

**9.6.4. 802.11n HT40 MODE**

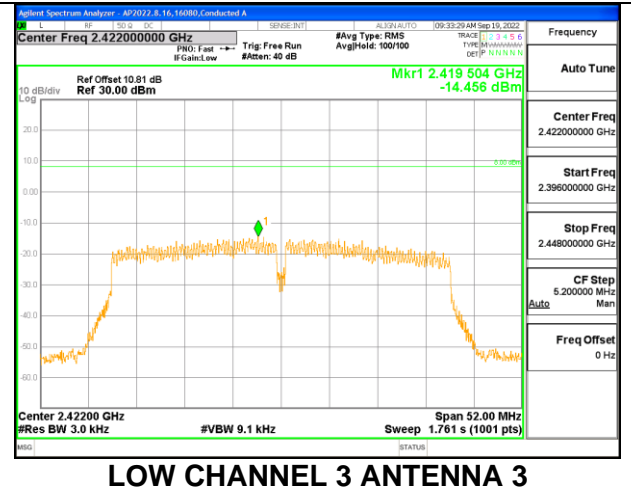
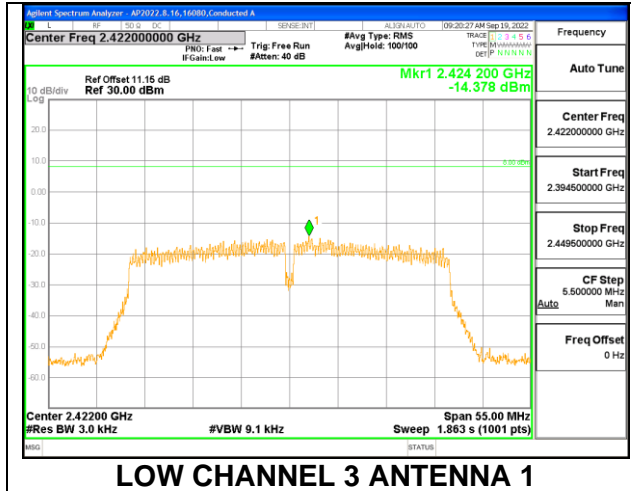
**2TX Antenna 1 + Antenna 3 CDD MODE**

<b>Duty Cycle CF (dB)</b>	2.96	<b>Included in Calculations of Corr'd PSD</b>
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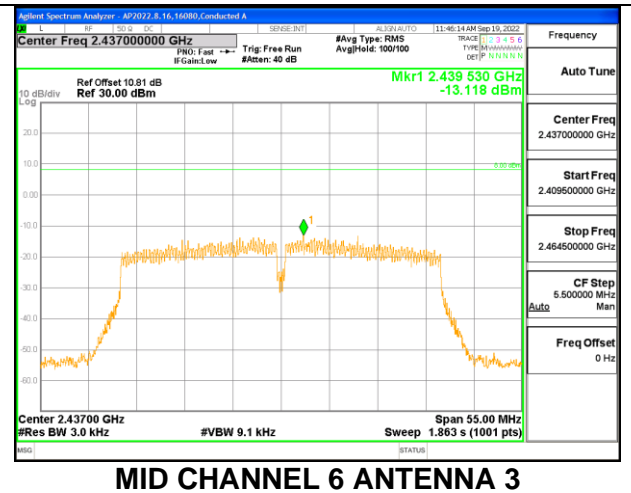
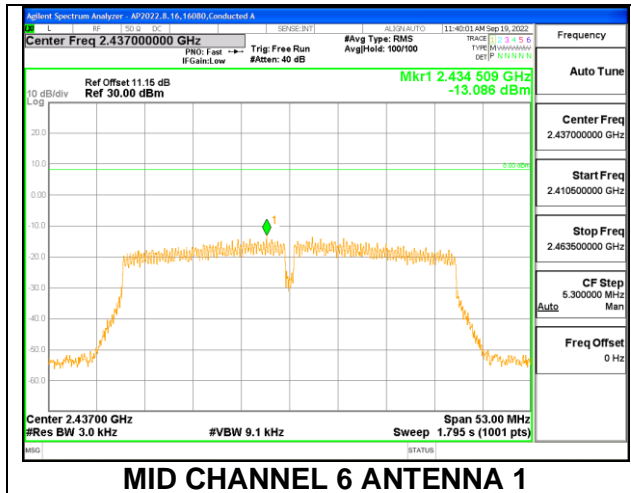
**PSD Results**

<b>Channel</b>	<b>Frequency (MHz)</b>	<b>Antenna 1 Meas (dBm/ 3kHz)</b>	<b>Antenna 3 Meas (dBm/ 3kHz)</b>	<b>Total Corr'd PSD (dBm/ 3kHz)</b>	<b>Limit (dBm/ 3kHz)</b>	<b>Margin (dB)</b>
Low 3	2422	-14.378	-14.456	-8.45	8.0	-16.4
Mid 6	2437	-13.086	-13.118	-7.13	8.0	-15.1
High 9	2452	-15.453	-15.224	-9.37	8.0	-17.4

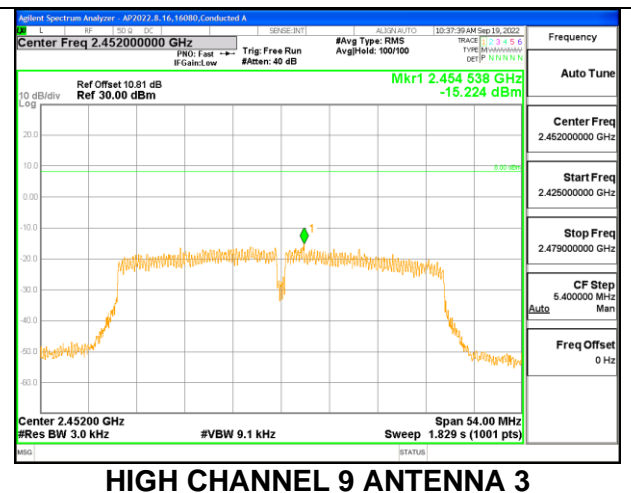
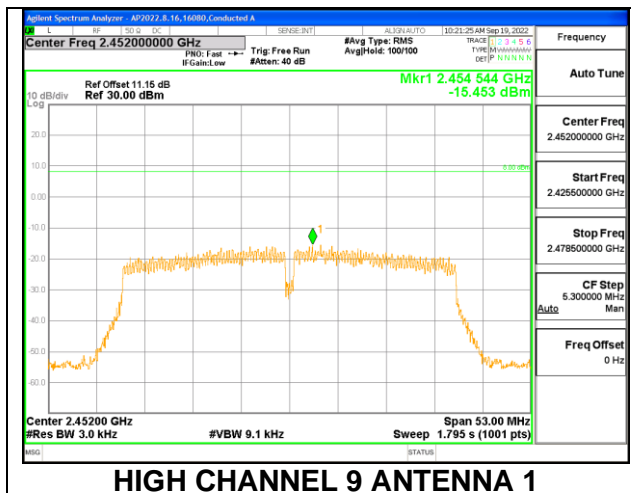
### LOW CHANNEL 3



### MID CHANNEL 6



### HIGH CHANNEL 9



## **9.7. CONDUCTED SPURIOUS EMISSIONS**

### **LIMITS**

FCC §15.247 (d)

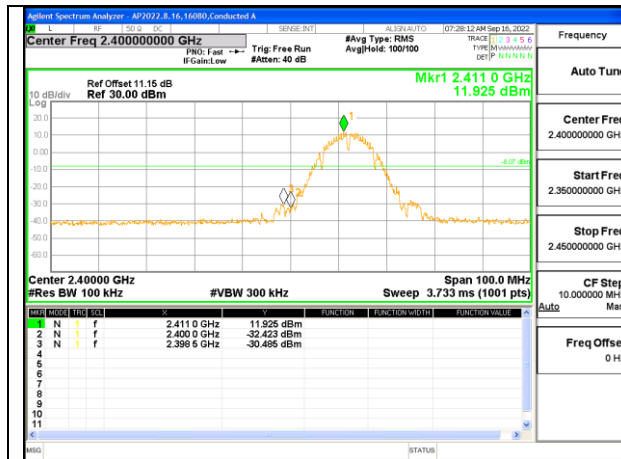
RSS-247 5.5

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

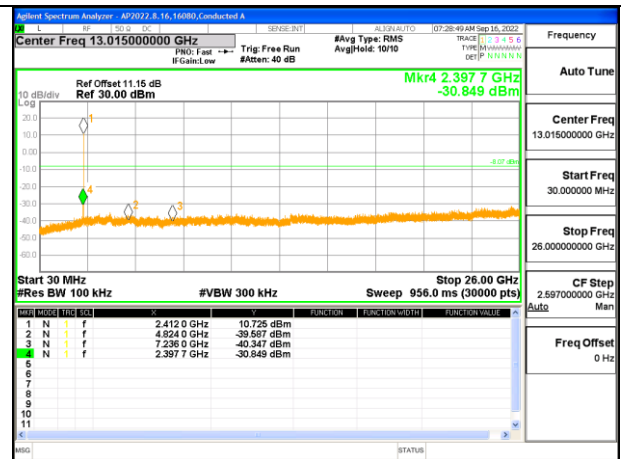
### **RESULTS**

**9.7.1. 802.11b MODE**

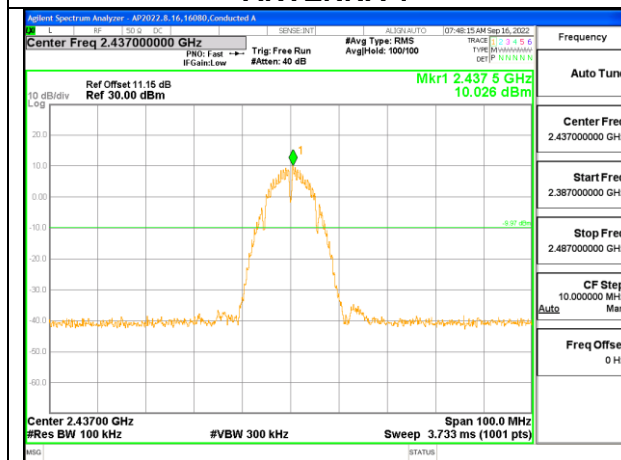
**2TX Antenna 1 + Antenna 3 CDD MODE**



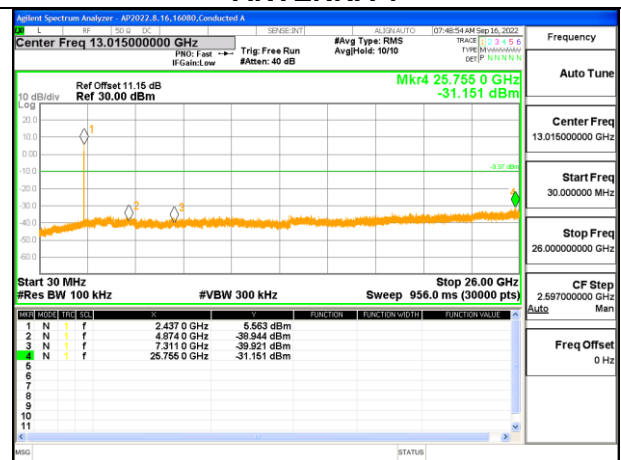
**LOW CHANNEL 1 BANDEDGE  
 ANTENNA 1**



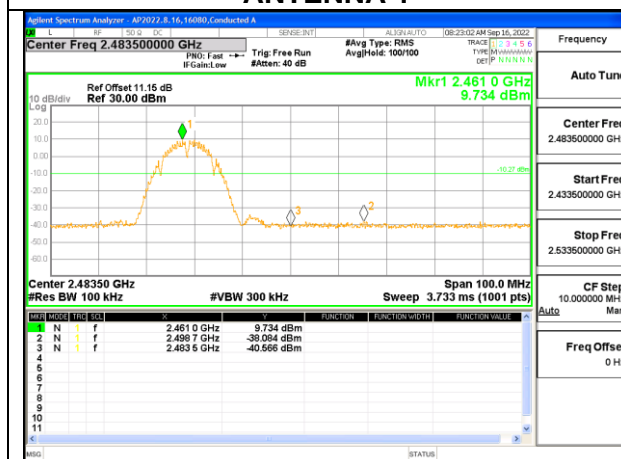
**OUT-OF-BAND LOW CHANNEL 1  
 ANTENNA 1**



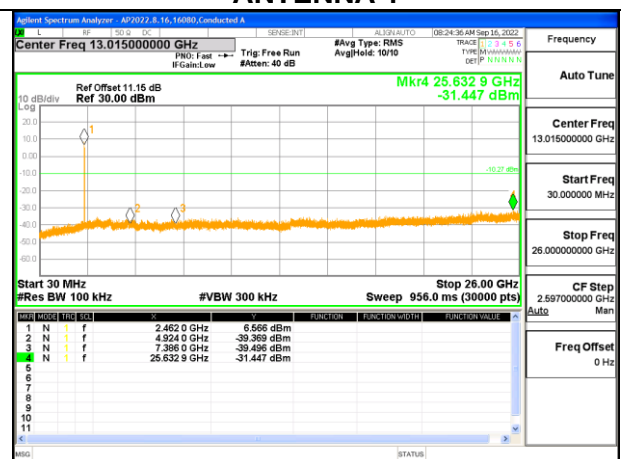
**IN-BAND REFERENCE LEVEL  
 ANTENNA 1**



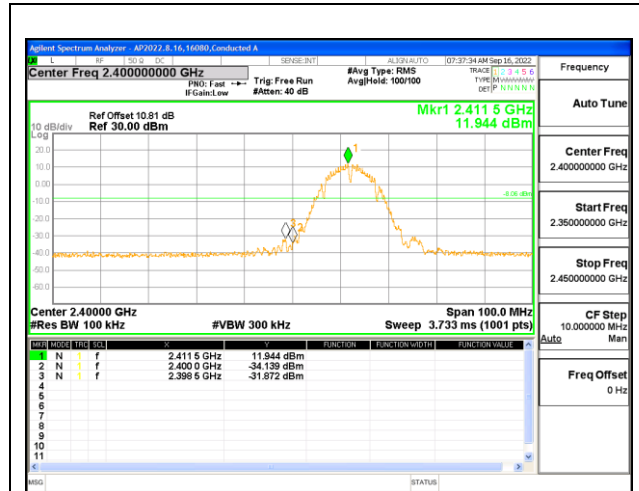
**OUT-OF-BAND MID CHANNEL  
 ANTENNA 1**



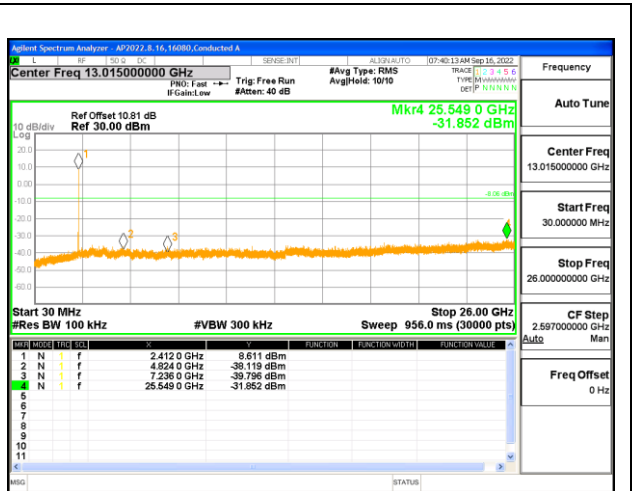
**HIGH CHANNEL 11 BANDEDGE  
 ANTENNA 1**



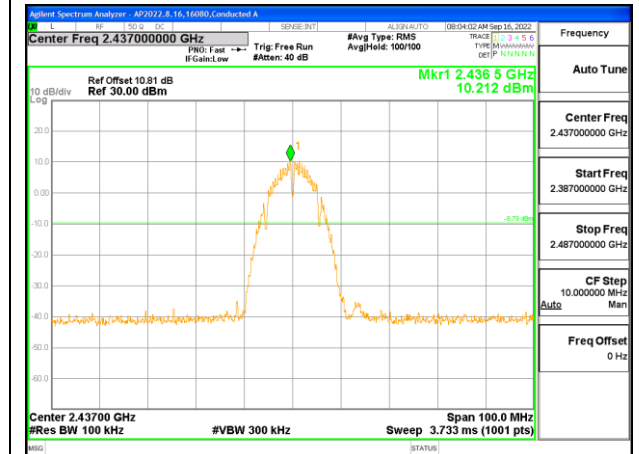
**OUT-OF-BAND HIGH CHANNEL 11  
 ANTENNA 1**



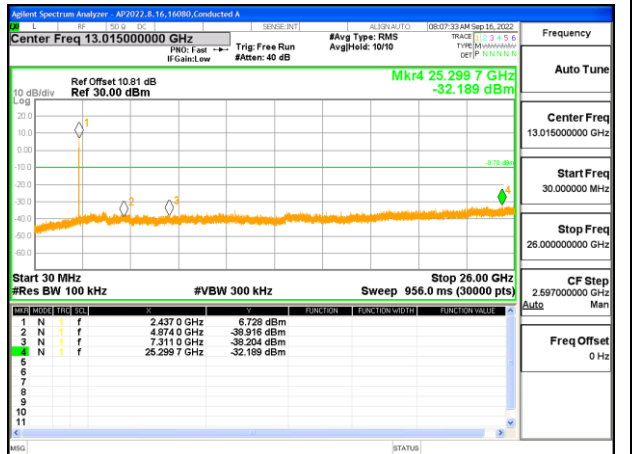
**LOW CHANNEL 1 BANDEDGE  
 ANTENNA 3**



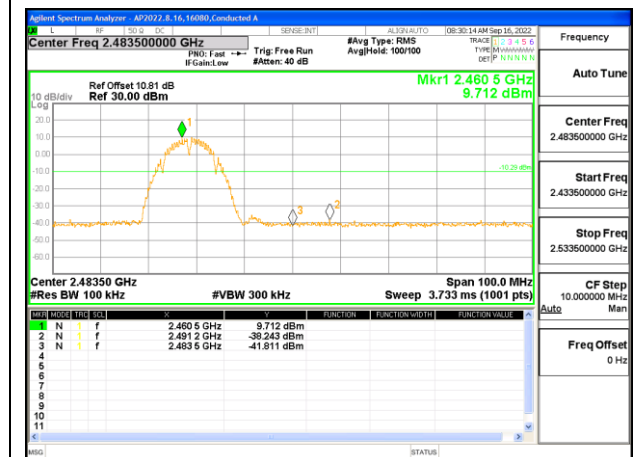
**OUT-OF-BAND LOW CHANNEL 1  
 ANTENNA 3**



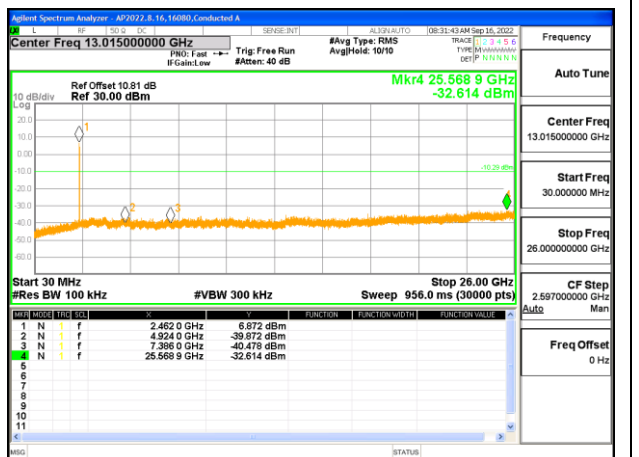
**IN-BAND REFERENCE LEVEL  
 ANTENNA 3**



**OUT-OF-BAND MID CHANNEL  
 ANTENNA 3**



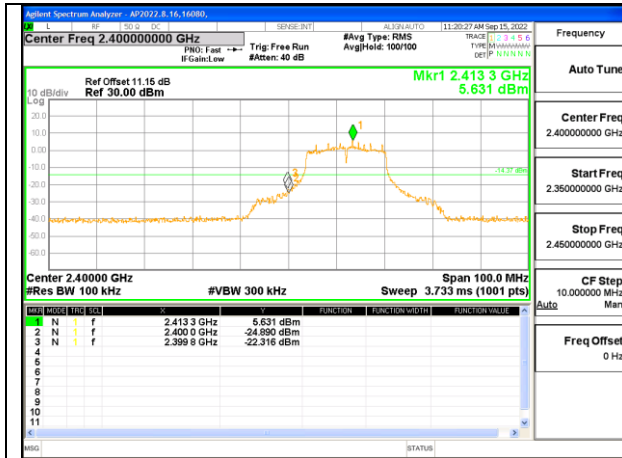
**HIGH CHANNEL 11 BANDEDGE  
 ANTENNA 3**



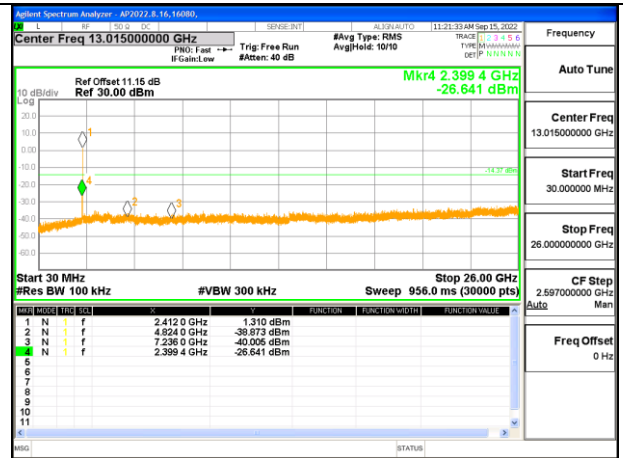
**OUT-OF-BAND HIGH CHANNEL 11  
 ANTENNA 3**

### 9.7.2. 802.11g MODE

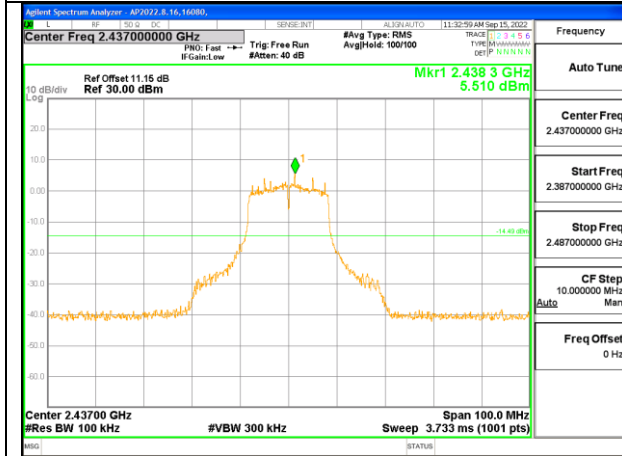
#### 2TX Antenna 1 + Antenna 3 CDD MODE



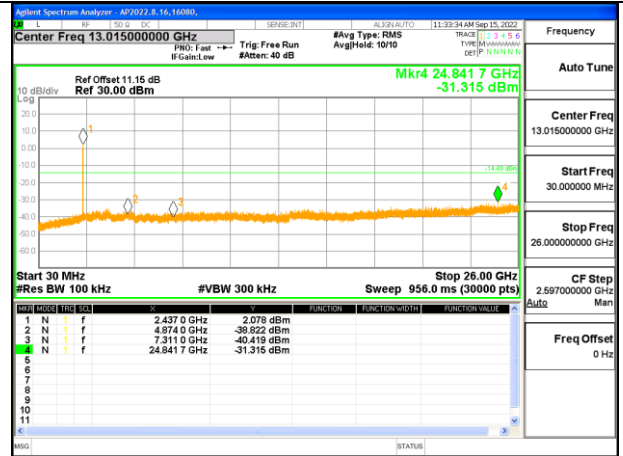
**LOW CHANNEL 1 BANDEDGE  
 ANTENNA 1**



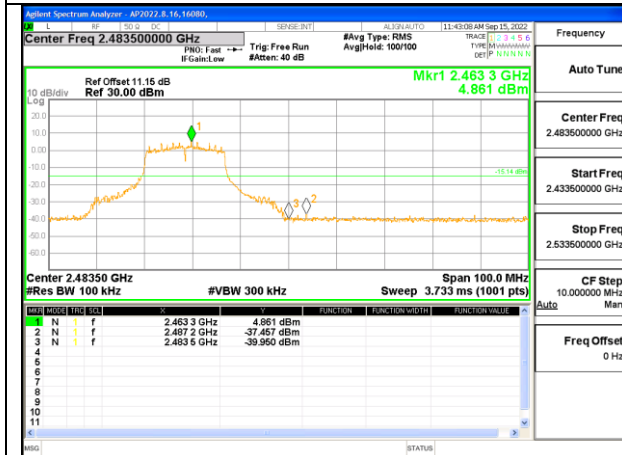
**OUT-OF-BAND LOW CHANNEL 1  
 ANTENNA 1**



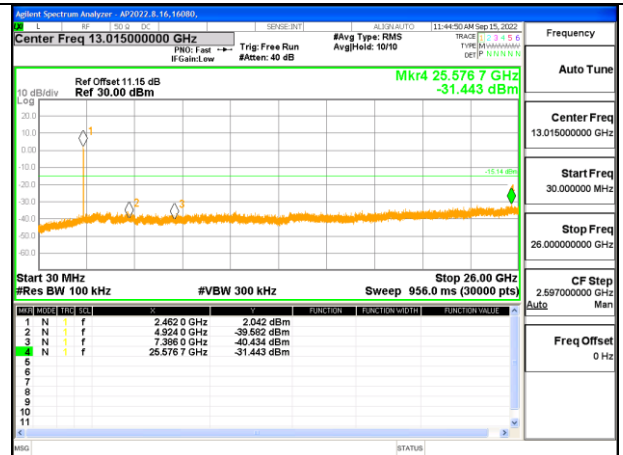
**IN-BAND REFERENCE LEVEL  
 ANTENNA 1**



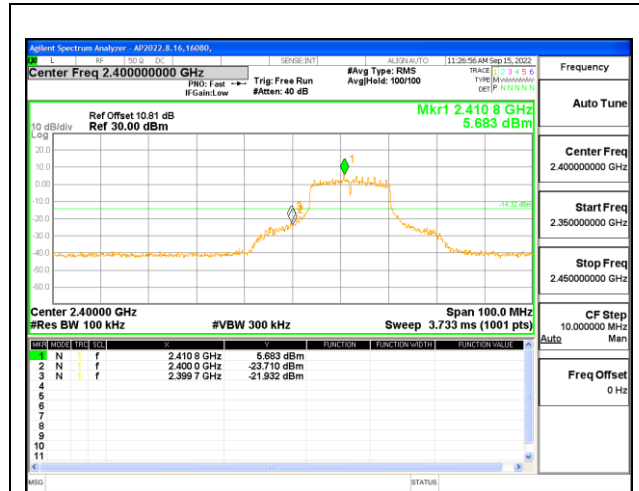
**OUT-OF-BAND MID CHANNEL  
 ANTENNA 1**



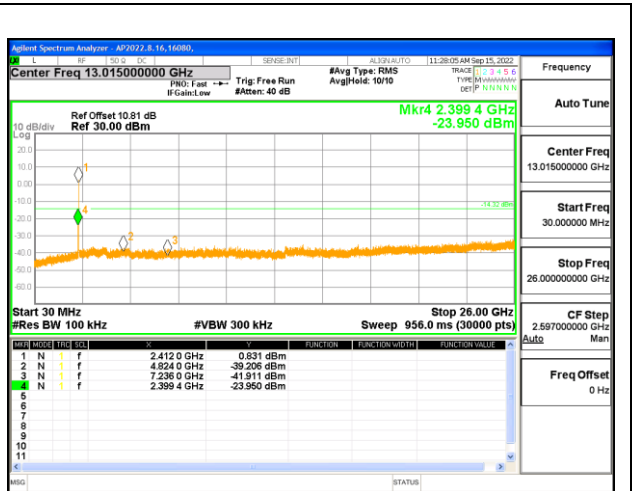
**HIGH CHANNEL 11 BANDEDGE  
 ANTENNA 1**



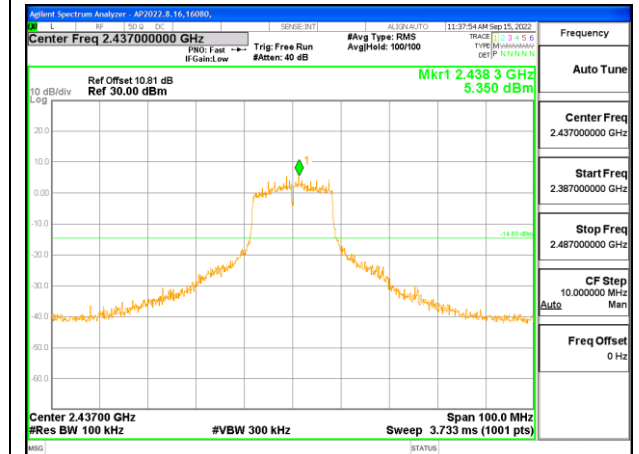
**OUT-OF-BAND HIGH CHANNEL 11  
 ANTENNA 1**



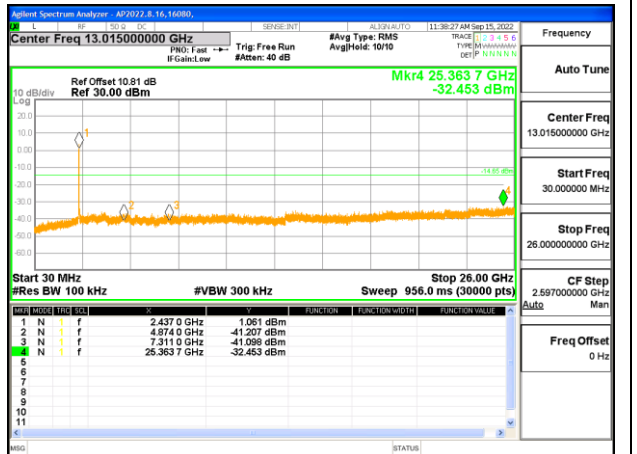
**LOW CHANNEL 1 BANDEDGE  
 ANTENNA 3**



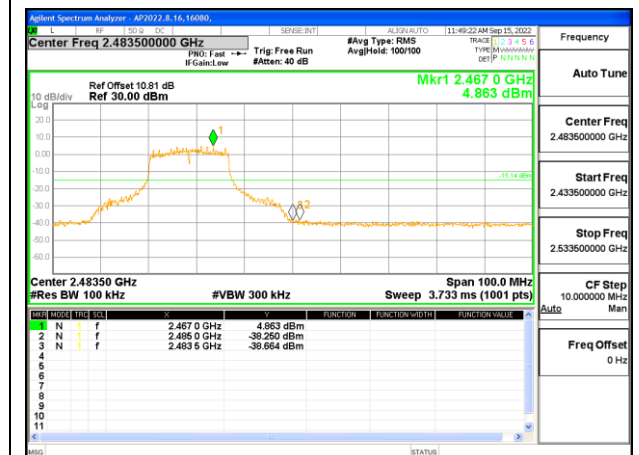
**OUT-OF-BAND LOW CHANNEL 1  
 ANTENNA 3**



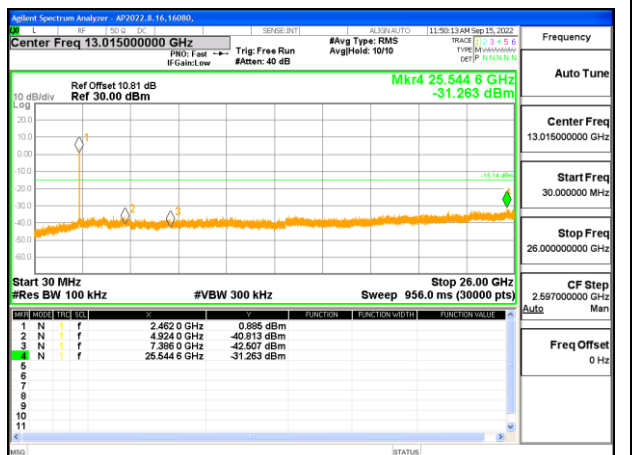
**IN-BAND REFERENCE LEVEL  
 ANTENNA 3**



**OUT-OF-BAND MID CHANNEL  
 ANTENNA 3**



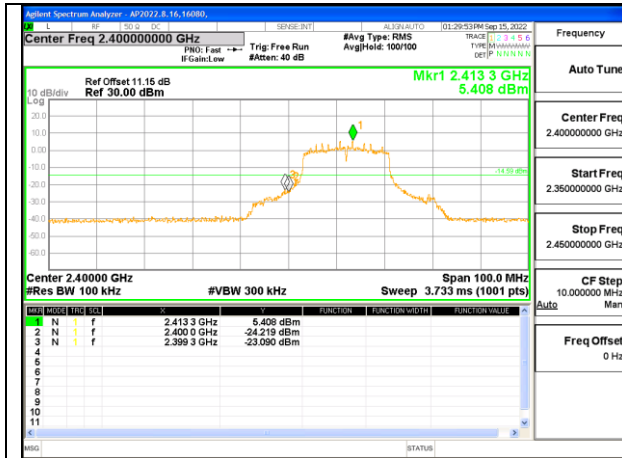
**HIGH CHANNEL 11 BANDEDGE  
 ANTENNA 3**



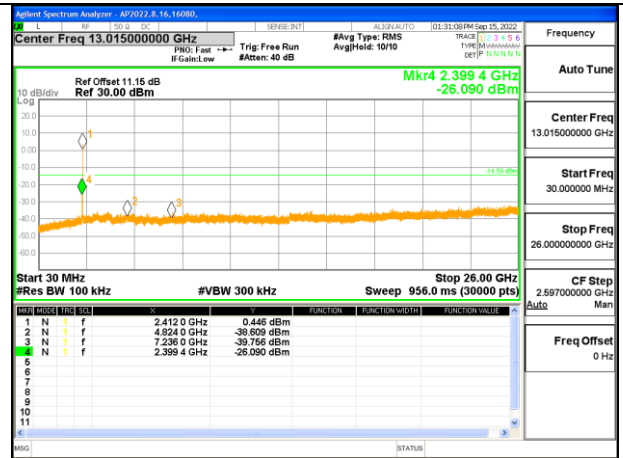
**OUT-OF-BAND HIGH CHANNEL 11  
 ANTENNA 3**

**9.7.3. 802.11n HT20 MODE**

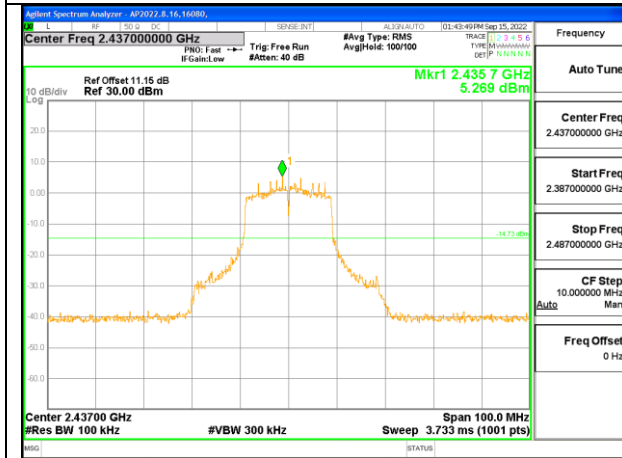
**2TX Antenna 1 + Antenna 3 CDD MODE**



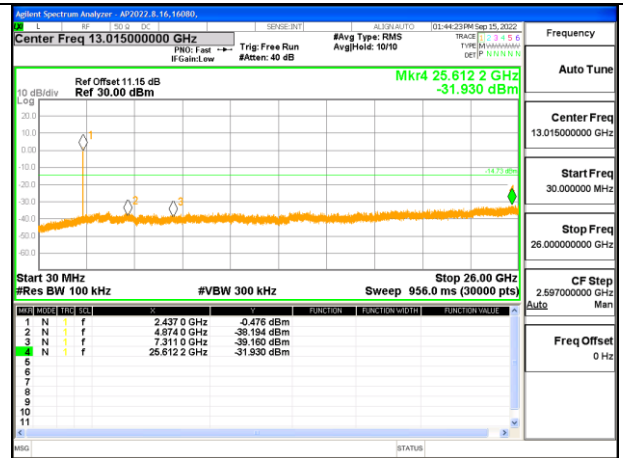
**LOW CHANNEL 1 BANDEDGE  
 ANTENNA 1**



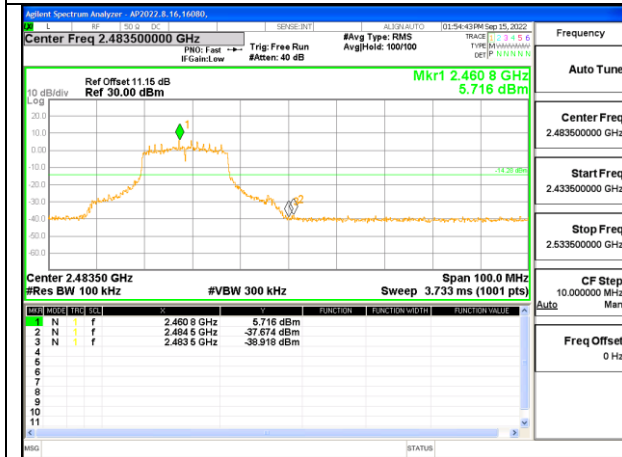
**OUT-OF-BAND LOW CHANNEL 1  
 ANTENNA 1**



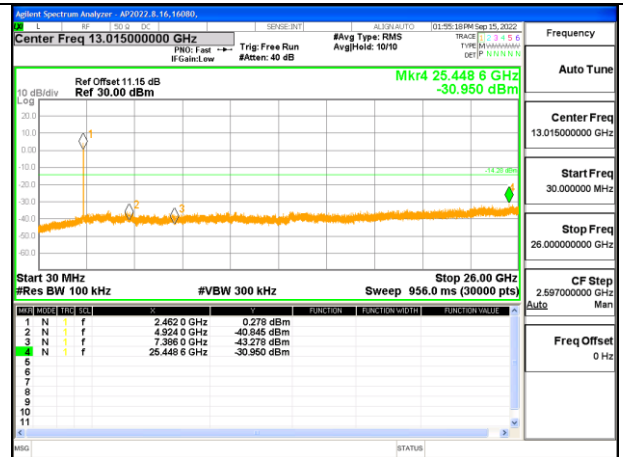
**IN-BAND REFERENCE LEVEL  
 ANTENNA 1**



**OUT-OF-BAND MID CHANNEL  
 ANTENNA 1**

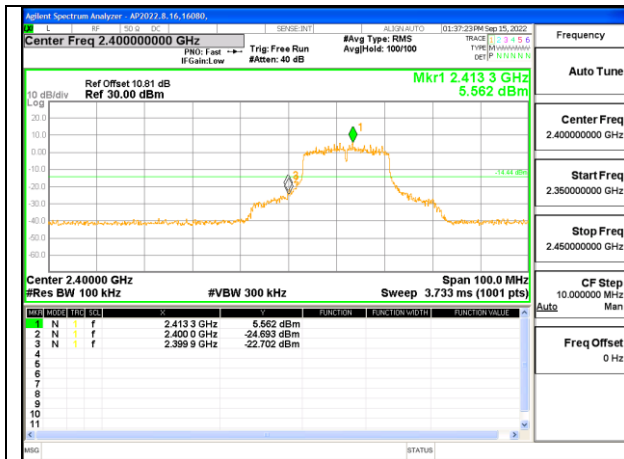


**HIGH CHANNEL 11 BANDEDGE  
 ANTENNA 1**

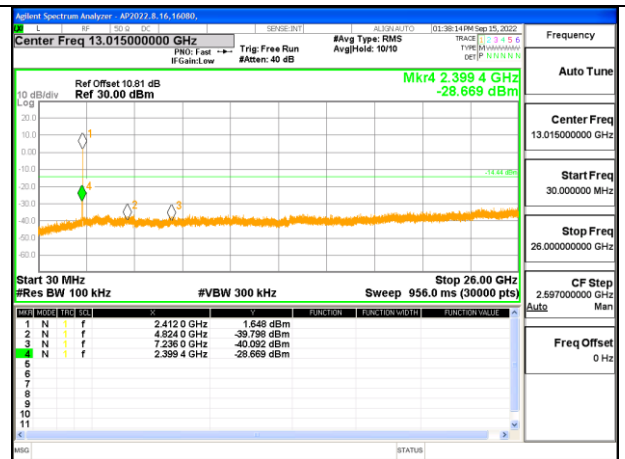


**OUT-OF-BAND HIGH CHANNEL 11  
 ANTENNA 1**

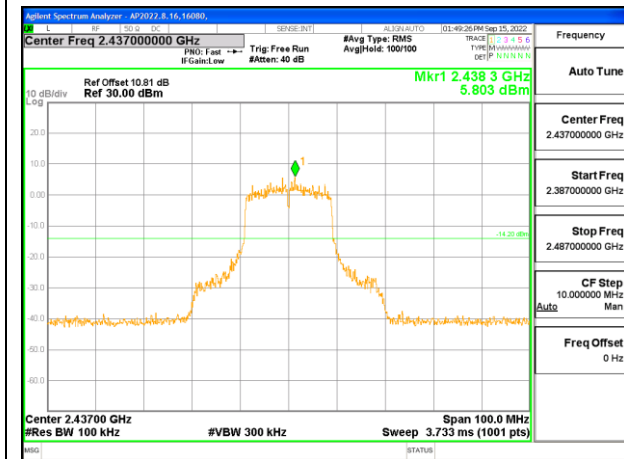




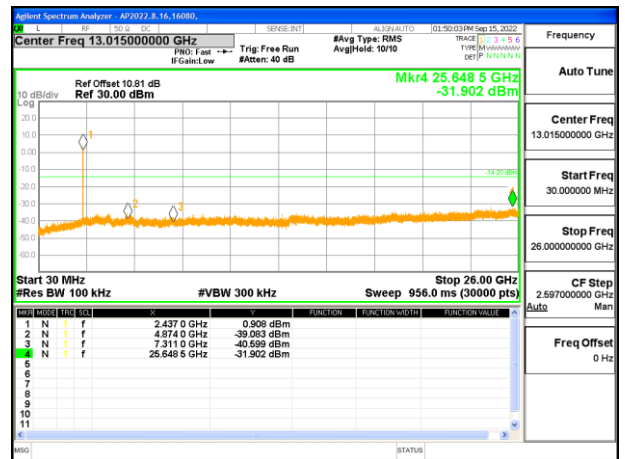
**LOW CHANNEL 1 BANDEDGE  
 ANTENNA 3**



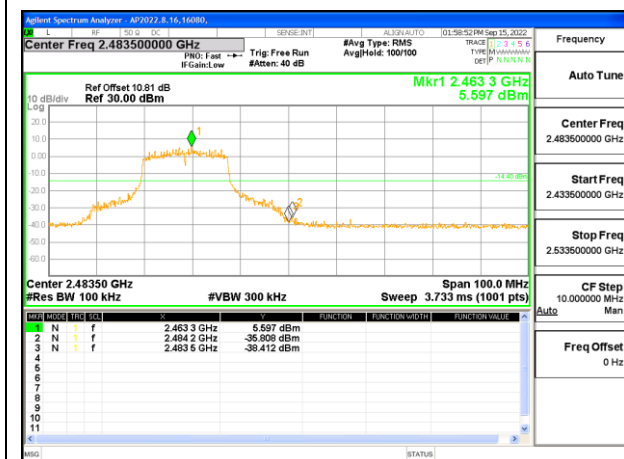
**OUT-OF-BAND LOW CHANNEL 1  
 ANTENNA 3**



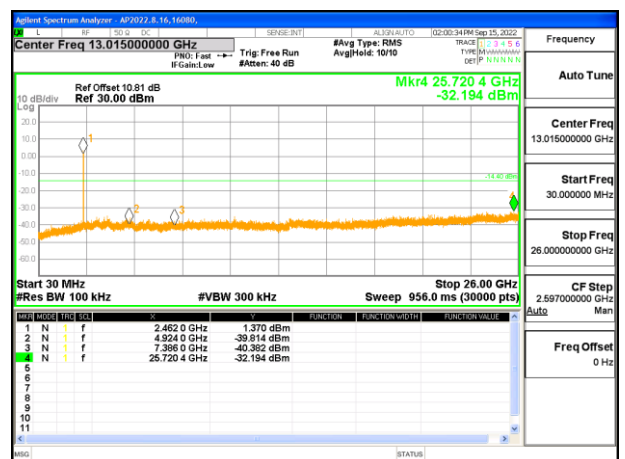
**IN-BAND REFERENCE LEVEL  
 ANTENNA 3**



**OUT-OF-BAND MID CHANNEL  
 ANTENNA 3**



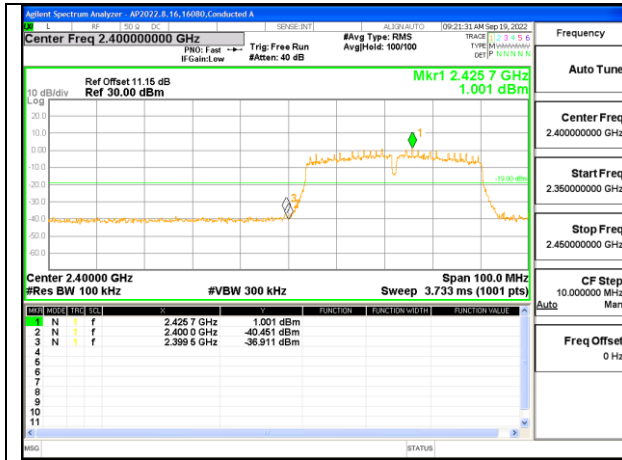
**HIGH CHANNEL 11 BANDEDGE  
 ANTENNA 3**



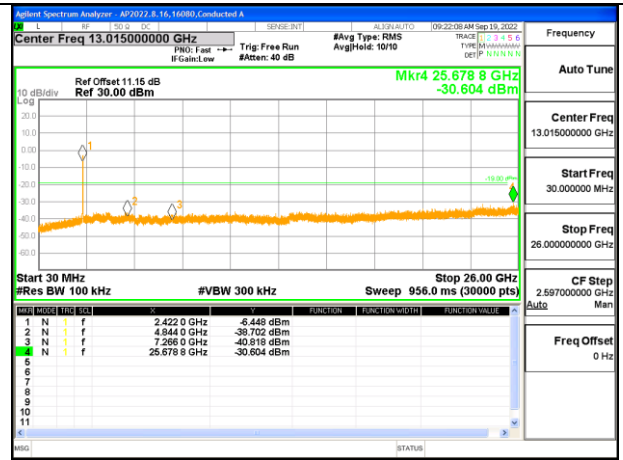
**OUT-OF-BAND HIGH CHANNEL 11  
 ANTENNA 3**

**9.7.4. 802.11n HT40 MODE**

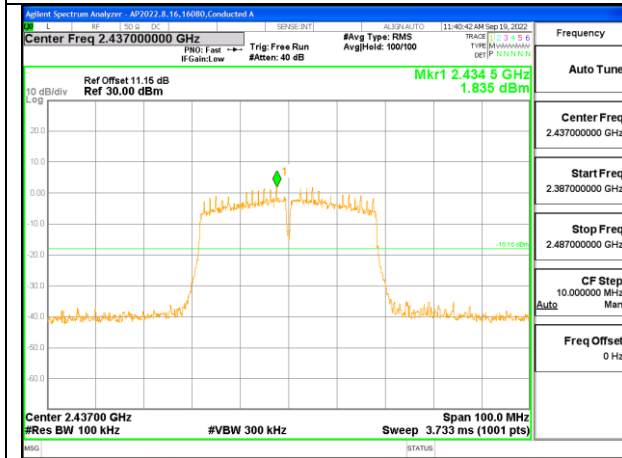
**2TX Antenna 1 + Antenna 3 CDD MODE**



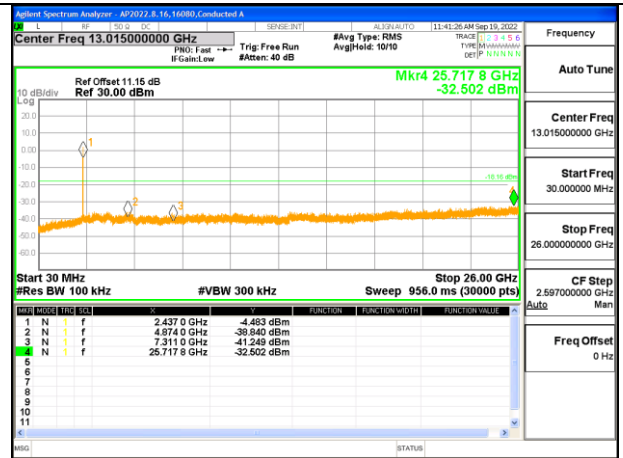
**LOW CHANNEL 3 BANDEDGE  
 ANTENNA 1**



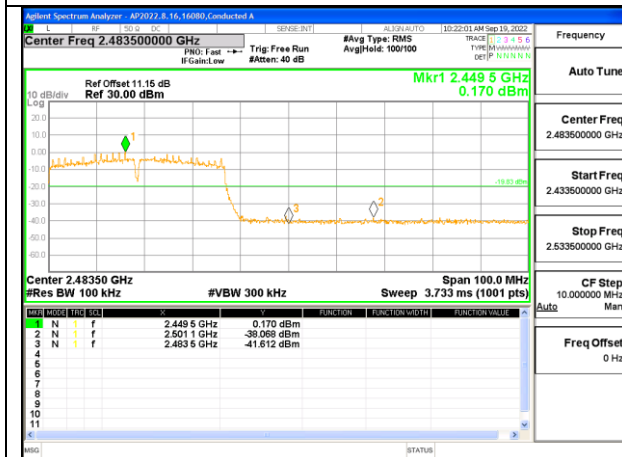
**OUT-OF-BAND LOW CHANNEL 3  
 ANTENNA 1**



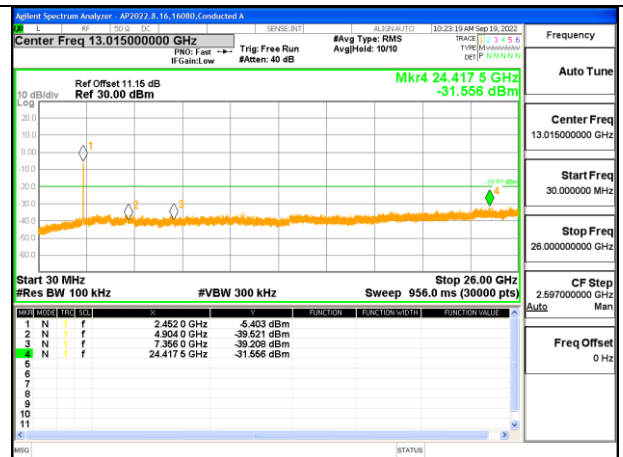
**IN-BAND REFERENCE LEVEL  
 ANTENNA 1**



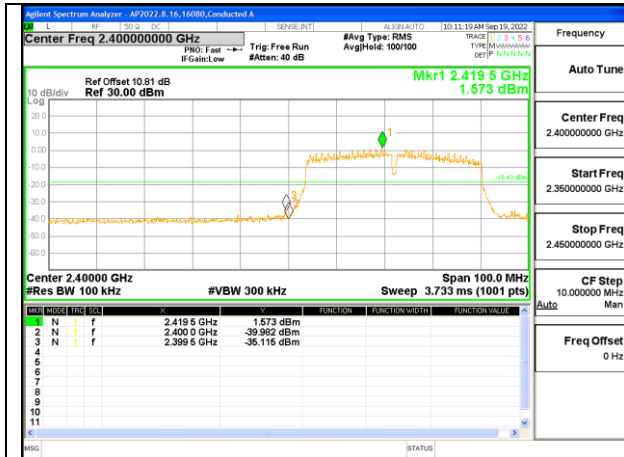
**OUT-OF-BAND MID CHANNEL  
 ANTENNA 1**



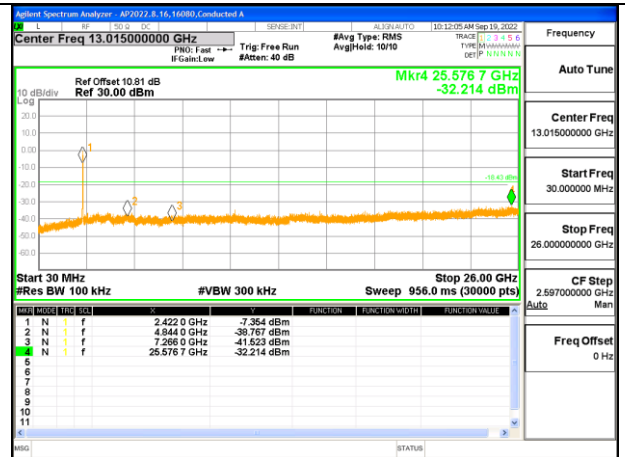
**HIGH CHANNEL 9 BANDEDGE  
 ANTENNA 1**



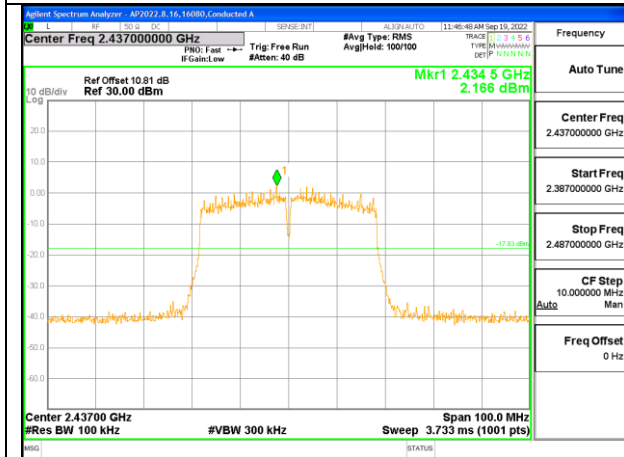
**OUT-OF-BAND HIGH CHANNEL 9  
 ANTENNA 1**



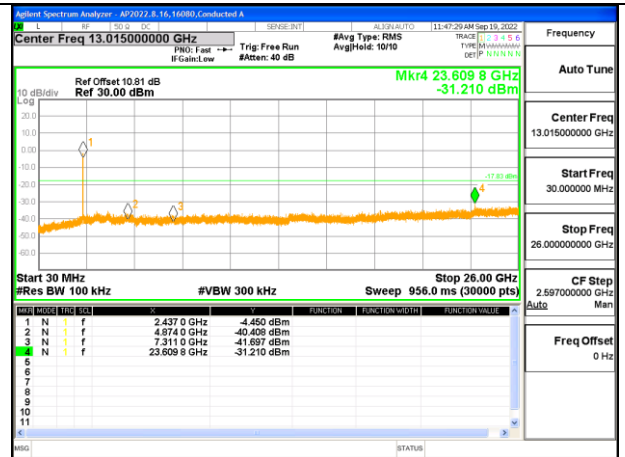
**LOW CHANNEL 3 BANDEDGE  
 ANTENNA 3**



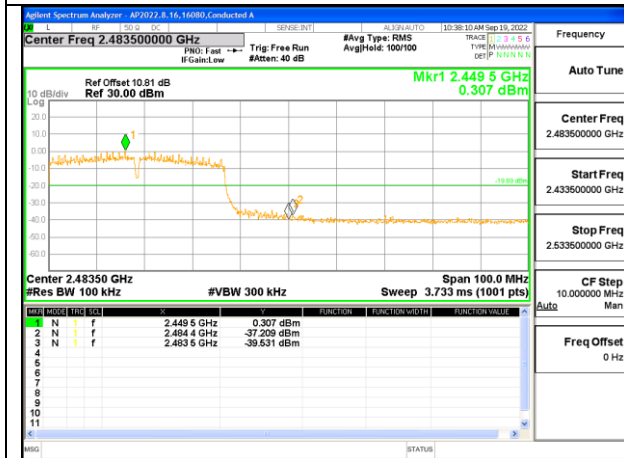
**OUT-OF-BAND LOW CHANNEL 3  
 ANTENNA 3**



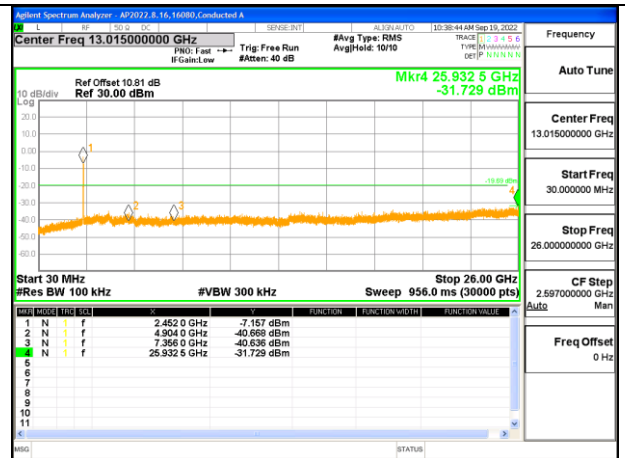
**IN-BAND REFERENCE LEVEL  
 ANTENNA 3**



**OUT-OF-BAND MID CHANNEL  
 ANTENNA 3**



**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 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.

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.

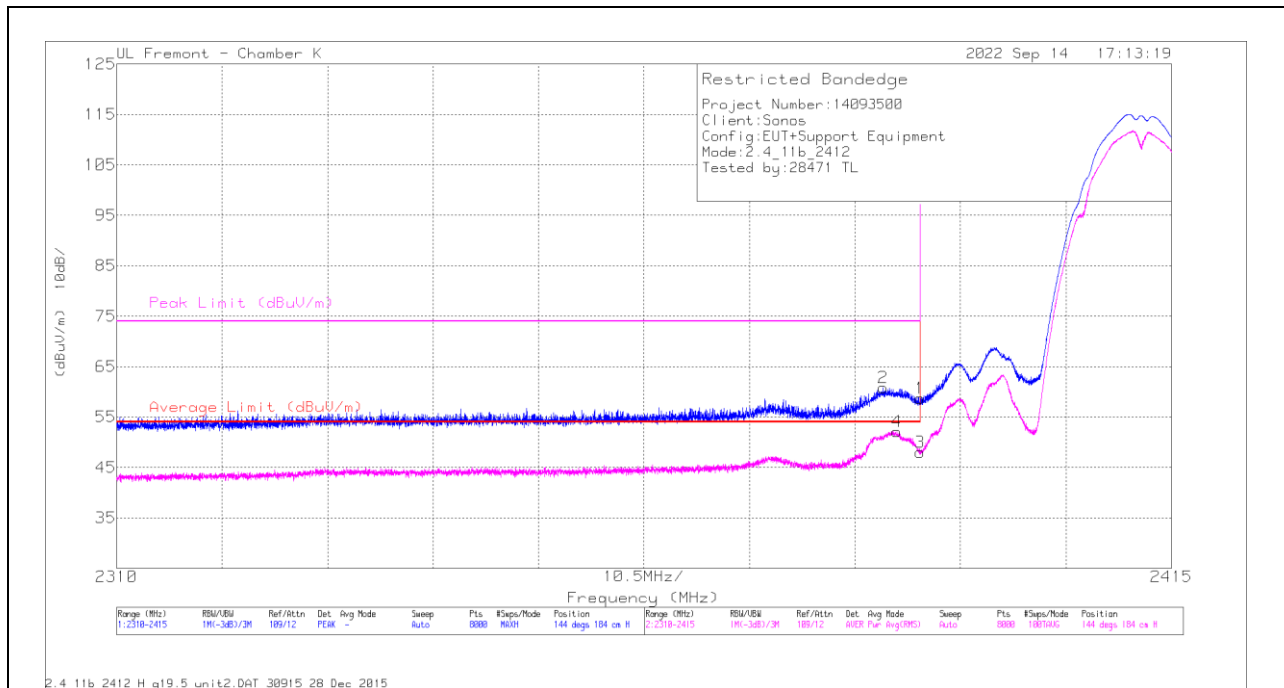
## 10.1. TRANSMITTER ABOVE 1 GHz

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

#### 2TX Antenna 1 + Antenna 3 CDD MODE

#### BANDEDGE (LOW CHANNEL, CH 1)

#### HORIZONTAL RESULT



#### Trace Markers

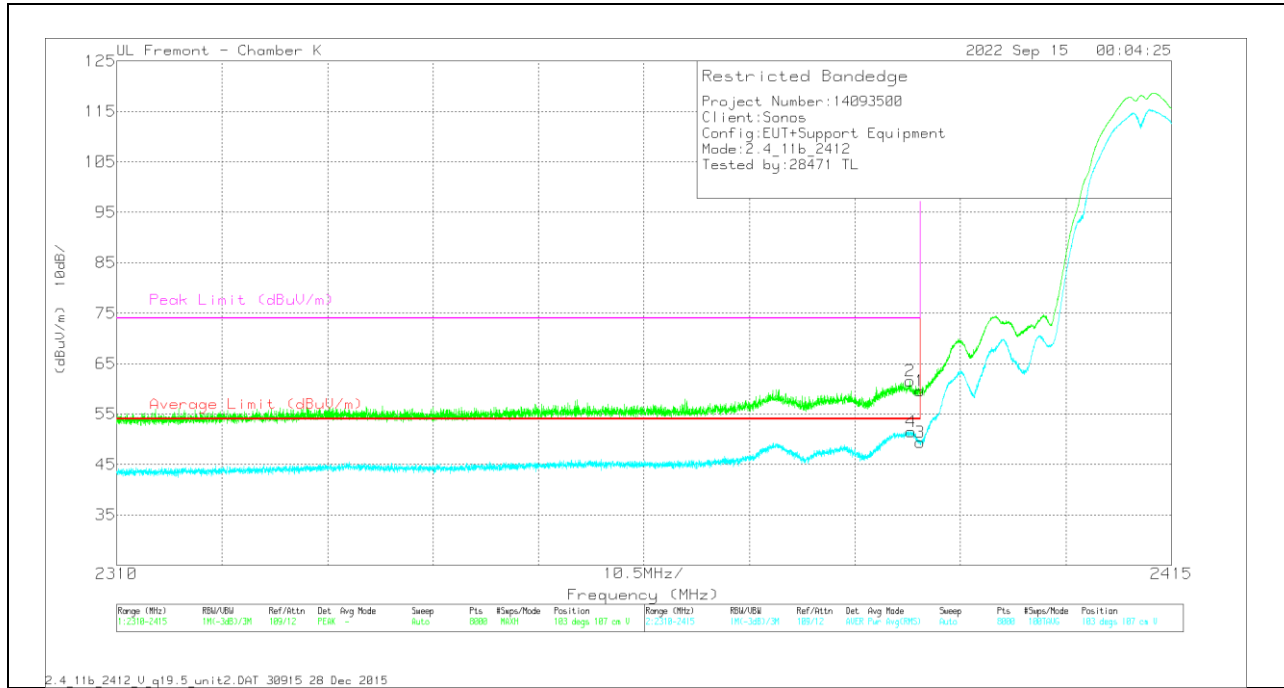
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80402 ACF(dB) - 3mH	Amp/Cbl/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2390	37.89	Pk	32.5	-11.7	0	58.69	-	-	74	-15.31	144	184	H
2	* 2386.32	40	Pk	32.4	-11.6	0	60.8	-	-	74	-13.2	144	184	H
3	* 2390	26.94	RMS	32.5	-11.7	.3	48.04	54	-5.96	-	-	144	184	H
4	* 2387.699	31.08	RMS	32.5	-11.7	.3	52.18	54	-1.82	-	-	144	184	H

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

Pk - Peak detector

RMS - RMS detection

### VERTICAL RESULT



### Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80402 ACF(dB) - 3mH	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	* 2390	38.79	Pk	32.5	-11.7	0	59.59	-	-	74	-14.41	103	107	V
2	* 2388.959	40.8	Pk	32.5	-11.7	0	61.6	-	-	74	-12.4	103	107	V
3	* 2390	28.27	RMS	32.5	-11.7	.3	49.37	54	-4.63	-	-	103	107	V
4	* 2389.077	30.44	RMS	32.5	-11.7	.3	51.54	54	-2.46	-	-	103	107	V

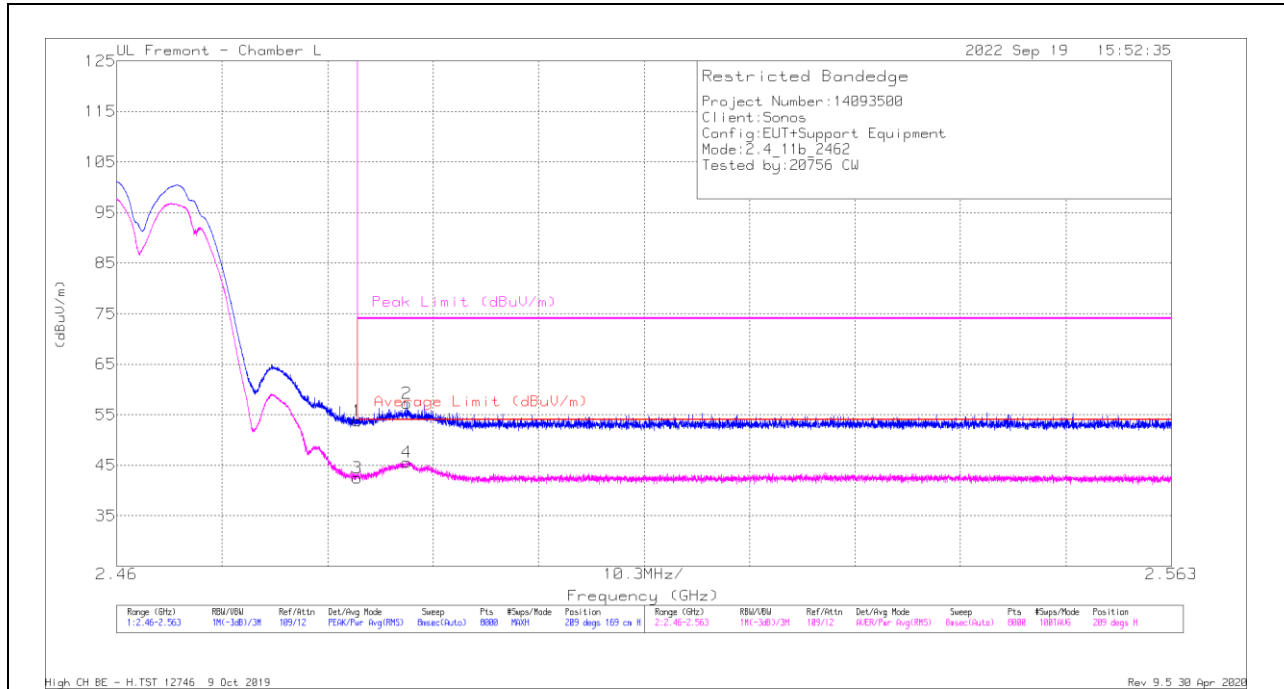
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

**BANDEDGE (HIGH CHANNEL, CH 11)**

**HORIZONTAL RESULT**



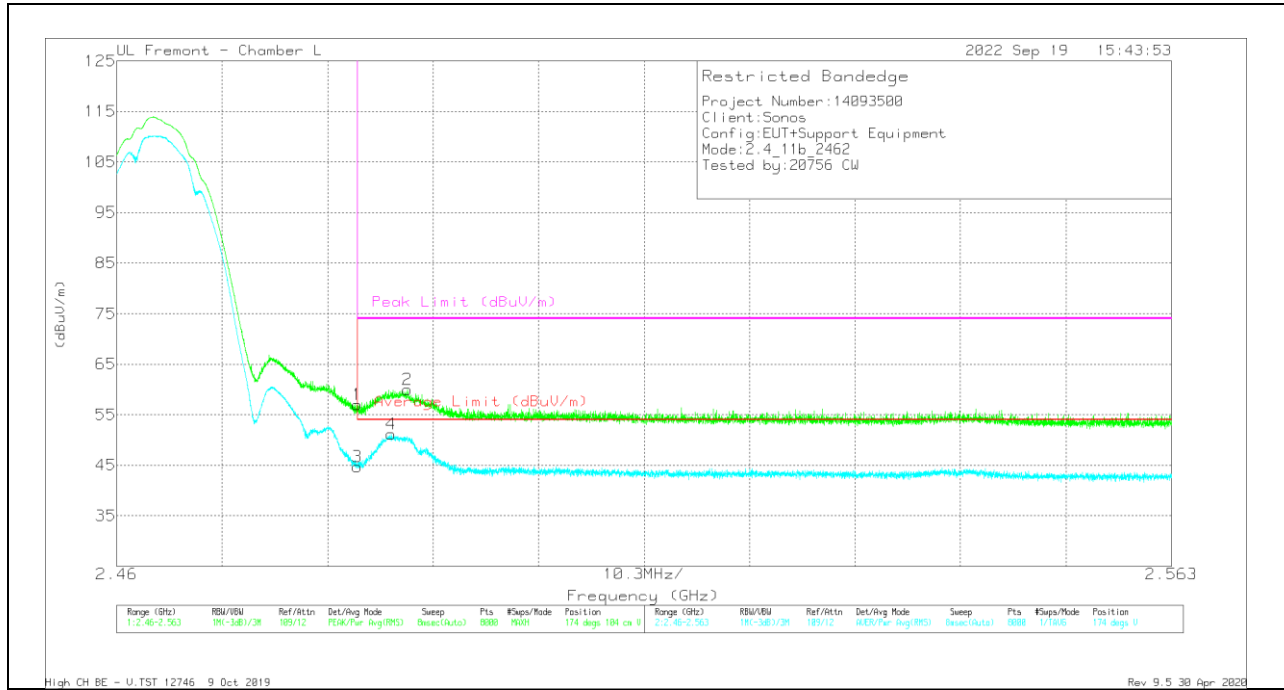
**Trace Markers**

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	* 2.4835	34.09	Pk	32.2	-12.5	0	53.79	-	-	74	-20.21	209	169	H
2	* 2.48832	37.52	Pk	32.2	-12.5	0	57.22	-	-	74	-16.78	209	169	H
3	* 2.4835	22.43	RMS	32.2	-12.5	.3	42.43	54	-11.57	-	-	209	169	H
4	* 2.48836	25.61	RMS	32.2	-12.5	.3	45.61	54	-8.39	-	-	209	169	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/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	* 2.4835	37.34	Pk	32.2	-12.5	0	57.04	-	-	74	-16.96	174	104	V
2	* 2.48841	40.33	Pk	32.2	-12.5	0	60.03	-	-	74	-13.97	174	104	V
3	* 2.4835	24.71	RMS	32.2	-12.5	.3	44.71	54	-9.29	-	-	174	104	V
4	* 2.48678	31.12	RMS	32.2	-12.5	.3	51.12	54	-2.88	-	-	174	104	V

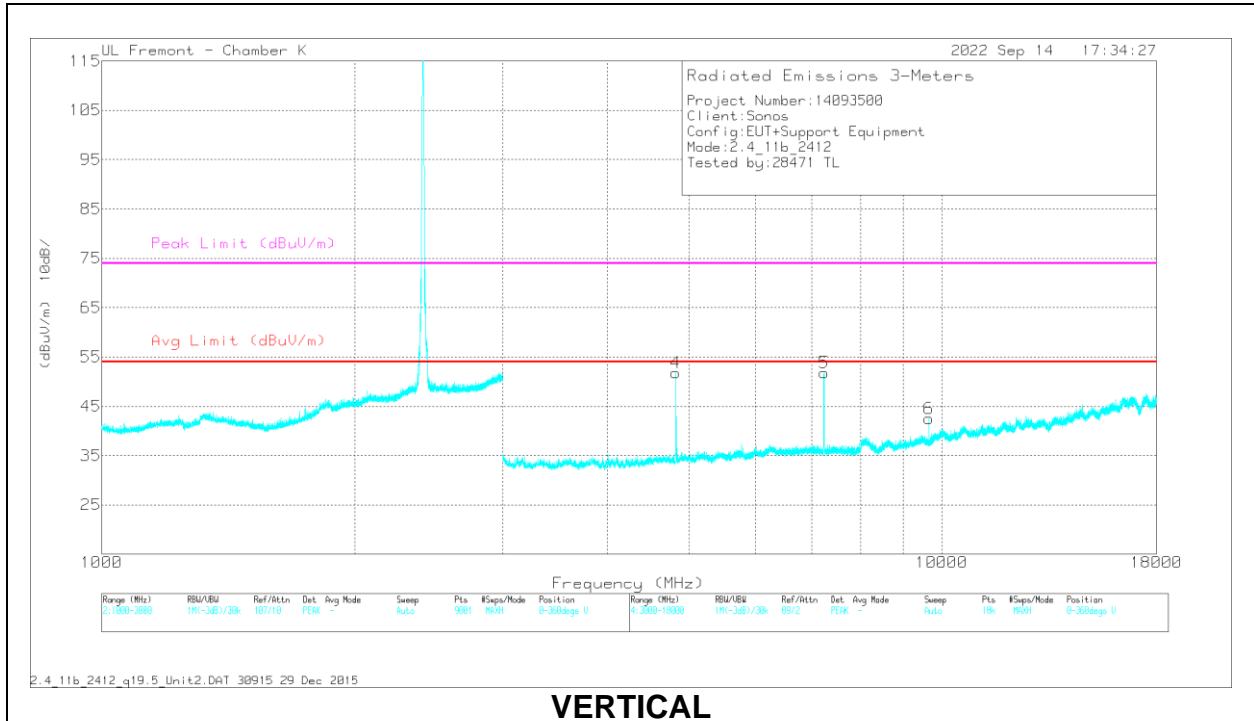
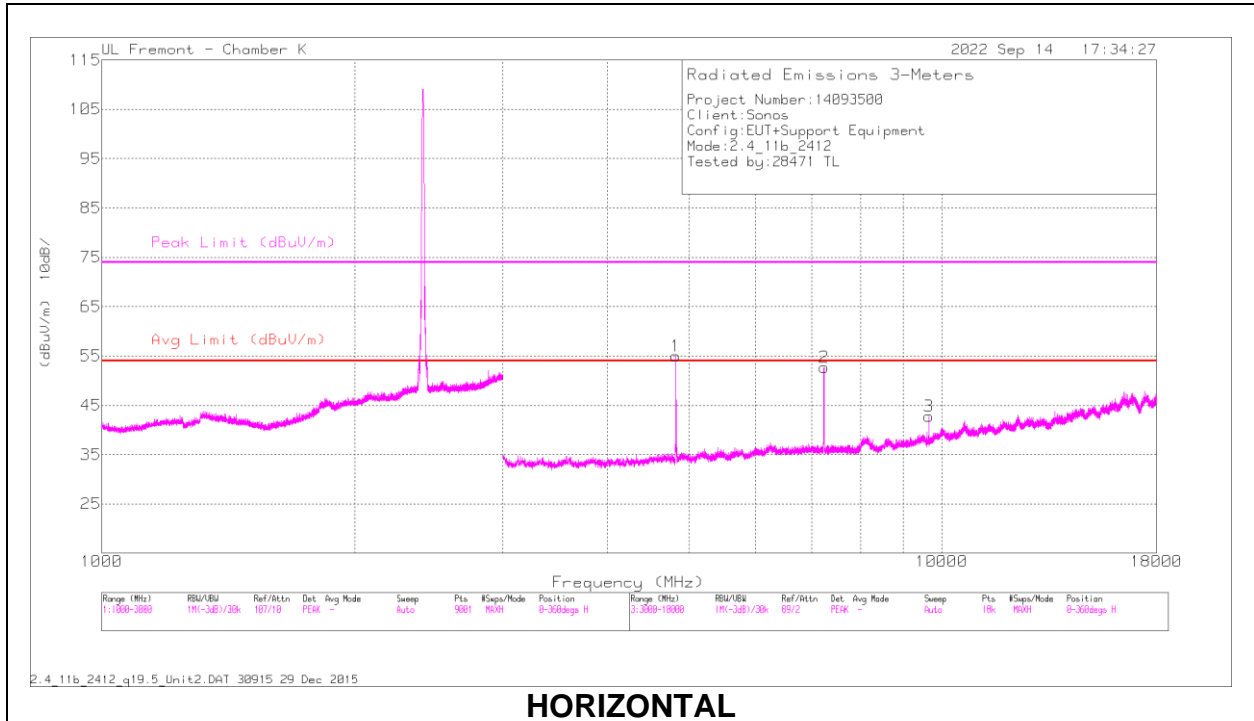
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

**HARMONICS AND SPURIOUS EMISSIONS**

**LOW CHANNEL, CH 1 RESULTS**



### RADIATED EMISSIONS

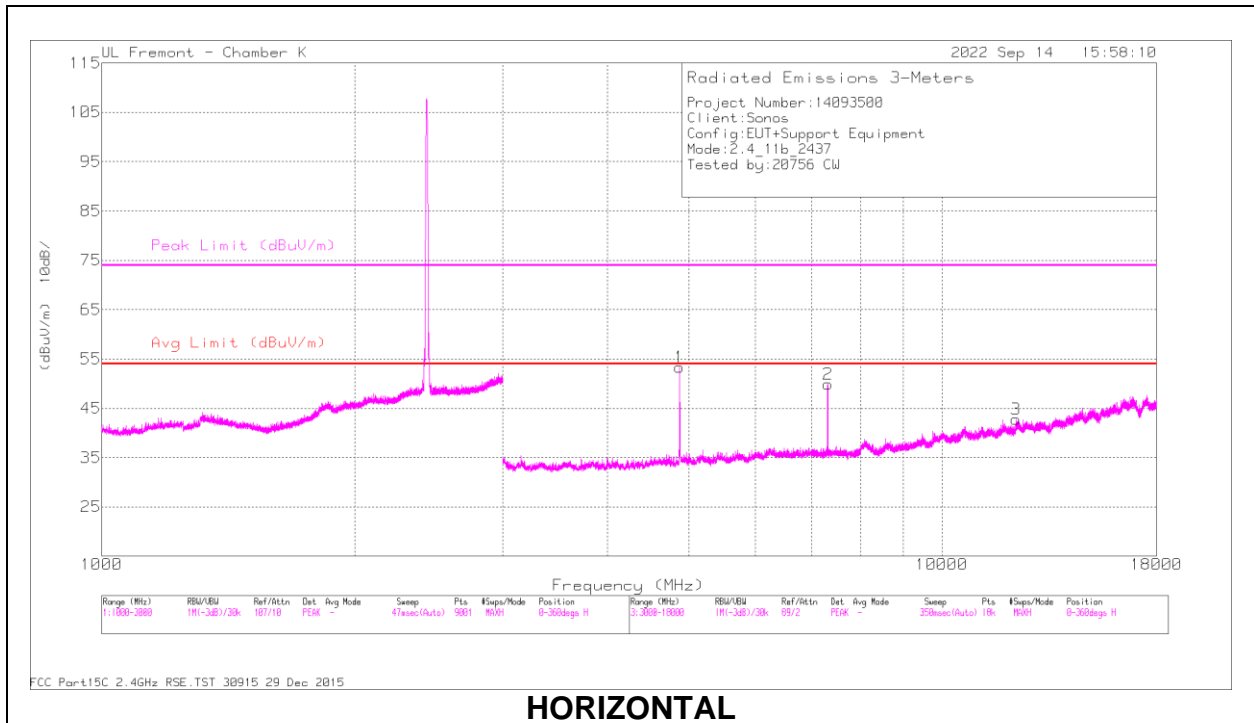
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80402 ACF(dB) - 3mH	Amp/Cb/Fitr (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4824.107	64.71	PK2	34.1	-40.5	0	58.31	-	-	74	-15.69	349	201	H
	* 4823.919	57.65	MAv1	34.1	-40.4	.3	51.65	54	-2.35	-	-	349	201	H
2	7237.258	61.11	PK2	35.8	-38.3	0	58.61	-	-	-	-	252	221	H
	9647.884	49.48	PK2	36.9	-36.4	0	49.98	-	-	-	-	139	99	H
4	* 4823.907	62.94	PK2	34.1	-40.4	0	56.64	-	-	74	-17.36	329	347	V
	* 4823.979	56.04	MAv1	34.1	-40.4	.3	50.04	54	-3.96	-	-	329	347	V
5	7237.266	60.17	PK2	35.8	-38.3	0	57.67	-	-	-	-	233	108	V
	9647.716	50.83	PK2	36.9	-36.4	0	51.33	-	-	-	-	103	254	V

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

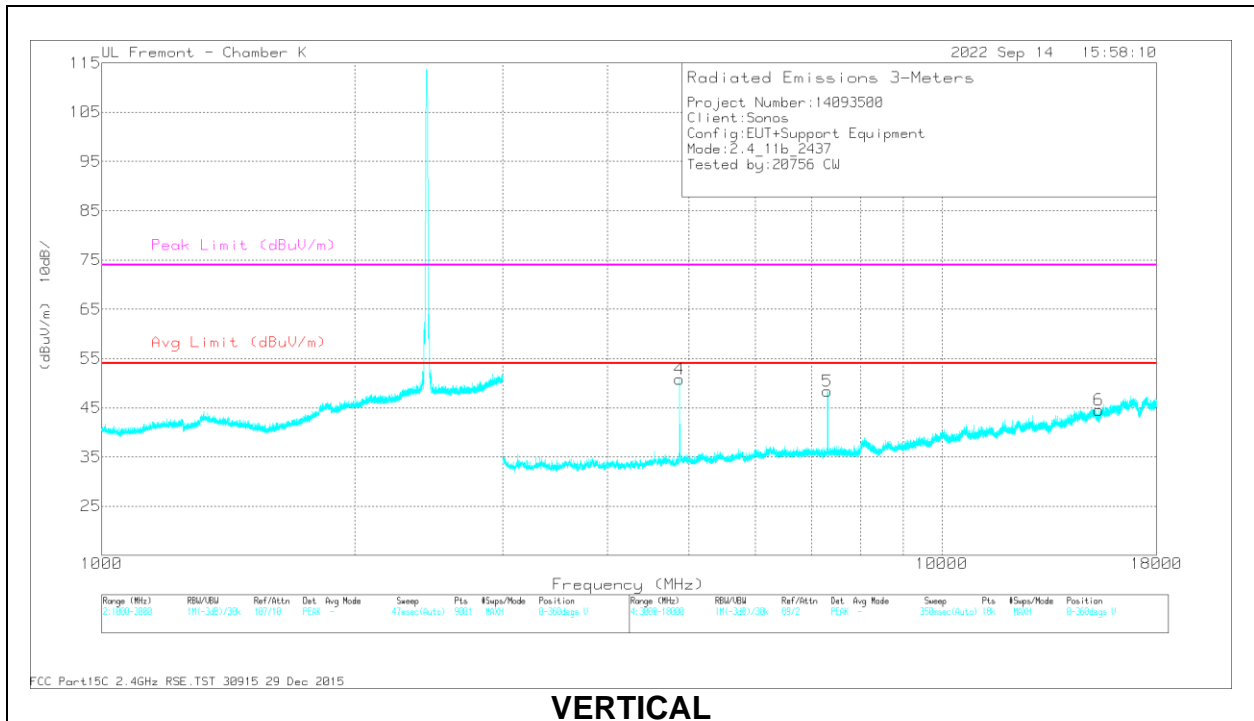
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

### MID CHANNEL, CH 6 RESULTS



**HORIZONTAL**



**VERTICAL**

**RADIATED EMISSIONS**

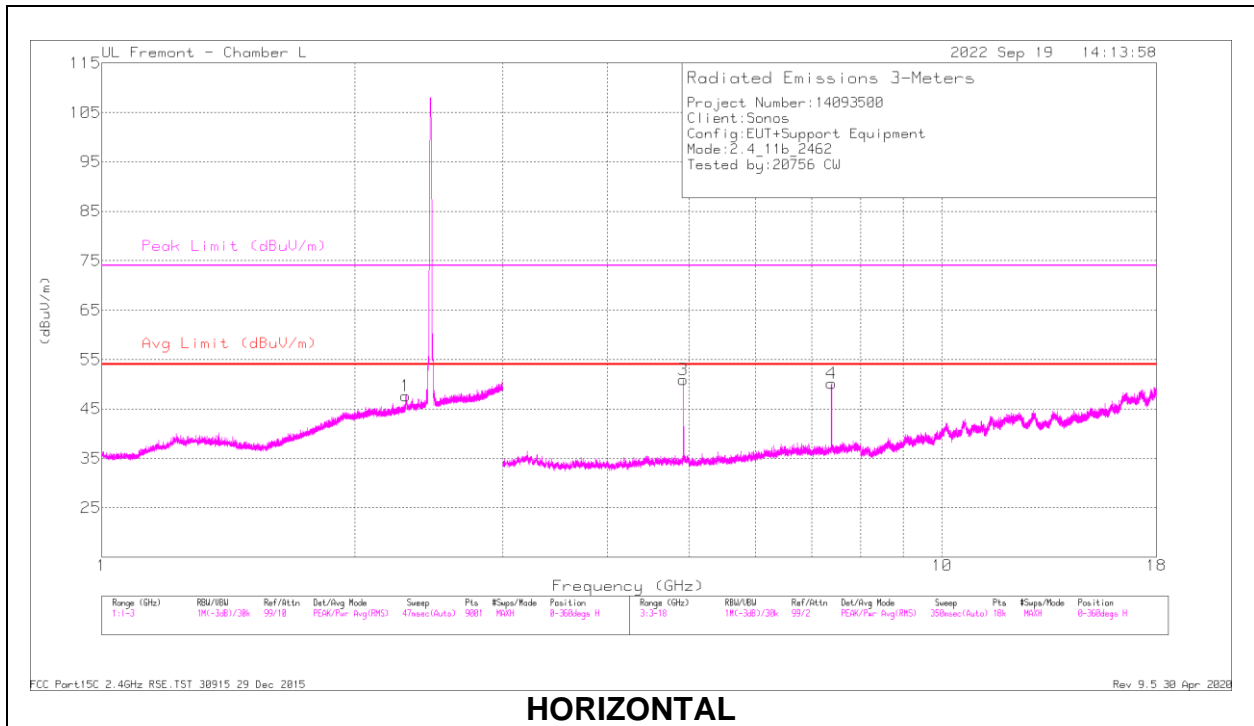
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80402 ACF(dB) - 3mH	Amp/Cb/Fitr (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4874.034	64.42	PK2	34.2	-40.3	0	58.32	-	-	74	-15.68	353	185	H
	* 4873.926	58.09	MAv1	34.2	-40.3	.3	52.29	54	-1.71	-	-	353	185	H
2	* 7312.45	58.14	PK2	35.7	-38	0	55.84	-	-	74	-18.16	249	192	H
	* 7312.534	51.59	MAv1	35.7	-38	.3	49.59	54	-4.41	-	-	249	192	H
3	* 12255.616	46.64	PK2	39	-34.2	0	51.44	-	-	74	-22.56	44	268	H
	* 12255.94	35.22	MAv1	39	-34.2	.3	40.32	54	-13.68	-	-	44	268	H
4	* 4873.954	60.9	PK2	34.2	-40.3	0	54.8	-	-	74	-19.2	301	100	V
	* 4873.93	54.48	MAv1	34.2	-40.3	.3	48.68	54	-5.32	-	-	301	100	V
5	* 7310.122	58.58	PK2	35.7	-38	0	56.28	-	-	74	-17.72	81	221	V
	* 7309.922	52.31	MAv1	35.7	-38	.3	50.31	54	-3.69	-	-	81	221	V
6	* 15379.084	46.14	PK2	40.2	-33.4	0	52.94	-	-	74	-21.06	317	276	V
	* 15376.683	34.78	MAv1	40.2	-33.4	.3	41.88	54	-12.12	-	-	317	276	V

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

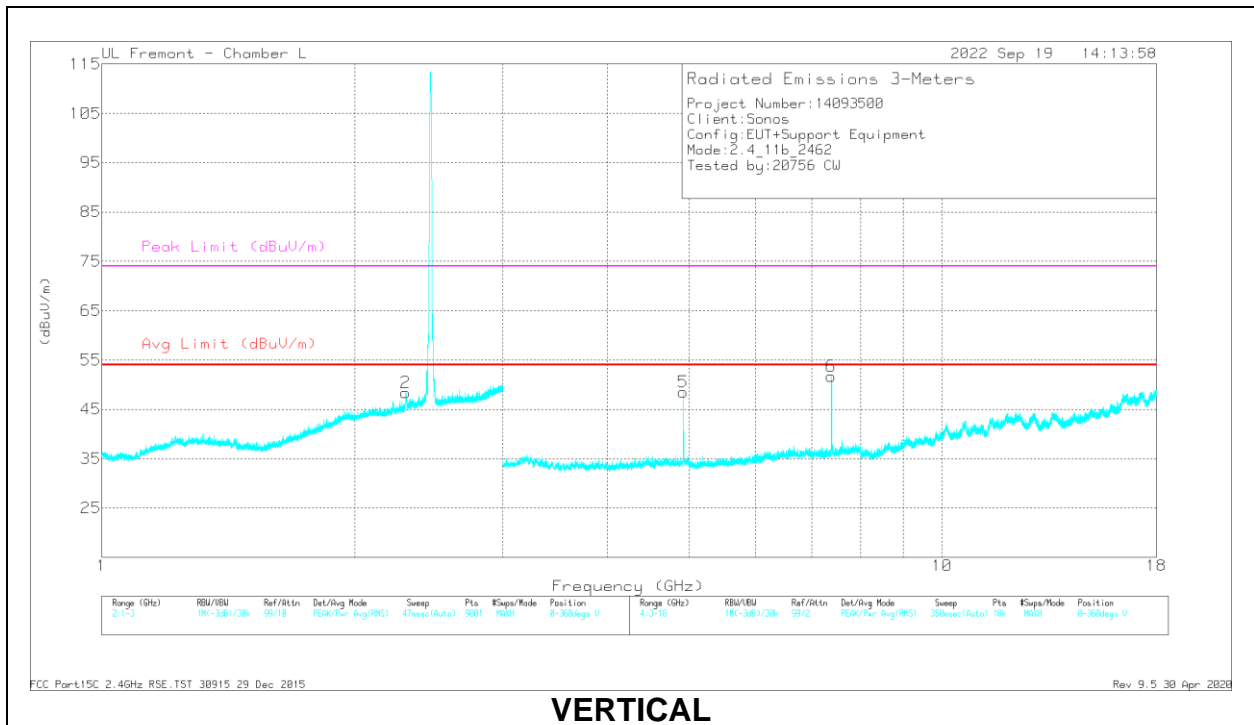
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

### HIGH CHANNEL, CH 11 RESULTS



**HORIZONTAL**



**VERTICAL**

**RADIATED EMISSIONS**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	80707 ACF (dB)	Amp/Cbl/Pad (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	2.30094	37.13	PK2	31.8	-13	0	55.93	-	-	-	-	197	144	H
2	2.30109	38	PK2	31.8	-13	0	56.8	-	-	-	-	169	121	V
3	* 4.92399	44.89	PK2	34.2	-25.6	0	53.49	-	-	74	-20.51	78	219	H
	* 4.92397	39.18	MAv1	34.2	-25.6	.3	48.08	54	-5.92	-	-	78	219	H
4	* 7.38709	41.71	PK2	35.9	-22.5	0	55.11	-	-	74	-18.89	177	111	H
	* 7.38711	36.05	MAv1	35.9	-22.5	.3	49.75	54	-4.25	-	-	177	111	H
5	* 4.92401	43.32	PK2	34.2	-25.6	0	51.92	-	-	74	-22.08	122	265	V
	* 4.92396	36.5	MAv1	34.2	-25.6	.3	45.4	54	-8.6	-	-	122	265	V
6	* 7.38459	42.9	PK2	35.9	-22.5	0	56.3	-	-	74	-17.7	274	110	V
	* 7.38471	37.22	MAv1	35.9	-22.5	.3	50.92	54	-3.08	-	-	274	110	V

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

PK2 - KDB558074 Method: Maximum Peak

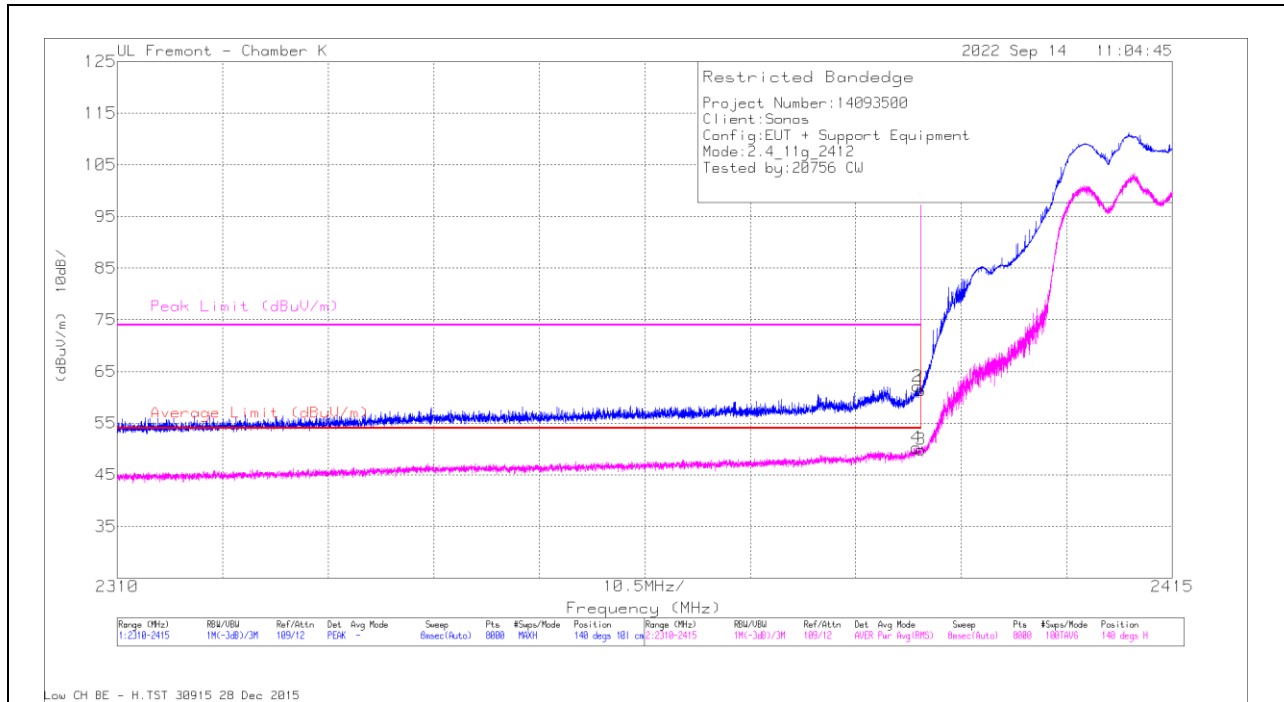
MAv1 - KDB558074 Option 1 Maximum RMS Average

### 10.1.2. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND

#### 2TX Antenna 1 + Antenna 3 CDD MODE

#### BANDEDGE (LOW CHANNEL, CH 1)

#### HORIZONTAL RESULT



#### Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80402 ACF(dB) - 3mH	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	* 2390	40.54	Pk	32.5	-11.7	0	61.34	-	-	74	-12.66	140	101	H
2	* 2389.642	41.33	Pk	32.5	-11.7	0	62.13	-	-	74	-11.87	140	101	H
3	* 2390	27.48	RMS	32.5	-11.7	1.61	49.89	54	-4.11	-	-	140	101	H
4	* 2389.563	27.86	RMS	32.5	-11.7	1.61	50.27	54	-3.73	-	-	140	101	H

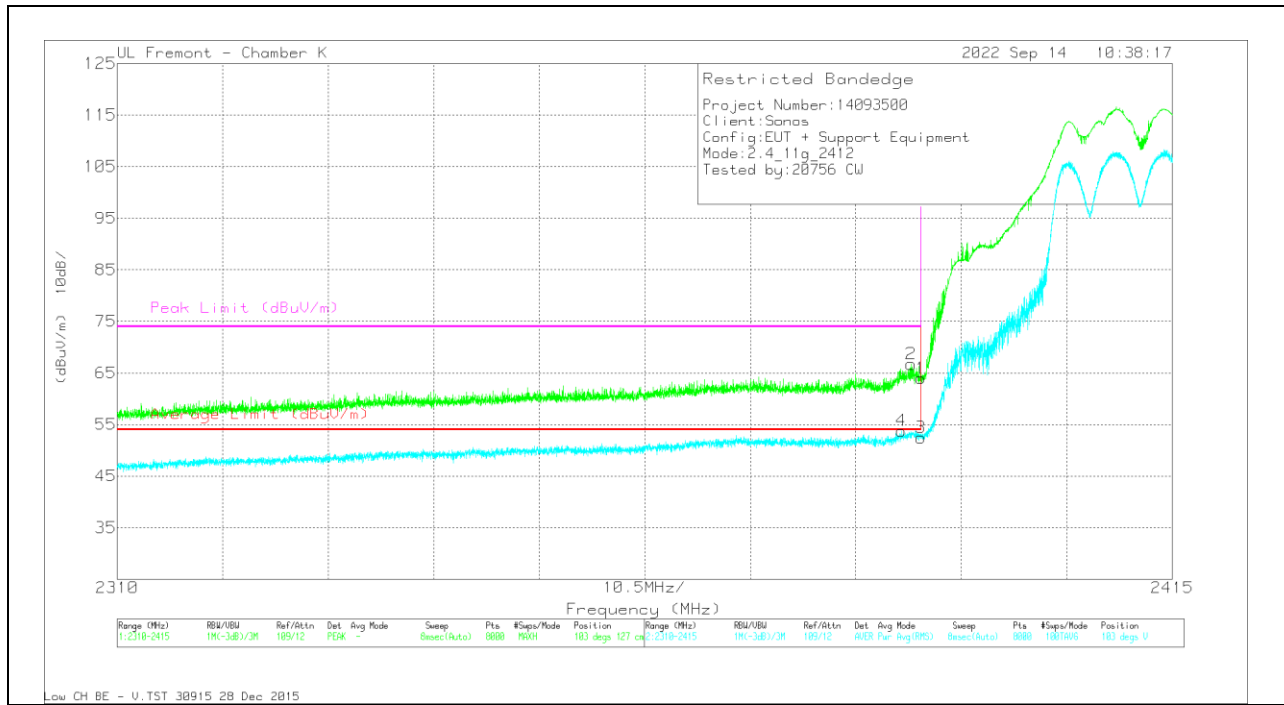
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection



### VERTICAL RESULT



### Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80402 ACF(dB) - 3mH	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	* 2390	43.14	Pk	32.5	-11.7	0	63.94	-	-	74	-10.06	103	127	V
2	* 2389.011	45.92	Pk	32.5	-11.7	0	66.72	-	-	74	-7.28	103	127	V
3	* 2390	30.06	RMS	32.5	-11.7	1.61	52.47	54	-1.53	-	-	103	127	V
4	* 2388.027	31.37	RMS	32.5	-11.7	1.61	53.78	54	-0.22	-	-	103	127	V

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

Pk - Peak detector

RMS - RMS detection