



Spectrum Management and Telecommunications

Radio Standards Specification

Licence-Exempt Radio Apparatus Operating in the Frequency Bands 116- 123 GHz, 174.8-182 GHz, 185-190 GHz and 244-246 GHz

Preface

Inquiries may be submitted by one of the following methods:

1. Online using the [General Inquiry](#) form (in the form, select the Directorate of Regulatory Standards radio button and specify “RSS-295” in the General Inquiry field)
2. By mail to the following address:

Innovation, Science and Economic Development Canada
Engineering, Planning and Standards Branch
Attention: Regulatory Standards Directorate
235 Queen Street
Ottawa ON K1A 0H5
Canada
3. By email to consultationradiostandards-consultationnormesradio@ised-isde.gc.ca

You may visit our [Common Questions and Answers](#) and [General Notices](#) webpages to find additional information and guidance related to technical equipment standards published by Innovation, Science and Economic Development Canada (ISED).

Comments and suggestions for improving this standard may be submitted online using the [Standard Change Request](#) form, or by mail or email to the above addresses.

All Innovation, Science and Economic Development Canada publications related to spectrum and telecommunications are available on the [Spectrum Management and Telecommunications](#) website.

Issued under the authority of
the Minister of Innovation, Science and Industry

Martin Proulx
Director General
Engineering, Planning and Standards Branch

Contents

1. Scope	1
2. Purpose and Application	1
3. General requirements and references	1
3.1 Coming into force	1
3.2 Certification requirements	1
3.3 Licensing requirements	1
3.4 RSS-Gen compliance	1
4. Definitions	2
5. Transmitter standard specifications	2
5.1 Measurement method.....	3
5.2 Types of modulation	3
5.3 Frequency stability.....	3
5.4 Transmitter output power	3
5.5 Transmitter unwanted emissions	4
6. User Manual and Labelling Requirements	4
6.1 User Manual.....	4
6.2 Labelling Requirements	4

1. Scope

This Radio Standard Specification (RSS) sets out the certification requirements for licence-exempt devices operating in the frequency bands 116-123 GHz, 174.8-182 GHz, 185-190 GHz and 244-246 GHz.

2. Purpose and Application

This RSS applies to licence-exempt devices which includes short range devices, and fixed point-to-point radio equipment operating in the frequency bands 116-123 GHz, 174.8-182 GHz, 185-190 GHz and 244-246 GHz.

3. General requirements and references

This section sets out the general requirements and references related to this RSS.

3.1 Coming into force

This standard will be in force as of the date of its publication on Innovation, Science and Economic Development Canada's (ISED) website.

3.2 Certification requirements

Equipment covered by this standard is classified as Category I equipment and shall be certified. Either a 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.

3.3 Licensing requirements

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

3.4 RSS-Gen compliance

Equipment being certified under this standard shall comply with the general requirements set out in RSS-Gen, [General Requirements for Compliance of Radio Apparatus](#).

4. Definitions

The following terms are used in this document.

Emission bandwidth

The frequency range occupied by a steady state signal with modulation, outside which the power spectral density shall be 6 dB below the maximum power spectral density in the band, as measured with a 100 kHz resolution bandwidth. The carrier frequency must be stationary during the measurement interval, even if not stationary during normal operation (e.g. frequency hopping shall be disabled).

Note: Occupied bandwidth has a different definition; refer to [RSS-Gen](#).

Fixed point-to-point equipment

Fixed radio equipment with directional antennas that is used to provide communications between fixed locations.

Indoor equipment

Equipment that, by the nature of its design, is intended to be operated in locations completely enclosed by walls, floor and ceiling.

Outdoor equipment

Equipment that does not meet the definition of indoor equipment.

Short-range devices (SRD)

Radio apparatus that usually operate with low transmitted power, have limited emission range and offer a low risk of interference to other radio services.

Total radiated power (TRP)

The integral of the power transmitted by all radiating elements, in different directions over the entire radiation sphere.

5. Transmitter standard specifications

This section sets out the technical requirements applicable to the radio transmitters subject to this standard.

5.1 Measurement method

Unless otherwise specified, all measurements shall be performed in accordance with the requirements of RSS-Gen.

Alternate measurement procedures or standards are listed on ISED's [Normative Test Standards and Acceptable Alternate Procedures](#) website and may be used to demonstrate compliance.

The average and peak equivalent isotropically radiated power (e.i.r.p.) shall be measured in terms of average and peak value respectively, during the transmit interval, with a measurement bandwidth that encompass the entire occupied bandwidth within the frequency band of operation.

For average e.i.r.p. measurements, a narrower resolution bandwidth can be used, provided that the measured power is integrated over the entire measurement bandwidth.

5.2 Types of modulation

Devices shall employ digital modulation.

5.3 Frequency stability

The frequency stability shall be sufficient to ensure that the occupied bandwidth stays within its frequency band of operation when tested to the temperature and supply voltage variations specified in [RSS-Gen](#).

5.4 Transmitter output power

Short-range devices (SRD) shall not exceed the following limits:

- a) the average e.i.r.p. shall not exceed 40 dBm and the peak e.i.r.p. shall not exceed 43 dBm.
- b) In addition, outdoor SRD equipment shall not exceed 10 dBm average TRP or total conducted power (sum of conducted power across all antenna connectors).

Fixed point-to-point equipment shall not exceed the following limits:

- c) the average e.i.r.p. shall not exceed 82 dBm minus 2 dB for every dB for which the antenna gain is less than 51 dBi.
- d) the peak e.i.r.p. shall not exceed 85 dBm minus 2 dB for every dB that the antenna gain is less than 51 dBi.

SRD and fixed point-to-point equipment with an emission bandwidth less than 100 MHz shall not exceed the following peak limit:

- e) the peak transmitter e.i.r.p. shall be limited to the product of the applicable peak transmitter power limit in 5.4 a) or 5.4 d) (in Watts) times the emission bandwidth divided by 100 MHz.

$$\text{Peak transmitter power} \leq P_{\text{Peak_limit}}(\text{in Watts}) \times (BW_{\text{emission}}/100\text{MHz})$$

5.5 Transmitter unwanted emissions

The power of any emissions outside the operating frequency bands shall not exceed:

- a) The level of the fundamental emission.
- b) The general field strength limits specified in [RSS-Gen](#) for emissions below 40 GHz.
- c) 90 pW/cm² at a distance of 3 meters for emissions between 40 GHz and the third harmonic of the highest fundamental frequency.

6. User Manual and Labelling Requirements

This section sets out the user manual and labelling requirements applicable to the radio transmitters subject to this standard.

6.1 User Manual

The user manual shall comply with the requirements of [RSS-Gen](#) in addition to the following requirements:

- a) For all equipment, a notice with the statement: *“The use of this device is on a “no-interference, no-protection” basis. Do not install or operate on board an aircraft or a satellite.”*
- b) For outdoor equipment, a notice with the statement: *“Do not aim upwards towards the sky.”*

6.2 Labelling Requirements

In addition to the labeling requirements specified in [RSS-Gen](#), indoor SRD equipment shall be labelled on the equipment using the following text: *“For indoor use only.”*