

FCC and ISED Canada Evaluation of the

Rimage Corporation
RAS39

FCC ID: QT5-RFID4
IC ID: 4496A-RFID4

In accordance with:
FCC 47 CFR part 15.225 and ISED Canada's
Radio Standards Specifications RSS-210

Prepared for: Rimage Corporation
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NAME	JOB TITLE	RESPONSIBLE FOR	ISSUE DATE
Omar Castillo	Senior EMC / Wireless Test Engineer	Authorized Signatory	August 18, 2026

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FCC Accreditation Designation Number US1148 New Brighton, MN Test Laboratory	Innovation, Science, and Economic Development Canada Accreditation Site Number 4512A New Brighton, MN Test Laboratory
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EXECUTIVE SUMMARY

A sample of this product was tested and found to be compliant with the standards listed above and the tests shown in Table 1.4-1 of this report.



A2LA Cert. No. 2955.11

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Contents

1	Report Summary	2
1.1	Report Modification Record	2
1.2	Introduction	2
1.3	Scope of Testing	4
1.4	Summary of Results	4
1.5	Product Information	5
1.6	Deviations from the Standard	6
1.7	EUT Modification Record	7
1.8	Test Location	7
2	Test Details	8
2.1	Antenna Requirements	8
2.2	20 dB Bandwidth	9
2.3	99% Bandwidth	12
2.4	Radiated Field Strength of Emissions within the 13.110-14.010 band	15
2.5	Radiated Field Strength of Emissions outside of the 13.110-14.010 band	21
2.6	Power Line Conducted Emissions	31
2.7	Frequency Tolerance of Carrier Signal	36
3	Test Equipment Information	39
3.1	General Test Equipment Used	39
4	Diagram of Test Set-ups	40
5	Measurement Uncertainty	45
6	Accreditation, Disclaimers and Copyright.....	46



1 Report Summary

1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

Table 1.1-1 – Modification Record

Issue	Description of Change	Date of Issue
1	First Issue	2026-July-28
2	Included the ISED Canada Certification number of the integrated printer.	2026-August-18

1.2 Introduction

The purpose of this report is to demonstrate compliance with Part 15 Subpart C of the FCC's Code of Federal Regulations Section 15.225 and Innovation Science and Economic Development Canada's Radio Standards Specification RSS-210 for the tests documented herein.

Applicant	Rimage Corporation
Manufacturer	Rimage Corporation
Applicant's Email Address	Zahid.taufig@rimage.com
Model Number(s)	RAS39
Serial Number(s)	RAS39: 20260101 CDPR6B: 10048931
FCC ID	QT5-RFID4
ISED Certification Number	4496A-RFID4
Hardware Version(s)	B
Software Version(s)	11.012
Number of Samples Tested	1
Test Specification/Issue/Date	US Code of Federal Regulations (CFR): Title 47, Part 15, Subpart C: Radio Frequency Devices, Intentional Radiators, 2025 Innovation, Science and Economic Development Canada Radio Standards Specification: RSS-210 — Licence-Exempt Radio Apparatus: Category I Equipment, Issue 11, June 25, 2024
Test Plan/Issue/Date	2026-April-15
Order Number	721020809
Date of Receipt of EUT	2026-June-22



Start of Test	2026-June-22
Finish of Test	2026-June-26
Name of Engineer(s)	Thierry Jean-Charles Duranta K. Barua
Related Document(s)	ANSI C63.10-2020: American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices US Code of Federal Regulations (CFR): Title 47, Part 2, Subpart J: Equipment Authorization Procedures, 2025 Innovation, Science and Economic Development Canada Radio Standards Specification: RSS-GEN - General Requirements for Compliance of Radio Apparatus, Issue 5, April 2018, Amendment 1, March 2019, Amendment 2, February 2021.



1.3 Scope of Testing

The purpose of this report is to demonstrate compliance with Part 15 Subpart C of the FCC's Code of Federal Regulations Section 15.225 and Innovation Science and Economic Development Canada's Radio Standards Specification RSS-210 of the RAS39 for the tests documented herein.

1.4 Summary of Results

Table 1.4-1 – Test Result Summary

Report Section	Specification Clause		Test Description	Base Standard	Test Engineer	Test Results
	FCC 47 CFR Rule Part	ISED Canada's RSS				
2.1	15.203, 15.204	RSS-GEN	Antenna Requirement	ANSI C63.10:2020	Duranta K. Barua	Pass
2.2	15.215(c)	RSS-GEN 6.7	20 dB Bandwidth	ANSI C63.10:2020	Duranta K. Barua	Pass
2.3	-	RSS-GEN 6.7	99% Bandwidth	ANSI C63.10:2020	Duranta K. Barua	Pass
2.4	15.225(a),(b),(c)	RSS-210 Annex B.6(a)	Radiated Field strength of Emissions within the Band 13.110-14.010 MHz	ANSI C63.10:2020	Duranta K. Barua	Pass
2.5	15.209, 15.225(d)	RSS-210 7.2, RSS-210 Annex B.6(a), RSS-GEN 8.9	Field Strength of Emissions outside of the Band 13.110-14.010 MHz	ANSI C63.10:2020	Duranta K. Barua	Pass
2.6	15.207	RSS-GEN 8.8	Power Line Conducted Emissions	ANSI C63.10:2020	Duranta K. Barua	Pass
2.7	15.225(e)	RSS-210 B.6(b)	Frequency Tolerance of Carrier Signal	ANSI C63.10:2020	Duranta K. Barua	Pass



1.5 Product Information

1.5.1 EUT Description

The EUT was an Automated USB Thumb Drive Publishing Robot intended for use in office and light industrial environments.

1.5.2 Technical Description

The RAS39 is an automated USB recording and publishing system. The EUT incorporates a 13.56 MHz RFID transceiver based on the STMicroelectronics ST25R3917B IC and a Taoglas FXR.1515.A.DG loop antenna for identification and tracking of consumables using the ISO/IEC 15693 protocol.

The EUT contains a previously approved RFID subsystem, Model CDPR6 (FCC ID: QT5-CDPR6, IC: 4496A-CDPR6), in addition to the ST25R3917B-based RFID subsystem evaluated in this report. The two RFID transmitters are not capable of simultaneous transmission.

Technical Details

Radio Description:	13.56 MHz RFID Reader / Transceiver
Mode of Operation:	RFID Reader / Transceiver
Transmit Frequency:	13.56 MHz
Receiver Frequency:	13.56 MHz
Trasnmitter Product Class:	Class 1
ITU Emission Class:	N/A
Extreme Temperature Range Category:	N/A
Frequency Range:	13.553 MHz – 13.567 MHz
Number of Channels:	1
Channel Separation:	N/A
Data Rate:	53 kbps (ISO/IEC 15693 High Data Rate)
Modulation Format:	ASK (Amplitude Shift Keying)
Antenna Type:	Integral Flexible PCB Multi-Turn Loop Antenna
Antenna Model:	Taoglas FXR.1515.A.DG
Antenna Dimension:	15 mm × 15 mm × 0.14 mm
Number of Loops/Turns:	4
Antenna Gain:	N/A
Input Power:	90-264VAC, 50/60Hz

A full description and detailed product specification details are available from the manufacturer.

**Table 1.5.2-1 – Cable Descriptions**

Cable/Port	Description
USB3 A-B Cable	2m USB Cable that connects PC to EUT.

Table 1.5.2-2 – Support Equipment Descriptions

Make	Model #	Serial #	Description
Nobilis	E01267	16288010300208	CPU
Asus	VE228	J9LMQS146164	Monitor
Dell	RT7D50	CN-0W7658-37172-SBL-0755	Keyboard
Microsoft	1479	03524-523-4454434-01144	Mouse

1.5.3 Modes of Operation

Table 1.5-3 – Test Frequencies & Modes of Operation

The EUT was evaluated while the Radio Module was configured to transmit at maximum output power permitted by the manufacturer.

Channel	Channel Number	Frequency (MHz)
N/A	N/A	13.56 MHz

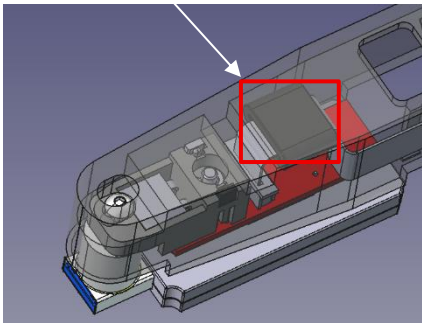
1.6 Deviations from the Standard

No deviations from the applicable test standard were made during testing.

1.7 EUT Modification Record

The table below details modifications made to the EUT during the test program. The modifications incorporated during each test are recorded on the appropriate test pages.

Table 1.7-1 – Modification Record

Modification State	Description of Modification fitted to EUT	Modification Fitted By	Date Modification Fitted
0	Initial State	N/A	N/A
1	Modified State 7427801 Ferrite was added to the FFC at the RFID transceiver PCBA. 	Rimage Corporation	22 nd June 2026

1.8 Test Location

TÜV SÜD conducted the following tests at our New Brighton, MN Test Laboratory.
Office address:

TÜV SÜD America, Inc.
141 14th Street NW
New Brighton, MN 55112 USA



2 Test Details

2.1 Antenna Requirements

2.1.1 Specification Reference

FCC: Section 15.203, 15.204;
ISED Canada RSS-Gen 6.8.

2.1.2 Equipment Under Test and Modification State

SN: 20260101, As shown in §1.5 with modification state “0”, as noted in §1.7.

2.1.3 Test Results

Limit Clause FCC Sections: 15.203, 15.204

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 carrier current devices or to devices operated under the provisions of §§ 15.211, 15.213, 15.217, 15.219, 15.221, or § 15.236. Further, 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.

Table 2.1-1 – Antenna Used In EUT

Antenna Type	Connection Type	Antenna Gain
Integral Flexible PCB Multi-Turn Loop Antenna	Direct PCB Connection	N/A

Note: The antenna and antenna connector are fully contained within the EUT and are inaccessible to the end user.

2.1.4 Test Location and Test Equipment Used

This test was carried out in
TÜV SÜD America, Inc., 141 14th Street NW, New Brighton, MN 55112, USA.

As this is a visual inspection, no test equipment was used.



2.2 20 dB Bandwidth

2.2.1 Specification Reference

FCC: Section 15.215(c)
ISED: RSS-GEN 6.7

2.2.2 Equipment Under Test and Modification State

SN: 20260101, As shown in §1.5 with modification state “1”, as noted in §1.7.

2.2.3 Date of Test

26th June 2026

2.2.4 Test Method

The 20 dB bandwidth was measured in accordance with ANSI C63.10 Subclause 6.9.2. The spectrum analyzer span was set between two times and five times the OBW. The RBW of the spectrum analyzer was set to 1% to 5% of the OBW. The VBW was approximately three times RBW. A peak detector was used for the measurements.

2.2.5 Environmental Conditions

Ambient Temperature	23.5°C
Relative Humidity	37 %
Atmospheric Pressure	981 mbar

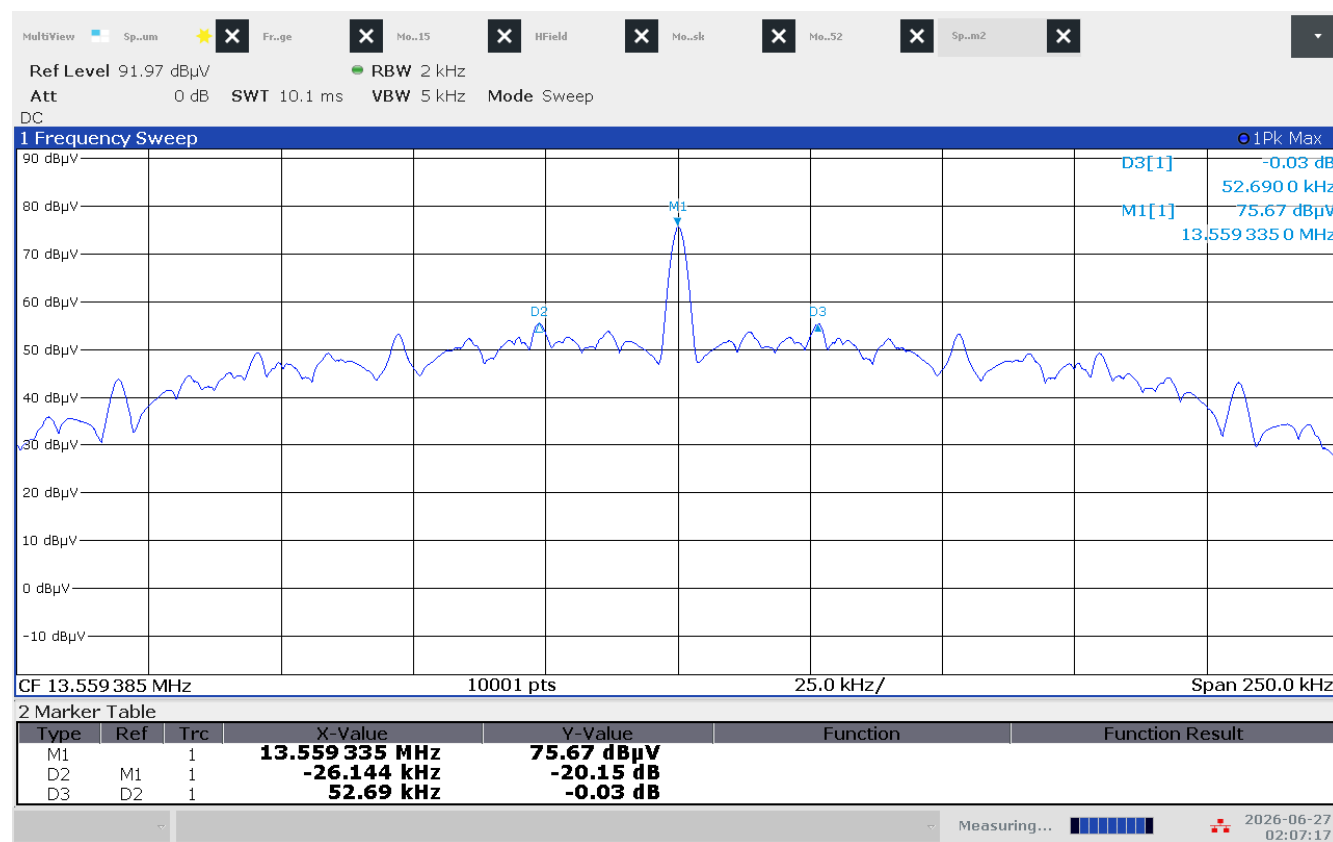


2.2.6 Test Results

120VAC/60Hz Powered Operating

Limit Clause FCC: Section 15.215(c), ISSED RSS Gen 6.7

The intentional radiator must be designed to ensure that the 20 dB bandwidth of the emission is contained within the frequency band designated in the rule section under which the equipment is operated.



02:07:18 AM 06/27/2026

Figure 2.2.6-1 – 20 dB Bandwidth Test Results Plot

Table 2.2.6-1 – 20 dB Bandwidth Test Result Measurement

Frequency (MHz)	20 dB Bandwidth (kHz)
13.559335	52.69



2.2.7 Test Location and Test Equipment Used

This test was carried out in the **Temperature Chamber** located in TÜV SÜD America, Inc., 141 14th Street NW, New Brighton, MN 55112, USA.

Device #	Manufacturer	Description	Model	Serial #	Cal Code	Cal Date	Cal Due
WRLE10515	EMCO/EMC Test	Near Field Probe	7405	7405-901	Y	N/A	N/A
WRLE10892	H-G	Cable, BNC 5M	EF142/11BNC/11BNC/5M	N/A	B	01/15/2026	01/15/2027
BEMC00002	US-Omega Engineering	Digital Thermometer	MDSS41-TC	5020074	G	09/02/2025	09/02/2026
NBLP11590	Russells	Russell Temp/Humidity	Temp/Humidity Chamber	06184873	Y	N/A	N/A
NBLE11810	Rohde & Schwarz	Signal Analyzer, 2 Hz-43 GHz, 2.92mm	FSW43	102394	G	09/30/2025	09/30/2026
TEMC00252	AC Power Corp	Programmable AC Power Supply	AFV-P-5000B	F122080022	Y	N/A	N/A
NBLE11974	Fluke	Digital Multimeter	614 - FLUKE - 17B+	66742932WS	G	07/30/2025	07/30/2026

Cal Code G = Calibration performed by an accredited outside source.

Cal Code B = Calibration verification performed internally.

Cal Code Y = Passive Device, or Calibration not required when used with other calibrated equipment.



2.3 99% Bandwidth

2.3.1 Specification Reference

ISED Canada: RSS-GEN 6.7

2.3.2 Equipment Under Test and Modification State

SN: 20260101, As shown in §1.5 with modification state “1”, as noted in §1.7.

2.3.3 Date of Test

26th June 2026

2.3.4 Test Method

The 99% occupied bandwidth was measured with the spectrum analyzer span set to fully display the emission. The RBW was set to 1% to 5% of the approximated bandwidth. The occupied 99% bandwidth was measured by using 99% bandwidth equipment function of the spectrum analyzer using a peak detector.

2.3.5 Environmental Conditions

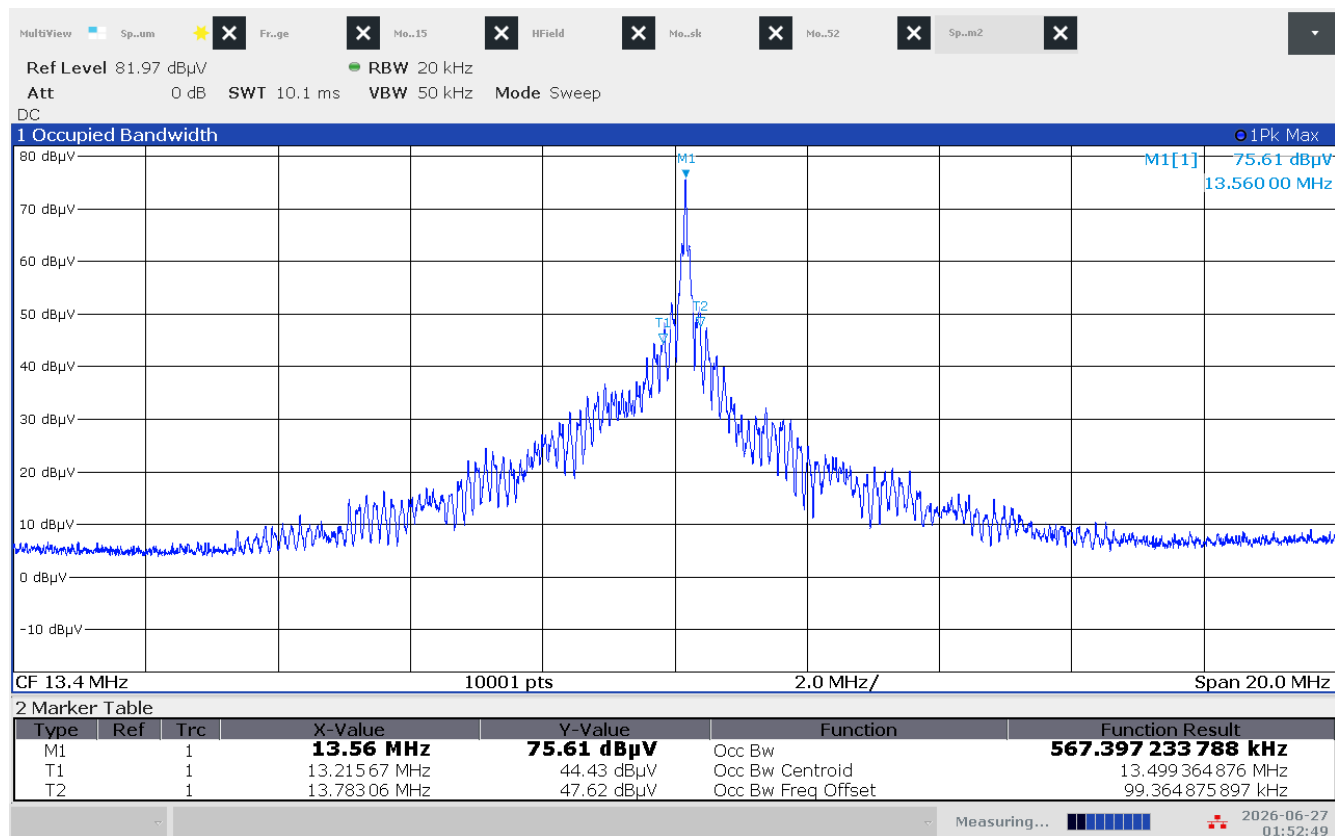
Ambient Temperature	23.4 °C
Relative Humidity	37%
Atmospheric Pressure	981 mbar



2.3.6 Test Results

120VAC/60Hz Powered Operating

Limit Clause ISD RSS-GEN 6.7



01:52:49 AM 06/27/2026

Figure 2.3.6-1 – 99% Bandwidth Test Results

Table 2.3.6-1 – 99% Bandwidth Test Results

Frequency (MHz)	99% Bandwidth (kHz)
13.560000	567.397



2.3.7 Test Location and Test Equipment Used

This test was carried out in the **Temperature Chamber** located in TÜV SÜD America, Inc., 141 14th Street NW, New Brighton, MN 55112, USA.

Device #	Manufacturer	Description	Model	Serial #	Cal Code	Cal Date	Cal Due
WRLE10515	EMCO/EMC Test	Near Field Probe	7405	7405-901	Y	N/A	N/A
WRLE10892	H-G	Cable, BNC 5M	EF142/11BNC/11BNC/5M	na	B	01/15/2026	01/15/2027
BEMC00002	US-Omega Engineering	Digital Thermometer	MDSS41-TC	5020074	G	09/02/2025	09/02/2026
NBLP11590	Russells	Russell Temp/Humidity	Temp/Humidity Chamber	06184873	Y	N/A	N/A
NBLE11810	Rohde & Schwarz	Signal Analyzer, 2 Hz-43 GHz, 2.92mm	FSW43	102394	G	09/30/2025	09/30/2026
TEMC00252	AC Power Corp	Programmable AC Power Supply	AFV-P-5000B	F122080022	Y	N/A	N/A
NBLE11974	Fluke	Digital Multimeter	614 - FLUKE - 17B+	66742932WS	G	07/30/2025	07/30/2026

Cal Code G = Calibration performed by an accredited outside source.

Cal Code B = Calibration verification performed internally.

Cal Code Y = Passive Device, or Calibration not required when used with other calibrated equipment.



2.4 Radiated Field Strength of Emissions within the 13.110-14.010 band

2.4.1 Specification Reference

FCC Sections: 15.225(a),(b),(c);
ISED Canada: RSS-210 Annex B.6(a)

2.4.2 Equipment Under Test and Modification State

SN: 20260101, As shown in §1.5 with modification state “1”, as noted in §1.7.

2.4.3 Date of Test

22nd & 23rd June 2026

2.4.4 Test Method

Radiated emissions tests were made over the frequency range of 13.110 to 14.010 MHz. For measurements below 30 MHz, the receive antenna height was set to 1 m and the EUT was rotated through 360 degrees. The resolution bandwidth was set to 200 Hz below 150 kHz and to 9 kHz above 150 kHz.

2.4.5 Environmental Conditions

Ambient Temperature	22.9-23.5 °C
Relative Humidity	35-39 %
Atmospheric Pressure	982-988 mBar

2.4.6 Additional Observations

Measurements were made using BAT-EMC (2024.0.9.5) automated software. The reported level is the actual level with all the correction factors factored in. Correction Factor column is for informational purposes only.



2.4.7 Test Results

120VAC/60Hz AC Powered Operating

Limit Clause FCC Sections 15.225 (a),(b),(c), ISED Canada: RSS-210 Annex B.6 (a)

Frequency (MHz)	Field Strength (microvolts/meter)	Field Strength (dBuV/m)	Measurement Distance (meters)
13.110 – 13.410	106	40.5	30
13.410 – 13.553	334	50.5	30
13.553 – 13.567	15,848	84	30
13.567 – 13.710	334	50.5	30
13.710 – 14.010	106*	40.5	30

Radiated measurements were performed at a distance closer than 30m as required, according to Part 15.209. Therefore, a correction factor was applied to account for propagation loss at the specified distance. The propagation loss was determined by using the square of an inverse linear distance extrapolation factor (40dB/decade) according to 15.31. A sample calculation of the distance correction factor is shown below for limits expressed at a 30m measurement distance.

Distance correction factor (30m Specified Test Distance) = $40 * \log \left(\frac{\text{Test Distance}}{30} \right) = 40 * \log \left(\frac{3}{30} \right) = -40 \text{ dB}$

Test Summary:

1. The Radio was configured to be transmitted at Max TX Power.
2. EUT was tested with the Receive Loop Antenna in 3 different Orientations in 9k-30MHz Range.
3. The measurements were performed at a test distance of 3m.
4. The limits are corrected using a distance correction factor of 40dB/decade as described above.
5. All other emissions were attenuated below the noise floor of the measurement equipment.

Test Result: Pass

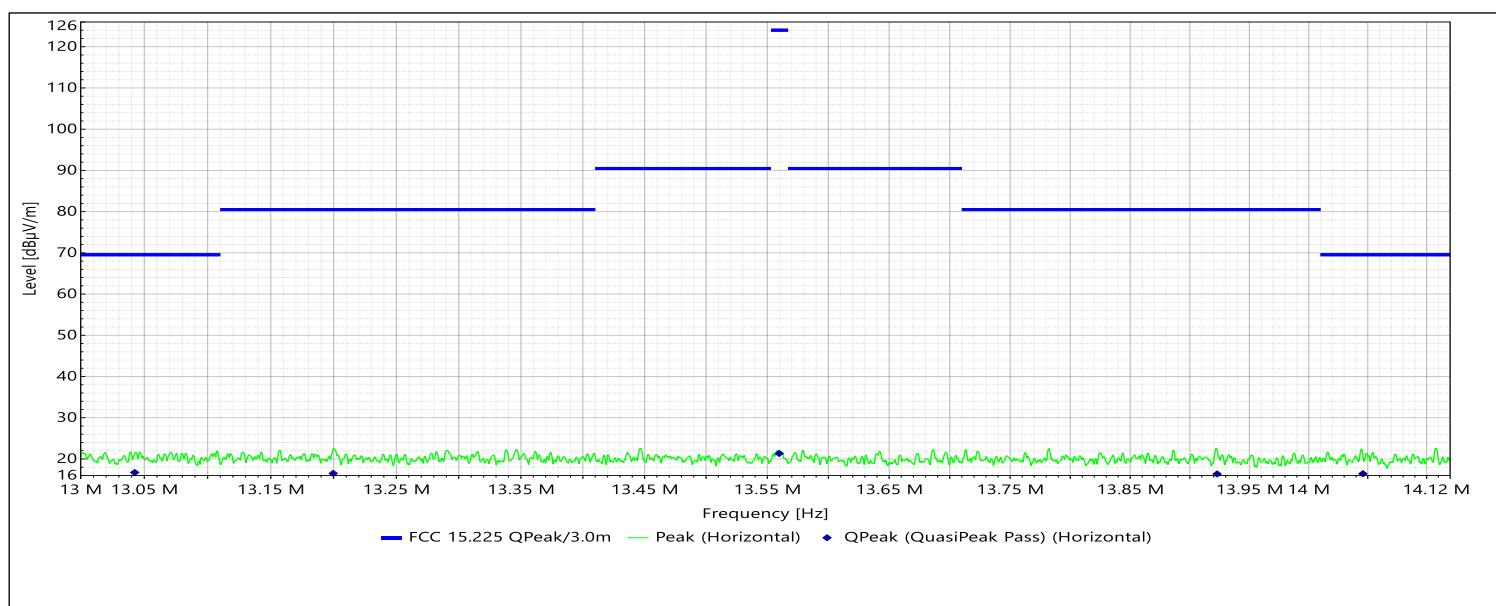


FCC 15.225 Emission Mask – 13 MHz- 14.12 MHz - Vertical Co-Planar

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
13 MHz - 14.12 MHz	3m	Vertical Co-Planar	9 kHz	6001 Pts	Auto

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
STS	Duranta K. Barua	6/23/2026	24.5 °C	33 %	966 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
RFID	13.56 MHz	N/A	TX	X-axis



Limit:
FCC Part 15.225/FCC 15.225

Test Results:
Pass

Figure 2.4.7-1 – Radiated Field Strength of Emissions within the 13.110-14.010 MHz band

Table 2.4.7-1 – Radiated Field Strength of Emissions within the 13.110-14.010 band

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
13.042	16.72	69.54	-52.82	260.00	1.00	Vertical Co-Planar	Pass
13.200	16.50	80.50	-64.00	261.00	1.00	Vertical Co-Planar	Pass
13.560	21.32	124.01	-102.69	288.00	1.00	Vertical Co-Planar	Pass
13.923	16.37	80.50	-64.13	71.00	1.00	Vertical Co-Planar	Pass
14.046	16.43	69.54	-53.11	4.00	1.00	Vertical Co-Planar	Pass

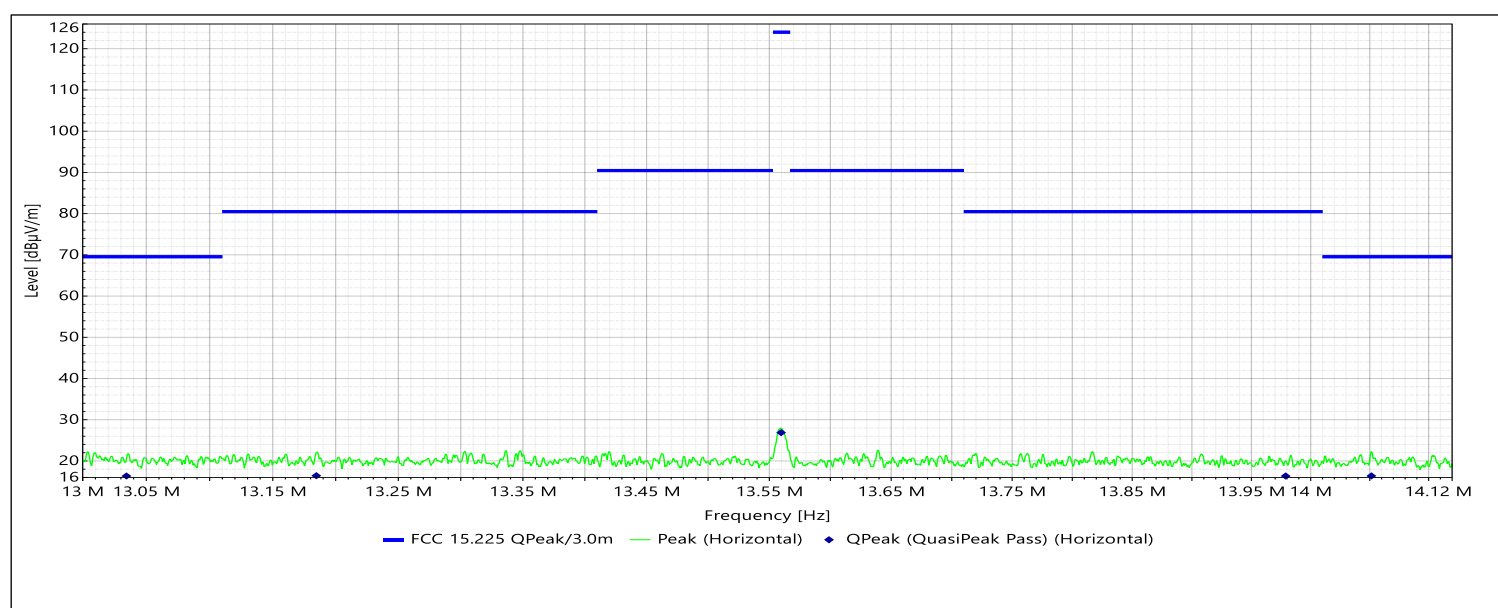


FCC 15.225 Emission Mask – 13 MHz- 14.12 MHz - Vertical Co-Axial

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
13 MHz - 14.12 MHz	3m	Vertical Co-Axial	9 kHz	6001 Pts	Auto

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
STS	Duranta K. Barua	6/23/2026	23.4 °C	31 %	968 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
RFID	13.56 MHz	N/A	TX	X-axis



Limit:
FCC Part 15.225/FCC 15.225

Test Results:
Pass

Figure 2.4.7-2 – Radiated Field Strength of Emissions within the 13.110-14.010 MHz band

Table 2.4.7-2 – Radiated Field Strength of Emissions within the 13.110-14.010 band

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
13.034	16.35	69.54	-53.19	343.00	1.00	Vertical Co-Axial	Pass
13.185	16.42	80.50	-64.08	150.00	1.00	Vertical Co-Axial	Pass
13.560	26.87	124.01	-97.14	237.00	1.00	Vertical Co-Axial	Pass
13.979	16.35	80.50	-64.15	235.00	1.00	Vertical Co-Axial	Pass
14.051	16.37	69.54	-53.17	54.00	1.00	Vertical Co-Axial	Pass

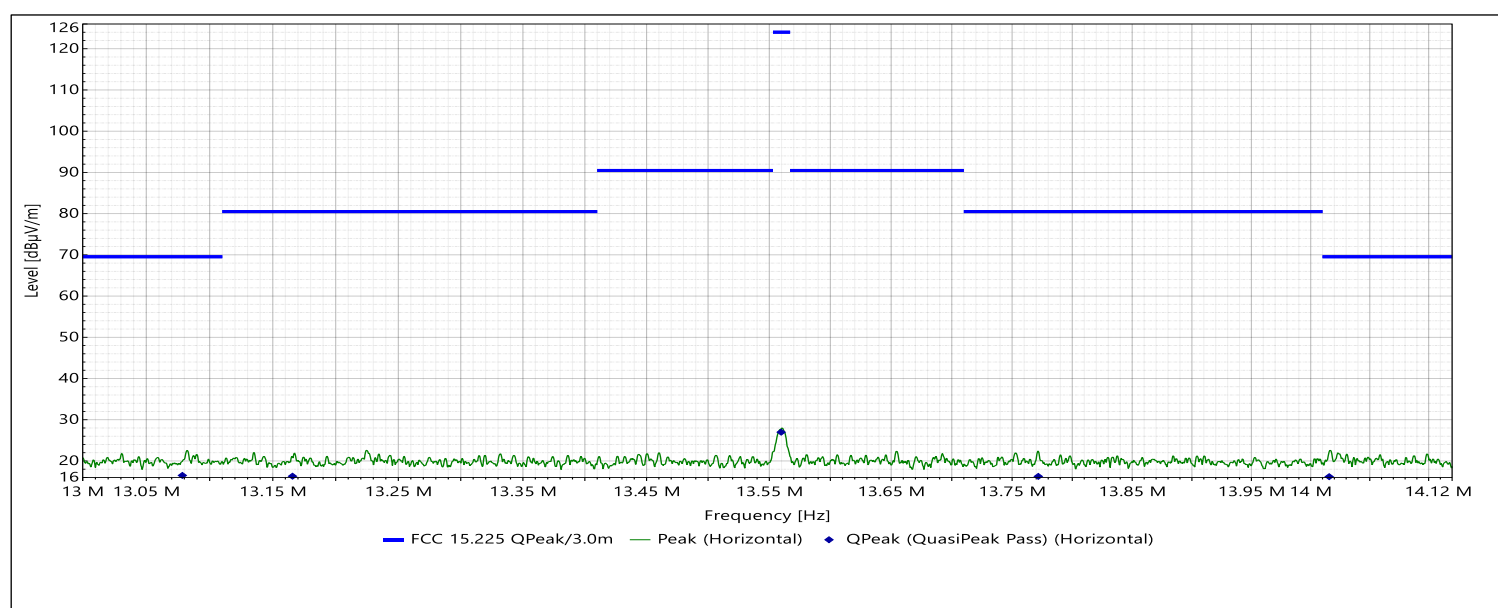


FCC 15.225 Emission Mask – 13 MHz- 14.12 MHz – Horizontal Co-Planar

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
13 MHz - 14.12 MHz	3m	Horizontal Co-Planar	9 kHz	6001 Pts	Auto

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
STS	Duranta K. Barua	6/23/2026	23.5 °C	32 %	966 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
RFID	13.56 MHz	N/A	TX	X-axis



Limit: FCC Part 15.225/FCC 15.225
Test Results: Pass

Figure 2.4.7-3 – Radiated Field Strength of Emissions within the 13.110-14.010 MHz band

Table 2.4.7-3 – Radiated Field Strength of Emissions within the 13.110-14.010 band

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
13.078	16.49	69.54	-53.05	291.00	1.00	Horizontal Co-Planar	Pass
13.166	16.30	80.50	-64.20	325.00	1.00	Horizontal Co-Planar	Pass
13.560	26.98	124.01	-97.03	34.00	1.00	Horizontal Co-Planar	Pass
13.772	16.25	80.50	-64.25	4.00	1.00	Horizontal Co-Planar	Pass
14.016	16.19	69.54	-53.35	308.00	1.00	Horizontal Co-Planar	Pass



2.4.8 Test Location and Test Equipment Used

This test was carried out in the **STS** located in
TÜV SÜD America, Inc., 141 14th Street NW, New Brighton, MN 55112, USA.

Device #	Manufacturer	Description	Model	Serial #	Cal Code	Cal Date	Cal Due
WRLE02418	EMCO/EMC Test	Antenna, Loop	6502	2215	G	03/18/2025	03/18/2027
WRLE10998	Rohde & Schwarz	Receiver, 20 Hz-26.5 GHz	ESU 26	100379	G	09/02/2025	09/02/2026

Cal Code G = Calibration performed by an accredited outside source.

Cal Code B = Calibration verification performed internally.

Cal Code Y = Passive Device, or Calibration not required when used with other calibrated equipment.



2.5 Radiated Field Strength of Emissions outside of the 13.110-14.010 band

2.5.1 Specification Reference

FCC Sections: 15.225(d), 15.209;
ISED Canada: RSS-210 7.2, RSS-210 Annex B.6(a), RSS-GEN 8.9

2.5.2 Equipment Under Test and Modification State

SN: 20260101, As shown in §1.5 with modification state “1”, as noted in §1.7.

2.5.3 Date of Test

22nd – 24th June 2026

2.5.4 Test Method

Radiated emissions tests were made over the frequency range of 9 kHz to 2 GHz, 10 times the highest fundamental frequency. Each emission was compared to the radiated emission limits as defined in Section 15.209.

For measurements below 30 MHz, the receive antenna height was set to 1 m and the EUT was rotated through 360 degrees. The resolution bandwidth was set to 200 Hz below 150 kHz and to 9 kHz above 150 kHz.

The EUT was rotated through 360° and the receive antenna height was varied from 1m to 4m so that the maximum radiated emissions level would be detected. For frequencies below 1000 MHz, quasi-peak measurements were made using a resolution bandwidth RBW of 120 kHz and a video bandwidth VBW of 300 kHz. For frequencies above 1000 MHz, peak measurements are made with RBW of 1 MHz and VBW of 3 MHz. Average measurements are performed in the linear scale using VBW of 30 Hz.

2.5.5 Duty Cycle Correction

The EUT was configured to transmit at 100% duty cycle during the evaluation corresponding to a Duty Cycle Correction Factor of $20 \cdot \log(100/100) = 0$ dB. No duty cycle correction factor was applied to the average measurements for the corrected average results.

2.5.6 Environmental Conditions

Ambient Temperature	22.9-24.3°C
Relative Humidity	27-35%
Atmospheric Pressure	968-985mbar

2.5.7 Additional Observations

Measurements were made using BAT-EMC (2024.0.9.5) automated software. The reported level is the actual level with all the correction factors factored in. Correction Factor column is for informational purposes only.



2.5.8 Test Results

120VAC/60Hz Powered Operating

Limit Clause FCC Sections 15.209, 15.225(d), ISCED Canada: RSS-210 7.2, RSS-GEN 8.9

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009-0.490	2400/F(kHz)	300
0.4090-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Radiated measurements were performed at a distance closer than 300 meters and 30m as required, according to Part 15.209. Therefore, a correction factor was applied to account for propagation loss at the specified distance. The propagation loss was determined by using the square of an inverse linear distance extrapolation factor (40dB/decade) according to 15.31. A sample calculation of the distance correction factor is shown below for limits expressed at a 300m measurement distance and a 30m measurement distance.

Distance correction factor (300m Specified Test Distance) = $40 \cdot \log \left(\frac{\text{Test Distance}}{300} \right) = 40 \cdot \log \left(\frac{3}{300} \right) = -80 \text{ dB}$

Distance correction factor (30m Specified Test Distance) = $40 \cdot \log \left(\frac{\text{Test Distance}}{30} \right) = 40 \cdot \log \left(\frac{3}{30} \right) = -40 \text{ dB}$

Limit Clause FCC 47 CFR Part 15B, Clause 15.109, ISCED ICES-003, Clause 3.2.2

Frequency Range (MHz)	Class A (3 m) Quasi-peak (dBμV/m)
30 – 88	49.5
88 – 216	54.0
216 – 960	56.9
>960	60.0

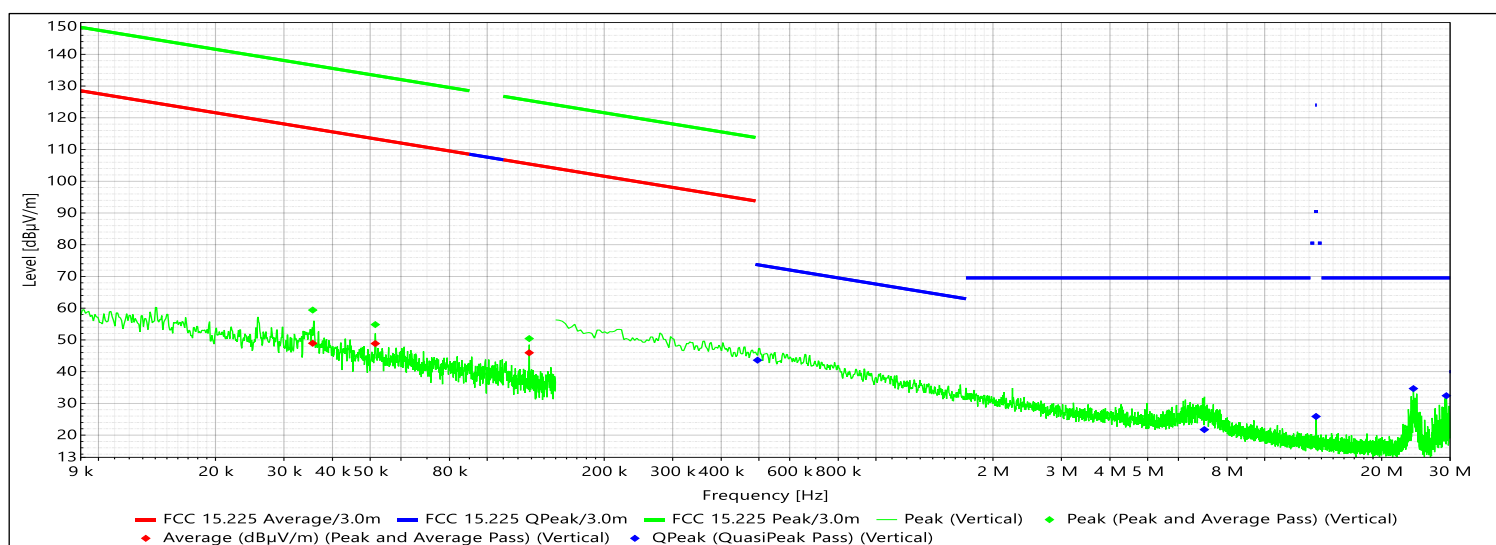


Spurious Emissions 9kHz-30MHz - FCC 15.225 [Vertical Co-Axial]

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
9 kHz - 150 kHz	3m	Vertical Co-Axial	200 Hz	1601 Pts	5 ms/MHz
150 kHz - 30 MHz	3m	Vertical Co-Axial	9 kHz	10001 Pts	5 ms/MHz

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
STS	Duranta K. Barua	6/23/2026	24.5 °C	33 %	966 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
RFID	13.56 MHz	N/A	TX	X-axis



Limit: FCC Part 15.225/FCC 15.225
Test Results: Pass

Figure 2.5.8-1 – Transmitter Radiated Spurious Emissions Plot 9kHz-30MHz

Table 2.5.8-1 – Transmitter Radiated Spurious Emissions Final Measurement 9kHz-30MHz

Frequency (MHz)	Peak Level (dBμV/m)	Peak Limit (dBμV/m)	Peak Margin (dB)	Average Level (dBμV/m)	Average Limit (dBμV/m)	Average Margin (dB)	QP Level (dBμV/m)	QP Limit (dBμV/m)	QPMargin (dB)	Azimuth (°)	Height (m)	Polarity	Result
0.036	59.41	136.57	-77.16	48.94	116.57	-67.63	-	-	-	283.00	1.00	Vertical	Pass
0.052	54.83	133.36	-78.52	48.85	113.36	-64.51	-	-	-	59.00	1.00	Vertical	Pass
0.128	50.42	125.44	-75.02	45.95	105.44	-59.49	-	-	-	0.00	1.00	Vertical	Pass
0.496	-	-	-	-	-	-	43.61	73.69	-30.08	274.00	1.00	Vertical	Pass
6.996	-	-	-	-	-	-	21.73	69.54	-47.81	65.00	1.00	Vertical	Pass
13.560	-	-	-	-	-	-	25.88	124.01	-98.13	195.00	1.00	Vertical	Pass
24.137	-	-	-	-	-	-	34.66	69.54	-34.88	291.00	1.00	Vertical	Pass
29.341	-	-	-	-	-	-	32.42	69.54	-37.12	139.00	1.00	Vertical	Pass

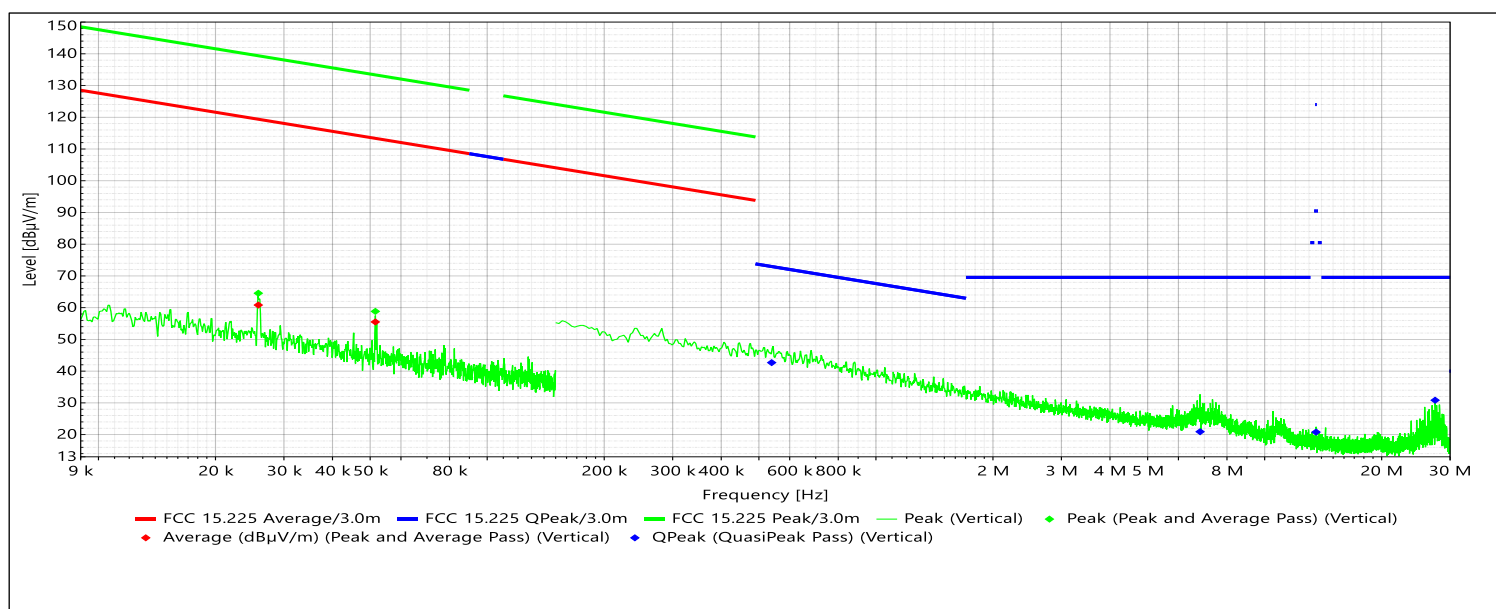


Spurious Emissions 9kHz-30MHz - FCC 15.225 [Vertical Co-Planar]

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
9 kHz - 150 kHz	3m	Vertical Co-Planar	200 Hz	1601 Pts	5 ms/MHz
150 kHz - 30 MHz	3m	Vertical Co-Planar	9 kHz	10001 Pts	5 ms/MHz

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
STS	Duranta K. Barua	6/23/2026	24.5 °C	33 %	966 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
RFID	13.56 MHz	N/A	TX	X-axis



Limit: FCC Part 15.225/FCC 15.225
Test Results: Pass

Figure 2.5.8-2 – Transmitter Radiated Spurious Emissions Plot 9kHz-30MHz

Table 2.5.8-2 – Transmitter Radiated Spurious Emissions Final Measurement 9kHz-30MHz

Frequency (MHz)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)	Average Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)	QP Level (dBuV/m)	QP Limit (dBuV/m)	QPMargin (dB)	Azimuth (°)	Height (m)	Polarity	Result
0.026	64.55	139.39	-74.84	60.82	119.39	-58.57	-	-	-	264.00	1.00	Vertical	Pass
0.052	58.83	133.36	-74.52	55.50	113.36	-57.85	-	-	-	149.00	1.00	Vertical	Pass
0.539	-	-	-	-	-	-	42.68	72.99	-30.31	169.00	1.00	Vertical	Pass
6.823	-	-	-	-	-	-	20.91	69.54	-48.63	81.00	1.00	Vertical	Pass
13.560	-	-	-	-	-	-	20.79	124.01	-103.22	305.00	1.00	Vertical	Pass
27.450	-	-	-	-	-	-	30.83	69.54	-38.71	0.00	1.00	Vertical	Pass

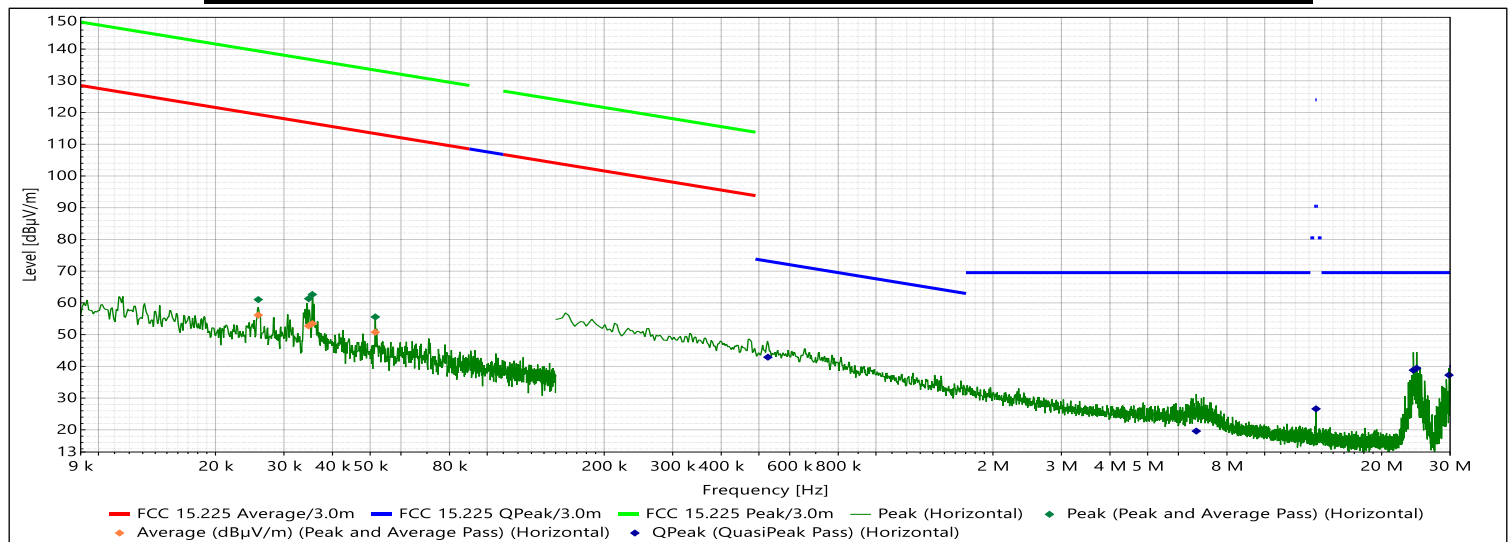


Spurious Emissions 9kHz-30MHz - FCC 15.225 [Horizontal Co-Planar]

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
9 kHz - 150 kHz	3m	Horizontal Co-Planar	200 Hz	1601 Pts	5 ms/MHz
150 kHz - 30 MHz	3m	Horizontal Co-Planar	9 kHz	10001 Pts	5 ms/MHz

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
STS	Duranta K. Barua	6/23/2026	24.5 °C	33 %	966 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
RFID	13.56 MHz	N/A	TX	X-axis



Limit: FCC Part 15.225/FCC 15.225
Test Results: Pass

Figure 2.5.8-3 – Transmitter Radiated Spurious Emissions Plot 9kHz-30MHz

Table 2.5.8-3 – Transmitter Radiated Spurious Emissions Final Measurement 9kHz-30MHz

Frequency (MHz)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)	Average Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)	QP Level (dBuV/m)	QP Limit (dBuV/m)	QPMargin (dB)	Azimuth (°)	Height (m)	Polarity	Result
0.026	61.05	139.39	-78.35	56.15	119.39	-63.24	-	-	-	268.00	1.00	Horizontal	Pass
0.035	61.33	136.79	-75.46	52.74	116.79	-64.05	-	-	-	258.00	1.00	Horizontal	Pass
0.035	62.65	136.59	-73.94	53.47	116.59	-63.12	-	-	-	254.00	1.00	Horizontal	Pass
0.052	55.58	133.36	-77.77	50.76	113.36	-62.60	-	-	-	358.00	1.00	Horizontal	Pass
0.527	-	-	-	-	-	-	42.90	73.18	-30.28	254.00	1.00	Horizontal	Pass
6.672	-	-	-	-	-	-	19.60	69.54	-49.94	62.00	1.00	Horizontal	Pass
13.560	-	-	-	-	-	-	26.61	124.01	-97.40	27.00	1.00	Horizontal	Pass
24.134	-	-	-	-	-	-	38.80	69.54	-30.74	268.00	1.00	Horizontal	Pass
24.607	-	-	-	-	-	-	39.41	69.54	-30.13	321.00	1.00	Horizontal	Pass
29.812	-	-	-	-	-	-	37.25	69.54	-32.29	127.00	1.00	Horizontal	Pass

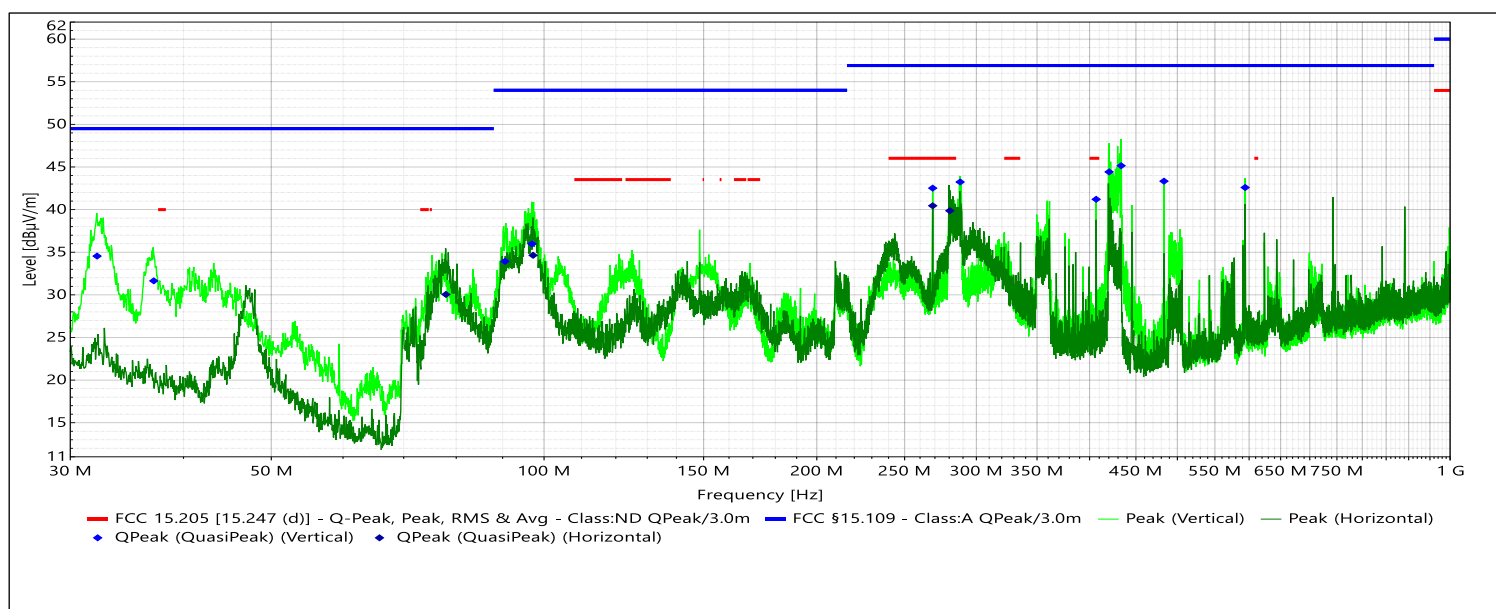


Radiated Spurious Emissions 30M-1GHz

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	120 kHz	20001 Pts	Auto
30 MHz - 1 GHz	3m	Horizontal	120 kHz	20001 Pts	Auto

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
STS	Duranta K. Barua	6/22/2026	23.3 °C	36 %	987 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
RFID	13.56 MHz	N/A	TX	X-axis



Limit:
FCC Part 15/FCC §15.109 Class A
FCC Part 15/FCC §15.209

Test Results:
Pass

Figure 2.5.8-4 – Transmitter Radiated Spurious Emissions Plot 30MHz – 1GHz

Table 2.5.8-4 – Transmitter Radiated Spurious Emissions Final Measurement 30 MHz – 1GHz

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
32.114	34.55	40.00	-5.45	69.00	1.02	Vertical	Pass
37.093	31.64	40.00	-8.36	356.00	1.00	Vertical	Pass
90.546	33.93	43.50	-9.57	73.00	1.00	Vertical	Pass
96.996	35.98	43.50	-7.52	94.00	1.00	Vertical	Pass
77.935	30.05	40.00	-9.95	121.00	2.50	Horizontal	Pass



97.258	34.64	43.50	-8.86	121.00	1.83	Horizontal	Pass
268.490	42.52	46.00	-3.48	186.00	1.72	Vertical	Pass
406.790	41.21	46.00	-4.79	360.00	1.00	Vertical	Pass
268.490	40.45	46.00	-5.55	111.00	1.04	Horizontal	Pass
280.450	39.87	46.00	-6.13	108.00	1.00	Horizontal	Pass
Beyond the 10th Harmonic outside the Restricted Bands							
287.901	43.24	56.90	-13.66	127.00	1.33	Vertical	Pass
420.388	44.42	56.90	-12.48	138.00	1.90	Vertical	Pass
433.417	45.15	56.90	-11.75	179.00	1.00	Vertical	Pass
483.282	43.34	56.90	-13.56	161.00	1.00	Vertical	Pass
594.030	42.59	56.90	-14.31	44.00	1.00	Vertical	Pass

The limits of FCC 15.209 were applied up to the 10th harmonics of the fundamental. Beyond the 10th harmonics, the limits of FCC 15.209 were applied within the restricted bands while the limits applicable to the digital device, FCC Part 15.109 (b), were applied outside of the restricted bands.

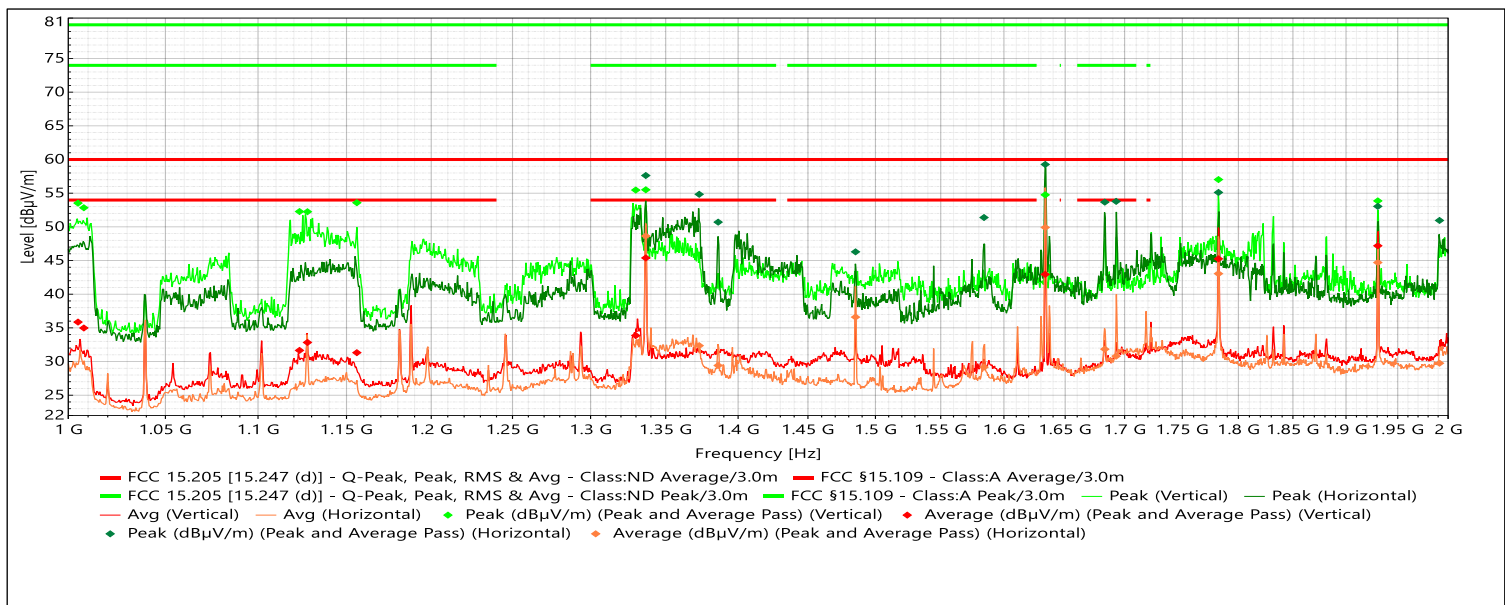


Radiated Spurious Emissions 1-2GHz

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
1 GHz - 2 GHz	3m	Vertical	1 MHz	2001 Pts	Auto
1 GHz - 2 GHz	3m	Horizontal	1 MHz	2001 Pts	Auto

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
STS	Duranta K. Barua	6/24/2026	22.9 °C	34 %	974 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
RFID	13.56 MHz	N/A	TX	X-axis



Limit:
FCC Part 15/FCC §15.109 Class A
FCC Part 15/FCC §15.209

Test Results:
Pass

Figure 2.5.8-5 – Transmitter Radiated Spurious Emissions Plot 1 – 2 GHz

Table 2.5.8-5 – Transmitter Radiated Spurious Emissions Final Measurement 1 – 2 GHz

Frequency (MHz)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)	Average Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
1004.899	53.52	73.98	-20.45	35.86	53.98	-18.12	263.00	1.00	Vertical	Pass
1007.851	52.84	73.98	-21.14	34.98	53.98	-19.00	263.00	1.00	Vertical	Pass
1123.170	52.28	73.98	-21.70	31.65	53.98	-22.33	275.00	2.67	Vertical	Pass
1127.659	52.24	73.98	-21.73	32.83	53.98	-21.15	283.00	2.50	Vertical	Pass
1155.994	53.58	73.98	-20.40	31.32	53.98	-22.66	276.00	2.50	Vertical	Pass



1329.833	55.46	73.98	-18.52	33.86	53.98	-20.12	17.00	1.33	Vertical	Pass
1336.569	55.50	73.98	-18.48	45.38	53.98	-8.60	269.00	2.50	Vertical	Pass
1336.569	57.62	73.98	-16.36	48.64	53.98	-5.34	289.00	2.50	Horizontal	Pass
1372.917	54.83	73.98	-19.15	32.36	53.98	-21.62	289.00	2.50	Horizontal	Pass
1386.048	50.70	73.98	-23.28	29.42	53.98	-24.56	290.00	2.50	Horizontal	Pass
1485.077	46.29	73.98	-27.69	36.60	53.98	-17.38	220.00	3.39	Horizontal	Pass
1584.093	51.38	73.98	-22.59	29.17	53.98	-24.81	257.00	2.50	Horizontal	Pass
1683.200	53.67	73.98	-20.31	31.84	53.98	-22.14	325.00	2.50	Horizontal	Pass
1692.789	53.78	73.98	-20.20	30.80	53.98	-23.18	319.00	2.40	Horizontal	Pass
Beyond the 10th Harmonic outside the Restricted Bands										
1633.583	54.75	80.00	-25.25	42.94	60.00	-17.06	192.00	3.83	Vertical	Pass
1782.091	57.02	80.00	-22.98	45.25	60.00	-14.75	232.00	2.98	Vertical	Pass
1930.599	53.86	80.00	-26.14	47.19	60.00	-12.81	245.00	1.02	Vertical	Pass
1633.583	59.27	80.00	-20.73	49.91	60.00	-10.09	276.00	1.24	Horizontal	Pass
1782.091	55.11	80.00	-24.89	43.05	60.00	-16.95	205.00	3.98	Horizontal	Pass
1930.599	53.04	80.00	-26.96	44.70	60.00	-15.30	85.00	2.48	Horizontal	Pass
1991.372	50.95	80.00	-29.05	29.75	60.00	-30.25	11.00	2.50	Horizontal	Pass

The limits of FCC 15.209 were applied up to the 10th harmonics of the fundamental. Beyond the 10th harmonics, the limits of FCC 15.209 were applied within the restricted bands while the limits applicable to the digital device, FCC Part 15.109 (b), were applied outside of the restricted bands.



2.5.9 Test Location and Test Equipment Used

This test was carried out in the **STS** located in
TÜV SÜD America, Inc., 141 14th Street NW, New Brighton, MN 55112, USA.

Device #	Manufacturer	Description	Model	Serial #	Cal Code	Cal Date	Cal Due
NBLE02667	Hewlett-Packard	Preamplifier, 0.1-1300 MHz	8447D	1616A00688	B	01/13/2026	01/13/2027
NBLE11460	ETS-Lindgren	Antenna, Horn 1-18 GHz	3117	155005	G	03/17/2025	03/17/2027
WRLE02418	EMCO/EMC Test	Antenna, Loop	6502	2215	G	03/18/2025	03/18/2027
WRLE10998	Rohde & Schwarz	Receiver, 20 Hz-26.5 GHz	ESU 26	100379	G	09/02/2025	09/02/2026
NBLE11578	ETS-Lindgren	Antenna, BiConiLog	3142C	00079889	G	11/05/2024	11/05/2026
NBLE11626	Com-Power Corp.	Preamplifier, 500 MHz-18 GHz	PAM-118A	18040020	B	01/17/2026	01/17/2027

Cal Code G = Calibration performed by an accredited outside source.

Cal Code B = Calibration verification performed internally.

Cal Code Y = Passive Device, or Calibration not required when used with other calibrated equipment.



2.6 Power Line Conducted Emissions

2.6.1 Specification Reference

FCC: Section 15.207
ISED Canada; RSS-GEN 8.8

2.6.2 Equipment Under Test and Modification State

SN: 20260101, As shown in §1.5 with modification state “1”, as noted in §1.7.

2.6.3 Date of Test

6/25/2026

2.6.4 Test Method

ANSI C63.10 section 6.2 was the guiding document for this evaluation. Conducted emissions were performed from 150 kHz to 30 MHz with the spectrum analyzer's resolution bandwidth set to 9 kHz and the video bandwidth set to 30 kHz. The calculation for the conducted emissions is as follows:

Corrected Reading = Analyzer Reading + LISN Loss + Cable Loss
Margin = Applicable Limit - Corrected Reading

2.6.5 Environmental Conditions

Ambient Temperature	24 °C
Relative Humidity	35 %
Atmospheric Pressure	986 mbar

2.6.6 Additional Observations

Measurements were made using BAT-EMC (2024.0.9.5) automated software. The reported level is the actual level with all the correction factors factored in. Correction Factor column is for informational purposes only.



2.6.7 Test Results

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

Test Summary:

1. EUT operated as intended before, during, and after testing.
2. The Radio was configured to be transmitted at Max TX Power.

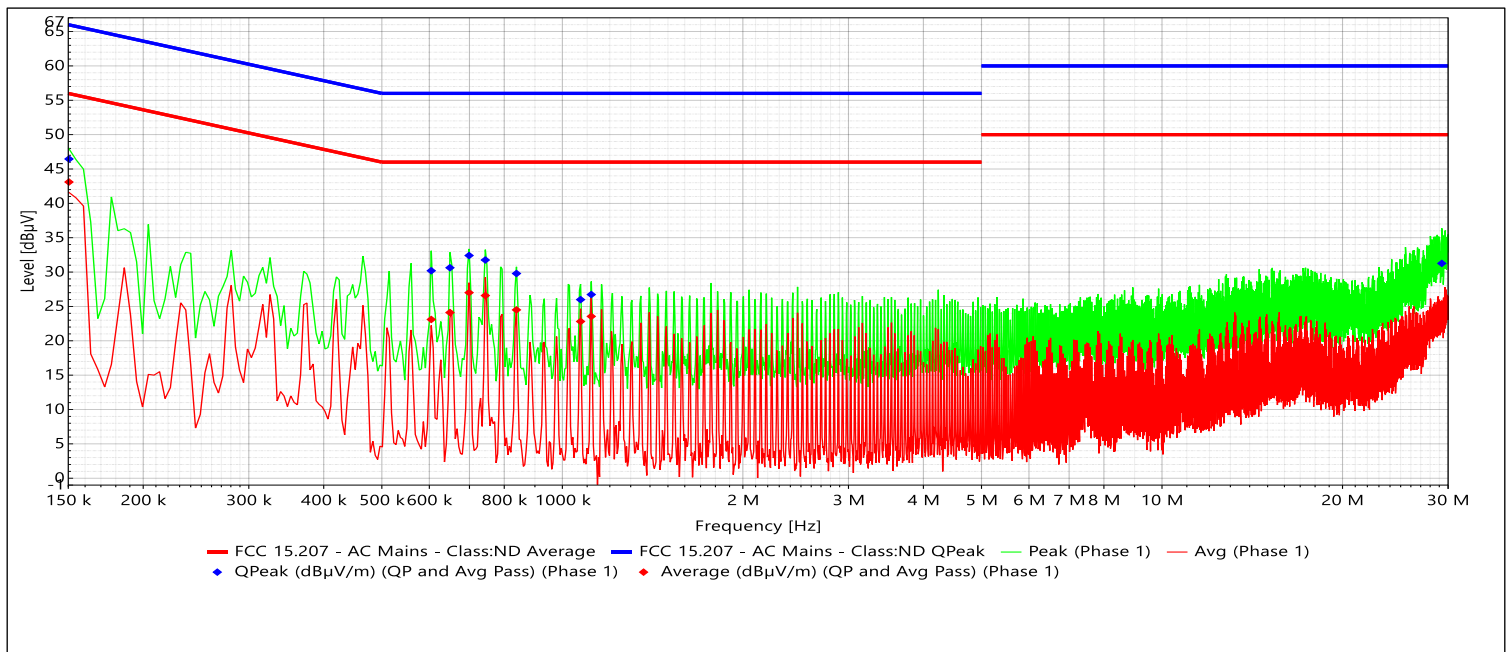
Test Result: Pass

See data below for detailed results.



L1 [120VAC, 60Hz]

Frequency Range	Line Tested	RBW	Step Size	Sweep Time
150 kHz - 30 MHz	L1	9 kHz	4.5 kHz	5 ms/MHz



Limit: FCC Part 15/FCC 15.207 - AC Mains
Test Date: 6/25/2026
Test Results: Pass

Figure 2.6.7-1 – Power Line Conducted Emissions Plot – L1

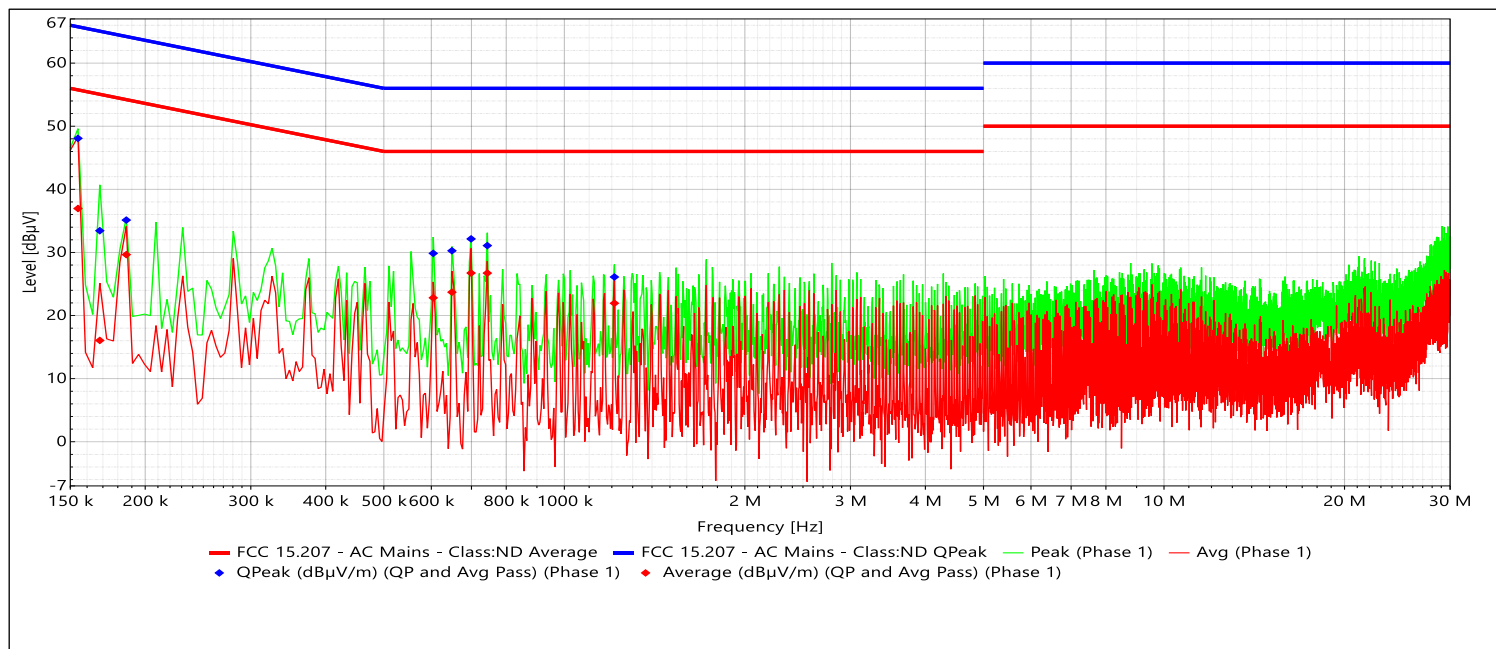
Table 2.6.7-1 – Power Line Conducted Emissions Results – L1

Frequency (MHz)	Average (dBμV)	Average Limit (dBμV)	Average Margin (dB)	QPeak (dBμV)	QPeak Limit (dBμV)	QPeak Margin (dB)	Result
0.150	43.10	56.00	-12.90	46.45	66.00	-19.55	Pass
0.605	23.10	46.00	-22.90	30.19	56.00	-25.81	Pass
0.650	24.11	46.00	-21.89	30.63	56.00	-25.37	Pass
0.699	27.01	46.00	-18.99	32.41	56.00	-23.59	Pass
0.744	26.58	46.00	-19.42	31.76	56.00	-24.24	Pass
0.839	24.50	46.00	-21.50	29.79	56.00	-26.21	Pass
1.073	22.81	46.00	-23.19	25.99	56.00	-30.01	Pass
1.118	23.55	46.00	-22.45	26.73	56.00	-29.27	Pass
29.283	25.39	50.00	-24.61	31.26	60.00	-28.74	Pass



L2 [120VAC, 60Hz]

Frequency Range	Line Tested	RBW	Step Size	Sweep Time
150 kHz - 30 MHz	L2	9 kHz	4.5 kHz	Auto



Limit: FCC Part 15/FCC 15.207 - AC Mains **Test Date:** 6/25/2026 **Test Results:** Pass

Figure 2.6.7-2 – Power Line Conducted Emissions Plot – L2

Table 2.6.7-2 – Power Line Conducted Emissions Results – L2

Frequency (MHz)	Average (dBμV)	Average Limit (dBμV)	Average Margin (dB)	QPeak (dBμV)	QPeak Limit (dBμV)	QPeak Margin (dB)	Result
0.155	36.96	55.75	-18.79	48.08	65.75	-17.68	Pass
0.168	16.05	55.06	-39.00	33.44	65.06	-31.62	Pass
0.186	29.65	54.21	-24.56	35.13	64.21	-29.09	Pass
0.605	22.81	46.00	-23.19	29.85	56.00	-26.15	Pass
0.650	23.70	46.00	-22.30	30.26	56.00	-25.74	Pass
0.699	26.73	46.00	-19.27	32.15	56.00	-23.85	Pass
0.744	26.72	46.00	-19.28	31.08	56.00	-24.92	Pass
1.212	21.94	46.00	-24.06	26.11	56.00	-29.89	Pass



2.6.8 Test Location and Test Equipment Used

This test was carried out in the **GRP2** located in
TÜV SÜD America, Inc., 141 14th Street NW, New Brighton, MN 55112, USA.

Device #	Manufacturer	Description	Model	Serial #	Cal Code	Cal Date	Cal Due
NBLE10459	Weinschel	Attenuator, 20 dB	34-20-34	BP1557	B	03/26/2026	03/25/2027
WRLE10944	Fischer Custom Comm.	LISN	FCC-LISN-50-25-2-10	120308	G	07/09/2025	07/09/2027
NBLE11592	Rohde & Schwarz	Receiver, 10 Hz-7 GHz	ESR7	101771	G	06/03/2025	07/06/2026

Cal Code G = Calibration performed by an accredited outside source.

Cal Code B = Calibration verification performed internally.

Cal Code Y = Passive Device, or Calibration not required when used with other calibrated equipment.



2.7 Frequency Tolerance of Carrier Signal

2.7.1 Specification Reference

FCC Section 15.225(e);
ISED Canada RSS-210 Annex B.6(b)

2.7.2 Equipment Under Test and Modification State

SN: 20260101, As shown in §1.5 with modification state “1”, as noted in §1.7.

2.7.3 Date of Test

6/27/2024 to 6/30/2024

2.7.4 Test Method

Frequency stability measurements were performed by operating the EUT in continuous transmit mode while monitoring the carrier frequency with a calibrated spectrum analyzer. The EUT was evaluated at the required temperature and supply voltage conditions after thermal stabilization at each test point. The measured carrier frequency was recorded and verified to remain within the 13.553 MHz to 13.567 MHz operating band specified by FCC §15.225(e). Measurements were performed in accordance with the applicable procedures of ANSI C63.10.

2.7.5 Environmental Conditions

Ambient Temperature	23 °C
Relative Humidity	37 %
Atmospheric Pressure	981 mbar



2.7.6 Test Results

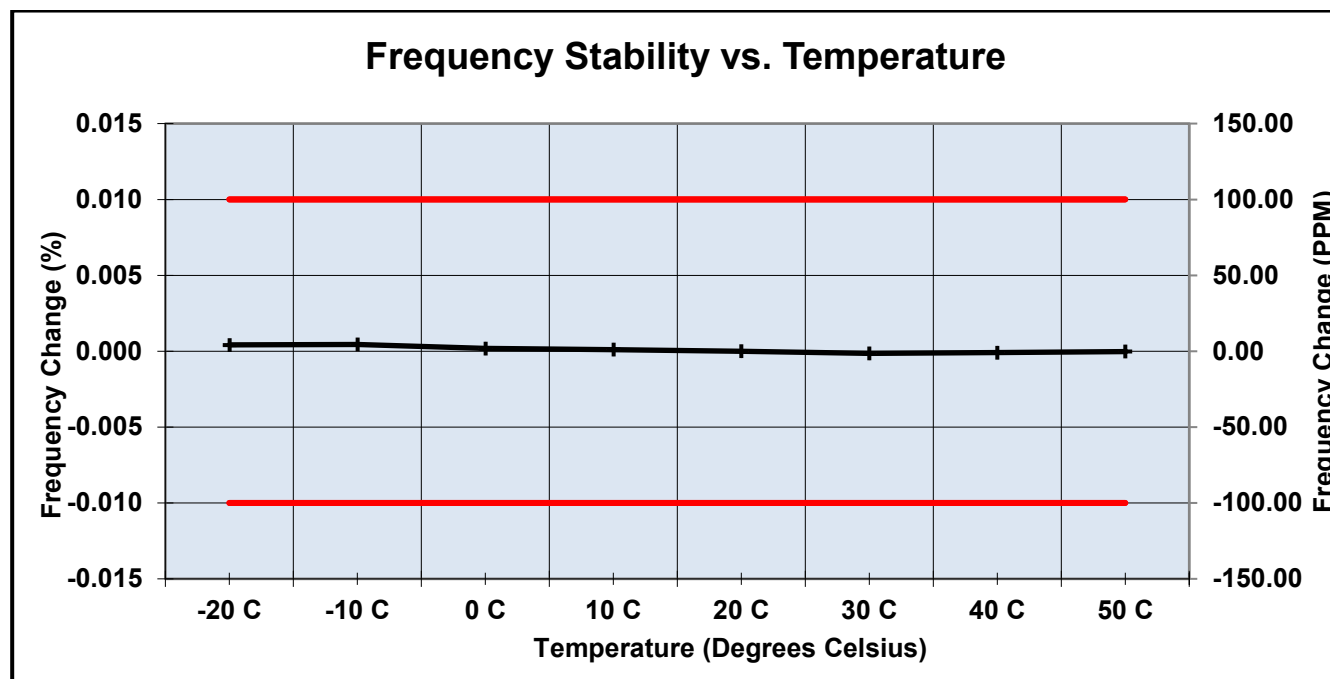


Figure 2.7.6-1 – Frequency Tolerance of Carrier Signal Result Chart

Table 2.7.6-1 – Frequency Tolerance of Carrier Signal Test Result

Temperature °C	Frequency (MHz)	Frequency Error		Voltage (%)	Voltage (VAC)
		(%)	PPM		
-20 C	13.5597545	0.00042	4.15201	100%	120.00
-10 C	13.559758	0.00044	4.43225	100%	120.00
0 C	13.559723	0.00018	1.80682	100%	120.00
10 C	13.559713	0.00011	1.06935	100%	120.00
20 C	13.559698	0.00000	0.00000	100%	120.00
30 C	13.559679	-0.00014	-1.43809	100%	120.00
40 C	13.559685	-0.00010	-0.99560	100%	120.00
50 C	13.559695	-0.00003	-0.25812	100%	120.00
20 C	13.559679	-0.00014	-1.39384	85%	102.00
20 C	13.559680	-0.00014	-1.37171	115%	138.00



2.7.7 Test Location and Test Equipment Used

This test was carried out in the **Temperature Chamber** located in TÜV SÜD America, Inc., 141 14th Street NW, New Brighton, MN 55112, USA.

Device #	Manufacturer	Description	Model	Serial #	Cal Code	Cal Date	Cal Due
WRLE10515	EMCO/EMC Test	Near Field Probe	7405	7405-901	Y	N/A	N/A
WRLE10892	H-G	Cable, BNC 5M	EF142/11BNC/11BNC/5M	na	B	01/15/2026	01/15/2027
BEMC00002	US-Omega Engineering	Digital Thermometer	MDSS41-TC	5020074	G	09/02/2025	09/02/2026
NBLP11590	Russells	Russell Temp/Humidity	Temp/Humidity Chamber	06184873	Y	N/A	N/A
NBLE11810	Rohde & Schwarz	Signal Analyzer, 2 Hz-43 GHz, 2.92mm	FSW43	102394	G	09/30/2025	09/30/2026
TEMC00252	AC Power Corp	Programmable AC Power Supply	AFV-P-5000B	F122080022	Y	N/A	N/A
NBLE11974	Fluke	Digital Multimeter	614 - FLUKE - 17B+	66742932WS	G	07/30/2025	07/30/2026

Cal Code G = Calibration performed by an accredited outside source.

Cal Code B = Calibration verification performed internally.

Cal Code Y = Passive Device, or Calibration not required when used with other calibrated equipment.



3 Test Equipment Information

3.1 General Test Equipment Used

Device #	Manufacturer	Description	Model	Serial #	Cal Code	Cal Date	Cal Due
WRLE10515	EMCO/EMC Test	Near Field Probe	7405	7405-901	Y	N/A	N/A
WRLE10892	H-G	Cable, BNC 5M	EF142/11BNC/11BNC/5M	na	B	01/15/2026	01/15/2027
BEMC00002	US-Omega Engineering	Digital Thermometer	MDSS41-TC	5020074	G	09/02/2025	09/02/2026
NBLP11590	Russells	Russell Temp/Humidity	Temp/Humidity Chamber	06184873	Y	N/A	N/A
NBLE11810	Rohde & Schwarz	Signal Analyzer, 2 Hz-43 GHz, 2.92mm	FSW43	102394	G	09/30/2025	09/30/2026
TEMC00252	AC Power Corp	Programmable AC Power Supply	AFV-P-5000B	F122080022	Y	N/A	N/A
NBLE11974	Fluke	Digital Multimeter	614 - FLUKE - 17B+	66742932WS	G	07/30/2025	07/30/2026
NBLE10459	Weinschel	Attenuator, 20 dB	34-20-34	BP1557	B	03/26/2026	03/25/2027
WRLE10944	Fischer Custom Comm.	LISN	FCC-LISN-50-25-2-10	120308	G	07/09/2025	07/09/2027
NBLE02667	Hewlett-Packard	Preamplifier, 0.1-1300 MHz	8447D	1616A00688	B	01/13/2026	01/13/2027
NBLE11460	ETS-Lindgren	Antenna, Horn 1-18 GHz	3117	155005	G	03/17/2025	03/17/2027
WRLE02418	EMCO/EMC Test	Antenna, Loop	6502	2215	G	03/18/2025	03/18/2027
WRLE10998	Rohde & Schwarz	Receiver, 20 Hz-26.5 GHz	ESU 26	100379	G	09/02/2025	09/02/2026
NBLE11578	ETS-Lindgren	Antenna, BiConiLog	3142C	00079889	G	11/05/2024	11/05/2026
NBLE11626	Com-Power Corp.	Preamplifier, 500 MHz-18 GHz	PAM-118A	18040020	B	01/17/2026	01/17/2027
NBLE11592	Rohde & Schwarz	Receiver, 10 Hz-7 GHz	ESR7	101771	G	06/03/2025	07/06/2026

Cal Code G = Calibration performed by an accredited outside source.

Cal Code B = Calibration verification performed internally.

Cal Code Y = Passive Device, or Calibration not required when used with other calibrated equipment.

4 Diagram of Test Set-ups

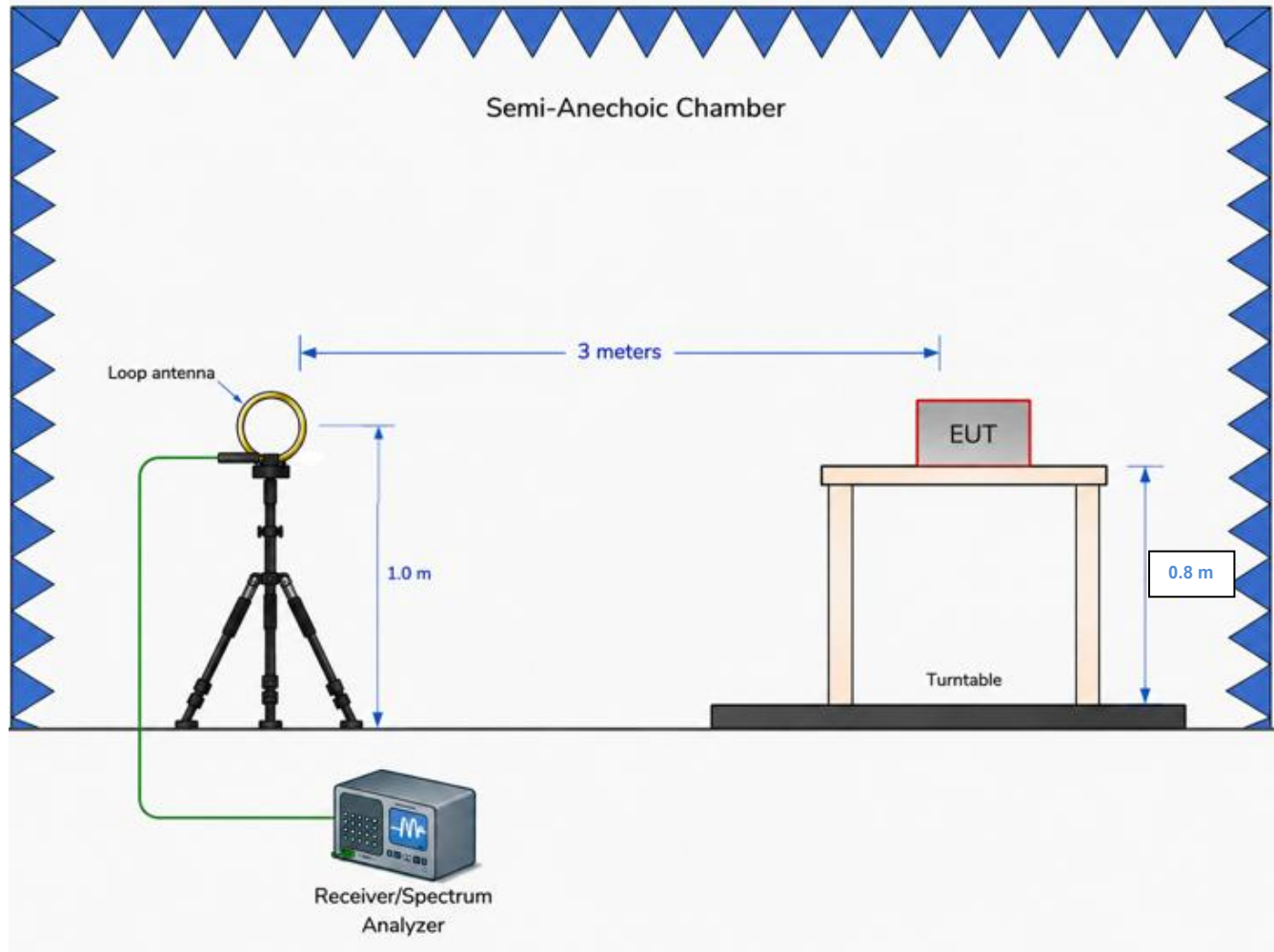


Figure 4-1 - Radiated Emissions Test Setup up to 30 MHz

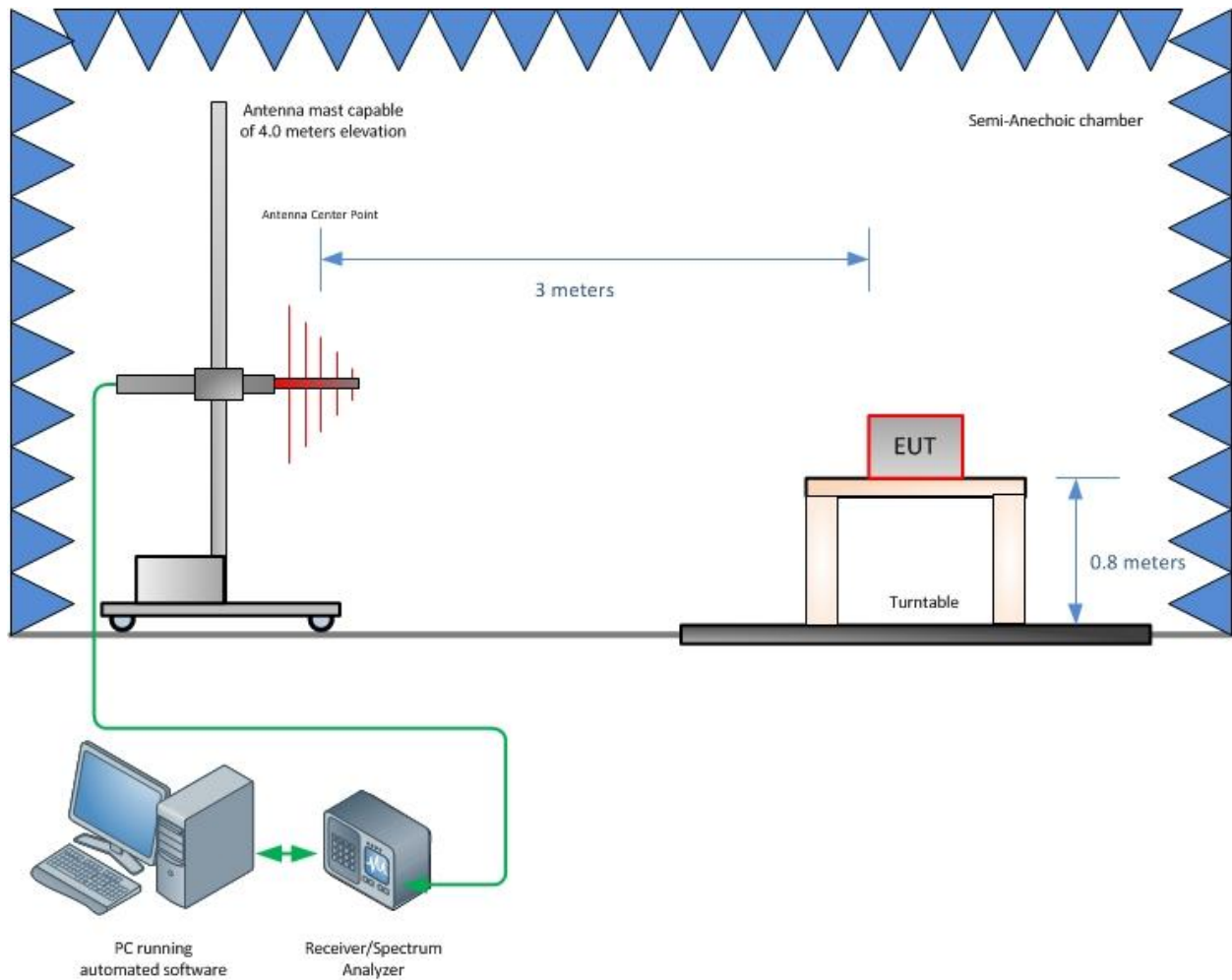


Figure 4-2 - Radiated Emissions Test Setup up to 1 GHz

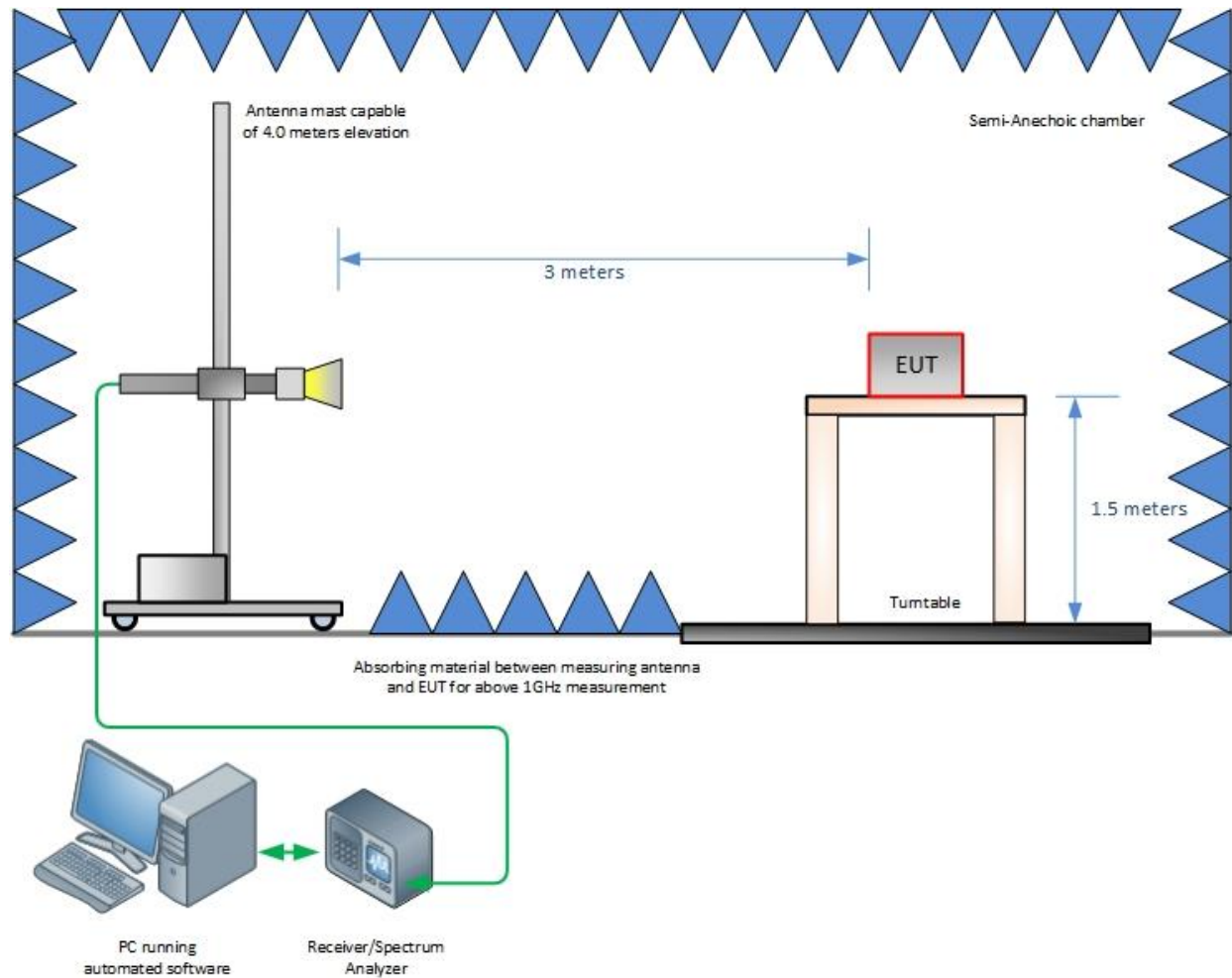
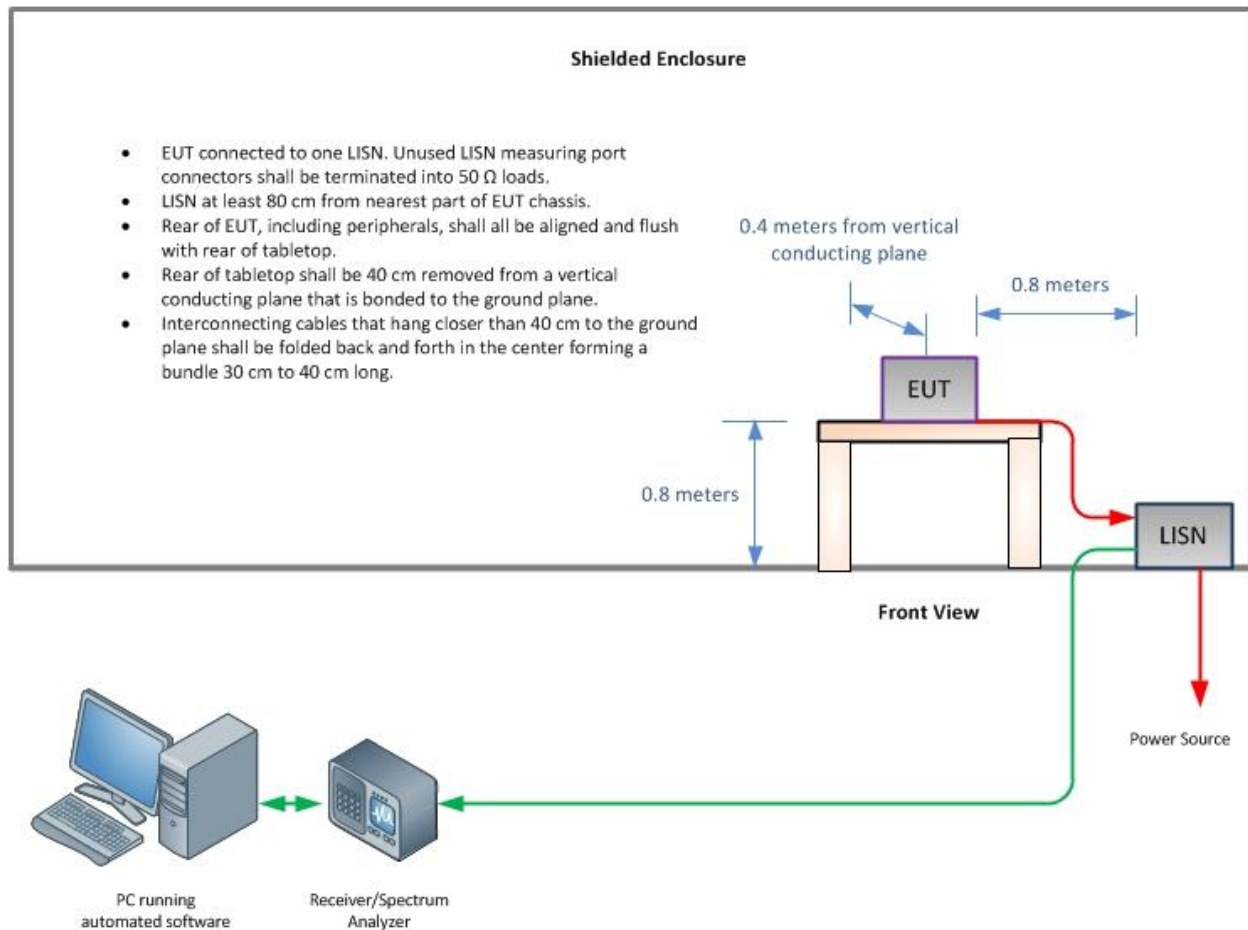


Figure 4-3 - Radiated Emissions Test Setup above 1 GHz

**Figure 4-4 - Conducted Emissions Test Setup**

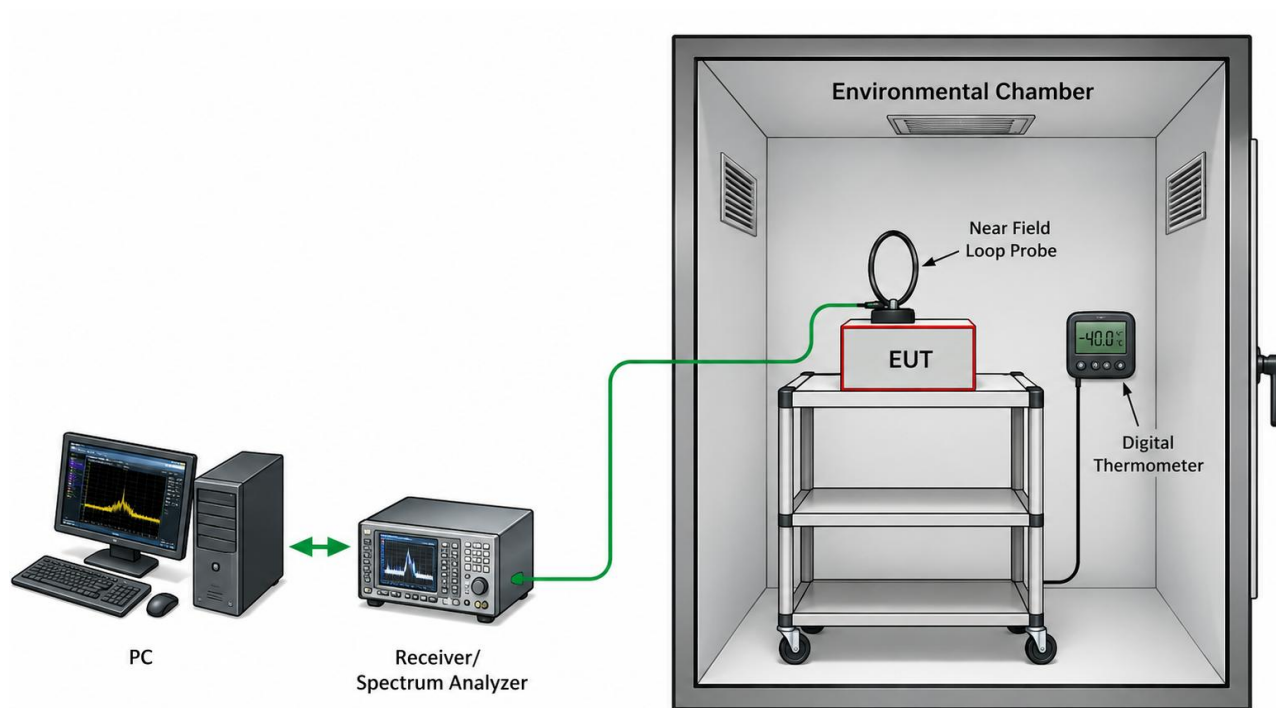


Figure 4-5 – Frequency Stability Test Setup



5 Measurement Uncertainty

For a 95% confidence level, the measurement uncertainties for defined systems are:

Table 5-1- Values of U_{CISPR} and U_{Lab}

Measurement	U_{CISPR}	U_{Lab}
Radiated disturbance (electric field strength on an open area test site or alternative test site) (30 MHz – 1 000 MHz) (1 – 6 GHz) (6-18 GHz)	6.3 dB 5.2 dB 5.5 dB	5.88 dB 4.47 dB 4.478 dB
Power Line Conducted Emissions 150 kHz – 30 MHz	3.4 dB	3.30 dB
Occupied Channel Bandwidth	-----	±2.83 %
RF output power, conducted	-----	±0.61 dB
Power Spectral Density, conducted	-----	±1.13 dB
Unwanted Emissions, conducted	-----	±2.64 dB

Notes:

U_{CISPR} resembles a value of measurement uncertainty for a specific test, which was determined by considering uncertainties associated with the quantities listed in CISPR 16-4-2:2011.

The test system for conducted emissions is defined as the LISN, tuned receiver or spectrum analyzer, and coaxial cable. This test system has a measurement uncertainty of ±3.30 dB. The test system for radiated emissions is defined as the antenna, the pre-amplifier, the spectrum analyzer and the coaxial cable. This test system for 30 MHz-1000 MHz has a measurement uncertainty of ±5.88 dB and above 1 GHz a measurement uncertainty of ±4.47 dB. The measurement uncertainty values for conducted and radiated emissions meet the requirements as expressed in CISPR 16-4-2. The equipment comprising the test systems is calibrated on an annual basis.



6 Accreditation, Disclaimers and Copyright

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