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Radio Standards Specification

Narrowband Multipoint Communication Systems in the Bands 1429.5-1432 MHz and 1493.5-1496.5 MHz

Preface

Radio Standards Specification RSS-142, Issue 4, *Narrowband Multipoint Communication Systems in the Bands 1429.5-1432 MHz and 1493.5-1496.5 MHz*, replaces Issue 3 of RSS-142, *Narrowband Multipoint Communication Systems in the Bands 1429.5-1430.5 MHz and 1493.5-1496.5 MHz*, dated December 2007.

This document will be in force as of the publication date of Notice SMSE-008-10 in the *Canada Gazette*, Part I. Upon publication, the public has 120 days to submit comments. These comments will be taken into account in the preparation of the next version of the document.

Listed below are the changes:

1. The frequency band 1429.5-1430.5 MHz is extended to 1429.5-1432 MHz.
2. The measurement method has been revised to allow the use of narrower resolution bandwidth for measuring unwanted emissions in the frequency range near the block edge.
3. The requirement to include the instructions on how to set the lowest and highest channel carrier frequencies for each frequency block in the user manual has been removed.

Issued under the authority of
the Minister of Industry

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1. Scope

This Radio Standards Specification (RSS) sets out certification requirements for radio transmitters and receivers of Narrowband Multipoint Communication Systems (N-MCS), including utility telemetry systems, in the bands 1429.5-1432 MHz and 1493.5-1496.5 MHz.

The frequency bands are intended for data communication between “home” (i.e. devices installed in residential and commercial buildings) and hub stations, or between hub stations.

2. General Information

The equipment covered by this standard is classified as Category I equipment. A technical acceptance certificate (TAC), issued by the Certification and Engineering Bureau of Industry Canada, or a certificate, issued by a Certification Body (CB), is required.

2.1 Licensing Requirements

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

2.2 Related Documents

All Spectrum Management and Telecommunications publications are available on the departmental website at <http://www.ic.gc.ca/spectrum>, under *Official Publications*.

In addition to related documents specified in RSS-Gen, *General Requirements and Information for the Certification of Radiocommunication Equipment*, the following Industry Canada documents should be consulted:

CPC-2-1-22 *Licensing Procedure for Automatic Meter Reading Equipment in the 1.4 GHz Band*

SRSP-301.4 *Technical Requirements for Fixed Radio Systems Operating in the Bands 1427-1452 MHz and 1492-1518 MHz*

CPC – Client Procedures Circular
SRSP – Standard Radio System Plan

3. General Requirements

3.1 RSS-Gen Compliance

This issue of RSS-142 shall be used in conjunction with RSS-Gen for general specifications and information relevant to the equipment for which this standard applies.

4. Measurement Method

4.1 Transmitter Unwanted Emissions

Unwanted emission measurements can be in peak or averaging mode provided that the unwanted emission powers are measured and expressed with the same parameters used to specify the unmodulated transmitter carrier power. For transmitters that do not produce a full power unmodulated carrier, reference to the unmodulated transmitter carrier power refers to the total power contained in the channel bandwidth.

For frequencies removed from the frequency block edge by less than 50 kHz, a measurement bandwidth of at least 300 Hz shall be used. For frequencies removed from the frequency block edge by more than 50 kHz, a measurement bandwidth of at least 100 kHz shall be used for measurement below 1 GHz, and of at least 1 MHz for measurement above 1 GHz. A lower resolution bandwidth may be employed near the frequency block edge provided that the power is integrated over the specified measurement bandwidth.

Set the carrier to the lowest settable or programmable frequency within the band 1429.5-1432 MHz, as permitted by the design of the equipment, to measure the unwanted emissions. Repeat the test using the highest settable or programmable frequency within this band. If a guard band is used in the design of the equipment to meet the standards specified in Section 6.4, ensure that this guard band is used when setting the lowest and the highest channel frequencies for the test. Report the frequencies used. These results can be used to represent testing of the lowest and highest channels of the equipment's operating frequency block.

Use the same method as above to test the equipment intended to operate in the upper sub-band, 1493.5-1496.5 MHz.

If the equipment is intended for only one sub-band, testing can be done for this sub-band alone.

5. General Standard Specifications

5.1 Home Utility Telemetry Transmitter Antenna

A home utility telemetry device must be sold and operated with the antenna with which it was certified. Antennas having similar in-band and out-of-band radiation patterns are considered to be of the same antenna type. A transmitter may be certified with different antenna types. Testing shall be performed using the highest gain antenna of each combination of transmitter and antenna type for which certification is being sought, with the transmitter output power set at the maximum level. Any antenna of the same type that has a gain equal to or less than an antenna that was successfully tested for certification with the transmitter will also be considered certified with the transmitter, and may be used and marketed with the transmitter. The manufacturer shall include a list of acceptable antenna types to be used with the transmitter, along with the application for certification.

6. Transmitter and Receiver Standard Specifications

6.1 Types of Modulation

Equipment certified under this standard may use any type of modulation technique.

6.2 Frequency Stability

The carrier frequency shall not depart from the reference frequency in excess of ± 50 ppm for the home unit and ± 1.5 ppm for the hub/node unit.

6.3 Transmitter Output Power

The transmitter output power shall be within ± 1.0 dB of the manufacturer's rated power and shall not exceed 2 watts for the home device and 10 watts for hub and nodal utility telemetry transmitters.

6.4 Transmitter Unwanted Emissions

For each frequency block defined in the Radio Frequency (RF) Channel Arrangements of SRSP-301.4, the power of any emissions shall be attenuated below the unmodulated carrier power, P (dBW), by at least:

- (a) 25 dB from 0 kHz to 25 kHz frequency offset;
- (b) 35 dB from 25 kHz to 100 kHz frequency offset;
- (c) $43 + 10 \log(p)$ dB for frequency offset greater than 100 kHz;

where frequency offset is measured from the frequency block edge and p is the transmitter output power in watts.

In addition, the unwanted emission shall comply with the following limits:

- (d) -42 dBm/MHz e.i.r.p. in the band 1452-1492 MHz; and
- (e) -70 dBW/MHz e.i.r.p in the band 1559-1610 MHz.

6.5 Receiver Spurious Emissions

Receiver spurious emissions shall comply with the limits specified in RSS-Gen.