



# **TEST REPORT**

**Report Number:** 14938215-E5V2

**Applicant:** SAMSUNG ELECTRONICS CO., LTD.  
129, SAMSUNG-RO, YEONGTONG-GU,  
SUWON-SI, GYEONGGI-DO, 16677, KOREA

**Model:** SM-A256E/DSN and SM-A256E/N

**FCC ID:** A3LSMA256E

**EUT Description:** GSM/WCDMA/LTE/5G Phone with BT/BLE,  
DTS/UNII a/b/g/n/ac, NFC

**Test Standard(s):** FCC 47 CFR PART 15 SUBPART E

**Date Of Issue:**  
2023-10-23

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## REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2023-10-18	Initial Issue	
V2	2023-10-23	Updated Sections 3, 6.6, 9.4, 10, 11	Benjamin D.

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## 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** SAMSUNG ELECTRONICS CO., LTD.  
129, SAMSUNG-RO, YEONGTONG-GU,  
SUWON-SI, GYEONGGI-DO, 16677, KOREA

**EUT DESCRIPTION:** GSM/WCDMA/LTE/5G Phone with BT/BLE, DTS/UNII a/b/g/n/ac, NFC

**MODEL:** SM-A256E/DSN and SM-A256E/N

**SERIAL NUMBER:** Conducted: R3CW50B1BPM  
Radiated: R3CW50B1C2V, R3CW50B1C0J

**DATE TESTED:** 2023-09-13 –2023-10-13

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart E	Complies

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, any agency of the Federal Government, or any agency of the U.S. government.

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## 2. TEST RESULT SUMMARY

FCC Clause	Requirement	Result	Comment
See Comment	Duty Cycle	Reporting purposes only	Per ANSI C63.10, Section 12.2
See Comment	26dB BW 99% OBW	Reporting purposes only	Per ANSI C63.10 Sections 6.9.2 and 6.9.3
15.407 (e)	6 dB BW	Complies	None
15.407 (a) (1-4), (h) (1)	Output Power	Complies	None
15.407 (a) (1-3, 5)	PSD	Complies	None
15.209, 15.205, 15.407 (b)	Radiated Emissions	Complies	None
15.207	AC Mains Conducted Emissions	Complies	None

## 3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with:

- FCC CFR 47 Part 2
- FCC CFR 47 Part 15E
- FCC KDB 662911 D01 v02r01
- FCC KDB 789033 D02 v02r01
- ANSI C63.10-2013
- KDB 414788 D01 Radiated Test Site v01r01

## 4. FACILITIES AND ACCREDITATION

UL Verification Services Inc. is accredited by A2LA, certification #0751.05, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
<input type="checkbox"/>	Building 1: 47173 Benicia Street, Fremont, CA 94538 USA	US0104	2324A	550739
<input checked="" type="checkbox"/>	Building 2: 47266 Benicia Street, Fremont, CA 94538 USA			
<input checked="" type="checkbox"/>	Building 3: 843 Auburn Court, Fremont, CA 94538 USA			
<input checked="" type="checkbox"/>	Building 4: 47658 Kato Rd, Fremont, CA 94538 USA			
<input type="checkbox"/>	Building 5: 47670 Kato Rd, Fremont, CA 94538 USA			



## 5. DECISION RULES AND MEASUREMENT UNCERTAINTY

### 5.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

### 5.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

### 5.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	U <sub>Lab</sub>
Radio Frequency (Spectrum Analyzer)	141.16 Hz
Occupied Bandwidth	1.22%
Power Spectral Density	2.47 dB
RF Power Measurement Direct Method Using Power Meter	1.3 dB (PK) / 0.45 dB (AV)
Unwanted Emissions, Conducted	1.94 dB
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.78 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.40 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.87 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	6.01 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.73 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.51 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.29 dB
Time Domain Measurements	3.39%
Temperature	0.57°C
Humidity	3.39%
DC Supply Voltages	0.57%

Uncertainty figures are valid to a confidence level of 95%.

## 5.4. SAMPLE CALCULATION

### **RADIATED EMISSIONS**

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB)  
– Preamp Gain (dB)

$36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$

### **MAINS CONDUCTED EMISSIONS**

Where relevant, the following sample calculation is provided:

Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN  
Insertion Loss.

$36.5 \text{ dBuV} + 0 \text{ dB} + 10.1 \text{ dB} + 0 \text{ dB} = 46.6 \text{ dBuV}$

## 6. EQUIPMENT UNDER TEST

### 6.1. EUT DESCRIPTION

The EUT is a GSM/WCDMA/LTE/5G Phone with BT/BLE, DTS/UNII a/b/g/n/ac and NFC.

The model SM-A256E/DSN was used for final testing and is representative of the test results in this report.

## 6.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

### 5.2 GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
<b>5.2 GHz band, 1TX</b>			
5180-5240	802.11a	15.60	36.31
5180-5240	802.11n HT20	15.38	34.51
5190-5230	802.11n HT40	14.47	27.99
5180-5240	802.11ac VHT20	Covered by 802.11n HT20 1TX	
5190-5230	802.11ac VHT40	Covered by 802.11n HT40 1TX	
5210	802.11ac VHT80	10.97	12.50

### 5.3 GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
<b>5.3 GHz band, 1TX</b>			
5260 - 5320	802.11a	15.45	35.08
5260 - 5320	802.11n HT20	15.35	34.28
5270 - 5310	802.11n HT40	14.26	26.67
5260 - 5320	802.11ac VHT20	Covered by 802.11n HT20 1TX	
5270 - 5310	802.11ac VHT40	Covered by 802.11n HT40 1TX	
5290	802.11ac VHT80	8.23	6.65

### 5.6 GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
<b>5.6 GHz band, 1TX</b>			
5500-5720	802.11a	15.56	35.97
5500-5720	802.11n HT20	15.45	35.08
5510-5710	802.11n HT40	14.59	28.77
5500-5720	802.11ac VHT20	Covered by 802.11n HT20 1TX	
5510-5710	802.11ac VHT40	Covered by 802.11n HT40 1TX	
5530-5690	802.11ac VHT80	12.57	18.07

**5.8 GHz BAND**

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
<b>5.8 GHz band, 1TX</b>			
5745-5825	802.11a	15.55	35.89
5745-5825	802.11n HT20	15.56	35.97
5755-5795	802.11n HT40	14.30	26.92
5745-5825	802.11ac VHT20	Covered by 802.11n HT20 1TX	
5755-5795	802.11ac VHT40	Covered by 802.11n HT40 1TX	
5775	802.11ac VHT80	12.13	16.33

### 6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The antenna(s) gain and type, as provided by the manufacturer' are as follows:

The radio utilizes an MFA antenna, with a maximum gain as follows:

Frequency Range (GHz)	Peak Antenna Gain (dBi)
5150-5250	-6.24
5250-5350	-6.24
5500-5700	-6.24
5725-5825	-6.24

### 6.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was WiFi FW Version: A256E.001.

### 6.5. WORST-CASE CONFIGURATION AND MODE

Radiated emissions below 1GHz, above 18GHz, and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

Band edge and radiated emissions between 1GHz and 18GHz were performed with the EUT set to transmit at the highest power on low, middle, and high channels.

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that Y orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Y orientation.

Worst-case data rates as provided by the manufacturer were:

802.11a mode: 6 Mbps  
802.11n HT20mode: MCS0  
802.11n HT40mode: MCS0  
802.11ac VHT80 mode: MCS0

## 6.6. DESCRIPTION OF TEST SETUP

SUPPORT TEST EQUIPMENT				
Description	Manufacturer	Model	Serial Number	FCC ID/ DoC
AC Adapter	Samsung	EP-TA800	R37TC7A00EBDKA	N/A

I/O CABLES (RF CONDUCTED TEST)						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Antenna	1	RF	Shielded	0.2	To PXA
2	USB-C	1	USB-C	Un-Shielded	1	EUT to AC Mains

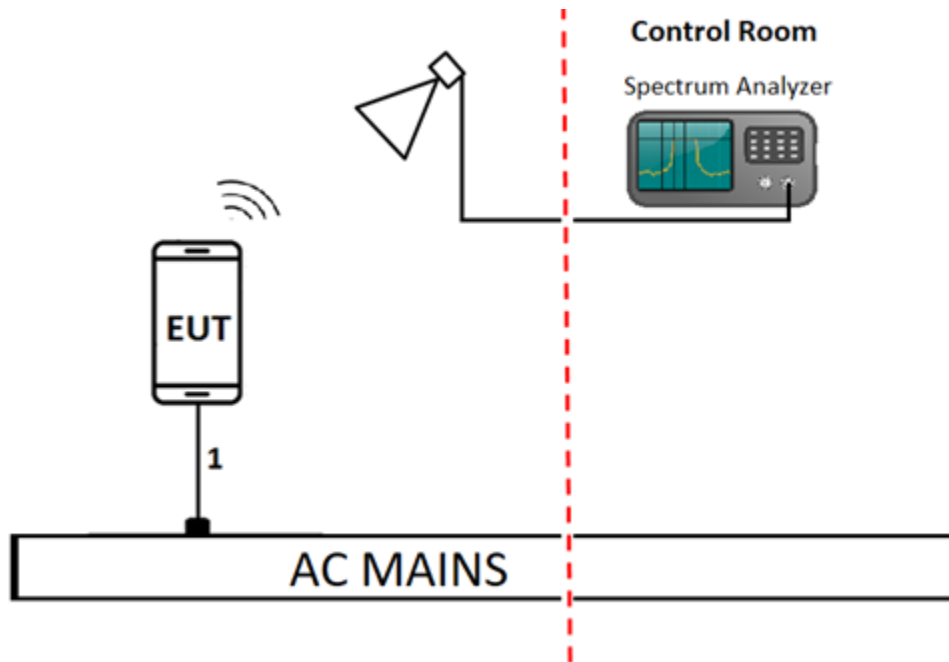
I/O CABLES (RF RADIATED and AC LINE CONDUCTED TEST)						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	USB-C	1	USB-C	Shielded	1	N/A

### TEST SETUP

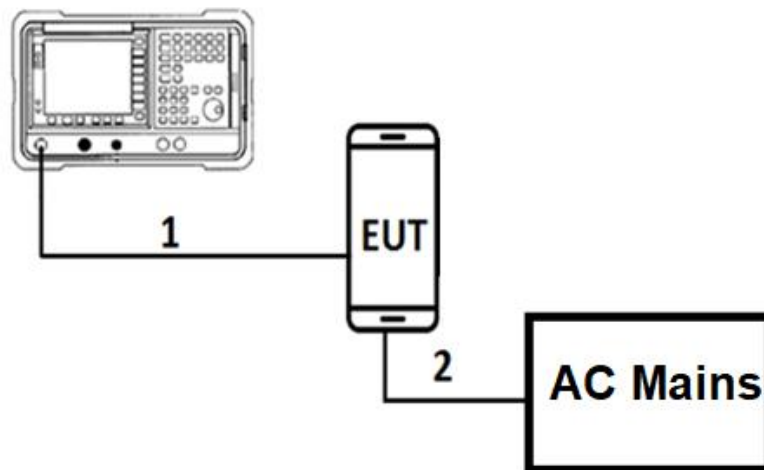
The EUT is a stand-alone device configured and tested in a worst-case setup. Worst case is using worst case orientation with AC charger attached to the EUT. Test software exercised the radio card.

**SETUP DIAGRAM**

**Radiated Configuration**

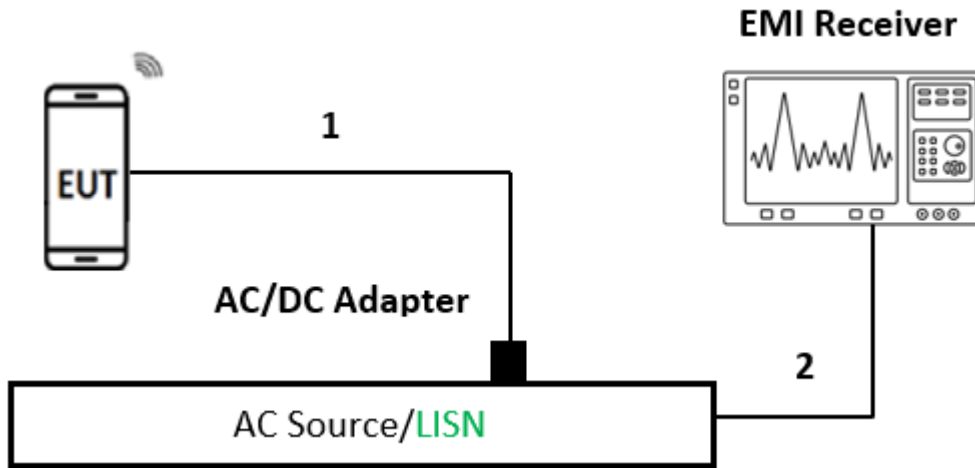


**Conducted Configuration**





### AC Line Conducted Configuration



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## 7. MEASUREMENT METHOD

On Time and Duty Cycle: KDB 789033 D02 v02r01, Section B.

6 dB Emission BW: KDB 789033 D02 v02r01, Section C.2

26 dB Emission BW: KDB 789033 D02 v02r01, Section C.1

99% Occupied BW: KDB 789033 D02 v02r01, Section D.

Conducted Output Power: KDB 789033 D02 v02r01, Section E.3.b (Method PM-G)

Power Spectral Density: KDB 789033 D02 v02r01, Section F

Unwanted emissions in restricted bands: KDB 789033 D02 v02r01, Sections G.3, G.4, G.5, and G.6.

Unwanted emissions in non-restricted bands: KDB 789033 D02 v02r01, Sections G.3, G.4, and G.5.

AC Power Line Conducted Emissions: ANSI C63.10-2013, Section 6.2.

Radiated Spurious Emissions Below 30MHz: ANSI C63.10-2013 Section 6.4

## 8. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment were utilized for the tests documented in this report:

TEST EQUIPMENT LIST					
Description	Manufacturer	Model	ID Num	Cal Due	Last Cal
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight Technologies Inc	N9030A	85214	02/29/2024	02/06/2023
10dB Fixed Attenuator, 2 Watts Up to 26.5 GHz	Pasternack Enterprises	PE7024-10	236358	Verified/Characterized before use	
89831EMI TEST RECEIVER	Rohde & Schwarz	ESW44	PRE0179372	02/29/2024	02/17/2023
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	230299	01/12/2024	01/12/2023
RF Filter Box, 1-18GHz, 12 Port.	UL-FR1	Frankenstein	231874	08/30/2024	08/23/2023
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	235670	04/30/2024	04/06/2023
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	226672	01/09/2024	01/09/2023
RF Filter Box, 1-18GHz, 17 Ports	UL-FR1	RATS 2	225079	04/30/2024	04/21/2023
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	191428	02/29/2024	02/15/2023
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	206807	02/28/2024	02/14/2023
RF Filter Box, 1-18GHz, 12 Port.	UL-FR1	Frankenstein	230878	02/29/2024	02/06/2023
Antenna, BroadBand Hybrid 30 MHz - 3 GHz	SUNOL SCIENCES CORP.	JB3	230635	01/31/2024	01/23/2023
Amplifier 9 KHz - 1 GHz	SONOMA INSTRUMENT	310N	230310	02/02/2024	02/02/2023
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	223462	04/30/2024	04/30/2023
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	81886	03/31/2024	03/20/2023
RF Filter Box, 1-18GHz	UL-FR1	NA	168534	01/05/2024	01/05/2023
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	201499	02/29/2024	02/27/2023
Antenna, Horn 18 to 26.5GHz	A.R.A.	MWH-1826/B	172363	01/31/2024	01/27/2023
Amplifier Assembly, 18-26.5GHz, 60dB Gain	AMPLICAL	AMP18G26.5-60	171580	05/31/2025	05/19/2023
Antenna, Horn 26.5 to 40GHz	A.R.A.	MWH-2640/B	172366	01/31/2024	01/27/2023
Link File, RF Amplifier Assembly, 26-40GHz, 65dB Gain	AMPLICAL	AMP26G40-65	172345	05/31/2024	05/19/2023
Antenna, Passive Loop 30Hz - 1MHz	ELECTRO-METRICS	EM-6871	170013	07/31/2024	07/28/2022
Antenna, Passive Loop 100KHz - 30MHz	ELECTRO-METRICS	EM-6872	170015	07/31/2024	07/28/2022
Power Meter, P-series single channel	Keysight Technologies Inc	N1912A	90630	01/31/2024	01/24/2023
Power Sensor, P - series, 50MHz to 18GHz, Wideband	Keysight Technologies Inc	N1921A	90391	01/31/2024	01/25/2023

AC Line Conducted					
Description	Manufacturer	Model	ID Num	Cal Due	Last Cal
EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESR	93091	02/29/2024	02/29/2023
LISN for Conducted Emissions CISPR-16	FISCHER CUSTOM COMMUNICATIONS	FCC-LISN-50/250-25-2-01-480V	175764	01/31/2024	01/31/2023
Transient Limiter	TE	TBFL1	207996	08/31/2024	08/10/2023

UL AUTOMATION SOFTWARE			
Radiated Software	UL	UL EMC	Version 9.5, 01 May 2023
Conducted Software	UL	UL EMC	2022.8.16
AC Line Conducted Software	UL	UL EMC	Version 9.5, 03 March 2023

## 9. ANTENNA PORT TEST RESULTS

### 9.1. ON TIME AND DUTY CYCLE

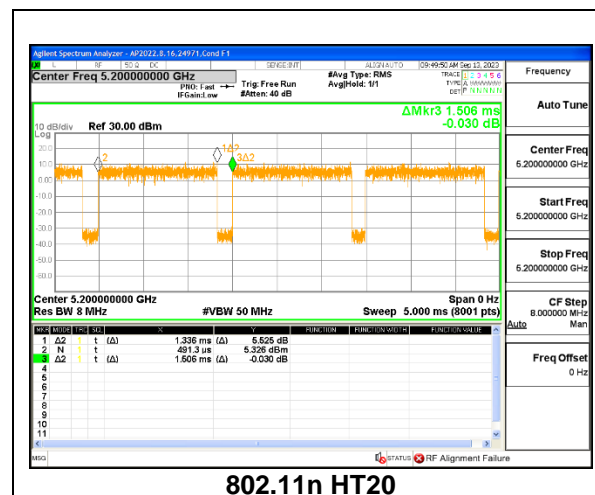
#### LIMITS

None; for reporting purposes only.

#### PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method.

#### DUTY CYCLE PLOT



#### ON TIME AND DUTY CYCLE RESULTS

Mode	Rate	ON Time B (ms)	Period (ms)	Duty Cycle (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Minimum VBW 1/B (kHz)
11a	1Mbps	1.428	1.598	0.8936	89.36%	0.49	0.700
11n HT20	6Mbps	1.336	1.506	0.8871	88.71%	0.52	0.749
11n HT40	MCS0	0.663	0.852	0.7786	77.86%	1.09	1.507
11ac VHT80	MCS0	2.227	2.434	0.9150	91.50%	0.39	0.449

## 9.2. 26 dB and 99% BANDWIDTH

### LIMITS

None; for reporting purposes only.

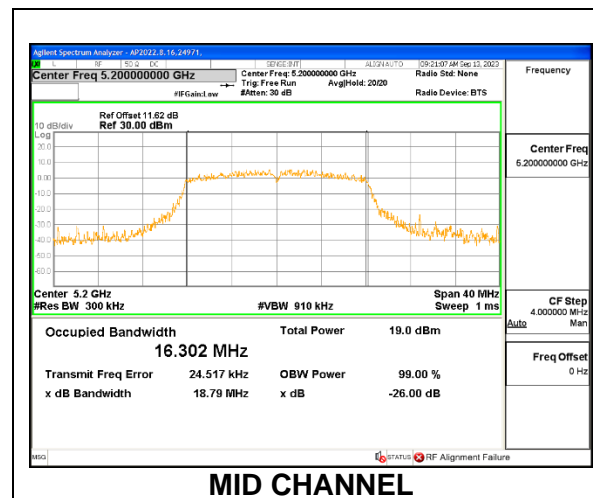
### RESULTS

Test Engineer:	24971
Test Date:	9/13/2023

## 9.2.1. 802.11a MODE IN THE 5.2 GHz BAND

### 1TX Antenna 1 MODE

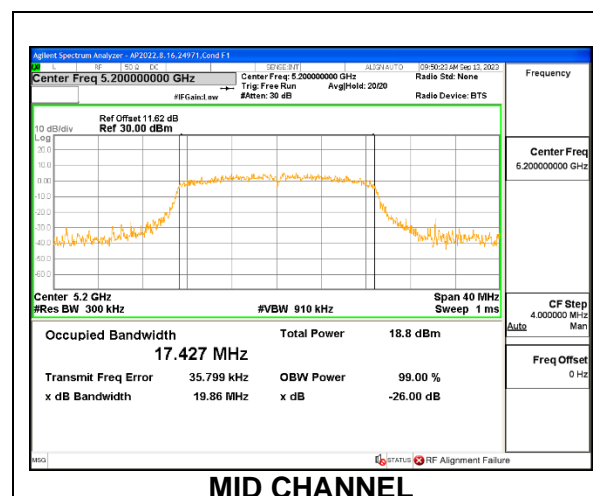
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	19.25	16.274
Mid	5200	18.79	16.302
High	5240	19.19	16.301



## 9.2.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

### 1TX Antenna 1 MODE

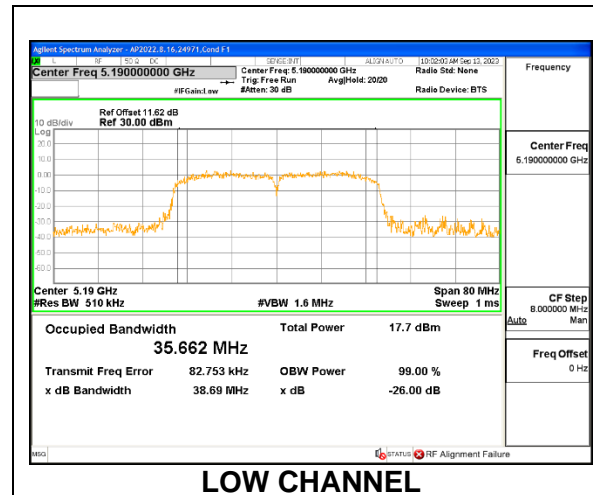
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	19.78	17.420
Mid	5200	19.86	17.427
High	5240	20.01	17.479



### 9.2.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

#### 1TX Antenna 1 MODE

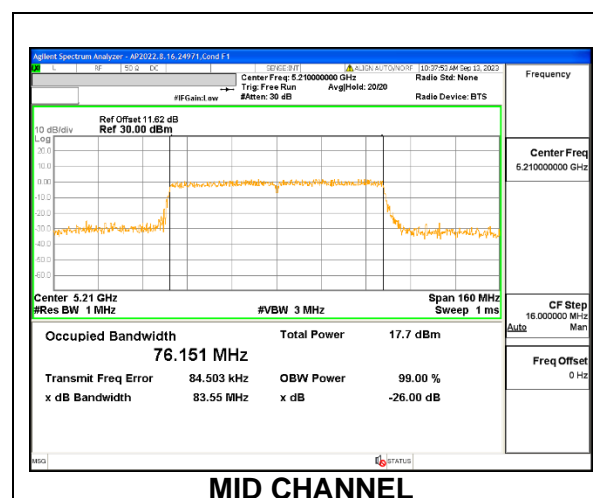
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5190	38.69	35.662
High	5230	39.69	35.590



### 9.2.4. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

#### 1TX Antenna 1 MODE

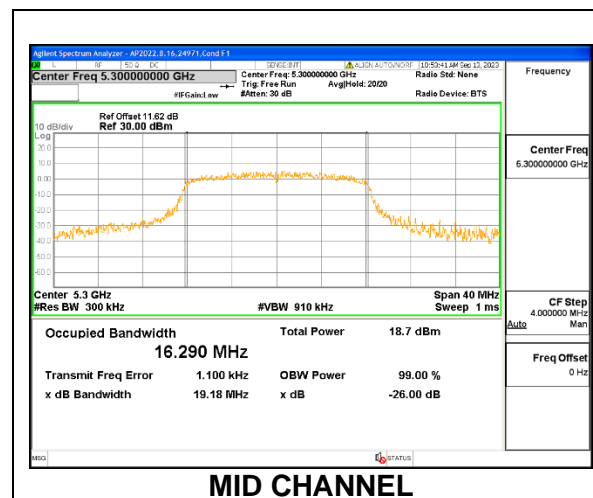
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5210	83.55	76.151



## 9.2.5. 802.11a MODE IN THE 5.3 GHz BAND

### 1TX Antenna 1 MODE

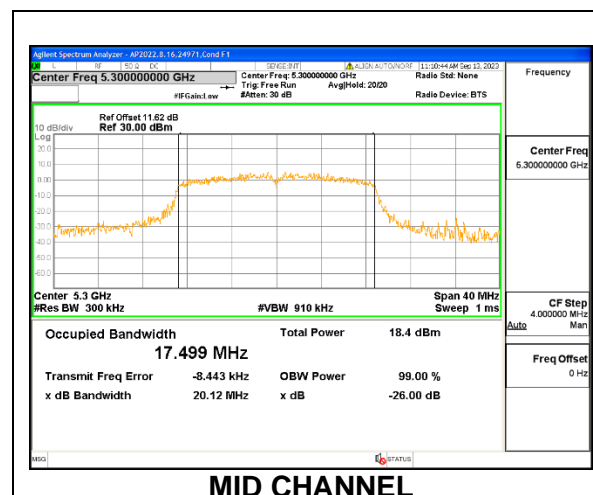
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5260	19.07	16.302
Mid	5300	19.18	16.290
High	5320	19.14	16.306



## 9.2.6. 802.11n HT20 MODE IN THE 5.3 GHz BAND

### 1TX Antenna 1 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5260	19.74	17.399
Mid	5300	20.12	17.499
High	5320	20.45	17.386

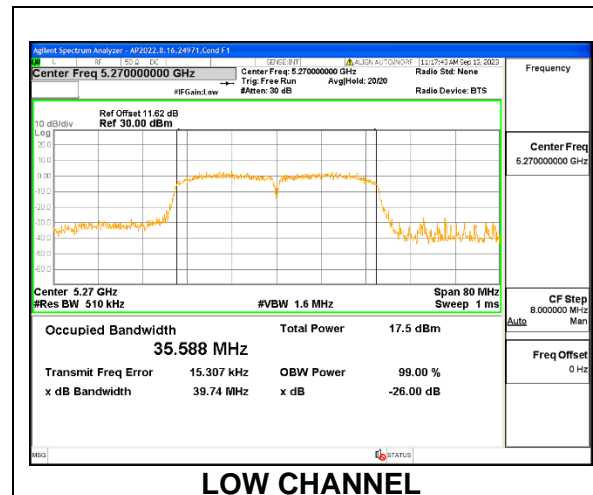




## 9.2.7. 802.11n HT40 MODE IN THE 5.3 GHz BAND

### 1TX Antenna 1 MODE

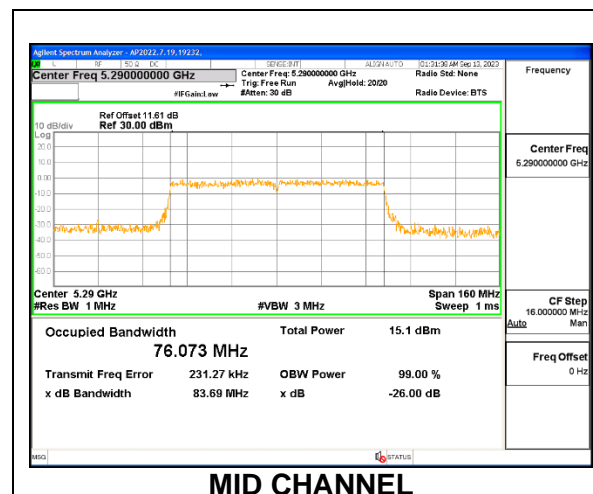
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5270	39.74	35.588
High	5310	39.10	35.684



## 9.2.8. 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

### 1TX Antenna 1 MODE

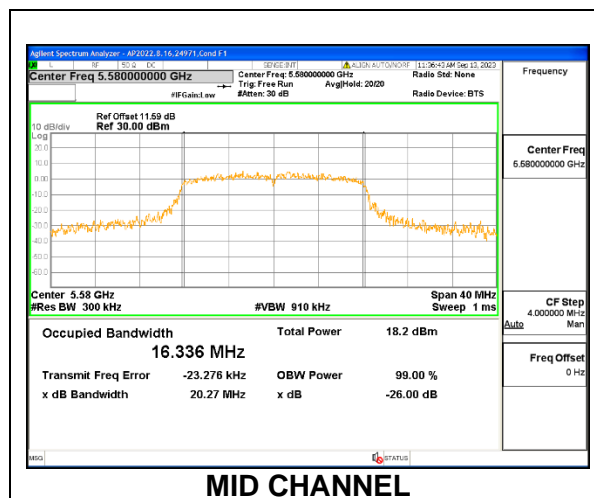
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Mid	5290	83.69	76.073



## 9.2.9. 802.11a MODE IN THE 5.6 GHz BAND

### 1TX Antenna 1 MODE

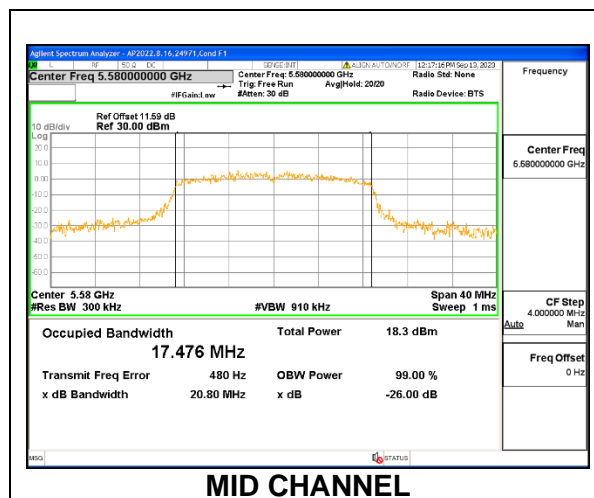
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5500	19.06	16.287
Mid	5580	20.27	16.336
High	5700	19.06	16.328
144	5720	20.39	16.305



## 9.2.10. 802.11n HT20 MODE IN THE 5.6 GHz BAND

### 1TX Antenna 1 MODE

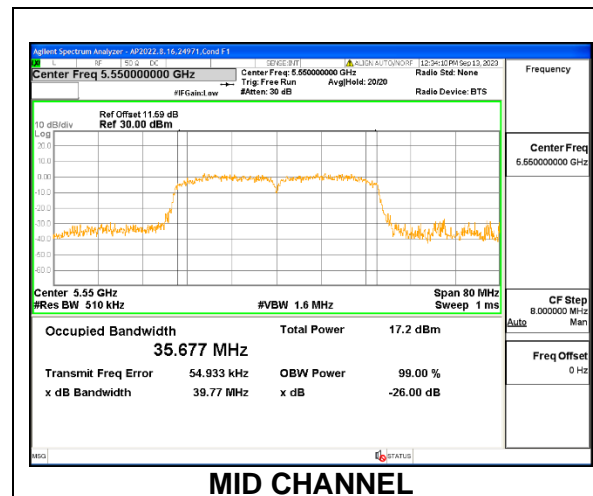
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5500	20.06	17.397
Mid	5580	20.80	17.476
High	5700	21.68	17.334
144	5720	20.89	17.395



## 9.2.11. 802.11n HT40 MODE IN THE 5.6 GHz BAND

### 1TX Antenna 1 MODE

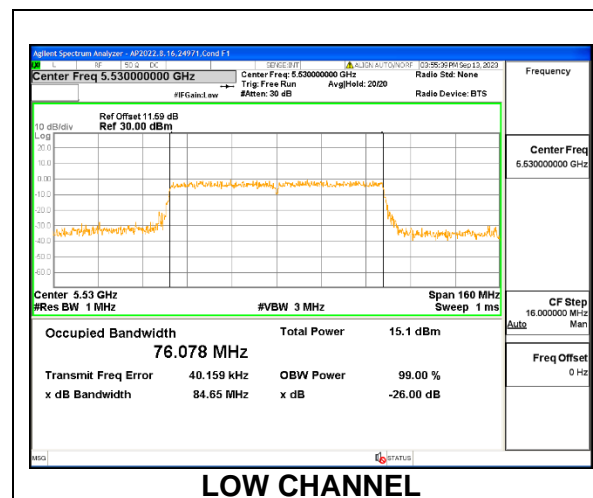
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5510	38.66	35.668
Mid	5550	39.77	35.677
High	5670	39.03	35.668
142	5710	38.88	35.694



## 9.2.12. 802.11ac VHT80 MODE IN THE 5.6 GHz BAND

### 1TX Antenna 1 MODE

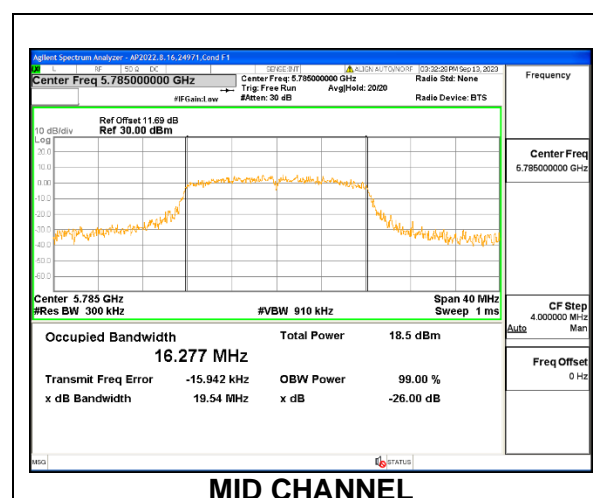
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5530	84.65	76.078
High	5610	85.24	76.051
138	5690	83.74	76.104



## 9.2.13. 802.11a MODE IN THE 5.8 GHz BAND

### 1TX Antenna 1 MODE

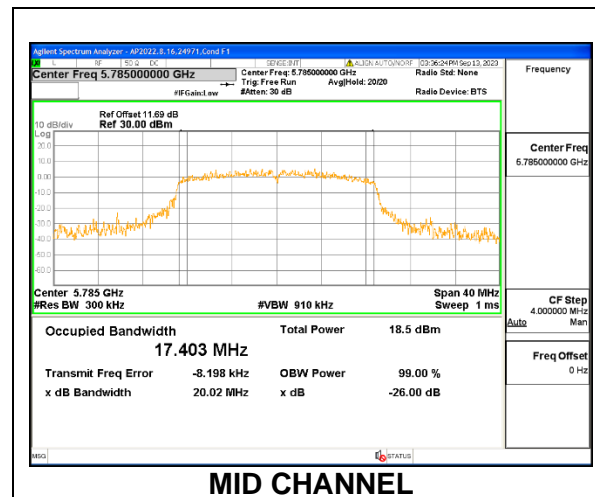
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5745	16.313
Mid	5785	16.277
High	5825	16.279



## 9.2.14. 802.11n HT20 MODE IN THE 5.8 GHz BAND

### 1TX Antenna 1 MODE

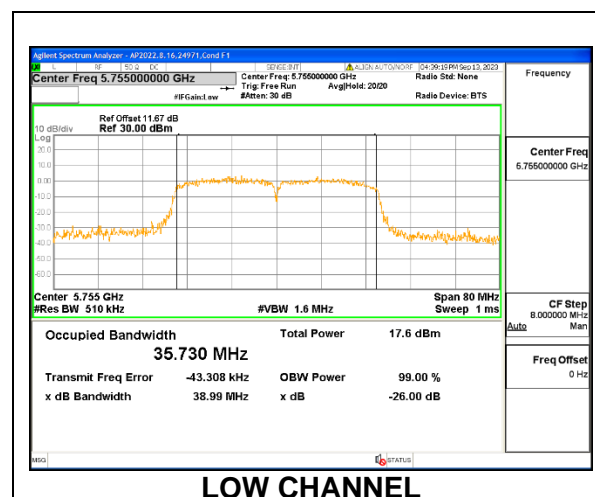
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5745	17.360
Mid	5785	17.403
High	5825	17.433



## 9.2.15. 802.11n HT40 MODE IN THE 5.8 GHz BAND

### 1TX Antenna 1 MODE

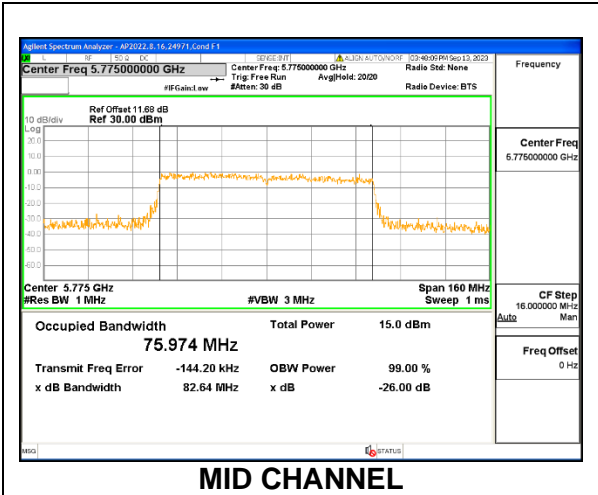
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5755	35.730
High	5795	35.691



9.2.16. 802.11ac VHT80 MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Mid	5775	75.974



### **9.3. 6 dB BANDWIDTH**

#### **LIMITS**

FCC §15.407 (e)

The minimum 6 dB bandwidth shall be at least 500 kHz.

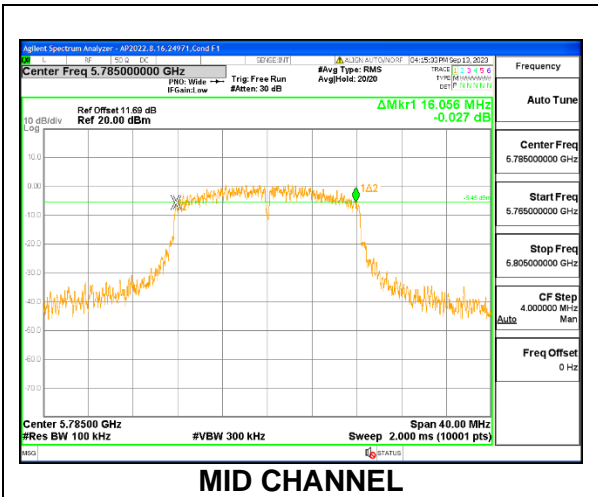
#### **RESULTS**



9.3.1. 802.11a MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

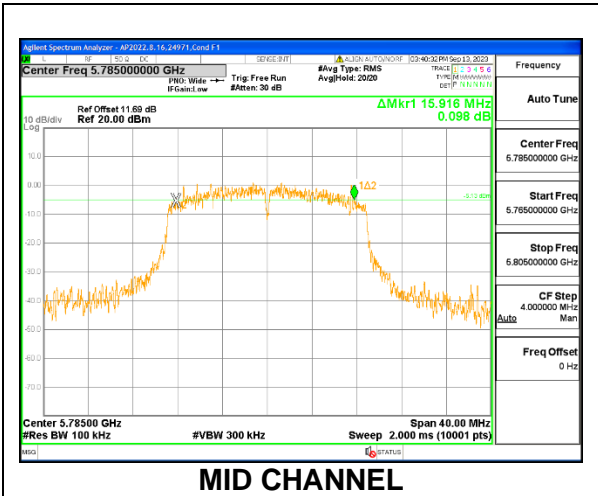
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5745	15.520	0.5
Mid	5785	16.056	0.5
High	5825	15.828	0.5
144	5720	3.192	0.5



9.3.2. 802.11n HT20 MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

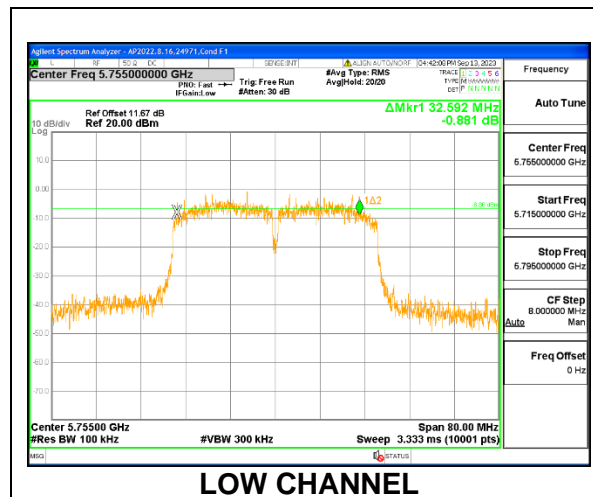
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5745	16.280	0.5
Mid	5785	15.916	0.5
High	5825	15.740	0.5
144	5720	3.492	0.5



### 9.3.3. 802.11n HT40 MODE IN THE 5.8 GHz BAND

#### 1TX Antenna 1 MODE

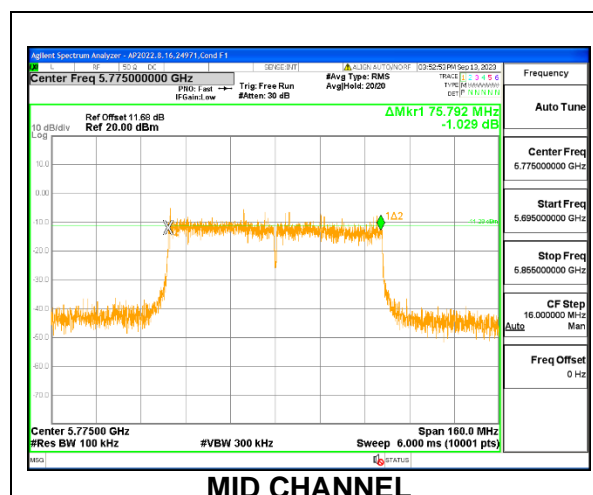
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5755	32.592	0.5
High	5795	31.008	0.5
142	5710	2.536	0.5



### 9.3.4. 802.11ac VHT80 MODE IN THE 5.8 GHz BAND

#### 1TX Antenna 1 MODE

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Mid	5775	75.792	0.5
138	5690	3.192	0.5



## 9.4. OUTPUT POWER AND PSD

### LIMITS

#### **FCC §15.407**

##### **Band 5.15–5.25 GHz**

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1-megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

##### **Bands 5.25-5.35 GHz and 5.47-5.725 GHz**

The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or  $11 \text{ dBm} + 10 \log B$ , where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1-megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

##### **Band 5.725-5.85 GHz**

The maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information.

### TEST PROCEDURE

The measurement method used for output power is KDB 789033 D02 v02r01, Section E.3.b (Method PM-G).

The measurement method used for power spectral density is KDB 789033 D02 v02r01, Section F.

For all straddle channels, full bandwidth power and PSD/MHz are reported in the 5.6GHz section because the combined 5.6GHz and 5.8GHz power and PSD/MHz already passed the worst-case 5.6GHz power and 5.8 GHz PSD/500kHz limits.

11n HT20 straddle channel 26dB bandwidth=  $(26\text{dB BW}/2)+5$

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**DIRECTIONAL ANTENNA GAIN**

For 1 TX:

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

Band (GHz)	Antenna Peak Gain (dBi)
5.2	-6.24
5.3	-6.24
5.6	-6.24
5.8	-6.24

### 9.4.1. 802.11a MODE IN THE 5.2 GHz BAND

#### 1TX Antenna 1 MODE (FCC)

Test Engineer:	24971
Test Date:	2023-09-13

#### Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5180	-6.24	24.00	11.00
Mid	5200	-6.24	24.00	11.00
High	5240	-6.24	24.00	11.00

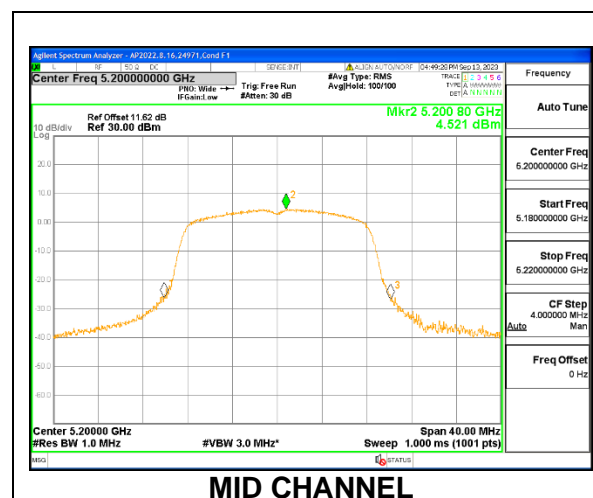
Duty Cycle CF (dB)	0.49	Included in Calculations of Corr'd PSD
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#### Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	15.45	15.45	24.00	-8.55
Mid	5200	15.60	15.60	24.00	-8.40
High	5240	15.39	15.39	24.00	-8.61

#### PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5180	4.466	4.956	11.000	-6.044
Mid	5200	4.521	5.011	11.000	-5.989
High	5240	4.457	4.947	11.000	-6.053



## 9.4.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

### 1TX Antenna 1 MODE (FCC)

Test Engineer:	24971
Test Date:	2023-09-13

#### Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5180	-6.24	24.00	11.00
Mid	5200	-6.24	24.00	11.00
High	5240	-6.24	24.00	11.00

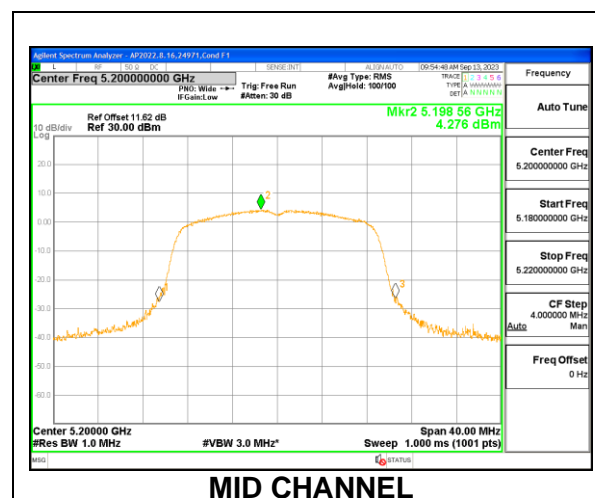
Duty Cycle CF (dB)	0.52	Included in Calculations of Corr'd PSD
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#### Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	15.38	15.38	24.00	-8.62
Mid	5200	15.17	15.17	24.00	-8.83
High	5240	15.22	15.22	24.00	-8.78

#### PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5180	4.116	4.636	11.000	-6.364
Mid	5200	4.276	4.796	11.000	-6.204
High	5240	4.592	5.112	11.000	-5.888



### 9.4.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

#### 1TX Antenna 1 MODE (FCC)

Test Engineer:	24971
Test Date:	2023-09-13

#### Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5190	-6.24	24.00	11.00
High	5230	-6.24	24.00	11.00

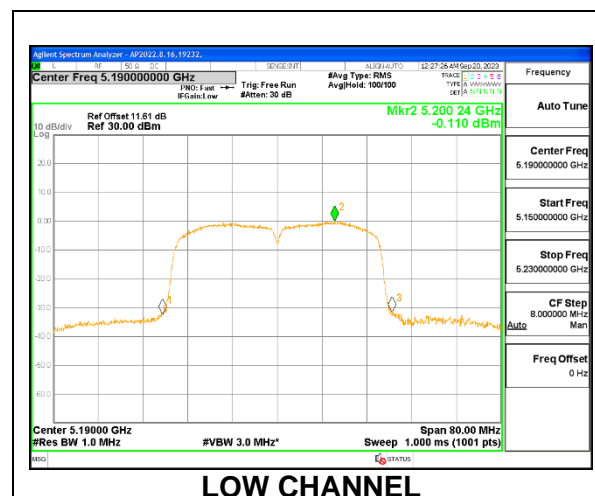
Duty Cycle CF (dB)	1.09	Included in Calculations of Corr'd PSD
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#### Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5190	14.16	14.16	24.00	-9.84
High	5230	14.47	14.47	24.00	-9.53

#### PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Low	5190	-0.110	0.980	11.000	-10.020
High	5230	0.283	1.373	11.000	-9.627



## 9.4.4. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

### 1TX Antenna 1 MODE (FCC)

Test Engineer:	26118
Test Date:	2023-09-25

#### Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Mid	5210	-6.24	24.00	11.00

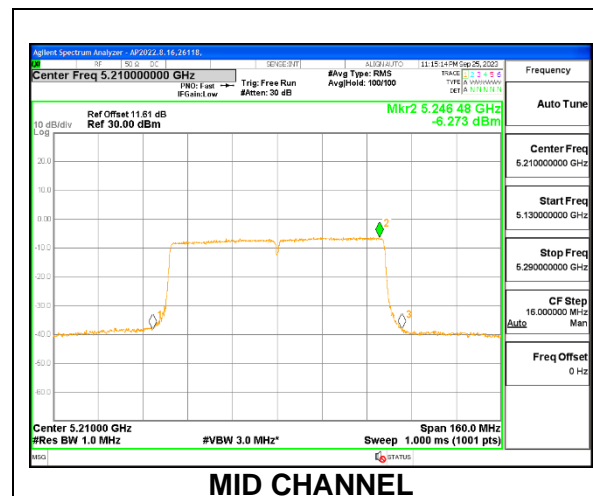
Duty Cycle CF (dB)	0.39	Included in Calculations of Corr'd PSD
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#### Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5210	10.97	10.97	24.00	-13.03

#### PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Mid	5210	-6.273	-5.883	11.00	-16.883





## 9.4.5. 802.11a MODE IN THE 5.3 GHz BAND

### 1TX Antenna 1 MODE (FCC)

Test Engineer:	24971
Test Date:	2023-09-13

#### Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5260	19.07	-6.24	23.80	11.00
Mid	5300	19.18	-6.24	23.83	11.00
High	5320	19.14	-6.24	23.82	11.00

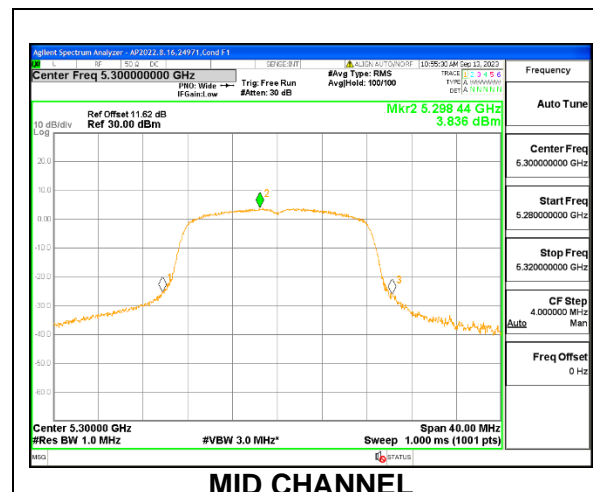
Duty Cycle CF (dB)	0.49	Included in Calculations of Corr'd PSD
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#### Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	15.35	15.35	23.80	-8.45
Mid	5300	15.45	15.45	23.83	-8.38
High	5320	15.16	15.16	23.82	-8.66

#### PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Low	5260	4.052	4.542	11.00	-6.458
Mid	5300	3.836	4.326	11.00	-6.674
High	5320	4.154	4.644	11.00	-6.356



## 9.4.6. 802.11n HT20 MODE IN THE 5.3 GHz BAND

### 1TX Antenna 1 MODE (FCC)

Test Engineer:	24971
Test Date:	2023-09-13

#### Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5260	19.74	-6.24	23.95	11.00
Mid	5300	20.12	-6.24	24.00	11.00
High	5320	20.45	-6.24	24.00	11.00

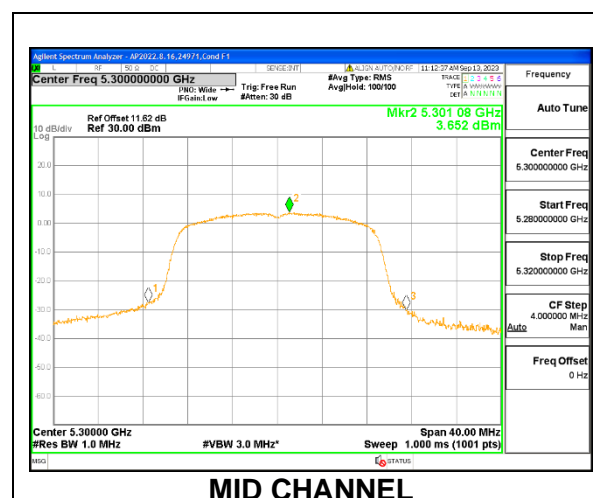
Duty Cycle CF (dB)	0.52	Included in Calculations of Corr'd PSD
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#### Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	15.35	15.35	23.95	-8.60
Mid	5300	15.24	15.24	24.00	-8.76
High	5320	15.34	15.34	24.00	-8.66

#### PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Low	5260	3.754	4.274	11.00	-6.726
Mid	5300	3.652	4.172	11.00	-6.828
High	5320	3.749	4.269	11.00	-6.731



## 9.4.7. 802.11n HT40 MODE IN THE 5.3 GHz BAND

### 1TX Antenna 1 MODE (FCC)

Test Engineer:	26118
Test Date:	2023-10-03

#### Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5270	39.74	-6.24	24.00	11.00
High	5310	39.10	-6.24	24.00	11.00

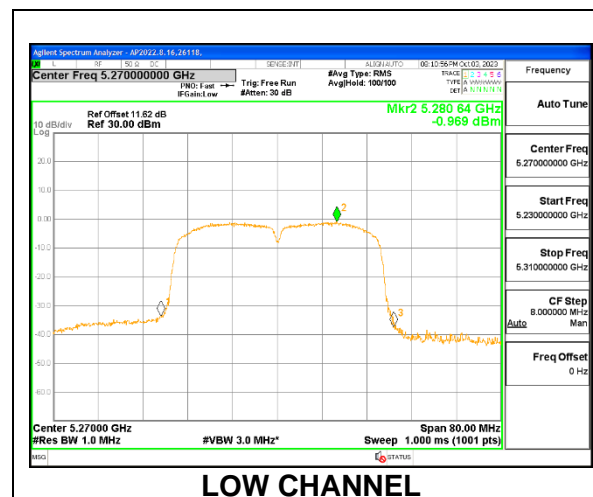
Duty Cycle CF (dB)	1.09	Included in Calculations of Corr'd PSD
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#### Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5270	14.26	14.26	24.00	-9.74
High	5310	12.14	12.14	24.00	-11.86

#### PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Low	5270	-0.969	0.121	11.00	-10.879
High	5310	-3.169	-2.079	11.00	-13.079



## 9.4.8. 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

### 1TX Antenna 1 MODE (FCC)

Test Engineer:	26118
Test Date:	2023-09-27

### Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Mid	5290	83.69	-6.24	24.00	11.00

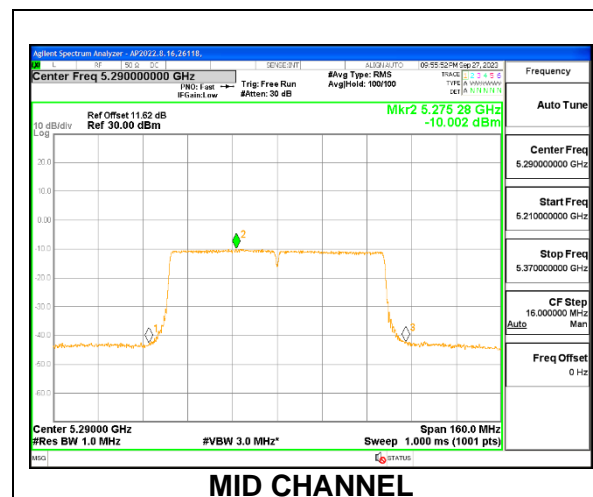
Duty Cycle CF (dB)	0.39	Included in Calculations of Corr'd PSD
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### Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5290	8.23	8.23	24.00	-15.77

### PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Mid	5290	-10.002	-9.612	11.00	-20.612



## 9.4.9. 802.11a MODE IN THE 5.6 GHz BAND

### 1TX Antenna 1 MODE (FCC)

Test Engineer:	24971
Test Date:	2023-09-13

#### Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5500	19.06	-6.24	23.80	11.00
Mid	5580	20.27	-6.24	24.00	11.00
High	5700	19.06	-6.24	23.80	11.00
144	5720	20.39	-6.24	24.00	11.00

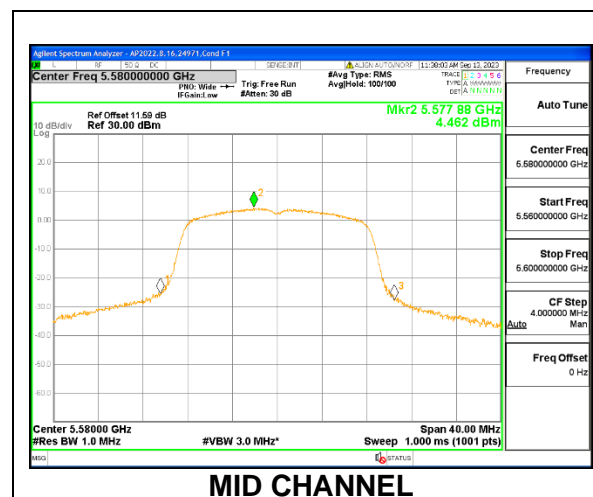
Duty Cycle CF (dB)	0.49	Included in Calculations Corr'd PSD
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#### Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5500	15.22	15.22	23.80	-8.58
Mid	5580	15.47	15.47	24.00	-8.53
High	5700	14.68	14.68	23.80	-9.12
144	5720	15.56	15.56	24.00	-8.44

#### PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Low	5500	4.136	4.626	11.00	-6.374
Mid	5580	4.462	4.952	11.00	-6.048
High	5700	4.075	4.565	11.00	-6.435
144	5720	4.585	5.075	11.00	-5.925



## 9.4.10. 802.11n HT20 MODE IN THE 5.6 GHz BAND

### 1TX Antenna 1 MODE (FCC)

Test Engineer:	24971
Test Date:	2023-09-13

#### Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5500	20.06	-6.24	24.00	11.00
Mid	5580	20.80	-6.24	24.00	11.00
High	5700	21.68	-6.24	24.00	11.00
144	5720	20.89	-6.24	24.00	11.00

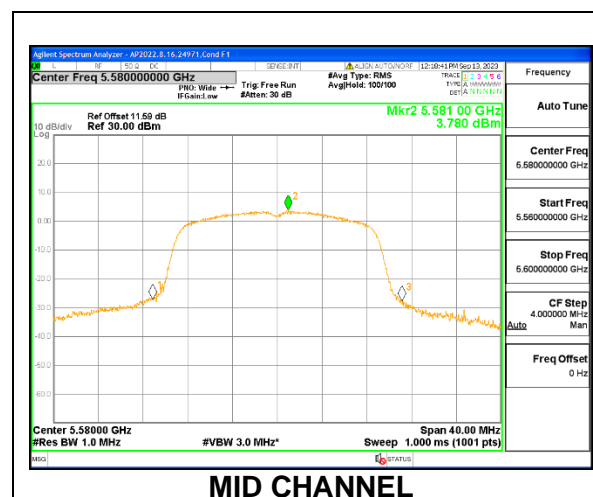
Duty Cycle CF (dB)	0.52	Included in Calculations Corr'd PSD
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#### Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5500	15.25	15.25	24.00	-8.75
Mid	5580	15.23	15.23	24.00	-8.77
High	5700	13.17	13.17	24.00	-10.83
144	5720	15.45	15.45	24.00	-8.55

#### PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Low	5500	3.932	4.452	11.00	-6.548
Mid	5580	3.780	4.300	11.00	-6.700
High	5700	2.386	2.906	11.00	-8.094
144	5720	3.831	4.351	11.00	-6.649



## 9.4.11. 802.11n HT40 MODE IN THE 5.6 GHz BAND

### 1TX Antenna 1 MODE (FCC)

Test Engineer:	24971
Test Date:	2023-09-13

#### Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5510	38.66	-6.24	24.00	11.00
Mid	5550	39.77	-6.24	24.00	11.00
High	5670	39.03	-6.24	24.00	11.00
142	5710	38.88	-6.24	24.00	11.00

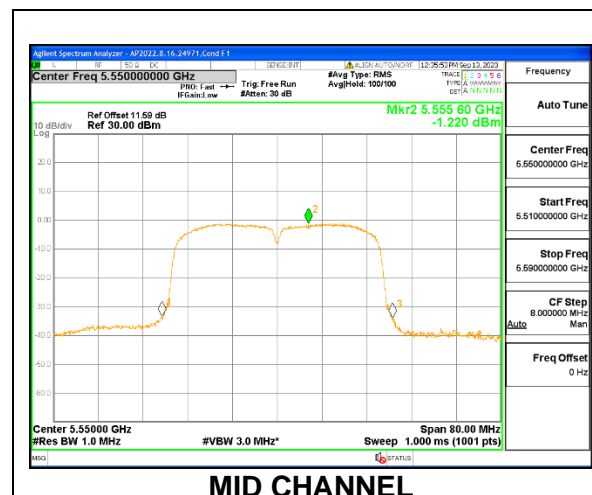
Duty Cycle CF (dB)	1.09	Included in Calculations Corr'd PSD
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#### Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5510	13.21	13.21	24.00	-10.79
Mid	5550	14.15	14.15	24.00	-9.85
High	5670	14.10	14.10	24.00	-9.90
142	5710	14.59	14.59	24.00	-9.41

#### PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Low	5510	-1.952	-0.862	11.00	-11.862
Mid	5550	-1.220	-0.130	11.00	-11.130
High	5670	-1.242	-0.152	11.00	-11.152
142	5710	-1.016	0.074	11.00	-10.926



## 9.4.12. 802.11ac VHT80 MODE IN THE 5.6 GHz BAND

### 1TX Antenna 1 MODE (FCC)

Test Engineer:	26118
Test Date:	2023-09-25

#### Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5530	84.65	-6.24	24.00	11.00
High	5610	85.24	-6.24	24.00	11.00
138	5690	83.74	-6.24	24.00	11.00

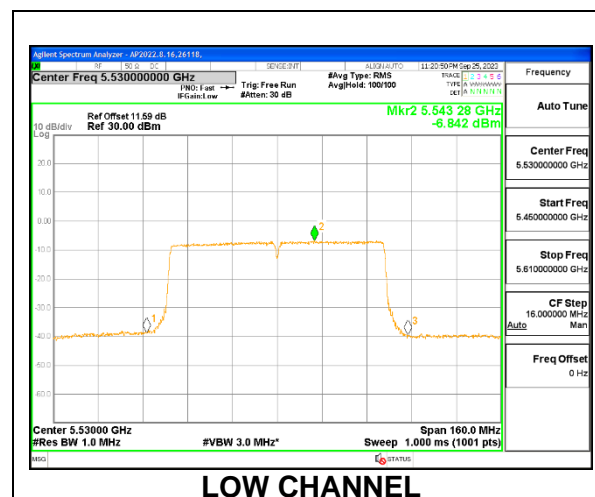
Duty Cycle CF (dB)	0.39	Included in Calculations Corr'd PSD
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#### Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5530	10.32	10.32	24.00	-13.68
High	5610	12.57	12.57	24.00	-11.43
138	5690	12.48	12.48	24.00	-11.52

#### PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Low	5530	-6.842	-6.452	11.00	-17.452
High	5610	-6.696	-6.306	11.00	-17.306
138	5690	-7.105	-6.715	11.00	-17.715







## 9.4.14. 802.11n HT20 MODE IN THE 5.8 GHz BAND

### 1TX Antenna 1 MODE (FCC)

Test Engineer:	24971
Test Date:	2023-09-13

#### Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/500KHz)
Low	5745	-6.24	30.00	30.00
Mid	5785	-6.24	30.00	30.00
High	5825	-6.24	30.00	30.00

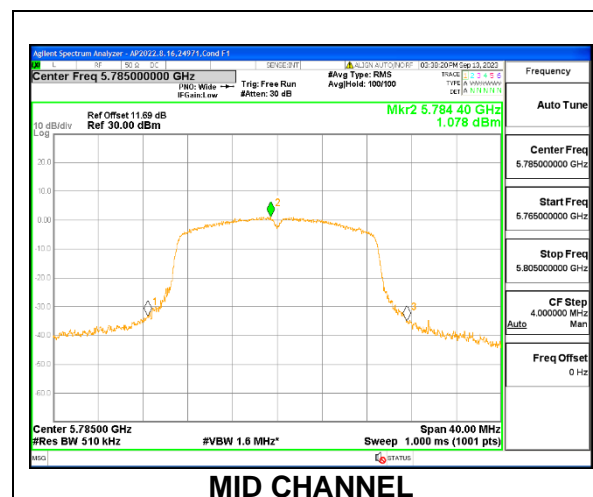
Duty Cycle CF (dB)	0.52	Included in Calculations of Corr'd PSD
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#### Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5745	15.56	15.56	30.00	-14.44
Mid	5785	15.22	15.22	30.00	-14.78
High	5825	15.55	15.55	30.00	-14.45

#### PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/500KHz)	Total Corr'd PSD (dBm/500KHz)	PSD Limit (dBm/500KHz)	PSD Margin (dB)
Low	5745	1.355	1.875	30.00	-28.13
Mid	5785	1.078	1.598	30.00	-28.40
High	5825	1.182	1.702	30.00	-28.30



## 9.4.15. 802.11n HT40 MODE IN THE 5.8 GHz BAND

### 1TX Antenna 1 MODE (FCC)

Test Engineer:	24971
Test Date:	2023-09-13

#### Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/500KHz)
Low	5755	-6.24	30.00	30.00
High	5795	-6.24	30.00	30.00

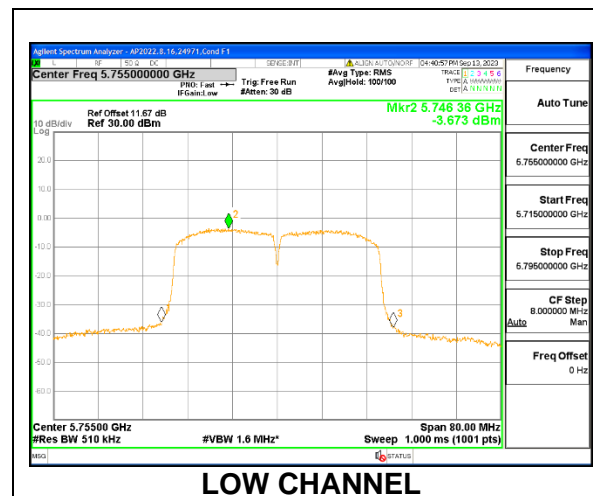
Duty Cycle CF (dB)	1.09	Included in Calculations of Corr'd PSD
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#### Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5755	14.30	14.30	30.00	-15.70
High	5795	14.19	14.19	30.00	-15.81

#### PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/500KHz)	Total Corr'd PSD (dBm/500KHz)	PSD Limit (dBm/500KHz)	PSD Margin (dB)
Low	5755	-3.673	-2.583	30.00	-32.58
High	5795	-3.496	-2.406	30.00	-32.41



## 9.4.16. 802.11ac VHT80 MODE IN THE 5.8 GHz BAND

### 1TX Antenna 1 MODE (FCC+IC)

Test Engineer:	26118
Test Date:	2023-09-25

#### Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/500KHz)
Mid	5775	-6.24	30.00	30.00

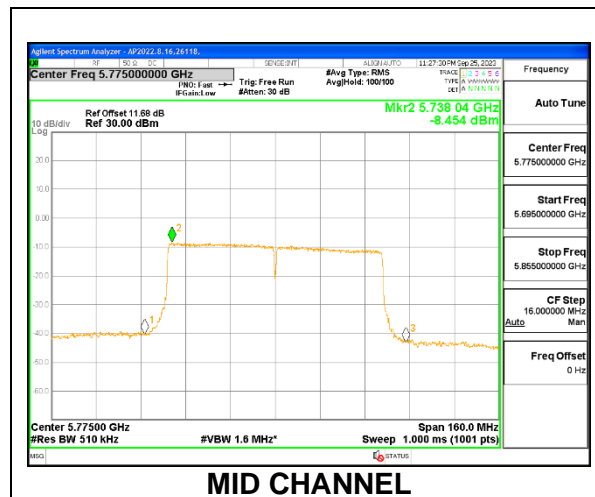
Duty Cycle CF (dB)	0.39	Included in Calculations of Corr'd PSD
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#### Output Power Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5775	12.13	12.13	30.00	-17.87

#### PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas PSD (dBm/500KHz)	Total Corr'd PSD (dBm/500KHz)	PSD Limit (dBm/500KHz)	PSD Margin (dB)
Mid	5775	-8.454	-8.064	30.00	-38.06



## 10. RADIATED TEST RESULTS

### LIMITS

FCC §15.205 and §15.209 -Restricted bands

FCC §15.407(b)(1-3) -Un-Restricted bands

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

### TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements in the 30-1000MHz range, 9kHz for peak and/or quasi-peak detection measurements in the 0.15-30MHz range and 200Hz for peak and/or quasi-peak detection measurements in the 9 to 150kHz range. Peak detection is used unless otherwise noted as quasi-peak or average (9-90kHz and 110-490kHz).

For pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.

For final measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements.

The spectrum from 30 MHz to 1GHz and 18GHz to 40 GHz is investigated with the transmitter set to transmit at the channel with highest output power as worst-case scenario. 1GHz to 18GHz was set to the lowest, middle, and highest channels in the 5 GHz bands.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

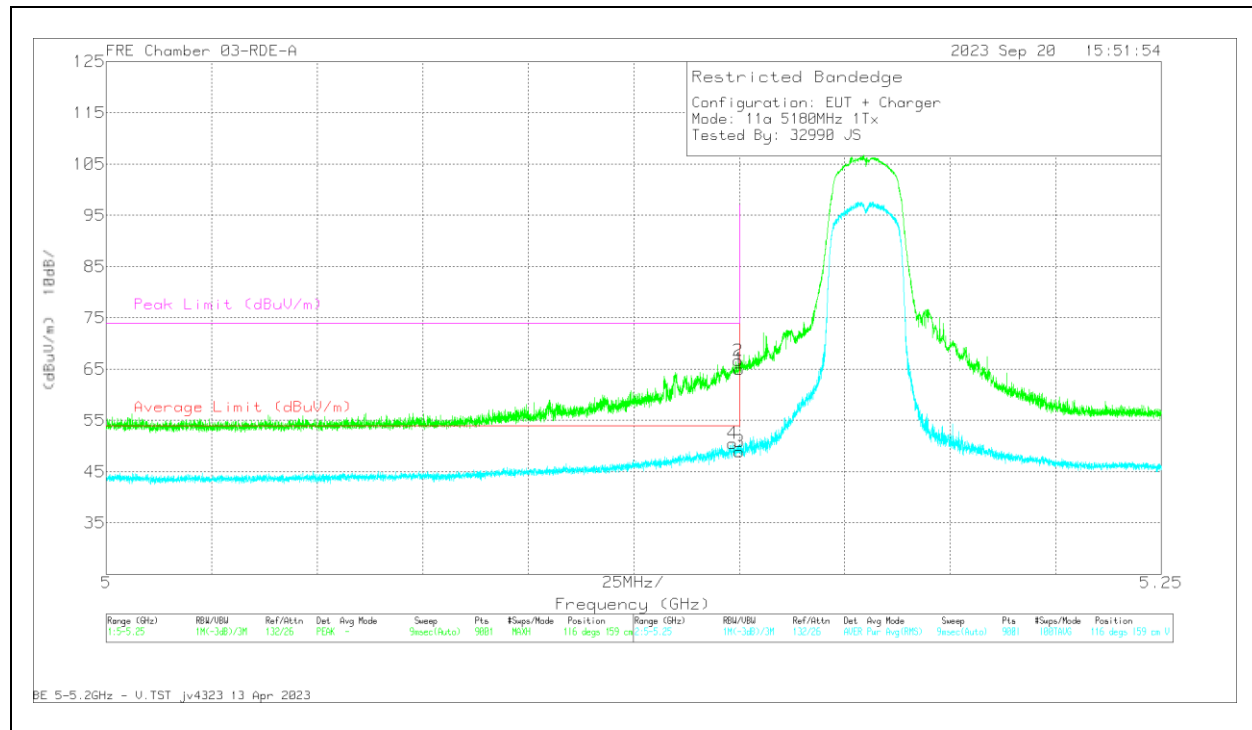
### KDB 414788 Open Field Site(OFS) and Chamber Correlation Justification

OFS and chamber correlation testing had been performed and chamber measured test result is the worst-case test result.

NOTE: The limits in CFR 47, Part 15, Subpart C, paragraph 15.209(a), are identical to those in RSS-Gen section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table), using the free space impedance of 377 Ohms. For example, the measurement at frequency X kHz resulted in a level of Y dBuV/m, which is equivalent to  $Y - 51.5 = Z$  dBuA/m, which has the same margin, W dB, to the corresponding RSS-Gen Table 6 limit as it has to 15.209(a) limit.



## VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	200897 ACF 3m (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	69.16	Pk	34.1	0	-38.28	64.98	-	-	74	-9.02	116	159	V
2	* 5.149779	70.87	Pk	34.1	0	-38.28	66.69	-	-	74	-7.31	116	159	V
3	* 5.15	52.6	RMS	34.1	.49	-38.28	48.91	54	-5.09	-	-	116	159	V
4	* 5.148446	54.18	RMS	34.1	.49	-38.26	50.51	54	-3.49	-	-	116	159	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

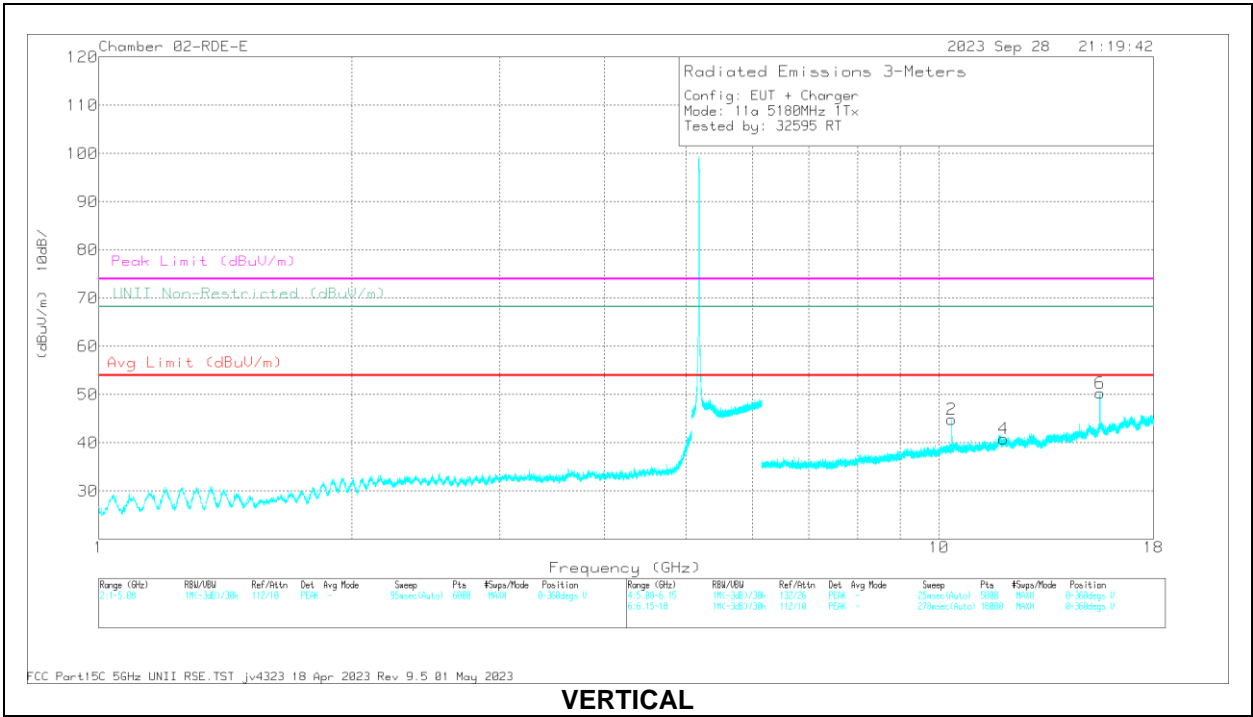
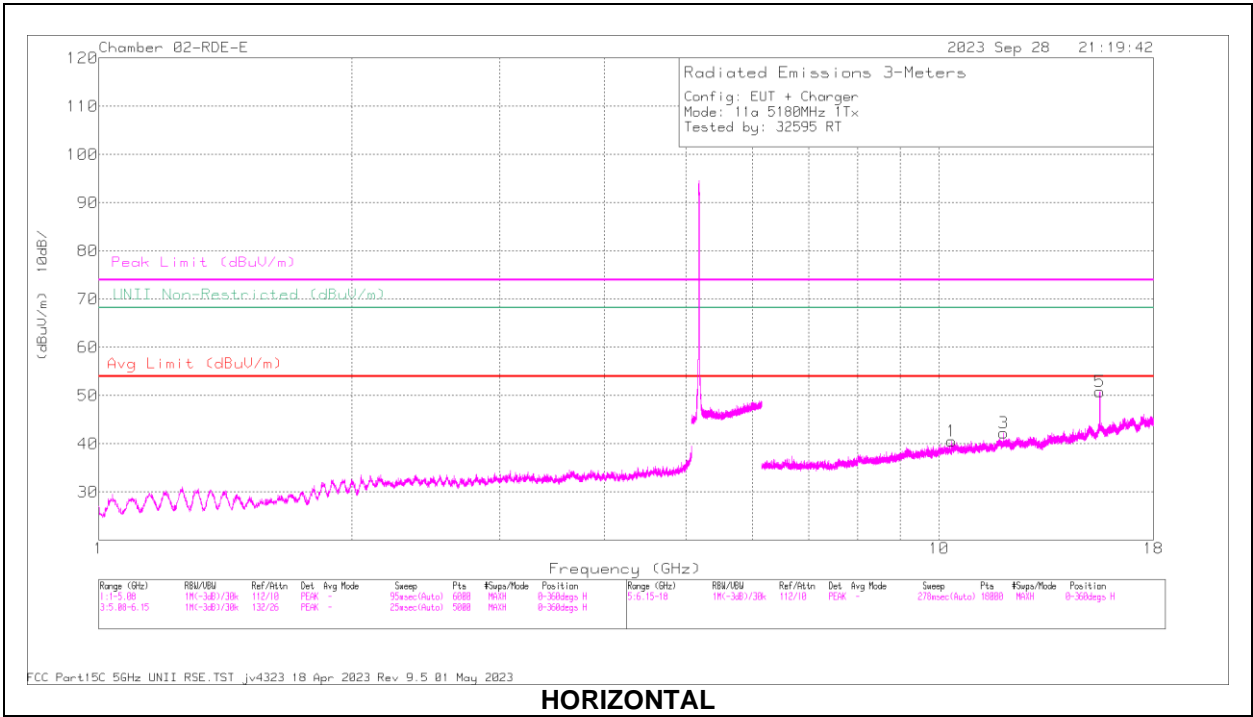
Pk - Peak detector

RMS - RMS detection



HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



## RADIATED EMISSIONS

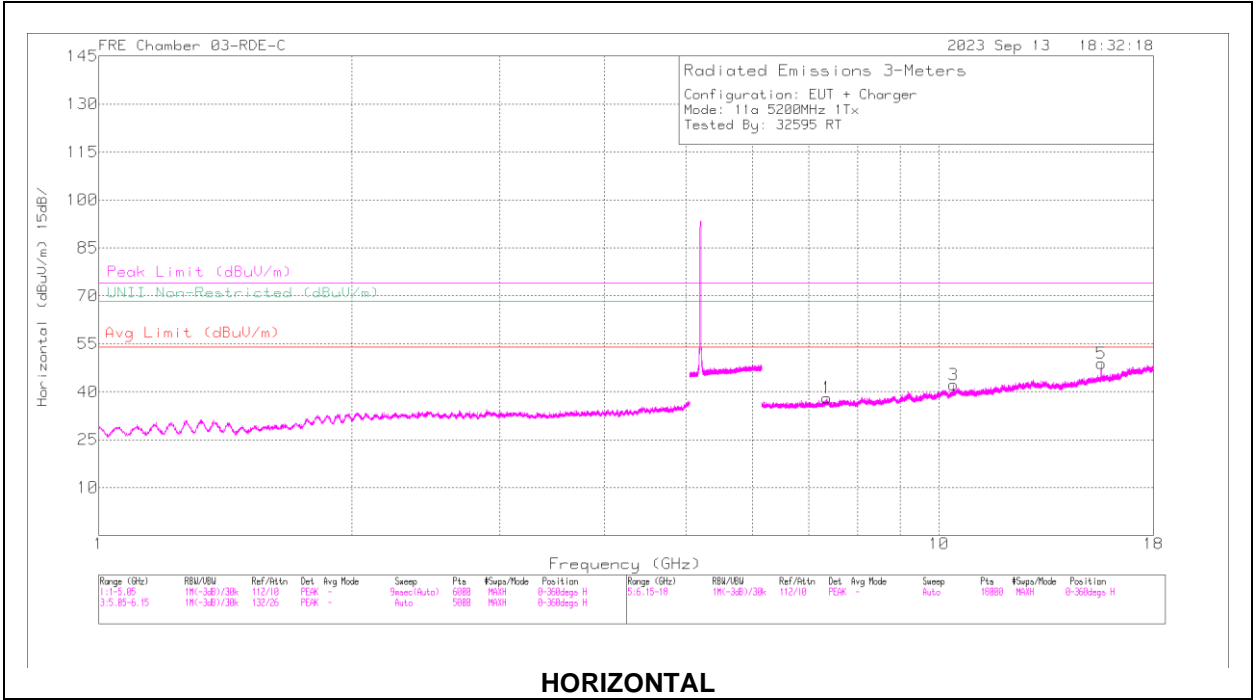
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206807 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 11.9427	54.69	PK-U	38.7	0	-42.83	50.56	-	-	74	-23.44	-	-	197	341	H
	* 11.9436	42.93	ADR	38.7	.49	-42.84	39.28	54	-14.72	-	-	-	-	197	341	H
5	* 15.5401	61.05	PK-U	40.3	0	-40.9	60.45	-	-	74	-13.55	-	-	221	213	H
	* 15.5391	48.17	ADR	40.3	.49	-40.87	48.09	54	-5.91	-	-	-	-	221	213	H
4	* 11.9500	54.44	PK-U	38.7	0	-42.89	50.25	-	-	74	-23.75	-	-	275	186	V
	* 11.9495	43.22	ADR	38.7	.49	-42.89	39.52	54	-14.48	-	-	-	-	275	186	V
6	* 15.5398	61.96	PK-U	40.3	0	-40.9	61.36	-	-	74	-12.64	-	-	255	110	V
	* 15.5397	49.18	ADR	40.3	.49	-40.89	49.08	54	-4.92	-	-	-	-	255	110	V
2	10.359918	58.37	PK-U	37.6	0	-44.33	51.64	-	-	-	-	68.2	-16.56	184	126	V
1	10.360205	56.5	PK-U	37.6	0	-44.32	49.78	-	-	-	-	68.2	-18.42	177	364	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

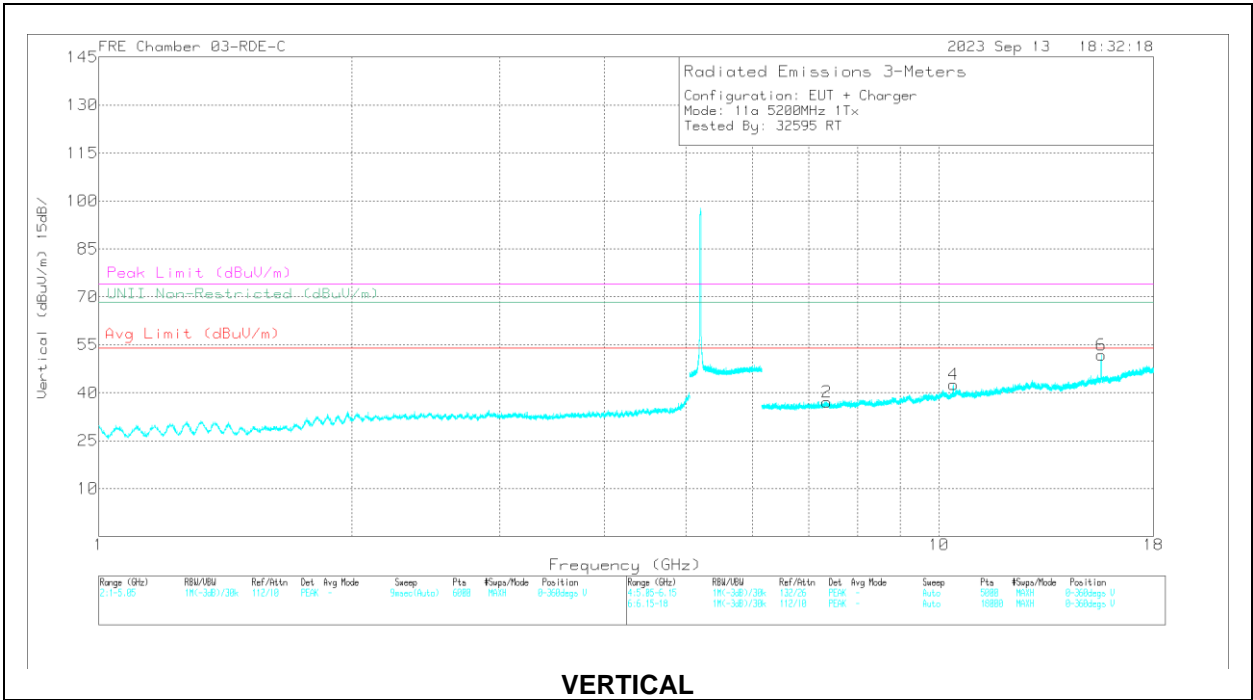
PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

## RADIATED EMISSIONS

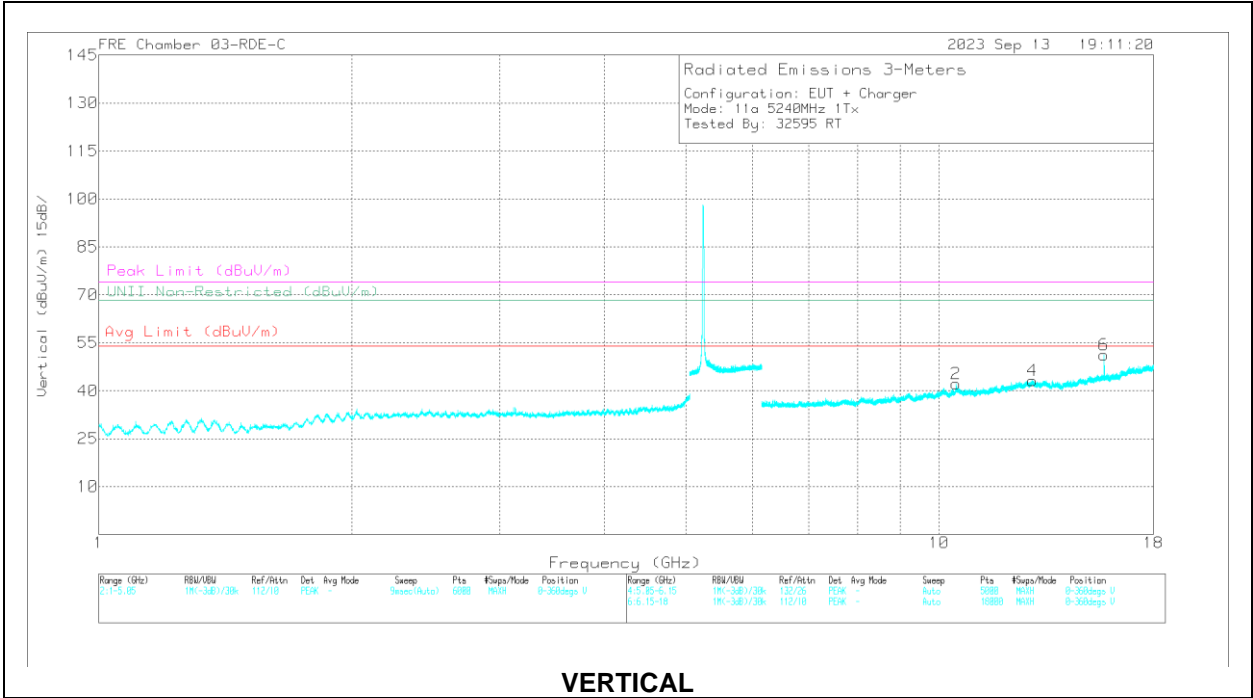
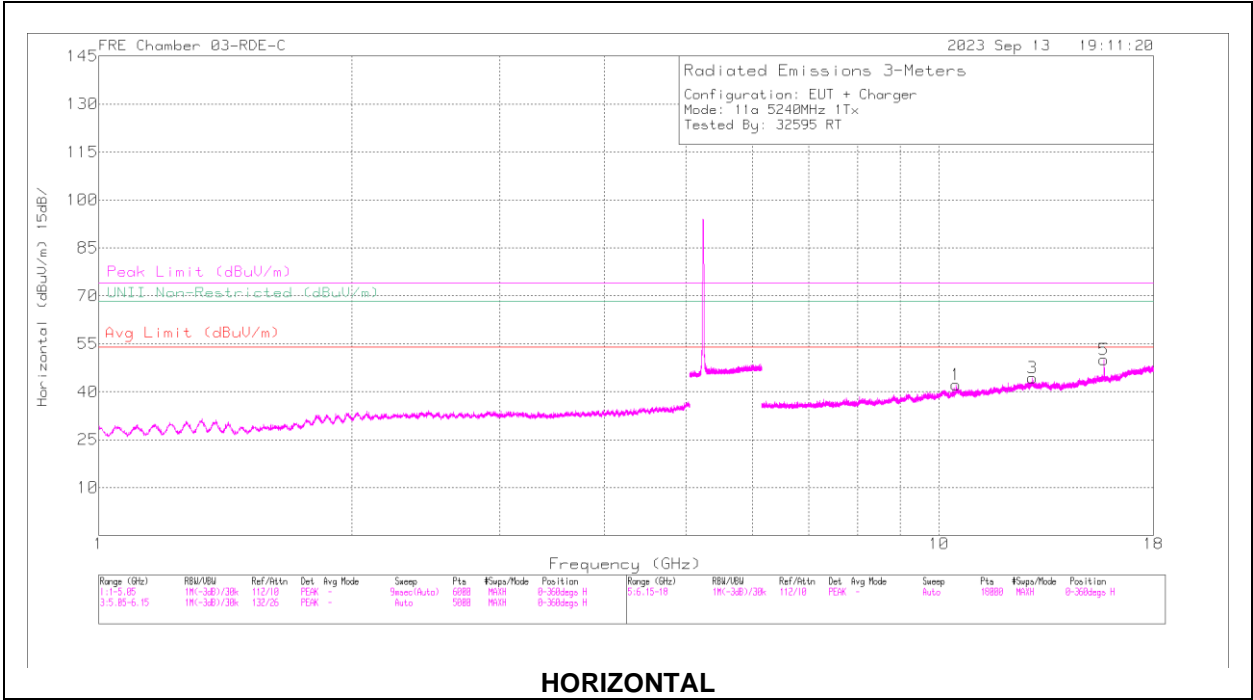
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226672 ACF (dB) 3mH	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 7.359355	56.82	PK-U	35.7	0	-45.84	46.68	-	-	74	-27.32	-	-	258	273	H
	* 7.357032	45.39	ADR	35.7	.49	-45.8	35.78	54	-18.22	-	-	-	-	258	273	H
5	*15.600147	64.47	PK-U	40	0	-44.1	60.37	-	-	74	-13.63	-	-	90	127	H
	*15.599449	51.61	ADR	40	.49	-44.1	48	54	-6	-	-	-	-	90	127	H
2	* 7.357222	57.16	PK-U	35.7	0	-45.8	47.06	-	-	74	-26.94	-	-	89	397	V
	* 7.35792	45.33	ADR	35.7	.49	-45.8	35.72	54	-18.28	-	-	-	-	89	397	V
6	*15.600136	65.97	PK-U	40	0	-44.1	61.87	-	-	74	-12.13	-	-	144	155	V
	*15.600541	52.86	ADR	40	.49	-44.1	49.25	54	-4.75	-	-	-	-	144	155	V
3	10.398738	58.13	PK-U	37.5	0	-44.9	50.73	-	-	-	-	68.2	-17.47	169	381	V
4	10.399003	59.78	PK-U	37.5	0	-44.9	52.38	-	-	-	-	68.2	-15.82	137	128	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

HIGH CHANNEL RESULTS



## RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226672 ACF (dB) 3mH	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	*15.719882	64.28	PK-U	40.1	0	-44.1	60.28	-	-	74	-13.72	-	-	93	120	H
	*15.719644	51.41	ADR	40.1	.49	-44.1	47.9	54	-6.1	-	-	-	-	93	120	H
6	*15.720019	67.18	PK-U	40.1	0	-44.1	63.18	-	-	74	-10.82	-	-	144	108	V
	*15.720009	54.21	ADR	40.1	.49	-44.1	50.7	54	-3.3	-	-	-	-	144	108	V
2	10.479176	59.04	PK-U	37.5	0	-44.18	52.36	-	-	-	-	68.2	-15.84	165	238	V
1	10.479655	59.18	PK-U	37.5	0	-44.13	52.55	-	-	-	-	68.2	-15.65	120	104	H
3	12.915812	58.03	PK-U	39.2	0	-44.48	52.75	-	-	-	-	68.2	-15.45	343	289	H
4	12.916958	58.12	PK-U	39.2	0	-44.5	52.82	-	-	-	-	68.2	-15.38	221	284	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

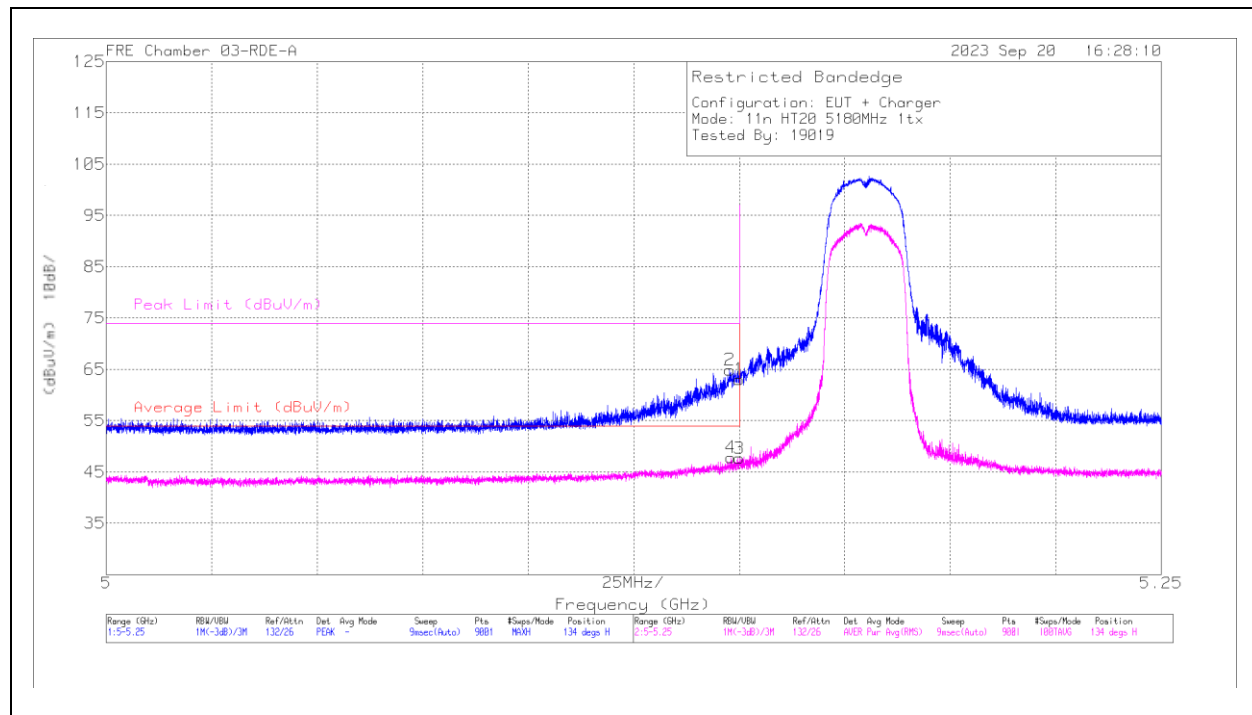
ADR - U-NII AD primary method, RMS average

## 10.1.2. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.2 GHz BAND

### 1TX Antenna 1 MODE

### BANDEDGE (LOW CHANNEL)

### HORIZONTAL RESULT



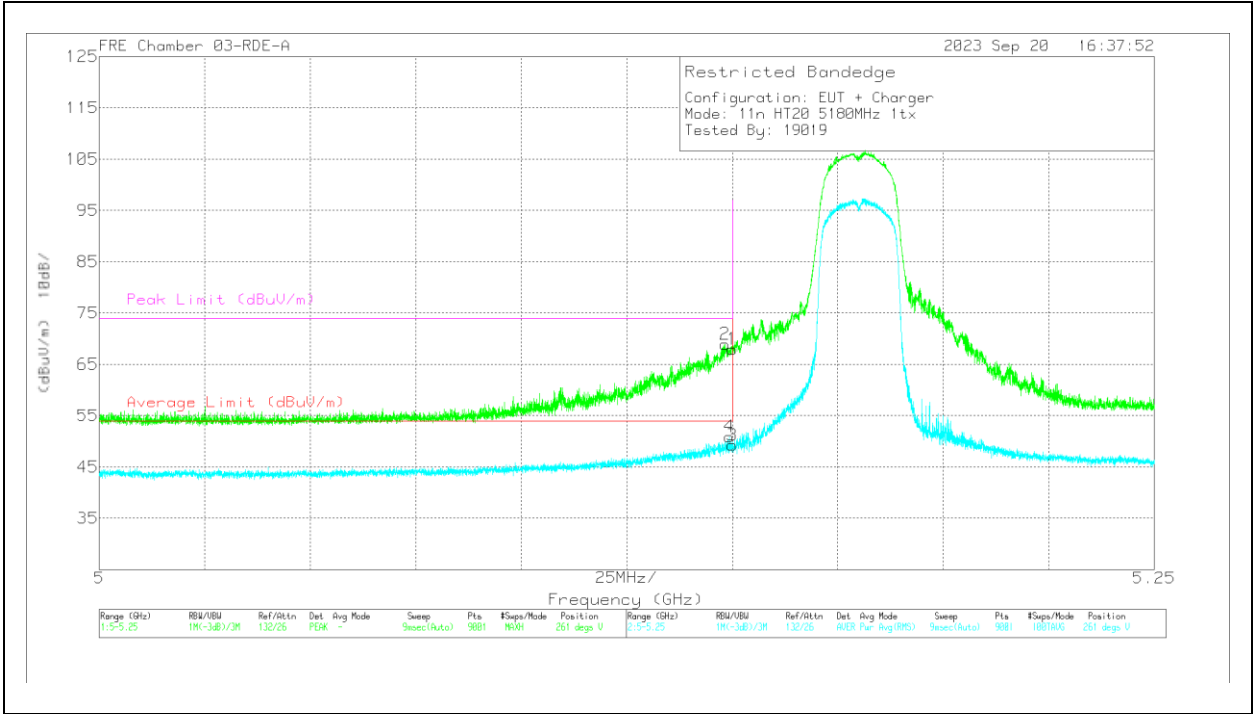
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	200897 ACF 3m (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	67.23	Pk	34.1	0	-38.28	63.05	-	-	74	-10.95	134	219	H
2	* 5.147751	69.04	Pk	34.1	0	-38.25	64.89	-	-	74	-9.11	134	219	H
3	* 5.15	51.31	RMS	34.1	.52	-38.28	47.65	54	-6.35	-	-	134	219	H
4	* 5.148001	51.44	RMS	34.1	.52	-38.25	47.81	54	-6.19	-	-	134	219	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT



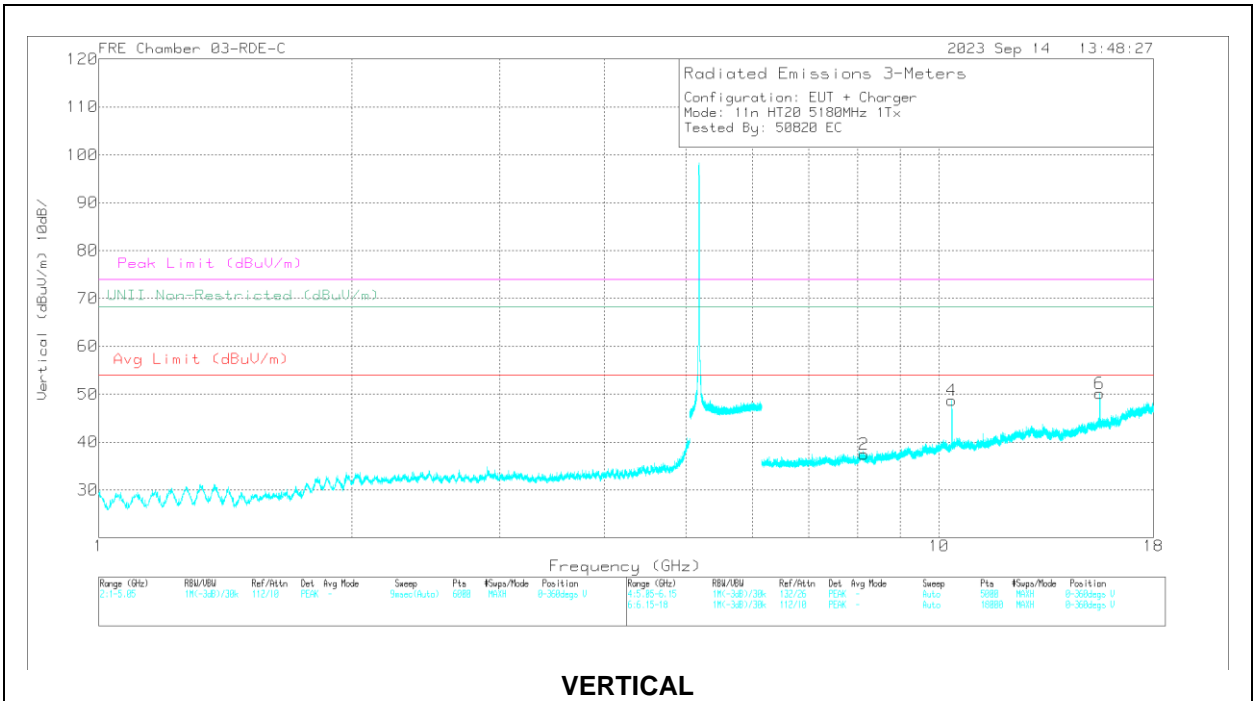
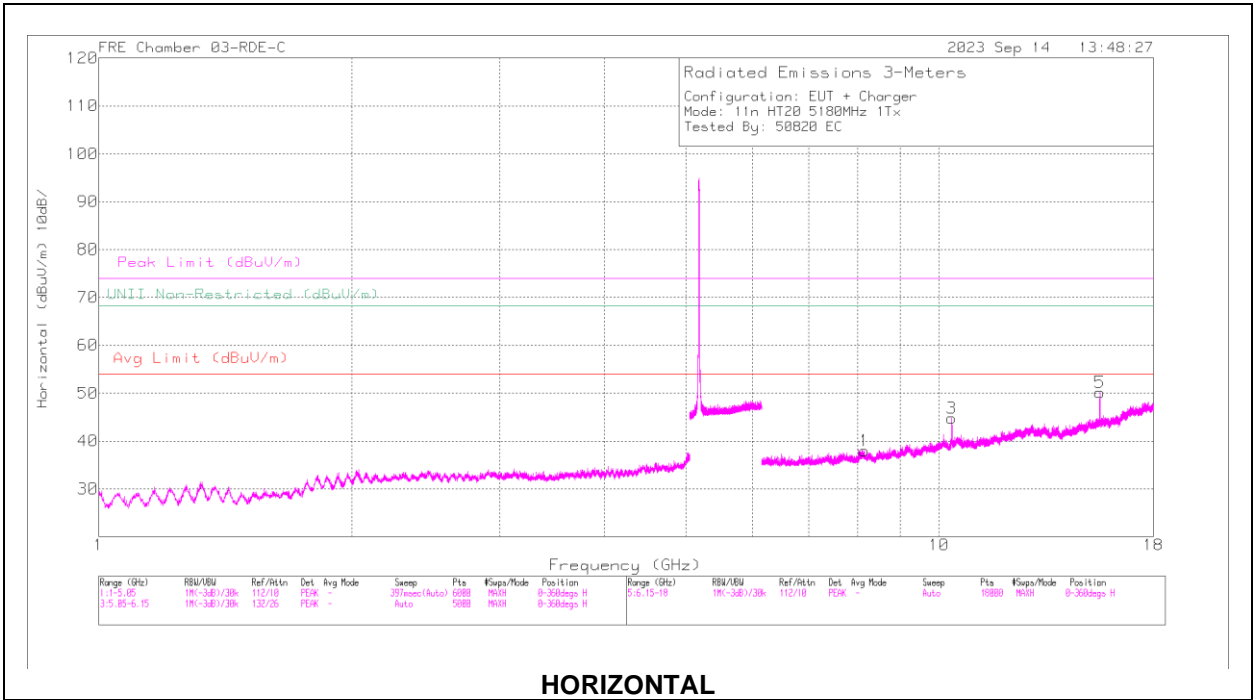
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	200897 ACF 3m (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	72.12	Pk	34.1	0	-38.28	67.94	-	-	74	-6.06	261	208	V
2	* 5.148335	73.11	Pk	34.1	0	-38.26	68.95	-	-	74	-5.05	261	208	V
3	* 5.15	52.9	RMS	34.1	.52	-38.28	49.24	54	-4.76	-	-	261	208	V
4	* 5.149307	54.56	RMS	34.1	.52	-38.27	50.91	54	-3.09	-	-	261	208	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
Pk - Peak detector  
RMS - RMS detection



HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



## RADIATED EMISSIONS

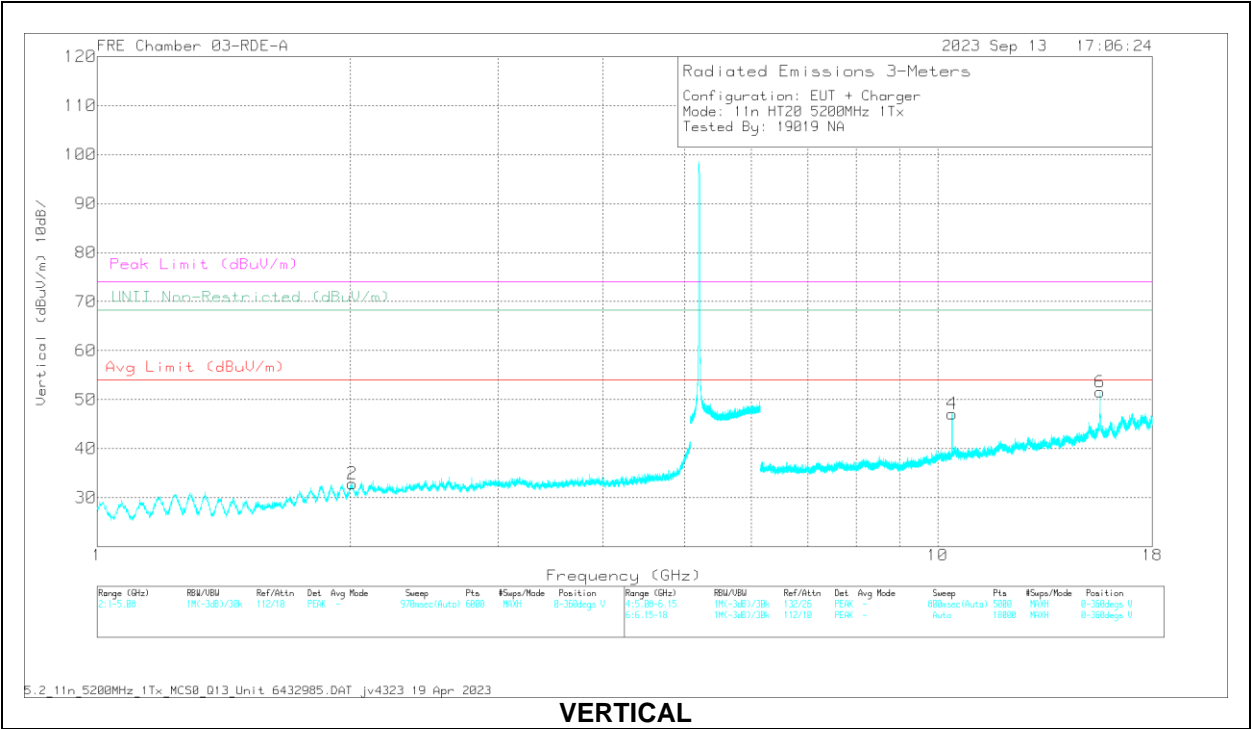
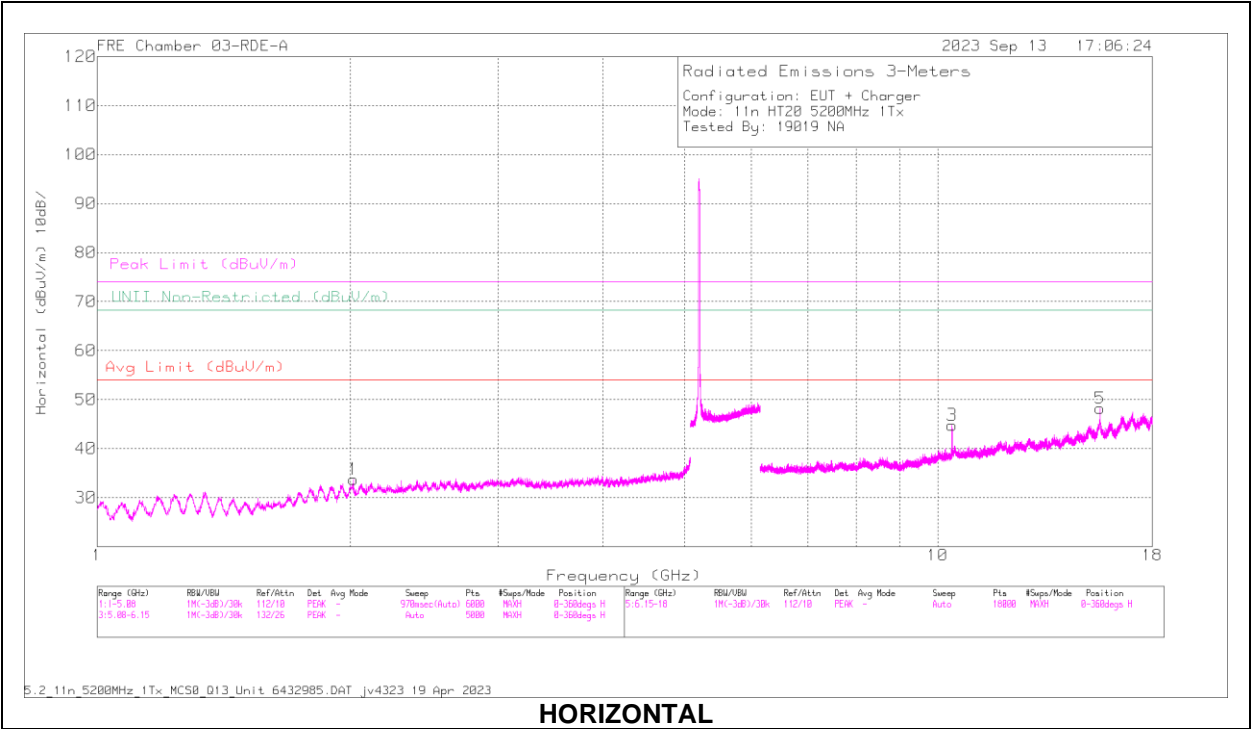
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226672 ACF (dB) 3mH	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 8.149996	55.96	PK-U	35.9	0	-44.5	47.36	-	-	74	-26.64	-	-	45	330	H
	* 8.151928	44.47	ADR	35.9	.52	-44.6	36.29	54	-17.71	-	-	-	-	45	330	H
5	* 15.54233	66.81	PK-U	39.9	0	-43.8	62.91	-	-	74	-11.09	-	-	217	143	H
	* 15.54128	52.34	ADR	39.9	.52	-43.8	48.96	54	-5.04	-	-	-	-	217	143	H
2	* 8.145063	55.82	PK-U	35.9	0	-44.51	47.21	-	-	74	-26.79	-	-	77	267	V
	* 8.144257	44.53	ADR	35.9	.52	-44.57	36.38	54	-17.62	-	-	-	-	77	267	V
6	* 15.54296	64.83	PK-U	39.9	0	-43.8	60.93	-	-	74	-13.07	-	-	144	239	V
	* 15.54132	51.07	ADR	39.9	.52	-43.8	47.69	54	-6.31	-	-	-	-	144	239	V
3	10.359173	63.67	PK-U	37.4	0	-44.8	56.27	-	-	-	-	68.2	-11.93	144	100	H
4	10.361059	64.91	PK-U	37.4	0	-44.8	57.51	-	-	-	-	68.2	-10.69	152	138	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

MID CHANNEL RESULTS



## RADIATED EMISSIONS

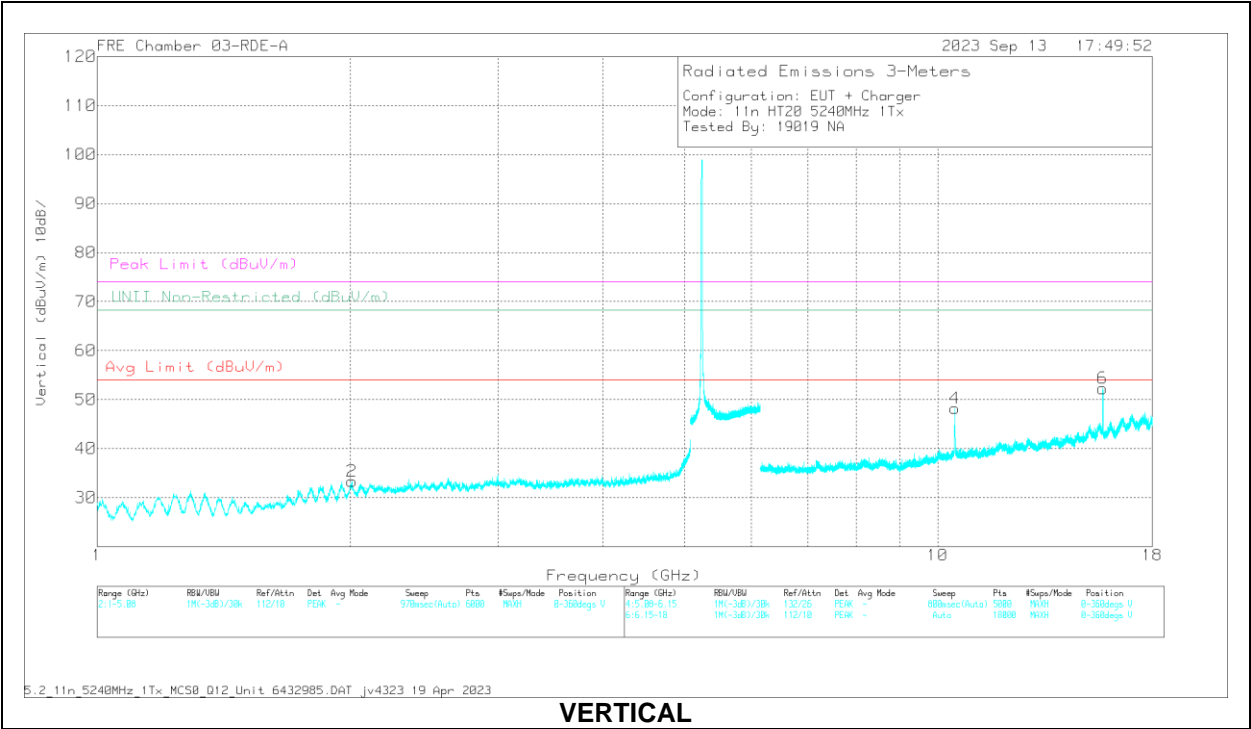
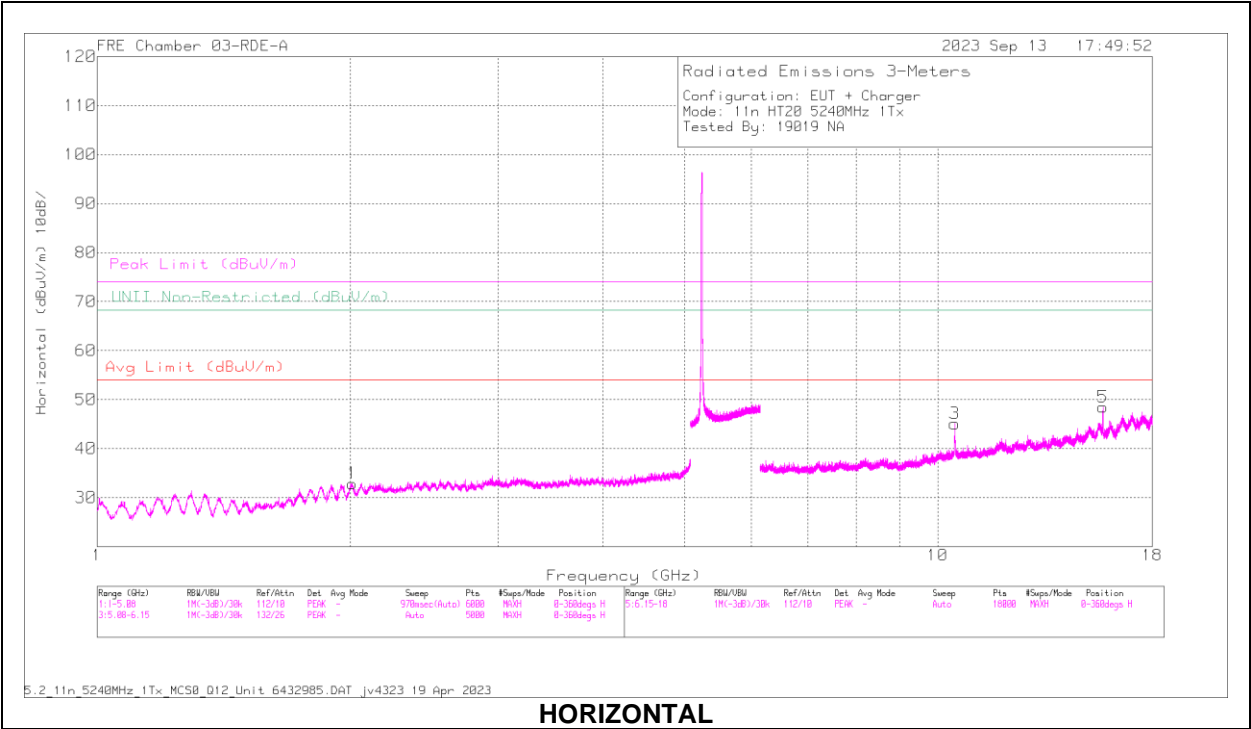
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	200897 ACF 3m (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 15.59465	54.96	PK-U	40.2	0	-40.24	54.92	-	-	74	-19.08	-	-	121	316	H
	* 15.59248	42.77	ADR	40.2	.52	-40.19	43.3	54	-10.7	-	-	-	-	121	316	H
6	* 15.59849	63.76	PK-U	40.2	0	-40.4	63.56	-	-	74	-10.44	-	-	135	113	V
	* 15.59988	50.06	ADR	40.2	.52	-40.47	50.31	54	-3.69	-	-	-	-	135	113	V
2	2.010388	61.92	PK-U	31.3	0	-50.02	43.2	-	-	-	-	68.2	-25	159	122	V
1	2.018518	60.9	PK-U	31.3	0	-50.04	42.16	-	-	-	-	68.2	-26.04	133	184	H
4	10.397766	65.75	PK-U	37.6	0	-45.14	58.21	-	-	-	-	68.2	-9.99	132	116	V
3	10.398875	63.1	PK-U	37.6	0	-45.14	55.56	-	-	-	-	68.2	-12.64	121	102	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

HIGH CHANNEL RESULTS



## RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	200897 ACF 3m (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 15.72230	62.51	PK-U	40.4	0	-41.74	61.17	-	-	74	-12.83	-	-	76	113	H
	* 15.72139	48.66	ADR	40.4	.52	-41.74	47.84	54	-6.16	-	-	-	-	76	113	H
6	* 15.72278	65.5	PK-U	40.4	0	-41.73	64.17	-	-	74	-9.83	-	-	138	110	V
	* 15.72162	51.54	ADR	40.4	.52	-41.75	50.71	54	-3.29	-	-	-	-	138	110	V
2	2.007809	61.54	PK-U	31.2	0	-50.22	42.52	-	-	-	-	68.2	-25.68	145	176	V
1	2.01018	61.39	PK-U	31.3	0	-50.03	42.66	-	-	-	-	68.2	-25.54	73	134	H
3	10.477992	62.21	PK-U	37.7	0	-45.05	54.86	-	-	-	-	68.2	-13.34	120	145	H
4	10.481305	64.38	PK-U	37.7	0	-44.88	57.2	-	-	-	-	68.2	-11	133	110	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

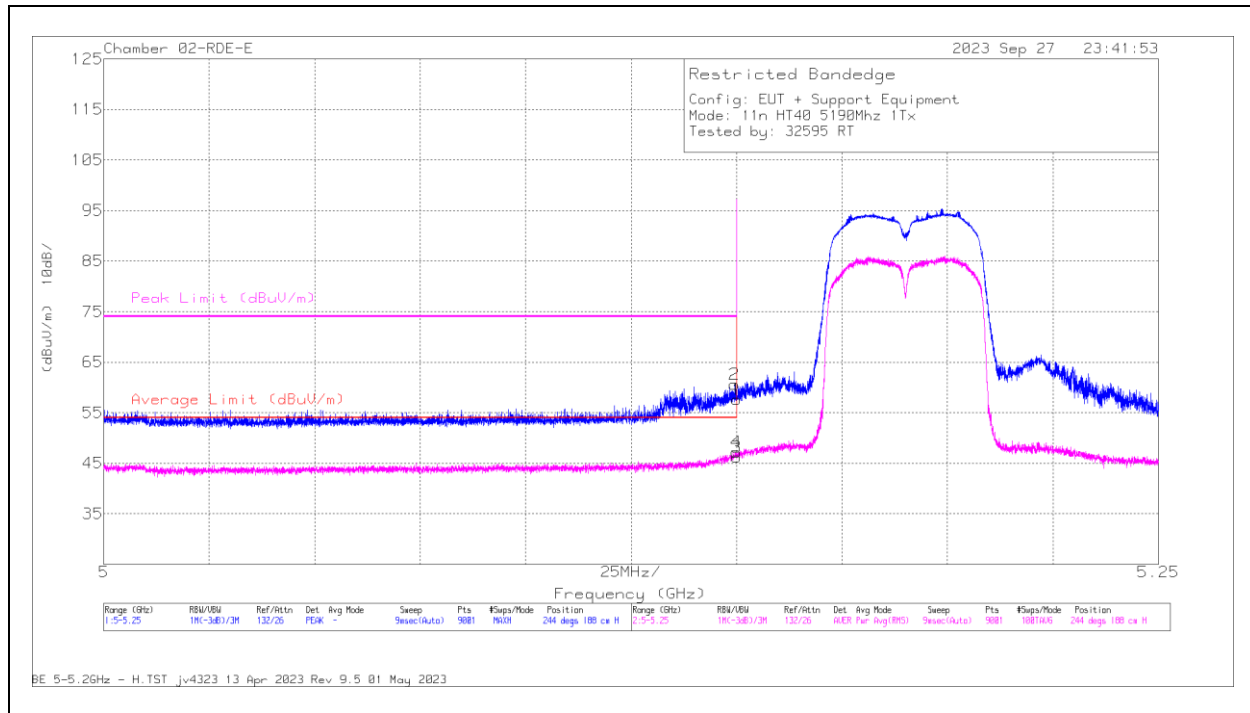
ADR - U-NII AD primary method, RMS average

### 10.1.3. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.2 GHz BAND

#### 1TX Antenna 1 MODE

#### BANDEDGE (LOW CHANNEL)

#### HORIZONTAL RESULT



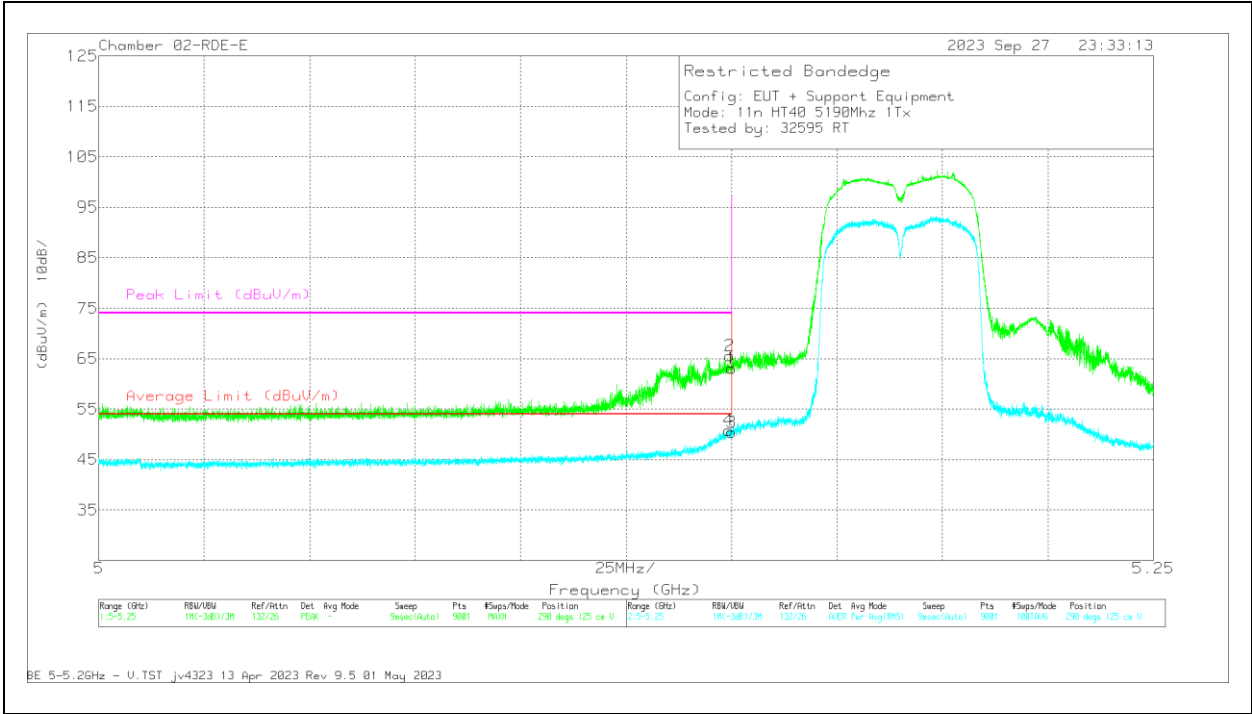
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206807 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 5.149501	64.12	Pk	34.3	0	-37.8	60.62	-	-	74	-13.38	244	188	H
4	* 5.149946	49.64	RMS	34.3	1.09	-37.8	47.23	54	-6.77	-	-	244	188	H
1	* 5.15	61.1	Pk	34.3	0	-37.8	57.6	-	-	74	-16.4	244	188	H
3	* 5.15	48.65	RMS	34.3	1.09	-37.8	46.24	54	-7.76	-	-	244	188	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT



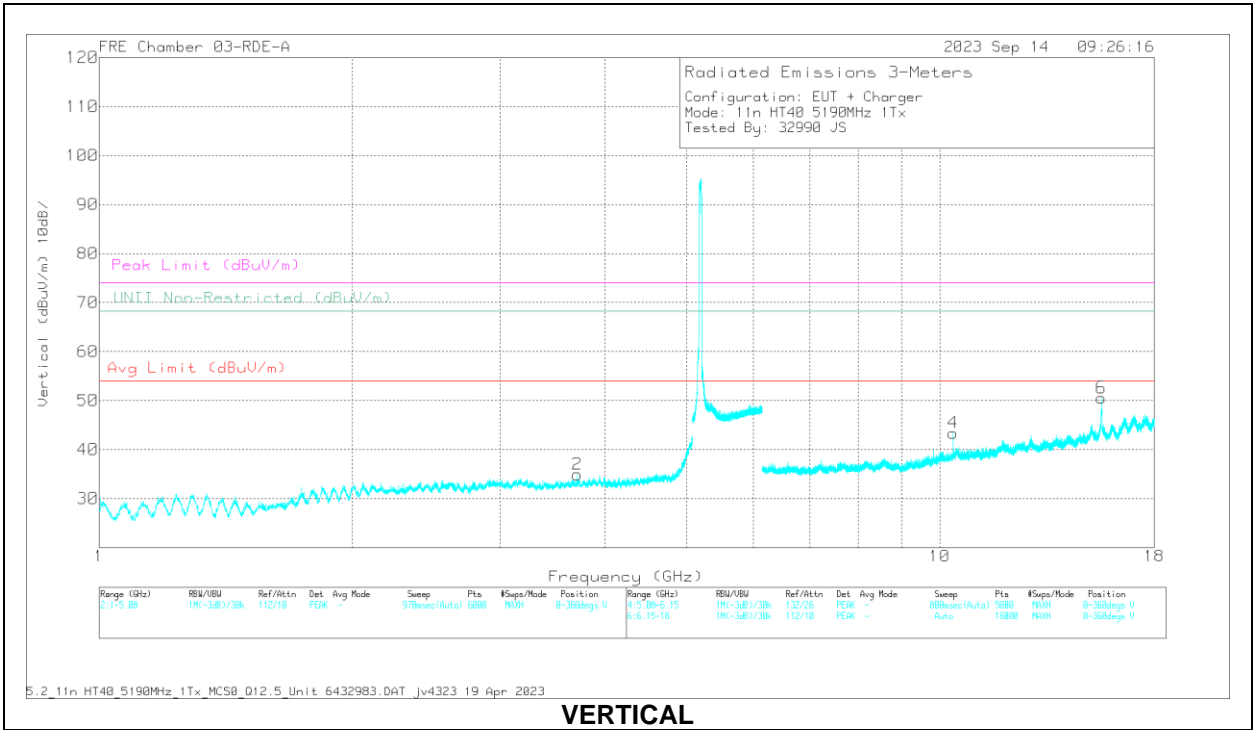
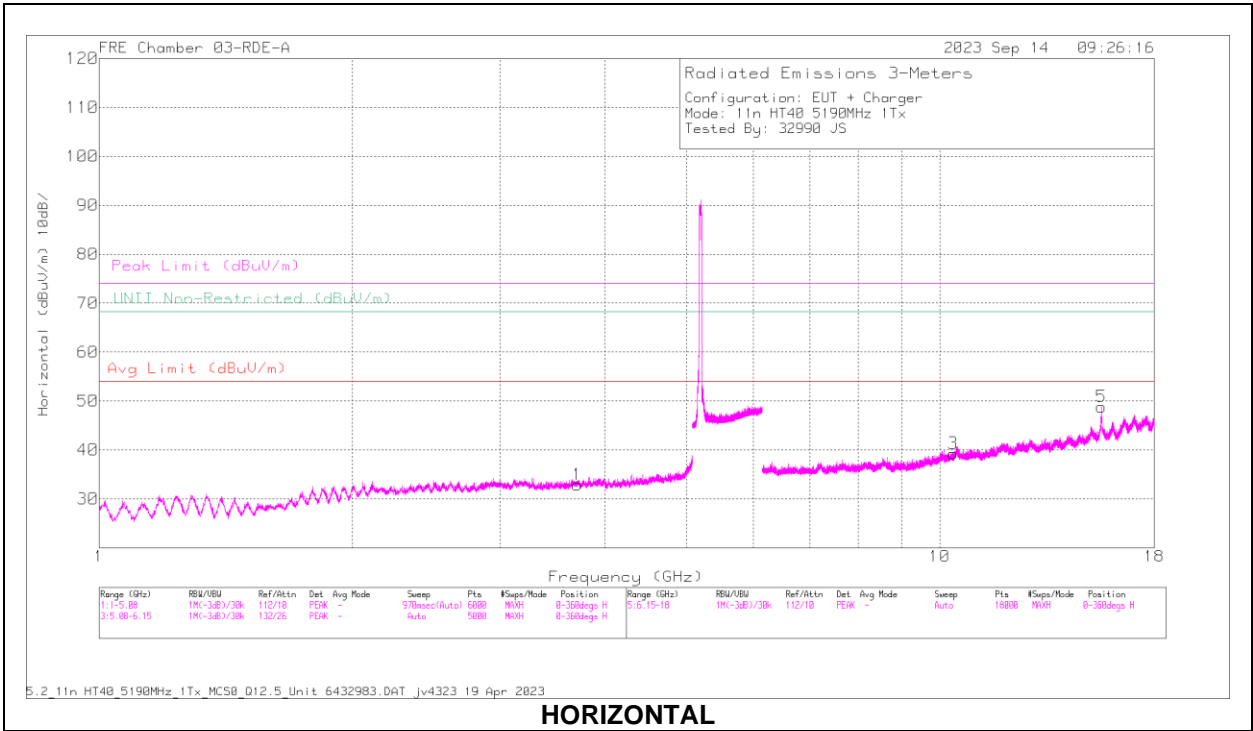
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206807 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	66.53	Pk	34.3	0	-37.8	63.03	-	-	74	-10.97	290	125	V
2	* 5.149529	69.08	Pk	34.3	0	-37.8	65.58	-	-	74	-8.42	290	125	V
3	* 5.15	52.82	RMS	34.3	1.09	-37.8	50.41	54	-3.59	-	-	290	125	V
4	* 5.149279	53.23	RMS	34.3	1.09	-37.8	50.82	54	-3.18	-	-	290	125	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
Pk - Peak detector  
RMS - RMS detection



HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



## RADIATED EMISSIONS

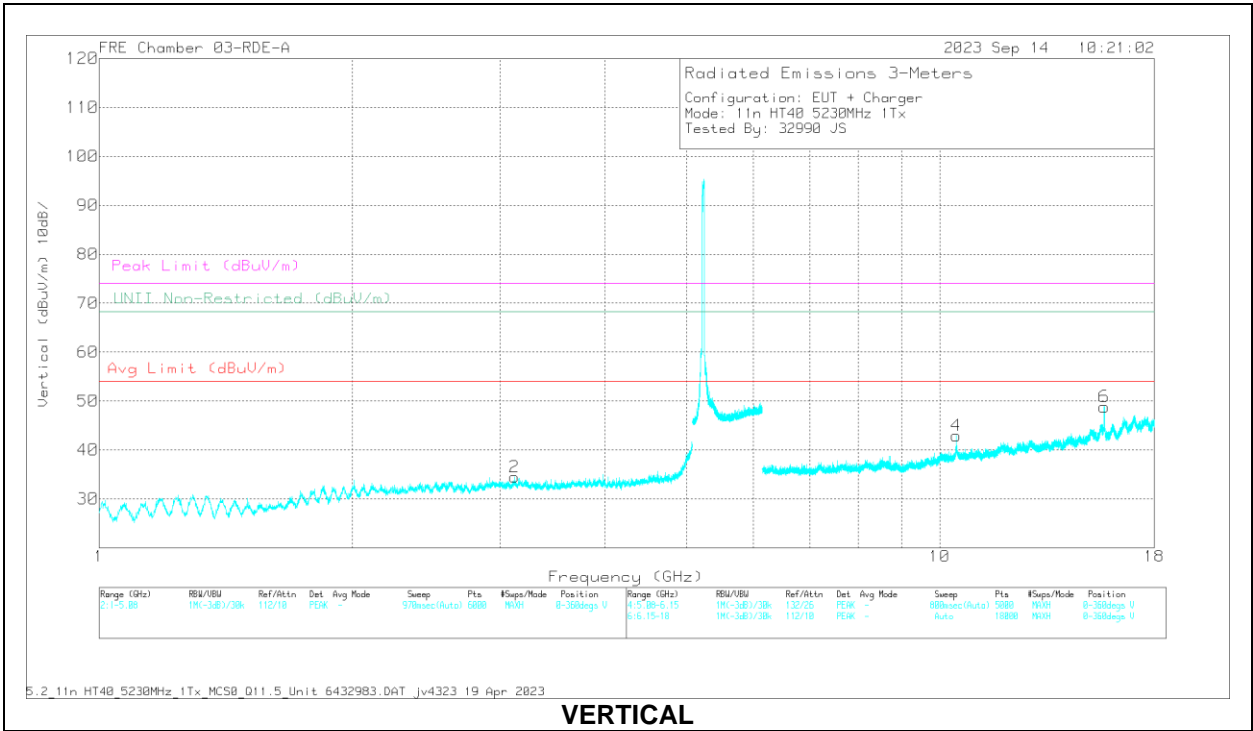
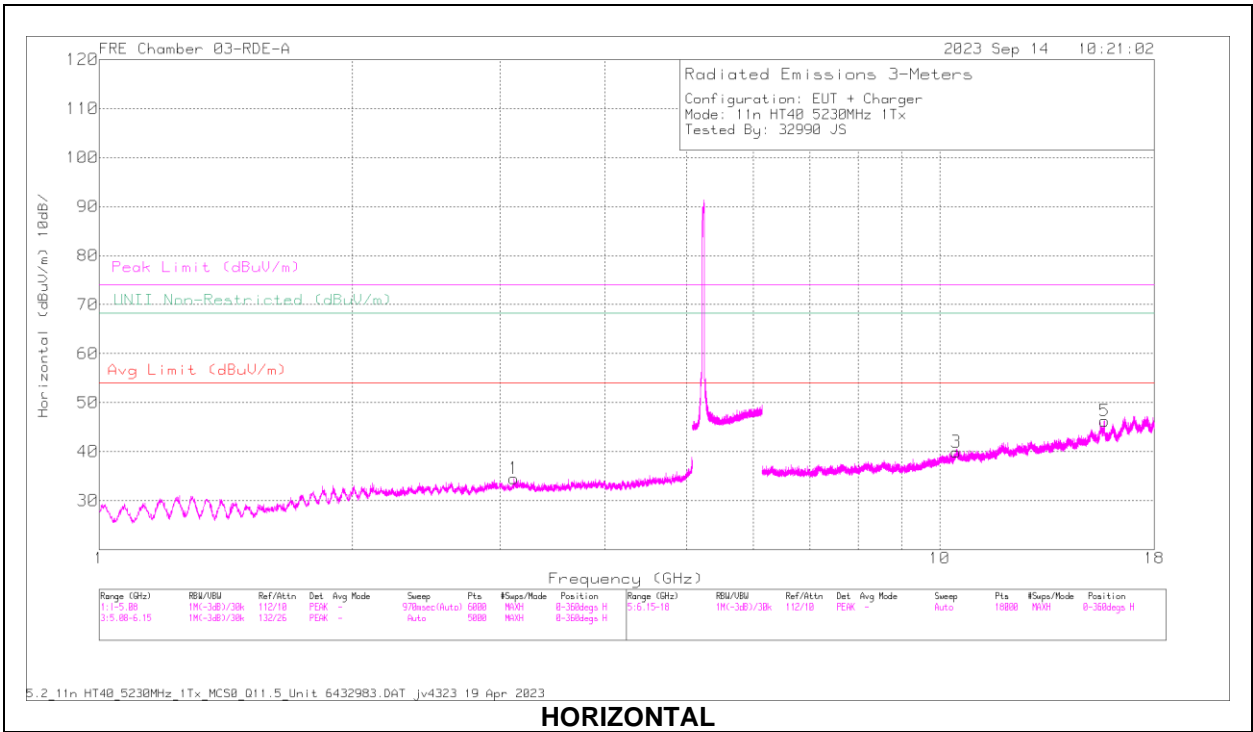
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	200897 ACF 3m (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.703966	57.72	PK-U	33	0	-47.22	43.5	-	-	74	-30.5	-	-	359	183	H
	* 3.704576	46.01	ADR	33	1.09	-47.22	32.88	54	-21.12	-	-	-	-	359	183	H
2	* 3.704041	57.72	PK-U	33	0	-47.22	43.5	-	-	74	-30.5	-	-	322	155	V
	* 3.703112	46.06	ADR	33	1.09	-47.23	32.92	54	-21.08	-	-	-	-	322	155	V
4	* 15.57545	57.56	PK-U	40.2	0	-40.09	57.67	-	-	74	-16.33	-	-	264	225	H
	* 15.57537	44.03	ADR	40.2	1.09	-40.09	45.23	54	-8.77	-	-	-	-	264	225	H
6	* 15.57508	62	PK-U	40.2	0	-40.09	62.11	-	-	74	-11.89	-	-	311	108	V
	* 15.57503	47.88	ADR	40.2	1.09	-40.09	49.08	54	-4.92	-	-	-	-	311	108	V
3	10.379581	58.92	PK-U	37.6	0	-45.17	51.35	-	-	-	-	68.2	-16.85	288	242	V
4	10.380161	56.53	PK-U	37.6	0	-45.16	48.97	-	-	-	-	68.2	-19.23	66	342	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

HIGH CHANNEL RESULTS



## RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	200897 ACF 3m (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 15.69777	57.03	PK-U	40.4	0	-41.71	55.72	-	-	74	-18.28	-	-	258	356	H
	* 15.69949	44.84	ADR	40.3	1.09	-41.7	44.53	54	-9.47	-	-	-	-	258	356	H
6	* 15.69806	60.44	PK-U	40.4	0	-41.71	59.13	-	-	74	-14.87	-	-	321	101	V
	* 15.69749	47.05	ADR	40.4	1.09	-41.72	46.82	54	-7.18	-	-	-	-	321	101	V
1	3.107526	58.57	PK-U	33	0	-48.03	43.54	-	-	-	-	68.2	-24.66	75	251	H
2	3.120329	59	PK-U	33	0	-48.03	43.97	-	-	-	-	68.2	-24.23	270	308	V
4	10.458966	56.94	PK-U	37.7	0	-45.14	49.5	-	-	-	-	68.2	-18.7	286	103	H
3	10.460334	59.41	PK-U	37.7	0	-45.15	51.96	-	-	-	-	68.2	-16.24	302	132	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

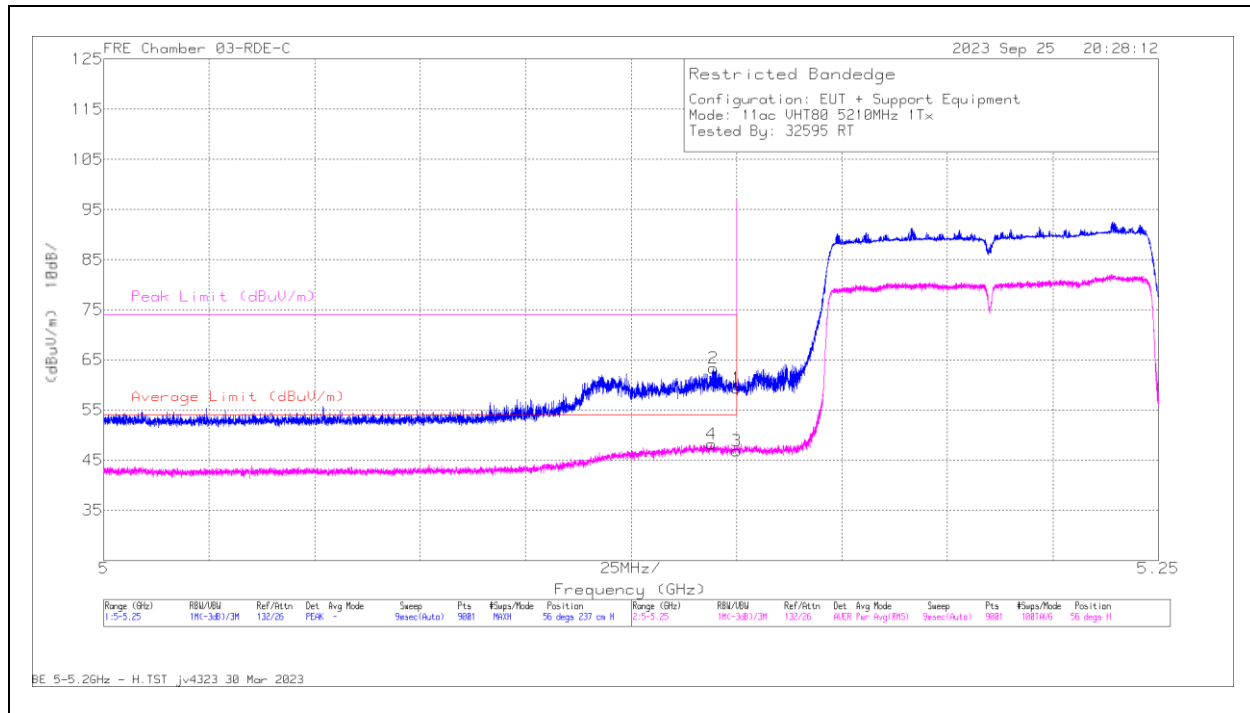
ADR - U-NII AD primary method, RMS average

## 10.1.4. TX ABOVE 1 GHz 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

### 1TX Antenna 1 MODE

### BANDEDGE (MID CHANNEL)

### HORIZONTAL RESULT



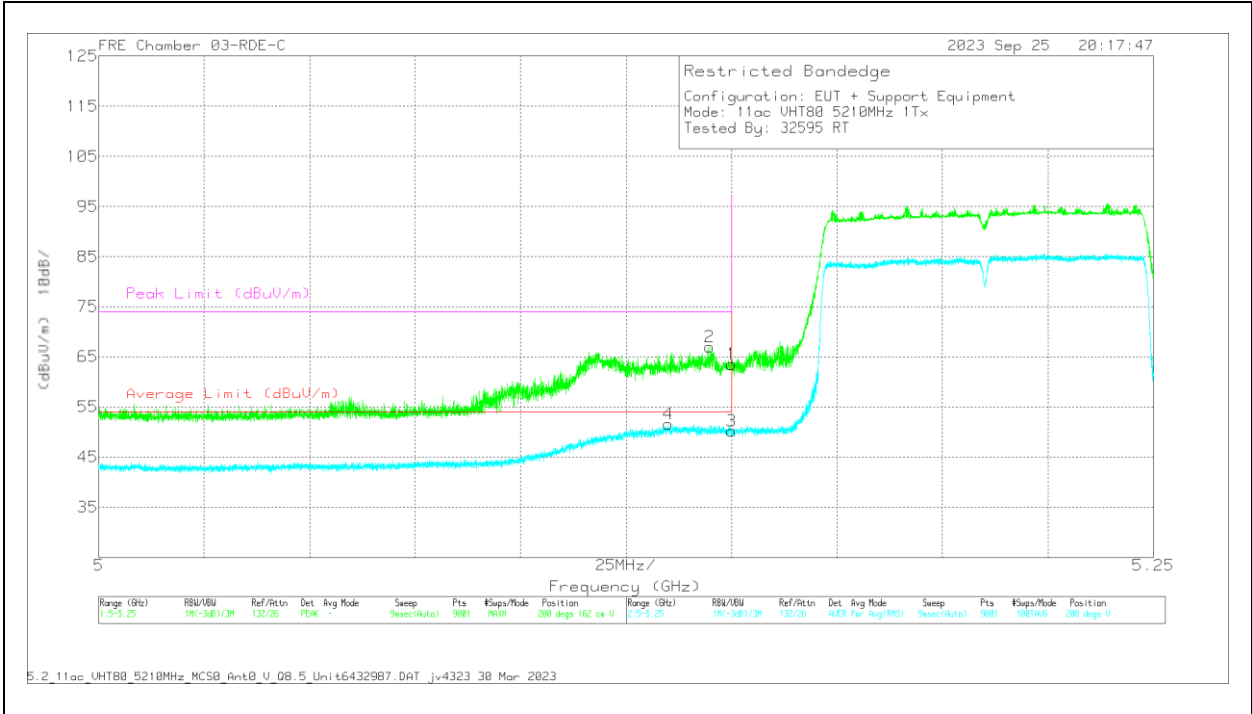
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226672 ACF (dB) 3mH	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	63.32	Pk	34.4	0	-38.4	59.32	-	-	74	-14.68	56	237	H
2	* 5.144529	67.49	Pk	34.3	0	-38.45	63.34	-	-	74	-10.66	56	237	H
3	* 5.15	50.51	RMS	34.4	.39	-38.4	46.9	54	-7.1	-	-	56	237	H
4	* 5.144084	51.93	RMS	34.3	.39	-38.41	48.21	54	-5.79	-	-	56	237	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT

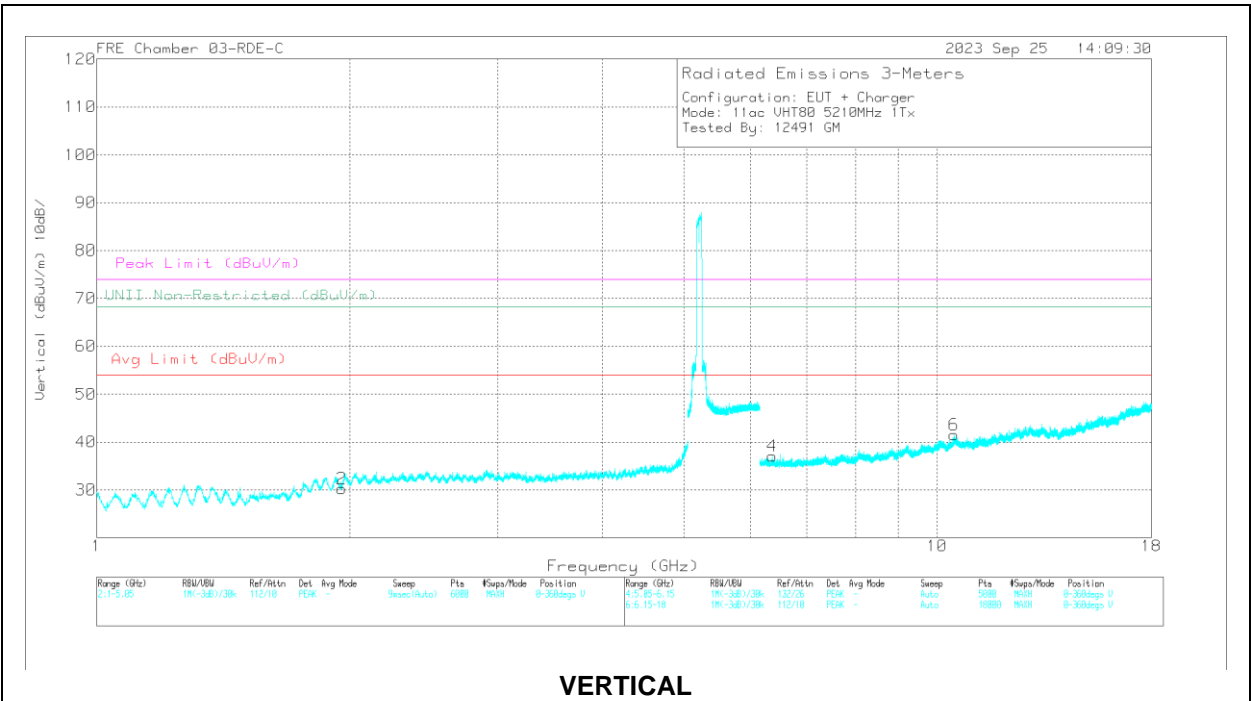
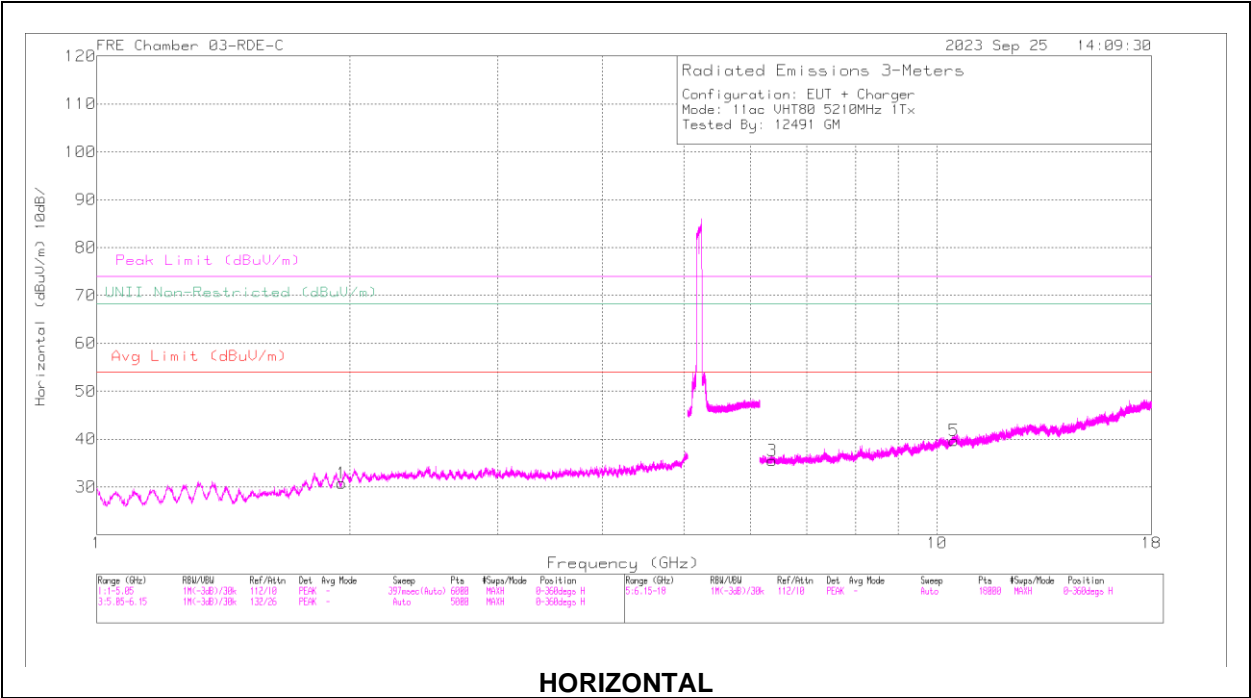


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226672 ACF (dB) 3mH	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	67.55	Pk	34.4	0	-38.4	63.55	-	-	74	-10.45	200	162	V
2	* 5.14489	71.19	Pk	34.3	0	-38.49	67	-	-	74	-7	200	162	V
3	* 5.15	53.86	RMS	34.4	.39	-38.4	50.25	54	-3.75	-	-	200	162	V
4	* 5.134973	55.27	RMS	34.3	.39	-38.41	51.55	54	-2.45	-	-	200	162	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
Pk - Peak detector  
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

MID CHANNEL RESULTS



## RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226672 ACF (dB) 3mH	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.955305	58.52	PK-U	31.2	0	-48.1	41.62	-	-	-	-	68.2	-26.58	260	108	V
2	1.956322	58.05	PK-U	31.2	0	-48.07	41.18	-	-	-	-	68.2	-27.02	133	122	H
3	6.362967	56.25	PK-U	35.4	0	-45.1	46.55	-	-	-	-	68.2	-21.65	119	148	V
4	6.364166	55.97	PK-U	35.4	0	-45.12	46.25	-	-	-	-	68.2	-21.95	166	139	H
5	10.479011	57.32	PK-U	37.5	0	-44.2	50.62	-	-	-	-	68.2	-17.58	130	118	V
6	10.481024	57.54	PK-U	37.5	0	-44.1	50.94	-	-	-	-	68.2	-17.26	229	121	H

PK-U - U-NII: Maximum Peak

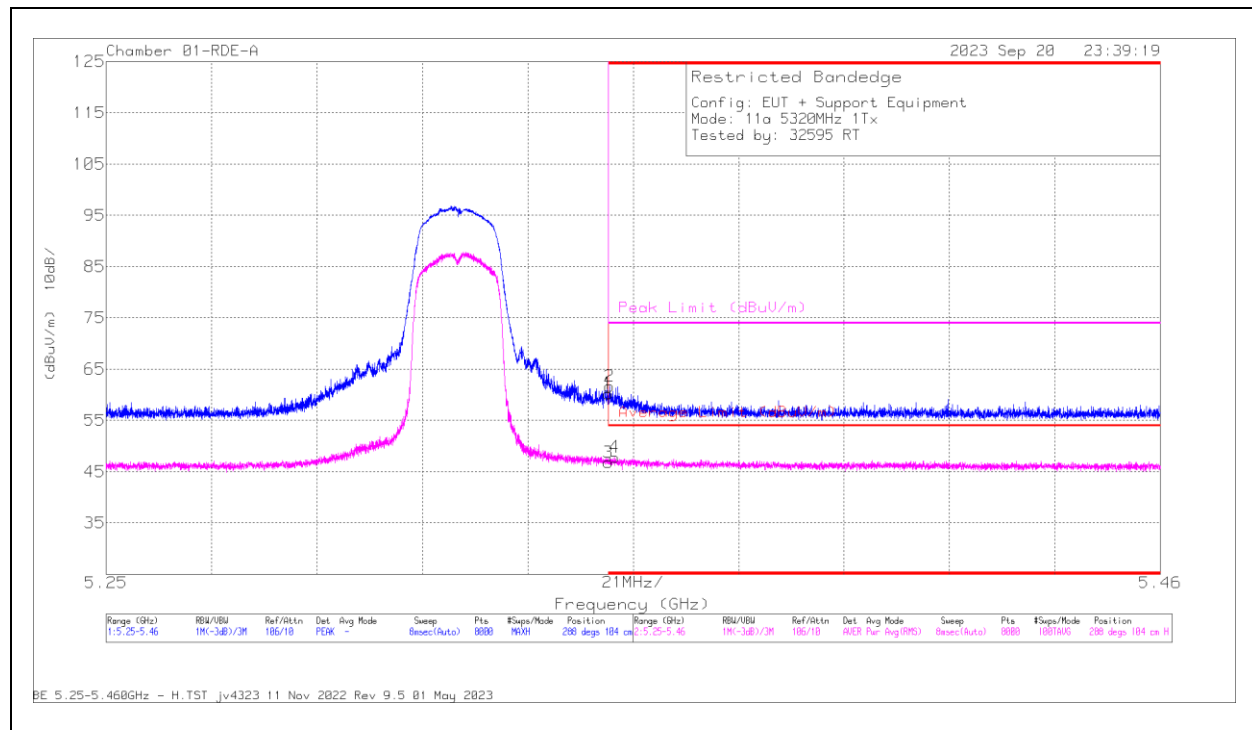


## 10.1.5. TX ABOVE 1 GHz 802.11a MODE IN THE 5.3 GHz BAND

### 1TX Antenna 1 MODE

### BANDEDGE (HIGH CHANNEL)

### HORIZONTAL RESULT



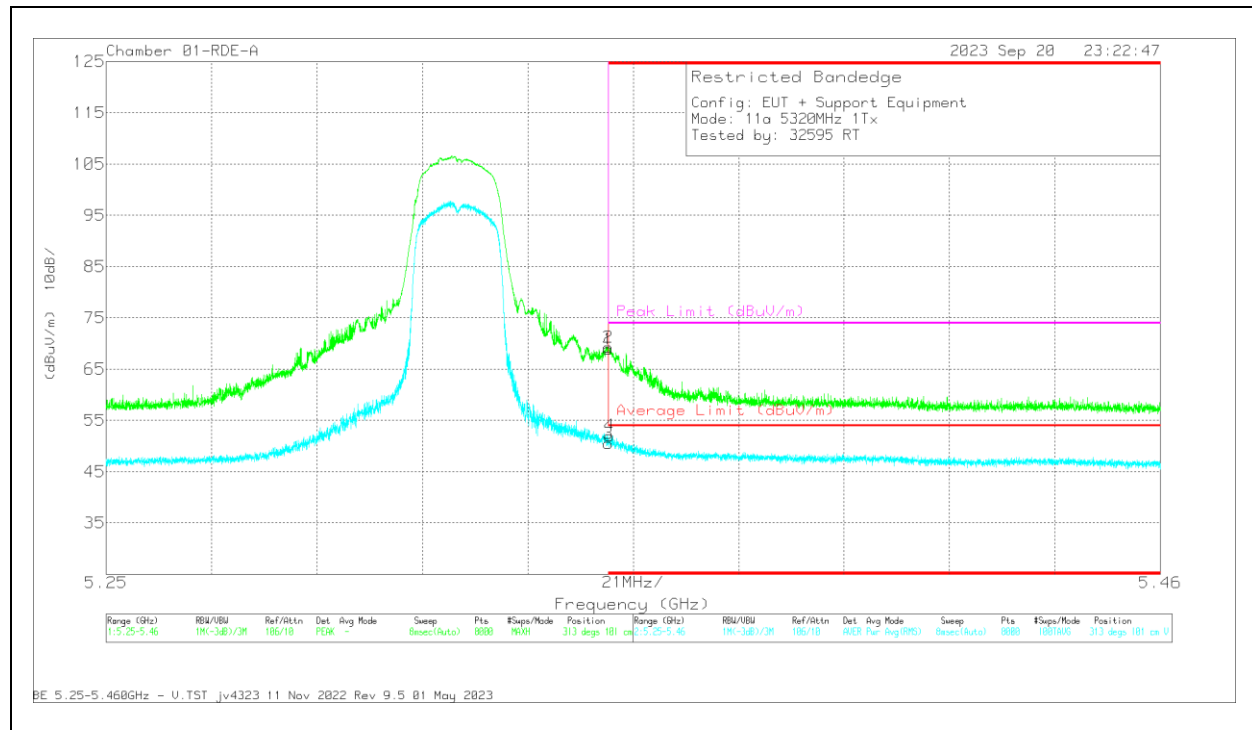
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	81886 ACF 3m (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.35	39.5	Pk	34.4	0	-13.66	60.24	-	-	74	-13.76	288	104	H
2	* 5.350286	40.9	Pk	34.4	0	-13.65	61.65	-	-	74	-12.35	288	104	H
3	* 5.35	25.55	RMS	34.4	.49	-13.66	46.78	54	-7.22	-	-	288	104	H
4	* 5.351258	26.54	RMS	34.4	.49	-13.63	47.8	54	-6.2	-	-	288	104	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

## VERTICAL RESULT

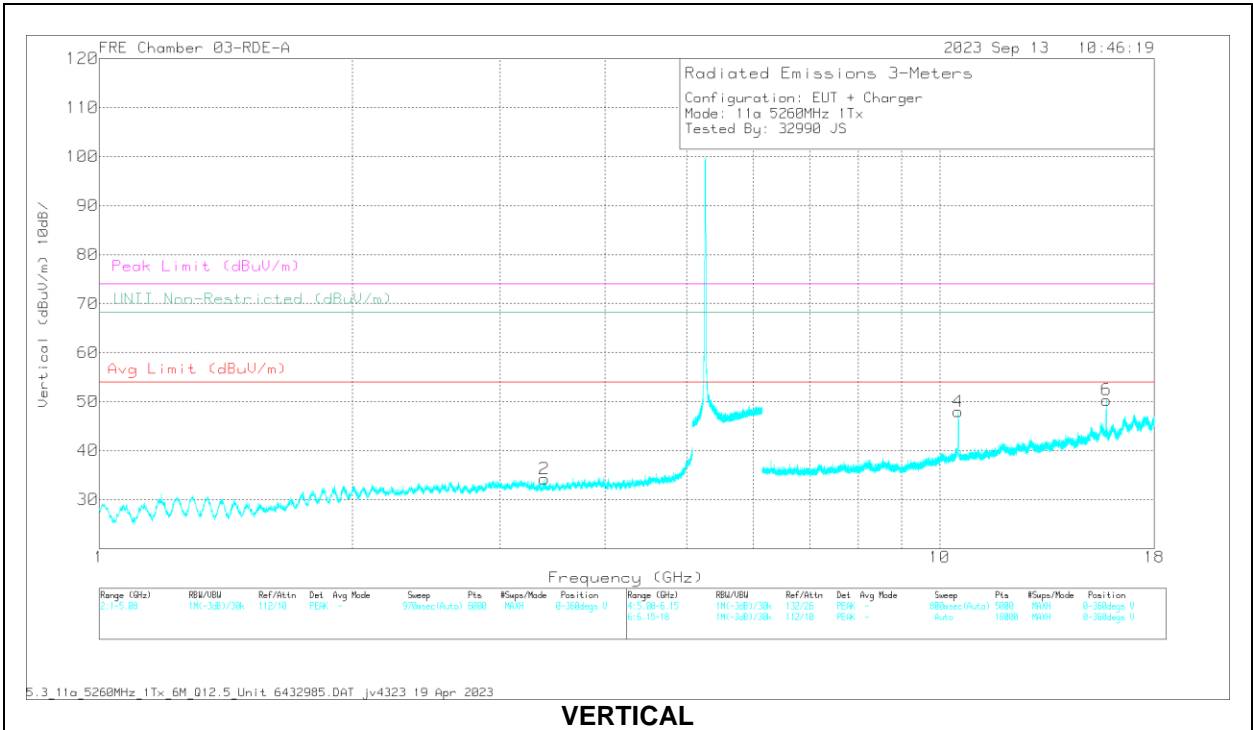
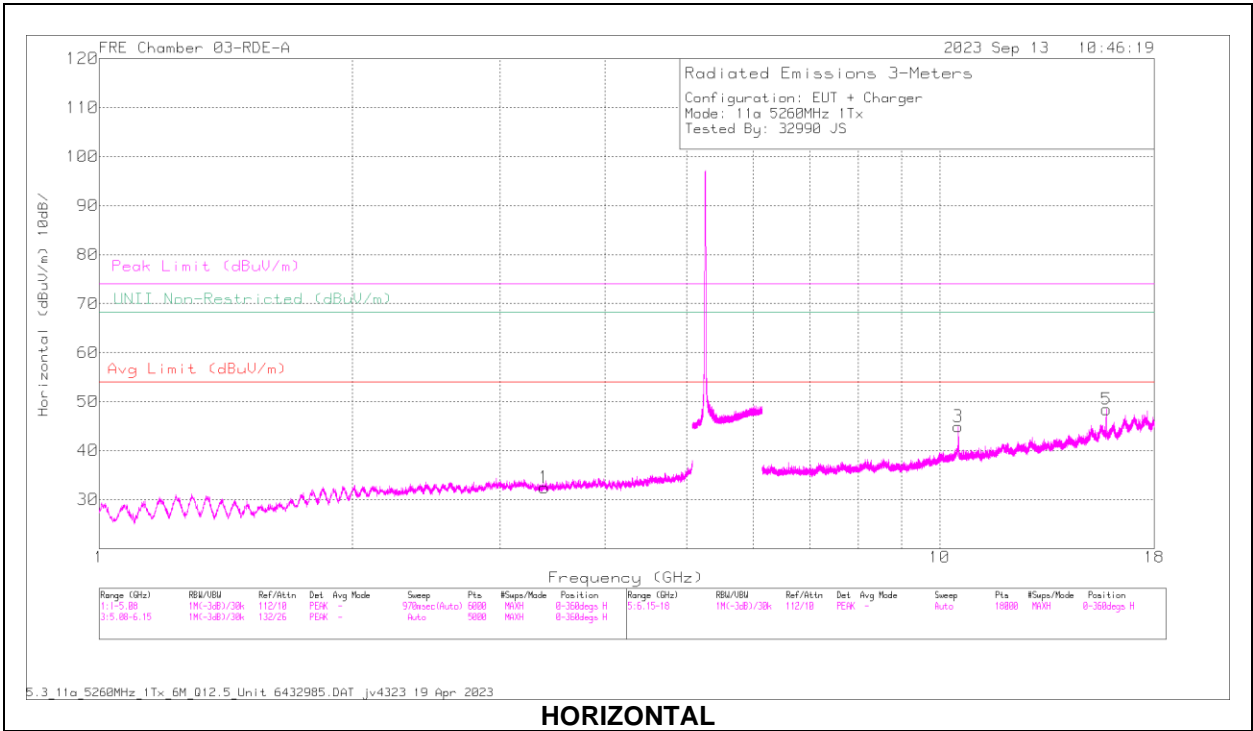


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	81886 ACF 3m (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.35	48.16	Pk	34.4	0	-13.66	68.9	-	-	74	-5.1	313	101	V
2	* 5.350024	48.52	Pk	34.4	0	-13.66	69.26	-	-	74	-4.74	313	101	V
3	* 5.35	29.27	RMS	34.4	.49	-13.66	50.5	54	-3.5	-	-	313	101	V
4	* 5.350313	30.76	RMS	34.4	.49	-13.65	52	54	-2	-	-	313	101	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
Pk - Peak detector  
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



## RADIATED EMISSIONS

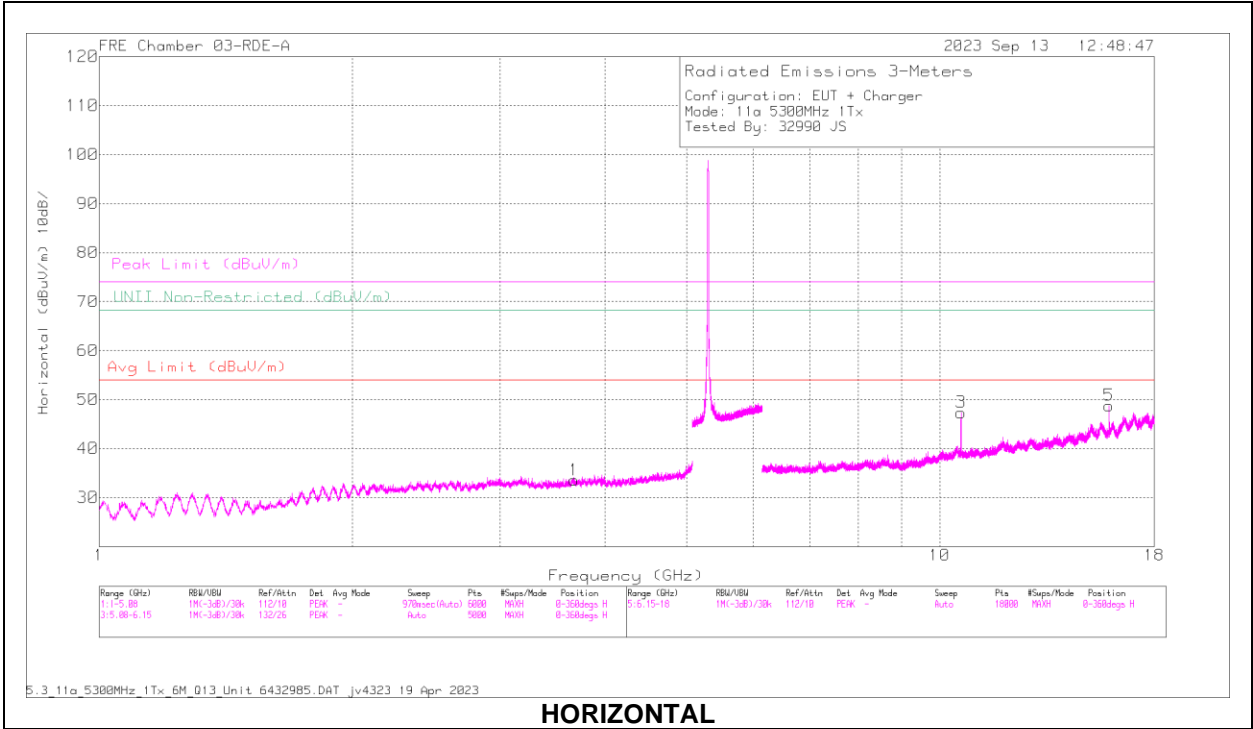
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	200897 ACF 3m (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	*15.784171	62.2	PK-U	40.4	0	-41.64	60.96	-	-	74	-13.04	-	-	25	124	H
	*15.783612	48.97	ADR	40.4	.49	-41.65	48.21	54	-5.79	-	-	-	-	25	124	H
6	*15.785406	62.26	PK-U	40.4	0	-41.59	61.07	-	-	74	-12.93	-	-	314	124	V
	*15.784716	49.02	ADR	40.4	.49	-41.61	48.3	54	-5.7	-	-	-	-	314	124	V
1	3.385263	57.87	PK-U	32.6	0	-47.18	43.29	-	-	-	-	68.2	-24.91	288	185	H
2	3.385751	58.05	PK-U	32.6	0	-47.18	43.47	-	-	-	-	68.2	-24.73	159	282	V
3	10.519216	62.63	PK-U	37.7	0	-45.06	55.27	-	-	-	-	68.2	-12.93	312	101	H
4	10.520278	64.71	PK-U	37.7	0	-45.09	57.32	-	-	-	-	68.2	-10.88	315	101	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

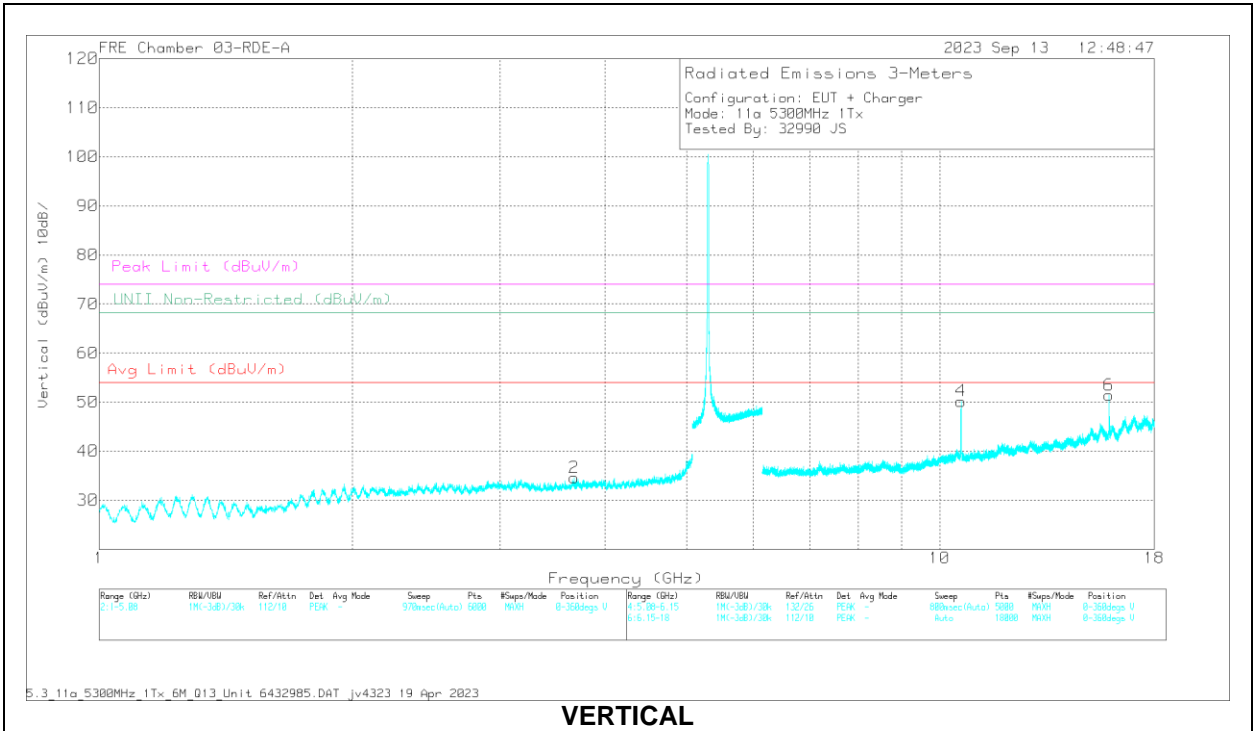
PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

MID CHANNEL RESULTS



HORIZONTAL



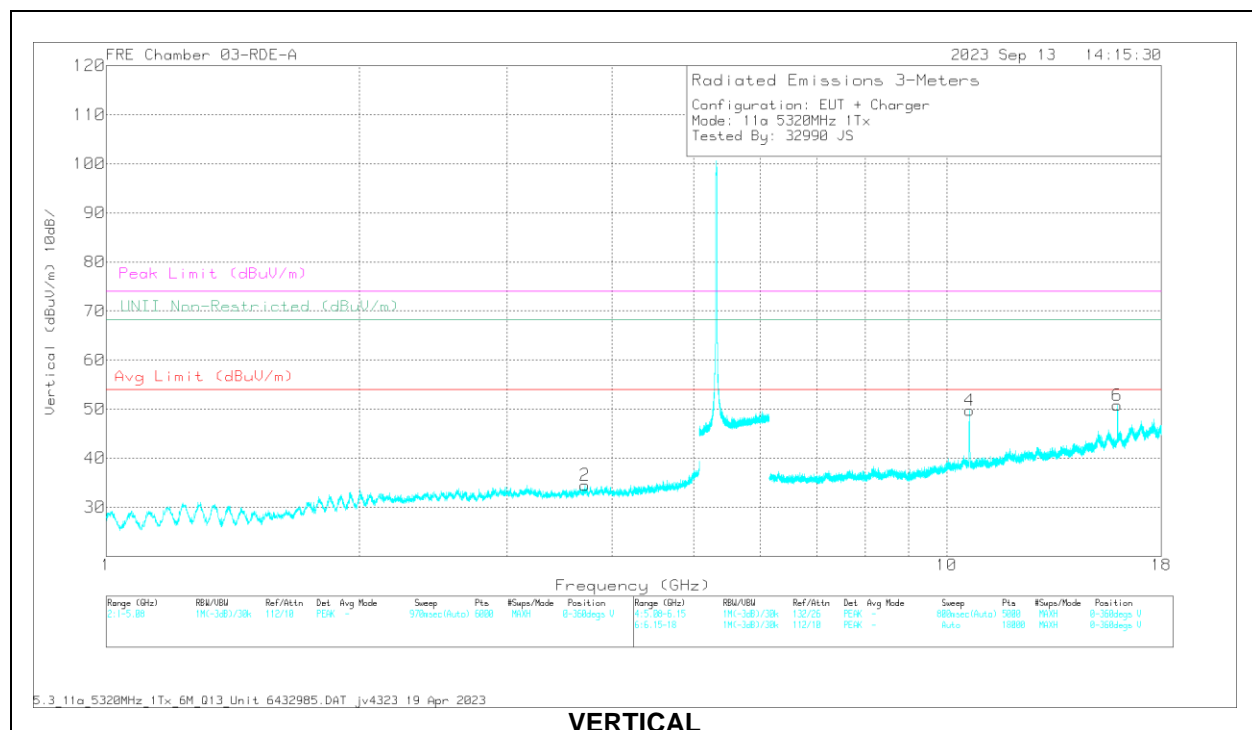
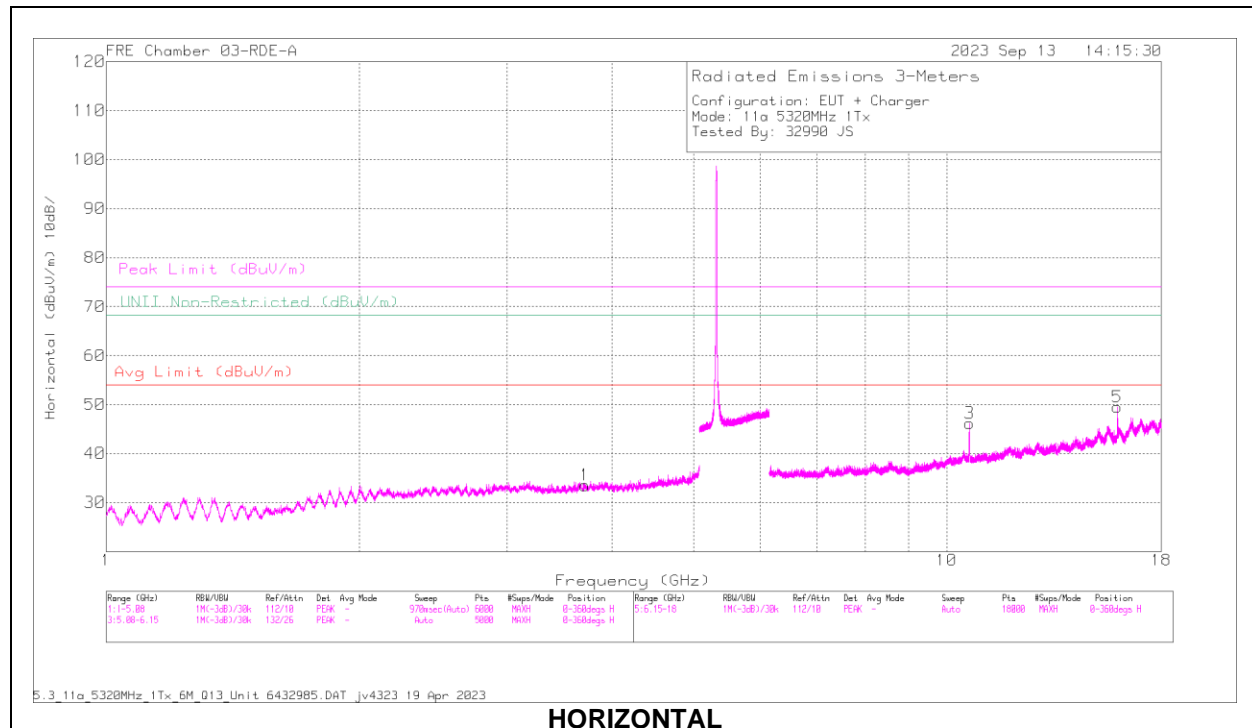
VERTICAL

## RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	200897 ACF 3m (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.672754	58.1	PK-U	33	0	-47.3	43.8	-	-	74	-30.2	-	-	47	170	H
	* 3.672272	46.21	ADR	33	.49	-47.28	32.42	54	-21.58	-	-	-	-	47	170	H
2	* 3.671072	57.89	PK-U	33	0	-47.26	43.63	-	-	74	-30.37	-	-	143	307	V
	* 3.672732	46.1	ADR	33	.49	-47.3	32.29	54	-21.71	-	-	-	-	143	307	V
5	*15.90039	59.87	PK-U	40.4	0	-41.74	58.53	-	-	74	-15.47	-	-	29	161	H
	*15.89976	47.03	ADR	40.4	.49	-41.74	46.18	54	-7.82	-	-	-	-	29	161	H
6	*15.89602	63.11	PK-U	40.4	0	-41.78	61.73	-	-	74	-12.27	-	-	277	103	V
	*15.89666	50.45	ADR	40.4	.49	-41.76	49.58	54	-4.42	-	-	-	-	277	103	V
3	10.599897	66.26	PK-U	37.7	0	-45.11	58.85	-	-	-	-	68.2	-9.35	309	112	V
4	10.59995	63.5	PK-U	37.7	0	-45.11	56.09	-	-	-	-	68.2	-12.11	313	117	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
PK-U - U-NII: Maximum Peak  
ADR - U-NII AD primary method, RMS average

## HIGH CHANNEL RESULTS



## RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	200897 ACF 3m (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*3.713801	58.54	PK-U	33.1	0	-47.13	44.51	-	-	74	-29.49	-	-	84	210	H
	*3.713951	46.03	ADR	33.1	.49	-47.14	32.48	54	-21.52	-	-	-	-	84	210	H
2	*3.716343	58.06	PK-U	33.1	0	-47.16	44	-	-	74	-30	-	-	12	159	V
	*3.716359	46.21	ADR	33.1	.49	-47.16	32.64	54	-21.36	-	-	-	-	12	159	V
3	*10.638796	63.14	PK-U	37.7	0	-45.19	55.65	-	-	74	-18.35	-	-	308	109	H
	*10.640112	52.56	ADR	37.7	.49	-45.22	45.53	54	-8.47	-	-	-	-	308	109	H
5	*15.959734	60.7	PK-U	40.4	0	-41.89	59.21	-	-	74	-14.79	-	-	28	340	H
	*15.959734	47.24	ADR	40.4	.49	-41.88	46.25	54	-7.75	-	-	-	-	28	340	H
4	*10.640812	65.96	PK-U	37.7	0	-45.22	58.44	-	-	74	-15.56	-	-	311	130	V
	*10.640111	55.27	ADR	37.7	.49	-45.22	48.24	54	-5.76	-	-	-	-	311	130	V
6	*15.963156	62.22	PK-U	40.5	0	-41.9	60.82	-	-	74	-13.18	-	-	270	276	V
	*15.962081	48.36	ADR	40.5	.49	-41.89	47.46	54	-6.54	-	-	-	-	270	276	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
PK-U - U-NII: Maximum Peak  
ADR - U-NII AD primary method, RMS average

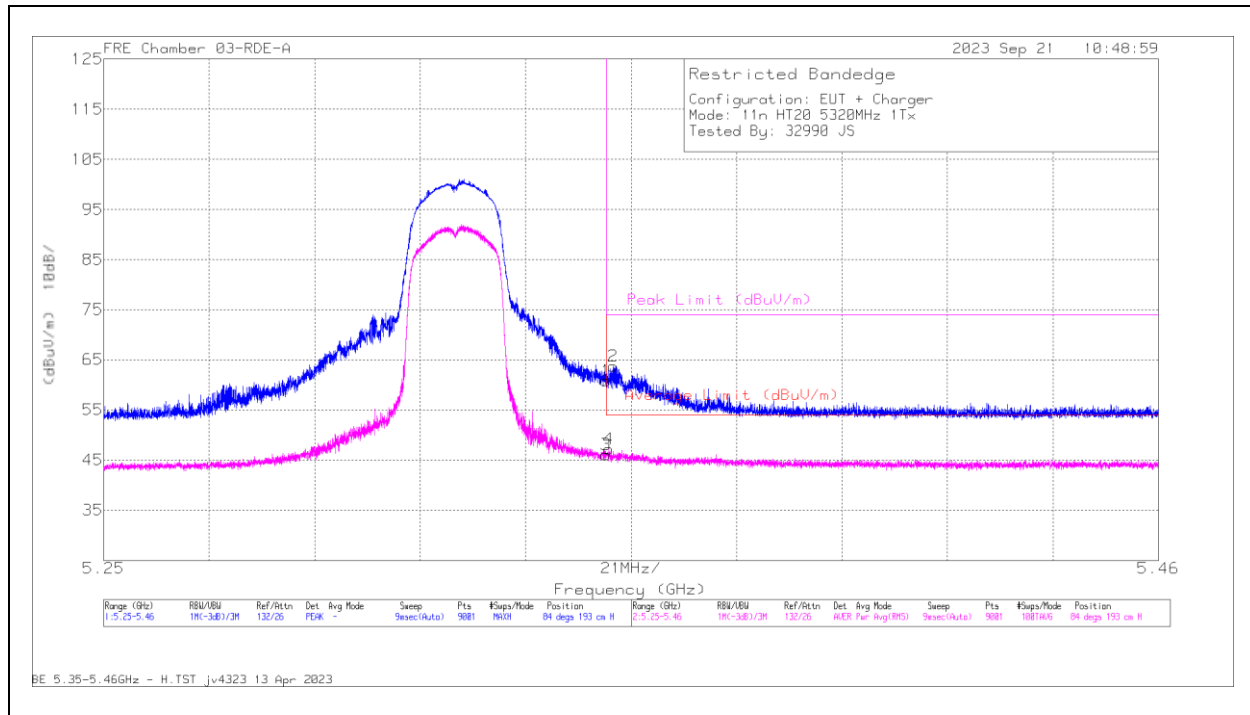


## 10.1.6. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.3 GHz BAND

### 1TX Antenna 1 MODE

### BANDEDGE (HIGH CHANNEL)

### HORIZONTAL RESULT



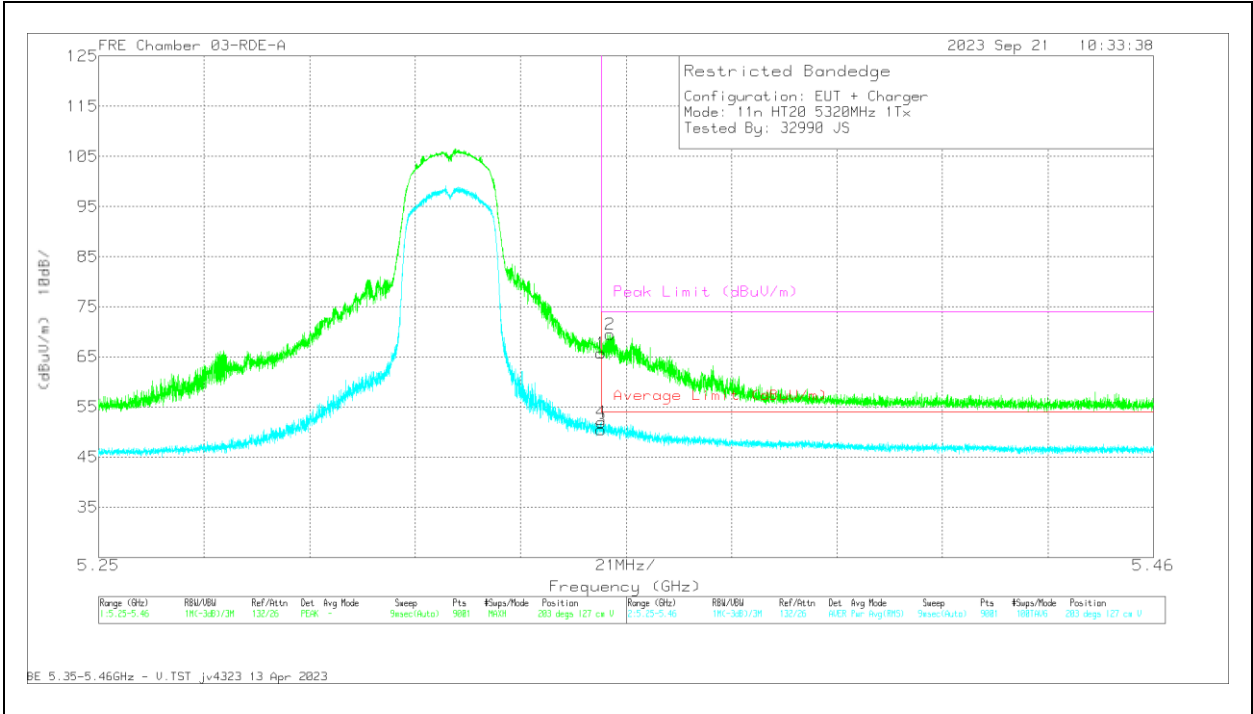
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	200897 ACF 3m (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.35	64.41	Pk	34.4	0	-37.93	60.88	-	-	74	-13.12	84	193	H
2	* 5.351382	67.24	Pk	34.4	0	-37.88	63.76	-	-	74	-10.24	84	193	H
3	* 5.35	49.14	RMS	34.4	.52	-37.93	46.13	54	-7.87	-	-	84	193	H
4	* 5.350519	50.17	RMS	34.4	.52	-37.91	47.18	54	-6.82	-	-	84	193	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT

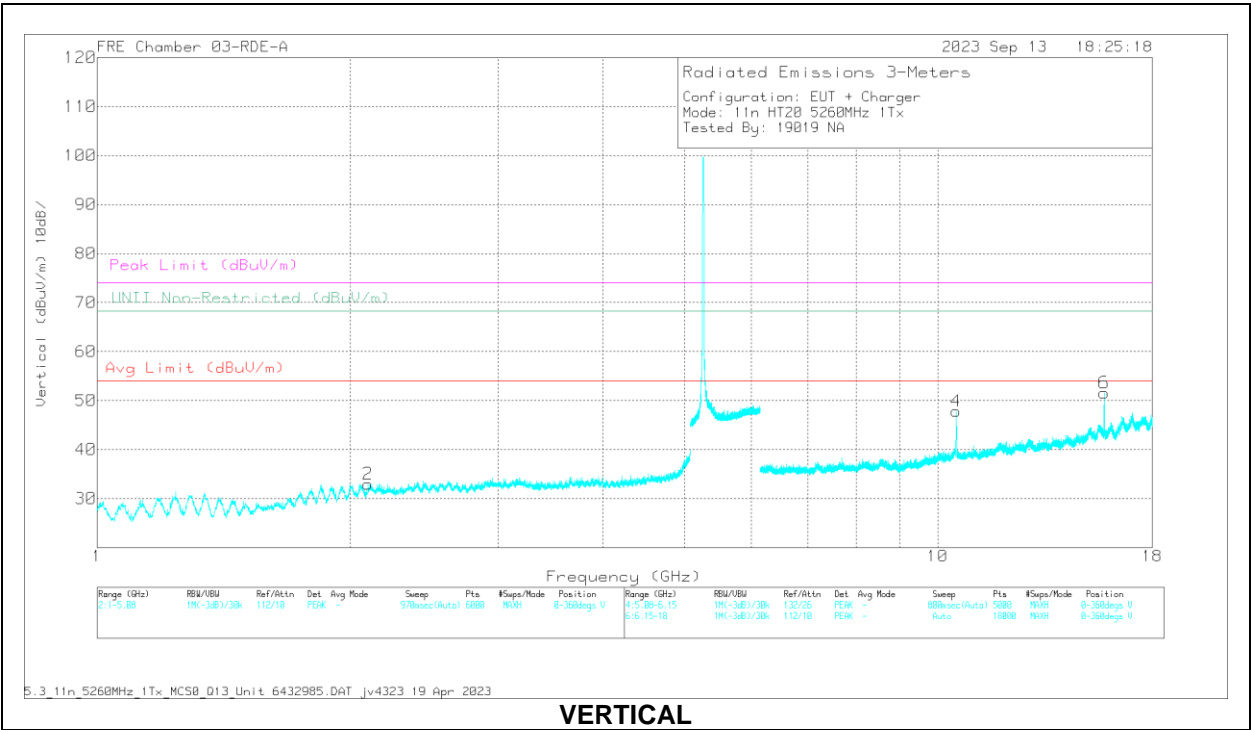
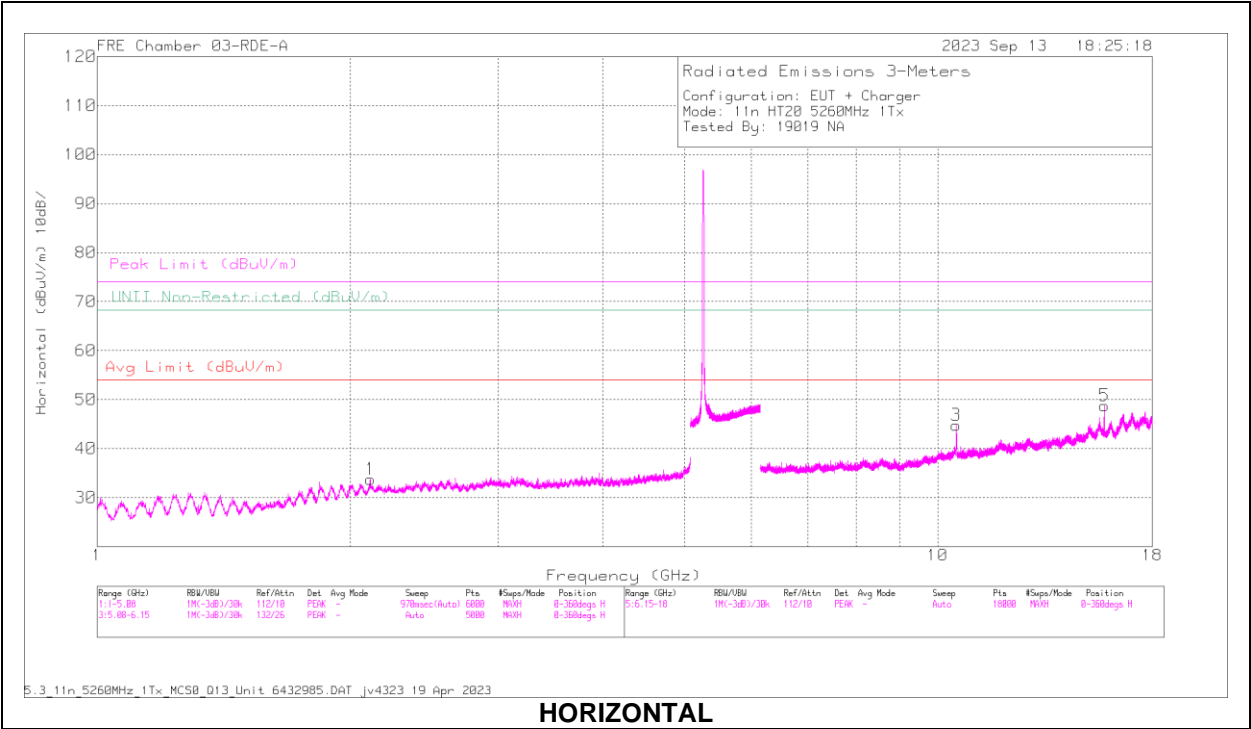


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	200897 ACF 3m (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.35	69.22	Pk	34.4	0	-37.93	65.69	-	-	74	-8.31	203	127	V
2	* 5.351849	72.91	Pk	34.4	0	-37.86	69.45	-	-	74	-4.55	203	127	V
3	* 5.35	53.48	RMS	34.4	.52	-37.93	50.47	54	-3.53	-	-	203	127	V
4	* 5.350052	54.95	RMS	34.4	.52	-37.93	51.94	54	-2.06	-	-	203	127	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
Pk - Peak detector  
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



## RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	200897 ACF 3m (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 15.78275	62.1	PK-U	40.4	0	-41.65	60.85	-	-	74	-13.15	-	-	84	207	H
	* 15.78189	48.2	ADR	40.4	.52	-41.67	47.45	54	-6.55	-	-	-	-	84	207	H
6	* 15.77917	65.27	PK-U	40.4	0	-41.74	63.93	-	-	74	-10.07	-	-	135	109	V
	* 15.78182	51.74	ADR	40.4	.52	-41.67	50.99	54	-3.01	-	-	-	-	135	109	V
2	2.102327	60.88	PK-U	31.4	0	-50.18	42.1	-	-	-	-	68.2	-26.1	146	145	V
1	2.113767	62.09	PK-U	31.4	0	-50.29	43.2	-	-	-	-	68.2	-25	85	114	H
3	10.518814	63.61	PK-U	37.7	0	-45.04	56.27	-	-	-	-	68.2	-11.93	119	107	H
4	10.521317	65.07	PK-U	37.7	0	-45.13	57.64	-	-	-	-	68.2	-10.56	127	103	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average