Licensing Procedure for Remote Rural Broadband Systems (RRBS) Operating in the Band 512-698 MHz (TV channels 21 to 51)
Preface

Client Procedures Circulars describe the various procedures or processes to be followed by the public when dealing with Industry Canada. The information contained in these circulars is subject to change without notice. It is therefore suggested that interested persons consult the nearest district office of Industry Canada for additional details. While every reasonable effort has been made to ensure accuracy, no warranty is expressed or implied. As well, these circulars have no status in law.

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

1. Principle .......................................................................................................................... 1
2. Intent .................................................................................................................................. 1
3. Mandate ............................................................................................................................. 1
4. Definitions .......................................................................................................................... 1
5. Licensing Policy .................................................................................................................. 2
  5.1 Applications for Television Stations on Channels 2-51 ................................................. 2
6. RRBS Licence Applications ................................................................................................. 2
  6.1 Eligibility ........................................................................................................................ 3
  6.2 Permitted Services and Licensing Approach ................................................................. 3
  6.3 Licensing Process and Licence Term ............................................................................ 4
  6.4 Service Areas ................................................................................................................ 4
  6.5 RRBS Spectrum Structure/Technical Considerations .................................................. 4
  6.6 Radio Licence Fee Calculation .................................................................................... 5
7. Coordination Issues ............................................................................................................ 6
  7.1 Domestic Coordination ................................................................................................. 6
  7.2 International Coordination .......................................................................................... 7
8. RRBS Interference and Mitigation ....................................................................................... 7
9. Licence Transferability ......................................................................................................... 8
10. Related Documents ........................................................................................................... 8

Annex A - Sample Service Areas Maps ............................................................................... 10
Annex B - RRBS Licence Conditions .................................................................................... 15
1. **Principle**

The Minister of Industry, pursuant to the *Department of Industry Act*, the *Radiocommunication Act* and the *Radiocommunication Regulations*, with due regard to the objectives of the *Telecommunications Act*, is responsible for spectrum management in Canada. As such, the Minister is responsible for developing national policies and goals for the effective use and management of the radio frequency spectrum.

2. **Intent**

The intent of this circular is to outline the procedures by which Remote Rural Broadband Systems (RRBS) are to be licensed for operation in the frequency band 512-698 MHz.

3. **Mandate**

Paragraph 5(1)(a) of the *Radiocommunication Act* states that the Minister may issue radio licences with respect to radio apparatus. The Minister may also fix terms and conditions of any such licence.

Sections 13 and 14 of the *Radiocommunication Regulations* outline the terms with respect to a radio licence issued to a radiocommunication service provider.

Section 65 of the *Radiocommunication Regulations* outlines the radio licence fee payable by a radiocommunication service provider in respect of radio apparatus installed in a fixed station.

4. **Definitions**

*Broadband Internet* means an Internet connection using a high data transmission rate, which enables capacity-intensive applications.

*Fixed Service* means a radiocommunication service that provides for communications between fixed stations.

*Fixed Station* means a radio station authorized to operate at a fixed point.

*Radiocommunication Carrier* means a person who operates an interconnected radio-based transmission facility used by that person or another person to provide radiocommunication services for compensation.

*Radiocommunication Service Provider* means a person, including a radiocommunication carrier, who operates radio apparatus used by that person or another person to provide radiocommunication services for compensation.

*Remote Rural Broadband System* means a fixed station that offers a fixed service and operates in the 512-608 MHz and 614-698 MHz frequency bands.
Remote Rural Communities: for the purpose of this licensing procedure only, these communities are defined as areas that have fewer than 100,000 people living within a 50 km radius, and are located at a sufficient distance from major population centres to avoid causing interference to local broadcasting facilities and their service contours.

5. Licensing Policy

In June 2006, Industry Canada established in RP-06, Policy for the Use of 700 MHz Systems for Public Safety Applications and Other Limited Use of Broadcasting Spectrum, a further refinement to the policy established in SP-746 MHz, Mobile Service Allocation Decision and Designation of Spectrum for Public Safety in the Frequency Band 746-806 MHz, whereby licence applications will be considered on a case-by-case basis for advanced communications services in remote rural communities on television channels that are unallotted and unassigned to the broadcasting service:

- at sufficient distance from major population centres to avoid causing interference to local broadcasting facilities and their service contours; and
- on the condition that they not constrain the provision of existing and new broadcasting services.

At this time, Industry Canada will consider licence applications to provide advanced communication services only for remote rural communities in unallotted and unassigned broadcasting spectrum in television channels 21 to 51 (512-698 MHz), except for channel 37.

5.1 Applications for Television Stations on Channels 2-51

Industry Canada notes that the Canadian Radio-television and Telecommunications Commission (CRTC) is still accepting applications for TV stations proposing to operate on channels 2-51. However, in an effort to encourage the implementation of digital television (DTV) in Canada and to move toward freeing up valuable spectrum resources for new advanced wireless services such as RRBS, in January 2007, the Department applied channel-specific criteria when receiving applications for broadcasting certificates for the use of television channels 2 to 51. Additional information can be found on the Spectrum Management and Telecommunications website.

6. RRBS Licence Applications

Industry Canada will accept complete radio station licence applications from potential RRBS service providers for individual service areas.

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1 Channel 37 is allocated to the radio astronomy service and is not available for broadcasting or RRBS.

Applicants may submit their applications to any Industry Canada Spectrum Management office.3

Information required includes the following:

- the name and address of the applicant;
- a narrative explaining the proposed RRBS;
- a completed Application for Licence to Install and Operate a Radio Station in Canada (IC 2365);
- a completed Radiocommunication and Broadcasting Antenna Systems Attestation (IC 2430);
- the company’s ownership and control structure, if not previously filed with the Department (see CPC-2-0-15, Canadian Ownership and Control.) If previously filed, an indication as to whether there has been any material changes to the ownership and control structure since the last review;
- the applicable radio licence fees as set out in the Radiocommunication Regulations;
- a list of preferred channels/frequencies and the technical parameters applied for; and
- a map(s) clearly showing the proposed coverage or service area.

Licensees must justify to the Department the amount of spectrum required to deploy their system.

For additional information on how to submit a radio station application and/or technical information, applicants should contact their local Spectrum Management office.

6.1 Eligibility

A licensee operating as a radiocommunication service provider must comply on an ongoing basis with eligibility criteria as set out in subsection 9(1) of the Radiocommunication Regulations.

A licensee operating as a radiocommunication carrier must also comply on an ongoing basis with the eligibility criteria set out in subsection 10(2) of the Radiocommunication Regulations.

Radiocommunication carriers may also be subject to regulation by the CRTC under the Telecommunications Act.

6.2 Permitted Services and Licensing Approach

RRBS service is a fixed type of radio service, limited to operation by radiocommunication service providers. Operation of mobile stations in the 512-608 MHz and 614-698 MHz frequency bands is currently not permitted. In addition, in accordance with RP-06, only limited, non-broadcasting use of this spectrum will be considered. Consequently, only subscriber-based broadband Internet applications will be allowed for licensing at this time.

Authorization of RRBS will be granted via the issuance of radio licences, using a system licensing approach. This means that system subscribers will not be required to hold individual radio licences.

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3 A complete list of regional and district spectrum management offices is provided in Radiocommunication Information Circular RIC-66 available at the following Industry Canada website: 
6.3 Licensing Process and Licence Term

A first-come, first-served (FCFS) licensing process will be used for RRBS. Industry Canada will authorize as many eligible applicants as the spectrum availability permits within a particular geographical area. Radio licences will be issued for a one-year term, with licence fees payable by March 31 of each year.

The licensee will have a high expectation that a new licence will be issued for a subsequent term through a renewal process unless a breach of licence condition has occurred, a fundamental reallocation of spectrum to a new service is required, or an overriding policy need arises.

It should be noted that the licence is subject to relevant provisions in the Radiocommunication Act and the Radiocommunication Regulations. As a result, the Minister has the power to amend the terms and conditions of the spectrum licence and to suspend or revoke a radio authorization (paragraph 5(1)(b) and subsection 5(2) of the Radiocommunication Act).

6.4 Service Areas

As outlined in Section 5, licensing of these systems will be permitted only in remote rural communities where the spectrum under consideration is not allotted or assigned to broadcasting services, and does not cause interference to existing broadcasting services. The area must be at sufficient distance from major population centres, broadcasting facilities and their service contours so as not to cause them interference. Applications for RRBS stations will not be considered if the station is located within 121 km from the Canada-United States border.

Based on this criteria, a set of maps has been developed that shows areas where applications for RRBS licences will be considered. It should be noted that these maps are generated with the specific conditions mentioned above and do not represent a definition of remote rural communities for other purposes (see sample service area maps in Annex A).

More detailed maps can be found on Industry Canada’s Spectrum Geo website, available at http://spectrumgeo.ic.gc.ca/txt/download-eng.html#RRBS. These maps will be used by the Department’s Spectrum Management offices to evaluate each application on a case-by-case basis. The maps will be updated with new census information as required.

6.5 RRBS Spectrum Structure/Technical Considerations

Frequencies will be assigned on a 6 MHz block basis concurrent with upper and lower boundary frequencies identical to the 6 MHz broadcast channel plan. Normally, two channels will be assigned to each RRBS using frequency division duplex (FDD) technology, and one channel will be assigned to each system using time division duplex (TDD) technology. However, for each TDD system, up to two contiguous channels may be assigned, depending on the availability of such contiguous channels and provided that the requirement for this extra capacity can be demonstrated.
RRBS licensees and associated subscriber stations must comply on an ongoing basis with all relevant Radio Standards Specifications (RSS) and Standard Radio System Plans (SRSP), including SRSP-300.512 and RSS-196, as amended from time to time.

6.6 Radio Licence Fee Calculation

As prescribed by the *Radiocommunication Regulations*, section 65:

“The radio licence fee payable by a radiocommunication service provider in respect of radio apparatus installed in a fixed station, other than a fixed station referred to in sections 66 to 71, is for each transmitter and each receiver installed at the station the sum of the applicable fees set out in Part II of Schedule III that corresponds to the number of telephone channels per radio frequency assigned to that transmitter or receiver.”

In order to determine the equivalent number of telephone channels necessary to calculate the radio licence fee, the following formula will be used:

Subsection 58(c) of the *Radiocommunication Regulations* states that:

“One digitally modulated channel is equivalent to the number of telephone channels calculated by dividing the modulation bit rate by 64 kilobits per second.”

| Number of equivalent telephone channels | \( \frac{\text{modulation bit rate of the system}}{64 \text{ kbps}} \) |

The modulation bit rate is the total number of bits carried from the transmitter to the receiver including, but not limited to, traffic carried for supervisory, error coding, internal communication, etc.

For example, for a network operating at an average speed of 3.0 Mbps, the number of equivalent telephone channels would be 3.0 Mbps divide by 64 kbps = 50 channels.

Therefore, the radio licence fee would be $42 (i.e. renewal fee) per radio frequency for each transmitter or receiver (assuming one transmit frequency (TX) and one receive frequency (RX) using the whole bandwidth).
Licensing Procedure for Remote Rural Broadband Systems (RRBS) Operating in the Band 512-698 MHz (TV channels 21 to 51) CPC-2-1-24

Radiocommunication Regulations Excerpt

Schedule III
PART II
(sections 55, 56, 58, 61 and 65)

Fee Schedule Applicable to Radiocommunication Users for Fixed Stations that Communicate with Other Fixed Stations or Space Stations

<table>
<thead>
<tr>
<th>Column I</th>
<th>Column II</th>
<th>Column III</th>
<th>Column IV</th>
<th>Column V</th>
<th>Column VI</th>
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<tr>
<td>Item</td>
<td>Number of Telephone Channels per Radio Frequency Assigned to each Transmitter or Receiver</td>
<td>Issuance Fee</td>
<td>Monthly Fee</td>
<td>Renewal Fee</td>
<td>Reinstatement Fee (April)</td>
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</tr>
<tr>
<td>2</td>
<td>From 25 to 60</td>
<td>$13.00</td>
<td>$3.50</td>
<td>$42.00</td>
<td>$44.00</td>
</tr>
</tbody>
</table>

Therefore, the licence fee total for this system would be: 2 (TX and RX) x $42.00 = $84.00.

Radio licences will be issued to eligible radiocommunication service providers in accordance with sections 13 and 14 of the Radiocommunication Regulations, which also provide authority for subscriber apparatus to operate.

7. Coordination Issues

7.1 Domestic Coordination

In the event that different RRBS operators in adjacent or overlapping service areas are assigned channels in the same or adjacent frequency range, inter-licensee coordination is required. Licensees must use their best efforts to enter into mutually acceptable sharing agreements that will facilitate the reasonable and timely development of their respective systems, and to coordinate with other licensed users in Canada where applicable.

Regardless, when potential conflicts between RRBS systems cannot be resolved, Industry Canada should be advised and, upon joint consultation, the Department will determine the necessary course of action.

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4 This schedule also applies to radiocommunication service providers under section 65 of the Radiocommunication Regulations.
7.2 International Coordination

In the border area, the sharing and use of the bands 470-608 MHz and 614-746 MHz are currently covered by a Broadcasting Agreement, a Broadcasting Letter of Understanding (LOU) and an Interim DTV Agreement. These three agreements and working arrangements deal with sharing and use of these bands by Canadian and U.S. TV broadcasting services operating within 400 km of the common border.

In addition, the LOU specifies that new services (i.e. non-broadcasting operations) shall not claim protection from DTV stations or analog TV stations. The LOU does not, however, deal with non-broadcasting versus non-broadcasting operations in the border area.

Therefore, until such time as a new agreement can be reached between Canada and the United States, any authorization issued for non-broadcasting use (including RRBS) within 400 km of the border must be on a no-interference, no-protection basis with respect to broadcasting services in the United States.

Further, RRBS licensees will be subject to any future agreements or arrangements between Canada and the United States regarding use of these systems in the border area, and may be required to modify their stations or operations in order to conform with such agreements or arrangements.

In addition, RRBS stations are currently not permitted to operate within 121 km of the Canada-United States border.

8. RRBS Interference and Mitigation

RRBS assignments are authorized on a no-interference, no-protection basis with respect to all TV broadcast services (including low-power and very low-power TV), but not with respect to other radio services.

Should an RRBS assignment cause interference to TV broadcasting assignments, mitigation measures must be taken by the RRBS licensee, even to the point of ceasing operation if another RRBS suitable channel cannot be found. Conversely, an RRBS assignment is not entitled to interference protection from TV broadcasting assignments.

Industry Canada expects RRBS service licensees to resolve any inter-system interference conflicts through good faith discussions and mutual agreement between affected parties. If such interference cannot be resolved, the parties should advise Industry Canada. Following consultation with these parties, the Department will determine the necessary course of action.

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6 Letter of Understanding Between the Federal Communications Commission of the United States of America and Industry Canada Related to the Use of the 54-72 MHz, 76-88 MHz, 174-216 MHz, 470-806 MHz Bands for Digital Television Broadcasting Service Along the Common Border.

7 Interim Agreement Between Canada and the United States Concerning Digital Television (DTV).
9. Licence Transferability

Section 11 of the *Radiocommunication Regulations* states that:

“It is a term of a radio licence that the licence not be transferred or assigned without the authorization of the Minister.”

Consequently, RRBS licensees who are radiocommunication carriers must notify and obtain approval from the Minister prior to making any changes that would have a material effect on the ownership or control of an entity holding a radio licence. Such notification must be made in advance for any proposed transactions within its knowledge. For more information, refer to CPC-2-0-15 *Canadian Ownership and Control*, as may be amended from time to time.

10. Related Documents


*Radiocommunication Act*

*Telecommunications Act*

*Radiocommunication Regulations*

*Canadian Table of Frequency Allocations 9 kHz to 275 GHz (2009 Edition)*

*CPC-2-0-03*  
*Radiocommunication and Broadcasting Antenna Systems*

*CPC-2-0-15*  
*Canadian Ownership and Control*

*CPC-2-0-17*  
*Conditions of Licence for Mandatory Roaming and Antenna Tower and Site Sharing and to Prohibit Exclusive Site Arrangements*

*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)*

*RSS-196*  
*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)*

*RIC-66*  
*Addresses and Telephone Numbers of Regional and District Offices*

*RP-06*  
*Policy for the Use of 700 MHz Systems for Public Safety Applications and Other Limited Use of Broadcasting Spectrum*
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<thead>
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<tr>
<td>SP-746 MHz</td>
<td>Mobile Service Allocation Decision and Designation of Spectrum for Public Safety in the Frequency Band 746-806 MHz</td>
</tr>
<tr>
<td>TBAA</td>
<td>Agreement Between the Government of Canada and the Government of the United States of America Relating to the TV Broadcasting Service and the Associated Working Arrangement</td>
</tr>
<tr>
<td>TBAA</td>
<td>Letter of Understanding Between the Federal Communications Commission of the United States of America and Industry Canada Related to the Use of the 54-72 MHz, 76-88 MHz, 174-216 MHz and 470-806 MHz Bands for the Digital Television Broadcasting Service Along the Common Border</td>
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CPC Client Procedures Circular  
RIC Radiocommunication Information Circular  
RP Radio Systems Policy  
RSS Radio Standards Specifications  
SP Spectrum Utilization Policy  
SRSP Standard Radio System Plan  
TBAA Terrestrial Broadcasting Agreements and Arrangements
Annex A - Sample Service Areas Maps

The following are sample maps only that generally describe areas within Canada that cannot be used for licensing of RRBS. Typically, these areas include regions located within 121 km of the Canada-United States border (shown as purple areas), and near major urban centres (shown as pink areas) where interference with existing TV broadcasting facilities is possible.

More detailed geographic service area maps and channel availability maps, specifically indicating where licensing of RRBS may be considered, are available on Industry Canada’s Spectrum Geo website at http://www.spectrumgeo.ic.gc.ca. These maps will be used by Industry Canada district offices to evaluate each RRBS licence application on a case-by-case basis. Regardless, applicants are encouraged to contact their nearest Industry Canada Spectrum Management office should they have questions regarding potential RRBS service areas and channel availability.

**East Coast**

Purple and pink areas indicated on the map are not available for licensing.
Quebec/Ontario

Purple and pink areas indicated on the map are not available for licensing.
Northern Ontario

Purple and pink areas indicated on the map are not available for licensing.
Manitoba/Saskatchewan

Purple and pink areas indicated on the map are not available for licensing.
Alberta/British Columbia

Purple and pink areas indicated on the map are not available for licensing.
Annex B - RRBS Licence Conditions

In addition to other terms of authorization noted in this document, the following conditions of licence will also apply for all authorized RRBS.

**Licence Term**

Radio licences will be issued for a one-year term, and may be renewed upon payment of the annual licence fee prior to March 31 of each year for the subsequent year (April 1 to March 31).

**Implementation of Spectrum Usage**

Licensees must submit to Industry Canada a written progress report, prior to the annual March 31 licence renewal deadline, to demonstrate that their spectrum is being put to use at a level acceptable to the Department. Failure to do so may result in cancellation of associated RRBS licences.

**Displacement Criteria**

RRBS development must not constrain the provision of existing and new broadcasting services. RRBS licensees must understand that, should interference to or from a broadcasting station occur, or should a change in the broadcast allotment plan arise, RRBS licensees may have to be relocated at their own expense.

**Eligibility**

A licensee operating as a radicommunication service provider must comply on an ongoing basis with eligibility criteria set out in subsection 9(1) of the *Radiocommunication Regulations*.

A licensee operating as a radicommunication carrier must also comply on an ongoing basis with the eligibility criteria in subsection 10(2) of the *Radiocommunication Regulations*. The licensee must notify the Minister of Industry of any change that would have a material effect upon its eligibility. Such notification must be made in advance for any proposed transactions within it’s knowledge.

**Radio Station Installations**

The licensee must comply with Client Procedures Circular CPC-2-0-03, *Radiocommunication and Broadcasting Antenna Systems*, as amended from time to time.

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8 Modifications to the broadcast allotment plan may be required to accommodate new unplanned primary broadcasting services. This may impact RRBS installations after their implementation. The probability of this increases with the proximity to urban centres.
Mandatory Antenna Tower and Site Sharing

RRBS licensees operating as radiocommunication carriers must comply with the mandatory antenna tower and site sharing requirements set out in Client Procedures Circular CPC-2-0-17, Conditions of Licence for Mandatory Roaming and Antenna Tower and Site Sharing and to Prohibit Exclusive Site Arrangements, as amended from time to time.

To facilitate compliance with this condition of licence, the licensee should consult the Department’s Guidelines for Compliance with the Conditions of Licence Relating to Antenna Tower and Site Sharing and to Prohibit Exclusive Site Arrangements (GL-06).

International Considerations

Licences for RRBS operations located outside 121 km, but within 400 km of the Canada-United States border, are issued on a no-interference, no-protection basis with respect to existing broadcasting services in the United States.

RRBS licensees will be subject to any future agreements or arrangements between Canada and the United States regarding the use of these systems in the border area, and may be required to modify affected stations or operations in order to conform to such agreements or arrangements.