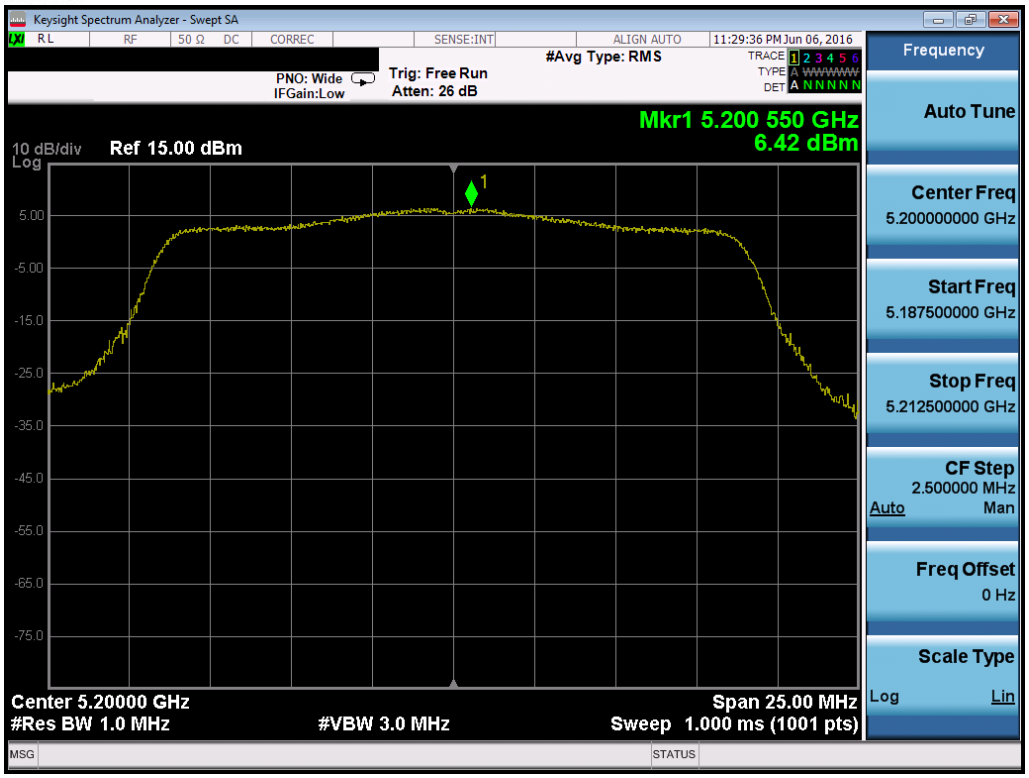
Plot 7-114. Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 36)

Plot 7-115. Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 40)

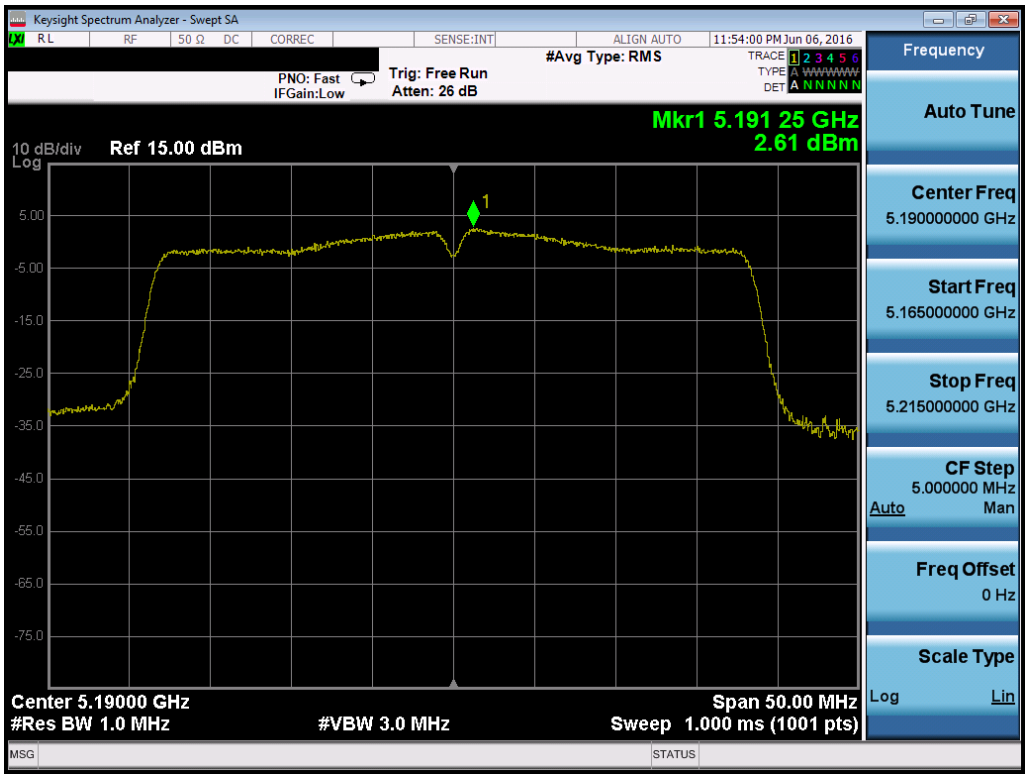
Plot 7-116. Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 48)

Plot 7-117. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 36)

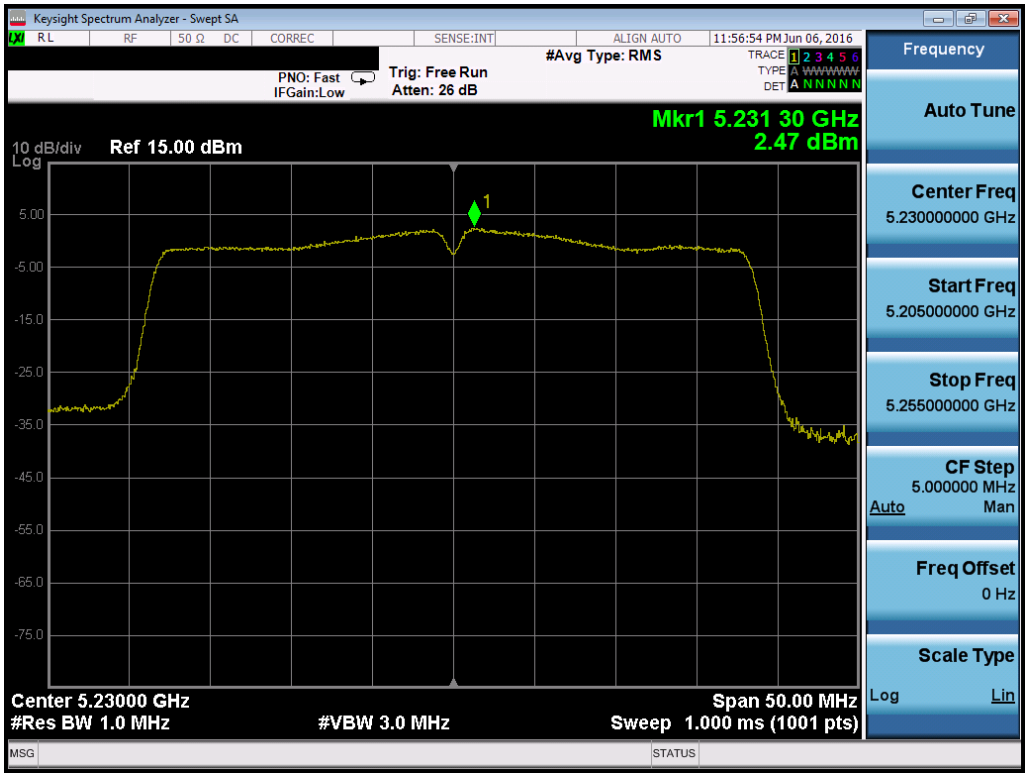


Plot 7-118. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 40)

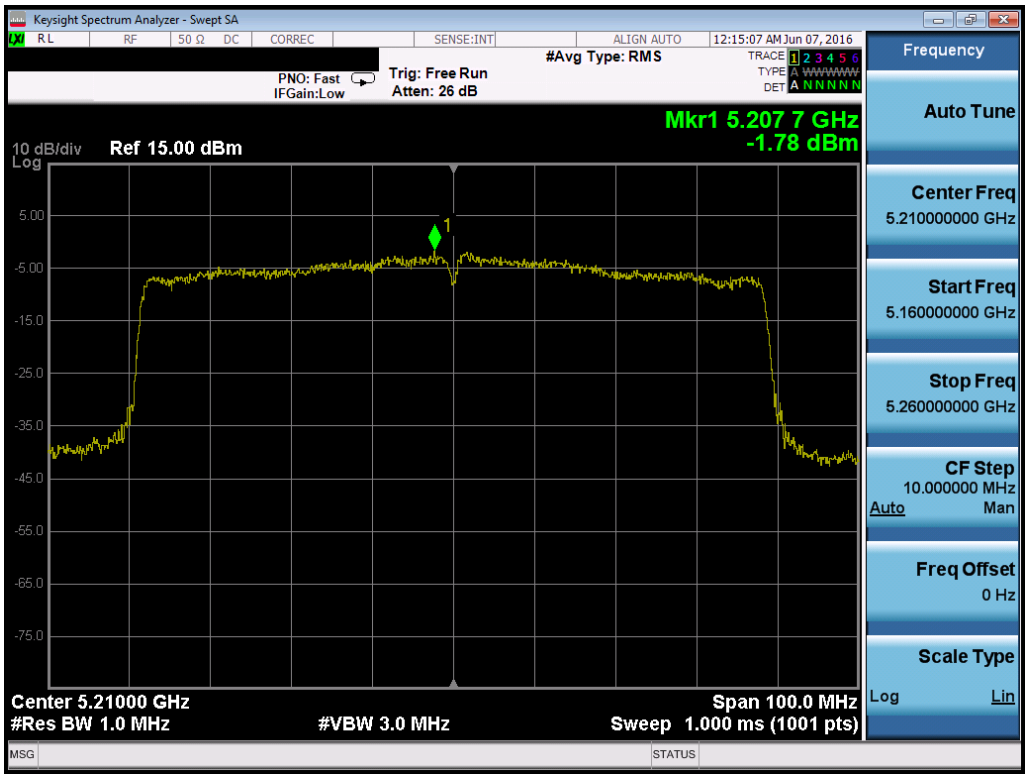
Plot 7-119. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 48)



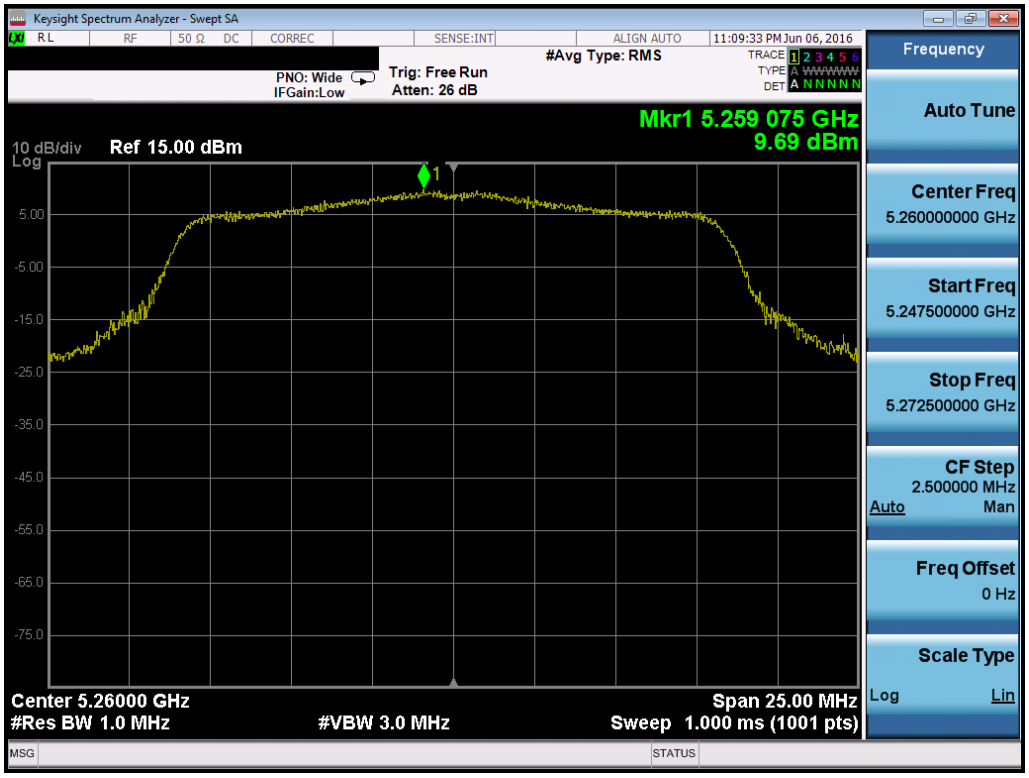
Plot 7-120. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 1) – Ch. 38)



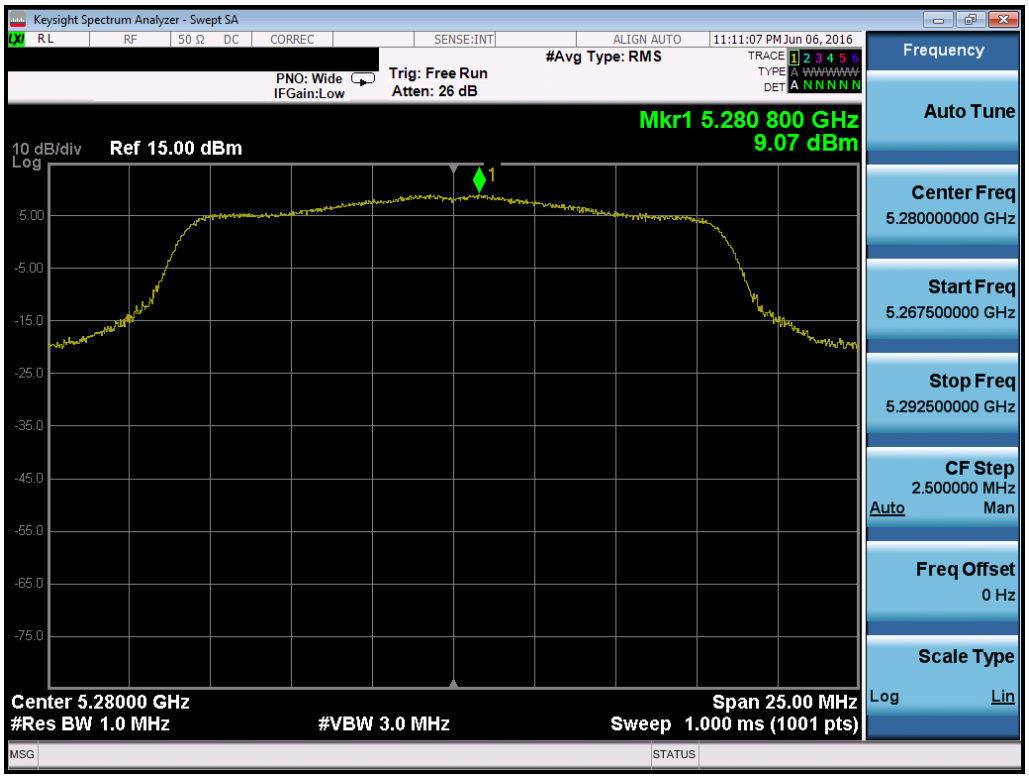
Plot 7-121. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 1) – Ch. 46)



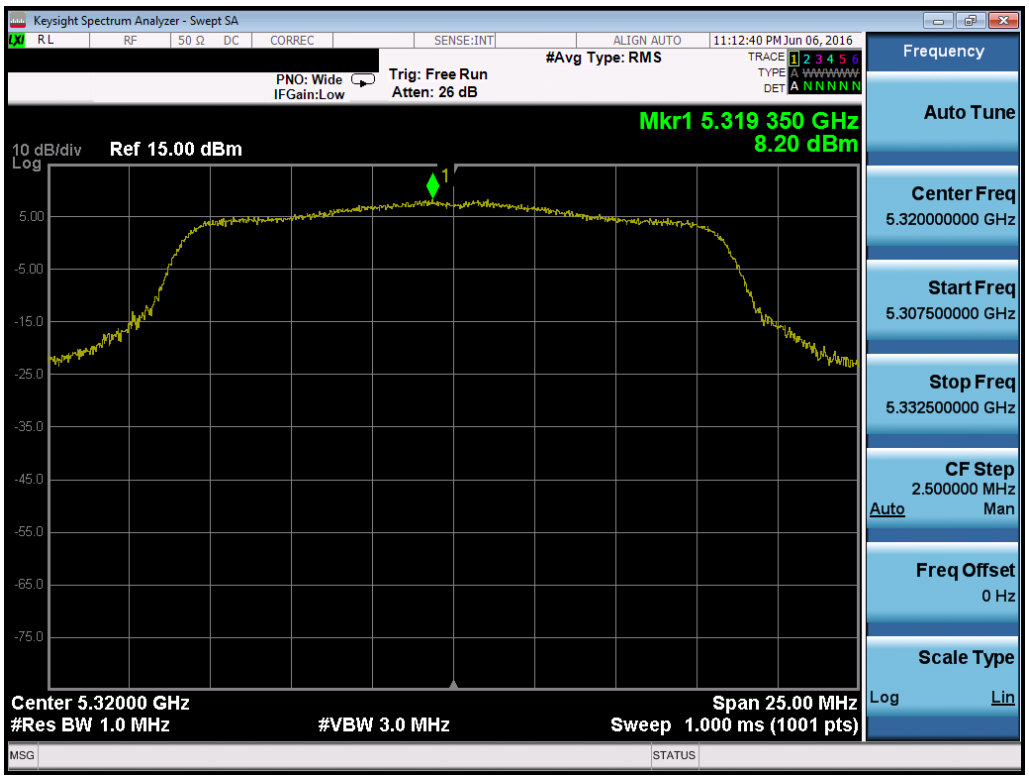
Plot 7-122. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 1) – Ch. 42)



Plot 7-123. Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 52)

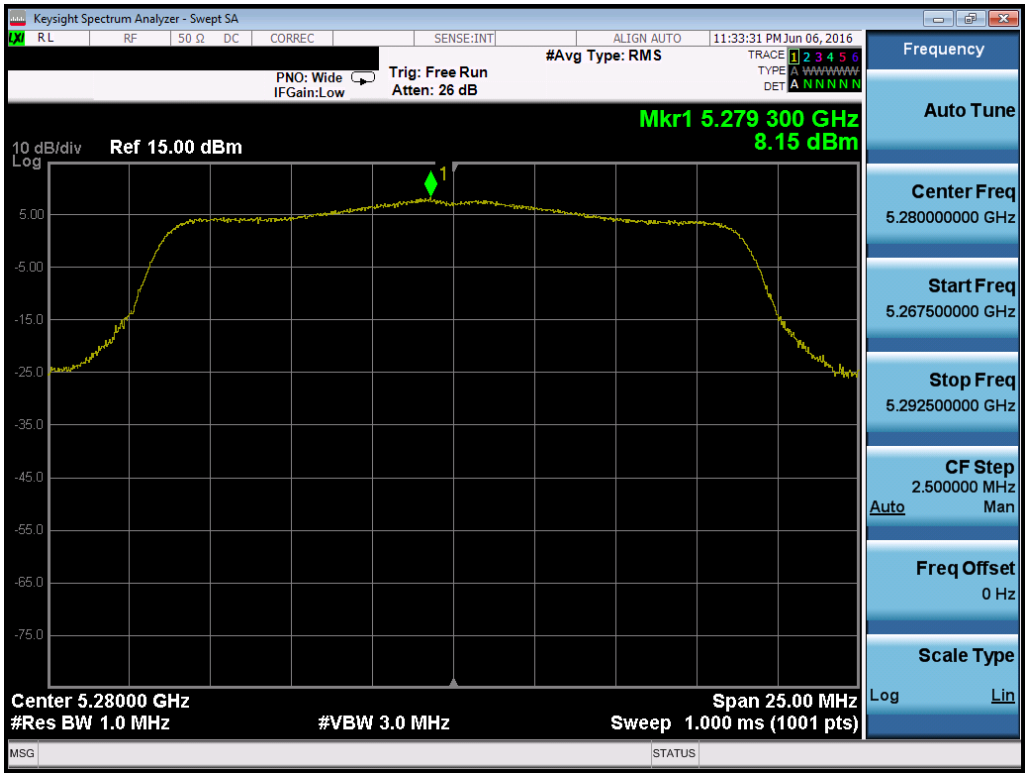


Plot 7-124. Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 56)

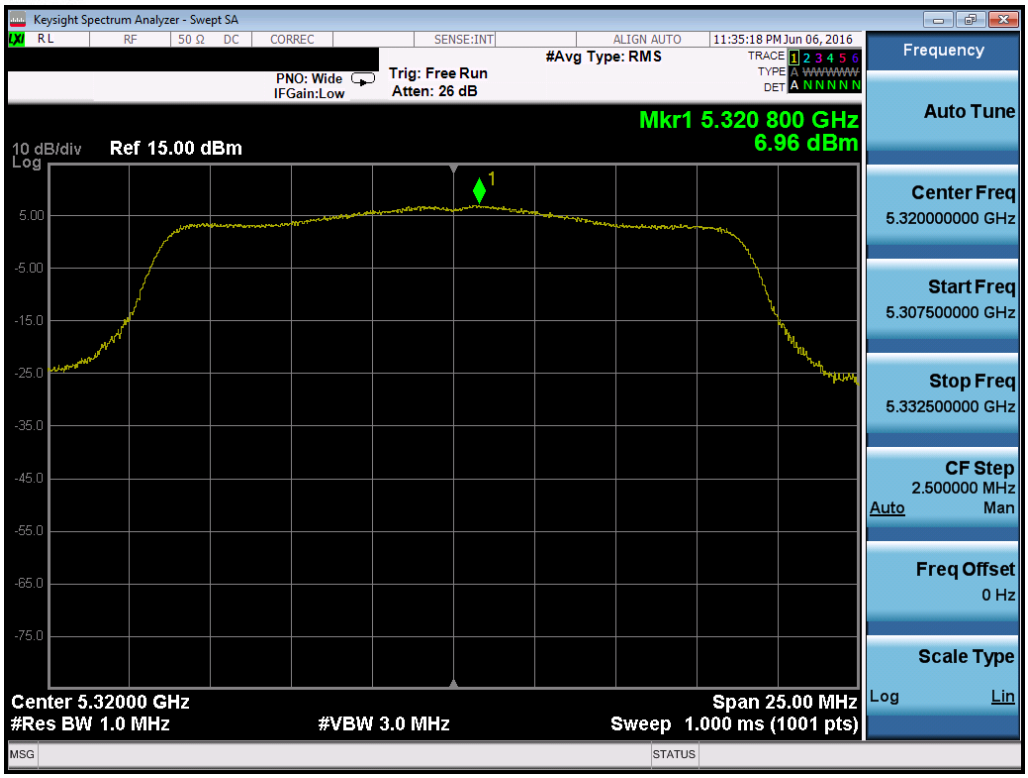


Plot 7-125. Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 64)

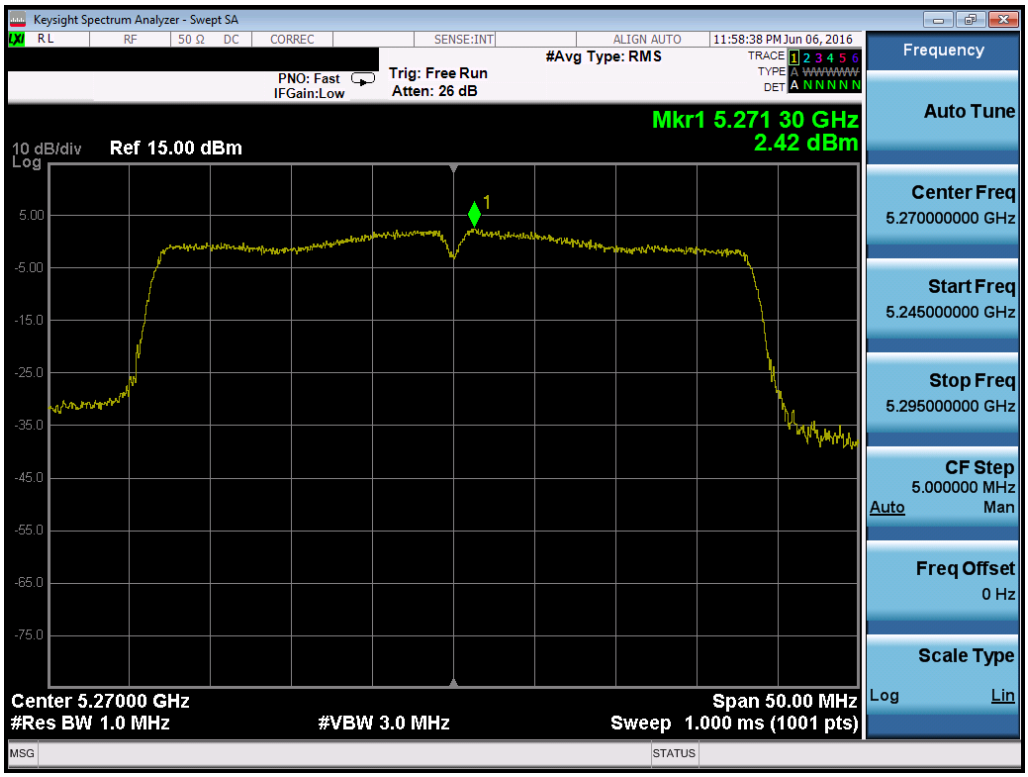
Plot 7-126. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2A) – Ch. 52)



Plot 7-127. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2A) – Ch. 56)



Plot 7-128. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2A) – Ch. 64)

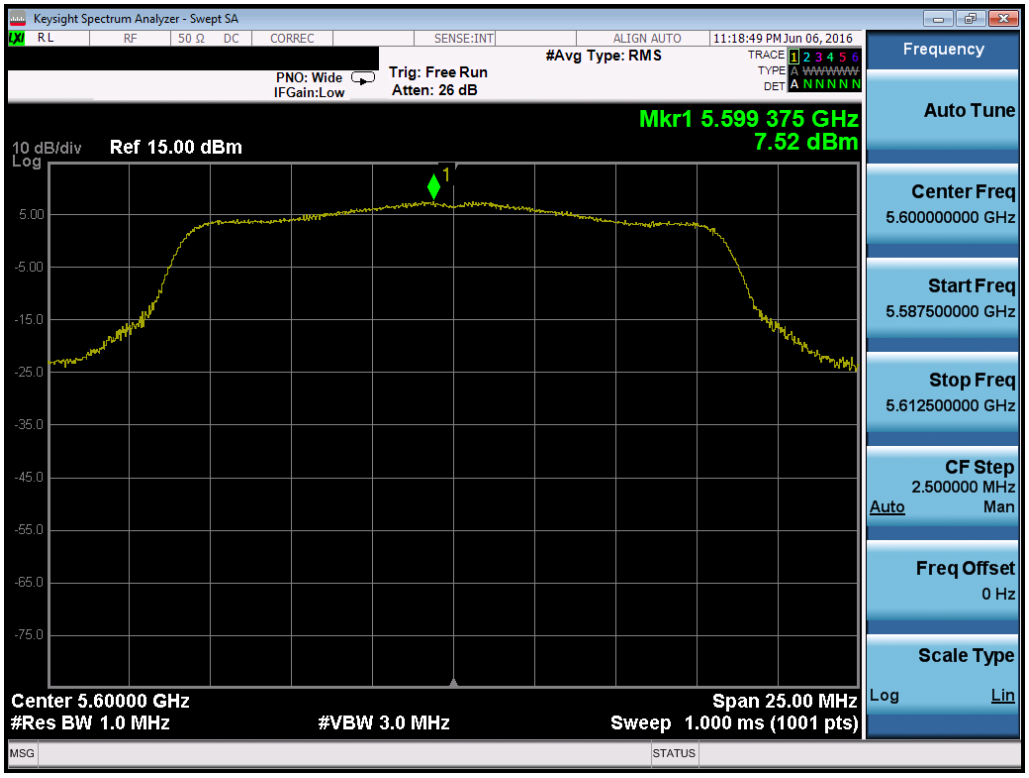


Plot 7-129. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2A) – Ch. 54)

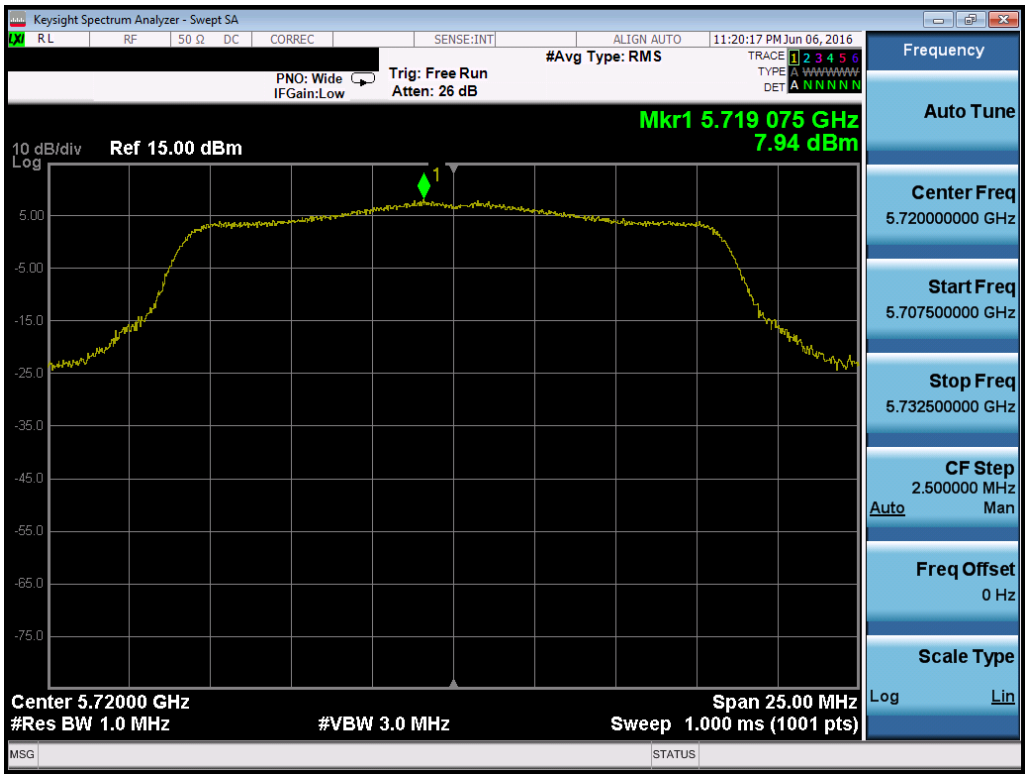
Plot 7-130. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2A) – Ch. 62)

Plot 7-131. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 2A) – Ch. 58)

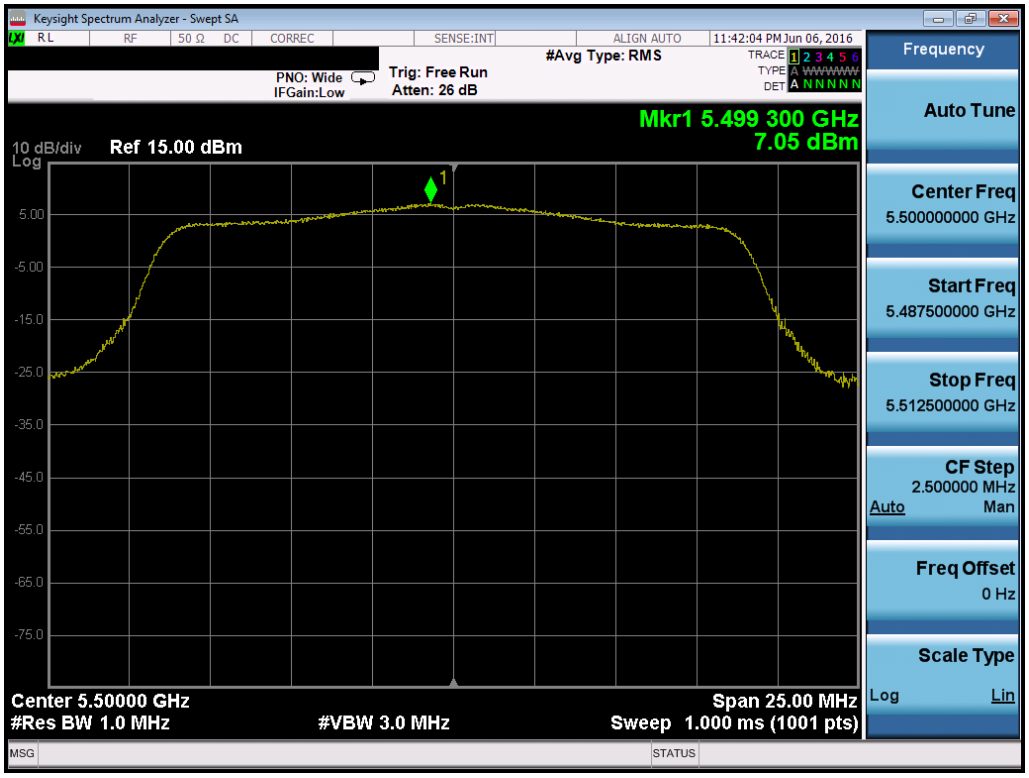
Plot 7-132. Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 100)



Plot 7-133. Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 120)

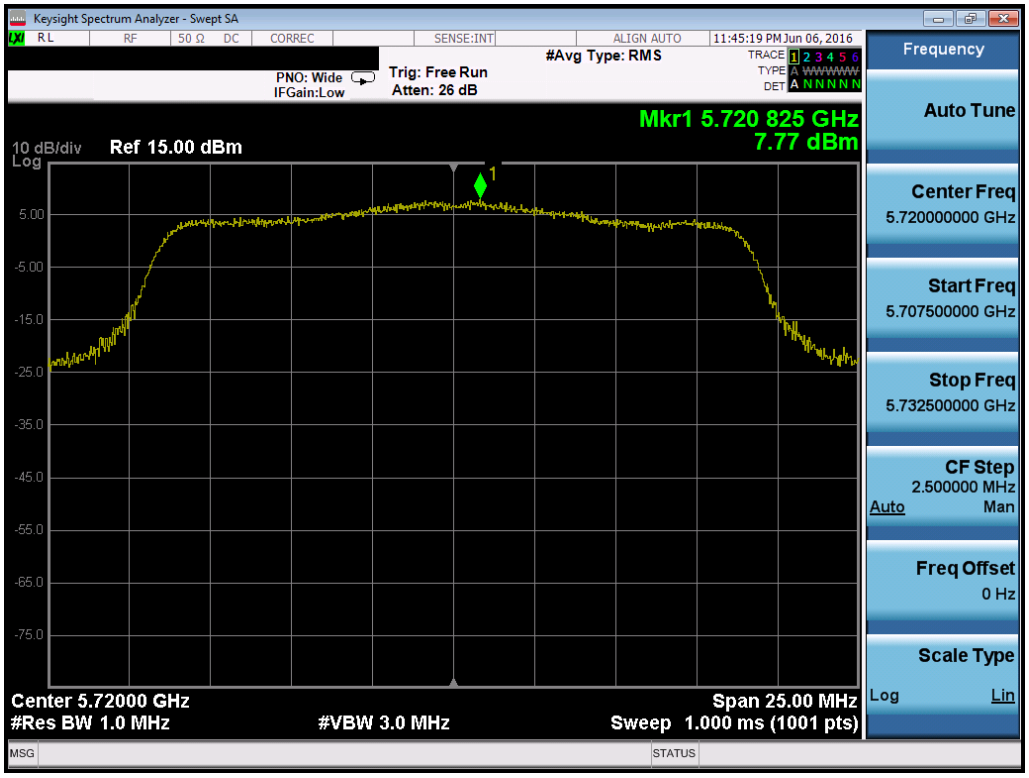


Plot 7-134. Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 144)

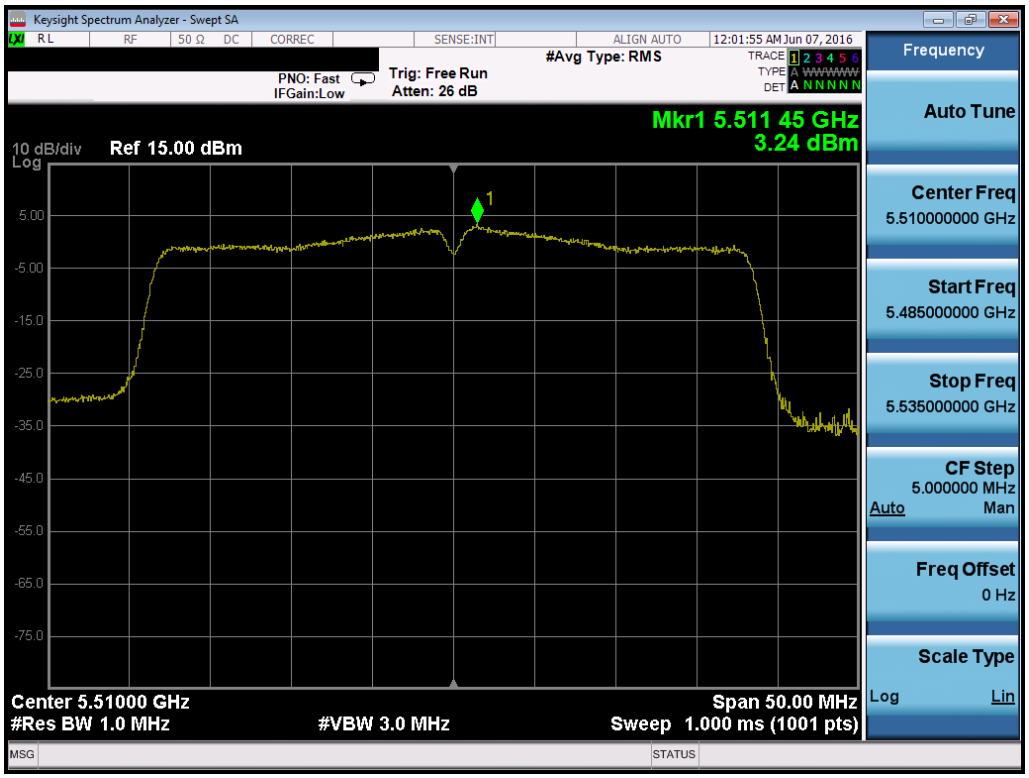


Plot 7-135. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 100)

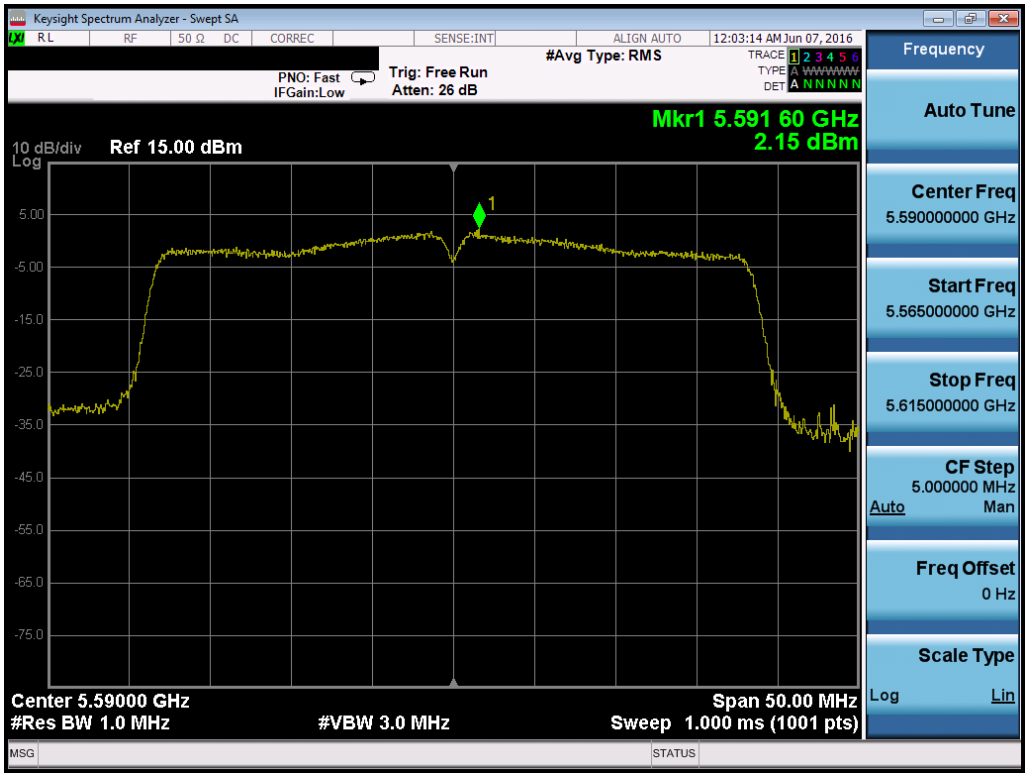
Plot 7-136. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 120)



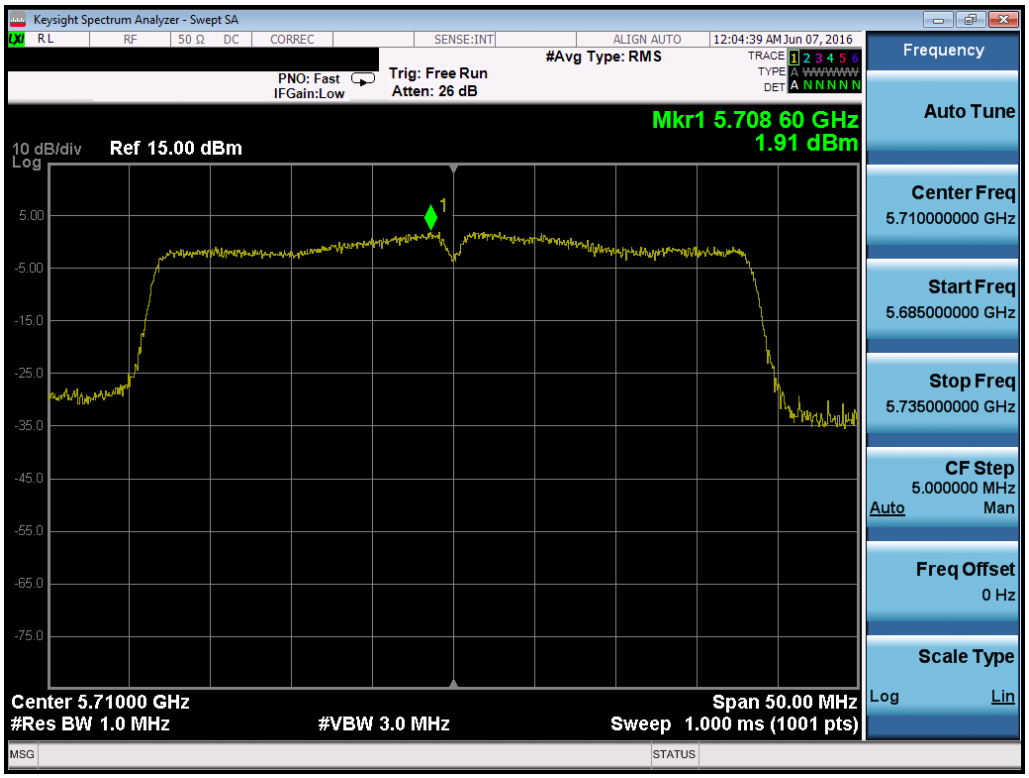
Plot 7-137. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 144)



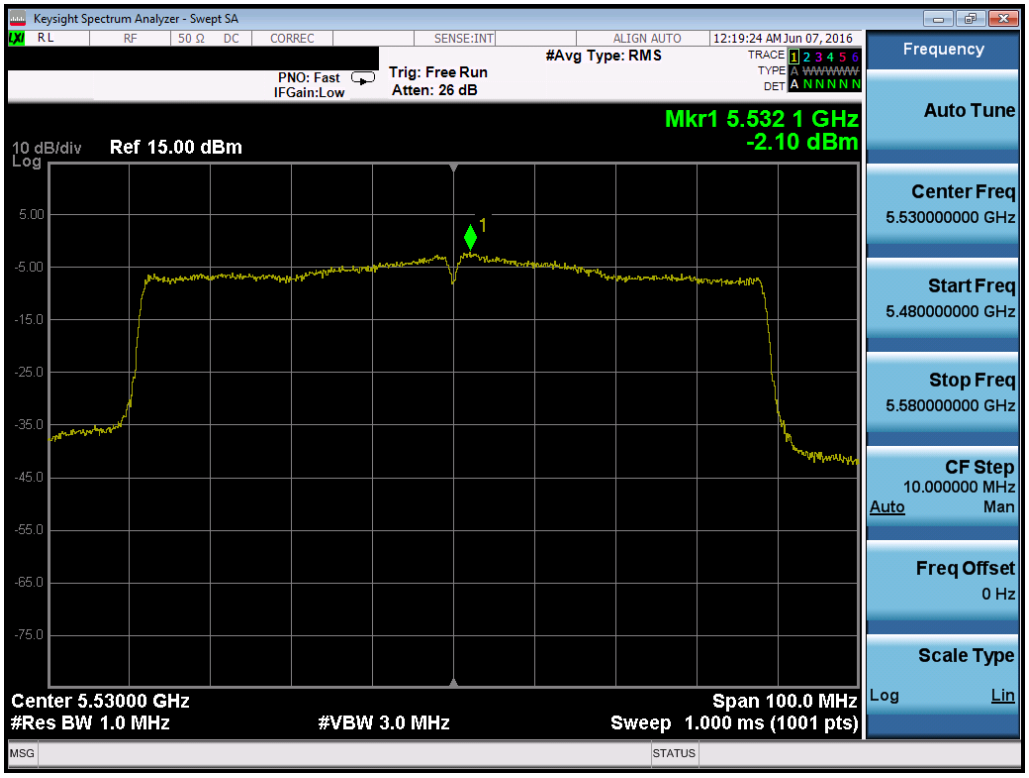
Plot 7-138. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 102)



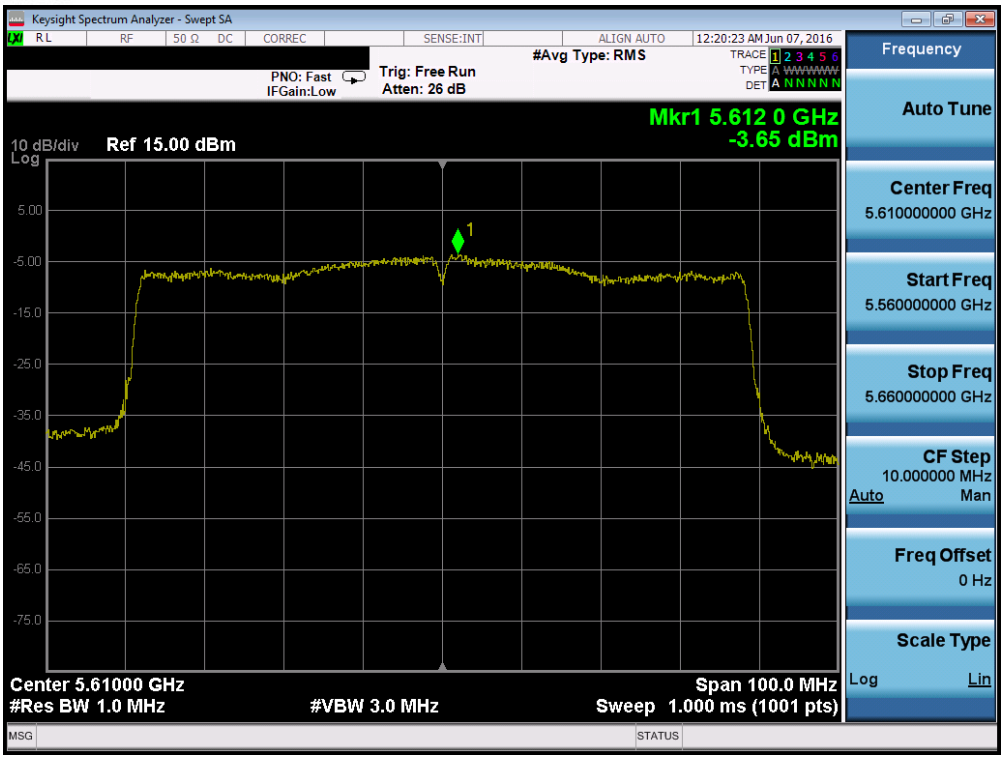
Plot 7-139. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 118)



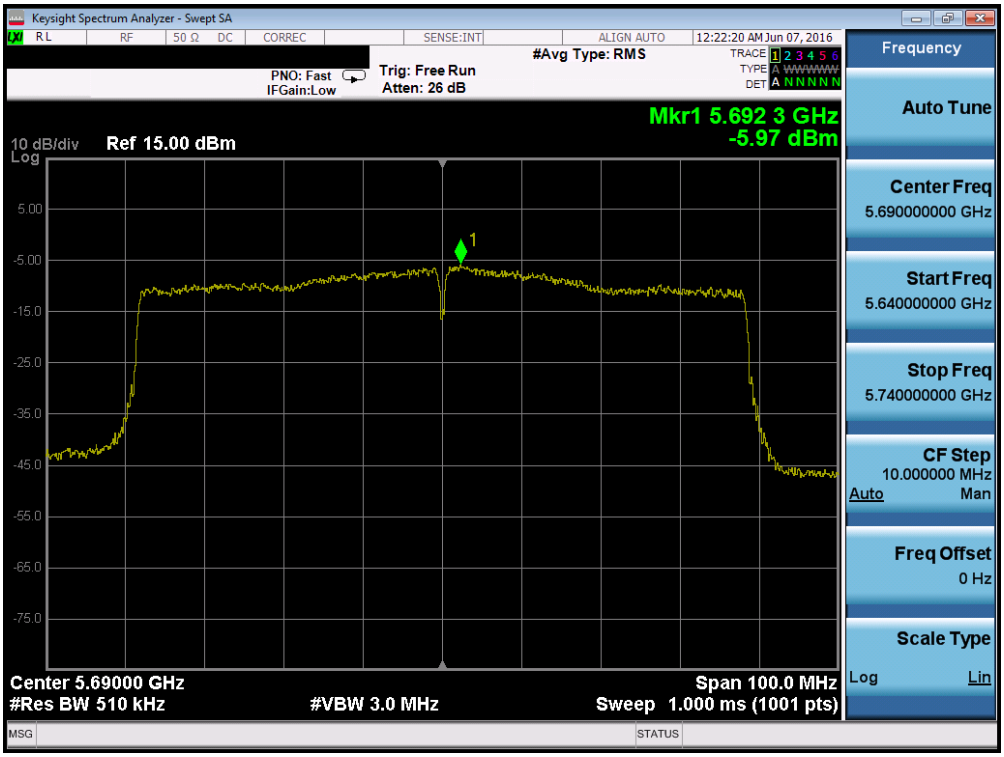
Plot 7-140. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 142)



Plot 7-141. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 2C) – Ch. 106)



Plot 7-142. Power Spectral Density Plot (80MHz BW 802.11n (UNII Band 2C) – Ch. 122)

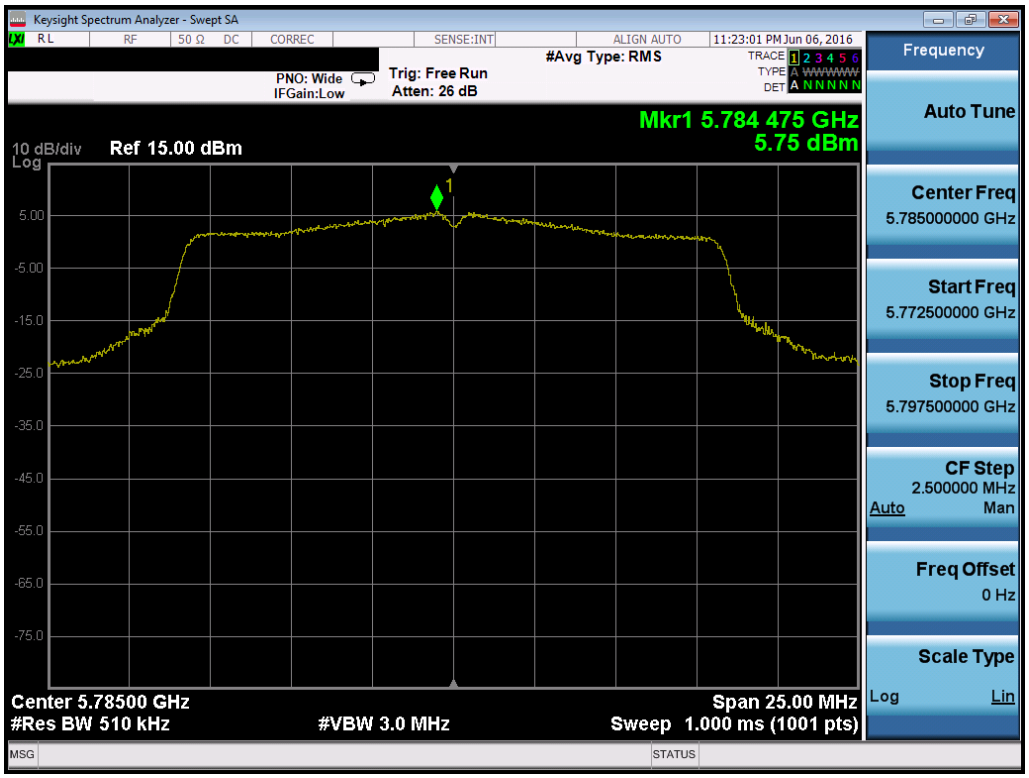


Plot 7-143. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 2C) – Ch. 138)

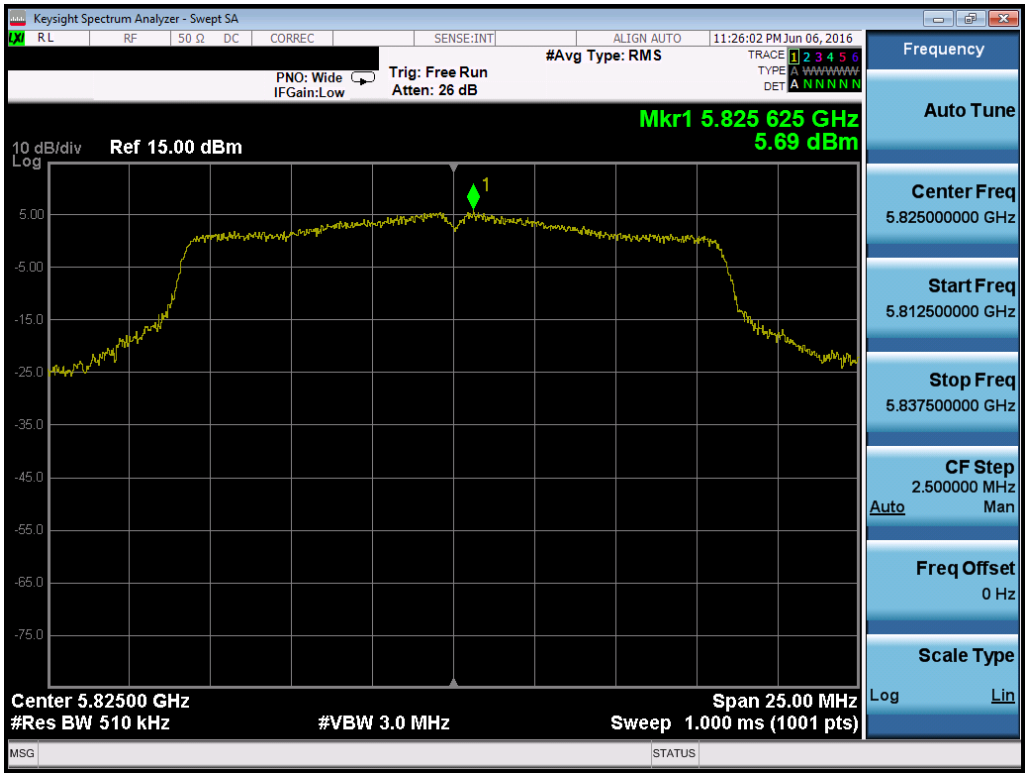
	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured Power Density [dBm]	Max Permissible Power Density [dBm/500kHz]	Margin [dB]	Pass / Fail
Band 3	5745	149	a	6	5.95	30.0	-24.05	Pass
	5785	157	a	6	5.75	30.0	-24.25	Pass
	5825	165	a	6	5.69	30.0	-24.31	Pass
	5745	149	n (20MHz)	6.5/7.2 (MCS0)	6.16	30.0	-23.84	Pass
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	5.19	30.0	-24.81	Pass
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	5.17	30.0	-24.83	Pass
	5755	151	n (40MHz)	13.5/15 (MCS0)	0.04	30.0	-29.96	Pass
	5795	159	n (40MHz)	13.5/15 (MCS0)	-0.37	30.0	-30.37	Pass
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	-2.57	30.0	-32.57	Pass

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

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

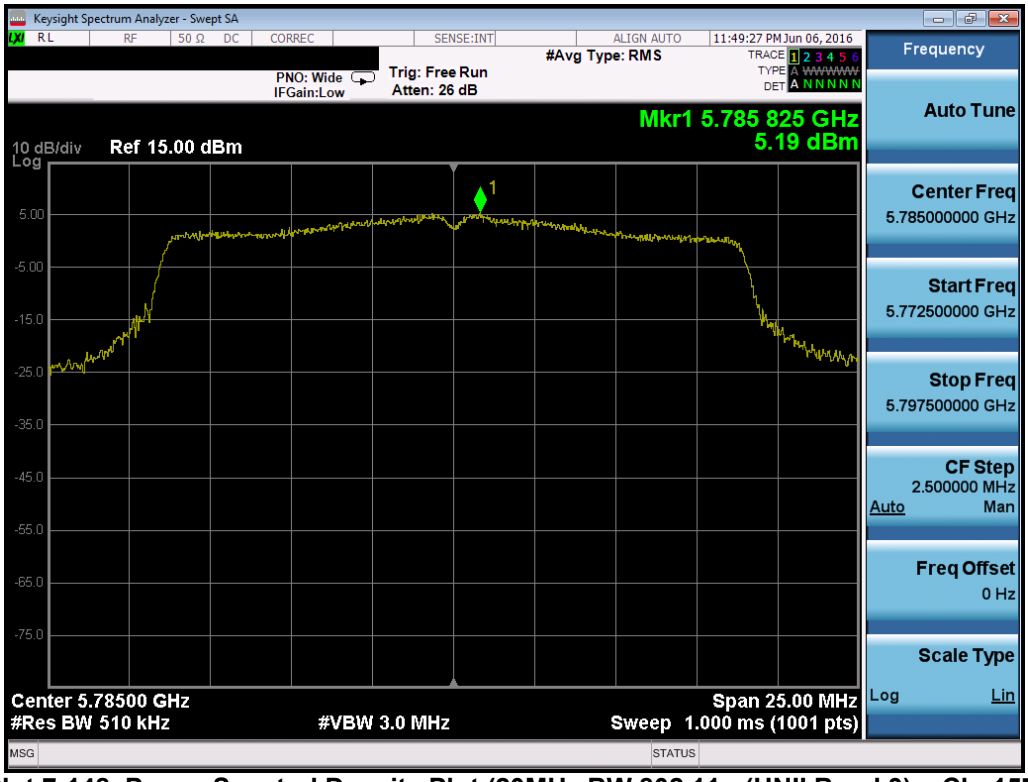


Plot 7-145. Power Spectral Density Plot (802.11a (UNII Band 3) – Ch. 157)

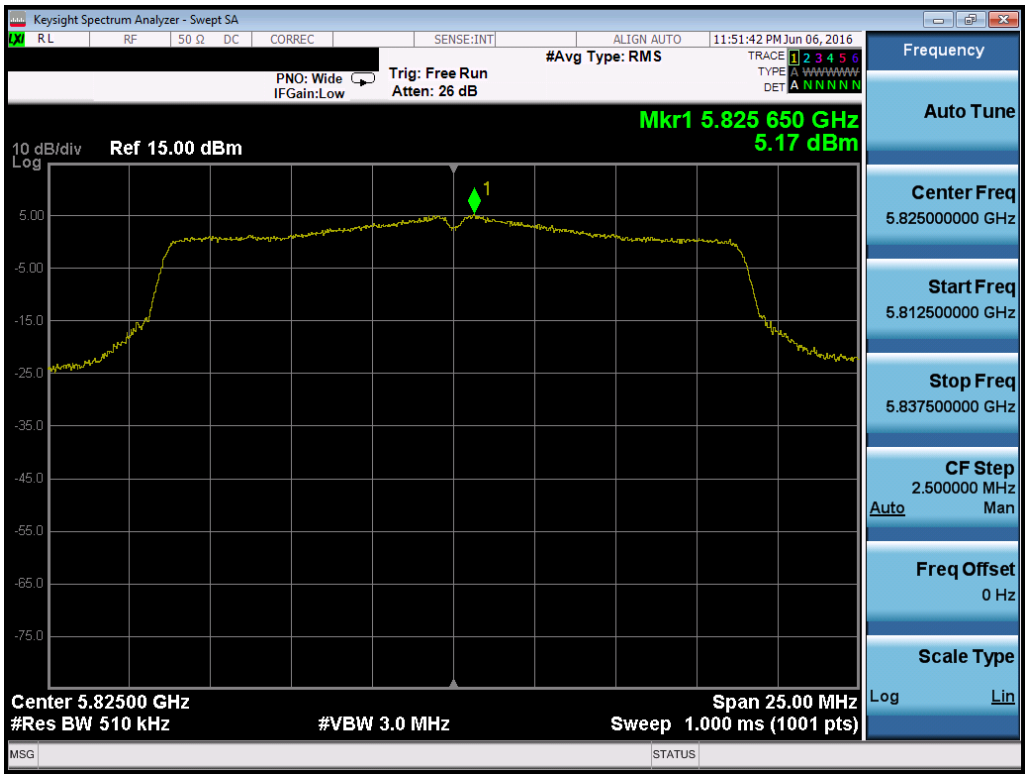


Plot 7-146. Power Spectral Density Plot (802.11a (UNII Band 3) – Ch. 165)

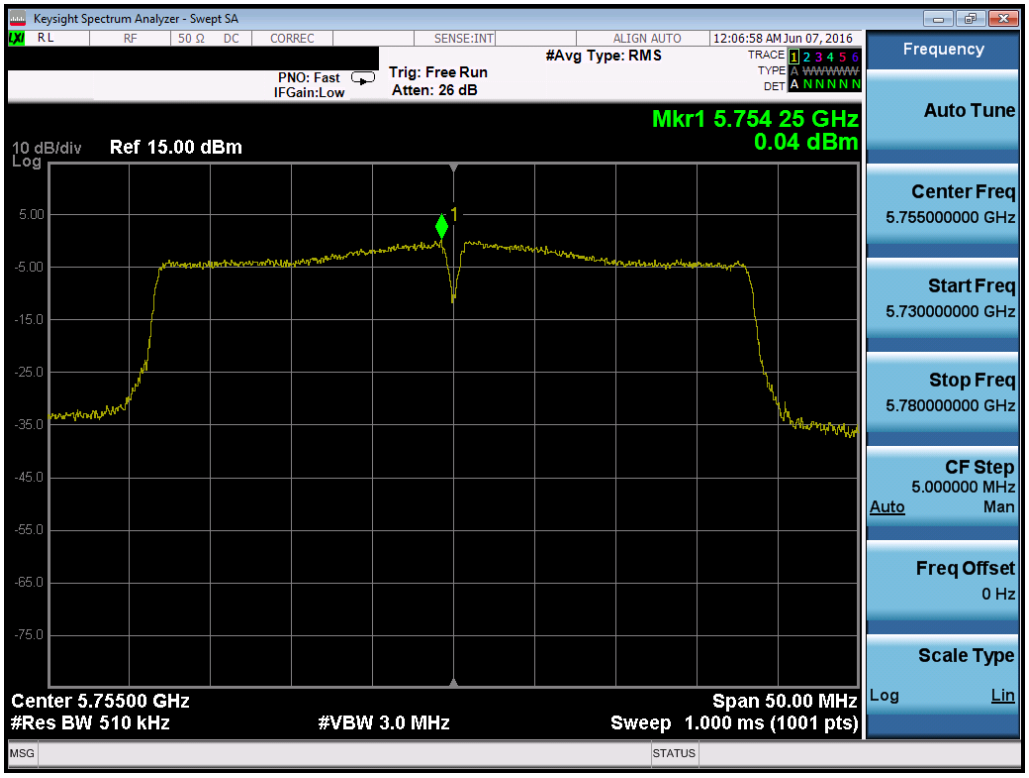
Plot 7-147. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 149)



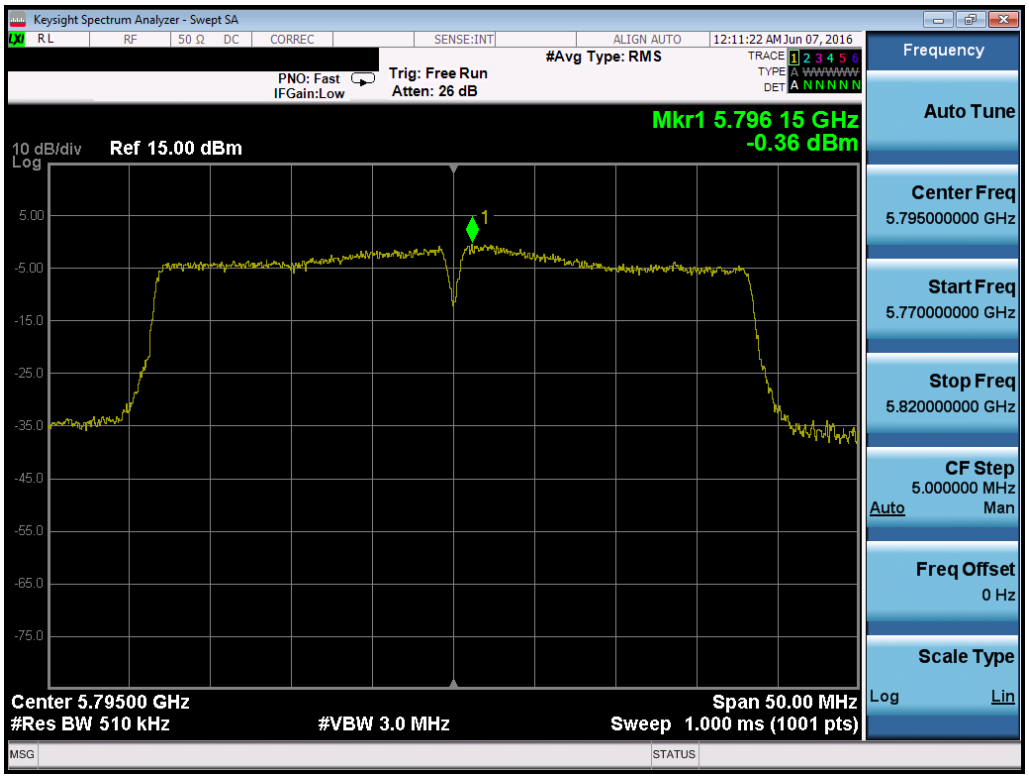
Plot 7-148. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 157)



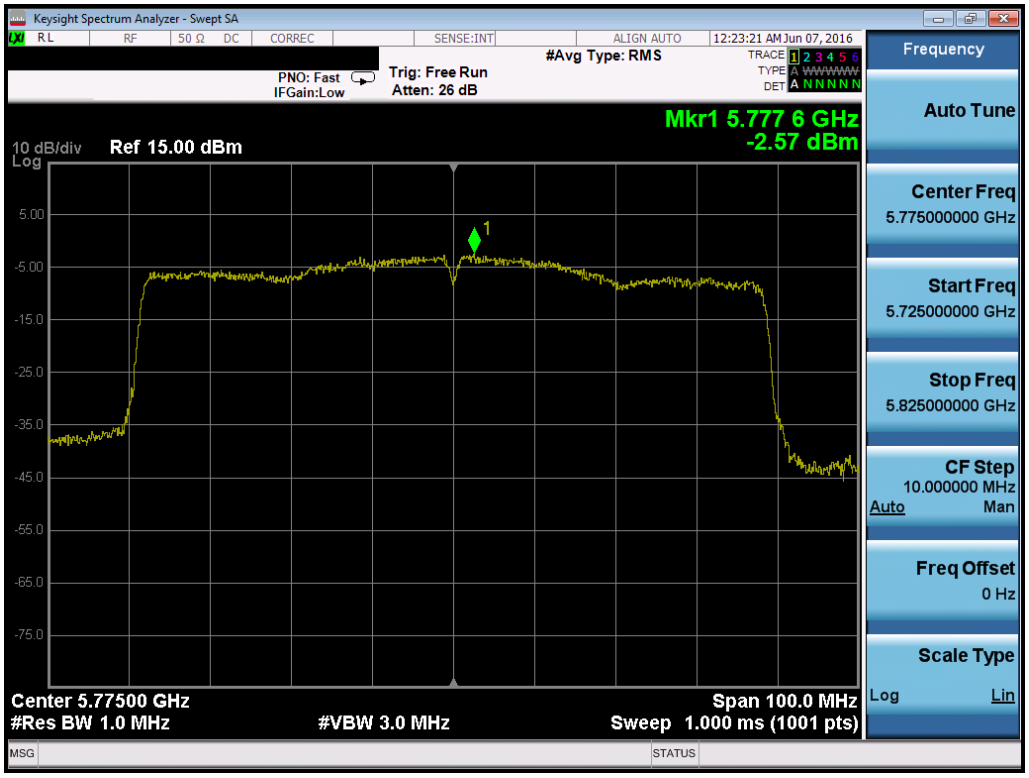
Plot 7-149. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 165)



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]	Pass / Fail
Band 1	5180	36	n (20MHz)	6.5/7.2 (MCS0)	5.95	6.80	9.40	11.0	-1.60	Pass
	5200	40	n (20MHz)	6.5/7.2 (MCS0)	5.81	6.42	9.14	11.0	-1.86	Pass
	5240	48	n (20MHz)	6.5/7.2 (MCS0)	6.53	7.48	10.04	11.0	-0.96	Pass
	5190	38	n (40MHz)	13.5/15 (MCS0)	2.03	2.61	5.34	11.0	-5.66	Pass
	5230	46	n (40MHz)	13.5/15 (MCS0)	2.27	2.47	5.38	11.0	-5.62	Pass
	5210	42	ac (80MHz)	29.3/32.5 (MCS0)	0.15	-1.78	2.30	11.0	-8.70	Pass
Band 2A	5260	52	n (20MHz)	6.5/7.2 (MCS0)	6.83	6.58	9.72	11.0	-1.28	Pass
	5280	56	n (20MHz)	6.5/7.2 (MCS0)	6.88	6.75	9.83	11.0	-1.17	Pass
	5320	64	n (20MHz)	6.5/7.2 (MCS0)	6.80	6.96	9.89	11.0	-1.11	Pass
	5270	54	n (40MHz)	13.5/15 (MCS0)	2.56	2.42	5.50	11.0	-5.50	Pass
	5310	62	n (40MHz)	13.5/15 (MCS0)	2.01	1.50	4.77	11.0	-6.23	Pass
	5290	58	ac (80MHz)	29.3/32.5 (MCS0)	-0.83	-1.08	2.06	11.0	-8.94	Pass
Band 2C	5500	100	n (20MHz)	6.5/7.2 (MCS0)	6.92	6.63	9.79	11.0	-1.21	Pass
	5600	120	n (20MHz)	6.5/7.2 (MCS0)	6.87	6.30	9.60	11.0	-1.40	Pass
	5720	144	n (20MHz)	6.5/7.2 (MCS0)	6.35	6.12	9.24	11.0	-1.76	Pass
	5510	102	n (40MHz)	13.5/15 (MCS0)	2.34	3.24	5.82	11.0	-5.18	Pass
	5590	118	n (40MHz)	13.5/15 (MCS0)	1.16	2.15	4.69	11.0	-6.31	Pass
	5710	142	n (40MHz)	13.5/15 (MCS0)	2.35	1.91	5.14	11.0	-5.86	Pass
	5530	106	ac (80MHz)	29.3/32.5 (MCS0)	-0.48	-2.10	1.80	11.0	-9.20	Pass

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]	Pass / Fail
Band 3	5745	149	n (20MHz)	6.5/7.2 (MCS0)	6.45	6.16	9.32	30.0	-20.68	Pass
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	5.72	5.19	8.48	30.0	-21.52	Pass
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	4.98	5.17	8.09	30.0	-21.91	Pass
	5755	151	n (40MHz)	13.5/15 (MCS0)	-0.20	0.04	2.93	30.0	-27.07	Pass
	5795	159	n (40MHz)	13.5/15 (MCS0)	-0.50	-0.37	2.58	30.0	-27.42	Pass
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	-1.35	-2.57	1.10	30.0	-28.90	Pass

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 the average conducted power spectral density was measured to be 5.95 dBm for Antenna-1 and 6.80 dBm for Antenna-2.

Antenna 1 + Antenna 2 = MIMO

(5.95 dBm + 6.80 dBm) = (3.93 mW + 4.79 mW) = 8.72 mW = 9.40 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: 3.80 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	5,180,000,128	128	0.00000247
100 %		- 30	5,179,999,956	-44	-0.00000085
100 %		- 20	5,180,000,048	48	0.00000093
100 %		- 10	5,180,000,067	67	0.00000129
100 %		0	5,179,999,766	-234	-0.00000452
100 %		+ 10	5,179,999,809	-191	-0.00000369
100 %		+ 20	5,179,999,951	-49	-0.00000095
100 %		+ 30	5,180,000,081	81	0.00000156
100 %		+ 40	5,180,000,216	216	0.00000417
100 %		+ 50	5,180,000,080	80	0.00000154
BATT. ENDPOINT	3.40	+ 20	5,179,999,953	-47	-0.00000091

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:	3.80	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	5,259,999,727	-273	-0.00000519
100 %		- 30	5,259,999,795	-205	-0.00000390
100 %		- 20	5,259,999,821	-179	-0.00000340
100 %		- 10	5,260,000,175	175	0.00000333
100 %		0	5,259,999,592	-408	-0.00000776
100 %		+ 10	5,260,000,002	2	0.00000004
100 %		+ 20	5,259,999,991	-9	-0.00000017
100 %		+ 30	5,260,000,331	331	0.00000629
100 %		+ 40	5,260,000,363	363	0.00000690
100 %		+ 50	5,260,000,013	13	0.00000025
BATT. ENDPOINT	3.40	+ 20	5,259,999,971	-29	-0.00000055

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:	3.80	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	5,500,000,002	2	0.00000004
100 %		- 30	5,499,999,709	-291	-0.00000529
100 %		- 20	5,500,000,067	67	0.00000122
100 %		- 10	5,499,999,957	-43	-0.00000078
100 %		0	5,500,000,156	156	0.00000284
100 %		+ 10	5,500,000,021	21	0.00000038
100 %		+ 20	5,500,000,008	8	0.00000015
100 %		+ 30	5,499,999,750	-250	-0.00000455
100 %		+ 40	5,499,999,684	-316	-0.00000575
100 %		+ 50	5,500,000,001	1	0.00000002
BATT. ENDPOINT	3.40	+ 20	5,499,999,893	-107	-0.00000195

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:	3.80	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	5,744,999,912	-88	-0.00000153
100 %		- 30	5,745,000,012	12	0.00000021
100 %		- 20	5,744,999,863	-137	-0.00000238
100 %		- 10	5,745,000,454	454	0.00000790
100 %		0	5,744,999,957	-43	-0.00000075
100 %		+ 10	5,745,000,067	67	0.00000117
100 %		+ 20	5,744,999,967	-33	-0.00000057
100 %		+ 30	5,744,999,911	-89	-0.00000155
100 %		+ 40	5,744,999,980	-20	-0.00000035
100 %		+ 50	5,744,999,563	-437	-0.00000761
BATT. ENDPOINT	3.40	+ 20	5,744,999,914	-86	-0.00000150

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.1)(b.6) §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 v01r02, 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.

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 v01r02 – 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.

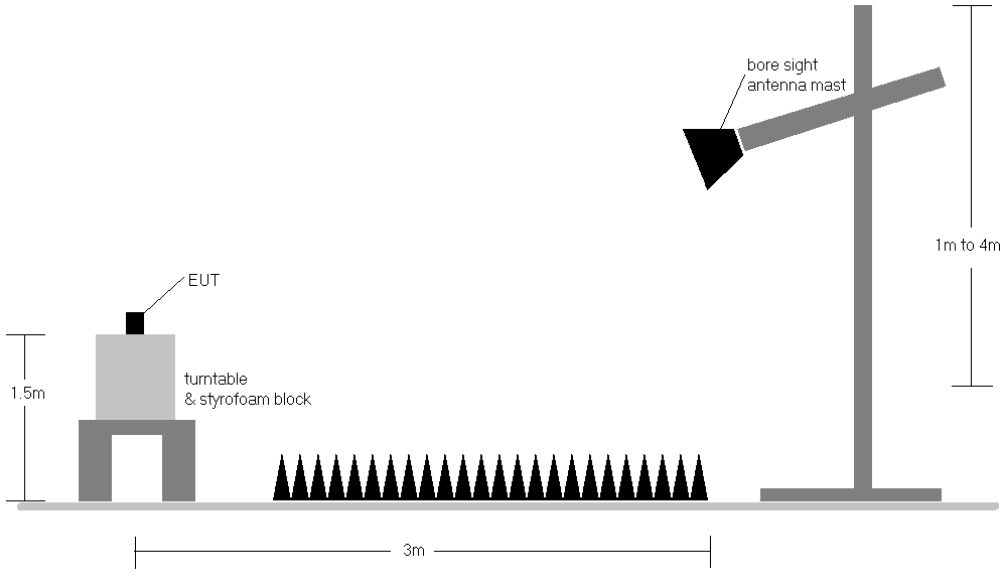


Figure 7-5. Test Instrument & Measurement Setup

Test Notes

1. All radiated spurious emissions levels were measured in a radiated test setup per the guidance of KDB 789033 D02 v01r02 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 6-11. 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

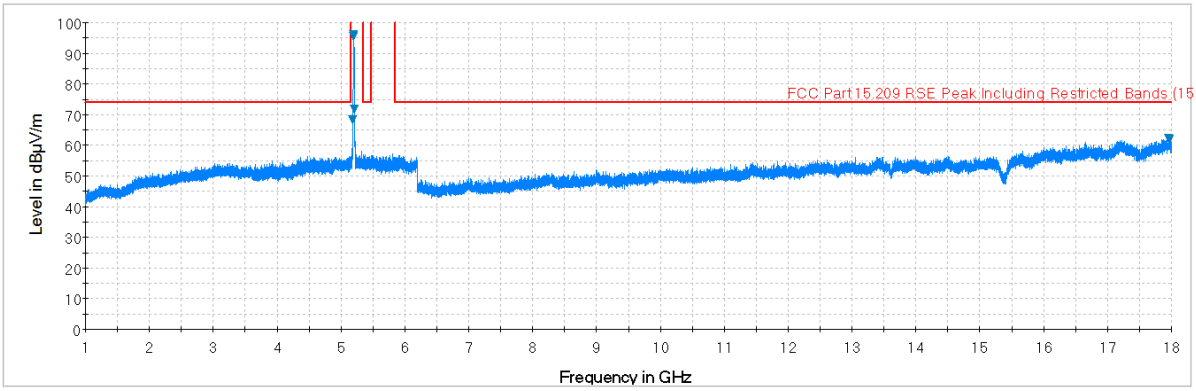
Determining Spurious Emissions Levels

- Field Strength Level $_{[dB\mu V/m]}$ = Analyzer Level $_{[dBm]}$ + 107 + AFCL $_{[dB/m]}$
- AFCL $_{[dB/m]}$ = Antenna Factor $_{[dB/m]}$ + Cable Loss $_{[dB]}$
- Margin $_{[dB]}$ = Field Strength Level $_{[dB\mu V/m]}$ – Limit $_{[dB\mu V/m]}$

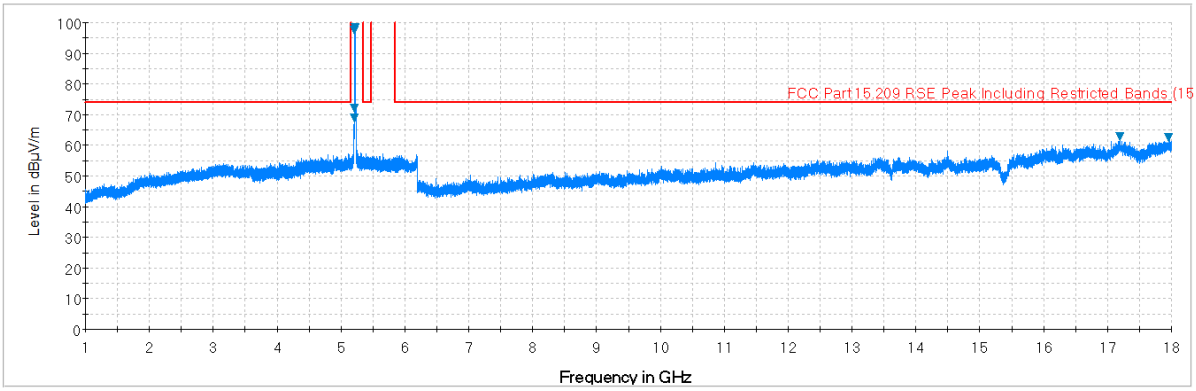
Radiated Band Edge Measurement Offset

- 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 + 10 dB Attenuator) – Preamplifier Gain

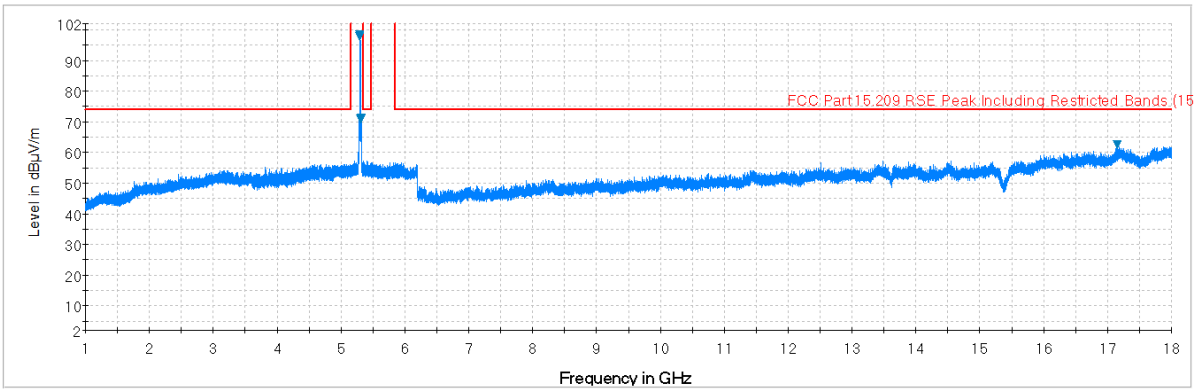
7.7.1 Antenna-1 Radiated Spurious Emission Measurements



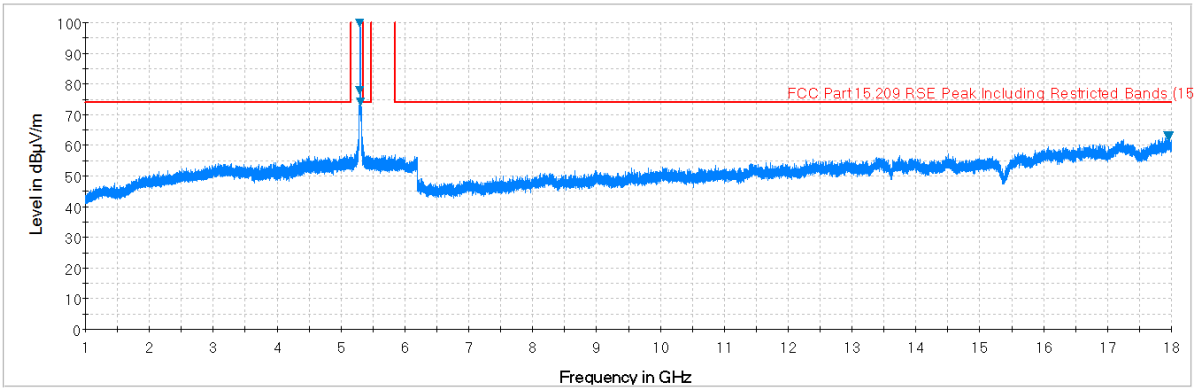
Plot 7-153. Radiated Spurious Plot above 1GHz (802.11a – U1 Ch. 40, Ant. Pol. H)



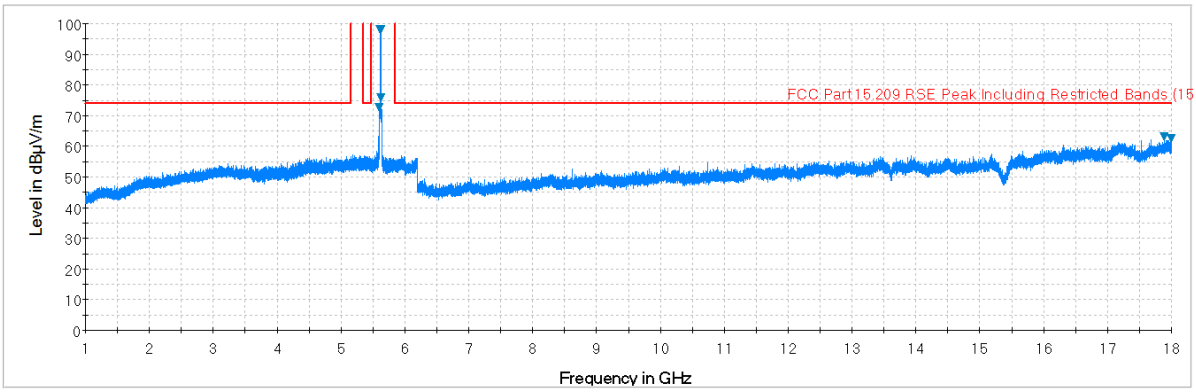
Plot 7-154. Radiated Spurious Plot above 1GHz (802.11a – U1 Ch. 40, Ant. Pol. V)



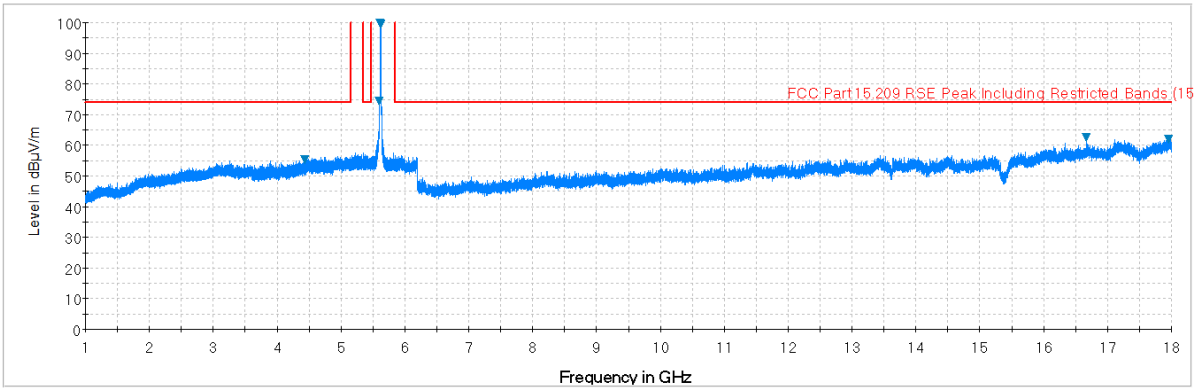
Plot 7-155. Radiated Spurious Plot above 1GHz (802.11a – U2A Ch. 56, Ant. Pol. H)



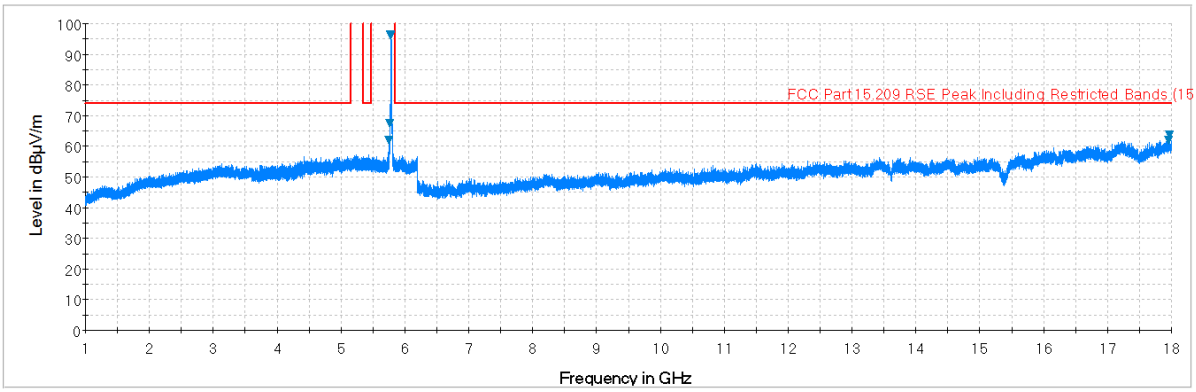
Plot 7-156. Radiated Spurious Plot above 1GHz (802.11a – U2A Ch. 56, Ant. Pol. V)



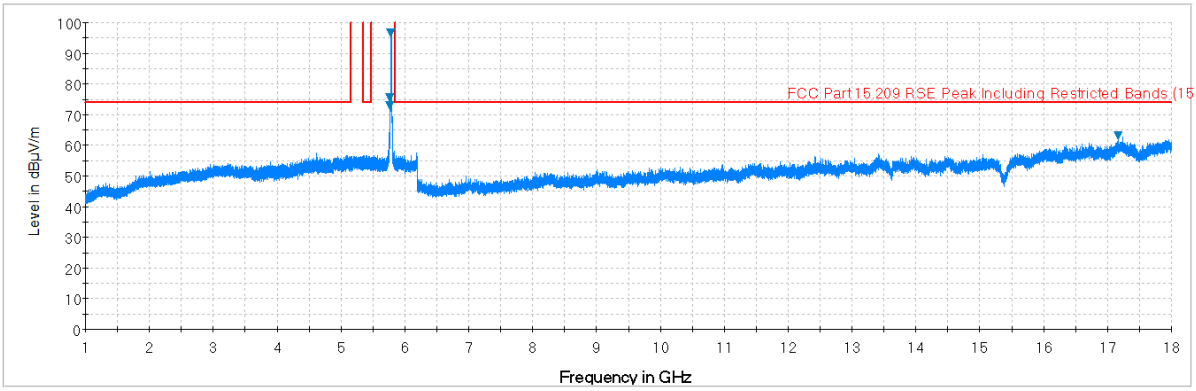
Plot 7-157. Radiated Spurious Plot above 1GHz (802.11a – U2C Ch. 116, Ant. Pol. H)



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



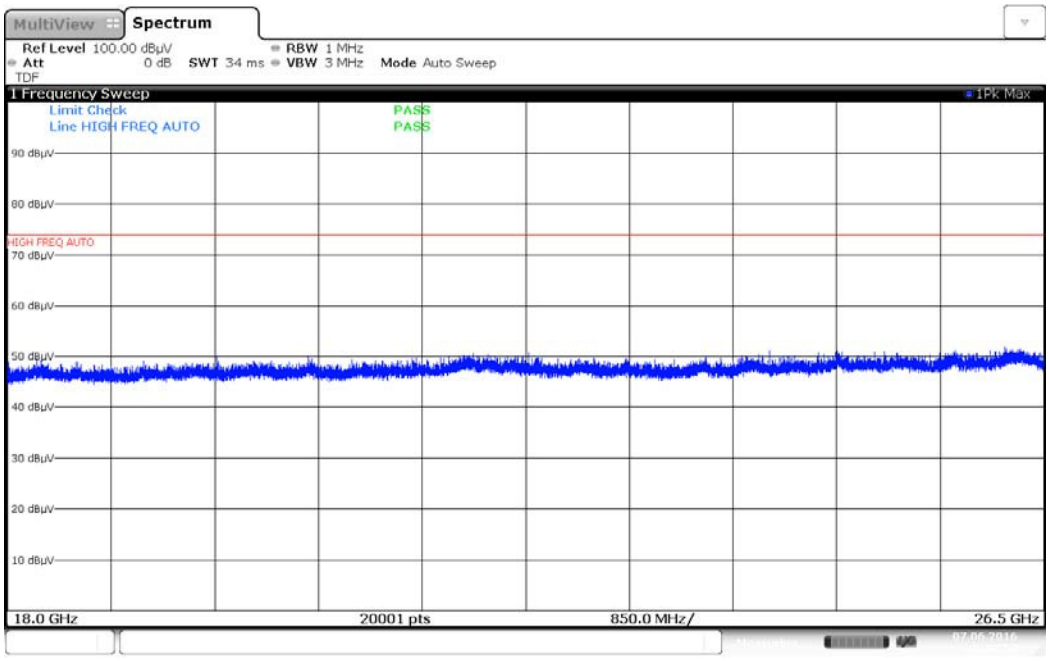
Plot 7-159. Radiated Spurious Plot above 1GHz (802.11a – U3 Ch. 157, Ant. Pol. H)



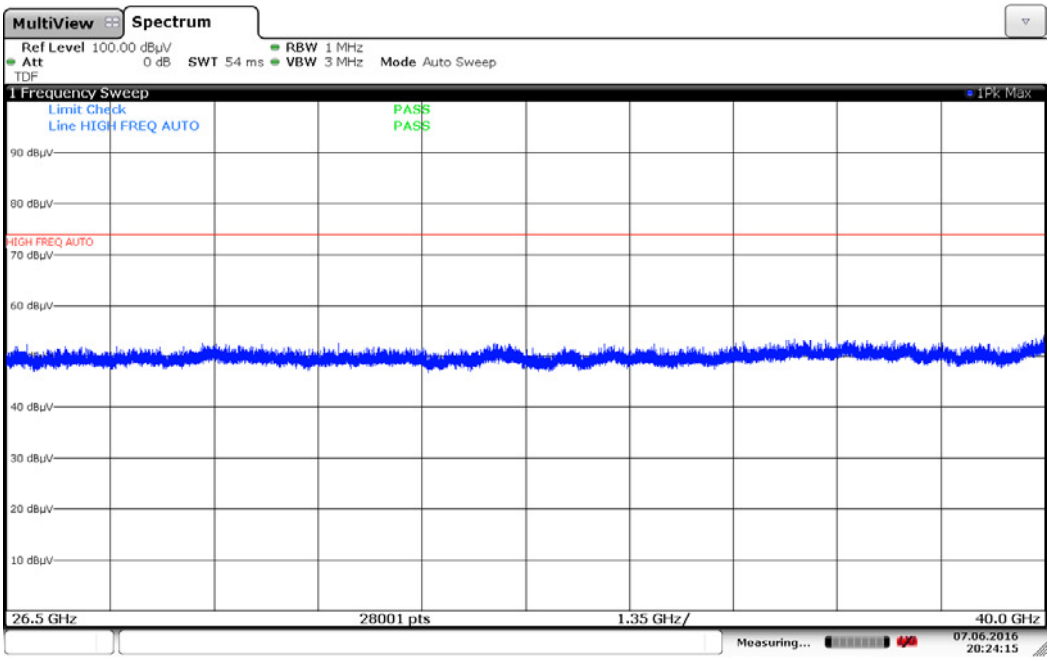
Plot 7-160. Radiated Spurious Plot above 1GHz (802.11a – U3 Ch. 157, Ant. Pol. V)

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

§15.209



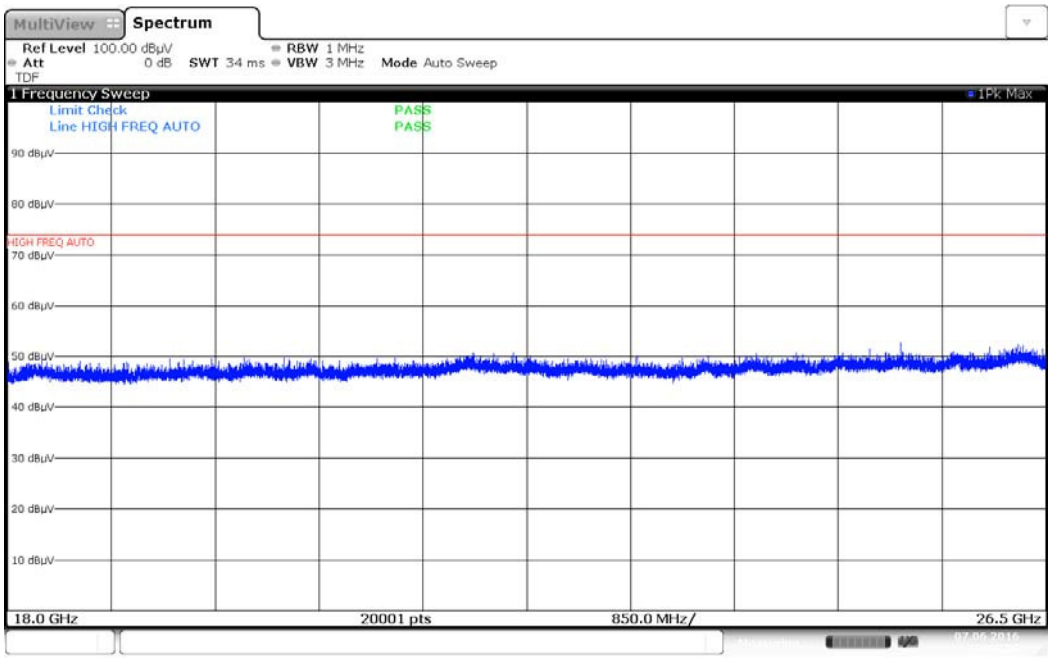
Plot 7-161. Radiated Spurious Plot above 18GHz (802.11a – Ant. Pol. H)



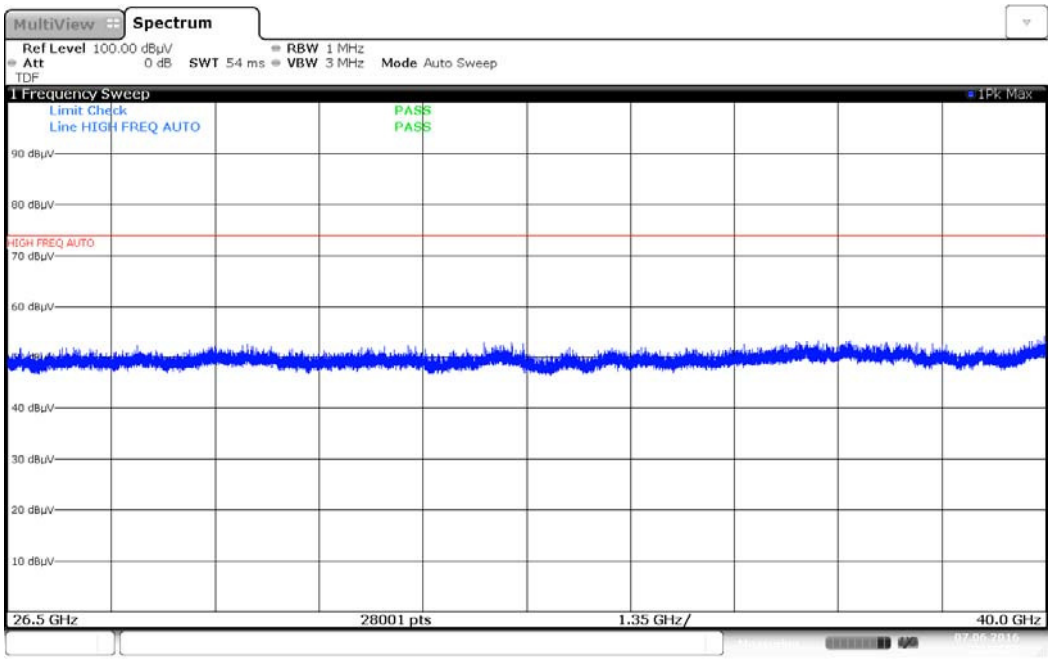
Plot 7-162. Radiated Spurious Plot above 18GHz (802.11a – Ant. Pol. H)

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

§15.209



Plot 7-163. Radiated Spurious Plot above 18GHz (802.11a – Ant. Pol. V)



Plot 7-164. Radiated Spurious Plot above 18GHz (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	H	-	-	-98.77	48.08	0.00	56.31	68.20	-11.89
*	15540.00	Average	H	-	-	-109.94	53.35	0.00	50.41	53.98	-3.57
*	15540.00	Peak	H	-	-	-98.31	53.35	0.00	62.04	73.98	-11.94
*	20720.00	Average	H	-	-	-107.90	44.39	-9.54	33.94	53.98	-20.04
*	20720.00	Peak	H	-	-	-95.40	44.39	-9.54	46.44	73.98	-27.54
	25900.00	Peak	H	-	-	-93.98	45.11	-9.54	48.59	68.20	-19.61

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	H	-	-	-98.77	48.05	0.00	56.28	68.20	-11.92
*	15600.00	Average	H	-	-	-110.33	53.44	0.00	50.10	53.98	-3.88
*	15600.00	Peak	H	-	-	-99.13	53.44	0.00	61.30	73.98	-12.68
*	20800.00	Average	H	-	-	-112.85	44.39	-9.54	29.00	53.98	-24.98
*	20800.00	Peak	H	-	-	-100.94	44.39	-9.54	40.91	73.98	-33.07
	26000.00	Peak	H	-	-	-99.77	45.12	-9.54	42.80	68.20	-25.40

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	H	-	-	-98.80	48.21	0.00	56.41	68.20	-11.79
*	15720.00	Average	H	-	-	-110.18	53.84	0.00	50.66	53.98	-3.32
*	15720.00	Peak	H	-	-	-98.26	53.84	0.00	62.58	73.98	-11.40
*	20960.00	Average	H	-	-	-112.44	44.31	-9.54	29.33	53.98	-24.65
*	20960.00	Peak	H	-	-	-97.29	44.31	-9.54	44.48	73.98	-29.50
	26200.00	Peak	H	-	-	-98.87	45.01	-9.54	43.60	68.20	-24.60

Table 7-30. 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	H	-	-	-99.51	48.21	0.00	55.70	68.20	-12.50
*	15720.00	Average	H	-	-	-110.31	53.84	0.00	50.53	53.98	-3.45
*	15720.00	Peak	H	-	-	-98.96	53.84	0.00	61.88	73.98	-12.10
*	20960.00	Average	H	-	-	-112.76	44.31	-9.54	29.01	53.98	-24.97
*	20960.00	Peak	H	-	-	-99.48	44.31	-9.54	42.29	73.98	-31.69
	26200.00	Peak	H	-	-	-101.31	45.01	-9.54	41.16	68.20	-27.04

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	H	-	-	-100.10	48.22	0.00	55.12	68.20	-13.08
*	15780.00	Average	H	-	-	-110.94	53.85	0.00	49.91	53.98	-4.07
*	15780.00	Peak	H	-	-	-99.10	53.85	0.00	61.75	73.98	-12.23
*	21040.00	Average	H	-	-	-112.28	44.29	-9.54	29.47	53.98	-24.51
*	21040.00	Peak	H	-	-	-97.22	44.29	-9.54	44.53	73.98	-29.45
	26300.00	Peak	H	-	-	-98.64	45.00	-9.54	43.82	68.20	-24.38

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	H	-	-	-98.98	48.18	0.00	56.20	68.20	-12.00
*	15840.00	Average	H	-	-	-110.57	53.94	0.00	50.36	53.98	-3.62
*	15840.00	Peak	H	-	-	-98.65	53.94	0.00	62.28	73.98	-11.70
*	21120.00	Average	H	-	-	-112.42	44.27	-9.54	29.31	53.98	-24.67
*	21120.00	Peak	H	-	-	-97.96	44.27	-9.54	43.77	73.98	-30.21
	26400.00	Peak	H	-	-	-99.15	45.02	-9.54	43.33	68.20	-24.87

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	H	-	-	-109.51	48.11	0.00	45.59	53.98	-8.39
*	10640.00	Peak	H	-	-	-99.09	48.11	0.00	56.01	73.98	-17.97
*	15960.00	Average	H	-	-	-110.65	54.57	0.00	50.92	53.98	-3.06
*	15960.00	Peak	H	-	-	-97.30	54.57	0.00	64.27	73.98	-9.71
*	21280.00	Average	H	-	-	-112.50	44.26	-9.54	29.22	53.98	-24.76
*	21280.00	Peak	H	-	-	-97.98	44.26	-9.54	43.74	73.98	-30.24
	26600.00	Peak	H	-	-	-101.06	47.61	-9.54	44.01	68.20	-24.19

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	H	-	-	-110.39	48.11	0.00	44.71	53.98	-9.27
*	10640.00	Peak	H	-	-	-98.22	48.11	0.00	56.88	73.98	-17.10
*	15960.00	Average	H	-	-	-110.62	54.57	0.00	50.95	53.98	-3.03
*	15960.00	Peak	H	-	-	-97.08	54.57	0.00	64.49	73.98	-9.49
*	21280.00	Average	H	-	-	-112.74	44.26	-9.54	28.98	53.98	-25.00
	21280.00	Peak	H	-	-	-98.25	44.26	-9.54	43.47	73.98	-30.51
	26600.00	Peak	H	-	-	-101.34	47.61	-9.54	43.73	68.20	-24.47

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	H	-	-	-109.15	49.03	0.00	46.88	53.98	-7.10
*	11000.00	Peak	H	-	-	-99.19	49.03	0.00	56.84	73.98	-17.14
	16500.00	Peak	H	-	-	-97.16	55.10	0.00	64.93	68.20	-3.27
	22000.00	Peak	H	-	-	-101.40	44.50	-9.54	40.56	68.20	-27.64
	27500.00	Peak	H	-	-	-101.24	47.97	-9.54	44.19	68.20	-24.01

Table 7-36. Radiated Measurements

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5600MHz
Channel:	120

	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]
*	11200.00	Average	H	-	-	-111.16	49.29	0.00	45.13	53.98	-8.85
*	11200.00	Peak	H	-	-	-99.93	49.29	0.00	56.36	73.98	-17.62
	16800.00	Peak	H	-	-	-98.89	57.02	0.00	65.13	68.20	-3.07
*	22400.00	Average	H	-	-	-113.18	44.56	-9.54	28.84	53.98	-25.14
*	22400.00	Peak	H	-	-	-98.48	44.56	-9.54	43.54	73.98	-30.44
	28000.00	Peak	H	-	-	-103.11	48.08	-9.54	42.43	68.20	-25.77

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	H	-	-	-110.71	49.74	0.00	46.03	53.98	-7.95
*	11440.00	Peak	H	-	-	-99.95	49.74	0.00	56.79	73.98	-17.19
	17160.00	Peak	H	-	-	-99.15	57.13	0.00	64.99	68.20	-3.21
*	22880.00	Average	H	-	-	-112.85	44.56	-9.54	29.16	53.98	-24.82
*	22880.00	Peak	H	-	-	-98.53	44.56	-9.54	43.48	73.98	-30.50
	28600.00	Peak	H	-	-	-102.78	48.32	-9.54	43.00	68.20	-25.20

Table 7-38. 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	H	-	-	-111.37	49.74	0.00	45.37	53.98	-8.61
*	11440.00	Peak	H	-	-	-98.61	49.74	0.00	58.13	73.98	-15.85
	17160.00	Peak	H	-	-	-99.69	57.13	0.00	64.45	68.20	-3.75
*	22880.00	Average	H	-	-	-112.99	44.56	-9.54	29.02	53.98	-24.96
*	22880.00	Peak	H	-	-	-98.55	44.56	-9.54	43.46	73.98	-30.52
	28600.00	Peak	H	-	-	-102.18	48.32	-9.54	43.60	68.20	-24.60

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	H	-	-	-111.12	50.05	0.00	45.94	53.98	-8.04
*	11490.00	Peak	H	-	-	-100.22	50.05	0.00	56.84	73.98	-17.14
	17235.00	Peak	H	-	-	-99.28	57.47	0.00	65.18	68.20	-3.02
*	22980.00	Average	H	-	-	-113.29	44.68	-9.54	28.85	53.98	-25.13
*	22980.00	Peak	H	-	-	-98.75	44.68	-9.54	43.39	73.98	-30.59
	28725.00	Peak	H	-	-	-102.55	48.26	-9.54	43.17	68.20	-25.03

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	H	-	-	-109.88	50.28	0.00	47.39	53.98	-6.59
*	11570.00	Peak	H	-	-	-97.57	50.28	0.00	59.70	73.98	-14.28
	17355.00	Peak	H	-	-	-98.49	56.61	0.00	65.12	68.20	-3.08
	23140.00	Peak	H	-	-	-98.79	44.75	-9.54	43.42	68.20	-24.78
	28925.00	Peak	H	-	-	-103.19	48.29	-9.54	42.56	68.20	-25.64

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	H	-	-	-110.03	50.40	0.00	47.37	53.98	-6.61
*	11650.00	Peak	H	-	-	-100.28	50.40	0.00	57.12	73.98	-16.86
	17475.00	Peak	H	-	-	-98.03	56.18	0.00	65.16	68.20	-3.04
	23300.00	Peak	H	-	-	-98.56	44.75	-9.54	43.64	68.20	-24.56
	29125.00	Peak	H	-	-	-103.05	48.28	-9.54	42.69	68.20	-25.51

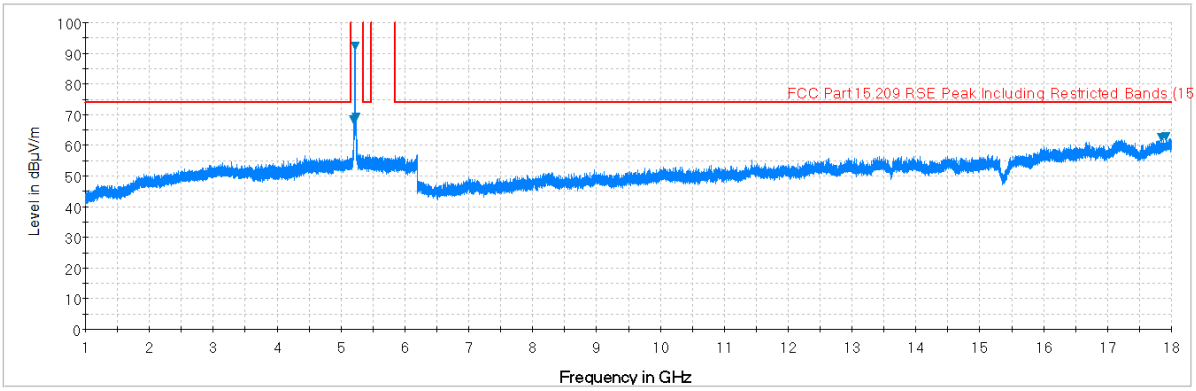
Table 7-42. Radiated Measurements

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

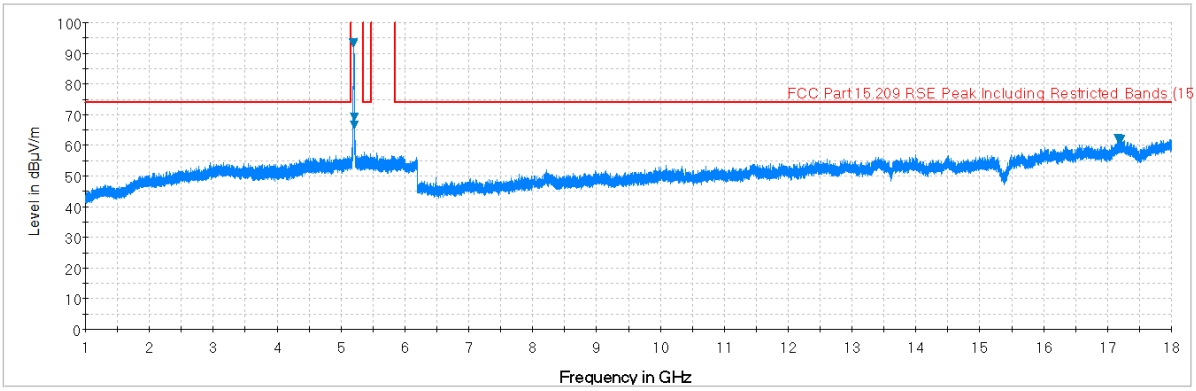
	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11650.00	Average	H	-	-	-109.47	50.40	0.00	47.93	53.98	-6.05
*	11650.00	Peak	H	-	-	-97.62	50.40	0.00	59.78	73.98	-14.20
	17475.00	Peak	H	-	-	-98.06	56.18	0.00	65.13	68.20	-3.07
	23300.00	Peak	H	-	-	-98.85	44.74	-9.54	43.35	68.20	-24.85
	29125.00	Peak	H	-	-	-102.96	48.28	-9.54	42.78	68.20	-25.42

Table 7-43. Radiated Measurements with WCP

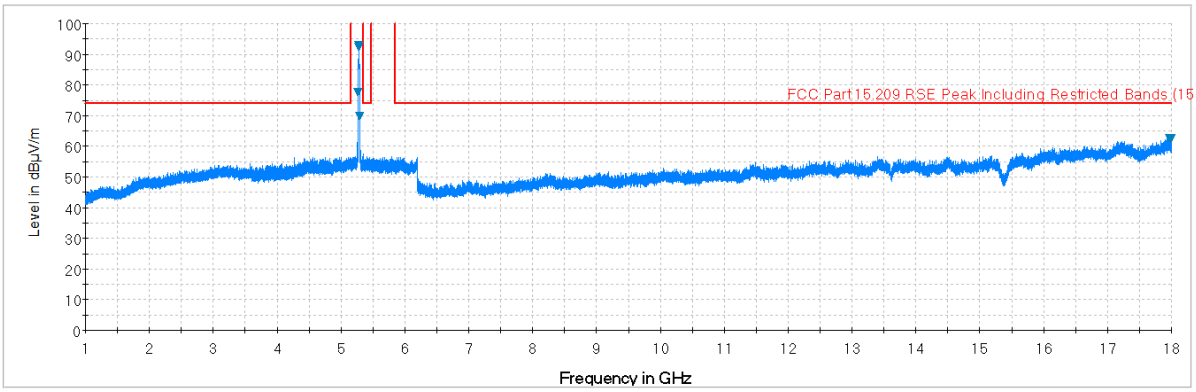
7.7.2 Antenna-2 Radiated Spurious Emission Measurements



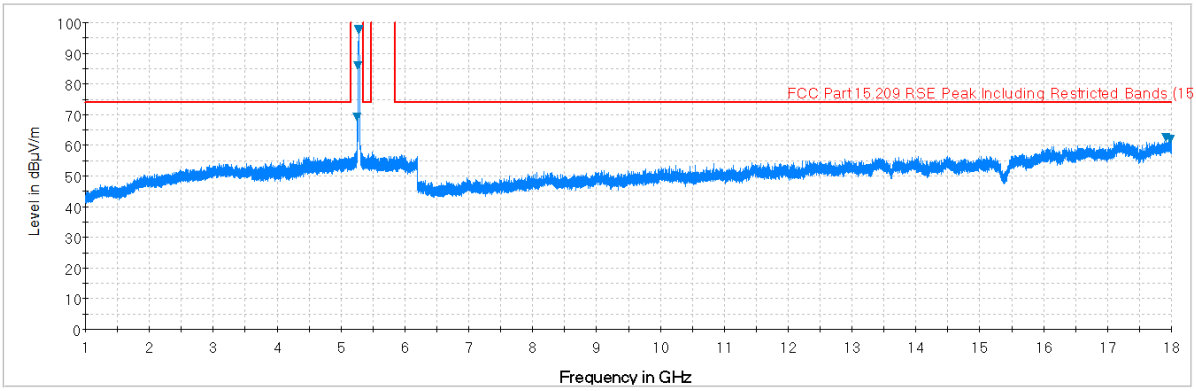
Plot 7-165. Radiated Spurious Plot above 1GHz (802.11a – U1 Ch. 40, Ant. Pol. H)



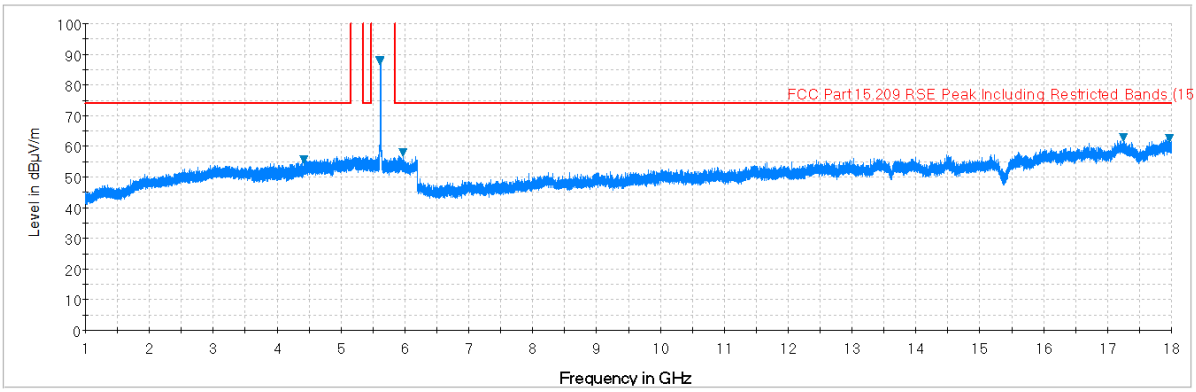
Plot 7-166. Radiated Spurious Plot above 1GHz (802.11a – U1 Ch. 40, Ant. Pol. V)



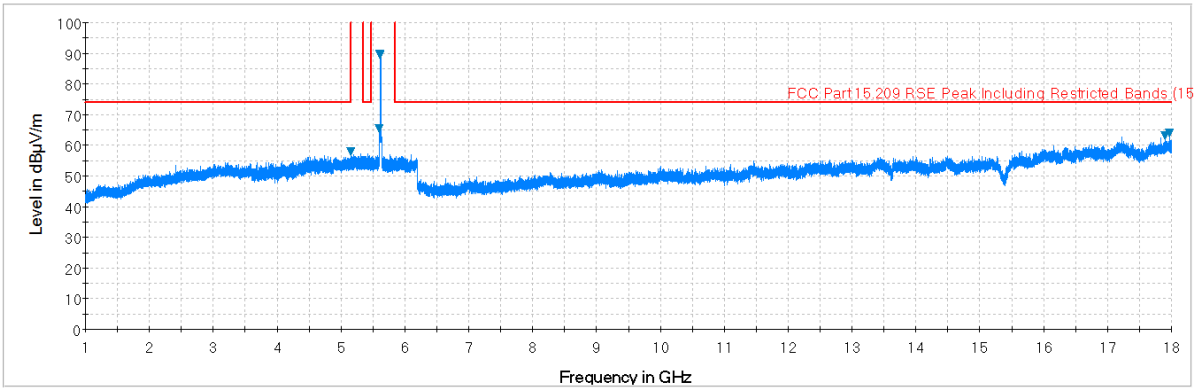
Plot 7-167. Radiated Spurious Plot above 1GHz (802.11a – U2A Ch. 56, Ant. Pol. H)



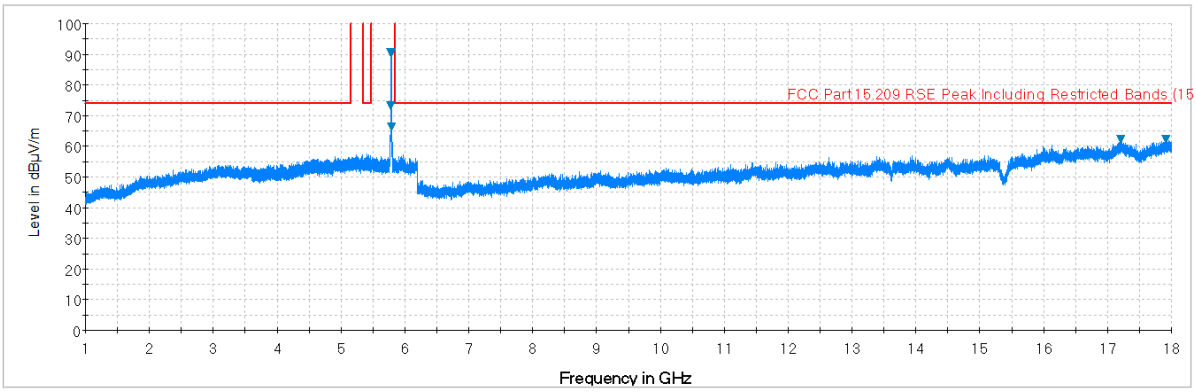
Plot 7-168. Radiated Spurious Plot above 1GHz (802.11a – U2A Ch. 56, Ant. Pol. V)



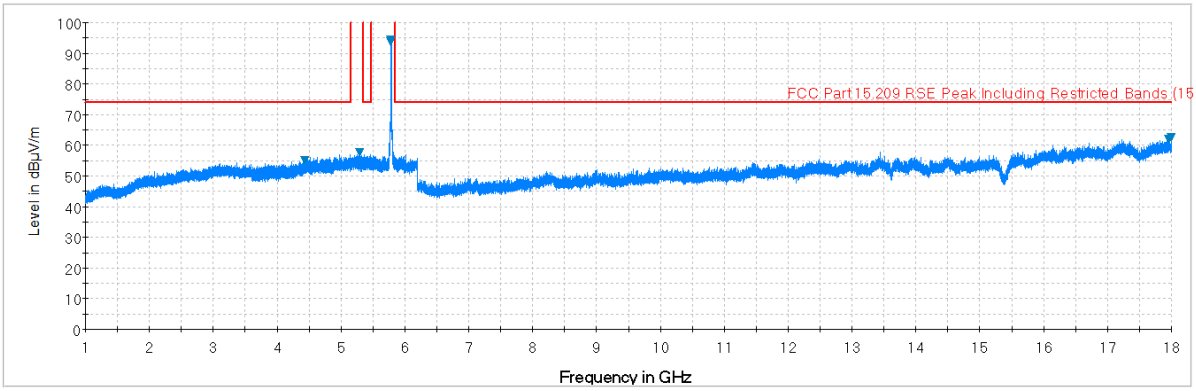
Plot 7-169. Radiated Spurious Plot above 1GHz (802.11a – U2C Ch. 116, Ant. Pol. H)



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



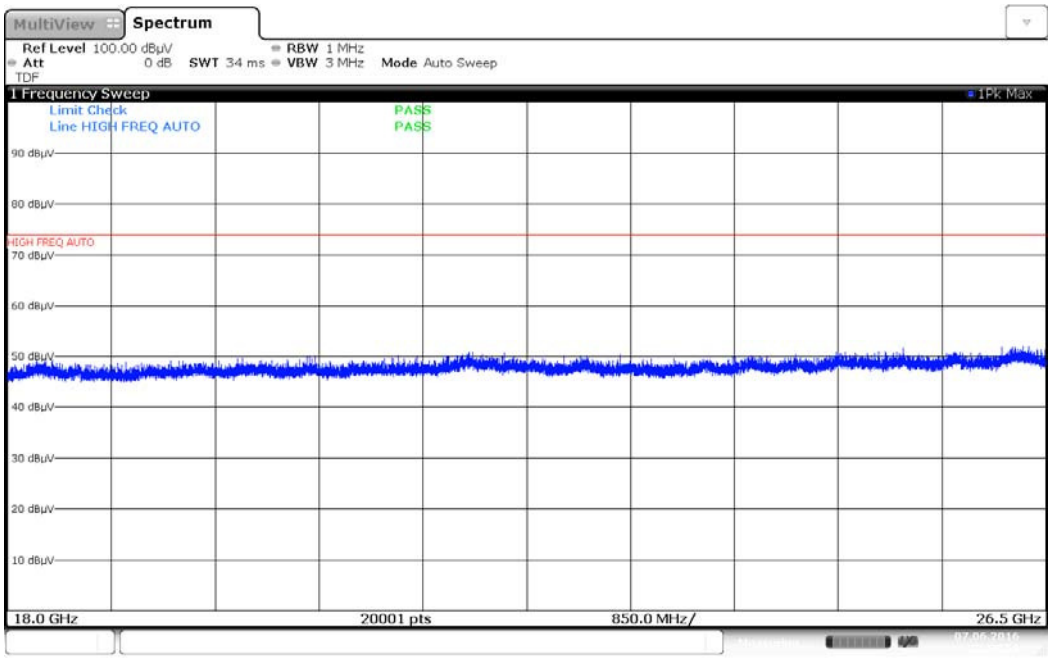
Plot 7-171. Radiated Spurious Plot above 1GHz (802.11a – U3 Ch. 157, Ant. Pol. H)



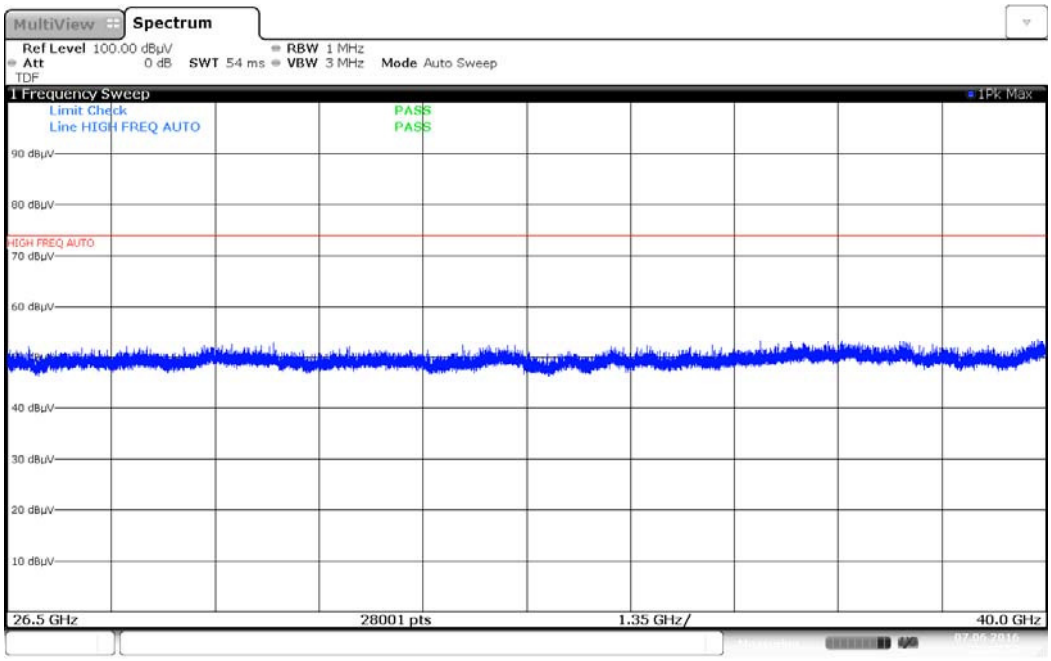
Plot 7-172. Radiated Spurious Plot above 1GHz (802.11a – U3 Ch. 157, Ant. Pol. V)

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

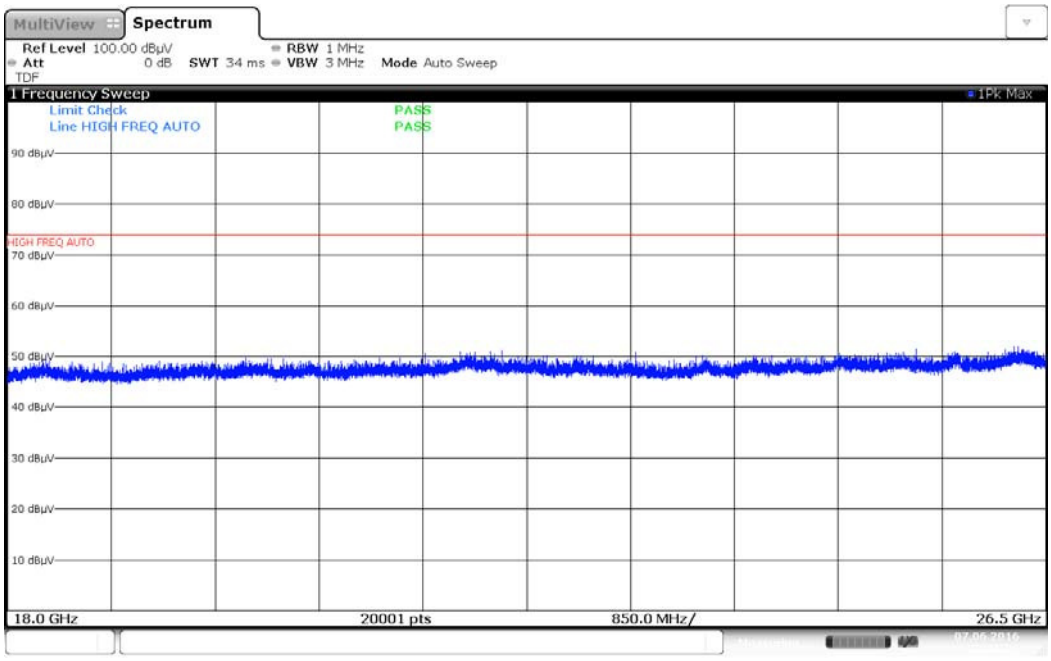
§15.209



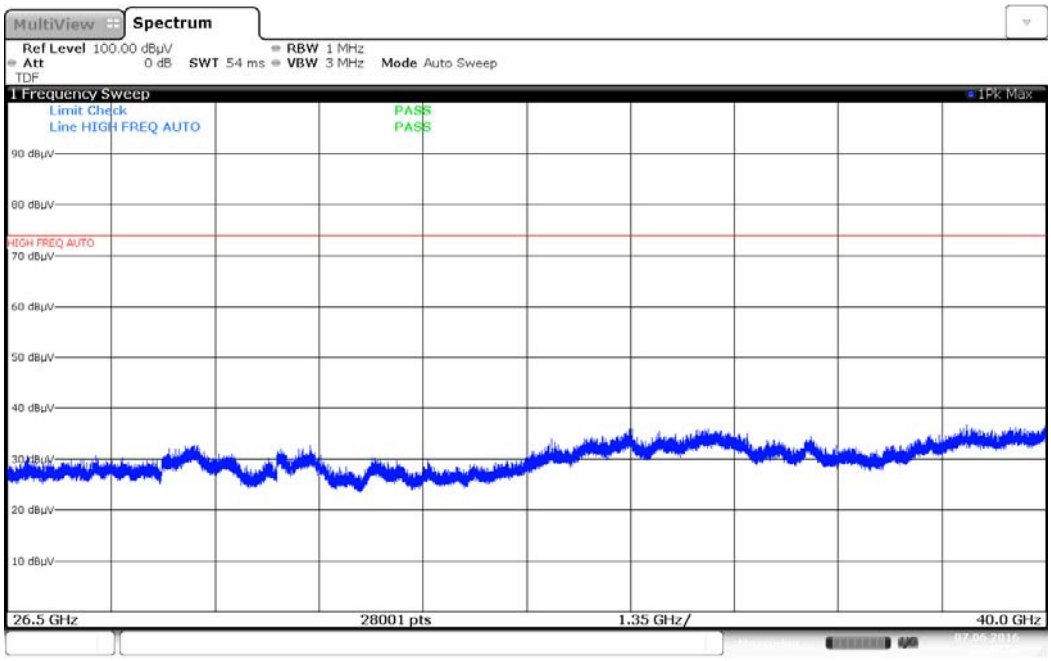
Plot 7-173. Radiated Spurious Plot above 18GHz (802.11a – Ant. Pol. H)



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



Plot 7-175. Radiated Spurious Plot above 18GHz (802.11a – Ant. Pol. V)



Plot 7-176. Radiated Spurious Plot above 18GHz (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	H	-	-	-99.75	48.08	0.00	55.33	68.20	-12.87
*	15540.00	Average	H	-	-	-109.66	53.35	0.00	50.69	53.98	-3.29
*	15540.00	Peak	H	-	-	-98.46	53.35	0.00	61.89	73.98	-12.09
*	20720.00	Average	H	-	-	-113.23	44.39	-9.54	28.61	53.98	-25.37
*	20720.00	Peak	H	-	-	-98.76	44.39	-9.54	43.08	73.98	-30.90
	25900.00	Peak	H	-	-	-101.01	45.11	-9.54	41.56	68.20	-26.64

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	H	-	-	-101.63	48.05	0.00	53.42	68.20	-14.78
*	15600.00	Average	H	-	-	-110.23	53.44	0.00	50.20	53.98	-3.78
*	15600.00	Peak	H	-	-	-98.41	53.44	0.00	62.02	73.98	-11.96
*	20800.00	Average	H	-	-	-112.65	44.39	-9.54	29.20	53.98	-24.78
*	20800.00	Peak	H	-	-	-97.86	44.39	-9.54	43.99	73.98	-29.99
	26000.00	Peak	H	-	-	-100.74	45.12	-9.54	41.83	68.20	-26.37

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	H	-	-	-100.10	48.21	0.00	55.11	68.20	-13.09
*	15720.00	Average	H	-	-	-109.93	53.84	0.00	50.91	53.98	-3.07
*	15720.00	Peak	H	-	-	-97.38	53.84	0.00	63.46	73.98	-10.52
*	20960.00	Average	H	-	-	-112.76	44.31	-9.54	29.01	53.98	-24.97
*	20960.00	Peak	H	-	-	-98.34	44.31	-9.54	43.43	73.98	-30.55
	26200.00	Peak	H	-	-	-100.19	45.01	-9.54	42.28	68.20	-25.92

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	H	-	-	-99.97	48.21	0.00	55.24	68.20	-12.96
*	15720.00	Average	H	-	-	-110.04	53.84	0.00	50.80	53.98	-3.18
*	15720.00	Peak	H	-	-	-95.93	53.84	0.00	64.91	73.98	-9.07
*	20960.00	Average	H	-	-	-112.53	44.31	-9.54	29.24	53.98	-24.74
*	20960.00	Peak	H	-	-	-97.81	44.31	-9.54	43.96	73.98	-30.02
	26200.00	Peak	H	-	-	-101.07	45.01	-9.54	41.40	68.20	-26.80

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	H	-	-	-99.83	48.22	0.00	55.39	68.20	-12.81
*	15780.00	Average	H	-	-	-110.56	53.85	0.00	50.29	53.98	-3.69
*	15780.00	Peak	H	-	-	-101.42	53.85	0.00	59.43	73.98	-14.55
*	21040.00	Average	H	-	-	-112.64	44.29	-9.54	29.11	53.98	-24.87
*	21040.00	Peak	H	-	-	-97.44	44.29	-9.54	44.31	73.98	-29.67
	26300.00	Peak	H	-	-	-99.60	45.00	-9.54	42.85	68.20	-25.35

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	H	-	-	-99.24	48.18	0.00	55.94	68.20	-12.26
*	15840.00	Average	H	-	-	-110.00	53.94	0.00	50.93	53.98	-3.05
*	15840.00	Peak	H	-	-	-98.46	53.94	0.00	62.47	73.98	-11.51
*	21120.00	Average	H	-	-	-113.14	44.28	-9.54	28.59	53.98	-25.39
*	21120.00	Peak	H	-	-	-97.34	44.28	-9.54	44.39	73.98	-29.59
	26400.00	Peak	H	-	-	-99.15	45.02	-9.54	43.33	68.20	-24.87

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	H	-	-	-110.75	48.11	0.00	44.35	53.98	-9.63
*	10640.00	Peak	H	-	-	-99.45	48.11	0.00	55.65	73.98	-18.33
*	15960.00	Average	H	-	-	-110.68	54.57	0.00	50.89	53.98	-3.09
*	15960.00	Peak	H	-	-	-98.66	54.57	0.00	62.91	73.98	-11.07
*	21280.00	Average	H	-	-	-113.12	44.26	-9.54	28.60	53.98	-25.38
*	21280.00	Peak	H	-	-	-98.05	44.26	-9.54	43.67	73.98	-30.31
	26600.00	Peak	H	-	-	-100.45	47.61	-9.54	44.61	68.20	-23.59

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	H	-	-	-110.80	48.11	0.00	44.30	53.98	-9.68
*	10640.00	Peak	H	-	-	-101.01	48.11	0.00	54.09	73.98	-19.89
*	15960.00	Average	H	-	-	-110.63	54.57	0.00	50.94	53.98	-3.04
*	15960.00	Peak	H	-	-	-98.85	54.57	0.00	62.72	73.98	-11.26
*	21280.00	Average	H	-	-	-113.04	44.26	-9.54	28.68	53.98	-25.30
	21280.00	Peak	H	-	-	-97.35	44.26	-9.54	44.37	73.98	-29.61
	26600.00	Peak	H	-	-	-100.91	47.61	-9.54	44.15	68.20	-24.05

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	H	-	-	-110.03	49.03	0.00	46.00	53.98	-7.98
*	11000.00	Peak	H	-	-	-98.16	49.03	0.00	57.87	73.98	-16.11
	16500.00	Peak	H	-	-	-98.60	55.10	0.00	63.49	68.20	-4.71
	22000.00	Peak	H	-	-	-100.37	44.50	-9.54	41.59	68.20	-26.61
	27500.00	Peak	H	-	-	-102.48	47.97	-9.54	42.95	68.20	-25.25

Table 7-52. Radiated Measurements

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5600MHz
Channel:	120

	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]
*	11200.00	Average	H	-	-	-110.71	49.29	0.00	45.58	53.98	-8.40
*	11200.00	Peak	H	-	-	-97.88	49.29	0.00	58.41	73.98	-15.57
	16800.00	Peak	H	-	-	-99.22	57.02	0.00	64.80	68.20	-3.40
*	22400.00	Average	H	-	-	-113.12	44.56	-9.54	28.90	53.98	-25.08
*	22400.00	Peak	H	-	-	-98.69	44.56	-9.54	43.33	73.98	-30.65
	28000.00	Peak	H	-	-	-102.10	48.08	-9.54	43.44	68.20	-24.76

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	H	-	-	-109.08	49.74	0.00	47.66	53.98	-6.32
*	11440.00	Peak	H	-	-	-98.86	49.74	0.00	57.88	73.98	-16.10
	17160.00	Peak	H	-	-	-100.47	57.13	0.00	63.67	68.20	-4.53
*	22880.00	Average	H	-	-	-112.81	44.56	-9.54	29.20	53.98	-24.78
*	22880.00	Peak	H	-	-	-98.30	44.56	-9.54	43.71	73.98	-30.27
	28600.00	Peak	H	-	-	-102.91	48.32	-9.54	42.87	68.20	-25.33

Table 7-54. 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	H	-	-	-110.02	49.74	0.00	46.72	53.98	-7.26
*	11440.00	Peak	H	-	-	-98.27	49.74	0.00	58.47	73.98	-15.51
	17160.00	Peak	H	-	-	-99.68	57.13	0.00	64.46	68.20	-3.74
*	22880.00	Average	H	-	-	-113.18	44.56	-9.54	28.83	53.98	-25.15
*	22880.00	Peak	H	-	-	-98.73	44.56	-9.54	43.29	73.98	-30.69
	28600.00	Peak	H	-	-	-102.93	48.32	-9.54	42.85	68.20	-25.35

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	H	-	-	-109.91	50.05	0.00	47.15	53.98	-6.83
*	11490.00	Peak	H	-	-	-98.37	50.05	0.00	58.69	73.98	-15.29
	17235.00	Peak	H	-	-	-98.23	56.39	0.00	65.15	68.20	-3.05
*	22980.00	Average	H	-	-	-113.04	44.69	-9.54	29.11	53.98	-24.87
*	22980.00	Peak	H	-	-	-98.79	44.69	-9.54	43.36	73.98	-30.62
	28725.00	Peak	H	-	-	-121.24	48.27	-9.54	24.49	68.20	-43.71

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	H	-	-	-110.40	50.28	0.00	46.87	53.98	-7.11
*	11570.00	Peak	H	-	-	-99.08	50.28	0.00	58.19	73.98	-15.79
	17355.00	Peak	H	-	-	-97.18	55.26	0.00	65.08	68.20	-3.12
	23140.00	Peak	H	-	-	-98.82	44.75	-9.54	43.39	68.20	-24.81
	28925.00	Peak	H	-	-	-102.49	48.29	-9.54	43.26	68.20	-24.94

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	H	-	-	-109.87	50.40	0.00	47.53	53.98	-6.45
*	11650.00	Peak	H	-	-	-98.75	50.40	0.00	58.65	73.98	-15.33
	17475.00	Peak	H	-	-	-98.60	56.77	0.00	65.18	68.20	-3.02
	23300.00	Peak	H	-	-	-98.82	44.74	-9.54	43.38	68.20	-24.82
	29125.00	Peak	H	-	-	-103.15	48.28	-9.54	42.59	68.20	-25.61

Table 7-58. 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	H	-	-	-109.08	50.40	0.00	48.32	53.98	-5.66
*	11650.00	Peak	H	-	-	-97.87	50.40	0.00	59.53	73.98	-14.45
	17475.00	Peak	H	-	-	-98.59	56.77	0.00	65.19	68.20	-3.01
	23300.00	Peak	H	-	-	-98.84	44.74	-9.54	43.36	68.20	-24.84
	29125.00	Peak	H	-	-	-102.99	48.28	-9.54	42.75	68.20	-25.45

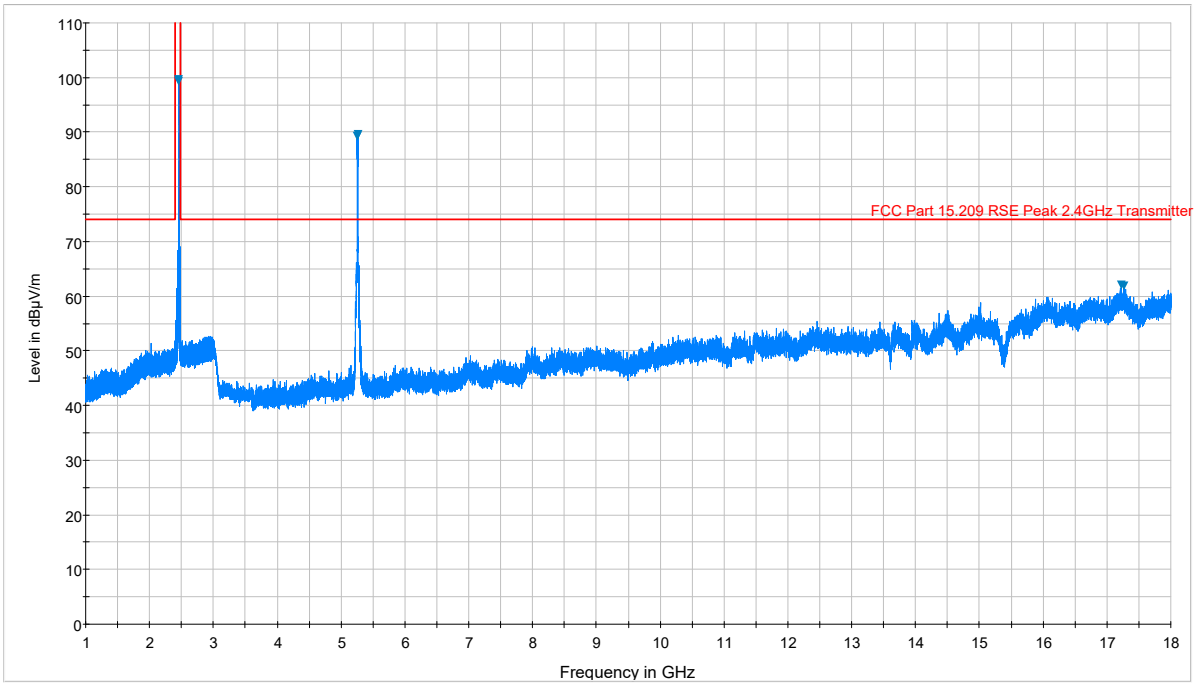
Table 7-59. Radiated Measurements with WCP

7.7.3 Simultaneous Transmission Radiated Spurious Emissions Measurements (Above 1GHz)

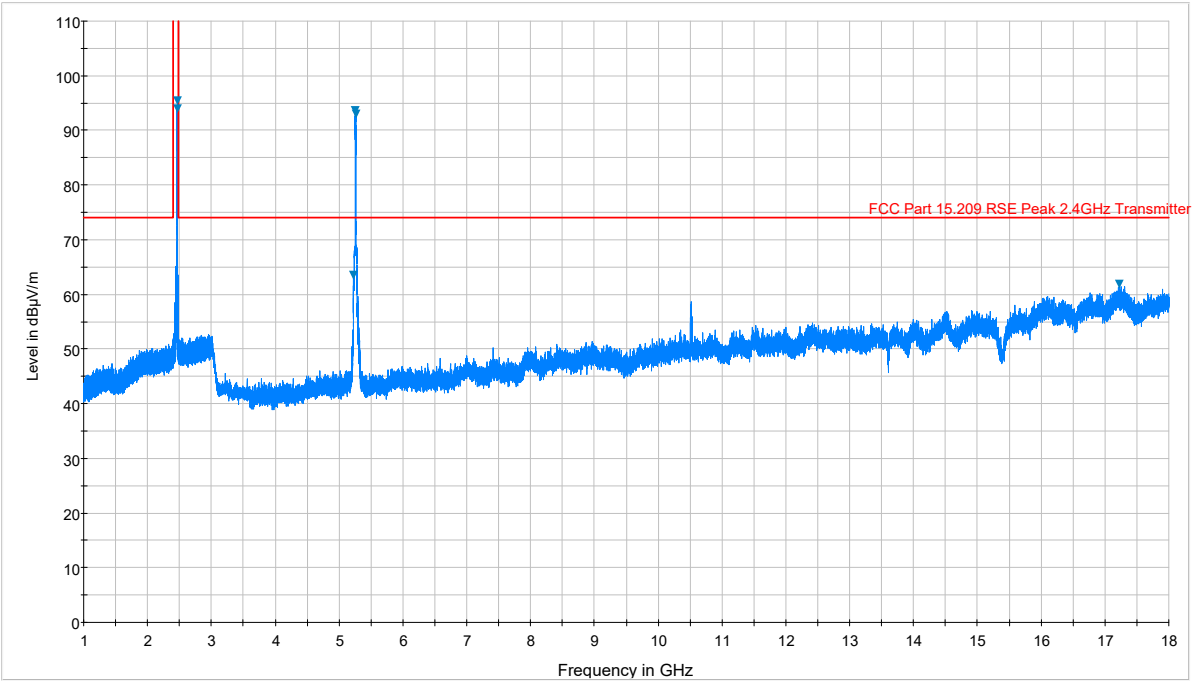
§15.209

Description	2.4 GHz Emission	5 GHz Emission
Antenna	1	2
Channel	11	52
Operating Frequency(MHz)	2462	5260
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 (Simultaneous Transmission Config-1, Ant. Pol. H)



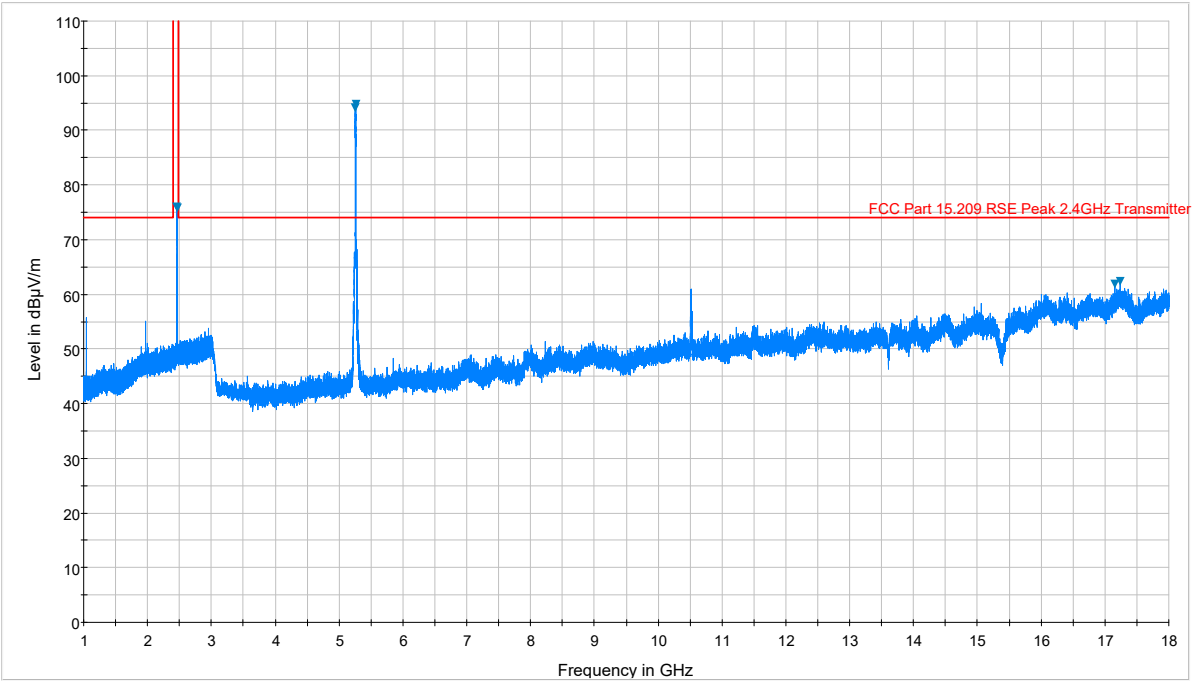
Plot 7-178. Radiated Spurious Plot above 1GHz (Simultaneous Transmission Config-1, Ant. Pol. V)

	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]
	3137.00	Peak	H	-	-	-99.22	43.10	0.00	50.87	68.20	-17.33
*	4924.00	Average	H	-	-	-110.95	49.92	0.00	45.97	53.98	-8.01
*	4924.00	Peak	H	-	-	-98.15	49.92	0.00	58.77	73.98	-15.21
	5936.00	Peak	H	-	-	-99.70	43.74	0.00	51.04	68.20	-17.16
*	8059.00	Peak	H	-	-	-111.61	45.22	0.00	40.62	53.98	-13.36
*	8059.00	Peak	H	-	-	-98.87	45.22	0.00	53.36	73.98	-20.62
	8735.00	Peak	H	-	-	-99.90	45.22	0.00	52.33	68.20	-15.87
*	10520.00	Average	H	-	-	-111.77	48.35	0.00	43.59	53.98	-10.39
*	10520.00	Peak	H	-	-	-99.11	50.64	0.00	58.52	73.98	-15.45

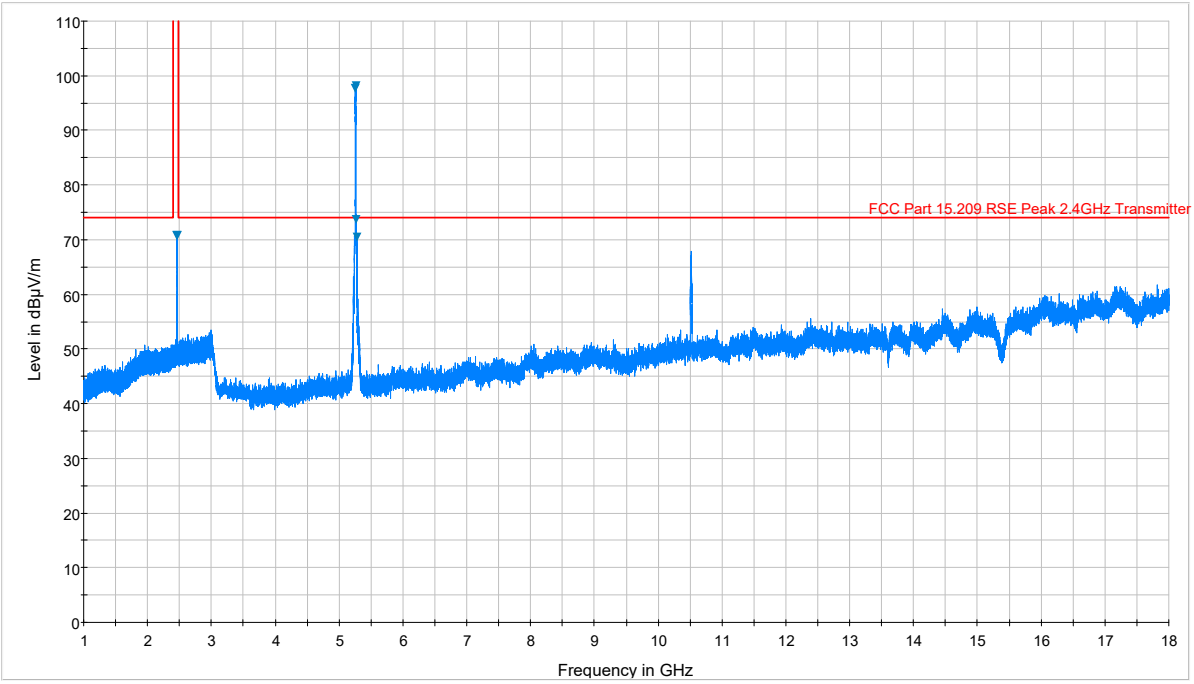
Table 7-61. Radiated Measurements Simultaneous Transmission Config-1

Description	5 GHz Emission	2.4 GHz Emission
Antenna	1	2
Channel	52	11
Operating Frequency(MHz)	5260	2462
Data Rate (Mbps)	6	1
Mode	802.11a	802.11b

Table 7-62. Simultaneous Transmission Config-2



Plot 7-179. Radiated Spurious Plot above 1GHz (Simultaneous Transmission Config-2, Ant. Pol. H)



Plot 7-180. Radiated Spurious Plot above 1GHz (Simultaneous Transmission Config-2, Ant. Pol. V)

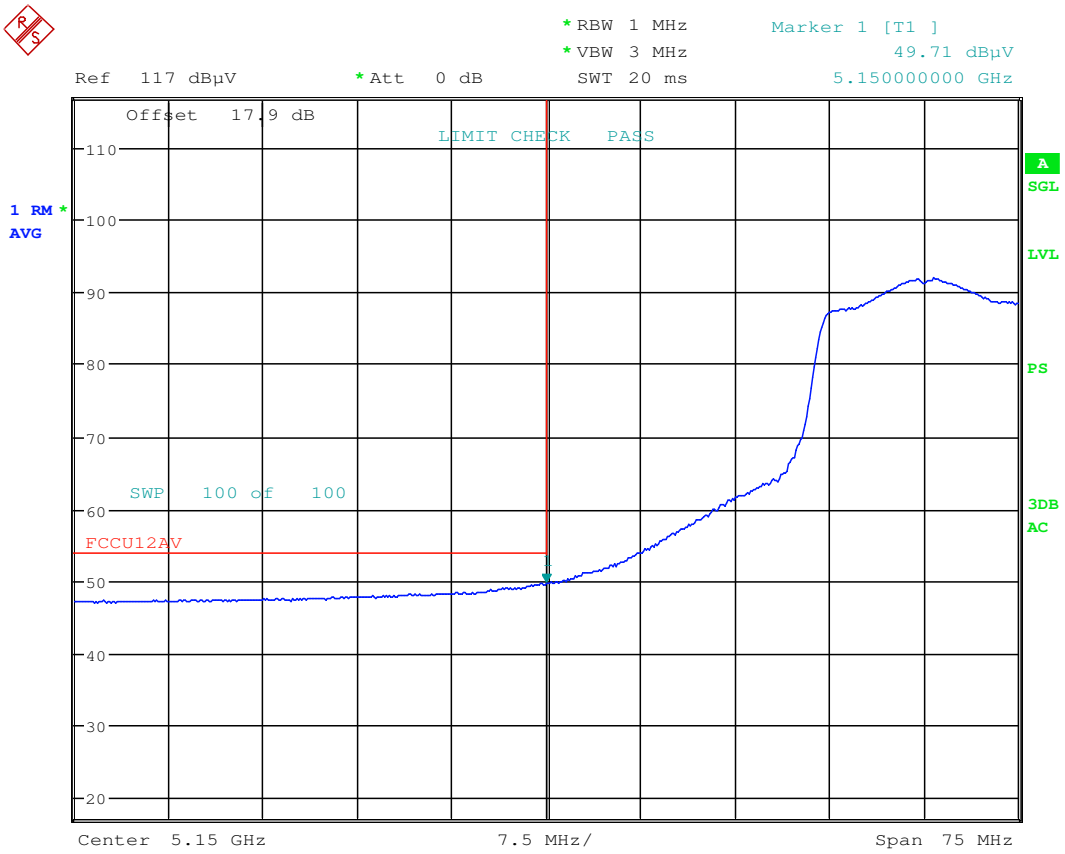
	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	1992.00	Peak	H	-	-	-99.79	43.10	0.00	50.30	68.20	-17.90
	3137.00	Peak	H	-	-	-99.08	43.10	0.00	51.01	68.20	-17.19
*	4924.00	Peak	H	-	-	-110.54	49.92	0.00	46.38	53.98	-7.60
*	4924.00	Average	H	-	-	-99.01	49.92	0.00	57.91	73.98	-16.07
	5936.00	Peak	H	-	-	-98.78	43.74	0.00	51.96	68.20	-16.24
*	8059.00	Peak	H	-	-	-111.78	45.22	0.00	40.45	53.98	-13.53
*	8059.00	Peak	H	-	-	-100.17	45.22	0.00	52.06	73.98	-21.92
	8735.00	Peak	H	-	-	-99.73	45.22	0.00	52.50	68.20	-15.70
*	10520.00	Average	H	-	-	-111.98	48.35	0.00	43.38	53.98	-10.60
*	10520.00	Peak	H	-	-	-96.76	50.64	0.00	60.87	68.20	-7.33

Table 7-63. Radiated Measurements Simultaneous Transmission Config-2

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

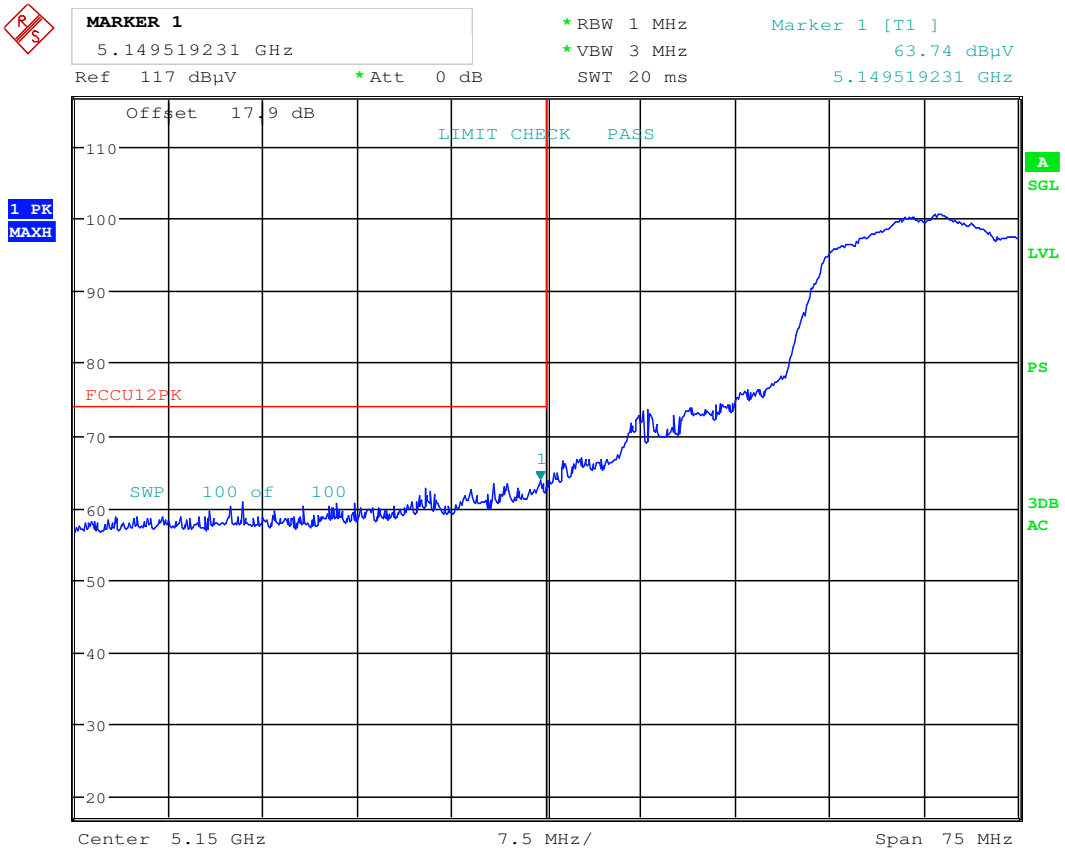


Date: 5.JUN.2016 13:54:59

Plot 7-181. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

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

§15.407(b.1)(b.2) §15.205 §15.209



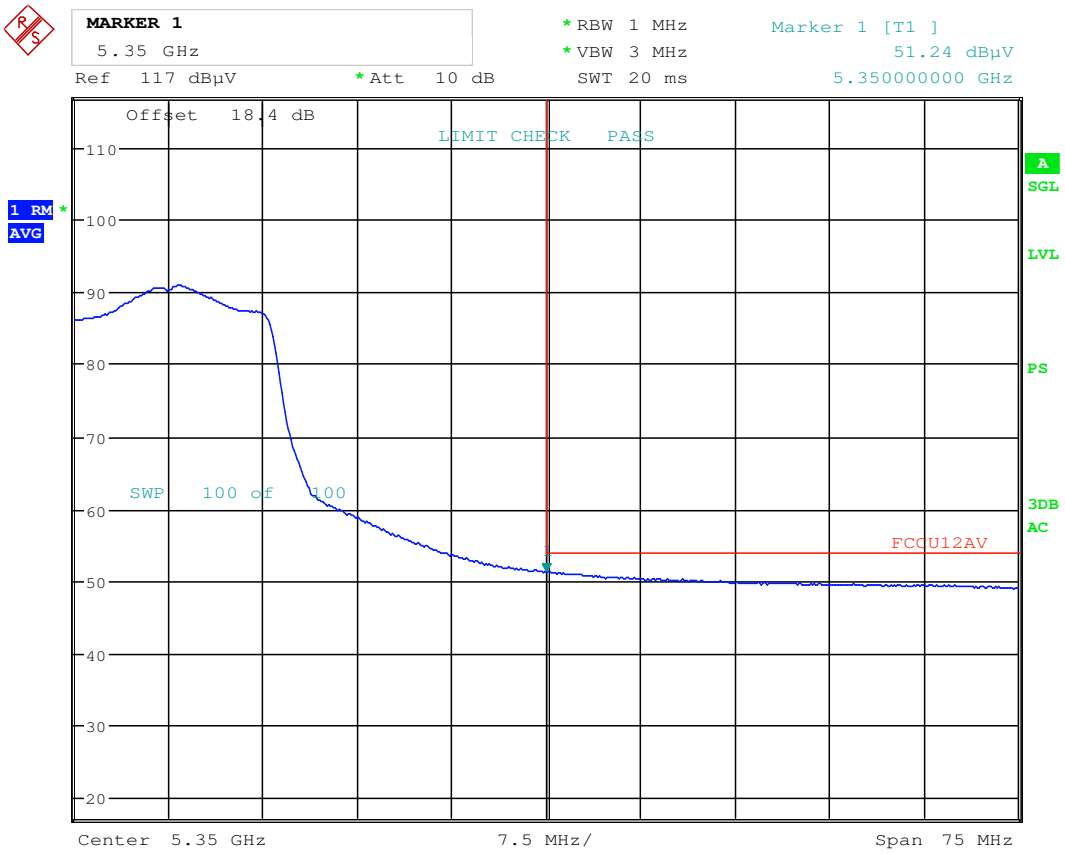
Date: 5.JUN.2016 13:56:07

Plot 7-182. Radiated Restricted Lower Band Edge Plot (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

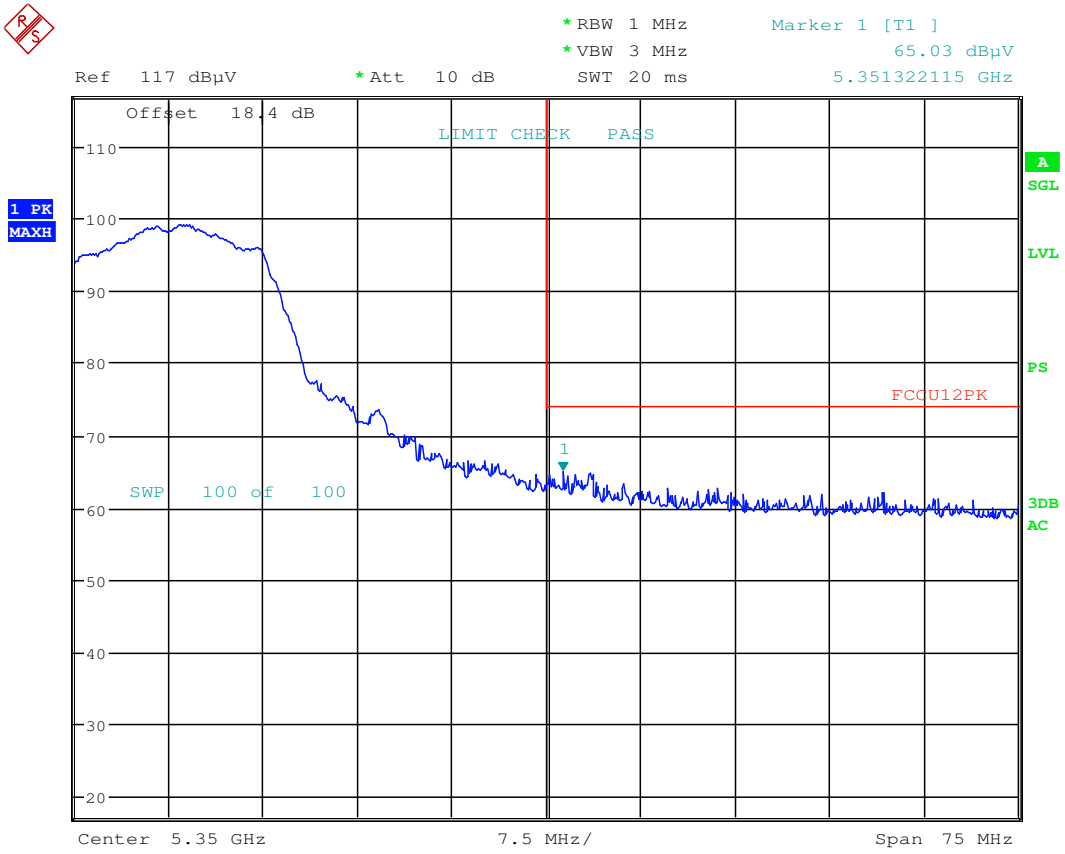


Date: 5.JUN.2016 14:59:54

Plot 7-183. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

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

§15.407(b.1)(b.2) §15.205 §15.209

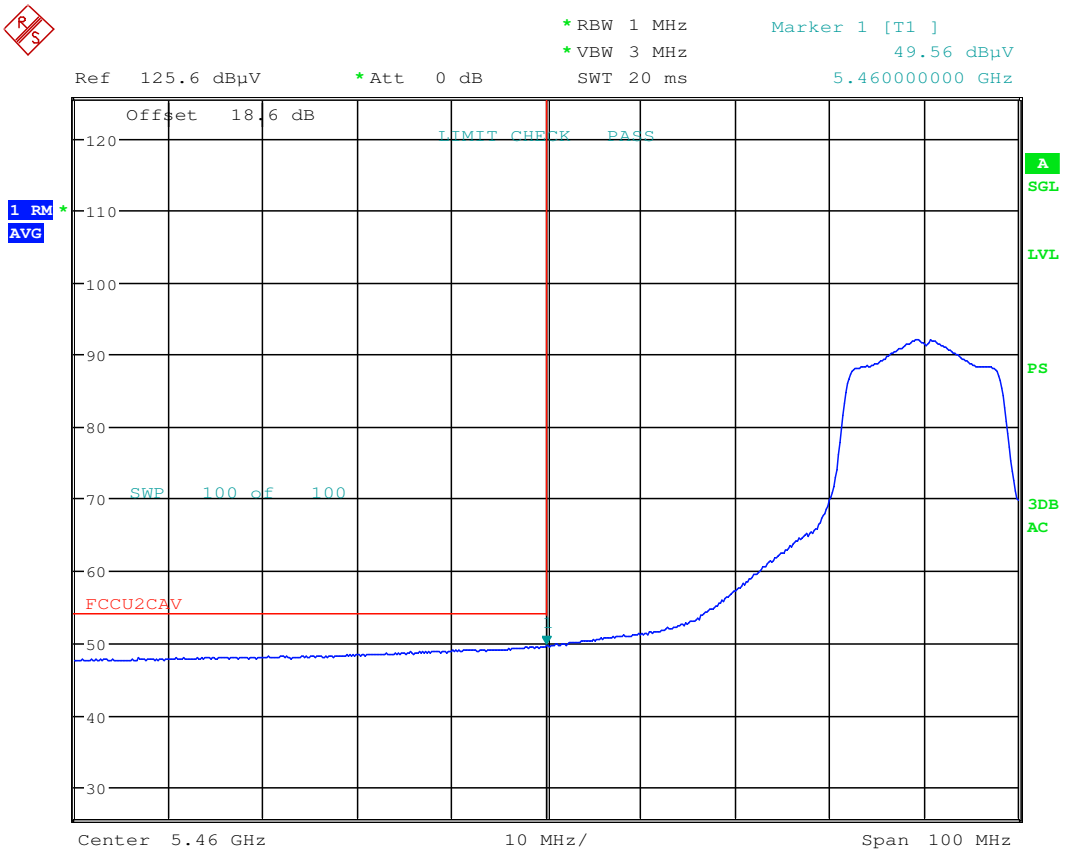


Plot 7-184. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

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

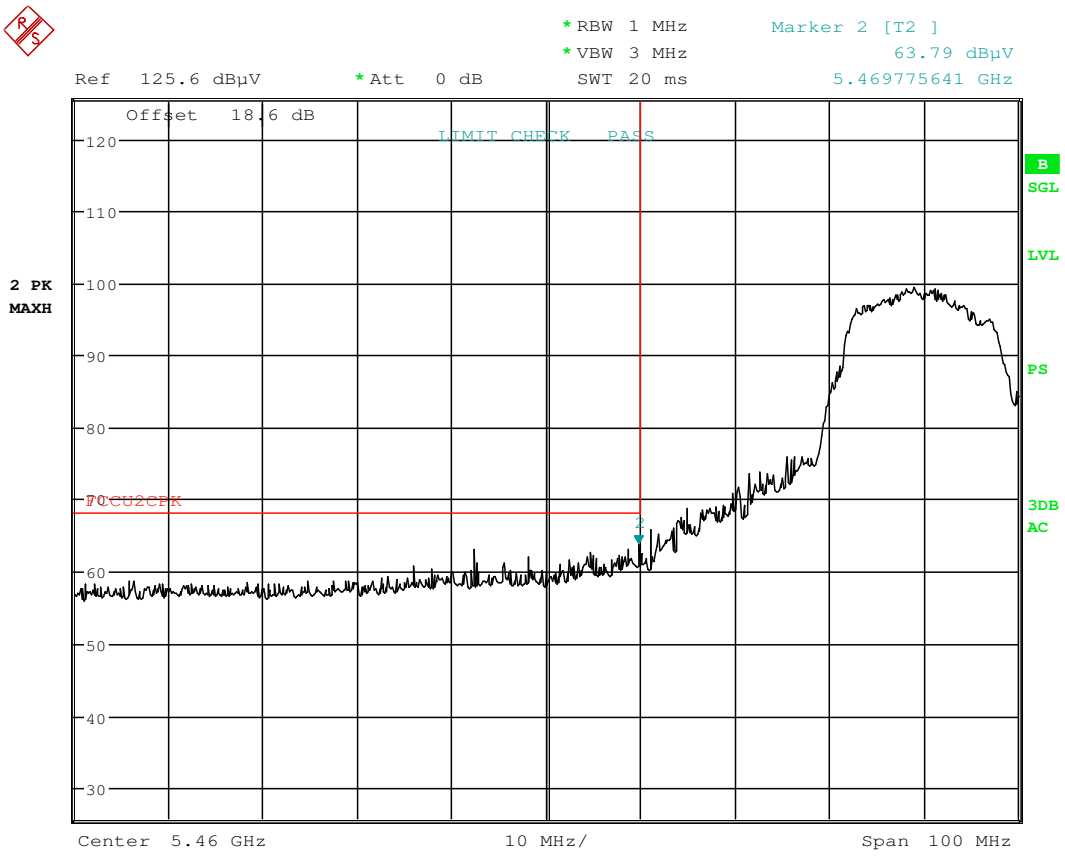


Date: 10.JUN.2016 18:29:38

Plot 7-185. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

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

§15.407(b.1)(b.2) §15.205 §15.209

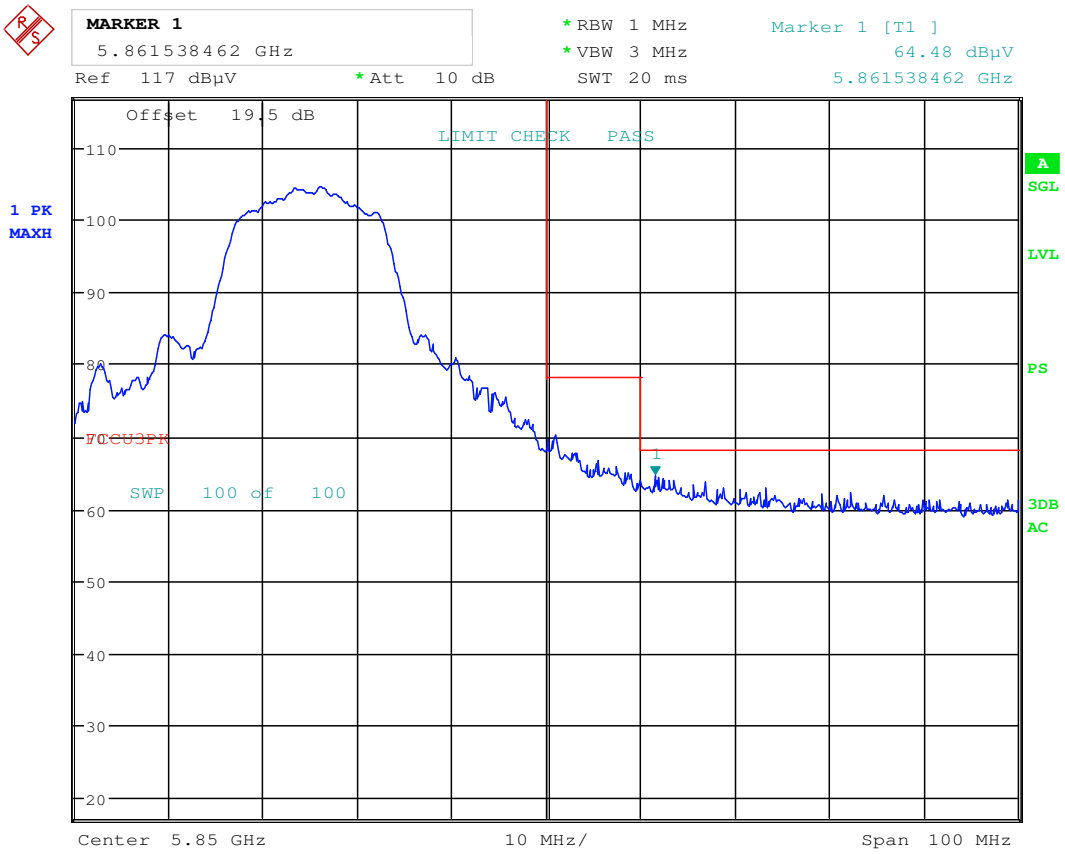


Plot 7-186. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

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



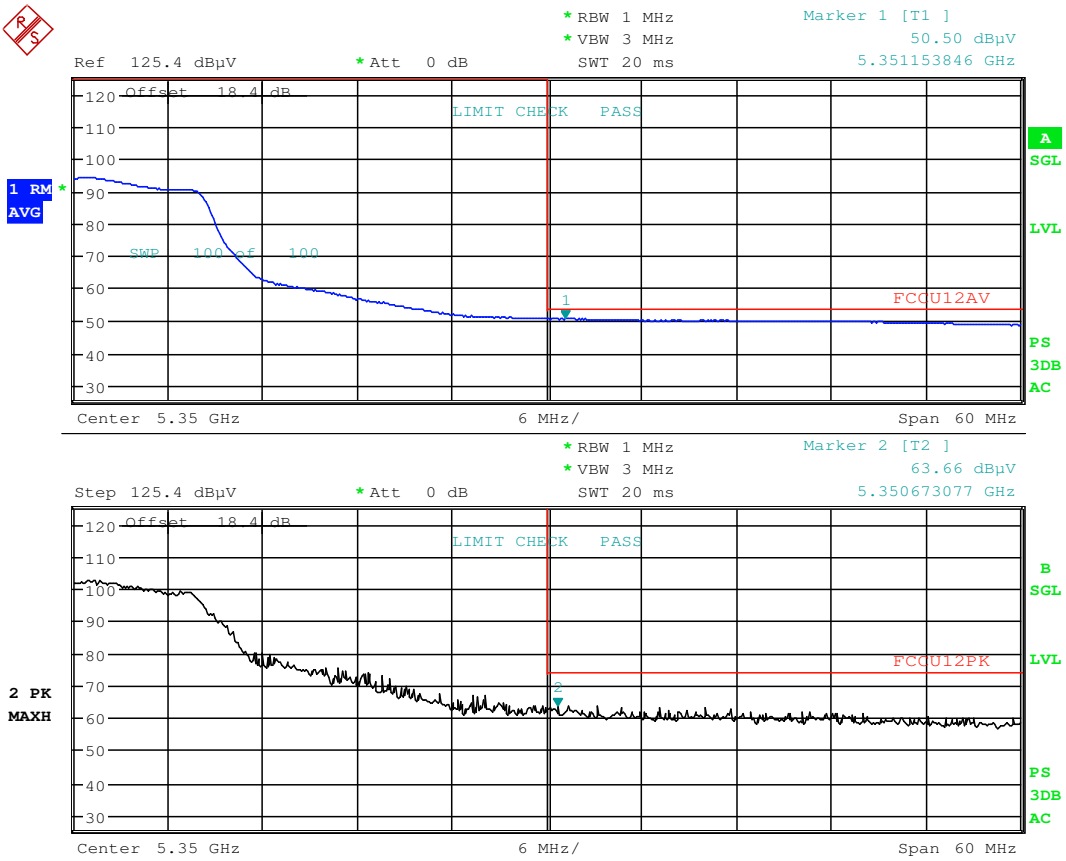
Date: 5.JUN.2016 16:53:15

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



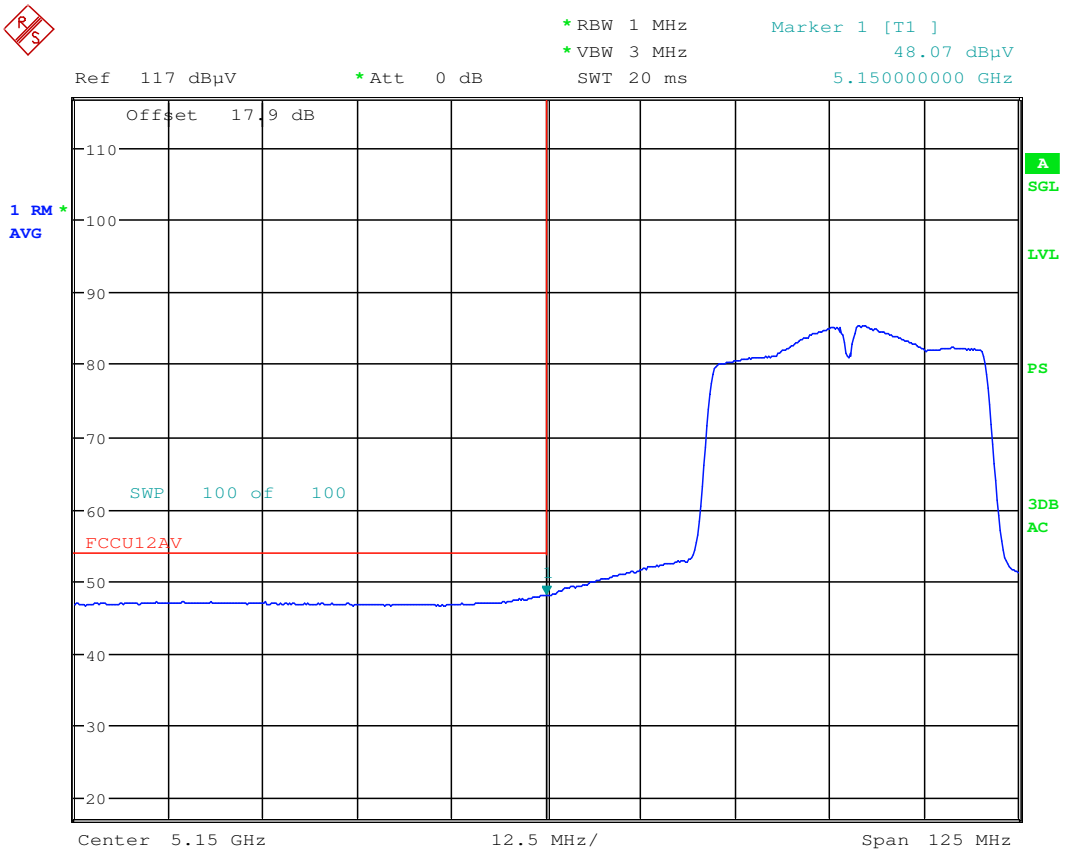
Date: 18.JUN.2016 19:23:04

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

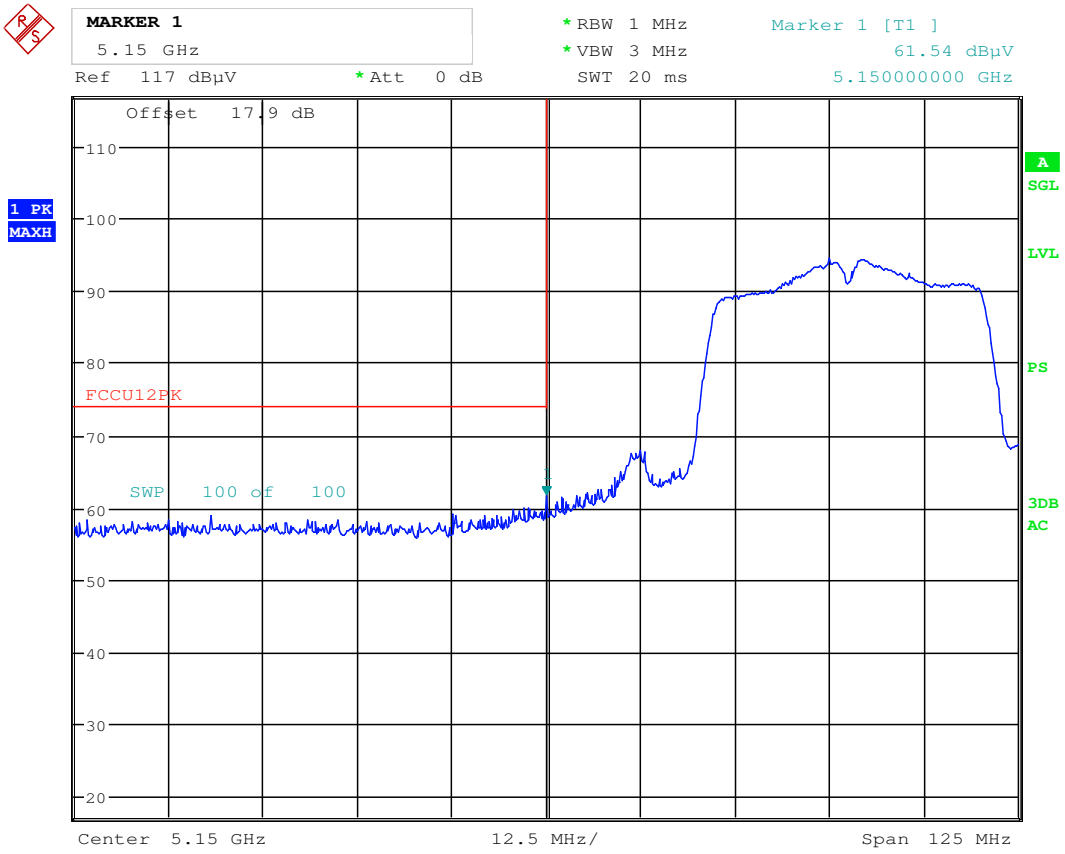


Date: 5.JUN.2016 14:09:15

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

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

§15.407(b.1)(b.2) §15.205 §15.209



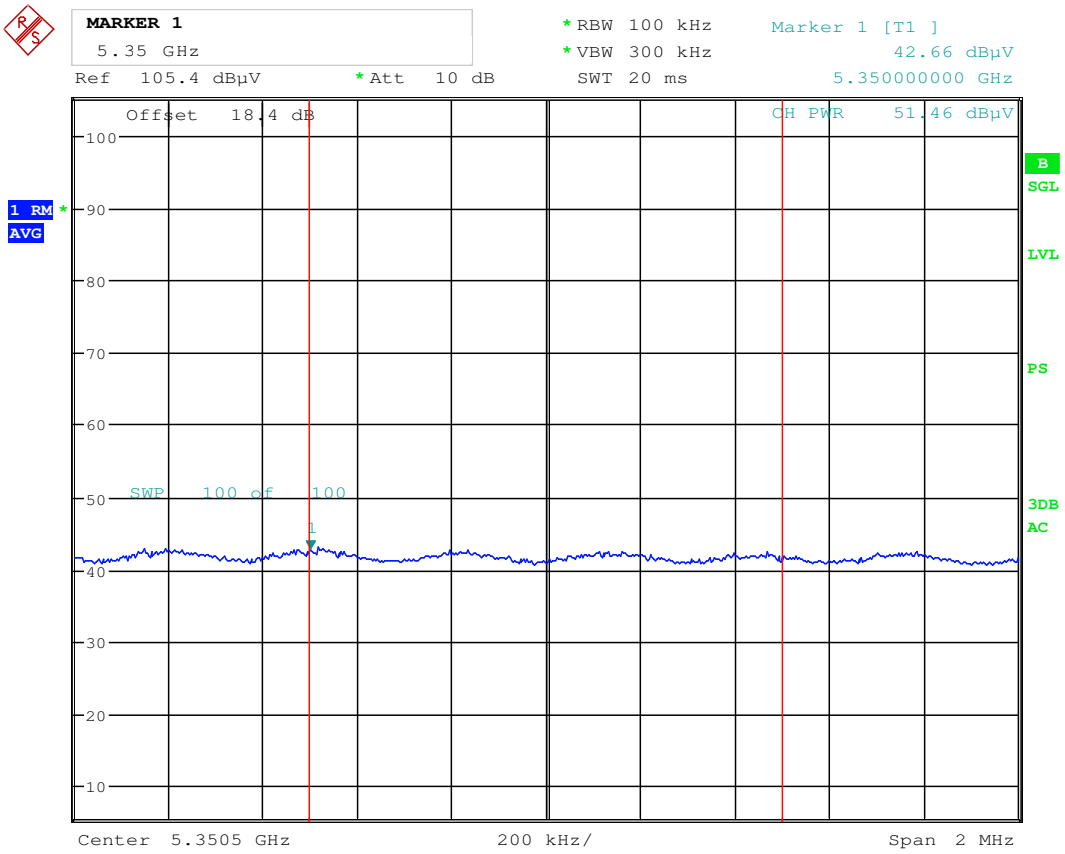
Date: 5.JUN.2016 14:10:12

Plot 7-190. Radiated Restricted Lower Band Edge Plot (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

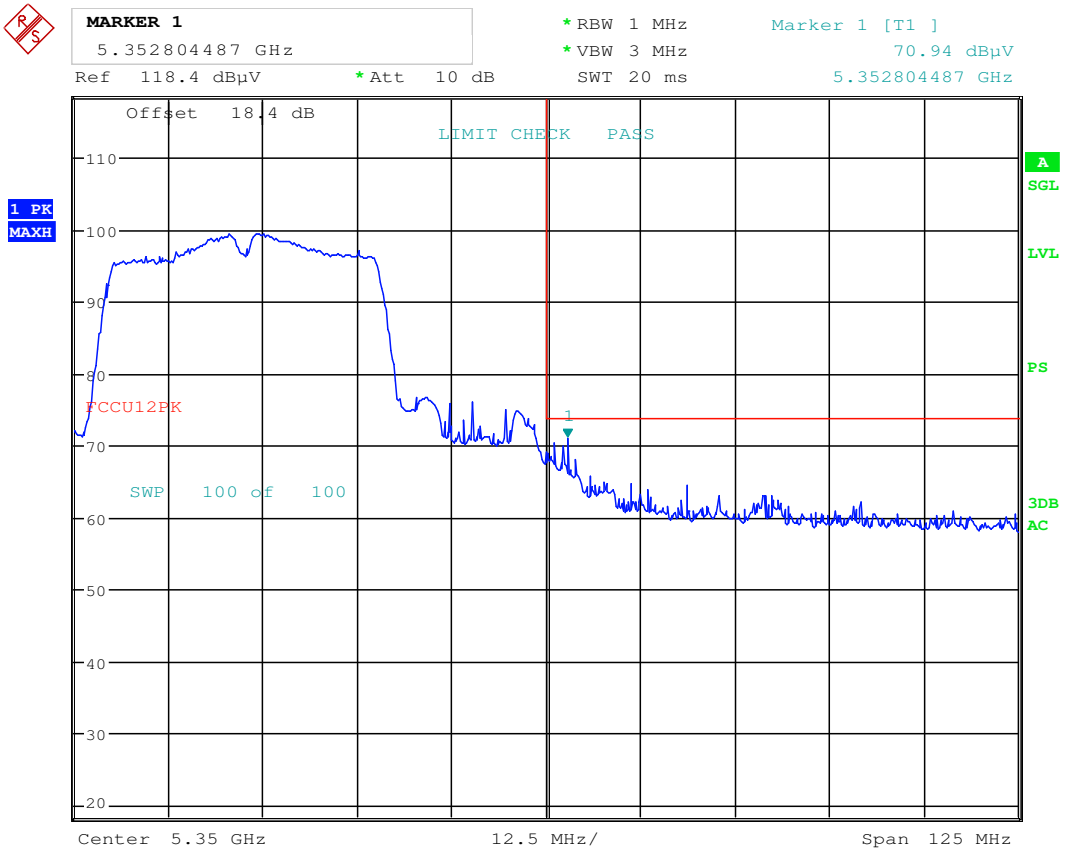


Date: 5.JUN.2016 15:37:28

Plot 7-191. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

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

§15.407(b.1)(b.2) §15.205 §15.209



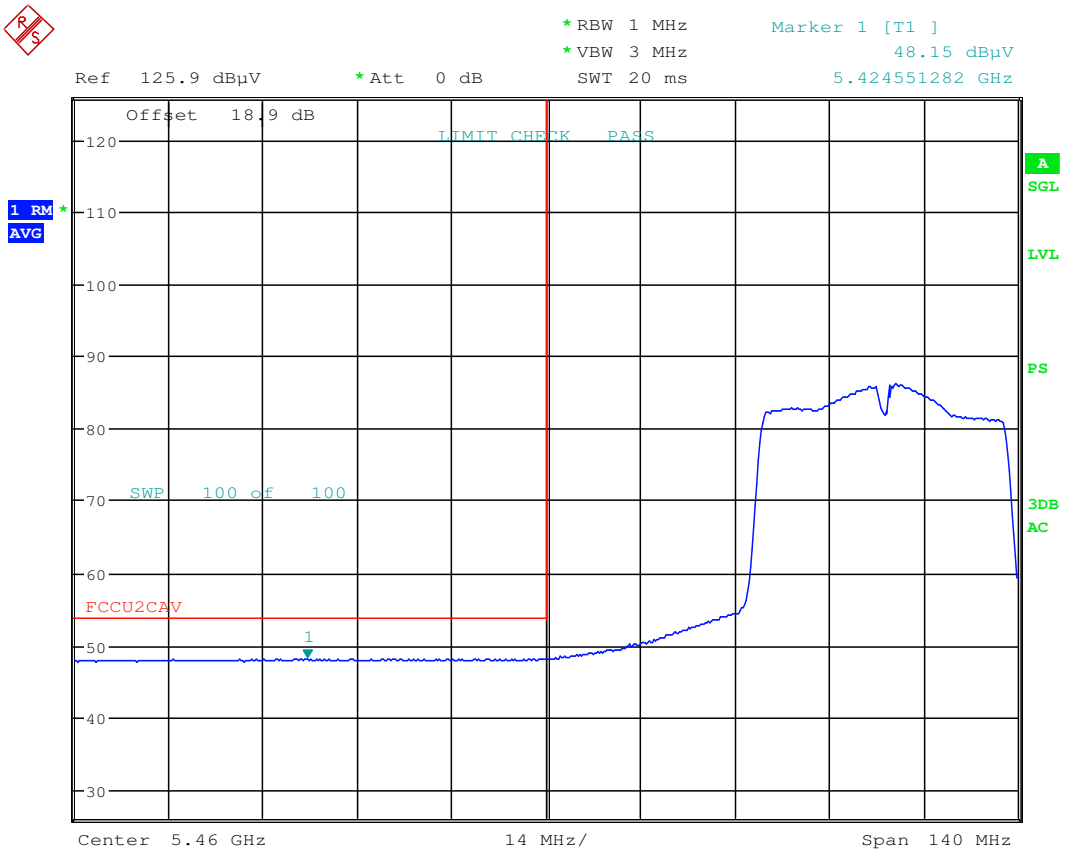
Date: 5.JUN.2016 15:38:42

Plot 7-192. Radiated Restricted Upper Band Edge Plot (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

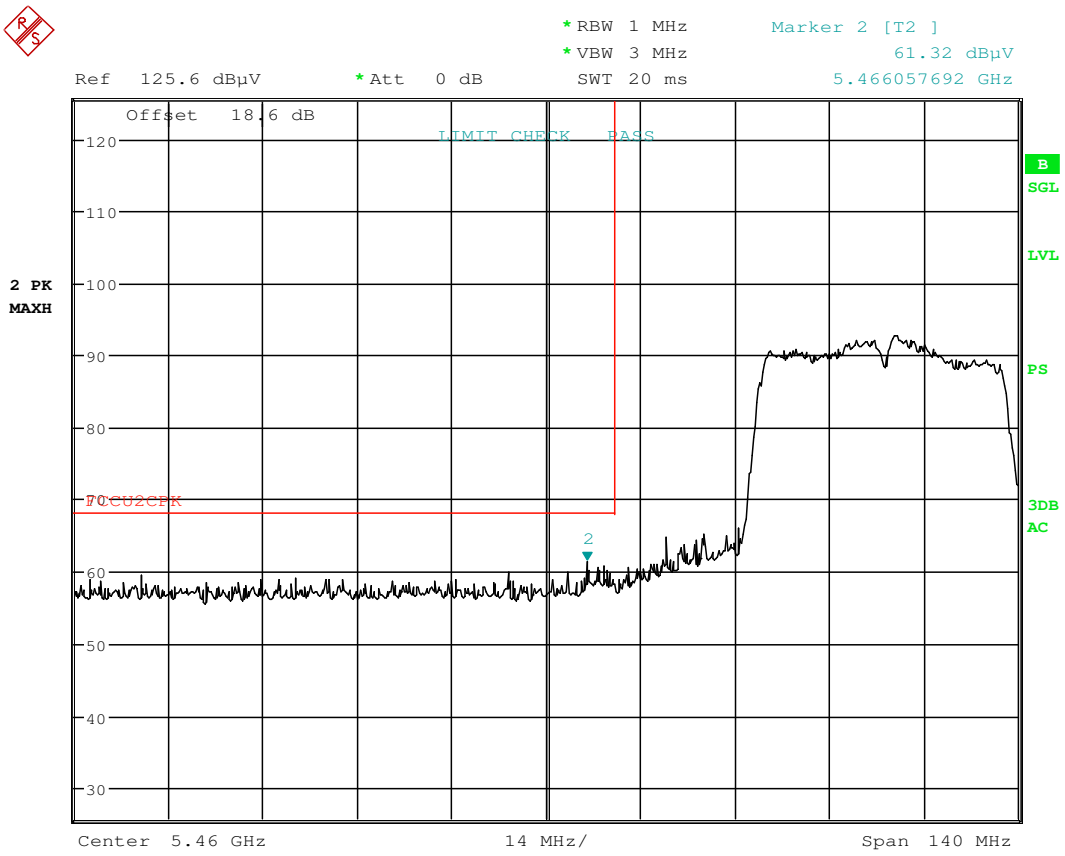


Date: 10.JUN.2016 18:31:56

Plot 7-193. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

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

§15.407(b.1)(b.2) §15.205 §15.209



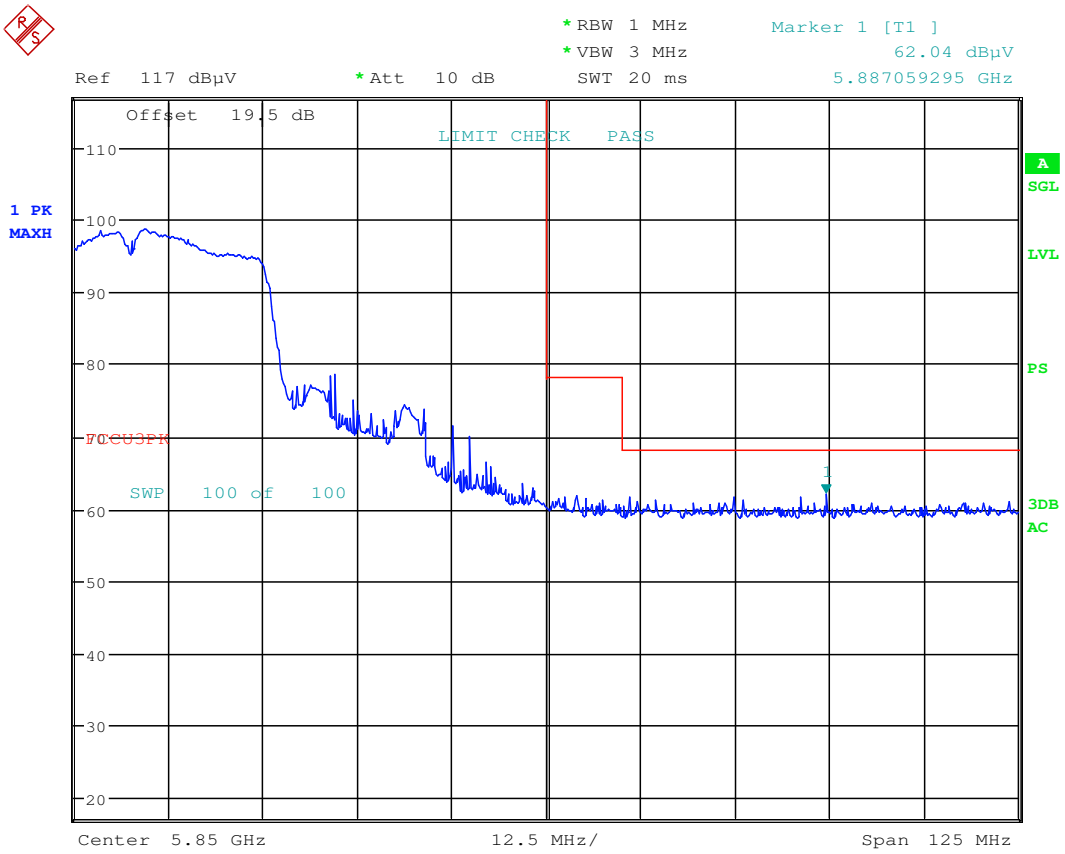
Date: 10.JUN.2016 02:07:34

Plot 7-194. Radiated Restricted Lower Band Edge Plot (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



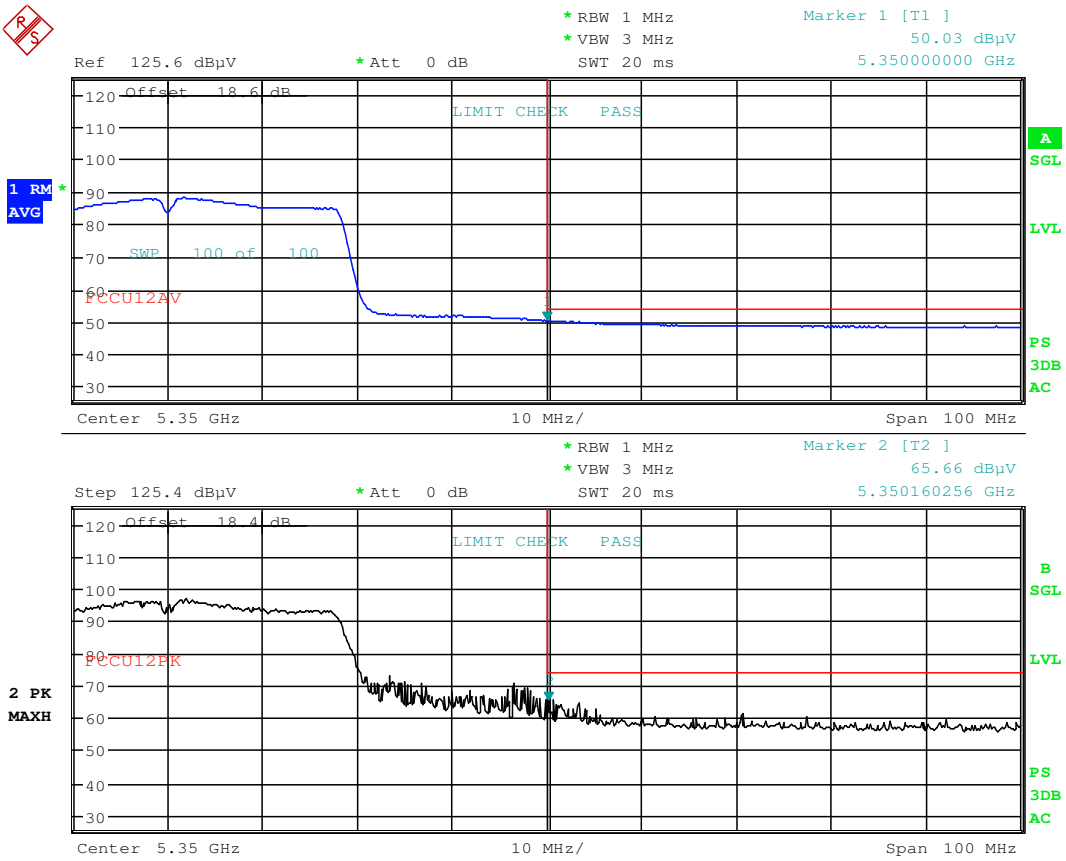
Date: 5.JUN.2016 16:56:01

Plot 7-195. 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:	802.11n (40MHz)
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5310MHz
Channel:	62



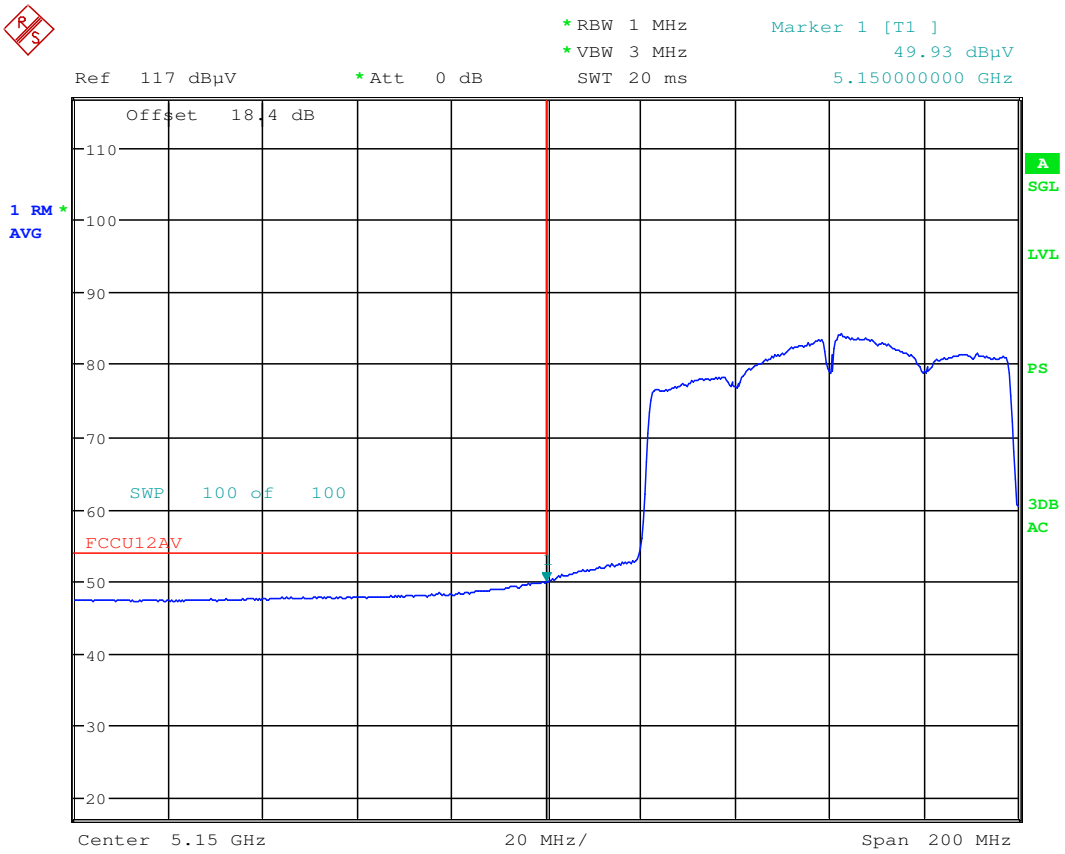
Date: 18.JUN.2016 19:25:23

Plot 7-196. 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

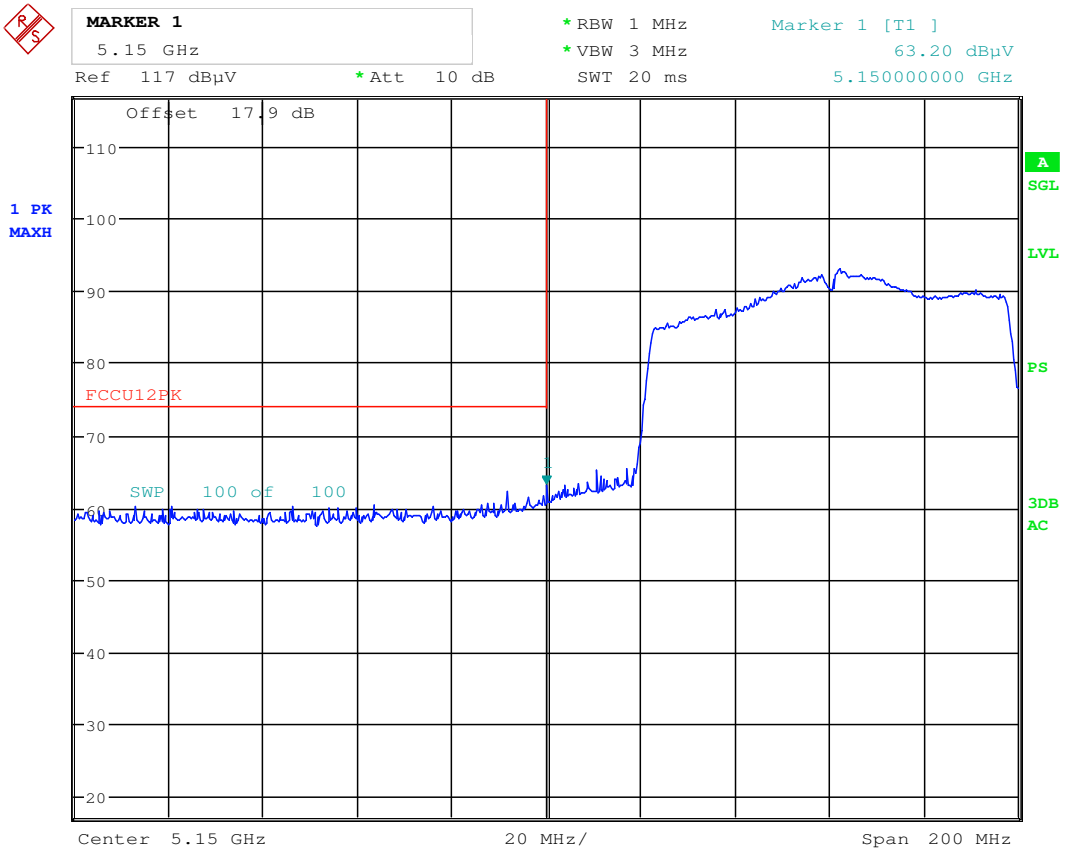


Date: 5.JUN.2016 14:26:16

Plot 7-197. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

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

§15.407(b.1)(b.2) §15.205 §15.209



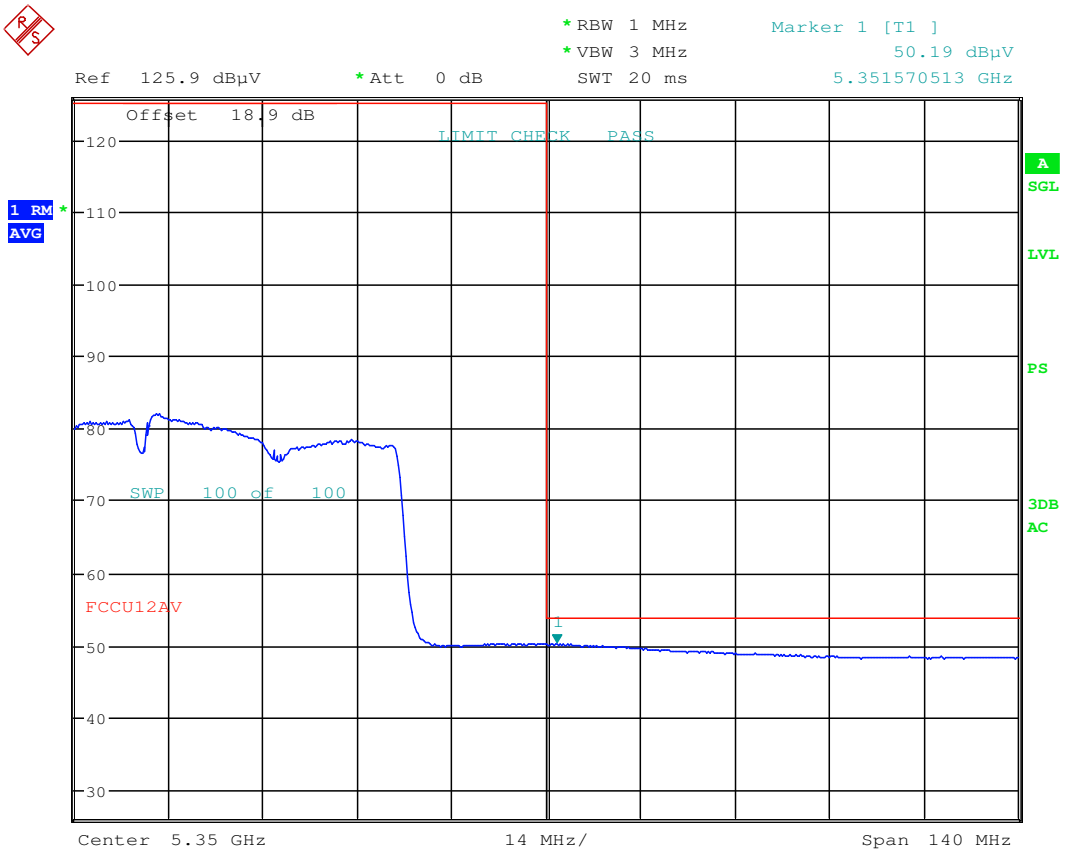
Date: 5.JUN.2016 14:28:33

Plot 7-198. Radiated Restricted Lower Band Edge Plot (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

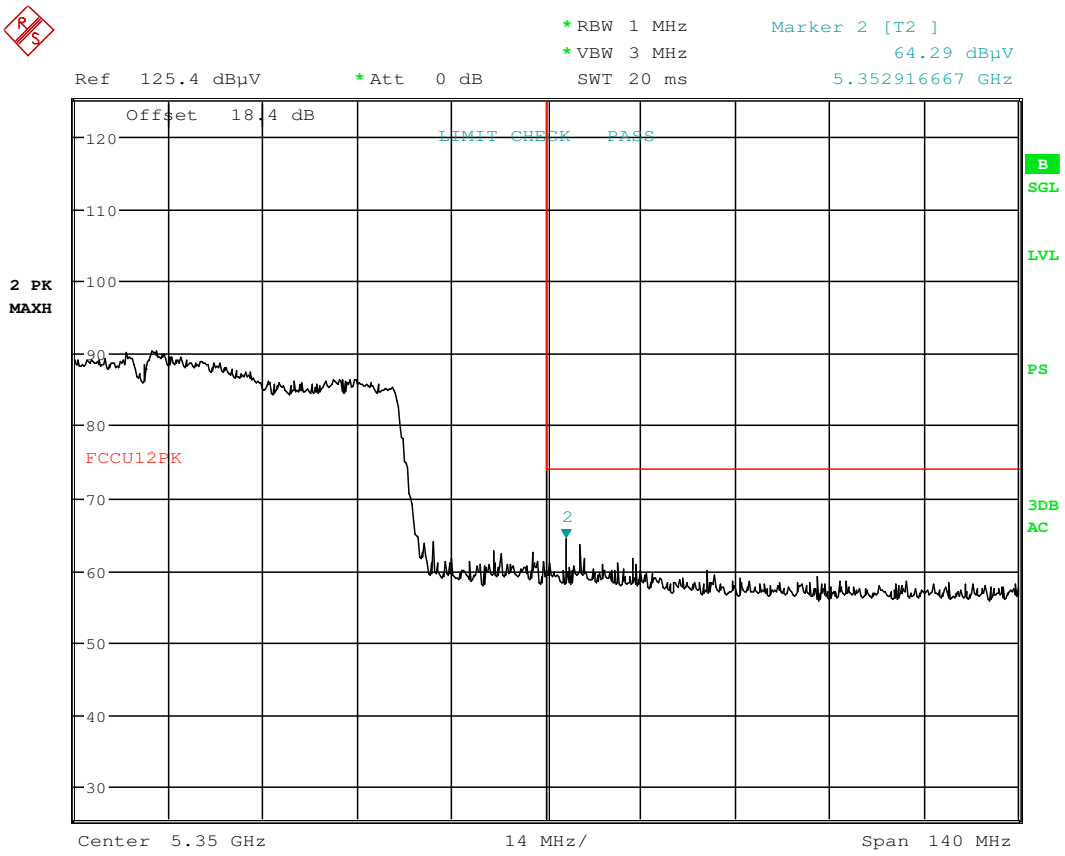


Date: 10.JUN.2016 02:18:45

Plot 7-199. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

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

§15.407(b.1)(b.2) §15.205 §15.209

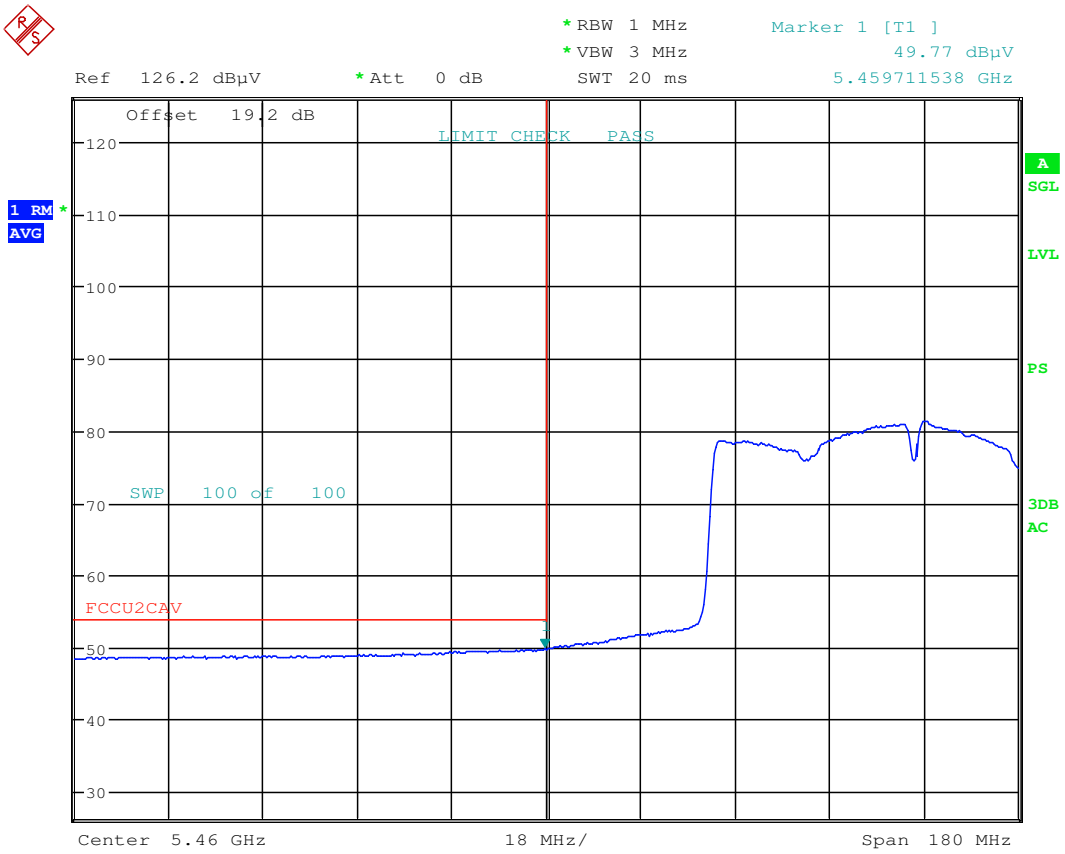


Plot 7-200. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

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

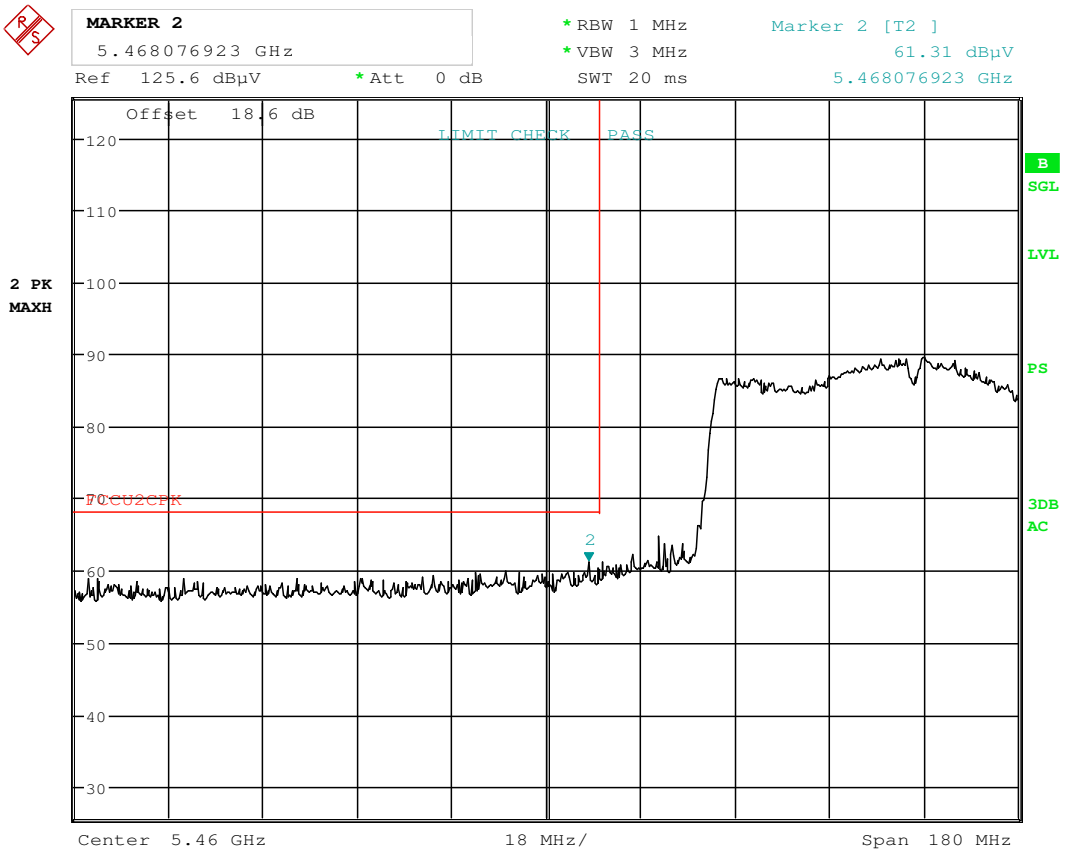


Date: 10.JUN.2016 02:13:34

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

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

§15.407(b.1)(b.2) §15.205 §15.209

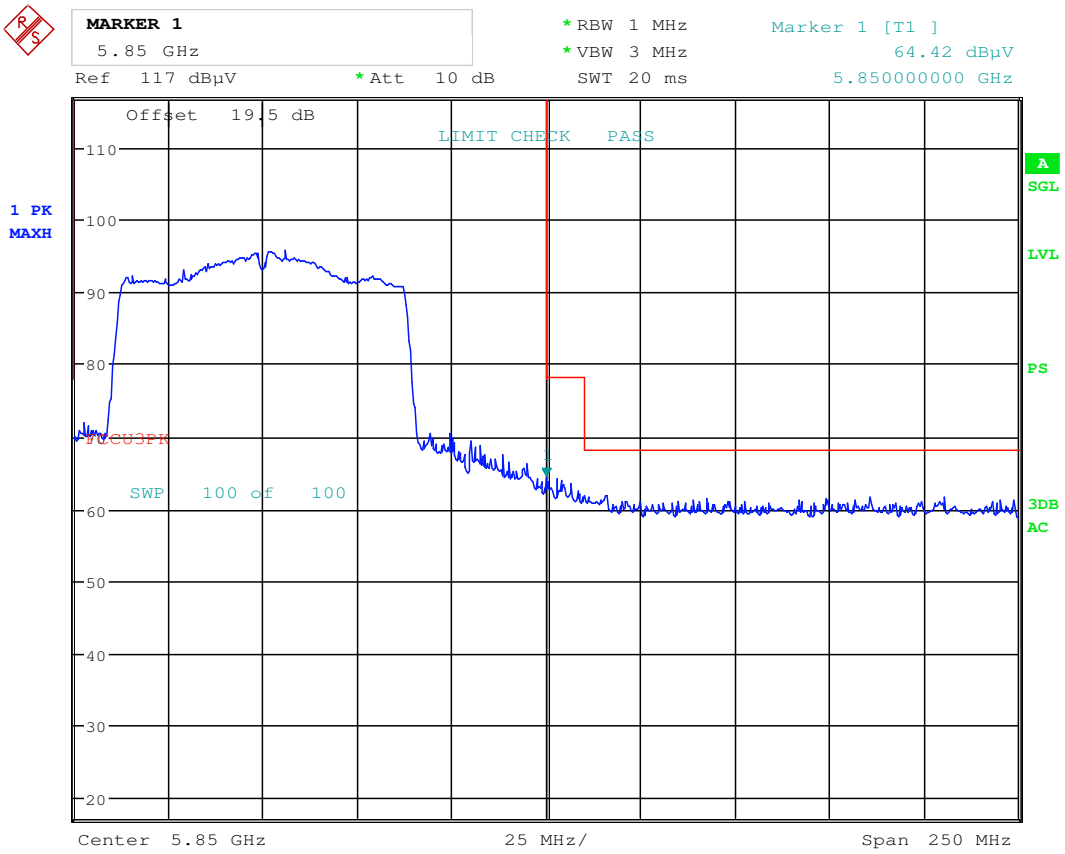


Plot 7-202. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

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

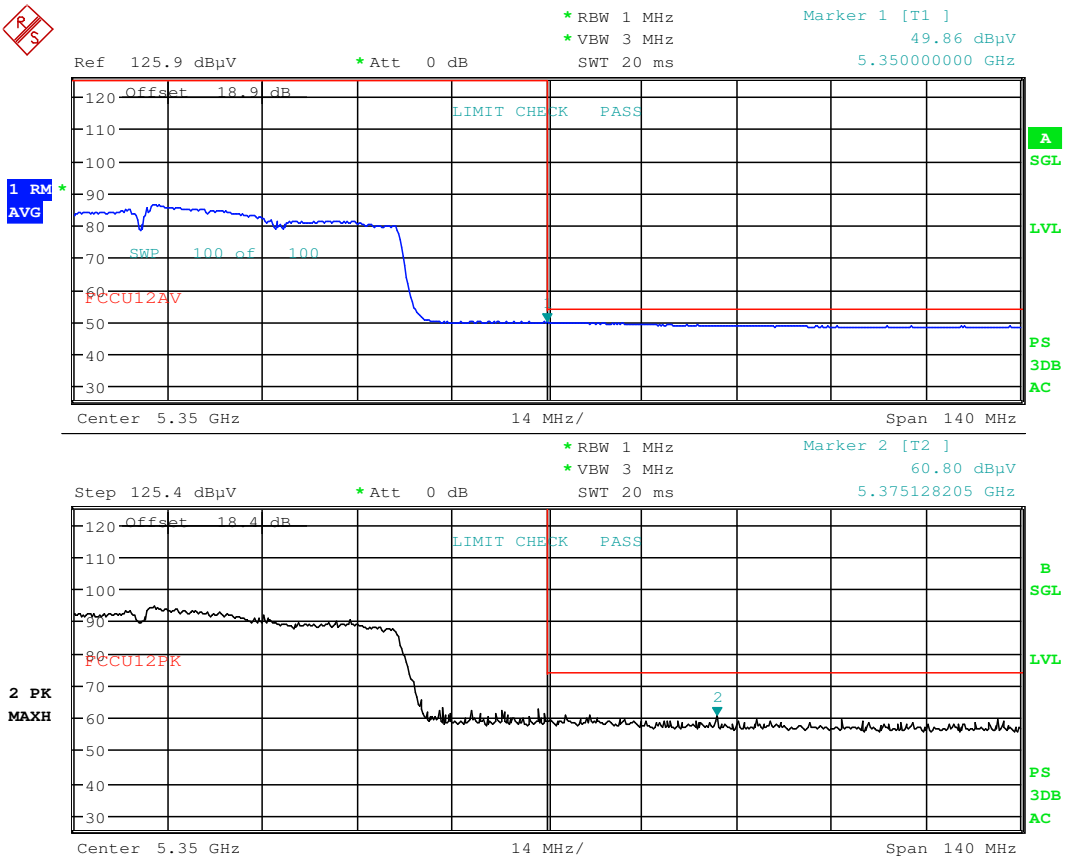


Plot 7-203. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

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

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode:	802.11ac (80MHz)
Worst Case Transfer Rate:	MSC0
Distance of Measurements:	3 Meters
Operating Frequency:	5290MHz
Channel:	58



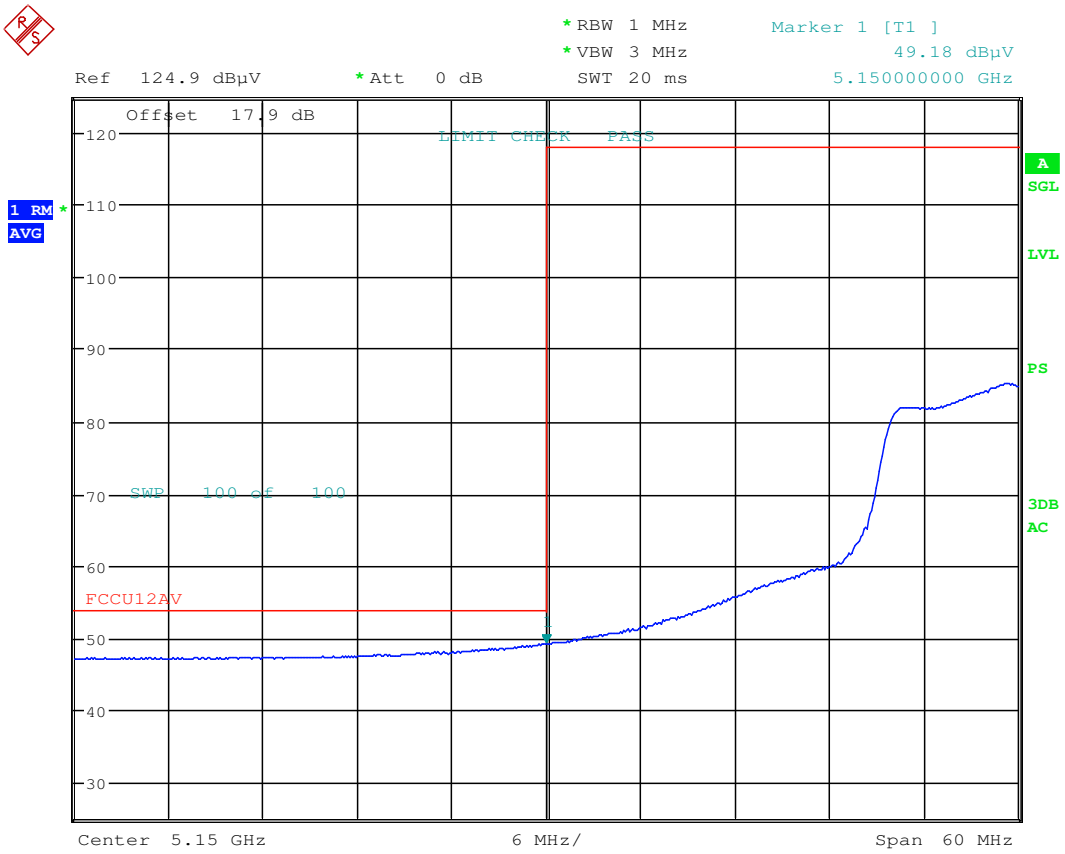
Date: 18.JUN.2016 19:28:59

Plot 7-204. 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

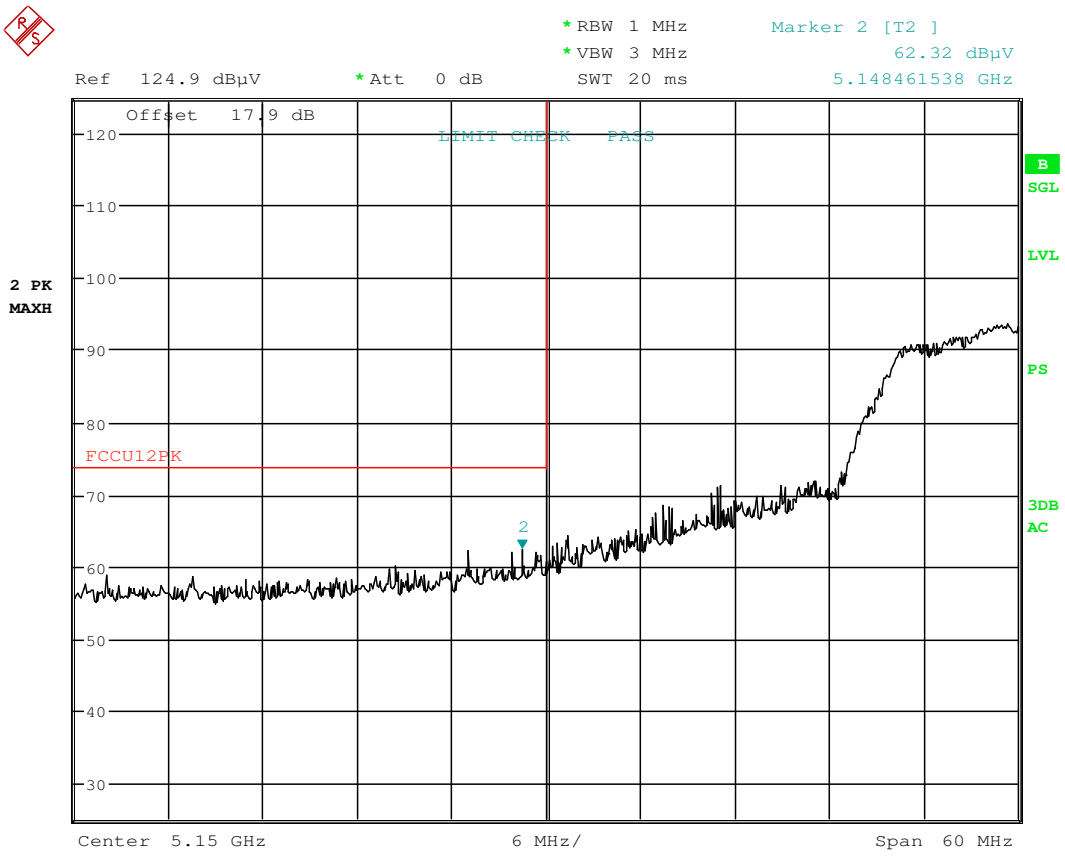


Date: 6.JUN.2016 18:53:38

Plot 7-205. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

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

§15.407(b.1)(b.2) §15.205 §15.209

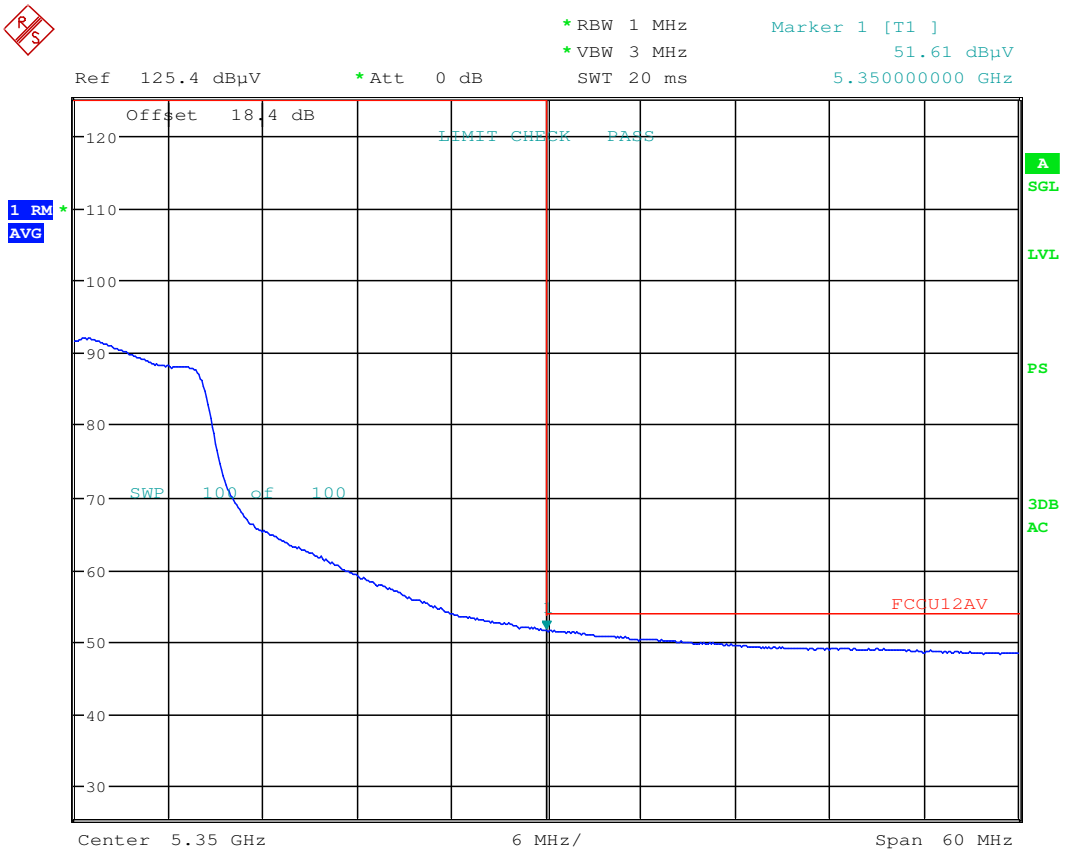


Plot 7-206. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

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

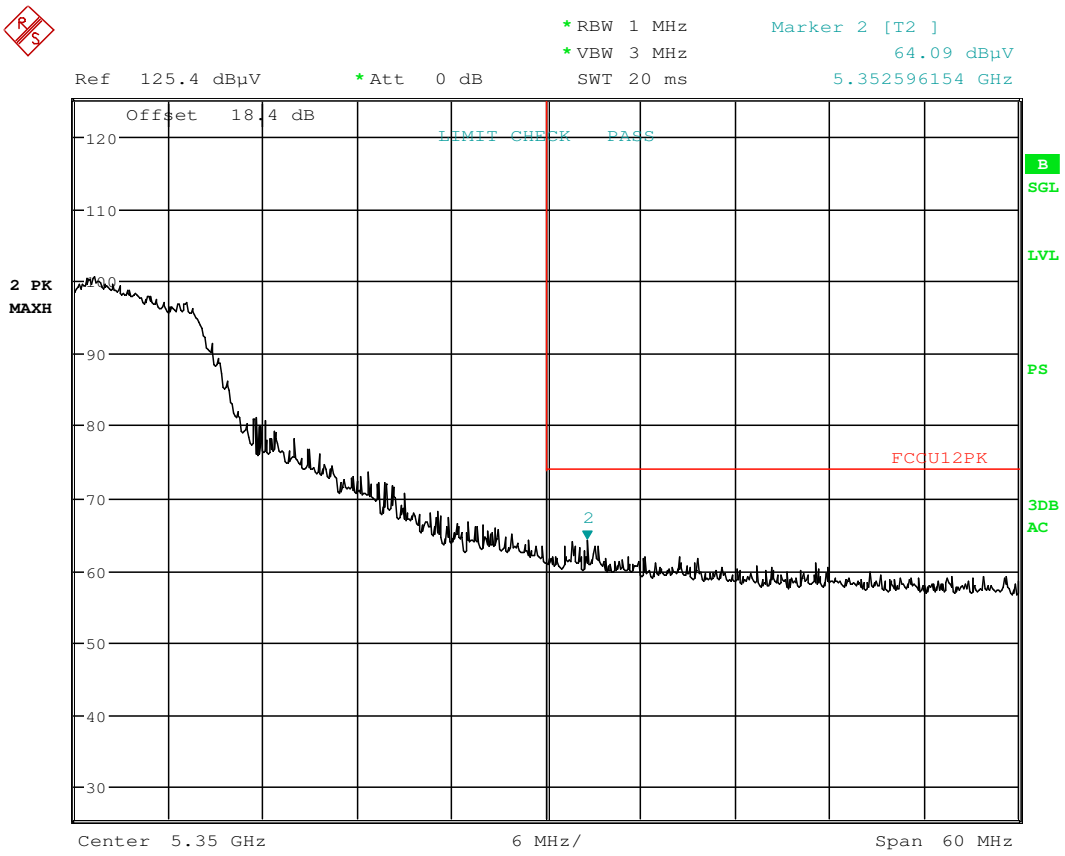


Date: 6.JUN.2016 19:07:19

Plot 7-207. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

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

§15.407(b.1)(b.2) §15.205 §15.209

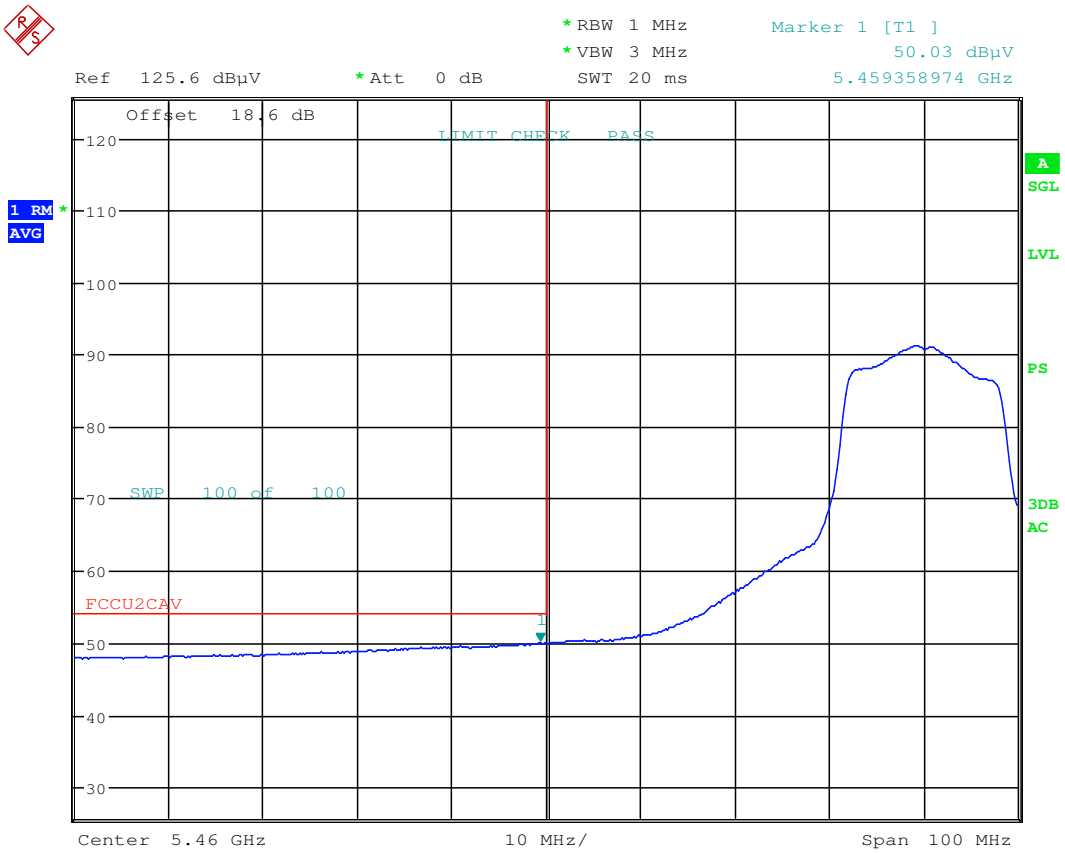


Plot 7-208. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

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

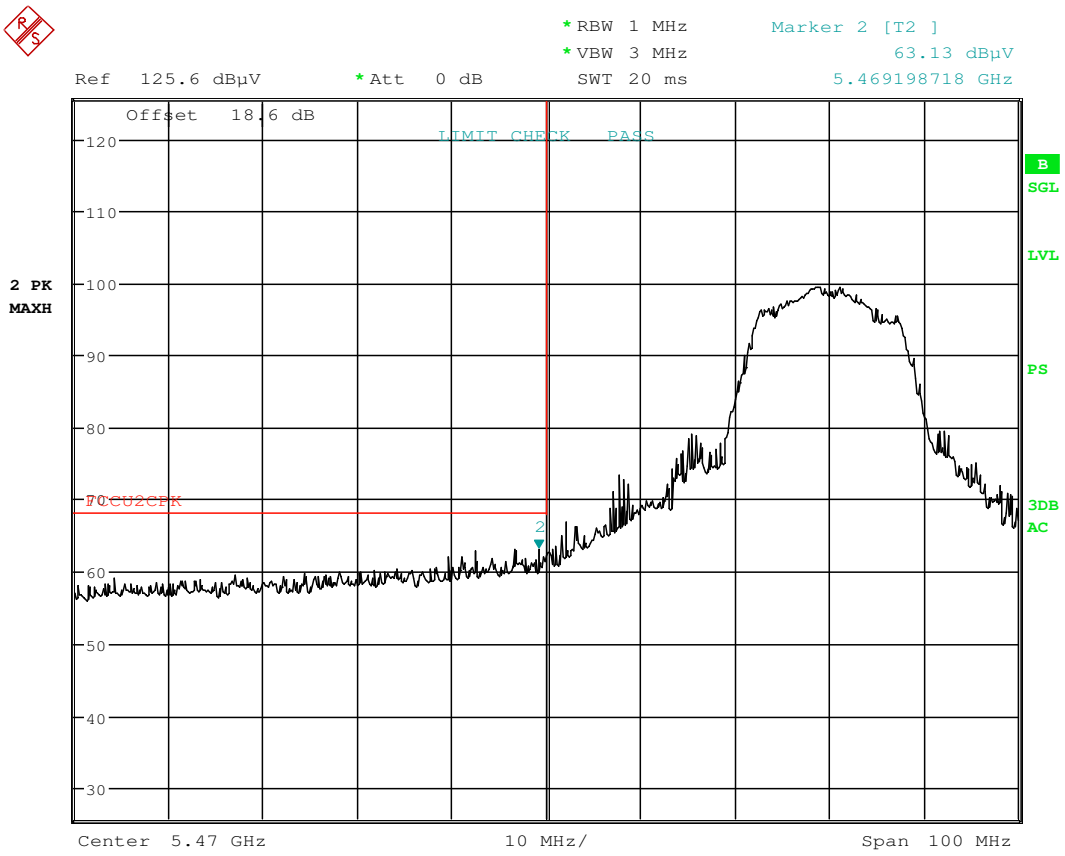


Date: 6.JUN.2016 19:55:51

Plot 7-209. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

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

§15.407(b.1)(b.2) §15.205 §15.209



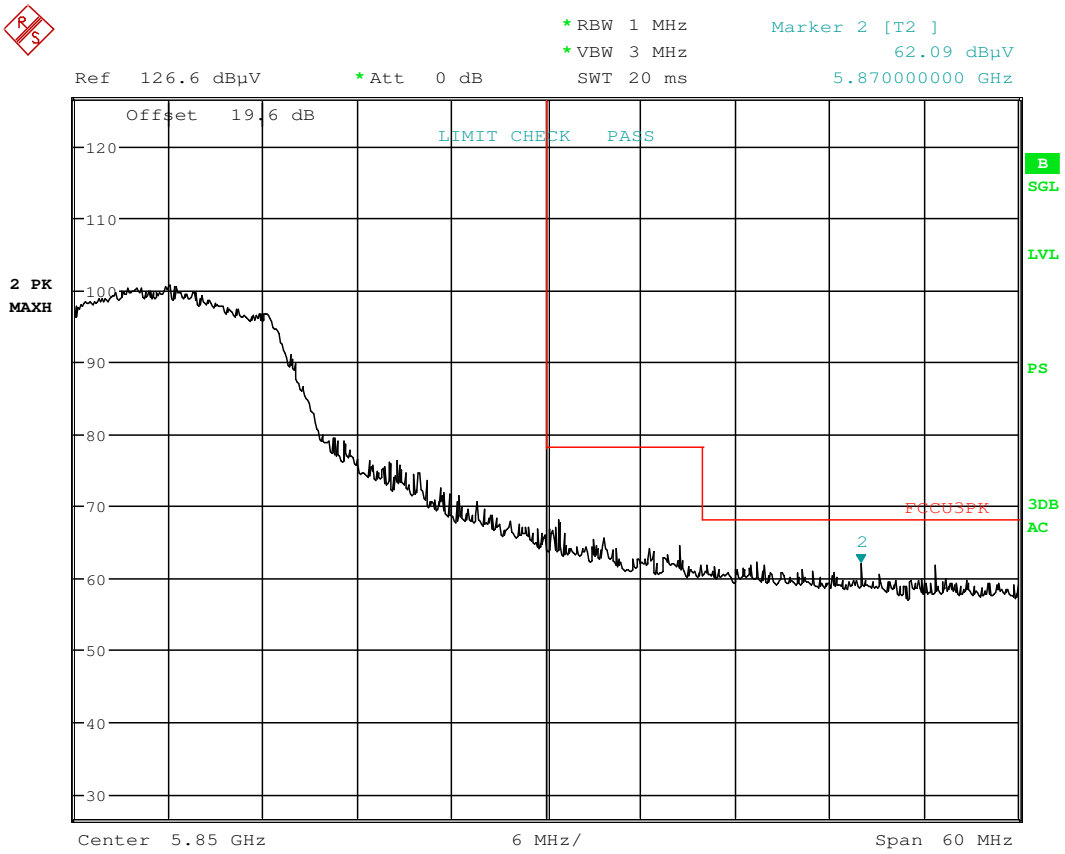
Date: 6.JUN.2016 19:55:37

Plot 7-210. Radiated Restricted Lower Band Edge Plot (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



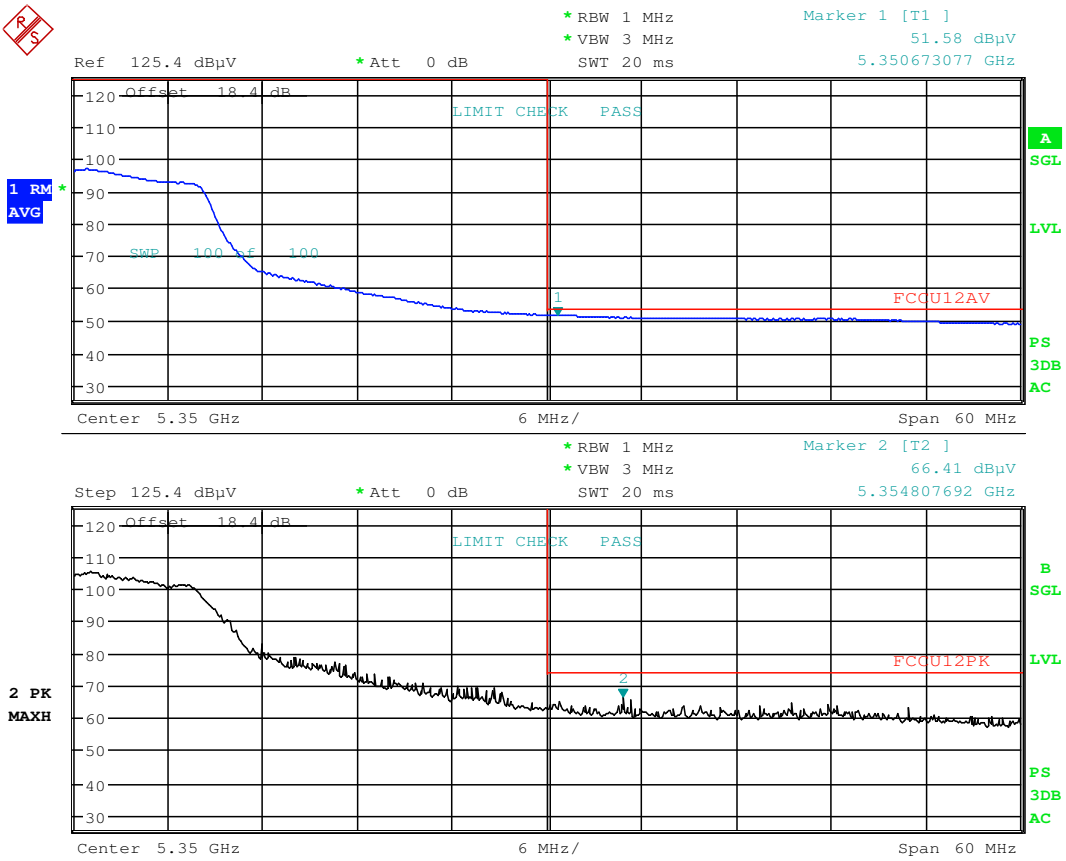
Date: 6.JUN.2016 20:02:18

Plot 7-211. 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



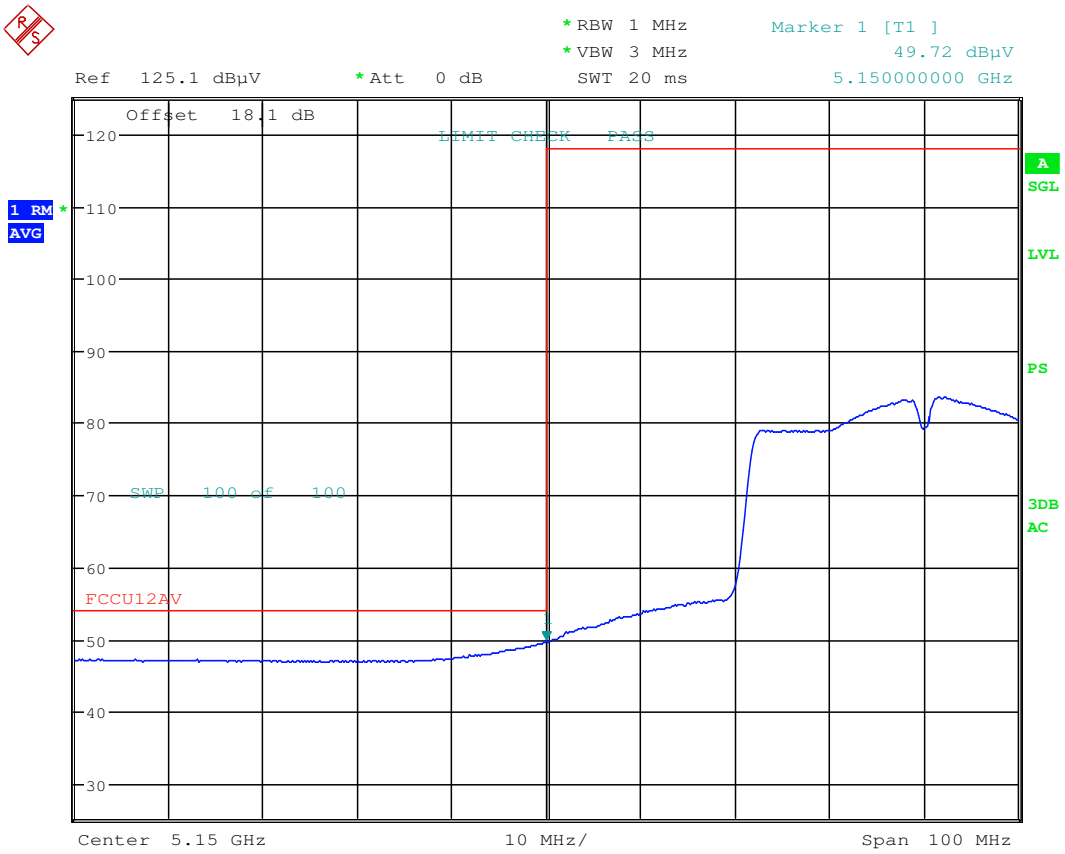
Date: 18.JUN.2016 19:35:32

Plot 7-212. 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

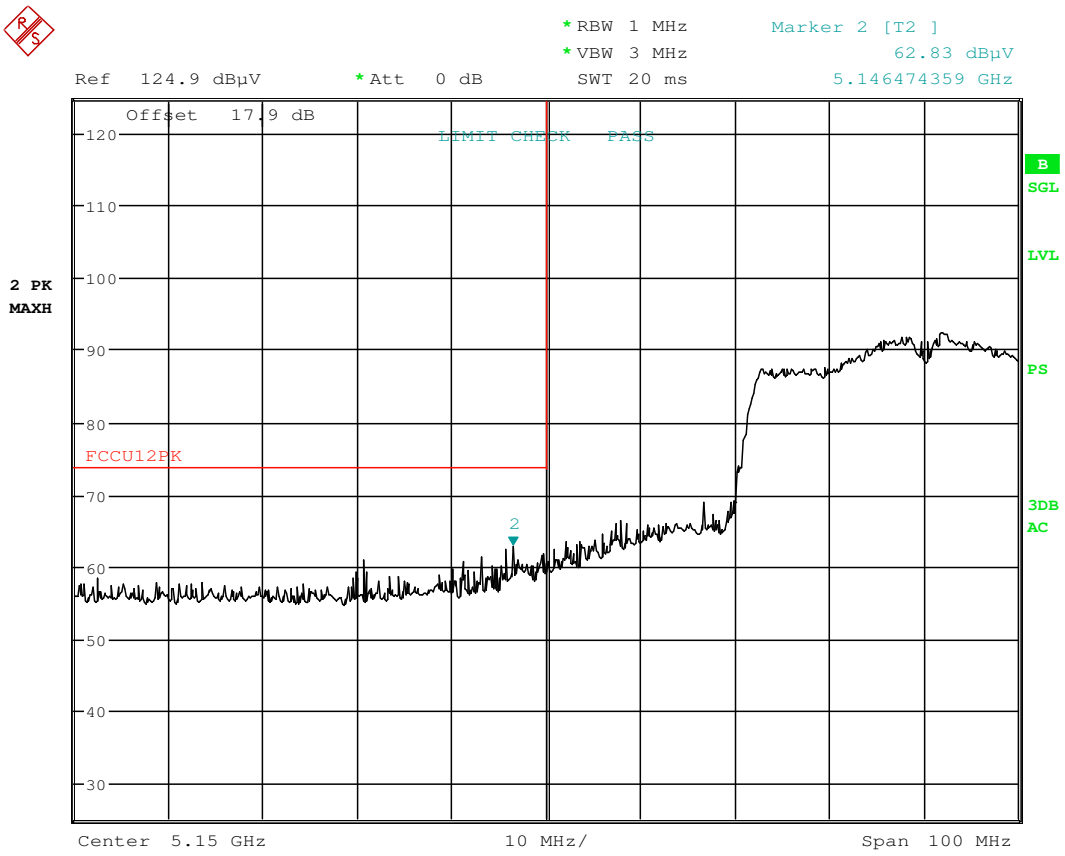


Date: 6.JUN.2016 20:53:18

Plot 7-213. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

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

§15.407(b.1)(b.2) §15.205 §15.209

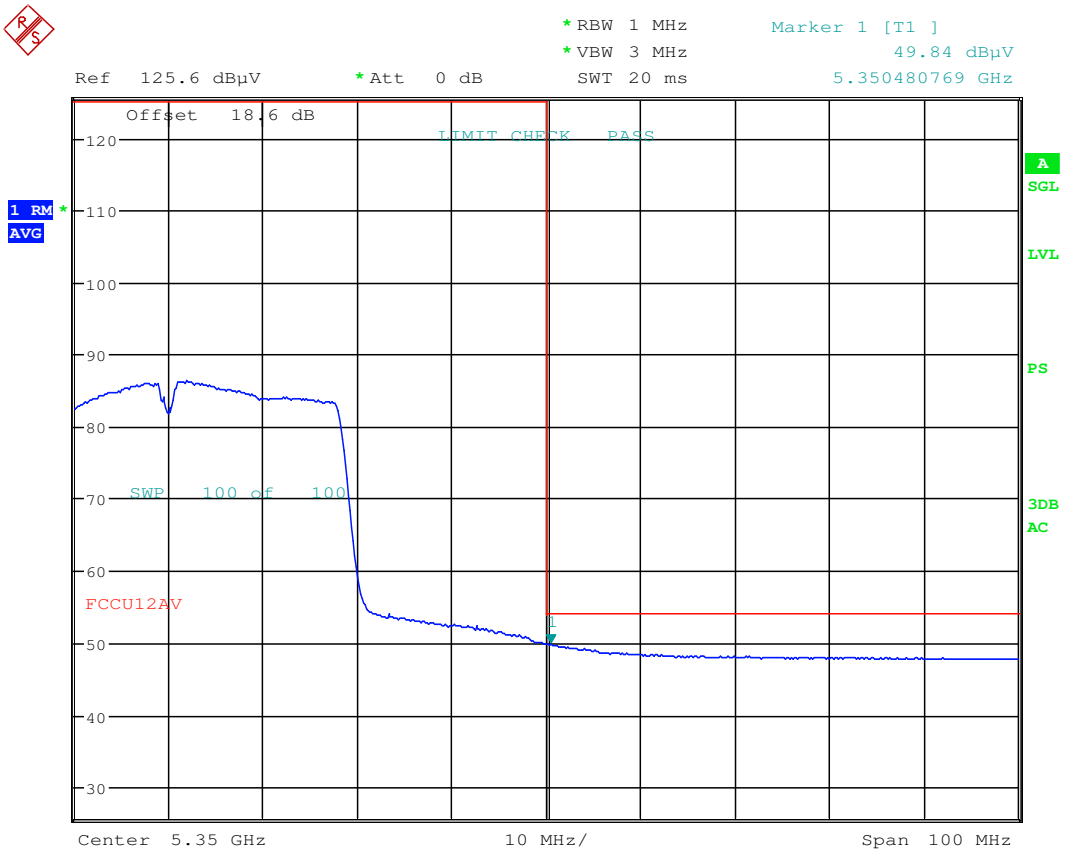


Plot 7-214. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

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

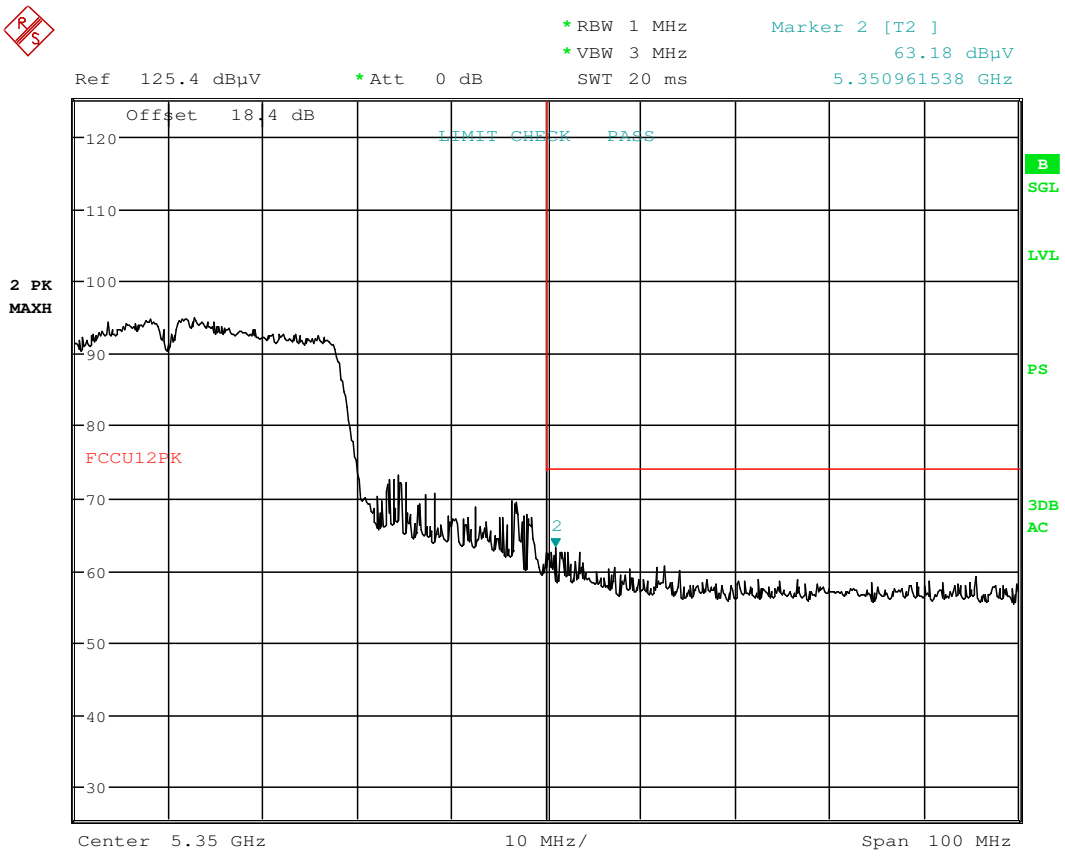


Date: 6.JUN.2016 20:58:35

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

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

§15.407(b.1)(b.2) §15.205 §15.209

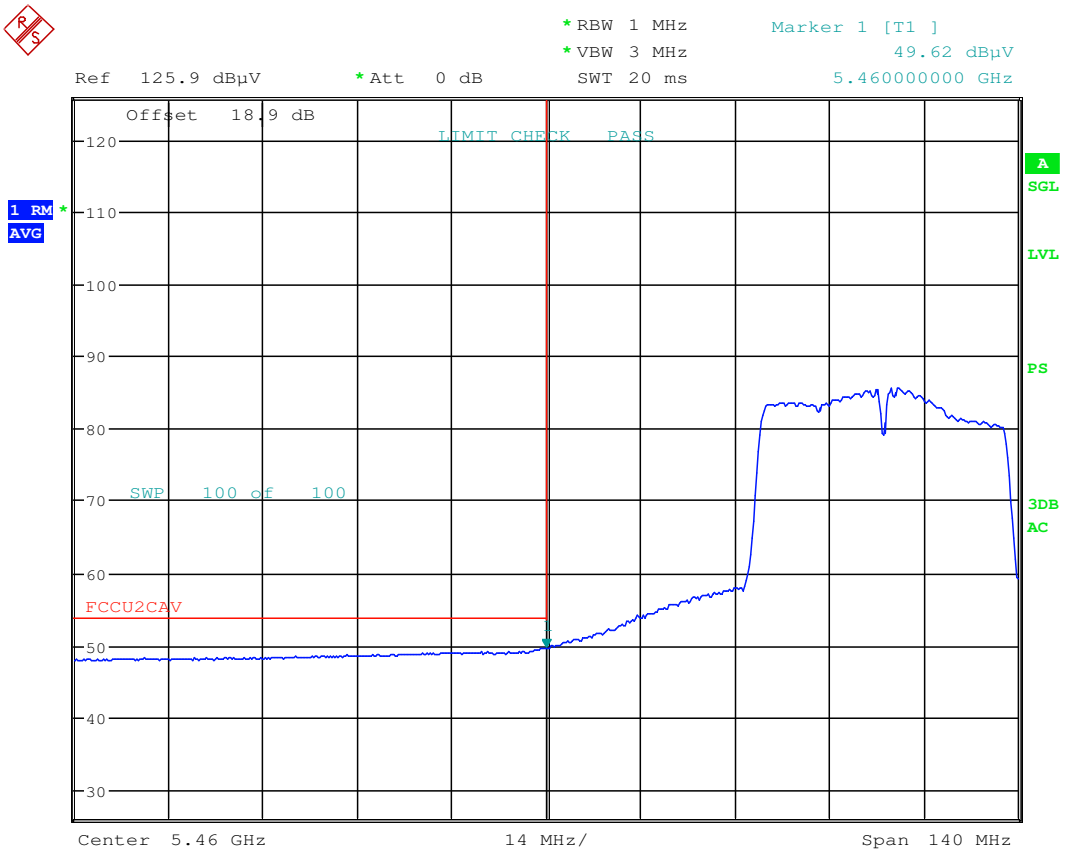


Plot 7-216. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

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

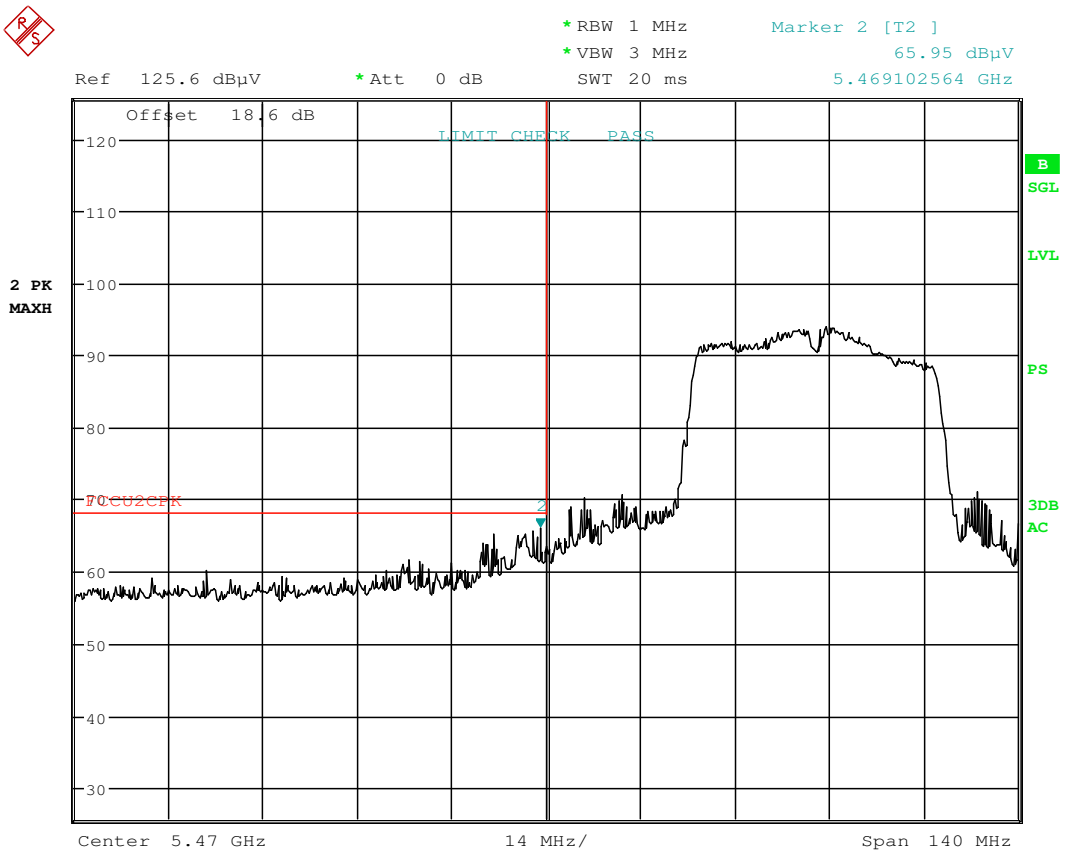


Date: 6.JUN.2016 21:04:18

Plot 7-217. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

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

§15.407(b.1)(b.2) §15.205 §15.209



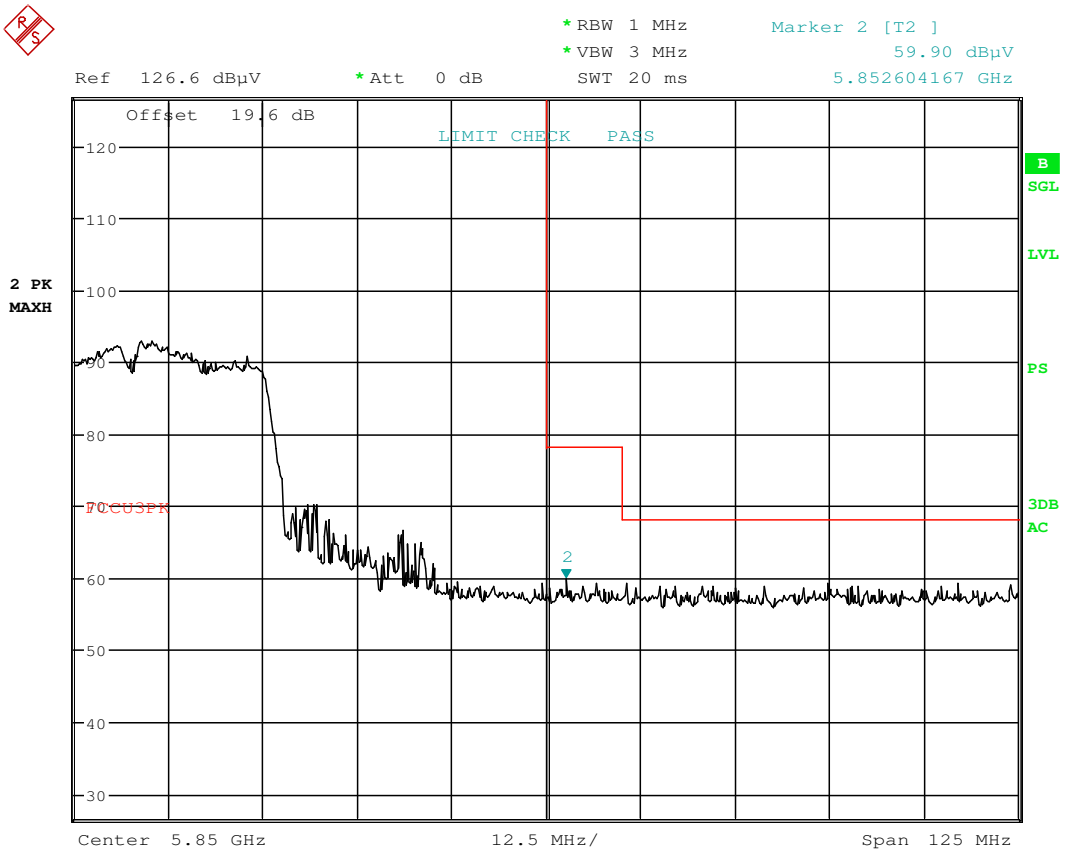
Date: 6.JUN.2016 21:04:40

Plot 7-218. Radiated Restricted Lower Band Edge Plot (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



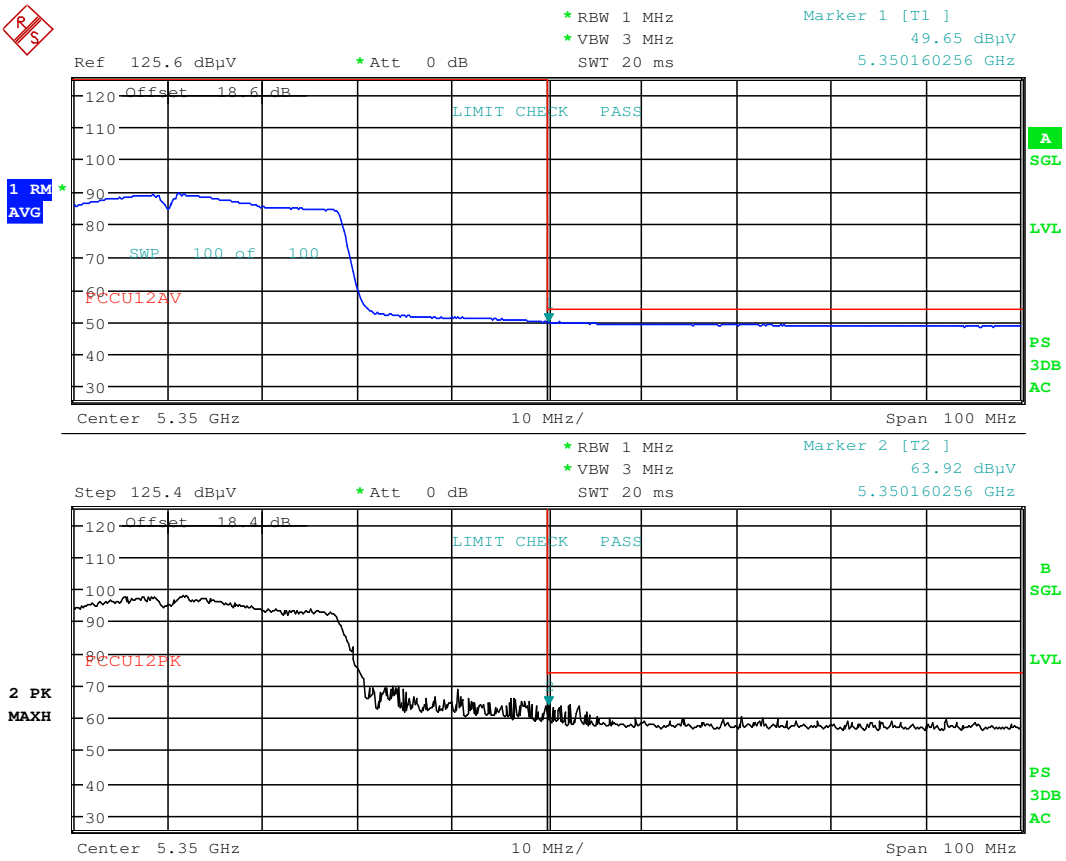
Date: 6.JUN.2016 21:20:36

Plot 7-219. 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:	802.11n (40MHz)
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5310MHz
Channel:	62



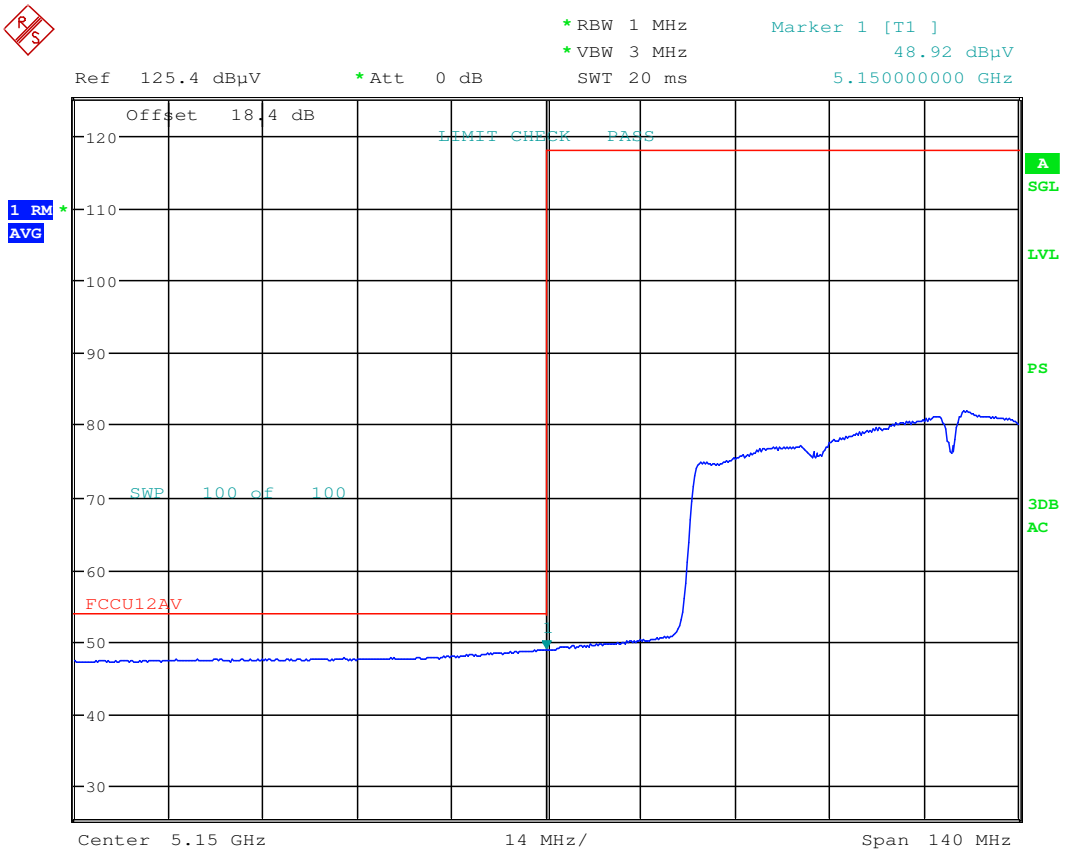
Date: 18.JUN.2016 19:43:24

Plot 7-220. 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

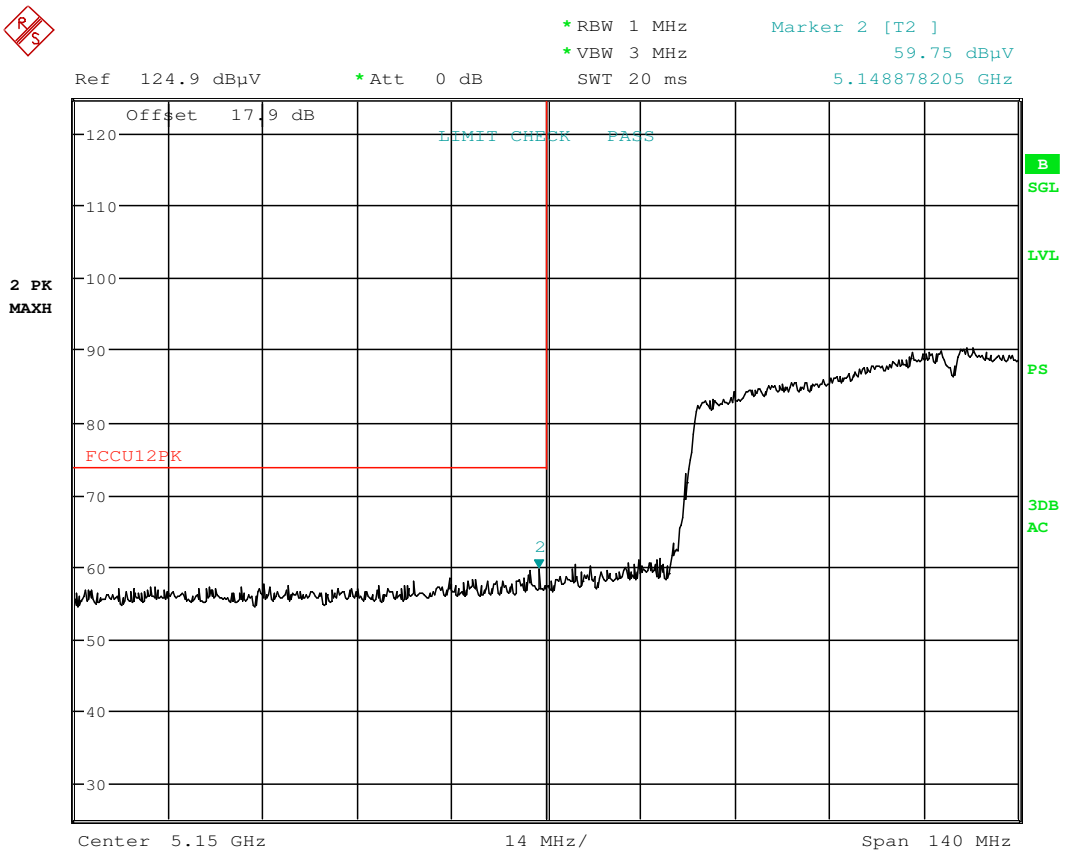
Worst Case Mode:	802.11n (80MHz)
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5210MHz
Channel:	42



Plot 7-221. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

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

§15.407(b.1)(b.2) §15.205 §15.209

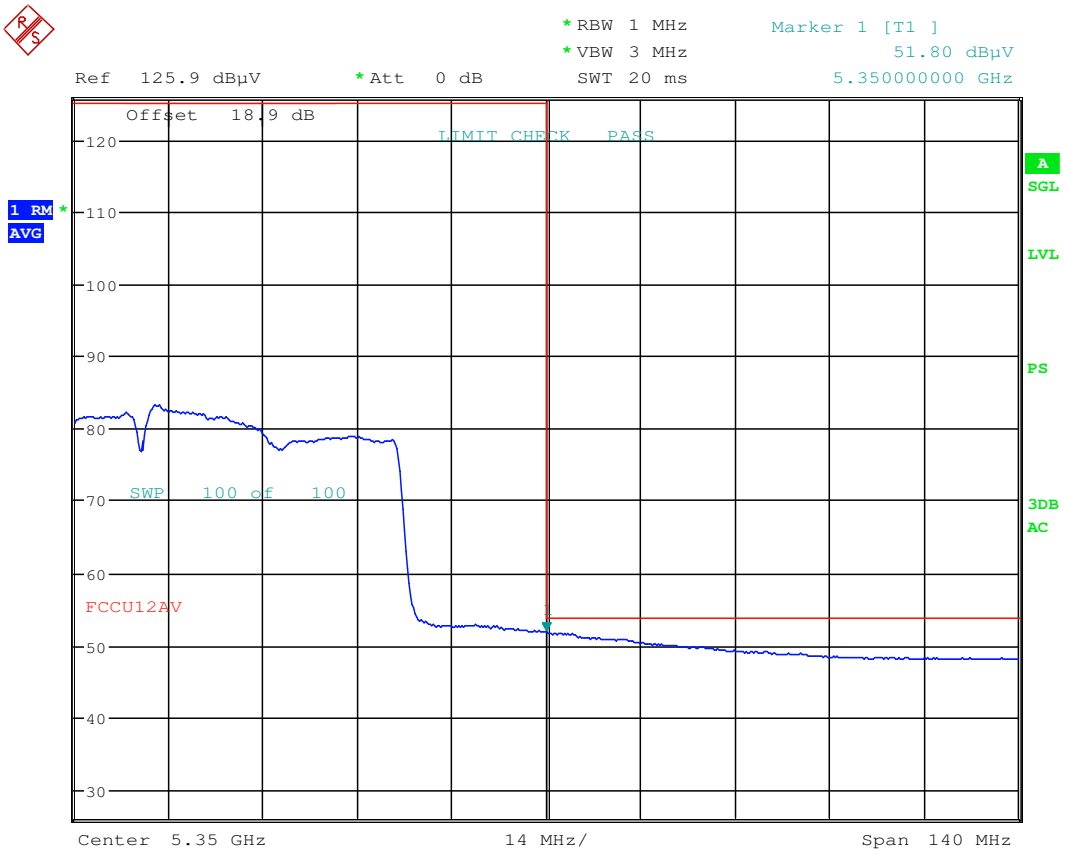


Plot 7-222. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

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

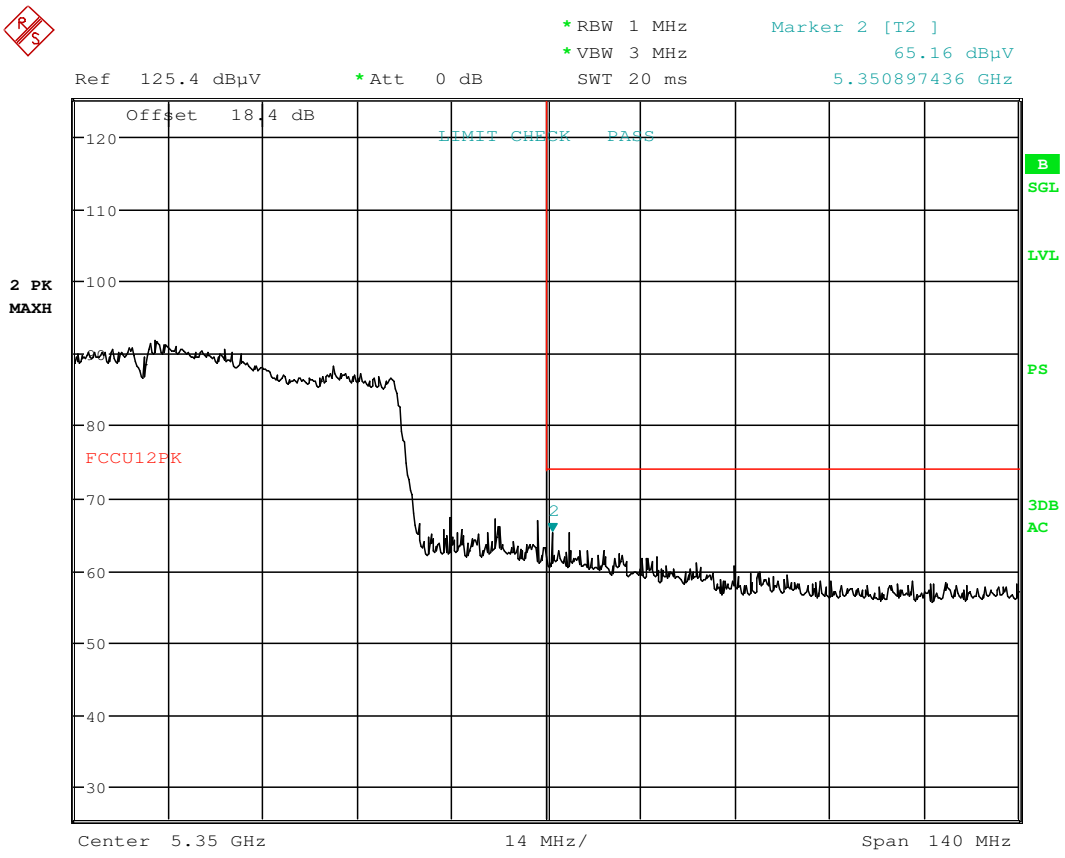


Date: 6.JUN.2016 21:34:11

Plot 7-223. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

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

§15.407(b.1)(b.2) §15.205 §15.209

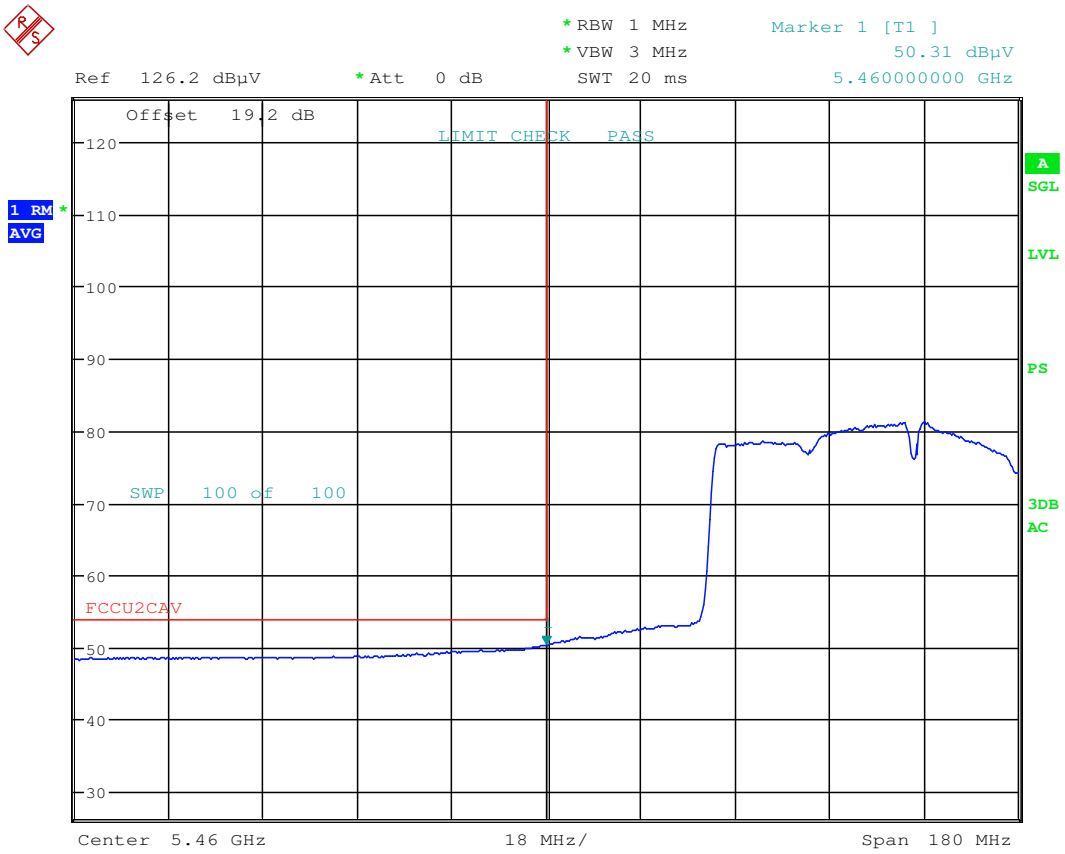


Plot 7-224. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

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

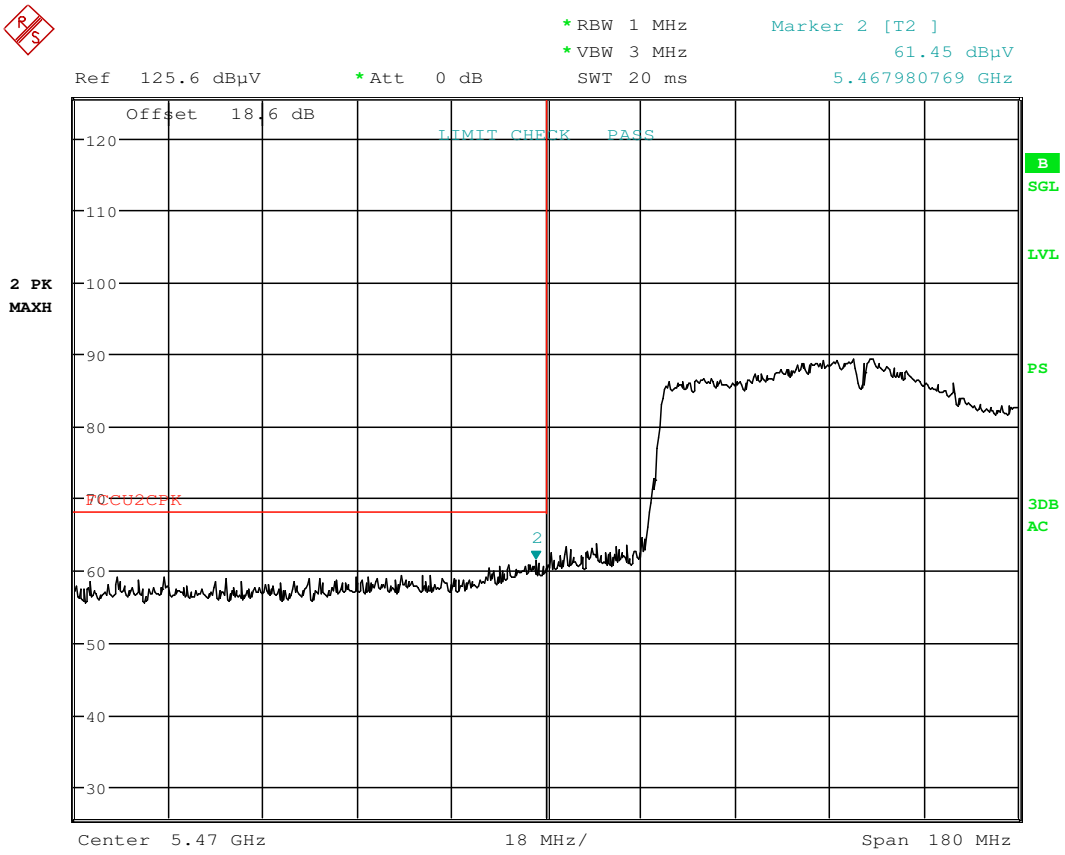


Date: 6.JUN.2016 21:39:24

Plot 7-225. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

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

§15.407(b.1)(b.2) §15.205 §15.209

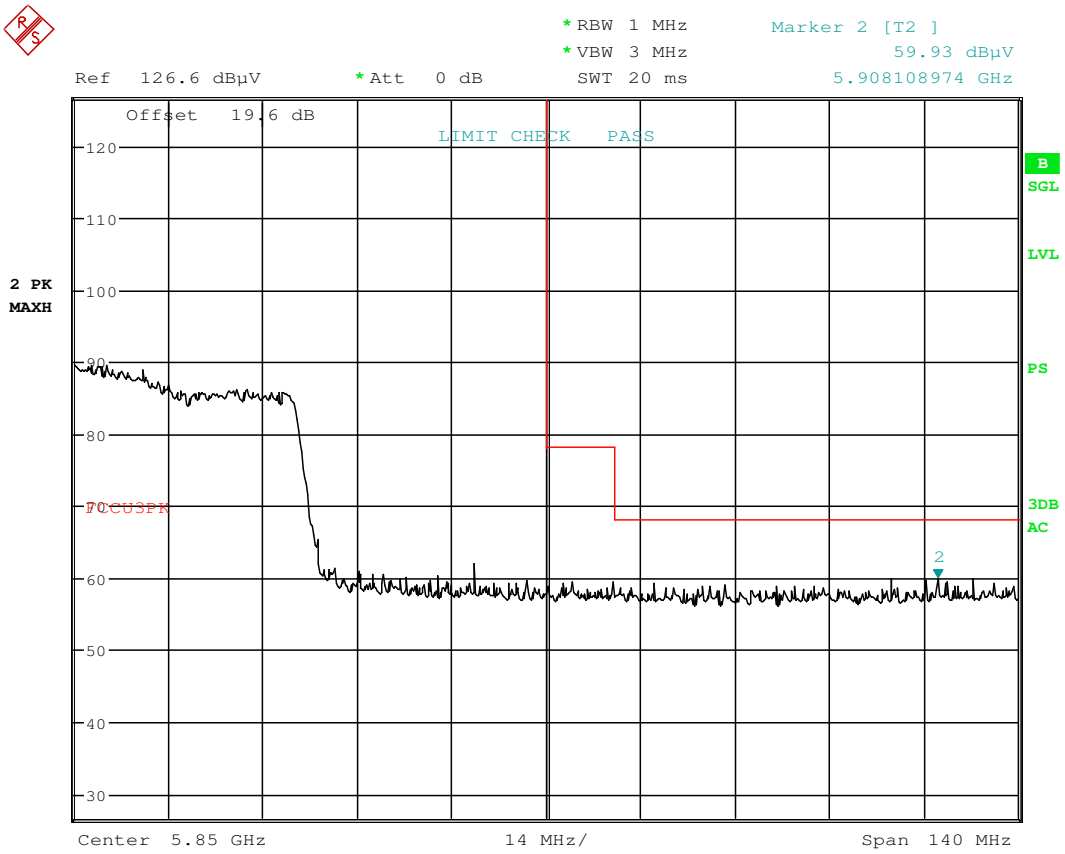


Plot 7-226. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

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



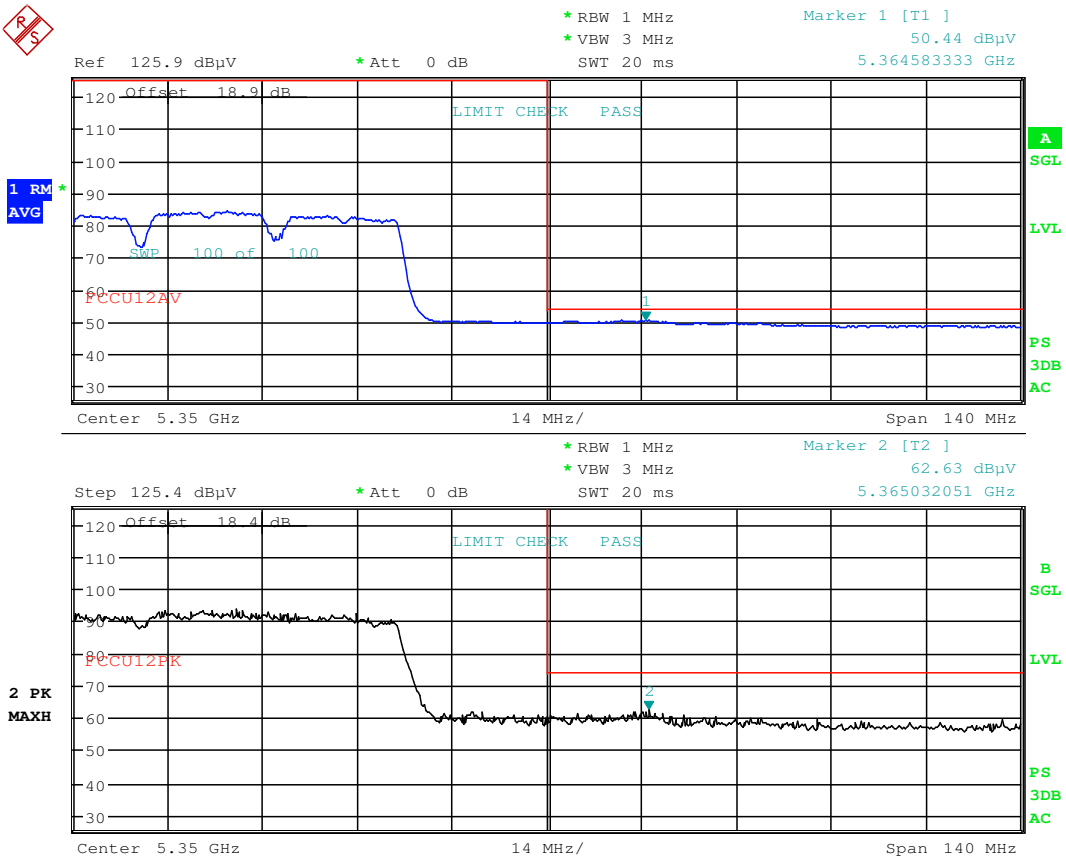
Date: 6.JUN.2016 21:55:07

Plot 7-227. 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:	802.11ac (80MHz)
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5290MHz
Channel:	58



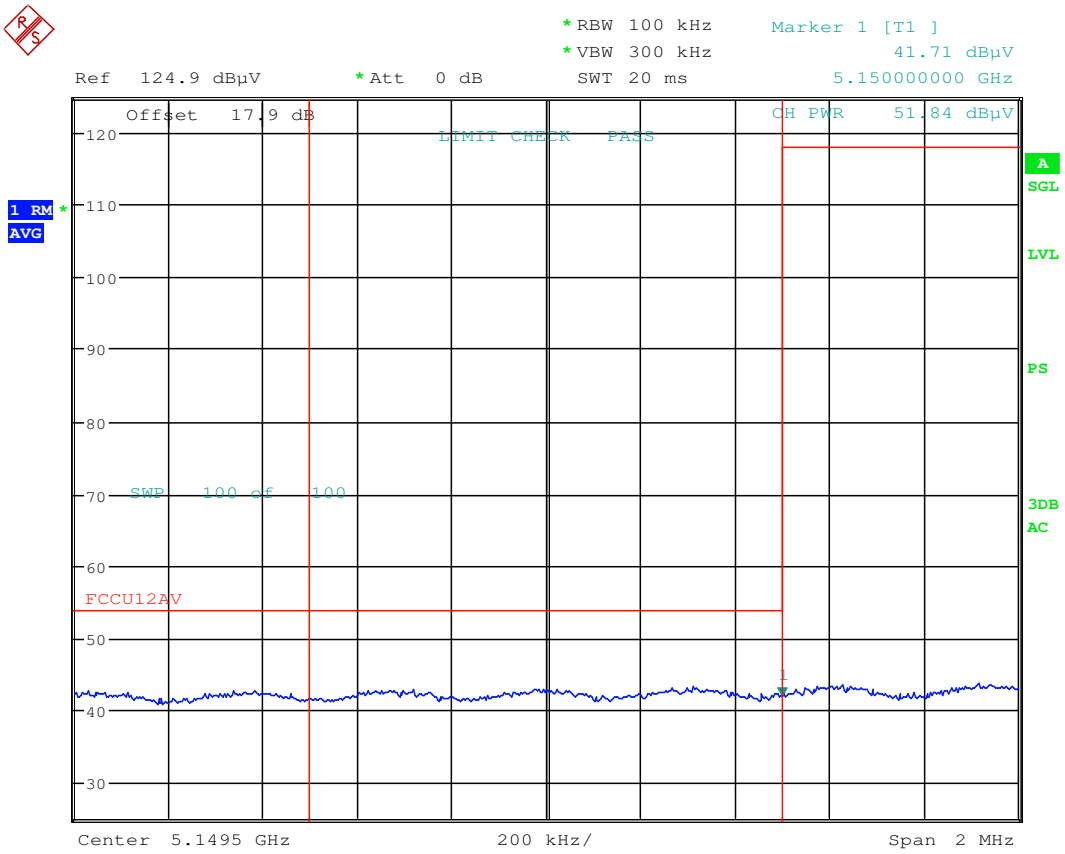
Date: 18.JUN.2016 19:44:55

Plot 7-228. 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

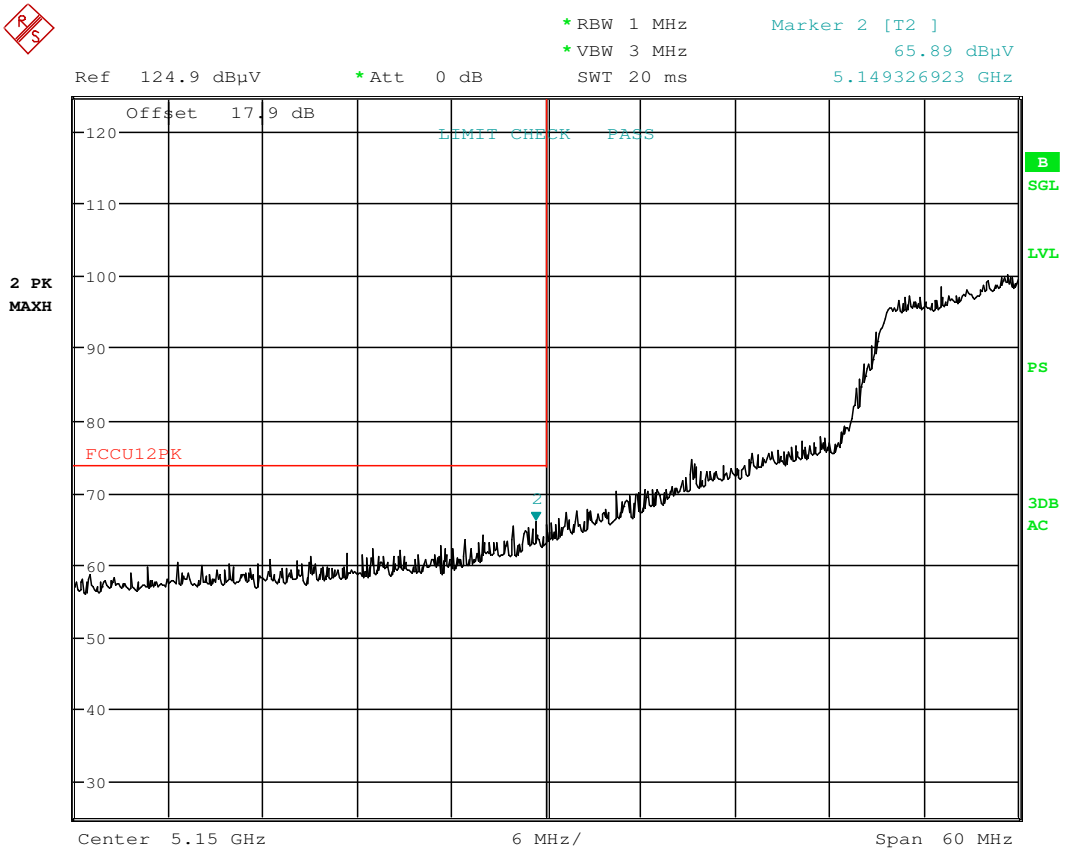


Date: 6.JUN.2016 22:43:34

Plot 7-229. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

MIMO Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

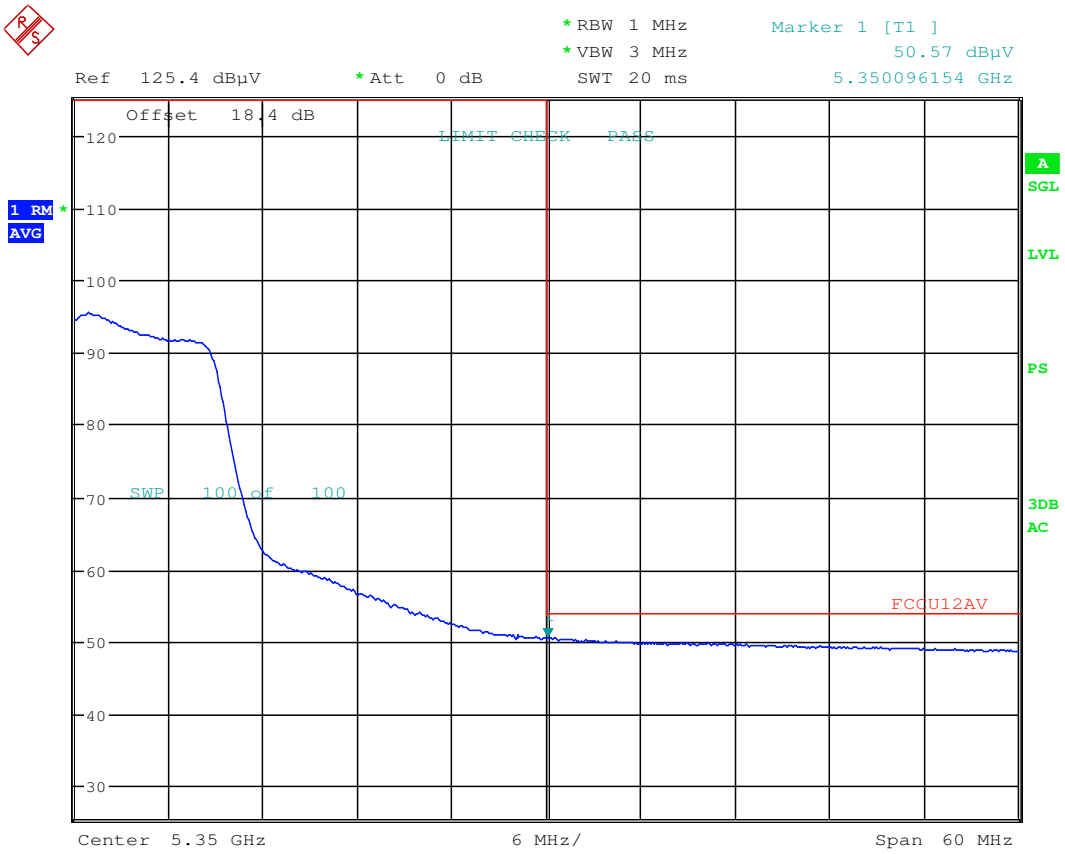


Plot 7-230. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

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

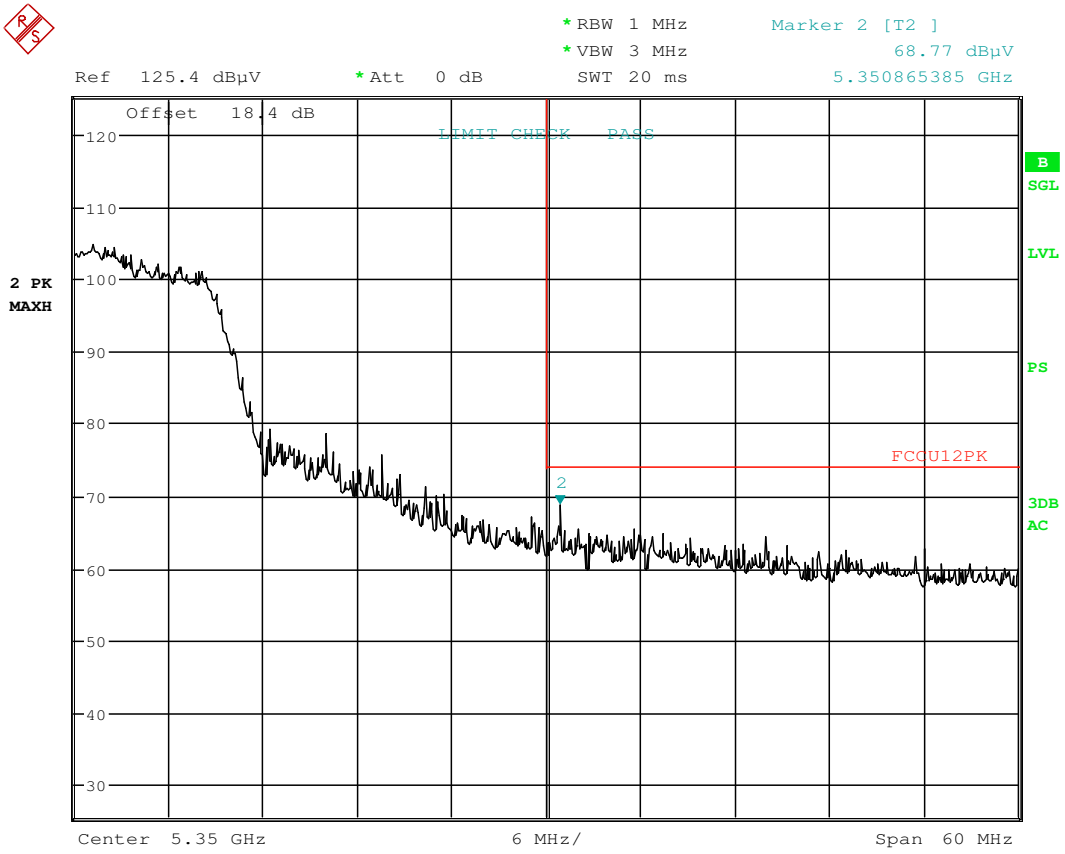


Date: 6.JUN.2016 23:04:25

Plot 7-231. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

MIMO Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

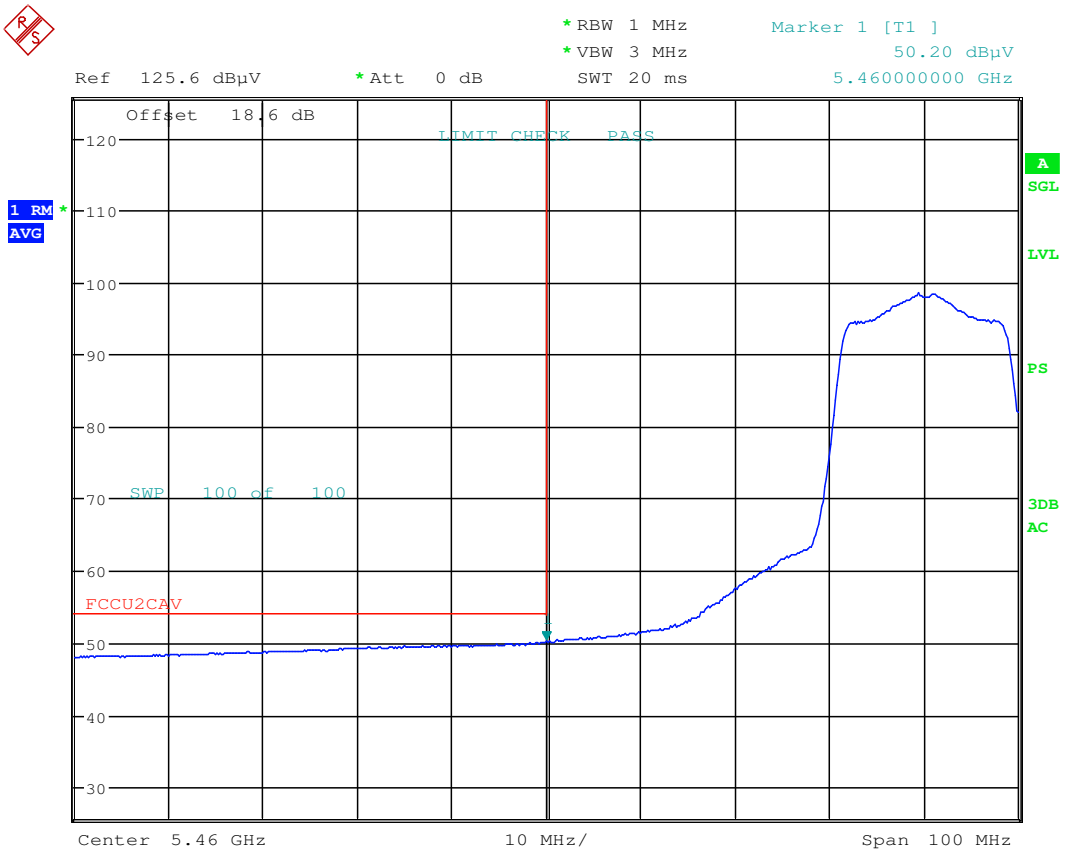


Plot 7-232. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

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

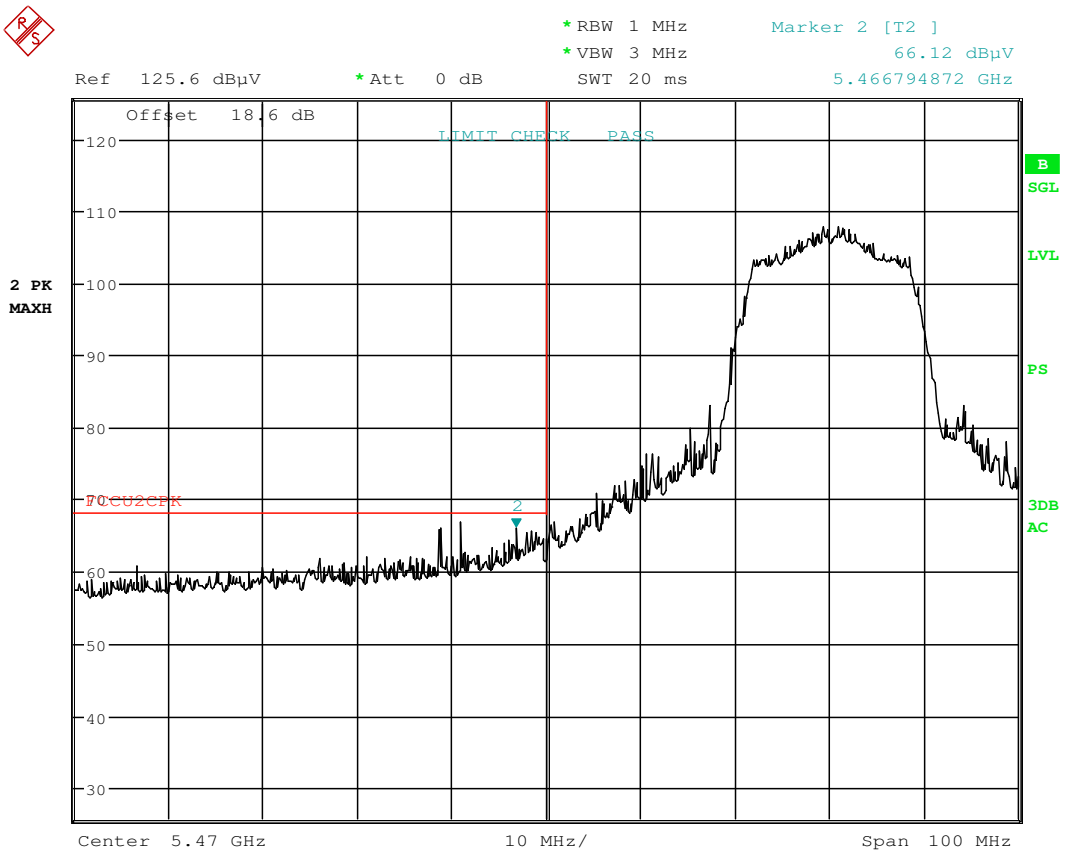


Date: 6.JUN.2016 23:15:17

Plot 7-233. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

MIMO Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209



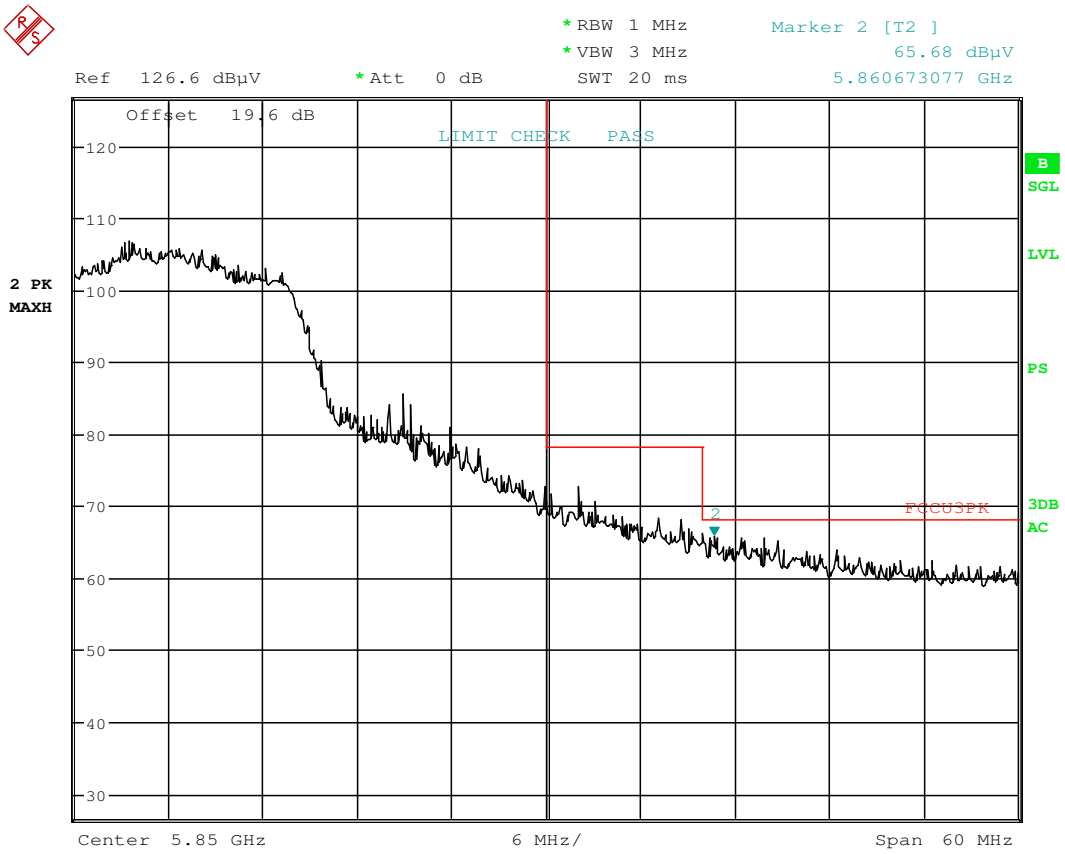
Date: 6.JUN.2016 23:15:41

Plot 7-234. Radiated Restricted Lower Band Edge Plot (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



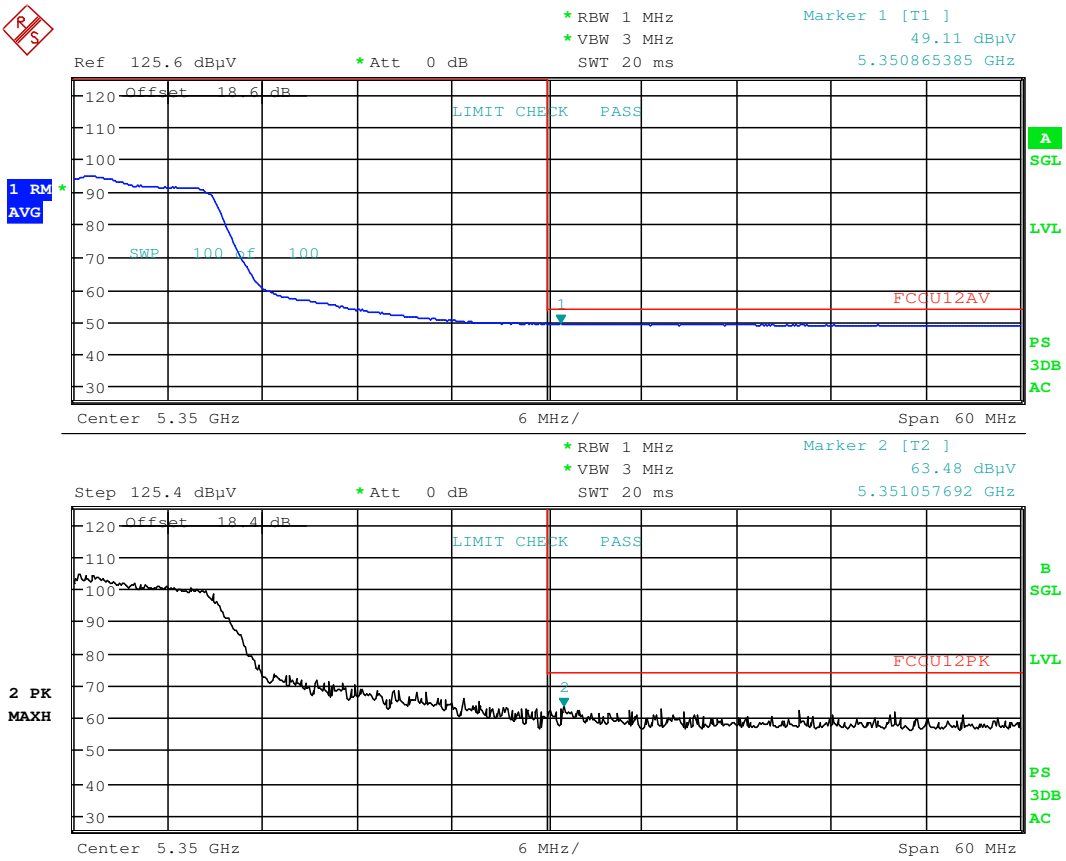
Date: 6.JUN.2016 23:26:07

Plot 7-235. 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:	5320MHz
Channel:	64



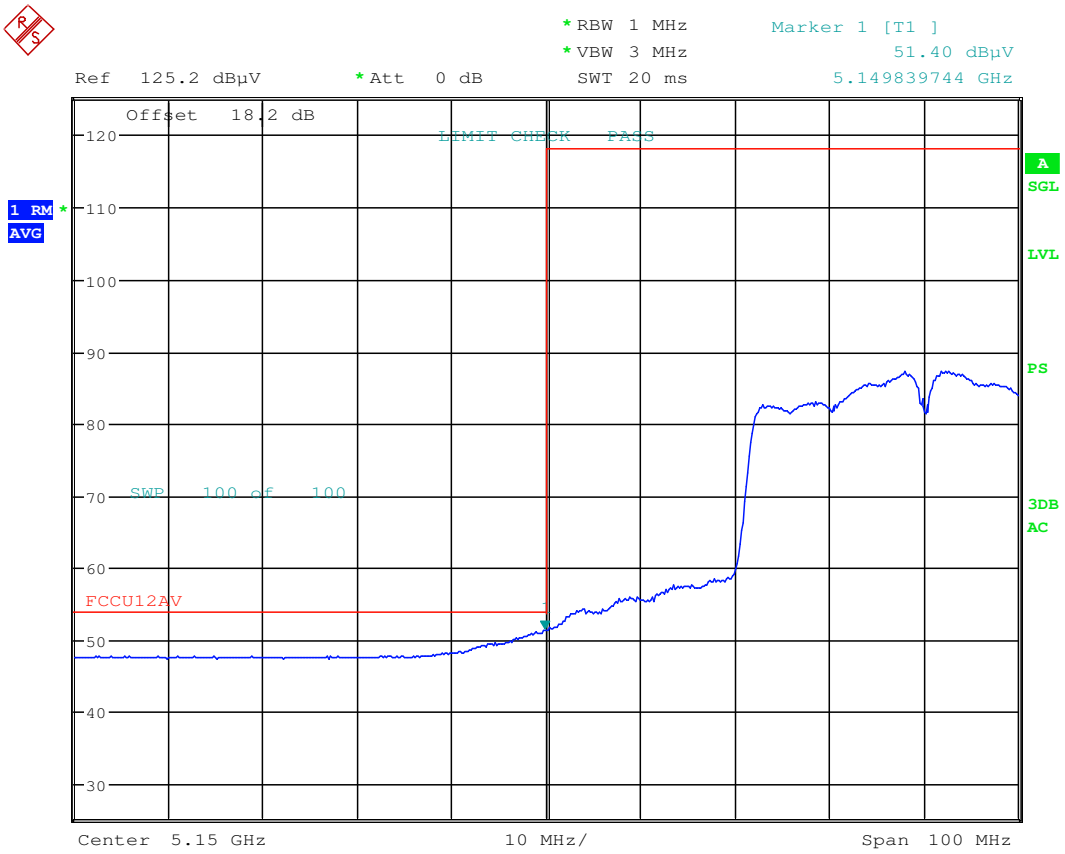
Date: 18.JUN.2016 19:52:33

Plot 7-236. 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

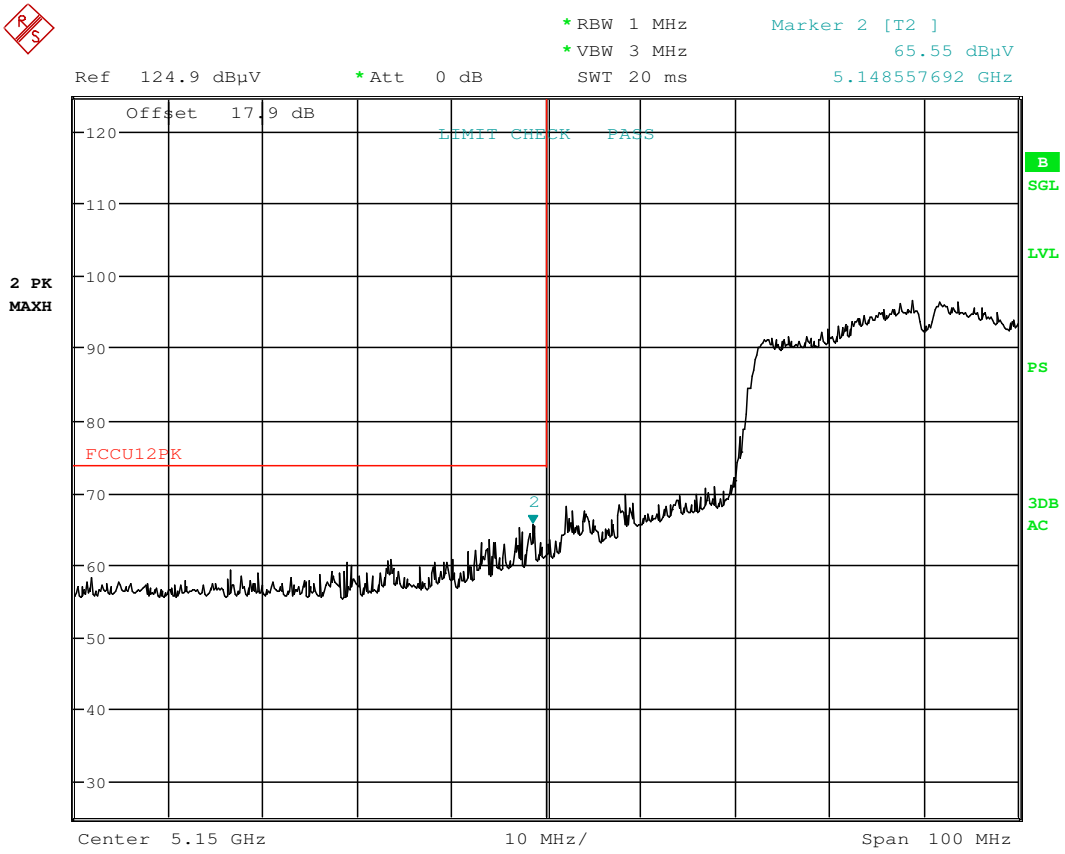


Date: 7.JUN.2016 00:07:38

Plot 7-237. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

MIMO Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

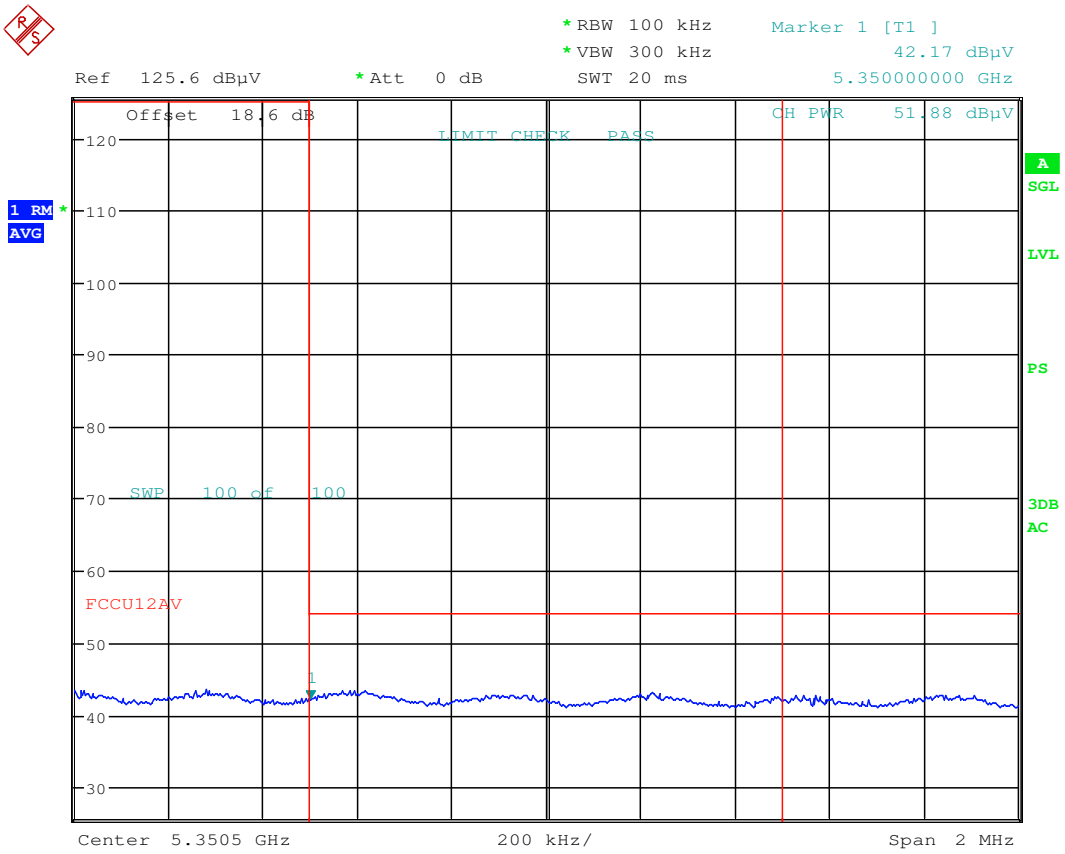


Plot 7-238. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

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

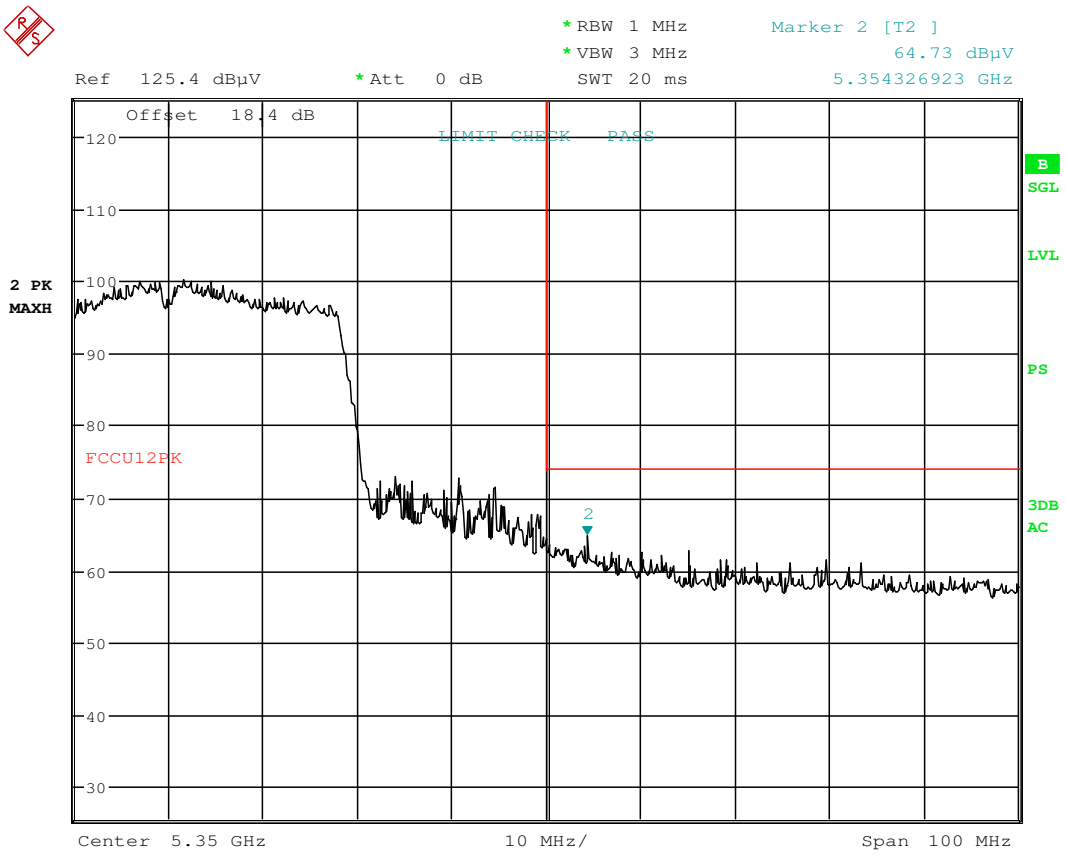


Date: 7.JUN.2016 00:16:05

Plot 7-239. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

MIMO Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209



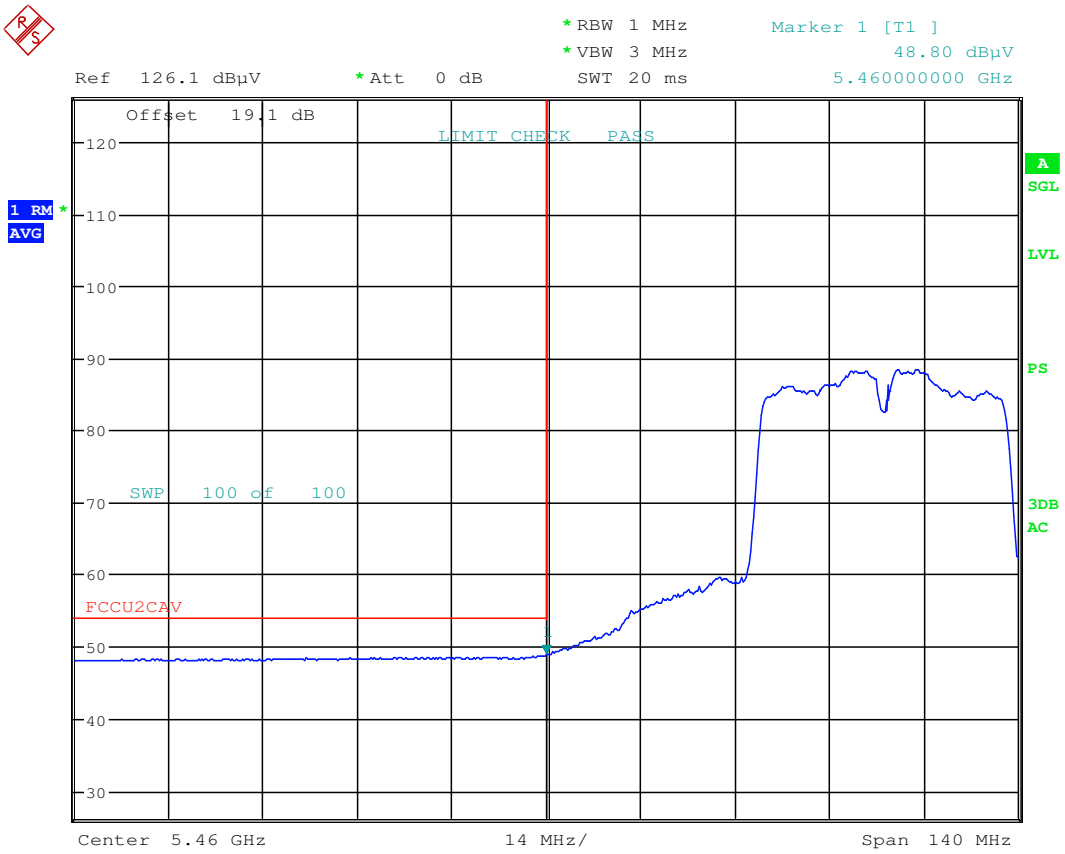
Date: 7.JUN.2016 00:16:20

Plot 7-240. Radiated Restricted Upper Band Edge Plot (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

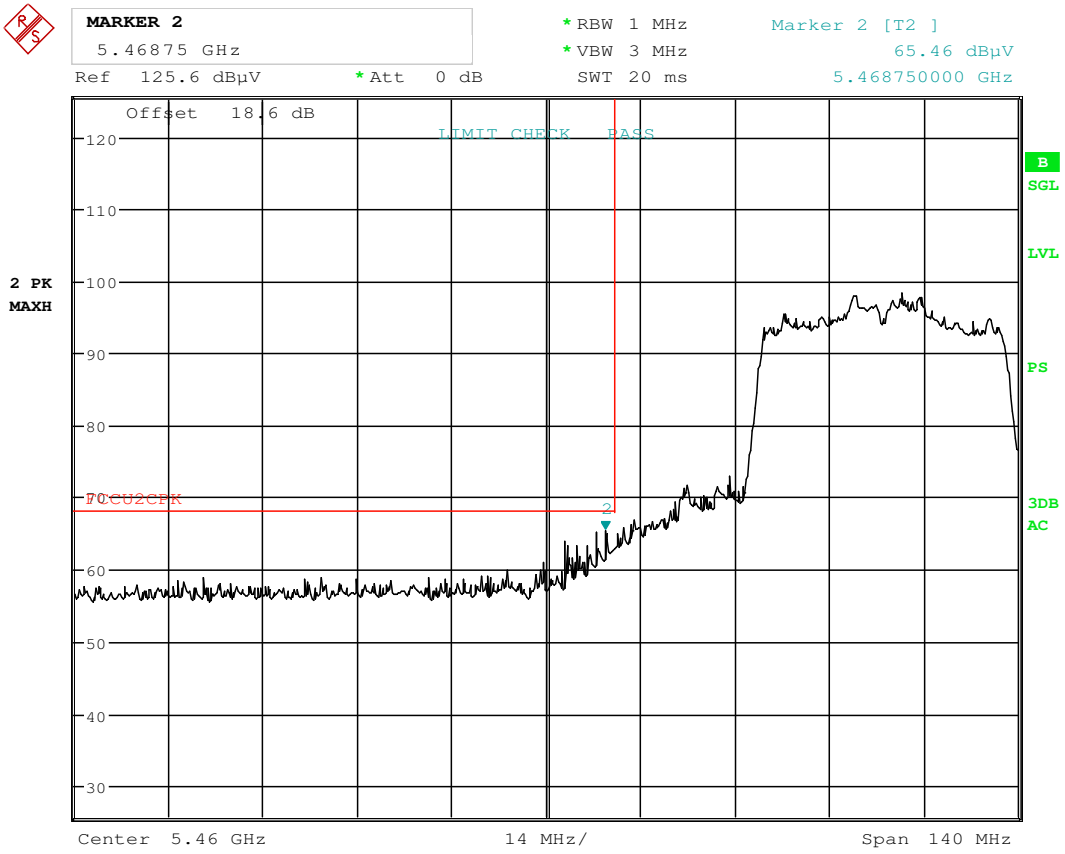


Date: 10.JUN.2016 18:40:19

Plot 7-241. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

MIMO Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

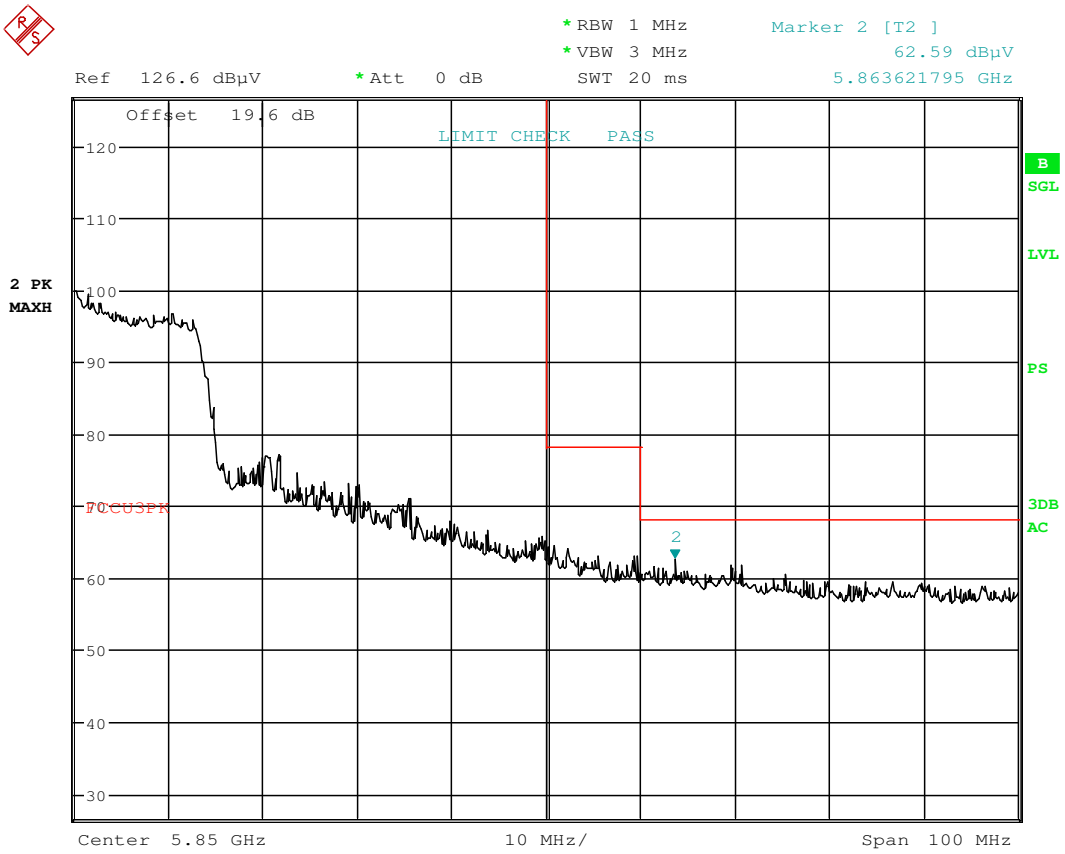


Plot 7-242. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

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

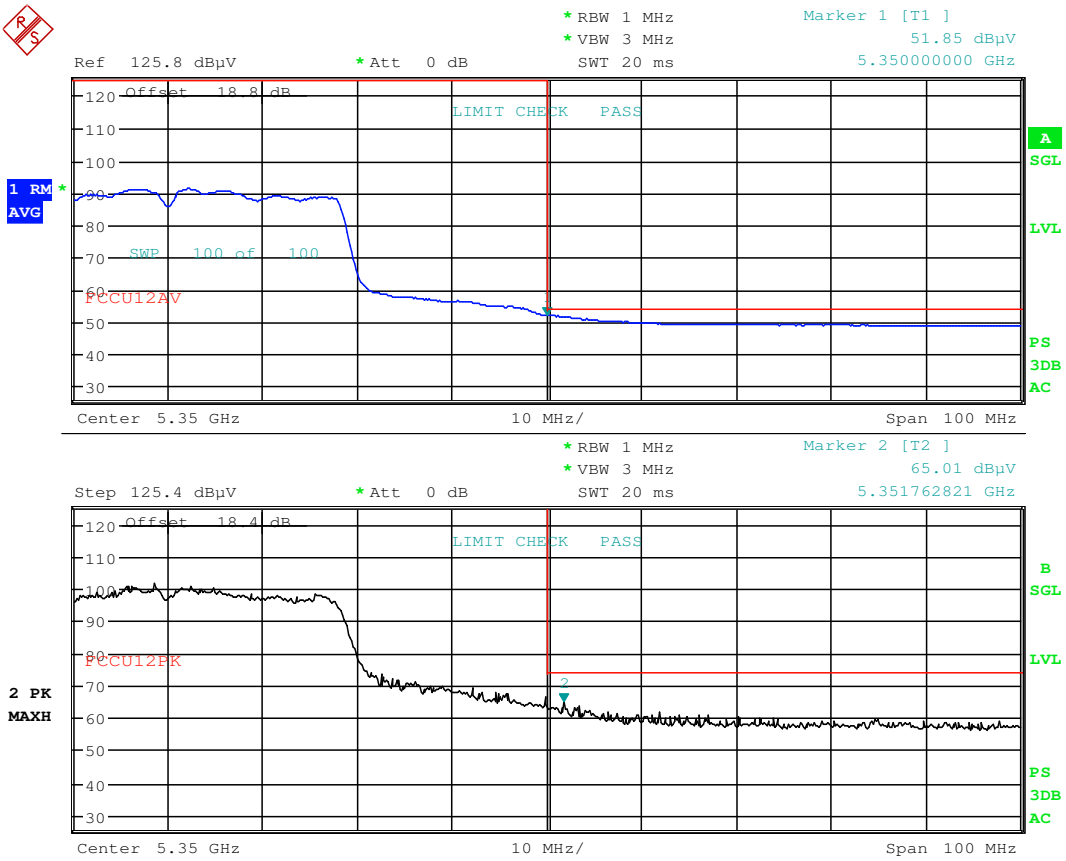


Plot 7-243. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

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:	5310MHz
Channel:	62



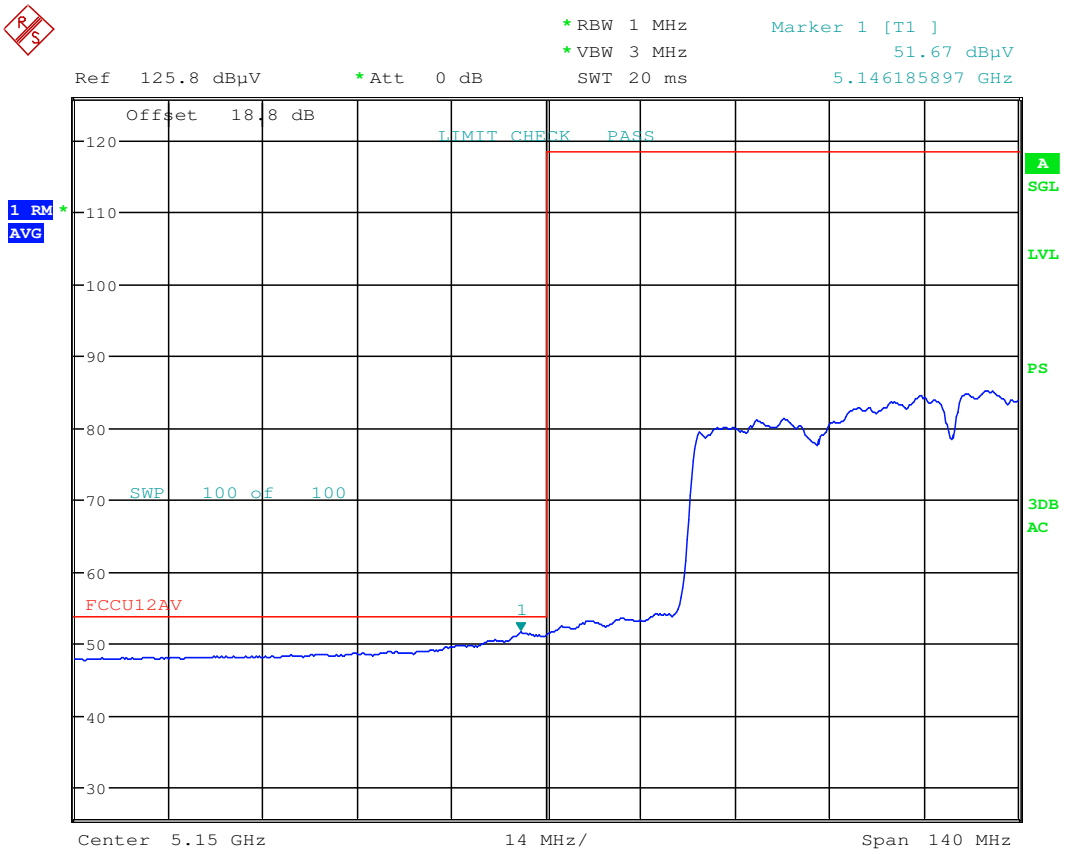
Date: 18.JUN.2016 19:53:32

Plot 7-244. 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

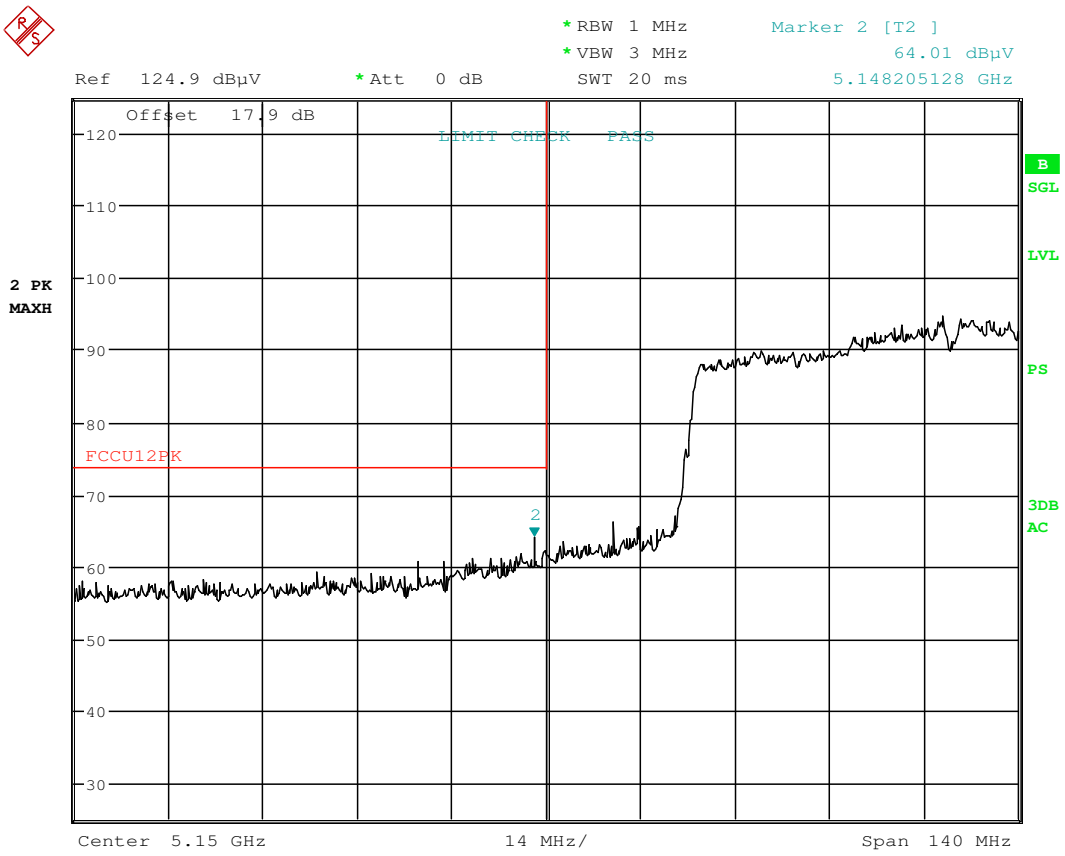


Date: 7.JUN.2016 00:48:25

Plot 7-245. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

MIMO Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

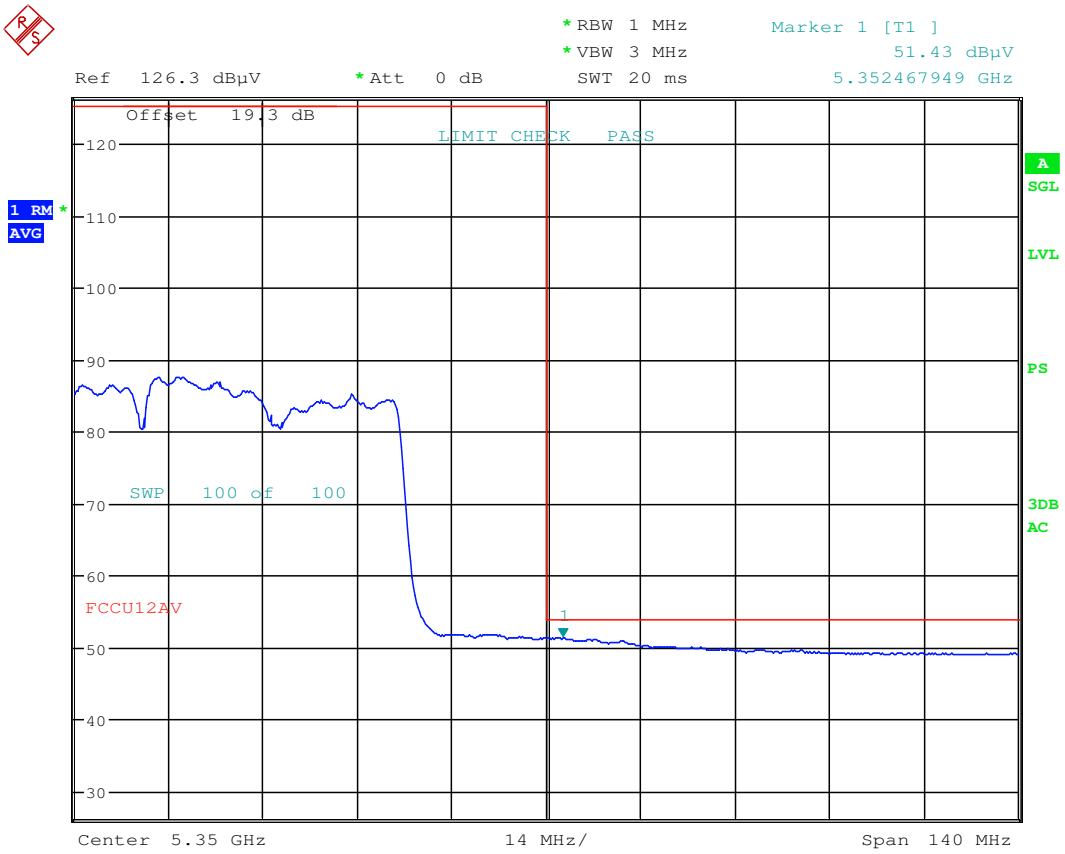


Plot 7-246. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

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

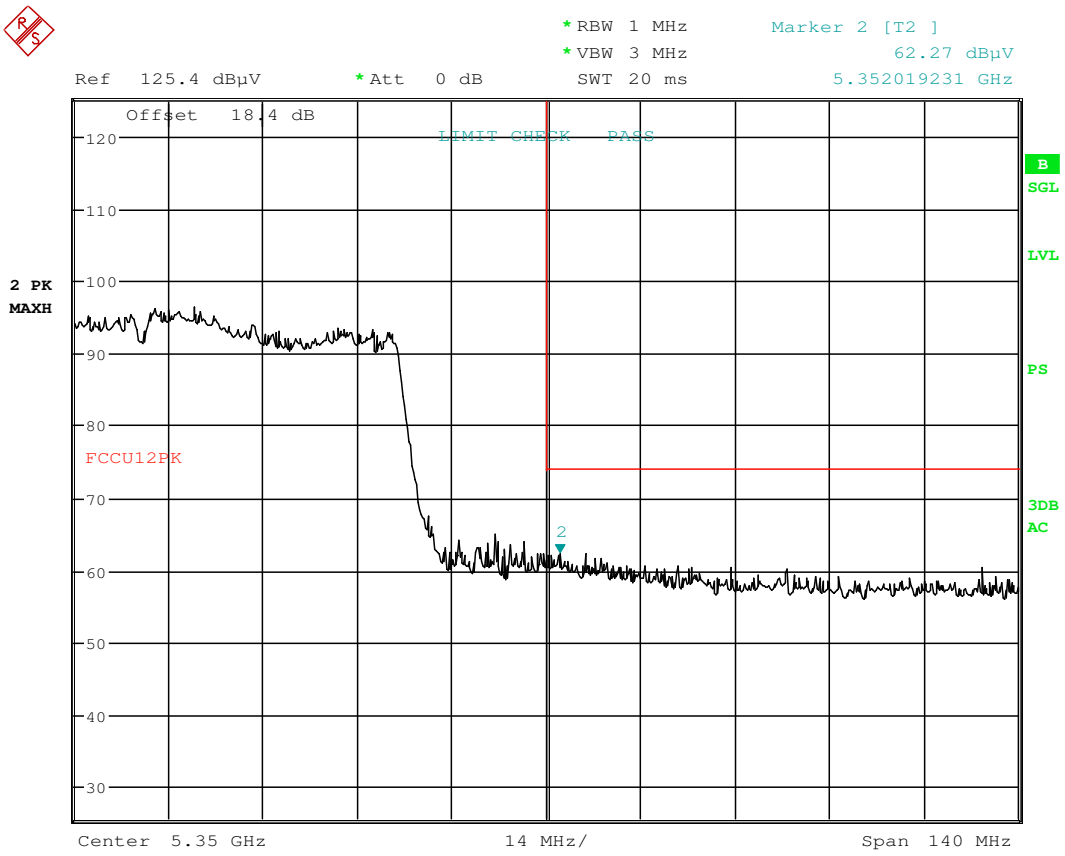


Date: 7.JUN.2016 00:57:18

Plot 7-247. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

MIMO Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

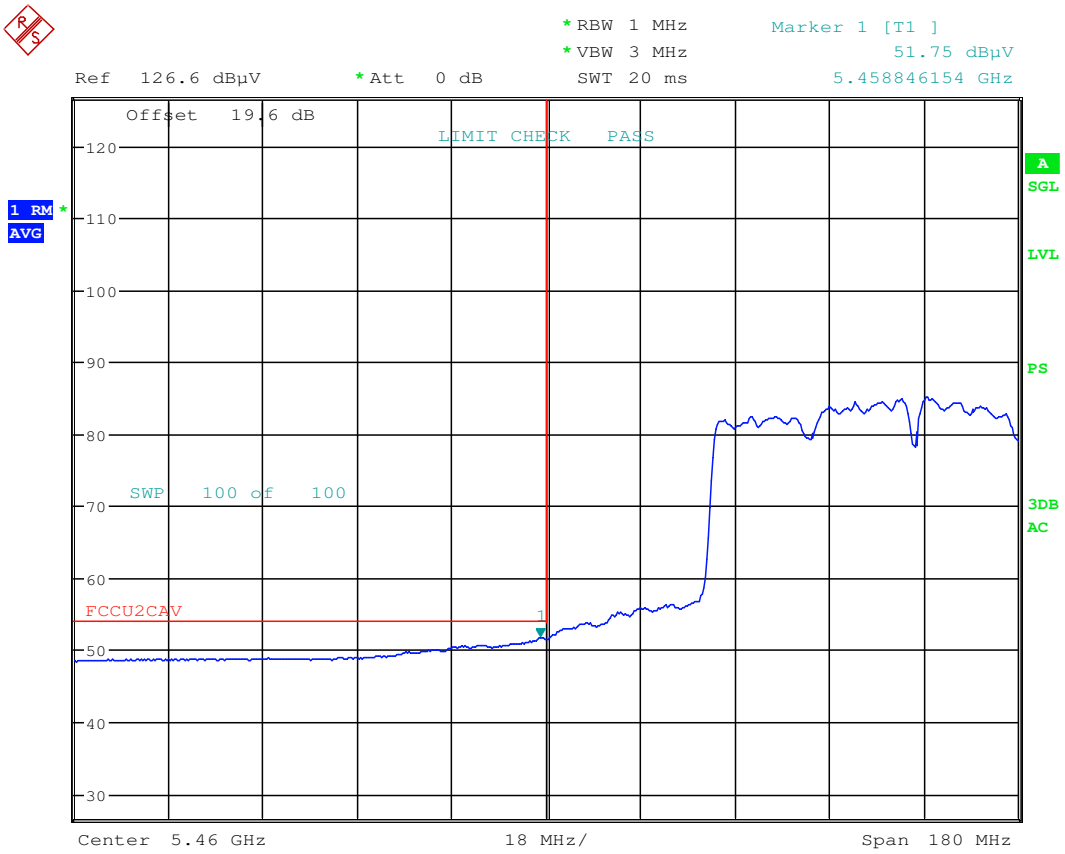


Plot 7-248. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

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

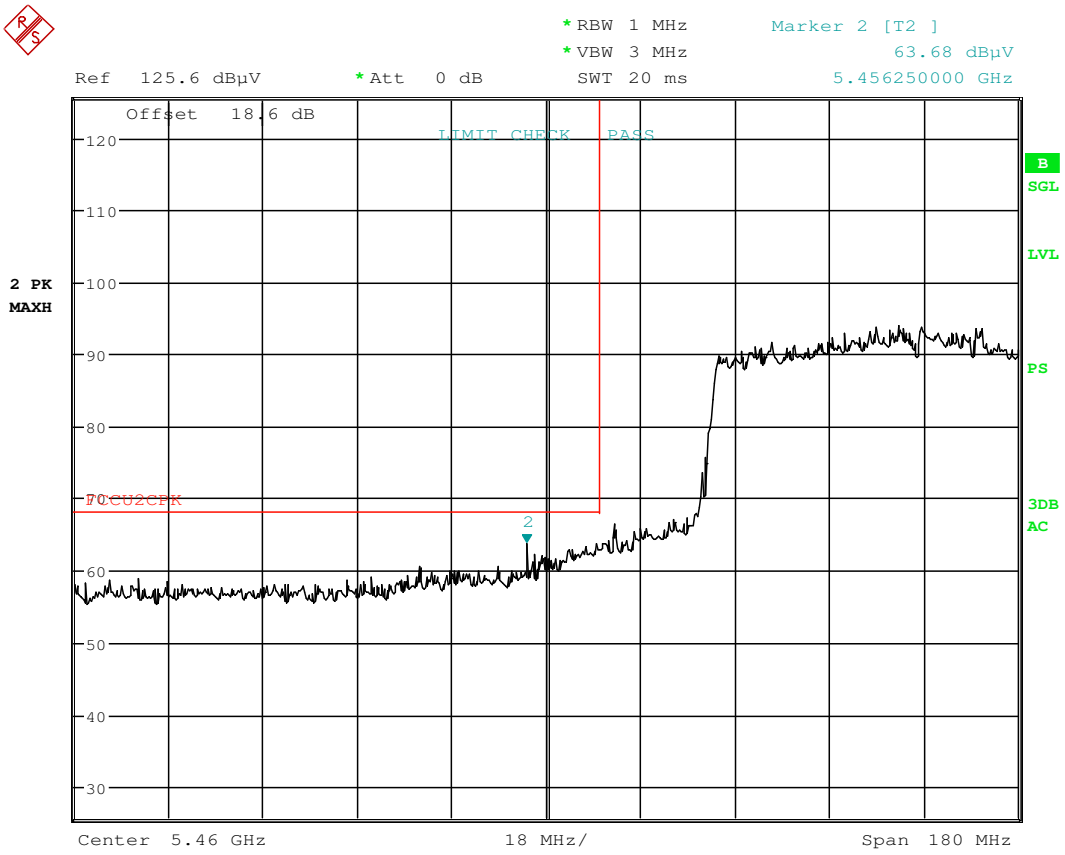


Date: 10.JUN.2016 18:44:39

Plot 7-249. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

MIMO Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

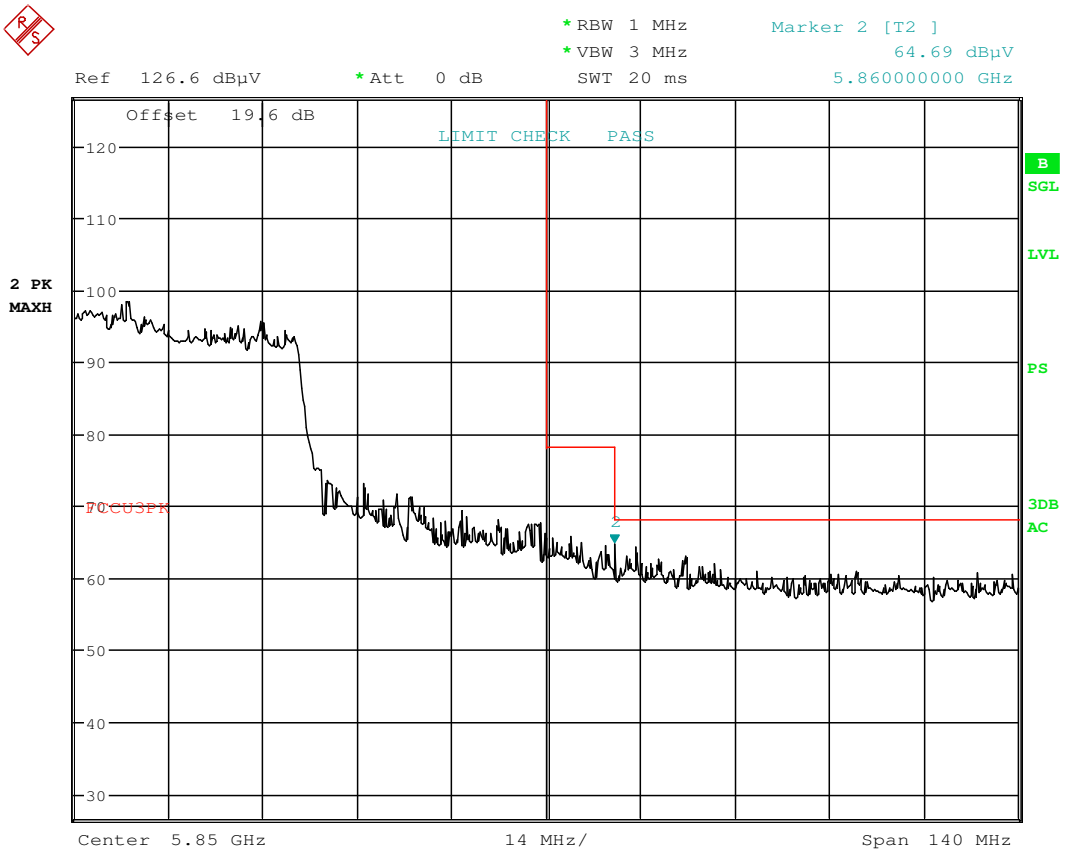


Plot 7-250. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

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



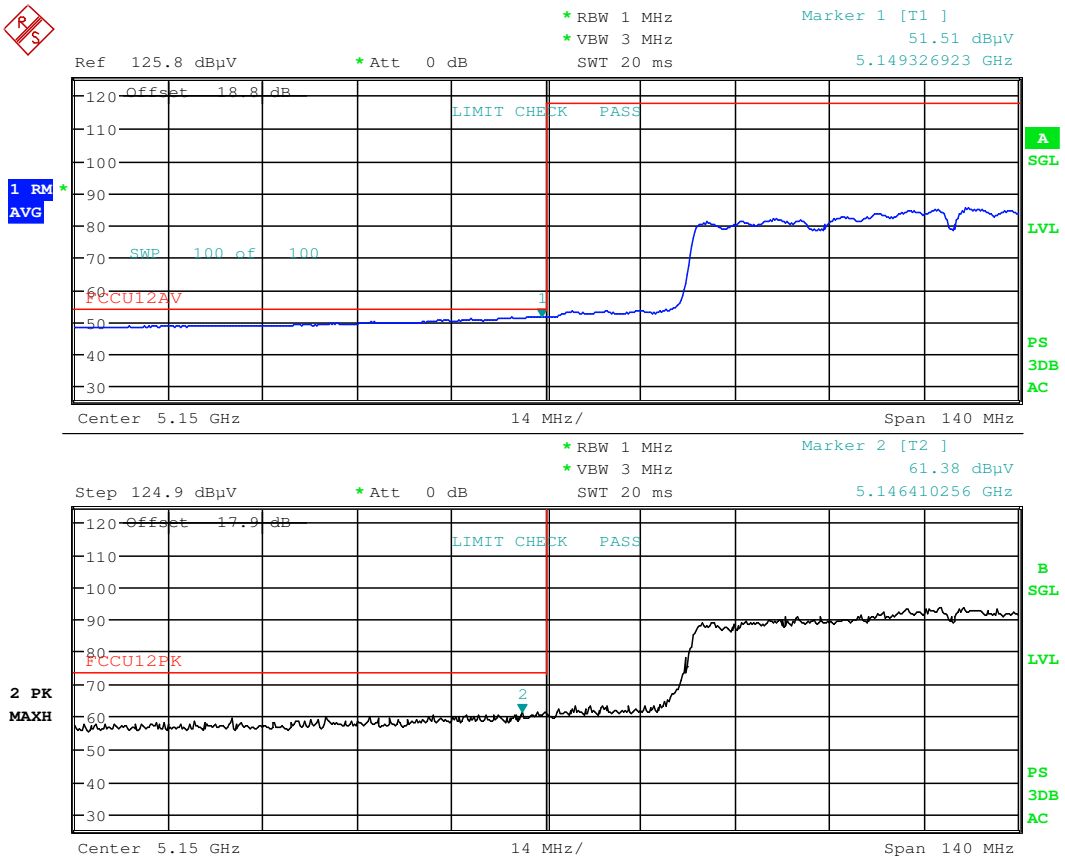
Date: 7.JUN.2016 01:34:41

Plot 7-251. 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:	5210MHz
Channel:	42



Date: 18.JUN.2016 20:03:57

Plot 7-252. 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 7-64 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 7-64. Radiated Limits

Test Procedures Used

ANSI C63.4-2014

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.

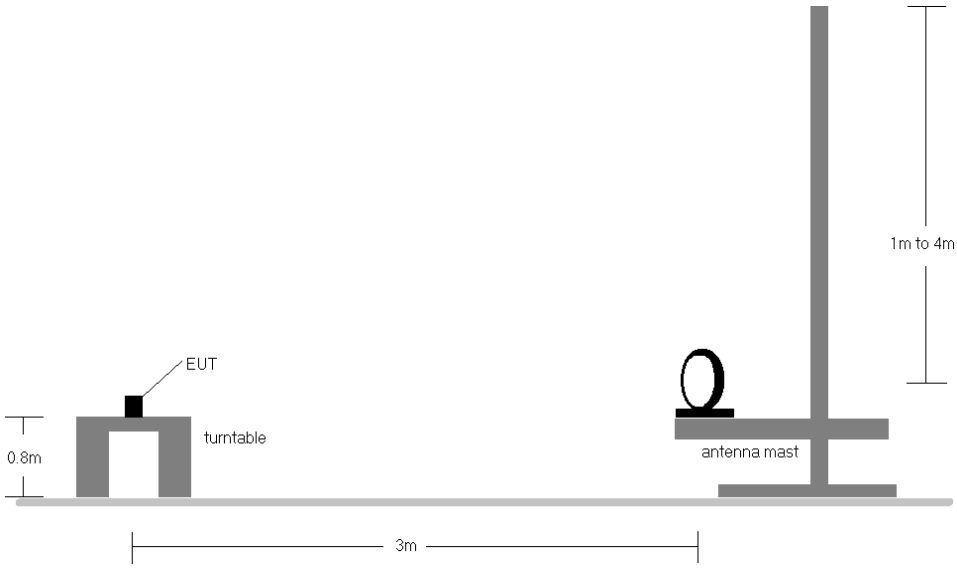


Figure 7-6. Radiated Test Setup < 30MHz

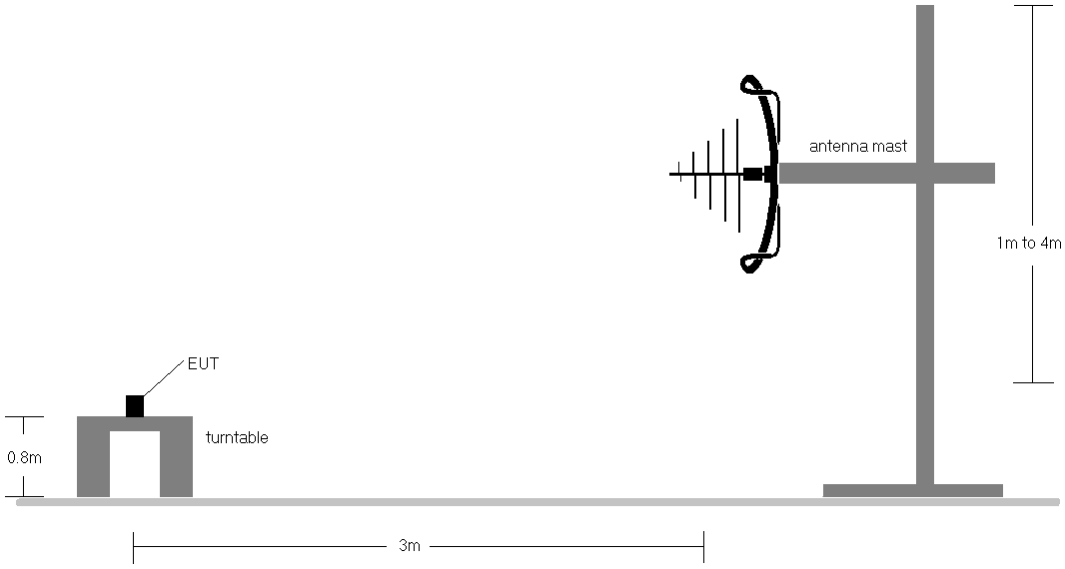


Figure 7-7. Radiated Test Setup < 1GHz

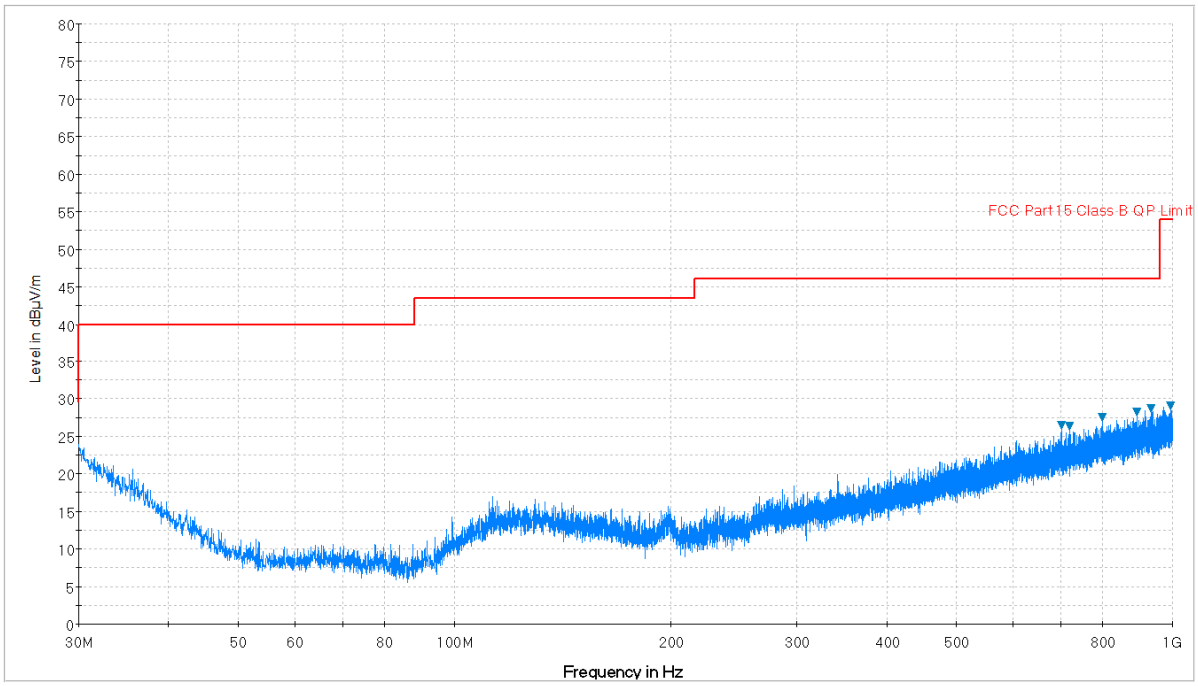
Test Notes

1. All emissions lying in restricted bands specified in §15.205 are below the limit shown in Table 7-64.
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.

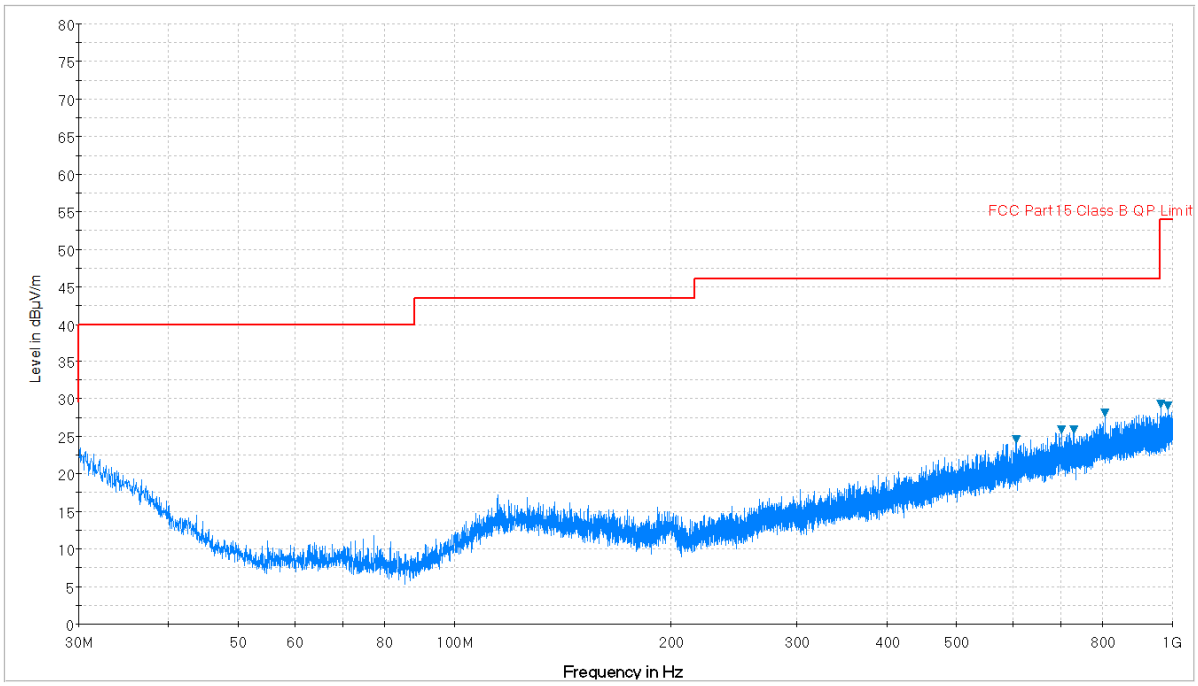
4. The spectrum is investigated using a peak detector and final measurements are recorded using CISPR quasi peak detector. The worst-case emissions are reported however emissions whose levels were not within 20dB of the respective limits were not reported.
5. Emissions were measured at a 3 meter test 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



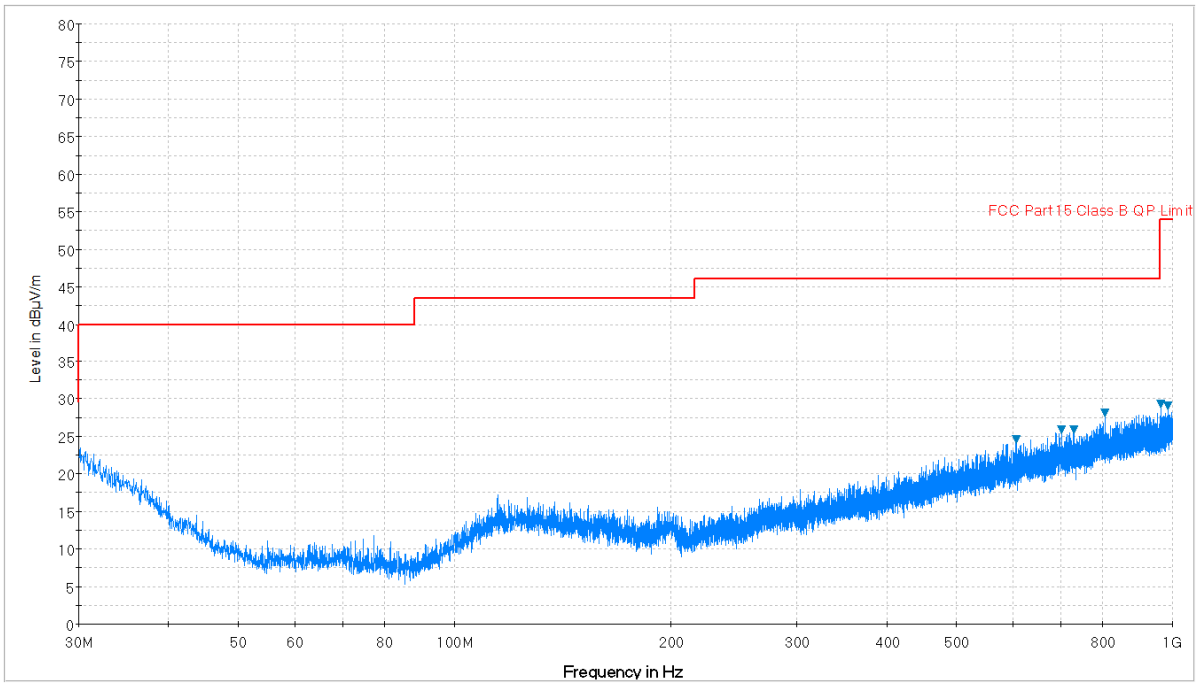
Plot 7-253. Radiated Spurious Plot below 1GHz (802.11a – U3 Ch. 157, Ant. Pol. H)



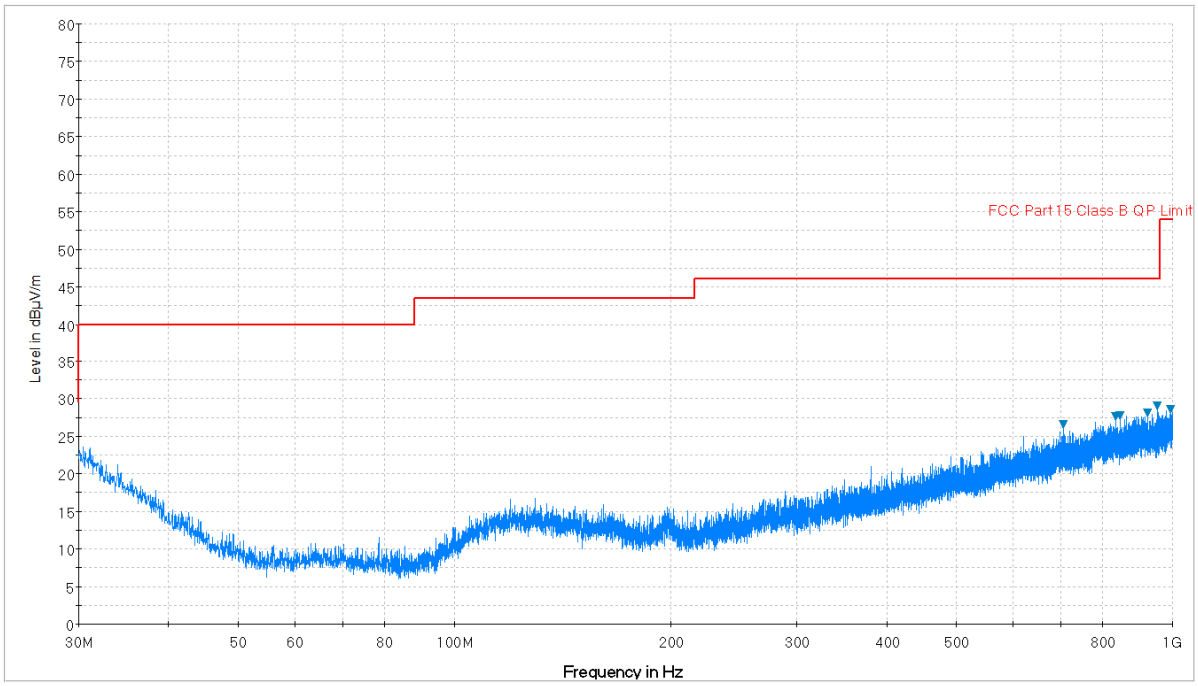
Plot 7-254. Radiated Spurious Plot below 1GHz (802.11a – U3 Ch. 157, Ant. Pol. V)

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

§15.209



Plot 7-255. Radiated Spurious Plot below 1GHz (802.11a – U3 Ch. 157, Ant. Pol. H)



Plot 7-256. 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 7-65. 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.

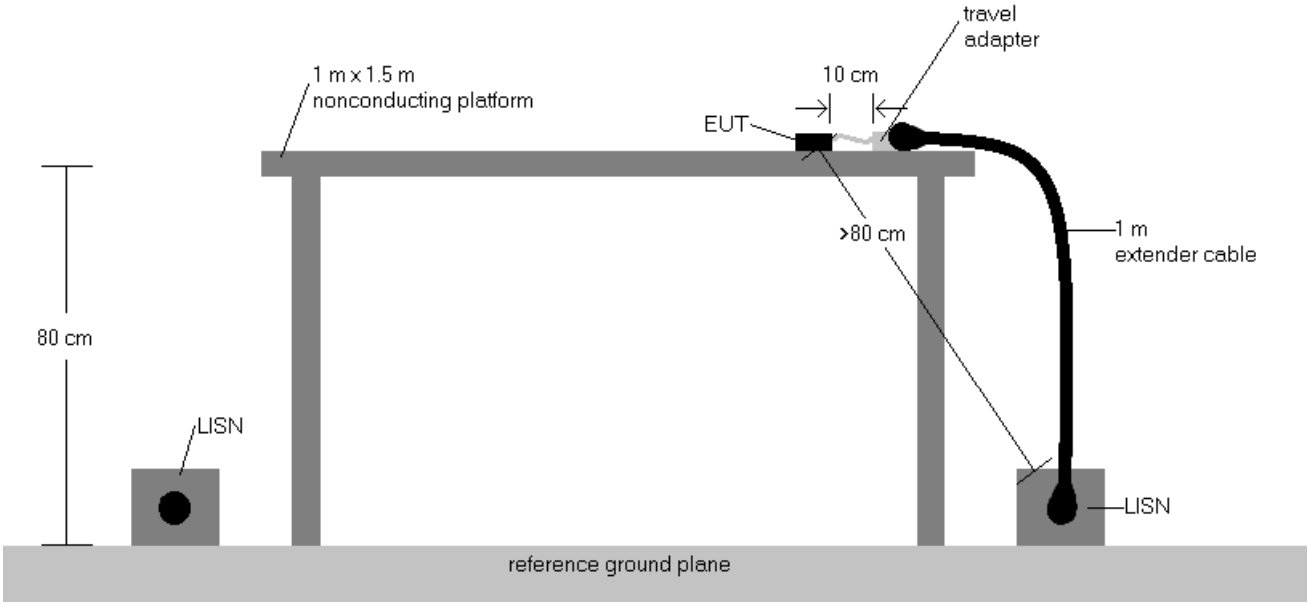


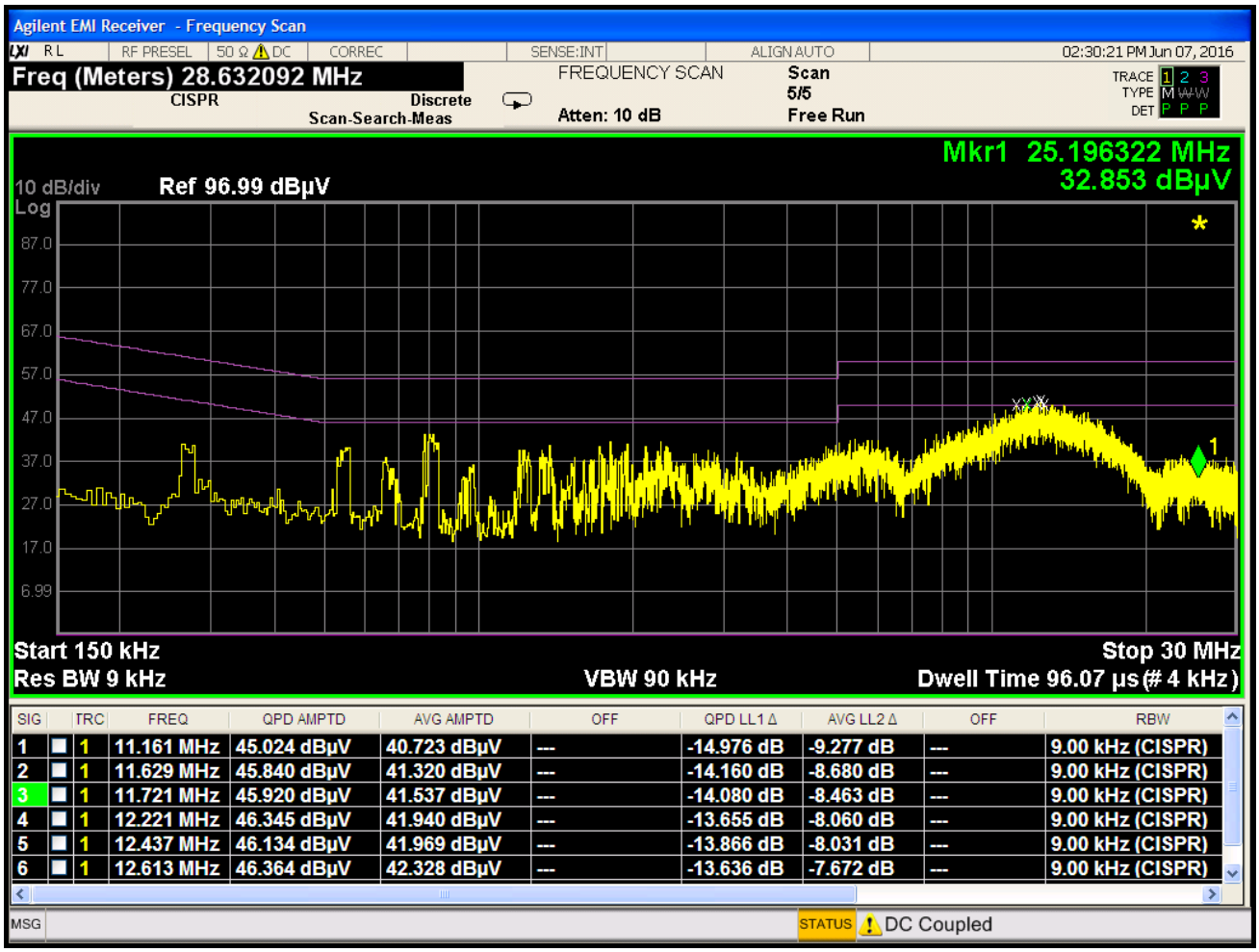
Figure 7-8. Test Instrument & Measurement Setup

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.

Line-Conducted Test Data

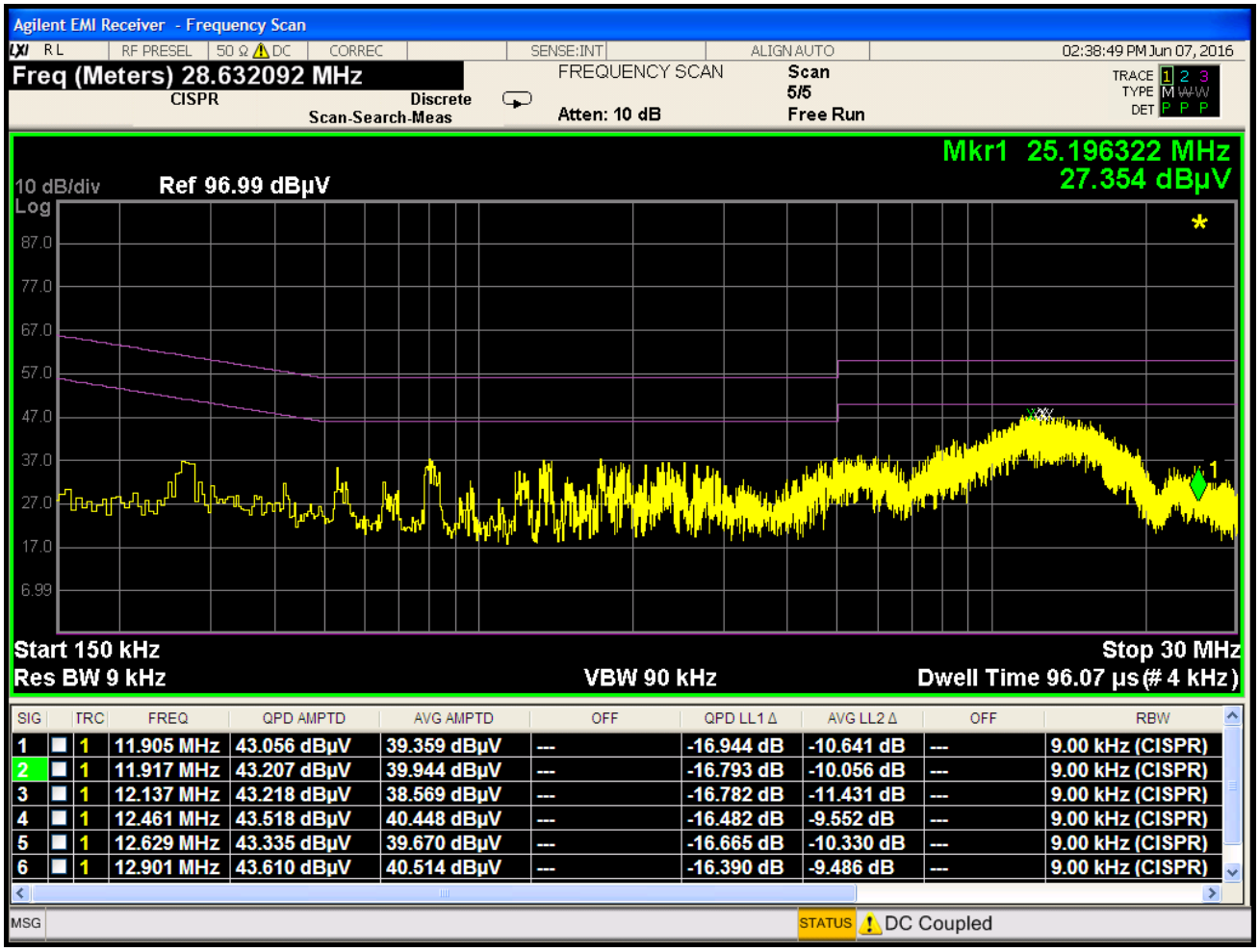
§15.407



Plot 7-257. Line Conducted Plot with 802.11a UNII Band 1 (L1)

Line-Conducted Test Data

§15.407

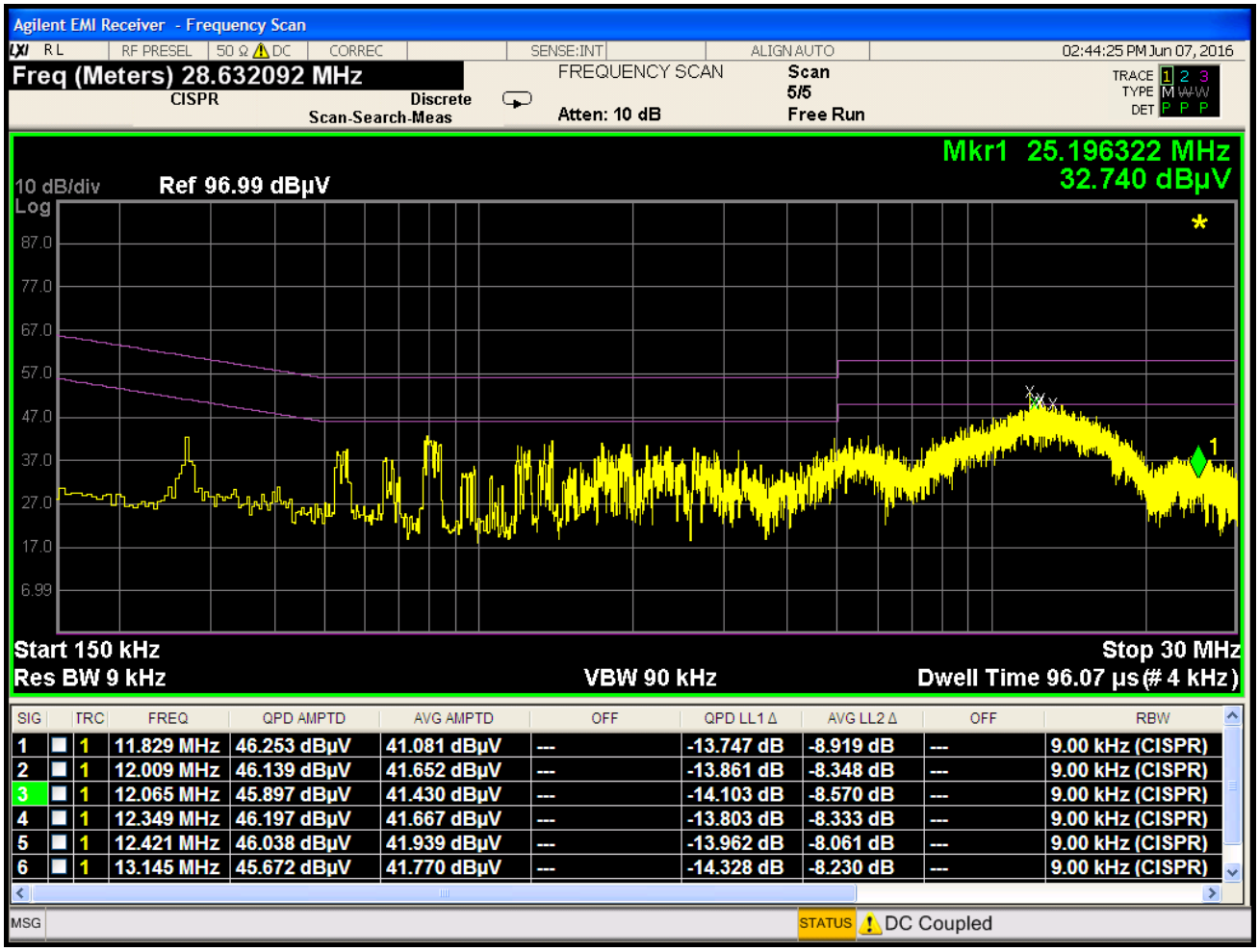


SIG		TRC	FREQ	QPD AMPTD	AVG AMPTD	OFF	QPD LL1 Δ	AVG LL2 Δ	OFF	RBW
1		1	11.905 MHz	43.056 dBµV	39.359 dBµV	---	-16.944 dB	-10.641 dB	---	9.00 kHz (CISPR)
2		1	11.917 MHz	43.207 dBµV	39.944 dBµV	---	-16.793 dB	-10.056 dB	---	9.00 kHz (CISPR)
3		1	12.137 MHz	43.218 dBµV	38.569 dBµV	---	-16.782 dB	-11.431 dB	---	9.00 kHz (CISPR)
4		1	12.461 MHz	43.518 dBµV	40.448 dBµV	---	-16.482 dB	-9.552 dB	---	9.00 kHz (CISPR)
5		1	12.629 MHz	43.335 dBµV	39.670 dBµV	---	-16.665 dB	-10.330 dB	---	9.00 kHz (CISPR)
6		1	12.901 MHz	43.610 dBµV	40.514 dBµV	---	-16.390 dB	-9.486 dB	---	9.00 kHz (CISPR)

Plot 7-258. Line Conducted Plot with 802.11a UNII Band 1 (N)

Line-Conducted Test Data

§15.407

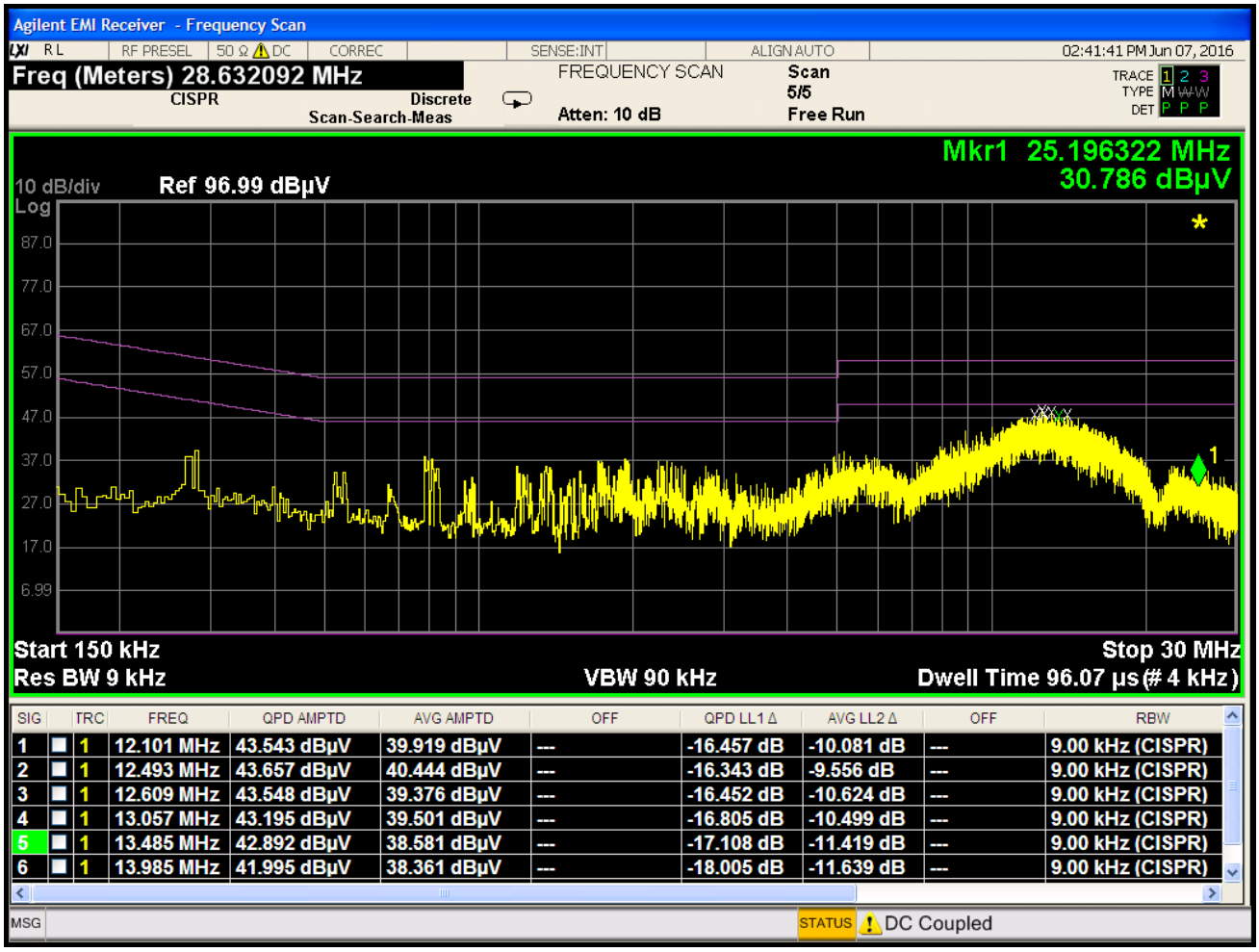


SIG		TRC	FREQ	QPD AMPTD	AVG AMPTD	OFF	QPD LL1 Δ	AVG LL2 Δ	OFF	RBW
1		1	11.829 MHz	46.253 dBµV	41.081 dBµV	---	-13.747 dB	-8.919 dB	---	9.00 kHz (CISPR)
2		1	12.009 MHz	46.139 dBµV	41.652 dBµV	---	-13.861 dB	-8.348 dB	---	9.00 kHz (CISPR)
3		1	12.065 MHz	45.897 dBµV	41.430 dBµV	---	-14.103 dB	-8.570 dB	---	9.00 kHz (CISPR)
4		1	12.349 MHz	46.197 dBµV	41.667 dBµV	---	-13.803 dB	-8.333 dB	---	9.00 kHz (CISPR)
5		1	12.421 MHz	46.038 dBµV	41.939 dBµV	---	-13.962 dB	-8.061 dB	---	9.00 kHz (CISPR)
6		1	13.145 MHz	45.672 dBµV	41.770 dBµV	---	-14.328 dB	-8.230 dB	---	9.00 kHz (CISPR)

Plot 7-259. Line Conducted Plot with 802.11a UNII Band 2A (L1)

Line-Conducted Test Data

§15.407

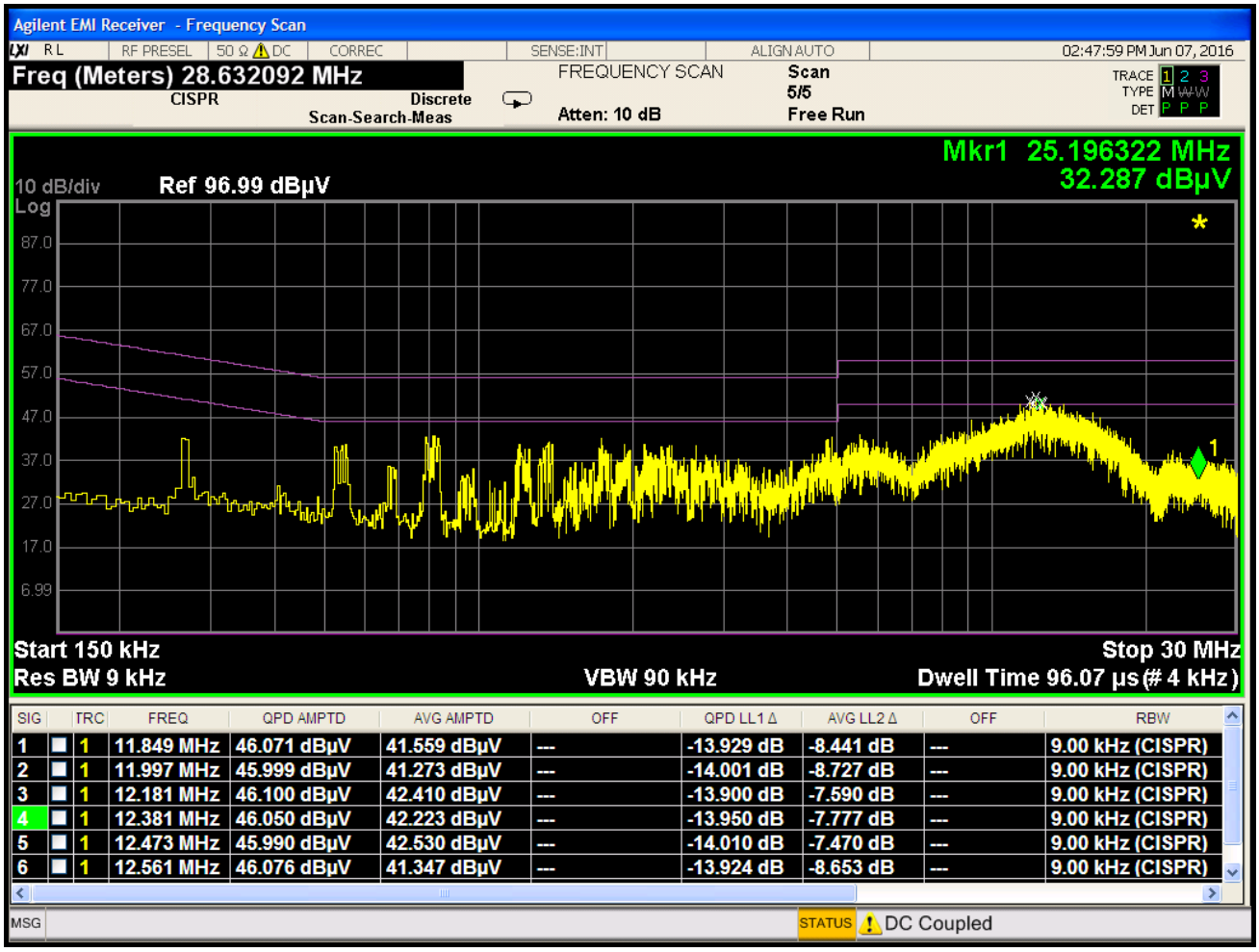


SIG	TRC	FREQ	QPD AMPTD	AVG AMPTD	OFF	QPD LL1 Δ	AVG LL2 Δ	OFF	RBW
1	1	12.101 MHz	43.543 dBµV	39.919 dBµV	---	-16.457 dB	-10.081 dB	---	9.00 kHz (CISPR)
2	1	12.493 MHz	43.657 dBµV	40.444 dBµV	---	-16.343 dB	-9.556 dB	---	9.00 kHz (CISPR)
3	1	12.609 MHz	43.548 dBµV	39.376 dBµV	---	-16.452 dB	-10.624 dB	---	9.00 kHz (CISPR)
4	1	13.057 MHz	43.195 dBµV	39.501 dBµV	---	-16.805 dB	-10.499 dB	---	9.00 kHz (CISPR)
5	1	13.485 MHz	42.892 dBµV	38.581 dBµV	---	-17.108 dB	-11.419 dB	---	9.00 kHz (CISPR)
6	1	13.985 MHz	41.995 dBµV	38.361 dBµV	---	-18.005 dB	-11.639 dB	---	9.00 kHz (CISPR)

Plot 7-260. Line Conducted Plot with 802.11a UNII Band 2A (N)

Line-Conducted Test Data

§15.407

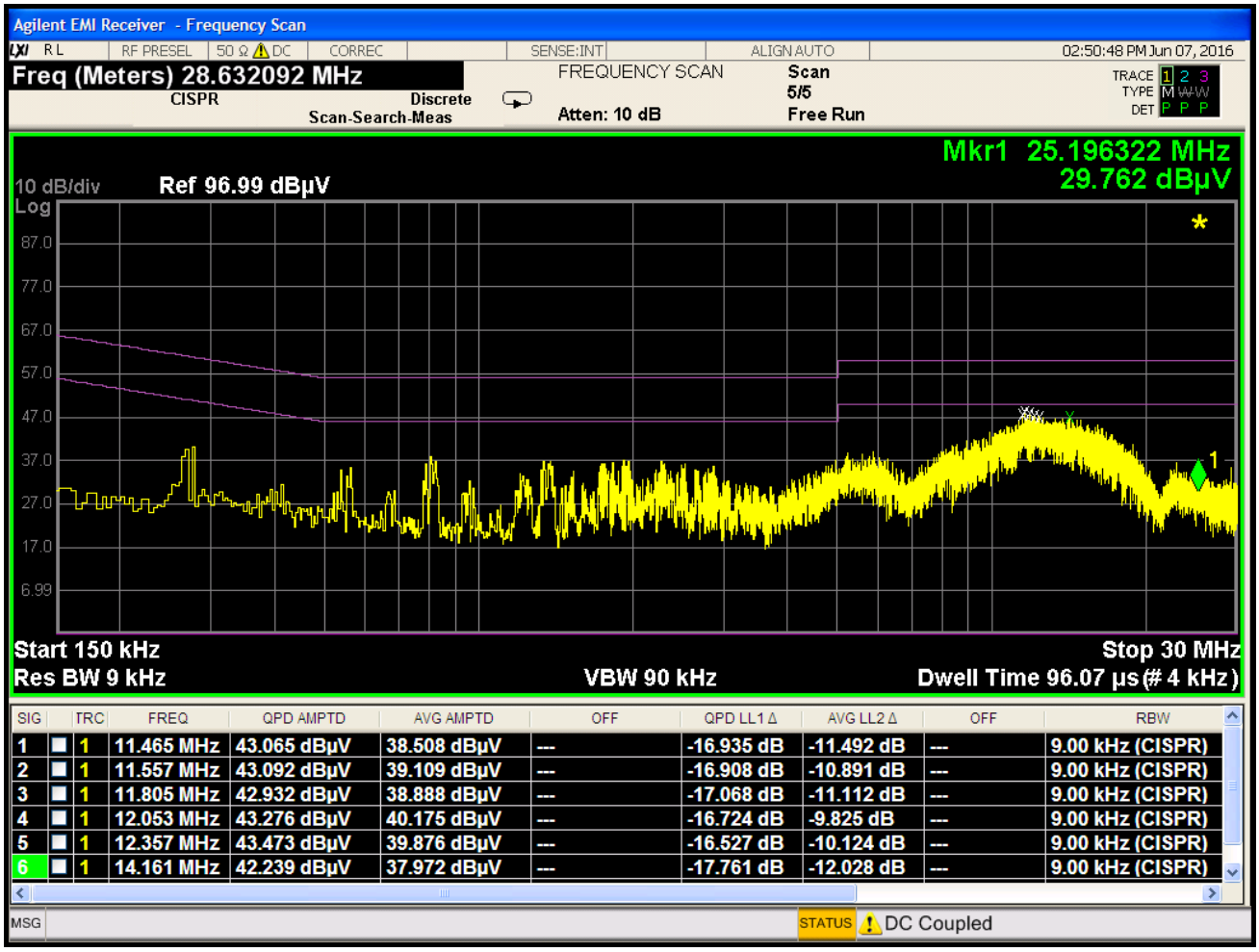


SIG		TRC	FREQ	QPD AMPTD	AVG AMPTD	OFF	QPD LL1 Δ	AVG LL2 Δ	OFF	RBW
1		1	11.849 MHz	46.071 dBµV	41.559 dBµV	---	-13.929 dB	-8.441 dB	---	9.00 kHz (CISPR)
2		1	11.997 MHz	45.999 dBµV	41.273 dBµV	---	-14.001 dB	-8.727 dB	---	9.00 kHz (CISPR)
3		1	12.181 MHz	46.100 dBµV	42.410 dBµV	---	-13.900 dB	-7.590 dB	---	9.00 kHz (CISPR)
4		1	12.381 MHz	46.050 dBµV	42.223 dBµV	---	-13.950 dB	-7.777 dB	---	9.00 kHz (CISPR)
5		1	12.473 MHz	45.990 dBµV	42.530 dBµV	---	-14.010 dB	-7.470 dB	---	9.00 kHz (CISPR)
6		1	12.561 MHz	46.076 dBµV	41.347 dBµV	---	-13.924 dB	-8.653 dB	---	9.00 kHz (CISPR)

Plot 7-261. Line Conducted Plot with 802.11a UNII Band 2C (L1)

Line-Conducted Test Data

§15.407

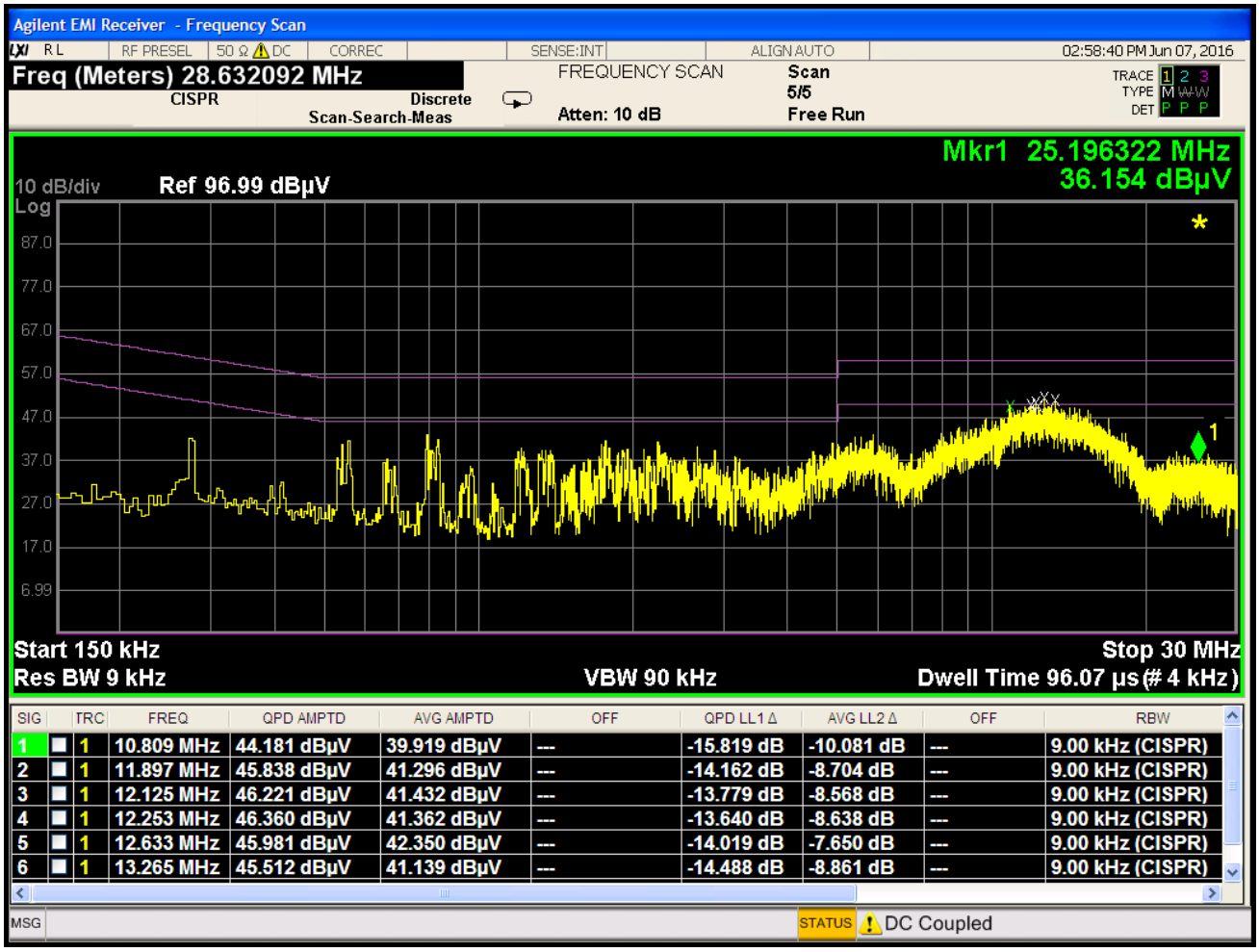


SIG		TRC	FREQ	QPD AMPTD	AVG AMPTD	OFF	QPD LL1 Δ	AVG LL2 Δ	OFF	RBW
1		1	11.465 MHz	43.065 dBµV	38.508 dBµV	---	-16.935 dB	-11.492 dB	---	9.00 kHz (CISPR)
2		1	11.557 MHz	43.092 dBµV	39.109 dBµV	---	-16.908 dB	-10.891 dB	---	9.00 kHz (CISPR)
3		1	11.805 MHz	42.932 dBµV	38.888 dBµV	---	-17.068 dB	-11.112 dB	---	9.00 kHz (CISPR)
4		1	12.053 MHz	43.276 dBµV	40.175 dBµV	---	-16.724 dB	-9.825 dB	---	9.00 kHz (CISPR)
5		1	12.357 MHz	43.473 dBµV	39.876 dBµV	---	-16.527 dB	-10.124 dB	---	9.00 kHz (CISPR)
6		1	14.161 MHz	42.239 dBµV	37.972 dBµV	---	-17.761 dB	-12.028 dB	---	9.00 kHz (CISPR)

Plot 7-262. Line Conducted Plot with 802.11a UNII Band 2C (N)

Line-Conducted Test Data

§15.407

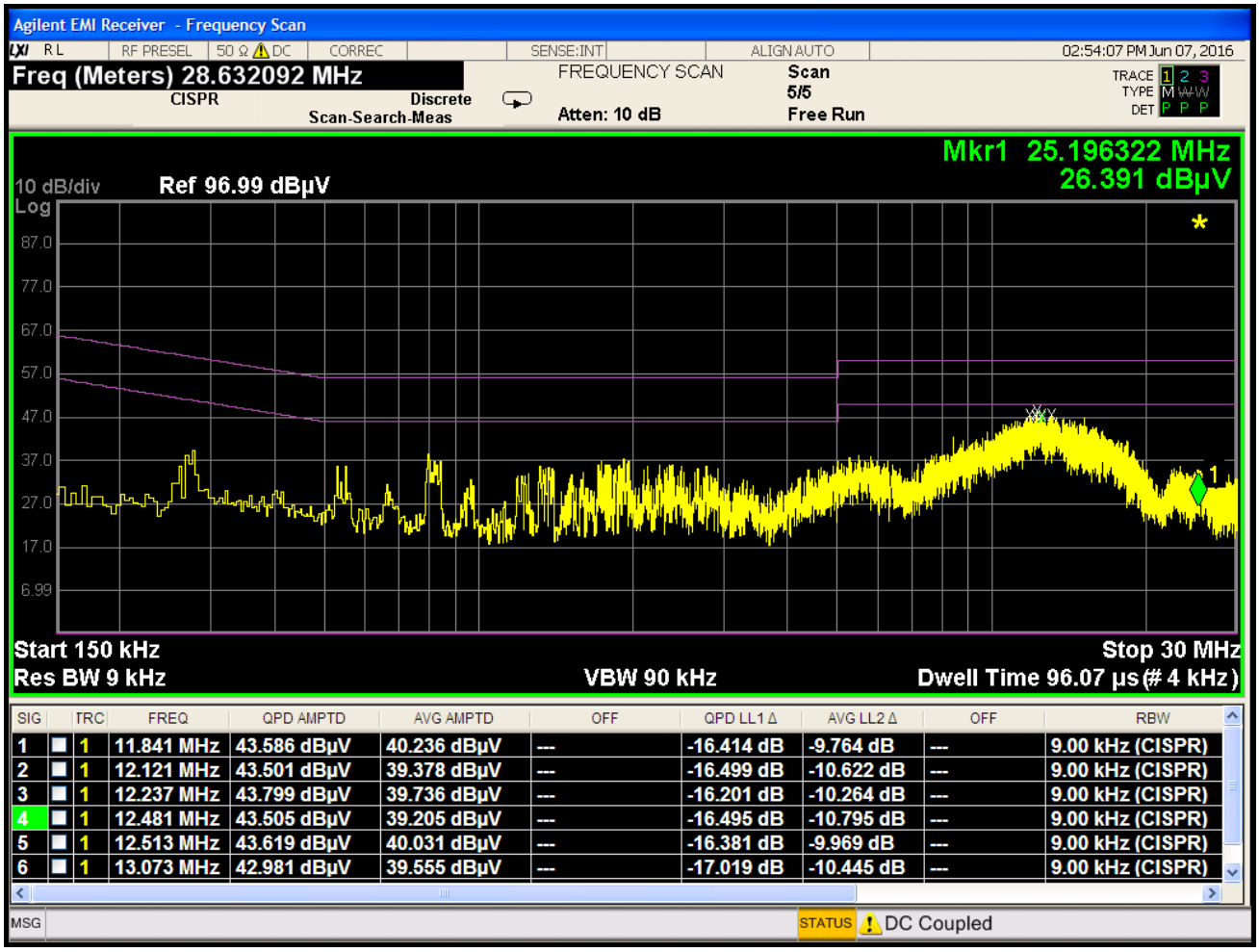


SIG		TRC	FREQ	QPD AMPTD	AVG AMPTD	OFF	QPD LL1 Δ	AVG LL2 Δ	OFF	RBW
1		1	10.809 MHz	44.181 dBµV	39.919 dBµV	---	-15.819 dB	-10.081 dB	---	9.00 kHz (CISPR)
2		1	11.897 MHz	45.838 dBµV	41.296 dBµV	---	-14.162 dB	-8.704 dB	---	9.00 kHz (CISPR)
3		1	12.125 MHz	46.221 dBµV	41.432 dBµV	---	-13.779 dB	-8.568 dB	---	9.00 kHz (CISPR)
4		1	12.253 MHz	46.360 dBµV	41.362 dBµV	---	-13.640 dB	-8.638 dB	---	9.00 kHz (CISPR)
5		1	12.633 MHz	45.981 dBµV	42.350 dBµV	---	-14.019 dB	-7.650 dB	---	9.00 kHz (CISPR)
6		1	13.265 MHz	45.512 dBµV	41.139 dBµV	---	-14.488 dB	-8.861 dB	---	9.00 kHz (CISPR)

Plot 7-263. Line Conducted Plot with 802.11a UNII Band 3 (L1)

Line-Conducted Test Data

§15.407



SIG		TRC	FREQ	QPD AMPTD	AVG AMPTD	OFF	QPD LL1 Δ	AVG LL2 Δ	OFF	RBW
1		1	11.841 MHz	43.586 dBµV	40.236 dBµV	---	-16.414 dB	-9.764 dB	---	9.00 kHz (CISPR)
2		1	12.121 MHz	43.501 dBµV	39.378 dBµV	---	-16.499 dB	-10.622 dB	---	9.00 kHz (CISPR)
3		1	12.237 MHz	43.799 dBµV	39.736 dBµV	---	-16.201 dB	-10.264 dB	---	9.00 kHz (CISPR)
4		1	12.481 MHz	43.505 dBµV	39.205 dBµV	---	-16.495 dB	-10.795 dB	---	9.00 kHz (CISPR)
5		1	12.513 MHz	43.619 dBµV	40.031 dBµV	---	-16.381 dB	-9.969 dB	---	9.00 kHz (CISPR)
6		1	13.073 MHz	42.981 dBµV	39.555 dBµV	---	-17.019 dB	-10.445 dB	---	9.00 kHz (CISPR)

Plot 7-264. 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 **Samsung Portable Handset FCC ID: A3LSMN935KOR** 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	< 250mW (23.98dBm) (5150-5250MHz) < 250mW (5250-5350MHz) < 250mW (5470-5725MHz) < 1W (30dBm) (5725-5850MHz)	CONDUCTED	PASS	Section A.2
15.407 (a.1), (5)	Maximum Power Spectral Density	< 11 dBm/MHz (5150-5250MHz, 5250-5350MHz, 5470-5725MHz) < 30 dBm/500kHz (5725-5850MHz)		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	5GHz (20MHz) Conducted Power [dBm]			Detector
		ANT1	ANT2	MIMO	
5180	36	12.48	11.93	15.22	AVG
5120	40	12.34	11.75	15.07	AVG
5220	44	12.53	11.88	15.23	AVG
5240	48	12.63	11.69	15.20	AVG
5260	52	13.35	14.70	17.09	AVG
5280	56	14.09	13.69	16.90	AVG
5300	60	14.22	14.67	17.46	AVG
5320	64	14.17	14.40	17.30	AVG
5500	100	14.23	14.02	17.14	AVG
5600	120	13.96	13.74	16.86	AVG
5620	124	13.91	13.70	16.82	AVG
5720	144	13.81	13.55	16.69	AVG
5745	149	14.19	13.12	16.70	AVG
5765	153	14.11	13.01	16.61	AVG
5785	157	14.07	13.05	16.60	AVG
5805	161	13.87	12.84	16.40	AVG
5825	165	14.11	12.92	16.57	AVG

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.

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Antenna-1 Power Density	Antenna-2 Power Density	Summed MIMO Power	Max Permissible Power Density [dBm/MHz]	Margin [dB]	Pass / Fail
Band 1	5180	36	a (20MHz)	6	3.27	3.58	6.44	11.0	-4.56	Pass
	5200	40	a (20MHz)	6	3.40	3.30	6.36	11.0	-4.64	Pass
	5240	48	a (20MHz)	6	3.43	3.43	6.44	11.0	-4.56	Pass
Band 2A	5260	52	a (20MHz)	6	2.98	3.59	6.30	11.0	-4.70	Pass
	5280	56	a (20MHz)	6	2.73	3.88	6.35	11.0	-4.65	Pass
	5320	64	a (20MHz)	6	4.90	5.70	8.33	11.0	-2.67	Pass
Band 2C	5500	100	a (20MHz)	6	5.11	5.46	8.30	11.0	-2.70	Pass
	5600	120	a (20MHz)	6	4.58	5.22	7.92	11.0	-3.08	Pass
	5720	144	a (20MHz)	6	4.07	4.63	7.37	11.0	-3.63	Pass

Table A3-3.802.11a Dual Tx Conducted Power Density Measurements

Antenna-1 Power Spectral Density Measurements

Plot A3-1. Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 36)

Plot A3-2. Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 40)

Plot A3-3. Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 48)

Plot A3-4. Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 52)

Plot A3-5. Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 56)

Plot A3-6. Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 64)

Plot A3-7. Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 100)

Plot A3-8. Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 120)

Plot A3-9. Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 144)

Plot A3-10. Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 36)

Plot A3-11. Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 40)

Plot A3-12. Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 48)

Plot 0 A3-13. Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 52)

Plot A3-14. Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 56)

Plot A3-15. Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 64)

Plot A3-16. Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 100)

Plot A3-17. Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 120)

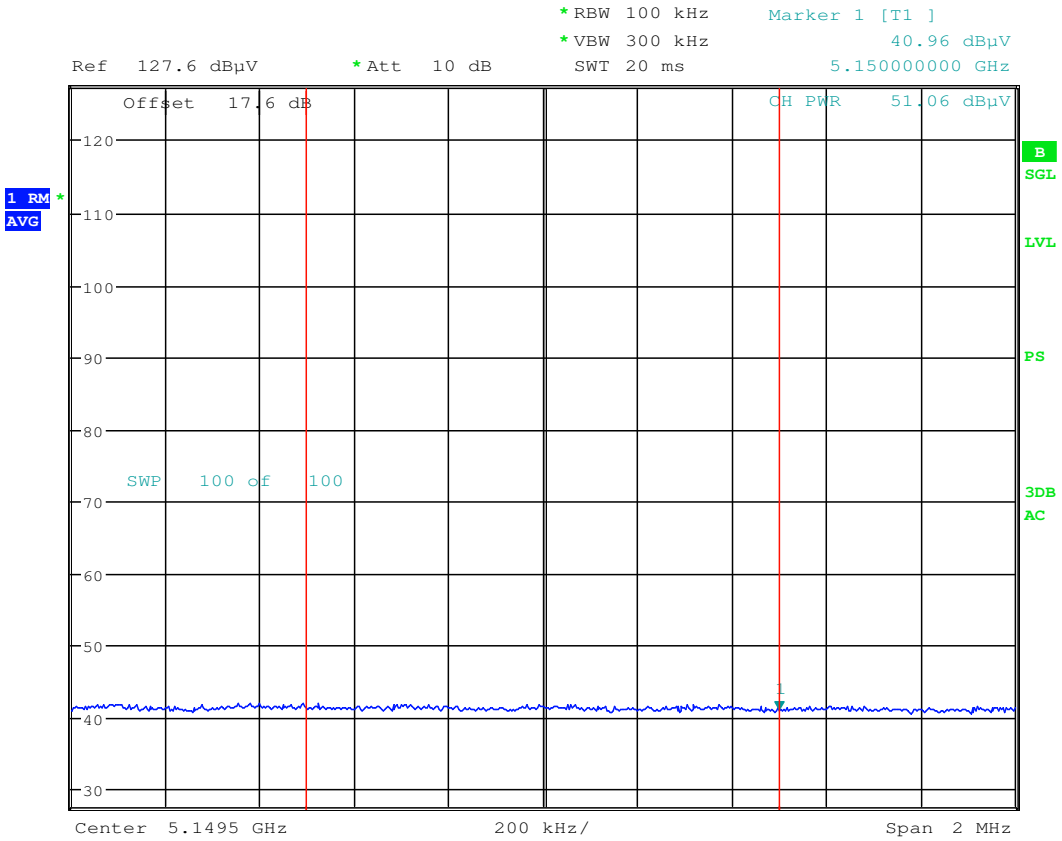
Plot A3-18. Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 144)

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

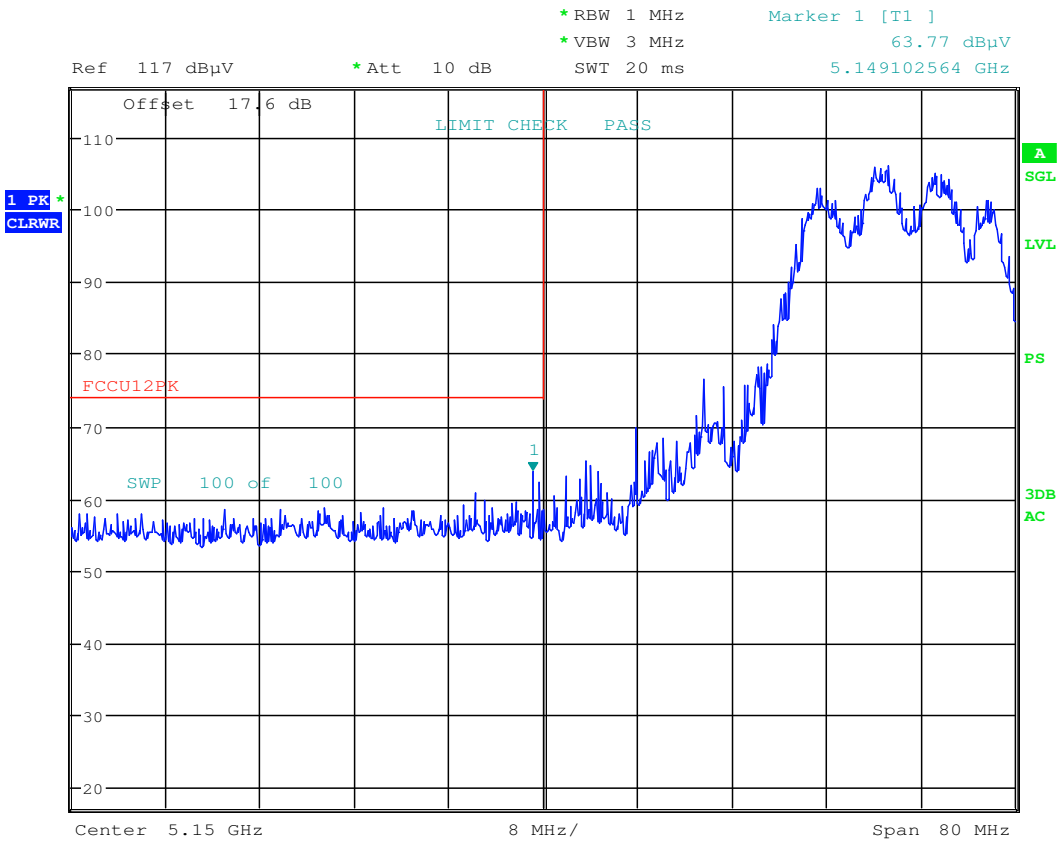


Date: 27.JUN.2016 13:00:53

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

Dual Tx Radiated Restricted Band Edge Measurements

§15.407(b.1)(b.2) §15.205 §15.209

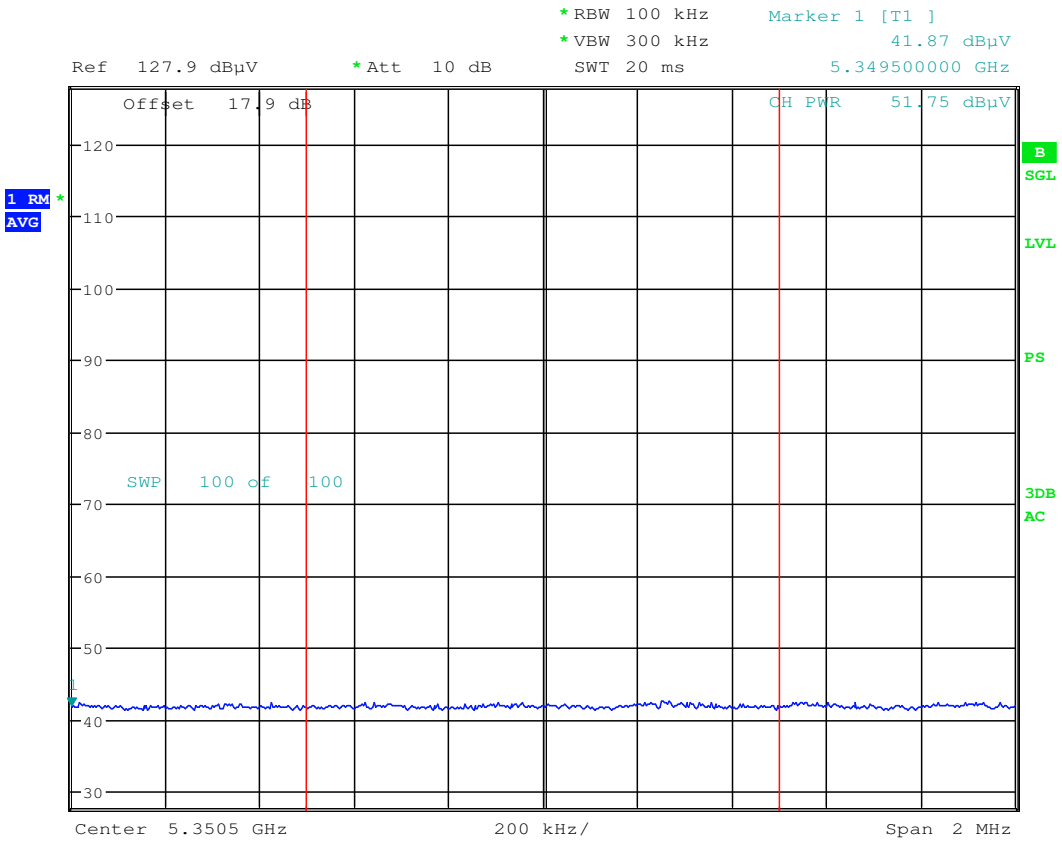


Plot A.4-2. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

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

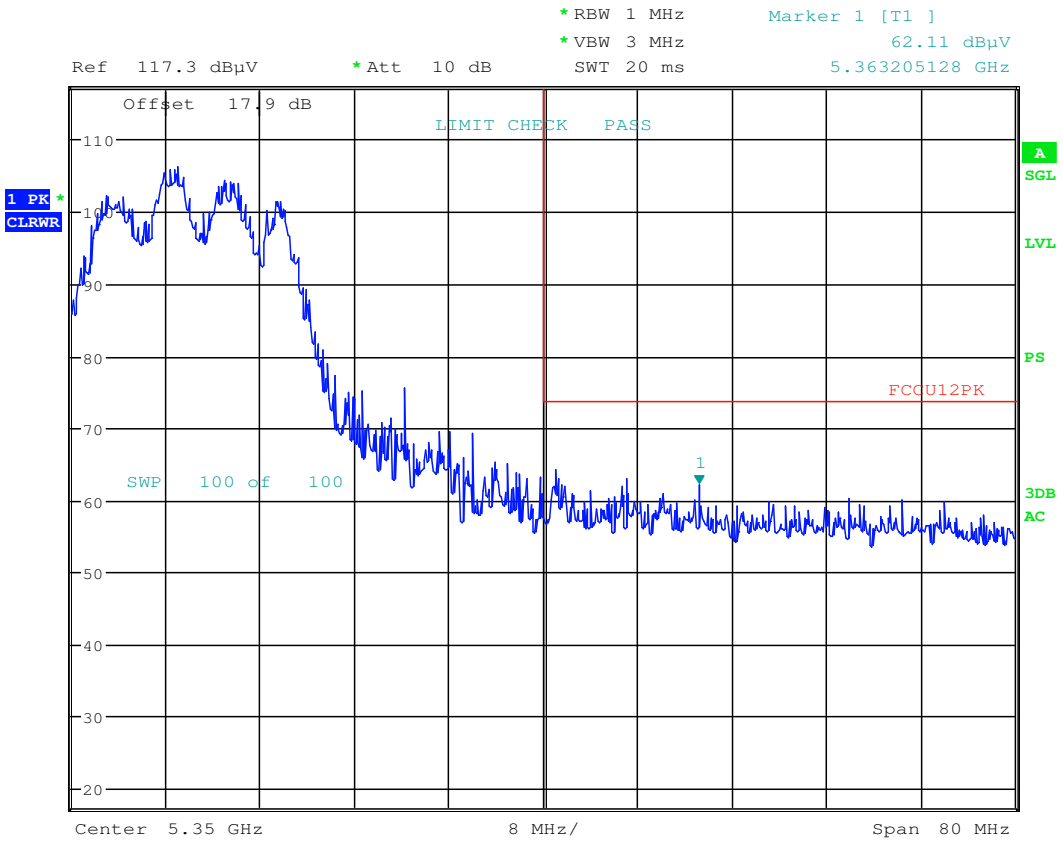


Date: 27.JUN.2016 13:08:27

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

Dual Tx Radiated Restricted Band Edge Measurements

§15.407(b.1)(b.2) §15.205 §15.209

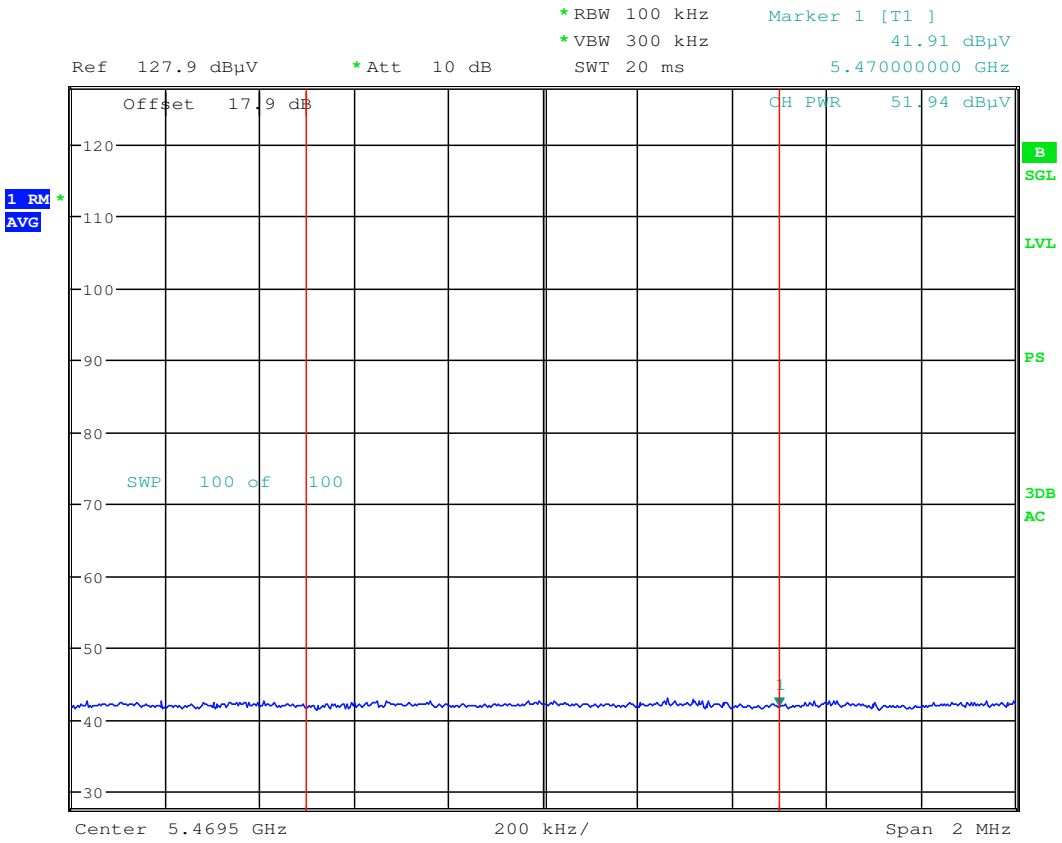


Plot A.4-4. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

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

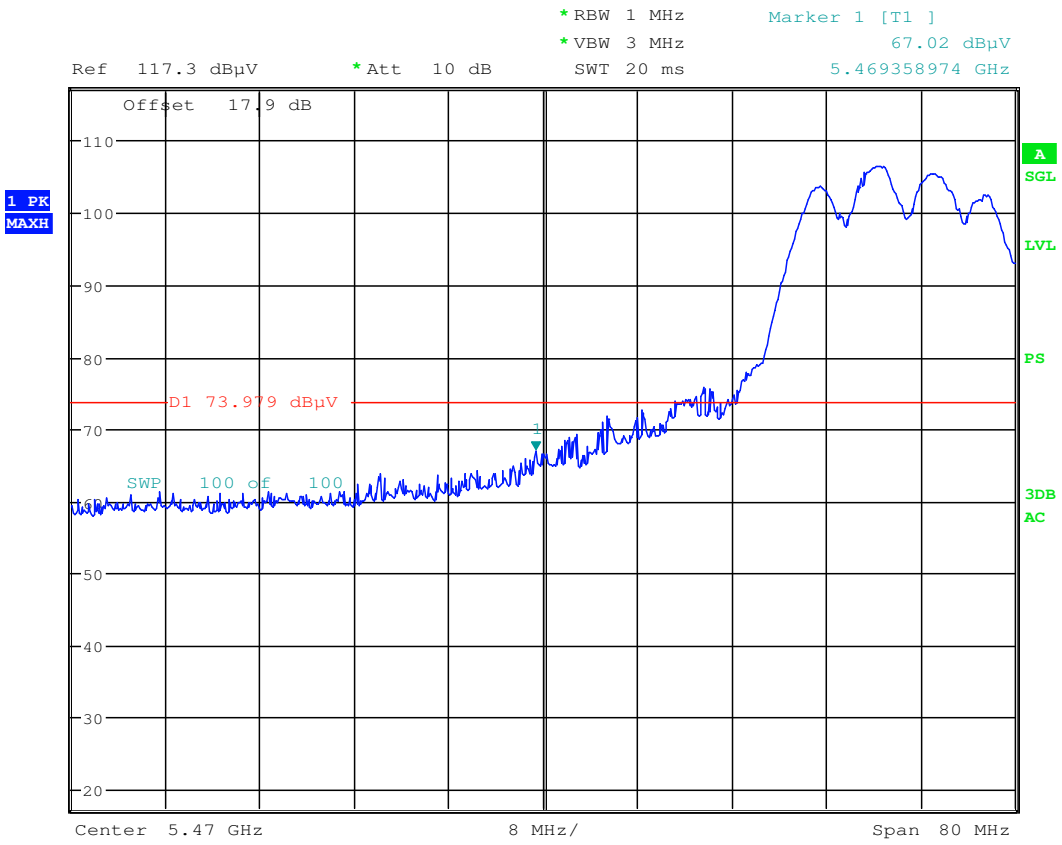


Date: 27.JUN.2016 13:26:24

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

Dual Tx Radiated Restricted Band Edge Measurements

§15.407(b.1)(b.2) §15.205 §15.209



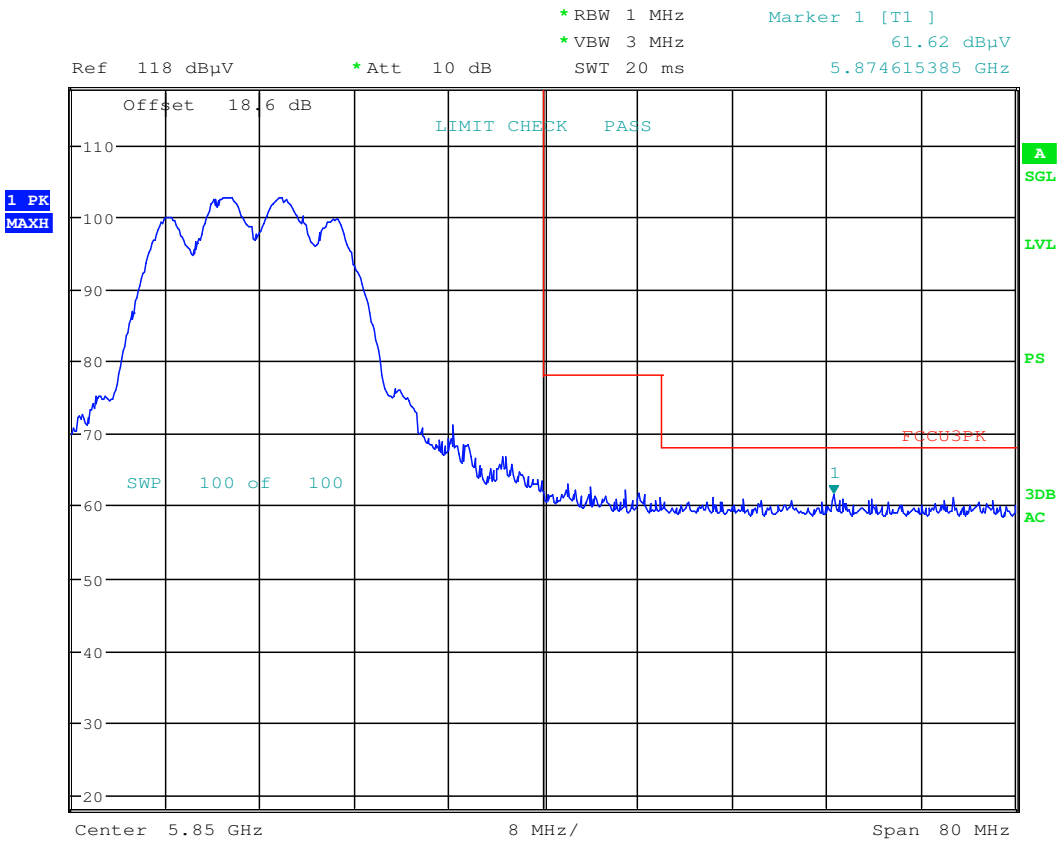
Date: 27.JUN.2016 13:27:06

Plot A.4-6. Radiated Restricted Lower Band Edge Plot (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:	5825MHz
Channel:	165



Date: 27.JUN.2016 13:32:05

Plot A.4-7. Radiated Upper Band Edge Plot (Peak – UNII Band 3)