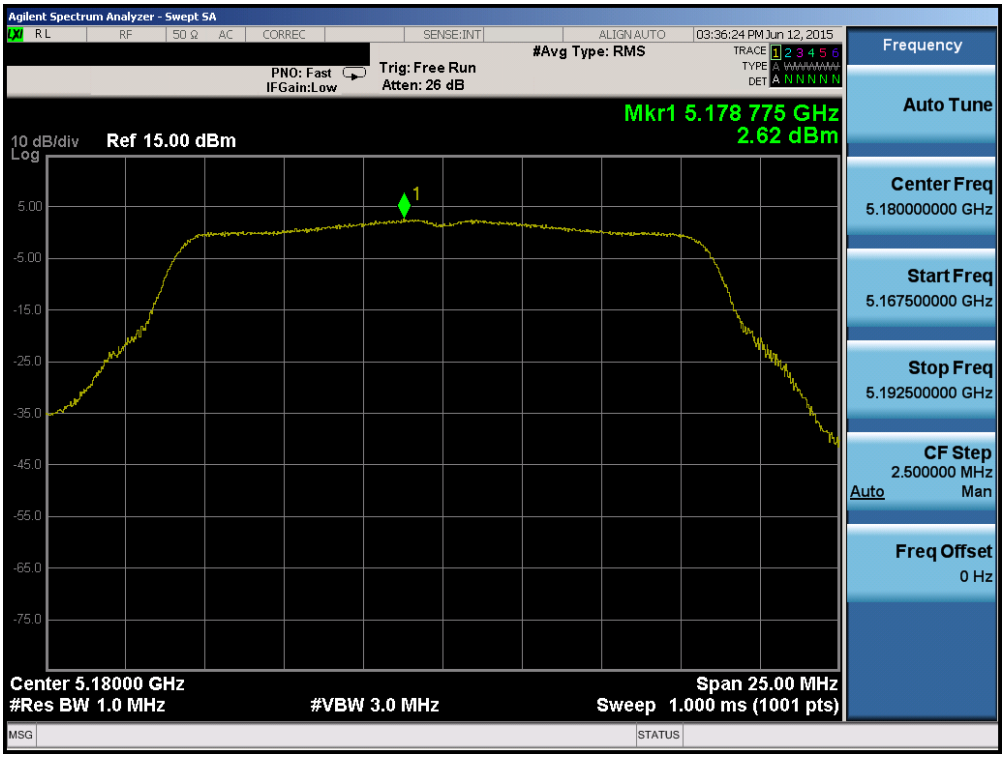
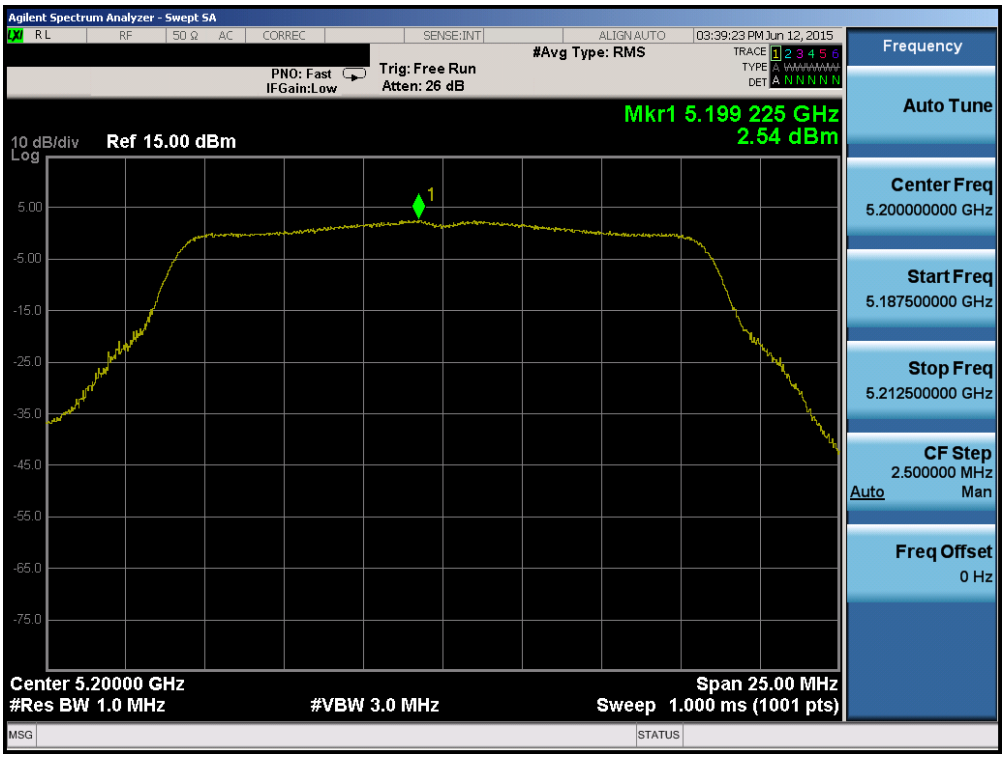
Antenna-2 Power Spectral Density Measurements

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured Power Density [dBm]	Max Permissible Power Density [dBm/MHz]	Margin [dB]	Pass / Fail
Band 1	5180	36	a	6	2.62	11.0	-8.38	Pass
	5200	40	a	6	2.54	11.0	-8.46	Pass
	5240	48	a	6	2.62	11.0	-8.38	Pass
	5180	36	n (20MHz)	6.5/7.2 (MCS0)	3.58	11.0	-7.43	Pass
	5200	40	n (20MHz)	6.5/7.2 (MCS0)	3.41	11.0	-7.59	Pass
	5240	48	n (20MHz)	6.5/7.2 (MCS0)	3.48	11.0	-7.52	Pass
	5190	38	n (40MHz)	13.5/15 (MCS0)	0.54	11.0	-10.46	Pass
	5230	46	n (40MHz)	13.5/15 (MCS0)	0.47	11.0	-10.53	Pass
	5210	42	ac (80MHz)	29.3/32.5 (MCS0)	-3.85	11.0	-14.85	Pass
Band 2A	5260	52	a	6	2.59	11.0	-8.41	Pass
	5280	56	a	6	3.69	11.0	-7.31	Pass
	5320	64	a	6	3.20	11.0	-7.80	Pass
	5260	52	n (20MHz)	6.5/7.2 (MCS0)	3.57	11.0	-7.43	Pass
	5280	56	n (20MHz)	6.5/7.2 (MCS0)	3.55	11.0	-7.45	Pass
	5320	64	n (20MHz)	6.5/7.2 (MCS0)	3.03	11.0	-7.97	Pass
	5270	54	n (40MHz)	13.5/15 (MCS0)	0.39	11.0	-10.61	Pass
	5310	62	n (40MHz)	13.5/15 (MCS0)	-0.19	11.0	-11.19	Pass
	5290	58	ac (80MHz)	29.3/32.5 (MCS0)	-3.89	11.0	-14.89	Pass
Band 2C	5500	100	a	6	3.64	11.0	-7.36	Pass
	5580	116	a	6	3.77	11.0	-7.23	Pass
	5720	144	a	6	3.70	11.0	-7.30	Pass
	5500	100	n (20MHz)	6.5/7.2 (MCS0)	3.51	11.0	-7.49	Pass
	5580	116	n (20MHz)	6.5/7.2 (MCS0)	2.86	11.0	-8.14	Pass
	5720	144	n (20MHz)	6.5/7.2 (MCS0)	3.16	11.0	-7.84	Pass
	5510	102	n (40MHz)	13.5/15 (MCS0)	0.46	11.0	-10.54	Pass
	5550	110	n (40MHz)	13.5/15 (MCS0)	-0.06	11.0	-11.06	Pass
	5710	142	n (40MHz)	13.5/15 (MCS0)	0.62	11.0	-10.38	Pass
	5530	106	ac (80MHz)	29.3/32.5 (MCS0)	-4.47	11.0	-15.47	Pass
	5690	138	ac (80MHz)	29.3/32.5 (MCS0)	-4.57	11.0	-15.57	Pass

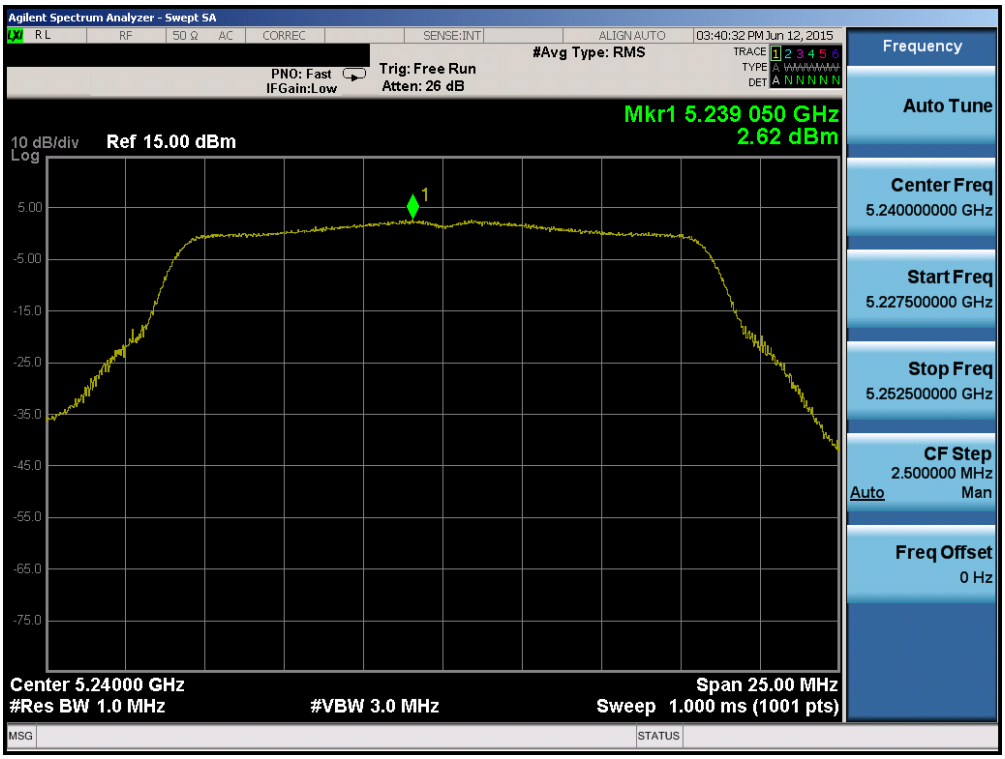
Table 6-19. Conducted Power Spectral Density Measurements



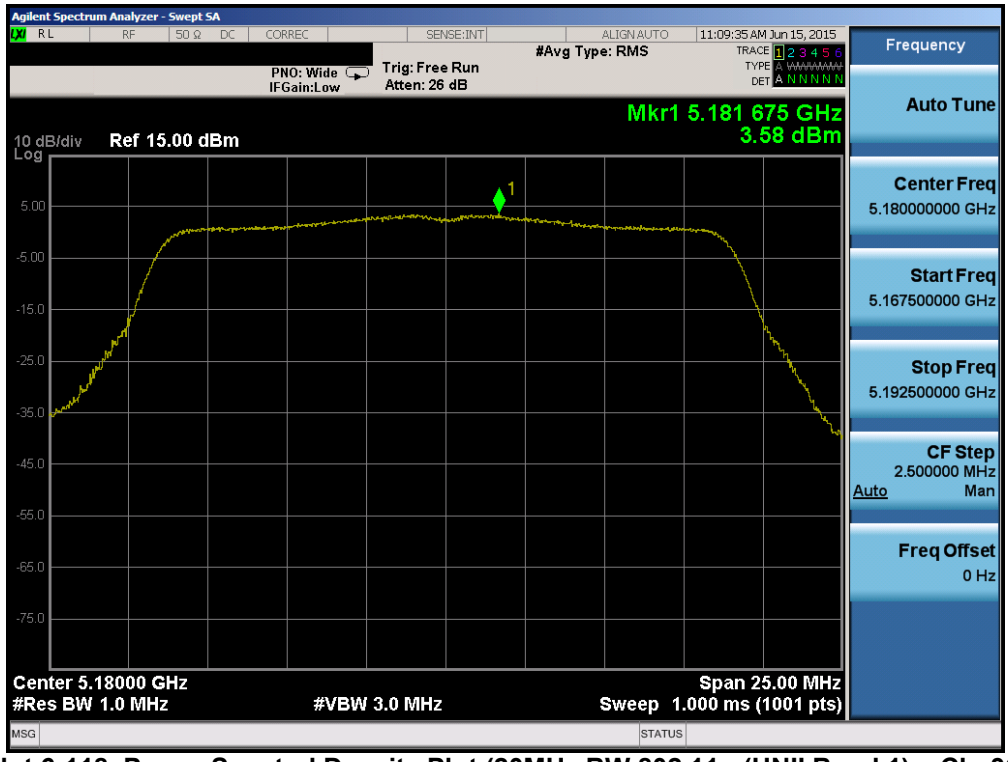
Plot 6-115. Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 36)



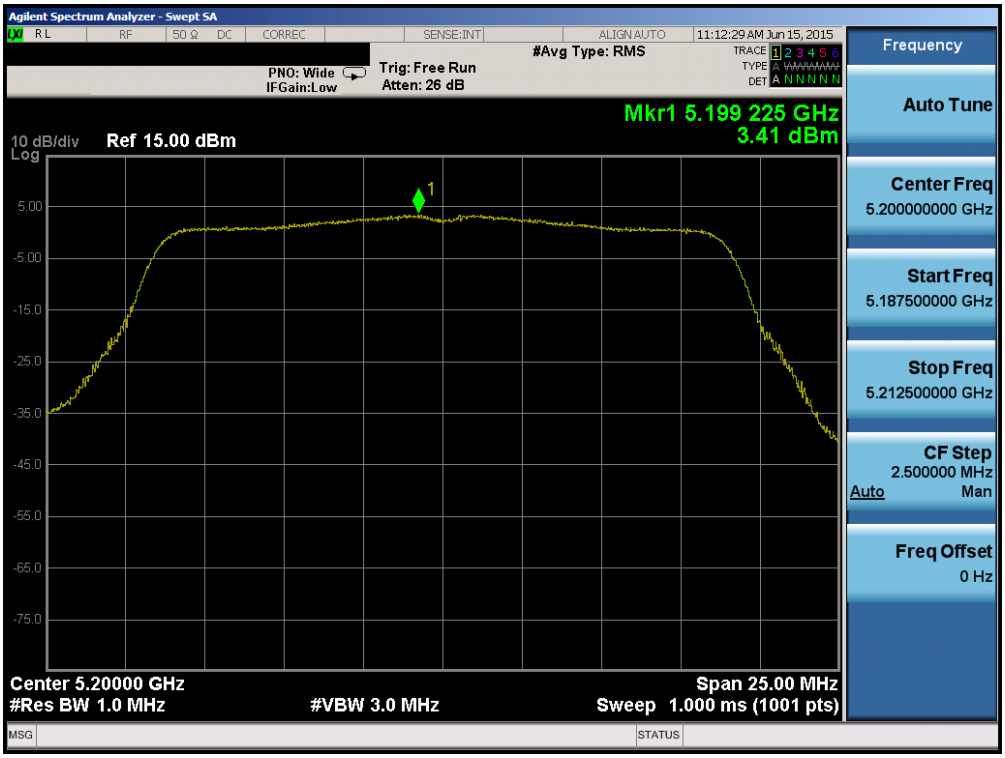
Plot 6-116. Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 40)



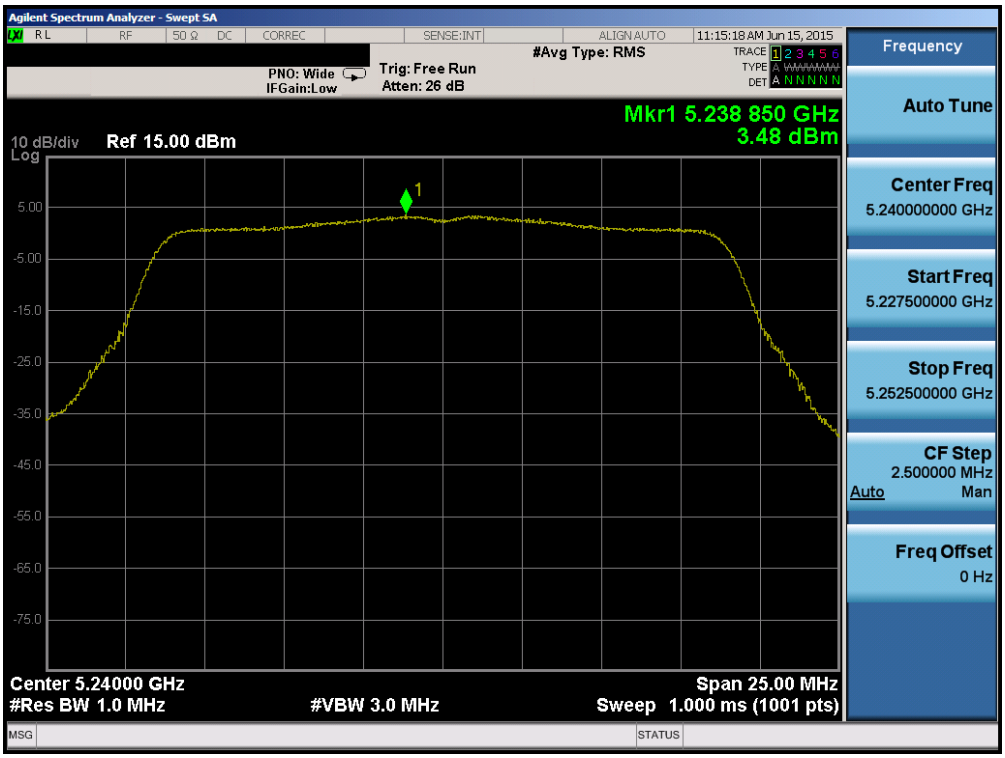
Plot 6-117. Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 48)



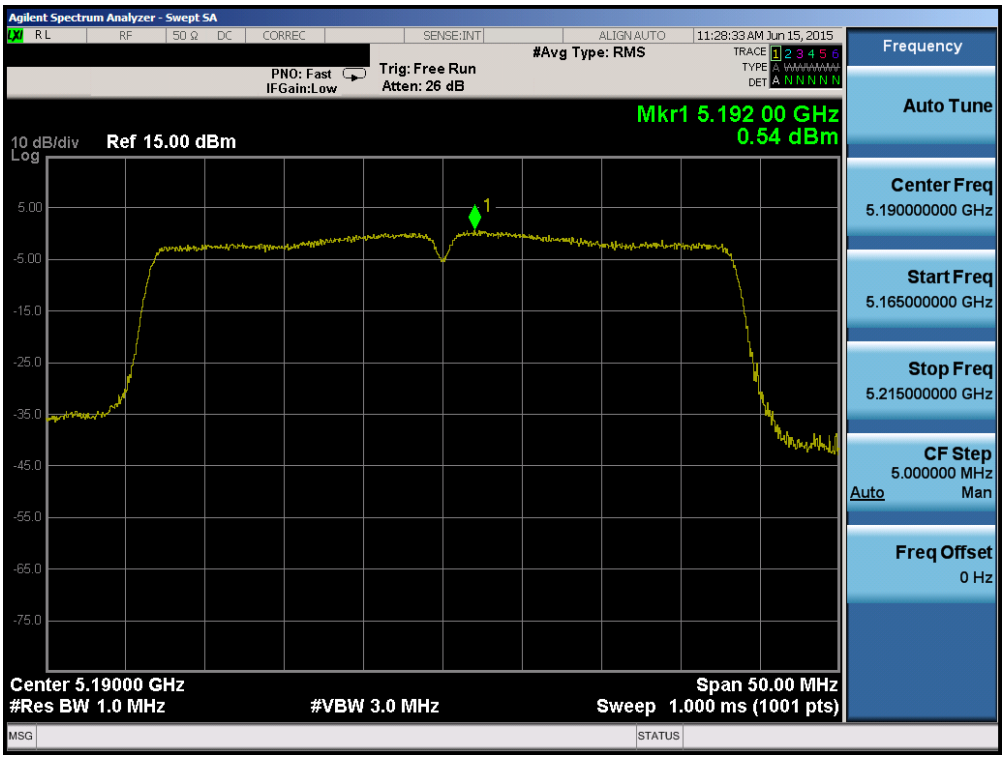
Plot 6-118. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 36)



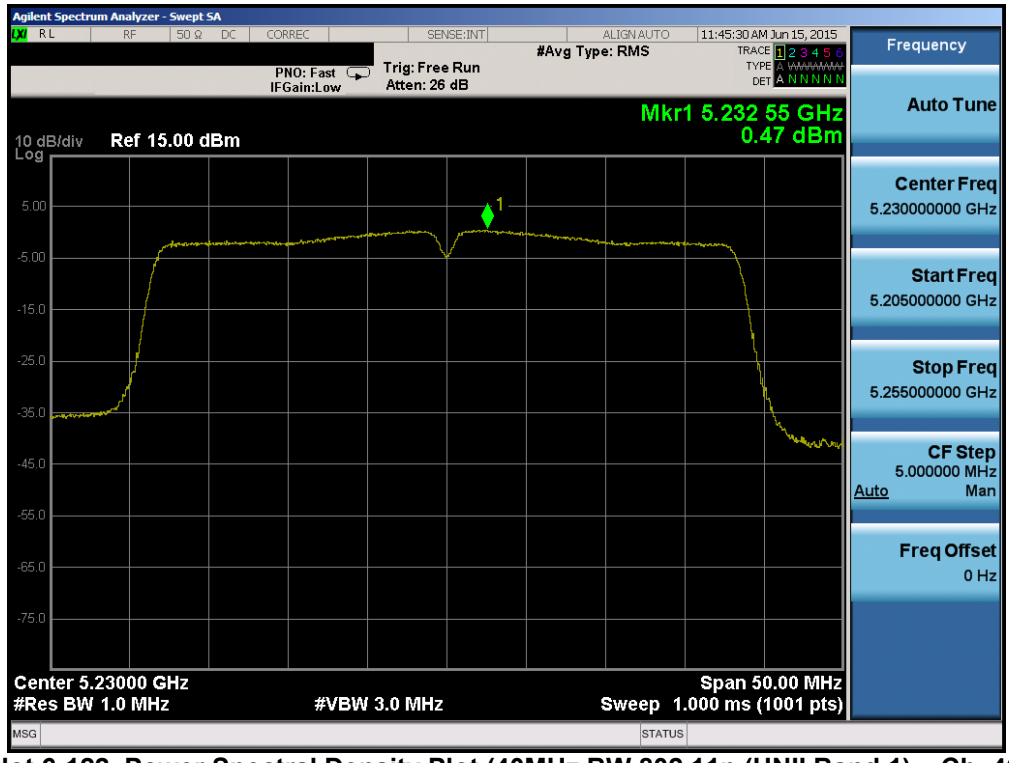
Plot 6-119. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 40)



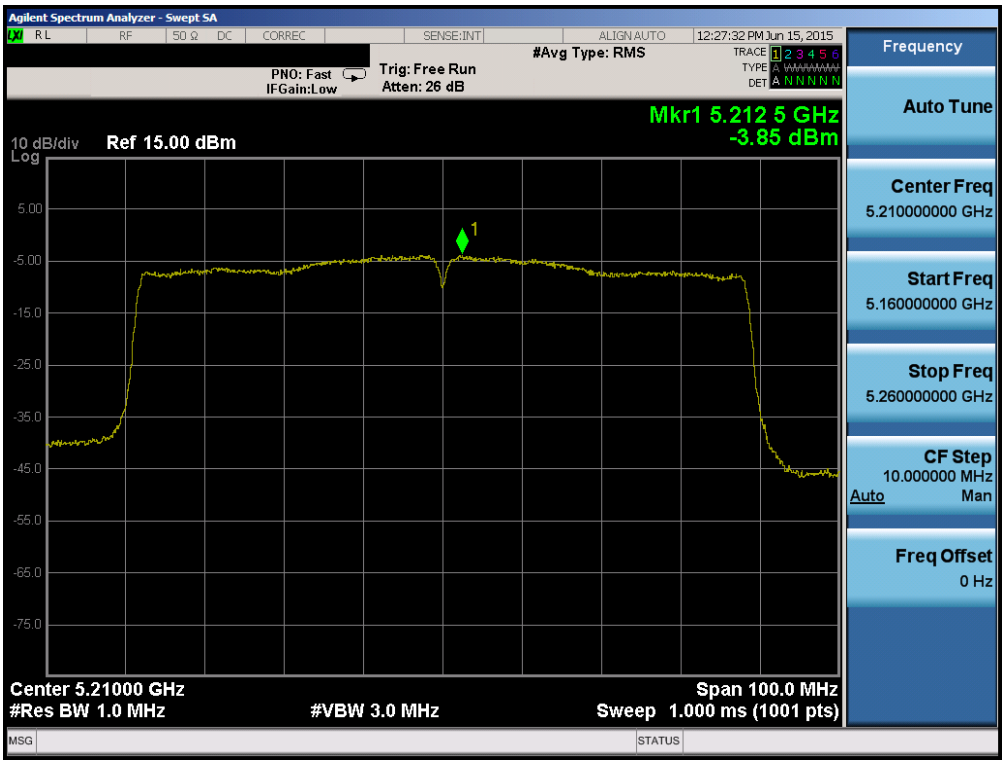
Plot 6-120. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 48)



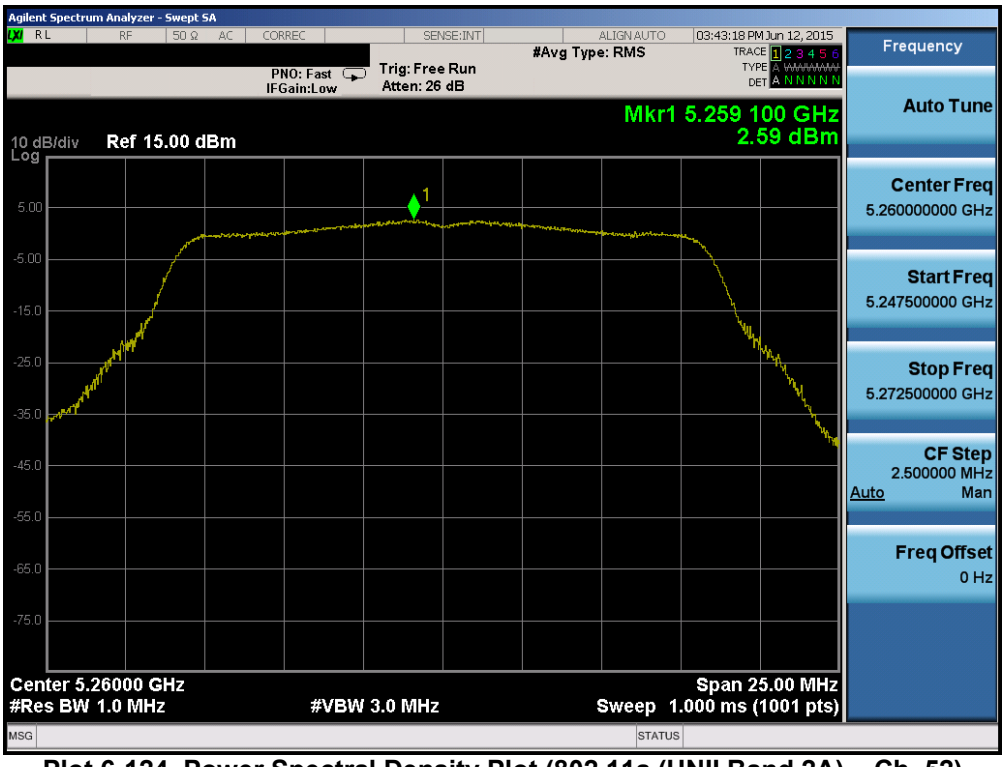
Plot 6-121. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 1) – Ch. 38)



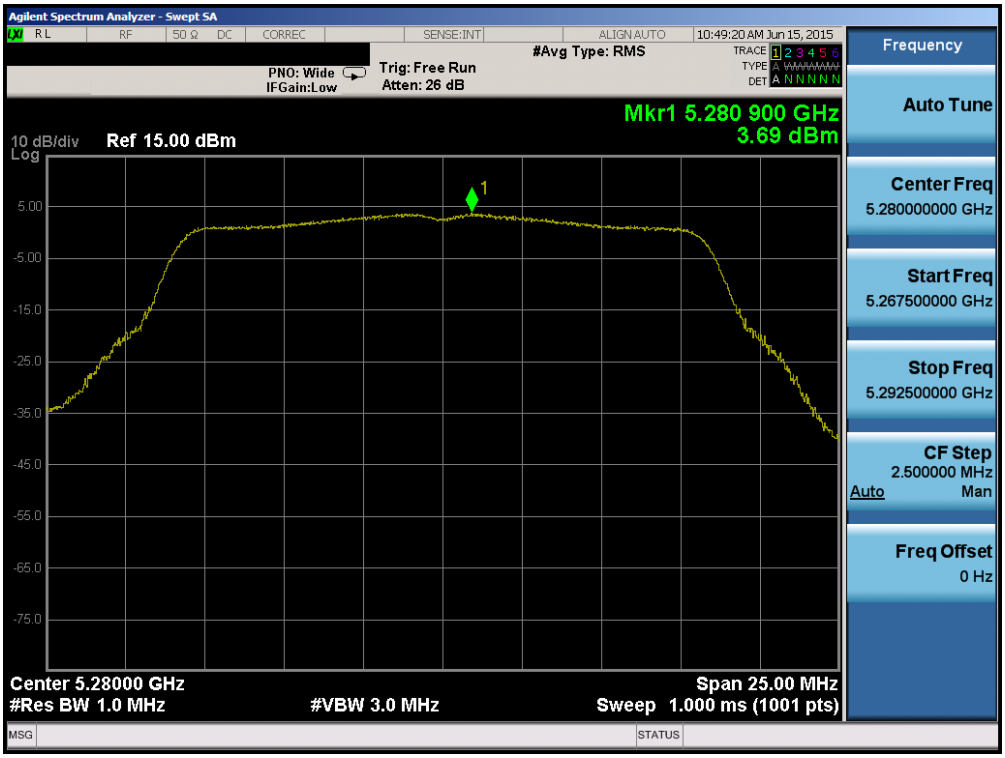
Plot 6-122. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 1) – Ch. 46)



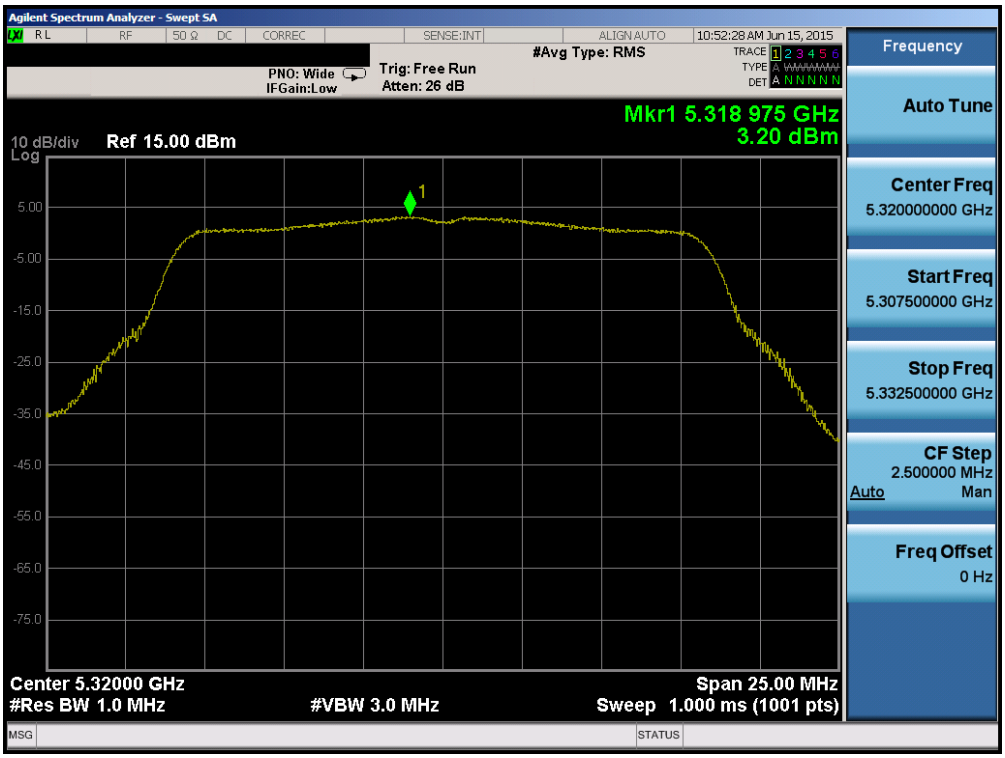
Plot 6-123. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 1) – Ch. 42)



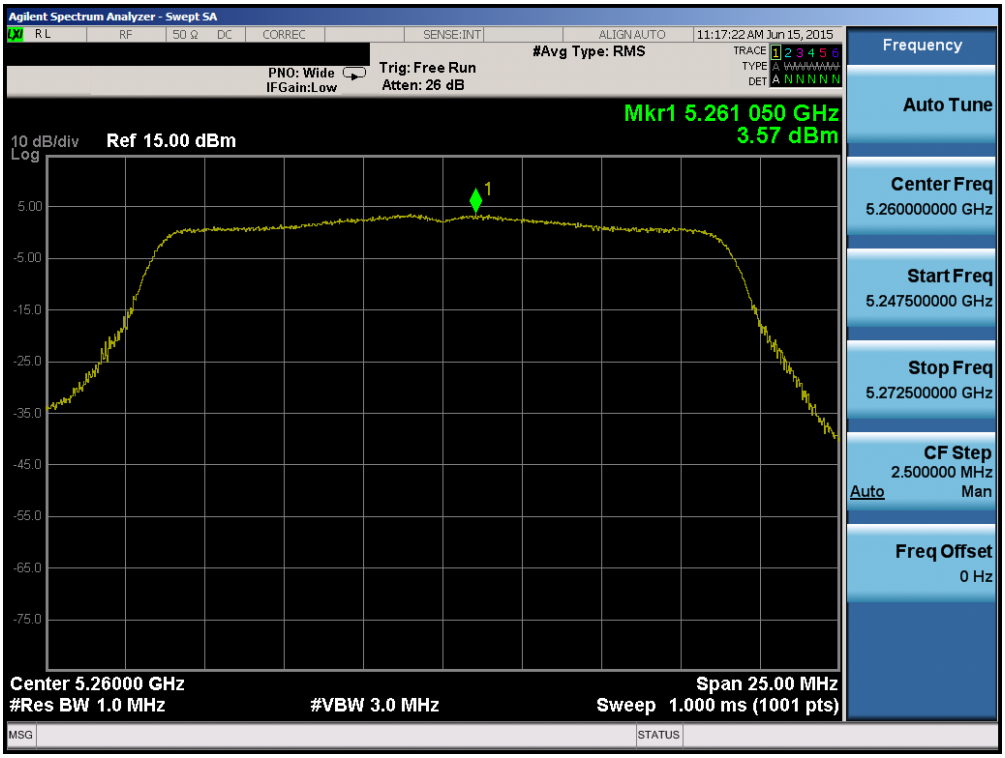
Plot 6-124. Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 52)



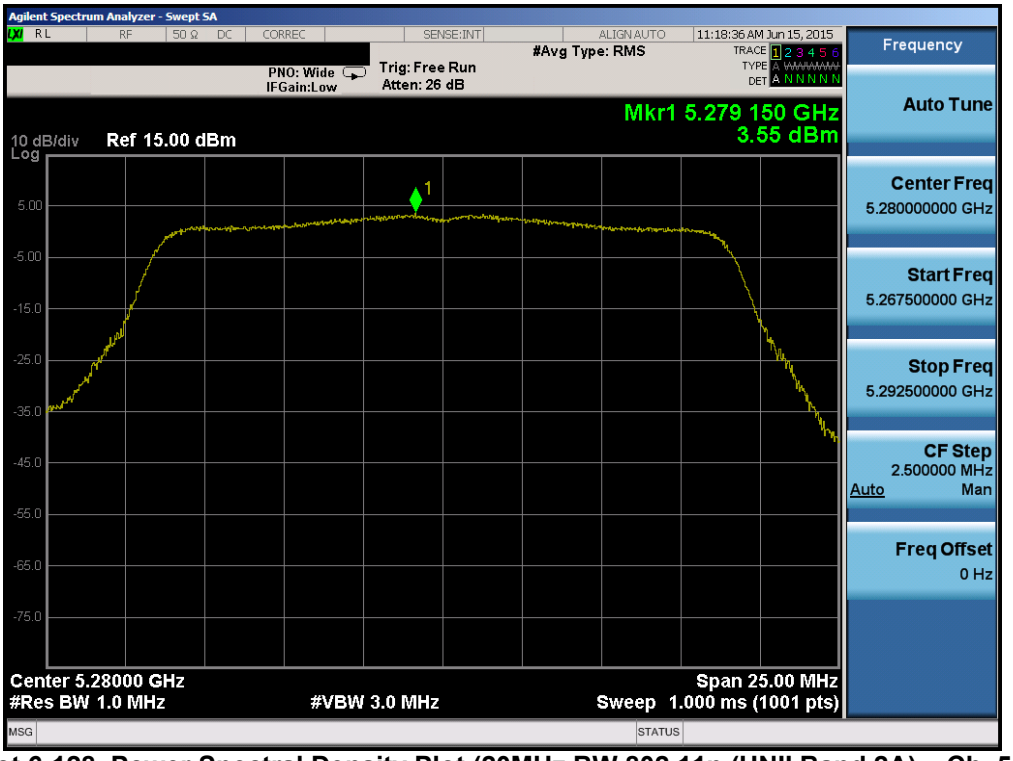
Plot 6-125. Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 56)



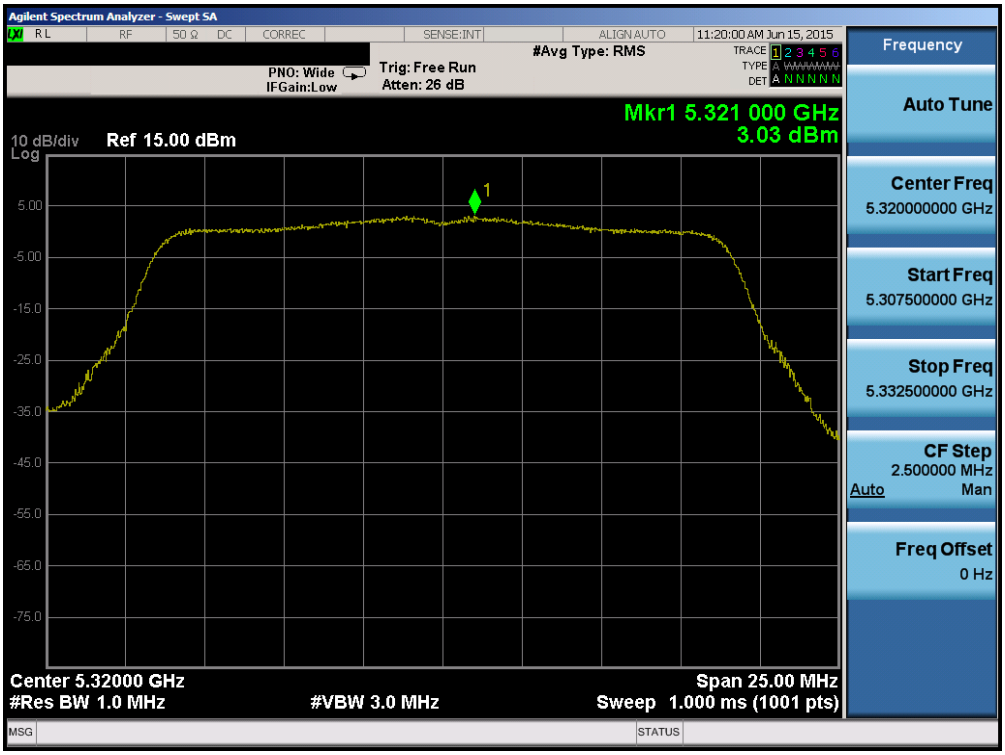
Plot 6-126. Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 64)



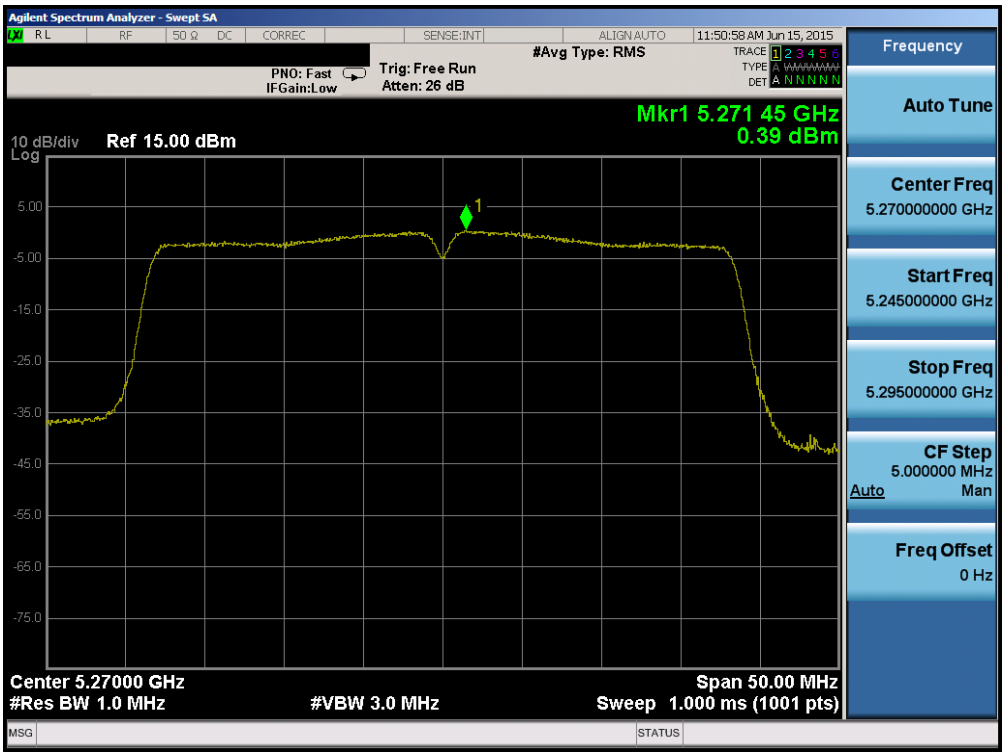
Plot 6-127. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2A) – Ch. 52)



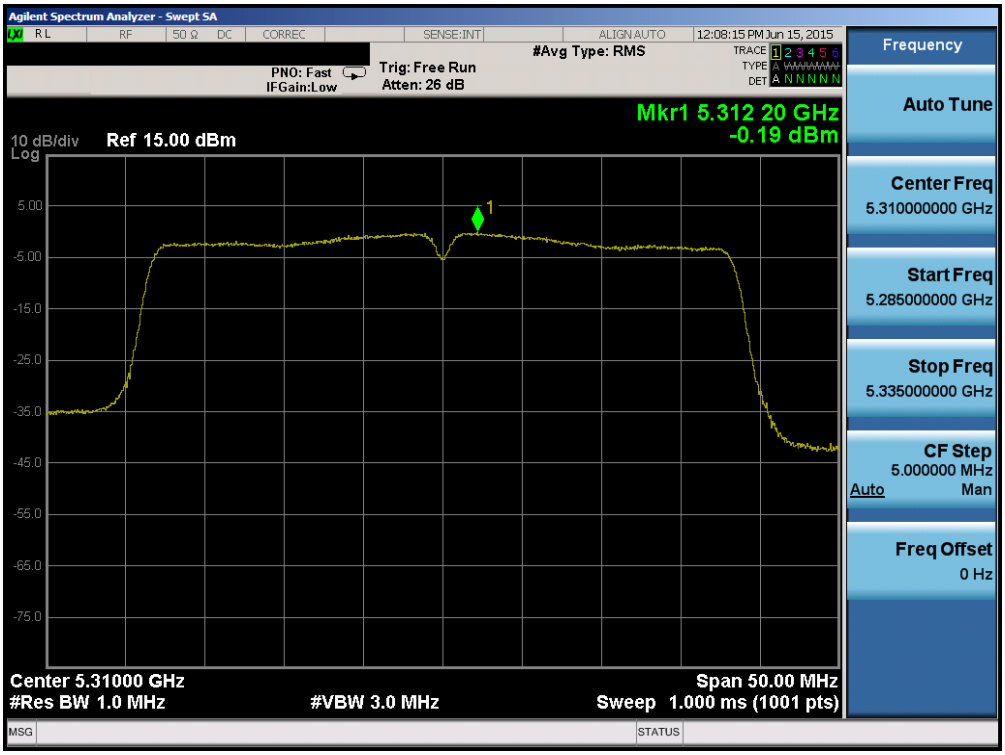
Plot 6-128. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2A) – Ch. 56)



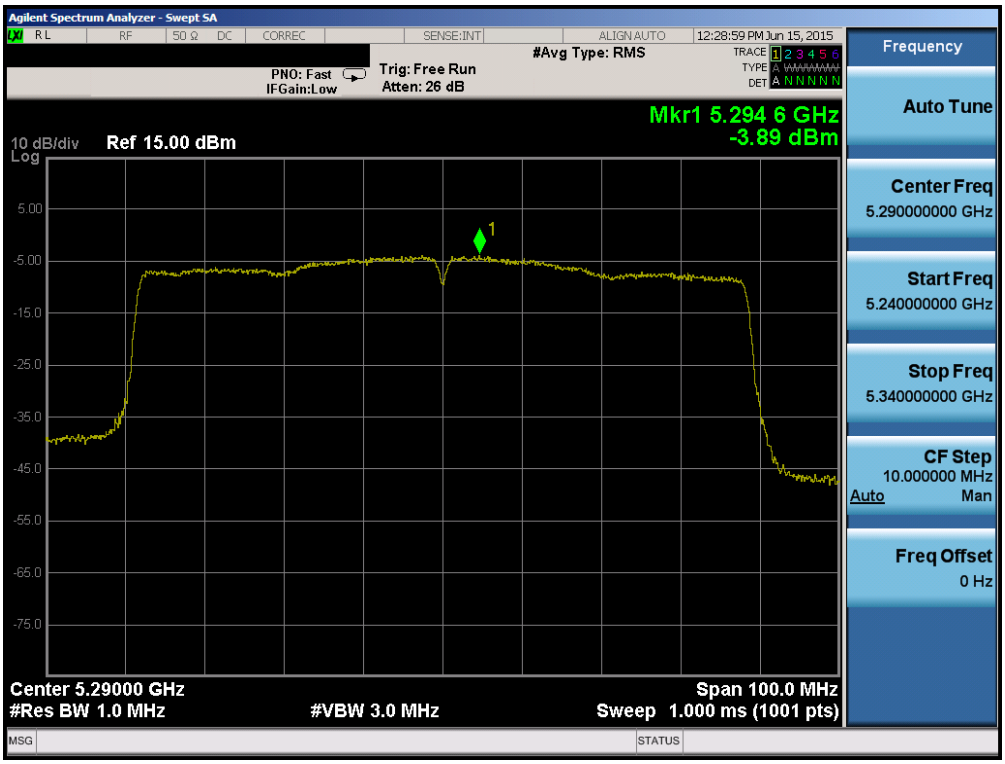
Plot 6-129. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2A) – Ch. 64)



Plot 6-130. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2A) – Ch. 54)

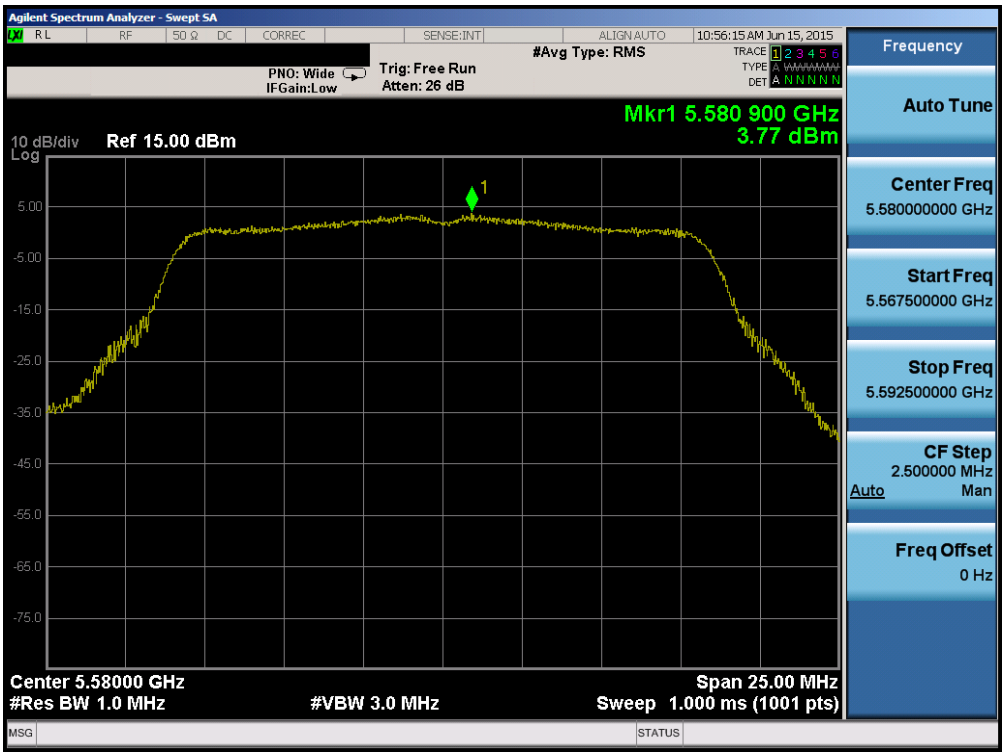


Plot 6-131. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2A) – Ch. 62)



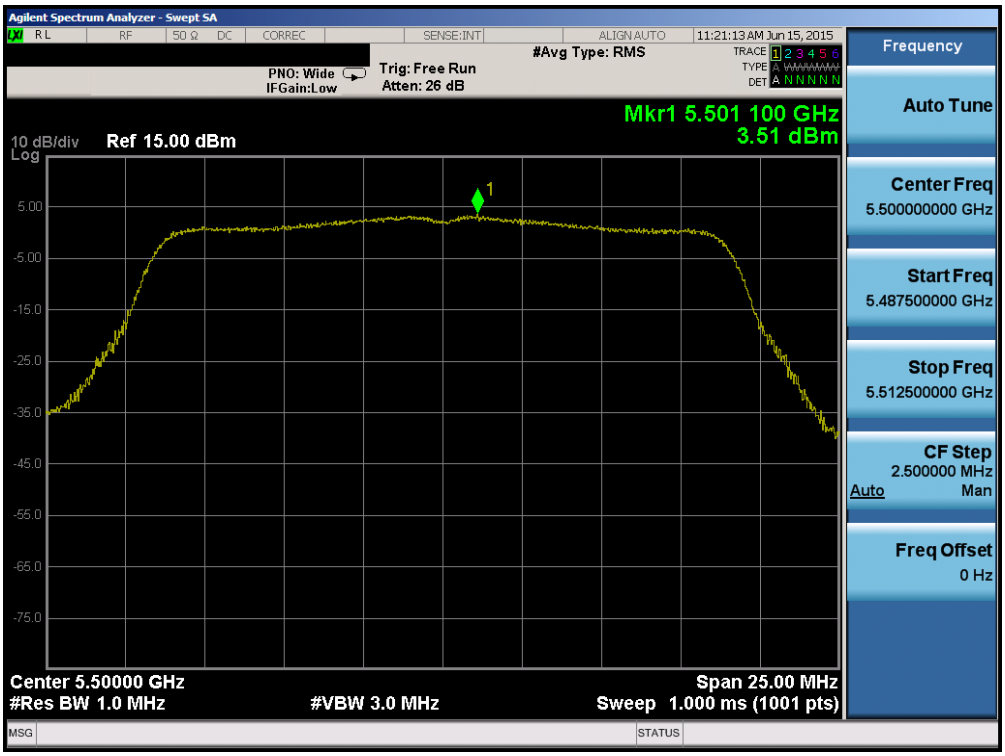
Plot 6-132. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 2A) – Ch. 58)

Plot 6-133. Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 100)

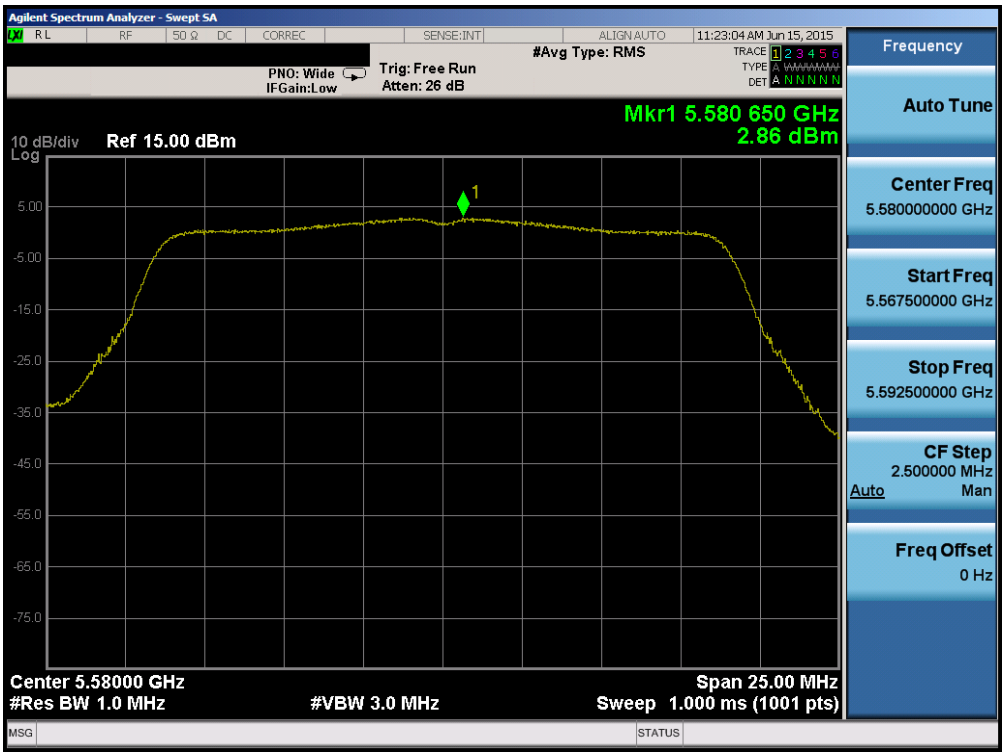


Plot 6-134. Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 116)

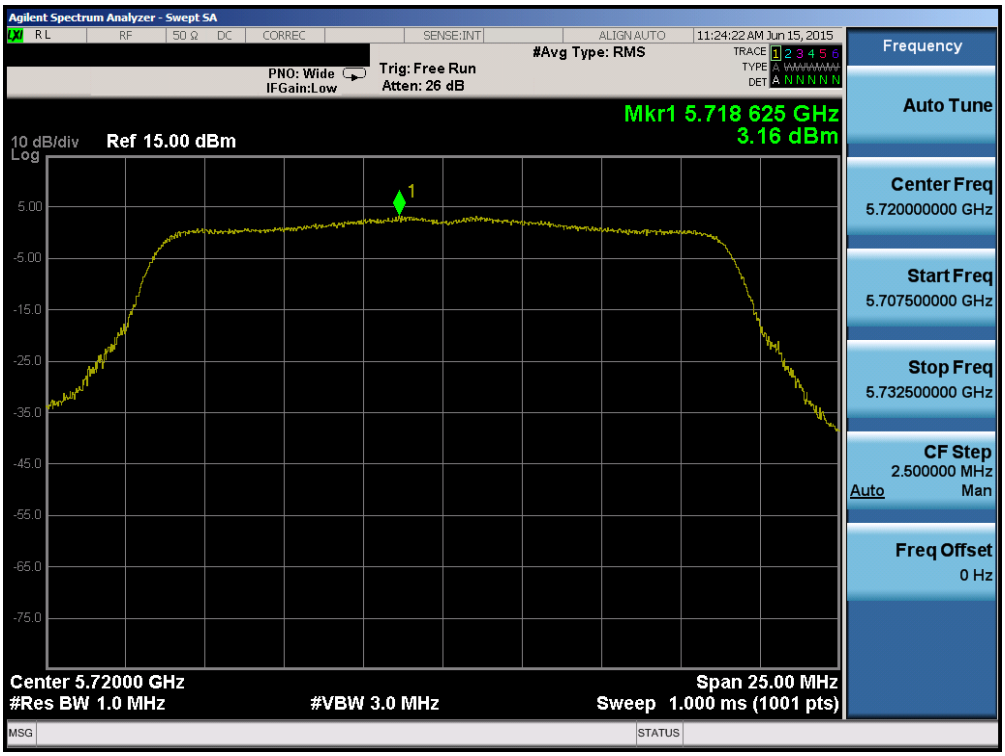
Plot 6-135. Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 144)



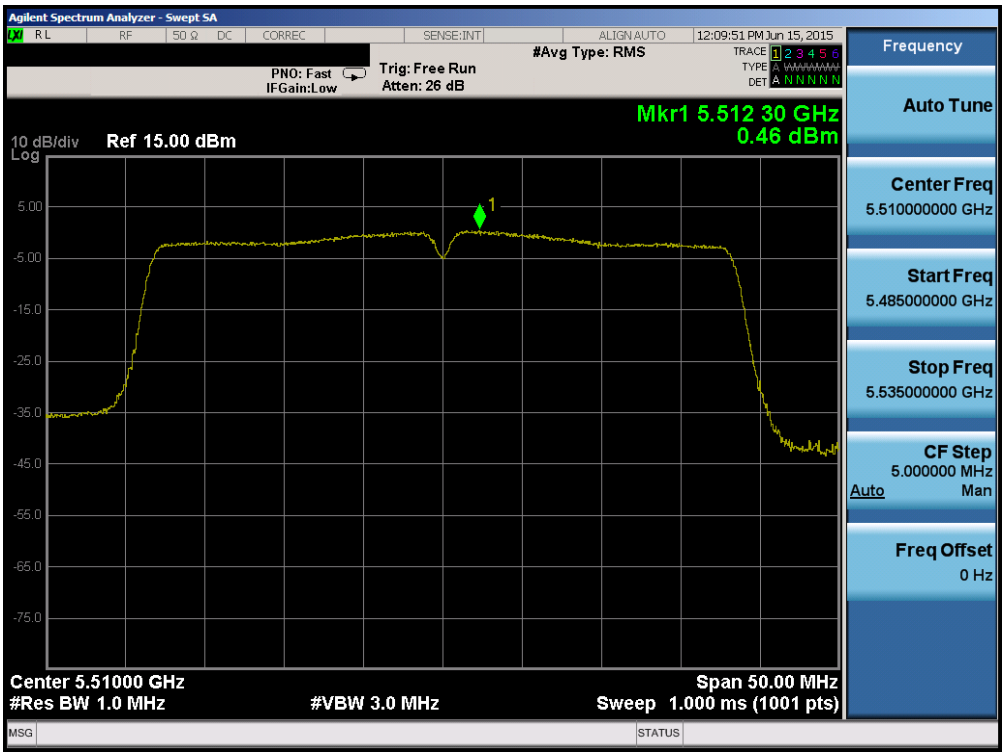
Plot 6-136. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 100)



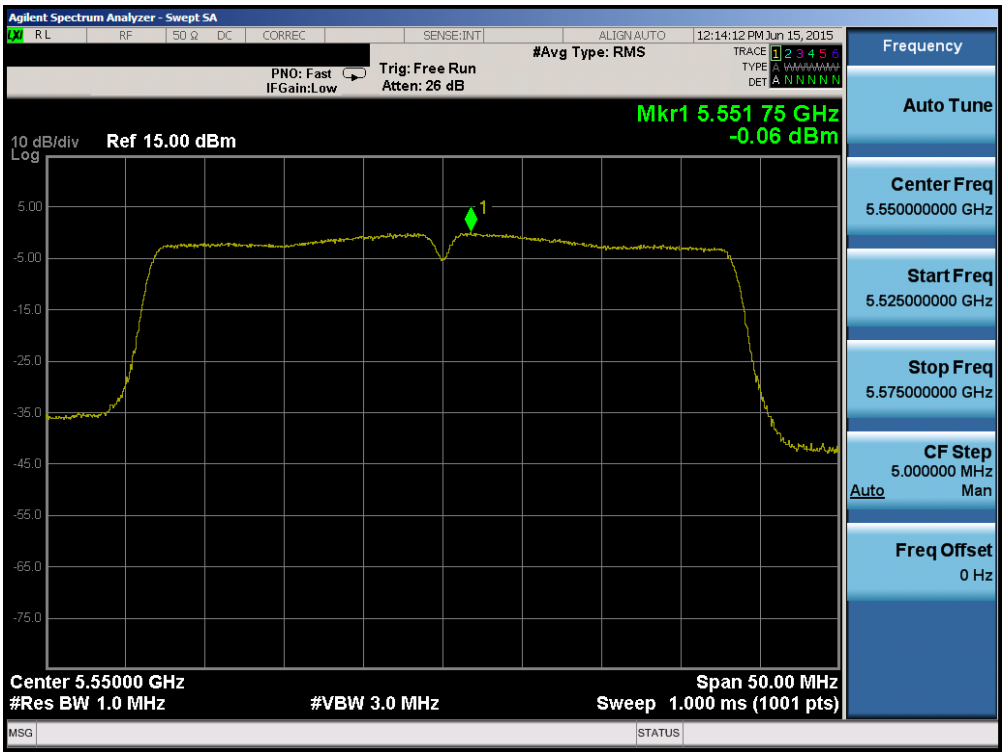
Plot 6-137. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 116)



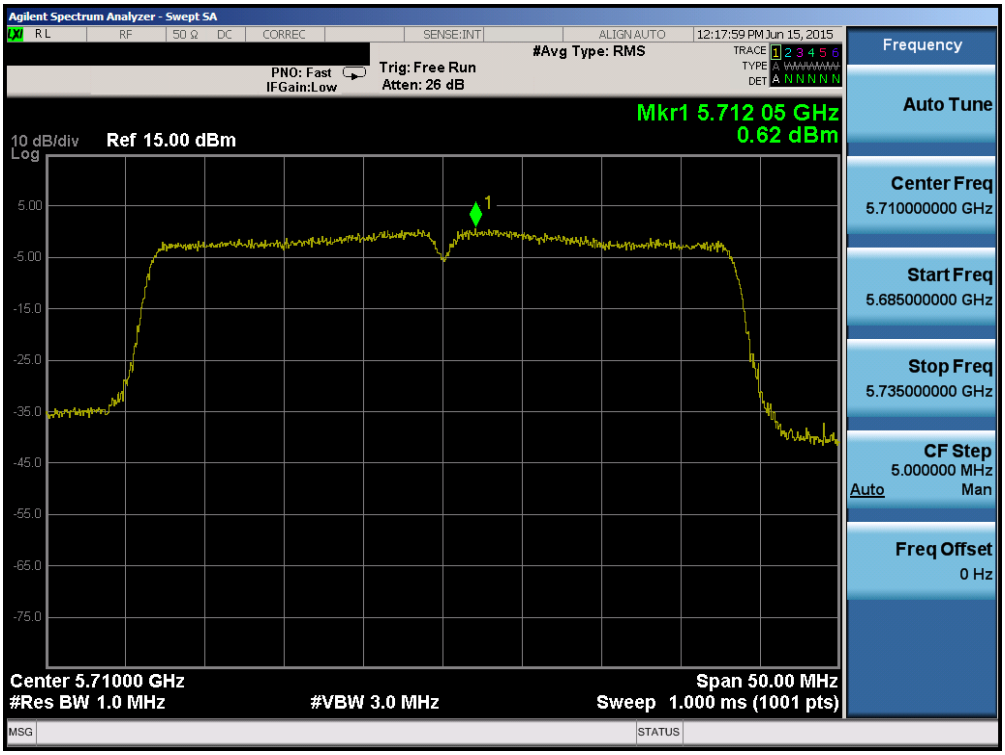
Plot 6-138. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 144)



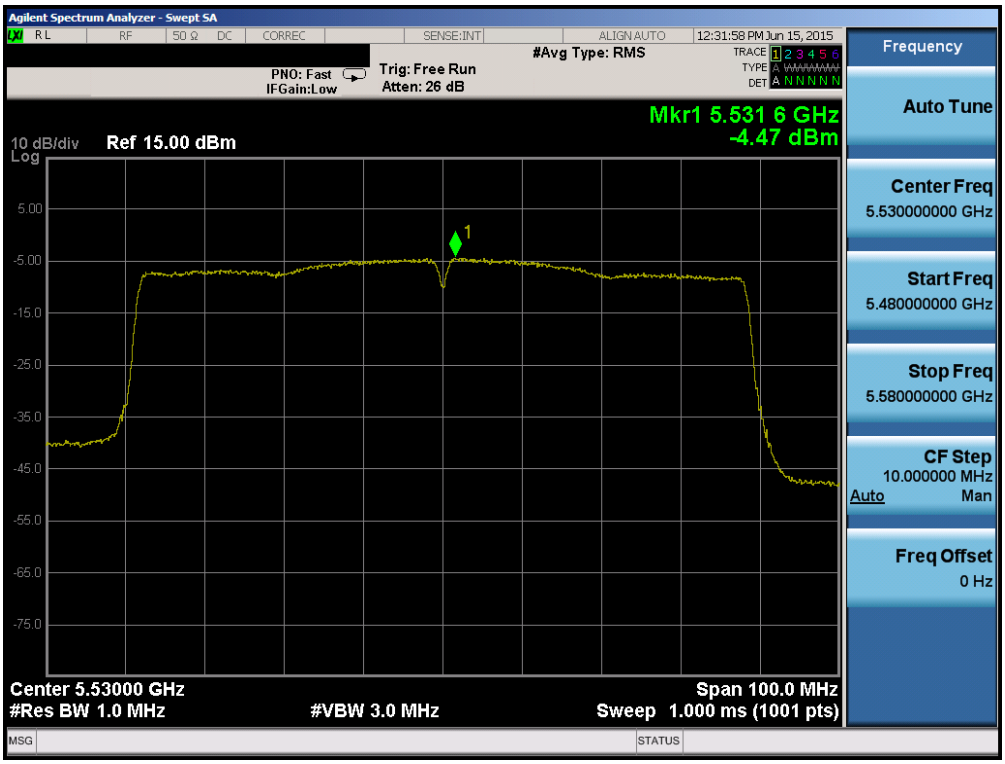
Plot 6-139. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 102)



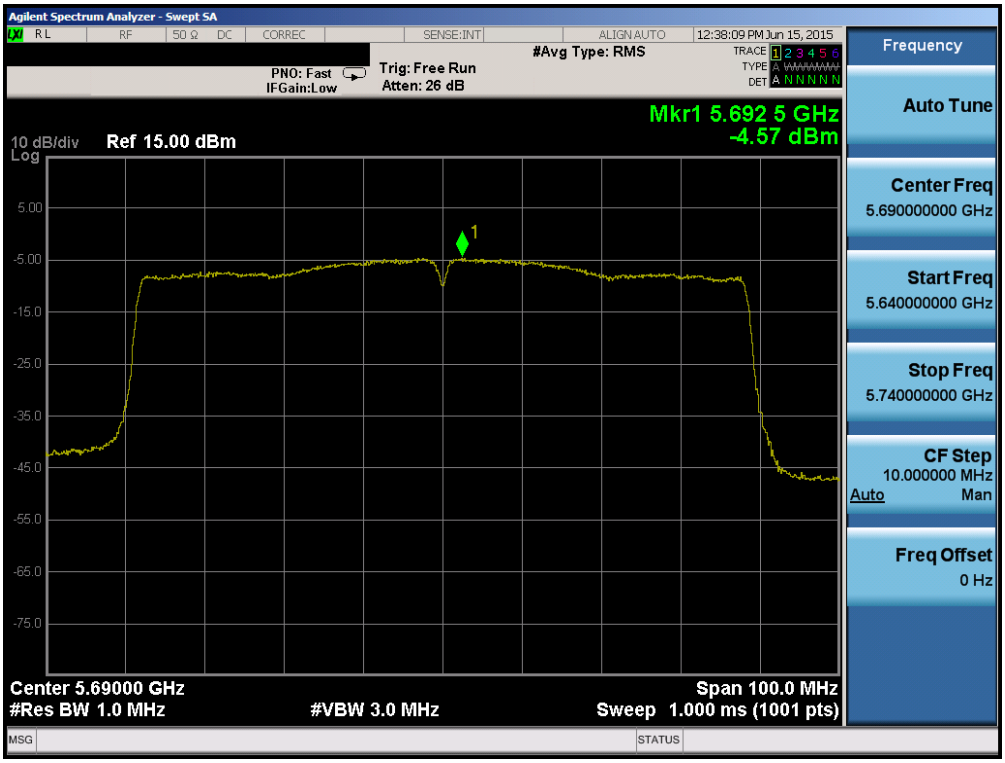
Plot 6-140. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 110)



Plot 6-141. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 142)



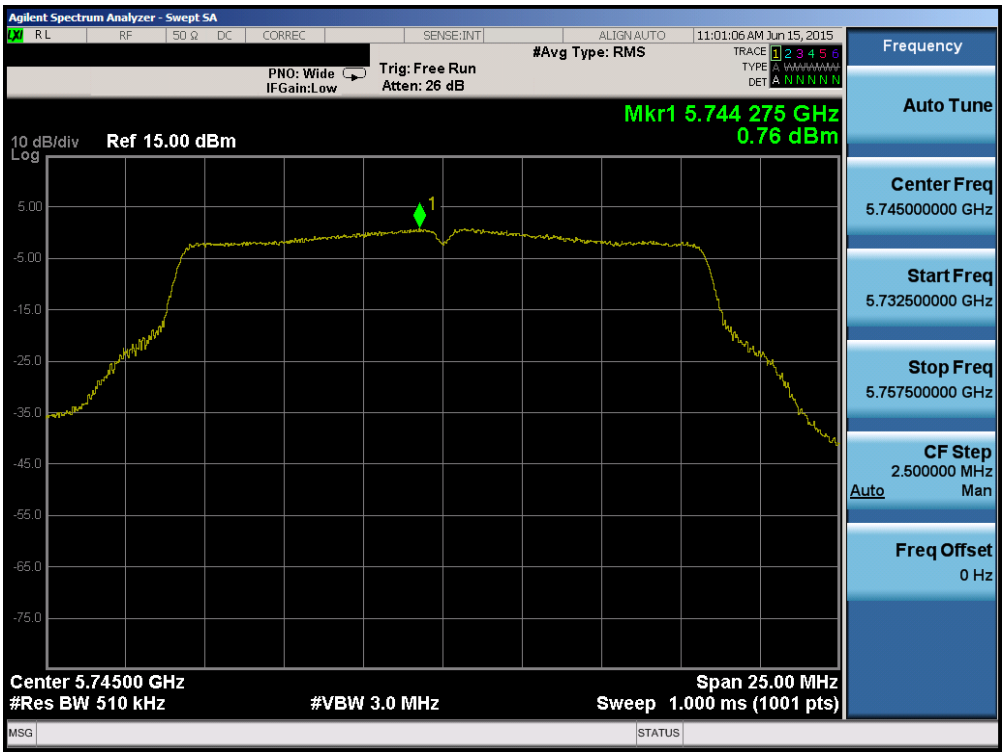
Plot 6-142. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 2C) – Ch. 106)



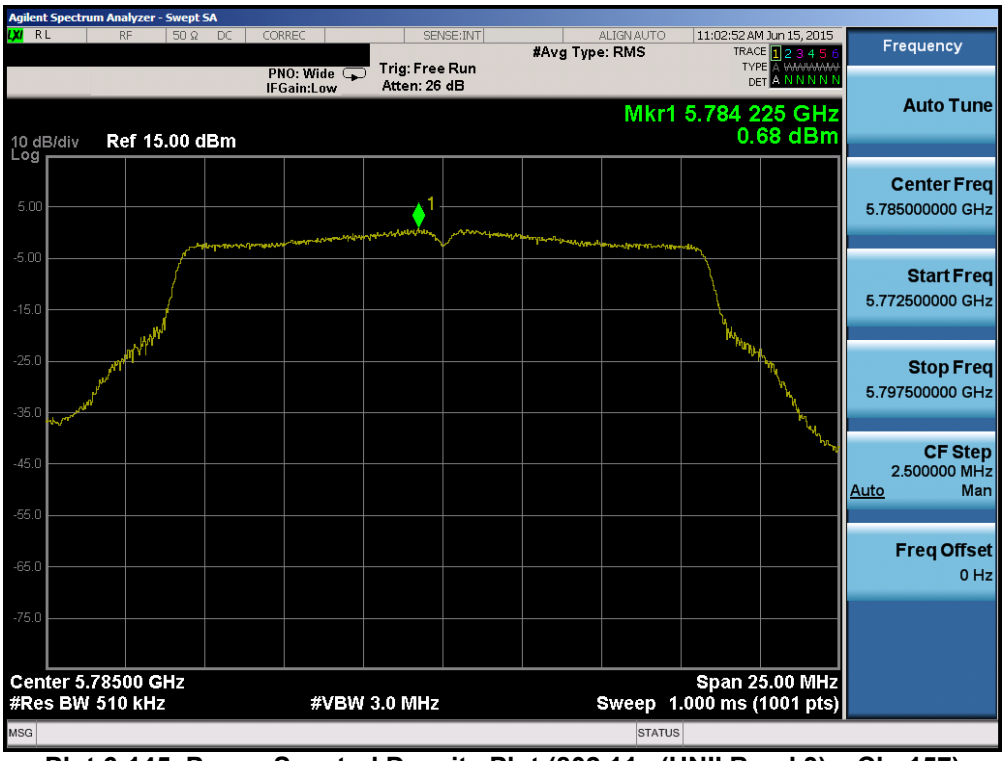
Plot 6-143. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 2C) – Ch. 138)

	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	0.76	30.0	-29.24	Pass
	5785	157	a	6	0.68	30.0	-29.32	Pass
	5825	165	a	6	0.25	30.0	-29.75	Pass
	5745	149	n (20MHz)	6.5/7.2 (MCS0)	0.58	30.0	-29.42	Pass
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	0.52	30.0	-29.48	Pass
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	0.47	30.0	-29.53	Pass
	5755	151	n (40MHz)	13.5/15 (MCS0)	-2.43	30.0	-32.43	Pass
	5795	159	n (40MHz)	13.5/15 (MCS0)	-2.71	30.0	-32.71	Pass
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	-7.33	30.0	-37.33	Pass

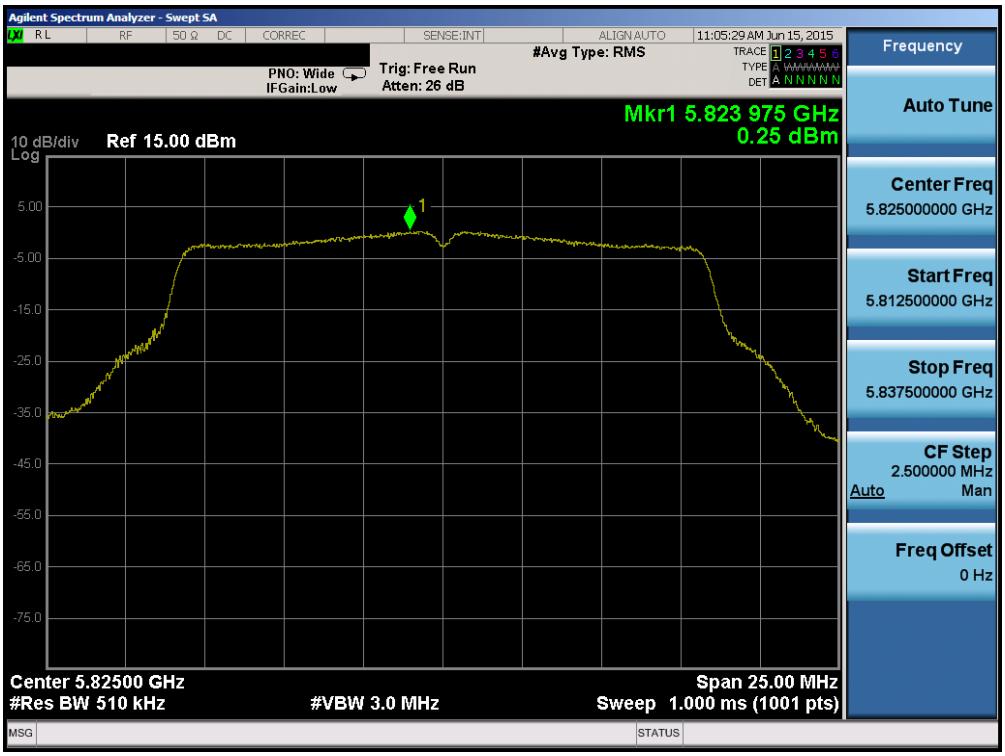
Table 6-20. Band 3 Conducted Power Spectral Density Measurements



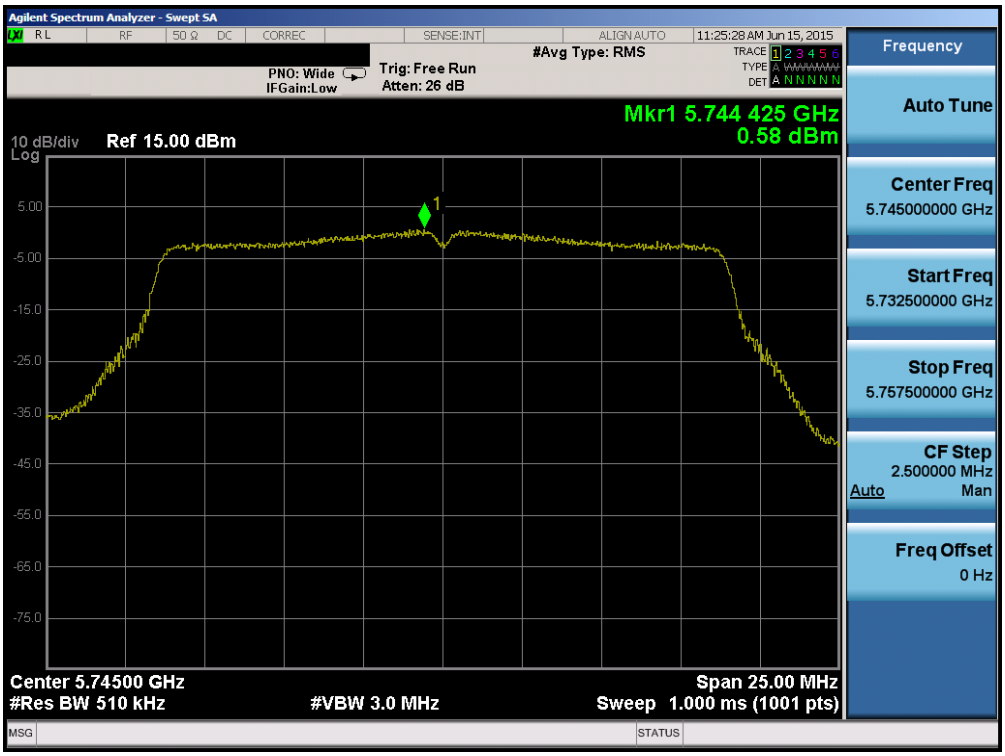
Plot 6-144. Power Spectral Density Plot (802.11a (UNII Band 3) – Ch. 149)



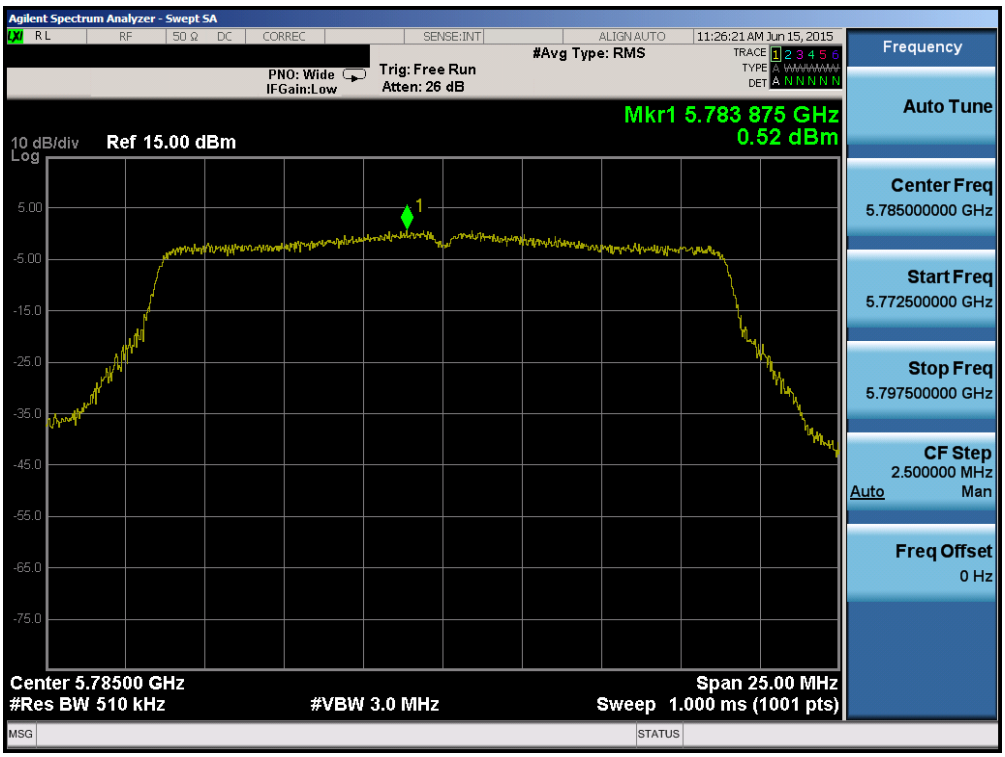
Plot 6-145. Power Spectral Density Plot (802.11a (UNII Band 3) – Ch. 157)



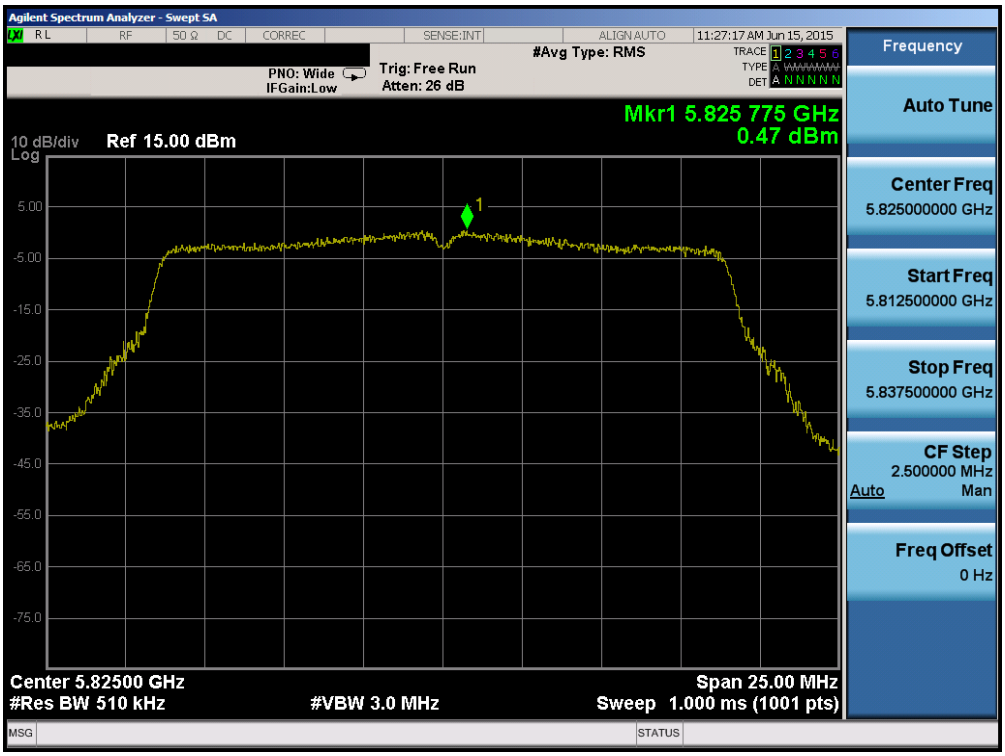
Plot 6-146. Power Spectral Density Plot (802.11a (UNII Band 3) – Ch. 165)



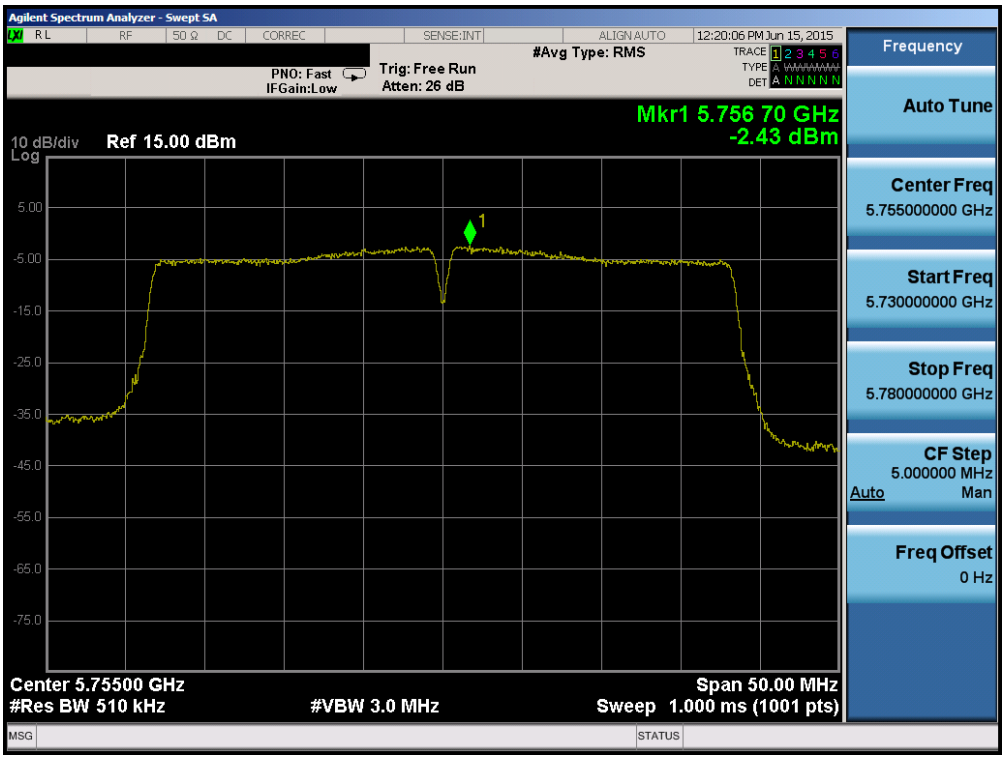
Plot 6-147. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 149)



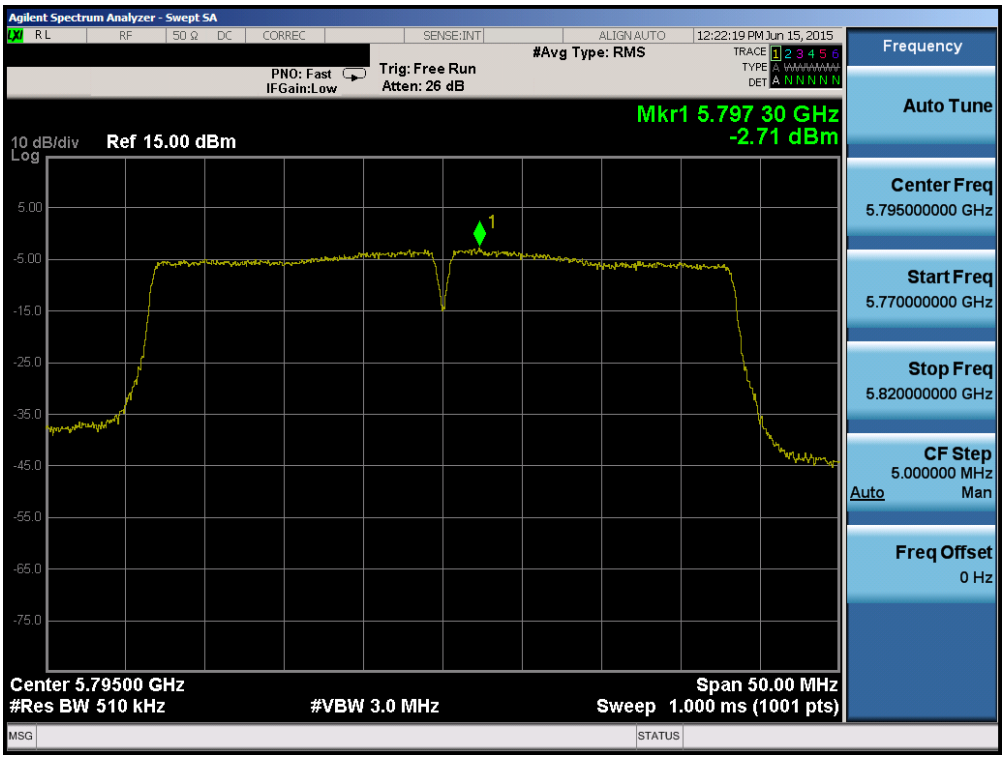
Plot 6-148. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 157)



Plot 6-149. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 165)



Plot 6-150. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 151)



Plot 6-151. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 159)

Plot 6-152. 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)	1.89	3.58	5.82	11.0	-5.18	Pass
	5200	40	n (20MHz)	6.5/7.2 (MCS0)	2.05	3.41	5.79	11.0	-5.21	Pass
	5240	48	n (20MHz)	6.5/7.2 (MCS0)	1.71	3.48	5.70	11.0	-5.30	Pass
	5190	38	n (40MHz)	13.5/15 (MCS0)	-2.00	0.54	2.46	11.0	-8.54	Pass
	5230	46	n (40MHz)	13.5/15 (MCS0)	-1.00	0.47	2.81	11.0	-8.19	Pass
	5210	42	ac (80MHz)	29.3/32.5 (MCS0)	-5.95	-3.85	-1.76	11.0	-12.76	Pass
Band 2A	5260	52	n (20MHz)	6.5/7.2 (MCS0)	1.85	3.57	5.80	11.0	-5.20	Pass
	5280	56	n (20MHz)	6.5/7.2 (MCS0)	1.93	3.55	5.82	11.0	-5.18	Pass
	5320	64	n (20MHz)	6.5/7.2 (MCS0)	2.56	3.03	5.81	11.0	-5.19	Pass
	5270	54	n (40MHz)	13.5/15 (MCS0)	-1.13	0.39	2.71	11.0	-8.29	Pass
	5310	62	n (40MHz)	13.5/15 (MCS0)	-2.32	-0.19	1.88	11.0	-9.12	Pass
	5290	58	ac (80MHz)	29.3/32.5 (MCS0)	-5.25	-3.89	-1.51	11.0	-12.51	Pass
Band 2C	5500	100	n (20MHz)	6.5/7.2 (MCS0)	3.11	3.51	6.32	11.0	-4.68	Pass
	5580	116	n (20MHz)	6.5/7.2 (MCS0)	2.87	2.87	5.88	11.0	-5.12	Pass
	5720	144	n (20MHz)	6.5/7.2 (MCS0)	2.67	3.16	5.93	11.0	-5.07	Pass
	5510	102	n (40MHz)	13.5/15 (MCS0)	-0.99	0.46	2.81	11.0	-8.19	Pass
	5550	110	n (40MHz)	13.5/15 (MCS0)	-1.50	-0.06	2.29	11.0	-8.71	Pass
	5710	142	n (40MHz)	13.5/15 (MCS0)	-1.28	0.62	2.78	11.0	-8.22	Pass
	5530	106	ac (80MHz)	29.3/32.5 (MCS0)	-6.45	-4.47	-2.33	11.0	-13.33	Pass
	5690	138	ac (80MHz)	29.3/32.5 (MCS0)	-5.75	-4.57	-2.11	11.0	-13.11	Pass

Table 6-21. 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)	0.40	0.58	3.50	30.0	-26.50	Pass
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	0.19	0.52	3.37	30.0	-26.63	Pass
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	0.31	0.47	3.40	30.0	-26.60	Pass
	5755	151	n (40MHz)	13.5/15 (MCS0)	-4.24	-2.43	-0.23	30.0	-30.23	Pass
	5795	159	n (40MHz)	13.5/15 (MCS0)	-4.00	-2.71	-0.30	30.0	-30.30	Pass
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	-8.30	-7.33	-4.78	30.0	-34.78	Pass

Table 6-22. 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 1.89 dBm for Antenna-1 and 3.58 dBm for Antenna-2.

Antenna 1 + Antenna 2 = MIMO

(1.89 dBm + 3.58 dBm) = (1.55 mW + 2.28 mW) = 3.82 mW = 5.82 dBm

6.6 Frequency Stability

§15.407(g)

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

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

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	5,179,999,829	-171	-0.00000330
100 %		- 30	5,179,999,997	-3	-0.00000006
100 %		- 20	5,179,999,974	-26	-0.00000050
100 %		- 10	5,179,999,880	-120	-0.00000232
100 %		0	5,179,999,957	-43	-0.00000083
100 %		+ 10	5,179,999,801	-199	-0.00000384
100 %		+ 20	5,179,999,832	-168	-0.00000325
100 %		+ 30	5,179,999,826	-174	-0.00000336
100 %		+ 40	5,179,999,970	-30	-0.00000058
100 %		+ 50	5,179,999,859	-141	-0.00000273
BATT. ENDPOINT	3.40	+ 20	5,179,999,978	-22	-0.00000042

Table 6-23. 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 -30°C and +50°C. The temperature was incremented by 10° intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded. Data for the worst case channel is shown below.

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

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	5,259,999,920	-80	-0.00000151
100 %		- 30	5,259,999,988	-12	-0.00000023
100 %		- 20	5,259,999,920	-80	-0.00000152
100 %		- 10	5,259,999,895	-105	-0.00000199
100 %		0	5,259,999,856	-144	-0.00000273
100 %		+ 10	5,259,999,869	-131	-0.00000249
100 %		+ 20	5,259,999,964	-36	-0.00000069
100 %		+ 30	5,259,999,956	-44	-0.00000083
100 %		+ 40	5,259,999,957	-43	-0.00000082
100 %		+ 50	5,259,999,961	-39	-0.00000074
BATT. ENDPOINT	3.40	+ 20	5,259,999,892	-108	-0.00000205

Table 6-24. 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 -30°C and +50°C. The temperature was incremented by 10° intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded. Data for the worst case channel is shown below.

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

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	5,499,999,873	-127	-0.00000231
100 %		- 30	5,499,999,935	-65	-0.00000118
100 %		- 20	5,499,999,809	-191	-0.00000348
100 %		- 10	5,499,999,885	-115	-0.00000208
100 %		0	5,499,999,964	-36	-0.00000066
100 %		+ 10	5,499,999,971	-29	-0.00000052
100 %		+ 20	5,499,999,819	-181	-0.00000329
100 %		+ 30	5,499,999,844	-156	-0.00000283
100 %		+ 40	5,499,999,878	-122	-0.00000221
100 %		+ 50	5,499,999,830	-170	-0.00000309
BATT. ENDPOINT	3.40	+ 20	5,499,999,993	-7	-0.00000013

Table 6-25. 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 -30°C and +50°C. The temperature was incremented by 10° intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded. Data for the worst case channel is shown below.

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

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	5,744,999,832	-168	-0.00000292
100 %		- 30	5,744,999,963	-37	-0.00000065
100 %		- 20	5,744,999,804	-196	-0.00000342
100 %		- 10	5,744,999,818	-182	-0.00000316
100 %		0	5,744,999,802	-198	-0.00000345
100 %		+ 10	5,744,999,944	-56	-0.00000098
100 %		+ 20	5,744,999,984	-16	-0.00000028
100 %		+ 30	5,744,999,815	-185	-0.00000323
100 %		+ 40	5,744,999,894	-106	-0.00000185
100 %		+ 50	5,744,999,803	-197	-0.00000343
BATT. ENDPOINT	3.40	+ 20	5,744,999,930	-70	-0.00000123

Table 6-26. 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.

6.7 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 v01, 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 6-27 per Section 15.209.

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

Table 6-27. Radiated Limits

Test Procedures Used

KDB 789033 D02 v01 – 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.

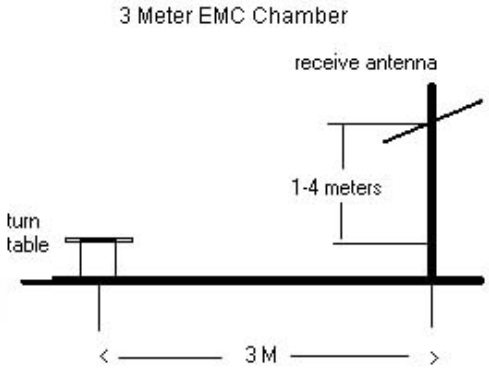


Figure 6-5. Test Instrument & Measurement Setup

Test Notes

1. All radiated spurious emissions levels were measured in a radiated test setup per the guidance of KDB 789033 D02 v01 Section H.
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 6-27.
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.

Sample Calculations

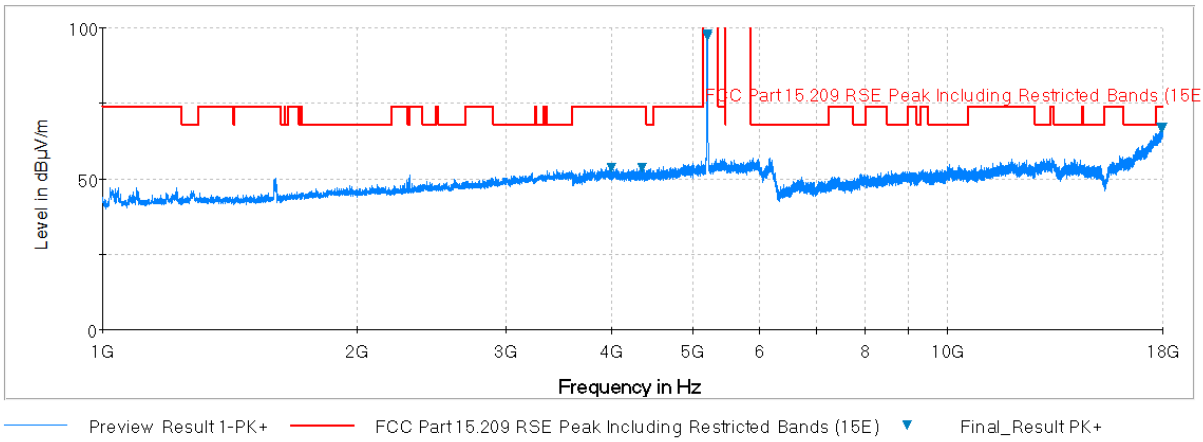
Determining Spurious Emissions Levels

- 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 $_{[dB\mu V/m]}$

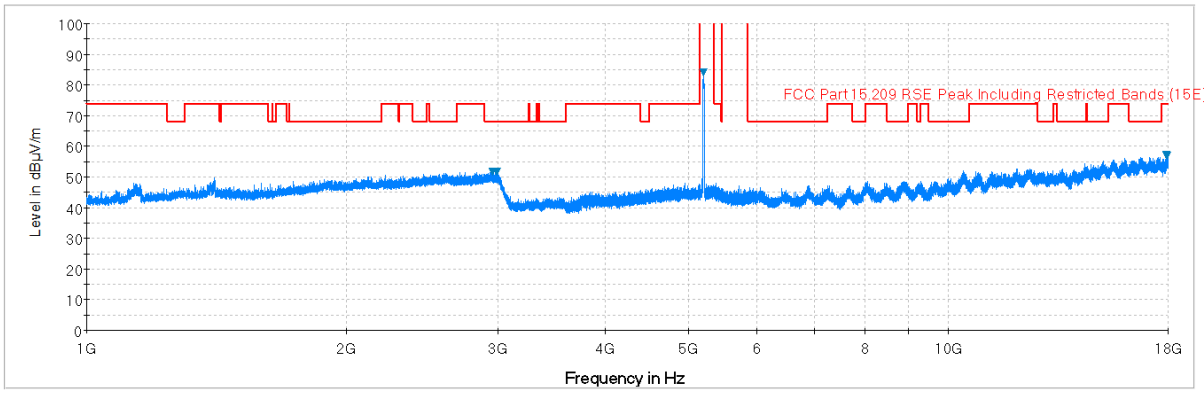
Radiated Band Edge Measurement Offset

- The amplitude offset shown in the radiated restricted band edge plots in Section 6.8 was calculated using the formula:
  Offset (dB) = (Antenna Factor + Cable Loss + 10 dB Attenuator) – Preamplifier Gain

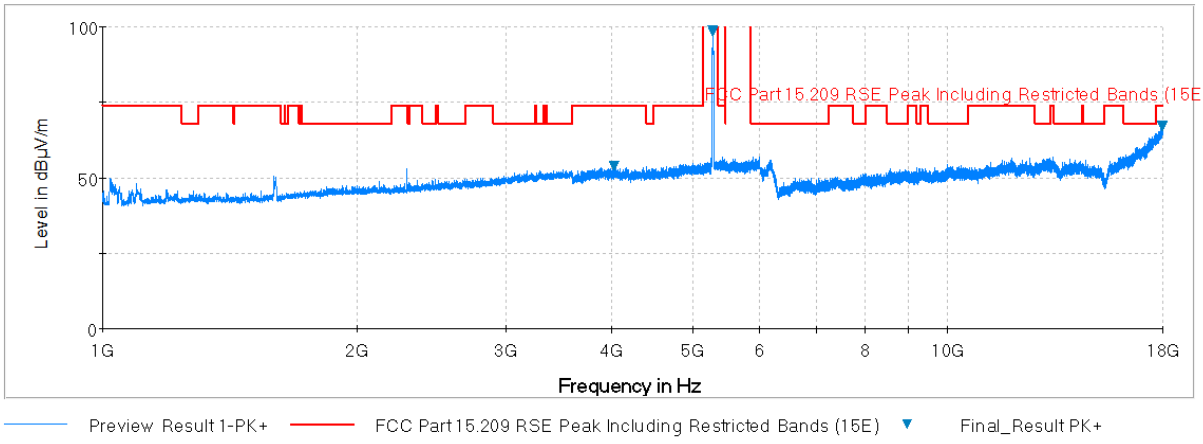
6.7.1 Antenna-1 Radiated Spurious Emission Measurements



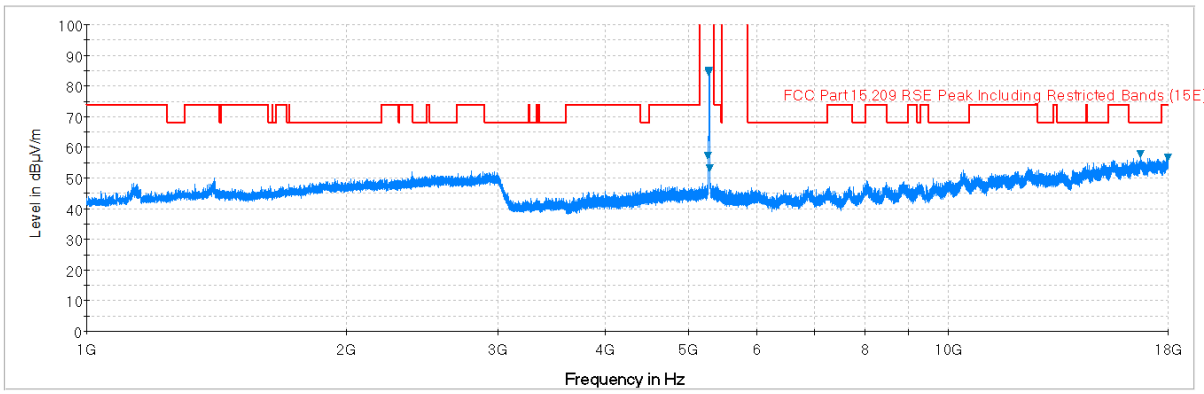
Plot 6-153. Radiated Spurious Plot above 1GHz (802.11a – U1 Ch. 40, Ant. Pol. H)



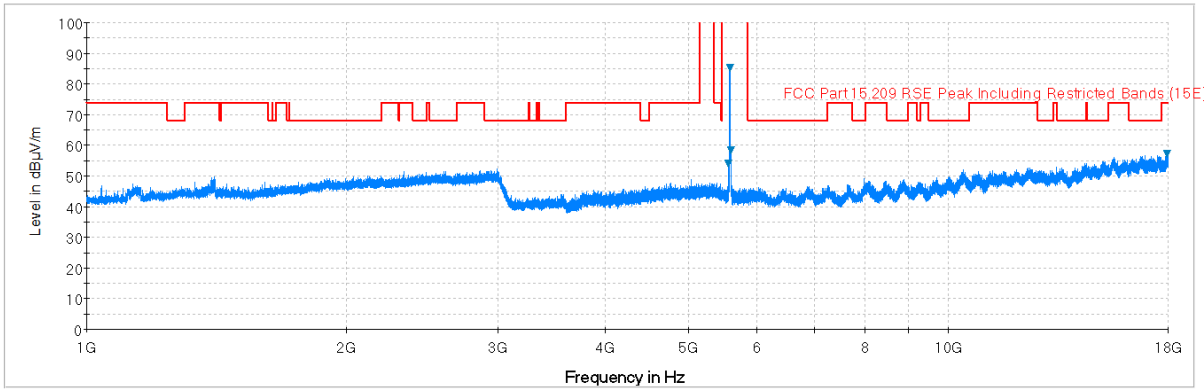
Plot 6-154. Radiated Spurious Plot above 1GHz (802.11a – U1 Ch. 40, Ant. Pol. V)



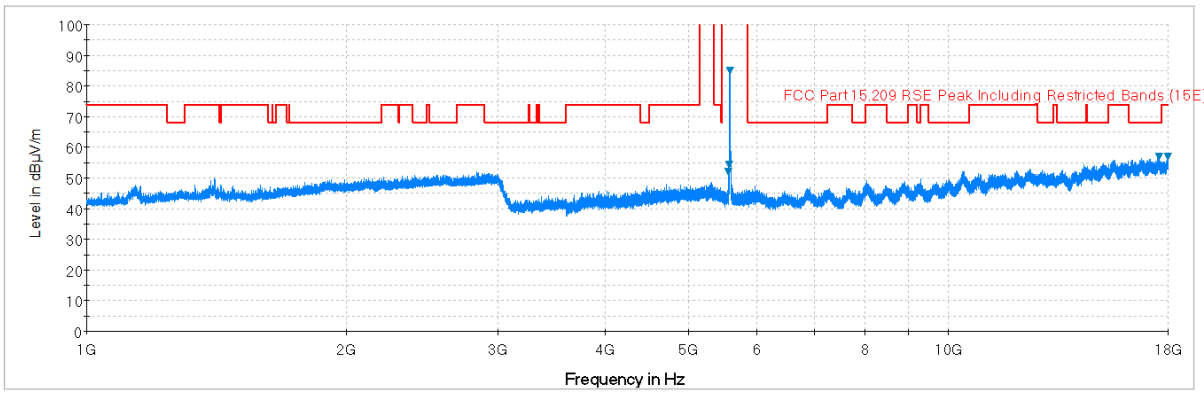
Plot 6-155. Radiated Spurious Plot above 1GHz (802.11a – U2A Ch. 56, Ant. Pol. H)



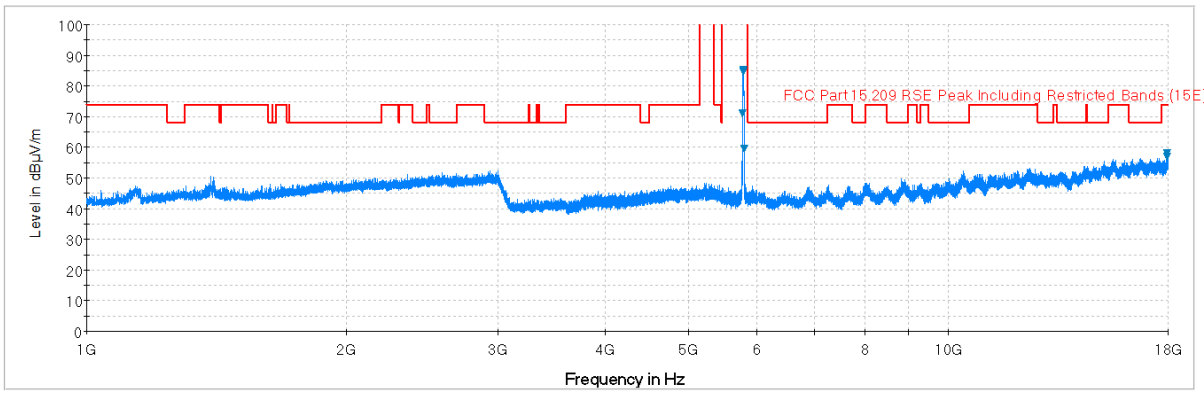
Plot 6-156. Radiated Spurious Plot above 1GHz (802.11a – U2A Ch. 56, Ant. Pol. V)



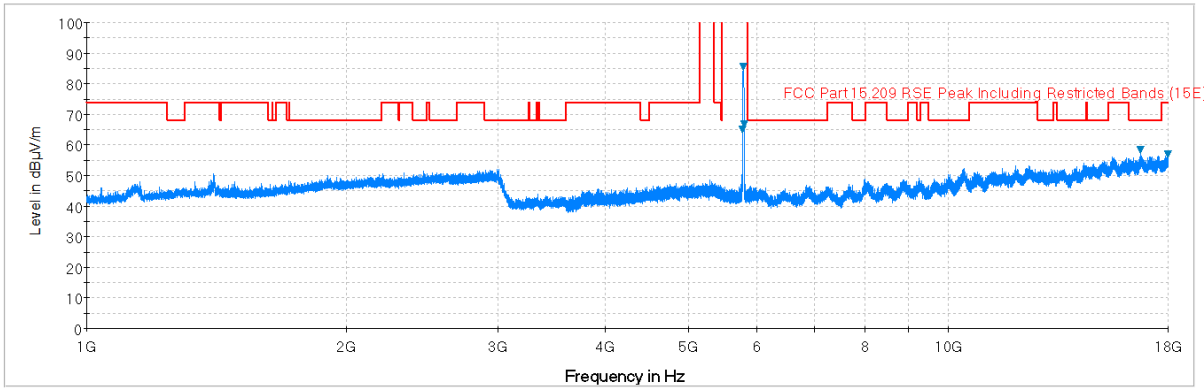
Plot 6-157. Radiated Spurious Plot above 1GHz (802.11a – U2C Ch. 116, Ant. Pol. H)



Plot 6-158. Radiated Spurious Plot above 1GHz (802.11a – U2C Ch. 116, Ant. Pol. V)

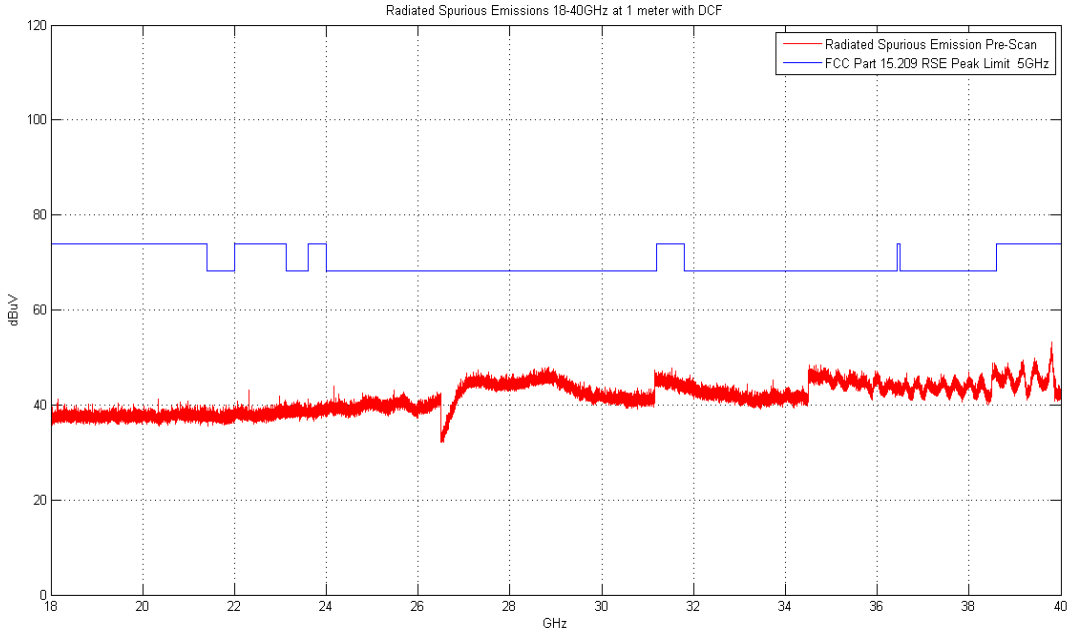


Plot 6-159. Radiated Spurious Plot above 1GHz (802.11a – U3 Ch. 157, Ant. Pol. H)

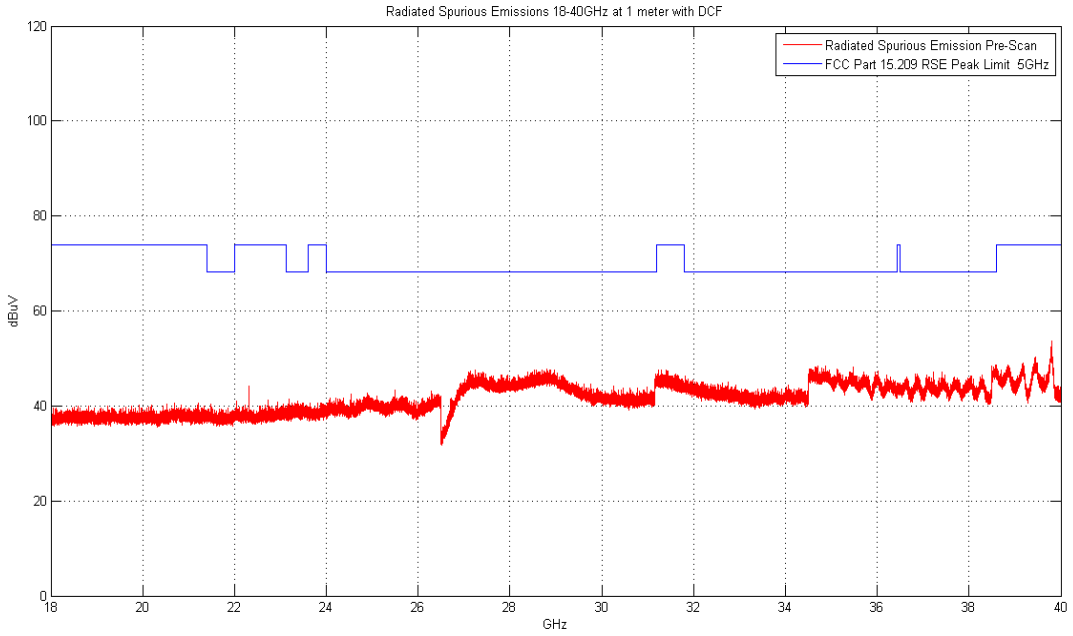


Plot 6-160. Radiated Spurious Plot above 1GHz (802.11a – U3 Ch. 157, Ant. Pol. V)

Antenna-1 Radiated Spurious Emissions Measurements (Above 18GHz)
§15.209



Plot 6-161. Radiated Spurious Plot above 18GHz (802.11a – Ant. Pol. H)



Plot 6-162. 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]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10360.00	-98.18	Peak	H	47.01	0.00	55.83	68.20	-12.37
*	15540.00	-111.77	Average	H	50.31	0.00	45.54	53.98	-8.44
*	15540.00	-99.99	Peak	H	50.31	0.00	57.32	73.98	-16.66
*	20720.00	-100.34	Average	H	48.79	-9.54	45.91	53.98	-8.07
*	20720.00	-95.14	Peak	H	48.79	-9.54	51.10	73.98	-22.88
	25900.00	-98.75	Peak	H	50.98	-9.54	49.69	68.20	-18.51

Table 6-28. 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]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10400.00	-97.84	Peak	H	46.83	0.00	55.99	68.20	-12.21
*	15600.00	-111.47	Average	H	50.36	0.00	45.89	53.98	-8.09
*	15600.00	-98.48	Peak	H	50.36	0.00	58.88	73.98	-15.10
*	20800.00	-101.33	Average	H	48.90	-9.54	45.03	53.98	-8.95
*	20800.00	-96.69	Peak	H	48.90	-9.54	49.67	73.98	-24.31
	26000.00	-98.44	Peak	H	51.05	-9.54	50.06	68.20	-18.14

Table 6-29. 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]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10480.00	-98.10	Peak	H	47.01	0.00	55.92	68.20	-12.28
*	15720.00	-111.61	Average	H	49.45	0.00	44.84	53.98	-9.14
*	15720.00	-99.92	Peak	H	49.45	0.00	56.53	73.98	-17.45
*	20960.00	-101.85	Average	H	49.09	-9.54	44.69	53.98	-9.29
*	20960.00	-97.27	Peak	H	49.09	-9.54	49.27	73.98	-24.71
	26200.00	-97.77	Peak	H	51.19	-9.54	50.87	68.20	-17.33

Table 6-30. Radiated Measurements

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

	Frequency [MHz]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10520.00	-98.02	Peak	H	47.08	0.00	56.06	68.20	-12.14
*	15780.00	-110.85	Average	H	49.15	0.00	45.30	53.98	-8.68
*	15780.00	-99.05	Peak	H	49.15	0.00	57.10	73.98	-16.88
*	21040.00	-100.83	Average	H	49.17	-9.54	45.80	53.98	-8.18
*	21040.00	-95.72	Peak	H	49.17	-9.54	50.91	73.98	-23.07
	26300.00	-97.09	Peak	H	51.26	-9.54	51.62	68.20	-16.58

Table 6-31. 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]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10560.00	-99.26	Peak	H	47.12	0.00	54.85	68.20	-13.35
*	15840.00	-112.01	Average	H	49.25	0.00	44.24	53.98	-9.73
*	15840.00	-99.79	Peak	H	49.25	0.00	56.46	73.98	-17.51
*	21120.00	-100.57	Average	H	49.24	-9.54	46.13	53.98	-7.85
*	21120.00	-96.76	Peak	H	49.24	-9.54	49.94	73.98	-24.04
	26400.00	-96.10	Peak	H	51.33	-9.54	52.69	68.20	-15.51

Table 6-32. 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]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	10640.00	-110.94	Average	H	47.16	0.00	43.23	53.98	-10.75
*	10640.00	-99.17	Peak	H	47.16	0.00	55.00	73.98	-18.98
*	15960.00	-112.00	Average	H	49.89	0.00	44.89	53.98	-9.09
*	15960.00	-100.06	Peak	H	49.89	0.00	56.83	73.98	-17.15
*	21280.00	-100.00	Average	H	49.36	-9.54	46.82	53.98	-7.16
*	21280.00	-97.00	Peak	H	49.36	-9.54	49.81	73.98	-24.16
	26600.00	-102.50	Peak	H	47.61	-9.54	42.57	68.20	-25.63

Table 6-33. Radiated Measurements

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

	Frequency [MHz]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11000.00	-105.01	Average	H	47.30	0.00	49.29	53.98	-4.69
*	11000.00	-96.23	Peak	H	47.30	0.00	58.07	73.98	-15.91
	16500.00	-99.33	Peak	H	52.15	0.00	59.82	68.20	-8.38
	22000.00	-94.81	Peak	H	49.39	-9.54	52.04	68.20	-16.16
	27500.00	-105.32	Peak	H	47.97	-9.54	40.11	68.20	-28.09

Table 6-34. Radiated Measurements

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

	Frequency [MHz]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11160.00	-104.25	Average	H	47.72	0.00	50.47	53.98	-3.51
*	11160.00	-97.10	Peak	H	47.72	0.00	57.62	73.98	-16.36
	16740.00	-99.33	Peak	H	52.70	0.00	60.37	68.20	-7.83
*	22320.00	-98.87	Average	H	49.84	-9.54	48.42	53.98	-5.56
*	22320.00	-94.82	Peak	H	49.84	-9.54	52.48	73.98	-21.50
	27900.00	-105.38	Peak	H	48.08	-9.54	40.16	68.20	-28.04

Table 6-35. 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]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11440.00	-104.53	Average	H	48.27	0.00	50.74	53.98	-3.24
*	11440.00	-96.75	Peak	H	48.27	0.00	58.52	73.98	-15.46
	17160.00	-99.61	Peak	H	55.06	0.00	62.46	68.20	-5.74
*	22880.00	-101.97	Average	H	50.03	-9.54	45.51	53.98	-8.47
*	22880.00	-96.52	Peak	H	50.03	-9.54	50.96	73.98	-23.02
	28600.00	-105.00	Peak	H	48.29	-9.54	40.75	68.20	-27.45

Table 6-36. 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]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11440.00	-110.56	Average	H	48.27	0.00	44.71	53.98	-9.27
*	11440.00	-98.39	Peak	H	48.27	0.00	56.88	73.98	-17.10
	17160.00	-98.92	Peak	H	55.06	0.00	63.15	68.20	-5.05
	22880.00	-96.59	Average	H	50.03	-9.54	50.89	53.98	-3.09
	22880.00	-90.86	Peak	H	50.03	-9.54	56.62	73.98	-17.36
	28600.00	-121.33	Peak	H	48.29	-9.54	24.42	68.20	-43.78

Table 6-37. 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]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11490.00	-106.96	Average	H	48.41	0.00	48.46	53.98	-5.52
*	11490.00	-98.26	Peak	H	48.41	0.00	57.16	73.98	-16.82
	17235.00	-98.72	Peak	H	55.55	0.00	63.83	68.20	-4.37
*	22980.00	-99.97	Average	H	50.04	-9.54	47.53	53.98	-6.45
*	22980.00	-94.68	Peak	H	50.04	-9.54	52.81	73.98	-21.17
	28725.00	-105.06	Peak	H	48.26	-9.54	40.66	68.20	-27.54

Table 6-38. 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]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11570.00	-105.32	Average	H	48.72	0.00	50.40	53.98	-3.58
*	11570.00	-95.43	Peak	H	48.72	0.00	60.29	73.98	-13.69
	17355.00	-99.69	Peak	H	56.11	0.00	63.41	68.20	-4.79
	23140.00	-94.98	Peak	H	50.11	-9.54	52.59	68.20	-15.61
	28925.00	-103.74	Peak	H	48.29	-9.54	42.01	68.20	-26.19

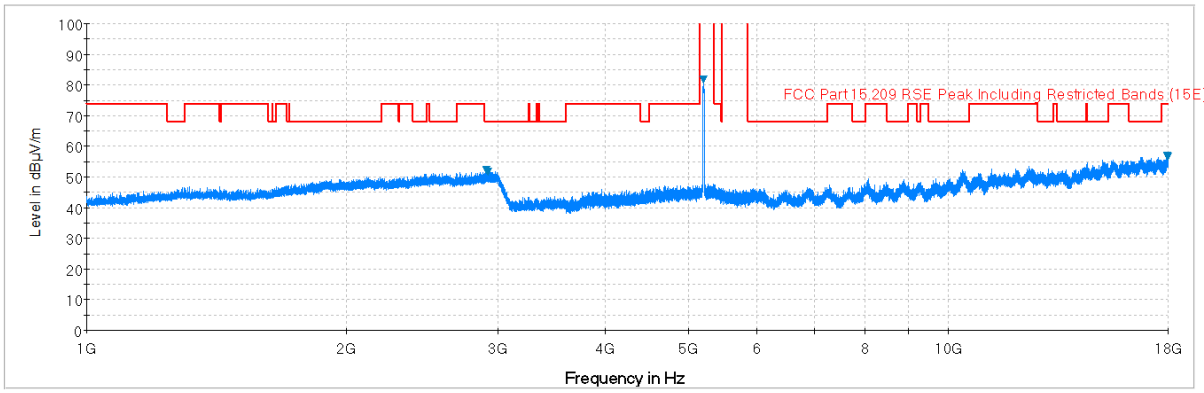
Table 6-39. Radiated Measurements

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

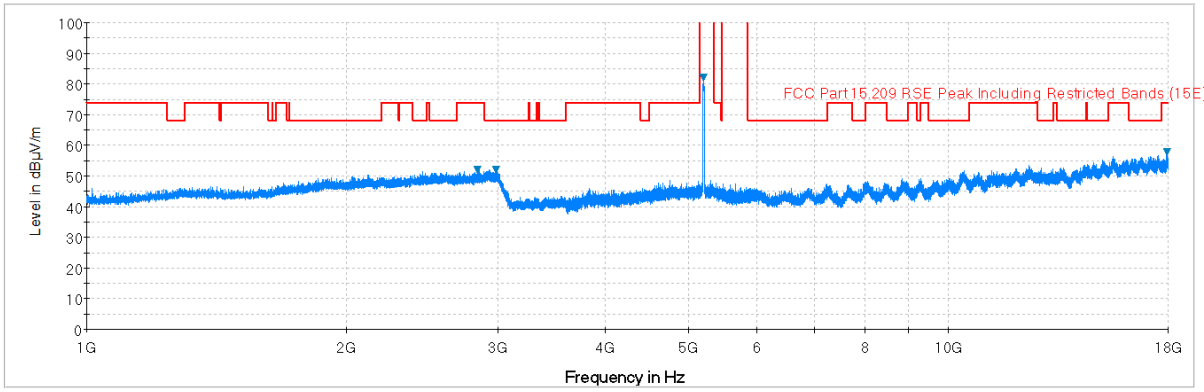
	Frequency [MHz]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11650.00	-108.92	Average	H	48.84	0.00	46.93	53.98	-7.05
*	11650.00	-96.38	Peak	H	48.84	0.00	59.47	73.98	-14.51
	17475.00	-100.02	Peak	H	57.52	0.00	64.50	68.20	-3.70
	23300.00	-94.87	Peak	H	50.13	-9.54	52.72	68.20	-15.48
	29125.00	-104.26	Peak	H	48.28	-9.54	41.49	68.20	-26.71

Table 6-40. Radiated Measurements

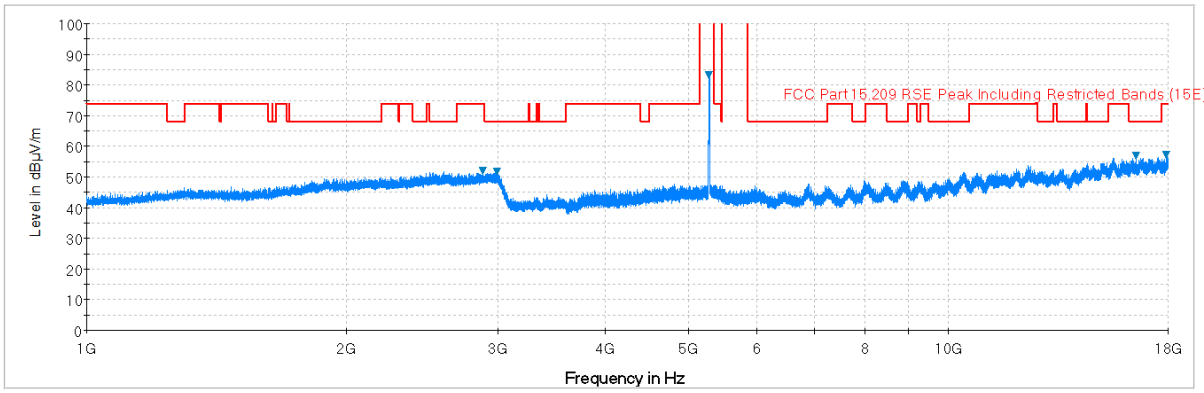
6.7.2 Antenna-2 Radiated Spurious Emission Measurements



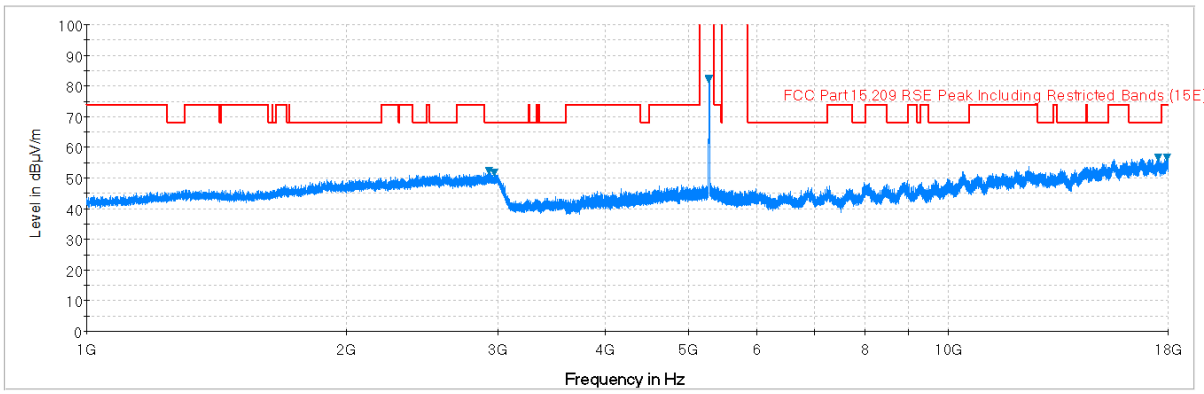
Plot 6-163. Radiated Spurious Plot above 1GHz (802.11a – U1 Ch. 40, Ant. Pol. H)



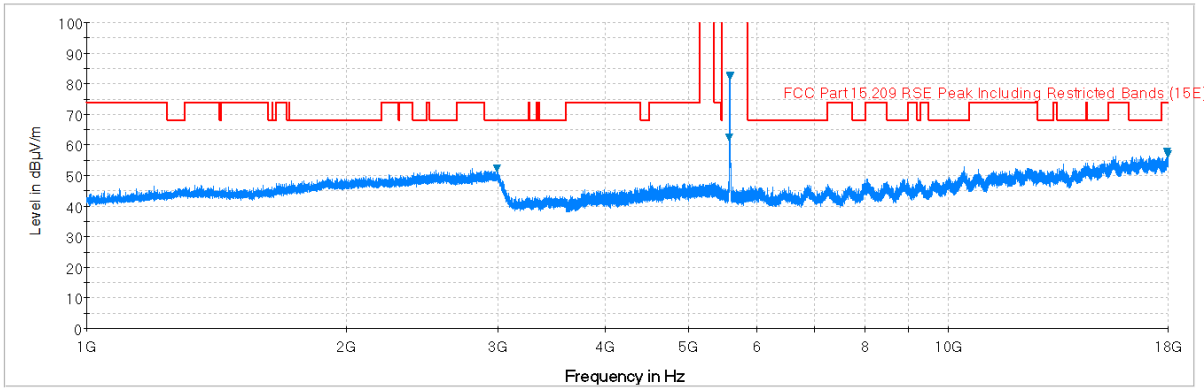
Plot 6-164. Radiated Spurious Plot above 1GHz (802.11a – U1 Ch. 40, Ant. Pol. V)



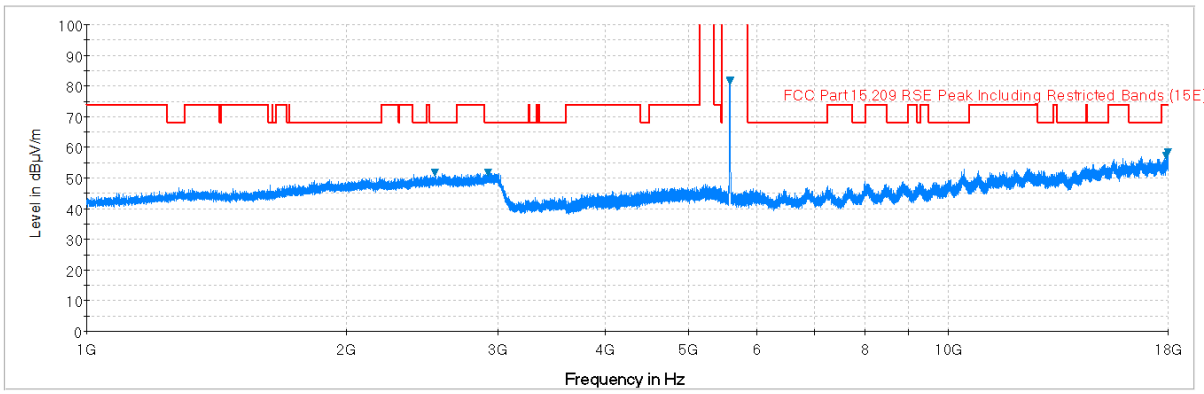
Plot 6-165. Radiated Spurious Plot above 1GHz (802.11a – U2A Ch. 56, Ant. Pol. H)



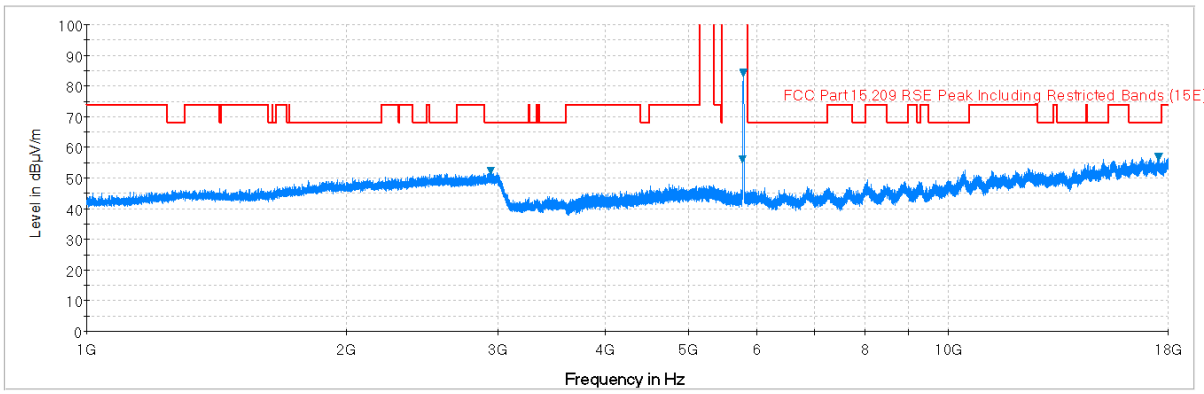
Plot 6-166. Radiated Spurious Plot above 1GHz (802.11a – U2A Ch. 56, Ant. Pol. V)



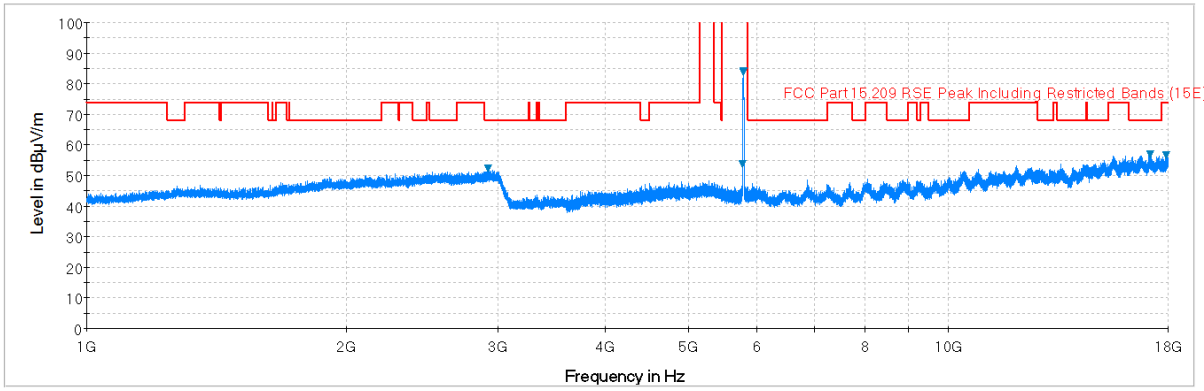
Plot 6-167. Radiated Spurious Plot above 1GHz (802.11a – U2C Ch. 116, Ant. Pol. H)



Plot 6-168. Radiated Spurious Plot above 1GHz (802.11a – U2C Ch. 116, Ant. Pol. V)

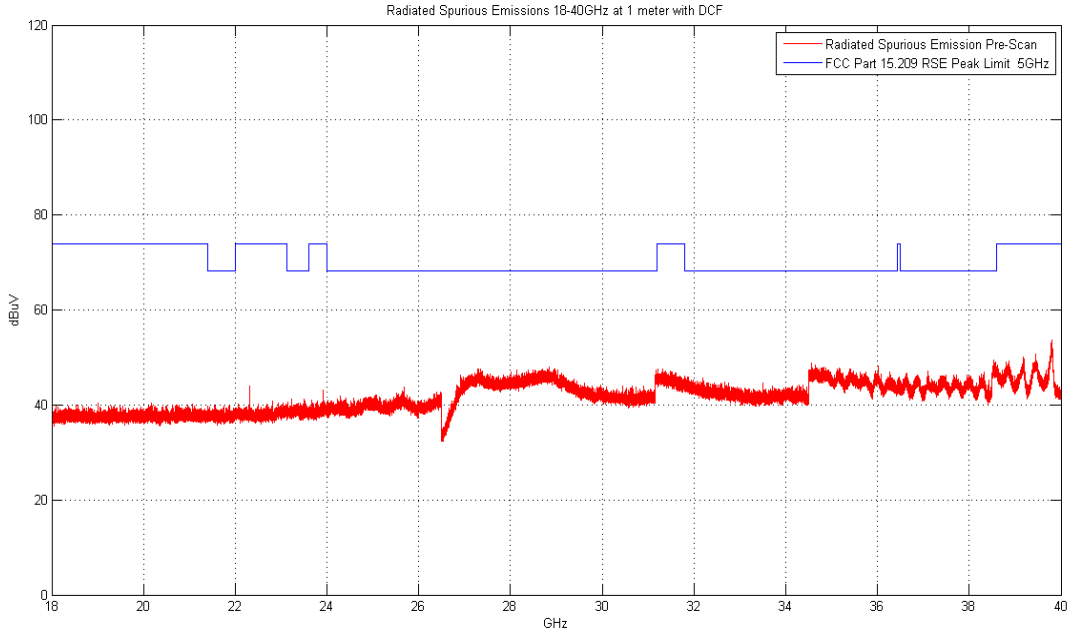


Plot 6-169. Radiated Spurious Plot above 1GHz (802.11a – U3 Ch. 157, Ant. Pol. H)

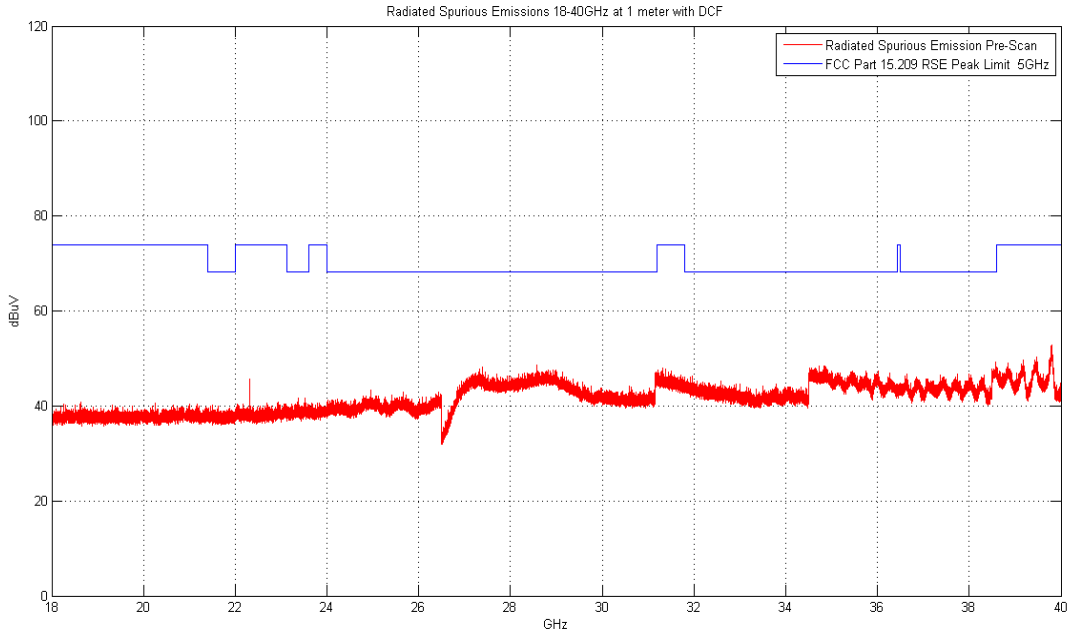


Plot 6-170. Radiated Spurious Plot above 1GHz (802.11a – U3 Ch. 157, Ant. Pol. V)

Antenna-2 Radiated Spurious Emissions Measurements (Above 18GHz)
§15.209



Plot 6-171. Radiated Spurious Plot above 18GHz (802.11a – Ant. Pol. H)



Plot 6-172. 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]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10360.00	-97.01	Peak	H	47.01	0.00	57.00	68.20	-11.20
*	15540.00	-112.03	Average	H	50.31	0.00	45.28	53.98	-8.70
*	15540.00	-100.24	Peak	H	50.31	0.00	57.07	73.98	-16.91
*	20720.00	-96.90	Average	H	48.79	-9.54	49.35	53.98	-4.63
*	20720.00	-92.70	Peak	H	48.79	-9.54	53.54	73.98	-20.44
	25900.00	-98.33	Peak	H	50.98	-9.54	50.11	68.20	-18.09

Table 6-41. 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]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10400.00	-98.31	Peak	H	46.83	0.00	55.52	68.20	-12.68
*	15600.00	-111.86	Average	H	50.36	0.00	45.50	53.98	-8.48
*	15600.00	-100.21	Peak	H	50.36	0.00	57.15	73.98	-16.83
*	20800.00	-97.69	Average	H	48.90	-9.54	48.67	53.98	-5.31
*	20800.00	-93.62	Peak	H	48.90	-9.54	52.74	73.98	-21.24
	26000.00	-99.28	Peak	H	51.05	-9.54	49.22	68.20	-18.98

Table 6-42. 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]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10480.00	-98.64	Peak	H	47.01	0.00	55.38	68.20	-12.82
*	15720.00	-112.06	Average	H	49.45	0.00	44.39	53.98	-9.59
*	15720.00	-100.34	Peak	H	49.45	0.00	56.11	73.98	-17.87
*	20960.00	-96.54	Average	H	49.09	-9.54	50.01	53.98	-3.97
*	20960.00	-93.66	Peak	H	49.09	-9.54	52.88	73.98	-21.10
	26200.00	-96.64	Peak	H	51.19	-9.54	52.00	68.20	-16.20

Table 6-43. Radiated Measurements

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

	Frequency [MHz]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10520.00	-96.55	Peak	H	47.08	0.00	57.53	68.20	-10.67
*	15780.00	-112.26	Average	H	49.15	0.00	43.89	53.98	-10.09
*	15780.00	-100.77	Peak	H	49.15	0.00	55.38	73.98	-18.60
*	21040.00	-96.94	Average	H	49.17	-9.54	49.69	53.98	-4.29
*	21040.00	-93.13	Peak	H	49.17	-9.54	53.50	73.98	-20.48
	26300.00	-96.26	Peak	H	51.26	-9.54	52.45	68.20	-15.75

Table 6-44. 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]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10560.00	-97.41	Peak	H	47.12	0.00	56.70	68.20	-11.50
*	15840.00	-113.01	Average	H	49.25	0.00	43.24	53.98	-10.73
*	15840.00	-101.30	Peak	H	49.25	0.00	54.95	73.98	-19.02
*	21120.00	-96.70	Average	H	49.24	-9.54	50.00	53.98	-3.98
*	21120.00	-93.63	Peak	H	49.24	-9.54	53.07	73.98	-20.91
	26400.00	-95.88	Peak	H	51.33	-9.54	52.91	68.20	-15.29

Table 6-45. 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]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	10640.00	-110.25	Average	H	47.16	0.00	43.92	53.98	-10.06
*	10640.00	-99.12	Peak	H	47.16	0.00	55.05	73.98	-18.93
*	15960.00	-111.79	Average	H	49.89	0.00	45.10	53.98	-8.88
*	15960.00	-99.73	Peak	H	49.89	0.00	57.16	73.98	-16.82
*	21280.00	-96.32	Average	H	49.36	-9.54	50.50	53.98	-3.48
*	21280.00	-94.07	Peak	H	49.36	-9.54	52.74	73.98	-21.23
	26600.00	-103.13	Peak	H	47.61	-9.54	41.94	68.20	-26.26

Table 6-46. Radiated Measurements

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

	Frequency [MHz]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11000.00	-110.34	Average	H	47.30	0.00	43.96	53.98	-10.02
*	11000.00	-97.83	Peak	H	47.30	0.00	56.47	73.98	-17.51
	16500.00	-99.93	Peak	H	52.15	0.00	59.22	68.20	-8.98
	22000.00	-94.00	Peak	H	49.39	-9.54	52.85	68.20	-15.35
	27500.00	-104.30	Peak	H	47.97	-9.54	41.13	68.20	-27.07

Table 6-47. Radiated Measurements

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

	Frequency [MHz]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11160.00	-109.32	Average	H	47.72	0.00	45.40	53.98	-8.58
*	11160.00	-98.60	Peak	H	47.72	0.00	56.12	73.98	-17.86
	16740.00	-99.56	Peak	H	52.70	0.00	60.14	68.20	-8.06
*	22320.00	-99.20	Average	H	49.84	-9.54	48.09	53.98	-5.89
*	22320.00	-95.42	Peak	H	49.84	-9.54	51.88	73.98	-22.10
	27900.00	-105.38	Peak	H	48.08	-9.54	40.16	68.20	-28.04

Table 6-48. 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]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11440.00	-108.46	Average	H	48.27	0.00	46.81	53.98	-7.17
*	11440.00	-97.65	Peak	H	48.27	0.00	57.62	73.98	-16.36
	17160.00	-99.27	Peak	H	55.06	0.00	62.80	68.20	-5.40
*	22880.00	-101.15	Average	H	50.03	-9.54	46.33	53.98	-7.65
*	22880.00	-97.06	Peak	H	50.03	-9.54	50.42	73.98	-23.56
	28600.00	-105.33	Peak	H	48.29	-9.54	40.42	68.20	-27.78

Table 6-49. Radiated Measurements

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

	Frequency [MHz]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11490.00	-107.51	Average	H	48.41	0.00	47.91	53.98	-6.07
*	11490.00	-96.07	Peak	H	48.41	0.00	59.35	73.98	-14.63
	17235.00	-98.93	Peak	H	55.55	0.00	63.62	68.20	-4.58
*	22980.00	-101.02	Average	H	50.04	-9.54	46.48	53.98	-7.50
*	22980.00	-96.78	Peak	H	50.04	-9.54	50.71	73.98	-23.27
	28725.00	-104.45	Peak	H	48.26	-9.54	41.27	68.20	-26.93

Table 6-50. 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]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11570.00	-106.72	Average	H	48.72	0.00	49.00	53.98	-4.98
*	11570.00	-95.44	Peak	H	48.72	0.00	60.28	73.98	-13.70
	17355.00	-98.96	Peak	H	56.11	0.00	64.14	68.20	-4.06
	23140.00	-95.38	Peak	H	50.11	-9.54	52.19	68.20	-16.01
	28925.00	-103.69	Peak	H	48.29	-9.54	42.06	68.20	-26.14

Table 6-51. 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]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11650.00	-108.12	Average	H	48.84	0.00	47.73	53.98	-6.25
*	11650.00	-95.03	Peak	H	48.84	0.00	60.82	73.98	-13.16
	17475.00	-99.99	Peak	H	57.52	0.00	64.53	68.20	-3.67
	23300.00	-94.32	Peak	H	50.13	-9.54	53.27	68.20	-14.93
	29125.00	-105.14	Peak	H	48.28	-9.54	40.61	68.20	-27.59

Table 6-52. 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]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11650.00	-108.12	Average	H	48.84	0.00	47.73	53.98	-6.25
*	11650.00	-95.03	Peak	H	48.84	0.00	60.82	73.98	-13.16
	17475.00	-99.99	Peak	H	57.52	0.00	64.53	68.20	-3.67
	23300.00	-94.32	Peak	H	50.13	-9.54	53.27	68.20	-14.93
	29125.00	-105.14	Peak	H	48.28	-9.54	40.61	68.20	-27.59

Table 6-53. 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]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11650.00	-109.32	Average	H	48.84	0.00	46.53	53.98	-7.45
*	11650.00	-97.34	Peak	H	48.84	0.00	58.51	73.98	-15.47
	17475.00	-99.94	Peak	H	57.52	0.00	64.58	68.20	-3.62
	23300.00	-90.73	Peak	H	50.13	-9.54	56.86	68.20	-11.34
	29125.00	-121.22	Peak	H	48.28	-9.54	24.53	68.20	-43.67

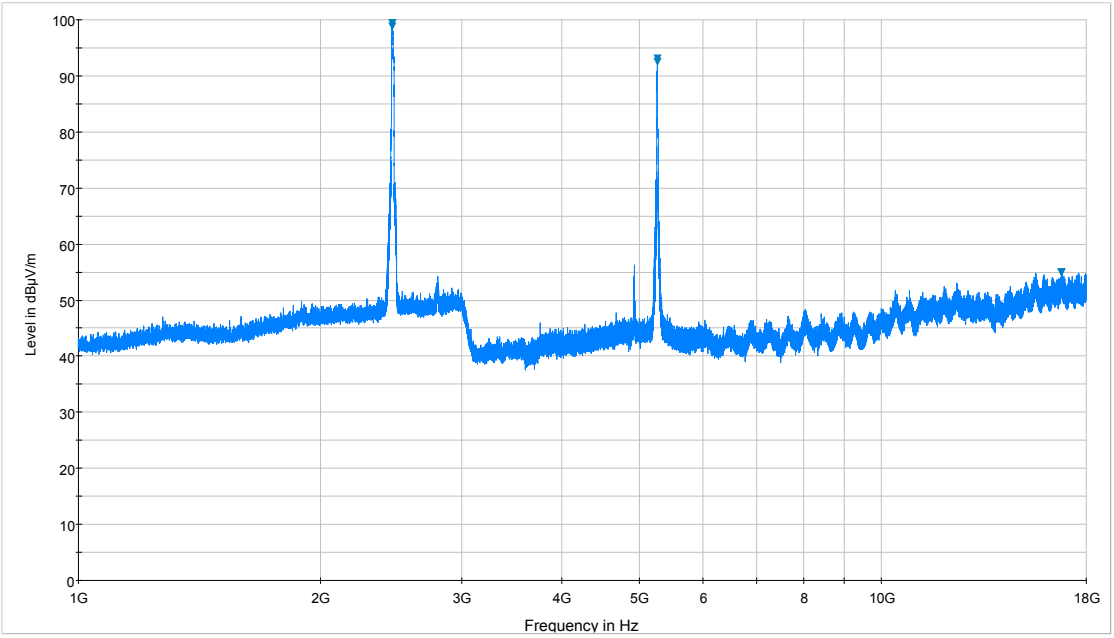
Table 6-54. Radiated Measurements with WCP

6.7.3 SIMULTANEOUS TX Radiated Spurious Emissions Measurements (Above 1GHz)

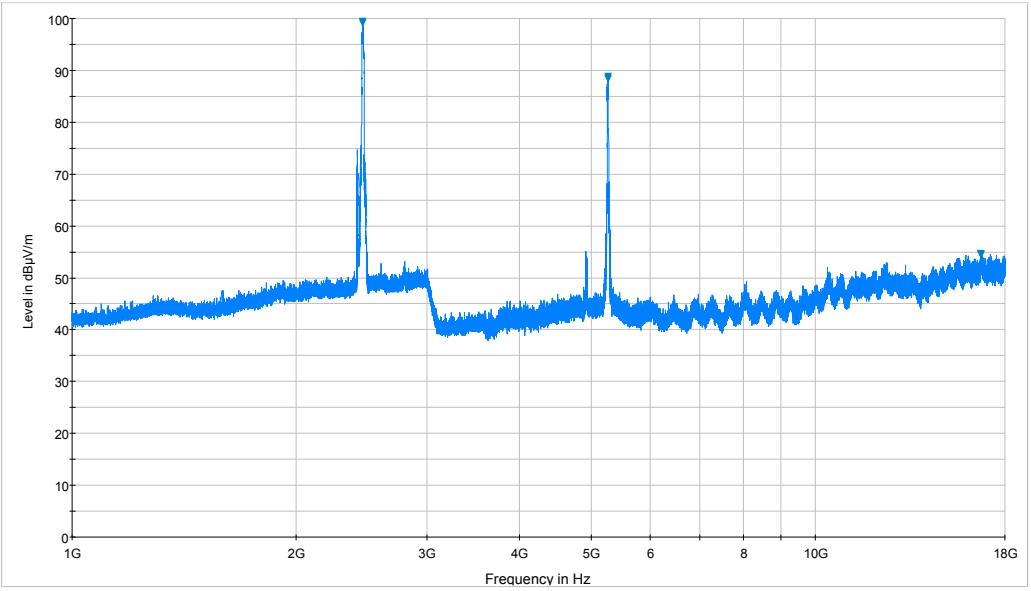
§15.209

Description	2.4 GHz Emission	5 GHz Emisison
Antenna	1	2
Channel	11	100
Operating Frequency(MHz)	2462	5500
Data Rate (Mbps)	1	6
Mode	802.11b	802.11a

Table 6-55. SIMULTANEOUS TX Config-1



Plot 6-173. Radiated Spurious Plot above 1GHz (SIMULTANEOUS TX Config-1, Ant. Pol. H)



Plot 6-174. Radiated Spurious Plot above 1GHz (SIMULTANEOUS TX Config-1, Ant. Pol. V)

	Frequency [MHz]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	2798.00	-103.59	Avg	H	41.70	38.39	53.98	-15.59
*	2798.00	-95.92	Peak	H	41.70	48.55	73.98	-25.43
*	4924.00	-101.32	Avg	H	41.05	37.40	53.98	-16.58
*	4924.00	-94.00	Peak	H	41.05	49.01	73.98	-24.97
*	7722.00	-111.68	Avg	H	44.56	41.32	53.98	-12.66
*	7722.00	-99.88	Peak	H	44.56	53.33	73.98	-20.65
*	8058.00	-101.32	Avg	H	45.13	41.00	53.98	-12.98
*	8058.00	-94.00	Peak	H	45.13	52.93	73.98	-21.05
	10184.00	-111.68	Peak	H	47.22	52.49	68.20	-15.71
	12982.00	-99.88	Peak	H	50.87	56.41	68.20	-11.79

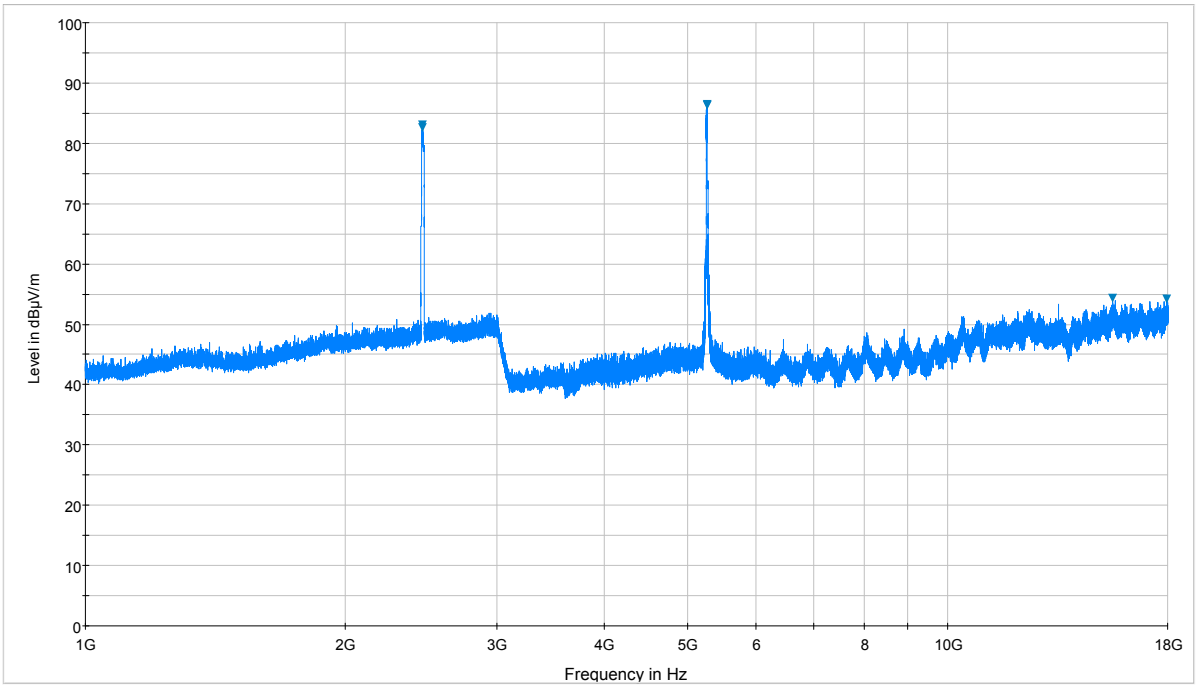
Table 6-56. Radiated Measurements SIMULTANEOUS TX Config-1

SIMULTANEOUS TX Radiated Spurious Emissions Measurements (Above 1GHz)

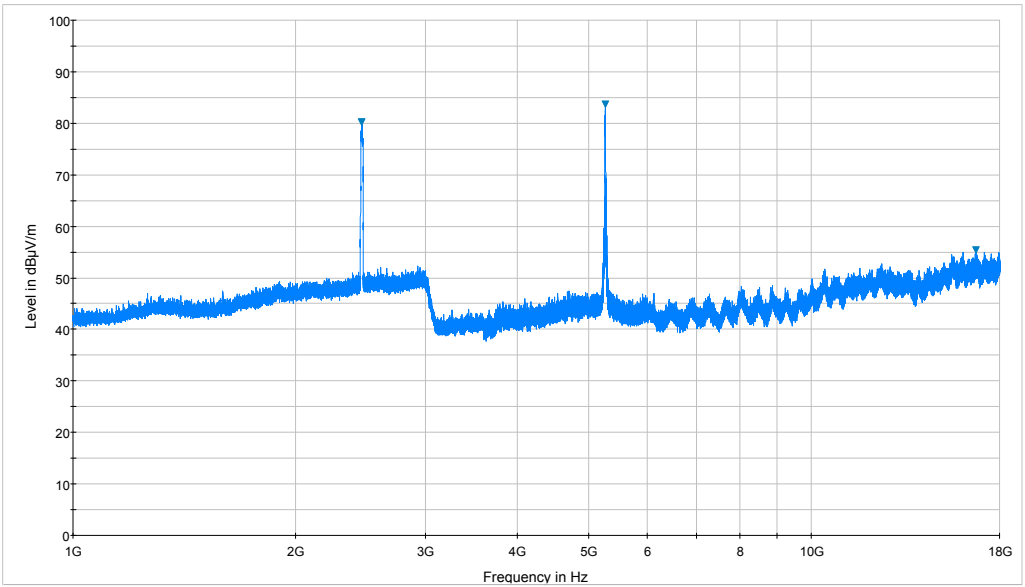
§15.209

Description	5 GHz Emisison	2.4 GHz Emission
Antenna	1	2
Channel	100	11
Operating Frequency(MHz)	5500	2462
Data Rate (Mbps)	6	1
Mode	802.11a	802.11b

Table 6-57. SIMULTANEOUS TX Config-2



Plot 6-175. Radiated Spurious Plot above 1GHz (SIMULTANEOUS TX Config-2, Ant. Pol. H)

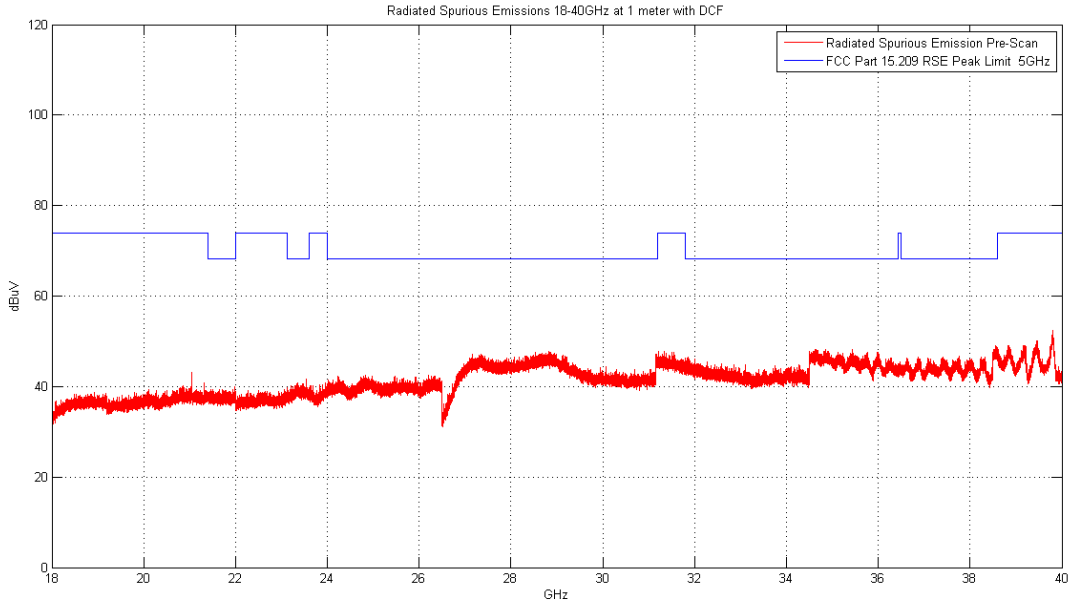


Plot 6-176. Radiated Spurious Plot above 1GHz (SIMULTANEOUS TX Config-2, Ant. Pol. V)

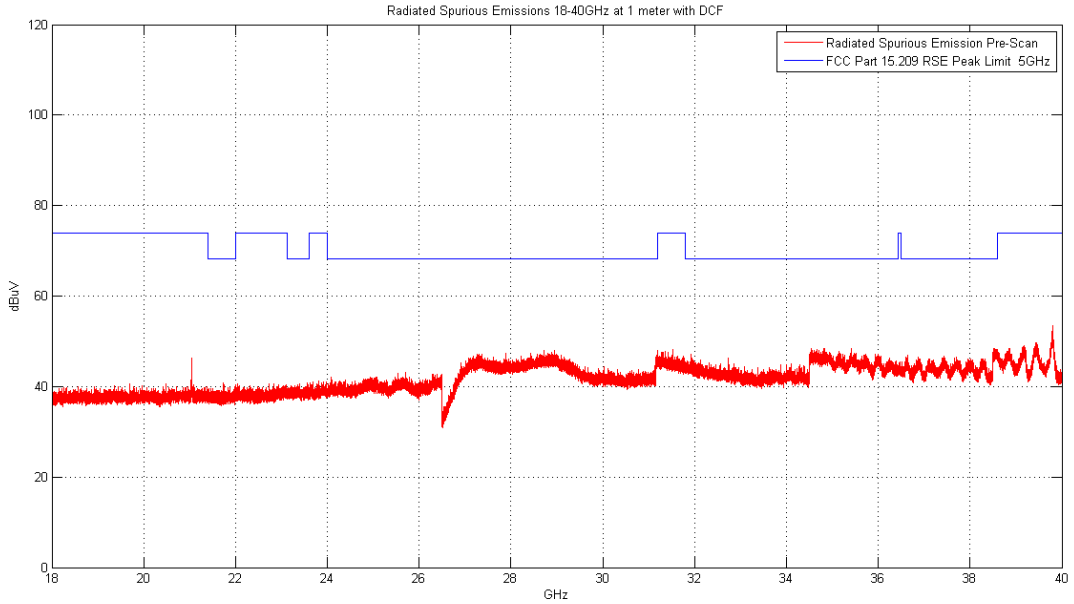
	Frequency [MHz]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	2798.00	-103.59	Avg	H	41.70	38.27	53.98	-15.71
*	2798.00	-95.92	Peak	H	41.70	48.44	73.98	-25.54
*	4924.00	-101.32	Avg	H	41.05	36.92	53.98	-17.06
*	4924.00	-94.00	Peak	H	41.05	48.28	73.98	-25.70
*	7722.00	-111.68	Avg	H	44.56	40.21	53.98	-13.77
*	7722.00	-99.88	Peak	H	44.56	51.89	73.98	-22.09
*	8058.00	-101.32	Avg	H	45.13	41.01	53.98	-12.97
*	8058.00	-94.00	Peak	H	45.13	52.56	73.98	-21.42
	10184.00	-111.68	Peak	H	47.22	53.48	68.20	-14.72
	12982.00	-99.88	Peak	H	50.87	56.51	68.20	-11.69

Table 6-58. Radiated Measurements SIMULTANEOUS TX Config-2

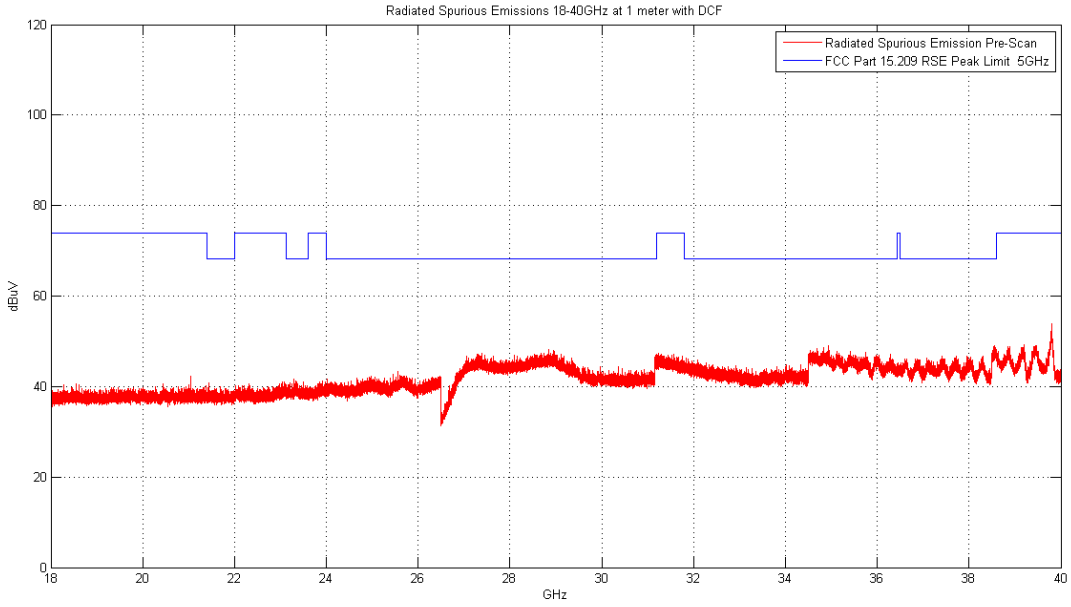
SIMULTANEOUS TX Radiated Spurious Emissions Measurements (Above 18GHz)
§15.209



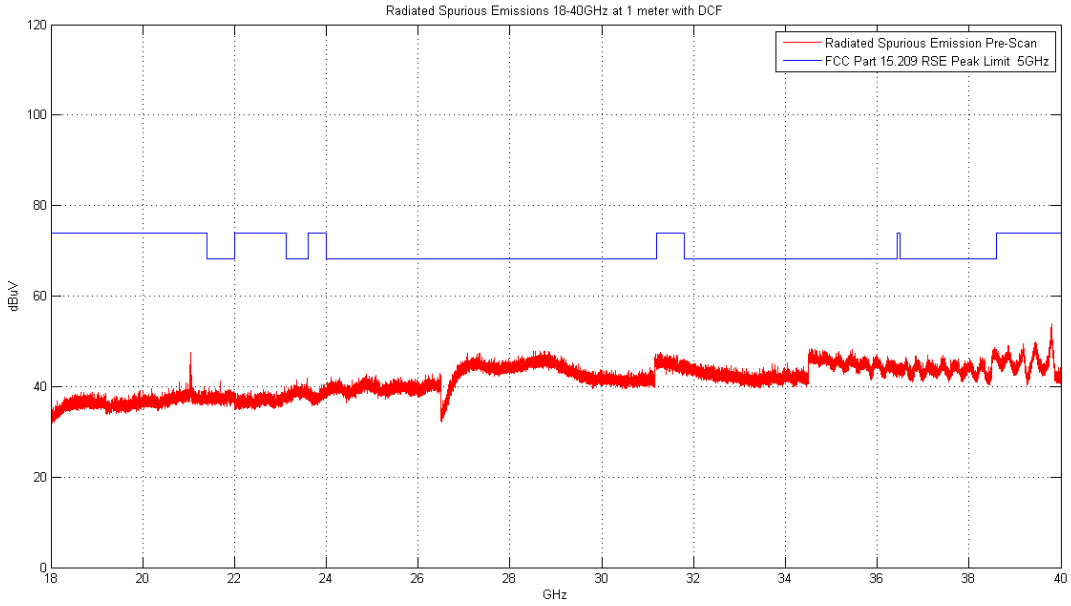
Plot 6-177. Radiated Spurious Plot above 18GHz (SIMULTANEOUS TX Config-1, Ant. Pol. H)



Plot 6-178. Radiated Spurious Plot above 18GHz (SIMULTANEOUS TX Config-1, Ant. Pol. V)



Plot 6-179. Radiated Spurious Plot above 18GHz (SIMULTANEOUS TX Config-2, Ant. Pol. H)

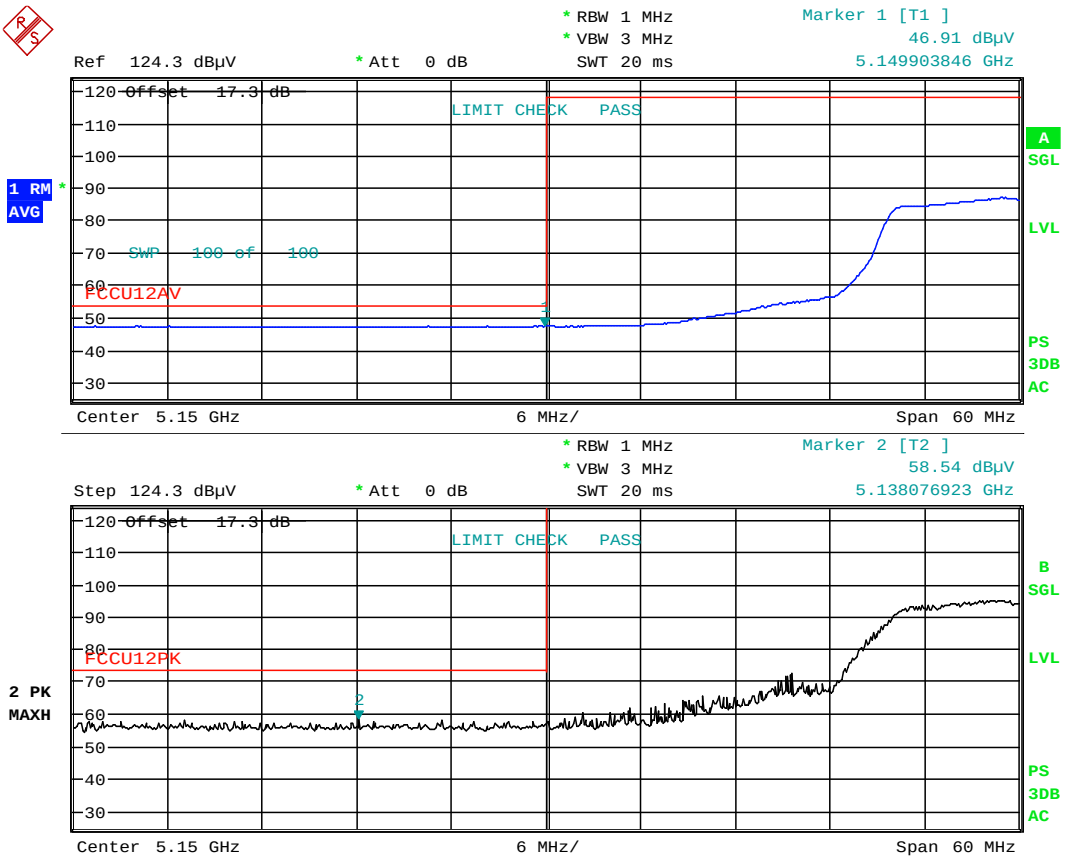


Plot 6-180. Radiated Spurious Plot above 18GHz (SIMULTANEOUS TX Config-2, Ant. Pol. V)

6.7.4 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



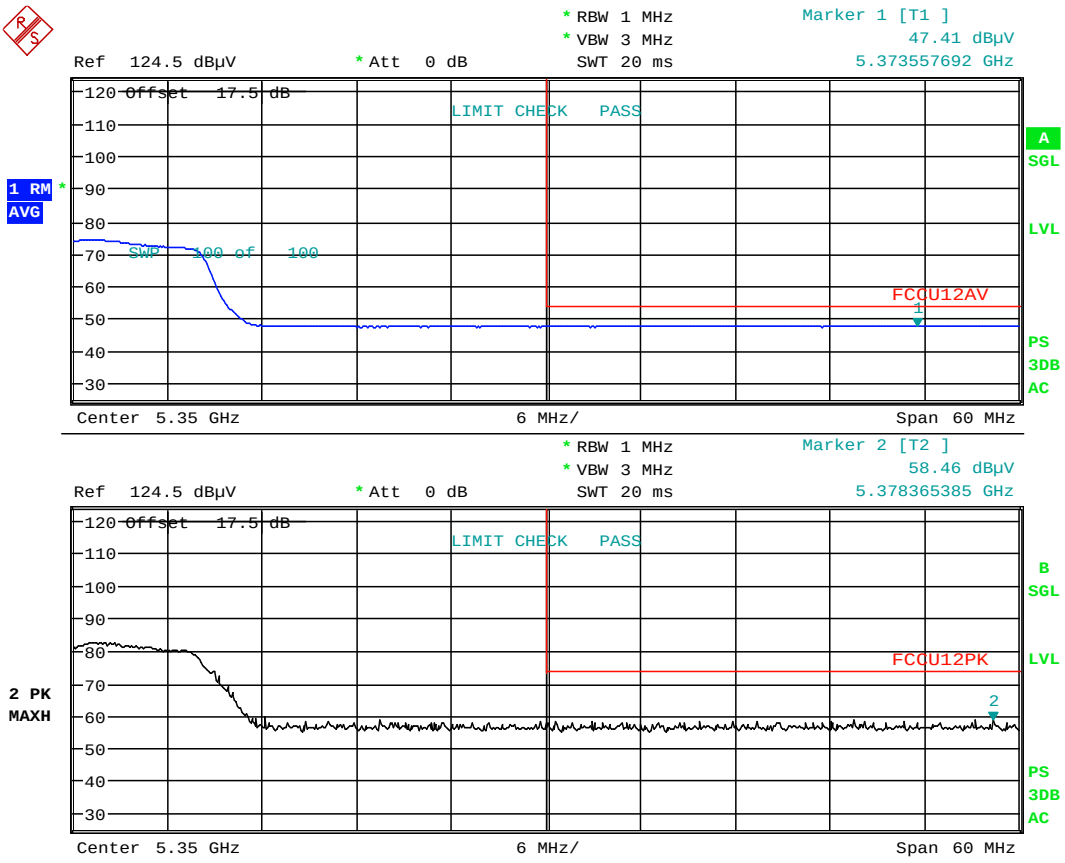
Date: 12.JUN.2015 05:40:14

Plot 6-181. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 1)

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

§15.407(b.1)(b.2) §15.205 §15.209

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



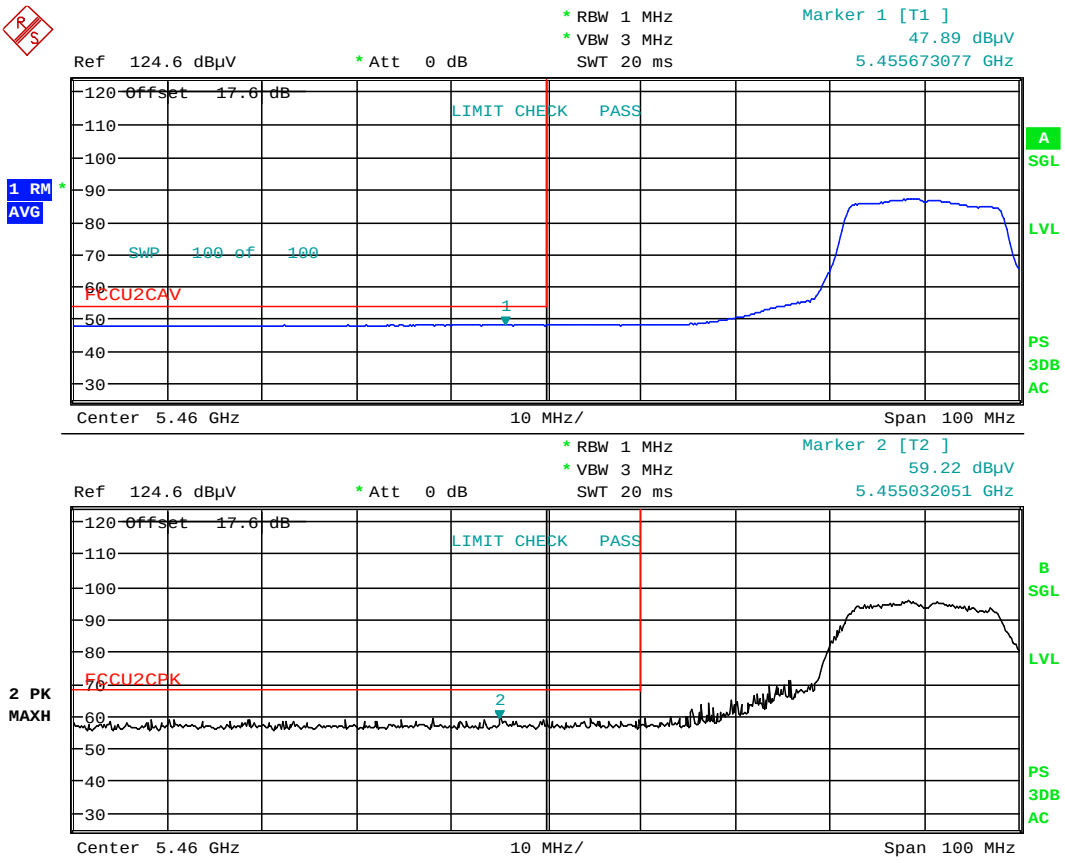
Date: 12.JUN.2015 05:47:39

Plot 6-182. Radiated Restricted Upper Band Edge Plot (Average & Peak – UNII Band 2A)

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

§15.407(b.1)(b.2) §15.205 §15.209

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



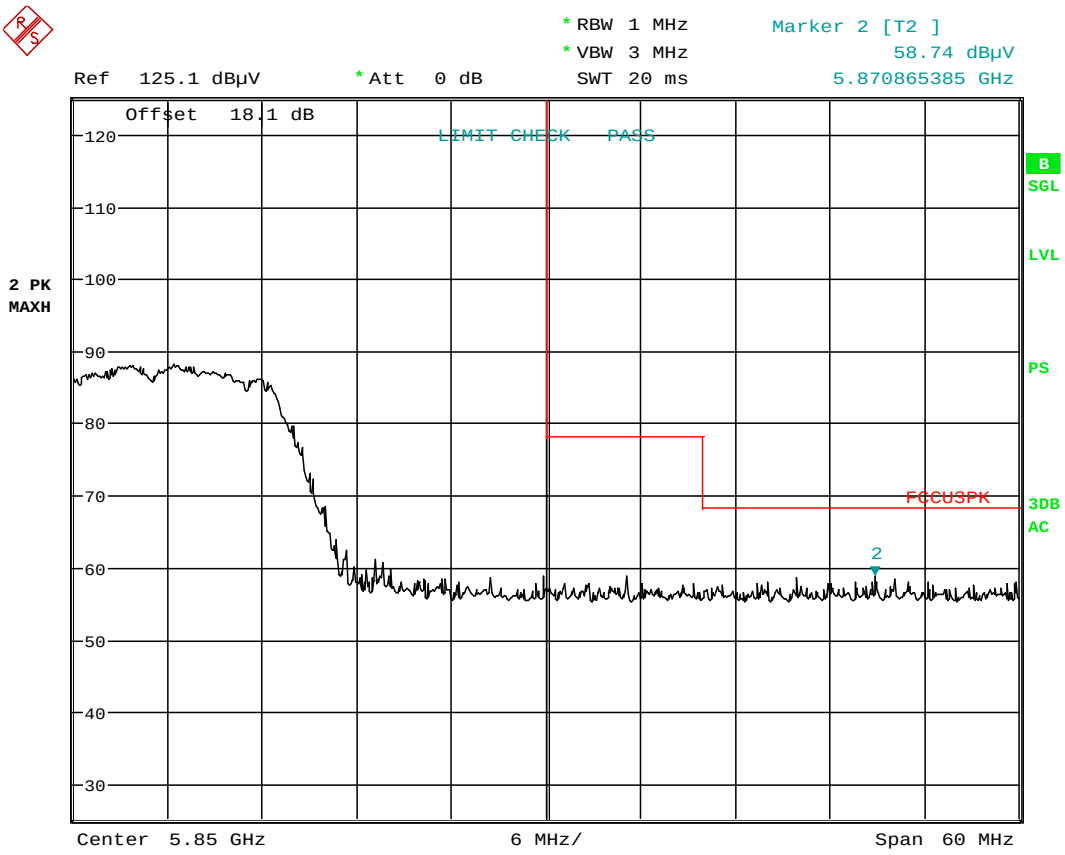
Date: 12.JUN.2015 05:54:01

Plot 6-183. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 2C)

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

§15.407(b.1)(b.2) §15.205 §15.209

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



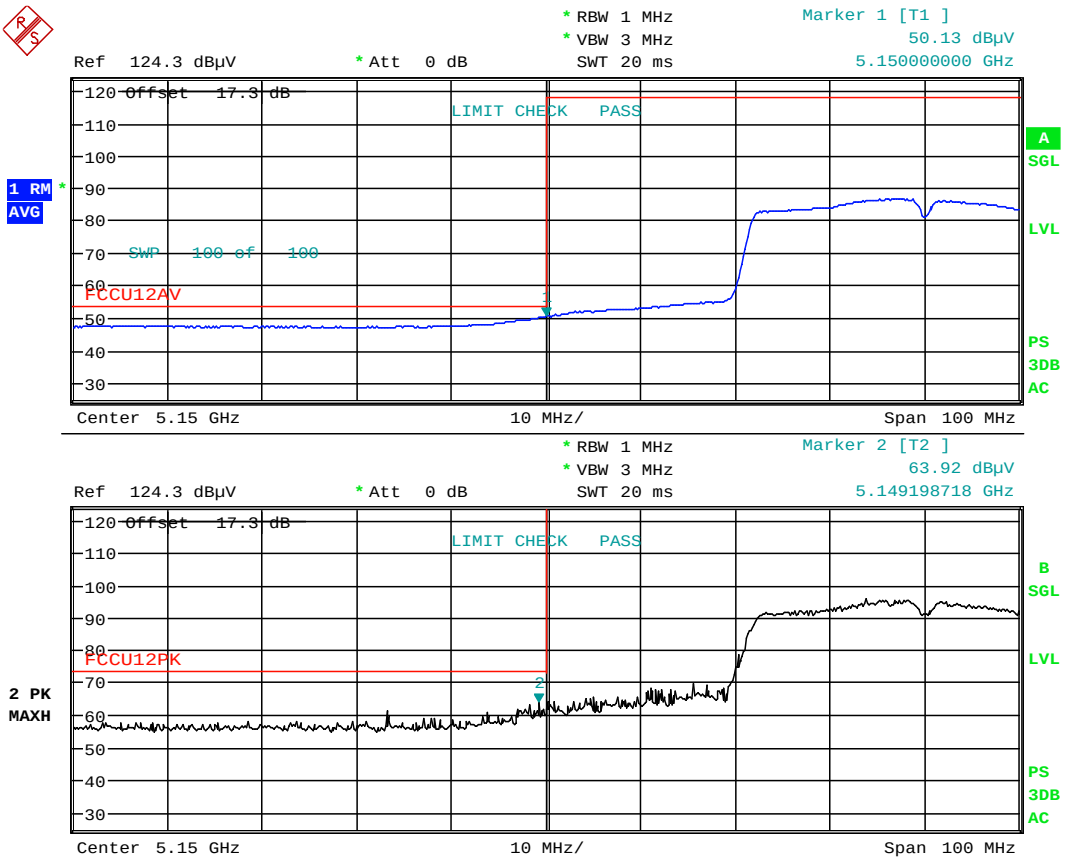
Date: 12.JUN.2015 05:59:32

Plot 6-184. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

6.7.5 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



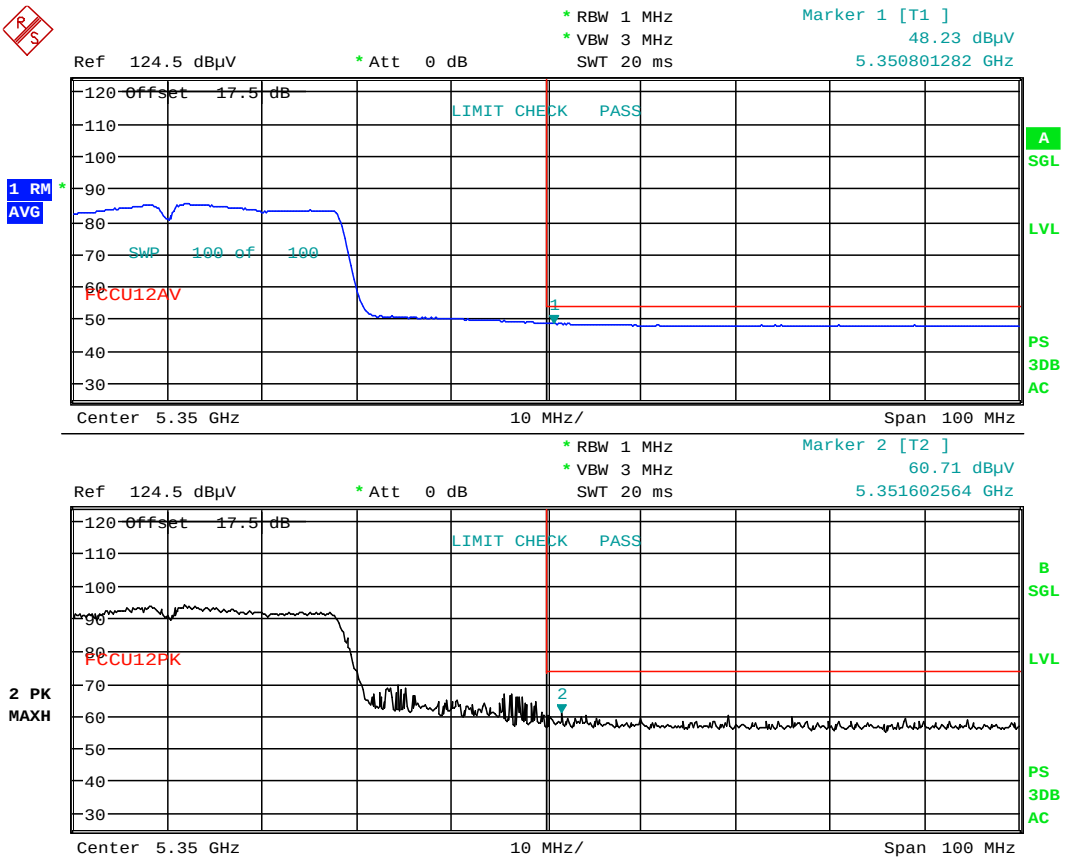
Date: 12.JUN.2015 06:06:28

Plot 6-185. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 1)

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

§15.407(b.1)(b.2) §15.205 §15.209

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



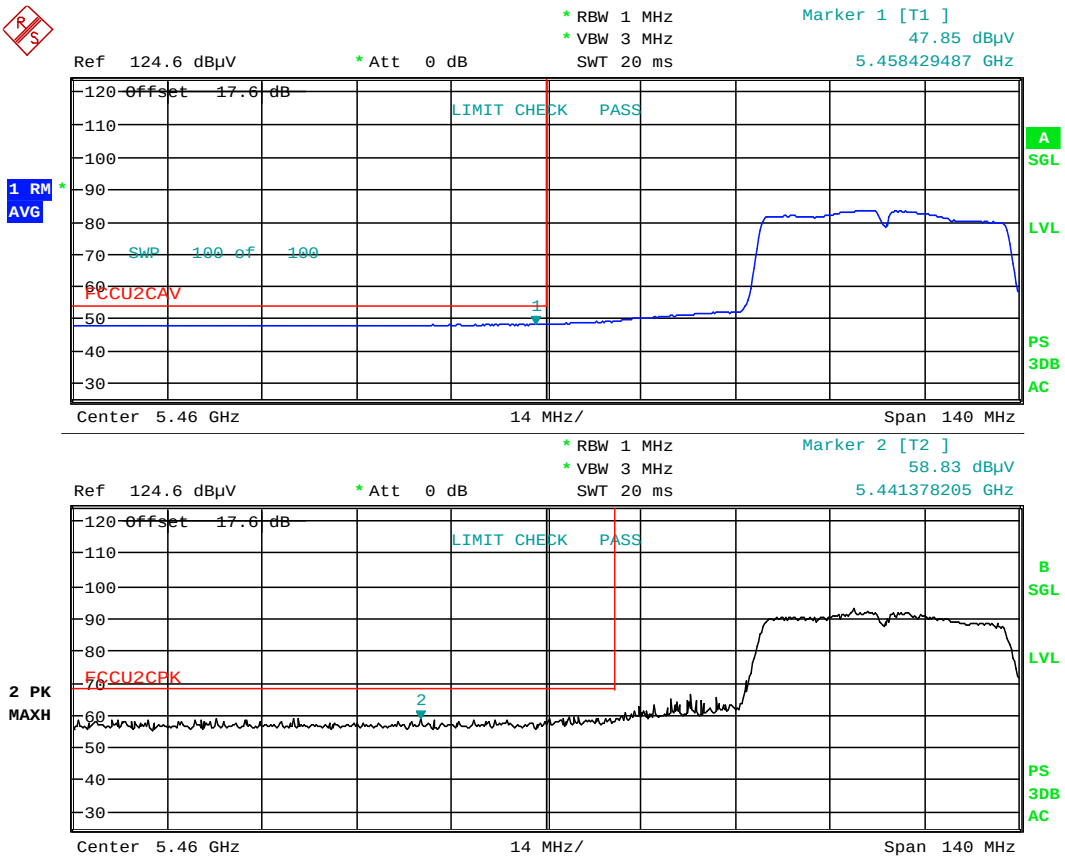
Date: 12.JUN.2015 06:12:09

Plot 6-186. Radiated Restricted Upper Band Edge Plot (Average & Peak – UNII Band 2A)

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

§15.407(b.1)(b.2) §15.205 §15.209

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



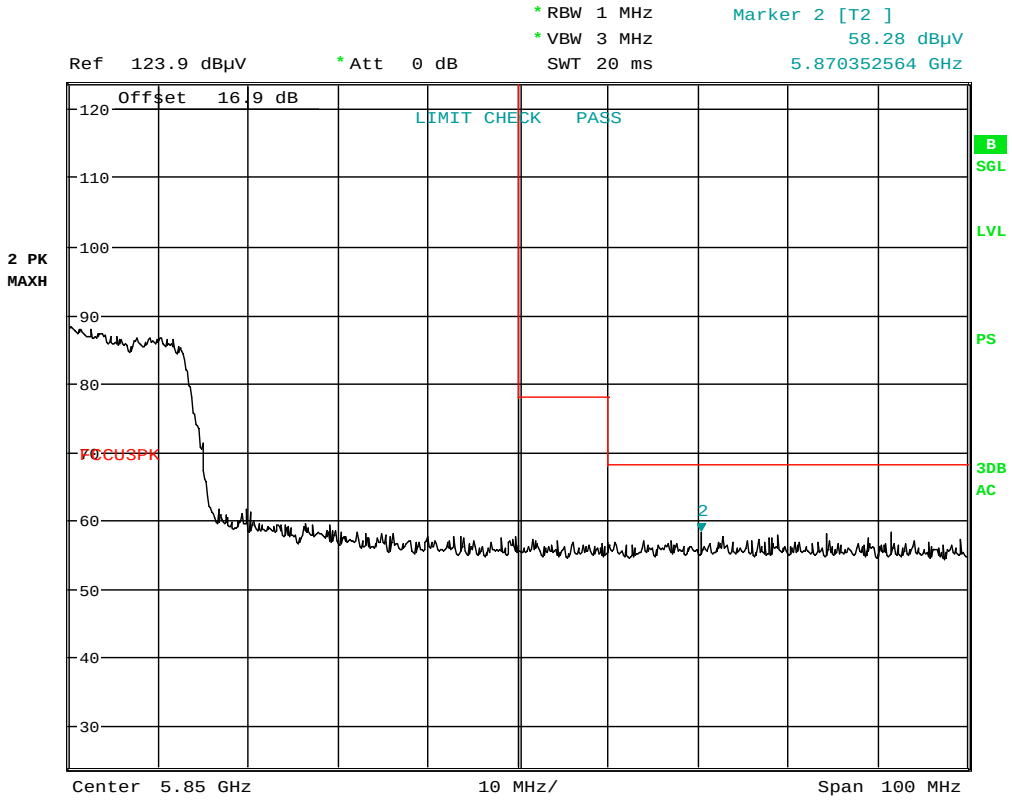
Date: 12.JUN.2015 06:17:40

Plot 6-187. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 2C)

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

§15.407(b.1)(b.2) §15.205 §15.209

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



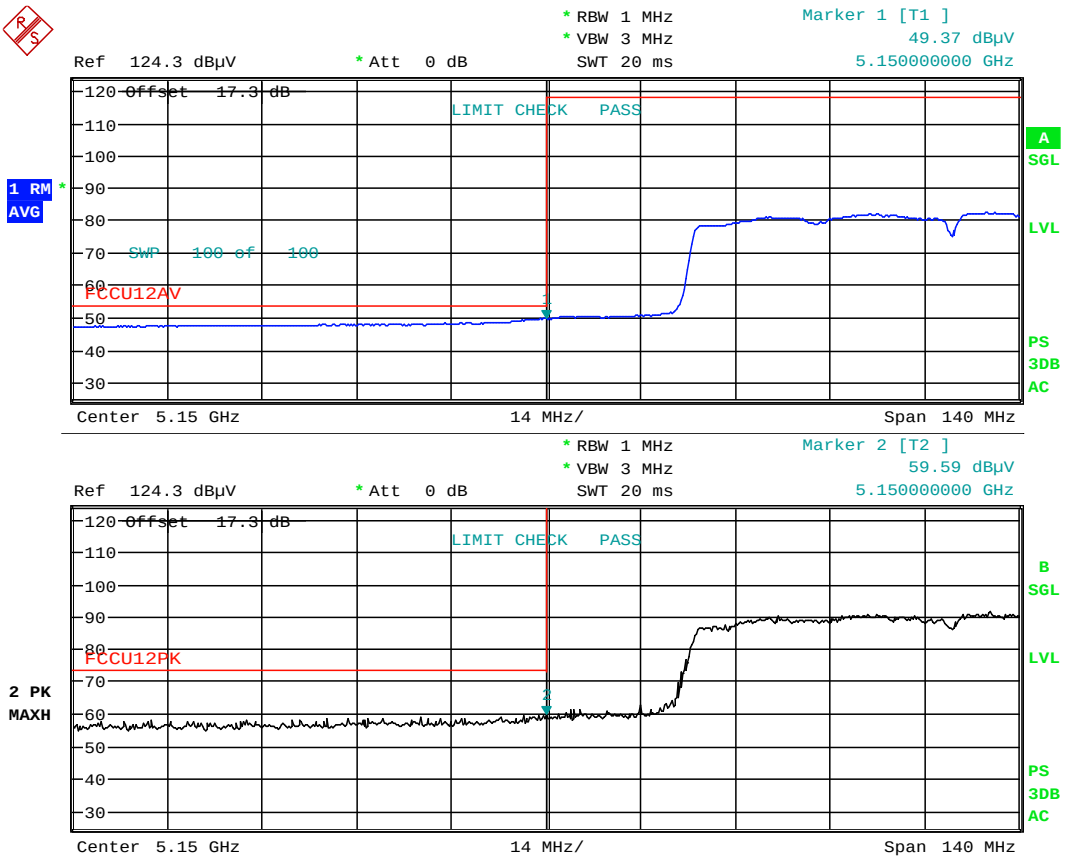
Date: 29.JUN.2015 19:36:21

Plot 6-188. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 3)

6.7.6 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



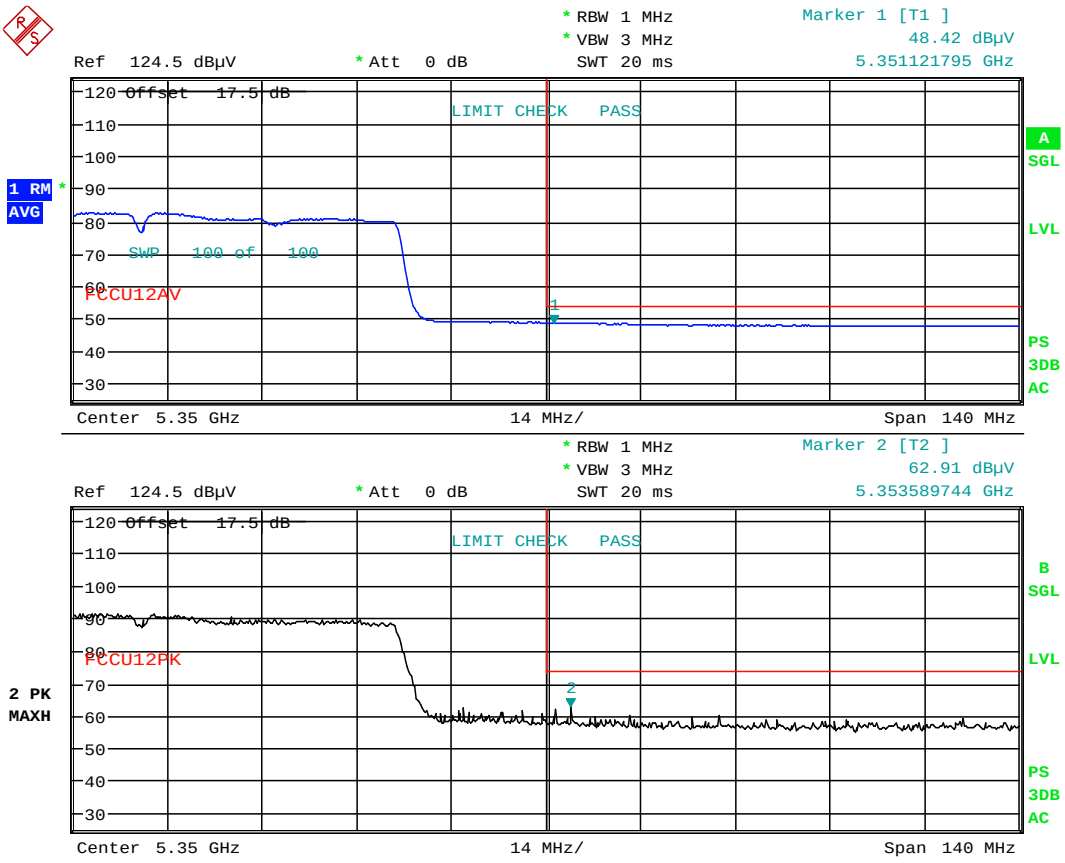
Date: 12.JUN.2015 06:32:09

Plot 6-189. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 1)

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

§15.407(b.1)(b.2) §15.205 §15.209

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



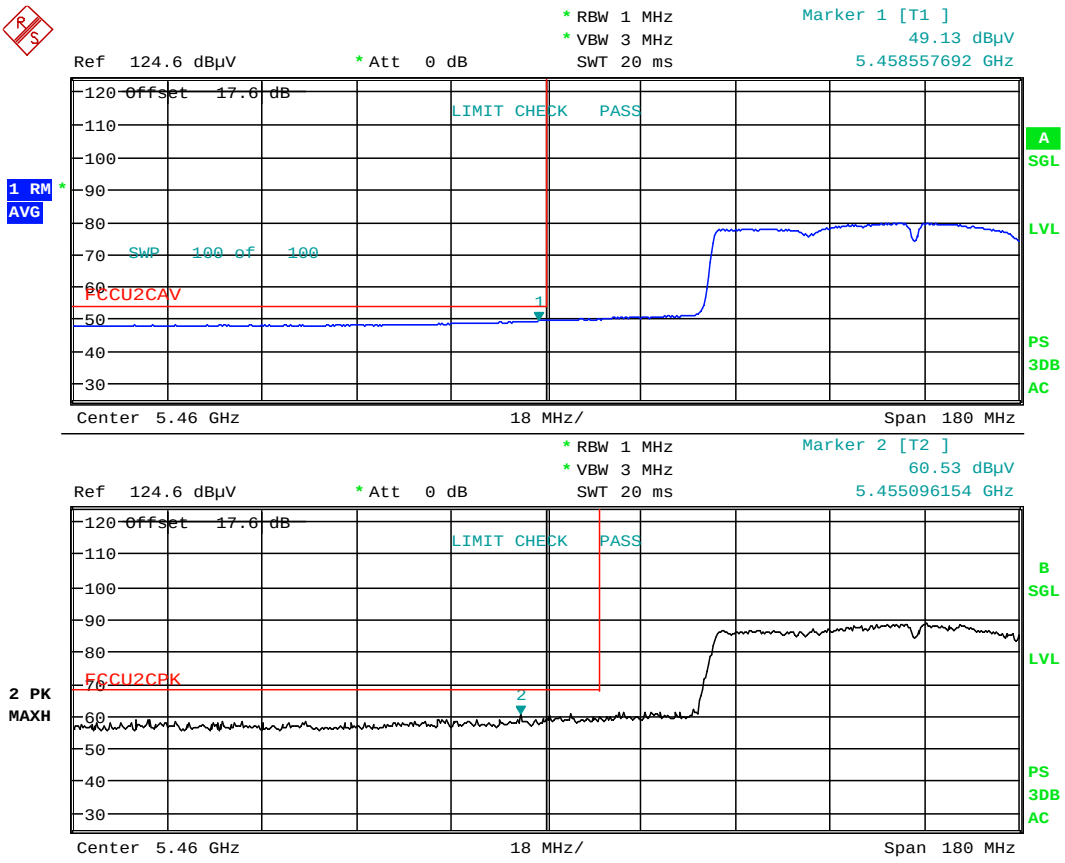
Date: 12.JUN.2015 06:38:46

Plot 6-190. Radiated Restricted Upper Band Edge Plot (Average & Peak – UNII Band 2A)

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

§15.407(b.1)(b.2) §15.205 §15.209

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



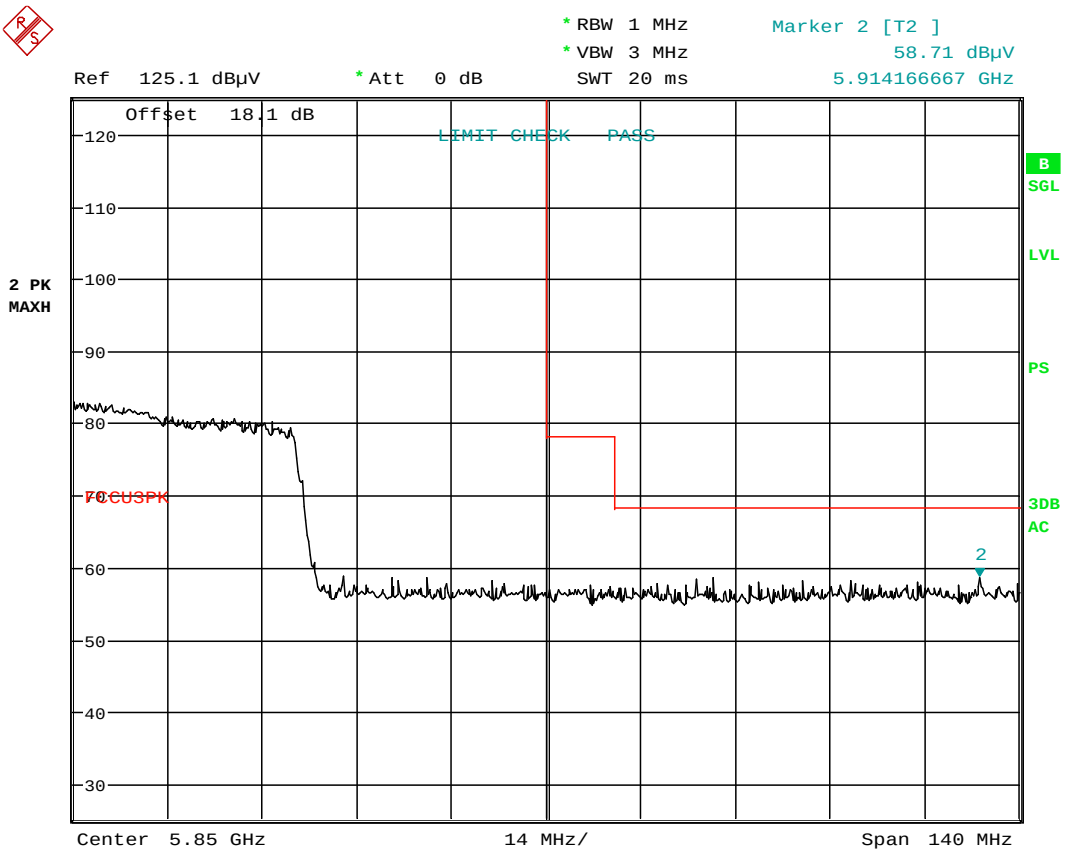
Date: 12.JUN.2015 06:50:45

Plot 6-191. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 2C)

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

§15.407(b.1)(b.2) §15.205 §15.209

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



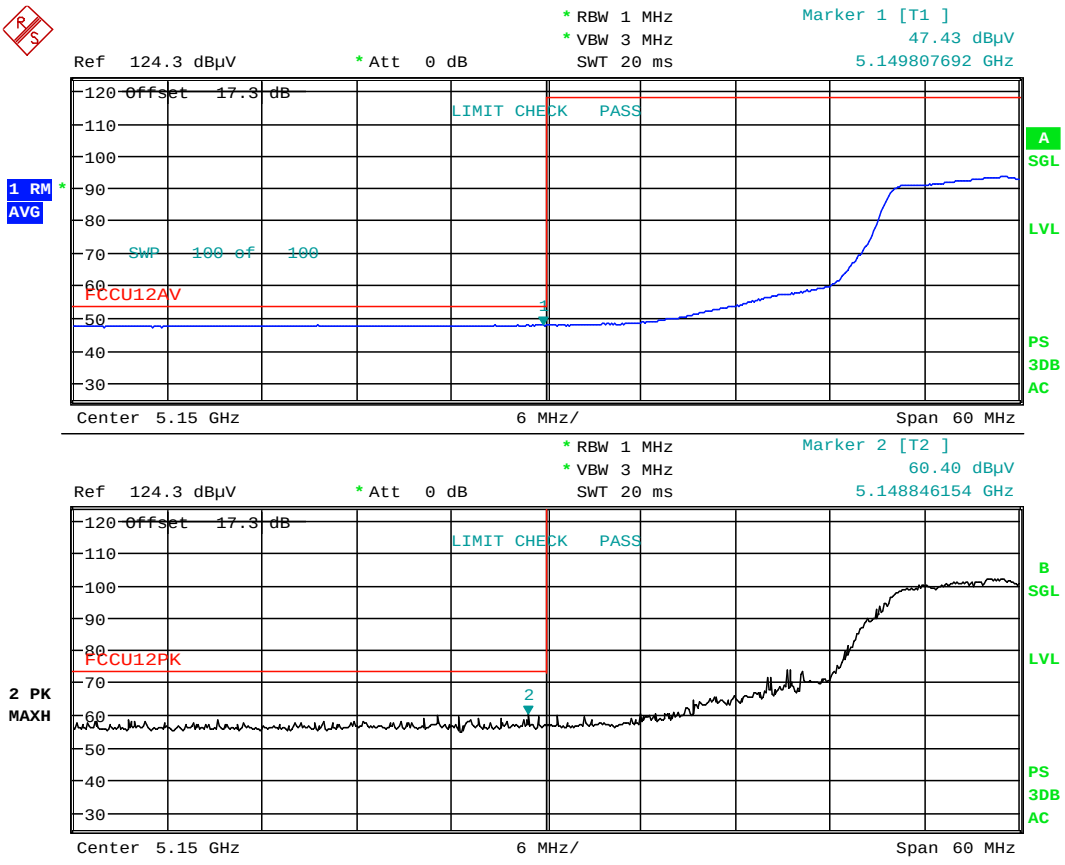
Date: 12.JUN.2015 06:56:19

Plot 6-192. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

6.7.7 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



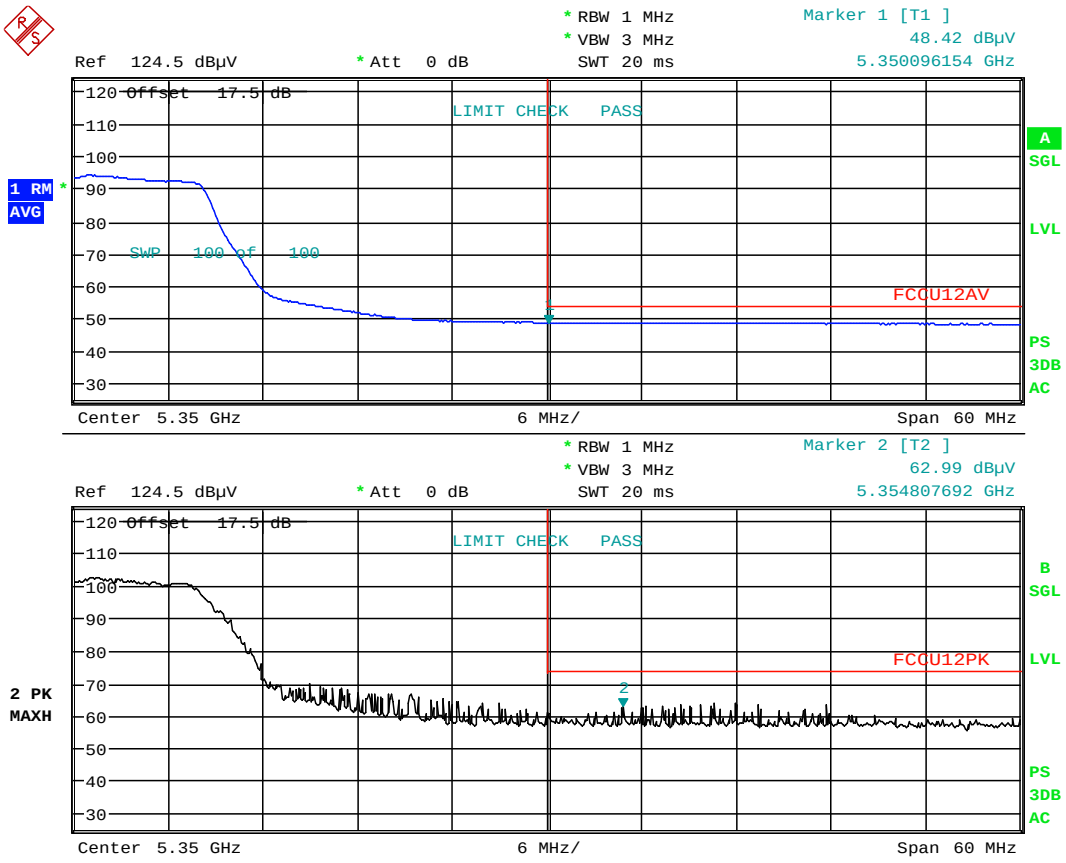
Date: 12.JUN.2015 07:06:22

Plot 6-193. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 1)

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

§15.407(b.1)(b.2) §15.205 §15.209

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



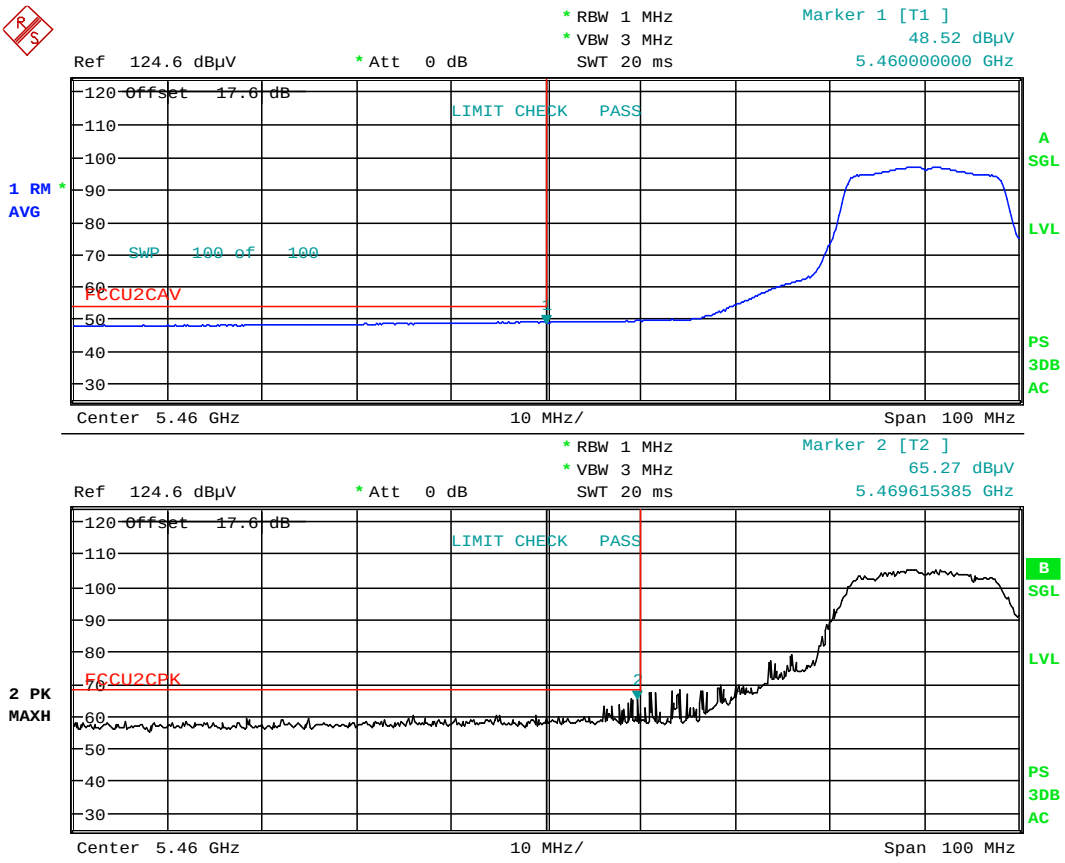
Date: 12.JUN.2015 07:11:42

Plot 6-194. Radiated Restricted Upper Band Edge Plot (Average & Peak – UNII Band 2A)

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

§15.407(b.1)(b.2) §15.205 §15.209

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



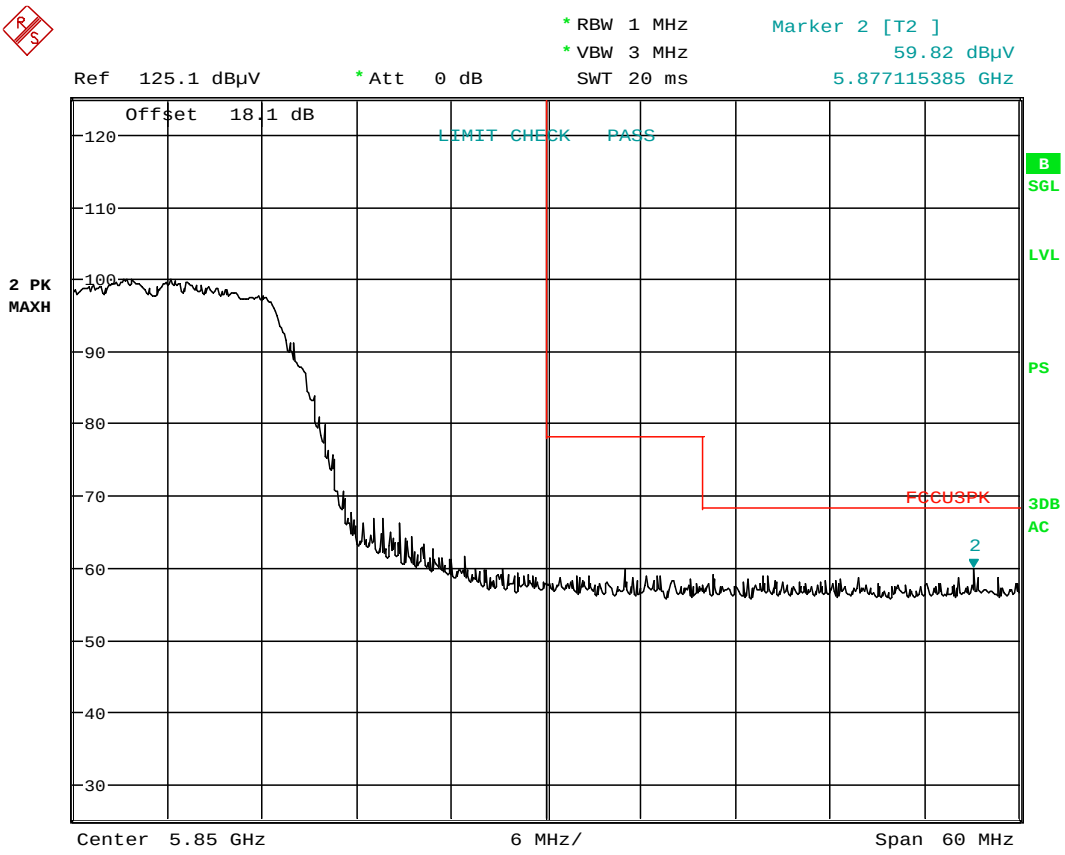
Date: 12.JUN.2015 07:18:02

Plot 6-195. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 2C)

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

§15.407(b.1)(b.2) §15.205 §15.209

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



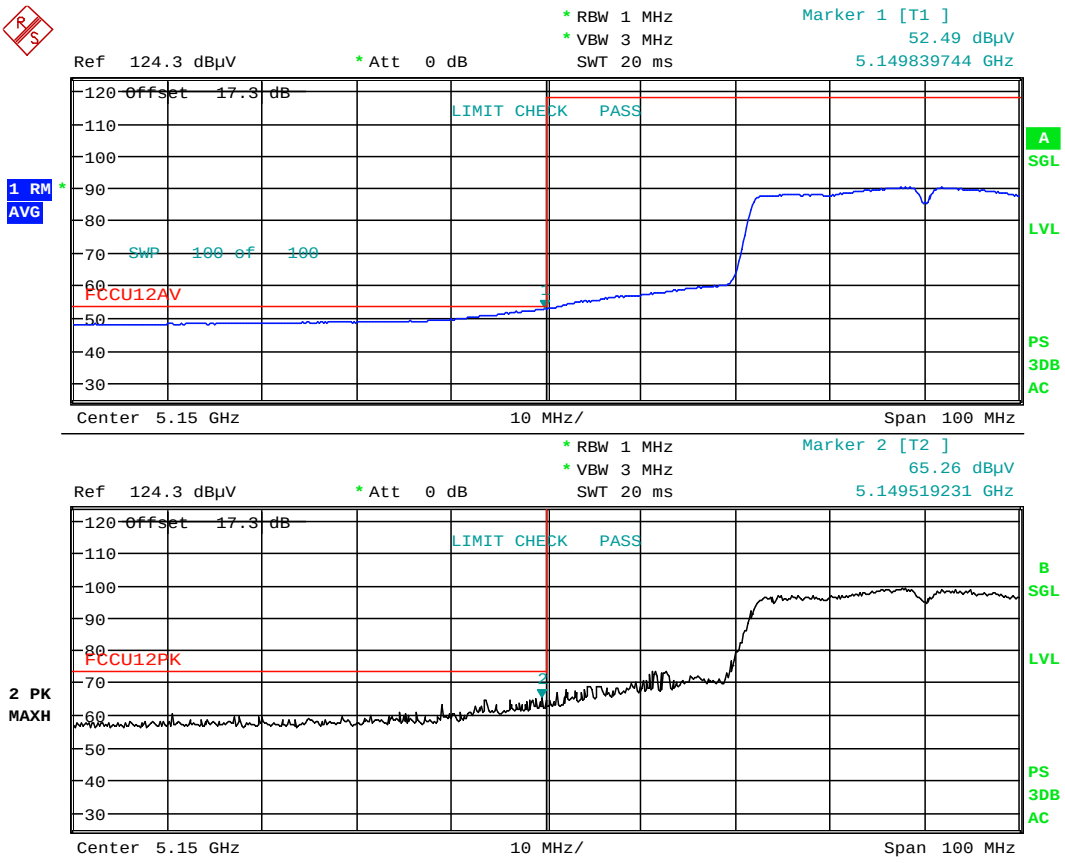
Date: 12.JUN.2015 07:23:00

Plot 6-196. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

6.7.8 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



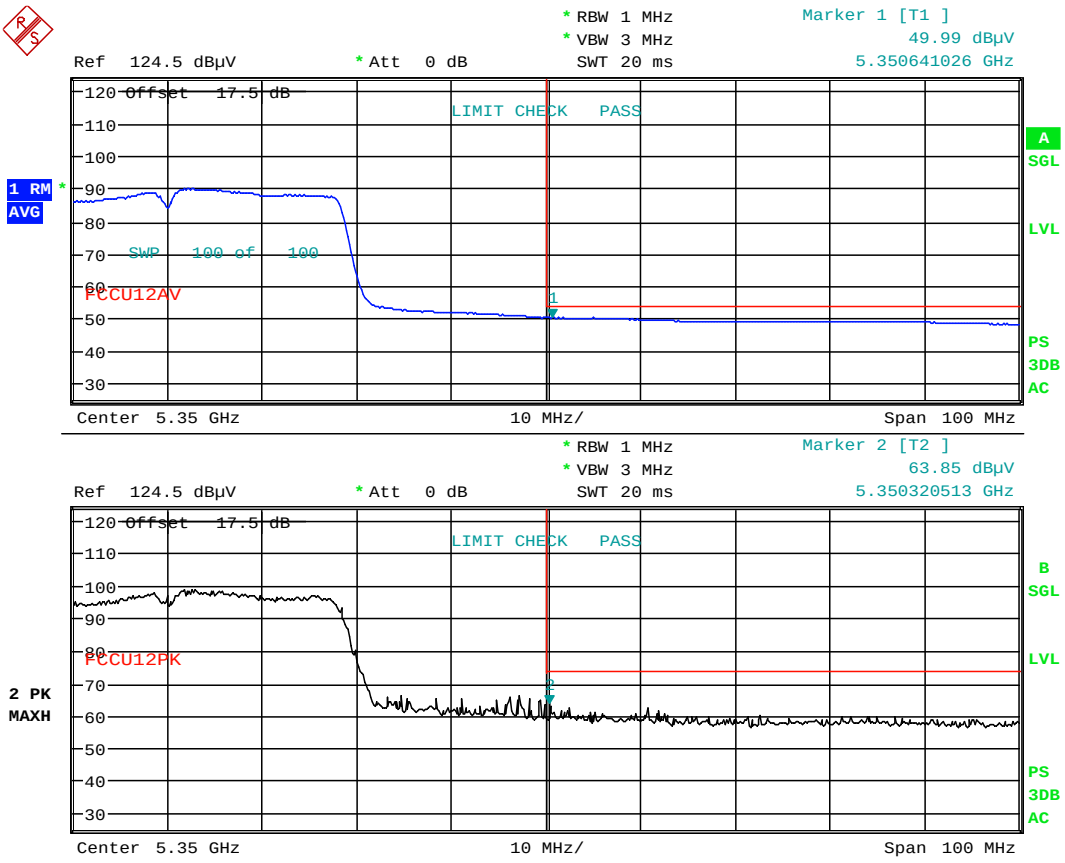
Date: 12.JUN.2015 07:32:00

Plot 6-197. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 1)

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

§15.407(b.1)(b.2) §15.205 §15.209

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



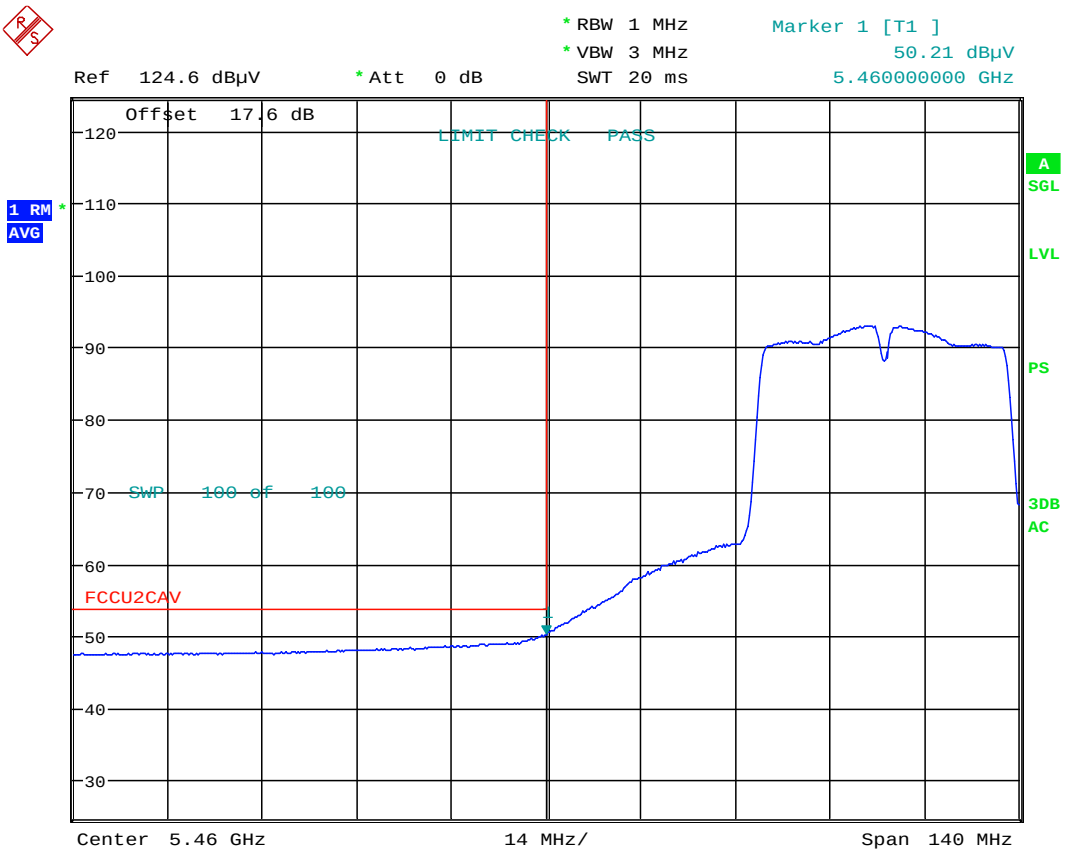
Date: 12.JUN.2015 07:38:54

Plot 6-198. Radiated Restricted Upper Band Edge Plot (Average & Peak – UNII Band 2A)

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

§15.407(b.1)(b.2) §15.205 §15.209

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

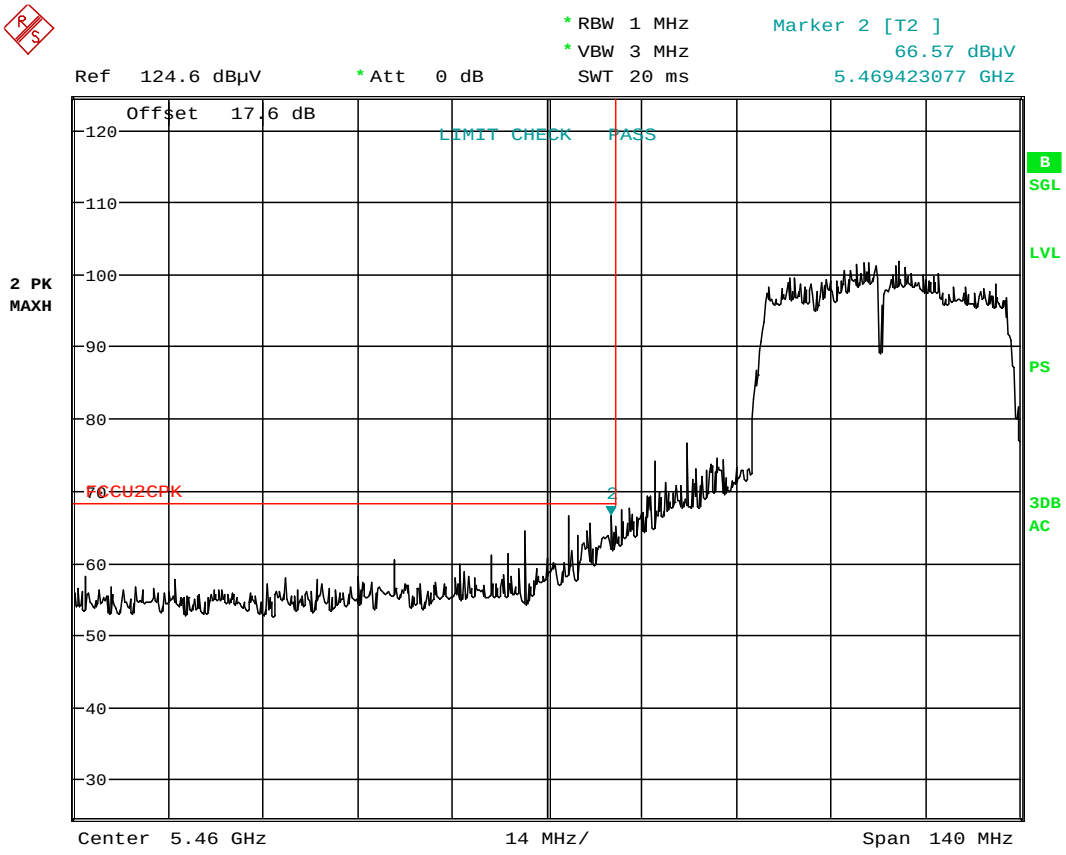


Date: 12.JUN.2015 07:44:48

Plot 6-199. 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



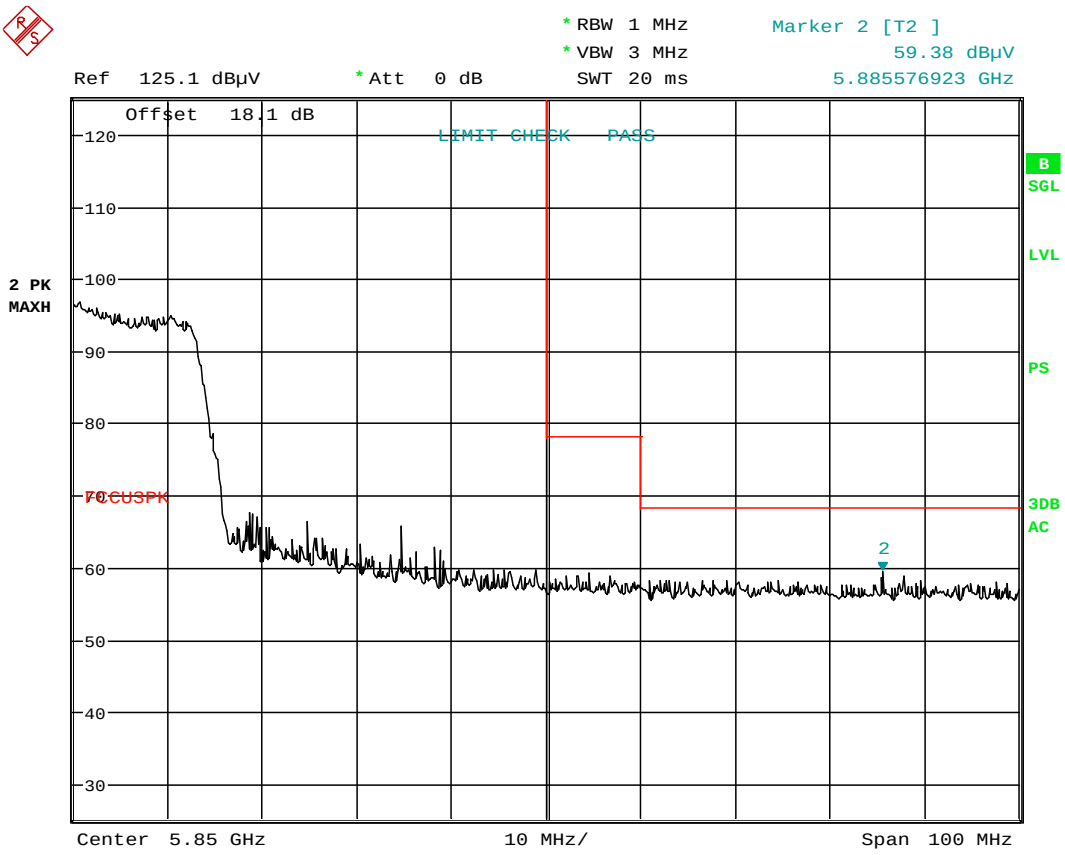
Date: 12.JUN.2015 07:45:41

Plot 6-200. 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

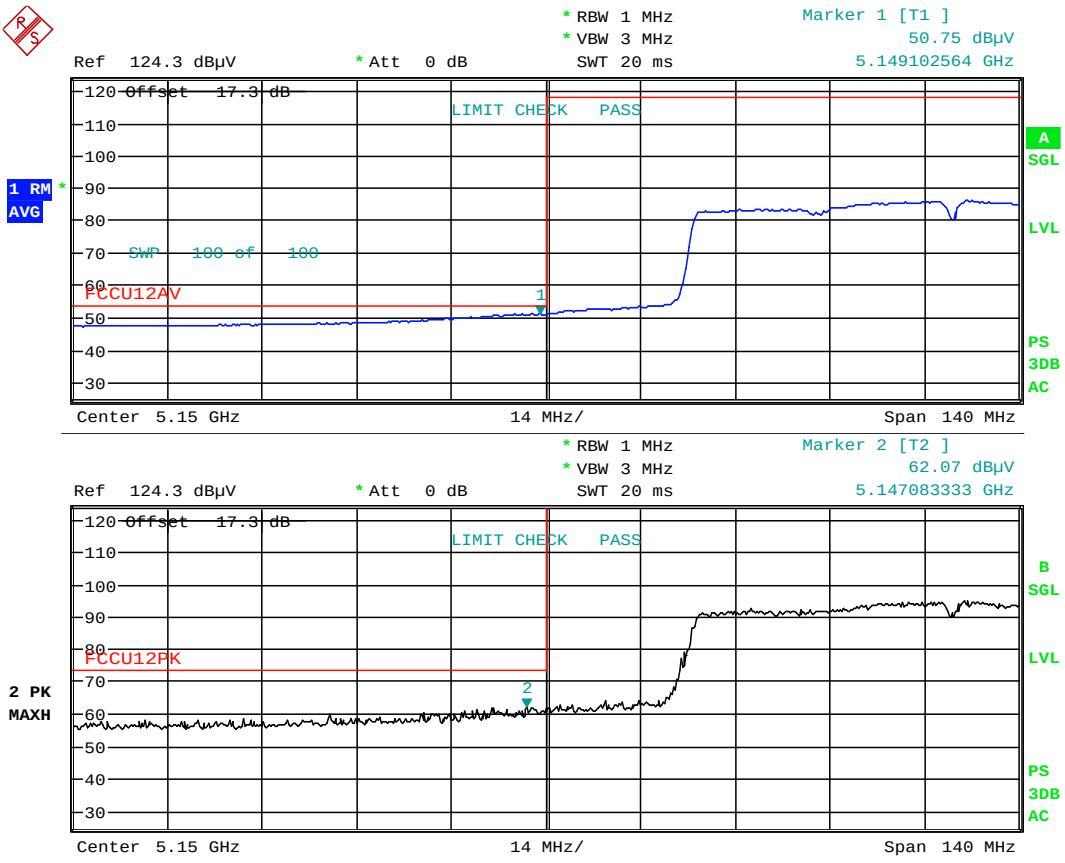


Plot 6-201. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

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

§15.407(b.1)(b.2) §15.205 §15.209

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



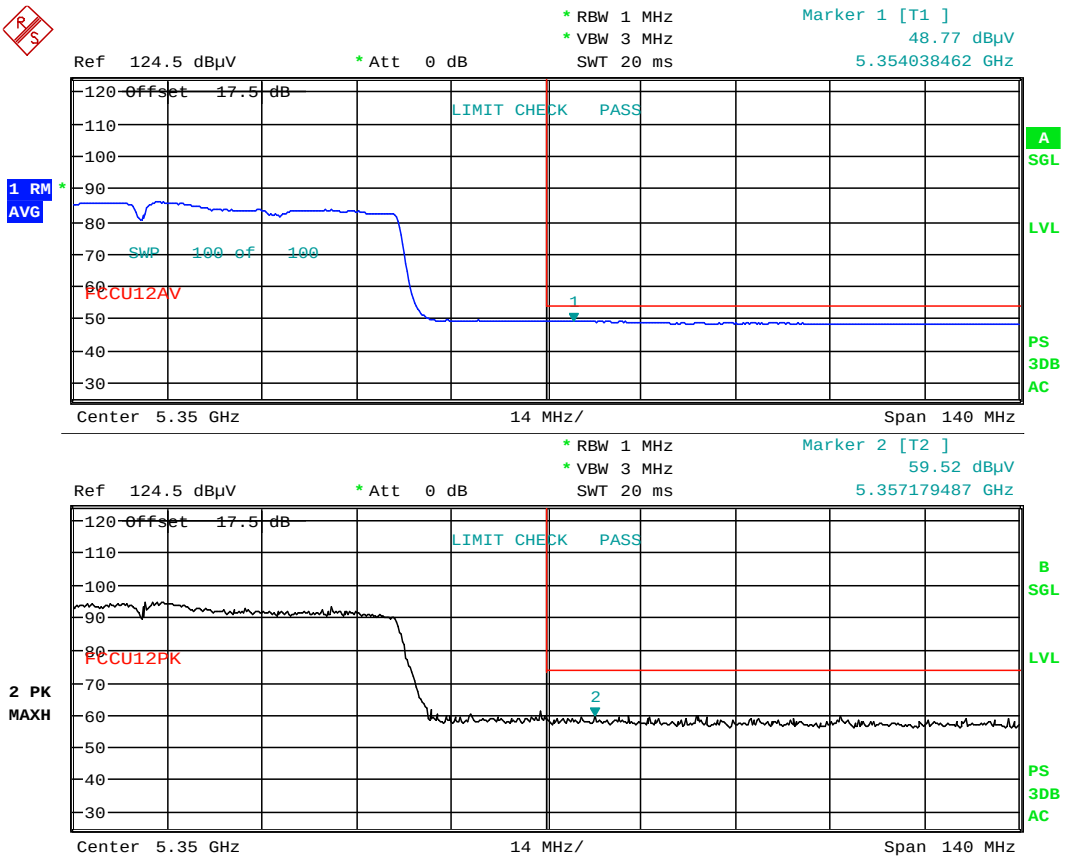
Date: 12.JUN.2015 08:10:37

Plot 6-202. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 1)

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

§15.407(b.1)(b.2) §15.205 §15.209

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



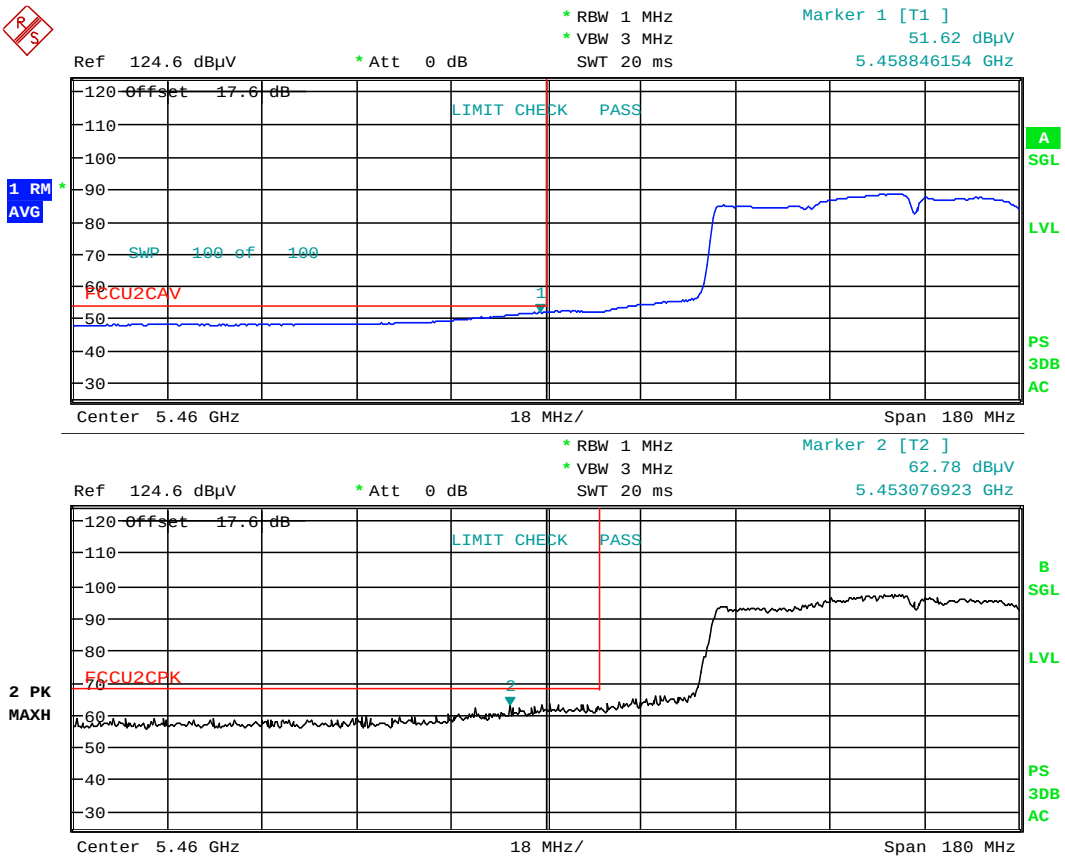
Date: 12.JUN.2015 08:16:08

Plot 6-203. Radiated Restricted Upper Band Edge Plot (Average & Peak – UNII Band 2A)

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

§15.407(b.1)(b.2) §15.205 §15.209

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



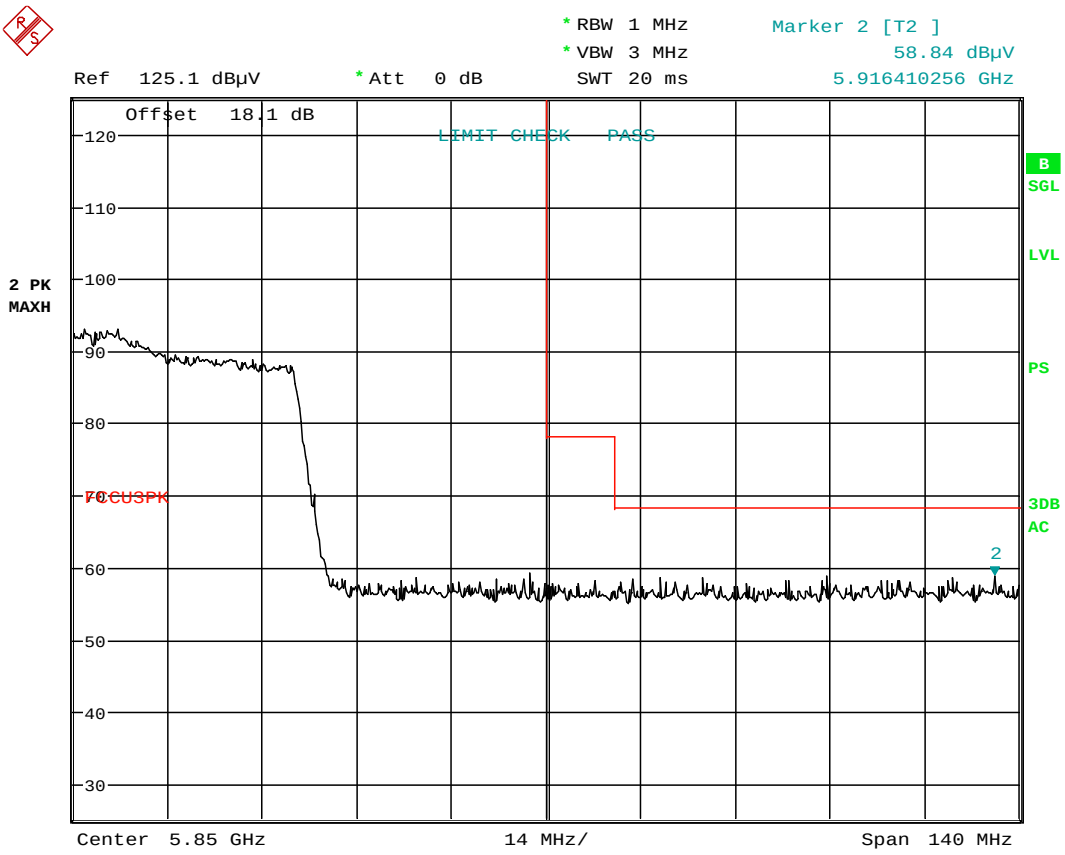
Date: 12.JUN.2015 08:21:41

Plot 6-204. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 2C)

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

§15.407(b.1)(b.2) §15.205 §15.209

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



Date: 12.JUN.2015 08:28:39

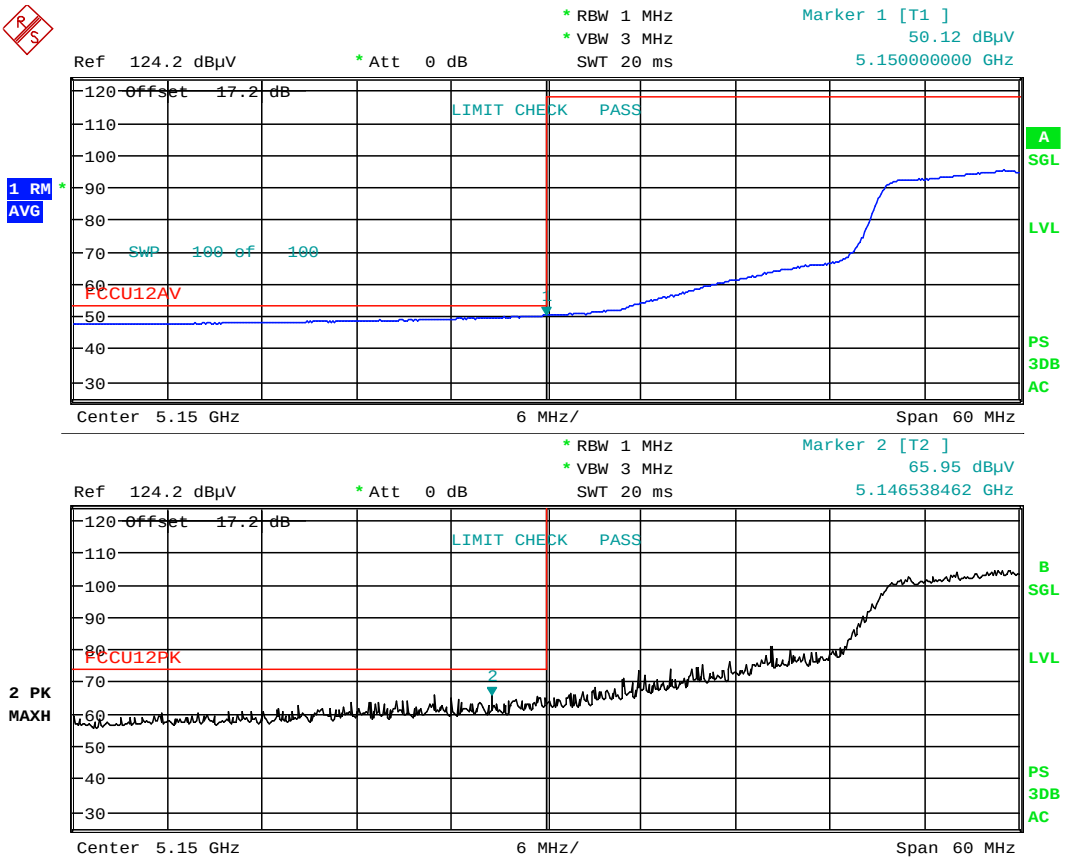
Plot 6-205. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

6.7.10 MIMO Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

MIMO Radiated Band Edge Measurements (20MHz BW)

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



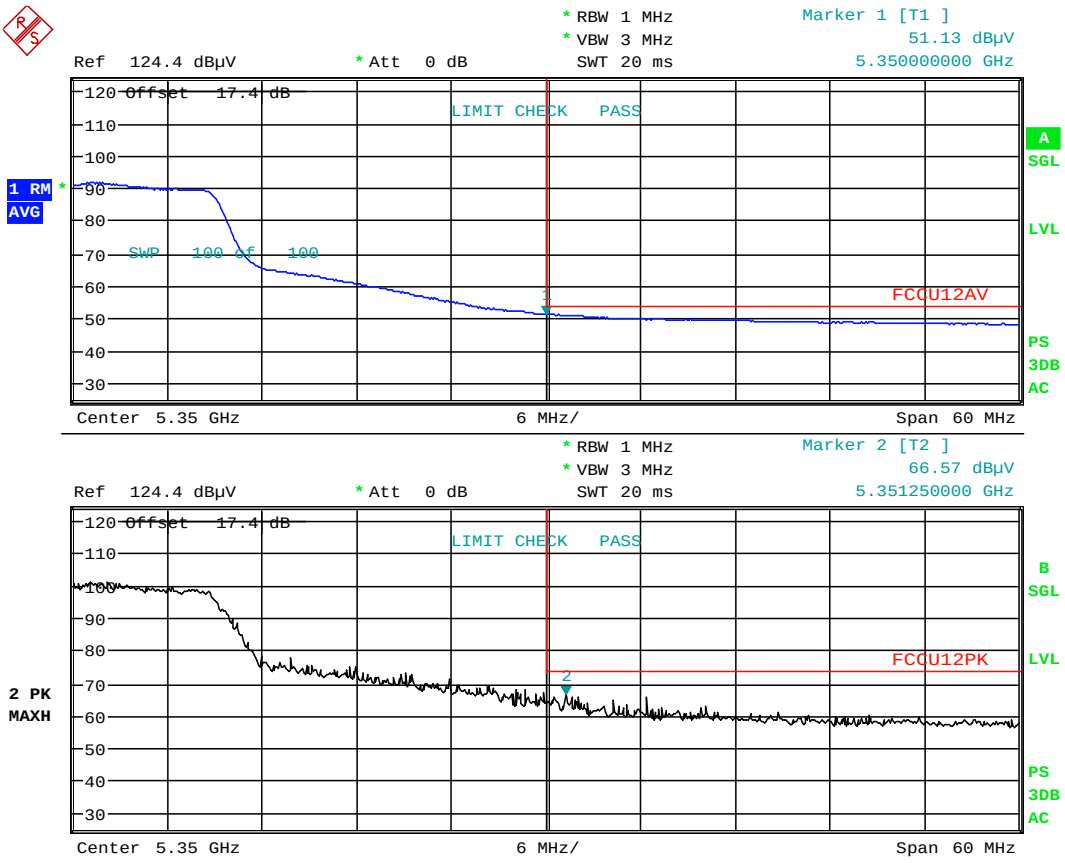
Date: 12.JUN.2015 08:52:10

Plot 6-206. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 1)

MIMO Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

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



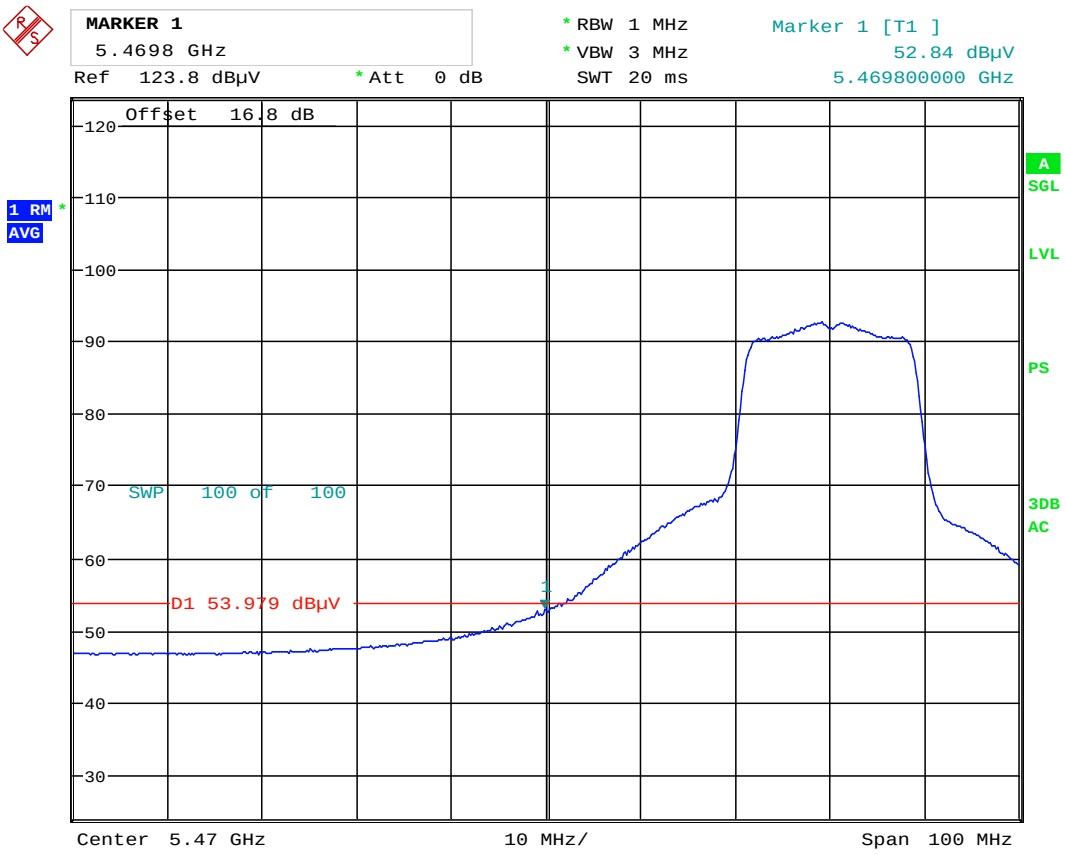
Date: 12.JUN.2015 09:04:05

Plot 6-207. Radiated Restricted Upper Band Edge Plot (Average & Peak – UNII Band 2A)

MIMO Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

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

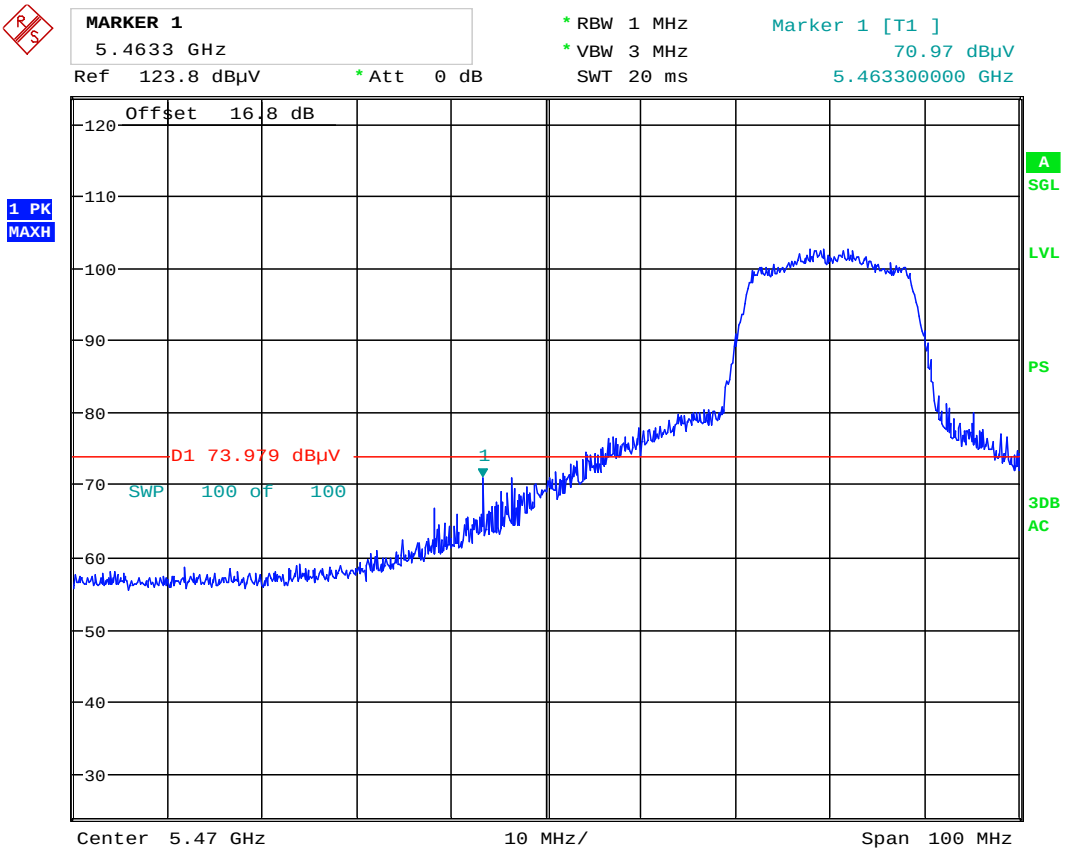


Date: 1.JUL.2015 09:31:48

Plot 6-208. 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



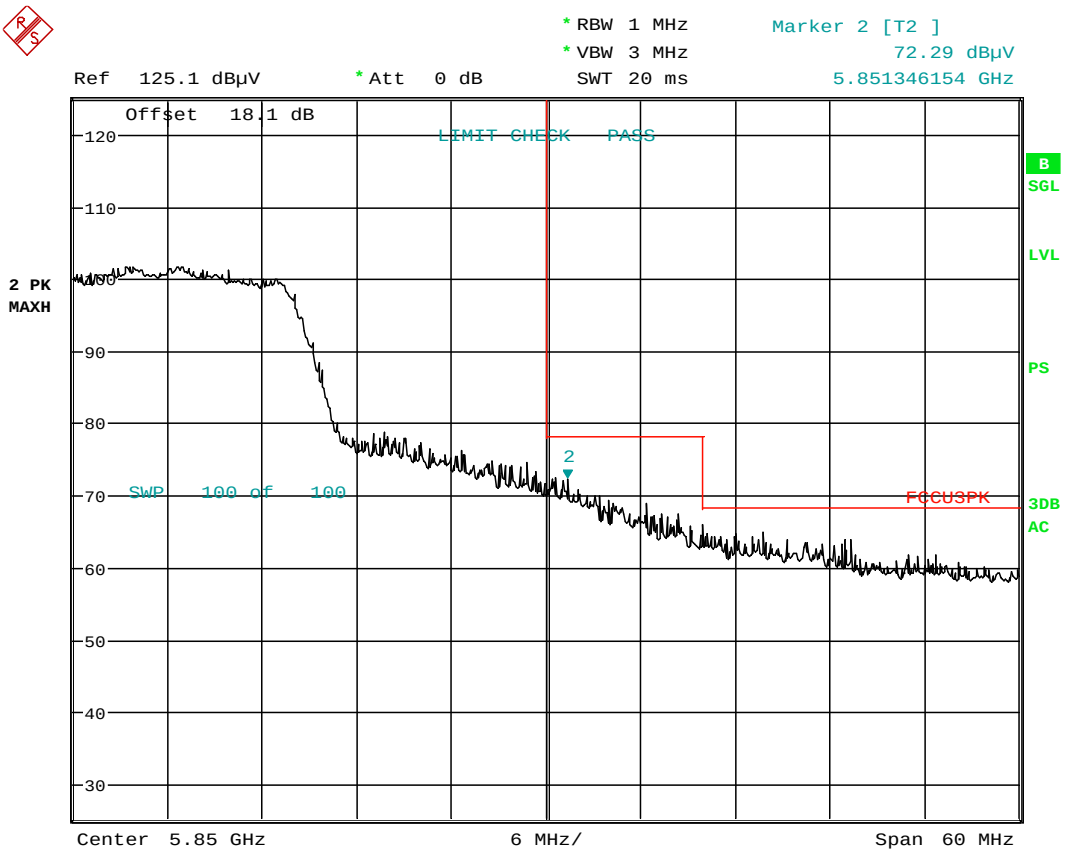
Date: 1.JUL.2015 09:33:16

Plot 6-209. 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



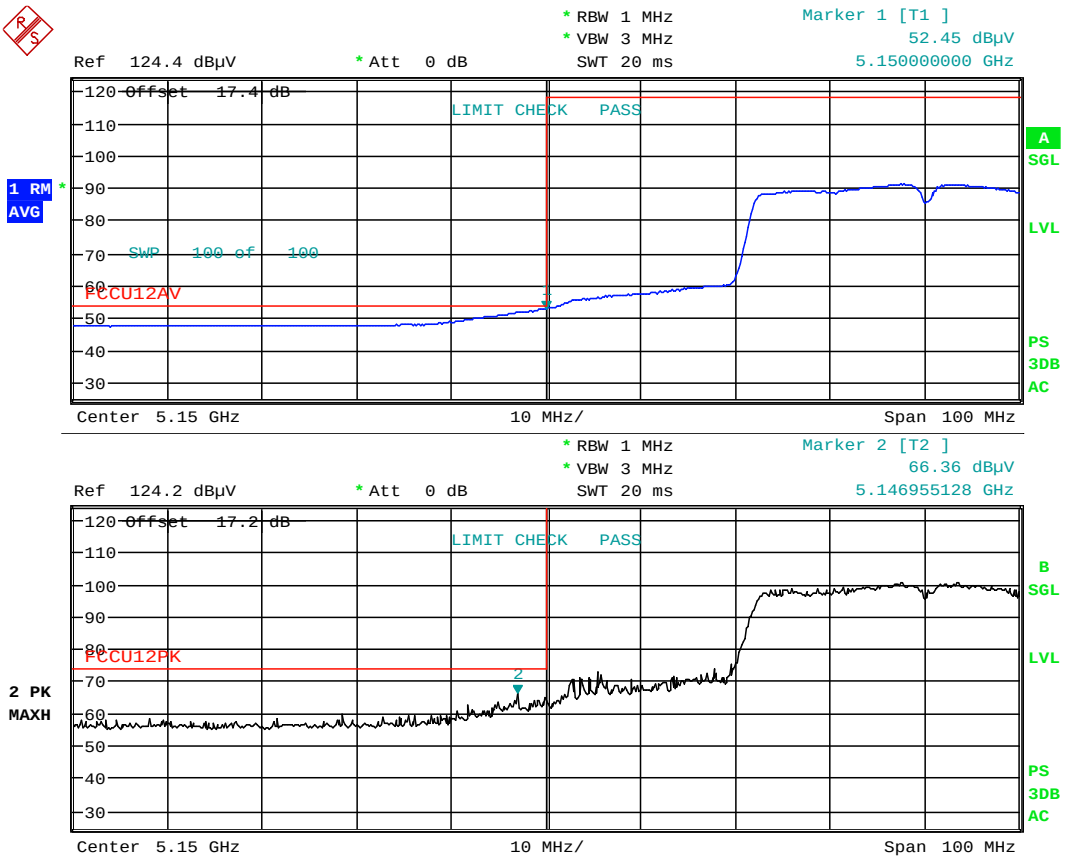
Date: 12.JUN.2015 09:37:49

Plot 6-210. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

6.7.11 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



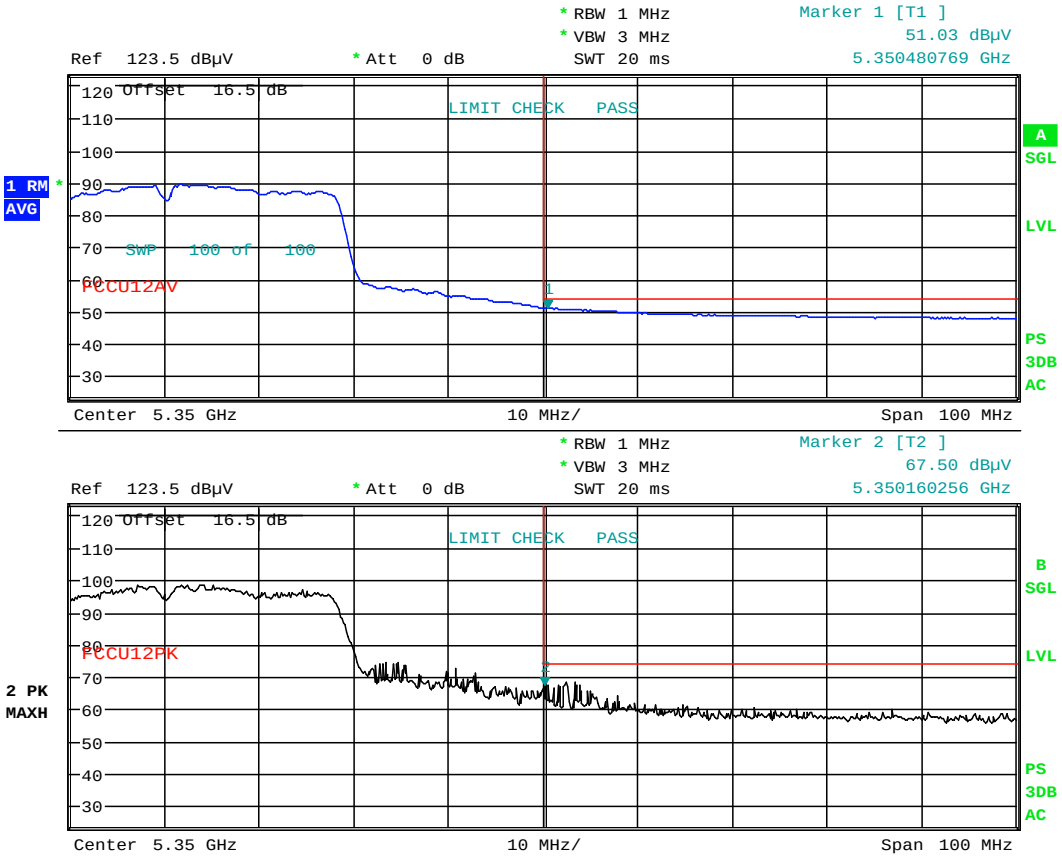
Date: 12.JUN.2015 08:57:01

Plot 6-211. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 1)

MIMO Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

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



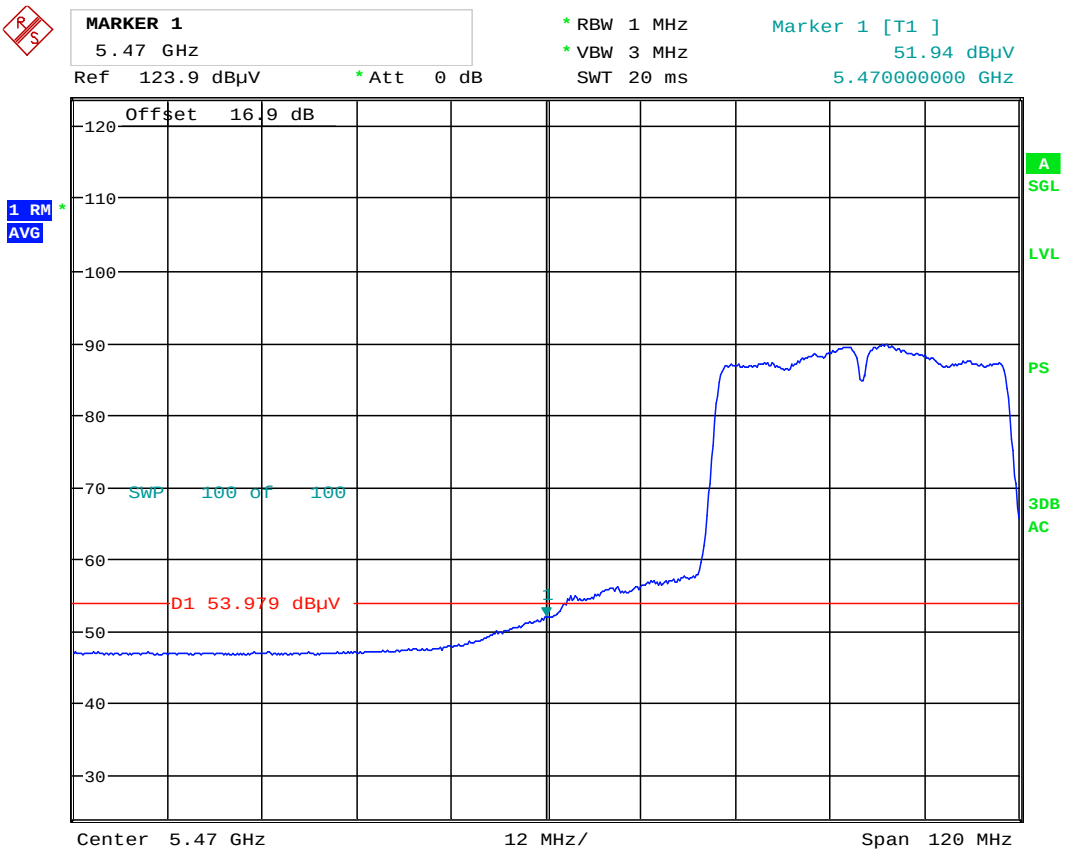
Date: 29.JUN.2015 19:44:38

Plot 6-212. Radiated Restricted Upper Band Edge Plot (Average & Peak – UNII Band 2A)

MIMO Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

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

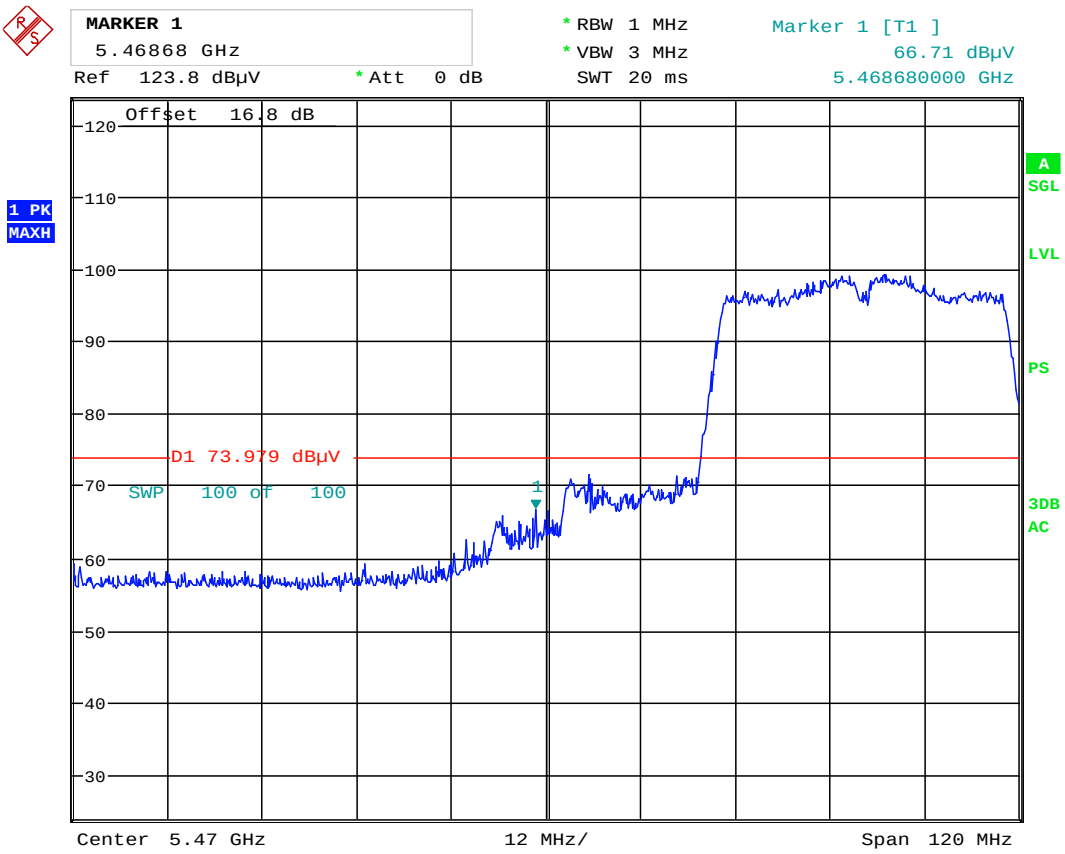


Plot 6-213. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

MIMO Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

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



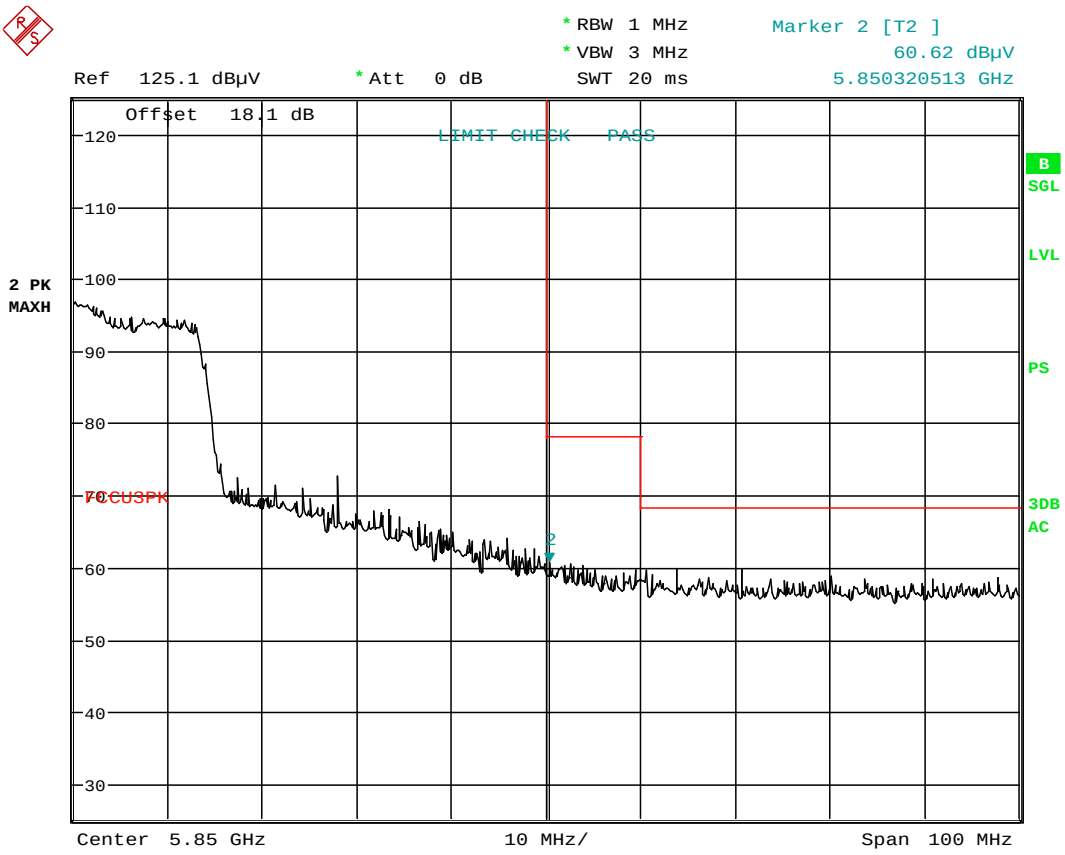
Date: 1.JUL.2015 09:42:11

Plot 6-214. 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



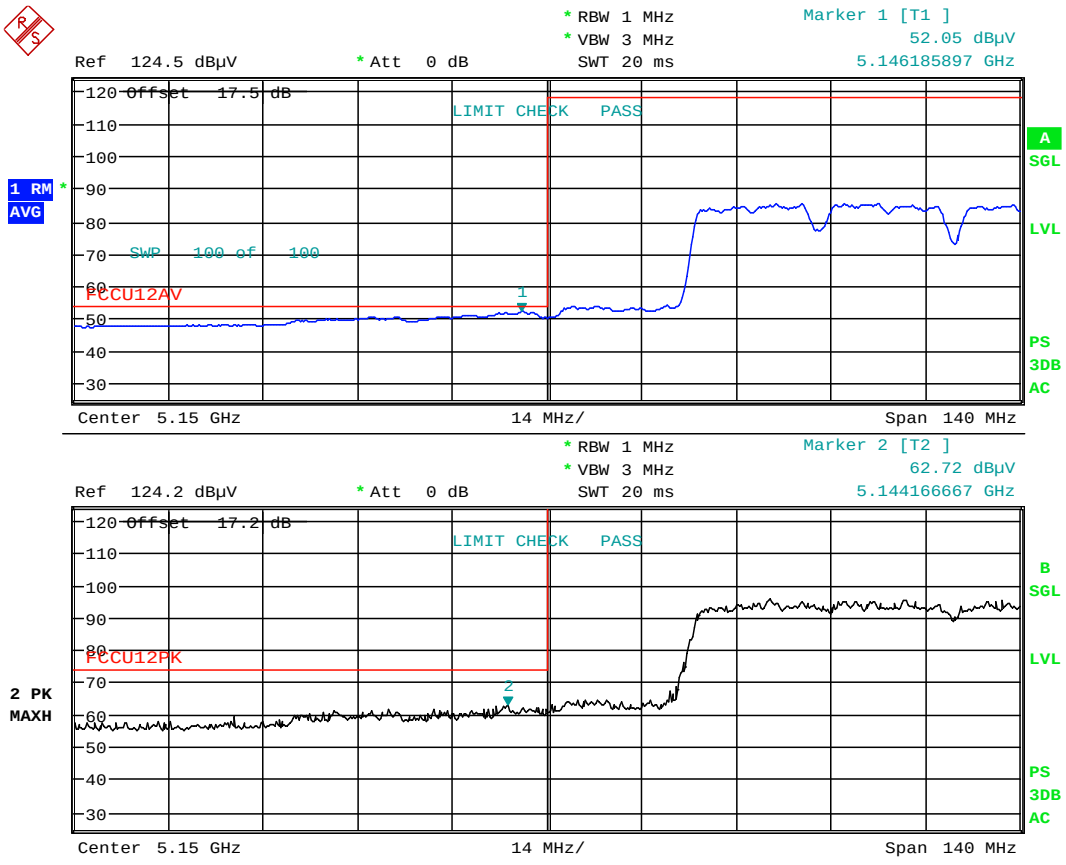
Date: 12.JUN.2015 09:39:29

Plot 6-215. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

6.7.12 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



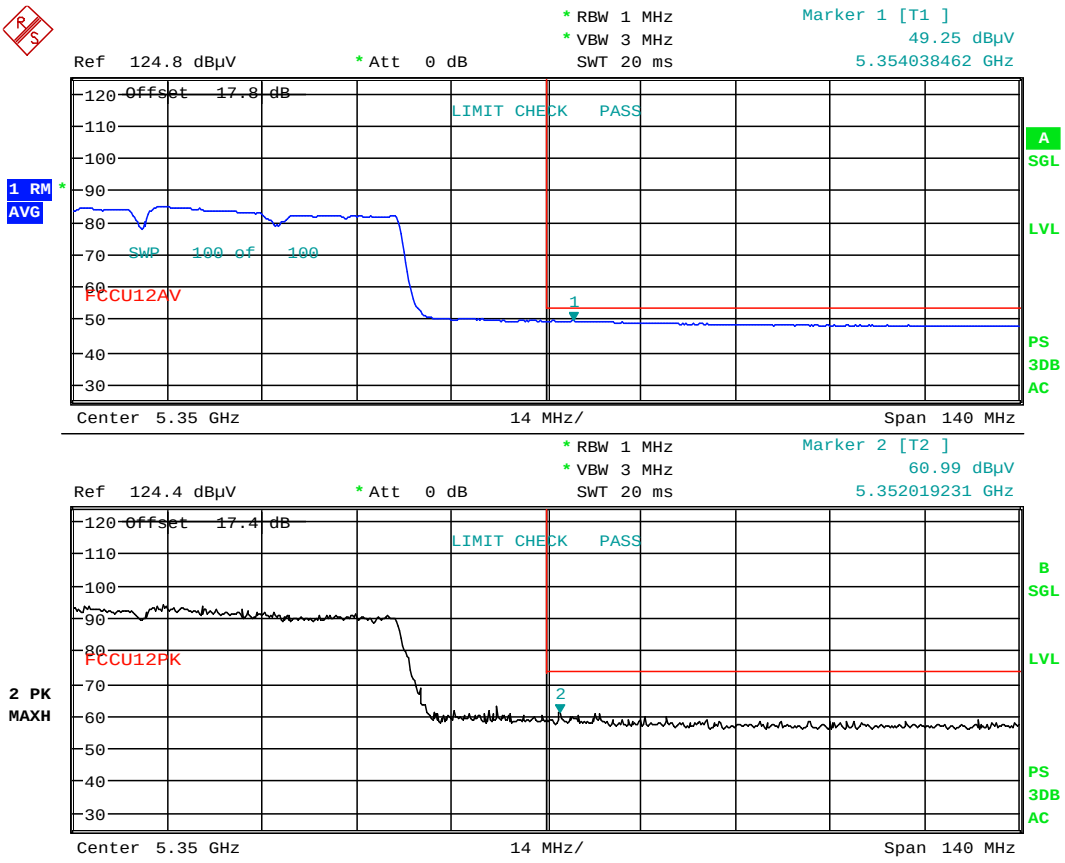
Date: 12.JUN.2015 08:59:15

Plot 6-216. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 1)

MIMO Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

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



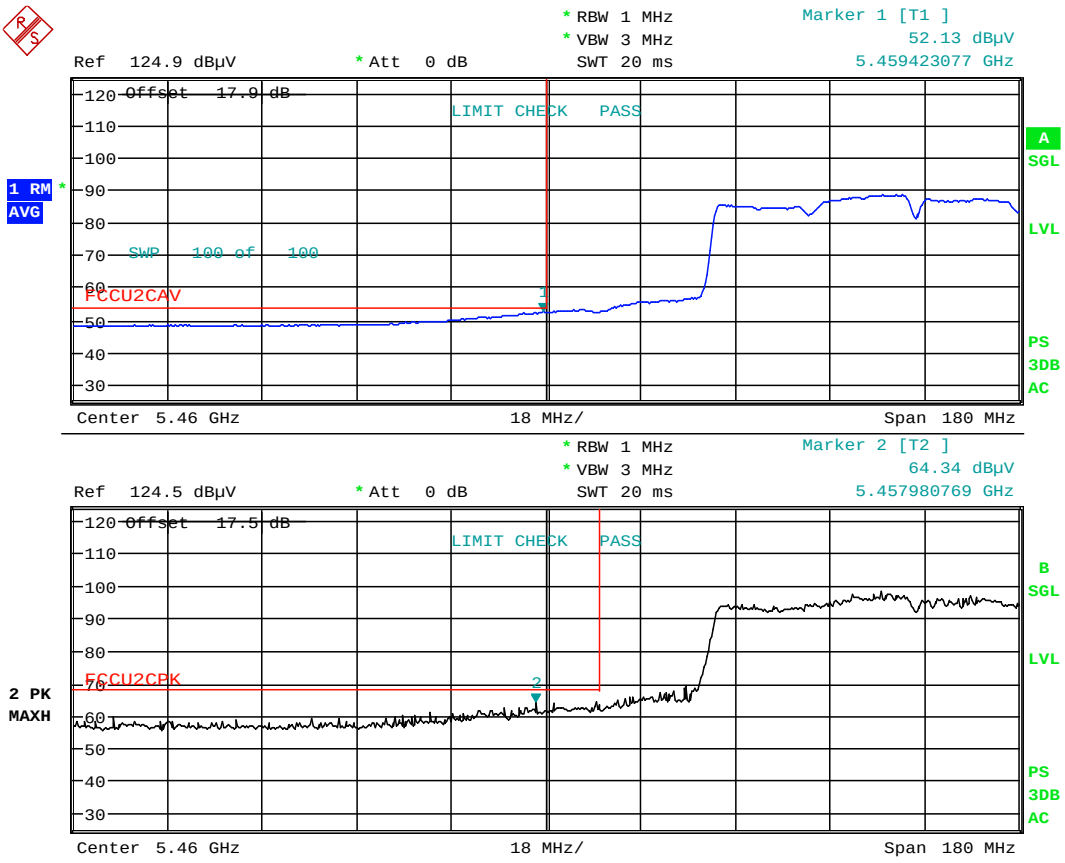
Date: 2.JUL.2015 00:17:52

Plot 6-217. Radiated Restricted Upper Band Edge Plot (Average & Peak – UNII Band 2A)

MIMO Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

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



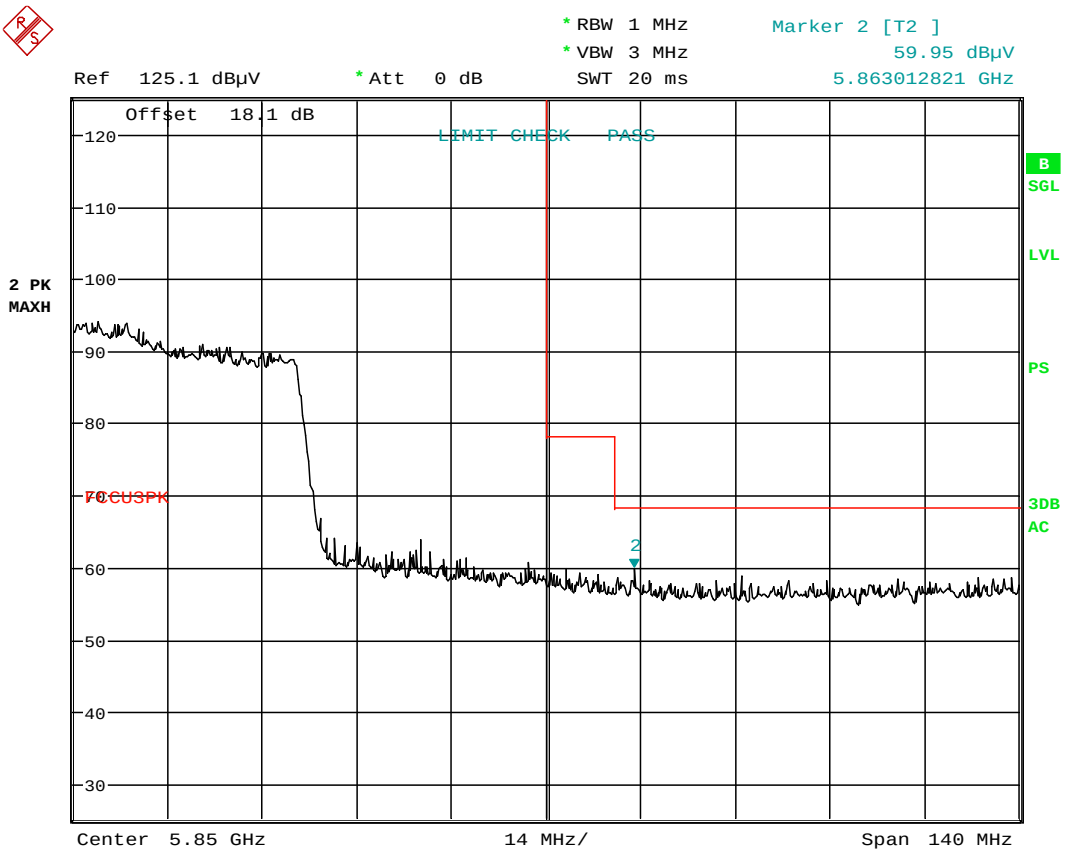
Date: 12.JUN.2015 09:31:55

Plot 6-218. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 2C)

MIMO Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

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



Date: 12.JUN.2015 09:40:51

Plot 6-219. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

6.8 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 6-59 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 6-59. Radiated Limits

Test Procedures Used

ANSI C63.4-2009

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 diagram below.

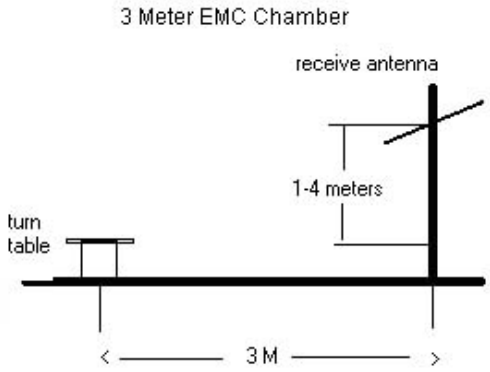


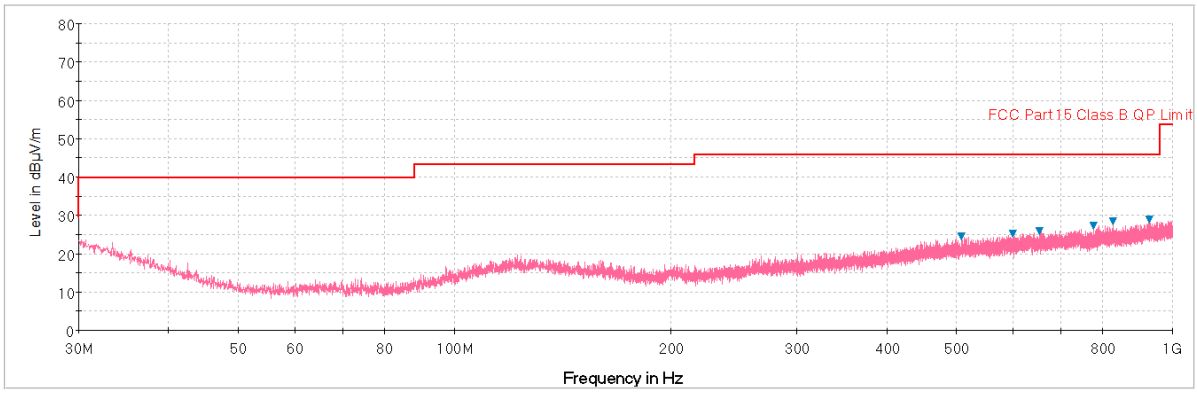
Figure 6-6. Test Instrument & Measurement Setup

Test Notes

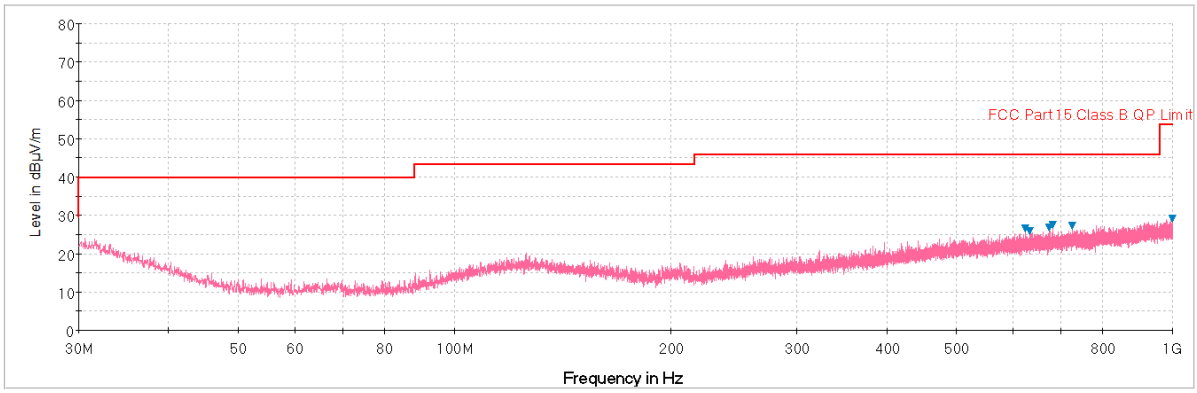
1. All emissions lying in restricted bands specified in §15.205 are below the limit shown in Table 6-27.
2. The broadband receive antenna is manipulated through vertical and horizontal polarizations during the tests. The EUT is manipulated through three orthogonal planes.
3. This unit was tested with 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



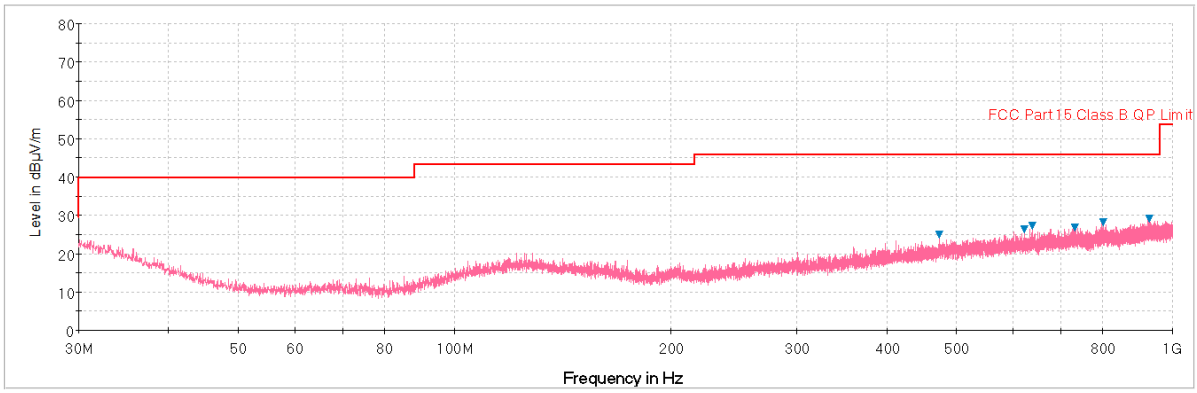
Plot 6-220. Radiated Spurious Plot below 1GHz (802.11a – U3 Ch. 157, Ant. Pol. H)



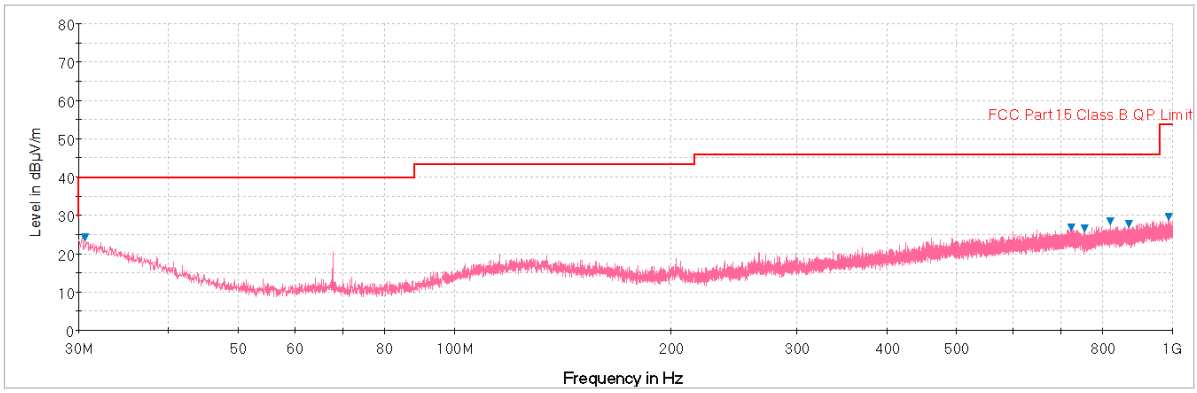
Plot 6-221. Radiated Spurious Plot below 1GHz (802.11a – U3 Ch. 157, Ant. Pol. V)

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

§15.209

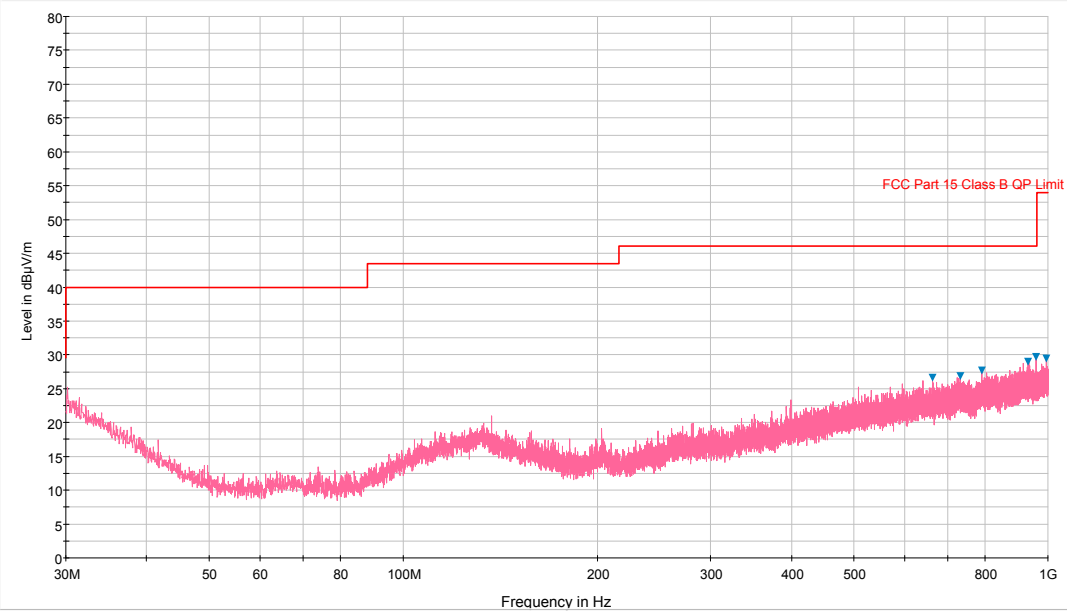


Plot 6-222. Radiated Spurious Plot below 1GHz (802.11a – U3 Ch. 157, Ant. Pol. H)

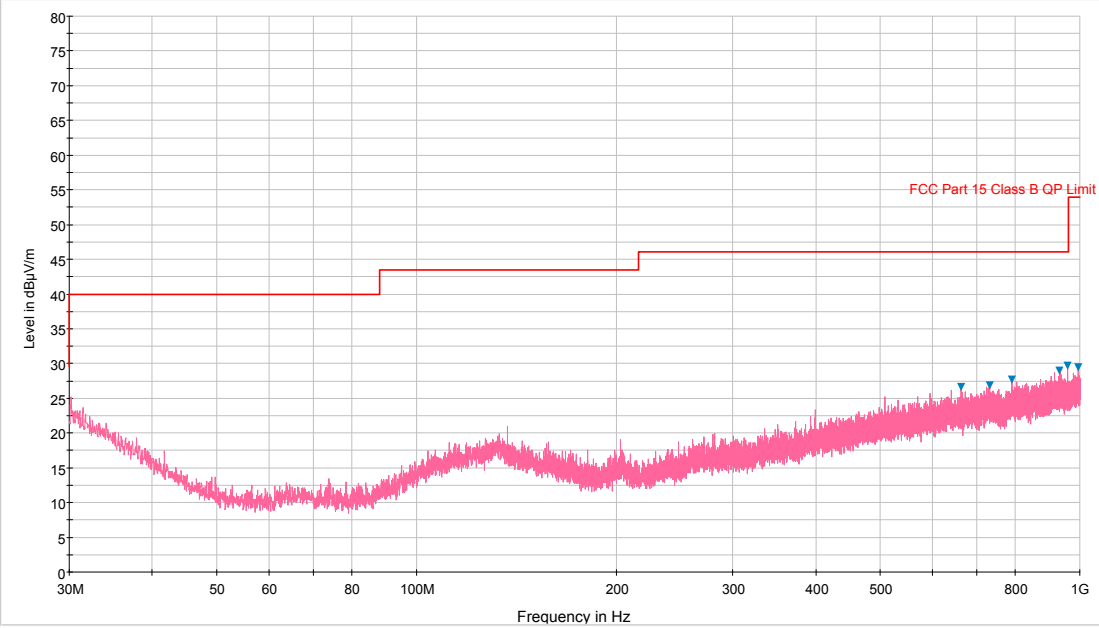


Plot 6-223. Radiated Spurious Plot below 1GHz (802.11a – U3 Ch. 157, Ant. Pol. V)

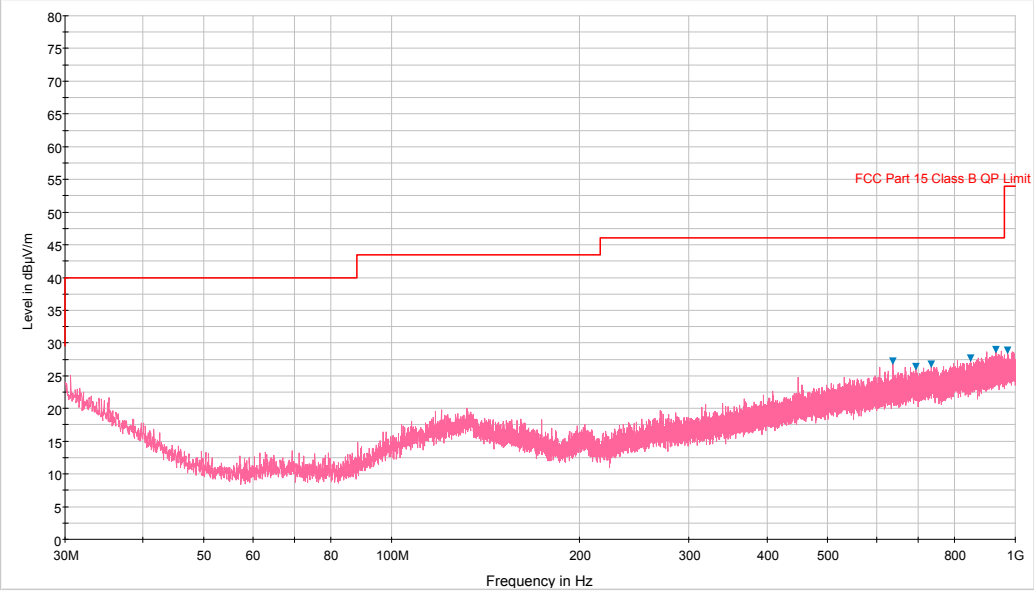
SIMULTANEOUS TX Radiated Spurious Emissions Measurements (Below 1GHz)
§15.209



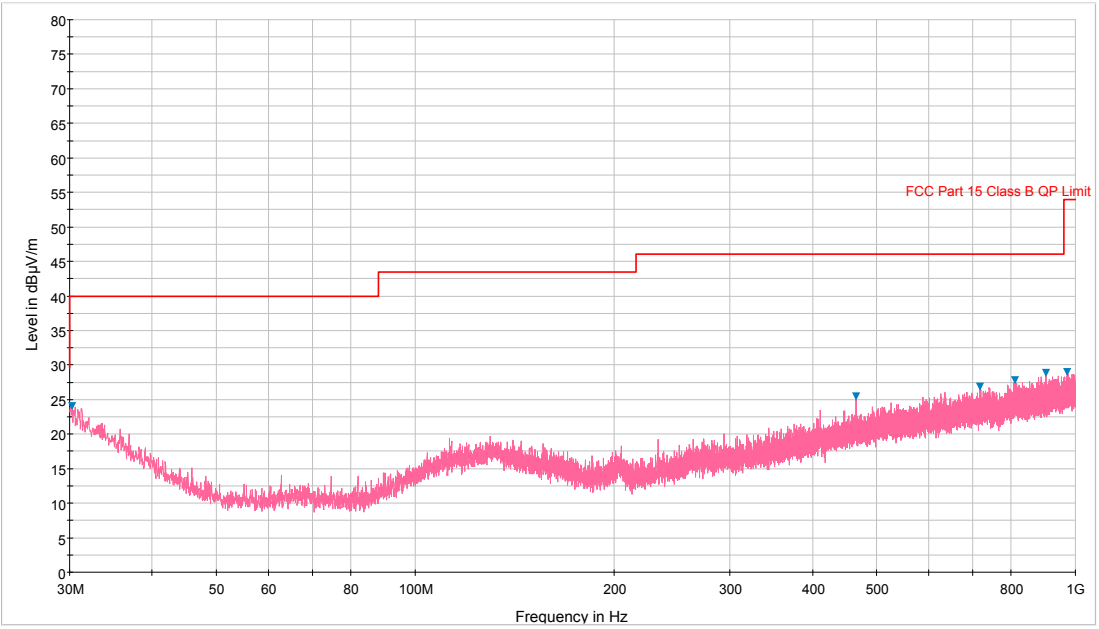
Plot 6-224. Radiated Spurious Plot below 1GHz (SIMULTANEOUS TX Config-1, Ant. Pol. H)



Plot 6-225. Radiated Spurious Plot below 1GHz (SIMULTANEOUS TX Config-1, Ant. Pol. V)



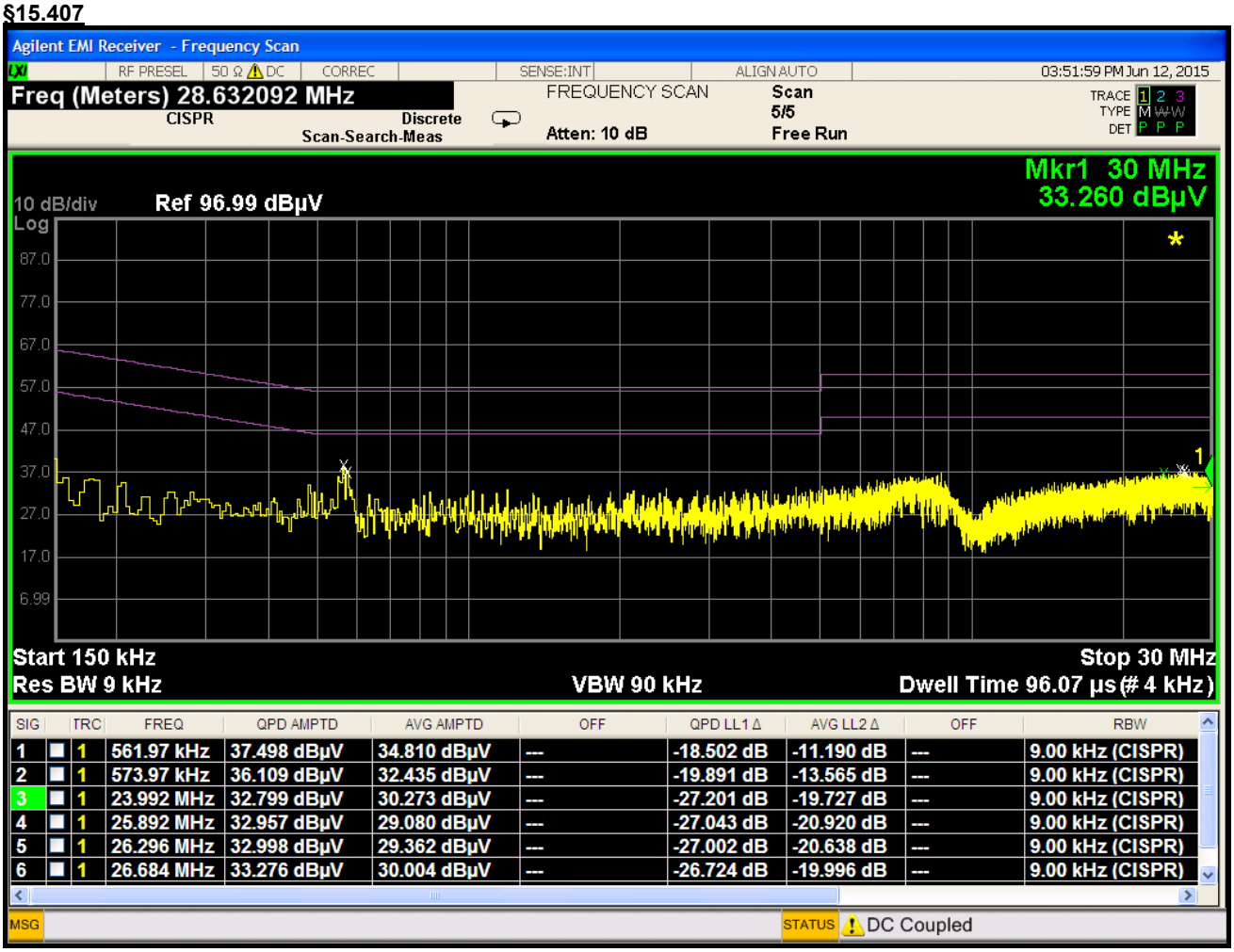
Plot 6-226. Radiated Spurious Plot below 1GHz (SIMULTANEOUS TX Config-2, Ant. Pol. H)



Plot 6-227. Radiated Spurious Plot below 1GHz (SIMULTANEOUS TX Config-2, Ant. Pol. V)

6.9 Line-Conducted Test Data

§15.407



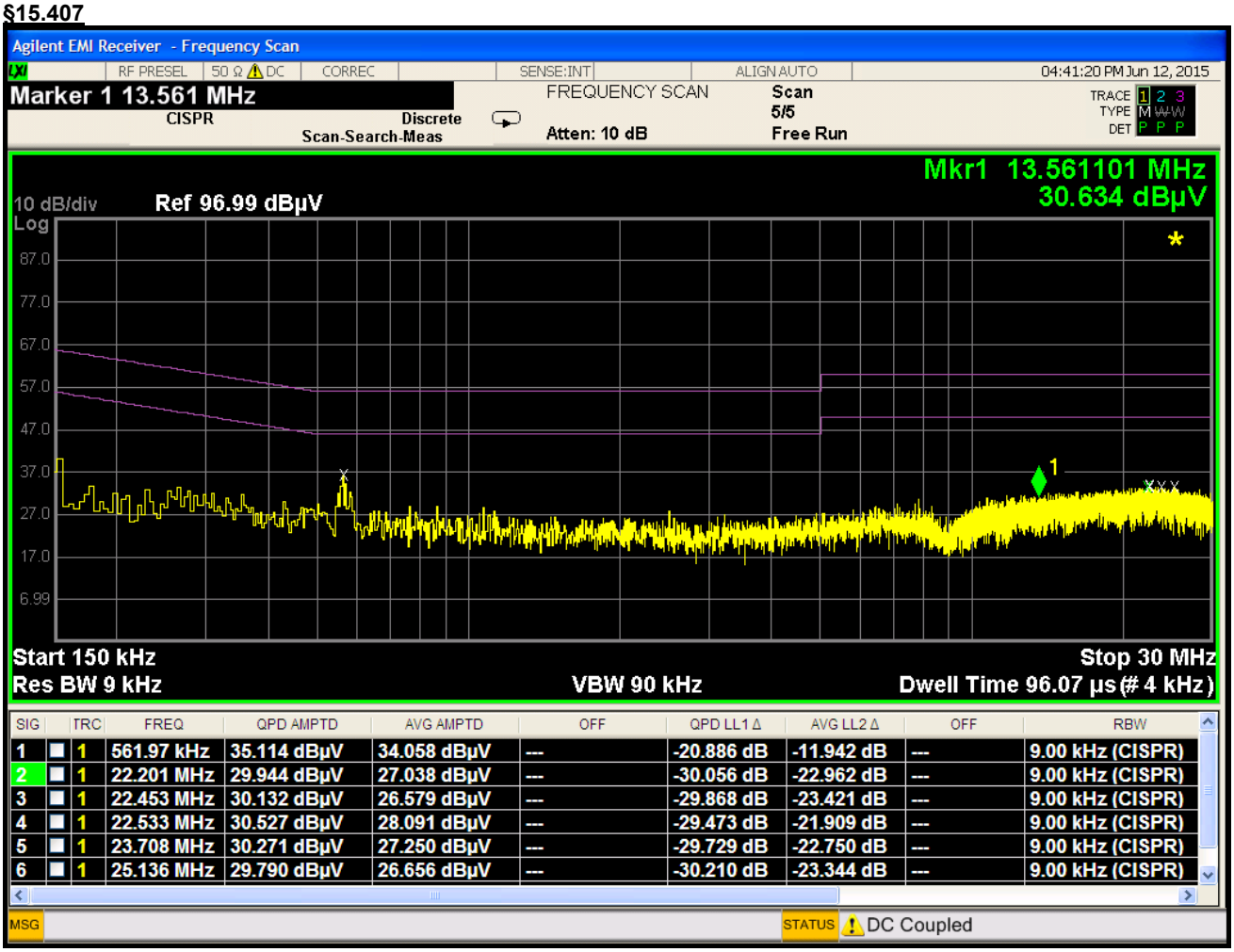
Plot 6-228. Line Conducted Plot with 802.11a UNII Band 1 (L1)

Notes:

1. All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11a mode using 6Mbps on Channel 36. The emissions found were not affected by the choice of channel used during testing.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. L1 = Phase; N = Neutral
4. Corr. (dB) = Cable loss (dB) + LISN insertion factor (dB)
5. QP/AV Level (dBµV) = QP/AV Analyzer/Receiver Level (dBµV) + Corr. (dB)
6. Margin (dB) = QP/AVLimit (dBµV) - QP/AV Level (dBµV)
7. Traces shown in plot are made using a peak detector.
8. Deviations to the Specifications: None.

Line-Conducted Test Data

§15.407



SIG	TRC	FREQ	QPD AMPTD	AVG AMPTD	OFF	QPD LL1 Δ	AVG LL2 Δ	OFF	RBW
1	1	561.97 kHz	35.114 dBµV	34.058 dBµV	---	-20.886 dB	-11.942 dB	---	9.00 kHz (CISPR)
2	1	22.201 MHz	29.944 dBµV	27.038 dBµV	---	-30.056 dB	-22.962 dB	---	9.00 kHz (CISPR)
3	1	22.453 MHz	30.132 dBµV	26.579 dBµV	---	-29.868 dB	-23.421 dB	---	9.00 kHz (CISPR)
4	1	22.533 MHz	30.527 dBµV	28.091 dBµV	---	-29.473 dB	-21.909 dB	---	9.00 kHz (CISPR)
5	1	23.708 MHz	30.271 dBµV	27.250 dBµV	---	-29.729 dB	-22.750 dB	---	9.00 kHz (CISPR)
6	1	25.136 MHz	29.790 dBµV	26.656 dBµV	---	-30.210 dB	-23.344 dB	---	9.00 kHz (CISPR)

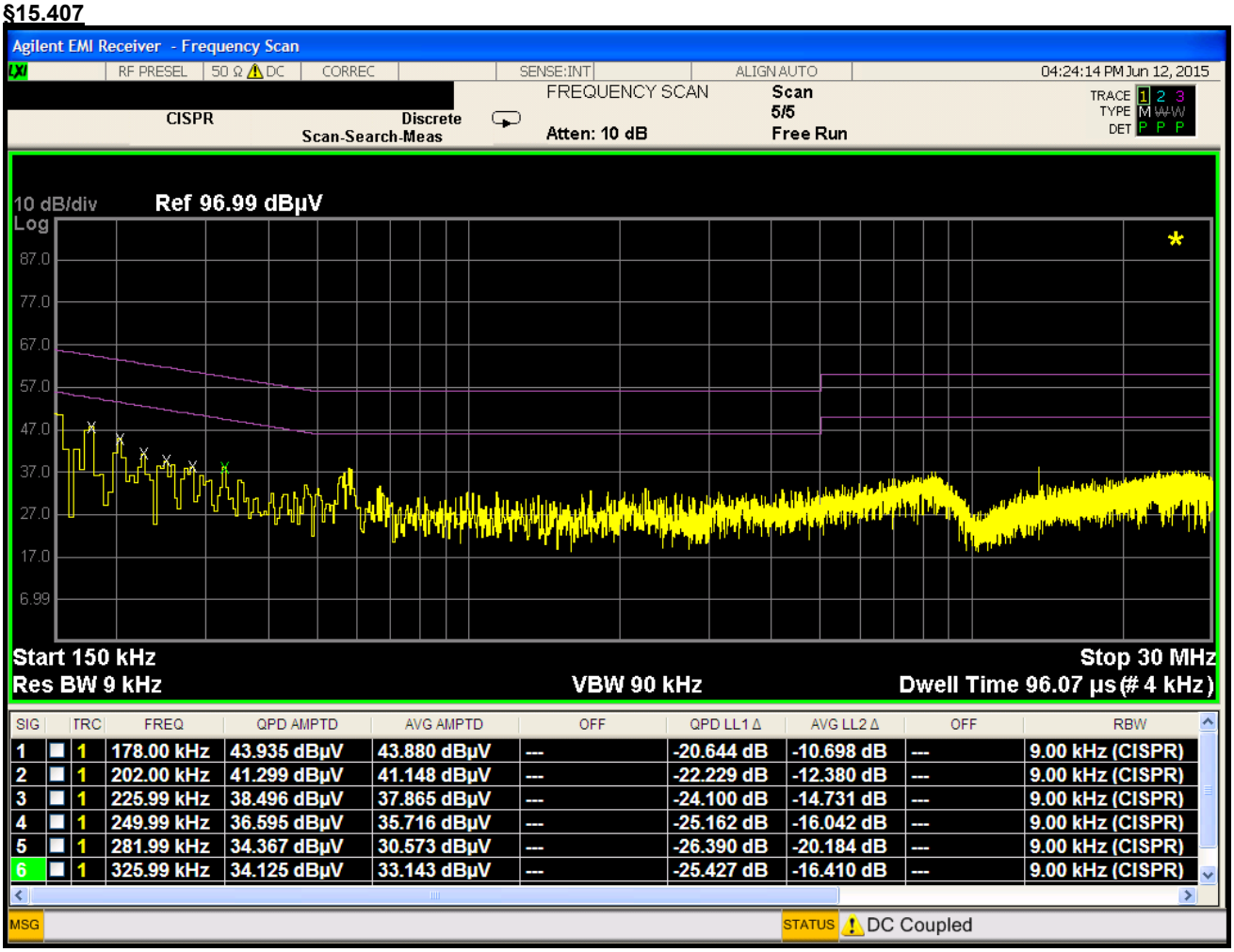
Plot 6-229. Line Conducted Plot with 802.11a UNII Band 1 (N)

Notes:

1. All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11a mode using 6Mbps on Channel 36. The emissions found were not affected by the choice of channel used during testing.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. L1 = Phase; N = Neutral
4. Corr. (dB) = Cable loss (dB) + LISN insertion factor (dB)
5. QP/AV Level (dBµV) = QP/AV Analyzer/Receiver Level (dBµV) + Corr. (dB)
6. Margin (dB) = QP/AVLimit (dBµV) - QP/AV Level (dBµV)
7. Traces shown in plot are made using a peak detector.
8. Deviations to the Specifications: None.

Line-Conducted Test Data

§15.407



SIG		TRC	FREQ	QPD AMPTD	AVG AMPTD	OFF	QPD LL1 Δ	AVG LL2 Δ	OFF	RBW
1		1	178.00 kHz	43.935 dBµV	43.880 dBµV	---	-20.644 dB	-10.698 dB	---	9.00 kHz (CISPR)
2		1	202.00 kHz	41.299 dBµV	41.148 dBµV	---	-22.229 dB	-12.380 dB	---	9.00 kHz (CISPR)
3		1	225.99 kHz	38.496 dBµV	37.865 dBµV	---	-24.100 dB	-14.731 dB	---	9.00 kHz (CISPR)
4		1	249.99 kHz	36.595 dBµV	35.716 dBµV	---	-25.162 dB	-16.042 dB	---	9.00 kHz (CISPR)
5		1	281.99 kHz	34.367 dBµV	30.573 dBµV	---	-26.390 dB	-20.184 dB	---	9.00 kHz (CISPR)
6		1	325.99 kHz	34.125 dBµV	33.143 dBµV	---	-25.427 dB	-16.410 dB	---	9.00 kHz (CISPR)

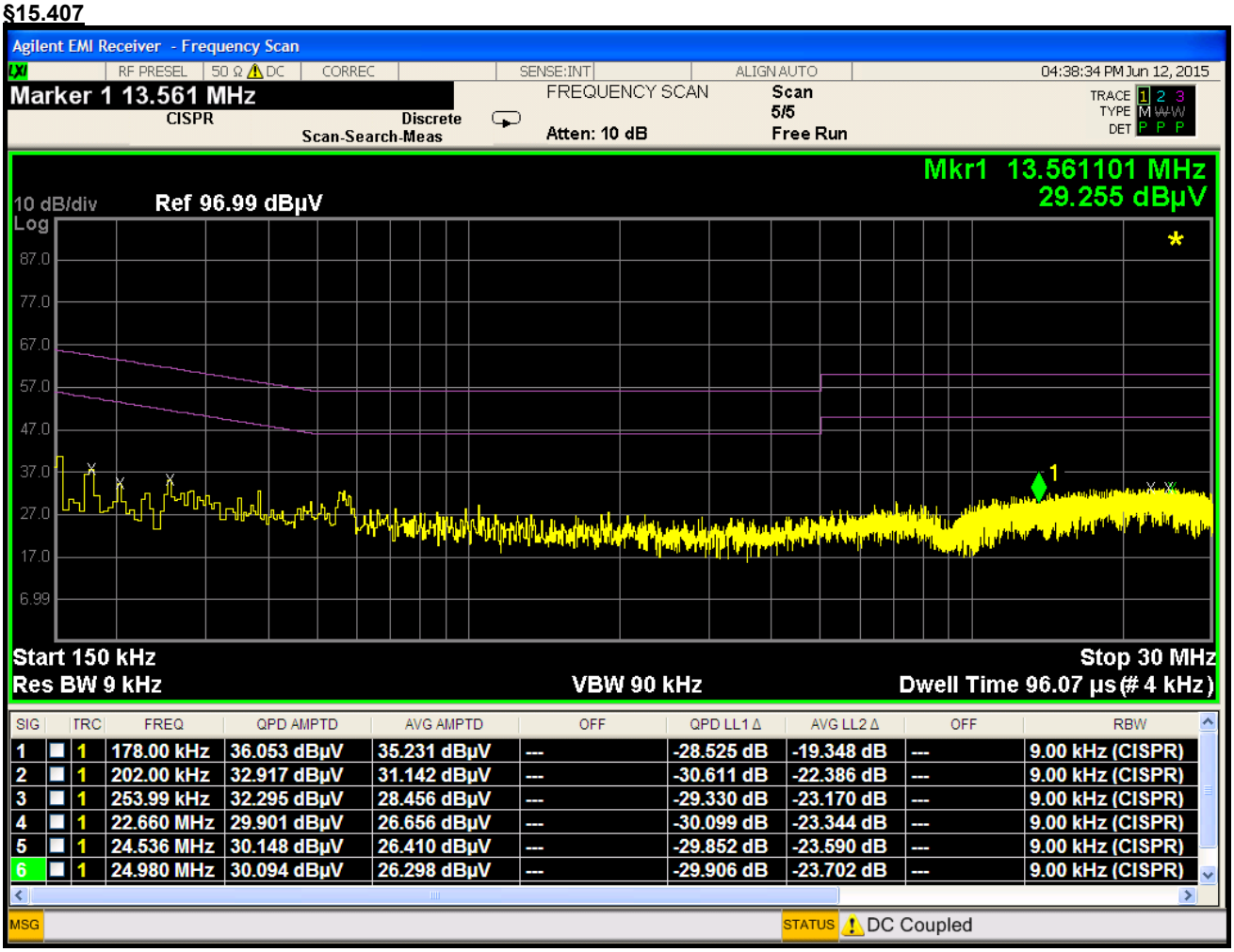
Plot 6-230. Line Conducted Plot with 802.11a UNII Band 2A (L1)

Notes:

1. All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11a mode using 6Mbps on Channel 52. The emissions found were not affected by the choice of channel used during testing.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. L1 = Phase; N = Neutral
4. Corr. (dB) = Cable loss (dB) + LISN insertion factor (dB)
5. QP/AV Level (dBµV) = QP/AV Analyzer/Receiver Level (dBµV) + Corr. (dB)
6. Margin (dB) = QP/AVLimit (dBµV) - QP/AV Level (dBµV)
7. Traces shown in plot are made using a peak detector.
8. Deviations to the Specifications: None.

Line-Conducted Test Data

§15.407



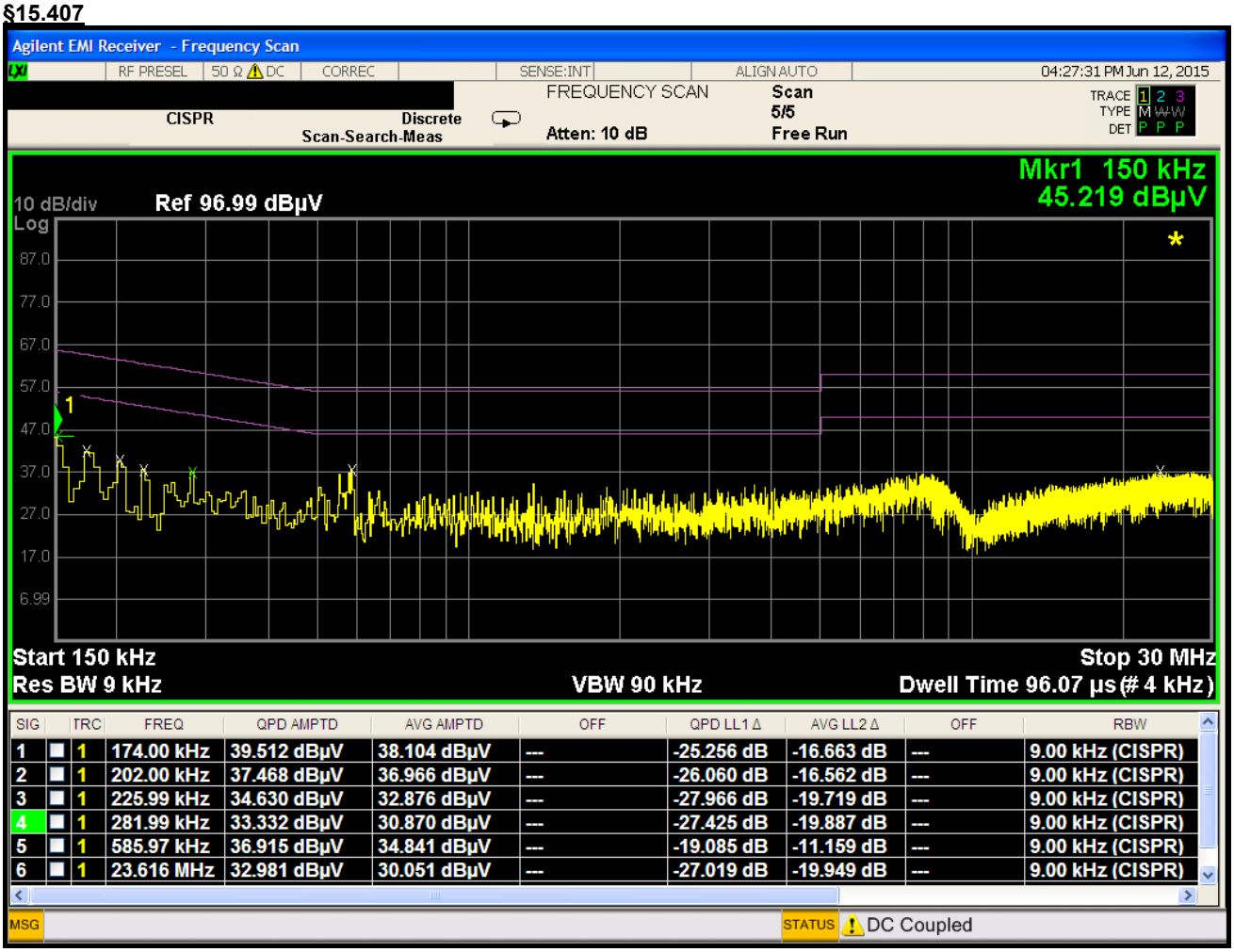
Plot 6-231. Line Conducted Plot with 802.11a UNII Band 2A (N)

Notes:

1. All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11a mode using 6Mbps on Channel 52. The emissions found were not affected by the choice of channel used during testing.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. L1 = Phase; N = Neutral
4. Corr. (dB) = Cable loss (dB) + LISN insertion factor (dB)
5. QP/AV Level (dBµV) = QP/AV Analyzer/Receiver Level (dBµV) + Corr. (dB)
6. Margin (dB) = QP/AVLimit (dBµV) - QP/AV Level (dBµV)
7. Traces shown in plot are made using a peak detector.
8. Deviations to the Specifications: None.

Line-Conducted Test Data

§15.407



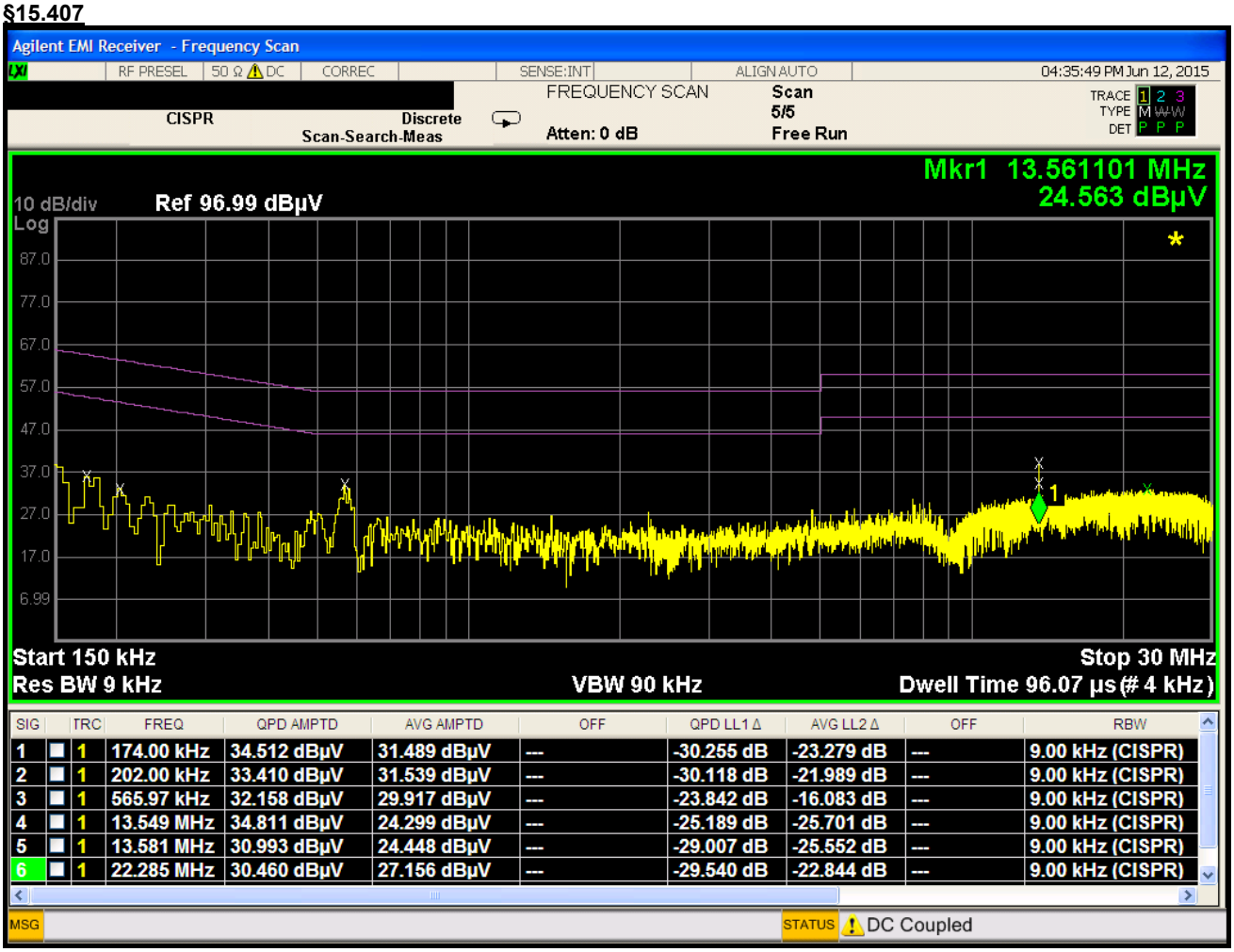
Plot 6-232. Line Conducted Plot with 802.11a UNII Band 2C (L1)

Notes:

1. All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11a mode using 6Mbps on Channel 100. The emissions found were not affected by the choice of channel used during testing.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. L1 = Phase; N = Neutral
4. Corr. (dB) = Cable loss (dB) + LISN insertion factor (dB)
5. QP/AV Level (dBµV) = QP/AV Analyzer/Receiver Level (dBµV) + Corr. (dB)
6. Margin (dB) = QP/AVLimit (dBµV) - QP/AV Level (dBµV)
7. Traces shown in plot are made using a peak detector.
8. Deviations to the Specifications: None.

Line-Conducted Test Data

§15.407



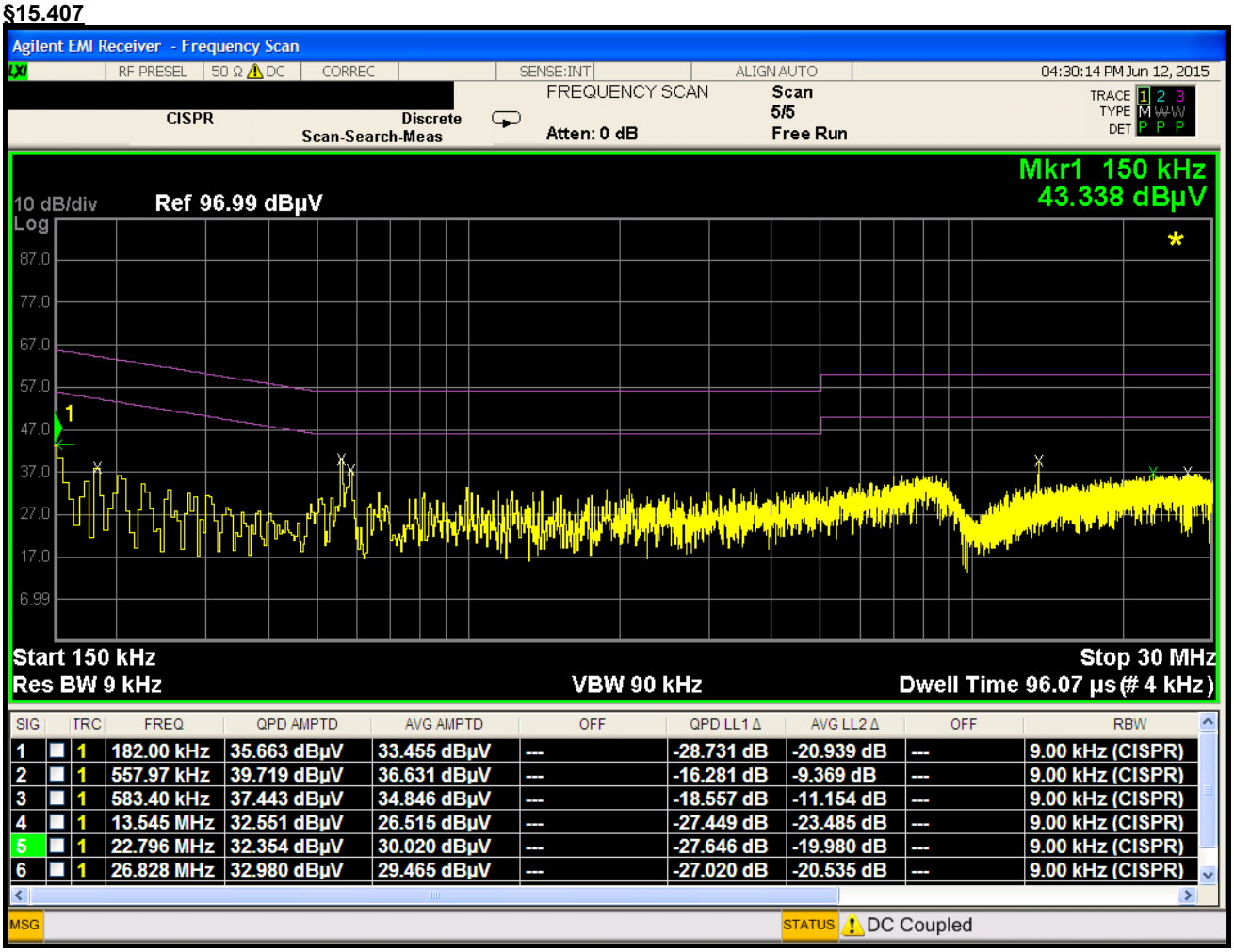
Plot 6-233. Line Conducted Plot with 802.11a UNII Band 2C (N)

Notes:

1. All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11a mode using 6Mbps on Channel 100. The emissions found were not affected by the choice of channel used during testing.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. L1 = Phase; N = Neutral
4. Corr. (dB) = Cable loss (dB) + LISN insertion factor (dB)
5. QP/AV Level (dBµV) = QP/AV Analyzer/Receiver Level (dBµV) + Corr. (dB)
6. Margin (dB) = QP/AVLimit (dBµV) - QP/AV Level (dBµV)
7. Traces shown in plot are made using a peak detector.
8. Deviations to the Specifications: None.

Line-Conducted Test Data

§15.407



SIG	TRC	FREQ	QPD AMPTD	AVG AMPTD	OFF	QPD LL1 Δ	AVG LL2 Δ	OFF	RBW
1	1	182.00 kHz	35.663 dBµV	33.455 dBµV	---	-28.731 dB	-20.939 dB	---	9.00 kHz (CISPR)
2	1	557.97 kHz	39.719 dBµV	36.631 dBµV	---	-16.281 dB	-9.369 dB	---	9.00 kHz (CISPR)
3	1	583.40 kHz	37.443 dBµV	34.846 dBµV	---	-18.557 dB	-11.154 dB	---	9.00 kHz (CISPR)
4	1	13.545 MHz	32.551 dBµV	26.515 dBµV	---	-27.449 dB	-23.485 dB	---	9.00 kHz (CISPR)
5	1	22.796 MHz	32.354 dBµV	30.020 dBµV	---	-27.646 dB	-19.980 dB	---	9.00 kHz (CISPR)
6	1	26.828 MHz	32.980 dBµV	29.465 dBµV	---	-27.020 dB	-20.535 dB	---	9.00 kHz (CISPR)

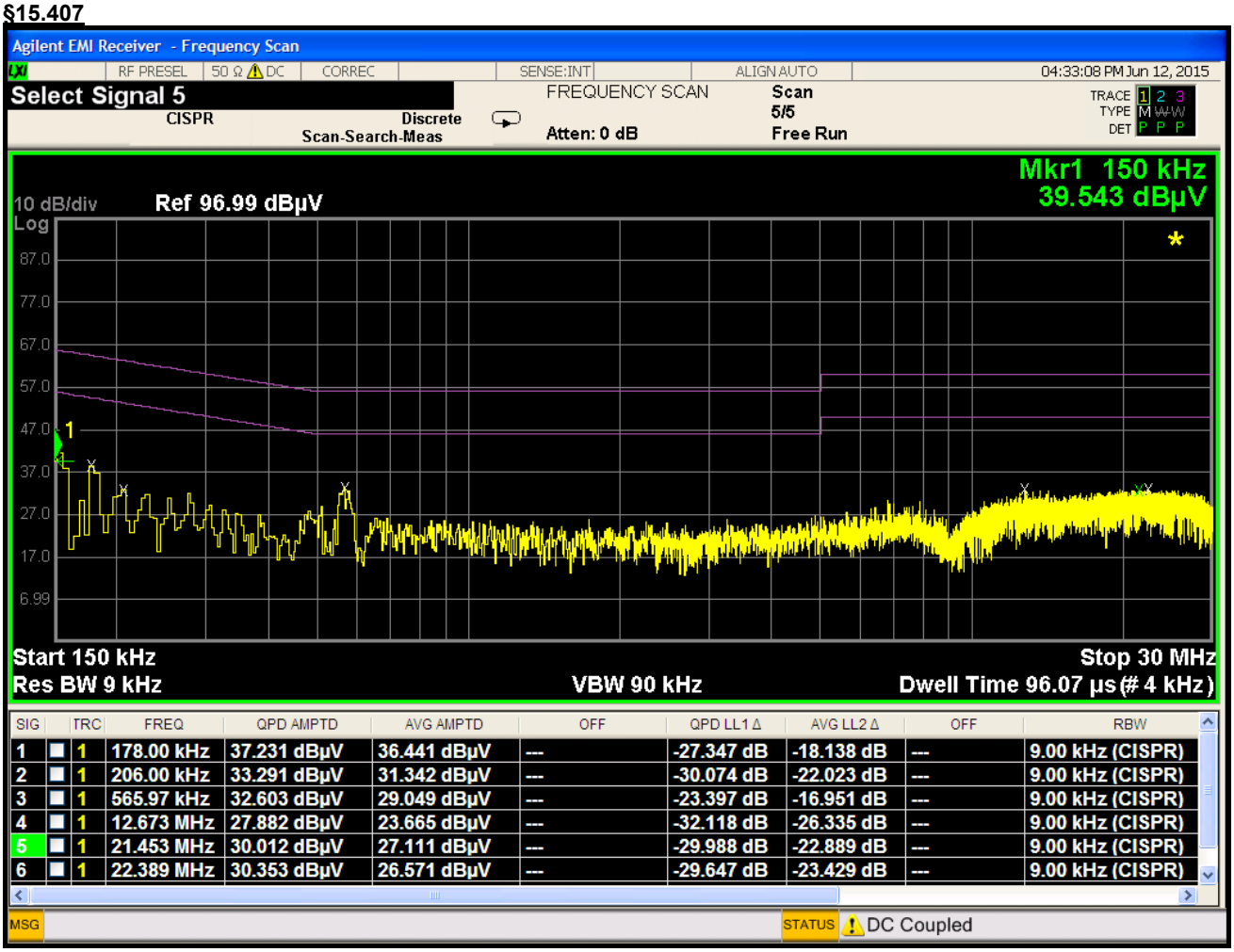
Plot 6-234. Line Conducted Plot with 802.11a UNII Band 3 (L1)

Notes:

1. All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11a mode using 6Mbps on Channel 149. The emissions found were not affected by the choice of channel used during testing.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. L1 = Phase; N = Neutral
4. Corr. (dB) = Cable loss (dB) + LISN insertion factor (dB)
5. QP/AV Level (dBµV) = QP/AV Analyzer/Receiver Level (dBµV) + Corr. (dB)
6. Margin (dB) = QP/AVLimit (dBµV) - QP/AV Level (dBµV)
7. Traces shown in plot are made using a peak detector.
8. Deviations to the Specifications: None.

Line-Conducted Test Data

§15.407



SIG	TRC	FREQ	QPD AMPTD	AVG AMPTD	OFF	QPD LL1 Δ	AVG LL2 Δ	OFF	RBW
1	1	178.00 kHz	37.231 dBµV	36.441 dBµV	---	-27.347 dB	-18.138 dB	---	9.00 kHz (CISPR)
2	1	206.00 kHz	33.291 dBµV	31.342 dBµV	---	-30.074 dB	-22.023 dB	---	9.00 kHz (CISPR)
3	1	565.97 kHz	32.603 dBµV	29.049 dBµV	---	-23.397 dB	-16.951 dB	---	9.00 kHz (CISPR)
4	1	12.673 MHz	27.882 dBµV	23.665 dBµV	---	-32.118 dB	-26.335 dB	---	9.00 kHz (CISPR)
5	1	21.453 MHz	30.012 dBµV	27.111 dBµV	---	-29.988 dB	-22.889 dB	---	9.00 kHz (CISPR)
6	1	22.389 MHz	30.353 dBµV	26.571 dBµV	---	-29.647 dB	-23.429 dB	---	9.00 kHz (CISPR)

Plot 6-235. Line Conducted Plot with 802.11a UNII Band 3 (N)

Notes:

1. All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11a mode using 6Mbps on Channel 149. The emissions found were not affected by the choice of channel used during testing.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. L1 = Phase; N = Neutral
4. Corr. (dB) = Cable loss (dB) + LISN insertion factor (dB)
5. QP/AV Level (dBµV) = QP/AV Analyzer/Receiver Level (dBµV) + Corr. (dB)
6. Margin (dB) = QP/AVLimit (dBµV) - QP/AV Level (dBµV)
7. Traces shown in plot are made using a peak detector.
8. Deviations to the Specifications: None.

7.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMG928T** is in compliance with Part 15E of the FCC Rules.