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RSS-130
Issue 2
February 2019

Spectrum Management and Telecommunications

Radio Standards Specification

Equipment Operating in the Frequency Bands 617-652 MHz, 663-698 MHz, 698-756 MHz and 777-787 MHz

Aussi disponible en français – CNR-130

Canada

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Preface

Radio Standards Specification 130, issue 2, *Equipment Operating in the Frequency Bands 617-652 MHz, 663-698 MHz, 698-756 MHz and 777-787 MHz*, replaces RSS-130, issue 1, *Mobile Broadband Services (MBS) Equipment Operating in the Frequency Bands 698-756 MHz and 777-787 MHz*, dated October 2013.

Changes are listed below:

- Add the frequency bands 617-652 MHz and 663-698 MHz and the related requirements to the standard.
- Add a provision for a transition period regarding RSS-130 issue 1.
- Change equipment's equivalent isotopically radiated power (e.i.r.p.) to effective radiated power (e.r.p.).
- Clarify that the equipment's unwanted emission limit shall be met at the highest and lowest frequency of the frequency block range that contains the equipment operating frequencies.
- Clarify that equipment's measurement shall be performed only with the carrier frequency set at the lowest frequency and highest frequency in each frequency bands.
- Add guidance on determining the occupied bandwidth when measuring frequency stability limits for equipment able to transmit numerous channels simultaneously.
- Remove measurement section on multiple antennas since the measurement method is defined in ANSI C63.26, *American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Service* (referenced in RSS-Gen, *General Requirements for Compliance of Radio Apparatus*).

Issued under the authority of
the Minister of Innovation, Science and Economic Development

Martin Proulx
Director General
Engineering, Planning and Standards Branch

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1. Scope

This Radio Standard Specification (RSS) sets out certification requirements for all equipment operating in the frequency bands 617-652 MHz, 663-698 MHz, 698-756 MHz and 777-787 MHz.

2. Transition period

This document will be in force upon publication on Innovation, Science and Economic Development Canada's (ISED) website. However, a transition period of six (6) months following its publication will be provided, within which certification under RSS-130, issue 1, or issue 2, will be accepted. After this period, only applications for certification of equipment under RSS-130, issue 2, will be accepted and equipment manufactured, imported, distributed, leased, offered for sale, or sold in Canada, shall comply with this issue.

A copy of RSS-130, issue 1, may be requested by email.

3. General information and requirements

3.1 Certification

Equipment covered by this standard is classified as Category I equipment and requires a technical acceptance certificate (TAC) issued by ISED's Certification and Engineering Bureau (CEB), or a certificate issued by a recognized certification body (CB).

3.2 Licensing requirements

Equipment covered by this standard is subject to licensing pursuant to subsection 4(1) of the *Radiocommunication Act*.

3.3 RSS-Gen compliance

RSS-130 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 Related documents

ISED documents are available on the Official publications section of the Spectrum Management and Telecommunications website.

The following document should be consulted in conjunction with this RSS:

SRSP-518 *Technical Requirements in the Bands 617-652 MHz, 663-698 MHz, 698-756 MHz and 777-787 MHz*

SRSP – Standard Radio System Plan

3.5 Definitions

Equipment operating frequency range is the range of frequencies that the equipment is designed to operate.

Fixed subscriber equipment is fixed equipment that provides connectivity between the user's equipment and base station equipment. Fixed subscriber equipment is used at a fixed point and is not operational while in motion.

Frequency band is the frequency range assigned for the service to be provided by the equipment (e.g. 617-652 MHz, 663-698 MHz, etc.)

Frequency block range is the range of each group of frequency block(s) that contains the equipment's operating frequency range.

Mobile equipment is equipment that is designed for use while in motion as well as during halts at unspecified points in which the radiating antenna is at least 20 cm apart from the human body.

Portable equipment is equipment with an embedded radiating antenna having direct contact with or within 20 cm of the human body.

4. Transmitter standard specifications

4.1 General

Measurement shall be performed with the equipment's carrier frequency set at the highest settable frequency and at the lowest settable frequency permitted by the design of the equipment in each frequency block range.

4.2 Types of modulation

Equipment certified under this standard shall employ digital modulation.

4.3 Frequency block

The frequency bands 617-652 MHz, 663-698 MHz, 698-756 MHz and 777-787 MHz are divided into small frequency blocks as per SRSP-518. Equipment shall operate according to the frequency plan given in the SRSP.

4.4 Interoperability requirement

Mobile and portable stations in the bands 617-652 MHz and 663-698 MHz must be capable of operating on all frequencies in these bands.

4.5 Transmitter frequency stability

For equipment that is capable of transmitting numerous channels simultaneously for different applications (e.g. LTE and narrowband – internet of things (IoT)), the occupied bandwidth shall be the bandwidth representing the sum of the occupied bandwidths of these channels.

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

4.6 Transmitter output power and effective radiated power (e.r.p.)

4.6.1 General

The transmitter output power shall be measured in terms of average power. In addition, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time and shall use a signal corresponding to the highest PAPR during periods of continuous transmission.

4.6.2 Frequency bands 617-652 MHz and 663-698 MHz

The e.r.p. shall not exceed 3 watts for mobile equipment, fixed subscriber equipment and portable equipment.

For base and fixed equipment other than fixed subscriber equipment, refer to SRSP-518 for the equivalent isotropically radiated power (e.i.r.p.) limits.

4.6.3 Frequency bands 698-756 MHz and 777-787 MHz

The e.r.p. shall not exceed 30 watts for mobile equipment and outdoor fixed subscriber equipment. The e.r.p. shall not exceed 3 watts for portable equipment and indoor fixed subscriber equipment.

For base and fixed equipment other than fixed subscriber equipment, refer to SRSP-518 for the e.i.r.p. limits.

4.7 Transmitter unwanted emissions

4.7.1 General unwanted emissions limits

The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least $43 + 10 \log_{10} p$ (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

4.7.2 Additional unwanted emissions limits

In addition to the limit outlined in section 4.7.1 above, equipment operating in the frequency bands 746-756 MHz and 777-787 MHz shall also comply with the following restrictions:

a) The power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least:

   (i) $76 + 10 \log_{10} p$ (watts), dB, for base and fixed equipment, and
   (ii) $65 + 10 \log_{10} p$ (watts), dB, for mobile and portable equipment.

b) The e.i.r.p. in the band 1559-1610 MHz shall not exceed -70 dBW/MHz for wideband signal and -80 dBW for discrete emission with bandwidth less than 700 Hz.