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RADIO TEST REPORT

Report ID:

REP164513

Project number:

PRJ0099195

Type of assessment:

Final product testing

Applicant:

Infinition Inc.

Description of product:

Ballistic Doppler Radar

Model(s)/HVIN(s):

BR-2401

Product marketing name (PMN):

BR-2401

FCC identifier:

FCC ID: PDG-BR2401

ISED certification number:

IC: 12550A-BR2401

Specifications:

- ◆ FCC 47 CFR Part 15, Subpart C, §15.245
- ◆ RSS-210 Annex F.2, Issue 11 June 25, 2024

Date of issue: August 14, 2026

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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 15.245	Operation within the bands 902–928 MHz, 2435–2465 MHz, 5785–5815 MHz, 10500–10550 MHz, and 24075–24175 MHz.
RSS-210 Annex F.2, Issue 11 June 25, 2024	Licence-Exempt Radio Apparatus: Category I Equipment. Speed radar meters operating in the bands 10.5-10.55 GHz, 24.075-24.175 GHz and 33.4-36 GHz.

1.2 Test methods

ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
RSS-Gen, Issue 5, March 2019	General Requirements for Compliance of Radio Apparatus

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
REP164513	August 14, 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

None

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

Applicant name	Infinition Inc.
Applicant address	2965 rue des Prairies, Trois-Rivières, Quebec, Canada, G8V1W4

4.3 EUT information

Product	Ballistic Doppler Radar
Part number /Model	BR-2401
Serial number	BR2401-25-246-004
Power supply requirements	DC: 12 V from external 100–240 V(AC) power adapter
Product description and theory of operation	The BR-2401 is a 24 GHz ISM band CW Doppler radar antenna that utilizes the Doppler principle to measure the velocity of moving objects. It is designed primarily for muzzle velocity measurement and is also capable of short-range velocity measurement depending on the caliber. This radar unit is intended for measuring 5.56 mm to 40 mm ammunition.

4.4 Radio technical information

Category of Wideband Data Transmission equipment	Other types of Wideband Data Transmission equipment (e.g. DSSS, OFDM, etc.).
Frequency band	24.075–24.175 GHz
Frequency Min	24.080 GHz Low Ch
Frequency Max	24.168 GHz High Ch
Field strength, dBμV/m @ 3 m	115.33
Measured BW (kHz), 99% OBW	48.17
Type of modulation	No modulation, CW carrier
Emission classification	N0N
Transmitter spurious, dBμV/m @ 3 m	76.89
Antenna information	type: microstrip antenna integrated on the PCB, manufacturer: Infinition, gain: 20 dBi

4.5 EUT setup details

4.5.1 Radio exercise details

Operating conditions	Turn on the device; it will enter Tx mode by pressing the TX button.
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
AC/DC adapter	Switching Power Adapter	MN: TR70MA120, SN: 70120-0001499,

Table 4.5-2: EUT interface ports

Description	Qty.
Reset/TTL Out ¹	1
Power input	1
10xpinTrigger In ¹	1
Ethernet	1

Note 1. Based on the client's set-up, this port was left disconnected.

Table 4.5-3: Support equipment

Description	Brand name	Serial number, Part number, Model, Revision level
Laptop	HP	SN: CND9124PJ7, MN: 15t-da000

Table 4.5-4: Inter-connection cables

Cable description	From	To	Length (m)
Power	EUT	AC main	2

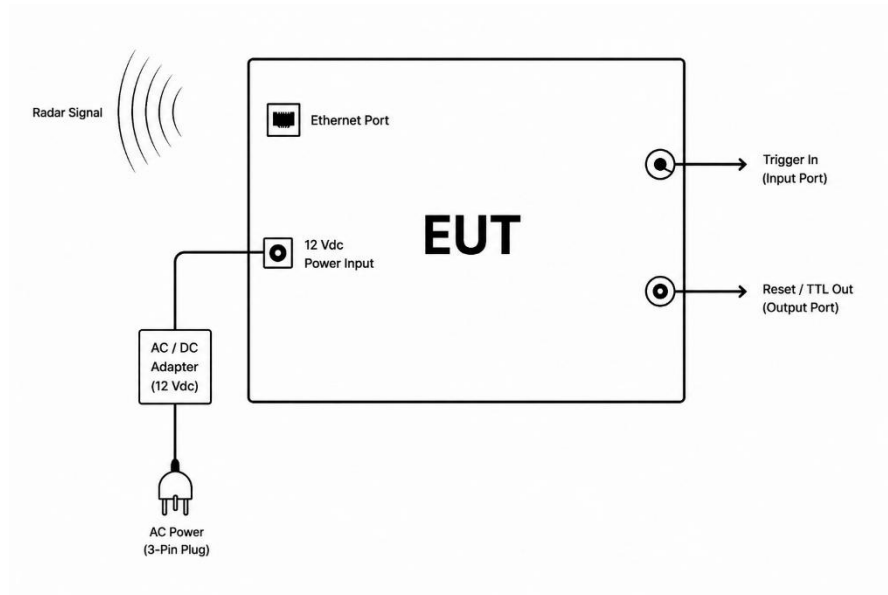


Figure 4.5-1: Radiated testing block diagram

Section 5. Summary of test results

5.1 Testing location

Test location (s) Montreal

5.2 Testing period

Test start date March 25, 2026 Test end date May 11, 2026

5.3 Sample information

Receipt date March 25, 2026 Nemko sample ID number(s) PRJ00991950001

5.4 FCC test results

Table 5.4-1: FCC requirements results

Part	Test description	Verdict
Generic requirements		
\$15.207(a)	Conducted limits	Pass
\$15.31(e)	Variation of power source	Pass
\$15.31(m)	Number of tested frequencies	Pass
\$15.203	Antenna requirement	Pass
\$15.215(c)	Emission bandwidth	Pass
\$15.215(c)	Frequency stability	Pass
Specific requirements		
\$15.245(b)	Radiated emissions of fundamental and harmonics	Pass
\$15.245(b)(1)	Radiated emissions of harmonics that fall within restricted frequency bands	Pass
\$15.245(b)(3)	Radiated spurious emissions except for harmonics	Pass

Notes: EUT is an AC powered device.

5.5 ISED test results

Table 5.5-1: ISED requirements results

Part	Test description	Verdict
Generic requirements		
RSS-Gen, 7.3	Receiver radiated emission limits	Not applicable ¹
RSS-Gen, 7.4	Receiver conducted emission limits	Not applicable ¹
RSS-Gen, 6.9	Operating bands and selection of test frequencies	Pass
RSS-Gen, 8.8	AC powerline conducted emissions limits	Pass
Specific requirements		
Annex F.2(a)	Radiated emissions of fundamental and harmonics	Pass
Annex F.2(b,c)	Radiated emissions of harmonics that fall within restricted frequency bands	Pass
Annex F.2(e)	The carrier frequency stability	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.

²The EUT is not intended for use in vehicles, aircraft, farm equipment, or railway equipment (F.1).

Section 6. Test equipment

6.1 Test equipment list

Table 6.1-1: Equipment list

Equipment	Manufacturer	Model no.	Asset no.	Cal cycle	Next cal.
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 8, 2027
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, 2027
50 Ω coax cable	Huber + Suhner	None	FA003438	1 year	May 15, 2027
RF Cable Assembly	Huber + Suhner	2M-750-195A-750	FA002554	1 year	January 20, 2027
LNA (1-18 GHz)	Miteq	N/A	FA003391	1 year	January 20, 2027
Receiver/spectrum analyzer	Rohde & Schwarz	ESU 26	FA002043	1 year	January 29, 2027
Horn antenna (18–40 GHz)	EMCO	3116	FA002487	1 year	April 9, 2027
Pre-amplifier (18–40 GHz)	Com-Power	PAM-840	FA002508	—	October 20, 2026
Signal and Spectrum Analyzer	Rohde & Schwarz	FSW50	FA003267	1 year	March 13, 2027
Standard gain horn (50-75 GHz)	Mi-Wave	261V-25/385	FA003270	—	NCR
Hamonic mixer (50-75 GHz)	Rohde & Schwarz	FS-Z75	FA003263	3years	Oct 26, 2026
Standard gain horn (75-110 GHz)	Mi-Wave	261W-25/387	FA003271	—	NCR
Hamonic mixer (75-110 GHz)	Rohde & Schwarz	FS-Z110	FA003262	3years	Sep 28, 2026
LISN	Rohde & Schwarz	ENV216	FA002514	1 year	March 17, 2027
3 Phase AC Power Supply	apc AC Power	AFC-33045T	FA002677	—	NCR

Notes: NCR - no calibration required, VOU - verify on use

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: Measurement uncertainty calculations based on equipment list

Measurement	Measurement uncertainty, ±dB
AC power line conducted emissions	3.3
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
Radiated spurious emissions (18 GHz to 26 GHz)	5.4
Radiated spurious emissions (18 GHz to 40 GHz)	5.4
Radiated spurious emissions (40 GHz to 220 GHz)	5.8
Conducted spurious emissions	1.6
RF Output power measurement using Spectrum Analyzer	1.6
Occupied bandwidth	2.4
Signal path calibration (Insertion loss)	1.5
Frequency stability	0.03

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	April 24, 2026	Temperature	22 °C
Tested by	Atefeh Beiginezhad	Air pressure	1009 mbar
Test location	Montreal	Relative humidity	32 %

7.1.3 Observations, settings and special notes

None

7.1.4 Test data

EUT Power requirements:

	☒ AC	☐ DC	☐ Battery
If EUT is an AC or a DC powered, was the noticeable output power variation observed?	☐ YES	☒ NO	☐ N/A
If EUT is 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	May 11, 2026	Temperature	22 °C
Tested by	Atefeh Beiginezhad	Air pressure	1002 mbar
Test location	Montreal	Relative humidity	32 %

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.

7.2.4 Test data

Table 7.2-2: Test channels selection

Start of Frequency range, GHz	End of Frequency range, GHz	Frequency range bandwidth, MHz	Lowest operating frequency, MHz	Central operating frequency, MHz	Highest operating frequency, MHz
24.000	24.250	250	24080	24120	24168

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.

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	May 6, 2026	Temperature	22 °C
Tested by	Atefeh Beiginezhad	Air pressure	1002 mbar
Test location	Montreal	Relative humidity	42 %

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
Flat Panel Microstrip	Infinition	None	20 dBi	soldered to the transmitter

7.4 AC power line conducted emissions limits

7.4.1 References, definitions and limits

FCC §15.207:

- (a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 Ω line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

ANSI C63.10, Clause 6.2:

If the EUT normally receives power from another device that in turn connects to the public utility ac power lines, measurements shall be made on that device with the EUT in operation to demonstrate that the device continues to comply with the appropriate limits while providing the EUT with power. If the EUT is operated only from internal or dedicated batteries, with no provisions for connection to the public utility ac power lines (600 VAC or less) to operate the EUT (such as an adapter), then ac power-line conducted measurements are not required.

For direct current (dc) powered devices where the ac power adapter is not supplied with the device, an "off-the-shelf" unmodified ac power adapter shall be used. If the device is supposed to be installed in a host (e.g., the device is a module or PC card), then it is tested in a typical compliant host.

RSS-Gen, Clause 8.8:

A radio apparatus that is designed to be connected to the public utility (AC) power line shall ensure that the radio frequency voltage, which is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz, shall not exceed the limits in table below.

Unless the requirements applicable to a given device state otherwise, for any radio apparatus equipped to operate from the public utility AC power supply either directly or indirectly (such as with a battery charger), the radio frequency voltage of emissions conducted back onto the AC power lines in the frequency range of 0.15 MHz to 30 MHz shall not exceed the limits shown in table below. The more stringent limit applies at the frequency range boundaries.

Table 7.4-1: Conducted emissions limit

Frequency of emission, MHz	Conducted limit, dB μ V	
	Quasi-peak	Average**
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

Notes: * - The level decreases linearly with the logarithm of the frequency.

 ** - A linear average detector is required.

7.4.2 Test summary

Verdict	Pass		
Test date	April 24, 2026	Temperature	22 °C
Tested by	Atefeh Beiginezhad	Air pressure	1010 mbar
Test location	Montreal	Relative humidity	44 %

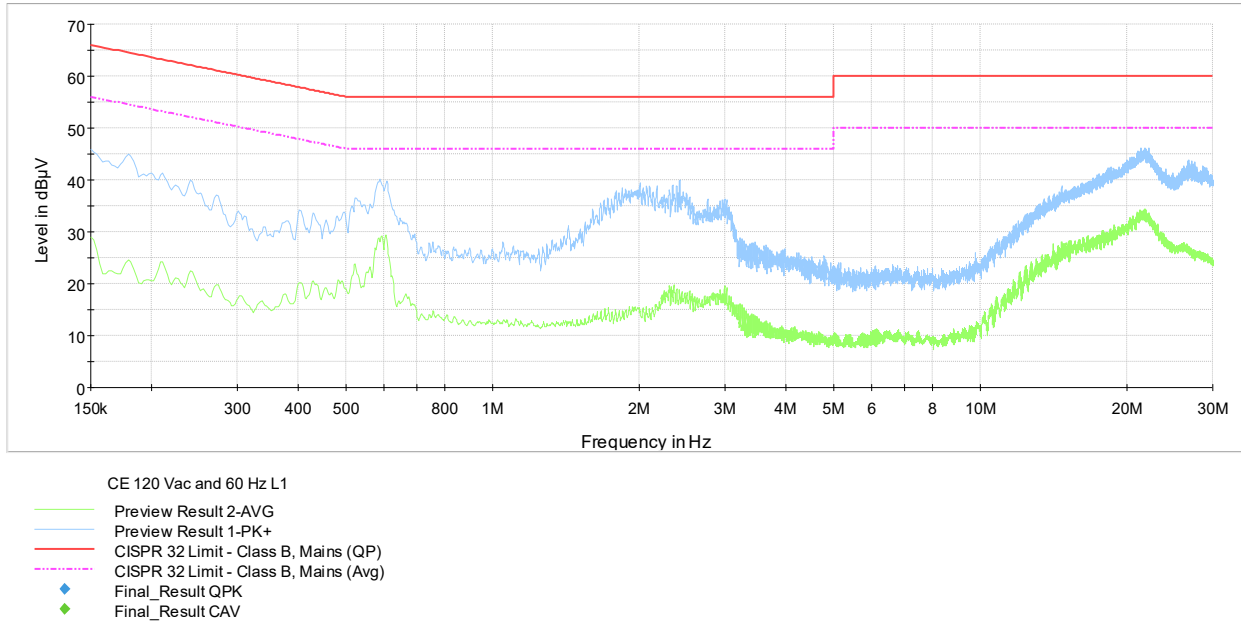
7.4.3 Observations, settings and special notes

Port under test – Coupling device	Input power – Artificial Mains Network (AMN)
EUT power input during test	12 V _{DC} (via external 100–240 V _{AC} , 50/60 Hz power adapter)
EUT setup configuration	Table top
Measurement details	A preview measurement was generated with the receiver in continuous scan mode. Emissions detected within 10 dB or above the limit were re-measured with the appropriate detector against the correlating limit and recorded as the final measurement.
Additional notes:	– The EUT was set up as tabletop configuration per ANSI C63.10-2013 measurement procedure. – The spectral scan has been corrected with transducer factors (i.e. cable loss, LISN factors, and attenuators) for determination of compliance. Correction factor (dB) = LISN factor IL (dB) + cable loss (dB) + attenuator (dB) – Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

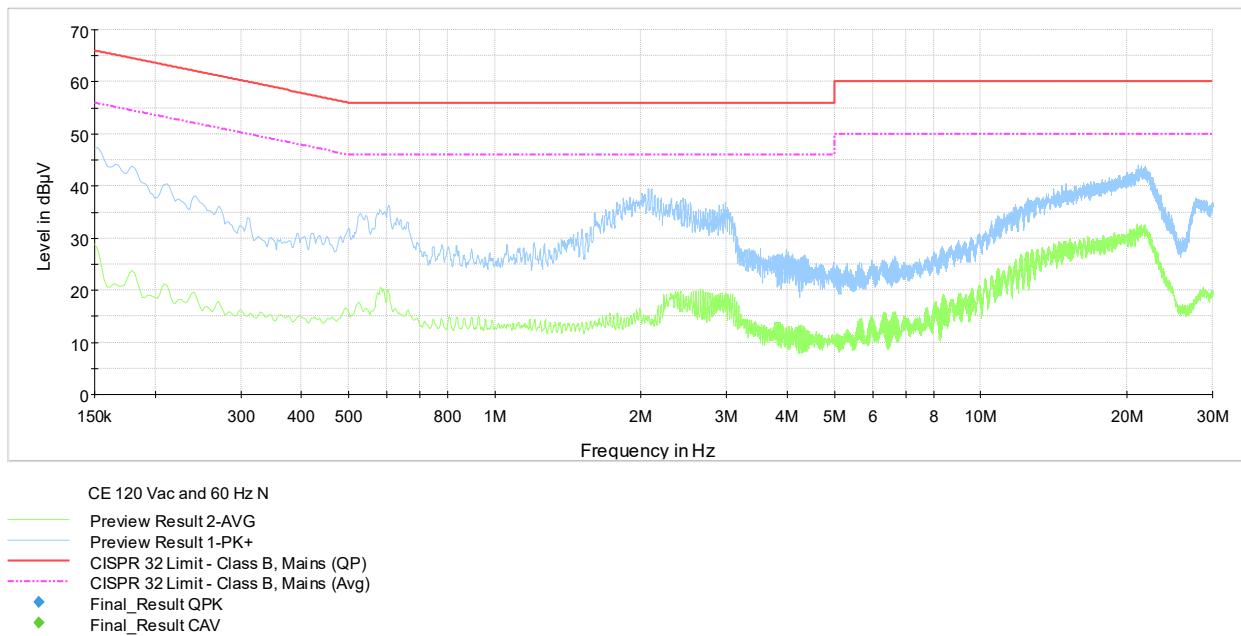
Receiver settings:

Resolution bandwidth	9 kHz
Video bandwidth	30 kHz
Detector mode	Peak and Average (Preview), Quasi-peak and CAverage (Final)
Trace mode	Max Hold
Measurement time	100 ms (Preview), 160 ms (Final)

7.4.4 Test data



Plot 7.4-1: Conducted emissions on phase line



Plot 7.4-2: Conducted emissions on neutral line

7.5 Field strength of fundamental and harmonics emissions

7.5.1 References, definitions and limits

FCC §15.245:

- (b) The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following table.
- (b)(1) Regardless of the limits shown in the above table, harmonic emissions in the restricted bands below 17.7 GHz, as specified in §15.205, shall not exceed the field strength limits shown in §15.209. Harmonic emissions in the restricted bands at and above 17.7 GHz shall not exceed the following field strength limits:
 - (b)(1)(i) For the second and third harmonics of field disturbance sensors operating in the 24075–24175 MHz band and for other field disturbance sensors designed for use only within a building or to open building doors, 25.0 mV/m.
 - (ii) For all other field disturbance sensors, 7.5 mV/m.
 - (iii) Field disturbance sensors designed to be used in motor vehicles or aircraft must include features to prevent continuous operation unless their emissions in the restricted bands, other than the second and third harmonics from devices operating in the 24075–24175 MHz band, fully comply with the limits given in §15.209. Continuous operation of field disturbance sensors designed to be used in farm equipment, vehicles such as forklifts that are intended primarily for use indoors or for very specialized operations, or railroad locomotives, railroad cars and other equipment which travels on fixed tracks is permitted. A field disturbance sensor will be considered not to be operating in a continuous mode if its operation is limited to specific activities of limited duration (e.g., putting a vehicle into reverse gear, activating a turn signal, etc.).
- (2) Field strength limits are specified at a distance of 3 meters.
- (3) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.
- (4) The emission limits shown above are based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply.

ANSI C63.10, Clause 6.3.3:

Radiated total peak emission level

Some wireless devices are subject to a peak limit based on the total peak emission level (i.e., rather than being based on a peak level over a specified bandwidth). Unless otherwise specified, radiated measurements of the fundamental-signal peak field strength shall be made using instrumentation with a bandwidth equal to or greater than the 6 dB bandwidth of the emission.⁴⁶ For unlicensed wireless devices with fundamental signals subject to quasi-peak (QP) limits, when the QP detector bandwidth is less than the 6 dB bandwidth of the emission, a peak detector with a bandwidth equal to or greater than the 6 dB bandwidth of the emission shall be used.

ANSI C63.10, Clause 4.1.4.2:

Specific detector functions and bandwidths for unlicensed wireless device measurements

4.1.4.2.1 Frequencies less than or equal to 1000 MHz

At any frequency or frequencies less than or equal to 1000 MHz, measurements shall be made with the CISPR quasi-peak detector and related measurement bandwidths, unless otherwise specified. The specifications for the measuring instrument using the CISPR quasi-peak detector are given in CISPR 16-1-1:2010. Where average limits are specified, an average detector shall be used. Where peak limits are also specified, the peak emission shall also be measured with instrumentation properly adjusted for factors, such as pulse desensitization. As an alternative to CISPR quasi-peak measurements or average measurements, a test laboratory may demonstrate compliance with the emission limits using measuring equipment employing a peak detector function as long as the equivalent or greater bandwidths as indicated for CISPR quasi-peak measurements or average measurements, as applicable, are employed.

Pulse-modulated devices with a pulse repetition frequency of 20 Hz or less have additional requirements.

4.1.4.2.2 Frequencies above 1000 MHz

Unless otherwise stated, on any frequency or frequencies above 1000 MHz, measurements shall be made with measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1 MHz. Peak measurements can apply to the total peak emission level radiated by the device (i.e., the total peak power level) depending on the applicable regulatory requirement. Note that the use of a pulse desensitization correction factor might be needed to determine the total peak emission level.

ANSI C63.10, Clause 6.3

Radiated emissions testing—common requirements

6.3.3 Radiated total peak emission level

Some wireless devices are subject to a peak limit based on the total peak emission level (i.e., rather than being based on a peak level over a specified bandwidth). Unless otherwise specified, radiated measurements of the fundamental-signal peak field strength shall be made using instrumentation with a bandwidth equal to or greater than the 6 dB bandwidth of the emission.

References, definitions and limits, continued

RSS-210 Annex F.2:

- a. The average field strength of fundamental and harmonic emissions measured at 3 m shall not exceed the limits shown in table F2 of [RSS-210](#).
- b. Harmonic emissions falling into restricted frequency bands listed in RSS-Gen and that are below 17.7 GHz shall meet the general field strength limits specified in RSS-Gen, regardless of the limits given in table F2.
- c. Harmonic emissions falling into restricted frequency bands listed in RSS-Gen and that are at or above 17.7 GHz shall not exceed the following field strength limits measured at a distance of 3 m using an average detector:
 - c. i. 25 mV/m for the second and third harmonic emissions of devices operating in the band 24.075-24.175 GHz and for the second harmonic emission of devices operating in the band 33.4-36.0 GHz
 - c. ii. 7.5 mV/m for all other harmonic emissions of FDS units operating in 24.075-24.175 GHz and 33.4-36.0 GHz bands and for other type of speed radar meters
- d. Emissions radiated outside of the specified frequency bands, except for harmonic emissions, shall be attenuated by at least 50 dB below the level of the fundamental emissions or the general field strength limits specified in RSS-Gen, whichever is less stringent.
- e. The carrier frequency stability shall be sufficient to ensure that the 40 dB bandwidth stays within the operating frequency band when tested at the temperature and supply voltage variations specified for the frequency stability measurement in RSS-Gen.

Table 7.5-1: Field strength limits (incl. RSS-210 table F2)

Fundamental frequency, MHz	Average Field strength of fundamental,		Average Field strength of harmonics, spurious emissions,	
	mV/m	dBμV/m	mV/m	dBμV/m
902–928	500	114	1.6	64
2435–2465	500	114	1.6	64
5785–5815	500	114	1.6	64
10500–10550	2500	128	25	88
24075–24175	2500	128	25	88
33400–36000	2500	128	80	98

Table 7.5-2: 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			

References, definitions and limits, continued

Table 7.5-3: ISED restricted frequency bands

MHz	MHz	MHz	GHz
0.090–0.110	12.51975–12.52025	399.9–410	5.35–5.46
2.1735–2.1905	12.57675–12.57725	608–614	7.25–7.75
3.020–3.026	13.36–13.41	960–1427	8.025–8.5
4.125–4.128	16.42–16.423	1435–1626.5	9.0–9.2
4.17725–4.17775	16.69475–16.69525	1645.5–1646.5	9.3–9.5
4.20725–4.20775	16.80425–16.80475	1660–1710	10.6–12.7
5.677–5.683	25.5–25.67	1718.8–1722.2	13.25–13.4
6.215–6.218	37.5–38.25	2200–2300	14.47–14.5
6.26775–6.26825	73–74.6	2310–2390	15.35–16.2
6.31175–6.31225	74.8–75.2	2655–2900	17.7–21.4
8.291–8.294	108–138	3260–3267	22.01–23.12
8.362–8.366	156.52475–156.52525	3332–3339	23.6–24.0
8.37625–8.38675	156.7–156.9	3345.8–3358	31.2–31.8
8.41425–8.41475	240–285	3500–4400	36.43–36.5
12.29–12.293	322–335.4	4500–5150	Above 38.6

Notes: Certain frequency bands listed in this table and above 38.6 GHz are designated for low-power license-exempt applications. These frequency bands and the requirements that apply to the devices are set out in this standard

Table 7.5-4: 15.209 and RSS-Gen emissions field strength limits

Frequency MHz	Field strength of emissions		Measurement distance
	$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$	m
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. F is in kHz. 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

7.5.2 Test summary

Verdict	Pass		
Test date	May 4, 2026	Temperature	23 °C
Tested by	Atefeh Beiginezhad	Air pressure	1010 mbar
Test location	Montreal	Relative humidity	32 %

7.5.3 Observations, settings and special notes

The spectrum was searched from 30 MHz to 110 GHz.
Radiated measurements were performed at a distance of 3 m.

Spectrum analyser settings for radiated measurements below 1 GHz:

Resolution bandwidth	100 kHz
Video bandwidth	300 kHz
Detector mode	Peak or Quasi-peak
Trace mode	Max Hold

Spectrum analyser settings for radiated measurements above 1 GHz:

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

7.5.4 Test data

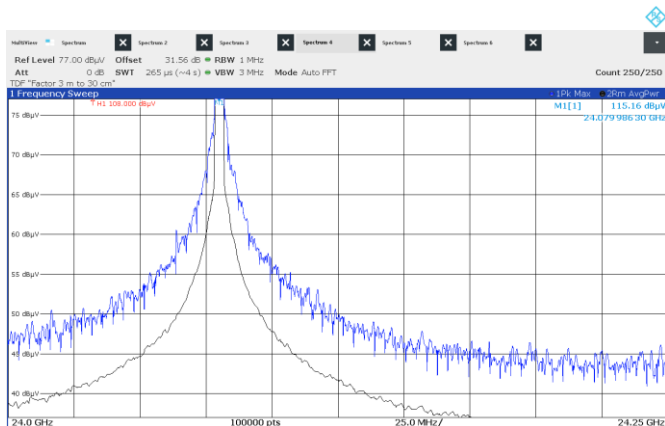


Figure 7.5-1: Field strength of fundamental emission Low Ch

Note: A limit line of 128 dBμV/m was applied.

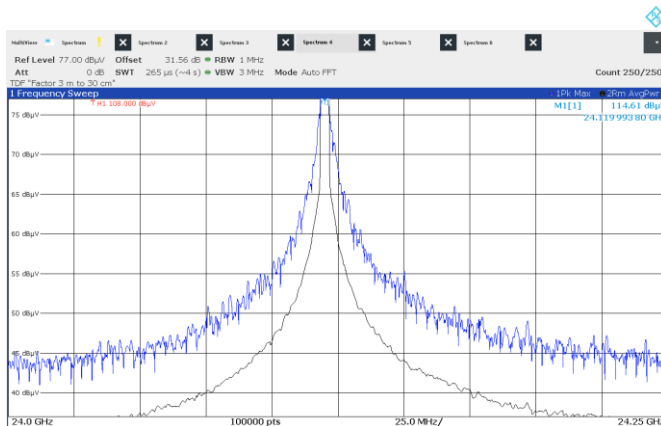


Figure 7.5-2: Field strength of fundamental emission Mid Ch

Note: A limit line of 128 dBμV/m was applied.

Test data, continued

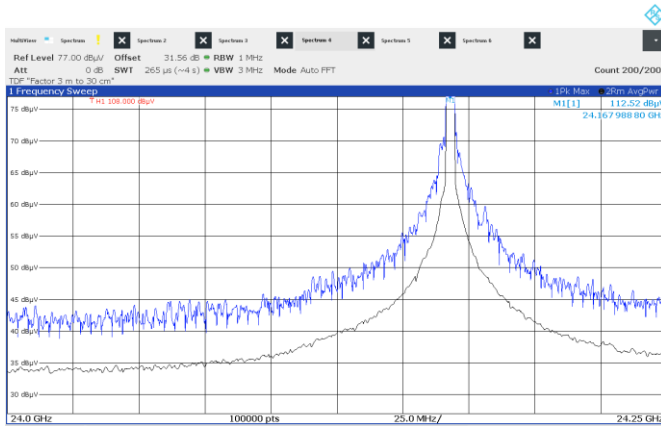


Figure 7.5-3: Field strength of fundamental emission High Ch

Note: A limit line of 128 dBμV/m was applied.

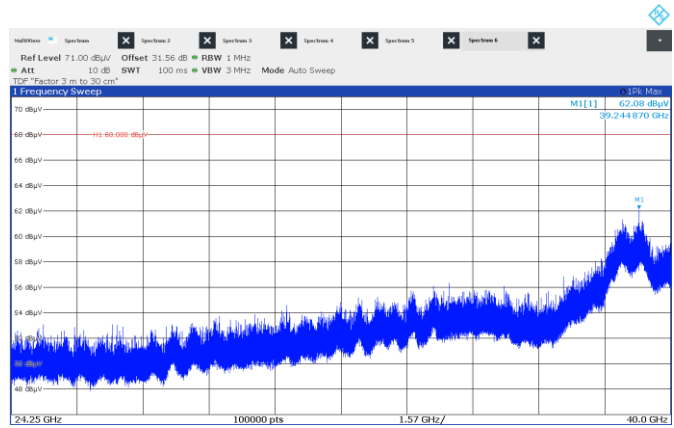


Figure 7.5-4: Field strength of harmonics emission (harmonics) Low Ch

Note: A limit line of 88 dBμV/m was applied.

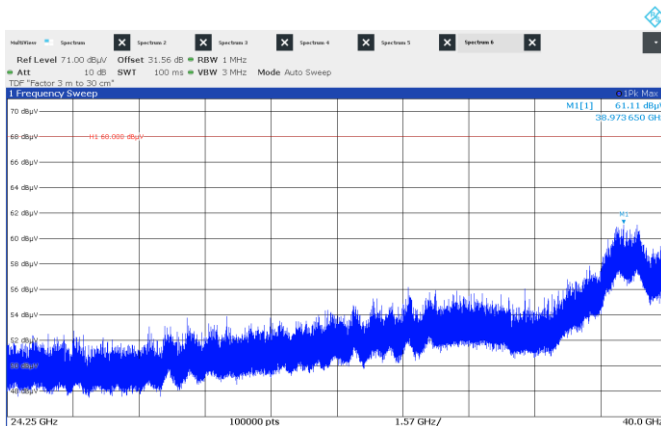


Figure 7.5-5: Field strength of harmonics emission (harmonics) Mid Ch

Note: A limit line of 88 dBμV/m was applied.

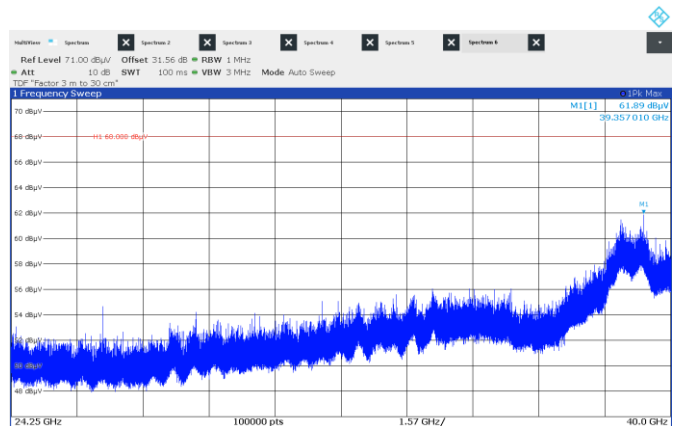


Figure 7.5-6: Field strength of harmonics emission (harmonics) High Ch

Note: A limit line of 88 dBμV/m was applied.

Test data, continued

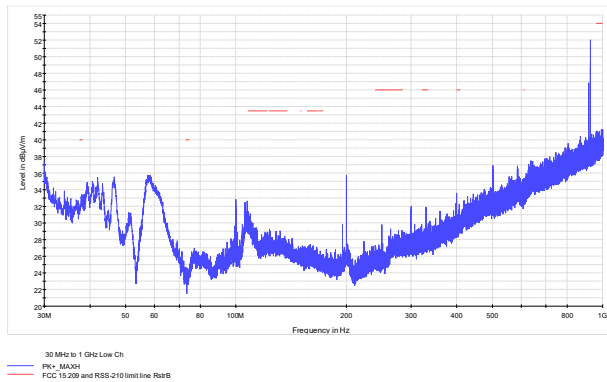


Figure 7.5-7: Radiated spurious emissions below 1000 MHz Low Ch

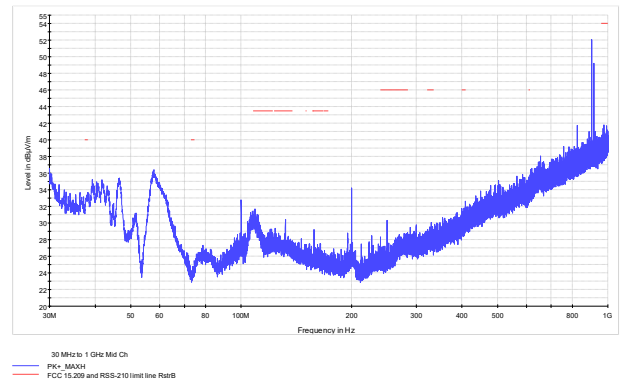


Figure 7.5-8: Radiated spurious emissions below 1000 MHz Mid Ch

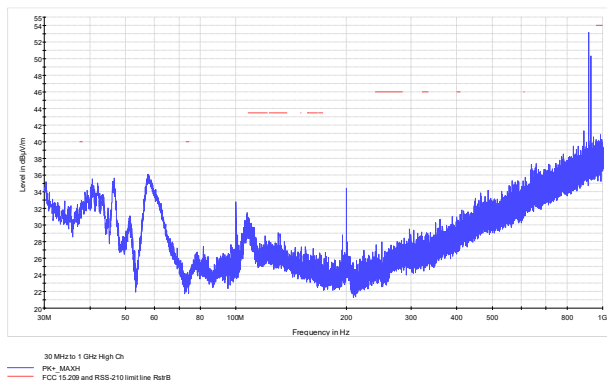


Figure 7.5-9: Radiated spurious emissions below 1000 MHz High Ch

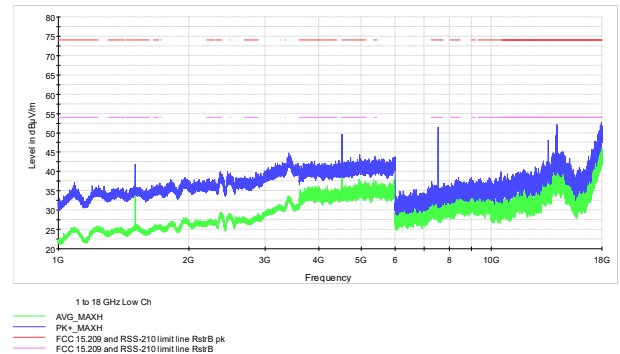


Figure 7.5-10: Radiated spurious emissions on 1-18 GHz Low Ch

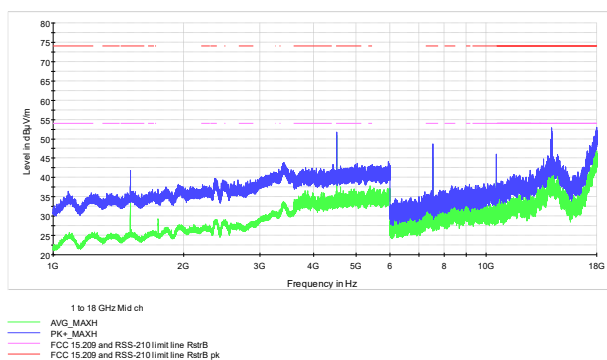


Figure 7.5-11: Radiated spurious emissions on 1-18 GHz Mid Ch

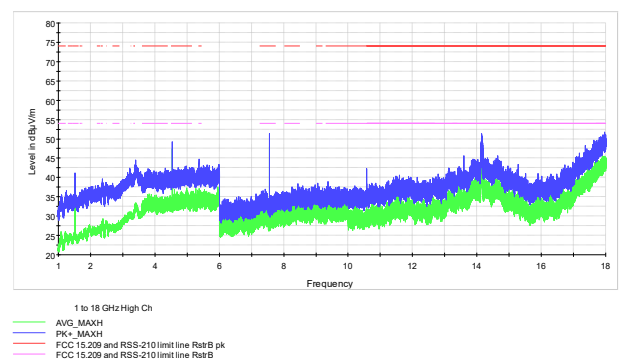


Figure 7.5-12: Radiated spurious emissions on 1-18 GHz High Ch

Test data, continued

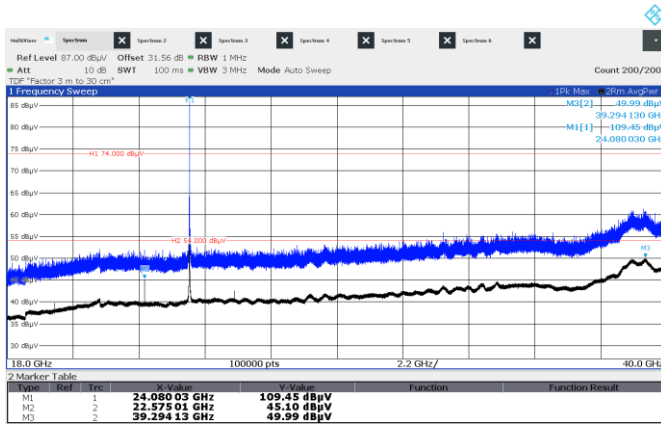


Figure 7.5-13: Radiated spurious emissions on 18-40 GHz Low Ch

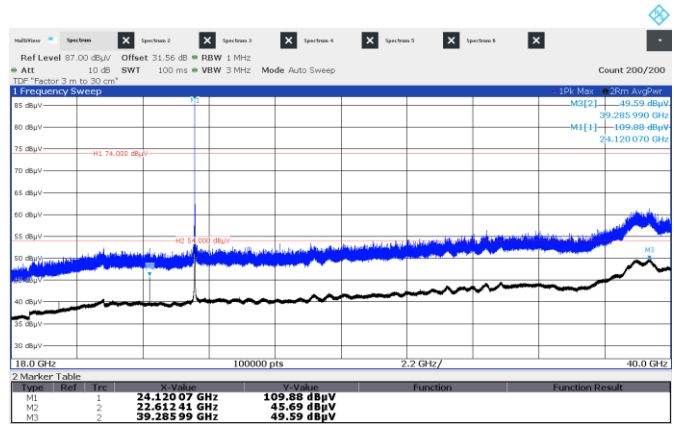


Figure 7.5-14: Radiated spurious emissions on 18-40 GHz Mid Ch

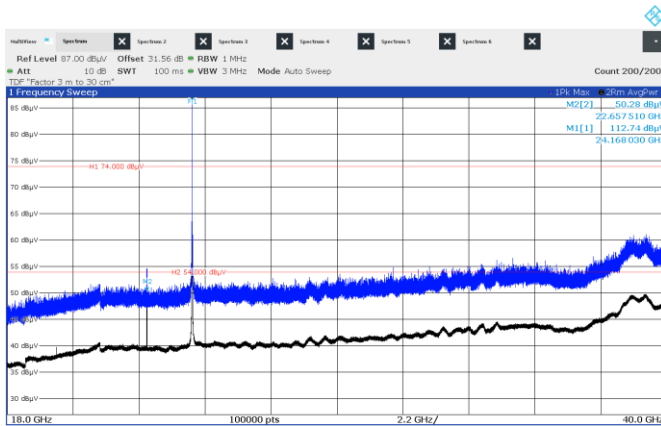


Figure 7.5-15: Radiated spurious emissions on 18-40 GHz High Ch

Test data, continued

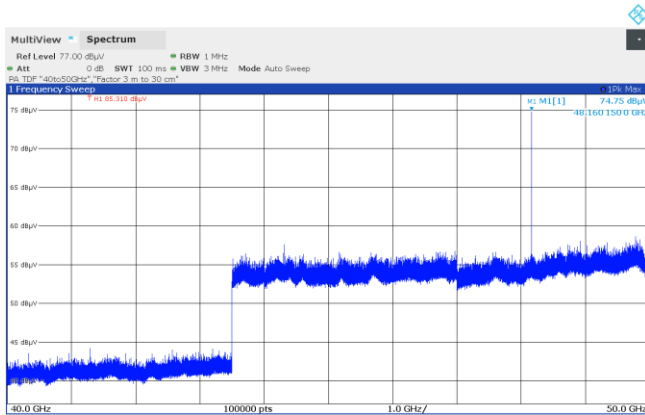


Figure 7.5-16: Radiated spurious emissions on 40-50 GHz Low Ch

Note: A limit line of 88 dBμV/m was applied.

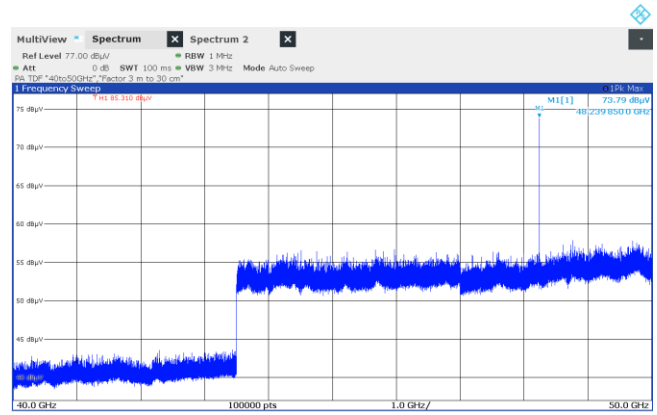


Figure 7.5-17: Radiated spurious emissions on 40-50 GHz Mid Ch

Note: A limit line of 88 dBμV/m was applied.

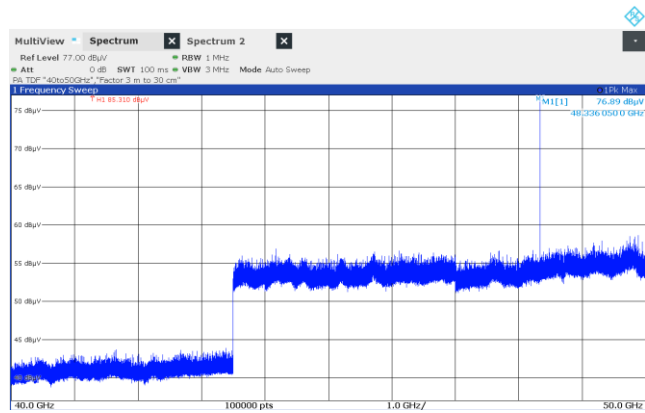


Figure 7.5-18: Radiated spurious emissions on 40-50 GHz High Ch

Note: A limit line of 88 dBμV/m was applied.

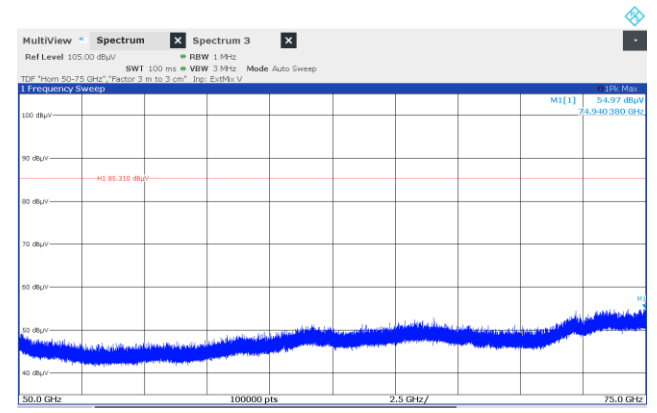


Figure 7.5-19: Radiated spurious emissions on 50-75 GHz Low Ch

Note: A limit line of 88 dBμV/m was applied.

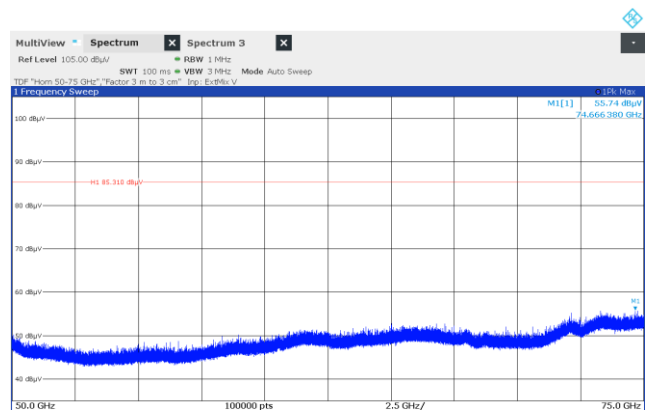


Figure 7.5-20: Radiated spurious emissions on 50-75 GHz Mid Ch

Note: A limit line of 88 dBμV/m was applied.

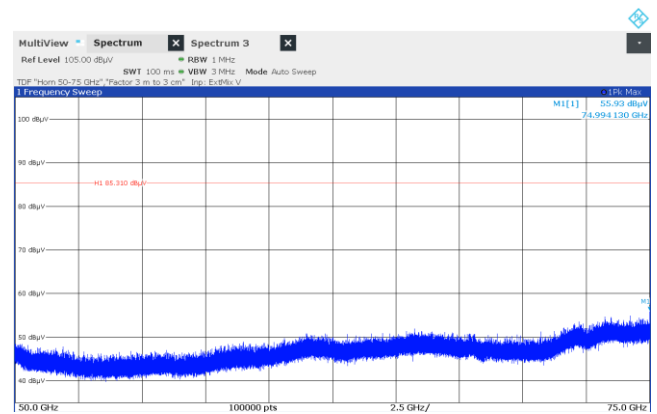


Figure 7.5-21: Radiated spurious emissions on 50-75 GHz High Ch

Note: A limit line of 88 dBμV/m was applied.

Test data, continued

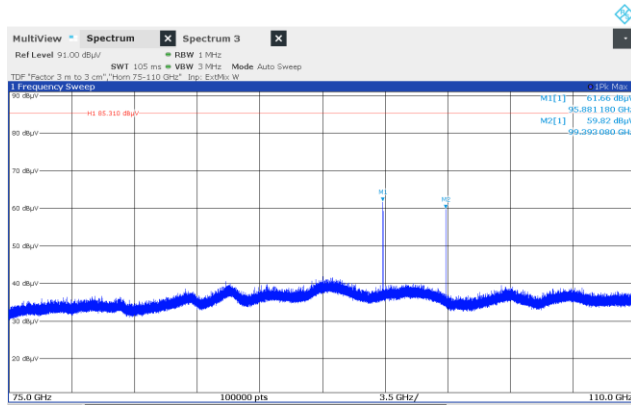


Figure 7.5-22: Radiated spurious emissions on 75-110 GHz Low Ch

Note: A limit line of 88 dBμV/m was applied.

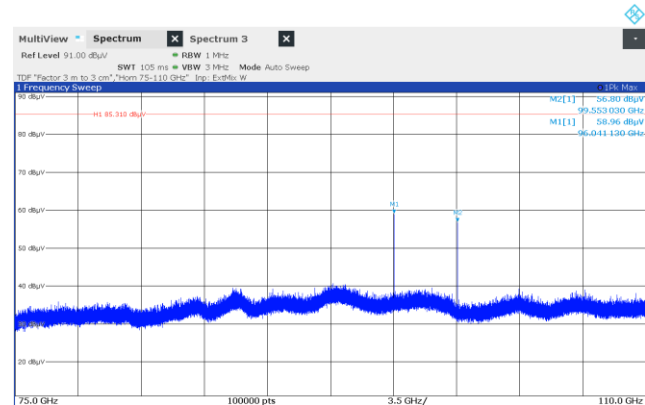


Figure 7.5-23: Radiated spurious emissions on 75-110 GHz Mid Ch

Note: A limit line of 88 dBμV/m was applied.

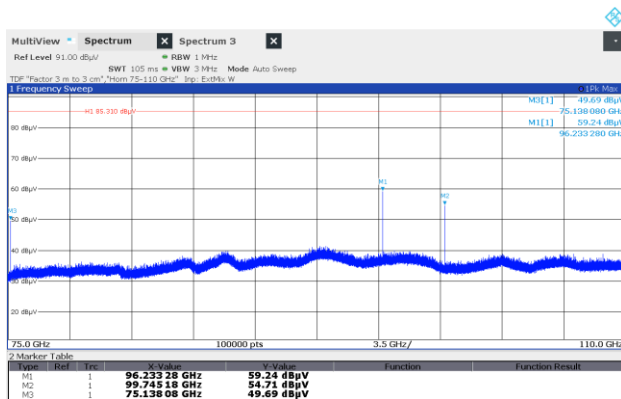


Figure 7.5-24: Radiated spurious emissions on 75-110 GHz High Ch

Note: A limit line of 88 dBμV/m was applied.

Table 7.5-5: Field strength of fundamental and harmonic emissions results

Channel	Frequency, MHz	Field strength of fundamental, dBμV/m		Margin, dB	Field strength of harmonics, dBμV/m		Margin, dB
		Measured	Limit		Measured	Limit	
Low	24080	115.16	128.00	12.84	74.75	88.00	13.25
Mid	24120	114.61	128.00	13.39	73.79	88.00	14.21
High	24168	112.52	128.00	15.48	76.89	88.00	11.11

Notes: Field strength includes correction factors of antenna, cable loss, amplifier, and attenuators where applicable.
The device transmitter operates with a continuous-wave (CW) signal; therefore, the peak measurement results also comply with the average limits.

7.6 Emission bandwidth and frequency stability

7.6.1 References, definitions and limits

FCC §15.215:

- (c) Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

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- e The carrier frequency stability shall be sufficient to ensure that the 40 dB bandwidth stays within the operating frequency band when tested at the temperature and supply voltage variations specified for the frequency stability measurement in RSS-Gen

RSS-Gen, Clause 5.1:

Occupied bandwidth (or 99% emission bandwidth) and x dB bandwidth

The occupied bandwidth shall be reported for all radio apparatus, in addition to the specified bandwidth required in the applicable RSS, such as the x dB bandwidth.

The following conditions shall apply for measuring the occupied bandwidth and x dB bandwidth:

the transmitter shall be operated at its maximum power

the span of the spectrum analyzer shall be set large enough to capture all products of the modulation process around the carrier or centre frequency, including the emission skirts, but small enough to avoid having other emissions (e.g., on adjacent channels) within the span

Table 7.6-1: Frequency stability limit

Fundamental frequency band, MHz	Central 80% of permitted operating frequency band, MHz
902–928	904.6–925.4
2435–2465	2438–2462
5785–5815	5788–5812
10500–10550	10505–10545
24075–24175	24085–24165

7.6.2 Test summary

Verdict	Pass		
Test date	May 4, 2026	Temperature	23 °C
Tested by	Atefeh Beiginezhad	Air pressure	1010 mbar
Test location	Montreal	Relative humidity	41 %

7.6.3 Observations, settings and special notes

Spectrum analyser settings:

Resolution bandwidth	≥ 1 % of emission bandwidth
Video bandwidth	≥ 3 × RBW
Frequency span	Wider than emission bandwidth
Detector mode	Peak

7.6.4 Test data

Table 7.6-2: Occupied (Emission) bandwidth results

Fundamental frequency band, MHz	99% occupied bandwidth, kHz	20 dB bandwidth, kHz
24080	47.10	40.36
24120	48.12	40.86
24168	48.17	40.56

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

Table 7.6-3: FCC occupied bandwidth limitations

Fundamental frequency band, MHz	Lower 20 dB BW frequency cross, MHz	Lower limit, MHz	Margin, MHz	Upper 20 dB BW frequency cross, MHz	Upper limit, MHz	Margin, MHz
24080	24079	24075	4	24080	24175	95
24120	24119	24075	44	24120	24175	55
24168	24167	24075	92	24168	24175	7

Table 7.6-4: Frequency drift measurements results

Test conditions	Frequency, MHz	Drift, Hz
+50 °C, Nominal	24.16799381	+1200
+40 °C, Nominal	24.16799271	+100
+30 °C, Nominal	24.16799261	0
+20 °C, +15 %	24.16799231	-300
+20 °C, Nominal	24.16799261	
+20 °C, -15 %	24.16799181	-800
+10 °C, Nominal	24.16799261	0
0 °C, Nominal	24.16799231	-300
-10 °C, Nominal	24.16799181	-800
-20 °C, Nominal	24.16799181	-800

Table 7.6-5: ISED occupied bandwidth limitations

Lower 40 dB BW frequency cross, MHz	Lower drifted frequency edge, MHz	Lower limit, MHz	Lower Margin, MHz	Upper 40 dB BW frequency cross, MHz	Upper drifted frequency edge, MHz	Upper limit, MHz	Upper Margin, MHz
24079.83816	24079.83736	24075.00000	4.83736	24168.13137	24168.13257	24175.00000	8.86743

Note: For frequency stability, the 40 dB bandwidth was measured at the low and high operating channels. The upper and lower 40 dB-down frequency points were identified for each channel. The maximum positive frequency drift was added to the upper 40 dB-down frequency point of the top channel, and the maximum negative frequency drift was subtracted from the lower 40 dB-down frequency point of the bottom channel. The resulting worst-case frequency range was then compared against the applicable authorized operating-band limits.

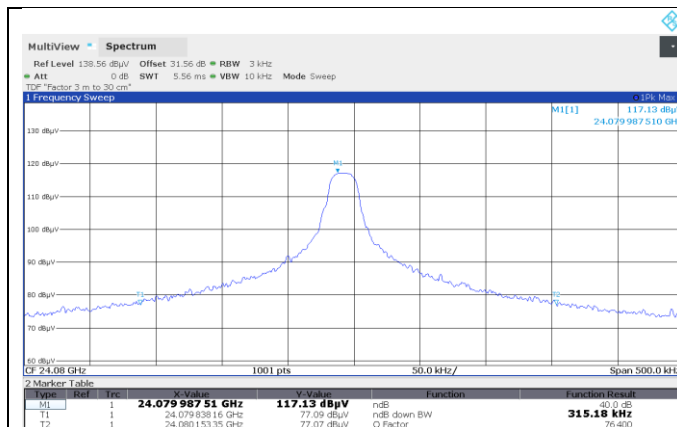


Figure 7.6-1: 40 dB bandwidth, sample plot Low Ch

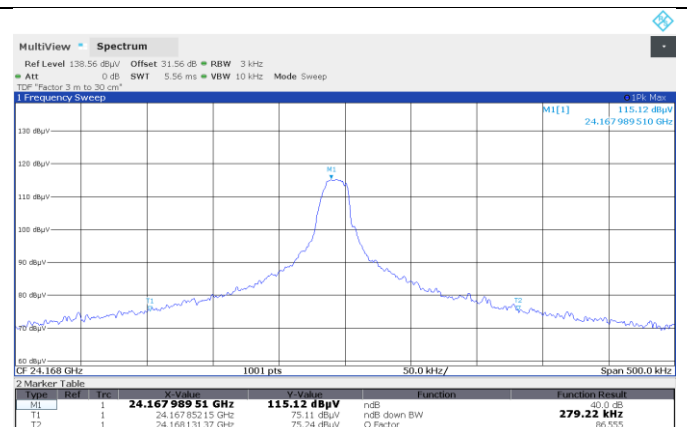


Figure 7.6-2: 40 dB bandwidth, sample plot High Ch

Test data, continued



Figure 7.6-3: 99% occupied bandwidth, sample plot Low Ch

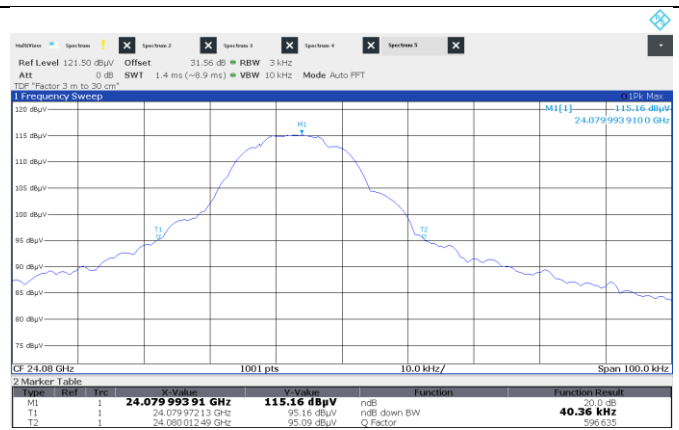


Figure 7.6-4: 20 dB bandwidth, sample plot Low Ch



Figure 7.6-5: 99% occupied bandwidth, sample plot Mid Ch



Figure 7.6-6: 20 dB bandwidth, sample plot Mid Ch



Figure 7.6-7: 99% occupied bandwidth, sample plot High Ch

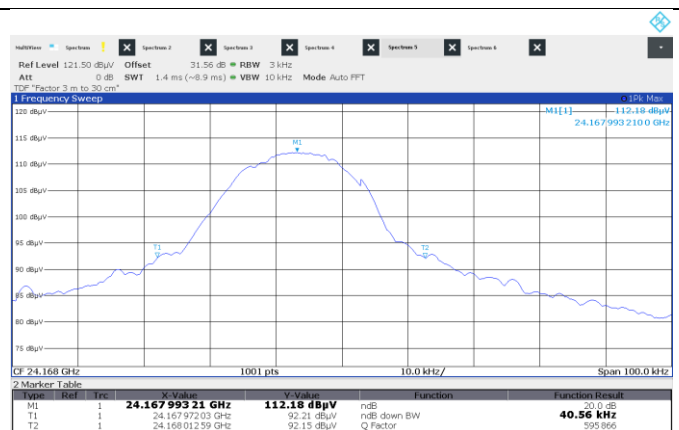
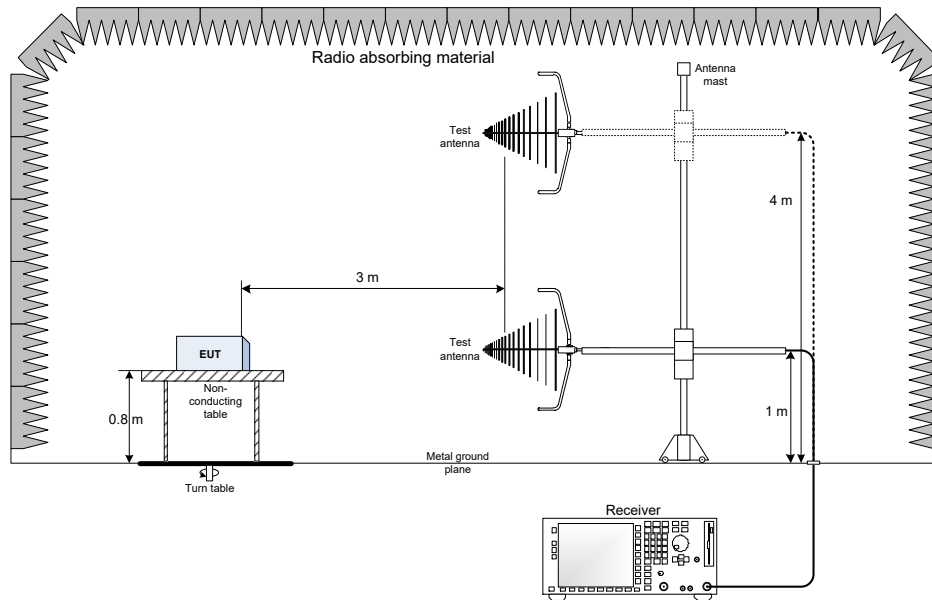


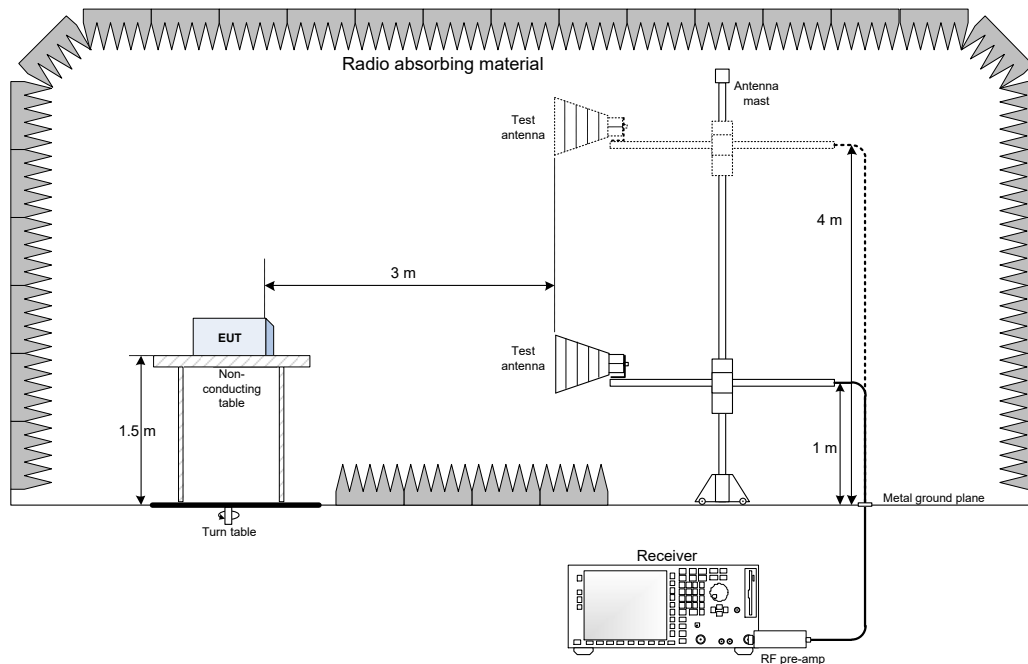
Figure 7.6-8: 20 dB bandwidth, sample plot High Ch

Section 8. Block diagrams of test set-ups

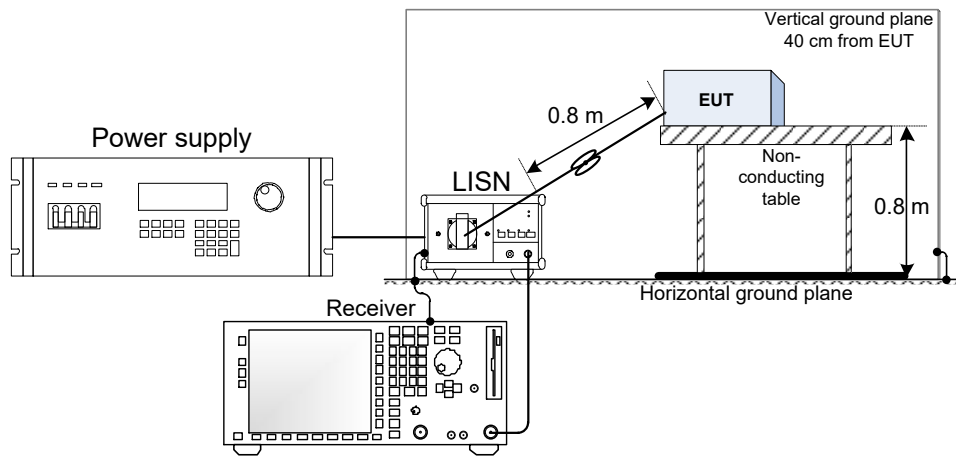
8.1 Radiated emissions set-up for frequencies below 1 GHz



8.2 Radiated emissions set-up for frequencies above 1 GHz



8.3 Conducted emissions set-up



8.4 Antenna port set-up

