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Spectrum Management and Telecommunications

Guideline

Interim Technical Guidelines for the Operation of the Broadband Radio Service (BRS) in the Band 2500-2690 MHz

Preface

Issue 1 of GL-07 is hereby released.

These technical guidelines include requirements for BRS systems authorized and deployed in the band 2500-2690 MHz, in conformance with *Canada Gazette* notice DGTP-002-06.

These technical requirements are subject to change pending further decisions by Industry Canada regarding the 2500-2690 MHz band plan. When the new Standard Radio System Plan (SRSP) becomes available, this technical guidelines document will be withdrawn.

Issued under the authority of
the Minister of Industry

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1. Intent

- 1.1 The intent of this guideline is to provide technical guidance for BRS that may be authorized to operate in the band 2500-2690 MHz in accordance with Radio Systems Policy, DGTP-002-06 – *Policy Provisions for the Band 2500-2690 MHz to Facilitate Future Mobile Service*, released in March 2006.
- 1.2 Fixed and mobile one-way and two-way service applications are eligible under a BRS licence. They may employ either time division duplex (TDD) or frequency division duplex (FDD) systems. This document is intended to be an interim guideline while a Standard Radio System Plan (SRSP) is developed pending Industry Canada's decision on the 2500-2690 MHz band plan.

2. General

- 2.1 GL-07 is based on the current or planned technologies considered by the service providers of BRS in the band 2500-2690 MHz.
- 2.2 Notwithstanding the fact that a system satisfies the requirements of this guideline, the Department shall require adjustment to radio and auxiliary equipment in radio stations whenever harmful interference¹ is caused to any licensed radio station.
- 2.3 Radio systems conforming to these technical requirements will be given priority in licensing over non-standard radio systems operating in these bands. The arrangements for non-standard systems are outlined in the document entitled *Spectrum Utilization Policies, General Information Related to Spectrum Utilization and Radio Systems Policies (SP Gen)*.
- 2.4 Industry Canada may require licensees and/or applicants to use system receiver selectivity characteristics that provide improved rejection of harmful interference.
- 2.5 Industry Canada will require applicants and/or licensees to cooperate in the selection of use of frequencies from within their assigned spectrum blocks to minimize interference and maximize the effective use of the authorized spectrum.
- 2.6 Equipment that has been previously certified in accordance with RSS-193 prior to the adoption of RSS-199 will be permitted to continue operating in the band 2500-2596 MHz, subject to the guidelines for coexistence of systems as defined in this guideline.

¹ For the purpose of GL-07, harmful interference means interference that endangers the functioning of a radionavigation service or other safety services, or seriously degrades, obstructs, or repeatedly interrupts a radiocommunication service operating in accordance with regulations and technical requirements laid down by Industry Canada under the *Radiocommunication Act*.

3. Related Documents

The following documents, as amended from time to time, outline the policy framework and radio licence application requirements for the BRS.

3.1 Radiocommunication Regulations

<http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01265.html>

3.2 SP Gen – *General Information Related to Spectrum Utilization and Radio System Policies*

<http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01049.html>

3.3 Canadian Table of Frequency Allocations

http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/h_sf01678.html

3.4 Client Procedures Circular CPC-2-0-03, *Radiocommunication and Broadcasting Antenna Systems*

<http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08777.html>

3.5 Client Procedures Circular CPC-2-1-23, *Licensing Procedure for Spectrum Licences for Terrestrial Services*

<http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01875.html>

3.6 Gazette Notice: DGTP-002-06 – *Policy Provisions for the Band 2500-2690 MHz to Facilitate Future Mobile Service*

<http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08551.html>

3.7 Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz – Safety Code 6

http://www.hc-sc.gc.ca/ewh-semt/pubs/radiation/radio_guide-lignes_direct-eng.php#sc6

3.8 Sharing Arrangement between the Department of Industry of Canada and the Federal Communications Commission of the United States of America Concerning the use of the Frequency Bands 2155-2162 MHz and 2500-2690 MHz by Terrestrial Stations near the Canada-United States Border

Terrestrial Radiocommunication Agreements and Arrangements (TRAA), Arrangement M.

<http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08965.html>

3.9 Broadcasting Procedures and Rules, Part 6 (BPR, Part 6) – *Application Procedures and Rules for Multipoint Distribution Television Broadcasting Undertakings (MDS-TV)*

<http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01770.html>

3.10 Radiocommunication Standard Specification 199 (RSS-199), *Broadband Radio Service (BRS) Equipment Operating in the Band 2500-2690 MHz*

<http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf09631.html>

- 3.11** **SRSP 302.5** – *Technical Requirements for Stations in the Fixed Service Operating in the 2150 to 2160 MHz and 2500 to 2690 MHz Bands*
<http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf00032.html>

4. Interim² BRS Licensing Band Plan

- 4.1 BRS licensees that have converted from an existing MCS licence are limited to operations in the frequency blocks 2500-2535 MHz and 2568-2596 MHz.
- 4.2 BRS licensees that have converted from an existing MDS licence are limited to operations in the frequency block 2596-2657 MHz.

5. Technical Requirements

5.1 Channel Bandwidth

- 5.1.1 The minimum channel bandwidth of any technology in this band is 1 MHz.

5.2 Radiated Power and Antenna

- 5.2.1 Base stations are limited to less than 33.3 W maximum equivalent isotropically radiated power (e.i.r.p.) in any 100 kHz segment.
- 5.2.2 Subscriber equipment is limited to a maximum transmitter power and e.i.r.p. in accordance with RSS-199.

5.3 Out-of-block Emissions

Radio equipment in this band is required to attenuate out-of-block emissions in accordance with RSS-199.

6. Guidelines for Coexistence of Systems

6.1 Domestic Coordination

6.1.1 Systems in Adjacent Areas in the Same Frequency Block

Where a BRS system will operate in the same frequency block but in adjacent areas to another BRS or MCS/MDS system, licensees are encouraged to enter into mutually beneficial arrangements to foster efficient spectrum use.

To identify stations that require coordination, the following criteria shall be used. A spectral power flux density (spfd) of $-106 \text{ dBW/m}^2/\text{MHz}$ measured at an antenna height above ground of 1.5 metres shall

² The final BRS band plan is expected to be finalized following a public consultation in 2010.

not be exceeded anywhere within an adjacent licensed area of another BRS licensee or MCS/MDS licensee unless the agreement of the affected licensee has been obtained.

Possible interference conflicts between systems may occur even though these technical specifications of this guideline are being met. The resolution of those conflicts should be through mutual arrangements between the affected parties, following consultation and coordination. Licensees will be expected to take full advantage of interference mitigation techniques, such as antenna discrimination, polarization, frequency offset, shielding, site selection and power control, to facilitate coexistence with systems of other operators, at both design and implementation stages.

When interference conflicts between systems cannot be resolved, the Department shall be so advised whereupon, following consultations with the parties concerned, it will determine the necessary modifications to be implemented by one or both parties.

6.1.2 Systems in Adjacent Frequency Blocks and Adjacent Frequency Bands

Out-of-block emission limits are specified in Section 5.3. If a new BRS base station causes interference to an existing licensee and, where a documented case of harmful interference is presented to the Department, the interfering BRS base station transmitter may be required to further attenuate its out-of-block emissions. If such further attenuation is required and the licensee receiving interference is also a BRS operator, the licensee receiving interference must also attenuate its own base station transmit out-of-block emissions by an amount such that both parties then have equal out-of-block emission power measured within the 5 MHz immediately above or below the block edge in question.

Possible interference conflicts between BRS and systems, as indicated below, may occur even though the technical specifications of this guideline are being met. The resolution of these conflicts, including those arising from adjacent block TDD and FDD use, should be arrived at through mutual arrangements between the affected parties, following consultation and coordination.

- (a) MCS licensees in the band 2500-2596 MHz and 2686-2688 MHz;
- (b) MDS licensees in the band 2596-2686 MHz and 2688-2690 MHz;
- (c) mobile-satellite service (MSS) downlink operations in the band 2483.5-2500 MHz; and
- (d) other BRS operations in frequency blocks adjacent to 2596 MHz.

When interference conflicts between systems cannot be resolved, the Department shall be so advised whereupon, following consultations with the parties concerned, it will determine the necessary modifications to be implemented by one or both parties.

6.2 International Coordination

Coordination requirements for BRS licensees deploying new facilities are required under a spectrum sharing arrangement between Canada and the United States entitled *Sharing Arrangement between the Department of Industry of Canada and the Federal Communications Commission of the United States of America Concerning the use of the Frequency Bands 2155-2162 MHz and 2500-2690 MHz by Terrestrial Stations near the Canada–United States Border*.

A reference to this arrangement is included in Section 3, Related Documents.