

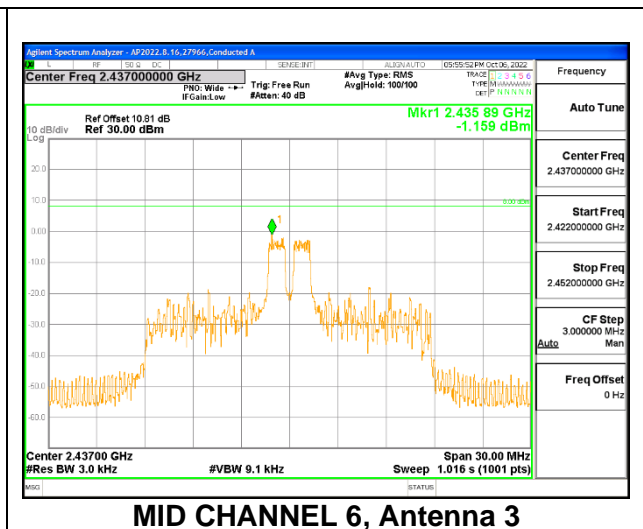
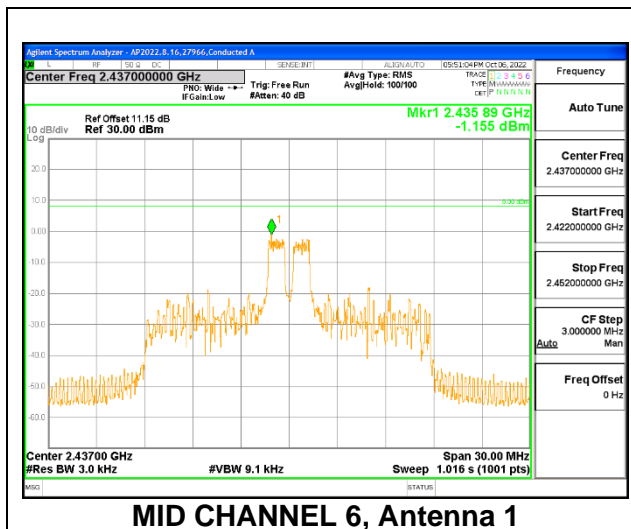
**2TX Antenna 1 + Antenna 3 CDD OFDMA MODE: 26-Tones, RU Index 4**

<b>Duty Cycle CF (dB)</b>	3.04	<b>Included in Calculations of Corr'd PSD</b>
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**PSD Results**

Channel	Frequency (MHz)	Antenna 1 Meas (dBm/ 3kHz)	Antenna 3 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Mid 6	2437	-1.155	-1.590	4.68	8.0	-3.3

**MID CHANNEL 6**



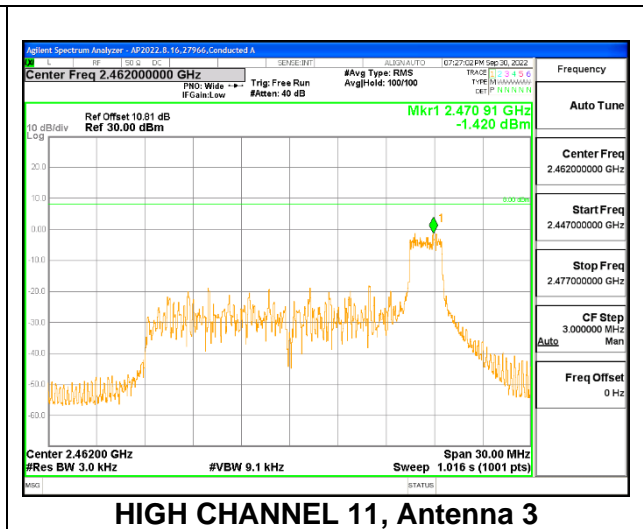
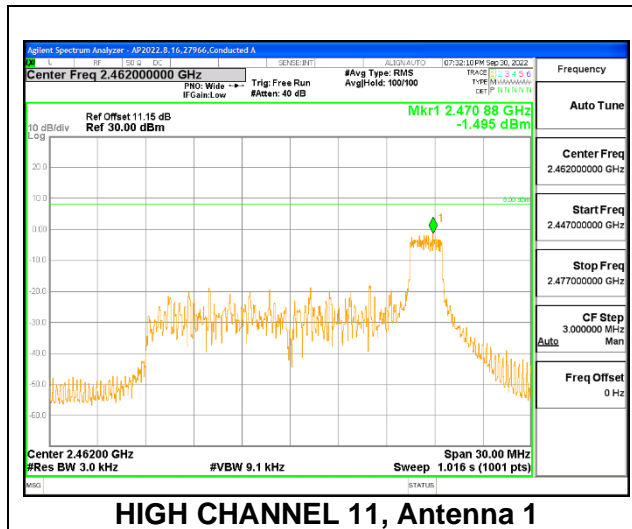
**2TX Antenna 1 + Antenna 3 CDD OFDMA MODE: 26-Tones, RU Index 8**

<b>Duty Cycle CF (dB)</b>	3.04	<b>Included in Calculations of Corr'd PSD</b>
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**PSD Results**

Channel	Frequency (MHz)	Antenna 1 Meas (dBm/ 3kHz)	Antenna 3 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
High 11	2462	-1.495	-1.420	4.59	8.0	-3.4

**HIGH CHANNEL 11**



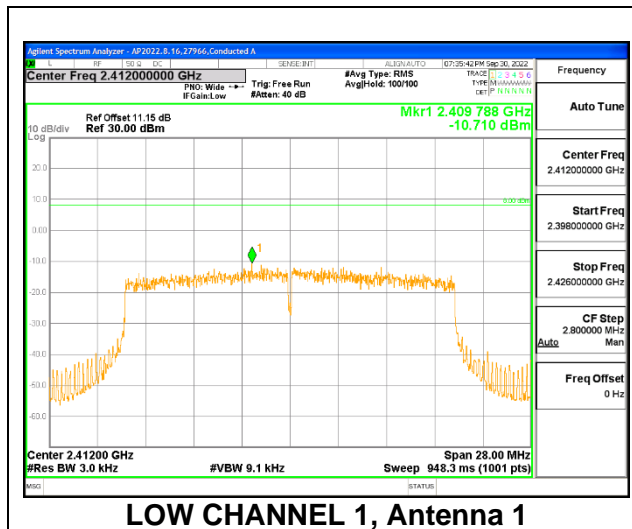
**2TX Antenna 1 + Antenna 3 CDD OFDMA MODE: 242-Tones, RU Index 61**

Duty Cycle CF (dB)	4.15	Included in Calculations of Corr'd PSD
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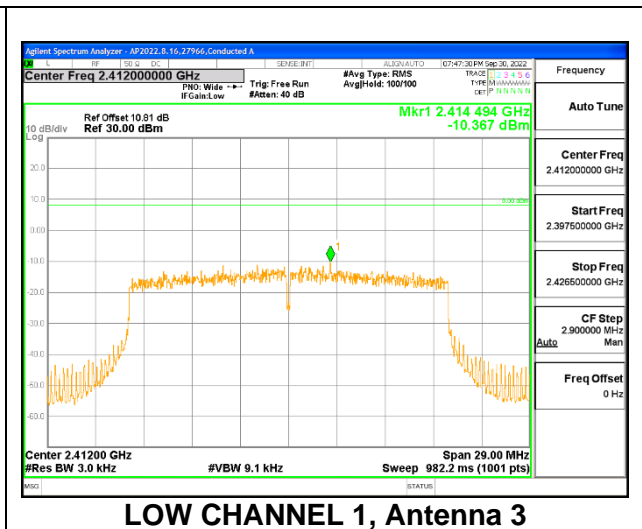
**PSD Results**

Channel	Frequency (MHz)	Antenna 1 Meas (dBm/3kHz)	Antenna 3 Meas (dBm/3kHz)	Total Corr'd PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low 1	2412	-10.710	-10.367	-3.37	8.0	-11.4
Mid 6	2437	-10.901	-10.334	-3.45	8.0	-11.4
High 11	2462	-10.459	-10.674	-3.40	8.0	-11.4

**LOW CHANNEL 1**

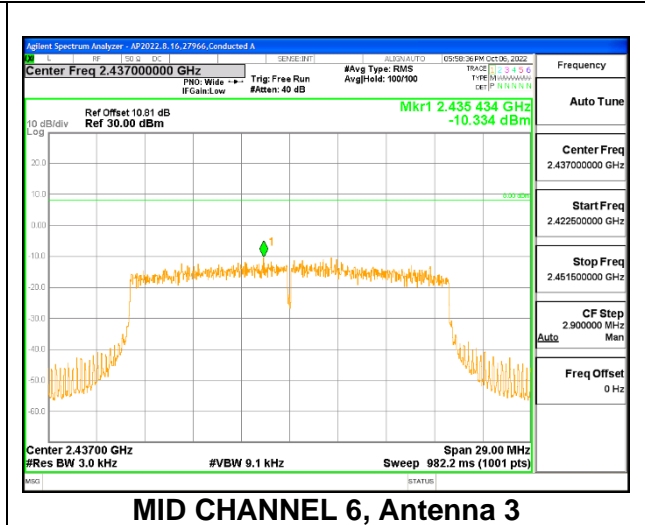
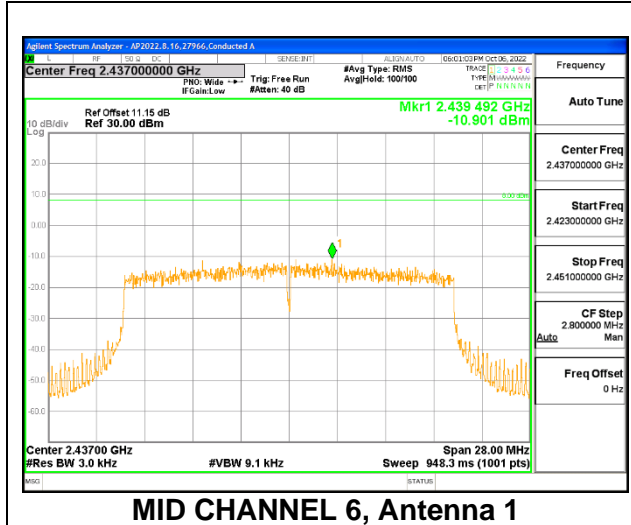


**LOW CHANNEL 1, Antenna 1**

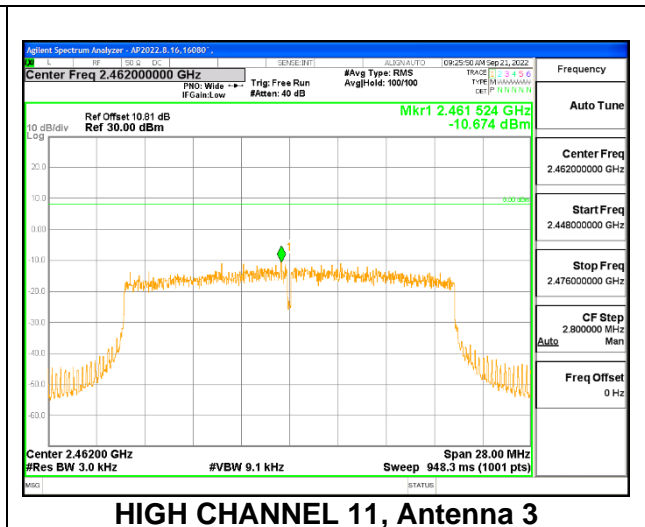
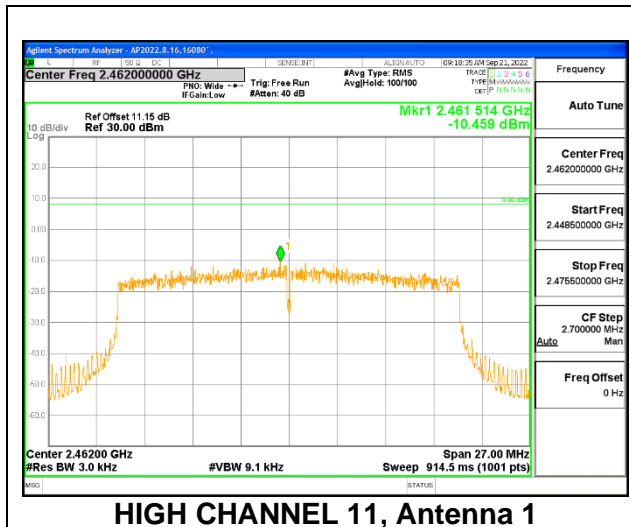


**LOW CHANNEL 1, Antenna 3**

### MID CHANNEL 6



### HIGH CHANNEL 11



### 9.6.2. 802.11ax HE40 MODE 2TX

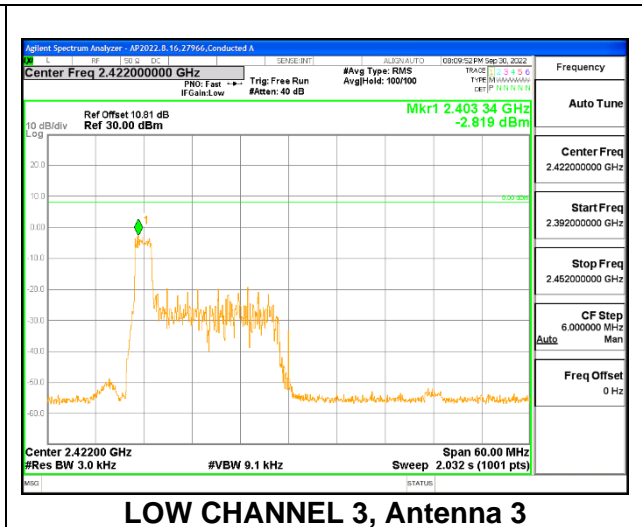
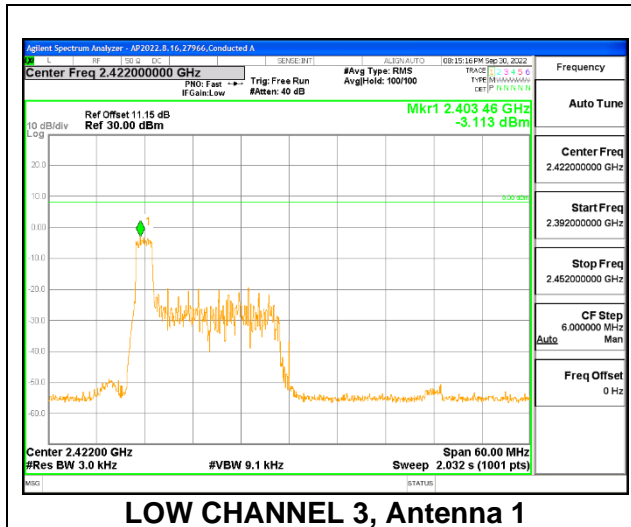
#### 2TX Antenna 1 + Antenna 3 CDD OFDMA MODE: 26-Tones, RU Index 0

Duty Cycle CF (dB)	3.12	Included in Calculations of Corr'd PSD
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#### PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas (dBm/ 3kHz)	Antenna 3 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 3	2422	-3.113	-2.819	3.17	8.0	-4.8

### LOW CHANNEL 3



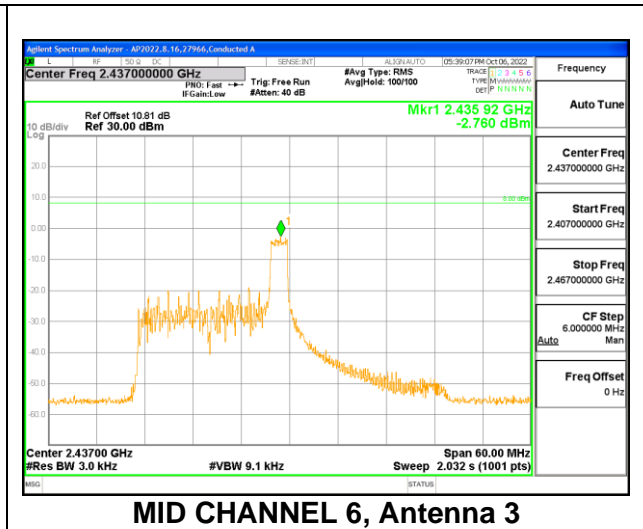
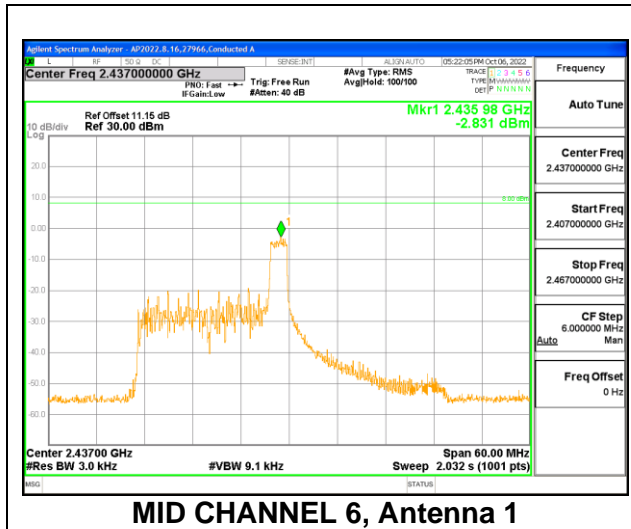
**2TX Antenna 1 + Antenna 3 CDD OFDMA MODE: 26-Tones, RU Index 8**

<b>Duty Cycle CF (dB)</b>	3.12	<b>Included in Calculations of Corr'd PSD</b>
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**PSD Results**

Channel	Frequency (MHz)	Antenna 1 Meas (dBm/ 3kHz)	Antenna 3 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Mid 6	2427	-2.831	-2.760	3.33	8.0	-4.7

**MID CHANNEL 6**



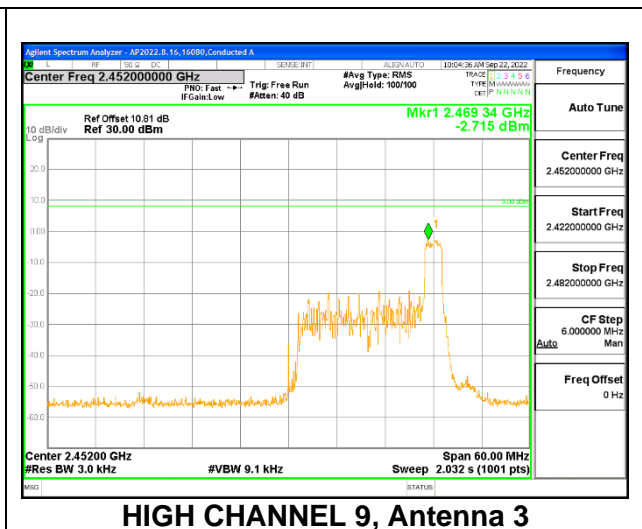
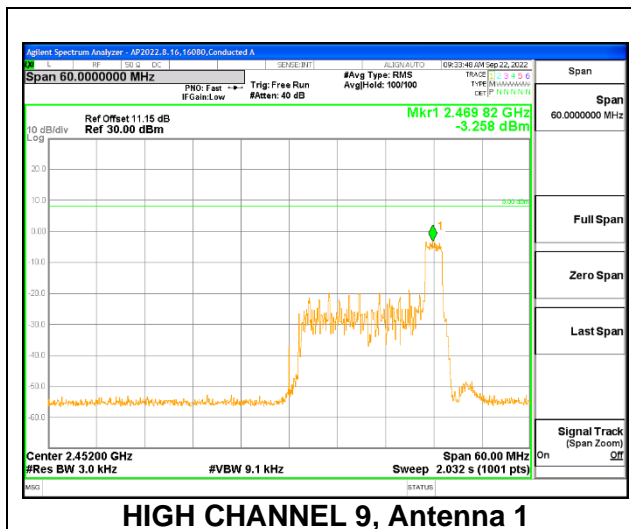
**2TX Antenna 1 + Antenna 3 CDD OFDMA MODE: 26-Tones, RU Index 17**

<b>Duty Cycle CF (dB)</b>	3.12	<b>Included in Calculations of Corr'd PSD</b>
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**PSD Results**

Channel	Frequency (MHz)	Antenna 1 Meas (dBm/ 3kHz)	Antenna 3 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
High 9	2452	-3.258	-2.715	3.15	8.0	-4.8

**HIGH CHANNEL 9**



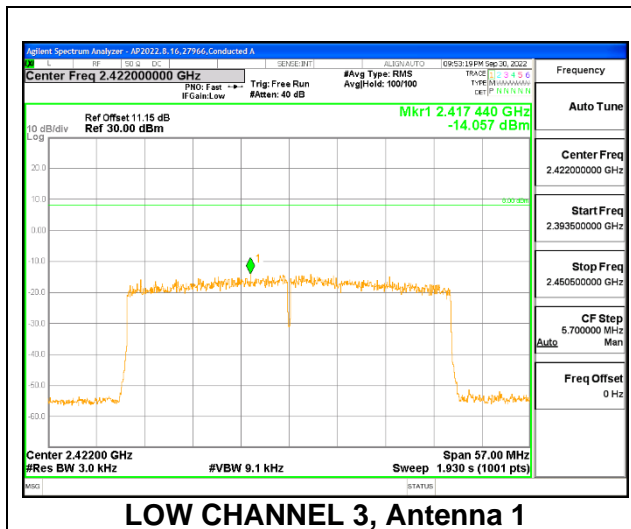
**2TX Antenna 1 + Antenna 3 CDD OFDMA MODE: 484-Tones, RU Index 65**

<b>Duty Cycle CF (dB)</b>	4.22	<b>Included in Calculations of Corr'd PSD</b>
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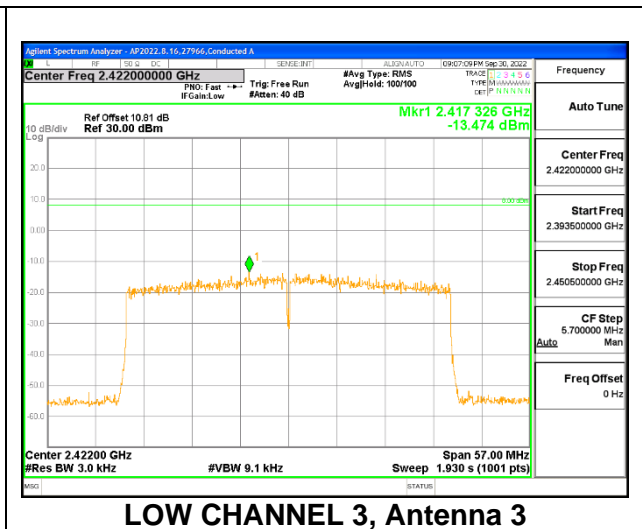
**PSD Results**

Channel	Frequency (MHz)	Antenna 1 Meas (dBm/3kHz)	Antenna 3 Meas (dBm/3kHz)	Total Corr'd PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low 3	2422	-14.057	-13.474	-6.53	8.0	-14.5
Mid 6	2437	-14.187	-13.569	-6.64	8.0	-14.6
High 9	2452	-15.434	-15.618	-8.29	8.0	-16.3

**LOW CHANNEL 3**



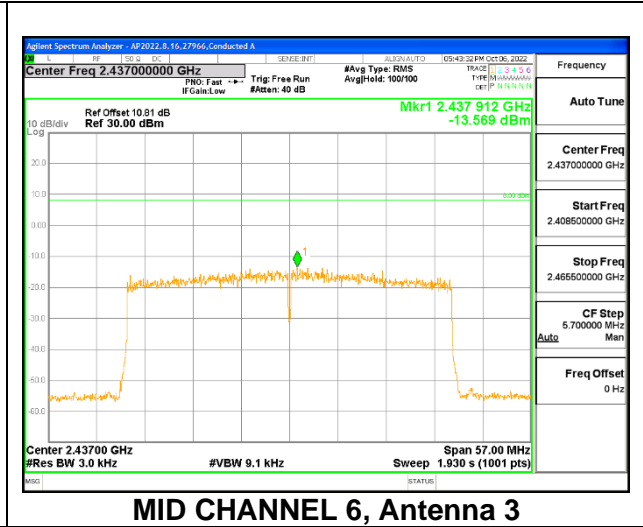
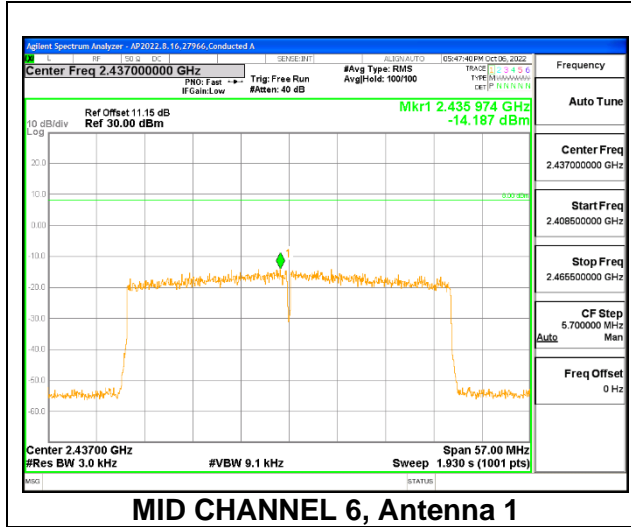
**LOW CHANNEL 3, Antenna 1**



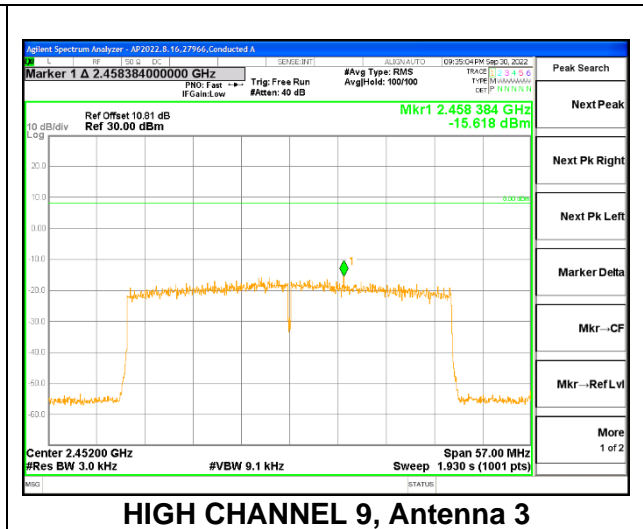
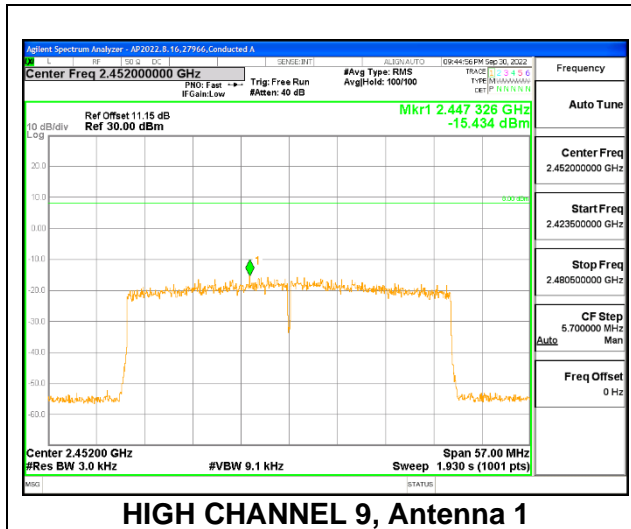
**LOW CHANNEL 3, Antenna 3**



### MID CHANNEL 6



### HIGH CHANNEL 9



## **9.7. CONDUCTED SPURIOUS EMISSIONS**

### **LIMITS**

FCC §15.407 (d)

RSS-247 5.5

(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

### **PROCEDURE**

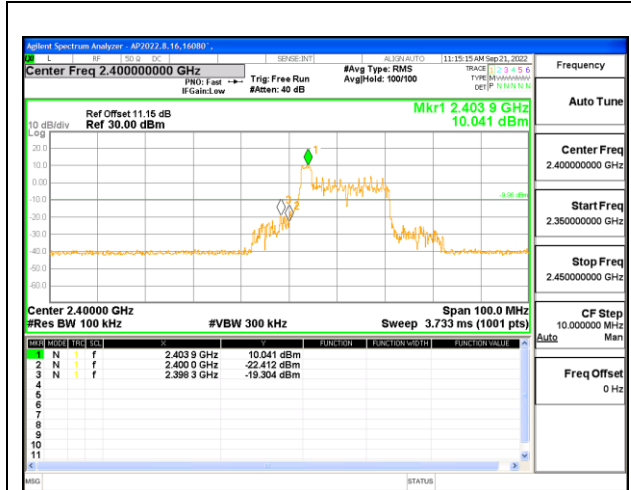
Output power was measured based on the use of peak measurement; therefore, the required attenuation is 20 dB.

### **RESULTS**

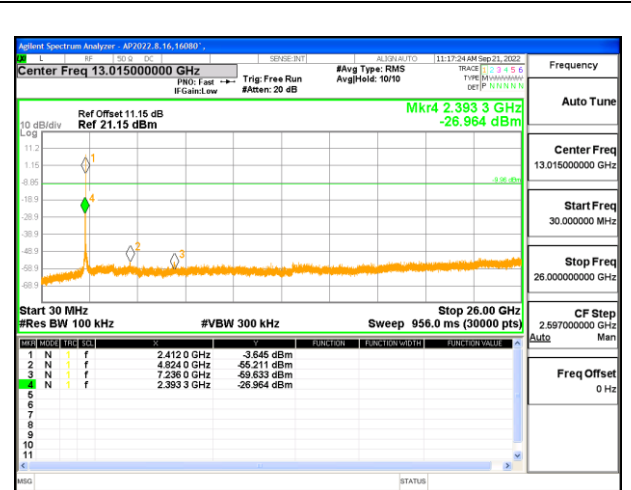
### 9.7.1. 802.11ax HE20 MODE 2TX

#### 2TX Antenna 1 + Antenna 3 CDD OFDMA MODE: 26-Tones, RU Index 0

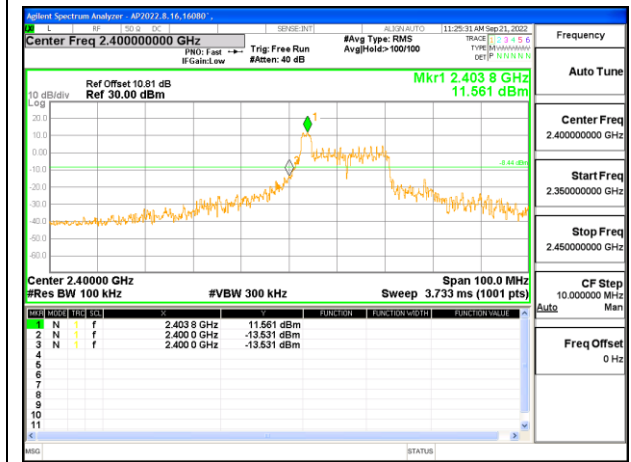
#### LOW CHANNEL 1



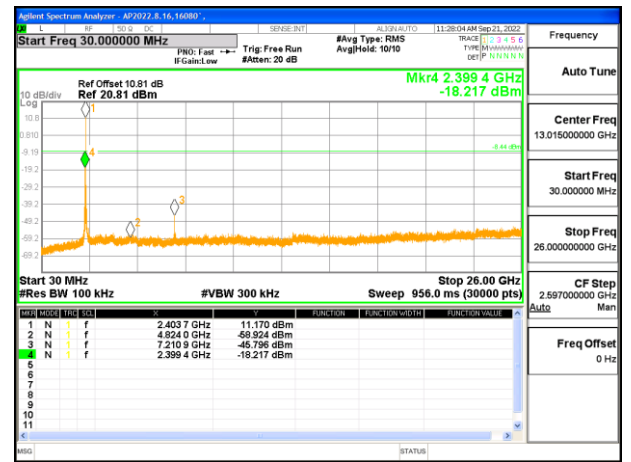
**LOW CHANNEL 1 BANDEDGE**  
 Antenna 1



**OUT-OF-BAND LOW CHANNEL 1**  
 Antenna 1



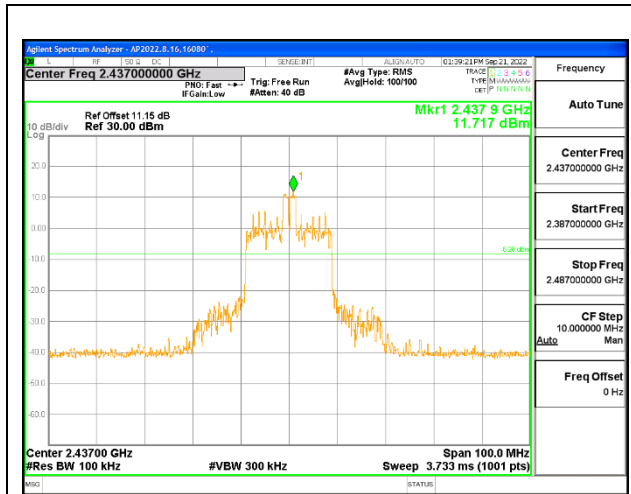
**LOW CHANNEL 1 BANDEDGE**  
 Antenna 3



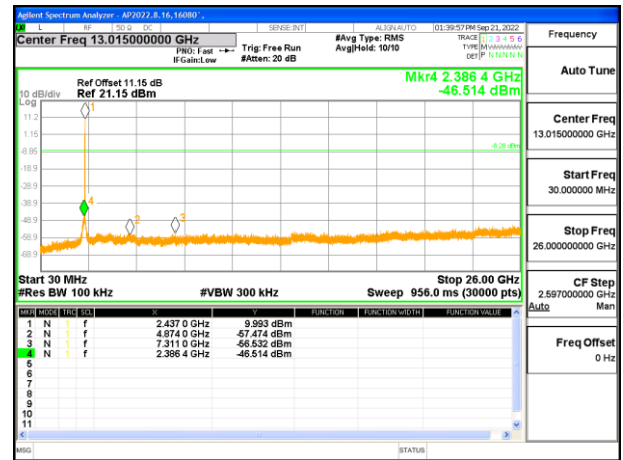
**OUT-OF-BAND LOW CHANNEL 1**  
 Antenna 3

**2TX Antenna 1 + Antenna 3 CDD OFDMA MODE: 26-Tones, RU Index 4**

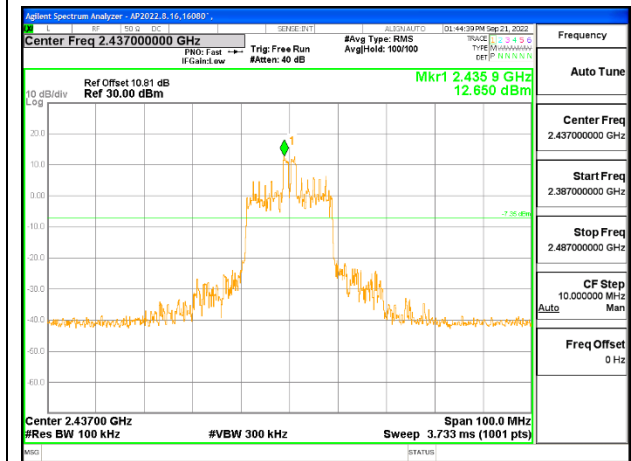
**MID CHANNEL 6**



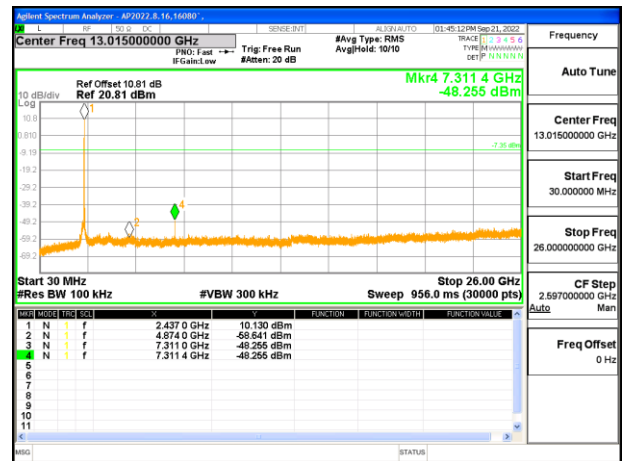
**IN-BAND REFERENCE LEVEL  
 Antenna 1**



**OUT-OF-BAND MID CHANNEL 6  
 Antenna 1**



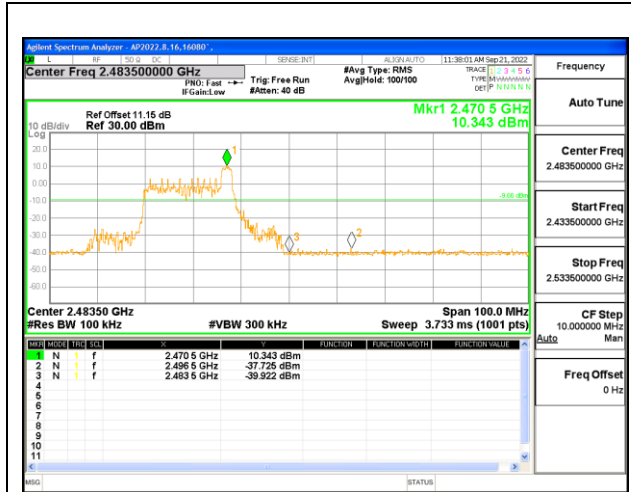
**IN-BAND REFERENCE LEVEL  
 Antenna 3**



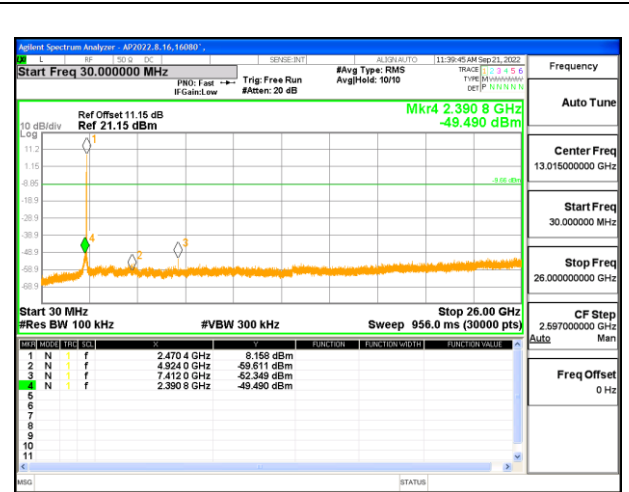
**OUT-OF-BAND MID CHANNEL 6  
 Antenna 3**

2TX Antenna 1 + Antenna 3 CDD OFDMA MODE: 26-Tones, RU Index 8

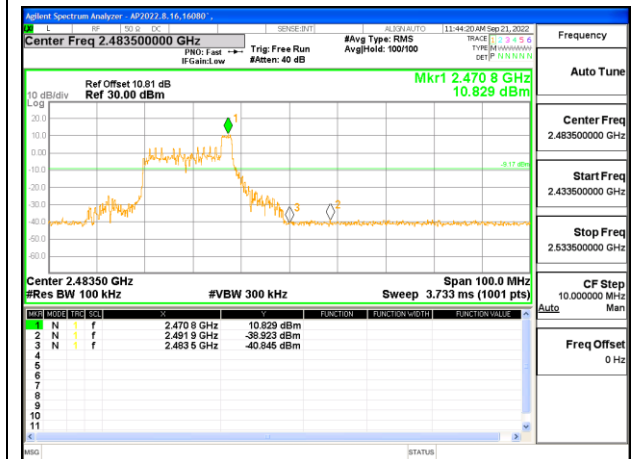
HIGH CHANNEL 11



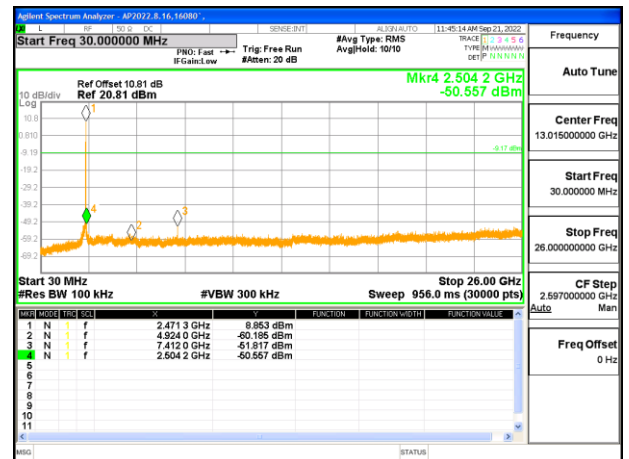
HIGH CHANNEL 11 BANDEDGE  
 Antenna 1



OUT-OF-BAND HIGH CHANNEL 11  
 Antenna 1



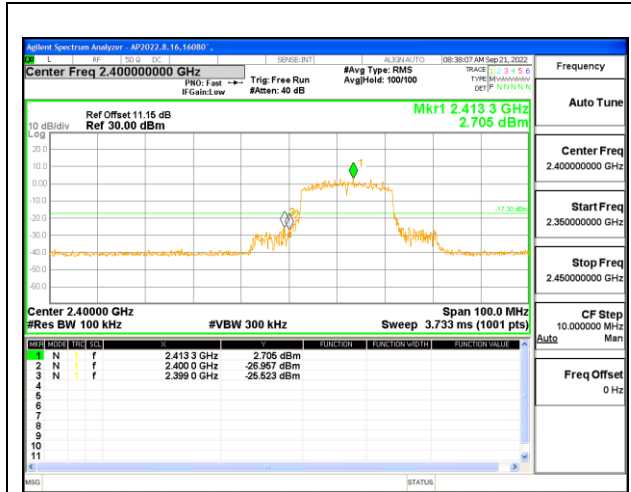
HIGH CHANNEL 11 BANDEDGE  
 Antenna 3



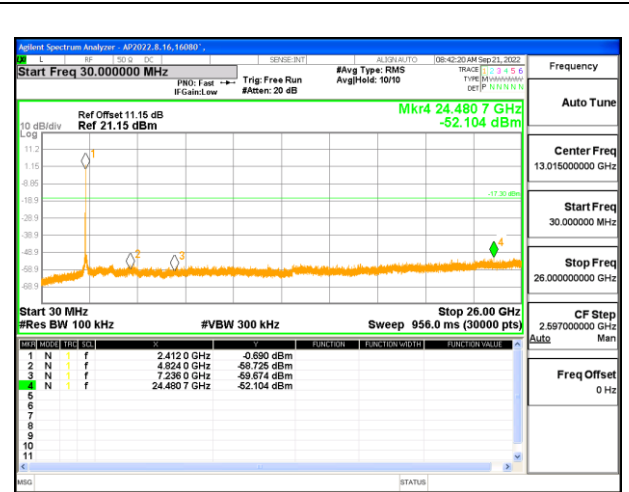
OUT-OF-BAND HIGH CHANNEL 11  
 Antenna 3

**2TX Antenna 1 + Antenna 3 CDD OFDMA MODE: 242-Tones, RU Index 61**

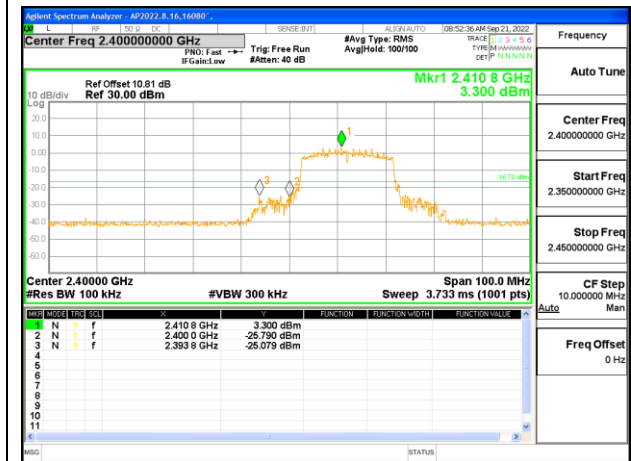
**LOW CHANNEL 1**



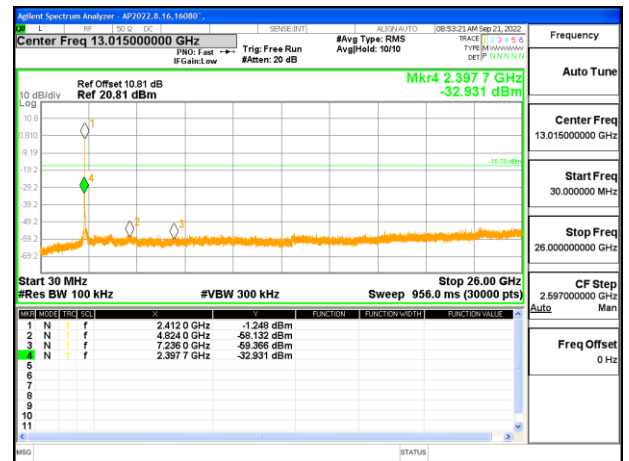
**LOW CHANNEL 1 BANDEDGE  
 Antenna 1**



**OUT-OF-BAND LOW CHANNEL 1  
 Antenna 1**

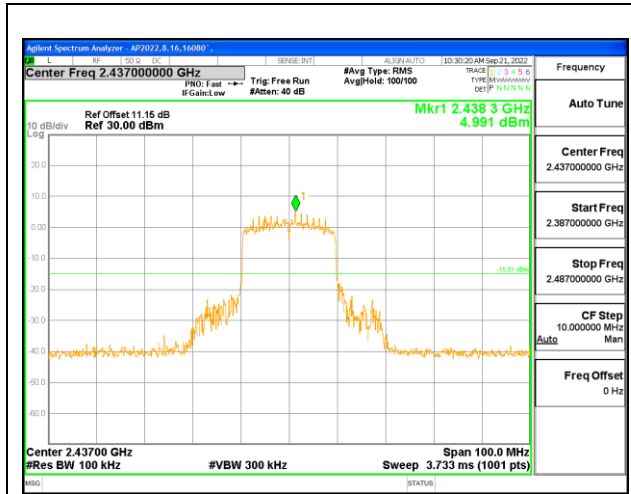


**LOW CHANNEL 1 BANDEDGE  
 Antenna 3**

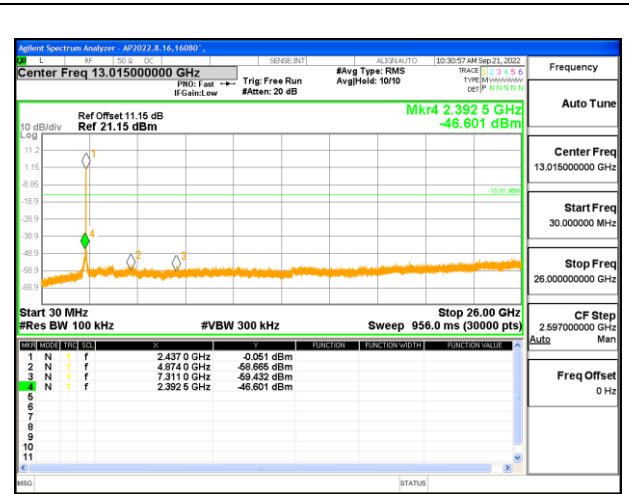


**OUT-OF-BAND LOW CHANNEL 1  
 Antenna 3**

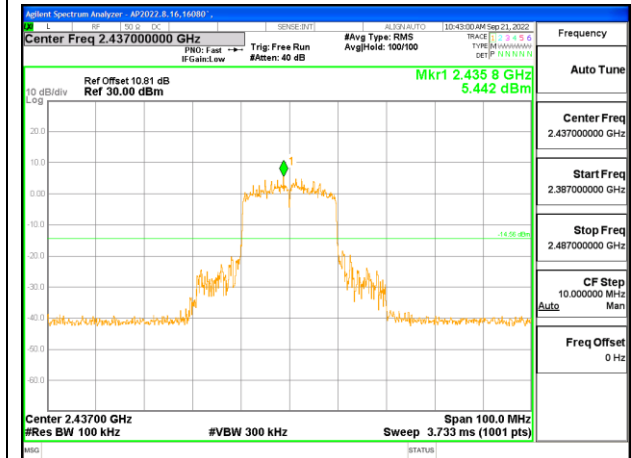
MID CHANNEL 6



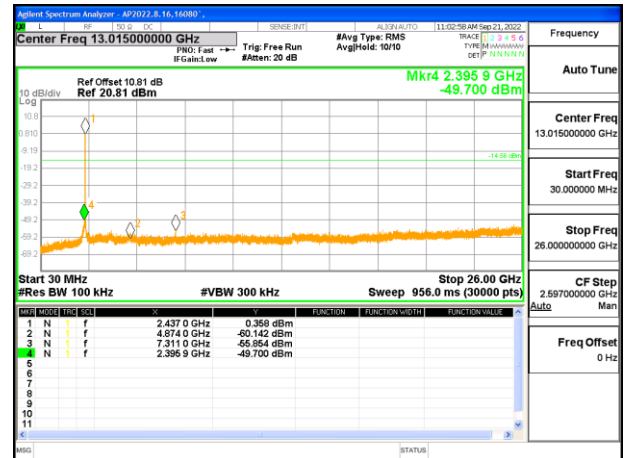
IN-BAND REFERENCE LEVEL  
 Antenna 1



OUT-OF-BAND MID CHANNEL 6  
 Antenna 1



IN-BAND REFERENCE LEVEL  
 Antenna 3

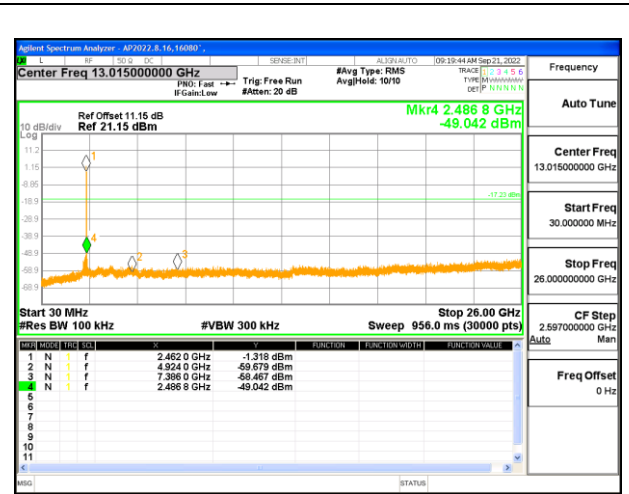


OUT-OF-BAND MID CHANNEL 6  
 Antenna 3

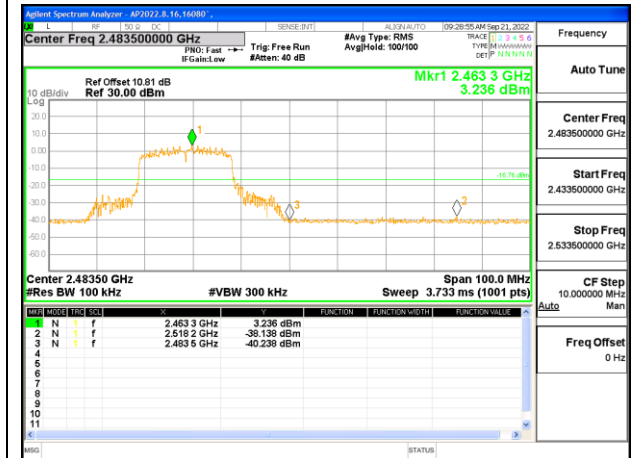
### HIGH CHANNEL 11



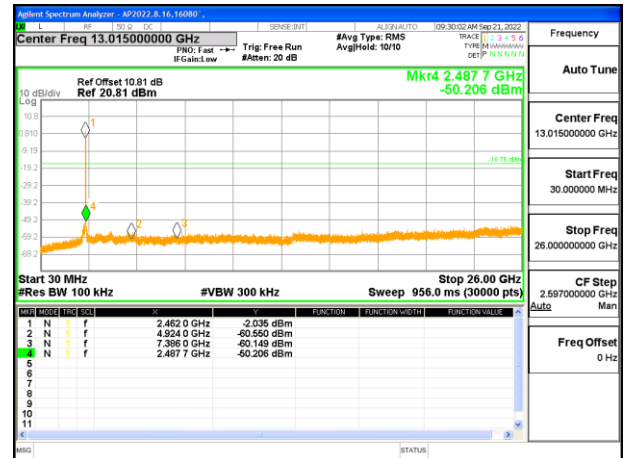
**HIGH CHANNEL 11 BANDEDGE  
 Antenna 1**



**OUT-OF-BAND HIGH CHANNEL 11  
 Antenna 1**



**HIGH CHANNEL 11 BANDEDGE  
 Antenna 3**



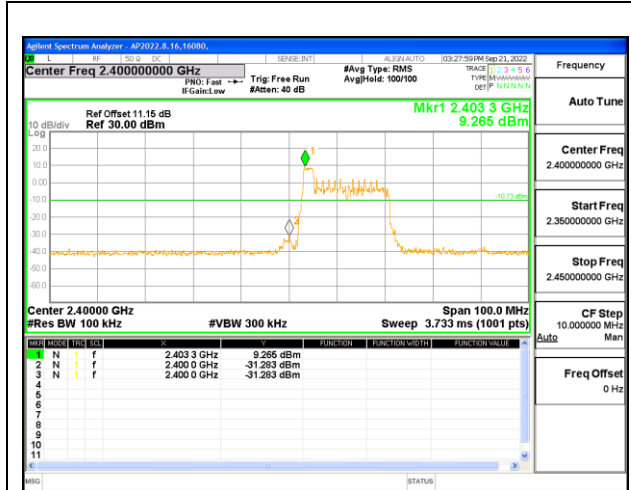
**OUT-OF-BAND HIGH CHANNEL 11  
 Antenna 3**



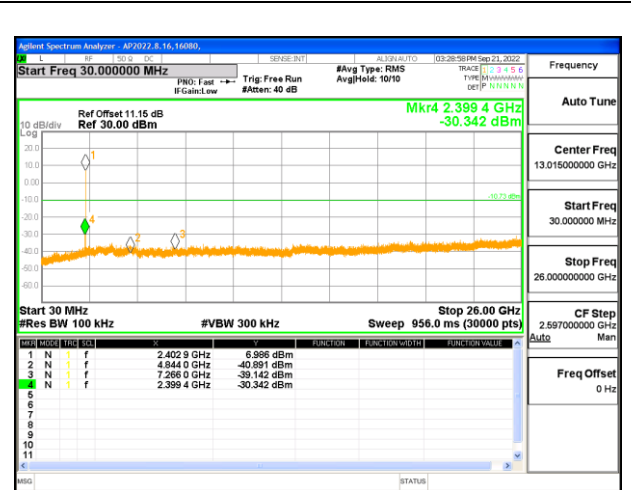
### 9.7.2. 802.11ax HE40 MODE 2TX

#### 2TX Antenna 1 + Antenna 3 CDD OFDMA MODE: 26-Tones, RU Index 0

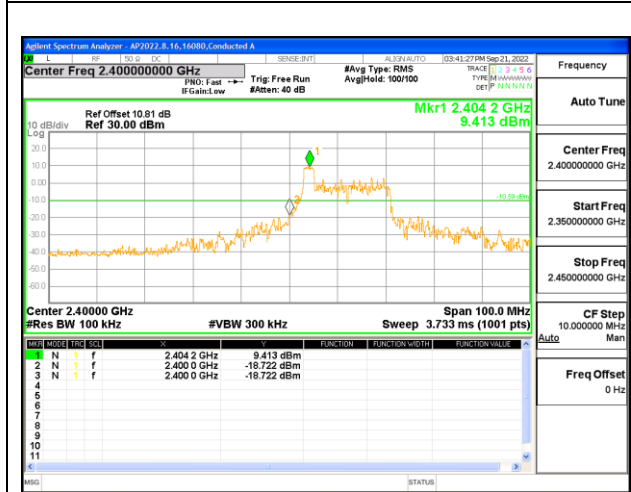
#### LOW CHANNEL 3



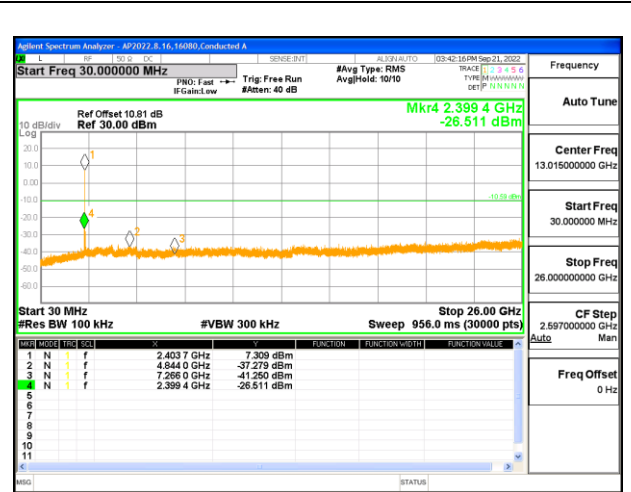
**LOW CHANNEL 3 BANDEDGE**  
 Antenna 1



**OUT-OF-BAND LOW CHANNEL 3**  
 Antenna 1



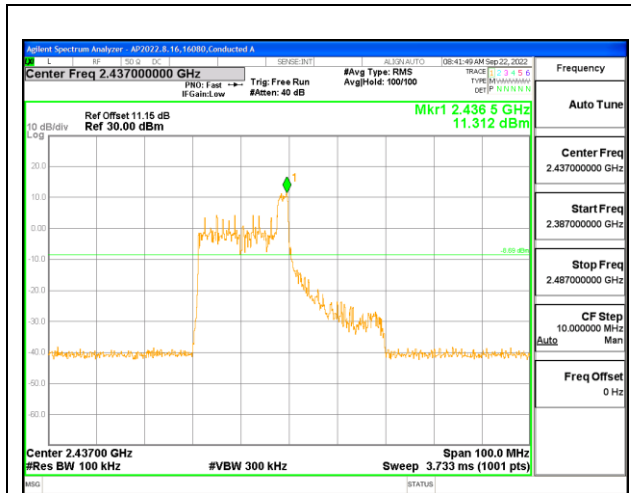
**LOW CHANNEL 3 BANDEDGE**  
 Antenna 3



**OUT-OF-BAND LOW CHANNEL 3**  
 Antenna 3

**2TX Antenna 1 + Antenna 3 CDD OFDMA MODE: 26-Tones, RU Index 8**

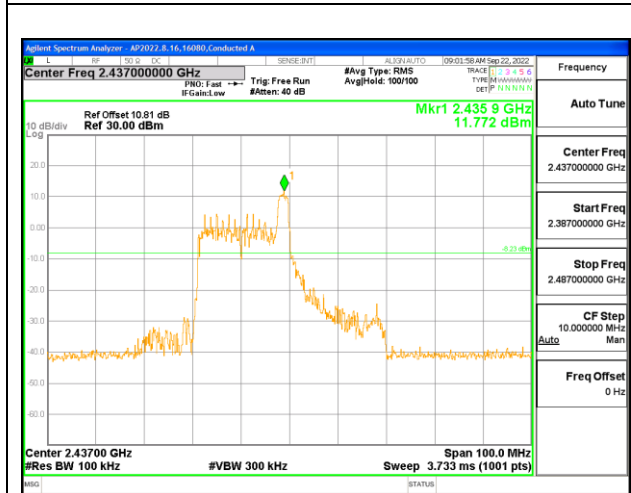
**MID CHANNEL 6**



**IN-BAND REFERENCE LEVEL  
 Antenna 1**



**OUT-OF-BAND MID CHANNEL 6  
 Antenna 1**



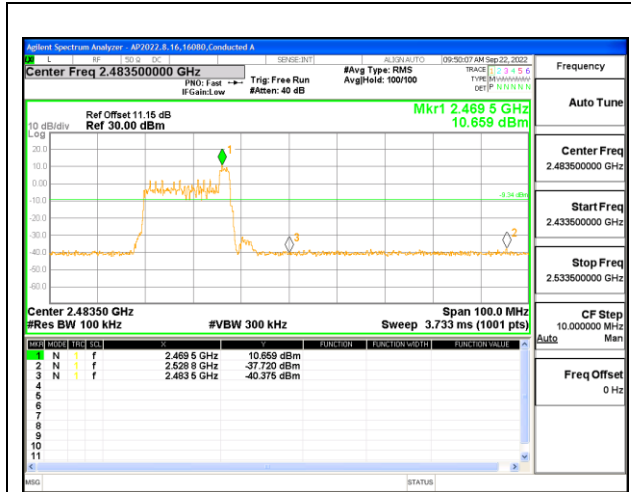
**IN-BAND REFERENCE LEVEL  
 Antenna 3**



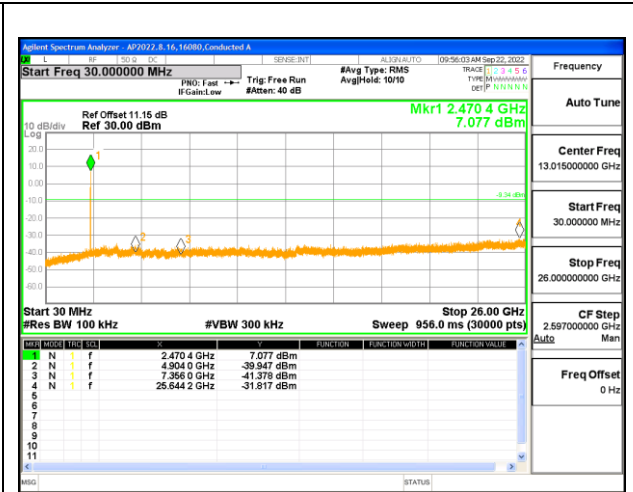
**OUT-OF-BAND MID CHANNEL 6  
 Antenna 3**

**2TX Antenna 1 + Antenna 3 CDD OFDMA MODE: 26-Tones, RU Index 17**

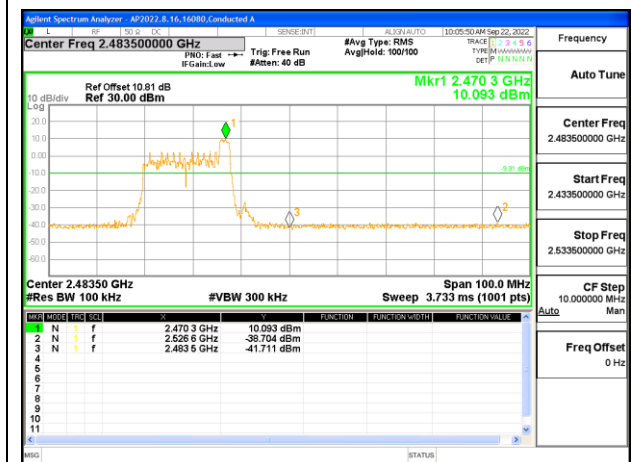
**HIGH CHANNEL 9**



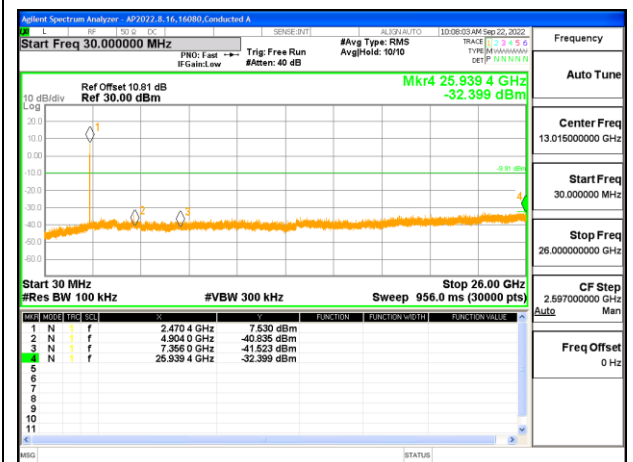
**HIGH CHANNEL 9 BANDEDGE  
 Antenna 1**



**OUT-OF-BAND HIGH CHANNEL 9  
 Antenna 1**



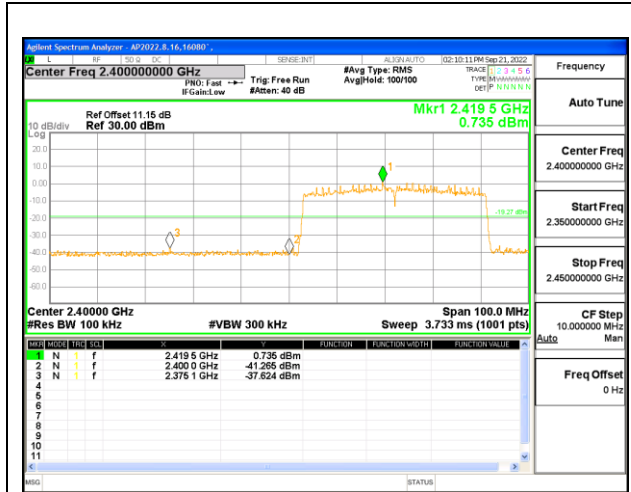
**HIGH CHANNEL 9 BANDEDGE  
 Antenna 3**



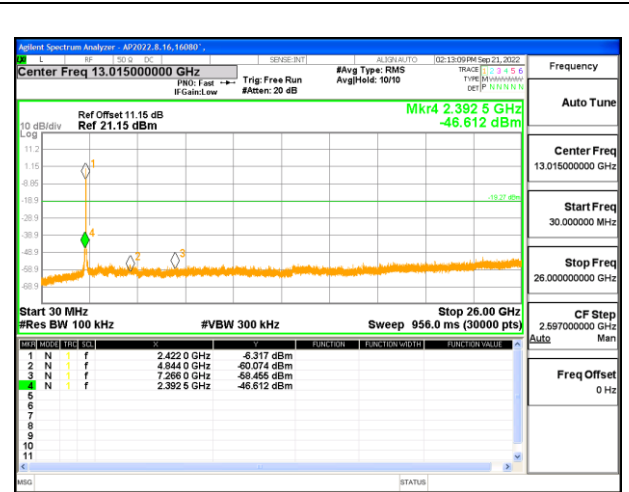
**OUT-OF-BAND HIGH CHANNEL 9  
 Antenna 3**

**2TX Antenna 1 + Antenna 3 CDD OFDMA MODE: 484-Tones, RU Index 65**

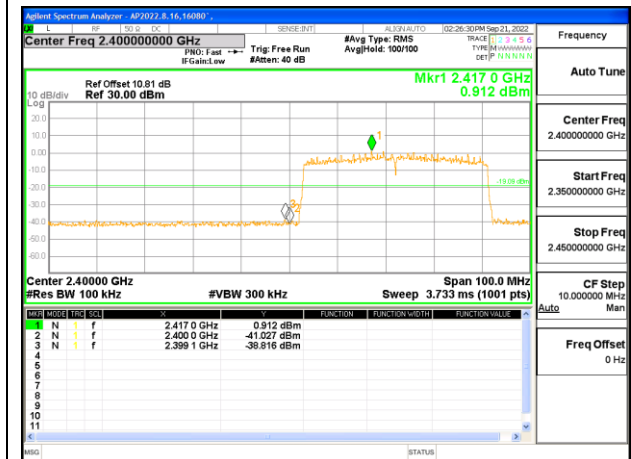
**LOW CHANNEL 3**



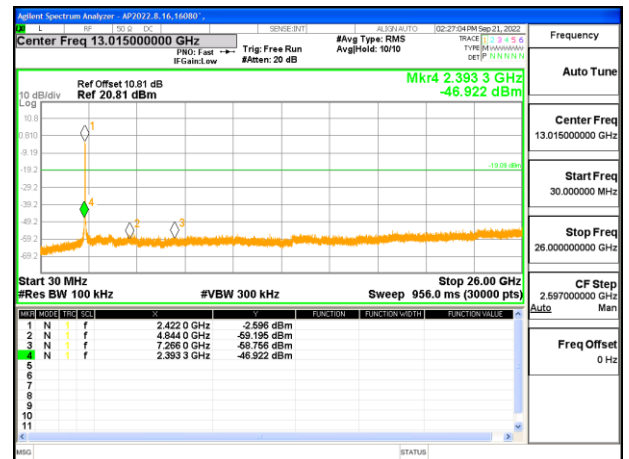
**LOW CHANNEL 3 BANDEDGE  
 Antenna 1**



**OUT-OF-BAND LOW CHANNEL 3  
 Antenna 1**

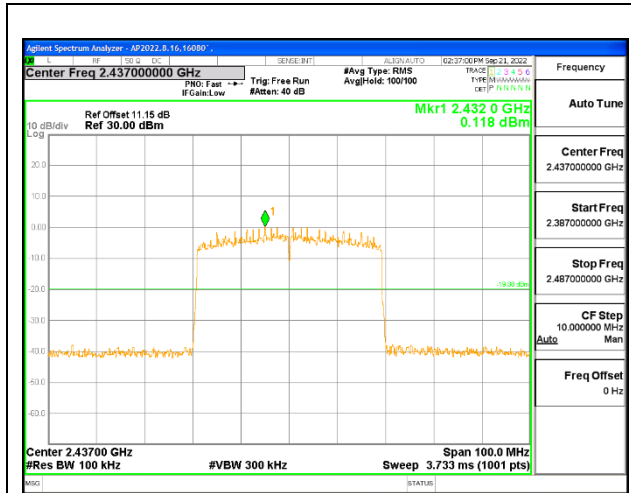


**LOW CHANNEL 3 BANDEDGE  
 Antenna 3**

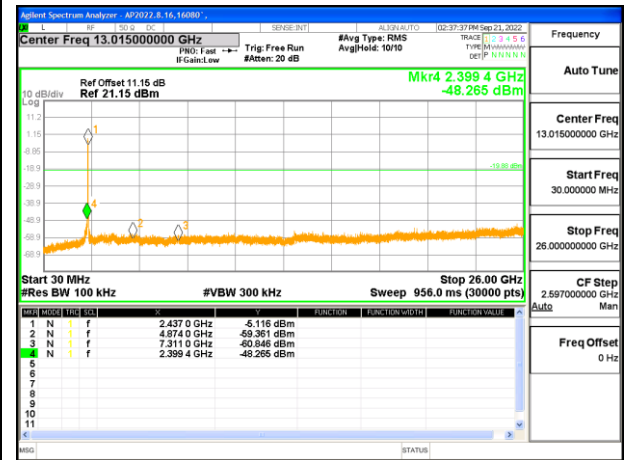


**OUT-OF-BAND LOW CHANNEL 3  
 Antenna 3**

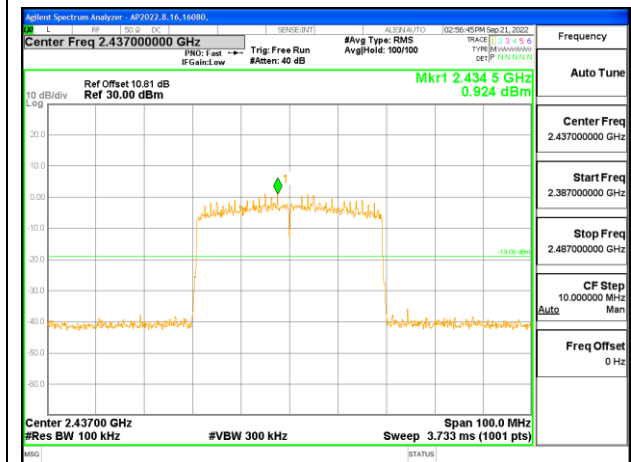
### MID CHANNEL 6



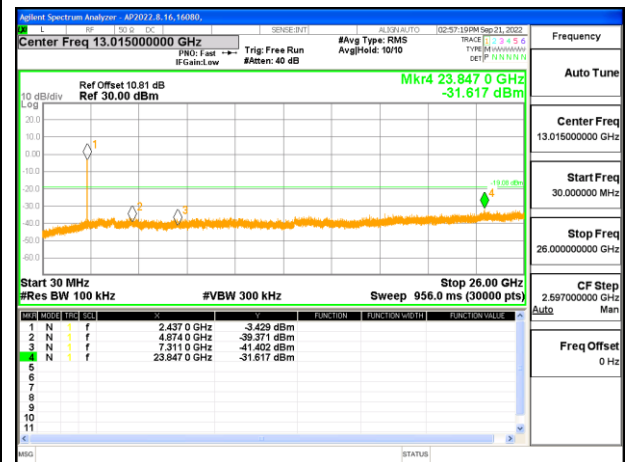
**IN-BAND REFERENCE LEVEL  
 Antenna 1**



**OUT-OF-BAND MID CHANNEL 6  
 Antenna 1**

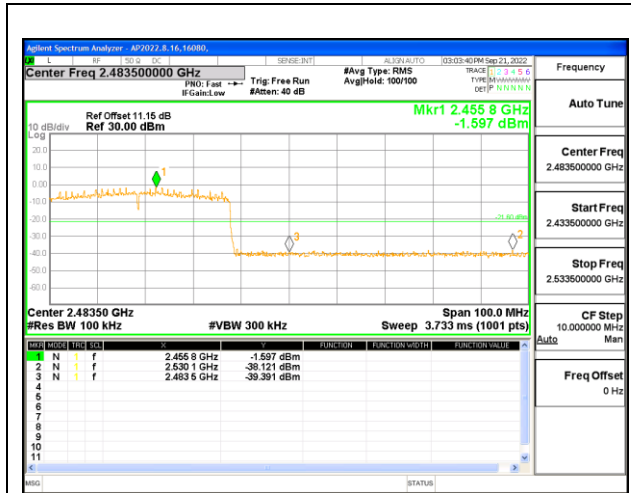


**IN-BAND REFERENCE LEVEL  
 Antenna 3**

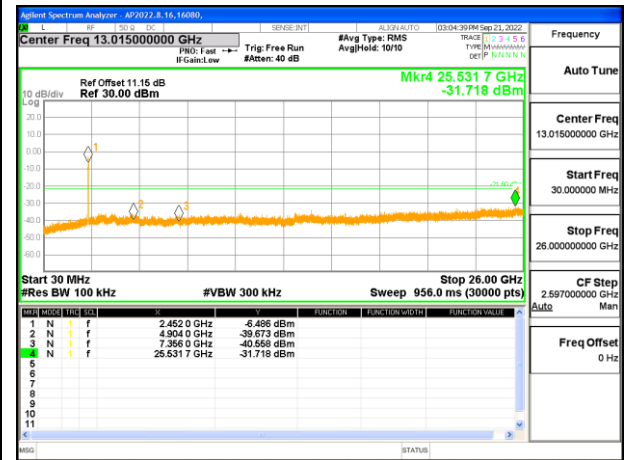


**OUT-OF-BAND MID CHANNEL 6  
 Antenna 3**

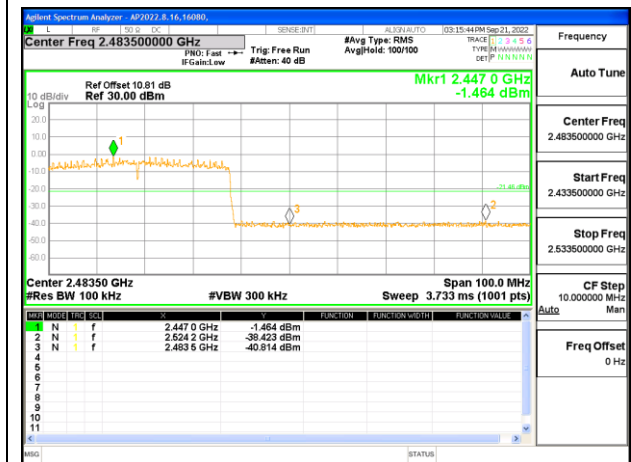
### HIGH CHANNEL 9



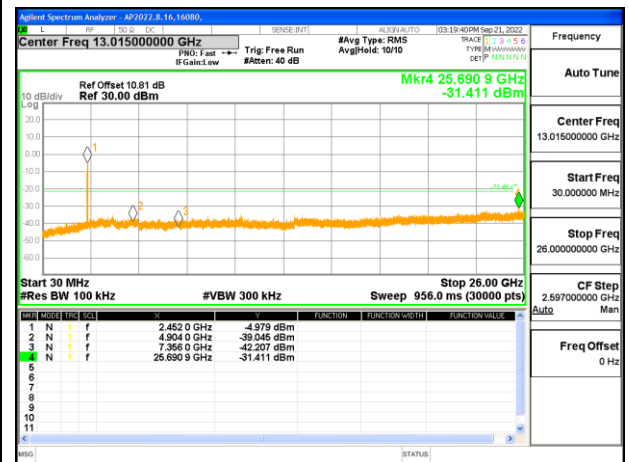
**HIGH CHANNEL 9 BANDEDGE  
 Antenna 1**



**OUT-OF-BAND HIGH CHANNEL 9  
 Antenna 1**



**HIGH CHANNEL 9 BANDEDGE  
 Antenna 3**



**OUT-OF-BAND HIGH CHANNEL 9  
 Antenna 3**

## 10. RADIATED TEST RESULTS

### LIMITS

FCC §15.205 and §15.209

RSS-GEN, Section 8.9 and 8.10

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
0.009-0.490	2400/F(kHz) @ 300 m	-
0.490-1.705	24000/F(kHz) @ 30 m	-
1.705 - 30	30 @ 30m	-
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 1 GHz to 18 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band. Below 30MHz, below 1GHz and above 18GHz emissions, the channel with the highest output power was tested.

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.

2D antenna use - For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel), parallel and perpendicular are the worst orientations, therefore testing was performed on these two orientations only.

Based 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.



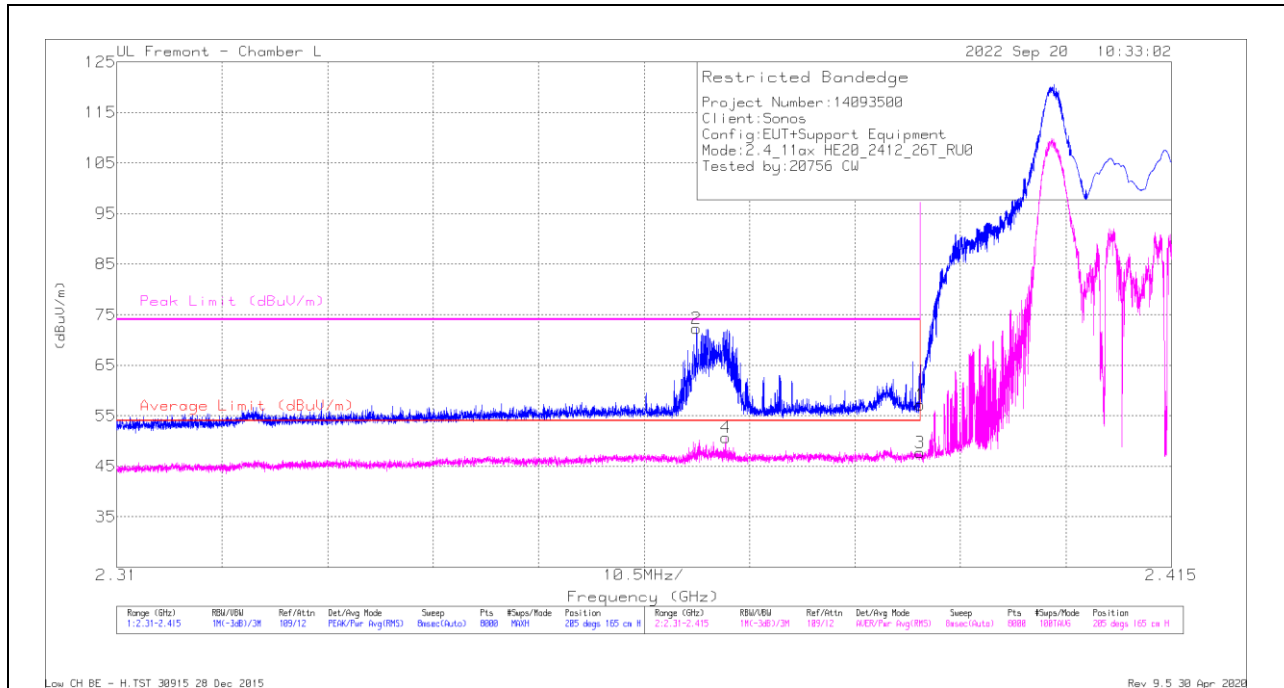
## 10.1. TRANSMITTER ABOVE 1 GHz

### 10.1.1. TX ABOVE 1 GHz 802.11ax HE20 MODE IN THE 2.4GHz BAND

**2TX Antenna 1 + Antenna 3 OFDMA MODE: 26-Tones, RU Index 0**

#### BANDEDGE (LOW CHANNEL 1)

#### HORIZONTAL RESULT



#### Trace Markers

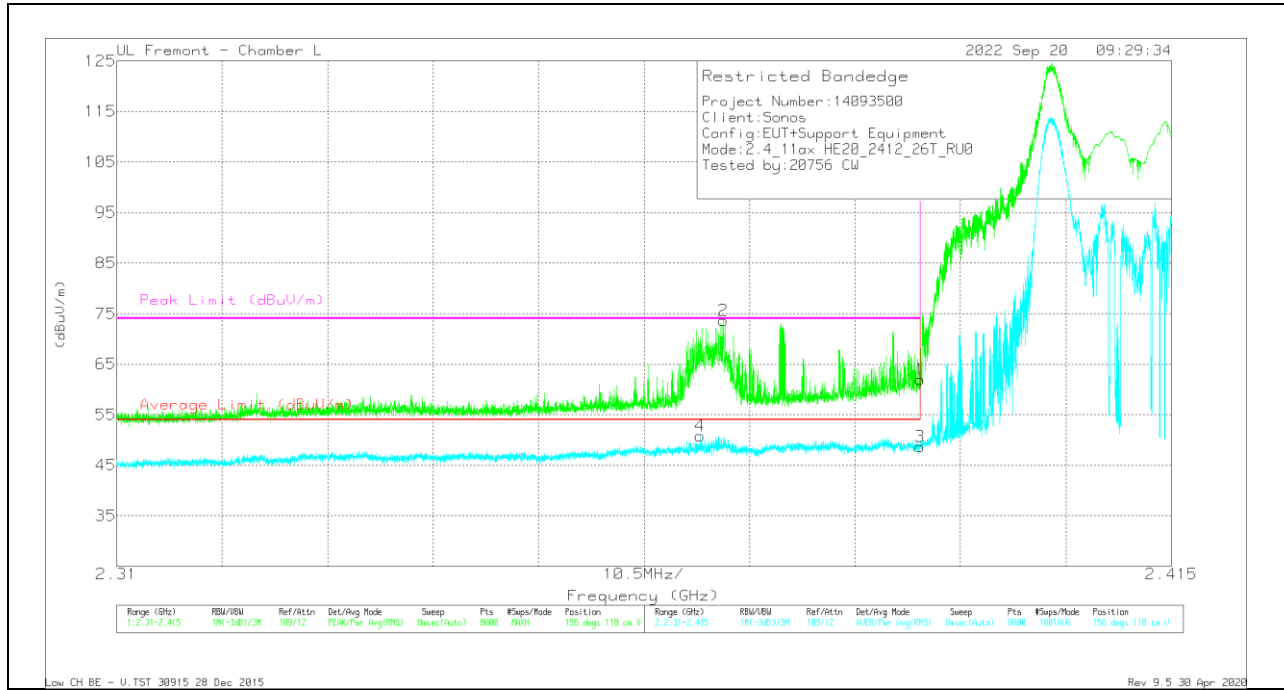
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	80707 ACF (dB)	Amp/Cbl/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	37.93	Pk	31.9	-12.7	0	57.13	-	-	74	-16.87	205	165	H
2	* 2.36773	53.12	Pk	31.9	-12.7	0	72.32	-	-	74	-1.68	205	165	H
3	* 2.39	25.39	RMS	31.9	-12.7	3.04	47.63	54	-6.37	-	-	205	165	H
4	* 2.37061	28.45	RMS	31.9	-12.7	3.04	50.69	54	-3.31	-	-	205	165	H

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

Pk - Peak detector

RMS - RMS detection

### VERTICAL RESULT



### Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	80707 ACF (dB)	Amp/Cb/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	42.79	Pk	31.9	-12.7	0	61.99	-	-	74	-12.01	156	118	V
2	* 2.3704	54.41	Pk	31.9	-12.7	0	73.61	-	-	74	-.39	156	118	V
3	* 2.39	26.39	RMS	31.9	-12.7	3.04	48.63	54	-5.37	-	-	156	118	V
4	* 2.36807	28.51	RMS	31.9	-12.7	3.04	50.75	54	-3.25	-	-	156	118	V

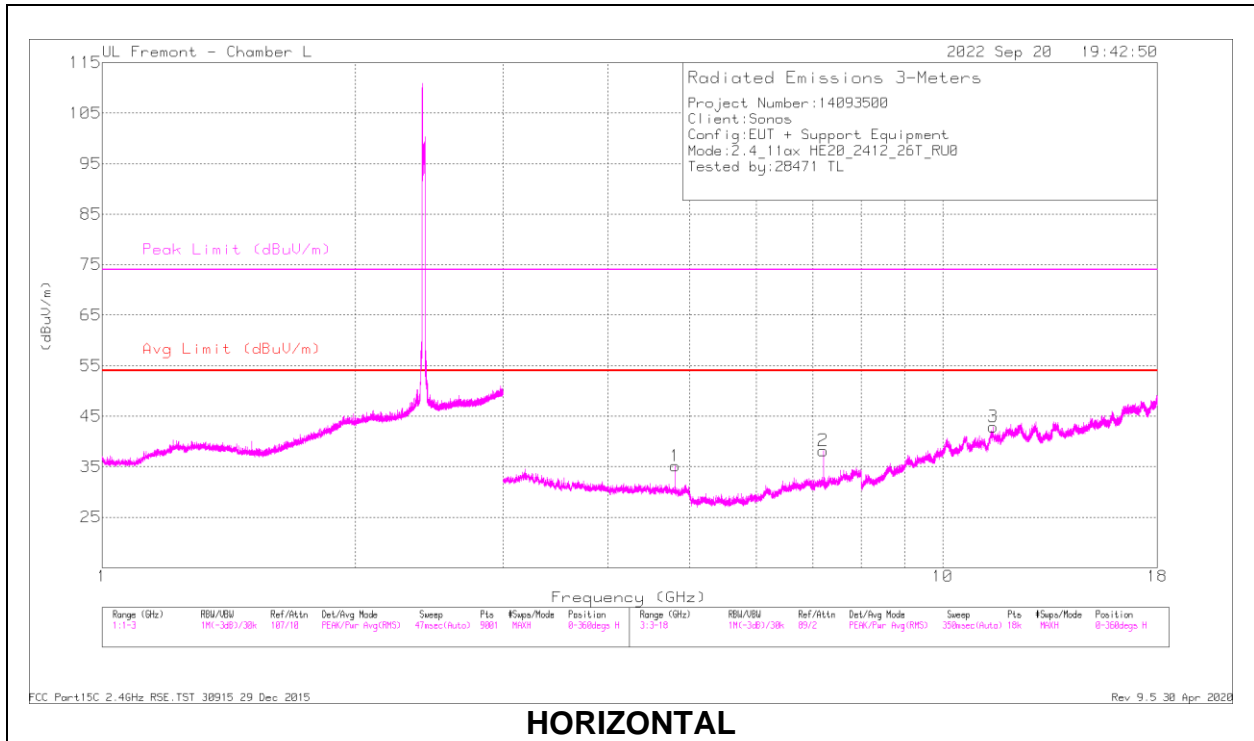
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

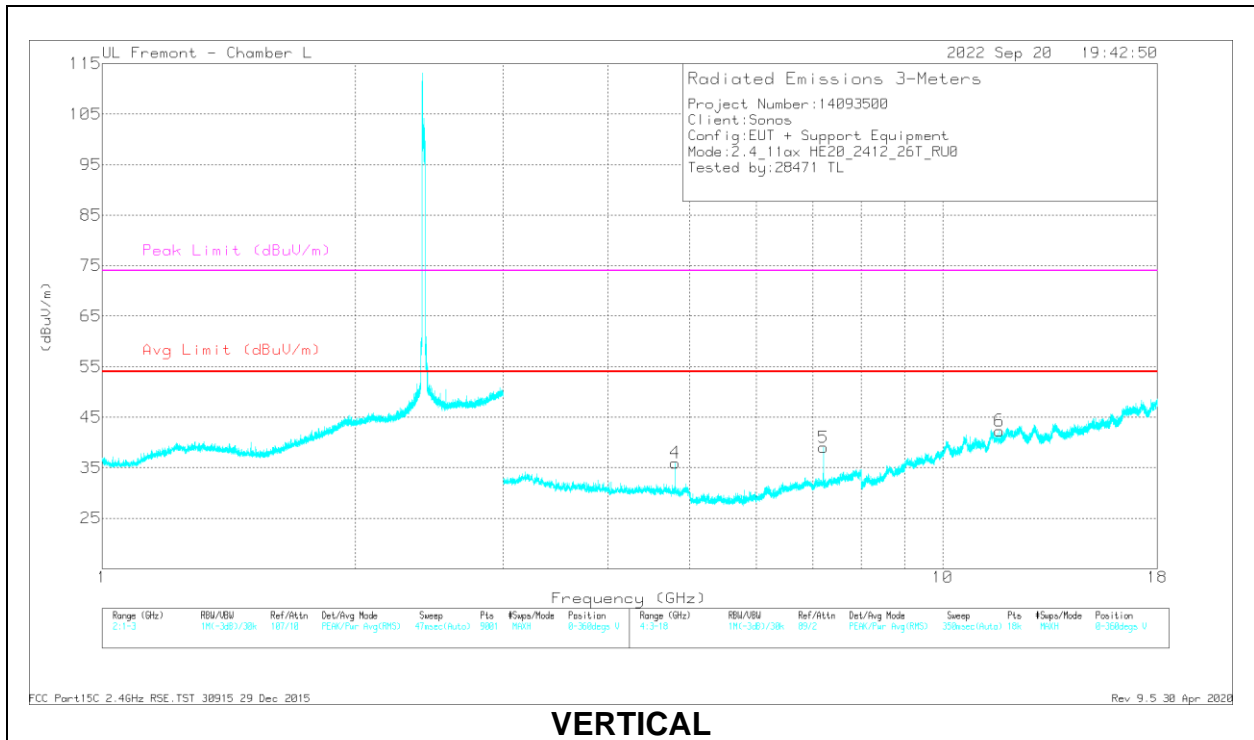
RMS - RMS detection

# HARMONICS AND SPURIOUS EMISSIONS

## LOW CHANNEL 1 RESULTS



**HORIZONTAL**



**VERTICAL**

**RADIATED EMISSIONS**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	80707 ACF (dB)	Amp/Cbl/Filtr (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.80794	53.74	PK2	34.1	-26.6	0	61.24	-	-	74	-12.76	41	157	H
	* 4.807	29.82	MAv1	34.1	-26.5	3.04	40.46	54	-13.54	-	-	41	157	H
2	7.21027	50.37	PK2	35.9	-23	0	63.27	-	-	-	-	250	104	H
3	* 11.47534	28.87	PK2	38.7	-17.4	0	50.17	-	-	74	-23.83	73	155	H
	* 11.47432	18.91	MAv1	38.7	-17.4	3.04	43.25	54	-10.75	-	-	73	155	H
4	* 4.80648	50.35	PK2	34.1	-26.5	0	57.95	-	-	74	-16.05	332	337	V
	* 4.80712	31.14	MAv1	34.1	-26.6	3.04	41.68	54	-12.32	-	-	332	337	V
5	7.20893	54.92	PK2	35.9	-23	0	67.82	-	-	-	-	129	392	V
6	* 11.67911	27.93	PK2	38.9	-17.1	0	49.73	-	-	74	-24.27	299	194	V
	* 11.6801	17.13	MAv1	38.9	-17.1	3.04	41.97	54	-12.03	-	-	299	194	V

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

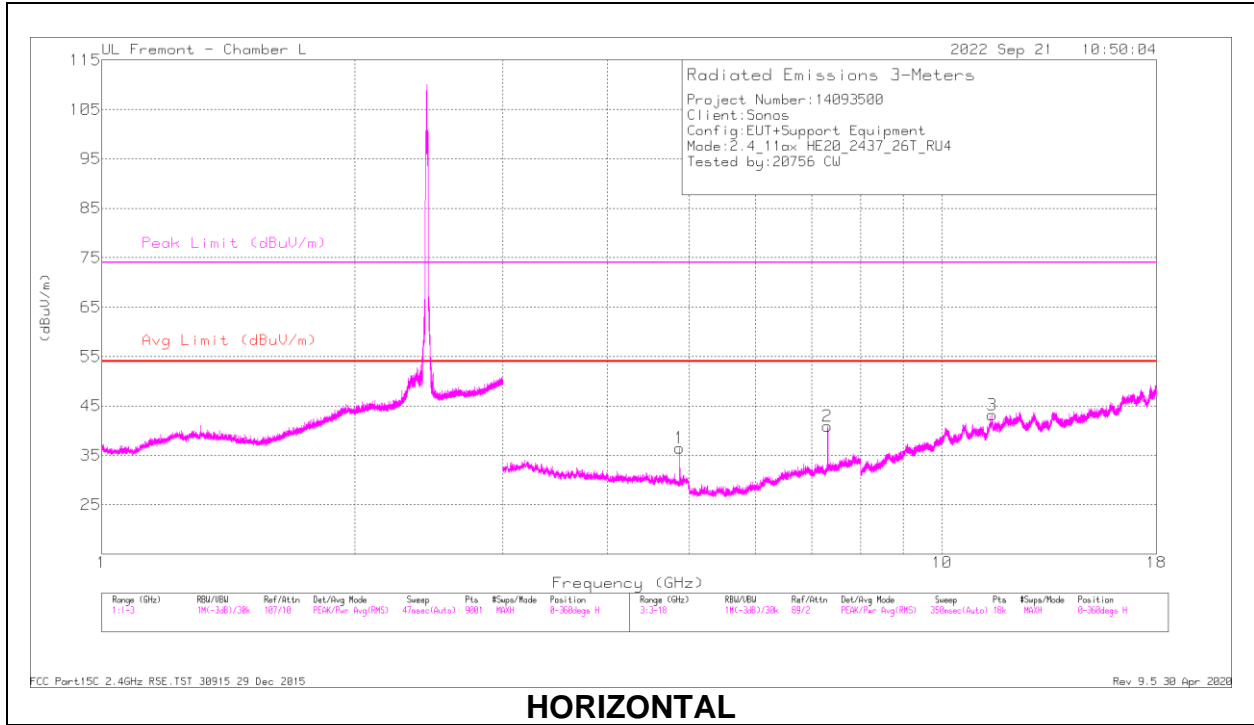
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

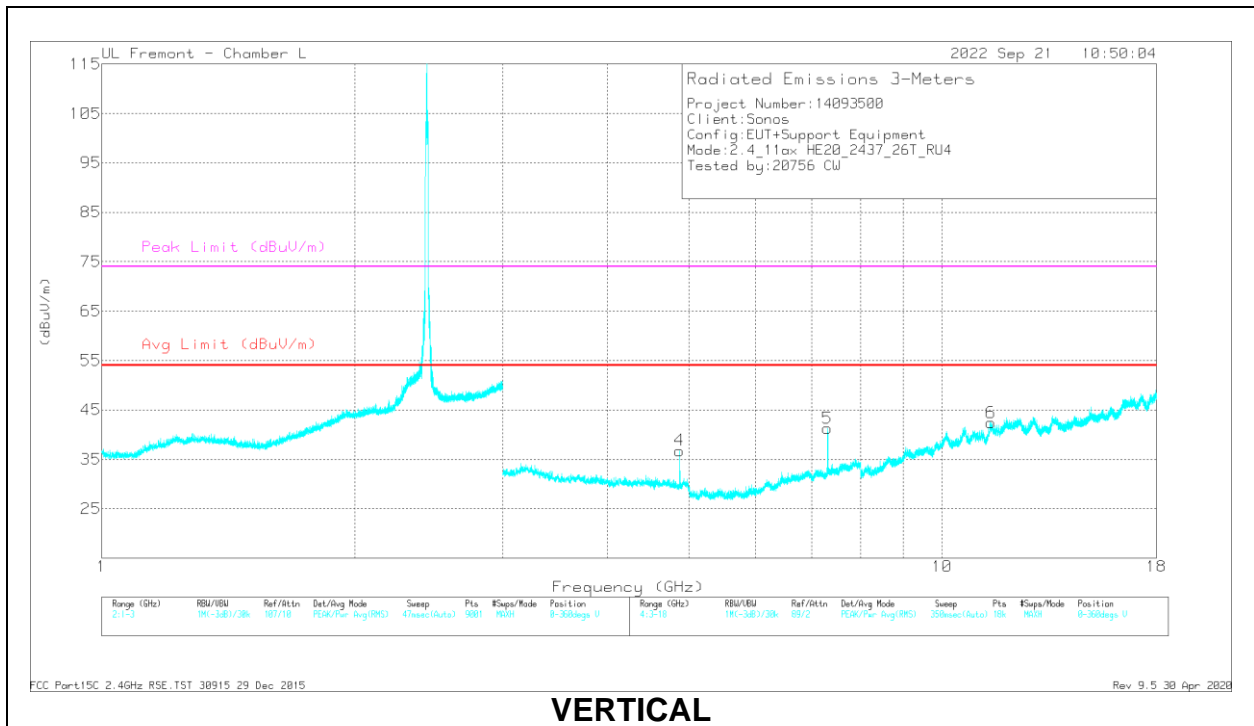
**2TX Antenna 1 + Antenna 3 OFDMA MODE: 26-Tones, RU Index 4**

**HARMONICS AND SPURIOUS EMISSIONS**

**MID CHANNEL 6 RESULTS**



**HORIZONTAL**



**VERTICAL**

**RADIATED EMISSIONS**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	80707 ACF (dB)	Amp/Cbl/Filtr (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.87418	40.34	PK2	34.2	-26.4	0	48.14	-	-	74	-25.86	187	104	H
	* 4.87415	24.74	MAv1	34.2	-26.4	3.04	35.58	54	-18.42	-	-	187	104	H
2	* 7.31167	51.08	PK2	35.9	-22.8	0	64.18	-	-	74	-9.82	301	223	H
	* 7.31121	31.72	MAv1	35.9	-22.9	3.04	47.76	54	-6.24	-	-	301	223	H
3	* 11.48509	29.36	PK2	38.7	-17.7	0	50.36	-	-	74	-23.64	19	123	H
	* 11.48181	18.72	MAv1	38.7	-17.6	3.04	42.86	54	-11.14	-	-	19	123	H
4	* 4.87227	43.83	PK2	34.2	-26.5	0	51.53	-	-	74	-22.47	251	334	V
	* 4.87411	29.84	MAv1	34.2	-26.4	3.04	40.68	54	-13.32	-	-	251	334	V
5	* 7.31129	44.75	PK2	35.9	-22.9	0	57.75	-	-	74	-16.25	131	127	V
	* 7.31113	24.98	MAv1	35.9	-22.9	3.04	41.02	54	-12.98	-	-	131	127	V
6	* 11.44571	28.28	PK2	38.6	-17.7	0	49.18	-	-	74	-24.82	24	201	V
	* 11.44719	18.17	MAv1	38.6	-17.7	3.04	42.11	54	-11.89	-	-	24	201	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average