



Spectrum Management and Telecommunications

Radio Standards Specification

# Flexible Use Broadband Equipment Operating in the Band 27.5-28.35 GHz

DRAFT

## Preface

Inquiries may be submitted by one of the following methods:

1. Online, using the [General Inquiry form](#) (in the form, select the Directorate of Regulatory Standards radio button and specify “RSS-193” in the General Inquiry field)
2. By mail to the following address:  
  
Innovation, Science and Economic Development Canada  
Engineering, Planning and Standards Branch  
Attention: Regulatory Standards Directorate  
235 Queen Street  
Ottawa, Ontario K1A 0H5  
Canada
3. By email to [consultationradiostandards-consultationnormesradio@ised-isde.gc.ca](mailto:consultationradiostandards-consultationnormesradio@ised-isde.gc.ca)

Additional information and guidance are available on the Innovation, Science and Economic Development Canada (ISED) webpages [Common Questions and Answers](#) and [General Notices](#).

Comments and suggestions for improving this standard may be submitted online using the [Standard Change Request form](#) or by mail or email to the above addresses.

All spectrum and telecommunications related documents are available on ISED’s [Spectrum Management and Telecommunications](#) website.

Issued under the authority of the  
Minister of Innovation, Science and Industry

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Director General  
Engineering, Planning and Standards Branch

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## 1. Scope

This Radio Standards Specification (RSS) sets out the requirements for the certification of flexible use broadband equipment, used in fixed and/or mobile services, operating in the frequency band 27.5-28.35 GHz.

## 2. Purpose and application

This RSS applies to base station, fixed service equipment, and subscriber equipment operating in the frequency band 27.5-28.35 GHz.

## 3. General requirements and references

This section specifies the general requirements and references related to this standard.

### 3.1 Coming into force

This standard will be in force as of the date of its publication on Innovation, Science and Economic Development Canada's (ISED) website.

### 3.2 Certification requirements

Equipment subject to this standard is classified as Category I and shall be certified. Either a technical acceptance certificate (TAC) issued by the [Certification and Engineering Bureau](#) (CEB) of ISED or a certificate issued by a recognized [certification body](#) (CB) is required.

### 3.3 Licensing requirements

Equipment subject to this standard requires a licence pursuant to subsection 4(1) of the [Radiocommunication Act](#).

### 3.4 RSS-Gen compliance

Equipment being certified under this standard shall also comply with the applicable requirements specified in RSS-Gen, [General Requirements for Compliance of Radio Apparatus](#). Where discrepancies exist between this standard and [RSS-Gen](#), this standard shall take precedence.

### 3.5 Related Documents

The following document should be consulted :

*SRSP-522, Technical Requirements for Non-Competitive Local Licensed Services, including Fixed and/or Mobile systems, and Flexible Use Broadband Systems, in the Band 27.5-28.35 GHz*

SRSP – Standard Radio System Plan

## 4. Definitions

The following terms are used in this standard.

### **Active antenna system (AAS)**

An antenna system where the amplitude and/or phase between antenna elements is dynamically adjusted, resulting in an antenna pattern that varies in response to short-term changes in the radio environment. Antenna systems used for long-term beam shaping such as fixed electrical down tilt are not considered an AAS. An AAS may be integrated in a point-to-multipoint (P-MP) hub station, base station and subscriber equipment.

### **AAS base station equipment**

A base station equipment with an AAS.

### **Antenna**

A radiating unit/component which contains all radiating elements forming either a fixed or dynamically adjusted pattern.

### **Base station equipment**

An equipment that provides network connectivity to, as well as management and control of, the subscriber equipment.

### **Channel bandwidth**

The equipment's operating bandwidth specified by the manufacturer that contains the information transmitted.

### **Channel frequency**

The frequency at the center of the channel bandwidth.

### **Fixed service equipment**

Equipment authorized to operate at a fixed point that provides communication between terrestrial stations. It can be used for point-to-point or point-to-multipoint services.

**Fixed subscriber equipment**

Subscriber equipment that is used at a fixed location, by the nature of its design. Fixed service equipment, portable, mobile, and nomadic equipment are not considered fixed subscriber equipment.

**Frequency block**

A portion of spectrum within a frequency band that can typically be assigned to operators.

**Frequency block group**

A continuous frequency range of one or multiple contiguous frequency blocks that contain the equipment's channel bandwidth specified by the manufacturer.

**Non-active antenna system (non-AAS)**

An antenna system that does not meet the definition of an AAS.

**Non-AAS base station equipment**

A base station equipment with a non-AAS.

**Point-to-point (P-P) equipment**

Equipment with directional antenna, installed at fixed locations, used to provide communication between two fixed locations such as backhaul.

**Point-to-multipoint (P-MP) hub equipment**

A fixed equipment to provide communication with multiple user equipment installed at fixed locations.

**Subscriber equipment**

An equipment that provides connectivity between the user and the base station equipment. It includes but not limited to mobile, portable, nomadic, and fixed subscriber equipment.

**Total radiated power (TRP)**

The integral of the power transmitted by all radiating elements, in different directions over the entire radiation sphere.

## 5. Transmitter requirements

This section specifies the requirements applicable to radio transmitters subject to this standard.

### 5.1 Measurement method

Unless otherwise specified in this standard, all measurements shall be performed in accordance with the requirements in [RSS-Gen](#). However, applicable alternative measurement procedures

listed on the [Normative Test Standards and Acceptable Alternate Procedures](#) webpage may also be used to demonstrate compliance.

The equipment shall comply with the specified requirements while performing measurements for all operating channel bandwidths specified by the manufacturer. If the transmitter is designed for a multi-carrier operation, the tests shall be carried out using both the maximum and minimum number of carriers intended for the equipment.

## 5.2 Band plan

The frequency band 27.5-28.35 GHz is divided into 17 unpaired blocks of 50 MHz as shown in table 1. Frequency blocks can be aggregated to form a frequency block group. SRSP-522 contains the detailed band plan.

**Table 1: Frequency blocks in the band 27.5-28.35 GHz**

Block	Lower Sub-band (GHz)	Upper Sub-band (GHz)	Block Size (MHz)
AA1	27.5	27.55	50
AA2	27.55	27.6	50
AA3	27.6	26.65	50
AA4	26.65	27.7	50
AA5	27.7	27.75	50
AA6	27.75	27.8	50
AA7	27.8	27.85	50
AA8	27.85	27.9	50
AA9	27.9	27.95	50
AA10	27.95	28.0	50
AA11	28.0	28.05	50
AA12	28.05	28.1	50
AA13	28.1	28.15	50
AA14	28.15	28.2	50
AA15	28.2	28.25	50
AA16	28.25	28.3	50
AA17	28.3	28.35	50

## 5.3 Type of modulation

The modulation used shall be digital.

## 5.4 Frequency stability

The frequency stability shall be sufficient to ensure that the occupied bandwidth stays within the operating frequency block or frequency block group when tested to the temperature and supply voltage variations specified in [RSS-Gen](#).

## 5.5 Transmitter power

The maximum power of the equipment measured in terms of average values shall comply with the limits specified in table 2.

**Table 2: Maximum power of equipment**

Equipment Type	Maximum power ( $P_{MAX}$ )
Non-AAS: Base station, fixed P-P station, P-MP hub station	75 dBm/100 MHz e.i.r.p.
AAS: Base station, P-MP hub station	[49 dBm/100 MHz TRP or 75 dBm/100 MHz e.i.r.p.] <i>Editor's note: ISED is requesting comments on either having a TRP or EIRP limit for AAS equipment.</i>
Fixed subscriber equipment	55 dBm/channel bandwidth e.i.r.p.
Subscriber equipment other than fixed subscriber equipment	43 dBm/channel bandwidth e.i.r.p.

Base station, fixed P-P and P-MP hub equipment operating with a occupied bandwidth of less than 100 MHz shall not exceed the limit prescribed in table 2 reduced proportionally and linearly based on the occupied bandwidth (OBW) relative to 100 MHz.

$$transmitter\ power(dBm) \leq P_{MAX}(dBm) + 10 \log(OBW/100MHz)$$

For base station, fixed P-P and P-MP hub equipment operating with non-contiguous channels the maximum power limit (including the equation) shall be applied individually to each contiguous portion of the channel. In this case the applicable occupied bandwidth to use in the equation shall be the one of each contiguous portion.

## 5.6 Transmitter unwanted emissions

Unwanted emissions shall be measured in term of average value when the transmitter is operating at the manufacturer's rated power and modulated as specified in RSS-Gen.

Equipment shall meet the unwanted emission limits, specified below, outside each frequency block group. For each channel bandwidth supported by the equipment under test, the unwanted emissions shall be measured and reported for two channel frequencies: one located

as close as possible to the low end and one located as close as possible to the high end of the equipment's operating frequency range.

The unwanted emissions, of any equipment, outside the frequency block group shall not exceed the TRP or total conducted power (sum of conducted power across all antenna connectors) limits as specified in table 3.

**Table 3: Unwanted emission limits of all equipment**

<b>Offset frequency from the edge of the frequency block group</b>	<b>TRP or conducted power (sum of conducted power across all antenna connectors)</b>
≤ 10% of occupied bandwidth	-5 dBm/MHz
> 10% of occupied bandwidth	-13 dBm/MHz