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Spectrum Management and Telecommunications

Radio Standards Specification

General Radio Service Equipment Operating in the Band 26.960 MHz to 27.410 MHz (Citizens Band)

Aussi disponible en français – CNR-236

Canada

Preface

Radio Standards Specification RSS-236, issue 2, *General Radio Service Equipment Operating in the Band 26.960 MHz to 27.410 MHz (Citizens Band),* replaces RSS-236, issue 1, dated September 2012.

The main changes are listed below:

1. modified Table 1 in section 4.1
2. changed the method of measurement in sections 3.5 and 4.5 from ANSI C63.10 to ANSI C63.26
3. removed section 4.3 Antennas
4. modified section 4.8 to include the new FM audio emission F3E
5. removed references to A1D, H1D, J1D, R1D from sections 4.8, 4.9, and 4.10
6. added reference bandwidth to the unwanted emissions in section 4.10
7. made editorial changes and clarifications, as appropriate

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-236” 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.

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 ISED publications related to spectrum management 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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Martin Proulx
Director General
Engineering, Planning and Standards Branch

Contents

1. Scope

This Radio Standards Specification (RSS) sets out general requirements for, and provides information on, the certification of radio apparatus that is used for the general radio service, also known as the citizens band (CB), operating in the 26.960-27.410 MHz frequency band.

2. Purpose and application

The CB is a two-way, short-distance, voice communications service for either personal or business activities of the general public.

Operators should reference the operational policies and procedures outlined in RIC-18, *General Radio Service (GRS)*.

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

However, a transition period of six months from the publication date will be provided. During this period compliance with RSS-236, issue 1 or RSS-236, issue 2, will be accepted. After this period, only applications for the certification of equipment under RSS-236, issue 2 will be accepted. Furthermore after this transition period, equipment manufactured, imported, distributed, leased, offered for sale, or sold in Canada shall comply with RSS-236, issue 2.

A copy of RSS-236, issue 1, is available upon request by email to consultationradiostandards-consultationnormesradio@ised-isde.gc.ca.

3.2 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 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 also comply with the general requirements set out in Radio Standards Specification RSS-Gen, *General Requirements for Compliance of Radio Apparatus*.

3.5 Normative publications

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

ANSI C63.26, *American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services*.

The applicable version of ETSI and ANSI standards, including accepted knowledge database (KDB) are listed on ISED's Certification and Engineering Bureau website.

3.6 Related documents

All ISED publications related to spectrum management and telecommunications referred to in this standard are available on the Spectrum Management and Telecommunications website.

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

RIC-18, *General Radio Service (GRS)*

TRC-43, *Designation of Emissions, Class of Station and Nature of Service*

4. Transmitter requirements

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

4.1 Channel allocation

CB channel allocations have been established in the band 26.960-27.410 MHz and shall operate the nominal carrier frequency (f_c) at the frequencies listed in Table 1.

Table 1: CB channel allocations

CB channel	Carrier frequency
1	26.965
2	26.975
3	26.985
4	27.005
5	27.015
6	27.025
7	27.035
8	27.055
9	27.065
10	27.075
11	27.085
12	27.105
13	27.115
14	27.125
15	27.135
16	27.155
17	27.165
18	27.175
19	27.185
20	27.205
21	27.215
22	27.225
23	27.255
24	27.235
25	27.245
26	27.265
27	27.275
28	27.285
29	27.295

30	27.305
31	27.315
32	27.325
33	27.335
34	27.345
35	27.355
36	27.365
37	27.375
38	27.385
39	27.395
40	27.405

4.2 Frequency allocation

In the case of double-sideband (DSB) radio equipment, the assigned frequency shall be the nominal f_c.

In the case of single-sideband (SSB) radio equipment, the assigned frequency shall be 1.40 kHz above the f_c for upper-sideband (USB) operation, and 1.40 kHz below for lower-sideband (LSB) operation.

4.3 External controls

There shall be no external controls that cause the equipment to operate in a manner that would violate the requirements of this standard. If a speech clarifier control is provided, it shall not change the transmitter frequency.

4.4 Use of batteries

Connection to batteries (if used) shall be made in such a manner as to permit replacement by the user without causing improper operation of the transmitter as specified in this RSS.

4.5 Measurement method

All measurements shall be performed in accordance with the techniques and procedures for measuring equipment provided in ANSI C63.26, *American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services*.

4.5.1 Measurement methods for SSB

When measuring fundamental emissions, the transmitter shall be modulated with a two-tone audio input signal. The test signals shall consist of two sinusoidal tones at the frequencies of 500 Hz +/- 5% and 2400 Hz +/- 5%, which, when simultaneously applied to the audio input of an SSB transmitter, result in equal amplitude radio frequency output signals.

A sample of the output shall be fed to a spectrum analyzer (or an equivalent instrument) to which the level of the audio input signal is increased. The audio level will be increased until the highest amplitude, odd-order, difference frequency intermodulation product is 20 dB below the level of either of the two test tones or until there is no further increase in output power. The average power output shall then be measured by suitable means. The means used shall be clearly specified in the test report. The peak envelope power is then twice the average power.

When measuring spurious emissions, the transmitter shall be operated with the carrier suppressed and modulated with two frequency test signals at a level to produce 50% of the average power measured above. A sample of the output shall be fed to a spectrum analyzer (or equivalent test equipment) and the level of the input signal increased by 10 dB, with the levels of both fundamental signals equal. The sampled output shall be analyzed from the lowest intermediate frequency (IF) generated to 1000 MHz and levels of all significant components recorded in the test report.

4.5.2 Measurement methods for DSB

When measuring fundamental emissions, the transmitter shall be operated without modulation. The average carrier power output shall then be measured by suitable means. The means used shall be clearly specified in the test report.

When measuring spurious emissions, the transmitter shall be operated using a 2400 Hz modulated sinusoidal signal at a level sufficient to produce 50% of modulation. A sample of the frequency modulated (RF) output shall be fed to a spectrum analyzer or equivalent test equipment and the level of the input signal increased by 16 dB. The sampled output shall be analyzed from the lowest IF generated to 1000 MHz and the levels of all significant components recorded in the test report.

4.6 Transmitter output power limits

The transmitter output power shall not exceed 4.0 watts for DSB mode of operation or FM signals. For SSB, the RF peak envelope power output shall not exceed 12 watts.

4.7 Types of modulation

Transmitters should not employ digital modulation and should not transmit non-voice data except for non-voice emissions as identified in section 4.8.

4.8 Permissible emissions

Permissible emissions include the following types: A3E, F3E, H3E, J3E and R3E.

Non-voice emissions are limited to selective calling or tone-operated squelch tones to establish or to continue voice communications.

4.9 Authorized bandwidth

The authorized bandwidth for emission types H3E, J3E and R3E is 4 kHz. The authorized bandwidth for emission types A3E and F3E is 8 kHz.

Each CB transmitter that transmits emission type H3E, J3E or R3E shall be capable of transmitting the upper sideband with suppressed, reduced or full carrier, respectively. The capability of also transmitting the lower sideband with suppressed, reduced or full carrier is permitted.

When emission type A3E is transmitted by a CB transmitter having a total power of greater than 2.5 W, the CB transmitter must automatically prevent the modulation from exceeding 100%.

When emission type F3E is transmitted by a CB transmitter the peak frequency deviation shall not exceed ±2 kHz.

4.10 Transmitter unwanted emissions

Unwanted emissions from licence-exempt transmitters that fall within restricted bands as identified in RSS-Gen shall comply with field strength limits as identified in RSS-Gen.

However, all other emissions shall comply with the limits as identified in this section.

The unwanted emissions shall be attenuated below the total transmitter power (Pt) by the following levels:

For H3E, J3E and R3E:

- At least 25 dB on any frequency removed from the center of the authorized bandwidth by more than 50%, up to and including 150% of the authorized

bandwidth, the power of unwanted emissions is to be measured with a reference bandwidth of 300 Hz

- At least 35 dB on any frequency removed from the center of the authorized bandwidth by more than 150%, up to and including 250% of the authorized bandwidth, the power of unwanted emissions is to be measured with a reference bandwidth of 300 Hz
- At least 53 + 10 $\log_{10}$(Pt) dB on any frequency removed from the center of the authorized bandwidth by more than 250% of the authorized bandwidth, the power of unwanted emissions is to be measured with a reference bandwidth of at least 30 kHz
- At least 60 dB on any frequency equal to or greater than twice the fundamental frequency, the power of unwanted emissions is to be measured with a reference bandwidth of at least 30 kHz

For A3E and F3E:

- At least 25 dB on any frequency removed from the center of the authorized bandwidth by more than 50%, up to and including 100% of the authorized bandwidth, the power of unwanted emissions is to be measured with a reference bandwidth of 300 Hz
- At least 35 dB on any frequency removed from the center of the authorized bandwidth by more than 100%, up to and including 250% of the authorized bandwidth, the power of unwanted emissions is to be measured with a reference bandwidth of 300 Hz
- At least 53 + 10 $\log_{10}$(Pt) dB on any frequency removed from the center of the authorized bandwidth by more than 250% of the authorized bandwidth, the power of unwanted emissions is to be measured with a reference bandwidth of at least 30 kHz
- At least 60 dB on any frequency equal to or greater than twice the fundamental frequency, the power of unwanted emissions is to be measured with a reference bandwidth of at least 30 kHz