Industry Canada Industrie Canada

SP 3-30 GHz
January 2002

Spectrum Management and Telecommunications Policy

Spectrum Utilization Policy

Consultation on Revisions to Spectrum Utilization Policies in the 3-30 GHz Frequency Range

Canada

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1.0 Introduction

The purpose of this paper announced in Gazette Notice, DGTP-001-02, is to invite public comments on spectrum policy proposals that address the use of certain bands in the 3-30 GHz frequency range.

In August 1997, the Department released a public consultation paper, entitled *Proposals to Provide New Opportunities for the Use of the Radio Spectrum in the 1-20 GHz Frequency Range* (DGTP-006-97). The document also announced policy decisions which were consequential to certain revisions to the *Canadian Table of Frequency Allocations*.

Since that time, spectrum utilization in the 1-3 GHz range has been addressed in two documents. Comments received in response to DGTP-006-97 were taken into consideration in the development of a spectrum policy entitled *Amendments to the Microwave Spectrum Utilization Policies in the 1-3 GHz Frequency Range* which was announced in Notice DGTP-006-99 in October 1999. This utilization policy made accommodation for more services and applications, and included a transition policy to facilitate the introduction of mobile satellite services. A further consultation paper (DGTP-003-00) was used to develop a spectrum policy entitled *Revisions to the Spectrum Utilization Policy for Services in the Band 2285-2483.5 MHz* (DGTP-03-01). Spectrum was designated for Wireless Communications Services (WCS) and provisions were made to facilitate the introduction of licence-exempt microwave devices in this utilization policy.

There has been interest expressed for the introduction of new services and applications in bands above 3 GHz. 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* (DGTP-013-98) which represented the first set of amendments to the 1-20 GHz policies in the spectrum above 3 GHz.

In December 1998, the *Policy Framework for the Provision of Fixed-satellite Services* liberalized many aspects of the provision of fixed-satellite service (FSS) communications in Canada. As a consequence of this liberalization and of other related commitments made in the policy framework, Industry Canada has modified the existing authorization procedures for fixed earth stations and approval of foreign fixed-satellite services. The Department has already approved a number of foreign fixed satellites for use in Canada with some provisions on frequency bands.

A number of changes are occurring in this spectrum range. For example, the requirement for exclusive bands to support heavy route microwave systems in the 4 and 6 GHz range has greatly diminished with the availability of other transport options such as fibre systems. In the 11 and 14 GHz range there is considerable interest in the provision of new broadband access services via geostationary satellites. Similarly, at 18 and 28 GHz, there are plans for multimedia satellite systems to be in operation in the next one-three years. In addition to these requirements, there is a demand for spectrum for new terrestrial wireless access services including licence-exempt applications.

As a result of these and other developments, a review of various aspects of the bands between 3 and 30 GHz is warranted.

2.0 Discussion

The need for broadband access and the provision of advanced telecommunications services to business and consumers continue to grow globally. Telecommunication service providers have been considering wireless solutions for the expansion of existing networks as well as for the implementation of new services. There has also been a new focus on local network distribution or the provision of last-mile connections directly to end users via wireless systems. Wireless technology has continued to advance with more manufacturers taking an interest in developing integrated transmission/switching networks with ATM and Internet Protocol Capability.

2.1 High Density Deployments

Until about five years ago, individual fixed service transmitting stations have typically been authorized on a site-by-site basis. This procedure involves coordination with stations of other systems or services within the band. Where the business case demands ubiquitous deployment on an ongoing basis, this procedure becomes less practicable. The level of interaction required to complete individual site-by-site coordination has a significant impact on the viability of service provision within an area, and can add untenable costs to the service provision particularly where mitigation techniques add complexity to the installation of customer premise equipment. In these circumstances it has become desirable for high density point-to-point and point-to-multipoint implementations to be authorized on the basis of a spectrum block within a geographic area (spectrum-area basis).

In the past five years, the Department has licensed a number of fixed service frequency bands on a spectrum-area basis for high density implementations to provide opportunities for businesses and consumers to benefit from a range of advanced communications access services from a number of carriers. The Department has licensed spectrum at 24 GHz, 28 GHz and 38 GHz for a variety of broadband wireless applications. This spectrum is expected to support short distance, high density, high capacity wireless connections of multiple T-1 channels (x of 1.544 Mb/s) which will most likely first serve businesses and apartment complexes. Some of these systems are being deployed to complement local wireline and fibre distribution networks.

In March 2000, the Department announced the winners of a licensing process for Multipoint Communication Systems (MCS) for fixed services in the band 2500-2596 MHz. This spectrum opened the door for a range of services including high-speed Internet access for consumers and small businesses. Spectrum at 2300 MHz was designated for Wireless Communication Services (WCS) in a recent utilization policy paper dealing with the frequency range 2285-2483.5 MHz (DGTP-003-01). A consultation document (DGRB-006-01) has recently been released for the policy framework to license spectrum at 2300 MHz for WCS and at 3500 MHz for Fixed Wireless Access (FWA). The Department expects that the demand for this spectrum will exceed the available supply in certain areas and that reliance on the marketplace to select licensees will be in the public interest. An auction was therefore selected as the most appropriate licensing process for these two bands.

Comments are requested on the following:

(a) whether there is a requirement to add a mobile allocation to the band 5850-5925 MHz to accommodate ITS applications;

(b) options available to minimize the impact on existing microwave users in the band; and

(c) the requirement, if any, for a moratorium on the licensing of new fixed systems in portions of the band, taking into account the time frames for implementation of ITS service in the bands.

7.0 Services in the 8 GHz Frequency Range

The 7725-8275 MHz band is designated for medium and high capacity fixed service microwave systems. The band 7900-8275 MHz is shared with FSS (Earth-to-space), limited to the Government of Canada (GoC) and used by the Department of National Defence for a small number of earth stations.

The Department is proposing to add a low capacity designation to this band. Comments are solicited on whether the designation for low capacity should be made throughout the band or be limited to a portion of the band, *e.g.*, 80+80 MHz.

Comments are also requested on the types of systems and their deployments which will continue to use the spectrum and new applications which are expected to require access to spectrum in this range.

The 8275-8500 MHz band is designated for low and medium capacity fixed service video systems. The band 8275-8400 MHz is shared with FSS (Earth-to-space) limited to GoC use.

Comments are requested on the types of systems and their deployments which will continue to use the spectrum, as well as, potential new applications which could be accommodated in this band.

8.0 Licence-Exempt Applications

There has been a lot of interest in licence-exempt applications in the 900 MHz, 2.4 GHz and 5 GHz bands which are shared with ISM applications. In October 1999, the Department released the *Spectrum Utilization Policy for Licence-Exempt Wireless Local Area Networks in the 5 GHz Range*. The Department designated the bands 5150-5250, 5250-5350 and 5725-5825 MHz for wireless LE-LAN systems which, by definition, can be characterized as local transmission devices available to provide a wide range of applications for high-speed broadband digital distribution applications including voice, video and data. The key objective of the policy was to provide sufficient spectrum for new LE-LAN devices which would provide greater choice of access and distribution technologies to service providers and users.

The next World Radiocommunication Conference in 2003 will consider regulatory provisions and spectrum requirements for new and additional allocations to the mobile, fixed, Earth exploration-satellite and space research services, and review the status of the radiolocation service in the frequency range 5 150-5 725 MHz under its agenda Item 1.5. There is some support for consideration in the band 5470-5725 MHz to allow indoor and outdoor wireless access system operation with minimal operational and/or technical constraints while protecting the existing services. Work is underway in the Conference Preparatory Committee to develop Canadian proposals.

The Department is interested in determining the general need and opportunities for spectrum to support new licence-exempt devices and systems in bands below 10 GHz.

The Department seeks comments on the following issues, potential directions and the public interest:

(a) whether more spectrum should be made available for LE applications recognizing that high power LE applications may constrain other services;

(b) whether there is spectrum where LE applications could be designated;

(c) the amount of spectrum which would be required; and

(d) the types of applications which could be accommodated.

8.1 Licence-Exempt Applications at 57 GHz

In January 2001, the Department announced the release of a spectrum utilization policy (Gazette Notice, DGTP-001-01) for the introduction of new licence-exempt wireless devices in the frequency bands 46.7-46.9 GHz, 57-64 GHz and 76-77 GHz. The band 59-64 GHz was designated for use by licence-exempt devices to accommodate a variety of short range high capacity wireless communication devices for the delivery of multimedia applications.

In the consultation which preceded the release of the utilization policy, the Department solicited comments on proposals for the bands 57-59 GHz and 64-66 GHz. At the time, most respondents preferred to defer comments on technical rules, future services and applications for these bands. Based on the response to the consultation, the Department deferred decisions on the introduction of LE devices in the 57-59 GHz band. Since that time the FCC has adopted technical rules for the use of the band 57-59 GHz by unlicensed devices, and the Department has received representation from the Radio Advisory Board of Canada to adopt a similar designation and technical rules. The Department also notes that several European administrations have adopted technical rules and channel plans for the band for licensed applications. While the use of the band by licence-exempt devices does not necessarily preclude the introduction of licensed services, it may make sharing difficult.

Recognizing the value of harmonizing spectrum use with other countries particularly for applications which involve consumer devices, the Department proposes to adopt a designation in the band 57-59 GHz for use by licence-exempt devices on the basis that such devices cannot claim protection from other radio systems and services. As a baseline, the Department proposes to establish technical requirements which align with those adopted by the FCC for the operation of such devices. **Comments are requested on these proposals.**

8.2 Licence-Exempt Applications at 90 GHz

The Department is aware that the FCC is considering making spectrum available at 90 GHz on a licensed and/or licence-exempt basis for high data rate last-mile applications. The FCC 's Office of Engineering and Technology held a forum last year to obtain feedback on potential commercial uses of the band 92-95 GHz. It is anticipated that this spectrum will provide good transmission range for very high capacity last-mile access applications and computer to computer communications.

The Department seeks comments on the following issues, potential directions and the public interest:

(a) the type of applications which will require access to this spectrum and the time frame for that requirement;

(b) the amount of spectrum which would be required; and

(c) whether portions of the spectrum should be made available on a licensed basis rather than a licence-exempt basis.

8.3 TV Pickups and Airborne TV Pickups

In October 1999, Industry Canada released a Spectrum Utilization Policy, entitled *Amendments to the Microwave Spectrum Policies in the 1-3 GHz Frequency Range* (SP 1-3 GHz) in which it designated the band 2025-2110 MHz, on a shared geographical basis, for TV-pickups and point-to-point fixed systems.

The need for TV-pickup operations from airborne platforms transmitting to receivers on the ground was identified. It is anticipated that coexistence with the fixed service systems will be difficult due to the large area over which these systems are expected to operate.