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Wireless Broadband Access Equipment Operating in the Band 3650-3700 MHz

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Canada

Preface

Radio Standards Specification 197, Issue 1, dated February 2010, *Wireless Broadband Access Equipment Operating in the Band 3650-3700 MHz*, will be in force as of the publication date of Notice SMSE-003-10 in the *Canada Gazette*, Part I. Upon publication, the public has 120 days to submit 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 of wireless access systems operating in Wireless Broadband Services (WBS) in the band 3650-3700 MHz.

2. General Information

Equipment operating in this band 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 recognized Certification Body (CB) is required.

2.1 Licensing Requirements

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

2.2 Radio Equipment List (REL)

As per Section 2.4 below, the type of contention-based protocol (restricted or unrestricted) employed by the equipment certified under this RSS shall be stated under the “Type of Equipment” category in Industry Canada’s REL database, which is available on the departmental website at http://www.ic.gc.ca/eic/site/ceb-bhst.nsf/eng/h_tt00020.html.

2.3 Related Documents

All Spectrum Management and Telecommunications publications are available on the following website: www.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:

CPC-2-1-26	<i>Licensing Procedure for Wireless Broadband Services (WBS) in the Frequency Band 3650-3700 MHz</i>
SP 3650 MHz	<i>Spectrum Utilization Policy, Technical and Licensing Requirements for Wireless Broadband Services (WBS) in the Band 3650-3700 MHz</i>
SRSP-303.65	<i>Technical Requirements for Wireless Broadband Services (WBS) in the Band 3650-3700 MHz</i>

CPC – Client Circular Procedure
SP – Spectrum Utilization Policy
SRSP – Standard Radio System Plan

2.4 Definitions

Contention-based Protocol: A protocol that allows multiple users to share the same spectrum by defining the events that must occur when two or more transmitters attempt to simultaneously access the same channel and by establishing rules by which a transmitter provides reasonable opportunities for other transmitters to operate. Such a protocol may consist of procedures for initiating new transmissions, procedures for determining the state of the channel (available or unavailable), and procedures for managing retransmissions in the event of a busy channel.

Restricted Contention Protocols: Restricted contention protocols can prevent co-frequency interference only to radio equipment that uses the same or similar protocols. The IEEE 802.16 standard is an example of a restricted contention protocol. Equipment incorporating such a protocol relies on scheduling so as to avoid interference among multiple transmitters using the same protocol. Such equipment cannot, however, determine whether other equipment using a different protocol is operating co-channel, as it does not employ a sensing mechanism.

Unrestricted Contention Protocols: Unrestricted contention protocols can prevent co-frequency interference to radio equipment that uses dissimilar contention protocols. The IEEE 802.11 standard is an example of an unrestricted contention protocol. Equipment incorporating such a protocol listens to the channel before transmitting. If the equipment senses that another radio is operating co-channel, it will not transmit, thereby avoiding co-channel interference to equipment using similar or dissimilar contention-based protocols.

3. General Requirements

3.1 RSS-Gen Compliance

RSS-197 shall be used in conjunction with RSS-Gen for general specifications and information relevant to the equipment for which this standard applies.

4. Certification Requirements

4.1 Test Report

In addition to the requirements in RSS-Gen, the certification applicant shall include in the test report the following, where applicable:

- (1) for mobile equipment, a description of how the equipment implements the requirement to positively receive and decode an enabling signal from the base station before the mobile equipment can transmit.
- (2) a description of the algorithm used to reduce the equivalent isotropically radiated power (e.i.r.p.) to the limit allowed in the case of overlapping beams if the equipment employs advanced antenna technology (see Section 5.6.3).

4.2 Contention-based Protocol Declaration

The certification applicant shall include, in the application, a signed declaration from the equipment manufacturer that the equipment employs a contention-based protocol. The declaration shall include a description of the methodology used to meet the requirement that each transmitter employ a contention-based protocol and shall indicate whether the equipment is capable of avoiding co-frequency interference with equipment using all other types of contention-based protocols (restricted or unrestricted contention protocols).

5. Transmitter and Receiver Standard Specifications

5.1 Type of Modulation

The type of modulation used shall be digital.

5.2 Channel Bandwidth

The channel bandwidth shall be equal or greater than 1 MHz.

5.3 Transmitter Frequency Stability

The transmitter frequency stability limit shall be determined as follows:

- (a) The frequency offset shall be measured according to the procedure described in RSS-Gen and recorded;
- (b) Using a resolution bandwidth of 1% of the occupied bandwidth, a reference point at the unwanted emission level specified in Section 5.7 on the emission mask of the lowest and highest channel shall be selected, and the frequency at these points shall be recorded as f_L and f_H respectively.

The applicant shall ensure frequency stability by showing that f_L minus the frequency offset and f_H plus the frequency offset shall be within the 3650-3700 MHz band.

5.4 Contention-based Protocol

Equipment shall employ a contention-based protocol and the type of protocol implemented (restricted or unrestricted) shall be reported (see Section 4.2).

5.5 Operating Restriction for Mobile and Portable Equipment

Mobile and portable devices shall operate only for as long as they can receive and decode an enabling signal transmitted by a base station. This includes direct communications between mobile/portable devices where data is not transferred between the mobile/portable devices and the base station.

5.6 Transmitter Output Power and Equivalent Isotropically Radiated Power (e.i.r.p.)

- 5.6.1 The maximum e.i.r.p. density of mobile equipment shall not exceed 40 mW in any 1 MHz bandwidth.
- 5.6.2 The maximum transmitter output power density of equipment, other than mobile and portable equipment, shall not exceed 1W in any 1 MHz bandwidth.
- 5.6.3 In addition, equipment, other than mobile and portable equipment, employing antenna systems that emit multiple directional beams, simultaneously or sequentially, for the purpose of directing signals to individual receivers or to groups of receivers, shall comply with the requirements in SRSP-303.65.

5.7 Transmitter Unwanted Emissions

The unwanted emissions shall be measured at the frequencies of the highest and lowest channel of all bandwidths and types of modulation that the equipment can operate with a resolution bandwidth of 1 MHz or less, but at least 1% of the occupied bandwidth of the transmitter, provided that the measured power is integrated over a 1 MHz bandwidth.

The power of any emissions outside the frequency band 3650-3700 MHz shall be attenuated below the channel transmitter power P (dBW) by $43 + 10 \text{ Log } (p)$, where p is measured in watts.

5.8 Receiver Spurious Emissions

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