



Spectrum Management and Telecommunications

Radio Standards Specification

Land Mobile and Fixed Equipment Operating in the Frequency Range 1.705 MHz to 30 MHz

Preface

Radio Standards Specification RSS-125, issue 3, *Land Mobile and Fixed Equipment Operating in the Frequency Range 1.705 MHz to 30 MHz*, replaces RSS-125, issue 2, *Land Mobile and Fixed Radio Transmitters and Receivers Operating in the Band 1.705 to 50 MHz Primarily Amplitude Modulated*, dated March 2000.

List of changes:

1. expanded the scope of the standard to permit all types of modulation (as such, the title of the standard has been revised accordingly)
2. changed the upper limit of the frequency band from 50 MHz to 30 MHz as frequencies above 30 MHz are covered in RSS-119
3. added a normative reference to RSS-Gen (as a result, applicable measurement methods refer to RSS-Gen and have been removed from this standard)
4. removed the receiver spurious emissions requirements as these are encompassed in RSS-Gen, normatively referred herein
5. updated the transmitter requirements
6. made editorial changes and clarifications, as appropriate

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

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1. Scope

This Radio Standards Specification (RSS) sets out the certification requirements for land mobile and fixed services equipment operating in the frequency range 1.705-30 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 of equipment under RSS-125, issue 3, or issue 2, will be accepted. After this period, only applications for certification of equipment under RSS-125, issue 3, will be accepted and equipment manufactured, imported, distributed, leased, offered for sale or sold in Canada shall comply with this present issue.

A copy of RSS-125, issue 2, is available upon request by [email](#).

3. Certification requirements

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

4. Licensing requirements

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

5. RSS-Gen compliance

RSS-125 shall be used in conjunction with RSS-Gen, [General Requirements for Compliance of Radio Apparatus](#) for general specifications and information relevant to the equipment to which this standard applies.

6. Related documents

All documents are available on ISED's [Spectrum management and telecommunications](#) web page.

The following document should be consulted in conjunction with this RSS to determine the specific bands in the frequency range 1.705-30 MHz allocated to fixed and land mobile services:

- [Canadian Table of Frequency Allocations](#)

7. Definition

Channel frequency is the centre of the channel that contains the information transmitted (excluding the carrier frequency for single sideband emissions).

8. Transmitter standard specifications

The provisions of this section are specific to the transmitter standard specifications. Systems that cannot conform to the limits in sections 8.3 and 8.5 may be eligible to be licensed on a case-by-case basis. Those systems will be evaluated by the corresponding district office. Refer to RIC-66, [Addresses and Telephone Numbers of District Offices](#) for more information about the district offices.

8.1. Measurement method

Measurements shall be performed in accordance with the requirements of RSS-Gen.

8.2. Types of modulation

All types of modulation are permitted.

8.3. Authorized and occupied bandwidth

The radio apparatus's authorized bandwidth is 3 kHz for single sideband (SSB) and 8 kHz for all other types of modulation. The maximum permissible occupied bandwidth shall not exceed the authorized bandwidth.

8.4. Frequency stability

Subjected to the measurement methods specified in RSS-Gen, the radio apparatus's frequency stability shall not exceed the values prescribed in Table 1.

Table 1: Transmitter frequency stability

Frequency (MHz)	Base and fixed station		Mobile station	
	Output power (W)	Frequency stability (Hz)	Output power (W)	Frequency stability (Hz)
1.705 – 4.0	≤ 200	50	> 0	40
	> 200	20		
4.0 – 30.0	≤ 500	50		
	> 500	20		50

8.5. Output power

The transmitter output power of the equipment shall not exceed the limits specified in Table 2.

Table 2: Maximum transmitter output power

SSB modulation		Other modulations	
Base station	Mobile station	Base station	Mobile station
1 kW (peak envelope power)	100 W (peak envelope power)	350 W (average)	100 W (average)

Note: In urban areas, the transmitter output power level for equipment using modulations other than SSB may be limited to 100 W (average) for the base station and 60 W (average) for the mobile station as part of the conditions of licence.

8.6. Unwanted emissions

The unwanted emission masks in this section apply to all modulations. However, for single sideband suppressed carrier modulation (J3E), only the emission mask with an audio low-pass filter applies.

8.6.1. Emission mask with an audio low-pass filter

The power of unwanted emissions shall be attenuated below the transmitter's output power, P (dBW) as follows:

- a) 25 dB; on any frequency removed from the channel frequency by more than 50% and up to 100% of the authorized bandwidth measured with a resolution bandwidth of 300 Hz;
- b) 35 dB; on any frequency removed from the channel frequency by more than 100% up to 250% of the authorized bandwidth measured with a resolution bandwidth of 300 Hz;
- c) $43 + 10 \cdot \log(p)$ or 70 dB, whichever is less stringent; in any 30 kHz bandwidth removed from the channel frequency by more than 250% of the occupied bandwidth.

Where:

p refers to the transmitter's output power expressed in watts.

8.6.2. Emission mask without an audio low-pass filter

The power of unwanted emissions shall be attenuated below the transmitter's output power P (dBW) as follows:

- a) $83 \cdot \log(f_d / 5)$ dB; on any frequency removed from the channel frequency by a displacement frequency of more than 5 kHz up to 10 kHz, measured with a resolution bandwidth of 300 Hz;
- b) $29 \cdot \log(f_d^2 / 11)$ dB or 50 dB, whichever is less stringent; on any frequency removed from the channel frequency by a displacement frequency of more than 10 kHz up to 250% of the authorized bandwidth, measured with a resolution bandwidth of 300 Hz;
- c) $43 + 10 \cdot \log(p)$ or 70 dB, whichever is less stringent; on any frequency removed from channel frequency by more than 250% of the authorized bandwidth, measured with a resolution bandwidth of 30 kHz.

Where:

f_d refers to the difference between the center of the occupied bandwidth and the emission component frequency expressed in kilohertz; and

p refers to the transmitter's output power expressed in watts.