban areas on a first-come, first-served basis. Furthermore, the Department wishes to provide a short period, from the issuance of this policy, to allow potential applicants the time to consider their requirements, and prepare and submit their applications. As of March 1, 2000, the Department will begin to consider applications on an FCFS basis in accordance with the principles and requirements of Phase 1 of Radio Standards Procedure 113 (RSP-113), *Application Procedure for Planned Radio Stations Above 960 MHz in the Fixed Service*. The Department will process applications that demonstrate an ability to deploy their systems within one year and meet commercial commitment service dates and deployment time frames.

However, should the number of applications received exceed the supply in one or a number of areas, the Department would consider initiating a competitive process after consulting with applicants. The approach is consistent with the policy paper entitled *Guidelines for Licensing and Spectrum Release Plan*, which will be released in the near future.

Interested parties have supported the need to ensure rapid implementation of wireless telemetry meter reading systems in urban areas. Such systems will typically serve large urban areas that require multiple hub stations, thereby making block-area licensing the preferred licensing process. Industry Canada has concluded that the best way to proceed is to issue spectrum licences for frequency assignments or spectrum blocks within a defined urban service area.

Successful applicants under Phase I of RSP-113 will receive a letter of acceptance-in-principle from the Department, which will be valid for a one-year period, after which it will expire if system operations have not begun. When the applicant is ready to commence deployment on a service-area basis within the 12-month period and has successfully co-ordinated with other AMR and SRS systems, the Department will issue a spectrum licence. When deployment has not proceeded by the end of the 12-month period, the acceptance-in-principle period will expire and the applicant will be required to submit

appropriate information to the Department to justify a further renewal. The request will be assessed against spectrum availability and other applications at that time.

Spectrum licences will be issued for specific service areas. Licensees will be expected to take measures to minimize radio frequency emissions outside the licenced service areas and co-ordinate with existing SRS systems.

2.3.1 Spectrum Licences

Spectrum licences, also referred to as block area licences, provide for the utilization by licensees of specified radio frequencies within a defined geographical area. Since site-specific radio station licences are not required, this type of licence benefits both the Department and licensees by reducing the administrative burden associated with licensing each radio apparatus.

Successful applicants are reminded that they must still obtain all other appropriate approvals associated with individual sites, as well as abide by relevant Industry Canada policies such as shared use of advantageous antenna sites. The licensees will also have the responsibility to ensure that their networks are properly planned and will be required to abide by the geographical and frequency privileges attributed to the licence.

In accordance with this policy, a Client Procedures Circular (CPC) will be published, outlining the detailed procedure and licensing conditions for spectrum licensing in this band.

2.3.2 Fees

Industry Canada believes that licence fees should reflect the economic value of the radio frequency spectrum being used. However, in the absence of a market-based mechanism by which this economic value can be revealed, the Department recognizes that such determinations are difficult.

Comments are sought on the proposed annual fees of \$10.00/MHz/1000 households for a spectrum licence in the bands 1427-1430 MHz and 1493.5-1496.5 MHz.

Comments should be forwarded to Mr. Terry Rudeen via electronic mail on or before December 31, 1999 at the following address:

spectrum_pubs@ic.gc.ca.

The number of households will be calculated using the latest available data generated by Statistics Canada for each census area within the area of coverage proposed by the applicant.

3.0 Fixed Services in the Band 1700-1990 MHz

With the release of SP 1-20 GHz in January 1995, the frequency range 1700-1850 MHz was identified as the new "lower 2 GHz" band for low capacity (LC) point-to-point systems. One of the priorities of the policy provisions was to accommodate microwave stations that were subject to displacement as a result of the introduction of personal communication services (PCS) in Canada.

Further to the release of SP 1-20 GHz, industry recommended an amendment to the band plan to accommodate the shortage of very low capacity (VLC) links. Service providers indicated that the good propagation characteristics of this frequency range make it particularly suitable for rural and remote applications requiring long hops. Public comment was solicited on the proposal to accommodate VLC links in the band 1700-1850 MHz in the spectrum utilization policy consultation paper entitled *Proposals to Provide New Opportunities for the Use of the Radio Spectrum in the 1-20 GHz Frequency Range*, Gazette Notice DGTP-006-97.

It is appropriate to note that utilization policy SP 1-20 GHz, issued in 1995, included a cautionary statement that the band 1710-1850 MHz may be subject to a future policy review to determine whether the band is required for other uses after the year 2000. Since that time, a number of domestic and international developments have led to the consideration of this spectrum at the International Telecommunication Union (ITU) World Radiocommunication Conference in May 2000 (WRC-2000) for the implementation of new mobile services commonly referred to as third generation personal communication services or IMT-2000. The document entitled *Updated Canadian Preliminary Views for WRC-2000* contains a proposal to this effect. It can be found at the following Web address: <http://strategis.ic.gc.ca/pics/sf/can-6e.pdf>.

The timing of this implementation could occur in incremental stages between the years 2005-2010. Based on the experiences with PCS roll-out, it could subsequently be necessary to transition existing fixed systems out of the spectrum to facilitate the implementation of the new services. Consequently, **the Department does not support any growth in this band at this time**, particularly for large-scale multi-hop networks, or for systems deployed in urban areas and their vicinities. Shortly after the results of WRC-2000, Industry Canada will decide on the steps to be taken to accommodate new mobile services in the band 1710-1850 MHz.

4.0 Modified Fixed Services Bands 2025-2110 and 2200-2285 MHz

In August 1997, Industry Canada initiated a comprehensive spectrum policy review proposing new opportunities for use of the radio spectrum in the 1-20 GHz frequency range. This was based on the considerable interest in the introduction of various services such as fixed wireless access systems, multipoint communication systems, and licence-exempt voice and data equipment. Canada Gazette Notice DGTP-006-97 put forth a number of new spectrum policy proposals.

4.1 Modified Fixed Service Bands

With the release of SP 1-20 GHz in January 1995, the frequency range 2010-2110 MHz paired with 2200-2300 MHz was identified as the new "upper 2 GHz" band for medium capacity (MC) point-to-point systems. A moratorium on the licensing of new fixed microwave applications was placed on the 1990-2010 and 2160-2200 MHz bands to facilitate the future implementation of mobile satellite services (MSS), and on the band 2110-2160 MHz for emerging PCS services. In August 1997, a similar moratorium was added to the band 2010-2025 MHz, which was allocated to mobile satellite services at the 1995 World Radiocommunication Conference (WRC 95).

Due to the moratorium imposed for the MSS spectrum in the band 2010-2025 MHz, the Department sought industry comments on their proposal to redefine the band plan for point-to-point fixed systems for medium-capacity links from 2010-2110 and 2200-2300 MHz (100+100) to 2025-2105 and 2200-2280 MHz (80+80).

Comments from industry indicated that the proposed 80+80 MHz was adequate to satisfy the needs of new MC applicants, however, additional low-capacity spectrum was requested.

Decision:

Based on public response and the need to increase mobile satellite spectrum, the Department has rearranged the band 2025-2110 MHz paired with 2200-2285 MHz for point-to-point systems as the "upper 2 GHz band". It is the view of the Department that this spectrum could be available for medium- and low-capacity applications.

This spectrum has been recognized by international footnote as being difficult to share with high-density deployments of one mobile service. It is also appropriate to note that current international opinions have been expressed this paired spectrum should be excluded from the spectrum being considered for the implementation of third generation mobile services (IMT-2000) in bands below 3 GHz.

4.2 TV-Pickups

In the consultation document, the Department recognized the need to find additional spectrum for TV-pickups. A proposal was made to designate the band 2025-2130 MHz for TV-pickups in urban areas. Part of that proposal included reviewing both present and future spectrum requirements for TV-pickups.

This proposal was the result of the current situation of TV-pickup spectrum. In particular, two channels that used to be available in the industrial, scientific and medical (ISM) band at 2450-2483.5 MHz are suffering gradual degradation with the increased use of ISM devices such as microwave ovens. This situation is not expected to improve with the introduction of licence-exempt microwave links in the band.

The same TV-pickup equipment that operates at 2450-2483.5 MHz is capable of operating at 1990-2110 MHz, as it has been available for broadcast auxiliary services in the U.S. for many years. Recent decisions in the U.S. have reduced the available spectrum to 85 MHz between 2025-2110 MHz.

There was strong support for additional TV-pickup channels in the proposed designated band, but there were also strong concerns over the potential reallocation issues with the deployment of IMT-2000 in the band 2110-2150 MHz.

Decision:

The Department is designating only part of the proposed band, that is, 2025-2110 MHz, for TV-pickups to be shared on an urban/rural basis with point-to-point systems. As 2110-2150 MHz is designated for future PCS, no new fixed systems will be implemented in this band.

The spectrum requirement for TV-pickups is expected to be proportional to the population and total geographical area of urban centres. In some areas, e.g., Toronto, Montreal and Vancouver, new point-to-point systems may not be accommodated because of the need for TV-pickups. However, it is expected that for the less congested major city centres, the majority of point-to-point systems can and will be accommodated on a case-by-case basis.

In addition to population and geographical areas, the highest concentration of use is expected to be within urban areas because of the nature of TV-pickup applications, with the highest congestion occurring at temporary installation sites located at major sporting events or conventions.

Preference will normally be given to TV-pickup implementations within urban areas. Outside of urban areas, access to the spectrum will be on a first-come, first-served basis,

although Industry Canada will monitor the deployment of radio systems to ensure adequate access for foreseen requirements of TV-pickups. Considerations for sharing the spectrum can be developed with industry and be included in the determination of urban areas. The precise definition of individual urban areas and spectrum requirements will be managed by the Department of Industry on a regional basis.

The Department expects improved technology to be deployed in order to considerably reduce spectrum requirements and facilitate a greater number of channels and installations.

4.3 Subscriber Radio and Very Low Capacity Point-to-Point Systems

A further proposal was made to accommodate subscriber radio systems (SRS) in the bands 2105-2130 and 2280-2305 MHz. Part of that proposal included reviewing whether or not low-capacity, point-to-point and subscriber radio systems should continue to be available in the paired frequency bands 2290-2360 and 2520-2590 MHz.

This proposal was in part due to events that have transpired since the release of SP 1-20 GHz in 1995 and have reduced the viability of the revised "super 2 GHz band", which was designated in portions of the 2.3 and 2.5 GHz bands. Two of these events are: the advancement of digital compression technology that has rekindled interest in multipoint communication services in the 2500-2596 MHz band, and the licensing of American satellite operators to provide digital audio radio service by satellite (DARS) at 2320-2345 MHz. A moratorium was established in December 1997 (Gazette Notice DGRB-007-97, *Multipoint Communications Systems (MCS) in the 2500 MHz Range; Spectrum and Licensing Policy Discussion Document*) for further licensing of SRS and point-to-point systems in the 2500-2596 MHz MCS band. A comparative licensing process was initiated in early June 1999 to license MCS systems at 2.5 GHz (refer to the document entitled *2500 MHz Multipoint Communications Systems - Policy and Licensing Procedures*).

Responses to the public consultation on accommodating SRS systems showed that there is little support from the SRS community for this proposal due to future mobile service deployment. Some concerns were expressed by PCS advocates that no new spectrum should be designated for fixed services as it would compromise the future of IMT-2000.

Decisions:

SRS may continue to be authorized in the bands 2025-2110 and 2200-2285 MHz in remote and distant rural areas under the provisions of the Geographical Differences Policy (GDP) Guideline outlined in the SP 1-20 GHz.

It is appropriate to designate a portion of the band 2025-2110 and 2200-2285 MHz, in the order of 10+10 MHz, for very low-capacity applications under the same geographical sharing conditions as those described above for TV-pickups and point-to-point systems.

It is worth noting that subsequent designations have been made to accommodate MCS systems, including Wireless Local Loop (WLL) and Fixed Wireless Access (FWA) in the bands 953-960 MHz and 3400-3550 MHz (DGTP-013-98, *Spectrum Policy and Licensing Provisions for Fixed Wireless Access Systems in Rural Areas in the Frequency Range 3400-3700 MHz*).

Systems operating in the bands 2025-2110 and 2200-2285 MHz should also take note of the international recommendations, which stipulate constraints on emission levels from fixed service transmitters in certain portions of the band, to facilitate sharing with the space science services. These recommendations also specify power flux density (pfd) levels that fixed service systems will have to tolerate.

The decisions described herein supersede the utilization policy provisions for the related bands contained in Gazette Notice DGTP-002-95, and are defined in Annex 2.

5.0 Spectrum Transition Policy to Facilitate the Introduction of the Mobile Satellite Service in the Bands 1990-2025 MHz and 2160-2200 MHz

5.1 Background

At the 1992 World Administrative Radio Conference (WARC-92), a total of 40+40 MHz of spectrum was allocated in the bands 1970-2010 MHz (Earth-to-space) and 2160-2200 MHz (space-to-Earth) to the mobile satellite service (MSS). Shortly after (in 1995), the Department consulted and modified the *Canadian Table of Frequency Allocations*. At the 1995 World Radiocommunication Conference, changes were made to the allocations at 2 GHz for MSS in International Telecommunication Union (ITU) Region 2 (the Americas), which included a revised allocation for Earth-to-space in the band 1990-2025 MHz. As well, the date of entry into force of the mobile satellite allocation has been advanced from the year 2005 to the year 2000. This change was brought on by countries, including Canada, that supported an earlier implementation of MSS in these new bands.

Modifications to the frequency allocations were made for Region 2 by adjusting the uplink allocation for MSS from the band 1970-2010 MHz to 1990-2025 MHz. The worldwide allocations at 1980-2010 MHz and 2170-2200 MHz and the Region 2 allocation at 2160-2170 MHz were left unchanged. Canada and a number of other Region 2 countries have joined in a new footnote (S5.389B) in the ITU *International Table of Frequency*

Allocations, which requires that the mobile satellite service not constrain the development of mobile systems in the band 1980-1990 MHz. This is intended to facilitate the future deployment of personal communications services.

These modified frequency allocations were adopted in the 1998 *Canadian Table of Frequency Allocations*. As a result, the following bands at 2 GHz are now allocated to the mobile satellite service, as well as to the fixed service (FS) in Canada:

- 1990-2025 MHz MSS (Earth-to-space)
- 2160-2200 MHz MSS (space-to-Earth)

After the WRC-95 decision with respect to the reallocation of the MSS bands and the moratorium placed by Industry Canada on the licensing of new fixed systems in the bands 1990-2010 MHz and 2110-2200 MHz in the January 1995 issue of SP 1-20 GHz, *Revisions to Microwave Spectrum Utilization Policies in the Range of 1-20 GHz*, the Department further imposed a moratorium in the 2010-2025 MHz band with respect to the licensing of new fixed microwave stations in DGTP-006-97. This new moratorium to accommodate the introduction of new mobile satellite services was established because sharing between FS and MSS operators is not practical.

The issuance of this moratorium for the additional MSS spectrum included a request for comments on the notification/displacement processes. Radio Systems Policy 007 (RP-007), entitled *Policy Framework for the Provision of Mobile Satellite Services via Regional and Global Satellite Systems in the Canadian Market*, outlines the policy framework applicable to the provision of mobile satellite services in Canada.

5.2 Spectrum Transition Policy

5.2.1 Spectrum Policy Considerations for Implementation of MSS at 2 GHz

In the past (as early as 1992), Industry Canada submitted Advanced Public Information (API) to the International Telecommunications Union for use of the 2 GHz MSS spectrum without prejudice to the decision on future MSS applications. The Department has also been approached by interested parties to initiate mobile satellite services in this spectrum.

In addition to the mobile satellite service policy framework document mentioned above, a number of spectrum utilization considerations will be taken into account in opening this new MSS band in order to accommodate a number of MSS systems. The following aspects will be considered in reviewing future MSS applications for the use of this important resource:

1. provisions for the orderly displacement of fixed systems to other frequency bands to accommodate mobile satellite system spectrum requirements;
2. a requirement to support a number of mobile satellite systems and service providers offering a range of innovative mobile satellite services with due regard to their economic and operational viability;
3. access to the mobile satellite spectrum for both geostationary and non-geostationary satellite (GSO and non-GSO) systems (spectrum sharing/partitioning); and
4. designation of spectrum to MSS with the objective of supporting regional and global systems offering a range of services including roaming.

Industry Canada recognizes that the licensing activities of global and regional MSS systems in other countries, particularly U.S. licensing proceedings, will have an impact on how the spectrum will be designated for a number of new MSS systems. This will also be taken into consideration in the designation of spectrum for particular systems and technologies.

5.2.2 General Principles

The *Spectrum Policy Framework for Canada* issued in 1992 outlines, among other things, the policy guidelines dealing with the allocation of spectrum resources and the displacement of radio systems. The policy states:

The radio frequency spectrum, as a national public resource, will be allocated and planned to advance public policy objectives, while ensuring a balance between public and private radiocommunication use to benefit the Canadian public. The allocation of and access to the spectrum will be adapted to meet changing user requirements, to provide spectrum that best meets the needs of the user, and to facilitate new and innovative services.

As a guideline for radio system or services displacement, the policy states:

As a radio licence does not confer ownership nor a continued right to a particular radio frequency, the Department will continue to provide reasonable notice to inform users of any conditions or circumstances which could result in the displacement of their services or systems to other bands.

Moreover, the policy framework reconfirms that there is no liability or responsibility or intent by the Department to financially compensate spectrum users being displaced. Furthermore, as new services have been introduced, it has not been the practice of Industry Canada to ask new radio users to compensate existing users being displaced. Of course, private arrangements may be made between new radio users and existing users on a voluntary basis, within the provisions of the spectrum transition policy.

The terms of the policy are reinforced by Section 40 of the *Radiocommunication Regulations*, which provides that the assignment of a radio frequency not confer a monopoly on the use of the frequency or any right of continued tenure.

5.2.3 The Development of Transition Provisions for the 2 GHz MSS Frequency Bands

Public comments on the proposal for a transition policy to notify and displace fixed microwave systems were part of DGTP-006-97. The proposal was a follow-up to footnotes C35A and C36 provided below, which indicate the Department's intention to develop an appropriate spectrum transition policy in the future.

C35A (CAN-98) In the bands 1990-2025 MHz and 2110-2200 MHz, the implementation of the mobile service will be subject to future policy review.

C36 (CAN-94) In the bands 1990-2010 MHz and 2160-2200 MHz, the fixed service may become secondary to the mobile-satellite service in certain sub-bands as may be determined by future policy review.

There was general agreement that co-ordination would not be practical for the co-existence of MSS and FS services in the same bands. It was also indicated that finding clear MSS spectrum within Canada would be difficult because of existing FS installations.

The Department notes that a moratorium has been in effect in the bands 1990-2010 MHz and 2110-2200 MHz since 1995. The implementation of PCS in the spectrum 1900-1990 MHz has also initiated the displacement of a number of paired channels located in the MSS downlink spectrum 2160-2200 MHz. The fixed service channels A2', A3', and B3' are paired with channels that overlap and affect the PCS spectrum blocks A, B, D and F in the band 1930-1975 MHz. Within urban areas, most of these incumbents have already been displaced, with the remaining operating predominately outside. There are approximately 340 frequency assignments (in-band or adjacent band) that are currently in use in the new MSS spectrum, and that would be affected if all the spectrum were to be used.

The Department received submissions that addressed the transition process of affected fixed stations, including the kind of notification or displacement measures that should be implemented. The Department has taken these public comments into consideration in developing a transition policy to accommodate MSS.

5.2.4 Transition Provisions for MSS in the Bands 1990-2025 and 2160-2200 MHz

The transition provisions being adopted are intended to facilitate the implementation of MSS service in Canada through the orderly displacement of fixed station frequency assignments. The provisions provide a reasonable notification period for the displacement of fixed assignments, and allow for the introduction of new mobile satellite services in the near term, based in part on demonstrated service dates to access Canadian and regional markets. Moreover, the provisions advocate a "necessary sub-band" displacement approach that links the displacement of fixed assignments to the MSS service implementation and spectrum requirements for the Canadian and North American markets.

The provisions are as follows:

1. The Department will issue formal notifications for the displacement of specific frequency assignments of fixed stations to make spectrum available on a country-wide basis, based on sufficient evidence from an approved MSS service provider¹ that such displacements are critical in meeting their service requirements, including:
 - a thorough justification that the commercial in-service date is viable;
 - justification of the spectrum requirement;
 - a technical assessment of affected fixed stations; and
 - justification that the spectrum will be accommodated on an (ITU) regional basis.
2. The earliest mandatory date for fixed frequency assignments that may be subject to displacement will be January 1, 2003. A minimum notification period

¹ An approved Canadian MSS service provider is a service provider that has been issued an approval in principle to use radio spectrum for the provision of mobile satellite services in Canada pursuant to an application submitted in accordance with Client Procedures Circular 2-6-06 (CPC-2-6-06), *Guidelines for the Submission of Applications to Provide Mobile Satellite Services in Canada and to License Subscriber Earth Stations*.

of two years will be afforded to fixed station incumbents. Earlier displacement to the formal notification date may be achieved through mutually acceptable arrangements between MSS operator(s) and the affected fixed station operator(s).

3. The displacement of frequency assignments of fixed stations and the date indicated in the notification will be based on the amount of spectrum necessary (parts of bands or sub-bands) for the implementation of a particular MSS system and the projected traffic for the Canadian market. The MSS operator(s) will ensure that such displacements, including dates and access to the Canadian and North American markets, are critical to meet the MSS service dates. The Department will consider the extent to which regional and global MSS systems have been assigned MSS spectrum for the North American market by other administrations as an indication of the service date of these systems.
4. The Department may enter into an arrangement for the assignment of the mobile satellite systems with other administrations or partition the spectrum according to technology or system operational characteristics in these allocations so as to improve the access to these bands to more MSS systems. Such an arrangement would likely be derived on a multinational basis in the near future.
5. In the event an MSS operator identifies a need to defer a notified displacement date due to delays in implementing an MSS service, an amendment to the notice of displacement must be issued at least one (1) year prior to the displacement date in effect or earlier.
6. The FS operators will cease operation of the identified frequency assignments on or before the displacement date indicated in the served notification.
7. The MSS operator shall not commence service prior to the displacement date indicated in the served notification unless a mutually acceptable arrangement has been made beforehand.
8. Industry Canada will retain oversight of the displacement process and will assist, where necessary, affected fixed operators in identifying new replacement frequency assignments.
9. Industry Canada will develop procedures based on the policy provisions in this document for the displacement of fixed service stations in the near future, and will incorporate them in the Department's mobile satellite service licence application procedure.

10. The operation of MSS service along the Canada-U.S. border will depend on the status of FS operation on either side of the border and on whether the frequency bands (in part or in whole) have been cleared for MSS service.

A significant and/or unjustified delay in the use of released frequency spectrum by MSS licensees, after the displacement date, will be viewed by Industry Canada as a serious breach of service commitment, particularly if fixed stations were displaced prematurely.

Industry Canada will monitor the effectiveness of the spectrum policy provisions related to the displacement of fixed systems. Changes to these provisions may be made to ensure that the continued availability of spectrum for MSS services is accomplished in the most efficient manner.

6.0 Implementation

The Department will closely monitor the deployment of N-MCS systems in the band 1.4 GHz to ensure an orderly roll-out through the first-come, first-served process. Alternate arrangements may ensue if the Department feels this process is not proceeding as planned. Note that new applicants to the band 1.4 GHz must co-ordinate with the subscriber radio system incumbents.

Based on the policy decisions in Section 5, Industry Canada will develop guidelines for the displacement of fixed service stations using the bands 1990-2025 and 2160-2200 MHz in the near future, and will incorporate them into the Department's mobile satellite service licence application procedure, Client Procedures Circular 2-6-06 (CPC-2-6-06), *Guidelines for the Submission of Applications to Provide Mobile Satellite Services in Canada and to License Subscriber Earth Stations*. Once available, it will be posted on the Industry Canada Web site at <http://strategis.ic.gc.ca/spectrum>.

Inquiries about the policy provisions found in this document may be addressed to the Spectrum and Radio Services Directorate, Telecommunications Policy Branch, 300 Slater Street, Ottawa, Ontario, K1A 0C8.

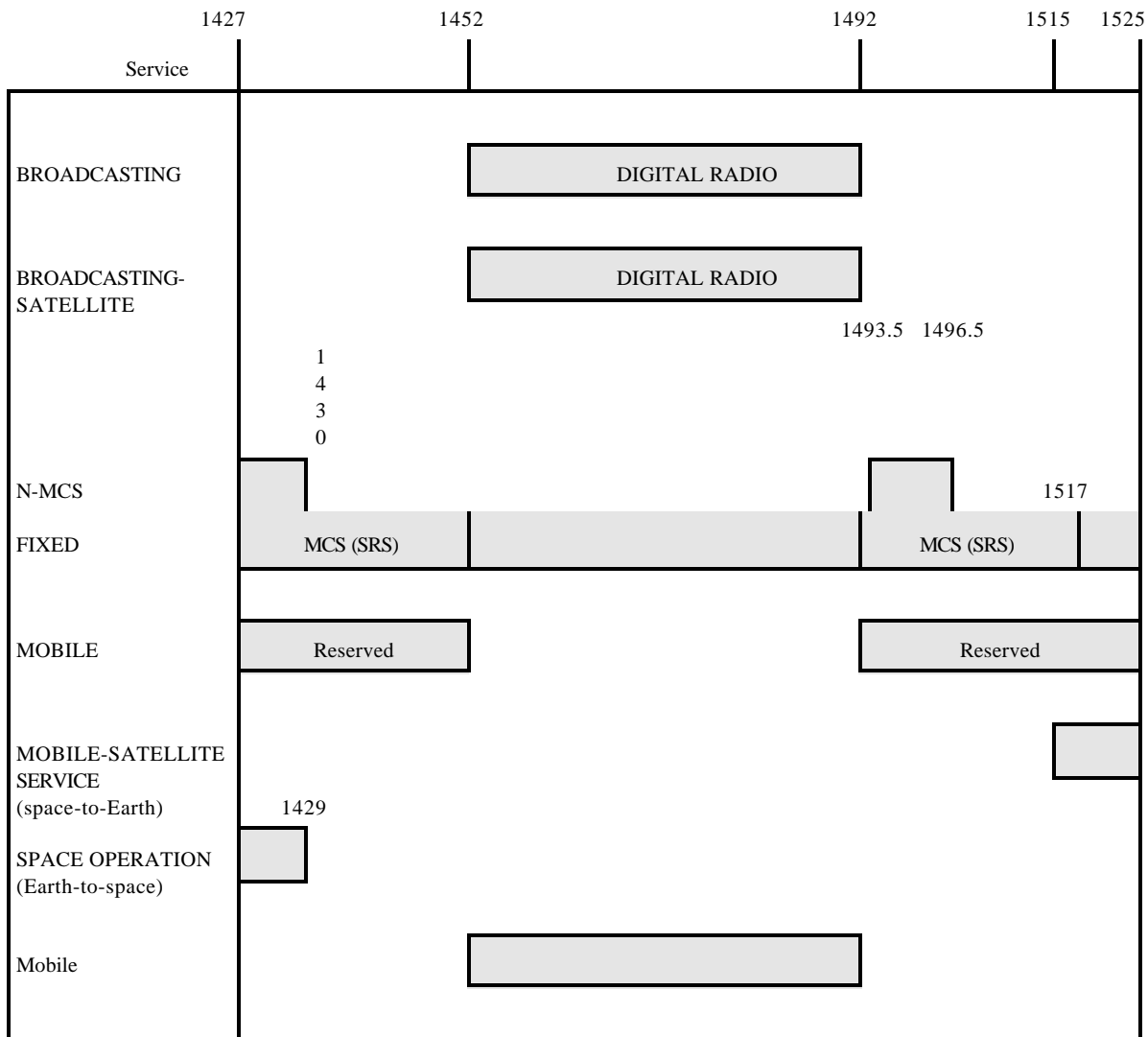
Issued under the authority
of the *Radiocommunication Act*

Michael Helm
Director General
Telecommunications Policy Branch

Revision to SP 1-20 GHz

Annex 1

Spectrum and Licensing Policy Provisions for the Band 1427-1525 MHz



1.0 A full description of the relationship between bands and services, as contained in related international and domestic footnotes, including the relative status of the broadcasting/ broadcasting-satellite and fixed, and of mobile-satellite and fixed services, can be found in the *Canadian Table of Frequency Allocations*.

2.0 Fixed Service use:

- 1427-1430 MHz Multipoint Communication Systems (Narrowband MCS (N-MCS))
- 1493.5-1496.5 MHz Multipoint Communication Systems (Narrowband MCS (N-MCS))
- 1427-1452 MHz Multipoint Communication Systems (Subscriber Radio Systems (SRS))
- 1492-1517 MHz Multipoint Communication Systems (Subscriber Radio Systems (SRS))

- 3.0 Existing fixed stations operating according to policies and standards in place in 1993 may continue to operate subject to the criteria and procedures which may be established for the mobile satellite service in the band 1515-1525 MHz and which will be established to implement digital radio broadcasting (DRB) as part of the allotment plan in the band 1452-1492 MHz.

Existing point-to-point fixed stations are non-standard in the bands 1427-1452 MHz and 1492-1517 MHz.

4.0 Subscriber Radio Systems (SRS) in the Bands 1427-1452 MHz and 1492-1517 MHz

- 4.1 Subscriber Radio Systems shall be assigned frequencies in the bands 1427-1452 MHz and 1492-1517 MHz.
- 4.2 The use of SRS in this band shall start at the second-highest frequency channel pair and work down in channel pairs in order to avoid potential conflicts with other services in adjacent bands, specifically with respect to digital radio broadcasting (1452-1492 MHz).
- 4.3 The development of SRS stations may be limited by existing aeronautical mobile (telemetry) operations along the Canada/U.S. border.

5.0 Narrowband Multipoint Communication Systems (N-MCS) in the Bands 1427-1430 MHz and 1493.5-1496.5 MHz

- 5.1 N-MCS will be limited to fixed telemetry applications such as automatic meter reading systems.
- 5.2 The spectrum will be assigned on an FCFS basis, for a maximum of 1 MHz per licensee according to the frequency block plan below:

Block A:	1427 - 1428 MHz
Block B:	1428 - 1429 MHz
Block C:	1429 - 1430 MHz
Block D:	1493.5 - 1494.5 MHz
Block E:	1494.5 - 1495.5 MHz
Block F:	1495.5 - 1496.5 MHz

Note: Other frequency plans may also be incorporated in the Standard Radio System

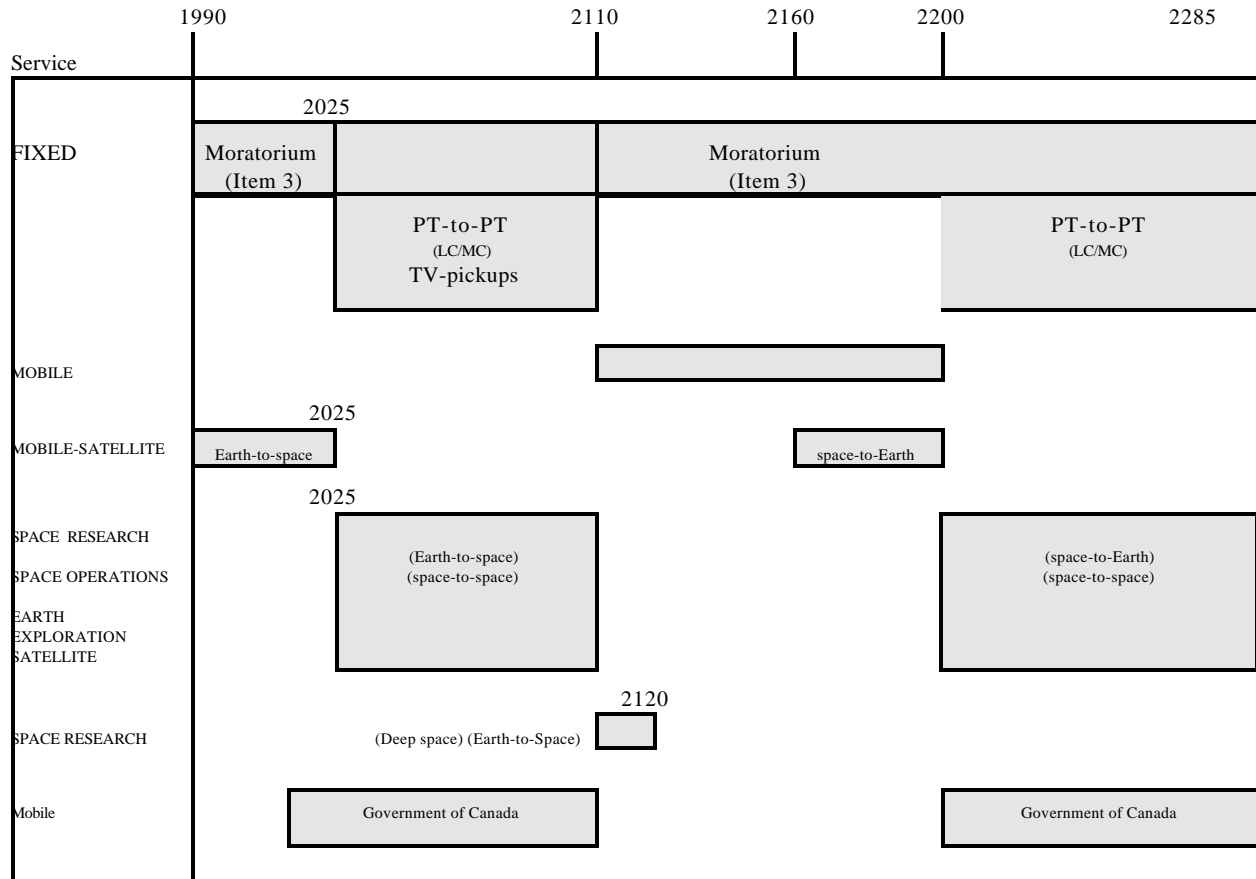
Plan (SRSP) for this spectrum.

- 5.3 A frequency block will be assigned only once within a geographical area.
 - 5.4 Licensees will be limited to 1 MHz of spectrum in a given area.
 - 5.5 Licensees will be permitted to use any channel arrangement within the assigned block.
 - 5.6 Point-to-point fixed service links are also permitted on a limited basis in this band. Such use should be complementary or incidental to the deployment of multipoint systems. Point-to-point links in a hub configuration are also permitted.
- 6.0 The use of the frequency bands 1427-1430 MHz and 1493.5-1496.5 MHz will be shared on a geographical basis between SRS and N-MCS systems. Access to this spectrum will be managed on a regional basis, and preference will normally be given to N-MCS implementations within urban areas. Outside of urban areas, access to the spectrum will continue to be on a first-come, first-served basis, although Industry Canada will monitor the deployment of radio systems to ensure adequate access for foreseen requirements of N-MCS.
- 7.0 N-MCS and SRS operators shall co-ordinate their facilities.

Revision to SP 1-20 GHz

Annex 2

Spectrum and Licensing Policy Provisions for the Band 1990-2285 MHz



1.0 A full description of the relationship between bands and services, as contained in related international and domestic footnotes, can be found in the *Canadian Table of Frequency Allocations*. This includes the relative status of the fixed and mobile services near 2 GHz. Further public consultation will determine the implementation of additional radio services in the band 2110-2200 MHz, such as PCS in the mobile service and mobile-satellite service.

2.0 Fixed system use:

- 2025-2110 MHz Point-to-Point Systems (Low and Medium Capacity) and TV-pickups
- 2200-2285 MHz Point-to-Point Systems (Low and Medium Capacity)

3.0 The moratorium identified through Gazette Notice DGTP-002-95 in January 1995 by Industry

Canada on the licensing of new fixed microwave stations in the bands 1990-2010 MHz and 2110-2200 MHz remains in effect. Modifications and/or extensions of existing systems may be permitted on a non-standard case-by-case basis. In August 1997, Industry Canada also issued a moratorium on the licensing of new fixed microwave stations through the 2010-2025 MHz band in Canada Gazette Notice DGTP-006-97.

4.0 The provisions of the Geographical Differences Policy (GDP) Guideline in SP 1-20 GHz apply.

5.0 Existing fixed systems operating in the 1990-2025 MHz and 2160-2200 MHz bands are protected as standard systems, subject to the spectrum transition policy, to accommodate MSS in these bands.

6.0 In uncongested rural and remote areas, subscriber radio systems may be authorized under the GDP Guideline in the 2025-2110 MHz and 2200-2285 MHz bands.

7.0 Preference will normally be given to TV-pickup implementations within urban areas. Outside of urban areas, access to the spectrum will be on a first-come, first-served basis, although Industry Canada will monitor the deployment of radio systems to ensure adequate access for foreseen requirements of TV-pickups. Considerations for sharing the spectrum can be developed with industry and be included in the determination of urban areas. The precise definition of individual urban areas and spectrum requirements will be managed by the Department on a regional basis.