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Fixed Wireless Access Equipment Operating in the Band 3450-3650 MHz

Preface

Radio Standards Specification 192, Issue 3, *Fixed Wireless Access Equipment Operating in the Band 3450-3650 MHz*, replaces Issue 2 of RSS-192 dated January 2004.

This document will be in force as of the publication date of Notice SMSE-003-08 in the *Canada Gazette*, Part I. Upon publication, the public has 120 days to make comments. These comments will be taken into account in the preparation of the next version of the document.

Listed below are the main changes:

1. **Section 3.1:** The requirement that RSS-Gen shall be used in conjunction with this RSS is stated.
2. Material common to most Radio Standards Specifications had been moved to RSS-Gen.
3. **Section 5.4:** The transmitted power tolerance has been increased to ± 2 dB.
4. **Section 5.5:** The transmitter unwanted emission limits have been revised and specified for different type of wireless access schemes.

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 of fixed wireless access (FWA) systems, including point-to-point applications in the band 3450 to 3650 MHz.

2. General Information

Equipment operating in this band is classified as Category I equipment, and a Technical Acceptance Certificate (TAC) issued by the Certification and Engineering Bureau 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 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, the following document should be consulted:

SRSP-303.4: *Technical Requirements for Fixed Wireless Access Systems Operating in the Band 3450-3650 MHz*

SRSP – Standard Radio System Plan

3. General Requirements

3.1 RSS-Gen Compliance

RSS-192 shall be used in conjunction with RSS-Gen, *General Requirements and Information for the Certification of Radiocommunication Equipment*, for general specifications and information relevant to the equipment for which this standard applies.

4. Measurement Methods

4.1 Transmitter Output Power

The average transmitter output power (P_{mean}) measurement shall be carried out before the unwanted emissions test. The transmitter output power value obtained from this test is the reference level used for the determination of the unwanted emissions specified in Section 5.5.

4.2 Transmitter Unwanted Emissions

Only unwanted emissions outside each 25 MHz frequency block are to be measured. Unwanted emissions shall be measured when the transmitter is operating at the manufacturer's rated power and modulated as specified in RSS-Gen.

The unwanted emissions shall be measured at the bottom and the top of the operating frequency bands. In doing so, the equipment must be set such that the middle of the occupied bandwidth is respectively as close to the bottom or the top of the band edge as the equipment design permits.

If the transmitter is designed for a multi-carrier operation, the test shall be carried out using the maximum number of carriers intended for the equipment.

Set the carrier frequency f_L to the lowest intended frequency of the frequency band. Record f_L and the RF spectrum. Repeat the test using the highest intended carrier frequency f_H .

5. Transmitter and Receiver Standard Specifications

5.1 Frequency Plan

The band 3450-3650 MHz is divided into 25 MHz blocks and the frequency plan is given in SRSP-303.4.

5.2 Types of Modulation

The modulation used shall be digital.

5.3 Frequency Stability

The carrier frequency shall not depart from the reference frequency in excess of ± 20 ppm.

In lieu of meeting the above stability value, the test report may show that the frequency stability is sufficient to ensure that the emissions stay within the 25 MHz block when tested to the temperature and supply voltage variations specified in RSS-Gen.

5.4 Transmitter Output Power

The average output power, P_{mean} , shall be within ± 2.0 dB of the manufacturer's rated power. The e.i.r.p. shall comply with the limits specified in SRSP-303.4.

5.5 Transmitter Unwanted Emissions

The unwanted emissions shall comply with the following limits:

- (i) In any 30 kHz bandwidth, the unwanted emission spectral density that is relative to the inband spectral density shall be attenuated at least to the limits shown in Table 1 according to the equipment modulation. The attenuation shall be linearly interpolated between the turning point attenuation limits.

Table 1: Attenuation of Unwanted Emission Limits for Various Access Schemes

Orthogonal Frequency Division Multiple Access (OFDMA)

Turning Point (F/ChS)	0	0.21	0.56	1.5	2
EMO = 2	8 dB	25 dB	27 dB	50 dB	50 dB
EMO = 4	8 dB	27 dB	32 dB	50 dB	50 dB
EMO = 6	8 dB	32 dB	38 dB	50 dB	50 dB

Code Division Multiple Access (CDMA)

Turning Point (F/ChS)	0	0.3	0.5	1	2
EMO Not applicable	0 dB	25 dB	25 dB	45 dB	45 dB

Frequency Division Multiple Access (FDMA)

Turning Point (F/ChS)	0	0.1	0.35	1	2
EMO = 2	23 dB	25 dB	25 dB	45 dB	45 dB
EMO = 3	27 dB	29 dB	29 dB	45 dB	45 dB
EMO = 4 or 6	31 dB	33 dB	33 dB	45 dB	45 dB

Time Division Multiple Access (TDMA)

Turning Point (F/ChS)	0	0.3	0.56	1.5	2
EMO = 2	Not applicable	25 dB	25 dB	45 dB	45 dB
EMO = 4	Not applicable	32 dB	37 dB	45 dB	45 dB
EMO = 6	13 dB	34 dB	42 dB	45 dB	45 dB

Or at any offset where attenuation exceeds the limit in 5.5 (ii), the limit in 5.5 (ii) shall be used.

The offset frequency from the block edge, F, at each turning point can be determined as follows:

$F = \text{ChS} * (\text{Turning Point})$; where ChS is defined as the frequency spacing between the centre

frequencies of two adjacent channels.

EMO is the equivalent modulation order of the transmitter, defined as $\log_2(\text{number of discrete states which may be assigned to each symbol})$. For example, for quadrature amplitude modulation (QAM):

$$2 = 4 \text{ QAM}$$

$$4 = 16 \text{ QAM}$$

$$6 = 64 \text{ QAM}$$

- (ii) In any 1.0 MHz band that is removed from the assigned centre frequency by more than $\pm 250\%$ of the necessary bandwidth, the power of any emission must be attenuated below P_{mean} by at least $43 + 10 \log_{10}(P_{\text{mean}})$ dB, or 70 dB, whichever is less stringent. P_{mean} is the mean output power of the transmitter in watts.

5.6 Receiver Spurious Emissions

Receiver spurious emissions shall not exceed -70 dBW/MHz below 21.2 GHz, and -60 dBW/MHz above 21.2 GHz at the antenna connector. A spectrum analyzer resolution bandwidth of 100 kHz shall be used to measure spurious emissions for emissions below 1.0 GHz, and a bandwidth of 1.0 MHz shall be used for emissions above 1.0 GHz.