Spectrum Management and Telecommunications

Client Procedures Circular

Licensed Low-Power Radio Apparatus
Preface

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1. **Principle**

The Minister of Industry, through the *Department of Industry Act*, the *Radiocommunication Act* and the *Radiocommunication Regulations*, with due regard to the objectives of the *Telecommunications Act*, is responsible for spectrum management in Canada. As such, the Minister oversees the development of national policies and goals for spectrum resource use and ensures effective management of the radio frequency spectrum.

2. **Mandate**

Section 5 of the *Radiocommunication Act* specifies that the Minister may issue radio licences in respect of radio apparatus. Further, section 6 of the Act states that the Governor in Council may exempt radio apparatus from the requirement to be licensed.

3. **Related Documents**

   - RSS-123 *Licensed Low-Power Radio Apparatus*
   - BETS-1 *Technical Standards and Requirements for Low Power Announce Transmitters in the Frequency Bands 525-1,705 kHz and 88-107.5 MHz*
   - RSS-Gen *General Requirements for Compliance of Radio Apparatus*
   - RSS-210 *Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment*
   - RSS-310 *Licence-exempt Radio Apparatus (All Frequency Bands): Category II Equipment*
   - CPC-2-1-28 *Voluntary Licensing of Licence-Exempt Low-Power Radio Apparatus in the TV Bands*
   - Canadian Radio-television and Telecommunications Commission *Public Notice CRTC 2000-10*
   - RIC-66 *Addresses and Telephone Numbers of Regional and District Offices*

4. **Policy**

4.1 **General**

Low-power radiocommunication apparatus (LPA) typically include devices such as cordless telephones, baby monitors, Family Radio Service (FRS) portable two-way radios, wireless microphones and cameras, and apparatus used for remote cue and control purposes or the synchronization of video camera signals.
The requirement to obtain a radio licence for an LPA is dependent upon the Radio Standards Specification (RSS) under which the LPA has been approved for use in Canada. LPA certified under RSS-123 are subject to radio licensing pursuant to subsection 4(1) of the Radiocommunication Act and the policies contained within this document. Licence-exempt LPA are approved under RSS-210 or RSS-310 only.

Note that licensing requirements do not apply to transmitters used for broadcasting.

Table 1 lists the frequency bands for devices commonly approved under RSS-123 and the maximum bandwidth allowed for the operation of these devices.\(^1\)

<table>
<thead>
<tr>
<th>Frequency Band (MHz)</th>
<th>Maximum Bandwidth</th>
<th>Device Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>26.10–26.48</td>
<td>200 kHz</td>
<td>Wireless microphones</td>
</tr>
<tr>
<td>88–107.5 (FM broadcast band)</td>
<td>200 kHz</td>
<td>Wireless microphones, low-power announcement service (LPAS) and other broadcasting services devices</td>
</tr>
<tr>
<td>150–174</td>
<td>54 kHz</td>
<td>Wireless microphones</td>
</tr>
<tr>
<td>450–451</td>
<td>200 kHz</td>
<td>Auxiliary broadcast wireless microphones</td>
</tr>
<tr>
<td>455–456</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note 1:** Maximum transmit power for all devices is 1.0 W.

**Note 2:** In the frequency modulation (FM) broadcast band (88–107.5 MHz), transmitters using carrier frequencies (frequencies spaced 200 kHz apart, i.e. 88.1, 88.3, . . . 107.5 MHz) may be authorized, under certain conditions, to provide public information or land mobile services. See Section 6 for details. FM transmitters using carrier frequencies above 107.5 MHz will not be authorized to provide these services in order to protect the aeronautical service operating above 108 MHz.

5. **Authorization and Operational Requirements for Wireless Microphones**

5.1 **General**

A wireless microphone system includes wireless microphones and associated monitors or receiving stations, and can operate only within a 500-metre radius.

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\(^1\) For low-power wireless microphones, wireless cameras and other LPA operating in the television broadcast bands, refer to CPC-2-1-28 — *Voluntary Licensing of Licence-Exempt Low-Power Radio Apparatus in TV Bands*. 
The licences for these LPA systems will indicate that:

(a) authorization is granted on a no-interference, no-protection basis vis-à-vis the primary radio services; and

(b) it is the licensee’s responsibility to resolve any interference problems caused to other primary spectrum users. For example, the following could be added as a condition of licence: “Should interference be caused to other primary spectrum users, the licensee will be required to take whatever steps are necessary to reduce the interference, including immediate cessation of station operation.”

The frequency assignment process will be administered carefully to ensure that interference is not unduly caused to primary users of a frequency band in which an LPA system operates.

5.2 Licensing of Wireless Microphones

A single mobile radio station licence will be issued for all microphones associated with the system and will specify the authorized transmit frequencies. A single land radio station licence will be issued for all fixed receivers and will specify the authorized receive frequencies. However, all licence fees will be charged to a single radio station channel.

Wireless microphones operating in the 26.10–26.48 MHz, 450–451 MHz and 455–456 MHz bands are not required to use specific carrier frequencies, but the assigned frequencies will be sufficiently far from the band edges to ensure that the occupied bandwidth falls entirely within the band. Frequencies assigned to microphones operating in the 88–107.5 MHz band will not only be sufficiently far from the band edges but will also be offset from the upper or lower band limit by 25 kHz, or an integral multiple thereof. Furthermore, the frequencies for wireless microphones operating in the FM broadcast band will be carefully selected to ensure that there is no disruption in the reception of other broadcast signals available in the immediate area.

Table 2 lists the preferred frequencies for general-use wireless microphones operating in the 150–174 MHz frequency band.

Table 2 — Preferred Frequencies in the 150–174 MHz Band

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Frequency (MHz)</th>
<th>Frequency (MHz)</th>
<th>Frequency (MHz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>169.445</td>
<td>170.245</td>
<td>171.045</td>
<td>171.845</td>
</tr>
<tr>
<td>169.505</td>
<td>170.305</td>
<td>171.105</td>
<td>171.905</td>
</tr>
</tbody>
</table>
Should none of the frequencies in Table 2 be permissible, Industry Canada may consider selecting one of the Broadcasting Auxiliary Use frequencies listed in Table 3, on a special case basis.

Table 3 — Frequencies Allocated for Broadcasting Auxiliary Use (MHz)

<table>
<thead>
<tr>
<th>152.870</th>
<th>153.050</th>
<th>153.230</th>
<th>166.250*</th>
<th>172.740</th>
</tr>
</thead>
<tbody>
<tr>
<td>152.930</td>
<td>153.110</td>
<td>153.290</td>
<td>170.150*</td>
<td>172.830</td>
</tr>
<tr>
<td>152.990</td>
<td>153.170</td>
<td>153.350</td>
<td>172.680</td>
<td>172.890</td>
</tr>
</tbody>
</table>

* The 166.250 MHz and 170.150 MHz frequencies are reserved exclusively for nationwide use by the Canadian Broadcasting Corporation.

6. Public Information and Other Non-broadcasting Services in the 88–107.5 MHz FM Broadcast Band

The public information service is defined in the Radiocommunication Regulations as “a radiocommunication service that provides for communications in which the transmissions are intended for the public, but does not include transmissions by a broadcasting undertaking.” Accordingly, a radio authorization can be issued for this type of service using radio apparatus certified under RSS-123 provided that all of the following criteria are met:

- The transmitter uses FM carrier frequencies (frequencies spaced 200 kHz apart, i.e. 88.1, 88.3, . . . 107.5 MHz);

- The radio apparatus is not used for broadcasting as defined in the Broadcasting Act — “any transmission of programs, whether or not encrypted, by radio waves or other means of telecommunication for reception by the public by means of broadcasting receiving apparatus, but does not include any such transmission of programs that is made solely for performance or display in a public place.” Applicants should consult the Canadian Radio-television and Telecommunications Commission (CRTC) if it is unclear whether their application meets this definition;

- The intended purpose of the radio apparatus is to provide an information service within the confines of a public place (shopping centre, museum, school, arena, drive-in theatre, parking lot, etc.);

- The effective radiated power (e.r.p.) is limited to 1 W and the field strength at the public place boundary is limited to 100 microvolts per metre (µV/m). Boundary field strength levels can be controlled by reducing transmitter power or by changing the transmitter antenna’s gain, height or location (i.e. indoor vs. outdoor).

The following condition of licence will be added:

\[\text{The radiated emission from this station shall be confined to the public place where this station is authorized to operate by limiting the field strength produced at the public place boundary to 100 microvolts per metre (µV/m). This authorization is granted on a no-interference, no-protection basis.}\]
A second scenario involves the use of this type of equipment for purposes such as the distribution of information to employees working on company property. In this case, the transmissions are not intended to be received by the general public, nor are the transmissions made within a public place. Therefore, a land mobile radio station licence can be issued. The modulation, carrier frequency, power and field strength limitations noted above must be respected.

For this scenario, the following condition of licence will be added:

*The radiated emission from this station shall be confined to the private property where this station is authorized to operate by limiting the field strength produced at the property boundary to 100 microvolts per metre (µV/m). This authorization is granted on a no-interference, no-protection basis.*

Radio apparatus operating within 18 nautical miles (33 km) of an airport or using a frequency higher than 100 MHz may be subject to coordination with NAV CANADA. The regional and/or district office involved in broadcasting certification should be consulted to confirm this requirement.

As noted earlier, apparatus certified under RSS-210 and not used for broadcasting are exempted from radio licensing requirements. Such apparatus include personal audio devices equipped with short-range FM transmitters that send radio signals to nearby FM receivers.

7. **Low-Power Announcement Service and Other Broadcasting Services in the 88–107.5 MHz Band**

If an installation’s radio transmissions are intended for reception by the general public and/or the signal is not confined to a public place, the installation must be considered a broadcasting undertaking. In that case, the installation’s operators are required to obtain an Industry Canada broadcasting certificate and a CRTC broadcasting licence; such installations must also use radio equipment certified under appropriate Broadcasting Equipment Technical Standards (BETS). However, in accordance with Industry Canada and CRTC policy, certain broadcasting undertakings may be exempted from these requirements. Refer to the CRTC Exemption Orders and Industry Canada’s Broadcasting Certificate-exempt Radio Apparatus List for current information.

Low-power announcement service (LPAS) stations allow real estate agents, store owners, local authorities and others to communicate messages of an informative or commercial nature to the general public by means of ultra-low-power transmitters (e.g. “talking signs”). As a broadcasting service, an LPAS undertaking may require an Industry Canada broadcasting certificate and a CRTC broadcasting licence. However, as noted in Public Notice CRTC 2000-10, in the section “Exemption order respecting low-power radio: Ultra low-power announcement service (LPAS) undertakings,” there are conditions under which an LPAS undertaking may be exempted from the requirement to obtain a licence.

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2 Frequency bands relevant to frequency selection and coordination by NAV CANADA are outlined in Appendix A of the Agreement Between Her Majesty the Queen in Right of Canada as Represented by the Minister of Industry and NAV CANADA Regarding Radio Frequency Spectrum Management.
If the LPAS radio apparatus used is certified under BETS-1, the LPAS undertaking is exempted from the requirement to obtain an Industry Canada broadcasting certificate. If the radio apparatus is not certified under BETS-1, the operator must apply for a broadcasting certificate by following the relevant Broadcasting Procedures and Rules (i.e. BPR-1 and BPR-3).

Appendix 1 provides an overview of the authorization process for both broadcasting and non-broadcasting services in the 88–107.5 MHz band.
Appendix 1 – Authorization Process for the 88–107.5 MHz Band

*Operation Conditions:*
1. Max ERP \( \leq 1 \) watt subject to co-channel coordination with NavCanada if located within 35 km of an airport, or if frequency \( \geq 100 \) MHz.
2. Field strength \( \leq 10 \mu \text{V/m} \) at the property boundary, including parking lot.

Note:
- BETS-0 or BETS-5 Certified Equipment.