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Spectrum Management and Telecommunications

Radio Standards Specification

Licence-Exempt Radio Apparatus: Category II Equipment

Draft 1

Preface

Radio Standards Specification RSS-310, Issue 5, *Licence-Exempt Radio Apparatus: Category II Equipment*, replaces RSS-310 Issue 4 dated July 2015.

Listed below are the main changes:

1. Transfer requirements for devices operating in the band 24-24.25 GHz to RSS-210, [Licence-Exempt Radio Apparatus: Category I Equipment](#). These devices are now required to be certified under RSS-210.
2. Add provision for transition period.
3. Refer to RSS-Gen, [General Requirements for Compliance of Radio Apparatus](#) for required text to be inserted into user manuals.
4. Remove provision for electronic labelling of equipment as this provision is now provided in RSS-Gen.
5. Remove requirements for Category II receivers as these receivers are now covered in RSS-Gen.
6. Remove exemption from any requirement for infrared wireless devices.
7. Update requirements for alternating current (AC) wire carrier current devices.
8. Update general information.

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1. Scope

Radio Standards Specification RSS-310, [Licence-Exempt Radio Apparatus: Category II Equipment](#), sets out standard requirements for licence-exempt radio apparatus used for radiocommunication (other than broadcasting) that is exempt from certification.

2. Transition period

This document will be in force upon publication on Innovation, Science and Economic Development Canada (ISED)'s website. However, a transition period of six (6) months following its publication will be provided, within which compliance with RSS-310 Issue 5, or Issue 4, will be accepted. After this period, equipment manufactured, imported, distributed, leased, offered for sale, or sold in Canada, shall comply with this issue.

A copy of RSS-310, issue 4, may be requested by [email](#).

3. General information

3.1 Certification requirement

Equipment covered by this standard is classified as Category II equipment. Pursuant to subsection 21(5) of the [Radiocommunication Regulations](#), Category II equipment is certification-exempt and no technical acceptance certificate (TAC) issued by the Certification and Engineering Bureau (CEB) of ISED or a certificate issued by a recognized certification body (CB) is required.

Pursuant to subsection 4(3) of the [Radiocommunication Act](#), the manufacturer, importer and/or distributor shall ensure that Category II equipment is in compliance with all applicable procedures and standards.

3.2 Licensing requirements

Equipment covered by this standard is exempt from licensing requirements, pursuant to Section 15 of the [Radiocommunication Regulations](#).

3.3 RSS-Gen compliance

RSS-310 shall be used in conjunction with RSS-Gen, [General Requirements for Compliance of Radio Apparatus](#), for general specifications and information relevant to the equipment covered by this standard.

3.4 Test report

A test report showing equipment compliance with all applicable technical requirements shall be compiled. The test report shall be prepared in accordance with the provisions of [RSS-Gen](#) where applicable.

3.5 Labelling requirements

Each unit of radio apparatus shall bear a label (shown below) which represents the manufacturer's or importer's self-declaration of compliance (SDoC) with RSS-310 prior to being marketed in Canada or imported into Canada. The labelling shall meet the requirements set out in this section and in RSS-Gen for electronic labelling (e-labelling). The label shall be permanently affixed to the apparatus or displayed electronically and its text must be clearly legible. If the dimensions of the device are extremely small or it is not practical to place the label on the apparatus and if e-labelling cannot be implemented, the label shall be placed in a prominent location in the user manual supplied with the apparatus, as agreed upon with ISED prior to the importation or marketing of the apparatus. The user manual may be in an electronic format; if it is not supplied to the user, the user manual must be readily available.

RSS-310 compliance label is given below:

Manufacturer's Name or Brand Name

Model: (model number)

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The RSS-310 compliance label is not required for devices consisting of Category II radio apparatus subject to RSS-310 that are housed together with Category I radio apparatus (e.g. a transceiver whose receiver is Category II radio apparatus and whose transmitter is Category I radio apparatus). These devices are, however, subject to the labelling requirements applicable to Category I radio apparatus, as set out in RSS-Gen.

3.6 User manual

Radio apparatus covered under this standard shall comply with the user manual notice requirements of [RSS-Gen](#) for licence-exempt radio apparatus. In addition, the carrier frequency and the RF output power (or field strength and measurement distance) shall be stated in the user manual.

3.7 Emissions falling within restricted frequency bands

Radio apparatus covered by this standard is required to comply with the provisions in [RSS-Gen](#) with respect to emissions falling within restricted frequency bands. These restricted frequency bands are listed in [RSS-Gen](#).

4. Technical requirements

4.1 Underground radios

Underground radio apparatus subject to this standard consists of base stations and/or repeaters, portable or mobile units located and operated completely below the surface of the earth, not freely accessible to the public, such as mines.

4.1.1 Labelling and user manual

In addition to the labelling requirements in Section 3.5, the equipment shall bear a label stating:

“For underground installations only”.

In addition to the user manual requirements in Section 3.6, the user manual shall include a notice cautioning the user not to install the transmitter near any opening to above ground, and shall provide instructions to comply with the requirements set out in this section.

Underground locations are defined as locations completely below the surface of the earth that are not freely accessible to the public. As such, radio apparatus operating in underground locations, for example, subway stations, underground parking, underground retail and businesses, do not qualify for licence exemption and require certification.

Above ground base stations whose sole means of communication is via cable, are licence-exempt and do not require certification.

Radio stations that operate exclusively in underground locations, not accessible to the public, are subject to this standard and are licence-exempt. These exempt stations operate on a secondary, no-interference, no-protection basis. Should interference be caused to any above ground radio apparatus, the operator of the underground system must take immediate remedial action to eliminate the interference.

Although these radio systems are licence-exempt, users may consult the local district office of ISED ([RIC-66](#)) regarding their proposed frequency selections. This would prevent the radio systems from operating on channels which may create interference with safety services and would help in the identification of systems inadvertently radiating signals above ground.

4.1.2 Technical requirements

Licence-exempt underground radio systems are not restricted in the number of frequencies that they may use. However, the fundamental components of modulation shall not fall within the restricted frequency bands listed in the “*Restricted Frequency Bands*” section of [RSS-Gen](#).

The transmitter output power should not be greater than necessary for its intended function and shall not exceed 110 W under any circumstances.

4.1.3 Installation requirements

At any location not defined as an underground location, the radio frequency (RF) field leakage from an underground radio system at the fundamental frequency shall not exceed the general field strength limits specified in [RSS-Gen](#).

4.2 Cable-locating equipment (Band 9-490 kHz)

Cable-locating equipment is used to locate a buried cable or pipe by coupling an RF signal onto the cable or pipe and using a receiver to detect its location. The equipment may operate on any frequency within the band 9-490 kHz and the power, in terms of peak value, shall not exceed 10 W for the band 9-45 kHz and 1 W for the band 45-490 kHz, respectively.

In addition to [RSS-Gen](#) user manual requirements, the user manual shall contain the following or

equivalent notice:

Equipment is for use by trained operators only and not for general household use. Usage duration shall be as short as possible to prevent possible radio interference to authorized services, especially the 100 kHz eLoran frequency.

4.3 Alternating current (AC) wire carrier current devices operating in the band 0-30 MHz

AC wire carrier current devices operating in the bands 0-30 MHz are intended for use inside buildings, using the building's AC wiring for RF signal propagation. The signals are generated by a transmitter/exciter unit that is electrically connected to the building wiring. These systems fall under the following categories:

- a) Interference-causing equipment where both the exciter (transmitter) and the receiver are connected to the building wiring and any radiated emissions of RF energy are unintentional. This includes in-house broadband power line devices. These devices are subject to ISED's Interference-Causing Equipment Standard [ICES-006](#), *AC Wire Carrier Current Devices (Unintentional Radiators)*.
- b) AC wire carrier current devices operating in the amplitude modulation (AM) broadcasting band of 535-1705 kHz that is intended for AM broadcast receivers. These devices are broadcasting equipment and are subject to [BETS-1](#), *Technical Standards and Requirements for Low Power Announce Transmitters in the Frequency Bands 525-1,705 kHz and 88-107.5 MHz*.
- c) AC wire carrier current devices of the intentional radiator type where the exciter is connected to the AC wire line but the receiver is not (e.g. a magnetic loop is used to pick up the received signal). These intentional radiator devices are covered by this standard (RSS-310) and shall comply with the limits and method of measurements prescribed in [ICES-006](#).

4.4 Transmitters with input power of 6 nW or less

Any transmitter that has a power consumption (total input power into the device) not exceeding 6 nW is excluded from any ISED requirements and may operate on any radio frequency, including in the restricted frequency bands listed in [RSS-Gen](#).

4.5 Band below 9 kHz

Radio apparatus operating at frequencies less than 9 kHz are excluded from any ISED requirements.

4.6 Band 9-490 kHz

Devices operating in the frequency band 9-490 kHz shall have all emissions, including the fundamental emission, at 40 dB below the general field strength limits listed in [RSS-Gen](#).

4.7 Bands 26.96-27.28 MHz and 49.82-49.90 MHz

Devices operating in the bands 26.96-27.28 MHz and/or 49.82-49.90 MHz shall have their field strength not exceed 10 mV/m measured at 3 metres with an average or a CISPR quasi-peak detector.

Outside these bands, the general field strength limits listed in [RSS-Gen](#) shall apply.

Cordless telephones are not permitted to operate under this provision for the band 49.82-49.90 MHz.

4.8 Data modems

Data modems shall have unwanted emissions outside their intended bandwidth adequately suppressed. Modems may be classified as one of two classes described below.

4.8.1 Data modems for connection to the public switched telephone network (PSTN)

Data modems to be connected to a PSTN shall comply with applicable requirements in CS-03, [Compliance Specification for Terminal Equipment, Terminal Systems, Network Protection Devices, Connection Arrangements and Hearing Aids Compatibility](#) and in DC-01, [Procedure for Declaration of Conformity and Registration of Terminal Equipment](#).

4.8.2 Data modems for connection to radio transmitter

If the data modem is a stand-alone unit (or part of a radio transmitter) and is intended for connection to the data port of a radio transmitter, the modem shall be tested to comply with Interference-Causing Equipment Standard ICES-003, [Information Technology Equipment \(Including Digital Apparatus\) — Limits and Methods of Measurement](#), as well as with the test described below.

The data modem must also contain suitable audio filters or employ pulse shaping to limit the frequency spectrum, and have a level adjustment capability so that the user can set the frequency deviation of the radio transmitter. It should also have impedance that matches the radio transmitter data port. A suitable test method is given below. The objectives of the test are for the modem manufacturer to ascertain whether the pulse shaping/audio filtering, together with the appropriate frequency deviation, will limit the wanted signal bandwidth, and for the said modem manufacturer to issue proper instructions to the user to adjust the frequency deviation.

4.8.2.1 Method of measurement

Step 1: Connect a data generator to the modem.

Step 2: Connect the modem to the data port of any type of radio transmitter that has been certified by ISED. Connect a spectrum analyzer to the RF output point of the transmitter.

Step 3: Set the data generator rate to the maximum for which the modem is rated, with a pseudo-random pattern of at least 2047 bits.

Step 4: The following information shall be marked on the spectrum plots and included in the test report: data bit and symbol rates; input voltage to the radio transmitter data port; the manufacturer's name; as well as the model number of the data modem.

4.8.2.2 Unwanted emissions

The spectral density of unwanted emissions outside the intended passband of the radio channel shall be at least 20 dB below the in-band (or passband) spectral density as measured by a spectrum analyzer with a resolution bandwidth of approximately 1.0% of the radio transmitter's occupied bandwidth.

4.8.3 Labelling and user manual

Labelling shall comply with [DC-01](#) procedure, as appropriate. In addition, the data modem user manual shall contain instructions on how to adjust the frequency deviation, and shall notify the user regarding the maximum bit and symbol rates that the modem is capable of handling.

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