

RADIO TEST REPORT

Report ID:

REP137810

Project number:

PRJ0090190

Type of assessment:

Modular approval

Type of radio equipment:

Spread Spectrum/Digital Device (902–928 MHz)

Equipment class:

**FHSS - frequency hopping spread spectrum and
DTS - digital transmission systems**

Applicant:

Les Consultants Penteract Inc.

Description of product:

**Wireless radio module for IoT, low power in ISM
band 902–928 MHz**

Model numbers(s)/HVIN(s):

EMMESH2

Model name(s) / Product marketing name (PMN):

EMMESH2

FCC identifier:

FCC ID: 2ASI4EMMESH2

ISED certification number:

IC: 24776-EMMESH2

Specifications:

- ◆ FCC 47 CFR Part 15 Subpart C, §15.247
- ◆ RSS-247, Issue 4, July 2025, Section 6

Date of issue: January 9, 2026

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Tested by

David Duchesne, EMC/RF Lab Manager

Reviewed by



Signature



Signature

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ANAB File Number: AT-3195 (Ottawa); AT-3193 (Pointe-Claire); AT-3194 (Cambridge)

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Website	www.nemko.com

Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contained in this report are within Nemko Canada's ISO/IEC 17025 accreditation.

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Section 1 Report summary

1.1 Test specifications

FCC 47 CFR Part 15, Subpart C, Clause 15.247	Operation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz
RSS-247, Issue 4, July 2025, Section 6	Requirements for frequency hopping systems, digital transmission systems and hybrid systems operating in the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz

1.2 Test methods

558074 D01 15.247 Meas Guidance v05r02 (April 2, 2019)	Guidance for compliance measurements on digital transmission system, frequency hopping spread spectrum system, and hybrid system devices operating under section 15.247 of the FCC rules.
RSS-Gen, Issue 5, February 2021	General Requirements for Compliance of Radio Apparatus
ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

1.3 Exclusions

None

1.4 Statement of compliance

Statement of Conformity:

The reported results have been evaluated against the specified limits of the standard(s) listed in **Section 1.1** of this report.

Conformity with the specified requirements is determined by comparing the measured results directly to the applicable limits. Measurement uncertainty is not applied to adjust or attribute to the measured value for the purpose of compliance determination.

In the configuration tested, the **Equipment Under Test (EUT)** was found to be compliant. Unless otherwise noted in **Section 1.2**, all testing was performed against the relevant requirements of the applicable test standard(s).

The results obtained indicate that the product under test complies in full with the requirements tested, and the test results relate only to the items tested.

Refer to the **Summary of Test Results** section for full details.

1.5 Test report revision history

Table 1.5-1: Test report revision history

Revision #	Date of issue	Details of changes made to test report
REP137810	January 9, 2026	Original report issued

Section 2 Engineering considerations

2.1 Modifications incorporated in the EUT for compliance

There were no modifications performed to the EUT during this assessment.

2.2 Technical judgment

As per customer the EUT employs two mutually exclusive operational modes. One mode is as a FHSS system and the other is as a DTS. EUT was assessed against the rules for a FHSS system when operating in that mode and as a DTS when operating in that mode.

2.3 Model variant declaration

There were no model variants declared by the applicant.

2.4 Deviations from laboratory tests procedures

No deviations were made from laboratory procedures.

Section 3 Test conditions

3.1 Atmospheric conditions

Temperature	15 °C – 35 °C
Relative humidity	20 % – 75 %
Air pressure	86 kPa (860 mbar) – 106 kPa (1060 mbar)

When it is impracticable to carry out tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests shall be recorded and stated.

3.2 Power supply range

The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage. For the purpose of the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages $\pm 5\%$, for which the equipment was designed.

Section 4 Information provided by the applicant

4.1 Disclaimer

This section contains information provided by the applicant and has been utilized to support the test plan. Inaccurate information provided by the applicant can affect the validity of the results contained within this test report. Nemko accepts no responsibility for the information contained within this section and the impact it may have on the test plan and resulting measurements.

4.2 Applicant / Manufacturer

Name	Les Consultants Penteract Inc.
Address	2376 rue Galvani, bureau 110 ,G1N 4G4 Québec QC Canada

4.3 EUT information

Product description	Wireless radio module for IoT, low power in ISM band 902–928 MHz
Model / HVIN	EMMESH2
Serial number	1 (FHSS with ext. antenna) 2 (FHSS with int. antenna) 3(DTS with ext. antenna) 4(DTS with int. antenna)
Part number	emmesh-002
Power supply requirements	3.4 to 5V DC
Product description and theory of operation	Emmesh is an RF module used mostly in "internet of things" to connect multiples object together in a meshing configuration over RF. It uses FHSS in 902–928 MHz FSK modulation at 66 Kbps. The module can also be used in DTS mode where it transmits sensor values on a single channel at low power to reduce battery consumption. It uses one channel inside 902–928 MHz band also at 66Kbps

4.4 Radio technical information

Category of Wideband Data Transmission equipment	☒ Frequency Hopping Spread Spectrum (FHSS) equipment
	☒ Other types of Wideband Data Transmission equipment (e.g. DSSS, OFDM, etc.).
Frequency band	902–928 MHz
Frequency Min	903.24 MHz
Frequency Max	926.76 MHz
RF power Max, Conducted	DTS: 0.0023 W (3.68 dBm) FHSS: 0.2851 W (24.55 dBm)
Field strength Max, Radiated	65.02 dBμV/m @ 3 m
Measured BW, 99% OBW	DTS: 612.31 kHz, FHSS: 463.4 kHz
Type of modulation	FSK
Emission classification	F1D
Transmitter spurious	51.1 in dBμV/m @ 3 m Average, Frequency
Antenna information	EUT uses two antenna configurations: 1. An external antenna with max gain 3 dBi. EUT is designed so that the end user may replace a broken antenna. (The EUT has a non-standard antenna jack or electrical connector.) 2. An internal antenna with max gain 3 dBi. The EUT uses a nondetachable (wire) antenna to the intentional radiator.

4.5 EUT setup details

4.5.1 Radio exercise details

Operating conditions	During tests, the EUT is configured to transmit at one frequency at its maximum RF power and with the maximum possible duty cycle by the test firmware. Since the radio circuitry is identical for both antenna configurations, all the conducted tests were performed on the external antenna variant.
Transmitter state	Transmitter set into continuous mode.

4.5.2 EUT setup configuration

Table 4.5-1: EUT sub assemblies

Description	Brand name	Model, Part number, Serial number, Revision level
External antenna	Atom Electric	MN: AT.RD.T195-915

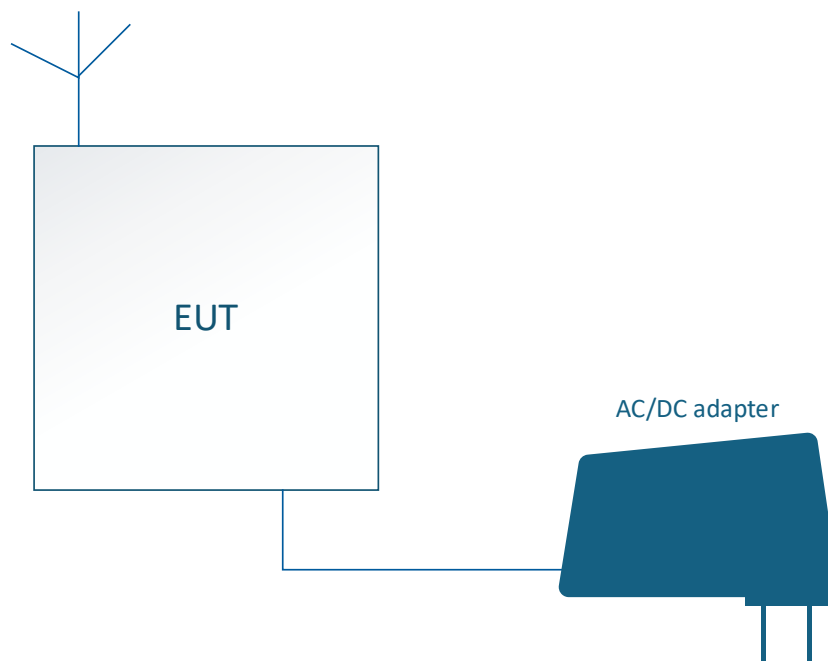
Table 4.5-2: EUT interface ports

Description	Qty.
Antenna port	1
Power port	1

Table 4.5-3: Support equipment

Description	Brand name	Model, Part number, Serial number, Revision level
AC/DC adapter	TRI-MAG	MN: L6R12H-050

Note Based on the client's request, an AC/DC adapter was provided to facilitate the testing process. This adapter is not part of the EUT, and the EUT's power requirement is supplied by a fresh 4.1 VDC battery.



Note Based on the client's request, an AC/DC adapter was provided to facilitate the testing process. This adapter is not part of the EUT, and the EUT's power requirement is supplied by a fresh 4.1 VDC battery.

Figure 4.5-1: Radiated testing block diagram

Section 5 Summary of test results

5.1 Testing period

Test start date	November 17, 2025	Test end date	November 21, 2025
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5.2 Sample information

Receipt date	November 17, 2025	Nemko sample ID number(s)	PRJ00901900001
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5.3 FCC test results

Table 5.3-1: FCC requirements results

Part	Test description	Verdict
Generic requirements		
§15.207(a)	Conducted limits	Not applicable ¹
§15.31(e)	Variation of power source	Pass
§15.31(m)	Number of tested frequencies	Pass
§15.203	Antenna requirement	Pass
§15.247(d)	Spurious emissions	Pass
FHSS specific requirements		
§15.247(a)(1)(i)	Requirements for operation in the 902–928 MHz band	Pass
§15.247(b)(2)	Maximum peak output power in the 902–928 MHz band	Pass
DTS specific requirements		
§15.247(a)(2)	Minimum 6 dB bandwidth	Pass
§15.247(b)(3)	Maximum peak output power	Pass
§15.247(e)	Power spectral density	Pass

Notes: 1.EUT is a battery-operated device, the testing was performed using fresh batteries.

5.4 ISED test results

Table 5.4-1: ISED requirements results

Part	Test description	Verdict
Generic requirements		
RSS-Gen, 7.3	Receiver radiated emission limits	Not applicable
RSS-Gen, 7.4	Receiver conducted emission limits	Not applicable
RSS-Gen, 6.9	Operating bands and selection of test frequencies	Pass
RSS-Gen, 8.8	AC powerline conducted emissions limits	Not applicable
RSS-247, 6.6	Unwanted emissions	Pass
FHSS specific requirements		
RSS-247, 6.2.1 (b)	Hopping channel carrier frequency separation	Pass
RSS-247, 6.2.2.1	Number of hopping channels, dwell time and occupied channel bandwidth in the 902–928 MHz band	Pass
RSS-247, 6.2.2.2	Transmitter output power and e.i.r.p. requirements in the 902–928 MHz band	Pass
DTS specific requirements for 900 MHz band		
RSS-247, 6.3.1 (a)	Minimum 6 dB bandwidth	Pass
RSS-247, 6.3.1 (b)	Maximum power spectral density	Pass
RSS-247, 6.3.2	Transmitter output power and e.i.r.p.	Pass

Notes: ¹According to sections 5.2 and 5.3 of RSS-Gen, Issue 5 the EUT does not have a stand-alone receiver neither scanner receiver, therefore exempt from receiver requirements.
EUT is a battery operated device, the testing was performed using fresh batteries.

Section 6 Test equipment

6.1 Test equipment list

Table 6.1-1: Equipment list

Equipment	Manufacturer	Model no.	Asset no.	Cal./Ver. cycle	Next cal./ver.
3 Phase AC Power Supply	apc AC Power	AFC-33045T	FA002677	—	NCR
3 m EMI test chamber (Emissions)	TDK	SAC-3	FA002532e	1 year	April 4, 2026
Flush mount turntable	Sunol	FM2022	FA002550	—	NCR
Antenna mast	Sunol	TLT2	FA002552	—	NCR
Bilog antenna (20–2000 MHz)	Sunol	JB1	FA002517	1 year	August 25, 2026
Horn antenna (1–18 GHz)	EMCO	3115	FA001451	1 year	June 25, 2026
50 Ω coax cable	Huber + Suhner	None	FA003438	1 year	May 15, 2026
RF Cable Assembly	Huber + Suhner	2M-750-195A-750	FA002554	1 year	January 20, 2026
50 Ω coax cable	C.C.A.	None	FA002603	1 year	January 20, 2026
LNA (1-18 GHz)	Miteq	N/A	FA003391	1 year	January 20, 2026
2.4 GHz band Notch Filter	Microwave Circuits	N0324413	FA002693	—	NCR
Receiver/spectrum analyzer	Rohde & Schwarz	ESU 26	FA002043	1 year	January 17, 2026

Note: NCR - no calibration required

All equipment related to the contribution of measurement has been included in this list. Such items include, but are not limited to, cables, attenuators, directional couplers, and pre-amps.

Table 6.1-2: Automation software details

Manufacturer of Software	Details
Rohde & Schwarz	EMC32, Software for EMC Measurements, Version 10.60.20

Table 6.1-3: Measurement uncertainty calculations based on equipment list

Measurement	Measurement uncertainty, $\pm$ dB
Radiated spurious emissions (30 MHz to 1 GHz)	5.7
Radiated spurious emissions (1 GHz to 6 GHz)	4.8
Radiated spurious emissions (6 GHz to 18 GHz)	5.1
Conducted spurious emissions	1.64
RF Output power measurement using Spectrum Analyzer	1.59
Occupied bandwidth	2.43%
Signal path calibration (Insertion loss)	1.52

Notes: UKAS Lab 34, TIA-603 and ETSI TR 100 028-1&2 have been used as guidance for measurement uncertainty reasonable estimations with regards to previous experience and validation of data. Nemko Canada Inc. follows these test methods in order to satisfy ISO/IEC 17025 requirements for estimation of uncertainty of measurement for wireless products. Measurement uncertainty calculations assume a coverage factor of $K = 2$ with 95% certainty.

Section 7 Testing data

7.1 Variation of power source

7.1.1 References, definitions and limits

FCC §15.31 (e):

For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

7.1.2 Test summary

Verdict	Pass		
Test date	November 18, 2025	Temperature	23 °C
Tested by	Atefeh Beiginezhad	Air pressure	1010 mbar
Test location	Montreal	Relative humidity	34 %

7.1.3 Observations, settings and special notes

The testing was performed as per ANSI C63.10 Section 5.13.

- Where the device is intended to be powered from an external power adapter, the voltage variations shall be applied to the input of the adapter provided with the device at the time of sale. If the device is not marketed or sold with a specific adapter, then a typical power adapter shall be used.
- For devices, where operating at a supply voltage deviating $\pm 15\%$ from the nominal rated value may cause damages or loss of intended function, test to minimum and maximum allowable voltage per manufacturer's specification and document in the report.
- For devices with wide range of rated supply voltage, test at 15% below the lowest and 15% above the highest declared nominal rated supply voltage.
- For devices obtaining power from an input/output (I/O) port (USB, firewire, etc.), a test jig is necessary to apply voltage variation to the device from a support power supply, while maintaining the functionalities of the device.
- For battery-operated equipment, the equipment tests shall be performed using a variable power supply.

7.1.4 Test data

EUT Power Source Type: Rechargeable Battery Powered

If EUT is an AC, a DC, or PoE powered, was a noticeable output power variation observed? ☐ YES ☐ NO ☒ N/A
If EUT is non-rechargeable battery operated, was the testing performed using fresh batteries? ☒ YES ☐ NO ☐ N/A
If EUT is rechargeable battery operated, was the testing performed using fully charged batteries? ☒ YES ☐ NO ☐ N/A

7.2 Number of frequencies

7.2.1 References, definitions and limits

FCC §15.31:

- (m) Measurements on intentional radiators or receivers shall be performed and, if required, reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table.

RSS-Gen, Clause 6.9:

Except where otherwise specified, measurements shall be performed for each frequency band of operation for which the radio apparatus is to be certified, with the device operating at the frequencies in each band of operation shown in table below. The frequencies selected for measurements shall be reported in the test report.

Table 7.2-1: Frequency Range of Operation

Frequency range over which the device operates (in each band)	Number of test frequencies required	Location of measurement frequency inside the operating frequency range
1 MHz or less	1	Center (middle of the band)
1–10 MHz	2	1 near high end, 1 near low end
Greater than 10 MHz	3	1 near high end, 1 near center and 1 near low end

Notes: “near” means as close as possible to or at the centre / low end / high end of the frequency range over which the device operates.

7.2.2 Test summary

Verdict	Pass		
Test date	November 18, 2025	Temperature	23 °C
Tested by	Atefeh Beiginezhad	Air pressure	1010 mbar
Test location	Montreal	Relative humidity	34 %

7.2.3 Observations, settings and special notes

ANSI C63.10, Clause 5.6.2.1:

The number of channels tested can be reduced by measuring the center channel bandwidth first and then applying the following relaxations as appropriate:

- For each operating mode, if the measured channel bandwidth on the middle channel is at least 150% of the minimum permitted bandwidth, then it is not necessary to measure the bandwidth on the high and low channels.
- For multiple-input multiple-output (MIMO) systems, if the measured channel bandwidth on testing the middle channel exceeds the minimum permitted bandwidth by more than 50% on one transmit chain, then it is not necessary to repeat testing on the other chains.
- If the measured channel bandwidth on the middle channel is less than 50% of the maximum permitted bandwidth, then it is not necessary to measure the bandwidth on the high and low channels.

ANSI C63.10, Clause 5.6.2.2:

For devices with multiple operating modes, measurements on the middle channel can be used to determine the worst-case mode(s). The worst-case modes are as follows:

- Band edge requirements—Measurements on the mode with the widest bandwidth can be used to cover the same channel (center frequency) on modes with narrower bandwidth that have the same or lower output power for each modulation family (e.g., OFDM and direct sequence spread spectrum).
- Spurious emissions—Measure the mode with the highest output power and the mode with the highest output power spectral density for each modulation family (e.g., OFDM and direct sequence spread spectrum).
- In-band PSD—Measurements on the mode with the narrowest bandwidth can be used to cover all modes within the same modulation family of an equal or lower output power provided the result is less than 50% of the limit.

7.2.4 Test data

Table 7.2-2: *Test channels selection*

Start of Frequency range, MHz	End of Frequency range, MHz	Frequency range bandwidth, MHz	Low channel, MHz	Mid channel, MHz	High channel, MHz
902	928	26	903.24	915.24	926.76

7.3 Antenna requirement

7.3.1 References, definitions and limits

FCC §15.203:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

FCC §15.247:

- (b) The maximum peak conducted output power of the intentional radiator shall not exceed the following:
- (4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

RSS-Gen, Clause 6.8:

The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report.

7.3.2 Test summary

Verdict	Pass		
Test date	November 18, 2025	Temperature	23 °C
Tested by	Atefeh Beiginezhad	Air pressure	1010 mbar
Test location	Montreal	Relative humidity	34 %

7.3.3 Observations, settings and special notes

None

7.3.4 Test data

- Does the EUT have detachable antenna(s)? ☐ NO ☒ YES
- If detachable, is the antenna connector(s) non-standard? ☒ YES ☐ NO ☐ N/A
- If connector is non-standard, is the EUT professionally installed? ☐ YES ☒ NO ☐ N/A

Table 7.3-1: Antenna information

Antenna type	Manufacturer	Model number	Maximum gain	Connector type
Internal (1/4 wave wire)	None	None	3 dBi	soldered
External (1/2 wave)	Atom Electric	AT.RD.T195	3 dBi	Umc to rpsma

7.4 Frequency Hopping Systems requirements, 900 MHz operation

7.4.1 References, definitions and limits

FCC §15.247:

- (a) Operation under the provisions of this Section is limited to frequency hopping and digitally modulated intentional radiators that comply with the following provisions:
 - (1) Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.
 - (i) For frequency hopping systems operating in the 902–928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.
 - (f) For the purposes of this section, hybrid systems are those that employ a combination of both frequency hopping and digital modulation techniques. The frequency hopping operation of the hybrid system, with the direct sequence or digital modulation operation turned-off, shall have an average time of occupancy on any frequency not to exceed 0.4 seconds within a time period in seconds equal to the number of hopping frequencies employed multiplied by 0.4. The power spectral density conducted from the intentional radiator to the antenna due to the digital modulation operation of the hybrid system, with the frequency hopping operation turned off, shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

Table 7.4-1: Summary of the basic requirements

$P_{\text{max-pk}} \leq 1 \text{ W}$	$P_{\text{max-pk}} \leq 0.125 \text{ W}$
$N_{\text{ch}} \geq 75$	$N_{\text{ch}} \geq 15$
$\Delta f \geq \text{MAX} \{ 25 \text{ kHz}, BW_{20 \text{ dB}} \}$	$\Delta f \geq \text{MAX} [\text{MAX} \{ 25 \text{ kHz}, 0.67 \times BW_{20 \text{ dB}} \} \text{ OR } \text{MAX} \{ 25 \text{ kHz}, BW_{20 \text{ dB}} \}]$
max. $BW_{20 \text{ dB}}$ not specified	max. $BW_{20 \text{ dB}}$ not specified
$t_{\text{ch}} \leq 0.4 \text{ s for } T = 0.4 \times N_{\text{ch}}$	$t_{\text{ch}} \leq 0.4 \text{ s for } T = 0.4 \times N_{\text{ch}}$
Note: t_{ch} = average time of occupancy; T = period; N_{ch} = # hopping frequencies; BW = bandwidth; Δf = hopping channel carrier frequency separation	

RSS-247, Clause 6.2.1:

- a. The bandwidth of a frequency hopping channel is the 20 dB emission bandwidth, measured with the hopping stopped. The system's RF bandwidth is equal to the channel bandwidth multiplied by the number of channels in the hopset. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.
 - b. The hopping channel carrier frequencies shall be separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.
- 6.2.2.1 The following bandwidth and hopping channel requirements shall apply:
- a. the maximum 20 dB bandwidth of the hopping channel shall be 500 kHz.
 - b. if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping channels and the average time of occupancy on any channel shall not be greater than 0.4 s within a 20 s period.
 - c. if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping channels and the average time of occupancy on any channel shall not be greater than 0.4 s within a 10 s period.

References, definitions and limits. continued

RSS-247, Clause 6.4:

Hybrid systems employ a combination of both frequency hopping and digital transmission techniques and shall comply with the following:

- b. With the digital transmission operation of the hybrid system turned off, the frequency hopping operation shall have an average time of occupancy on any frequency not exceeding 0.4 seconds within a duration in seconds equal to the number of hopping frequencies multiplied by 0.4.
- c. hybrid systems shall have a true frequency hopping system, as set out in sections 6.2.1 a) and 6.2.1 b). The hybrid systems shall comply with:
 - i. the minimum channel separation,
 - ii. the pseudo-random hop sequence, and
 the receiver matching bandwidth and synchronization.

7.4.2 Test summary

Verdict	Pass		
Test date	November 19, 2025	Temperature	22 °C
Tested by	Atefeh Beiginezhad	Air pressure	1009 mbar
Test location	Montreal	Relative humidity	33 %

7.4.3 Observations, settings and special notes

Carrier frequency separation was tested per ANSI C63.10 subclause 7.8.2. Spectrum analyser settings:

Resolution bandwidth	Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel.
Video bandwidth	≥ RBW
Frequency span	Wide enough to capture the peaks of two adjacent channels
Detector mode	Peak
Trace mode	Max Hold

Number of hopping frequencies was tested per ANSI C63.10 subclause 7.8.3. Spectrum analyser settings:

Resolution bandwidth	To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.
Video bandwidth	≥ RBW
Frequency span	The frequency band of operation. Depending on the number of channels the device supports, it may be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.
Detector mode	Peak
Trace mode	Max Hold

Time of occupancy (dwell time) was tested per ANSI C63.10 subclause 7.8.4. Spectrum analyser settings:

Resolution bandwidth	shall be ≤ channel spacing and where possible RBW should be set $\gg 1/T$, where T is the expected dwell time per channel.
Video bandwidth	≥ RBW
Frequency span	Zero span, centered on a hopping channel.
Detector mode	Peak
Trace mode	Max Hold

20 dB bandwidth was tested per ANSI C63.10 subclause 6.9.2. Spectrum analyser settings:

Resolution bandwidth	≥ 1–5% of the 20 dB bandwidth
Video bandwidth	≥ RBW
Frequency span	approximately 2 to 5 times the 20 dB bandwidth, centered on a hopping channel
Detector mode	Peak
Trace mode	Max Hold

7.4.4 Test data

Table 7.4-2: 20 dB bandwidth results

Frequency, MHz	20 dB bandwidth, kHz	Limit kHz	Margin, kHz
903.24	445.6	500	54.4
915.24	447.6	500	52.4
926.76	447.6	500	52.4

Table 7.4-3: 99% occupied bandwidth results

Frequency, MHz	99% occupied bandwidth, kHz
903.24	453.9
915.24	463.4
926.76	465.4

Notes: There is no 99% occupied bandwidth limit in the standard's requirements the measurement results provided for information purposes only.

Table 7.4-4: Carrier frequency separation results

Carrier frequency separation, kHz	Minimum limit, kHz	Margin, kHz
479.5	447.6	31.9

Table 7.4-5: Number of hopping frequencies results

Number of hopping frequencies	Minimum limit	Margin
50	25	25

Table 7.4-6: Average time of occupancy results

Dwell time of each pulse, ms	Number of pulses within period	Total dwell time within period, ms ¹	Limit, ms	Margin, ms
8.847	16	141.552	400	258.448

Notes: 1. Over a 10 s measurement, 4 main peaks were observed. Since each peak had a duration of approximately 150 ms, the sweep time was reduced to 150 ms to observe individual pulses more clearly. At this setting, 4 pulses were seen per peak, each with an on-time of 8.847 ms. The total on-time over the 10 s measurement was calculated as:
Total On-Time = 4 (Figure 7.4 6) × 4 (Figure 7.4 7) × 8.847 ms = 141.552 ms

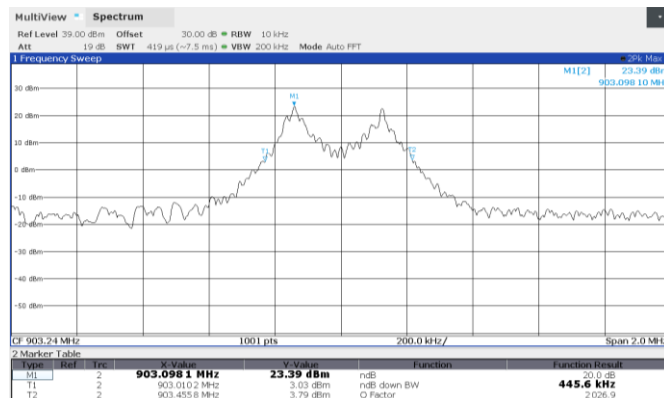


Figure 7.4-1: 20 dB bandwidth on low channel

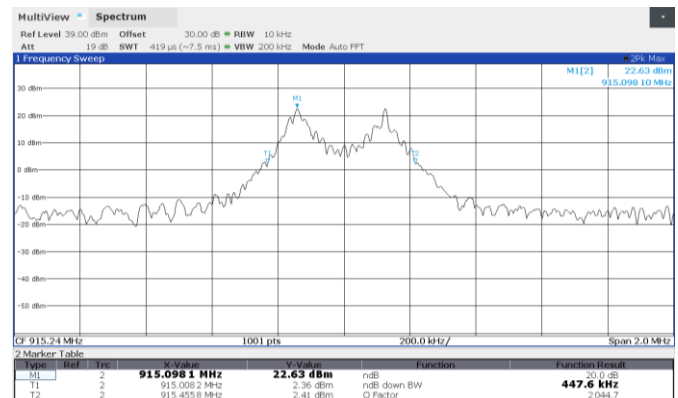


Figure 7.4-2: 20 dB bandwidth on mid channel

Test data, continued

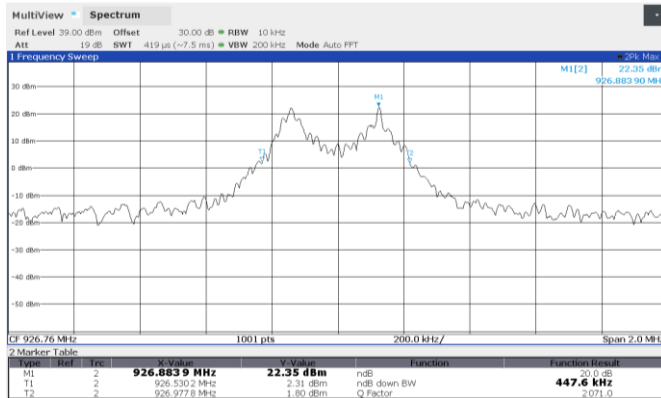


Figure 7.4-3: 20 dB bandwidth on high channel

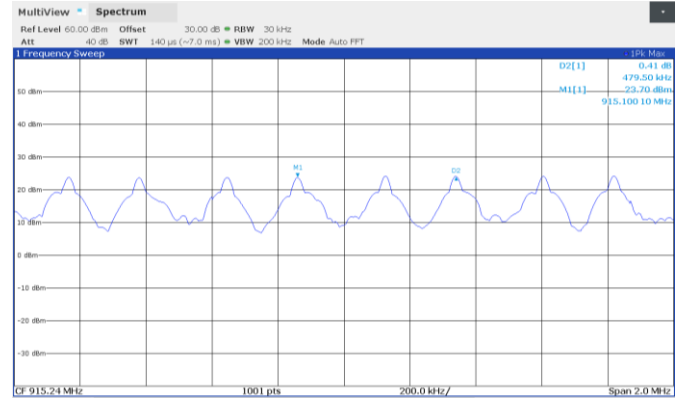


Figure 7.4-4: Carrier frequency separation

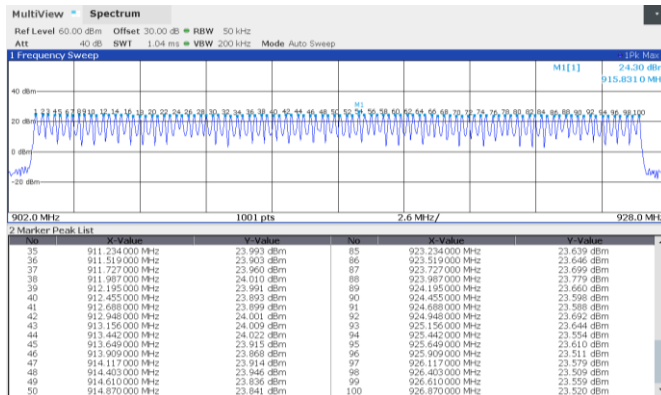


Figure 7.4-5: Number of hopping channels

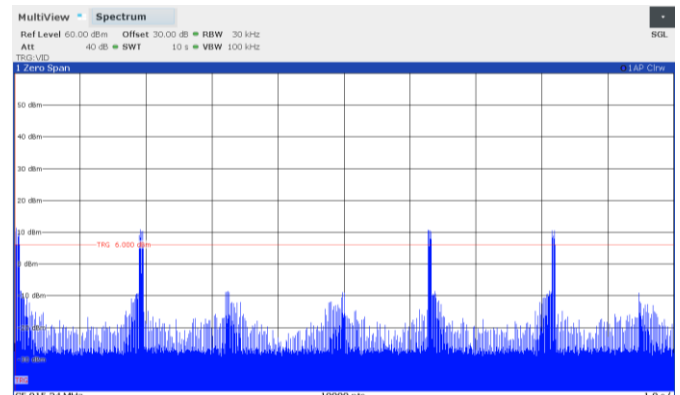


Figure 7.4-6: Dwell time 10 s

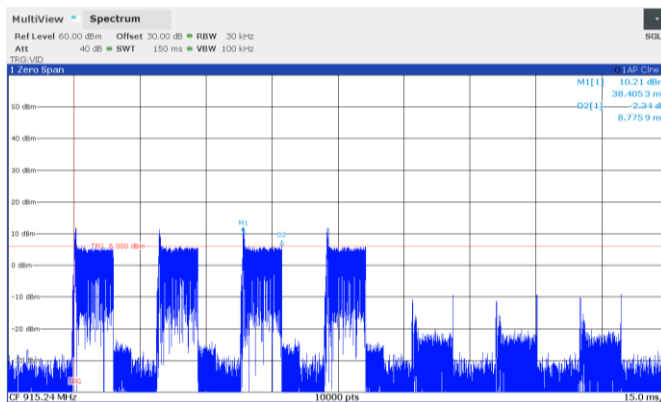


Figure 7.4-7: Time domain analysis (Scan time:150 ms)

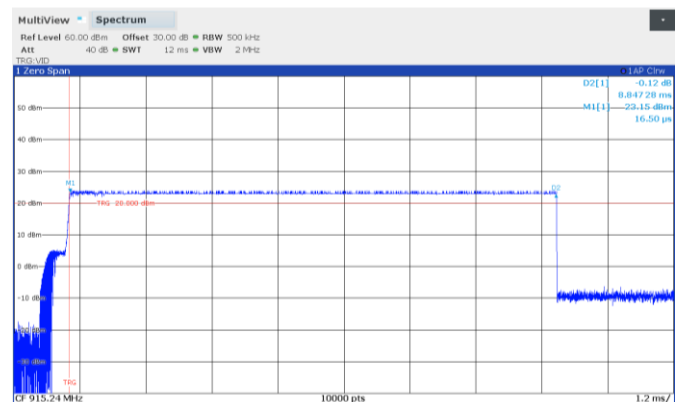


Figure 7.4-8: Time domain analysis (Scan time:12 ms)

7.5 Transmitter output power and e.i.r.p. requirements for FHSS 900 MHz

7.5.1 References, definitions and limits

FCC §15.247:

- (b) The maximum peak conducted output power of the intentional radiator shall not exceed the following:
- (2) For frequency hopping systems operating in the 902–928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section.
- (4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

RSS-247, Clause 6.2.2.2:

The following transmitter output power and e.i.r.p. requirements shall apply:

- a. if the hopset uses 50 or more hopping channels, the maximum peak conducted output power shall not exceed 1.0 W, and the e.i.r.p. shall not exceed 4 W.
- b. if the hopset uses less than 50 hopping channels, the maximum peak conducted output power shall not exceed 0.25 W and the e.i.r.p. shall not exceed 1 W

7.5.2 Test summary

Verdict	Pass		
Test date	November 20, 2025	Temperature	23 °C
Tested by	Atefeh Beiginezhad	Air pressure	1009 mbar
Test location	Montreal	Relative humidity	34 %

7.5.3 Observations, settings and special notes

Conducted output power was tested per ANSI C63.10 subclause 7.8.5. The hopping shall be disabled for this test. Spectrum analyser settings:

Resolution bandwidth	> 20 dB bandwidth of the emission being measured
Video bandwidth	≥ RBW
Frequency span	approximately 5 times the 20 dB bandwidth, centered on a hopping channel
Detector mode	Peak
Trace mode	Max Hold

7.5.4 Test data

Table 7.5-1: Output power and EIRP results

Frequency, MHz	Output power, dBm	Output power limit, dBm	Margin, dB	Antenna gain, dBi	EIRP, dBm	EIRP limit, dBm	EIRP margin, dB
903.24	24.21	30.00	5.79	3.00	27.21	36.00	8.79
915.24	24.55	30.00	5.45	3.00	27.55	36.00	8.45
926.76	23.74	30.00	6.26	3.00	26.74	36.00	9.26

Notes: EIRP = Output power + Antenna gain

Test data, continued

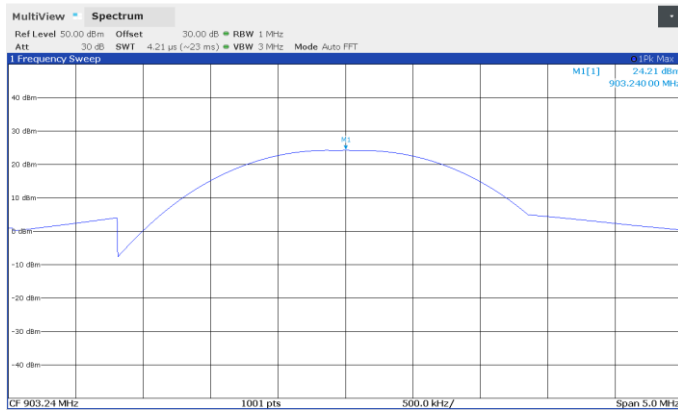


Figure 7.5-1: Output power on low channel

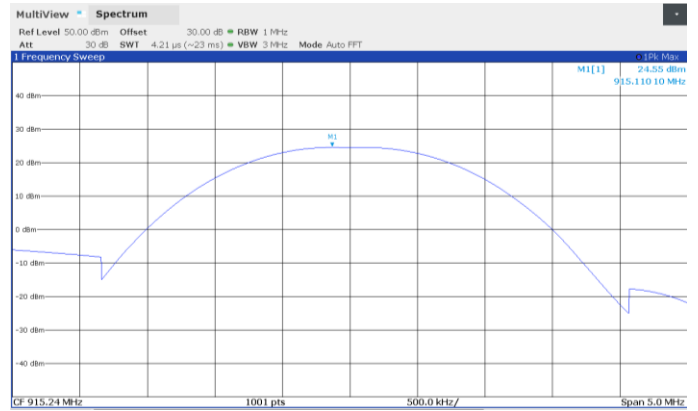


Figure 7.5-2: Output power on mid channel

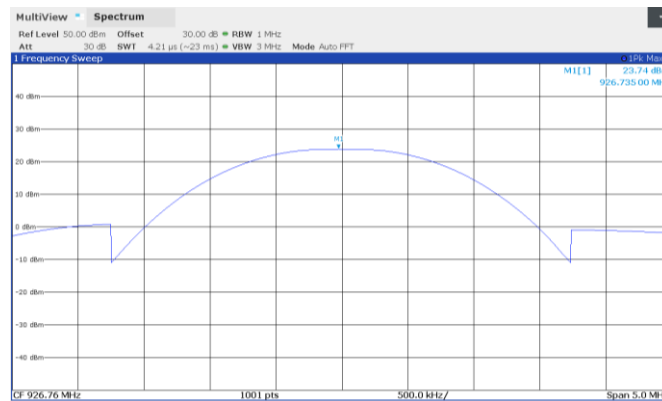


Figure 7.5-3: Output power on high channel

7.6 Minimum 6 dB bandwidth for DTS systems

7.6.1 References, definitions and limits

FCC §15.247:

- (a) Operation under the provisions of this Section is limited to frequency hopping and digitally modulated intentional radiators that comply with the following provisions:
- (2) Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

RSS-247, Clause 6.3.1:

The following applies to the bands 902-928 MHz and 2400-2483.5 MHz

- a. The minimum 6 dB bandwidth shall be 500 kHz.

RSS-247, Clause 7.3.4.2:

For equipment operating in the band 5725-5850 MHz, the 6 dB bandwidth shall be at least 500 kHz.

RSS-Gen, Clause 6.7:

6 dB bandwidth is defined as the frequency range between two points, one at the lowest frequency below and one at the highest frequency above the carrier frequency, at which the maximum power level of the transmitted emission is attenuated 6 dB below the maximum in-band power level of the modulated signal, where the two points are on the outskirts of the in-band emission.

For the 99% emission bandwidth, the trace data points are recovered and directly summed in linear power level terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached, and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded. The difference between the two recorded frequencies is the occupied bandwidth (or the 99% emission bandwidth).

7.6.2 Test summary

Verdict	Pass		
Test date	November 21, 2025	Temperature	23 °C
Tested by	Atefeh Beiginezhad	Air pressure	1009 mbar
Test location	Montreal	Relative humidity	34 %

7.6.3 Observations, settings and special notes

The test was performed as per KDB 558074, section 8.2 with reference to ANSI C63.10 subclause 11.8 and 6.9.2. 99% OBW was performed per ANSI C63.10 subclause 6.9.3. Spectrum analyser settings:

Resolution bandwidth	6 dB BW: 100 kHz; 99% OBW: 1–5% of OBW
Video bandwidth	≥3 × RBW
Frequency span	6 dB BW: 2 MHz, 99% OBW: 10 MHz
Detector mode	Peak
Trace mode	Max Hold

7.6.4 Test data

Table 7.6-1: 99% occupied bandwidth results

Frequency, MHz	99% occupied bandwidth, kHz
903.24	608.22
915.24	612.31
926.76	612.28

Notes: There is no 99% occupied bandwidth limit in the standard's requirements, the measurement results provided for information purposes only.

Table 7.6-2: 6 dB bandwidth results

Frequency, MHz	6 dB bandwidth, kHz	Minimum limit, kHz	Margin
903.24	621.4	500	121.4
915.24	615.4	500	115.4
926.76	617.4	500	117.4

Notes: There is no 99% occupied bandwidth limit in the standard's requirements, the measurement results provided for information purposes only.

MultiView ■ Spectrum

Ref Level 30.00 dBm Offset 30.00 dB BW 100 kHz

Att 10 dB SWF 42.04 μ s (-8.2 ms) VBW 300 kHz Mode Auto FFT

1 Frequency Sweep ● 0% Max

20 dBm

10 dBm

0 dBm

-10 dBm

-20 dBm

-30 dBm

-40 dBm

-50 dBm

-60 dBm

M1 -2.790 dBm

M2

M3

M4

D3[1] -0.02 dB
615.40 kHz
902.4398 MHz

M1[1] -3.21 dBm
902.4398 MHz

CF 902.24 MHz

1001 pts

200.0 kHz

Span 2.0 MHz

2 Marker Table

Marker	Ref	Trc	X-Value	Y-Value	Function	Function Result
M1		1	902.4398 MHz	3.21 dBm		
M2		1	902.9343 MHz	-2.69 dBm		
D3	M2	1	615.4 kHz	-0.02 dB		

MultiView Spectrum

Ref Level 30.00 dBm Offset 30.00 dB RBW 100 kHz

Att 10 dB SWT 42.04 μ s (-8.2 ms) VBW 300 kHz Mode Auto FFT

1 Frequency Sweep

20 dBm

10 dBm

0 dBm

-10 dBm

-20 dBm

-30 dBm

-35 dBm

-40 dBm

-50 dBm

-60 dBm

-70 dBm

-80 dBm

-90 dBm

-100 dBm

915.24 MHz

1001 pts

200.0 kHz

Span 2.0 MHz

Marker Table

Marker	Freq	X-Value	Y-Value	Function	Function Result
M1	1	915.4376 MHz	-3.65 dBm		
M2	1	914.9303 MHz	-0.14 dB		
D3	2	914.9303 MHz	-0.14 dB		

MultiView • **Spectrum**

Ref Level 30.00 dBm Offset 30.00 dB • RBW 100 kHz
Att 10 dB SWI 42.04 μs (-0.2 ms) • VBW 300 kHz Mode Auto FFT

I Frequency Sweep

0.25 MHz

Marker	Freq [MHz]	Amp [dBm]
M1	926.56020 MHz	-0.40 dBm
M2	926.4503 MHz	-5.71 dBm
D3	928.4503 MHz	0.05 dBm

H1 -5.830 dBm

CF 926.76 MHz 1001 pts 200.0 kHz Span 2.0 MHz

Type	Ref	Tre	X-Value	Y-Value	Function	Function Result
M1		1	926.5602 HHz	-0.40 dBm		
M2		1	926.4503 HHz	-5.71 dBm		
D3	M2	1	617.4 kHz	0.05 dB		

MultiView ▾ Spectrum

Ref Level 30.00 dBm Offset 30.00 dB • RBW 20 kHz

ATT 10 dB SWT 210 μs (-8.4 ms) • VBW 100 kHz Mode Auto FFT

1 Occupied Bandwidth

10 dBm

0 dBm

-10 dBm

-20 dBm

-30 dBm

-40 dBm

-50 dBm

OF 903.24 MHz

1001 pts

1.0 MHz

Span 10.00 MHz

3.15 dBm

903.440 MHz

2 Marker Table

Type	Ref	Freq	Value	Function	Frequency Offset
M1	1	903.44 MHz	3.15 dBm	Occ BW	608.228 964 405 kHz
T1	1	902.935 76 MHz	-14.99 dBm	Occ BW Centroid	903.239 869 565 MHz
T2	1	903.543 88 MHz	-14.80 dBm	Occ BW Freq Offset	-130.434 645 091 Hz

MultiView Spectrum

Ref Level 30.00 dBm Offset 30.00 dB BW 20 kHz
 Att 10 dB SWF 210 us (-8.4 dB) VSW 100 kHz Mode Auto FFT

1 Occupied Bandwidth

0 dB Max
 M1 1 2.15 dBm
 915.440 00 MHz

20 dBm
 10 dBm
 0 dBm
 -10 dBm
 -20 dBm
 -30 dBm
 -40 dBm
 -50 dBm

CF 915.24 MHz 1001 pts 1.0 MHz/ Span 10.0 MHz

Marker	Freq	Amplitude	Function
M1	915.44 MHz	2.15 dBm	Occ BW
T1	914.936 49 MHz	-15.96 dBm	Occ BW Centroid
T2	915.540 19 MHz	-16.22 dBm	Occ BW Freq Offset

MultiView ▾ Spectrum

Ref Level 30.00 dBm Offset 20.00 dB RBW 20 kHz

Att 10 dB SWF 210 μs (-6.4 ms) VBW 100 kHz Mode Auto FFT

Occupied Bandwidth

0.1% Max 0.08 dBm 926.960 00 MHz

20 dBm

10 dBm

0 dBm

-10 dBm

-20 dBm

-30 dBm

-40 dBm

-50 dBm

OF 926.76 MHz 1001 pts 1.0 MHz/ Span 10.0 MHz

2 Marker Table

Type	Ref	Freq	X-Value	Y-Value	Function	Function Result
M1	1		926.96 MHz	0.08 dBm	Occ BW	612.285 858 929 kHz
T1	1		926.446 72 MHz	-18.91 dBm	Occ BW Centroid	926.752 062 595 MHz
T2	1		927.050 01 MHz	-18.77 dBm	Occ BW Edge Offset	-71.37 495 224 kHz

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7.7 Transmitter output power and e.i.r.p. requirements for DTS in 900 MHz

7.7.1 References, definitions and limits

FCC §15.247:

- (b) The maximum peak conducted output power of the intentional radiator shall not exceed the following:
- (3) For systems using digital modulation in the 902–928 MHz band: 1 W (30 dBm). As an alternative to a peak power measurement, compliance with the one-Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements, averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.
- (4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- (c) Operation with directional antenna gains greater than 6 dBi.
- (1) Fixed point-to-point operation:
- (iii) Fixed, point-to-point operation, as used in paragraphs (c)(1)(i) and (c)(1)(ii) of this section, excludes the use of point-to-multipoint systems, omnidirectional applications, and multiple co-located intentional radiators transmitting the same information. The operator of the spread spectrum or digitally modulated intentional radiator or, if the equipment is professionally installed, the installer is responsible for ensuring that the system is used exclusively for fixed, point-to-point operations. The instruction manual furnished with the intentional radiator shall contain language in the installation instructions informing the operator and the installer of this responsibility.

RSS-247, Clause 6.3.2:

For DTS operating in the band 902-928 MHz, the maximum peak conducted output power shall not exceed 1 W (30 dBm), and the e.i.r.p. shall not exceed 4 W (36 dBm).

As an alternative to a peak power measurement, compliance can be based on a measurement of the maximum conducted output power.

7.7.2 Test summary

Verdict	Pass		
Test date	November 21, 2025	Temperature	21 °C
Tested by	Atefeh Beiginezhad	Air pressure	1009 mbar
Test location	Montreal	Relative humidity	34 %

7.7.3 Observations, settings and special notes

The test was performed as per KDB 558074, section 8.3 with reference to ANSI C63.10 subclause 11.9.1 (peak power) using method RBW≥DTS bandwidth (Maximum peak conducted output power)

Spectrum analyser settings:

Resolution bandwidth	1 MHz
Video bandwidth	≥3 × RBW
Frequency span	5 MHz
Detector mode	Peak
Trace mode	Max hold

7.7.4 Test data

Table 7.7-1: Output power and EIRP results

Frequency, MHz	Conducted output power, dBm	Output power limit, dBm	Output power margin, dB	Antenna gain, dBi	EIRP, dBm	EIRP limit, dBm	EIRP margin, dB
903.24	3.68	30.00	26.32	3.00	6.68	36.00	29.32
915.24	2.91	30.00	27.09	3.00	5.91	36.00	30.09
926.76	1.24	30.00	28.76	3.00	4.24	36.00	31.76

Note: $EIRP [dBm] = \text{Conducted output power [dBm]} + \text{Antenna gain [dBi]}$

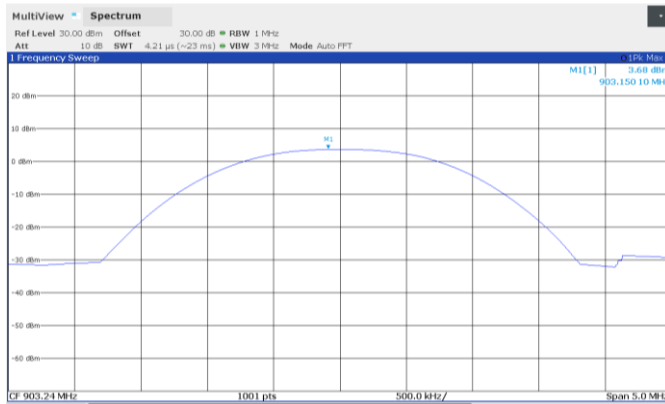


Figure 7.7-1: Output power on low channel

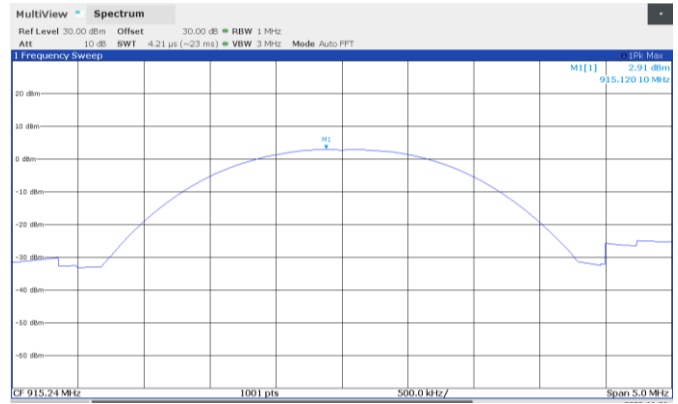


Figure 7.7-2: Output power on mid channel

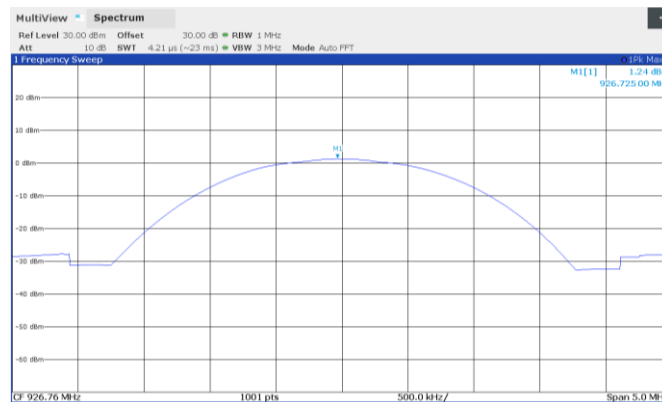


Figure 7.7-3: Output power on high channel

7.8 Spurious (out-of-band) unwanted emissions

7.8.1 References, definitions and limits

FCC §15.247:

- (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

RSS-247, Clause 6.6:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum device, digitally modulated device, or hybrid system is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power – based on either an RF conducted or a radiated measurement – provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 6.3.2, the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

RSS-Gen:

- 8.9 Except where otherwise indicated in the applicable RSS, radiated emissions shall comply with the field strength limits shown in table below.
- 8.10 Restricted frequency bands are designated primarily for safety-of-life services (distress calling and certain aeronautical activities), certain satellite downlinks, radio astronomy and some government uses. The following conditions related to the restricted frequency bands apply:
- a The transmit frequency, including fundamental components of modulation, of licence-exempt radio apparatus shall not fall within the restricted frequency bands.
 - b Unwanted emissions that fall into restricted frequency bands listed in table 7 shall comply with the limits specified in table below.
 - c Unwanted emissions that do not fall within the restricted frequency bands shall comply either with the limits specified in the applicable RSS or with those specified in table below.

Table 7.8-1: FCC §15.209 and RSS-Gen – Radiated emission limits

Frequency, MHz	Field strength of emissions		Measurement distance, m
	μV/m	dBμV/m	
0.009–0.490	2400/F	$67.6 - 20 \times \log_{10}(F)$	300
0.490–1.705	24000/F	$87.6 - 20 \times \log_{10}(F)$	30
1.705–30.0	30	29.5	30
30–88	100	40.0	3
88–216	150	43.5	3
216–960	200	46.0	3
above 960	500	54.0	3

Notes: In the emission table above, the tighter limit applies at the band edges.
For frequencies above 1 GHz the limit on peak RF emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.

References, definitions and limits, continued

Table 7.8-2: ISED restricted frequency bands

MHz	MHz	MHz	GHz
0.090–0.110	12.57675–12.57725	399.9–410	7.25–7.75
0.495–0.505	13.36–13.41	608–614	8.025–8.5
2.1735–2.1905	16.42–16.423	960–1427	9.0–9.2
3.020–3.026	16.69475–16.69525	1435–1626.5	9.3–9.5
4.125–4.128	16.80425–16.80475	1645.5–1646.5	10.6–12.7
4.17725–4.17775	25.5–25.67	1660–1710	13.25–13.4
4.20725–4.20775	37.5–38.25	1718.8–1722.2	14.47–14.5
5.677–5.683	73–74.6	2200–2300	15.35–16.2
6.215–6.218	74.8–75.2	2310–2390	17.7–21.4
6.26775–6.26825	108–138	2483.5–2500	22.01–23.12
6.31175–6.31225	149.9–150.05	2655–2900	23.6–24.0
8.291–8.294	156.52475–156.52525	3260–3267	31.2–31.8
8.362–8.366	156.7–156.9	3332–3339	36.43–36.5
8.37625–8.38675	162.0125–167.17	3345.8–3358	
8.41425–8.41475	167.72–173.2	3500–4400	Above 38.6
12.29–12.293	240–285	4500–5150	
12.51975–12.52025	322–335.4	5350–5460	

Note: Certain frequency bands listed in Table 7.8-2 and above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to related devices are set out in the 200 and 300 series of RSSs.

Table 7.8-3: FCC restricted frequency bands

MHz	MHz	MHz	GHz
0.090–0.110	16.42–16.423	399.9–410	4.5–5.15
0.495–0.505	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225	123–138	2200–2300	14.47–14.5
8.291–8.294	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675	156.7–156.9	2690–2900	22.01–23.12
8.41425–8.41475	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293	167.72–173.2	3332–3339	31.2–31.8
12.51975–12.52025	240–285	3345.8–3358	36.43–36.5
12.57675–12.57725	322–335.4	3600–4400	Above 38.6
13.36–13.41			

7.8.2 Test summary

Verdict	Pass		
Test date	November 17, 2025	Temperature	23 °C
Tested by	Atefeh Beiginezhad	Air pressure	1009 mbar
Test location	Montreal	Relative humidity	33 %

7.8.3 Observations, settings and special notes

- As part of the current assessment, the test range of 9 kHz to 10th harmonic has been fully considered and compared to the actual frequencies utilized within the EUT. Since the EUT contains a transmitter in the GHz range, the EUT has been deemed compliant without formal testing in the 9 kHz to 30 MHz test range, therefore formal test results (tabular data and/or plots) are not provided within this test report.
- EUT was set to transmit with 100 % duty cycle.
- Radiated measurements were performed at a distance of 3 m.
- DTS emissions in non-restricted frequency bands test was performed as per KDB 558074, section 8.5 with reference to ANSI C63.10 subclause 11.11.
- Since fundamental power was tested using the maximum peak conducted output power procedure to demonstrate compliance, the spurious emissions limit is –20 dBc/100 kHz.
- DTS emissions in restricted frequency bands test was performed as per KDB 558074, section 8.6 with reference to ANSI C63.10 subclause 11.12.
- FHSS band-edge emission measurements test was performed with reference to ANSI C63.10 subclause 6.10.4.
- FHSS emissions in restricted frequency bands test was performed with reference to ANSI C63.10 subclause 6.10.5.
- FHSS conducted emissions in spurious bands was performed with reference to ANSI C63.10 subclause 7.8.7

Spectrum analyser settings for radiated measurements within restricted bands below 1 GHz:

Resolution bandwidth:	100 kHz
Video bandwidth:	300 kHz
Detector mode:	Peak
Trace mode:	Max Hold

Spectrum analyser settings for peak radiated measurements within restricted bands above 1 GHz:

Resolution bandwidth:	1 MHz
Video bandwidth:	3 MHz
Detector mode:	Peak
Trace mode:	Max Hold

Spectrum analyser settings for conducted spurious emissions measurements:

Resolution bandwidth:	100 kHz
Video bandwidth:	300 kHz
Detector mode:	Peak
Trace mode:	Max Hold

7.8.4 Test data

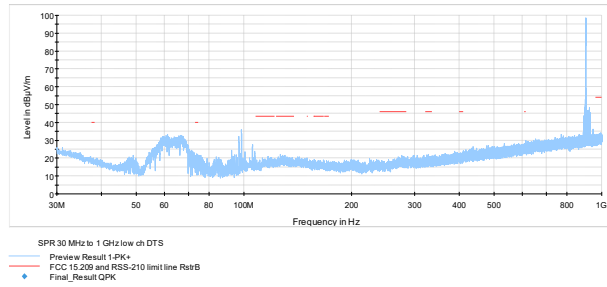


Figure 7.8-1: Radiated spurious emissions on Low Ch (DTS External antenna)

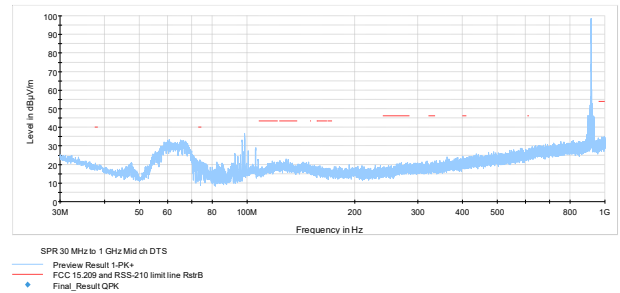


Figure 7.8-2: Radiated spurious emissions on Mid Ch (DTS External antenna)

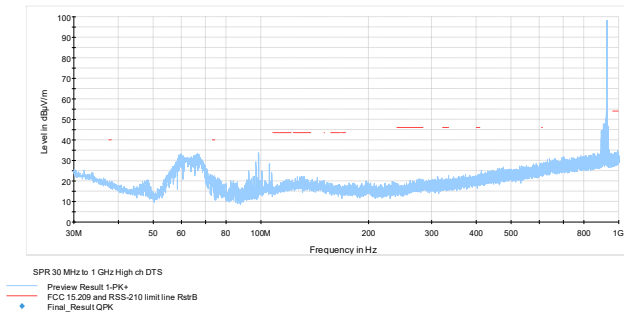


Figure 7.8-3: Radiated spurious emissions on High Ch (DTS External antenna)

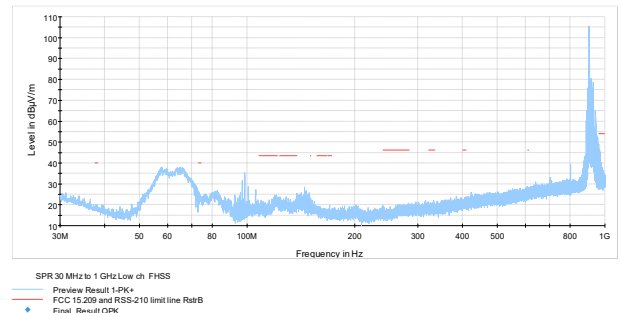


Figure 7.8-4: Radiated spurious emissions on Low Ch (FHSS External antenna)

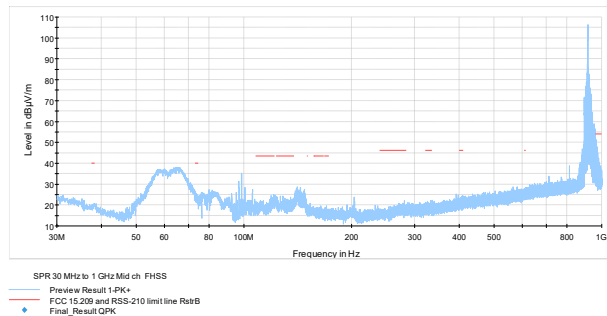


Figure 7.8-5: Radiated spurious emissions on Mid Ch (FHSS External antenna)

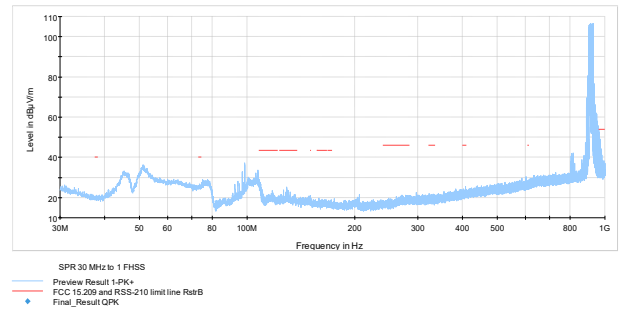


Figure 7.8-6: Radiated spurious emissions on High Ch (FHSS External antenna)

Test data, continued

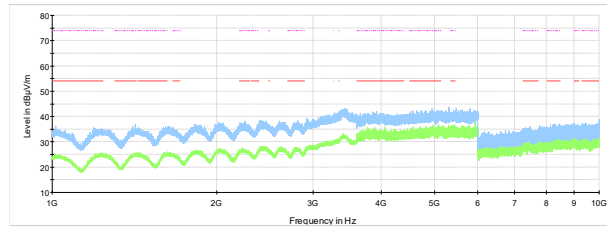


Figure 7.8-7: Radiated spurious emissions on Low Ch (DTS External antenna)

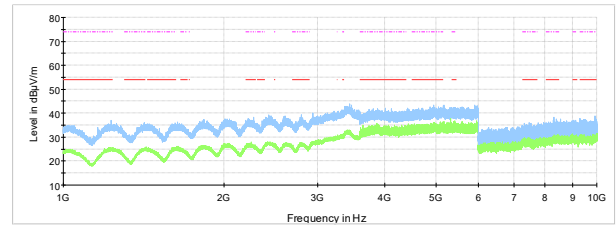


Figure 7.8-8: Radiated spurious emissions on Mid Ch (DTS External antenna)

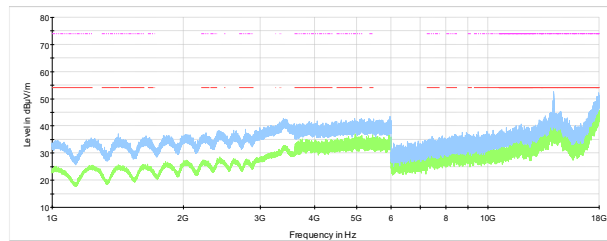


Figure 7.8-9: Radiated spurious emissions on High Ch (DTS External antenna)

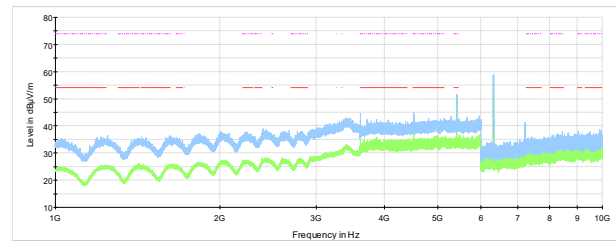


Figure 7.8-10: Radiated spurious emissions on Low Ch (FHSS External antenna)

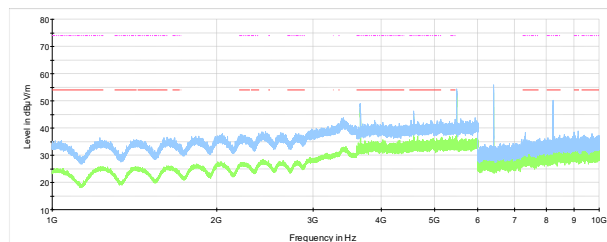


Figure 7.8-11: Radiated spurious emissions on Mid Ch (FHSS External antenna)

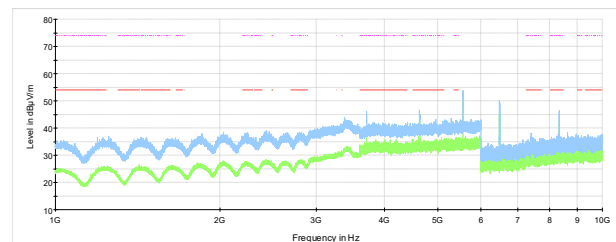


Figure 7.8-12: Radiated spurious emissions on High Ch (FHSS External antenna)

Test data, continued

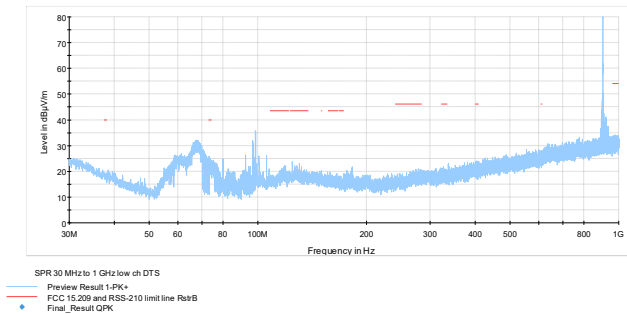


Figure 7.8-13: Radiated spurious emissions on Low Ch (DTS Internal antenna)

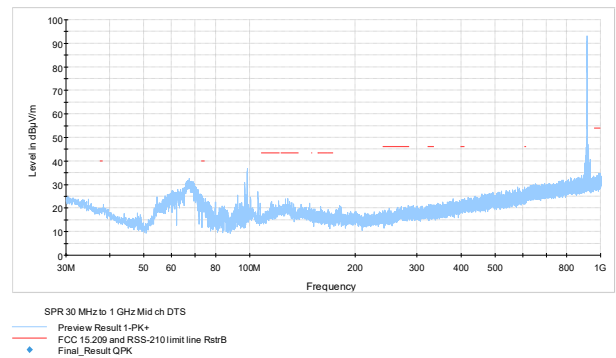


Figure 7.8-14: Radiated spurious emissions on Mid Ch (DTS Internal antenna)

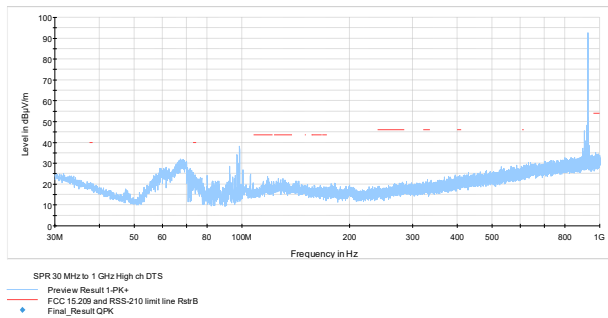


Figure 7.8-15: Radiated spurious emissions on High Ch (DTS Internal antenna)

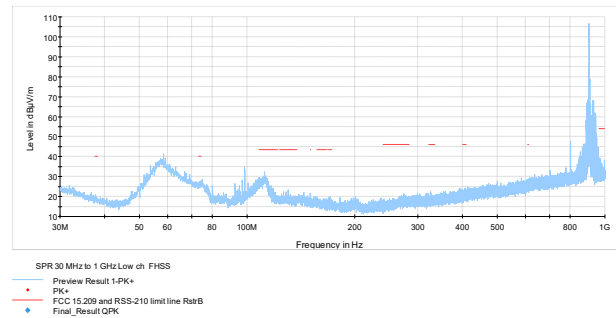


Figure 7.8-16: Radiated spurious emissions on Low Ch (FHSS Internal antenna)

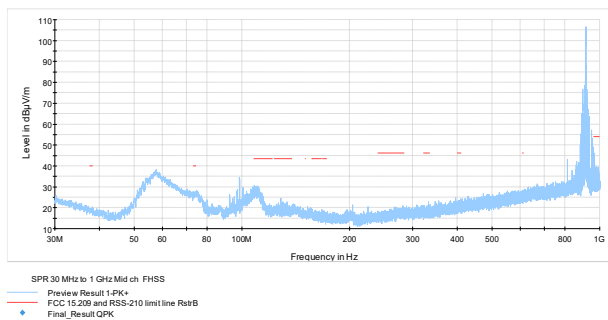


Figure 7.8-17: Radiated spurious emissions on Mid Ch (FHSS External antenna)

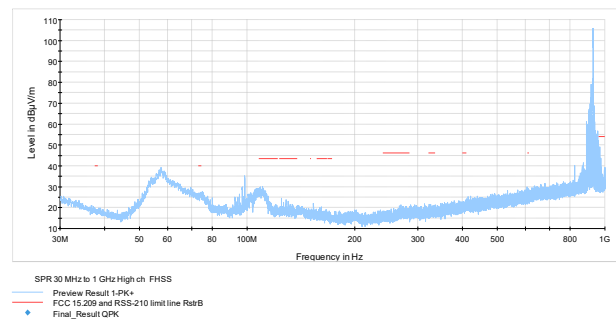


Figure 7.8-18: Radiated spurious emissions on High Ch (FHSS Internal antenna)

Test data, continued

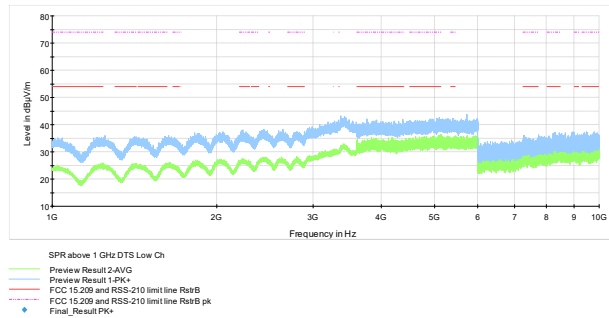


Figure 7.8-19: Radiated spurious emissions on Low Ch (DTS External antenna)

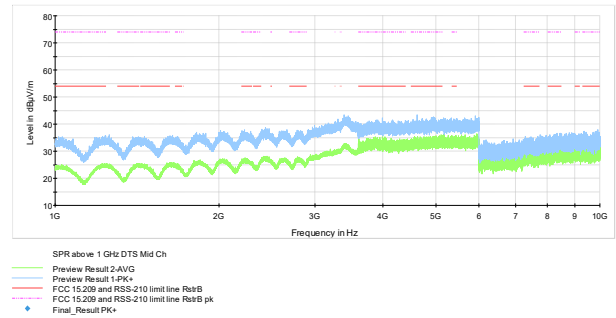


Figure 7.8-20: Radiated spurious emissions on Mid Ch (DTS External antenna)

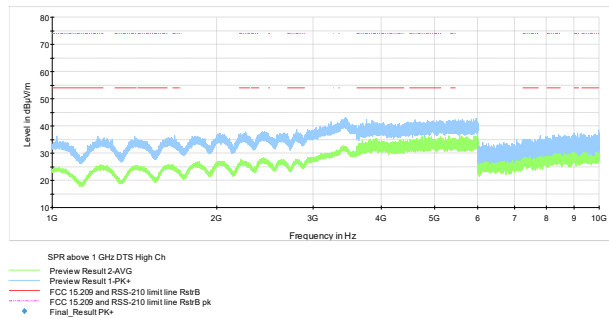


Figure 7.8-21: Radiated spurious emissions on High Ch (DTS External antenna)

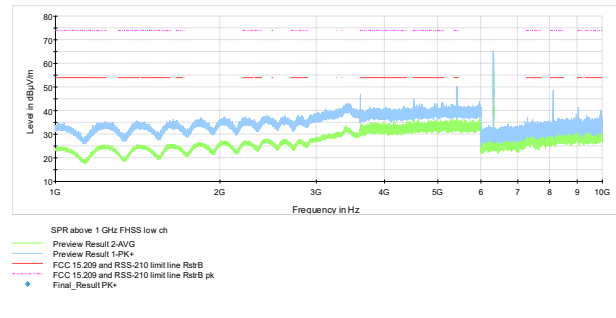


Figure 7.8-22: Radiated spurious emissions on Low Ch (FHSS External antenna)

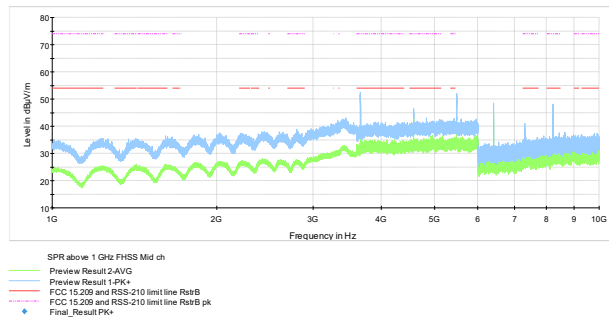


Figure 7.8-23: Radiated spurious emissions on Mid Ch (FHSS External antenna)

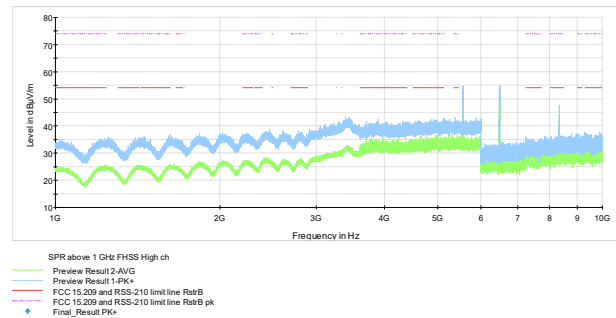


Figure 7.8-24: Radiated spurious emissions on High Ch (FHSS External antenna)

Test data, continued

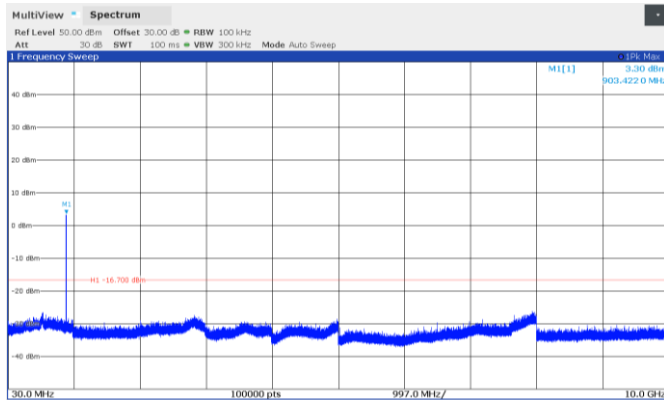


Figure 7.8-25: Conducted spurious emissions on Low Ch (DTS External antenna)

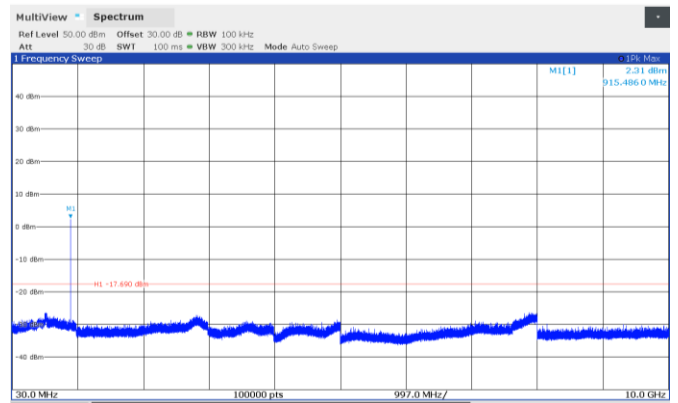


Figure 7.8-26: Conducted spurious emissions on Mid Ch (DTS External antenna)

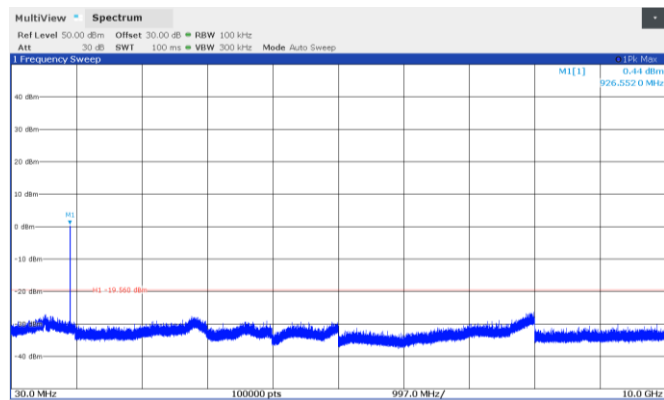


Figure 7.8-27: Conducted spurious emissions on High Ch (DTS External antenna)

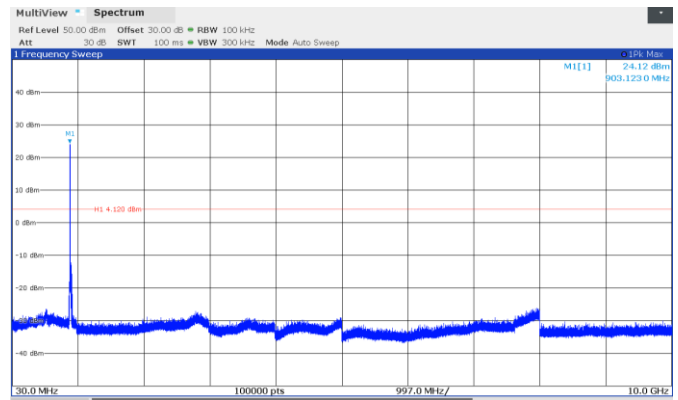


Figure 7.8-28: Conducted spurious emissions on Low Ch (FHSS External antenna)

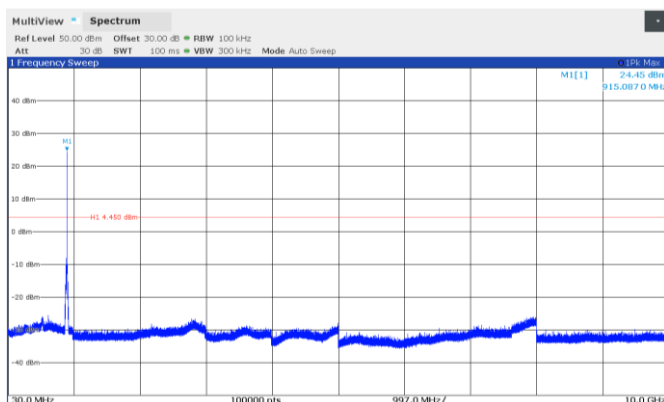


Figure 7.8-29: Conducted spurious emissions on Mid Ch (FHSS External antenna)

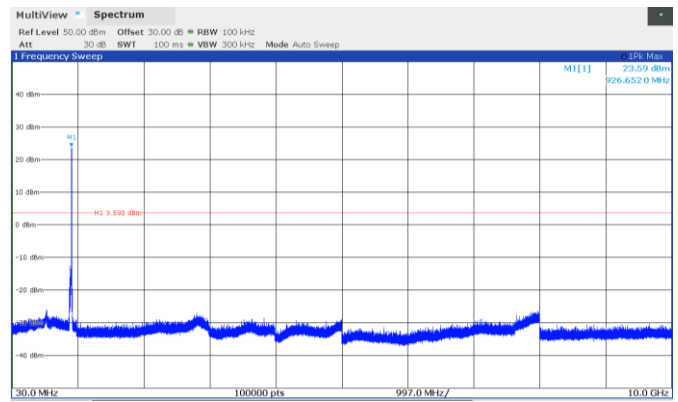


Figure 7.8-30: Conducted spurious emissions on High Ch (FHSS External antenna)

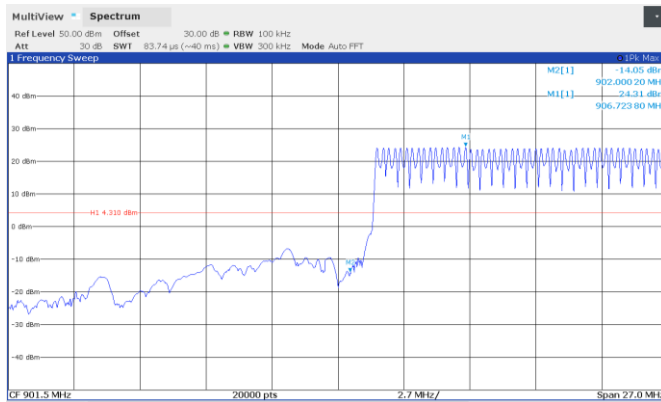


Figure 7.8-31: Lower band edge conducted spurious emissions at 902 MHz
FHSS

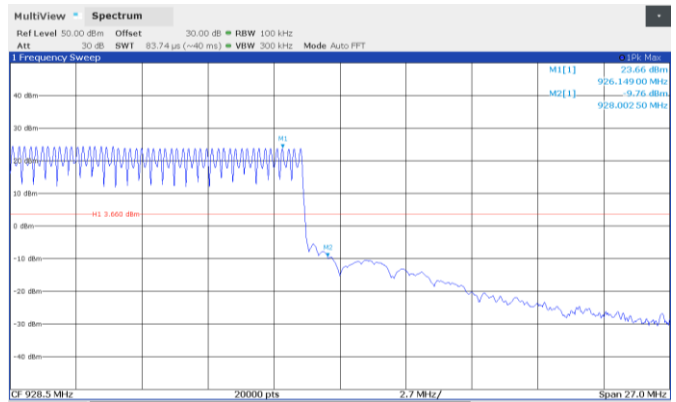


Figure 7.8-32: Higher band edge conducted spurious emissions at 928 MHz
FHSS

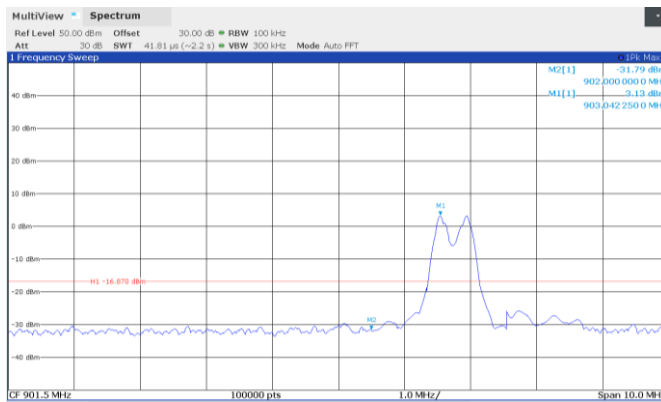


Figure 7.8-33: Lower band edge conducted spurious emissions at 902 MHz
DTS

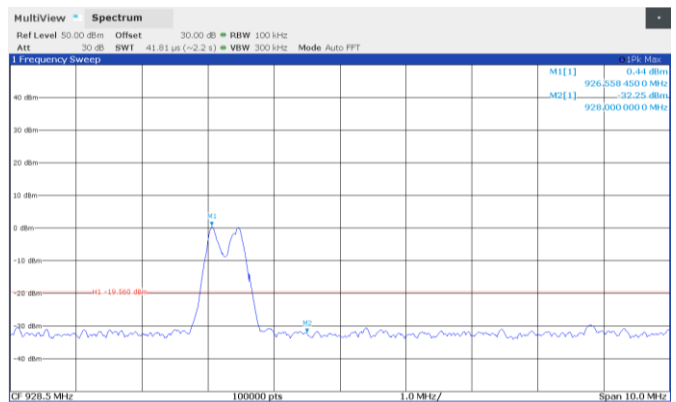


Figure 7.8-34: Upper band edge conducted spurious emissions at 928 MHz
DTS

7.9 Power spectral density for digitally modulated devices

7.9.1 References, definitions and limits

FCC §15.247:

- (e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.
- (f) For the purposes of this section, hybrid systems are those that employ a combination of both frequency hopping and digital modulation techniques. The frequency hopping operation of the hybrid system, with the direct sequence or digital modulation operation turned-off, shall have an average time of occupancy on any frequency not to exceed 0.4 seconds within a time period in seconds equal to the number of hopping frequencies employed multiplied by 0.4. The power spectral density conducted from the intentional radiator to the antenna due to the digital modulation operation of the hybrid system, with the frequency hopping operation turned off, shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RSS-247, Clause 6.3.1:

The following applies to the bands 902-928 MHz and 2400-2483.5 MHz:

- b. The transmitter power spectral density conducted from the transmitter to the antenna(s) shall not be greater than 8 dBm/3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of section 6.3.2 The power spectral density shall be determined using the same method as is used to determine the maximum conducted output power.

RSS-247, Clause 7.3.4.3:

Equipment operating in the band 5725-5850 shall comply with the following power limits:

- b. the maximum output power spectral density shall not exceed 30 dBm/500 kHz.

RSS-247, Clause 6.4:

Hybrid systems employ a combination of both frequency hopping and digital transmission techniques at the same time on the same carrier, and shall comply with the following.

- a. The power spectral density requirements for digital modulation operation, when the frequency hopping operation is stopped, shall not exceed 8 dBm/3 kHz.

7.9.2 Test summary

Verdict	Pass		
Test date	November 21, 2025	Temperature	23 °C
Tested by	Atefeh Beiginezhad	Air pressure	1009 mbar
Test location	Montreal	Relative humidity	34 %

7.9.3 Observations, settings and special notes

Power spectral density test was performed as per KDB 558074, section 8.4 with reference to ANSI C63.10 subclause 11.10.
The test was performed using method PKPSD (peak PSD). Spectrum analyser settings:

Resolution bandwidth:	3 kHz ≤ RBW ≤ 100 kHz
Video bandwidth:	≥ 3 × RBW
Frequency span:	1.5 times the DTS BW (Peak) 1.5 times the OBW (Average)
Detector mode:	Peak
Trace mode:	Maxhold
Averaging sweeps number:	100

7.9.4 Test data

Table 7.9-1: PSD results

Frequency, MHz	PSD, dBm/3 kHz	PSD limit, dBm/3kHz	Margin, dB
903.24	-2.33	8.00	10.33
915.24	-3.64	8.00	11.64
926.76	-5.49	8.00	19.49

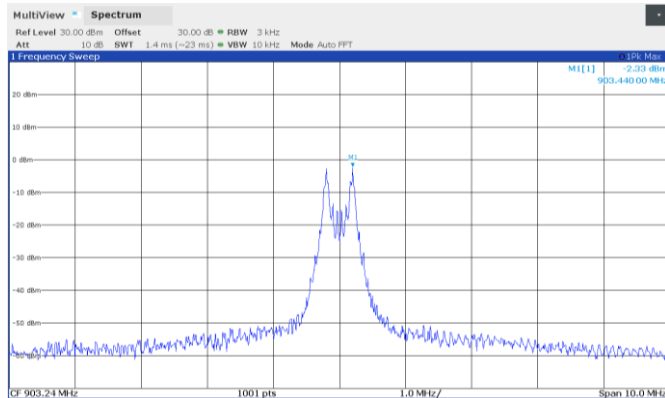


Figure 7.9-1: PSD on low channel

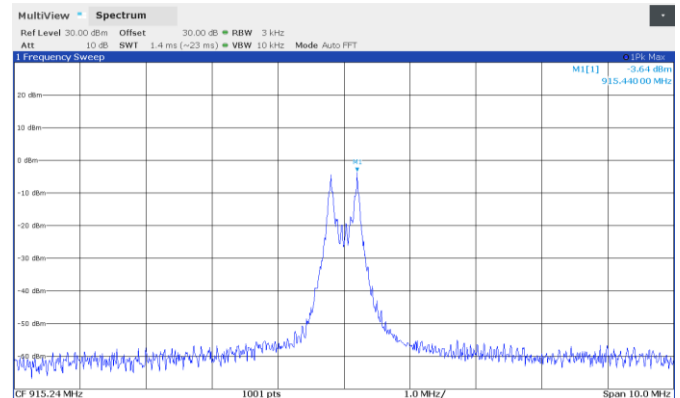


Figure 7.9-2: PSD on mid channel

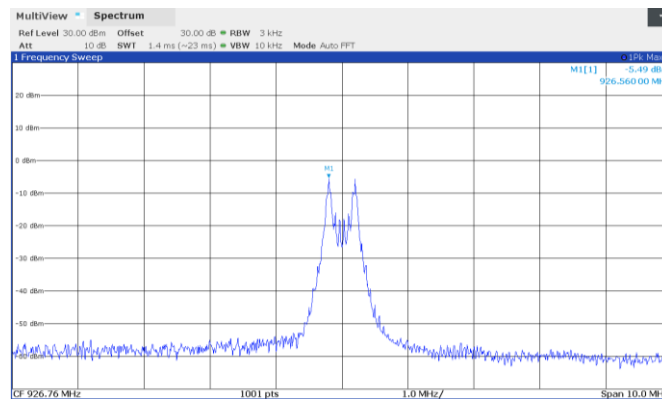
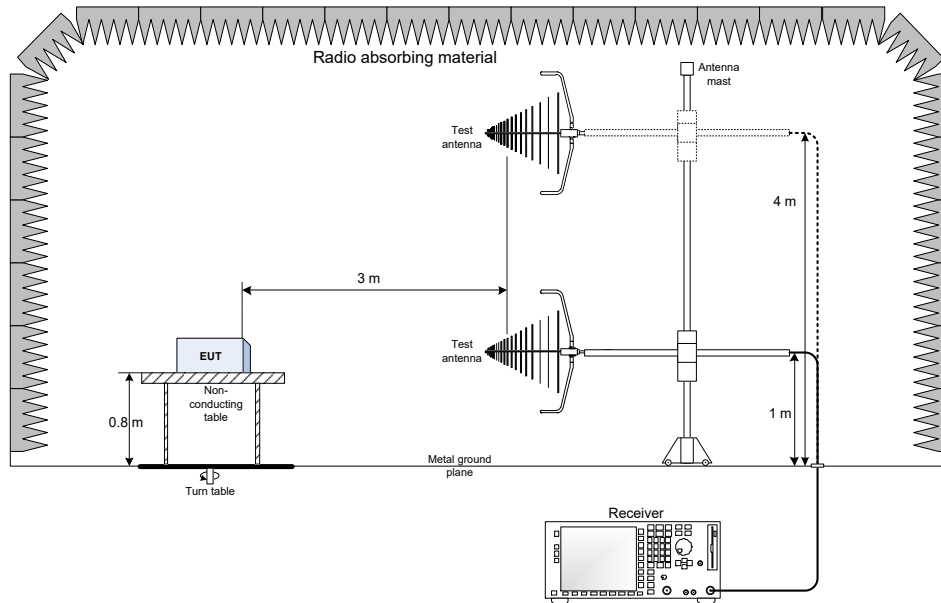


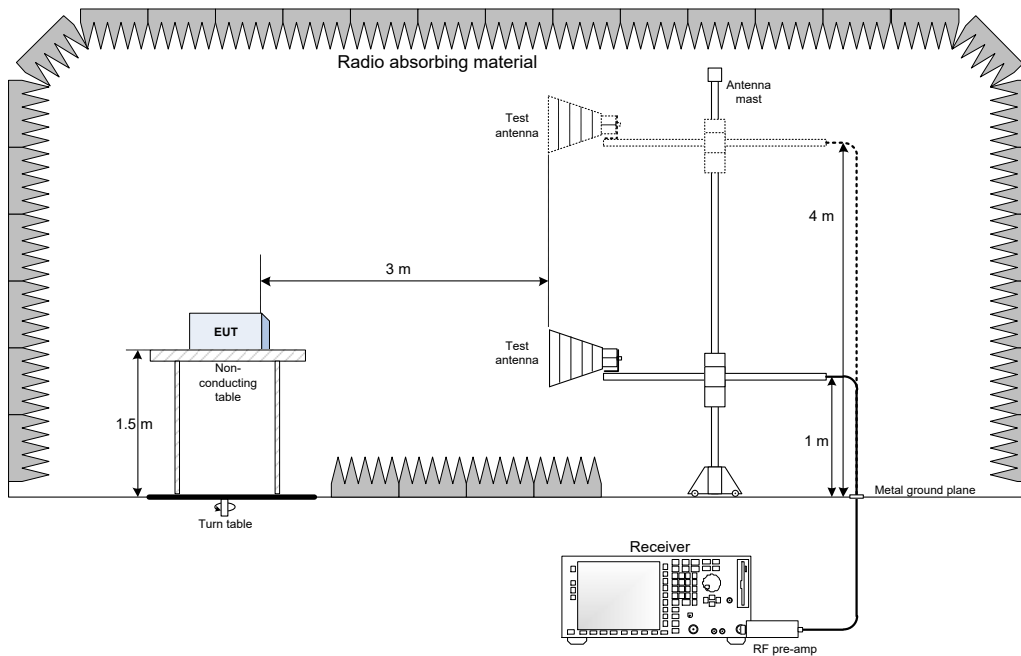
Figure 7.9-3: PSD on high channel

Section 8 Test setup diagrams

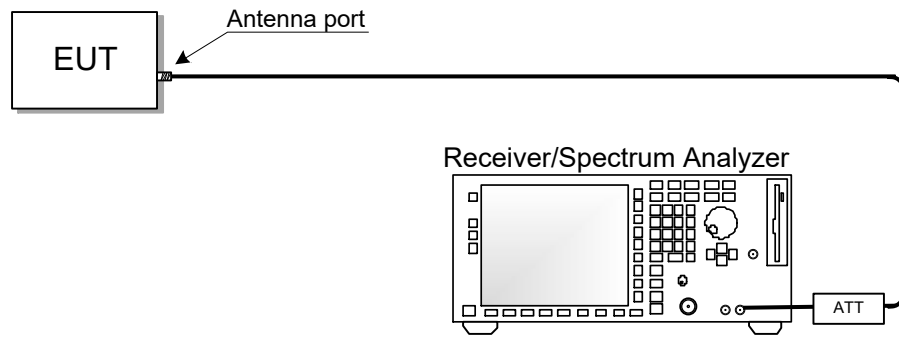
8.1 Radiated emissions set-up for frequencies below 1 GHz



8.2 Radiated emissions set-up for frequencies above 1 GHz



8.3 Antenna port set-up



End of the test report