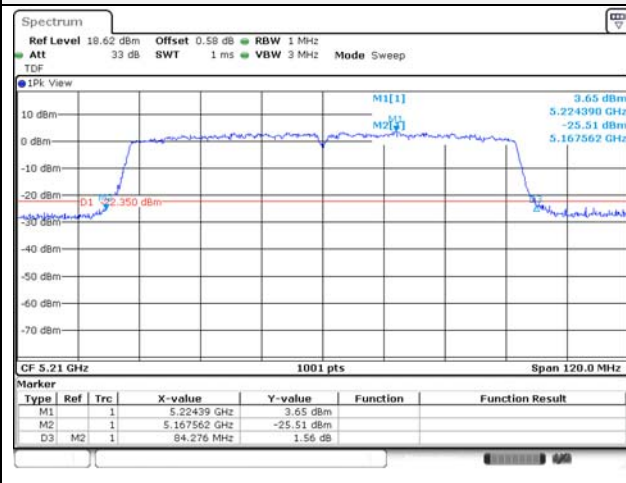
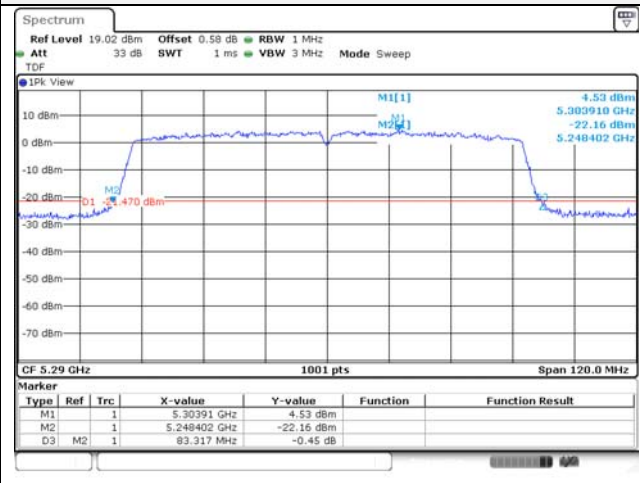


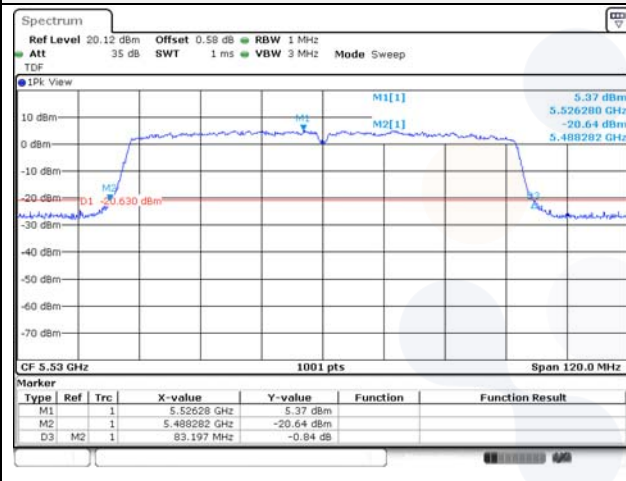
UNII-1 / 802.11ac VHT80 / Mid ch.



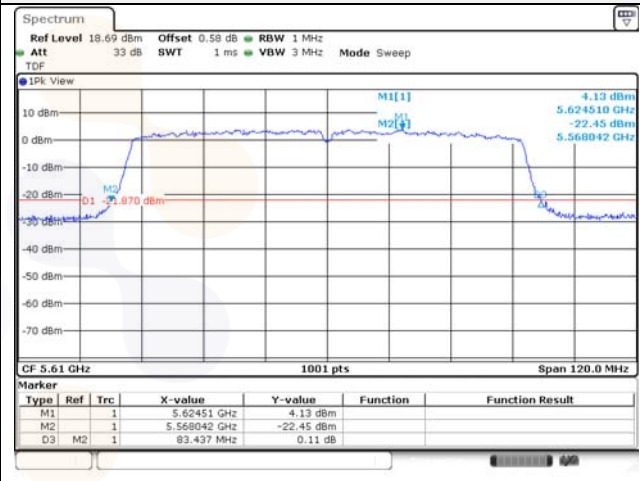
UNII-2A / 802.11ac VHT80 / Mid ch.



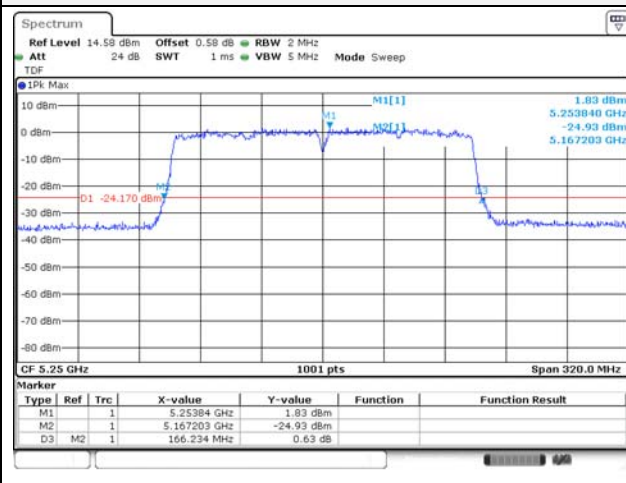
UNII-2C / 802.11ac VHT80 / Low ch.



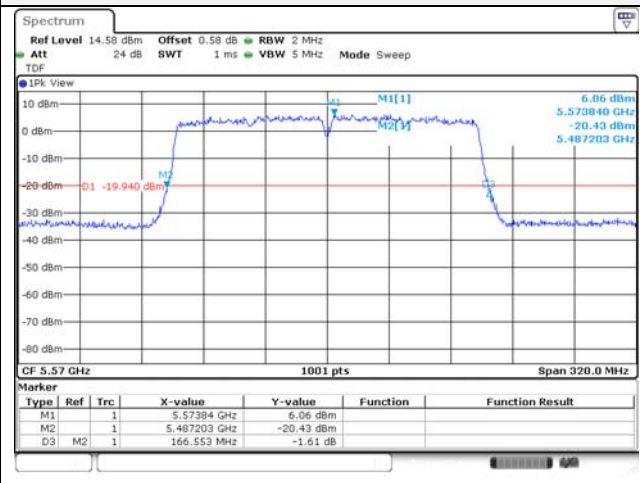
UNII-2C / 802.11ac VHT80 / High ch.



UNII-1 / 802.11ac VHT160 / Mid ch.

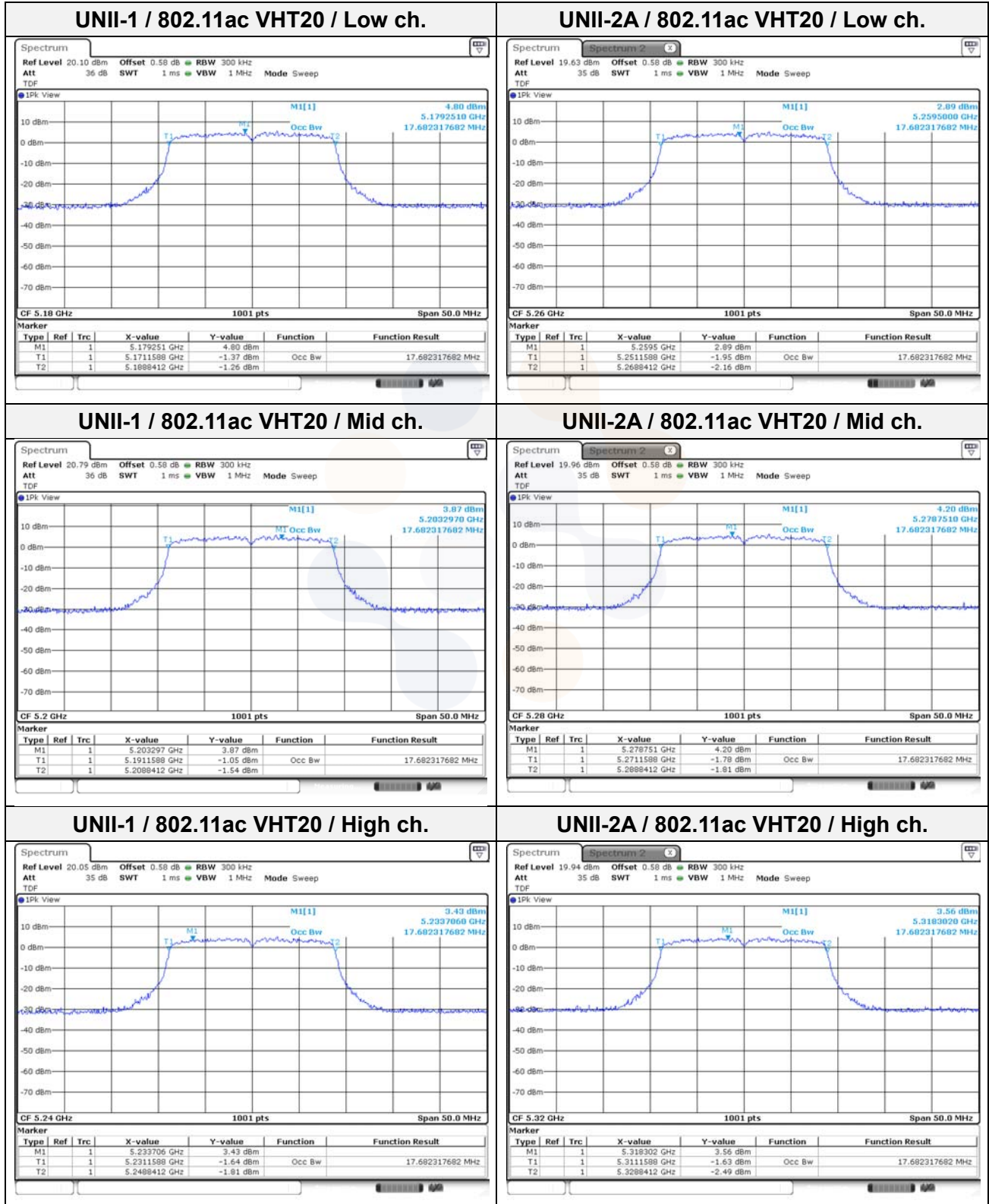


UNII-2C / 802.11ac VHT160 / Mid ch.

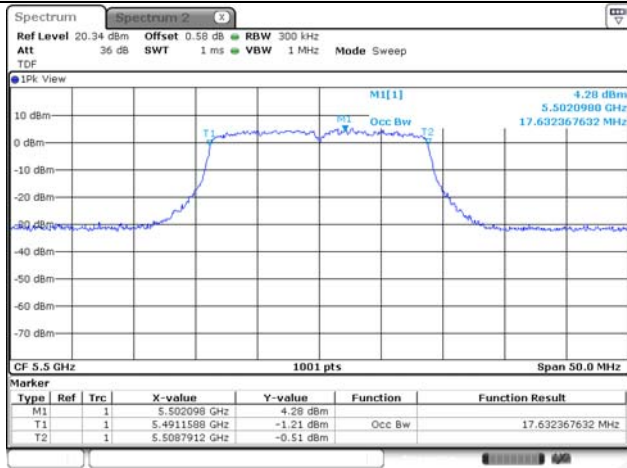


In order to simplify the report, attached plots were only MIMO ANT 1

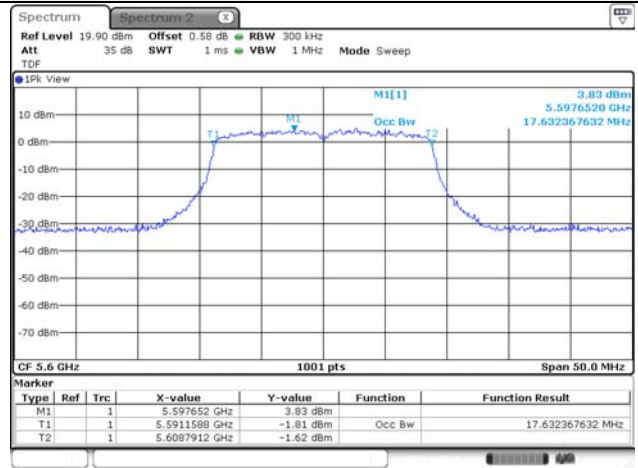
99% bandwidth



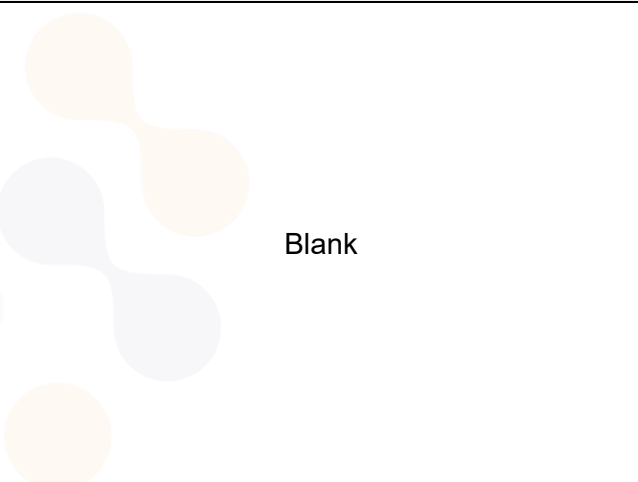
UNII-2C / 802.11ac VHT20 / Low ch.



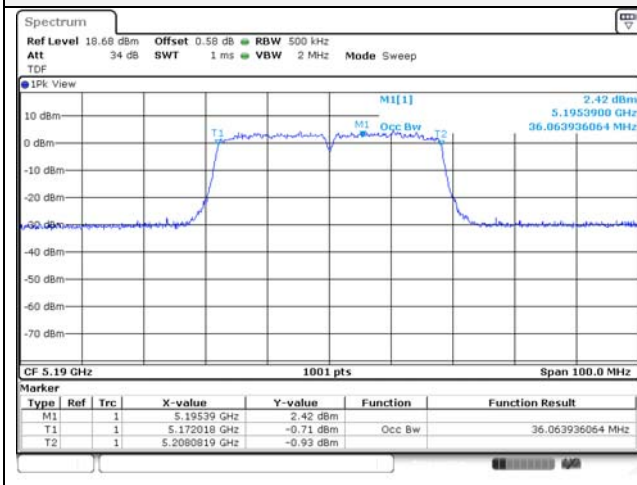
UNII-2C / 802.11ac VHT20 / Mid ch.



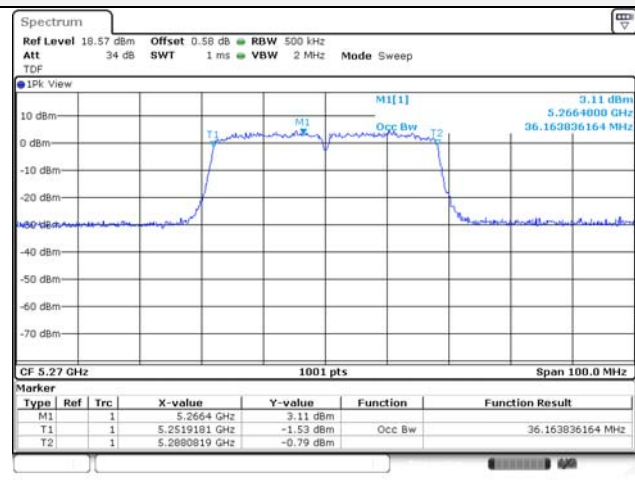
UNII-2C / 802.11ac VHT20 / High ch.



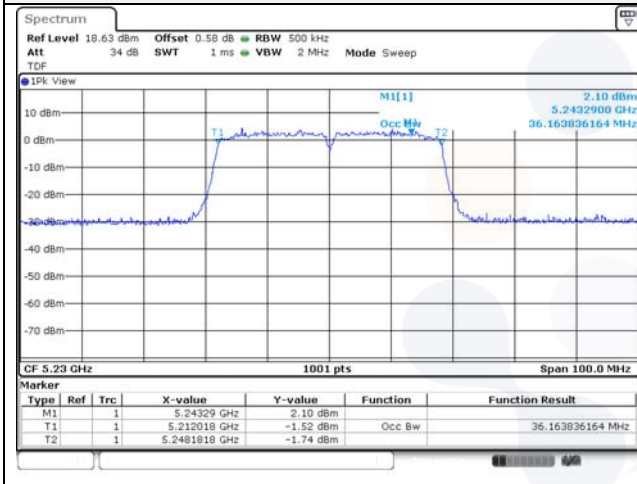
UNII-1 / 802.11ac VHT40 / Low ch.



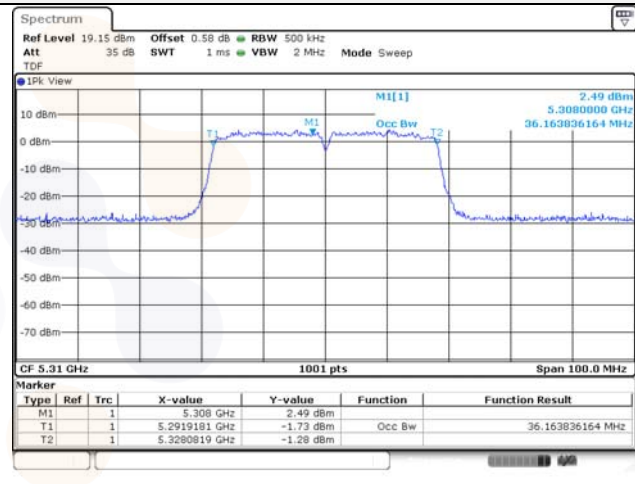
UNII-2A / 802.11ac VHT40 / Low ch.



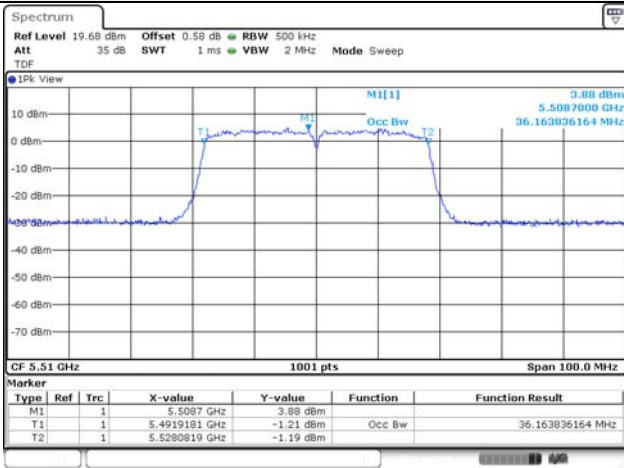
UNII-1 / 802.11ac VHT40 / High ch.



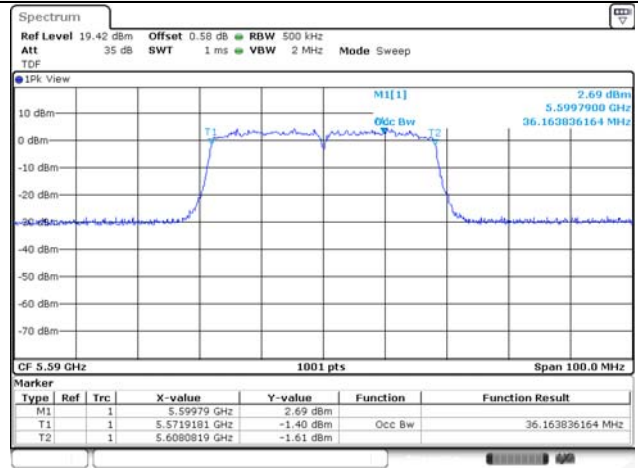
UNII-2A / 802.11ac VHT40 / High ch.



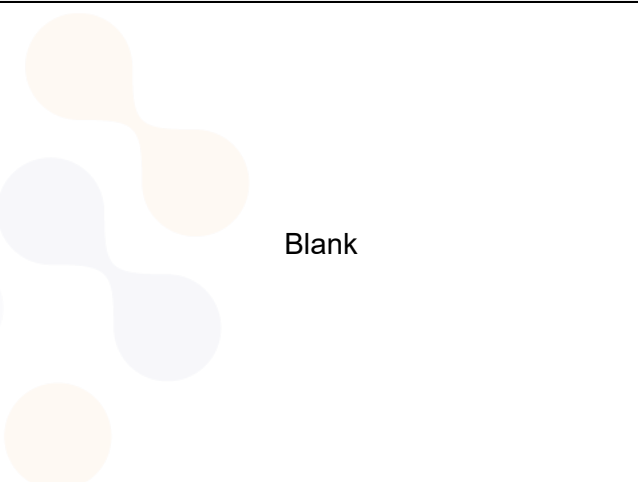
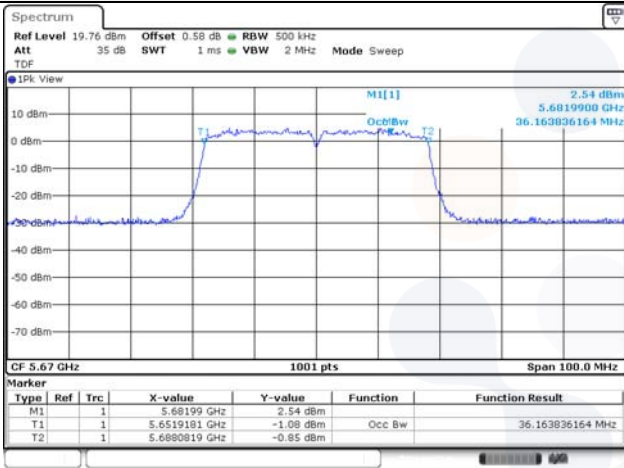
UNII-2C / 802.11ac VHT40 / Low ch.



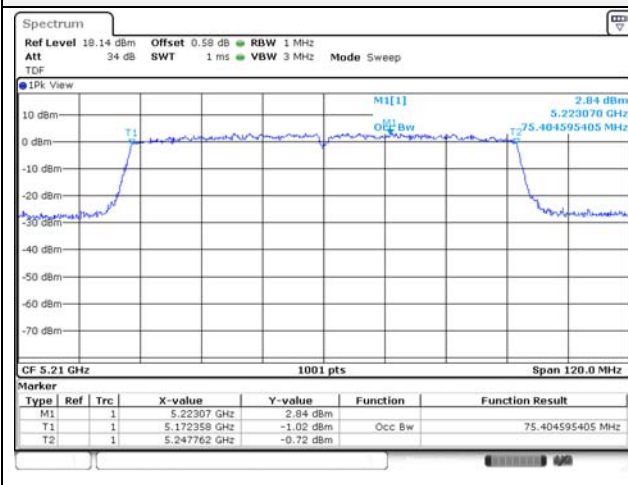
UNII-2C / 802.11ac VHT40 / Mid ch.



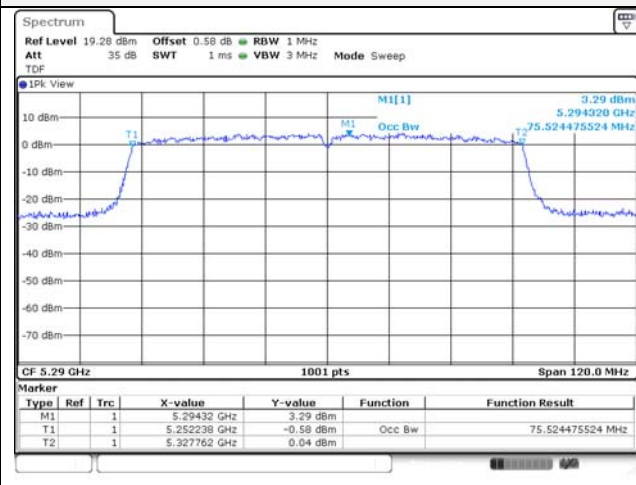
UNII-2C / 802.11ac VHT40 / High ch.



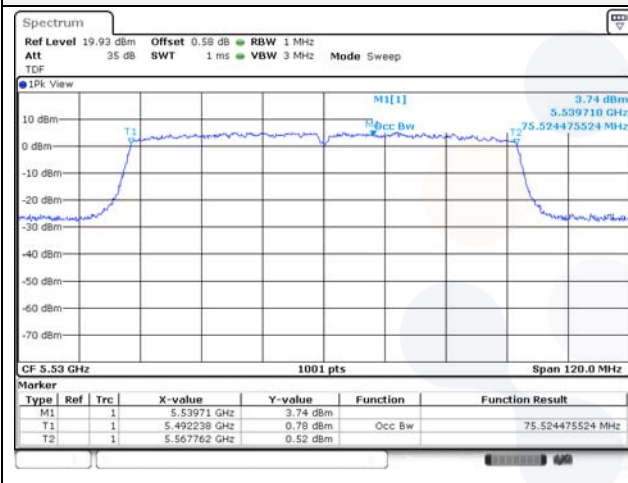
UNII-1 / 802.11ac VHT80 / Mid ch.



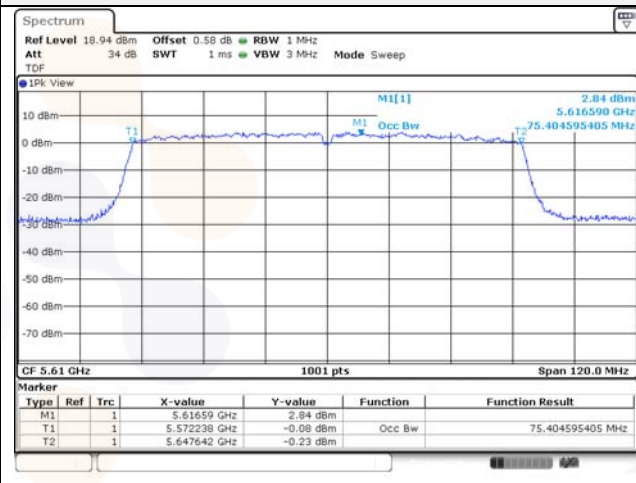
UNII-2A / 802.11ac VHT80 / Mid ch.



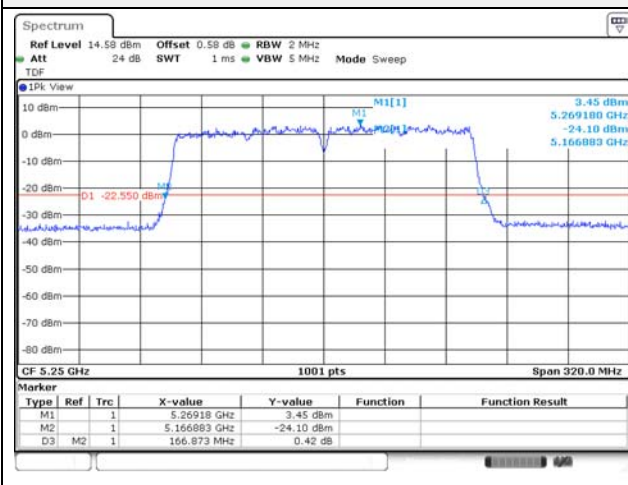
UNII-2C / 802.11ac VHT80 / Low ch.



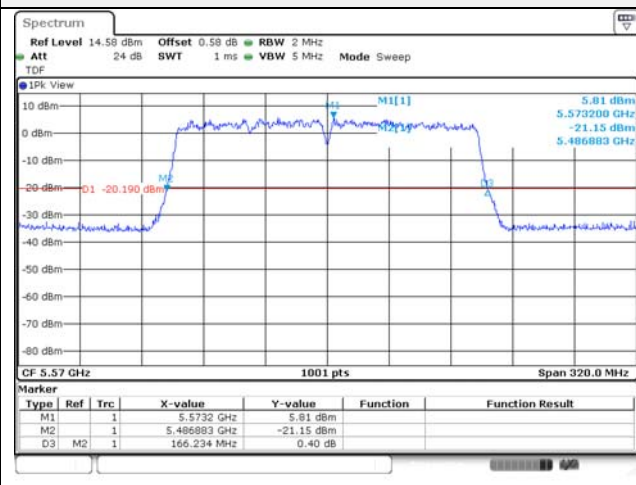
UNII-2C / 802.11ac VHT80 / High ch.



UNII-1 / 802.11ac VHT160 / Mid ch.

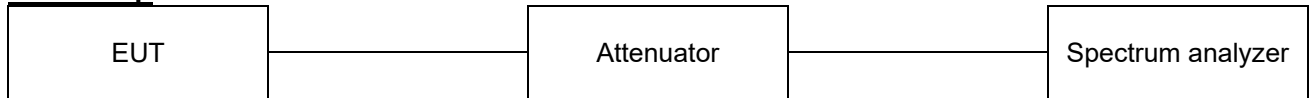


UNII-2C / 802.11ac VHT160 / Mid ch.



7.4. 6 dB Bandwidth & 99% Bandwidth

Test setup



Limit

According to §15.407(e), Within the 5.725-5.850 GHz and 5.850-5.895 GHz bands, the minimum 6 dB bandwidth of U-NII devices shall be at least 500kHz.

Test procedure

ANSI C63.10-2013 Section 6.9.2
KDB 789033 D02 v02r01 - Section C.2
KDB 291074 D02 v01 – 2.11

Test settings

Minimum Emission Bandwidth for the band 5.725–5.85 GHz and 5.850–5.895 GHz.

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 kHz for the band 5.725–5.85 GHz and 5.850-5.895 GHz band. The following procedure shall be used for measuring this Bandwidth:

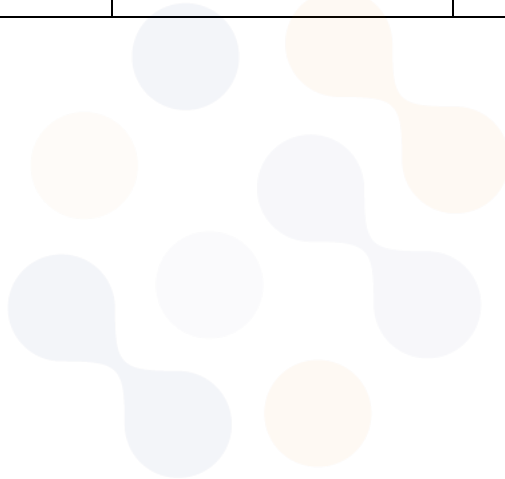
1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Test results

SISO

Test mode	Band	Frequency (MHz)	6dB bandwidth (MHz)	Limit (MHz)	99% bandwidth (MHz)
			ANT1		ANT1
802.11a	UNII-3	5 745	16.33	0.50	16.48
		5 785	16.38	0.50	16.48
		5 825	16.38	0.50	16.48

Test mode	Band	Frequency (MHz)	6dB bandwidth (MHz)	Limit (MHz)	99% bandwidth (MHz)
			ANT1		ANT1
802.11a	UNII-4	5 845	16.13	0.50	16.48
		5 865	16.38	0.50	16.48
		5 885	16.33	0.50	16.48



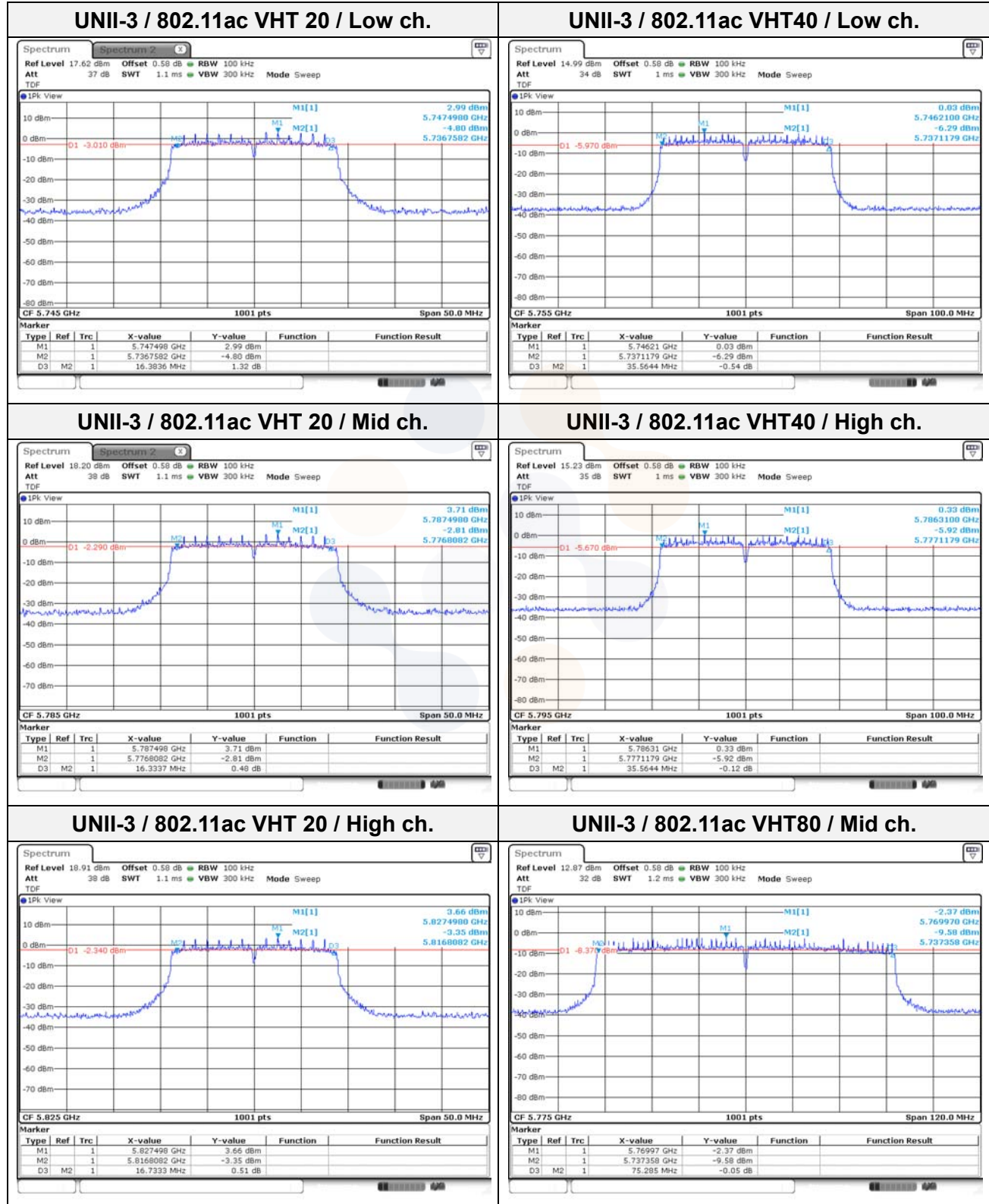
MIMO

Test mode	Band	Frequency (MHz)	6dB bandwidth (MHz)		Limit (MHz)	99% bandwidth (MHz)	
			ANT1	ANT2		ANT1	ANT2
802.11a	UNII-3	5 745	16.08	16.08	0.50	16.53	16.43
		5 785	16.33	16.08	0.50	16.53	16.43
		5 825	16.13	15.98	0.50	16.53	16.43
802.11n HT20	UNII-3	5 745	16.58	16.83	0.50	17.63	17.63
		5 785	15.98	16.63	0.50	17.63	17.63
		5 825	16.33	16.83	0.50	17.68	17.63
802.11n HT40	UNII-3	5 755	36.06	35.86	0.50	36.16	36.16
		5 795	35.56	35.96	0.50	36.16	36.16
802.11ac VHT20	UNII-3	5 745	16.38	16.83	0.50	17.63	17.63
		5 785	16.33	16.83	0.50	17.63	17.63
		5 825	16.73	16.93	0.50	17.68	17.63
802.11ac VHT40	UNII-3	5 755	35.56	36.36	0.50	36.16	36.16
		5 795	35.56	35.36	0.50	36.16	36.16
802.11ac VHT80	UNII-3	5 775	75.28	75.28	0.50	75.52	75.40

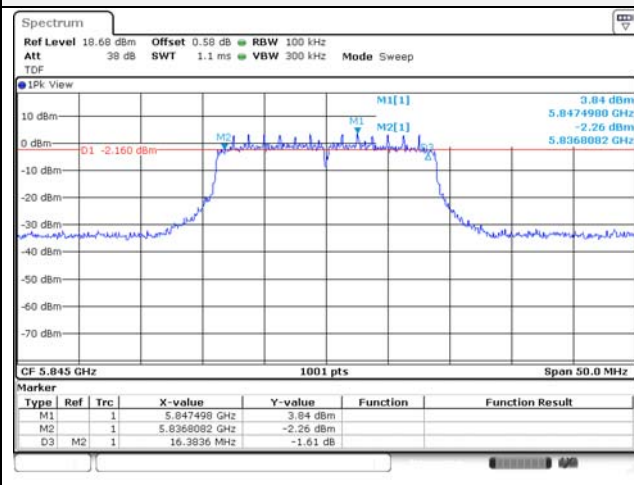
Test mode	Band	Frequency (MHz)	6dB bandwidth (MHz)		Limit (MHz)	99% bandwidth (MHz)	
			ANT1	ANT2		ANT1	ANT2
802.11a	UNII-4	5 845	16.33	16.33	0.50	16.53	16.48
		5 865	16.38	16.38	0.50	16.48	16.48
		5 885	16.13	16.08	0.50	16.53	16.48
802.11n HT20	UNII-4	5 845	16.63	16.88	0.50	17.63	17.63
		5 865	16.33	16.83	0.50	17.63	17.68
		5 885	16.33	16.58	0.50	17.68	17.68
802.11n HT40	UNII-4	5 835	35.56	35.96	0.50	36.16	36.16
		5 875	35.56	35.56	0.50	36.16	36.16
802.11ac VHT20	UNII-4	5 845	16.38	16.88	0.50	17.63	17.63
		5 865	16.33	16.93	0.50	17.63	17.68
		5 885	16.18	16.83	0.50	17.68	17.68
802.11ac VHT40	UNII-4	5 835	35.56	35.96	0.50	36.16	36.16
		5 875	35.56	35.36	0.50	36.16	36.16
802.11ac VHT80	UNII-4	5 855	75.40	75.28	0.50	75.40	75.40
802.11ac VHT160	UNII-4	5 815	156.00	156.00	0.50	154.73	155.36

In order to simplify the report, attached plots were only MIMO ANT 1

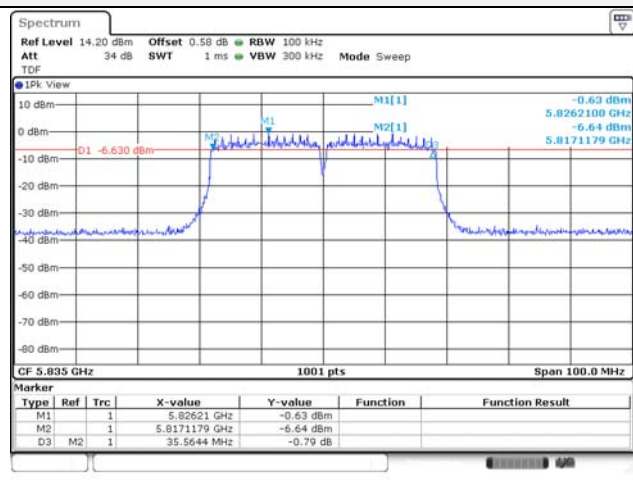
6 dB bandwidth



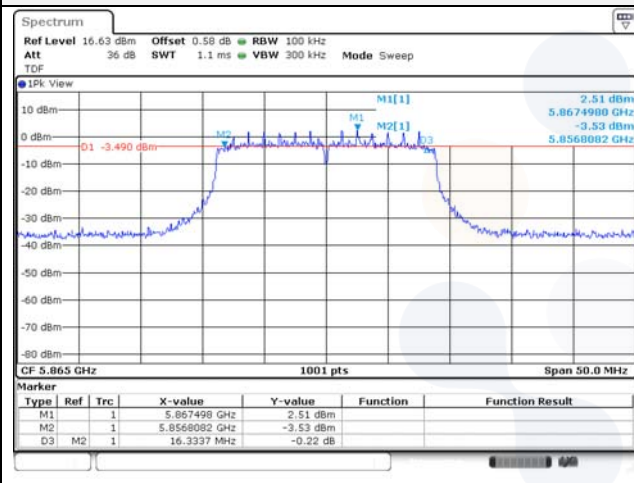
UNII-4 / 802.11ac VHT 20 / Low ch.



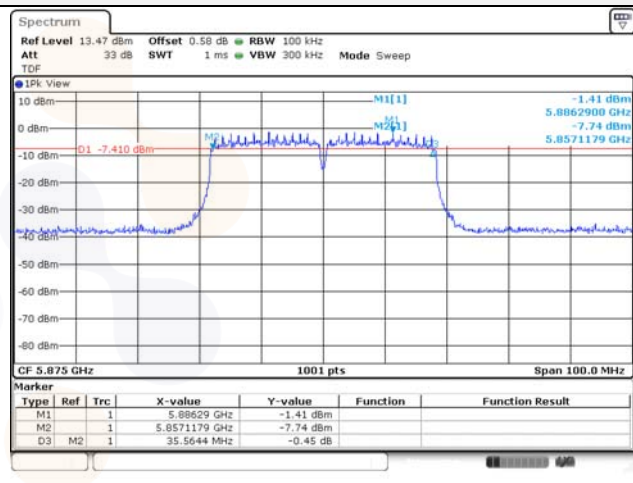
UNII-4 / 802.11ac VHT40 / Low ch.



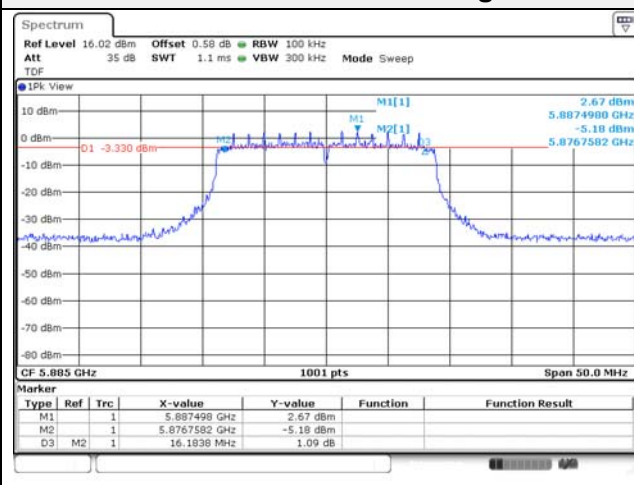
UNII-4 / 802.11ac VHT 20 / Mid ch.



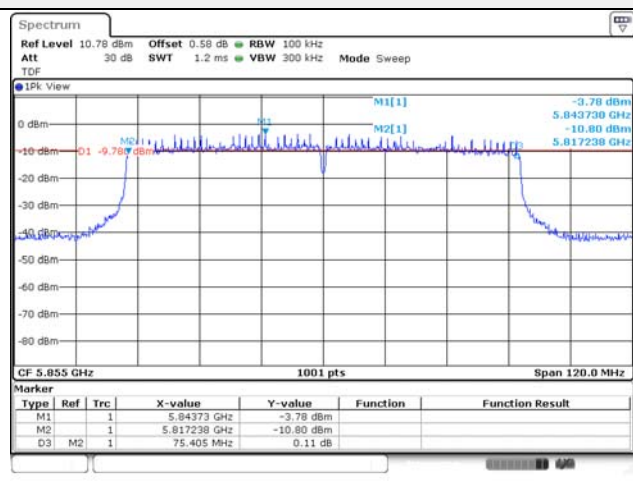
UNII-4 / 802.11ac VHT40 / High ch.



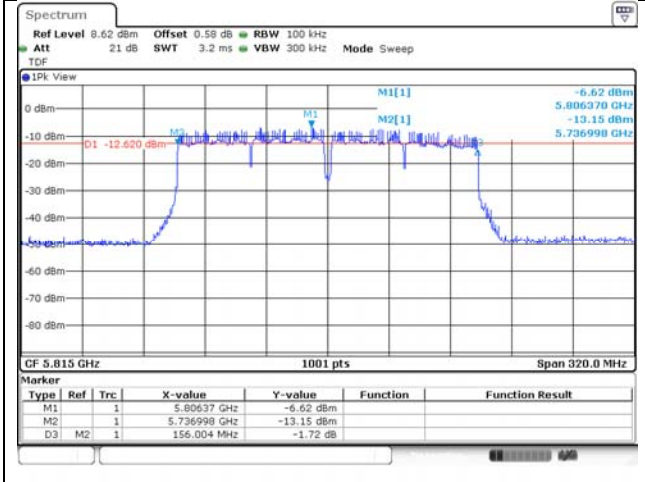
UNII-4 / 802.11ac VHT 20 / High ch.



UNII-4 / 802.11ac VHT80 / Mid ch.



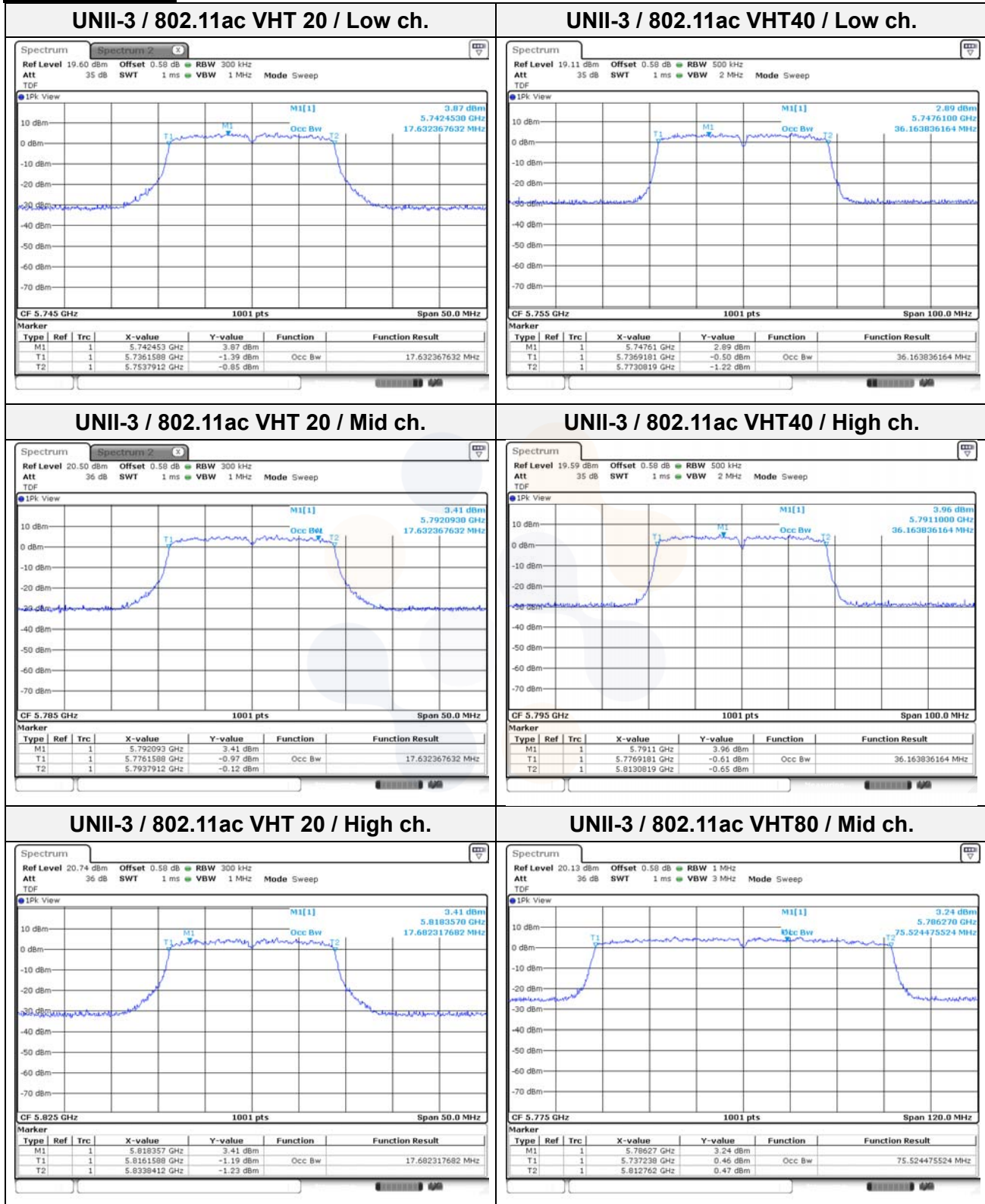
UNII-4 / 802.11ac VHT 160 / Mid ch.



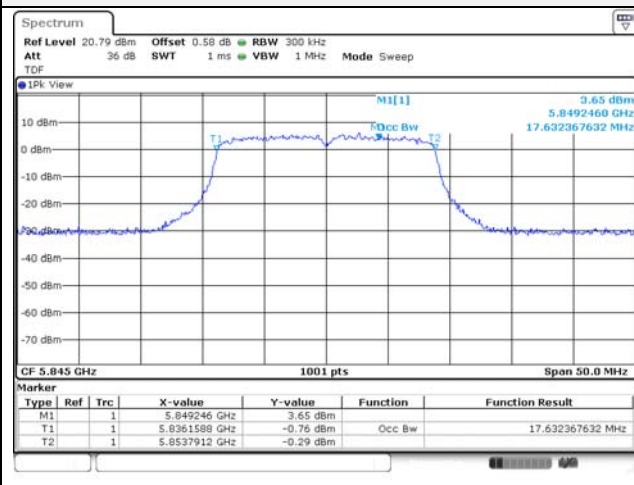
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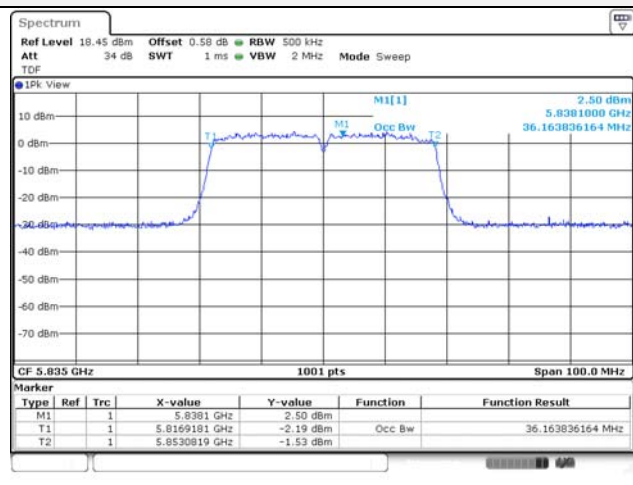
99% bandwidth



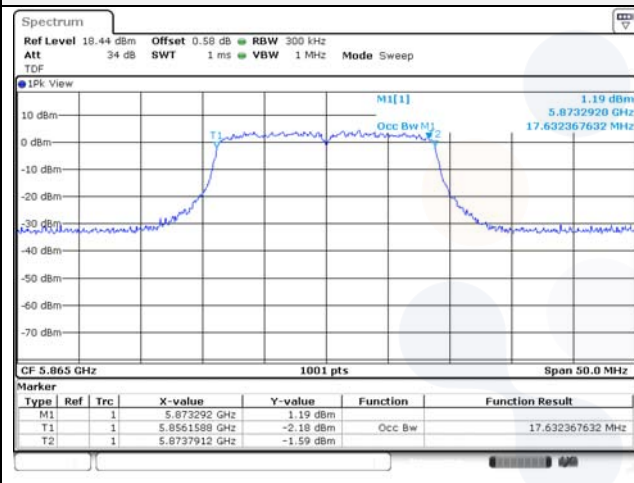
UNII-4 / 802.11ac VHT 20 / Low ch.



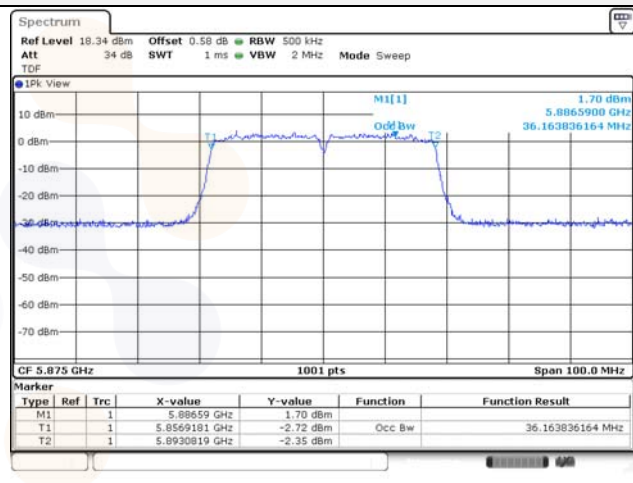
UNII-4 / 802.11ac VHT40 / Low ch.



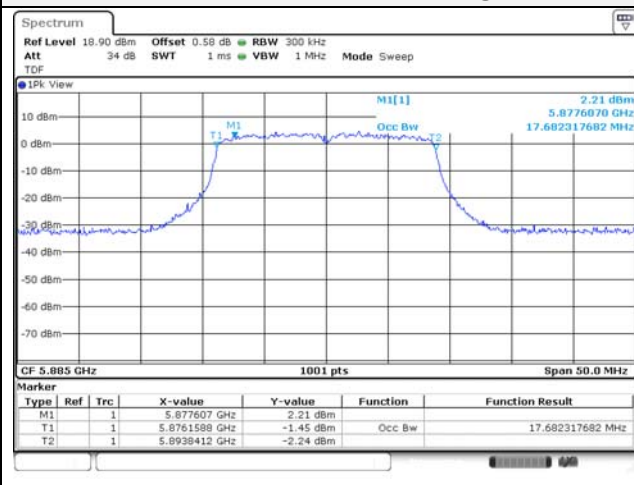
UNII-4 / 802.11ac VHT 20 / Mid ch.



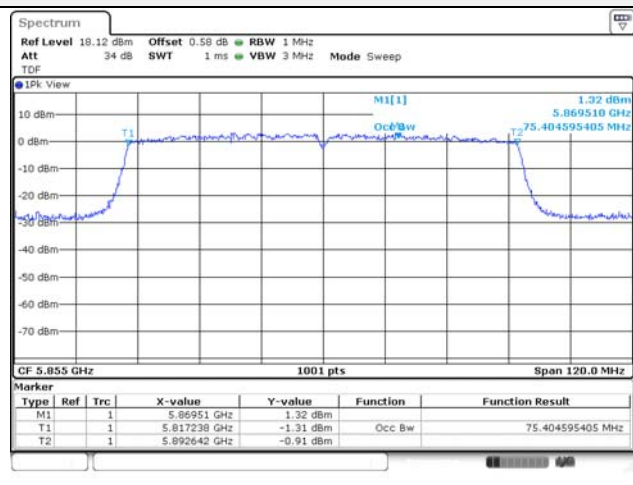
UNII-4 / 802.11ac VHT40 / High ch.



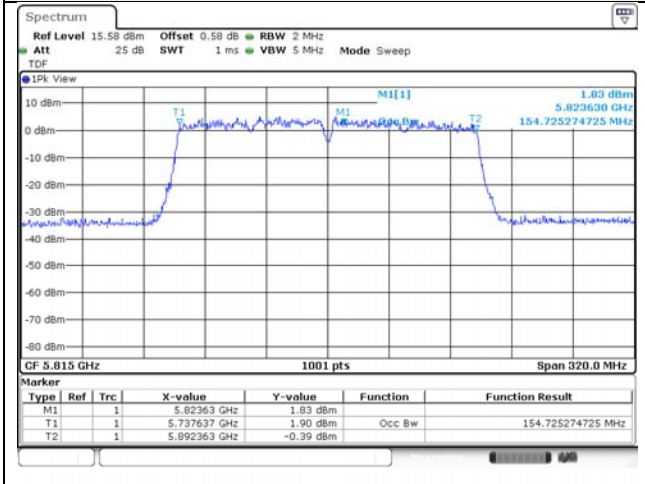
UNII-4 / 802.11ac VHT 20 / High ch.



UNII-4 / 802.11ac VHT80 / Mid ch.



UNII-4 / 802.11ac VHT 160 / Mid ch.



Blank



7.5. Straddle channel

26dB bandwidth & 99% Bandwidth

SISO

Test mode	Band	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
			ANT1	ANT1
802.11a	UNII-2C	5 720	15.34	13.24
802.11a	UNII-3	5 720	4.79	3.24

Notes:

- For 99% Bandwidth, measured 99% occupied bandwidth is separated as below.
 - For UNII band 2C = 5 725 MHz – T1 (Measured frequency on the marker table)
 - For UNII band 3 = T2 (Measured frequency on the marker table) – 5 725 MHz



MIMO

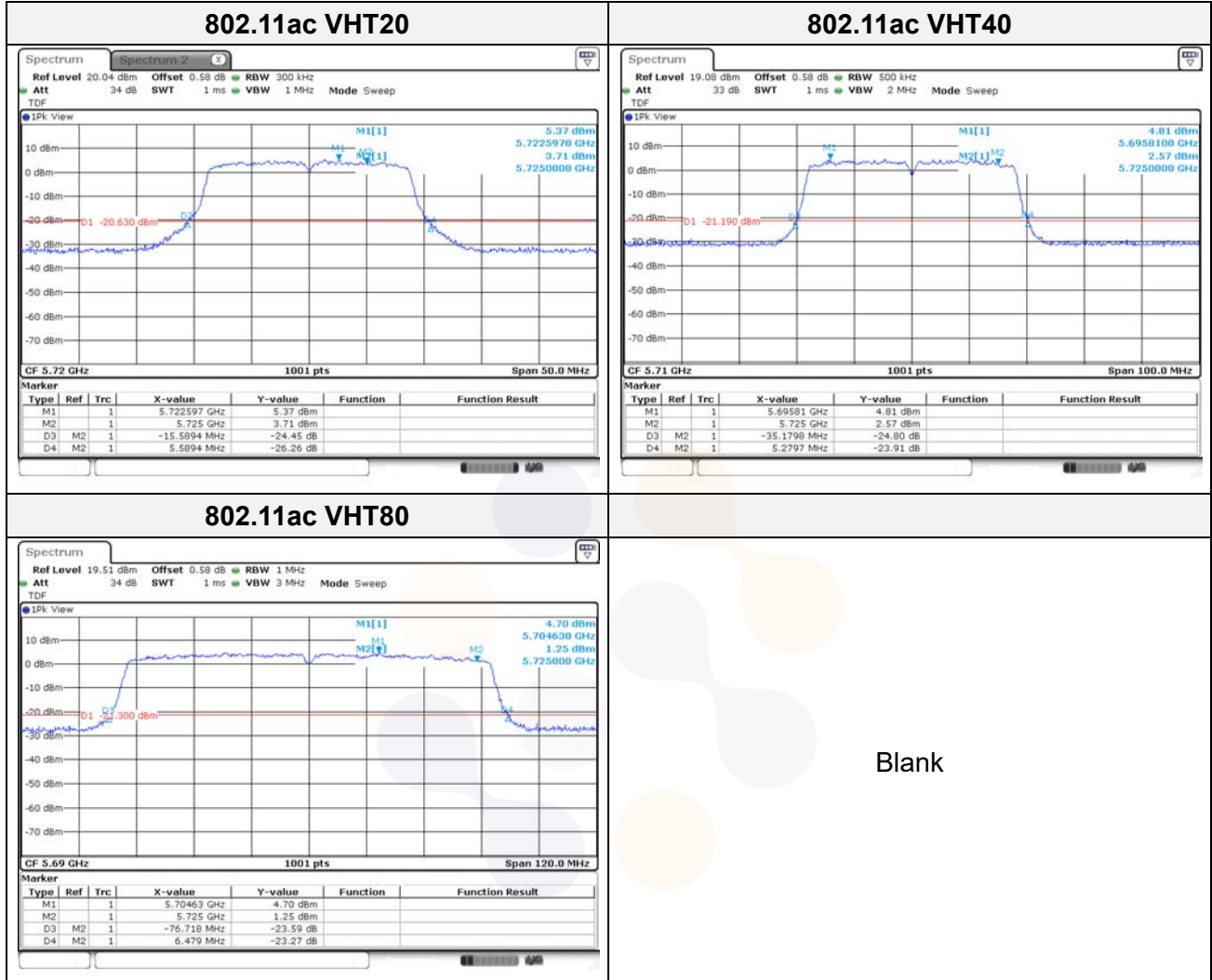
Test mode	Band	Frequency (MHz)	26dB Bandwidth (MHz)		99% Bandwidth (MHz)	
			ANT1	ANT2	ANT1	ANT2
802.11a	UNII-2C	5 720	15.29	15.24	13.24	13.24
802.11n HT20			15.54	15.39	13.84	13.79
802.11ac VHT20			15.59	15.29	13.84	13.84
802.11a	UNII-3	5 720	5.24	5.24	3.24	3.19
802.11n HT20			5.54	5.59	3.79	3.79
802.11ac VHT20			5.59	5.54	3.79	3.84
802.11n HT40	UNII-2C	5 710	35.08	34.88	33.08	33.08
802.11ac VHT40			35.18	34.98	33.08	33.08
802.11n HT40	UNII-3	5 710	5.38	4.88	3.08	3.08
802.11ac VHT40			5.28	5.28	3.08	3.08
802.11ac VHT80	UNII-2C	5 690	76.72	76.36	72.76	72.64
	UNII-3	5 690	6.48	6.84	2.76	2.76

Notes:

- For 99% Bandwidth, measured 99% occupied bandwidth is separated as below.
 - For UNII band 2C = 5 725 MHz – T1 (Measured frequency on the marker table)
 - For UNII band 3 = T2 (Measured frequency on the marker table) – 5 725 MHz

In order to simplify the report, attached plots were only MIMO ANT 1

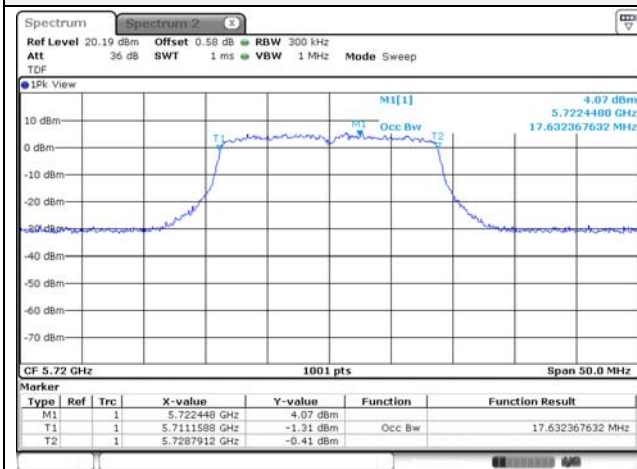
26dB bandwidth



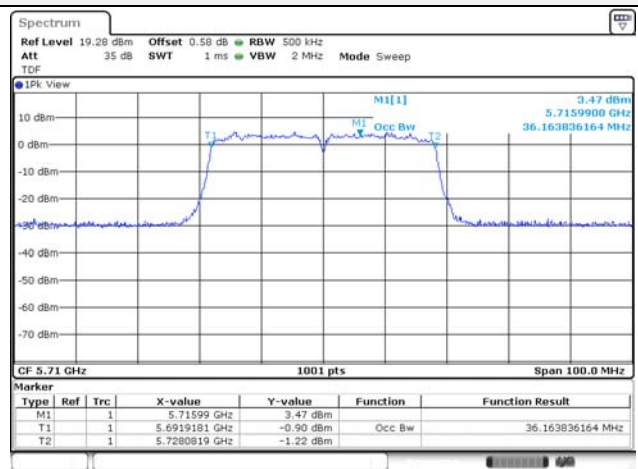
Blank

99% bandwidth

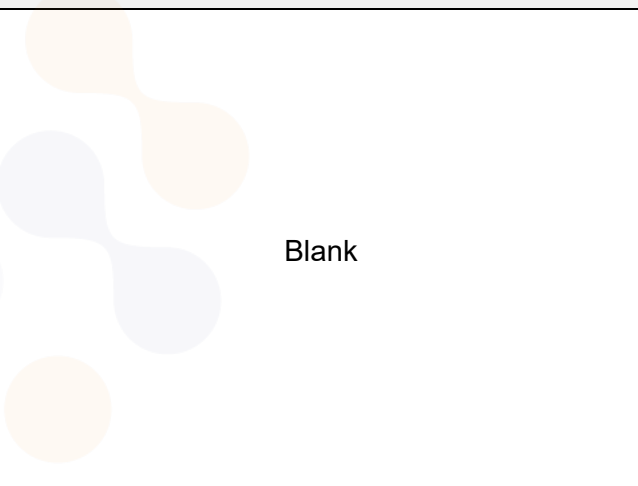
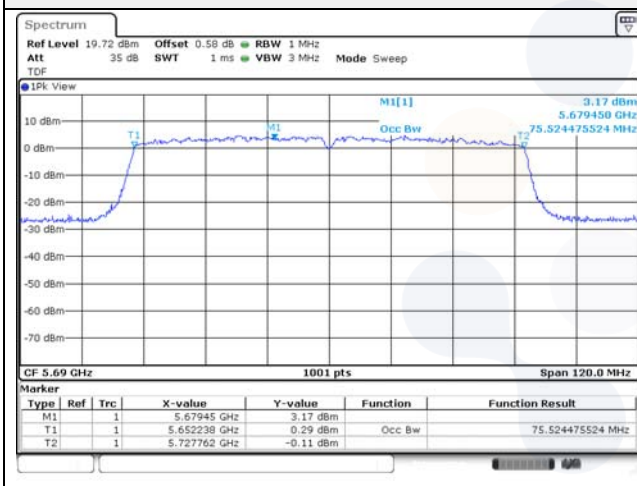
802.11ac VHT20



802.11ac VHT40



802.11ac VHT80



6dB bandwidth

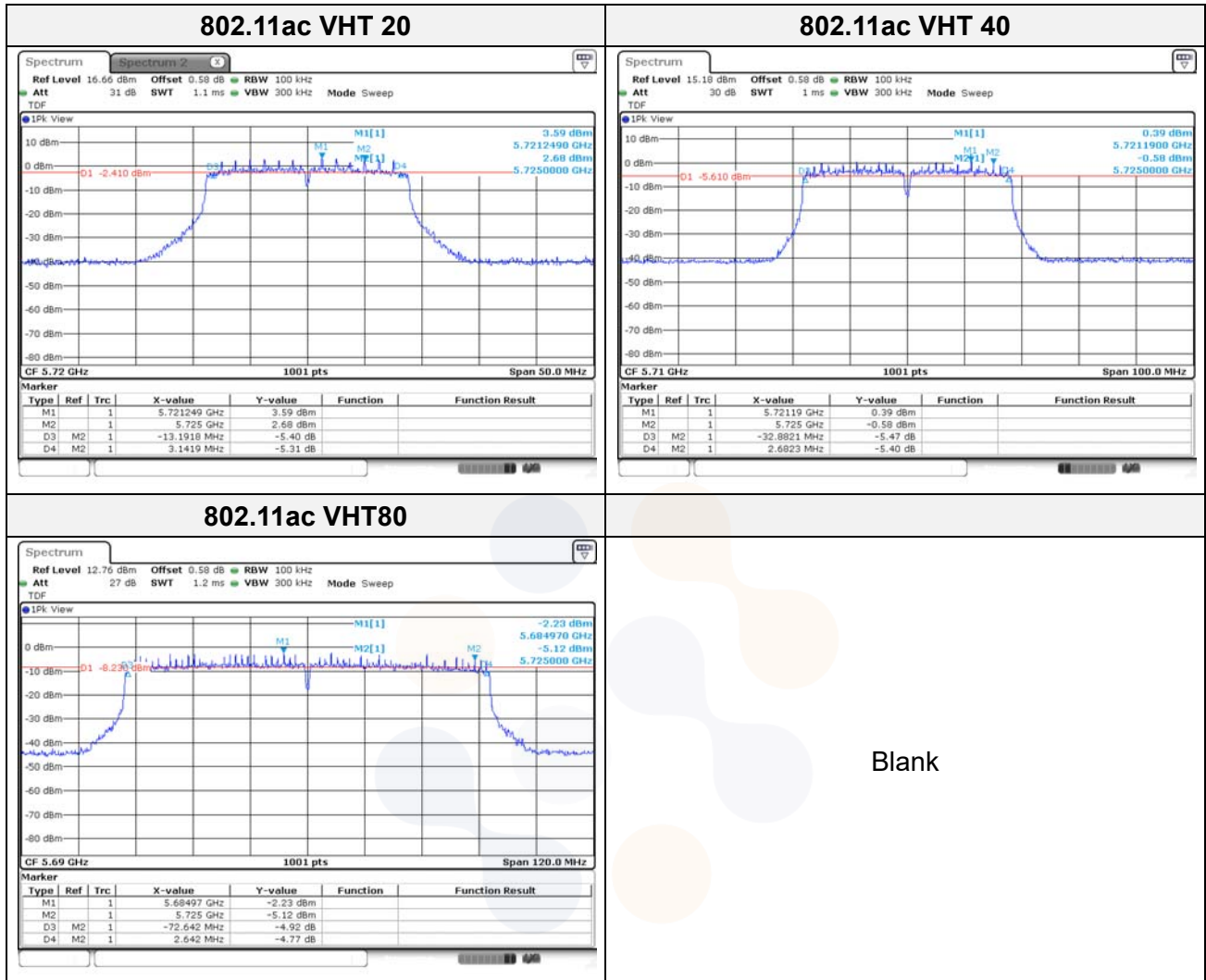
SISO

Test mode	Band	Frequency (MHz)	6dB Bandwidth (MHz)		Limit (MHz)
			ANT1		
802.11a	UNII-3	5 720	3.19		0.50

MIMO

Test mode	Band	Frequency (MHz)	6dB Bandwidth (MHz)		Limit (MHz)
			ANT1	ANT2	
802.11a	UNII-3	5 720	2.89	2.79	0.50
802.11n HT20			3.19	3.39	0.50
802.11ac VHT20			3.14	3.39	0.50
802.11n HT40	UNII-3	5 710	2.68	2.88	0.50
802.11ac VHT40			2.68	3.18	0.50
802.11ac VHT80	UNII-3	5 690	2.64	2.64	0.50

In order to simplify the report, attached plots were only MIMO ANT 1



Output Power

-SISO Conducted Output Power

Test mode	Band	Frequency (MHz)	Measured output power			FCC Limit (dBm)	IC Limit (dBm)	
			Reading (dBm)		DCF (dB)			Result (dBm)
			ANT1					
802.11a	UNII-2C	5 720	12.22		0.37	12.59	22.86	23.17
802.11a	UNII-3	5 720	5.75			6.12	30.00	30.00

Notes:

1. Result(dB m) = Reading Power + D.C.F

-SISO e.i.r.p.

Test mode	Band	Frequency (MHz)	Measured output power			MAX e.i.r.p Limit (dBm)
			Conducted Output Power (dBm)	ANT gain (dB)	MAX e.i.r.p (dBm)	
			ANT1	ANT1	ANT1	
802.11a	UNII-2C	5 720	12.59	-7.16	5.43	29.17
802.11a	UNII-3	5 720	6.12	-7.16	-1.04	30.00

Notes:

1. e.i.r.p. Calculation: e.i.r.p. (dBm) = Conducted output power (dBm) + Antenna gain (dBi)

-MIMO Conducted Output Power

Test mode	Band	Frequency (MHz)	Measured output power				FCC Limit (dBm)	IC Limit (dBm)
			Reading (dBm)		DCF (dB)	Result (dBm)		
			ANT1	ANT2				
802.11a	UNII-2C	5 720	12.67	11.47	0.29	15.41	22.83	23.16
802.11n HT20			12.08	10.94	0.61	15.17	22.87	23.45
802.11ac VHT20			12.04	10.83	0.61	15.10	22.84	23.46
802.11a	UNII-3	5 720	6.52	5.23	0.29	9.22	30.00	30.00
802.11n HT20			6.05	5.01	0.61	9.18	30.00	30.00
802.11ac VHT20			5.93	4.84	0.61	9.04	30.00	30.00
802.11n HT40	UNII-2C	5 710	12.27	11.78	1.13	16.17	23.98	23.98
802.11ac VHT40			12.29	11.82	1.10	16.17	23.98	23.98
802.11n HT40	UNII-3	5 710	1.49	1.15	1.13	5.46	30.00	30.00
802.11ac VHT40			1.25	0.86	1.10	5.17	30.00	30.00
802.11ac VHT80	UNII-2C	5 690	11.32	11.34	1.86	16.20	23.98	23.98
	UNII-3	5 690	-3.39	-3.48	1.86	1.44	30.00	30.00

Notes:

1. Result(dB m) = $10\log(10^{(\text{ANT } 1/10)} + 10^{(\text{ANT } 2/10)}) + \text{D.C.F}$

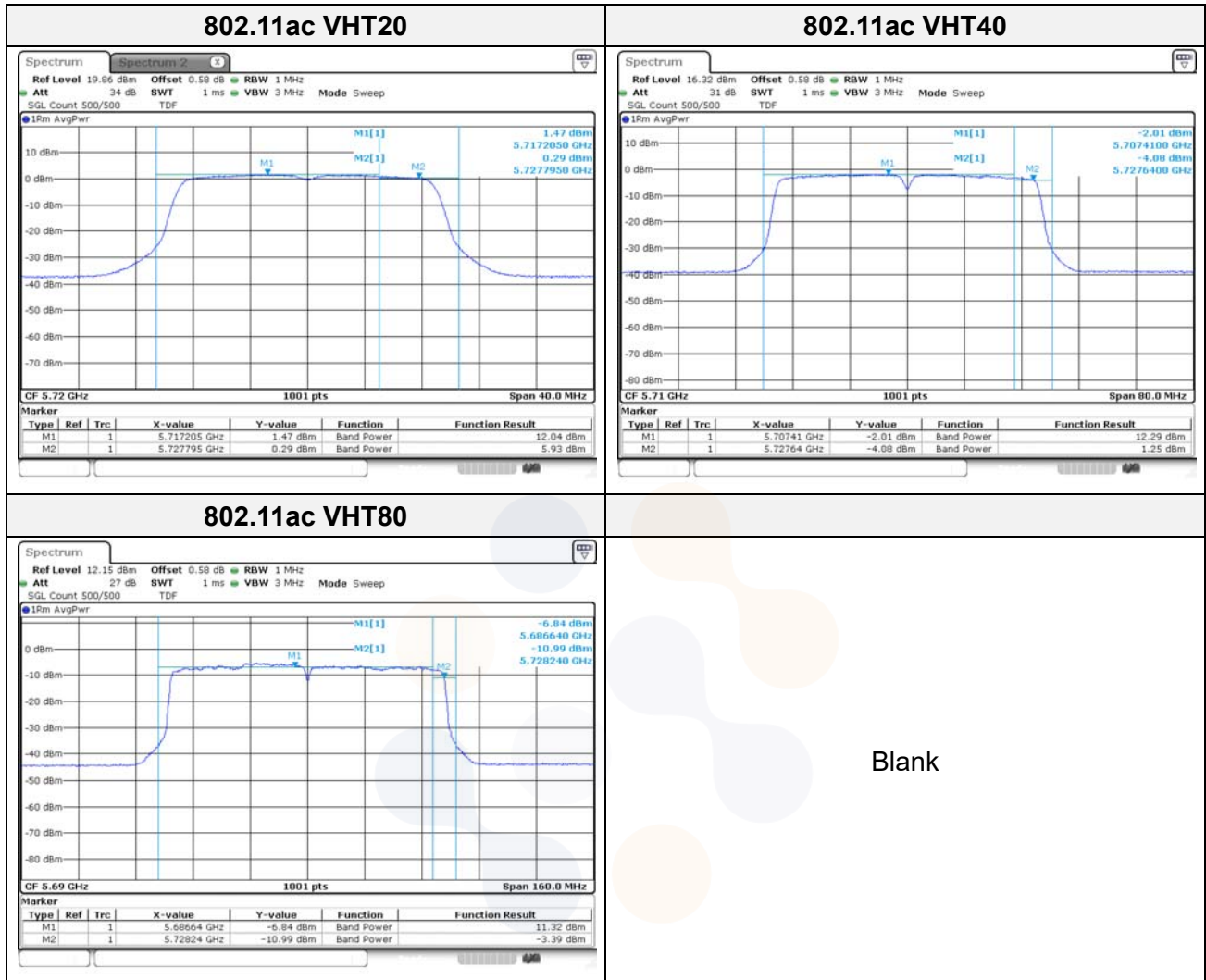
-MIMO e.i.r.p.

Test mode	Band	Frequency (MHz)	Measured output power			Limit (dBm)
			Conducted output Power (dBm)	ANT gain (dBi)	MAX e.i.r.p (dBm)	
802.11a	UNII-2C	5 720	15.41	-4.06	11.35	29.16
802.11n HT20			15.17		11.11	29.45
802.11ac VHT20			15.10		11.04	29.46
802.11a	UNII-3	5 720	9.22	-4.01	5.16	30.00
802.11n HT20			9.18		5.12	
802.11ac VHT20			9.04		4.98	
802.11n HT40	UNII-2C	5 710	16.17	-4.06	12.11	30.00
802.11ac VHT40			16.17		12.11	
802.11n HT40	UNII-3	5 710	5.46	-4.01	1.40	30.00
802.11ac VHT40			5.17		1.11	
802.11ac VHT80	UNII-2C	5 690	16.20	-4.06	12.14	30.00
	UNII-3	5 690	1.44	-4.01	-2.62	30.00

Notes:

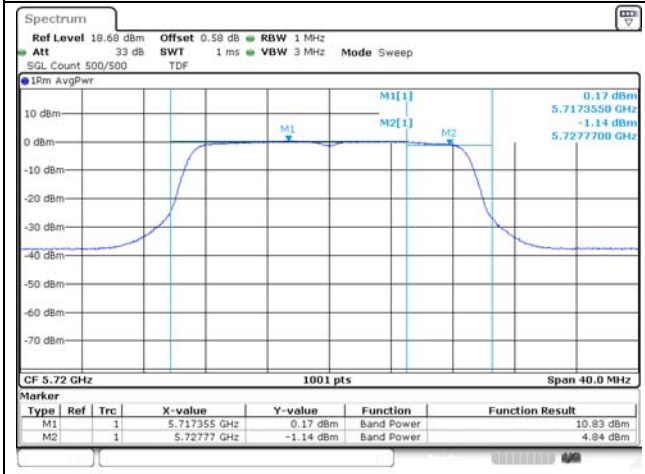
- e.i.r.p. Calculation: e.i.r.p. (dBm) = Conducted output power (dBm) + Antenna gain (dBi)

In order to simplify the report, attached plots were only MIMO
 ANT 1

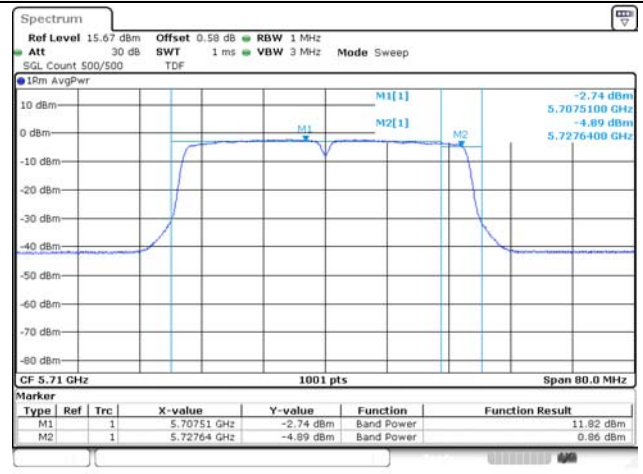


ANT2

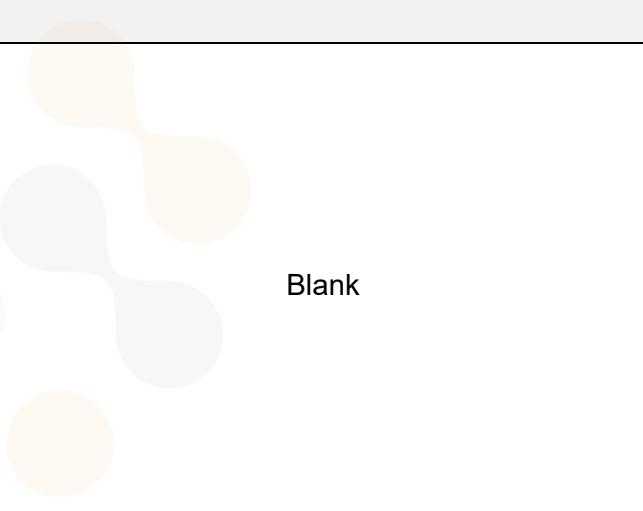
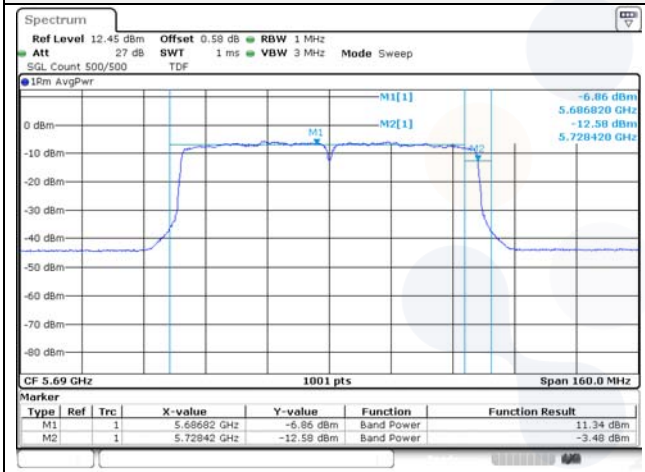
802.11ac VHT20



802.11ac VHT40



802.11ac VHT80



Power Spectral Density

-SISO

Test mode	Band	Frequency (MHz)	Measured PSD (dBm/MHz)	DCF (dB)	Maximum PSD (dB m/MHz)	Limit (dBm/MHz)
			ANT1		ANT1	
802.11a	UNII-2C	5 720	1.85	0.28	2.13	11.00

Test mode	Band	Frequency (MHz)	Measured PSD (dBm/MHz)	DCF (dB)	Maximum PSD (dB m/MHz)	Limit (dBm/MHz)
			ANT1		ANT1	
802.11a	UNII-3	5 720	-1.35	0.28	-1.07	11.00

Notes:

- Maximum PSD calculation
 - Maximum PSD = Measured PSD + D.C.F



-MIMO

Test mode	Band	Frequency (MHz)	Measured PSD (dBm/MHz)		DCF (dB)	Maximum PSD (dB m/MHz)	Limit (dBm/MHz)
			ANT1	ANT2			
802.11a	UNII-2C	5 720	2.85	1.37	0.29	5.47	11.00
802.11n HT20			1.60	0.51	0.61	4.71	
802.11ac VHT20			1.59	0.49	0.61	4.69	
802.11n HT40		5 710	-1.83	-2.63	1.13	1.92	
802.11ac VHT40			-1.87	-2.46	1.10	1.96	
802.11ac VHT80			5 690	-5.61	-5.77	1.86	

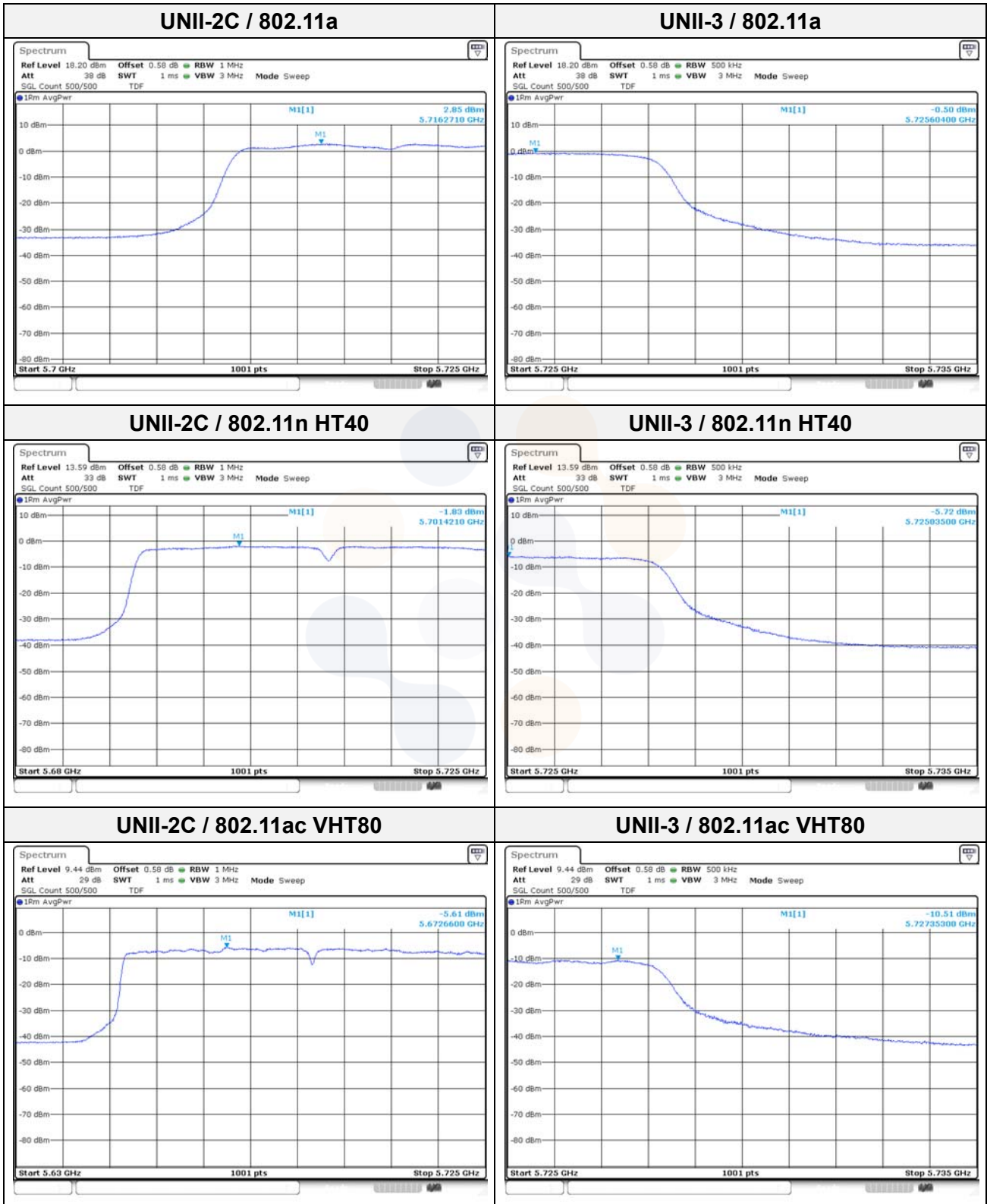
Test mode	Band	Frequency (MHz)	Measured PSD (dBm/MHz)		DCF (dB)	Maximum PSD (dB m/MHz)	Limit (dBm/MHz)
			ANT1	ANT2			
802.11a	UNII-3	5 720	-0.50	-1.91	0.29	2.15	11.00
802.11n HT20			-1.64	-2.74	0.61	1.47	
802.11ac VHT20			-1.67	-2.63	0.61	1.49	
802.11n HT40		5 710	-5.72	-5.96	1.13	-1.70	
802.11ac VHT40			-5.69	-6.21	1.10	-1.83	
802.11ac VHT80			5 690	-10.51	-10.00	1.86	

Notes:

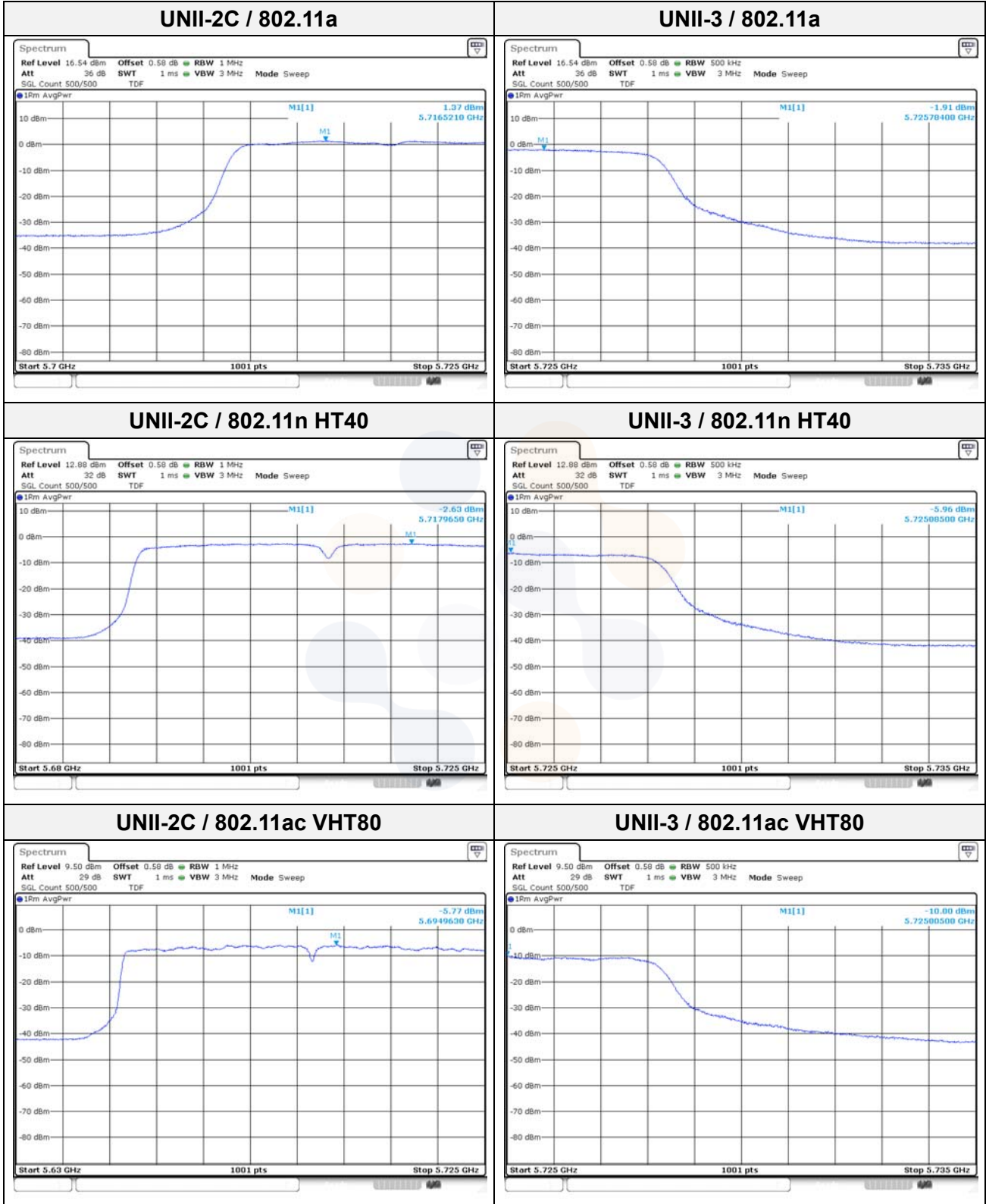
1. Maximum PSD calculation

- Maximum PSD = Measured $10\log(10^{(\text{ANT } 1/10)} + 10^{(\text{ANT } 2/10)}) + \text{D.C.F}$

In order to simplify the report, attached plots were only MIMO
 ANT1



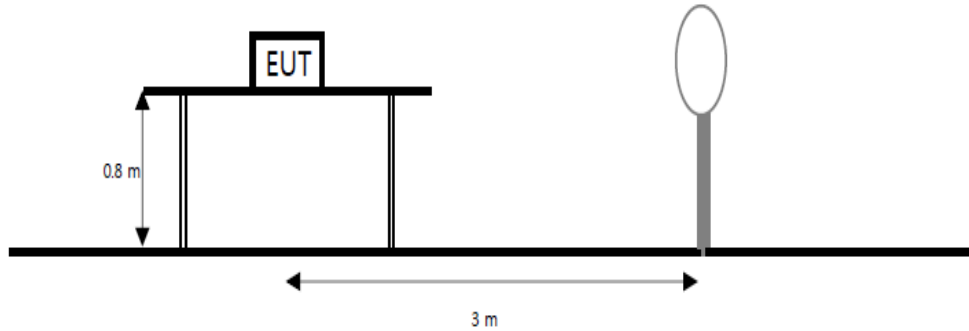
MIMO ANT2



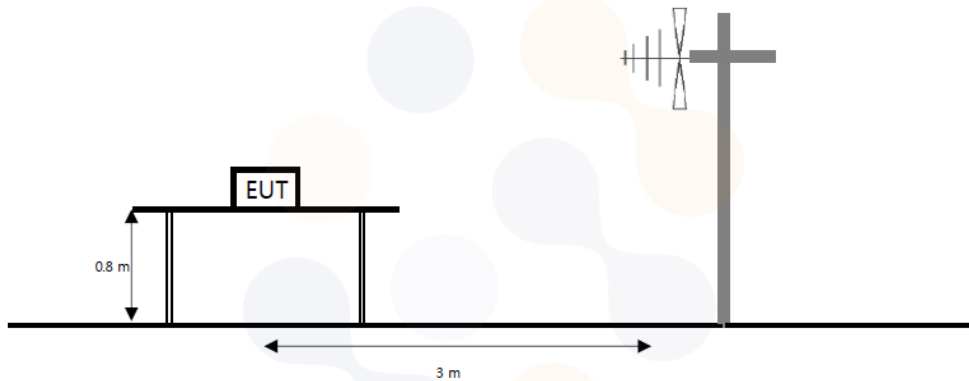
7.6. Spurious Emission, Band Edge and Restricted bands

Test setup

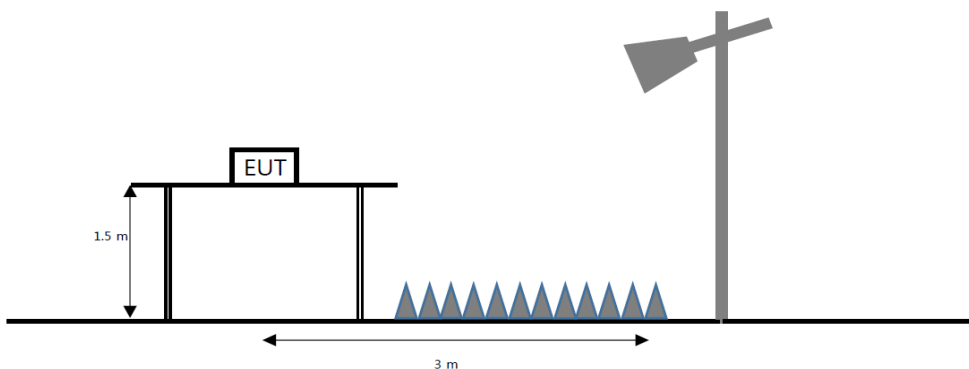
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 kHz to 30 MHz Emissions



The diagram below shows the test setup that is utilized to make the measurements for emission from 30 MHz to 1 GHz emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 1 GHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz emissions, whichever is lower.



Limit

FCC

According to section 15.209(a) except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field strength ($\mu V/m$)	Measurement distance (m)
0.009 - 0.490	2 400/F(kHz)	300
0.490 - 1.705	24 000/F(kHz)	30
1.705 - 30	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., Section 15.231 and 15.241.

According to section 15.205(a) and (b) only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.009 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
0.495 - 0.505	16.694 75 - 16.695 25	608 - 614	5.35 - 5.46
2.173 5 - 2.190 5	16.804 25 - 16.804 75	960 - 1 240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1 300 - 1 427	8.025 - 8.5
4.177 25 - 4.177 75	37.5 - 38.25	1 435 - 1 626.5	9.0 - 9.2
4.207 25 - 4.207 75	73 - 74.6	1 645.5 - 1 646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1 660 - 1 710	10.6 - 12.7
6.267 75 - 6.268 25	108 - 121.94	1 718.8 - 1 722.2	13.25 - 13.4
6.311 75 - 6.312 25	123 - 138	2 200 - 2 300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2 310 - 2 390	15.35 - 16.2
8.362 - 8.366	156.524 75 - 156.525	2 483.5 - 2 500	17.7 - 21.4
8.376 25 - 8.386 75	25	2 690 - 2 900	22.01 - 23.12
8.414 25 - 8.414 75	156.7 - 156.9	3 260 - 3 267	23.6 - 24.0
12.29 - 12.293	162.012 5 - 167.17	3 332 - 3 339	31.2 - 31.8
12.519 75 - 12.520 25	167.72 - 173.2	3 345.8 - 3 358	36.43 - 36.5
12.576 75 - 12.577 25	240 - 285	3 600 - 4 400	Above 38.6
13.36 - 13.41	322 - 335.4		

The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in section 15.209. At frequencies equal to or less than 1 000 MHz, compliance with the limits in section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1 000 MHz, compliance with the emission limits in section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in section 15.35 apply to these measurements.

According to section 15.407(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:

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

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.

For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

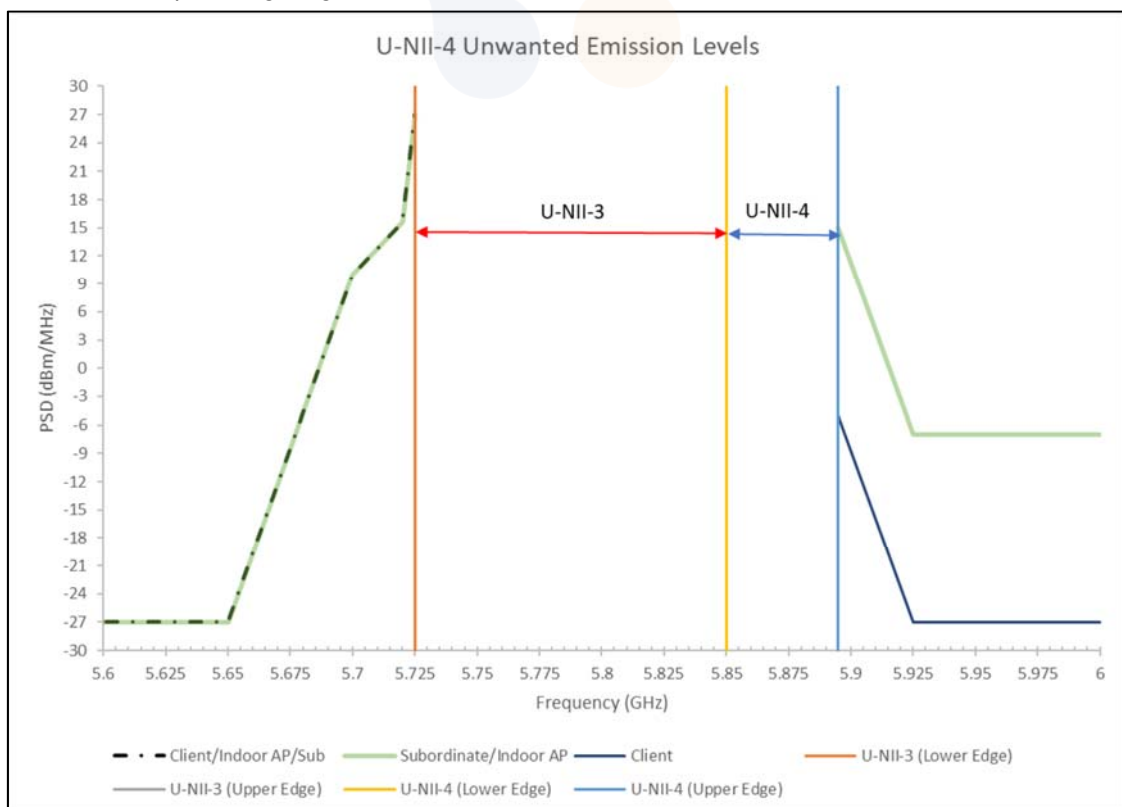
For transmitters operating solely in the 5.850-5.895 GHz band or operating on a channel that spans across 5.725-5.895 GHz:

[RMS detector]

For a client device, all emissions at or above 5.895 GHz shall not exceed an e.i.r.p. of -5 dBm/MHz and shall decrease linearly to an e.i.r.p. of -27 dBm/MHz at or above 5.925 GHz.

[Peak detector]

For a client device or indoor access point or subordinate device, all emissions below 5.725 GHz shall not exceed an e.i.r.p. of -27 dBm/MHz at 5.65 GHz increasing linearly to 10 dBm/MHz at 5.7 GHz, and from 5.7 GHz increasing linearly to a level of 15.6 dBm/MHz at 5.72 GHz, and from 5.72 GHz increasing linearly to a level of 27 dBm/MHz at 5.725 GHz.



IC

According to RSS-247(5.5), In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

According to RSS-Gen(8.9), Except where otherwise indicated in the applicable RSS, radiated emissions shall comply with the field strength limits shown in table 5 and table 6. Additionally, the level of any transmitter unwanted emission shall not exceed the level of the transmitter’s fundamental emission.

Table 5- General field strength limits at frequencies above 30 MHz

Frequency(MHz)	Field strength ($\mu\text{V}/\text{m}$ at 3 m)
30 to 88	100
88 to 216	150
216 to 960	200
Above 960	500

Table 6- General field strength limits at frequencies below 30 MHz

Frequency	Magnetic field strength (H-Field) ($\mu\text{A}/\text{m}$)	Measurement distance(m)
9 – 490 kHz ¹⁾	6.37/F (F in kHz)	300
490 – 1705 kHz	63.7/F (F in kHz)	30
1.705 - 30 MHz	0.08	30

According to RSS-Gen(8.10), Restricted frequency bands, identified in table 7, are designated primarily for safety-of-life services (distress calling and certain aeronautical activities), certain satellite downlinks, radio astronomy and some government uses. Except where otherwise indicated, the following conditions related to the restricted frequency bands apply:

- (a) The transmit frequency, including fundamental components of modulation, of licence-exempt radio apparatus shall not fall within the restricted frequency bands listed in table 7 except for apparatus compliant with RSS-287, Emergency Position Indicating Radio Beacons (EPIRB), Emergency Locator Transmitters (ELT), Personal Locator Beacons (PLB), and Maritime Survivor Locator Devices (MSLD).
- (b) Unwanted emissions that fall into restricted frequency bands listed in table 7 shall comply with the limits specified in table 5 and table 6.
- (c) Unwanted emissions that do not fall within the restricted frequency bands listed in table 7 shall comply either with the limits specified in the applicable RSS or with those specified in table 5 and table 6.

Table 7- Restricted frequency bands*

MHz	MHz	GHz
0.090 - 0.110	149.9 - 150.05	9.0 - 9.2
0.495 - 0.505	156.52475 - 156.52525	9.3 - 9.5
2.1735 - 2.1905	156.7 - 156.9	10.6 - 12.7
3.020 - 3.026	162.0125 - 167.17	13.25 - 13.4
4.125 - 4.128	167.72 - 173.2	14.47 - 14.5
4.17725 - 4.17775	240 - 285	15.35 - 16.2
4.20725 - 4.20775	322 - 335.4	17.7 - 21.4
5.677 - 5.683	399.9 - 410	22.01 - 23.12
6.215 - 6.218	608 - 614	23.6 - 24.0
6.26775 - 6.26825	960 - 1427	31.2 - 31.8
6.31175 - 6.31225	1435 - 1626.5	36.43 - 36.5
8.291 - 8.294	1645.5 - 1646.5	Above 38.6
8.362 - 8.366	1660 - 1710	
8.37625 - 8.38675	1718.8 - 1722.2	
8.41425 - 8.41475	2200 - 2300	
12.29 - 12.293	2310 - 2390	
12.51975 - 12.52025	2483.5 - 2500	
12.57675 - 12.57725	2655 - 2900	
13.36 - 13.41	3260 - 3267	
16.42 - 16.423	3332 - 3339	
16.69475 - 16.69525	3345.8 - 3358	
16.80425 - 16.80475	3500 - 4400	
25.5 - 25.67	4500 - 5150	
37.5 - 38.25	5350 - 5460	
73 - 74.6	7250 - 7750	
74.8 - 75.2	8025 - 8500	
108 - 138	--	

* Certain frequency bands listed in table 7 and in bands above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to related devices are set out in the 200 and 300 series of RSSs.

Test procedure

ANSI C63.10-2013 Section 12.7.7.2, 12.7.5, 12.7.6
KDB 789033 D02 v02r01 – Section G
KDB 291074 D02 v01 – 2.10.2

Test settings

Peak field strength measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = as specified in table
3. VBW \geq (3 \times RBW)
4. Detector = peak
5. Sweep time = auto
6. Trace mode = max hold
7. Allow sweeps to continue until the trace stabilizes

Table. RBW as a function of frequency

Frequency	RBW
9 kHz to 150 kHz	200 Hz to 300 Hz
0.15 MHz to 30 MHz	9 kHz to 10 kHz
30 MHz to 1 000 MHz	100 kHz to 120 kHz
> 1 000 MHz	1 MHz

Average field strength measurements

Trace averaging with continuous EUT transmission at full power


If the EUT can be configured or modified to transmit continuously ($D \geq 98\%$), then the average emission levels shall be measured using the following method (with EUT transmitting continuously):

1. RBW = 1 MHz (unless otherwise specified).
2. VBW \geq (3 \times RBW).
3. Detector = RMS (power averaging), if $[\text{span} / (\# \text{ of points in sweep})] \leq (\text{RBW} / 2)$. Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied, then the detector mode shall be set to peak.
4. Averaging type = power (i.e., rms):
 - 1) As an alternative, the detector and averaging type may be set for linear voltage averaging.
 - 2) Some instruments require linear display mode to use linear voltage averaging. Log or dB averaging shall not be used.
5. Sweep time = auto.
6. Perform a trace average of at least 100 traces.

Trace averaging across ON and OFF times of the EUT transmissions followed by duty cycle correction

If continuous transmission of the EUT ($D \geq 98\%$) cannot be achieved and the duty cycle is constant (duty cycle variations are less than $\pm 2\%$), then the following procedure shall be used:

1. The EUT shall be configured to operate at the maximum achievable duty cycle.
2. Measure the duty cycle D of the transmitter output signal as described in 11.6.
3. RBW = 1 MHz (unless otherwise specified).
4. VBW \geq [3 \times RBW].
5. Detector = RMS (power averaging), if $[\text{span} / (\# \text{ of points in sweep})] \leq (\text{RBW} / 2)$. Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this

<p style="text-align: center;">Eurofins KCTL Co.,Ltd. 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea TEL: 82-31-285-0894 FAX: 82-505-299-8311 www.kctl.co.kr</p>	<p style="text-align: center;">Report No.: KR22-SRF0170-A Page (96) of (185)</p>	
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condition cannot be satisfied, then the detector mode shall be set to peak.

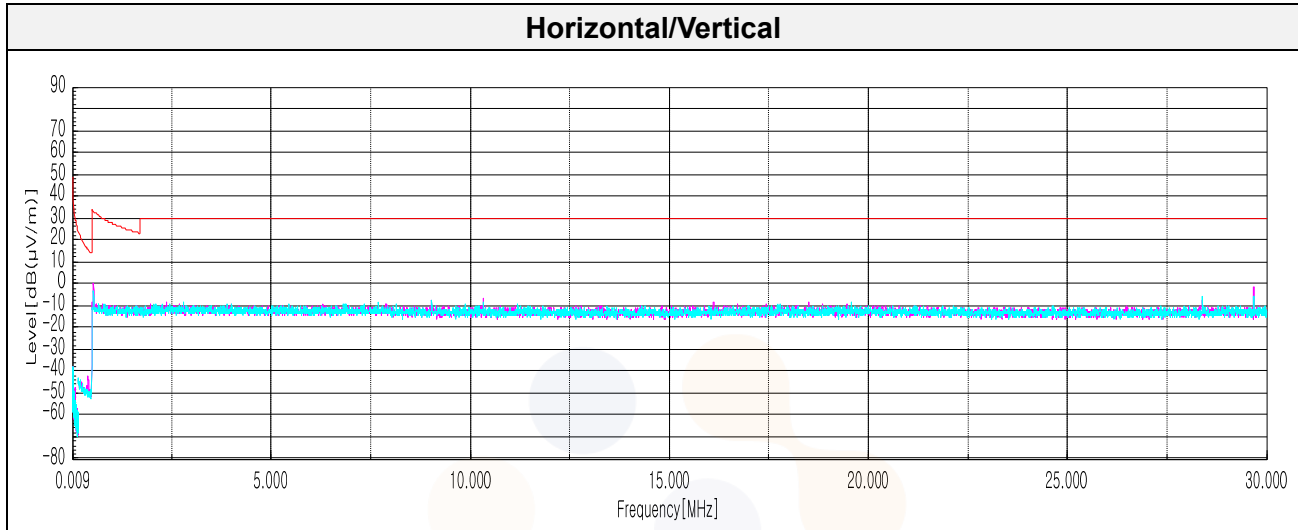
6. Averaging type = power (i.e., rms):
 - 1) As an alternative, the detector and averaging type may be set for linear voltage averaging.
 - 2) Some instruments require linear display mode to use linear voltage averaging. Log or dB averaging shall not be used.
7. Sweep time = auto.
8. Perform a trace average of at least 100 traces.
9. A correction factor shall be added to the measurement results prior to comparing with the emission limit to compute the emission level that would have been measured had the test been performed at 100% duty cycle. The correction factor is computed as follows:
 - 1) If power averaging (rms) mode was used in step f), then the applicable correction factor is $[10 \log (1 / D)]$, where D is the duty cycle.
 - 2) If linear voltage averaging mode was used in step f), then the applicable correction factor is $[20 \log (1 / D)]$, where D is the duty cycle.
 - 3) If a specific emission is demonstrated to be continuous ($D \geq 98\%$) rather than turning ON and OFF with the transmit cycle, then no duty cycle correction is required for that emission.

Notes:

1. $f < 30$ MHz, extrapolation factor of 40 dB/decade of distance. $F_d = 40 \log(D_m/D_s)$
 $f \geq 30$ MHz, extrapolation factor of 20 dB/decade of distance. $F_d = 20 \log(D_m/D_s)$
Where:
 F_d = Distance factor in dB
 D_m = Measurement distance in meters
 D_s = Specification distance in meters
2. Factors(dB) = Antenna factor(dB/m) + Cable loss(dB) + or Amp. gain(dB) + or F_d (dB)
3. The worst-case emissions are reported however emissions whose levels were not within 20 dB of respective limits were not reported.
4. Average test would be performed if the peak result were greater than the average limit.
5. ¹⁾ means restricted band.
6. Below 30 MHz frequency range, In order to search for the worst result, all orientations about parallel, perpendicular, and ground-parallel were investigated then reported. when the emission level was higher than 20 dB of the limit, then the following statement shall be made: "No spurious emissions were detected within 20 dB of the limit."
7. For above 1 GHz pre-scan 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.
8. 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 377Ω. For example, the measurement frequency X kHz resulted in a level of Y dBμV/m, which is equivalent to $Y - 51.5 = Z$ dBμA/m, which has the same margin, W dB, to the corresponding RSS-GEN Table 6 limit as it has to be 15.209(a) limit.

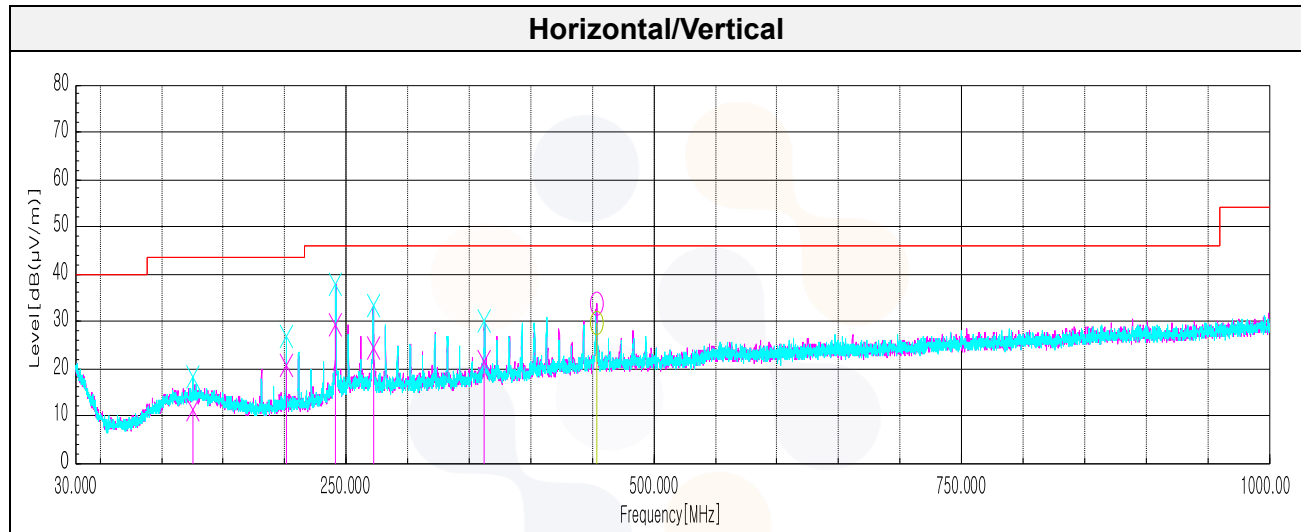
Test results (Below 30 MHz) – Worst case: 802.11a 2TX MIMO / UNII-4_5 885 MHz

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Quasi peak data								
No spurious emissions were detected within 20 dB of the limit.								



Test results (Below 1 000 MHz) – Worst case: 802.11a 2TX MIMO / UNII-4_5 885 MHz

Frequency (MHz)	Pol. (V/H)	Reading (dB(μV))	Ant. Factor (dB)	Amp.+Cable (dB)	DCF (dB)	Result (dB(μV/m))	Limit (dB(μV/m))	Margin (dB)
Quasi peak data								
125.18 ¹⁾	V	20.70	17.90	-27.46	-	11.14	43.50	32.36
201.21	V	31.50	15.32	-26.37	-	20.45	43.50	23.05
241.58 ¹⁾	V	37.70	17.32	-25.73	-	29.29	46.00	16.71
271.89 ¹⁾	V	31.00	18.72	-25.39	-	24.33	46.00	21.67
362.35	V	25.10	20.69	-24.26	-	21.53	46.00	24.47
453.53	H	29.90	22.77	-23.30	-	29.37	46.00	16.63



Test results (Above 1 000 MHz)

802.11a UNII-1 ANT1

Lowest Channel (5 180 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 013.11 ¹⁾	V	41.19	33.72	-23.96	-	50.95	74.00	23.05
7 770.03	V	66.11	35.31	-51.14	-	50.28	68.20	17.92
10 340.28	V	57.32	37.07	-47.96	-	46.43	68.20	21.77
15 551.58 ¹⁾	V	56.78	40.34	-46.82	-	50.30	74.00	23.70
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Middle Channel (5 200 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
7 799.86	V	63.76	35.32	-51.08	-	48.00	68.20	20.20
10 329.14	H	58.87	37.06	-47.97	-	47.96	68.20	20.24
15 619.14 ¹⁾	V	56.93	40.40	-46.75	-	50.58	74.00	23.42
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

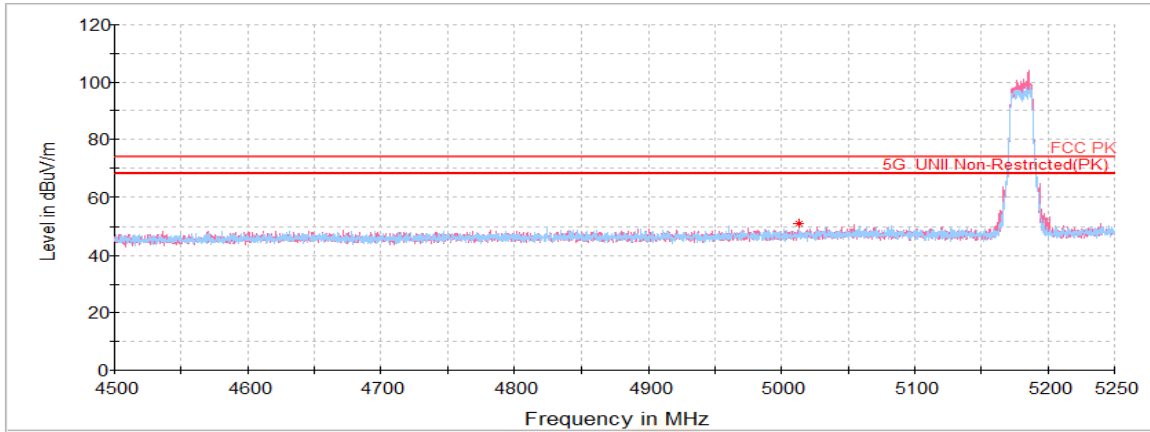
Highest Channel (5 240 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
10 480.80	V	57.67	37.18	-47.87	-	46.98	68.20	21.22
15 737.73 ¹⁾	H	56.38	40.49	-46.64	-	50.23	74.00	23.77
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11a UNII-1 ANT1

Lowest Channel (5 180 MHz)

Horizontal/Vertical for Band-edge



802.11a UNII-1 2TX MIMO

Lowest Channel (5 180 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
5 066.58 ¹⁾	V	43.41	33.78	-23.92	-	53.27	74.00	20.73
7 770.03	V	67.55	35.31	-51.14	-	51.72	68.20	16.48
10 187.55	H	58.78	36.95	-48.06	-	47.67	68.20	20.53
15 486.59 ¹⁾	H	60.01	40.19	-46.88	-	53.32	74.00	20.68
Average Data								
5 066.58 ¹⁾	V	32.38	33.78	-23.92	0.29	42.53	54.00	11.47
15 486.59 ¹⁾	H	47.73	40.19	-46.88	0.29	41.33	54.00	12.67

Middle Channel (5 200 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
7 800.22	V	68.36	35.32	-51.08	-	52.60	68.20	15.60
10 275.59	V	58.44	37.02	-48.00	-	47.46	68.20	20.74
15 671.48 ¹⁾	V	58.01	40.44	-46.70	-	51.75	74.00	22.25
Average Data								
15 671.48 ¹⁾	V	47.55	40.44	-46.70	0.29	41.58	54.00	12.42

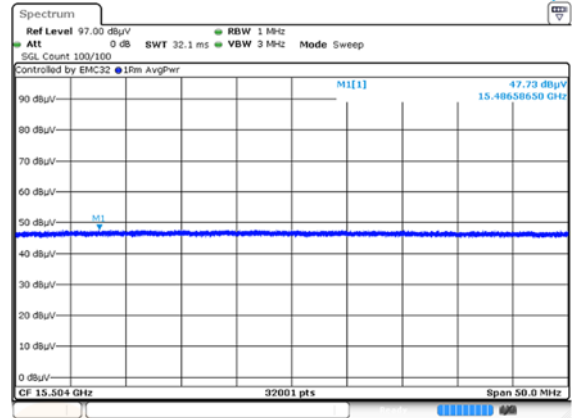
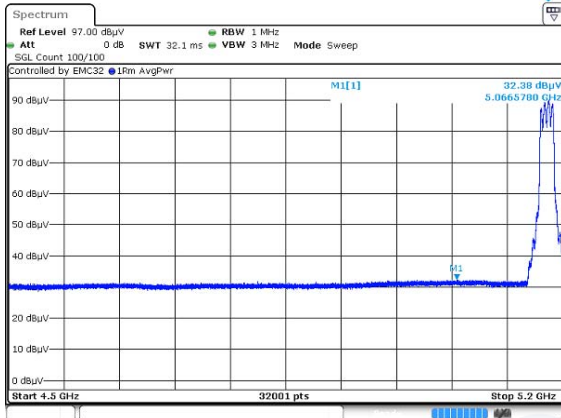
Highest Channel (5 240 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
7 859.88	V	64.35	35.34	-50.97	-	48.72	68.20	19.48
10 500.56	H	57.32	37.20	-47.86	-	46.66	68.20	21.54
15 699.64 ¹⁾	H	57.10	40.46	-46.68	-	50.88	74.00	23.12
Average Data								
No spurious emissions were detected within 20 dB of the limit								

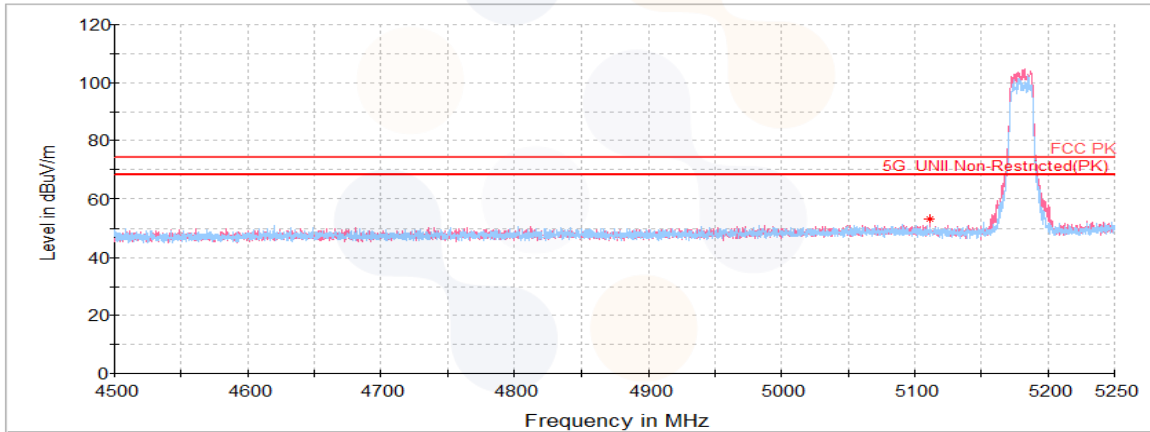
802.11a UNII-1 2TX MIMO

Lowest Channel (5 180 MHz)

Average data



Horizontal/Vertical for Band-edge



802.11 HT20 UNII-1 2TX MIMO

Lowest Channel (5 180 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 097.46 ¹⁾	V	41.93	33.82	-23.89	-	51.86	74.00	22.14
7 770.39	V	67.34	35.31	-51.14	-	51.51	68.20	16.69
10 316.20	V	57.43	37.05	-47.98	-	46.50	68.20	21.70
15 499.45 ¹⁾	V	58.05	40.20	-46.86	-	51.39	74.00	22.61
Average Data								
5 097.46 ¹⁾	V	32.56	33.82	-23.89	0.61	43.10	54.00	10.90
15 499.45 ¹⁾	V	47.86	40.20	-46.86	0.61	41.81	54.00	12.19

Middle Channel (5 200 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
7 799.86	V	67.22	35.32	-51.08	-	51.46	68.20	16.74
10 464.63	V	57.36	37.17	-47.88	-	46.65	68.20	21.55
15 653.64 ¹⁾	V	57.22	40.42	-46.72	-	50.92	74.00	23.08
Average Data								
No spurious emissions were detected within 20 dB of the limit								

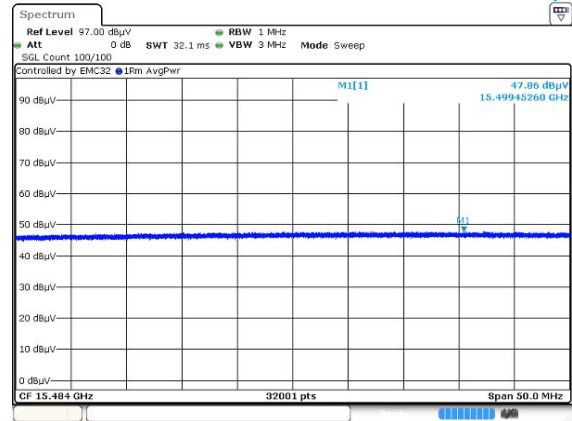
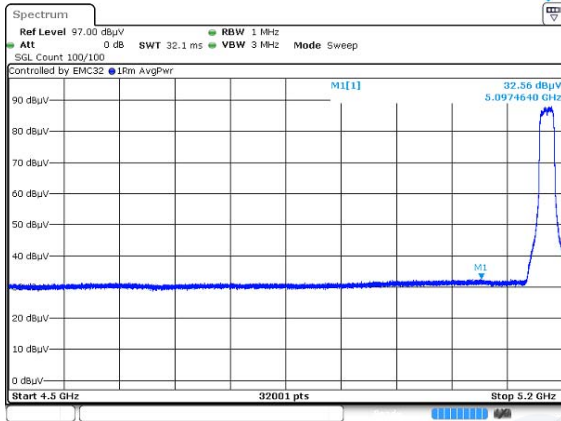
Highest Channel (5 240 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
10 476.13	H	58.59	37.18	-47.87	-	47.90	68.20	20.30
15 725.16 ¹⁾	V	57.01	40.48	-46.65	-	50.84	74.00	23.16
Average Data								
No spurious emissions were detected within 20 dB of the limit								

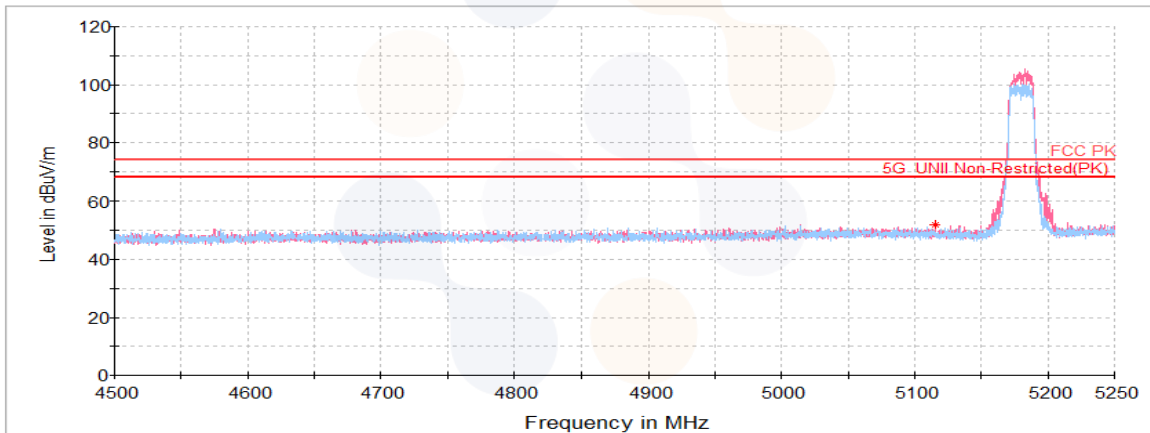
802.11 HT20 UNII-1 2TX MIMO

Lowest Channel (5 180 MHz)

Average data



Horizontal/Vertical for Band-edge



802.11 HT40 UNII-1 2TX MIMO

Lowest Channel (5 190 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 145.65 ¹⁾	V	44.32	33.87	-23.83	-	54.36	74.00	19.64
7 785.13	V	67.78	35.31	-51.11	-	51.98	68.20	16.22
10 277.39	H	58.72	37.02	-48.00	-	47.74	68.20	20.46
15 658.16 ¹⁾	H	57.63	40.43	-46.72	-	51.34	74.00	22.66
Average Data								
5 145.65 ¹⁾	V	37.28	33.87	-23.83	1.13	48.45	54.00	5.55
15 658.16 ¹⁾	H	47.62	40.43	-46.72	1.13	42.46	54.00	11.54

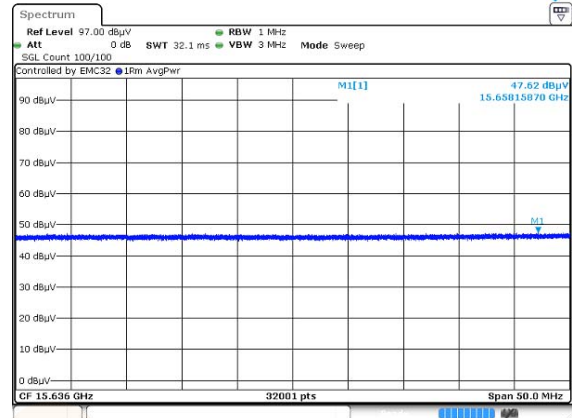
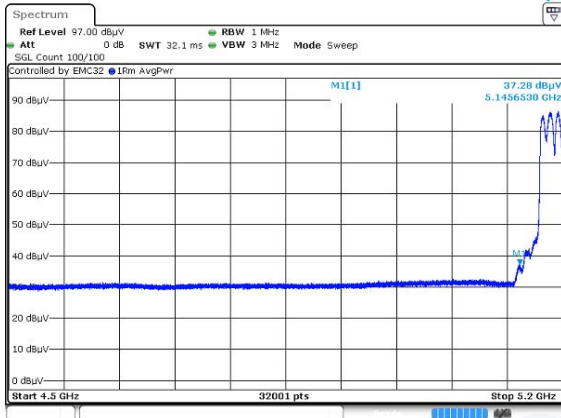
Highest Channel (5 230 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
10 481.52	H	57.92	37.19	-47.87	-	47.24	68.20	20.96
15 656.16 ¹⁾	V	57.22	40.42	-46.72	-	50.92	74.00	23.08
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

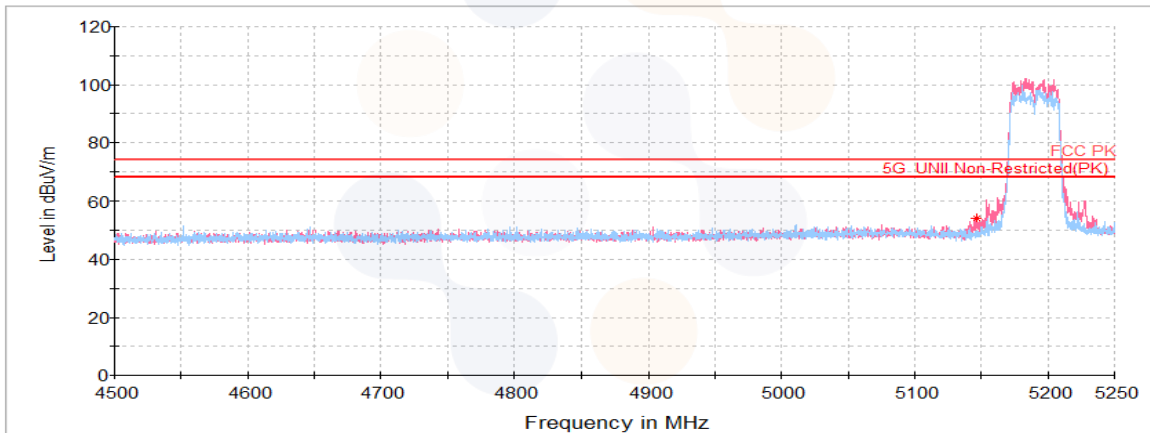
802.11 HT40 UNII-1 2TX MIMO

Lowest Channel (5 190 MHz)

Average data



Horizontal/Vertical for Band-edge



802.11ac VHT20 UNII-1 2TX MIMO

Lowest Channel (5 180 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
5 101.99 ¹⁾	V	42.20	33.82	-23.89	-	52.13	74.00	21.87
7 769.67	V	68.20	35.31	-51.14	-	52.37	68.20	15.83
10 178.92	V	59.52	36.94	-48.07	-	48.39	68.20	19.81
15 499.79 ¹⁾	V	58.08	40.20	-46.86	-	51.42	74.00	22.58
Average Data								
5 101.99 ¹⁾	V	32.32	33.82	-23.89	0.61	42.86	54.00	11.14
15 499.79 ¹⁾	V	47.91	40.20	-46.86	0.61	41.86	54.00	12.14

Middle Channel (5 200 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
7 800.22	V	66.73	35.32	-51.08	-	50.97	68.20	17.23
10 175.69	H	58.86	36.94	-48.07	-	47.73	68.20	20.47
15 500.34 ¹⁾	H	57.82	40.30	-46.86	-	51.26	74.00	22.74
Average Data								
15 500.34 ¹⁾	H	47.54	40.30	-46.86	0.61	41.59	54.00	12.41

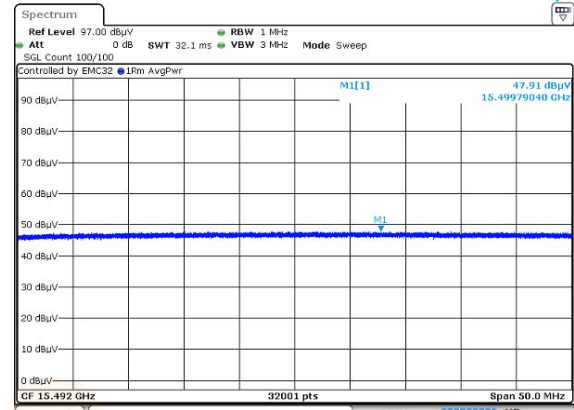
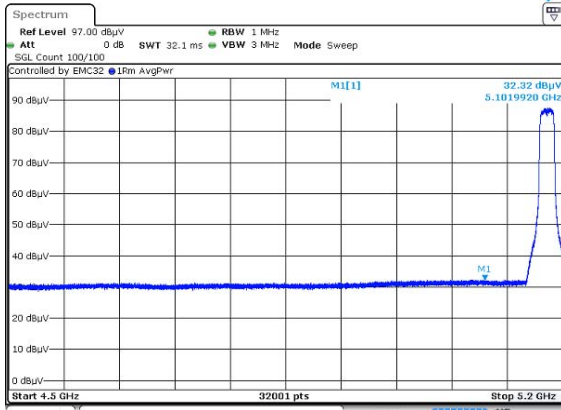
Highest Channel (5 240 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
7 860.23	V	64.54	35.34	-50.96	-	48.92	68.20	19.28
10 435.52	H	57.84	37.15	-47.90	-	47.09	68.20	21.11
15 667.09 ¹⁾	H	58.64	40.43	-46.71	-	52.36	74.00	21.64
Average Data								
No spurious emissions were detected within 20 dB of the limit								
15 667.09 ¹⁾	H	47.53	40.43	-46.71	0.61	41.86	54.00	12.14

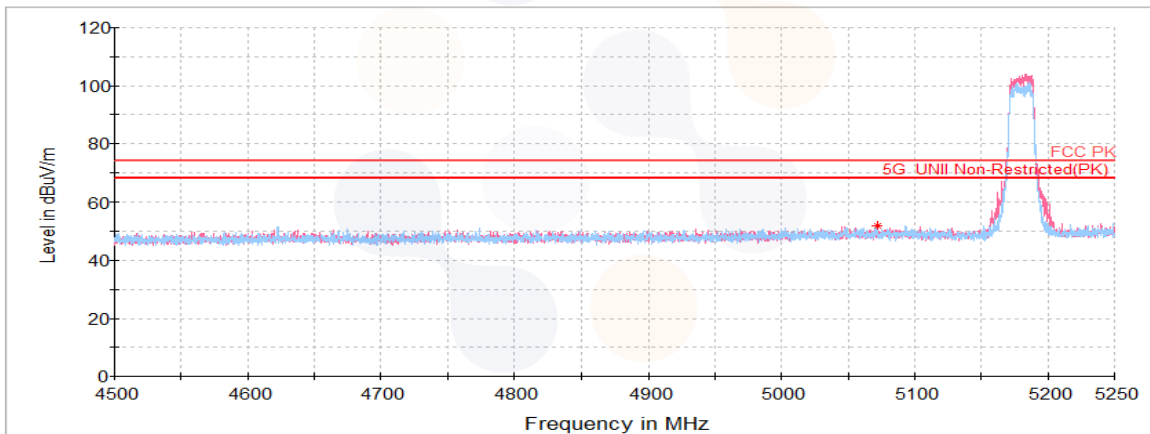
802.11ac VHT20 UNII-1 2TX MIMO

Lowest Channel (5 180 MHz)

Average data



Horizontal/Vertical for Band-edge



802.11ac VHT40 UNII-1 2TX MIMO

Lowest Channel (5 190 MHz)

Frequency (MHz)	Pol. (V/H)	Reading (dB(μ V))	Ant. Factor (dB)	Amp.+Cable (dB)	DCF (dB)	Result (dB(μ V/m))	Limit (dB(μ V/m))	Margin (dB)
Peak data								
5 149.90 ¹⁾	V	44.23	33.88	-23.83	-	54.28	74.00	19.72
7 784.77	V	67.83	35.31	-51.11	-	52.03	68.20	16.17
10 261.22	H	58.73	37.01	-48.01	-	47.73	68.20	20.47
15 502.34 ¹⁾	V	57.50	40.30	-46.86	-	50.94	74.00	23.06
Average Data								
5 149.90 ¹⁾	V	37.49	33.88	-23.83	1.10	48.64	54.00	5.36

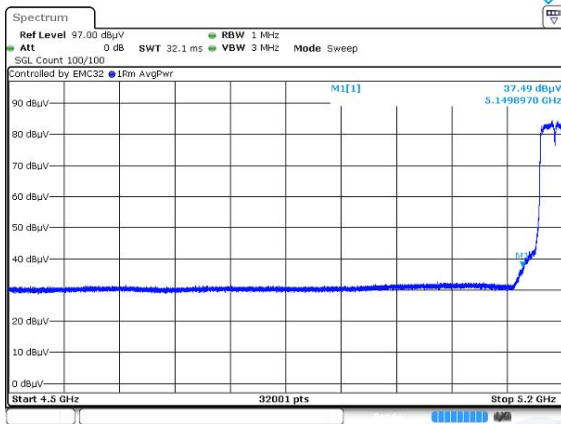
Highest Channel (5 230 MHz)

Frequency (MHz)	Pol. (V/H)	Reading (dB(μ V))	Ant. Factor (dB)	Amp.+Cable (dB)	DCF (dB)	Result (dB(μ V/m))	Limit (dB(μ V/m))	Margin (dB)
Peak data								
10 436.59	H	57.36	37.15	-47.90	-	46.61	68.20	21.59
15 693.89 ¹⁾	H	57.14	40.46	-46.68	-	50.92	74.00	23.08
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11ac VHT40 UNII-1 2TX MIMO

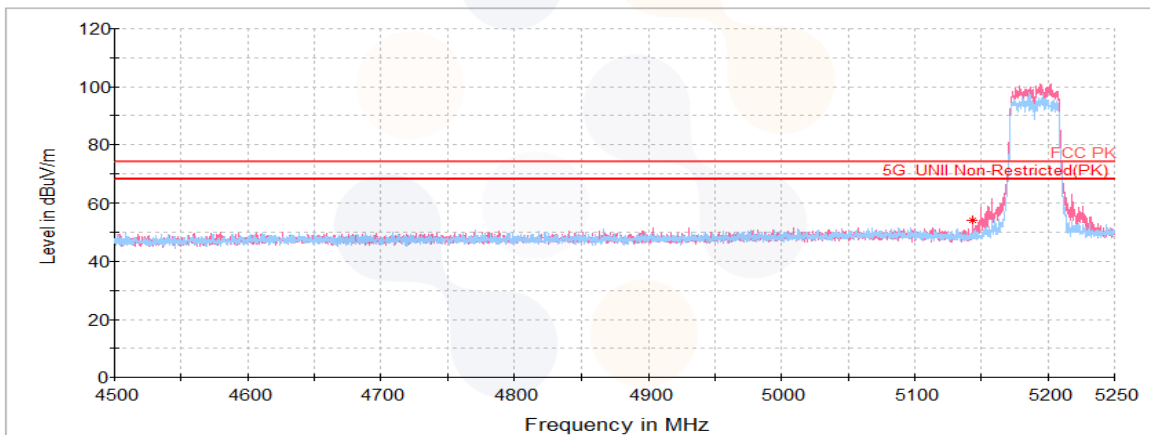
Lowest Channel (5 190 MHz)

Average data



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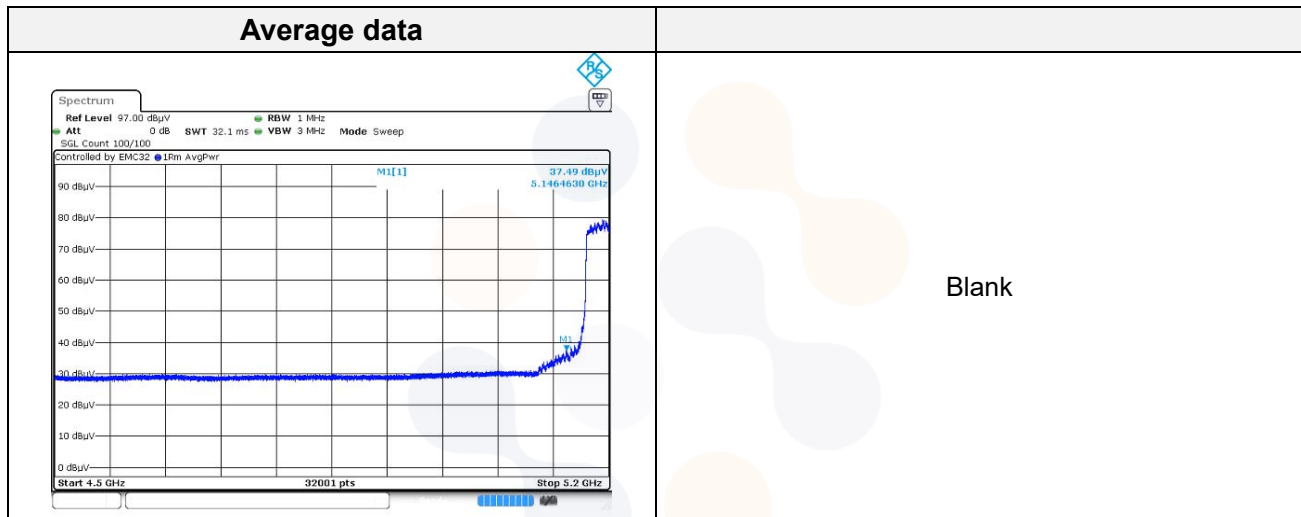
Horizontal/Vertical for Band-edge



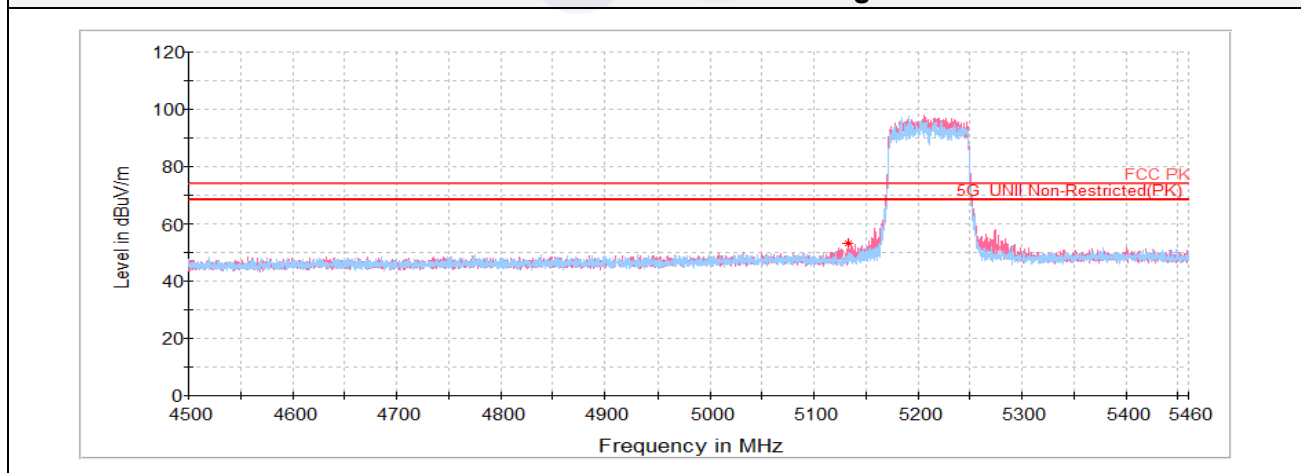
802.11ac VHT80 UNII-1 2TX MIMO

Middle Channel (5 210 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 146.46 ¹⁾	V	43.27	33.88	-23.83	-	53.32	74.00	20.68
10 441.63	V	57.39	37.15	-47.90	-	46.64	68.20	21.56
15 623.81 ¹⁾	H	56.72	40.40	-46.75	-	50.37	74.00	23.63
Average Data								
5 146.46 ¹⁾	V	37.49	33.88	-23.83	1.86	49.40	54.00	4.60



Horizontal/Vertical for Band-edge

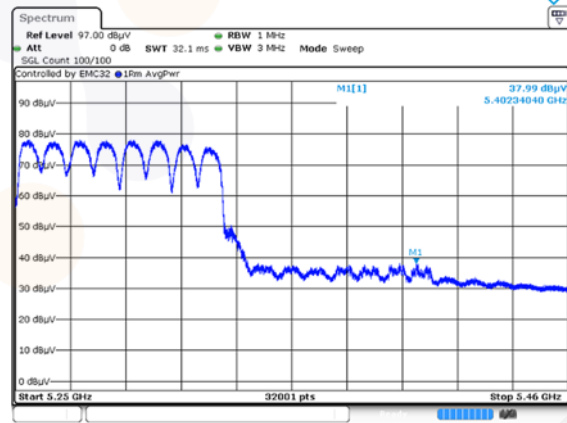
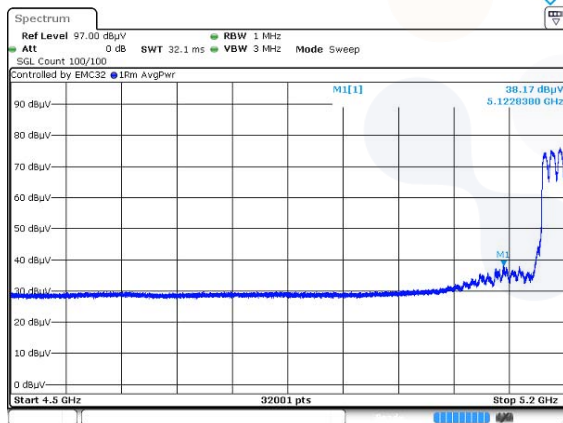


802.11ac VHT160 UNII-1 2TX MIMO

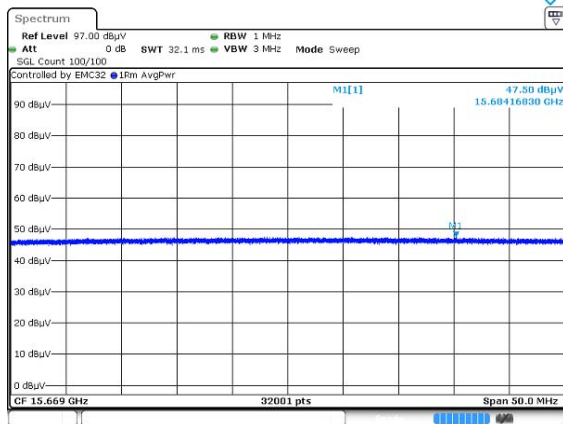
Middle Channel (5 250 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
5 122.84 ¹⁾	V	48.98	33.85	-23.86	-	58.97	74.00	15.03
5 402.34 ¹⁾	V	46.86	34.18	-23.46	-	57.58	74.00	16.42
6 999.89	V	69.96	35.10	-51.47	-	53.59	68.20	14.61
10 636.77 ¹⁾	H	58.06	37.28	-47.81	-	47.53	74.00	26.47
15 684.17 ¹⁾	H	57.54	40.45	-46.69	-	51.30	74.00	22.70
Average Data								
5 122.84 ¹⁾	V	38.17	33.85	-23.86	1.89	50.05	54.00	3.95
5 402.34 ¹⁾	V	37.99	34.18	-23.46	1.89	50.60	54.00	3.40
15 684.17 ¹⁾	H	47.50	40.45	-46.69	1.89	43.15	54.00	10.85

Average data

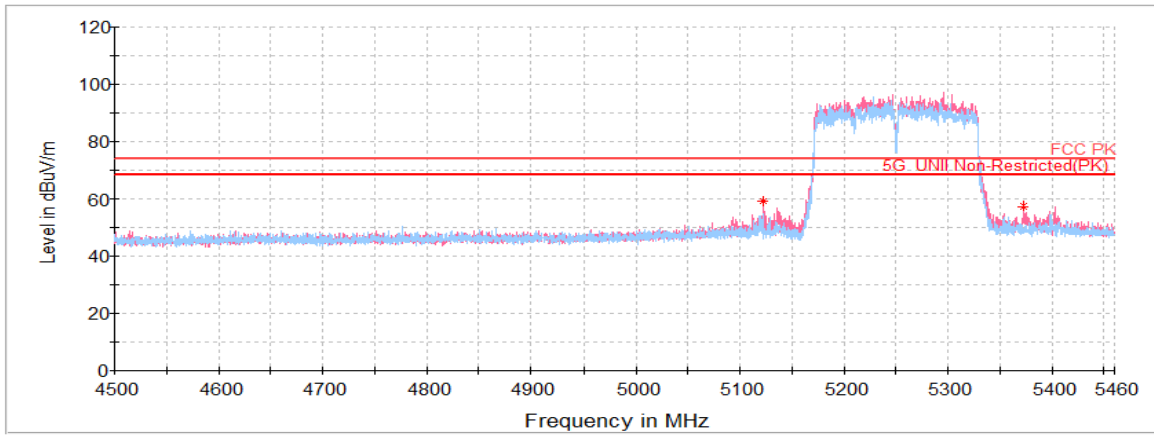


Average data



Blank

Horizontal/Vertical for Band-edge

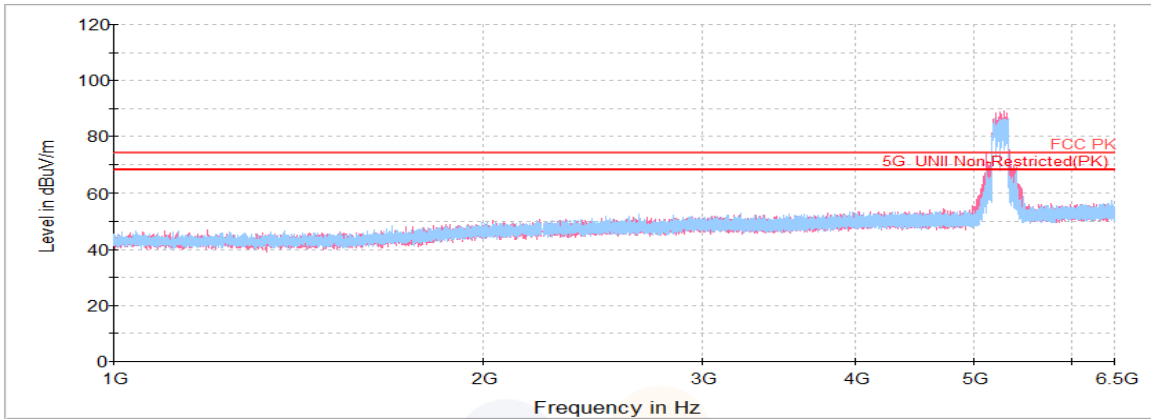


lot of Harmonics and Spurious Emissions

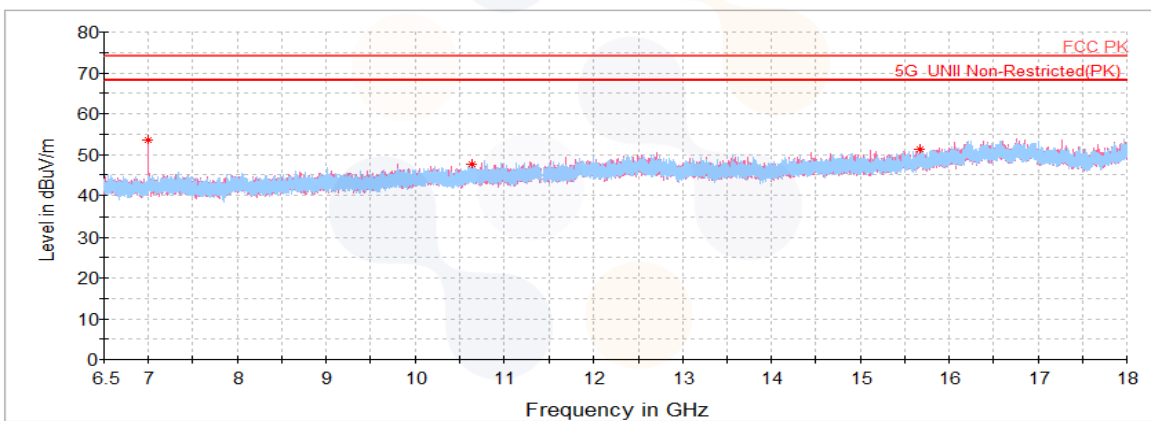
In order to simplify the report, attached plots were only the lowest margin condition

802.11ac VHT160_UNII-1_2TX MIMO_ Middle Channel (5 250 MHz)

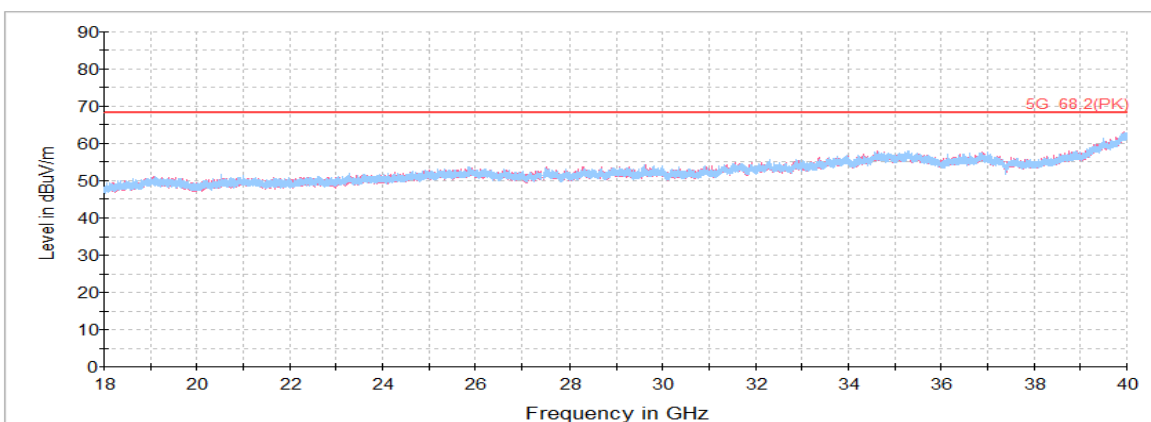
Horizontal/Vertical for 1 GHz ~ 6.5 GHz



Horizontal/Vertical for 6.5 GHz ~ 18 GHz



Horizontal/Vertical for 18 GHz ~ 40 GHz



802.11a UNII-2A ANT1

Lowest Channel (5 260 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
10 513.50	H	58.31	37.21	-47.85	-	47.67	68.20	20.53
15 802.06 ¹⁾	H	56.40	40.54	-46.58	-	50.36	74.00	23.64
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Middle Channel (5 280 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
10 592.92	V	58.36	37.26	-47.83	-	47.79	68.20	20.41
15 820.75 ¹⁾	V	56.68	40.56	-46.56	-	50.68	74.00	23.32
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

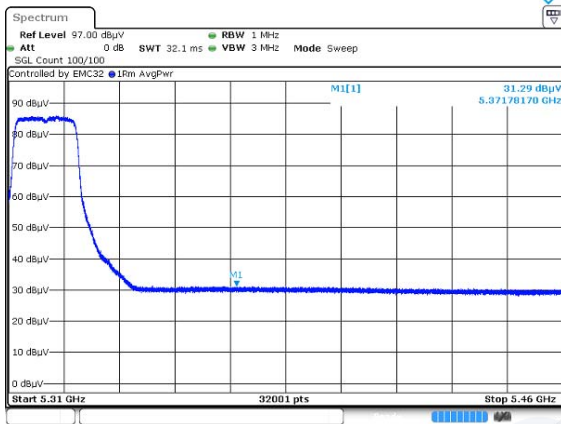
Highest Channel (5 320 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 371.78 ¹⁾	V	41.67	34.15	-23.52	-	52.30	74.00	21.70
10 650.06 ¹⁾	V	58.87	37.29	-47.81	-	48.35	74.00	25.65
15 903.77 ¹⁾	V	56.30	40.62	-46.49	-	50.43	74.00	23.57
Average Data								
5 371.78 ¹⁾	V	31.29	34.15	-23.52	0.28	42.20	54.00	11.80

802.11a UNII-2A ANT1

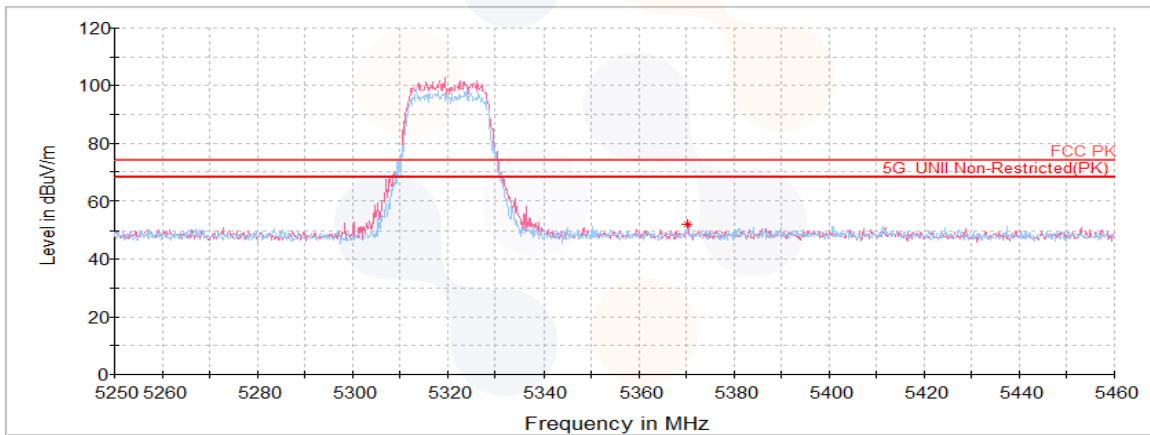
Highest Channel (5 320 MHz)

Average data



Blank

Horizontal/Vertical for Band-edge



802.11a UNII-2A 2TX MIMO

Lowest Channel (5 260 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
10 528.59	H	57.57	37.22	-47.85	-	46.94	68.20	21.26
15 790.20 ¹⁾	V	56.59	40.53	-46.59	-	50.53	74.00	23.47
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Middle Channel (5 280 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
10 600.47 ¹⁾	H	59.73	37.26	-47.82	-	49.17	74.00	24.83
15 847.70 ¹⁾	V	56.49	40.58	-46.54	-	50.53	74.00	23.47
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

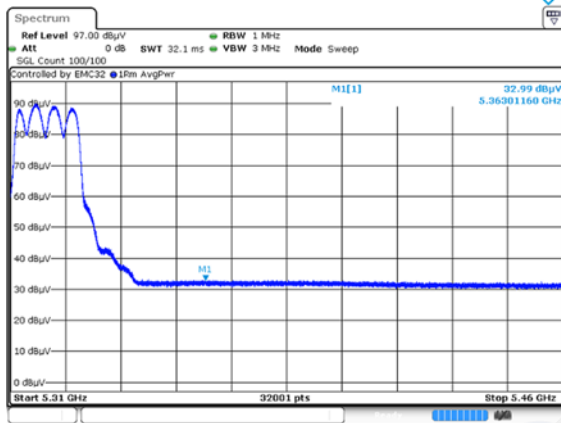
Highest Channel (5 320 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 363.01 ¹⁾	V	43.58	34.14	-23.55	-	54.17	74.00	19.83
10 616.28 ¹⁾	V	58.25	37.27	-47.82	-	47.70	74.00	26.30
15 952.64 ¹⁾	H	55.98	40.66	-46.44	-	50.20	74.00	23.80
Average Data								
5 363.01 ¹⁾	V	32.99	34.14	-23.55	0.29	43.87	54.00	10.13

802.11a UNII-2A 2TX MIMO

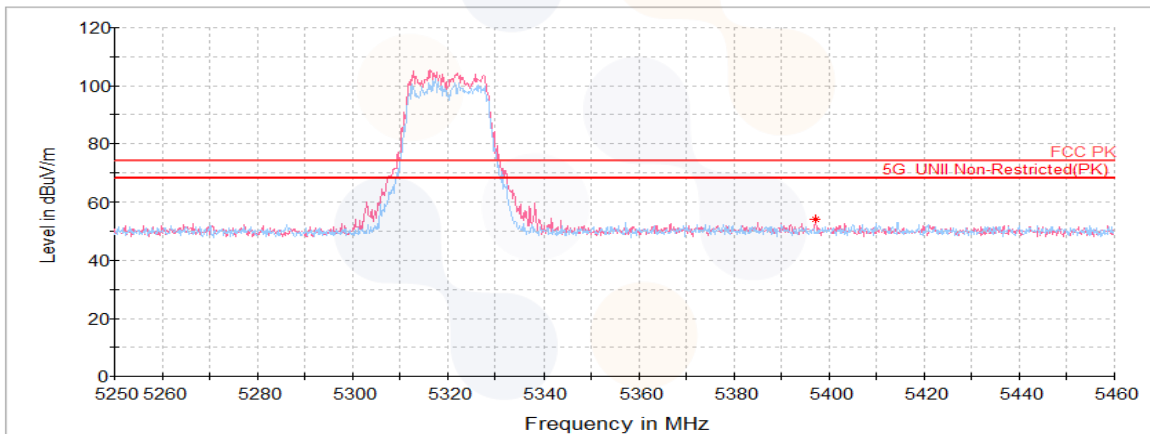
Highest Channel (5 320 MHz)

Average data



Blank

Horizontal/Vertical for Band-edge



802.11n HT20 UNII-2A 2TX MIMO

Lowest Channel (5 260 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
10 507.03	V	57.07	37.20	-47.86	-	46.41	68.20	21.79
15 791.64 ¹⁾	V	55.93	40.53	-46.59	-	49.87	74.00	24.13
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Middle Channel (5 280 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
10 586.09	H	58.47	37.25	-47.83	-	47.89	68.20	20.31
15 822.91 ¹⁾	H	56.78	40.56	-46.56	-	50.78	74.00	23.22
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

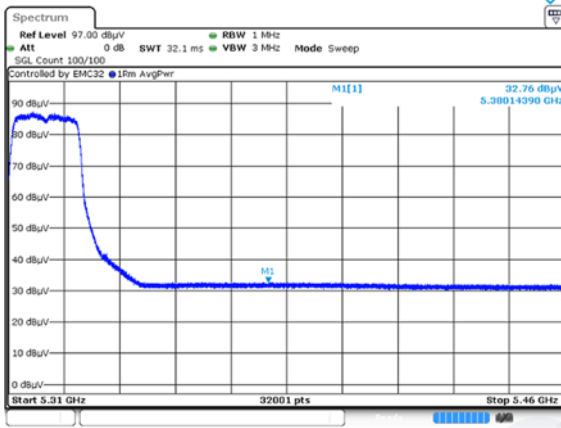
Highest Channel (5 320 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 380.14 ¹⁾	V	41.87	34.16	-23.51	-	52.52	74.00	21.48
10 669.11 ¹⁾	H	58.96	37.30	-47.80	-	48.46	74.00	25.54
15 985.34 ¹⁾	H	56.05	40.69	-46.41	-	50.33	74.00	23.67
Average Data								
5 380.14 ¹⁾	V	32.76	34.16	-23.51	0.61	44.02	54.00	9.98

802.11n HT20 UNII-2A 2TX MIMO

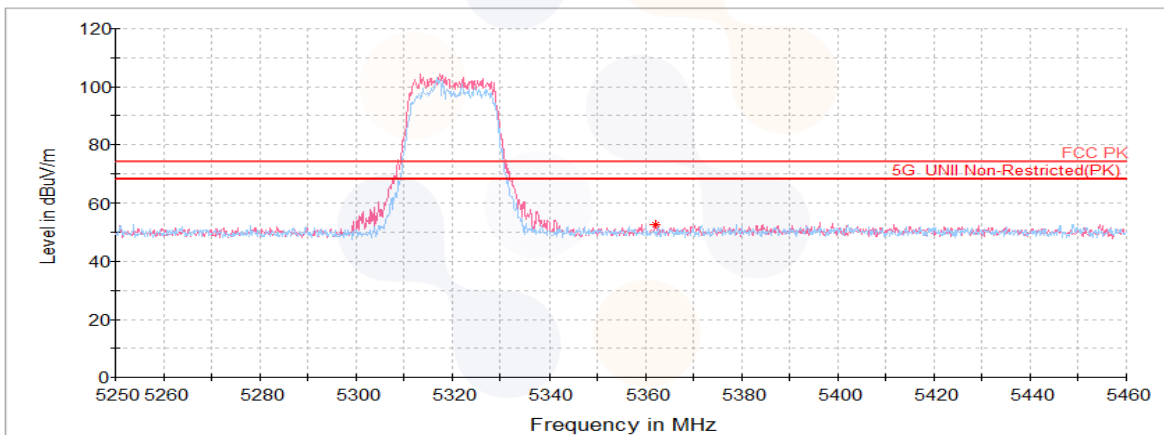
Highest Channel (5 320 MHz)

Average data



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Horizontal/Vertical for Band-edge



802.11n HT40 UNII-2A 2TX MIMO

Lowest Channel (5 270 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
10 593.64	H	59.50	37.26	-47.83	-	48.93	68.20	19.27
15 838.36 ¹⁾	H	56.92	40.57	-46.55	-	50.94	74.00	23.06
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

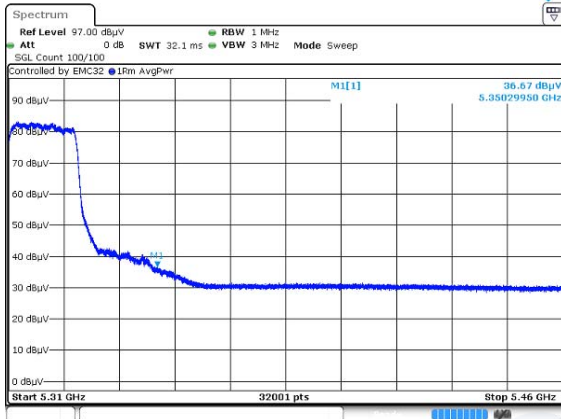
Highest Channel (5 310 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 350.30 ¹⁾	V	45.71	34.12	-23.57	-	56.26	74.00	17.74
10 622.03 ¹⁾	V	58.30	37.27	-47.82	-	47.75	74.00	26.25
15 913.11 ¹⁾	V	56.60	40.63	-46.48	-	50.75	74.00	23.25
Average Data								
5 350.30 ¹⁾	V	36.67	34.12	-23.57	0.64	47.86	54.00	6.14

802.11n HT40 UNII-2A 2TX MIMO

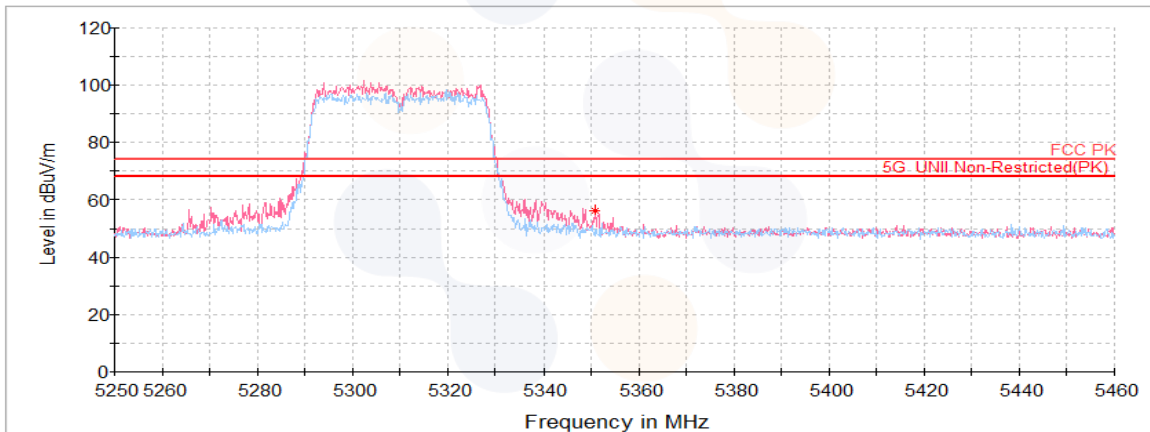
Highest Channel (5 310 MHz)

Average data



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Horizontal/Vertical for Band-edge



802.11ac VHT20 UNII-2A 2TX MIMO

Lowest Channel (5 260 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
10 496.97	H	58.61	37.20	-47.86	-	47.95	68.20	20.25
15 757.86 ¹⁾	H	55.96	40.51	-46.62	-	49.85	74.00	24.15
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Middle Channel (5 280 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
10 564.89	V	59.17	37.24	-47.84	-	48.57	68.20	19.63
15 849.86 ¹⁾	H	56.67	40.58	-46.54	-	50.71	74.00	23.29
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

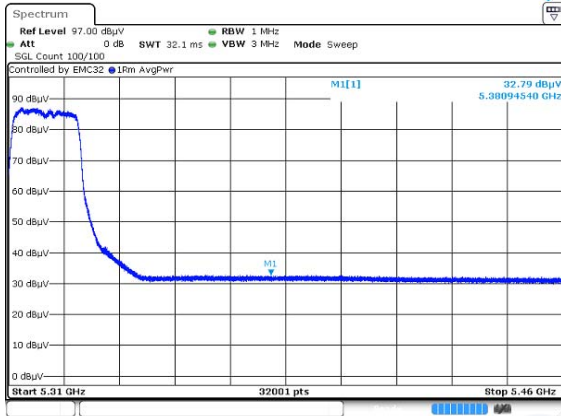
Highest Channel (5 320 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 380.95 ¹⁾	V	43.49	34.16	-23.50	-	54.15	74.00	19.85
10 640.72 ¹⁾	H	58.03	37.28	-47.81	-	47.50	74.00	26.50
15 999.00 ¹⁾	V	56.58	40.70	-46.40	-	50.88	74.00	23.12
Average Data								
5 380.95 ¹⁾	V	32.79	34.16	-23.50	0.61	44.06	54.00	9.94

802.11ac VHT20 UNII-2A 2TX MIMO

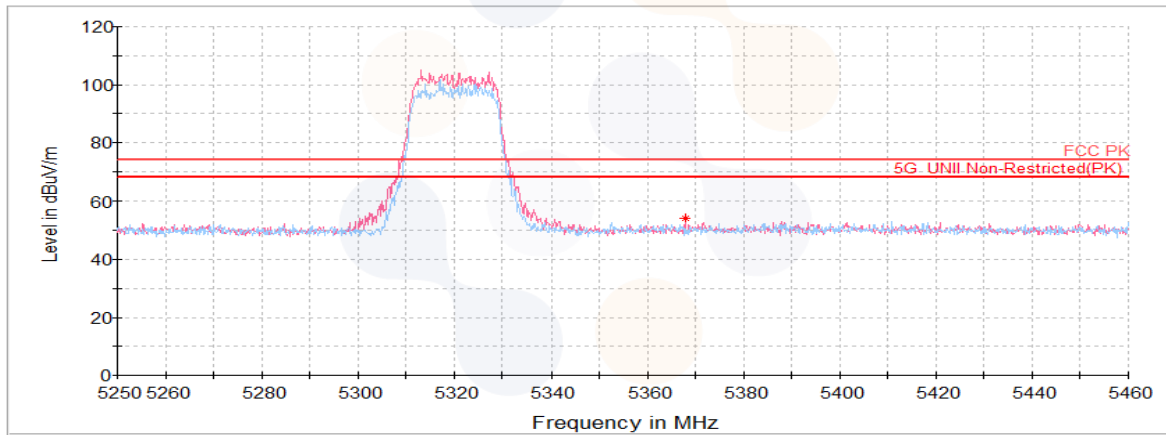
Highest Channel (5 320 MHz)

Average data



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Horizontal/Vertical for Band-edge



802.11ac VHT40 UNII-2A 2TX MIMO

Lowest Channel (5 270 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
10 561.66	H	57.92	37.24	-47.84	-	47.32	68.20	20.88
15 836.20 ¹⁾	H	56.97	40.57	-46.55	-	50.99	74.00	23.01
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

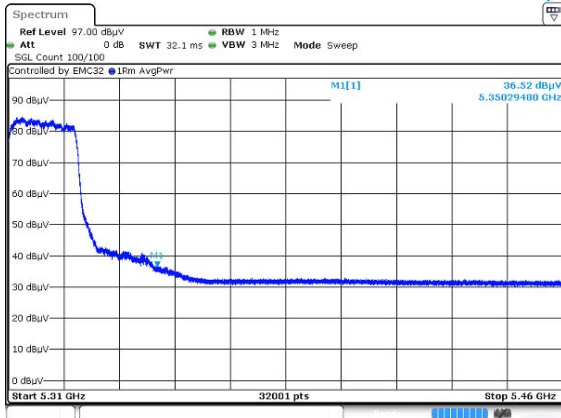
Highest Channel (5 310 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 350.29 ¹⁾	V	42.95	34.12	-23.57	-	53.50	74.00	20.50
10 698.94 ¹⁾	V	59.39	37.32	-47.79	-	48.92	74.00	25.08
15 947.61 ¹⁾	V	56.35	40.66	-46.45	-	50.56	74.00	23.44
Average Data								
5 350.29 ¹⁾	V	36.52	34.12	-23.57	1.10	48.17	54.00	5.83

802.11ac VHT40 UNII-2A 2TX MIMO

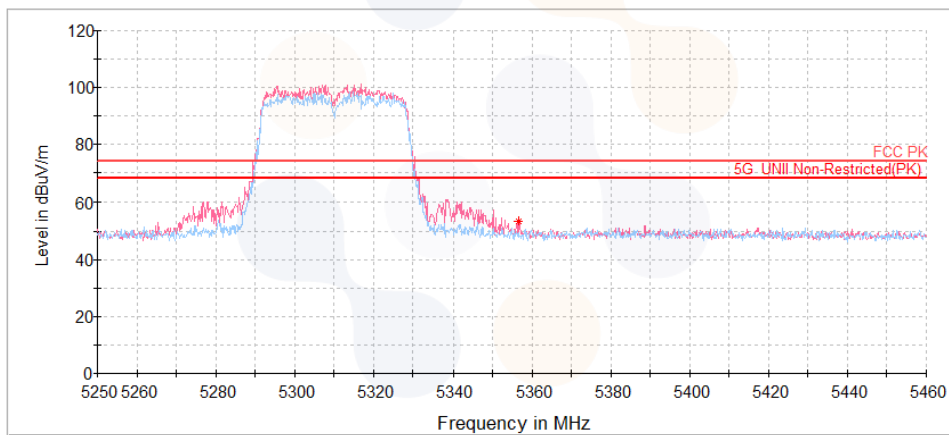
Highest Channel (5 310 MHz)

Average data



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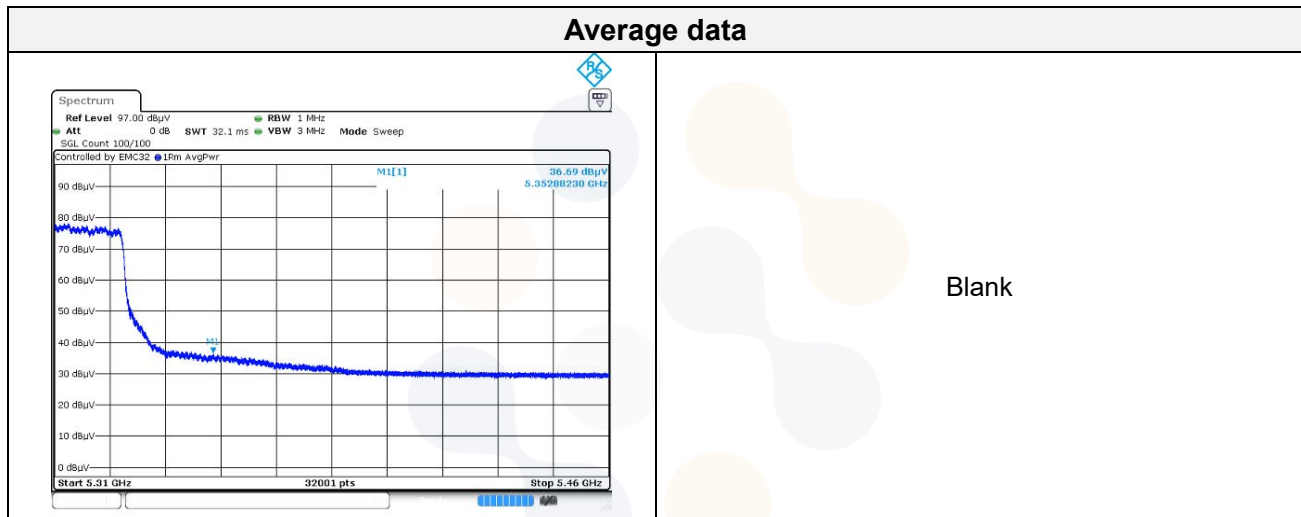
Horizontal/Vertical for Band-edge



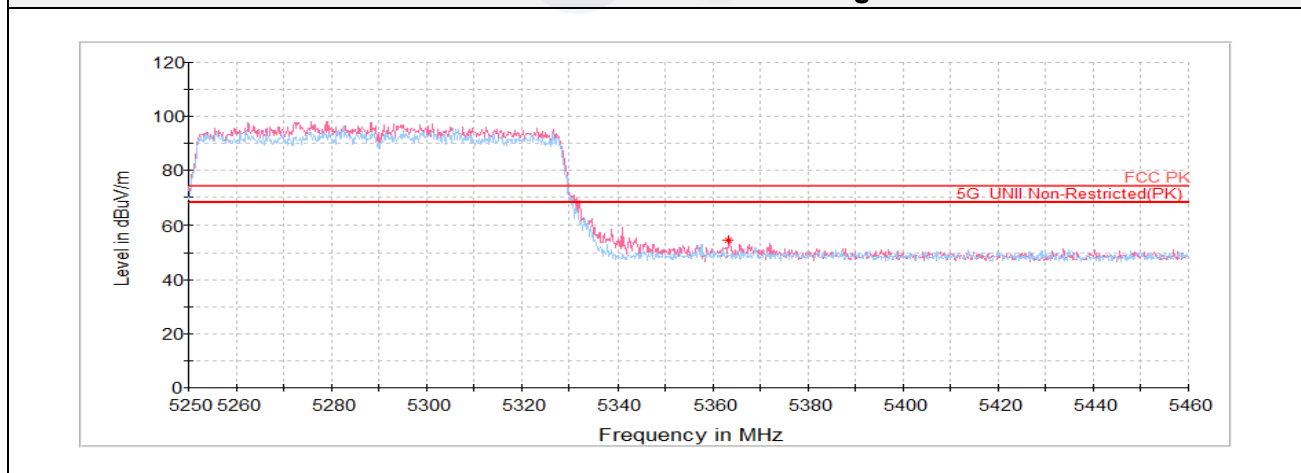
802.11ac VHT80 UNII-2A 2TX MIMO

Middle Channel (5 290 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 352.88 ¹⁾	V	43.96	34.12	-23.57	-	54.51	74.00	19.49
10 580.70	H	57.63	37.25	-47.83	-	47.05	68.20	21.15
15 873.94 ¹⁾	H	56.50	40.60	-46.51	-	50.59	74.00	23.41
Average Data								
5 352.88 ¹⁾	V	36.69	34.12	-23.57	1.86	49.10	54.00	4.90



Horizontal/Vertical for Band-edge

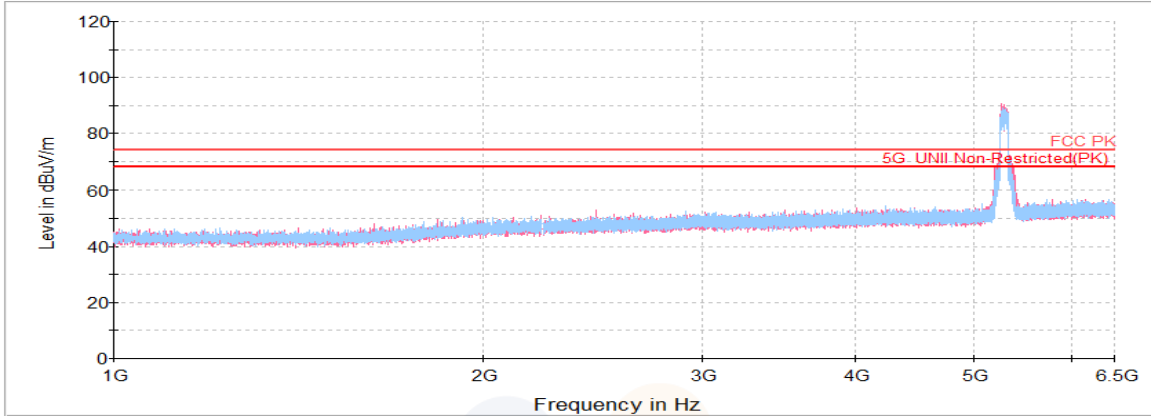


Plot of Harmonics and Spurious Emissions

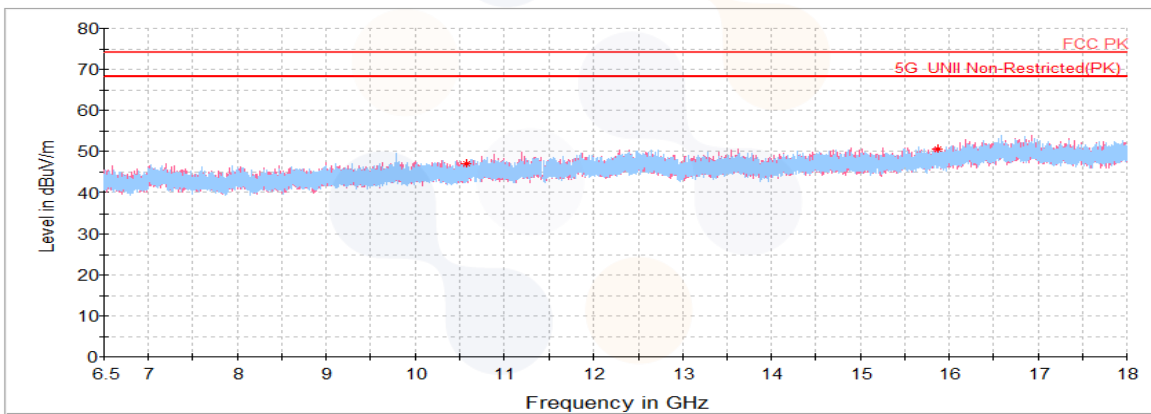
In order to simplify the report, attached plots were only the lowest margin condition

802.11ac VHT80 UNII-2A_2TX MIMO_ Middle Channel (5 290 MHz)

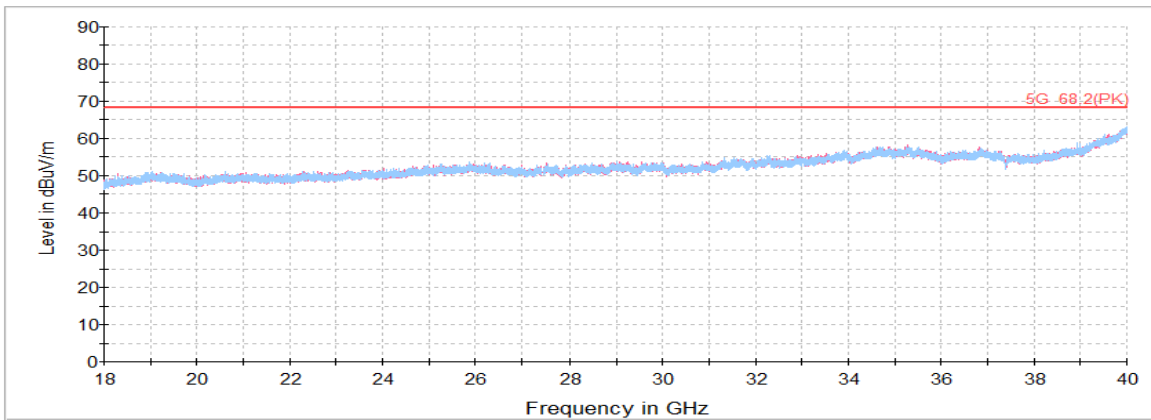
Horizontal/Vertical for 1 GHz ~ 6.5 GHz



Horizontal/Vertical for 6.5 GHz ~ 18 GHz



Horizontal/Vertical for 18 GHz ~ 40 GHz



802.11a UNII-2C ANT1

Lowest Channel (5 500 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
5 386.21 ¹⁾	V	41.38	34.16	-23.49	-	52.05	74.00	21.95
6 599.55	V	64.61	35.18	-52.04	-	47.75	68.20	20.45
10 999.38 ¹⁾	H	58.56	37.50	-47.69	-	48.37	74.00	25.63
16 599.16	V	56.42	42.36	-44.49	-	54.29	68.20	13.91
Average Data								
5 386.21 ¹⁾	V	31.04	34.16	-23.49	0.28	41.99	54.00	12.01

Middle Channel (5 600 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
11 209.61 ¹⁾	V	58.56	37.71	-47.67	-	48.60	74.00	25.40
16 832.75	H	54.85	42.73	-44.50	-	53.08	68.20	15.12
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

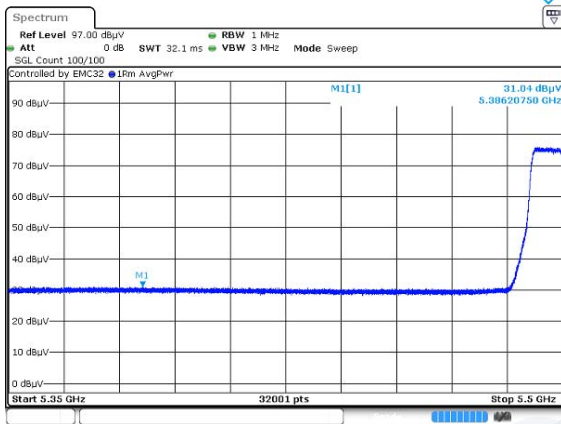
Highest Channel (5 700 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
5 747.88	V	41.23	34.75	-22.89	-	53.09	68.20	15.11
11 390.73 ¹⁾	V	58.54	37.89	-47.65	-	48.78	74.00	25.22
17 085.39	H	55.31	41.61	-44.66	-	52.26	68.20	15.94
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11a UNII-2C ANT1

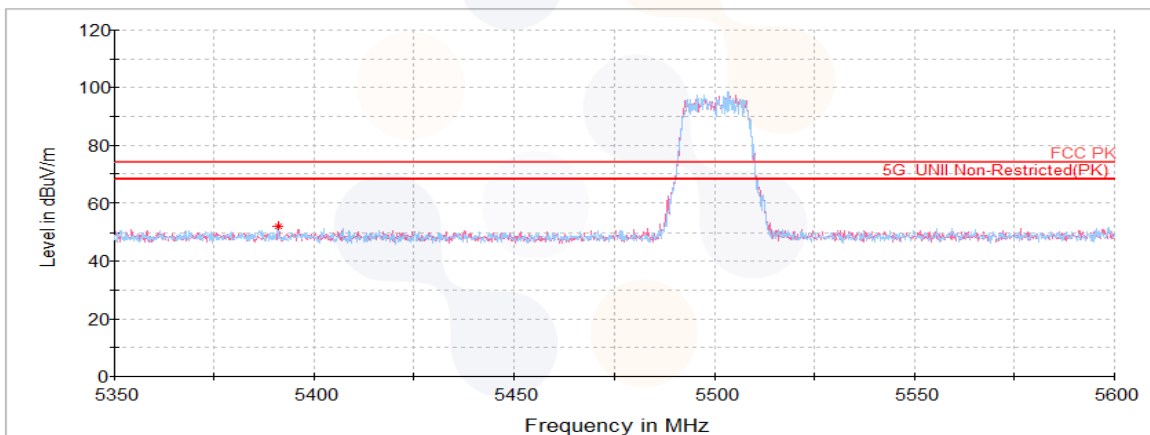
Lowest Channel (5 500 MHz)

Average data



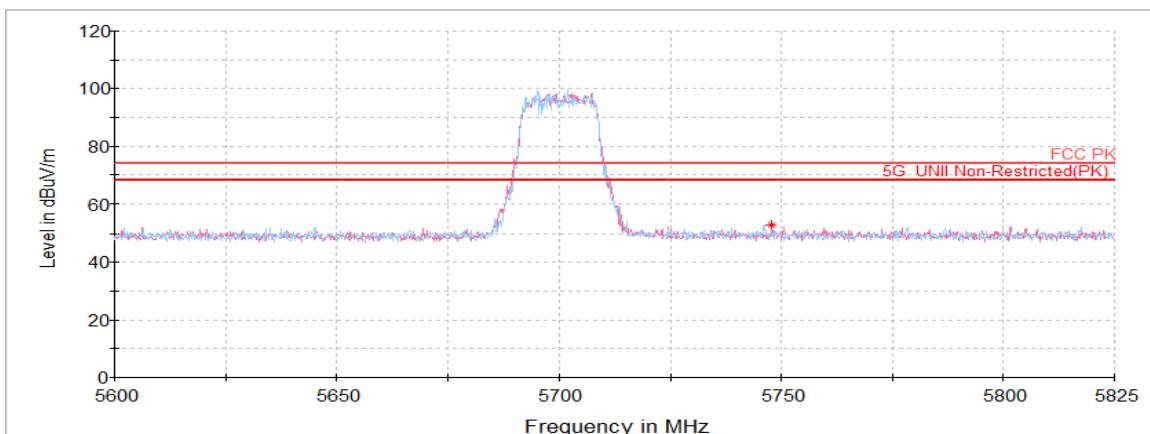
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Horizontal/Vertical for Band-edge



Highest Channel (5 700 MHz)

Horizontal/Vertical for Band-edge



802.11a UNII-2C 2TX MIMO

Lowest Channel (5 500 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
5 453.70 ¹⁾	V	40.61	34.24	-23.43	-	51.42	74.00	22.58
6 599.91	V	66.26	35.18	-52.04	-	49.40	68.20	18.80
11 052.56 ¹⁾	H	57.75	37.55	-47.68	-	47.62	74.00	26.38
16 521.53	H	55.87	42.23	-44.48	-	53.62	68.20	14.58
Average Data								
5 453.70 ¹⁾	V	32.20	34.24	-23.43	0.29	43.30	54.00	10.70

Middle Channel (5 600 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
11 203.86 ¹⁾	V	58.50	37.70	-47.67	-	48.53	74.00	25.47
16 840.66	H	54.96	42.75	-44.50	-	53.21	68.20	14.99
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

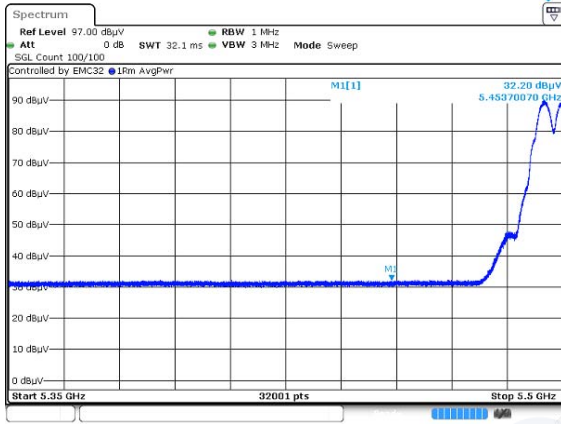
Highest Channel (5 700 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
5 734.81	V	42.52	34.72	-22.94	-	54.30	68.20	13.90
11 376.72 ¹⁾	H	58.36	37.88	-47.65	-	48.59	74.00	25.41
17 134.63	H	55.80	41.57	-44.75	-	52.62	68.20	15.58
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11a UNII-2C 2TX MIMO

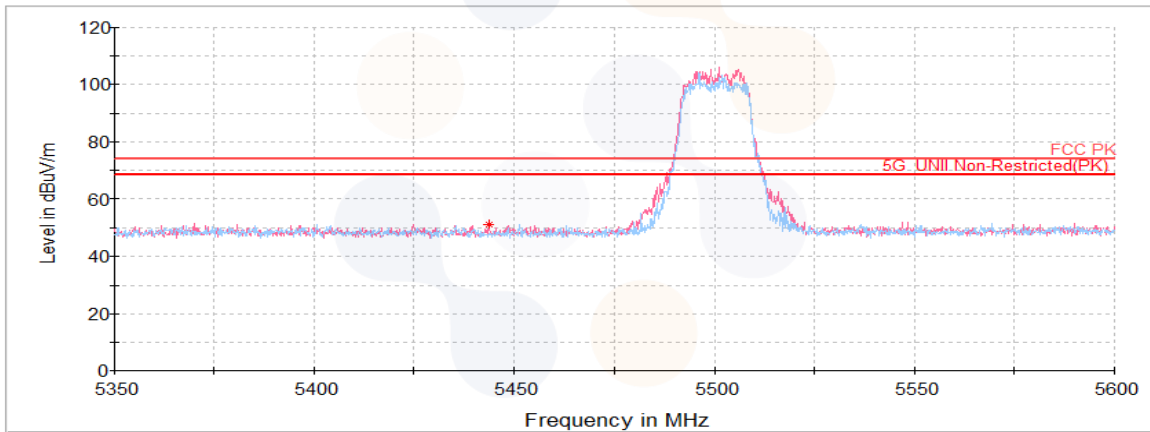
Lowest Channel (5 500 MHz)

Average data



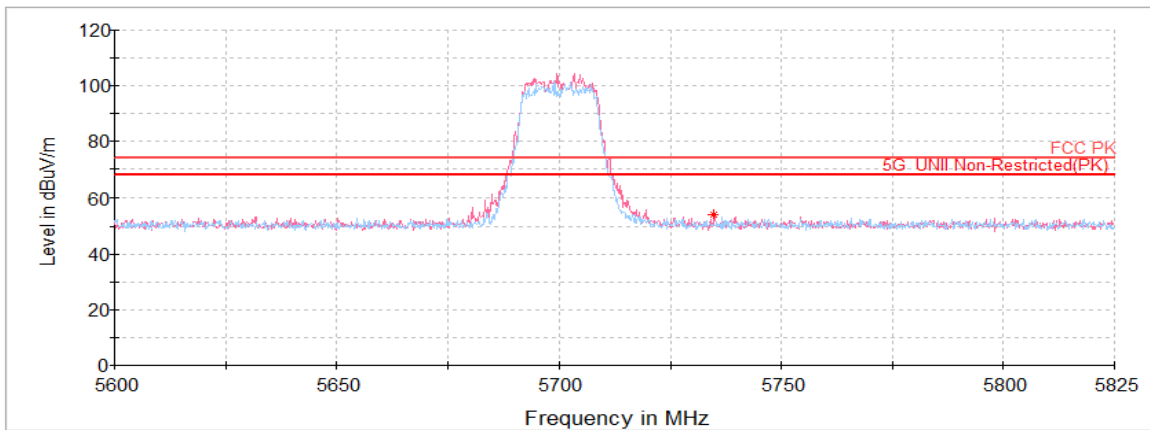
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Horizontal/Vertical for Band-edge



Highest Channel (5 700 MHz)

Horizontal/Vertical for Band-edge



802.11n HT20 UNII-2C 2TX MIMO

Lowest Channel (5 500 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ N/m))	(dB(μ N/m))	(dB)
Peak data								
5 434.62 ¹⁾	V	40.82	34.22	-23.44	-	51.60	74.00	22.40
6 600.27	V	64.64	35.18	-52.04	-	47.78	68.20	20.42
10 985.72 ¹⁾	V	58.05	37.49	-47.69	-	47.85	74.00	26.15
16 493.86	V	55.74	42.49	-44.51	-	53.72	68.20	14.48
Average Data								
5 434.62 ¹⁾	V	32.21	34.22	-23.44	0.61	43.60	54.00	10.40

Middle Channel (5 600 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ N/m))	(dB(μ N/m))	(dB)
Peak data								
11 265.67 ¹⁾	V	58.80	37.77	-47.66	-	48.91	74.00	25.09
16 849.28	V	54.28	42.76	-44.50	-	52.54	68.20	15.66
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

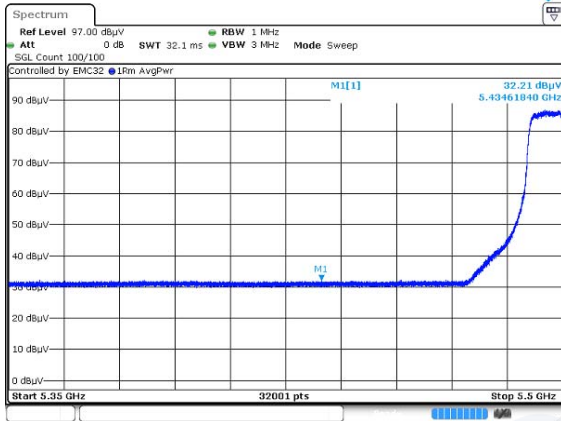
Highest Channel (5 700 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ N/m))	(dB(μ N/m))	(dB)
Peak data								
5 757.84	V	41.55	34.76	-22.86	-	53.45	68.20	14.75
11 382.11 ¹⁾	H	58.39	37.88	-47.65	-	48.62	74.00	25.38
17 114.14	H	55.49	41.59	-44.71	-	52.37	68.20	15.83
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT20 UNII-2C 2TX MIMO

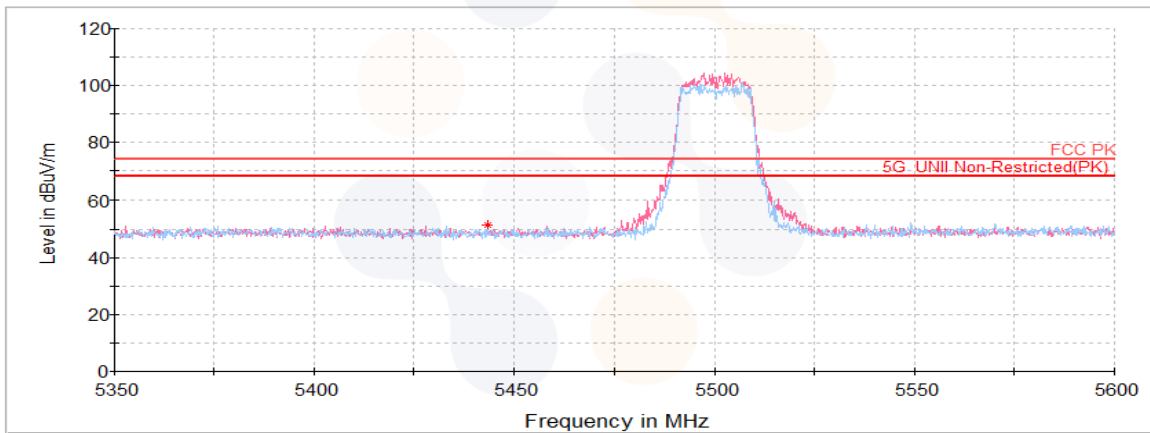
Lowest Channel (5 500 MHz)

Average data



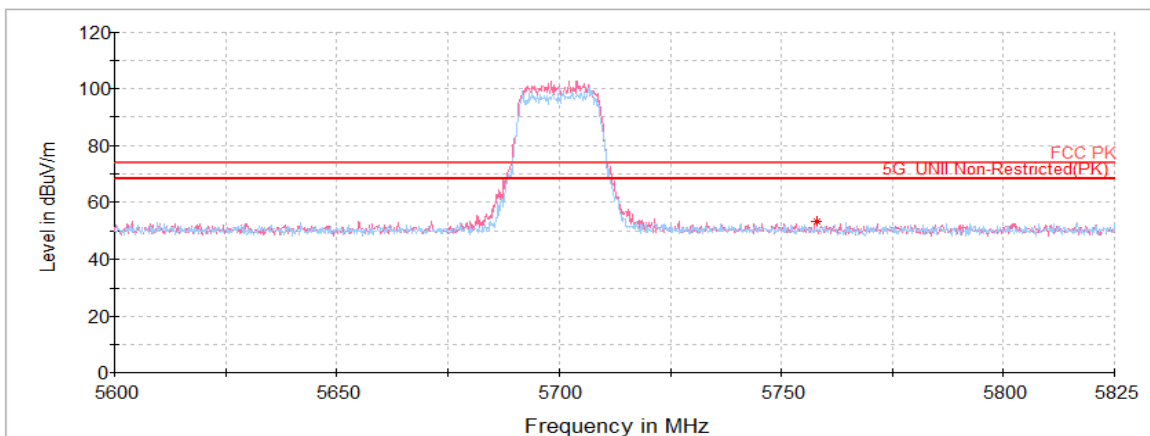
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Horizontal/Vertical for Band-edge



Highest Channel (5 700 MHz)

Horizontal/Vertical for Band-edge



802.11n HT40 UNII-2C 2TX MIMO

Lowest Channel (5 510 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
5 423.32 ¹⁾	V	44.07	34.21	-23.45	-	54.83	74.00	19.17
6 611.77	V	63.41	35.18	-52.02	-	46.57	68.20	21.63
11 043.58 ¹⁾	H	57.34	37.54	-47.68	-	47.20	74.00	26.80
16 549.92	H	55.24	42.28	-44.49	-	53.03	68.20	15.17
Average Data								
5 423.32 ¹⁾	V	32.37	34.21	-23.45	0.64	43.77	54.00	10.23

Middle Channel (5 590 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
11 188.41 ¹⁾	H	57.93	37.69	-47.67	-	47.95	74.00	26.05
16 758.00	H	55.13	42.61	-44.49	-	53.25	68.20	14.95
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

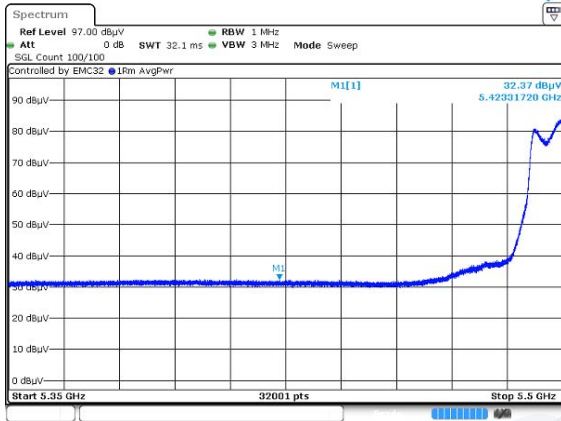
Highest Channel (5 670 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
5 737.05	V	41.40	34.73	-22.93	-	53.20	68.20	15.00
11 348.69 ¹⁾	V	59.25	37.85	-47.65	-	49.45	74.00	24.55
16 949.91	V	55.00	42.92	-44.50	-	53.42	68.20	14.78
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT40 UNII-2C 2TX MIMO

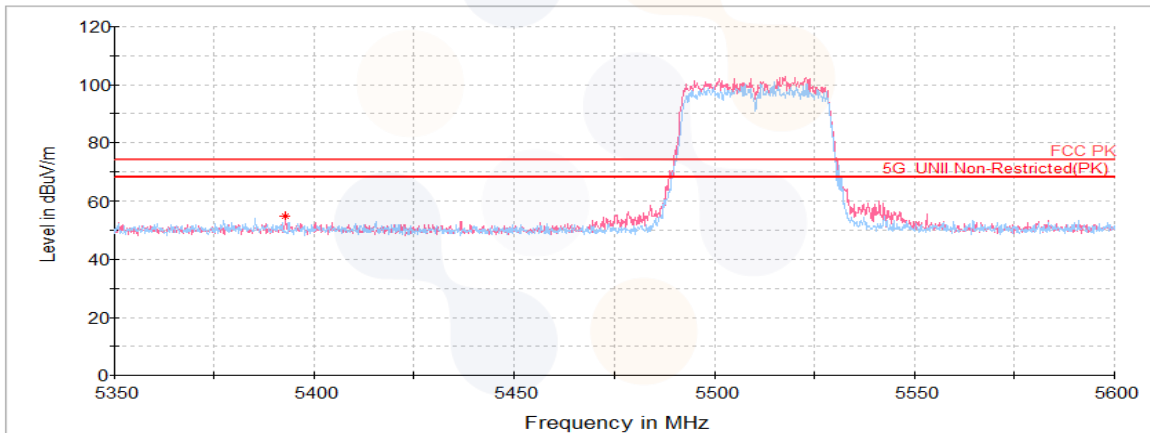
Lowest Channel (5 510 MHz)

Average data



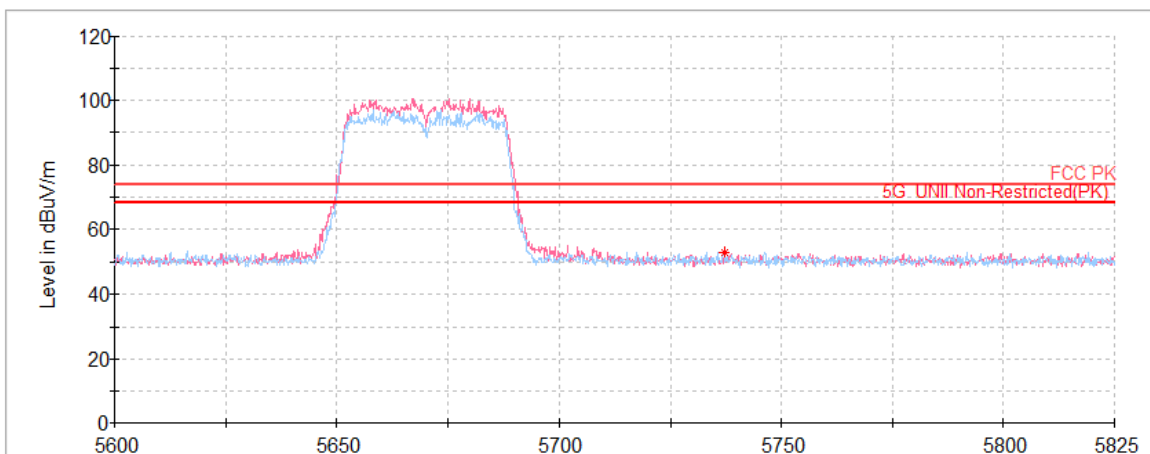
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Horizontal/Vertical for Band-edge



Highest Channel (5 670 MHz)

Horizontal/Vertical for Band-edge



802.11ac VHT20 UNII-2C 2TX MIMO

Lowest Channel (5 500 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ N/m))	(dB(μ N/m))	(dB)
Peak data								
5 420.37 ¹⁾	V	40.35	34.20	-23.45	-	51.10	74.00	22.90
11 156.78 ¹⁾	H	58.02	37.66	-47.67	-	48.01	74.00	25.99
15 560.92 ¹⁾	H	56.14	40.35	-46.81	-	49.68	74.00	24.32
Average Data								
5 420.37 ¹⁾	V	32.31	34.20	-23.45	0.61	43.67	54.00	10.33

Middle Channel (5 600 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ N/m))	(dB(μ N/m))	(dB)
Peak data								
6 723.53	V	64.80	35.16	-51.86	-	48.10	68.20	20.10
8 959.92	V	62.48	35.68	-49.03	-	49.13	68.20	19.07
11 183.38 ¹⁾	H	57.83	37.68	-47.67	-	47.84	74.00	26.16
16 823.41	H	53.68	42.72	-44.50	-	51.90	68.20	16.30
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

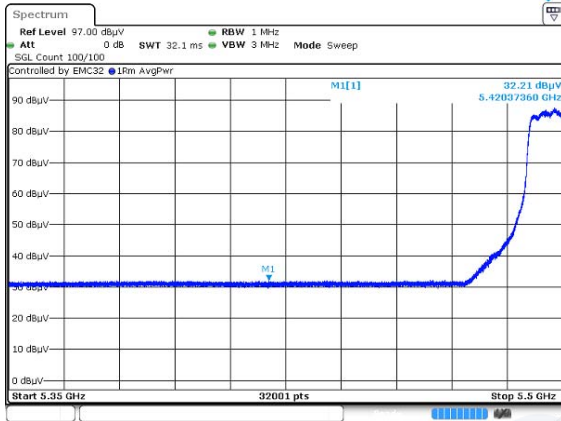
Highest Channel (5 700 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ N/m))	(dB(μ N/m))	(dB)
Peak data								
5 744.95	H	40.92	34.74	-22.90	-	52.76	68.20	15.44
11 395.77 ¹⁾	V	58.44	37.90	-47.65	-	48.69	74.00	25.31
17 078.56	H	55.07	41.62	-44.65	-	52.04	68.20	16.16
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11ac VHT20 UNII-2C 2TX MIMO

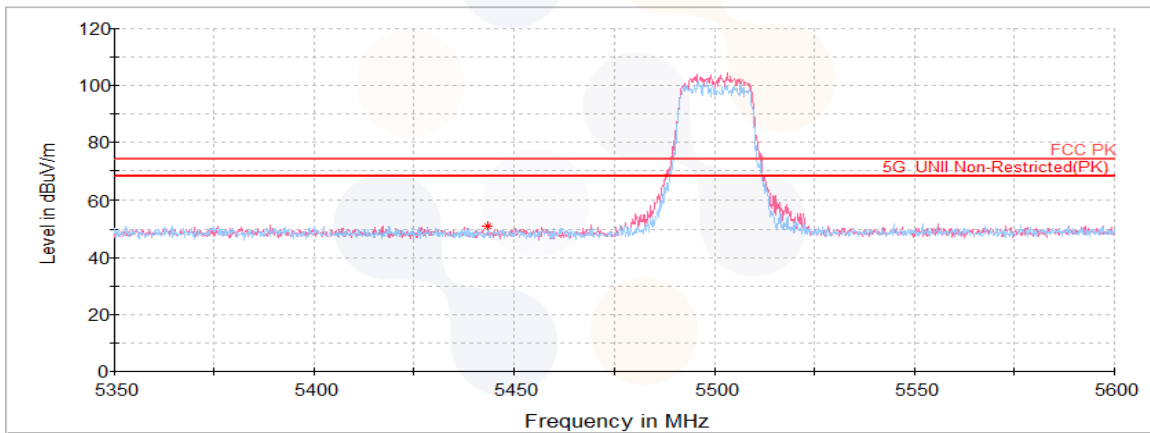
Lowest Channel (5 500 MHz)

Average data



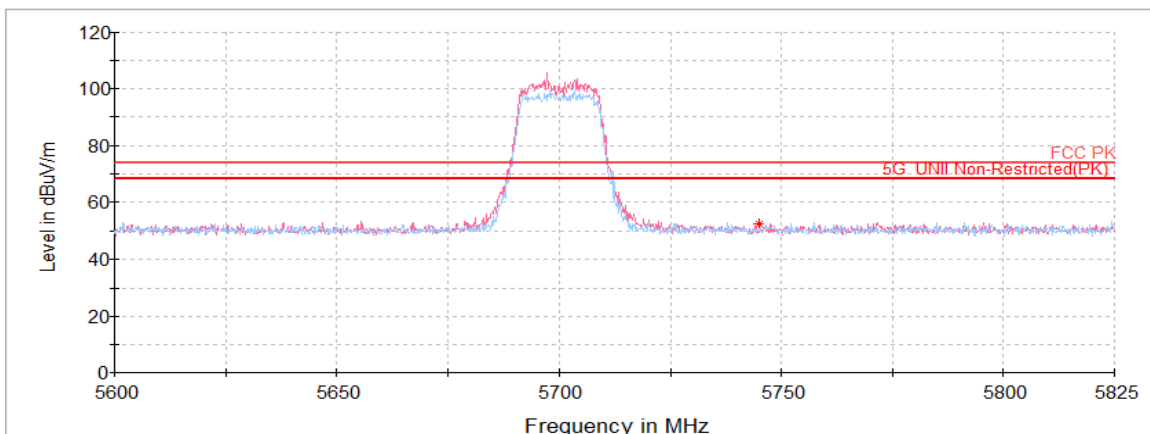
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Horizontal/Vertical for Band-edge



Highest Channel (5 700 MHz)

Horizontal/Vertical for Band-edge



802.11ac VHT40 UNII-2C 2TX MIMO

Lowest Channel (5 510 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB($\mu V/m$))	(dB($\mu V/m$))	(dB)
Peak data								
5 459.91 ¹⁾	V	42.57	34.25	-23.42	-	53.40	74.00	20.60
11 052.56 ¹⁾	V	58.96	37.55	-47.68	-	48.83	74.00	25.17
16 515.42	H	54.75	42.22	-44.48	-	52.49	68.20	15.71
Average Data								
5 459.91 ¹⁾	V	32.23	34.25	-23.42	1.10	44.16	54.00	9.84

Middle Channel (5 590 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB($\mu V/m$))	(dB($\mu V/m$))	(dB)
Peak data								
11 335.39 ¹⁾	V	59.08	37.84	-47.66	-	49.26	74.00	24.74
16 817.66	V	55.18	42.71	-44.50	-	53.39	68.20	14.81
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

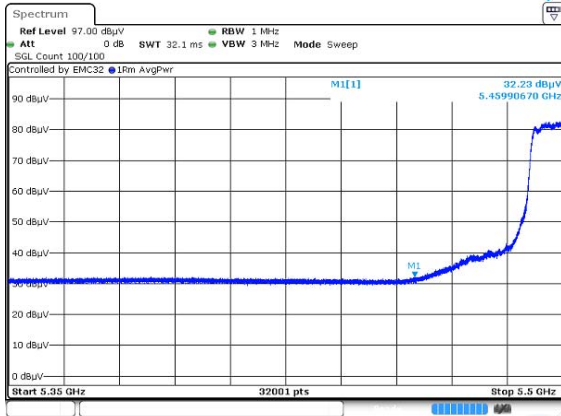
Highest Channel (5 670 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB($\mu V/m$))	(dB($\mu V/m$))	(dB)
Peak data								
5 747.70	V	41.88	34.75	-22.89	-	53.74	68.20	14.46
11 184.09 ¹⁾	H	58.67	37.68	-47.67	-	48.68	74.00	25.32
16 831.67	H	54.43	42.73	-44.50	-	52.66	68.20	15.54
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11ac VHT40 UNII-2C 2TX MIMO

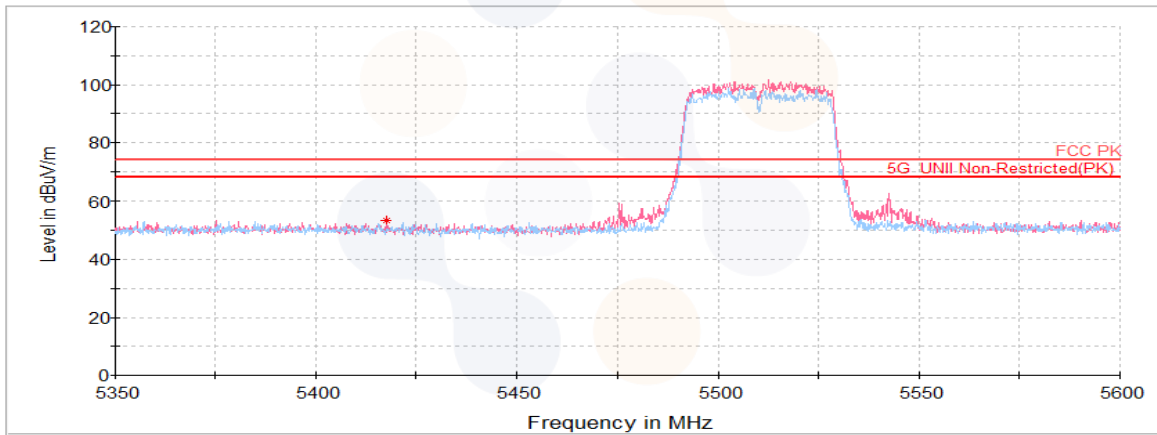
Lowest Channel (5 510 MHz)

Average data



Blank

Horizontal/Vertical for Band-edge



Highest Channel (5 670 MHz)

Horizontal/Vertical for Band-edge



802.11ac VHT80 UNII-2C 2TX MIMO

Lowest Channel (5 530 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB($\mu V/m$))	(dB($\mu V/m$))	(dB)
Peak data								
5 455.98 ¹⁾	V	43.28	34.25	-23.43	-	54.10	74.00	19.90
10 886.53 ¹⁾	V	59.04	37.43	-47.73	-	48.74	74.00	25.26
16 570.77	V	55.38	42.31	-44.49	-	53.20	68.20	15.00
Average Data								
5 455.98 ¹⁾	V	34.41	34.25	-23.43	1.86	47.09	54.00	6.91

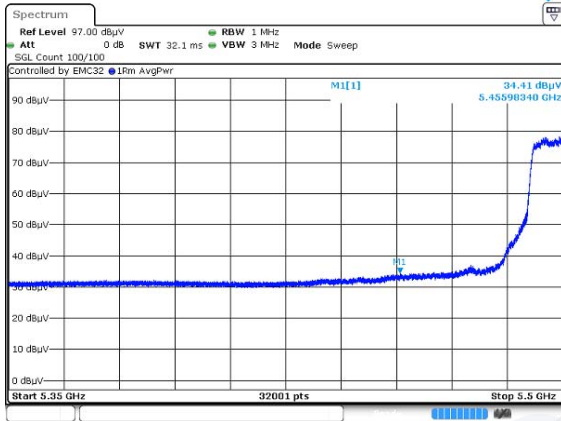
Highest Channel (5 610 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB($\mu V/m$))	(dB($\mu V/m$))	(dB)
Peak data								
5 738.08	V	41.65	34.73	-22.92	-	53.46	68.20	14.74
11 293.70 ¹⁾	V	58.59	37.79	-47.66	-	48.72	74.00	25.28
16 910.73	V	54.82	42.86	-44.50	-	53.18	68.20	15.02
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11ac VHT80 UNII-2C 2TX MIMO

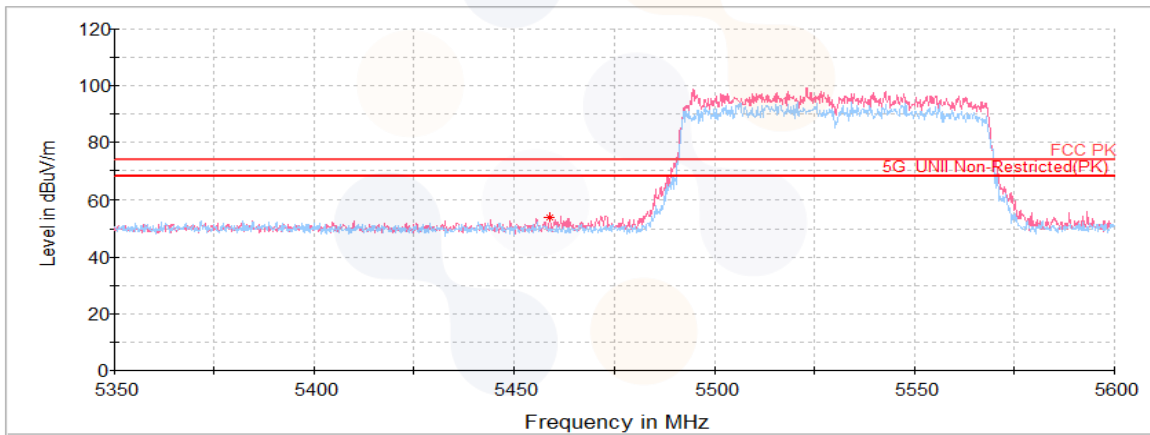
Lowest Channel (5 530 MHz)

Average data



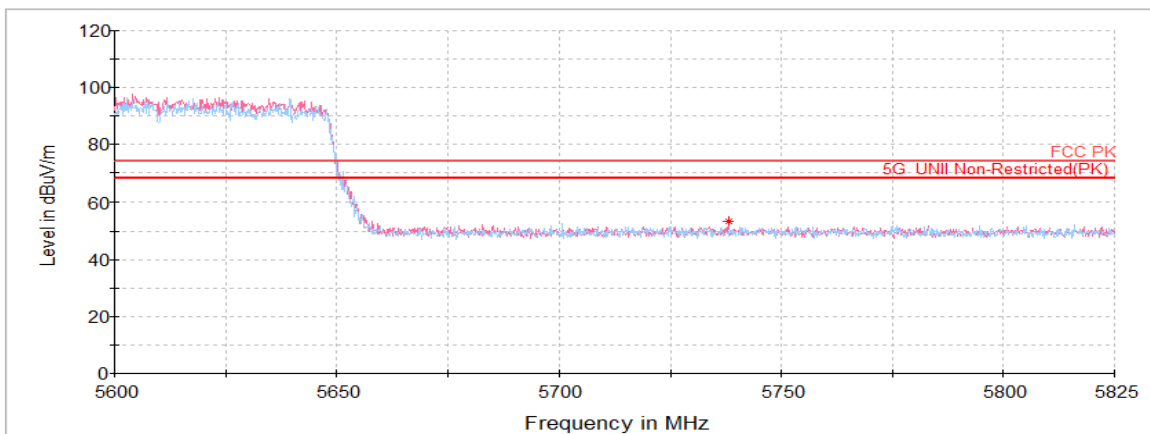
Blank

Horizontal/Vertical for Band-edge



Highest Channel (5 610MHz)

Horizontal/Vertical for Band-edge

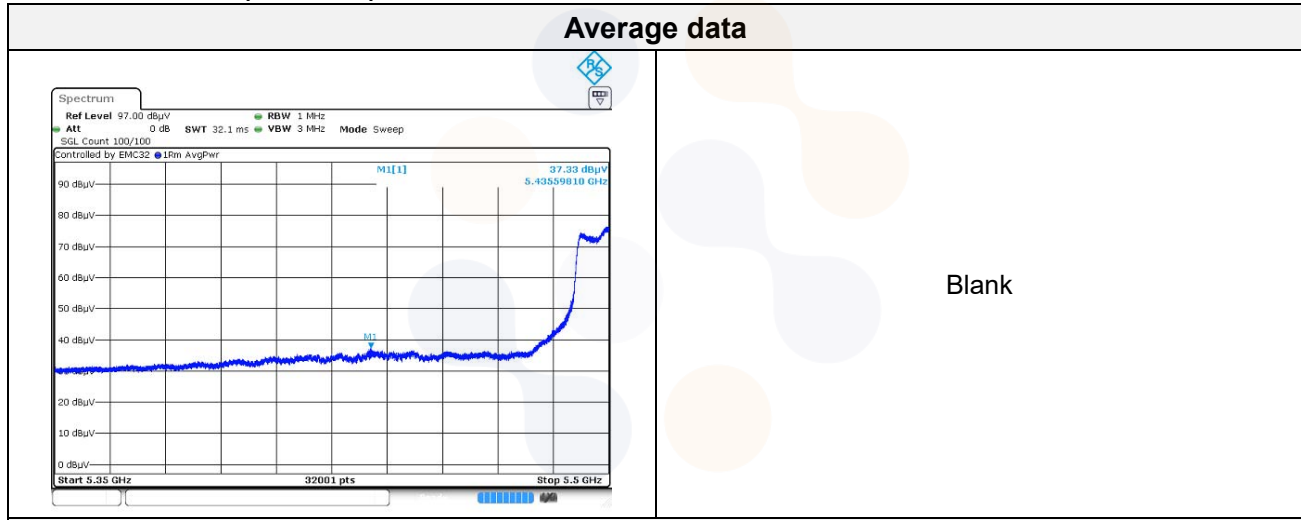


802.11ac VHT160 UNII-2C 2TX MIMO

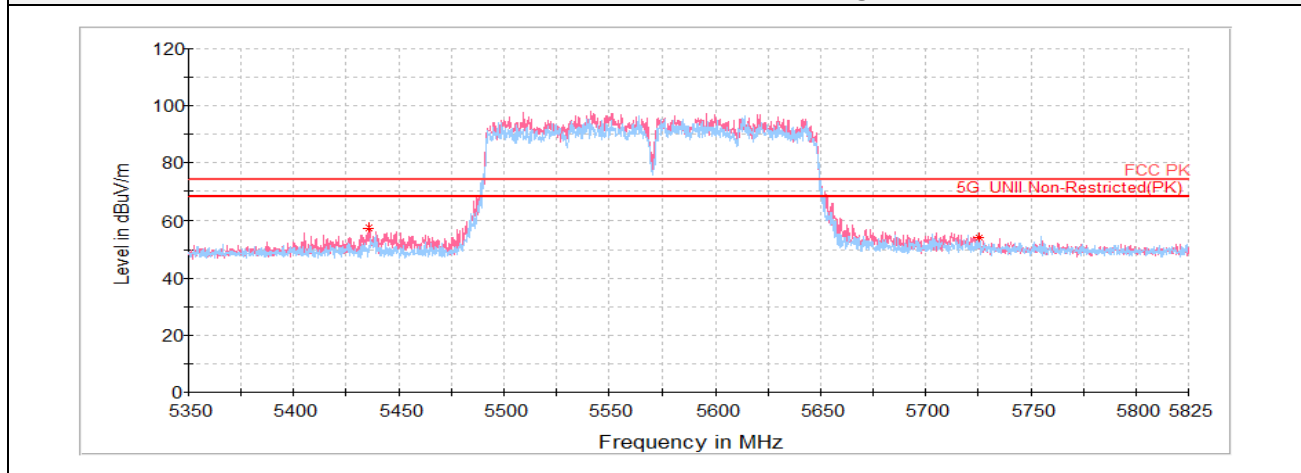
Middle Channel (5 575 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 435.60 ¹⁾	V	46.82	34.22	-23.44	-	57.60	74.00	16.40
5 725.53	V	42.38	34.71	-22.97	-	54.12	68.20	14.08
11 195.95 ¹⁾	H	58.27	37.70	-47.67	-	48.30	74.00	25.70
16 890.61	V	55.89	42.82	-44.50	-	54.21	68.20	13.99
Average Data								
5 435.60 ¹⁾	V	37.33	34.22	-23.44	1.89	50.00	54.00	4.00

Lowest Channel (5 575 MHz)



Horizontal/Vertical for Band-edge

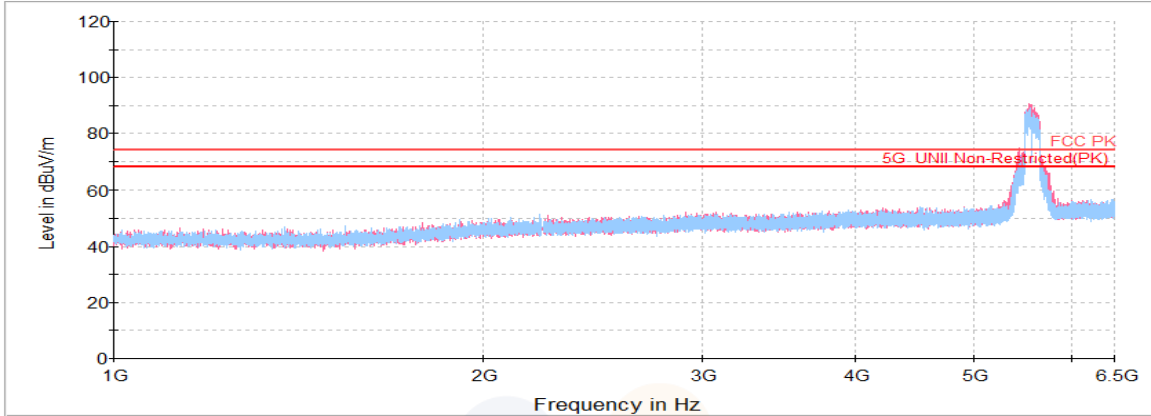


Plot of Harmonics and Spurious Emissions

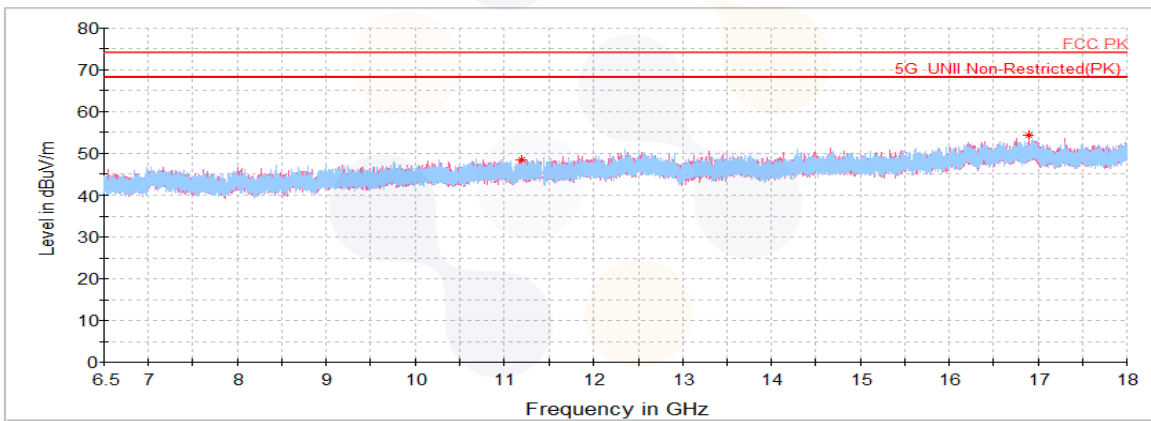
In order to simplify the report, attached plots were only the lowest margin condition

802.11ac VHT160_UNII-2C_2TX MIMO_ Middle Channel (5 575 MHz)

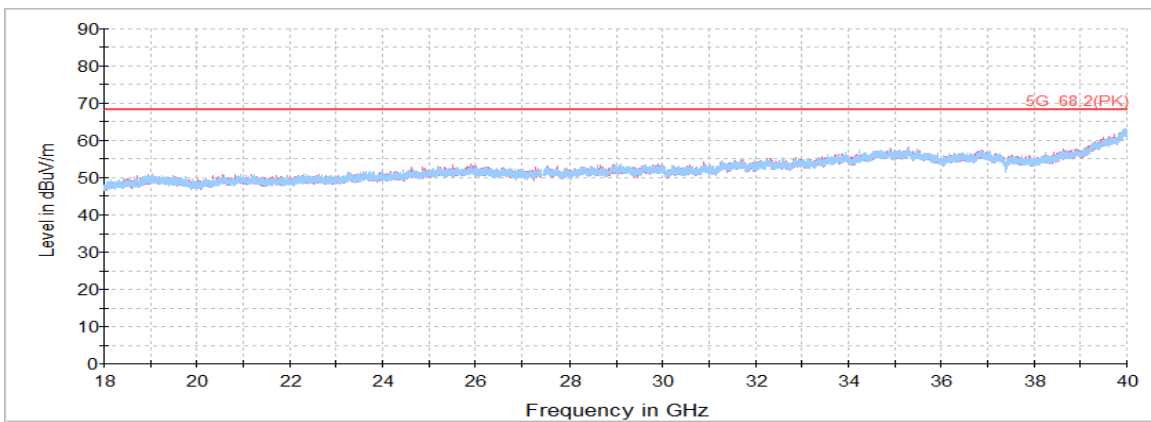
Horizontal/Vertical for 1 GHz ~ 6.5 GHz



Horizontal/Vertical for 6.5 GHz ~ 18 GHz



Horizontal/Vertical for 18 GHz ~ 40 GHz



Straddle Channel

ANT 1

802.11a (5 720 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
11 489.20 ¹⁾	V	58.78	37.99	-47.64	-	49.13	74.00	24.87
17 199.67	V	55.55	41.50	-44.87	-	52.18	68.20	16.02
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

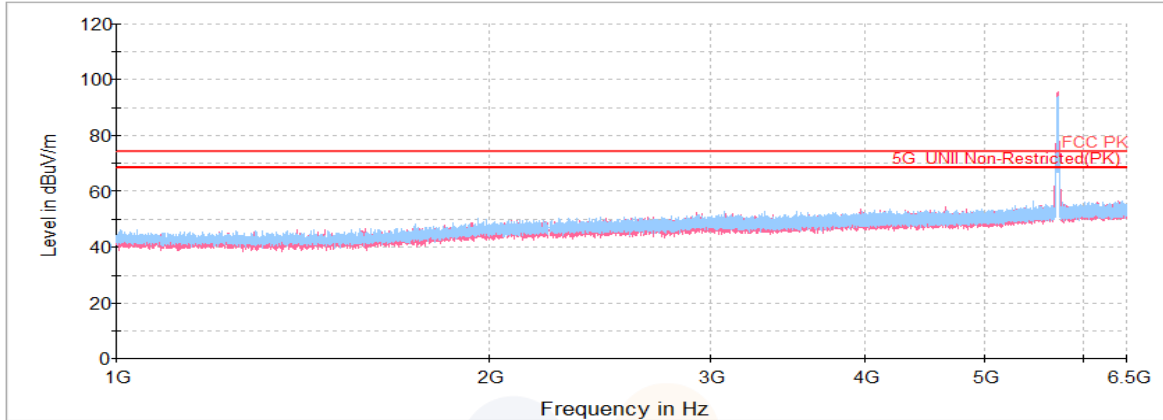


Plot of Harmonics and Spurious Emissions

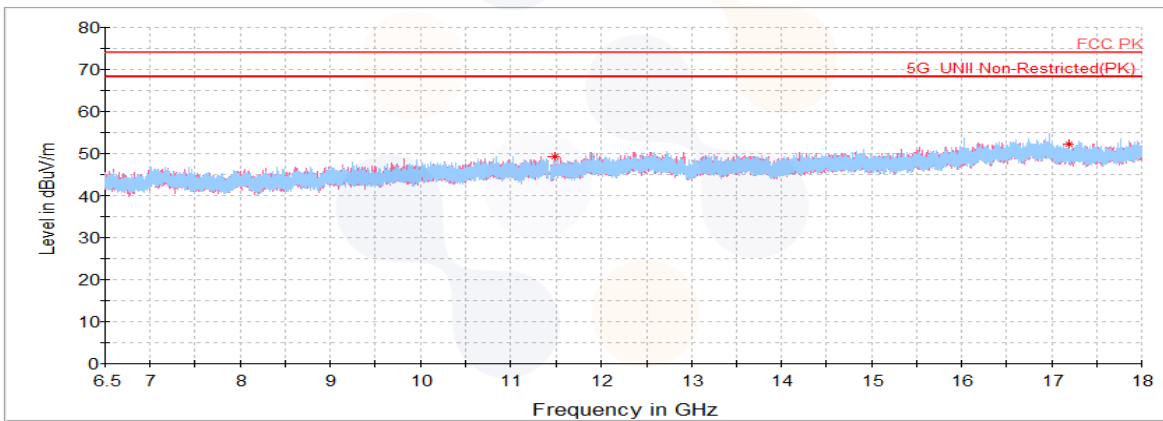
In order to simplify the report, attached plots were only the lowest margin condition

802.11a_Straddle Channel (5 720 MHz)

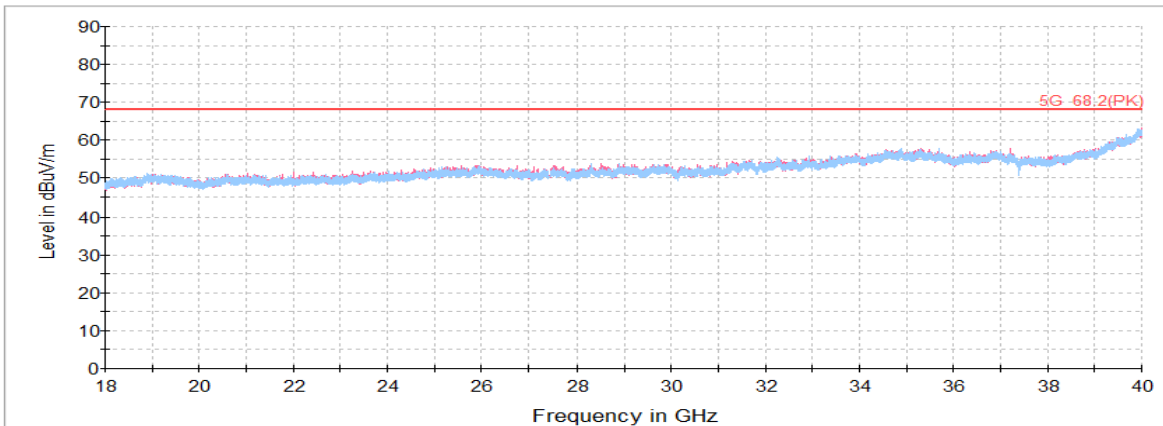
Horizontal/Vertical for 1 GHz ~ 6.5 GHz



Horizontal/Vertical for 6.5 GHz ~ 18 GHz



Horizontal/Vertical for 18 GHz ~ 40 GHz



MIMO

802.11a (5 720 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
11 400.08 ¹⁾	H	58.83	37.90	-47.65	-	49.08	74.00	24.92
17 163.73	V	55.10	41.54	-44.80	-	51.84	68.20	16.36
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT20 (5 720 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
11 488.13 ¹⁾	V	58.53	37.99	-47.64	-	48.88	74.00	25.12
17 187.45	H	55.06	41.51	-44.85	-	51.72	68.20	16.48
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT40 (5 710 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
11 361.63 ¹⁾	H	59.40	37.86	-47.65	-	49.61	74.00	24.39
17 100.13	V	55.83	41.60	-44.69	-	52.74	68.20	15.46
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11ac VHT20 (5 720 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
11 429.91 ¹⁾	V	57.93	37.93	-47.65	-	48.21	74.00	25.79
17 099.41	H	54.72	41.60	-44.69	-	51.63	68.20	16.57
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11ac VHT40 (5 710 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
11 224.34 ¹⁾	V	59.53	37.72	-47.67	-	49.58	74.00	24.42
17 095.45	V	55.80	41.60	-44.68	-	52.72	68.20	15.48
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11ac VHT80 (5 690 MHz)

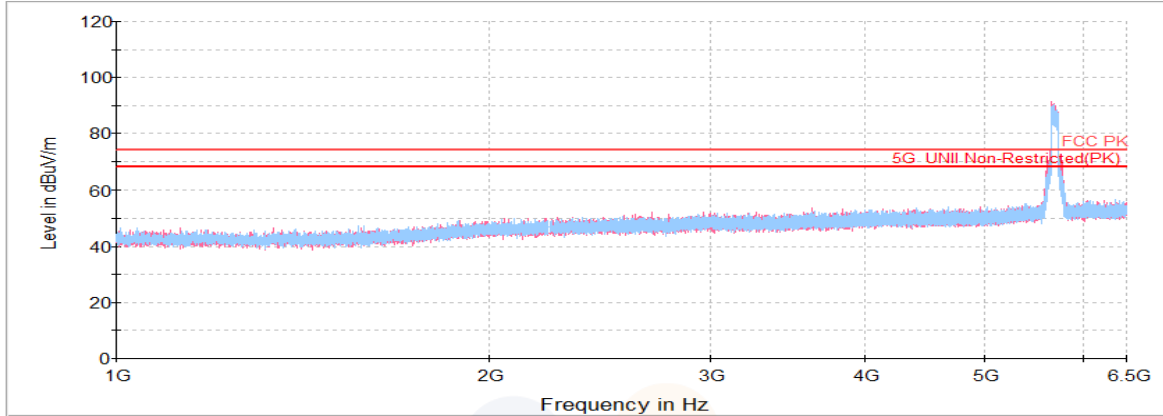
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
11 389.30 ¹⁾	V	58.40	37.89	-47.65	-	48.64	74.00	25.36
17 014.23	V	55.98	41.69	-44.53	-	53.14	68.20	15.06
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Plot of Harmonics and Spurious Emissions

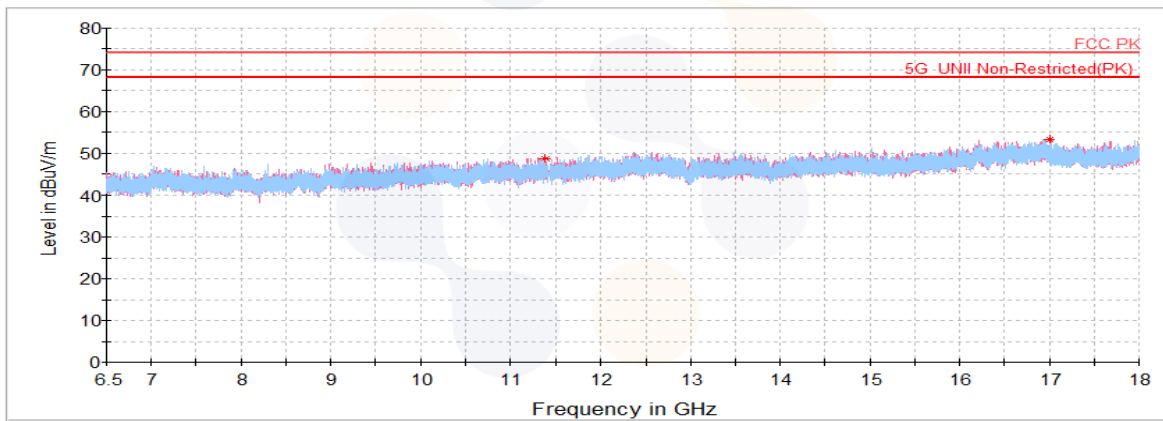
In order to simplify the report, attached plots were only the lowest margin condition

802.11ac VHT80_Straddle Channel (5 690 MHz)

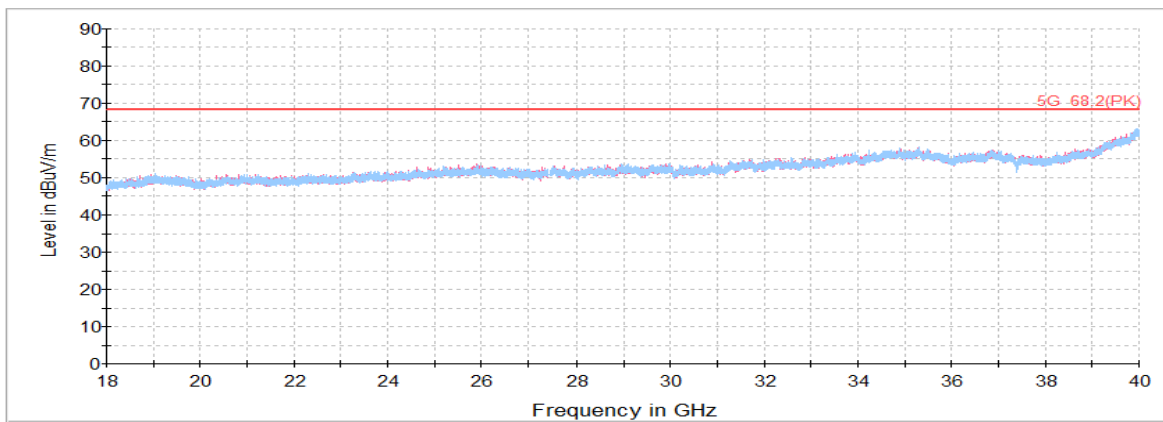
Horizontal/Vertical for 1 GHz ~ 6.5 GHz



Horizontal/Vertical for 6.5 GHz ~ 18 GHz



Horizontal/Vertical for 18 GHz ~ 40 GHz



802.11a UNII-3 ANT1

Lowest Channel (5 745 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 685.31	V	40.61	34.63	-23.06	-	52.18	94.33	42.15
11 481.30 ¹⁾	H	58.07	37.98	-47.64	-	48.41	74.00	25.59
17 193.92	H	55.04	41.51	-44.86	-	51.69	68.20	16.51
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Middle Channel (5 785 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
11 606.72 ¹⁾	V	59.66	38.09	-47.69	-	50.06	74.00	23.94
17 317.55	H	55.49	41.38	-45.09	-	51.78	68.20	16.42
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

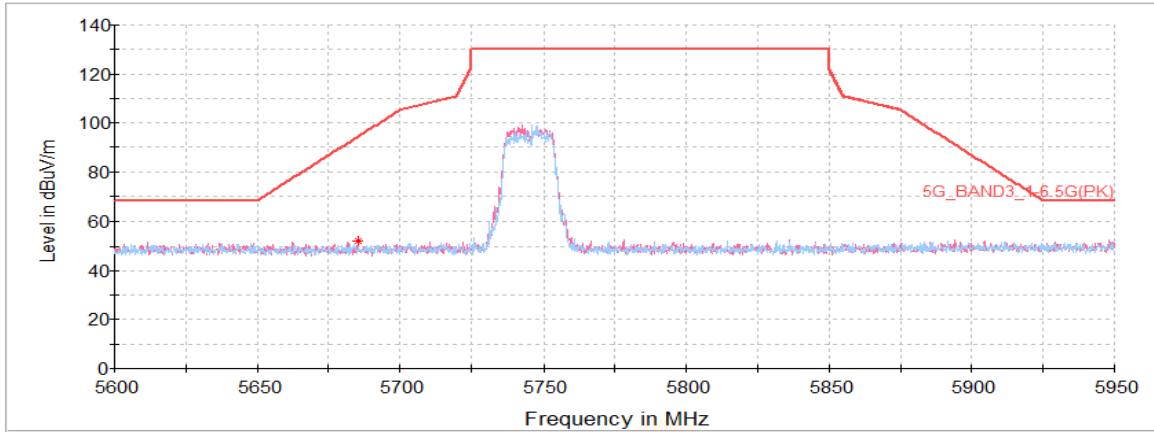
Highest Channel (5 825 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 879.36		40.34	34.98	-22.84	-	52.48	101.97	49.49
11 667.45 ¹⁾	V	57.31	38.13	-47.71	-	47.73	74.00	26.27
17 468.84	H	56.52	41.23	-45.36	-	52.39	68.20	15.81
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11a UNII-3 ANT1

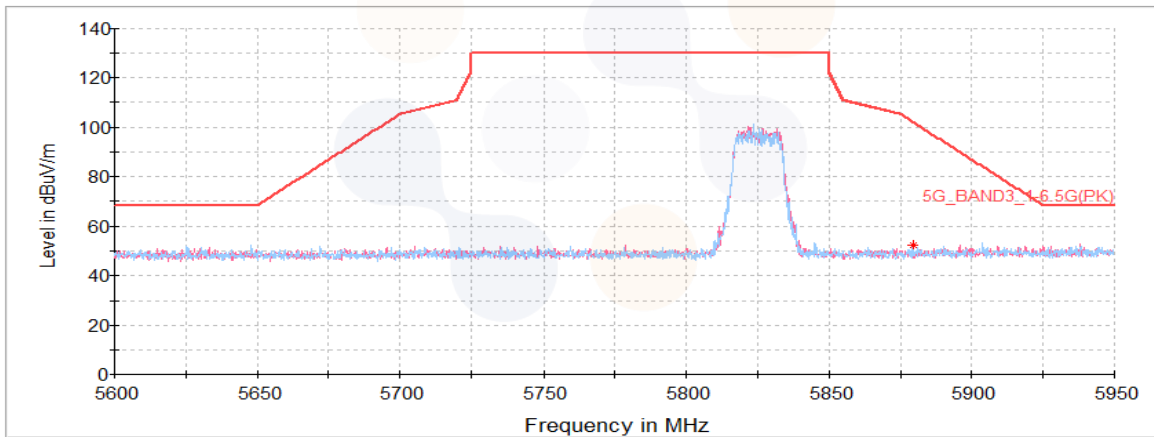
Lowest Channel (5 745 MHz)

Horizontal/Vertical for Band-edge



Highest Channel (5 825 MHz)

Horizontal/Vertical for Band-edge



802.11a UNII-3 2TX MIIMO

Lowest Channel (5 745 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 723.47	V	42.07	34.70	-22.97	-	53.80	118.71	64.91
11 363.42 ¹⁾	H	58.87	37.86	-47.65	-	49.08	74.00	24.92
17 256.45	H	56.11	41.44	-44.97	-	52.58	68.20	15.62
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Middle Channel (5 785 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
11 577.97 ¹⁾	H	58.78	38.06	-47.67	-	49.17	74.00	24.83
17 331.20	H	56.58	41.37	-45.11	-	52.84	68.20	15.36
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

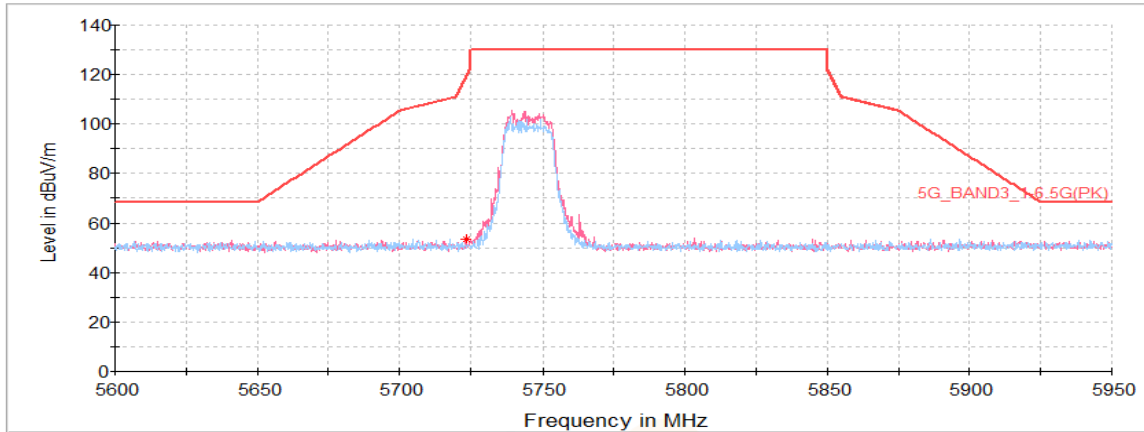
Highest Channel (5 825 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 866.64	V	40.84	34.96	-22.82	-	52.98	107.54	54.56
11 694.41 ¹⁾	H	58.58	38.16	-47.73	-	49.01	74.00	24.99
17 464.17	H	56.53	41.24	-45.35	-	52.42	68.20	15.78
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11a UNII-3 2TX MIIMO

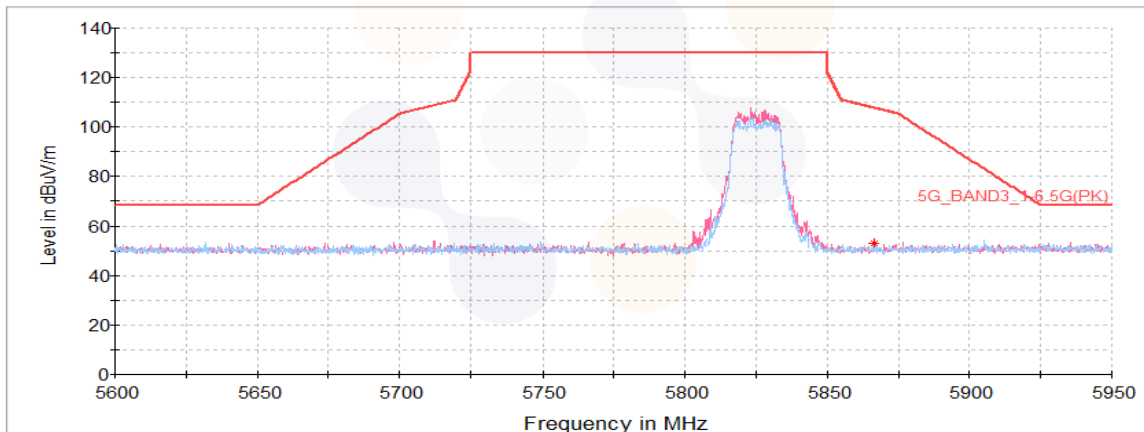
Lowest Channel (5 745 MHz)

Horizontal/Vertical for Band-edge



Highest Channel (5 825 MHz)

Horizontal/Vertical for Band-edge



802.11n HT20 UNII-3 2TX MIMO

Lowest Channel (5 745 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 699.75	V	42.67	34.66	-23.05	-	54.28	105.02	50.73
11 586.95 ¹⁾	V	58.71	38.07	-47.68	-	49.10	74.00	24.90
17 268.31	H	55.51	41.43	-45.00	-	51.94	68.20	16.26
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Middle Channel (5 785 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
11 371.33 ¹⁾	H	59.42	37.87	-47.65	-	49.64	74.00	24.36
17 296.34	H	55.86	41.40	-45.05	-	52.21	68.20	15.99
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

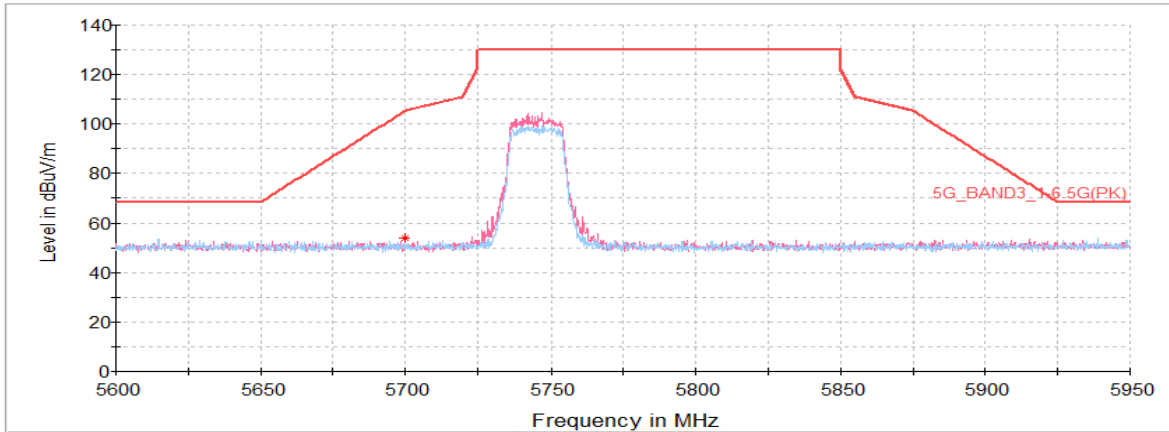
Highest Channel (5 825 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 867.50	V	41.87	34.96	-22.82	-	54.01	107.30	53.29
11 709.14 ¹⁾	V	58.57	38.17	-47.73	-	49.01	74.00	24.99
17 339.83	V	56.34	41.36	-45.13	-	52.57	68.20	15.63
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT20 UNII-3 2TX MIMO

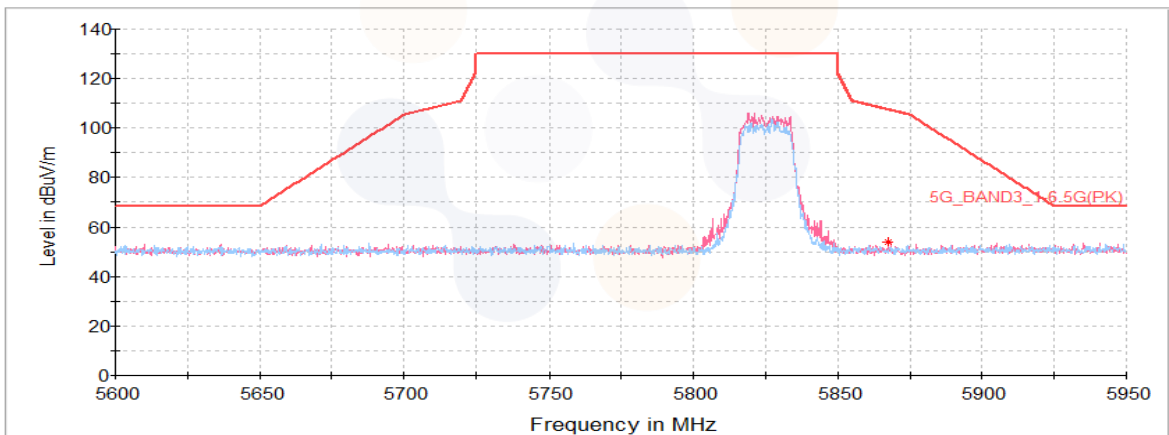
Lowest Channel (5 745 MHz)

Horizontal/Vertical for Band-edge



Highest Channel (5 825 MHz)

Horizontal/Vertical for Band-edge



802.11n HT40 UNII-3 2TX MIMO

Lowest Channel (5 755 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
5 718.83	V	48.52	34.69	-22.99	-	60.22	110.47	50.25
11 387.50 ¹⁾	V	59.45	37.89	-47.65	-	49.69	74.00	24.31
17 448.00	V	57.51	41.25	-45.32	-	53.44	68.20	14.76
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

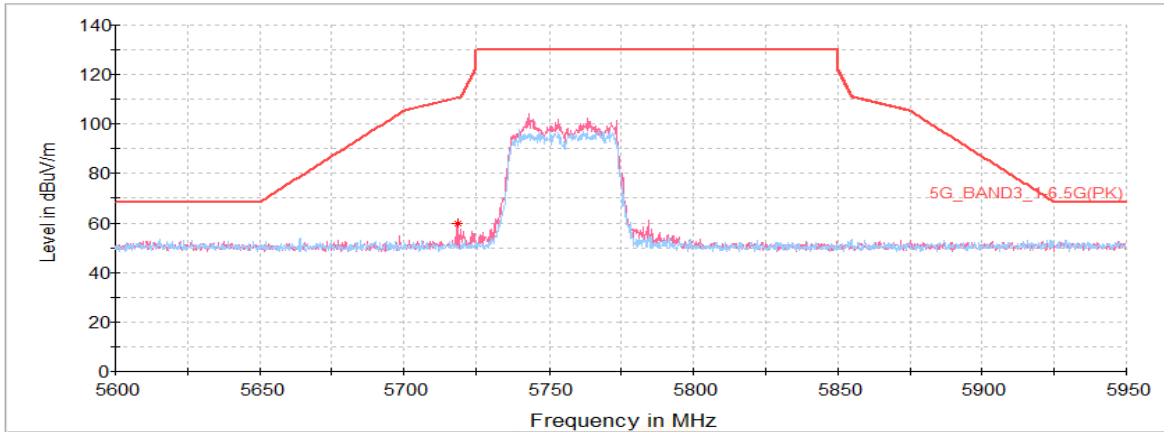
Highest Channel (5 795 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
5 858.56	H	41.94	34.95	-22.81	-	54.08	109.80	55.72
11 649.84 ¹⁾	H	58.56	38.12	-47.71	-	48.97	74.00	25.03
17 289.88	V	56.09	41.41	-45.03	-	52.47	68.20	15.73
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT40 UNII-3 2TX MIMO

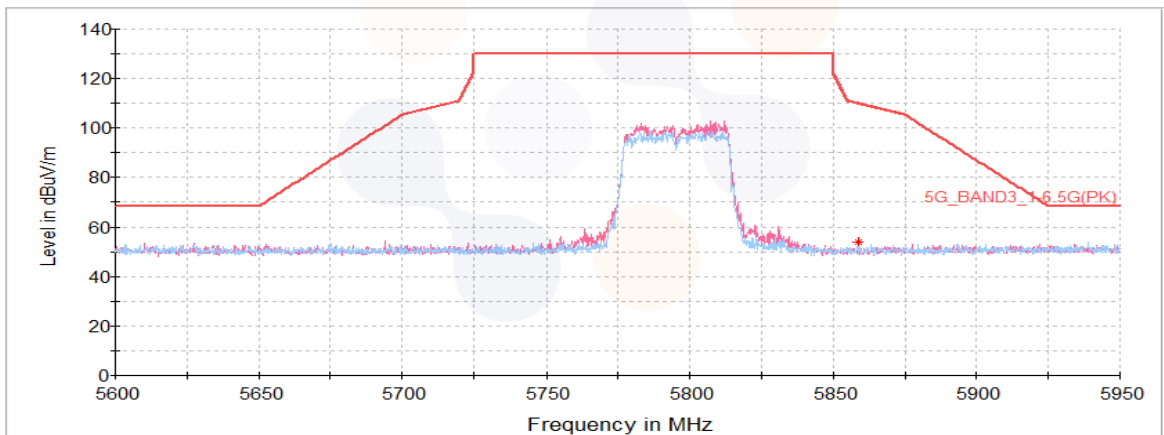
Lowest Channel (5 755 MHz)

Horizontal/Vertical for Band-edge



Highest Channel (5 795 MHz)

Horizontal/Vertical for Band-edge



802.11ac VHT20 UNII-3 2TX MIMO

Lowest Channel (5 745 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB($\mu V/m$))	(dB($\mu V/m$))	(dB)
Peak data								
5 714.88	H	41.58	34.69	-23.00	-	53.27	109.37	56.09
11 381.75 ¹⁾	H	58.95	37.88	-47.65	-	49.18	74.00	24.82
17 142.53	V	55.56	41.56	-44.77	-	52.35	68.20	15.85
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Middle Channel (5 785 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB($\mu V/m$))	(dB($\mu V/m$))	(dB)
Peak data								
11 520.11 ¹⁾	V	58.64	38.02	-47.65	-	49.01	74.00	24.99
17 323.30	H	56.30	41.38	-45.10	-	52.58	68.20	15.62
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

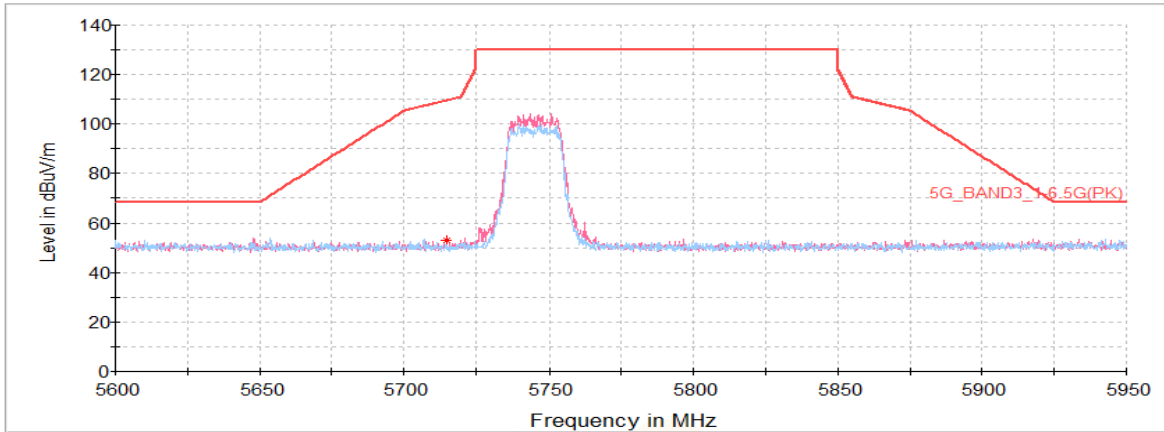
Highest Channel (5 825 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB($\mu V/m$))	(dB($\mu V/m$))	(dB)
Peak data								
5 884.69	V	41.08	34.99	-22.85	-	53.22	98.03	44.82
11 620.38 ¹⁾	V	57.76	38.10	-47.69	-	48.17	74.00	25.83
17 485.38	V	56.40	41.21	-45.39	-	52.22	68.20	15.98
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11ac VHT20 UNII-3 2TX MIMO

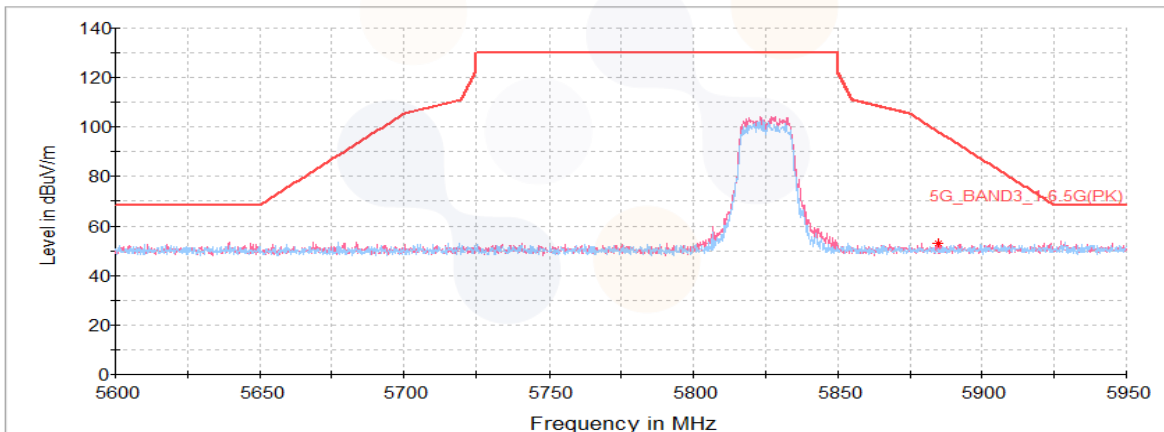
Lowest Channel (5 745 MHz)

Horizontal/Vertical for Band-edge



Highest Channel (5 825 MHz)

Horizontal/Vertical for Band-edge



802.11ac VHT40 UNII-3 2TX MIMO

Lowest Channel (5 755 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 723.81	V	44.04	34.70	-22.97	-	55.77	119.49	63.72
11 379.59 ¹⁾	V	58.61	37.88	-47.65	-	48.84	74.00	25.16
17 295.63	V	55.86	41.40	-45.05	-	52.21	68.20	15.99
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

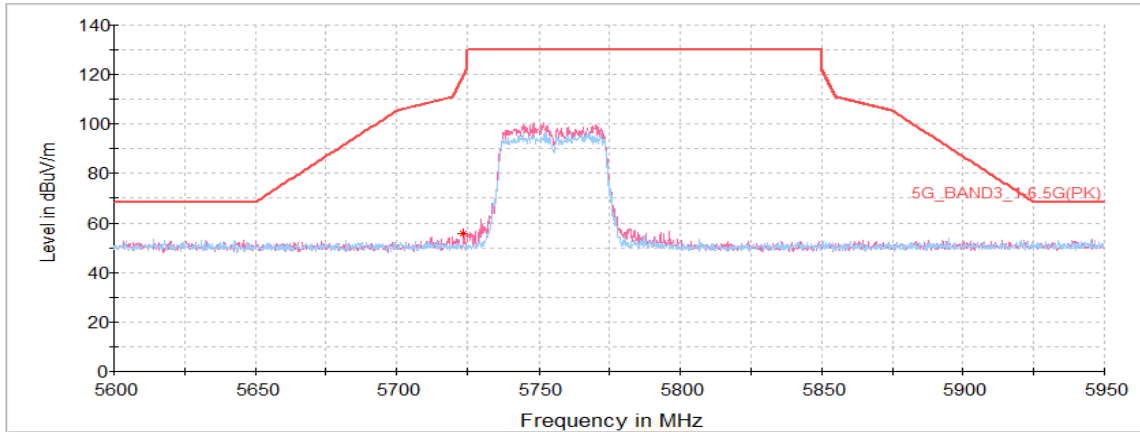
Highest Channel (5 795 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 865.09	H	40.58	34.96	-22.82	-	52.72	107.97	55.26
11 727.83 ¹⁾	V	59.67	38.18	-47.74	-	50.11	74.00	23.89
17 329.77	V	56.15	41.37	-45.11	-	52.41	68.20	15.79
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11ac VHT40 UNII-3 2TX MIMO

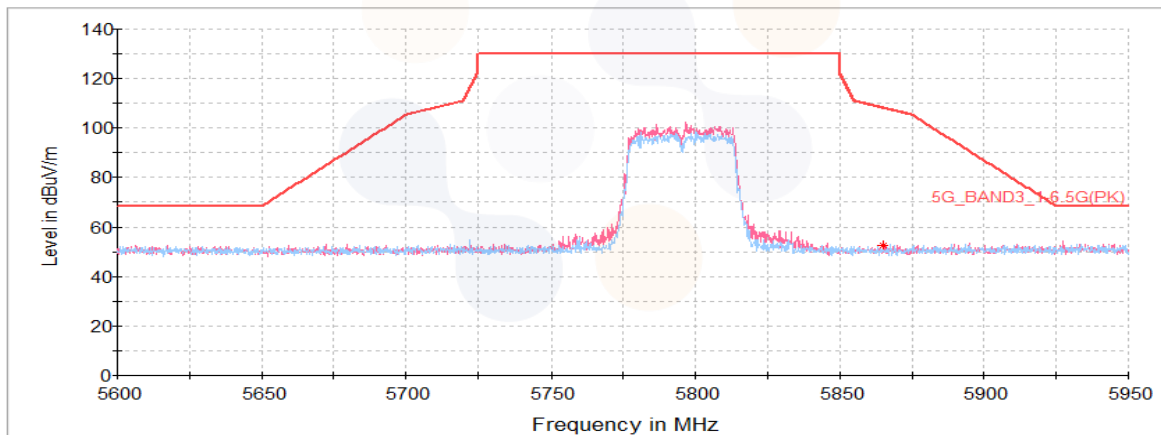
Lowest Channel (5 755 MHz)

Horizontal/Vertical for Band-edge



Highest Channel (5 795 MHz)

Horizontal/Vertical for Band-edge

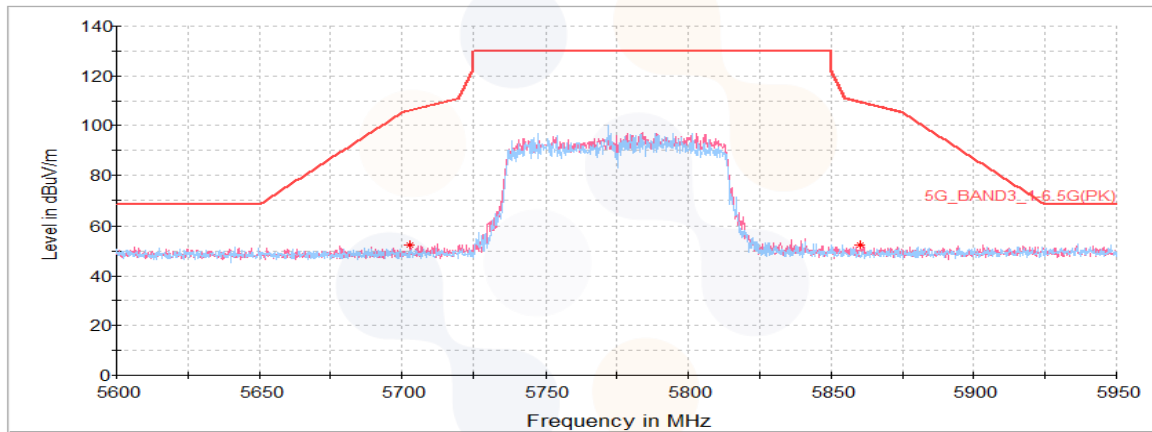


802.11ac VHT80 UNII-3 2TX MIMO

Middle Channel (5 775 MHz)

Frequency (MHz)	Pol. (V/H)	Reading (dB(μ V))	Ant. Factor (dB)	Amp.+Cable (dB)	DCF (dB)	Result (dB(μ V/m))	Limit (dB(μ V/m))	Margin (dB)
Peak data								
5 703.02	V	40.73	34.67	-23.04	-	52.36	106.04	53.68
5 860.28	V	40.06	34.95	-22.81	-	52.20	109.32	57.12
11 389.66 ¹⁾	V	59.46	37.89	-47.65	-	49.70	74.00	24.30
17 329.77	H	56.15	41.37	-45.11	-	52.41	68.20	15.79
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Horizontal/Vertical for Band-edge

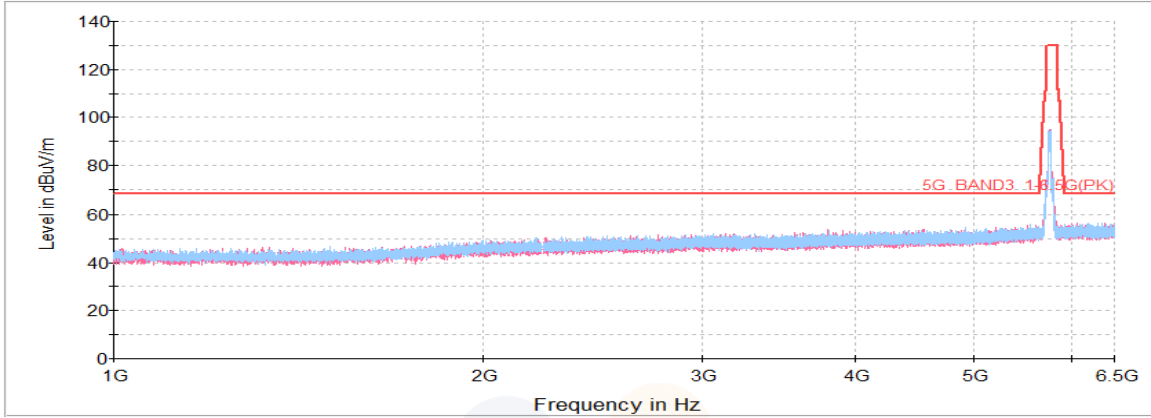


Plot of Harmonics and Spurious Emissions

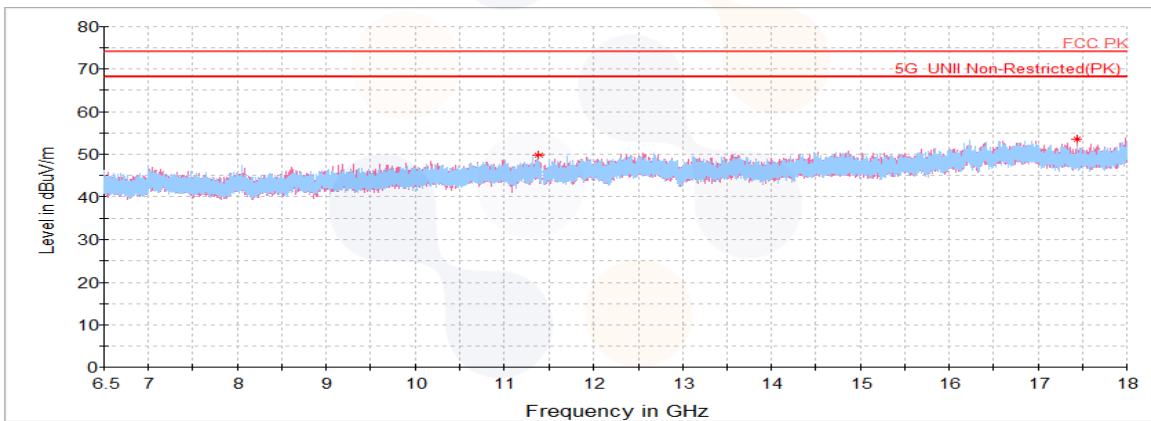
In order to simplify the report, attached plots were only the lowest margin condition

802.11n HT40_UNII-3_2TX MIMO_Low Channel (5 755 MHz)

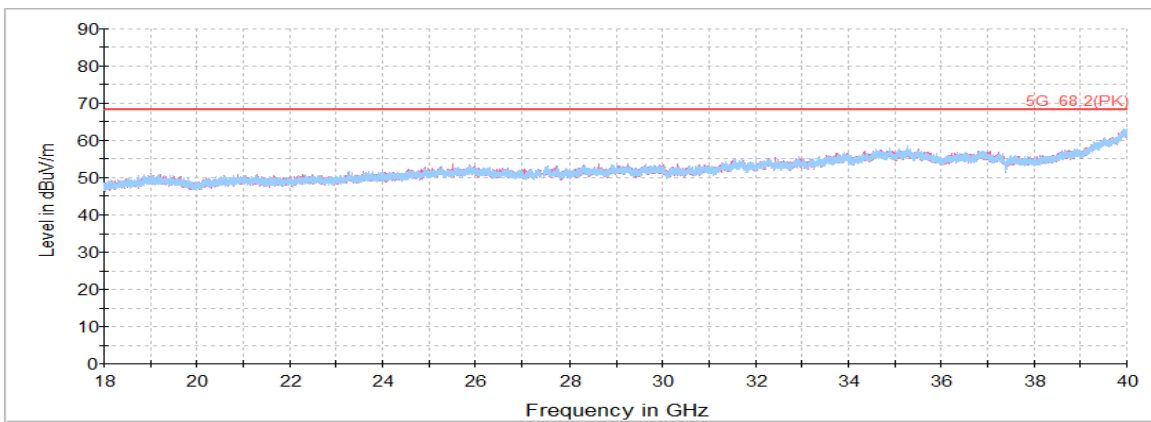
Horizontal/Vertical for 1 GHz ~ 6.5 GHz



Horizontal/Vertical for 6.5 GHz ~ 18 GHz



Horizontal/Vertical for 18 GHz ~ 40 GHz



802.11a UNII-4 ANT1

Lowest Channel (5 845 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 707.70	V	40.84	34.67	-23.02	-	52.49	107.36	54.87
11 572.58 ¹⁾	V	58.75	38.06	-47.67	-	49.14	74.00	24.86
17 233.81	V	56.28	41.47	-44.93	-	52.82	68.20	15.38
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Middle Channel (5 865 MHz)

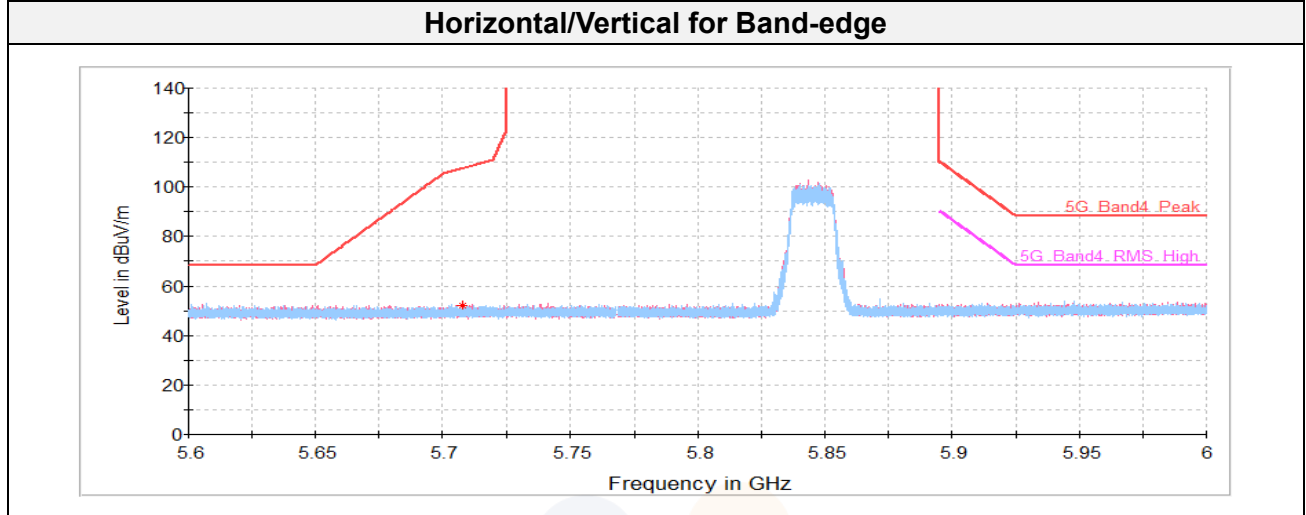
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
11 737.89 ¹⁾	V	58.27	38.19	-47.74	-	48.72	74.00	25.28
17 609.00	V	56.40	40.48	-45.24	-	51.64	68.20	16.56
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Highest Channel (5 885 MHz)

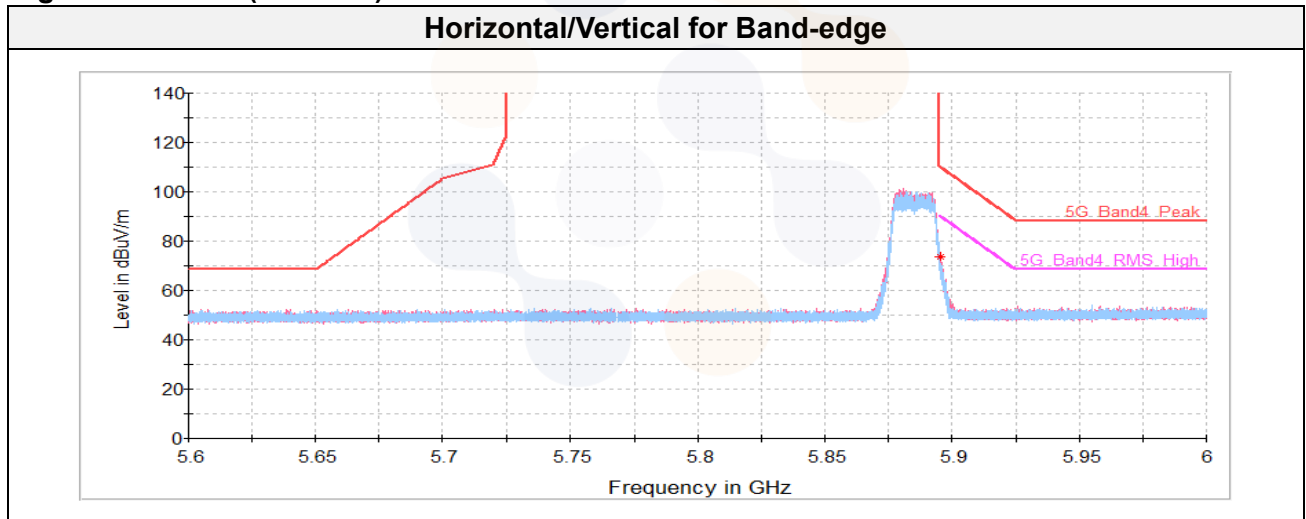
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 895.38	V	61.39	35.01	-22.86	-	73.54	109.93	36.38
11 831.33 ¹⁾	H	60.43	38.27	-47.79	-	50.91	74.00	23.09
17 684.83	V	57.50	40.33	-45.11	-	52.72	68.20	15.48
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11a UNII-4 ANT1

Lowest Channel (5 845 MHz)



Highest Channel (5 885 MHz)



802.11a UNII-4 2TX MIIMO

Lowest Channel (5 845 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 685.01	H	42.10	34.63	-23.06	-	53.67	94.11	40.44
7 793.39	V	67.76	35.32	-51.10	-	51.98	68.20	16.22
11 847.14 ¹⁾	V	58.25	38.28	-47.79	-	48.74	74.00	25.26
17 431.83	V	55.19	41.27	-45.29	-	51.17	68.20	17.03
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Middle Channel (5 865 MHz)

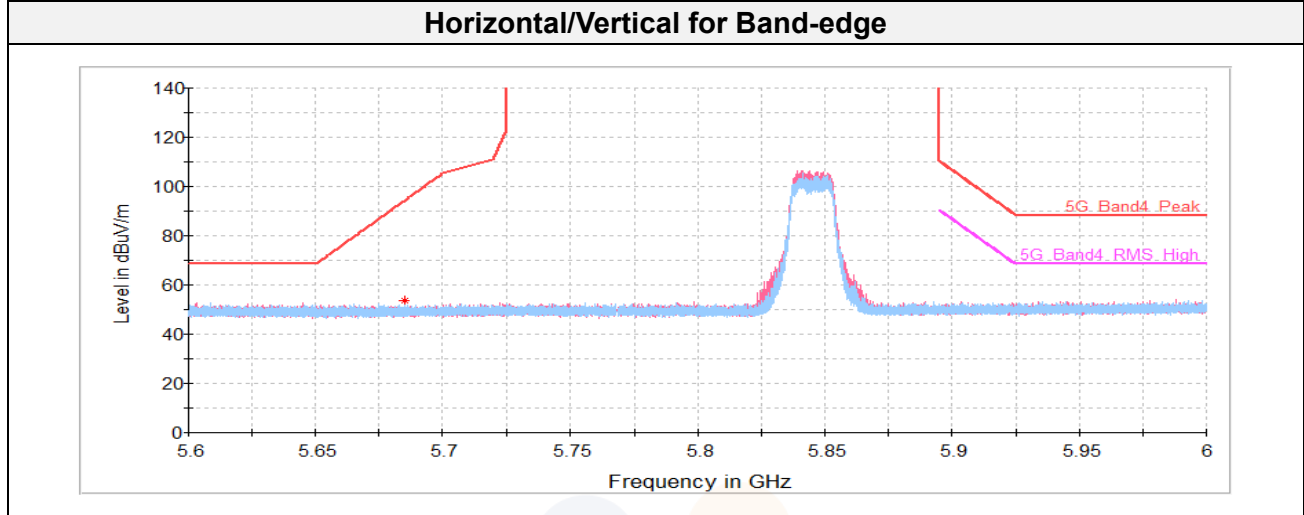
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
7 820.34	V	66.59	35.33	-51.04	-	50.88	68.20	17.32
11 833.84 ¹⁾	V	58.64	38.27	-47.79	-	49.12	74.00	24.88
17 551.50	V	55.64	40.60	-45.33	-	50.91	68.20	17.29
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Highest Channel (5 885 MHz)

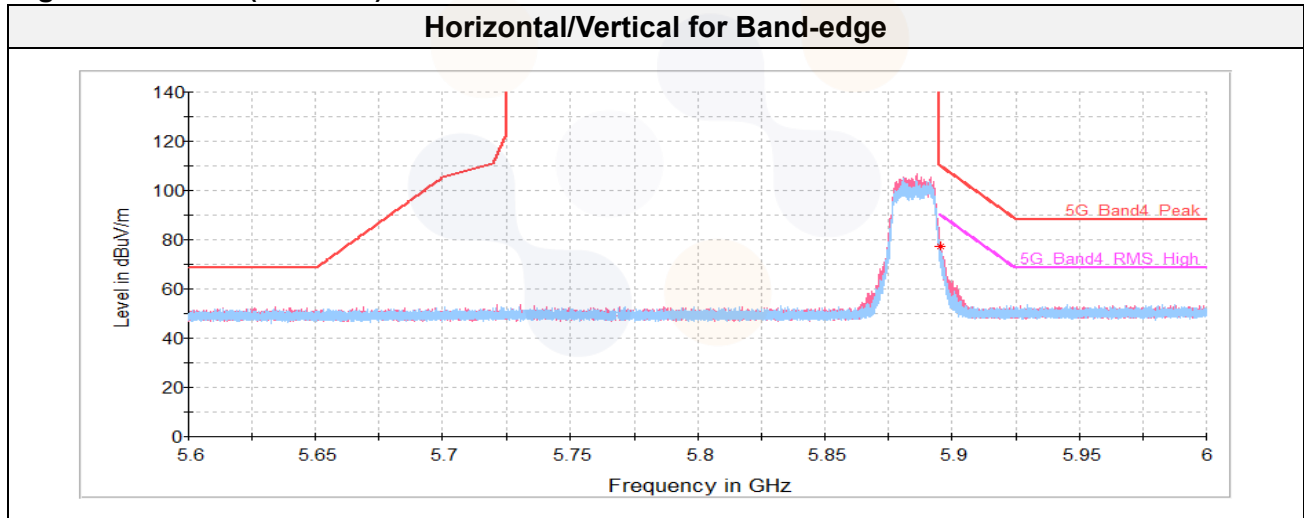
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 895.38	V	65.02	35.01	-22.86	-	77.17	109.93	32.76
11 856.13 ¹⁾	V	59.64	38.28	-47.80	-	50.12	74.00	23.88
17 670.45	V	56.47	40.36	-45.14	-	51.69	68.20	16.51
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11a UNII-4 2TX MIIMO

Lowest Channel (5 845 MHz)



Highest Channel (5 885 MHz)



802.11n HT20 UNII-4 2TX MIMO

Lowest Channel (5 845 MHz)

Frequency (MHz)	Pol. (V/H)	Reading (dB(μ V))	Ant. Factor (dB)	Amp.+Cable (dB)	DCF (dB)	Result (dB(μ V/m))	Limit (dB(μ V/m))	Margin (dB)
Peak data								
5 717.05	V	41.71	34.69	-22.99	-	53.41	109.97	56.56
7 793.39	V	67.74	35.32	-51.10	-	51.96	68.20	16.24
11 687.94 ¹⁾	H	57.72	38.15	-47.72	-	48.15	74.00	25.85
17 665.78	H	57.24	40.37	-45.14	-	52.47	68.20	15.73
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Middle Channel (5 865 MHz)

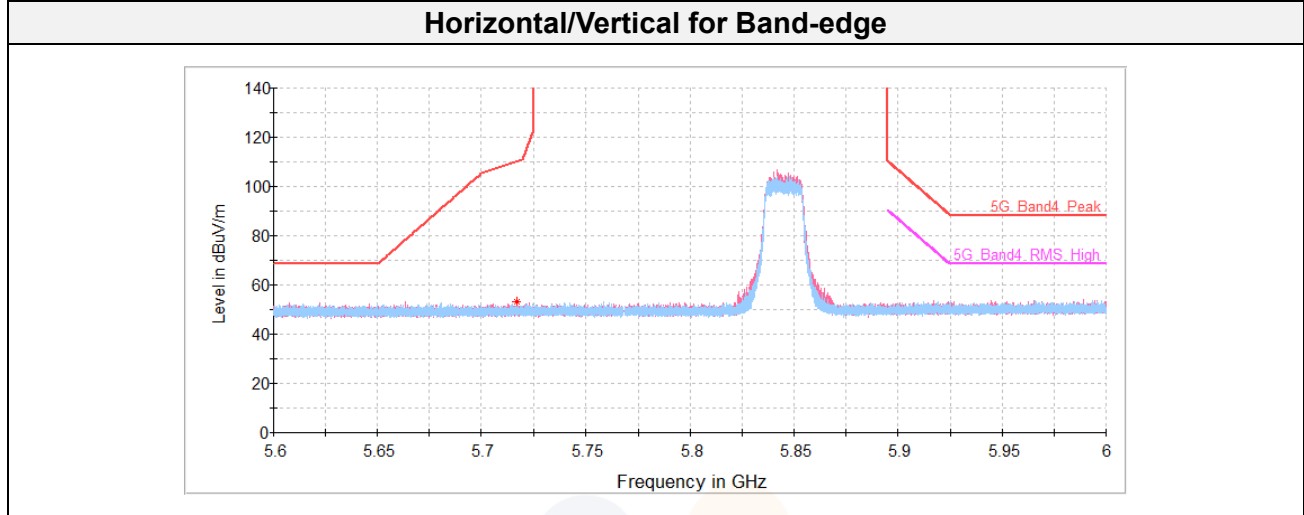
Frequency (MHz)	Pol. (V/H)	Reading (dB(μ V))	Ant. Factor (dB)	Amp.+Cable (dB)	DCF (dB)	Result (dB(μ V/m))	Limit (dB(μ V/m))	Margin (dB)
Peak data								
7 819.98	V	66.43	35.33	-51.04	-	50.72	68.20	17.48
10 050.27	H	60.68	36.84	-48.15	-	49.37	68.20	18.83
11 873.38 ¹⁾	H	58.85	38.30	-47.81	-	49.34	74.00	24.66
17 672.25	V	56.63	40.36	-45.13	-	51.86	68.20	16.34
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Highest Channel (5 885 MHz)

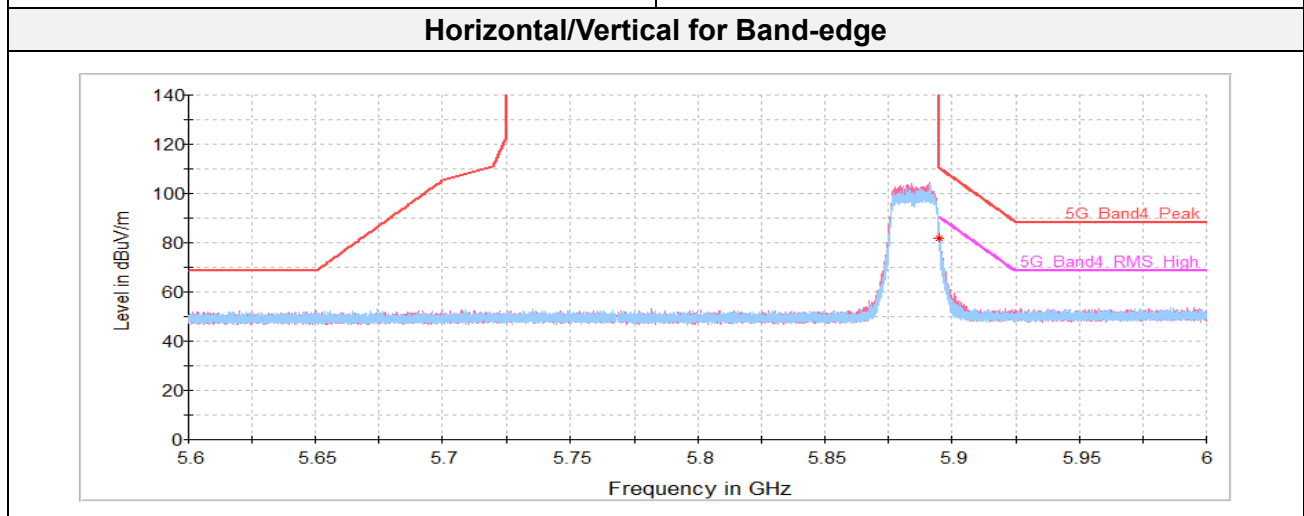
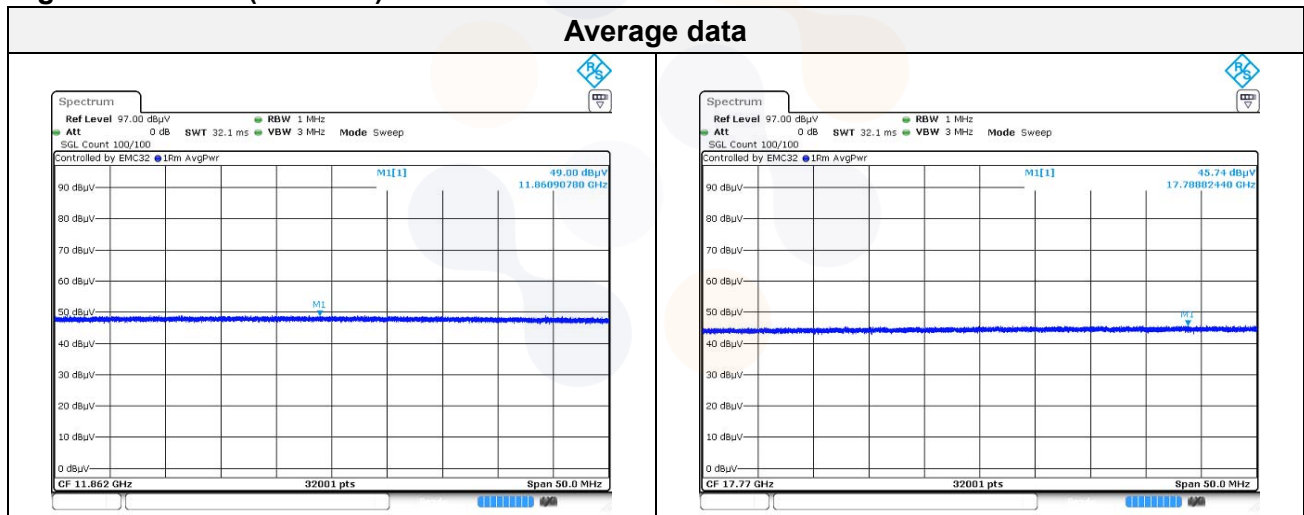
Frequency (MHz)	Pol. (V/H)	Reading (dB(μ V))	Ant. Factor (dB)	Amp.+Cable (dB)	DCF (dB)	Result (dB(μ V/m))	Limit (dB(μ V/m))	Margin (dB)
Peak data								
5 895.05	H	69.65	35.01	-22.86	-	81.80	110.16	28.36
7 846.58	V	65.38	35.34	-50.99	-	49.73	68.20	18.47
11 860.91 ¹⁾	H	60.91	38.29	-47.80	-	51.40	74.00	22.60
17 788.82 ¹⁾	V	57.87	40.12	-44.94	-	53.05	74.00	20.95
Average Data								
11 860.91 ¹⁾	H	49.00	38.29	-47.80	0.61	40.10	54.00	13.90
17 788.82 ¹⁾	V	45.74	40.12	-44.94	0.61	41.53	54.00	12.47

802.11n HT20 UNII-4 2TX MIMO

Lowest Channel (5 845 MHz)



Highest Channel (5 885 MHz)



802.11n HT40 UNII-4 2TX MIMO

Lowest Channel (5 835 MHz)

Frequency (MHz)	Pol. (V/H)	Reading (dB(μ V))	Ant. Factor (dB)	Amp.+Cable (dB)	DCF (dB)	Result (dB(μ V/m))	Limit (dB(μ V/m))	Margin (dB)
Peak data								
5 702.70	V	41.24	34.66	-23.04	-	52.86	105.96	53.09
7 779.73	V	67.86	35.31	-51.12	-	52.05	68.20	16.15
11 611.39 ¹⁾	V	57.25	38.09	-47.69	-	47.65	74.00	26.35
17 602.53	H	56.39	40.49	-45.25	-	51.63	68.20	16.57
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

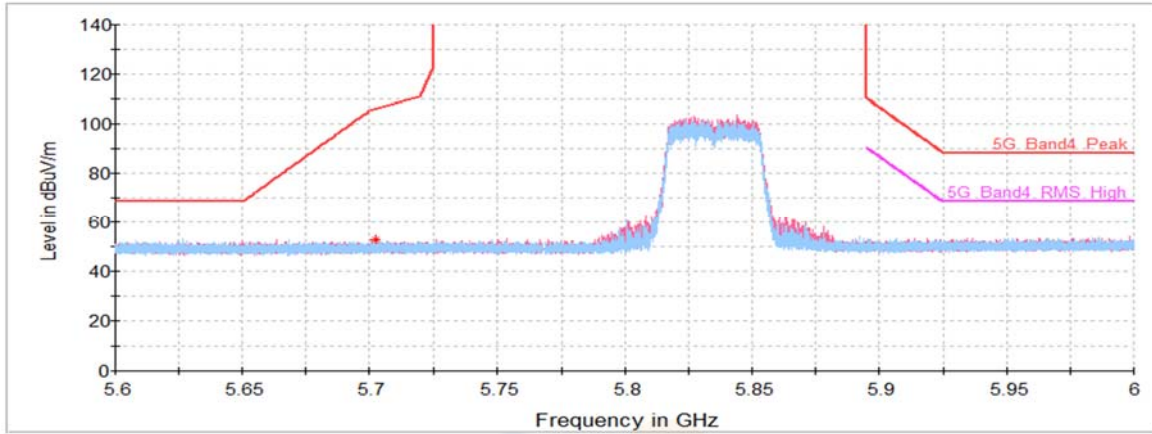
Highest Channel (5 875 MHz)

Frequency (MHz)	Pol. (V/H)	Reading (dB(μ V))	Ant. Factor (dB)	Amp.+Cable (dB)	DCF (dB)	Result (dB(μ V/m))	Limit (dB(μ V/m))	Margin (dB)
Peak data								
5 895.09	V	64.10	35.01	-22.86	-	76.25	110.14	33.89
11 732.86 ¹⁾	V	59.37	38.19	-47.74	-	49.82	74.00	24.18
17 648.53	H	57.32	40.40	-45.17	-	52.55	68.20	15.65
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT40 UNII-4 2TX MIMO

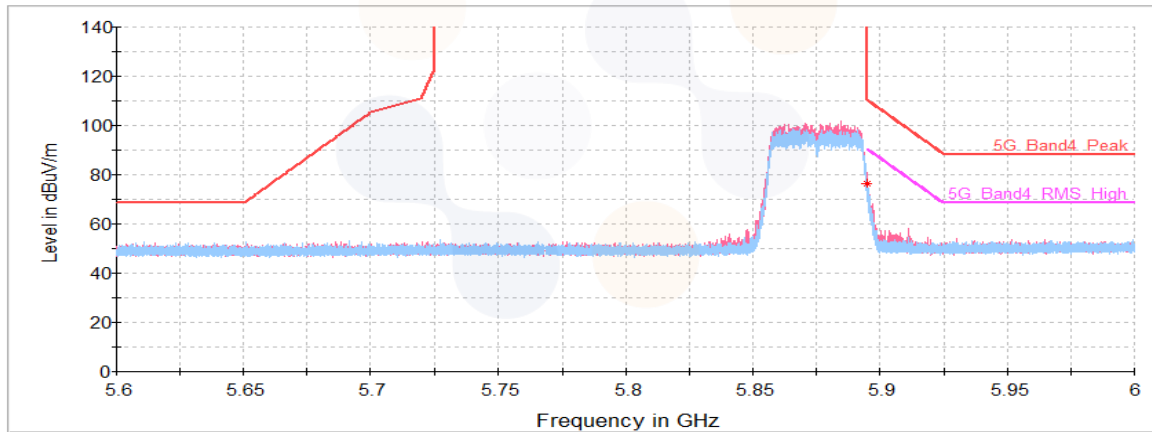
Lowest Channel (5 835 MHz)

Horizontal/Vertical for Band-edge



Highest Channel (5 875 MHz)

Horizontal/Vertical for Band-edge



802.11ac VHT20 UNII-4 2TX MIMO

Lowest Channel (5 845 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 709.44	V	40.51	34.68	-23.02	-	52.17	107.84	55.67
7 793.03	V	67.12	35.32	-51.10	-	51.34	68.20	16.86
11 932.31 ¹⁾	H	59.73	38.35	-47.83	-	50.25	74.00	23.75
17 588.88	V	56.68	40.52	-45.27	-	51.93	68.20	16.27
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Middle Channel (5 865 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
7 819.98	V	66.09	35.33	-51.04	-	50.38	68.20	17.82
11 930.16 ¹⁾	H	58.89	38.34	-47.83	-	49.40	74.00	24.60
17 207.58	V	55.73	41.49	-44.88	-	52.34	68.20	15.86
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

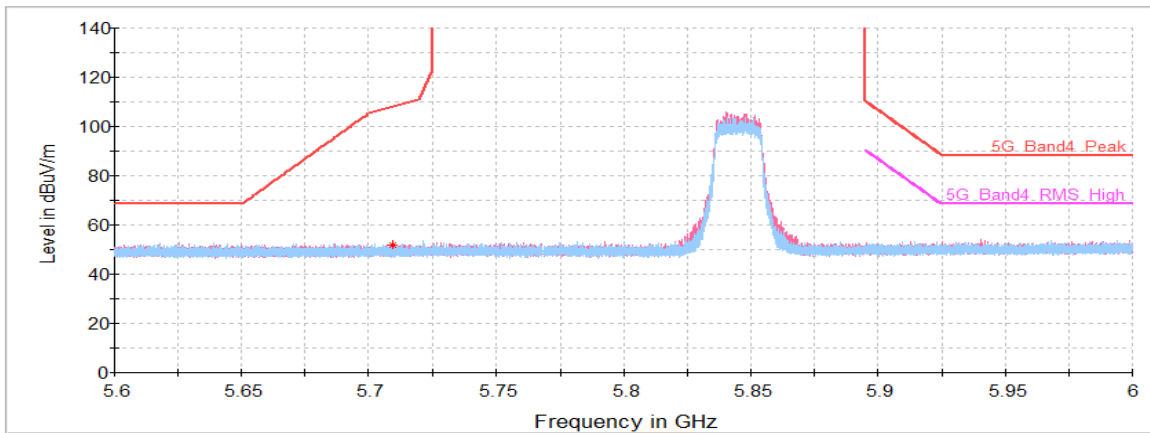
Highest Channel (5 885 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μ V))	(dB)	(dB)	(dB)	(dB(μ V/m))	(dB(μ V/m))	(dB)
Peak data								
5 895.23	V	70.86	35.01	-22.86	-	83.01	110.04	27.03
7 846.58	V	65.43	35.34	-50.99	-	49.78	68.20	18.42
11 853.97 ¹⁾	V	58.90	38.28	-47.80	-	49.38	74.00	24.62
16 391.44	V	57.77	42.26	-44.90	-	55.13	68.20	13.07
17 737.82 ¹⁾	H	57.21	40.22	-45.03	-	52.40	74.00	21.60
Average Data								
17 737.82 ¹⁾	H	45.33	40.22	-45.03	0.61	41.13	54.00	12.87

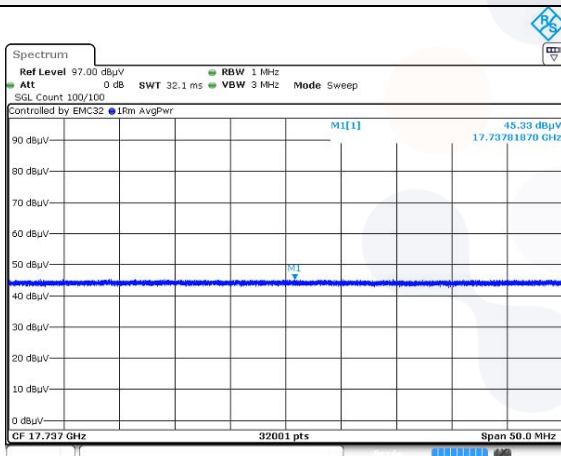
802.11ac VHT20 UNII-4 2TX MIMO

Lowest Channel (5 845 MHz)

Horizontal/Vertical for Band-edge



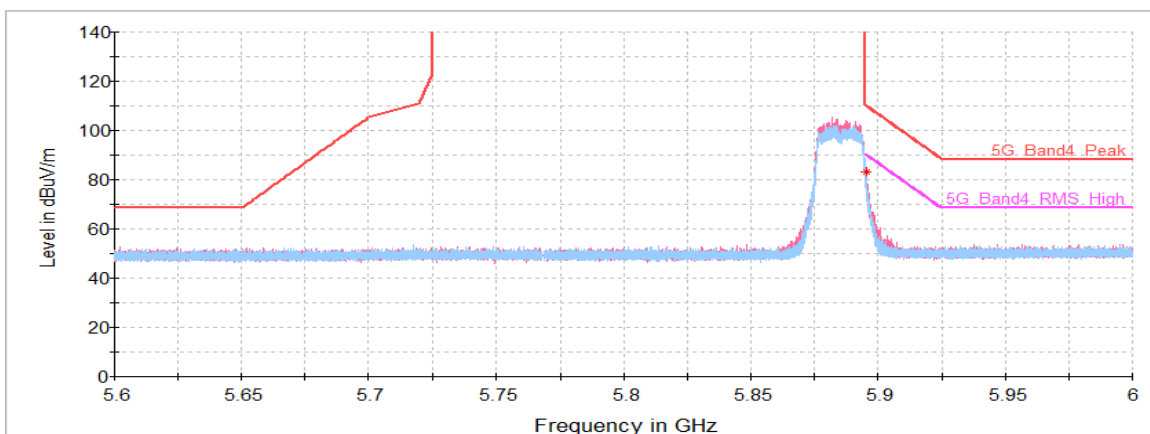
Average data



Blank

Highest Channel (5 885 MHz)

Horizontal/Vertical for Band-edge



802.11ac VHT40 UNII-4 2TX MIMO

Lowest Channel (5 835 MHz)

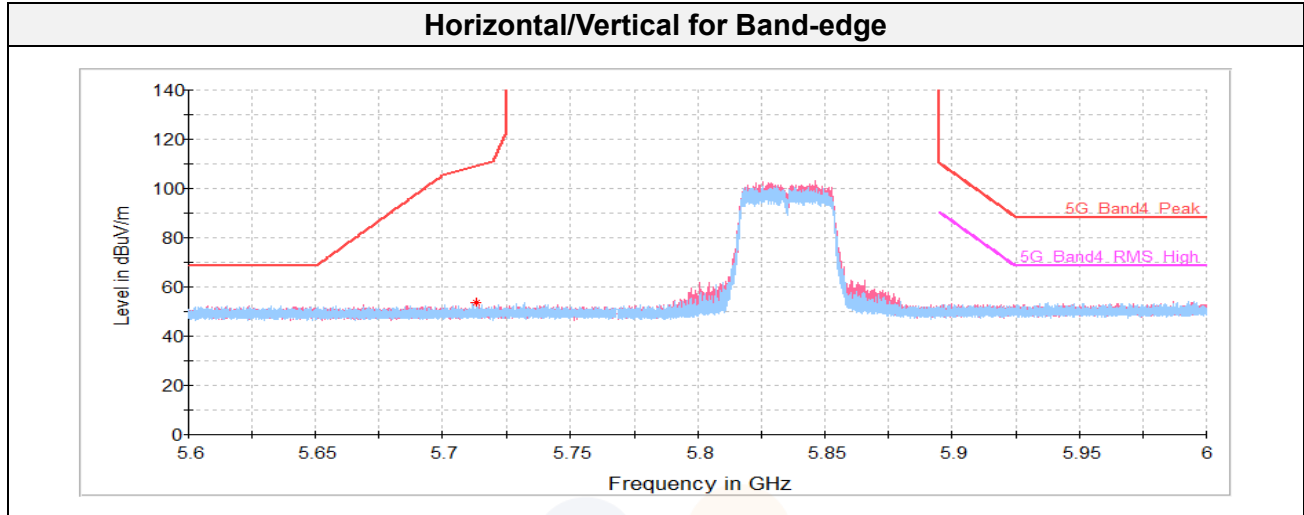
Frequency (MHz)	Pol. (V/H)	Reading (dB(μ V))	Ant. Factor (dB)	Amp.+Cable (dB)	DCF (dB)	Result (dB(μ V/m))	Limit (dB(μ V/m))	Margin (dB)
Peak data								
5 713.08	V	42.17	34.68	-23.01	-	53.84	108.86	55.03
7 780.09	V	67.63	35.31	-51.12	-	51.82	68.20	16.38
11 700.88 ¹⁾	V	57.59	38.16	-47.73	-	48.02	74.00	25.98
17 610.08	V	56.24	40.48	-45.24	-	51.48	68.20	16.72
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Highest Channel (5 875 MHz)

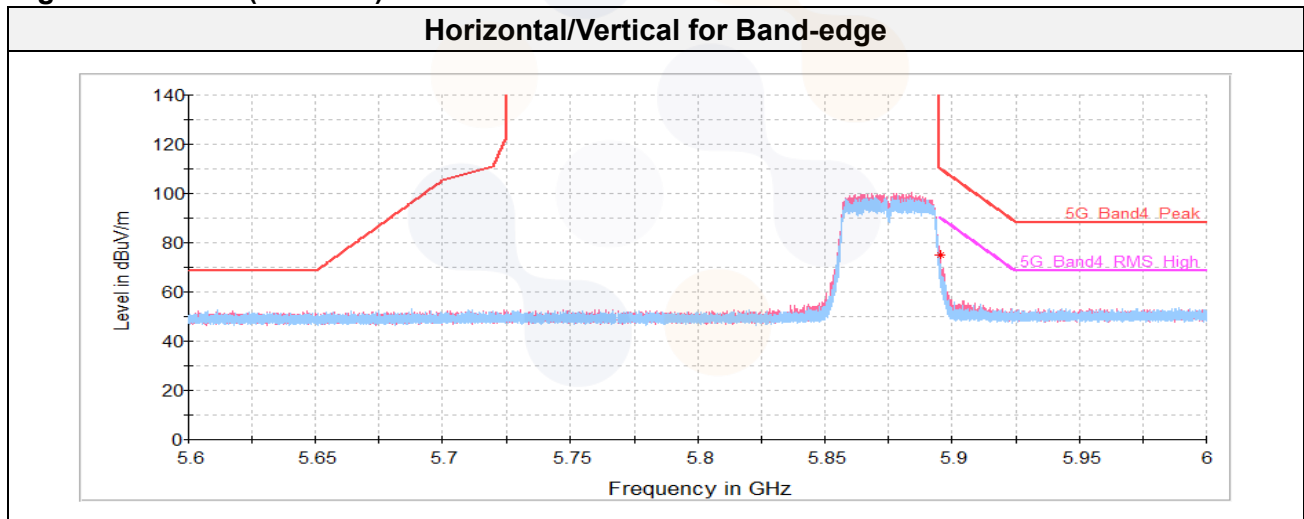
Frequency (MHz)	Pol. (V/H)	Reading (dB(μ V))	Ant. Factor (dB)	Amp.+Cable (dB)	DCF (dB)	Result (dB(μ V/m))	Limit (dB(μ V/m))	Margin (dB)
Peak data								
5 895.15	V	62.54	35.01	-22.86	-	74.69	110.09	35.40
11 797.55 ¹⁾	V	59.33	38.24	-47.77	-	49.80	74.00	24.20
17 646.02	V	56.98	40.41	-45.18	-	52.21	68.20	15.99
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11ac VHT40 UNII-4 2TX MIMO

Lowest Channel (5 835 MHz)



Highest Channel (5 875 MHz)

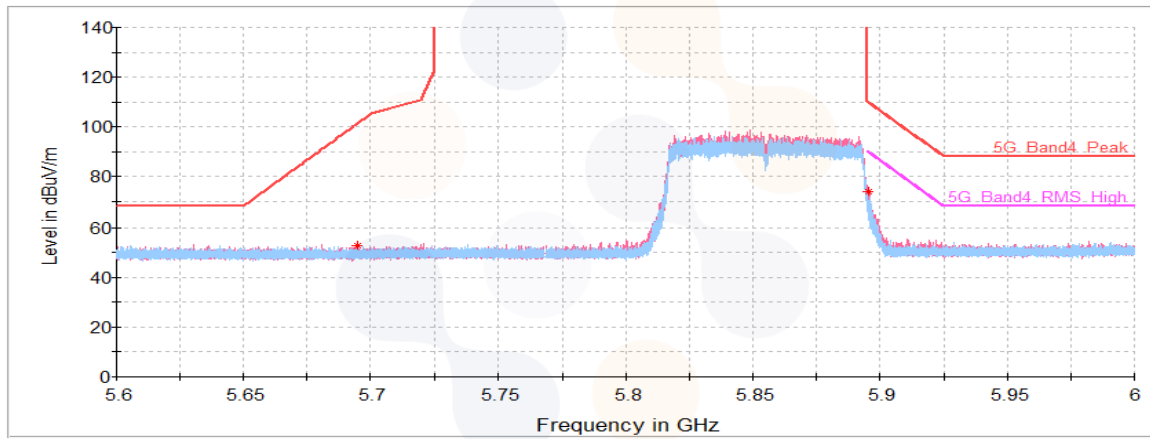


802.11ac VHT80 UNII-4 2TX MIMO

Middle Channel (5 855 MHz)

Frequency (MHz)	Pol. (V/H)	Reading (dB(μV))	Ant. Factor (dB)	Amp.+Cable (dB)	DCF (dB)	Result (dB(μV/m))	Limit (dB(μV/m))	Margin (dB)
Peak data								
5 695.10	H	41.29	34.65	-23.05	-	52.89	101.57	48.69
5 895.15	V	62.03	35.01	-22.86	-	74.18	110.09	35.91
11 701.59 ¹⁾	V	57.72	38.16	-47.73	-	48.15	74.00	25.85
17 596.06	V	55.80	40.51	-45.26	-	51.05	68.20	17.15
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Horizontal/Vertical for Band-edge

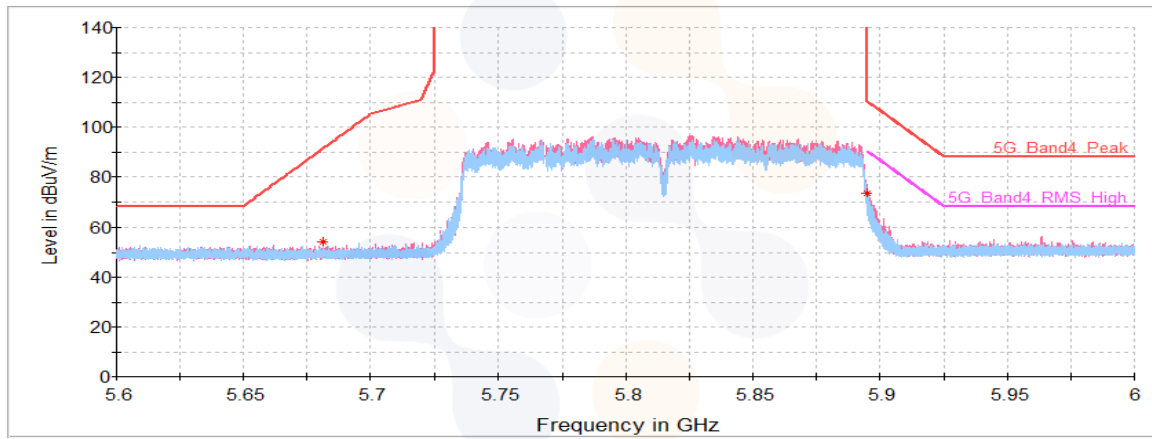


802.11ac VHT160 UNII-4 2TX MIMO

Middle Channel (5 815 MHz)

Frequency (MHz)	Pol. (V/H)	Reading (dB(μ V))	Ant. Factor (dB)	Amp.+Cable (dB)	DCF (dB)	Result (dB(μ V/m))	Limit (dB(μ V/m))	Margin (dB)
Peak data								
5 681.49	V	42.62	34.63	-23.06	-	54.19	91.50	37.31
5 895.05	V	61.36	35.01	-22.86	-	73.51	110.16	36.65
11 668.53 ¹⁾	V	59.87	38.13	-47.71	-	50.29	74.00	23.71
17 470.64	H	57.42	41.23	-45.36	-	53.29	68.20	14.91
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Horizontal/Vertical for Band-edge

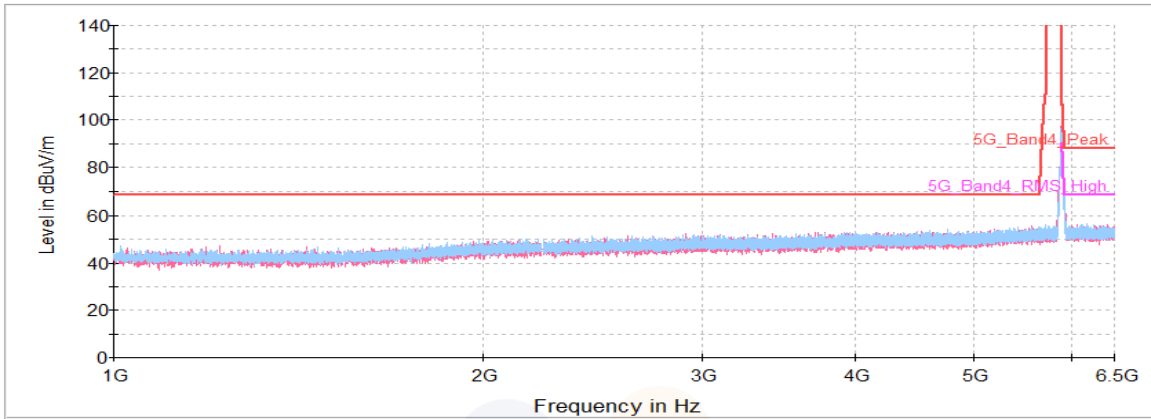


Plot of Harmonics and Spurious Emissions

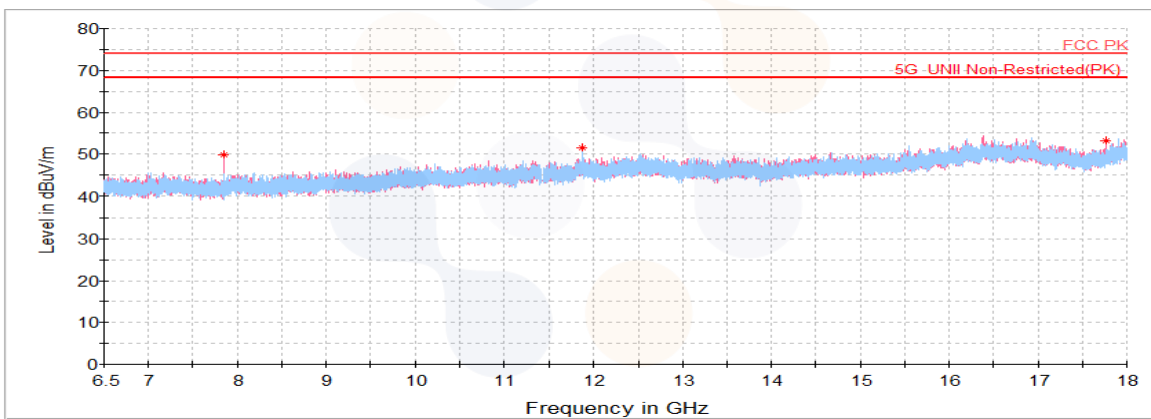
In order to simplify the report, attached plots were only the lowest margin condition

802.11n HT20_UNII-4_2TX MIMO_High Channel (5 885 MHz)

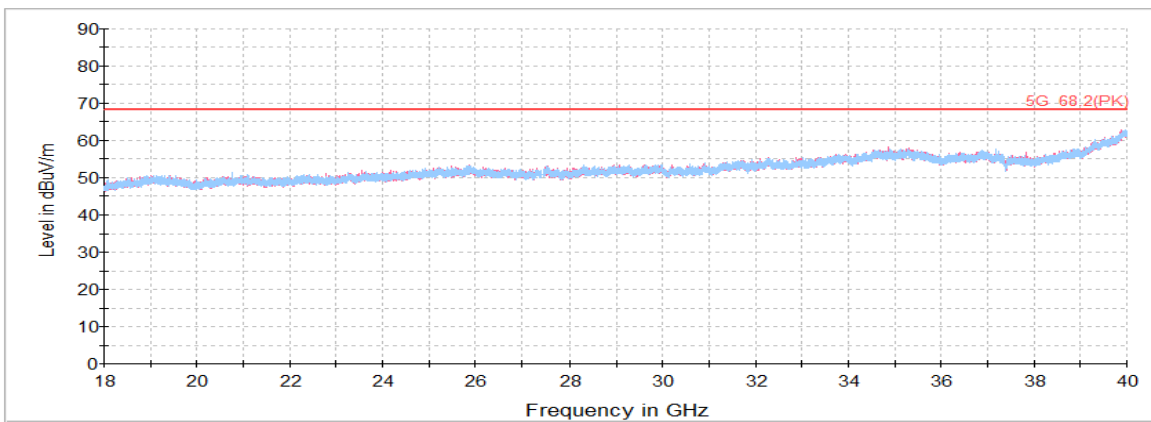
Horizontal/Vertical for 1 GHz ~ 6.5 GHz



Horizontal/Vertical for 6.5 GHz ~ 18 GHz



Horizontal/Vertical for 18 GHz ~ 40 GHz



Spurious Emission for Simultaneous Tx Condition

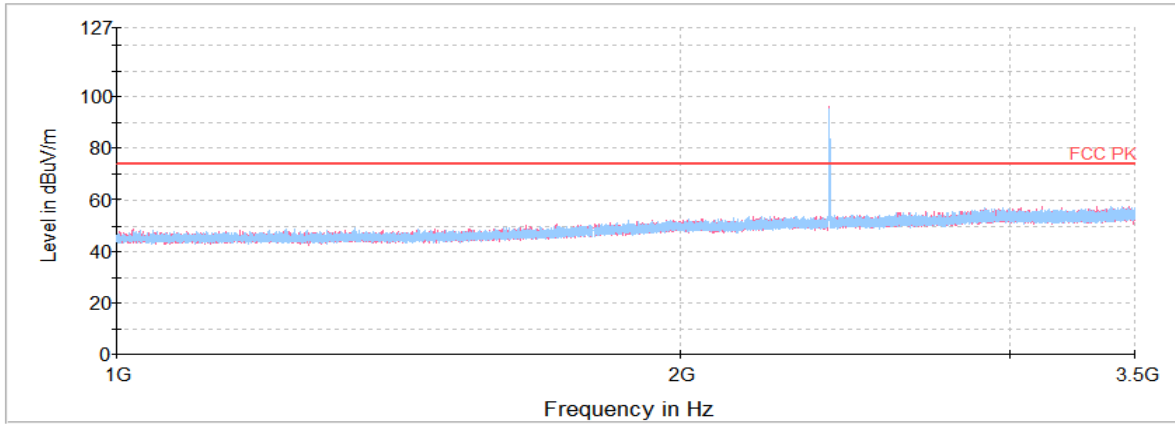
Case	Bluetooth	WLAN 5 GHz
Mode	BLE	11ac VHT160
Channel	0	50
Frequency	2 402 MHz	5 250 MHz
Data Rate	2M Bits/s, 37 Packet	MCS0

Notes.

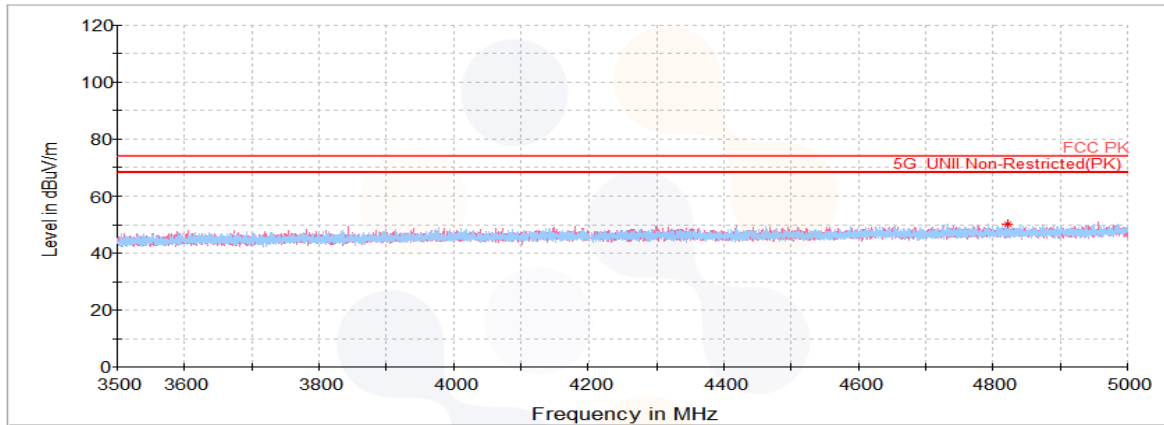
The lowest margin condition among the channels and modes were selected for test.

Frequency (MHz)	Pol. (V/H)	Reading (dB(μ V))	Ant. Factor (dB)	Amp.+Cable (dB)	DCF (dB)	Result (dB(μ V/m))	Limit (dB(μ V/m))	Margin (dB)
Peak data								
4 821.13 ¹⁾	V	71.91	33.70	-55.14	-	50.47	74.00	23.53
6 999.53	V	64.52	35.10	-51.47	-	48.15	68.20	20.05
10 512.42	H	59.35	37.21	-47.85	-	48.71	68.20	19.49
15 804.58 ¹⁾	V	56.96	40.54	-46.58	-	50.92	74.00	23.08
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

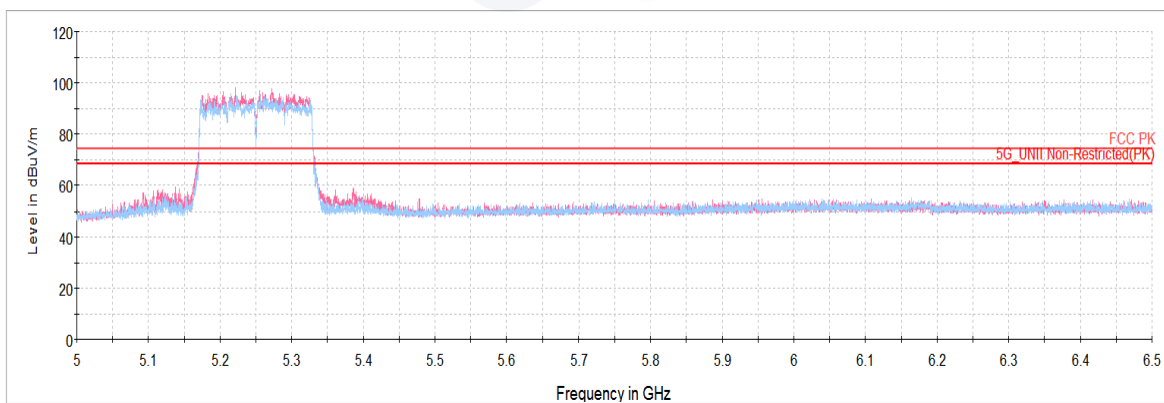
Horizontal/Vertical for 1 GHz ~ 3.5 GHz



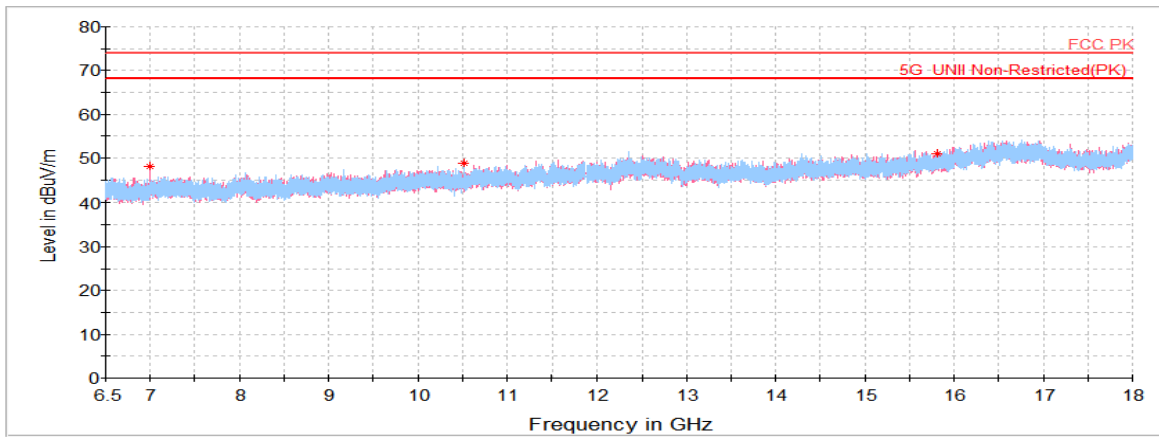
Horizontal/Vertical for 3.5 GHz ~ 5 GHz



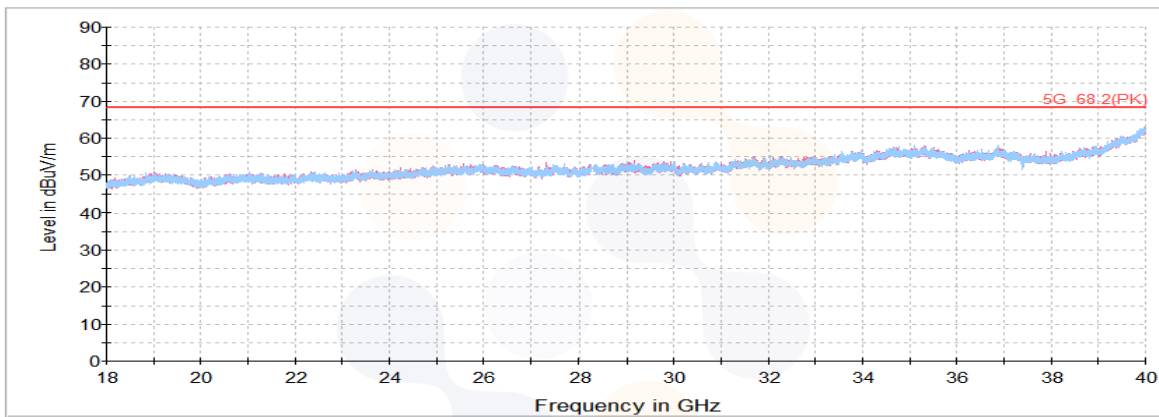
Horizontal/Vertical for 5 GHz ~ 6.5 GHz



Horizontal/Vertical for 6.5 GHz ~ 18 GHz

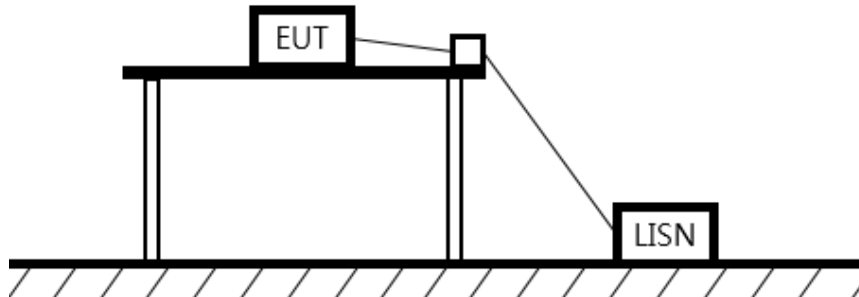


Horizontal/Vertical for 18 GHz ~ 40 GHz



7.7. AC Conducted emission

Test setup



Limit

§15.407

According to 15.207(a) and RSS-Gen (8.8), for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50uH/50 ohm line impedance stabilization network (LISN). Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequencies ranges.

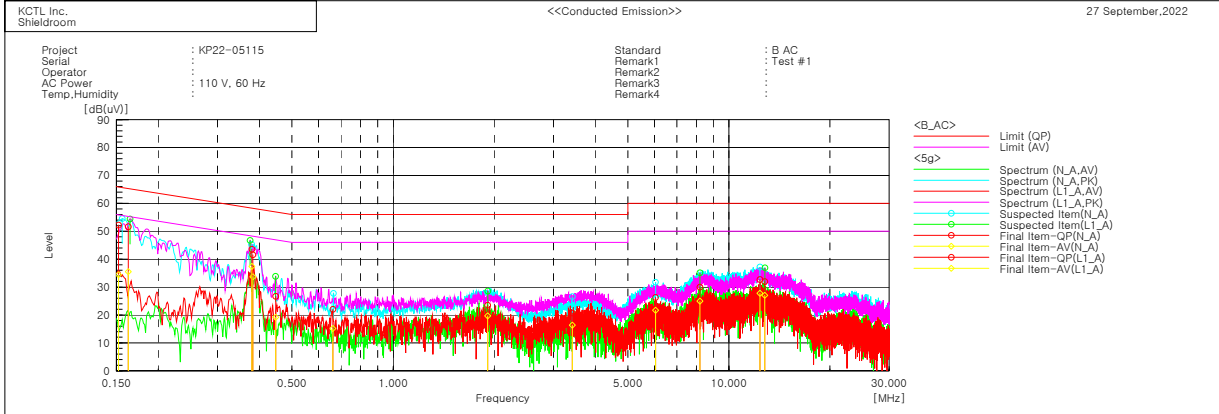
Frequency of Emission (MHz)	Conducted limit (dB μ V/m)	
	Quasi-peak	Average
0.15 – 0.50	66 - 56*	56 - 46*
0.50 – 5.00	56	46
5.00 – 30.0	60	50

Measurement procedure

1. The EUT was placed on a wooden table of size, 1 m by 1.5 m, raised 80 cm in which is located 40 cm away from the vertical wall and 1.5m away from the side wall of the shielded room.
2. Each current-carrying conductor of the EUT power cord was individually connected through a 50 Ω /50 μ H LISN, which is an input transducer to a spectrum analyzer or an EMI/Field Intensity Meter, to the input power source.
3. Exploratory measurements were made to identify the frequency of the emission that had the highest amplitude relative to the limit by operating the EUT in a range of typical modes of operation, cable position, and with a typical system equipment configuration and arrangement. Based on the exploratory tests of the EUT, the one EUT cable configuration and arrangement and mode of operation that had produced the emission with the highest amplitude relative to the limit was selected for the final measurement.
4. The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment is the system) was then performed over the frequency range of 0.15 MHz to 30 MHz.
5. The measurements were made with the detector set to peak amplitude within a bandwidth of 10 kHz or to quasi-peak and average within a bandwidth of 9 kHz. The EUT was in transmitting mode during the measurements.

Test results

Worst case: 802.11a 2TX MIMO / UNII-4_5 885 MHz



Final Result

--- N_A Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.15217	42.4	24.6	9.8	52.2	34.4	65.9	55.9	13.7	21.5
2	0.38239	31.7	23.9	9.8	41.5	33.7	58.2	48.2	16.7	14.5
3	0.66186	12.1	5.3	9.9	22.0	15.2	56.0	46.0	34.0	30.8
4	3.4186	10.9	6.5	9.8	20.7	16.3	56.0	46.0	35.3	29.7
5	6.04719	16.4	11.8	9.9	26.3	21.7	60.0	50.0	33.7	28.3
6	12.37776	22.5	17.6	10.2	32.7	27.8	60.0	50.0	27.3	22.2

--- L1_A Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.16271	41.6	25.5	10.0	51.6	35.5	65.3	55.3	13.7	19.8
2	0.38009	33.8	27.6	9.8	43.6	37.4	58.3	48.3	14.7	10.9
3	0.44748	16.8	9.2	9.9	26.7	19.1	56.9	46.9	30.2	27.8
4	1.91153	13.7	9.9	9.8	23.5	19.7	56.0	46.0	32.5	26.3
5	8.19953	20.0	15.0	10.0	30.0	25.0	60.0	50.0	30.0	25.0
6	12.79618	21.7	16.8	10.3	32.0	27.1	60.0	50.0	28.0	22.9

8. Measurement equipment

Equipment Name	Manufacturer	Model No.	Serial No.	Next Cal. Date
Spectrum Analyzer	R&S	FSV30	100810	23.07.12
DC Power Supply	AGILENT	E3632A	KR75304571	23.05.02
Attenuator	API Inmet	40AH2W-10	11	23.05.03
Vector Signal Generator	R&S	SMBV100A	257566	23.07.04
Signal Generator	R&S	SMB100A	176206	23.01.19
Power Sensor	R&S	NRP-Z81	1137.9009.02-106224-tg	23.06.23
Attenuator	R&S	DNF Dämpfungsglied 10 dB in N-50 Ohm	0001	23.05.02
Spectrum Analyzer	R&S	FSV40	100989	23.10.14*
EMI TEST RECEIVER	R&S	ESC17	100732	23.01.19
Bi-Log Antenna	TESEQ	CBL 6112D	62438	24.08.24
Amplifier	SONOMA INSTRUMENT	310N	284608	23.08.18
ATTENUATOR	KEYSIGHT	8491B-6dB	MY39271060	24.04.27
ISOLATION TRANSFORMER	ONETECH CO., LTD	OT-IT500VA	OTR1-16026	23.03.28
Horn antenna	ETS.lindgren	3117	155787	23.09.29*
Horn antenna	ETS.lindgren	3116	00086632	23.01.25
Attenuator	API Inmet	40AH2W-10	12	23.05.03
AMPLIFIER	B&Z Technologies	BZRT-00504000- 481055-382525	26299-27735	23.09.19*
AMPLIFIER	B&Z Technologies	BZR-0050400- 551028-252525	27736	23.09.19*
LOOP Antenna	R&S	HFH2-Z2	100355	24.08.10
Antenna Mast	Innco Systems	MA4640-XP-ET	-	-
Turn Table	Innco Systems	CO3000	1175/45850319/P	-
Antenna Mast	Innco Systems	MA4000-EP	303	-
Turn Table	Innco Systems	CO3000	1175/45850319/P	-
Highpass Filter	WT	WT-A1698-HS	WT160411001	23.05.03
TWO-LINE V - NETWORK	R&S	ENV216	101358	23.09.29*
EMI TEST RECEIVER	R&S	ESC13	100001	23.08.18

* Tests related to this equipment were progressed after the calibration was completed

End of test report