Antenna-2 Power Spectral Density Measurements

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured Power Density [dBm]	Max Permissible Power Density [dBm/MHz]	Margin [dB]
Band 1	5180	36	a	6	7.20	11.0	-3.80
	5200	40	a	6	7.52	11.0	-3.49
	5240	48	a	6	7.28	11.0	-3.72
	5180	36	n (20MHz)	6.5/7.2 (MCS0)	6.78	11.0	-4.22
	5200	40	n (20MHz)	6.5/7.2 (MCS0)	6.93	11.0	-4.07
	5240	48	n (20MHz)	6.5/7.2 (MCS0)	6.82	11.0	-4.18
	5190	38	n (40MHz)	13.5/15 (MCS0)	7.06	11.0	-3.94
	5230	46	n (40MHz)	13.5/15 (MCS0)	7.75	11.0	-3.26
	5210	42	ac (80MHz)	29.3/32.5 (MCS0)	-2.54	11.0	-13.54
Band 2A	5260	52	a	6	7.06	11.0	-3.94
	5280	56	a	6	7.55	11.0	-3.45
	5320	64	a	6	7.75	11.0	-3.26
	5260	52	n (20MHz)	6.5/7.2 (MCS0)	6.82	11.0	-4.18
	5280	56	n (20MHz)	6.5/7.2 (MCS0)	6.97	11.0	-4.03
	5320	64	n (20MHz)	6.5/7.2 (MCS0)	7.04	11.0	-3.96
	5270	54	n (40MHz)	13.5/15 (MCS0)	2.95	11.0	-8.05
	5310	62	n (40MHz)	13.5/15 (MCS0)	1.01	11.0	-9.99
	5290	58	ac (80MHz)	29.3/32.5 (MCS0)	-4.56	11.0	-15.56
Band 2C	5500	100	a	6	7.58	11.0	-3.42
	5580	116	a	6	7.28	11.0	-3.73
	5720	144	a	6	7.48	11.0	-3.52
	5500	100	n (20MHz)	6.5/7.2 (MCS0)	7.37	11.0	-3.63
	5580	116	n (20MHz)	6.5/7.2 (MCS0)	7.08	11.0	-3.92
	5720	144	n (20MHz)	6.5/7.2 (MCS0)	6.54	11.0	-4.46
	5510	102	n (40MHz)	13.5/15 (MCS0)	1.09	11.0	-9.91
	5550	110	n (40MHz)	13.5/15 (MCS0)	3.43	11.0	-7.57
	5710	142	n (40MHz)	13.5/15 (MCS0)	2.97	11.0	-8.03
	5530	106	ac (80MHz)	29.3/32.5 (MCS0)	-2.46	11.0	-13.46
	5690	138	ac (80MHz)	29.3/32.5 (MCS0)	-3.13	11.0	-14.13

Table 7-19. Conducted Power Spectral Density Measurements

Plot 7-115. Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 36)

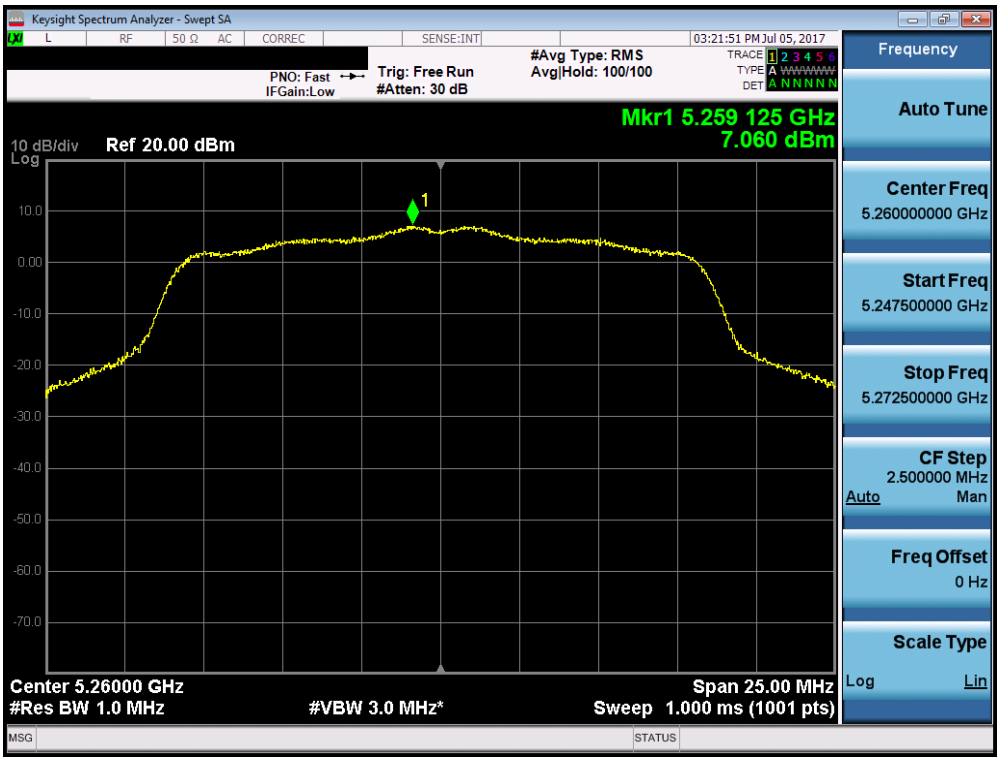
Plot 7-116. Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 40)

Plot 7-117. Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 48)

Plot 7-118. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 36)

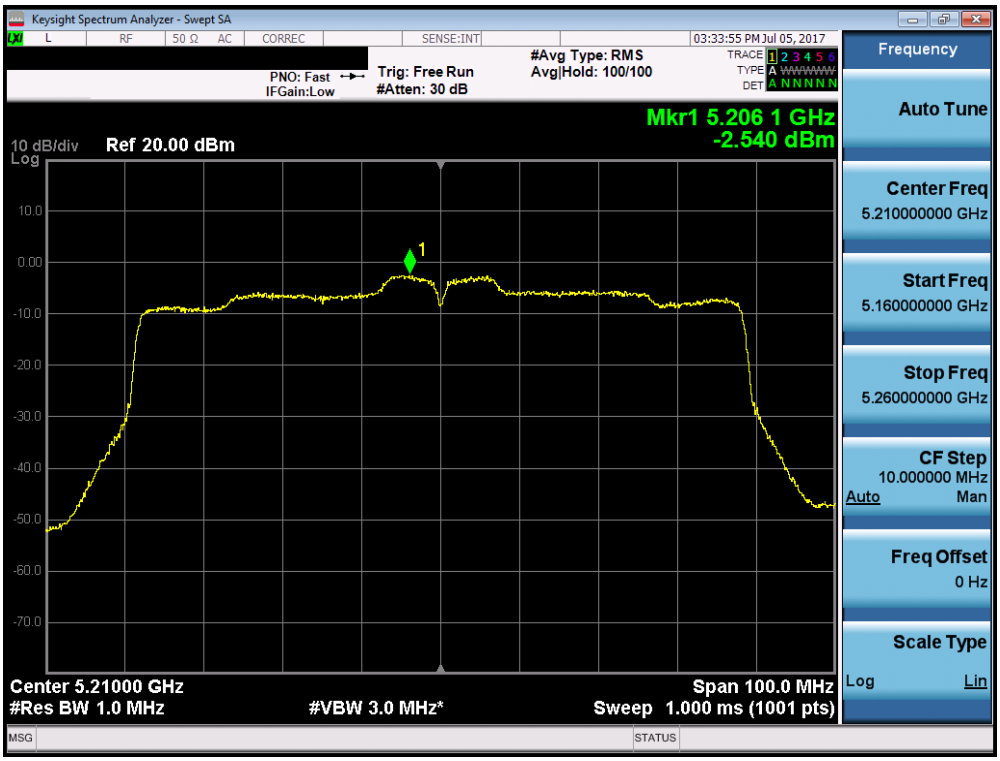
Plot 7-119. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 40)

Plot 7-120. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 48)

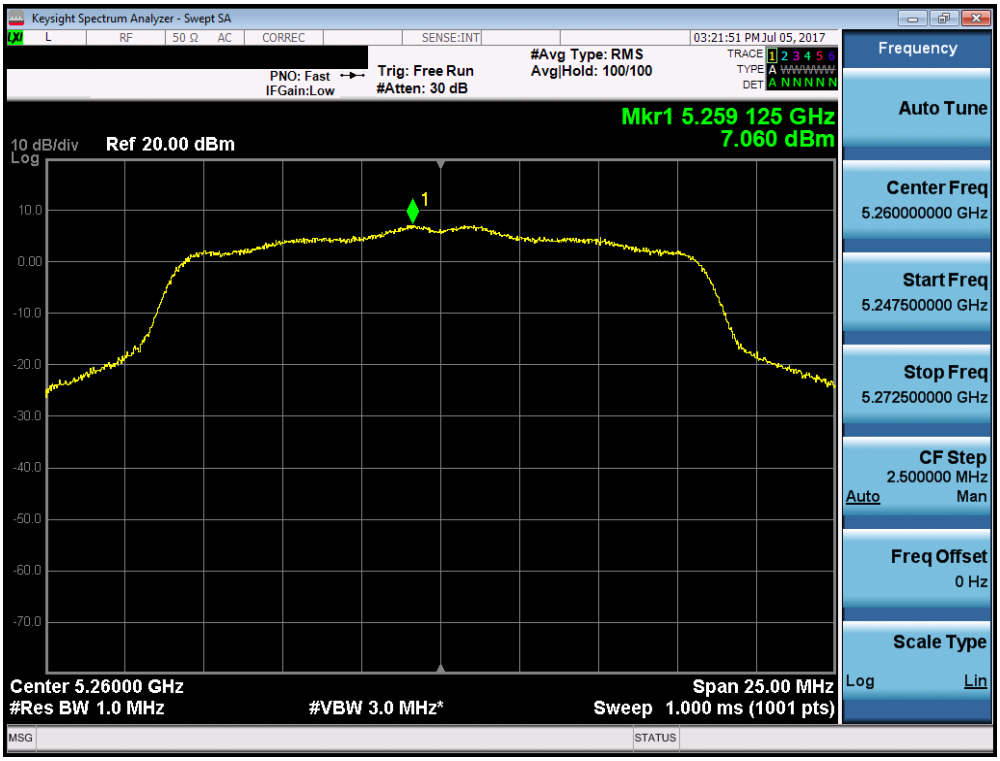


Plot 7-121. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 1) – Ch. 38)

Plot 7-122. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 1) – Ch. 46)



Plot 7-123. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 1) – Ch. 42)



Plot 7-124. Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 52)

Plot 7-125. Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 56)

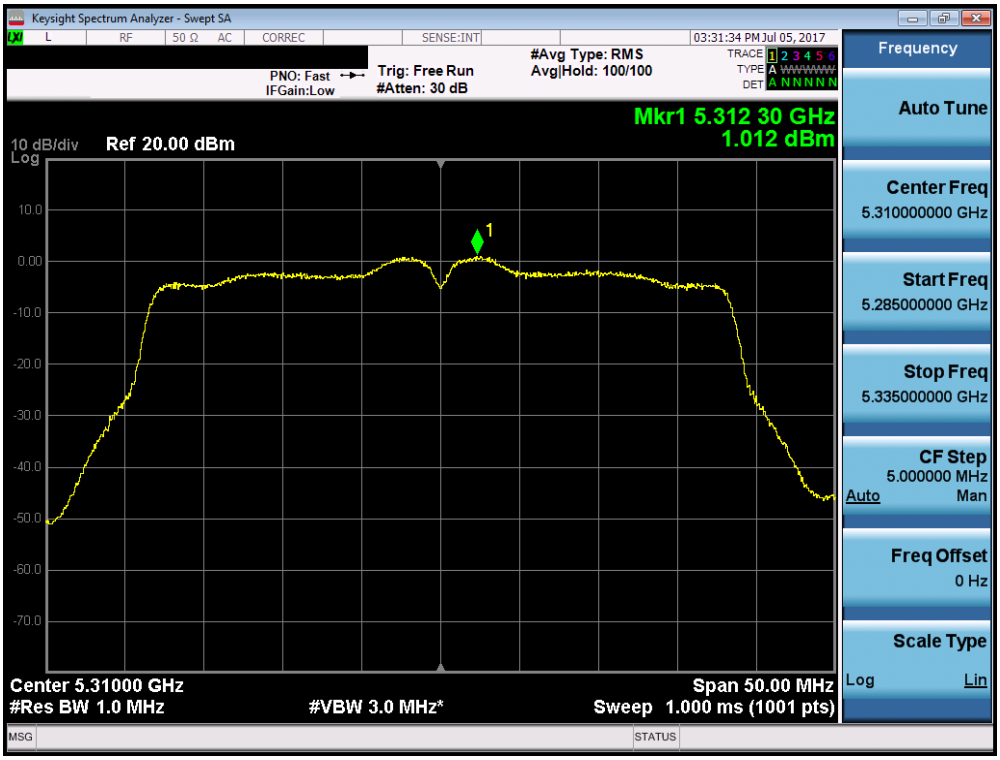
Plot 7-126. Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 64)

Plot 7-127. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2A) – Ch. 52)

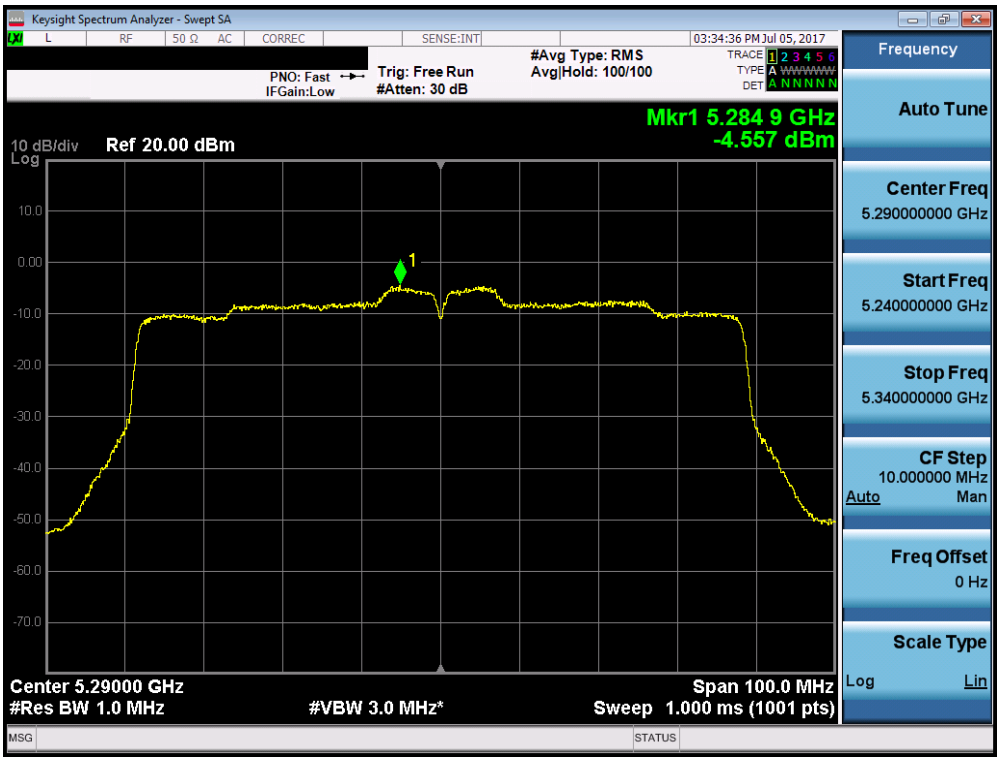
Plot 7-128. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2A) – Ch. 56)

Plot 7-129. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2A) – Ch. 64)

Plot 7-130. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2A) – Ch. 54)



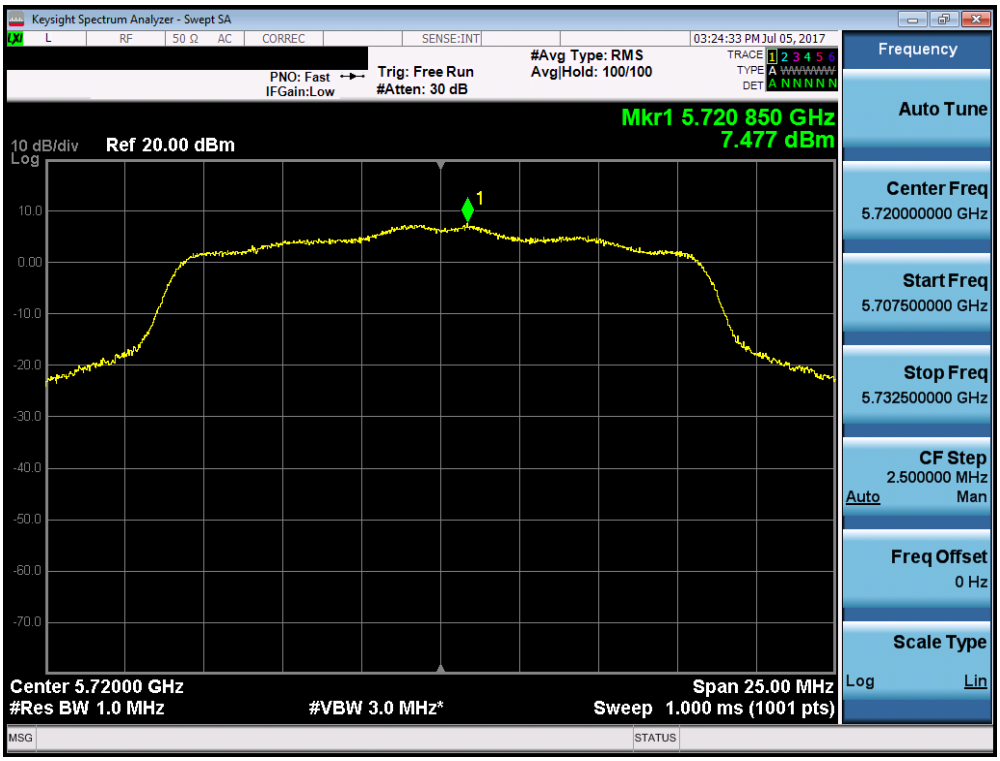
Plot 7-131. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2A) – Ch. 62)



Plot 7-132. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 2A) – Ch. 58)

Plot 7-133. Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 100)

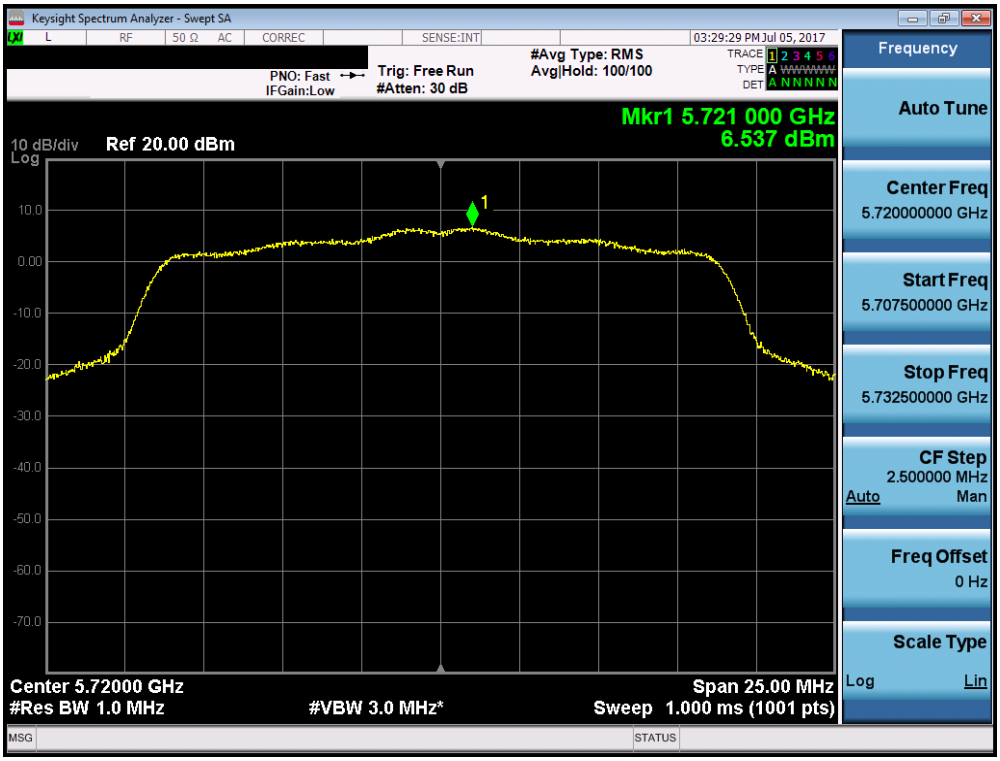
Plot 7-134. Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 116)



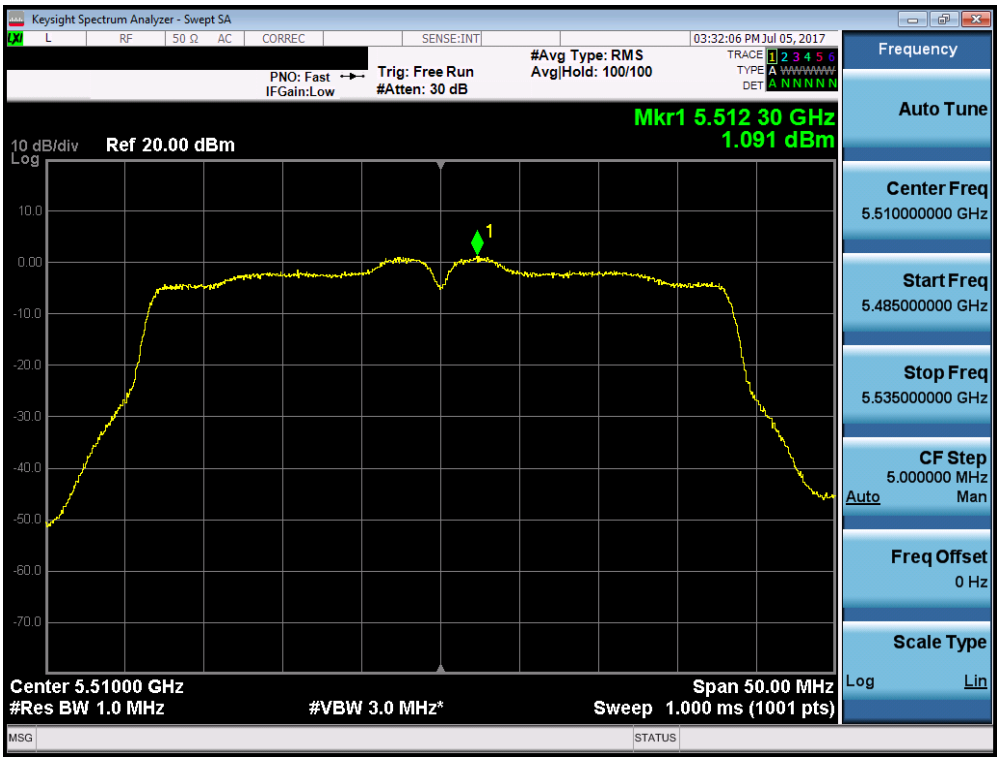
Plot 7-135. Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 144)

Plot 7-136. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 100)

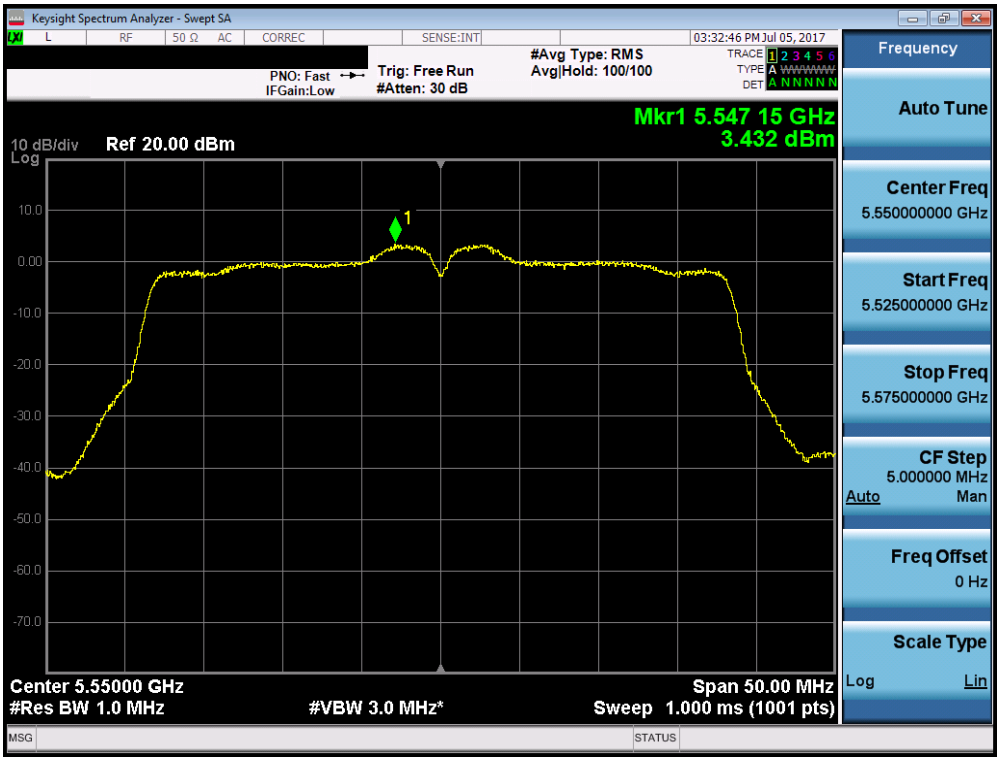
Plot 7-137. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 116)



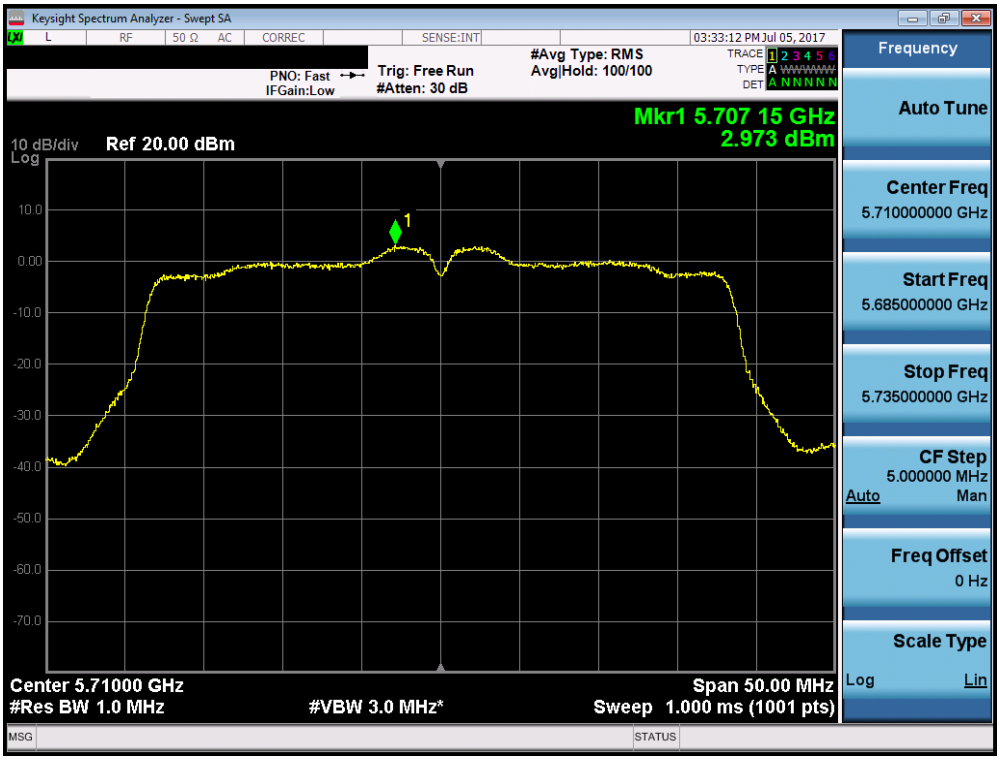
Plot 7-138. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 144)



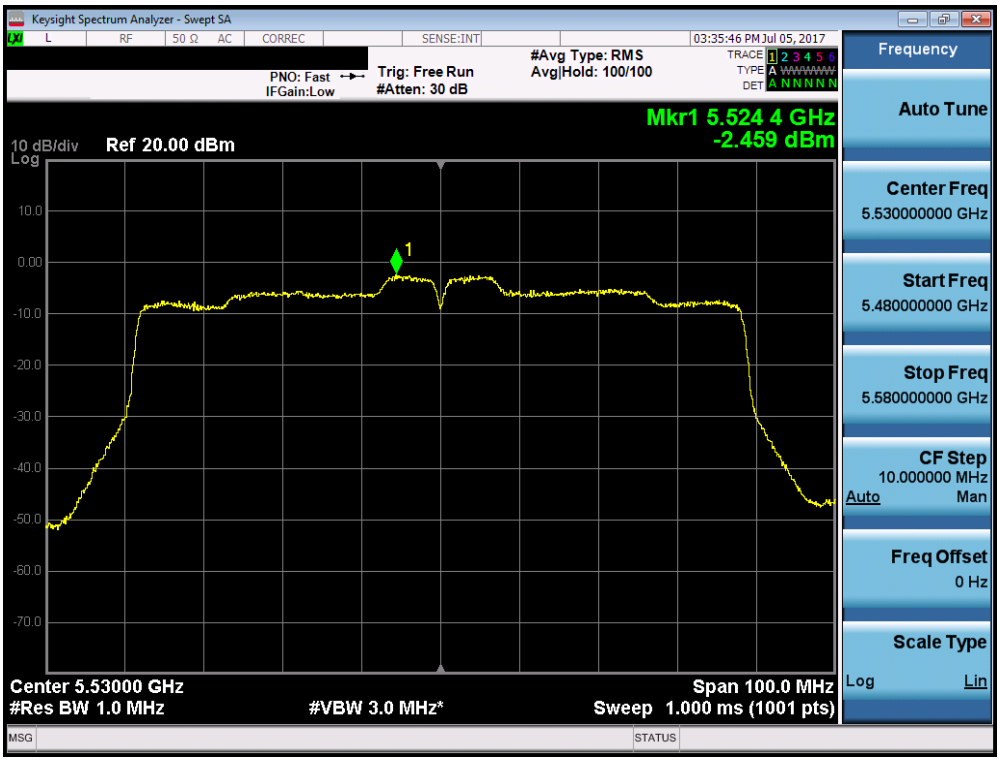
Plot 7-139. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 102)



Plot 7-140. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 110)



Plot 7-141. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 142)



Plot 7-142. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 2C) – Ch. 106)

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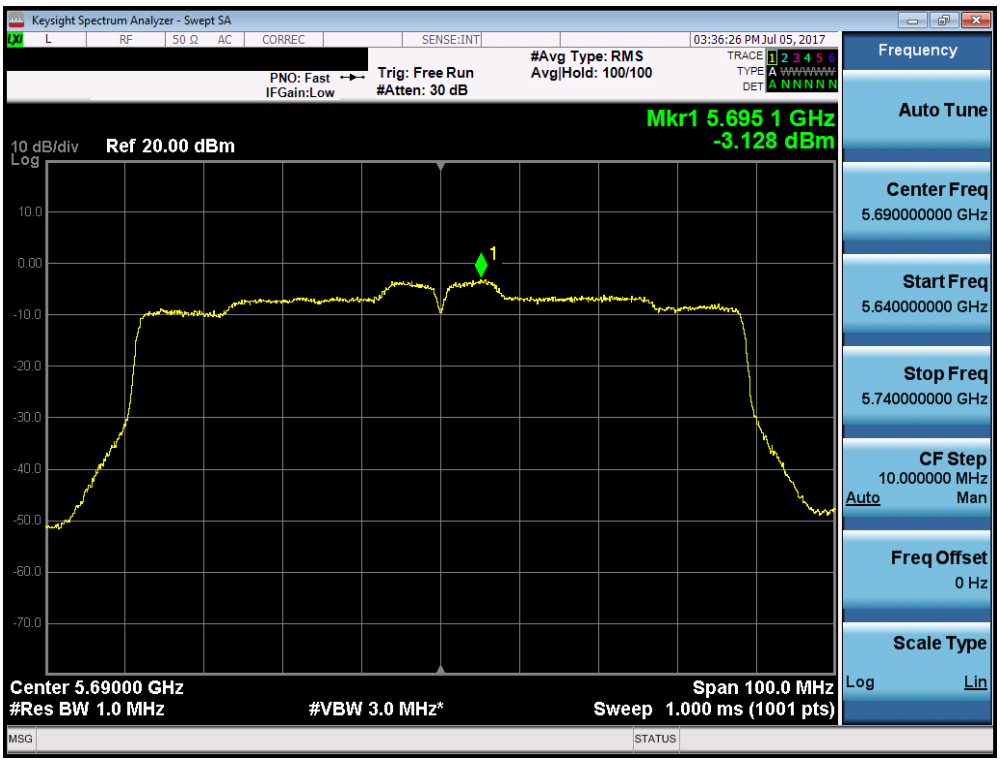
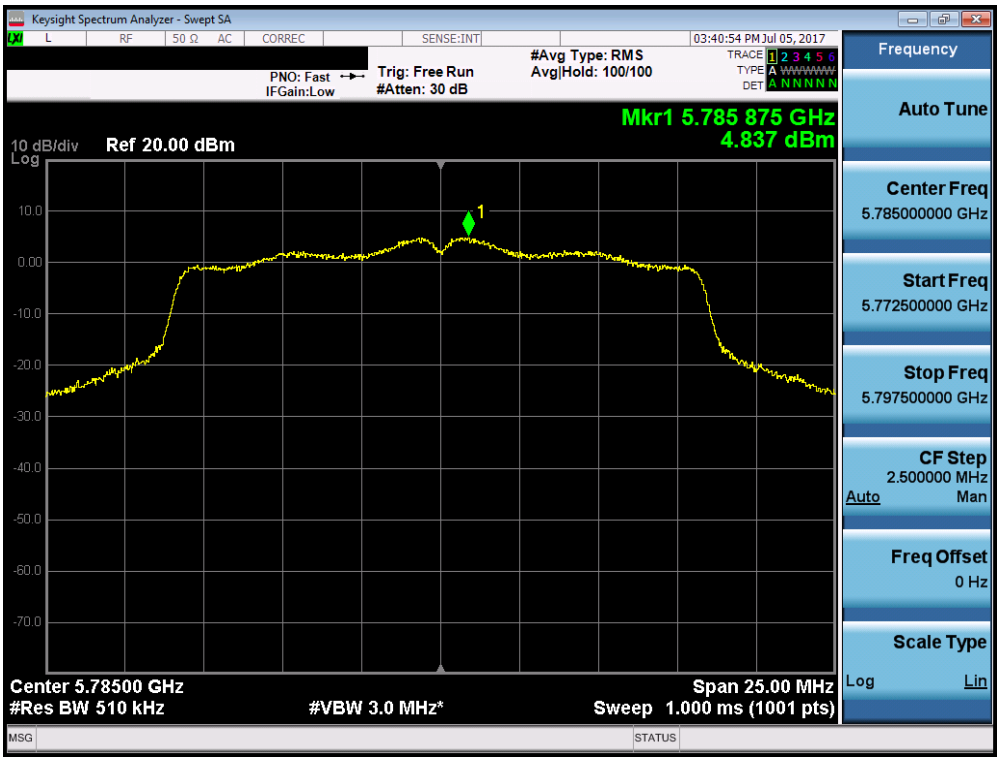


Plot 7-143. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 2C) – Ch. 138)

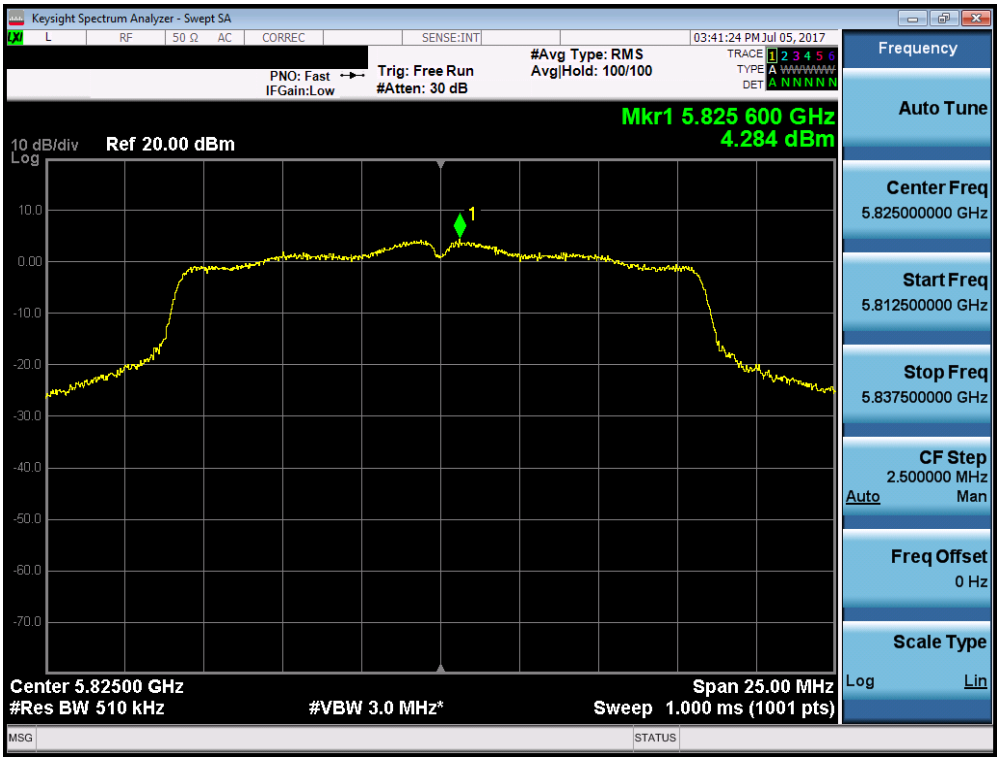
	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured Power Density [dBm]	Max Permissible Power Density [dBm/500kHz]	Margin [dB]
Band 3	5745	149	a	6	4.49	30.0	-25.51
	5785	157	a	6	4.84	30.0	-25.16
	5825	165	a	6	4.28	30.0	-25.72
	5745	149	n (20MHz)	6.5/7.2 (MCS0)	4.16	30.0	-25.84
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	4.37	30.0	-25.63
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	4.32	30.0	-25.68
	5755	151	n (40MHz)	13.5/15 (MCS0)	0.02	30.0	-29.98
	5795	159	n (40MHz)	13.5/15 (MCS0)	0.35	30.0	-29.65
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	-6.16	30.0	-36.16

Table 7-20. Band 3 Conducted Power Spectral Density Measurements

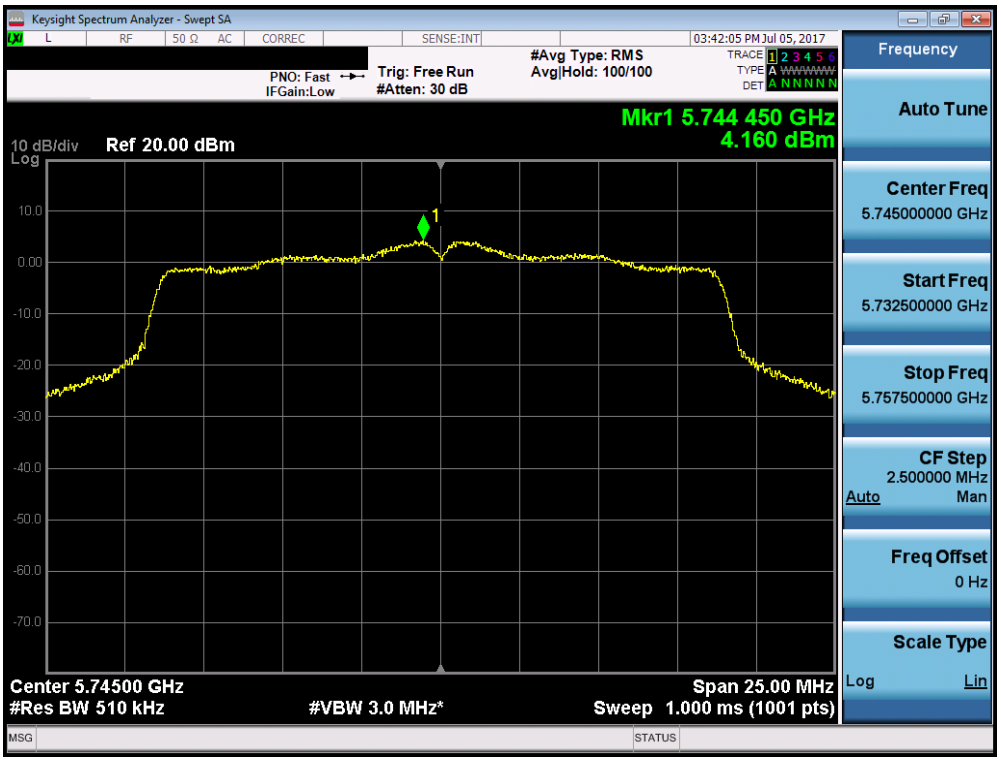
Plot 7-144. Power Spectral Density Plot (802.11a (UNII Band 3) – Ch. 149)



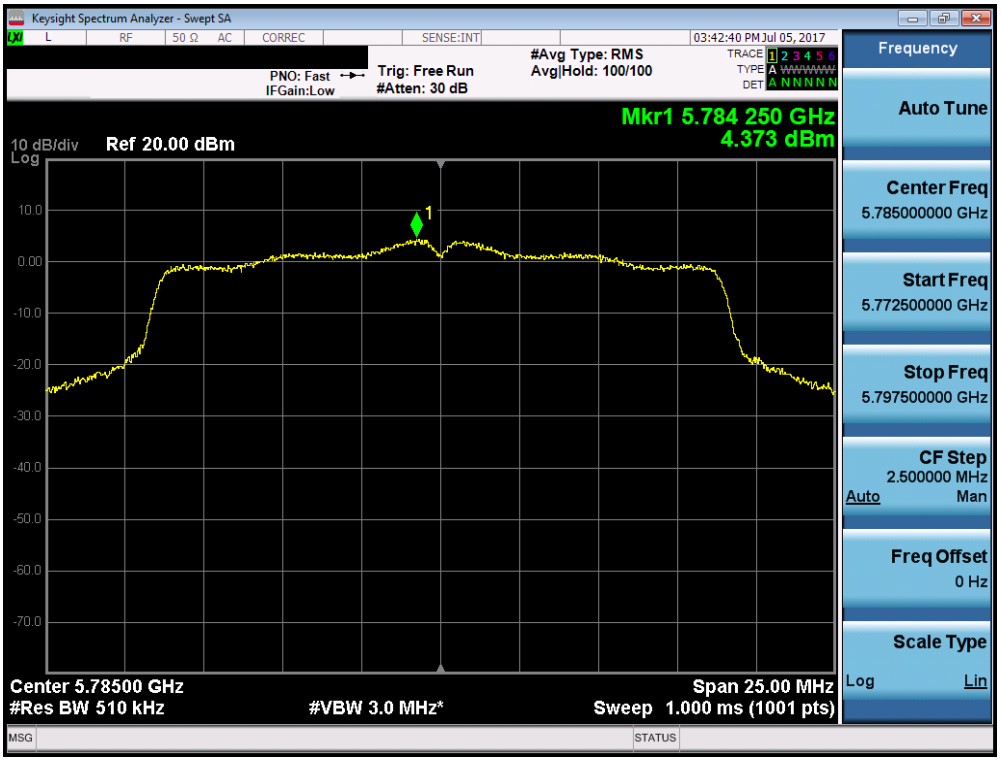
Plot 7-145. Power Spectral Density Plot (802.11a (UNII Band 3) – Ch. 157)



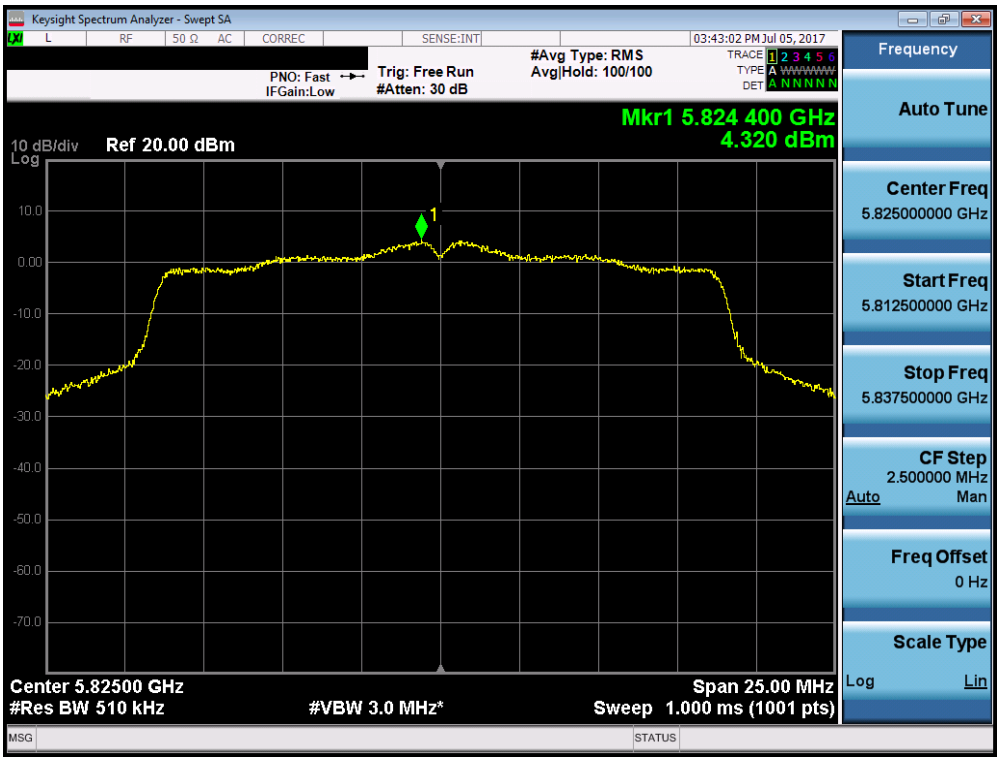
Plot 7-146. Power Spectral Density Plot (802.11a (UNII Band 3) – Ch. 165)



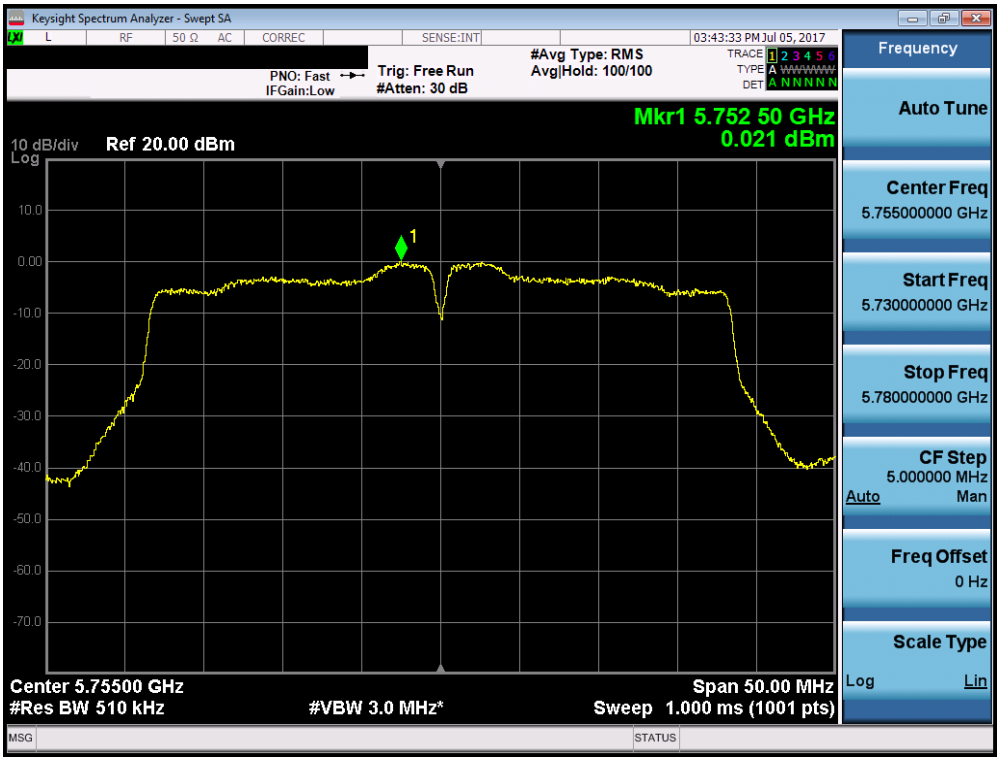
Plot 7-147. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 149)



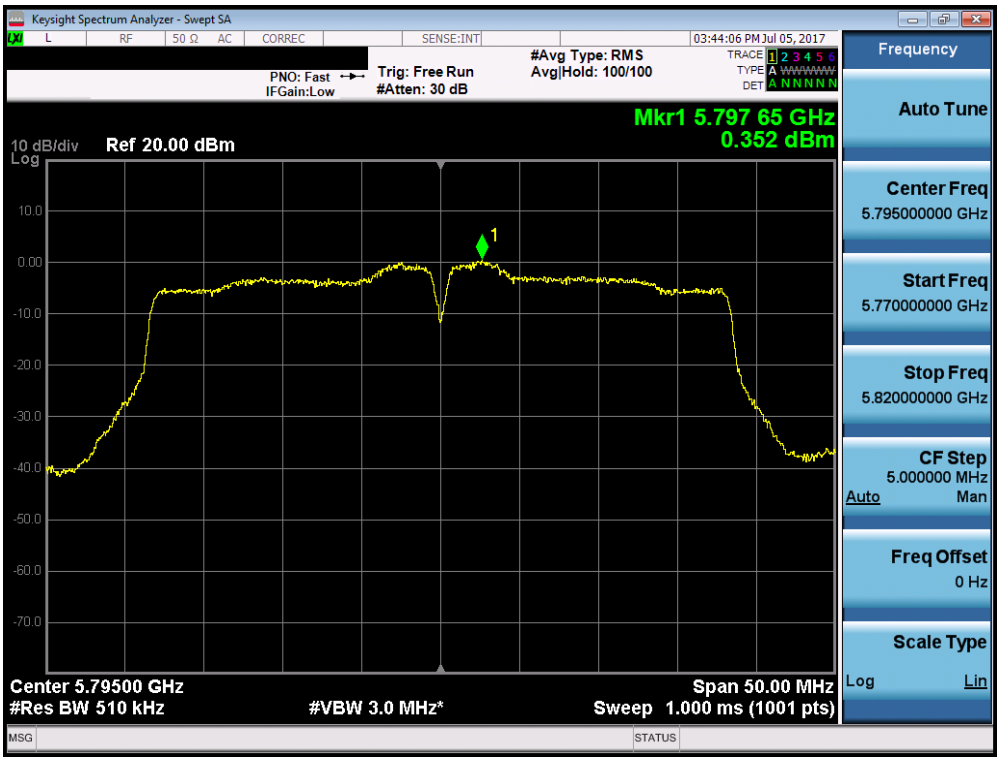
Plot 7-148. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 157)



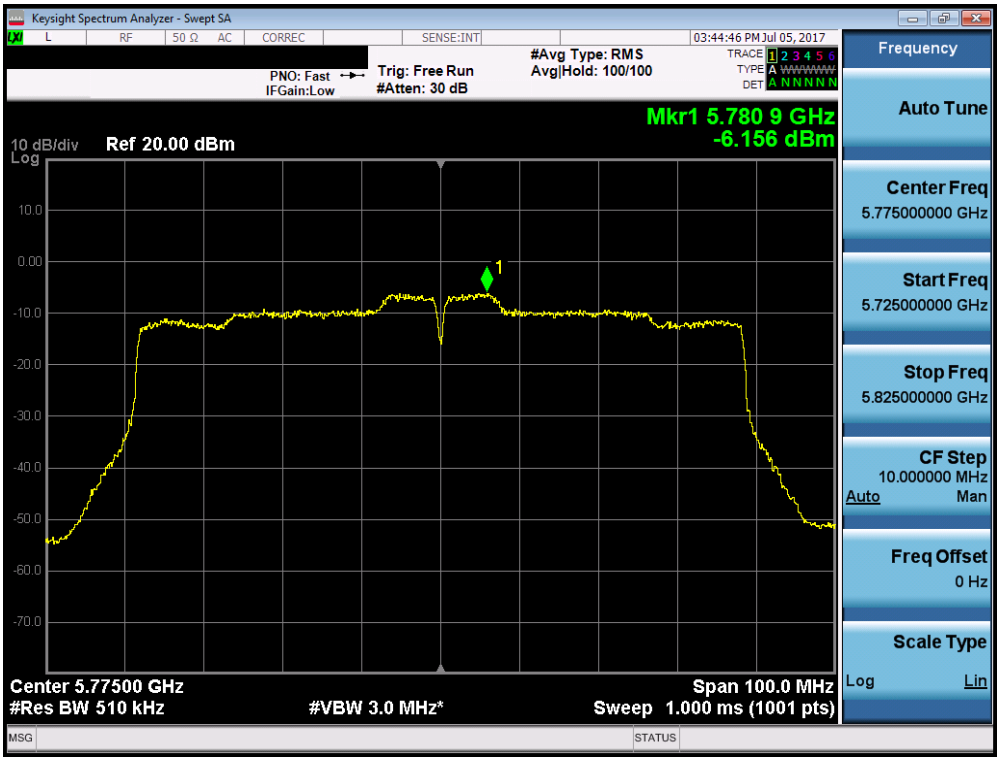
Plot 7-149. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 165)



Plot 7-150. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 151)



Plot 7-151. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 159)



Plot 7-152. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 3) – Ch. 155)

Summed MIMO Power Spectral Density Measurements

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Antenn-1 Power Density [dBm]	Antenn-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Max Permissible Power Density [dBm/MHz]	Margin [dB]
Band 1	5180	36	n (20MHz)	6.5/7.2 (MCS0)	6.64	6.78	9.72	11.0	-1.28
	5200	40	n (20MHz)	6.5/7.2 (MCS0)	6.81	6.93	9.88	11.0	-1.12
	5240	48	n (20MHz)	6.5/7.2 (MCS0)	6.74	6.82	9.79	11.0	-1.21
	5190	38	n (40MHz)	13.5/15 (MCS0)	0.50	0.95	3.74	11.0	-7.26
	5230	46	n (40MHz)	13.5/15 (MCS0)	2.74	3.12	5.95	11.0	-5.05
	5210	42	ac (80MHz)	29.3/32.5 (MCS0)	-2.59	-2.54	0.45	11.0	-10.55
Band 2A	5260	52	n (20MHz)	6.5/7.2 (MCS0)	6.56	6.82	9.70	11.0	-1.30
	5280	56	n (20MHz)	6.5/7.2 (MCS0)	6.59	6.97	9.79	11.0	-1.21
	5320	64	n (20MHz)	6.5/7.2 (MCS0)	7.11	7.04	10.09	11.0	-0.91
	5270	54	n (40MHz)	13.5/15 (MCS0)	2.72	2.95	5.85	11.0	-5.15
	5310	62	n (40MHz)	13.5/15 (MCS0)	0.57	1.01	3.81	11.0	-7.19
	5290	58	ac (80MHz)	29.3/32.5 (MCS0)	-4.80	-4.56	-1.67	11.0	-12.67
Band 2C	5500	100	n (20MHz)	6.5/7.2 (MCS0)	7.00	7.37	10.20	11.0	-0.80
	5580	116	n (20MHz)	6.5/7.2 (MCS0)	7.18	7.08	10.14	11.0	-0.86
	5720	144	n (20MHz)	6.5/7.2 (MCS0)	5.96	6.54	9.27	11.0	-1.73
	5510	102	n (40MHz)	13.5/15 (MCS0)	1.24	1.09	4.18	11.0	-6.82
	5550	110	n (40MHz)	13.5/15 (MCS0)	3.21	3.43	6.33	11.0	-4.67
	5710	142	n (40MHz)	13.5/15 (MCS0)	2.30	2.97	5.66	11.0	-5.34
	5530	106	ac (80MHz)	29.3/32.5 (MCS0)	-2.73	-2.46	0.42	11.0	-10.58
	5690	138	ac (80MHz)	29.3/32.5 (MCS0)	-4.02	-3.13	-0.54	11.0	-11.54

Table 7-21. Bands 1, 2A, 2C MIMO Conducted Power Spectral Density Measurements

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Antenn-1 Power Density [dBm]	Antenn-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Max Permissible Power Density [dBm/500kHz]	Margin [dB]
Band 3	5745	149	n (20MHz)	6.5/7.2 (MCS0)	3.41	4.16	6.81	30.0	-23.19
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	3.56	4.37	6.99	30.0	-23.01
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	3.28	4.32	6.84	30.0	-23.16
	5755	151	n (40MHz)	13.5/15 (MCS0)	-0.35	0.02	2.85	30.0	-27.15
	5795	159	n (40MHz)	13.5/15 (MCS0)	0.12	0.35	3.25	30.0	-26.75
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	-6.93	-6.16	-3.51	30.0	-33.51

Table 7-22. Band 3 MIMO Conducted Power Spectral Density Measurements

Note:

Per KDB 662911 v02r01 Section E)2), the power spectral density at Antenna 1 and Antenna 2 were first measured separately as shown in the section above. The measured values were then summed in linear power units then converted back to dBm.

Sample MIMO Calculation:

At 5180MHz in 802.11n MIMO mode, the average conducted power spectral density was measured to be 6.64 dBm for Antenna-1 and 6.78 dBm for Antenna-2.

Antenna 1 + Antenna 2 = MIMO

(6.64 dBm + 6.78 dBm) = (4.61 mW + 4.76 mW) = 9.38 mW = 9.72 dBm

7.6 Frequency Stability

§15.407(g)

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between -30ºC and +50ºC. The temperature was incremented by 10º intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded. Data for the worst case channel is shown below.

OPERATING FREQUENCY:	5,180,000,000	Hz
CHANNEL:	36	
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	5,179,999,687	-313	-0.00000604
100 %		- 30	5,179,999,977	-23	-0.00000044
100 %		- 20	5,179,999,671	-329	-0.00000635
100 %		- 10	5,180,000,225	225	0.00000434
100 %		0	5,179,999,830	-170	-0.00000328
100 %		+ 10	5,180,000,347	347	0.00000670
100 %		+ 20	5,180,000,025	25	0.00000048
100 %		+ 30	5,179,999,714	-286	-0.00000552
100 %		+ 40	5,180,000,031	31	0.00000060
100 %		+ 50	5,179,999,901	-99	-0.00000191
BATT. ENDPOINT	3.45	+ 20	5,180,000,100	100	0.00000193

Table 7-23. Frequency Stability Measurements for UNII Band 1 (Ch. 36)

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

Frequency Stability

§15.407(g)

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between -30ºC and +50ºC. The temperature was incremented by 10º intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded. Data for the worst case channel is shown below.

OPERATING FREQUENCY:	5,260,000,000	Hz
CHANNEL:	52	
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	5,260,000,007	7	0.00000013
100 %		- 30	5,259,999,890	-110	-0.00000209
100 %		- 20	5,260,000,001	1	0.00000002
100 %		- 10	5,259,999,941	-59	-0.00000112
100 %		0	5,260,000,002	2	0.00000004
100 %		+ 10	5,259,999,830	-170	-0.00000323
100 %		+ 20	5,260,000,286	286	0.00000544
100 %		+ 30	5,260,000,082	82	0.00000156
100 %		+ 40	5,259,999,704	-296	-0.00000563
100 %		+ 50	5,260,000,265	265	0.00000504
BATT. ENDPOINT	3.45	+ 20	5,259,999,898	-102	-0.00000194

Table 7-24. Frequency Stability Measurements for UNII Band 2A (Ch. 52)

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

Frequency Stability

§15.407(g)

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between -30ºC and +50ºC. The temperature was incremented by 10º intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded. Data for the worst case channel is shown below.

OPERATING FREQUENCY:	5,500,000,000	Hz
CHANNEL:	100	
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	5,499,999,985	-15	-0.00000027
100 %		- 30	5,500,000,004	4	0.00000007
100 %		- 20	5,500,000,103	103	0.00000187
100 %		- 10	5,500,000,103	103	0.00000187
100 %		0	5,499,999,725	-275	-0.00000500
100 %		+ 10	5,500,000,095	95	0.00000173
100 %		+ 20	5,499,999,996	-4	-0.00000007
100 %		+ 30	5,499,999,892	-108	-0.00000196
100 %		+ 40	5,499,999,909	-91	-0.00000165
100 %		+ 50	5,499,999,899	-101	-0.00000184
BATT. ENDPOINT	3.45	+ 20	5,500,000,153	153	0.00000278

Table 7-25. Frequency Stability Measurements for UNII Band 2C (Ch. 100)

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

Frequency Stability

§15.407(g)

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between -30ºC and +50ºC. The temperature was incremented by 10º intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded. Data for the worst case channel is shown below.

OPERATING FREQUENCY:	5,745,000,000	Hz
CHANNEL:	149	
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	5,744,999,919	-81	-0.00000141
100 %		- 30	5,744,999,918	-82	-0.00000143
100 %		- 20	5,744,999,871	-129	-0.00000225
100 %		- 10	5,745,000,331	331	0.00000576
100 %		0	5,745,000,180	180	0.00000313
100 %		+ 10	5,744,999,823	-177	-0.00000308
100 %		+ 20	5,745,000,271	271	0.00000472
100 %		+ 30	5,745,000,009	9	0.00000016
100 %		+ 40	5,744,999,903	-97	-0.00000169
100 %		+ 50	5,745,000,168	168	0.00000292
BATT. ENDPOINT	3.45	+ 20	5,744,999,821	-179	-0.00000312

Table 7-26. Frequency Stability Measurements for UNII Band 3 (Ch. 149)

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

7.7 Radiated Spurious Emission Measurements – Above 1GHz

§15.407(b) §15.205 §15.209

Test Overview and Limit

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in KDB 789033 D02 v01r04, and at the appropriate frequencies. All channels, modes (e.g. 802.11a, 802.11n (20MHz BW), 802.11n (40MHz BW), and 802.11ac (80MHz)), and modulations/data rates were investigated among all UNII bands. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.

For transmitters operating in the 5.15-5.25 GHz and 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of −27 dBm/MHz.

For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP 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.

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table 7-27 per Section 15.209.

Frequency	Field Strength [µV/m]	Measured Distance [Meters]
Above 960.0 MHz	500	3

Table 7-27. Radiated Limits

Test Procedures Used

KDB 789033 D02 v01r04 – Section G

Test Settings

Average Measurements above 1GHz (Method AD)

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = power average (RMS)
5. Number of measurement points = 1001 (Number of points must be ≥ 2 x span/RBW)
6. Averaging type = power (RMS)
7. Sweep time = auto couple
8. Trace was averaged over 100 sweeps

Peak Measurements above 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Peak Measurements below 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. Span was set greater than 1MHz
3. RBW = 120kHz
4. Detector = CISPR quasi-peak
5. Sweep time = auto couple
6. Trace was allowed to stabilize

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

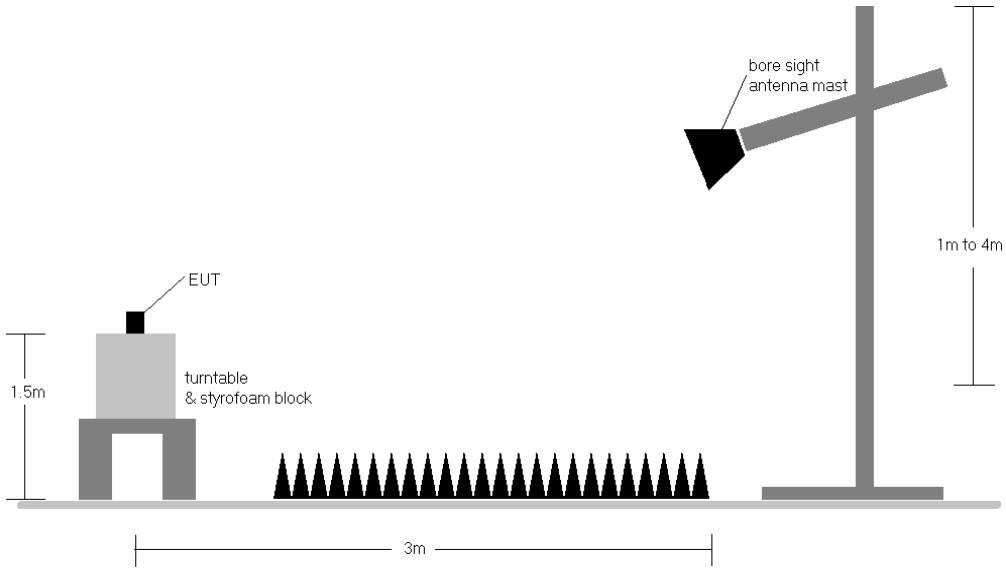


Figure 7-5. Test Instrument & Measurement Setup

Test Notes

1. All radiated spurious emissions levels were measured in a radiated test setup per the guidance of KDB 789033 D02 v01r04 Section G.
2. All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 7-27.
3. All spurious emissions lying in restricted bands specified in §15.205 are below the limit shown in Table 7-27. All spurious emissions that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dBμV/m.
4. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
5. This unit was tested with its standard battery.
6. The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter using CISPR quasi peak detector below 1GHz. Above 1 GHz, average and peak measurements were taken using linearly polarized horn antennas. The worst-case emissions are reported however emissions whose levels were not within 20dB of the respective limits were not reported.
7. Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.
8. Radiated spurious emissions were investigated while operating in MIMO mode, however, it was determined that single antenna operation produced the worst case emissions. Since the emissions produced from MIMO operation were found to be more than 20dB below the limit, the MIMO emissions are not reported.
9. The wide spectrum spurious emissions plots shown on the following pages are used only for the purpose of emission identification. Any emissions found to be within 20dB of the limit are fully investigated and the results are shown in this section. Rohde & Schwarz EMC32, Version 9.15.00 automated test software was used to perform the Radiated Spurious Emissions Pre-Scan testing.
10. The "-" shown in the following RSE tables are used to denote a noise floor measurement.

Sample Calculations

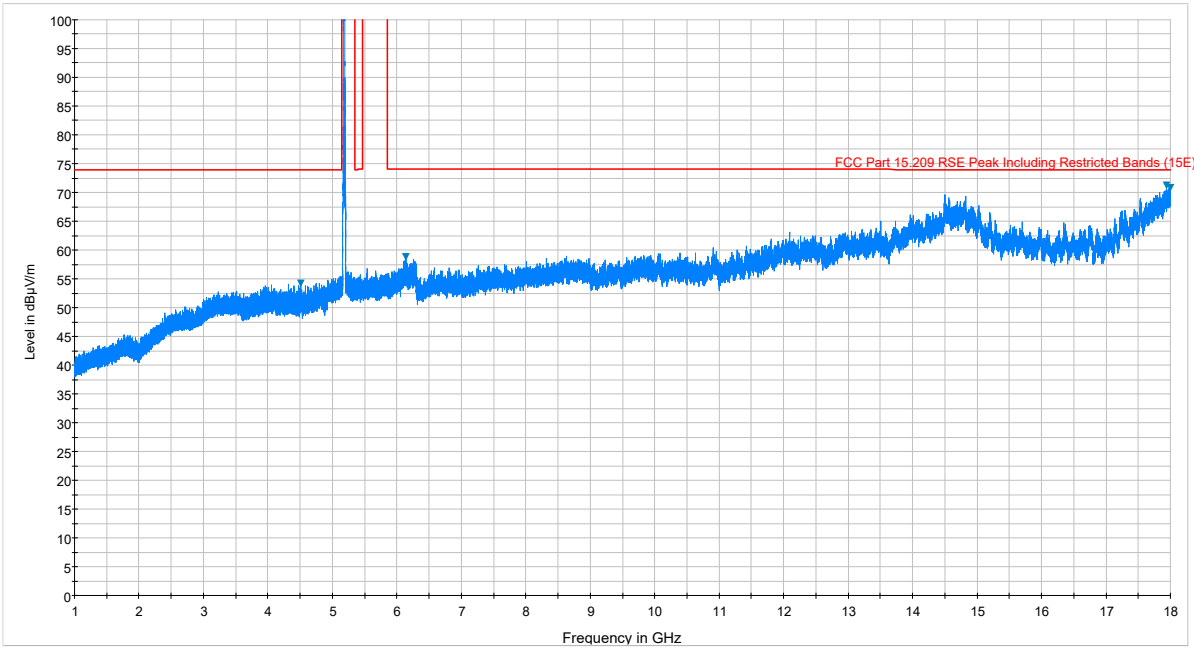
Determining Spurious Emissions Levels

- Field Strength Level [dBμV/m] = Analyzer Level [dBm] + 107 + AFCL [dB/m]
- AFCL [dB/m] = Antenna Factor [dB/m] + Cable Loss [dB]
- Margin [dB] = Field Strength Level [dBμV/m] – Limit [dBμV/m]

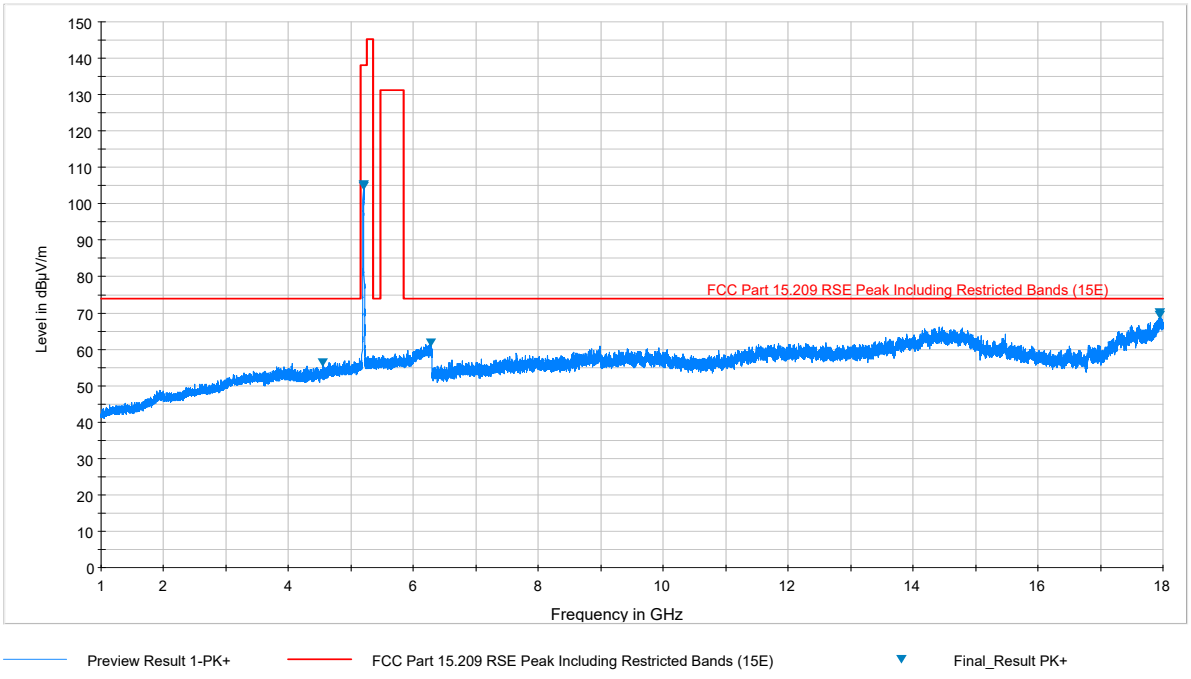
Radiated Band Edge Measurement Offset

- The amplitude offset shown in the radiated restricted band edge plots in Section 7.7 was calculated using the formula:
  Offset (dB) = (Antenna Factor + Cable Loss + Attenuator) – Preamplifier Gain

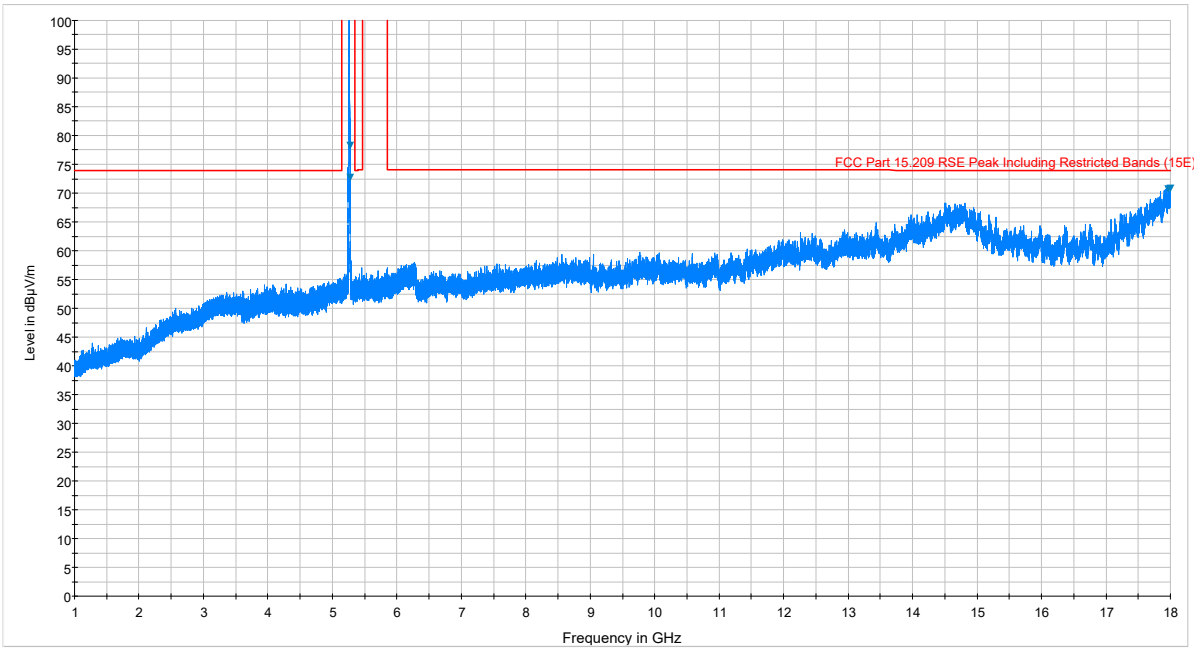
7.7.1 Antenna-1 Radiated Spurious Emission Measurements



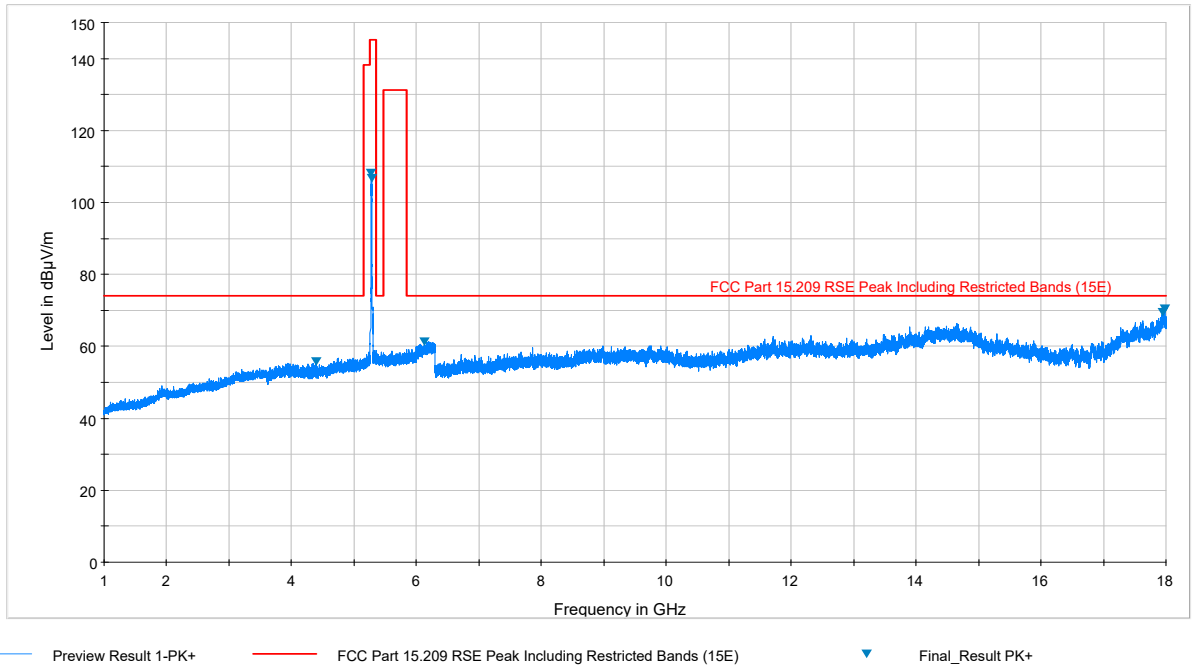
Plot 7-153. Radiated Spurious Plot above 1GHz (802.11a – U1 Ch. 40, Ant. Pol. H)



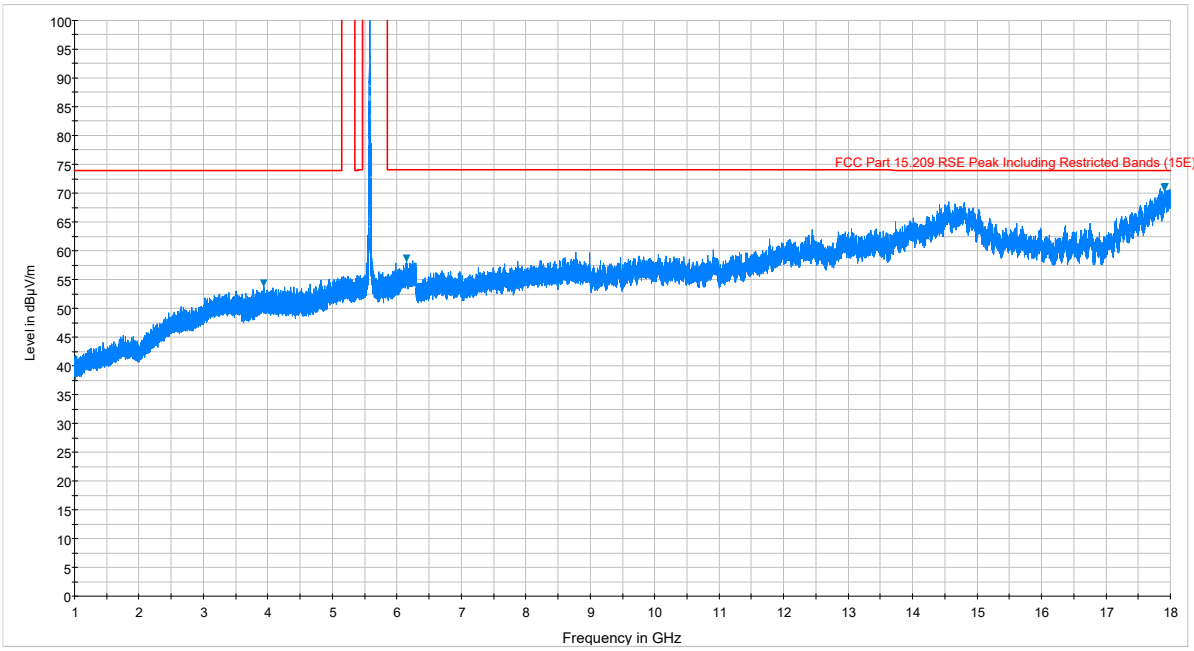
Plot 7-154. Radiated Spurious Plot above 1GHz (802.11a – U1 Ch. 40, Ant. Pol. V)



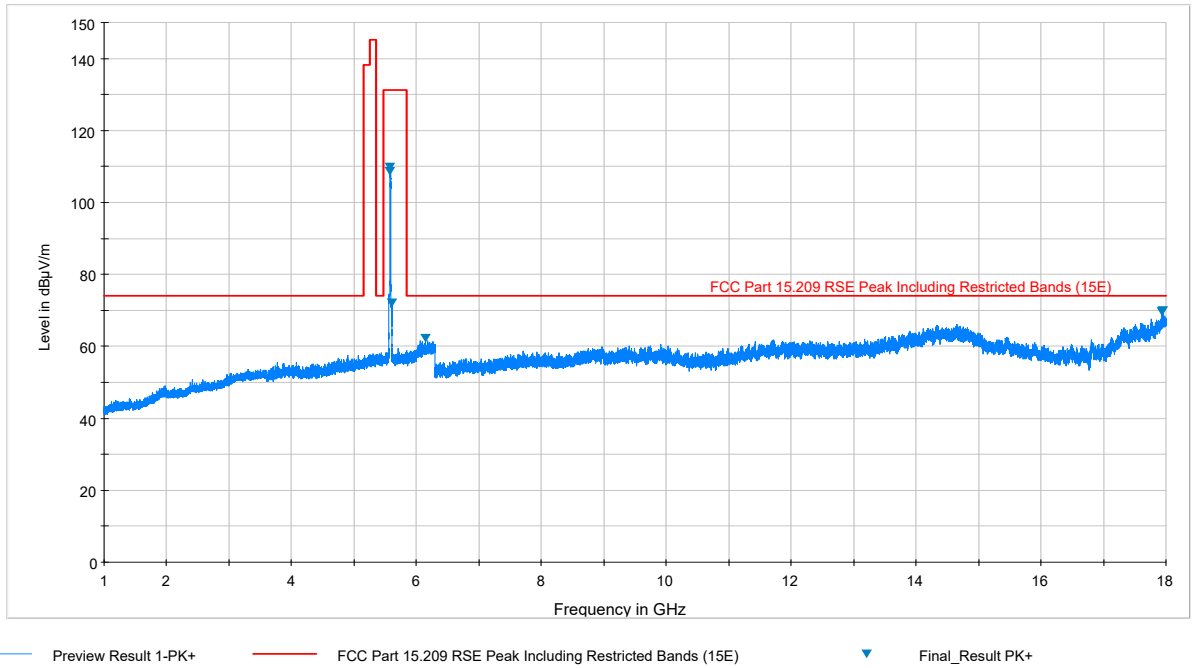
Plot 7-155. Radiated Spurious Plot above 1GHz (802.11a – U2A Ch. 56, Ant. Pol. H)



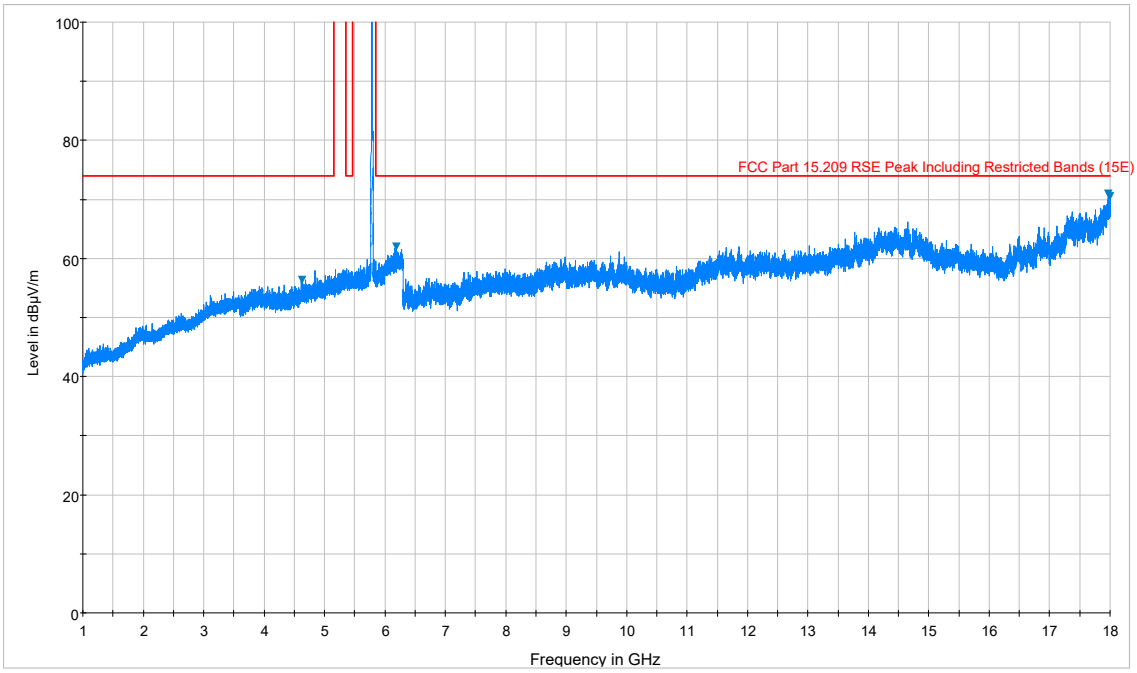
Plot 7-156. Radiated Spurious Plot above 1GHz (802.11a – U2A Ch. 56, Ant. Pol. V)



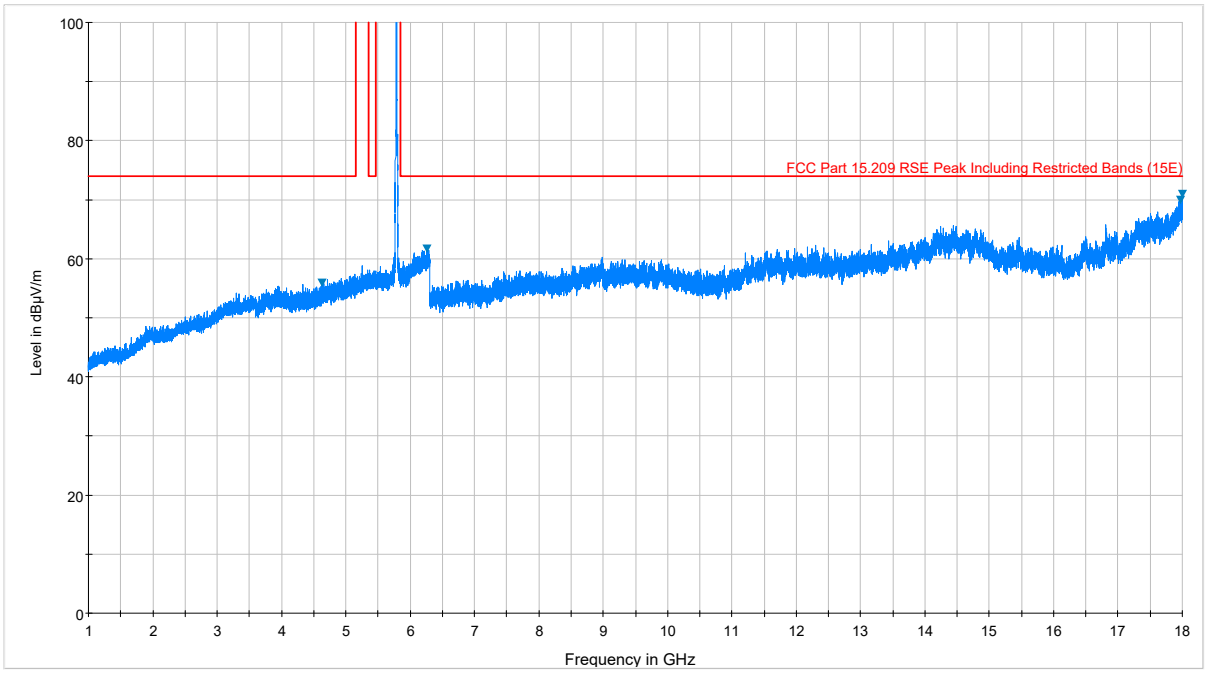
Plot 7-157. Radiated Spurious Plot above 1GHz (802.11a – U2C Ch. 116, Ant. Pol. H)



Plot 7-158. Radiated Spurious Plot above 1GHz (802.11a – U2C Ch. 116, Ant. Pol. V)



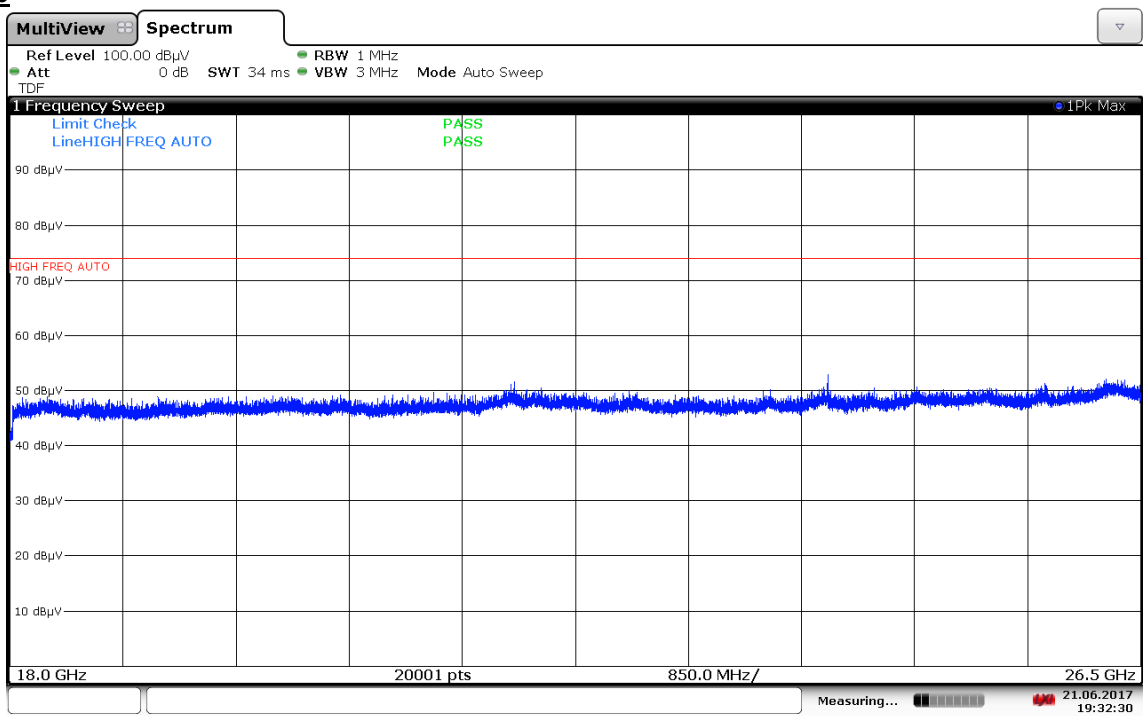
Plot 7-159. Radiated Spurious Plot above 1GHz (802.11a – U3 Ch. 157, Ant. Pol. H)



Plot 7-160. Radiated Spurious Plot above 1GHz (802.11a – U3 Ch. 157, Ant. Pol. V)

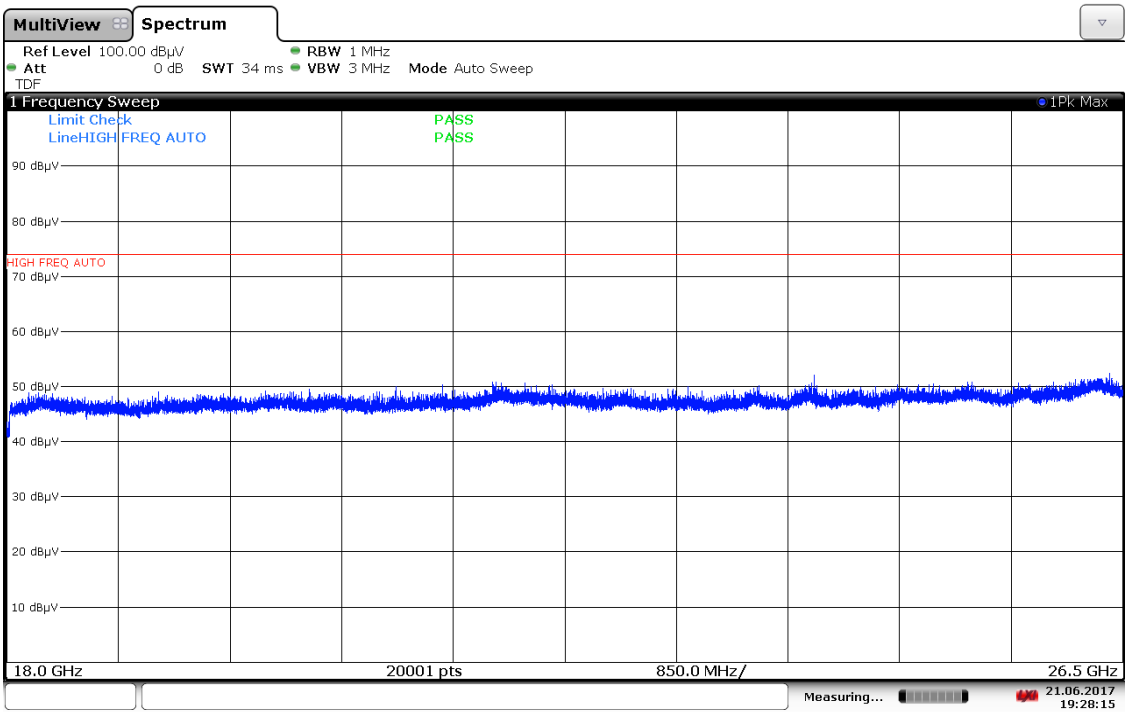
Antenna-1 Radiated Spurious Emissions Measurements (Above 18GHz)

§15.209



19:32:30 21.06.2017

Plot 7-161. Radiated Spurious Plot 18GHz - 26.5GHz (802.11a – Ant. Pol. H)

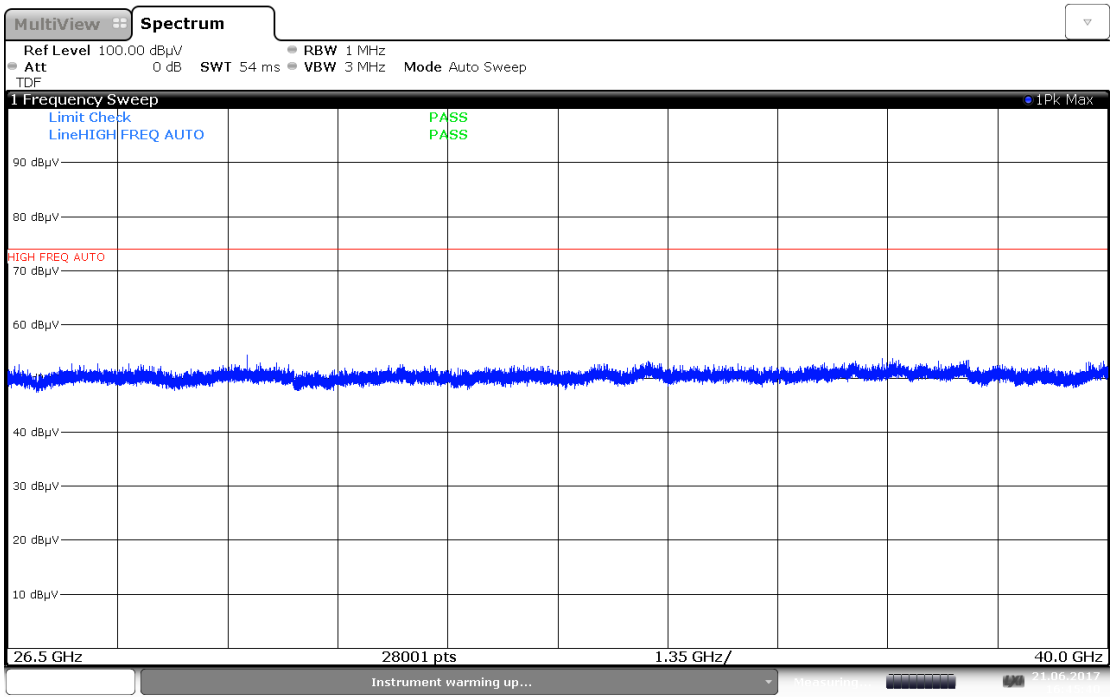


19:28:16 21.06.2017

Plot 7-162. Radiated Spurious Plot above 18GHz - 26.5GHz (802.11a – Ant. Pol. V)

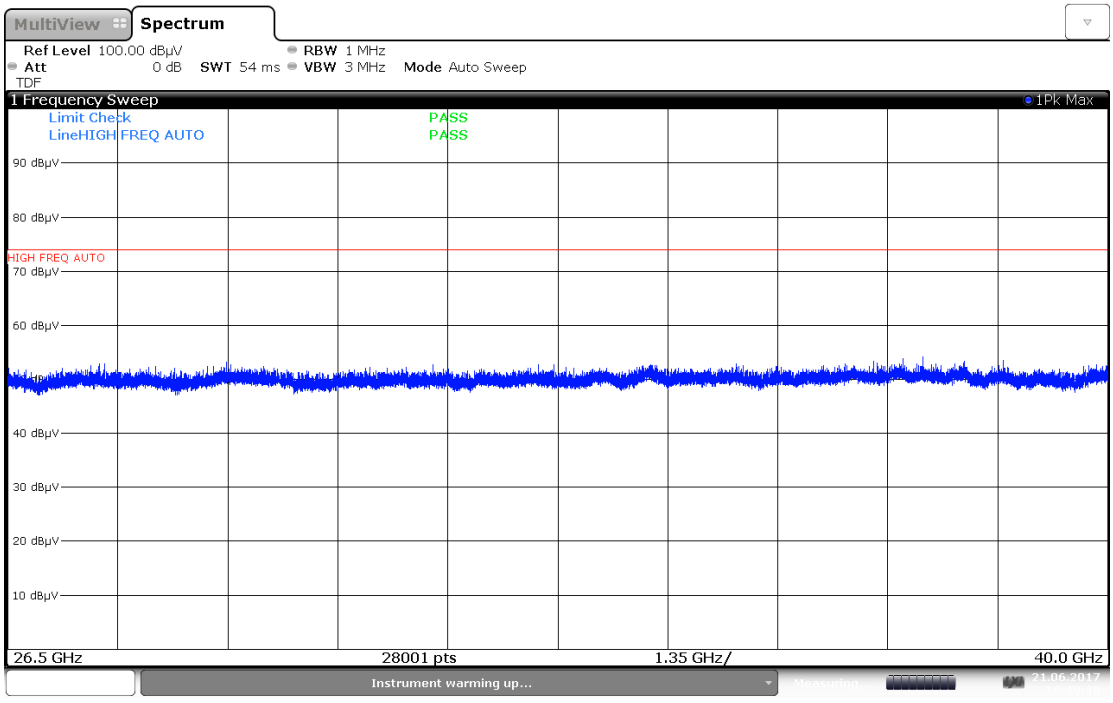
Antenna-1 Radiated Spurious Emissions Measurements (Above 18GHz)

§15.209



16:45:41 21.06.2017

Plot 7-163. Radiated Spurious Plot 26.5GHz - 40GHz (802.11a – Ant. Pol. H)



16:49:48 21.06.2017

Plot 7-164. Radiated Spurious Plot above 26.5GHz - 40GHz (802.11a – Ant. Pol. V)

Antenna-1 Radiated Spurious Emission Measurements

§15.247(d) §15.205 & §15.209

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5180MHz
Channel:	36

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10360.00	Peak	V	100	252	-60.20	12.13	-9.54	49.39	68.20	-18.81
*	15540.00	Average	V	-	-	-75.17	14.49	-9.54	36.78	53.98	-17.20
*	15540.00	Peak	V	-	-	-63.98	14.49	-9.54	47.97	73.98	-26.01
*	20720.00	Average	V	-	-	-71.09	7.94	-9.54	34.31	53.98	-19.67
*	20720.00	Peak	V	-	-	-59.24	7.94	-9.54	46.16	73.98	-27.82
	25900.00	Peak	V	-	-	-47.04	8.46	-9.54	58.88	68.20	-9.32

Table 7-28. Radiated Measurements

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5200MHz
Channel:	40

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10400.00	Peak	V	100	251	-57.93	12.12	-9.54	51.65	68.20	-16.55
*	15600.00	Average	V	-	-	-75.18	14.31	-9.54	36.59	53.98	-17.39
*	15600.00	Peak	V	-	-	-63.08	14.31	-9.54	48.69	73.98	-25.29
*	20800.00	Average	V	-	-	-70.84	7.95	-9.54	34.57	53.98	-19.41
*	20800.00	Peak	V	-	-	-59.95	7.95	-9.54	45.46	73.98	-28.52
	26000.00	Peak	V	-	-	-47.15	8.60	-9.54	58.91	68.20	-9.29

Table 7-29. Radiated Measurements

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5240MHz
Channel:	48

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10480.00	Peak	V	100	255	-59.79	12.09	-9.54	49.76	68.20	-18.44
*	15720.00	Average	V	-	-	-74.84	14.02	-9.54	36.64	53.98	-17.34
*	15720.00	Peak	V	-	-	-63.59	14.02	-9.54	47.89	73.98	-26.09
*	20960.00	Average	V	-	-	-71.45	7.91	-9.54	33.92	53.98	-20.06
*	20960.00	Peak	V	-	-	-59.32	7.91	-9.54	46.05	73.98	-27.93
	26200.00	Peak	V	-	-	-46.38	8.62	-9.54	59.70	68.20	-8.50

Table 7-30. Radiated Measurements

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5200MHz
Channel:	40

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10400.00	Peak	V	100	192	-59.53	12.12	-9.54	50.05	68.20	-18.15
*	15600.00	Average	V	100	306	-77.80	14.31	-9.54	33.97	53.98	-20.01
*	15600.00	Peak	V	100	306	-65.42	14.31	-9.54	46.35	73.98	-27.63
*	20800.00	Average	V	-	-	-71.99	7.95	-9.54	33.42	53.98	-20.56
*	20800.00	Peak	V	-	-	-59.80	7.95	-9.54	45.61	73.98	-28.37
	26000.00	Peak	V	-	-	-46.86	8.60	-9.54	59.20	68.20	-9.00

Table 7-31. Radiated Measurements with WCP

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5260MHz
Channel:	52

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10520.00	Peak	V	100	325	-59.60	12.16	-9.54	50.02	68.20	-18.18
*	15780.00	Average	V	-	-	-73.43	14.03	-9.54	38.06	53.98	-15.92
*	15780.00	Peak	V	-	-	-62.46	14.03	-9.54	49.03	73.98	-24.95
*	21040.00	Average	V	-	-	-71.07	7.92	-9.54	34.31	53.98	-19.67
*	21040.00	Peak	V	-	-	-59.00	7.92	-9.54	46.38	73.98	-27.60
	26300.00	Peak	V	-	-	-45.86	8.73	-9.54	60.33	68.20	-7.87

Table 7-32. Radiated Measurements

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5280MHz
Channel:	56

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10560.00	Peak	V	100	238	-54.65	12.04	-9.54	54.85	68.20	-13.35
*	15840.00	Average	V	100	252	-69.44	14.25	-9.54	42.26	53.98	-11.72
*	15840.00	Peak	V	100	252	-56.38	14.25	-9.54	55.32	73.98	-18.66
*	21120.00	Average	V	-	-	-70.81	7.96	-9.54	34.61	53.98	-19.37
*	21120.00	Peak	V	-	-	-59.04	7.96	-9.54	46.38	73.98	-27.60
	26400.00	Peak	V	-	-	-45.85	8.94	-9.54	60.55	68.20	-7.65

Table 7-33. Radiated Measurements

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5320MHz
Channel:	64

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	10640.00	Average	V	100	238	-65.98	12.06	-9.54	43.54	53.98	-10.44
*	10640.00	Peak	V	100	238	-54.50	12.06	-9.54	55.02	73.98	-18.96
*	15960.00	Average	V	100	228	-71.24	14.55	-9.54	40.77	53.98	-13.21
*	15960.00	Peak	V	100	228	-59.19	14.55	-9.54	52.82	73.98	-21.16
*	21280.00	Average	V	-	-	-70.35	8.04	-9.54	35.15	53.98	-18.83
*	21280.00	Peak	V	-	-	-59.23	8.04	-9.54	46.27	73.98	-27.71
	26600.00	Peak	V	-	-	-45.57	-8.30	-9.54	43.58	68.20	-24.62

Table 7-34. Radiated Measurements

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5320MHz
Channel:	64

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	10640.00	Average	V	100	236	-71.64	12.06	-9.54	37.88	53.98	-16.10
*	10640.00	Peak	V	100	236	-59.42	12.06	-9.54	50.10	73.98	-23.88
*	15960.00	Average	V	100	213	-79.06	14.55	-9.54	32.95	53.98	-21.03
*	15960.00	Peak	V	100	213	-67.17	14.55	-9.54	44.84	73.98	-29.14
*	21280.00	Average	V	-	-	-71.41	8.04	-9.54	34.09	53.98	-19.89
*	21280.00	Peak	V	-	-	-59.38	8.04	-9.54	46.12	73.98	-27.86
	26600.00	Peak	V	-	-	-45.64	-8.30	-9.54	43.51	68.20	-24.69

Table 7-35. Radiated Measurements with WCP

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6 Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5500MHz
Channel: 100

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11000.00	Average	V	100	236	-68.35	12.87	-9.54	41.98	53.98	-12.00
*	11000.00	Peak	V	100	236	-57.54	12.87	-9.54	52.79	73.98	-21.19
	16500.00	Peak	V	100	252	-55.73	16.61	-9.54	58.34	68.20	-9.86
	22000.00	Peak	V	-	-	-57.78	8.43	-9.54	48.10	68.20	-20.10
	27500.00	Peak	V	-	-	-45.58	-8.80	-9.54	43.08	68.20	-25.12

Table 7-36. Radiated Measurements

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6 Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5580MHz
Channel: 116

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11160.00	Average	V	100	235	-67.17	12.64	-9.54	42.93	53.98	-11.05
*	11160.00	Peak	V	100	235	-56.96	12.64	-9.54	53.14	73.98	-20.84
	16740.00	Peak	V	100	264	-60.88	16.21	-9.54	52.79	68.20	-15.41
*	22320.00	Average	V	-	-	-69.97	8.08	-9.54	35.57	53.98	-18.41
*	22320.00	Peak	V	-	-	-58.23	8.08	-9.54	47.31	73.98	-26.67
	27900.00	Peak	V	-	-	-45.70	-9.08	-9.54	42.68	68.20	-25.52

Table 7-37. Radiated Measurements

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5720MHz
Channel:	144

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11440.00	Average	V	100	237	-67.63	12.47	-9.54	42.30	53.98	-11.68
*	11440.00	Peak	V	100	237	-57.77	12.47	-9.54	52.16	73.98	-21.82
	17160.00	Peak	V	-	-	-62.12	18.06	-9.54	53.40	68.20	-14.80
*	22880.00	Average	V	-	-	-70.52	8.37	-9.54	35.31	53.98	-18.67
*	22880.00	Peak	V	-	-	-59.12	8.37	-9.54	46.71	73.98	-27.27
	28600.00	Peak	V	-	-	-44.12	-8.95	-9.54	44.39	68.20	-23.81

Table 7-38. Radiated Measurements

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5580MHz
Channel:	116

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11160.00	Average	V	100	239	-74.49	12.64	-9.54	35.61	53.98	-18.37
*	11160.00	Peak	V	100	239	-62.65	12.64	-9.54	47.45	73.98	-26.53
	16740.00	Peak	V	-	-	-61.18	16.21	-9.54	52.49	68.20	-15.71
*	22320.00	Average	V	-	-	-71.00	8.08	-9.54	34.54	53.98	-19.44
*	22320.00	Peak	V	-	-	-59.50	8.08	-9.54	46.04	73.98	-27.94
	27900.00	Peak	V	-	-	-45.18	-9.08	-9.54	43.20	68.20	-25.00

Table 7-39. Radiated Measurements with WCP

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5745MHz
Channel:	149

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11490.00	Average	V	100	237	-68.25	12.43	-9.54	41.64	53.98	-12.34
*	11490.00	Peak	V	100	237	-57.78	12.43	-9.54	52.11	73.98	-21.87
	17235.00	Peak	V	-	-	-61.78	18.61	-9.54	54.29	68.20	-13.91
*	22980.00	Average	V	-	-	-71.51	8.16	-9.54	34.11	53.98	-19.87
*	22980.00	Peak	V	-	-	-60.23	8.16	-9.54	45.39	73.98	-28.59
	28725.00	Peak	V	-	-	-44.35	-9.24	-9.54	43.87	68.20	-24.33

Table 7-40. Radiated Measurements

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5785MHz
Channel:	157

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11570.00	Average	V	100	236	-69.42	12.54	-9.54	40.58	53.98	-13.40
*	11570.00	Peak	V	100	236	-59.40	12.54	-9.54	50.60	73.98	-23.38
	17355.00	Peak	V	-	-	-61.08	18.73	-9.54	55.11	68.20	-13.09
	23140.00	Peak	V	-	-	-59.43	8.37	-9.54	46.40	68.20	-21.80
	28925.00	Peak	V	-	-	-44.17	-9.65	-9.54	43.64	68.20	-24.56

Table 7-41. Radiated Measurements

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5825MHz
Channel:	165

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11650.00	Average	V	100	241	-70.89	12.99	-9.54	39.55	53.98	-14.43
*	11650.00	Peak	V	100	241	-61.11	12.99	-9.54	49.33	73.98	-24.65
	17475.00	Peak	V	-	-	-60.83	19.25	-9.54	55.87	68.20	-12.33
	23300.00	Peak	V	-	-	-59.96	8.50	-9.54	45.99	68.20	-22.21
	29125.00	Peak	V	-	-	-43.67	-9.87	-9.54	43.92	68.20	-24.28

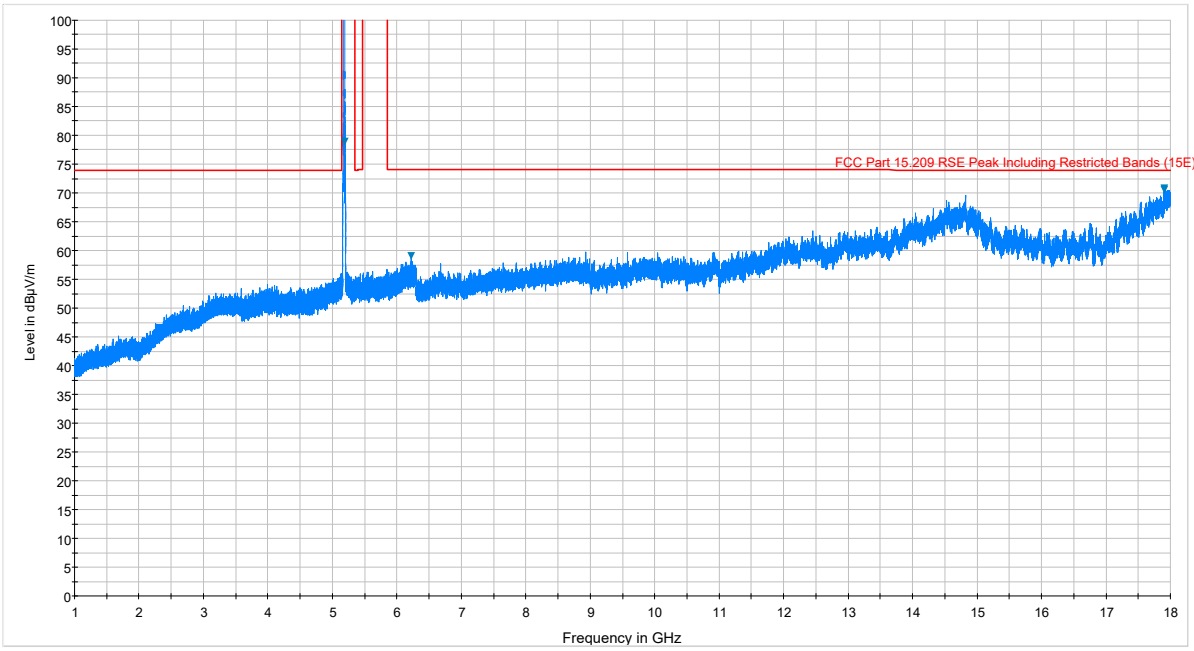
Table 7-42. Radiated Measurements

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5745MHz
Channel:	149

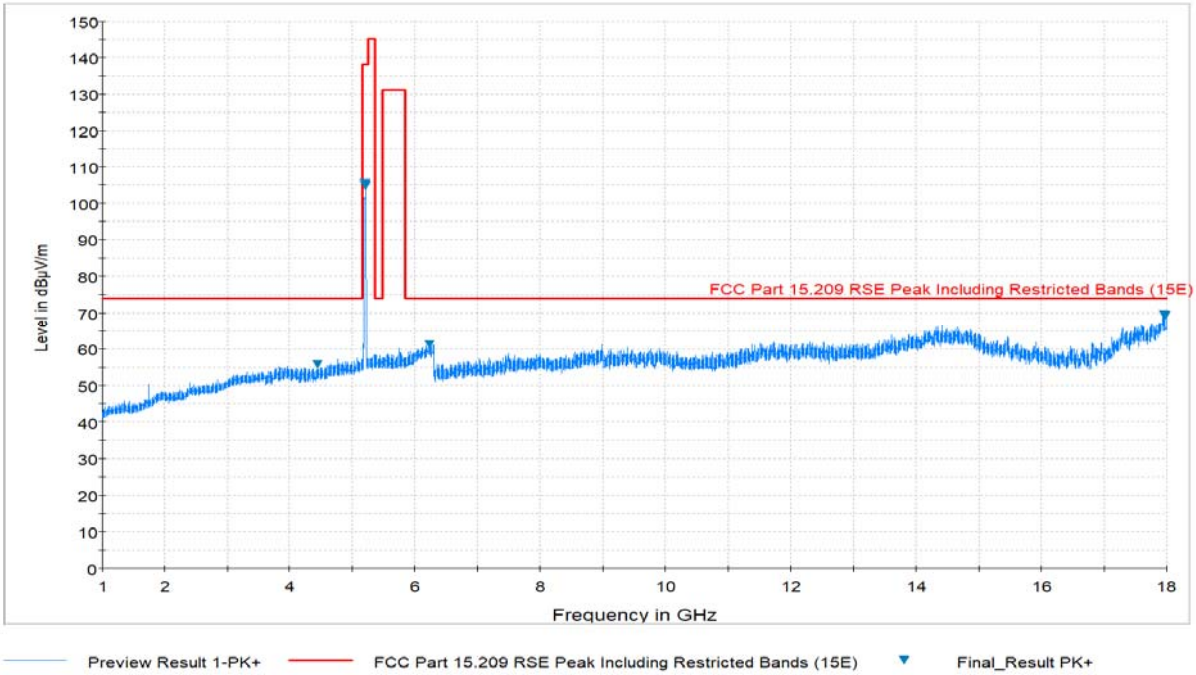
	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11490.00	Average	V	100	241	-73.30	12.43	-9.54	36.59	53.98	-17.39
*	11490.00	Peak	V	100	241	-61.65	12.43	-9.54	48.24	73.98	-25.74
	17235.00	Peak	V	-	-	-61.59	18.61	-9.54	54.48	68.20	-13.72
*	22980.00	Average	V	-	-	-72.35	8.16	-9.54	33.27	53.98	-20.71
*	22980.00	Peak	V	-	-	-60.77	8.16	-9.54	44.85	73.98	-29.13
	28725.00	Peak	V	-	-	-44.83	-9.24	-9.54	43.39	68.20	-24.81

Table 7-43. Radiated Measurements with WCP

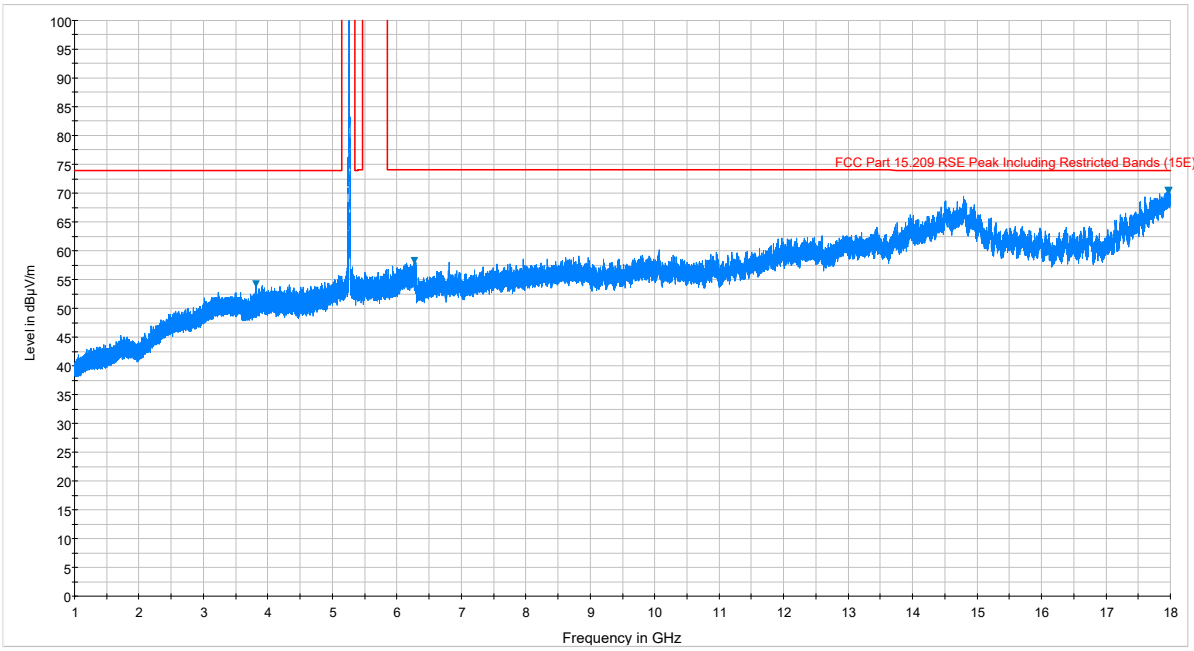
7.7.2 Antenna-2 Radiated Spurious Emission Measurements



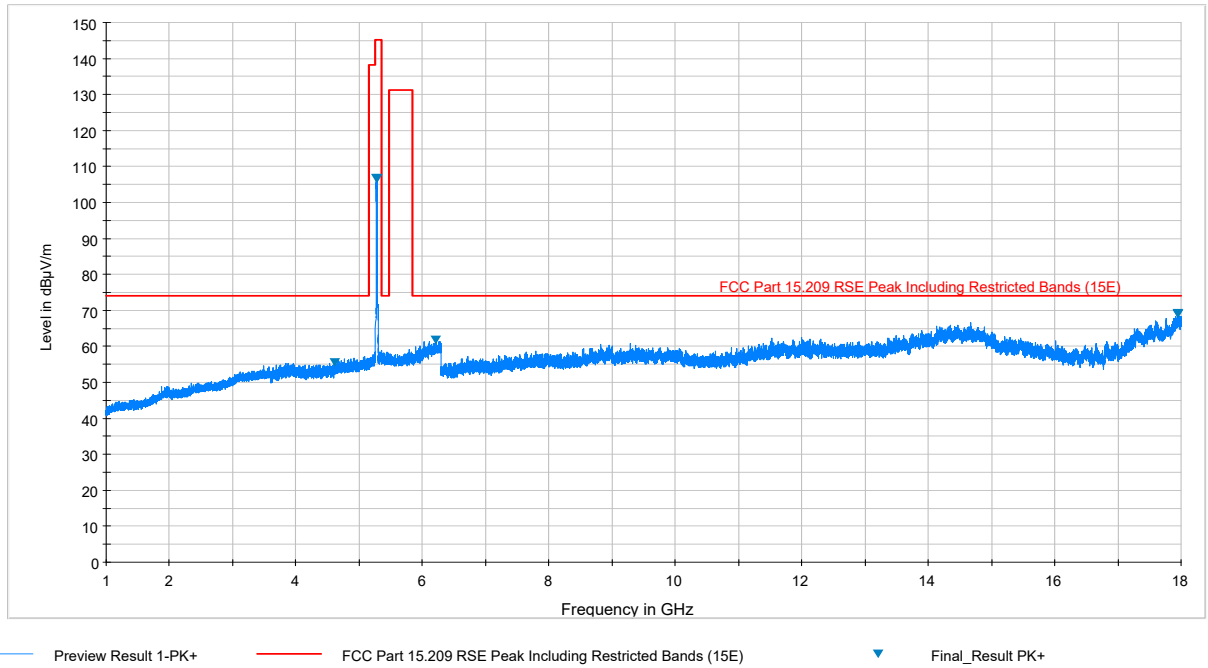
Plot 7-165. Radiated Spurious Plot above 1GHz (802.11a – U1 Ch. 40, Ant. Pol. H)



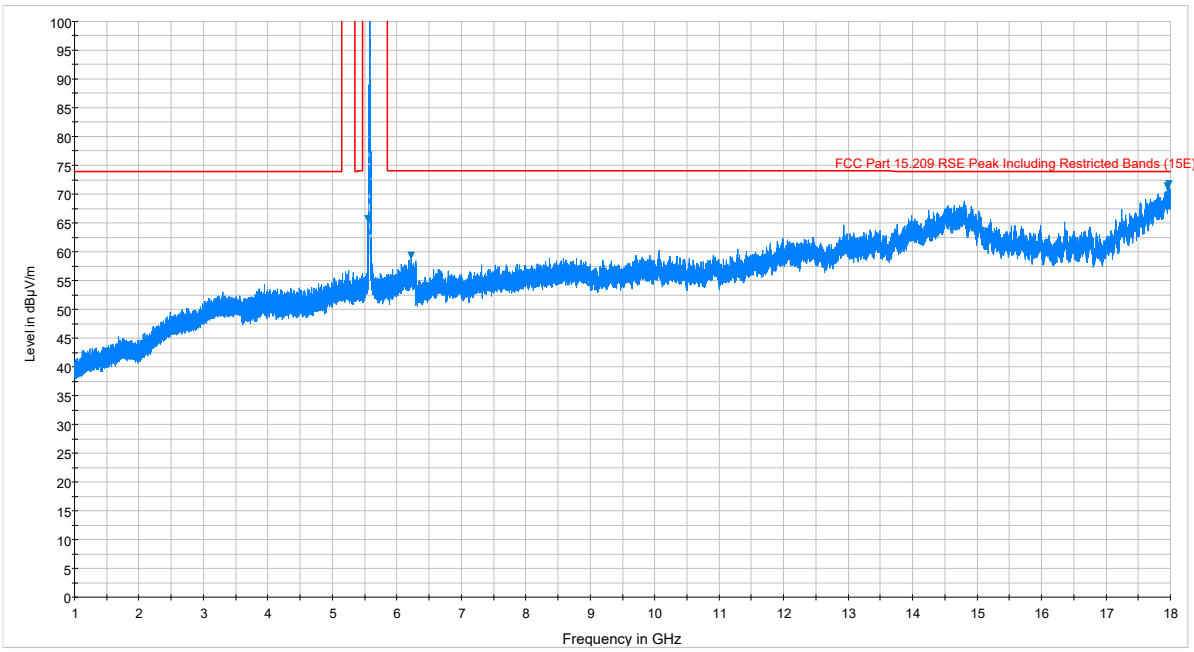
Plot 7-166. Radiated Spurious Plot above 1GHz (802.11a – U1 Ch. 40, Ant. Pol. V)



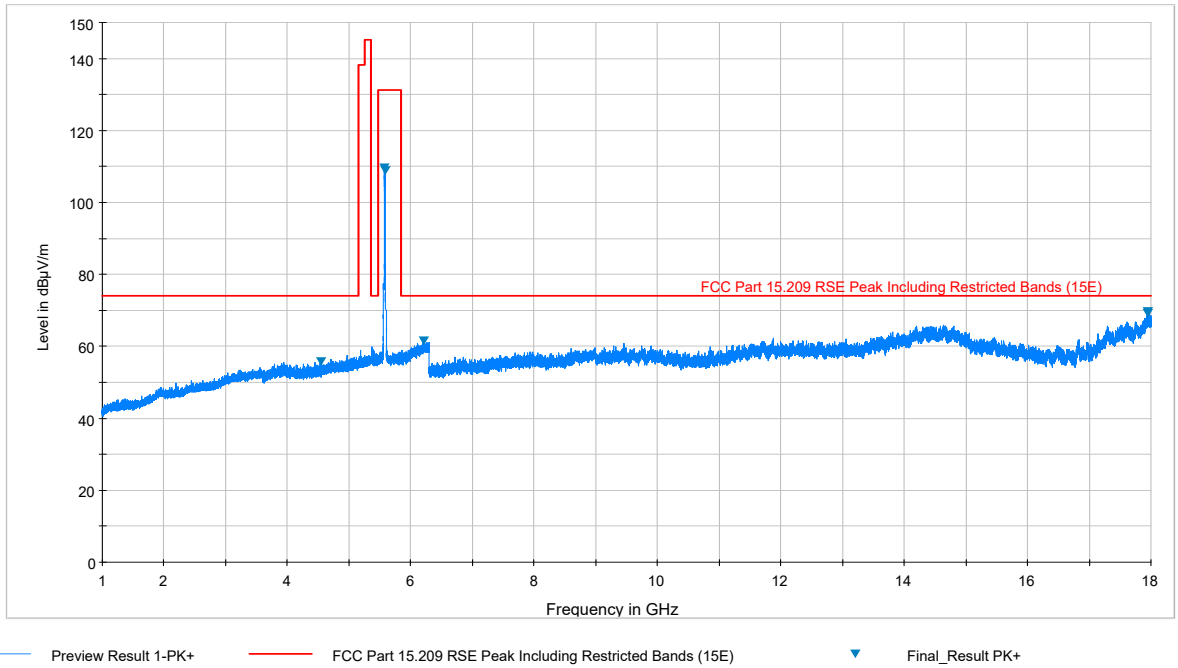
Plot 7-167. Radiated Spurious Plot above 1GHz (802.11a – U2A Ch. 56, Ant. Pol. H)



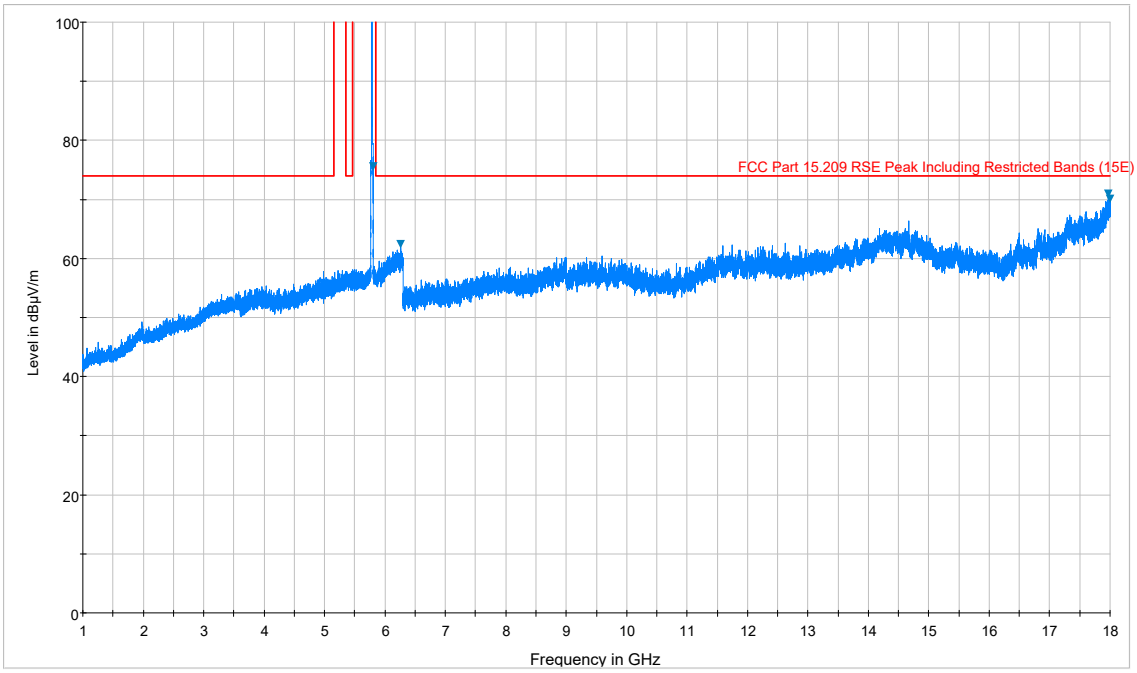
Plot 7-168. Radiated Spurious Plot above 1GHz (802.11a – U2A Ch. 56, Ant. Pol. V)



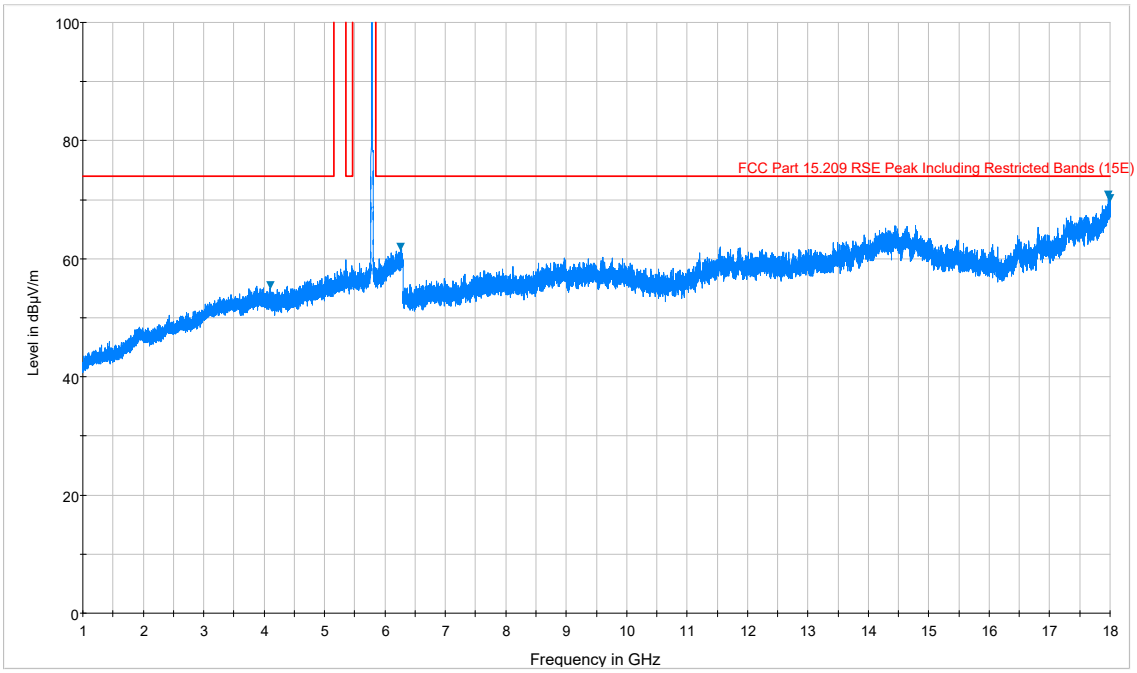
Plot 7-169. Radiated Spurious Plot above 1GHz (802.11a – U2C Ch. 116, Ant. Pol. H)



Plot 7-170. Radiated Spurious Plot above 1GHz (802.11a – U2C Ch. 116, Ant. Pol. V)



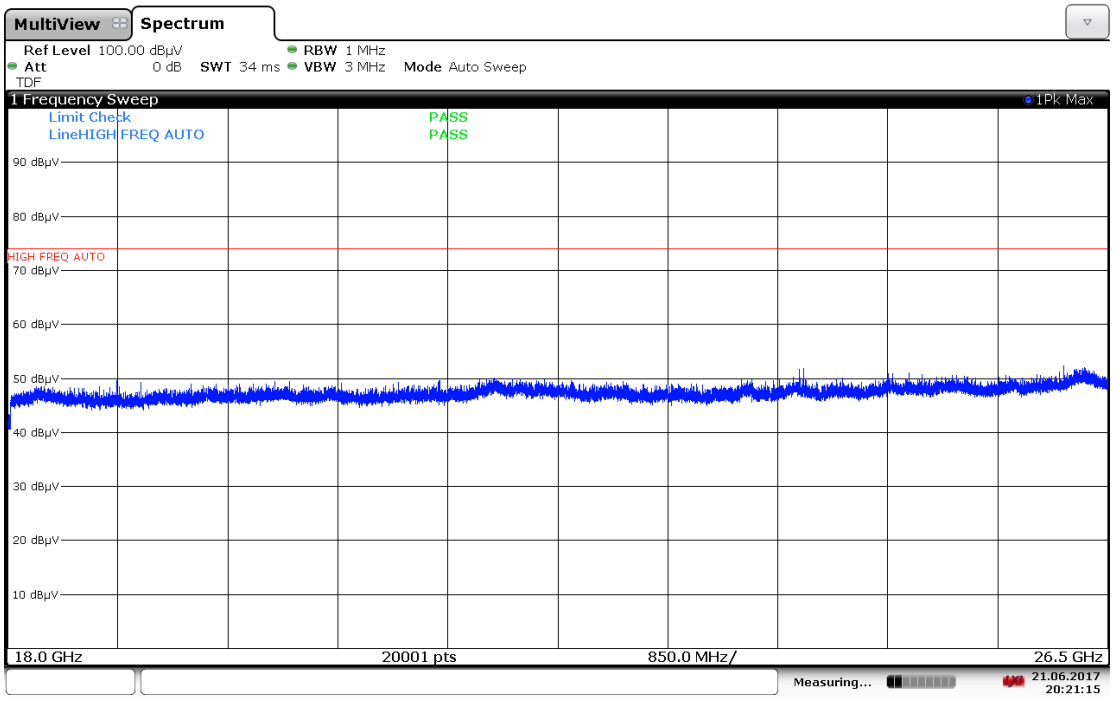
Plot 7-171. Radiated Spurious Plot above 1GHz (802.11a – U3 Ch. 157, Ant. Pol. H)



Plot 7-172. Radiated Spurious Plot above 1GHz (802.11a – U3 Ch. 157, Ant. Pol. V)

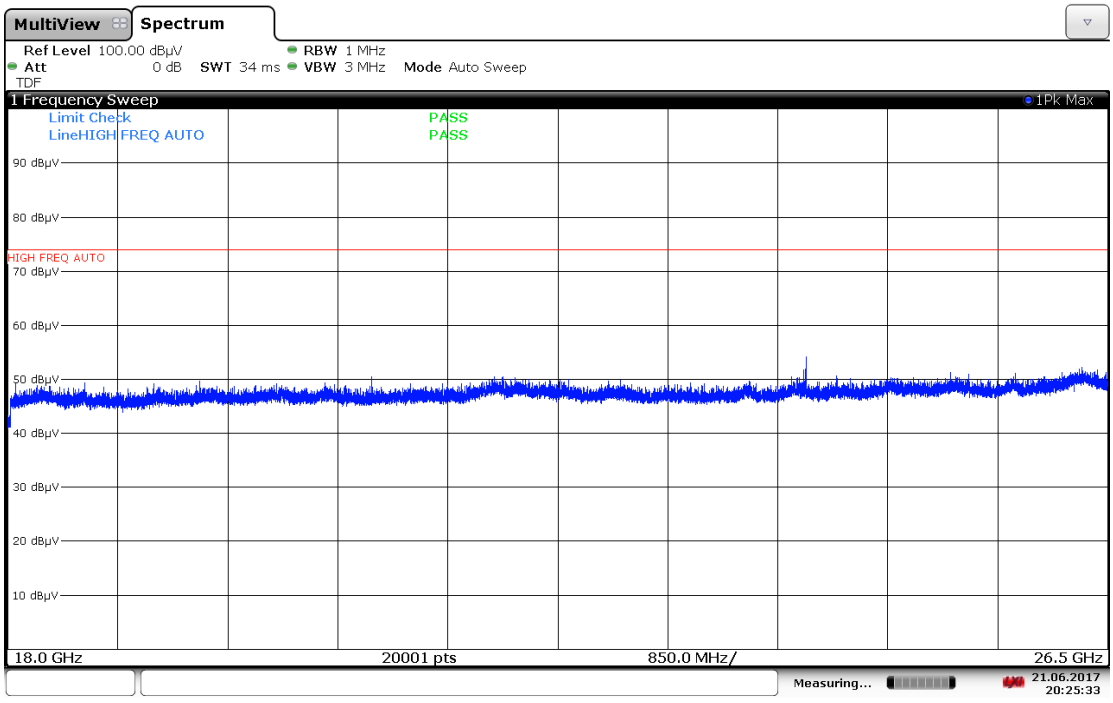
Antenna-2 Radiated Spurious Emissions Measurements (Above 18GHz)

§15.209



20:21:16 21.06.2017

Plot 7-173. Radiated Spurious Plot above 18GHz - 26.5GHz (802.11a – Ant. Pol. H)

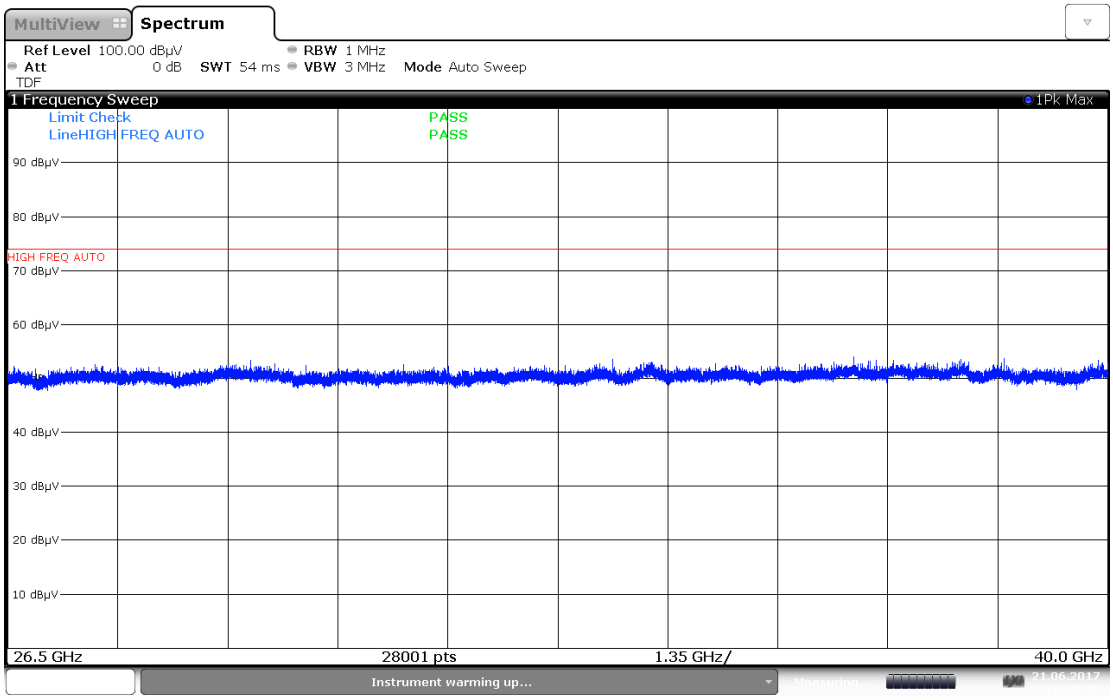


20:25:33 21.06.2017

Plot 7-174. Radiated Spurious Plot above 18GHz - 26.5GHz (802.11a – Ant. Pol. V)

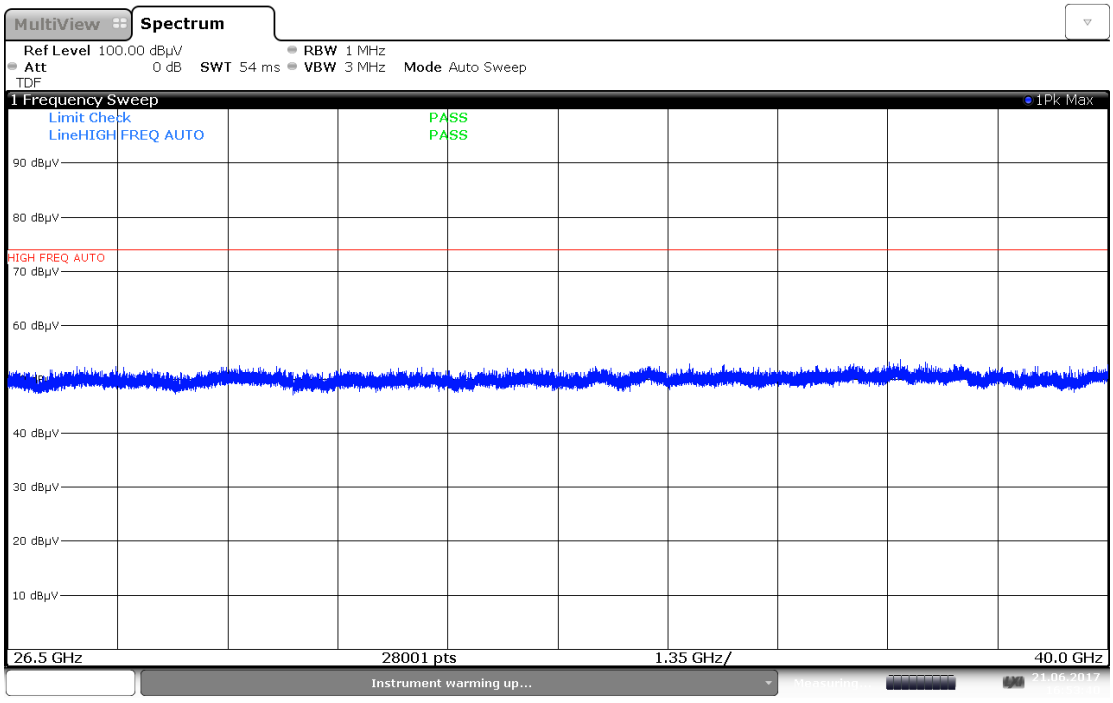
Antenna-2 Radiated Spurious Emissions Measurements (Above 18GHz)

§15.209



16:59:34 21.06.2017

Plot 7-175. Radiated Spurious Plot 26.5GHz - 40GHz (802.11a – Ant. Pol. H)



16:53:41 21.06.2017

Plot 7-176. Radiated Spurious Plot above 26.5GHz - 40GHz (802.11a – Ant. Pol. V)

Antenna-2 Radiated Spurious Emission Measurements

§15.247(d) §15.205 & §15.209

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5180MHz
Channel:	36

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
10360.00	Peak	V	100	233	-54.70	12.13	-9.54	54.89	68.20	-13.31
15540.00	Average	V	-	-	-73.98	14.49	-9.54	37.97	53.98	-16.01
15540.00	Peak	V	-	-	-63.54	14.49	-9.54	48.41	73.98	-25.57
20720.00	Average	V	-	-	-70.95	7.94	-9.54	34.45	53.98	-19.53
20720.00	Peak	V	-	-	-59.40	7.94	-9.54	46.00	73.98	-27.98
25900.00	Peak	V	-	-	-47.46	8.46	-9.54	58.46	68.20	-9.74

Table 7-44. Radiated Measurements

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5200MHz
Channel:	40

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10400.00	Peak	V	100	232	-55.05	12.12	-9.54	54.53	68.20	-13.67
*	15600.00	Average	V	-	-	-74.24	14.31	-9.54	37.53	53.98	-16.45
*	15600.00	Peak	V	-	-	-63.72	14.31	-9.54	48.05	73.98	-25.93
*	20800.00	Average	V	-	-	-71.20	7.95	-9.54	34.21	53.98	-19.77
*	20800.00	Peak	V	-	-	-59.31	7.95	-9.54	46.10	73.98	-27.88
	26000.00	Peak	V	-	-	-46.35	8.60	-9.54	59.71	68.20	-8.49

Table 7-45. Radiated Measurements

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5240MHz
Channel:	48

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10480.00	Peak	V	100	234	-53.91	12.09	-9.54	55.64	68.20	-12.56
*	15720.00	Average	V	100	245	-72.98	14.02	-9.54	38.50	53.98	-15.48
*	15720.00	Peak	V	100	245	-62.58	14.02	-9.54	48.90	73.98	-25.08
*	20960.00	Average	V	-	-	-71.45	7.91	-9.54	33.92	53.98	-20.06
*	20960.00	Peak	V	-	-	-59.33	7.91	-9.54	46.04	73.98	-27.94
	26200.00	Peak	V	-	-	-46.58	8.62	-9.54	59.50	68.20	-8.70

Table 7-46. Radiated Measurements

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5240MHz
Channel:	48

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10480.00	Peak	V	100	240	-58.17	12.09	-9.54	51.38	68.20	-16.82
*	15720.00	Average	V	100	247	-74.55	14.02	-9.54	36.93	53.98	-17.05
*	15720.00	Peak	V	100	247	-62.24	14.02	-9.54	49.24	73.98	-24.74
*	20960.00	Average	V	-	-	-72.30	7.91	-9.54	33.07	53.98	-20.91
*	20960.00	Peak	V	-	-	-60.70	7.91	-9.54	44.67	73.98	-29.31
	26200.00	Peak	V	-	-	-46.36	8.62	-9.54	59.72	68.20	-8.48

Table 7-47. Radiated Measurements with WCP

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5260MHz
Channel:	52

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10520.00	Peak	V	100	237	-55.58	12.16	-9.54	54.04	68.20	-14.16
*	15780.00	Average	V	100	246	-73.52	14.03	-9.54	37.97	53.98	-16.01
*	15780.00	Peak	V	100	246	-63.04	14.03	-9.54	48.45	73.98	-25.53
*	21040.00	Average	V	-	-	-71.04	7.92	-9.54	34.34	53.98	-19.64
*	21040.00	Peak	V	-	-	-59.17	7.92	-9.54	46.21	73.98	-27.77
	26300.00	Peak	V	-	-	-46.06	8.73	-9.54	60.13	68.20	-8.07

Table 7-48. Radiated Measurements

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5280MHz
Channel:	56

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10560.00	Peak	V	100	239	-54.80	12.04	-9.54	54.70	68.20	-13.50
*	15840.00	Average	V	-	-	-73.24	14.25	-9.54	38.46	53.98	-15.52
*	15840.00	Peak	V	-	-	-63.82	14.25	-9.54	47.88	73.98	-26.10
*	21120.00	Average	V	-	-	-70.76	7.96	-9.54	34.66	53.98	-19.32
*	21120.00	Peak	V	-	-	-58.98	7.96	-9.54	46.44	73.98	-27.54
	26400.00	Peak	V	-	-	-45.80	8.94	-9.54	60.60	68.20	-7.60

Table 7-49. Radiated Measurements

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6 Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5320MHz
Channel: 64

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	10640.00	Average	V	100	240	-66.20	12.06	-9.54	43.32	53.98	-10.66
*	10640.00	Peak	V	100	240	-53.38	12.06	-9.54	56.14	73.98	-17.84
*	15960.00	Average	V	-	-	-73.10	14.55	-9.54	38.91	53.98	-15.07
*	15960.00	Peak	V	-	-	-62.57	14.55	-9.54	49.44	73.98	-24.54
*	21280.00	Average	V	-	-	-70.23	8.04	-9.54	35.27	53.98	-18.71
*	21280.00	Peak	V	-	-	-58.65	8.04	-9.54	46.85	73.98	-27.13
	26600.00	Peak	V	-	-	-46.55	-8.30	-9.54	42.60	68.20	-25.60

Table 7-50. Radiated Measurements

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6 Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5320MHz
Channel: 64

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	10640.00	Average	V	100	236	-70.03	12.06	-9.54	39.49	53.98	-14.49
*	10640.00	Peak	V	100	236	-56.88	12.06	-9.54	52.64	73.98	-21.34
*	15960.00	Average	V	-	-	-74.44	14.55	-9.54	37.57	53.98	-16.41
*	15960.00	Peak	V	-	-	-62.54	14.55	-9.54	49.47	73.98	-24.51
*	21280.00	Average	V	-	-	-71.38	8.04	-9.54	34.12	53.98	-19.86
*	21280.00	Peak	V	-	-	-59.05	8.04	-9.54	46.45	73.98	-27.53
	26600.00	Peak	V	-	-	-46.52	-8.30	-9.54	42.63	68.20	-25.57

Table 7-51. Radiated Measurements with WCP

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5500MHz
Channel: 100

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11000.00	Average	V	100	235	-69.15	12.87	-9.54	41.18	53.98	-12.80
*	11000.00	Peak	V	100	235	-59.41	12.87	-9.54	50.92	73.98	-23.06
	16500.00	Peak	V	-	-	-61.61	16.61	-9.54	52.46	68.20	-15.74
	22000.00	Peak	V	-	-	-57.92	8.43	-9.54	47.96	68.20	-20.24
	27500.00	Peak	V	-	-	-45.75	-8.80	-9.54	42.91	68.20	-25.29

Table 7-52. Radiated Measurements

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6 Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5580MHz
Channel: 116

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11160.00	Average	V	100	237	-66.18	12.64	-9.54	43.92	53.98	-10.06
*	11160.00	Peak	V	100	237	-56.56	12.64	-9.54	53.54	73.98	-20.44
	16740.00	Peak	V	-	-	-62.49	16.21	-9.54	51.18	68.20	-17.02
*	22320.00	Average	V	-	-	-69.99	8.08	-9.54	35.55	53.98	-18.43
*	22320.00	Peak	V	-	-	-58.21	8.08	-9.54	47.33	73.98	-26.65
	27900.00	Peak	V	-	-	-45.32	-9.08	-9.54	43.06	68.20	-25.14

Table 7-53. Radiated Measurements

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5720MHz
Channel:	144

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11440.00	Average	V	100	238	-66.71	12.47	-9.54	43.22	53.98	-10.76
*	11440.00	Peak	V	100	238	-57.41	12.47	-9.54	52.52	73.98	-21.46
	17160.00	Peak	V	-	-	-62.69	18.06	-9.54	52.83	68.20	-15.37
*	22880.00	Average	V	-	-	-70.73	8.37	-9.54	35.10	53.98	-18.88
*	22880.00	Peak	V	-	-	-59.50	8.37	-9.54	46.33	73.98	-27.65
	28600.00	Peak	V	-	-	-44.12	-8.95	-9.54	44.39	68.20	-23.81

Table 7-54. Radiated Measurements

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5580MHz
Channel:	116

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11160.00	Average	V	100	243	-73.73	12.64	-9.54	36.37	53.98	-17.61
*	11160.00	Peak	V	100	243	-62.73	12.64	-9.54	47.37	73.98	-26.61
	16740.00	Peak	V	-	-	-61.96	16.21	-9.54	51.71	68.20	-16.49
*	22320.00	Average	V	-	-	-70.98	8.08	-9.54	34.56	53.98	-19.42
*	22320.00	Peak	V	-	-	-58.40	8.08	-9.54	47.14	73.98	-26.84
	27900.00	Peak	V	-	-	-45.32	-9.08	-9.54	43.06	68.20	-25.14

Table 7-55. Radiated Measurements with WCP

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5745MHz
Channel:	149

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11490.00	Average	V	100	240	-67.79	12.43	-9.54	42.10	53.98	-11.88
*	11490.00	Peak	V	100	240	-58.81	12.43	-9.54	51.08	73.98	-22.90
	17235.00	Peak	V	-	-	-62.23	18.61	-9.54	53.84	68.20	-14.36
*	22980.00	Average	V	-	-	-71.08	8.16	-9.54	34.54	53.98	-19.44
*	22980.00	Peak	V	-	-	-61.20	8.16	-9.54	44.42	73.98	-29.56
	28725.00	Peak	V	-	-	-44.65	-9.24	-9.54	43.57	68.20	-24.63

Table 7-56. Radiated Measurements

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5785MHz
Channel:	157

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11570.00	Average	V	100	240	-69.29	12.54	-9.54	40.71	53.98	-13.27
*	11570.00	Peak	V	100	240	-59.66	12.54	-9.54	50.34	73.98	-23.64
	17355.00	Peak	V	-	-	-61.63	18.73	-9.54	54.56	68.20	-13.64
	23140.00	Peak	V	-	-	-59.65	8.37	-9.54	46.18	68.20	-22.02
	28925.00	Peak	V	-	-	-43.93	-9.65	-9.54	43.88	68.20	-24.32

Table 7-57. Radiated Measurements

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5825MHz
Channel:	165

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11650.00	Average	V	100	240	-71.09	12.99	-9.54	39.35	53.98	-14.63
*	11650.00	Peak	V	100	240	-60.59	12.99	-9.54	49.85	73.98	-24.13
	17475.00	Peak	V	-	-	-61.42	19.25	-9.54	55.28	68.20	-12.92
	23300.00	Peak	V	-	-	-59.37	8.50	-9.54	46.58	68.20	-21.62
	29125.00	Peak	V	-	-	-43.43	-9.87	-9.54	44.16	68.20	-24.04

Table 7-58. Radiated Measurements

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5745MHz
Channel:	149

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11490.00	Average	V	100	240	-72.88	12.43	-9.54	37.01	53.98	-16.97
*	11490.00	Peak	V	100	240	-61.31	12.43	-9.54	48.58	73.98	-25.40
	17235.00	Peak	V	-	-	-61.44	18.61	-9.54	54.63	68.20	-13.57
*	22980.00	Average	V	-	-	-72.20	8.16	-9.54	33.42	53.98	-20.56
*	22980.00	Peak	V	-	-	-60.66	8.16	-9.54	44.96	73.98	-29.02
	28725.00	Peak	V	-	-	-44.20	-9.24	-9.54	44.02	68.20	-24.18

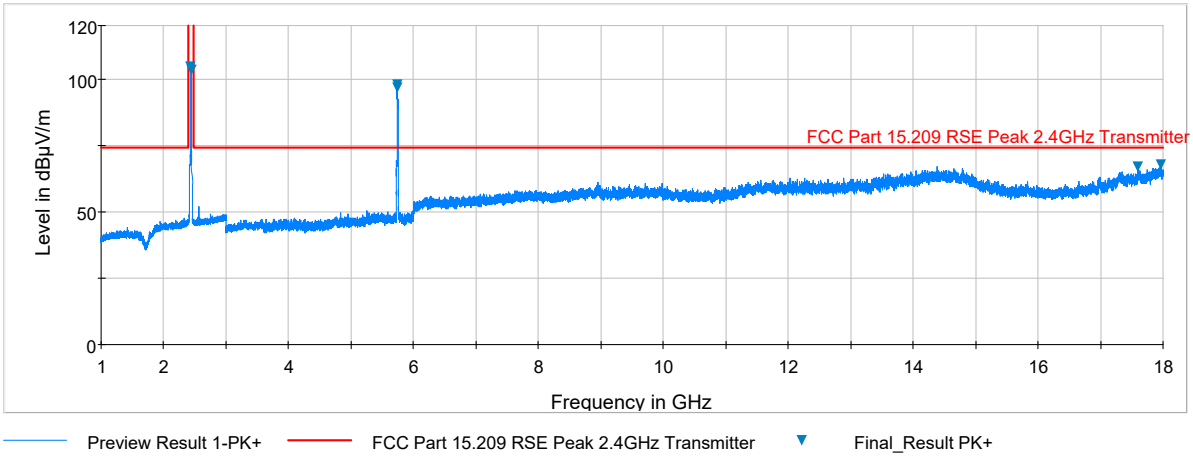
Table 7-59. Radiated Measurements with WCP

7.7.3 Simultaneous Tx Radiated Spurious Emissions Measurements

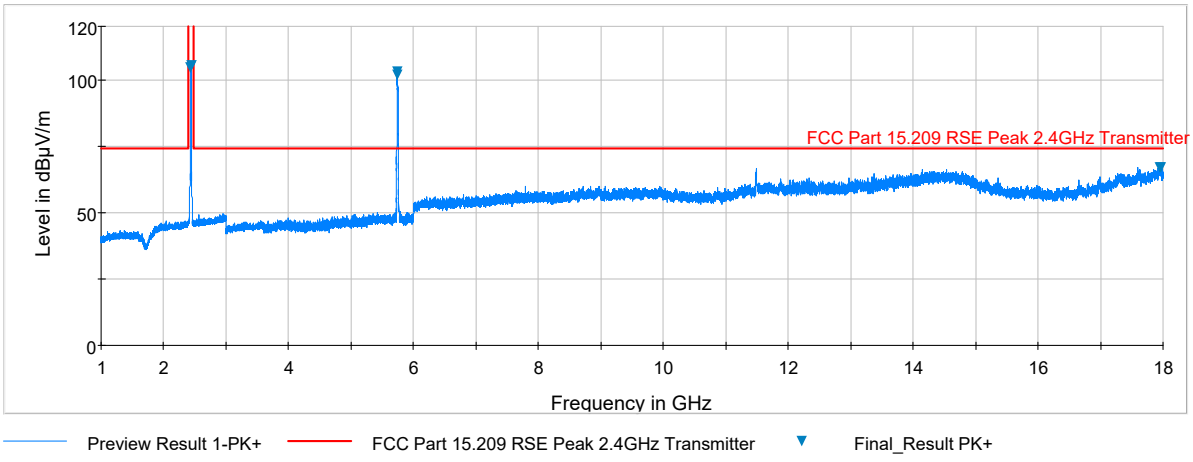
§15.247(d) §15.205 & §15.209

Description	2.4 GHz Emission	5 GHz Emission
Antenna	1	2
Channel	6	149
Operating Frequency(MHz)	2437	5745
Data Rate (Mbps)	1	6
Mode	802.11b	802.11a

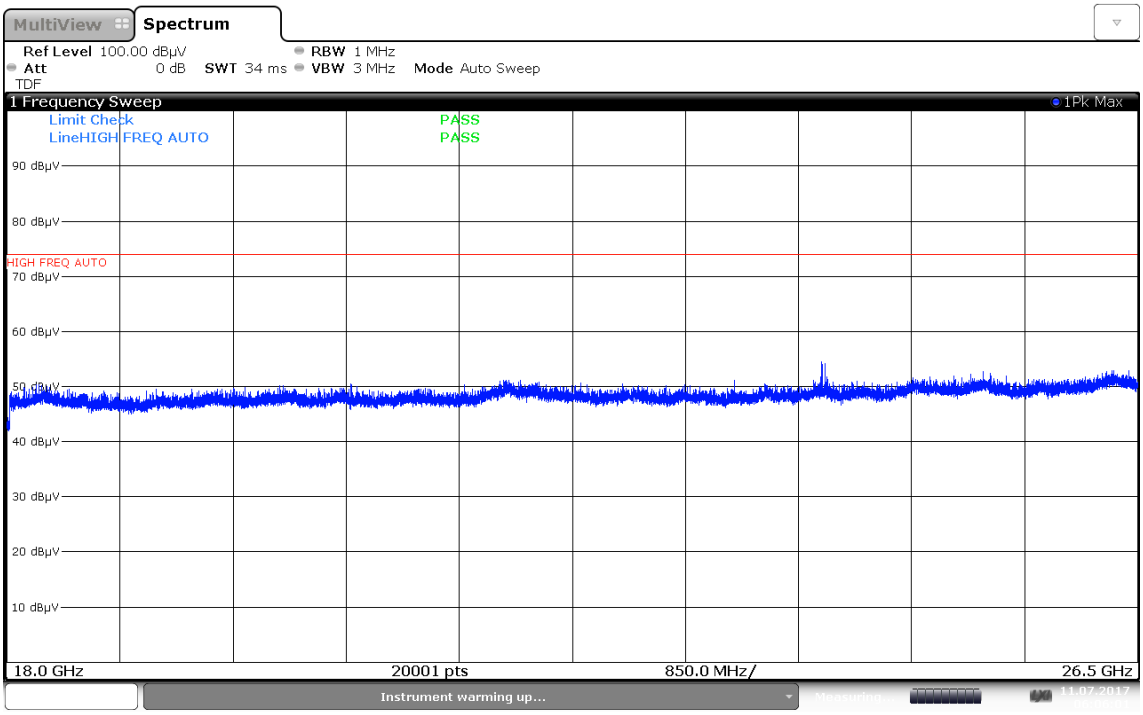
Table 7-60. Simultaneous Transmission Config-1



Plot 7-177. Radiated Spurious Plot above 1GHz (2.4GHz – 5GHz, Ant. Pol. H)

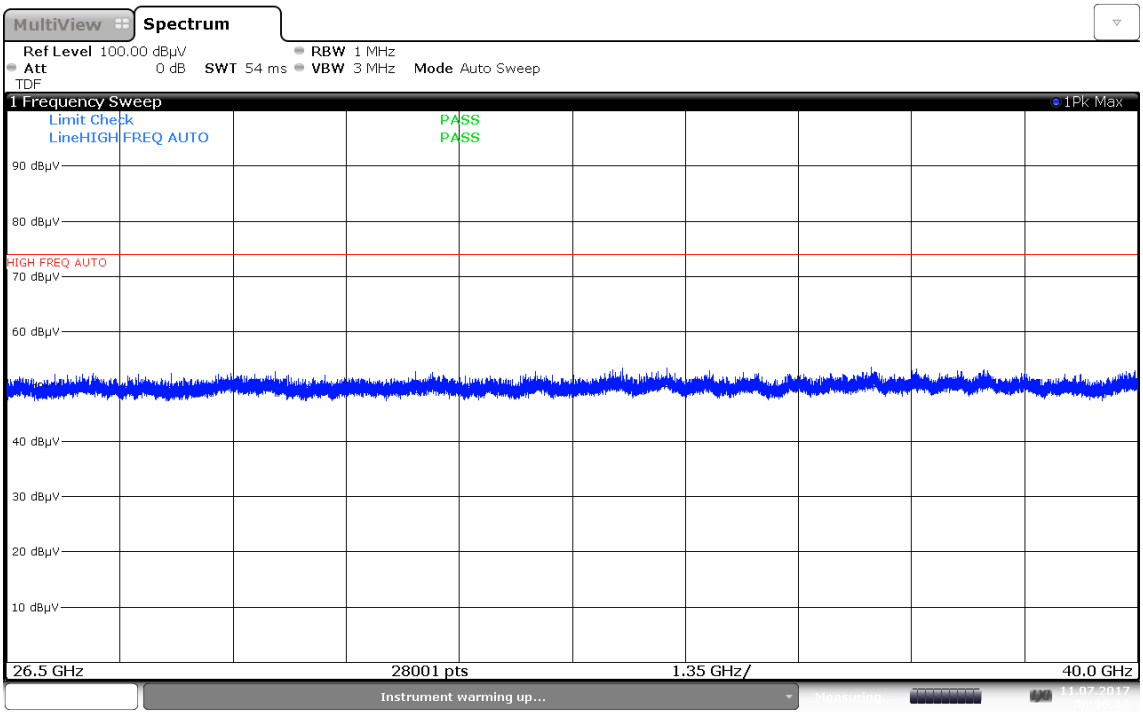


Plot 7-178. Radiated Spurious Plot above 1GHz (2.4GHz – 5GHz, Ant. Pol. V)



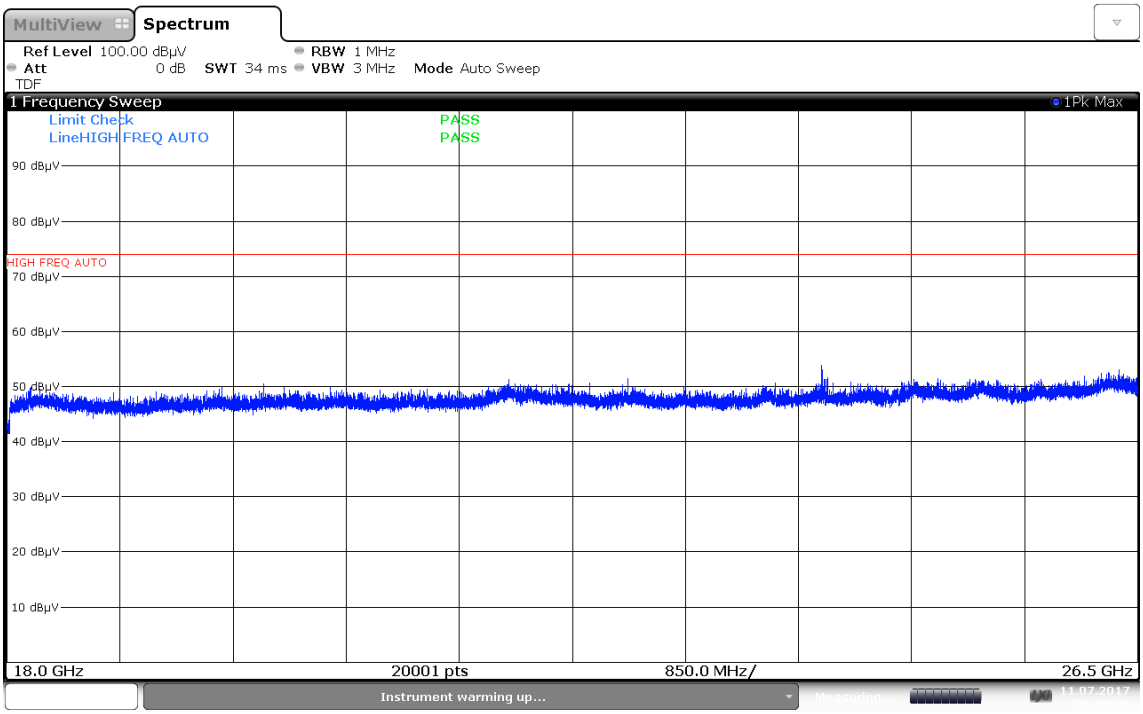
06:06:02 11.07.2017

Plot 7-179.Radiated Spurious Plot 18-26.5GHz (2.4GHz – 5GHz, Ant. Pol. H)



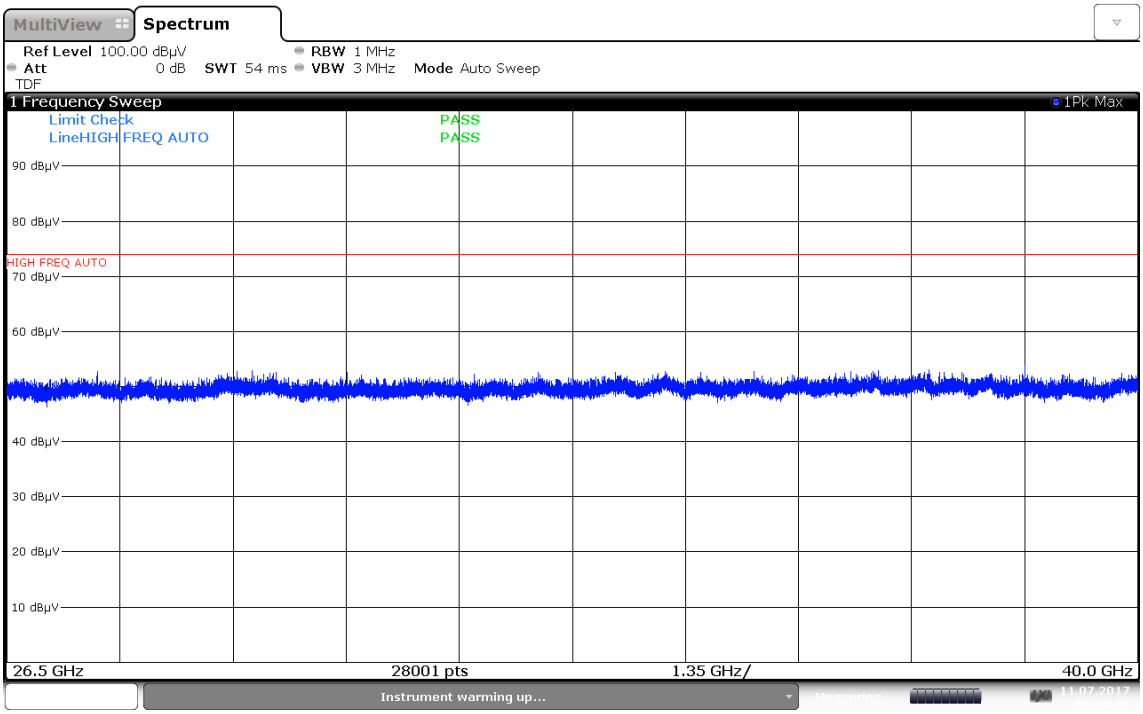
06:16:17 11.07.2017

Plot 7-180. Radiated Spurious Plot 26.5-40GHz (2.4GHz – 5GHz, Ant. Pol. H)



06:09:46 11.07.2017

Plot 7-181. Radiated Spurious Plot 18-26.5GHz (2.4GHz – 5GHz, Ant. Pol. V)



06:18:31 11.07.2017

Plot 7-182. Radiated Spurious Plot 26.5-40GHz (2.4GHz – 5GHz, Ant. Pol. V)

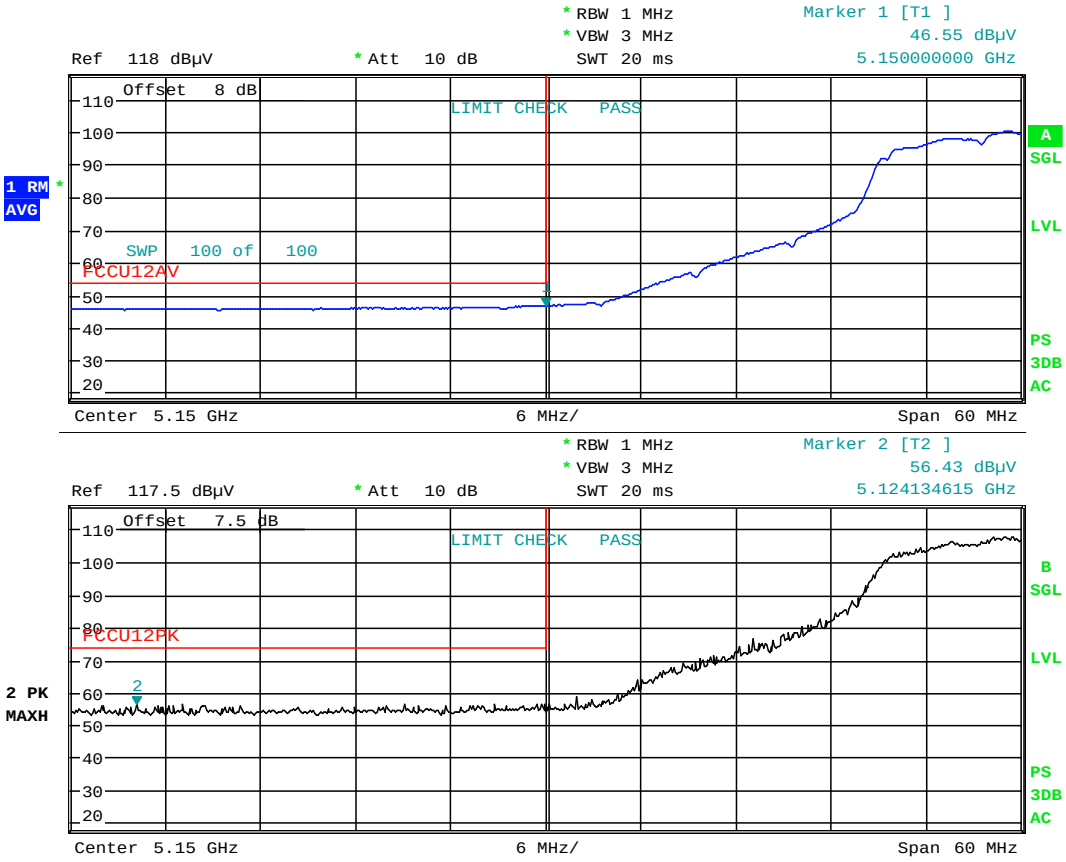
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4179.00	Average	H	-	-	-69.38	-1.41	0.00	36.21	53.98	-17.77
4179.00	Peak	H	-	-	-57.23	-1.41	0.00	48.36	73.98	-25.62
7487.00	Average	H	-	-	-71.46	10.34	0.00	45.88	53.98	-8.10
7487.00	Peak	H	-	-	-60.22	10.34	0.00	57.12	73.98	-16.86
9053.00	Average	H	-	-	-71.27	12.00	0.00	47.73	53.98	-6.25
9053.00	Peak	H	-	-	-59.19	12.00	0.00	59.81	73.98	-14.17
10795.00	Average	H	-	-	-71.76	12.58	0.00	47.82	53.98	-6.16
10795.00	Peak	H	-	-	-59.12	12.58	0.00	60.46	73.98	-13.52
12361.00	Average	H	-	-	-60.92	15.81	0.00	61.89	73.98	-12.08
12361.00	Peak	H	-	-	-71.98	15.81	0.00	50.83	53.98	-3.14
15669.00	Average	H	-	-	-62.14	15.78	0.00	60.64	73.98	-13.34
15669.00	Peak	H	-	-	-73.28	15.78	-9.54	39.96	53.98	-14.02

Plot 7-183. Radiated Measurements (ANT1 2.4GHz – ANT2 5GHz)

7.7.4 Antenna-1 Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	5180MHz
Channel:	36



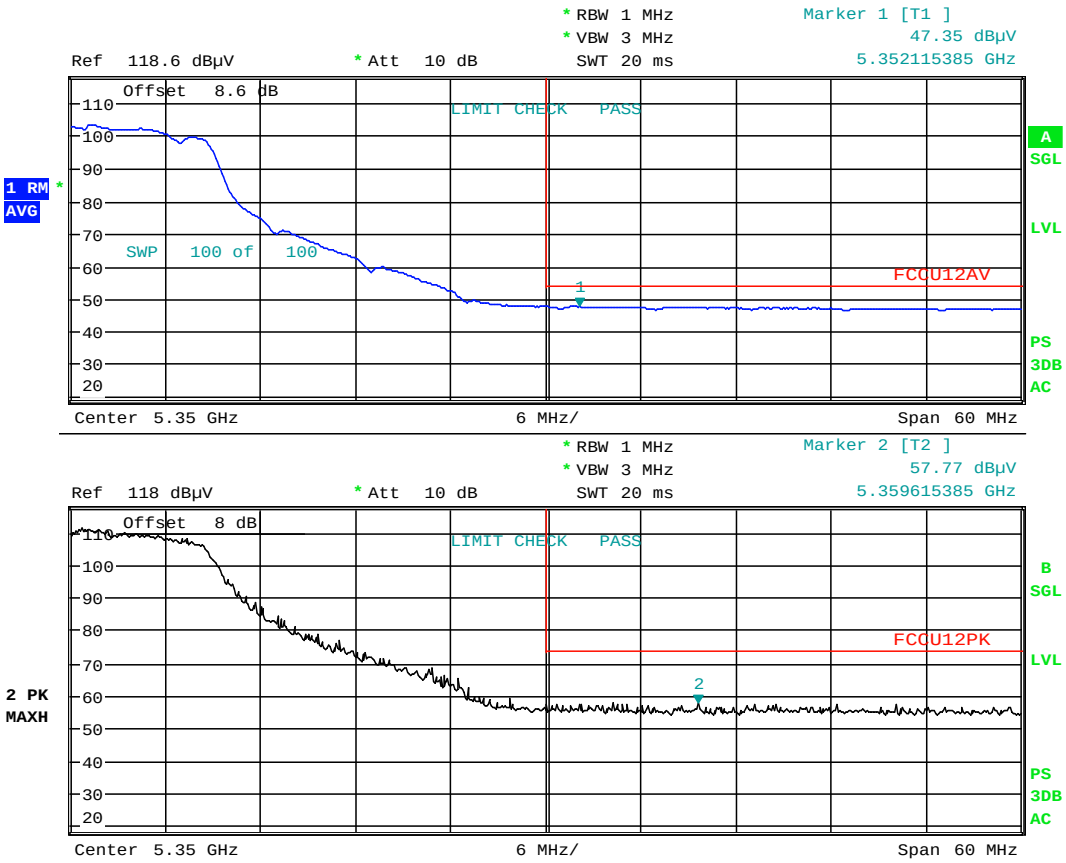
Date: 11.JUL.2017 21:21:20

Plot 7-184. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 1)

Antenna-1 Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	5320MHz
Channel:	64



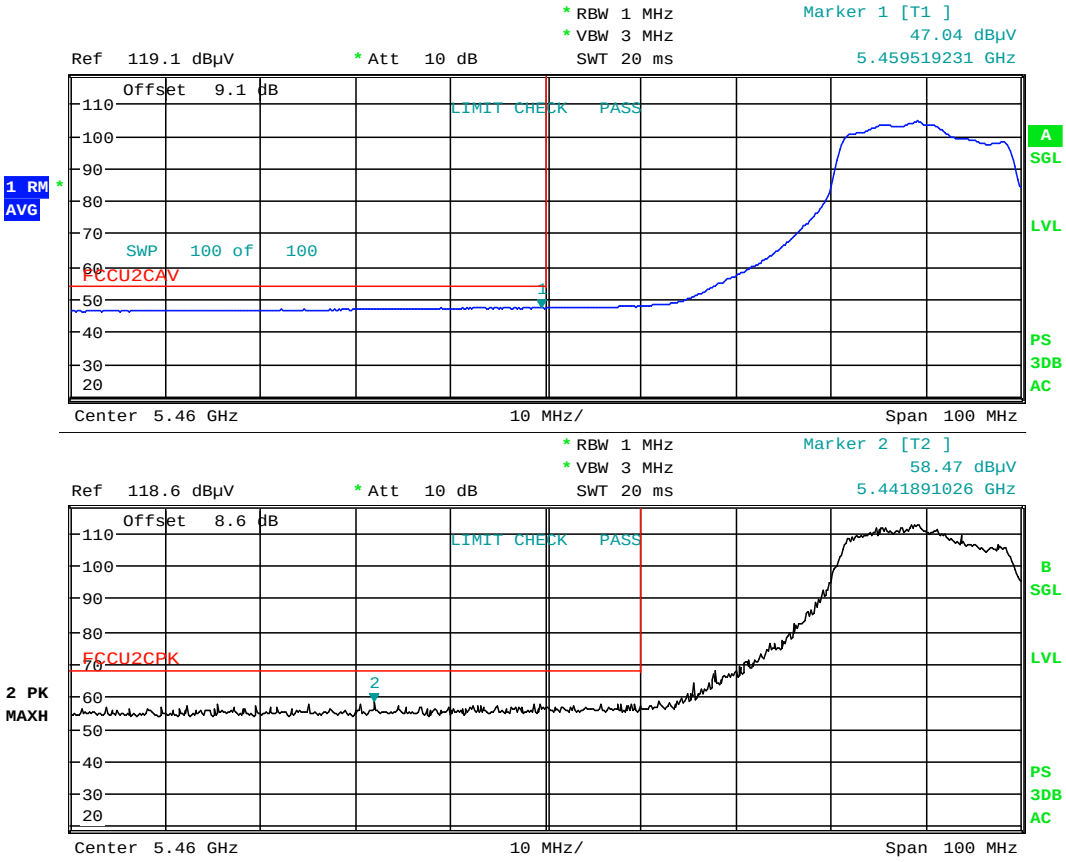
Date: 11.JUL.2017 21:29:38

Plot 7-185. Radiated Restricted Upper Band Edge Plot (Average & Peak – UNII Band 2A)

Antenna-1 Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	5500MHz
Channel:	100



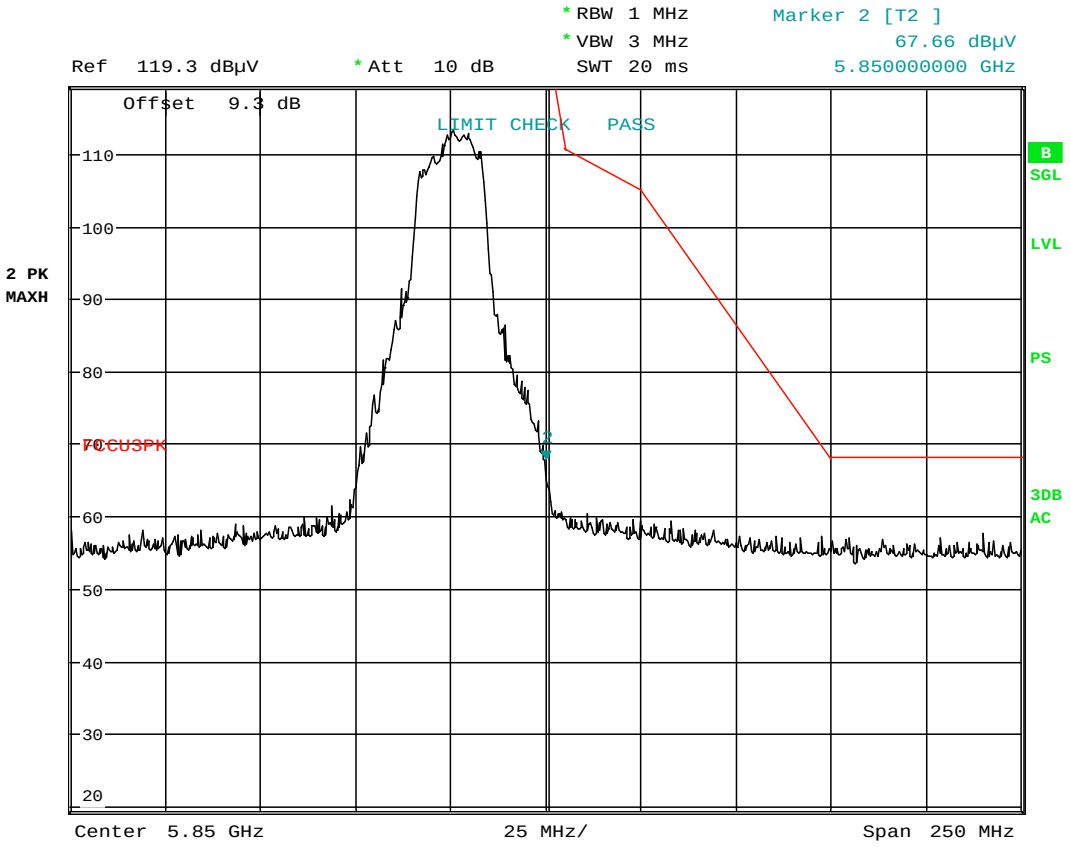
Date: 11.JUL.2017 21:36:01

Plot 7-186. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 2C)

Antenna-1 Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	5825MHz
Channel:	165



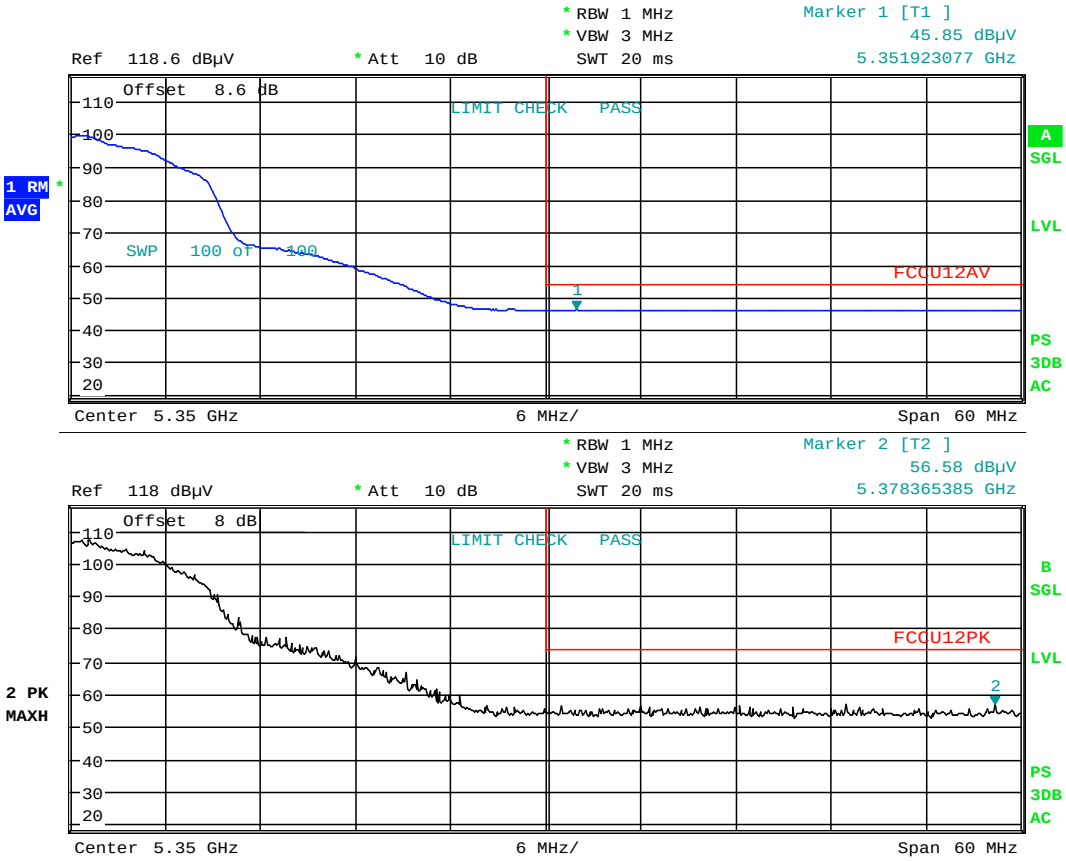
Date: 11.JUL.2017 21:48:52

Plot 7-187. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

Antenna-1 WCP Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	5320MHz
Channel:	64



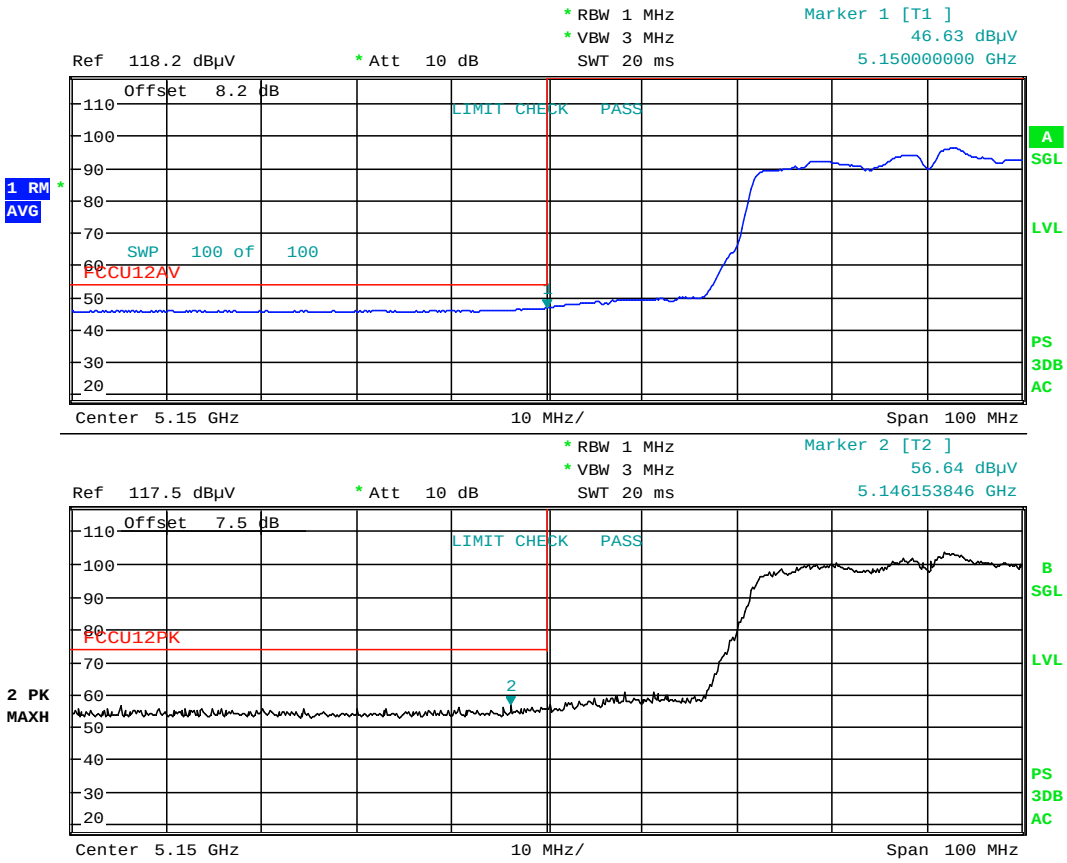
Date: 11.JUL.2017 21:57:12

Plot 7-188. Radiated Restricted Band Edge Plot with WCP

7.7.5 Antenna-1 Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11n (40MHz)
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5190MHz
Channel:	38



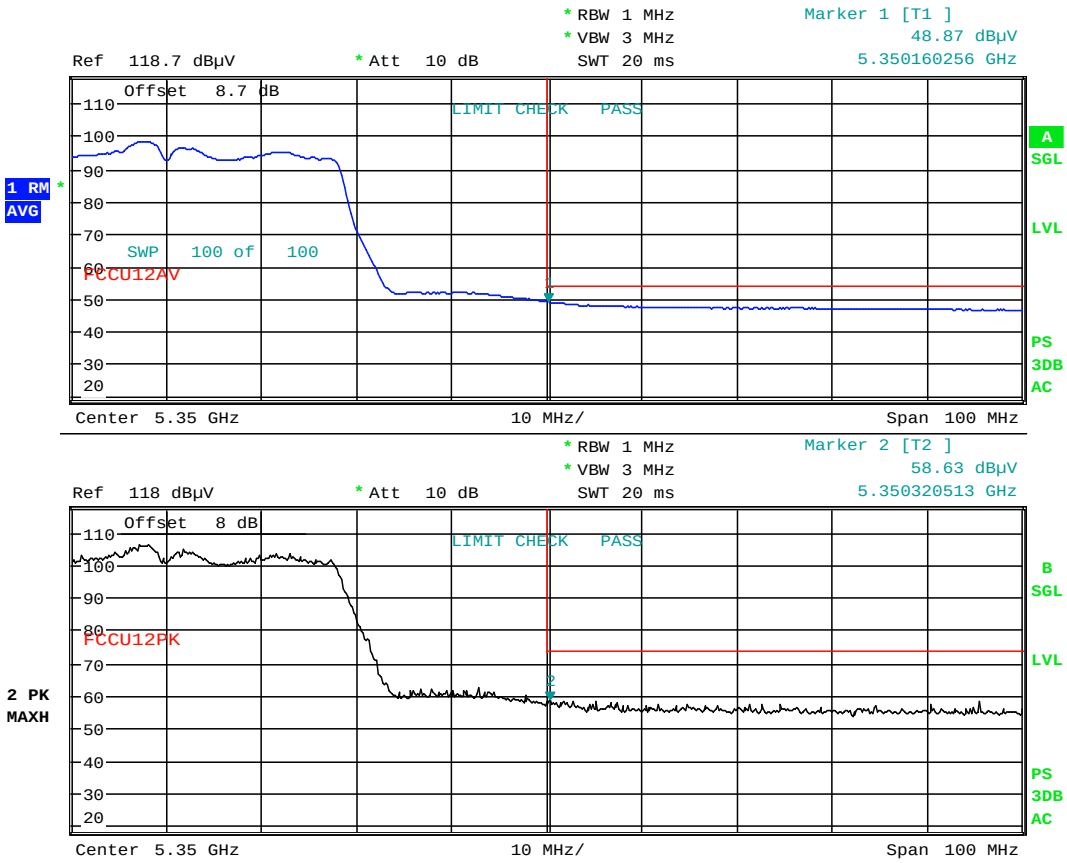
Date: 11.JUL.2017 21:22:38

Plot 7-189. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 1)

Antenna-1 Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11n (40MHz)
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5310MHz
Channel:	62



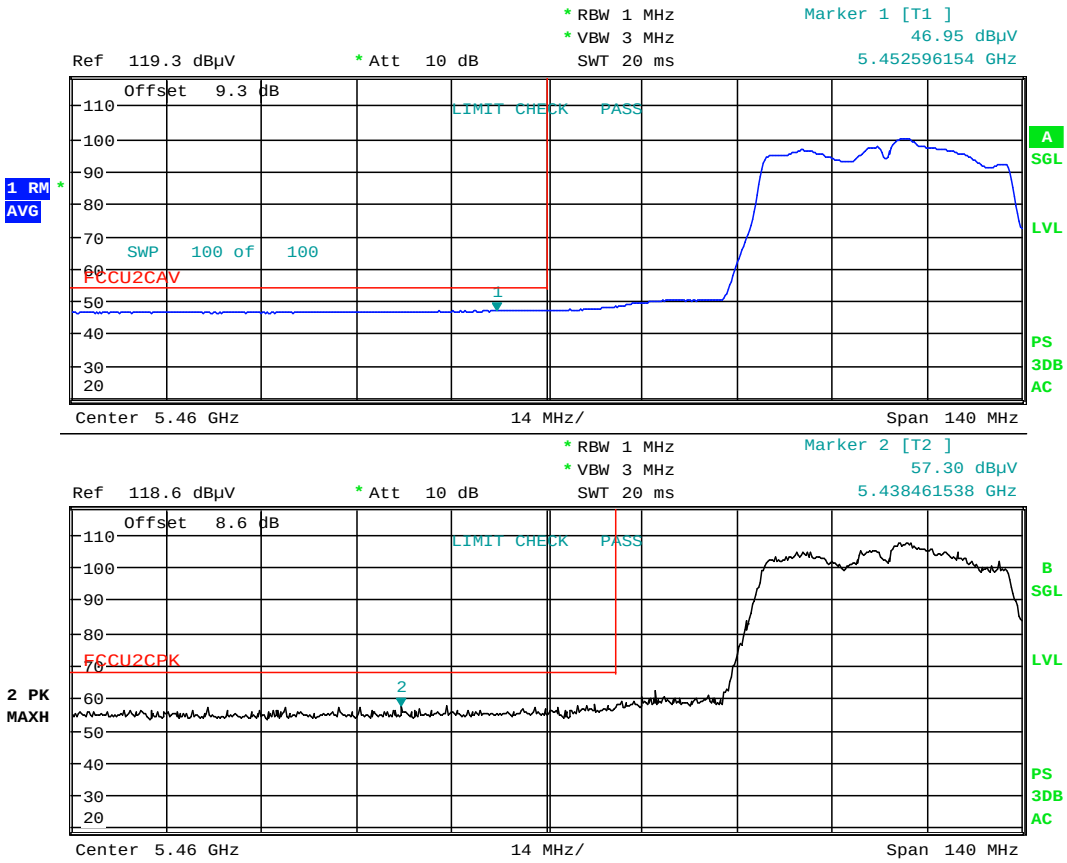
Date: 11.JUL.2017 21:30:47

Plot 7-190. Radiated Restricted Upper Band Edge Plot (Average & Peak – UNII Band 2A)

Antenna-1 Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11n (40MHz)
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5510MHz
Channel:	102



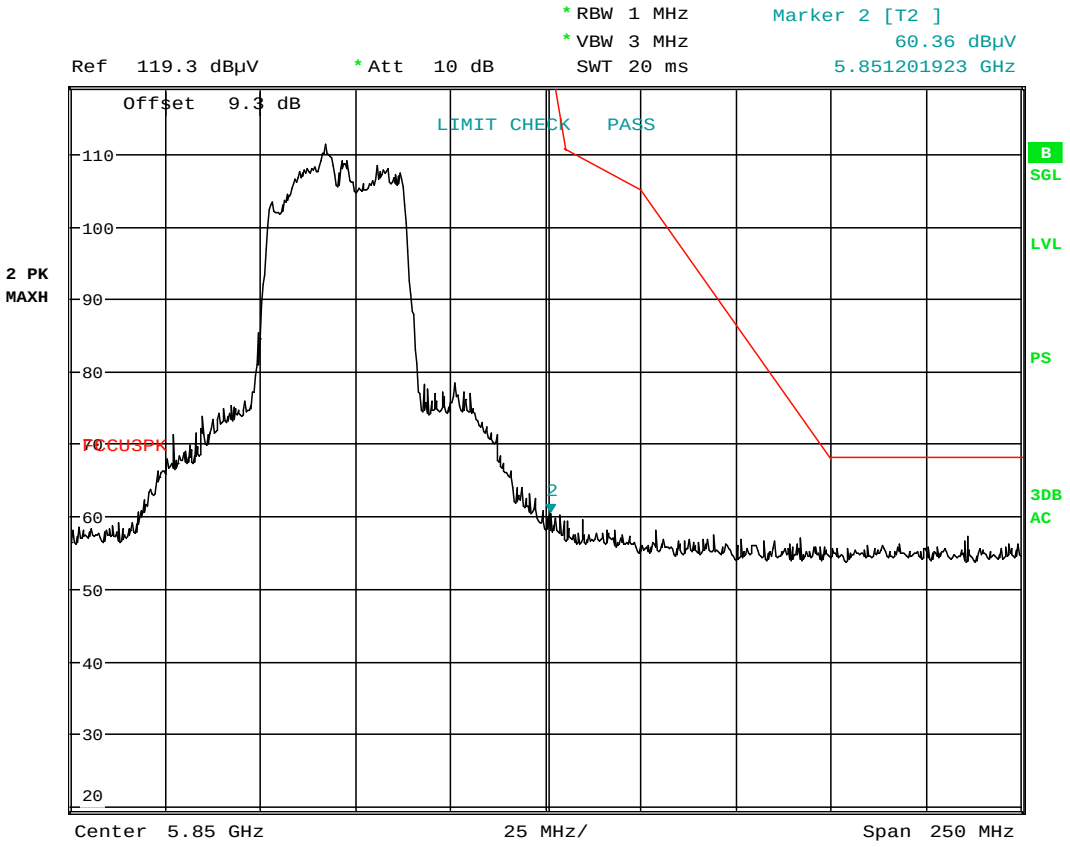
Date: 11.JUL.2017 21:37:31

Plot 7-191. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 2C)

Antenna-1 Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11n (40MHz)
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5795MHz
Channel:	159



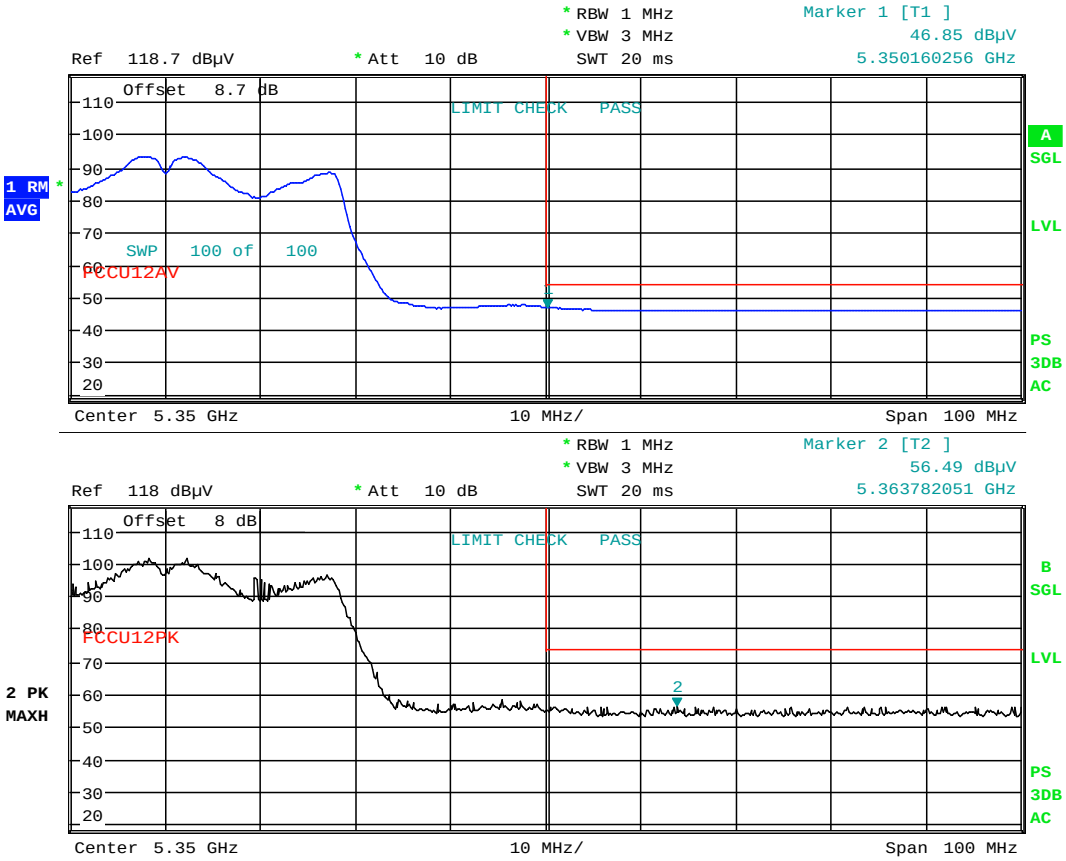
Date: 11.JUL.2017 21:50:01

Plot 7-192. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

Antenna-1 WCP Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	5310MHz
Channel:	62



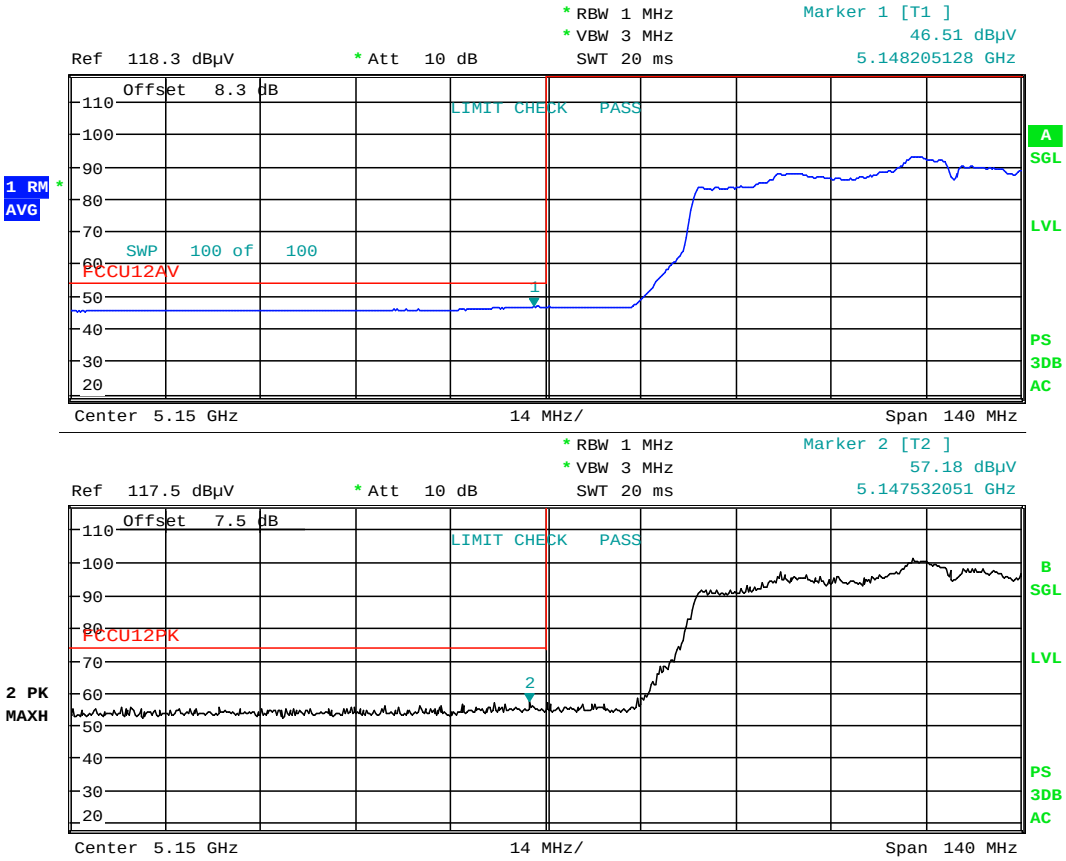
Date: 11.JUL.2017 21:58:39

Plot 7-193. Radiated Restricted Band Edge Plot with WCP

7.7.6 Antenna-1 Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11n (80MHz)
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5210MHz
Channel:	42



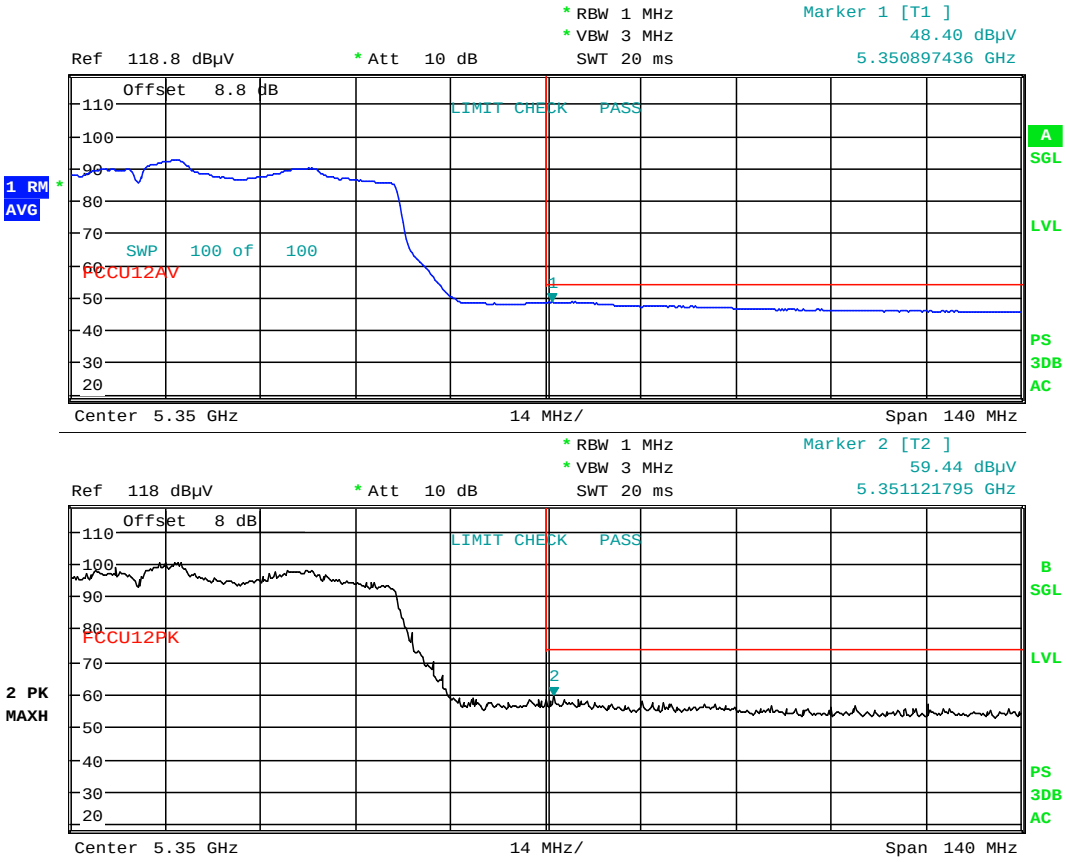
Date: 11.JUL.2017 21:23:50

Plot 7-194. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 1)

Antenna-1 Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11ac (80MHz)
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5290MHz
Channel:	58



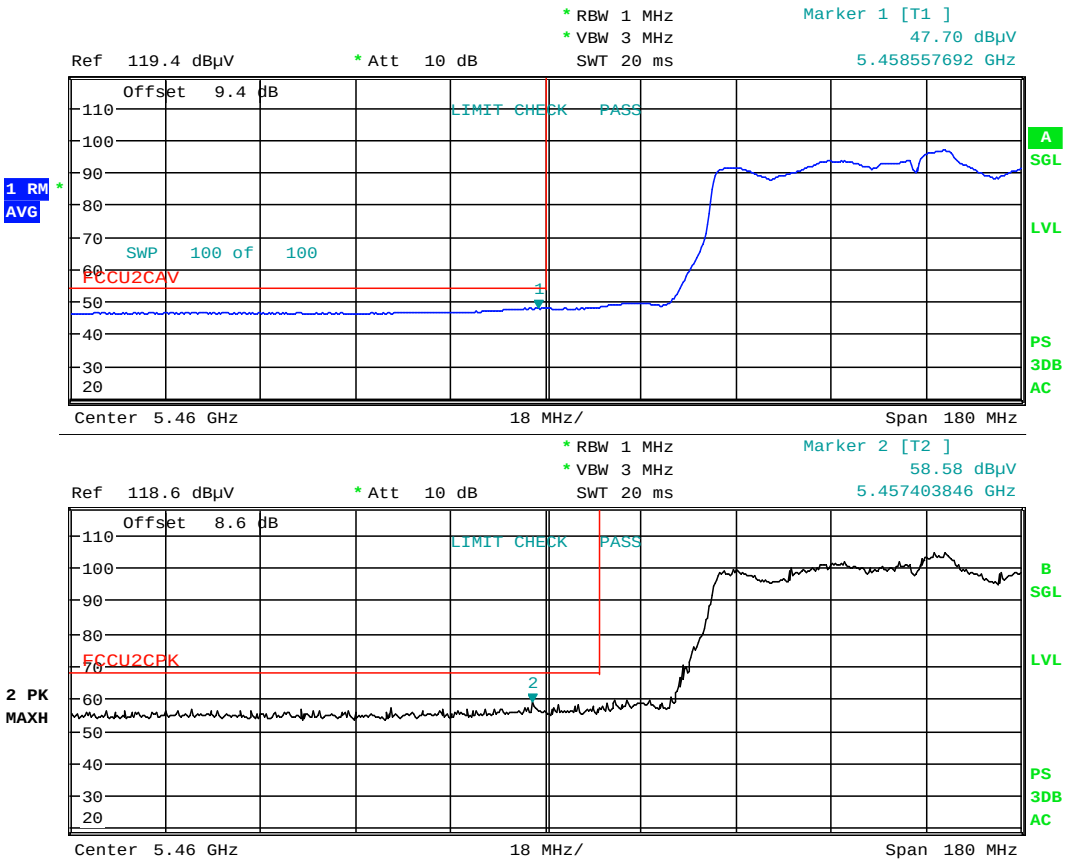
Date: 11.JUL.2017 21:32:02

Plot 7-195. Radiated Restricted Upper Band Edge Plot (Average & Peak – UNII Band 2A)

Antenna-1 Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11ac (80MHz)
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5530MHz
Channel:	106



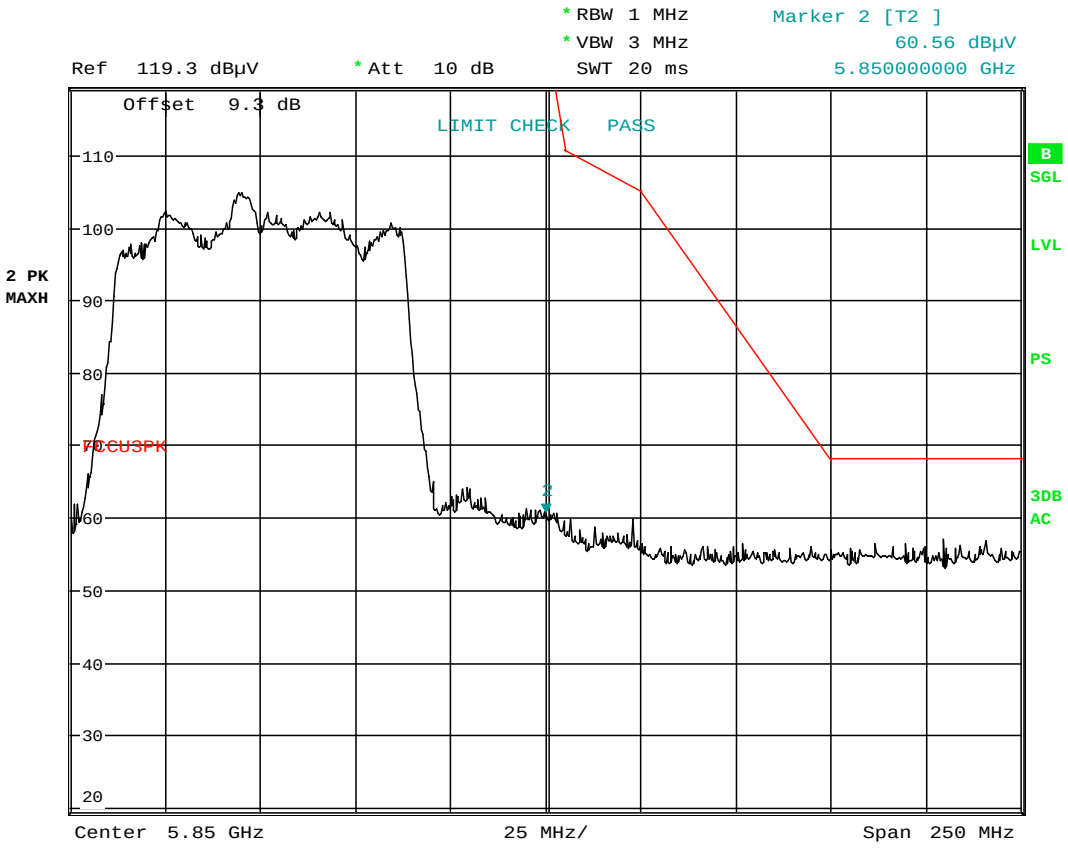
Date: 11.JUL.2017 21:39:10

Plot 7-196. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 2C)

Antenna-1 Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11ac (80MHz)
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5775MHz
Channel:	155



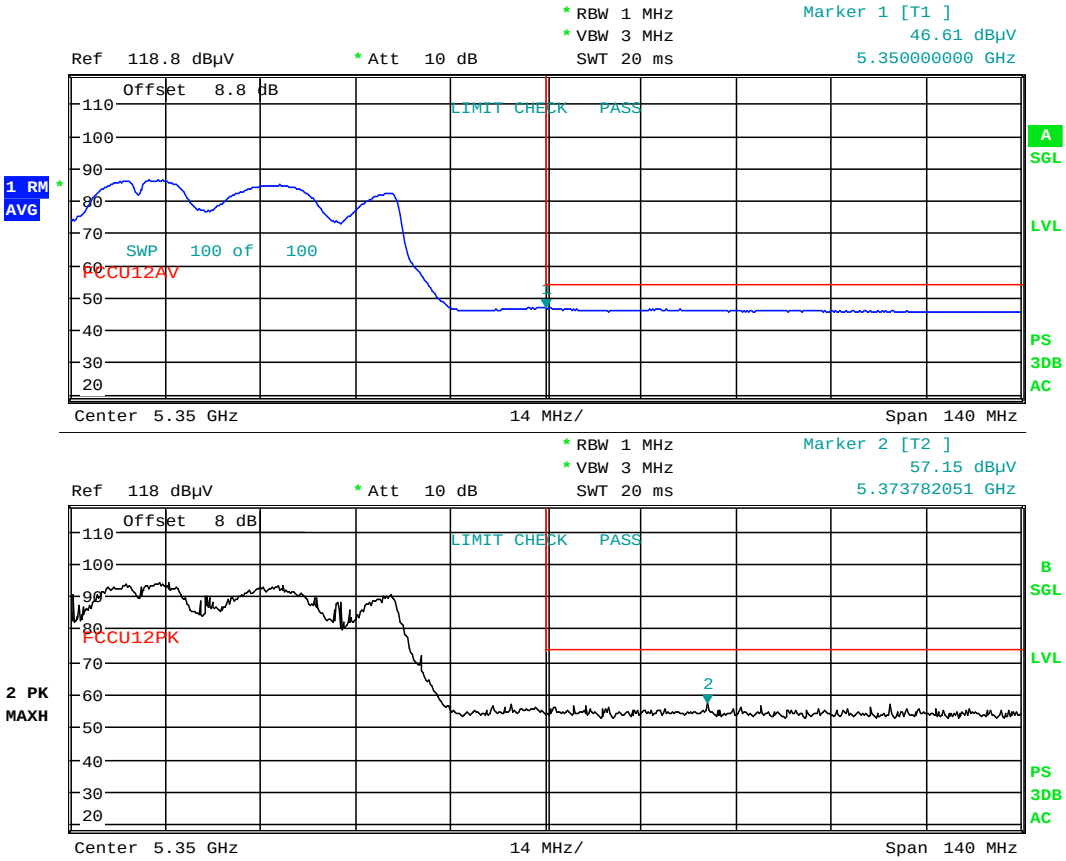
Date: 11.JUL.2017 21:51:11

Plot 7-197. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

Antenna-1 WCP Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	5290MHz
Channel:	58



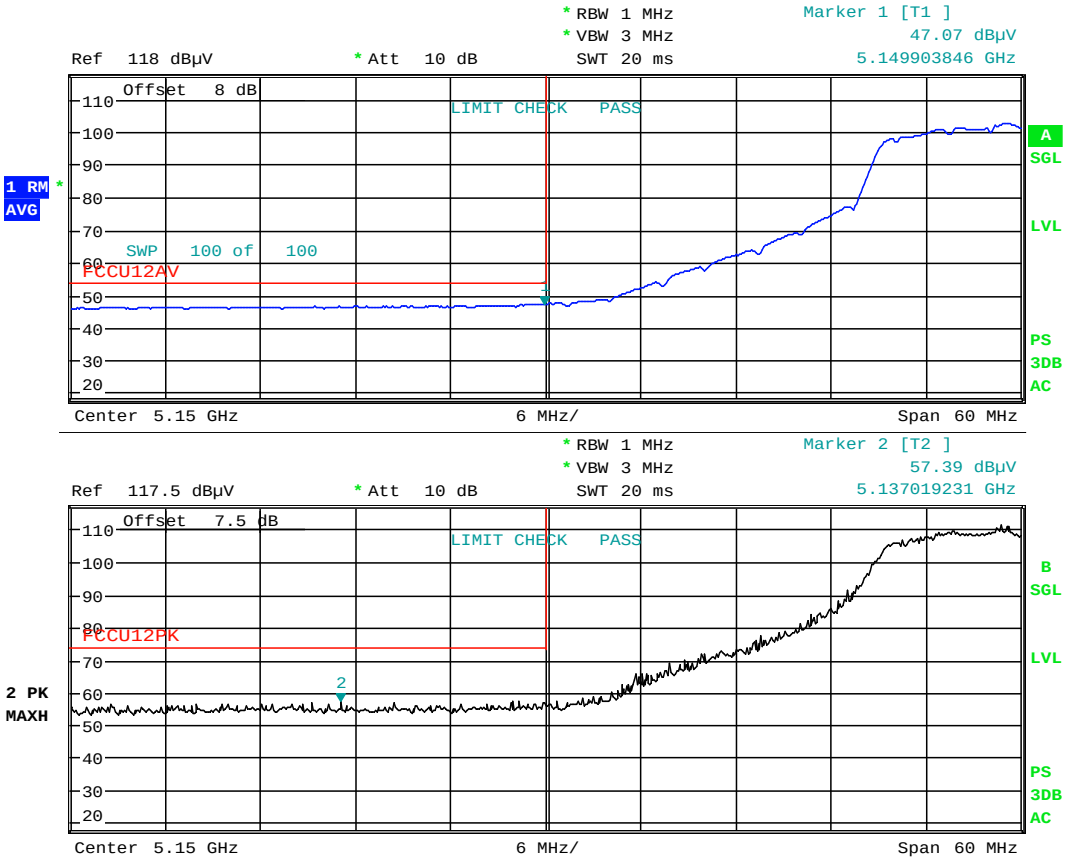
Date: 11.JUL.2017 22:00:01

Plot 7-198. Radiated Restricted Band Edge Plot with WCP

7.7.7 Antenna-2 Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	5180MHz
Channel:	36



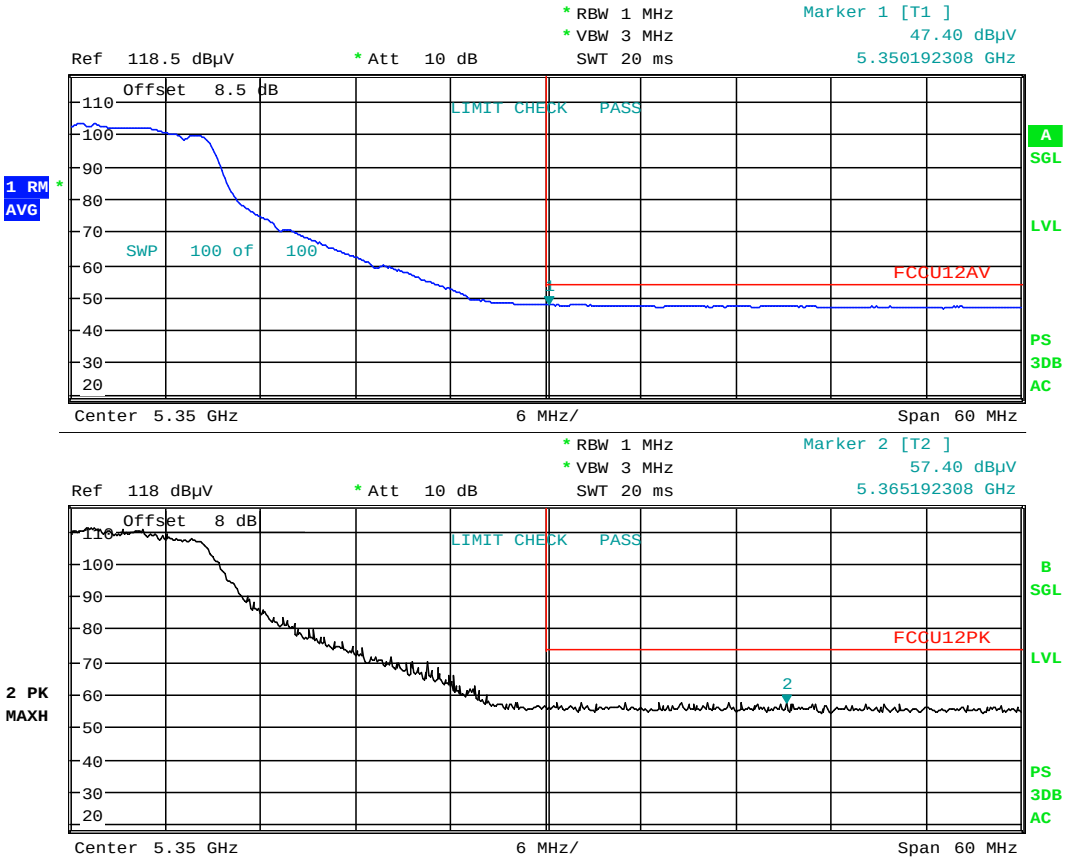
Date: 11.JUL.2017 22:04:31

Plot 7-199. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 1)

Antenna-2 Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	5320MHz
Channel:	64



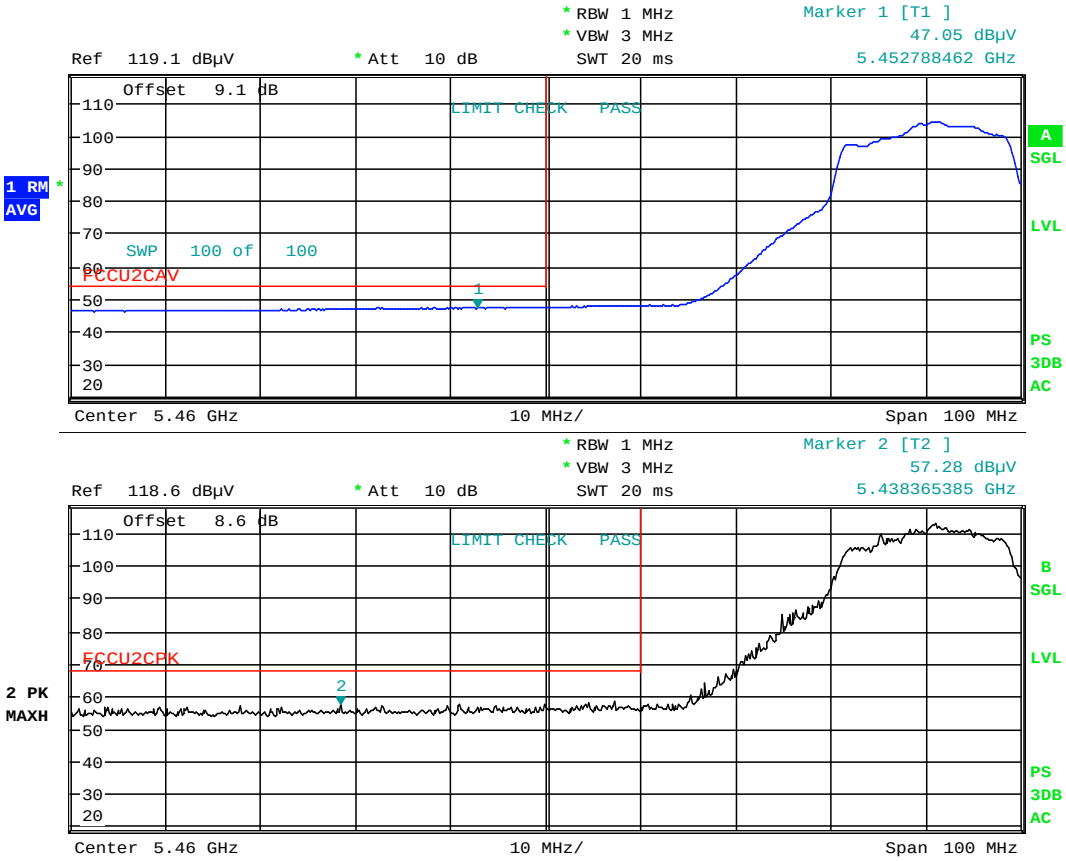
Date: 11.JUL.2017 22:13:48

Plot 7-200. Radiated Restricted Upper Band Edge Plot (Average & Peak – UNII Band 2A)

Antenna-2 Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	5500MHz
Channel:	100



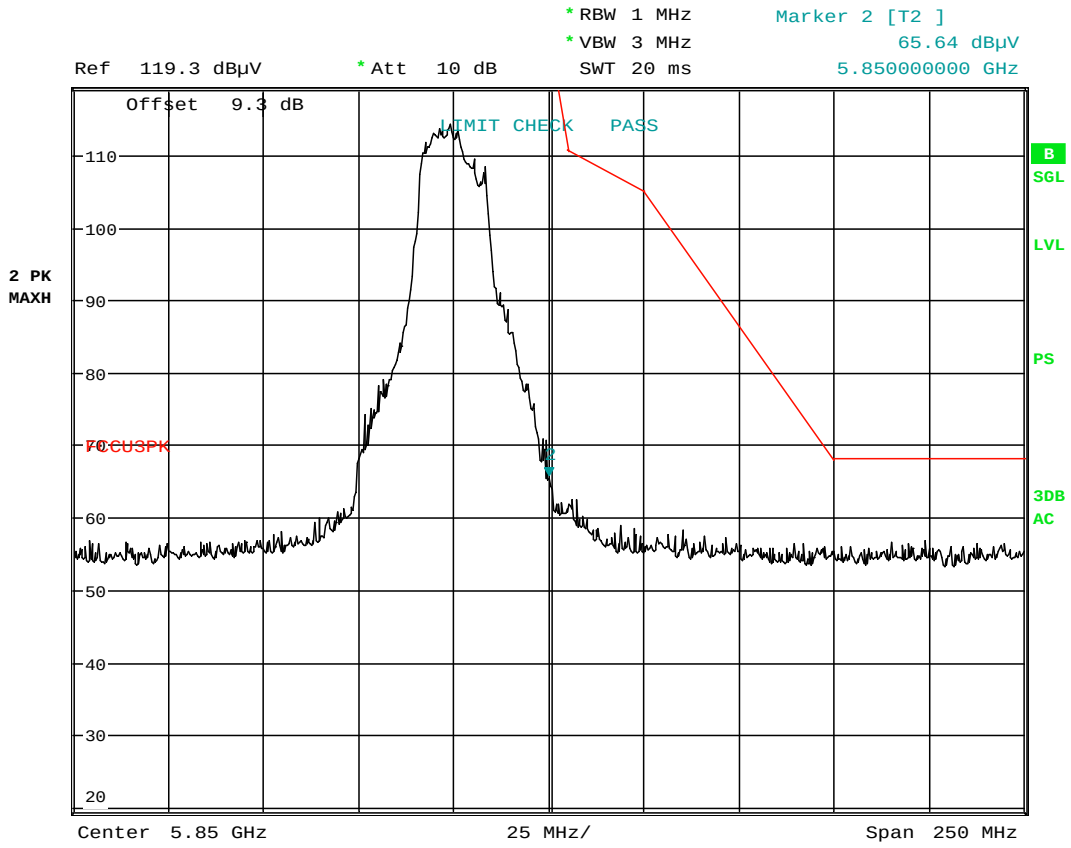
Date: 11.JUL.2017 22:21:02

Plot 7-201. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 2C)

Antenna-2 Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	5825MHz
Channel:	165



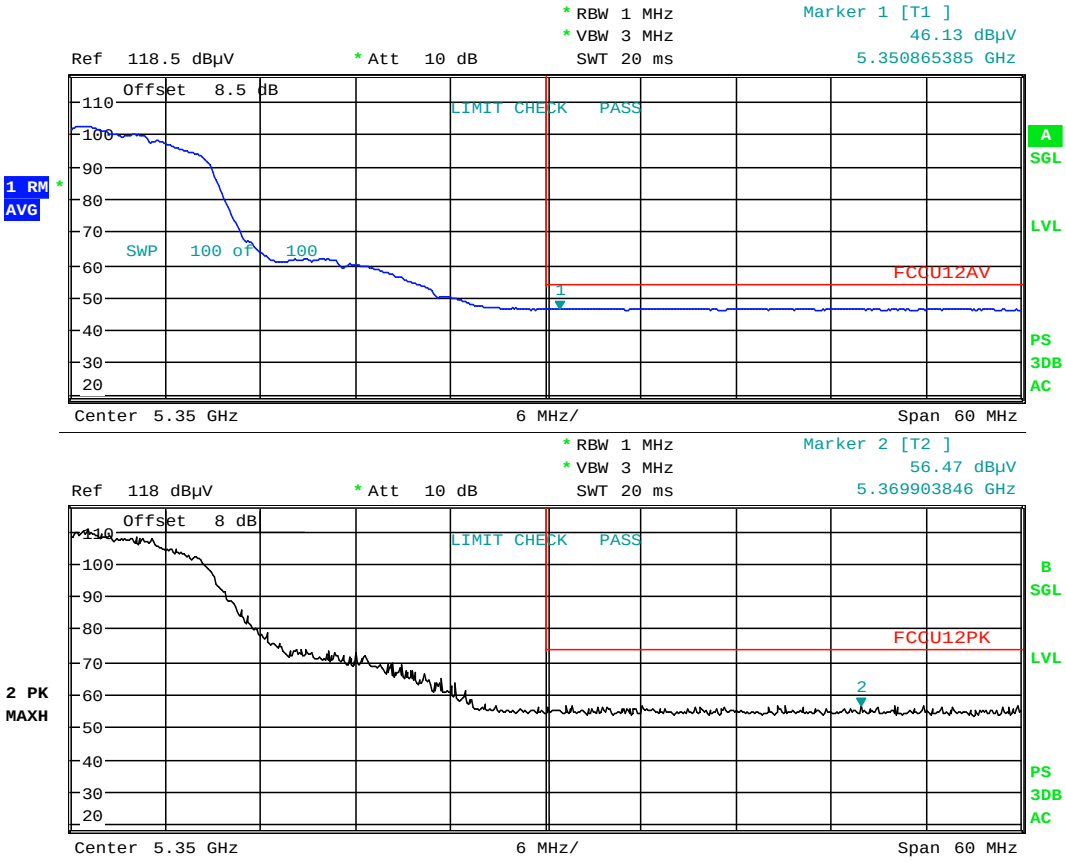
Date: 11.JUL.2017 22:28:16

Plot 7-202. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

Antenna-2 WCP Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	5320MHz
Channel:	64



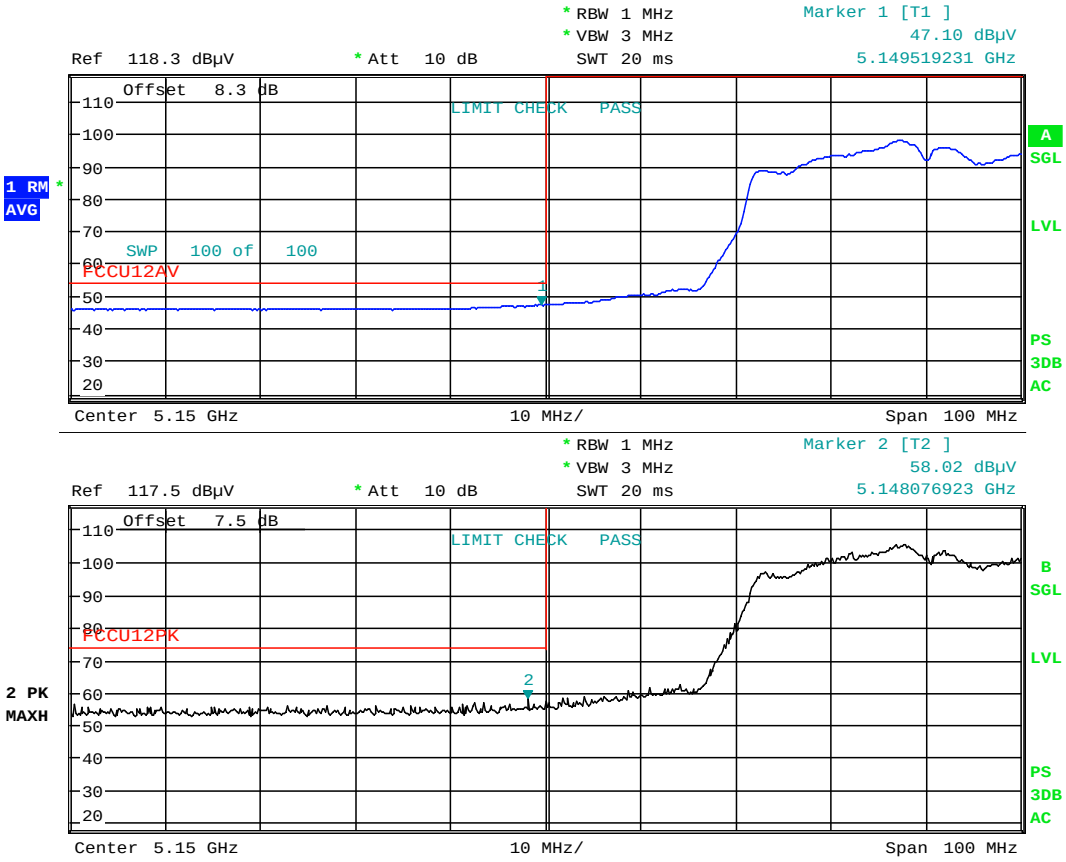
Date: 11.JUL.2017 22:35:24

Plot 7-203. Radiated Restricted Band Edge Plot with WCP

7.7.8 Antenna-2 Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11n (40MHz)
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5190MHz
Channel:	38



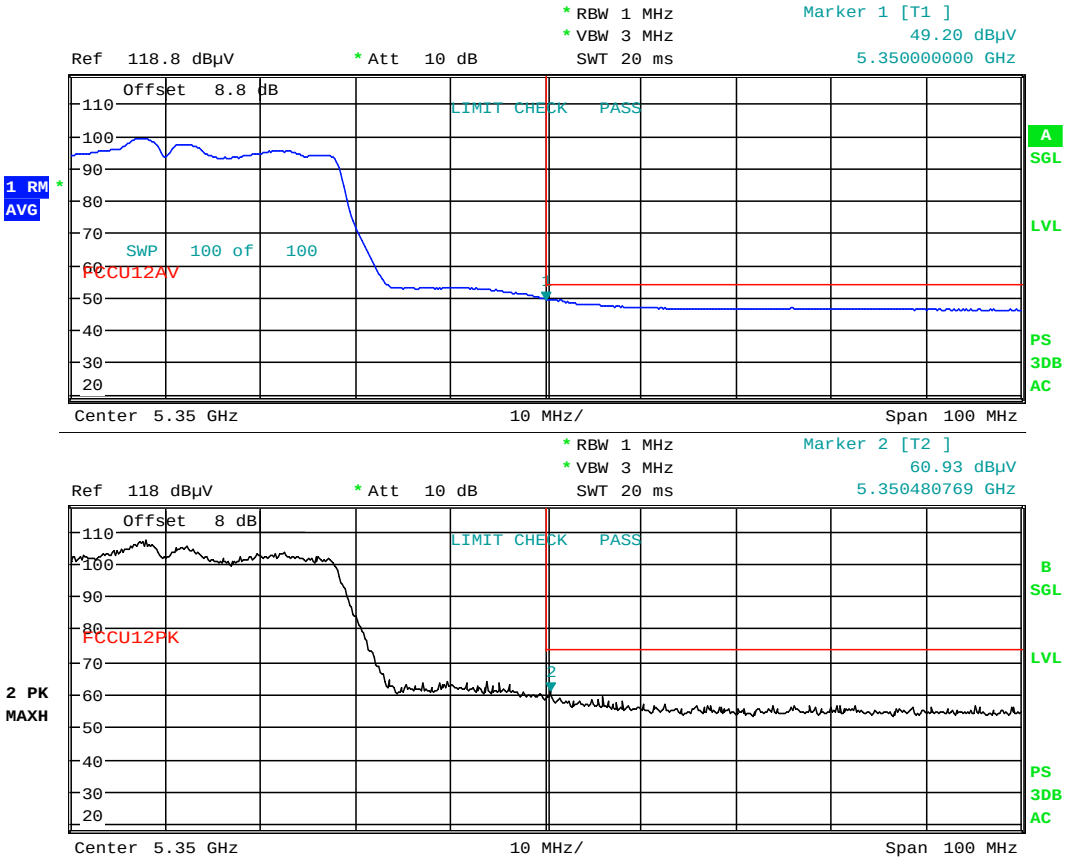
Date: 11.JUL.2017 22:05:46

Plot 7-204. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 1)

Antenna-2 Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11n (40MHz)
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5310MHz
Channel:	62



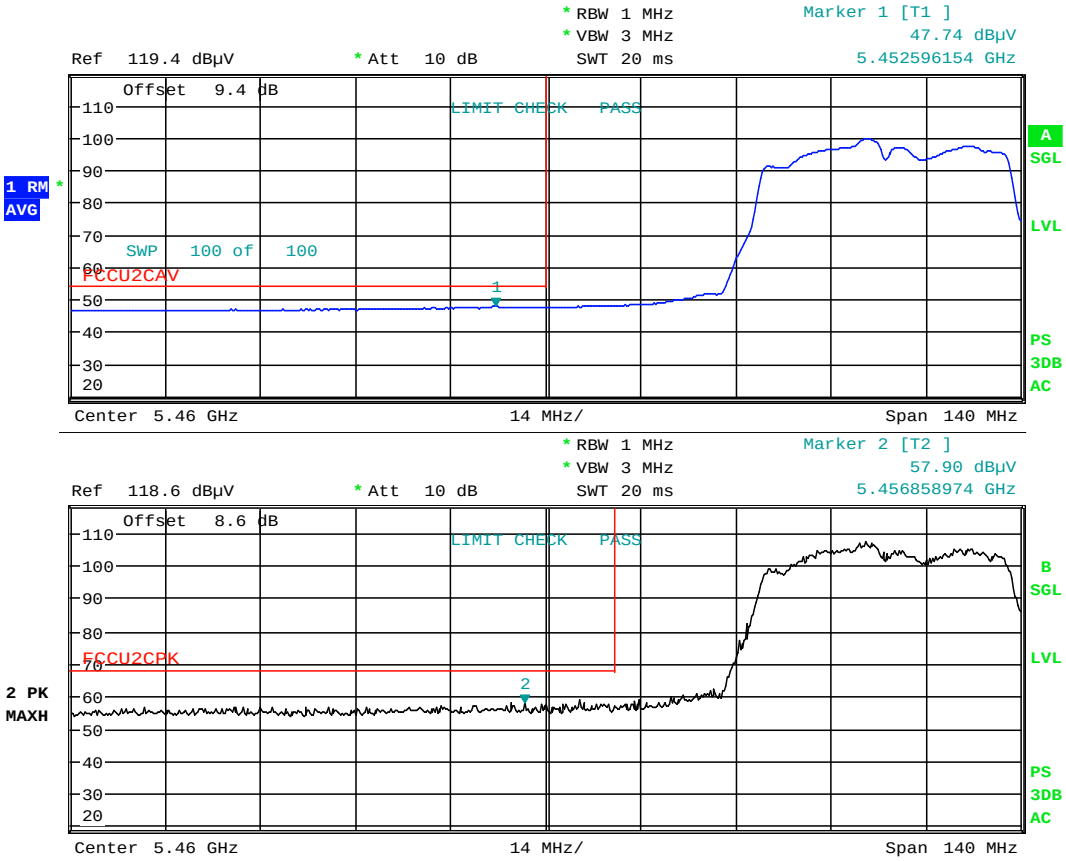
Date: 11.JUL.2017 22:14:59

Plot 7-205. Radiated Restricted Upper Band Edge Plot (Average & Peak – UNII Band 2A)

Antenna-2 Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11n (40MHz)
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5510MHz
Channel:	102



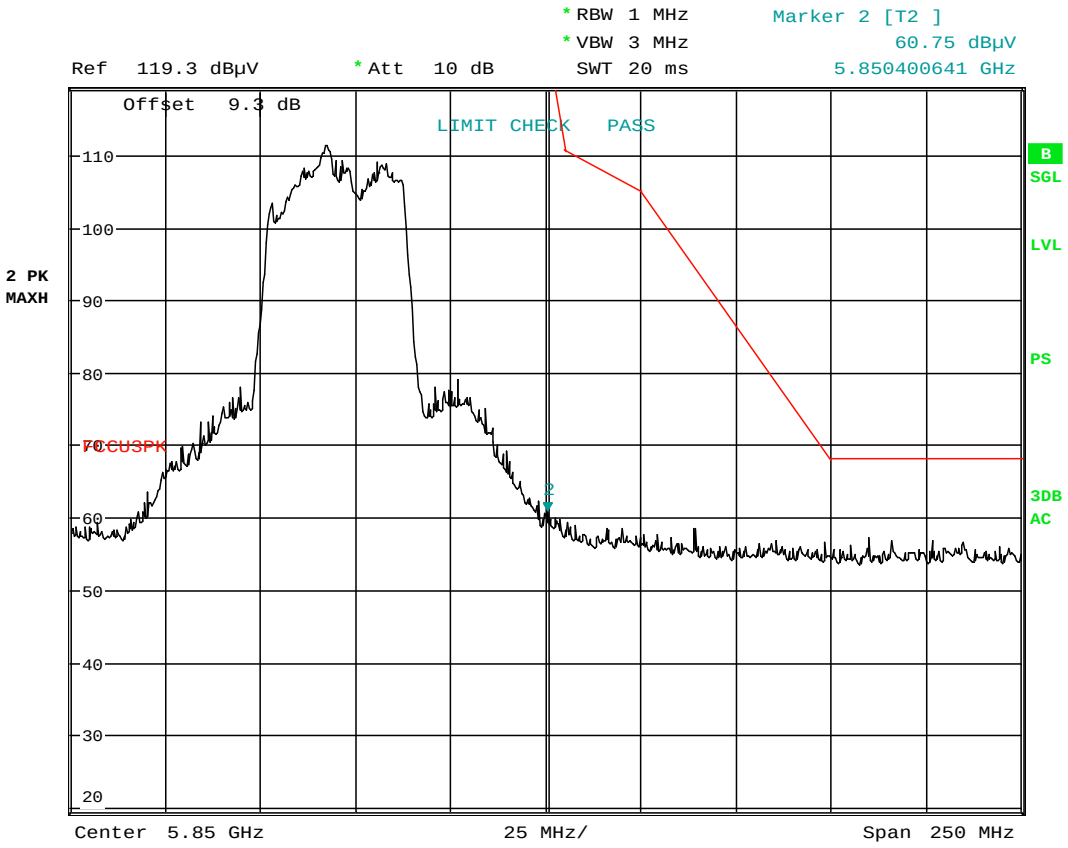
Date: 11.JUL.2017 22:22:17

Plot 7-206. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 2C)

Antenna-2 Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11n (40MHz)
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5795MHz
Channel:	159



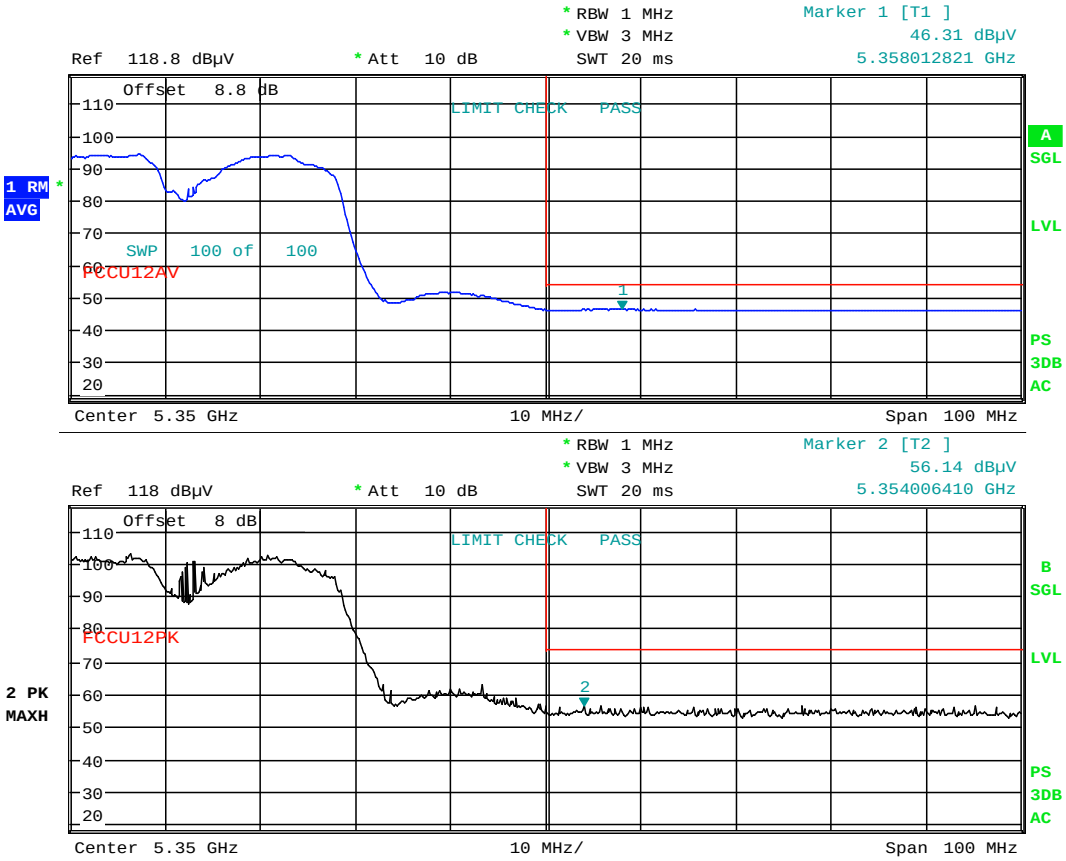
Date: 11.JUL.2017 22:29:15

Plot 7-207. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

Antenna-2 WCP Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	5310MHz
Channel:	62



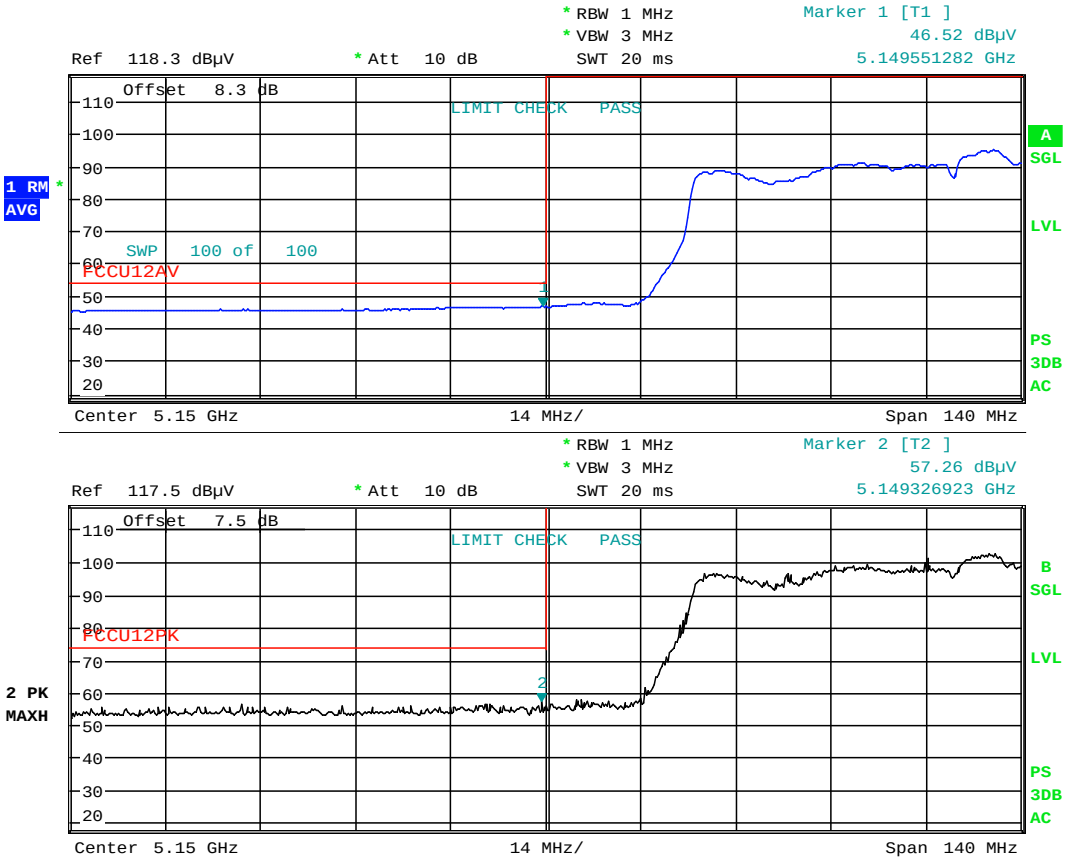
Date: 11.JUL.2017 22:36:36

Plot 7-208. Radiated Restricted Band Edge Plot with WCP

7.7.9 Antenna-2 Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11n (80MHz)
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5210MHz
Channel:	42



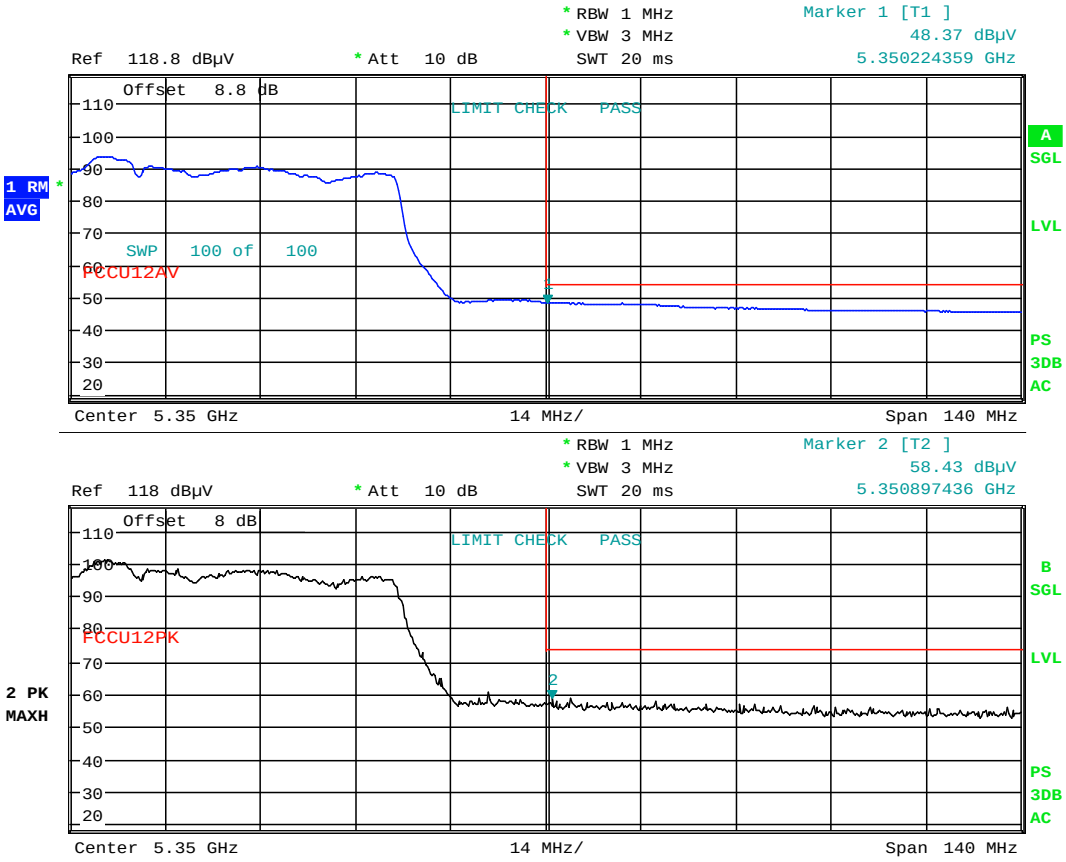
Date: 11.JUL.2017 22:06:46

Plot 7-209. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 1)

Antenna-2 Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11ac (80MHz)
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5290MHz
Channel:	58



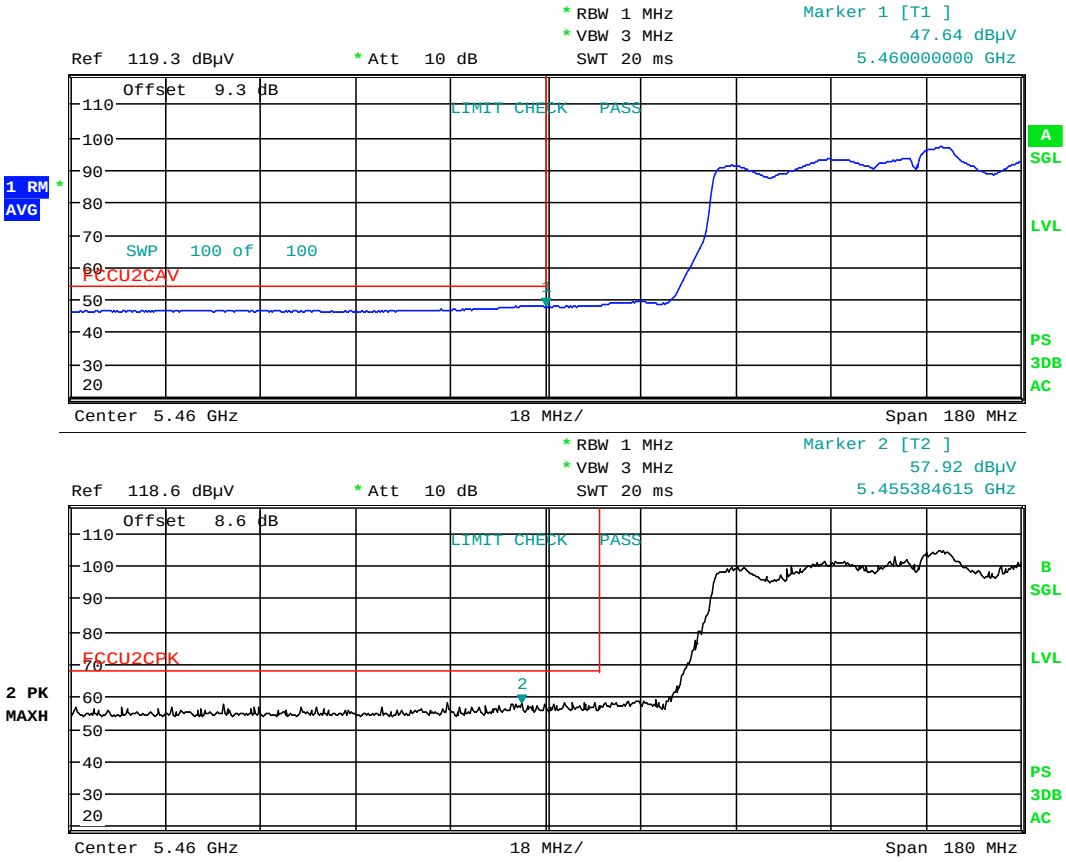
Date: 11.JUL.2017 22:16:06

Plot 7-210. Radiated Restricted Upper Band Edge Plot (Average & Peak – UNII Band 2A)

Antenna-2 Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11ac (80MHz)
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5530MHz
Channel:	106



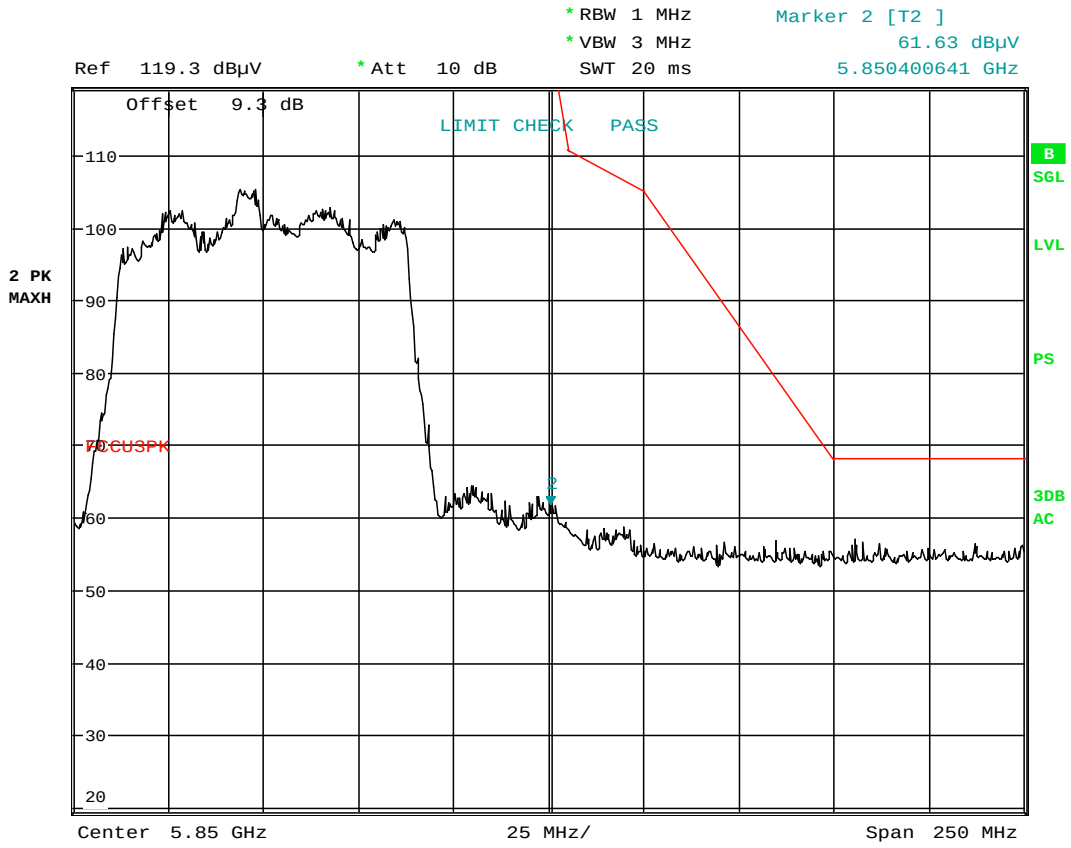
Date: 11.JUL.2017 22:23:43

Plot 7-211. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 2C)

Antenna-2 Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11ac (80MHz)
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5775MHz
Channel:	155



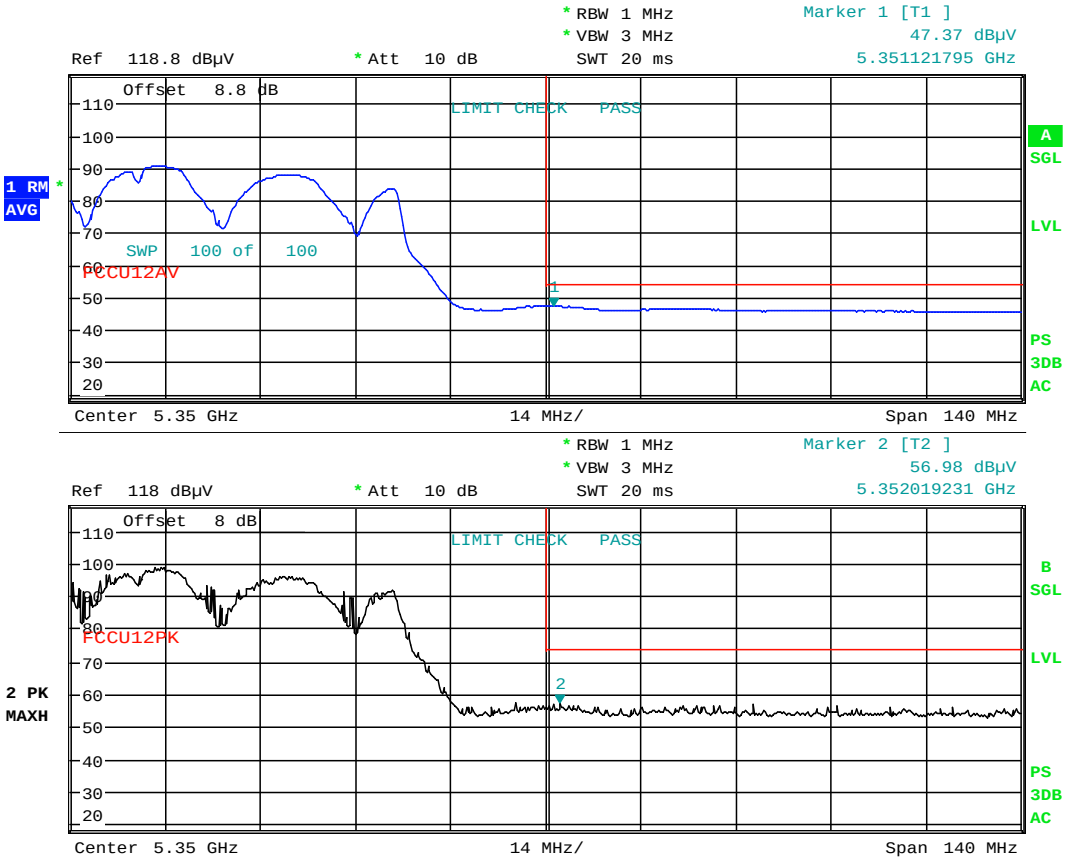
Date: 11.JUL.2017 22:30:18

Plot 7-212. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

Antenna-2 WCP Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	5290MHz
Channel:	58



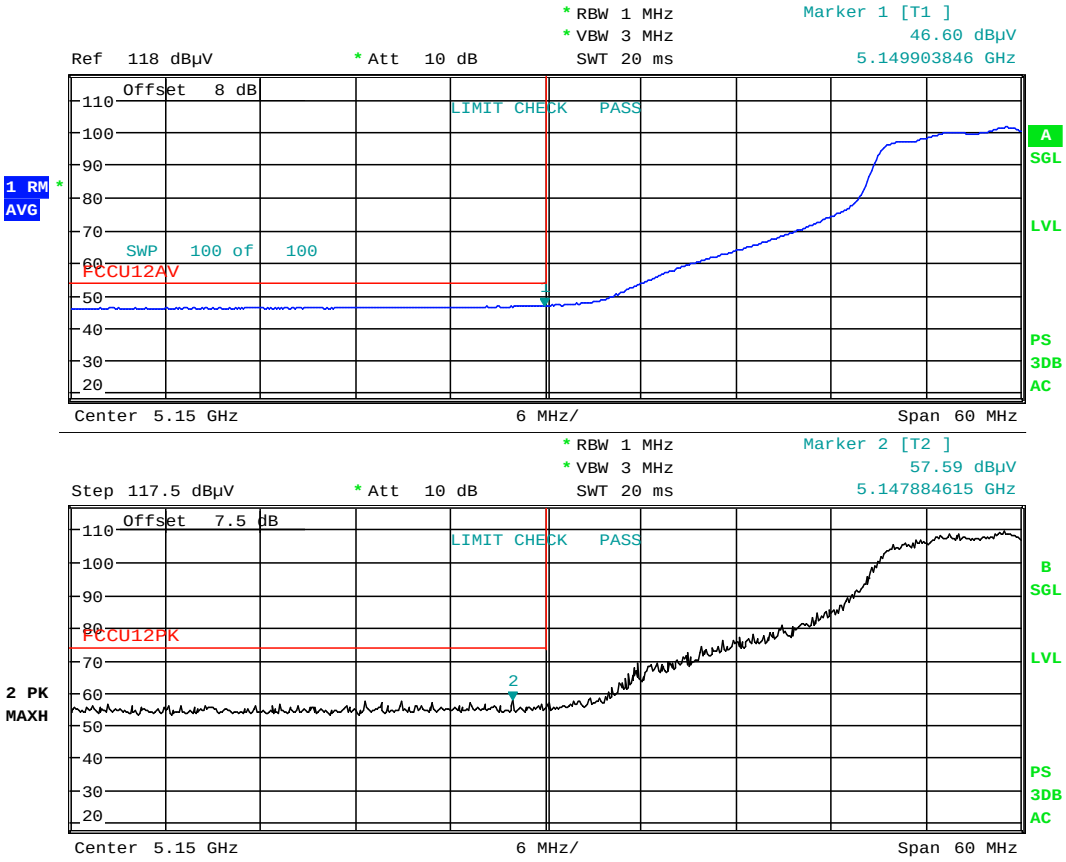
Date: 11.JUL.2017 22:37:53

Plot 7-213. Radiated Restricted Band Edge Plot with WCP

7.7.10 MIMO Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11n (20MHz)
Worst Case Transfer Rate:	MCS8
Distance of Measurements:	3 Meters
Operating Frequency:	5180MHz
Channel:	36



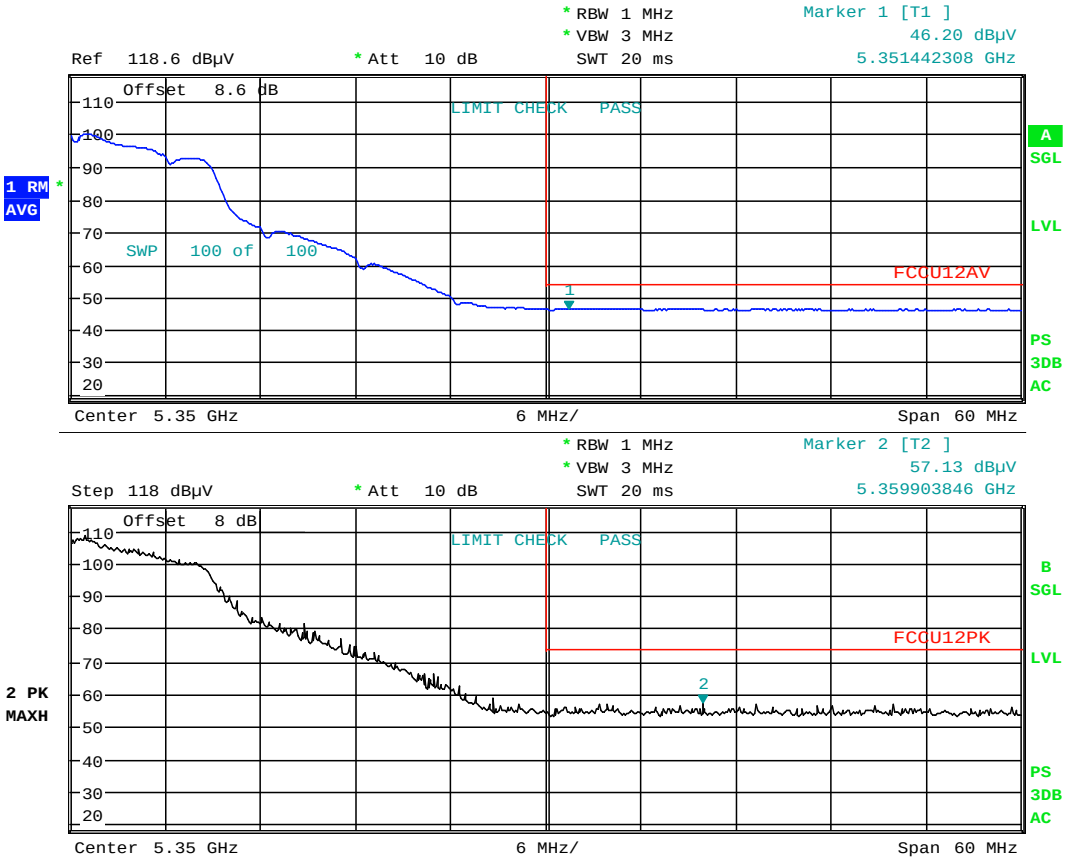
Date: 11.JUL.2017 20:06:54

Plot 7-214. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 1)

MIMO Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11n (20MHz)
Worst Case Transfer Rate:	MCS8
Distance of Measurements:	3 Meters
Operating Frequency:	5320MHz
Channel:	64



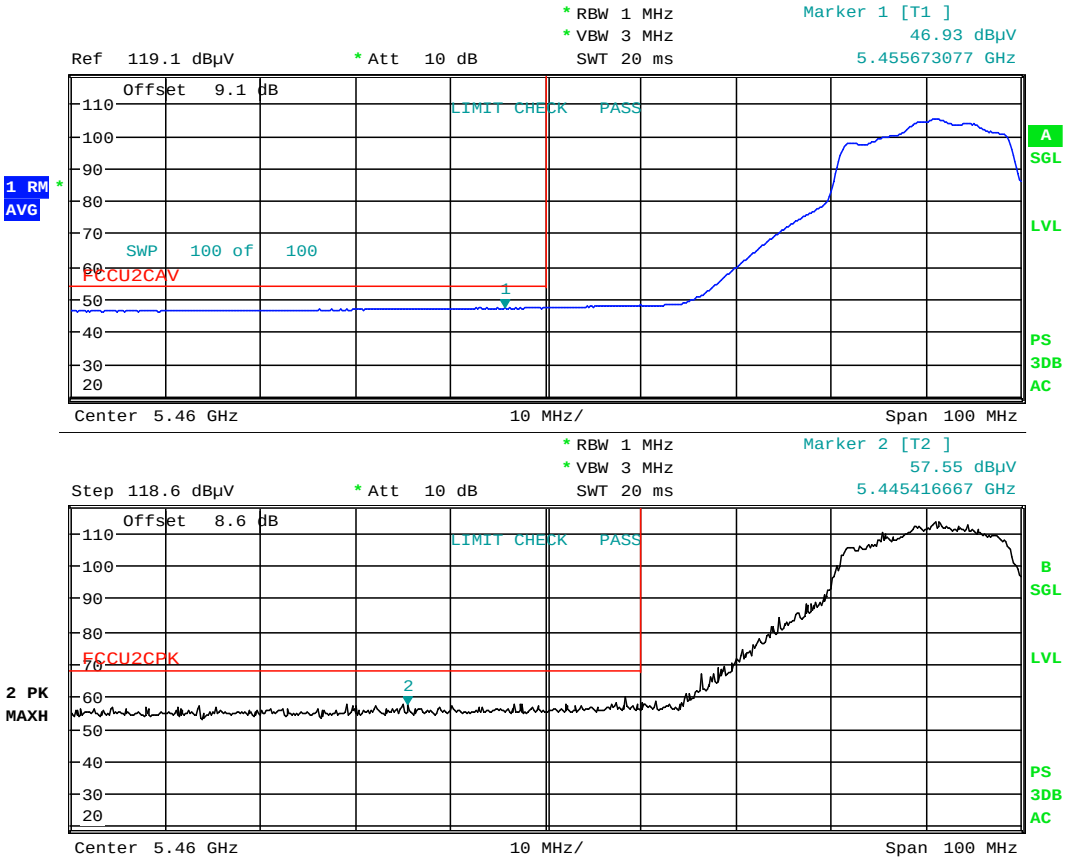
Date: 11.JUL.2017 20:15:19

Plot 7-215. Radiated Restricted Upper Band Edge Plot (Average & Peak – UNII Band 2A)

MIMO Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11n (20MHz)
Worst Case Transfer Rate:	MCS8
Distance of Measurements:	3 Meters
Operating Frequency:	5500MHz
Channel:	100



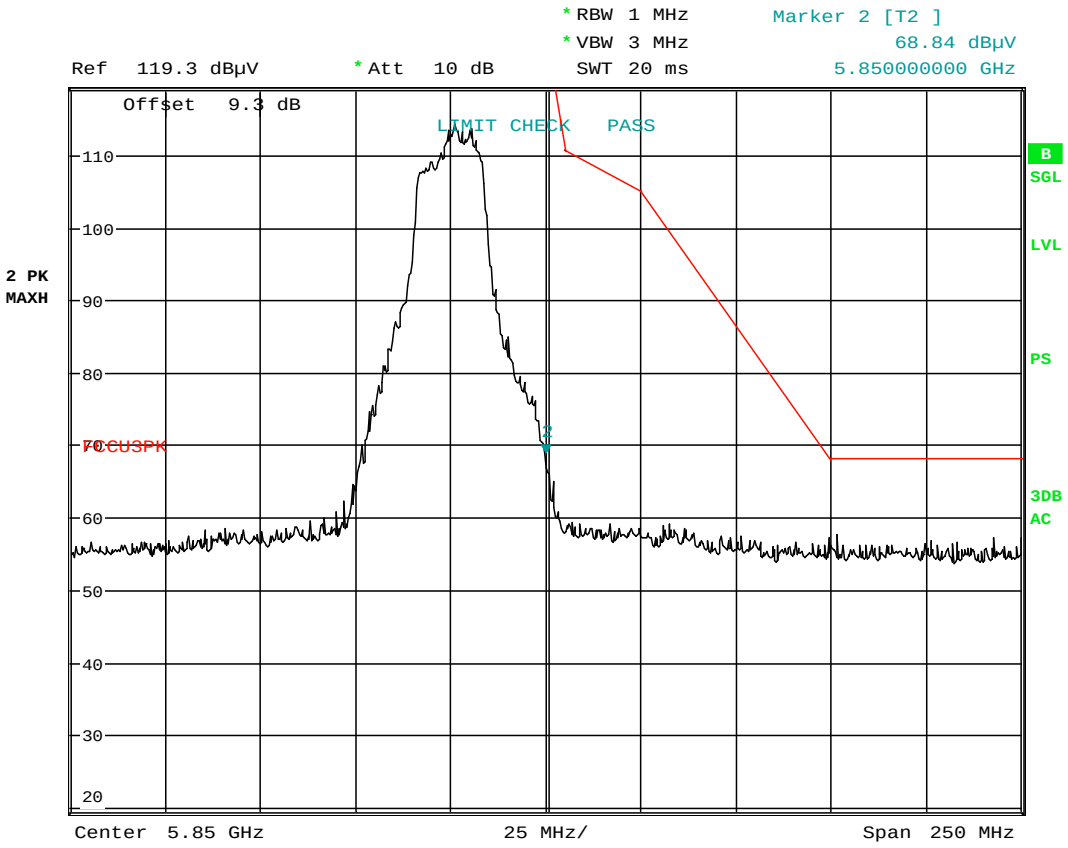
Date: 11.JUL.2017 20:26:56

Plot 7-216. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 2C)

MIMO Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11n (20MHz)
Worst Case Transfer Rate:	MCS8
Distance of Measurements:	3 Meters
Operating Frequency:	5825MHz
Channel:	165



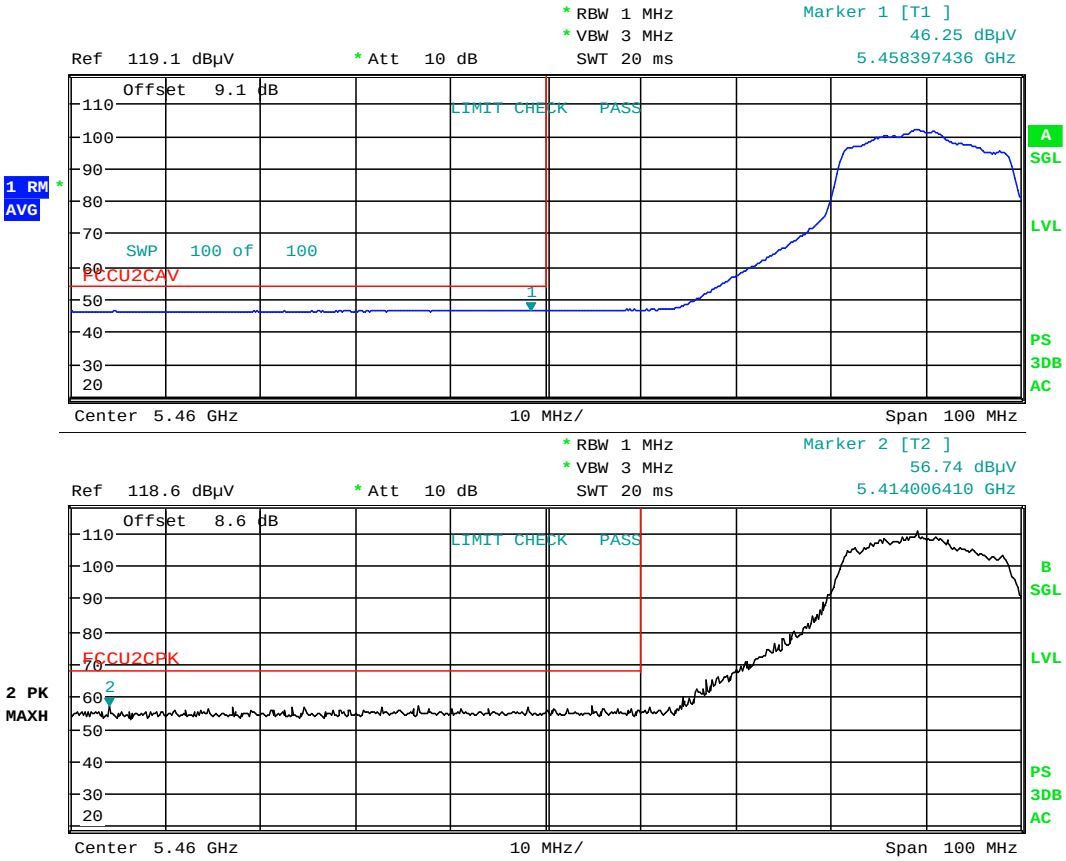
Date: 11.JUL.2017 20:36:00

Plot 7-217. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

MIMO WCP Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11n (20MHz)
Worst Case Transfer Rate:	MCS8
Distance of Measurements:	3 Meters
Operating Frequency:	5550MHz
Channel:	100



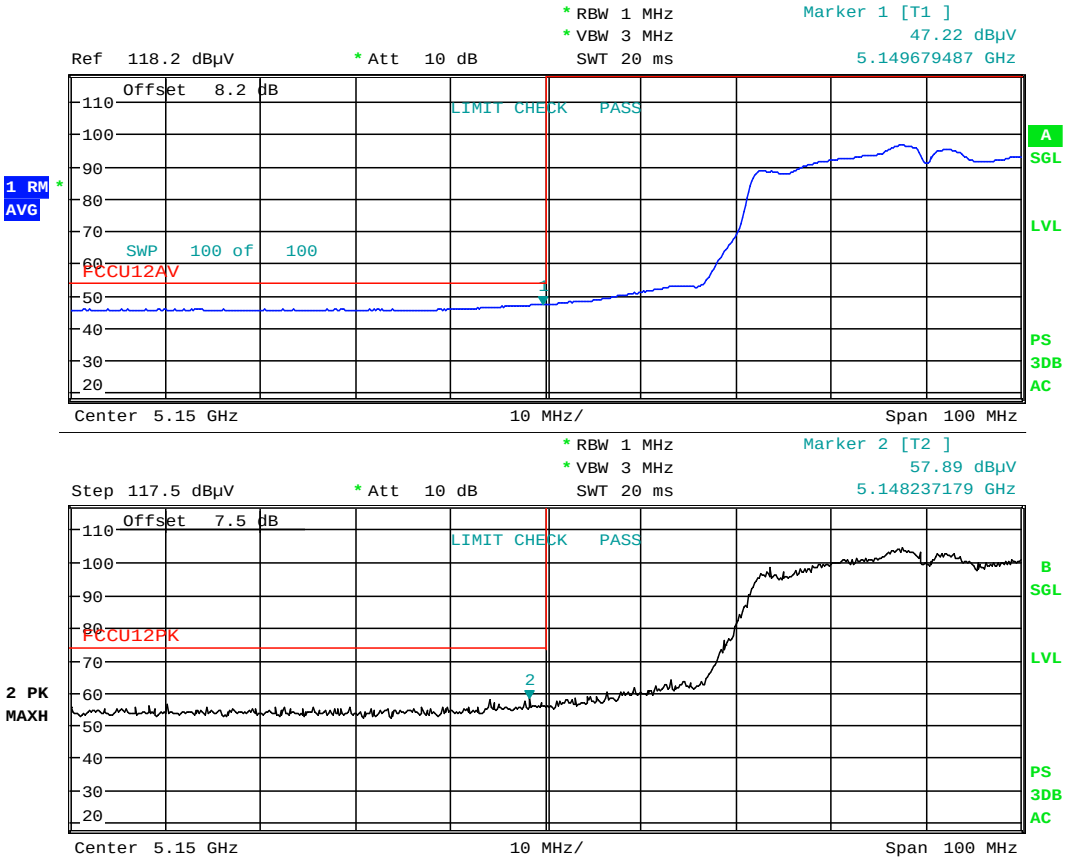
Date: 11.JUL.2017 20:44:37

Plot 7-218. Radiated Restricted Band Edge Plot with WCP

7.7.11 MIMO Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11n (40MHz)
Worst Case Transfer Rate:	MCS8
Distance of Measurements:	3 Meters
Operating Frequency:	5190MHz
Channel:	38



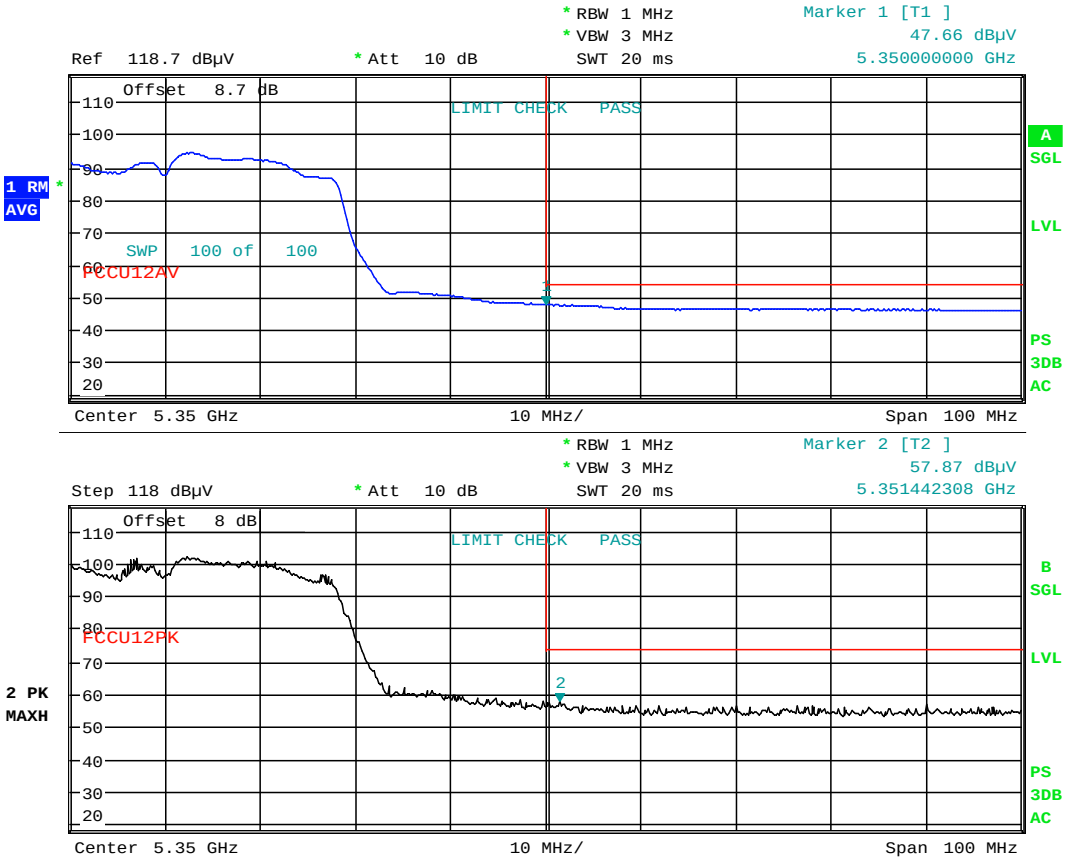
Date: 11.JUL.2017 20:09:04

Plot 7-219. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 1)

MIMO Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11n (40MHz)
Worst Case Transfer Rate:	MCS8
Distance of Measurements:	3 Meters
Operating Frequency:	5310MHz
Channel:	62



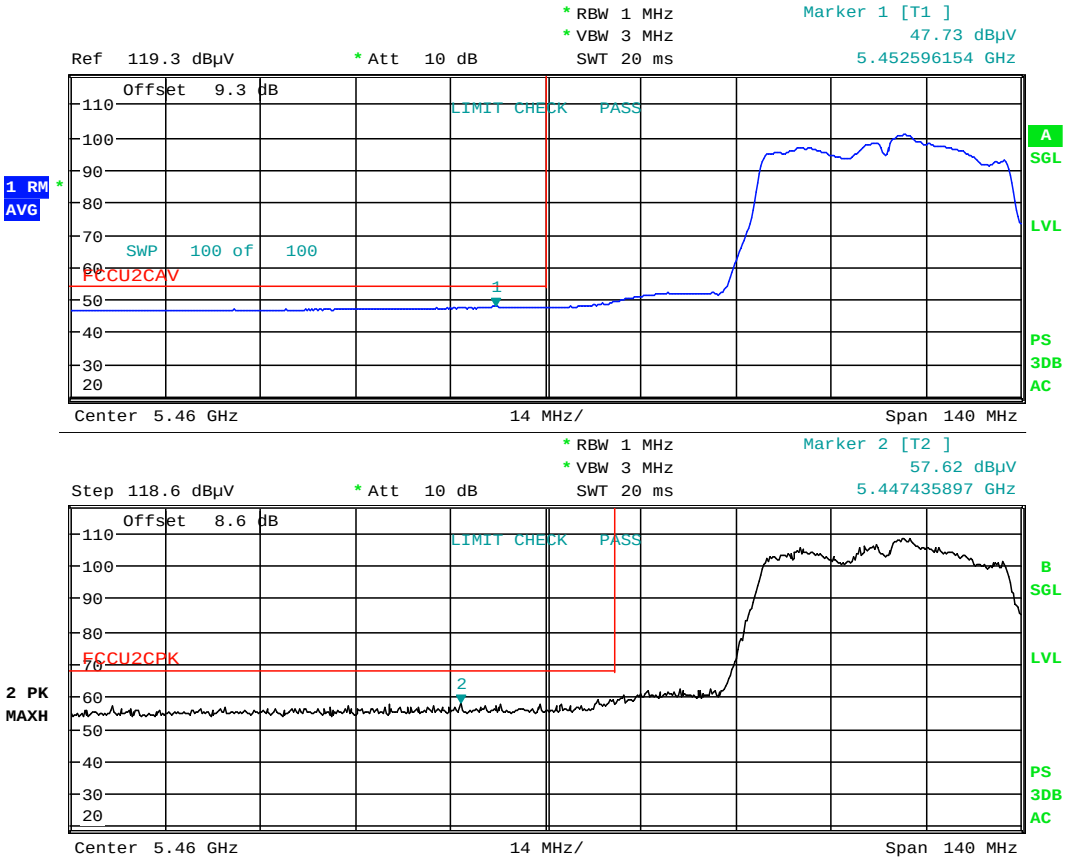
Date: 11.JUL.2017 20:17:16

Plot 7-220. Radiated Restricted Upper Band Edge Plot (Average & Peak – UNII Band 2A)

MIMO Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11n (40MHz)
Worst Case Transfer Rate:	MCS8
Distance of Measurements:	3 Meters
Operating Frequency:	5510MHz
Channel:	102



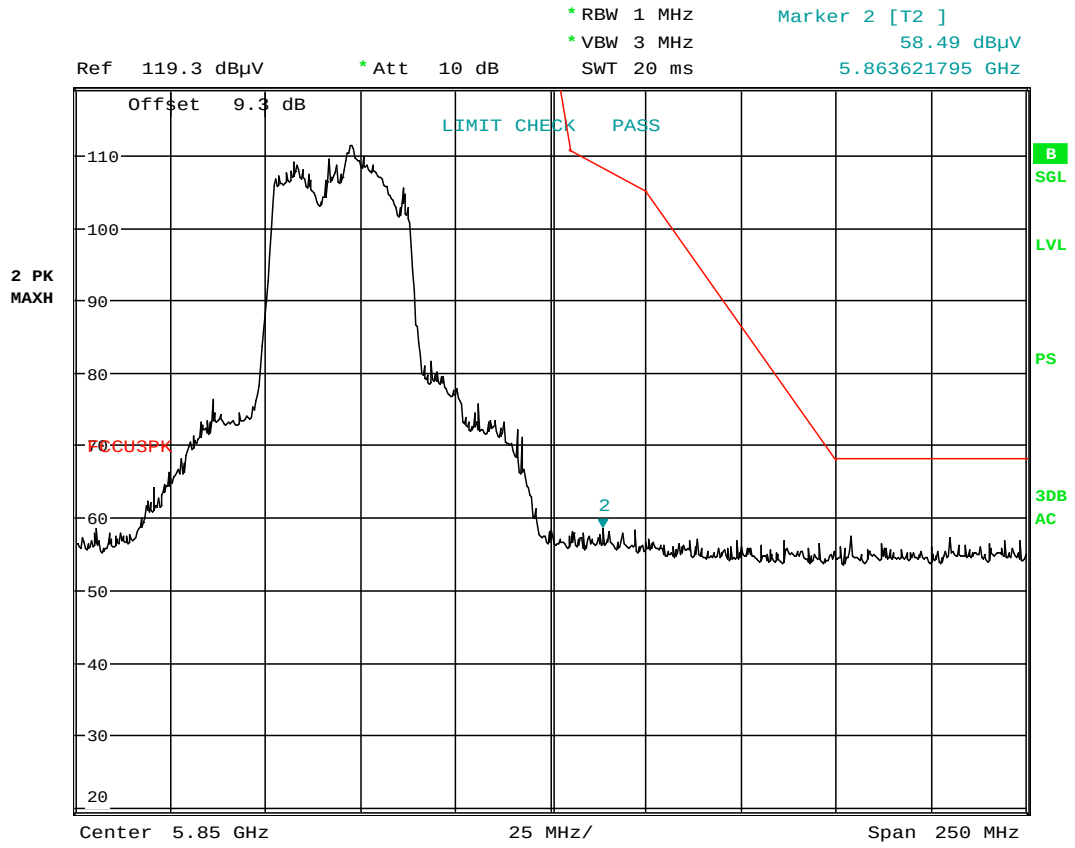
Date: 11.JUL.2017 20:28:23

Plot 7-221. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 2C)

MIMO Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11n (40MHz)
Worst Case Transfer Rate:	MCS8
Distance of Measurements:	3 Meters
Operating Frequency:	5795MHz
Channel:	159



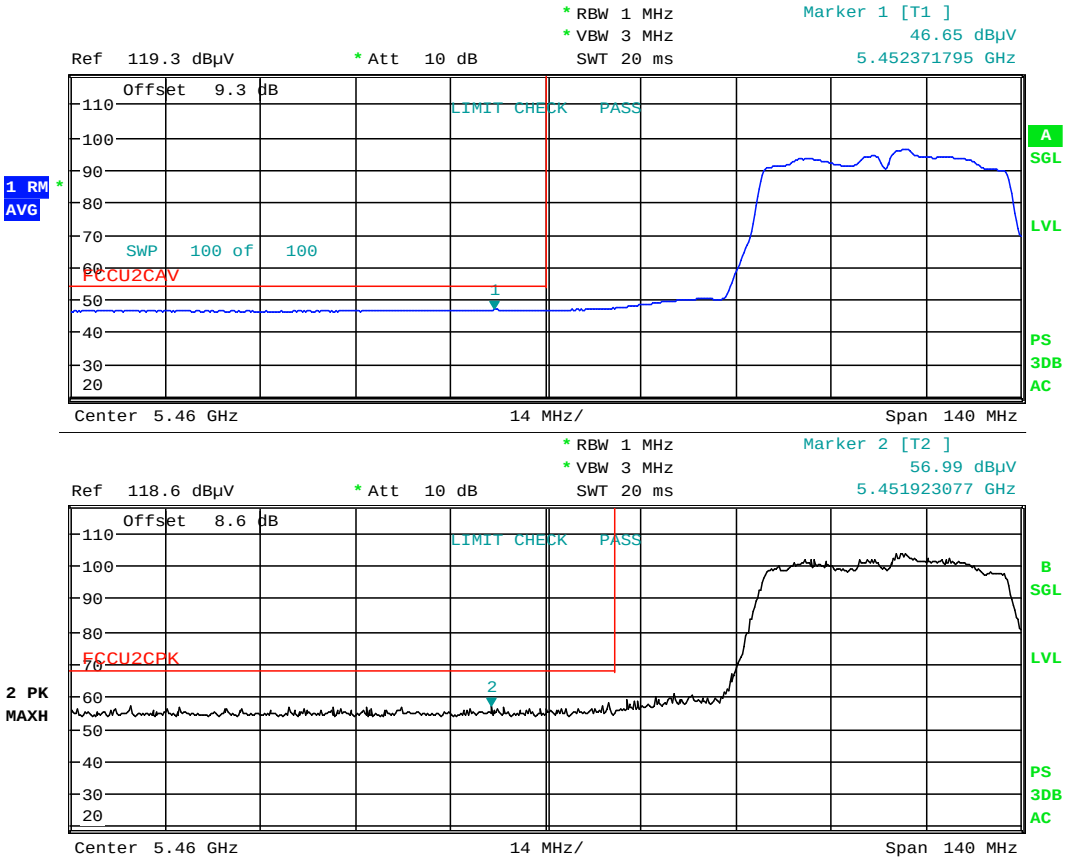
Date: 11.JUL.2017 20:37:05

Plot 7-222. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

MIMO WCP Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11n (40MHz)
Worst Case Transfer Rate:	MCS8
Distance of Measurements:	3 Meters
Operating Frequency:	5510MHz
Channel:	102



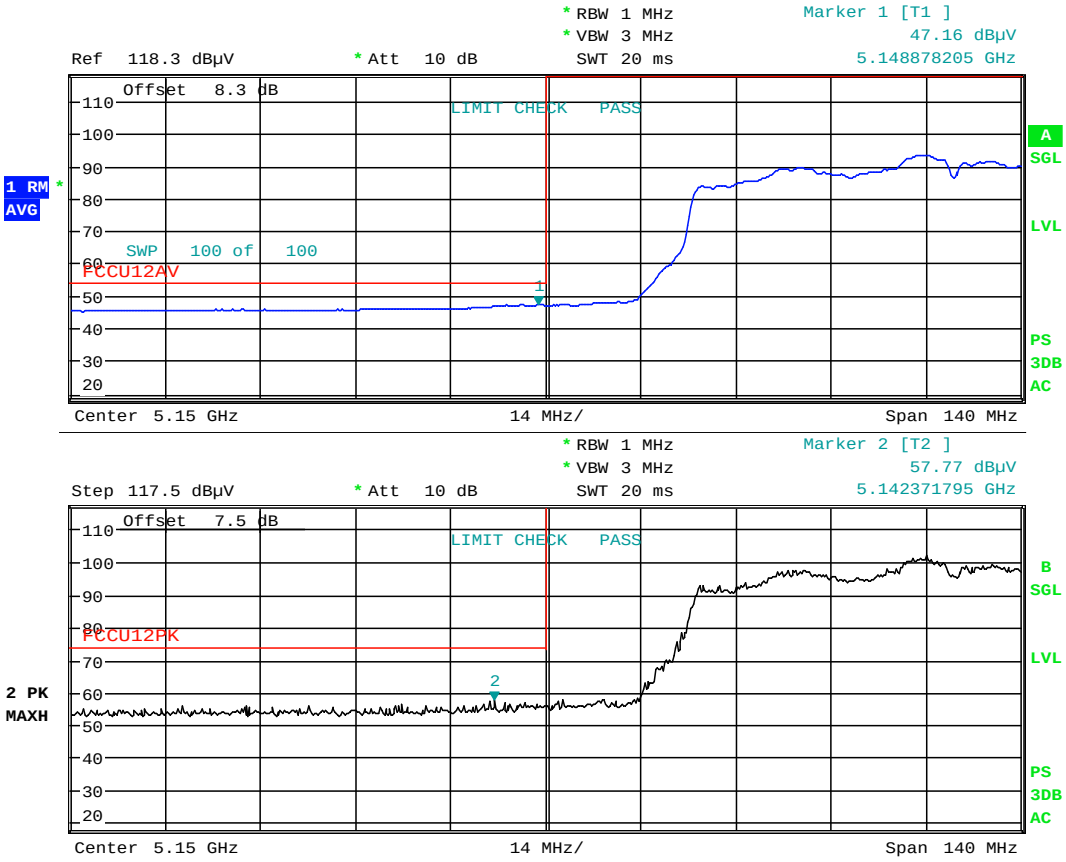
Date: 11.JUL.2017 20:45:55

Plot 7-223. Radiated Restricted Band Edge Plot with WCP

7.7.12 MIMO Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11ac (80MHz)
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5210MHz
Channel:	42



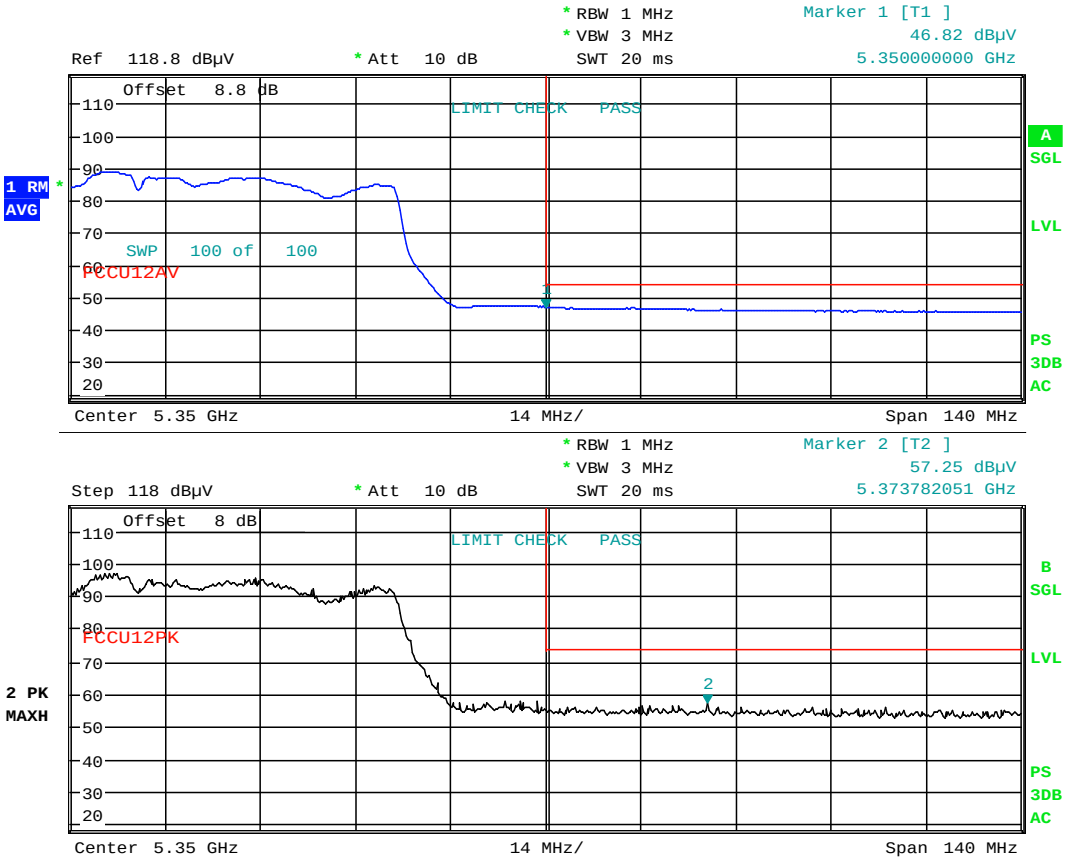
Date: 11.JUL.2017 20:10:23

Plot 7-224. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 1)

MIMO Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11ac (80MHz)
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5290MHz
Channel:	58



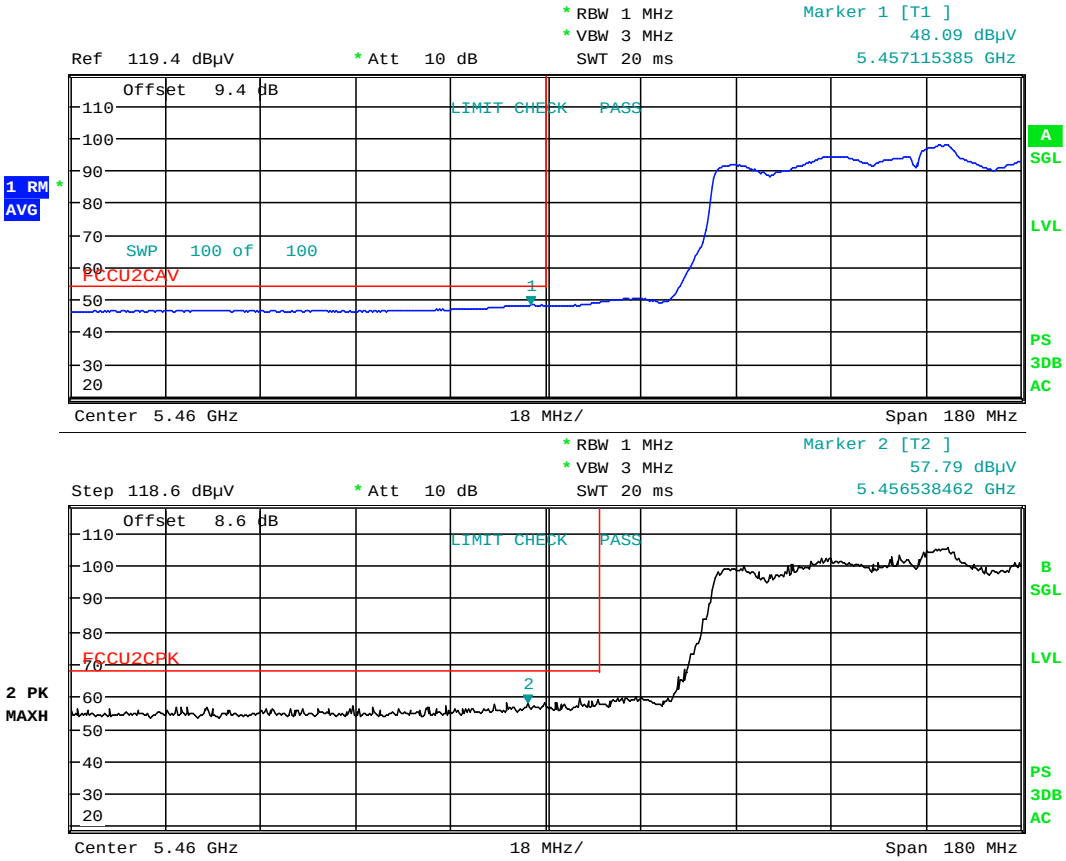
Date: 11.JUL.2017 20:18:40

Plot 7-225. Radiated Restricted Upper Band Edge Plot (Average & Peak – UNII Band 2A)

MIMO Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11ac (80MHz)
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5530MHz
Channel:	106



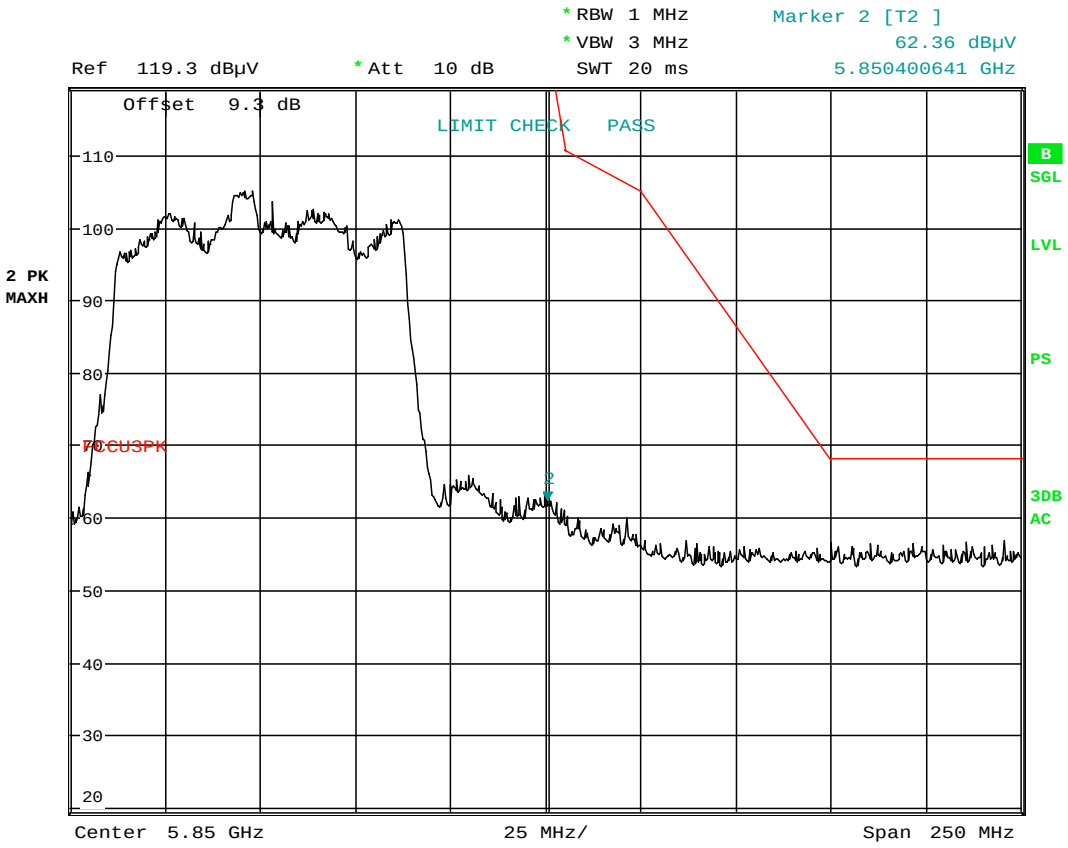
Date: 11.JUL.2017 20:29:30

Plot 7-226. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 2C)

MIMO Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11ac (80MHz)
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5775MHz
Channel:	155



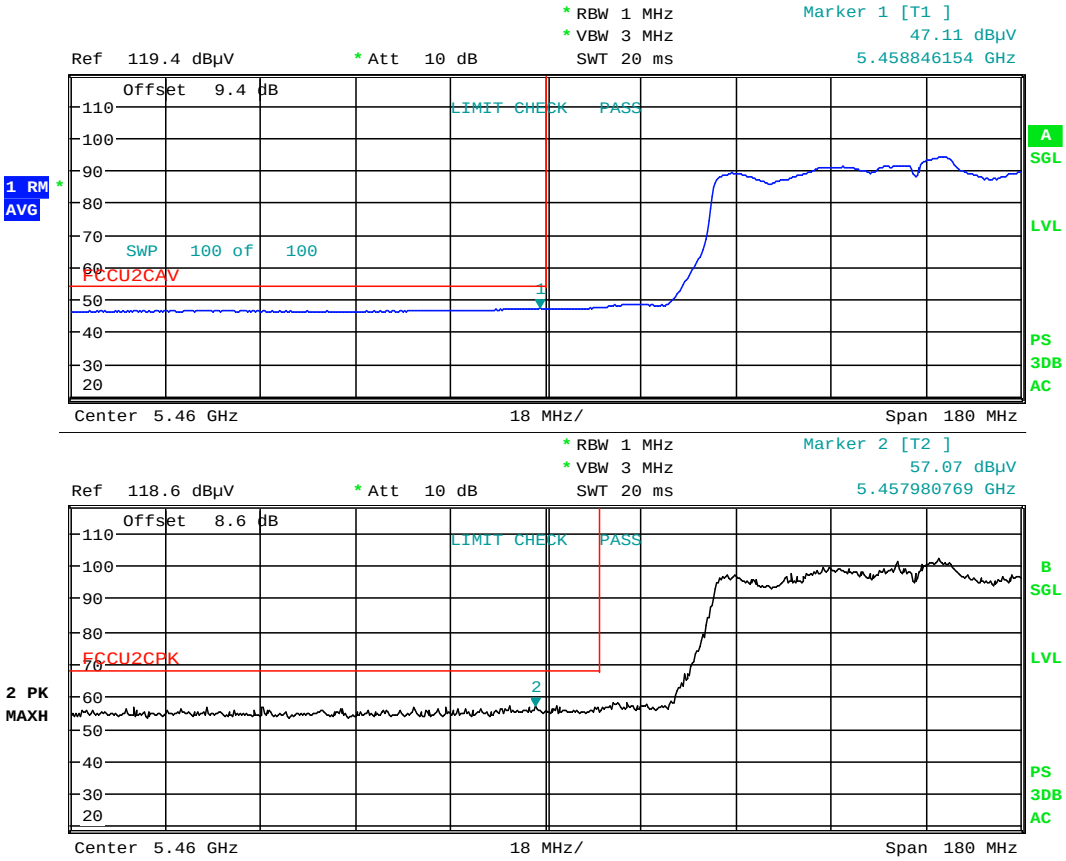
Date: 11.JUL.2017 20:38:09

Plot 7-227. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

MIMO WCP Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11ac (80MHz)
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5530MHz
Channel:	106



Date: 11.JUL.2017 20:47:11

Plot 7-228. Radiated Restricted Band Edge Plot with WCP

7.8 Radiated Spurious Emissions Measurements – Below 1GHz

§15.209

Test Overview and Limit

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates and modes were investigated for radiated spurious emissions. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table 7-61 per Section 15.209.

Frequency	Field Strength [µV/m]	Measured Distance [Meters]
0.009 – 0.490 MHz	2400/F (kHz)	300
0.490 – 1.705 MHz	24000/F (kHz)	30
1.705 – 30.00 MHz	30	30
30.00 – 88.00 MHz	100	3
88.00 – 216.0 MHz	150	3
216.0 – 960.0 MHz	200	3
Above 960.0 MHz	500	3

Table 7-61. Radiated Limits

Test Procedures Used

ANSI C63.10-2013

Test Settings

Quasi-Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 120kHz (for emissions from 30MHz – 1GHz)
3. Detector = quasi-peak
4. Sweep time = auto couple
5. Trace mode = max hold
6. Trace was allowed to stabilize

Test Setup

The EUT and measurement equipment were set up as shown in the diagrams below.

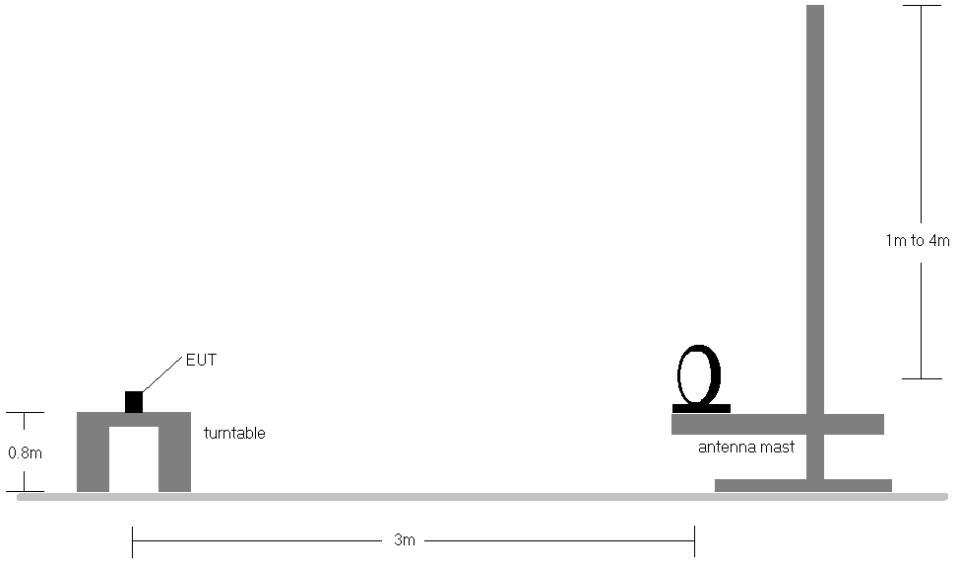


Figure 7-6. Radiated Test Setup < 30MHz

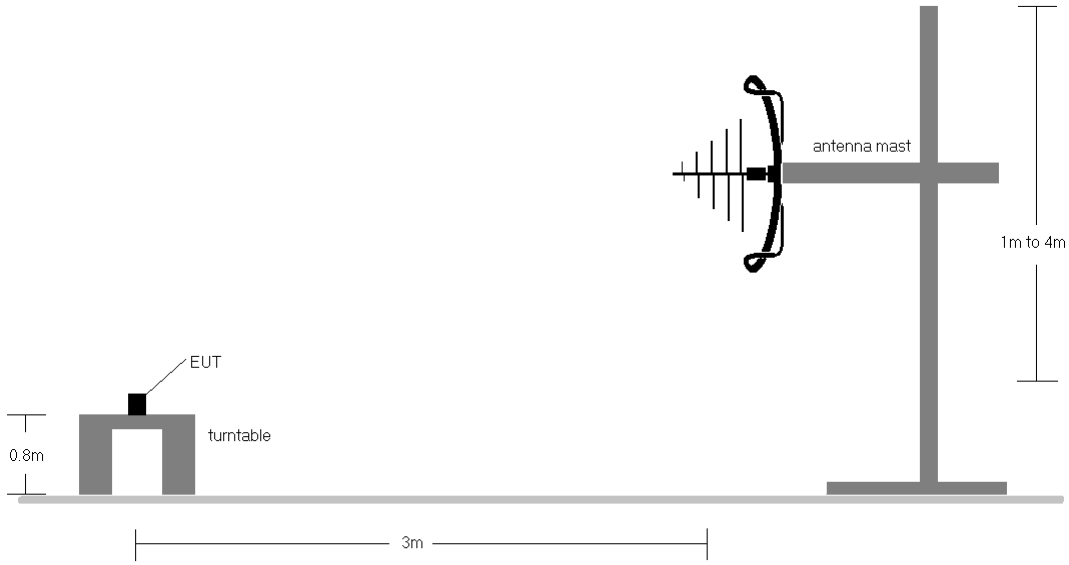


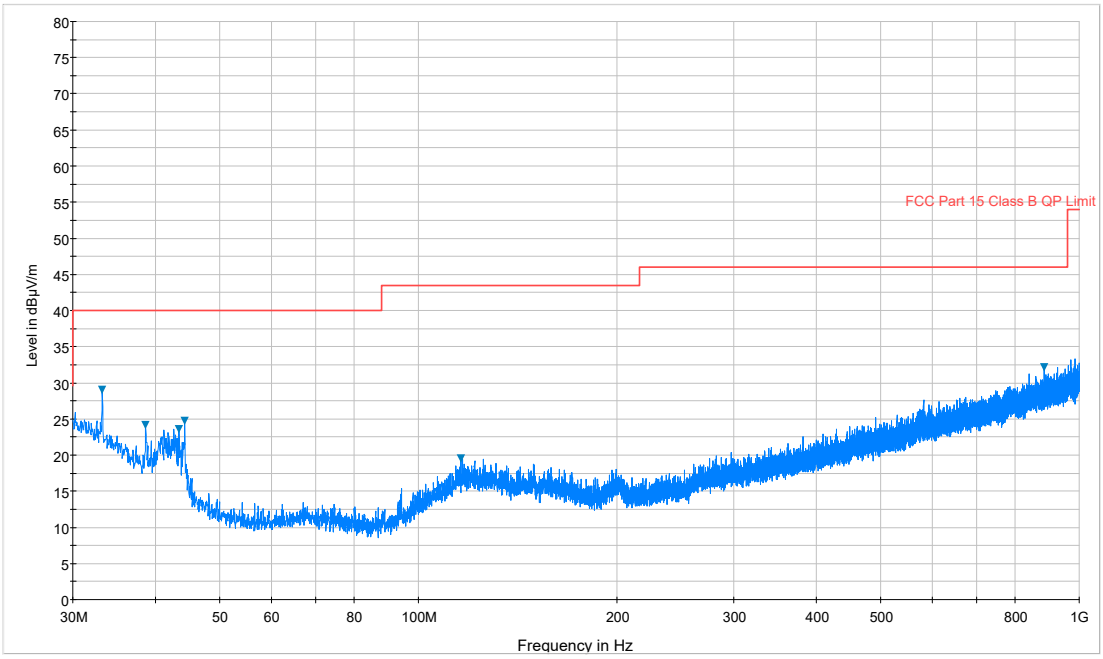
Figure 7-7. Radiated Test Setup < 1GHz

Test Notes

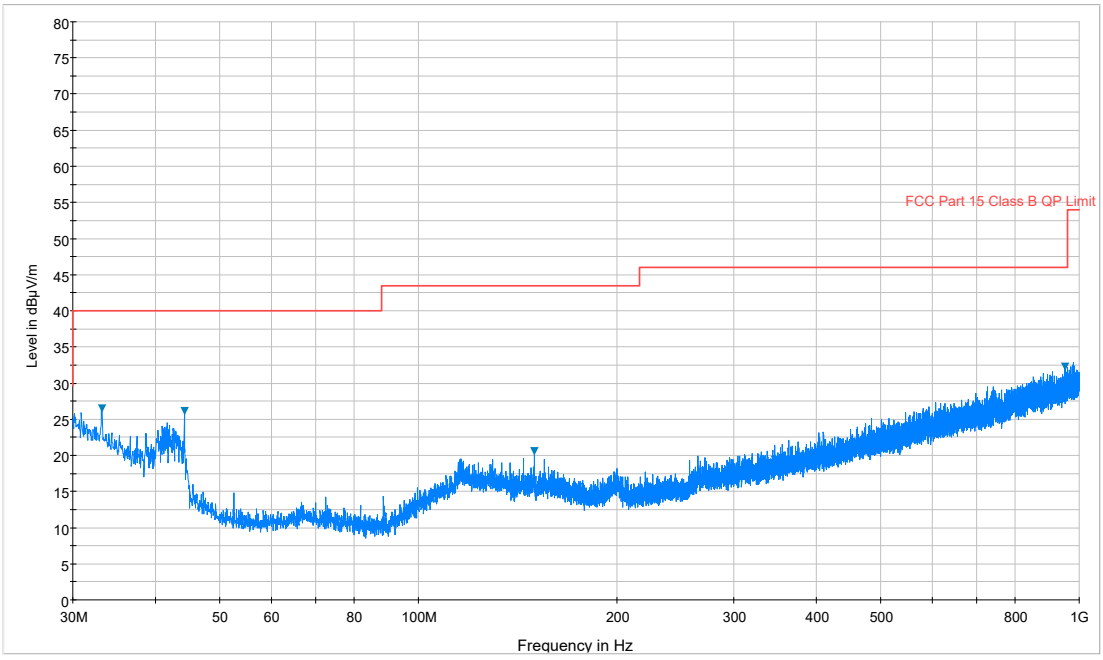
1. All emissions lying in restricted bands specified in §15.205 are below the limit shown in Table 7-61.
2. The broadband receive antenna is manipulated through vertical and horizontal polarizations during the tests. The EUT is manipulated through three orthogonal planes.
3. This unit was tested with its standard battery.
4. The spectrum is investigated using a peak detector and final measurements are recorded using CISPR quasi peak detector. The worst-case emissions are reported however emissions whose levels were not within 20dB of the respective limits were not reported.
5. Emissions were measured at a 3 meter test distance.
6. Emissions are investigated while operating on the center channel of the mode, band, and modulation that produced the worst case results during the transmitter spurious emissions testing.
7. No spurious emissions were detected within 20dB of the limit below 30MHz.
8. The results recorded using the broadband antenna is known to correlate with the results obtained by using a tuned dipole with an acceptable degree of accuracy. The VSWR for the measurement antenna was found to be less than 2:1.
9. The wide spectrum spurious emissions plots shown on the following pages are used only for the purpose of emission identification. There were no emissions detected in the 30MHz – 1GHz frequency range, as shown in the subsequent plots.

Antenna-1 Radiated Spurious Emissions Measurements (Below 1GHz)

§15.209



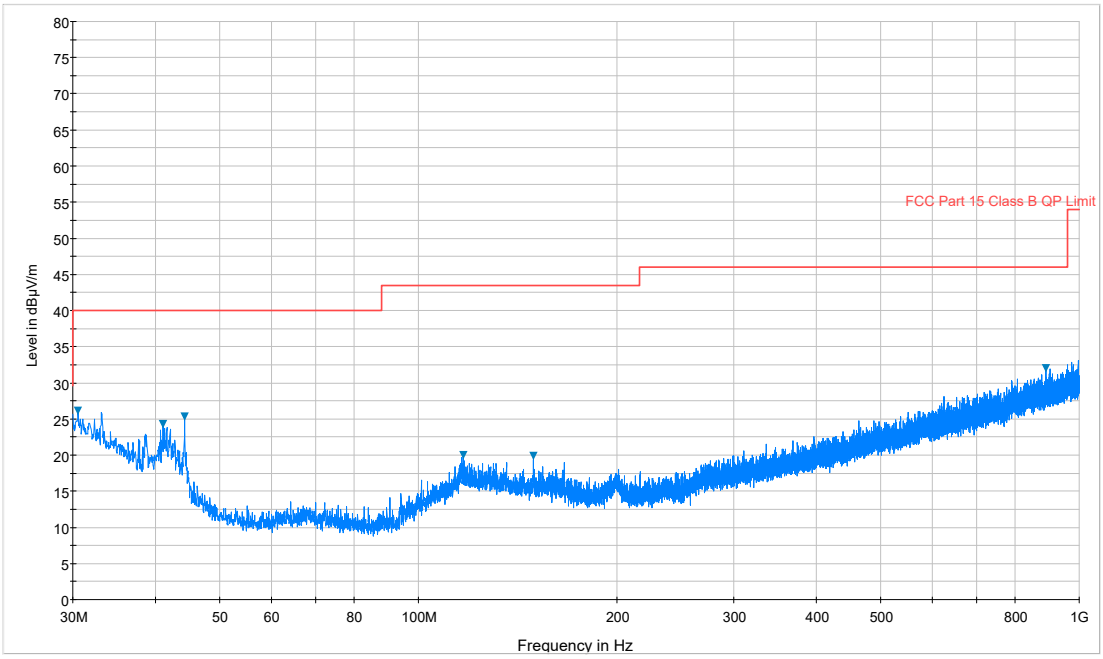
Plot 7-229. Radiated Spurious Plot below 1GHz (802.11a – U3 Ch. 157, Ant. Pol. H)



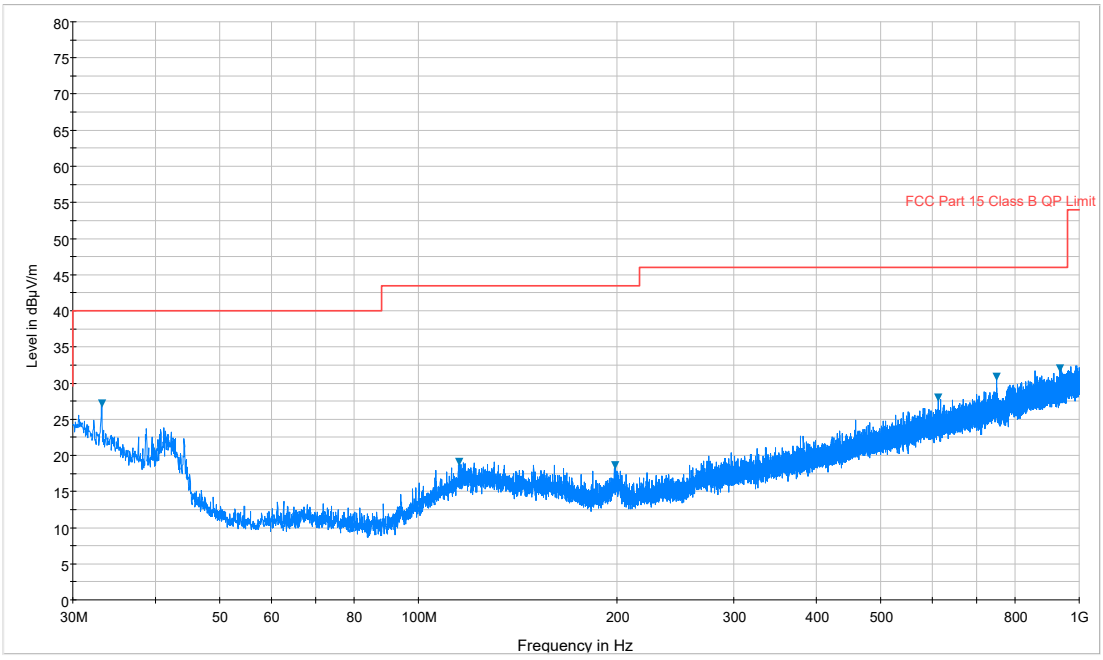
Plot 7-230. Radiated Spurious Plot below 1GHz (802.11a – U3 Ch. 157, Ant. Pol. V)

Antenna-2 Radiated Spurious Emissions Measurements (Below 1GHz)

§15.209



Plot 7-231. Radiated Spurious Plot below 1GHz (802.11a – U3 Ch. 157, Ant. Pol. H)



Plot 7-232. Radiated Spurious Plot below 1GHz (802.11a – U3 Ch. 157, Ant. Pol. V)

7.9 Line-Conducted Test Data

§15.407

Test Overview and Limit

All AC line conducted spurious emissions are measured with a receiver connected to a grounded LISN while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates and modes were investigated for conducted spurious emissions. Only the conducted emissions of the configuration that produced the worst case emissions are reported in this section.

All conducted emissions must not exceed the limits shown in the table below, per Section 15.207.

Frequency of emission (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50

Table 7-62. Conducted Limits

*Decreases with the logarithm of the frequency.

Test Procedures Used

ANSI C63.10-2013, Section 6.2

Test Settings

Quasi-Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the spurious emission of interest
2. RBW = 9kHz (for emissions from 150kHz – 30MHz)
3. Detector = quasi-peak
4. Sweep time = auto couple
5. Trace mode = max hold
6. Trace was allowed to stabilize

Average Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the spurious emission of interest
2. RBW = 9kHz (for emissions from 150kHz – 30MHz)
3. Detector = RMS
4. Sweep time = auto couple
5. Trace mode = max hold
6. Trace was allowed to stabilize

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

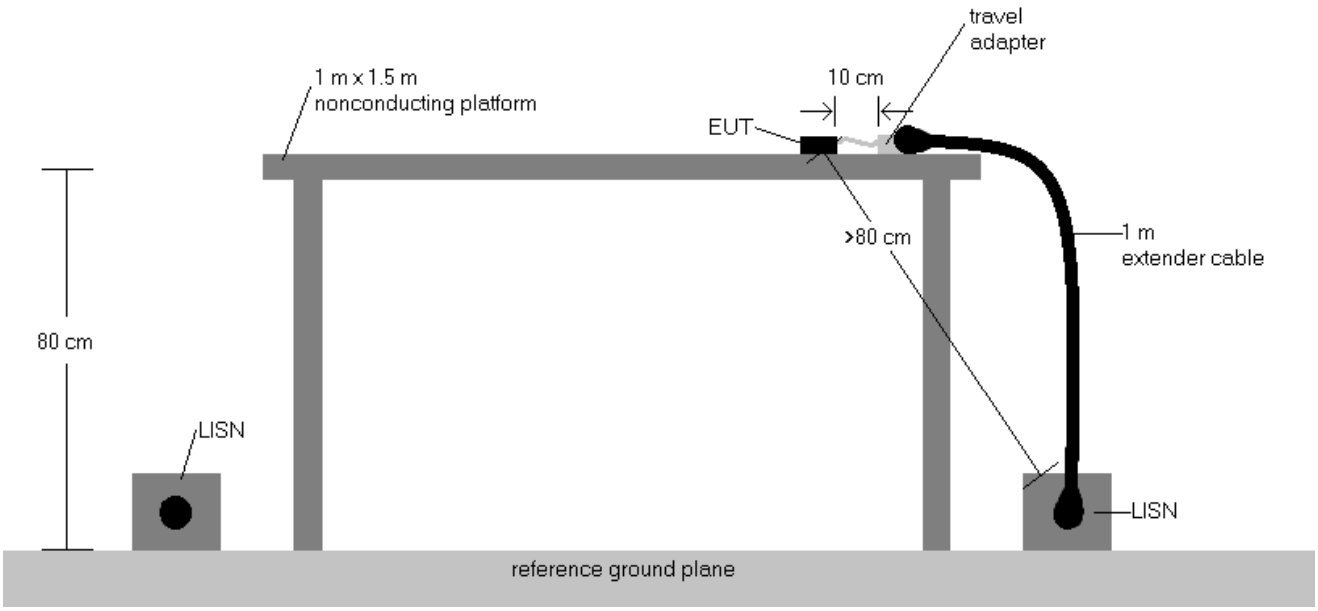
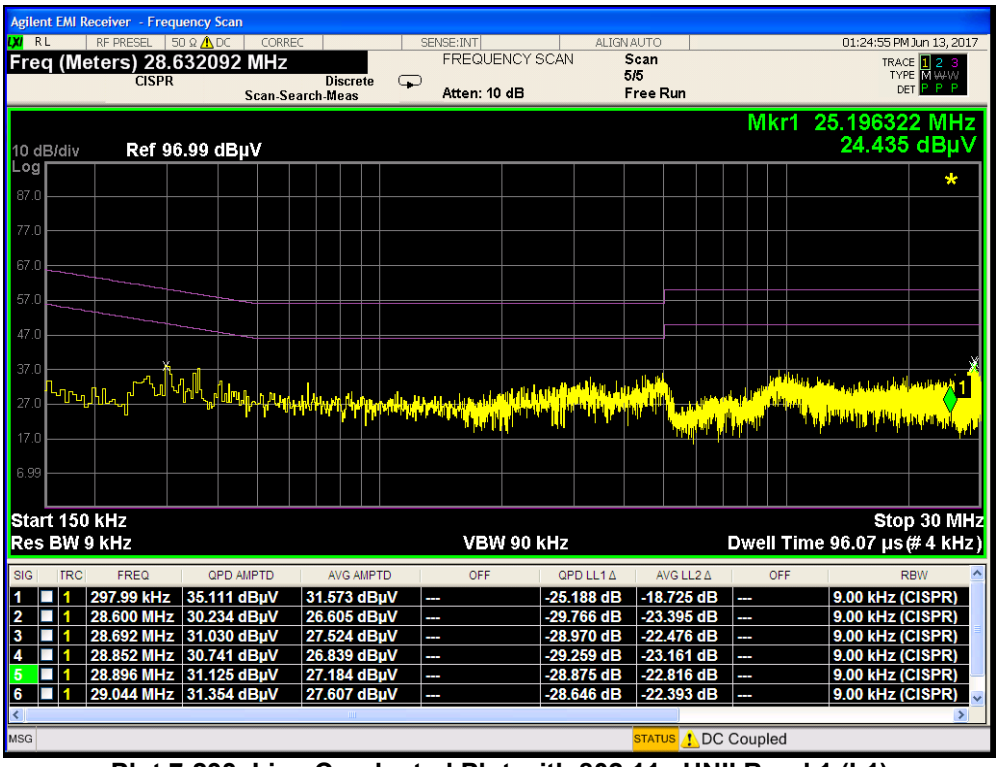


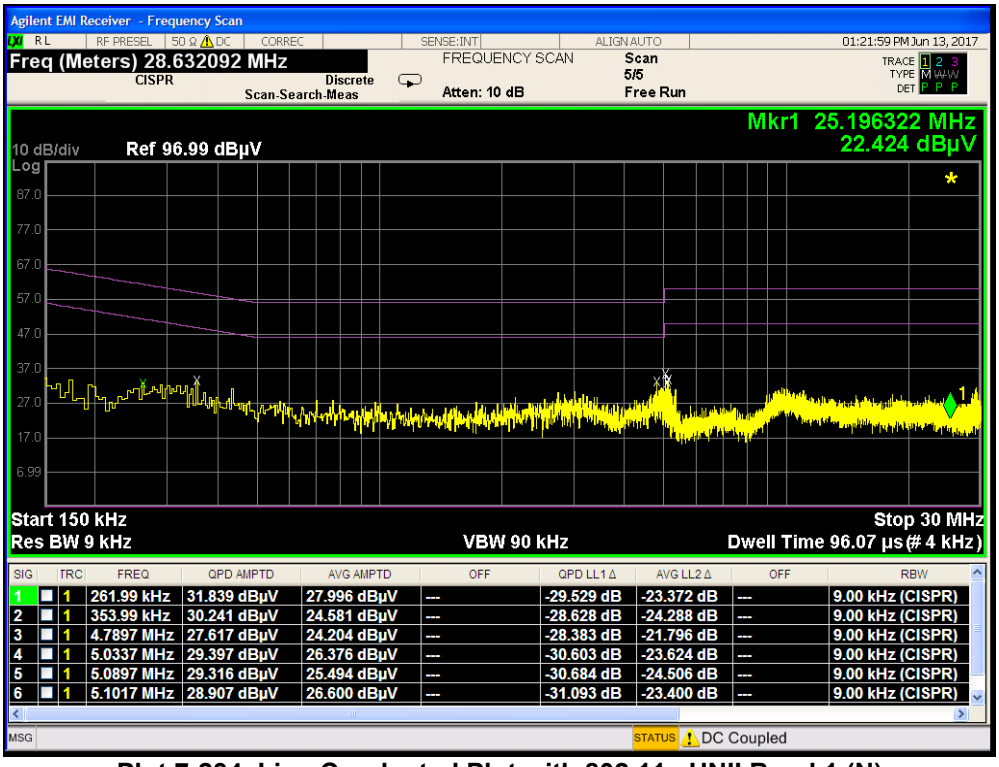
Figure 7-8. Test Instrument & Measurement Setup

Test Notes

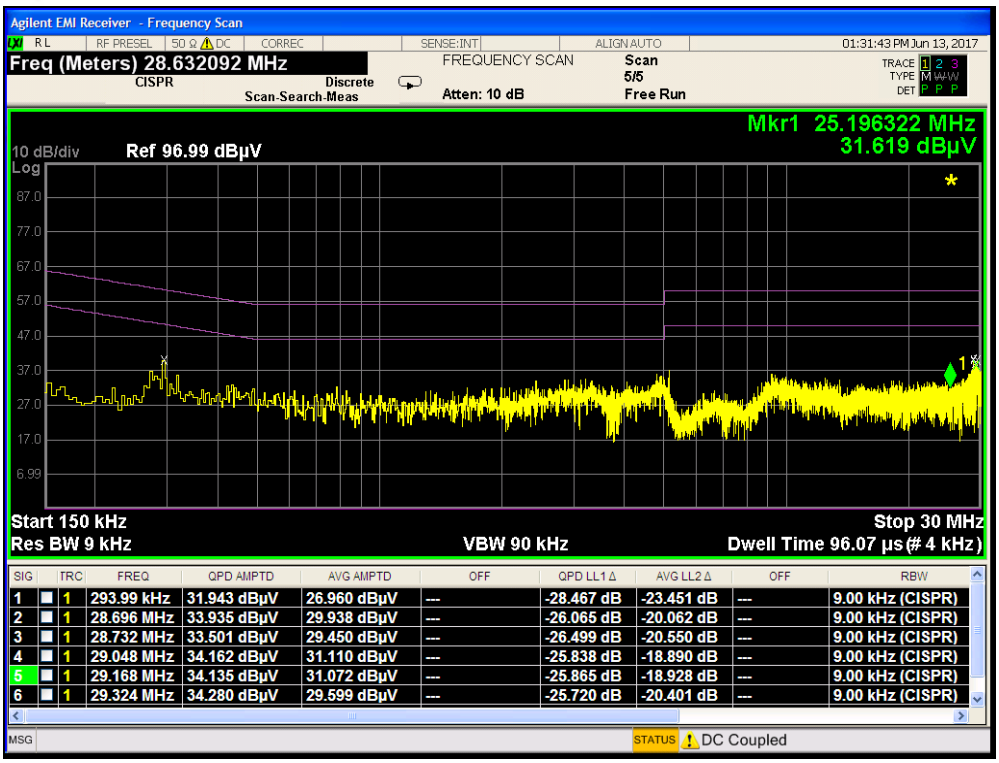
1. All modes of operation were investigated and the worst-case emissions are reported using mid channel. The emissions found were not affected by the choice of channel used during testing.
2. The limit for an intentional radiator from 150kHz to 30MHz are specified in 15.207.
3. Corr. (dB) = Cable loss (dB) + LISN insertion factor (dB)
4. QP/AV Level (dBμV) = QP/AV Analyzer/Receiver Level (dBμV) + Corr. (dB)
5. Margin (dB) = QP/AV Limit (dBμV) - QP/AV Level (dBμV)
6. Traces shown in plot are made using a peak detector.
7. Deviations to the Specifications: None.



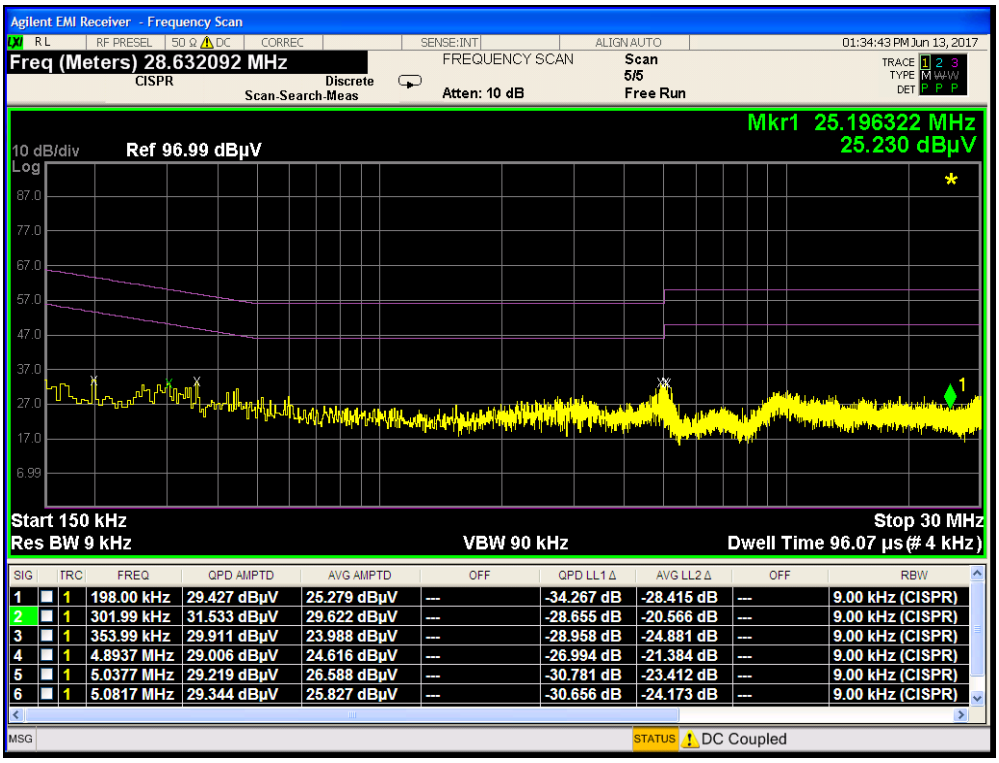
Plot 7-233. Line Conducted Plot with 802.11a UNII Band 1 (L1)



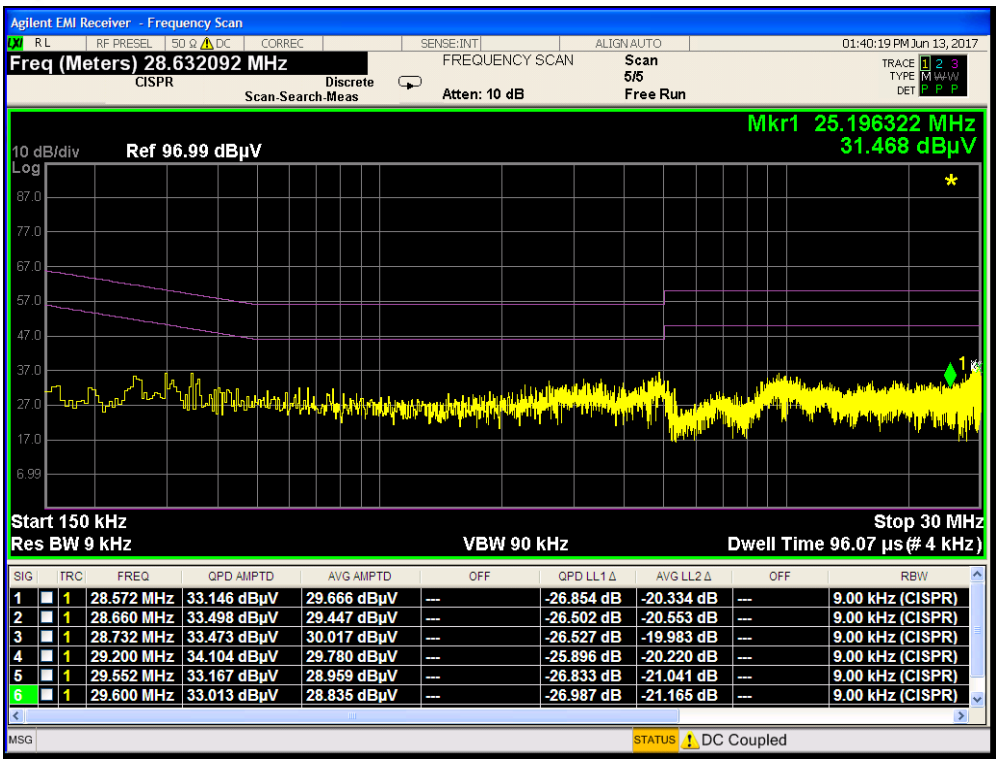
Plot 7-234. Line Conducted Plot with 802.11a UNII Band 1 (N)



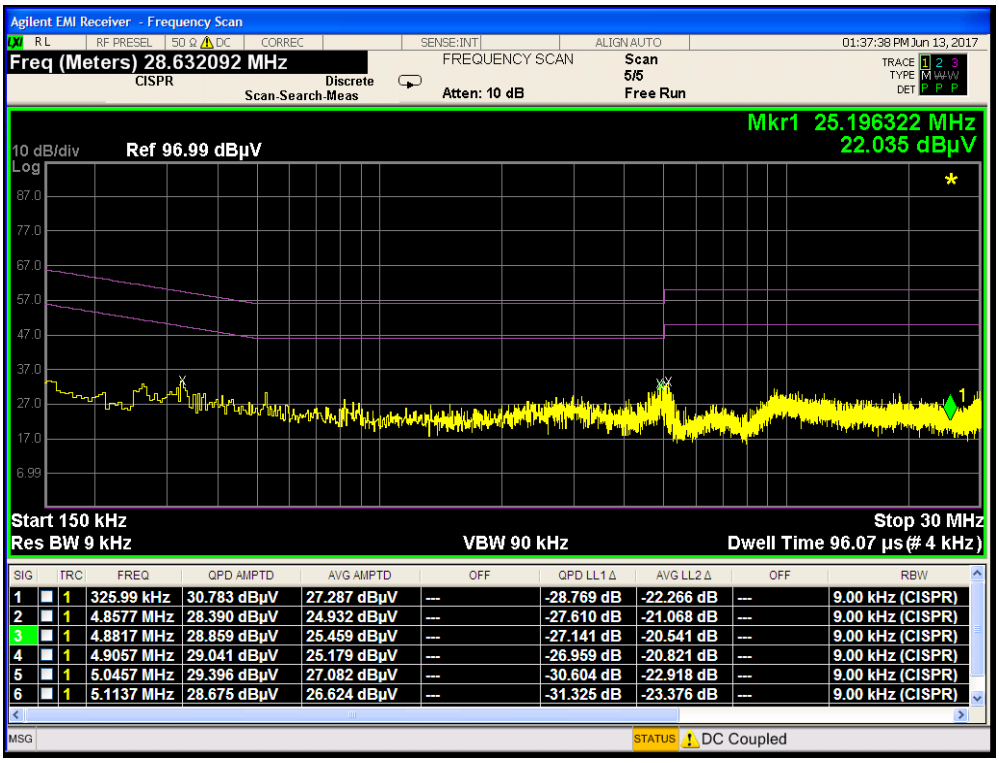
Plot 7-235. Line Conducted Plot with 802.11a UNII Band 2A (L1)



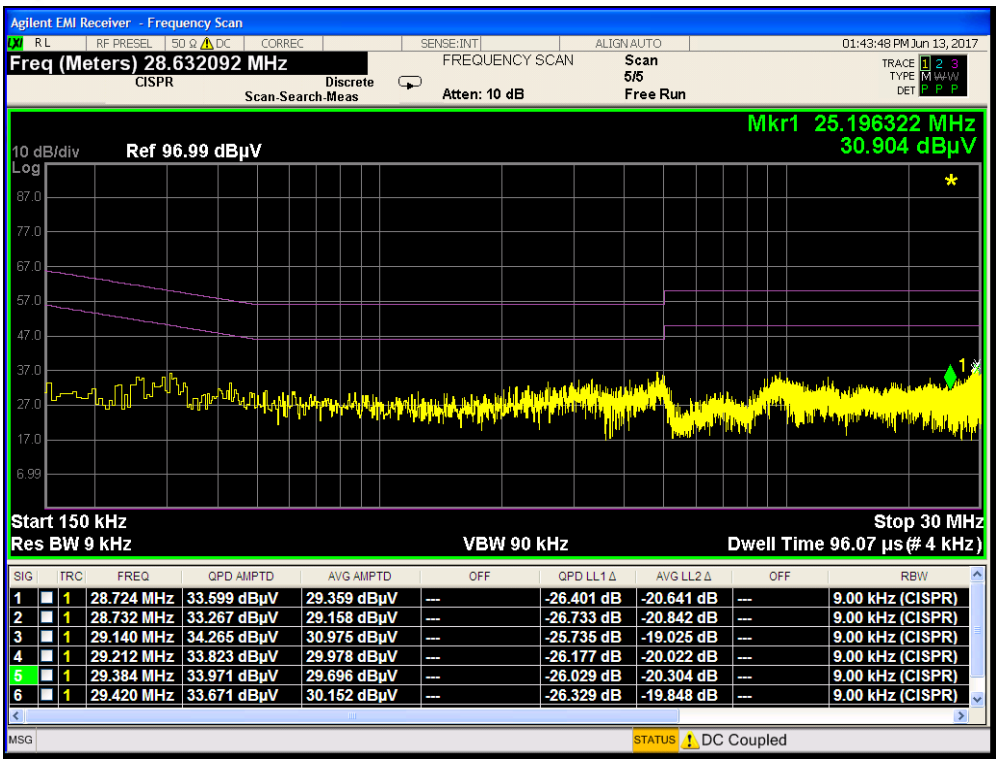
Plot 7-236. Line Conducted Plot with 802.11a UNII Band 2A (N)



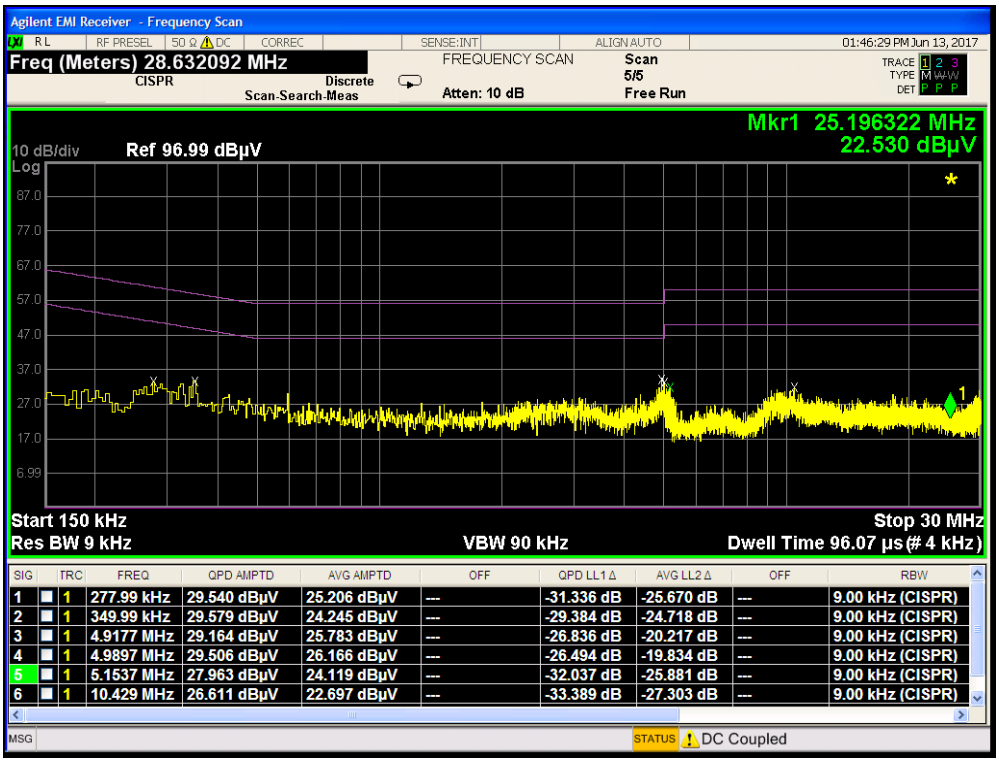
Plot 7-237. Line Conducted Plot with 802.11a UNII Band 2C (L1)



Plot 7-238. Line Conducted Plot with 802.11a UNII Band 2C (N)



Plot 7-239. Line Conducted Plot with 802.11a UNII Band 3 (L1)



Plot 7-240. Line Conducted Plot with 802.11a UNII Band 3 (N)

8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFLS998** is in compliance with Part 15E of the FCC Rules.

APPENDIX A. 802.11A DUAL TX

A.1 Summary

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
TRANSMITTER MODE (TX)					
15.407 (a.1)	Maximum Conducted Output Power	Maximum conducted powers must meet limits detailed in 15.407(a)	CONDUCTED	PASS	Section A.2
15.407 (a.1), (5)	Maximum Power Spectral Density	Maximum power spectral density must meet the limits detailed in 15.407(a)		PASS	Section A.3
15.205, 15.407(b.1),(5),(6)	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209		PASS	Section A.4

Table A.1-1. Summary of Test Results

Notes:

1) This device employs dual transmission in 802.11a and 802.11g modes using Cyclic Delay Diversity. For all test cases, the device was set to transmit from both antennas simultaneously. The data in this section demonstrates compliance to the dual-transmission requirements specified in KDB 662911 v02r01.
2) All data found in this section is compiled from plots found in the main body of this test report.
3) Since this device is able to transmit the same data through both of its antennas in a given symbol period, then, by the definition specified in KDB 662911 v02r01 Section F)1), the transmission symbols are correlated.
4) Since two antennas are supported in this device and a minimum of N_{ss} = 1 antenna can operate at any given time, the maximum array gain for two correlated signals is $10\log_{10}(N_{ant}/N_{ss})$ = 3dB, where N_{ss} is the number of spatial streams and N_{ant} is the total number of antennas.
5) For conducted spurious emissions, per KDB 662911 v02r01 Section E)3)b), the emissions on each individual output complied with its corresponding relative limit for that output, so additional testing was not required for dual transmission operation.

A.2 Output Power Measurement

§15.247(b.3)

Test Overview

Using the "Measure and Sum" technique, the measured conducted power values were summed in linear power units then converted back to dBm. Original measured values are found in Section 7.4 of this report.

Freq [MHz]	Channel	Detector	5GHz (20MHz) Conducted Power [dBm]		
			IEEE Transmission Mode		
			ANT1	ANT2	MIMO
5180	36	AVG	16.63	14.88	18.85
5200	40	AVG	16.60	14.91	18.85
5220	44	AVG	16.61	14.94	18.87
5240	48	AVG	16.39	14.99	18.76
5260	52	AVG	16.42	14.95	18.76
5280	56	AVG	16.77	15.10	19.03
5300	60	AVG	16.54	15.14	18.91
5320	64	AVG	16.66	15.28	19.03
5500	100	AVG	16.58	15.29	18.99
5580	116	AVG	16.71	15.77	19.28
5660	132	AVG	16.65	15.71	19.22
5720	144	AVG	16.62	15.75	19.22
5745	149	AVG	16.59	15.87	19.26
5785	157	AVG	16.57	15.85	19.24
5825	165	AVG	16.55	15.77	19.19

Table A2-1. Dual Tx 802.11a-mode Conducted Output Power Measurements

A.3 Power Spectral Density

§15.247(e)

Test Overview

Using the "Measure and Sum" technique, the measured conducted power density values were summed in linear power units then converted back to dBm. Original measured values are found in Section 7.5 of this report.

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Antenn-1 Power Density [dBm]	Antenn-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Max Permissible Power Density [dBm/MHz]	Margin [dB]
Band 1	5180	36	a	6.5/7.2 (MCS0)	6.94	7.20	10.08	11.0	-0.92
	5200	40	a	6.5/7.2 (MCS0)	6.87	7.52	10.21	11.0	-0.79
	5240	48	a	6.5/7.2 (MCS0)	7.31	7.28	10.31	11.0	-0.69
Band 2A	5260	52	a	6.5/7.2 (MCS0)	7.21	7.06	10.14	11.0	-0.86
	5280	56	a	6.5/7.2 (MCS0)	7.31	7.55	10.44	11.0	-0.56
	5320	64	a	6.5/7.2 (MCS0)	7.21	7.75	10.49	11.0	-0.51
Band 2C	5500	100	a	6.5/7.2 (MCS0)	7.60	7.58	10.60	11.0	-0.40
	5580	116	a	6.5/7.2 (MCS0)	7.31	7.28	10.30	11.0	-0.70
	5720	144	a	6.5/7.2 (MCS0)	6.38	7.48	9.97	11.0	-1.03

Table A3-1.802.11a Dual Tx Conducted Power Density Measurements

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Antenn-1 Power Density [dBm]	Antenn-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Max Permissible Power Density [dBm/500kHz]	Margin [dB]
Band 3	5745	149	a	6.5/7.2 (MCS0)	4.12	4.49	7.32	30.0	-22.68
	5785	157	a	6.5/7.2 (MCS0)	4.35	4.84	7.61	30.0	-22.39
	5825	165	a	6.5/7.2 (MCS0)	4.02	4.28	7.17	30.0	-22.83

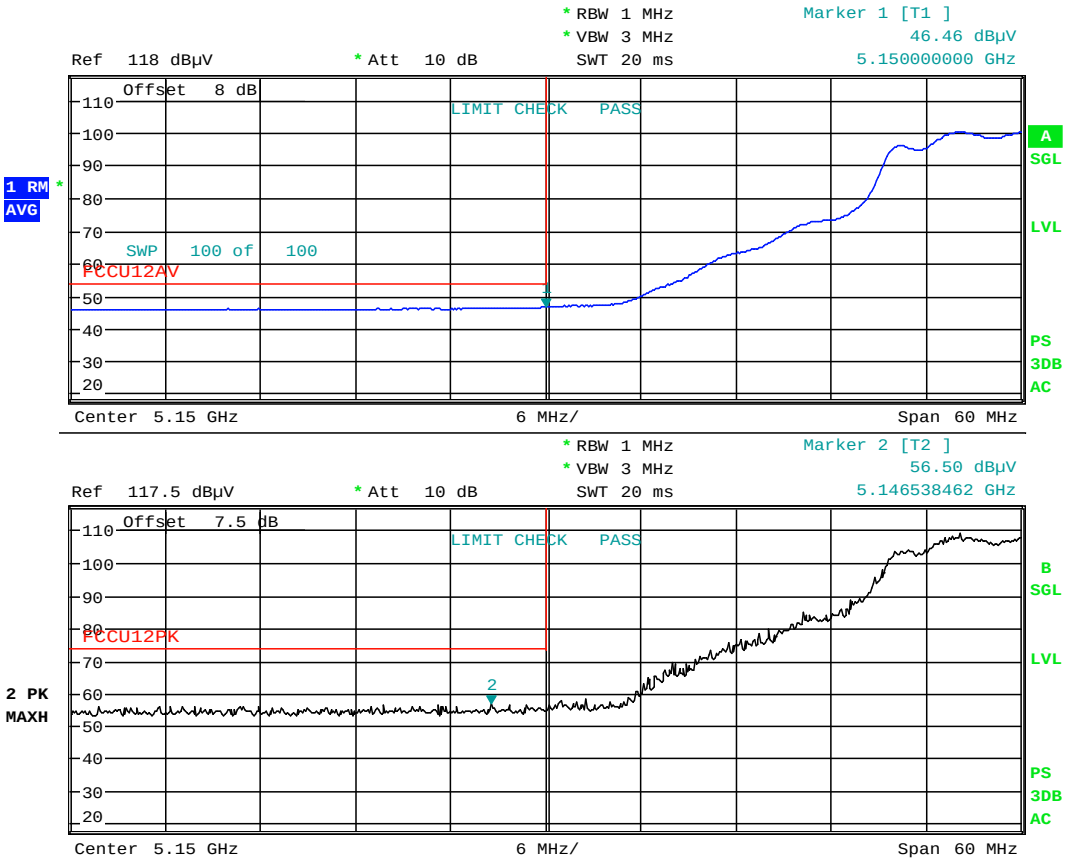
Table A3-2.802.11a Dual Tx Conducted Power Density Measurements

A.4 Dual Tx Radiated Restricted Band Edge Measurements

§15.205 §15.209

The radiated restricted band edge measurements are measured with an EMI test receiver connected to the receive antenna while the EUT is transmitting on both outputs in 802.11a mode.

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	5180MHz
Channel:	36



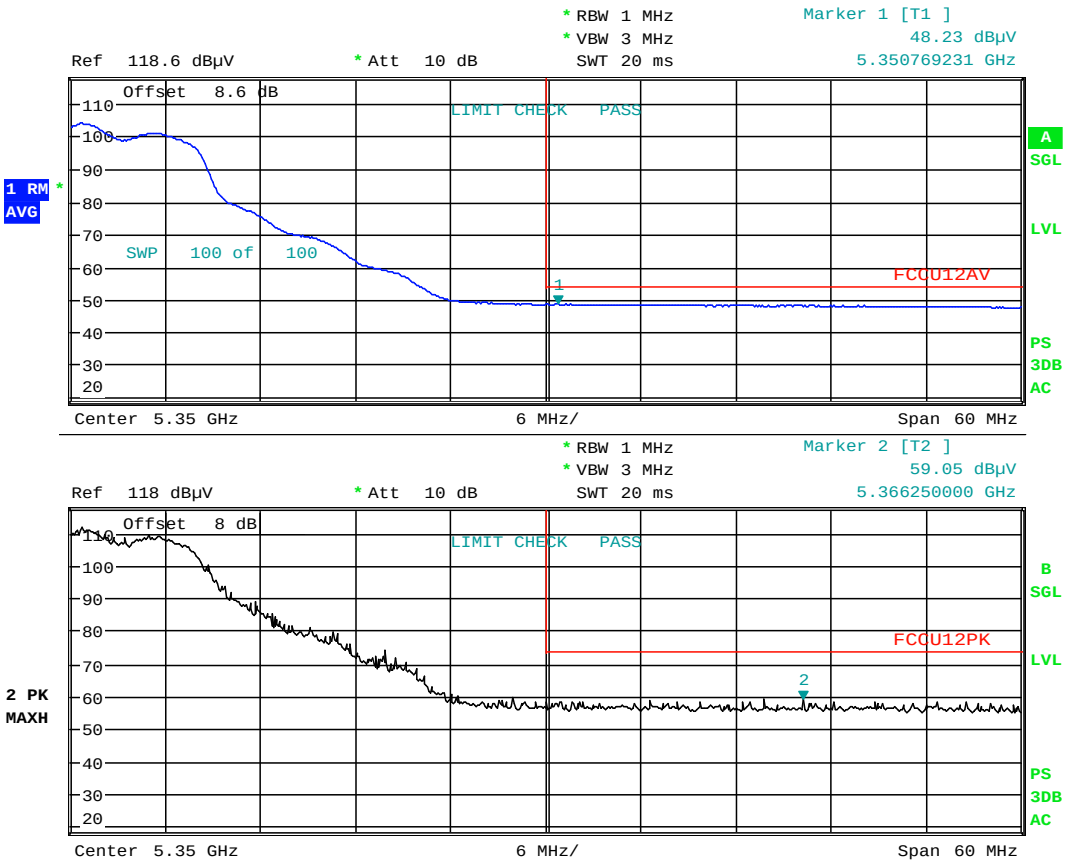
Date: 11.JUL.2017 20:54:56

Plot A.4-1. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 1)

Dual Tx Radiated Restricted Band Edge Measurements

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	5320MHz
Channel:	64



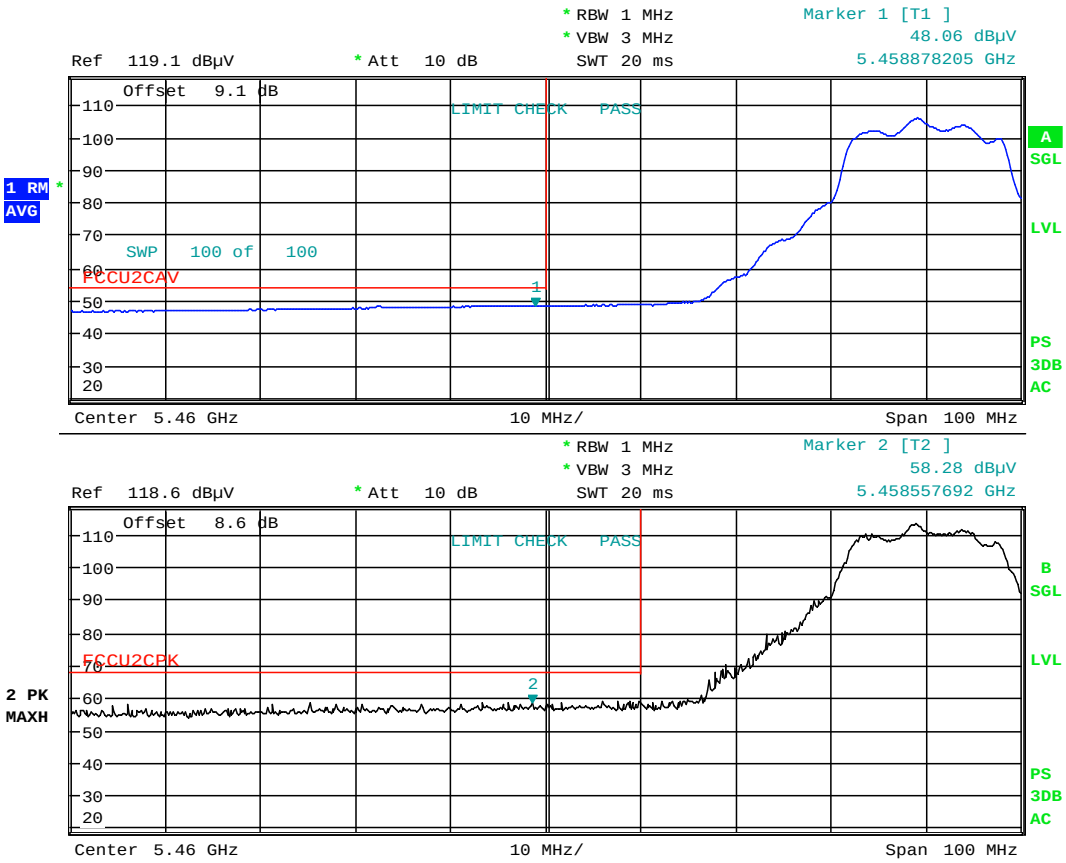
Date: 11.JUL.2017 20:59:36

Plot A.4-3. Radiated Restricted Upper Band Edge Plot (Average & Peak– UNII Band 2A)

Dual Tx Radiated Restricted Band Edge Measurements

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	5500MHz
Channel:	100



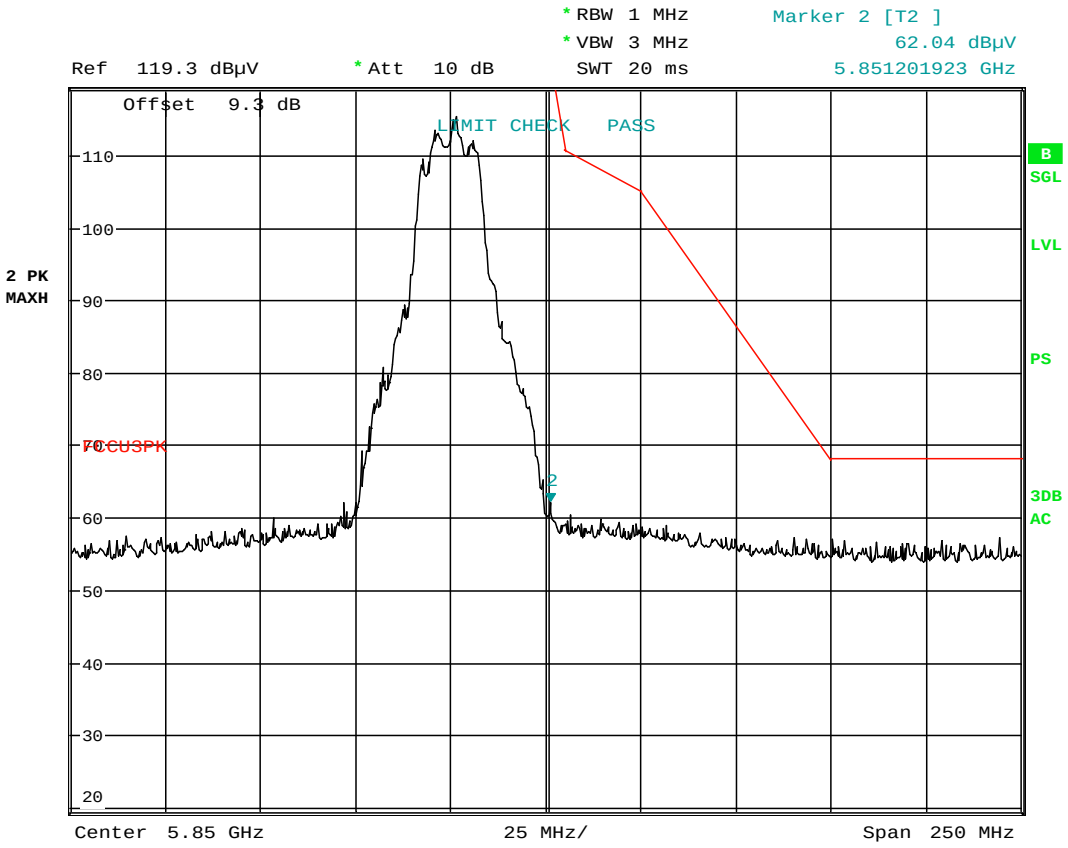
Date: 11.JUL.2017 21:04:04

Plot A.4-5. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 2C)

Dual Tx Radiated Restricted Band Edge Measurements

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	5825MHz
Channel:	165



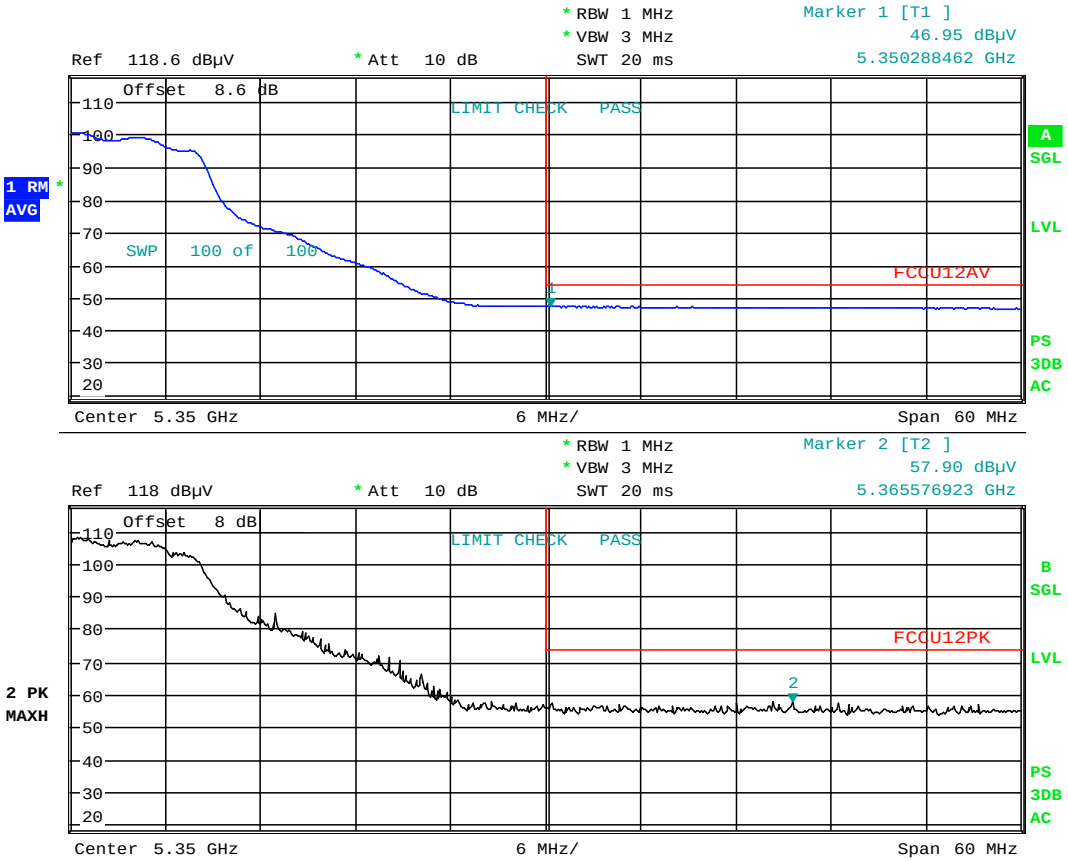
Date: 11.JUL.2017 21:08:41

Plot A.4-9. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

Dual Tx Radiated Restricted Band Edge Measurements

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	5500MHz
Channel:	100



Date: 11.JUL.2017 21:15:17

Plot A.4-5. Radiated Restricted Lower Band Edge Plot with WCP (Average – UNII Band 2C)