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Radio Standards Specification

# **Point-to-Multipoint Broadband Equipment Operating in the Bands 512-608 MHz and 614-698 MHz for Rural Remote Broadband Systems (RRBS) (TV Channels 21 to 51)**

## Preface

Radio Standards Specification 196 (RSS-196), Issue 1, *Point-to-Multipoint Broadband Equipment Operating in the Bands 512-608 and 614-698 MHz for Rural Remote Broadband Systems (RRBS) (TV Channels 21 to 51)*, will be in force as of the publication date of Notice SMSE-007-10 in the *Canada Gazette*, Part I. Upon publication, the public has 120 days to make comments. Comments will be taken into account in the preparation of the next version of the document.

Issued under the authority of  
the Minister of Industry

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## 1. Scope

This Radio Standard Specification (RSS) sets out certification requirements for radio transmitters and receivers employed in Rural Remote Broadband Systems (RRBS) to provide point-to-multipoint fixed wireless access broadband radiocommunication in the bands 512-608 MHz and 614-698 MHz (TV channels 21 to 51).

## 2. General Information

Equipment covered by this standard is classified as Category I equipment, and a Technical Acceptance Certificate (TAC) issued by the Certification and Engineering Bureau (CEB) of Industry Canada or a certificate issued by a recognized Certification Body (CB) is required.

### 2.1 Licensing Requirements

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

### 2.2 Definition

**Nominal Channel Bandwidth:** for the purposes of this document, the nominal channel bandwidth is defined as follows:

For equipment having an occupied bandwidth less than or equal to 6 MHz, the nominal channel bandwidth is 6 MHz, the channel being a 6 MHz block as specified in the radio frequency channel arrangement in SRSP 300.512.

For equipment having an occupied bandwidth greater than 6 MHz, up to a maximum of 12 MHz, the nominal channel bandwidth is 12 MHz, the channel being formed by two contiguous 6 MHz blocks as specified in the radio frequency channel arrangement in SRSP-300.512.

### 2.3 Related Documents

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

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

IEEE Std. 1631: *IEEE Recommended Practice for Measurement of 8-VSB Digital Television Transmission Mask Compliance for the USA*

RSS-210: *Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment*

SRSP-300.512: *Technical Requirements for Remote Rural Broadband Systems (RRBS) Operating in the Bands 512-608 MHz and 614-698 MHz (TV Channels 21 to 51).*

IEEE Std - The Institute of Electrical and Electronics Engineers Standard  
SRSP – Standard Radio System Plan

### **3. General Requirements**

#### **3.1 RSS-Gen Compliance**

RSS-196 shall be used in conjunction with RSS-Gen for general specifications and information relevant to the equipment for which this standard applies.

### **4. Transmitter and Receiver Standard Specifications**

#### **4.1 Frequency Plan**

The radio frequency channel arrangements are defined in SRSP-300.512.

#### **4.2 Type of Modulation**

Equipment certified under this standard shall use digital modulation.

#### **4.3 Nominal Channel Bandwidth and Occupied Bandwidth**

Equipment having an occupied bandwidth of less than or equal to 6 MHz shall comply with the standard specified for a 6 MHz nominal channel bandwidth, i.e. the occupied bandwidth shall be contained in the 6 MHz nominal channel bandwidth as defined in Section 2.2, and the specifications shall meet all requirements applicable to 6 MHz channel bandwidth equipment.

The maximum permissible nominal channel bandwidth is 12 MHz.

The occupied bandwidth shall be greater than or equal to 500 kHz and shall not exceed the nominal channel bandwidth.

#### **4.4 Frequency Stability**

The carrier frequency shall not depart from the reference frequency (as defined in RSS-Gen) in excess of  $\pm 10$  ppm.

#### **4.5 Transmitter Output Power**

The average transmitter output power for the subscriber equipment shall not exceed 1 watt in a 6 MHz bandwidth and the average transmitter power spectral density shall not exceed -7 dBW/100 kHz.

The average transmitter output power for the base station equipment shall not exceed 125 watts in a 6 MHz bandwidth and the average transmitter power spectral density shall not exceed 14 dBW/100 kHz.

The equivalent isotropically radiated power (e.i.r.p.) limits for the subscriber and base stations are specified in SRSP-300.512.

#### **4.6 Transmitter Unwanted Emissions**

The transmitter unwanted emissions shall be measured using an average detector and a resolution bandwidth equal to the measurement bandwidth specified in Table 1. A lower resolution bandwidth may be employed near the channel edge, provided the power is integrated over a 100 kHz bandwidth. Any suitable method of measurement can be used provided that it is fully described in the test report. The Certification and Engineering Bureau of Industry Canada shall be consulted to determine the acceptability of the method. A document which can be used for guidance while measuring this emission mask is IEEE RP1631.

The power of unwanted emissions in the measurement bandwidth shall be attenuated below the average transmitted power in a 6 MHz bandwidth,  $P$  (dBW), by the limits specified in Table 1, or shall comply with the field strength limits indicated in Table 2 of RSS-210, where applicable.  $\Delta f$  (MHz) is the frequency separation from the edge of the nominal channel used by the equipment to the centre of the measurement bandwidth. Figure 1 shows the unwanted emissions limits for a 100 kHz measurement bandwidth with  $\Delta f$  less than 18 MHz.

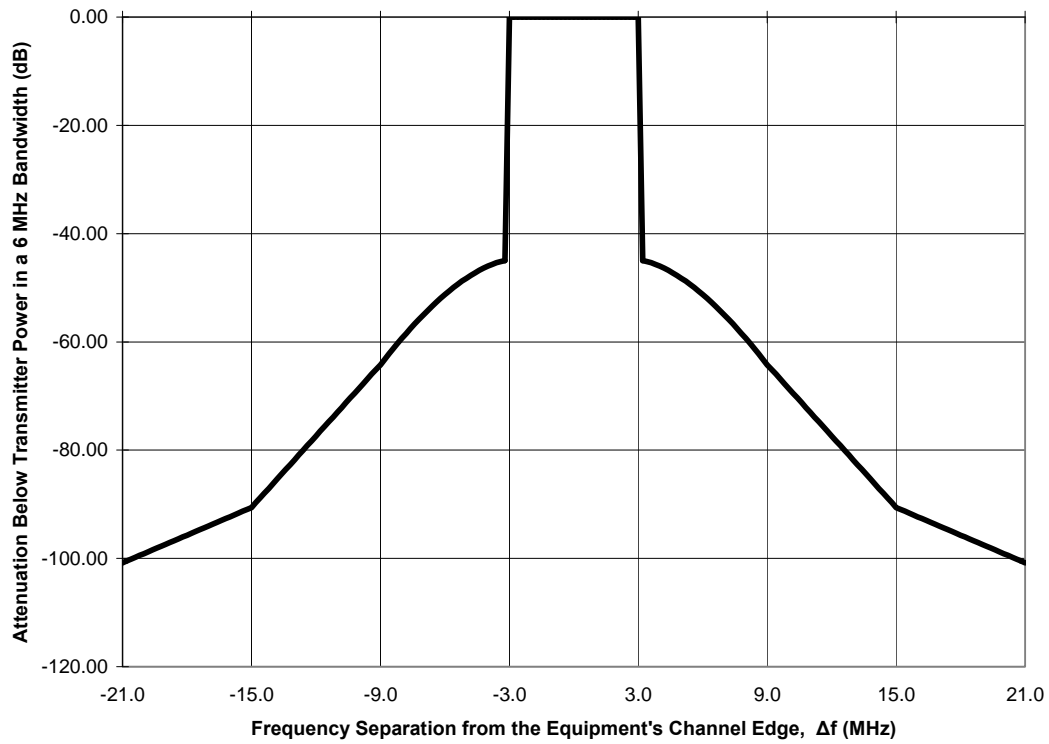
**Table 1: Unwanted Emission Limits**

Frequency Separation, $\Delta f$ (MHz)	Out-of-channel Attenuation (dB) or Field Strength	Measurement Bandwidth
$0.05 \leq \Delta f \leq 6$	$44.9 + 1.1 * (\Delta f)^{1.6}$	100 kHz
$6 \leq \Delta f \leq 12$	$37.8 + 4.4 * \Delta f$	
$12 \leq \Delta f \leq 18$	$70.2 + 1.7 * \Delta f$	
$\Delta f > 18$ AND within 54-72 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz and 614-698 MHz	100.8	
Outside the above cases	Base station equipment:  $43 + 10 * \log(p)$ Where p is the transmitter power in a 6 MHz bandwidth expressed in watts  Subscriber Equipment:  As per RSS-210, Table 2, <i>General Field Strength Limits for Transmitter and Receivers at Frequencies above 30 MHz</i>	100 kHz for $f_m \leq 1$ GHz 1 MHz for $f_m > 1$ GHz  120 kHz for $f_m \leq 1$ GHz 1 MHz for $f_m > 1$ GHz  Where $f_m$ is the measurement frequency

**Note:** As per SRSP-300.512, subscriber equipment certified with this emission mask shall employ only vertical polarization for the transmit antenna, while any polarization can be used for reception. The vertically polarized antenna needs to meet the requirements specified in SRSP-300.512.

Base station equipment certified with this emission mask can employ any type of signal polarization, provided that the RRBS siting restrictions, specified in SRSP-300.512, are observed.

Figure 1 Unwanted Emissions Limits with  $\Delta f < 18$  MHz



#### 4.7 Receiver Spurious Emissions

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