



Spectrum Management and Telecommunications

Radio Standards Specification

Flexible Use Broadband Equipment Operating in the Band 3900-3980 MHz

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-198” 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
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3. By email to consultationradiostandards-consultationnormesradio@ised-isde.gc.ca

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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

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Engineering, Planning and Standards Branch

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1. Scope

This Radio Standard Specification (RSS) sets out the requirements for the certification of flexible use broadband equipment used in fixed and/or mobile services operating in the frequency band 3900-3980 MHz.

2. Purpose and application

This RSS applies to base station, fixed service equipment, and subscriber equipment operating in the frequency band 3900-3980 MHz.

3. General requirements and references

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

3.1 Coming into force and transition period

This document 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 subject to licensing requirements pursuant to subsection 4(1) of the [Radiocommunication Act](#).

3.4 RSS-Gen compliance

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

3.5 Related documents

All ISED publications related to spectrum management and telecommunications are available on the [Spectrum Management and Telecommunications](#) website. In addition to related documents specified in RSS-Gen, refer to the following documents as needed.

- SRSP-521, *Technical Requirements for Non-Competitive Local Licensed Services, including Fixed and/or Mobile Systems, and Flexible Use Broadband Systems, in the Band 3900 - 3980 MHz*

Acronyms

- SRSP: Standard Radio System Plan

4. Definitions

The following terms are used in this document:

Antenna

A radiating unit or system containing all radiating elements, forming either a fixed or dynamically-adjusted pattern.

Base station equipment

Equipment that provides connectivity to, as well as management and control of, the subscriber equipment.

Channel bandwidth

The equipment's operating bandwidth specified by the manufacturer that contains the information transmitted.

Channel frequency

The frequency at the center of the channel bandwidth.

Fixed service equipment

Equipment authorized to operate at a fixed point that provides communication between terrestrial stations. It can be used for point-to-point or point-to-multipoint services.

Fixed subscriber equipment

Subscriber equipment that is used at a fixed location, by the nature of its design. Fixed service equipment, portable, mobile, and nomadic equipment are not considered fixed subscriber equipment.

Frequency block

A portion of spectrum within a frequency band that can typically be assigned to operators.

Frequency block group

A continuous frequency range of one or multiple contiguous frequency blocks that contains the equipment's channel bandwidth specified by the manufacturer.

Indoor base station equipment

Base station equipment, including its antenna, which is designed to operate and radiate in locations completely enclosed by walls and a ceiling

Subscriber equipment

Equipment that provides connectivity between the user and the base station equipment. It includes, but is not limited to mobile, portable, nomadic, and fixed subscriber equipment.

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 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 [Certification and Engineering Bureau](#) website and may be used to demonstrate compliance.

The equipment shall comply with the specified requirements while performing measurements for all operating channel bandwidths specified by the manufacturer.

If the transmitter is designed for a multi-carrier operation, the tests shall be carried out using both the maximum and minimum number of carriers intended for the equipment.

5.2 Band plan

The band 3900-3980 MHz is divided into 10 MHz frequency blocks as per SRSP-521. Blocks can be aggregated to form a frequency block group. For equipment with channel bandwidths smaller than or equal to 10 MHz, the frequency block group is 10 MHz.

5.3 Type of modulation

The modulation used shall be digital.

5.4 Frequency stability

The frequency stability shall be sufficient to ensure that the occupied bandwidth stays within the operating frequency block or frequency block group when tested at the temperature and supply voltage variations specified in RSS-Gen.

5.5 Transmitter output power

The maximum power spectral density per antenna (considering all radiation patterns) of the equipment, measured in terms of average values, shall comply with the limits specified in table 1. For outdoor base station, indoor base station, fixed service equipment, and fixed subscriber equipment both limits specified shall be met.

Table 1: Maximum power spectral density of equipment

Equipment type	Maximum power spectral density (per antenna)	
Outdoor base station, fixed service equipment	47 dBm/10 MHz e.i.r.p.	37 dBm/MHz e.i.r.p.
Indoor base station	30 dBm/ 10 MHz e.i.r.p	20 dBm/MHz e.i.r.p.
Fixed subscriber equipment	30 dBm/10 MHz e.i.r.p	20 dBm/MHz e.i.r.p.
Subscriber equipment other than fixed subscriber equipment	30 dBm/channel bandwidth e.i.r.p.	

In addition, the peak to average power ratio (PAPR) of the equipment shall not exceed 13 dB for more than 0.1% of the time, using a signal that corresponds to the highest PAPR during periods of continuous transmission.

5.6 Transmitter unwanted emissions

Unwanted emissions shall be measured in term of average value when the transmitter is operating at the manufacturer's rated power and modulated as specified in RSS-Gen.

Equipment shall meet the unwanted emission limits, specified below, outside each frequency block group. For each channel bandwidth supported by the equipment under test, the unwanted emissions shall be measured and reported for two channel frequencies: one located as close as possible to the low end and one located as close as possible to the high end of the equipment's operating frequency range.

5.6.1 Unwanted emission limits for all equipment

The unwanted emission outside the frequency block group shall not exceed the TRP or total conducted power (sum of conducted power across all antenna connectors) limits specified in table 2:

Table 2: Unwanted emission limits for all equipment

Offset frequency from the edge of the frequency block group (MHz)	Unwanted emission limit
≤1	-13 dBm/1% OB*
>1	-13 dBm/MHz

*OB is the occupied bandwidth

5.6.2 Additional unwanted emission limits

For frequencies between 4200 MHz and 4400 MHz, the unwanted emission of outdoor base station, indoor base station and fixed service equipment shall not exceed a [TRP or total conducted power (sum of conducted power across all antenna connectors) limit of -33 dBm/MHz].

6. Labelling requirement

In addition to the labeling requirements specified in RSS-Gen, indoor base station equipment shall be labelled on the equipment using the following text "For indoor use only".

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