6.5 Peak Excursion Ratio – 802.11a/n/ac

§15.407(a.6)

Test Overview and Limit

The spectrum analyzer was connected to the antenna terminal while the EUT was operating at its maximum duty cycle (>98%), at its maximum power control level, as defined in KDB 789033 v01r03, and at the appropriate frequencies. Method SA-1, as defined in KDB 789033 v01r03, was used to capture the average trace used to make the peak excursion measurement.

The largest permissible difference between the modulation envelope (measured using a peak hold function) and the maximum power spectral density is 13 dBm/MHz.

Test Procedure Used

KDB 789033 v01r03 – Section G

Test Settings

1. Analyzer was set to the center frequency of the UNII channel under investigation
2. Span was set to encompass the entire emission bandwidth of the signal
3. RBW = 1MHz
4. VBW = 3MHz
5. Detector = peak
6. Trace mode = max hold
7. Trace was allowed to stabilize
8. The peak search function of the spectrum analyzer was used to find the peak of the spectrum. This level was compared to the peak power density level found from the previous section to determine the peak excursion.

Test Setup

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

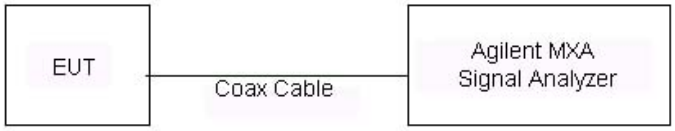

Figure 6-4. Test Instrument & Measurement Setup

Test Notes

The peak excursion was investigated for all signal types, modulation types, channel bandwidths, and variations in signal parameters and the worst case data is shown below. Only the worst case modulation mode on a single channel among all bands is reported since that is sufficient to demonstrate compliance to the peak excursion requirement per KDB 789033 v01r03.

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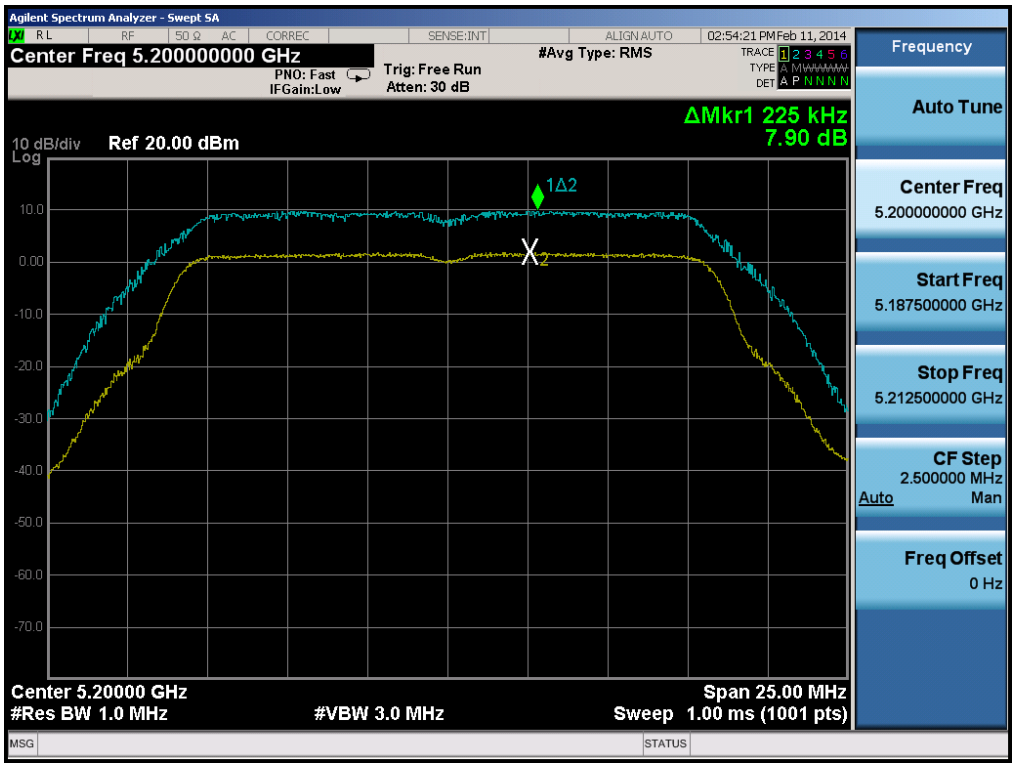
Antenna-1 Peak Excursion Ratio – 802.11a/n/ac

Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured Peak Excursion Ratio [dBm]	Max Permissible Peak Excursion Ratio [dBm/MHz]	Margin [dB]
5200	40	a	6	7.90	13.0	-5.10
5240	48	n (20MHz)	6.5/7.2 (MCS0)	8.27	13.0	-4.73
5190	38	n (40MHz)	13.5/15 (MCS0)	8.77	13.0	-4.23
5210	42	ac (80MHz)	29.3/32.5 (MCS0)	7.94	13.0	-5.06

Table 6-27. Conducted Peak Excursion Ratio Measurements



Plot 6-131. Peak Excursion Ratio Plot (802.11a (UNII Band 1) – Ch. 40)

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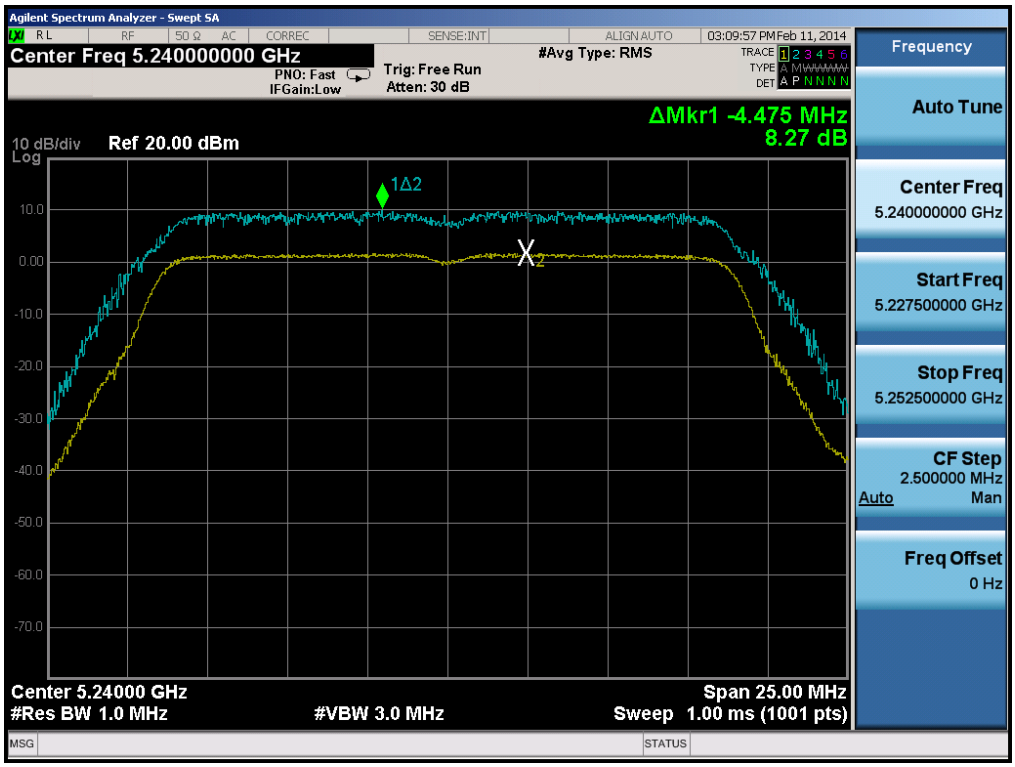
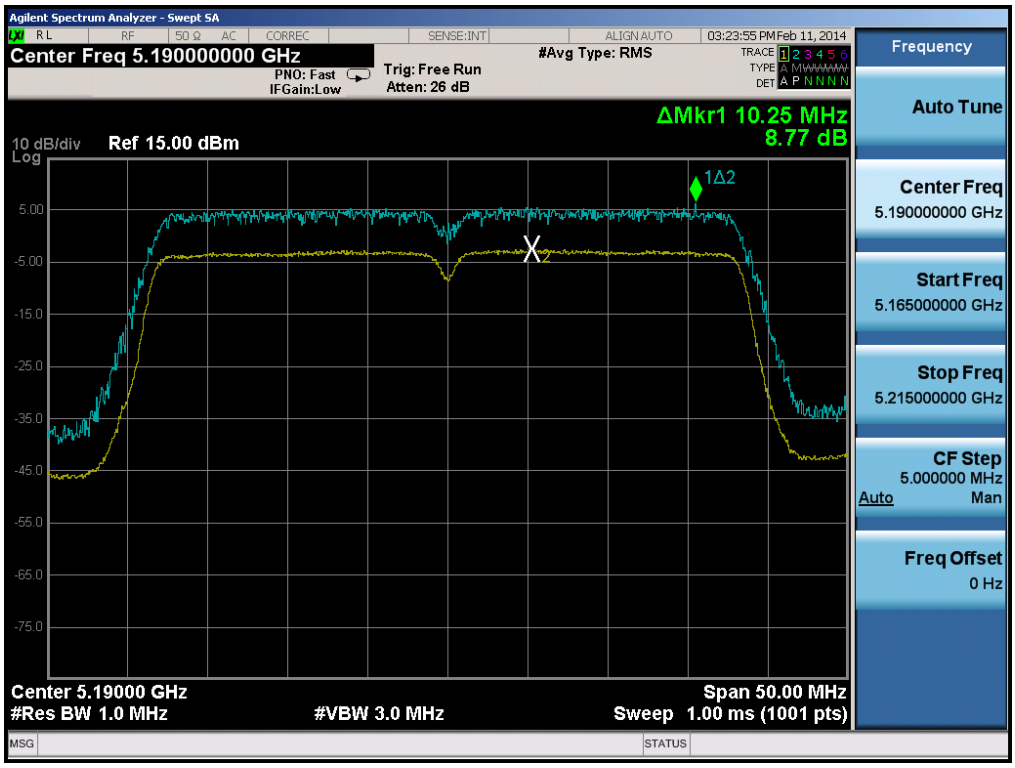


Plot 6-132. Peak Excursion Ratio Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 48)



Plot 6-133. Peak Excursion Ratio Plot (40MHz BW 802.11n (UNII Band 1) – Ch. 38)

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Plot 6-134. Peak Excursion Ratio Plot (80MHz BW 802.11ac (UNII Band 1) – Ch. 42)

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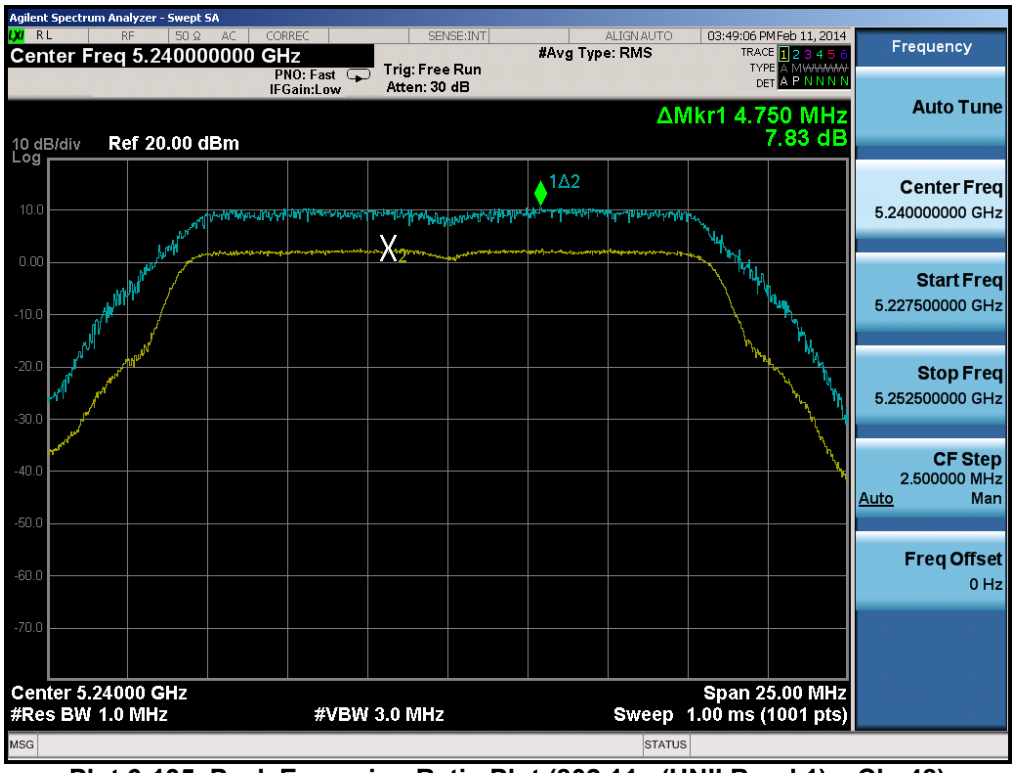
Antenna-2 Peak Excursion Ratio – 802.11a/n/ac

Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured Peak Excursion Ratio [dBm]	Max Permissible Peak Excursion Ratio [dBm/MHz]	Margin [dB]
5240	48	a	6	7.83	13.0	-5.17
5240	48	n (20MHz)	6.5/7.2 (MCS0)	8.34	13.0	-4.66
5230	46	n (40MHz)	13.5/15 (MCS0)	8.07	13.0	-4.94
5210	42	ac (80MHz)	29.3/32.5 (MCS0)	9.51	13.0	-3.49

Table 6-28. Conducted Peak Excursion Ratio Measurements



Plot 6-135. Peak Excursion Ratio Plot (802.11a (UNII Band 1) – Ch. 48)

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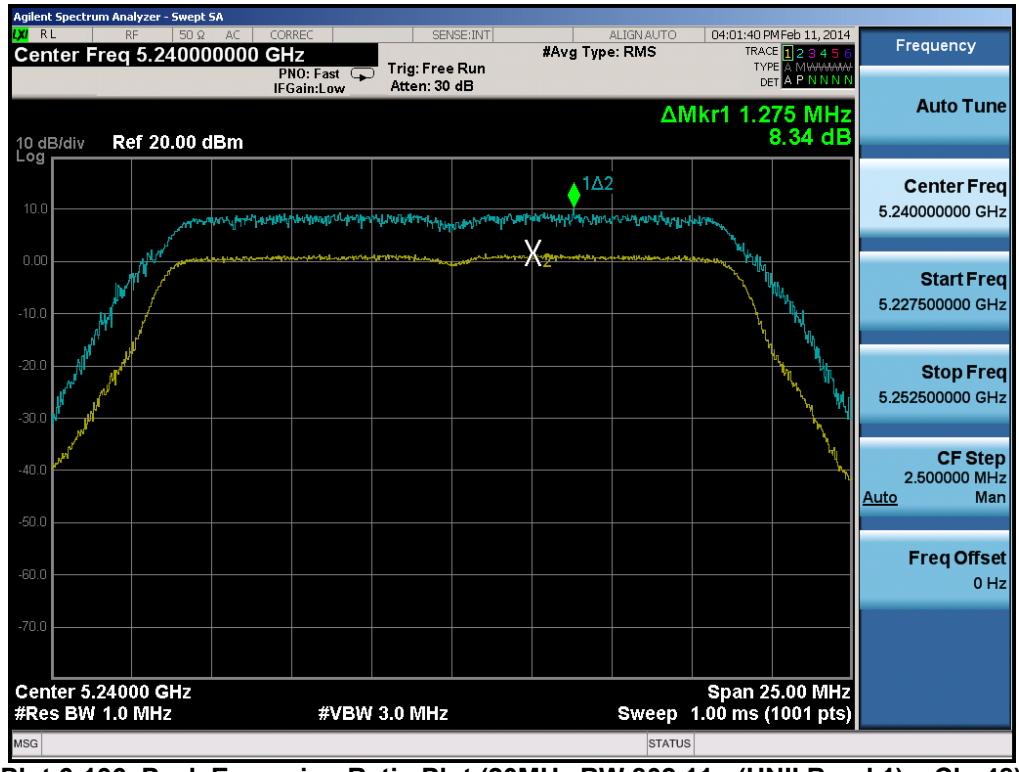
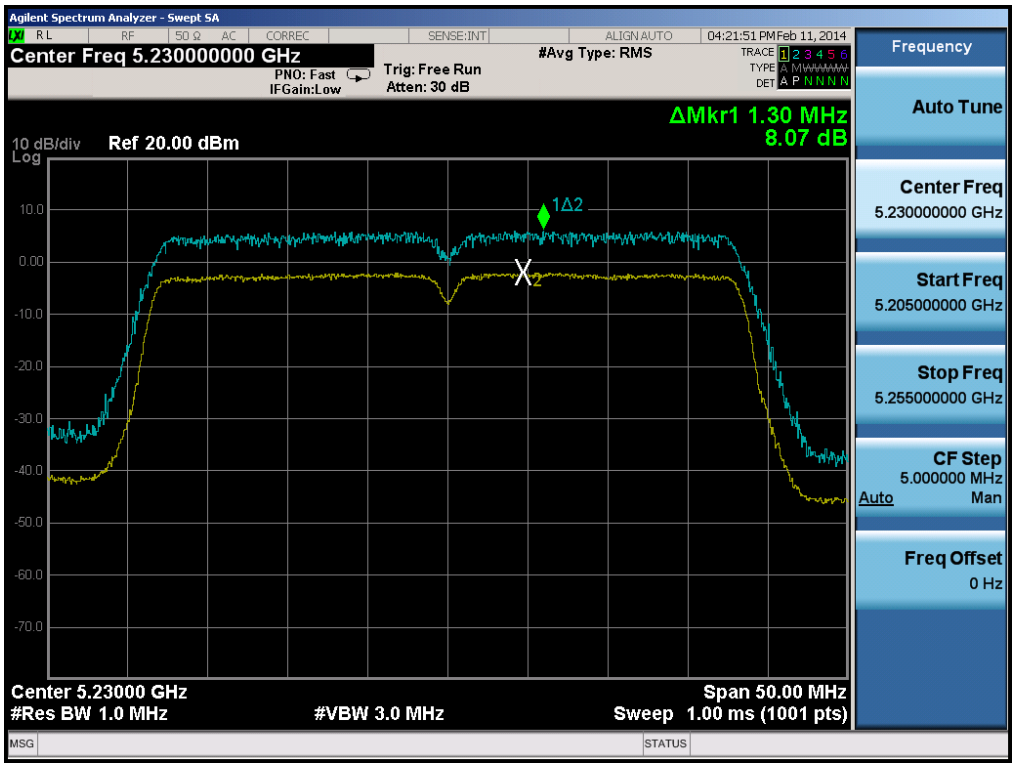


Plot 6-136. Peak Excursion Ratio Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 48)



Plot 6-137. Peak Excursion Ratio Plot (40MHz BW 802.11n (UNII Band 1) – Ch. 46)

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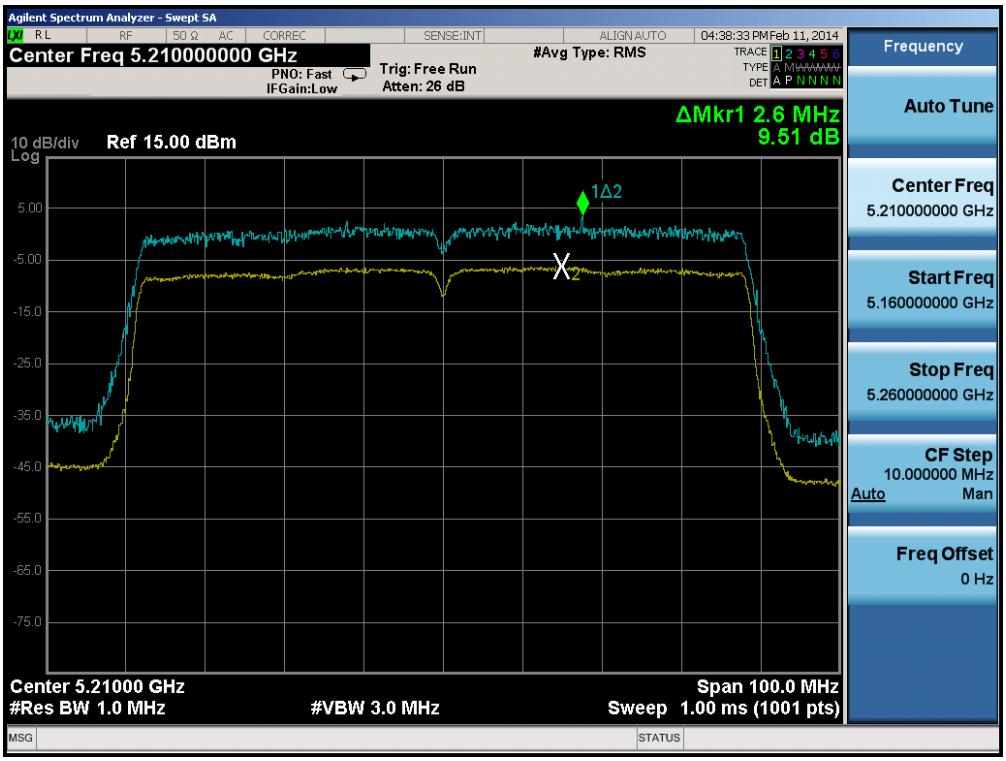

Plot 6-138. Peak Excursion Ratio Plot (80MHz BW 802.11ac (UNII Band 1) – Ch. 42)

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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: 3.80 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	5,180,000,005	5	0.00000010
100 %		- 30	5,179,999,974	-26	-0.00000050
100 %		- 20	5,179,999,973	-27	-0.00000052
100 %		- 10	5,180,000,000	0	0.00000000
100 %		0	5,180,000,013	13	0.00000025
100 %		+ 10	5,179,999,977	-23	-0.00000044
100 %		+ 20	5,180,000,007	7	0.00000014
100 %		+ 30	5,179,999,980	-20	-0.00000039
100 %		+ 40	5,180,000,018	18	0.00000035
100 %		+ 50	5,180,000,013	13	0.00000025
115 %	4.37	+ 20	5,179,999,980	-20	-0.00000039
BATT. ENDPOINT	3.40	+ 20	5,179,999,981	-19	-0.00000037

Table 6-29. 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.

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Frequency Stability (Cont'd)
§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: 3.80 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	5,259,999,995	-5	-0.00000010
100 %		- 30	5,260,000,023	23	0.00000044
100 %		- 20	5,259,999,981	-19	-0.00000036
100 %		- 10	5,259,999,982	-18	-0.00000034
100 %		0	5,259,999,983	-17	-0.00000032
100 %		+ 10	5,260,000,020	20	0.00000038
100 %		+ 20	5,259,999,988	-12	-0.00000023
100 %		+ 30	5,260,000,006	6	0.00000011
100 %		+ 40	5,259,999,980	-20	-0.00000038
100 %		+ 50	5,259,999,995	-5	-0.00000010
115 %	4.37	+ 20	5,260,000,011	11	0.00000021
BATT. ENDPOINT	3.40	+ 20	5,259,999,983	-17	-0.00000032

Table 6-30. 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.

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Frequency Stability (Cont'd)
§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: 3.80 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	5,500,000,008	8	0.00000015
100 %		- 30	5,499,999,995	-5	-0.00000009
100 %		- 20	5,499,999,986	-14	-0.00000025
100 %		- 10	5,500,000,005	5	0.00000009
100 %		0	5,500,000,002	2	0.00000004
100 %		+ 10	5,499,999,996	-4	-0.00000007
100 %		+ 20	5,499,999,986	-14	-0.00000025
100 %		+ 30	5,500,000,002	2	0.00000004
100 %		+ 40	5,499,999,987	-13	-0.00000024
100 %		+ 50	5,500,000,001	1	0.00000002
115 %	4.37	+ 20	5,499,999,994	-6	-0.00000011
BATT. ENDPOINT	3.40	+ 20	5,500,000,008	8	0.00000015

Table 6-31. 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.

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6.7 Radiated Spurious Emission Measurements

§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 (>98%), at its maximum power control level, as defined in KDB 789033 v01r03, and at the appropriate frequencies. All channels, modes (e.g. 802.11a, 802.11n (20MHz BW), 802.11n (40MHz BW), and 802.11ac (80MHz BW)), 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 6-32 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 6-32. Radiated Limits

Test Procedures Used

KDB 789033 v01r03 – Section H

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

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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.

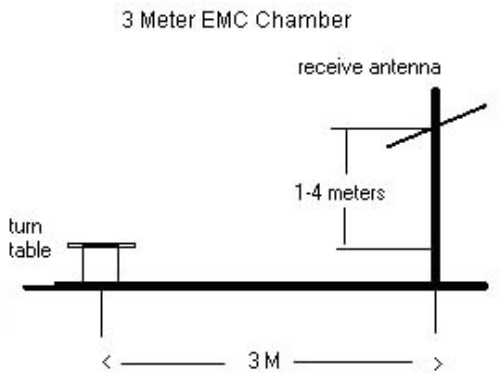

Figure 6-5. Test Instrument & Measurement Setup

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Test Notes

1. All radiated spurious emissions levels were measured in a radiated test setup per the guidance of KDB 789033 v01r03 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 6-32.
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. The EUT is supplied with a new/fully-recharged battery. The battery for this model EB-BG900BBE contains an embedded NFC antenna.
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. Average levels at -135dBm and peak levels at -125dBm represent the analyzer noise floor and signify that no emission was detected.
9. Significant radiated spurious emissions levels were not found for MIMO test configurations.

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

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Antenna-1 Radiated Spurious Emission Measurements

§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]

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	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10360.00	-125.00	Peak	H	46.44	0.00	28.44	68.20	-39.76
*	15540.00	-135.00	Average	H	51.12	0.00	23.12	53.98	-30.86
*	15540.00	-125.00	Peak	H	51.12	0.00	33.12	73.98	-40.86
*	20720.00	-106.07	Average	H	44.00	-9.54	35.39	53.98	-18.59
*	20720.00	-95.83	Peak	H	44.00	-9.54	45.63	73.98	-28.35
	25900.00	-125.00	Peak	H	44.87	0.00	26.87	68.20	-41.33

Table 6-33. 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	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10400.00	-125.00	Peak	H	46.65	0.00	28.65	68.20	-39.55
*	15600.00	-135.00	Average	H	51.11	0.00	23.11	53.98	-30.87
*	15600.00	-125.00	Peak	H	51.11	0.00	33.11	73.98	-40.87
*	20800.00	-104.41	Average	H	43.99	-9.54	37.03	53.98	-16.95
*	20800.00	-96.55	Peak	H	43.99	-9.54	44.89	73.98	-29.09
	26000.00	-125.00	Peak	H	44.97	0.00	26.97	68.20	-41.23

Table 6-34. Radiated Measurements

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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	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10480.00	-125.00	Peak	H	46.65	0.00	28.65	68.20	-39.55
*	15720.00	-135.00	Average	H	51.40	0.00	23.40	53.98	-30.58
*	15720.00	-125.00	Peak	H	51.40	0.00	33.40	73.98	-40.58
*	20960.00	-104.41	Average	H	43.90	-9.54	36.94	53.98	-17.04
*	20960.00	-97.46	Peak	H	43.90	-9.54	43.89	73.98	-30.09
	26200.00	-125.00	Peak	H	44.76	0.00	26.76	68.20	-41.44

Table 6-35. 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	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10520.00	-125.00	Peak	H	46.71	0.00	28.71	68.20	-39.49
*	15780.00	-135.00	Average	H	51.48	0.00	23.48	53.98	-30.50
*	15780.00	-125.00	Peak	H	51.48	0.00	33.48	73.98	-40.50
*	21040.00	-105.99	Average	H	43.84	-9.54	35.31	53.98	-18.67
*	21040.00	-97.52	Peak	H	43.84	-9.54	43.78	73.98	-30.20
	26300.00	-125.00	Peak	H	44.78	0.00	26.78	68.20	-41.42

Table 6-36. Radiated Measurements

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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	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10560.00	-125.00	Peak	H	46.84	0.00	28.84	68.20	-39.36
*	15840.00	-135.00	Average	H	51.38	0.00	23.38	53.98	-30.60
*	15840.00	-125.00	Peak	H	51.38	0.00	33.38	73.98	-40.60
*	21120.00	-104.80	Average	H	43.74	-9.54	36.39	53.98	-17.58
*	21120.00	-97.33	Peak	H	43.74	-9.54	43.87	73.98	-30.11
	26400.00	-125.00	Peak	H	44.72	0.00	26.72	68.20	-41.48

Table 6-37. 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	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	10640.00	-135.00	Average	H	46.94	0.00	18.94	53.98	-35.04
*	10640.00	-125.00	Peak	H	46.94	0.00	28.94	73.98	-45.04
*	15960.00	-135.00	Average	H	51.55	0.00	23.55	53.98	-30.43
*	15960.00	-125.00	Peak	H	51.55	0.00	33.55	73.98	-40.43
*	21280.00	-105.48	Average	H	43.64	-9.54	35.61	53.98	-18.37
*	21280.00	-96.67	Peak	H	43.64	-9.54	44.43	73.98	-29.55
	26600.00	-125.00	Peak	H	47.28	0.00	29.28	68.20	-38.92

Table 6-38. Radiated Measurements

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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	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11000.00	-135.00	Average	H	46.89	0.00	18.89	53.98	-35.09
*	11000.00	-125.00	Peak	H	46.89	0.00	28.89	73.98	-45.09
	16500.00	-125.00	Peak	H	52.96	0.00	34.96	68.20	-33.24
	22000.00	-97.41	Peak	H	43.92	-9.54	43.97	68.20	-24.23
	27500.00	-125.00	Peak	H	48.51	0.00	30.51	68.20	-37.69

Table 6-39. 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	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11160.00	-135.00	Average	H	47.07	0.00	19.07	53.98	-34.91
*	11160.00	-125.00	Peak	H	47.07	0.00	29.07	73.98	-44.91
	16740.00	-125.00	Peak	H	53.12	0.00	35.12	68.20	-33.08
*	22320.00	-106.32	Average	H	44.40	-9.54	35.53	53.98	-18.45
*	22320.00	-97.86	Peak	H	44.40	-9.54	44.00	73.98	-29.98
	27900.00	-125.00	Peak	H	48.13	0.00	30.13	68.20	-38.07

Table 6-40. Radiated Measurements

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Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5700MHz
Channel:	140

	Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11400.00	-135.00	Average	H	47.30	0.00	19.30	53.98	-34.68
*	11400.00	-125.00	Peak	H	47.30	0.00	29.30	73.98	-44.68
	17100.00	-125.00	Peak	H	53.07	0.00	35.07	68.20	-33.13
*	22800.00	-107.55	Average	H	44.39	-9.54	34.29	53.98	-19.69
*	22800.00	-99.06	Peak	H	44.39	-9.54	42.79	73.98	-31.19
	28500.00	-125.00	Peak	H	48.03	0.00	30.03	68.20	-38.17

Table 6-41. Radiated Measurements

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Antenna-2 Radiated Spurious Emission Measurements

§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]

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	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10360.00	-125.00	Peak	H	46.44	0.00	28.44	68.20	-39.76
*	15540.00	-135.00	Average	H	51.12	0.00	23.12	53.98	-30.86
*	15540.00	-125.00	Peak	H	51.12	0.00	33.12	73.98	-40.86
*	20720.00	-102.65	Average	H	44.00	-9.54	38.81	53.98	-15.17
*	20720.00	-95.48	Peak	H	44.00	-9.54	45.98	73.98	-28.00
	25900.00	-125.00	Peak	H	44.87	0.00	26.87	68.20	-41.33

Table 6-42. 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	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10400.00	-125.00	Peak	H	46.65	0.00	28.65	68.20	-39.55
*	15600.00	-135.00	Average	H	51.11	0.00	23.11	53.98	-30.87
*	15600.00	-125.00	Peak	H	51.11	0.00	33.11	73.98	-40.87
*	20800.00	-102.39	Average	H	43.99	-9.54	39.05	53.98	-14.92
*	20800.00	-94.43	Peak	H	43.99	-9.54	47.01	73.98	-26.97
	26000.00	-125.00	Peak	H	44.97	0.00	26.97	68.20	-41.23

Table 6-43. Radiated Measurements

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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	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10480.00	-125.00	Peak	H	46.65	0.00	28.65	68.20	-39.55
*	15720.00	-135.00	Average	H	51.40	0.00	23.40	53.98	-30.58
*	15720.00	-125.00	Peak	H	51.40	0.00	33.40	73.98	-40.58
*	20960.00	-102.63	Average	H	43.90	-9.54	38.73	53.98	-15.25
*	20960.00	-94.41	Peak	H	43.90	-9.54	46.94	73.98	-27.04
	26200.00	-125.00	Peak	H	44.76	0.00	26.76	68.20	-41.44

Table 6-44. 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	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10520.00	-125.00	Peak	H	46.71	0.00	28.71	68.20	-39.49
*	15780.00	-135.00	Average	H	51.48	0.00	23.48	53.98	-30.50
*	15780.00	-125.00	Peak	H	51.48	0.00	33.48	73.98	-40.50
*	21040.00	-104.97	Average	H	43.84	-9.54	36.33	53.98	-17.65
*	21040.00	-96.20	Peak	H	43.84	-9.54	45.10	73.98	-28.88
	26300.00	-125.00	Peak	H	44.78	0.00	26.78	68.20	-41.42

Table 6-45. Radiated Measurements

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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	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10560.00	-125.00	Peak	H	46.84	0.00	28.84	68.20	-39.36
*	15840.00	-135.00	Average	H	51.38	0.00	23.38	53.98	-30.60
*	15840.00	-125.00	Peak	H	51.38	0.00	33.38	73.98	-40.60
*	21120.00	-104.02	Average	H	43.74	-9.54	37.18	53.98	-16.80
*	21120.00	-94.78	Peak	H	43.74	-9.54	46.42	73.98	-27.56
	26400.00	-125.00	Peak	H	44.72	0.00	26.72	68.20	-41.48

Table 6-46. 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	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	10640.00	-135.00	Average	H	46.94	0.00	18.94	53.98	-35.04
*	10640.00	-125.00	Peak	H	46.94	0.00	28.94	73.98	-45.04
*	15960.00	-135.00	Average	H	51.55	0.00	23.55	53.98	-30.43
*	15960.00	-125.00	Peak	H	51.55	0.00	33.55	73.98	-40.43
*	21280.00	-105.05	Average	H	44.39	-9.54	36.80	53.98	-17.18
*	21280.00	-98.65	Peak	H	44.39	-9.54	43.20	73.98	-30.78
	26600.00	-125.00	Peak	H	47.28	0.00	29.28	68.20	-38.92

Table 6-47. Radiated Measurements

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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	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11000.00	-135.00	Average	H	46.89	0.00	18.89	53.98	-35.09
*	11000.00	-125.00	Peak	H	46.89	0.00	28.89	73.98	-45.09
	16500.00	-125.00	Peak	H	52.96	0.00	34.96	68.20	-33.24
	22000.00	-97.64	Peak	H	43.92	-9.54	43.74	68.20	-24.46
	27500.00	-125.00	Peak	H	48.51	0.00	30.51	68.20	-37.69

Table 6-48. 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	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11160.00	-135.00	Average	H	47.07	0.00	19.07	53.98	-34.91
*	11160.00	-125.00	Peak	H	47.07	0.00	29.07	73.98	-44.91
	16740.00	-125.00	Peak	H	53.12	0.00	35.12	68.20	-33.08
*	22320.00	-104.47	Average	H	44.40	-9.54	37.38	53.98	-16.60
*	22320.00	-98.27	Peak	H	44.40	-9.54	43.59	73.98	-30.39
	27900.00	-125.00	Peak	H	48.13	0.00	30.13	68.20	-38.07

Table 6-49. Radiated Measurements

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Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6 Mbps
Distance of Measurements:	1 & 3 Meters
Operating Frequency:	5700MHz
Channel:	140

	Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11400.00	-135.00	Average	H	47.30	0.00	19.30	53.98	-34.68
*	11400.00	-125.00	Peak	H	47.30	0.00	29.30	73.98	-44.68
	17100.00	-125.00	Peak	H	53.07	0.00	35.07	68.20	-33.13
*	22800.00	-104.34	Average	H	44.39	-9.54	37.51	53.98	-16.47
*	22800.00	-98.10	Peak	H	44.39	-9.54	43.75	73.98	-30.23
	28500.00	-125.00	Peak	H	48.03	0.00	30.03	68.20	-38.17

Table 6-50. Radiated Measurements

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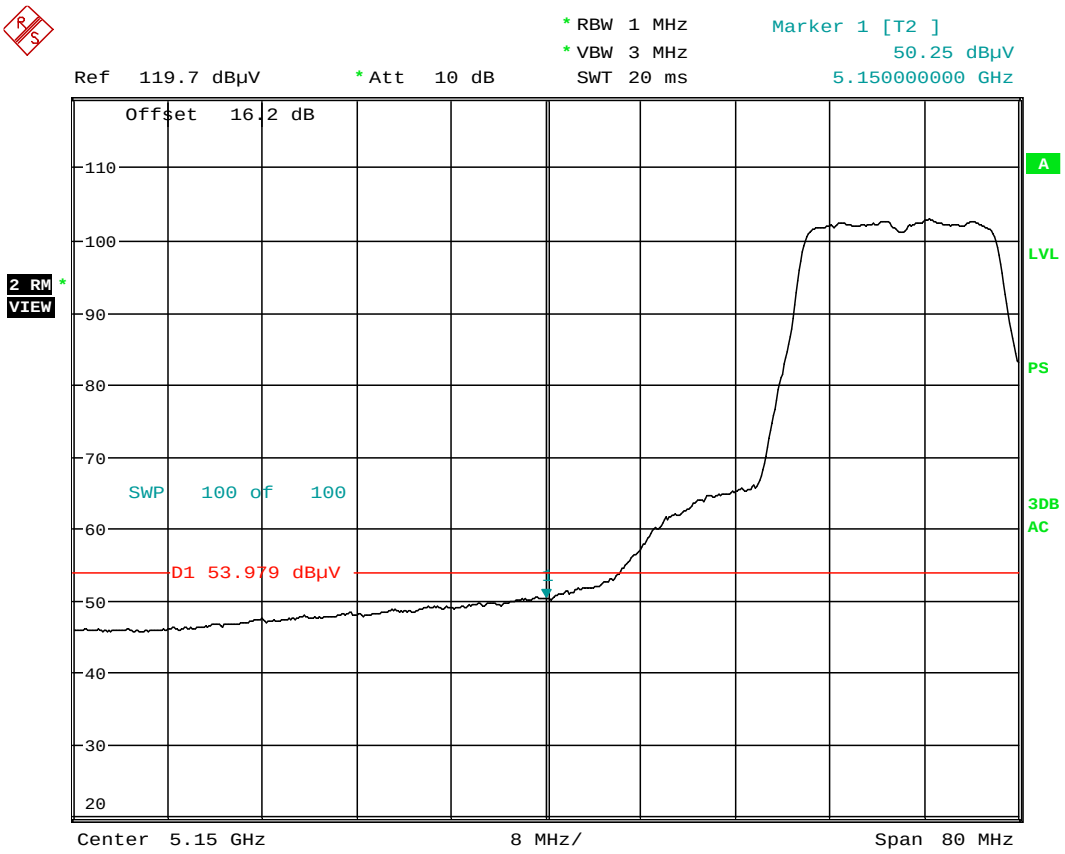
6.8 Antenna-1 Radiated Band Edge Measurements (20MHz BW)

§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.FEB.2014 12:27:05

Plot 6-139. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

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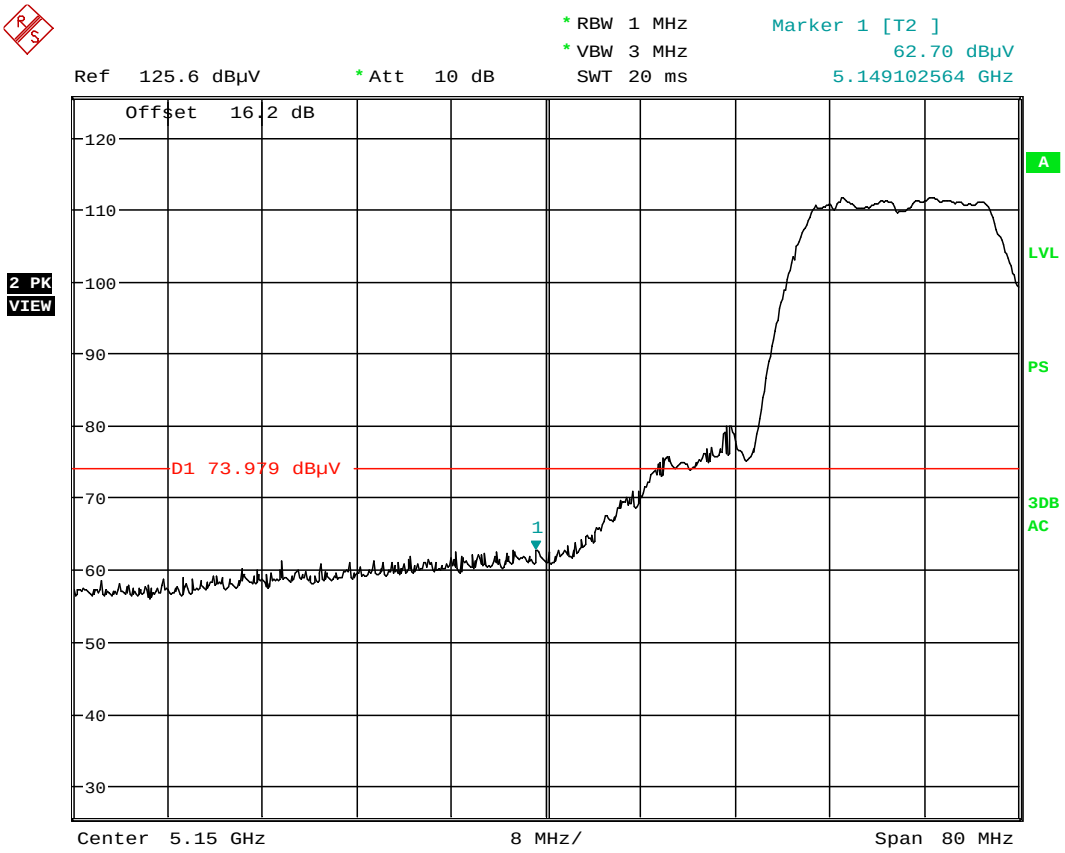
Radiated Band Edge Measurements (20MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 12.FEB.2014 12:25:49

Plot 6-140. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

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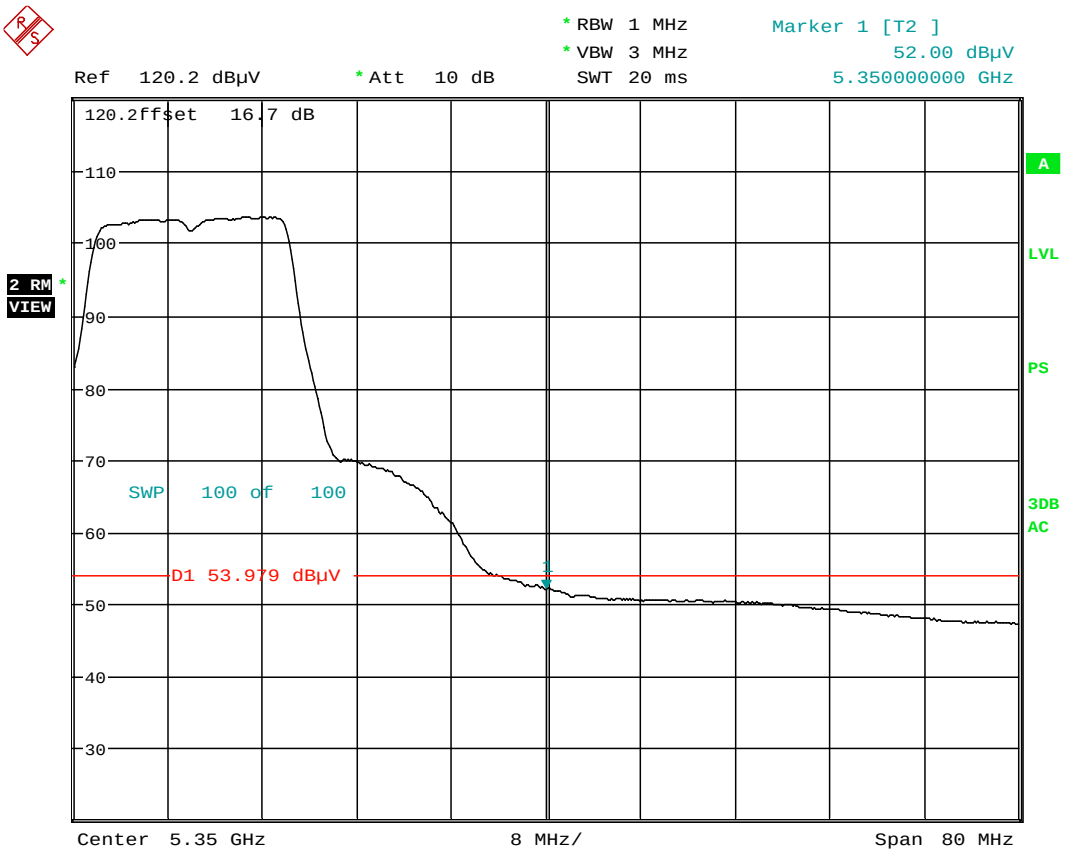
Radiated Band Edge Measurements (20MHz BW) (Cont'd)
§15.407(b.1)(b.2) §15.205 §15.209

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



Date: 12.FEB.2014 12:57:09

Plot 6-141. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

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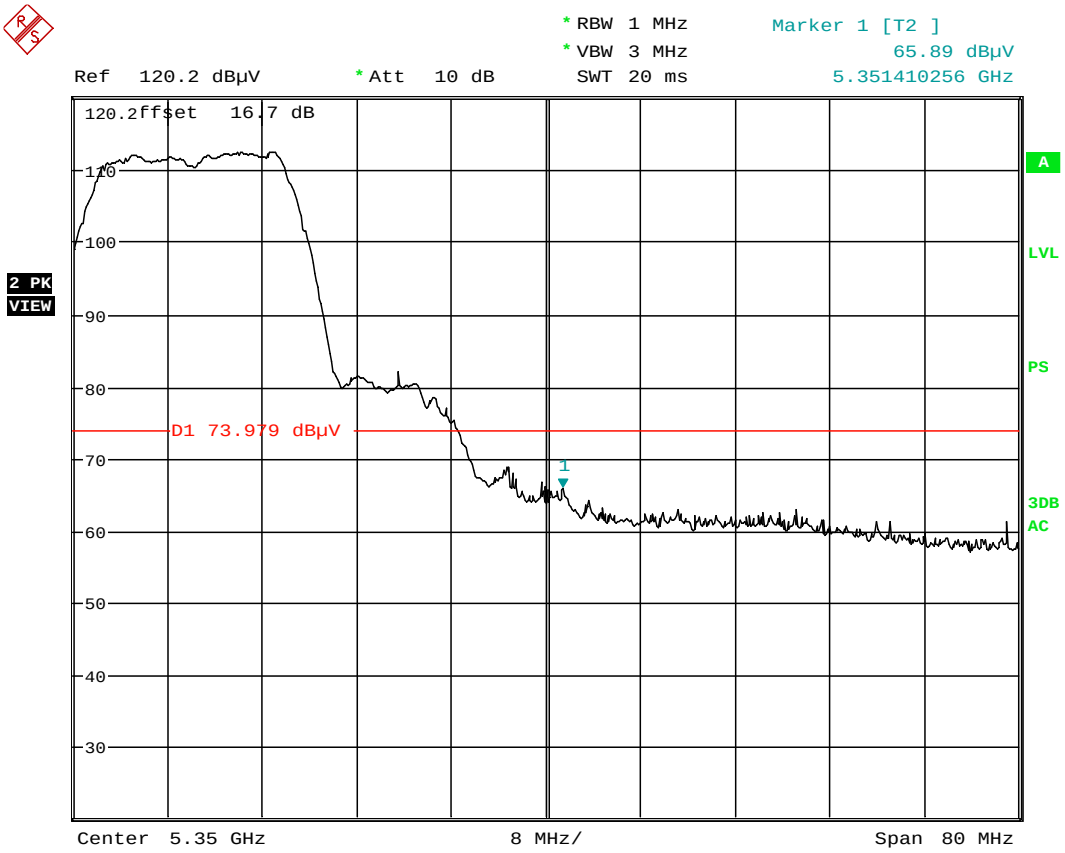
Radiated Band Edge Measurements (20MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 12.FEB.2014 12:58:24

Plot 6-142. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

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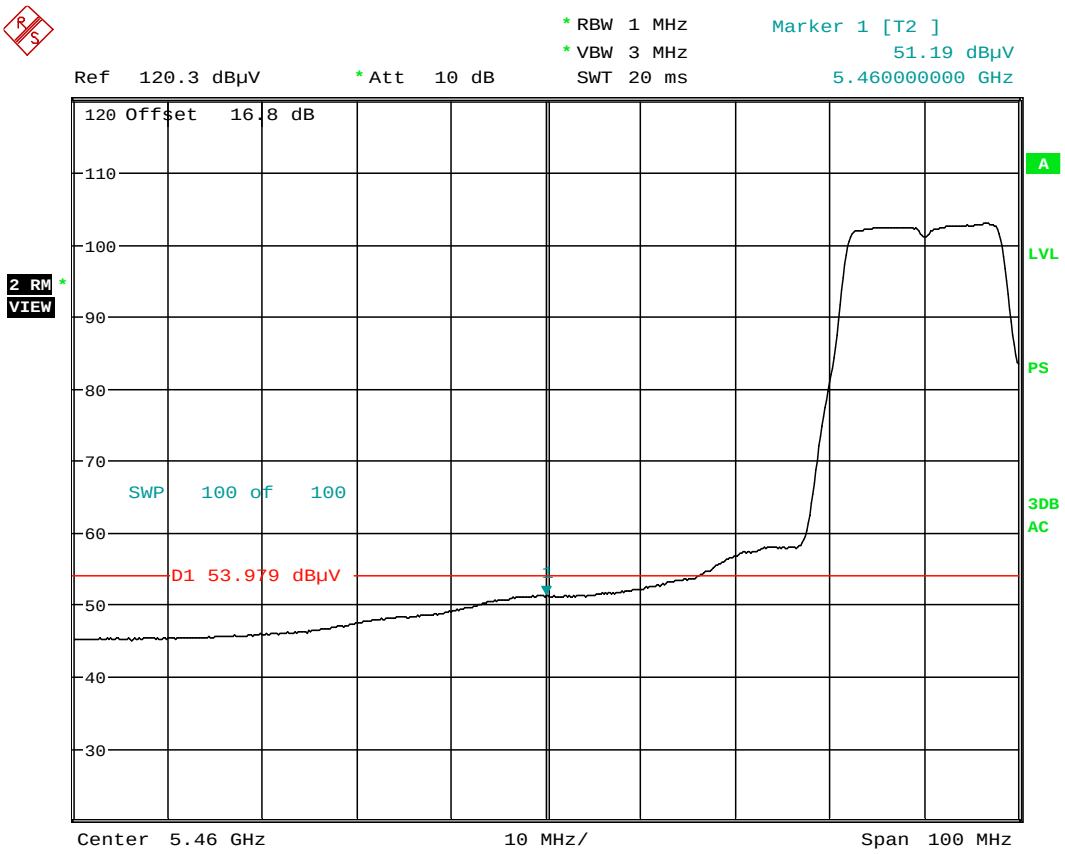
Radiated Band Edge Measurements (20MHz BW) (Cont'd)
§15.407(b.1)(b.2) §15.205 §15.209

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



Date: 12.FEB.2014 13:25:48

Plot 6-143. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

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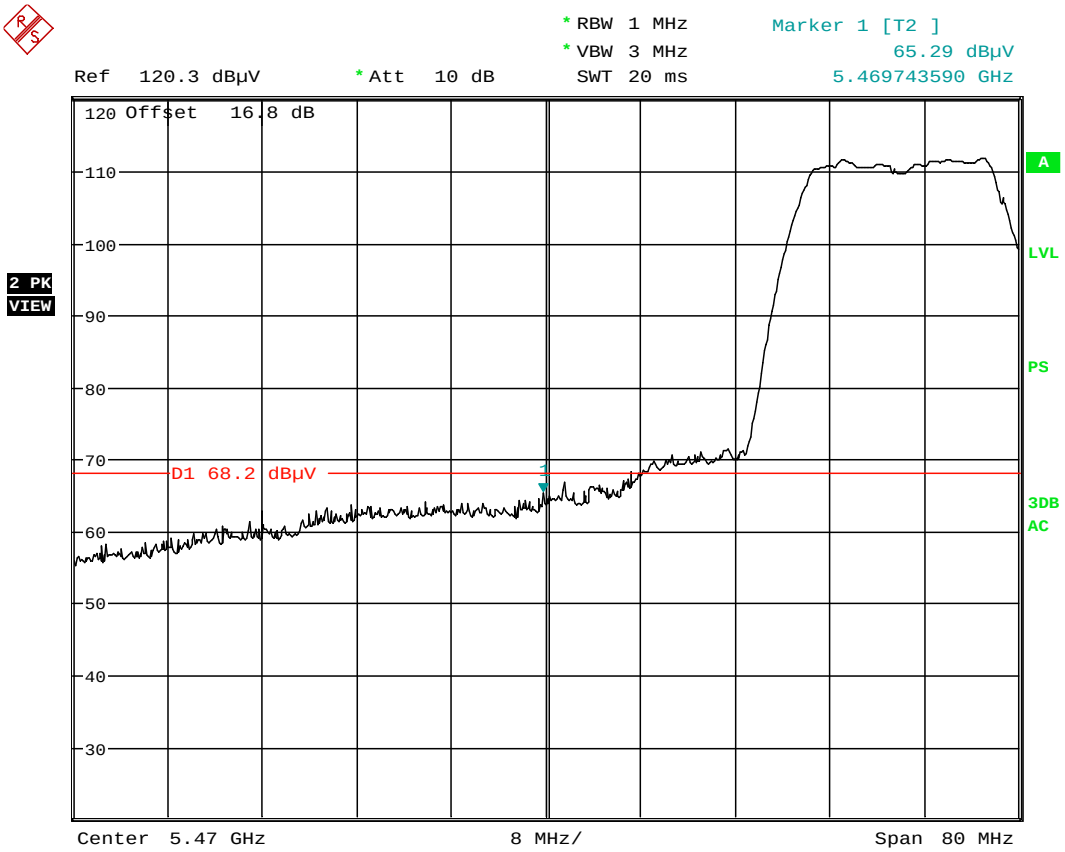
Radiated Band Edge Measurements (20MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 12.FEB.2014 13:26:49

Plot 6-144. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

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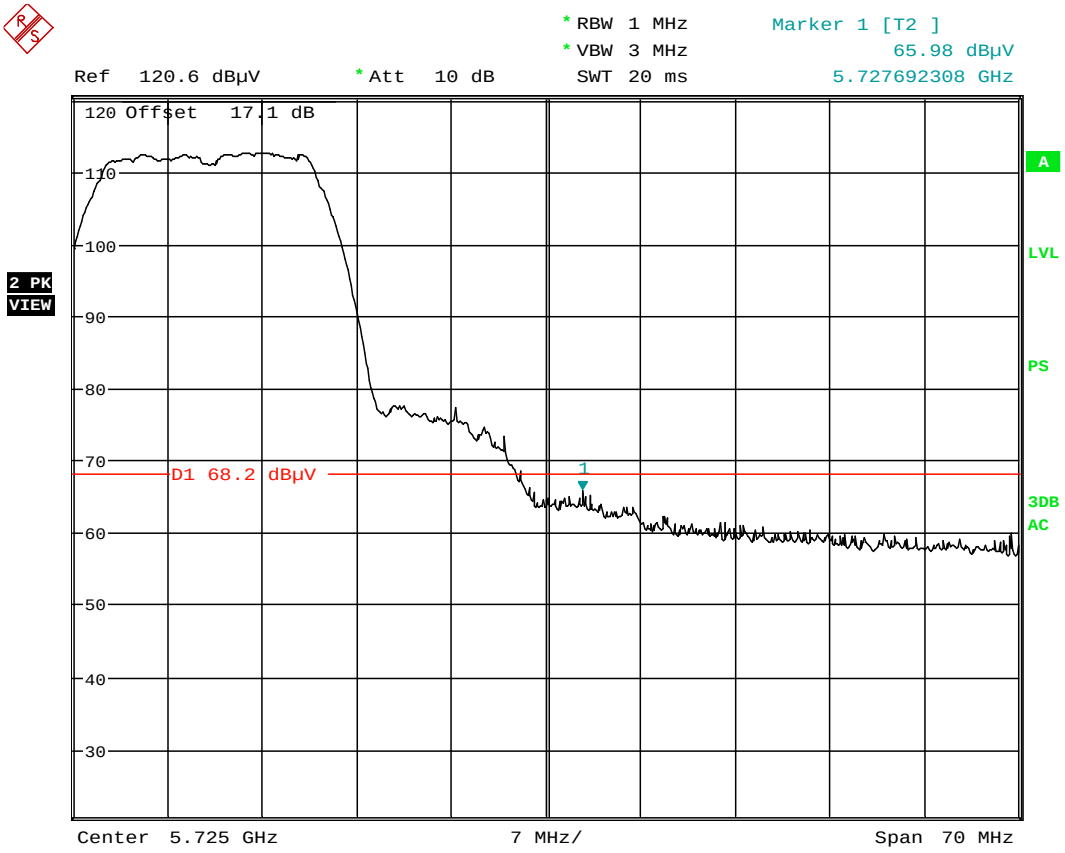
Radiated Band Edge Measurements (20MHz BW) (Cont'd)

§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:	5700MHz
Channel:	140



Date: 12.FEB.2014 14:28:23

Plot 6-145. Radiated Upper Band Edge Plot (Peak – UNII Band 2C)

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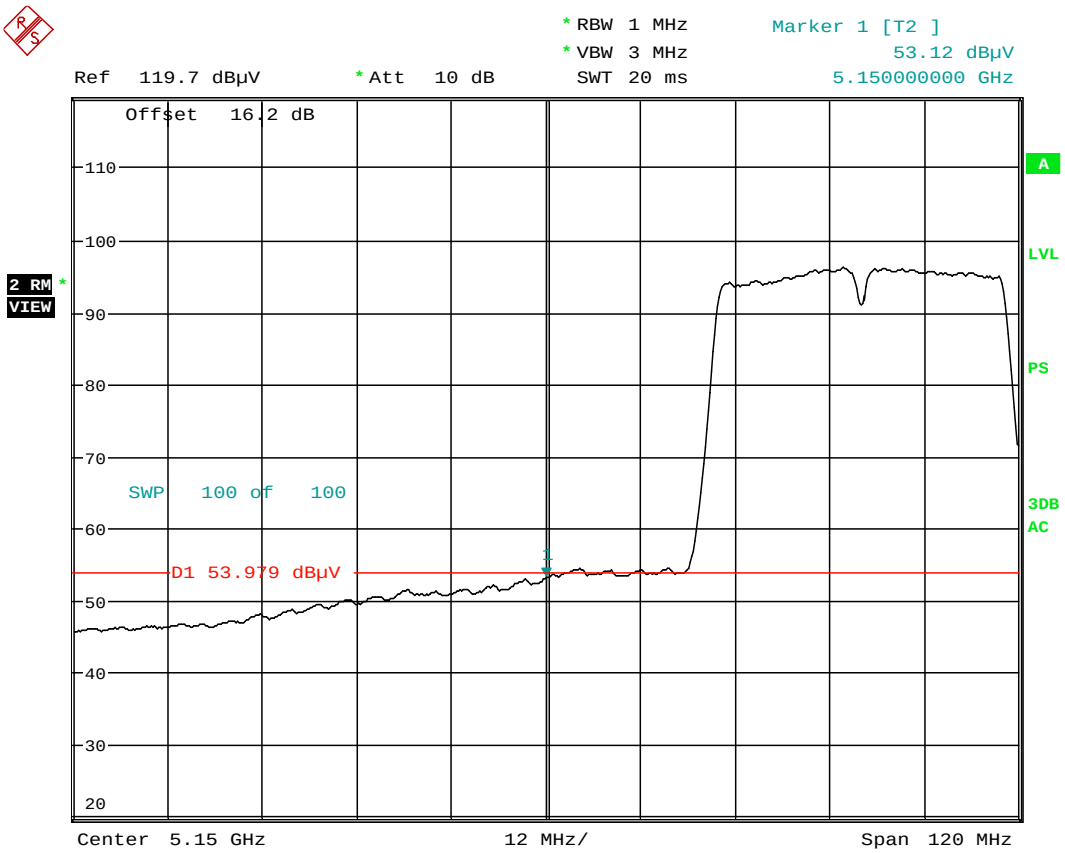
6.9 Antenna-1 Radiated Band Edge Measurements (40MHz BW)

§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: 14.FEB.2014 14:54:25

Plot 6-146. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

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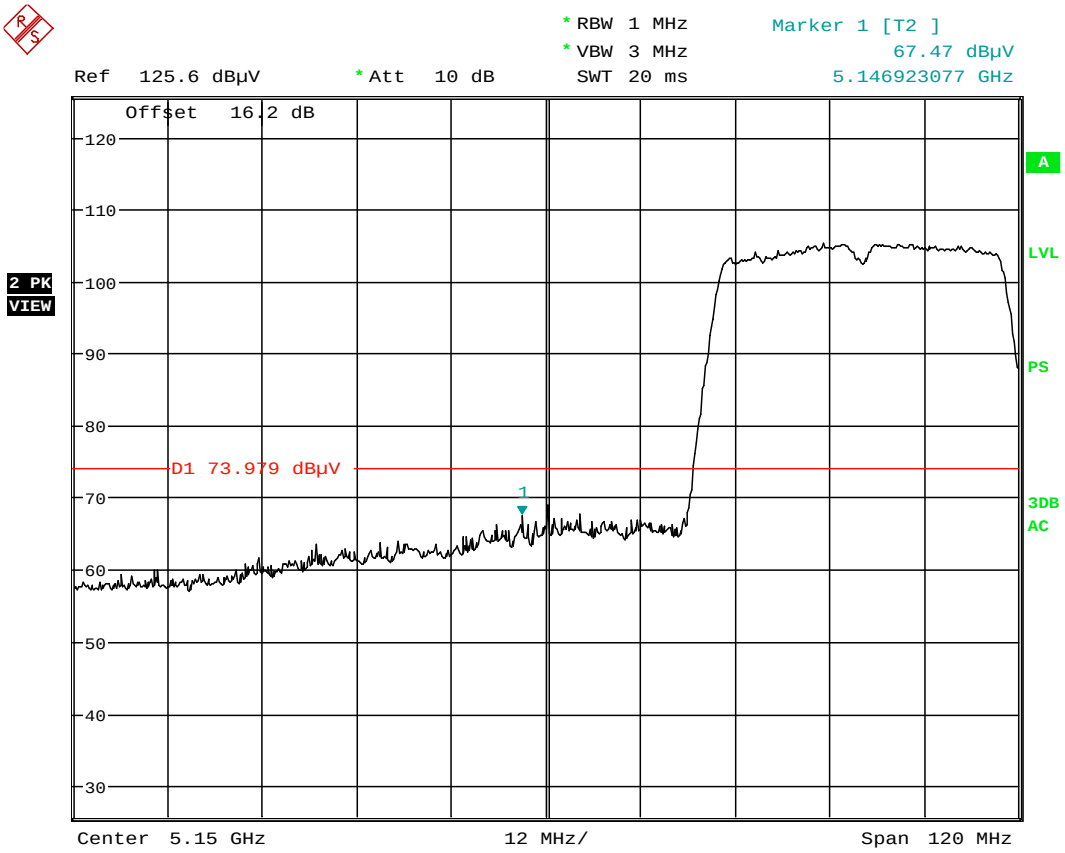
Radiated Band Edge Measurements (40MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 14.FEB.2014 14:55:57

Plot 6-147. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

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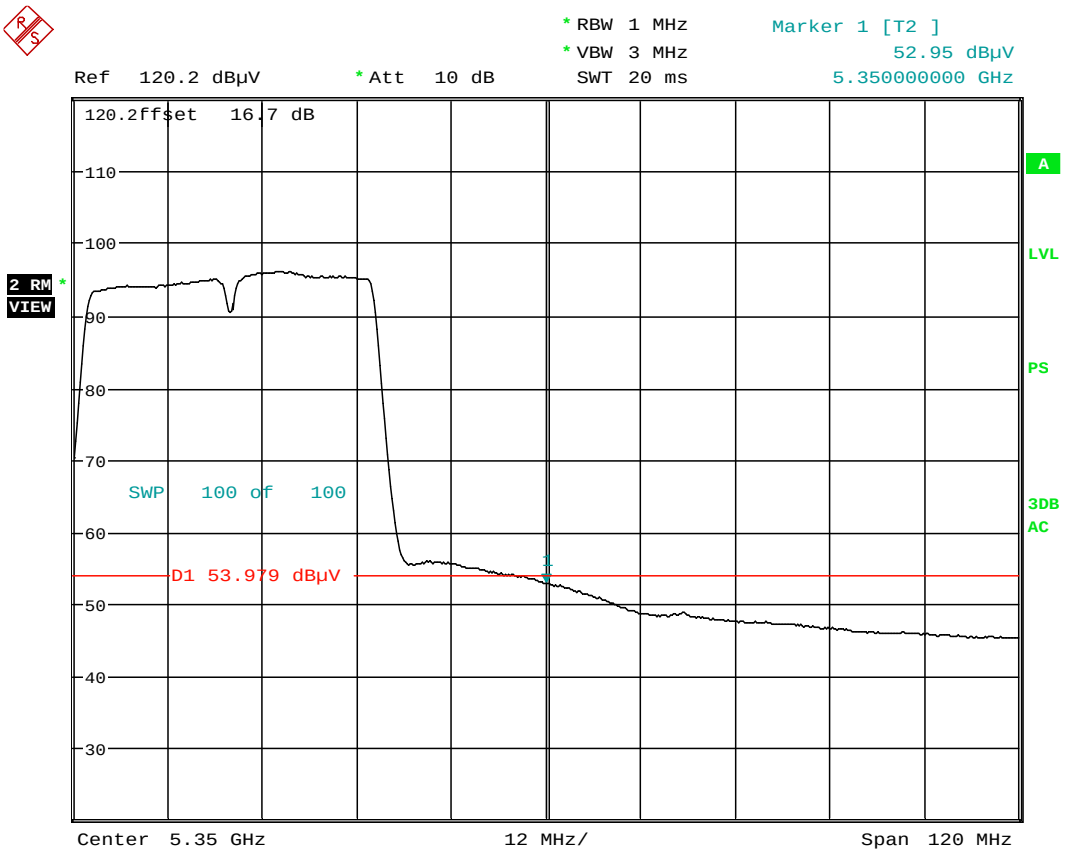
Radiated Band Edge Measurements (40MHz BW) (Cont'd)
§15.407(b.1)(b.2) §15.205 §15.209

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



Date: 14.FEB.2014 15:08:57

Plot 6-148. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

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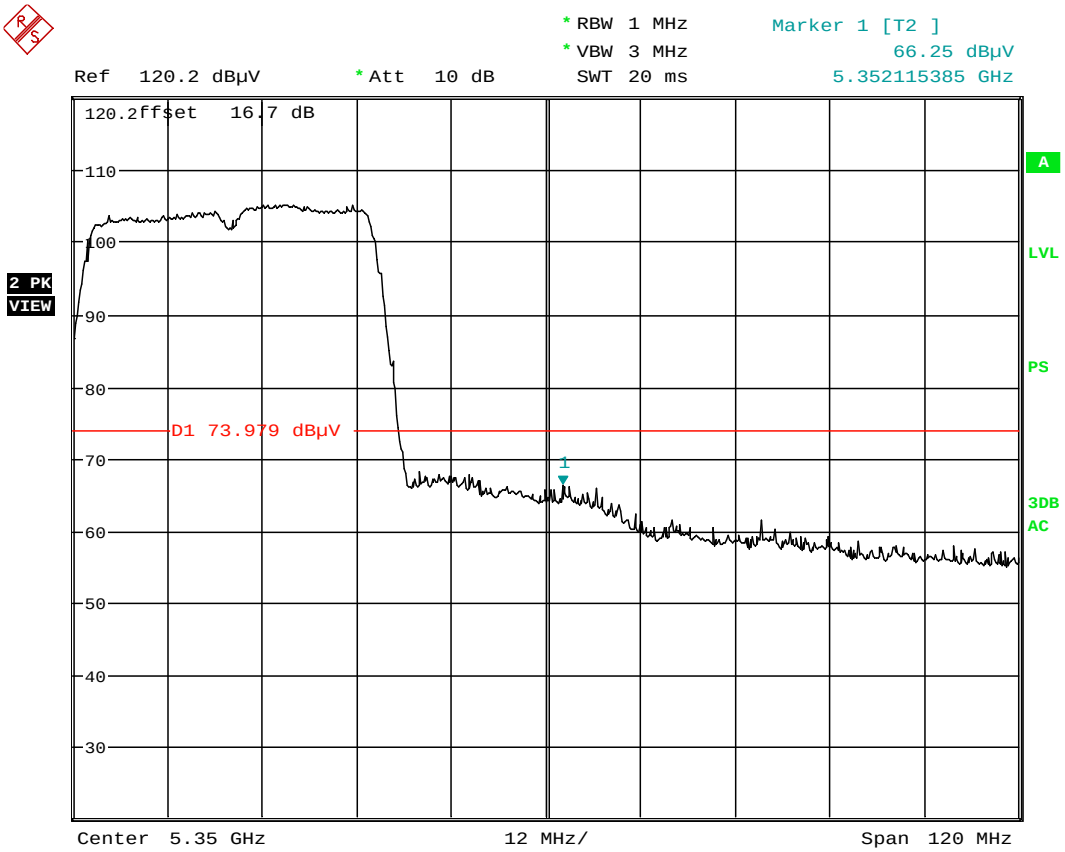
Radiated Band Edge Measurements (40MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 14.FEB.2014 15:13:55

Plot 6-149. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

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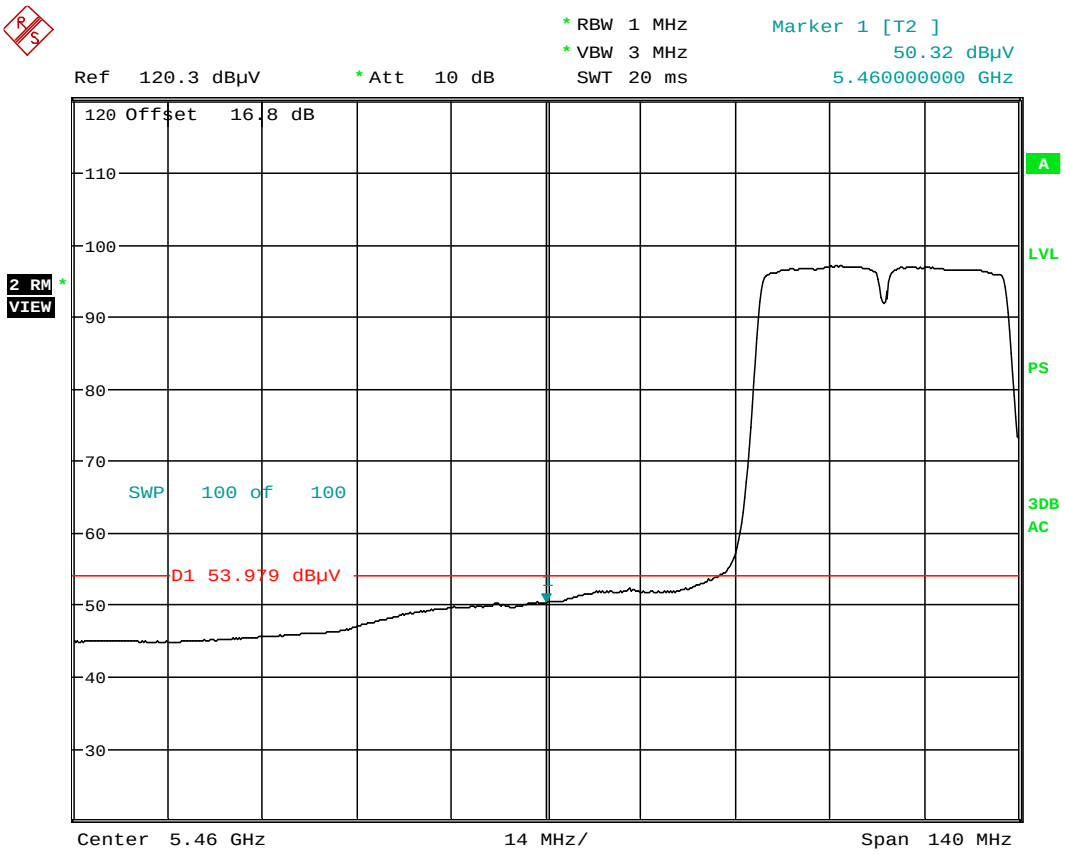
Radiated Band Edge Measurements (40MHz BW) (Cont'd)
§15.407(b.1)(b.2) §15.205 §15.209

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



Date: 14.FEB.2014 15:35:29

Plot 6-150. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

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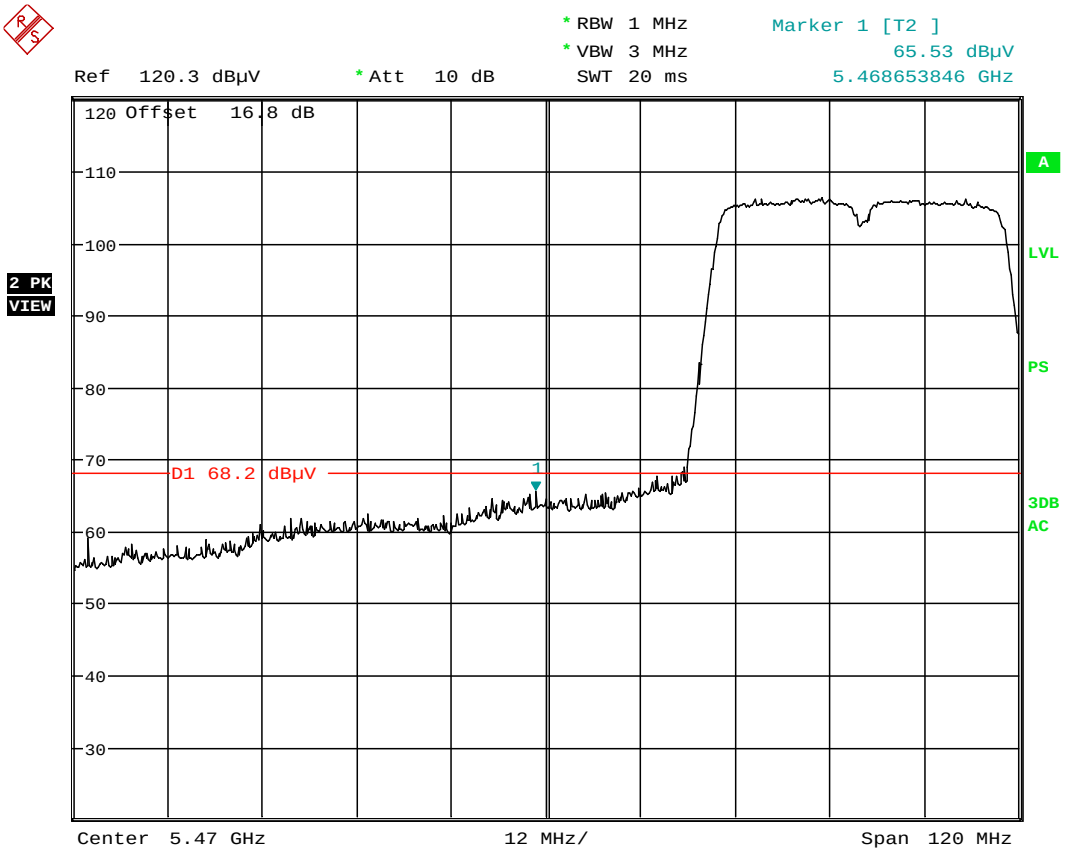
Radiated Band Edge Measurements (40MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 14.FEB.2014 15:38:10

Plot 6-151. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

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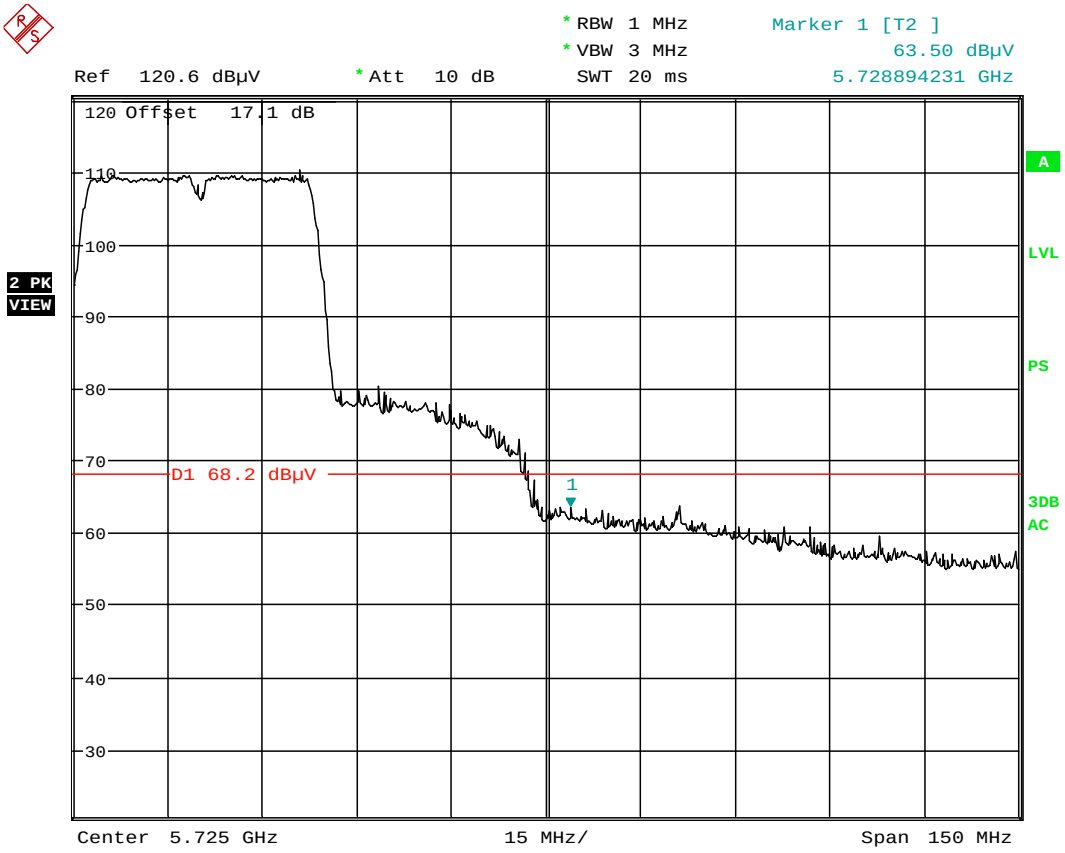
Radiated Band Edge Measurements (40MHz BW) (Cont'd)

§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:	5670MHz
Channel:	134



Date: 12.FEB.2014 14:33:58

Plot 6-152. Radiated Upper Band Edge Plot (Peak – UNII Band 2C)

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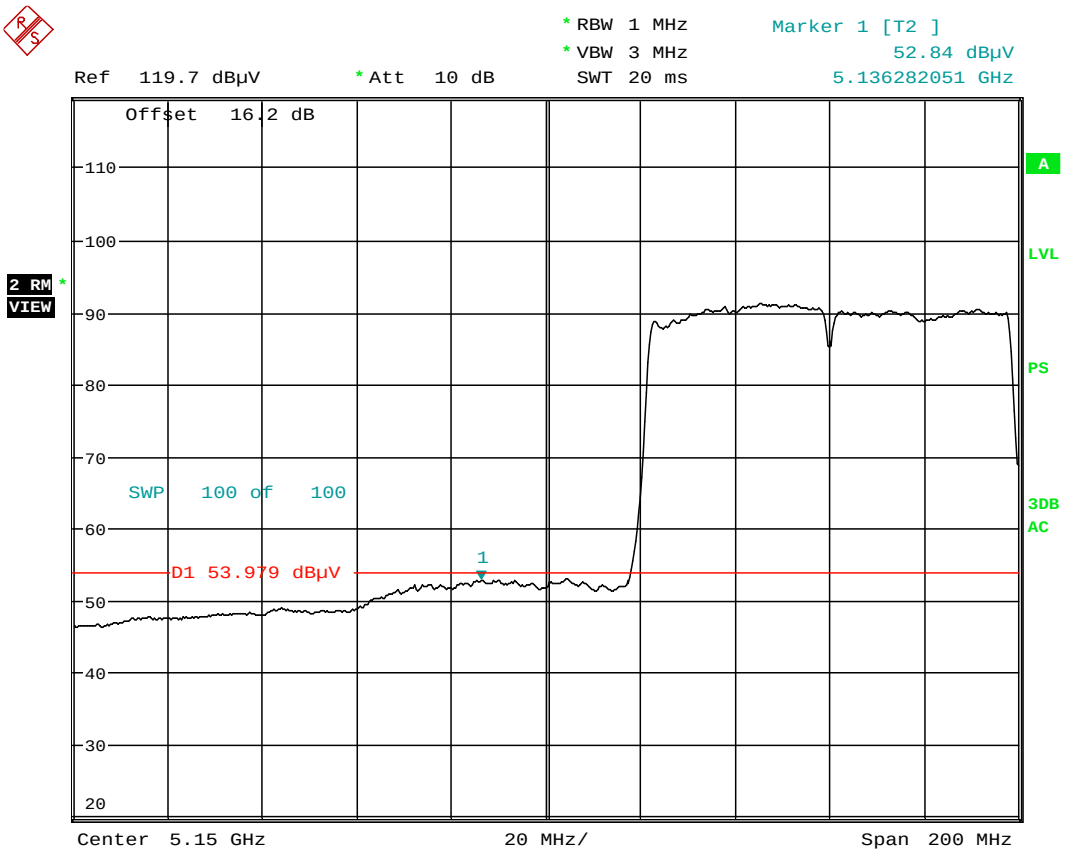
6.10 Antenna-1 Radiated Band Edge Measurements (80MHz BW)

§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:	5210MHz
Channel:	42



Date: 14.FEB.2014 15:01:16

Plot 6-153. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

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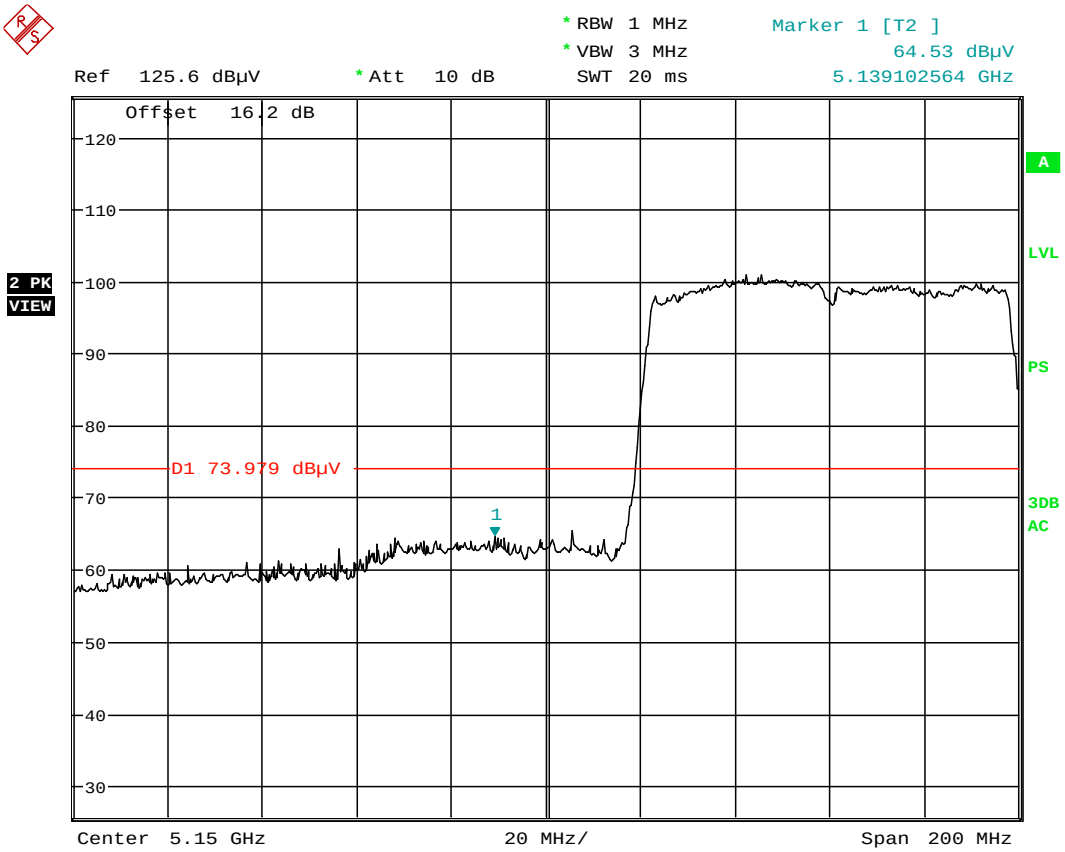
Radiated Band Edge Measurements (80MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 14.FEB.2014 15:03:12

Plot 6-154. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

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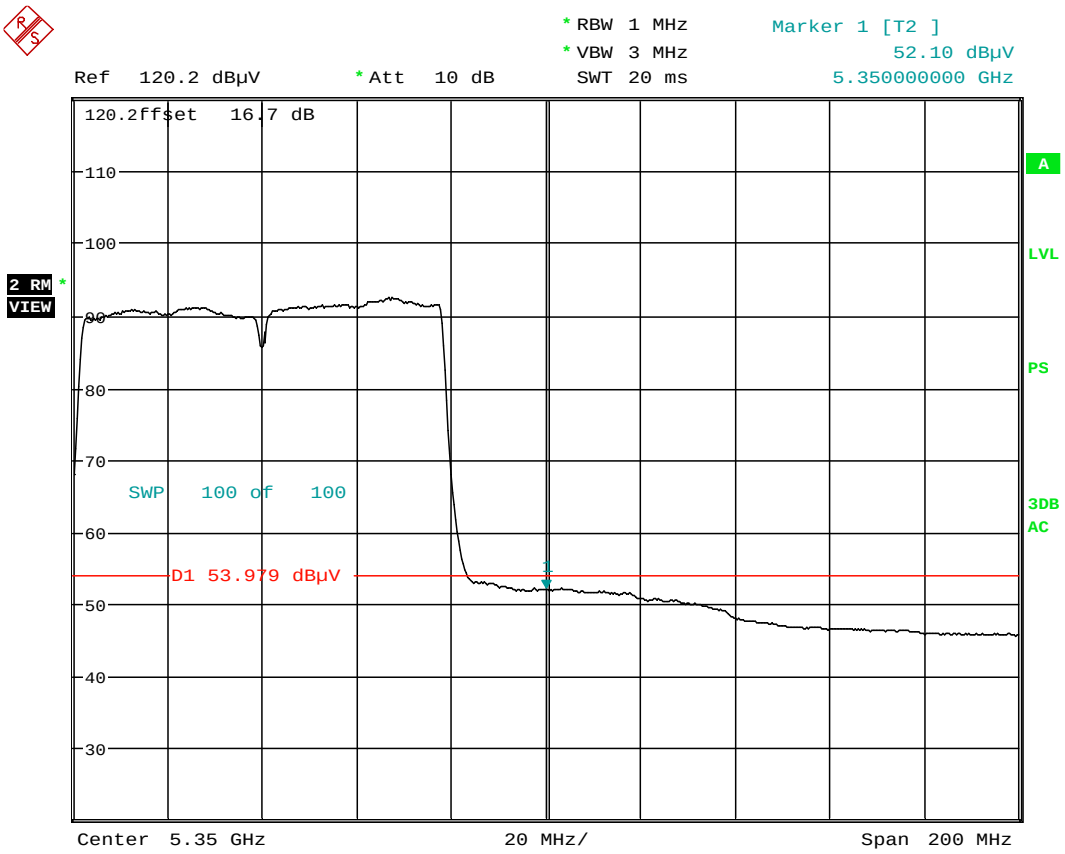
Radiated Band Edge Measurements (80MHz BW) (Cont'd)
§15.407(b.1)(b.2) §15.205 §15.209

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



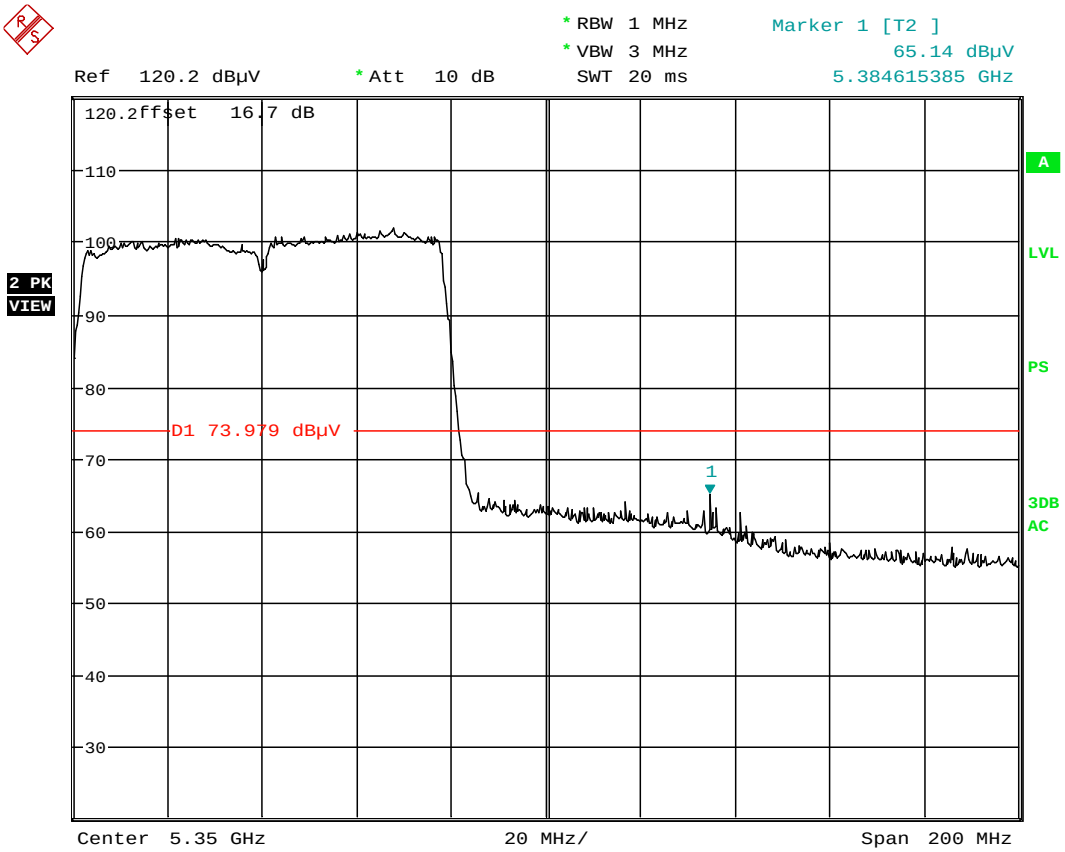
Date: 14.FEB.2014 15:21:00

Plot 6-155. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

© 2014 PCTEST Engineering Laboratory, Inc.

Radiated Band Edge Measurements (80MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 14.FEB.2014 15:22:17

Plot 6-156. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

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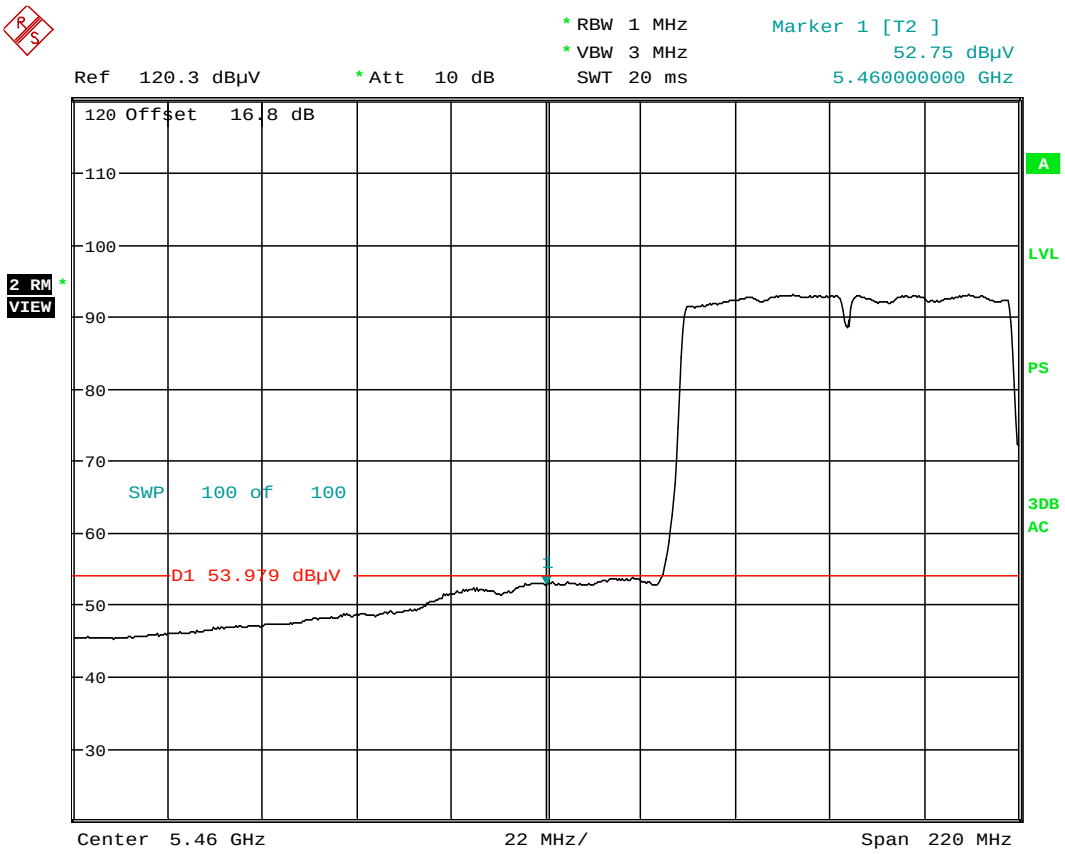
Radiated Band Edge Measurements (80MHz BW) (Cont'd)
§15.407(b.1)(b.2) §15.205 §15.209

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



Date: 12.FEB.2014 14:05:52

Plot 6-157. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

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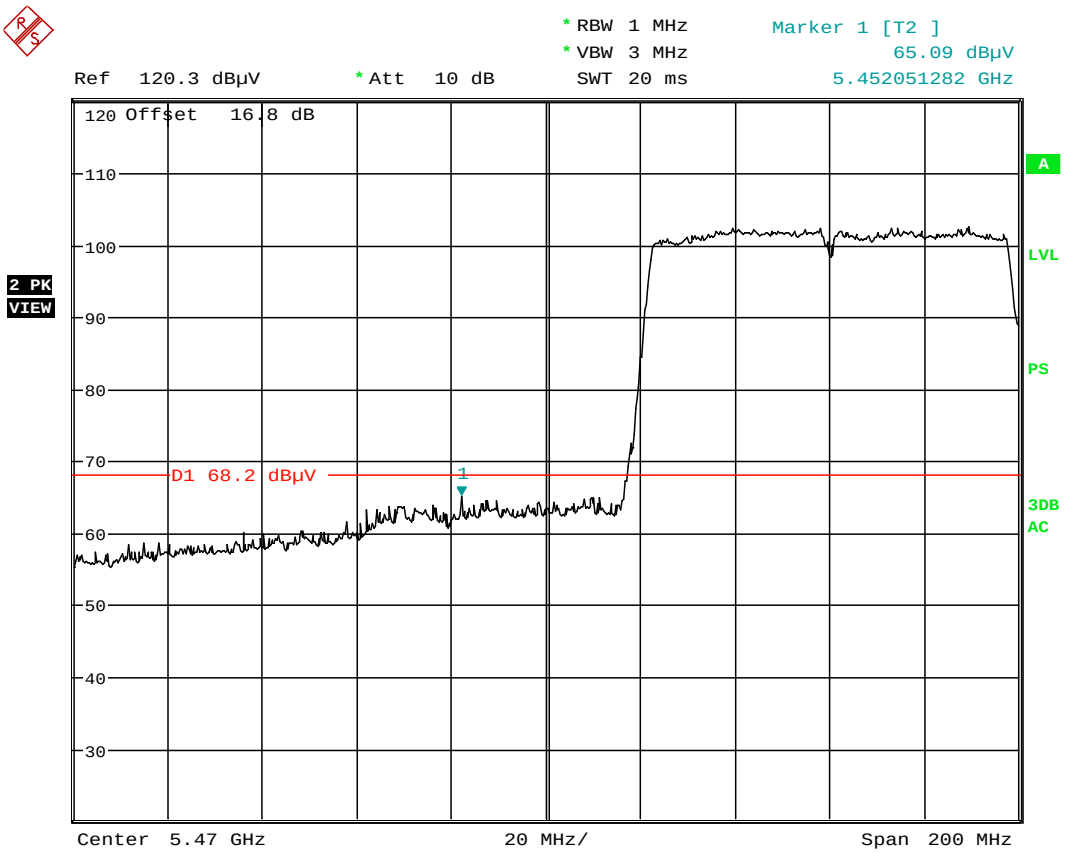
Radiated Band Edge Measurements (80MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 12.FEB.2014 14:07:53

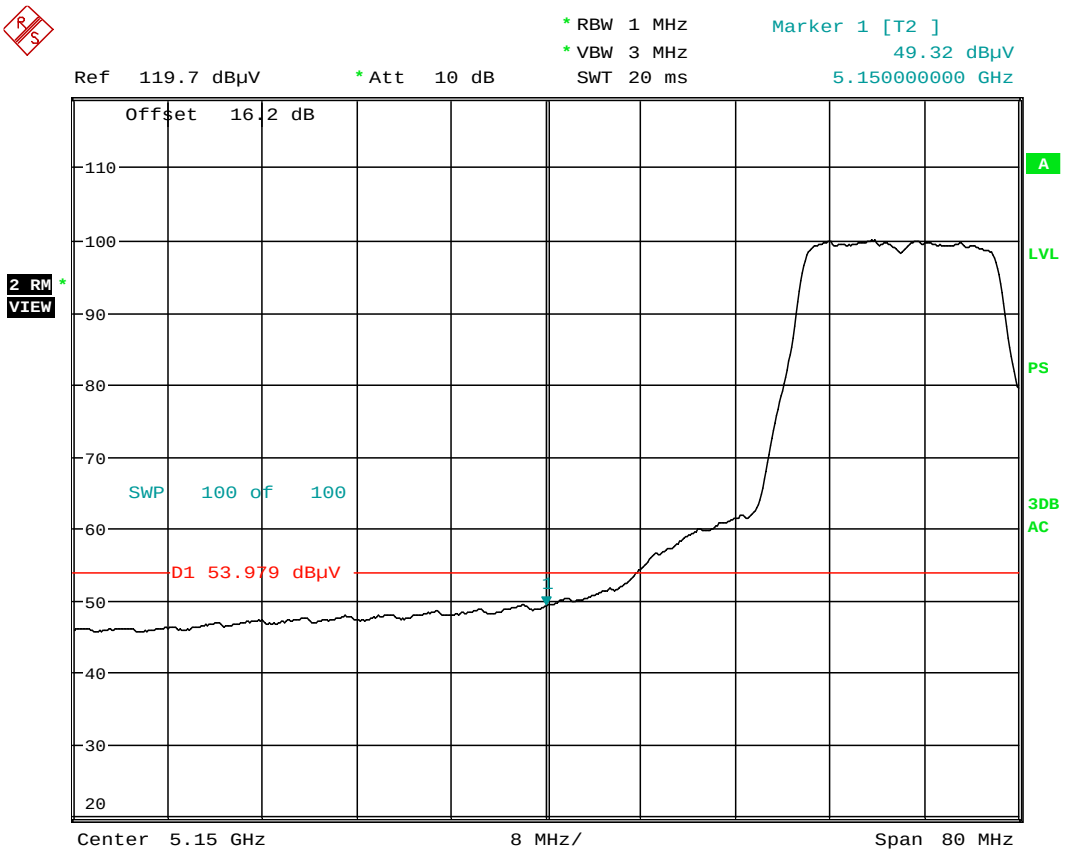
Plot 6-158. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

© 2014 PCTEST Engineering Laboratory, Inc.

6.11 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



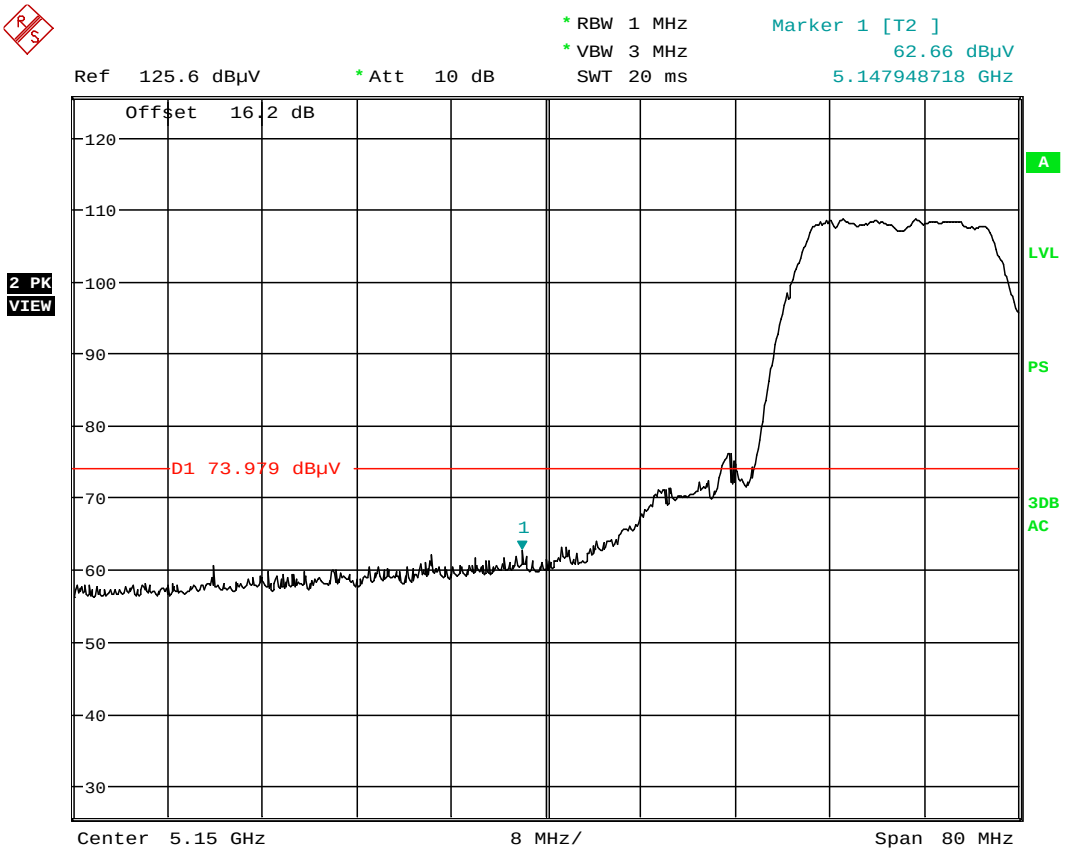
Date: 12.FEB.2014 14:50:23

Plot 6-159. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

© 2014 PCTEST Engineering Laboratory, Inc.

Radiated Band Edge Measurements (20MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 12.FEB.2014 14:49:45

Plot 6-160. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

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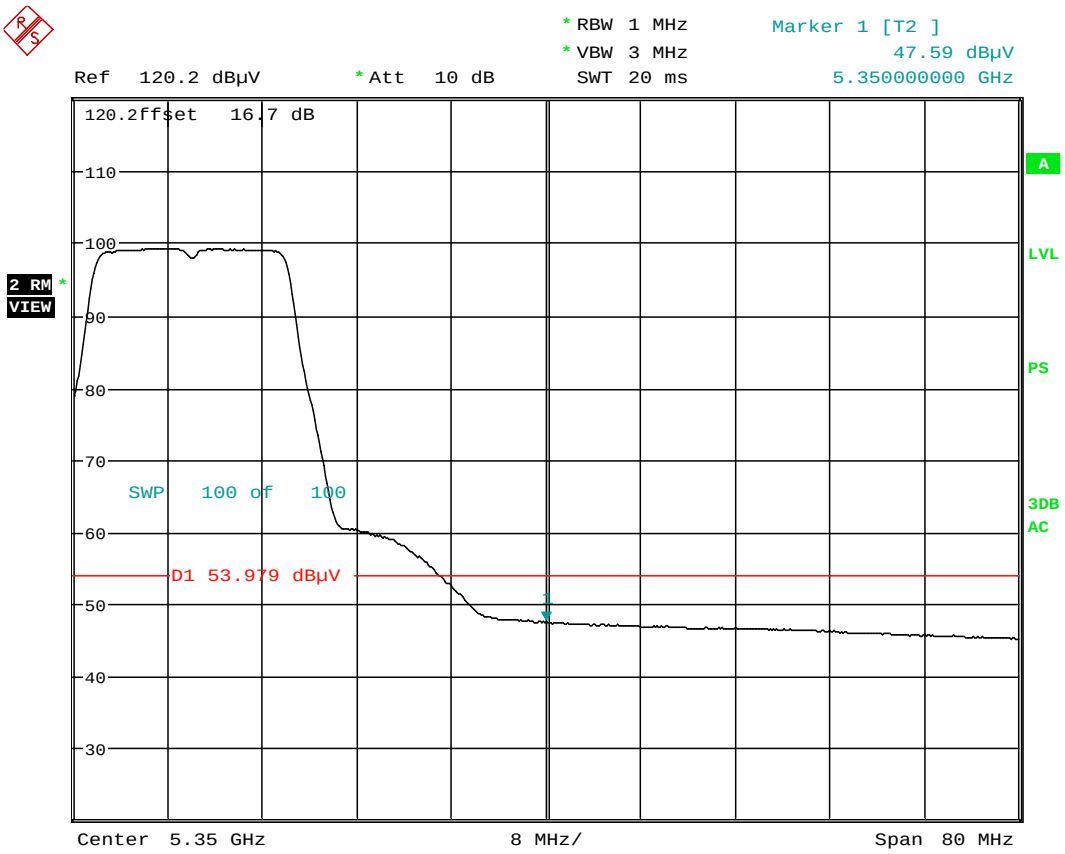
Radiated Band Edge Measurements (20MHz BW) (Cont'd)
§15.407(b.1)(b.2) §15.205 §15.209

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



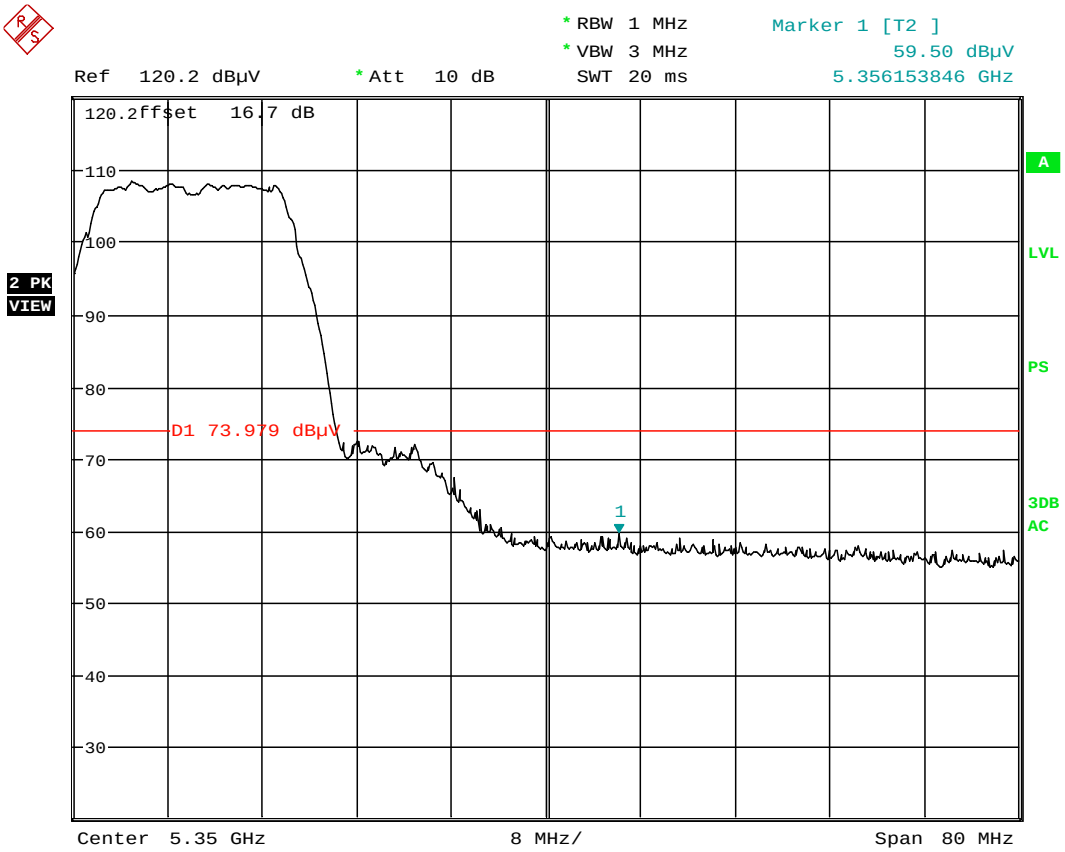
Date: 12.FEB.2014 15:14:28

Plot 6-161. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

© 2014 PCTEST Engineering Laboratory, Inc.

Radiated Band Edge Measurements (20MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 12.FEB.2014 15:13:53

Plot 6-162. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

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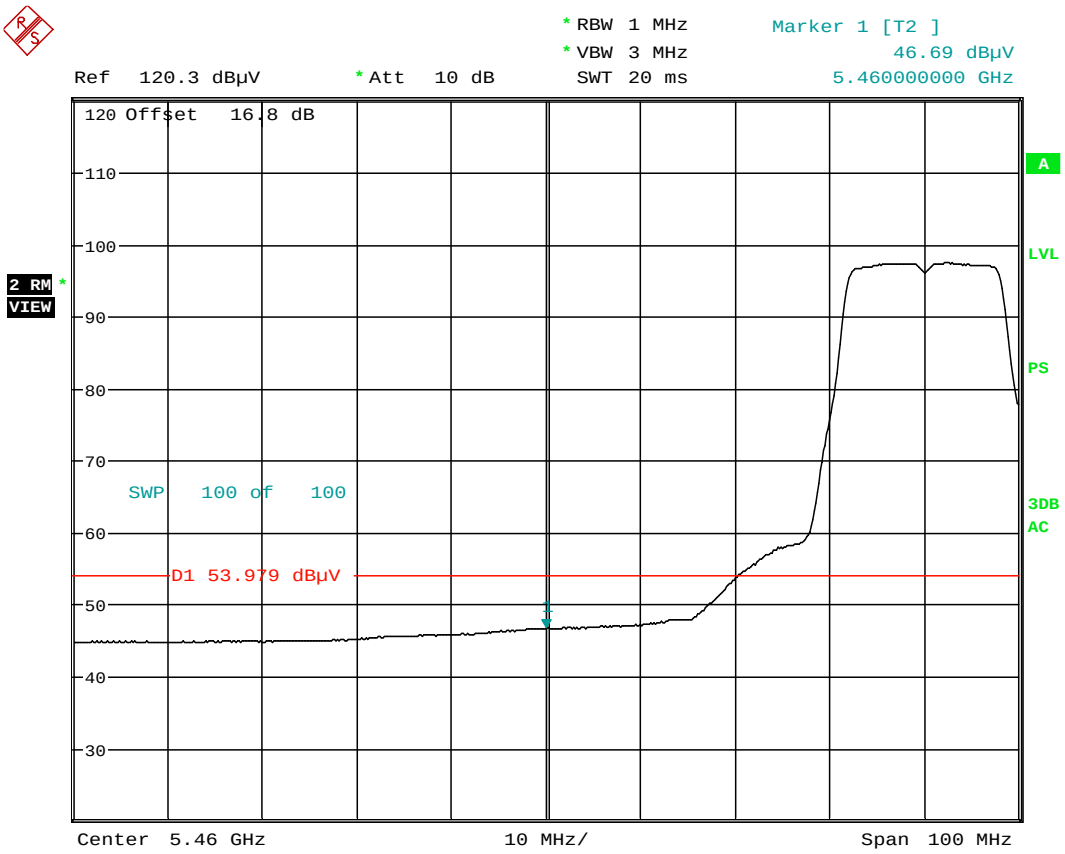
Radiated Band Edge Measurements (20MHz BW) (Cont'd)
§15.407(b.1)(b.2) §15.205 §15.209

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



Date: 12.FEB.2014 15:29:53

Plot 6-163. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

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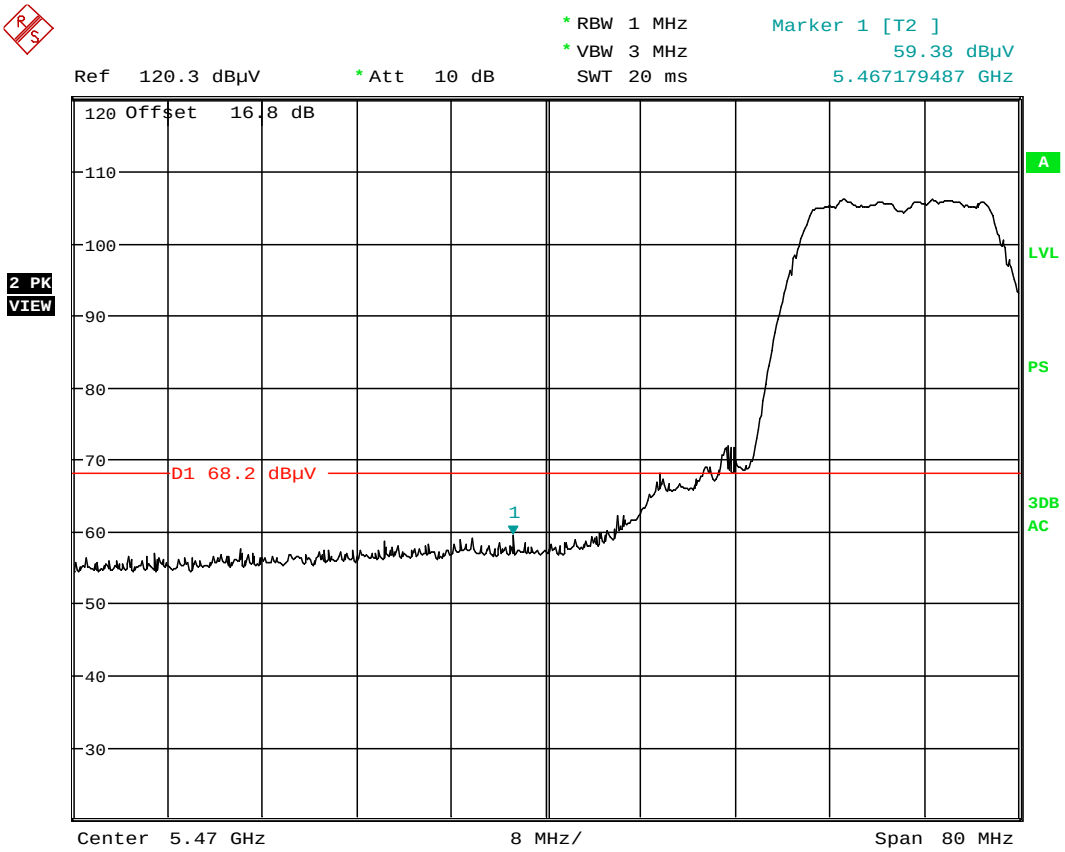
Radiated Band Edge Measurements (20MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 12.FEB.2014 15:29:07

Plot 6-164. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

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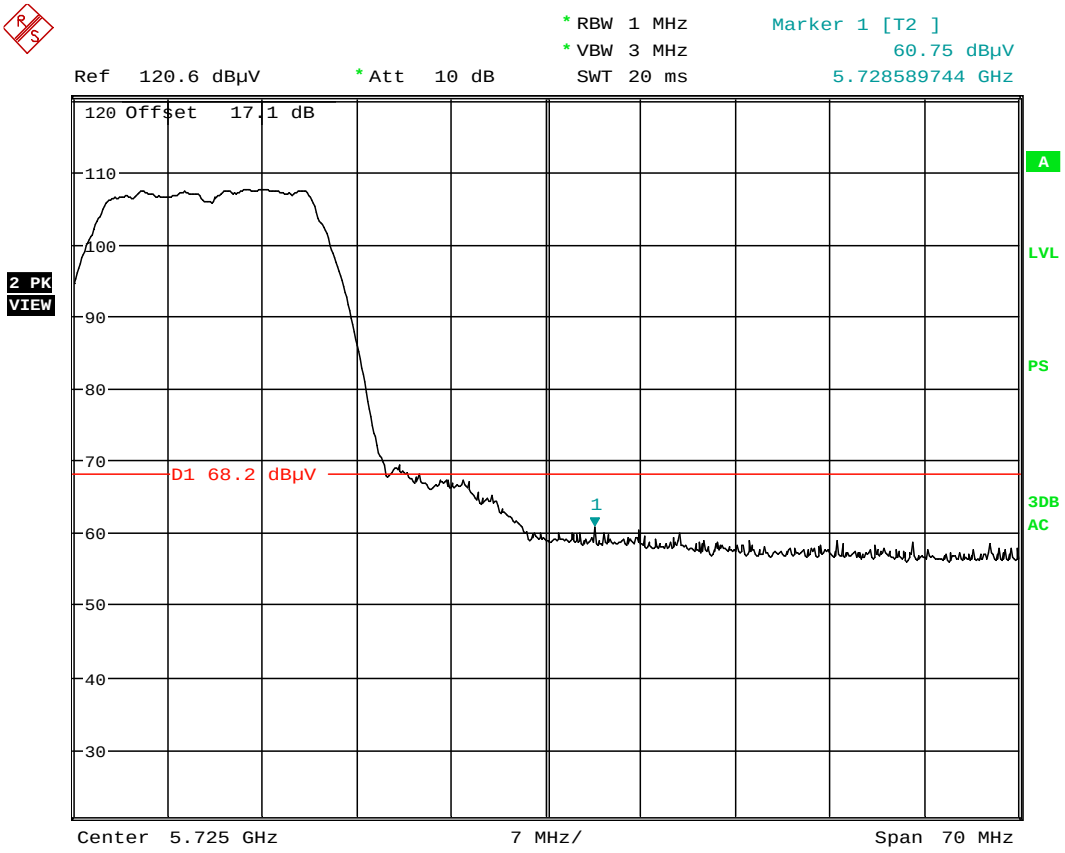
Radiated Band Edge Measurements (20MHz BW) (Cont'd)

§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:	5700MHz
Channel:	140



Date: 12.FEB.2014 15:57:20

Plot 6-165. Radiated Upper Band Edge Plot (Peak – UNII Band 2C)

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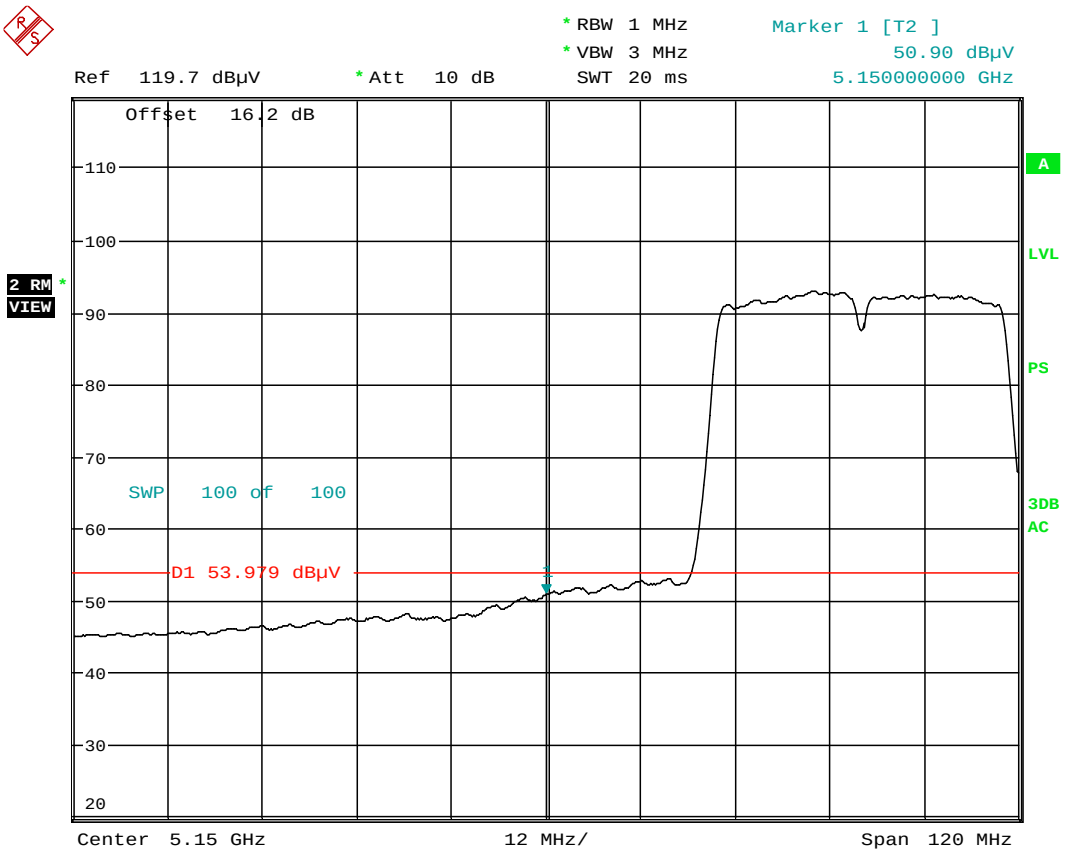
6.12 Antenna-2 Radiated Band Edge Measurements (40MHz BW)

§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: 14.FEB.2014 15:52:34

Plot 6-166. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

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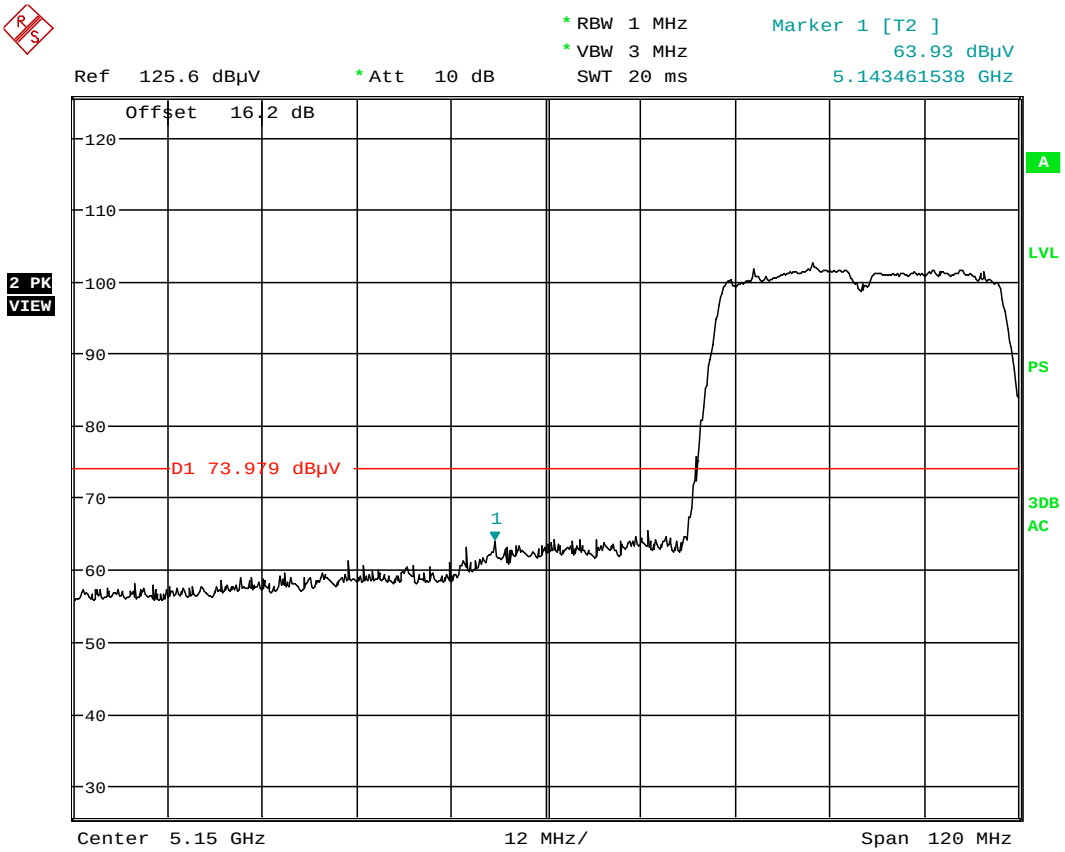
Radiated Band Edge Measurements (40MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 14.FEB.2014 15:53:34

Plot 6-167. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

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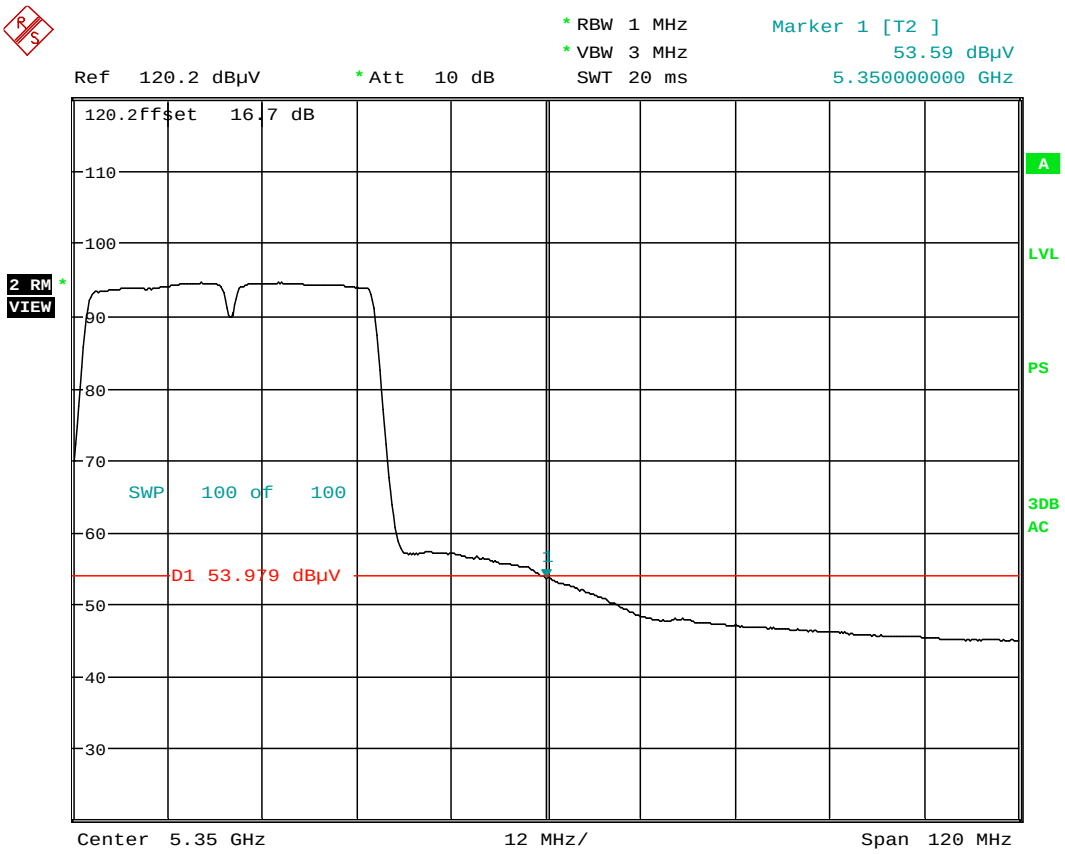
Radiated Band Edge Measurements (40MHz BW) (Cont'd)
§15.407(b.1)(b.2) §15.205 §15.209

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



Date: 12.FEB.2014 15:18:47

Plot 6-168. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

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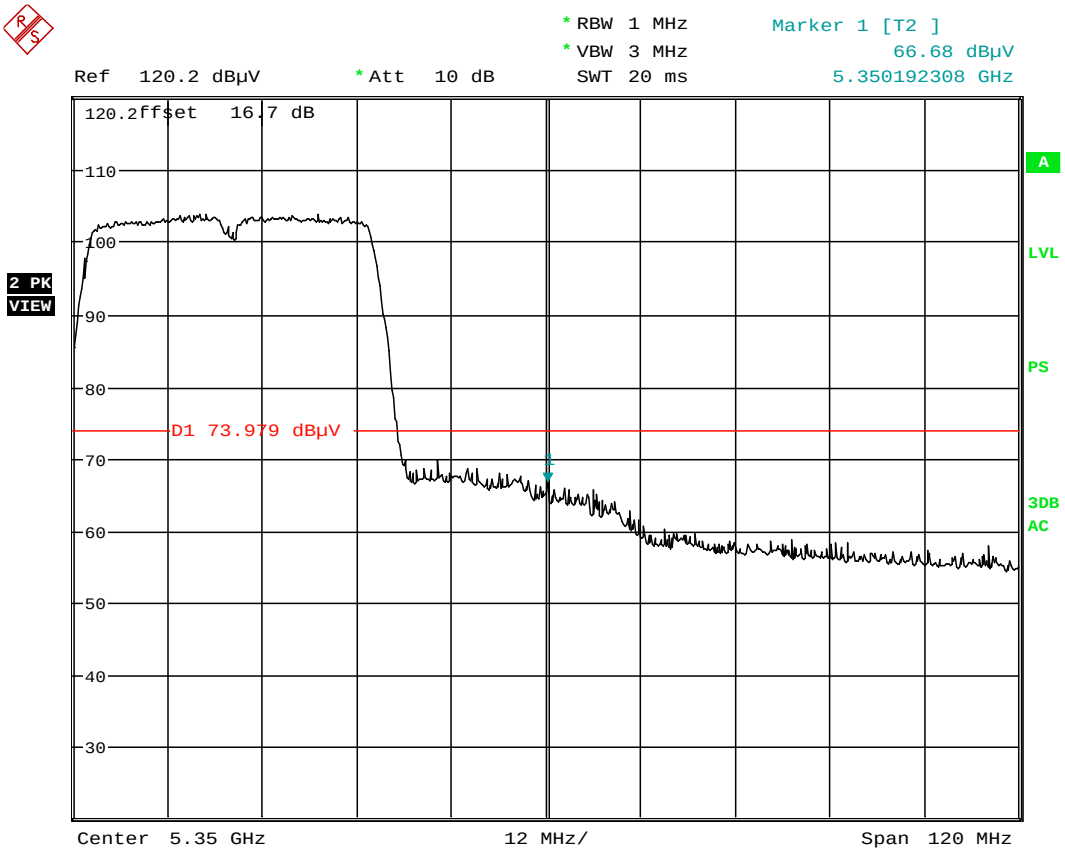
Radiated Band Edge Measurements (40MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 12.FEB.2014 15:21:35

Plot 6-169. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

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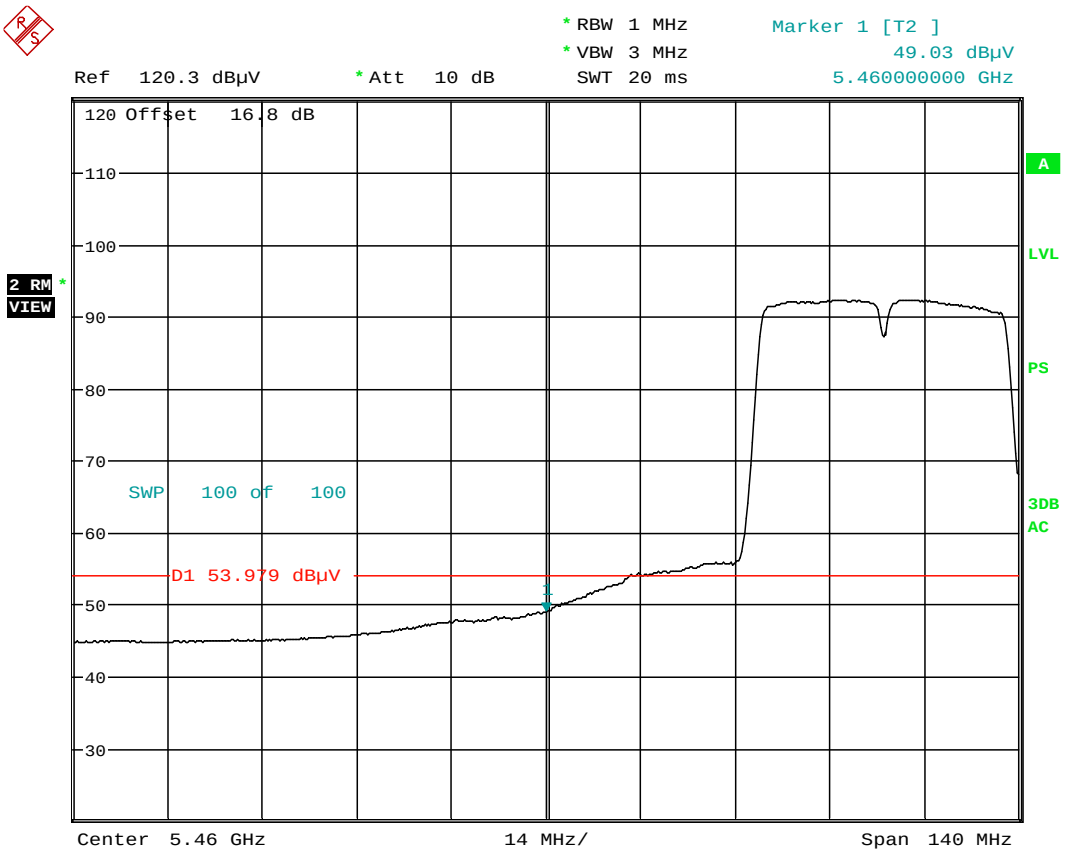
Radiated Band Edge Measurements (40MHz BW) (Cont'd)
§15.407(b.1)(b.2) §15.205 §15.209

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



Date: 12.FEB.2014 15:31:37

Plot 6-170. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

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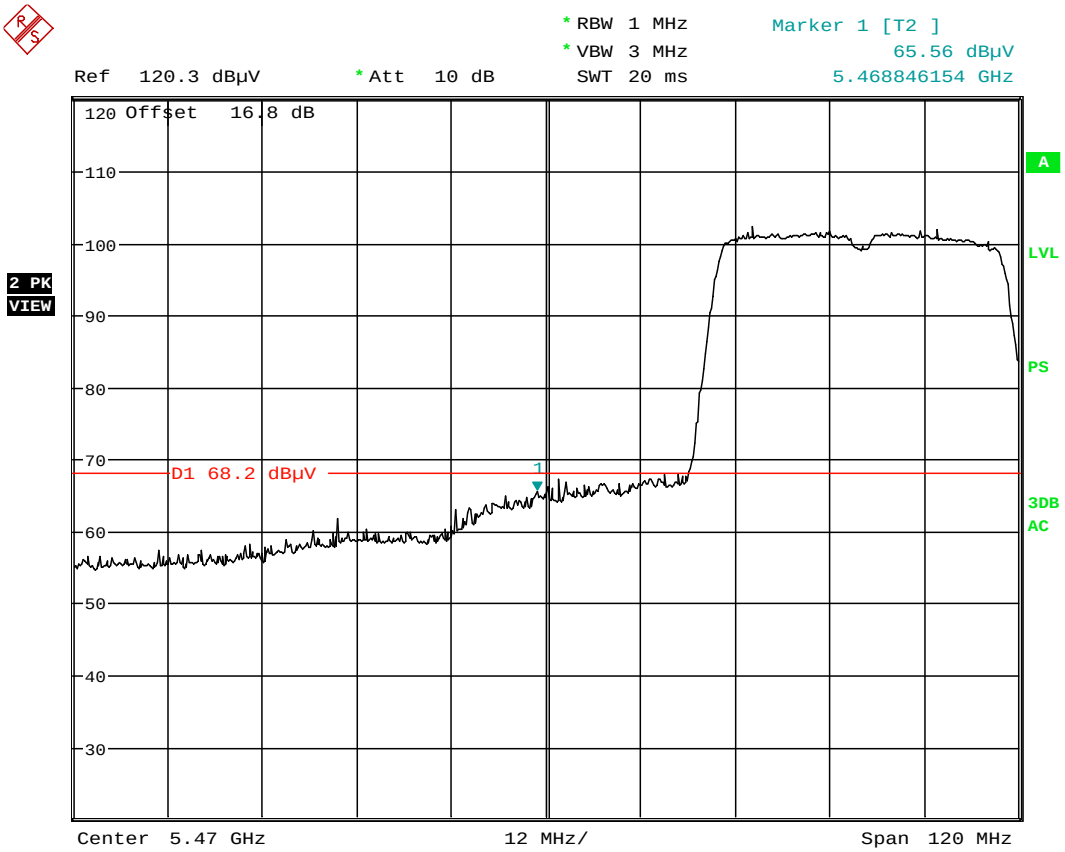
Radiated Band Edge Measurements (40MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 12.FEB.2014 15:32:42

Plot 6-171. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

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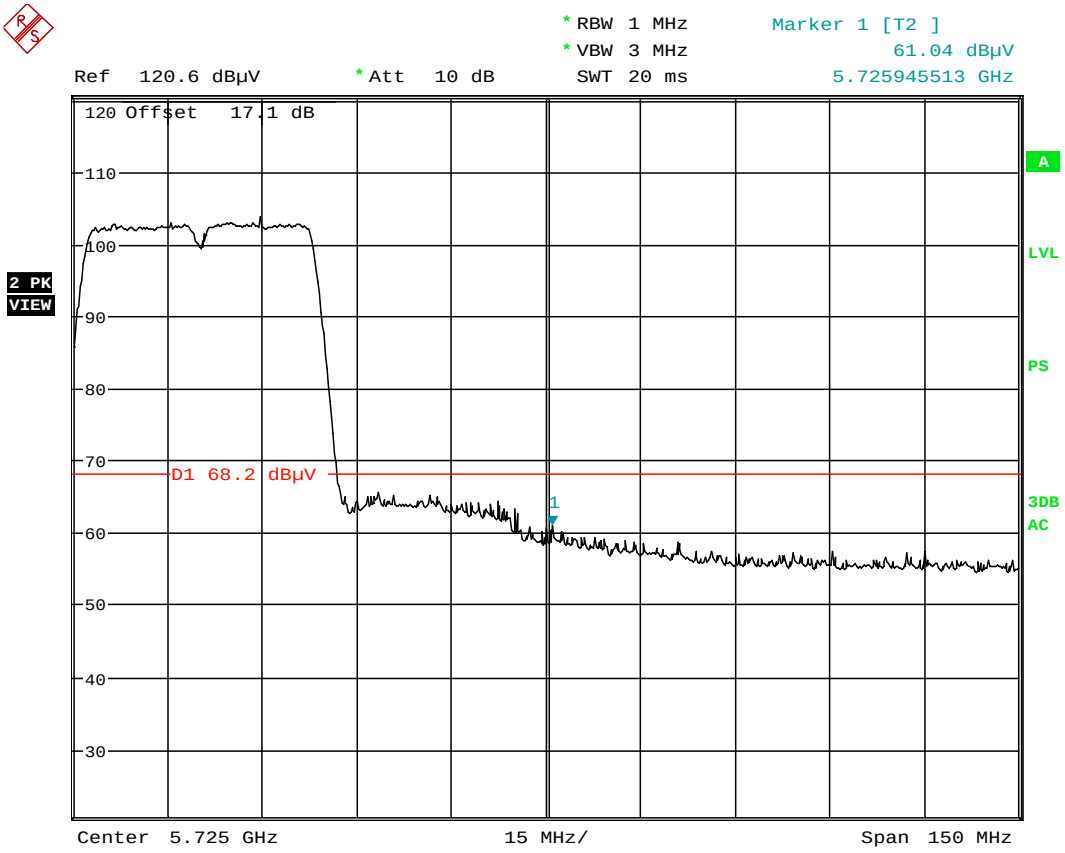
Radiated Band Edge Measurements (40MHz BW) (Cont'd)

§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:	5670MHz
Channel:	134



Date: 12.FEB.2014 15:59:21

Plot 6-172. Radiated Upper Band Edge Plot (Peak – UNII Band 2C)

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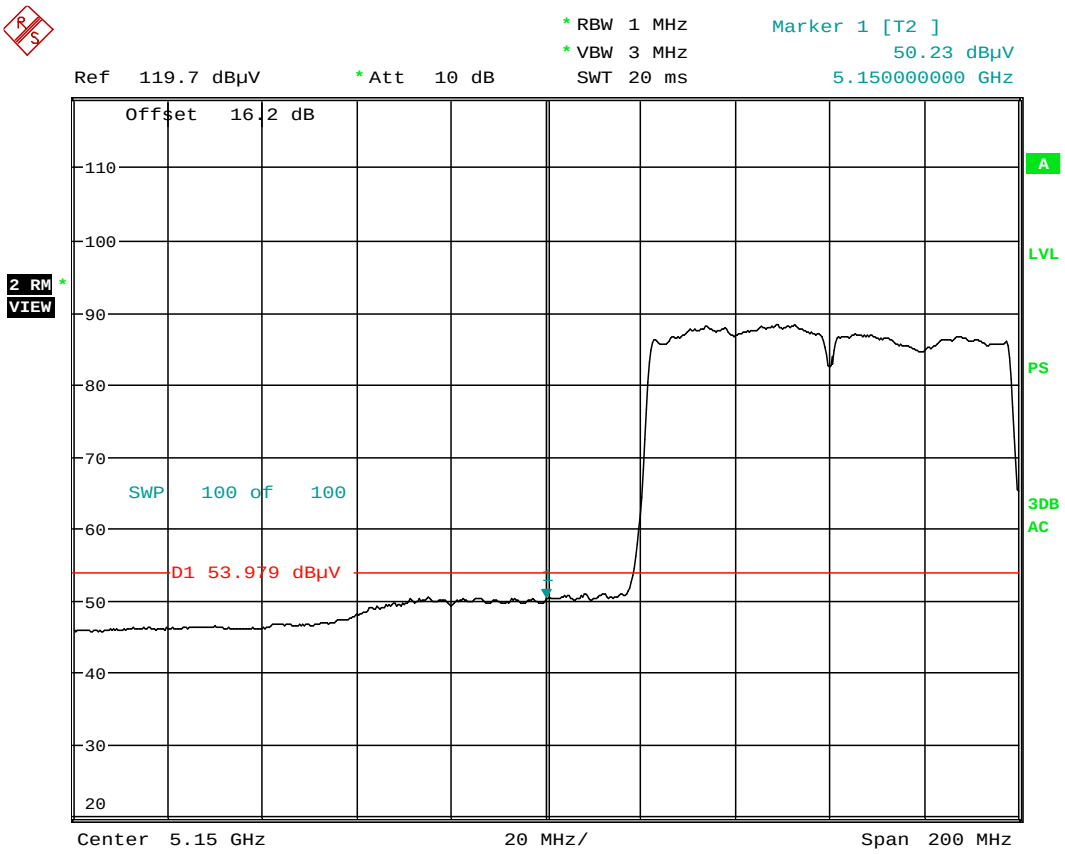
6.13 Antenna-2 Radiated Band Edge Measurements (80MHz BW)

§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:	5210MHz
Channel:	42



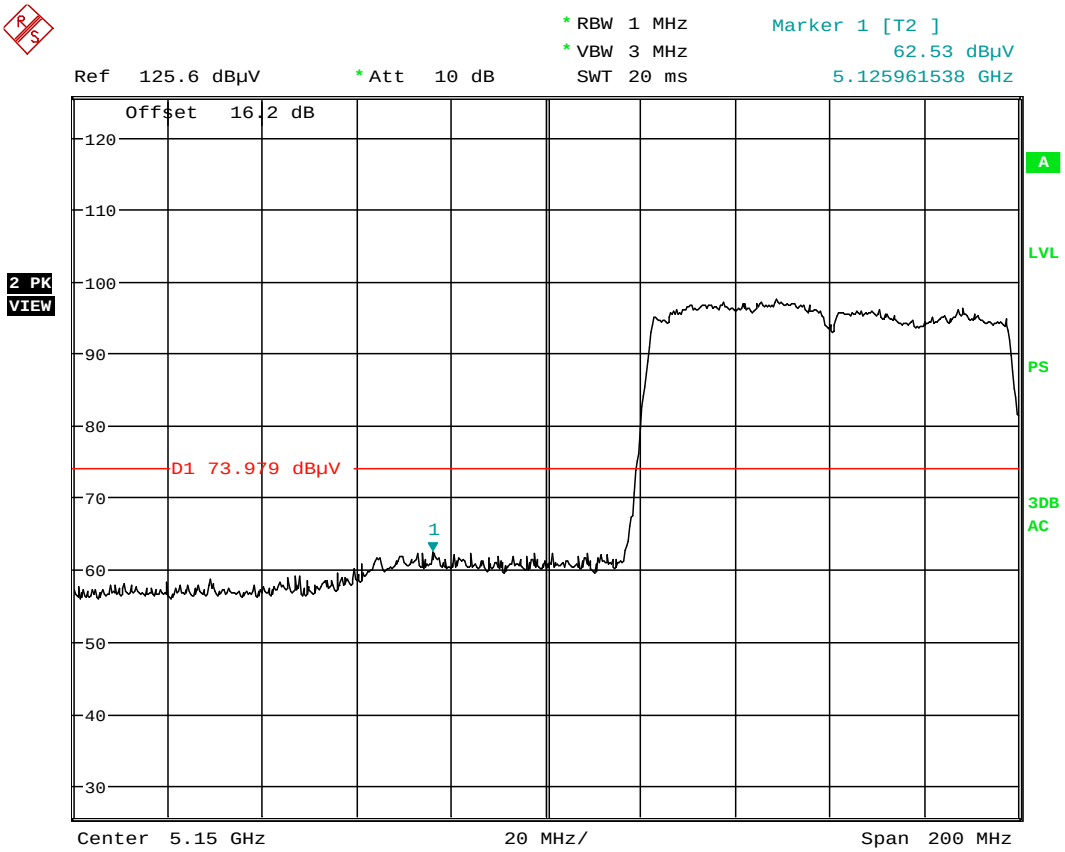
Date: 14.FEB.2014 15:57:15

Plot 6-173. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

© 2014 PCTEST Engineering Laboratory, Inc.

Radiated Band Edge Measurements (80MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 14.FEB.2014 15:58:32

Plot 6-174. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

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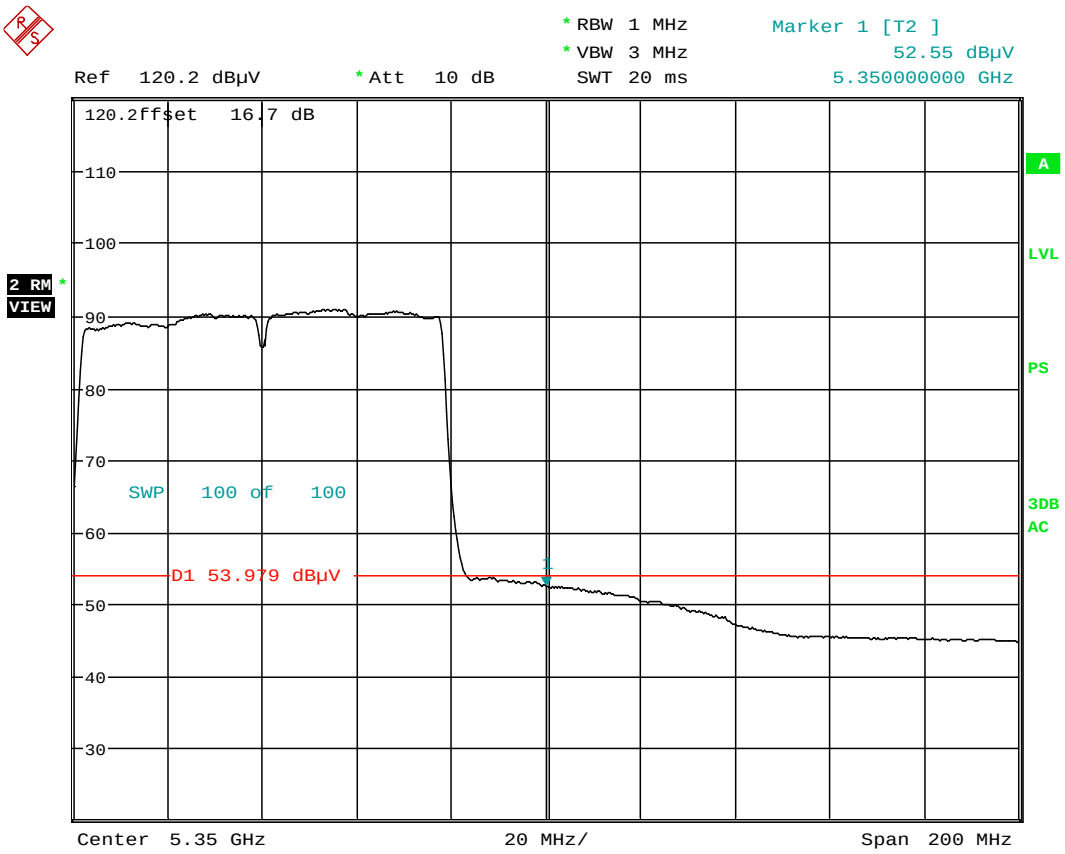
Radiated Band Edge Measurements (80MHz BW) (Cont'd)
§15.407(b.1)(b.2) §15.205 §15.209

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



Date: 12.FEB.2014 15:24:06

Plot 6-175. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

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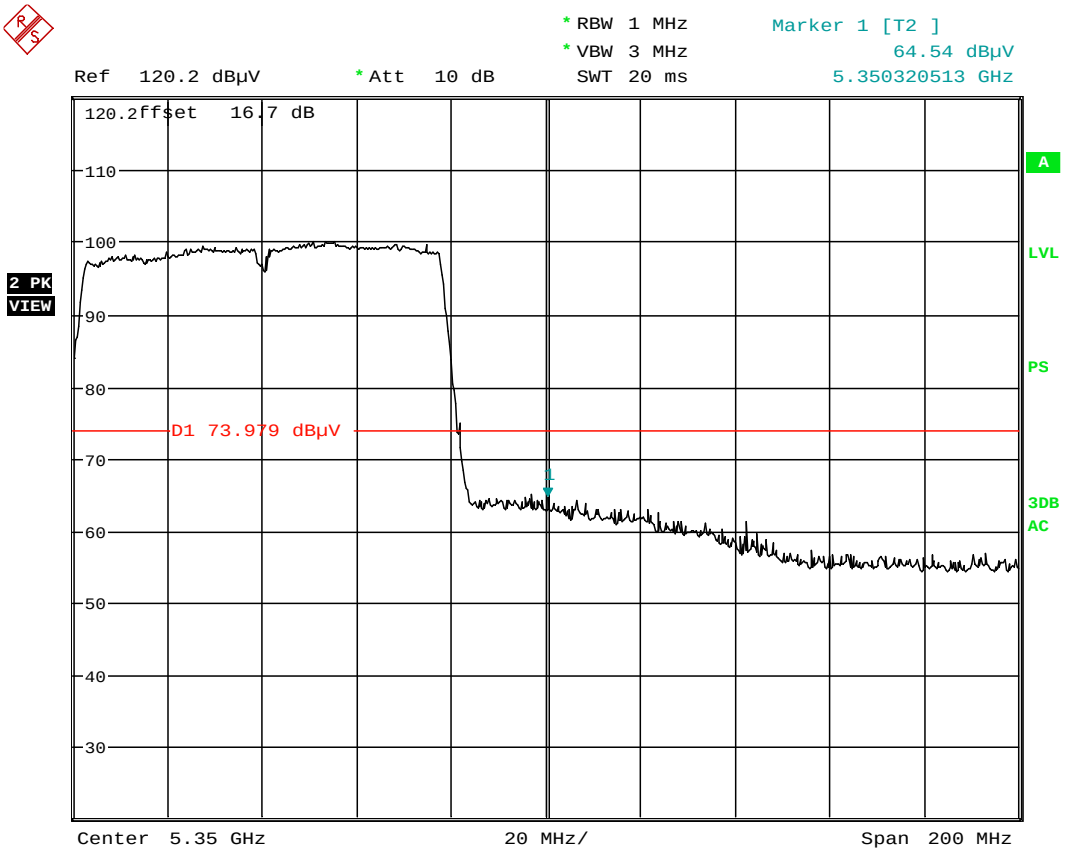
Radiated Band Edge Measurements (80MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 12.FEB.2014 15:25:21

Plot 6-176. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

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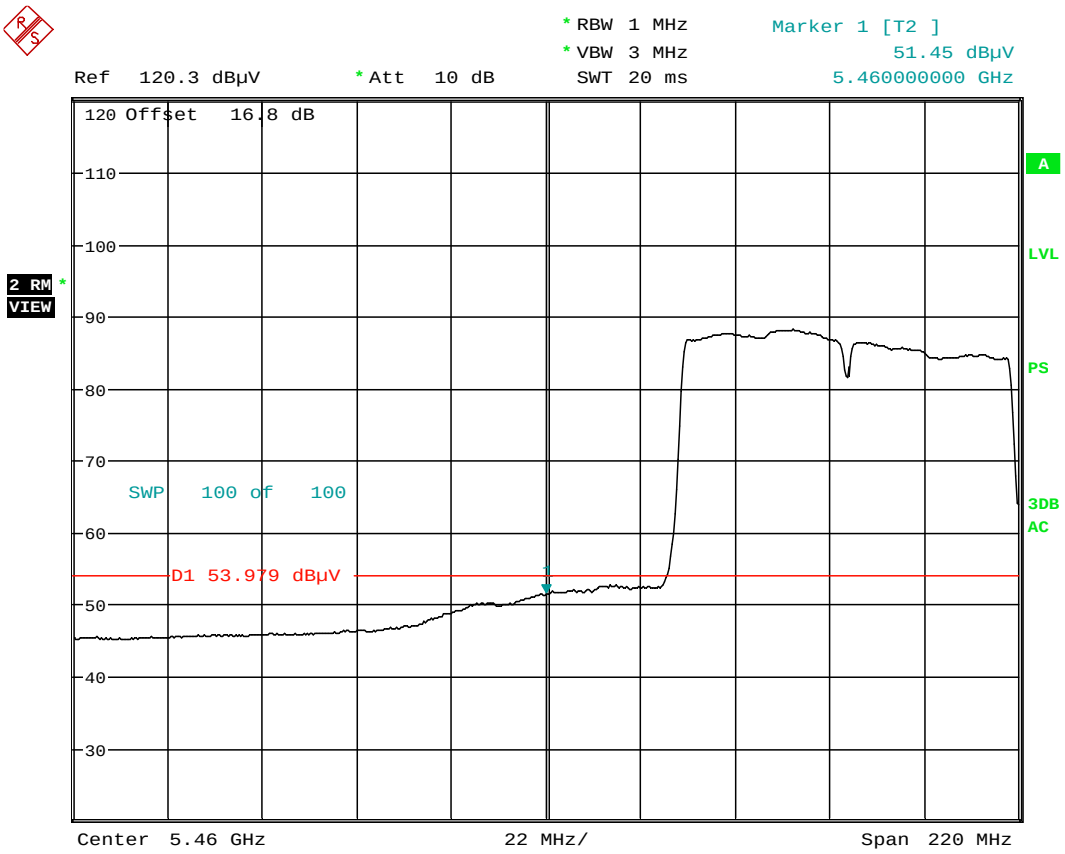
Radiated Band Edge Measurements (80MHz BW) (Cont'd)
§15.407(b.1)(b.2) §15.205 §15.209

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



Date: 12.FEB.2014 15:49:51

Plot 6-177. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

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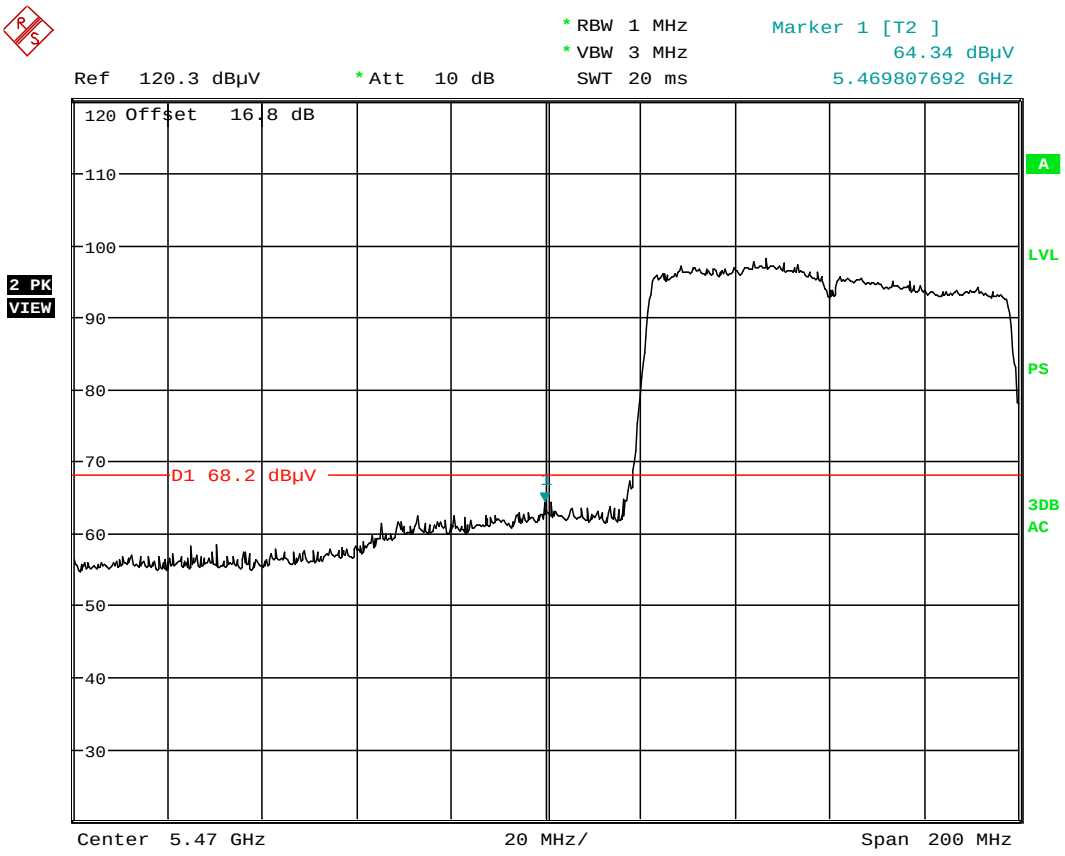
Radiated Band Edge Measurements (80MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 12.FEB.2014 15:47:36

Plot 6-178. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

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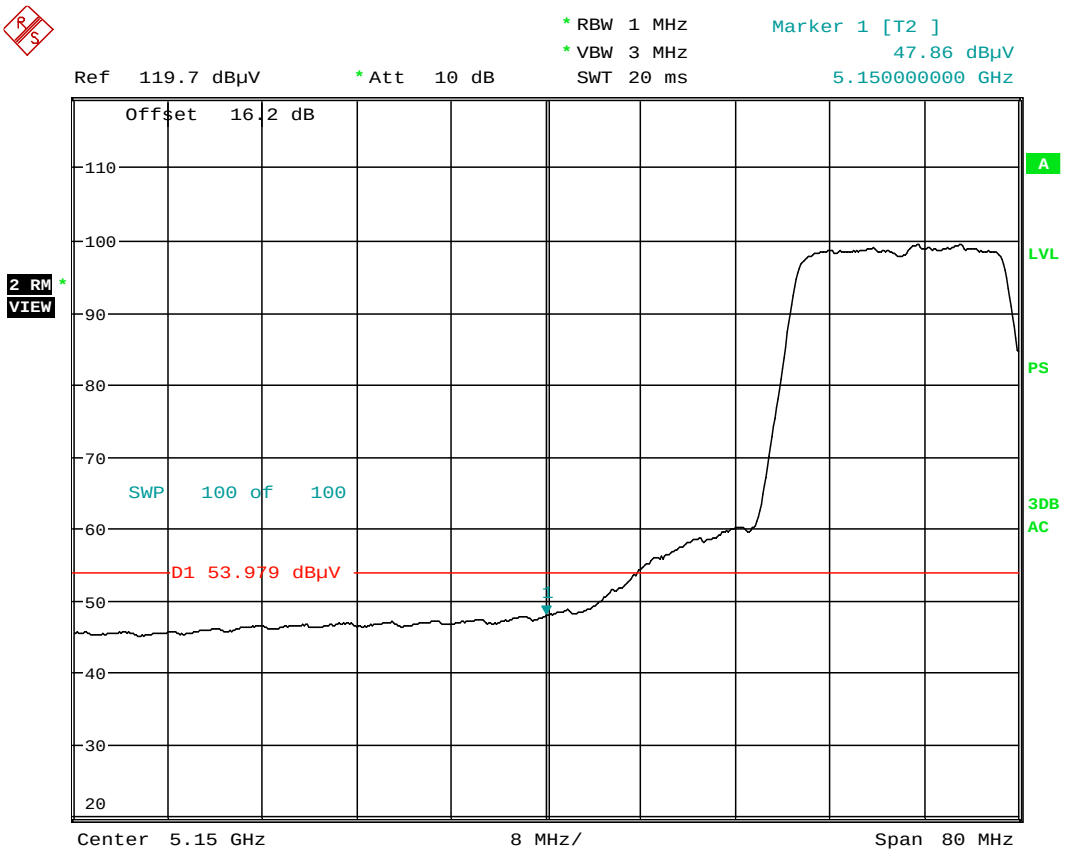
6.14 MIMO Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

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



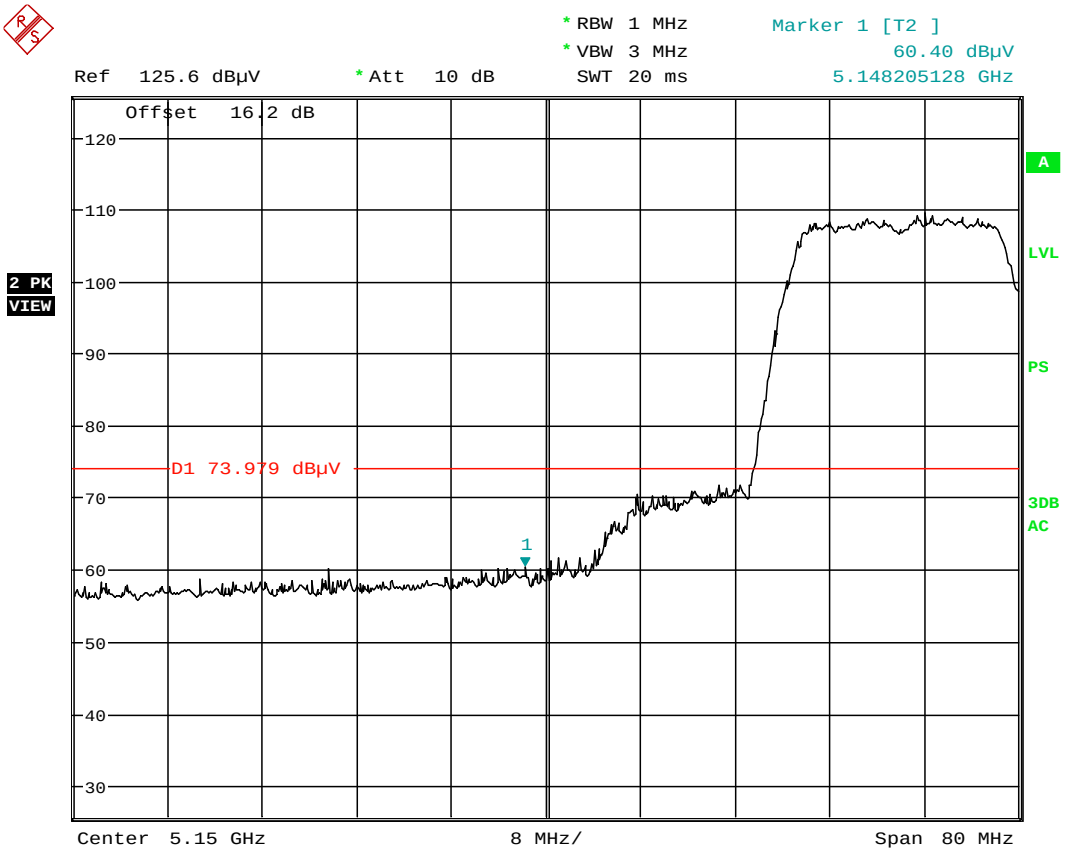
Date: 12.FEB.2014 16:07:32

Plot 6-179. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

© 2014 PCTEST Engineering Laboratory, Inc.

Radiated Band Edge Measurements (20MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 12.FEB.2014 16:06:49

Plot 6-180. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

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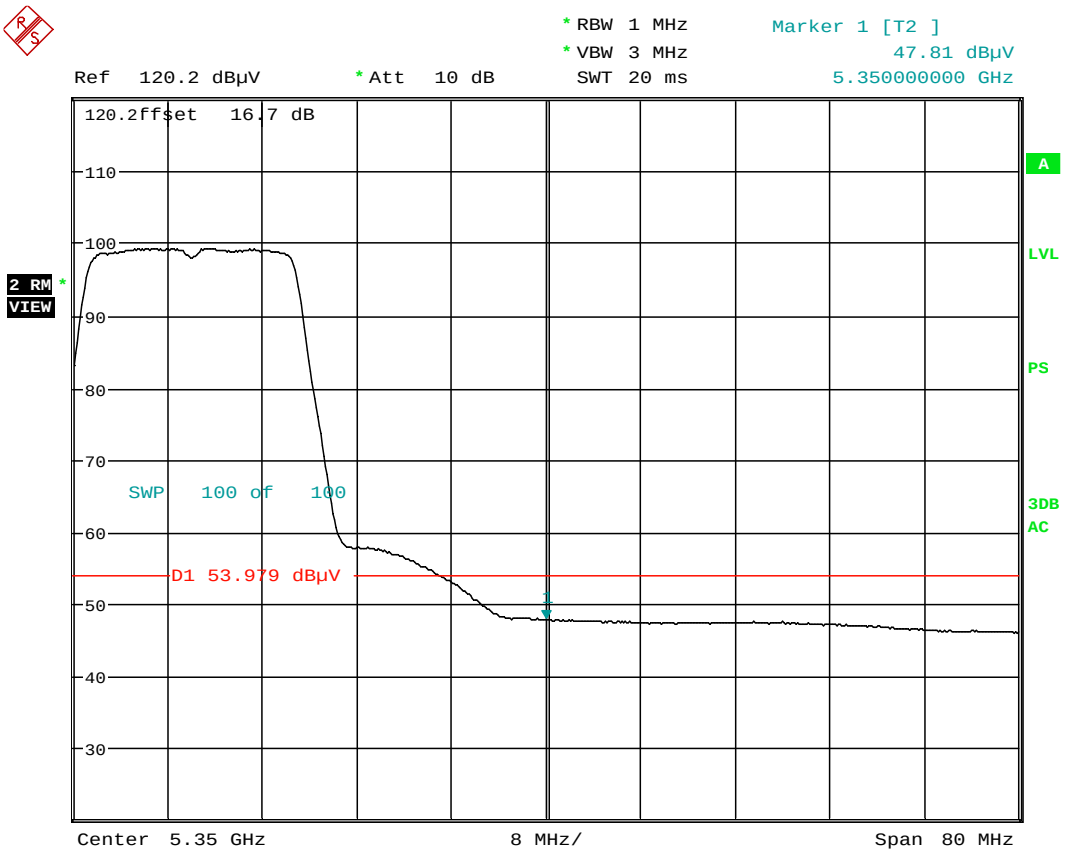
Radiated Band Edge Measurements (20MHz BW) (Cont'd)

§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.FEB.2014 16:27:36

Plot 6-181. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

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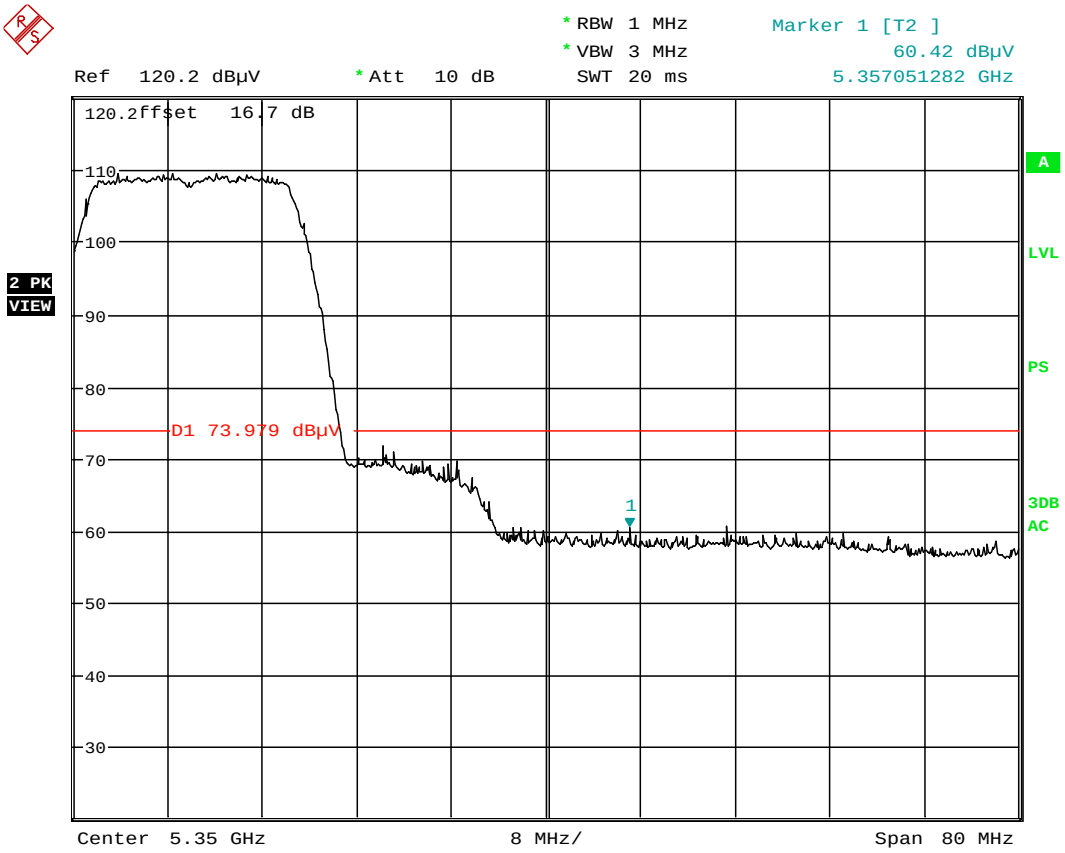
Radiated Band Edge Measurements (20MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 12.FEB.2014 16:26:53

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

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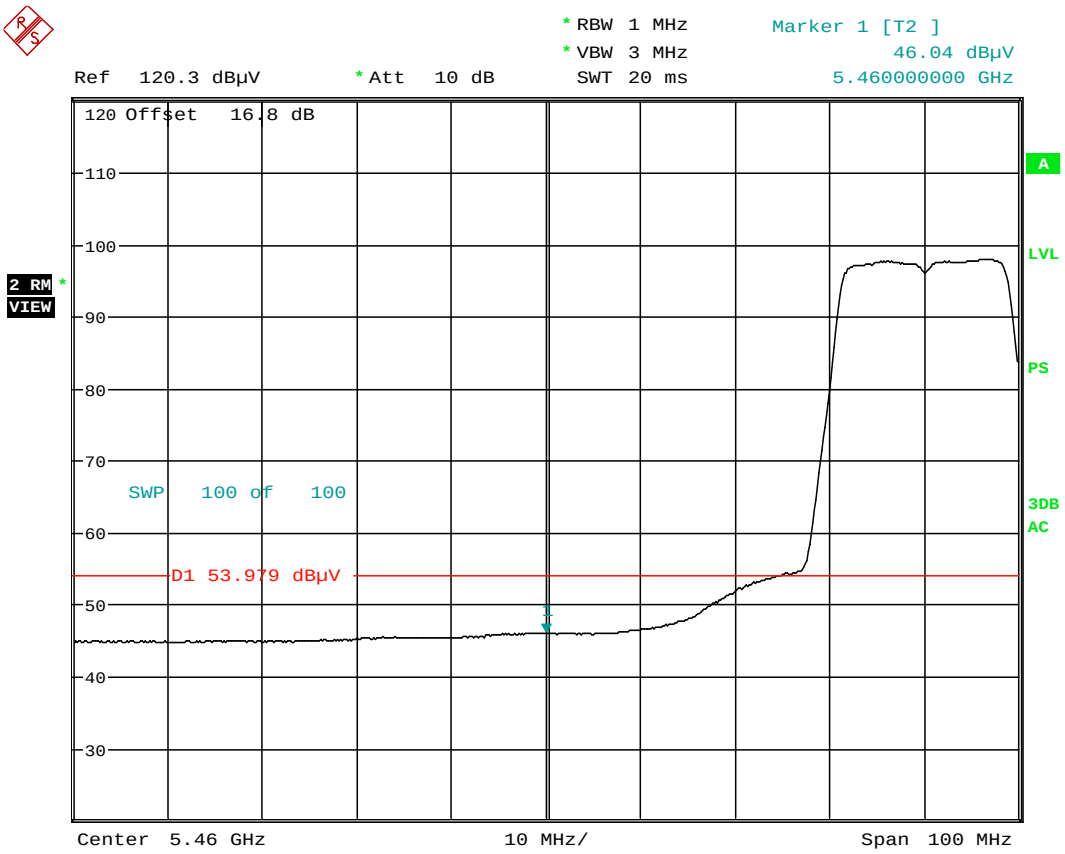
Radiated Band Edge Measurements (20MHz BW) (Cont'd)
§15.407(b.1)(b.2) §15.205 §15.209

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



Date: 12.FEB.2014 16:43:58

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

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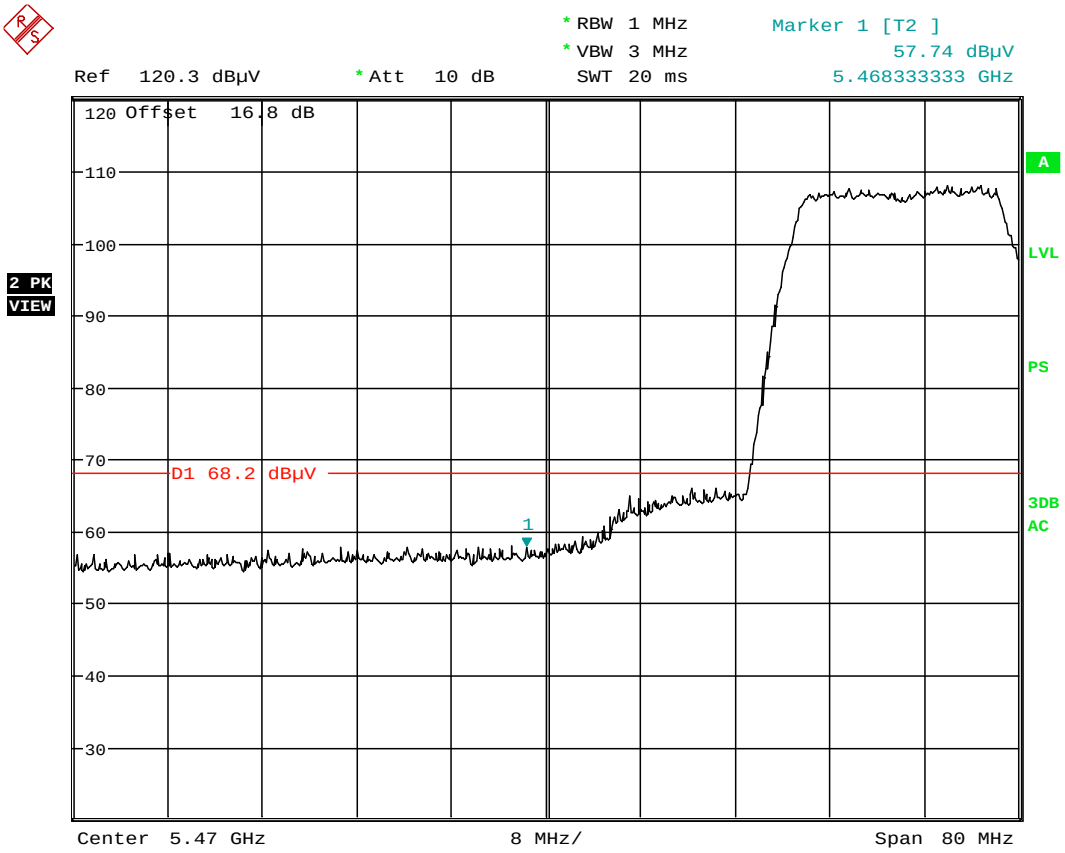
Radiated Band Edge Measurements (20MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 12.FEB.2014 16:43:27

Plot 6-184. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

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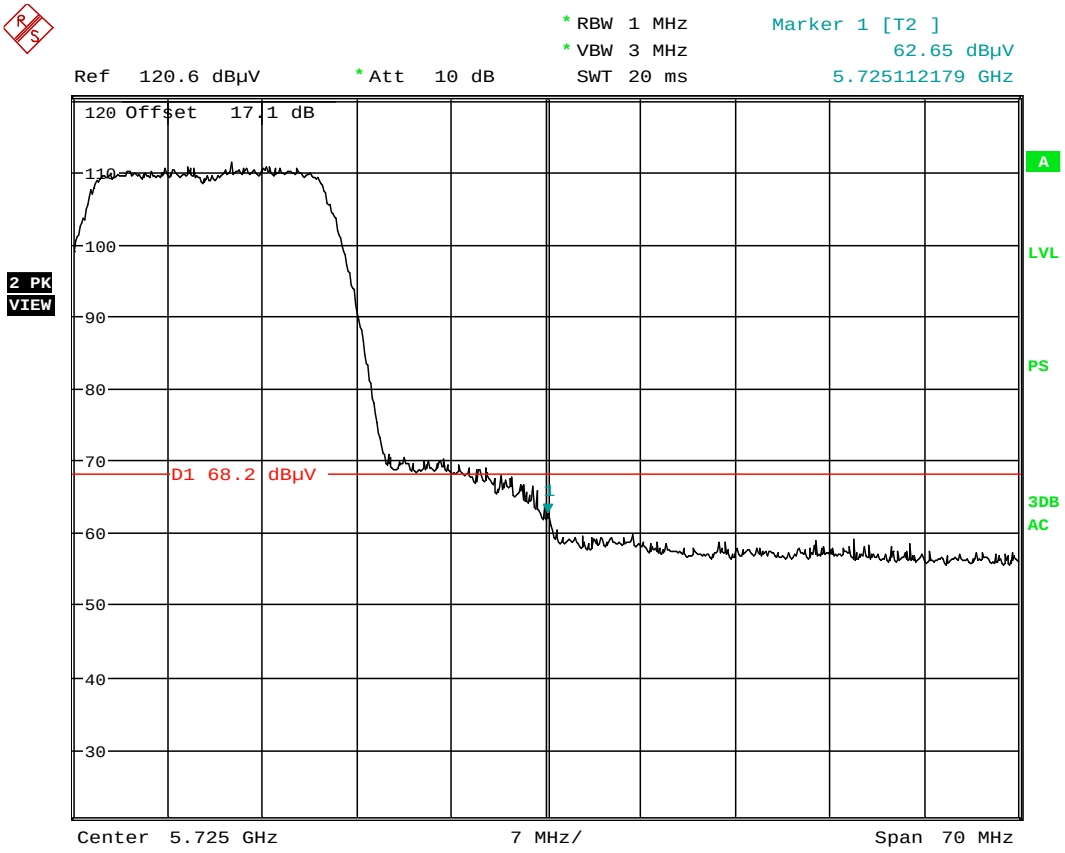
Radiated Band Edge Measurements (20MHz BW) (Cont'd)

§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:	5700MHz
Channel:	140



Date: 12.FEB.2014 16:55:47

Plot 6-185. Radiated Upper Band Edge Plot (Peak – UNII Band 2C)

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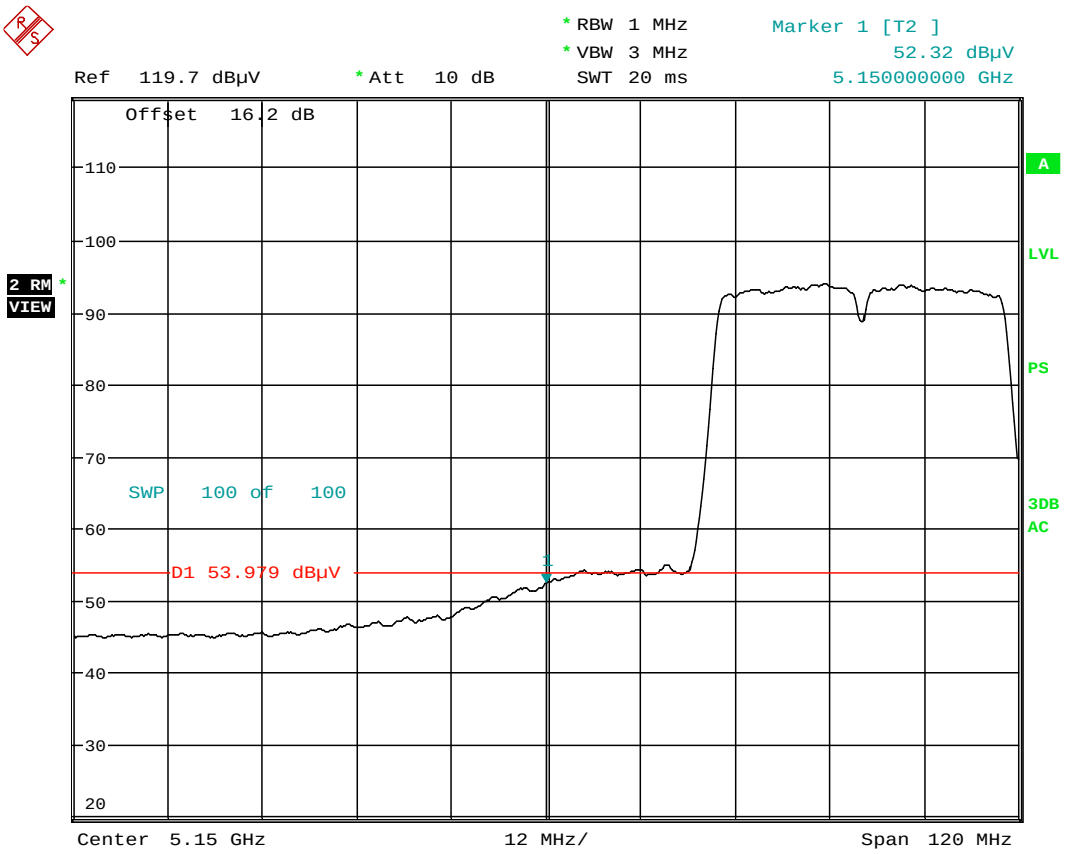
6.15 MIMO Radiated Band Edge Measurements (40MHz BW)

§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.FEB.2014 16:11:39

Plot 6-186. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

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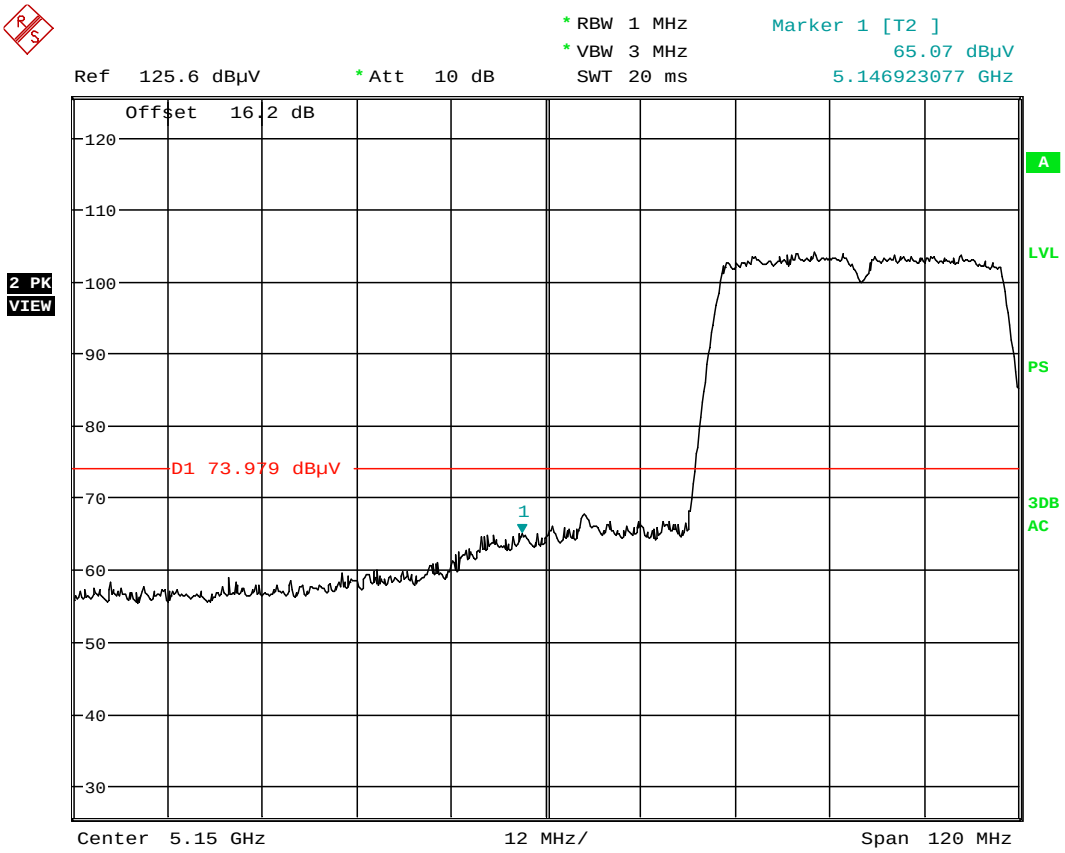
Radiated Band Edge Measurements (40MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 12.FEB.2014 16:13:31

Plot 6-187. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

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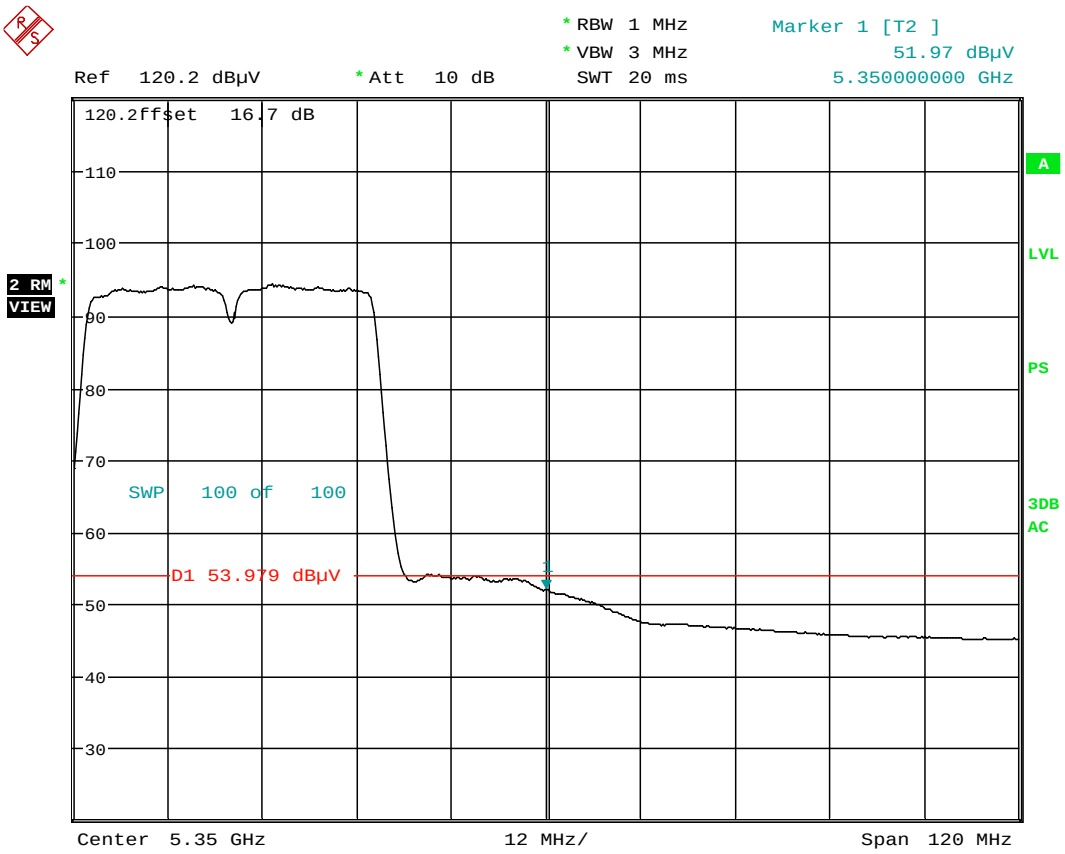
Radiated Band Edge Measurements (40MHz BW) (Cont'd)
§15.407(b.1)(b.2) §15.205 §15.209

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



Date: 12.FEB.2014 16:31:19

Plot 6-188. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

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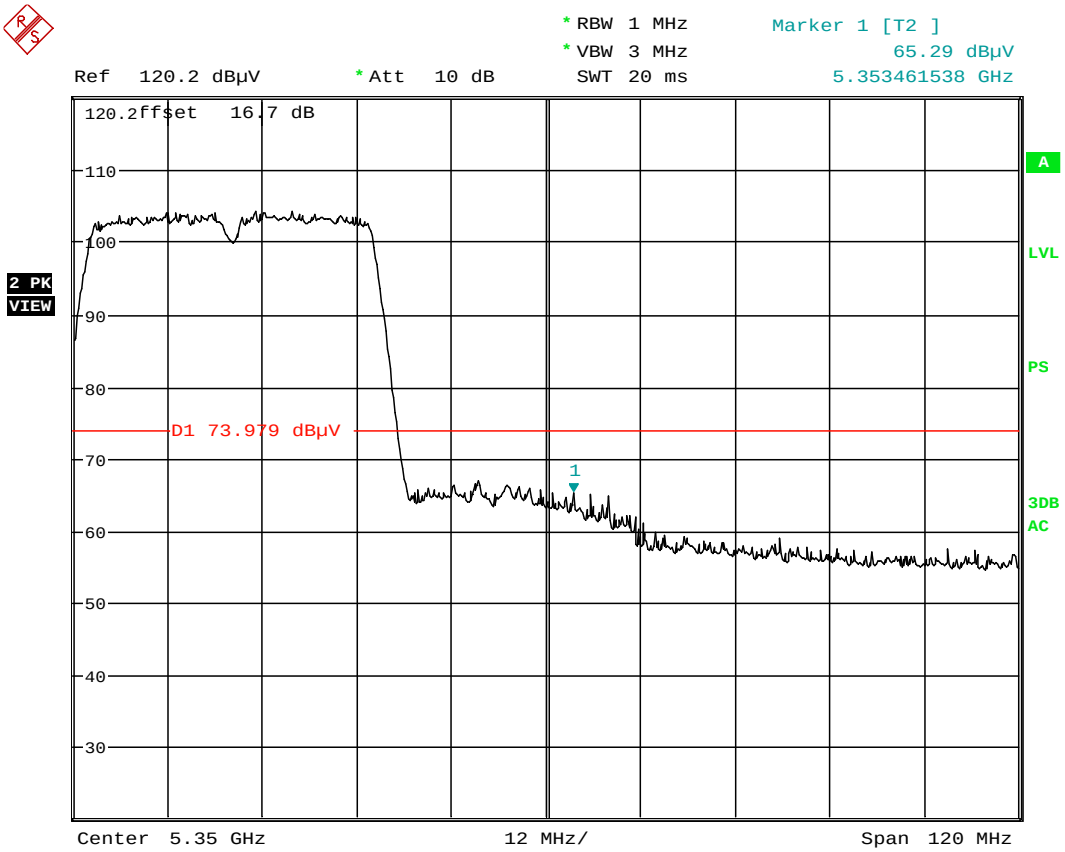
Radiated Band Edge Measurements (40MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 12.FEB.2014 16:35:11

Plot 6-189. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

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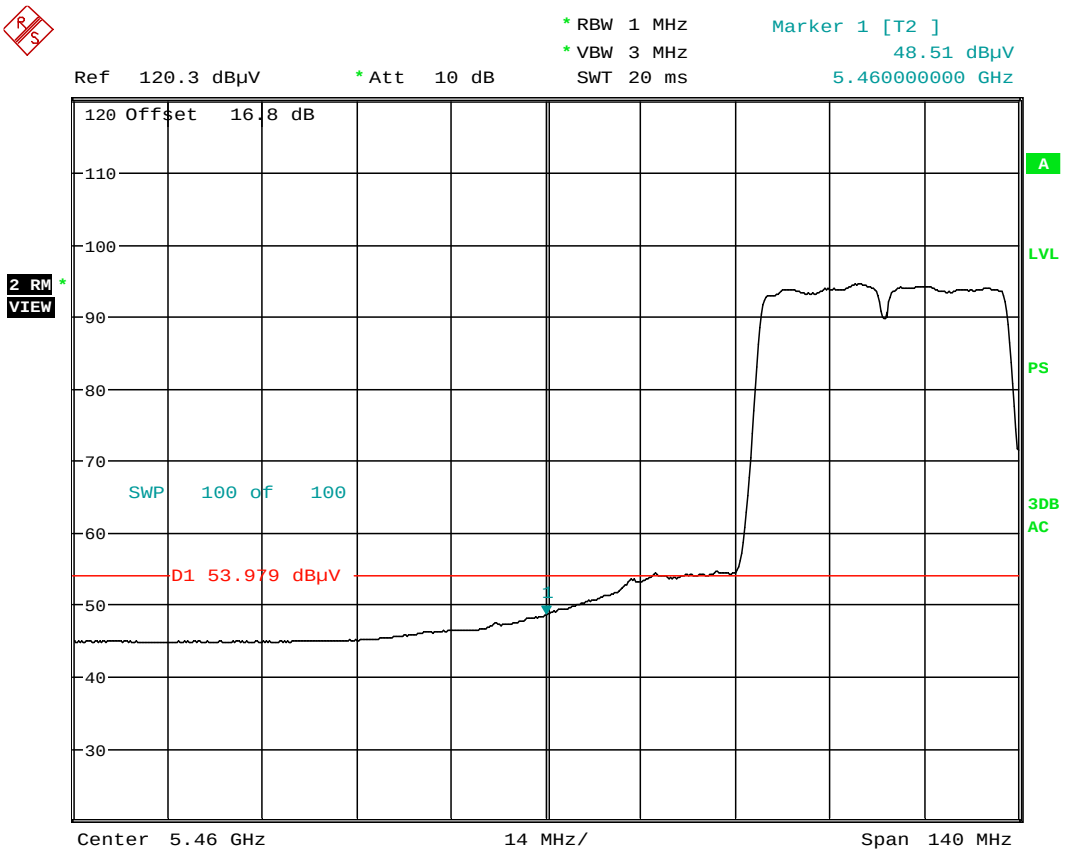
Radiated Band Edge Measurements (40MHz BW) (Cont'd)
§15.407(b.1)(b.2) §15.205 §15.209

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



Date: 12.FEB.2014 16:46:21

Plot 6-190. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

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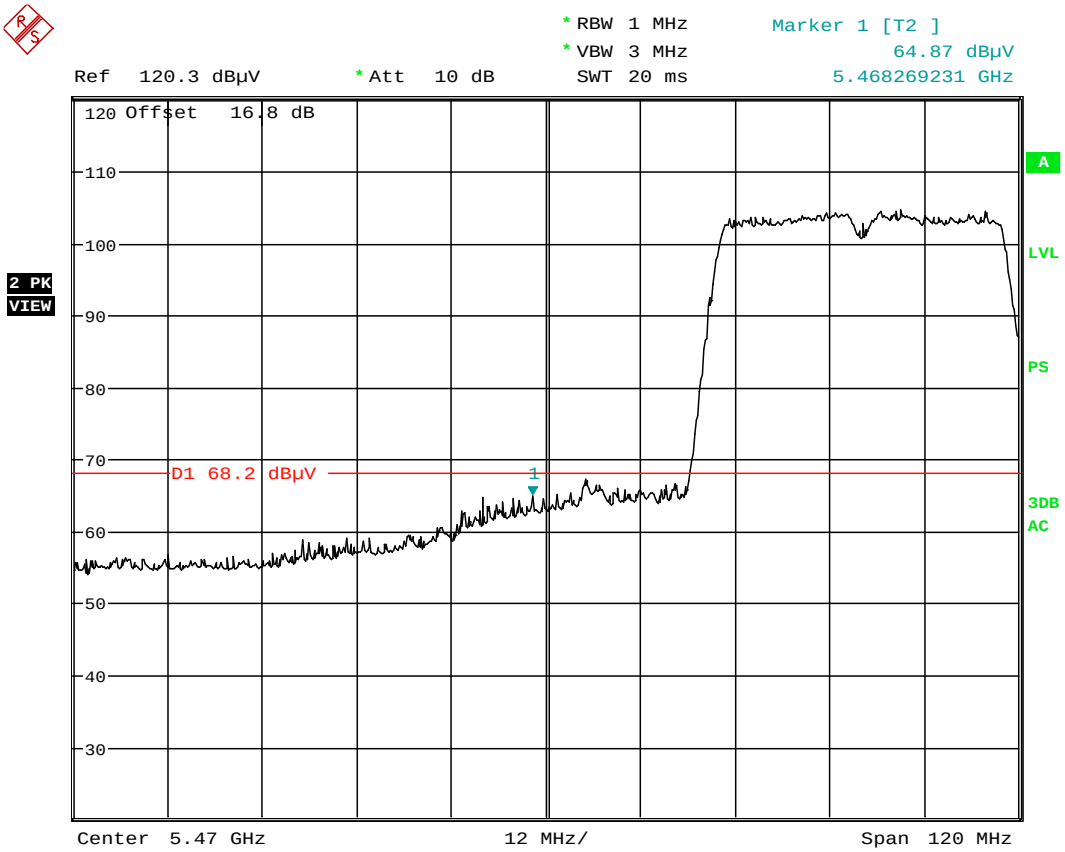
Radiated Band Edge Measurements (40MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 12.FEB.2014 16:48:46

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

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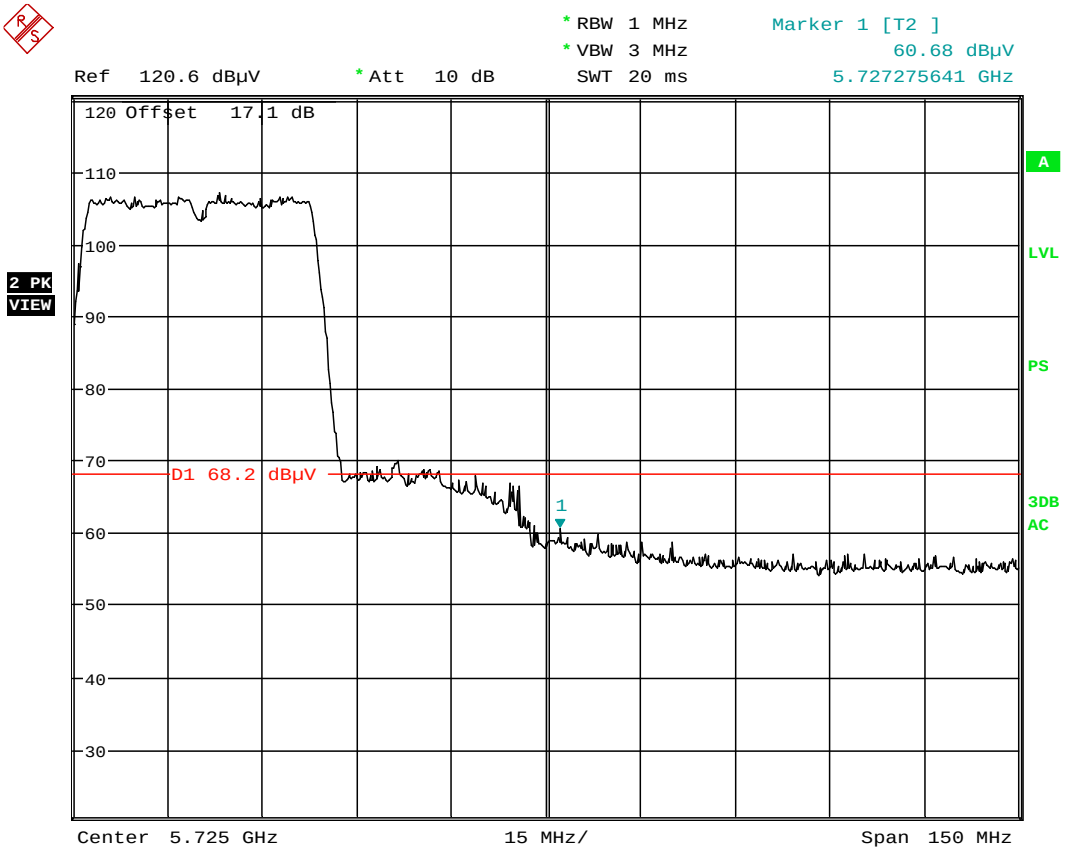
Radiated Band Edge Measurements (40MHz BW) (Cont'd)

§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:	5670MHz
Channel:	134



Date: 12.FEB.2014 16:57:25

Plot 6-192. Radiated Upper Band Edge Plot (Peak – UNII Band 2C)

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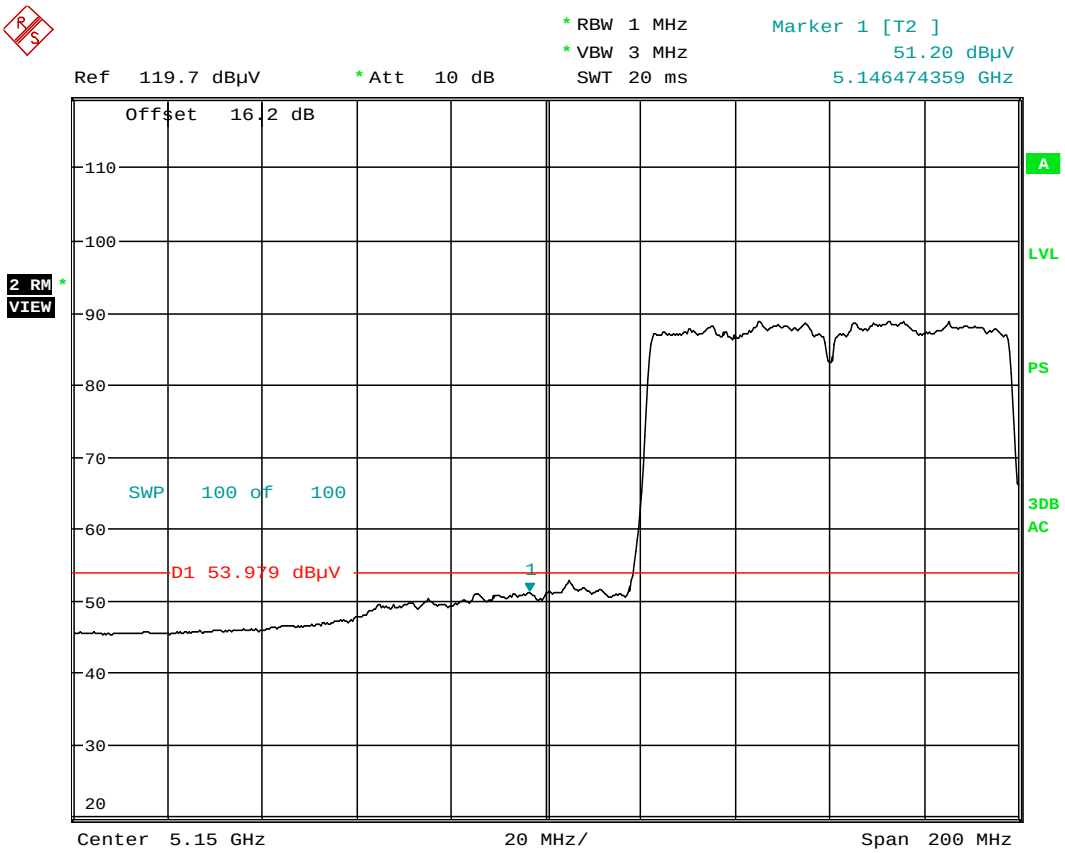
6.16 MIMO Radiated Band Edge Measurements (80MHz BW)

§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: 14.FEB.2014 14:12:54

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

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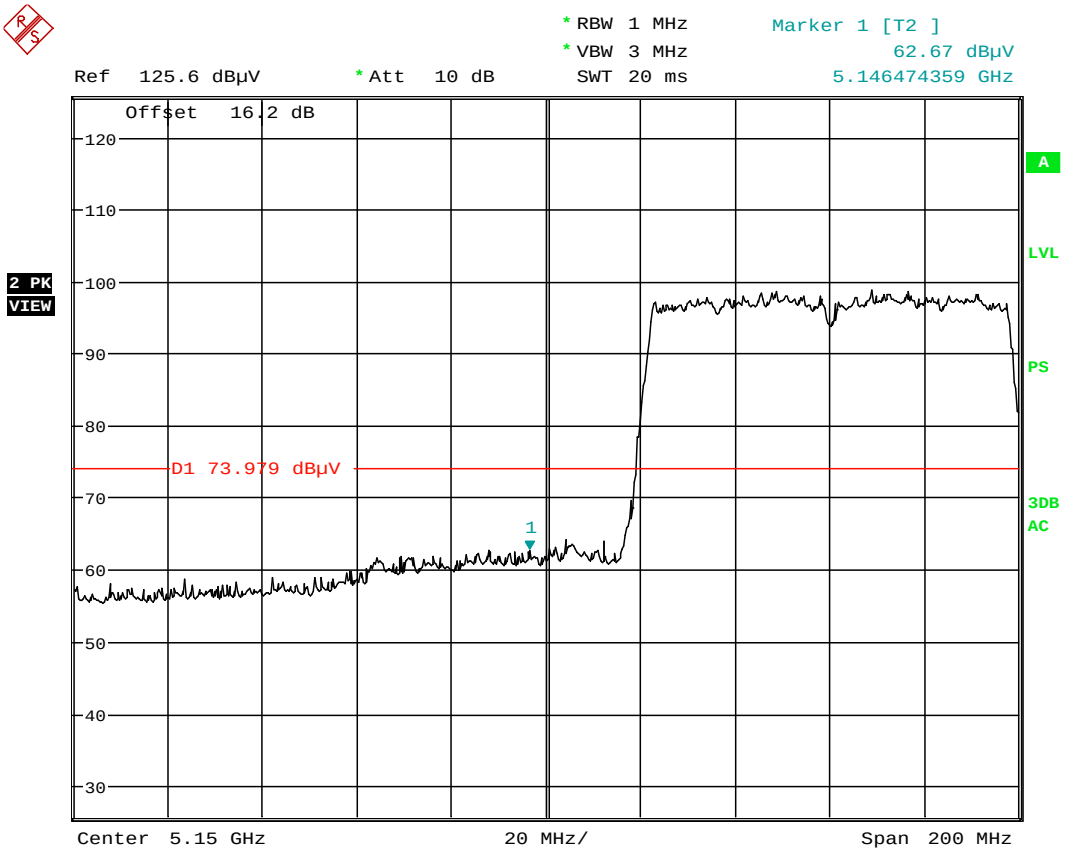
Radiated Band Edge Measurements (80MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 14.FEB.2014 14:14:05

Plot 6-194. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

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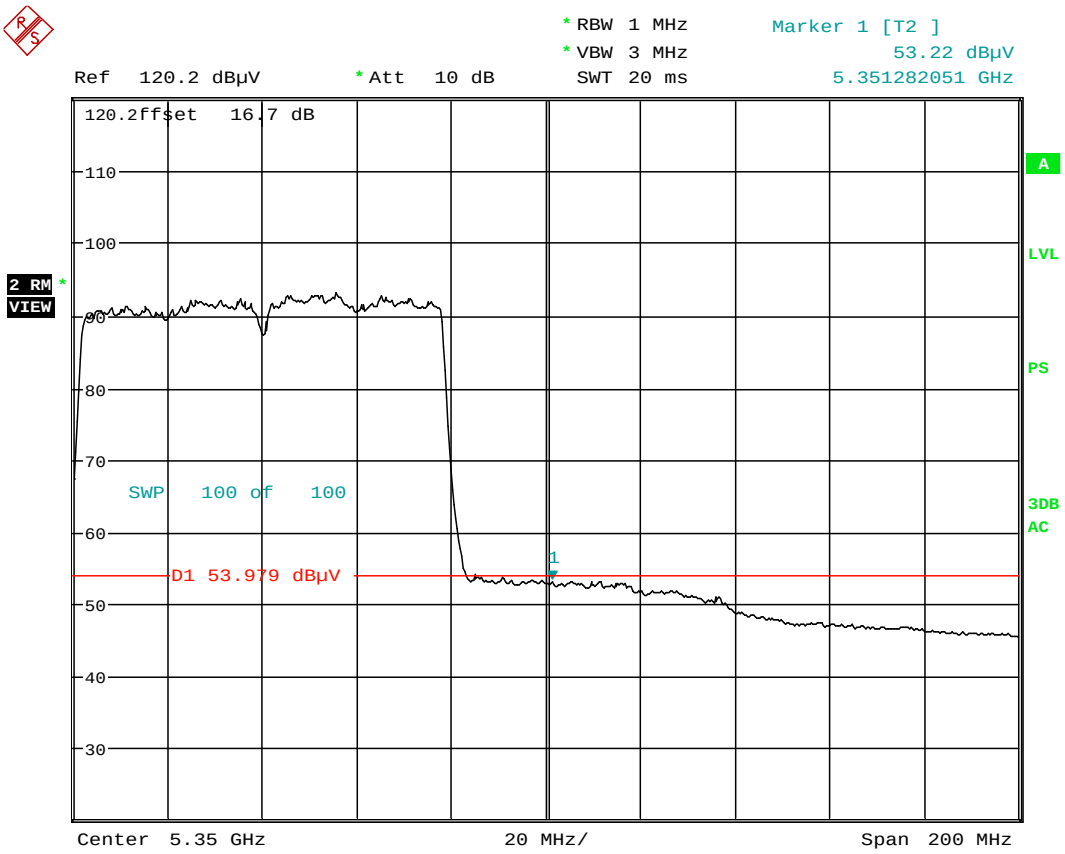
Radiated Band Edge Measurements (80MHz BW) (Cont'd)
§15.407(b.1)(b.2) §15.205 §15.209

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



Date: 12.FEB.2014 16:38:00

Plot 6-195. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

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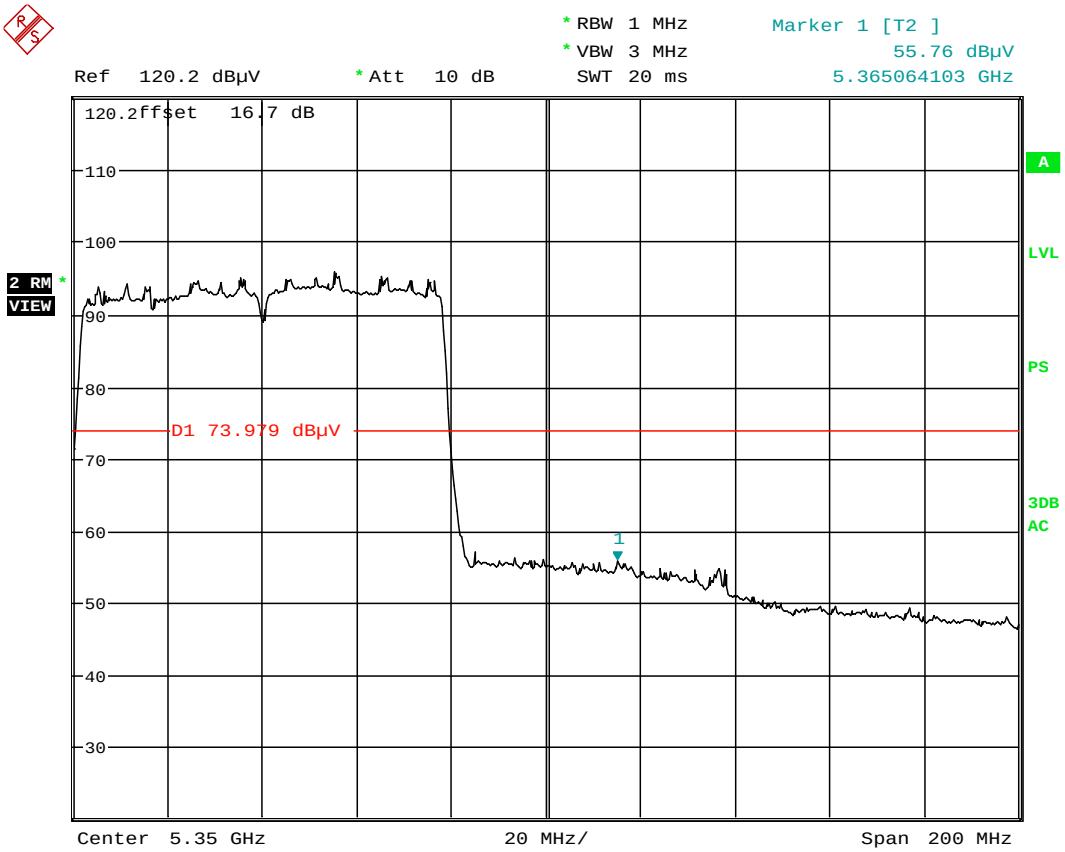
Radiated Band Edge Measurements (80MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 12.FEB.2014 16:39:09

Plot 6-196. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

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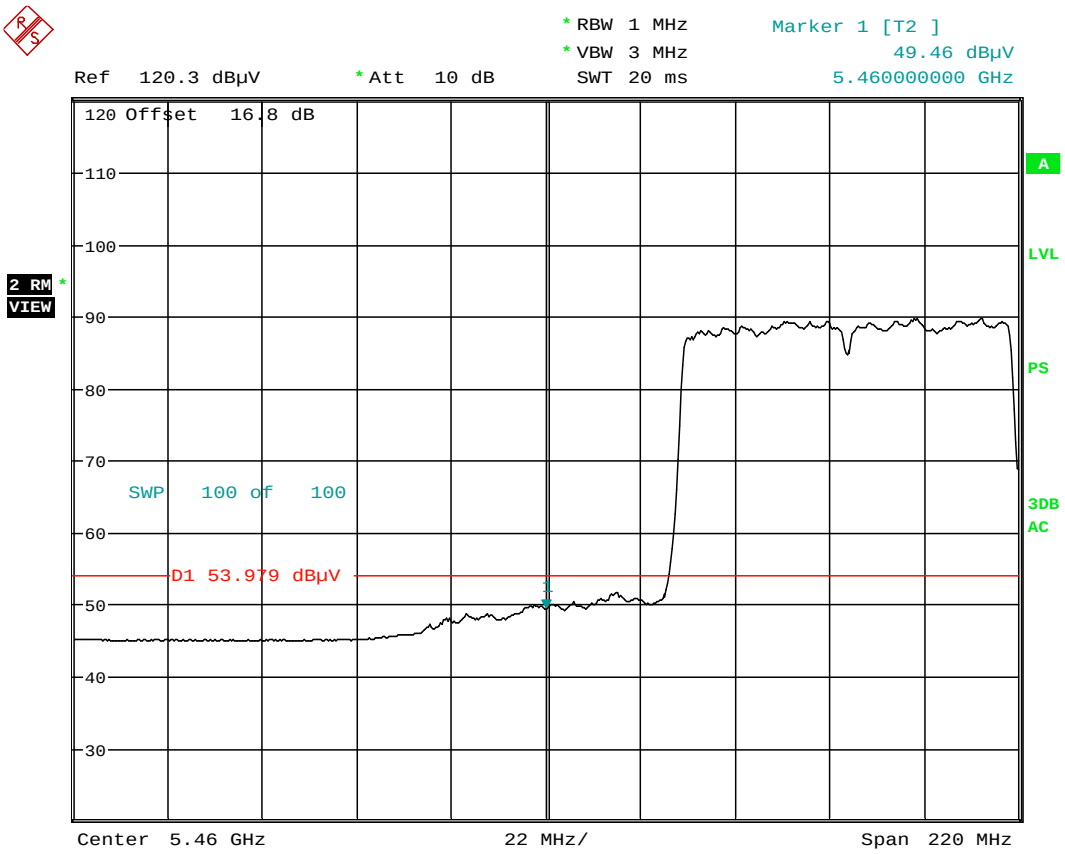
Radiated Band Edge Measurements (80MHz BW) (Cont'd)
§15.407(b.1)(b.2) §15.205 §15.209

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



Date: 12.FEB.2014 16:52:02

Plot 6-197. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

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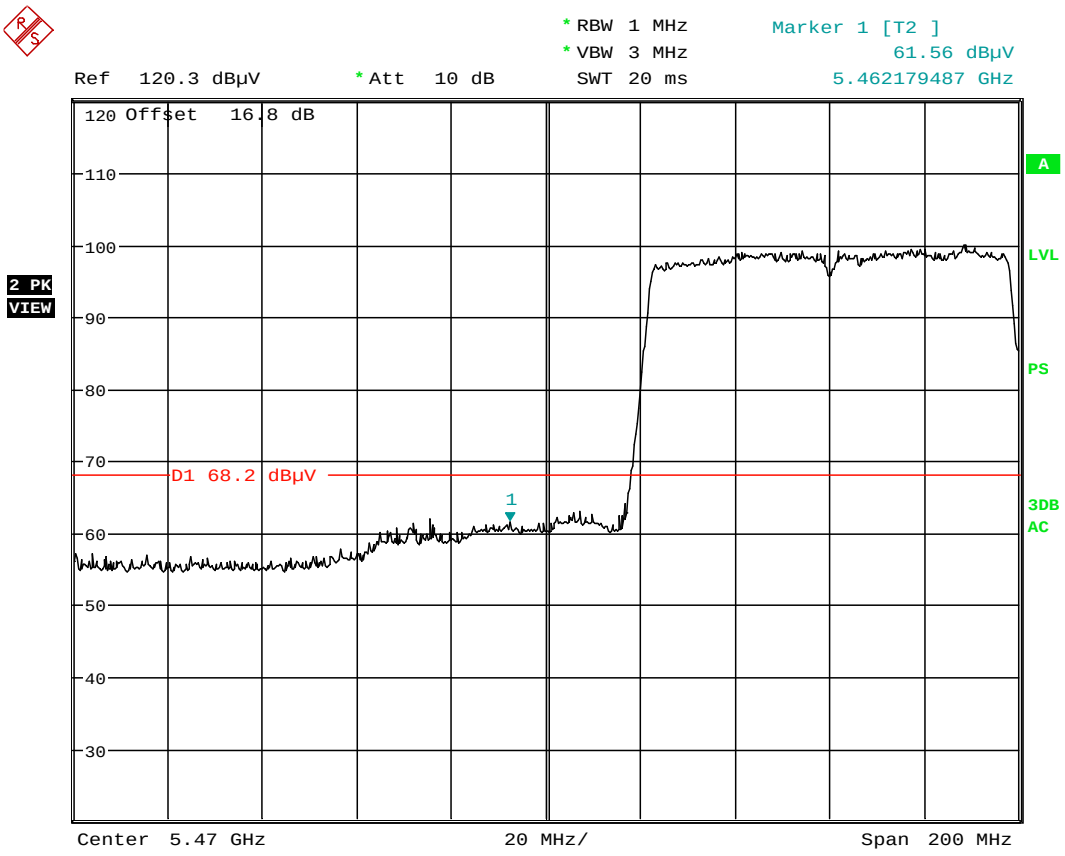
Radiated Band Edge Measurements (80MHz BW) (Cont'd)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 12.FEB.2014 16:50:53

Plot 6-198. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

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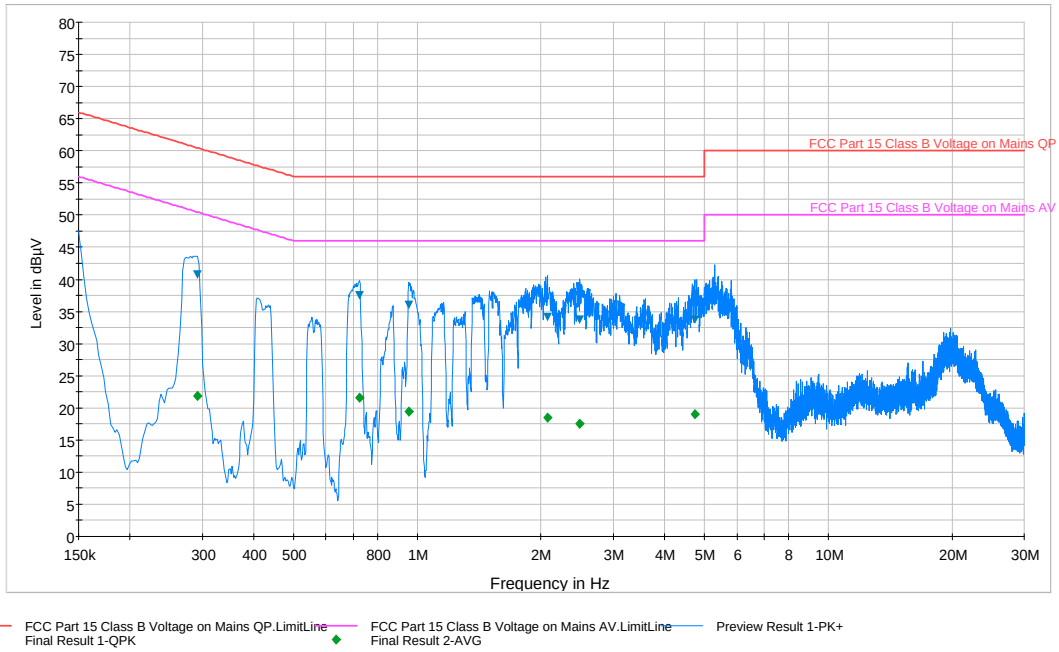
6.17 Line-Conducted Test Data

§15.407



Plot 6-199. Line Conducted Plot with 802.11a UNII Band 1 (L1)

Frequency	Line	Corr.	QuasiPeak	Limit	Margin	Average	Limit	Margin
MHz		dB	dBµV	dBµV	dB	dBµV	dBµV	dB
0.292	L1	0.1	40.70	60.50	19.70	21.80	50.50	28.70
0.724	L1	0.1	37.50	56.00	18.50	21.60	46.00	24.40
0.953	L1	0.1	36.00	56.00	20.00	19.40	46.00	26.60
2.076	L1	0.1	34.10	56.00	21.90	18.40	46.00	27.60
2.490	L1	0.1	33.70	56.00	22.30	17.50	46.00	28.50
4.733	L1	0.2	33.70	56.00	22.30	19.00	46.00	27.00

Table 6-51. Line Conducted Data 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.

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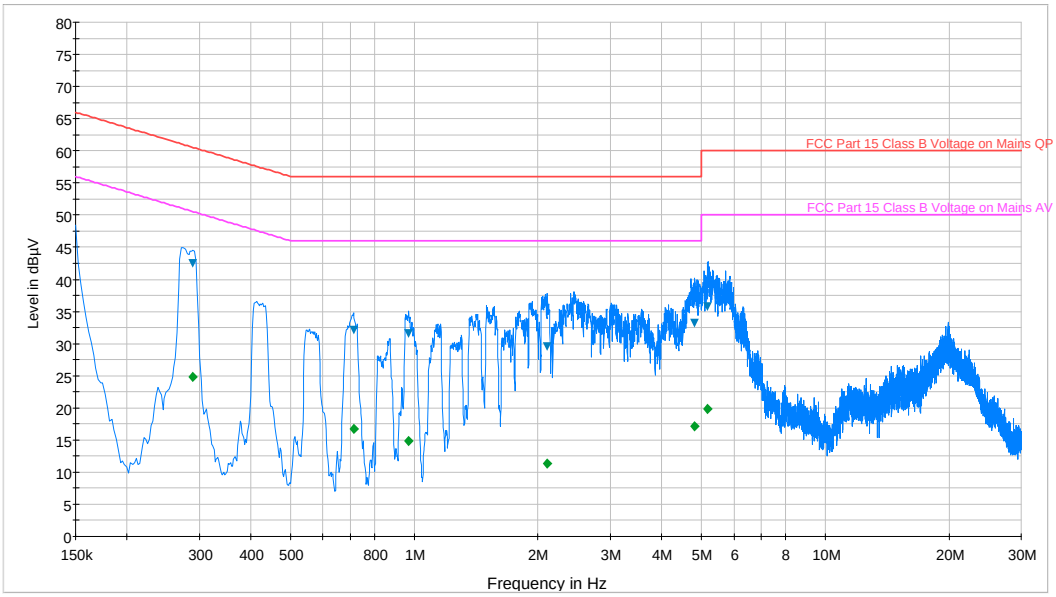
Line-Conducted Test Data (Cont'd)

§15.407



Plot 6-200. Line Conducted Plot with 802.11a UNII Band 1 (N)

Frequency	Line	Corr.	QuasiPeak	Limit	Margin	Average	Limit	Margin
MHz		dB	dBµV	dBµV	dB	dBµV	dBµV	dB
0.290	N	0.1	42.50	60.50	18.00	24.80	50.50	25.70
0.713	N	0.1	32.10	56.00	23.90	16.70	46.00	29.30
0.969	N	0.1	31.50	56.00	24.50	14.80	46.00	31.20
2.108	N	0.2	29.50	56.00	26.50	11.30	46.00	34.70
4.819	N	0.2	33.10	56.00	22.90	17.20	46.00	28.80
5.183	N	0.2	35.80	60.00	24.20	19.90	50.00	30.10

Table 6-52. Line Conducted Data 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.

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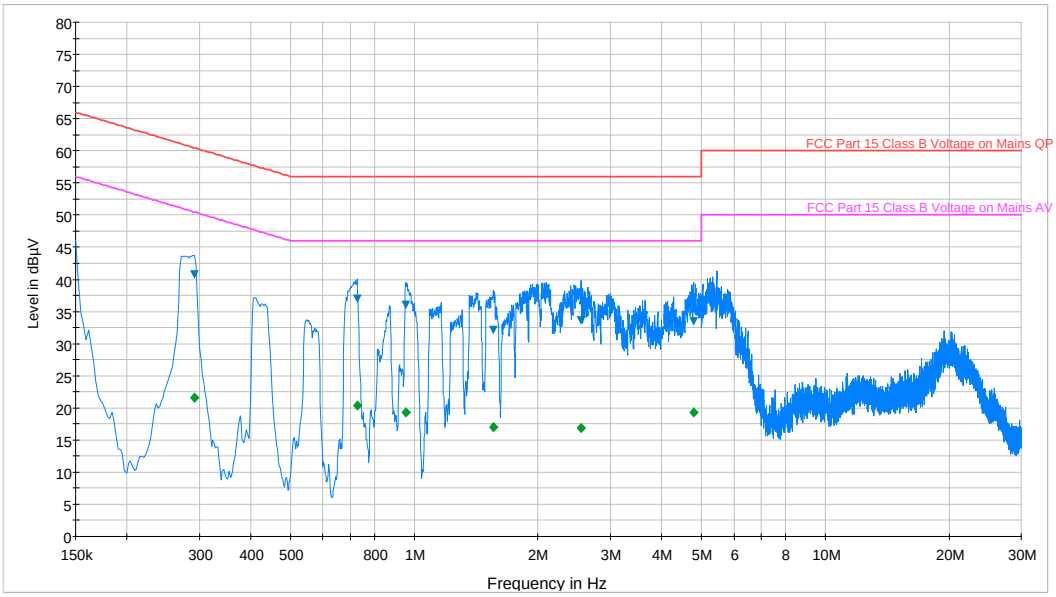
Line-Conducted Test Data (Cont'd)

§15.407



Plot 6-201. Line Conducted Plot with 802.11a UNII Band 2A (L1)

Frequency	Line	Corr.	QuasiPeak	Limit	Margin	Average	Limit	Margin
MHz		dB	dBµV	dBµV	dB	dBµV	dBµV	dB
0.292	L1	0.1	40.70	60.50	19.80	21.60	50.50	28.90
0.726	L1	0.1	37.00	56.00	19.00	20.40	46.00	25.60
0.953	L1	0.1	36.10	56.00	19.90	19.30	46.00	26.70
1.559	L1	0.1	32.20	56.00	23.80	17.00	46.00	29.00
2.546	L1	0.1	33.60	56.00	22.40	16.90	46.00	29.10
4.783	L1	0.2	33.50	56.00	22.50	19.30	46.00	26.70

Table 6-53. Line Conducted Data 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.

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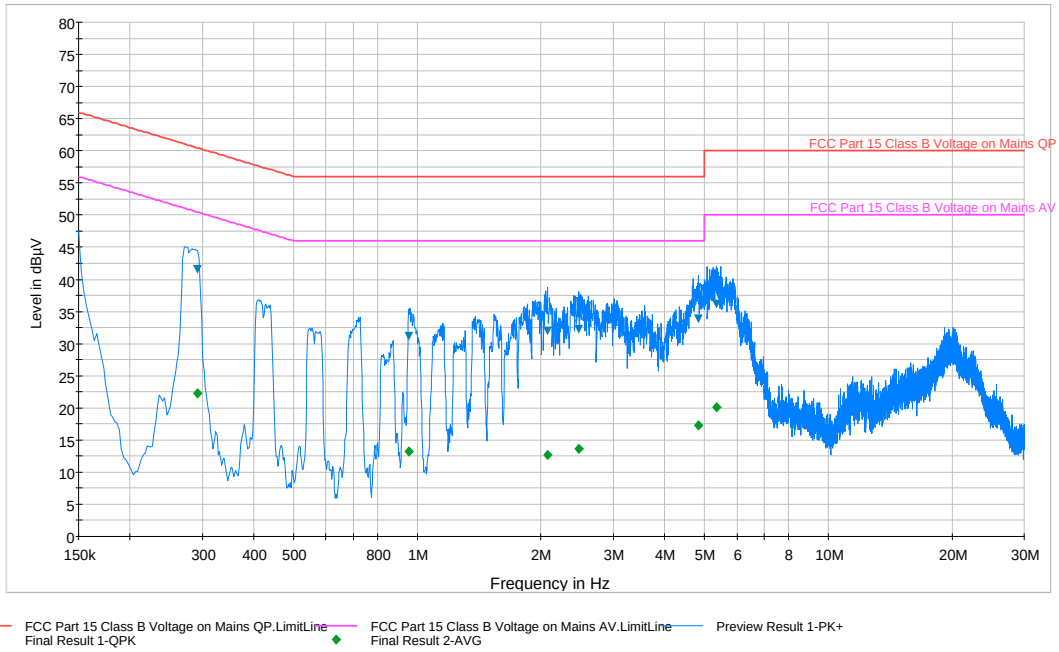
Line-Conducted Test Data (Cont'd)

§15.407



Plot 6-202. Line Conducted Plot with 802.11a UNII Band 2A (N)

Frequency	Line	Corr.	QuasiPeak	Limit	Margin	Average	Limit	Margin
MHz		dB	dBµV	dBµV	dB	dBµV	dBµV	dB
0.292	N	0.1	41.60	60.50	18.90	22.30	50.50	28.20
0.953	N	0.1	31.10	56.00	24.90	13.20	46.00	32.80
2.076	N	0.2	31.90	56.00	24.10	12.70	46.00	33.30
2.470	N	0.2	32.30	56.00	23.70	13.60	46.00	32.40
4.828	N	0.2	33.90	56.00	22.10	17.30	46.00	28.70
5.339	N	0.2	36.20	60.00	23.80	20.20	50.00	29.80

Table 6-54. Line Conducted Data 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.

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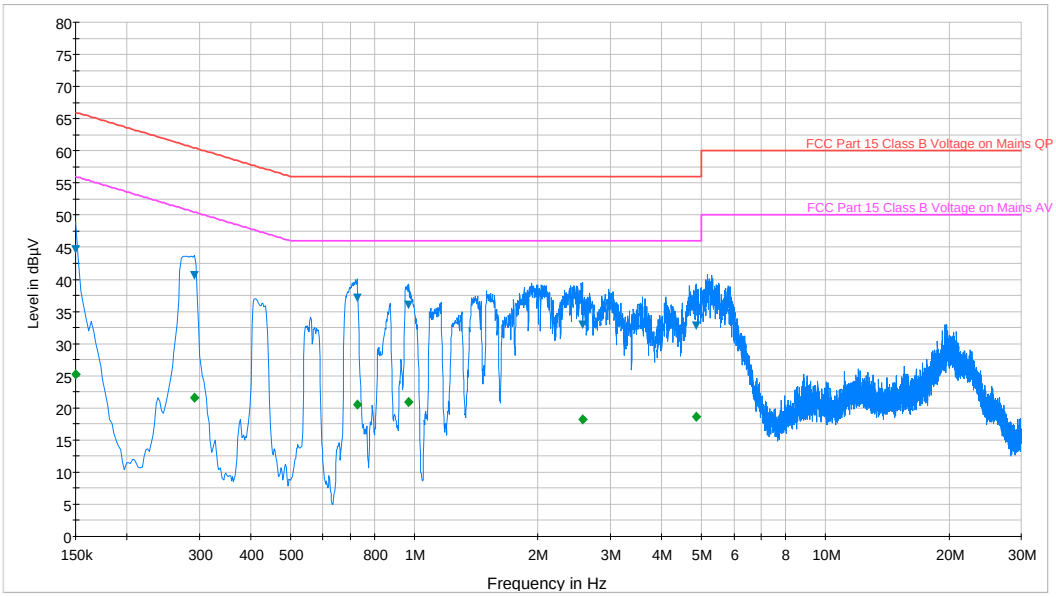
Line-Conducted Test Data (Cont'd)

§15.407



Plot 6-203. Line Conducted Plot with 802.11a UNII Band 2C (L1)

Frequency	Line	Corr.	QuasiPeak	Limit	Margin	Average	Limit	Margin
MHz		dB	dBµV	dBµV	dB	dBµV	dBµV	dB
0.150	L1	0.2	44.60	66.00	21.40	25.20	56.00	30.80
0.292	L1	0.1	40.60	60.50	19.90	21.50	50.50	28.90
0.726	L1	0.1	37.10	56.00	18.90	20.50	46.00	25.50
0.969	L1	0.1	36.00	56.00	20.00	21.00	46.00	25.00
2.569	L1	0.1	32.90	56.00	23.10	18.20	46.00	27.80
4.848	L1	0.2	32.70	56.00	23.30	18.60	46.00	27.40

Table 6-55. 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.

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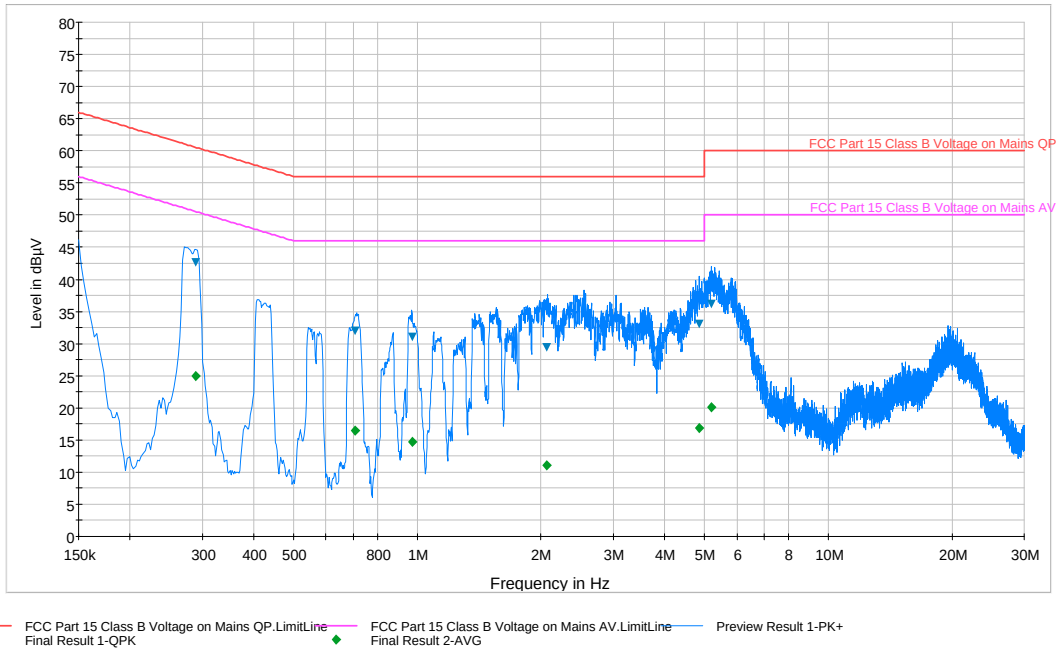
Line-Conducted Test Data (Cont'd)

§15.407



Plot 6-204. Line Conducted Plot with 802.11a UNII Band 2C (N)

Frequency	Line	Corr.	QuasiPeak	Limit	Margin	Average	Limit	Margin
MHz		dB	dBµV	dBµV	dB	dBµV	dBµV	dB
0.290	N	0.1	42.70	60.50	17.90	25.00	50.50	25.50
0.706	N	0.1	32.00	56.00	24.00	16.50	46.00	29.50
0.971	N	0.1	31.00	56.00	25.00	14.70	46.00	31.30
2.067	N	0.2	29.40	56.00	26.60	11.10	46.00	34.90
4.855	N	0.2	33.10	56.00	22.90	16.80	46.00	29.20
5.199	N	0.2	36.10	60.00	23.90	20.10	50.00	29.90

Table 6-56. Line Conducted Data 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.

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7.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMG9008W** is in compliance with Part 15E of the FCC Rules.

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