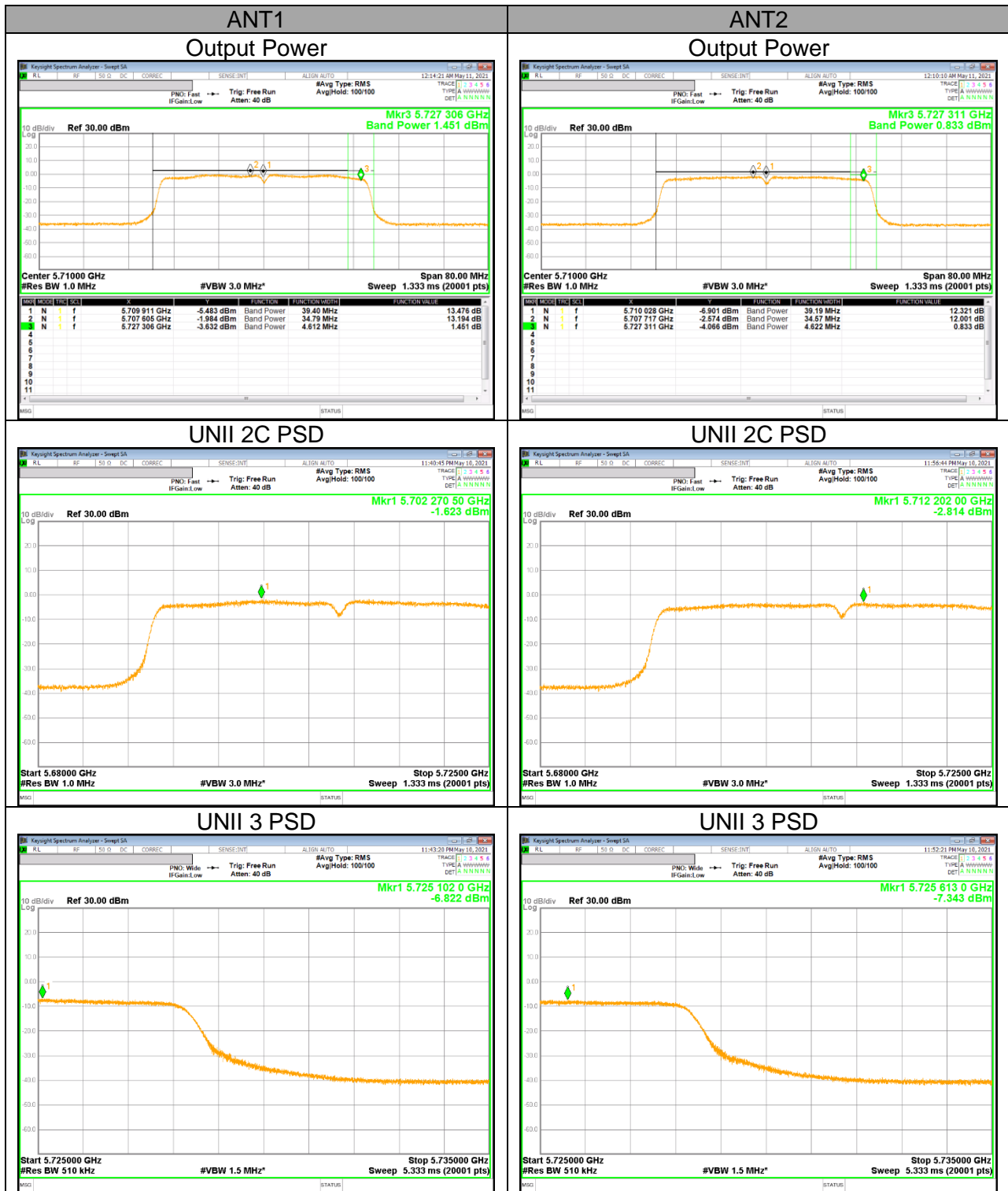
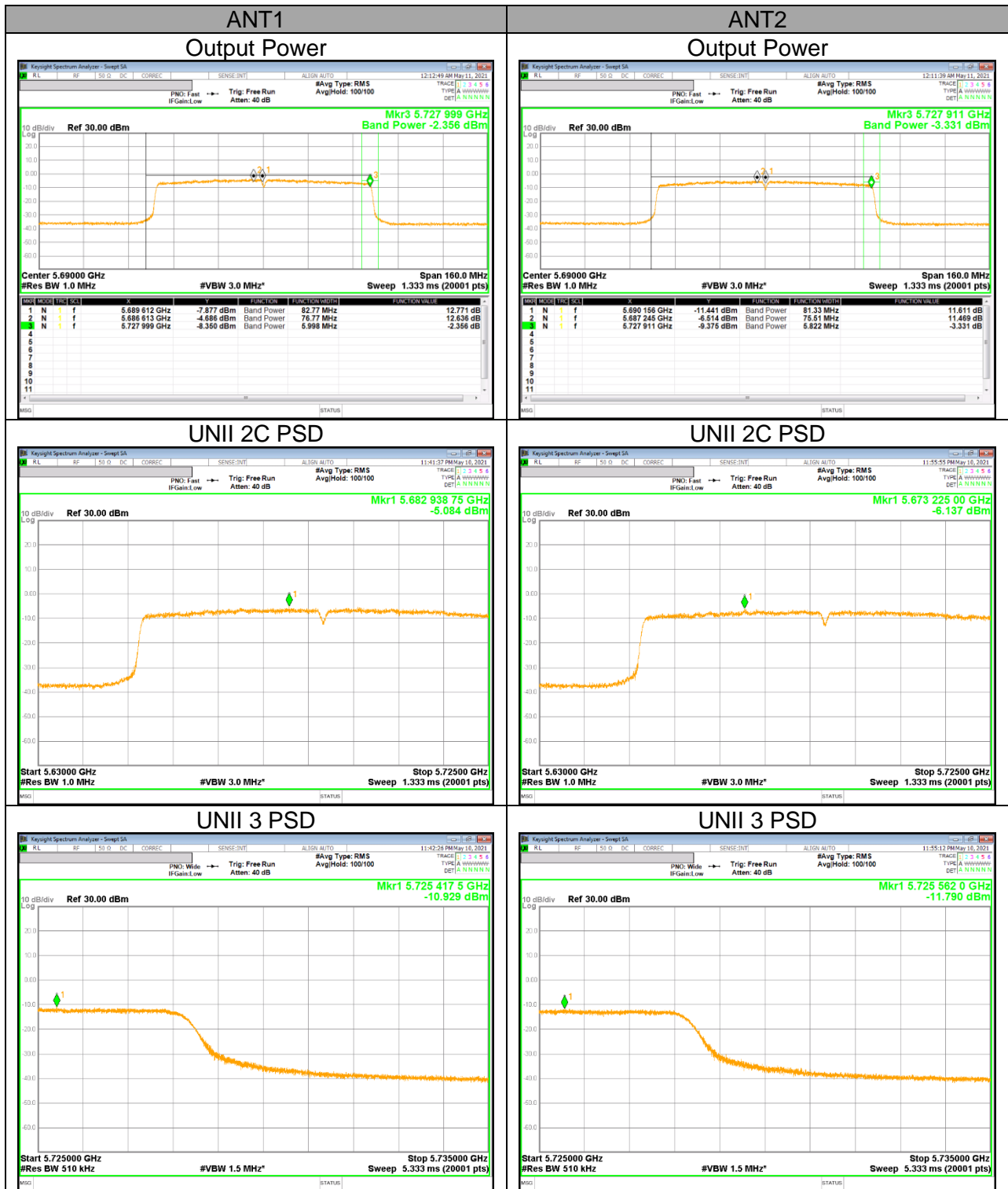


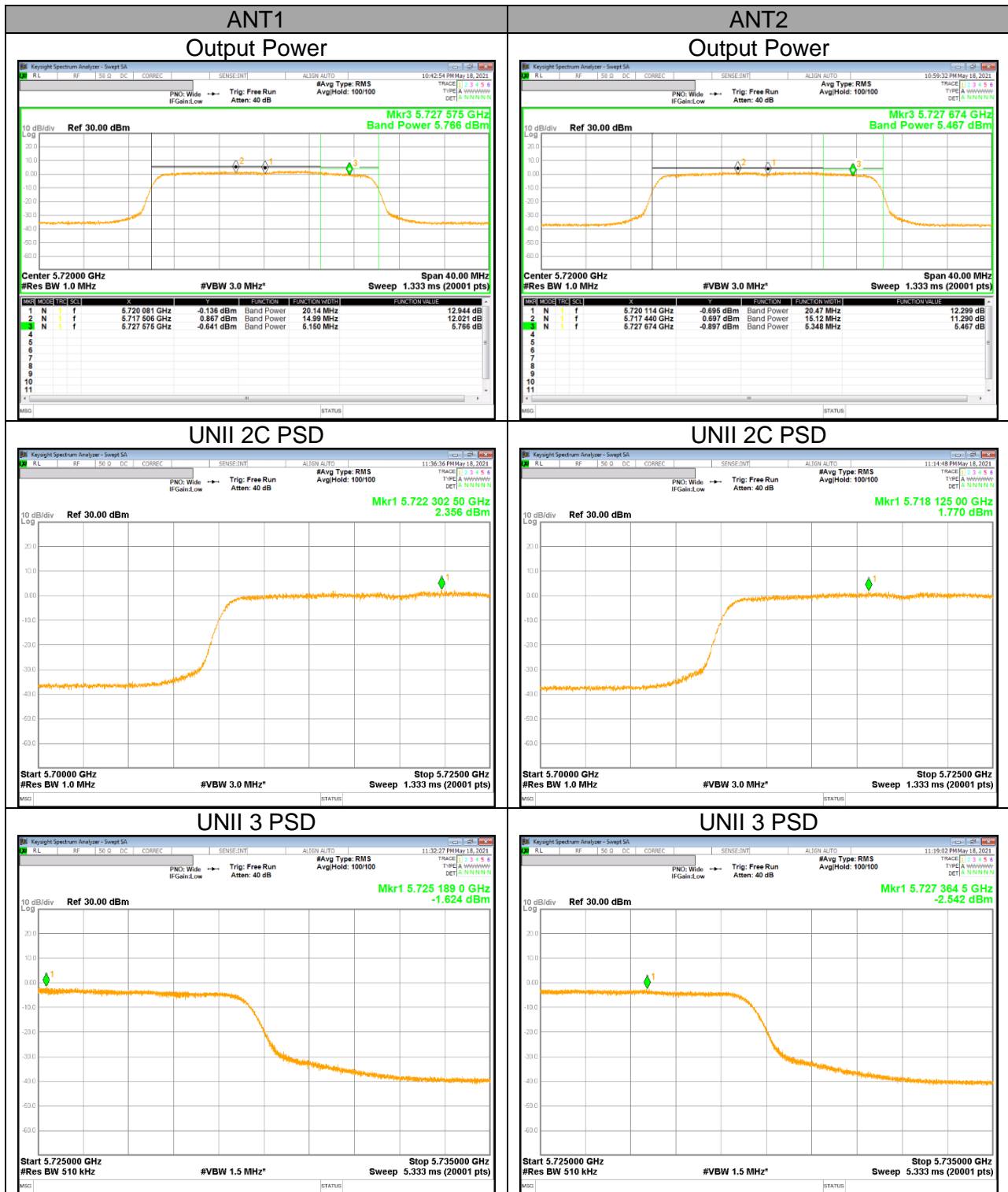
**UNII Straddle Ch. IEEE 802.11n HT40 mode Output Power and PSD**



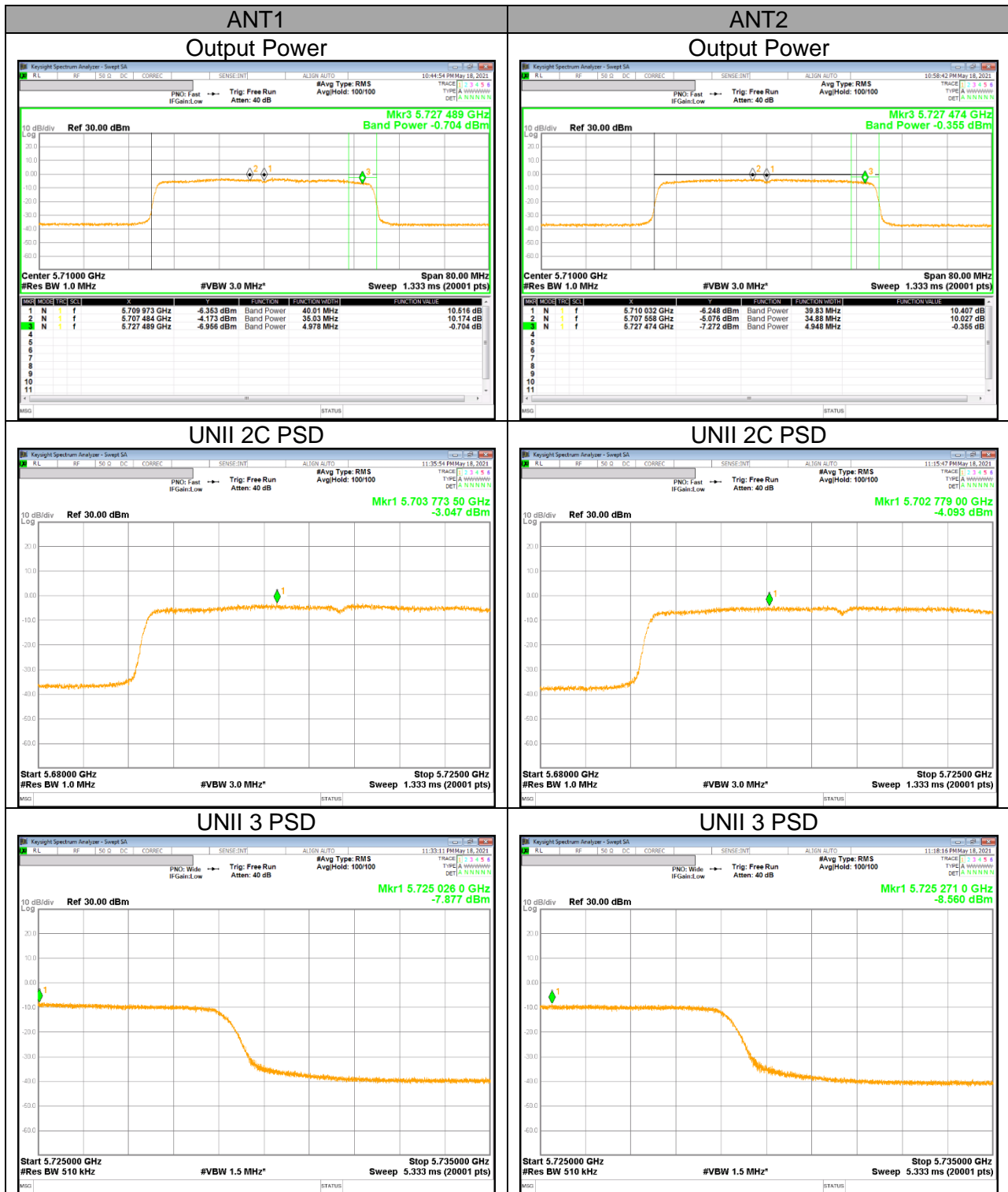
**UNII Straddle Ch. IEEE 802.11ac VHT80 mode Output Power and PSD**



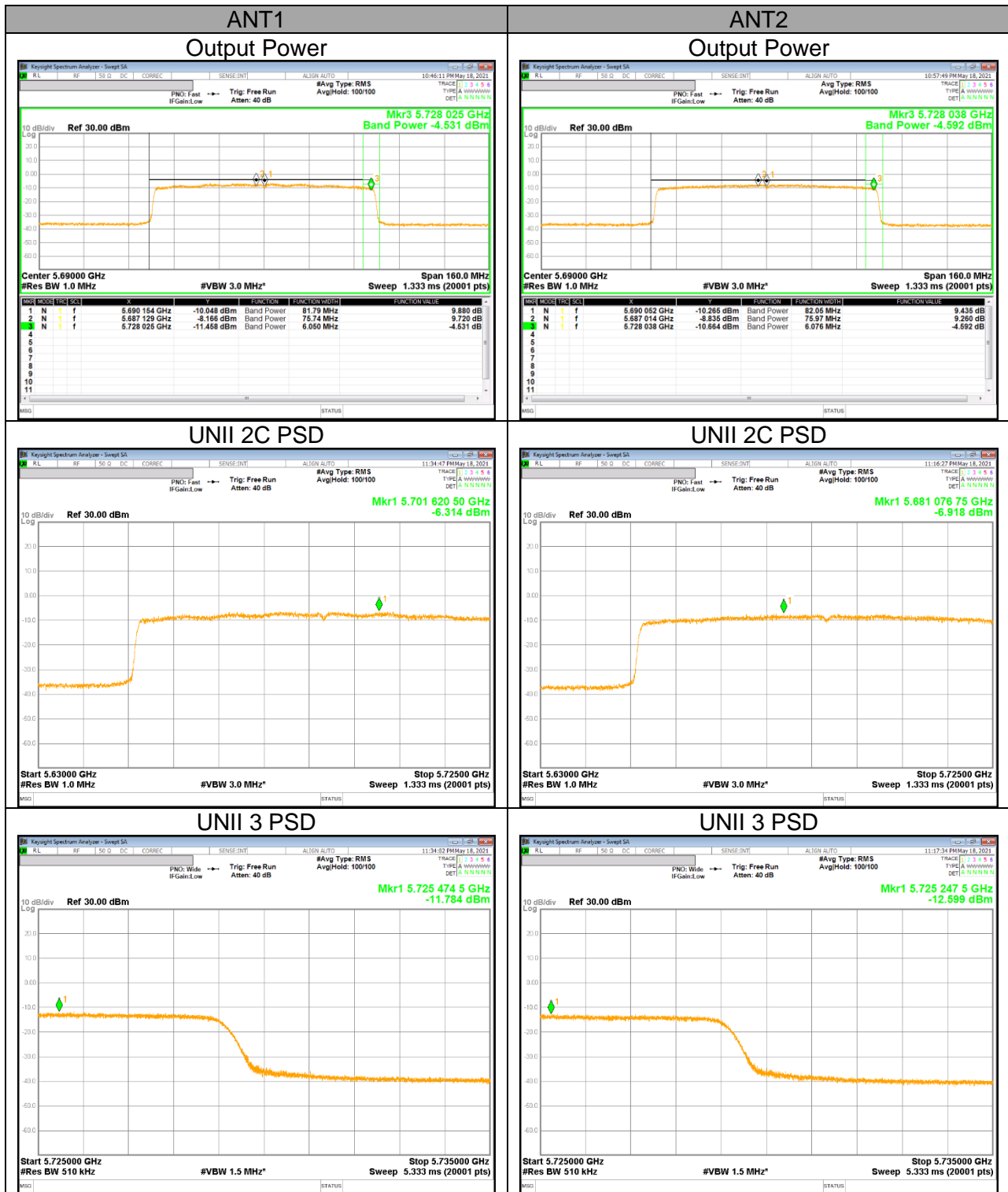
**UNII Straddle Ch. IEEE 802.11ax HE20(SU) mode Output Power and PSD**



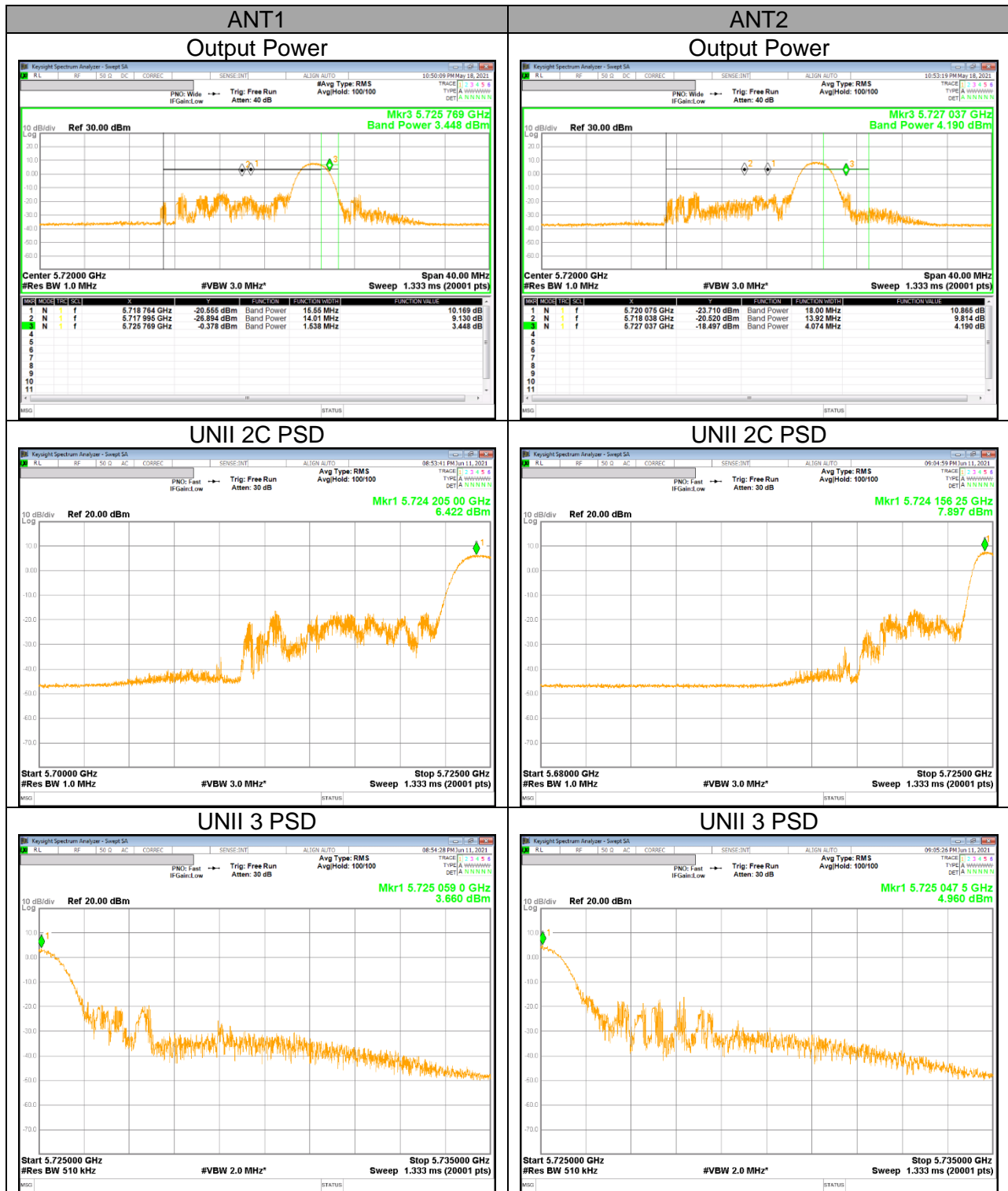
**UNII Straddle Ch. IEEE 802.11ax HE40(SU) mode Output Power and PSD**



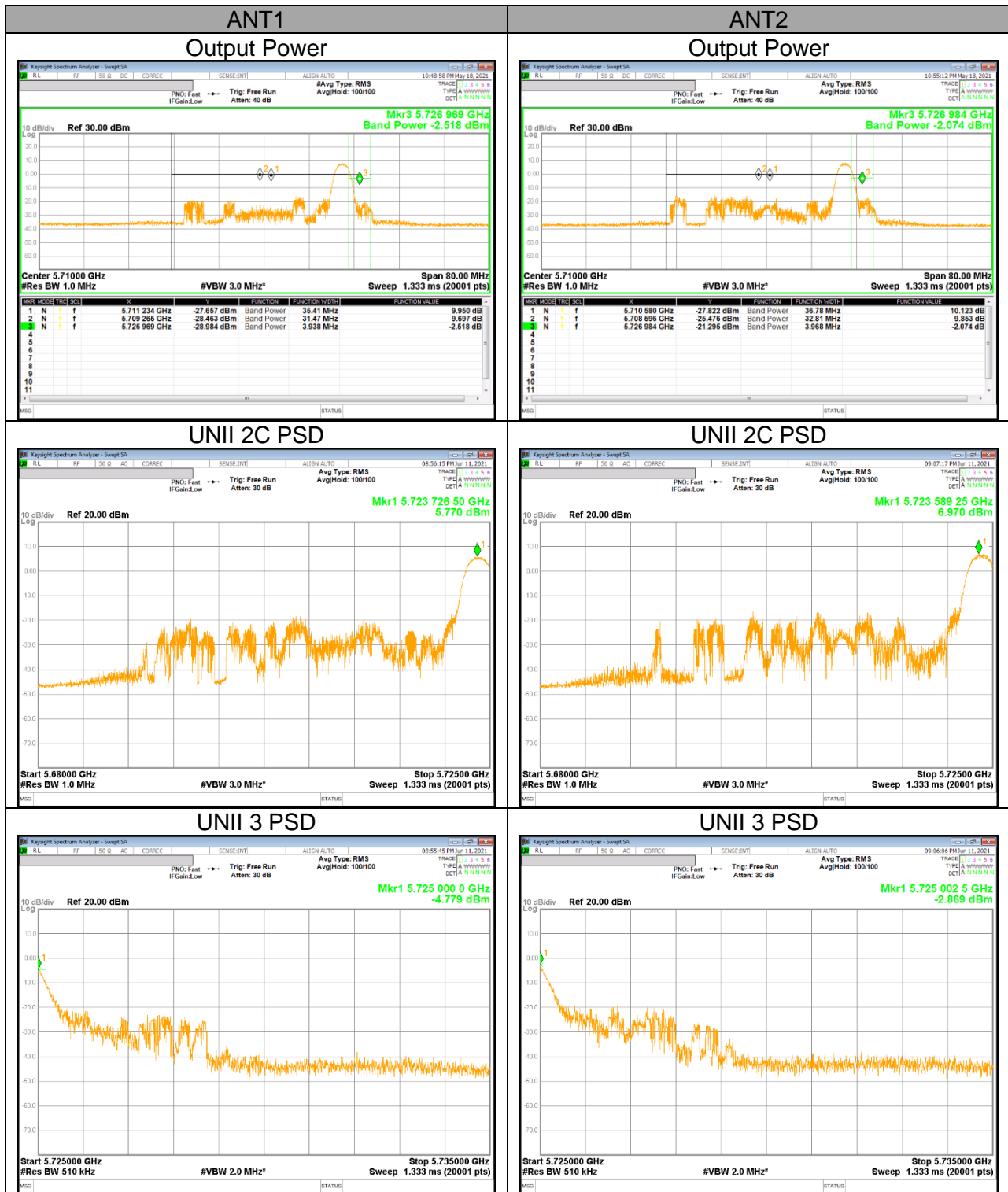
**UNII Straddle Ch. IEEE 802.11ax HE80(SU) mode Output Power and PSD**



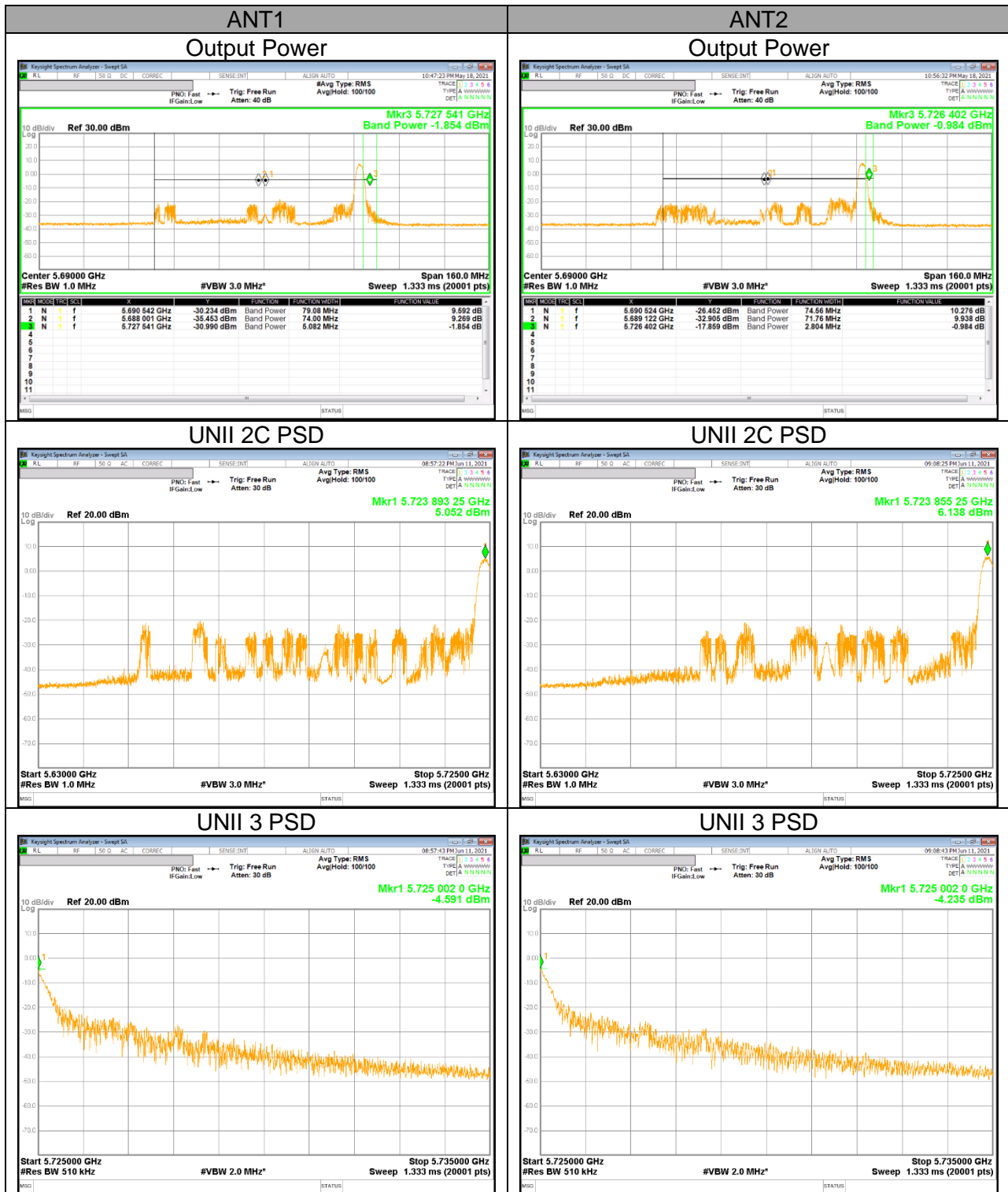
**UNII Straddle Ch. IEEE 802.11ax HE20(6RU) mode Output Power and PSD**



**UNII Straddle Ch. IEEE 802.11ax HE40(15RU) mode Output Power and PSD**



**UNII Straddle Ch. IEEE 802.11ax HE80(34RU) mode Output Power and PSD**





## 11. TRANSMITTER ABOVE 1 GHz

### LIMITS

FCC §15.205 and §15.209

Limits for radiated disturbance of an intentional radiator		
Frequency range (MHz)	Limits (µV/m)	Measurement Distance (m)
0.009 – 0.490	2400 / F (kHz)	300
0.490 – 1.705	24000 / F (kHz)	30
1.705 – 30.0	30	30
30 – 88	100**	3
88 - 216	150**	3
216 – 960	200**	3
Above 960	500	3

\*\* Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g. §§ 15.231 and 15.241.

FCC Part 15.205 (a) : Only spurious emissions are permitted in any of the frequency bands listed below :

MHz	MHz	MHz	MHz	GHz	GHz
0.009 ~ 0.110	8.41425 ~ 8.41475	108 ~ 121.94	1300 ~ 1427	4.5 ~ 5.15	14.47 ~ 14.5
0.495 ~ 0.505	12.29 ~ 12.293	123 ~ 138	1435 ~ 1626.5	5.35 ~ 5.46	15.35 ~ 16.2
2.1735 ~ 2.1905	12.51975 ~ 12.52025	149.9 ~ 150.05	1645.5 ~ 1646.5	7.25 ~ 7.75	17.7 ~ 21.4
4.125 ~ 4.128	12.57675 ~ 12.57725	156.52475 ~ 156.52525	1660 ~ 1710	8.025 ~ 8.5	22.01 ~ 23.12
4.17725 ~ 4.17775	13.36 ~ 13.41	156.7 ~ 156.9	1718.8 ~ 1722.2	9.0 ~ 9.2	23.6 ~ 24.0
4.20725 ~ 4.20775	16.42 ~ 16.423	162.0125 ~ 167.17	2200 ~ 2300	9.3 ~ 9.5	31.2 ~ 31.8
6.215 ~ 6.218	16.69475 ~ 16.69525	167.72 ~ 173.2	2310 ~ 2390	10.6 ~ 12.7	36.43 ~ 36.5
6.26775 ~ 6.26825	16.80425 ~ 16.80475	240 ~ 285	2483.5 ~ 2500	13.25 ~ 13.4	Above 38.6
6.31175 ~ 6.31225	25.5 ~ 25.67	322 ~ 335.4	2655 ~ 2900		
8.291 ~ 8.294	37.5 ~ 38.25	399.90 ~ 410	3260 ~ 3267		
8.362 ~ 8.366	73 ~ 74.6	608 ~ 614	3332 ~ 3339		
8.37625 ~ 8.38675	74.8 ~ 75.2	960 ~ 1240	3345.8 ~ 3358 3600 ~ 4400		

▪ FCC Part 15.205(b) : The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

**FCC §15.407 (b)**

(b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

- (1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (4) For transmitters operating in the 5.725-5.85 GHz band:
  - (i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
- (5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary,  
provided the measured energy is integrated to show the total power over 1 MHz.
- (6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.
- (7) The provisions of §15.205 apply to intentional radiators operating under this section.
- (8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits.

**Note**

- Limit translation to field strength level (FCC §15.407)

$$E[\text{dBuV/m}] = \text{EIRP}[\text{dBm}] + 95.2 = -27\text{dBm} + 95.2 = 68.2\text{dBuV/m}$$

$$E[\text{dBuV/m}] = \text{EIRP}[\text{dBm}] + 95.2 = -17\text{dBm} + 95.2 = 78.2\text{dBuV/m}$$

## **TEST PROCEDURE**

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz and 100 cm for 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. Peak detection is used unless otherwise noted as quasi-peak.

Reference to KDB 789033 D02 v02r01 UNII part G) 6) c) Method AD:

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor to the reading offset for average measurements.

Pre-scans to detect harmonic and spurious emissions, the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 kHz for peak measurements.

The spectrum from 1GHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.  
(From 30MHz to 1GHz, test was performed with the EUT set to transmit at the channel with highest output power)

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.

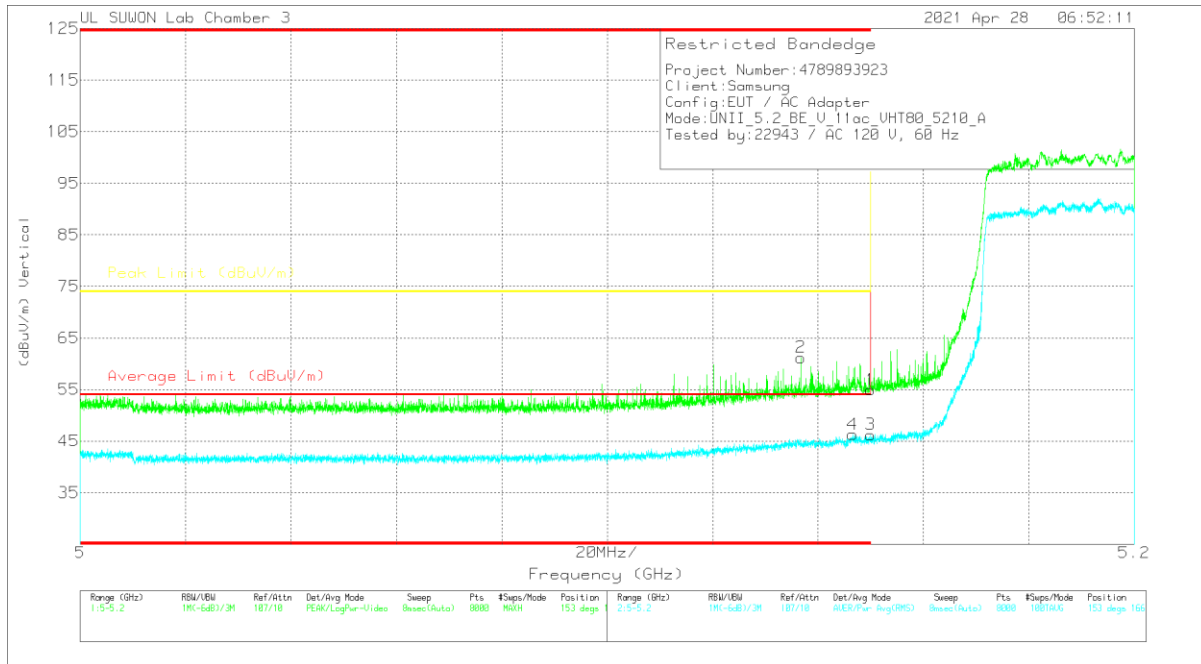
Note : Emission was pre-scanned from 9kHz to 30MHz; No emissions were detected which was at least 20dB below the specification limit (consider distance correction factor).  
Per FCC part 15.31(o), test results were not reported.

Although these tests were performed other than open field test site, adequate comparison measurements were confirmed against 30 m open are test site.  
Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the one of tests made in an open field based on KDB 414788.

# 11.1. TX ABOVE 1GHz 2Tx MODE IN THE 5.2GHz BAND

## BANDEDGE (WORST CASE: 802.11ax VHT80 / 5210 MHz)

### VERTICAL PEAK AND AVERAGE DATA



### Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00218957	10dB_ATT[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	* 5.14999	40.95	Pk	34.8	-20.8	0	54.95	-	-	74	-19.05	153	166	V
2	* 5.13672	47.22	Pk	34.8	-20.8	0	61.22	-	-	74	-12.78	153	166	V
3	* 5.14999	31.88	RMS	34.8	-20.8	.36	46.24	54	-7.76	-	-	153	166	V
4	* 5.14657	31.91	RMS	34.8	-20.8	.36	46.27	54	-7.73	-	-	153	166	V

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

Pk - Peak detector

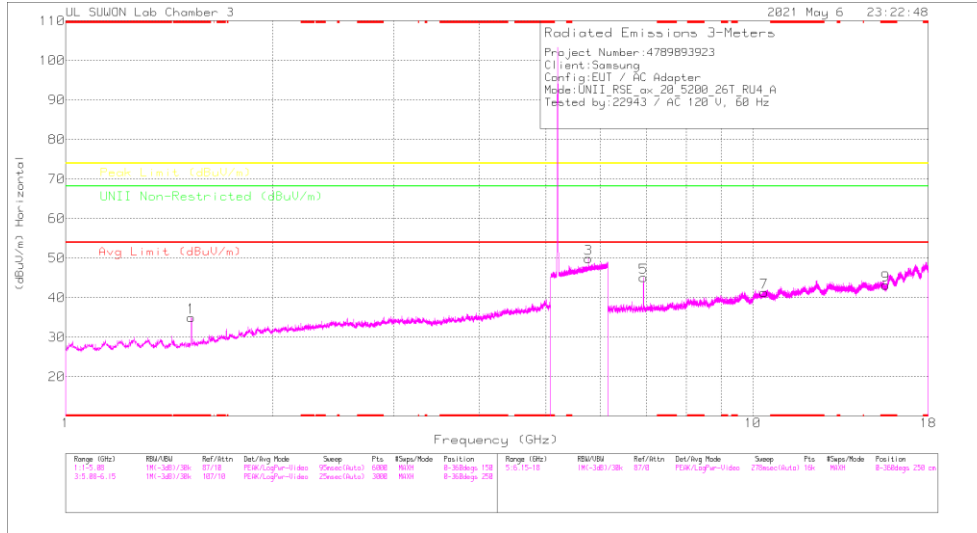
RMS - RMS detection

**BANDEDGE TEST DATA**

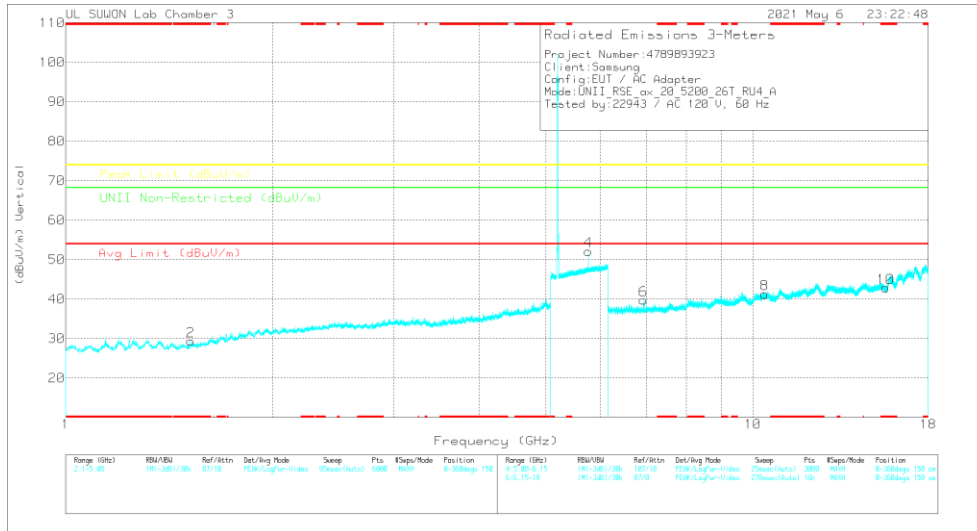
Mode	Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity	
802.11a	5180	MIMO	* 5.14999	36.76	Pk	34.80	-20.80	0.00	50.76	-	-	74.00	-23.24	339	100	H	
			* 5.12081	39.75	Pk	34.80	-20.80	0.00	53.75	-	-	74.00	-20.25	339	100	H	
			* 5.14999	27.57	RMS	34.80	-20.80	0.15	41.72	54.00	-12.28	-	-	-	339	100	H
			* 5.00123	29.08	RMS	34.70	-20.80	0.15	43.13	54.00	-10.87	-	-	-	339	100	H
			* 5.14999	37.28	Pk	34.80	-20.80	0.00	51.28	-	-	-	74.00	-22.72	117	109	V
			* 5.004	40.64	Pk	34.70	-20.80	0.00	54.54	-	-	-	74.00	-19.46	117	109	V
			* 5.14999	27.15	RMS	34.80	-20.80	0.15	41.30	54.00	-12.70	-	-	-	117	109	V
			* 5.00775	29.17	RMS	34.70	-20.90	0.15	43.12	54.00	-10.88	-	-	-	117	109	V
			* 5.14999	37.68	Pk	34.80	-20.80	0.00	51.68	-	-	-	74.00	-22.32	336	101	H
			* 5.06531	40.46	Pk	34.70	-20.80	0.00	54.36	-	-	-	74.00	-19.64	336	101	H
802.11n (HT20)	5180	MIMO	* 5.14999	27.62	RMS	34.80	-20.80	0.17	41.79	54.00	-12.21	-	-	336	101	H	
			* 5.00003	29.02	RMS	34.70	-20.80	0.17	43.09	54.00	-10.91	-	-	-	336	101	H
			* 5.14999	37.73	Pk	34.80	-20.80	0.00	51.73	-	-	74.00	-22.27	118	248	V	
			* 5.00938	40.71	Pk	34.70	-20.90	0.00	54.51	-	-	74.00	-19.49	118	248	V	
			* 5.14999	26.70	RMS	34.80	-20.80	0.17	40.87	54.00	-13.13	-	-	-	118	248	V
			* 5.00715	29.20	RMS	34.70	-20.90	0.17	43.17	54.00	-10.53	-	-	-	118	248	V
			* 5.14999	41.64	Pk	34.80	-20.80	0.00	55.64	-	-	-	74.00	-18.36	339	100	H
			* 5.14584	42.00	Pk	34.80	-20.80	0.00	56.00	-	-	-	74.00	-18.00	339	100	H
			* 5.14999	30.00	RMS	34.80	-20.80	0.17	44.17	54.00	-9.83	-	-	-	339	100	H
			* 5.14979	31.02	RMS	34.80	-20.80	0.17	45.19	54.00	-8.81	-	-	-	339	100	H
802.11n (HT40)	5190	MIMO	* 5.14999	39.61	Pk	34.80	-20.80	0.00	53.61	-	-	74.00	-20.39	118	111	V	
			* 5.14739	41.85	Pk	34.80	-20.80	0.00	55.85	-	-	74.00	-18.15	118	111	V	
			* 5.14999	29.68	RMS	34.80	-20.80	0.17	43.85	54.00	-10.15	-	-	-	118	111	V
			* 5.14874	30.23	RMS	34.80	-20.80	0.17	44.40	54.00	-9.60	-	-	-	118	111	V
			* 5.14999	39.61	Pk	34.80	-20.80	0.00	53.61	-	-	74.00	-20.39	337	101	H	
			* 5.14602	45.85	Pk	34.80	-20.80	0.00	59.85	-	-	74.00	-14.15	337	101	H	
			* 5.14999	29.34	RMS	34.80	-20.80	0.36	43.70	54.00	-10.30	-	-	-	337	101	H
			* 5.14677	30.65	RMS	34.80	-20.80	0.36	45.01	54.00	-8.99	-	-	-	337	101	H
			* 5.14999	40.95	Pk	34.80	-20.80	0.00	54.95	-	-	74.00	-19.05	153	166	V	
			* 5.13672	47.22	Pk	34.80	-20.80	0.00	61.22	-	-	74.00	-12.78	153	166	V	
802.11ac (VHT80)	5210	MIMO	* 5.14999	31.88	RMS	34.80	-20.80	0.36	46.24	54.00	-7.76	-	-	153	166	V	
			* 5.14657	31.91	RMS	34.80	-20.80	0.36	46.27	54.00	-7.73	-	-	-	153	166	V

Note1. Pk - Peak detector, RMS - RMS detector  
 Note2. \* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

**HARMONICS AND SPURIOUS EMISSIONS(WORST CASE: 802.11ax HE20 / 4RU / 5200 MHz )  
 5200 MHz HORIZONTAL**



**5200 MHz VERTICAL**



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

**5200 MHz DATA**

**Radiated Emissions**

Frequency (GHz)	Mask Reading (dBuV)	Det	3117_00218957	5GHz_LF[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Deg)	Height (cm)	Polarity
* 1.52413	48.27	PK-U	28.4	-35.6	0	41.07	-	-	74	-32.93	-	-	0	100	H
* 1.52961	45.86	PK-U	28.4	-35.6	0	38.66	-	-	74	-35.34	-	-	360	100	V
Frequency (GHz)	Mask Reading (dBuV)	Det	3117_00218957	10dB_ATT[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Deg)	Height (cm)	Polarity
5.76074	42.04	PK-U	35.7	-19.5	0	58.24	-	-	-	-	68.2	-9.96	0	100	H
5.75675	41.88	PK-U	35.7	-19.6	0	57.98	-	-	-	-	68.2	-10.22	360	100	V
Frequency (GHz)	Mask Reading (dBuV)	Det	3117_00218957	6GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Deg)	Height (cm)	Polarity
6.93334	41.6	PK-U	36.2	-26.2	0	51.6	-	-	-	-	68.2	-16.6	339	252	H
6.9331	38.26	PK-U	36.2	-26.2	0	48.26	-	-	-	-	68.2	-19.94	216	101	V
10.40154	34.22	PK-U	38.1	-20.9	0	51.42	-	-	-	-	68.2	-16.78	360	100	H
10.39939	34.48	PK-U	38.1	-20.9	0	51.68	-	-	-	-	68.2	-16.52	360	100	V
* 15.59824	34.69	PK-U	40.3	-21.5	0	53.49	-	-	74	-20.51	-	-	360	100	H
* 15.6047	34.67	PK-U	40.3	-21.4	0	53.57	-	-	74	-20.43	-	-	360	100	V

\* - indicates frequency in CFR47

**HARMONICS AND SPURIOUS EMISSIONS TEST DATA**

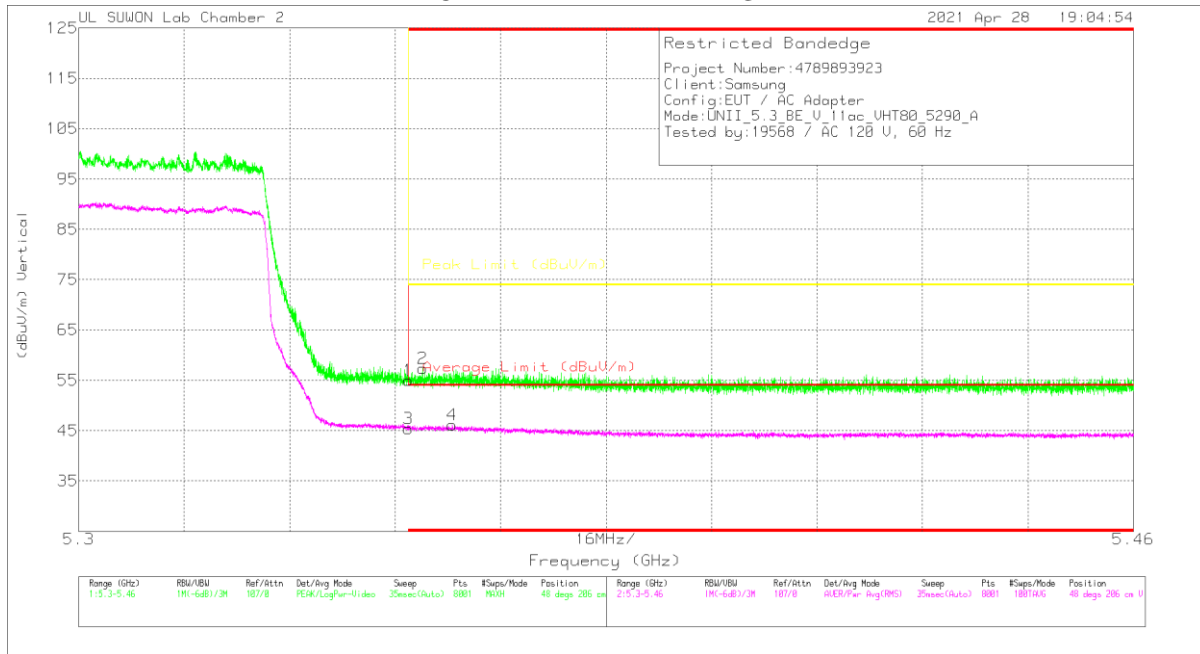
Mode	Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Non-Restricted [dBuV/m]	Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity			
802.11a	5180	MIMO	*1.52562	48.25	PK-U	28.40	-35.60	0.00	41.05	-	-	74.00	-32.95	-	-	360	100	H			
			**1.52517	46.69	PK-U	28.40	-35.60	0.00	39.49	-	-	74.00	-34.51	-	-	360	100	V			
			5.755	41.94	PK-U	35.70	-19.60	0.00	58.04	-	-	-	-	-	-	68.20	-10.16	360	100	H	
			5.759	41.22	PK-U	35.70	-19.50	0.00	57.42	-	-	-	-	-	-	68.20	-10.78	360	100	V	
			7.770	36.46	PK-U	36.30	-24.40	0.00	48.36	-	-	-	-	-	-	68.20	-19.84	360	100	H	
			7.769	36.34	PK-U	36.30	-24.40	0.00	48.24	-	-	-	-	-	-	68.20	-19.96	360	100	V	
			10.362	34.53	PK-U	38.10	-20.70	0.00	51.93	-	-	-	-	-	-	68.20	-16.27	360	100	H	
			10.359	34.43	PK-U	38.10	-20.80	0.00	51.73	-	-	-	-	-	-	68.20	-16.47	360	100	V	
			**15.53956	35.33	PK-U	40.20	-21.70	0.00	53.83	-	-	-	-	74.00	-20.17	-	-	360	100	H	
			**15.54191	35.66	PK-U	40.20	-21.70	0.00	54.16	-	-	-	-	74.00	-19.84	-	-	360	100	V	
			*1.52486	48.62	PK-U	28.40	-35.60	0.00	41.42	-	-	-	-	74.00	-32.58	-	-	360	100	H	
			**1.52573	46.58	PK-U	28.40	-35.60	0.00	39.38	-	-	-	-	74.00	-34.62	-	-	360	100	V	
	5.760	41.87	PK-U	35.70	-19.50	0.00	58.07	-	-	-	-	-	-	68.20	-10.13	360	100	H			
	5.760	41.97	PK-U	35.70	-19.50	0.00	58.17	-	-	-	-	-	-	68.20	-10.03	360	100	V			
	7.799	35.97	PK-U	36.30	-24.00	0.00	48.27	-	-	-	-	-	-	68.20	-19.93	360	100	H			
	7.802	36.82	PK-U	36.30	-24.00	0.00	48.12	-	-	-	-	-	-	68.20	-19.08	360	100	V			
	10.401	34.31	PK-U	38.10	-20.90	0.00	51.51	-	-	-	-	-	-	68.20	-16.69	360	100	H			
	10.399	34.68	PK-U	38.10	-20.90	0.00	51.88	-	-	-	-	-	-	68.20	-16.32	360	100	V			
	**15.59978	35.01	PK-U	40.30	-21.50	0.00	53.81	-	-	-	-	74.00	-20.19	-	-	360	100	H			
	**15.60185	35.25	PK-U	40.30	-21.40	0.00	54.15	-	-	-	-	74.00	-19.85	-	-	360	100	V			
	*1.52569	47.96	PK-U	28.40	-35.60	0.00	40.76	-	-	-	-	74.00	-33.24	-	-	360	100	H			
	**1.52208	46.04	PK-U	28.40	-35.60	0.00	38.84	-	-	-	-	74.00	-35.16	-	-	360	100	V			
	5.760	41.59	PK-U	35.70	-19.50	0.00	57.79	-	-	-	-	-	-	68.20	-10.41	360	100	H			
	5.759	41.27	PK-U	35.70	-19.50	0.00	57.47	-	-	-	-	-	-	68.20	-10.73	360	100	V			
	7.858	35.61	PK-U	36.30	-23.60	0.00	48.31	-	-	-	-	-	-	68.20	-19.89	360	100	H			
	7.863	35.55	PK-U	36.30	-23.50	0.00	48.35	-	-	-	-	-	-	68.20	-19.85	360	100	V			
	10.476	35.30	PK-U	38.20	-21.00	0.00	52.50	-	-	-	-	-	-	68.20	-15.70	360	100	H			
	10.483	34.08	PK-U	38.20	-20.90	0.00	51.38	-	-	-	-	-	-	68.20	-16.82	360	100	V			
	*15.715	29.34	PK-U	40.50	-21.20	0.00	48.64	-	-	-	-	74.00	-25.36	-	-	360	100	H			
	**15.72468	34.74	PK-U	40.50	-21.10	0.00	54.14	-	-	-	-	74.00	-19.86	-	-	360	100	V			
	802.11n (HT40) Spot-Check	5230	MIMO	*1.52452	48.17	PK-U	28.40	-35.60	0.00	40.97	-	-	74.00	-33.03	-	-	0	100	H		
				**1.52824	46.64	PK-U	28.40	-35.60	0.00	39.44	-	-	74.00	-34.56	-	-	0	100	V		
				5.760	42.04	PK-U	35.70	-19.50	0.00	58.24	-	-	-	-	-	-	68.20	-9.96	0	100	H
				5.759	41.35	PK-U	35.70	-19.50	0.00	57.55	-	-	-	-	-	-	68.20	-10.65	0	100	V
				7.842	35.71	PK-U	36.30	-23.90	0.00	48.11	-	-	-	-	-	-	68.20	-20.09	0	100	H
				7.842	36.12	PK-U	36.30	-23.90	0.00	48.52	-	-	-	-	-	-	68.20	-19.68	0	100	V
10.463				33.95	PK-U	38.20	-21.00	0.00	51.15	-	-	-	-	-	-	68.20	-17.05	0	100	H	
10.457				34.31	PK-U	38.20	-21.10	0.00	51.41	-	-	-	-	-	-	68.20	-16.79	0	100	V	
**15.68855				34.80	PK-U	40.50	-21.20	0.00	54.10	-	-	-	-	74.00	-19.90	-	-	0	100	H	
**15.68826				34.10	PK-U	40.50	-21.30	0.00	53.30	-	-	-	-	74.00	-20.70	-	-	0	100	V	
*1.52413				48.27	PK-U	28.40	-35.60	0.00	41.07	-	-	-	-	74.00	-32.93	-	-	0	100	H	
**1.52961				45.86	PK-U	28.40	-35.60	0.00	38.66	-	-	-	-	74.00	-35.34	-	-	360	100	V	
5.761	42.04	PK-U	35.70	-19.50	0.00	58.24	-	-	-	-	-	-	68.20	-9.96	0	100	H				
5.757	41.98	PK-U	35.70	-19.60	0.00	57.98	-	-	-	-	-	-	68.20	-10.22	360	100	V				
6.933	41.60	PK-U	36.20	-26.20	0.00	51.60	-	-	-	-	-	-	68.20	-16.80	339	252	H				
6.933	38.26	PK-U	36.20	-26.20	0.00	48.26	-	-	-	-	-	-	68.20	-19.94	216	101	V				
10.402	34.22	PK-U	38.10	-20.90	0.00	51.42	-	-	-	-	-	-	68.20	-16.78	360	100	H				
10.399	34.48	PK-U	38.10	-20.90	0.00	51.68	-	-	-	-	-	-	68.20	-16.52	360	100	V				
**15.59824	34.69	PK-U	40.30	-21.50	0.00	53.49	-	-	-	-	74.00	-20.51	-	-	360	100	H				
**15.6047	34.67	PK-U	40.30	-21.40	0.00	53.57	-	-	-	-	74.00	-20.43	-	-	360	100	V				
802.11ax (HE20) 4RU	5200	MIMO	*1.52486	48.05	PK-U	28.40	-35.60	0.00	40.85	-	-	74.00	-33.15	-	-	360	100	H			
			**1.52918	45.46	PK-U	28.40	-35.60	0.00	38.26	-	-	74.00	-35.74	-	-	360	100	V			
			5.760	41.88	PK-U	35.70	-19.50	0.00	58.08	-	-	-	-	-	68.20	-10.12	360	100	H		
			5.765	41.17	PK-U	35.70	-19.60	0.00	57.27	-	-	-	-	-	68.20	-10.93	360	100	V		
			6.920	41.05	PK-U	36.20	-26.30	0.00	50.95	-	-	-	-	-	-	68.20	-17.25	339	240	H	
			6.920	38.37	PK-U	36.20	-26.30	0.00	48.27	-	-	-	-	-	-	68.20	-19.93	214	110	V	
			10.376	34.19	PK-U	38.10	-20.80	0.00	51.49	-	-	-	-	-	-	68.20	-16.71	360	100	H	
			10.379	34.32	PK-U	38.10	-20.80	0.00	51.62	-	-	-	-	-	-	68.20	-16.58	360	100	V	
			*15.57149	34.95	PK-U	40.30	-21.50	0.00	53.75	-	-	-	-	74.00	-20.25	-	-	360	100	H	
			**15.56912	34.93	PK-U	40.30	-21.60	0.00	53.63	-	-	-	-	74.00	-20.37	-	-	360	100	V	
			*1.52421	47.60	PK-U	28.40	-35.60	0.00	40.40	-	-	-	-	74.00	-33.60	-	-	360	100	H	
			**1.52778	45.96	PK-U	28.40	-35.60	0.00	38.76	-	-	-	-	74.00	-35.24	-	-	360	100	V	
5.760	41.66	PK-U	35.70	-19.50	0.00	57.86	-	-	-	-	-	-	68.20	-10.34	360	100	H				
5.757	41.22	PK-U	35.70	-19.60	0.00	57.32	-	-	-	-	-	-	68.20	-10.88	360	100	V				
6.947	40.38	PK-U	36.20	-26.00	0.00	50.58	-	-	-	-	-	-	68.20	-17.62	341	235	H				
6.946	38.25	PK-U	36.20	-26.00	0.00	48.45	-	-	-	-	-	-	68.20	-19.75	215	101	V				
10.420	33.82	PK-U	38.10	-21.00	0.00	50.92	-	-	-	-	-	-	68.20	-17.28	360	100	H				
10.418	33.99	PK-U	38.10	-21.00	0.00	51.09	-	-	-	-	-	-	68.20	-17.11	360	100	V				
*15.63251	34.27	PK-U	40.40	-21.30	0.00	53.37	-	-	-	-	74.00	-20.63	-	-	360	100	H				
*15.63221	34.13	PK-U	40.40	-21.30	0.00	53.23	-	-	-	-	74.00	-20.77	-	-	360	100	V				

Note1. PK-U - U-NII: Maximum Peak  
 Note2. \* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 Note3. 5760 MHz measured data is a signal generated regardless of power level and mode.

## 11.2. TX ABOVE 1GHz 2Tx MODE IN THE 5.3GHz BAND

### BANDEDGE (WORST CASE: 802.11ac VHT80 / 5290 MHz)

#### VERTICAL PEAK AND AVERAGE DATA



#### Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	10dB_ATT[dB]	DC Cor (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.35002	38.18	Pk	34.5	-17.7	0	54.98	-	-	74	-19.02	48	206	V
2	* 5.35214	40.58	Pk	34.5	-17.7	0	57.38	-	-	74	-16.62	48	206	V
3	* 5.35002	28.23	RMS	34.5	-17.7	.36	45.39	54	-8.61	-	-	48	206	V
4	* 5.35664	28.96	RMS	34.5	-17.7	.36	46.12	54	-7.88	-	-	48	206	V

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

Pk - Peak detector

RMS - RMS detection



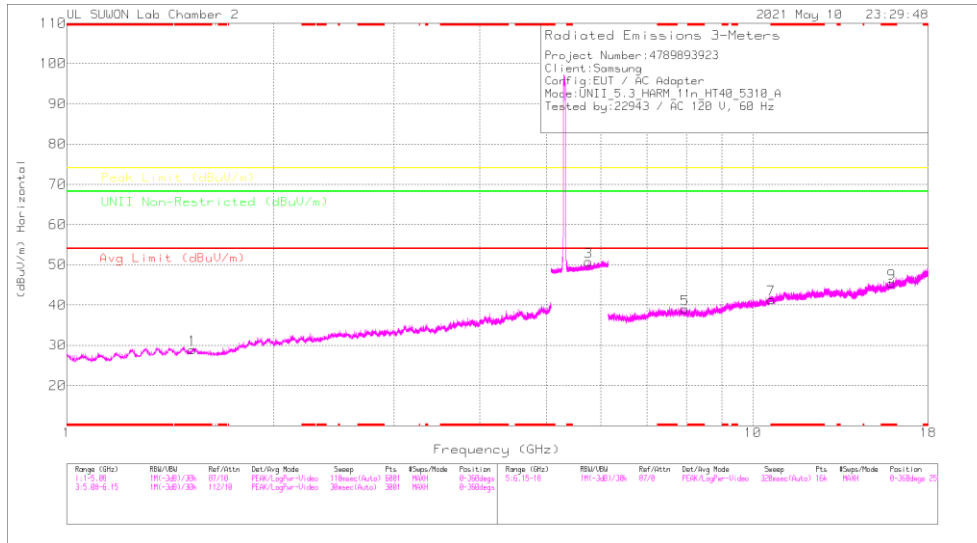
**BANDEDGE TEST DATA**

Mode	Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity	
802.11a	5320	MIMO	* 5.35002	36.48	Pk	34.50	-17.70	0.00	53.28	-	-	74.00	-20.72	9	104	H	
			* 5.4506	40.05	Pk	34.60	-17.80	0.00	56.85	-	-	74.00	-17.15	9	104	H	
			* 5.35002	27.30	RMS	34.50	-17.70	0.15	44.25	54.00	-9.75	-	-	-	9	104	H
			* 5.40444	27.67	RMS	34.60	-17.70	0.15	44.72	54.00	-9.28	-	-	-	9	104	H
			* 5.35002	36.39	Pk	34.50	-17.70	0.00	53.19	-	-	74.00	-20.81	234	370	V	
			* 5.44438	39.92	Pk	34.60	-17.80	0.00	56.72	-	-	74.00	-17.28	234	370	V	
			* 5.35002	26.82	RMS	34.50	-17.70	0.15	43.77	54.00	-10.23	-	-	-	234	370	V
			* 5.43352	27.58	RMS	34.60	-17.70	0.15	44.63	54.00	-9.37	-	-	-	234	370	V
802.11n (HT20)	5320	MIMO	* 5.35002	36.77	Pk	34.50	-17.70	0.00	53.57	-	-	74.00	-20.43	75	108	H	
			* 5.361	40.31	Pk	34.50	-17.70	0.00	57.11	-	-	74.00	-16.89	75	108	H	
			* 5.35002	27.25	RMS	34.50	-17.70	0.17	44.22	54.00	-9.78	-	-	-	75	108	H
			* 5.42462	27.71	RMS	34.60	-17.70	0.17	44.78	54.00	-9.22	-	-	-	75	108	H
			* 5.35002	37.16	Pk	34.50	-17.70	0.00	53.96	-	-	74.00	-20.04	236	370	V	
			* 5.45058	39.70	Pk	34.60	-17.80	0.00	56.50	-	-	74.00	-17.50	236	370	V	
			* 5.35002	26.79	RMS	34.50	-17.70	0.17	43.76	54.00	-10.24	-	-	-	236	370	V
			* 5.43068	27.68	RMS	34.60	-17.70	0.17	44.75	54.00	-9.25	-	-	-	236	370	V
802.11n (HT40)	5310	MIMO	* 5.35002	39.15	Pk	34.50	-17.70	0.00	55.95	-	-	74.00	-18.05	74	111	H	
			* 5.35252	44.12	Pk	34.50	-17.70	0.00	60.92	-	-	74.00	-13.08	74	111	H	
			* 5.35002	28.42	RMS	34.50	-17.70	0.17	45.39	54.00	-8.61	-	-	-	74	111	H
			* 5.35046	28.67	RMS	34.50	-17.70	0.17	45.64	54.00	-8.36	-	-	-	74	111	H
			* 5.35002	38.50	Pk	34.50	-17.70	0.00	55.30	-	-	74.00	-18.70	257	368	V	
			* 5.38056	40.62	Pk	34.50	-17.80	0.00	57.32	-	-	74.00	-16.68	257	368	V	
			* 5.35002	28.52	RMS	34.50	-17.70	0.17	45.49	54.00	-8.51	-	-	-	257	368	V
			* 5.35044	28.54	RMS	34.50	-17.70	0.17	45.51	54.00	-8.49	-	-	-	257	368	V
802.11ac (VHT80)	5290	MIMO	* 5.35002	37.12	Pk	34.50	-17.70	0.00	53.92	-	-	74.00	-20.08	72	120	H	
			* 5.35704	40.34	Pk	34.50	-17.70	0.00	57.14	-	-	74.00	-16.86	72	120	H	
			* 5.35002	27.78	RMS	34.50	-17.70	0.36	44.94	54.00	-9.06	-	-	-	72	120	H
			* 5.3583	28.45	RMS	34.50	-17.70	0.36	45.61	54.00	-8.39	-	-	-	72	120	H
			* 5.35002	38.18	Pk	34.50	-17.70	0.00	54.98	-	-	74.00	-19.02	48	206	V	
			* 5.35214	40.58	Pk	34.50	-17.70	0.00	57.38	-	-	74.00	-16.62	48	206	V	
			* 5.35002	28.23	RMS	34.50	-17.70	0.36	45.39	54.00	-8.61	-	-	-	48	206	V
			* 5.35664	28.96	RMS	34.50	-17.70	0.36	46.12	54.00	-7.88	-	-	-	48	206	V

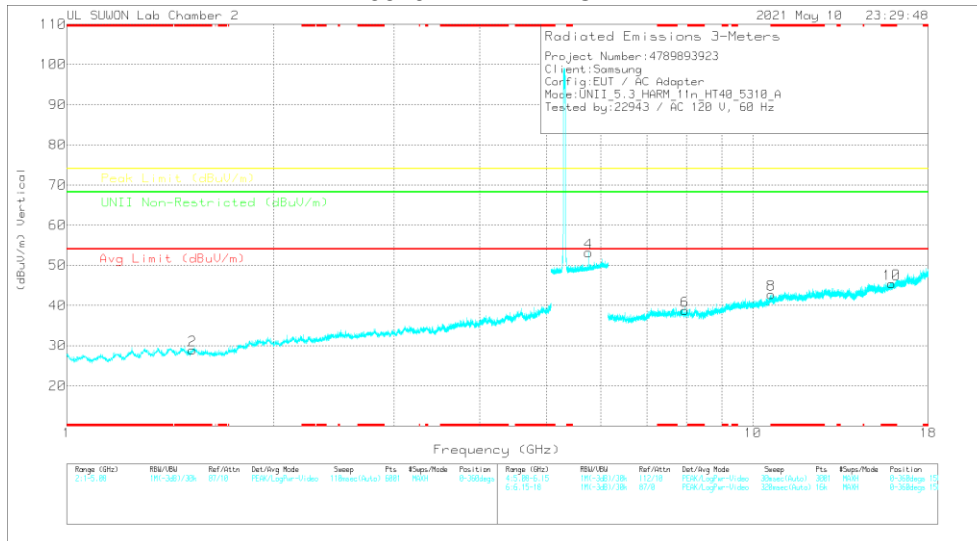
Note1. Pk - Peak detector, RMS - RMS detector

Note2. \* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

**HARMONICS AND SPURIOUS EMISSIONS(WORST CASE: 802.11n HT40 / 5310 MHz)**  
**5310 MHz HORIZONTAL**



**5310 MHz VERTICAL**



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

**5310 MHz DATA**

**Radiated Emissions**

Frequency (GHz)	Mask Reading (dBuV)	Det	3117_00168724	5GHz_LF(SB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Asimuth (Degs)	Height (cm)	Polarity
* 1.52654	40.94	PK-U	28.9	-30.7	0	39.14	-	-	74	-34.86	-	-	360	100	H
* 1.52571	41.44	PK-U	28.9	-30.7	0	39.64	-	-	74	-34.36	-	-	360	100	V

Frequency (GHz)	Mask Reading (dBuV)	Det	3117_00168724	10dB_ATT(SB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Asimuth (Degs)	Height (cm)	Polarity
5.75018	42.35	PK-U	34.7	-17	0	60.05	-	-	-	-	68.2	-8.15	360	100	H
5.75464	41.95	PK-U	34.8	-17	0	59.75	-	-	-	-	68.2	-8.45	360	100	V

Frequency (GHz)	Mask Reading (dBuV)	Det	3117_00168724	6GHz_HF(SB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Asimuth (Degs)	Height (cm)	Polarity
7.96308	36.13	PK-U	36	-23.1	0	49.03	-	-	-	-	68.2	-19.17	360	100	H
7.96327	36.89	PK-U	36	-23.1	0	49.79	-	-	-	-	68.2	-18.41	360	100	V
* 10.61955	33.05	PK-U	37.9	-19	0	51.95	-	-	74	-22.05	-	-	360	100	H
* 10.62377	33.13	PK-U	37.9	-19	0	52.03	-	-	74	-21.97	-	-	360	100	V
* 15.92661	34.45	PK-U	40.6	-19	0	56.05	-	-	74	-17.95	-	-	360	100	H
* 15.93428	34.35	PK-U	40.6	-19.1	0	55.85	-	-	74	-18.15	-	-	360	100	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 PK-U - U-NII: Maximum Peak

**HARMONICS AND SPURIOUS EMISSIONS TEST DATA**

5260	MIMO	** 1.52403	48.22	PK-U	28.40	-35.60	0.00	41.02	-	-	74.00	-32.98	-	-	360	100	H		
		** 1.52608	46.71	PK-U	28.40	-35.60	0.00	39.51	-	-	74.00	-34.49	-	-	360	100	V		
		5.760	41.80	PK-U	35.70	-19.50	0.00	58.00	-	-	-	-	68.20	-10.20	360	100	H		
		5.762	41.20	PK-U	35.70	-19.60	0.00	57.30	-	-	-	-	68.20	-10.90	360	100	V		
		7.885	35.80	PK-U	36.30	-23.60	0.00	48.50	-	-	-	-	68.20	-19.70	360	100	H		
		7.890	36.08	PK-U	36.30	-23.70	0.00	48.68	-	-	-	-	68.20	-19.52	360	100	V		
		10.517	34.47	PK-U	38.20	-20.80	0.00	51.87	-	-	-	-	68.20	-16.33	360	100	H		
		10.521	33.95	PK-U	38.20	-20.90	0.00	51.25	-	-	-	-	68.20	-16.95	360	100	V		
		** 15.7805	34.82	PK-U	40.60	-21.00	0.00	54.42	-	-	-	74.00	-19.58	-	-	360	100	H	
		** 15.7798	35.47	PK-U	40.60	-21.00	0.00	55.07	-	-	-	74.00	-18.93	-	-	360	100	V	
		** 1.52461	48.57	PK-U	28.40	-35.60	0.00	41.37	-	-	-	74.00	-32.63	-	-	360	100	H	
		** 1.52923	46.49	PK-U	28.40	-35.60	0.00	39.29	-	-	-	74.00	-34.71	-	-	360	100	V	
		5.760	41.77	PK-U	35.70	-19.50	0.00	57.97	-	-	-	-	68.20	-10.23	360	100	H		
		5.760	41.94	PK-U	35.70	-19.50	0.00	58.14	-	-	-	-	68.20	-10.06	360	100	V		
		7.850	36.42	PK-U	36.30	-23.90	0.00	48.82	-	-	-	-	68.20	-19.38	360	100	H		
7.849	36.49	PK-U	36.30	-23.80	0.00	48.99	-	-	-	-	68.20	-19.21	360	100	V				
** 10.60382	33.84	PK-U	38.30	-21.00	0.00	51.14	-	-	-	74.00	-22.86	-	-	360	100	H			
** 10.6073	33.71	PK-U	38.30	-21.00	0.00	51.11	-	-	-	74.00	-22.99	-	-	360	100	V			
** 15.90392	35.20	PK-U	40.80	-20.50	0.00	55.50	-	-	-	74.00	-18.50	-	-	360	100	H			
** 15.90216	35.73	PK-U	40.80	-20.50	0.00	56.03	-	-	-	74.00	-17.97	-	-	360	100	V			
** 1.52624	48.37	PK-U	28.40	-35.60	0.00	41.17	-	-	-	74.00	-32.83	-	-	360	100	H			
* 1.525	46.48	PK-U	28.40	-35.60	0.00	39.28	-	-	-	74.00	-34.72	-	-	360	100	V			
5.760	42.22	PK-U	35.70	-19.50	0.00	58.42	-	-	-	-	-	68.20	-9.78	360	100	H			
5.763	41.70	PK-U	35.70	-19.50	0.00	57.90	-	-	-	-	-	68.20	-10.30	360	100	V			
7.976	35.88	PK-U	36.30	-23.90	0.00	48.28	-	-	-	-	-	68.20	-19.92	360	100	H			
7.981	35.91	PK-U	36.30	-23.90	0.00	48.31	-	-	-	-	-	68.20	-19.89	360	100	V			
** 10.63747	33.51	PK-U	38.30	-21.00	0.00	50.81	-	-	-	74.00	-23.19	-	-	360	100	H			
** 10.63989	33.56	PK-U	38.30	-21.10	0.00	50.76	-	-	-	74.00	-23.24	-	-	360	100	V			
** 15.95585	35.34	PK-U	40.90	-20.40	0.00	55.84	-	-	-	74.00	-18.16	-	-	360	100	H			
** 15.95911	34.91	PK-U	40.90	-20.50	0.00	55.31	-	-	-	74.00	-18.69	-	-	360	100	V			
802.11n (HT20) Spot-Check	5300	MIMO	* 1.5267	45.90	PK-U	28.40	-35.60	0.00	38.70	-	-	74.00	-35.30	-	-	360	100	H	
			** 1.52311	46.13	PK-U	28.40	-35.60	0.00	38.93	-	-	74.00	-35.07	-	-	360	100	V	
			5.760	42.26	PK-U	35.70	-19.50	0.00	58.46	-	-	-	-	68.20	-9.74	360	100	H	
			5.760	41.69	PK-U	35.70	-19.50	0.00	57.89	-	-	-	-	68.20	-10.31	360	100	V	
			7.951	36.52	PK-U	36.30	-23.90	0.00	48.92	-	-	-	-	68.20	-19.28	360	100	H	
			7.946	36.12	PK-U	36.30	-23.80	0.00	48.62	-	-	-	-	68.20	-19.58	360	100	V	
			** 10.61783	34.07	PK-U	38.30	-21.00	0.00	51.37	-	-	-	74.00	-22.63	-	-	360	100	H
			** 10.60742	33.63	PK-U	38.30	-21.00	0.00	50.93	-	-	-	74.00	-23.07	-	-	360	100	V
			** 15.90215	35.63	PK-U	40.80	-20.50	0.00	55.93	-	-	-	74.00	-18.07	-	-	360	100	H
			** 15.89743	35.27	PK-U	40.80	-20.50	0.00	55.57	-	-	-	74.00	-18.43	-	-	360	100	V
			* 1.52654	40.94	PK-U	28.90	-30.70	0.00	39.14	-	-	-	74.00	-34.86	-	-	360	100	H
			** 1.52571	41.44	PK-U	28.90	-30.70	0.00	39.64	-	-	-	74.00	-34.36	-	-	360	100	V
			5.760	42.35	PK-U	34.70	-17.00	0.00	60.05	-	-	-	-	68.20	-8.15	360	100	H	
			5.765	41.95	PK-U	34.80	-17.00	0.00	59.75	-	-	-	-	68.20	-8.45	360	100	V	
			7.964	36.13	PK-U	36.00	-23.10	0.00	49.03	-	-	-	-	68.20	-19.17	360	100	H	
7.963	36.89	PK-U	36.00	-23.10	0.00	49.79	-	-	-	-	68.20	-18.41	360	100	V				
** 10.61955	33.05	PK-U	37.90	-19.00	0.00	51.95	-	-	-	74.00	-22.05	-	-	360	100	H			
** 10.62377	33.13	PK-U	37.90	-19.00	0.00	52.03	-	-	-	74.00	-21.97	-	-	360	100	V			
** 15.92881	34.45	PK-U	40.60	-19.00	0.00	56.05	-	-	-	74.00	-17.95	-	-	360	100	H			
** 15.93428	34.35	PK-U	40.60	-19.10	0.00	55.85	-	-	-	74.00	-18.15	-	-	360	100	V			
802.11ax (HE20) 4RU	5300	MIMO	** 1.52499	47.69	PK-U	28.40	-35.60	0.00	40.49	-	-	74.00	-33.51	-	-	360	100	H	
			** 1.52988	45.55	PK-U	28.40	-35.60	0.00	38.35	-	-	74.00	-35.65	-	-	0	100	V	
			5.760	42.27	PK-U	35.70	-19.50	0.00	58.47	-	-	-	-	68.20	-9.73	360	100	H	
			5.764	40.86	PK-U	35.70	-19.50	0.00	57.06	-	-	-	-	68.20	-11.14	0	100	V	
			7.066	37.84	PK-U	36.20	-25.70	0.00	48.34	-	-	-	-	68.20	-19.86	161	254	H	
			7.065	37.85	PK-U	36.20	-25.70	0.00	48.35	-	-	-	-	68.20	-19.85	131	230	V	
			* 10.60904	33.63	PK-U	38.30	-21.00	0.00	50.93	-	-	-	74.00	-23.07	-	-	0	100	H
			** 10.60184	33.35	PK-U	38.30	-21.00	0.00	50.65	-	-	-	74.00	-23.35	-	-	0	100	V
			** 15.90175	35.63	PK-U	40.80	-20.50	0.00	55.93	-	-	-	74.00	-18.07	-	-	0	100	H
			** 15.89898	35.03	PK-U	40.80	-20.50	0.00	55.33	-	-	-	74.00	-18.67	-	-	0	100	V

Note1. PK-U - U-NII: Maximum Peak / ADR - U-NII AD primary method, RMS average

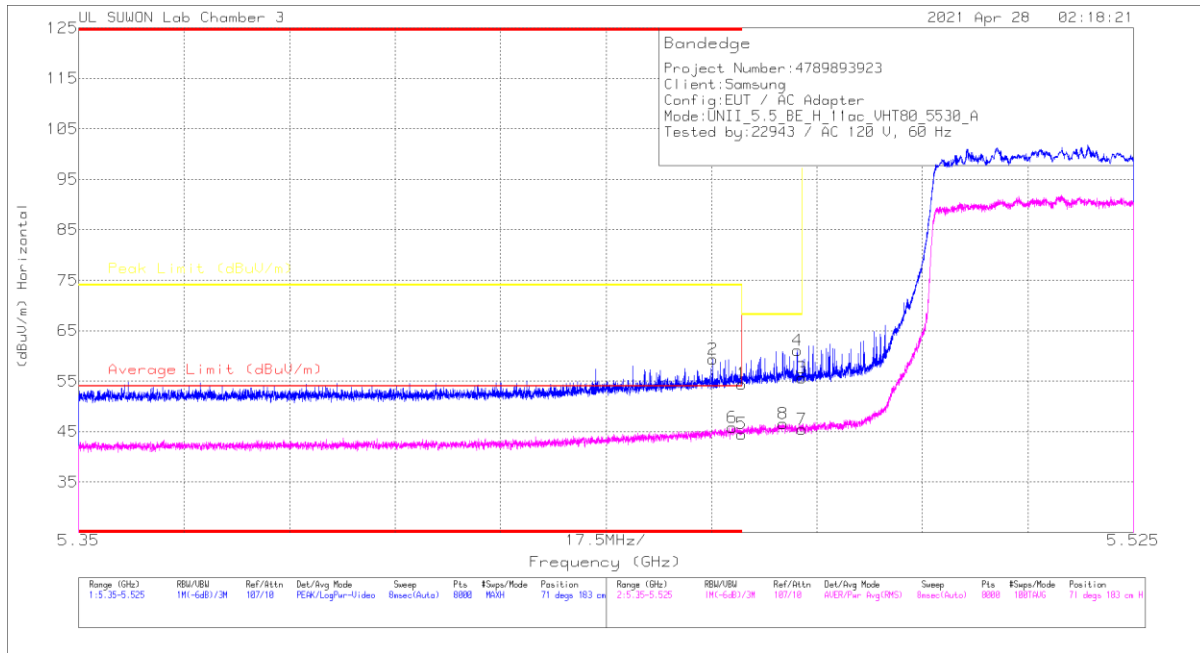
Note2. \* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Note3. 5760 MHz measured data is a signal generated regardless of power level and mode.

### 11.3. TX ABOVE 1GHz 2Tx MODE IN THE 5.5 GHz BAND

**BANDEDGE (WORST CASE: 802.11ac HT80 / 5530 MHz)**

**HORIZONTAL PEAK AND AVERAGE DATA**



**Trace Markers**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00218957	10dB_ATT[dB]	DC Cor (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.45998	39.45	Pk	35.3	-20.3	0	54.45	-	-	74	-19.55	71	183	H
2	* 5.45519	44.33	Pk	35.3	-20.3	0	59.33	-	-	74	-14.67	71	183	H
3	5.46998	40.57	Pk	35.3	-20.2	0	55.67	-	-	68.2	-12.53	71	183	H
4	5.46921	46.13	Pk	35.3	-20.3	0	61.13	-	-	68.2	-7.07	71	183	H
5	* 5.45998	29.16	RMS	35.3	-20.3	.36	44.52	54	-9.48	-	-	71	183	H
6	* 5.45843	30.41	RMS	35.3	-20.3	.36	45.77	54	-8.23	-	-	71	183	H
7	5.46998	29.96	RMS	35.3	-20.2	.36	45.42	-	-	-	-	71	183	H
8	5.46692	31.17	RMS	35.3	-20.3	.36	46.53	-	-	-	-	71	183	H

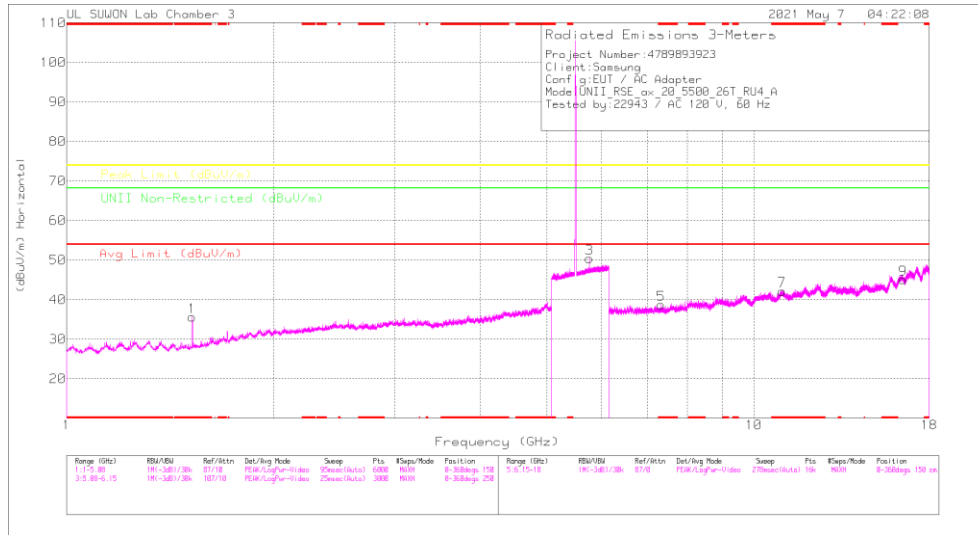
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

**BANDEDGE TEST DATA**

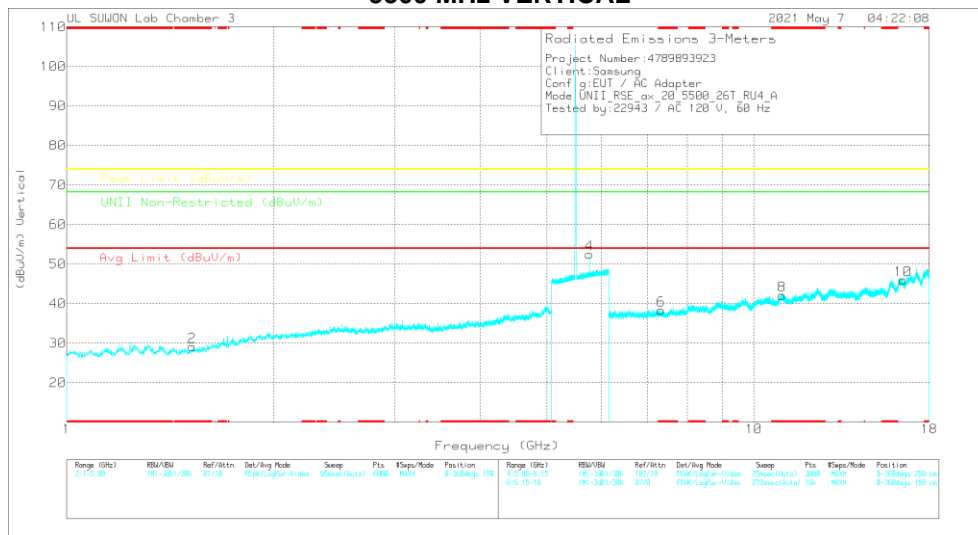
Mode	Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity	
802.11a	5500	MIMO	* 5.45998	37.35	Pk	35.30	-20.30	0.00	52.35	-	-	74.00	-21.65	72	144	H	
			* 5.44707	40.34	Pk	35.30	-20.20	0.00	55.44	-	-	74.00	-18.56	72	144	H	
			5.46998	37.47	Pk	35.30	-20.20	0.00	52.57	-	-	68.20	-15.63	72	144	H	
			5.46917	40.20	Pk	35.30	-20.30	0.00	55.20	-	-	68.20	-13.00	72	144	H	
			* 5.45998	26.84	RMS	35.30	-20.30	0.15	41.99	54.00	-12.01	-	-	-	72	144	H
			* 5.4518	28.59	RMS	35.30	-20.20	0.15	43.84	54.00	-10.16	-	-	-	72	144	H
			5.46998	27.89	RMS	35.30	-20.20	0.15	43.14	-	-	-	-	-	72	144	H
			5.46705	28.57	RMS	35.30	-20.20	0.15	43.82	-	-	-	-	-	72	144	H
			* 5.45998	37.09	Pk	35.30	-20.30	0.00	52.09	-	-	74.00	-21.91	72	342	100	V
			* 5.44935	40.54	Pk	35.30	-20.30	0.00	55.54	-	-	74.00	-18.46	72	342	100	V
			5.46998	38.50	Pk	35.30	-20.20	0.00	53.60	-	-	68.20	-14.60	72	342	100	V
			5.46757	39.08	Pk	35.30	-20.20	0.00	54.18	-	-	68.20	-14.02	72	342	100	V
	* 5.45998	26.93	RMS	35.30	-20.30	0.15	42.08	54.00	-11.92	-	-	-	342	100	V		
	* 5.43799	28.47	RMS	35.30	-20.30	0.15	43.62	54.00	-10.38	-	-	-	342	100	V		
	5.46998	27.07	RMS	35.30	-20.20	0.15	42.32	-	-	-	-	-	342	100	V		
	5.46142	28.33	RMS	35.30	-20.20	0.15	43.58	-	-	-	-	-	342	100	V		
	5700	MIMO	5.72500	37.68	Pk	35.70	-19.70	0.00	53.68	-	-	68.20	-14.52	267	108	H	
			5.80058	39.76	Pk	35.80	-19.50	0.00	56.06	-	-	68.20	-12.14	267	108	H	
			5.72500	37.90	Pk	35.70	-19.70	0.00	53.90	-	-	68.20	-14.30	332	138	V	
			5.76002	41.61	Pk	35.70	-19.50	0.00	57.81	-	-	68.20	-10.39	332	138	V	
			* 5.45998	37.02	Pk	35.30	-20.30	0.00	52.02	-	-	74.00	-21.98	71	144	H	
			* 5.35785	40.53	Pk	35.10	-20.40	0.00	55.23	-	-	74.00	-18.77	71	144	H	
			5.46998	37.85	Pk	35.30	-20.20	0.00	52.95	-	-	68.20	-15.25	71	144	H	
			5.46659	39.56	Pk	35.30	-20.30	0.00	54.56	-	-	68.20	-13.64	71	144	H	
* 5.45998			27.59	RMS	35.30	-20.30	0.17	42.76	54.00	-11.24	-	-	-	71	144	H	
* 5.43055			28.30	RMS	35.30	-20.30	0.17	43.47	54.00	-10.53	-	-	-	71	144	H	
5.46998			27.90	RMS	35.30	-20.20	0.17	43.17	-	-	-	-	-	71	144	H	
5.46994			28.03	RMS	35.30	-20.20	0.17	43.30	-	-	-	-	-	71	144	H	
* 5.45998	37.17	Pk	35.30	-20.30	0.00	52.17	-	-	74.00	-21.83	192	100	V				
* 5.39457	40.39	Pk	35.20	-20.40	0.00	55.19	-	-	74.00	-18.81	192	100	V				
5.46998	36.91	Pk	35.30	-20.20	0.00	52.01	-	-	68.20	-16.19	192	100	V				
5.46591	39.40	Pk	35.30	-20.30	0.00	54.40	-	-	68.20	-13.80	192	100	V				
* 5.45998	27.48	RMS	35.30	-20.30	0.17	42.65	54.00	-11.35	-	-	-	192	100	V			
* 5.39999	29.23	RMS	35.20	-20.30	0.17	44.30	54.00	-9.70	-	-	-	192	100	V			
5.46998	26.71	RMS	35.30	-20.20	0.17	41.98	-	-	-	-	-	192	100	V			
5.46948	28.28	RMS	35.30	-20.30	0.17	43.45	-	-	-	-	-	192	100	V			
5700	MIMO	5.72500	36.81	Pk	35.70	-19.70	0.00	52.81	-	-	68.20	-15.39	265	108	H		
		5.82342	39.60	Pk	35.80	-19.50	0.00	55.90	-	-	68.20	-12.30	265	108	H		
		5.72500	38.23	Pk	35.70	-19.70	0.00	55.23	-	-	68.20	-12.97	331	137	V		
		5.76004	42.46	Pk	35.70	-19.50	0.00	58.66	-	-	68.20	-9.54	331	137	V		
		* 5.45998	36.82	Pk	35.30	-20.30	0.00	51.82	-	-	74.00	-22.18	71	146	H		
		* 5.37	40.46	Pk	35.10	-20.40	0.00	55.16	-	-	74.00	-18.84	71	146	H		
		5.46998	41.90	Pk	35.30	-20.20	0.00	57.00	-	-	68.20	-11.20	71	146	H		
		5.46991	43.89	Pk	35.30	-20.20	0.00	58.99	-	-	68.20	-9.21	71	146	H		
		* 5.45998	27.40	RMS	35.30	-20.30	0.17	42.57	54.00	-11.43	-	-	-	71	146	H	
		* 5.45904	28.20	RMS	35.30	-20.30	0.17	43.37	54.00	-10.63	-	-	-	71	146	H	
		5.46998	30.08	RMS	35.30	-20.20	0.17	45.35	-	-	-	-	-	71	146	H	
		5.46985	30.51	RMS	35.30	-20.20	0.17	45.78	-	-	-	-	-	71	146	H	
* 5.45998	37.62	Pk	35.30	-20.30	0.00	52.62	-	-	74.00	-21.38	342	100	V				
* 5.42053	40.29	Pk	35.20	-20.30	0.00	55.19	-	-	74.00	-18.81	342	100	V				
5.46998	40.91	Pk	35.30	-20.20	0.00	56.01	-	-	68.20	-12.19	342	100	V				
5.46976	42.20	Pk	35.30	-20.20	0.00	57.30	-	-	68.20	-10.90	342	100	V				
* 5.45998	27.14	RMS	35.30	-20.30	0.17	42.31	54.00	-11.69	-	-	-	342	100	V			
* 5.45736	28.43	RMS	35.30	-20.30	0.17	43.60	54.00	-10.40	-	-	-	342	100	V			
5.46998	29.62	RMS	35.30	-20.20	0.17	44.89	-	-	-	-	-	342	100	V			
5.46974	30.58	RMS	35.30	-20.20	0.17	45.85	-	-	-	-	-	342	100	V			
5670	MIMO	5.72500	36.85	Pk	35.70	-19.70	0.00	52.85	-	-	68.20	-15.35	253	103	H		
		5.75879	39.65	Pk	35.70	-19.50	0.00	55.85	-	-	68.20	-12.35	253	103	H		
		5.72500	37.85	Pk	35.70	-19.70	0.00	53.85	-	-	68.20	-14.35	332	147	V		
		5.76013	42.07	Pk	35.70	-19.50	0.00	58.27	-	-	68.20	-9.93	332	147	V		
		* 5.45998	39.45	Pk	35.30	-20.30	0.00	54.45	-	-	74.00	-19.55	71	183	H		
		* 5.45519	44.33	Pk	35.30	-20.30	0.00	59.33	-	-	74.00	-14.67	71	183	H		
		5.46998	40.57	Pk	35.30	-20.20	0.00	55.67	-	-	68.20	-12.53	71	183	H		
		5.46921	46.13	Pk	35.30	-20.30	0.00	61.13	-	-	68.20	-7.07	71	183	H		
		* 5.45998	29.16	RMS	35.30	-20.30	0.36	44.52	54.00	-9.48	-	-	-	71	183	H	
		* 5.45843	30.41	RMS	35.30	-20.30	0.36	45.77	54.00	-8.23	-	-	-	71	183	H	
		5.46998	29.96	RMS	35.30	-20.20	0.36	45.42	-	-	-	-	-	71	183	H	
		5.46692	31.17	RMS	35.30	-20.30	0.36	46.53	-	-	-	-	-	71	183	H	
* 5.45998	39.97	Pk	35.30	-20.30	0.00	54.97	-	-	74.00	-19.03	342	101	V				
* 5.44462	44.63	Pk	35.30	-20.30	0.00	59.63	-	-	74.00	-14.37	342	101	V				
5.46998	40.73	Pk	35.30	-20.20	0.00	55.83	-	-	68.20	-12.37	342	101	V				
5.46274	45.75	Pk	35.30	-20.30	0.00	60.75	-	-	68.20	-7.45	342	101	V				
* 5.45998	28.98	RMS	35.30	-20.30	0.36	44.34	54.00	-9.66	-	-	-	342	101	V			
* 5.45919	30.39	RMS	35.30	-20.30	0.36	45.75	54.00	-8.25	-	-	-	342	101	V			
5.46998	30.21	RMS	35.30	-20.20	0.36	45.67	-	-	-	-	-	342	101	V			
5.46978	30.92	RMS	35.30	-20.20	0.36	46.38	-	-	-	-	-	342	101	V			
5610	MIMO	5.72500	36.62	Pk	35.70	-19.70	0.00	52.62	-	-	68.20	-15.58	71	104	H		
		5.76018	40.00	Pk	35.70	-19.50	0.00	56.20	-	-	68.20	-12.00	71	104	H		
		5.72500	37.22	Pk	35.70	-19.70	0.00	53.22	-	-	68.20	-14.98	326	167	V		
		5.76004	41.72	Pk	35.70	-19.50	0.00	57.92	-	-	68.20	-10.28	326	167	V		

Note1. Pk - Peak detector, RMS - RMS detector  
 Note2. \* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

**HARMONICS AND SPURIOUS EMISSIONS(WORST CASE: 802.11ax HE20 / 4RU / 5500 MHz)**  
**5500 MHz HORIZONTAL**



**5500 MHz VERTICAL**



Note. Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

**5500 MHz DATA**

**Radiated Emissions**

Frequency (GHz)	Mask Reading (dBuV)	Det	3117_00218957	5GHz_LF[S]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Altitude (Degs)	Height (cm)	Polarity
* 1.52491	47.99	PK-U	28.4	-35.6	0	40.79	-	-	74	-33.21	-	-	0	100	H
* 1.52933	45.84	PK-U	28.4	-35.6	0	38.64	-	-	74	-35.36	-	-	0	100	V

Frequency (GHz)	Mask Reading (dBuV)	Det	3117_00218957	10dB_ATT[S]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Altitude (Degs)	Height (cm)	Polarity
5.75758	42.44	PK-U	35.7	-19.6	0	55.54	-	-	-	-	68.2	-9.66	0	100	H
5.7567	41.2	PK-U	35.7	-19.6	0	57.3	-	-	-	-	68.2	-10.9	0	100	V

Frequency (GHz)	Mask Reading (dBuV)	Det	3117_00218957	6GHz_HPS[S]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Altitude (Degs)	Height (cm)	Polarity
* 7.34219	36.38	PK-U	36	-24.6	0	47.78	-	-	74	-26.22	-	-	343	193	H
* 7.33877	36.19	PK-U	36	-24.6	0	47.59	-	-	74	-26.41	-	-	120	219	V
* 11.00069	34.53	PK-U	38.5	-21.2	0	51.83	-	-	74	-22.17	-	-	360	100	H
* 10.99876	34.77	PK-U	38.5	-21.1	0	52.17	-	-	74	-21.83	-	-	360	100	V
16.49976	33.63	PK-U	42	-19.3	0	56.33	-	-	-	-	68.2	-11.87	360	100	H
16.49553	33.26	PK-U	42	-19.2	0	56.06	-	-	-	-	68.2	-12.14	360	100	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 PK-U - U-NII: Maximum Peak

**HARMONICS AND SPURIOUS EMISSIONS TEST DATA**

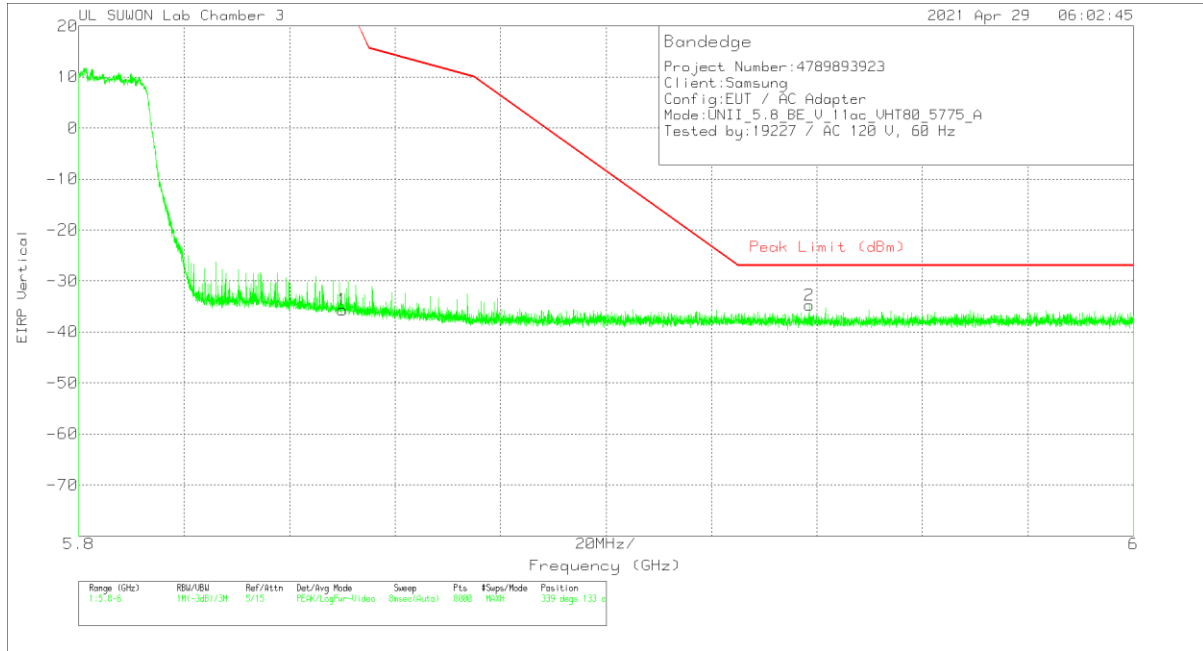
Mode	Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Non-Restricted [dBuV/m]	Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity			
802.11a	5500	MIMO	** 1.52321	51.11	PK-U	28.40	-35.60	0.00	43.91	-	-	74.00	-30.09	-	-	54	141	H			
			** 1.52409	41.42	ADR	28.40	-35.60	0.15	34.37	54.00	-19.63	-	-	-	-	-	54	141	H		
			** 1.52402	44.89	PK-U	28.40	-35.60	0.00	37.69	-	-	-	74.00	-36.31	-	-	11	120	V		
			** 1.52445	33.34	ADR	28.40	-35.60	0.15	26.29	54.00	-27.71	-	-	-	-	-	11	120	V		
			5.762	38.95	PK-U	35.70	-19.50	0.00	55.15	-	-	-	-	-	68.20	-13.05	144	106	H		
			5.760	40.51	PK-U	35.70	-19.50	0.00	56.71	-	-	-	-	-	68.20	-11.49	323	135	V		
			* 8.24823	35.25	PK-U	36.20	-23.20	0.00	48.25	-	-	-	74.00	-25.75	-	-	360	100	H		
			* 8.25066	34.02	PK-U	36.20	-23.20	0.00	46.92	-	-	-	74.00	-27.08	-	-	360	100	V		
			** 11.0008	32.44	PK-U	38.50	-21.20	0.00	49.74	-	-	-	74.00	-24.26	-	-	360	100	H		
			** 11.00164	32.78	PK-U	38.50	-21.10	0.00	50.18	-	-	-	74.00	-23.82	-	-	360	100	V		
			** 16.499	31.80	PK-U	42.00	-19.30	0.00	54.50	-	-	-	-	-	68.20	-13.70	360	100	H		
			** 16.498	31.84	PK-U	42.00	-19.30	0.00	54.54	-	-	-	-	-	68.20	-13.66	360	100	V		
			* 1.52379	47.94	PK-U	28.40	-35.60	0.00	40.74	-	-	-	-	74.00	-33.26	-	-	360	100	H	
			* 1.52403	46.45	PK-U	28.40	-35.60	0.00	39.25	-	-	-	-	74.00	-34.75	-	-	360	100	V	
			5.760	41.31	PK-U	35.70	-19.50	0.00	57.51	-	-	-	-	-	68.20	-10.69	360	100	H		
			5.763	41.98	PK-U	35.70	-19.50	0.00	58.18	-	-	-	-	-	68.20	-10.02	360	100	V		
			* 8.36977	33.56	PK-U	36.20	-23.20	0.00	46.55	-	-	-	74.00	-27.44	-	-	360	100	H		
			* 8.37086	33.96	PK-U	36.20	-23.20	0.00	46.96	-	-	-	74.00	-27.04	-	-	360	100	V		
			** 11.16031	32.69	PK-U	38.60	-21.50	0.00	49.79	-	-	-	74.00	-24.21	-	-	360	100	H		
			** 11.15885	32.78	PK-U	38.60	-21.40	0.00	49.98	-	-	-	74.00	-24.02	-	-	360	100	V		
	16.740	30.80	PK-U	42.30	-18.80	0.00	54.30	-	-	-	-	-	68.20	-13.90	360	100	H				
	16.743	31.39	PK-U	42.30	-18.80	0.00	54.89	-	-	-	-	-	68.20	-13.31	360	100	V				
	* 1.52415	47.89	PK-U	28.40	-35.60	0.00	40.69	-	-	-	-	74.00	-33.31	-	-	360	100	H			
	* 1.52319	46.56	PK-U	28.40	-35.60	0.00	39.36	-	-	-	-	74.00	-34.64	-	-	360	100	V			
	5.760	41.44	PK-U	35.70	-19.50	0.00	57.64	-	-	-	-	-	68.20	-10.56	360	100	H				
	5.759	41.22	PK-U	35.70	-19.50	0.00	57.42	-	-	-	-	-	68.20	-10.78	360	100	V				
	8.551	32.83	PK-U	36.50	-22.50	0.00	46.83	-	-	-	-	-	68.20	-21.37	360	100	H				
	8.550	33.10	PK-U	36.50	-22.50	0.00	47.10	-	-	-	-	-	68.20	-21.10	360	100	V				
	* 11.4	31.31	PK-U	38.60	-21.40	0.00	48.51	-	-	-	74.00	-25.49	-	-	360	100	H				
	** 11.40099	30.77	PK-U	38.60	-21.40	0.00	47.97	-	-	-	74.00	-26.03	-	-	360	100	V				
	17.101	30.38	PK-U	42.30	-18.10	0.00	54.58	-	-	-	-	-	68.20	-13.62	360	100	H				
	17.102	30.10	PK-U	42.30	-18.10	0.00	54.30	-	-	-	-	-	68.20	-13.90	360	100	V				
	* 1.52477	47.68	PK-U	28.40	-35.60	0.00	40.48	-	-	-	-	74.00	-33.52	-	-	360	100	H			
	* 1.52593	46.22	PK-U	28.40	-35.60	0.00	39.02	-	-	-	-	74.00	-34.98	-	-	360	100	V			
	5.760	41.96	PK-U	35.70	-19.50	0.00	58.16	-	-	-	-	-	68.20	-10.04	360	100	H				
	5.765	41.22	PK-U	35.70	-19.60	0.00	57.32	-	-	-	-	-	68.20	-10.88	360	100	V				
	8.580	32.52	PK-U	36.50	-22.80	0.00	46.22	-	-	-	-	-	68.20	-21.98	360	100	H				
	8.581	33.11	PK-U	36.50	-22.80	0.00	46.81	-	-	-	-	-	68.20	-21.39	360	100	V				
	* 11.44261	32.23	PK-U	38.60	-21.30	0.00	49.53	-	-	-	74.00	-24.47	-	-	360	100	H				
	* 11.43932	32.20	PK-U	38.60	-21.30	0.00	49.50	-	-	-	74.00	-24.50	-	-	360	100	V				
	17.159	30.98	PK-U	42.20	-18.00	0.00	55.18	-	-	-	-	-	68.20	-13.02	360	100	H				
	17.161	31.37	PK-U	42.20	-18.00	0.00	55.57	-	-	-	-	-	68.20	-12.63	360	100	V				
	802.11n (HT20) Spot-Check	5500	MIMO	5.764	42.21	PK-U	35.70	-19.50	0.00	58.41	-	-	-	-	68.20	-9.79	360	100	H		
				5.752	40.86	PK-U	35.70	-19.60	0.00	56.96	-	-	-	-	68.20	-11.24	360	100	V		
				* 8.24262	35.93	PK-U	36.20	-23.20	0.00	48.93	-	-	-	74.00	-25.07	-	-	360	100	H	
				* 8.24669	36.57	PK-U	36.20	-23.20	0.00	49.47	-	-	-	74.00	-24.53	-	-	360	100	V	
				** 11.00829	34.06	PK-U	38.50	-21.20	0.00	51.36	-	-	-	74.00	-22.64	-	-	360	100	H	
				** 11.09888	34.77	PK-U	38.50	-21.10	0.00	52.17	-	-	-	74.00	-21.83	-	-	360	100	V	
				** 16.503	34.31	PK-U	42.00	-19.20	0.00	57.11	-	-	-	-	-	68.20	-11.09	360	100	H	
				** 16.497	33.82	PK-U	42.00	-19.30	0.00	56.52	-	-	-	-	-	68.20	-11.68	360	100	V	
				* 1.52491	47.99	PK-U	28.40	-35.60	0.00	40.79	-	-	-	-	74.00	-33.21	-	-	0	100	H
				* 1.52933	45.84	PK-U	28.40	-35.60	0.00	38.64	-	-	-	-	74.00	-35.36	-	-	0	100	V
	5.758	42.44	PK-U	35.70	-19.60	0.00	58.54	-	-	-	-	-	68.20	-9.66	0	100	H				
	5.757	41.20	PK-U	35.70	-19.60	0.00	57.30	-	-	-	-	-	68.20	-10.90	0	100	V				
	* 7.34218	36.38	PK-U	36.00	-24.60	0.00	47.78	-	-	-	74.00	-26.22	-	-	343	193	H				
	* 7.33877	36.19	PK-U	36.00	-24.60	0.00	47.59	-	-	-	74.00	-26.41	-	-	120	219	V				
	** 11.00069	34.53	PK-U	38.50	-21.20	0.00	51.83	-	-	-	74.00	-22.17	-	-	360	100	H				
	* 10.99876	34.77	PK-U	38.50	-21.10	0.00	52.17	-	-	-	74.00	-21.83	-	-	360	100	V				
	16.500	33.63	PK-U	42.00	-19.30	0.00	56.33	-	-	-	-	-	68.20	-11.87	360	100	H				
	16.496	33.26	PK-U	42.00	-19.20	0.00	56.06	-	-	-	-	-	68.20	-12.14	360	100	V				

Note1. PK-U - U-NII: Maximum Peak / ADR - U-NII AD primary method, RMS average  
 Note2. \* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

### 11.4. TX ABOVE 1GHz 2Tx MODE IN THE 5.8 GHz BAND

**BANDEDGE (WORST CASE: 802.11ac VHT80 UPPER SIDE / 5775 MHz)**

**VERTICAL PEAK DATA**



**Trace Markers**

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	3117_00218957	10dB_ATT[dB]	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85001	-63.96	Pk	35.9	-19.4	11.8	0	-35.66	26.99	-62.65	339	133	V
2	5.93852	-63.14	Pk	36	-19.4	11.8	0	-34.74	-27	-7.74	339	133	V

Pk - Peak detector

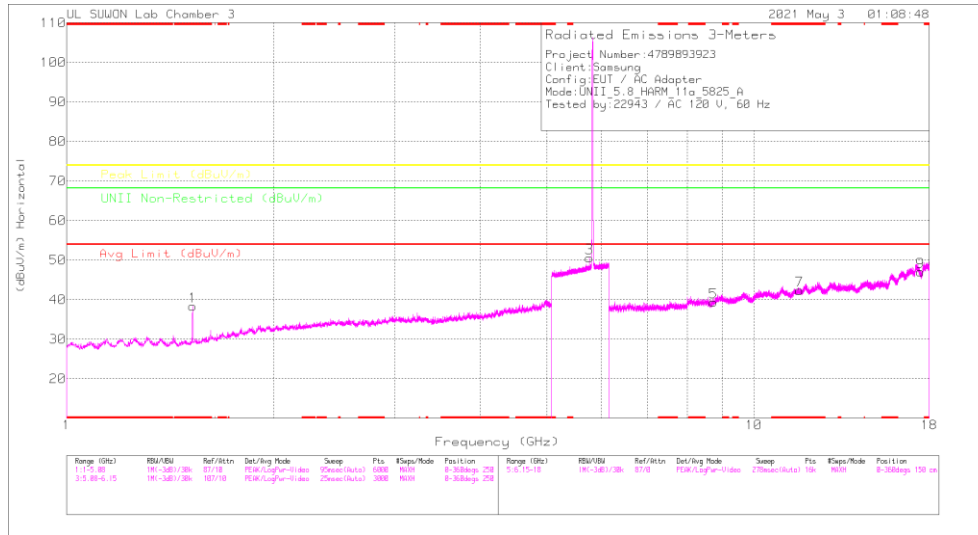


**BANDEDGE TEST DATA**

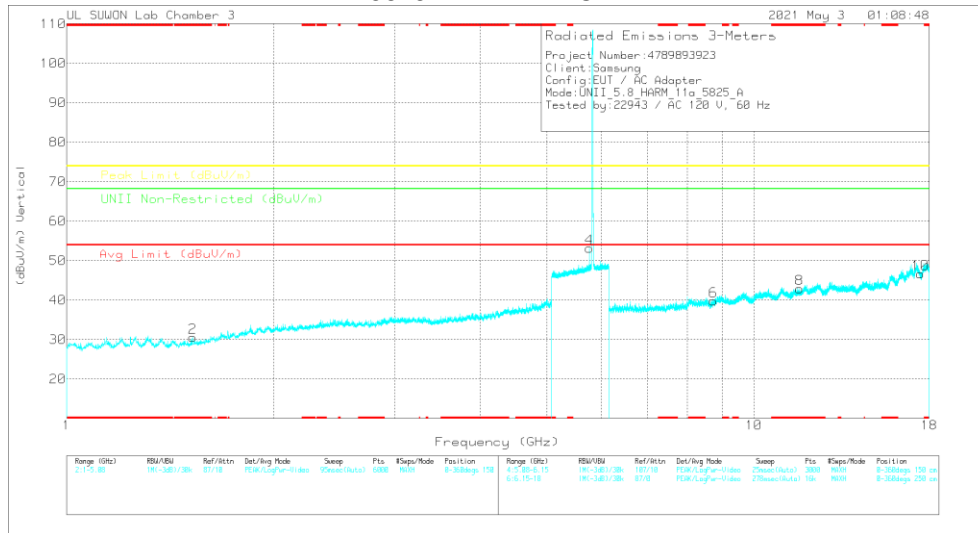
Mode	Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBm]	Detector Mode	ANT Factor	Loss [dB]	Conv. F [dB]	DC Corr [dB]	Result [dBm]	PK Limit [dBm]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
802.11a	5745	MIMO	5.72500	-63.99	Pk	35.60	-19.70	11.80	0.00	-36.29	27.00	-63.29	24	156	H
			5.64626	-63.92	Pk	35.50	-19.90	11.80	0.00	-36.52	-27.00	-9.52	24	156	H
			5.72500	-63.01	Pk	35.60	-19.70	11.80	0.00	-35.31	27.00	-62.31	332	117	V
			5.64870	-63.28	Pk	35.50	-19.90	11.80	0.00	-35.88	-27.00	-8.88	332	117	V
			5.85001	-66.34	Pk	35.90	-19.40	11.80	0.00	-38.04	26.99	-65.03	17	127	H
	5825	MIMO	5.99847	-63.93	Pk	36.00	-19.30	11.80	0.00	-35.43	-27.00	-8.43	17	127	H
			5.85001	-65.47	Pk	35.90	-19.40	11.80	0.00	-37.17	26.99	-64.16	334	138	V
			5.99665	-63.81	Pk	36.00	-19.30	11.80	0.00	-35.31	-27.00	-8.31	334	138	V
			5.72500	-61.90	Pk	35.60	-19.70	11.80	0.00	-34.20	27.00	-61.20	254	117	H
			5.62791	-64.06	Pk	35.50	-20.00	11.80	0.00	-36.76	-27.00	-9.76	254	117	H
802.11n (HT20)	5745	MIMO	5.72500	-60.29	Pk	35.60	-19.70	11.80	0.00	-32.59	27.00	-59.59	328	144	V
			5.62567	-63.58	Pk	35.50	-20.00	11.80	0.00	-36.28	-27.00	-9.28	328	144	V
			5.85001	-65.89	Pk	35.90	-19.40	11.80	0.00	-37.59	26.99	-64.58	249	102	H
			5.99427	-63.68	Pk	36.00	-19.30	11.80	0.00	-35.18	-27.00	-8.18	249	102	H
			5.85001	-63.76	Pk	35.90	-19.40	11.80	0.00	-35.46	26.99	-62.45	330	140	V
	5825	MIMO	5.93802	-63.52	Pk	36.00	-19.40	11.80	0.00	-35.12	-27.00	-8.12	330	140	V
			5.72500	-59.48	Pk	35.60	-19.70	11.80	0.00	-31.78	27.00	-58.78	261	106	H
			5.63745	-64.06	Pk	35.50	-20.00	11.80	0.00	-36.76	-27.00	-9.76	261	106	H
			5.63171	-64.22	Pk	35.50	-20.00	11.80	0.00	-36.92	-27.00	-9.92	334	149	V
			5.85001	-66.71	Pk	35.90	-19.40	11.80	0.00	-38.41	26.99	-65.40	268	120	H
802.11n (HT40)	5755	MIMO	5.97357	-63.58	Pk	36.00	-19.30	11.80	0.00	-35.08	-27.00	-8.08	268	120	H
			5.85001	-65.20	Pk	35.90	-19.40	11.80	0.00	-36.90	26.99	-63.89	342	133	V
			5.99105	-63.51	Pk	36.00	-19.30	11.80	0.00	-35.01	-27.00	-8.01	342	133	V
			5.72500	-64.22	Pk	35.60	-19.70	11.80	0.00	-36.52	27.00	-63.52	220	196	H
			5.64621	-63.41	Pk	35.50	-19.90	11.80	0.00	-36.01	-27.00	-9.01	220	196	H
	5795	MIMO	5.72500	-61.44	Pk	35.60	-19.70	11.80	0.00	-33.74	27.00	-60.74	332	131	V
			5.62555	-63.21	Pk	35.50	-20.00	11.80	0.00	-35.91	-27.00	-8.91	332	131	V
			5.85001	-65.73	Pk	35.90	-19.40	11.80	0.00	-37.43	26.99	-64.42	24	133	H
			5.97015	-63.93	Pk	36.00	-19.40	11.80	0.00	-35.53	-27.00	-8.53	24	133	H
			5.85001	-63.96	Pk	35.90	-19.40	11.80	0.00	-35.66	26.99	-62.65	339	133	V
802.11ac (VHT80)	5775 (Lower Side)	MIMO	5.93852	-63.14	Pk	36.00	-19.40	11.80	0.00	-34.74	-27.00	-7.74	339	133	V

Note. Pk - Peak detector

**HARMONICS AND SPURIOUS EMISSIONS(WORST CASE: 802.11a / 5825 MHz)**  
**5825 MHz HORIZONTAL**



**5825 MHz VERTICAL**



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

**5825 MHz DATA**

**Radiated Emissions**

Frequency (GHz)	Meas Reading (dBuV)	Det	3117_00218967	5GHz_LF[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Altitude (Degs)	Height (cm)	Polarity	
* 1.52406	49.03	PK-U	28.4	-35.6	0	41.83	-	-	74	-32.17	-	-	-	360	100	H
* 1.52506	46.68	PK-U	28.4	-35.6	0	39.48	-	-	74	-34.52	-	-	-	360	100	V

Frequency (GHz)	Meas Reading (dBuV)	Det	3117_00218967	10dB_ATT[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Altitude (Degs)	Height (cm)	Polarity
5.76019	42.54	PK-U	35.7	-19.5	0	58.74	-	-	-	-	68.2	-9.46	360	100	H
5.75962	42.18	PK-U	35.7	-19.5	0	58.38	-	-	-	-	68.2	-9.82	360	100	V

Frequency (GHz)	Meas Reading (dBuV)	Det	3117_00218967	6GHz_HPS[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Altitude (Degs)	Height (cm)	Polarity
8.74077	35.6	PK-U	38.5	-22.5	0	49.6	-	-	-	-	68.2	-18.6	360	100	H
8.74042	35.63	PK-U	38.5	-22.4	0	49.73	-	-	-	-	68.2	-18.47	360	100	V
* 11.64851	35.11	PK-U	38.8	-21.5	0	52.41	-	-	74	-21.59	-	-	360	100	H
* 11.653	35.18	PK-U	38.9	-21.5	0	52.58	-	-	74	-21.42	-	-	360	100	V
17.47985	32.15	PK-U	42	-17	0	57.15	-	-	-	-	68.2	-11.05	360	100	H
17.47543	31.72	PK-U	42	-17	0	56.72	-	-	-	-	68.2	-11.48	360	100	V

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

PK-U - U-NII: Maximum Peak

**HARMONICS AND SPURIOUS EMISSIONS TEST DATA**

802.11a	5745	MIMO	*1.52399	47.91	PK-U	28.40	-35.60	0.00	40.71	-	-	74.00	-33.29	-	-	360	100	H	
			*1.52338	46.22	PK-U	28.40	-35.60	0.00	39.02	-	-	74.00	-34.98	-	-	360	100	V	
			8.612	34.84	PK-U	36.50	-22.70	0.00	48.64	-	-	-	-	68.20	-19.56	360	100	H	
			8.616	34.92	PK-U	36.50	-22.70	0.00	48.72	-	-	-	-	68.20	-19.48	360	100	V	
			*11.49665	34.12	PK-U	38.70	-21.40	0.00	51.42	-	-	74.00	-22.58	-	-	360	100	H	
			*11.49514	34.68	PK-U	38.70	-21.40	0.00	51.98	-	-	74.00	-22.02	-	-	360	100	V	
	802.11a	5785	MIMO	17.243	33.27	PK-U	42.10	-17.20	0.00	58.17	-	-	-	-	68.20	-10.03	360	100	H
				17.244	33.40	PK-U	42.10	-17.20	0.00	58.30	-	-	-	-	68.20	-9.90	360	100	V
				*1.52431	48.27	PK-U	28.40	-35.60	0.00	41.07	-	-	74.00	-32.93	-	-	360	100	H
				*1.52437	45.73	PK-U	28.40	-35.60	0.00	38.53	-	-	74.00	-35.47	-	-	360	100	V
				8.678	33.12	PK-U	36.50	-22.60	0.00	47.02	-	-	-	-	68.20	-21.18	360	100	H
				8.678	32.95	PK-U	36.50	-22.60	0.00	46.85	-	-	-	-	68.20	-21.35	360	100	V
802.11a		5825	MIMO	*11.57153	33.32	PK-U	38.80	-21.60	0.00	50.52	-	-	74.00	-23.48	-	-	360	100	H
				*11.57223	33.06	PK-U	38.80	-21.60	0.00	50.26	-	-	74.00	-23.74	-	-	360	100	V
				17.356	30.74	PK-U	42.00	-17.40	0.00	55.34	-	-	-	-	68.20	-12.56	360	100	H
				17.353	30.71	PK-U	42.00	-17.40	0.00	55.31	-	-	-	-	68.20	-12.89	360	100	V
				*1.52406	49.03	PK-U	28.40	-35.60	0.00	41.83	-	-	74.00	-32.17	-	-	360	100	H
				*1.52506	46.68	PK-U	28.40	-35.60	0.00	39.48	-	-	74.00	-34.52	-	-	360	100	V
	802.11n (HT20) Spot-Check	5825	MIMO	5.760	42.18	PK-U	35.70	-19.50	0.00	58.38	-	-	-	-	68.20	-9.82	360	100	V
				8.741	35.60	PK-U	36.50	-22.50	0.00	49.60	-	-	-	-	68.20	-18.60	360	100	H
				8.740	35.63	PK-U	36.50	-22.40	0.00	49.73	-	-	-	-	68.20	-18.47	360	100	V
				*11.64851	35.11	PK-U	38.80	-21.50	0.00	52.41	-	-	74.00	-21.59	-	-	360	100	H
				*11.653	35.18	PK-U	38.90	-21.50	0.00	52.58	-	-	74.00	-21.42	-	-	360	100	V
				17.480	32.15	PK-U	42.00	-17.00	0.00	57.15	-	-	-	-	68.20	-11.05	360	100	H
802.11ac (VHT80) Spot-Check		5775	MIMO	17.475	31.72	PK-U	42.00	-17.00	0.00	56.72	-	-	-	-	68.20	-11.48	360	100	V
				*1.52462	48.33	PK-U	28.40	-35.60	0.00	41.13	-	-	74.00	-32.87	-	-	360	100	H
				*1.52424	46.58	PK-U	28.40	-35.60	0.00	39.38	-	-	74.00	-34.62	-	-	360	100	V
				8.674	35.37	PK-U	36.50	-22.70	0.00	49.17	-	-	-	-	68.20	-19.03	360	100	H
				8.677	35.13	PK-U	36.50	-22.60	0.00	49.03	-	-	-	-	68.20	-19.17	360	100	V
				*11.56993	34.60	PK-U	38.80	-21.70	0.00	51.70	-	-	74.00	-22.30	-	-	360	100	H
	802.11ax (HE20) DRU	5745	MIMO	*11.56587	34.68	PK-U	38.80	-21.60	0.00	51.88	-	-	74.00	-22.12	-	-	360	100	V
				17.353	32.31	PK-U	42.00	-17.40	0.00	56.91	-	-	-	-	68.20	-11.29	360	100	H
				17.353	32.50	PK-U	42.00	-17.40	0.00	57.10	-	-	-	-	68.20	-11.10	360	100	V
				*1.5242	43.27	PK-U	28.90	-30.70	0.00	41.47	-	-	74.00	-32.53	-	-	360	100	H
				*1.52407	41.57	PK-U	28.90	-30.70	0.00	39.77	-	-	74.00	-34.23	-	-	360	100	V
				8.665	34.54	PK-U	36.20	-21.80	0.00	48.94	-	-	-	-	68.20	-19.26	360	100	H
802.11ax (HE20) DRU		5745	MIMO	8.666	34.55	PK-U	36.20	-21.80	0.00	48.95	-	-	-	-	68.20	-19.25	360	100	V
				*11.54826	33.73	PK-U	38.30	-19.00	0.00	53.03	-	-	74.00	-20.97	-	-	360	100	H
				*11.54841	32.82	PK-U	38.30	-19.00	0.00	52.12	-	-	74.00	-21.88	-	-	360	100	V
				17.353	34.70	PK-U	41.00	-18.30	0.00	57.40	-	-	-	-	68.20	-10.80	360	100	H
				17.356	34.06	PK-U	41.00	-18.40	0.00	56.66	-	-	-	-	68.20	-11.54	360	100	V
				*1.52356	47.95	PK-U	28.40	-35.60	0.00	40.75	-	-	74.00	-33.25	-	-	0	100	H
*1.52744	46.36	PK-U	28.40	-35.60	0.00	39.16	-	-	74.00	-34.84	-	-	0	100	V				
*11.49228	34.68	PK-U	38.70	-21.30	0.00	52.08	-	-	74.00	-21.92	-	-	0	100	H				
*11.49296	34.72	PK-U	38.70	-21.30	0.00	52.12	-	-	74.00	-21.88	-	-	0	100	V				
17.235	32.78	PK-U	42.10	-17.30	0.00	57.58	-	-	-	-	68.20	-10.62	0	100	H				
17.232	32.73	PK-U	42.10	-17.40	0.00	57.43	-	-	-	-	68.20	-10.77	0	100	V				

Note1. PK-U - U-NII: Maximum Peak / ADR - U-NII AD primary method, RMS average  
 Note2. \* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

## 11.5. Spurious Emissions for Simultaneous Transmission

### 11.5.1. Worst test case RSDB condition

Case 1	2.4 GHz WLAN ANT1 + ANT2	5GHz WLAN ANT1 + ANT2
Mode	802.11n HT20	802.11ax HE20
Channel	6	40
Frequency[MHz]	2437	5200
Tone	-	26T
RU	-	4
Data Rate	MCS 0	MCS 0
Axis (Worst)	X & Y	

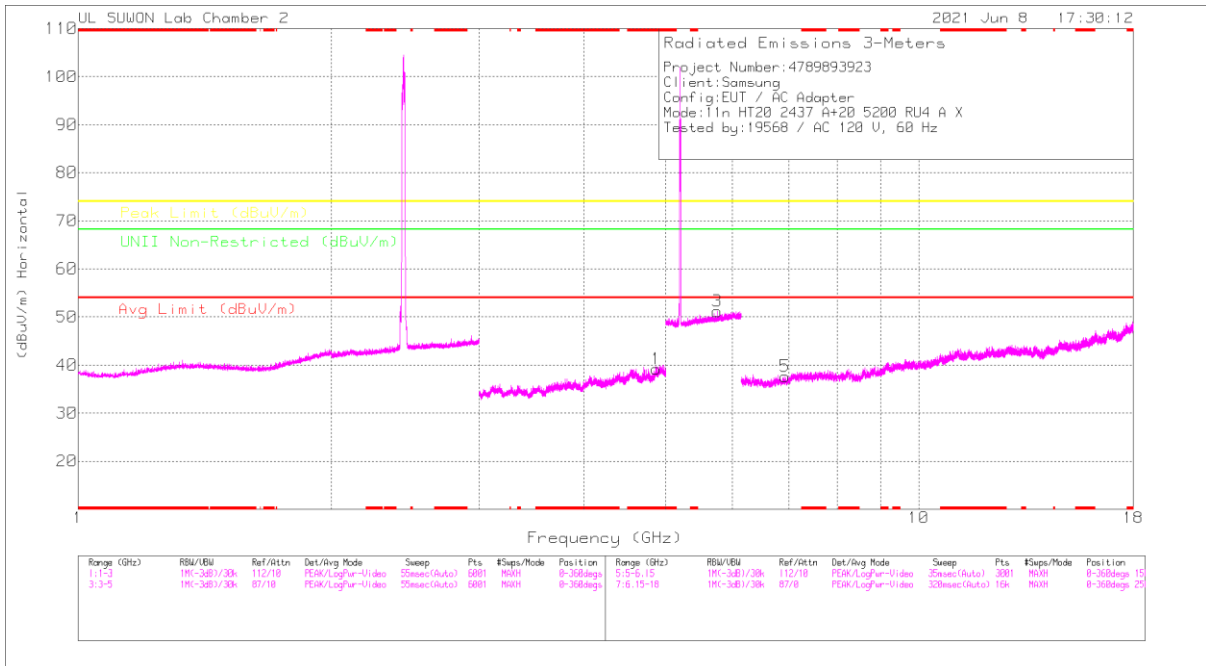
#### **NOTE**

The lowest margin condition among the channels and modes were selected for test. Low, mid, and high channels of 2.4GH WLAN were tested, and the worst case configuration & data were listed in the test report.

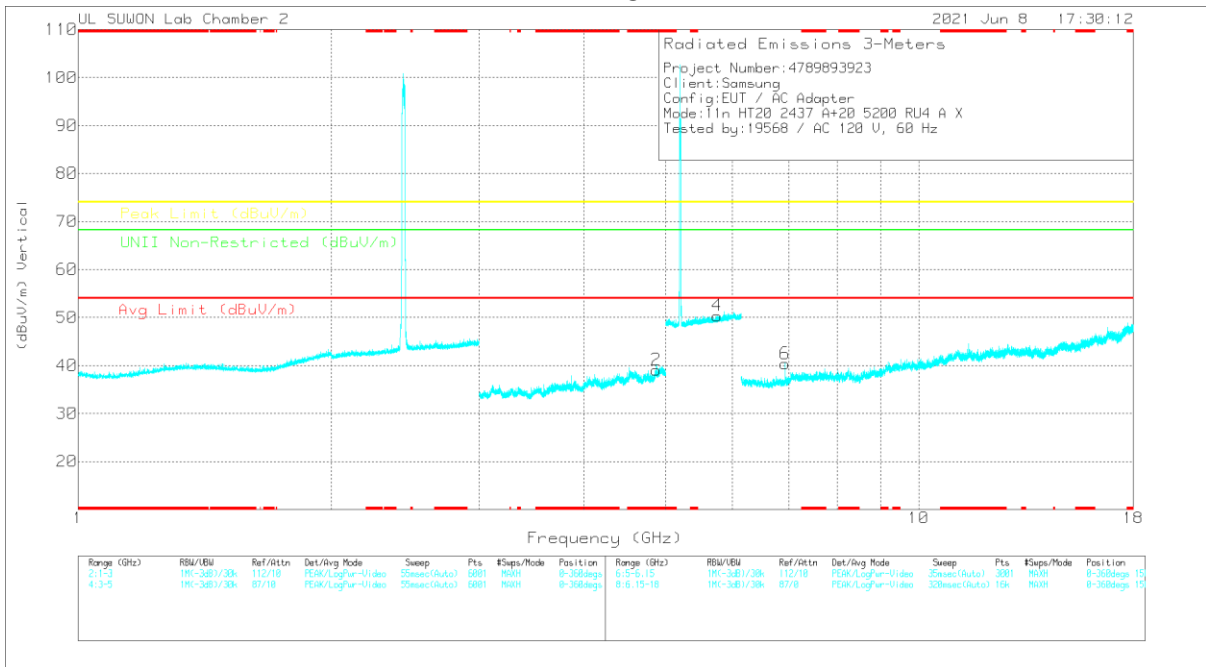
### 11.5.2. Test Results

#### Spurious emission for Simultaneous Transmission Case1. – X axis

#### HORIZONTAL



#### VERTICAL



Radiated Emissions

Frequency (GHz)	Meas Reading (dBuV)	Det	3117_00168724	5GHz_LP1(dB)	DTS_Noise(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNI Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.872	45.05	PK2	34.1	-26.5	.3	0	52.95	-	-	74	-21.05	-	-	171	100	H
* 4.8737	31.3	MAv1	34.1	-26.6	.3	.09	39.19	54	-14.81	-	-	-	-	171	100	H
* 4.87214	45.32	PK2	34.1	-26.5	.3	0	53.22	-	-	74	-20.78	-	-	294	178	V
* 4.8737	31.46	MAv1	34.1	-26.6	.3	.09	39.35	54	-14.85	-	-	-	-	294	178	V

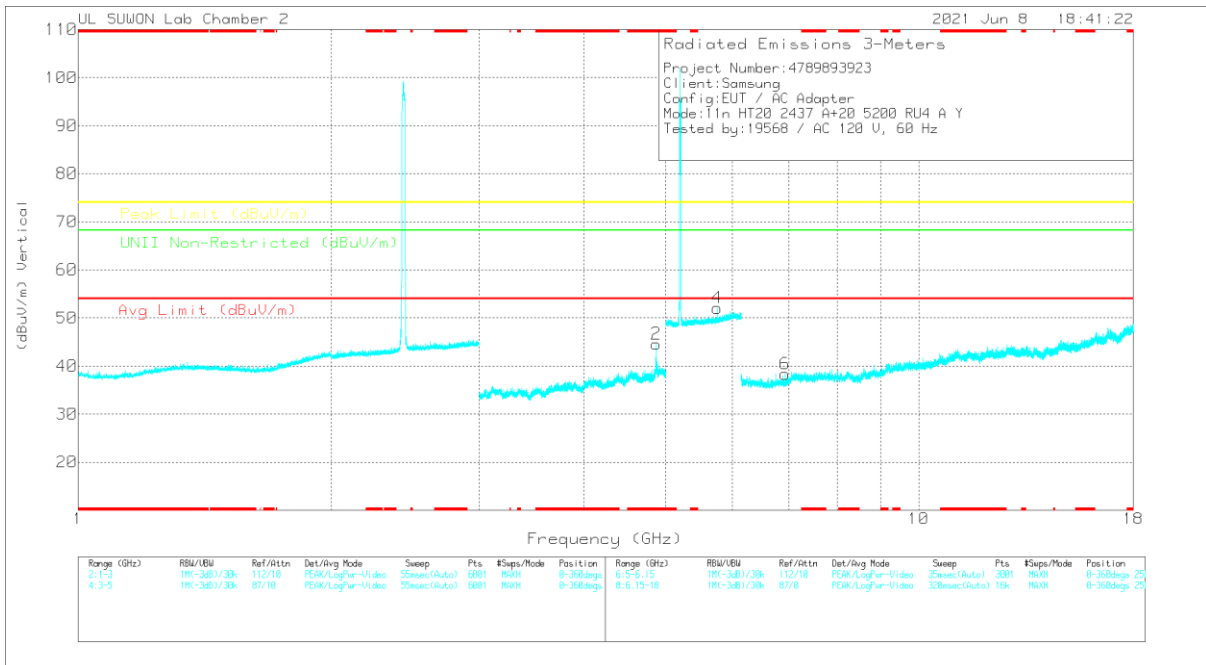
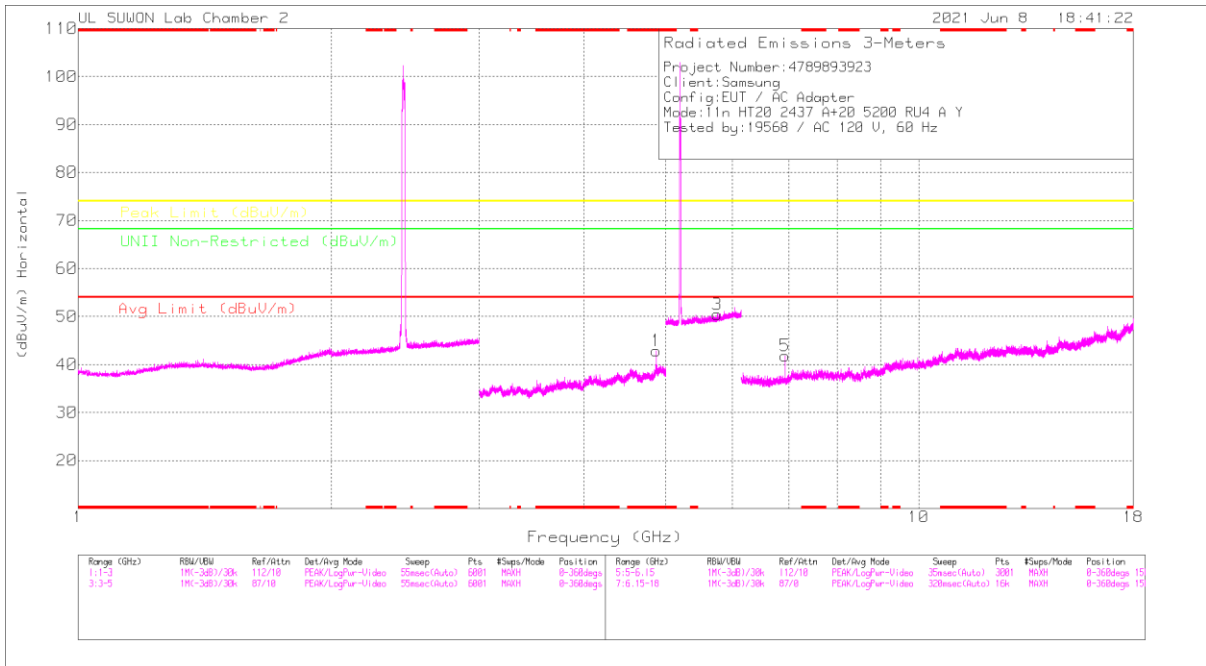
Frequency (GHz)	Meas Reading (dBuV)	Det	3117_00168724	10dB_ATT(dB)	DTS_Noise(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNI Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5.76113	42.24	PK-U	34.8	-17	.4	0	52.44	-	-	-	-	68.2	-7.76	360	100	H
5.75957	43.07	PK-U	34.7	-17	.4	0	61.17	-	-	-	-	68.2	-7.03	360	100	V

Frequency (GHz)	Meas Reading (dBuV)	Det	3117_00168724	6GHz_HP(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNI Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6.93522	36.83	PK-U	35.8	-24.9	0	47.73	-	-	-	-	68.2	-20.47	360	100	H
6.9332	37.18	PK-U	35.8	-24.9	0	48.08	-	-	-	-	68.2	-20.12	360	100	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 PK2 - KDB558074 Method: Maximum Peak  
 MAv1 - KDB558074 Option 1 Maximum RMS Average  
 PK-U - U-NII: Maximum Peak

**Case1. – Y axis**



Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	5GHz_LP1(dB)	DTS_Noise(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.87232	45.09	PK2	34.1	-26.5	.3	0	52.99	-	-	74	-21.01	-	-	90	171	H
* 4.87376	31.4	MAv1	34.1	-26.6	.3	.09	39.29	54	-14.71	-	-	-	-	90	171	H
* 4.87202	48.61	PK2	34.1	-26.5	.3	0	56.51	-	-	74	-17.49	-	-	321	139	V
* 4.8736	34.4	MAv1	34.1	-26.6	.3	.09	42.29	54	-11.71	-	-	-	-	321	139	V

Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	10dB_ATT(dB)	DTS_Noise(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5.78006	42.92	PK-U	34.7	-17	.4	0	51.02	-	-	-	-	68.2	-7.18	360	100	H
5.76134	42.04	PK-U	34.8	-17	.4	0	60.24	-	-	-	-	68.2	-7.96	360	100	V

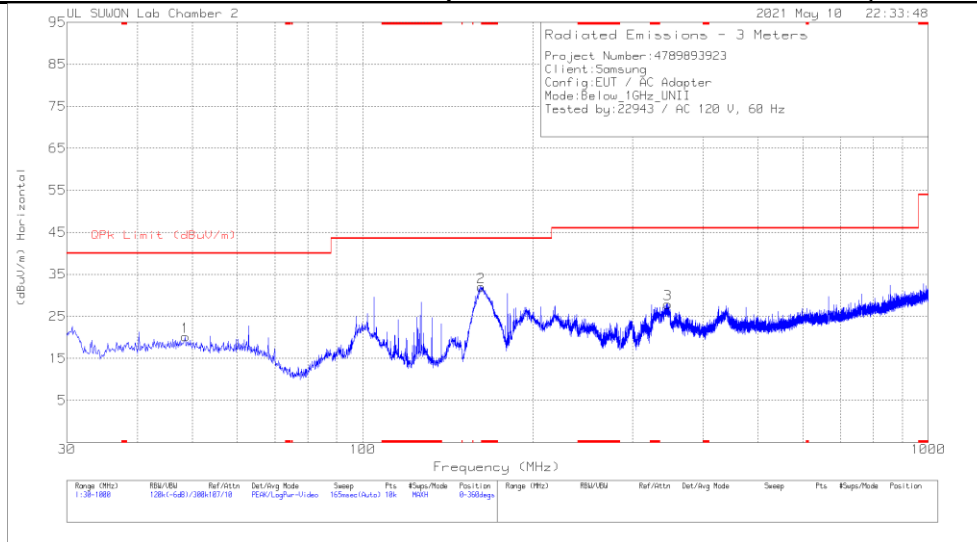
  

Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	6GHz_HP(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6.033	37	PK-U	35.8	-24.9	0	47.9	-	-	-	-	68.2	-20.3	360	100	H
6.93376	37.25	PK-U	35.8	-24.9	0	48.15	-	-	-	-	68.2	-20.05	360	100	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 PK2 - KDB558074 Method: Maximum Peak  
 MAv1 - KDB558074 Option 1 Maximum RMS Average  
 PK-U - U-NII: Maximum Peak



## 12. WORST-CASE BELOW 1 GHz SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)



## SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)



### Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Below_1G[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	48.624	32.07	Pk	19.9	-31.8	20.17	40	-19.83	0-360	300	H
2	* 162.211	48.7	Pk	14.3	-31	32	43.52	-11.52	0-360	200	H
3	346.317	37.22	Pk	20.8	-30.1	27.92	46.02	-18.1	0-360	100	H
4	30.776	51.77	Pk	15.5	-32.1	35.17	40	-4.83	0-360	100	V
5	* 126.127	52.38	Pk	14.6	-31.1	35.88	43.52	-7.64	0-360	100	V
6	* 335.259	38.8	Pk	20.2	-30.1	28.9	46.02	-17.12	0-360	100	V

### Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Below_1G[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
30.776	47.82	Qp	15.5	-32.1	31.22	40	-8.78	63	100	V

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

Pk - Peak detector

Qp - Quasi-Peak detector

### 13. AC POWER LINE CONDUCTED EMISSIONS

#### LIMITS

FCC §15.207 (a)  
IC RSS-GEN Clause 8.8

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 <sup>*</sup>	56 to 46 <sup>*</sup>
0.5-5	56	46
5-30	60	50

<sup>\*</sup>Decreases with the logarithm of the frequency.

#### TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

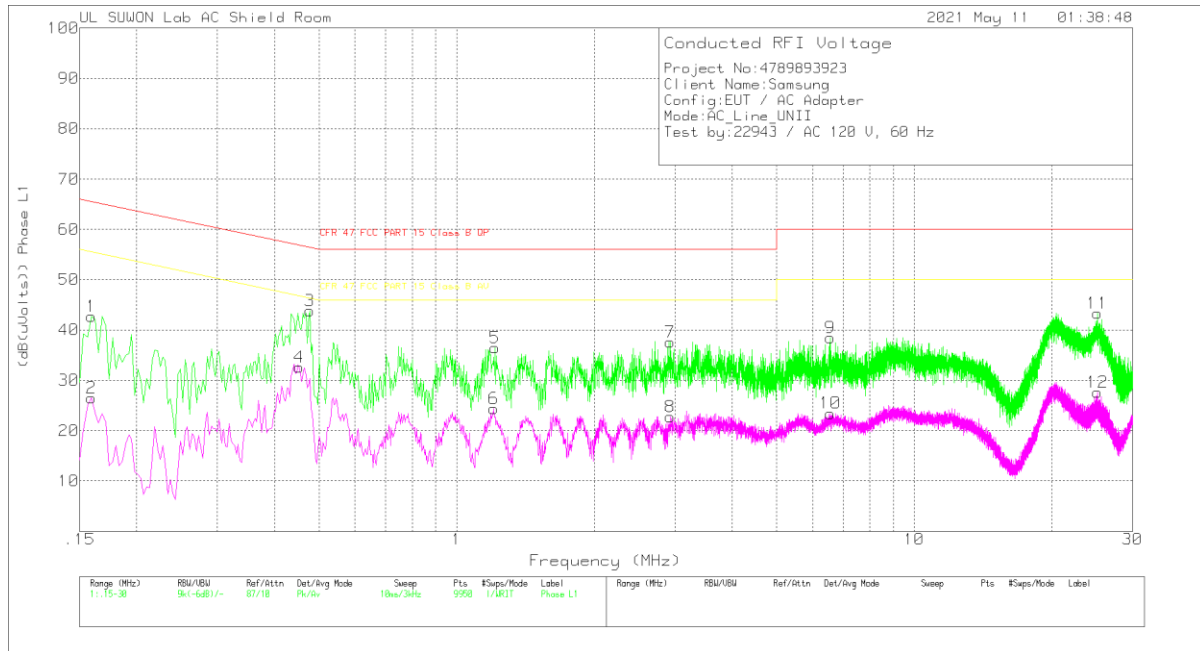
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

#### RESULTS

**WORST EMISSIONS**

**LINE 1 DATA**



**Trace Markers**

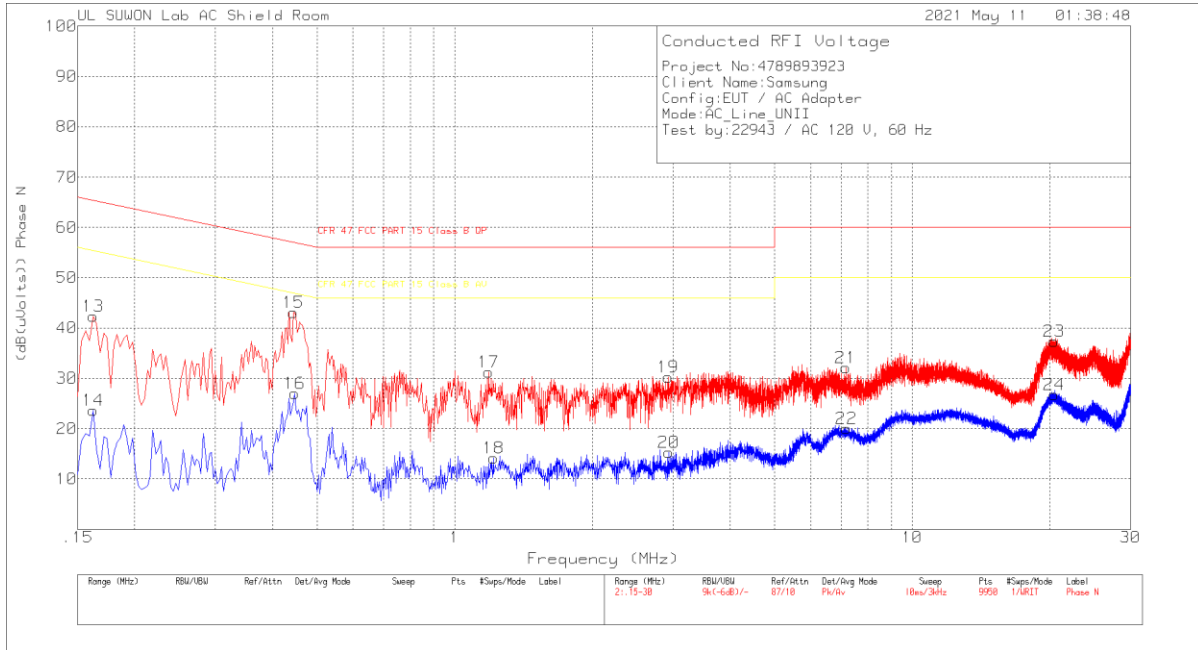
Range 1: Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_Wit h EX_L1[dB]	CABLELOS S(dB)	Corrected Reading (dB(uVolts))	CFR 47 FCC PART 15 Class B QP	Margin (dB)	CFR 47 FCC PART 15 Class B AV	Margin (dB)
1	.159	32.73	Pk	9.9	.1	42.73	65.52	-22.79	-	-
2	.159	16.46	Av	9.9	.1	26.46	-	-	55.52	-29.06
3	.477	33.69	Pk	9.9	.2	43.79	56.39	-12.6	-	-
4	.453	22.46	Av	9.9	.2	32.56	-	-	46.82	-14.26
5	1.212	26.34	Pk	9.8	.3	36.44	56	-19.56	-	-
6	1.206	14.28	Av	9.8	.3	24.38	-	-	46	-21.62
7	2.928	27.57	Pk	9.7	.3	37.57	56	-18.43	-	-
8	2.928	12.72	Av	9.7	.3	22.72	-	-	46	-23.28
9	6.558	28.42	Pk	9.8	.3	38.52	60	-21.48	-	-
10	6.558	13.35	Av	9.8	.3	23.45	-	-	50	-26.55
11	25.113	32.42	Pk	10.5	.4	43.32	60	-16.68	-	-
12	25.113	16.68	Av	10.5	.4	27.58	-	-	50	-22.42

Pk - Peak detector

Av - Average detection

LINE 2 DATA



Trace Markers

Range 2: Phase N .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_Wit h EX_N[dB]	CABLELOS S(dB)	Corrected Reading (dB(uVolts))	CFR 47 FCC PART 15 Class B QP	Margin (dB)	CFR 47 FCC PART 15 Class B AV	Margin (dB)
13	.162	32.25	Pk	10	.1	42.35	65.36	-23.01	-	-
14	.162	13.59	Av	10	.1	23.69	-	-	55.36	-31.67
15	.444	32.99	Pk	9.9	.2	43.09	56.99	-13.9	-	-
16	.447	16.95	Av	9.9	.2	27.05	-	-	46.93	-19.88
17	1.188	21.13	Pk	9.8	.3	31.23	56	-24.77	-	-
18	1.215	4.09	Av	9.8	.3	14.19	-	-	46	-31.81
19	2.928	20.19	Pk	9.8	.3	30.29	56	-25.71	-	-
20	2.937	5.15	Av	9.8	.3	15.25	-	-	46	-30.75
21	7.158	21.95	Pk	9.9	.3	32.15	60	-27.85	-	-
22	7.182	9.8	Av	9.9	.3	20	-	-	50	-30
23	20.454	26.63	Pk	10.3	.4	37.33	60	-22.67	-	-
24	20.421	16.09	Av	10.3	.4	26.79	-	-	50	-23.21

Pk - Peak detector

Av - Average detection

## 14. DYNAMIC FREQUENCY SELECTION

### 14.1. OVERVIEW

#### 14.1.1. LIMITS

#### FCC

§15.407 (h), FCC KDB 905462 D02 “COMPLIANCE MEASUREMENT PROCEDURES FOR UNLICENSED-NATIONAL INFORMATION INFRASTRUCTURE DEVICES OPERATING IN THE 5250-5350 MHz AND 5470-5725 MHz BANDS INCORPORATING DYNAMIC FREQUENCY SELECTION” and KDB 905462 D03 “U-NII CLIENT DEVICES WITHOUT RADAR DETECTION CAPABILITY”.

**Table 1: Applicability of DFS requirements prior to use of a channel**

Requirement	Operational Mode		
	Master	Client (without radar detection)	Client (with radar detection)
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

**Table 2: Applicability of DFS requirements during normal operation**

Requirement	Operational Mode		
	Master	Client (without DFS)	Client (with DFS)
DFS Detection Threshold	Yes	Not required	Yes
Channel Closing Transmission Time	Yes	Yes	Yes
Channel Move Time	Yes	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required	Yes

Additional requirements for devices with multiple bandwidth modes	Master Device or Client with Radar DFS	Client (without DFS)
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required

**Note:** Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in all 20 MHz channel blocks and a null frequency between the bonded 20 MHz channel blocks.

**Table 3: Interference Threshold values, Master or Client incorporating In-Service Monitoring**

Maximum Transmit Power	Value (see notes)
E.I.R.P. $\geq$ 200 mill watt	-64 dBm
E.I.R.P. < 200 mill watt and power spectral density < 10 dBm/MHz	-62 dBm
E.I.R.P. < 200 mill watt that do not meet power spectral density requirement	-64 dBm
<p><b>Note 1:</b> This is the level at the input of the receiver assuming a 0 dBi receive antenna  <b>Note 2:</b> Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.  <b>Note 3:</b> E.I.R.P. is based on the highest antenna gain. For MIMO devices refer to KDB publication 662911 D01.</p>	

**Table 4: DFS Response requirement values**

Parameter	Value
<i>Non-occupancy period</i>	30 minutes
<i>Channel Availability Check Time</i>	60 seconds
<i>Channel Move Time</i>	10 seconds (See Note 1)
<i>Channel Closing Transmission Time</i>	200 milliseconds + approx. 60 milliseconds over remaining 10 second period. (See Notes 1 and 2)
<i>U-NII Detection Bandwidth</i>	Minimum 100% of the U- NII 99% transmission power bandwidth. (See Note 3)
<p><b>Note 1:</b> <i>Channel Move Time</i> and the <i>Channel Closing Transmission Time</i> should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.  <b>Note 2:</b> The <i>Channel Closing Transmission Time</i> is comprised of 200 milliseconds starting at the beginning of the <i>Channel Move Time</i> plus any additional intermittent control signals required to facilitate a <i>Channel</i> move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.  <b>Note 3:</b> During the <i>U-NII Detection Bandwidth</i> detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.</p>	

**Table 5 – Short Pulse Radar Test Waveforms**

Radar Type	Pulse Width (usec)	PRI (usec)	Pulses	Minimum Percentage of Successful Detection	Minimum Trials
0	1	1428	18	See Note 1	See Note 1
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in table 5a	Roundup: $\{(1/360) \times (19 \times 10^6 \text{ PRI}_{\text{usec}})\}$	60%	30
		Test B: 15 unique PRI values randomly selected within the range of 518-3066 usec. With a minimum increment of 1 usec, excluding PRI values selected in Test A			
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120
<b>Note 1:</b> Short Pulse Radar Type 0 should be used for the <i>Detection Bandwidth</i> test, <i>Channel Move Time</i> , and <i>Channel Closing Time</i> tests.					

**Table 6 – Long Pulse Radar Test Signal**

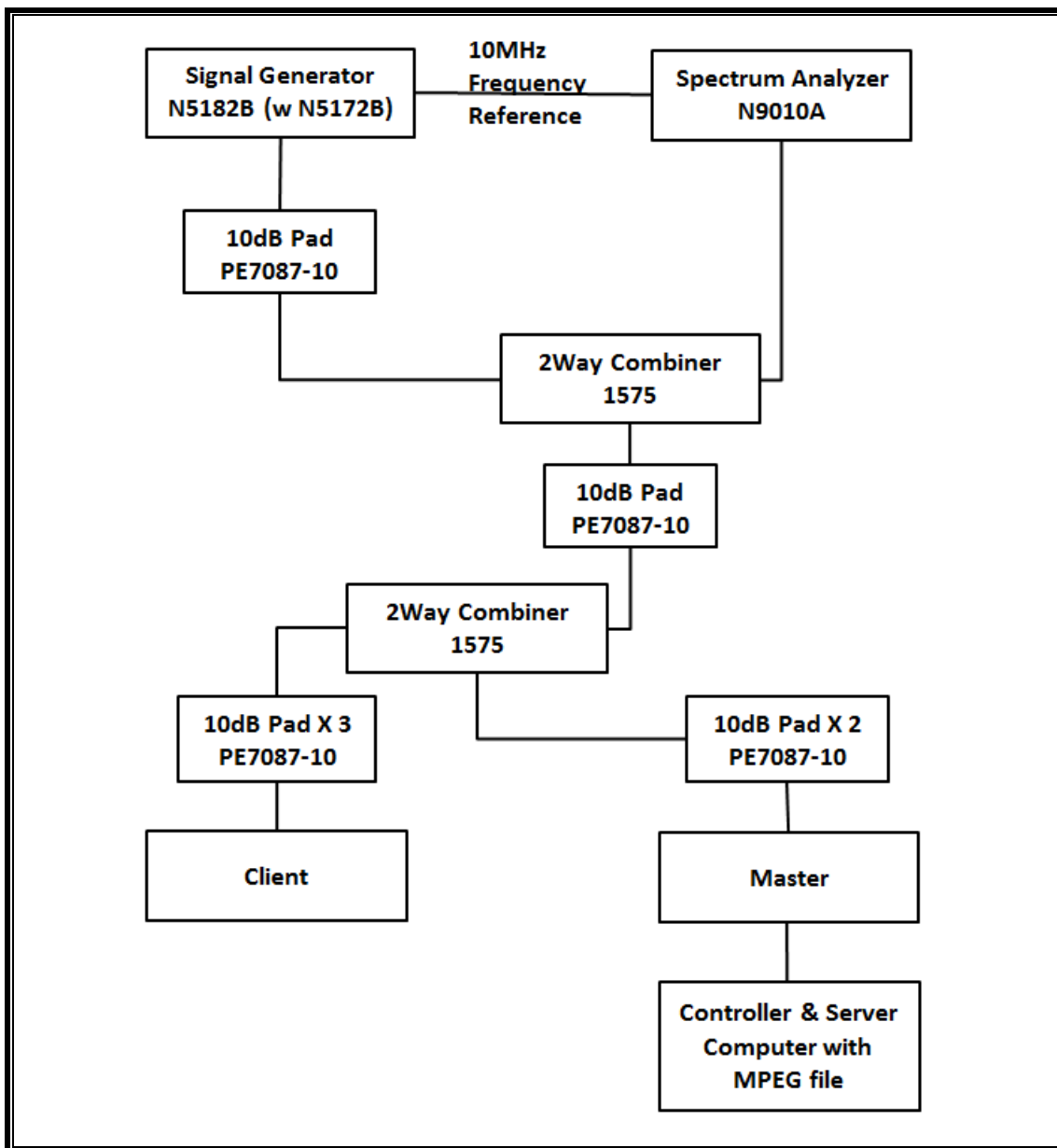
Radar Waveform Type	Pulse Width (μsec)	Chirp Width (MHz)	PRI (μsec)	Pulses per Burst	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

**Table 7 – Frequency Hopping Radar Test Signal**

Radar Waveform Type	Pulse Width (μsec)	PRI (μsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Trials
6	1	333	9	0.333	300	70%	30

### 14.1.2. TEST AND MEASUREMENT SYSTEM

#### CONDUCTED METHOD SYSTEM BLOCK DIAGRAM





## **SYSTEM OVERVIEW**

The short pulse and long pulse signal generating system utilizes the Keysite Signal Studio for Pulse Building as N5172B. The Vector Signal Generator has been validated by the NTIA. The hopping signal generating system utilizes the CCS simulated hopping method and system, which has been validated by the DoD, FCC and NTIA. The software selects waveform parameters from within the bounds of the signal type on a random basis using uniform distribution.

The short pulse types 1, 2, 3 and 4, and the long pulse type 5 parameters are randomized at run-time.

The hopping type 6 pulse parameters are fixed while the hopping sequence is based on the August 2005 NTIA Hopping Frequency List. The initial starting point randomized at run-time and each subsequent starting point is incremented by 475. Each frequency in the 100-length segment is compared to the boundaries of the EUT Detection Bandwidth and the software creates a hopping burst pattern in accordance with Section 7.4.1.3 Method #2 Simulated Frequency Hopping Radar Waveform Generating Subsystem of KDB 905462 D02. The frequency of the signal generator is incremented in 1 MHz steps from  $F_L$  to  $F_H$  for each successive trial. This incremental sequence is repeated as required to generate a minimum of 30 total trials and to maintain a uniform frequency distribution over the entire Detection Bandwidth.

The signal monitoring equipment consists of a spectrum analyzer. The aggregate ON time is calculated by multiplying the number of bins above a threshold during a particular observation period by the dwell time per bin, with the analyzer set to peak detection and max hold.

## **SYSTEM CALIBRATION**

A 50-ohm load is connected in place of the spectrum analyzer, and the spectrum analyzer is connected to a horn antenna via a coaxial cable, with the reference level offset set to (horn antenna gain – coaxial cable loss). The signal generator is set to CW mode. The amplitude of the signal generator is adjusted to yield a level of –64 dBm as measured on the spectrum analyzer.

Without changing any of the instrument settings, the spectrum analyzer is reconnected to the Common port of the Spectrum Analyzer Combiner/Divider. The Reference Level Offset of the spectrum analyzer is adjusted so that the displayed amplitude of the signal is –64 dBm.

The spectrum analyzer displays the level of the signal generator as received at the antenna ports of the Master Device. The interference detection threshold may be varied from the calibrated value of –64 dBm and the spectrum analyzer will still indicate the level as received by the Master Device.

**ADJUSTMENT OF DISPLAYED TRAFFIC LEVEL**

A link is established between the Master and Slave and the distance between the units is adjusted as needed to provide a suitable received level at the Master and Slave devices. The video test file is streamed to generate WLAN traffic. The monitoring antenna is adjusted so that the WLAN traffic level, as displayed on the spectrum analyzer, is at lower amplitude than the radar detection threshold.

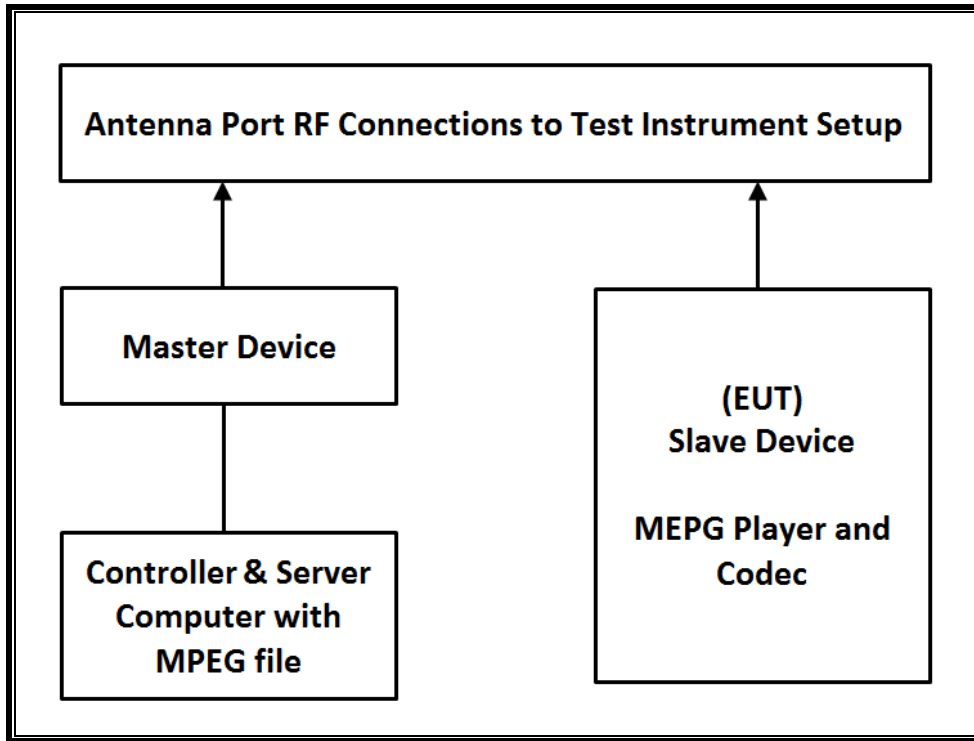
**TEST AND MEASUREMENT EQUIPMENT**

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

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	S/N	Next Cal Due
Spectrum Analyzer, 7 GHz	Agilent / HP	N9010A	MY54200580	08-05-21
Vector Signal Generator, 6GHz	Agilent / HP	N5182B	MY53051241	08-03-21
Combiner	WEINSCHTEL	WA1534	UL001	01-27-22
Combiner	WEINSCHTEL	WA1535	UL002	01-27-22

**14.1.3. SETUP OF EUT**

**CONDUCTED METHOD EUT TEST SETUP**



**SUPPORT EQUIPMENT**

The following support equipment was utilized for the DFS tests documented in this report:

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Wireless Access Point	Cisco	AIR-CAP3702E-A-K9	FTX182276QX	LDK102087
Notebook PC (Controller/Server)	HP	HP EliteDesk 800 G1 TWR	CZC4125J25	DoC

#### **14.1.4. DESCRIPTION OF EUT**

The EUT operates over the 5250-5350 MHz and 5470-5725 MHz ranges.

The EUT is a Slave Device without Radar Detection.

The highest power level of the widest bandwidth (802.11ac VHT80) within these bands is 11.71 dBm in the 5250-5350 MHz band and 12.71 dBm in the 5470-5725 MHz band.

The antenna assembly utilized two antenna.

Gain of ANT1 : 2.07 dBi for UNII 2A and 0.41 dBi for UNII 2C.

Gain of ANT2 : 5.14 dBi for UNII 2A and 5.57 dBi for UNII 2C.

The rated output power of the Master unit is > 23dBm (EIRP). Therefore the required interference threshold level is -64 dBm. After correction for procedural adjustments, the required conducted threshold at the antenna port is  $-64 + 1 = -63$  dBm.

The calibrated radiated DFS Detection Threshold level is set to -64 dBm. The tested level is lower than the required level hence it provides a margin to the limit.

The EUT uses one transmitter/receiver chain connected to an antenna to perform radiated tests. WLAN traffic that meets or exceeds the minimum required loading was generated by transferring a data stream from the controller/server PC to the EUT using iPerf version 2.0.5 software package.

TPC is not required since the maximum EIRP is less than 500 mW (27 dBm).

The EUT utilizes the 802.11 architecture. Three nominal channel bandwidths are implemented: 20 MHz, 40 MHz and 80 MHz.

The software installed in the access point is 12.4(25d)JA1.

#### **UNIFORM CHANNEL SPREADING**

This requirement is not applicable to Slave radio devices.

#### **CHANNEL PUNCTURING(802.11ax)**

This EUT does not support channel puncturing.

#### **OVERVIEW OF MASTER DEVICE WITH RESPECT TO §15.407 (h) REQUIREMENTS**

The Master Device is a Cisco Access Point, FCC ID: LDK102087. The minimum antenna gain for the Master Device is 6 dBi.

The rated output power of the Master unit is > 23dBm (EIRP). Therefore the required interference threshold level is -64 dBm. After correction for procedural adjustments, the required radiated threshold at the antenna port is  $-64 + 1 = -63$  dBm.

The calibrated radiated DFS Detection Threshold level is set to -64 dBm. The tested level is lower than the required level hence it provides a margin to the limit.

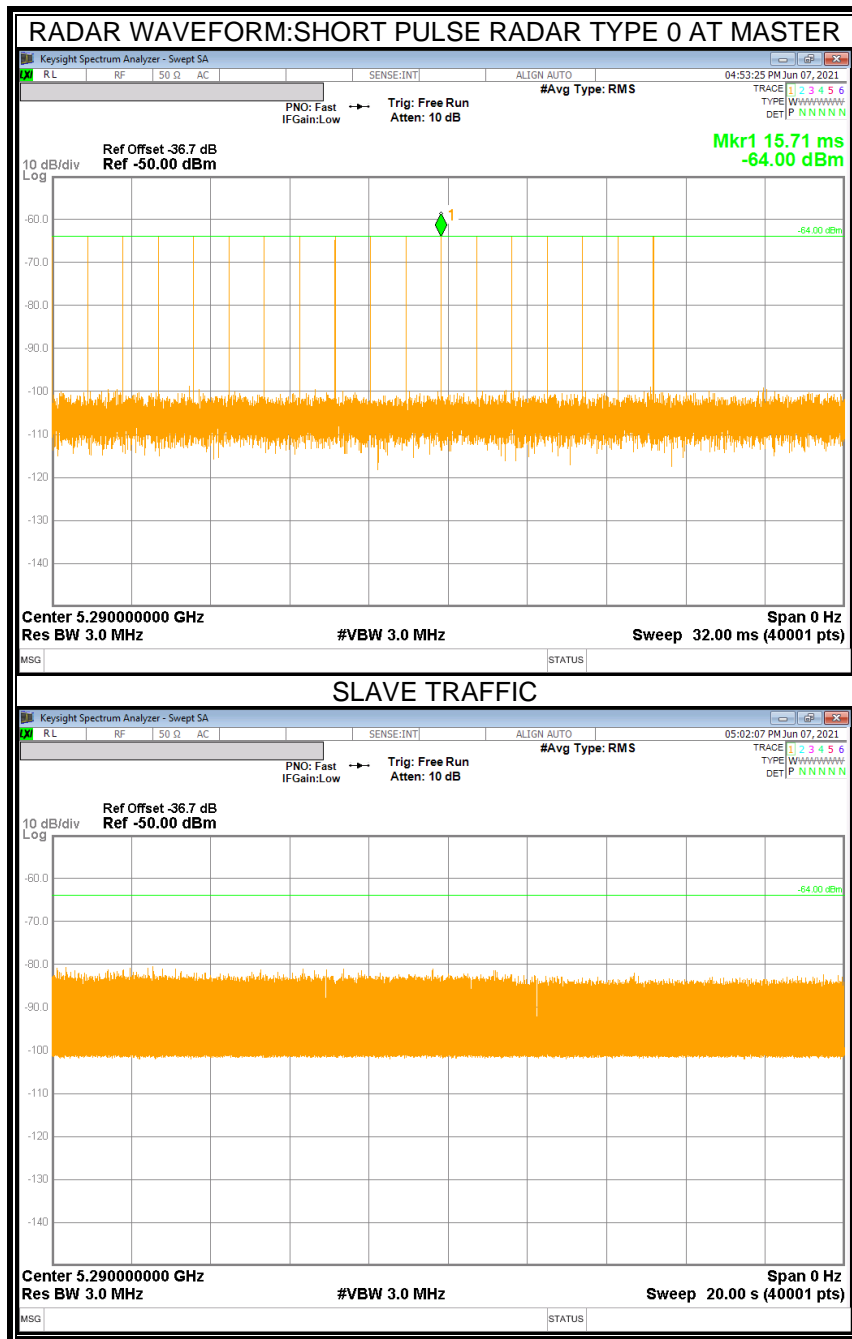
## 14.2. RESULTS FOR 80 MHz BANDWIDTH (UNII-2A BAND)

### 14.2.1. TEST CHANNEL

All tests were performed at a channel center frequency of 5290 MHz.

### 14.2.2. RADAR WAVEFORM AND TRAFFIC

#### RADAR WAVEFORM



### 14.2.3. OVERLAPPING CHANNEL TESTS

#### RESULTS

These tests are not applicable.

### 14.2.4. MOVE AND CLOSING TIME

#### REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =  
(Number of analyzer bins showing transmission) \* (dwell time per bin)

The observation period over which the aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

#### RESULTS

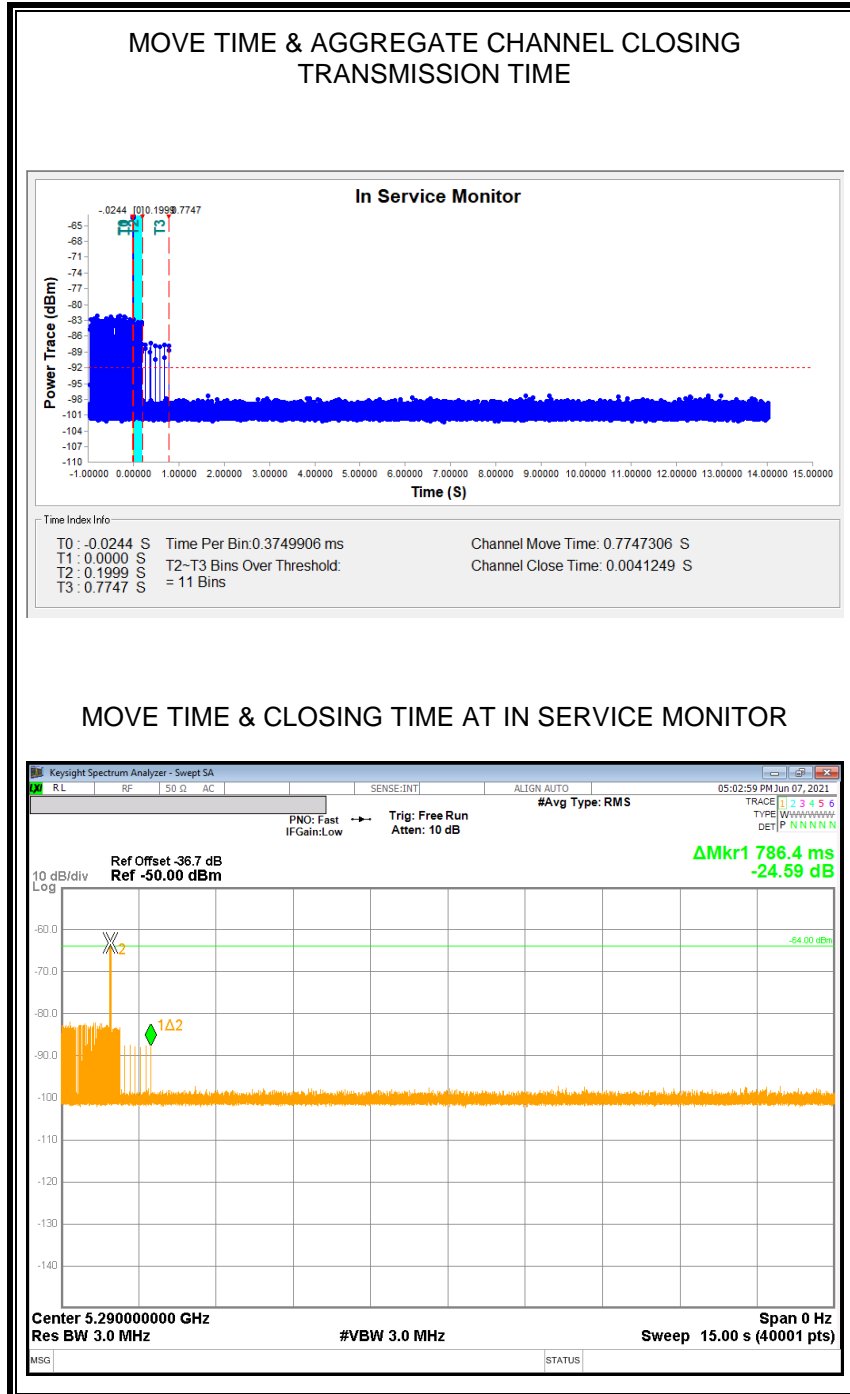
Channel Move Time (sec)	Limit (sec)
0.775	10

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
4.125	60

**MOVE TIME & CHANNEL CLOSING TIME**

**AGGREGATE CHANNEL CLOSING TRANSMISSION TIME**

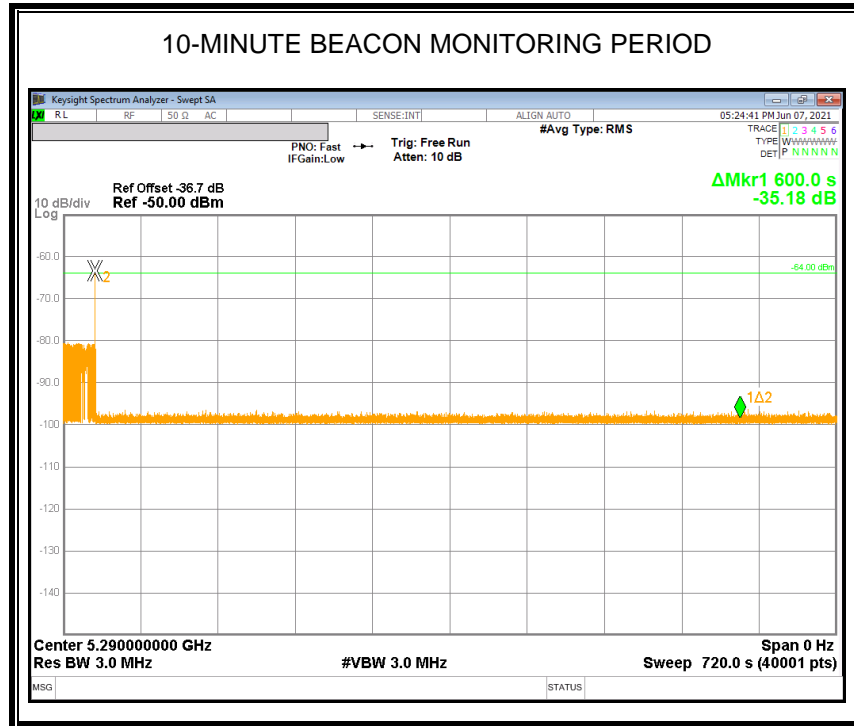
No transmissions are observed during the aggregate monitoring period.



**NON-OCCUPANCY PERIOD**

**RESULTS**

No EUT transmissions were observed on the test channel during the 10-minute observation time.





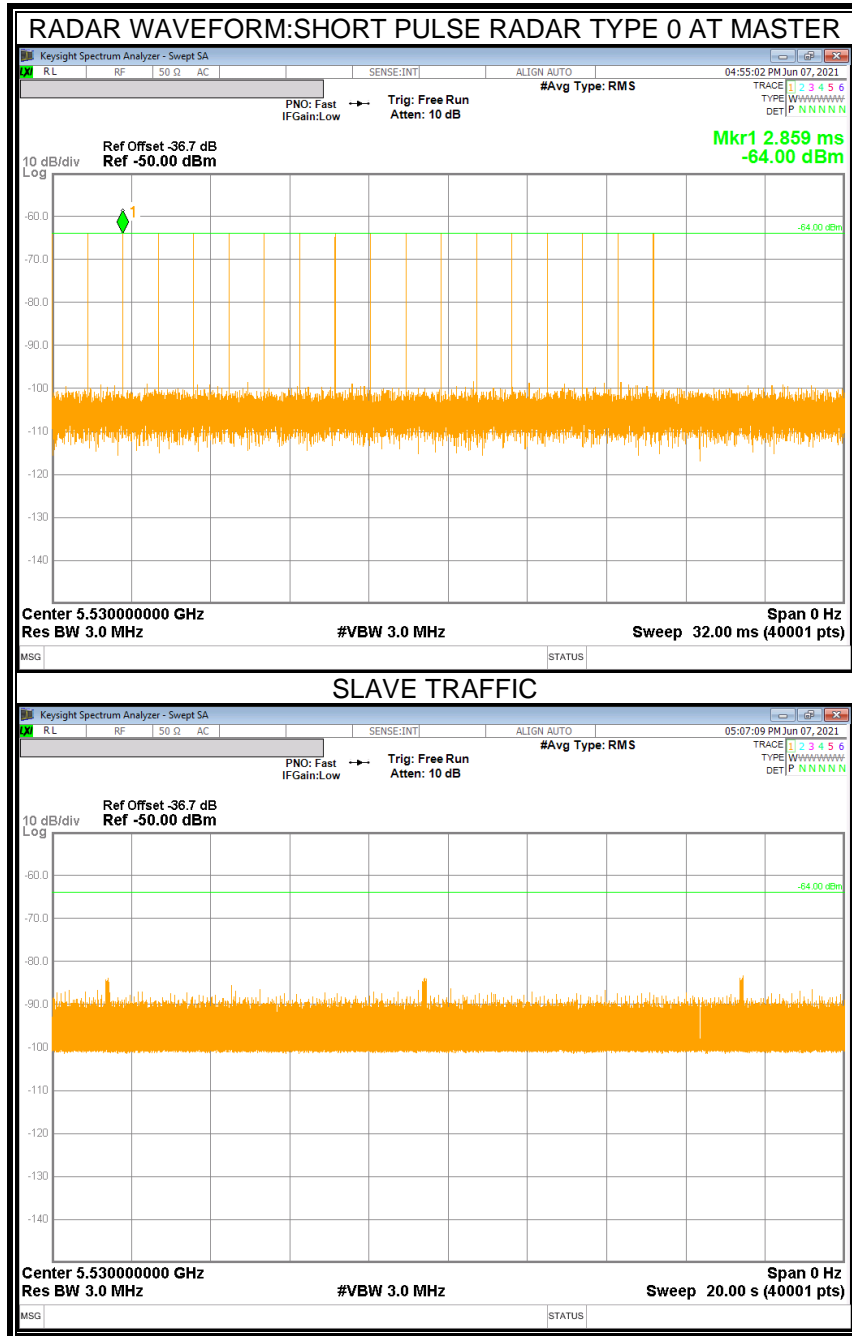
### 14.3. RESULTS FOR 80 MHz BANDWIDTH (UNII-2C BAND)

#### 14.3.1. TEST CHANNEL

All tests were performed at a channel center frequency of 5530 MHz.

#### 14.3.2. RADAR WAVEFORM AND TRAFFIC

##### RADAR WAVEFORM



### 14.3.3. OVERLAPPING CHANNEL TESTS

#### RESULTS

These tests are not applicable.

### 14.3.4. MOVE AND CLOSING TIME

#### REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =  
(Number of analyzer bins showing transmission) \* (dwell time per bin)

The observation period over which the aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

#### RESULTS

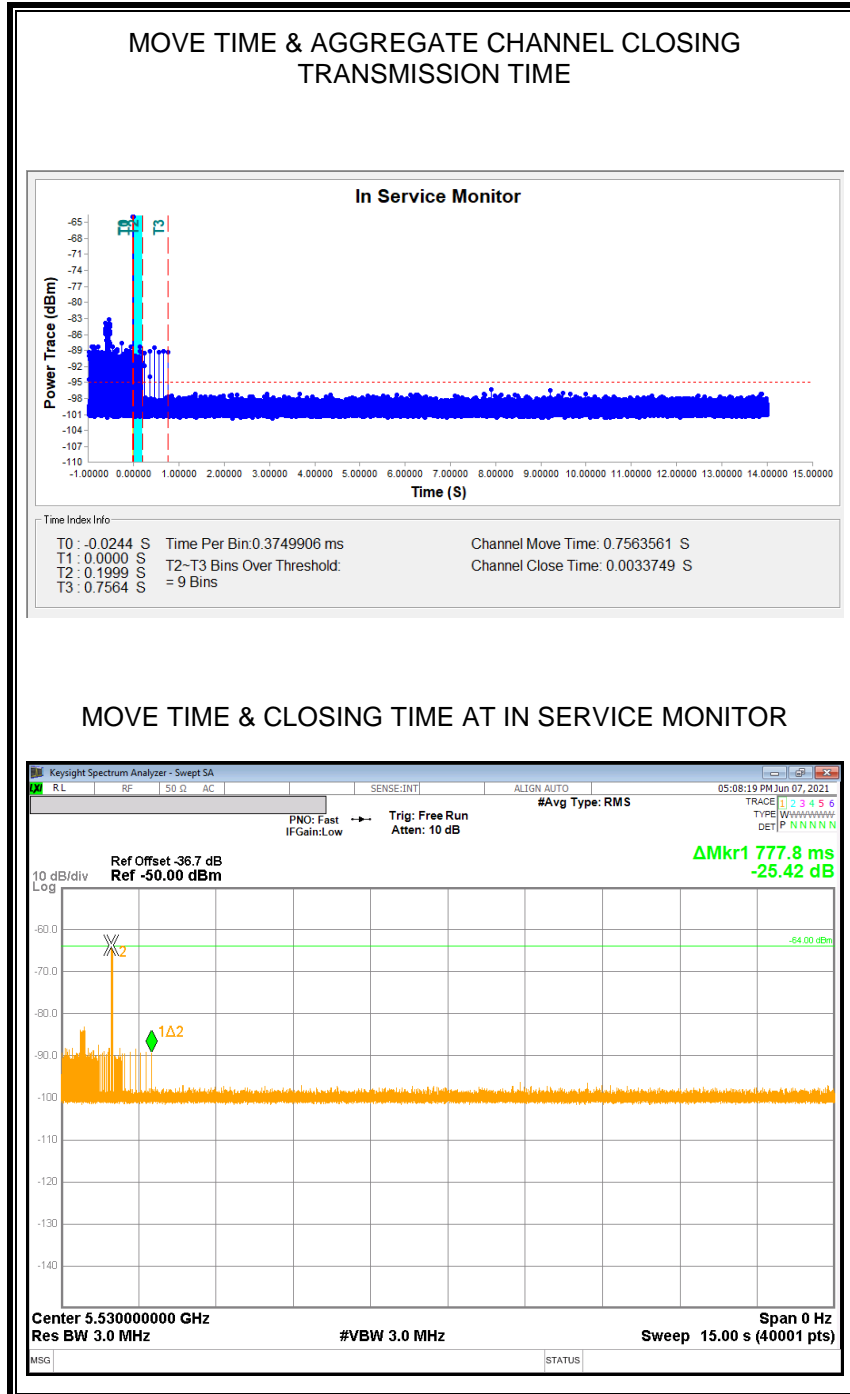
Channel Move Time (sec)	Limit (sec)
0.756	10

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
3.375	60

**MOVE TIME & CHANNEL CLOSING TIME**

**AGGREGATE CHANNEL CLOSING TRANSMISSION TIME**

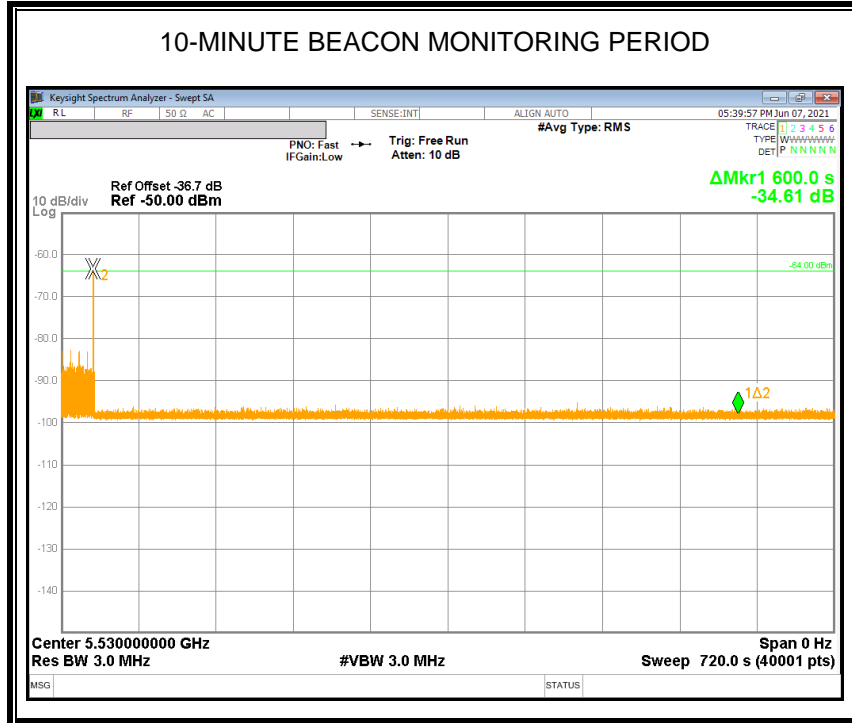
No transmissions are observed during the aggregate monitoring period.



**NON-OCCUPANCY PERIOD**

**RESULTS**

No EUT transmissions were observed on the test channel during the 10-minute observation time.



**END OF TEST REPORT**