Spectrum Utilization Policy for Licence Exempt Wireless Devices in the Bands 46.7-46.9 GHz, 57-64 GHz and 76-77 GHz
The purpose of this notice is to announce the release of the spectrum utilization policy under the above title 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.

Background

In December 2000, Industry Canada released a consultation paper entitled Proposed Spectrum Policy for Licence Exempt Wireless Devices in the Bands 46.7-46.9 GHz, 57-64 GHz and 76-77 GHz under Canada Gazette Notice DGTP-009-00, which sought comments on proposals to designate 6200 MHz of spectrum for licence exempt (LE) wireless devices.

Comments received on this paper provided strong support to open these bands for LE wireless devices. Support was also given to the technical requirements for equipment certification which align with that of the Federal Communications Commission, thereby ensuring a greater choice of technologies available to Canadians, and facilitating the roaming of devices. Most comments received pointed to issues of clarification and precision in the technical provisions of the paper.

Based on these comments, Industry Canada is issuing a set of spectrum policy provisions for the introduction of LE-wireless devices. Concurrently, the Department has established an interim set of technical standard requirements for incorporation into the Radio Standard Specification RSS-210.

The policy document entitled Spectrum Utilization Policy for Licence Exempt Wireless Devices in the Bands 46.7-46.9 GHz, 57-64 GHz and 76-77 GHz is available electronically as follows:

World Wide Web (WWW)
http://strategis.ic.gc.ca/spectrum
or can be obtained in hard copy (for a fee), from:

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January 19, 2001

Michael Helm  
Director General  
Telecommunications Policy Branch
1.0 Introduction

This policy document announced in Gazette Notice DGTP-001-01 addresses the spectrum utilization policy 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. With this new spectrum, a wide range of innovative LE products, services and applications will be supported.

With the release of this policy, provisions are established to accommodate short range high capacity wireless communication devices for the delivery of multimedia applications in the 59-64 GHz band, and commercial vehicle mounted field disturbance sensors for vehicle radiolocation (radar) applications in the bands 46.7-46.9 GHz and 76-77 GHz.

Licence exempt devices are radio apparatus which are exempt under the Radiocommunication Act from the requirement to operate under a radio licence in specified radio frequency bands and which conform to appropriate Industry Canada spectrum policies, regulations and technical standards. Licence exempt devices or systems cannot claim protection from other radio systems and cannot cause harmful interference into licensed radio services.

As indicated in the consultation paper, the Department has set out the technical standard requirements taking into account the developments in other countries with respect to these devices and applications, specifically those of the Federal Communications Commission (FCC). Harmonization of the spectrum policy and technical requirements with regional and global activities will ensure that maximum benefits are derived.

Licence exempt devices may constitute transmission facilities as defined in the Telecommunications Act. The use of such devices in providing telecommunications services to the public for compensation could be subject to the provisions of the Telecommunications Act, including those pertaining to Canadian ownership and control requirements.

2.0 Background

In December 2000, the Department released a consultation document (DGTP-009-00) entitled Proposed Spectrum Policy for Licence Exempt Wireless Devices in the Bands 46.7-46.9 GHz, 57-64 GHz, and 76-77 GHz (DGTP-009-00). Comments were invited on the proposal to open 6200 MHz of spectrum for new licence exempt applications.

The consultation document requested comments on:

- designating the band 46.7 - 46.9 GHz for LE wireless devices, restricted to vehicle mounted field disturbance sensors (as with vehicle radar applications);
- opening the band 59 - 64 GHz for LE wireless devices;
- designating services and applications in the band 57-59 GHz;
- designating the band 76 - 77 GHz for LE wireless devices; and

- the technical and system requirements for equipment certification in all 3 bands.

3.0 Policy Provisions for Licence Exempt Wireless Devices

3.1 General Discussion of Consultation Paper

Comments received provided strong support to open up the bands 46.7-46.9 GHz, 57-64 GHz, 76-77 GHz for LE wireless devices. Support was also given to the technical requirements for equipment certification which align with that of the FCC, thereby facilitating opportunities for Canadian industry in larger equipment markets.

Most comments received point to issues of clarification in the technical provisions contained in the Annex of the paper. Some respondents provided text to supplement the revised RSS-210.

Based on these comments, Industry Canada is now issuing a set of spectrum policy provisions for the introduction of LE-wireless devices. Concurrently, the Department has established a baseline set of technical standard requirements for incorporation in Radio Standard Specification RSS-210. A description of these requirements is outlined in the attached Annex of this document.

3.2 Discussion and Policy Provisions for the Band 46.7 - 46.9 GHz

This band is currently allocated to the mobile, mobile-satellite, radionavigation and radionavigation-satellite services on a primary basis in the Canadian Table of Frequency Allocations.

The Department proposed in DGTP-009-00 to designate the band 46.7 - 46.9 GHz for vehicle mounted field disturbance sensors used in vehicle radar applications. With strong industry support to proceed, the Department is making the following policy provision:

_The band 46.7-46.9 GHz is designated for use by licence exempt devices to be used in vehicle mounted field disturbance sensors (vehicle radar) applications on the basis that such devices cannot claim protection from other radio systems and services. Transmission of information by these devices will be allowed provided that the primary mode of operation is a vehicle radar system. As a baseline, the Department is establishing technical requirements which align with those adopted by the FCC for the operation of such devices. These baseline requirements are described in the attached technical Annex. Consideration may be given to other applications that can successfully co-exist._
3.3 Discussion and Policy Provisions for the Band 57 - 64 GHz

This band is currently allocated to the fixed, mobile, inter-satellite, earth exploration-satellite and space research on a primary basis in the band 57-58.2 GHz and to fixed, mobile, earth exploration-satellite and space research on a primary basis in the band 58.2-59 GHz. The 59-64 GHz band is allocated to the fixed, mobile, radiolocation, earth exploration-satellite, space research and inter-satellite services on a primary basis in the Canadian Table of Frequency Allocations.

The Department proposed to open a total of 5000 MHz (specifically 59-64 GHz) of spectrum for LE devices. Comments were also sought on the proposed technical standard requirements for the band 57-59 GHz, noting that preliminary discussions on spectrum etiquette have started within the RABC forum. The Department also solicited comments on preference for future designation of services and applications in the band 57-59 GHz.

The FCC has already adopted a spectrum etiquette for unlicensed operation in the 59-64 GHz band. They have also initiated a separate rulemaking to address appropriate technical rules for the 57-59 GHz and 64-66 GHz bands. Decisions with respect to the addition of licence exempt operation have not been made at this time. Respondents suggested that the technical rules in the 57-59 GHz band could be a simple extension of those adopted in the band 59-64 GHz. Until a final decision is made however, most respondents preferred holding off their comments on technical rules, future services and applications suggestions.

Cognizant that the FCC is still in the process of completing its rulemaking, the Department will defer the decision on the introduction of LE devices in the 57-59 GHz band.

Based on the strong interest from industry, the Department is making the following policy provision:

The band 59-64 GHz is designated 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 is establishing technical requirements which align with those adopted by the FCC for the operation of such devices. These baseline requirements are described in the attached technical Annex.

3.4 Discussion and Policy Provisions for the Band 76 - 77 GHz

This band is currently allocated to radiolocation service on a primary basis and to the amateur, amateur-satellite and space research services on a secondary basis in the Canadian Table of Frequency Allocations.
The Department proposed to designate the band 76 - 77 GHz for LE wireless devices. With strong industry support to proceed, the Department is making the following policy provision:

The band 76-77 GHz is designated for use by licence exempt devices to be used in vehicle mounted field disturbance sensors (vehicle radar) applications on the basis that such devices cannot claim protection from other radio systems and services. Transmission of information by these devices will be allowed provided that the primary mode of operation is a vehicle radar system. As a baseline, the Department is establishing technical requirements which align with those adopted by the FCC for the operation of such devices. These baseline requirements are described in the attached technical Annex. Consideration may be given to other applications that can successfully co-exist.

Amateurs in this band, while given secondary status, will have restricted access to the 76-77 GHz band. A separate consultation will be carried out to review the possible modification of the amateur service to a primary allocation in the band 77.5-78 GHz based on WRC-2000 decisions.

4.0 Technical and System Requirements for Equipment Certification

As indicated in the consultation paper, the Department has made the technical standard requirements taking into account the developments in other countries with respect to these devices and applications, specifically those of the FCC. Harmonization of the spectrum policy and technical requirements with regional and global activities will ensure that maximum benefits are derived.

Most comments received pointed to issues of precision in the technical provisions Annex. Respondents also provided suggested text to be incorporated into the RSS-210 for clarification purposes. Based on the comments received, the Department has finalized the technical requirements contained in the attached Annex. This Annex provides the baseline technical and system requirements for equipment certification. Further details on the equipment certification in these bands will be found in RSS-210.

Any variation from the technical limits adopted in this document will be developed by Industry Canada in consultation with the interested parties and incorporated into the document RSS-210.
5.0 Implementation

The Department is of the view that the technical specifications adopted in this document will provide sufficient flexibility for the implementation of LE-wireless devices and permit the orderly operation of other services. Further details on the certification requirements will be incorporated into RSS-210.

Issued under the authority of the Radiocommunication Act

Michael Helm
Director General
Telecommunications Policy Branch

R.W. McCaughern
Director General
Spectrum Engineering Branch
# Annex

## Technical and System Requirements for Equipment Certification

<table>
<thead>
<tr>
<th>Parameter</th>
<th>46.7-46.9 GHz</th>
<th>59-64 GHz</th>
<th>76-77 GHz</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In-Band Power Density Limits</strong></td>
<td>Vehicles in Motion</td>
<td>Category 1: Products Other Than Fixed Field Disturbance Sensors</td>
<td>Vehicles in Motion</td>
</tr>
<tr>
<td></td>
<td>60 mW/cm² measured at a distance of 3 metres from the radiating source for forward-looking vehicle radar.</td>
<td>Average power density of emission: 9 µW/cm² measured at a distance of 3 meters from radiating source.</td>
<td>60 mW/cm² measured at a distance of 3 meters from the radiating source for forward-looking vehicle radar.</td>
</tr>
<tr>
<td></td>
<td>30 mW/cm² measured at a distance of 3 meters from the radiating source for side and rear-looking vehicle radar.</td>
<td>Peak power density of emission: 18 µW/cm² measured at a distance of 3 metres from the radiating source.</td>
<td>30 mW/cm² measured at a distance of 3 meters from the radiating source for side and rear-looking vehicle radar.</td>
</tr>
<tr>
<td><strong>Stationary Vehicles</strong></td>
<td>200 hW/cm² measured at a distance of 3 meters from the radiating source when vehicle is moving less than 1 km/hour.</td>
<td>Category 2: Fixed Field Disturbance Sensors that Occupy 500 MHz Bandwidth or Less and Contained Wholly in 61-61.5 GHz Band</td>
<td>Stationary Vehicles</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Average power density of emission: 9 mW/cm² measured at a distance of 3 meters from radiating source.</td>
<td>200 hW/cm² measured at a distance of 3 meters from the radiating source when vehicle is moving less than 1 km/hour.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Peak power density of emission: 18 mW/cm² measured at a distance of 3 metres from the radiating source.</td>
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<tr>
<td></td>
<td></td>
<td>Category 3: Fixed Field Disturbance Sensors for Emissions Outside 61-61.5GHz (still within 59-64 GHz Band)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Average power density of emission: 9 hW/cm² measured at a distance of 3 metres from radiating source.</td>
<td></td>
</tr>
</tbody>
</table>

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1 This annex was updated November 2003.
<table>
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<tr>
<th>Parameter</th>
<th>46.7-46.9 GHz</th>
<th>59-64 GHz</th>
<th>76-77 GHz</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Peak power density of emission:</strong></td>
<td>18 hW/cm² measured at a distance of 3 metres from the radiating source.</td>
<td>9 hW/cm² measured at a distance of 3 metres from the radiating source and peak transmitter output power not exceeding 0.1 mW.</td>
<td></td>
</tr>
<tr>
<td><strong>Category 4: Fixed Field Disturbance Sensors Other Than Those Operating Under Provisions of Categories 2 and 3:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Antenna Side Lobe Attenuation</strong></td>
<td>No need for special restriction on side lobe attenuation since manufacturers will limit this level without regulation.</td>
<td>No need for special restriction on side lobe attenuation since manufacturers will limit this level without regulation.</td>
<td>No need for special restriction on side lobe attenuation since manufacturers will limit this level without regulation.</td>
</tr>
</tbody>
</table>
### Spectrum Utilization Policy for Licence Exempt Wireless Devices in the Bands 46.7-46.9 GHz, 57-64 GHz and 76-77 GHz SP-47 GHz

<table>
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<th>76-77 GHz</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spurious Emission Limits</strong>*</td>
<td>Emissions below 40 GHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Field</td>
<td>Meas.</td>
<td></td>
</tr>
<tr>
<td>Frequency (MHz)</td>
<td>Strength (mv/m)</td>
<td>Distance (metres)</td>
<td></td>
</tr>
<tr>
<td>0.009-0.490</td>
<td>2400/F (kHz)</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>0.490-1.705</td>
<td>24000/F (kHz)</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>1.705-30.0</td>
<td>30</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>30-88</td>
<td>100 **</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>88-216</td>
<td>150 **</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>216-960</td>
<td>200 **</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Above 960</td>
<td>500</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

** fundamental emissions from intentional radiators operating shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. **

** Exception:** Perimeter protection systems may operate in the 54-72 MHz and 76-88 MHz bands under the provisions of this section. The use of such perimeter protection systems is limited to industrial, business and commercial applications.

**Emissions Outside the Operating Band and Between 40 GHz and 200 GHz**

2 pW/cm² measured at a distance of 3 metres from the radiating source.

- spurious emission limits may not exceed the level of the fundamental emission.

90 pW/cm² measured at a distance of 3 metres from the radiating source.

Within the 59.0-59.05 GHz band, only spurious emissions related to a publicly-accessible coordination channel are permitted.

- spurious emission limits may not exceed the level of the fundamental emission.

**Emissions above 200 GHz**

1000 pW/cm² measured at a distance of 3 metres from the radiating source.

- spurious emission limits may not exceed the level of the fundamental emission.

- for field disturbance sensors in this band, spectrum will be investigated up to 231 GHz.
### Spectrum Utilization Policy for Licence Exempt Wireless Devices in the Bands 46.7-46.9 GHz, 57-64 GHz and 76-77 GHz

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<th>76-77 GHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak Tx Output Power</td>
<td>No Limit</td>
<td>- 500 mW</td>
<td>No Limit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Transmitters with emission bandwidth of less than 100 MHz must limit peak transmit output power to the product of 500 mW times their emission bandwidth, divided by 100 MHz.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>- With necessary authorization, transmitters may be mounted in a group installation for simultaneous operation with one or more authorized transmitters. However, transmitters must not be equipped with external phase-locking inputs that permit beam-forming arrays to be realised.</td>
<td></td>
</tr>
</tbody>
</table>
### Spectrum Utilization Policy for Licence Exempt Wireless Devices in the Bands 46.7-46.9 GHz, 57-64 GHz and 76-77 GHz

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<tbody>
<tr>
<td><strong>Measurement Requirements</strong></td>
<td>Above 30 GHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emissions from transmitters operating above 30 GHz be measured to the fifth harmonic of the highest operating frequency or to 200 GHz (whichever is lower).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For field disturbance sensors operating in the 76-77 GHz band, spectrum will be investigated up to 231 GHz.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 MHz resolution bandwidth for measurement instrument used to measure emissions above 1000 MHz</td>
<td></td>
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</tr>
<tr>
<td>The measurement of conducted emissions above 40 GHz could accurately portray the radiated RF fields, provided that the antenna characteristics can be determined accurately. Accordingly, conducted measurements that are to be employed in order to facilitate measurements will be permitted.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Not Applicable</td>
<td>Peak Power Density is to be measured with an RF detector that has detection bandwidth encompassing 59-64 GHz and video bandwidth of a minimum 10 MHz. (Or equivalent measurement method).</td>
<td>Not Applicable</td>
<td></td>
</tr>
<tr>
<td><strong>Frequency Stability Requirements</strong></td>
<td>Fundamental emissions of millimetre wave devices must be contained within the specified frequency bands during all conditions of operations. For certification purposes, the equipment will be presumed to operate over the temperature range of -20 to +50 degrees Celsius with an input voltage variation of 85% to 115% of the rated input voltage. Should the equipment operate at temperatures lower than the tested range, it is expected that this requirement is still met.</td>
<td></td>
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</tbody>
</table>

*Note:*

Unless otherwise specified (e.g. in 59-64 GHz), when the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value. The exact method of calculating the average field strength shall be submitted with any application for certification or shall be retained in the measurement data file for equipment subject to notification or verification.