

FCC and ISCED Canada Testing of the

Cinch Systems, Inc
RF-ARGB-319-V3

In accordance with FCC 47 CFR part 15.231 and
ISED Canada's Radio Standards Specifications
RSS-210

Prepared for: Cinch Systems, Inc
12075 43 st ne Suite 30
St Michael, MN 55376

FCC ID: 2ABBZ-RF-ARGB-319V3
IC: 11817A-RFARGB319V3

COMMERCIAL-IN-CONFIDENCE

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Testing	Yves-Thierry Jean-Charles	2026-April-07	

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD Product Service document control rules.

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

Samples of this product were tested and found to be compliant with the standards listed above and the tests shown in Table 1.3-1 of this report.

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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.

Issue	Description of Change	Date of Issue
1	First Issue	2026-March-26
2	Revised the FCC ID.	2026-April-07

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 15.231 and Innovation Science and Economic Development Canada’s Radio Standards Specification RSS-210 for the tests documented herein.



Applicant	Cinch Systems, Inc
Manufacturer	Cinch Systems, Inc
Applicant's Email Address	kerry.tobias@cinchsystems.com
Model Number(s)	RF-ARGB-319-V3
Serial Number(s)	09B499B (Radiated Emissions) 09774E8 (Timing and Bandwidth Measurements)
FCC ID	2ABBZ-RF-ARGB-319V3
ISED Certification Number	11817A-RFARGB319V3
Hardware Version(s)	X1
Software Version(s)	V004 (runtime code used for Timing and Bandwidth Measurements) RF-ARGB-V3-319-ELK_V003_061125-CP (special firmware for radiated spurious emissions).
Number of Samples Tested	2
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 2024.
Order Number	72101822
Date	2026-January-30
Date of Receipt of EUT	2026-February-26
Start of Test	2026-February-26
Finish of Test	2026-March-12
Name of Engineer(s)	Yves-Thierry Jean-Charles
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 Summary of Results

A summary of the tests carried out in accordance with FCC Part 15.231 and ISED Canada's RSS-210 is shown below.

Table 1.3-1 – Test Result Summary

Test Parameter	Test Plan (Yes/No)	Test Result	FCC 47 CFR Rule Part	ISED Canada's RSS	Test Report Page No
Antenna Requirement	Yes	Pass	15.203, 15.204	-----	9
Periodic Operation	Yes	Pass	15.231(a)	RSS-210 A.1.2	11
Radiated Field Strength of Fundamental and Spurious Emissions	Yes	Pass	15.231(b)	RSS-210 A.1.3	21
20 dB Bandwidth	Yes	Pass	15.231 (c)	-----	56
99% Bandwidth	Yes	Pass	-----	RSS-210 A.1.4	59
*Power Line Conducted Emissions	No	Not Tested	15.207	RSS-GEN 8.8	-----

*The device is a battery-operated equipment without provisions for connection to the AC Mains. The device is exempted from the power line conducted emissions requirements.



1.4 Product Information

1.4.1 Technical Description

The EUT is a glass break detector interfacing wirelessly to a security panel to provide life safety and property protection. The transmitter operates at a frequency of 319.508 MHz

Technical Details

Mode of Operation:	319 MHz Momentarily Operated Transmitter
Frequency Range:	319.5 MHz
Number of Channels:	1
Channel Separation:	N/A
Data Rate:	5 kbps
Modulations:	OOK
Antenna Type/Gain:	Monopole, -11.5 dBi
Input Power:	2x 3 VDC Battery

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

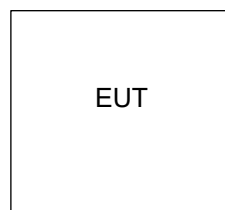


Figure 1.4.1-1 – EUT test Setup Block Diagram

Note: The EUT is a standalone / self-contained battery-operated equipment without provisions for connection to the AC mains or accessory equipment.

1.4.2 Modes of Operation

The EUT was evaluated using the preconfigured power setting from the manufacturer. For the radiated emissions evaluation, the EUT was running a test firmware that allowed periodic transmission of a modulated carrier. The EUT was transmitting using the maximum duty cycle configuration allowed by the test firmware.

For the timing and bandwidth measurements, the EUT was operating using a sample configured with the production firmware.

For the bandwidth measurements, the modulated carrier was initiated by using the tamper switch.



For the momentary transmission evaluation, the timing was triggered both manually (tamper alarm) and automatically (glass break alarm). The timing of the supervisory signal was evaluated as well.

A summary of the samples' configurations used during the evaluation is provided below.

Table 1.4.2-1 – Modes of Operation

Test	Firmware	Firmware Description
Radiated Emissions	Test	Modulated Signal at maximum data rate allowed by the test firmware.
Momentary Operation	Production Firmware	Packet Transmissions at Representative Maximum Duty Cycle.
Bandwidth	Production Firmware	Packet Transmissions at Representative Maximum Duty Cycle.

1.4.3 Monitoring of Equipment

The EUT was evaluated for radiated spurious emissions in three orthogonal orientations. Where applicable, the test results are provided for the EUT orientation leading to the highest emissions with respect to the limits.

For the timing evaluation, the assessment covered the tamper alarm, the glass break alarm as well as the momentary supervisory transmissions.

1.4.4 Performance Criteria

The EUT was evaluated in accordance with the performance criteria defined below.

Table 1.4.4-1 – Performance Criteria

Parameter	Requirement
Antenna Requirement	FCC: Section 15.203. 15.204
Periodic Operation	FCC; Section 15.231(a); ISED Canada: RSS-210 A.1.2
Radiated Field Strength of Fundamental and Spurious Emissions	FCC: Section 15.231(b); ISED Canada: RSS-210 A.1.3
20 dB Bandwidth	FCC: Section 15.231(c)
99% Bandwidth	ISED Canada: RSS-210 A.1.4

1.5 Deviations from the Standard

The evaluation was performed without any deviation from the test standards.



1.6 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.

Modification State	Description of Modification still fitted to EUT	Modification Fitted By	Date Modification Fitted
0	None	N/A	N/A

The equipment was tested as provided without any modifications.

1.7 Test Location

TÜV SÜD Product Service conducted the following tests at our New Brighton, MN Test Laboratory.

Test Name	Name of Engineer(s)	Accreditation
Battery Powered, Operating		
Antenna Requirement	Thierry Jean-Charles	A2LA
Periodic Operation	Thierry Jean-Charles	A2LA
Radiated Field Strength of Fundamental and Spurious Emissions	Thierry Jean-Charles	A2LA
20 dB Bandwidth	Thierry Jean-Charles	A2LA
99% Bandwidth	Thierry Jean-Charles	A2LA

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

2.1.2 Equipment Under Test and Modification State

S/N: 09B499B

2.1.3 Date of Test

2/26/2026

2.1.4 Test Method

N/A

2.1.5 Environmental Conditions

Ambient Temperature N/A

Relative Humidity N/A

Atmospheric Pressure N/A

2.1.6 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 2.1.6-1 – Antenna Used In EUT

Antenna Type	Connection Type	Antenna Gain (dBi)
Monopole	Soldered on PCB	-11.5



Test Summary:

The EUT uses a wire monopole antenna that is soldered directly to the PCB. Because the antenna is not user-replaceable, the device meets the antenna requirements of FCC Section 15.203.

Test Result: Pass

2.1.7 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 was a visual inspection, no test equipment was used.



2.2 Periodic Operation

2.2.1 Specification Reference

FCC Sections: 15.231(a);
ISED Canada: RSS-210 A.1.2

2.2.2 Equipment Under Test and Modification State

S/N: 09774E8

2.2.3 Date of Test

2/27/2026 to 2/28/2026

2.2.4 Test Method

The transmitter was activated automatically and was evaluated using a spectrum analyzer at zero span.

2.2.5 Environmental Conditions

Ambient Temperature	23.5 °C
Relative Humidity	11 %
Atmospheric Pressure	980 mbar

2.2.6 Test Results

Battery Powered, Operating

Limit Clause FCC Sections 15.231(a), ISED Canada: RSS-210 A.1.2

A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released. A transmitter activated automatically shall cease transmission within 5 seconds after activation.

Test Summary:

The EUT meets the transmission duration limitations requirements. The assessment for the glass break alarm transmissions is provided for informational purposes only since this configuration falls under FCC Section 15.231 A(4) and ISED Canada RSS-210 A.1.2 (d) and is exempted from the 5 seconds timing requirements.

Test Result: Pass



2.2.6.1 Transmission Timing Operation

FCC 15.231(a)(1)/ RSS-210 A.1.2(a) Manually Operated Transmitter

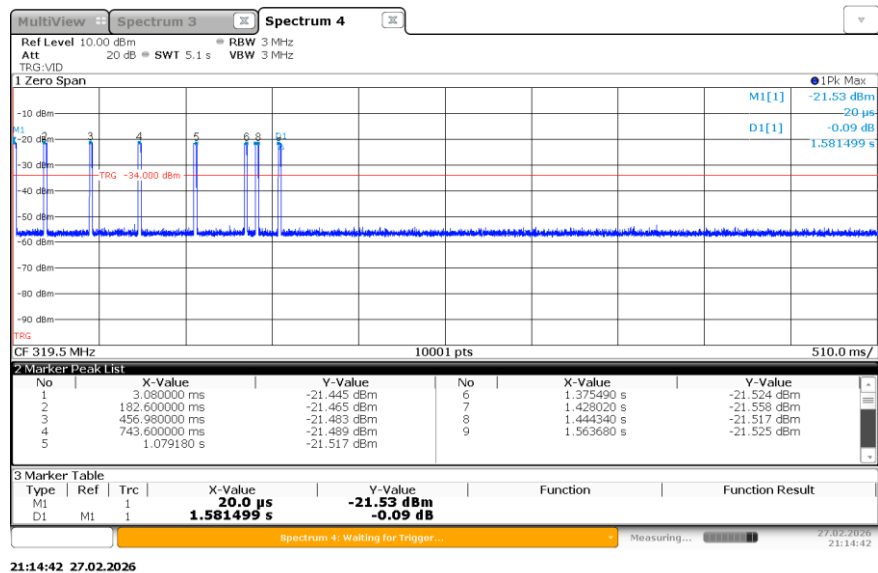


Figure 2.2.6.1-1 – Transmitter Deactivation Time Test Results – Tamper button engaged

Table 2.2.6.1-1 – Transmitter Deactivation Time Test Results

Frequency MHz	Transmission Type	Turn Off Time (s)	Limit (s)	Result
319.5	Manual	1.581499	5	Pass

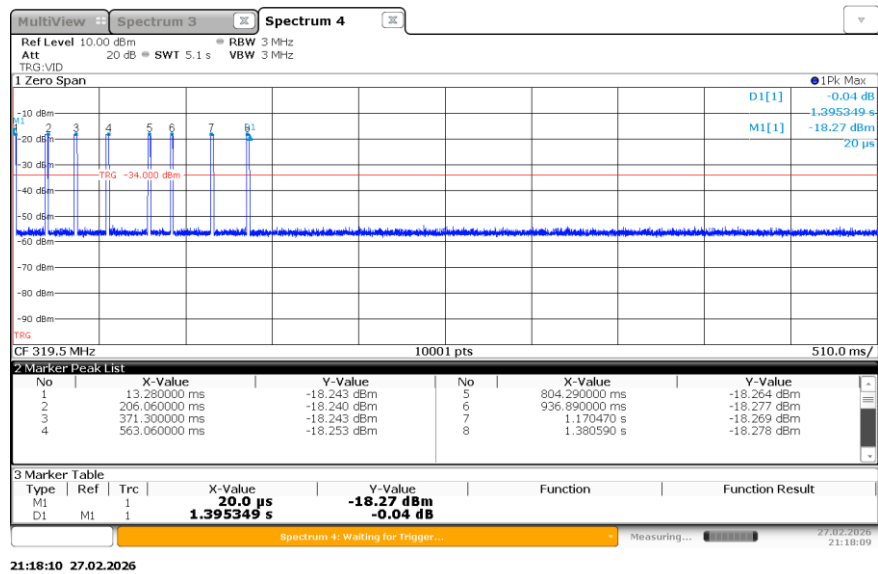


Figure 2.2.6.1-2 – Transmitter Deactivation Time Test Results – Tamper button released

Table 2.2.6.1-2 – Transmitter Deactivation Time Test Results

Frequency MHz	Transmission Type	Turn Off Time (s)	Limit (s)	Result
319.5	Manual	1.395349	5	Pass



FCC 15.231(a)(2)/ RSS-210 A.1.2(b) Automatically Activated Transmitter

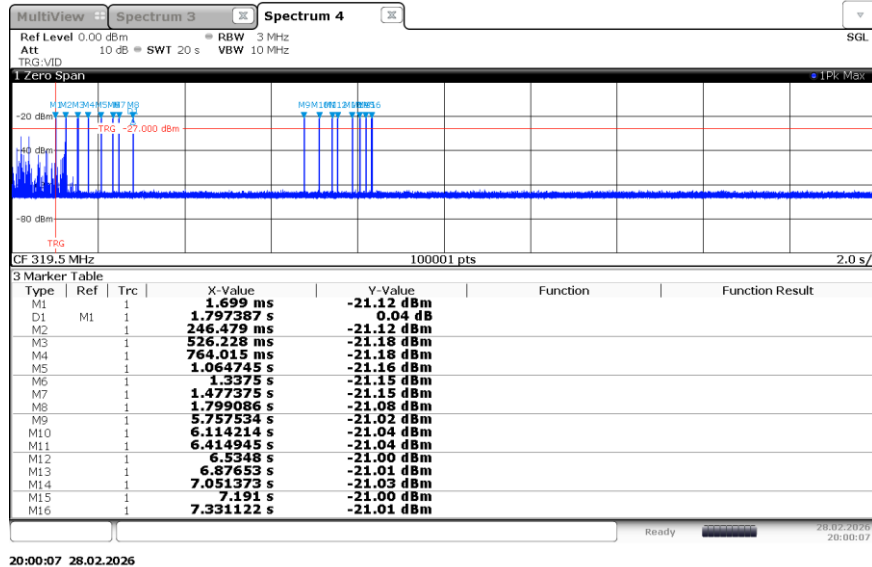


Figure 2.2.6.1-3 – Transmitter Deactivation Time Test Results – glass break alarm

Table 2.2.6.1-3 – Transmitter Deactivation Time Test Results

Frequency M Hz	Transmission Type	Turn Off Time (s)	Limit (s)	Result
319.5	Automatic	7.33	N/A	Pass

Note: The glass break alarm mode is only activated during emergencies related to security and is exempted from the 5s timing requirements per FCC Section 15.231(a)(4) and ISSED Canada RSS-210 A.1.2(d). The information is provided for informational purposes. More information about the timing is provided in the equipment Theory of Operation.



FCC 15.231(a)(3)/ RSS-210 A.1.2(c) Periodic Operation

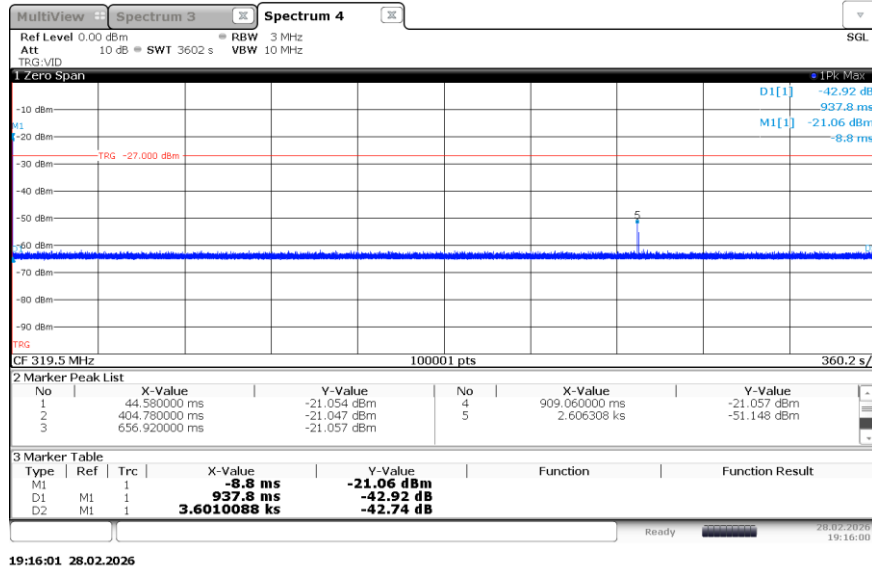


Figure 2.2.6.1-4 – Timing Measurement Test Results – Maximum Transmission Over One Hour

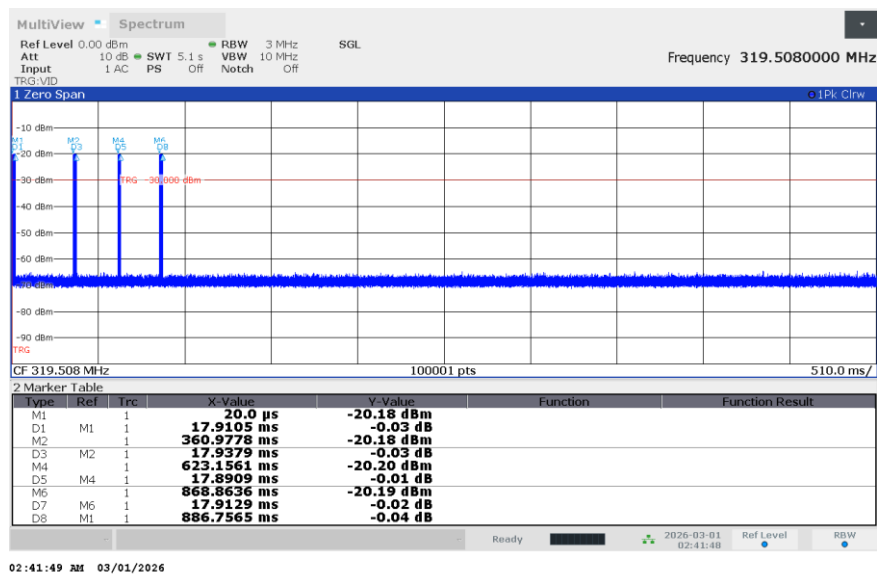


Figure 2.2.6.1-5 – Timing Measurement Test Results – Maximum Transmission Over One Hour – shorter sweep view

Table 2.2.6.1-4 – Transmitter Deactivation Time Test Results

Frequency MHz	Transmission Type	Packets Length (s)	Number of Packets	Transmission Time (s)	Limit (s)	Result
319.5	Automatic	0.0179	4	0.0717	2	Pass



2.2.6.2 Transmitter Duty Cycle

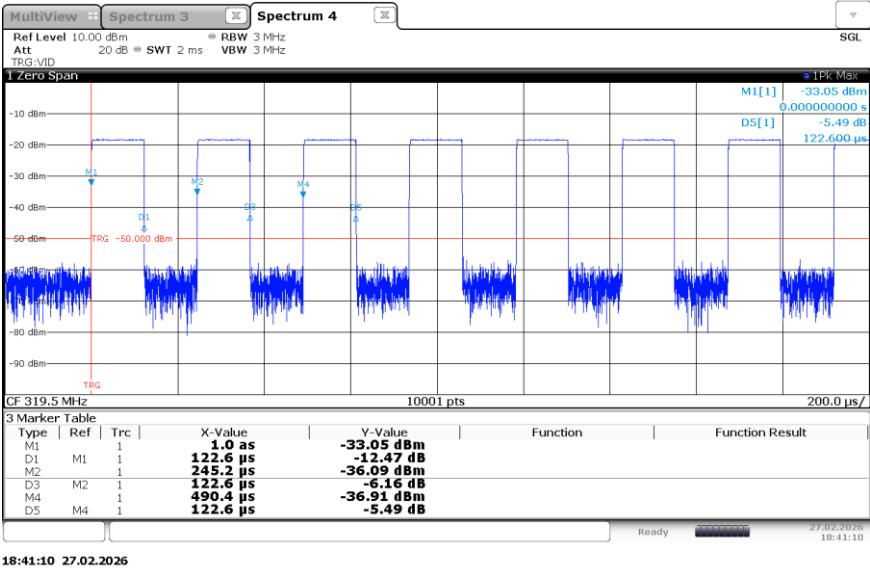


Figure 2.2.6.2-1 – Pulse Width Test Results – Short Pulses

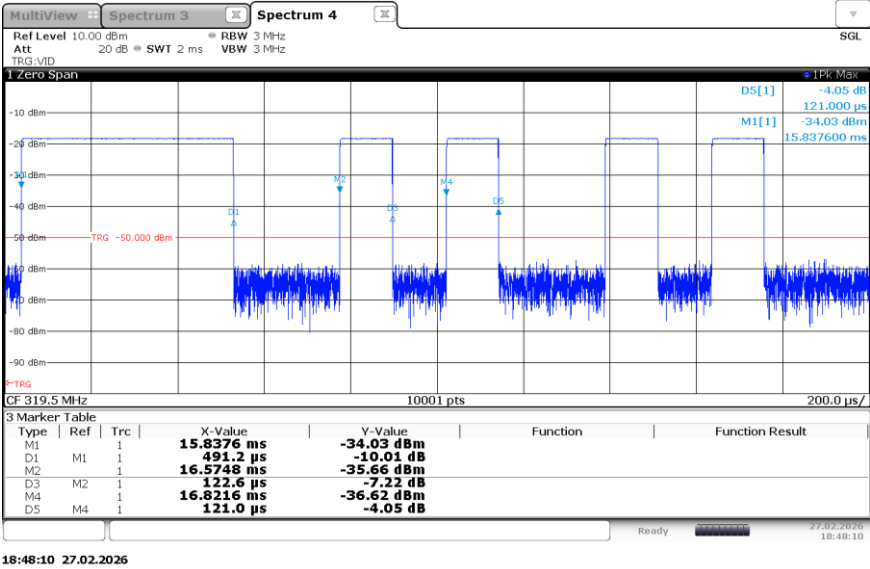
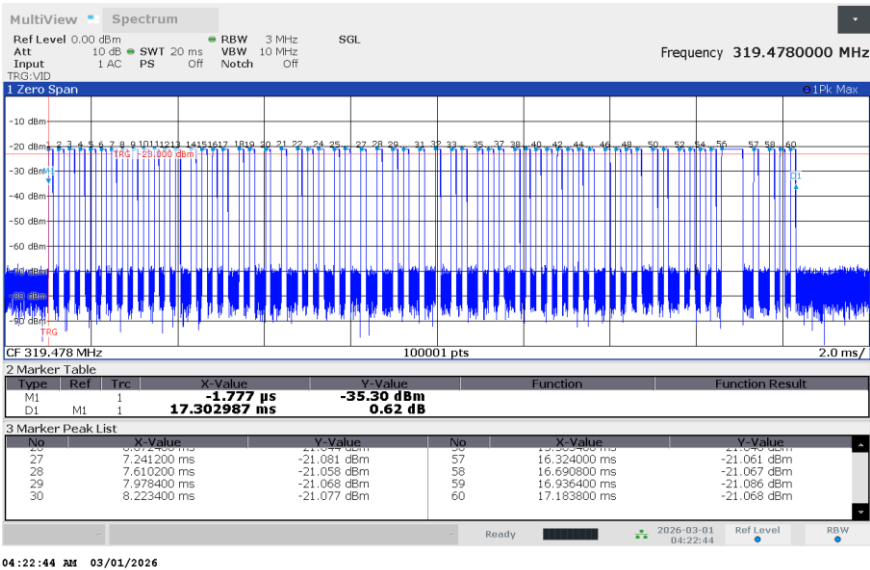
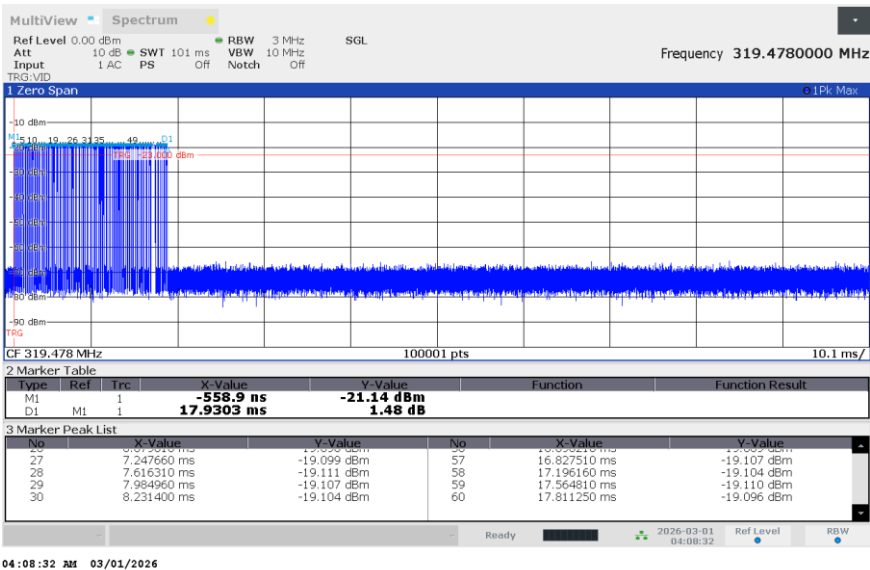


Figure 2.2.6.2-2 – Pulse Width Test Results – Long and Short Pulses



04:22:44 AM 03/01/2026

Figure 2.2.6.2-3 – Number of Pulses - Tamper button engaged



04:08:32 AM 03/01/2026

Figure 2.2.6.2-4 – Number of Pulses in 100 ms - Tamper button engaged

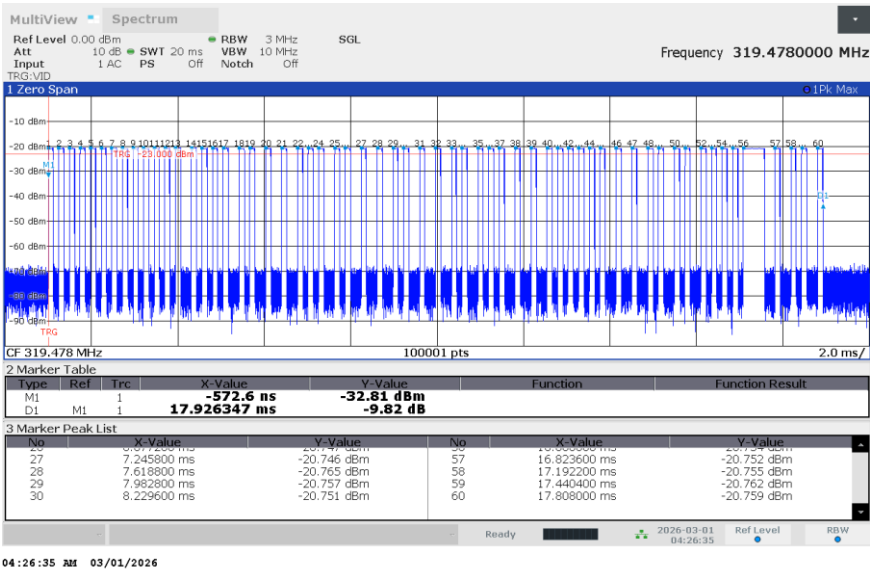


Figure 2.2.6.2-5 – Number of Pulses - Tamper button released

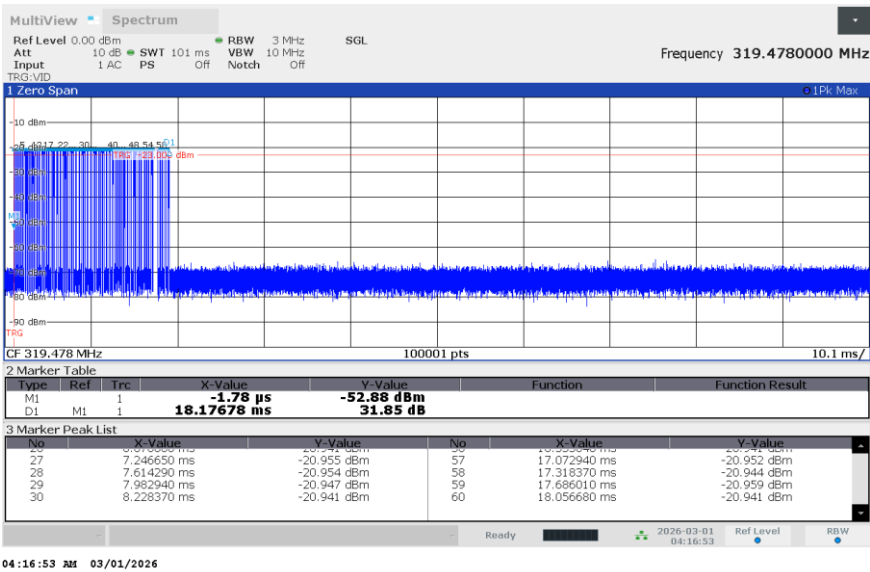


Figure 2.2.6.2-6 – Number of Pulses in 100 ms - Tamper button released

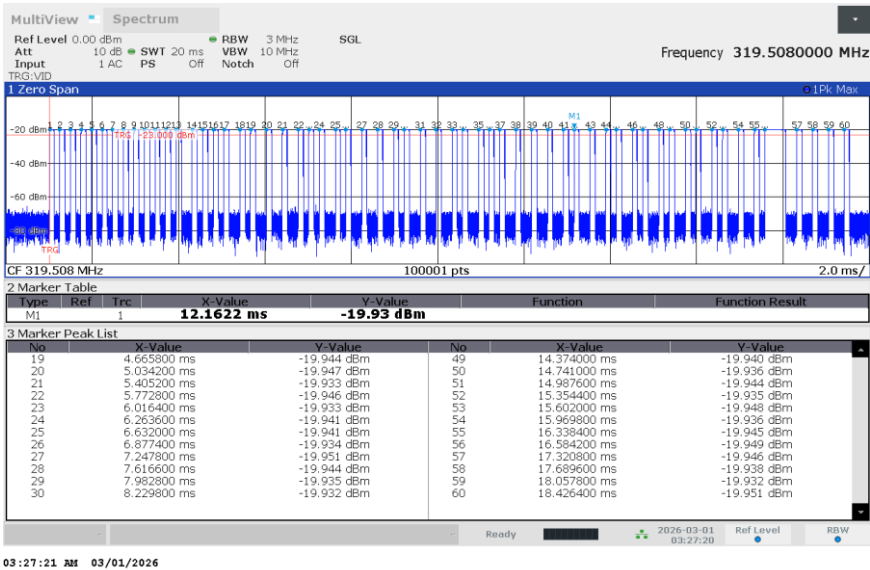


Figure 2.2.6.2-7 – Number of Pulses in 100 ms - Glass Break Alarm

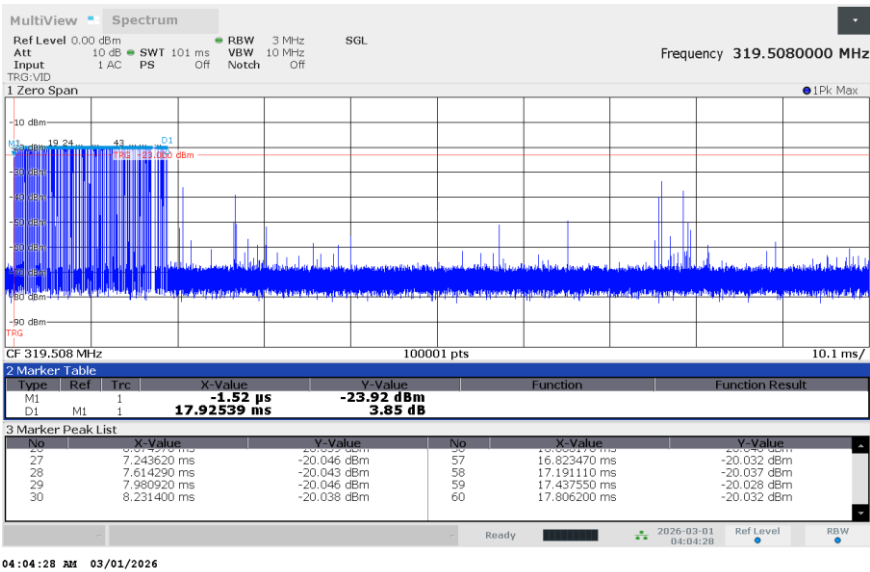


Figure 2.2.6.2-8 – Number of Pulses in 100 ms – Glass Break Alarm

**Table 2.2.6.2-1 – Transmitter Duty Cycle Test Results and Correction Factor Determination**

Frequency M Hz	Pulse Length (ms)	Number of Pulses	Transmission Time (ms)	Observation Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
	0.1226	59	7.2334	100	7.23%	-----
	0.4912	1	0.4912	100	0.49%	-----
Total	-----	60	7.7246	100	7.72%	-22.24

2.2.7 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.

Device #	Manufacturer	Description	Model	Serial #	Cal Code	Cal Date	Cal Due
DEMC3085	Rohde & Schwarz	Signal & Spectrum Analyzer	FSW43	103997	G	08/29/2025	08/29/2026
NBLE03560	Huber+Suhner	Cable, BNC 1M	HS142	1M-8	B	08/04/2025	08/04/2026
NBLE03582	Huber+Suhner	Cable, BNC 4M	HS142	4M-10	B	10/15/2025	10/15/2026
NBLE11052	Huber+Suhner	Cable, BNC 1M	EF14211/BNC/11BNC	11052	B	03/17/2025	03/17/2026
WRLE10515	EMCO/EMC Test	Near Field Probe	7405	7405-901	Y	N/A	N/A
WRLE11124	RF Precision Cables	2 Way Pwr Div, Type N	PDX2103	none	B	04/22/2025	04/22/2026
NBLE11813	Rohde & Schwarz	Receiver, 1 Hz-8 GHz	ESW8	103154	G	09/17/2025	09/17/2026

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.

O/M = Output Monitored with Calibrated Equipment.

N/A = Not Applicable



2.3 Radiated Field Strength and Spurious Emissions

2.3.1 Specification Reference

FCC Sections: 15.231(b);
ISED Canada: RSS-210 A.1.3

2.3.2 Equipment Under Test and Modification State

S/N: 09B499B

2.3.3 Date of Test

2/26/2026 to 3/12/2026

2.3.4 Test Method

Radiated emissions tests were made over the frequency range of 9 kHz to 4 GHz, 10 times the highest fundamental frequency. Each emission found to be in a restricted band as defined by FCC 47 CFR Part 15 Subpart B Section 15.205, including any emission at the operational band-edge, was compared to the applicable radiated emission limits.

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.

For measurements above 30 MHz, 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 which fall in the restricted bands between 30 MHz and 1 GHz, 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.

The peak emissions were compared to a limit corresponding to 20 dB above the maximum permitted average limit according to Part 15.35. The final measurements were then corrected by antenna correction factors and cable loss for comparison to the limits. Further, compliance with the provisions of Section 15.205 was demonstrated using the measurement instrumentation specified in that section where applicable.

For the average test results, a duty cycle correction factor as described below was applied to the peak measurements.

2.3.5 Duty Cycle Correction

The EUT was configured to transmit at 100% duty cycle during the evaluation. Per the measurements of Section 2.2.6.2, a Duty Cycle Correction of 7.725% corresponding to $20 \cdot \log(7.725/100) = -22.24$ dB was applied to the peak measurements for the corrected average results.



2.3.6 Environmental Conditions

Ambient Temperature	26.6 °C
Relative Humidity	6 %
Atmospheric Pressure	975 mbar

2.3.7 Test Results

Battery Powered, Operating

Limit Clause FCC Sections 15.231(a), ISED Canada: RSS-210 A.1.3

Table 2.3.7-1 – Fundamental and Spurious Emissions Limits

Fundamental Frequency (MHz)	Field Strength of Fundamental (microvolts/meter)	Field Strength of Spurious Emissions (microvolts/meter)
40.66-40.70	2,250	225
70-130	1,250	125
130-174	¹ 1,250 to 3,750	¹ 125 to 375
174-260	3,750	375
260-470	¹ 3,750 to 12,500	¹ 375 to 1250
Above 470	12,500	1250

¹Linear Interpolations

Limit Clause FCC Sections 15.205, 15.209, ISED Canada: RSS-GEN 8.9, 8.10

Table 2.3.7-2 – Spurious Emissions Limits in the Restricted Bands

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

** Except as provided in FCC 15.209 paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.



2.3.7.1 Field Strength of Fundamental Emissions

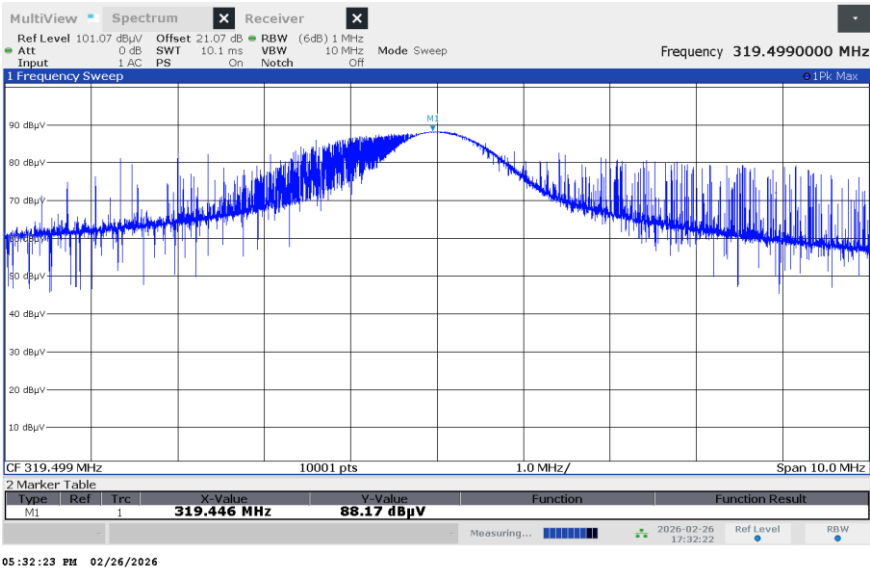


Figure 2.3.7.1-1 – Fundamental Field Strength - Horizontal Polarization – X Axis

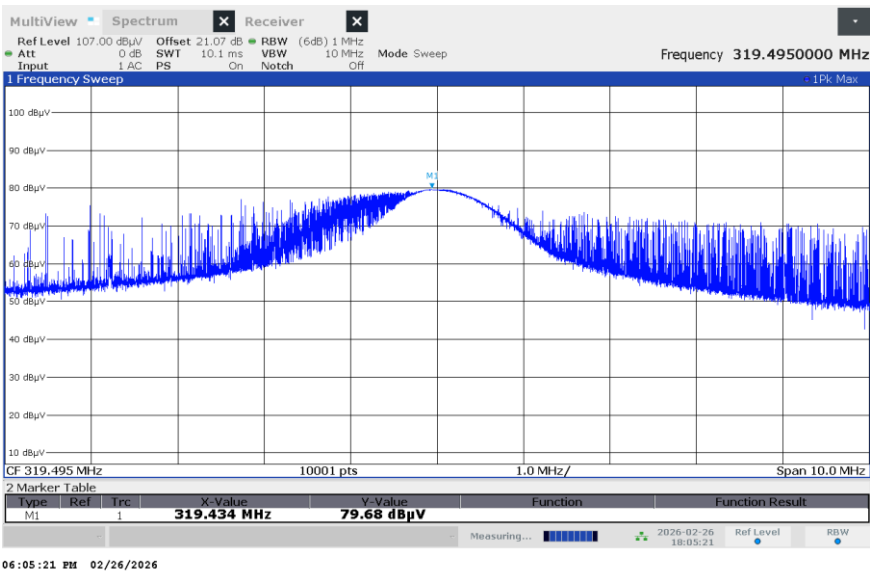


Figure 2.3.7.1-2 – Fundamental Field Strength - Vertical Polarization X-Axis

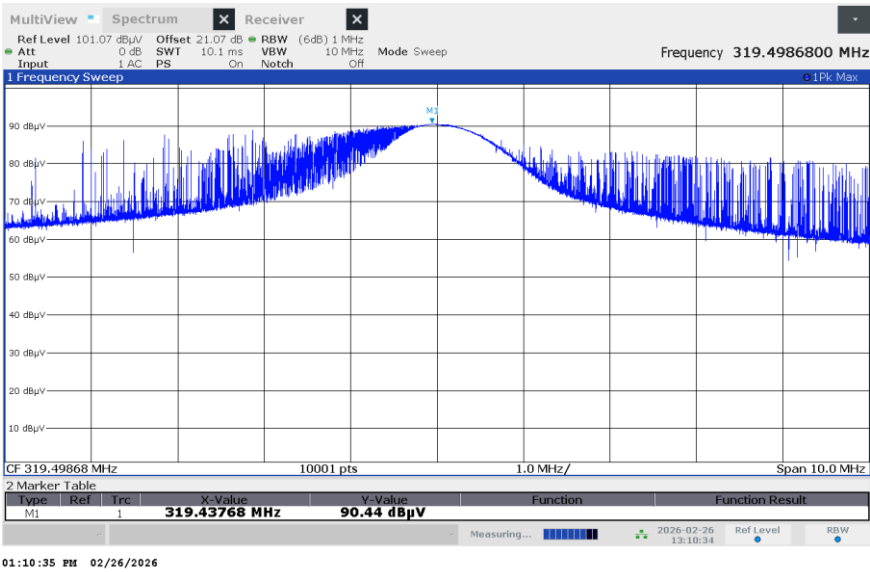


Figure 2.3.7.1-3 – Fundamental Field Strength - Horizontal Polarization – Y-Axis

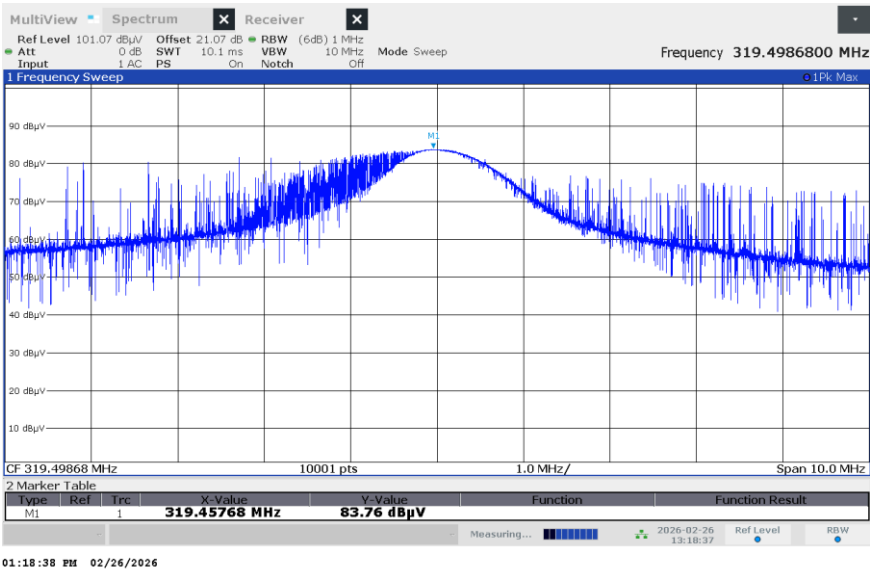


Figure 2.3.7.1-4 – Fundamental Field Strength - Vertical Polarization Y-Axis

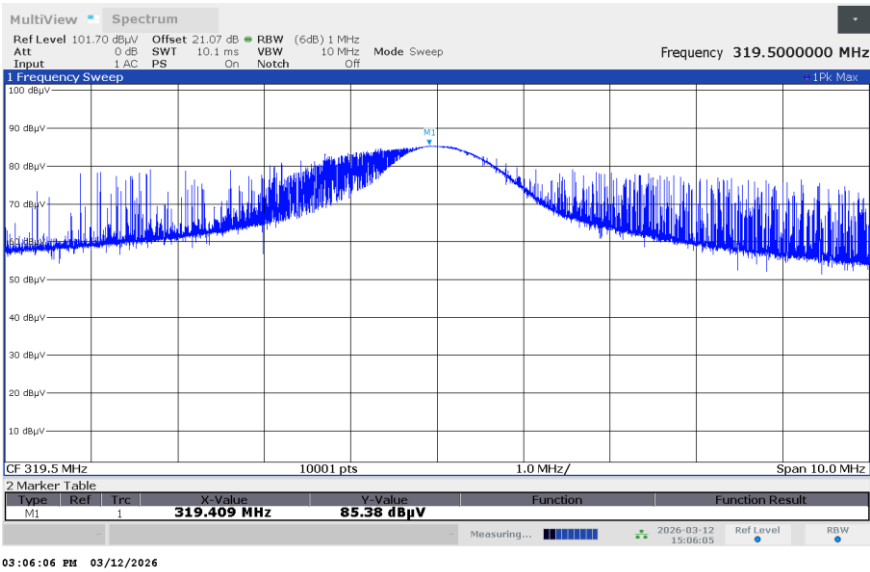


Figure 2.3.7.1-5 – Fundamental Field Strength - Horizontal Polarization – Z-Axis

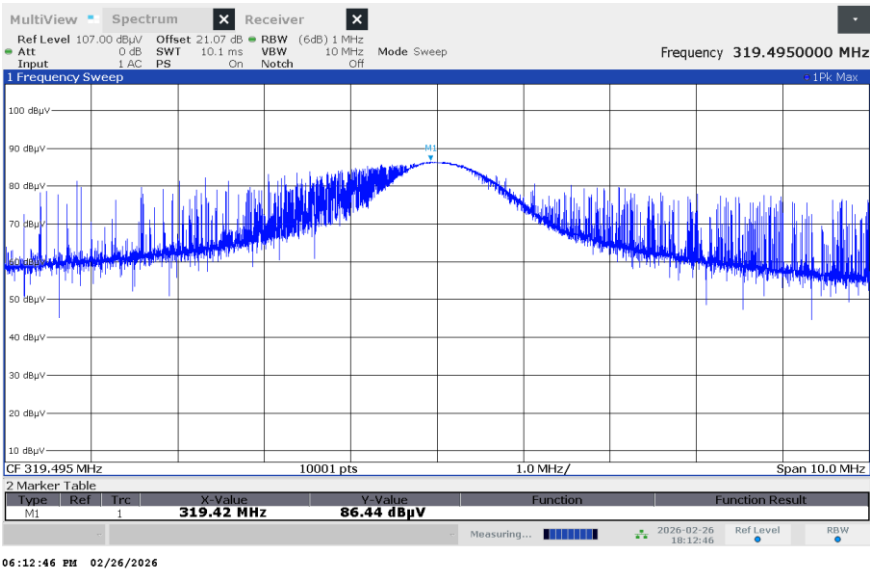


Figure 2.3.7.1-6 – Fundamental Field Strength - Vertical Polarization - Z-Axis

**Table 2.3.7.1-1– Radiated Emissions Test Results – Peak and Average Levels**

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	Orientation	Result
319.5	88.17	95.89	-7.72	65.93	75.89	-9.96	166	1	Horizontal	X-axis	Pass
319.5	79.68	95.89	-16.21	57.44	75.89	-18.45	236	3.75	Vertical	X-axis	Pass
319.5	90.44	95.89	-5.45	68.2	75.89	-7.69	310	1	Horizontal	Y-axis	Pass
319.5	83.76	95.89	-12.13	61.52	75.89	-14.37	90	2.5	Vertical	Y-axis	Pass
319.5	85.38	95.89	-10.51	63.14	75.89	-12.75	281.00	1.02	Horizontal	Z-axis	Pass
319.5	86.44	95.89	-9.45	64.2	75.89	-11.69	269	190	Vertical	Z-axis	Pass



2.3.7.2 Radiated Spurious Emissions

Spurious - 9kHz-30MHz - X Axis S unit - Vertical Co-Axial

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
9 kHz - 150 kHz	3m	Vertical	200 Hz	1411 Pts	5 ms/MHz
150 kHz - 30 MHz	3m	Vertical	9 kHz	5971 Pts	5 ms/MHz

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	2/27/2026	24.7 C	40%	986 mbar

Technology	Frequency	Channel	Mode	EUT Orientation
319 MHz Momentarily Operated Transmitter using OOK modulation	319.508 MHz	N/A	TX	X-axis

Limit:

FCC Part 15/FCC §15.209_2025_09_23

Test Results:

Pass

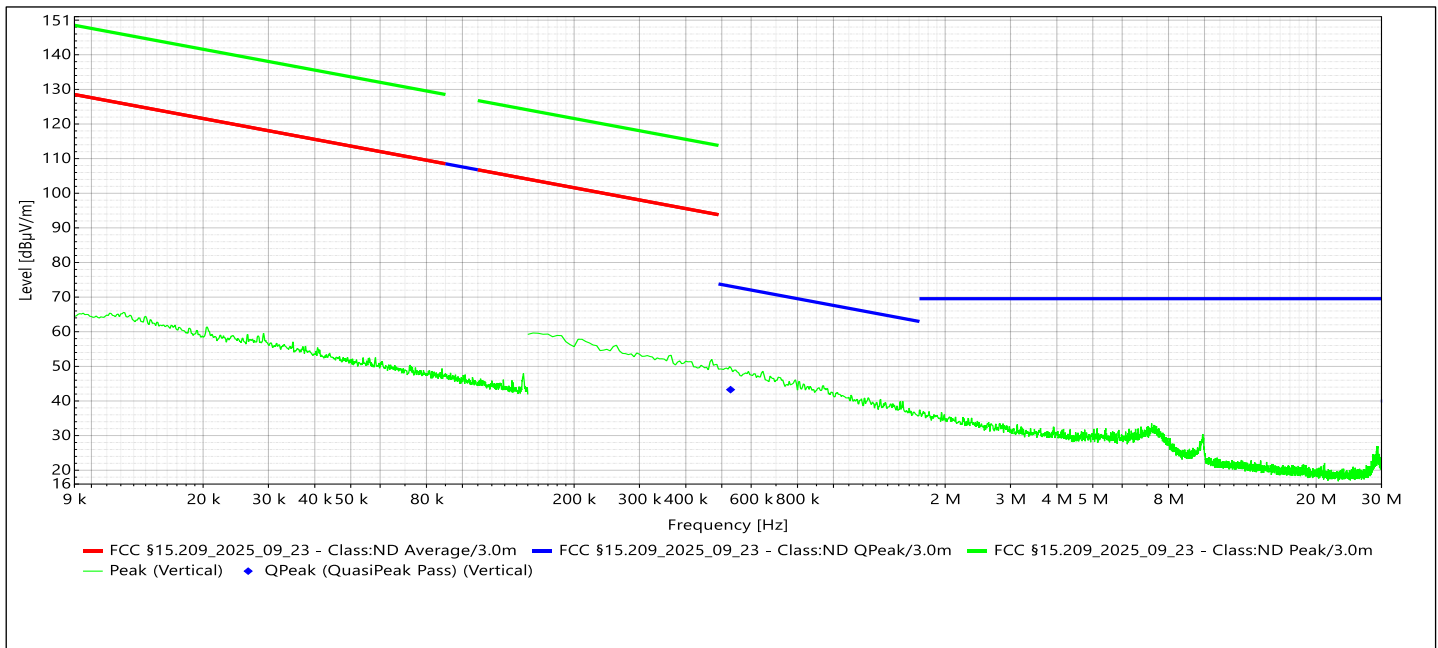


Figure 2.3.7.2-1 – Radiated Emissions Test Results



Table 2.3.7.2-1– Radiated Emissions Test Results

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
0.528	43.27	73.12	-29.85	6.00	1.00	Vertical	Pass

Test Notes: Field Strength of Spurious Emissions - Vertical Coaxial



Fundamental and Spurious Emissions X axis

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
200 MHz - 400 MHz	3m	Vertical	120 kHz	18001 Pts	Auto
200 MHz - 400 MHz	3m	Horizontal	120 kHz	18001 Pts	Auto

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	2/26/2026	27.1 C	9 %	975 mbar

Technology	Frequency	Channel	Mode	EUT Orientation
319 MHz Momentarily Operated Transmitter using OOK modulation	319.508 MHz	N/A	TX	X-axis

Limit:
FCC Part 15.231/FCC 15.231(b) 2025

Test Results:
Pass

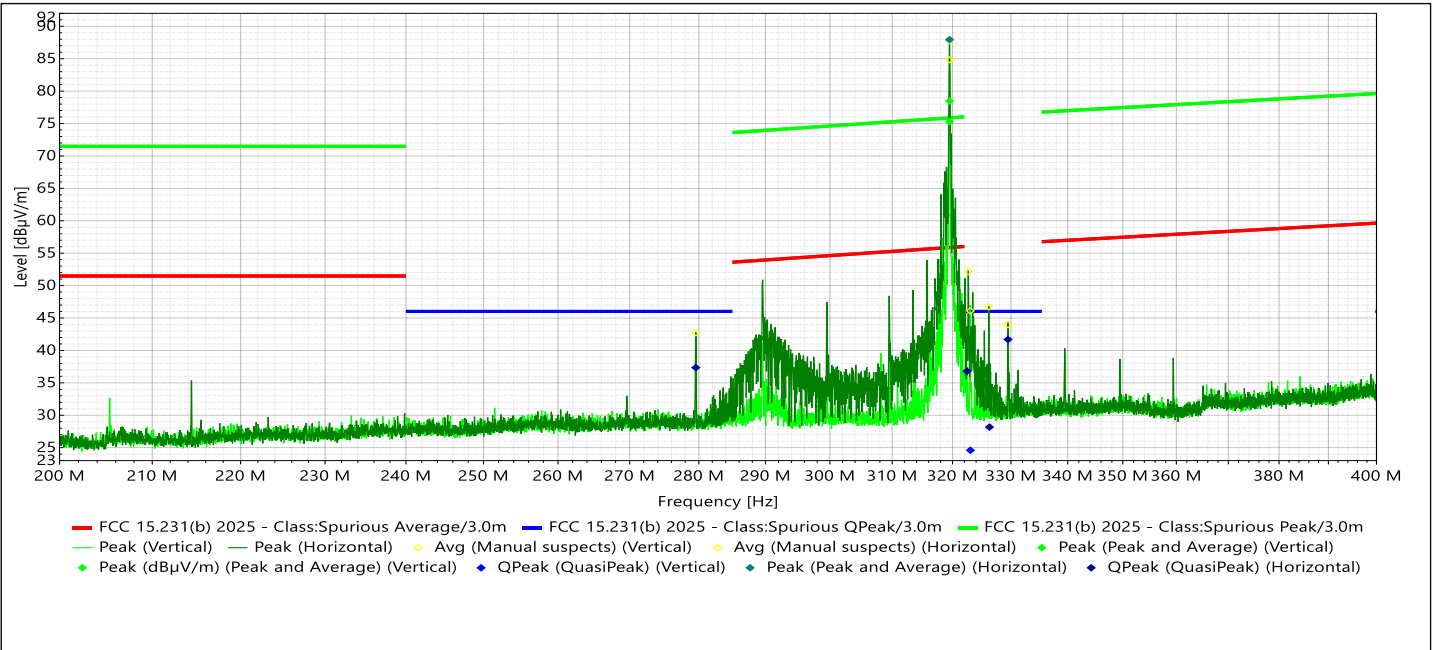


Figure 2.3.7.2-2 – Radiated Emissions Test Results

**Table 2.3.7.2-2– Radiated Emissions Test Results – Quasi-Peak Levels**

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
323.024	24.60	46.02	-21.42	210.00	1.31	Vertical	Pass
279.559	37.35	46.02	-8.67	124.00	1.00	Horizontal	Pass
322.458	36.79	46.02	-9.23	124.00	1.00	Horizontal	Pass
326.288	28.18	46.02	-17.85	236.00	1.00	Horizontal	Pass
329.483	41.69	46.02	-4.33	360.00	1.00	Horizontal	Pass

Test Notes: Fundamental Field Strength and Spurious



Spurious - 30MHz - 1GHz - X axis S unit

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	120 kHz	19401 Pts	Auto
30 MHz - 1 GHz	3m	Horizontal	120 kHz	19401 Pts	Auto

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	2/26/2026	24.9 C	40 %	985 mbar

Technology	Frequency	Channel	Mode	EUT Orientation
319 MHz Momentarily Operated Transmitter using OOK modulation	319.508 MHz	N/A	TX	X-axis

Limit:
FCC Part 15.231/FCC 15.231(b) 2025

Test Results:
Pass

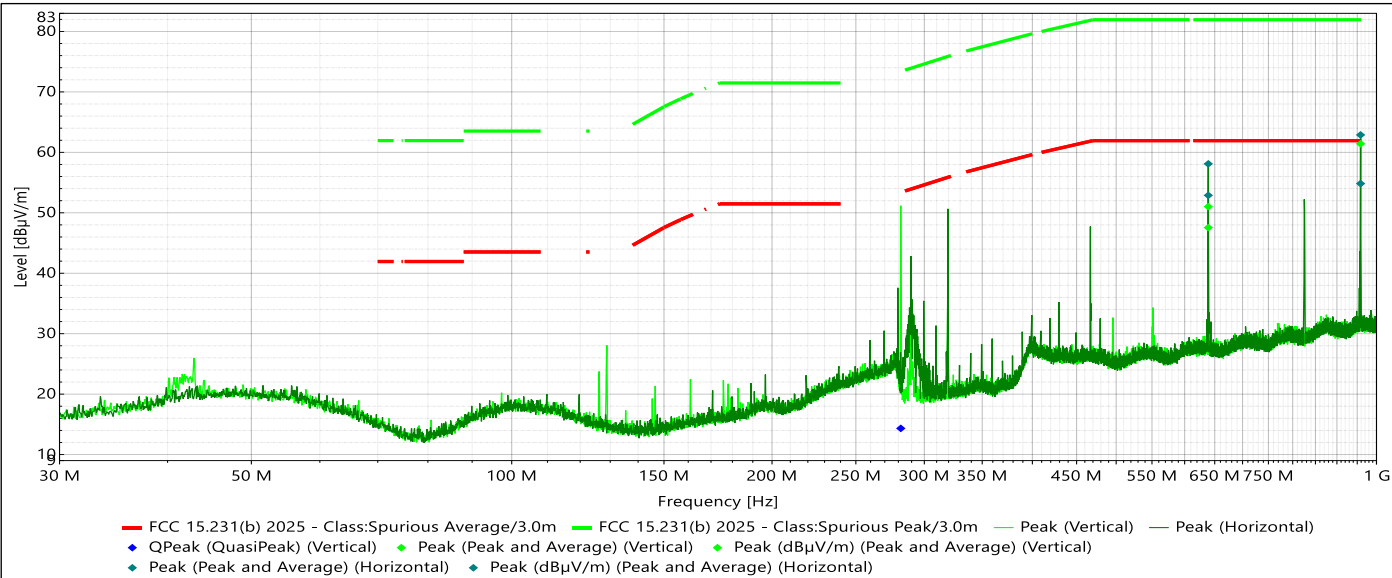


Figure 2.3.7.2-3 – Radiated Emissions Test Results



Finals

Table 2.3.7.2-3– Radiated Emissions Test Results – Quasi-Peak Levels

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
281.783	14.33	46.02	-31.69	18.00	1.92	Vertical	Pass

Table 2.3.7.2-4– Radiated Emissions Test Results – Peak and Average Levels

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
638.995	47.55	81.94	-34.39	25.31	61.94	-36.63	118.00	3.75	Vertical	Pass
638.995	51.02	81.94	-30.92	28.78	61.94	-33.16	65.00	2.50	Vertical	Pass
958.490	61.42	81.94	-20.52	39.18	61.94	-22.76	243.00	1.00	Vertical	Pass
638.995	52.89	81.94	-29.05	30.65	61.94	-31.29	5.00	3.75	Horizontal	Pass
638.995	58.10	81.94	-23.84	35.86	61.94	-26.08	356.00	2.50	Horizontal	Pass
958.490	54.83	81.94	-27.11	32.59	61.94	-29.35	356.00	3.75	Horizontal	Pass
958.490	62.89	81.94	-19.05	40.65	61.94	-21.29	130.00	2.50	Horizontal	Pass

Test Notes:

- Field Strength of Spurious Emissions
- A duty correction factor of -22.24 dB from the peak levels was used for the average test results.



Spurious RE 1-4GHz - X axis S unit

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
1 GHz - 4 GHz	3m	Vertical	1 MHz	6001 Pts	200 ms
1 GHz - 4 GHz	3m	Horizontal	1 MHz	6001 Pts	200 ms

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	2/27/2026	23.7C	44%	989mbar

Technology	Frequency	Channel	Mode	EUT Orientation
319 MHz Momentarily Operated Transmitter using OOK modulation	319.508 MHz	N/A	TX	X-axis

Limit:
FCC Part 15.231/FCC 15.231(b) 2025

Test Results:
Pass

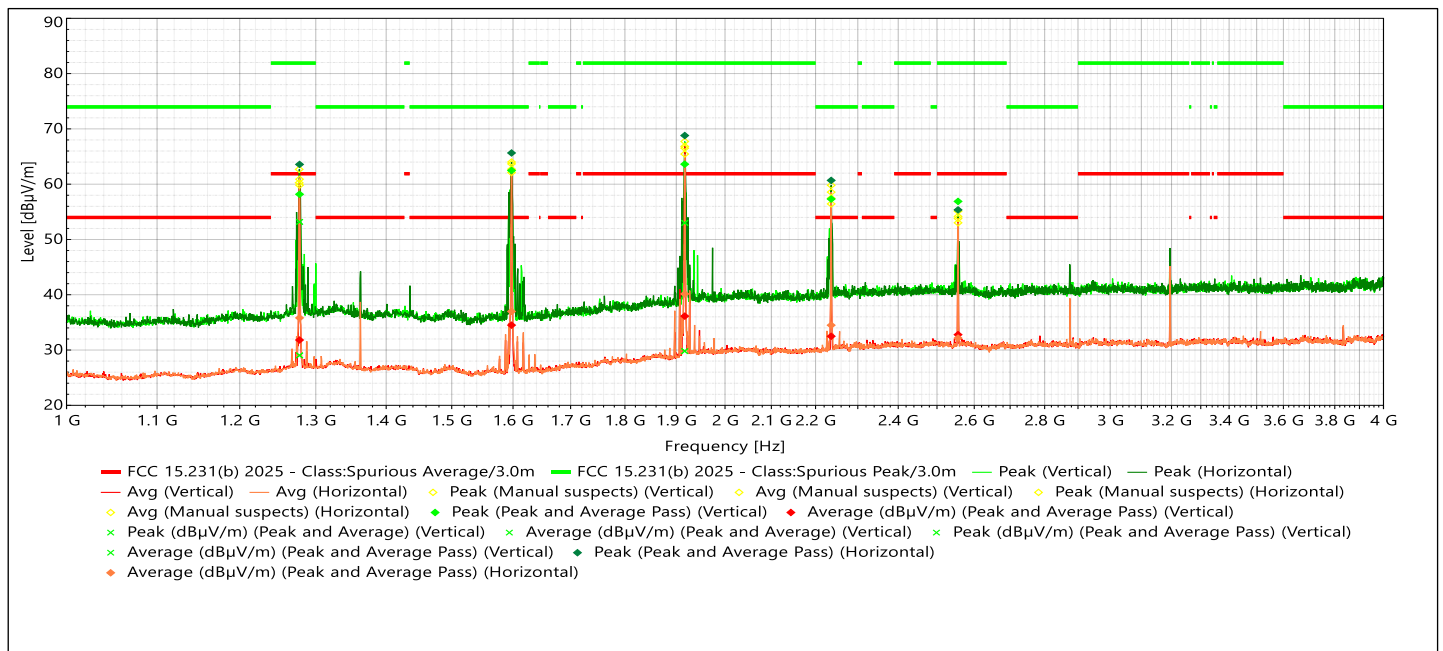


Figure 2.3.7.2-4 – Radiated Emissions Test Results

**Table 2.3.7.2-5– Radiated Emissions Test Results – Peak and Average Levels**

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
1277.996	58.17	81.90	-23.73	35.93	61.90	-25.97	87.00	3.01	Vertical	Pass
1277.996	53.18	81.90	-28.72	30.94	61.90	-30.96	38.00	1.00	Vertical	Pass
1597.491	62.48	73.98	-11.50	40.24	53.98	-13.74	79.00	2.73	Vertical	Pass
1916.993	63.62	81.90	-18.28	41.38	61.90	-20.52	103.00	3.86	Vertical	Pass
1916.993	53.00	81.90	-28.90	30.76	61.90	-31.14	51.00	1.00	Vertical	Pass
2236.488	57.32	73.98	-16.66	35.08	53.98	-18.9	95.00	3.50	Vertical	Pass
2555.988	56.89	81.90	-25.01	34.65	61.90	-27.25	144.00	3.54	Vertical	Pass
1277.992	63.58	81.90	-18.32	41.34	61.90	-20.56	192.00	2.02	Horizontal	Pass
1597.496	65.65	73.98	-8.33	43.41	53.98	-10.57	15.00	3.25	Horizontal	Pass
1916.991	68.80	81.90	-13.10	46.56	61.90	-15.34	63.00	1.05	Horizontal	Pass
2236.493	60.68	73.98	-13.29	38.44	53.98	-15.54	233.00	3.58	Horizontal	Pass
2555.989	55.35	81.90	-26.55	33.11	61.90	-28.79	119.00	3.82	Horizontal	Pass

Test Notes:

- Field Strength of Spurious Emissions
- A duty correction factor of -22.24 dB from the peak levels was used for the average test results.



Spurious - 9kHz-30MHz - Y Axis S unit - Vertical Co-Planar

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
9 kHz - 150 kHz	3m	Vertical	200 Hz	1411 Pts	5 ms/MHz
150 kHz - 30 MHz	3m	Vertical	9 kHz	5971 Pts	5 ms/MHz

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	2/27/2026	24.7 C	40%	986 mbar

Technology	Frequency	Channel	Mode	EUT Orientation
319 MHz Momentarily Operated Transmitter using OOK modulation	319.508 MHz	N/A	TX	Y-axis

Limit:
FCC Part 15/FCC §15.209_2025_09_23

Test Results:
Pass

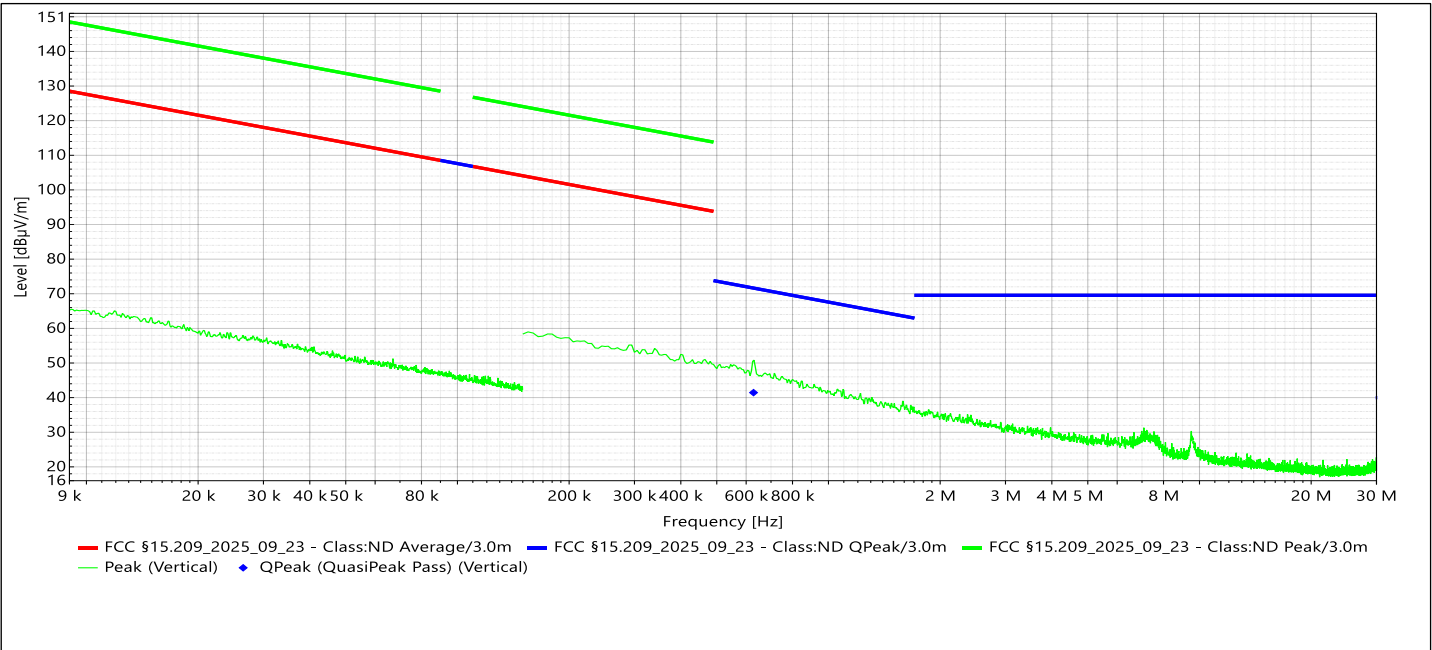


Figure 2.3.7.2-5 – Radiated Emissions Test Results

**Table 2.3.7.2-6– Radiated Emissions Test Results – Quasi-Peak Levels**

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
0.628	41.44	71.62	-30.17	312.00	1.00	Vertical	Pass

Test Notes: Field Strength of Spurious Emissions - Vertical Coplanar



Spurious - 9kHz-30MHz - Y Axis S unit - Horizontal Co-Planar

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
9 kHz - 150 kHz	3m	Horizontal	200 Hz	1411 Pts	5 ms/MHz
150 kHz - 30 MHz	3m	Horizontal	9 kHz	5971 Pts	5 ms/MHz

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	2/27/2026	24.7 C	40%	986 mbar

Technology	Frequency	Channel	Mode	EUT Orientation
319 MHz Momentarily Operated Transmitter using OOK modulation	319.508 MHz	N/A	TX	Y-axis

Limit:
FCC Part 15/FCC §15.209_2025_09_23

Test Results:
Pass

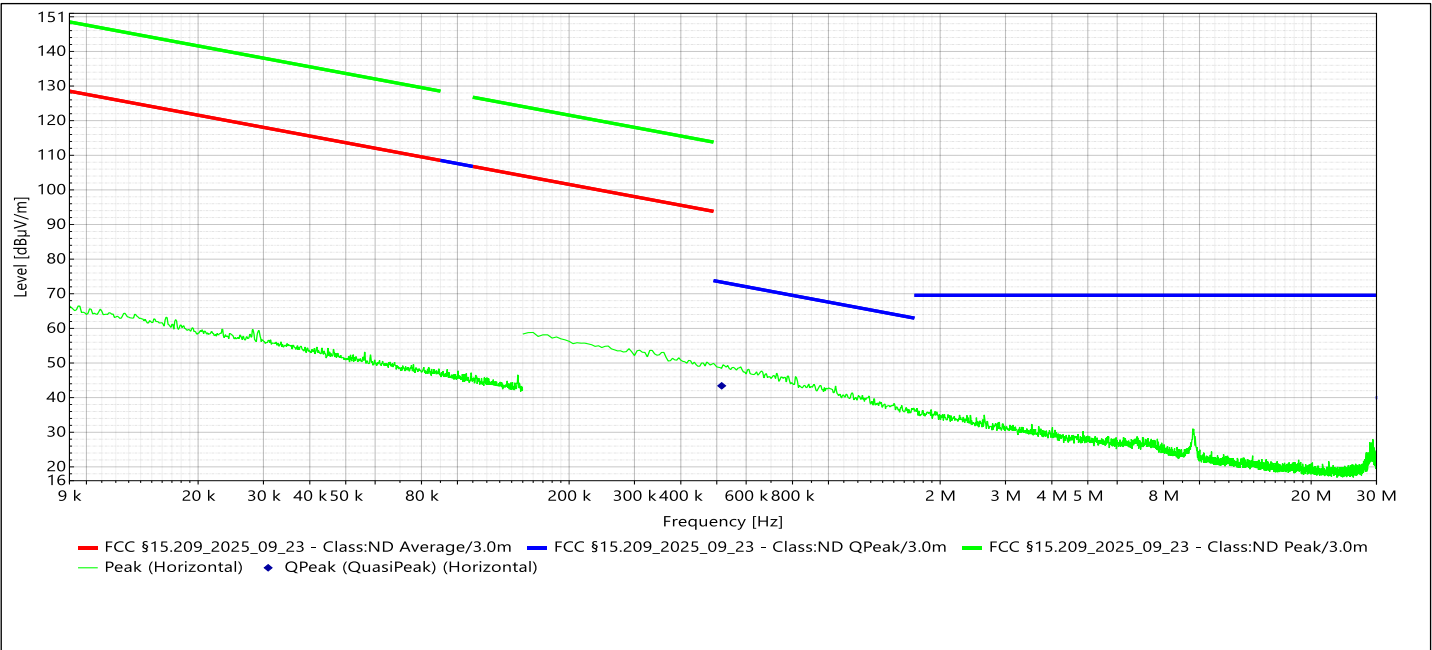


Figure 2.3.7.2-6 – Radiated Emissions Test Results



Table 2.3.7.2-7– Radiated Emissions Test Results – Quasi-Peak Levels

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
0.516	43.41	73.37	-29.96	220.00	1.00	Horizontal	Pass

Test Notes: Field Strength of Spurious Emissions - Horizontal Coplanar



Spurious - 9kHz-30MHz - Y Axis S unit - Vertical Co-Axial

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
9 kHz - 150 kHz	3m	Vertical	200 Hz	1411 Pts	5 ms/MHz
150 kHz - 30 MHz	3m	Vertical	9 kHz	5971 Pts	5 ms/MHz

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	2/27/2026	24.7 C	40%	986 mbar

Technology	Frequency	Channel	Mode	EUT Orientation
319 MHz Momentarily Operated Transmitter using OOK modulation	319.508 MHz	N/A	TX	Y-axis

Limit:
FCC Part 15/FCC §15.209_2025_09_23

Test Results:
Pass

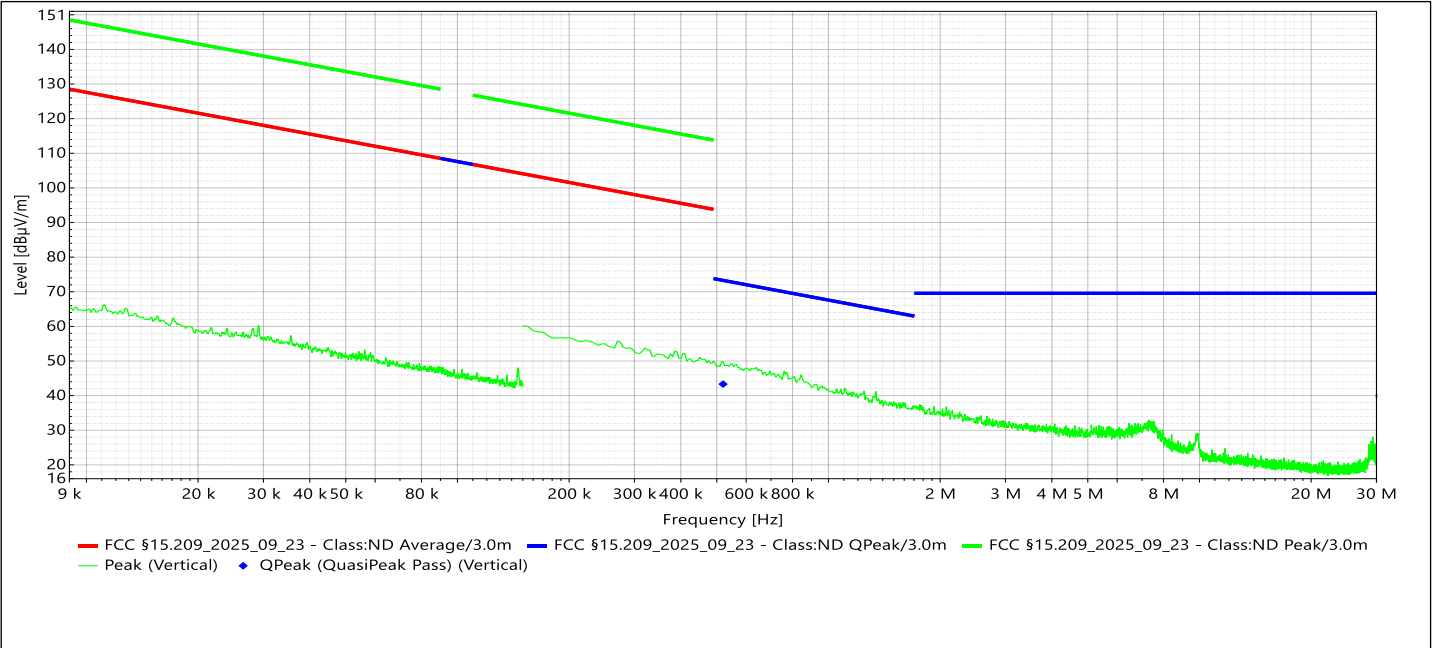


Figure 2.3.7.2-7 – Radiated Emissions Test Results

**Table 2.3.7.2-8– Radiated Emissions Test Results – Quasi-Peak Levels**

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
0.520	43.33	73.28	-29.95	91.00	1.00	Vertical	Pass

Test Notes: Field Strength of Spurious Emissions - Vertical Coaxial



Fundamental and Spurious Emissions Y axis

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
200 MHz - 400 MHz	3m	Vertical	120 kHz	18001 Pts	Auto
200 MHz - 400 MHz	3m	Horizontal	120 kHz	18001 Pts	Auto

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	2/26/2026	27.1 C	9 %	975 mbar

Technology	Frequency	Channel	Mode	EUT Orientation
319 MHz Momentarily Operated Transmitter using OOK modulation	319.508 MHz	N/A	TX	Y-axis

Limit:

FCC Part 15.231/FCC 15.231(b) 2025

Test Results:

Pass

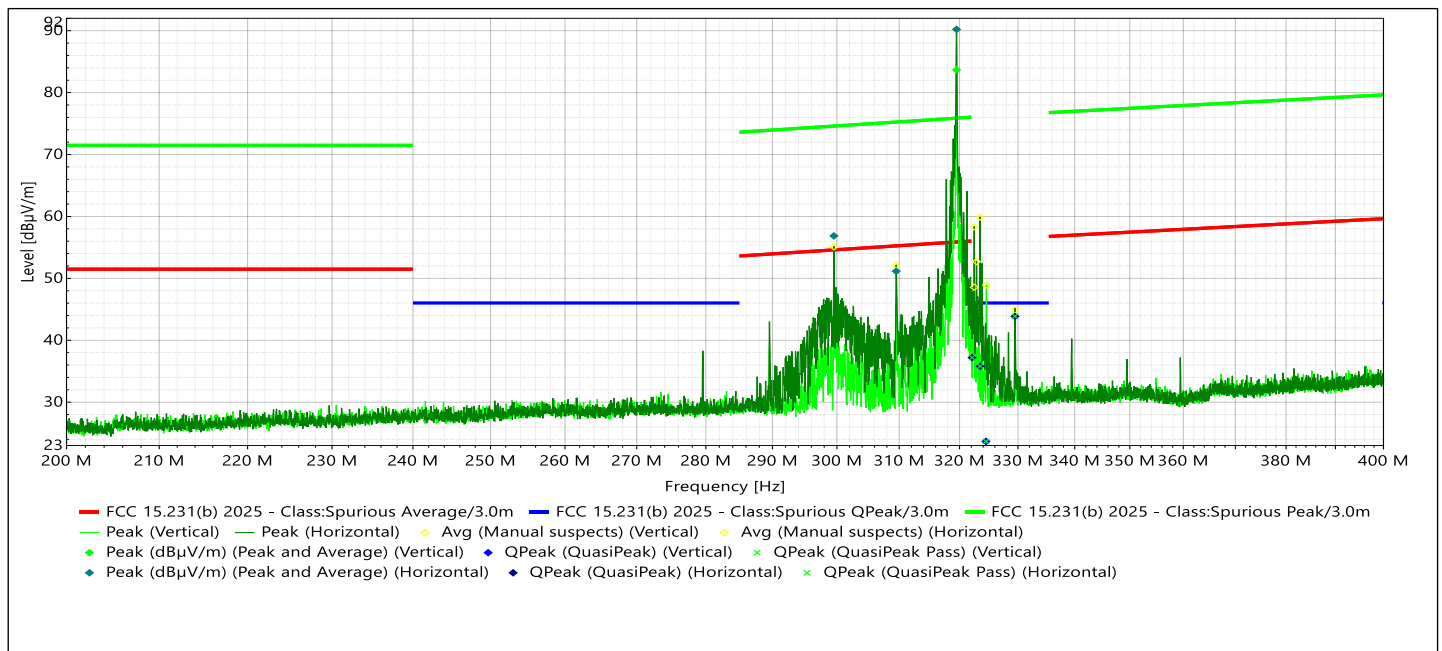


Figure 2.3.7.2-8 – Radiated Emissions Test Results

**Table 2.3.7.2-9– Radiated Emissions Test Results – Peak and Average Levels**

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
299.530	56.86	74.60	-17.74	34.62	54.60	-19.98	132.00	1.00	Horizontal	Pass
309.514	51.15	75.25	-24.10	28.91	55.25	-26.34	356.00	1.00	Horizontal	Pass

Test Notes:

- Field Strength of Spurious Emissions
- A duty correction factor of -22.24 dB from the peak levels was used for the average test results.

Table 2.3.7.2-10– Radiated Emissions Test Results – Quasi-Peak Levels

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
324.487	23.66	46.02	-22.36	356.00	1.25	Vertical	Pass
322.124	37.20	46.02	-8.82	356.00	1.00	Horizontal	Pass
323.497	35.81	46.02	-10.22	117.00	1.00	Horizontal	Pass
329.479	43.87	46.02	-2.16	132.00	1.00	Horizontal	Pass

Test Notes: Field Strength of Spurious Emissions.



Spurious - 30MHz - 1GHz - Y axis S unit

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	120 kHz	19401 Pts	Auto
30 MHz - 1 GHz	3m	Horizontal	120 kHz	19401 Pts	Auto

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	2/26/2026	26.4 C	12 %	976 mbar

Technology	Frequency	Channel	Mode	EUT Orientation
Proprietary OOK modulation	319.508 MHz	N/A	TX	Y-axis

Limit:
FCC Part 15.231/FCC 15.231(b) 2025

Test Results:
Pass

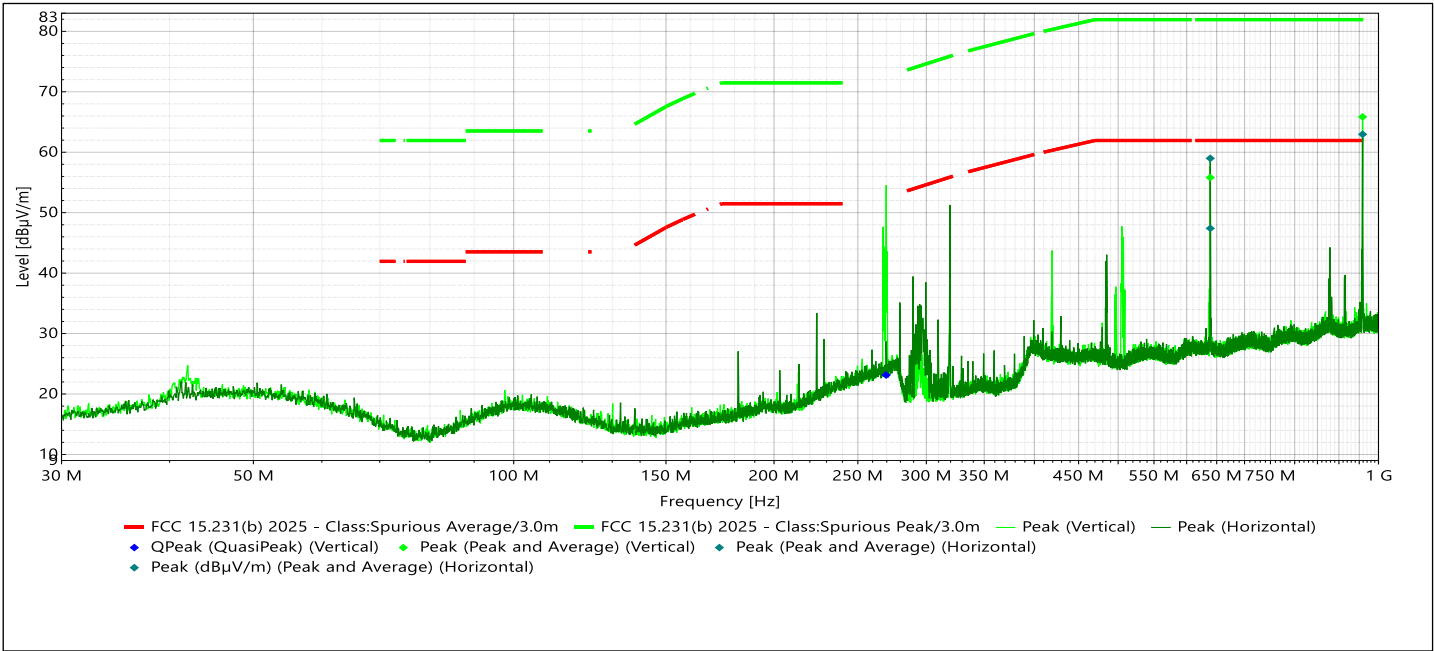


Figure 2.3.7.2-9 – Radiated Emissions Test Results

**Table 2.3.7.2-11– Radiated Emissions Test Results – Quasi-Peak Levels**

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
269.578	23.13	46.02	-22.89	130.00	2.64	Vertical	Pass

Test Notes: Field Strength of Spurious Emissions

Table 2.3.7.2-12– Radiated Emissions Test Results – Peak and Average Levels

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
638.994	55.81	81.94	-26.13	33.57	61.94	-28.37	117.00	1.00	Vertical	Pass
958.490	65.85	81.94	-16.09	43.61	61.94	-18.33	0.00	1.00	Vertical	Pass
638.994	47.41	81.94	-34.53	25.17	61.94	-36.77	360.00	3.75	Horizontal	Pass
638.994	58.99	81.94	-22.95	36.75	61.94	-25.19	175.00	2.50	Horizontal	Pass
958.490	62.97	81.94	-18.97	40.73	61.94	-21.21	360.00	1.00	Horizontal	Pass

Test Notes:

- Field Strength of Spurious Emissions
- A duty correction factor of -22.24 dB from the peak levels was used for the average test results.



Spurious RE 1-4GHz - Y axis S unit

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
1 GHz - 4 GHz	3m	Vertical	1 MHz	6001 Pts	200 ms
1 GHz - 4 GHz	3m	Horizontal	1 MHz	6001 Pts	200 ms

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	2/27/2026	23.7C	44%	989mbar

Technology	Frequency	Channel	Mode	EUT Orientation
319 MHz Momentarily Operated Transmitter using OOK modulation	319.508 MHz	N/A	TX	Y-axis

Limit:
FCC Part 15.231/FCC 15.231(b) 2025

Test Results:
Pass

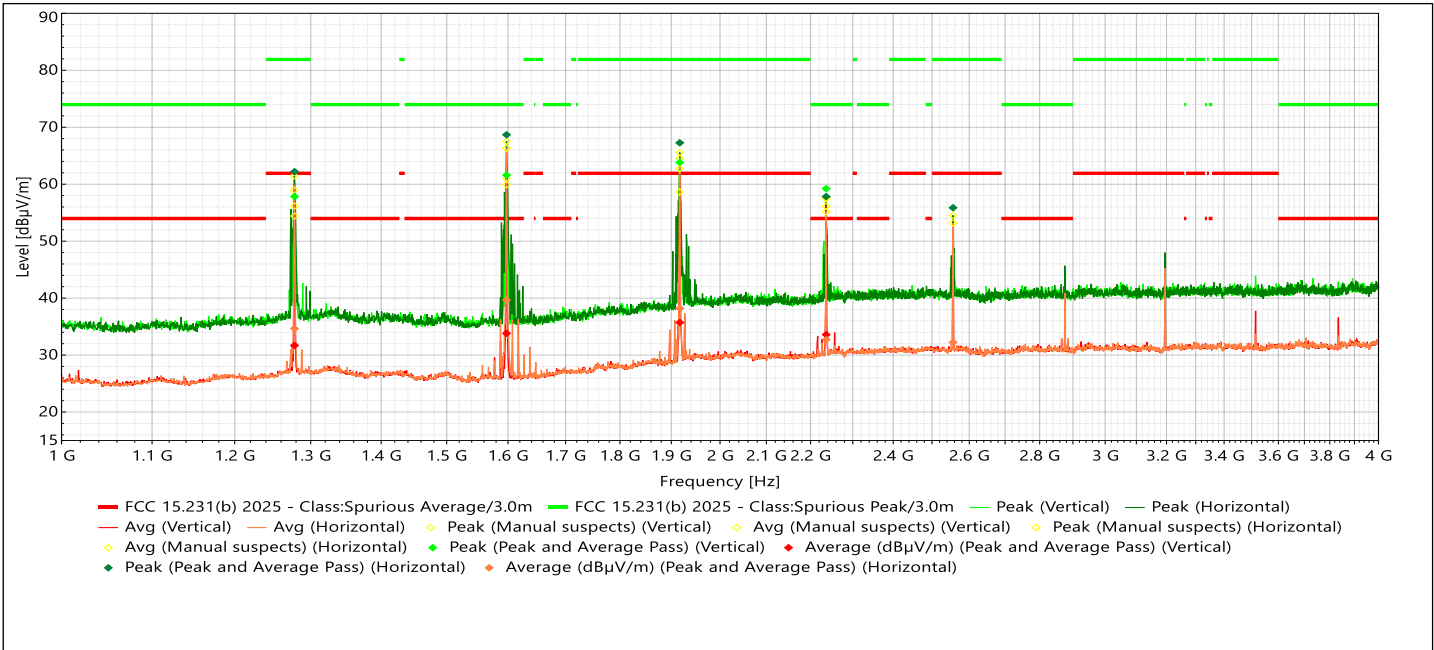


Figure 2.3.7.2-10 – Radiated Emissions Test Results

**Table 2.3.7.2-13– Radiated Emissions Test Results – Peak and Average Levels**

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
1277.993	57.83	81.90	-24.07	35.59	61.90		0.00	1.00	Vertical	Pass
1597.493	61.60	73.98	-12.38	39.36	53.98		289.00	1.00	Vertical	Pass
1916.996	63.82	81.90	-18.08	41.58	61.90		305.00	1.33	Vertical	Pass
2236.494	59.22	73.98	-14.76	36.98	53.98		249.00	3.33	Vertical	Pass
1277.996	62.20	81.90	-19.70	39.96	61.90		0.00	1.97	Horizontal	Pass
1597.496	68.68	73.98	-5.30	46.44	53.98		23.00	1.61	Horizontal	Pass
1916.997	67.27	81.90	-14.63	45.03	61.90		39.00	1.05	Horizontal	Pass
2236.497	57.83	73.98	-16.15	35.59	53.98		55.00	1.32	Horizontal	Pass
2555.995	55.86	81.90	-26.04	33.62	61.90		71.00	1.00	Horizontal	Pass

Test Notes:

- Field Strength of Spurious Emissions
- A duty correction factor of -22.24 dB from the peak levels was used for the average test results.



Spurious - 9kHz-30MHz - Z Axis S unit - Vertical Co-Axial

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
9 kHz - 150 kHz	3m	Vertical	200 Hz	1411 Pts	5 ms/MHz
150 kHz - 30 MHz	3m	Vertical	9 kHz	5971 Pts	5 ms/MHz

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	2/27/2026	24.7 C	40%	986 mbar

Technology	Frequency	Channel	Mode	EUT Orientation
319 MHz Momentarily Operated Transmitter using OOK modulation	319.508 MHz	N/A	TX	Z-axis

Limit:

FCC Part 15/FCC §15.209_2025_09_23

Test Results:

Pass

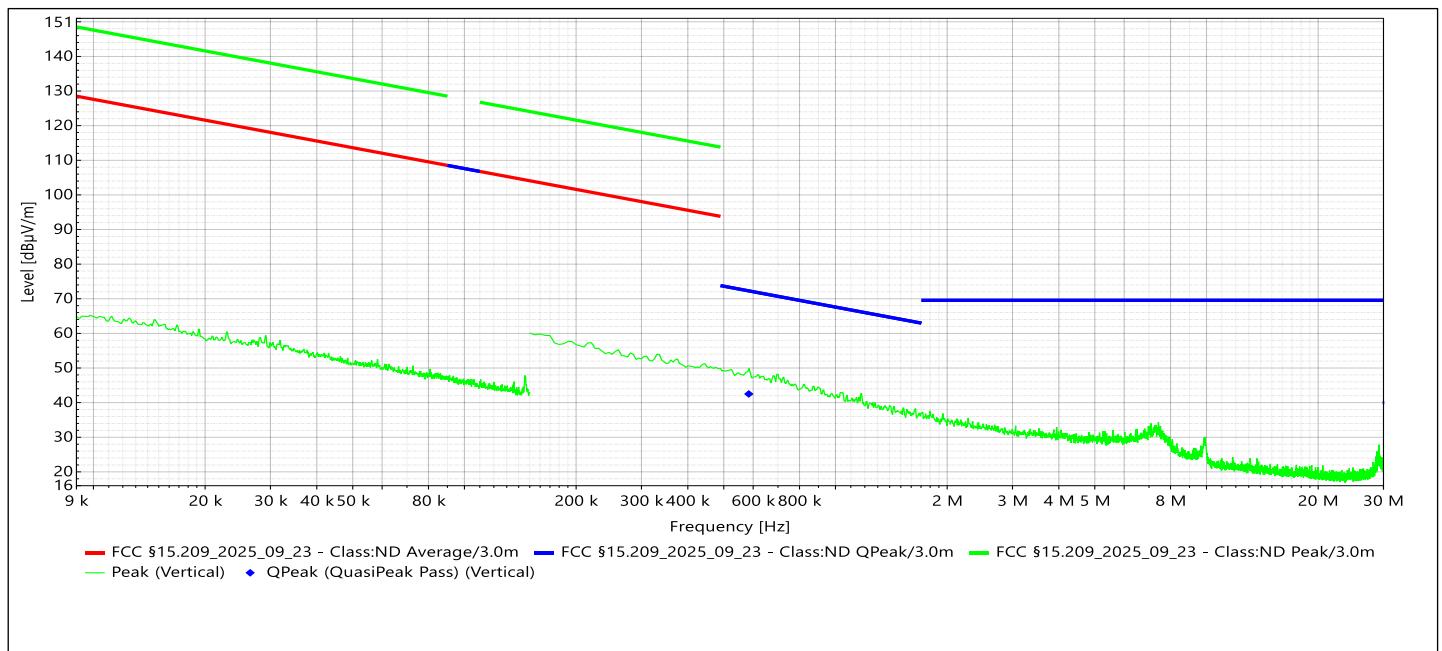


Figure 2.3.7.2-11 – Radiated Emissions Test Results



Table 2.3.7.2-14– Radiated Emissions Test Results – Quasi-Peak Levels

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
0.584	42.50	72.26	-29.76	63.00	1.00	Vertical	Pass

Test Notes: Field Strength of Spurious Emissions - Vertical Coaxial



Fundamental and Spurious Emissions Z axis

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
200 MHz - 400 MHz	3m	Vertical	120 kHz	18001 Pts	Auto
200 MHz - 400 MHz	3m	Horizontal	120 kHz	18001 Pts	Auto

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	2/26/2026	27.1 C	9 %	975 mbar

Technology	Frequency	Channel	Mode	EUT Orientation
Proprietary OOK modulation	319.508 MHz	N/A	TX	Z-axis

Limit:
FCC Part 15.231/FCC 15.231(b) 2025

Test Results:
Pass

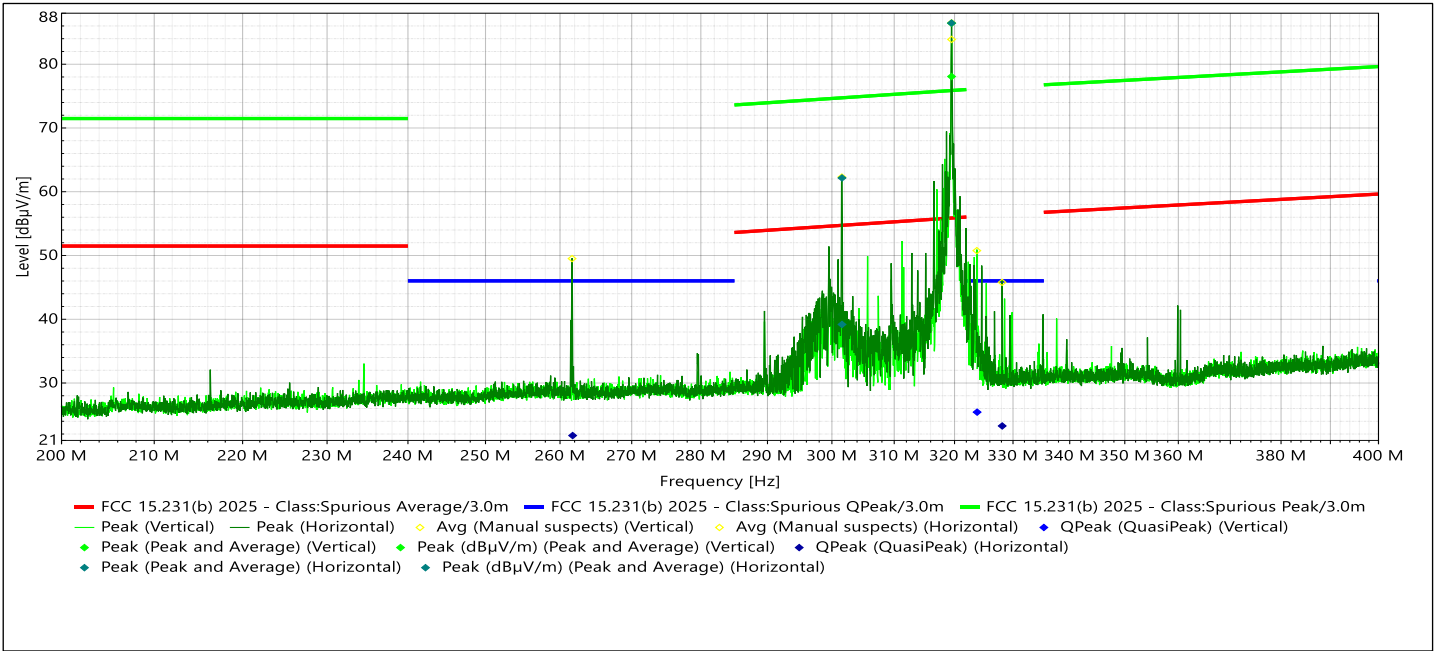


Figure 2.3.7.2-12 – Radiated Emissions Test Results

**Table 2.3.7.2-15– Radiated Emissions Test Results – Peak and Average Levels**

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
301.598	39.19	74.72	-35.53	16.95	54.72	-37.77	0.00	3.75	Horizontal	Pass
301.598	62.16	74.73	-12.57	39.92	54.73	-14.81	0.00	2.50	Horizontal	Pass

Test Notes:

- Field Strength of Spurious Emissions
- A duty correction factor of -22.24 dB from the peak levels was used for the average test results.

Table 2.3.7.2-16– Radiated Emissions Test Results – Quasi-Peak Levels

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
323.828	25.43	46.02	-20.59	236.00	1.00	Vertical	Pass
261.735	21.76	46.02	-24.26	135.00	1.88	Horizontal	Pass
328.132	23.26	46.02	-22.76	130.00	3.64	Horizontal	Pass

Test Notes: Fundamental Field Strength and Spurious



Spurious - 30MHz - 1GHz - Z axis S unit

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	120 kHz	19401 Pts	Auto
30 MHz - 1 GHz	3m	Horizontal	120 kHz	19401 Pts	Auto

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	2/27/2026	24.9 C	40 %	985 mbar

Technology	Frequency	Channel	Mode	EUT Orientation
Proprietary OOK modulation	319.508 MHz	N/A	TX	Z-axis

Limit:
FCC Part 15.231/FCC 15.231(b) 2025

Test Results:
Pass

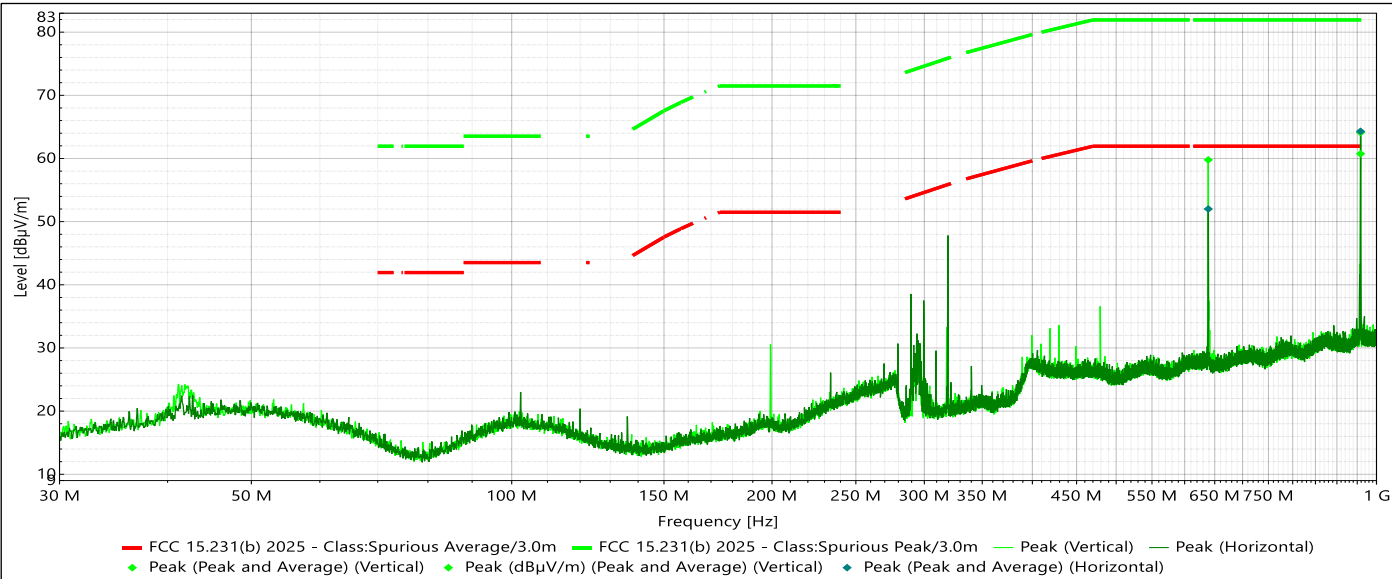


Figure 2.3.7.2-13 – Radiated Emissions Test Results



Finals

Table 2.3.7.2-17– Radiated Emissions Test Results – Peak and Average Levels

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
638.993	59.78	81.94	-22.16	37.54	61.94	-24.4	244.00	1.02	Vertical	Pass
958.488	60.75	81.94	-21.19	38.51	61.94	-23.43	117.00	1.00	Vertical	Pass
958.488	64.11	81.94	-17.83	41.87	61.94	-20.07	37.00	1.00	Vertical	Pass
638.994	52.01	81.94	-29.93	29.77	61.94	-32.17	360.00	1.00	Horizontal	Pass
958.488	64.30	81.94	-17.64	42.06	61.94	-19.88	360.00	1.00	Horizontal	Pass

Test Notes:

- Field Strength of Spurious Emissions
- A duty correction factor of -22.24 dB from the peak levels was used for the average test results.



Spurious RE 1-4GHz - Z axis S unit

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
1 GHz - 4 GHz	3m	Vertical	1 MHz	6001 Pts	200 ms
1 GHz - 4 GHz	3m	Horizontal	1 MHz	6001 Pts	200 ms

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	2/27/2026	24.9C	42%	989mbar

Technology	Frequency	Channel	Mode	EUT Orientation
319 MHz Momentarily Operated Transmitter using OOK modulation	319.508 MHz	N/A	TX	Z-axis

Limit:
FCC Part 15.231/FCC 15.231(b) 2025

Test Results:
Pass

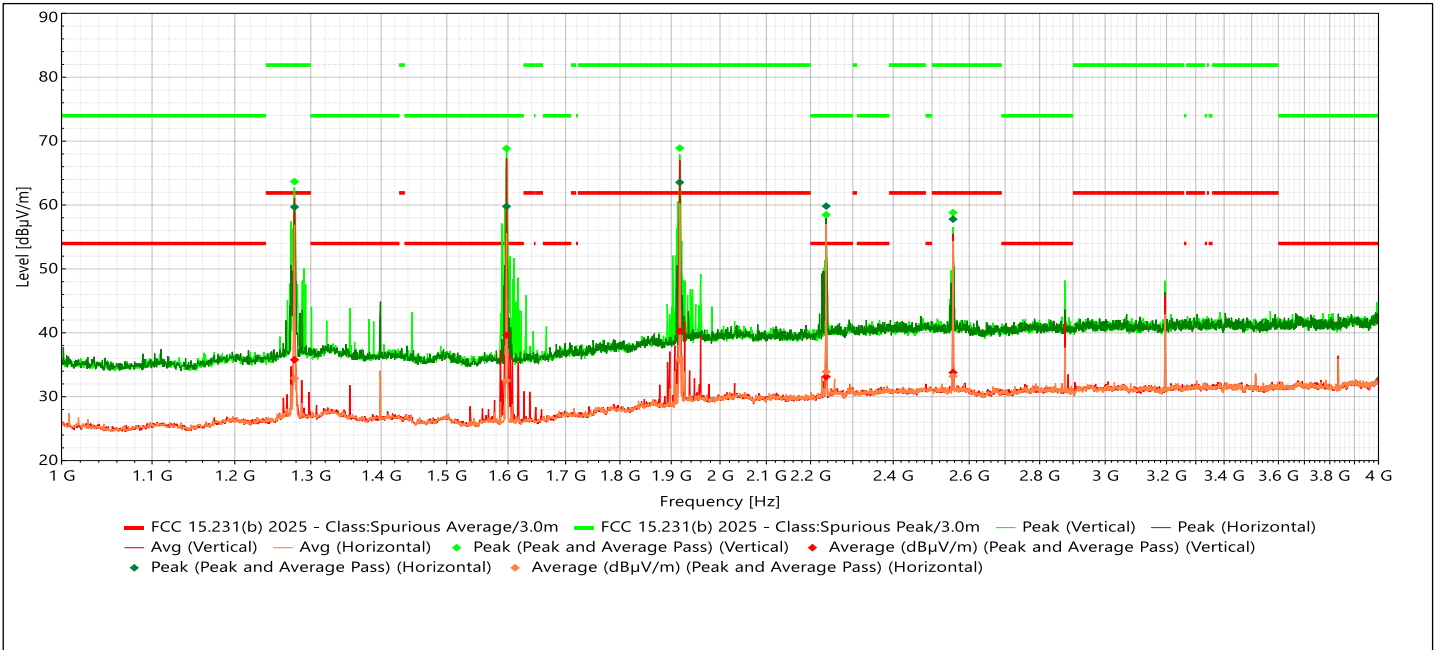


Figure 2.3.7.2-14 – Radiated Emissions Test Results

**Table 2.3.7.2-18– Radiated Emissions Test Results – Peak and Average Levels**

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
1277.994	63.67	81.90	-18.23	41.43	61.90	-20.47	22.00	2.82	Vertical	Pass
1597.496	68.85	73.98	-5.13	46.61	53.98	-7.37	6.00	2.45	Vertical	Pass
1916.994	68.91	81.90	-12.99	46.67	61.90	-15.23	6.00	2.97	Vertical	Pass
2236.493	58.47	73.98	-15.51	36.23	53.98	-17.75	313.00	3.46	Vertical	Pass
2555.995	58.81	81.90	-23.09	36.57	61.90	-25.33	321.00	1.19	Vertical	Pass
1277.997	59.69	81.90	-22.21	37.45	61.90	-24.45	338.00	1.00	Horizontal	Pass
1597.493	59.78	73.98	-14.20	37.54	53.98	-16.44	112.00	3.45	Horizontal	Pass
1916.993	63.55	81.90	-18.35	41.31	61.90	-20.59	22.00	1.05	Horizontal	Pass
2236.493	59.83	73.98	-14.15	37.59	53.98	-16.39	330.00	1.05	Horizontal	Pass
2555.997	57.78	81.90	-24.12	35.54	61.90	-26.36	338.00	2.89	Horizontal	Pass

Test Notes:

- Field Strength of Spurious Emissions
- A duty correction factor of -22.24 dB from the peak levels was used for the average test results.

2.3.8 Sample Calculations

$$R_c = R_u + CF_T$$

Where:

CF_T	=	Total Correction Factor (AF+CA+AG)-DC (Average Measurements Only)
R_u	=	Uncorrected Reading
R_c	=	Corrected Level
AF	=	Antenna Factor
CA	=	Cable Attenuation
AG	=	Amplifier Gain
DC	=	Duty Cycle Correction Factor

Example Calculation: PeakCorrected Level: $75.63 + (-6.78) = 68.85 \text{ dB}\mu\text{V/m}$ Margin: $68.85 \text{ dB}\mu\text{V/m} - 74 \text{ dB}\mu\text{V/m} = -5.15 \text{ dB}$ **Example Calculation: Average**Corrected Level: $75.63 + (-6.78) - 22.24 = 46.61 \text{ dB}\mu\text{V/m}$ Margin: $46.61 \text{ dB}\mu\text{V/m} - 54 \text{ dB}\mu\text{V/m} = -7.39 \text{ dB}$



2.3.9 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.

Test Site: 3mSAC

Device #	Manufacturer	Description	Model	Serial #	Cal Code	Cal Date	Cal Due
NBLE03504	Florida RF Labs	Cable, N 3ft	FL335	3ft-1	B	03/19/2025	03/19/2026
NBLE03514	Florida RF Labs	Cable, SMA	FL200	3ft-9	B	10/14/2025	10/14/2026
NBLE10574		Cable, BNC 3M	EF142	10574	B	03/21/2025	03/21/2026
NBLE11142	Hewlett-Packard	Preamplifier, 0.1 to 1300 MHz	8447D	2727A05370	B	10/16/2025	10/16/2026
WRLE02418	EMCO/EMC Test	Antenna, Loop	6502	2215	G	03/18/2025	03/18/2027
WRLE10891		Cable, BNC 5M	EF142/11BNC/11BNC/5M	N/A	B	03/17/2025	03/17/2026
WRLE11519	Com-Power Corp.	Preamplifier, 500 MHz-18 GHz	PAM-118A	18040002	B	01/24/2026	01/24/2027
NBLE11614	Teledyne Storm Microwave	Cable, N 3m	90-195-3MTR	182984-003	B	01/26/2026	01/26/2027
NBLE11618	Teledyne Storm Microwave	Cable, N 8m	90-195-8MTR	182982-004	B	02/05/2026	02/05/2027
NBLE11630	ETS-Lindgren	Antenna, 1-18 GHz	3117	00218816	G	09/27/2024	09/27/2026
NBLE11645	Schwarzbeck	Antenna, Trilog, 30 MHz-7 GHz	VULB 9162	0254	G	06/24/2025	06/24/2027
TEMC00185	Eagle	Tunable Notch Filter 250 - 850 MHz	TNF-230	N/A	B	01/24/2026	01/24/2027
NBLE11754	Rohde & Schwarz	Receiver, 1 Hz-44 GHz	ESW44	103037	G	10/24/2025	10/24/2026
NBLE12001	Micro-Tronics	High Pass Filter - 900 MHz	HPM50115	019	B	01/15/2026	01/15/2027

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.



2.4 20 dB Bandwidth

2.4.1 Specification Reference

FCC: Section 15.215

2.4.2 Equipment Under Test and Modification State

S/N: 09774E8

2.4.3 Date of Test

2/27/2026

2.4.4 Test Method

The spectrum analyzer span was set to 2 to 5 times the estimated bandwidth of the emission. The RBW was set from 1% to 5% of the estimated emission bandwidth. The trace was set to max hold with a peak detector active. The 20-dB function of the analyzer was utilized to determine the 20 dB bandwidth of the emission.

2.4.5 Environmental Conditions

Ambient Temperature	24.3°C
Relative Humidity	13 %
Atmospheric Pressure	980 mbar

2.4.6 Test Results

Battery Powered, Operating

Limit Clause FCC Part 15.231(c)

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

Test Summary:

The 20 dB Bandwidth limit is calculated as 0.25% of the 319.5 MHz center frequency. The limit is equal to 0.799 MHz. Therefore, the 20 dB bandwidth of the emission is less than 0.25% of the center frequency.

Test Result: Pass

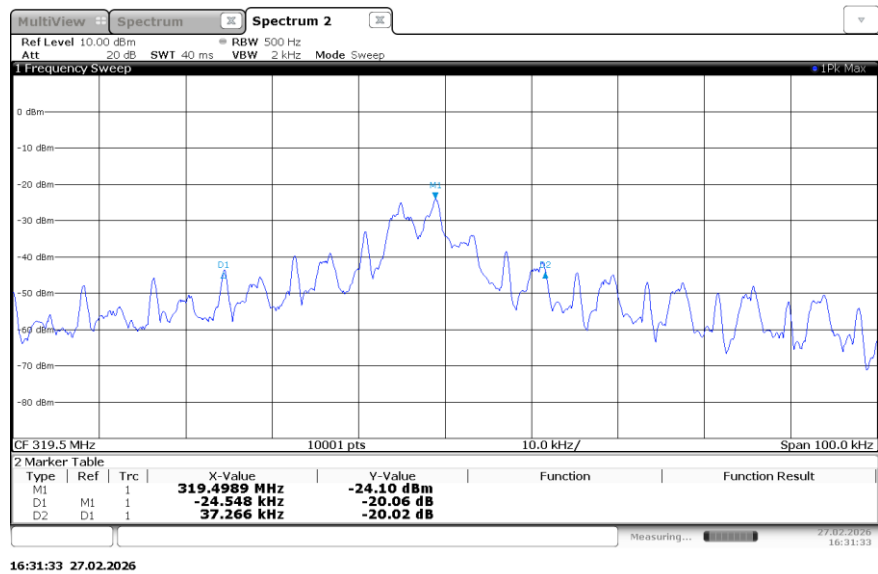


Figure 2.4.6-1 – 20-dB Bandwidth Test Results

Table 2.4.6-1 – 20 dB Bandwidth Test Results

Frequency MHz	Bandwidth (kHz)	Limit (kHz)	Result
319.5	37.266	798.75	Pass



2.4.7 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.

Test Site: Reverb

Device #	Manufacturer	Description	Model	Serial #	Cal Code	Cal Date	Cal Due
DEMC3085	Rohde & Schwarz	Signal & Spectrum Analyzer	FSW43	103997	G	08/29/2025	08/29/2026
NBLE03582	Huber+ Suhner	Cable, BNC 4M	HS142	4M-10	B	10/15/2025	10/15/2026
WRLE10515	EMCO/EMC Test	Near Field Probe	7405	7405-901	Y	N/A	N/A

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.
N/A = Not Applicable



2.5 99% Bandwidth

2.5.1 Specification Reference

ISED Canada: RSS-210 A.1.4

2.5.2 Equipment Under Test and Modification State

S/N: 09774E8

2.5.3 Date of Test

3/2/2026

2.5.4 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.

2.5.5 Environmental Conditions

Ambient Temperature	23.8°C
Relative Humidity	11 %
Atmospheric Pressure	974 mbar

2.5.6 Test Results

Battery Powered, Operating

Limit Clause ISED RSS-210 A.1.4

The occupied bandwidth of momentarily operated devices shall be less than or equal to 0.25% of the center frequency for devices operating between 70 MHz and 900 MHz. For devices operating above 900 MHz, the occupied bandwidth shall be less than or equal to 0.5% of the center frequency.

Test Summary:

The 99% Occupied Bandwidth limit is calculated as 0.25% of the 319.5 MHz center frequency. The limit is equal to 0.799 MHz. Therefore the 99% bandwidth of the emission is less than 0.25% of the center frequency.

Test Result: Pass

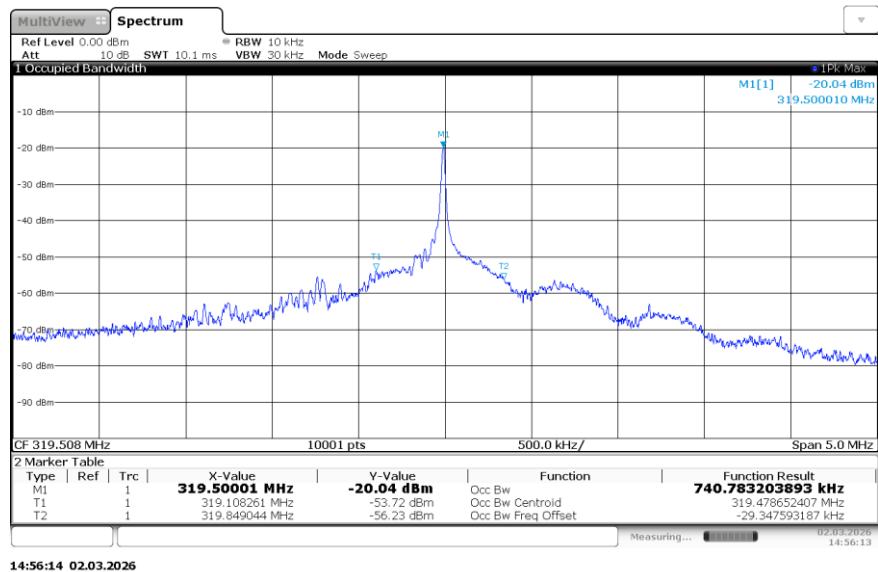


Figure 2.5.6-1 – 99% Bandwidth Test Results

Table 2.5.6-1 – 99% Bandwidth Test Results

Frequency MHz	Bandwidth (kHz)	Limit (kHz)	Result
319.5	740.7832	798.75	Pass

2.5.7 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.

Test Site: Reverb

Used test devices:

Device #	Manufacturer	Description	Model	Serial #	Cal Code	Cal Date	Cal Due
DEMC3085	Rohde & Schwarz	Signal & Spectrum Analyzer	FSW43	103997	G	08/29/2025	08/29/2026
NBLE03582	Huber+ Suhner	Cable, BNC 4M	HS142	4M-10	B	10/15/2025	10/15/2026
WRLE10515	EMCO/EMC Test	Near Field Probe	7405	7405-901	Y	N/A	N/A

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.
N/A = Not Applicable



3 Test Equipment Information

3.1 General Test Equipment Used

TEST EQUIPMENT

All measurement instrumentation is traceable to the National Institute of Standards and Technology and is calibrated to meet test method standard requirements and/or manufacturer's specifications

Device #	Manufacturer	Description	Model	Serial #	Cal Code	Cal Date	Cal Due
DEMC3085	Rohde & Schwarz	Signal & Spectrum Analyzer	FSW43	103997	G	08/29/2025	08/29/2026
NBLE03560	Huber+Suhner	Cable, BNC 1M	HS142	1M-8	B	08/04/2025	08/04/2026
NBLE03582	Huber+Suhner	Cable, BNC 4M	HS142	4M-10	B	10/15/2025	10/15/2026
NBLE11052	Huber+Suhner	Cable, BNC 1M	EF14211/BNC/11BNC	11052	B	03/17/2025	03/17/2026
WRLE10515	EMCO/EMC Test	Near Field Probe	7405	7405-901	Y	N/A	N/A
WRLE11124	RF Precision Cables	2 Way Pwr Div, Type N	PDX2103	none	B	04/22/2025	04/22/2026
NBLE11813	Rohde & Schwarz	Receiver, 1 Hz-8 GHz	ESW8	103154	G	09/17/2025	09/17/2026
NBLE03504	Florida RF Labs	Cable, N 3ft	FL335	3ft-1	B	03/19/2025	03/19/2026
NBLE03514	Florida RF Labs	Cable, SMA	FL200	3ft-9	B	10/14/2025	10/14/2026
NBLE10574	Huber+Suhner	Cable, BNC 3M	EF142	10574	B	03/21/2025	03/21/2026
NBLE11142	Hewlett-Packard	Preamplifier, 0.1 to 1300 MHz	8447D	2727A05370	B	10/16/2025	10/16/2026
WRLE02418	EMCO/EMC Test	Antenna, Loop	6502	2215	G	03/18/2025	03/18/2027
WRLE10891		Cable, BNC 5M	EF142/11BNC/11BNC/5M	N/A	B	03/17/2025	03/17/2026
WRLE11519	Com-Power Corp.	Preamplifier, 500 MHz-18 GHz	PAM-118A	18040002	B	01/24/2026	01/24/2027
NBLE11614	Teledyne Storm Microwave	Cable, N 3m	90-195-3MTR	182984-003	B	01/26/2026	01/26/2027
NBLE11618	Teledyne Storm Microwave	Cable, N 8m	90-195-8MTR	182982-004	B	02/05/2026	02/05/2027
NBLE11630	ETS-Lindgren	Antenna, 1-18 GHz	3117	00218816	G	09/27/2024	09/27/2026
NBLE11645	Schwarzbeck	Antenna, Trilog, 30 MHz-7 GHz	VULB 9162	0254	G	06/24/2025	06/24/2027
TEMC00185	Eagle	Tunable Notch Filter 250 - 850 MHz	TNF-230	N/A	B	01/24/2026	01/24/2027
NBLE11754	Rohde & Schwarz	Receiver, 1 Hz-44 GHz	ESW44	103037	G	10/24/2025	10/24/2026
NBLE12001	Micro-Tronics	High Pass Filter - 900 MHz	HPM50115	019	B	01/15/2026	01/15/2027

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.

O/M = Output Monitored with Calibrated Equipment.

N/A = Not Applicable



4 Diagram of Test Set-ups

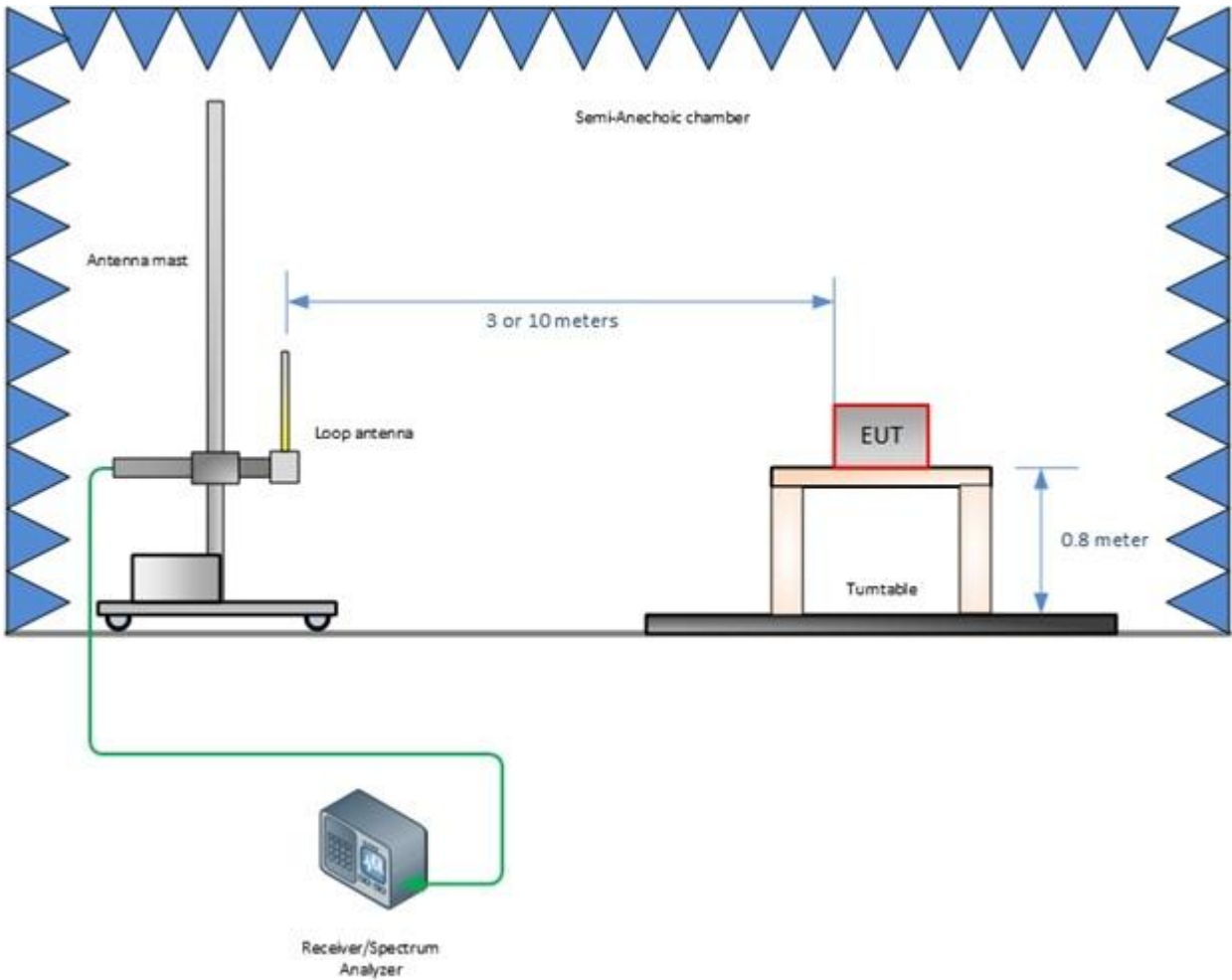


Figure 4-1 – Radiated Emissions Test Setup below 30 MHz

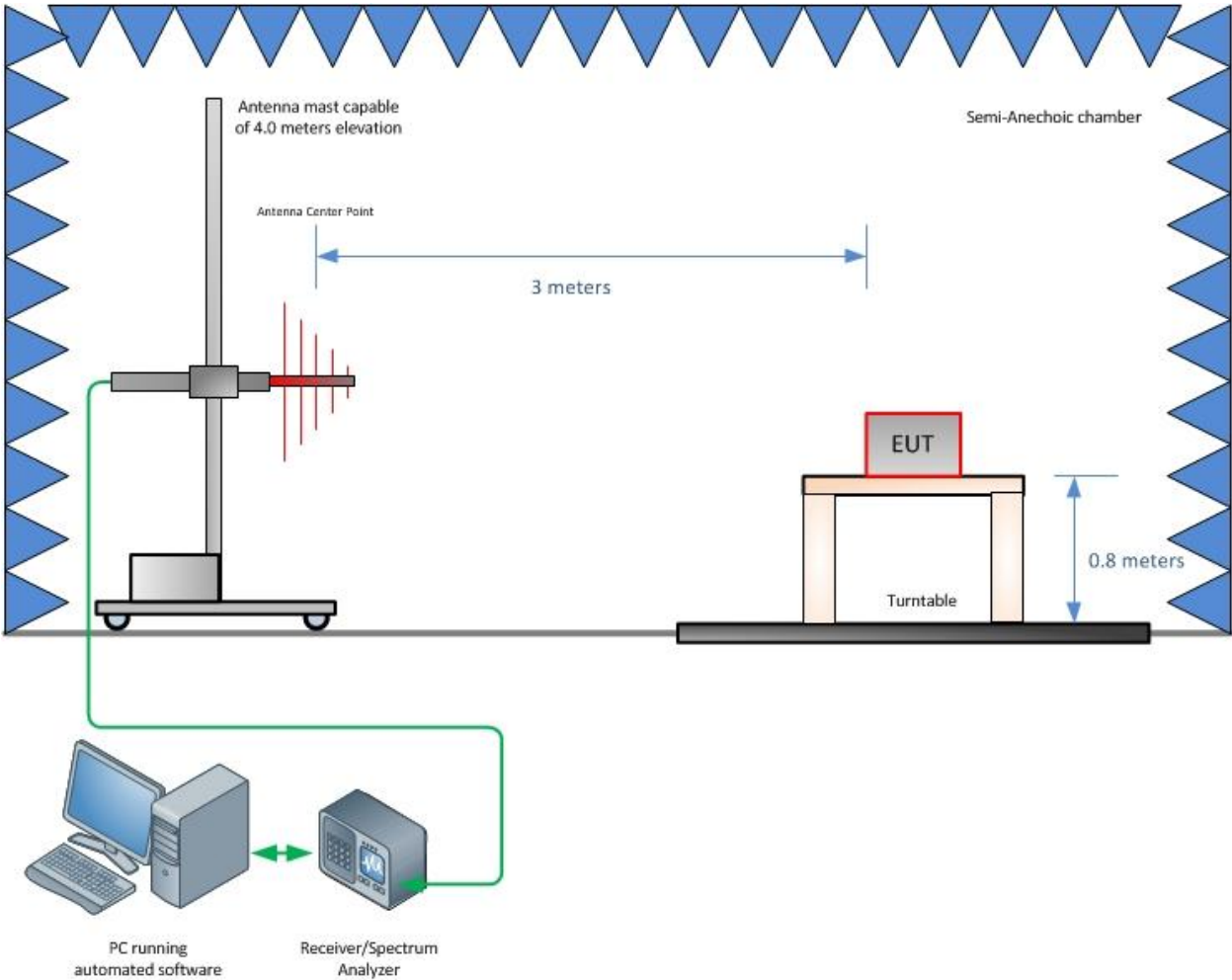


Figure 4-2 – Radiated Emissions Test Setup up to 1 GHz

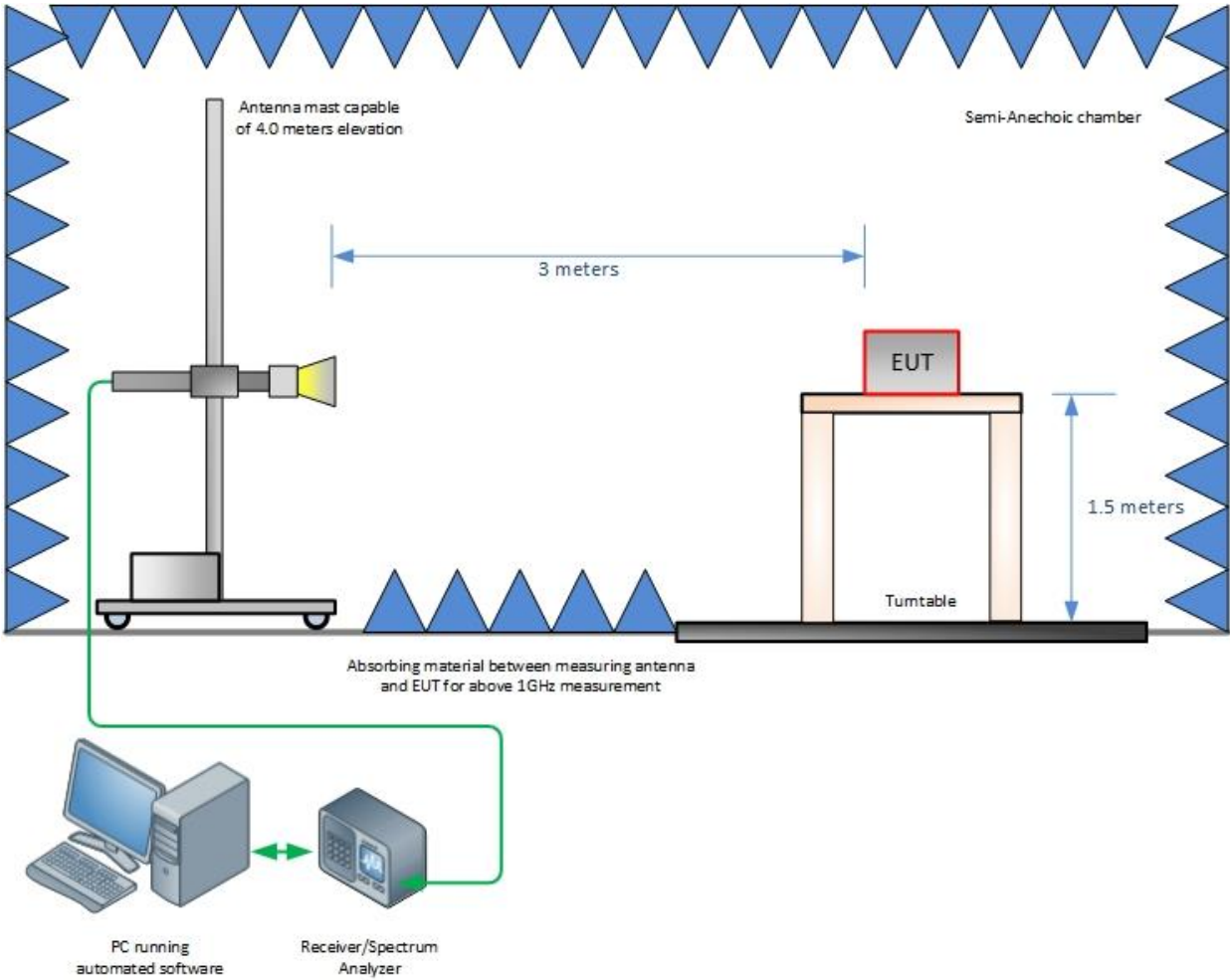


Figure 4-3 – Radiated Emissions Test Setup above 1 GHz



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)	6.3 dB	5.88 dB
(1 – 6 GHz)	5.2 dB	4.47 dB
(6-18 GHz)	5.5 dB	4.47 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.



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