Industry Canada Industrie Canada

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Spectrum Management and Telecommunications

Radio Standards Procedure

Application Procedures for Planned Radio Stations Above 960 MHz in the Fixed Service

March 2010: Section 4.3.2 of this document has been updated to ensure consistency with Section 7.3 of CPC 2-0-03, *Radiocommunication and Broadcasting Antenna Systems*.

Aussi disponible en français - PNR-113

Canada

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Preamble

1. The Minister of Industry may issue or amend licences for such terms and under such conditions as is considered appropriate for ensuring the orderly development and operation of radiocommunications in Canada.

2. Licences for planned radio stations above 960 MHz are granted after submissions are evaluated and approved by the Department. Applicants will be expected to provide sufficient information for an assessment of environmental impact, which will be conducted by the Department. The Department requires that applicants for radio licences cooperate and coordinate with other licence holders to permit reasonable and orderly sharing of the spectrum.

3. The applicant is also responsible for obtaining appropriate approvals as necessary from regulatory agencies other than those specified in the *Radiocommunication Act*.

4. The following responsibilities of the Minister of Industry are reflected in this procedure:

   (a) to optimize the utilization of the radio frequency spectrum;

   (b) to provide for the planning of the efficient and orderly growth of the Canadian telecommunications network as an entire system;

   (c) to ensure that the public interest is served through the consideration of all relevant factors in the granting of licences for new radio transmission facilities;

   (d) to anticipate, analyze, and resolve harmful interference problems in the early stages of system development;

   (e) to consider future system expansion plans and provide for frequency protection to the extent possible; and

   (f) to ensure that Canadian radiocommunication systems conform to the provisions of the *Radiocommunication Act* and the *Radiocommunication Regulations* as well as the International Telecommunication Union (ITU) *Radio Regulations*.

5. The Department reserves the right to consult with other interested parties who may be technically or economically affected by a proposal. The Department may be required to disclose information to affected parties or to other individuals requesting the information under the *Access to Information Act*. Measures will be taken to preserve the confidentiality of information which has been identified

by the applicant as having commercial, security and proprietary consequences. If the Department concurs with the applicant that such information qualifies for exemption under the provisions of the *Access to Information Act*, the applicant will be consulted prior to the release of the information. More information may be found in the *Access to Information Act* and the *Access to Information Regulations*.

Issued under the authority of
the Minister of Industry

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McCaughern
Director General
Spectrum Engineering Branch

1. General

1.1 Application of These Procedures

1.1.1 Types of Systems Covered

This document describes the procedures to obtain site-specific licences from Industry Canada for the operation of new radio systems, and modifications to existing radio systems, in the fixed service operating above 960 MHz in accordance with the first-come, first-served (FCFS) licensing process. Area licensed systems, which are authorized through spectrum licences (as per Client Procedures Circular 2-1-23, *Licensing Procedure for Spectrum Licences for Terrestrial Services* (CPC-2-1-23)), are not covered by this document. For more information on the FCFS process and the frequency bands where it applies, refer to Radio System Policy 020, *Guidelines on the Licensing Process and Spectrum Release Plan* (RP-020).

1.1.2 Modifications to Existing Systems that Require a Licence Application

It is necessary to follow the procedures in this RSP if any of the following modifications to existing fixed radio systems are proposed:

- Changes to the route design, including changes to station locations, or if new radio stations are to be added;
- Additional radio channels are added to a system;
- Modifications to the operating frequency of existing radio channels;
- Changes to the antenna radiated power;
- Changes to the antenna characteristics, elevation angles, or azimuths; and/or
- Modifications to the equipment characteristics such as bandwidth, modulation characteristics, or capacity.

1.2 Consultation with the Department

Applicants are encouraged to contact the regional or district offices of the Department at the earliest possible opportunity to discuss general policy issues and the planning of their proposed systems, or where any uncertainty exists regarding the licence application process.

For a complete list of Industry Canada regional and district offices, refer to Radiocommunication Information Circular 66, *Addresses and Telephone Numbers of Regional and District Offices* (RIC-66).

1.3 Application Submissions

Applicants are encouraged to utilize the Spectrum Direct website at http://sd.ic.gc.ca to submit applications directly to the Department.

Applications may also be submitted by e-mail or in hard copy to any regional or district office. Consult RIC-66 for the nearest location. For new applicants intending to submit applications via e-mail, the Department reserves the right to request a signed attestation to verify the authenticity of an application and may hold the processing of the application until a satisfactory attestation has been received.

1.4 Service Standards

The standard time frame for service under this RSP is as follows:

- For Letters of Intent, a response in the form of either an Approval in Principle or Letter of Rejection will be issued no later than four weeks from the date of receipt.

- For Licence Applications, an Authorization or a Letter of Rejection will be issued no later than four weeks from the date of receipt of complete information. If international frequency coordination is required, authorization will be issued no later than ten weeks from the date of receipt.

The above time frames are effective from the date that all data relevant to the full assessment of either the Letter of Intent or the Licence Application has been received. If an application is incomplete, or if the Department requests further information, the above time frames will be extended in accordance with the date that the information is received.

For licence applications submitted through Spectrum Direct and where prior coordination is either not needed or has been successfully completed, authorization may occur within a shorter time frame.

The Department is committed to processing applications in a prompt and courteous manner. A complete description of the Department's service standards may be found in the publication *Spectrum Management Service Standards*.

2. Related Documents and Websites

The following may be found on Industry Canada's Spectrum Management and Telecommunications website at http://strategis.ic.gc.ca/spectrum, under *Official Publications*.

CPC-2-0-03	*Radiocommunication and Broadcasting Antenna Systems*
CPC-2-6-01	*Procedure for the Submission of Applications to Licence Fixed Earth Stations and to Approve the Use of Foreign Fixed-satellite Service (FSS) Satellites in Canada*
CPC-2-1-23	*Licensing Procedure for Spectrum Licences for Terrestrial Services*
RIC-42	*Guide for Calculating Radio Licensing Fees*
RIC-66	*Addresses and Telephone Numbers of Regional and District Offices*
RP-020	*Guidelines on the Licensing Process and Spectrum Release Plan*
RP-022	*Microwave Licensing Policy Framework*
RSP-114	*Licence Application Procedure for Planned Earth Stations in Space Radiocommunication Services*

Spectrum Management Service Standards

Spectrum Policy Framework for Canada

TRAA - Terrestrial Radiocommunication Agreements and Arrangements

TRC-43 *Notes Regarding Designation of Emission (Including Necessary Bandwidth and Classification), Class of Station and Nature of Service*

CPC - Client Procedures Circular
RIC - Radiocommunication Information Circular
RP - Radio Systems Procedure
RSP - Radio Standards Procedure
TRC - Telecommunications Regulation Circular

The Spectrum Direct website: http://sd.ic.gc.ca

Safety Code 6 - *Limits of Exposure to Radio-frequency Fields at Frequencies from 10 kHz to 300 GHz* may be found at Health Canada's website at http://www.hc-sc.gc.ca/ewh-semt/pubs/radiation/99ehd-dhm237/index_e.html.

3. Overview of the Licence Application Evaluation Process

The Department's core objectives and guidelines underlying the Canadian Spectrum Management Program may be found in the *Spectrum Policy Framework for Canada*.

The following sections present the policies and processes that form the basis for the evaluation of licence applications submitted under this RSP.

3.1 Compliance with RP-022 Microwave Licensing Policy Framework

Authorization is subject to compliance with Radio Systems Policy 022, *Microwave Licensing Policy Framework* (RP-022) which provides a common policy framework for the licensing of microwave radio facilities under the first-come, first-served licensing process. RP-022 covers the eligibility of the applicant; the requirement for the microwave facilities; conformance with relevant Departmental policies and standards; and the need to meet regulatory requirements prescribed by the Canadian Radio-television and Telecommunications Commission (CRTC). Furthermore, authorizations are done without prejudice to any requirement prescribed by the CRTC.

RP-022 also contains special provisions for power utilities and broadcasters applying for radio licences.

3.2 Compliance with CPC-2-0-03, Radiocommunication and Broadcasting Antenna Systems

Applicants must comply with the procedures, as outlined in CPC-2-0-03, *Radiocommunication and Broadcasting Antenna Systems*. These procedures, amongst other issues, require that:

(a) radio stations are installed and operated in a manner that complies with the limits of human exposure to radio frequency fields established by Health Canada;

(b) prior to installation or modification of significant antenna structures, necessary consultation has taken place;

(c) the installation and modification of radio stations are done in a manner that complies with the *Canadian Environmental Assessment Act*; and

(d) antenna structures are marked in accordance with the recommendations of Transport Canada.

3.3 Frequency Coordination

Radio systems must be planned and designed so that harmful interference does not occur to existing licensed radio systems or earth stations. The frequency coordination process is intended to enable licensees to confirm that proposed radio systems meet this criterion. Frequency coordination may be based on mutually acceptable technical criteria including relevant recommendations of the ITU-R. Frequency growth plans for existing and proposed terrestrial and earth stations, which have been provided to the Department, are to be taken into consideration in the coordination process.

3.3.1 Frequency Coordination with Domestic Spectrum Users

Prior to initiating a request for frequency coordination, applicants are expected to have performed their own internal studies to determine that their proposed system will not create harmful interference into existing or proposed domestic terrestrial systems and earth stations. Applicants must confirm that frequency coordination with the operators of these radio facilities has been successfully completed. Information on other spectrum users within the coordination zone of the proposed radio system may be found on the Spectrum Direct website along with additional information on the search process. Please note that there are some licence records that are not fully disclosed on this website for security reasons, however sufficient information is provided to enable applicants to contact the protected licence holders in order to perform frequency coordination.

Requests for frequency coordination must include enough technical information for a full assessment of whether the proposed system, and any planned growth of the system, will cause harmful interference. Appendix A includes the minimum information that must be included in a frequency coordination request.

For frequency coordination with earth stations, additional information may be found in Client Procedures Circular 2-6-01, *Procedure for the Submission of Applications to Licence Fixed Earth Stations and to Approve the Use of Foreign Fixed-satellite Service (FSS) Satellites in Canada* (CPC-2-6-01) and Radio Standards Procedure 114, *Licence Application Procedure for Planned Earth Stations in Space Radiocommunication Services* (RSP-114).

3.3.2 Frequency Coordination with International Authorities

Frequency coordination with international authorities will be carried out by the Department on the applicant's behalf, except as noted below. If coordination is unsuccessful, the Department will notify the applicant and provide sufficient information on the anticipated conflict in order to assist the parties involved in developing a resolution.

Applicants are encouraged to pre-coordinate with international users wherever possible to help avoid unnecessary delays. Any information regarding pre-coordination which has been completed should be included with the licence application.

For some frequency bands, coordination with international authorities is the responsibility of either the applicant or a non-government agency. Where this alternate arrangement applies, notification of the coordination procedures are contained in Departmental publications applicable specifically to these bands. The procedures for international coordination are established by bilateral agreements. More information can be found in Terrestrial Radiocommunication Agreements and Arrangements (TRAA).

4. The Letter of Intent and the Licence Application

For proposed systems where licensing policy or technical issues may arise that could delay or prevent authorization, the applicant has the option of submitting a letter of intent as per Section 4.1 of this document.

For all proposed radio systems, or modifications to existing radio systems, an application containing the information as per Sections 4.2 to 4.5 must be submitted.

4.1 Letter of Intent (Optional)

In order that authorization may proceed in a timely manner, applicants are advised that they are responsible for ensuring that proposed radio systems adhere to the Department's policies and standards and conform to any Departmental consultation in progress. Where an applicant is unfamiliar with the policies and procedures for applying for a radio system, or where there is any uncertainty on a licensing issue that could delay or prevent authorization, the applicant is advised to submit a Letter of Intent prior to submitting an application or entering into any commitments. Although the Letter of Intent is an optional step in the licensing process, it is recommended in the above situations.

4.1.1 Purpose of the Letter of Intent

A Letter of Intent may be submitted in connection with any licensing issue; however, there are circumstances where a Letter of Intent may be of particularly importance, such as:

- Where the public interest aspect of the proposed radio system may be in question;
- Where the applicant wants to file a growth plan with the Department;
- Where approval of the radio system would require significant policy interpretation;
- Where the design of the proposed radio system is not in compliance with the Department's policies or standards or is in non-conformance with a Departmental consultation in progress; and
- Where the system is not licensable through existing Departmental policies or standards but where licensing would be in the public interest.

4.1.2 Contents of the Letter of Intent

The Letter of Intent should contain sufficient information to permit a comprehensive examination of the proposal. The applicant should consider including the following data but may omit any items that are not relevant to the issues under study:

- The applicant's full name, address, telephone number, and the individual that the Department can contact regarding the application;

- For existing licensees, the company code assigned by the Department;
- For new licensees, sufficient information must be provided to assess their eligibility to hold a radio licence. Refer to sections 9 and 10 of the *Radiocommunication Regulations*;
- The purpose of the system and a description of the type of traffic that will be carried;
- The proposed frequency band and reason for its selection;
- System growth data (if applicable);
- The in-service date of the system;
- Technical data on the system design such as site locations, equipment and antenna characteristics, and frequency plan; and
- If the system is in non-conformance with any of the Department's policies, technical requirements, or consultations in progress, a description of the non-conforming aspects should be provided. An explanation should be provided for the non-conformance.

The Department may request further information that it considers relevant in the assessment of the Letter of Intent.

4.1.3 Response to The Letter of Intent

Upon receipt of a Letter of Intent, the Department will study the proposal and issue either an Approval in Principle or a Letter of Refusal. In the latter situation and where possible, the Department will suggest changes to the radio system in order that a licence application may be submitted. An Approval in Principle is normally valid for six months but this time frame may be reduced or extended at the discretion of the Regional Director. If conditions arise that require modifications, the applicant will be informed. An Approval in Principle does not confer the same rights as a radio licence and applicants should be aware that the Department cannot be held responsible for any commitments made based solely on an Approval in Principle.

4.2 System Overview

All applications should commence with information on the applicant and an overview of the radio system from a spectrum management perspective. This could be presented in a covering letter or combined with the items in Sections 4.3 to 4.5 of this document to form a single submission. The following data should be included:

- The applicant's full name, address, telephone number, and the individual that the Department can contact regarding the application;
- For existing licensees, the company code assigned by the Department;
- For new licensees, sufficient information must be provided to assess their eligibility to hold a radio licence (refer to sections 9 and 10 of the *Radiocommunication Regulations*);
- The purpose of the system and a description of the type of traffic that will be carried;
- The reason for selecting the frequency band;
- The in-service date of the system; and
- If the system is in non-conformance with any of the Department's policies, technical requirements, or consultations in progress, a description of the non-conforming aspects should be provided. An explanation should be provided for the non-conformance.

Note: It is not necessary to submit any information listed above if it was previously included in a Letter of Intent for the proposed system.

4.3 Engineering Brief

The purpose of the Engineering Brief is to demonstrate that the proposed system is designed in conformity with sound engineering practices and that it meets all relevant spectrum utilization criteria and technical requirements currently in effect. In addition, the system design should be based on the following principles:

- The system availability should meet objectives typically attained within the telecommunications industry for similar radio facilities operating in the same band.
- For multi-hop systems, intra-system interference should adhere to industry-accepted electromagnetic compatibility standards.
- The route and choice of design parameters must be chosen to avoid causing harmful interference to other licensed spectrum users and therefore to achieve successful frequency coordination.

To confirm that the system design is in accordance with the above objectives, the Engineering Brief must be certified by a person who is authorized under a provincial or territorial engineering act to engage in the practice of professional engineering.

The technical description of the proposed radio system may be presented in any format; however, the Department recommends that the layout follows the on-line data entry structure of Spectrum Direct. For illustrative purposes, sample tables adapted from the Spectrum Direct website are shown in following sections of this document.

4.3.1 System Growth

The following information on projected system growth does not have to be included in the Engineering Brief section if it was previously submitted in a Letter of Intent.

If the applicant anticipates that additional RF channels within the proposed frequency band will be required in the future, a projected forecast must be included with the application. The forecast should include: (a) the current traffic requirements for the proposed system and projected growth over a five-year period; and (b) the frequencies and bandwidth of the current and future proposed RF channels with details of the planned expansion over five years. A description of the proposed protection scheme should be included.

For proposed systems which will not expand beyond one channel but where the applicant anticipates that future traffic growth will necessitate expansion to a larger bandwidth within the same frequency band, the Engineering Brief should include: (a) the current and future traffic requirements with projected time frames outlining when the higher capacity will be needed; and (b) the frequency and bandwidth of the future proposed RF channel.

The Department assesses system growth plans individually and, where substantial and justified, will endeavour to accommodate the anticipated growth to the extent practicable in light of evolving spectrum

policies and standards as well as the spectrum needs of others. Nevertheless, accommodation of system growth cannot be guaranteed and should not be assumed by the applicant.

4.3.2 Station Data

This data establishes the geographical location of each station and whether it is existing or new.

Station Data

	Site 1		Site 2	
Reference Information				
Application Type	New ☐	Modification ☐	New ☐	Modification ☐
Licence Number (if applicable)				
Station Details				
Call Sign (if applicable)				
Site Name (include Province)				
Geographical Coordinates Format	NAD 27 ☐ NAD 83 ☐		NAD 27 ☐ NAD 83 ☐	
Latitude (ddmmss)				
Longitude (dddmmss)				
Antenna Structure Height Above Ground Level (m)				
Ground Elevation Above Mean Sea Level (m)				
Notification to Broadcasters				
Have notified broadcast operators having AM, FM, or TV antenna towers within 2 km of this site.	☐ Yes ☐ No ☐ Not applicable		☐ Yes ☐ No ☐ Not applicable	
If yes, list names of broadcasters notified. If no, explain why not.				

4.3.3 Frequency Data

This data describes the characteristics of the radio path.

Frequency Data

	Site 1		Site 2	
Reference Information				
Application type	New ☐	Modification ☐	New ☐	Modification ☐
Record Identifier (if applicable)				
Technical Parameters				
Transmit Frequency (MHz)				
Total Attenuation (dB)*	Tx:	Rx:	Tx:	Rx:
RF Output Power (dBm)				
Radio Make & Model				
Antenna				
Antenna Make & Model				
Gain (dBi)				
Polarization				
Azimuth (degrees)				
Elevation Angle (degrees)				
Antenna Height Above Ground Level (m)				
Received Signal				
Path Length (km)				
Unfaded Received Signal Level (dBm)				
Total Propagation Availability (%)				
Link Diversity (If applicable)**				
Space Diversity Antenna Make and Model				
Diversity Antenna Height Above Ground Level (m)				

* The total attenuation is defined as the summation of the losses in dB between the radio antenna coupling and the antenna input. These losses are specified separately for the transmit and receive paths. Include all losses associated with monitored hot stand-by or diversity configurations.

** When propagation reliability is improved through diversity techniques, a description should be included of the method used.

4.3.4 Passive Reflector/Repeater Data

Passive reflectors and passive repeaters (back-to-back antennas) do not need to be licensed, but their use must be declared. If passive reflectors and/or repeaters are used in the system, the following data must be included in the application:

Passive Reflector Data

Passive Reflector Location	
Latitude (ddmmss)	
Longitude (dddmmss)	
Ground Elevation Above Mean Sea Level (m)	
Area of Reflection Surface (m^2)	
Azimuth Normal to the Reflection Surface (degrees)	
Elevation Angle (degrees)	
Height Above Ground Level (m)	
Associated Station *	

Passive Repeater Data (Back-Back)

Passive Repeater Location		
Latitude (ddmmss)		
Longitude (dddmmss)		
Ground Elevation Above Sea level (m)		
Antenna Details**	Antenna 1	Antenna 2
Antenna Gain (dBi)		
Azimuth (degrees)		
Height Above Ground Level (m)		
Is there a polarization change between antenna 1 and antenna 2?	YES □	NO □
Associated station*		

* A passive repeater or reflector must be associated with one of the two end stations of the radio link. If the end station is not specified in the application, the Department will determine the association.

** Antenna information must be supplied with the application as per Section 4.3.6 of this document.

4.3.5 Radio Model Data

Radio Model Data

Reference Information	
Model Number	
Manufacturer	
Radio Model Specifications	
RF Bandwidth (MHz)	
Maximum Tx Power (dBm)	
Tx Frequency Stability (%)	
Type of Modulation	
Number of Modulation Levels (not applicable for analogue video)	
Bandwidth and Emission Designator	
Capacity (Mbit/s or number of video channels and subcarriers)	
Receiver Threshold Level (dBm) for BER= 10^{-3} or S/N ratio = 40 dB for video	

The Maximum Tx Power is defined as the power into the antenna system coupling or branching unit. If the transmitter is capable of Automatic Transmit Power Control (ATPC), indicate the maximum ATPC value in watts.

The receiver threshold and corresponding BER or video S/N ratio are to be measured at the receiver input coupling.

The modulation bit rate includes the aggregate of all data that is carried over the radio link. It includes the capacity available for service plus all supervisory, orderwire, and housekeeping bits related to the operation of the radio equipment.

Information on specifying bandwidth and emission designator may be found in Telecommunications Regulation Circular 43, *Notes Regarding Designation of Emission (Including Necessary Bandwidth and Classification), Class of Station and Nature of Service* (TRC-43).

4.3.6 Antenna Model Data

If detailed information on any of the antennas used is not on file with the Department, the information shown below must be provided along with antenna patterns showing both co-planar and cross-polar discrimination. A list of antennas on file with the Department is available on Spectrum Direct.

Antenna Model Data

Model Number	
Manufacturer	
Antenna Type	
Antenna Gain (dBi)	
Size (m)	

4.4 Frequency Coordination Attestation

The applicant must state whether the coordination analysis for the proposed system resulted in frequency coordination with other domestic or international spectrum users. If coordination did occur, the applicant must confirm that the coordination was successful.

Applicants are required to retain all technical studies, correspondence, and any other relevant supporting data regarding frequency coordination and/or antenna structure coordination for five years. This documentation must be made available to the Department upon request.

4.5 Additional Information

The Department encourages applicants to include any additional information that may be relevant in the assessment of their proposal.

The Department may request supplementary data and further explanation of any component of the application that it considers necessary in evaluating the submission.

5. Licence Fees

Licence issuance fees are payable, prorated from the authorization date to the end of Industry Canada's current fiscal year (March 31). Annual renewal fees are payable thereafter. A full description of the licensing fee structure may be found in the *Radiocommunication Regulations* and Radiocommunication Information Circular 42, *Guide for Calculating Radio Licensing Fees* (RIC-42).

6. Obligations of Licensees

The following sections describe the ongoing obligations that licensees have to the Department and to other operators after applications have been approved.

6.1 In-Service Date

Licences will be issued for the in-service date specified in the application unless the Department is notified in advance of any change in the implementation schedule. Authorized radio systems are

expected to be operational within a reasonable time frame from the date of authorization. Otherwise, the Department may revoke the licensed frequencies.

6.2 Updates on Growth Plans

Licensees should keep the Department informed of any changes that arise in system growth predictions.

6.3 Ongoing Frequency Coordination

Licensees are obliged to participate in frequency coordination studies with any other operators who are applying to the Department for frequency assignments. In responding to requests for frequency coordination, licensees are responsible for assessing the potential of interference to their systems. Whether the potential for harmful interference exists or not, frequency coordination requests must be responded to within 30 days.

6.4 Cancellation of Licensed Frequencies

When a frequency assignment is no longer required by the applicant, the Department should be notified immediately. Sufficient information to completely identify the assignment must be provided. Upon receipt and verification of the cancellation, the Department will remove the assignment from its database. The yearly licence renewal fee for a frequency assignment will continue to be charged until a cancellation notice is received.

Appendix A - Frequency Coordination

Requests for frequency coordination must include enough technical information for a full assessment of whether a proposed radio system, and any planned growth of the system, will cause harmful interference to existing radio systems. The response time for requests for frequency coordination is typically 30 days, effective from the date that all of the necessary information is received.

The following minimum data is to be included:

Administrative Information

- Originating coordinator's name, address, and internal contact
- Phone number, fax number, and e-mail address
- Date coordination request sent
- Confirmation of whether this a new system or a modification to an existing licensed system
- In-service date of the proposed system

Station Data

- Site names and licence numbers (if existing)
- Latitude and longitude (Specify NAD27 or NAD83)
- Ground level above mean sea level

Radio Equipment Details

- Equipment makes and models
- Power output (include information on ATPC if utilized)
- Transmit and receive frequencies
- Polarization
- Bandwidth and type of modulation
- Capacity

Antennas

- Makes and models
- Gains
- Radiation patterns
- Azimuths and elevation angles
- Height of each antenna centreline above ground level
- Antenna system losses between the radio antenna coupling and the antenna input

Passive Reflector or Repeater (if used)

- Latitude and longitude of passive reflector or repeater
- Ground level above sea level
- Passive reflector surface area, azimuth normal to the reflecting surface, and elevation angle
- Passive repeater antenna makes and models, gains, polarizations, and azimuths
- Height above ground level of the centre line of the reflecting surfaces

System Growth (optional)

All technical information on system growth that is to be included in the licence application must be part of the frequency coordination request and include:

- Additional RF channels and dates of implementation up to 5 years in the future;
- Bandwidths, type of modulation, and capacities of future channels; and
- For any future planned expansion of an RF channel bandwidth, the final bandwidth, capacity, and type of modulation.

Additional Comments

Any additional information that may be relevant to the frequency coordination request should be included.