



RF Test Report

Standard(s): FCC Part 15 Subpart 15.407,
RSS-247 Issue 3:2023

Unlicensed Intentional Radiators

Issued To: Ecobee Inc
207 Queens Quay Suite 600
Toronto, ON M5J 1A7
Canada

Product Name: Smart Thermostat
Model: ECB601/ECB501
FCC ID: WR92025AA2060G
IC: 7981A-2025AA2060G

Report No. ML302480-RF00 (DTS - UNII-3)
Date of Issue: January 13, 2026

Report Prepared By:

A handwritten signature in black ink, appearing to read "M. Xie".

Min Xie, Sr. EMC/RF Project Engineer

Reviewed By:

A handwritten signature in black ink, appearing to read "Amir Emami".

Amir Emami, Project Engineer

Megalab Group Inc. – 150 Addison Hall Circle, Aurora, Ontario, L4G 3X8, Canada

www.megalabinc.com – (905) 752-1925

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1. Revision History

Project No. & Revision	Report Date	Initials	Description
ML302480-RF00 (DTS - UNII-3)	January 13, 2026	MX	Initial Release
-	-	-	-

NOTE:

- Latest reports marked as a revision replace any previous report and/or report revision issued under the same project number.

2. Summary of Test Results

2.1 Test Verdict

Unless otherwise stated, the test data and results in this test report relate only to the sample(s) tested.

Requirement		Test Type	Result	Remark
FCC	ISED			
15.203 15.407(a)	RSS-247 5.4(d)	Antenna Gain and Requirement	Pass	LDS Antenna on Plastic Frame -1.88 dBi
15.407(e)	RSS-247 6.2.4.2	6dB Bandwidth	Pass	> 500 KHz
15. 407(a) FCC 2.1049	RSS-247 RSS-GEN 6.7	Emission Bandwidth	Pass	26dB and/or 99% Bandwidth Fall within allowed Band
15. 407(a)	RSS-247 6.2.4.2	Output Power	Pass	≤1 W (30 dBm)
15.407(a)	RSS-247 6.2.4.2	Power Spectral Density	Pass	≤30 dBm/500kHz
15.407(b)(4)	RSS-247 6.2.4.3	Spurious Out of Band Emissions	Pass	Emission Mask, Peak e.i.r.p
15.407(b)(10) 15.205 15.209	RSS-247 6.2.4.2 RSS-GEN 8.10	Transmitter Spurious Radiated Emissions in restricted bands	Pass	QuasiPeak < 1 GHz Peak & Average > 1GHz
15.207	RSS-GEN (Table 4)	Power Line Conducted Emissions	Pass	--

2.1.1 Test Verdict Notes and Justifications

The DUT was mounted as in normal usage. See the Test Setup Photos for details.

This DTS report documents the 5725 – 5850 MHz UNII-3 transceiver.

For the Antenna requirement specified in FCC 15.203 and 15.407 (a)), the unit uses a permanently connected LDS Antenna on Plastic Frame with -1.88 dBi which is less than 6 dBi gain. Antenna details obtained from Manufacturer's Datasheet.

For the Restricted Bands of operation, the EUT is designed to only operate between 5725 – 5850 MHz.

For DFS, the 26 dB BW of 40 MHz channels were within 5470 -5725 MHz band; however, the 99% BW were outside the 5470 -5725 MHz band. Thus, DFS testing are not require as per RSS-247 and FCC KDB 789033 Section III B. 2. a)(i).

As per FCC KDB 789033, "Section 15.407(g) specifies that U-NII devices are required to ensure frequency stability...the applications for equipment certification are not required to include test reports with explicit demonstration of compliance." Temperature stability measurements were not performed. See ECB601 FRQ_STB + DC_TX exhibit for additional details.

ECB601 FRQ_STB + DC_TX exhibit also details how the device complies with 15.407 (c) and RSS 247 Section 6.4.

2.2 Test Standards

Standard	Description
47 CFR FCC Part 15 Subpart E	Code of Federal Regulations – Radio Frequency Devices, Intentional Radiators
FCC KDB 414788 D01	Radiated Test Site v01r01
FCC KDB 789033 D02	General U-NII Test Procedures New Rules v02r01
FCC KDB 447498	RF exposure procedures and equipment authorization policies for mobile and portable devices
RSS-247 Issue 3:2025	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices
RSS-GEN Issue 5:2021	General Requirements for Compliance of Radio Apparatus
ANSI C63.4:2014	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
ANSI C63.10:2020/A1:2024	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
ISO 17025:2017	General Requirements for the Competence of Testing and Calibration Laboratories

2.3 Test Facility

All tests were performed at Megalab Group Inc., located at 150 Addison Hall Circle, Aurora, ON, L4G 3X8, Canada.

The 10-meter semi-anechoic chamber for radiated emission and radiated immunity is designed to handle weights of up to 10,000lb and has power capability of over 100A. The turntable is capable of supporting test devices or systems either floor standing or table top of up to 4 meters wide and 3m tall. Conducted emissions, unless otherwise specified, are performed on a 2.44m x 2.48m ground plane and using a 2.44m x 2.48m vertical ground plane if applicable.

2.3.1 Accreditations

This report does not indicate any product endorsement by any government, accreditation agency, or Megalab Group Inc. Megalab Group Inc. shall have no liability for any deductions, interpretations or generalizations drawn by the client or others from the issued reports. If any opinions or interpretations are expressed in this report, they are outside Megalab Group Inc.'s scope of accreditation and do not necessarily reflect the opinions of Megalab Group Inc., unless otherwise specified.



A2LA (Certificate #5179.02)

Megalab Group Inc. is accredited to ISO/IEC 17025:2017 by the American Association for Laboratory Accreditation (A2LA) with Testing Certificate #5179.02. The laboratories current scope of accreditation can be found as listed on A2LA's website.



Innovation, Science and
Economic Development Canada

ISED

Megalab Group Inc. is registered with and recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory.
Company Number: 28697



FCC

Megalab Group Inc. is registered with and recognized by the Federal Communications Commission (FCC) as an accredited testing laboratory.
Registration No. 200040



VCCI

The Semi-anechoic chamber of Megalab Group Inc. is registered with the Regulations for Voluntary Control Council for Interference (VCCI). Registration No.: R-20173, G-20174, C-20132, T-20133.

2.3.2 Measurement Uncertainty

As per ISO/IEC 17025 requirements, an evaluation of the measurement uncertainties associated with the emission test results should be included in the test report.

Where relevant, the following measurement uncertainty levels have been estimated for the tests performed on the DUT as specified in CISPR 16-4-2. The measurement uncertainties given below are based on a coverage factor $k = 2$ which yields approximately a 95% level of confidence for the near-normal distribution typical of most measurement results.

Measurement	Frequency Range	Uncertainty
Conducted Emissions at AC Mains Power Port	150kHz to 30MHz	2.27 dB
Radiated Emissions	30MHz to 1GHz	5.22 dB
	1GHz to 18GHz	4.76 dB

2.3.3 Sample Calculations

Conducted Emissions

$$\begin{aligned}
 \text{Emission Level (dB}\mu\text{V)} &= \text{Read Level (dB}\mu\text{V)} + \text{LISN Factor (dB)} + \text{Attenuation Factor (dB)} + \text{Cable Loss (dB)} \\
 &= 34.8 + 0.1 + 10.0 + 0.2 \\
 &= 45.1
 \end{aligned}$$

$$\begin{aligned}
 \text{Margin (dB)} &= \text{Limit (dB}\mu\text{V)} - \text{Emission Level (dB}\mu\text{V)} \\
 &= 60.0 - 45.1 \\
 &= 14.9
 \end{aligned}$$

Radiated Emissions

$$\begin{aligned}
 \text{Emission Level (dB}\mu\text{V/m)} &= \text{Read Level (dB}\mu\text{V)} + \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} - \text{Pre-Amp Gain (dB)} \\
 &= 52.4 + 9.4 + 1.3 - 29.2 \\
 &= 33.9
 \end{aligned}$$

$$\begin{aligned}
 \text{Margin (dB)} &= \text{Limit (dB}\mu\text{V/m)} - \text{Emission Level (dB}\mu\text{V/m)} \\
 &= 50.0 - 33.9 \\
 &= 16.1
 \end{aligned}$$

2.3.4 Terms, Definitions and Abbreviations

AE	Auxiliary Equipment
DUT	Device Under Test
DTS	Digital Transmission System
EMC	Electro-Magnetic Compatibility
FHSS	Frequency Hopping Spread Spectrum
ISM	Industrial, Scientific and Medical
LISN	Line Impedance Stabilization Network
N/A	Not Applicable
NCR	No Calibration Required
RF	Radio Frequency
RBW	Resolution Bandwidth
VBW	Video Bandwidth

Auxiliary Equipment/Support Equipment

Equipment needed to exercise and/or monitor the operation of the DUT.

Artificial Mains Network

Network that provides a defined impedance to the DUT at radio frequencies, couples the disturbance voltage to the measuring receiver and decouples the test circuit from the supply mains.

Class A Equipment

Equipment suitable for use in all locations other than those allocated in residential environments and those directly connected to a low voltage power supply network which supplies buildings used for domestic purposes.

Class B Equipment

Equipment suitable for use in all locations, including in residential environments and in establishments directly connected to a low voltage power supply network which supplies buildings used for domestic purposes.

Device Under Test

Device or system being evaluated for compliance with the requirements of the Test Standards listed in this report.

Electro-Magnetic Compatibility

Ability of equipment or system to function satisfactorily in its EM environment without introducing intolerable electromagnetic disturbances to anything in that environment.

Electromagnetic Disturbance

Any electromagnetic phenomenon which may degrade the performance of a device, equipment or system.

3. General Information

3.1 Client Information

Company	Ecobee Inc
Address	207 Queens Quay Suite 600 Toronto, ON M5J 1A7 Canada
Contact	John Russomanno
Email	john@ecobee.com

3.2 Device Under Test (DUT)

3.2.1 DUT Information

DUT Name	Smart Thermostat
DUT Model(s)	ECB601/ECB501
Serial Number	Production samples
Power Source (AC / DC / Battery)	AC
Input Voltage (V) or Range	24Vac
Frequency (Hz) or Range	60Hz
Mode(s) of Operation	Continuous transmission, > 98% Duty Cycle
Connectors Available on DUT	Standard thermostat connections
Transmitter Information	
FCC ID	WR92025AA2060G
IC	7981A-2025AA2060G
Technology Used	802.11 a/n/ac
Operating Frequency	5725 – 5850 MHz
Modulation Type	OFDM (BPSK, QPSK, 16-QAM, 64-QAM)
Number of Channels	4
Antenna Manufacturer	LDS Antenna on Plastic Frame
Antenna Model	N/A
Antenna Type	Custom antenna
Antenna Gain	-1.88 dBi

Note: Above antenna information is provided by the client. The characteristics and gain are obtained from the Antenna Manufacturer's Data Sheet.

3.2.2 DUT Description

EUT is a smart thermostat; it contains 2400 – 2483.5 MHz DTS (802.11 b/g/n and BLE), 2400 – 2483.5 MHz FHSS (Bluetooth Classic), 5150-5250 MHz, and 5725-5850 MHz transmitters on one chip, and a 920 – 928 MHz FHSS/Hybrid transmitter on second chip.

This report documents the compliance test results of the UNII-3 transmitter.

3.3 Test Setup of DUT

3.3.1 Configuration

The DUT was configured in a direct test mode with the following parameters

- For all the tests, the DUT was set to transmit continuously with maximum duty cycle
- Power setting: 17 for 20 MHz bandwidth and 16 for 40 MHz bandwidth.
- Channels – 20 MHz Bandwidth:
 - Low, 5745 MHz
 - Mid, 5785 MHz
 - High, 5825 MHz
- Channels - 40 MHz Bandwidth:
 - Low, 5755 MHz
 - Hight 57 MHz

During all radiated emission measurements, the DUT was mounted in its normal orientation. See Test Setup Photos for axis details.

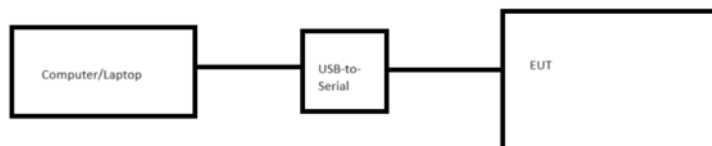


Figure 1 – Configuration Block Diagram

Description of I/O Cables			
Cable Function	Length of Cable (m)	Shielded (Y/N)	Outdoor Use (Y/N)
Thermostat control	>3	N	N

3.3.2 Support Equipment

Device	Manufacturer	Model	S/N
Custom USB Interface	Ecobee	--	---

3.4 Modifications for Compliance

No modifications were made to the device under test to comply with the testing requirements.

4. Test Results

4.1 Emission Bandwidth

Test Date: September 5 & 8, 2025
Temperature (°C) 24.6 / 23.6
Relative Humidity (%) 34.1 / 31.3
Barometric Pressure (kPa) 97.7 / 98.8

Initials: MX

4.1.1 Limits

The requirement is as specified in FCC Part 15.407 and RSS-247 6.2.4.2.

	FCC Part 15.407(a)(1)(iv)	RSS-247 6.2.4.2
6 dB Bandwidth	> 500 kHz	> 500 kHz

There is no limit specified for 26 dB and 99% bandwidths. Data is for reporting purpose only.

Even though there is no specified limit, these measurements are used to determine compliance to RSS-247 Section 6.2.4.2:

- any unwanted emissions that falls between the upper edge of the 26 dB bandwidth and 5350 MHz shall be attenuated below the channel power by at least 26 dB, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth.
- if the occupied bandwidth also falls within the 5250-5350 MHz band, the transmission is considered as intentional and the devices shall comply with all requirements in the band 5250-5350 MHz including implementing DFS (see section 7.3.6) and TPC, on the portion of the emission that resides in the 5250-5350 MHz band.

4.1.2 Test Procedure

Tested according to ANSI C63.10 Section 12.5 and 6.9

For the 6/26 dB Bandwidth:

- Set RBW = 1% to 5% of 6/26 dB bandwidth
- $VBW \geq [3 \times RBW]$
- Detector = Peak
- Trace Mode = Max Hold.
- Sweep = Auto Couple.
- Span = 2 to 5 times the 6/26 dB bandwidth
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26dB relative to the maximum level measured in the fundamental emission.

For the 99% Bandwidth:

- Set RBW in the range of 1% to 5% of the actual occupied bandwidth.
- Set VBW $\geq [3 \times \text{RBW}]$.
- Span set to 1.5 to 5 times the occupied bandwidth.
- Use the 99% power bandwidth function of the instrument to measure bandwidth.

4.1.3 Test Results

The EUT passed. All of the protocols had a minimum measured 6 dB BW of more than 500 kHz.

The 99% of bandwidth of the transmitters for informational purposes. There is no limit specified for 99% bandwidth.

The EUT supports 802.11 a/n/ac protocols for UNII-I WIFI. For every protocol, three channels were measured. The 6 dB, 26 dB and 99% bandwidth are documented in the following tables

802.11 a				
Emission Bandwidth				
Frequency (MHz)	6dB Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Test Result
5745	15.160	34.180	20.84	Pass
5785	15.165	34.780	20.53	Pass
5825	15.195	35.270	20.56	Pass
F _L (26 dB BW) = 5727.84 MHz F _L (99% BW) = 5734.62 MHz				

802.11 n				
Emission Bandwidth				
Frequency (MHz)	6dB Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Test Result
5745	16.214	23.020	18.19	Pass
5785	16.244	22.970	18.16	Pass
5825	16.094	22.640	18.20	Pass
F _L (26 dB BW) = 5733.90 MHz F _L (99% BW) = 5249.12 MHz				

802.11 ac				
Emission Bandwidth				
Frequency (MHz)	6dB Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Test Result
5745	15.790	22.970	18.22	5745
5785	15.974	22.910	18.14	5785
5825	16.150	22.750	18.12	5825
F _L (26 dB BW) = 5733.85 MHz F _L (99% BW) = 5735.96 MHz				

802.11 n/40 MHz				
Emission Bandwidth				
Frequency (MHz)	6dB Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Test Result
5755	35.200	71.730	40.32	Pass
5795	35.240	71.430	40.59	Pass
F _L (26 dB BW) = 5717.94 MHz				
F _L (99% BW) = 5734.49 MHz				

802.11 ac/40 MHz				
Emission Bandwidth				
Frequency (MHz)	6dB Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Test Result
5755	35.180	73.930	41.63	Pass
5795	35.480	73.830	41.46	Pass
F _L (26 dB BW) = 5717.64 MHz				
F _L (99% BW) = 5733.98 MHz				

4.1.3.1. 802.11 a Plots

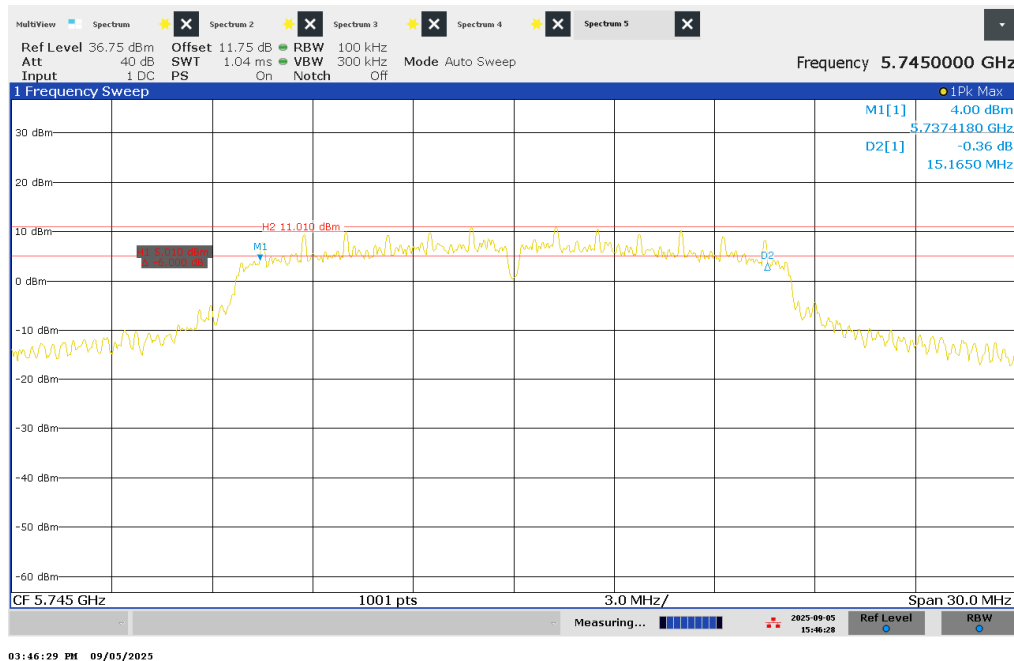


Figure 2 – 6dB Bandwidth – Low Channel



Figure 3 – 6dB Bandwidth – Mid Channel

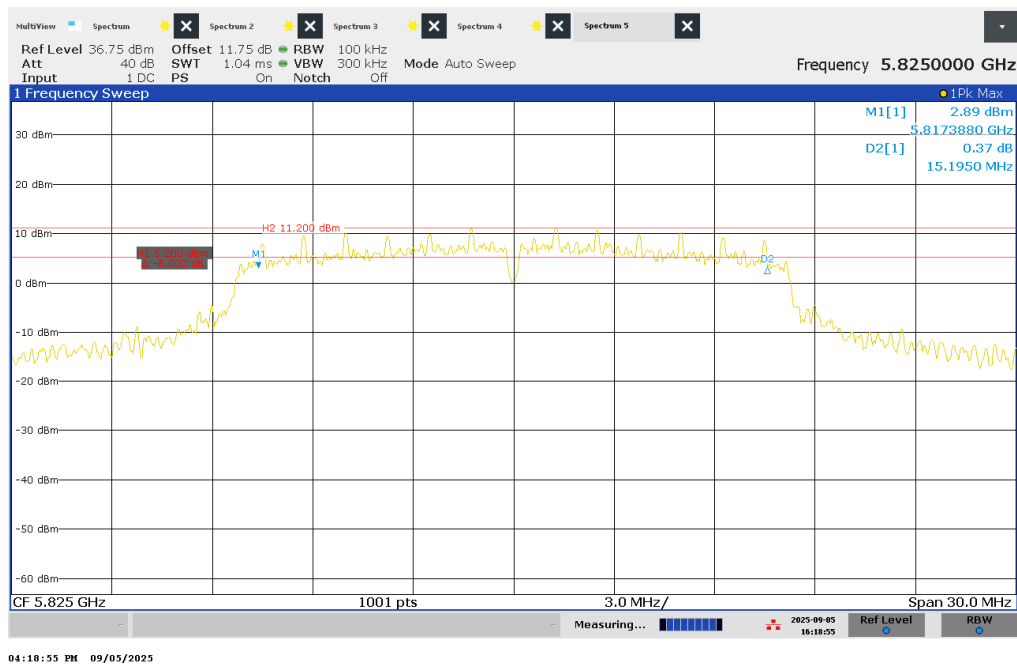


Figure 4 – 6dB Bandwidth – High Channel

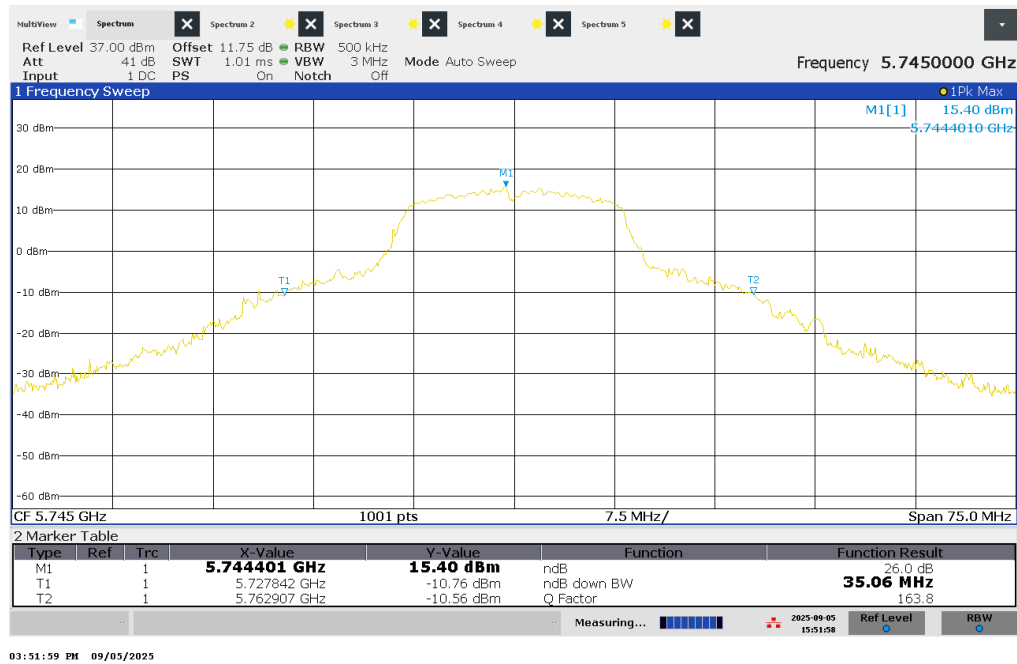


Figure 5 – 26dB Bandwidth – Low Channel

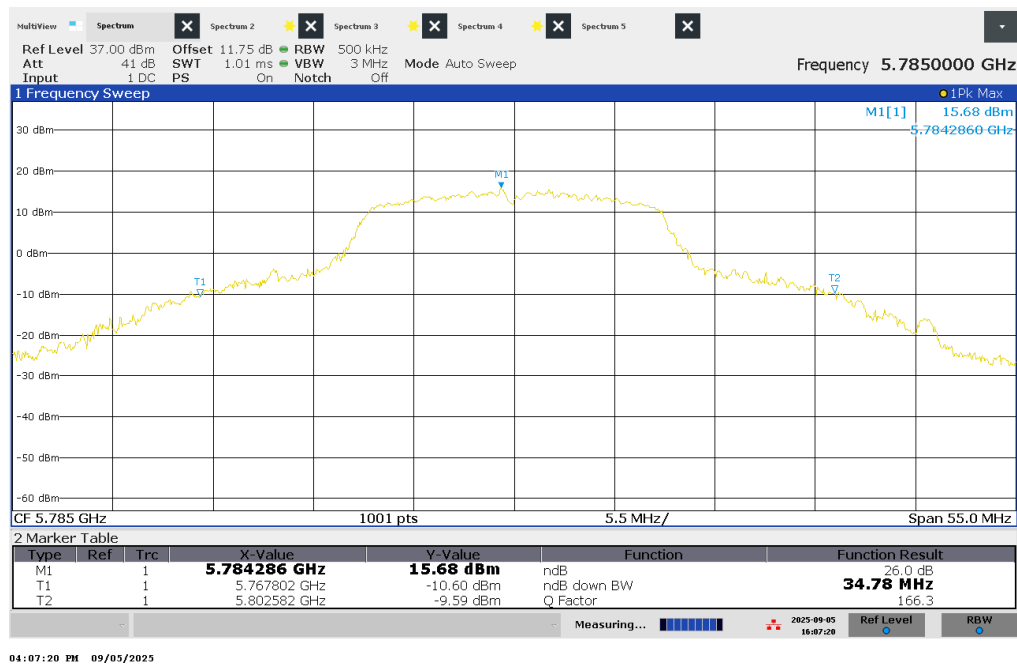


Figure 6 – 26dB Bandwidth – Mid Channel

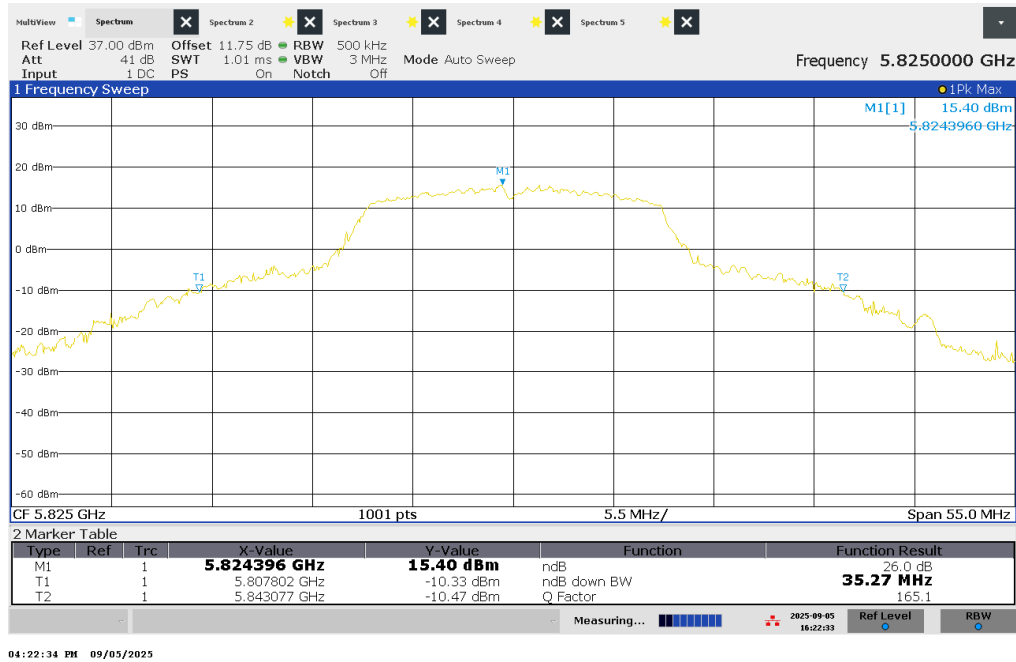


Figure 7 – 26dB Bandwidth – High Channel

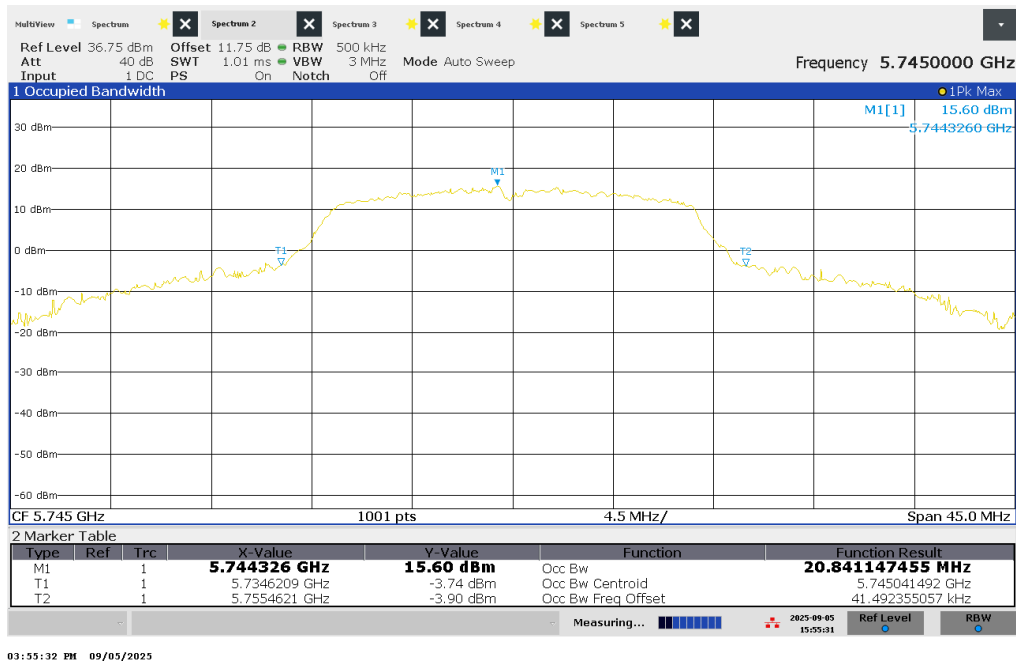


Figure 8 – 99% Bandwidth – Low Channel

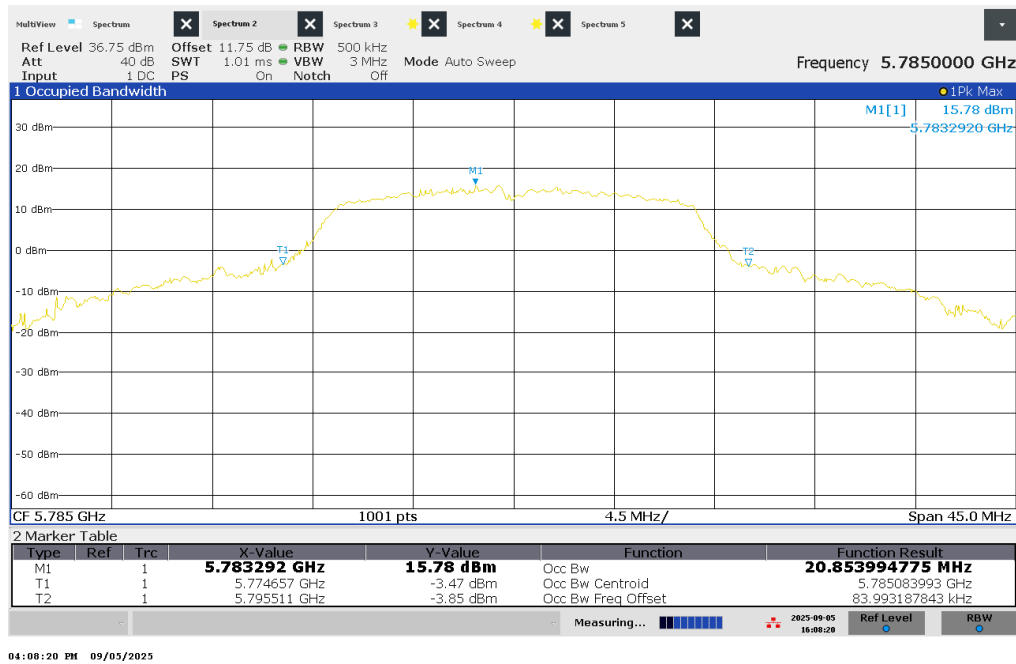


Figure 9 – 99% Bandwidth – Mid Channel

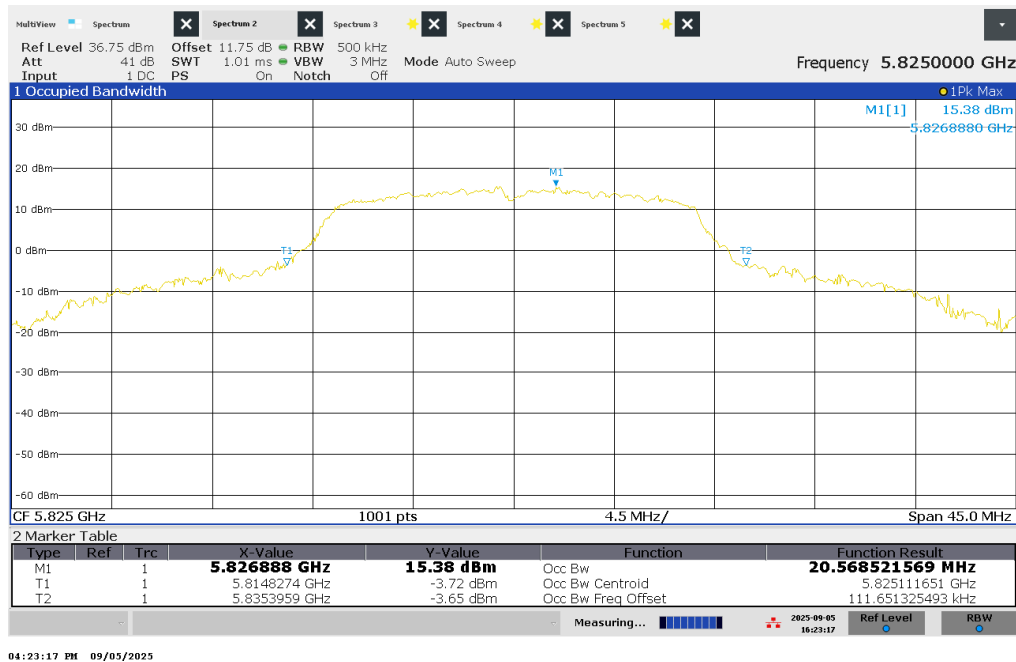


Figure 10 – 99% Bandwidth – High Channel

4.1.3.2. 802.11 n/20 MHz Plots



Figure 11 – 6dB Bandwidth – Low Channel

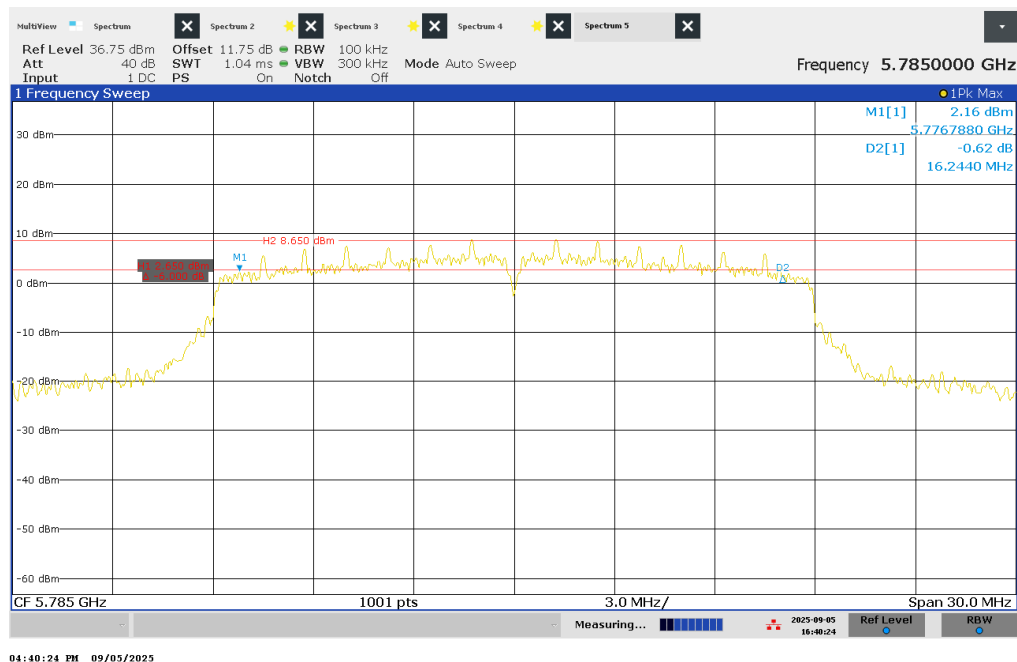


Figure 12 – 6dB Bandwidth – Mid Channel

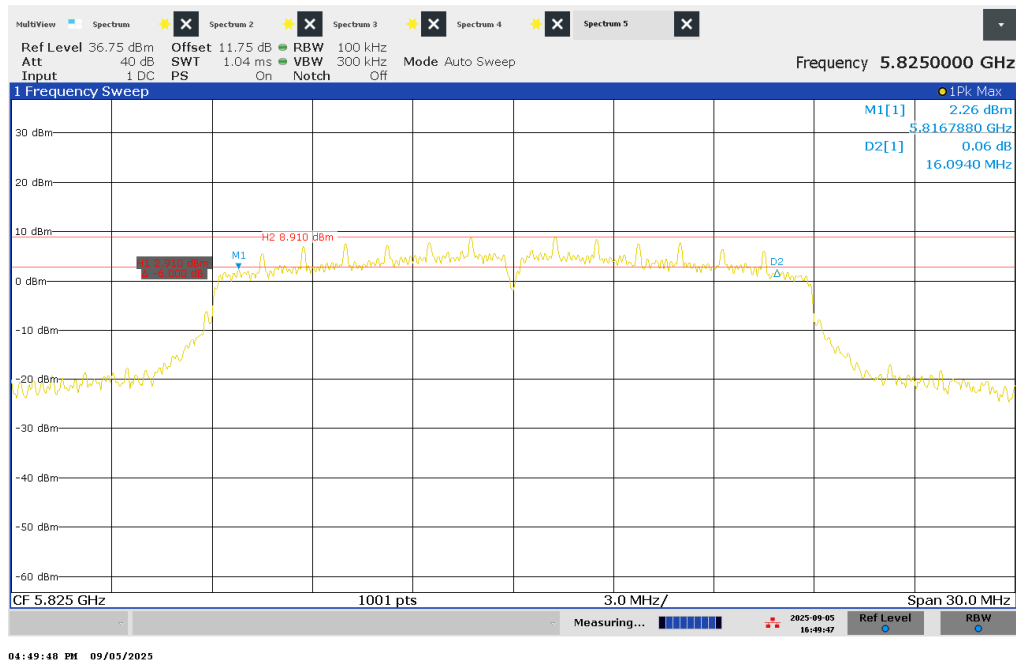


Figure 13 – 6dB Bandwidth – High Channel

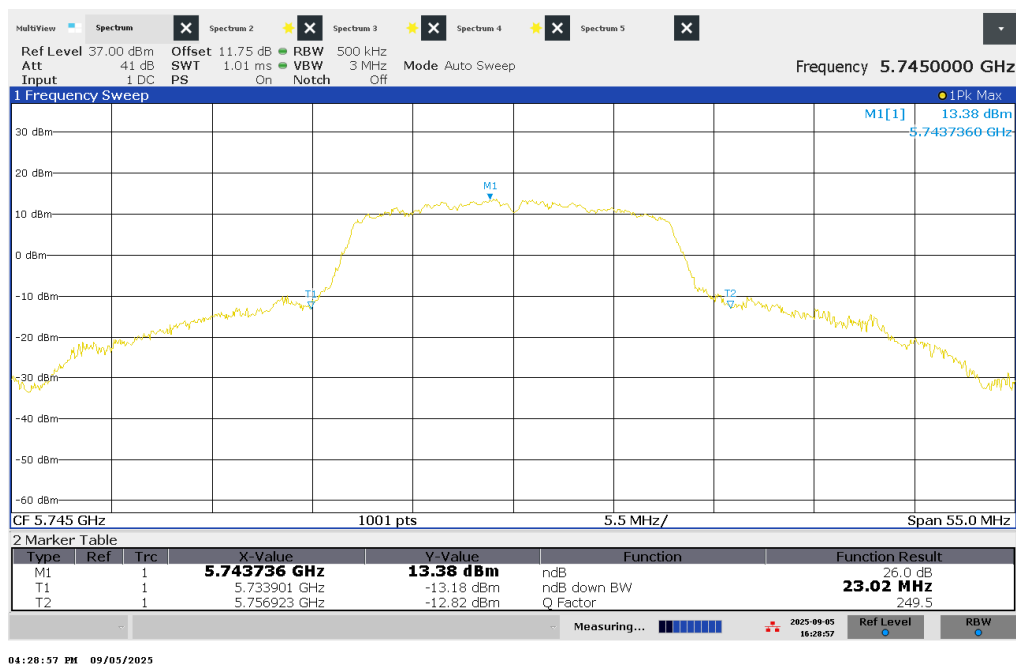


Figure 14 – 26dB Bandwidth – Low Channel

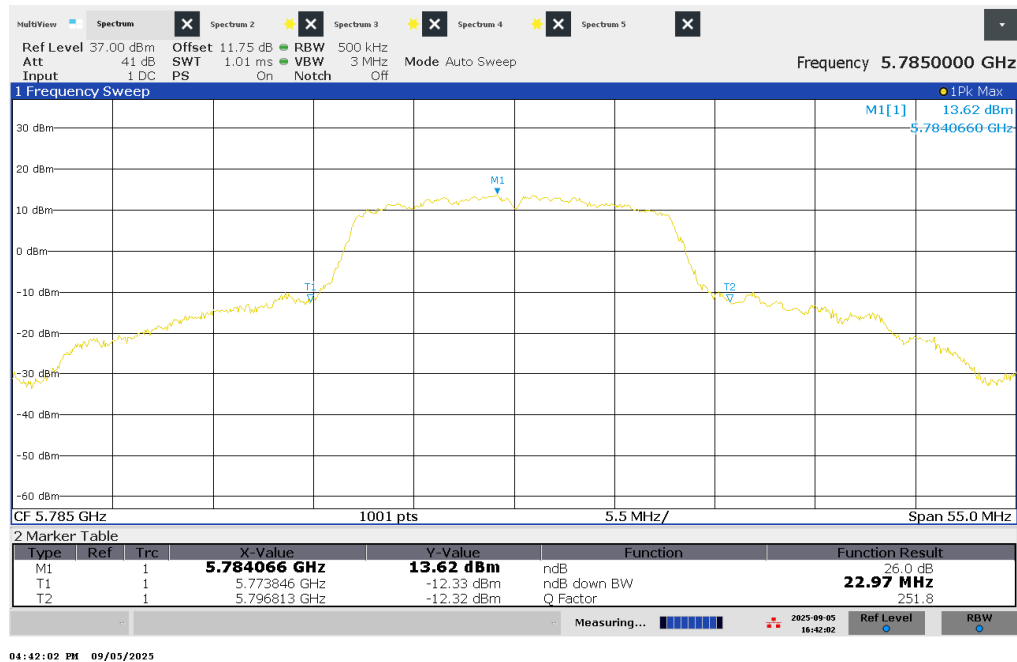


Figure 15 – 26dB Bandwidth – Mid Channel

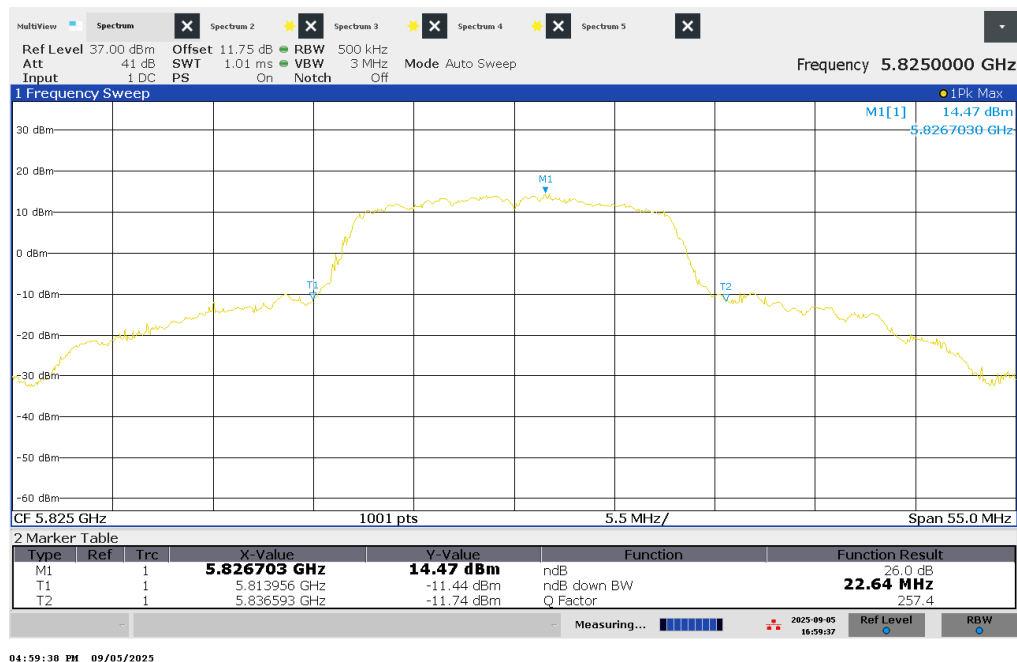


Figure 16 – 26dB Bandwidth – High Channel

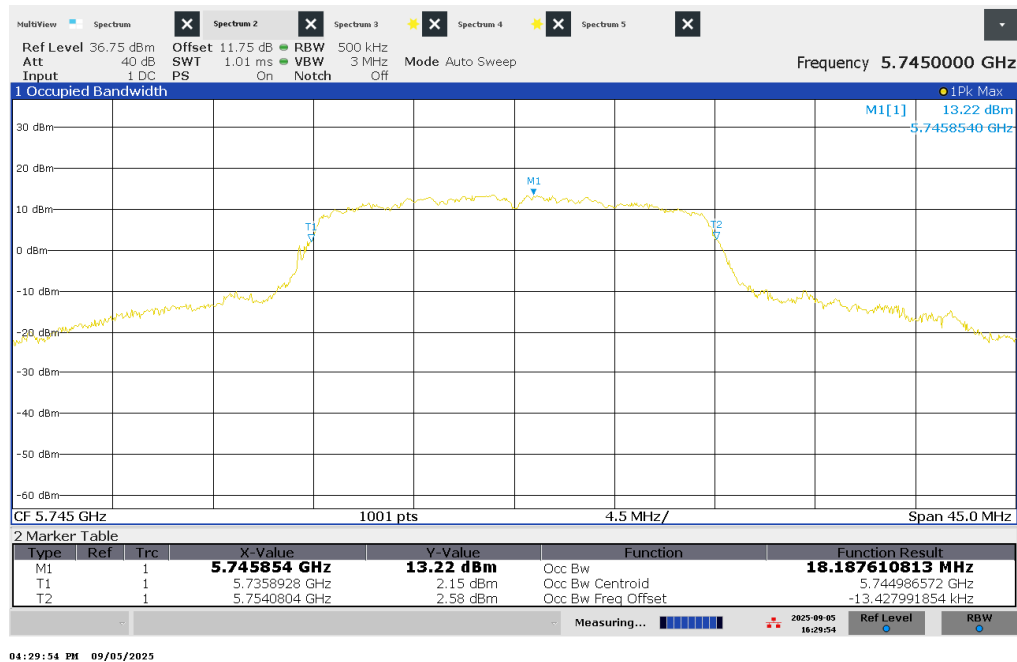


Figure 17 – 99% Bandwidth – Low Channel

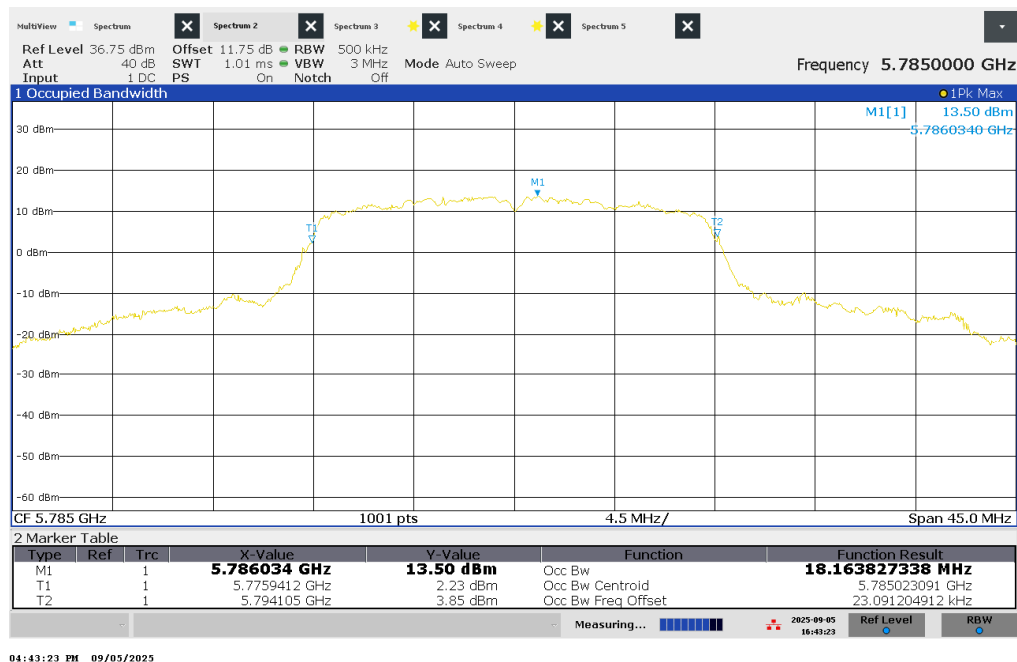


Figure 18 – 99% Bandwidth – Mid Channel



Figure 19 – 99% Bandwidth – High Channel

4.1.3.3. 802.11 n/40 MHz Plots

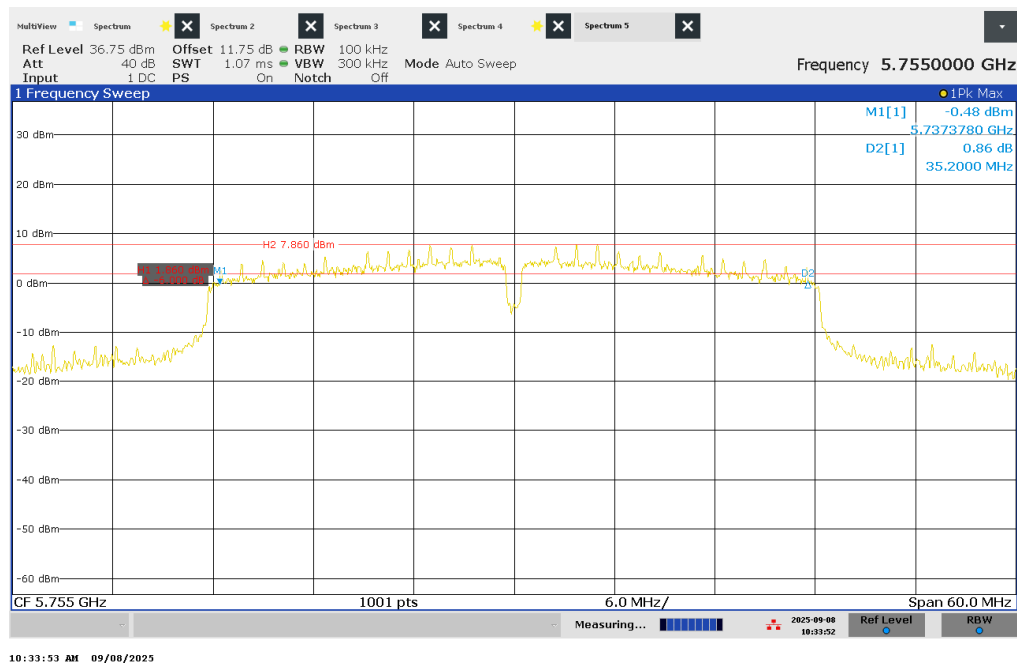


Figure 20 – 6dB Bandwidth – Low Channel

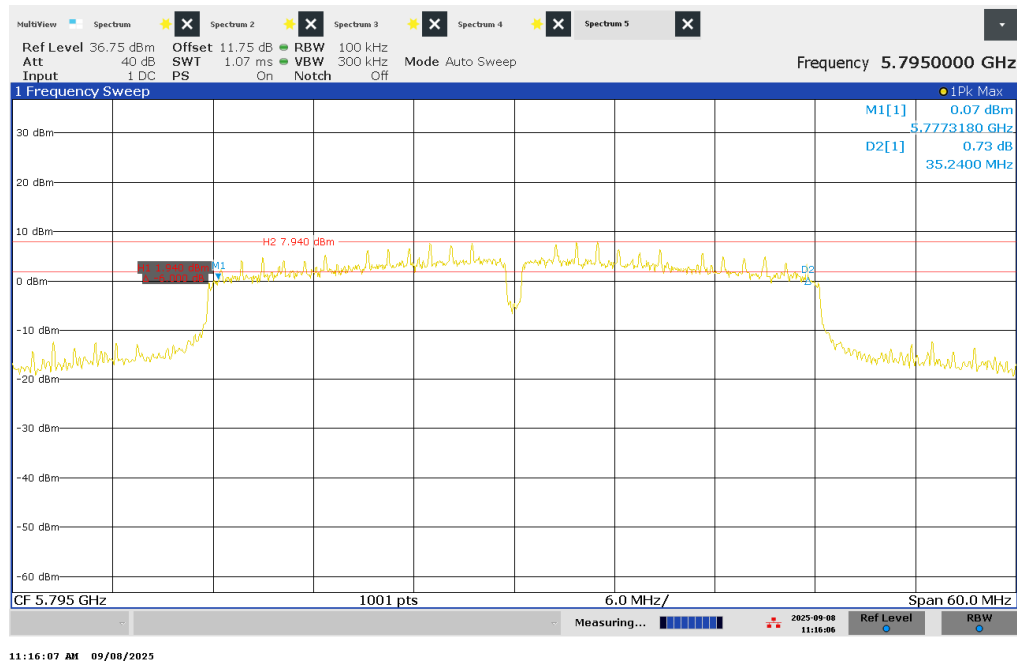


Figure 21 – 6dB Bandwidth – High Channel

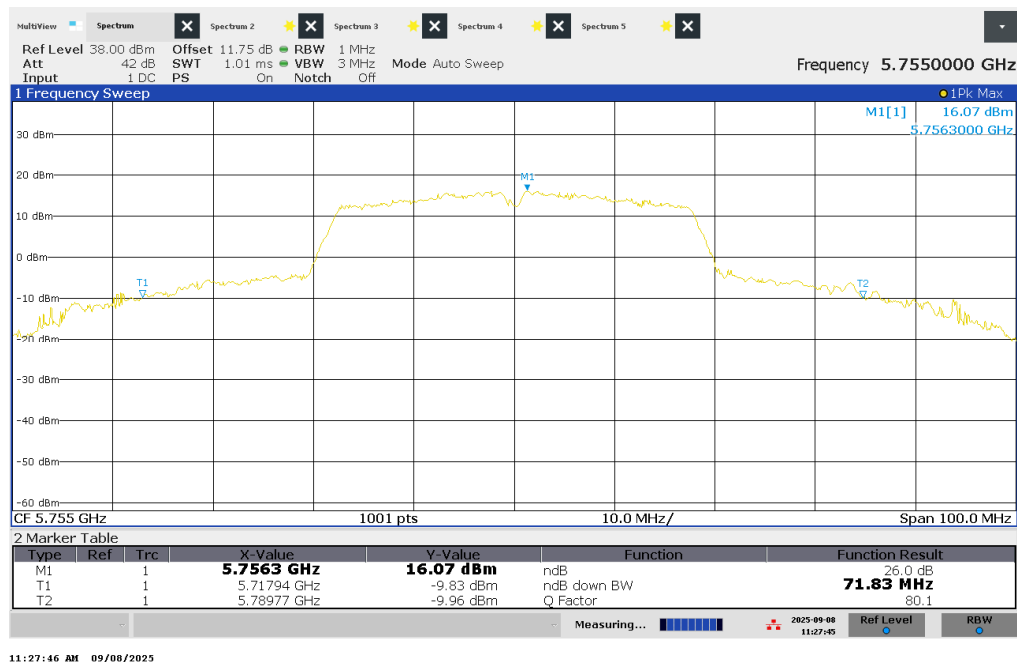


Figure 22 – 26dB Bandwidth – Low Channel

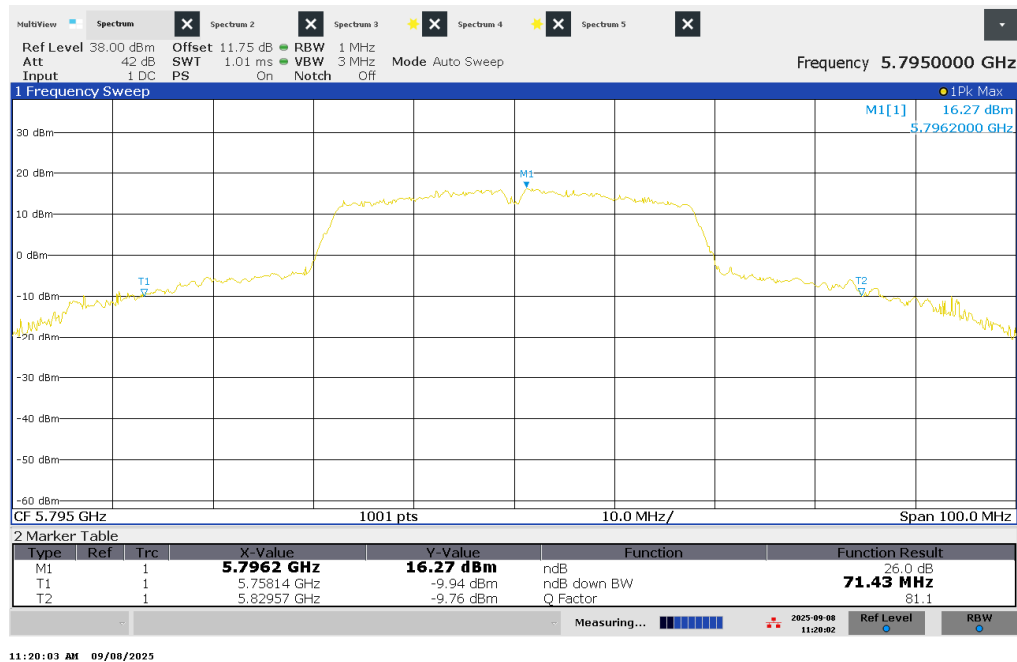


Figure 23 – 26dB Bandwidth – High Channel

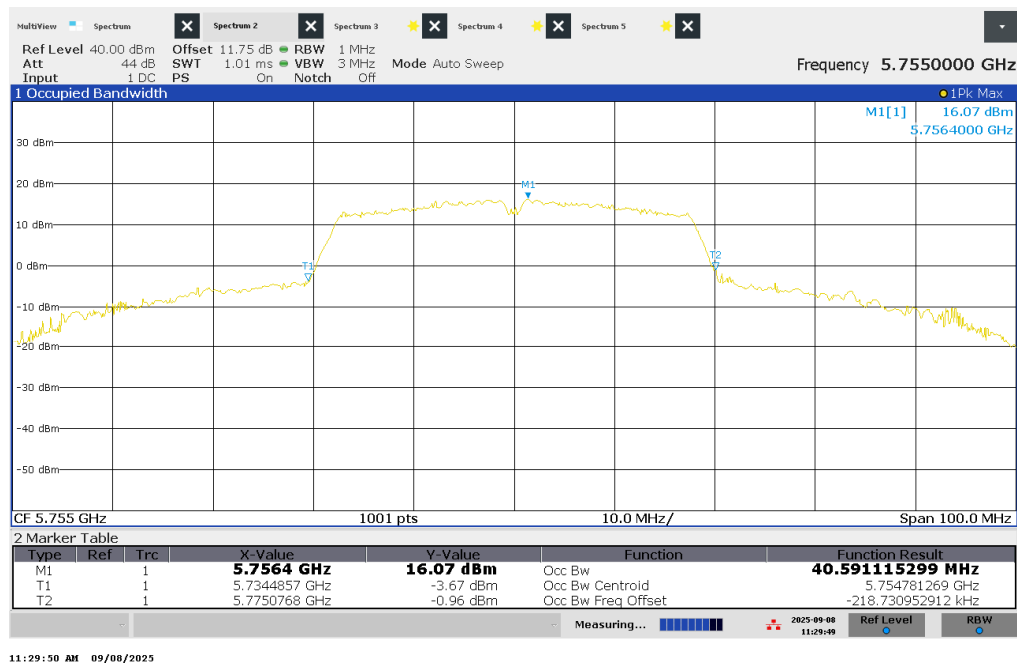


Figure 24 – 99% Bandwidth – Low Channel

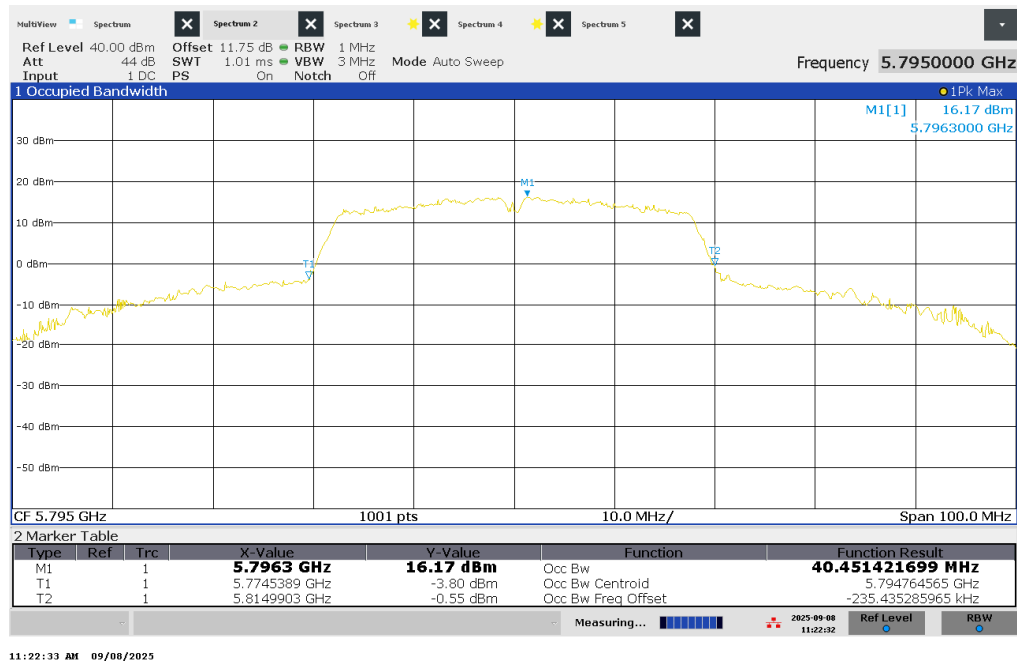


Figure 25 – 99% Bandwidth – High Channel

4.1.3.4. 802.11 ac/20 MHz Plots

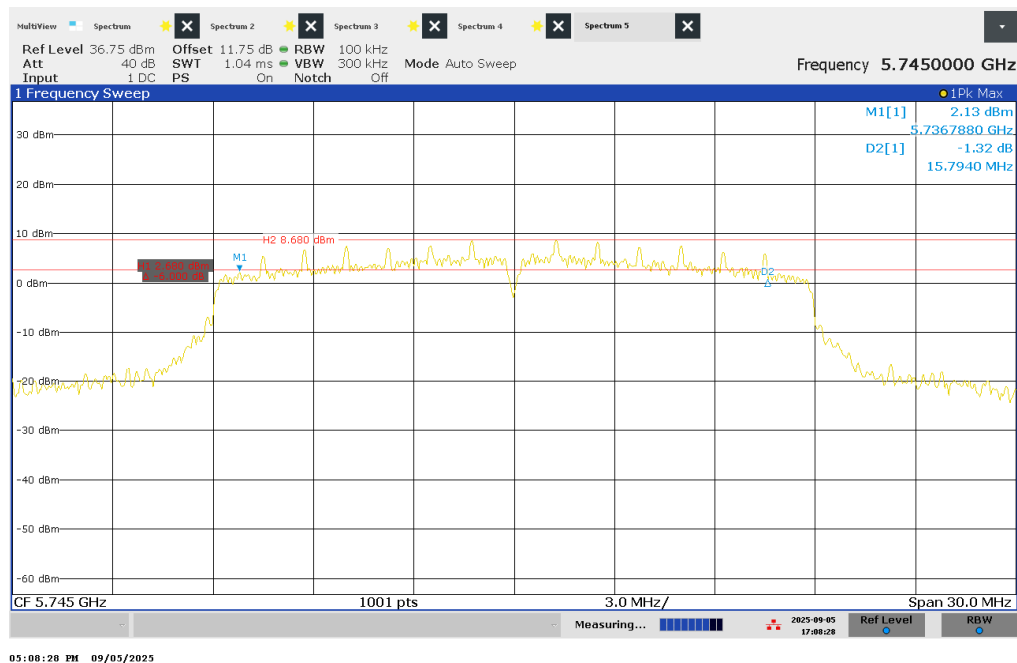


Figure 26 – 6dB Bandwidth – Low Channel



Figure 27 – 6dB Bandwidth – Mid Channel

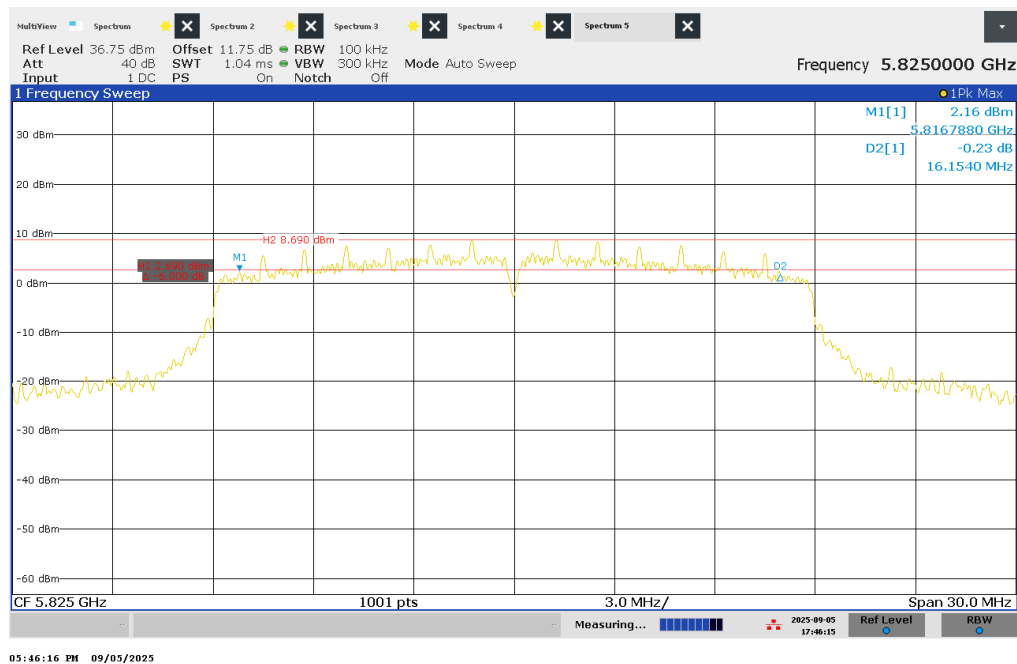


Figure 28 – 6dB Bandwidth – High Channel

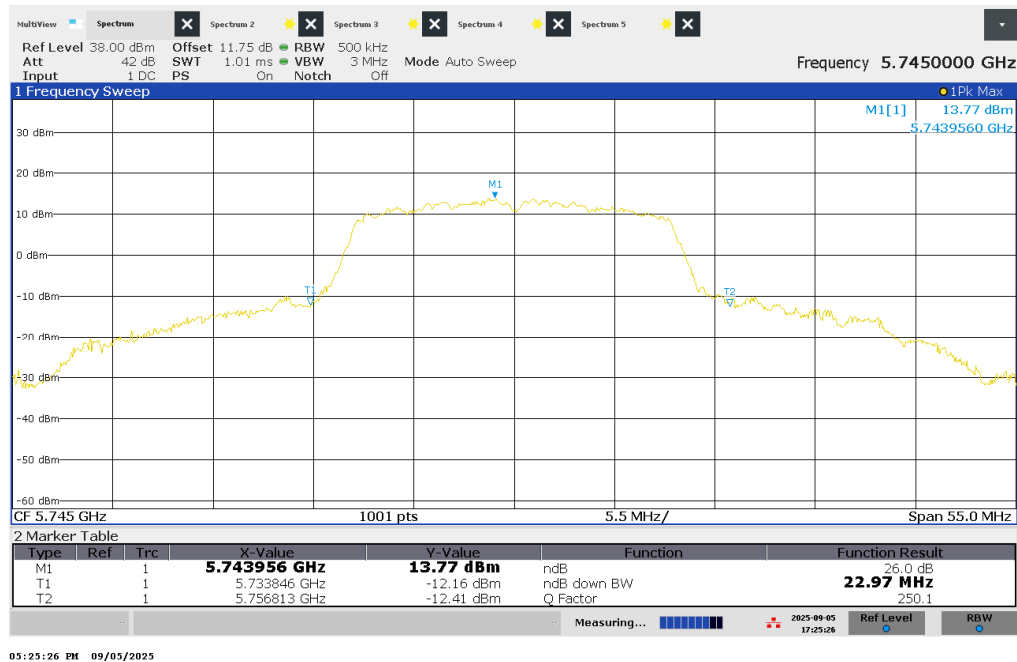


Figure 29 – 26dB Bandwidth – Low Channel

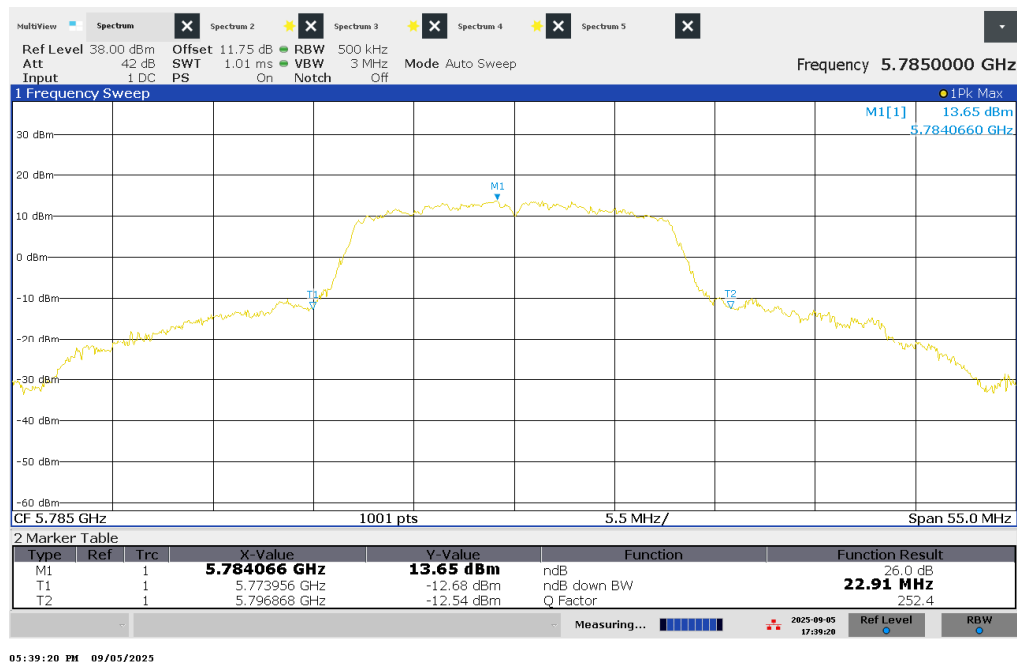


Figure 30 – 26dB Bandwidth – Mid Channel

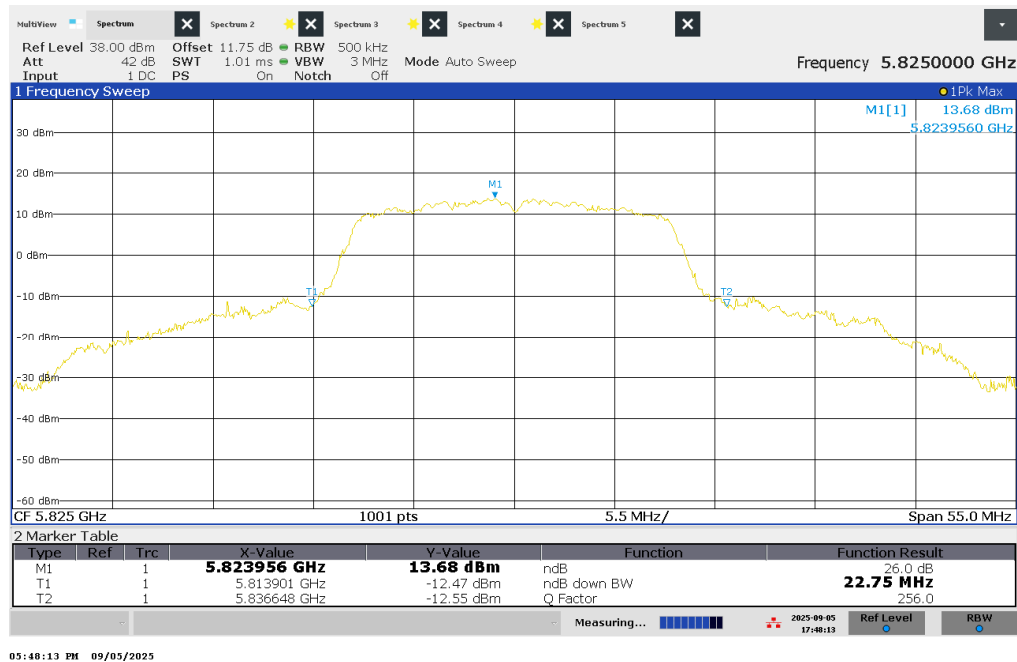


Figure 31 – 26dB Bandwidth – High Channel

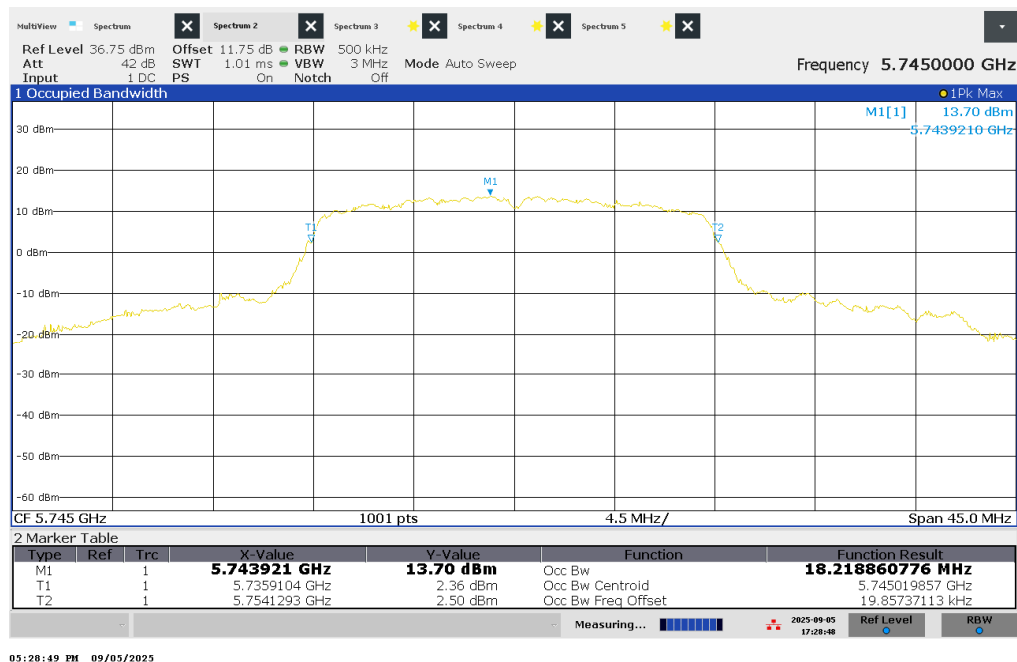


Figure 32 – 99% Bandwidth – Low Channel

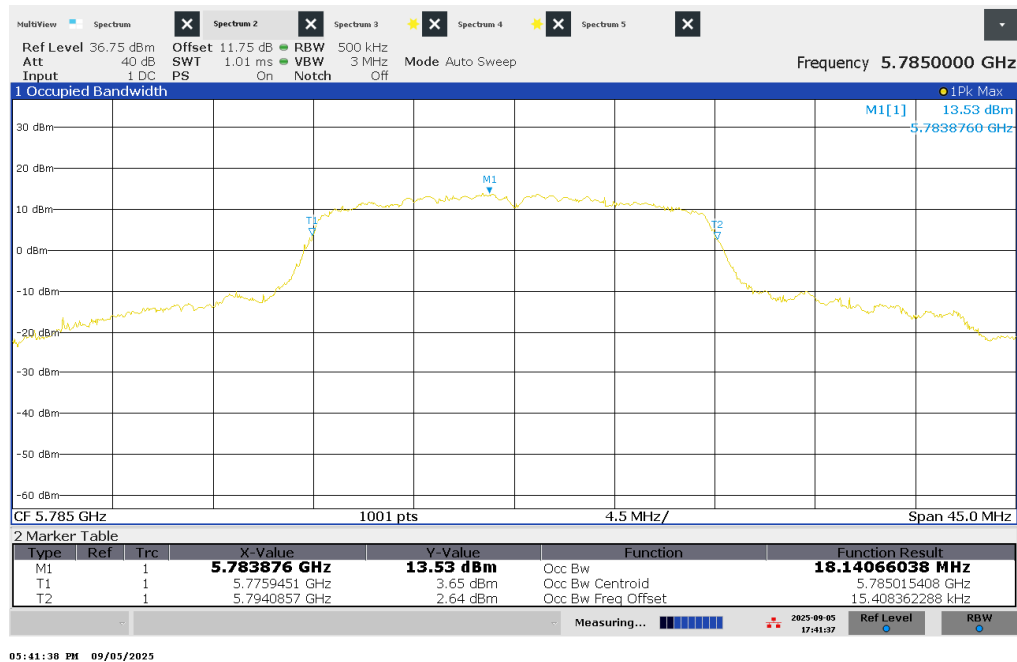


Figure 33 – 99% Bandwidth – Mid Channel

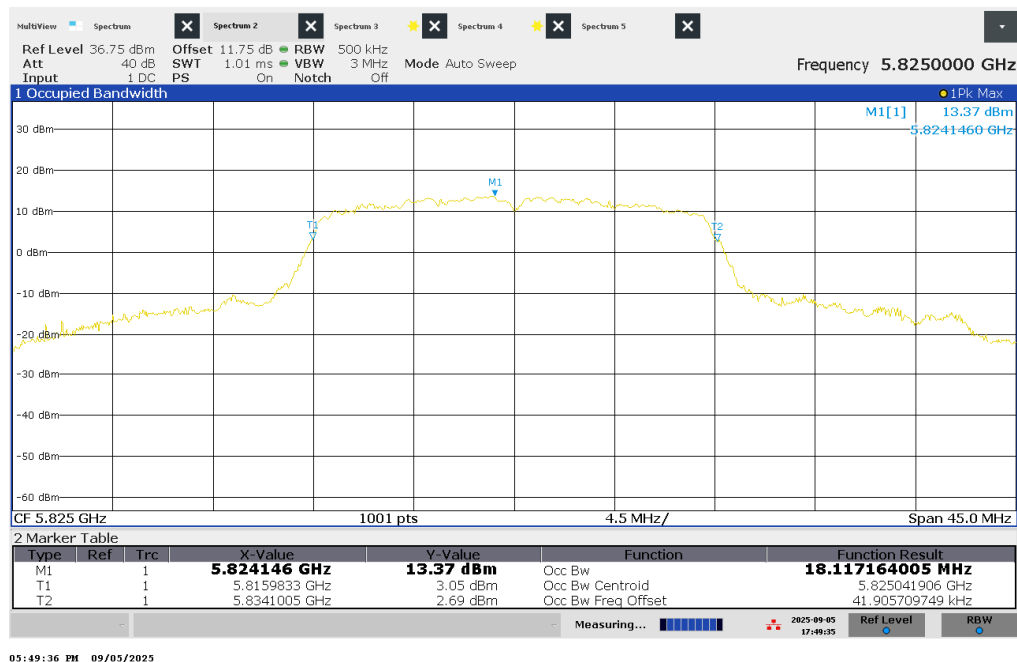


Figure 34 – 99% Bandwidth – High Channel

4.1.3.5. 802.11 ac/40 MHz Plots

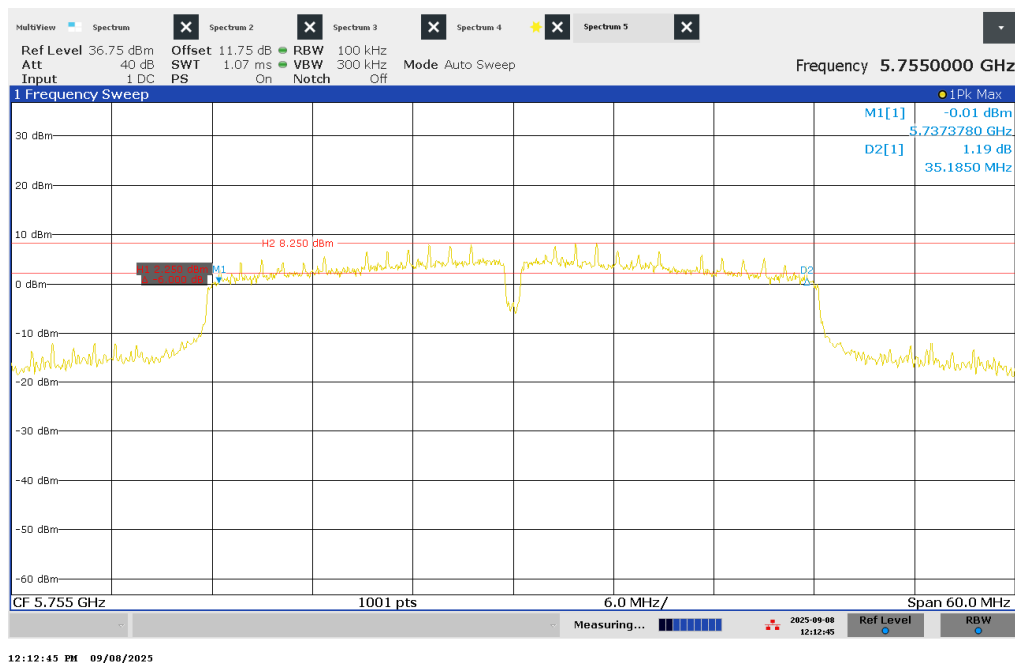


Figure 35 – 6dB Bandwidth – Low Channel

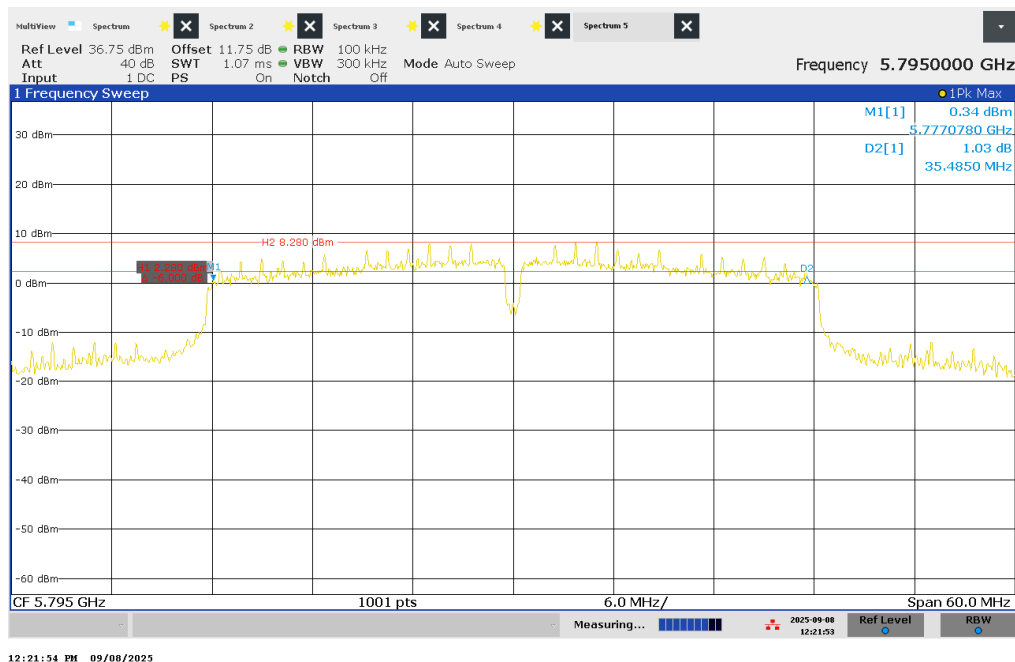


Figure 36 – 6dB Bandwidth – High Channel

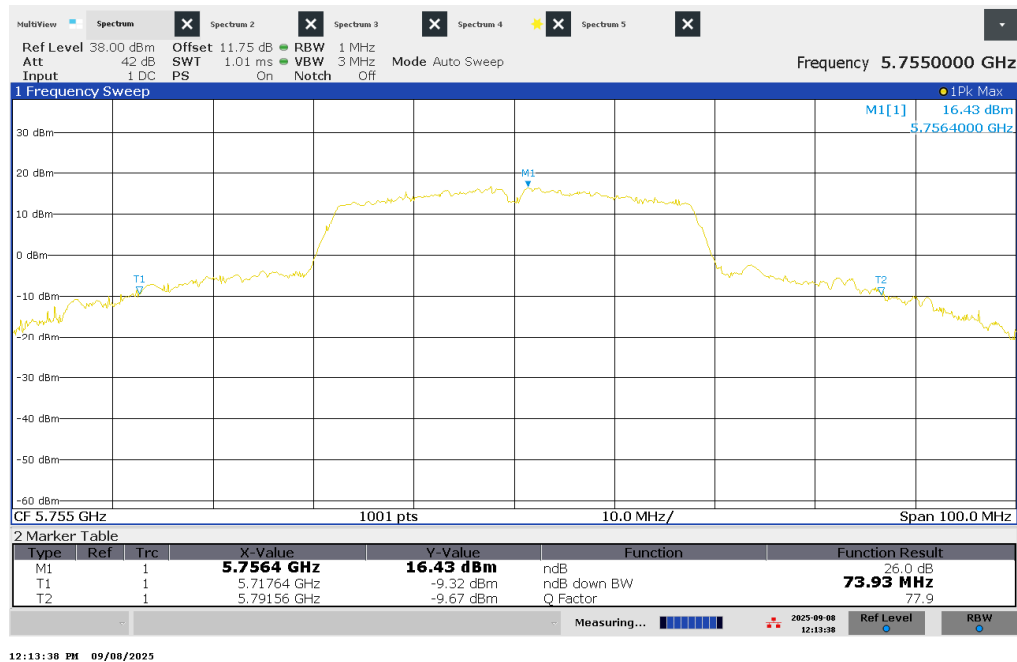


Figure 37 – 26dB Bandwidth – Low Channel

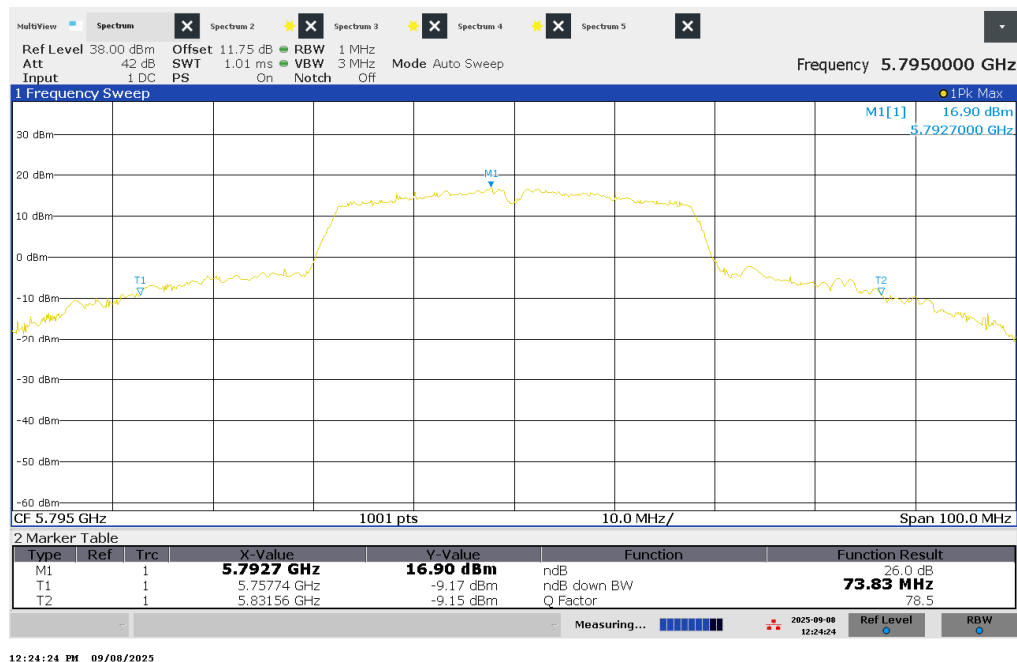


Figure 38 – 26dB Bandwidth – High Channel

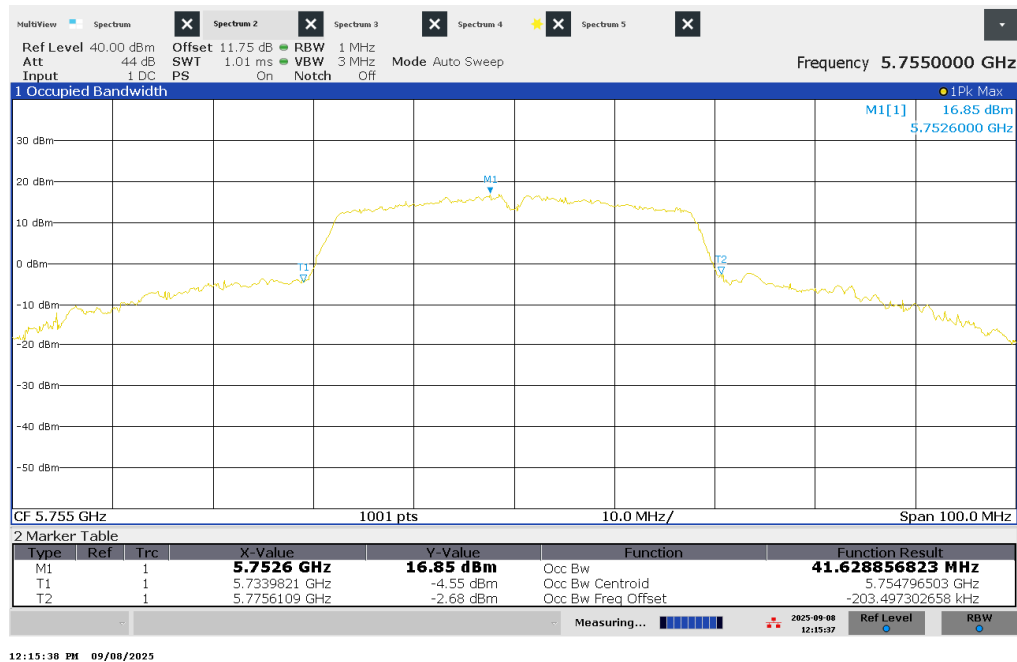


Figure 39 – 99% Bandwidth – Low Channel

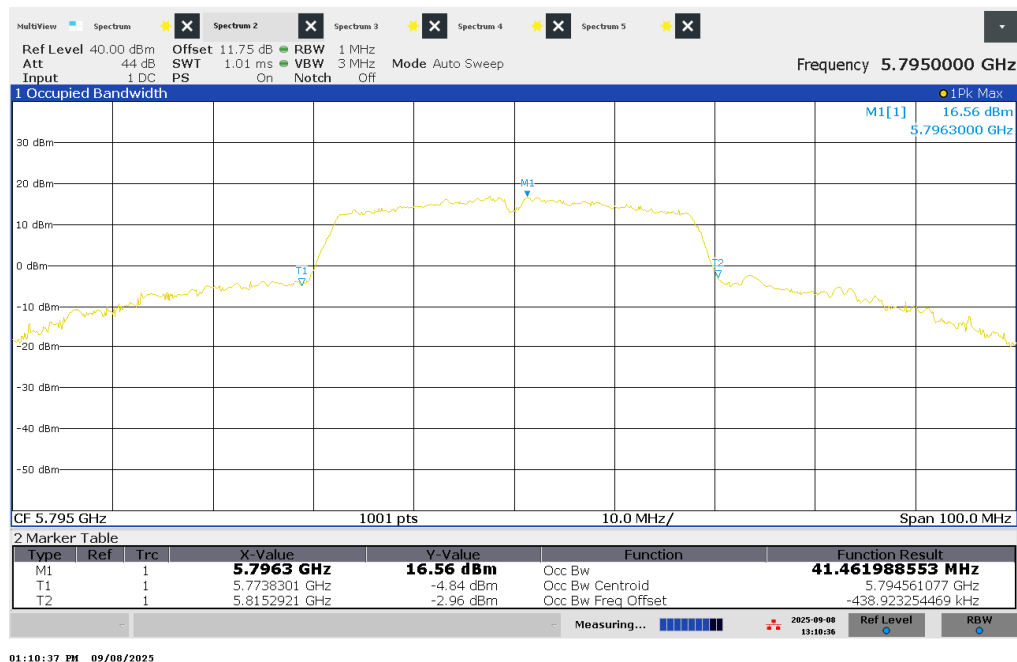


Figure 40 – 99% Bandwidth – High Channel

4.1.4 Test Equipment List

Equipment ID	Description	Manufacturer	Model	Calibration Date	Calibration Due
EQ_EMC_58	EMI Receiver	Rohde & Schwarz	ESW 44	Mar 1, 2024	Mar 1, 2026
EQ_EMC_115	10dB Attenuator	Fairview Microwave	SA18E-10	NCR	NCR

4.2 Maximum Conducted Output Power

Test Date: September 5 & 8, 2025
Temperature (°C) 24.6 / 23.6
Relative Humidity (%) 34.1 / 31.3
Barometric Pressure (kPa) 97.7 / 98.8

Initials: MX

4.2.1 Limits

The limits are defined in FCC Part 15.407(a)(1)(iv) and RSS-247 6.2.4.2. The EUT is a client device and is not installed in vehicles. Thus, applicable limits are:

	FCC Part 15.407(a)(1)(iv)	RSS-247 6.2.4.2
Max Conducted Output Power	1 W (30 dBm)	1 W (30 dBm)

If the antenna gain is above 6 dBi, the maximum conducted output power shall be reduced by the amount in dB that the antenna gain exceeds 6 dB.

4.2.2 Test Procedure

Tested according to ANSI C63.10 Section 12.4.2.2 Method SA-1 and FCC KDB 789033 D02

The RF output of the DUT was connected to the spectrum analyzer with sufficient attenuation in front. The total path loss was set as reference offset to correct the final reading.

For Maximum Conducted Output (Average) Power

- Set RBW = 1 MHz
- Set VBW $\geq 3 \times$ RBW
- Detector: RMS
- Span: At least 1.5 times the OBW
- Trace: Average
- Average Sweep Count: At least 100 times
- Trace Mode: Single
- Use instrument's band power measurement function to computer power by integrating the spectrum across the OBW.

4.2.3 Test Results

The EUT passed.

The EUT supports 802.11 b/g/n protocols for UNII-3 WIFI. For each protocol, three channels were measured. The maximum conducted power is documented in the following tables

802.11 a				
Frequency (MHz)	Avg Power (dBm)	Avg Power (mW)	Limit (mW)	Pass/Fail
5745	20.98	125.31	1000.00	Pass
5785	21.00	125.89	1000.00	Pass
5825	20.92	123.59	1000.00	Pass

802.11 n/20 MHz				
Frequency (MHz)	Avg Power (dBm)	Avg Power (mW)	Limit (mW)	Pass/Fail
5745	18.47	70.31	1000.00	Pass
5785	18.58	72.11	1000.00	Pass
5825	18.65	73.28	1000.00	Pass

802.11 ac/20 MHz				
Frequency (MHz)	Avg Power (dBm)	Avg Power (mW)	Limit (mW)	Pass/Fail
5745	18.47	70.31	1000.00	Pass
5785	18.50	70.79	1000.00	Pass
5825	18.54	71.45	1000.00	Pass

802.11 n/40 MHz				
Frequency (MHz)	Avg Power (dBm)	Avg Power (mW)	Limit (mW)	Pass/Fail
5755	20.44	110.66	1000.00	Pass
5795	20.55	113.50	1000.00	Pass

802.11 ac/40 MHz				
Frequency (MHz)	Avg Power (dBm)	Avg Power (mW)	Limit (mW)	Pass/Fail
5755	20.81	120.50	1000.00	Pass
5795	20.90	123.03	1000.00	Pass

4.2.3.1. 802.11 a Plots

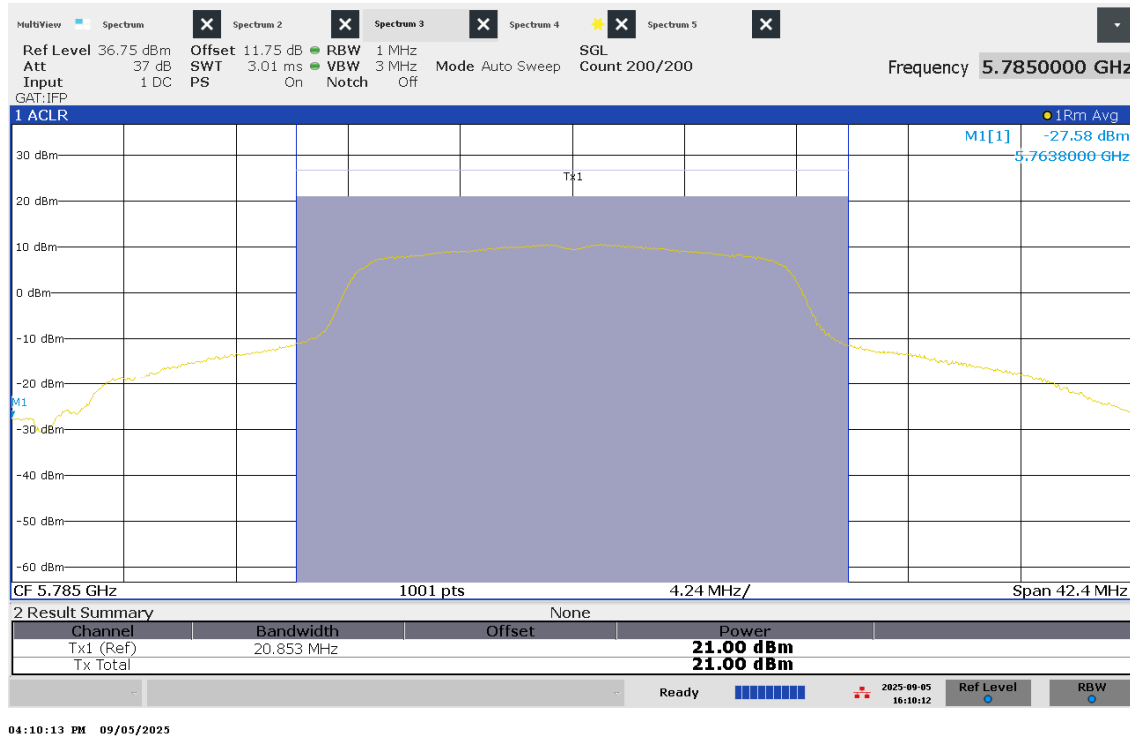


Figure 41 – Average Power - Mid Channel

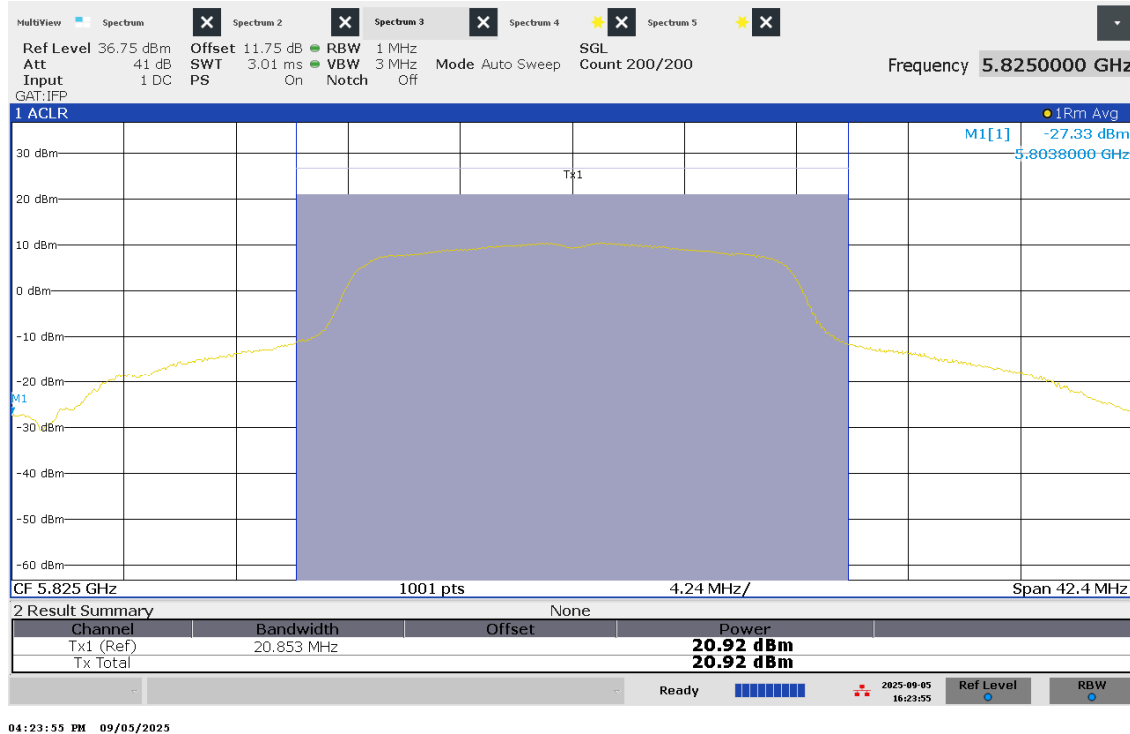


Figure 42 – Average Power - High Channel

4.2.3.2. 802.11 n/20 MHz Plots

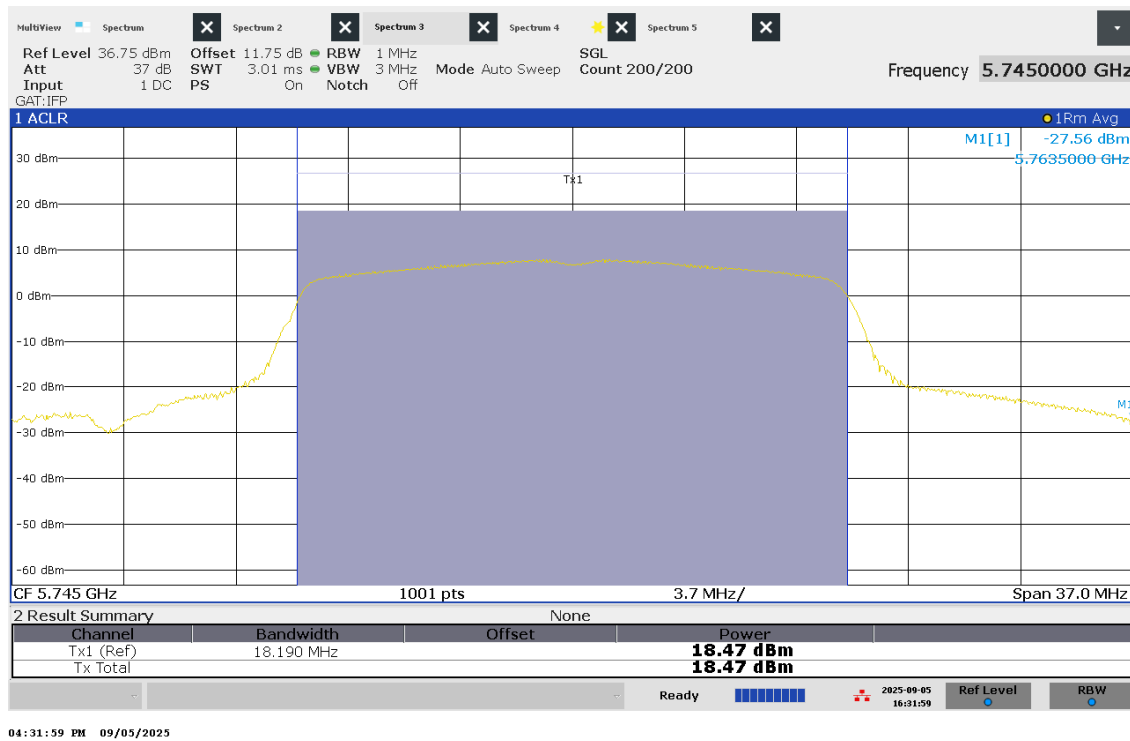


Figure 43 – Average Power - Low Channel

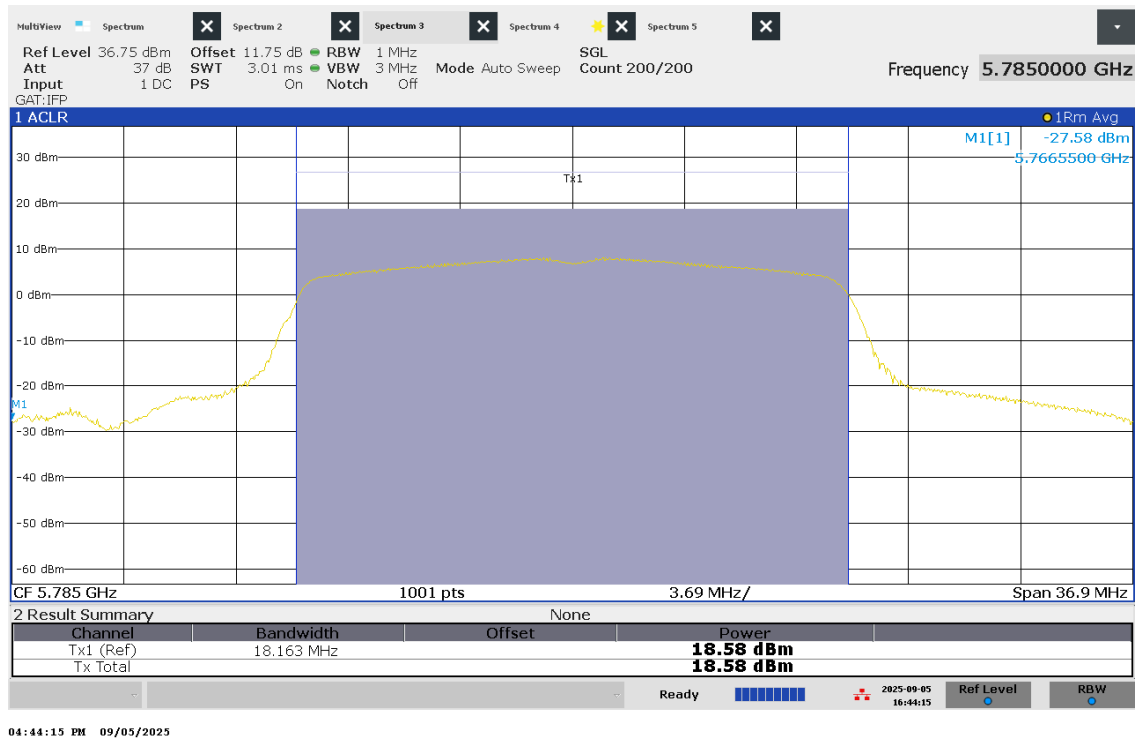


Figure 44 – Average Power - Mid Channel

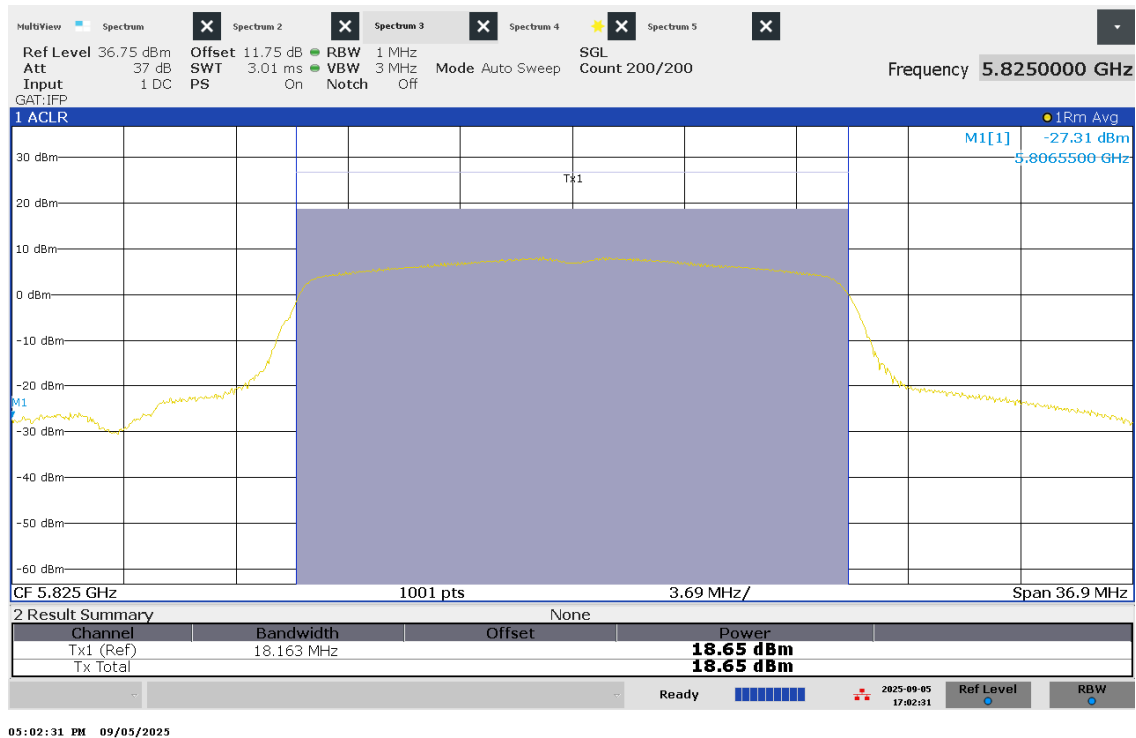


Figure 45 – Average Power - High Channel

4.2.3.3. 802.11 n/40 MHz Plots

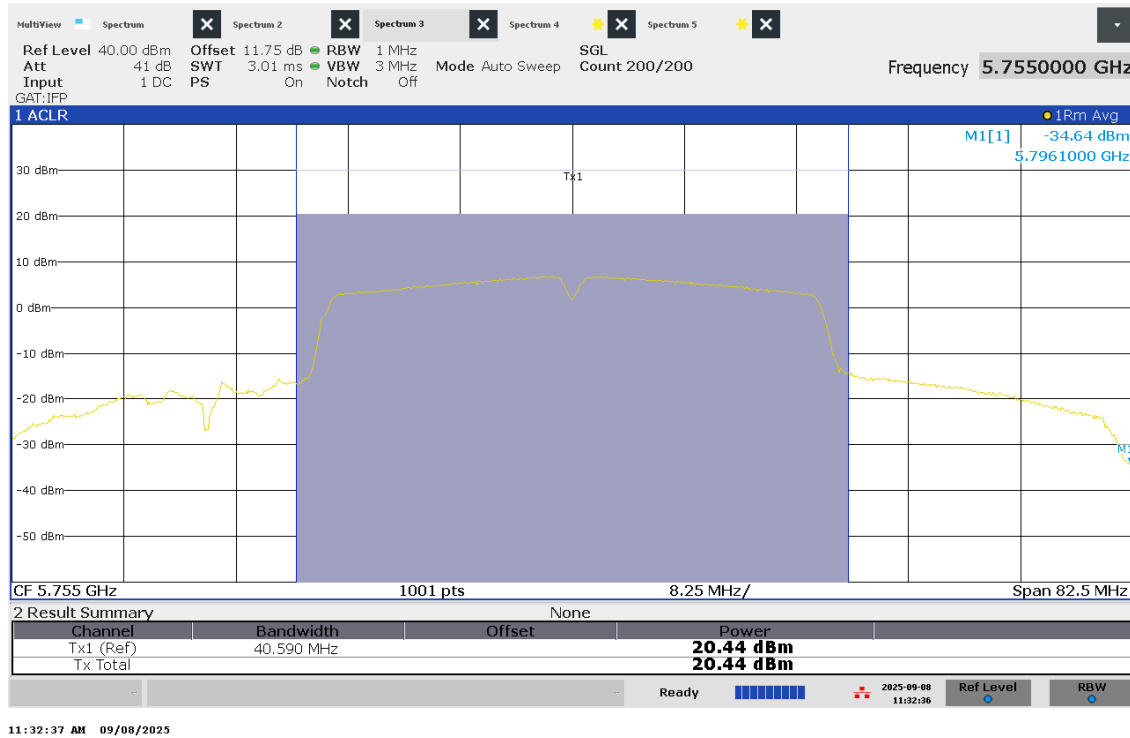


Figure 46 – Average Power - Low Channel

4.2.3.4. 802.11 ac/20 MHz Plots

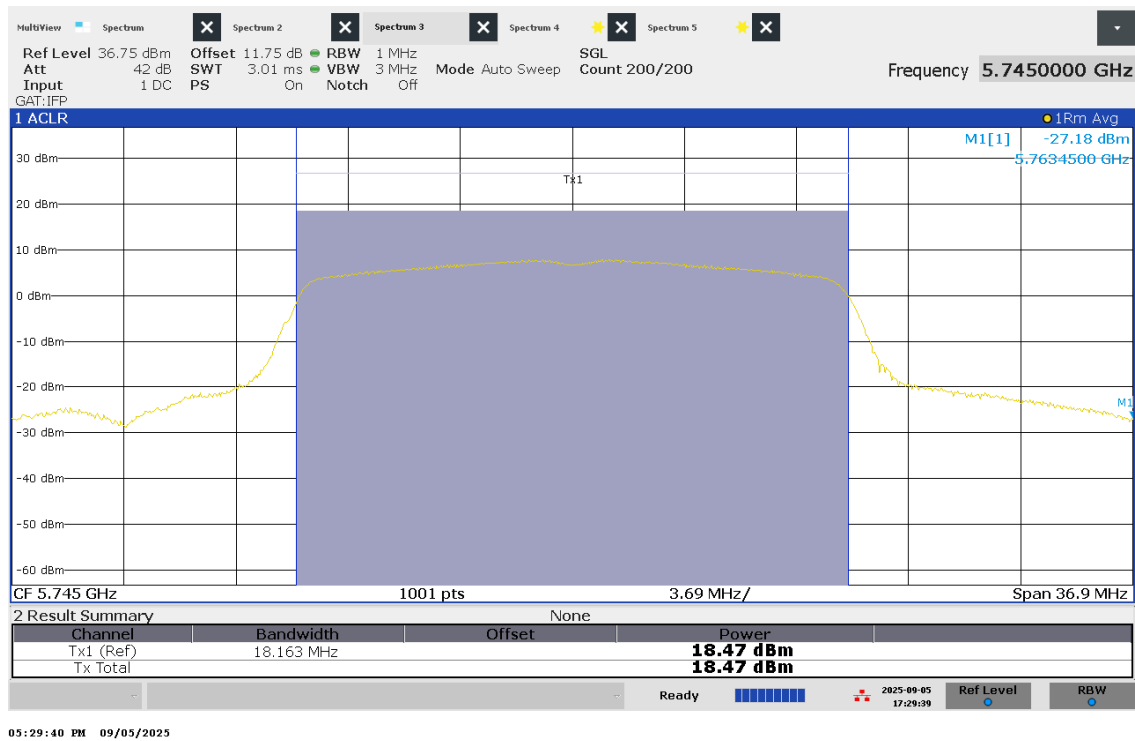


Figure 47 – Average Power - Low Channel

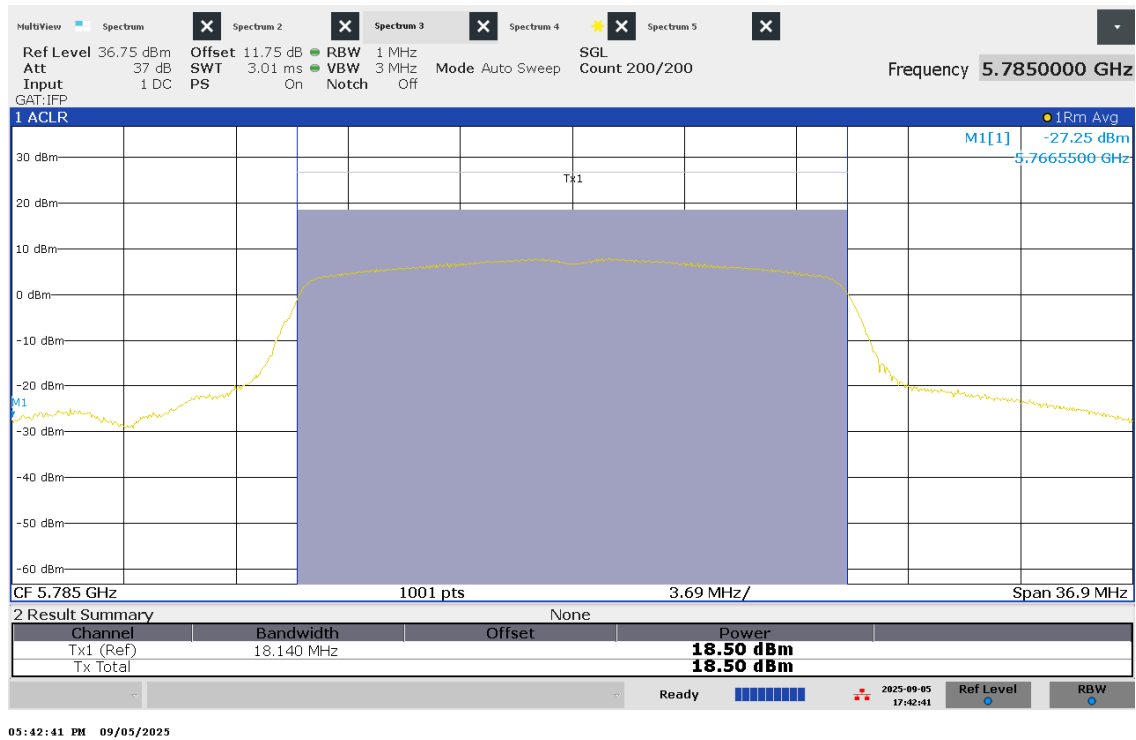


Figure 48 – Average Power - Mid Channel

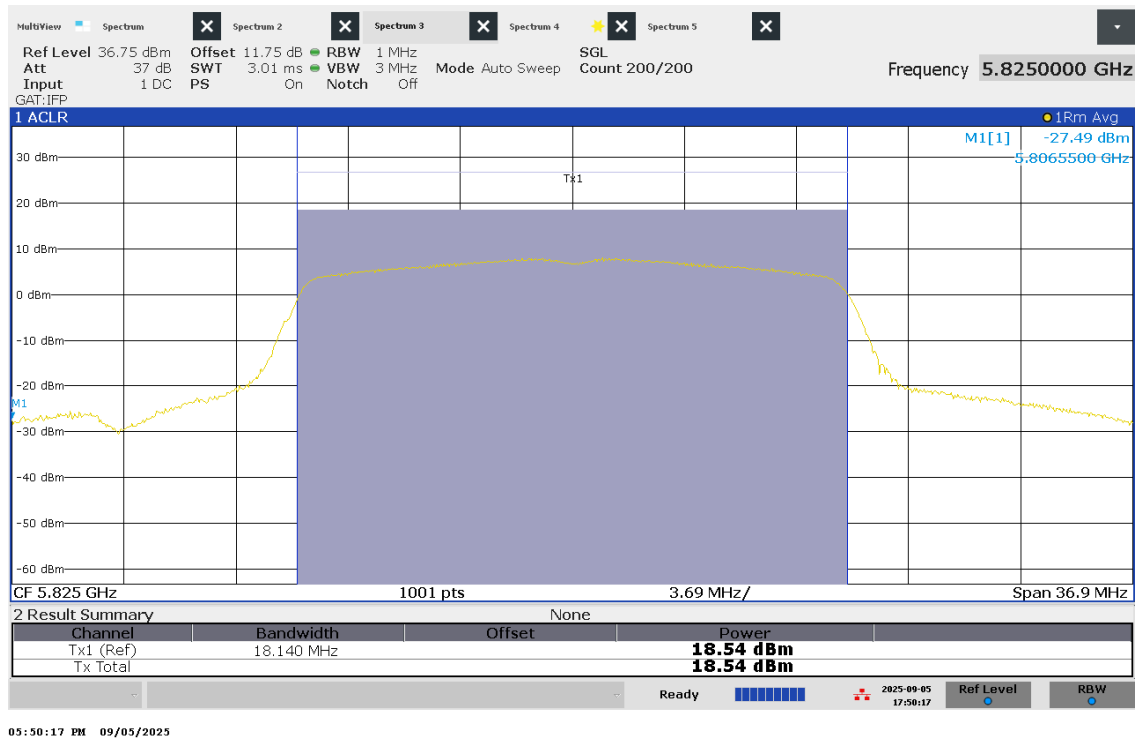


Figure 49 – Average Power - High Channel

4.2.3.5. 802.11 ac/40 MHz Plots

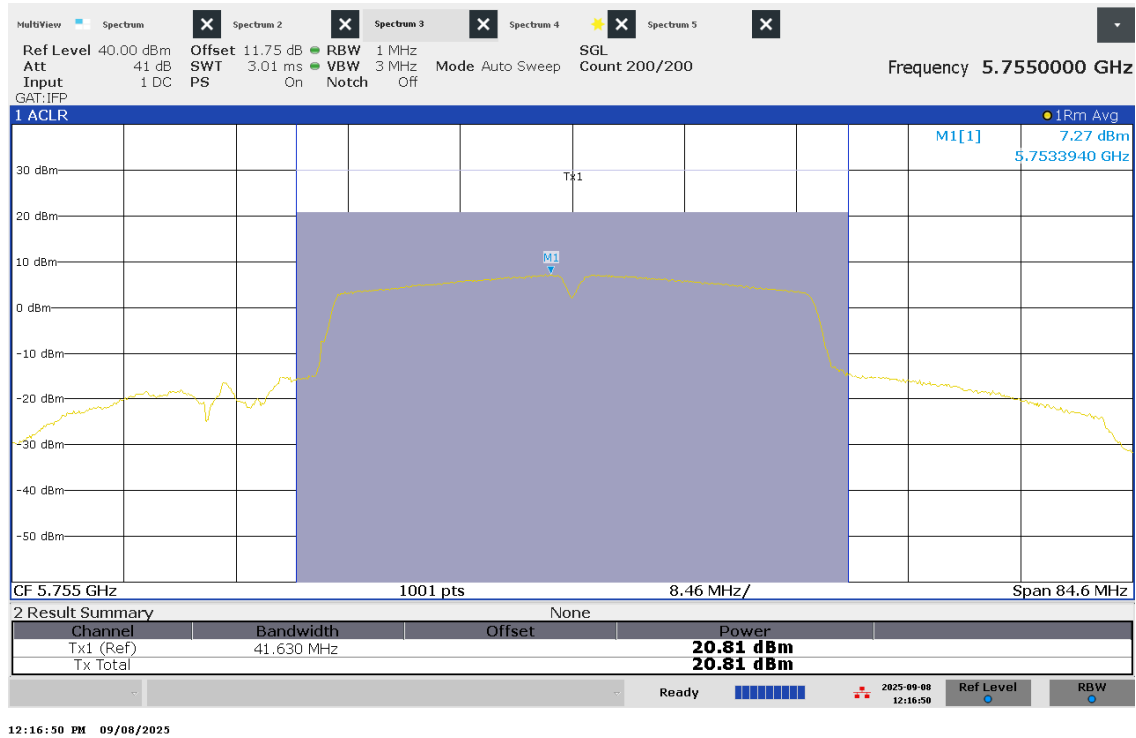


Figure 50 – Average Power - Low Channel



Figure 51 – Average Power - High Channel

4.2.4 Test Equipment List

Equipment ID	Description	Manufacturer	Model	Calibration Date	Calibration Due
EQ_EMC_58	EMI Receiver	Rohde & Schwarz	ESW 44	Mar 1, 2024	Mar 1, 2026
EQ_EMC_115	10dB Attenuator	Fairview Microwave	SA18E-10	NCR	NCR

4.3 Power Spectral Density

Test Date: September 5 & 8, 2025
Temperature (°C) 24.6 / 23.6
Relative Humidity (%) 34.1 / 31.3
Barometric Pressure (kPa) 97.7 / 98.8

Initials: MX

4.3.1 Limits

The limits are defined in FCC Part 15.407(a)(1)(iv) and RSS-247 6.2.4.2. The EUT is a client device and is not installed in vehicles. Thus, applicable limits are:

FCC Part 15.407(a)(1)(iv)		RSS-247 6.2.4.2	
PSD	30 dBm/500 kHz	PSD	30 dBm/500 kHz

If the antenna gain is above 6 dBi, the power density shall be reduced by the amount in dB that the antenna gain exceeds 6 dB.

4.3.2 Test Procedure

Tested according to ANSI C63.10 Section 12.6

- Set RBW = 500 kHz and VBW $\geq [3 \times \text{RBW}]$.
- Set Span to greater than 99% Bandwidth.
- Detector = RMS
- Trace Mode = Average.
- Sweep = Auto Couple.
- Trace average at least 100 traces in power averaging (rms) mode.
- Use the peak marker function to determine the maximum level.

The RF output of the DUT was connected to the spectrum analyzer with sufficient attenuation in front. External attenuator and cable loss were accounted for as reference offset in the spectrum analyzer.

The DUT was set to transmit at maximum tuned power. The DUT supports 802.11 a/n/ac. Three Channels for each mode were measured for 20 MHz bandwidth and two channels were measured for 40 MHz bandwidth.

4.3.3 Test Results

The EUT passed.

The following tables show the power spectral density:

802.11 a			
Frequency (MHz)	PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass/Fail
5745	7.69	30	Pass
5785	7.77	30	Pass
5825	7.77	30	Pass

802.11 n/20 MHz			
Frequency (MHz)	PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass/Fail
5745	5.12	30	Pass
5785	5.08	30	Pass
5825	5.25	30	Pass

802.11 ac/20 MHz			
Frequency (MHz)	PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass/Fail
5745	5.06	30	Pass
5785	4.91	30	Pass
5825	5.04	30	Pass

802.11 n/40 MHz			
Frequency (MHz)	PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass/Fail
5755	3.93	30	Pass
5795	3.98	30	Pass

802.11 n/40 MHz			
Frequency (MHz)	PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass/Fail
5755	4.23	30	Pass
5795	4.31	30	Pass

4.3.3.1. 802.11 a

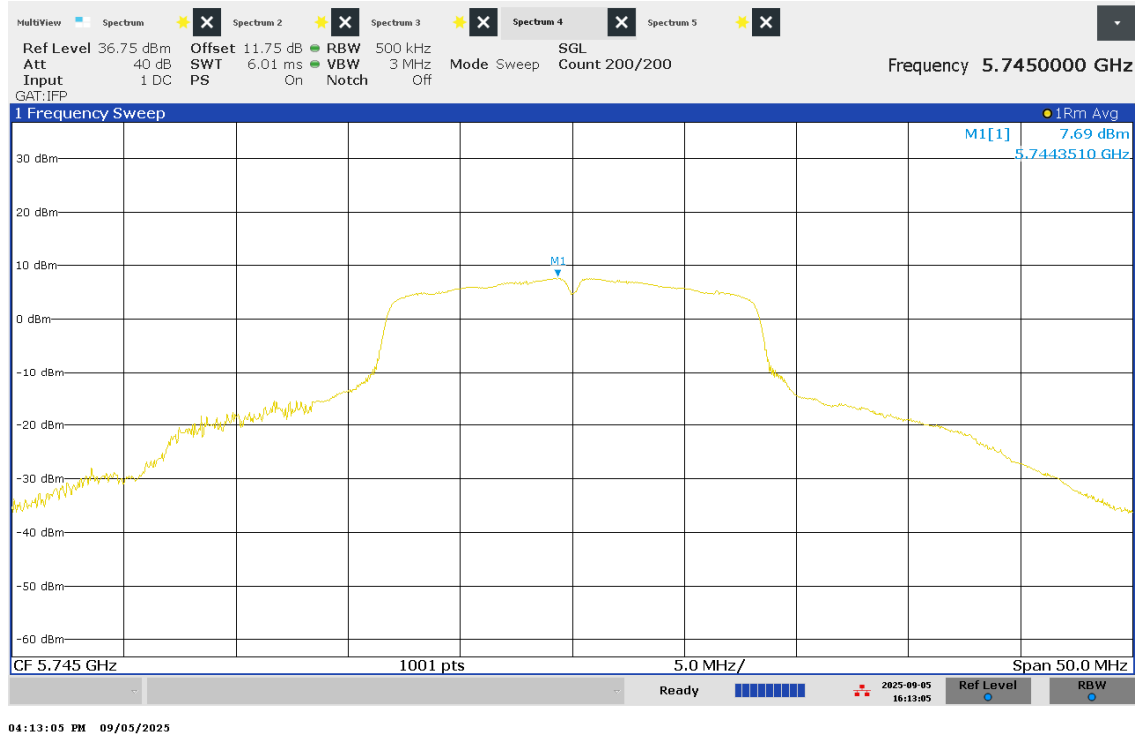


Figure 52 – PSD - Low Channel

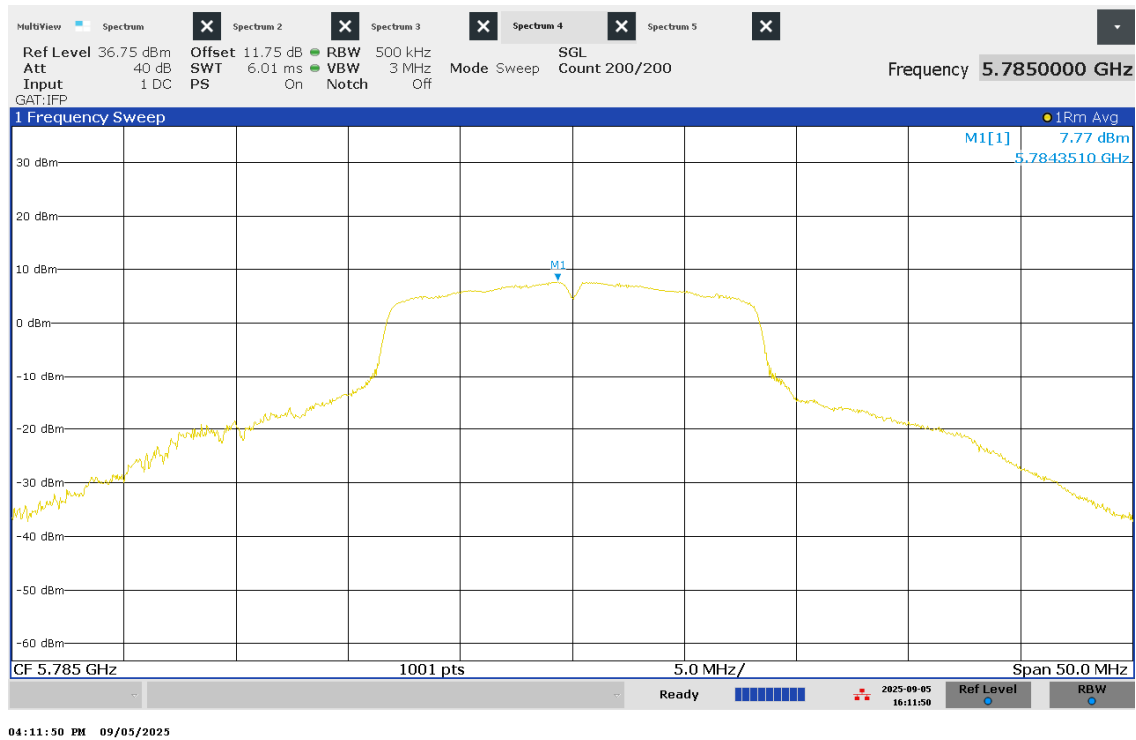


Figure 53 – PSD - Mid Channel

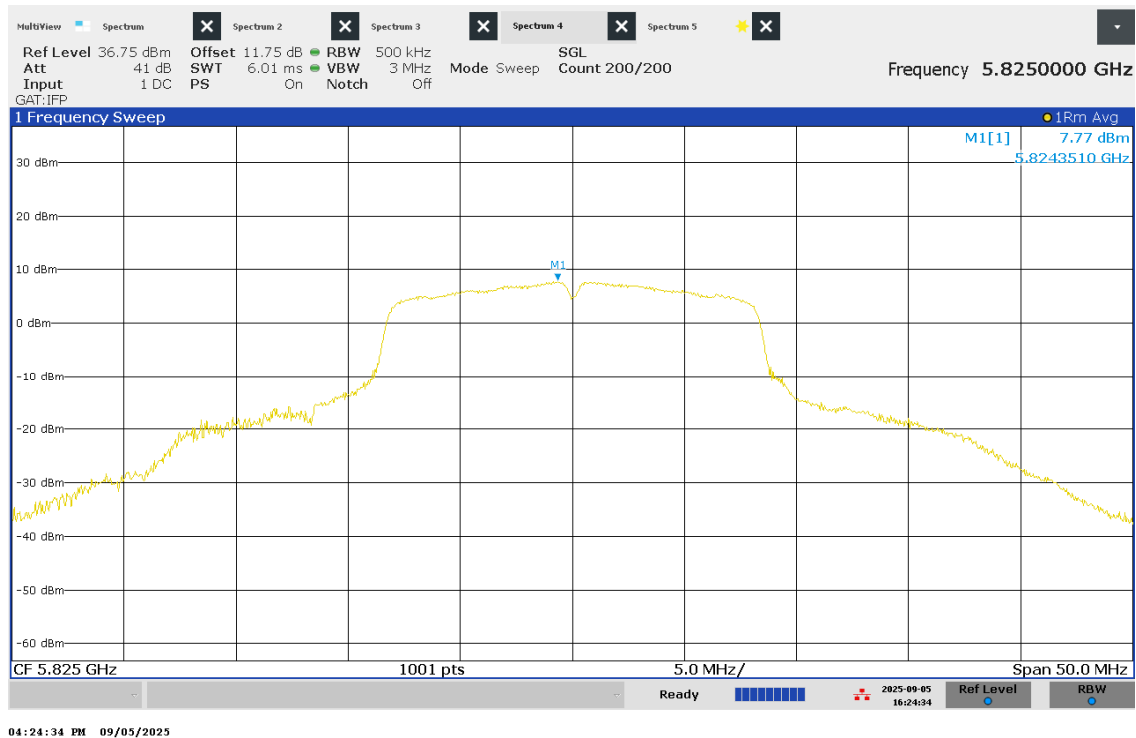
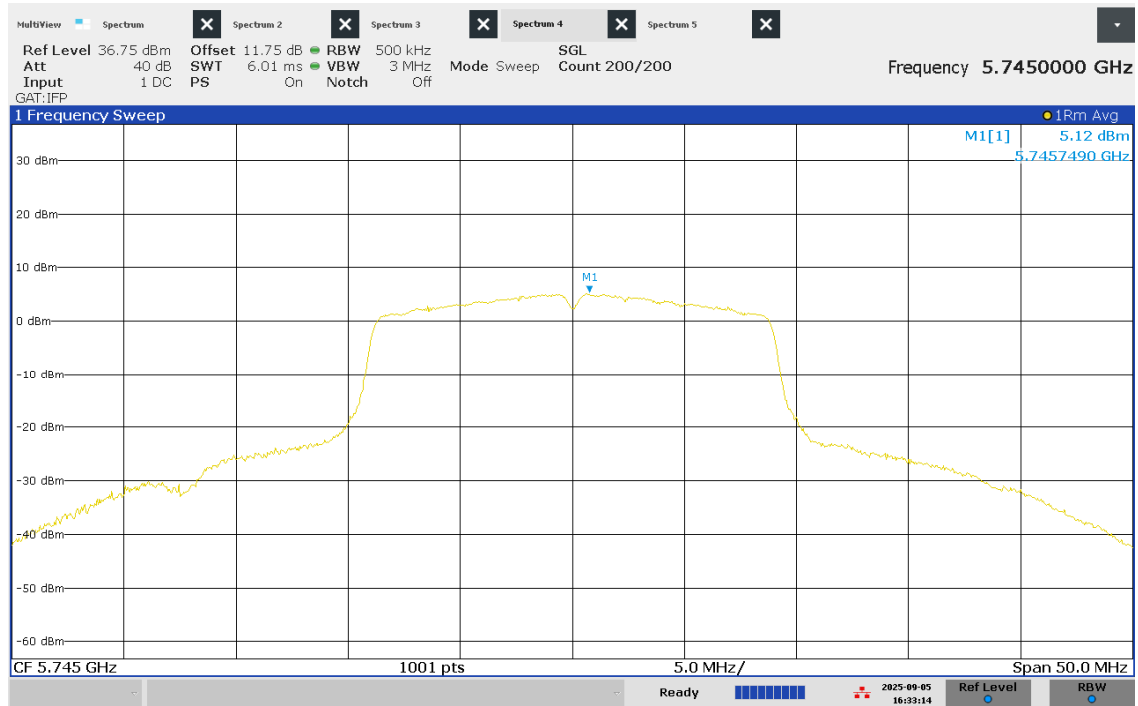


Figure 54 – PSD - High Channel

4.3.3.2. 802.11 n/20 MHz



04:33:14 PM 09/05/2025

Figure 55 – PSD - Low Channel

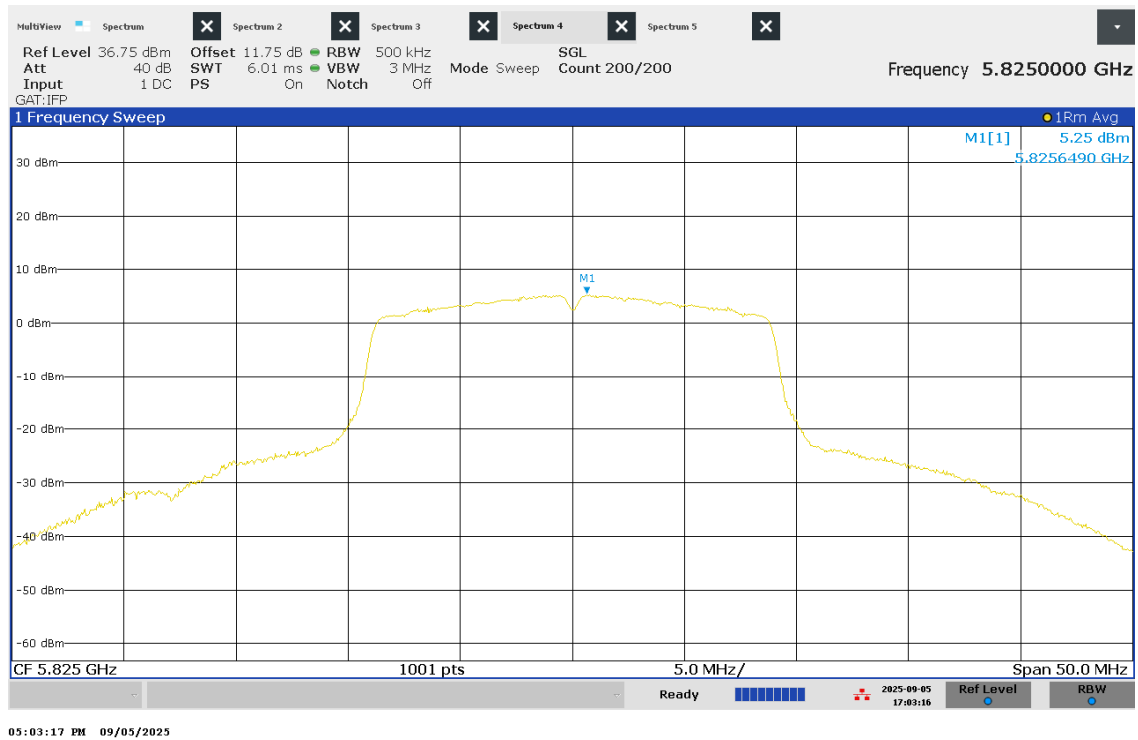


Figure 56 – PSD - Mid Channel

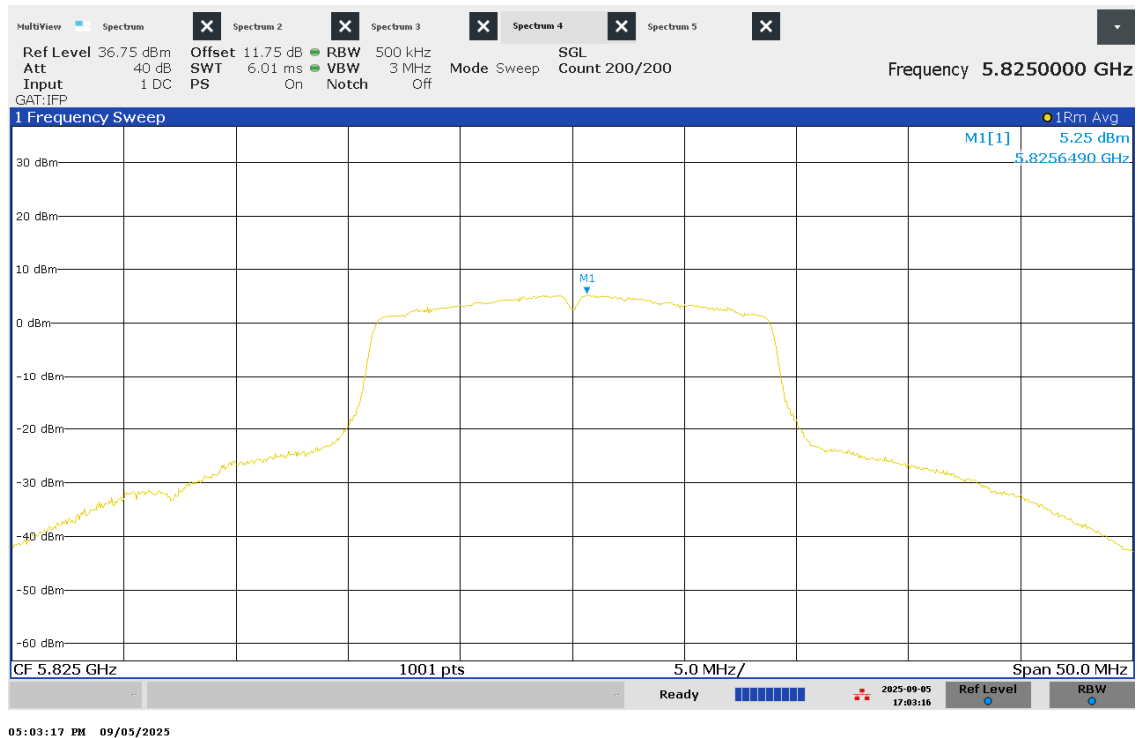
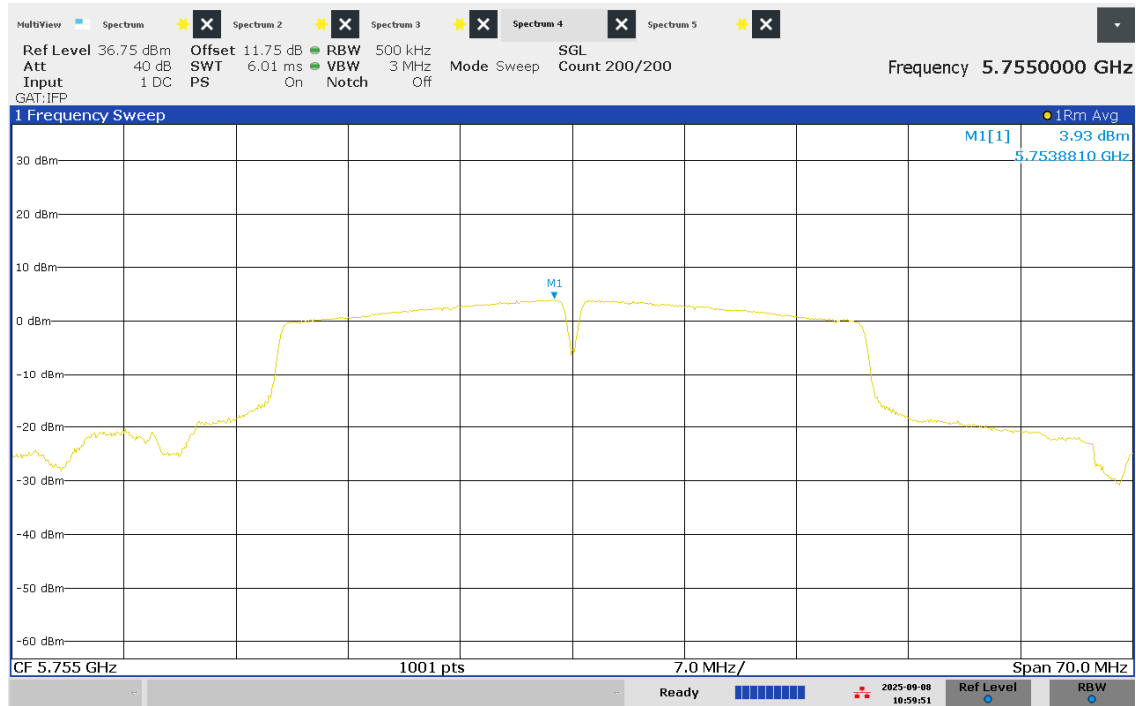


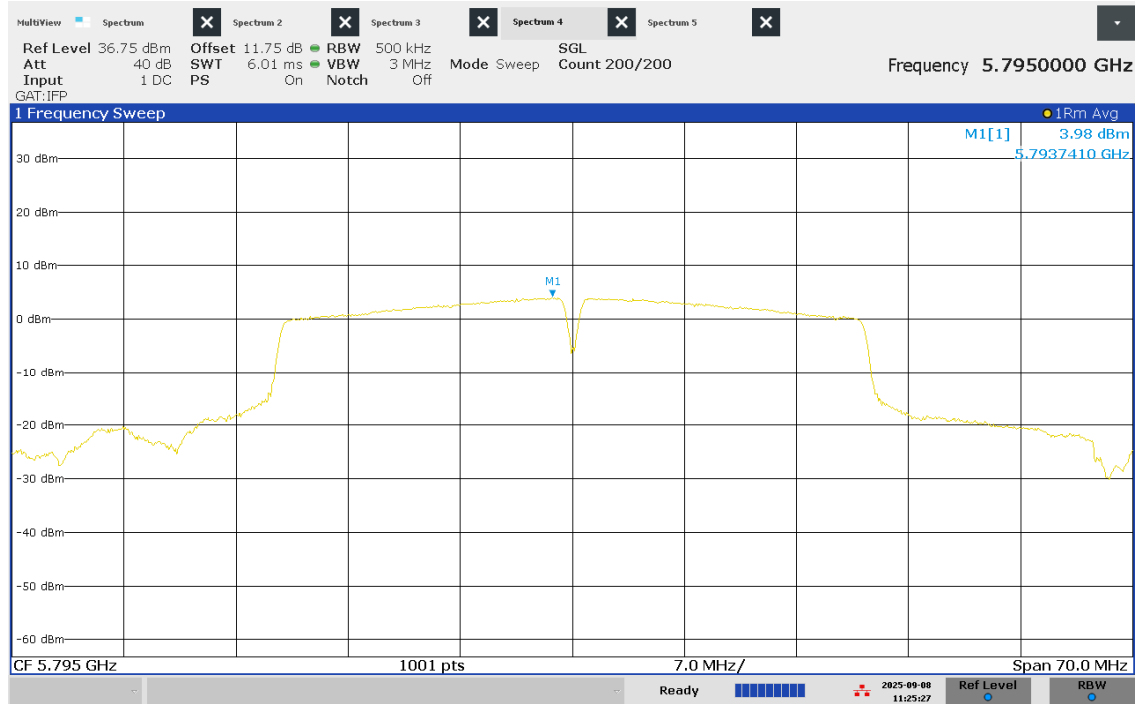
Figure 57 – PSD - High Channel

4.3.3.3. 802.11 n/40 MHz



10:59:52 AM 09/08/2025

Figure 58 – PSD - Low Channel



11:25:28 AM 09/08/2025

Figure 59 – PSD - High Channel

4.3.3.4. 802.11 ac/20 MHz

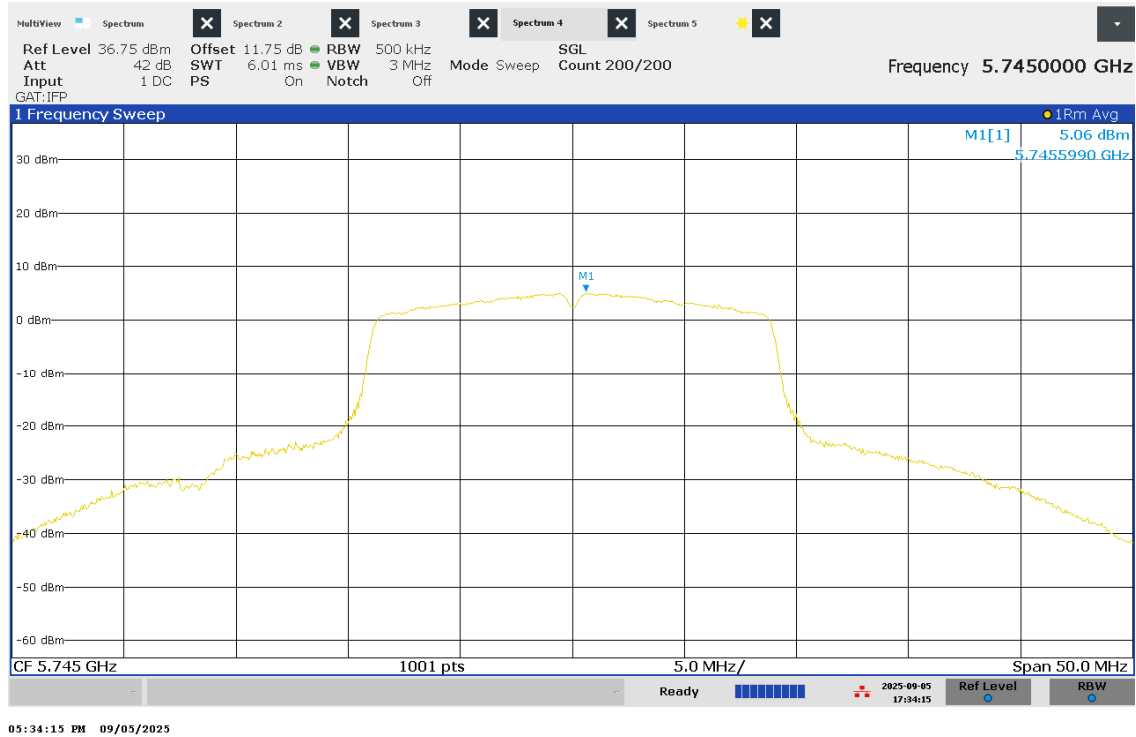


Figure 60 – PSD - Low Channel

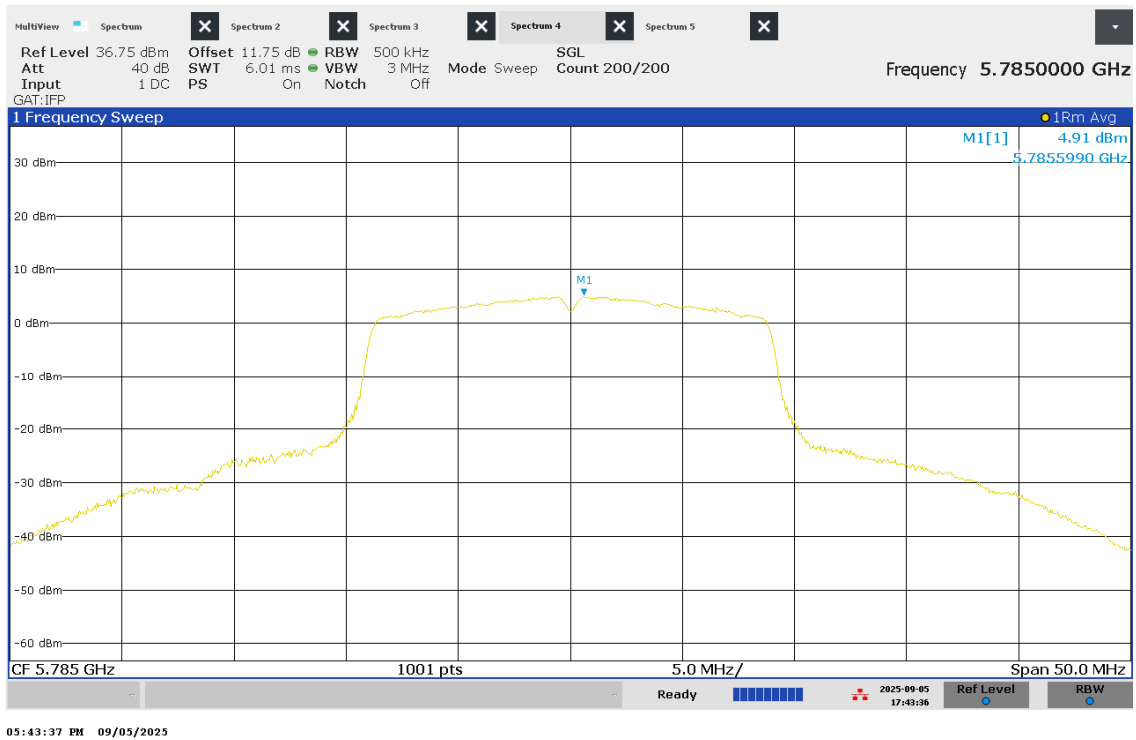


Figure 61 – PSD - Mid Channel

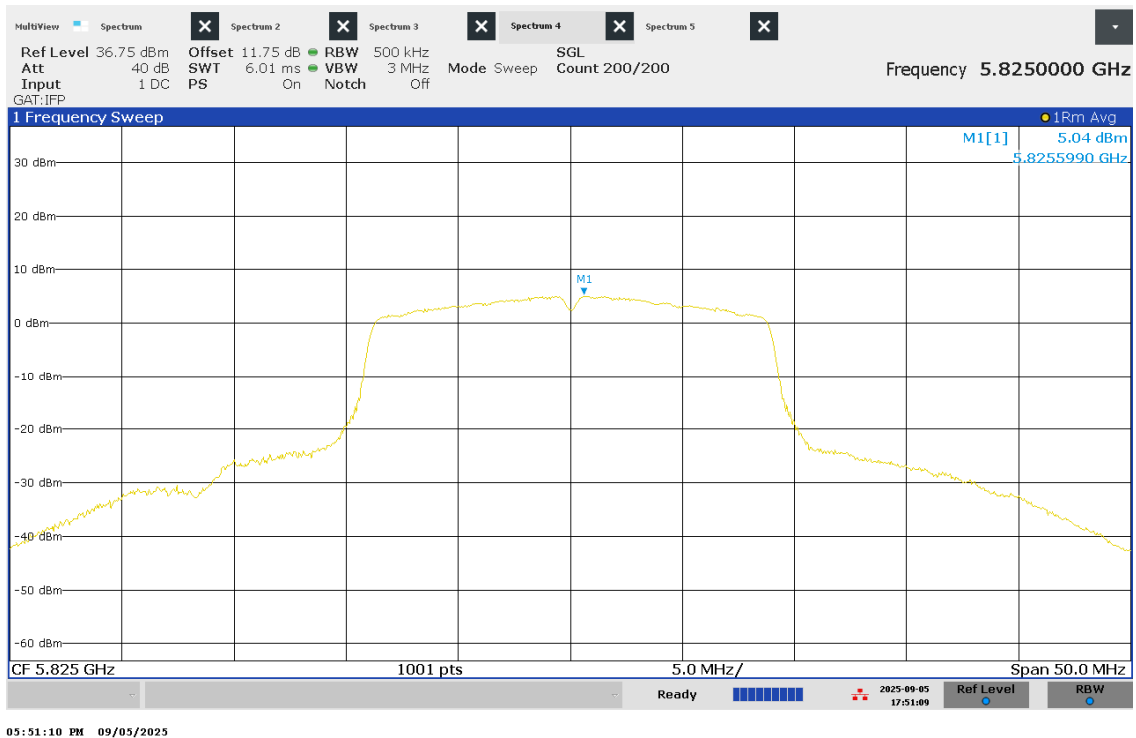
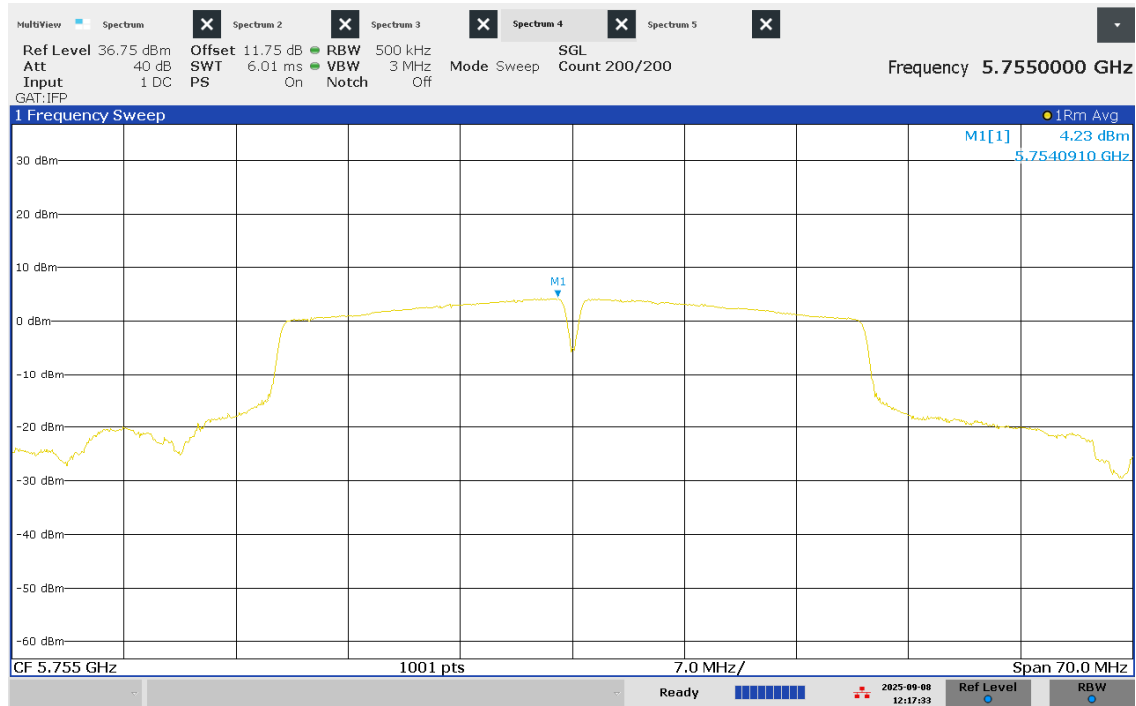


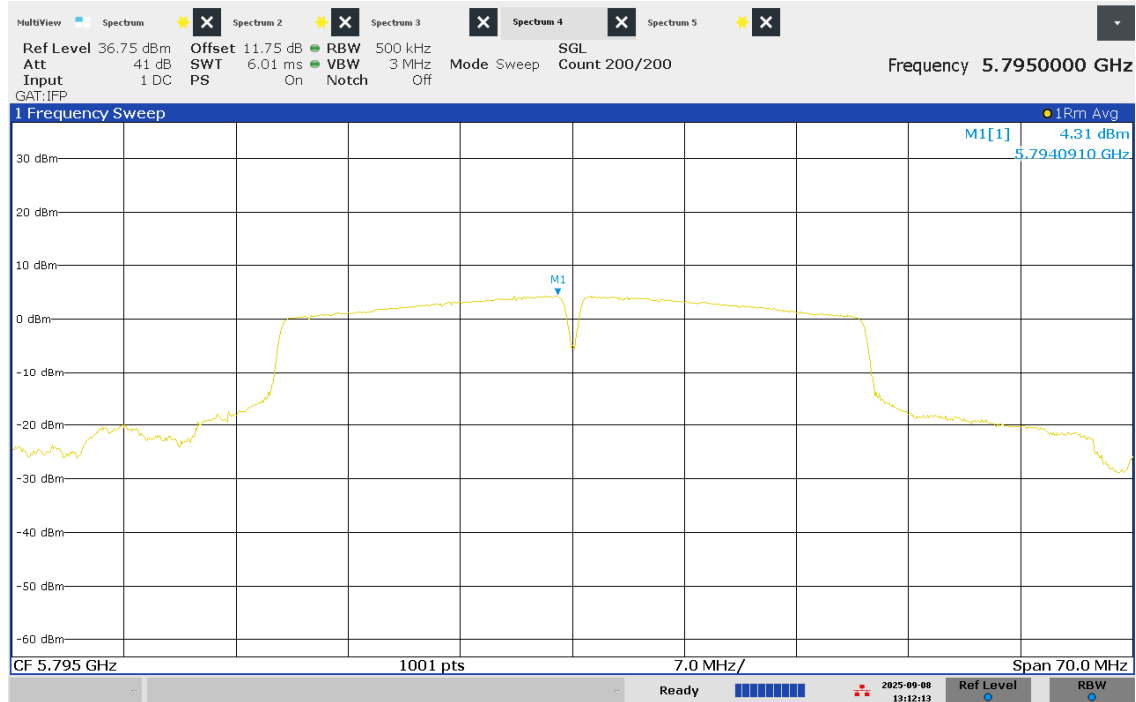
Figure 62 – PSD - High Channel

4.3.3.5. 802.11 n/40 MHz



12:17:34 PM 09/08/2025

Figure 63 – PSD - Low Channel



01:12:14 PM 09/08/2025

Figure 64 – PSD - High Channel

4.3.4 Test Equipment List

Equipment ID	Description	Manufacturer	Model	Calibration Date	Calibration Due
EQ_EMC_58	EMI Receiver	Rohde & Schwarz	ESW 44	Mar 1, 2024	Mar 1, 2026
EQ_EMC_115	10dB Attenuator	Fairview Microwave	SA18E-10	NCR	NCR

4.4 Transmitter Spurious Radiated Emissions

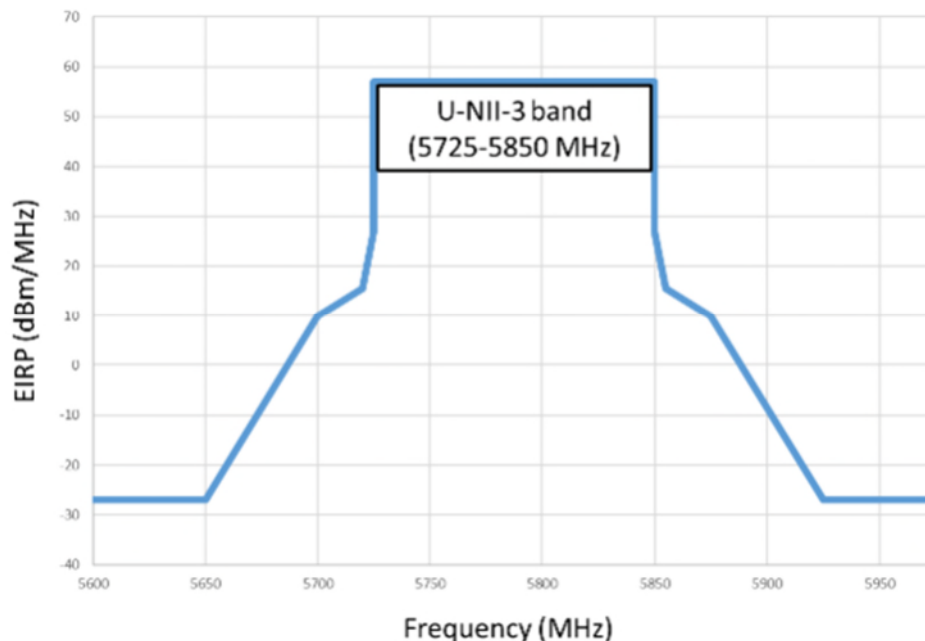
Test Date:	August 20 & 21, 2025
Temperature (°C)	25.8 / 25.9
Relative Humidity (%)	50.5 / 45.1
Barometric Pressure (kPa)	97.9 / 98.2

Initials: MX

4.4.1 Limits

The limits are defined in FCC Part 15.407(b)(1) and RSS-247 6.2.4.3.

For transmitters operating in the 5.725-5.850 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.



Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in FCC15.209 and RSS-Gen Section 8.9.

Unwanted emissions above 1 GHz must also comply with the general field strength limits set forth in FCC 15.209 for any emissions which fall in the restricted band as defined in FCC 15.205 (a) and RSS-Gen Table 7.

The general field strength limits are given in the table below:

Frequency Range (MHz)	Field Strength Limit		Field Strength at 3m (dB μ V/m)	Detector Type / Measurement Bandwidth
	μ V/m	Distance		
0.009 – 0.150	2400/F(kHz)	300	128.5 – 104.1	Quasi-Peak $\ddagger$ / 200Hz
0.150 – 0.490	2400/F(kHz)	300	104.1 – 93.8	Quasi-Peak $\ddagger$ / 9kHz
0.490 – 1.705	24000/F(kHz)	30	73.8 – 63.0	Quasi-Peak / 9kHz
1.705 – 30	30	30	69.5	Quasi-Peak / 9kHz
30 – 88	100	3	40.0	Quasi-Peak / 120kHz
88 – 216	150	3	43.5	Quasi-Peak / 120kHz
216 – 960	200	3	46.0	Quasi-Peak / 120kHz
960 – 1000	500	3	54.0	Quasi-Peak / 120kHz
Above 1000	500	3	54.0	Average / 1MHz
Above 1000	5000	3	74.0	Peak / 1MHz

$\ddagger$ The emission limits below 1GHz shown in the above table are based on measurements employing a CISPR Quasi-Peak detector except for the frequency bands 9-90 kHz and 110-490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.

As per ANSI C63.10 Section 4.1, if the Peak detector measurements do not exceed the Quasi-Peak limits, or Average limits where defined, then the DUT is considered to have passed the requirements.

4.4.2 Test Procedure

Tested according to ANSI C63.10 Section 12.7.

The device under test was setup inside a semi-anechoic chamber with remotely controlled turntable and antenna positioner at a 3m test distance. The DUT was placed on top of a 0.8m high non-conductive table above the reference ground plane for frequencies below 1GHz and 1.5m high for frequencies above 1GHz.

To determine the emission characteristics of the DUT, exploratory radiated emission scans were made while rotating the turntable 0° to 360° and using a Peak detector. The results were recorded in graphical form.

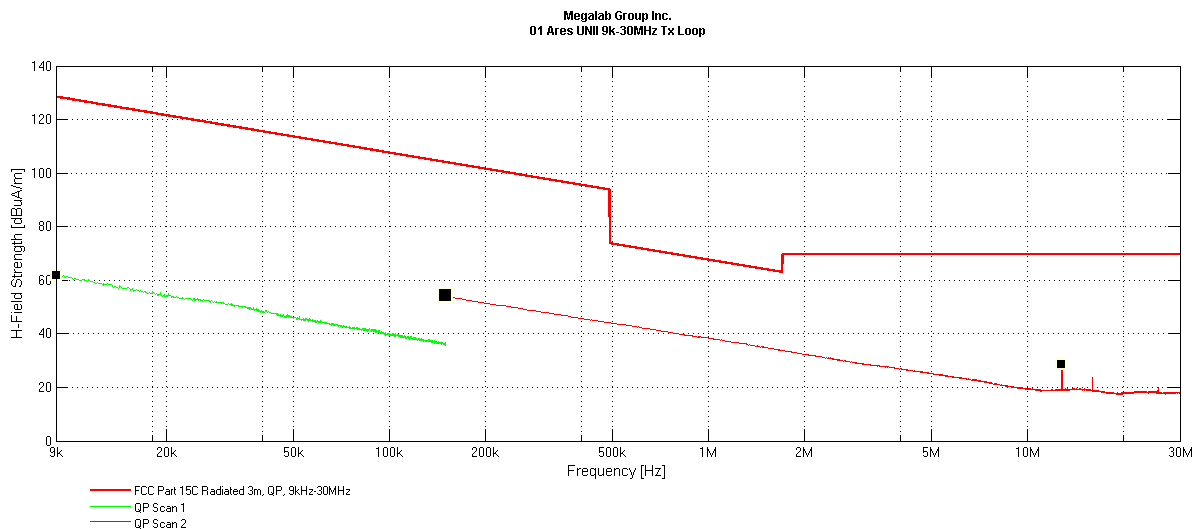
For each suspected emission, final measurements of the DUT radiated emissions with the Quasi-Peak, Average or Peak detector, as defined in the limit tables above, were made with the turntable azimuth rotated 0° to 360° and antenna height varied from 1m to 4m. The antenna was positioned to receive emissions in the vertical and horizontal polarizations such that the maximum radiated emission levels were detected.

As per FCC Part 15.33(a), the DUT was scanned to the 10th harmonic of the highest fundamental frequency.

Testing for 9 kHz – 30 MHz was performed with 3 orthogonal antenna polarities. The worst case results were present in this report.

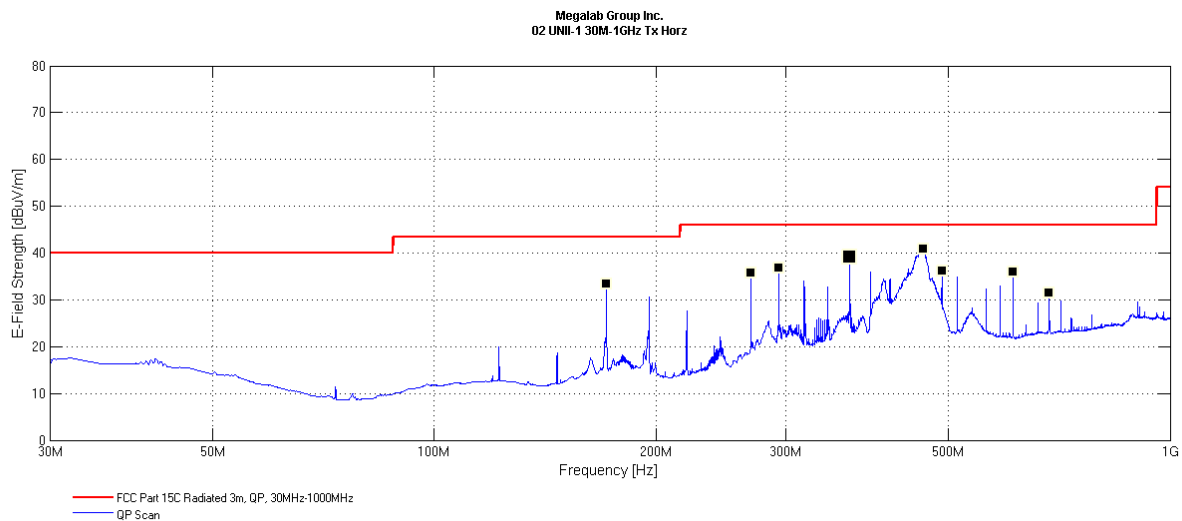
4.4.3 Test Results - ECB601

Range:	9kHz to 30 MHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	XZ-Plane



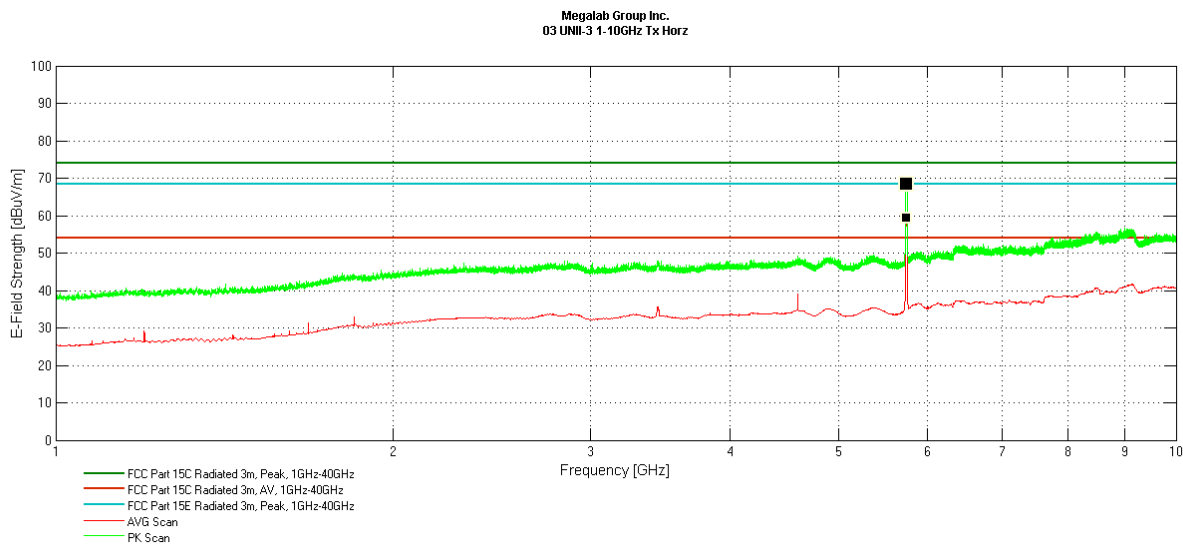
Remark: Quasi-Peak Emission Plot

Range:	30MHz to 1GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Horizontal



Remark: - Quasi-Peak Emission Plot
- A Notch filter was used to filter out the fundamental

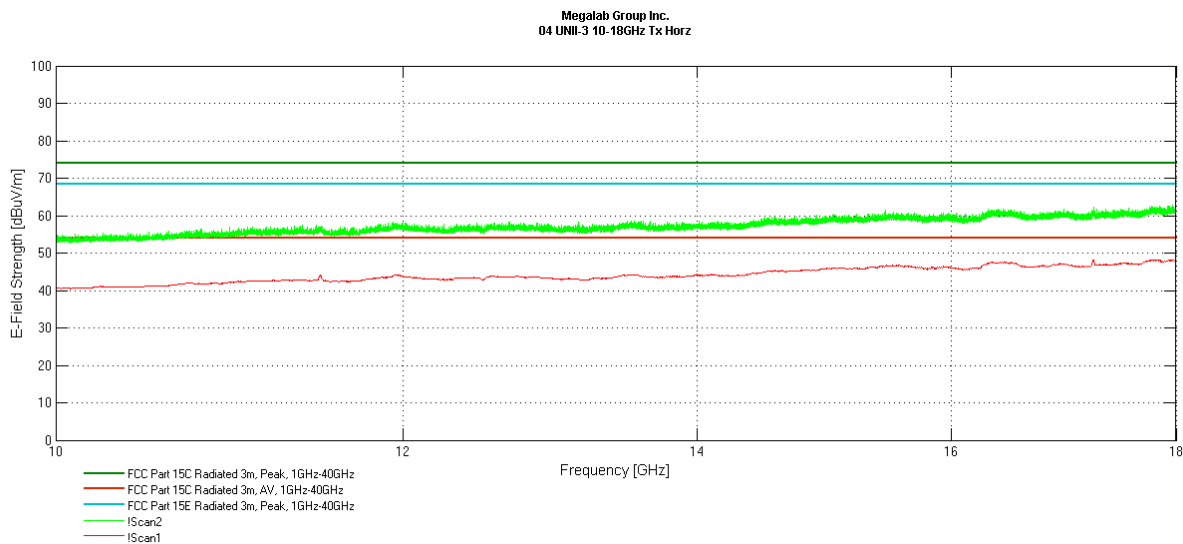
Range:	1GHz to 10GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Horizontal



Project Ecobee_Ares2_ML302480_UNII-3.S64

Remark: - **Peak** and **Average** Emission Plot
- A Notch filter was used to filter out the fundamental

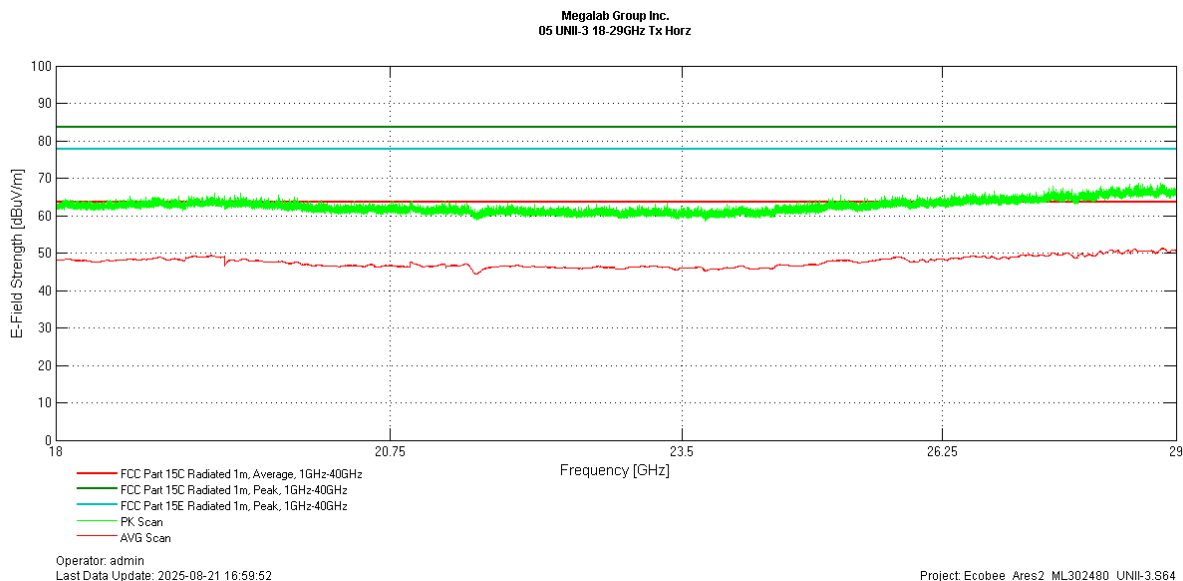
Range:	10GHz to 18GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Horizontal



Project Ecobee_Ares2_ML302480_UNII-3.S64

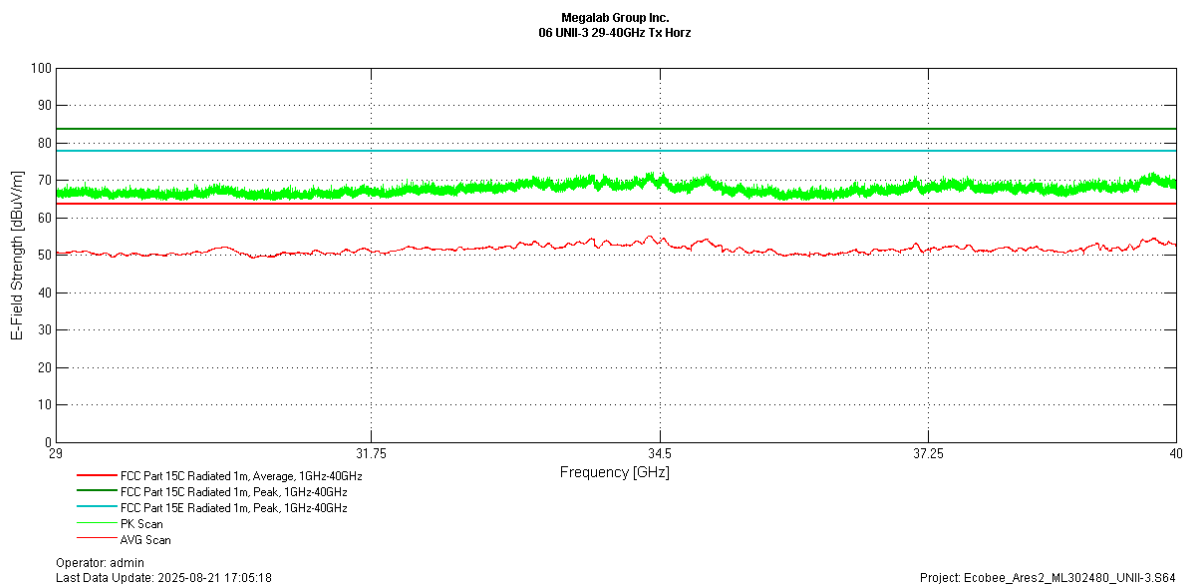
Remark: - **Peak** and **Average** Emission Plot
- A Notch filter was used to filter out the fundamental

Range:	18GHz to 29GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Horizontal



Remark: - **Peak** and **Average** Emission Plot

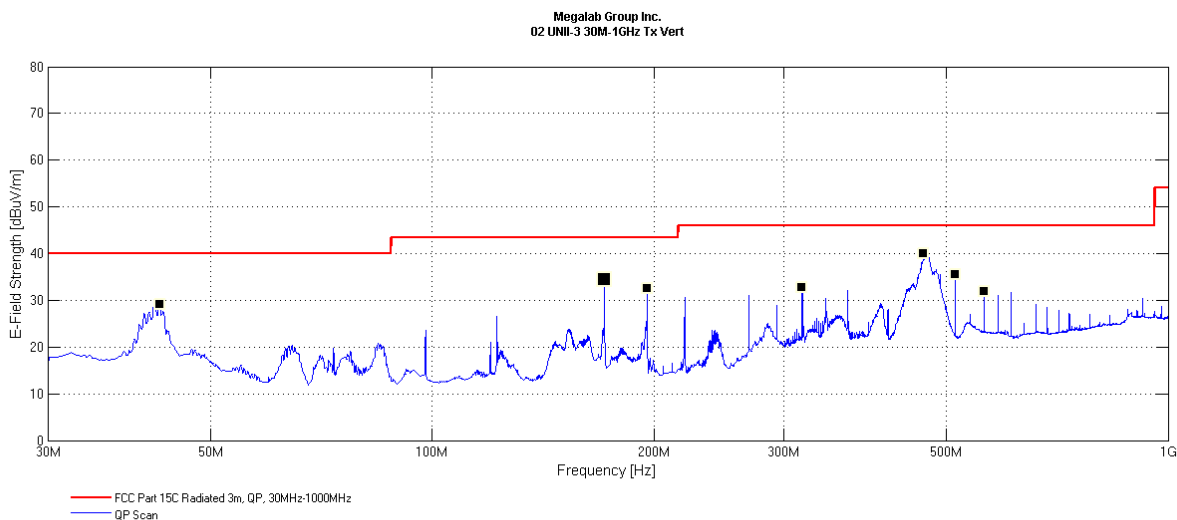
Range:	29 GHz to 40 GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Horizontal



Remark: - **Peak** and **Average** Emission Plot

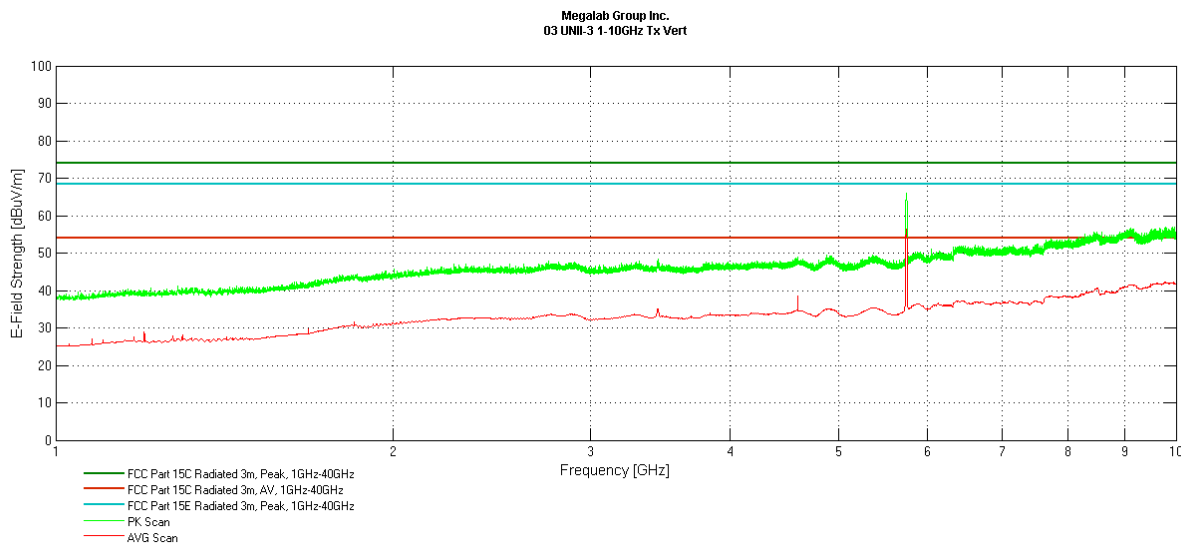
Horizontal Antenna Polarization							
Frequency (MHz)	Detector	Reading (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Test Result
456.40	QP	57.69	-16.42	41.27	46.00	4.73	Pass
912.75	QP	48.88	-8.96	39.92	46.00	6.08	Pass
367.25	QP	56.83	-18.31	38.52	46.00	7.48	Pass
293.80	QP	56.96	-20.24	36.72	46.00	9.28	Pass
171.40	QP	57.11	-23.76	33.35	43.50	10.15	Pass
612.05	QP	49.56	-13.92	35.64	46.00	10.36	Pass

Range:	30MHz to 1GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Vertical



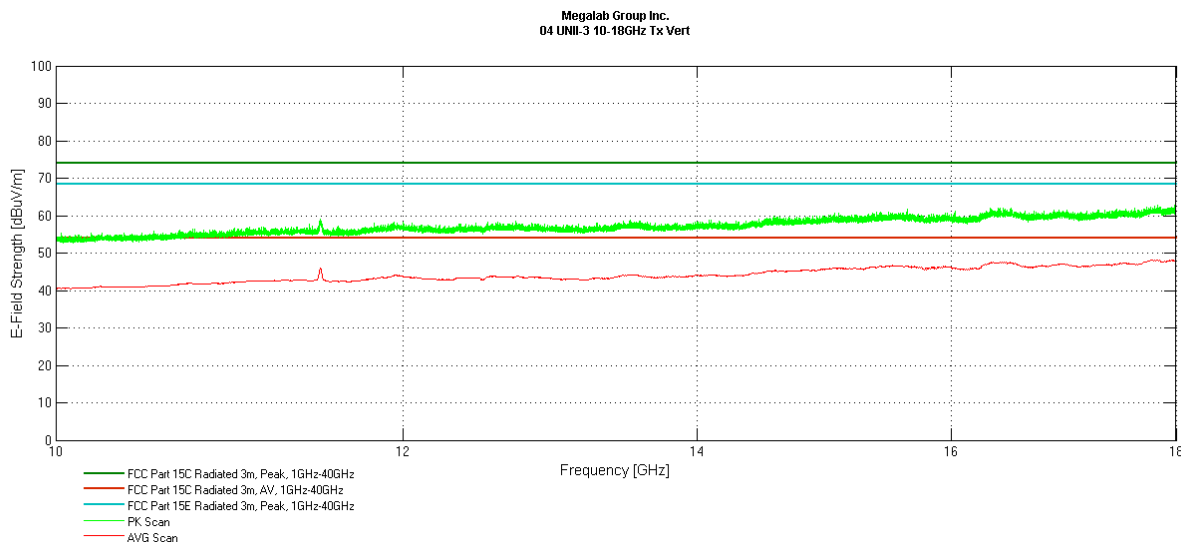
Remark: - Quasi-Peak Emission Plot
- A Notch filter was used to filter out the fundamental

Range:	1GHz to 10GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Vertical



Remark: - **Peak** and **Average** Emission Plot
- A Notch filter was used to filter out the fundamental

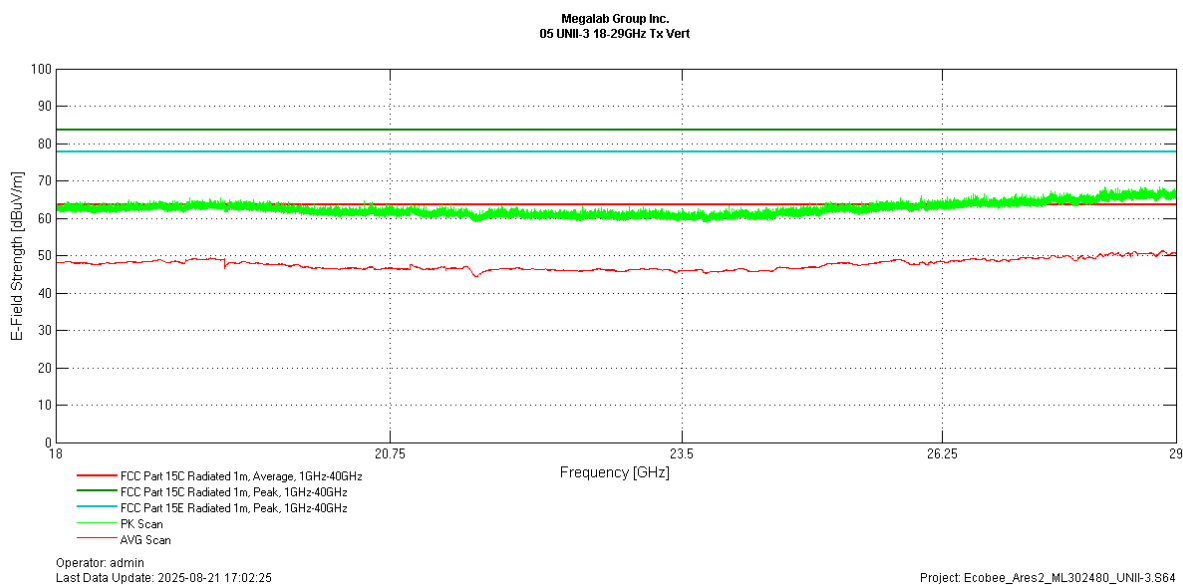
Range:	10GHz to 18GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Vertical



Remark: - **Peak** and **Average** Emission Plot
- A Notch filter was used to filter out the fundamental

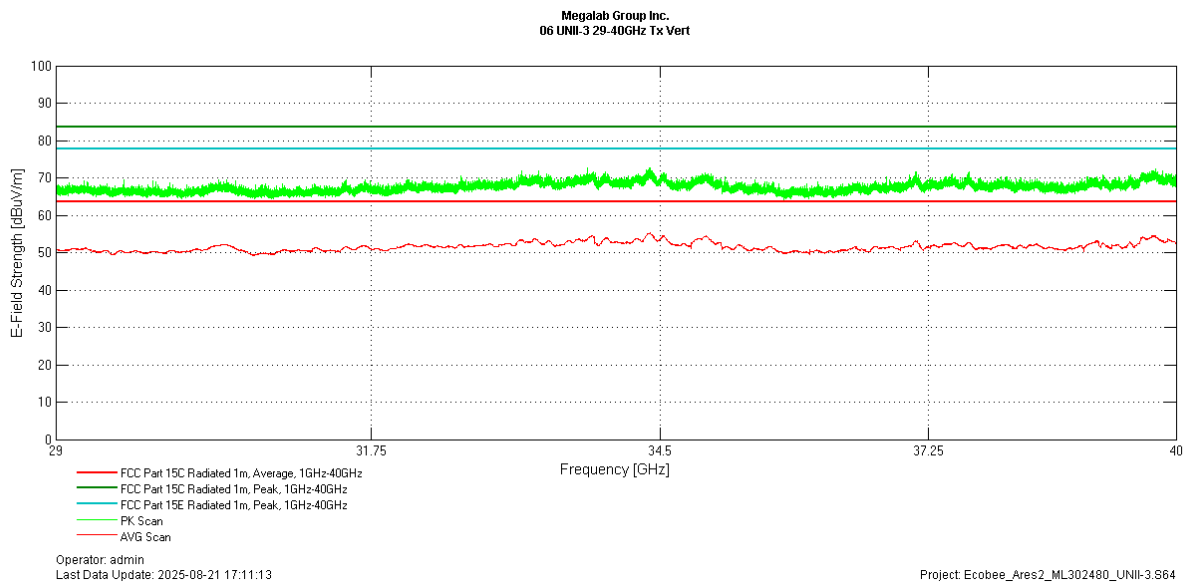
Range:	18GHz to 29GHz	Tx Frequency	5745 MHz
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Test Voltage:	24Vac 60Hz	Antenna Polarization	Vertical
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Remark: **Peak** and **Average** Emission Plot

Range:	29 GHz to 40 GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Vertical

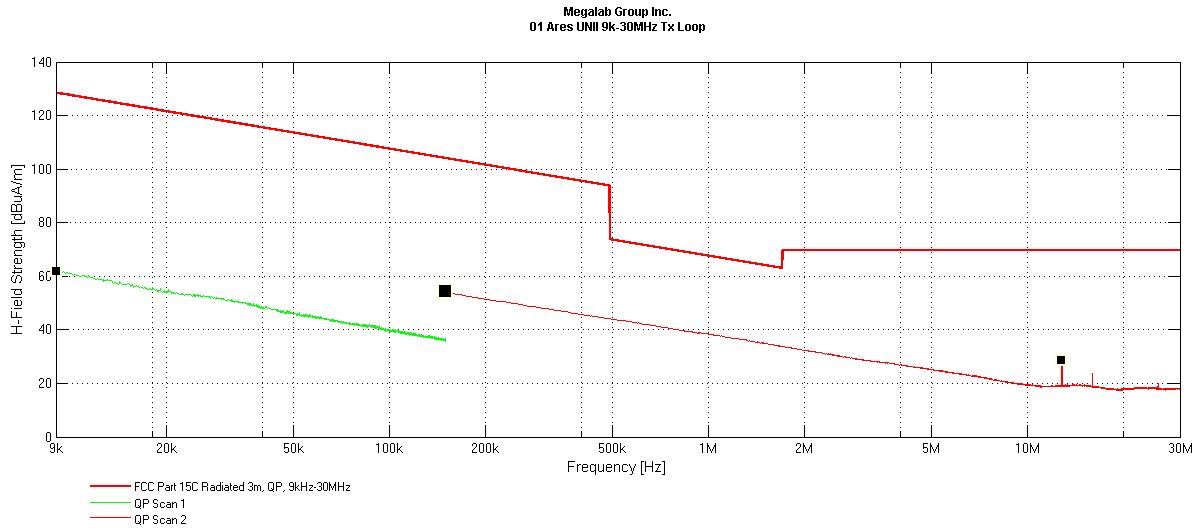


Remark: **Peak** and **Average** Emission Plot

Vertical Antenna Polarization							
Frequency (MHz)	Detector	Reading (dB μ V)	Correction Factor (dB/m)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Test Result
465.10	QP	56.00	-16.02	39.98	46.00	6.02	Pass
42.60	QP	48.37	-19.27	29.10	40.00	10.90	Pass
171.40	QP	58.31	-23.76	34.55	43.50	8.95	Pass
195.80	QP	55.86	-23.23	32.63	43.50	10.87	Pass
562.95	QP	46.61	-14.77	31.84	46.00	14.16	Pass
514.05	QP	50.84	-15.21	35.63	46.00	10.37	Pass
318.15	QP	52.40	-19.57	32.83	46.00	13.17	Pass

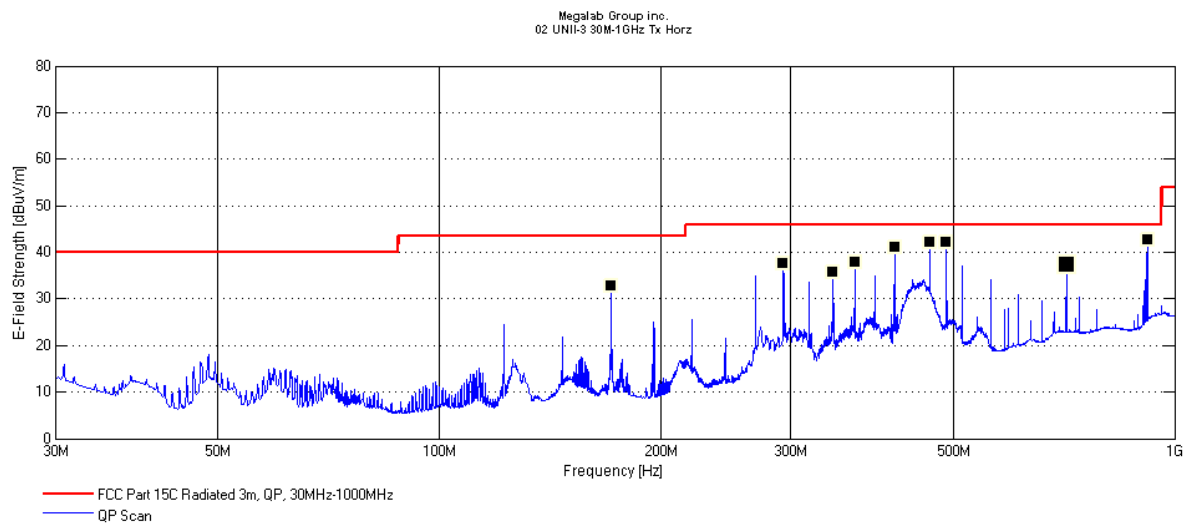
4.4.4 Test Results - ECB601 PLC

Range:	9kHz to 30 MHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	XZ-Plane



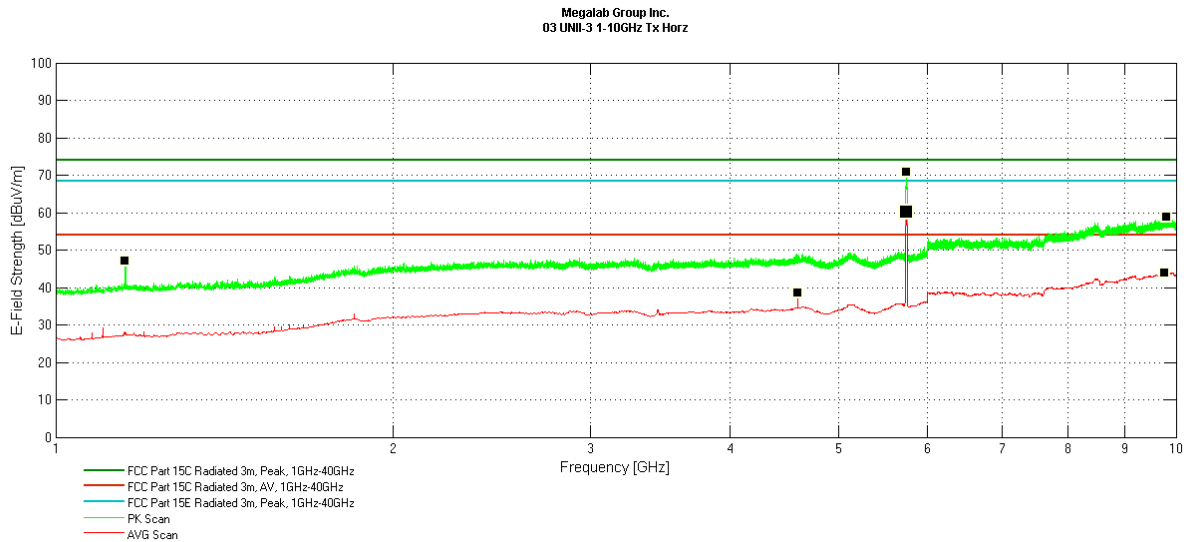
Remark: Quasi-Peak Emission Plot

Range:	30MHz to 1GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Horizontal



Remark: - Quasi-Peak Emission Plot
- A Notch filter was used to filter out the fundamental

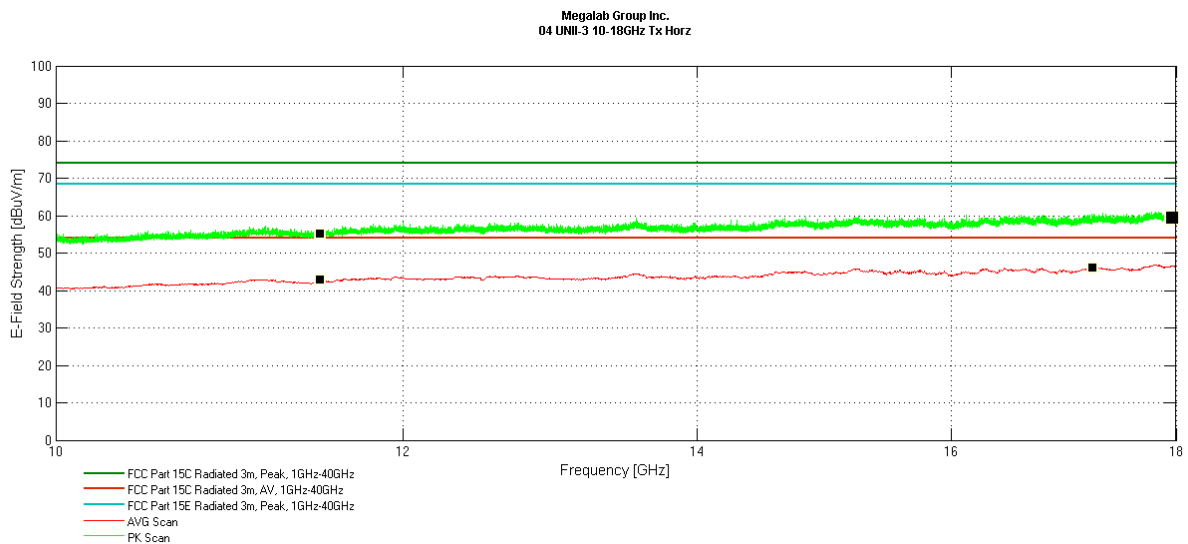
Range:	1GHz to 10GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Horizontal



Project: Ecobee_Ares2_PLC_ML303040_UNII-3.S64

Remark: - **Peak** and **Average** Emission Plot
- A Notch filter was used to filter out the fundamental

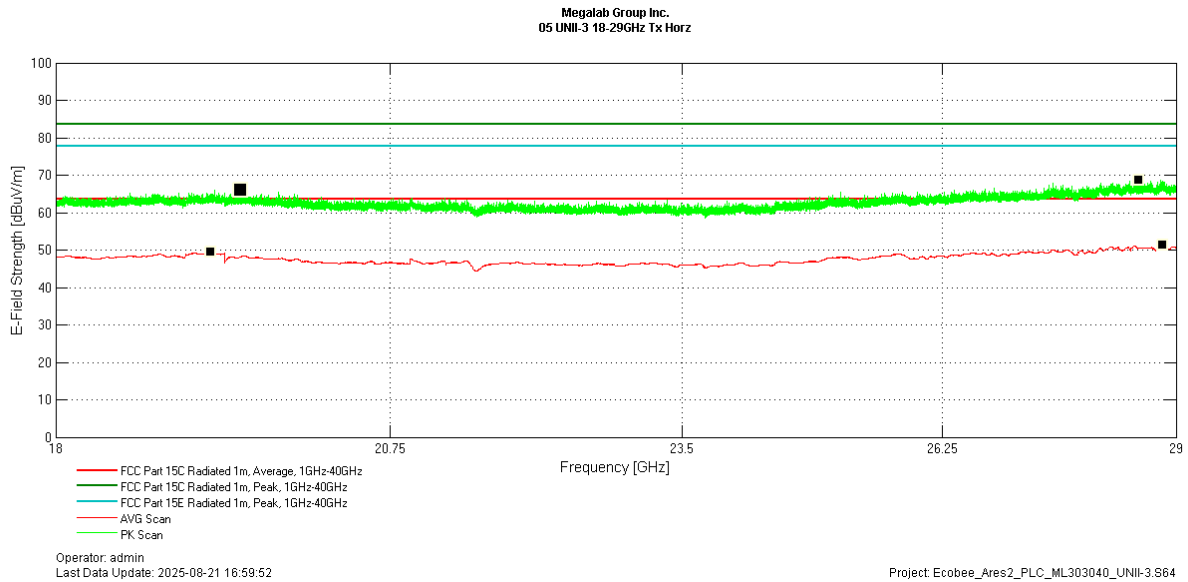
Range:	10GHz to 18GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Horizontal



Project: Ecobee_Ares2_PLC_ML303040_UNII-3.S64

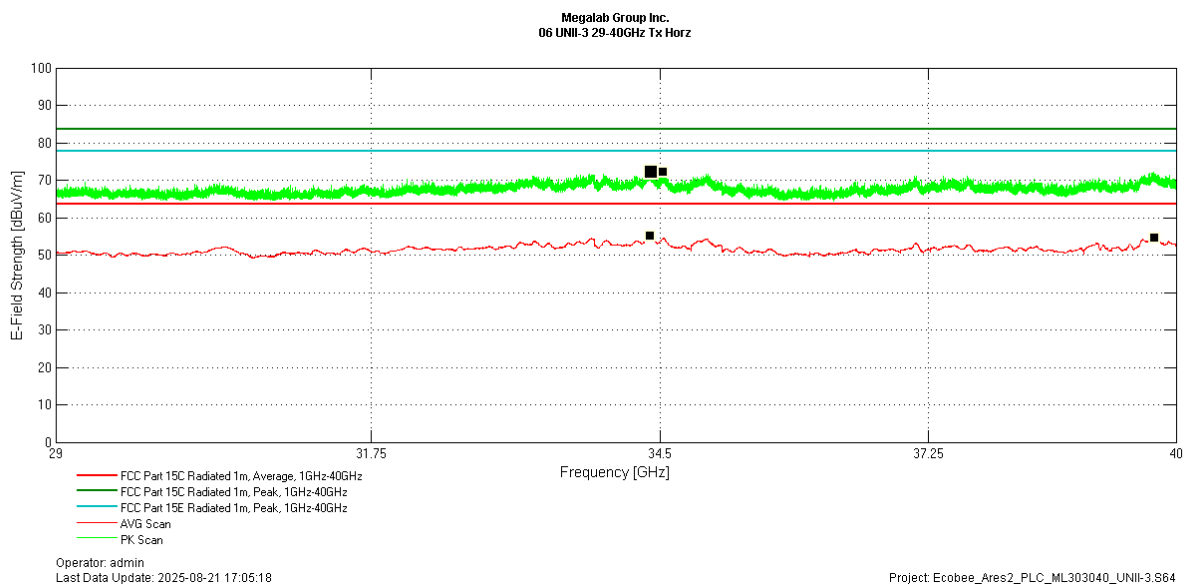
Remark: - **Peak** and **Average** Emission Plot
- A Notch filter was used to filter out the fundamental

Range:	18GHz to 29GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Horizontal



Remark: - **Peak** and **Average** Emission Plot

Range:	29 GHz to 40 GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Horizontal



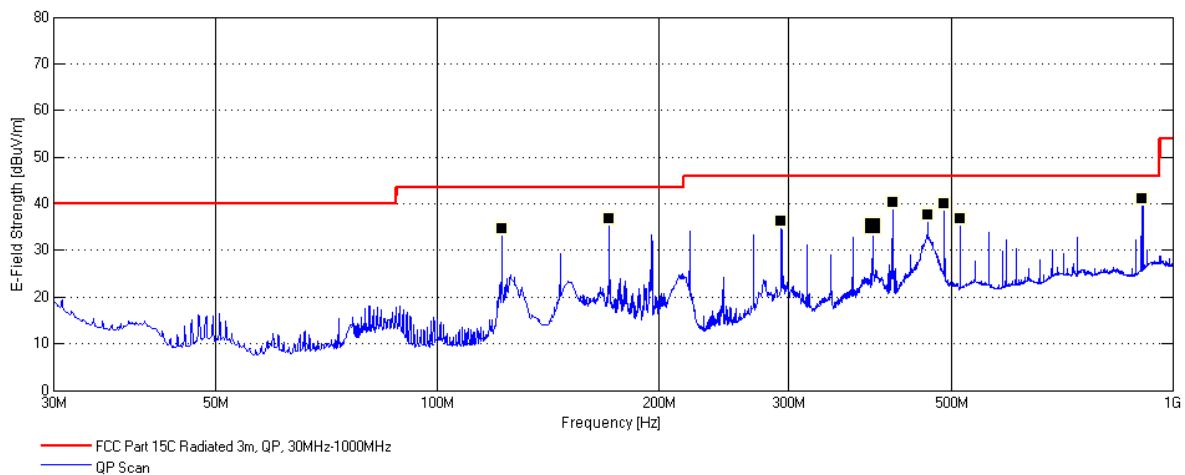
Remark: - **Peak** and **Average** Emission Plot

Horizontal Antenna Polarization

Frequency (MHz)	Detector	Reading (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Test Result
917.95	QP	37.60	4.97	42.57	46.00	3.43	Pass
489.65	QP	44.54	-2.27	42.27	46.00	3.73	Pass
465.10	QP	44.49	-2.25	42.24	46.00	3.76	Pass
416.20	QP	43.56	-2.37	41.19	46.00	4.81	Pass
367.25	QP	41.59	-3.83	37.76	46.00	8.24	Pass
293.80	QP	44.52	-7.05	37.47	46.00	8.53	Pass

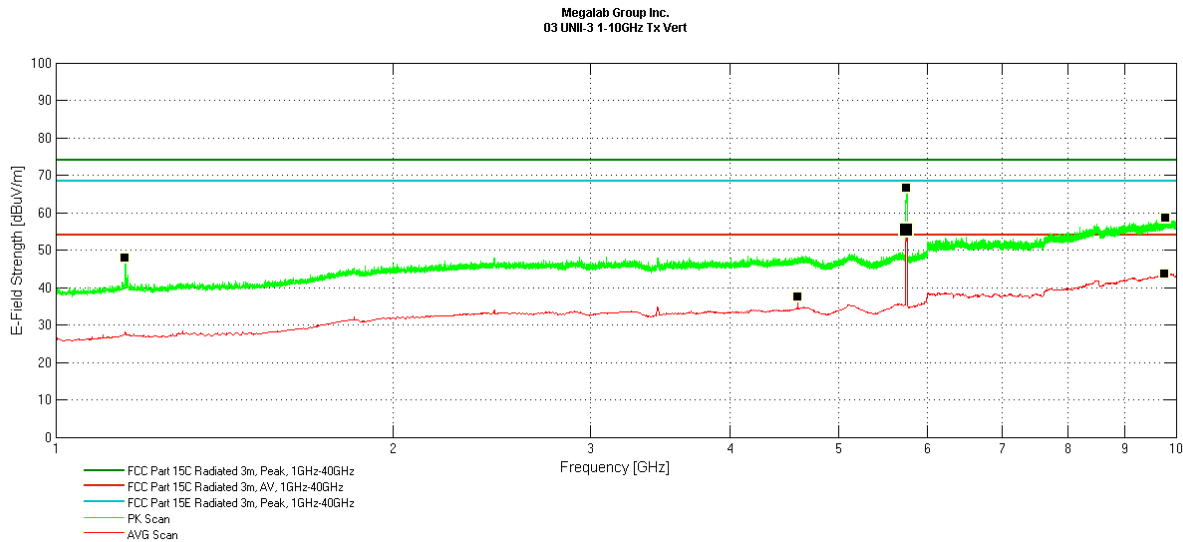
Range:	30MHz to 1GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Vertical

Megalab Group Inc.
02 UNII-3 30M-1GHz Tx Vert



Remark: - Quasi-Peak Emission Plot
- A Notch filter was used to filter out the fundamental

Range:	1GHz to 10GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Vertical

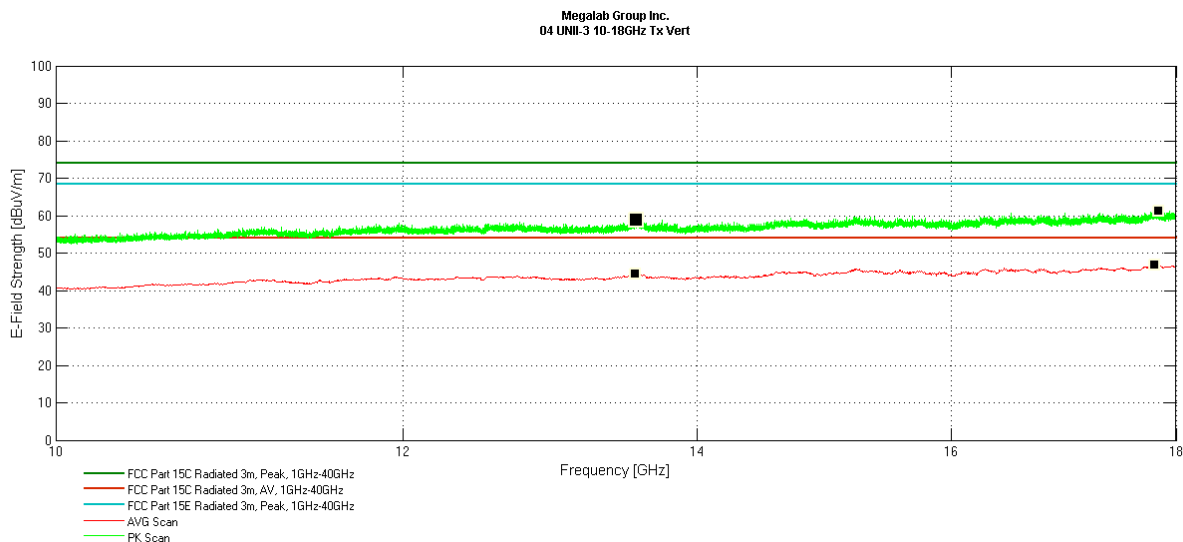


Operator: admin
Last Data Update: 2025-11-23 14:56:13

Project: Ecobee_Ares2_PLC_ML303040_UNII-3.S64

Remark: - **Peak** and **Average** Emission Plot
- A Notch filter was used to filter out the fundamental

Range:	10GHz to 18GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Vertical



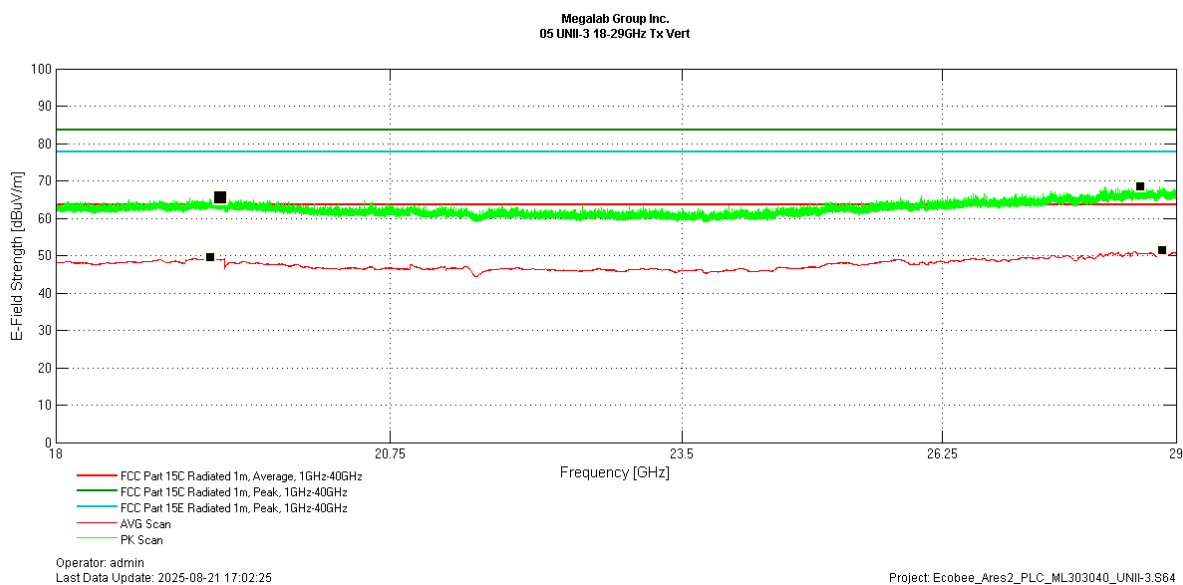
Operator: admin
Last Data Update: 2025-11-23 15:09:36

Project: Ecobee_Ares2_PLC_ML303040_UNII-3.S64

Remark: - **Peak** and **Average** Emission Plot
- A Notch filter was used to filter out the fundamental

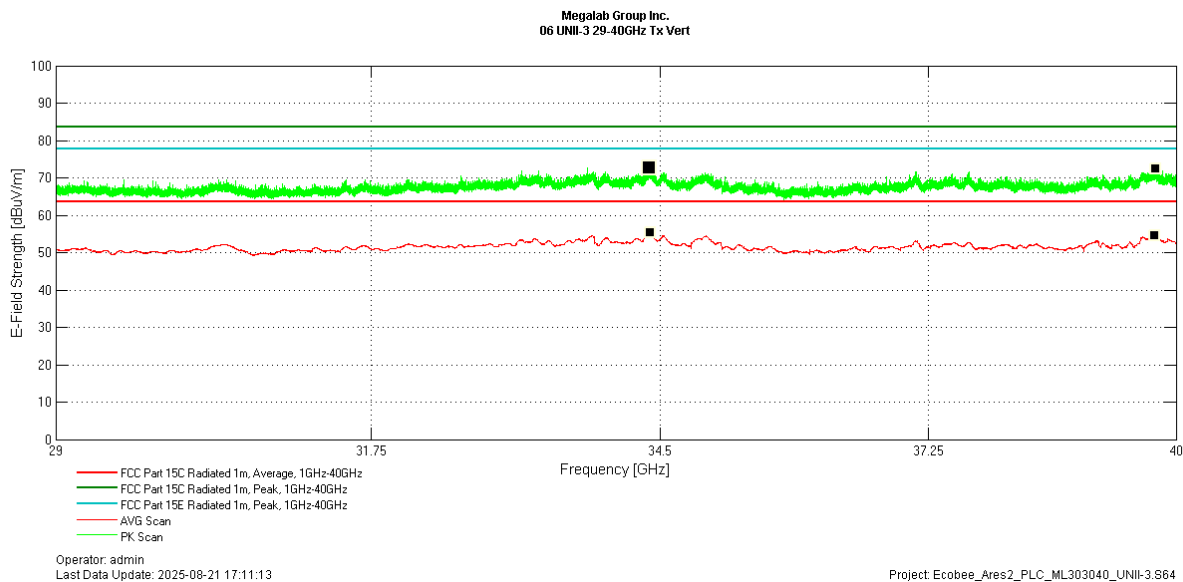
Range:	18GHz to 29GHz	Tx Frequency	5745 MHz
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Test Voltage:	24Vac 60Hz	Antenna Polarization	Vertical
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Remark: **Peak** and **Average** Emission Plot

Range:	29 GHz to 40 GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Vertical

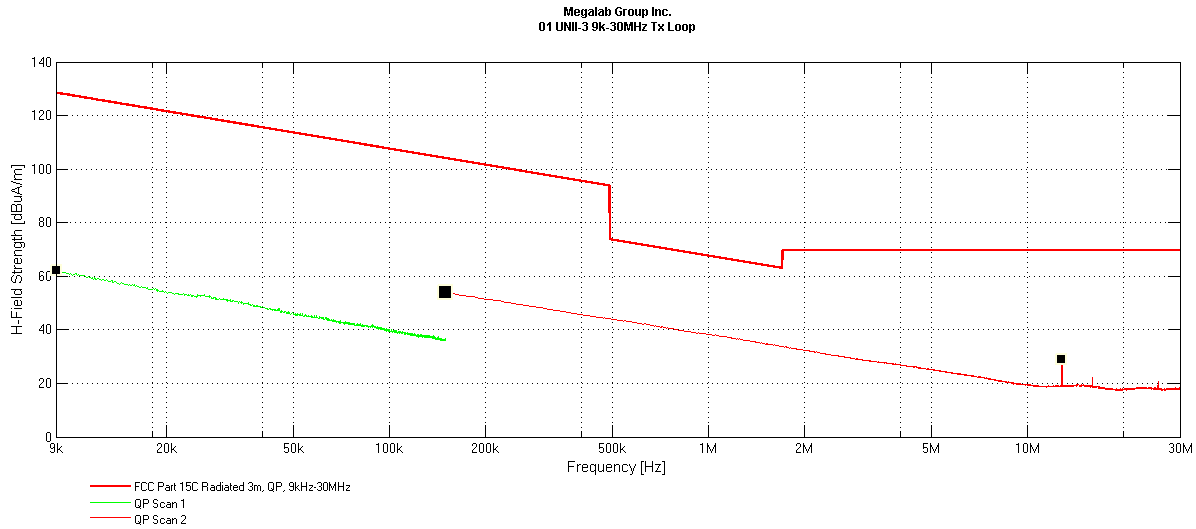


Remark: **Peak** and **Average** Emission Plot

Vertical Antenna Polarization							
Frequency (MHz)	Detector	Reading (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Test Result
910.05	QP	36.62	4.56	41.18	46.00	4.82	Pass
416.20	QP	42.70	-2.37	40.33	46.00	5.67	Pass
489.65	QP	42.19	-2.27	39.92	46.00	6.08	Pass
171.40	QP	47.10	-10.41	36.69	43.50	6.81	Pass
465.10	QP	39.74	-2.25	37.49	46.00	8.51	Pass
122.30	QP	47.74	-13.12	34.62	43.50	8.88	Pass

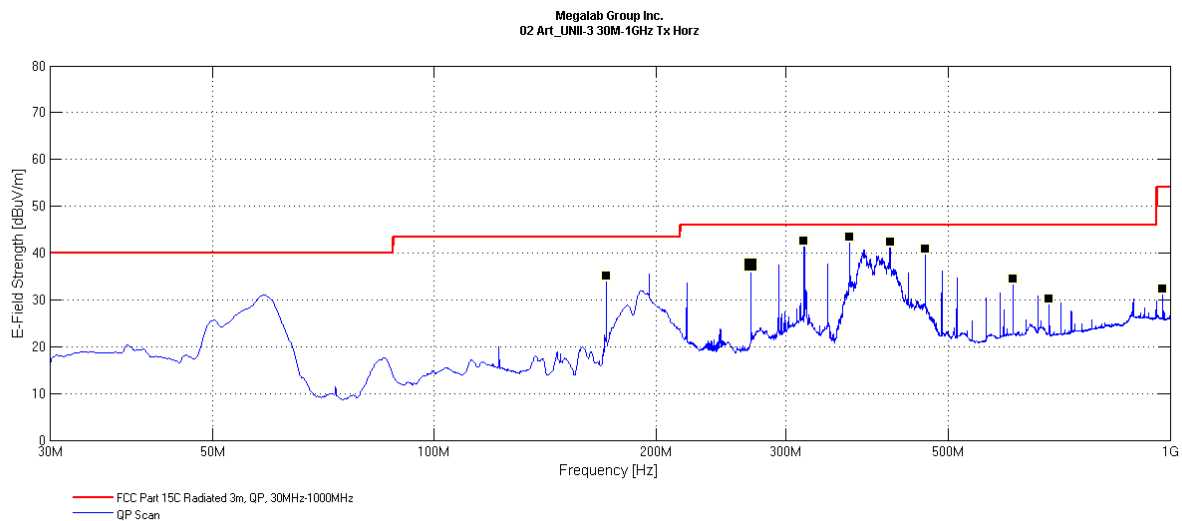
4.4.5 Test Results – ECB501

Range:	9kHz to 30 MHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	XZ-Plane



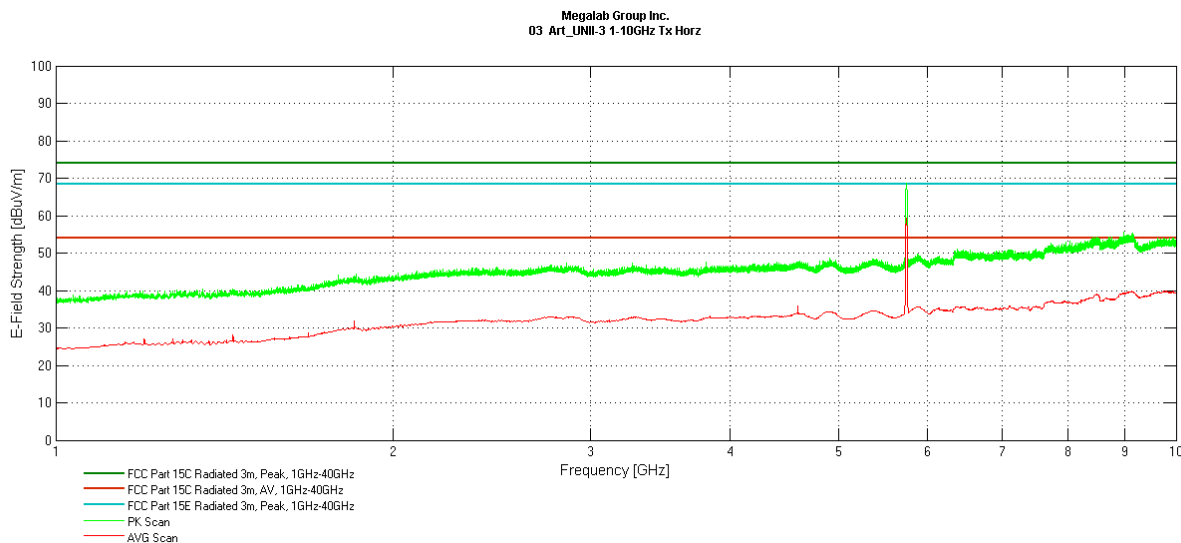
Remark: Quasi-Peak Emission Plot

Range:	30MHz to 1GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Horizontal



Remark: - Quasi-Peak Emission Plot
- A Notch filter was used to filter out the fundamental

Range:	1GHz to 10GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Horizontal

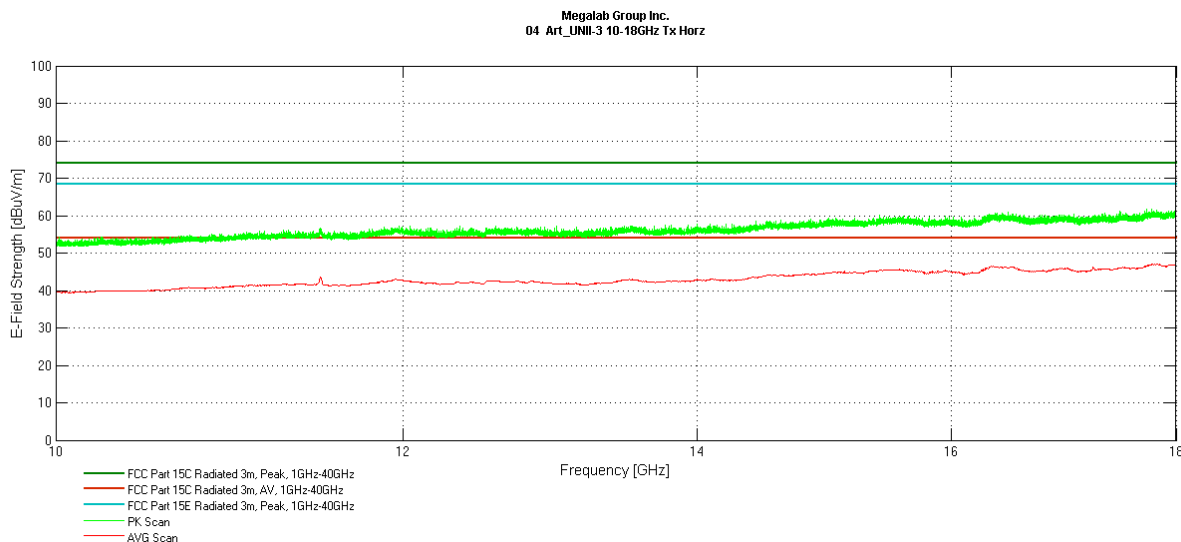


Operator: admin
Last Data Update: 2025-08-21 11:58:00

Project Ecobee_Artemis2_ML302480_UNII-3.S64

Remark: - **Peak** and **Average** Emission Plot
 - A Notch filter was used to filter out the fundamental

Range:	10GHz to 18GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Horizontal

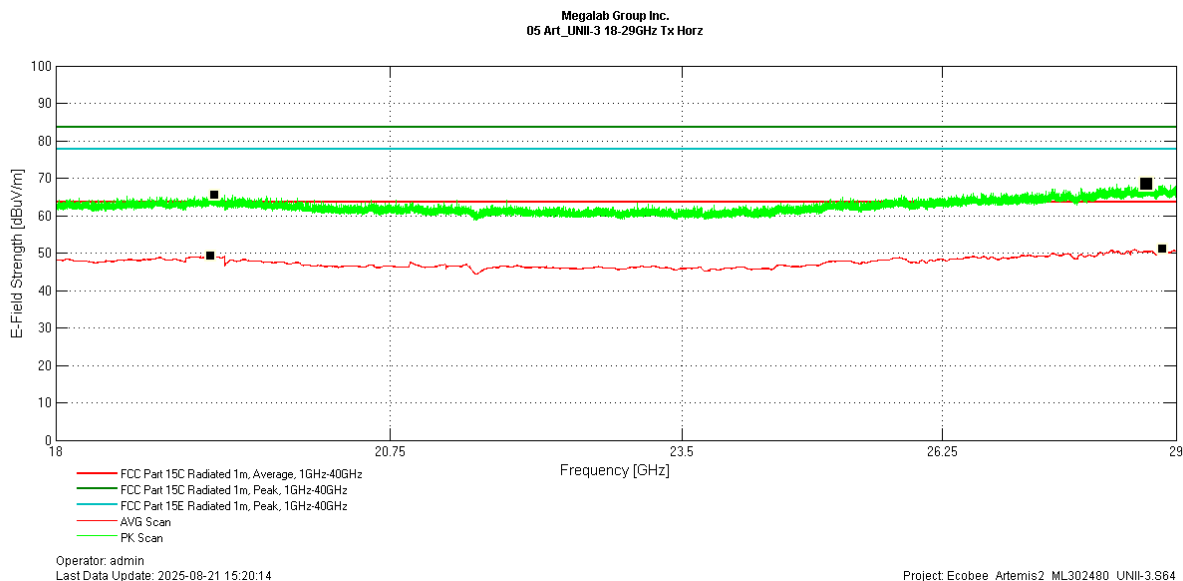


Operator: admin
Last Data Update: 2025-08-21 12:12:28

Project Ecobee_Artemis2_ML302480_UNII-3.S64

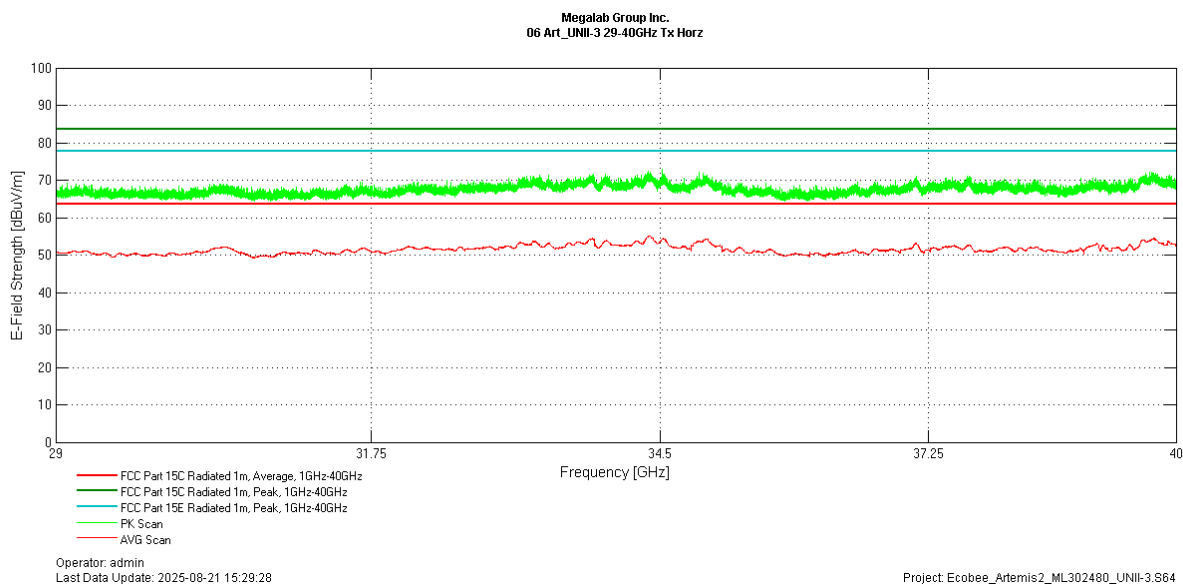
Remark: - **Peak** and **Average** Emission Plot
 - A Notch filter was used to filter out the fundamental

Range:	18GHz to 29GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Horizontal



Remark: - **Peak** and **Average** Emission Plot

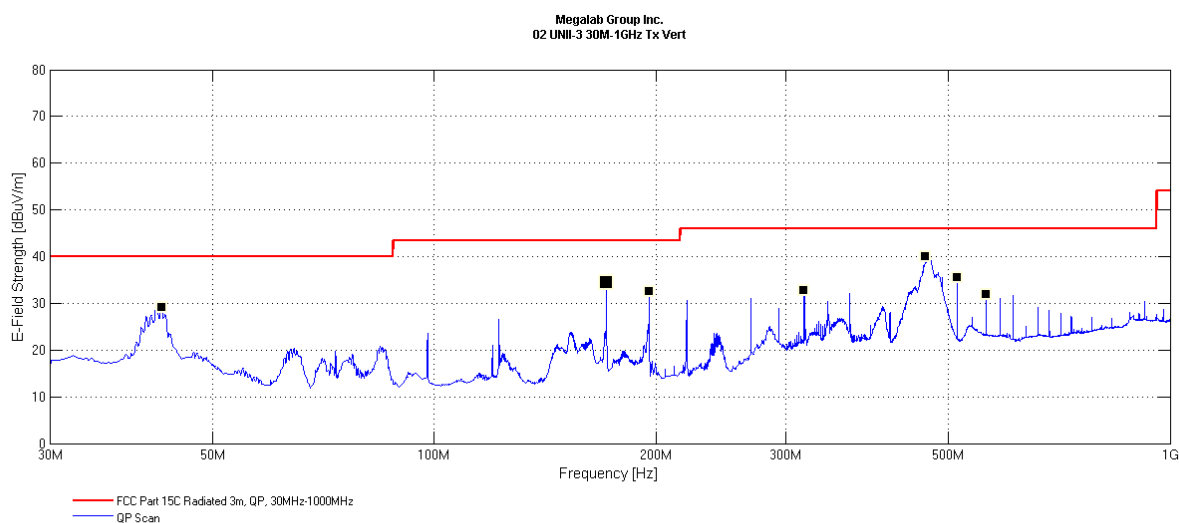
Range:	29 GHz to 40 GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Horizontal



Remark: - **Peak** and **Average** Emission Plot

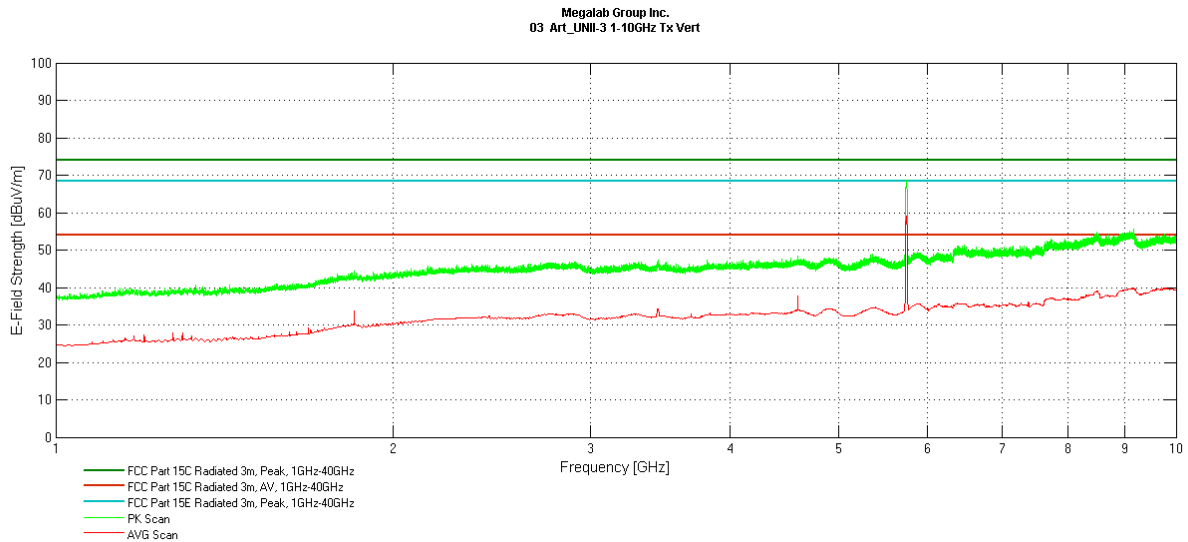
Horizontal Antenna Polarization							
Frequency (MHz)	Detector	Reading (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Test Result
367.25	QP	61.71	-18.31	43.40	46.00	2.60	Pass
318.20	QP	62.16	-19.56	42.60	46.00	3.40	Pass
416.20	QP	59.19	-16.81	42.38	46.00	3.62	Pass
465.10	QP	56.91	-16.02	40.89	46.00	5.11	Pass
171.40	QP	58.86	-23.76	35.10	43.50	8.40	Pass
269.25	QP	58.06	-20.71	37.35	46.00	8.65	Pass

Range:	30MHz to 1GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Vertical



Remark: - Quasi-Peak Emission Plot
- A Notch filter was used to filter out the fundamental

Range:	1GHz to 10GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Vertical

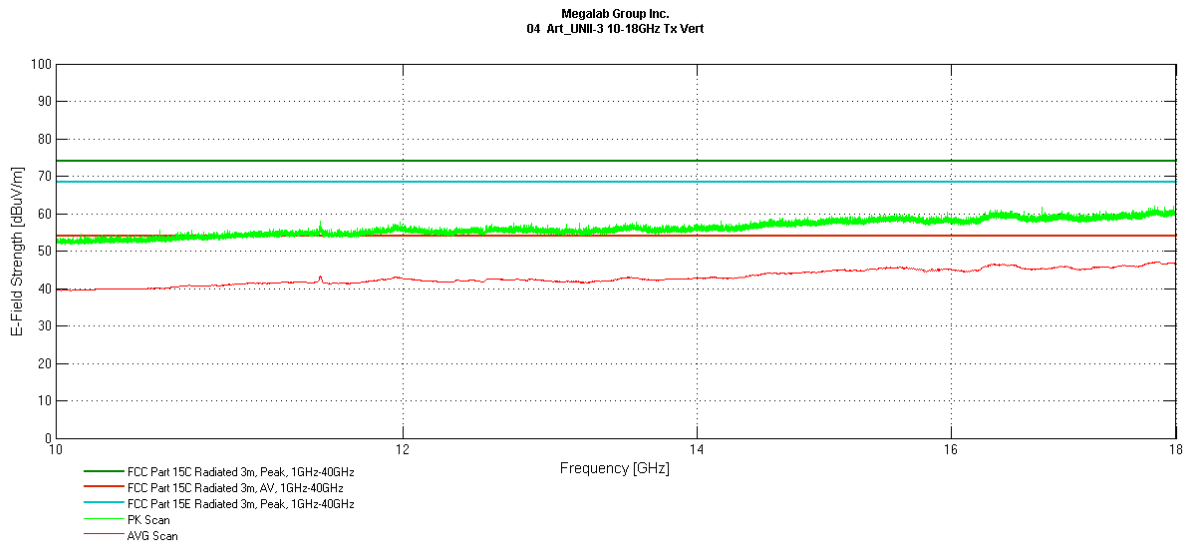


Operator: admin
Last Data Update: 2025-08-21 12:04:28

Project: Ecobee_Artemis2_ML302480_UNII-3.S84

Remark: - **Peak** and **Average** Emission Plot
 - A Notch filter was used to filter out the fundamental

Range:	10GHz to 18GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Vertical

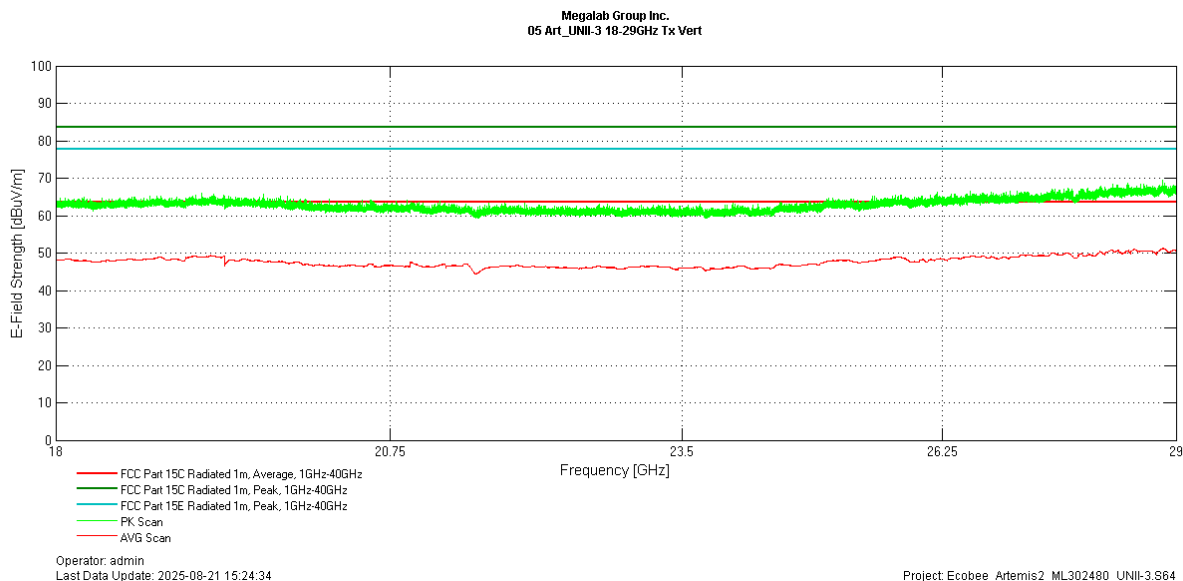


Operator: admin
Last Data Update: 2025-08-21 12:17:57

Project: Ecobee_Artemis2_ML302480_UNII-3.S84

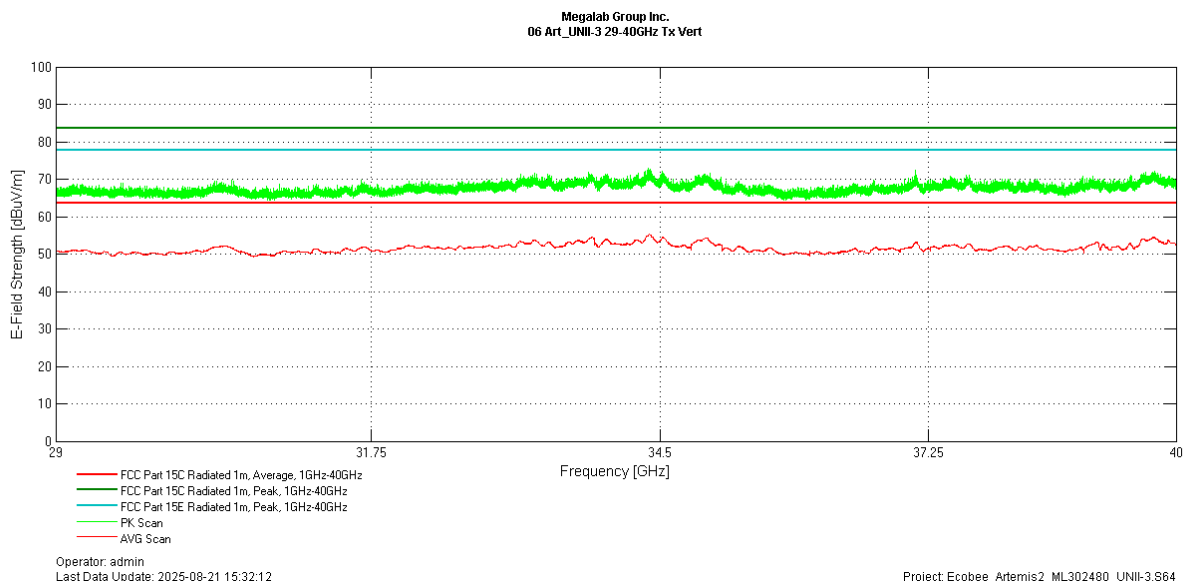
Remark: - **Peak** and **Average** Emission Plot
 - A Notch filter was used to filter out the fundamental

Range:	18GHz to 29GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Vertical



Remark: **Peak** and **Average** Emission Plot

Range:	29 GHz to 40 GHz	Tx Frequency	5745 MHz
Test Voltage:	24Vac 60Hz	Antenna Polarization	Vertical



Remark: **Peak** and **Average** Emission Plot

Vertical Antenna Polarization							
Frequency (MHz)	Detector	Reading (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Test Result
465.10	QP	56.00	-16.02	39.98	46.00	6.02	Pass
42.60	QP	48.37	-19.27	29.10	40.00	10.90	Pass
171.40	QP	58.31	-23.76	34.55	43.50	8.95	Pass
195.80	QP	55.86	-23.23	32.63	43.50	10.87	Pass
562.95	QP	46.61	-14.77	31.84	46.00	14.16	Pass
514.05	QP	50.84	-15.21	35.63	46.00	10.37	Pass

4.4.6 Test Equipment List

Equipment ID	Description	Manufacturer	Model	Calibration Date	Calibration Due
EQ_EMC_58	EMI Receiver	Rohde & Schwarz	ESW 44	Mar 1, 2024	Mar 1, 2026
EQ_EMC_132	EMI Test Receiver (v6.91.2)	Gauss Instruments	TDEMI X40	Nov 29, 2023	Nov 29, 2025
EQ_EMC_48	Loop Antenna	Com-Power	AL-130R	Apr 9, 2024	Apr 9, 2026
EQ_EMC_59	BiLog Antenna	ETS Lindgren	3142E	Apr 19, 2024	Apr 19, 2026
EQ_EMC_60	Horn Antenna	ETS Lindgren	3117	Apr 9, 2024	Apr 9, 2026
EQ_EMC_56	DRG Horn Antenna 18GHz-40GHz	A.H Systems	SAS-574	Apr 8, 2024	Apr 8, 2026
EQ_EMC_68	6dB Attenuator	Fairview Microwave	SA3NS-06	Apr 19, 2024	Apr 19, 2026
EQ_EMC_85	RF Cable <1GHz	Times Microwave	LMR-400	NCR	NCR
EQ_EMC_75	RF Cable >1GHz	MegaPhase	EMC2	NCR	NCR
EQ_EMC_123	Preamplifier 30MHz-9GHz	RF Bay	EPA-250T	Jan 23, 2024	Jan 23, 2026
EQ_EMC_42	Preamplifier 1GHz-18GHz	Com-Power	PAM-118A	Jan 17, 2024	Jan 17, 2026
EQ_EMC_43	Preamplifier 18GHz-40GHz	Com-Power	PAM-840A	Jan 31, 2024	Jan 31, 2026
EQ_EMC_108	2400 - 2500MHz Notch Filter	Micro-Tronics	BRM50702	NCR	NCR
EQ_EMC_149	Emission Software RE/CE	Gauss Instruments	EMI64k v6.31.2	NCR	NCR

4.5 Emission Mask

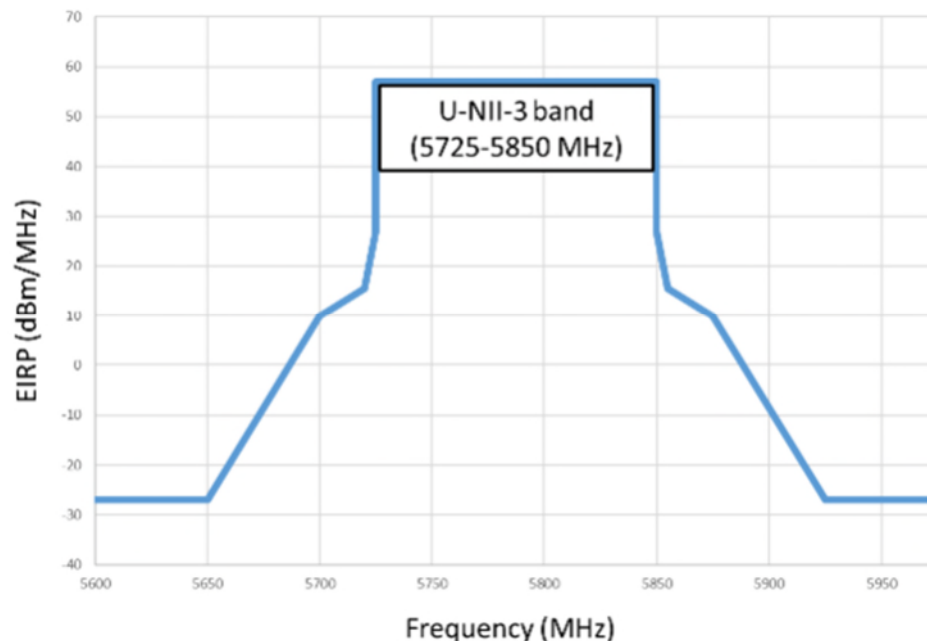
Test Date:	January 18/30, 2024
Temperature (°C)	20.7 / 20.4
Relative Humidity (%)	9.1 / 20.9
Barometric Pressure (kPa)	97.5 / 98.1

Initials: MX

4.5.1 Limits

The limits are defined in FCC Part 15.407(b)(1) and RSS-247 6.2.4.3.

For transmitters operating in the 5.725-5.850 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.



Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in FCC15.209 and RSS-Gen Section 8.9.

As per ANSI C63.10 Section 4.1, if the Peak detector measurements do not exceed the Quasi-Peak limits, or Average limits where defined, then the DUT is considered to have passed the requirements.

4.5.2 Test Procedure

Tested according to ANSI C63.10 Section 12.7

The device under test was setup inside a semi-anechoic chamber with remotely controlled turntable and antenna positioner at a 3m test distance. The DUT was placed on top of a 0.8m high non-conductive

table above the reference ground plane for frequencies below 1GHz and 1.5m high for frequencies above 1GHz.

For both the lower and upper radiated band edges, the radiated emission was first maximized on the center frequency of the low and high channels with the turntable azimuth rotated 0° to 360° and antenna height varied from 1m to 4m. Once maximized, the start and stop frequency were adjusted to capture that channel's lower and upper band edges inside the restricted bands.

The antenna was positioned to receive emissions in the vertical and horizontal polarizations such that the maximum radiated emission levels were detected.

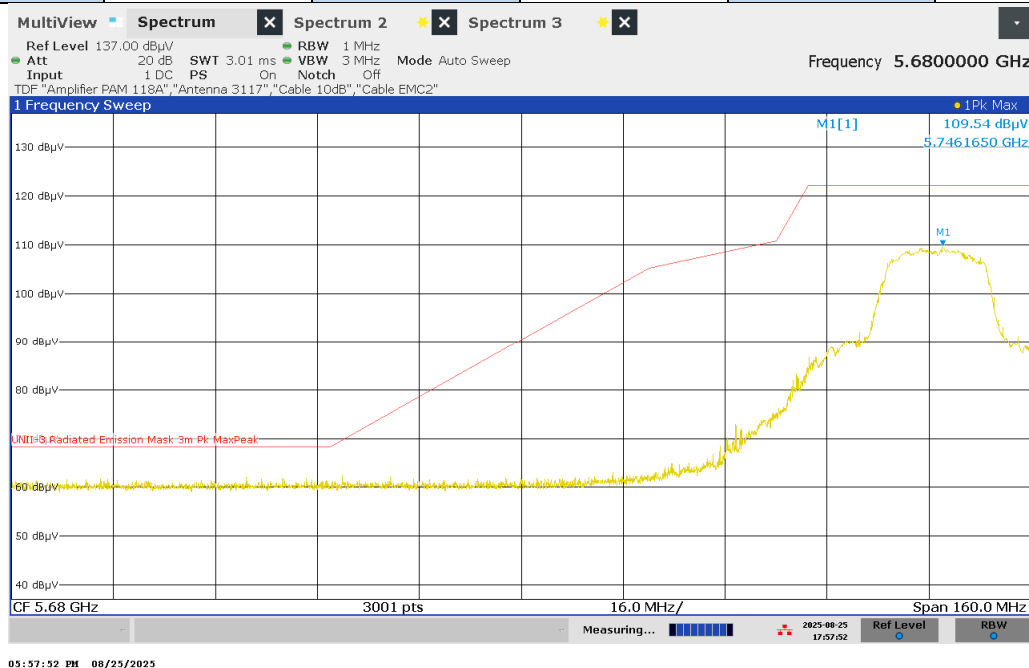
The radiated band edge measurements were made with the DUT in normal operation position.

4.5.3 Test Results – ECB601

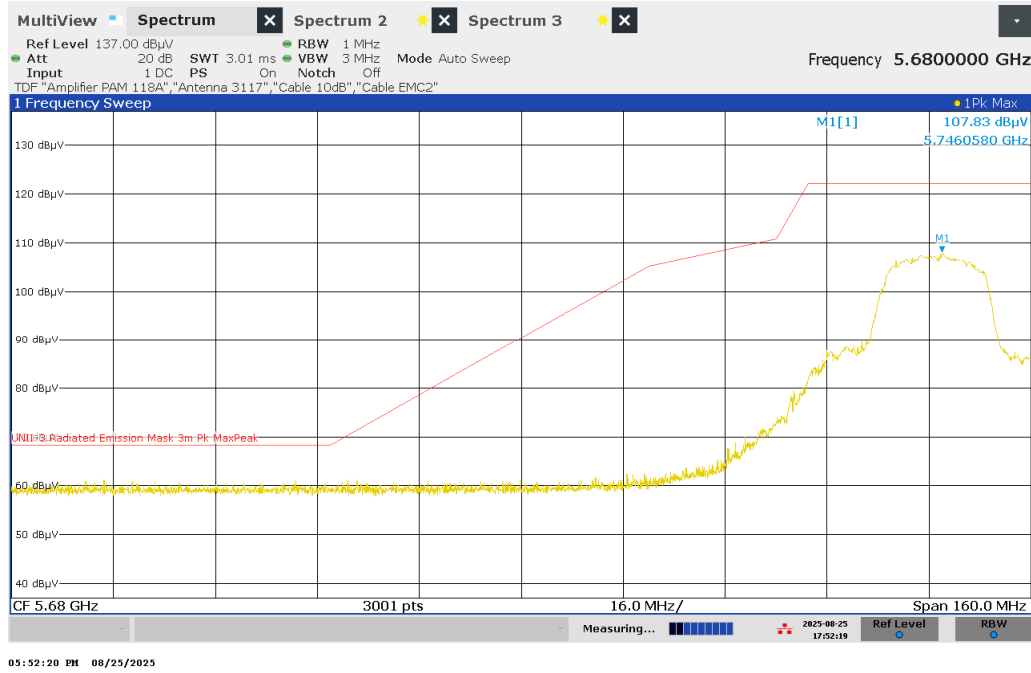
The DUT met the band edge requirements. Peak output power for low, mid and high channels were measured and the Plots Section below contains the maximum radiated emission levels captured on the spectrum analyzer at the band edges. The Final Measurements Section contains the final results with the correction factors added in.

4.5.3.1. Plots – 802.11 a

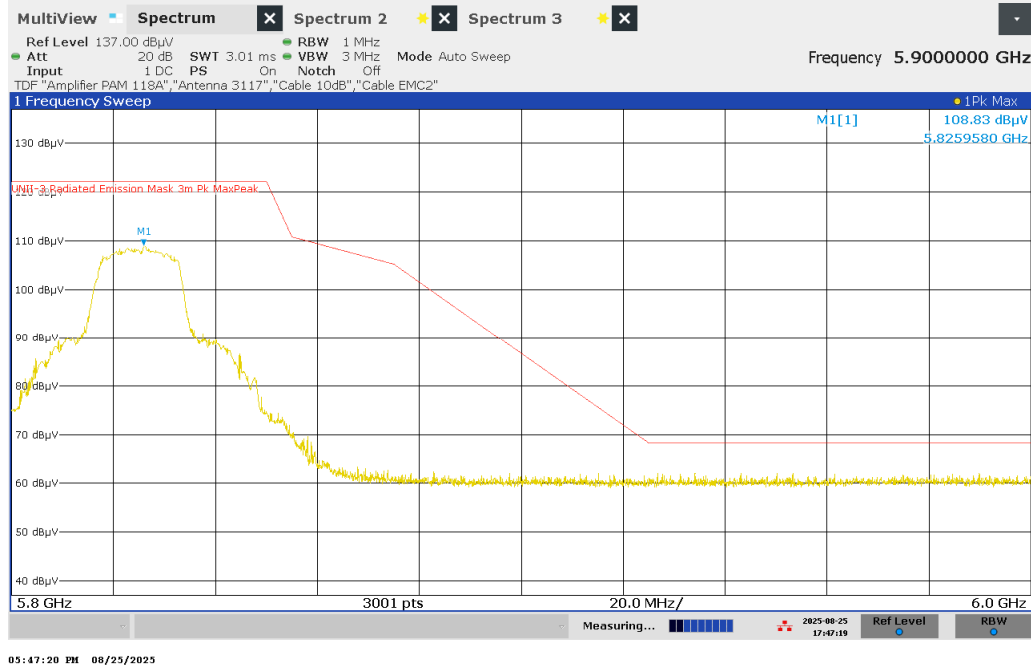
Tx Frequency	Low Channel	Antenna Polarization	Horizontal	Emission	Peak
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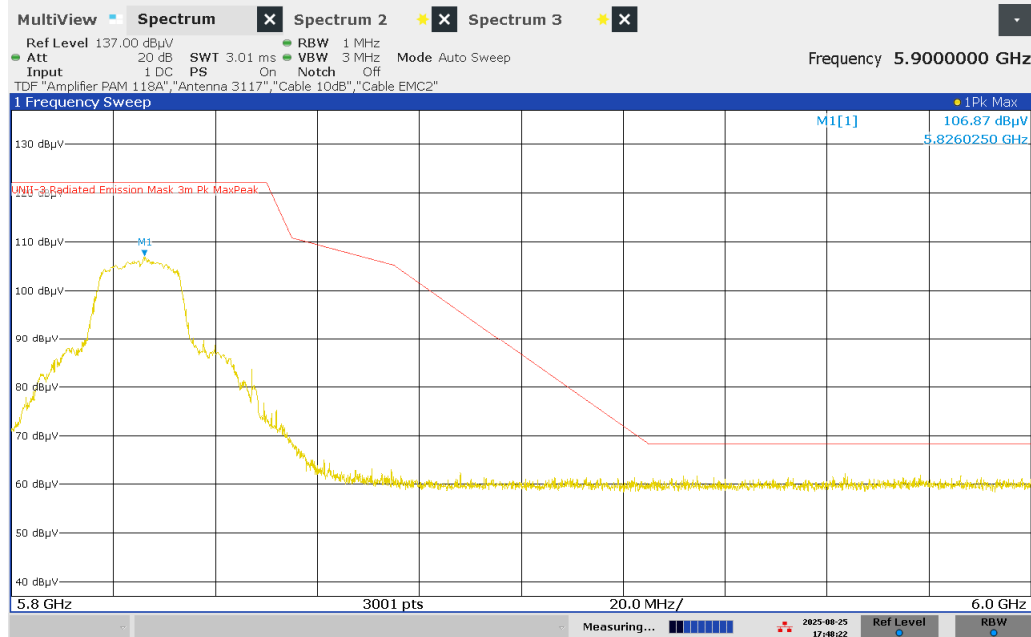
Tx Frequency	Low Channel	Antenna Polarization	Vertical	Emission	Peak
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Tx Frequency	High Channel	Antenna Polarization	Horizontal	Emission	Peak
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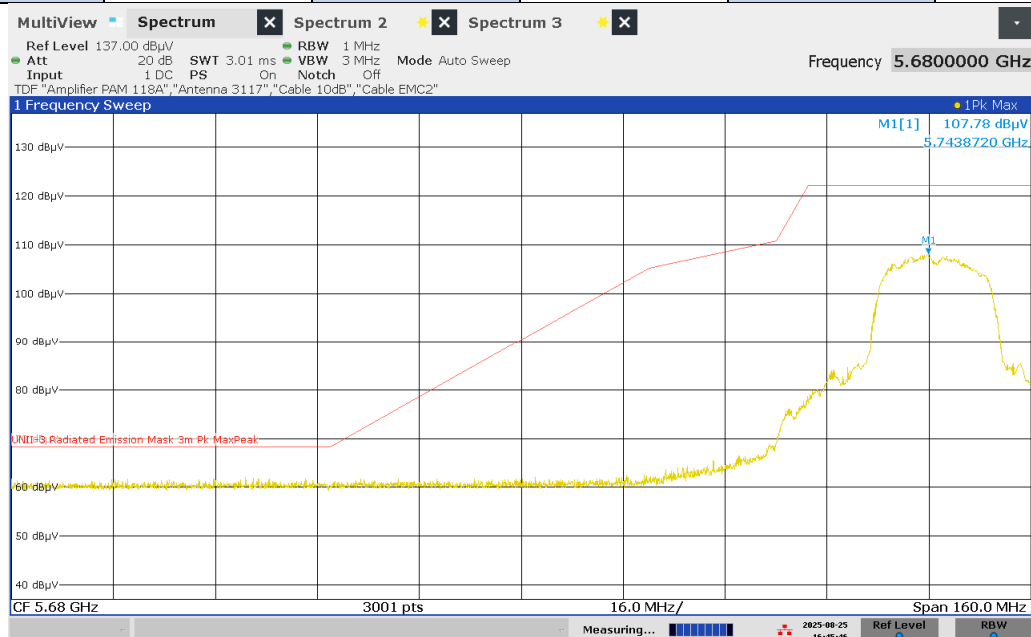
Tx Frequency	High Channel	Antenna Polarization	Vertical	Emission	Peak
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05:48:22 PM 08/25/2025

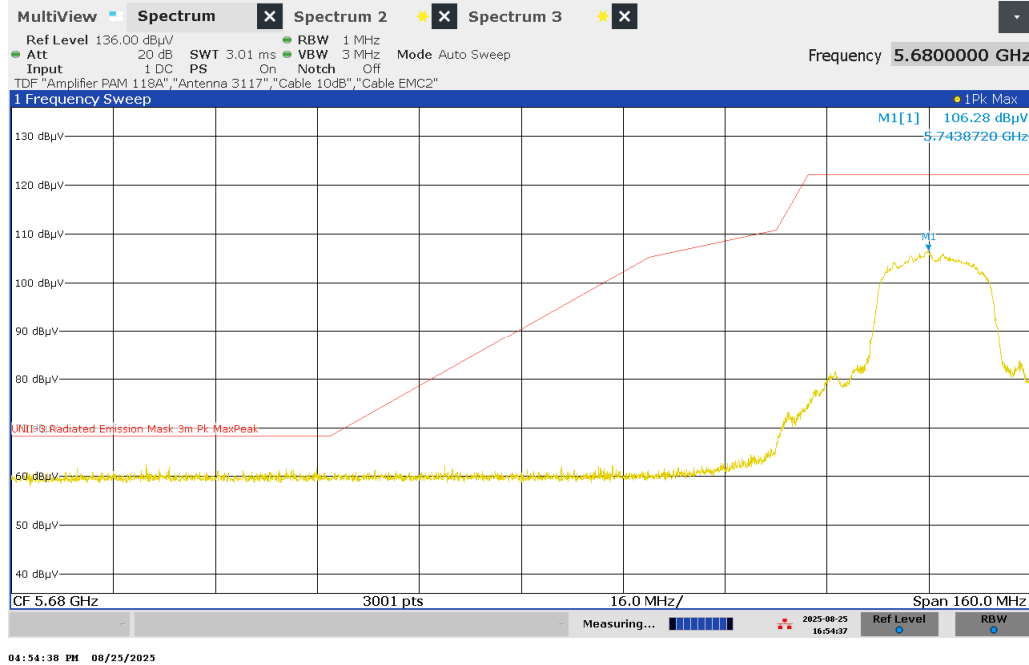
4.5.3.2. Plots – 802.11 n/20 MHz

Tx Frequency	Low Channel	Antenna Polarization	Horizontal	Emission	Peak
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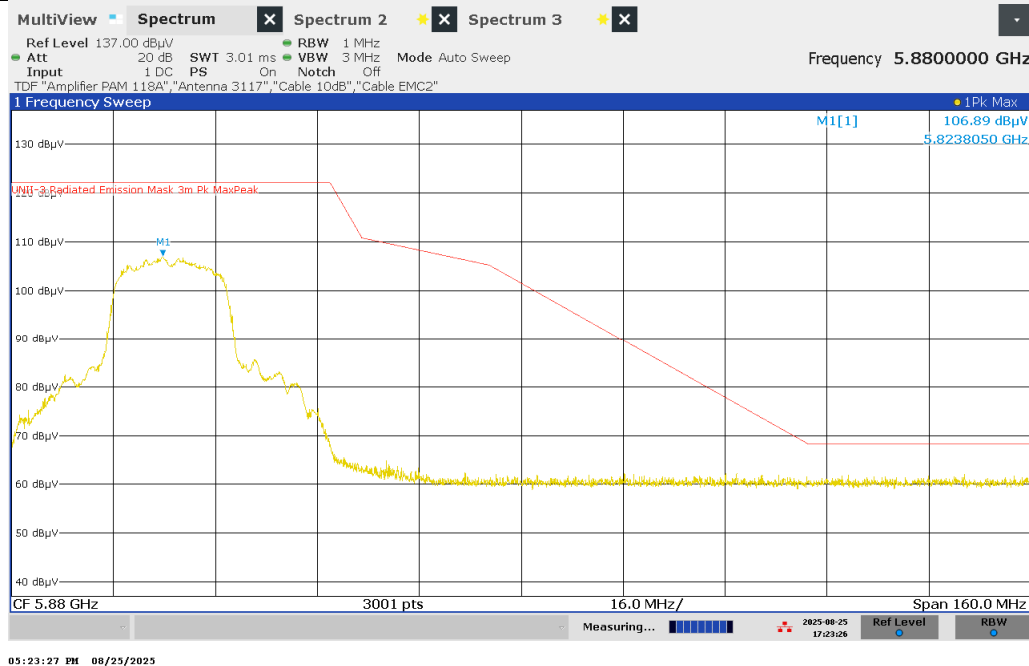


04:45:47 PM 08/25/2025

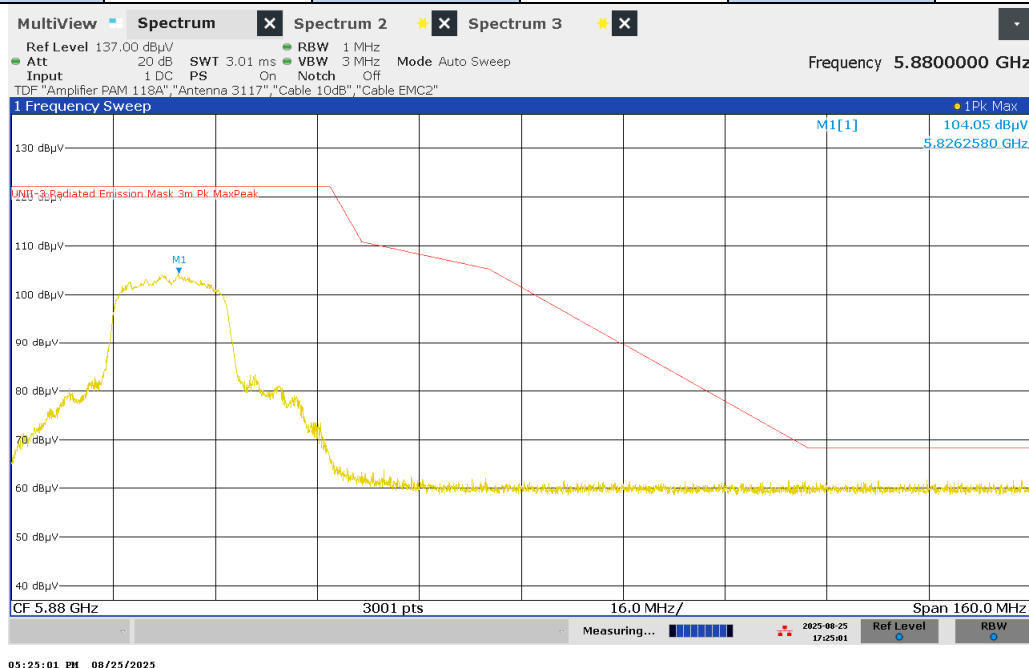
Tx Frequency	Low Channel	Antenna Polarization	Vertical	Emission	Peak
--------------	-------------	----------------------	----------	----------	------



Tx Frequency	High Channel	Antenna Polarization	Horizontal	Emission	Peak
--------------	--------------	----------------------	------------	----------	------

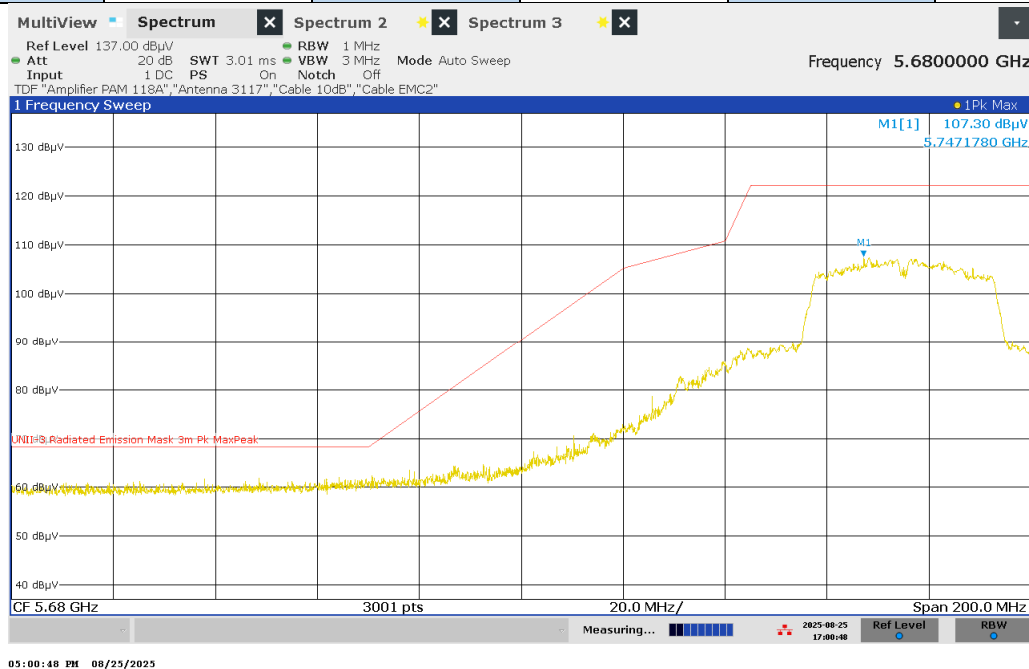


Tx Frequency	High Channel	Antenna Polarization	Vertical	Emission	Peak
--------------	--------------	----------------------	----------	----------	------

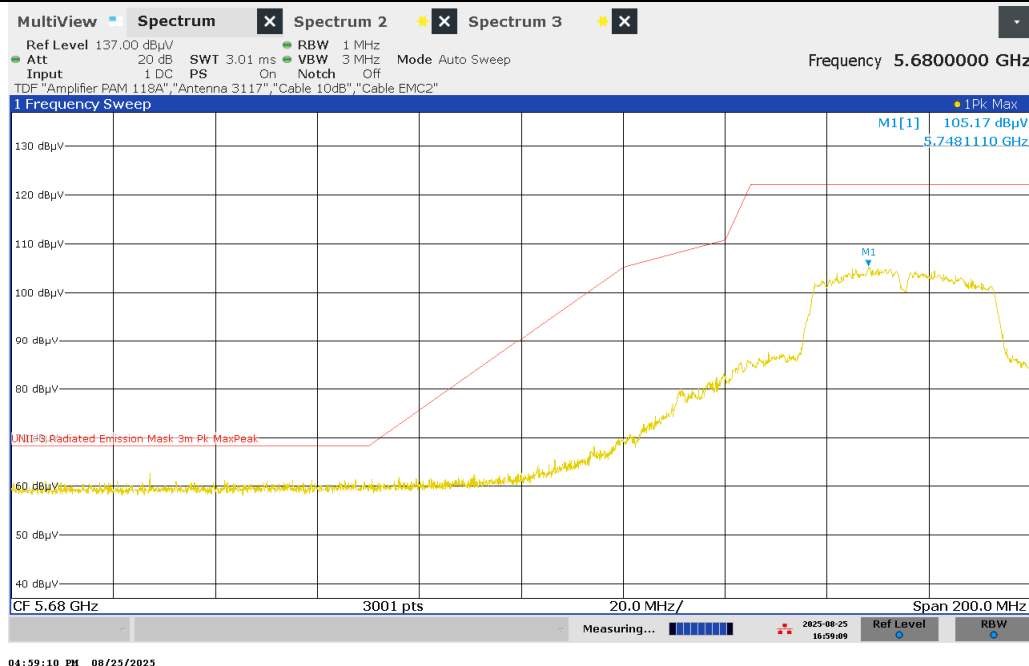


4.5.3.3. Plots – 802.11 n/40 MHz

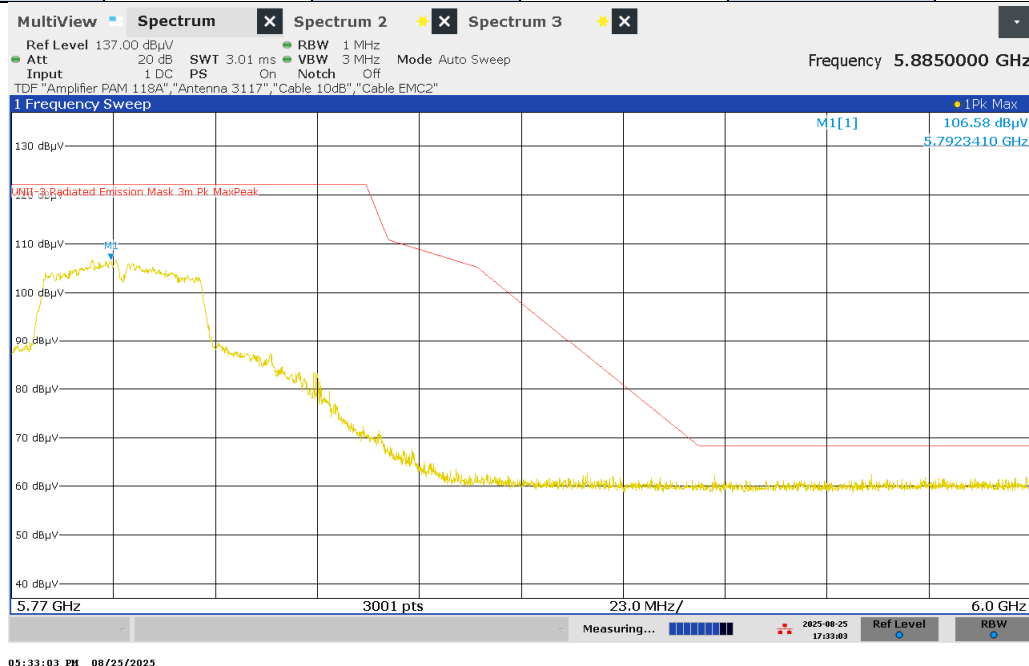
Tx Frequency	Low Channel	Antenna Polarization	Horizontal	Emission	Peak
--------------	-------------	----------------------	------------	----------	------



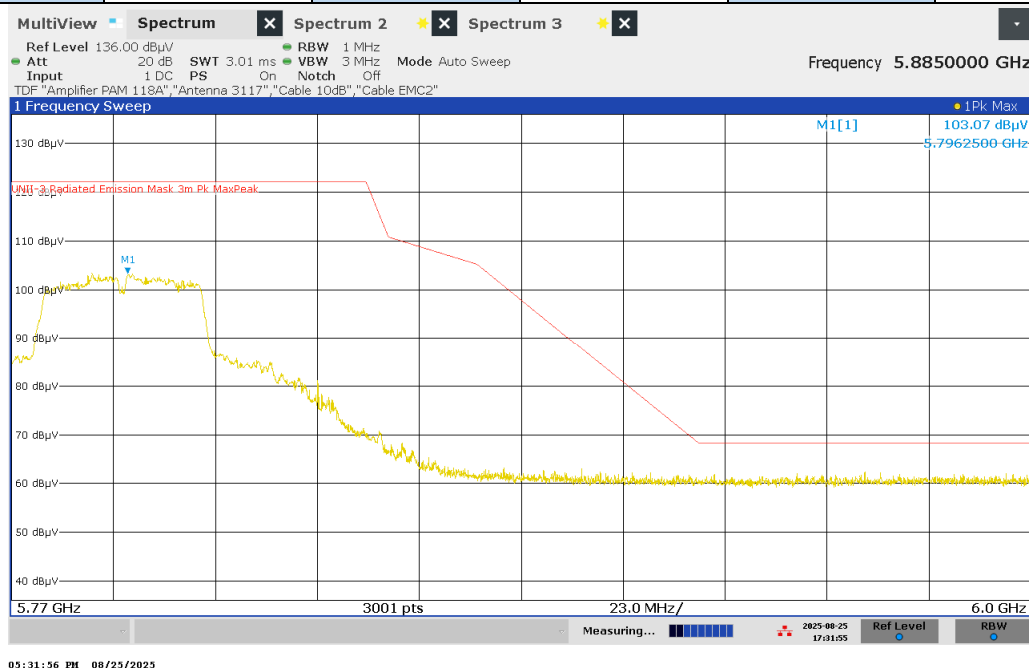
Tx Frequency	Low Channel	Antenna Polarization	Vertical	Emission	Peak
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Tx Frequency	High Channel	Antenna Polarization	Horizontal	Emission	Peak
--------------	--------------	----------------------	------------	----------	------

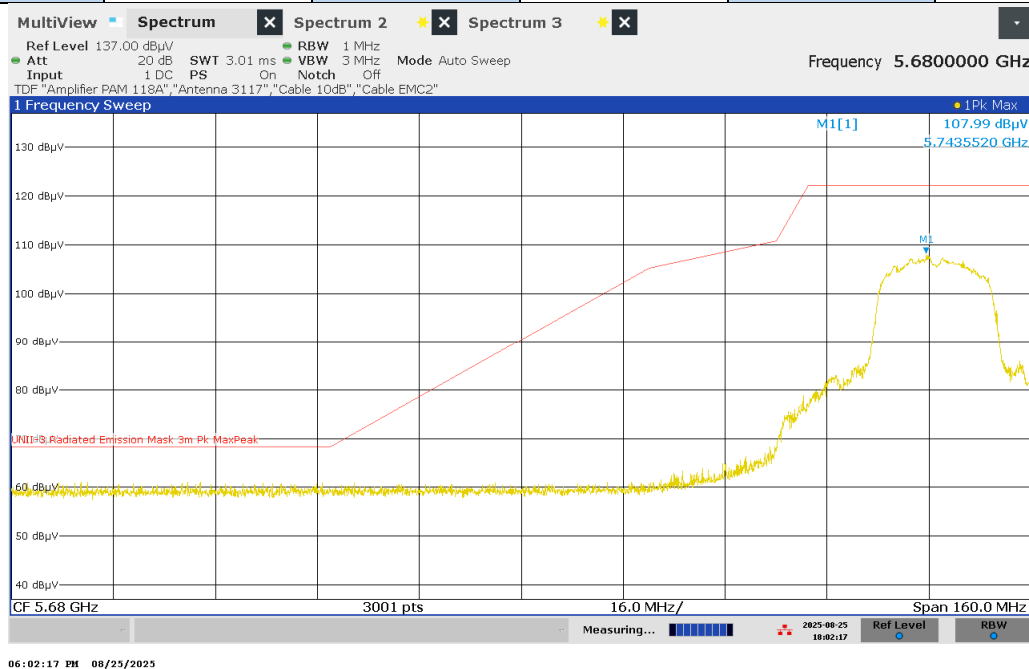


Tx Frequency	High Channel	Antenna Polarization	Vertical	Emission	Peak
--------------	--------------	----------------------	----------	----------	------

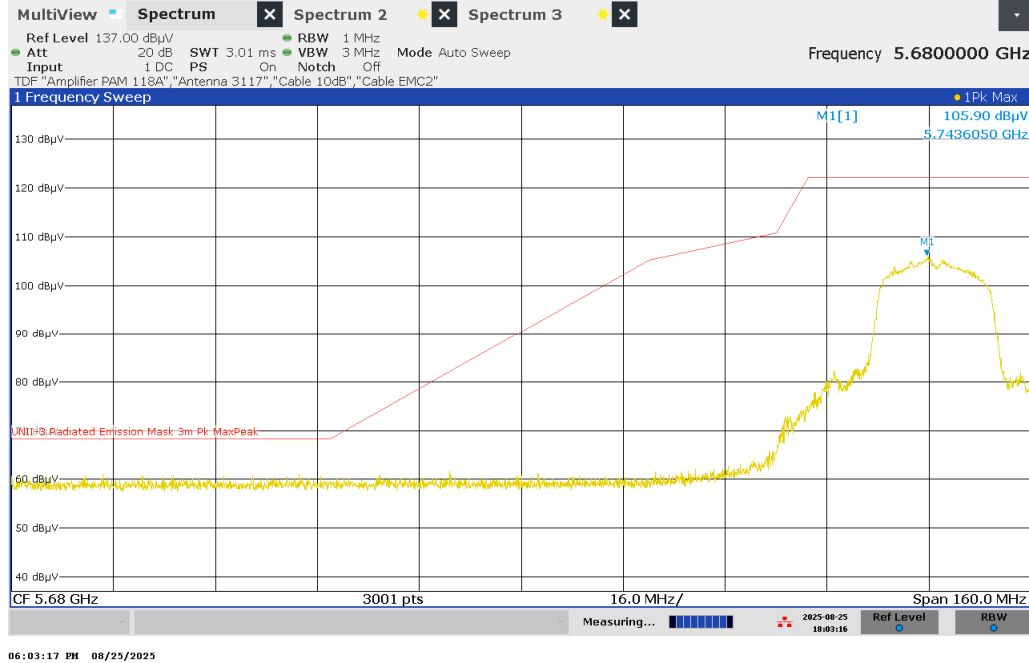


4.5.3.4. Plots – 802.11 ac/20 MHz

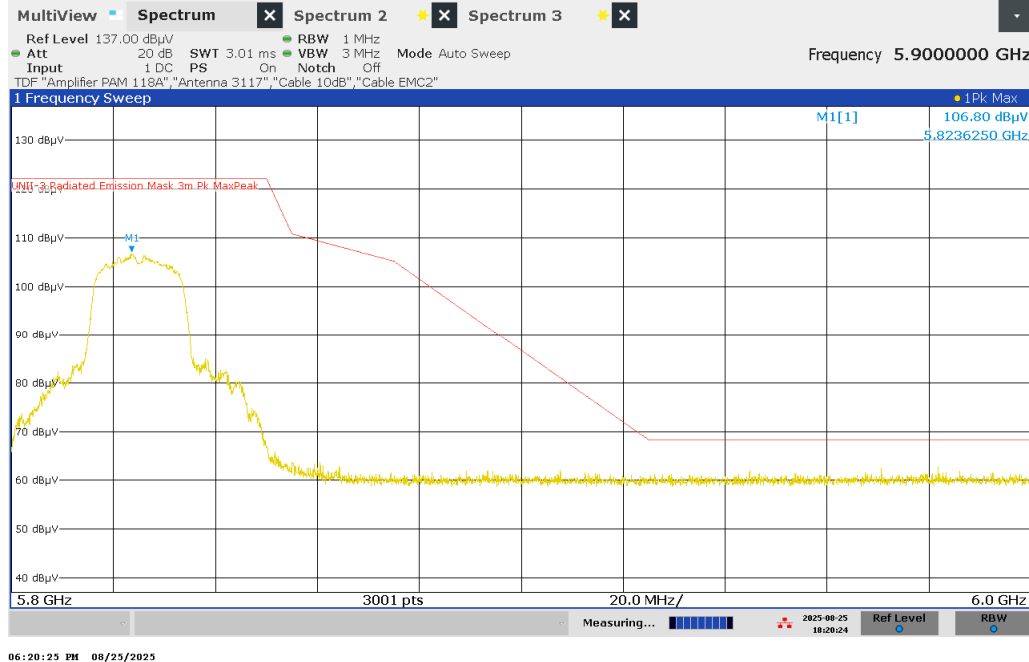
Tx Frequency	Low Channel	Antenna Polarization	Horizontal	Emission	Peak
--------------	-------------	----------------------	------------	----------	------



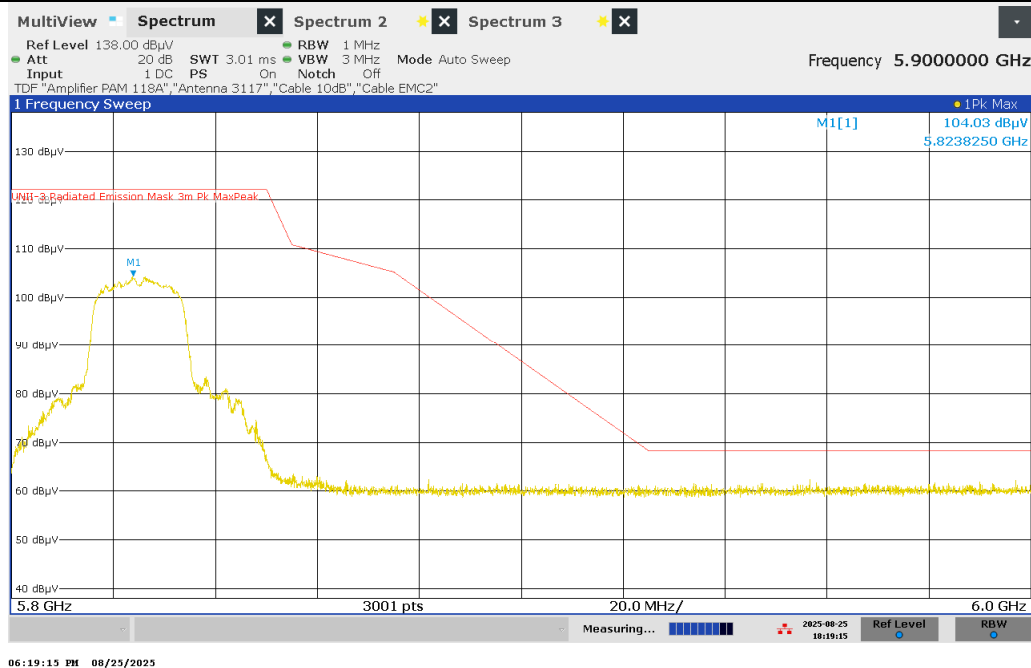
Tx Frequency	Low Channel	Antenna Polarization	Vertical	Emission	Peak
--------------	-------------	----------------------	----------	----------	------



Tx Frequency	High Channel	Antenna Polarization	Horizontal	Emission	Peak
--------------	--------------	----------------------	------------	----------	------

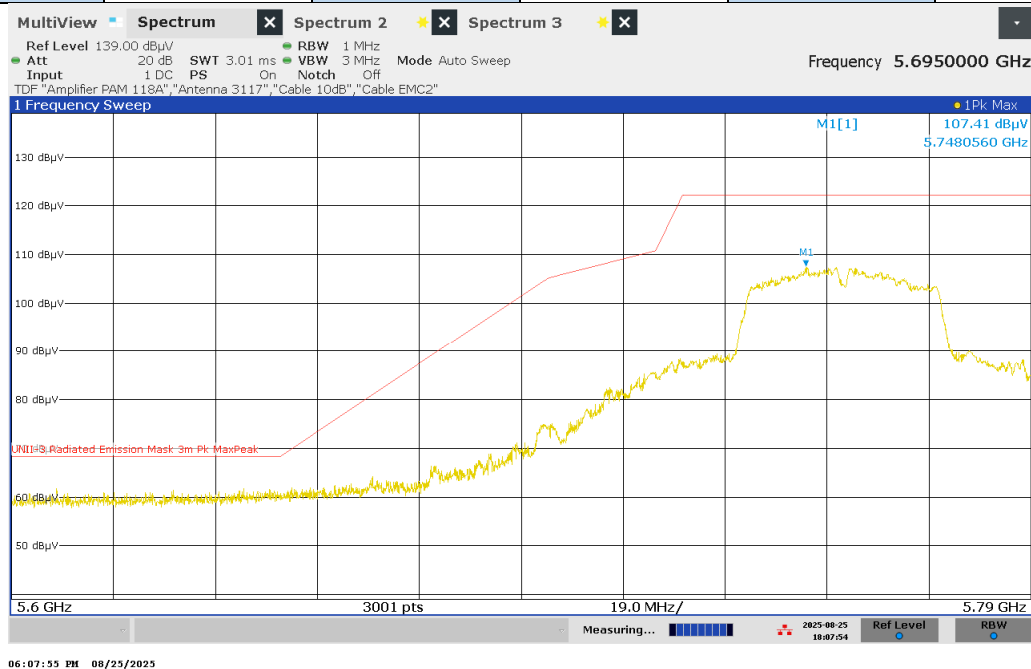


Tx Frequency	High Channel	Antenna Polarization	Vertical	Emission	Peak
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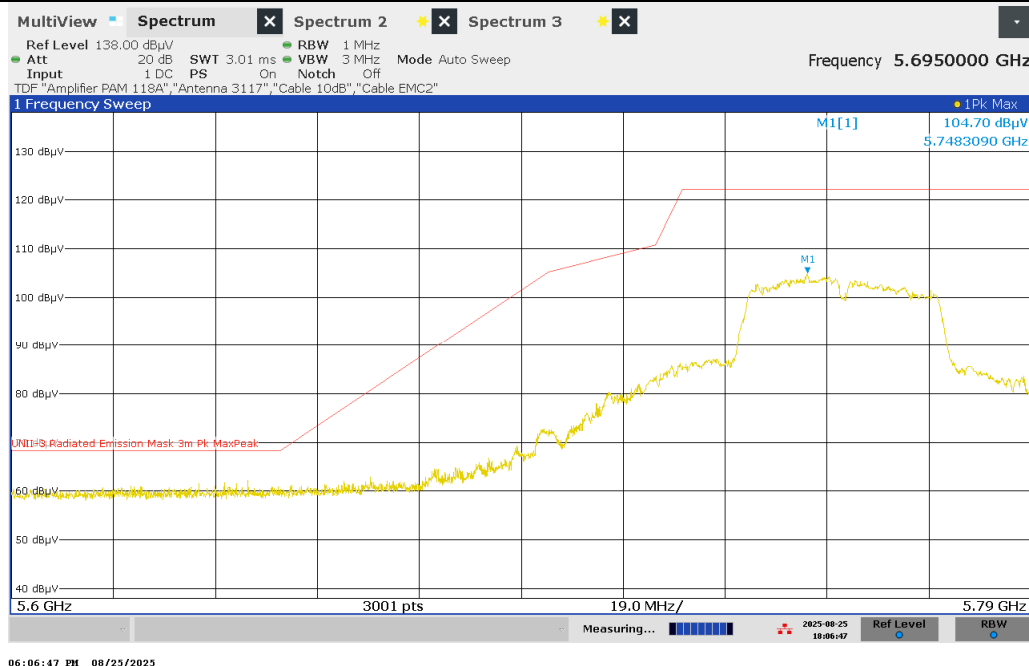


4.5.3.5. Plots – 802.11 ac/40 MHz

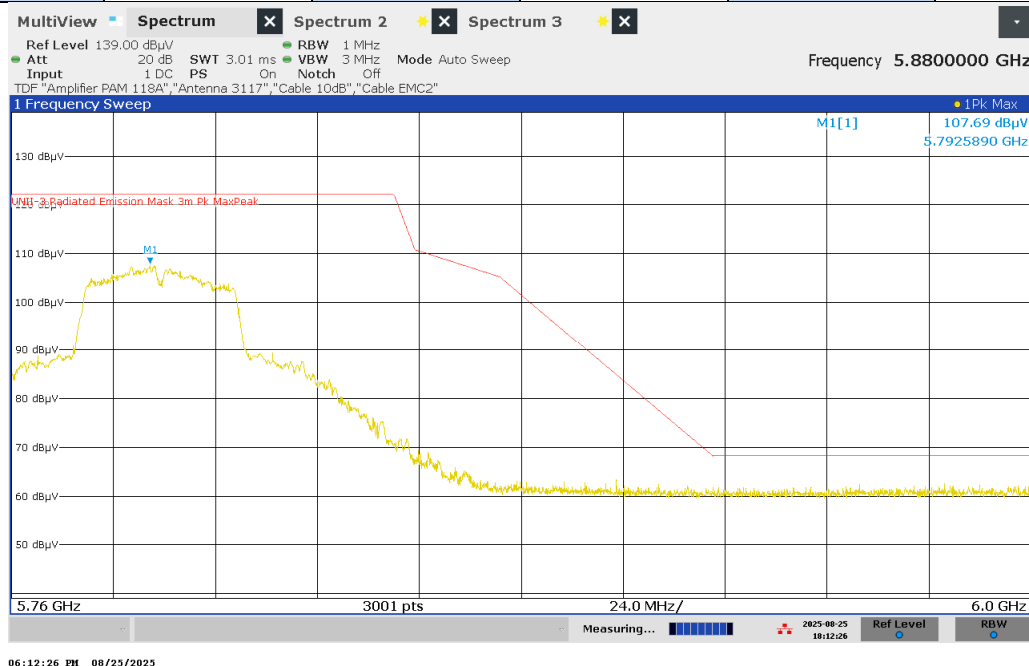
Tx Frequency	Low Channel	Antenna Polarization	Horizontal	Emission	Peak
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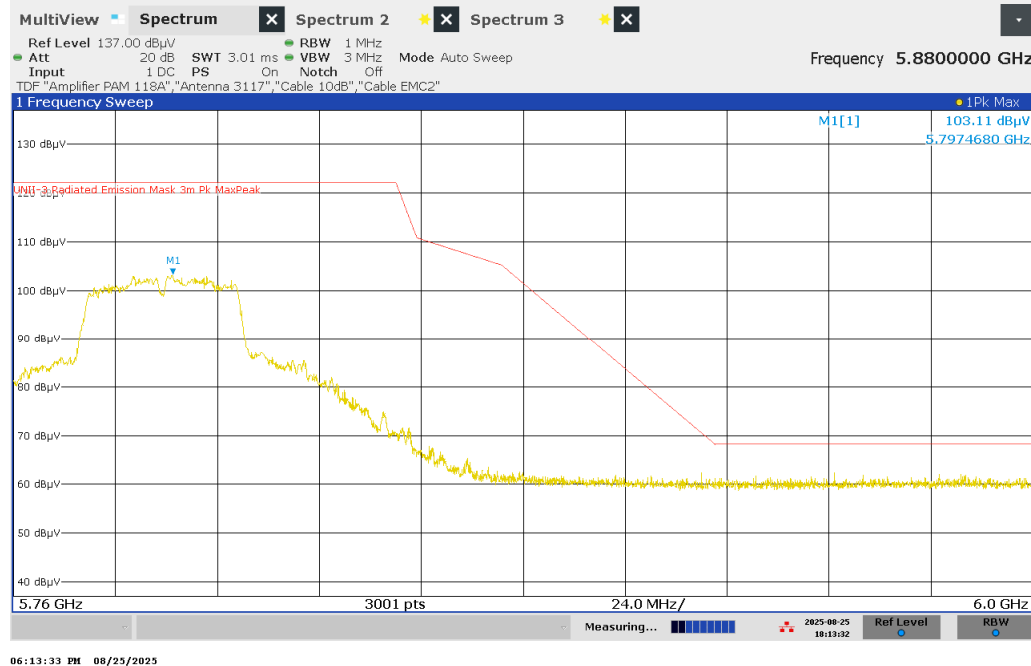
Tx Frequency	Low Channel	Antenna Polarization	Vertical	Emission	Peak
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Tx Frequency	High Channel	Antenna Polarization	Horizontal	Emission	Peak
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Tx Frequency	High Channel	Antenna Polarization	Vertical	Emission	Peak
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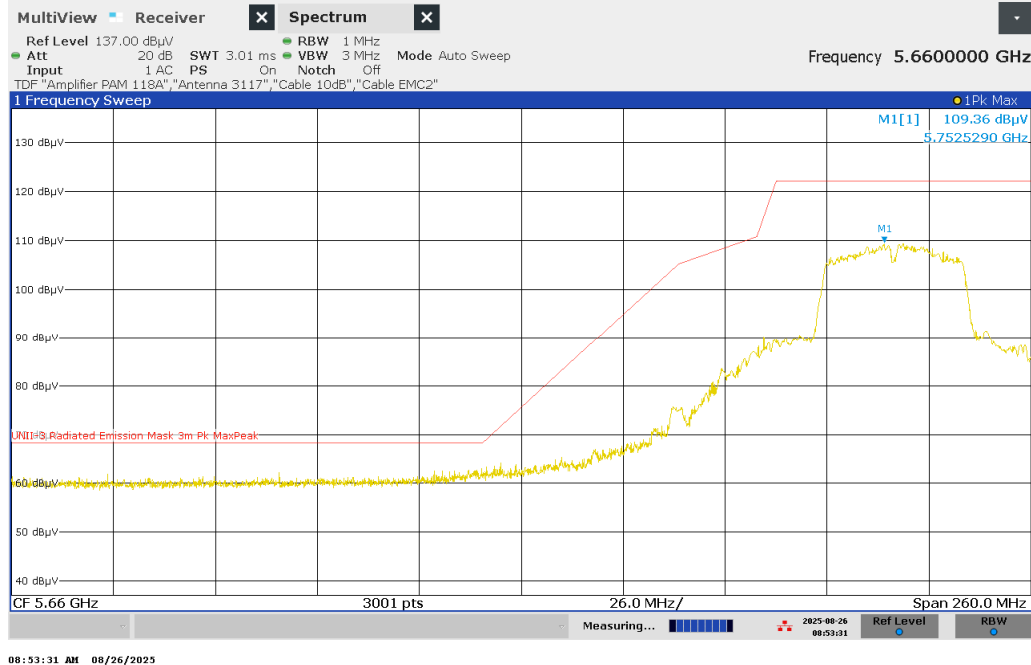


4.5.4 Test Results – ECB501

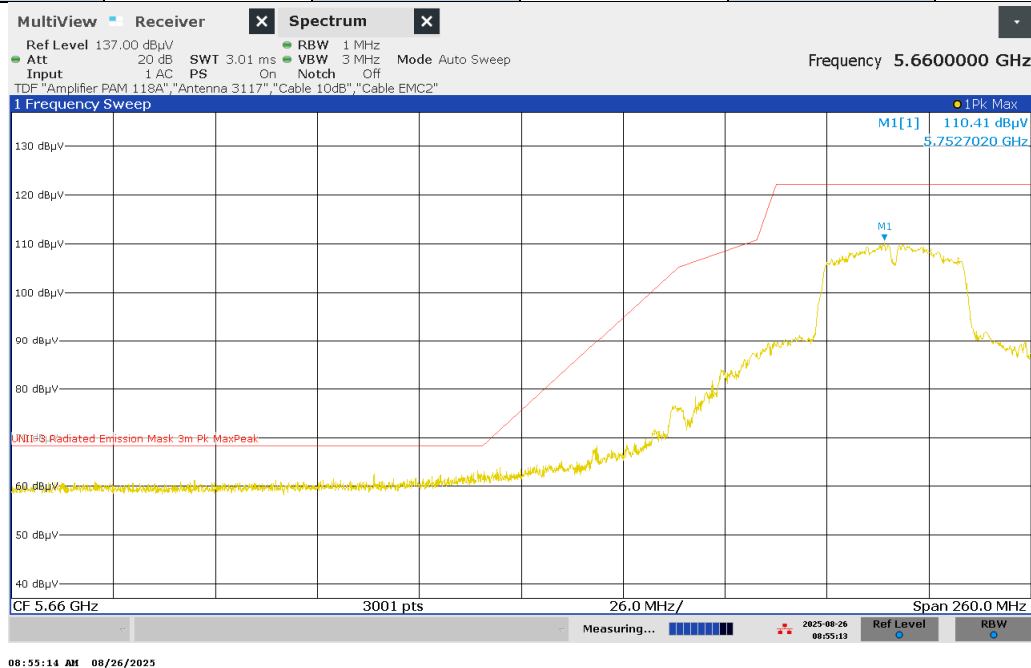
The DUT met the band edge requirements. Peak output power for low, mid and high channels were measured and the Plots Section below contains the maximum radiated emission levels captured on the spectrum analyzer at the band edges. The Final Measurements Section contains the final results with the correction factors added in.

4.5.4.1. Plots – 802.11 ac/40 MHz

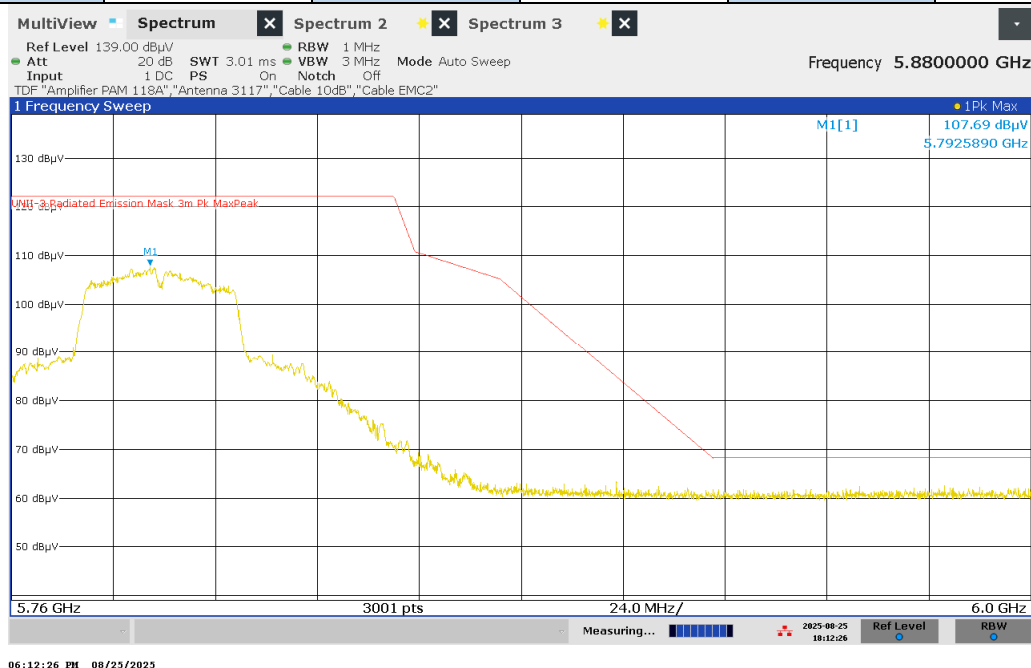
Tx Frequency	Low Channel	Antenna Polarization	Horizontal	Emission	Peak
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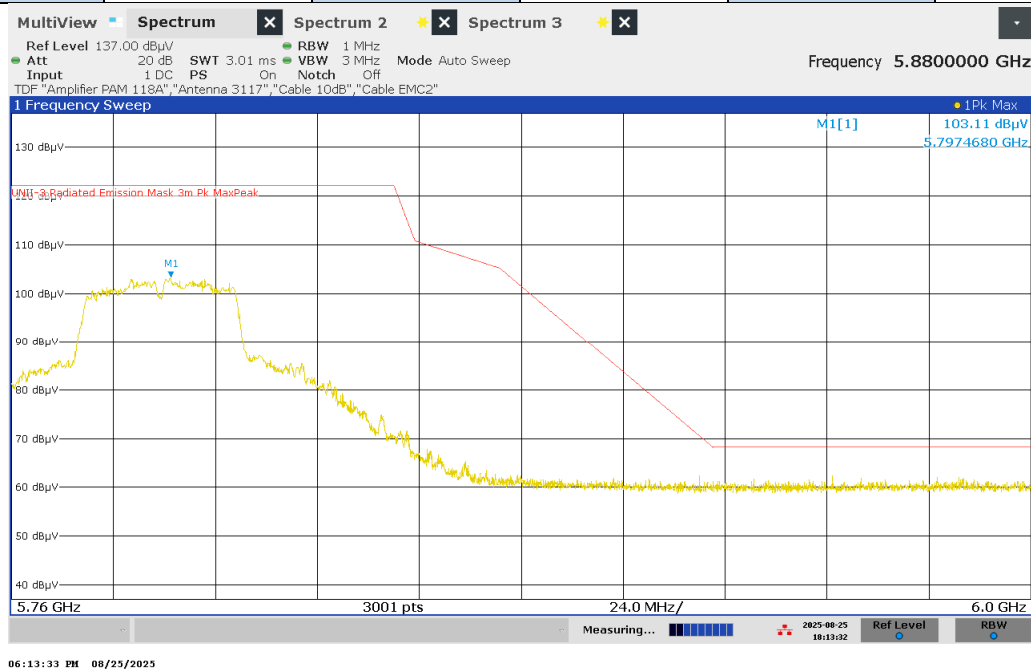
Tx Frequency	Low Channel	Antenna Polarization	Vertical	Emission	Peak
--------------	-------------	----------------------	----------	----------	------



Tx Frequency	High Channel	Antenna Polarization	Horizontal	Emission	Peak
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Tx Frequency	High Channel	Antenna Polarization	Vertical	Emission	Peak
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4.5.5 Test Equipment List

Equipment ID	Description	Manufacturer	Model	Calibration Date	Calibration Due
EQ_EMC_58	EMI Receiver	Rohde & Schwarz	ESW 44	Mar 1, 2024	Mar 1, 2026
EQ_EMC_60	Horn Antenna	ETS Lindgren	3117	Apr 9, 2024	Apr 9, 2026
EQ_EMC_75	RF Cable >1GHz	MegaPhase	EMC2	NCR	NCR
EQ_EMC_115	10 dB Attenuator SMA	Fairview Microwave	SA18E-10	NCR	NCR
EQ_EMC_42	Preamplifier 1GHz-18GHz	Com-Power	PAM-118A	Jan 17, 2024	Jan 17, 2026

4.6 Power Line Conducted Emissions

Test Date: September 24, 2025
Temperature (°C) 25.1
Relative Humidity (%) 54.1
Barometric Pressure (kPa) 98.0

Initials: MX

The conducted emission test is to measure radio-frequency (RF) signals and noise emitted from electrical and electronic devices in the frequency range of 150kHz to 30MHz.

4.6.1 Limits

Base Standard(s): FCC Subpart C 15.207 and RSS-GEN Section 8.8.

Frequency Range (MHz)	Coupling Device	Detector Type / Bandwidth	Limit (dBμV)
0.15 to 0.50	LISN	Quasi-Peak / 9kHz	66 to 56*
0.50 to 5			56
5 to 30			60
0.15 to 0.50	LISN	Average / 9kHz	56 to 46*
0.50 to 5			46
5 to 30			50

* Decreases linearly with the logarithm of the frequency

As per ANSI C63.4 Section 4.2, if the Peak or Quasi-Peak detector measurements do not exceed the Average limits, then the DUT is considered to have passed the requirements.

4.6.2 Test Procedure

Tested according to ANSI C63.10 Section 6.2.

Conducted emissions were measured on the DUT's power port via an Artificial Mains Network (AMN), also known as Line Impedance Stabilization Network (LISN), and maximum conducted emissions are checked on all the DUT's AC lines in the frequency range of 150kHz to 30MHz. All other support equipment were powered via another LISN. The LISNs provide 50Ω/50μH of coupling impedance for the measuring receiver.

To determine the emission characteristics of the DUT, the conducted emission scans were made using a Peak detector and the results were recorded in graphical form.

For each suspected emission, final measurements of the DUT conducted emissions were made with the Quasi-Peak or Average detector as defined in the limits table above.

For Table-Top Equipment, the device under test is configured on a 0.8m high non-conductive table above the reference ground plane and 0.4m away from the vertical reference ground plane.

4.6.3 Setup Diagram

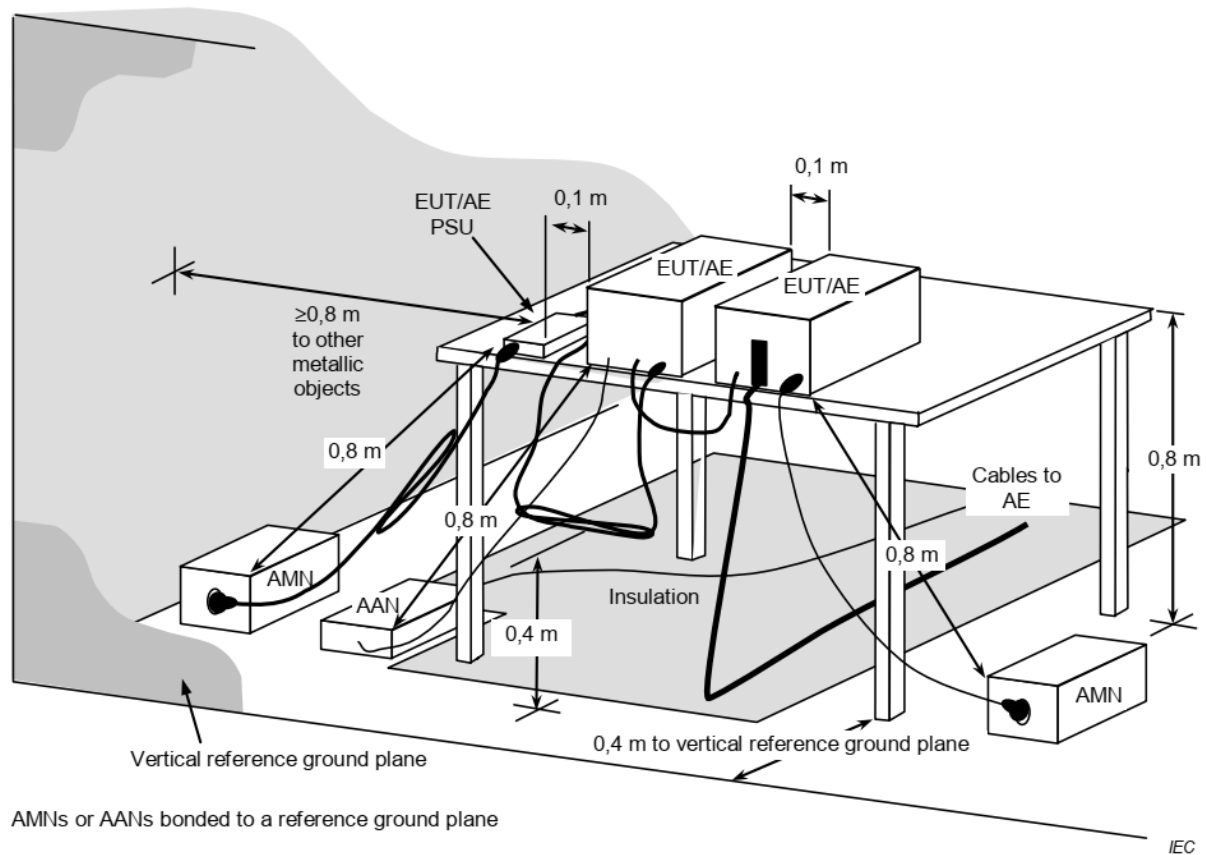
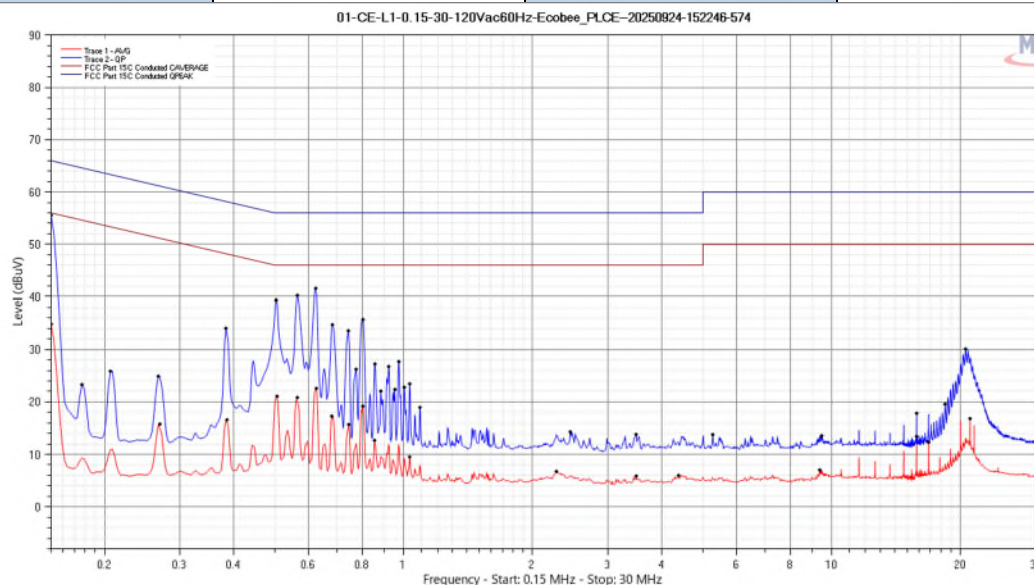


Figure 65 – Sample Measurement Arrangement for DUT

4.6.4 Test Results

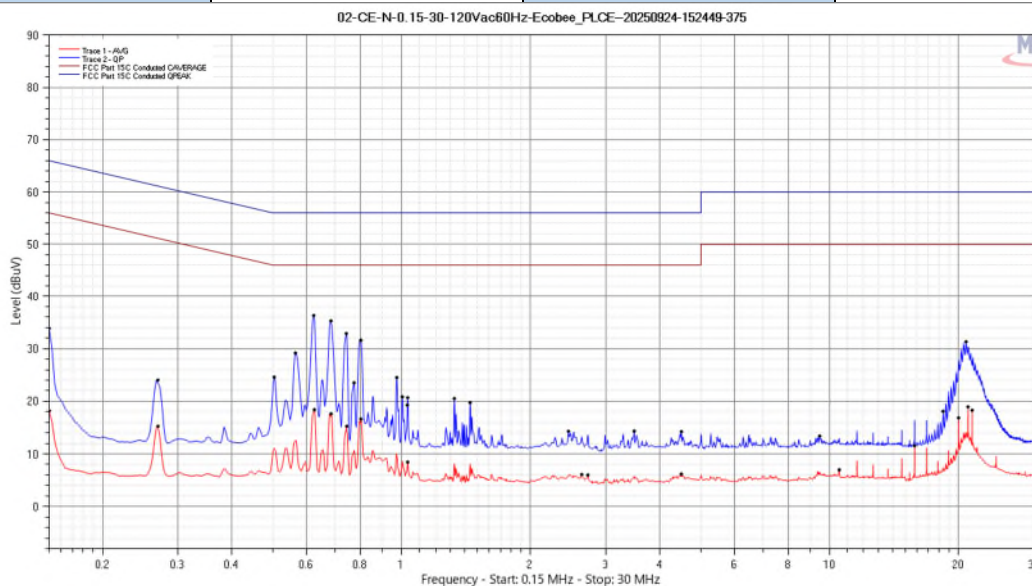
Range:	150kHz to 30MHz	DUT	ECB601/WIFI
Test Voltage:	120Vac 60Hz	Phase	Line



Remark: Quasi-Peak and Average Emission Plot

Line 1							
Frequency (MHz)	Detector	Reading (dBuV)	Correction Factor (dB)	Emissions Level (dBuV)	Limit (dBuV)	Margin (dB)	Test Result
0.15	CAVG	24.74	10.11	34.85	56	21.15	Pass
0.625	CAVG	12.5	10.08	22.58	46	23.42	Pass
0.505	CAVG	11.02	10.08	21.1	46	24.9	Pass
0.15	QP	45.45	10.11	55.56	66	10.44	Pass
0.622	QP	31.48	10.08	41.56	56	14.44	Pass
0.564	QP	30.15	10.08	40.23	56	15.77	Pass

Range:	150kHz to 30MHz	DUT	ECB601/WIFI
Test Voltage:	120Vac 60Hz	Phase	Neutral



Remark: Peak Emission Plot

Neutral							
Frequency (MHz)	Detector	Reading (dBuV)	Correction Factor (dB)	Emissions Level (dBuV)	Limit (dBuV)	Margin (dB)	Test Result
0.625	CAVG	8.33	10.08	18.41	46	27.59	Pass
0.683	CAVG	7.55	10.08	17.63	46	28.37	Pass
0.802	CAVG	6.55	10.08	16.63	46	29.37	Pass
0.622	QP	26.23	10.08	36.31	56	19.69	Pass
0.683	QP	25.21	10.08	35.29	56	20.71	Pass
0.742	QP	22.79	10.08	32.87	56	23.13	Pass

4.6.5 Test Equipment List

Equipment ID	Description	Manufacturer	Model	Calibration/ (Verification) Date	Calibration/ (Verification) Due
EQ_EMC_58	EMI Receiver	Rohde & Schwarz	ESW 44	Mar 1, 2024	Mar 1, 2026
EQ_EMC_61	LISN	FCC	50/250-16-2-01	Jan 16, 2024	Jan 16, 2026
EQ_EMC_174	10dB Attenuator	Centric RF	C6N10-10	(Apr 2, 2025)	(Apr 2, 2026)
EQ_EMC_84	RF Cable	Times Microwave	LMR-400	(Apr 2, 2025)	(Apr 2, 2026)
EQ_EMC_195	Emissions Software	Megalab Group	Electro V3.1.3	NCR	NCR

----- End of Test Report -----