Spectrum Management and Telecommunications Policy

Radio Standards Specification

900 MHz Narrowband
Personal Communication Service
Preface

Radio Standards Specification RSS-134, Issue 2, 900 MHz Narrowband Personal Communication Service, sets out the technical requirements for the compliance of narrowband personal communication service (PCS) in the band 900 MHz.

This document will come into force after its publication on the Department’s website (www.ic.gc.ca/spectrum).

List of Changes:

(1) Modernized to reflect the current RSS structure since its last publication in 2000.
(2) Editorial modifications and corrections have been made throughout.
(3) The reference to RSS-102 has been updated.

Inquiries on this standard may be submitted online using the General Inquiry form. Comments and suggestions for improving this standard may be submitted online using the Standard Change Request form.

All Spectrum Management and Telecommunications publications are available on the following website: www.ic.gc.ca/spectrum.

Issued under the authority of
the Minister of Innovation, Science and Economic Development

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1. **Scope**

This Radio Standards Specification sets out standards for transmitters and receivers for the narrowband personal communication service (PCS) in the bands 901-902 MHz, 930-931 MHz and 940-941 MHz.

2. **General**

Equipment certified under this standard is classified as Category I equipment and requires a technical acceptance certificate (TAC) issued by the Certification and Engineering Bureau of Innovation, Science and Economic Development, or a certificate issued by a certification body (CB), pursuant to Section 4(2) of the *Radiocommunication Act*.

2.1 **Licensing Requirements**

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

2.2 **RSS-Gen Compliance**

RSS-134 shall be used in conjunction with RSS-Gen, *General Requirements for Compliance of Radio Apparatus*, for general specifications and information relevant to the equipment for which this standard applies.

2.3 **Radio Frequency Exposure**

The requirements in RSS-102, *Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)*, must be met.

2.4 **Related Documents**


The following departmental document should be consulted:

SRSP-509, *Technical Requirements for Narrowband Personal Communication Services in 901-902 MHz, 930-931 MHz and 940-941 MHz* (SRSP: Standard Radio System Plan)

3. **Measurement Methods**

3.1 **Transmitter Output Power**

The power to be measured shall be the maximum output power, averaged over any 100 ms interval, measured with a spectrum analyzer of resolution bandwidth wider than the occupied
bandwidth of the transmitter. The video bandwidth shall be greater than or equal to three times the resolution bandwidth. Alternatively, the spectrum analyzer can be set to the peak hold mode.

### 3.2 Transmitter Unwanted Emissions

Unwanted emissions are to be measured when the transmitter is operating at the manufacturer’s rated power and modulated with signals representative of those encountered in a real system operation.

### 4. Transmitter Standard Specifications

#### 4.1 Channel Spacings and Authorized Bandwidths

The standard channel spacings are 12.5 and 50 kHz. The authorized bandwidth is 10 kHz for 12.5 kHz spaced channels and 45 kHz bandwidth for 50 kHz spaced channels.

Channel aggregation using adjacent channels is also permitted provided that it is shown in the equipment certification application that frequency spectrum efficiency is maintained by such aggregation. For aggregated channels, the authorized bandwidth is 5 kHz less than the total aggregated channel width.

For frequency channeling, plan and permissible antenna height information, refer to SRSP-509.

#### 4.2 Types of Modulation

The devices may employ any type of modulation techniques. The type of modulation used must be reported.

#### 4.3 Typical Output Power

(a) Stations transmitting in the 901-902 MHz band and all mobile stations in the 930-931 MHz and 940-941 MHz bands are limited to 7 watts effective radiated power (ERP) (11.5 watts effective isotropic radiated power (EIRP)).

(b) Base stations transmitting in the 930-931 MHz and 940-941 MHz bands can be certified to any manufacturer's rated power that respects the ERP restrictions of SRSP-509.

(c) For an aggregated channel, the permissible power of a single transmitter does not vary with its bandwidth.
4.4 Transmitter Unwanted Emissions

4.4.1 Minimum Standard for Spacings Exceeding 12.5 kHz (Bandwidth > 10 kHz)

The power of emissions from the transmitter with modulated carrier shall be attenuated below the transmitter power \( P \) in accordance with the following schedule (where the displacement frequency \( f_d \) measured in kHz starts from the edge of the authorized bandwidth):

(a) For \( f_d \) up to and including 40 kHz: at least \( 116 \log_{10}((f_d+10)/6.1) \) dB, or \( 50+10 \log_{10} (P) \) dB, or 70 dB, whichever is less stringent, using a spectrum analyzer of 300 Hz resolution bandwidth;

(b) For \( f_d \) of more than 40 kHz: at least \( 43+10 \log_{10} (P) \) dB, or 80 dB, whichever is less stringent, using a spectrum analyzer of 30 kHz resolution bandwidth.

4.4.2 Minimum Standard for 12.5 kHz Spaced Equipment (Bandwidth = 10 kHz)

The power of emissions from the transmitter with modulated carrier shall be attenuated below the transmitter power \( P \) in accordance with the following schedule (where the displacement frequency \( f_d \), measured in kHz, starts from the edge of the authorized bandwidth):

(a) For \( f_d \) up to and including 20 kHz: at least \( 116 \log_{10}((f_d+5)/3.05) \) dB, or \( 50+10 \log_{10} (P) \) dB, or 70 dB, whichever is less stringent, using a spectrum analyzer of 300 Hz resolution bandwidth;

(b) For \( f_d \) of more than 20 kHz: at least \( 43+10 \log_{10} (P) \) dB, or 80 dB, whichever is less stringent, using a spectrum analyzer of 30 kHz resolution bandwidth.

4.5 Frequency Stability

The Radio Frequency carrier frequency shall not depart from the reference frequency in excess of \( \pm 0.0001\% \) (\( \pm 1 \) ppm).

In lieu of meeting the above stability value, the test report may show that the frequency stability is sufficient to ensure that the emission bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.