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RADIO TEST REPORT

Report ID:

REP104491

Project number:

PRJ0083817

Type of assessment:

Final product testing

Applicant:

Tyco Safety Products Canada Ltd.

Description of product:

Dual Technology Motion Sensor

Model(s)/HVIN(s):

LC-203E, LC-204E, LC-224

Product marketing name (PMN):

LC-203, LC-204, LC-224

FCC identifier:

FCC ID: F5325LC203424

ISED certification number:

IC: 160A-LC203424

Specifications:

- ◆ FCC 47 CFR Part 15, Subpart C, §15.245
- ◆ RSS-210 Annex F.1, Issue 11, June 2024

Date of issue: December 15, 2025

Sagarkumar Patel

Tested by

Andrey Adelberg, Senior WL/EMC Specialist

Reviewed by

Andrey Adelberg

Signature

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



Lab locations

Company name	Nemko Canada Inc.			
Facilities	<i>Ottawa site:</i>	<i>Montréal site:</i>	<i>Cambridge site:</i>	<i>Almonte site:</i>
	303 River Road Ottawa, Ontario Canada K1V 1H2	292 Labrosse Avenue Pointe-Claire, Québec Canada H9R 5L8	1-130 Saltsman Drive Cambridge, Ontario Canada N3E 0B2	1500 Peter Robinson Road West Carleton, Ontario Canada K0A 1L0
	Tel: +1 613 737 9680 Fax: +1 613 737 9691	Tel: +1 514 694 2684 Fax: +1 514 694 3528	Tel: +1 519 650 4811	Tel: +1 613 256-9117
Test site identifier	Organization	Ottawa/Almonte	Montreal	Cambridge
	FCC:	CA2040	CA2041	CA0101
	ISED:	2040A-4	2040G-5	24676
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 15.245	Operation within the bands 902–928 MHz, 2435–2465 MHz, 5785–5815 MHz, 10500–10550 MHz, and 24075–24175 MHz.
RSS-210 Annex F.1, Issue 11, June 2024	Licence-Exempt Radio Apparatus: Category I Equipment. Field disturbance sensors operating in the bands 902–928 MHz, 2435–2465 MHz, 5785–5815 MHz, 10.5–10.55 GHz, and 24.075–24.175 GHz.

1.2 Test methods

ANSI C63.10:2020/Cor.1:2023	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
RSS-Gen, Issue 5, April 2018	General Requirements for Compliance of Radio Apparatus

1.3 Exclusions

None

1.4 Statement of compliance

In the configuration tested, the EUT was found compliant.

Testing was performed against all relevant requirements of the test standard except as noted in section 1.3 above. Results obtained indicate that the product under test complies in full with the requirements tested. The test results relate only to the items tested.

Determining compliance is based on the results of the compliance measurement, not taking into account measurement uncertainty, in accordance with section 1.3 of ANSI C63.10:2020/Cor.1:2023

See “Summary of test results” 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
REP104491	December 15, 2025	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

Although the circuitry and components are largely identical, there are specific variations between the models. These differences include:

- LC-203E has antimasking circuitry and uses Type A relay output
- LC-204E does not have the antimasking circuitry populated and uses Type A relay output
- LC-224 does not have the antimasking circuitry populated and uses Type C relay output

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	Tyco Safety Products Canada Ltd.
Applicant address	3301 Langstaff Rd., Concord, L4K 4L2, Canada, ON
Manufacturer name	Same as applicant
Manufacturer address	Same as applicant

4.3 EUT information

Product description	Dual Technology Motion Sensor
Model(s) / HVIN(s)	LC-203E (tested), LC-204E, LC-224
Serial number	-
Power supply requirements	DC: 9-15 V
Product description and theory of operation	This product is a dual technology motion detector used for burglary alarm systems, it includes PIR and MW detection and Antimasking. The MW module operates at 10.525 GHz

4.4 Radio technical information

Frequency band	10500–10550 MHz
Operating Frequency	10515 MHz
Field strength, dB μ V/m @ 3 m	106.68
Measured BW (kHz), 99% OBW	5400
Type of modulation	PM
Emission classification	5M40P0N
Transmitter spurious, dB μ V/m @ 3 m	68.81(Peak) 10550 MHz
Antenna information	Micro-strip path antenna is integral to module, gain 9.63 dBi

4.5 EUT setup details

4.5.1 Radio exercise details

Operating conditions	EUT Operated in TX mode after powering up.
Transmitter state	The transmitter is set into continuous Tx mode.

4.5.2 EUT setup configuration

Table 4.5-1: EUT interface ports

Description	Qty.
Interface connected to panel (including DC power and signal)	1

Table 4.5-2: Support equipment

Description	Brand name	Model, Part number, Serial number, Revision level
AC Transformer 16.5VAC, 40VA	DSC	MN: PTD1640U
Control panel	DSC/Tyco	MN: HS2128, Rev. UA621 Rev 04
Keypad	DSC/Tyco	SN: 52115A28, MN: HS2LCD, Rev. UA628 Rev. 03

Table 4.5-3: Inter-connection cables

Cable description	From	To	Length (m)
Multi wires cable (including DC power and signal wires)	EUT	Control panel	> 3
Power cable	AC Transformer	Control panel	< 1
Multi wires cable	Keypad	Control panel	< 1

EUT setup configuration, continued



Figure 4.5-1: Radiated testing block diagram

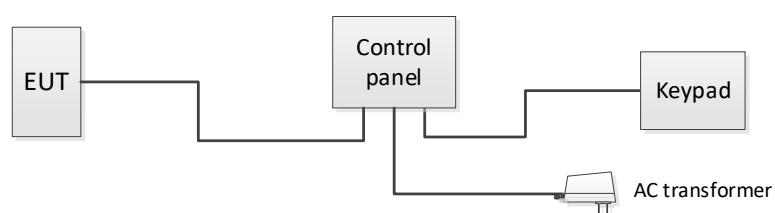


Figure 4.5-2: Antenna port testing block diagram

Section 5. Summary of test results

5.1 Testing period

Test start date	October 30, 2025	Test end date	November 11, 2025
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5.2 Sample information

Receipt date	October 30, 2025	Nemko sample ID number(s)	PRJ00838170002
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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	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 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	Pass
RSS-Gen, 8.11	Frequency stability	Pass
Specific requirements (RSS-210)		
Annex F.1(a)	Radiated emissions of fundamental and harmonics	Pass
Annex F.1(b)(c)	Radiated emissions of harmonics that fall within restricted frequency bands	Pass
Annex F.1(e)	Radiated spurious emissions except for harmonics	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.

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 m EMI test chamber	TDK	SAC-3	FA002047	1 year	March 14, 2026
Flush mount turntable	Sunol	FM2022	FA002082	—	NCR
Controller	Sunol	SC104V	FA002060	—	NCR
Antenna mast	Sunol	TLT2	FA002061	—	NCR
Receiver/spectrum analyzer	Rohde & Schwarz	ESU 40	FA002071	1 year	February 7, 2026
Horn antenna (18–18 GHz)	ETS Lindgren	3117	FA002840	1 year	March 7, 2026
61505 AC/DC programmable source	Chroma	61509	FA003036	—	NCR
Preamp (1–18 GHz)	ETS Lindgren	124334	FA002877	1 year	January 13, 2026
Biconical antenna (30–300 MHz)	Sunol	BC2	FA002078	1 year	June 10, 2026
Log periodic antenna (200–5000 MHz)	Sunol	LP5	FA002077	1 year	June 11, 2026
50 Ω coax cable	Carlisle	WHU18-1818-072	FA002391	1 year	October 7, 2026
50 Ω coax cable	Huber+Suhner	104B11NX2/11000	FA003441	1 year	October 7, 2026
Horn antenna (18–26.5 GHz)	Electro-metrics	SH-50/60-1	FA000479	—	VOU
Horn antenna 26.5–40 GHz	Electro-metrics	SH-50/60-2	FA000485	—	VOU
Horn antenna (18–40 GHz)	EMCO	3116	FA001847	3 year	May 21, 2027
40–60 GHz Harmonic mixer	OML	WR19 M19HWD	FA002322	—	VOU
40–60 GHz Standard gain horn	Millitech	U SGH-19	FA002322a	—	VOU
Cable	Huber+Suhner	Sucoflex 101 PEA	FA003090	1 year	October 30, 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

Test description	Manufacturer of Software	Details
Radiated Measurement	Rohde & Schwarz	EMC32, Software for EMC Measurements, Version 11.20.00
conducted emissions	Rohde & Schwarz	EMC32, Software for EMC Measurements, Version 11.20.00

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

Measurement	Measurement uncertainty, $\pm$ dB
AC power line conducted emissions	3.8
Radiated spurious emissions (30 MHz to 1 GHz)	5.8
Radiated spurious emissions (1 GHz to 6 GHz)	4.7
Radiated spurious emissions (6 GHz to 18 GHz)	5.0
Radiated spurious emissions (18 GHz to 26 GHz)	5.0
Radiated spurious emissions (18 GHz to 40 GHz)	5.2
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 5, 2025	Temperature	22 °C
Tested by	Sagarkumar Patel	Air pressure	997 mbar
Test location	Ottawa	Relative humidity	42 %

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	November 5, 2025	Temperature	22 °C
Tested by	Sagarkumar Patel	Air pressure	997 mbar
Test location	Ottawa	Relative humidity	42 %

7.2.3 Observations, settings and special notes

None

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	Operating Frequency, MHz
10500	10550	50	10515

Note: EUT is a single frequency transmitter

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	November 5, 2025	Temperature	22 °C
Tested by	Sagarkumar Patel	Air pressure	997 mbar
Test location	Ottawa	Relative humidity	42 %

7.3.3 Observations, settings and special notes

None

7.3.4 Test data

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

Table 7.3-1: Antenna information

Antenna type	Manufacturer	Model number	Maximum gain	Connector type
PCB Micro Strip patch	Sky Microwave Co, Ltd	SKY-DF1052D11A	9.63 dBi	None

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	November 5, 2025	Temperature	22 °C
Tested by	Sagarkumar Patel	Air pressure	997 mbar
Test location	Ottawa	Relative humidity	42 %

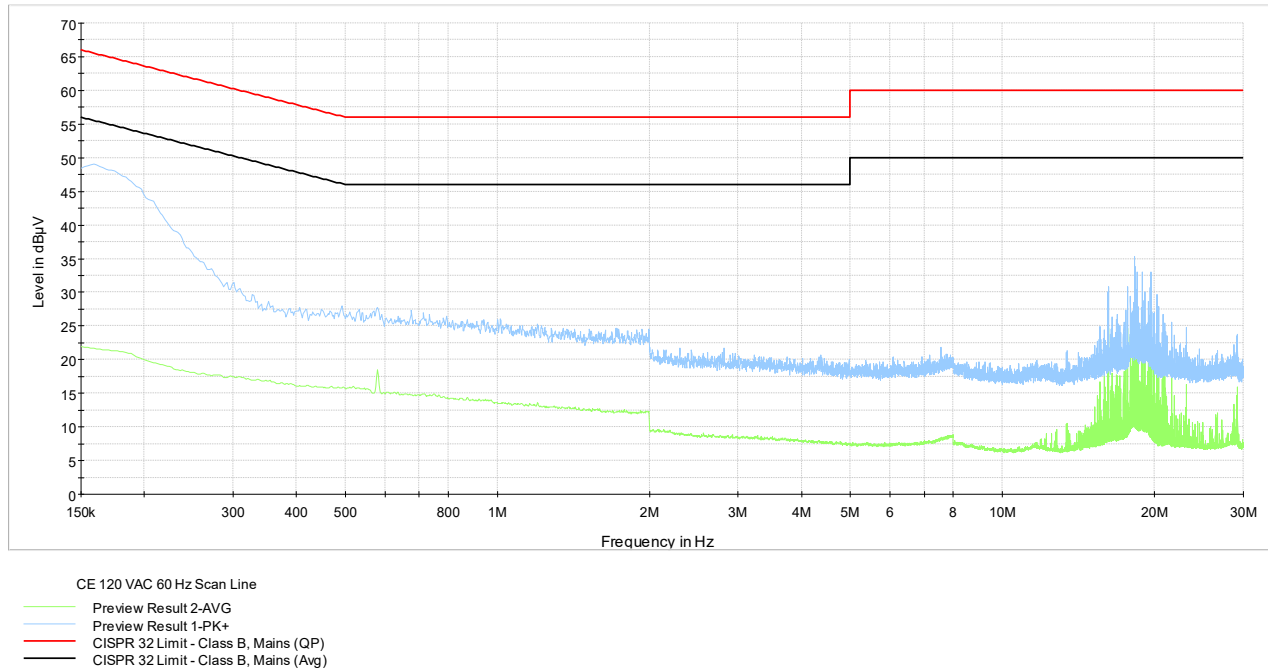
7.4.3 Observations, settings and special notes

Port under test – Coupling device	AC Mains input of the control panel – Artificial Mains Network (AMN)
EUT power input during test	120 V _{AC} , 60 Hz
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 C63.10-2020 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.

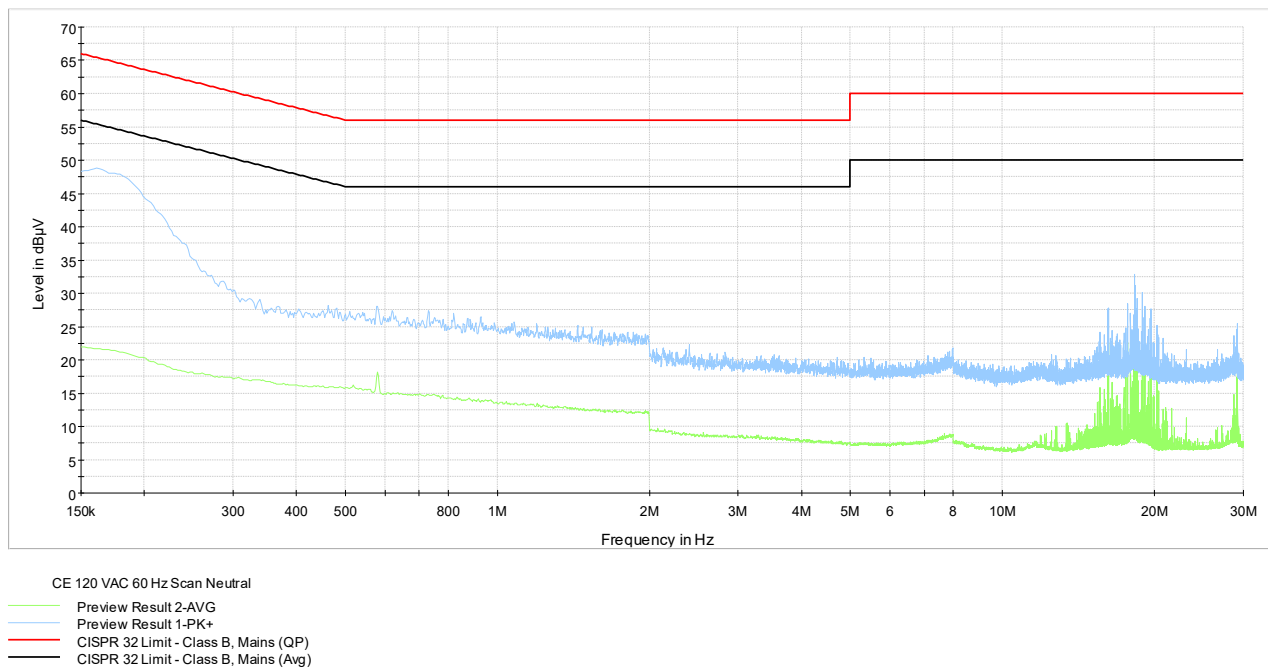
Receiver settings:

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 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.
- (1) Regardless of the limits shown in the following 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:
 - (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.
- (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.

RSS-210 Annex F.1:

- a. The average field strength of fundamental and harmonic emissions measured at 3 m shall not exceed the limits shown in table
- b. Additionally, 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 below.
- 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:
 - c. i. 25 mV/m for the second and third harmonic emissions of field disturbance sensors operating in the band 24075–24175 MHz and for devices designed for use only within buildings or for intermittent use, such as to open building doors
 - ii. 7.5 mV/m for all other devices
- e. 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 to the general field strength limits specified in RSS-Gen, whichever is less stringent.

Table 7.5-1: Field strength limits

Fundamental frequency, MHz	Average Field strength of fundamental,		Average Field strength of spurious emissions,	
	mV/m	dBµV/m	mV/m	dBµV/m
10500–10550	2500	128	25	88

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.
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	November 5, 2025	Temperature	22 °C
Tested by	Sagarkumar Patel	Air pressure	997 mbar
Test location	Ottawa	Relative humidity	42 %

7.5.3 Observations, settings and special notes

- The spectral plots within this section are a summation of vertical and horizontal scans. The spectral plots within this section have been corrected with all relevant transducer factors.
- The spectrum was searched from 30 MHz to the 5th harmonic.
- Radiated measurements were performed at a distance of 3 m below 18 GHz, from 18 GHz to 40 GHz at 1 m, and from 40 GHz to 53 GHz at 0.3 m
- Above 40 GHz, spurious emissions and harmonics were either not detected or were more than 20 dB below the applicable limit, so they were not reported as per ANSI C63.10
- Average was calculated from peak results using duty cycle correction factor (DCCF),
Pulse width = 0.07954 ms, Pulse repetition = 20 pulses within 10 ms, $DCCF = 20 \times \log_{10} ((0.07954 \times 20) / 10) = -15.96 \text{ dB}$

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 (for Peak); 10 Hz (for Average)
Detector mode	Peak
Trace mode	Max Hold

7.5.4 Test data

Table 7.5-5: Radiated field strength measurement results

Frequency, GHz	Peak field strength, dB μ V/m	Peak limit, dB μ V/m	Margin, dB	Duty cycle factor, dB	Average field strength, dB μ V/m	Average limit, dB μ V/m	Margin, dB
10.515	104.59	148.00	43.41	-15.96	88.63	128.00	39.37
21.029	74.69	108.00	33.31	-15.96	58.73	88.00	29.27
31.545	58.82	108.00	49.18	-15.96	42.86	88.00	45.14
10.500	67.92	74.00	6.08	-15.96	51.96	54.00	2.04
10.550	68.81	74.00	5.19	-15.96	52.85	54.00	1.15

Notes: Field strength includes correction factor of antenna, cable loss, amplifier, and attenuators where applicable.

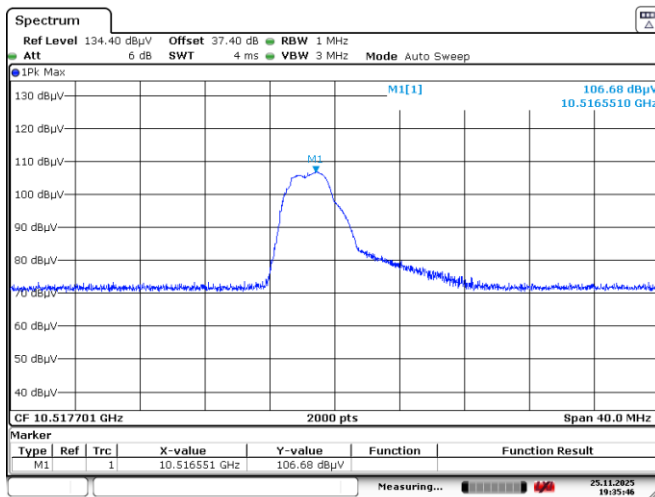


Figure 7.5-1: Field strength of fundamental emission

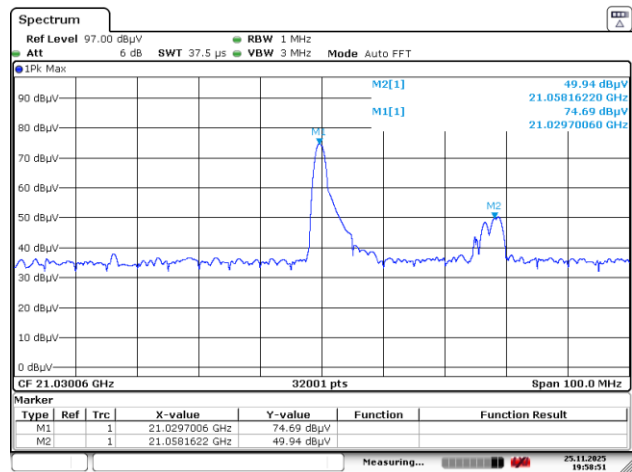


Figure 7.5-2: Field strength of 2nd harmonic emission

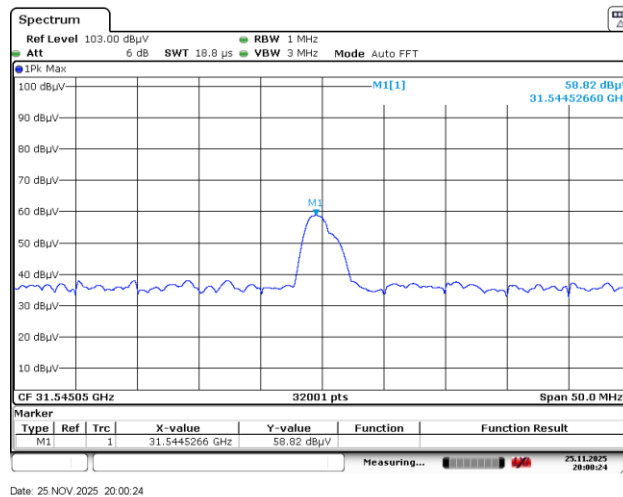


Figure 7.5-3: Field strength of 3rd harmonic emission

Test data, continued

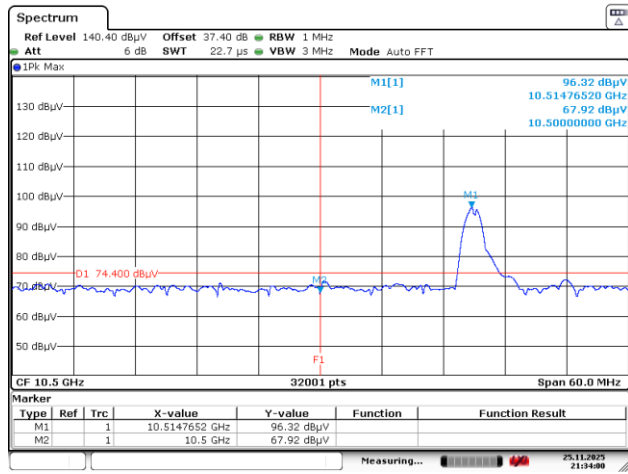


Figure 7.5-2: Field strength of emission at lower bandedge

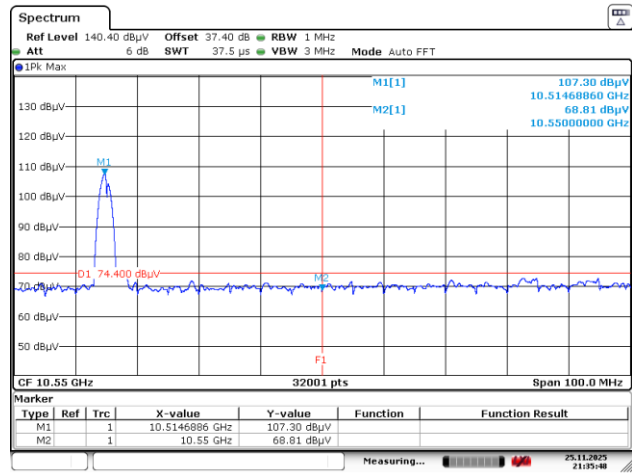


Figure 7.5-3: Field strength of emission at upper bandedge

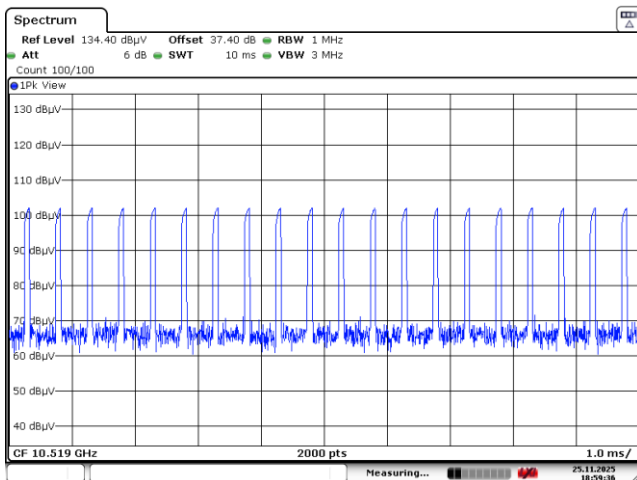


Figure 7.5-6: Pulse numbers per 10 ms (20)

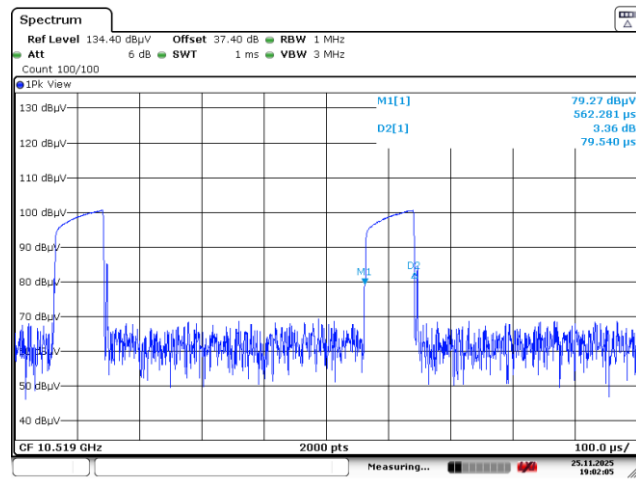


Figure 7.5-7: Pulse width (79.540 μs)

Test data, continued

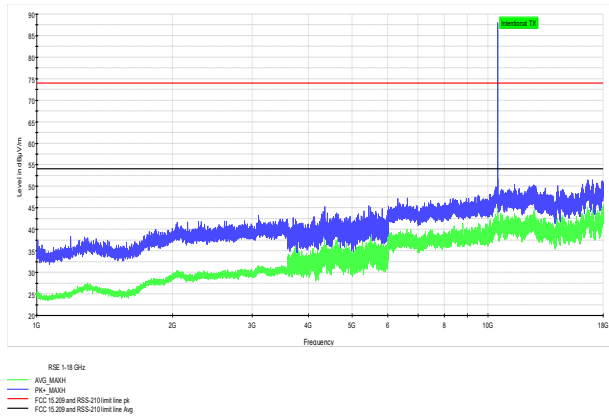


Figure 7.5-2: Field strength of spurious emissions 30–1000 MHz

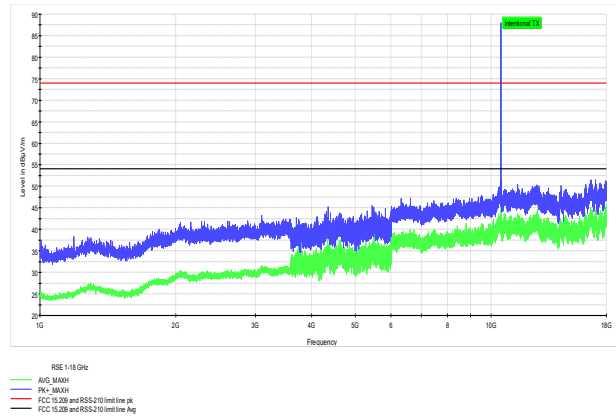


Figure 7.5-3: Field strength of spurious emissions within 1–18 GHz

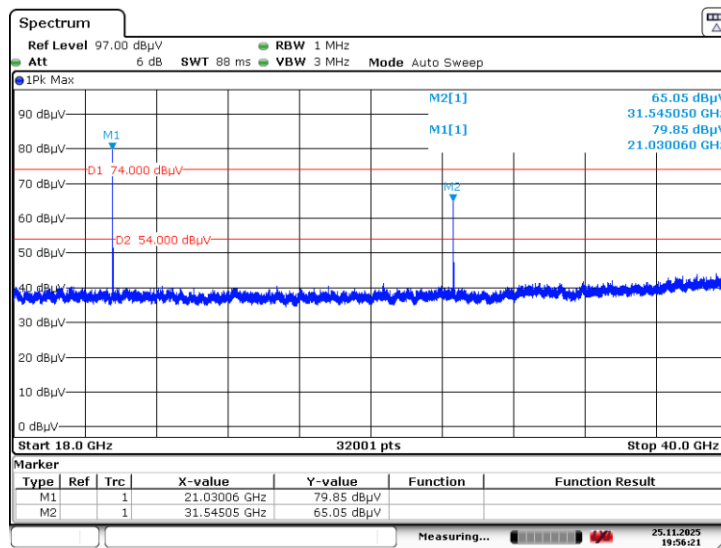


Figure 7.5-4: Field strength of spurious emissions within 18–26 GHz

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.

RSS-Gen, Clause 6.7:

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

The occupied bandwidth or the “99% emission bandwidth” is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.

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).

RSS-Gen, Clause 8.11:

Frequency stability

If the frequency stability of the licence-exempt radio apparatus is not specified in the applicable RSS, the fundamental emissions of the radio apparatus should be kept within at least the central 80% of its permitted operating frequency band in order to minimize the possibility of out-of-band operation.

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	November 5, 2025	Temperature	22 °C
Tested by	Sagarkumar Patel	Air pressure	997 Mbar
Test location	Ottawa	Relative humidity	42 %

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 bandwidth measurement result

Frequency, MHz	20 dB BW, MHz	99% BW, MHz
10518.812	6.090	5.400

Table 7.6-3: FCC occupied bandwidth limitations

Fundamental frequency, MHz	Lower -20 dBc frequency cross, MHz	Lower limit, MHz	Margin, MHz	Upper -20 dBc frequency cross, MHz	Upper limit, MHz	Margin, MHz
10518.812	10514.402	10505.000	9.402	10520.492	10545.000	24.508

Table 7.6-4: ISED occupied bandwidth limitations

Fundamental frequency, MHz	Lower 99% BW frequency cross, MHz	Lower limit, MHz	Margin, MHz	Upper 99% BW frequency cross, MHz	Upper limit, MHz	Margin, MHz
10517.189	10514.538	10505.000	9.538	10520.038	10545.000	24.962

Verdict: complies as the fundamental emission is kept within the central 80% of the permitted band (10505 MHz to 10545 MHz). The frequency stability of this licence-exempt radio apparatus is not specified.

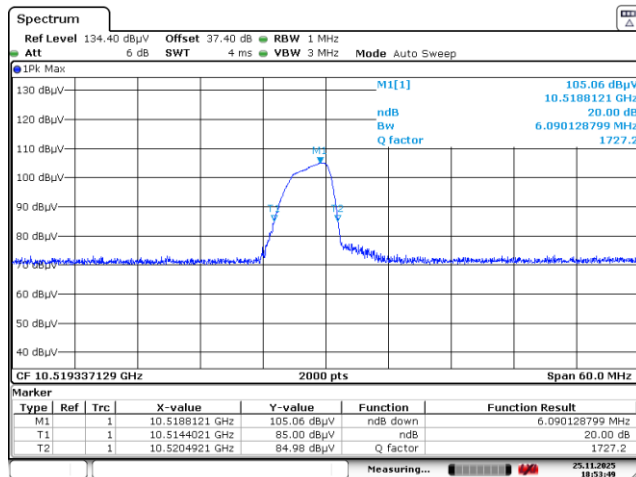


Figure 7.6-1: 20 dB occupied bandwidth

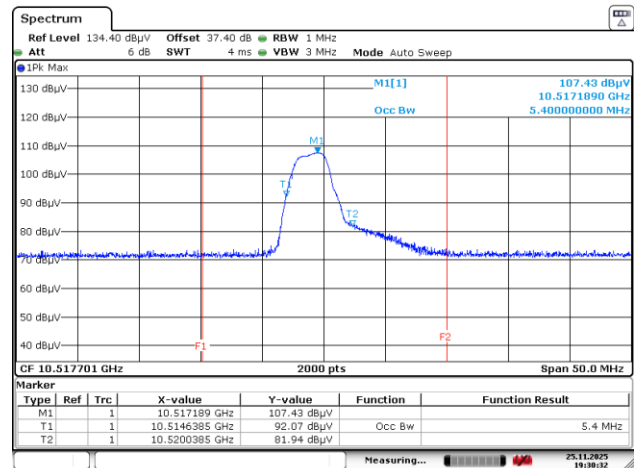
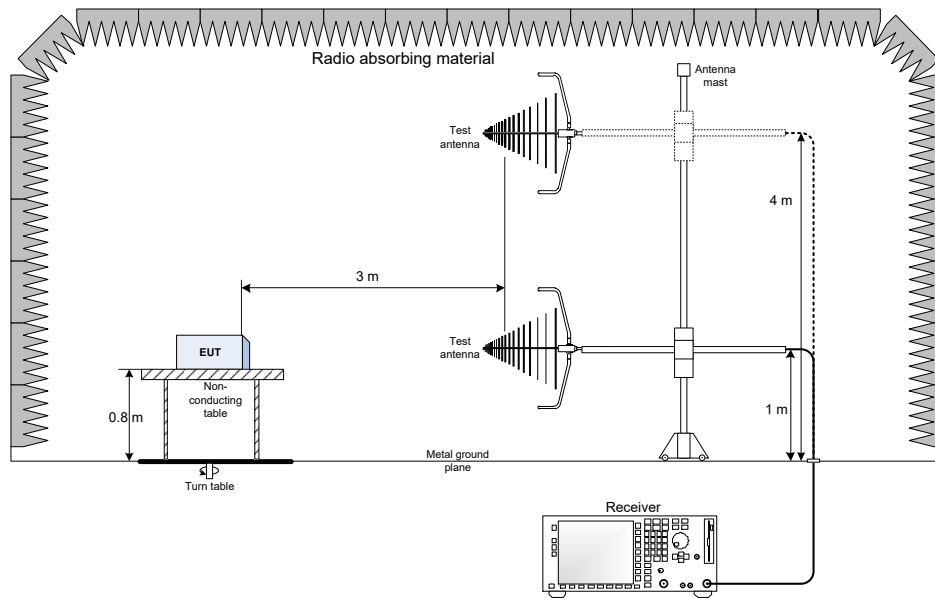


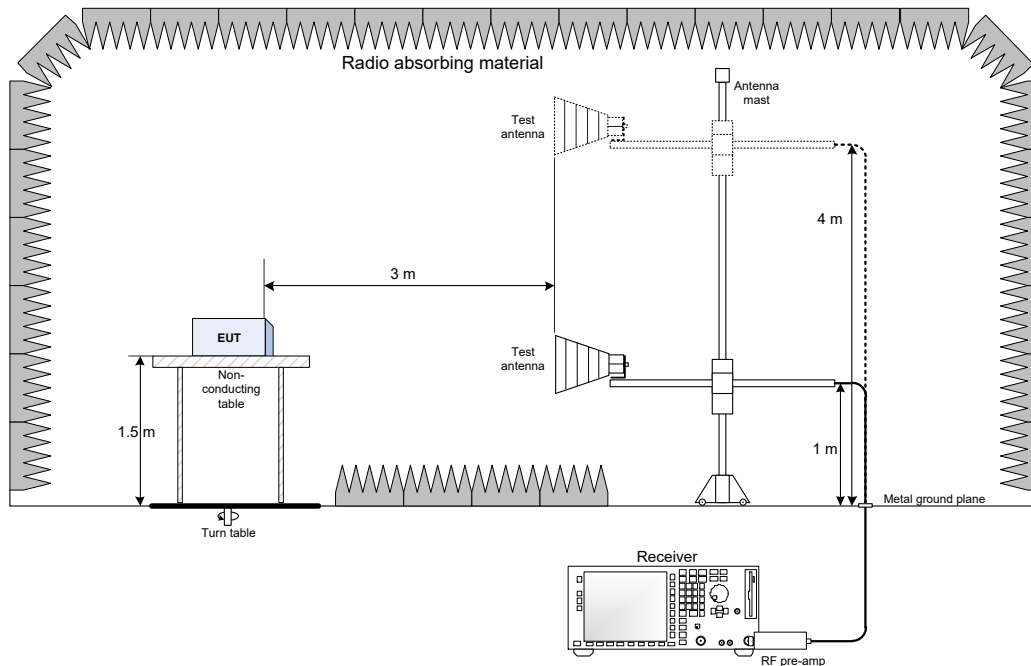
Figure 7.6-2: 99 % occupied bandwidth

Section 8. Block diagrams of test set-ups

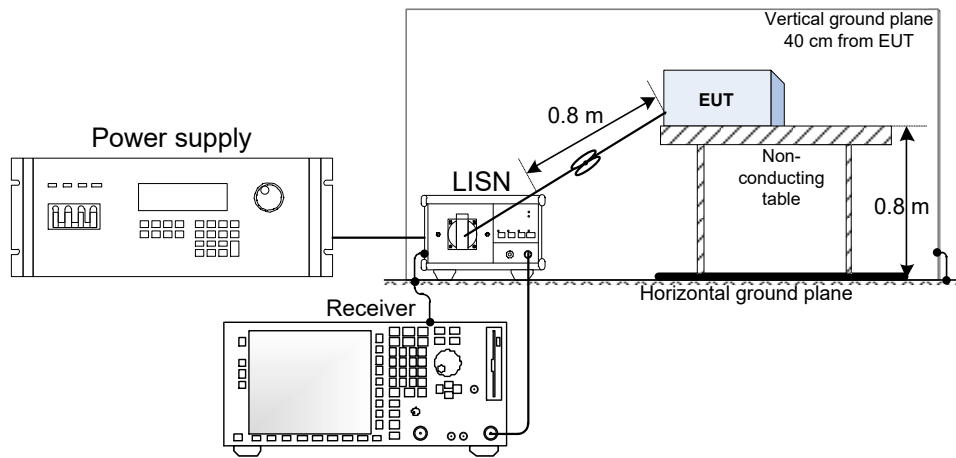
8.1 Radiated emissions set-up for frequencies below 1 GHz



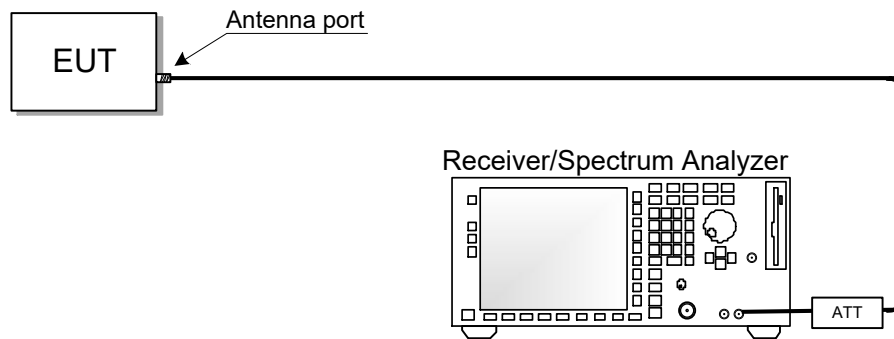
8.2 Radiated emissions set-up for frequencies above 1 GHz



8.3 Conducted emissions set-up



8.4 Antenna port set-up



End of the test report