Innovation, Sciences et Développement économique Canada
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Spectrum Management and Telecommunications

Radio Standards Specification

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

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Canada

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.

Listed below are the main 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. Change 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. The transmitter requirements have been updated.
6. Editorial changes and clarifications have been made, as appropriate.

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

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Martin Proulx
Director General
Engineering, Planning and Standards Branch

Contents

1. Scope

This Radio Standards Specification (RSS) sets out the certification requirements for licensed radio apparatus operating in the land mobile and fixed services allocated within the 1.705 MHz to 30 MHz frequency band.

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 applications for the certification of equipment as per RSS-125, issue 3, or RSS-125, 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 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 or a certificate issued by a recognized certification body (CB) is required.

4. Licensing requirements

The 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 covered by this standard.

6. 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 to determine the specific bands in the 1.705 MHz to 30 MHz frequency range allocated to fixed and land mobile services:

Canadian Table of Frequency Allocations

7. Definitions

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

8. Transmitter specifications

The provisions of this section are specific to the transmitter specifications.

8.1. Types of modulation

All types of modulation are permitted.

8.2. Authorized and occupied bandwidth

The radio apparatus' 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.

8.3. 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)	Frequency Stability (Hz)
1.705 – 4.0	≤ 200	50	40
	> 200	20	
4.0 – 30.0	≤ 500	50	50
	> 500	20	

8.4. Output power

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

Table 2 – Transmitter output power

AM 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.

8.5. Unwanted emissions

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

8.5.1. 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:

(i) 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;

(ii) 35dB; 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;

(iii) 43 + 10*log (p (watts)) 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.

8.5.2. 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:

(i) 83* log (f_d /5) dB; on any frequency removed from the channel frequency by a displacement frequency (f_d in kHz) of more than 5 kHz up to 10 kHz, measured with a resolution bandwidth of 300 Hz;

(ii) 29*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 (f_d in kHz) of more than 10 kHz up to 250% of the authorized bandwidth, measured with a resolution bandwidth of 300 Hz;

(iii) 43 +10*log (p (watts)) 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.