

FCC and ISED Canada Testing of the

Appareo Systems ESP32-PICO-MINI-02

FCC ID: 2AETC-AESPPICOMINI
IC: N/A

In accordance with:
FCC 47 CFR part 15.247 and ISED Canada's
Radio Standards Specifications RSS-247

Prepared for: Appareo Systems
1810 NDSU Research Cir. N.
Fargo, ND 58102



America

Add value.
Inspire trust.

COMMERCIAL-IN-CONFIDENCE

Document Number: NC721009406.1 | Issue: 1

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Authorized Signatory	Ferdinand Custodio	2025 -October-16	
Testing	Thierry Jean-Charles	2025-October-03	

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD America, Inc. 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

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.



A2LA Cert. No. 2955.11

DISCLAIMER AND COPYRIGHT

This non-binding report has been prepared by TÜV SÜD America with all reasonable skill and care. The document is confidential to the potential Client and TÜV SÜD America. No part of this document may be reproduced without the prior written approval of TÜV SÜD America. © TÜV SÜD.

DISCLAIMER AND COPYRIGHT

Our A2LA Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our A2LA Accreditation. Results of test not covered by our A2LA Accreditation Schedule are marked NUA (Not A2LA Accredited).

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

Phone: 651-631-2487
www.tuv-sud-america.com

TÜV SÜD

TÜV®



Contents

1	Report Summary	3
1.1	Report Modification Record	3
1.2	Introduction	3
1.3	Brief Summary of Results	6
1.4	Product Information	7
1.5	Deviations from the Standard	10
1.6	EUT Modification Record	10
1.7	Test Location	10
2	Test Details	11
2.1	Antenna Requirements	11
2.2	Peak Output Power	13
2.3	Radiated Spurious Emissions into Restricted Frequency Bands	16
3	Test Equipment Information	76
3.1	General Test Equipment Used	76
4	Diagram of Test Set-ups	77
5	Measurement Uncertainty	81
6	Accreditation, Disclaimers and Copyright.....	82



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	2025-October-16

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 15.247 and Innovation Science and Economic Development Canada's Radio Standards Specification RSS-247 for the tests documented herein due to a reduction of the Maximum RF Output Power.



Applicant	Appareo Systems
Manufacturer	Appareo Systems
Applicant's Email Address	ggilbraith@appareo.com
Model Number(s)	ESP32-PICO-MINI-02
Serial Number(s)	00110 (Radiated Emissions Sample) 00125 (RF Output Power Sample)
FCC ID	2AETC-AESPPICOMINI
ISED Certification Number	N/A
Host Hardware Version(s)	FPGA: 1.0.3.63
Host Software Version(s)	App: 0.8.1.0
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, 2024 Innovation, Science and Economic Development Canada Radio Standards Specification: RSS-247 — Digital Transmission Systems, Frequency Hopping Systems and Licence-Exempt Local Area Network Devices in 902-928 MHz, 2400-2483.5 MHz, 5150-5350 MHz, and 5470-5895 MHz bands, Issue 4, July 2025
Order Number	721009406
Date	2025-March-19
Date of Receipt of EUT	2025-July-28
Start of Test	2025-August-02
Finish of Test	2025-September-22
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 FCC OET KDB Publication 558074 D01 15.247 Meas Guidance v05r02: Guidance for Compliance Measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid System Devices Operating under Section 15.247 of the FCC Rules, April 2, 2019



FCC KDB Publication 996369 D04 Module Integration Guide
v02: Modular Transmitter Integration Guide - Guidance for
Host Product Manufacturers, October 13, 2020.

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 Brief Summary of Results

A summary of the tests carried out in accordance with FCC Part 15.247 and ISSED Canada's RSS-247 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	-----	11
6 dB Bandwidth	No	Not Tested	15.247(a)(2)	RSS-247 5.2(a)	-----
99% Bandwidth	No	Not Tested	-----	RSS-GEN 6.6	-----
Peak Output Power	Yes	Pass	15.247(b)(3)	RSS-247 5.4(d)	13
Band-Edge Compliance of RF Conducted Emissions	No	Not Tested	15.247(d)	RSS-247 5.5	-----
RF Conducted Spurious Emissions	No	Not Tested	15.247(d)	RSS-247 5.5	-----
Radiated Spurious Emissions into Restricted Frequency Bands	Yes	Pass	15.205, 15.209	RSS-GEN 8.9, 8.10	16
Power Spectral Density	No	Not Tested	15.247(e)	RSS-247 5.2(b)	-----
Duty Cycle	No	-----	-----	-----	-----
Power Line Conducted Emissions	No	Not Tested	15.207	RSS-GEN 8.8	-----



1.4 Product Information

1.4.1 Technical Description

Stratus 4 is a battery-operated portable receiver that works with Stratus Insight, Stratus Horizon Pro, and other popular flight apps. It provides pilots with subscription-free in-flight weather and traffic and is a source of accurate WAAS (Wide Area Augmentation System) GPS position. It receives ADS-B (Automatic Dependent Surveillance-Broadcast) FIS-B (weather information), TIS-B (traffic information), and other related data and broadcasts it to compatible flight apps via a Wi-Fi network.

The device includes a 2.4 GHz Wi-Fi module with FCC ID: 2AETC-AESPPICOMINI and a 2.4 GHz BLE module with FCC ID: SQGBL652. The test report documents the compliance of the 2.4 GHz Wi-Fi radio while integrated within the Stratus 4 Host.

Technical Details

Mode of Operation:	IEEE 802.11b/g/n Wi-Fi
Frequency Range:	802.11b/g/n 20 MHz: 2412 - 2462 MHz 802.11n 40 MHz: 2422 - 2452 MHz
Number of Channels:	802.11b/g/n 20 MHz: 11 802.11n 40 MHz: 7
Channel Separation:	5 MHz
Data Rate:	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: MCS0 - MCS7
Modulations:	802.11b: CCK, DSSS 802.11g/n: OFDM
Antenna Type/Gain:	PCB Trace Antenna / 3.96 dBi
Input Power:	120V / 60 Hz (Host Device)

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

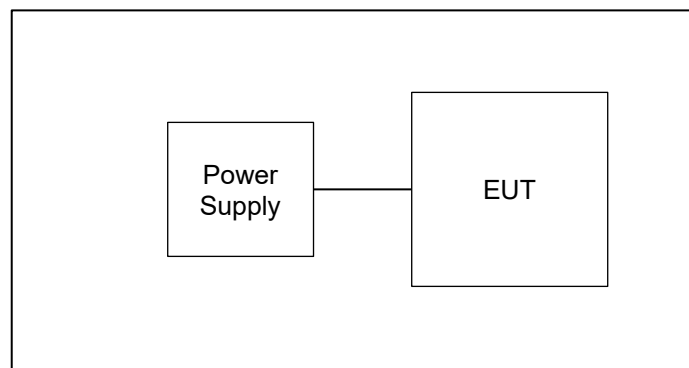


Figure 1.4.1-1 – Test Setup Block Diagram

**Table 1.4.1-1 – Cable Descriptions**

Cable/Port	Description
USB C	1.83m, Stratus-4 to Anker Charger

Note: The EUT was configured with UART connectors for serial communication with a computer for the configuration of radio for testing purposes.

Table 1.4.1-2 – Support Equipment Descriptions

Make/Model	Description
Anker / A26377	511 Charger (Nano Pro) 5V 3A, 9V 2.22A output



1.4.2 Modes of Operation

The tested mode of operation was:
IEEE 2.4 GHz 802.11 Wi-Fi radio in the Transmit mode.

The radio was configured using the Espressif ESPRFTool_v3.6. The EUT was configured using the FCC Certification table.

1.4.3 Monitoring of Performance

The EUT was evaluated for radiated spurious emissions in the restricted bands as well as the RF output power.

For the RF output power measurements, a sample was configured with an RF connector at the antenna port to allow direct coupling to the measurement equipment.

For the radiated emissions measurements, preliminary evaluations were performed for the EUT in three orthogonal orientations. The final measurements were collected using the EUT orientations leading to the highest emissions with respect to the limits. A summary of the modes evaluated are provided below.

Table 1.4.3-1: Tested Modes of Operation

Evaluation	Mode	Orientation
Radiated Spurious Emissions in the Restricted Bands	802.11b – 1 Mbps (Worst Case from Original Filing)	X-axis (EUT flat)
Radiated Emissions at the Band-Edges	802.11b – 1 Mbps 802.11g – 6 Mbps 802.11n – MCS0	Y-axis (EUT on side)

1.4.4 Performance Criteria

The EUT was evaluated in accordance with the requirements described below.

Table 1.4.4-1: Performance Criteria

Parameter	Requirement
Antenna Requirement	FCC: Section 15.203. 15.204
Peak Output Power	FCC: Section 15.247(b)(3); ISED Canada: RSS-247 5.4(d)
Radiated Spurious Emissions into Restricted Frequency Bands	FCC: Sections 15.205, 15.209; ISED Canada: RSS-GEN 8.9, 8.10



1.5 Deviations from the Standard

The EUT was evaluated 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
1	Reduction of Output Power Settings by 2 dB	Appareo Systems	9/8/2025
	A 0.45in x 0.45in piece of Laird Softzorb MCS absorber on top of the Qorvo RF2052 frequency converter.		

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
AC Powered, Operating		
Antenna Requirement	Thierry Jean-Charles	A2LA
Peak Output Power	Thierry Jean-Charles	A2LA
Radiated Spurious Emissions into Restricted Frequency Bands	Thierry Jean-Charles Duranta K. Barua	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;
ISED Canada RSS-Gen 6.8.

2.1.2 Equipment Under Test and Modification State

S/N: 00110, refer to Section 1.6.

2.1.3 Date of Test

9/8/2025

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
PCB	On-Board	3.96 dBi



Test Summary:

The EUT uses an on-board PCB trace antenna which is integral to the module. The antenna is not removable and therefore meets the 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 is a visual inspection, no test equipment was used.



2.2 Peak Output Power

2.2.1 Specification Reference

FCC Section 15.247(b)(3)
ISED Canada: RSS-247 5.4(d)

2.2.2 Equipment Under Test and Modification State

S/N: 00125, refer to Section 1.6.

2.2.3 Date of Test

9/22/2025

2.2.4 Test Method

The fundamental emission output power was measured in accordance with ANSI C63.10 Subclause 11.9.2.3.1 Method AVGPM. The RF output of the equipment under test was directly connected to the input of the Power Meter through suitable attenuation.

The EUT was transmitting at 100 % duty cycle during the measurements.

2.2.5 Environmental Conditions

Ambient Temperature	23.8°C
Relative Humidity	42.9 %
Atmospheric Pressure	979 mbar

2.2.6 Test Results

AC Powered Operating

Limit Clause FCC Part 15.247(b)(3), ISED RSS-247 5.4(d)

The Maximum Output Power allowed for systems using digital modulation is 1 Watt (30 dBm)

Test Summary:

The EUT maximum TX output power was measured as 15.74 dBm.

Test Result: Pass

**Table 2.2.6-1: Maximum Output Power Results – 802.11b**

Frequency (MHz)	Output Power (dBm)
2412	15.65
2417	15.65
2432	15.39
2437	15.50
2442	15.48
2457	15.70
2462	15.74

Table 2.2.6-2: Maximum Output Power Results – 802.11g

Frequency (MHz)	Output Power (dBm)
2412	13.8
2417	13.4
2437	13.4
2457	13.78
2462	13.65

Table 2.2.6-3: Maximum Output Power Results – 802.11n 20 MHz

Frequency (MHz)	Output Power (dBm)
2412	13.6
2417	13.5
2437	13.2
2457	13.55
2462	13.65

**Table 2.2.6-4: Maximum Output Power Results – 802.11n 40 MHz**

Frequency (MHz)	Output Power (dBm)
2422	13.61
2427	13.6
2432	13.42
2437	13.24
2442	13.4
2447	13.3
2452	13.42

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
WRLE11323	Mini-Circuits Lab	Attenuator, 20 dB	BW-N20W5	1323	B	08/29/2025	08/29/2026
NBLE11627	Keysight	Power Meter	N1912A (SAP 21006102)	MY58150016	G	01/13/2025	01/13/2026
NBLE11628	Keysight	Power Sensor	N1921A	MY58130003	G	01/13/2025	01/13/2026

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 Radiated Spurious Emissions into Restricted Frequency Bands

2.3.1 Specification Reference

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

2.3.2 Equipment Under Test and Modification State

S/N: 00110, refer to Section 1.6.

2.3.3 Date of Test

8/2/2025 to 9/19/2025

2.3.4 Test Method

Radiated emissions tests were made over the frequency range of 9 kHz to 26 GHz, 10 times the highest fundamental frequency. Each emission found to be in a restricted band as defined by section 15.205, including any emission at the operational band-edge, 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.

2.3.5 Duty Cycle Correction

The EUT was configured to transmit at 100% duty cycle during the evaluation. A Duty Cycle Correction of 100% corresponding to $20 \cdot \log(100/100) = 0$ dB was applied for the corrected average results.

2.3.6 Environmental Conditions

Ambient Temperature	23 - 26 °C
Relative Humidity	40 - 45 %
Atmospheric Pressure	982 - 987 mbar



2.3.7 Test Results

AC Powered, Operating

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

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.

Test Summary:

The emissions falling within the restricted bands as described in FCC Section 15.205 were assessed to the limits defined in FCC Section 15.209. The EUT met the restricted band requirements for radiated band-edge and spurious emissions as described below.

Test Result: Pass



2.3.7.1 Radiated Band-Edge Emissions Test Results

Test RE 2.3-2.6GHz - Charging_sn00110_Sideways_2412 MHz_802.11b

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
2.3 GHz - 2.6 GHz	3m	Vertical	1 MHz	3001 Pts	200 ms
2.3 GHz - 2.6 GHz	3m	Horizontal	1 MHz	3001 Pts	200 ms

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3m SAC	Thierry Jean-Charles	9/16/2025	25.1 C	41 %	986 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
Wi-Fi	2412 MHz	1	TX	Y-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

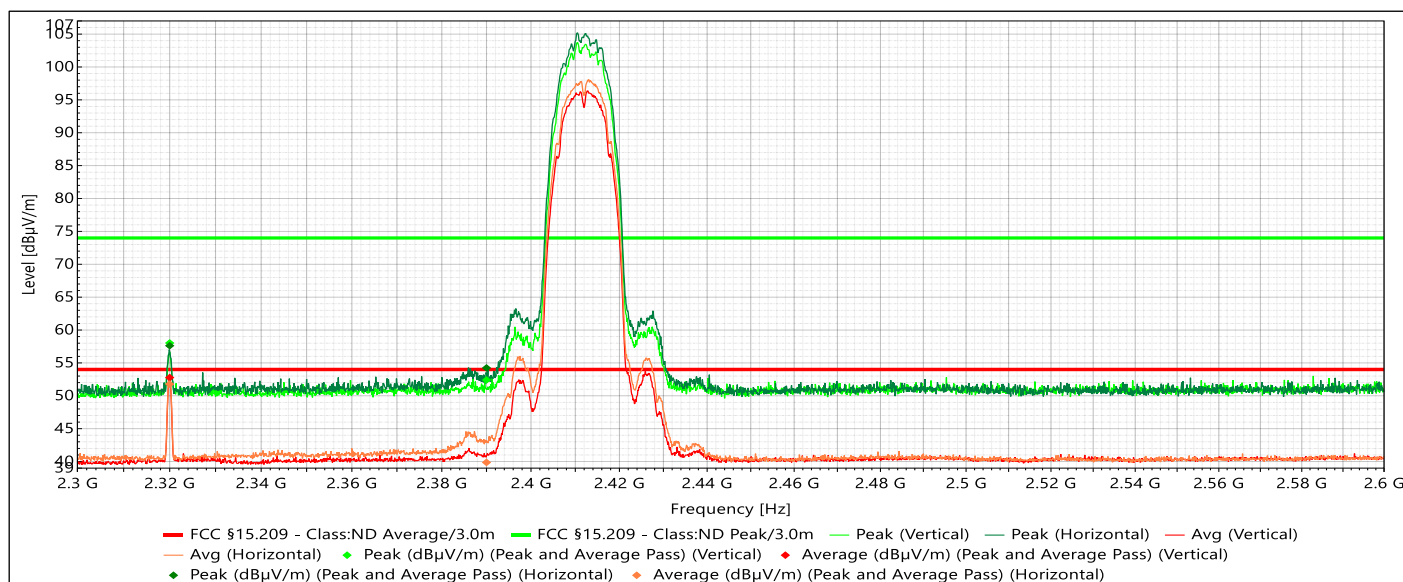


Figure 2.3.7.1-1 – Radiated Emissions Test Results

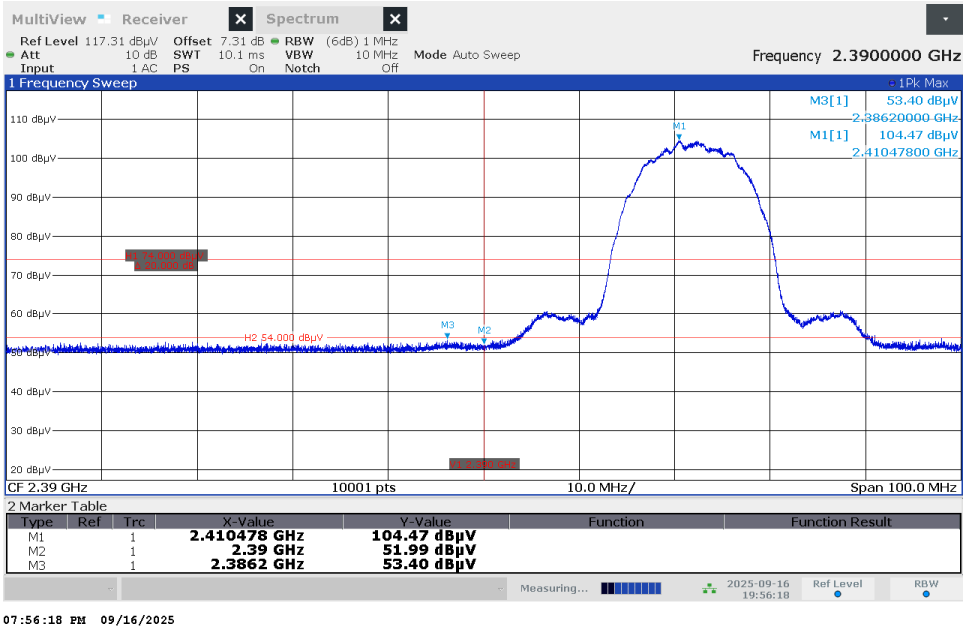


Figure 2.3.7.1-2 –Radiated Band-Edge Emissions Test Results – Peak – Vertical Polarization

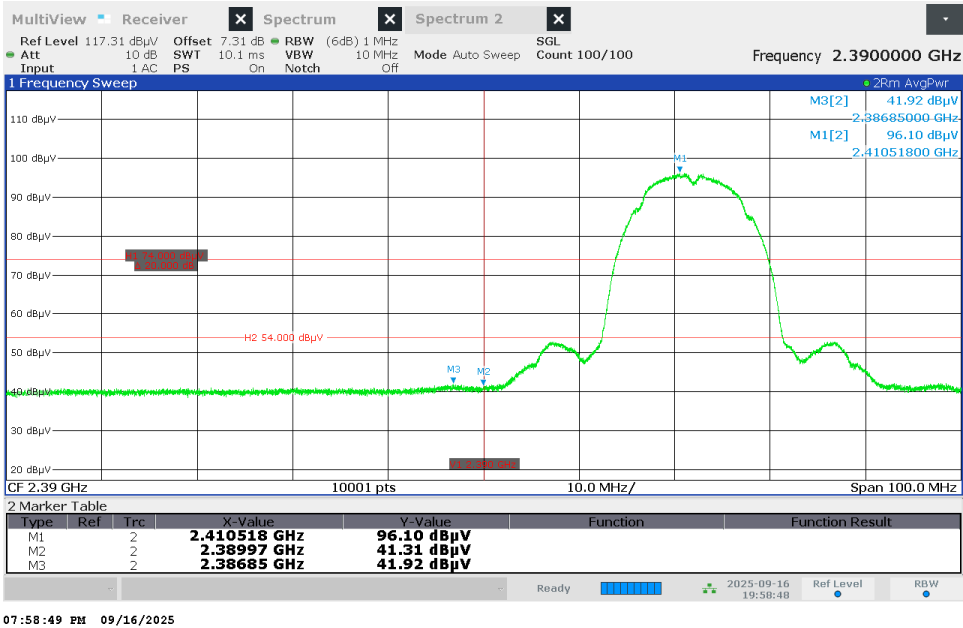


Figure 2.3.7.1-3 –Radiated Band-Edge Emissions Test Results – Average – Vertical Polarization

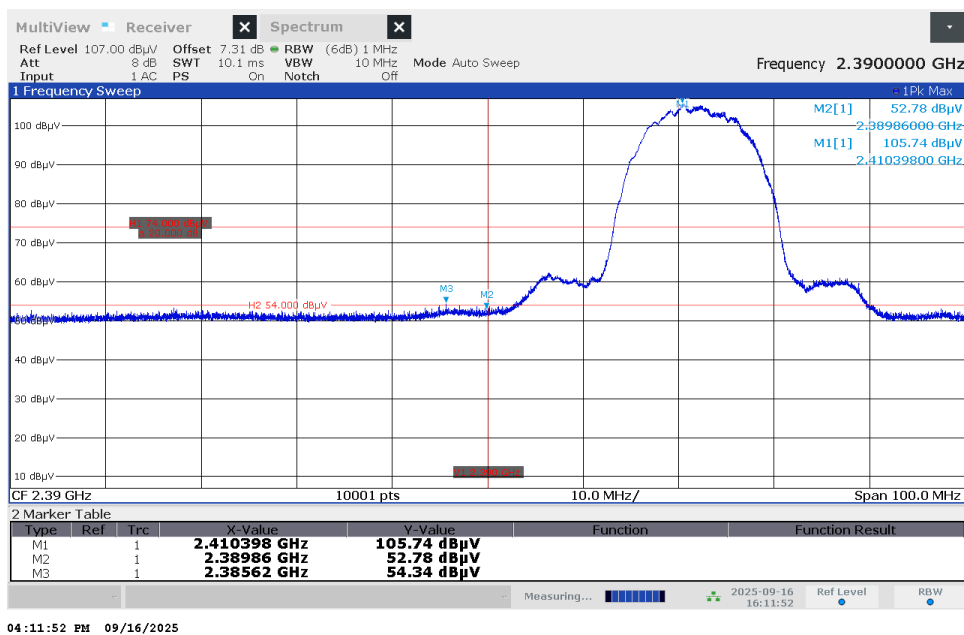


Figure 2.3.7.1-4 –Radiated Band-Edge Emissions Test Results – Peak – Horizontal Polarization

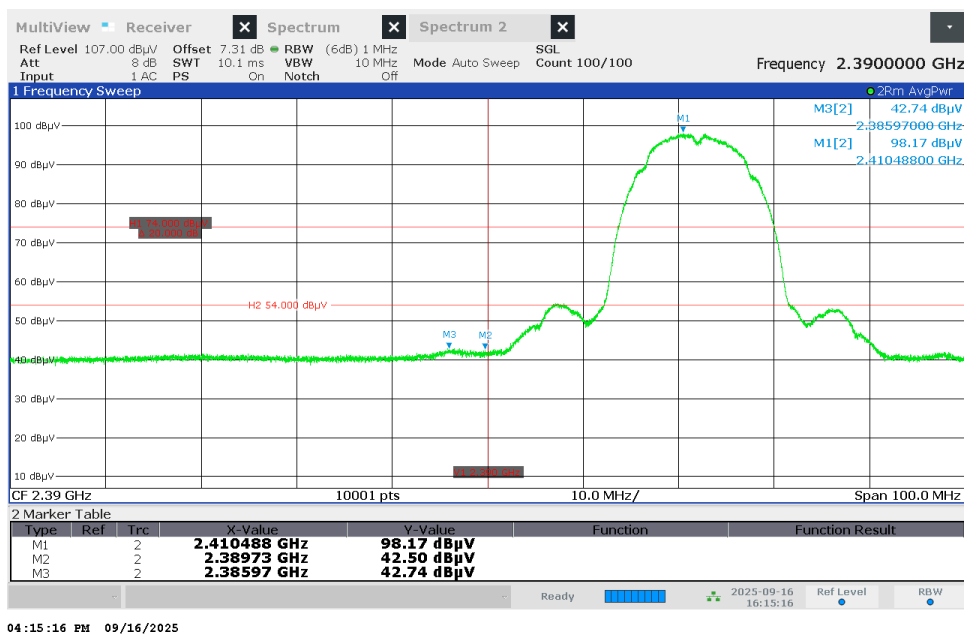


Figure 2.3.7.1-5 –Radiated Band-Edge Emissions Test Results – Average – Horizontal Polarization



Finals

Table 2.3.7.1-1 – Radiated Emissions Test Results

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
2320.000	58.03	74.00	-15.97	52.77	54.00	-1.23	159.00	1.31	Vertical	Pass
2386.200	53.40	74.00	-20.6	41.92	54.00	-12.08	241.00	3.55	Vertical	Pass
2390.000	52.40	74.00	-21.6	41.31	54.00	-12.69	241.00	3.55	Vertical	Pass
2320.002	57.62	74.00	-16.38	51.77	54.00	-2.23	23.00	1.00	Horizontal	Pass
2385.62	54.34	74.00	-19.66	42.74	54.00	-11.26	257.00	1.11	Horizontal	Pass
2390.000	54.23	74.00	-19.77	42.50	54.00	-11.5	257.00	1.11	Horizontal	Pass

Test Notes: 802.11b - 1 Mbps - New Power (-2 dB reduction)



Test RE 2.3-2.6GHz - Charging_sn00110_Sideways_2462 MHz_802.11b

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
2.3 GHz - 2.6 GHz	3m	Vertical	1 MHz	3001 Pts	200 ms
2.3 GHz - 2.6 GHz	3m	Horizontal	1 MHz	3001 Pts	200 ms

Test Area	Tested By	Test Date:	Temperature	Humidity	Pressure
3m SAC	Thierry Jean-Charles	9/16/2025	25.1 C	40 %	985 mBar

Technology:	Frequency:	Channel:	Mode:	EUT Orientation:
Wi-Fi	2462 MHz	11	802.11b	Y-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

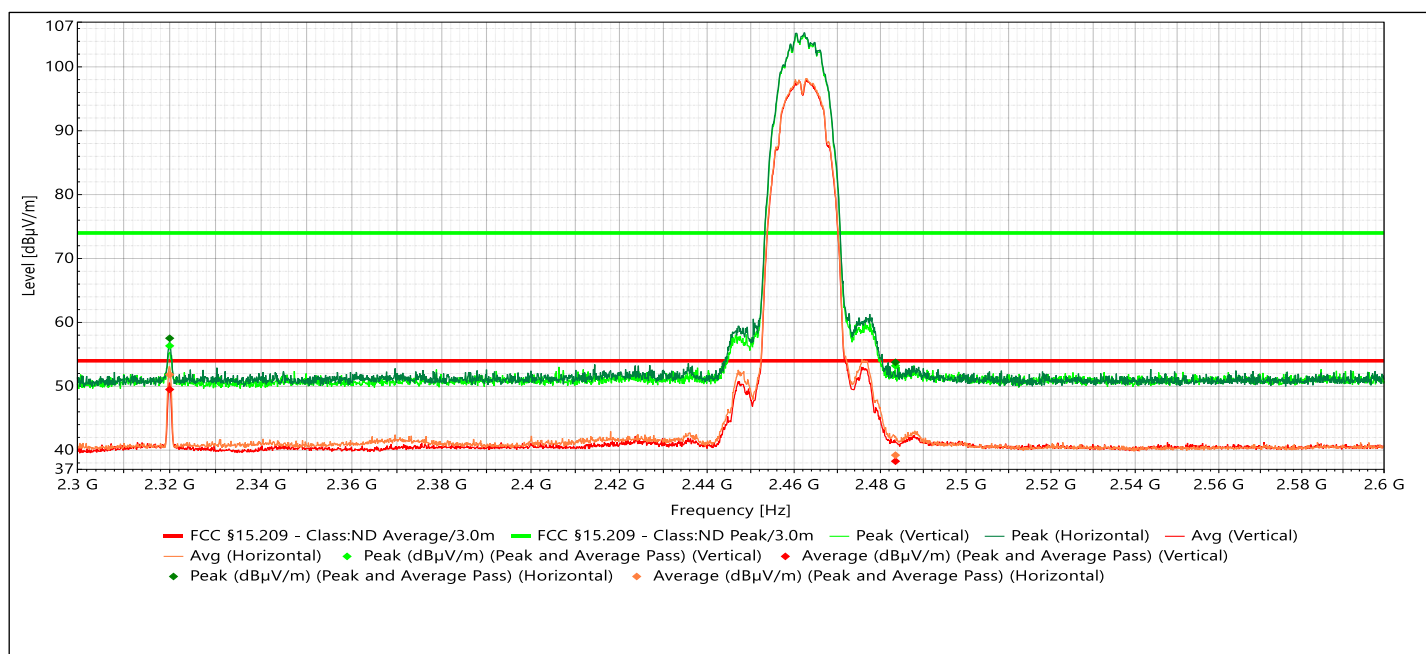


Figure 2.3.7.1-6 – Radiated Emissions Test Results

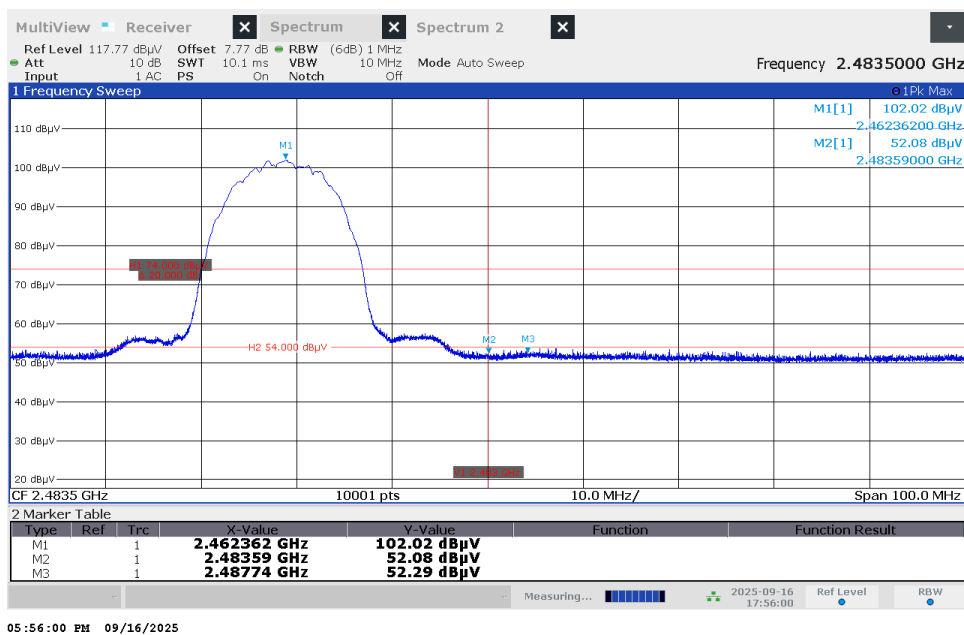


Figure 2.3.7.1-7 –Radiated Band-Edge Emissions Test Results – Peak – Vertical Polarization

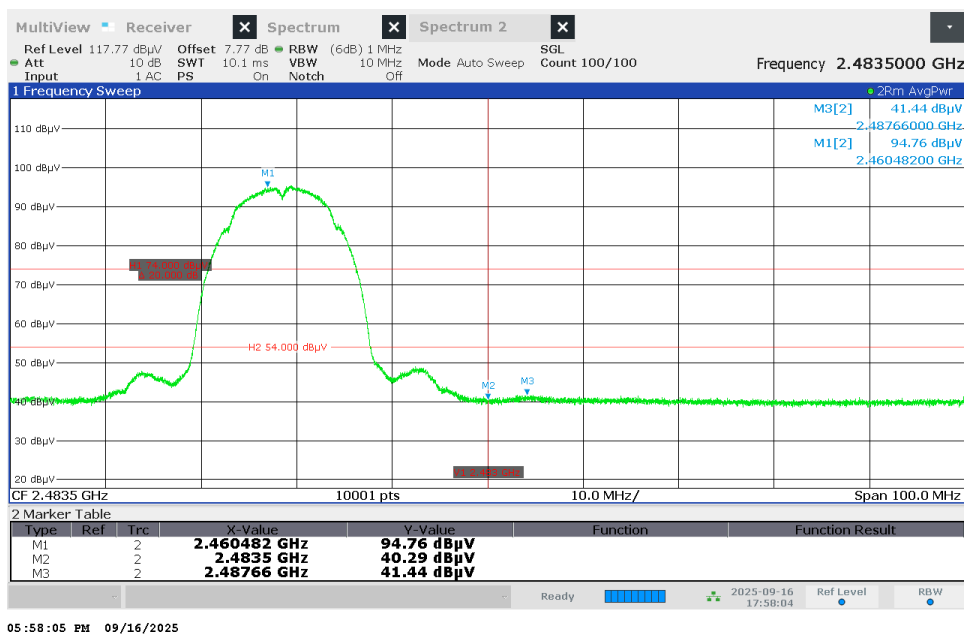


Figure 2.3.7.1-8 –Radiated Band-Edge Emissions Test Results – Average – Vertical Polarization

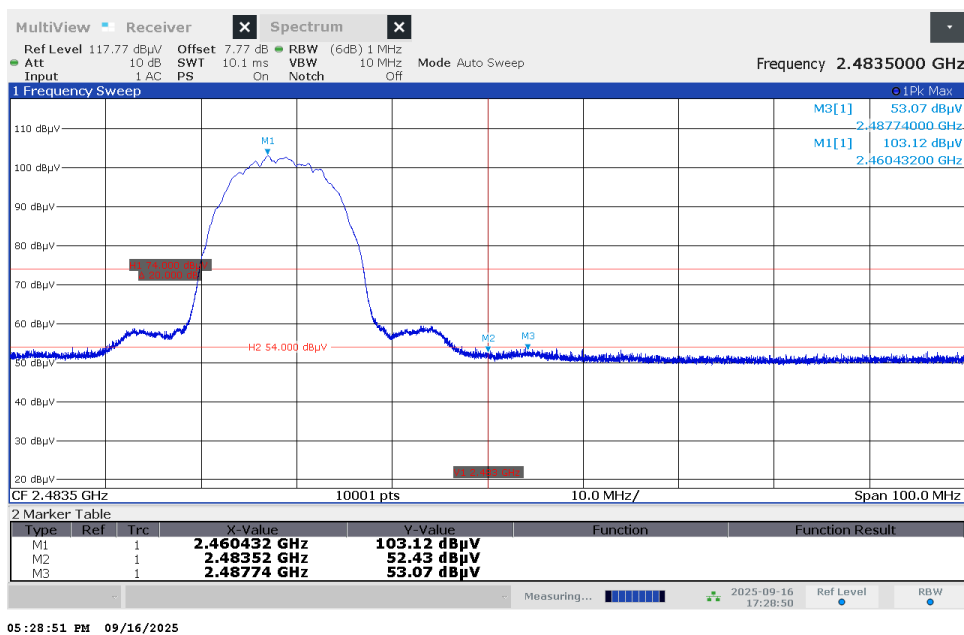


Figure 2.3.7.1-9 –Radiated Band-Edge Emissions Test Results – Peak – Horizontal Polarization

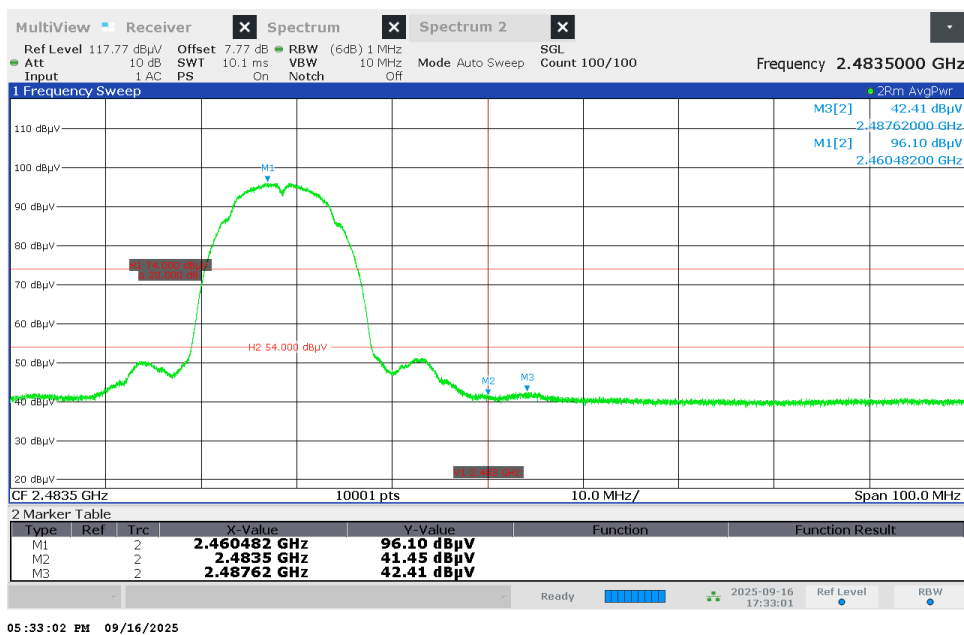


Figure 2.3.7.1-10 –Radiated Band-Edge Emissions Test Results – Average – Horizontal Polarization



Finals

Table 2.3.7.1-2 – Radiated Emissions Test Results

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
2320.001	56.33	74.00	-17.67	49.50	54.00	-4.5	63.00	1.33	Vertical	Pass
2483.500	53.21	74.00	-20.79	40.29	54.00	-13.71	8.00	1.12	Vertical	Pass
2487.74	52.29	74.00	-21.71	41.44	54.00	-12.56	8.00	1.12	Vertical	Pass
2320.002	57.52	74.00	-16.48	51.82	54.00	-2.18	216.00	1.25	Horizontal	Pass
2483.500	53.76	74.00	-20.24	41.45	54.00	-12.55	256.00	3.19	Horizontal	Pass
2487.74	53.07	74.00	-20.93	42.41	54.00	-11.59	256.00	3.19	Horizontal	Pass

Test Notes: 802.11b - 1 Mbps - New Power (-2 dB reduction)



Test RE 2.3-2.6GHz - Charging_sn00110_Sideways_2412 MHz_802.11g

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
2.3 GHz - 2.6 GHz	3m	Vertical	1 MHz	3001 Pts	200 ms
2.3 GHz - 2.6 GHz	3m	Horizontal	1 MHz	3001 Pts	200 ms

Test Area	Tested By	Test Date:	Temperature	Humidity	Pressure
3m SAC	Thierry Jean-Charles	9/16/2025	25.3 C	42 %	987 mBar

Technology:	Frequency:	Channel:	Mode:	EUT Orientation:
Wi-Fi	2412 MHz	1	802.11g	Y-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

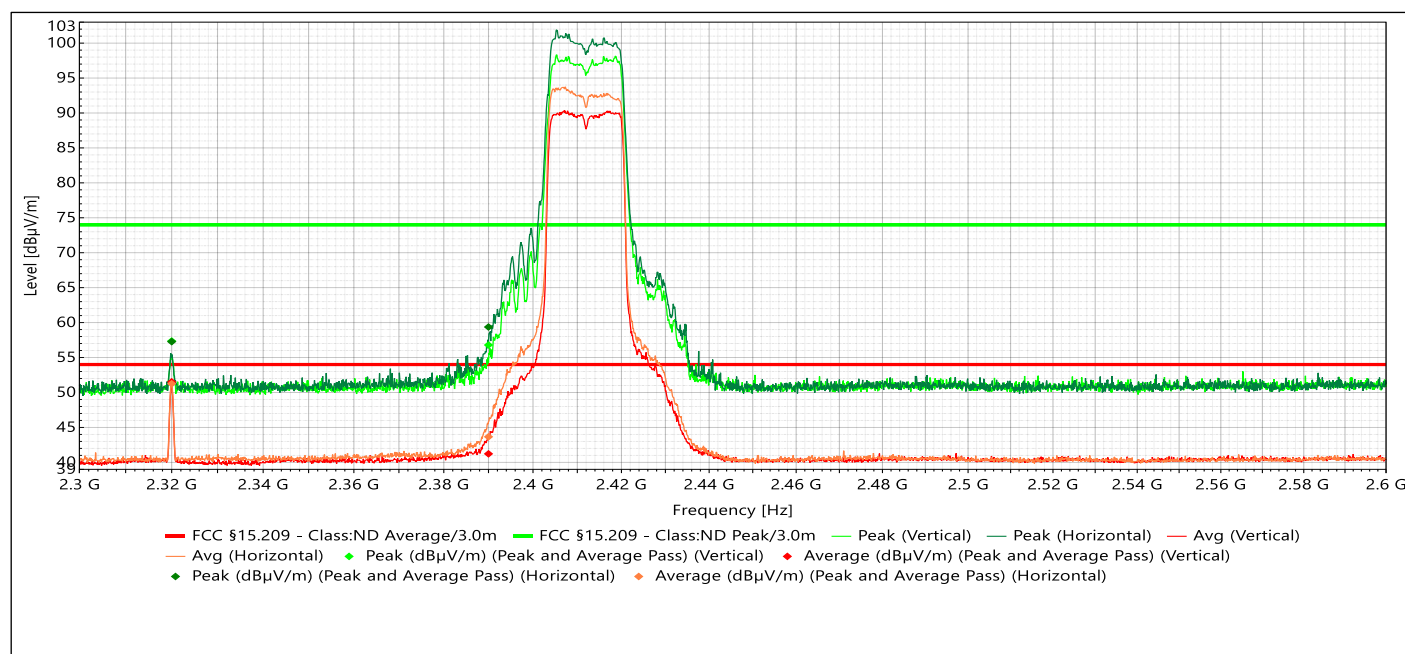


Figure 2.3.7.1-11 – Radiated Emissions Test Results

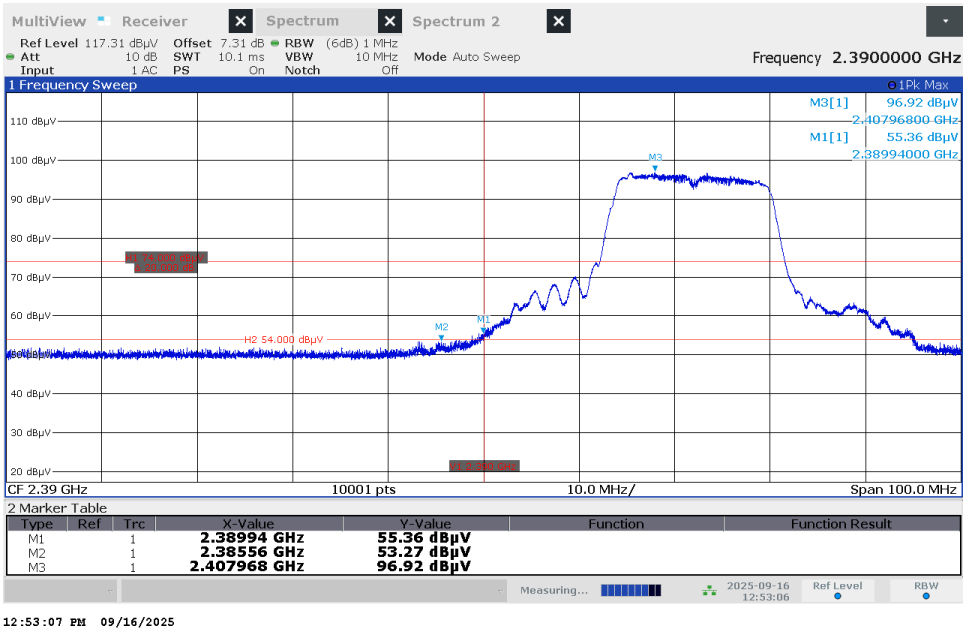


Figure 2.3.7.1-12 –Radiated Band-Edge Emissions Test Results – Peak – Vertical Polarization

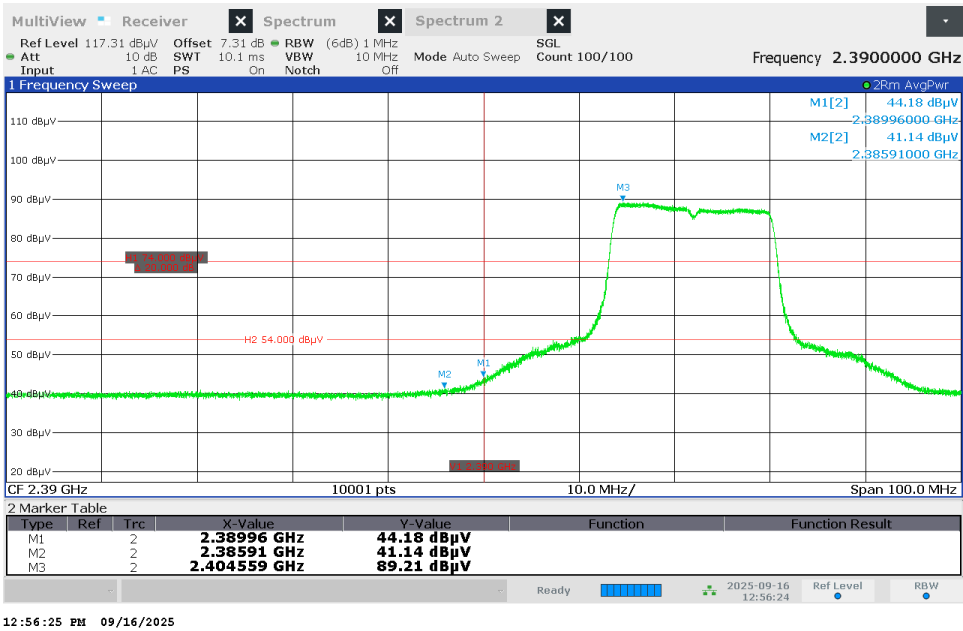


Figure 2.3.7.1-13 –Radiated Band-Edge Emissions Test Results – Average – Vertical Polarization

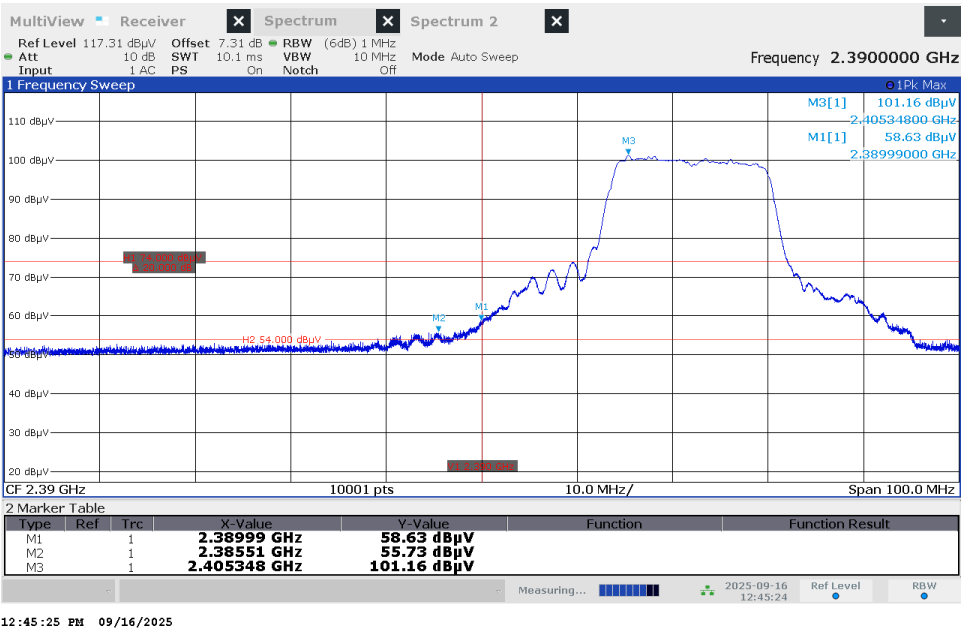


Figure 2.3.7.1-14 –Radiated Band-Edge Emissions Test Results – Peak – Horizontal Polarization

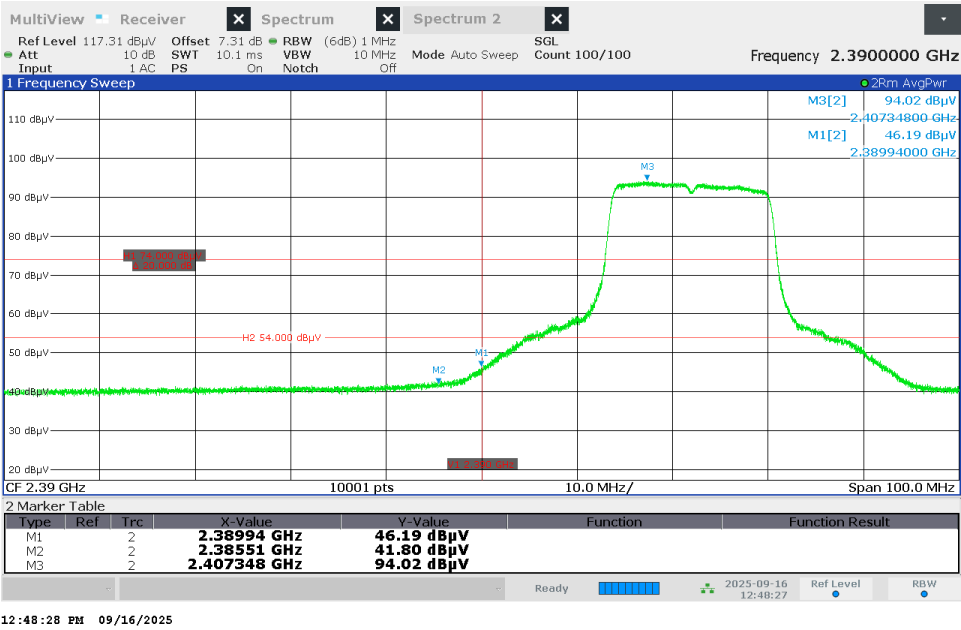


Figure 2.3.7.1-15 –Radiated Band-Edge Emissions Test Results – Average – Horizontal Polarization



Finals

Table 2.3.7.1-3 – Radiated Emissions Test Results

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
2320.001	57.36	74.00	-16.64	51.53	54.00	-2.47	119.00	1.25	Vertical	Pass
2385.56	53.27	74.00	-20.73	41.14	54.00	-12.86	135.00	1.11	Vertical	Pass
2390.000	56.79	74.00	-17.21	44.18	54.00	-9.82	135.00	1.11	Vertical	Pass
2320.002	57.27	74.00	-16.73	51.25	54.00	-2.75	79.00	1.88	Horizontal	Pass
2385.51	55.73	74.00	-18.27	41.80	54.00	-12.2	55.00	2.98	Horizontal	Pass
2390.000	59.37	74.00	-14.63	46.19	54.00	-7.81	55.00	2.98	Horizontal	Pass

Test Notes: 802.11g - 6 Mbps - New Power (-2 dB reduction)



Test RE 2.3-2.6GHz - Charging_sn00110_Sideways_2462 MHz_802.11g

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
2.3 GHz - 2.6 GHz	3m	Vertical	1 MHz	3001 Pts	200 ms
2.3 GHz - 2.6 GHz	3m	Horizontal	1 MHz	3001 Pts	200 ms

Test Area	Tested By	Test Date:	Temperature	Humidity	Pressure
3m SAC	Thierry Jean-Charles	9/16/2025	25.5 C	41 %	987 mBar

Technology:	Frequency:	Channel:	Mode:	EUT Orientation:
Wi-Fi	2462 MHz	11	802.11g	Y-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

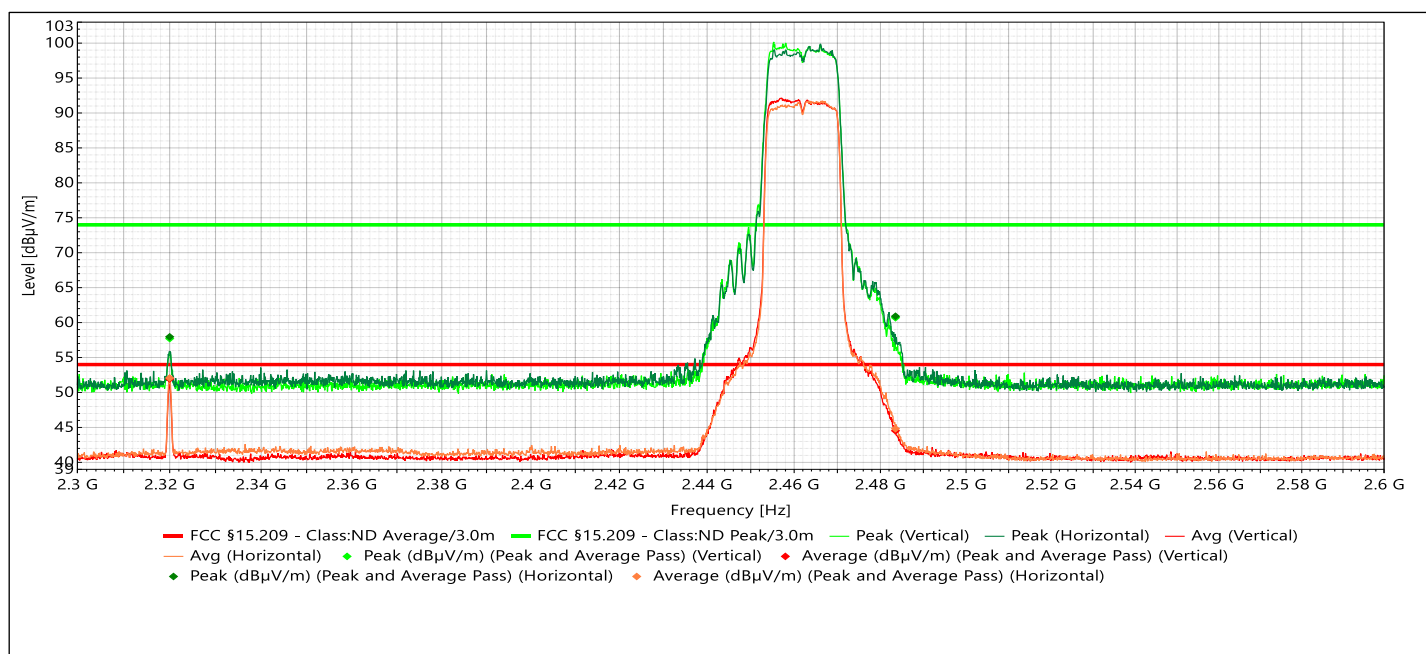


Figure 2.3.7.1-16 – Radiated Emissions Test Results

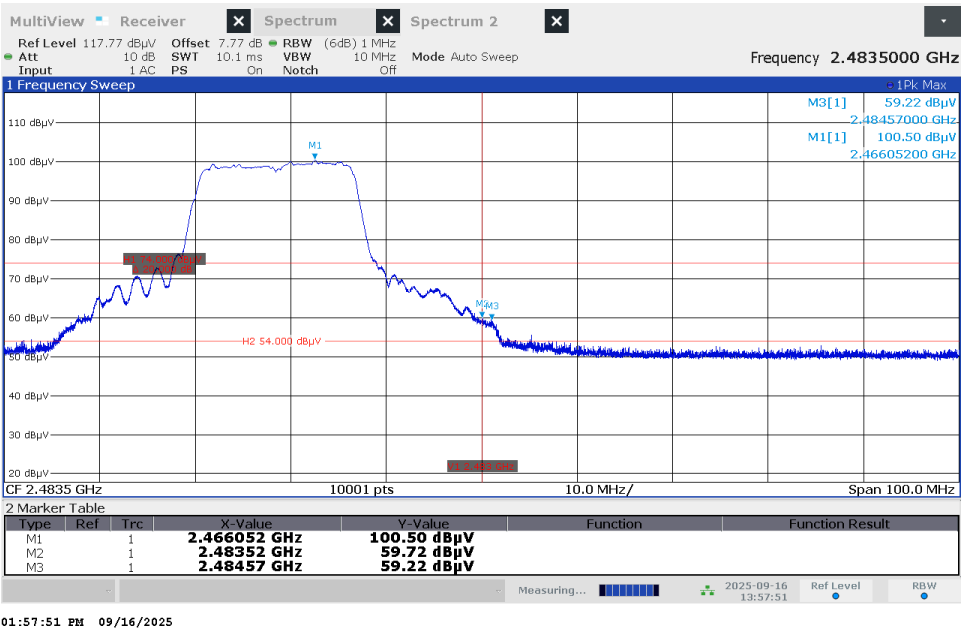


Figure 2.3.7.1-17 –Radiated Band-Edge Emissions Test Results – Peak – Vertical Polarization

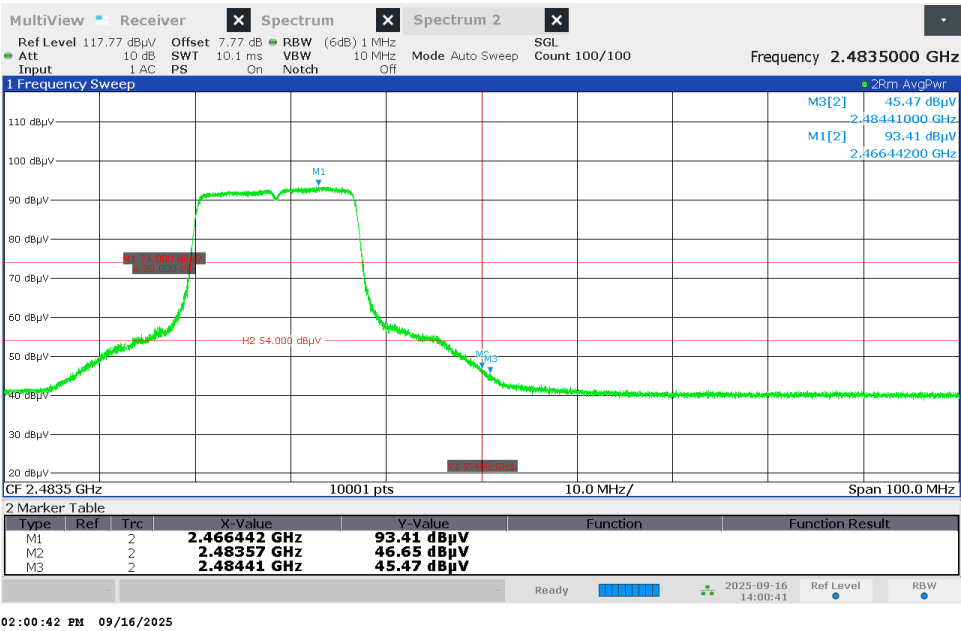


Figure 2.3.7.1-18 –Radiated Band-Edge Emissions Test Results – Average – Vertical Polarization

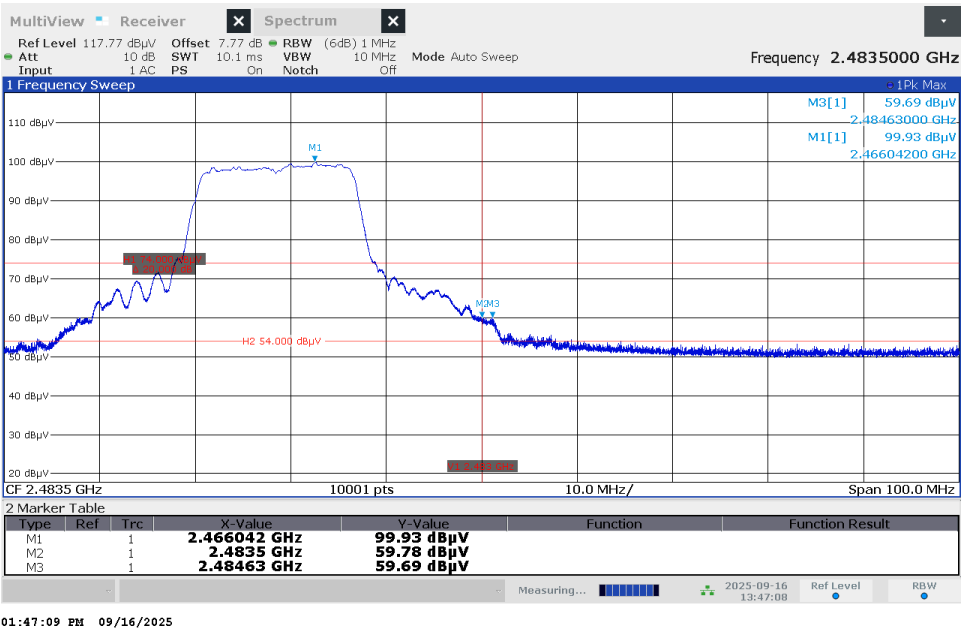


Figure 2.3.7.1-19 –Radiated Band-Edge Emissions Test Results – Peak – Horizontal Polarization

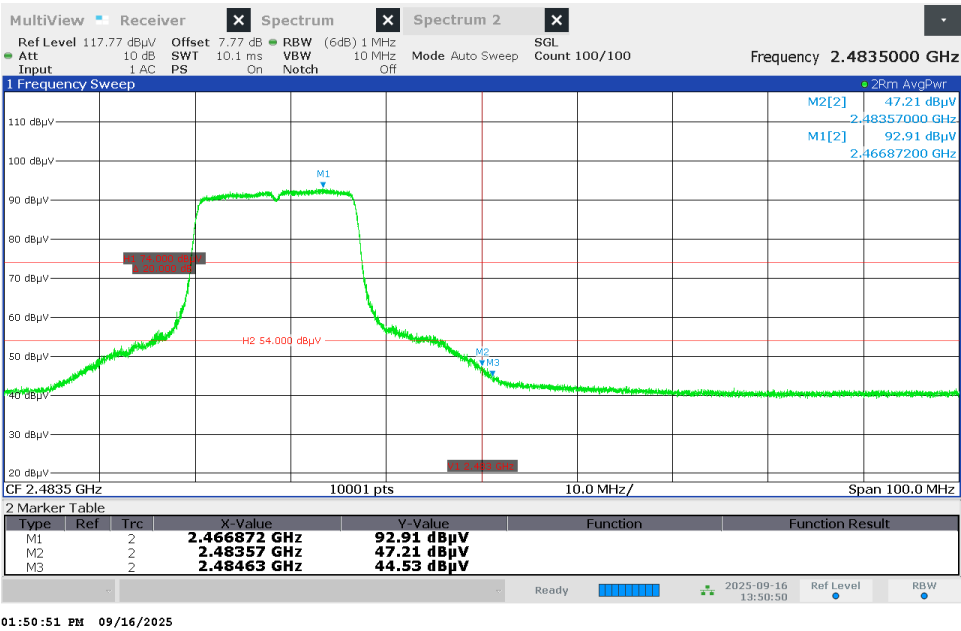


Figure 2.3.7.1-20 –Radiated Band-Edge Emissions Test Results – Average – Horizontal Polarization



Finals

Table 2.3.7.1-4 – Radiated Emissions Test Results

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
2320.002	57.71	74.00	-16.29	51.93	54.00	-2.07	119.00	1.24	Vertical	Pass
2483.500	60.69	74.00	-13.31	46.65	54.00	-7.35	328.00	1.25	Vertical	Pass
2484.57	59.22	74.00	-14.78	45.47	54.00	-8.53	328.00	1.25	Vertical	Pass
2320.000	57.97	74.00	-16.03	52.08	54.00	-1.92	199.00	1.25	Horizontal	Pass
2483.500	60.91	74.00	-13.09	47.21	54.00	-6.79	47.00	3.13	Horizontal	Pass
2484.63	59.69	74.00	-14.31	44.53	54.00	-9.47	47.00	3.13	Horizontal	Pass

Test Notes: 802.11g - 6 Mbps - New Power (-2 dB reduction)



Test RE 2.3-2.6GHz - Charging_sn00110_Sideways_Ch1_n20

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
2.3 GHz - 2.6 GHz	3m	Vertical	1 MHz	3001 Pts	200 ms
2.3 GHz - 2.6 GHz	3m	Horizontal	1 MHz	3001 Pts	200 ms

Test Area	Tested By	Test Date:	Temperature	Humidity	Pressure
3m SAC	Thierry Jean-Charles	9/8/2025	23.8 C	45%	984 mBar

Technology:	Frequency:	Channel:	Mode:	EUT Orientation:
Wi-Fi	2412 MHz	1	802.11n 20 MHz	Y-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

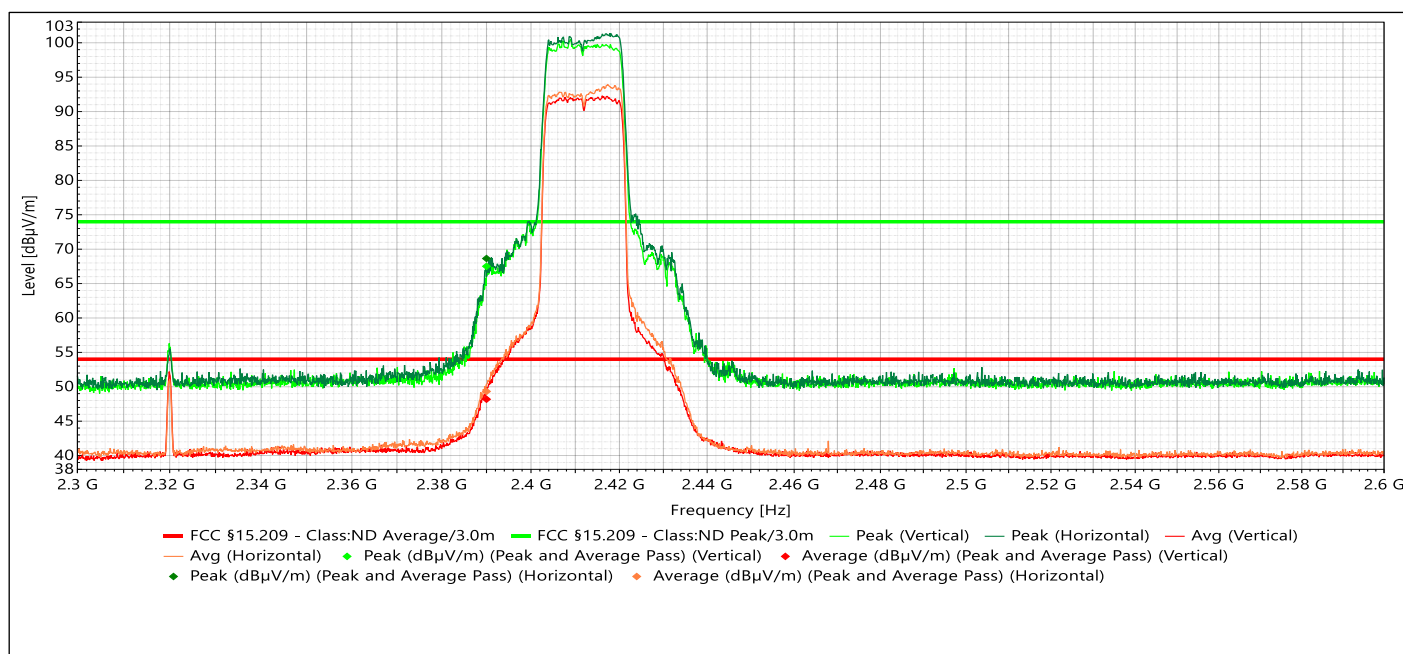


Figure 2.3.7.1-21 – Radiated Emissions Test Results

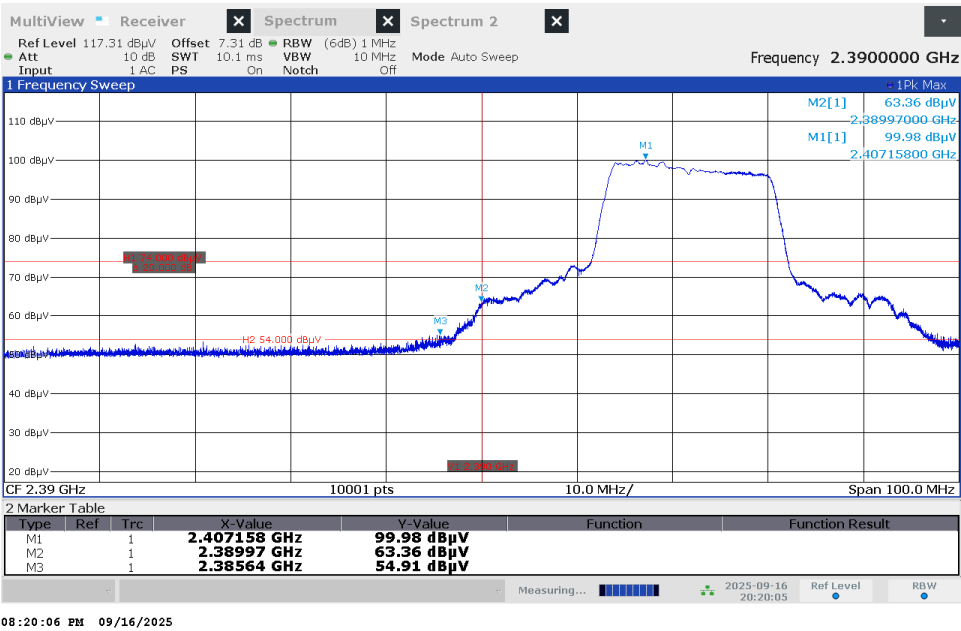


Figure 2.3.7.1-22 –Radiated Band-Edge Emissions Test Results – Peak – Vertical Polarization

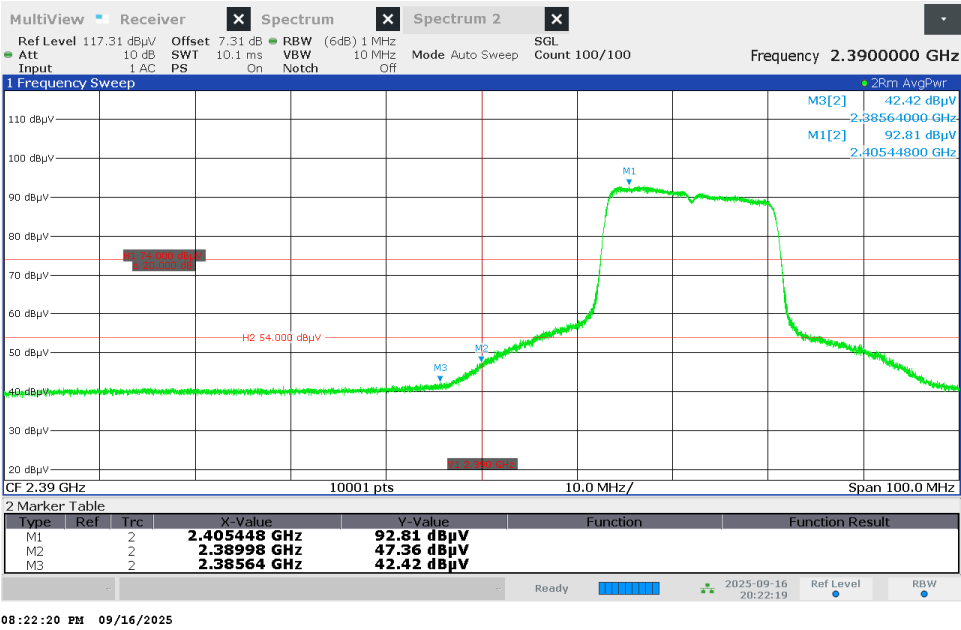


Figure 2.3.7.1-23 –Radiated Band-Edge Emissions Test Results – Average – Vertical Polarization

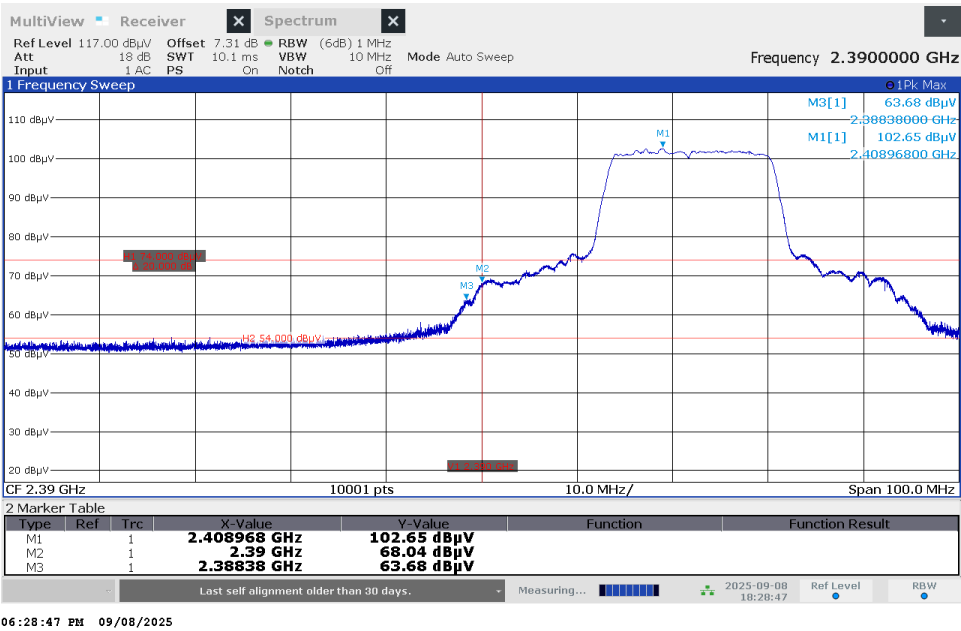


Figure 2.3.7.1-24 –Radiated Band-Edge Emissions Test Results – Peak – Horizontal Polarization

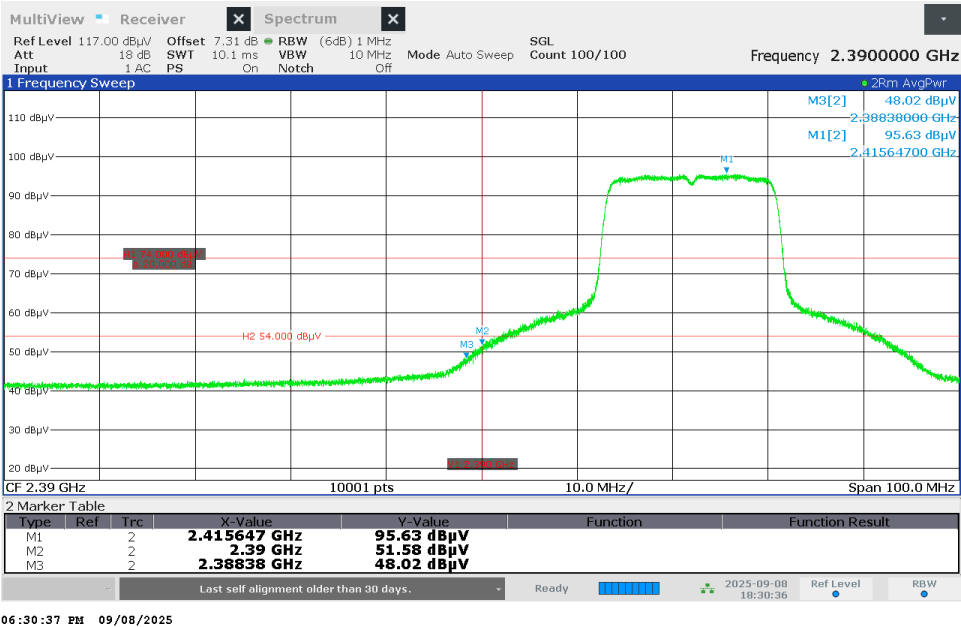


Figure 2.3.7.1-25 –Radiated Band-Edge Emissions Test Results – Average – Horizontal Polarization



Finals

Table 2.3.7.1-5 – Radiated Emissions Test Results

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
2385.64	54.91	74.00	-19.09	42.42	54.00	-11.58	281.00	1.00	Vertical	Pass
2390.000	67.51	74.00	-6.49	48.19	54.00	-5.81	281.00	1.00	Vertical	Pass
2385.64	63.68	74.00	-10.32	48.02	54.00	-5.98	30.00	3.48	Horizontal	Pass
2390.000	68.64	74.00	-5.36	51.58	54.00	-2.42	30.00	3.48	Horizontal	Pass

Test Notes: 802.11n 20 MHz - MCS0 - New Power (-2 dB reduction)



Test RE 2.3-2.6GHz - Charging_sn00110_Sideways_Ch11_n20

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
2.3 GHz - 2.6 GHz	3m	Vertical	1 MHz	3001 Pts	200 ms
2.3 GHz - 2.6 GHz	3m	Horizontal	1 MHz	3001 Pts	200 ms

Test Area	Tested By	Test Date:	Temperature	Humidity	Pressure
3m SAC	Thierry Jean-Charles	9/8/2025	23.8 C	45%	984 mBar

Technology:	Frequency:	Channel:	Mode:	EUT Orientation:
Wi-Fi	2462 MHz	11	802.11n 20 MHz	Y-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

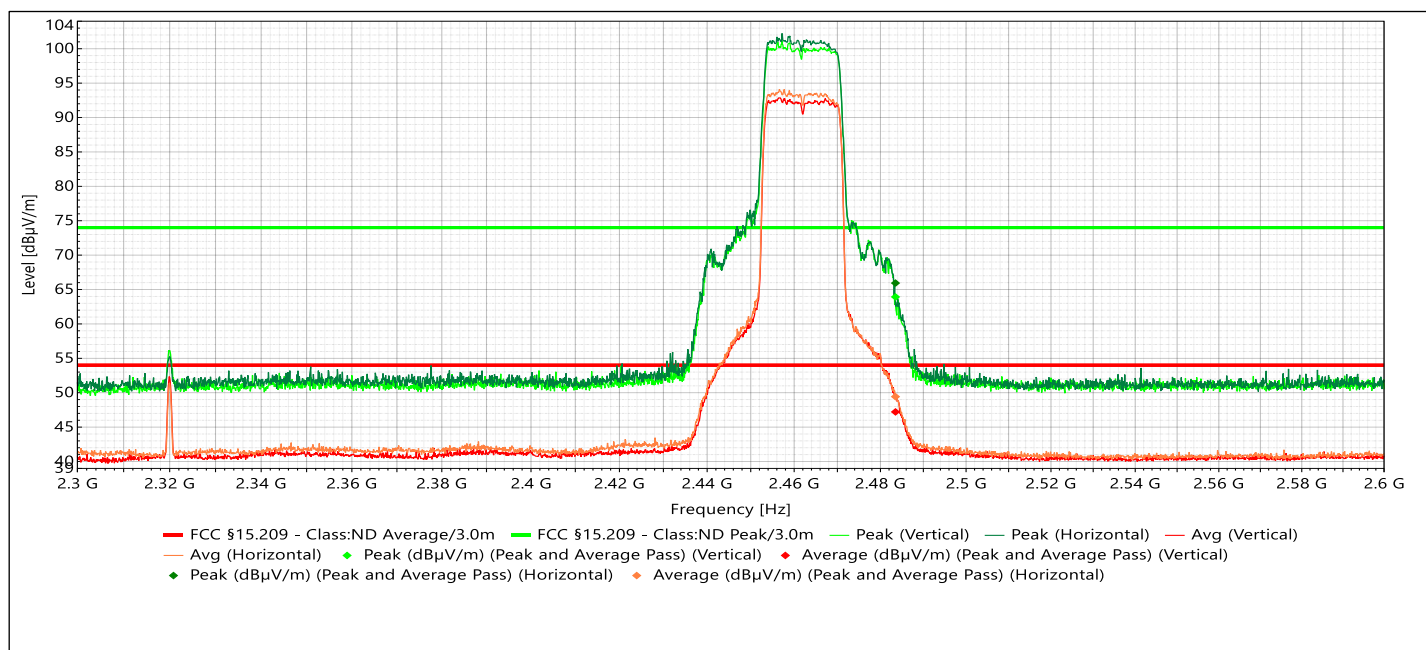


Figure 2.3.7.1-26 – Radiated Emissions Test Results

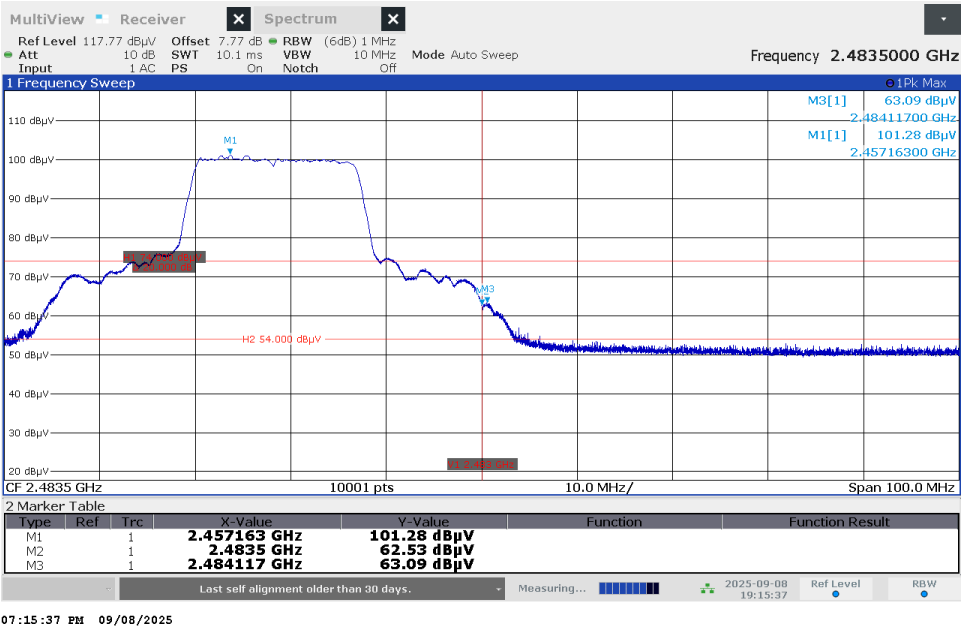


Figure 2.3.7.1-27 –Radiated Band-Edge Emissions Test Results – Peak – Vertical Polarization

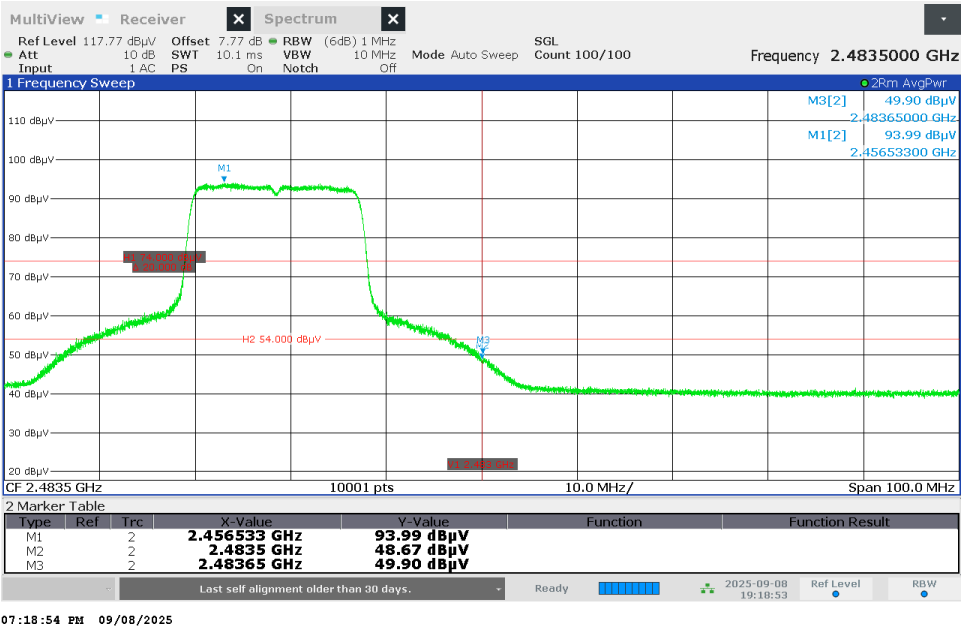


Figure 2.3.7.1-28 –Radiated Band-Edge Emissions Test Results – Average – Vertical Polarization

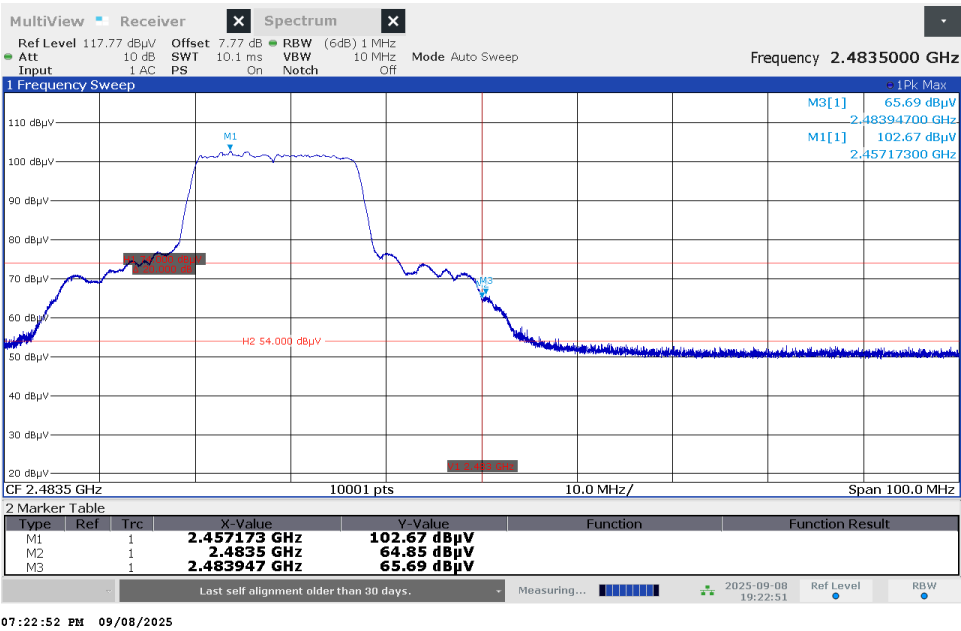


Figure 2.3.7.1-29 –Radiated Band-Edge Emissions Test Results – Peak – Horizontal Polarization

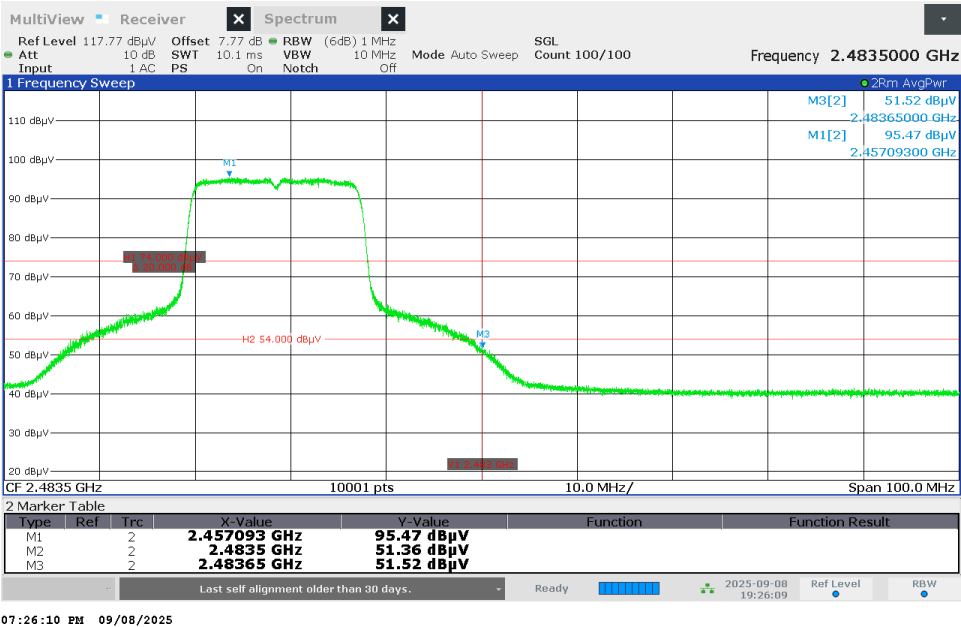


Figure 2.3.7.1-30 –Radiated Band-Edge Emissions Test Results – Average – Horizontal Polarization



Finals

Table 2.3.7.1-6 – Radiated Emissions Test Results

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
2483.500	63.93	74.00	-10.07	48.67	54.00	-5.33	71.00	1.00	Vertical	Pass
2484.117	63.09	74.00	-10.91	49.90	54.00	-4.1	71.00	1.00	Vertical	Pass
2483.500	65.94	74.00	-8.06	51.36	54.00	-2.64	39.00	3.68	Horizontal	Pass
2483.947	65.69	74.00	-8.31	51.52	54.00	-2.48	39.00	3.68	Horizontal	Pass

Test Notes: 802.11n 20 MHz - MCS0 - New Power (-2 dB reduction)



Test RE 2.3-2.6GHz - Charging_sn00110_Sideways_Ch3

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
2.3 GHz - 2.6 GHz	3m	Vertical	1 MHz	3001 Pts	200 ms
2.3 GHz - 2.6 GHz	3m	Horizontal	1 MHz	3001 Pts	200 ms

Test Area	Tested By	Test Date:	Temperature	Humidity	Pressure
3m SAC	Thierry Jean-Charles	9/8/2025	23.8 C	45%	984 mBar

Technology:	Frequency:	Channel:	Mode:	EUT Orientation:
Wi-Fi	2422 MHz	3	802.11n 40 MHz	Y-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

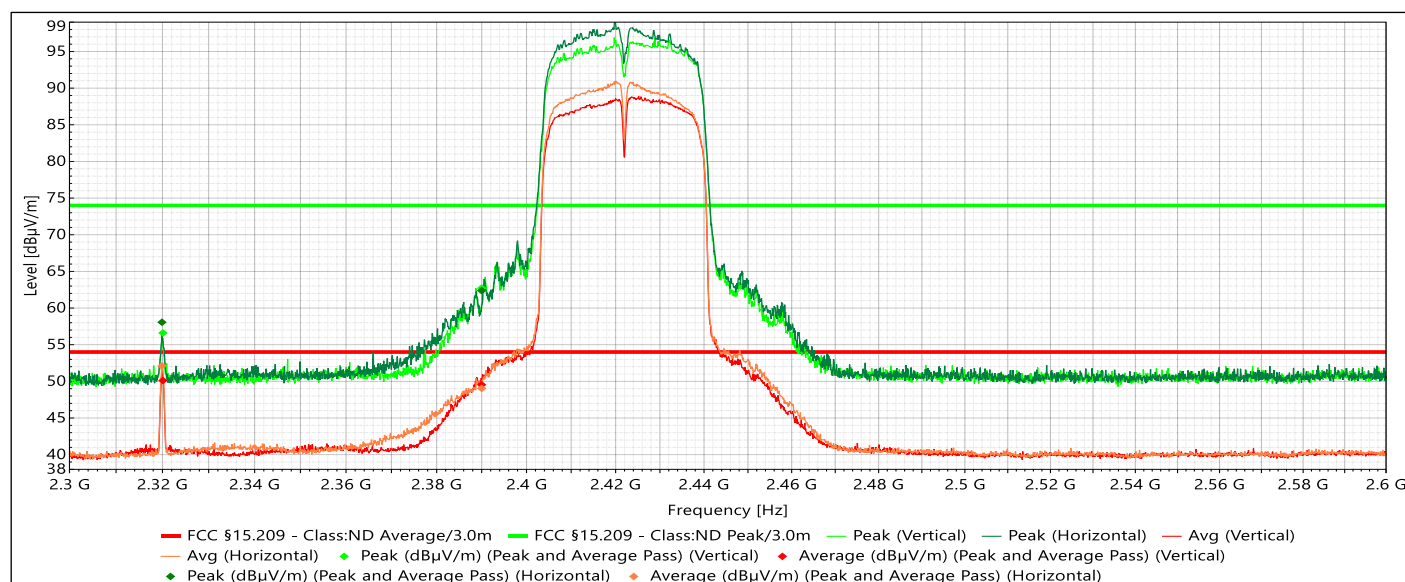


Figure 2.3.7.1-31 – Radiated Emissions Test Results

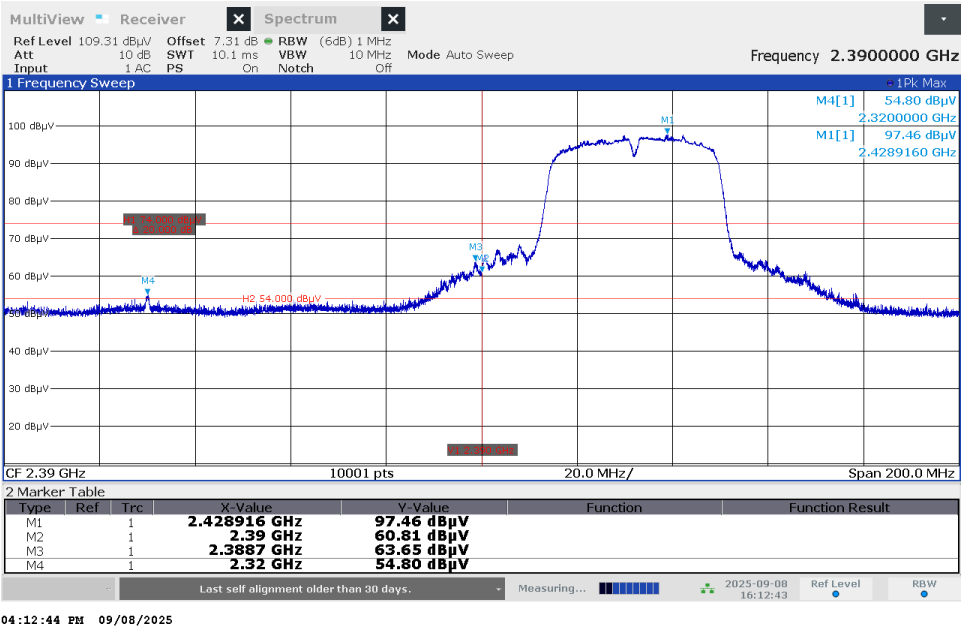


Figure 2.3.7.1-32 –Radiated Band-Edge Emissions Test Results – Peak – Vertical Polarization

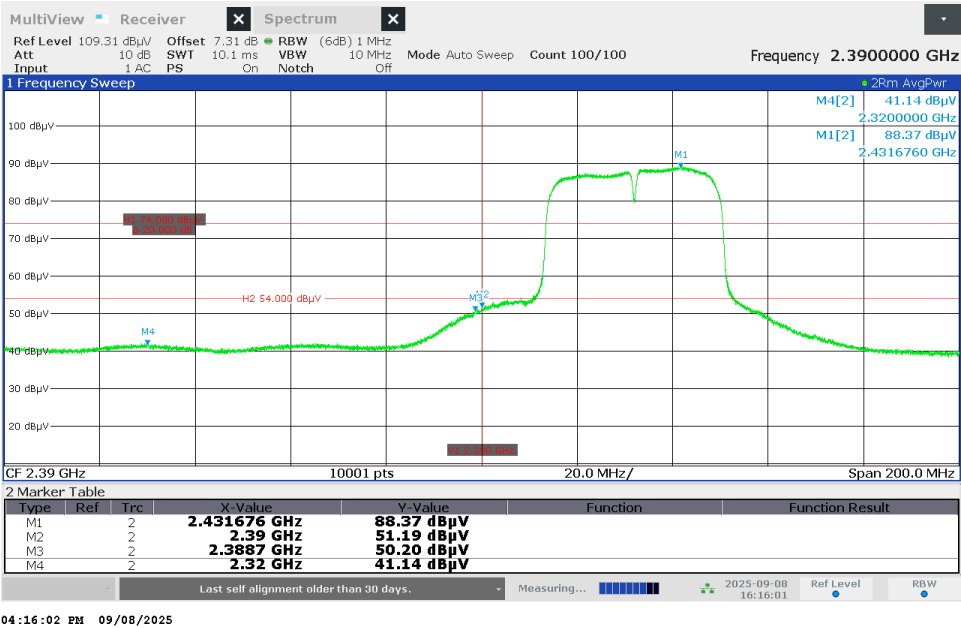


Figure 2.3.7.1-33 –Radiated Band-Edge Emissions Test Results – Average – Vertical Polarization

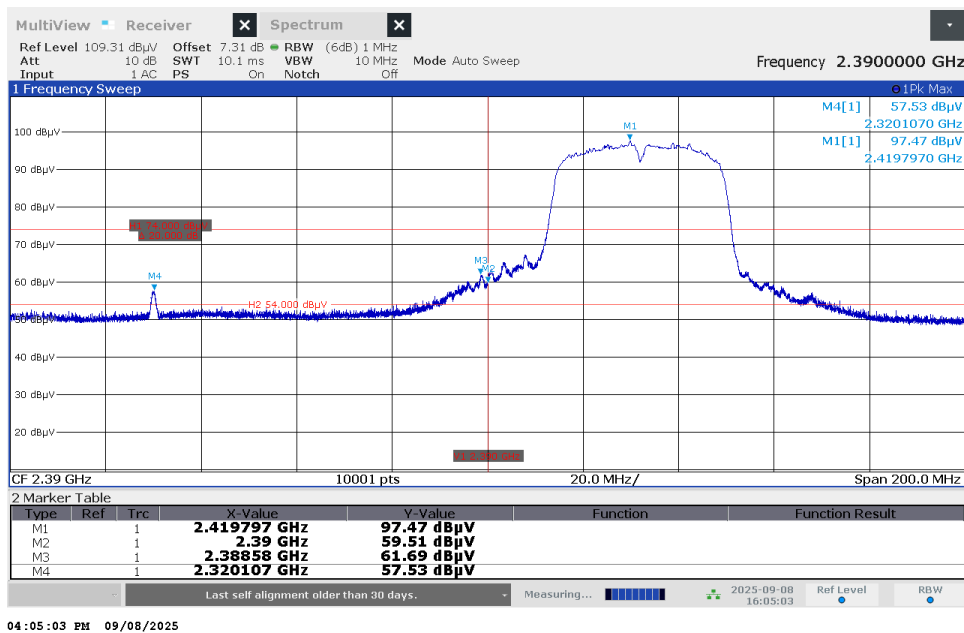


Figure 2.3.7.1-34 –Radiated Band-Edge Emissions Test Results – Peak – Horizontal Polarization

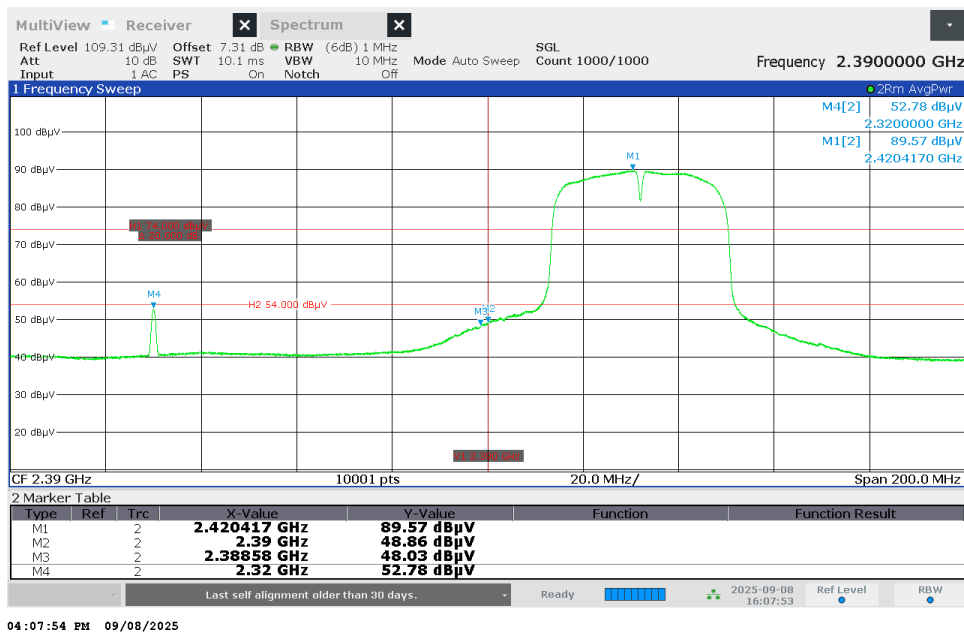


Figure 2.3.7.1-35 –Radiated Band-Edge Emissions Test Results – Average – Horizontal Polarization



Finals

Table 2.3.7.1-7 – Radiated Emissions Test Results

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
2320.100	56.60	74.00	-17.40	50.12	54.00	-3.88	159.00	1.00	Vertical	Pass
2388.7	63.65	74.00	-10.35	50.20	54.00	-3.80	273.00	1.00	Vertical	Pass
2390.000	62.72	74.00	-11.28	51.19	54.00	-2.81	273.00	1.00	Vertical	Pass
2319.900	58.06	74.00	-15.94	52.78	54.00	-1.22	39.00	1.59	Horizontal	Pass
2388.58	61.69	74.00	-12.31	48.03	54.00	-5.97	128.00	1.12	Horizontal	Pass
2390.000	62.37	74.00	-11.63	49.04	54.00	-4.96	128.00	1.12	Horizontal	Pass

Test Notes: 802.11n 40 MHz - MCS0 - New Power (-2 dB reduction)



Test RE 2.3-2.6GHz - Charging_sn00110_Sideways_Ch9

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
2.3 GHz - 2.6 GHz	3m	Vertical	1 MHz	3001 Pts	200 ms
2.3 GHz - 2.6 GHz	3m	Horizontal	1 MHz	3001 Pts	200 ms

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3m SAC	Thierry Jean-Charles	9/8/2025	23.8 C	45%	984 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
Wi-Fi	2452 MHz	9	802.11n 40 MHz	Y-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

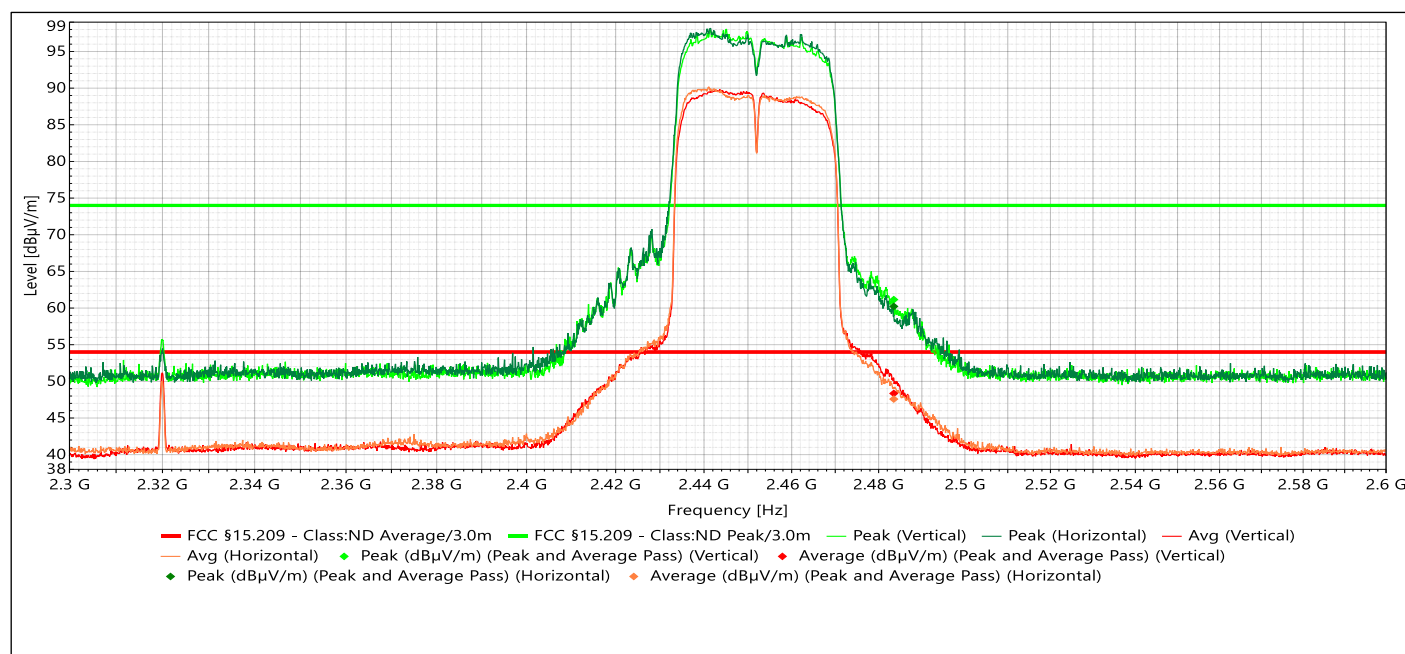


Figure 2.3.7.1-36 – Radiated Emissions Test Results

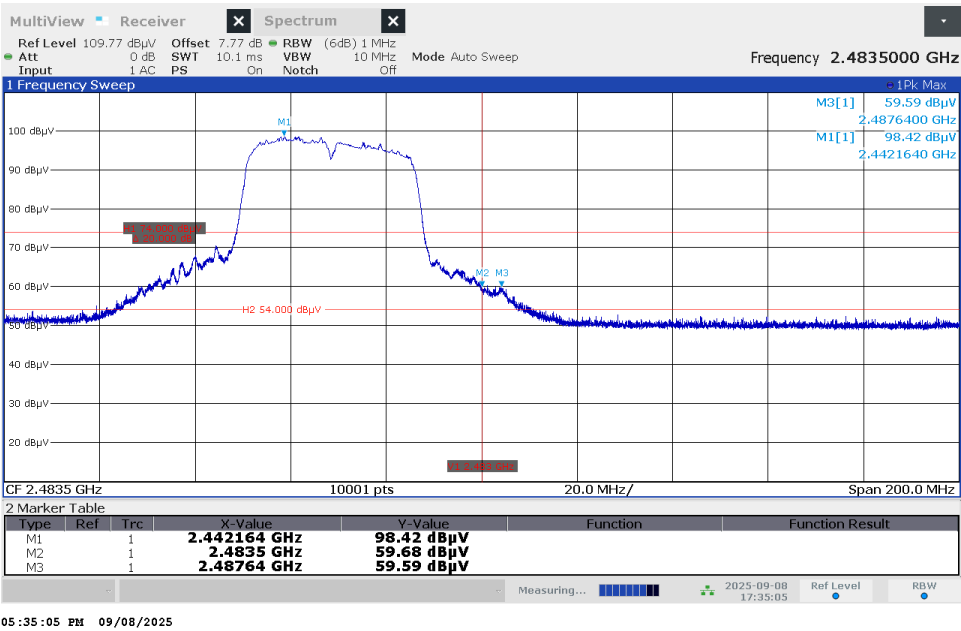


Figure 2.3.7.1-37 –Radiated Band-Edge Emissions Test Results – Peak – Vertical Polarization

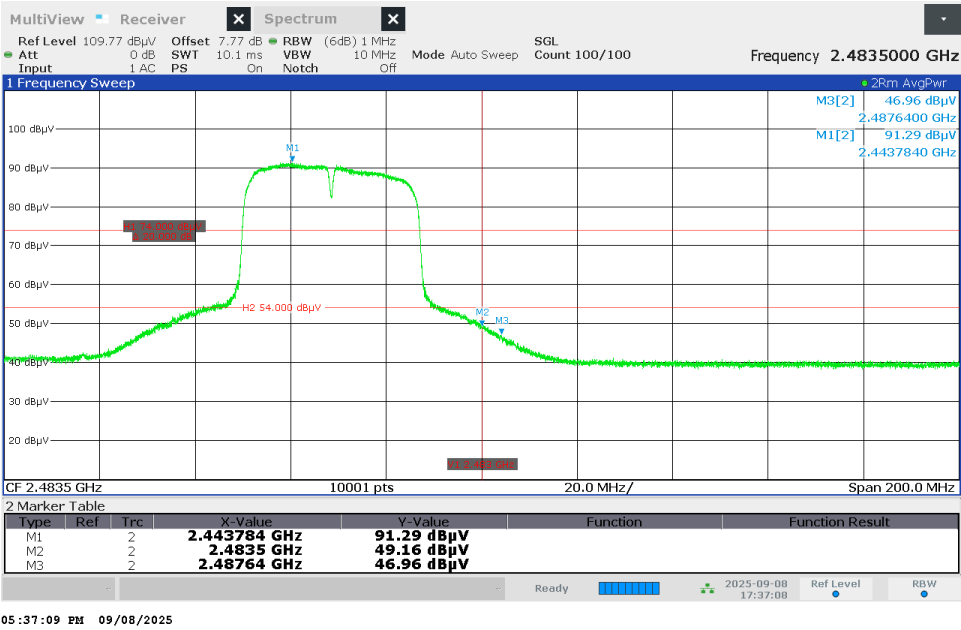


Figure 2.3.7.1-38 –Radiated Band-Edge Emissions Test Results – Average – Vertical Polarization

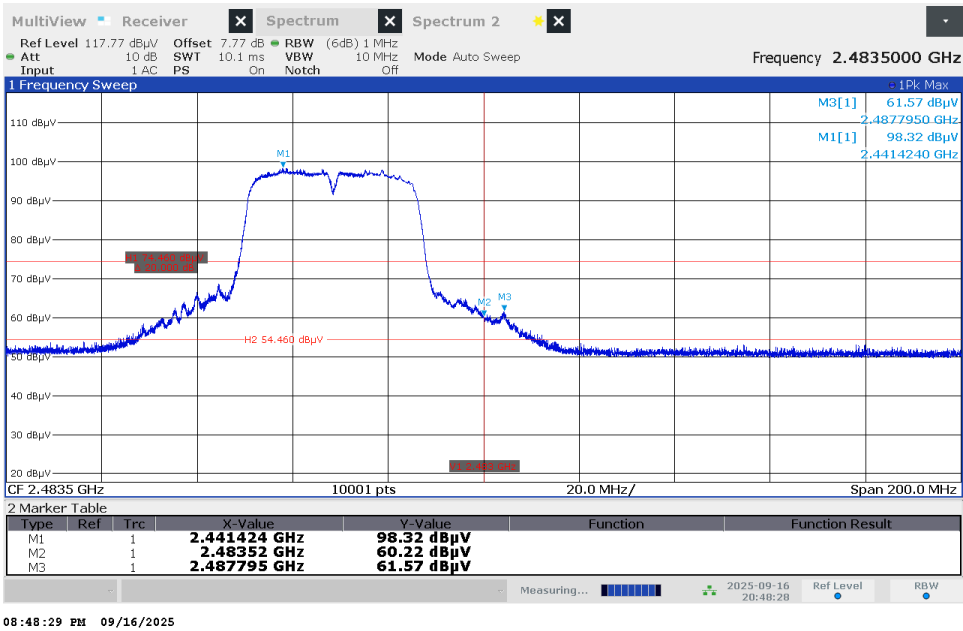


Figure 2.3.7.1-39 –Radiated Band-Edge Emissions Test Results – Peak – Horizontal Polarization

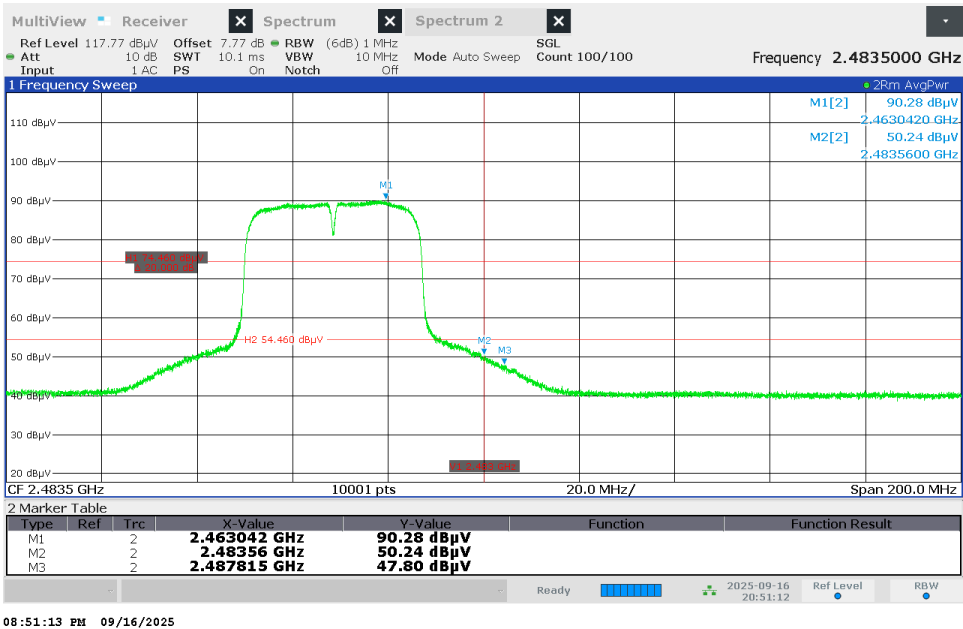


Figure 2.3.7.1-40 –Radiated Band-Edge Emissions Test Results – Average – Horizontal Polarization



Finals

Table 2.3.7.1-8 – Radiated Emissions Test Results

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
2483.500	61.15	74.00	-12.85	49.16	54.00	-4.84	63.00	1.00	Vertical	Pass
2487.640	59.59	74.00	-14.41	46.96	54.00	-7.04	63.00	1.00	Vertical	Pass
2483.500	60.23	74.00	-13.77	50.24	54.00	-3.76	346.00	2.14	Horizontal	Pass
2487.795	61.57	74.00	-12.43	47.80	54.00	-6.20	346.00	2.14	Horizontal	Pass

Test Notes: 802.11n 40 MHz - MCS0 - New Power (-2 dB reduction)



2.3.7.2 Radiated Spurious Emissions Test Results

Spurious Emissions 9 kHz-30MHz - Charging_sn00110_Flat_2412 MHz_802.11b - V - Coaxial

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

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	9/19/2025	23.8 C	45 %	984 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
Wi-Fi	2412 MHz	1	802.11b	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

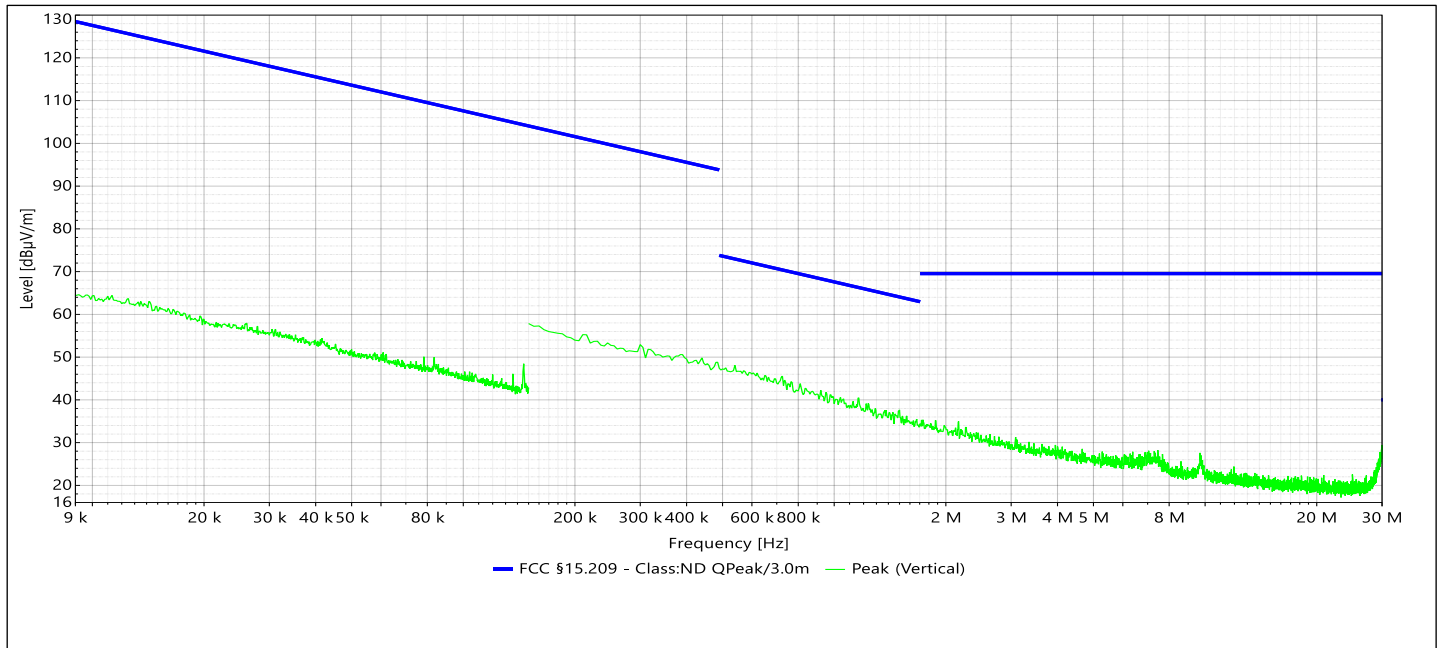


Figure 2.3.7.2-1 – Radiated Emissions Test Results

Test Notes: 802.11b, 1 Mbps - Vertical



Spurious Emissions 30M-1GHz - Charging_sn00110_Flat_2412 MHz_802.11b

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	100 kHz	19401 Pts	Auto
30 MHz - 1 GHz	3m	Horizontal	100 kHz	19401 Pts	Auto

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	9/19/2025	24.5 C	44%	982 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
Wi-Fi	2412 MHz	1	802.11b	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

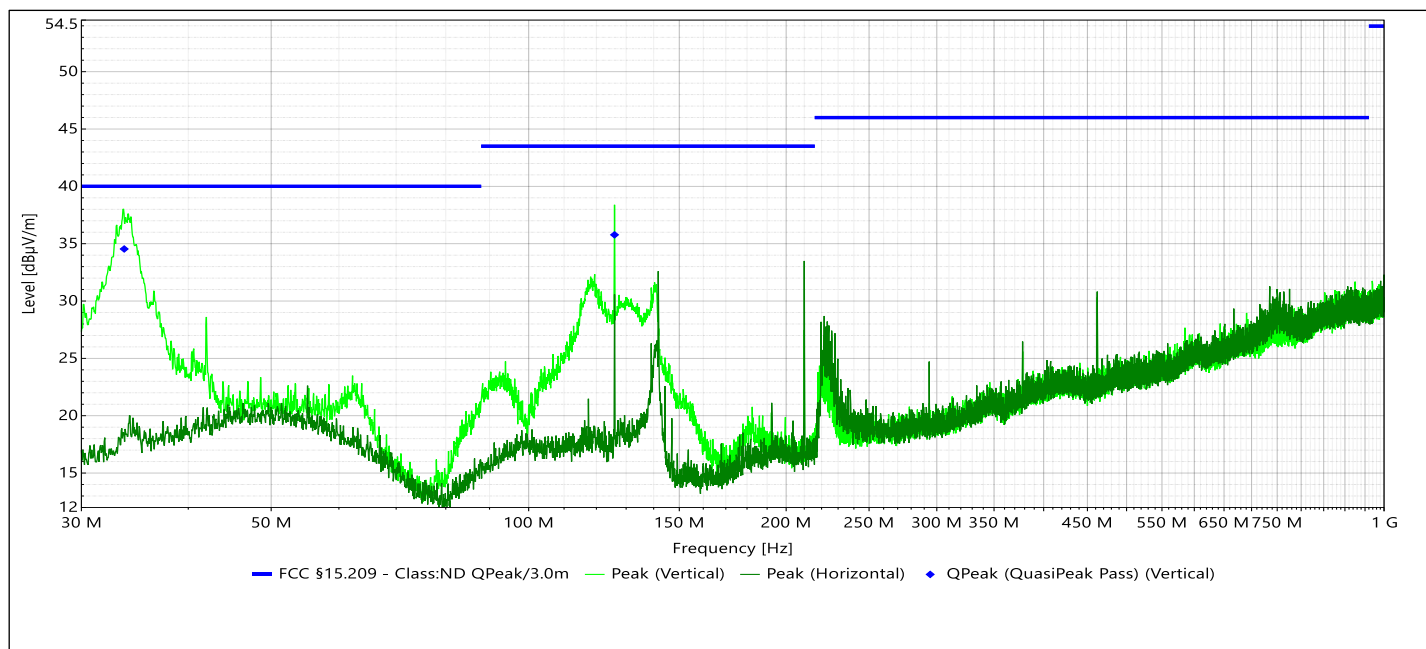


Figure 2.3.7.2-2 – Radiated Emissions Test Results



Finals

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
33.664	34.54	40.00	-5.46	57.00	1.02	Vertical	Pass
126.000	35.77	43.50	-7.73	117.00	1.00	Vertical	Pass

Test Notes: 802.11b, 1 Mbps



Spurious Emissions 1-18GHz - Charging_sn00110_Flat_2412 MHz_802.11b

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
1 GHz - 18 GHz	3m	Vertical	1 MHz	34001 Pts	200 ms
1 GHz - 18 GHz	3m	Horizontal	1 MHz	34001 Pts	200 ms

Test Area	Tested By	Test Date:	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	9/18/2025	24.2 C	42%	985 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
Wi-Fi	2412 MHz	1	802.11b	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

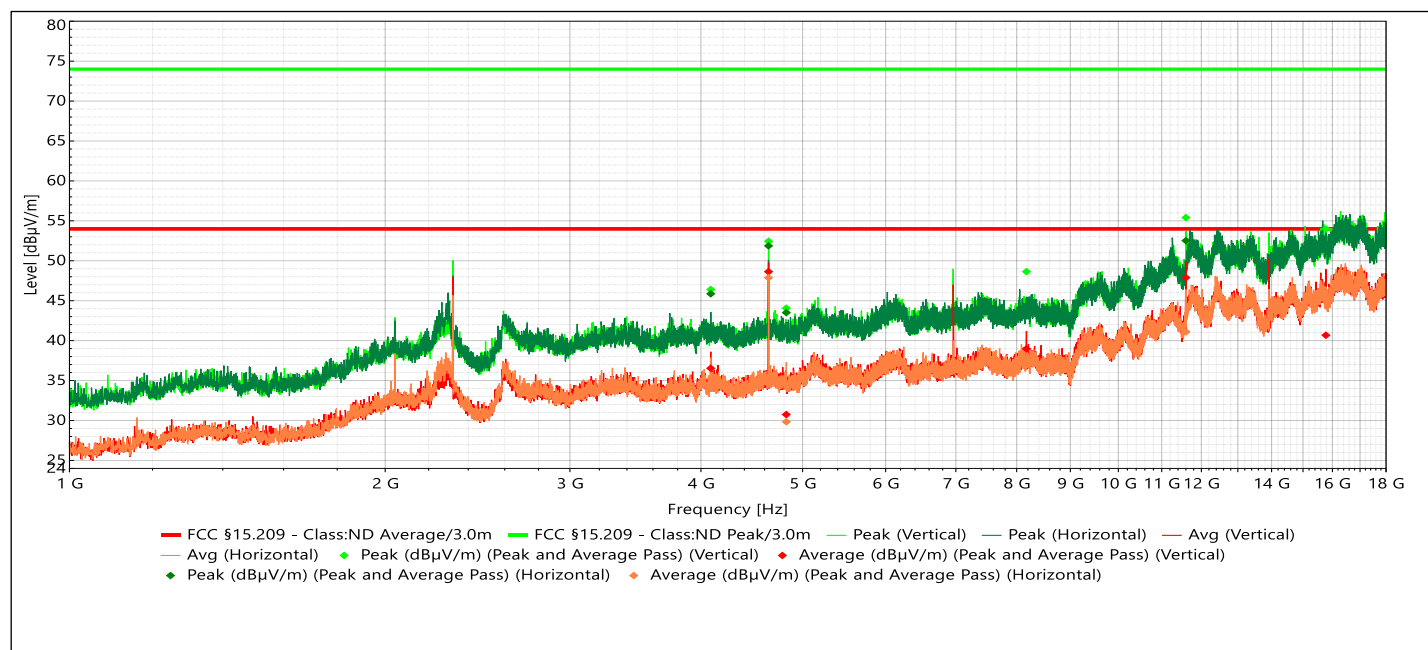


Figure 2.3.7.2-3 – Radiated Emissions Test Results



Finals

Table 2.3.7.2-2 – Radiated Emissions Test Results

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
4087.000	46.40	74.00	-27.60	36.53	54.00	-17.47	0.00	1.04	Vertical	Pass
4640.000	52.44	74.00	-21.56	48.64	54.00	-5.36	127.00	3.65	Vertical	Pass
4823.944	44.06	74.00	-29.94	30.74	54.00	-23.26	183.00	1.35	Vertical	Pass
8174.003	48.64	74.00	-25.36	38.98	54.00	-15.02	31.00	1.00	Vertical	Pass
11600.001	55.41	74.00	-18.59	47.89	54.00	-6.11	265.00	2.56	Vertical	Pass
15772.313	54.00	74.00	-20.00	40.68	54.00	-13.32	64.00	2.92	Vertical	Pass
4087.000	45.86	74.00	-28.14	35.21	54.00	-18.79	249.00	1.80	Horizontal	Pass
4640.000	51.87	74.00	-22.13	47.88	54.00	-6.12	241.00	1.39	Horizontal	Pass
4824.940	43.51	74.00	-30.49	29.84	54.00	-24.16	280.00	3.87	Horizontal	Pass
11600.003	52.52	74.00	-21.48	41.10	54.00	-12.90	176.00	1.00	Horizontal	Pass

Test Notes:

- 802.11b - 1 Mbps - New Power (-2 dB reduction)
- The emissions at 6.96 GHz and 13.92 GHz fall outside of the restricted bands defined in FCC Section 15.205 and are not subject to the FCC Section 15.209 limits.



Spurious Emissions 18-26GHz - Charging_sn00110_Flat_2412 MHz_802.11b

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
18 GHz - 26 GHz	3m	Vertical	1 MHz	16001 Pts	200 ms
18 GHz - 26 GHz	3m	Horizontal	1 MHz	16001 Pts	200 ms

Test Area	Tested By	Test Date:	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	9/18/2025	24.2 C	42%	983 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
Wi-Fi	2412 MHz	1	802.11b	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

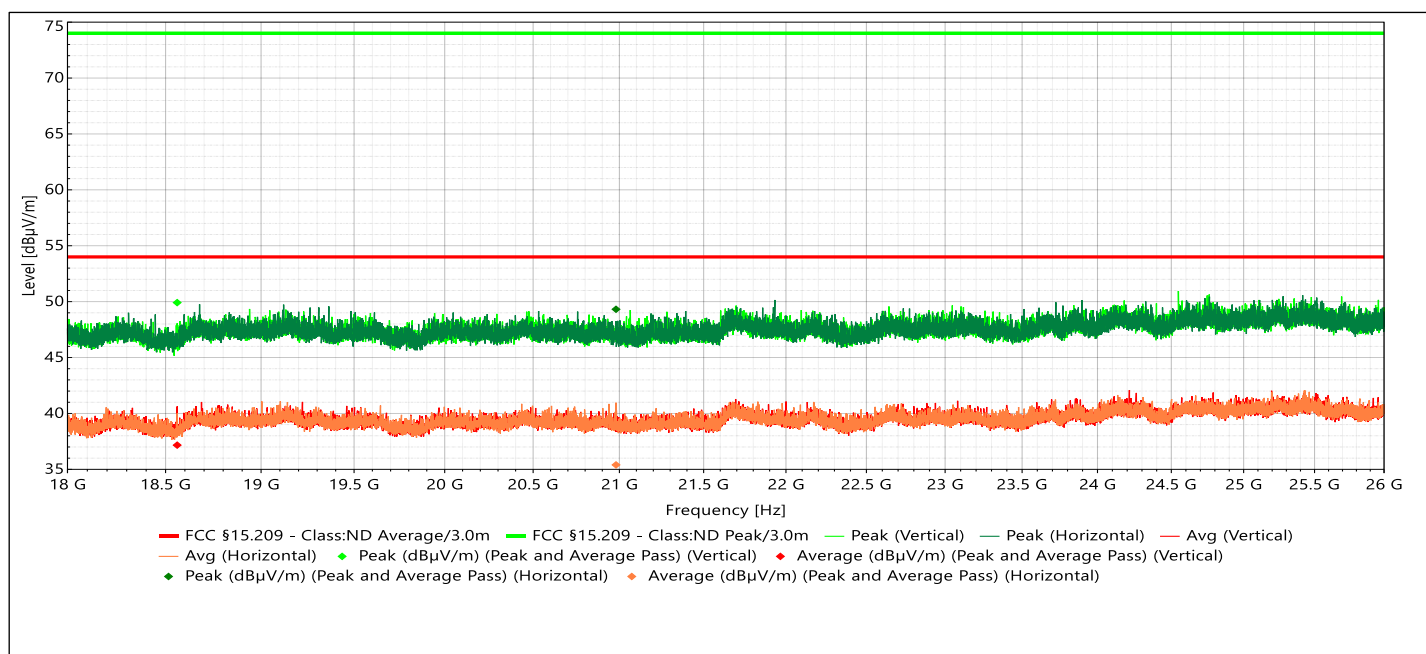


Figure 2.3.7.2-4 – Radiated Emissions Test Results



Finals

Table 2.3.7.2-3 – Radiated Emissions Test Results

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
18560.004	49.91	74.00	-24.09	37.16	54.00	-16.84	96.00	1.11	Vertical	Pass
20980.196	49.32	74.00	-24.68	35.40	54.00	-18.60	22.00	1.14	Horizontal	Pass

Test Notes: 802.11b - 1 Mbps - New Power (-2 dB reduction)



Spurious Emissions 9 kHz-30MHz - Charging_sn00110_Flat_2437 MHz_802.11b - V -Coaxial

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

Test Area	Tested By	Test Date:	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	9/19/2025	23.8 C	45 %	984 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
Wi-Fi	2437 MHz	6	802.11b	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

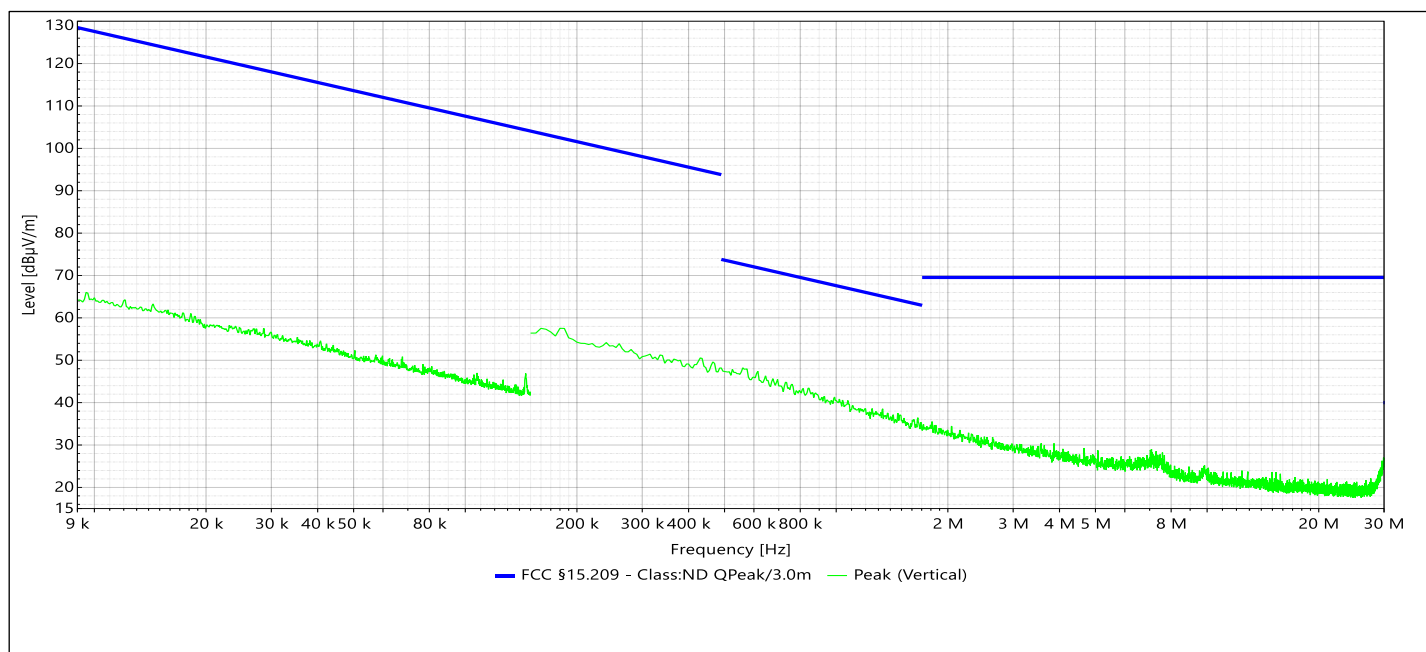


Figure 2.3.7.2-5 – Radiated Emissions Test Results

Test Notes: 802.11b, 1 Mbps - Vertical Coaxial



Spurious Emissions 9 kHz-30MHz - Charging_sn00110_Flat_2437 MHz_802.11b - V -Coplanar

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

Test Area	Tested By	Test Date:	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	9/19/2025	23.8 C	45 %	984 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
Wi-Fi	2437 MHz	6	802.11b	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

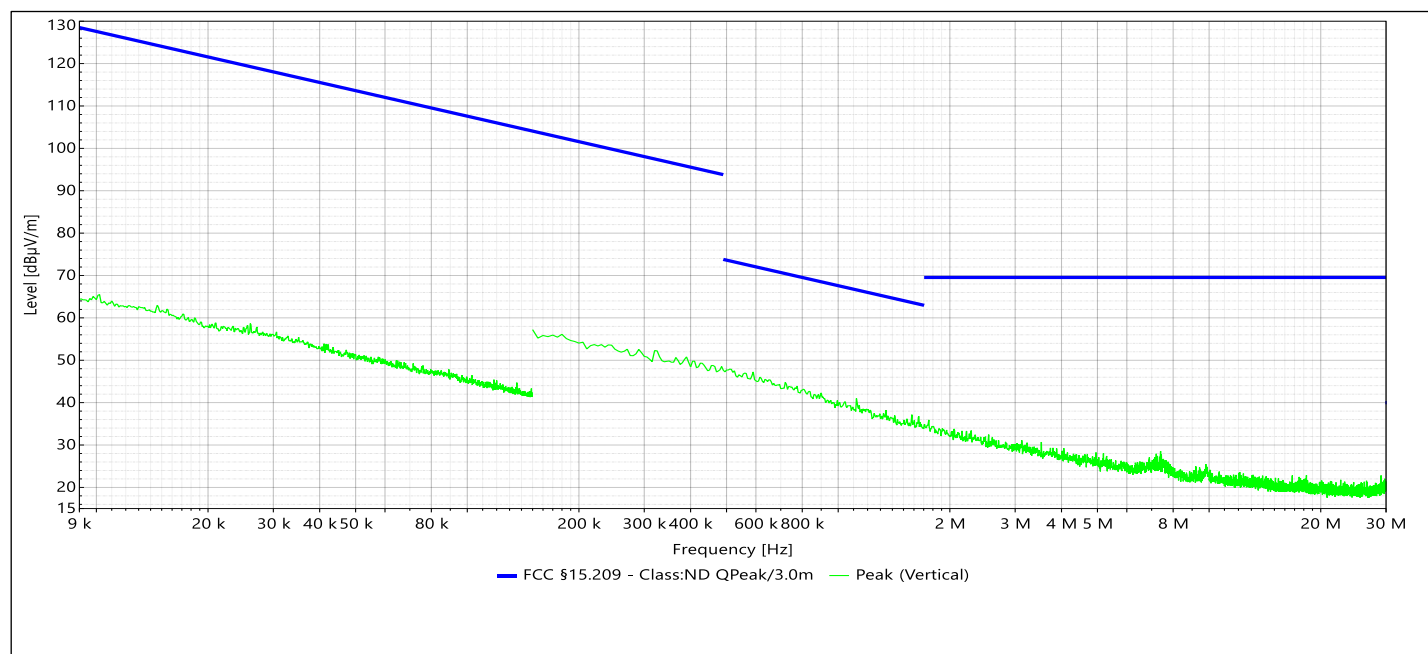


Figure 2.3.7.2-6 – Radiated Emissions Test Results

Test Notes: 802.11b, 1 Mbps - Vertical Coplanar



Spurious Emissions 9 kHz-30MHz - Charging_sn00110_Flat_2437 MHz_802.11b - H -Coplanar

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

Test Area	Tested By	Test Date:	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	9/19/2025	23.8 C	45 %	984 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
Wi-Fi	2437 MHz	6	802.11b	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

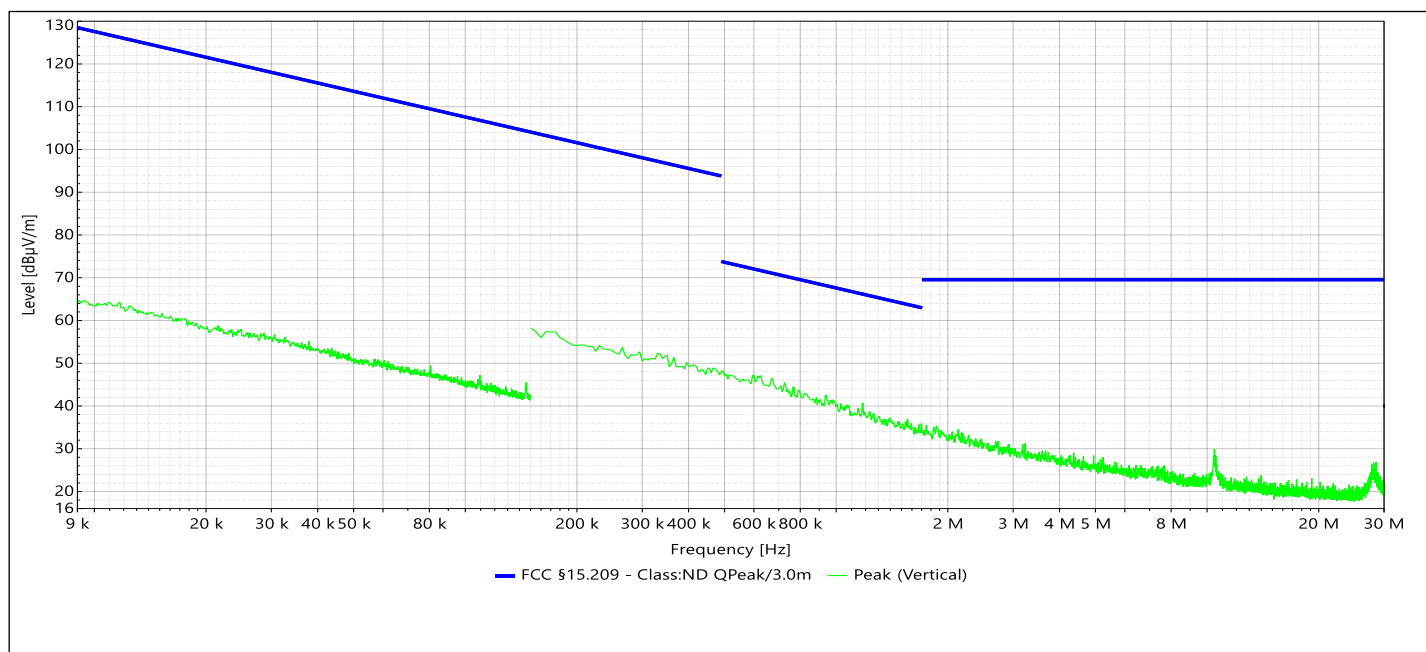


Figure 2.3.7.2-7 – Radiated Emissions Test Results

Test Notes: 802.11b, 1 Mbps - Horizontal Coplanar



Spurious Emissions 30M-1GHz - Charging_sn00110_Flat_2437 MHz_802.11b

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	100 kHz	19401 Pts	Auto
30 MHz - 1 GHz	3m	Horizontal	100 kHz	19401 Pts	Auto

Test Area	Tested By	Test Date:	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	9/19/2025	24.5 C	44%	982 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
Wi-Fi	2437 MHz	6	802.11b	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

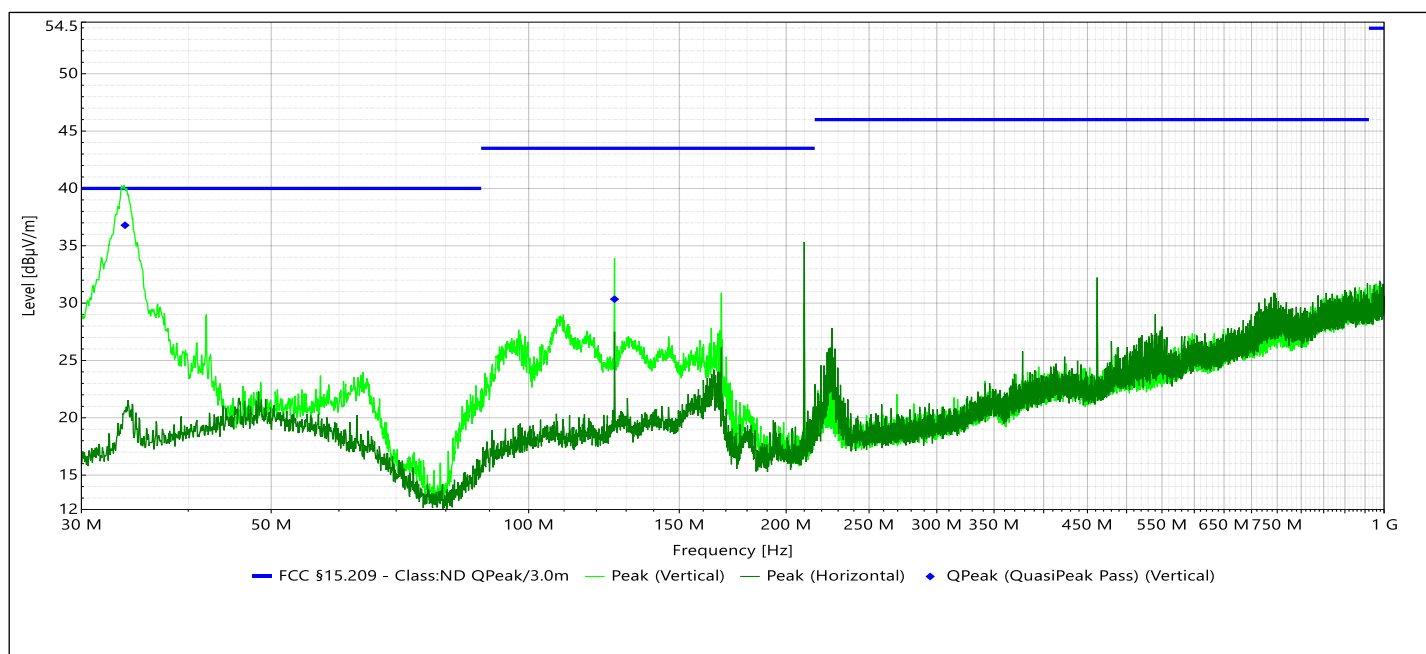


Figure 2.3.7.2-8 – Radiated Emissions Test Results



Finals

Table 2.3.7.2-4 – Radiated Emissions Test Results

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
33.739	36.79	40.00	-3.21	35.00	1.00	Vertical	Pass
126.000	30.34	43.50	-13.16	117.00	1.00	Vertical	Pass

Test Notes: 802.11b, 1 Mbps



Spurious Emissions 1-18GHz - Charging_sn00110_Flat_2437 MHz_802.11b

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
1 GHz - 18 GHz	3m	Vertical	1 MHz	34001 Pts	200 ms
1 GHz - 18 GHz	3m	Horizontal	1 MHz	34001 Pts	200 ms

Test Area	Tested By	Test Date:	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	9/18/2025	24.2 C	43%	985 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
Wi-Fi	2437 MHz	6	802.11b	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

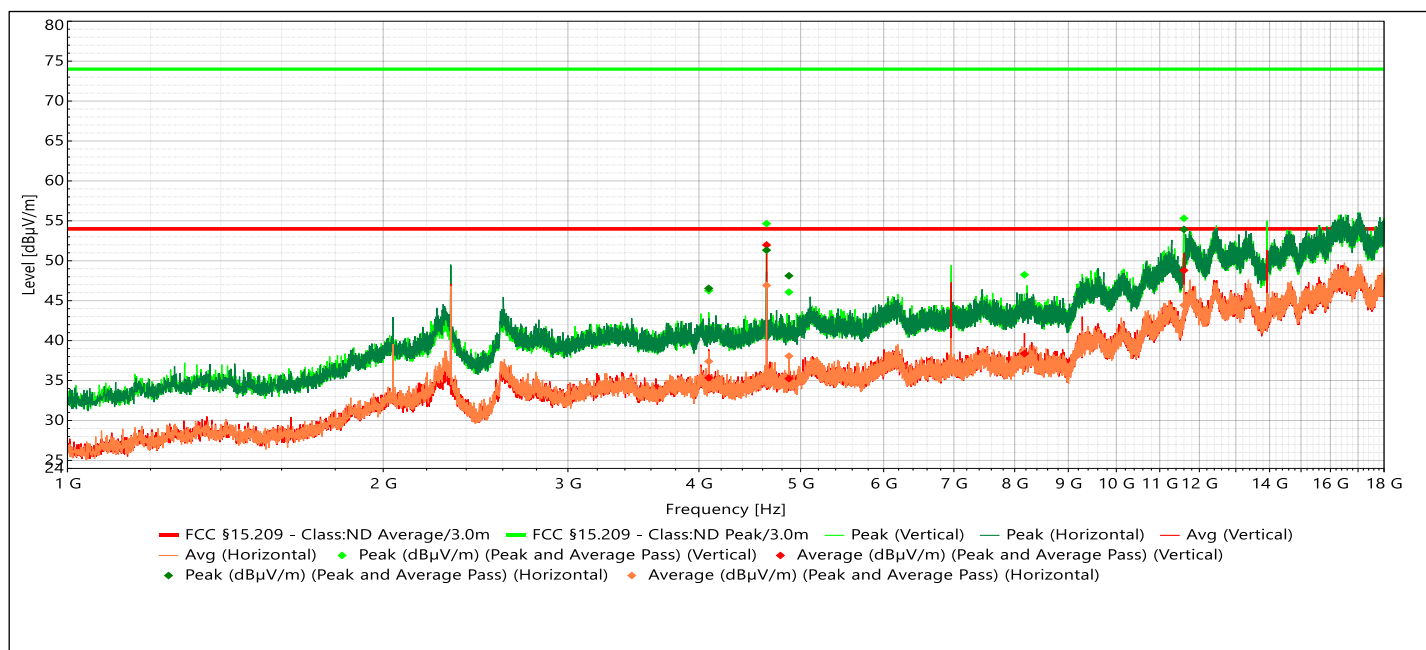


Figure 2.3.7.2-9 – Radiated Emissions Test Results



Finals

Table 2.3.7.2-5 – Radiated Emissions Test Results

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
4087.000	46.26	74.00	-27.74	35.35	54.00	-18.65	6.00	1.32	Vertical	Pass
4640.000	54.66	74.00	-19.34	51.98	54.00	-2.02	119.00	3.07	Vertical	Pass
4873.942	46.07	74.00	-27.93	35.24	54.00	-18.76	320.00	3.55	Vertical	Pass
8174.003	48.25	74.00	-25.75	38.37	54.00	-15.63	16.00	1.00	Vertical	Pass
11600.001	55.33	74.00	-18.67	48.80	54.00	-5.20	241.00	1.00	Vertical	Pass
4087.000	46.55	74.00	-27.45	37.40	54.00	-16.60	39.00	3.54	Horizontal	Pass
4640.002	51.33	74.00	-22.67	46.92	54.00	-7.08	249.00	1.11	Horizontal	Pass
4873.942	48.12	74.00	-25.88	38.06	54.00	-15.94	161.00	1.00	Horizontal	Pass
11600.001	53.93	74.00	-20.07	44.44	54.00	-9.56	321.00	1.00	Horizontal	Pass

Test Notes:

- 802.11b - 1 Mbps - New Power (-2 dB reduction)
- The emissions at 6.96 GHz and 13.92 GHz fall outside of the restricted bands defined in FCC Section 15.205 and are not subject to the FCC Section 15.209 limits.



Spurious Emissions 18-26GHz - Charging_sn00110_Flat_2437 MHz_802.11b

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
18 GHz - 26 GHz	3m	Vertical	1 MHz	16001 Pts	200 ms
18 GHz - 26 GHz	3m	Horizontal	1 MHz	16001 Pts	200 ms

Test Area	Tested By	Test Date:	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	9/18/2025	24.7 C	41%	983 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
Wi-Fi	2437 MHz	6	802.11b	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

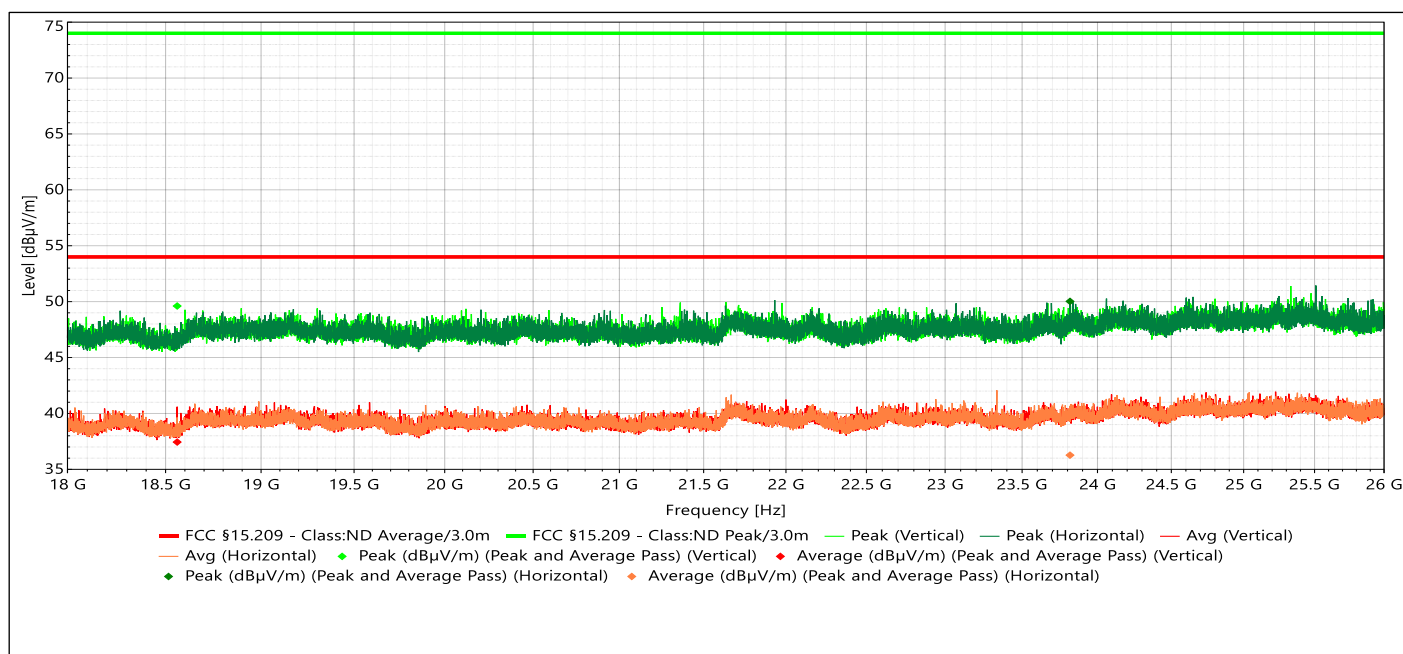


Figure 2.3.7.2-10 – Radiated Emissions Test Results



Finals

Table 2.3.7.2-6 – Radiated Emissions Test Results

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
18560.003	49.61	74.00	-24.39	37.44	54.00	-16.56	321.00	1.00	Vertical	Pass
23816.579	50.02	74.00	-23.98	36.27	54.00	-17.73	330.00	2.00	Horizontal	Pass

Test Notes: 802.11b - 1 Mbps - New Power (-2 dB reduction)



Spurious Emissions 9 kHz-30MHz - Charging_sn00110_Flat_2462 MHz_802.11b

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

Test Area	Tested By	Test Date:	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	9/19/2025	23.8 C	45 %	984 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
Wi-Fi	2462 MHz	11	802.11b	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

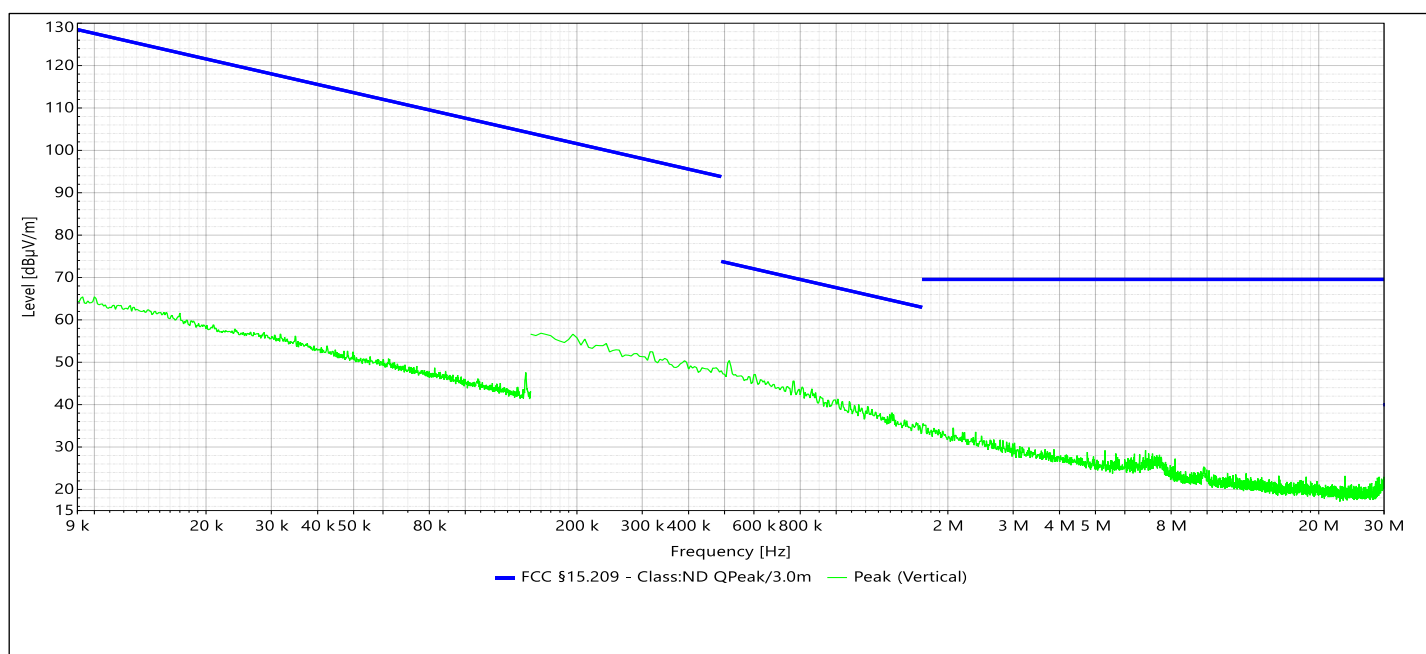


Figure 2.3.7.2-11 – Radiated Emissions Test Results

Test Notes: 802.11b, 1 Mbps



Spurious Emissions 30M-1GHz - Charging_sn00110_Flat_2462 MHz_802.11b

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	100 kHz	19401 Pts	Auto
30 MHz - 1 GHz	3m	Horizontal	100 kHz	19401 Pts	Auto

Test Area	Tested By	Test Date:	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	9/19/2025	24.5 C	44%	982 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
Wi-Fi	2462 MHz	11	802.11b	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

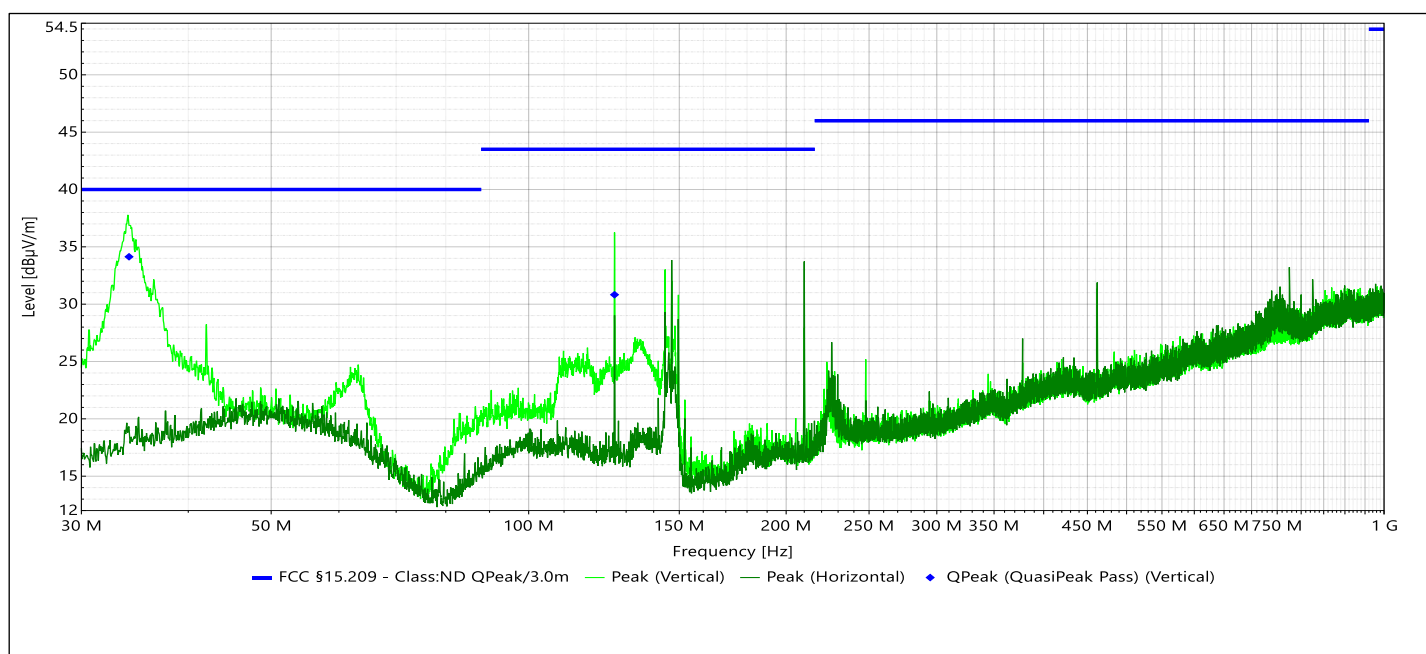


Figure 2.3.7.2-12 – Radiated Emissions Test Results



Finals

Table 2.3.7.2-7 – Radiated Emissions Test Results

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
34.105	34.13	40.00	-5.87	64.00	1.02	Vertical	Pass
126.000	30.82	43.50	-12.68	236.00	1.00	Vertical	Pass

Test Notes: 802.11b, 1 Mbps



Spurious Emissions 1-18GHz - Charging_sn00110_Flat_2462 MHz_802.11b

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
1 GHz - 18 GHz	3m	Vertical	1 MHz	34001 Pts	200 ms
1 GHz - 18 GHz	3m	Horizontal	1 MHz	34001 Pts	200 ms

Test Area	Tested By	Test Date:	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	9/18/2025	25 C	41%	985 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
Wi-Fi	2462 MHz	11	802.11b	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

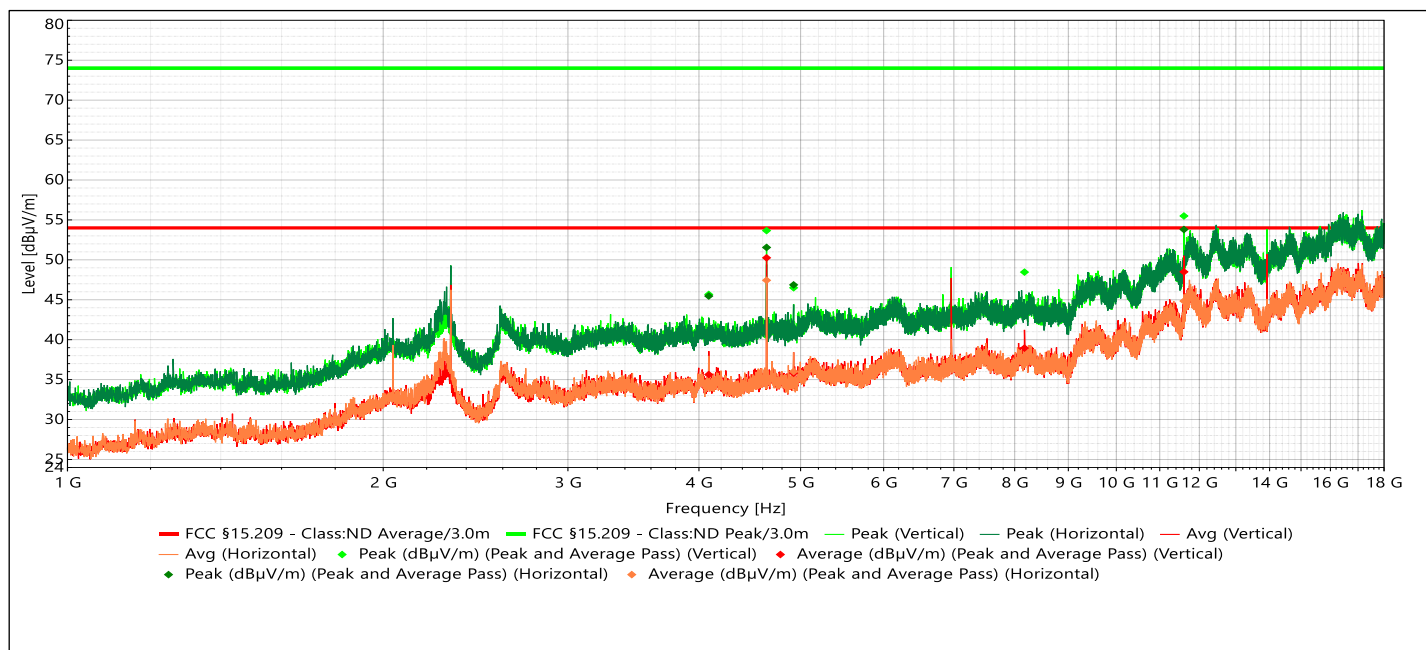


Figure 2.3.7.2-13 – Radiated Emissions Test Results



Finals

Table 2.3.7.2-8 – Radiated Emissions Test Results

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
4087.002	45.67	74.00	-28.33	35.63	54.00	-18.37	360.00	1.45	Vertical	Pass
4639.999	53.66	74.00	-20.34	50.26	54.00	-3.74	127.00	1.74	Vertical	Pass
4923.942	46.50	74.00	-27.50	35.81	54.00	-18.19	185.00	1.05	Vertical	Pass
8174.002	48.46	74.00	-25.54	38.95	54.00	-15.05	24.00	1.00	Vertical	Pass
11600.001	55.49	74.00	-18.51	48.50	54.00	-5.50	241.00	1.05	Vertical	Pass
4087.000	45.47	74.00	-28.53	34.67	54.00	-19.33	96.00	3.88	Horizontal	Pass
4640.003	51.55	74.00	-22.45	47.44	54.00	-6.56	249.00	1.32	Horizontal	Pass
4923.942	46.87	74.00	-27.13	36.01	54.00	-17.99	0.00	1.00	Horizontal	Pass
11600.000	53.80	74.00	-20.20	44.84	54.00	-9.16	201.00	1.05	Horizontal	Pass

Test Notes:

- 802.11b - 1 Mbps - New Power (-2 dB reduction)
- The emissions at 6.96 GHz and 13.92 GHz fall outside of the restricted bands defined in FCC Section 15.205 and are not subject to the FCC Section 15.209 limits.



Spurious Emissions 18-26GHz - Charging_sn00110_Flat_2462 MHz_802.11b

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
18 GHz - 26 GHz	3m	Vertical	1 MHz	16001 Pts	200 ms
18 GHz - 26 GHz	3m	Horizontal	1 MHz	16001 Pts	200 ms

Test Area	Tested By	Test Date:	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	9/18/2025	24.7 C	41%	984 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
Wi-Fi	2462 MHz	11	802.11b	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

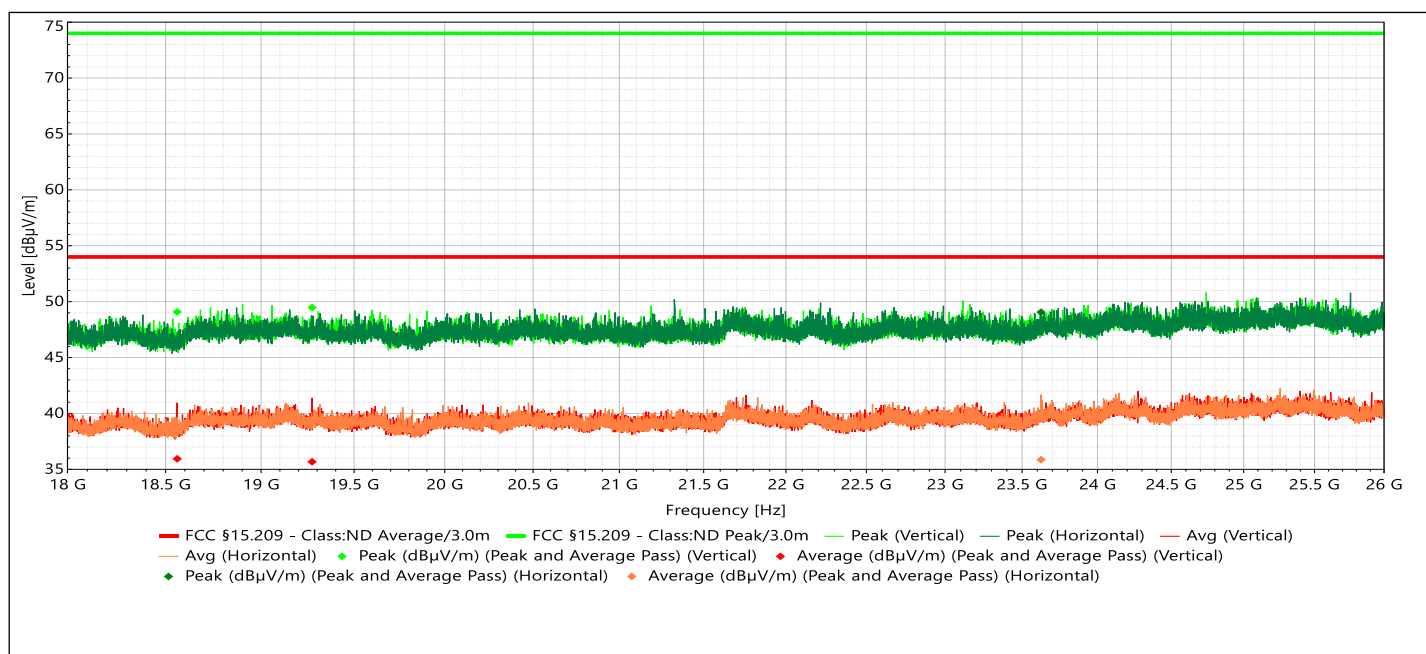


Figure 2.3.7.2-14 – Radiated Emissions Test Results



Finals

Table 2.3.7.2-9 – Radiated Emissions Test Results

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
18560.001	49.08	74.00	-24.92	35.94	54.00	-18.06	264.00	3.00	Vertical	Pass
19272.767	49.47	74.00	-24.53	35.67	54.00	-18.33	161.00	1.27	Vertical	Pass
23624.750	49.06	74.00	-24.94	35.86	54.00	-18.14	360.00	2.34	Horizontal	Pass

Test Notes: 802.11b - 1 Mbps - New Power (-2 dB reduction)



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: Peak

Corrected Level: $50.96 + 7.07 = 58.03 \text{ dB}\mu\text{V/m}$

Margin: $58.03 \text{ dB}\mu\text{V/m} - 74 \text{ dB}\mu\text{V/m} = -15.97 \text{ dB}$

Example Calculation: Average

Corrected Level: $45.7 + 7.07 - 0 = 52.77 \text{ dB}\mu\text{V/m}$

Margin: $52.77 \text{ dB}\mu\text{V/m} - 54 \text{ dB}\mu\text{V/m} = -1.23 \text{ dB}$



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	10/12/2024	10/12/2025
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	09/23/2024	09/23/2025
WRLE02418	EMCO/EMC Test	Antenna, Loop	6502	2215	G	03/18/2025	03/18/2027
WRLE10891	Huber & Suhner	Cable, BNC 5M	EF142/11BNC/11BNC/5M	na	B	03/17/2025	03/17/2026
WRLE11324	Mini-Circuits Lab	Attenuator, 10 dB	BW-N10W5	1324	B	03/24/2025	03/24/2026
WRLE11519	Com-Power Corp.	Preamplifier, 500 MHz-18 GHz	PAM-118A	18040002	B	01/23/2025	01/23/2026
NBLE11614	Teledyne Storm Microwave	Cable, N 3m	90-195-3MTR	182984-003	B	02/05/2025	02/05/2026
NBLE11618	Teledyne Storm Microwave	Cable, N 8m	90-195-8MTR	182982-004	B	02/05/2025	02/05/2026
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
NBLE11699	Microwave Circuits	Notch Filter, 2.4-2.4837 GHz	N0324415	502922 DC1947	B	08/05/2025	08/05/2026
NBLE11754	Rohde & Schwarz	Receiver, 1 Hz-44 GHz	ESW44	103037	G	10/01/2024	10/01/2025

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

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
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	10/12/2024	10/12/2025
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	09/23/2024	09/23/2025
WRLE02418	EMCO/EMC Test	Antenna, Loop	6502	2215	G	03/18/2025	03/18/2027
WRLE10891	Huber & Suhner	Cable, BNC 5M	EF142/11BNC/11BNC/5M	na	B	03/17/2025	03/17/2026
WRLE11324	Mini-Circuits Lab	Attenuator, 10 dB	BW-N10W5	1324	B	03/24/2025	03/24/2026
WRLE11519	Com-Power Corp.	Preamplifier, 500 MHz-18 GHz	PAM-118A	18040002	B	01/23/2025	01/23/2026
NBLE11614	Teledyne Storm Microwave	Cable, N 3m	90-195-3MTR	182984-003	B	02/05/2025	02/05/2026
NBLE11618	Teledyne Storm Microwave	Cable, N 8m	90-195-8MTR	182982-004	B	02/05/2025	02/05/2026
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
NBLE11699	Microwave Circuits	Notch Filter, 2.4-2.4837 GHz	N0324415	502922 DC1947	B	08/05/2025	08/05/2026
NBLE11754	Rohde & Schwarz	Receiver, 1 Hz-44 GHz	ESW44	103037	G	10/01/2024	10/01/2025
WRLE11323	Mini-Circuits Lab	Attenuator, 20 dB	BW-N20W5	1323	B	08/29/2025	08/29/2026
NBLE11627	Keysight	Power Meter	N1912A (SAP 21006102)	MY58150016	G	01/13/2025	01/13/2026
NBLE11628	Keysight	Power Sensor	N1921A	MY58130003	G	01/13/2025	01/13/2026

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

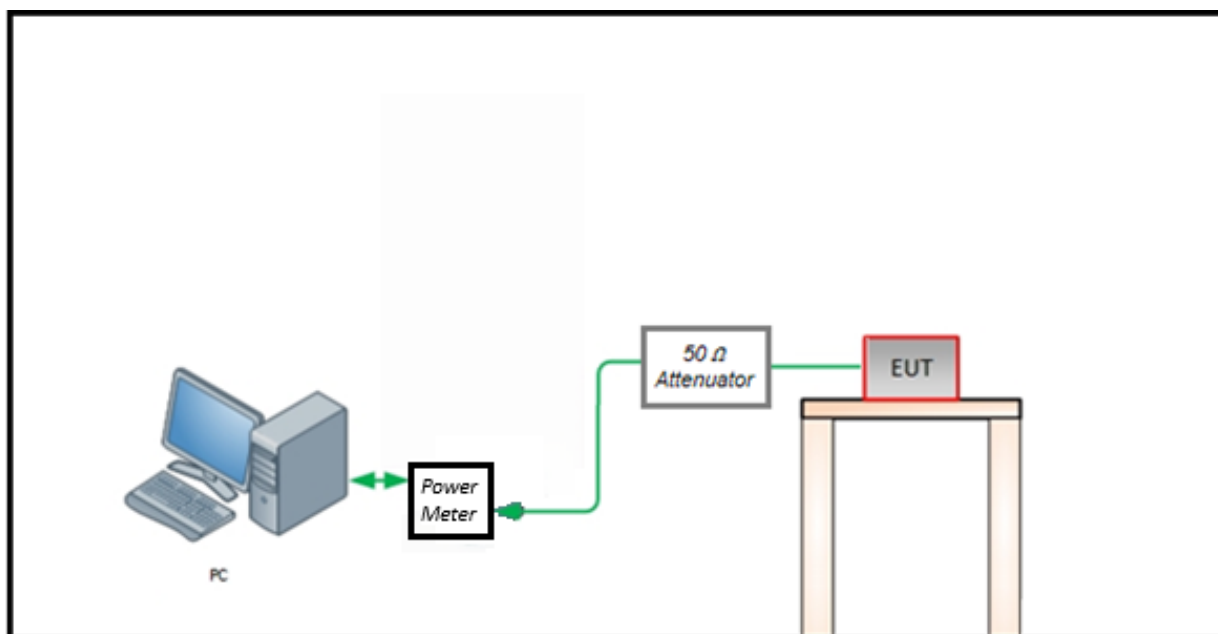


Figure 4-1 – RF Conducted Test Setup – Power Measurements

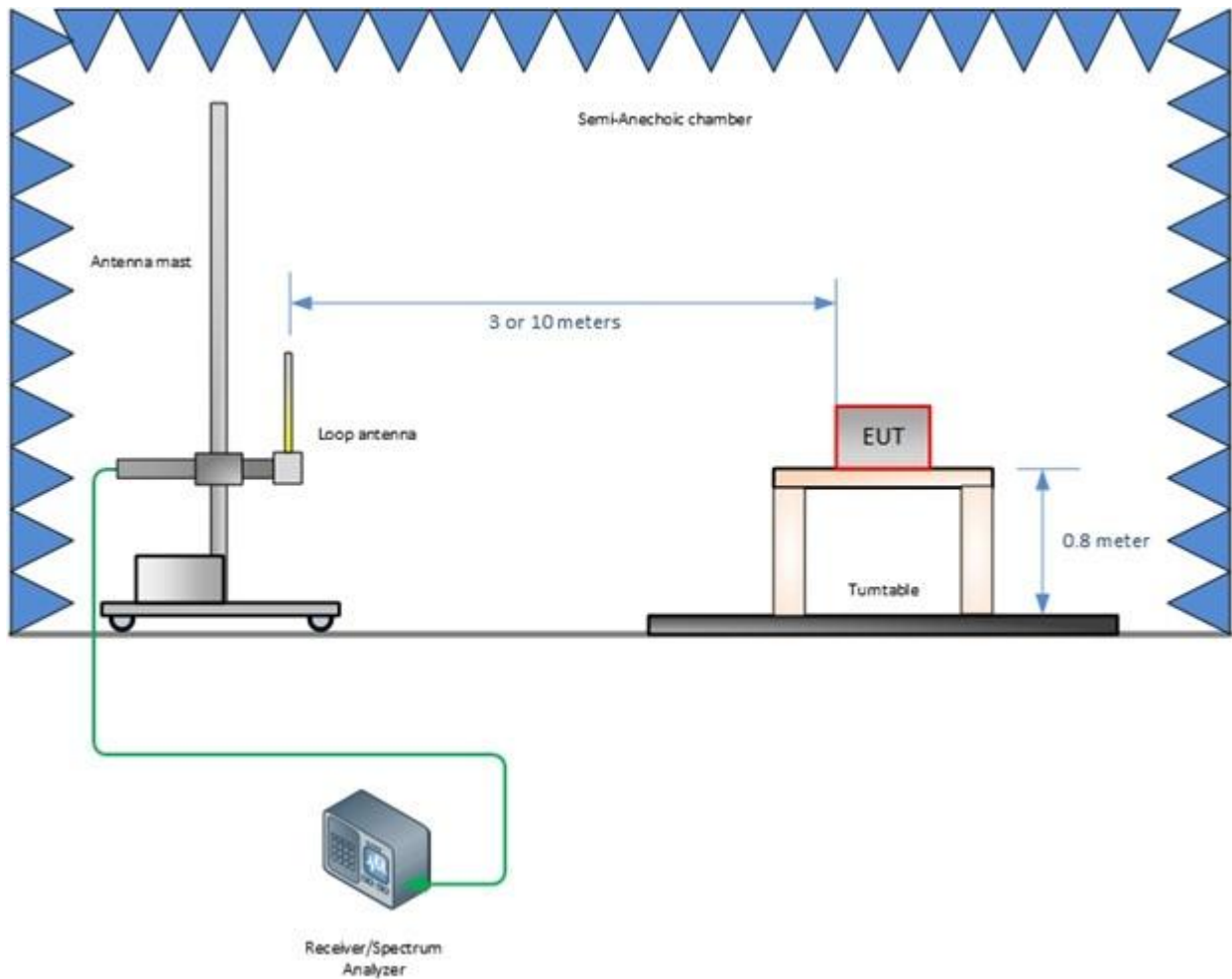


Figure 4-2 – Radiated Emissions Test Setup up to 30 MHz

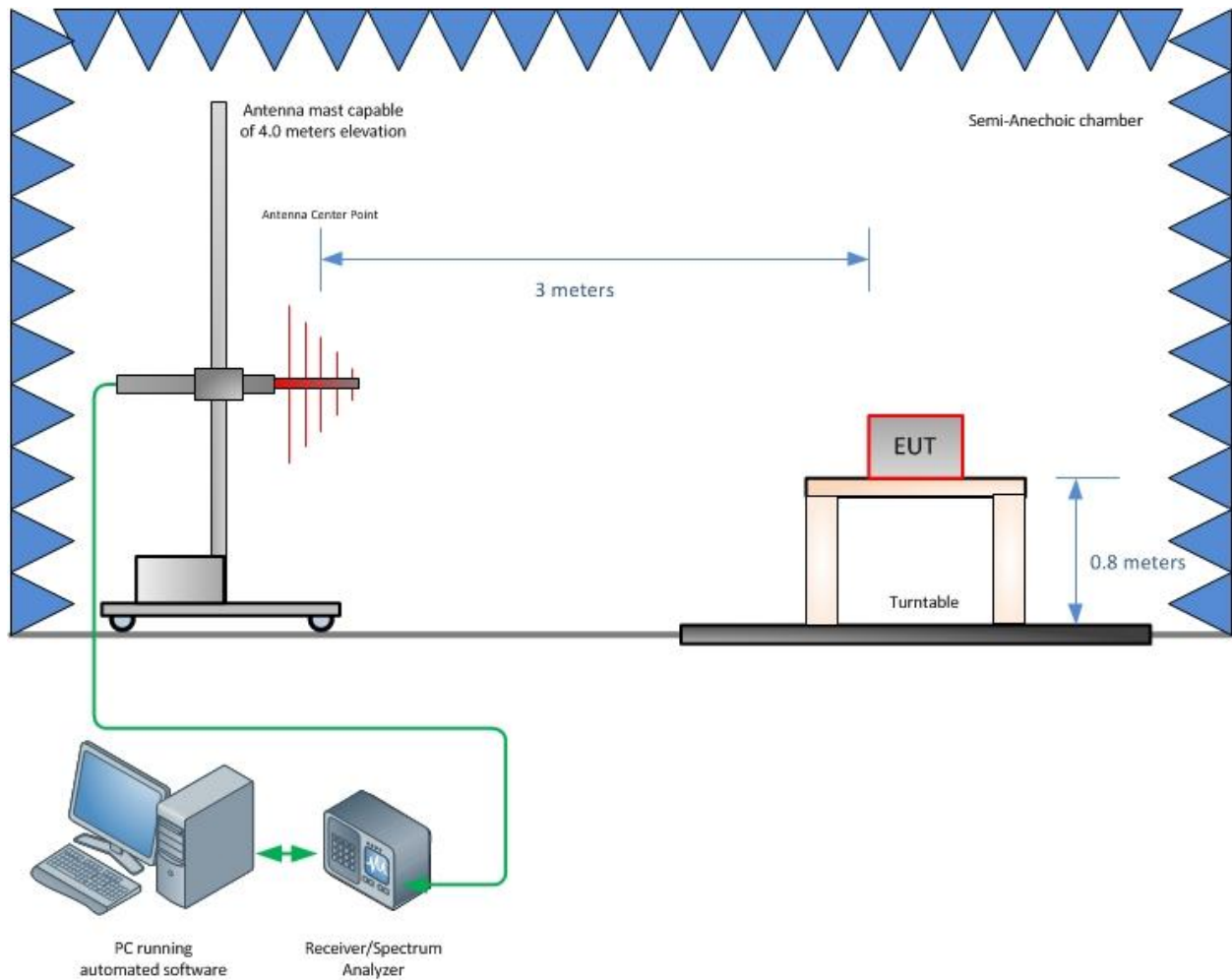


Figure 4-3 – Radiated Emissions Test Setup up to 1 GHz

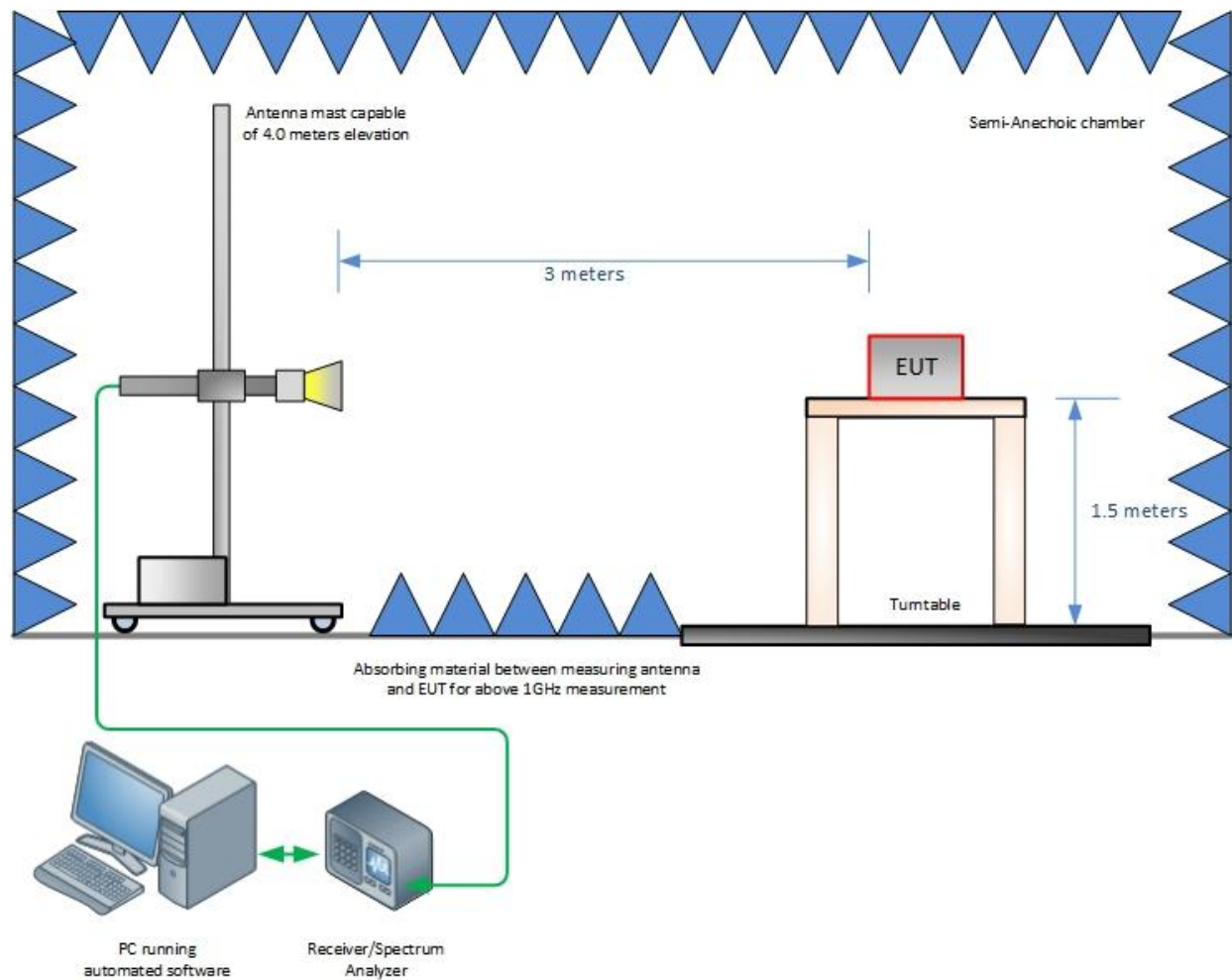


Figure 4-4 – Radiated Emissions Test Setup above 1 GHz



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.



6 Accreditation, Disclaimers and Copyright

TÜV SÜD America Inc.'s reports apply only to the specific sample tested under stated test conditions. It is the manufacturer's responsibility to assure the continued compliance of production units of this model. TÜV SÜD America, Inc. shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV SÜD America, Inc.'s issued reports.

This report is the confidential property of the client. As a mutual protection to our clients, the public and TÜV SÜD America, Inc., extracts from the test report shall not be reproduced, except in full without TÜV SÜD America, Inc.'s written approval.

This report must not be used to claim product certification, approval, or endorsement by A2LA, NIST, or any agency of the federal government.