7.4 UNII Output Power Measurement – 802.11a/n/ac

§15.407 (a.1)

Test Overview and Limits

A transmitter antenna terminal of the EUT is connected to the input of an RF pulse power sensor. Measurement is made using a broadband average power meter while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in KDB 789033 D02 v01r02, and at the appropriate frequencies.

In the 5.47 – 5.725GHz band, the maximum permissible conducted output power is the lesser of 250mW (23.98dBm) and 11 dBm + 10log$_{10}$(26dB BW) = 11 dBm + 10log$_{10}$(21.47) = 24.32 dBm.

In the 5.725 – 5.850GHz band, the maximum permissible conducted output power is 1W (30dBm).

Test Procedure Used

KDB 789033 D02 v01r02 – Section E)3)b) Method PM-G
KDB 662911 v02r01 – Section E)1) Measure-and-Sum Technique

Test Settings

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter. The trace was averaged over 100 traces to obtain the final measured average power.

Test Setup

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

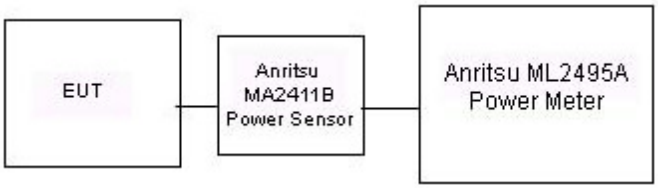

Figure 7-3. Test Instrument & Measurement Setup

Test Notes

None

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Antenna-1 Conducted Output Power Measurements

Freq [MHz]	Channel	5GHz (20MHz) Conducted Power [dBm]		
		IEEE Transmission Mode		
		802.11a	802.11n	802.11ac
5600	120	13.14	12.88	13.26
5620	124	13.30	12.92	13.24
5640	128	13.34	12.76	13.04
5720	144	13.19	12.42	12.76
5745	149	13.31	12.74	12.54
5765	153	13.21	12.56	12.42
5785	157	13.15	12.72	12.43
5805	161	13.20	12.52	12.32
5825	165	12.98	12.74	12.27

Table 7-6. 20MHz BW (UNII) Maximum Conducted Output Power

Freq [MHz]	Channel	5GHz (40MHz) Conducted Power [dBm]	
		IEEE Transmission Mode	
		802.11n	802.11ac
5590	118	11.73	11.81
5630	126	12.48	11.61
5710	142	12.19	12.21
5755	151	11.43	12.09
5795	159	11.77	11.76

Table 7-7. 40MHz BW (UNII) Maximum Conducted Output Power

5GHz (80MHz) Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11ac
5610	122	11.33
5690	138	10.98
5775	155	11.25

Table 7-8. 80MHz BW (UNII) Maximum Conducted Output Power

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Antenna-2 Conducted Output Power Measurements

Freq [MHz]	Channel	5GHz (20MHz) Conducted Power [dBm]		
		IEEE Transmission Mode		
		802.11a	802.11n	802.11ac
5600	120	13.34	12.83	13.05
5620	124	13.37	12.76	13.12
5640	128	13.40	12.74	13.05
5720	144	13.35	12.75	13.03
5745	149	13.37	13.08	13.19
5765	153	13.14	13.11	13.26
5785	157	13.31	13.21	13.12
5805	161	13.11	13.25	13.11
5825	165	13.25	13.16	13.21

Table 7-9. 20MHz BW (UNII) Maximum Conducted Output Power

Freq [MHz]	Channel	5GHz (40MHz) Conducted Power [dBm]	
		IEEE Transmission Mode	
		802.11n	802.11ac
5590	118	11.38	11.50
5630	126	11.36	11.54
5710	142	11.43	11.48
5755	151	11.74	11.77
5795	159	11.77	11.81

Table 7-10. 40MHz BW (UNII) Maximum Conducted Output Power

5GHz (80MHz) Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11ac
5610	122	11.1
5690	138	11.12
5775	155	11.26

Table 7-11. 80MHz BW (UNII) Maximum Conducted Output Power

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MIMO Maximum Conducted Output Power Measurements

Freq [MHz]	Channel	5GHz (20MHz) Conducted Power [dBm]		
		ANT1	ANT2	MIMO
5600	120	12.88	12.83	15.87
5620	124	12.92	12.76	15.85
5640	128	12.76	12.74	15.76
5720	144	12.42	12.75	15.60
5745	149	12.74	13.08	15.92
5765	153	12.56	13.11	15.85
5785	157	12.72	13.21	15.98
5805	161	12.52	13.25	15.91
5825	165	12.74	13.16	15.97

Table 7-12. MIMO 20MHz BW 802.11n (UNII) Maximum Conducted Output Power

Freq [MHz]	Channel	5GHz (20MHz) Conducted Power [dBm]		
		ANT1	ANT2	MIMO
5600	120	13.26	13.05	16.17
5620	124	13.24	13.12	16.19
5640	128	13.04	13.05	16.06
5720	144	12.76	13.03	15.91
5745	149	12.54	13.19	15.89
5765	153	12.42	13.26	15.87
5785	157	12.43	13.12	15.80
5805	161	12.32	13.11	15.74
5825	165	12.27	13.21	15.78

Table 7-13. MIMO 20MHz BW 802.11ac (UNII) Maximum Conducted Output Power

Freq [MHz]	Channel	5GHz (40MHz) Conducted Power [dBm]		
		ANT1	ANT2	MIMO
5590	118	11.73	11.38	14.57
5630	126	12.48	11.36	14.97
5710	142	12.19	11.43	14.84
5755	151	11.43	11.74	14.60
5795	159	11.77	11.77	14.78

Table 7-14. MIMO 40MHz BW 802.11n (UNII) Maximum Conducted Output Power

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Freq [MHz]	Channel	5GHz (40MHz) Conducted Power [dBm]		
		ANT1	ANT2	MIMO
5590	118	11.81	11.50	14.67
5630	126	11.61	11.54	14.59
5710	142	12.21	11.48	14.87
5755	151	12.09	11.77	14.94
5795	159	11.76	11.81	14.80

Table 7-15. MIMO 40MHz BW 802.11ac (UNII) Maximum Conducted Output Power

Freq [MHz]	Channel	5GHz (80MHz) Conducted Power [dBm]		
		ANT1	ANT2	MIMO
5610	122	11.33	11.1	14.23
5690	138	10.98	11.12	14.06
5775	155	11.25	11.26	14.27

Table 7-16. MIMO 80MHz BW 802.11ac (UNII) Maximum Conducted Output Power

Note:

Per KDB 662911 v02r01 Section E)1), the conducted powers at Antenna 1 and Antenna 2 were first measured separately during MIMO transmission 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 5600 MHz the average conducted output power was measured to be 12.88 dBm for Antenna-1 and 12.83 dBm for Antenna-2.

Antenna 1 + Antenna 2 = MIMO

(12.88 dBm + 12.83 dBm) = (19.4 mW + 19.2 mW) = 38.6 mW = 15.87 dBm

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7.5 Maximum Power Spectral Density – 802.11a/n/ac

§15.407(a.1)(2.5)

Test Overview and Limit

The spectrum analyzer was connected to the antenna terminal while the EUT was operating at its maximum duty cycle, at its maximum power control level, as defined in KDB 789033 D02 v01, and at the appropriate frequencies. Method SA-1, as defined in KDB 789033 D02 v1r02, was used to measure the power spectral density.

In the 5.47 – 5.725GHz bands, the maximum permissible power spectral density is 11dBm/MHz.

In the 5.725 – 5.850GHz band, the maximum permissible power spectral density is 30dBm/500kHz.

Test Procedure Used

KDB 789033 D02 v1r02 – Section F
KDB 662911 v02r01 – Section E)2) Measure-and-Sum Technique

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 (UNII 2C), RBW = 510kHz (UNII 3)
4. VBW = 3MHz
5. Number of sweep points $\geq$ 2 x (span/RBW)
6. Sweep time = auto
7. Detector = power averaging (RMS)
8. Trigger was set to free run for all modes
9. Trace was averaged over 100 sweeps
10. The peak search function of the spectrum analyzer was used to find the peak of the spectrum.

Test Setup

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

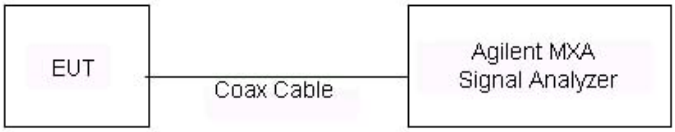

Figure 7-4. Test Instrument & Measurement Setup

Test Notes

None

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Antenna-1 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 2C	5600	120	a	6	3.47	11.0	-7.53	Pass
	5720	144	a	6	3.32	11.0	-7.68	Pass
	5600	120	n (20MHz)	6.5/7.2 (MCS0)	1.57	11.0	-9.43	Pass
	5720	144	n (20MHz)	6.5/7.2 (MCS0)	1.90	11.0	-9.10	Pass
	5590	118	n (40MHz)	13.5/15 (MCS0)	-2.74	11.0	-13.74	Pass
	5710	142	n (40MHz)	13.5/15 (MCS0)	-1.06	11.0	-12.06	Pass
	5610	122	ac (80MHz)	29.3/32.5 (MCS0)	-6.01	11.0	-17.01	Pass
	5690	138	ac (80MHz)	29.3/32.5 (MCS0)	-8.59	11.0	-19.59	Pass

Table 7-17. Bands 1, 2A, 2C Conducted Power Spectral Density Measurements

Plot 7-35. Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 120)

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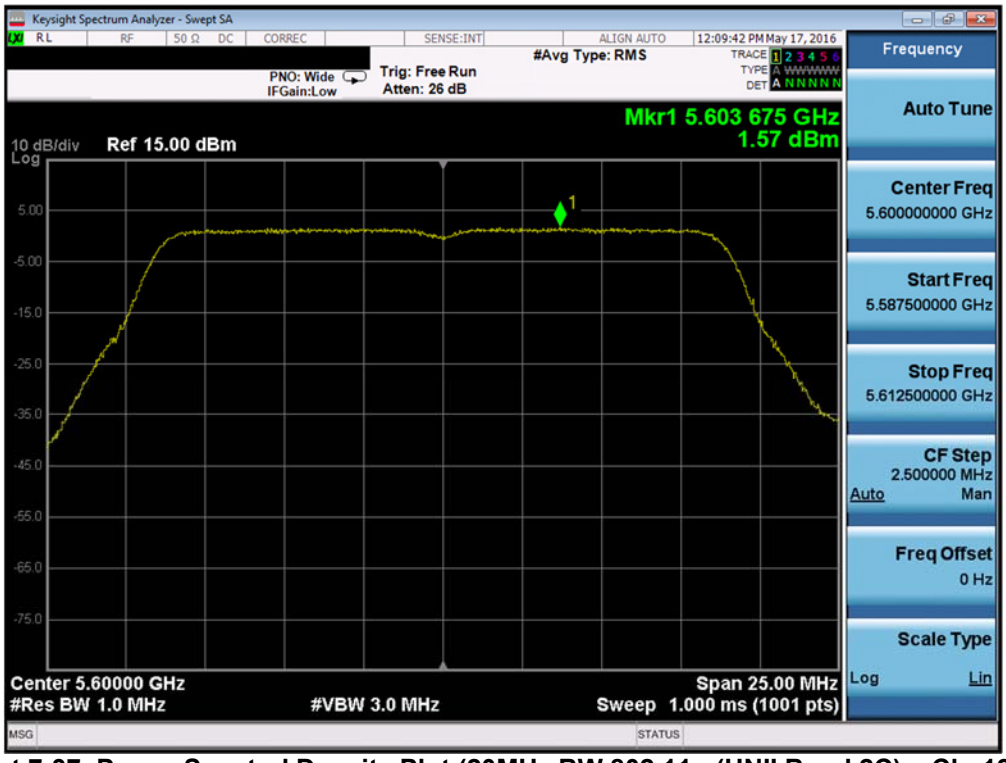
Plot 7-36. Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 144)



Plot 7-37. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 120)

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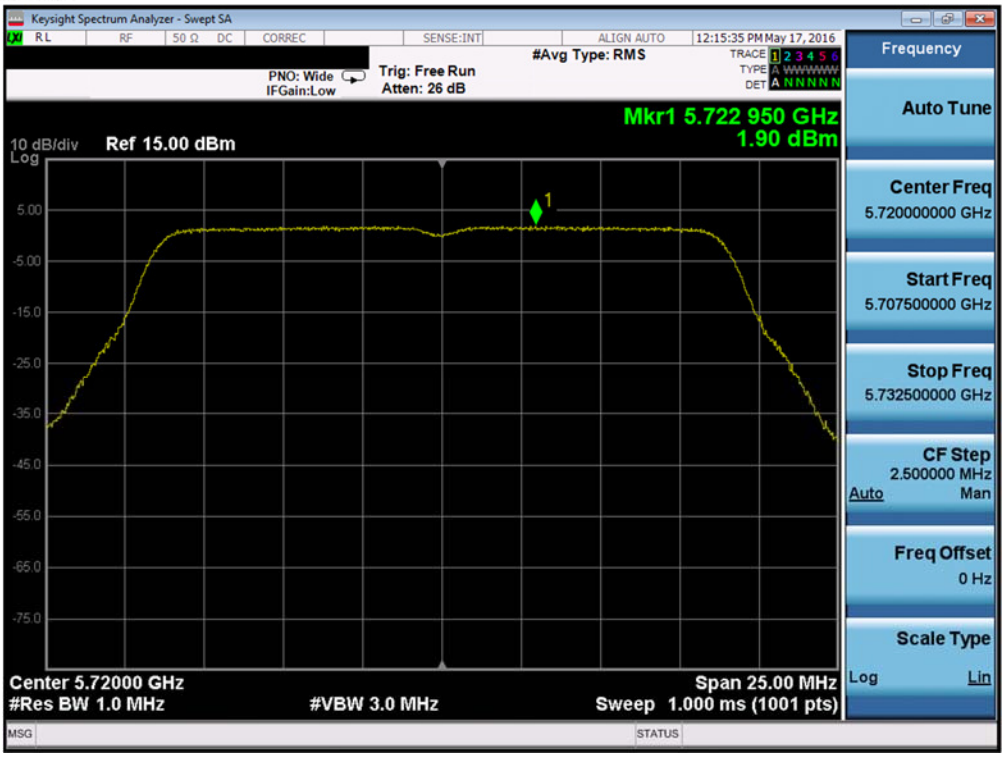
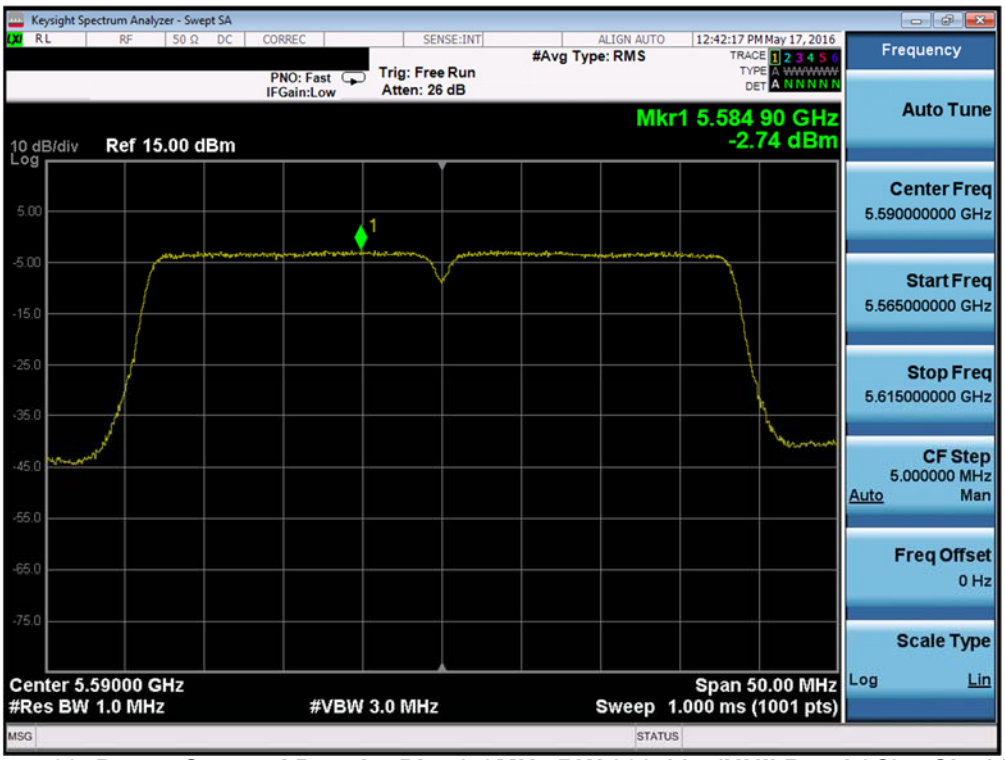


Plot 7-38. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 144)



Plot 7-39. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 118)

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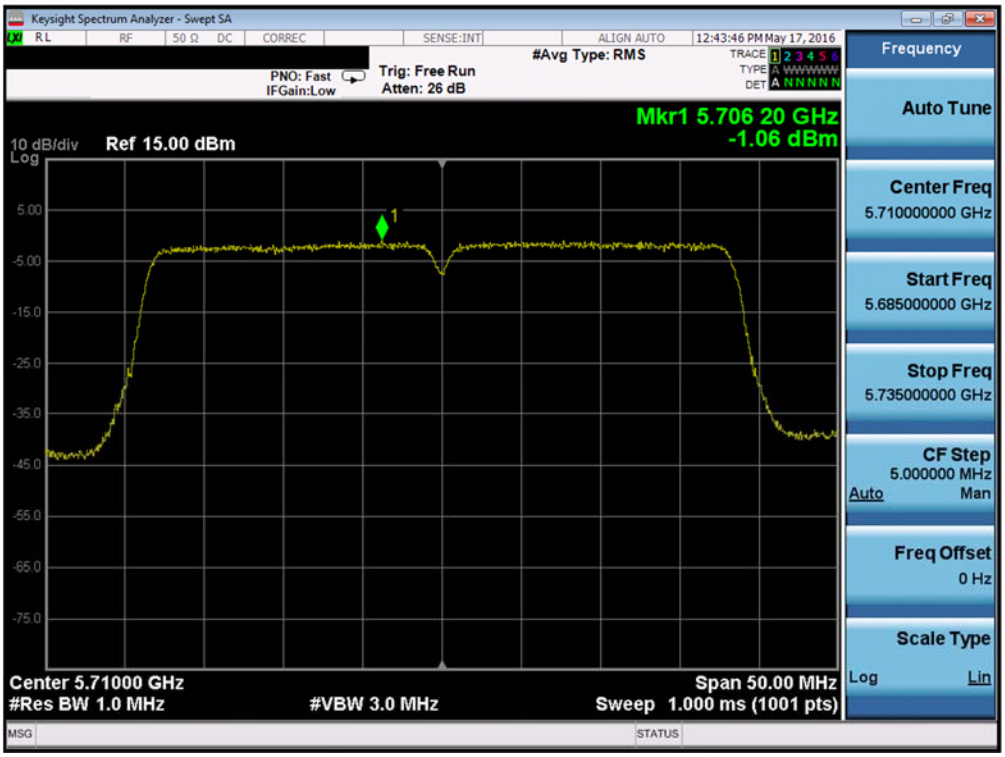
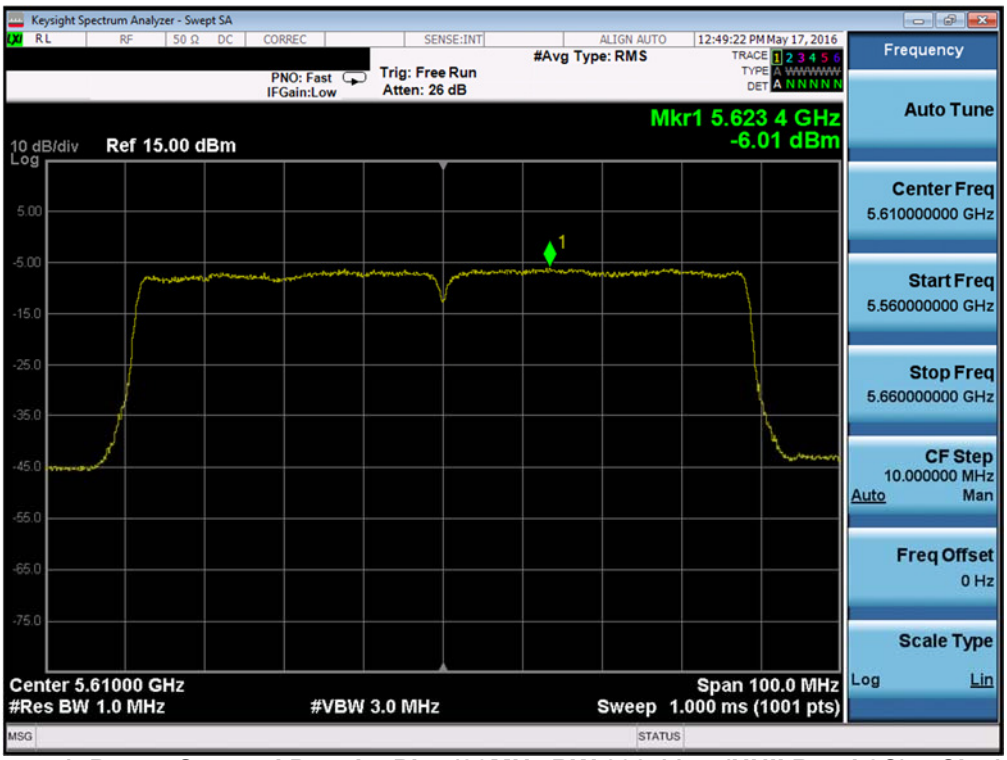


Plot 7-40. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 142)



Plot 7-41. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 2C) – Ch. 122)

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Plot 7-42. 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	-2.48	30.0	-32.48	Pass
	5785	157	a	6	-2.80	30.0	-32.80	Pass
	5825	165	a	6	-3.46	30.0	-33.46	Pass
	5745	149	n (20MHz)	6.5/7.2 (MCS0)	-3.14	30.0	-33.14	Pass
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	-2.97	30.0	-32.97	Pass
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	-3.86	30.0	-33.86	Pass
	5755	151	n (40MHz)	13.5/15 (MCS0)	-6.57	30.0	-36.57	Pass
	5795	159	n (40MHz)	13.5/15 (MCS0)	-7.35	30.0	-37.35	Pass
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	-8.21	30.0	-38.21	Pass

Table 7-18. Band 3 Conducted Power Spectral Density Measurements

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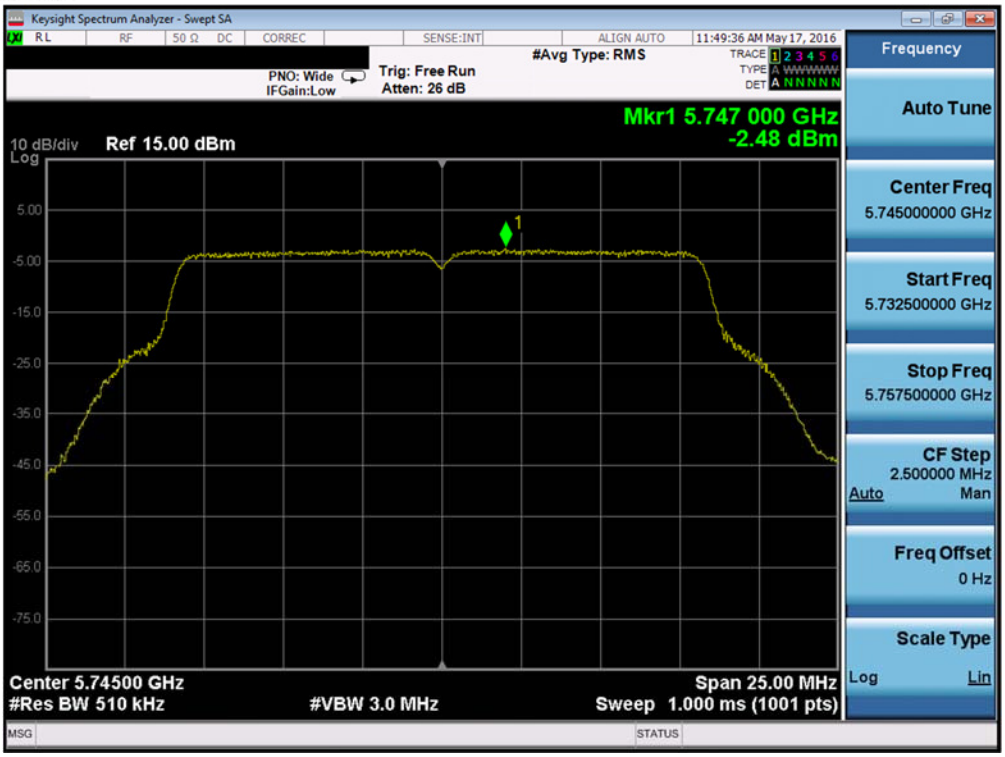
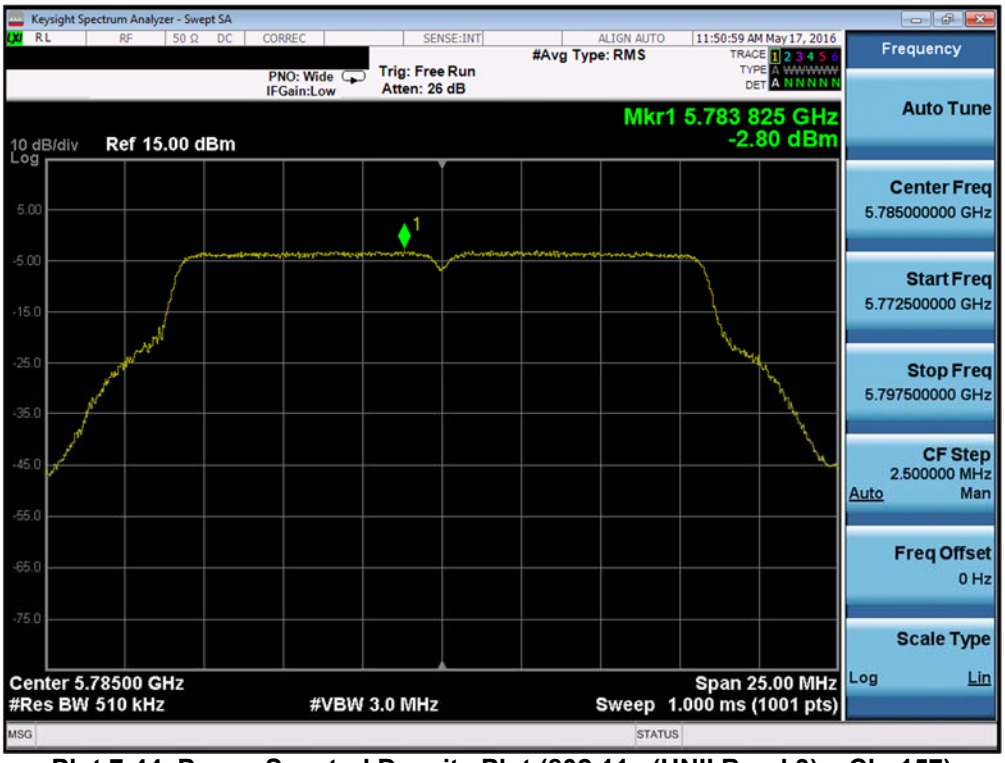


Plot 7-43. Power Spectral Density Plot (802.11a (UNII Band 3) – Ch. 149)



Plot 7-44. Power Spectral Density Plot (802.11a (UNII Band 3) – Ch. 157)

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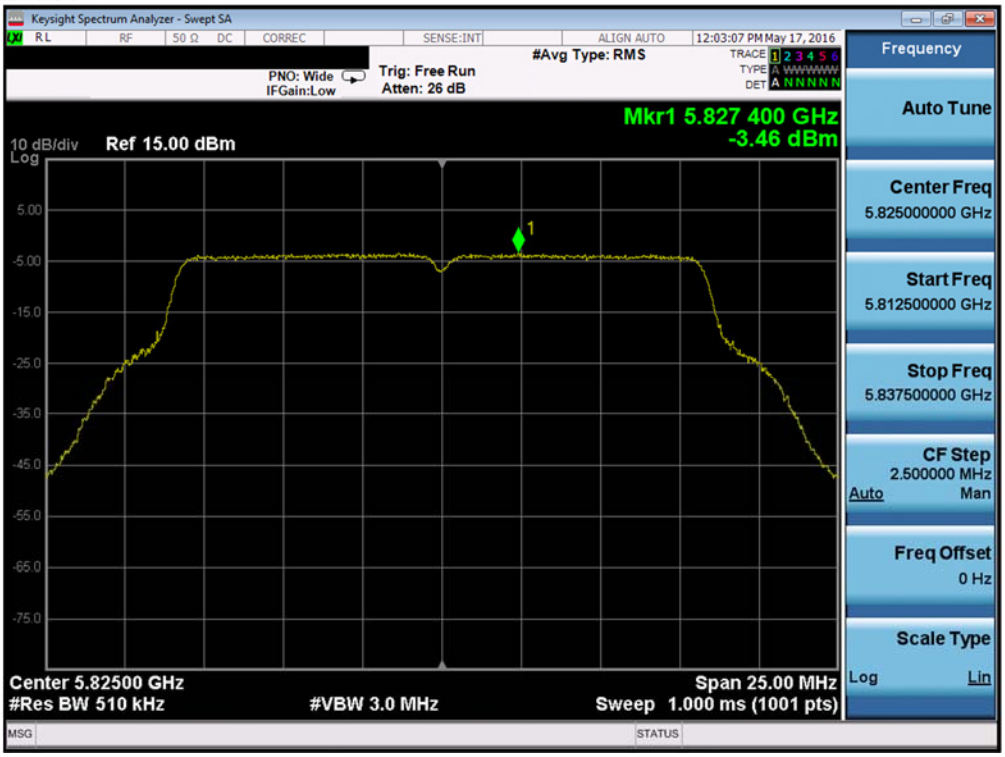

Plot 7-45. Power Spectral Density Plot (802.11a (UNII Band 3) – Ch. 165)

Plot 7-46. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 149)

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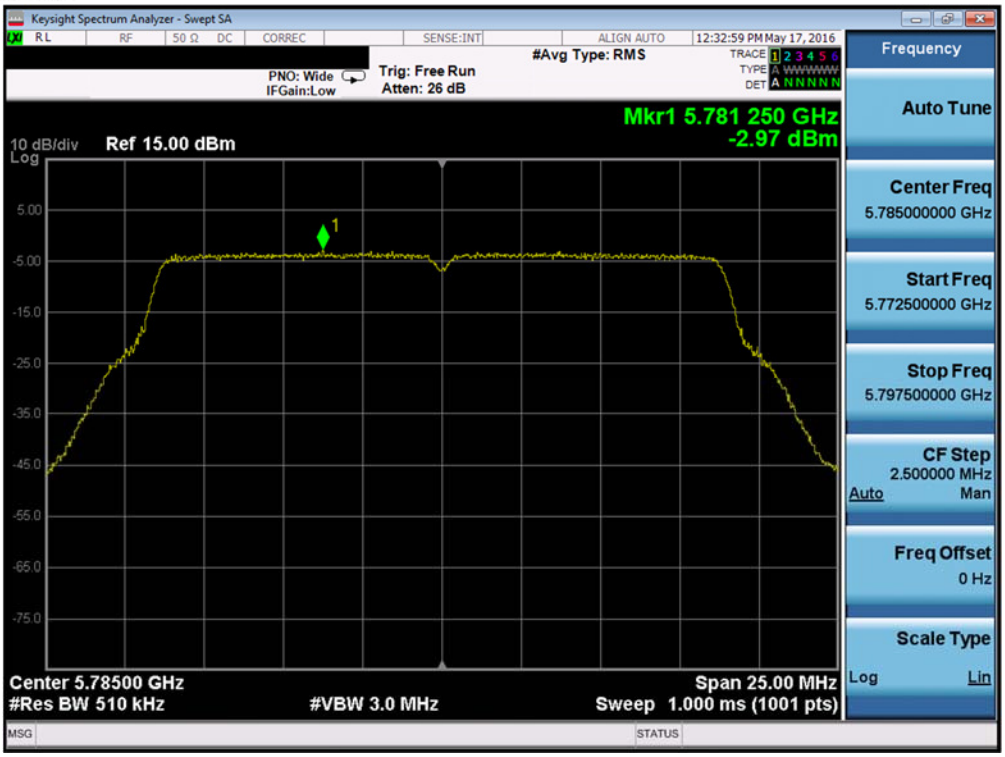
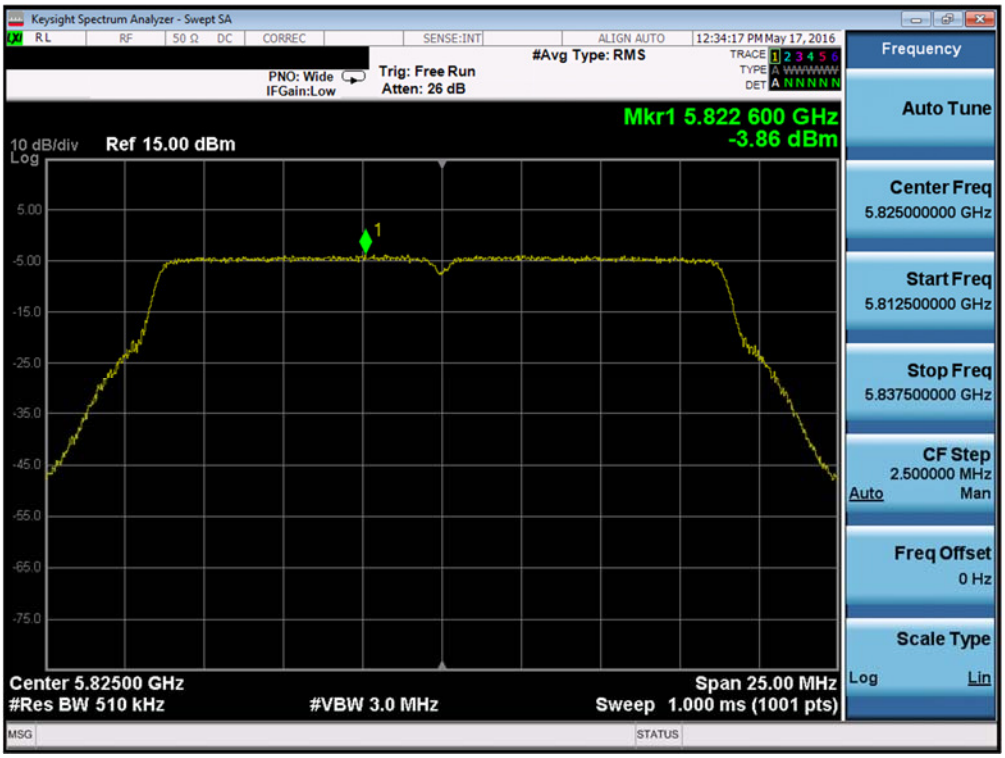


Plot 7-47. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 157)



Plot 7-48. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 165)

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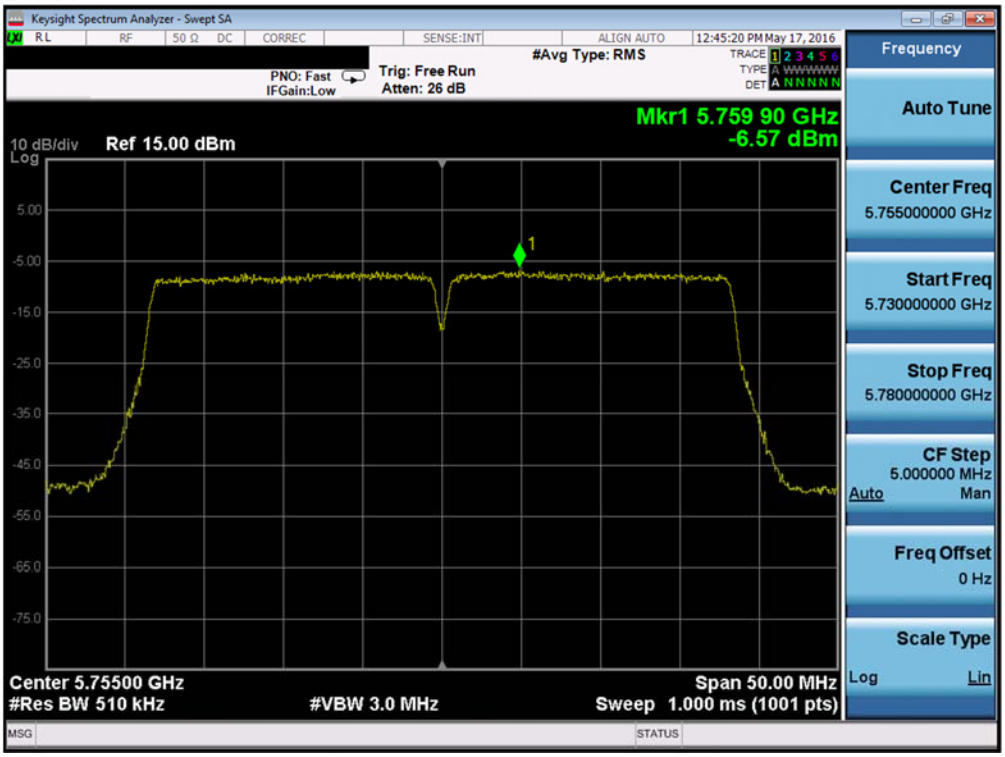
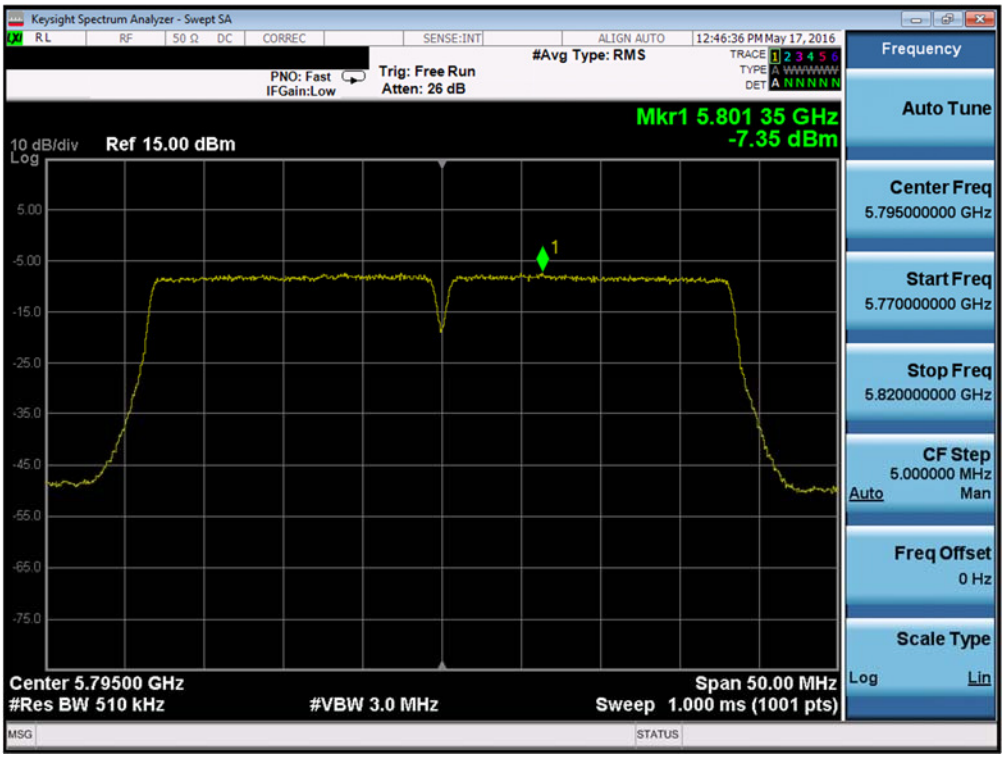


Plot 7-49. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 151)



Plot 7-50. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 159)

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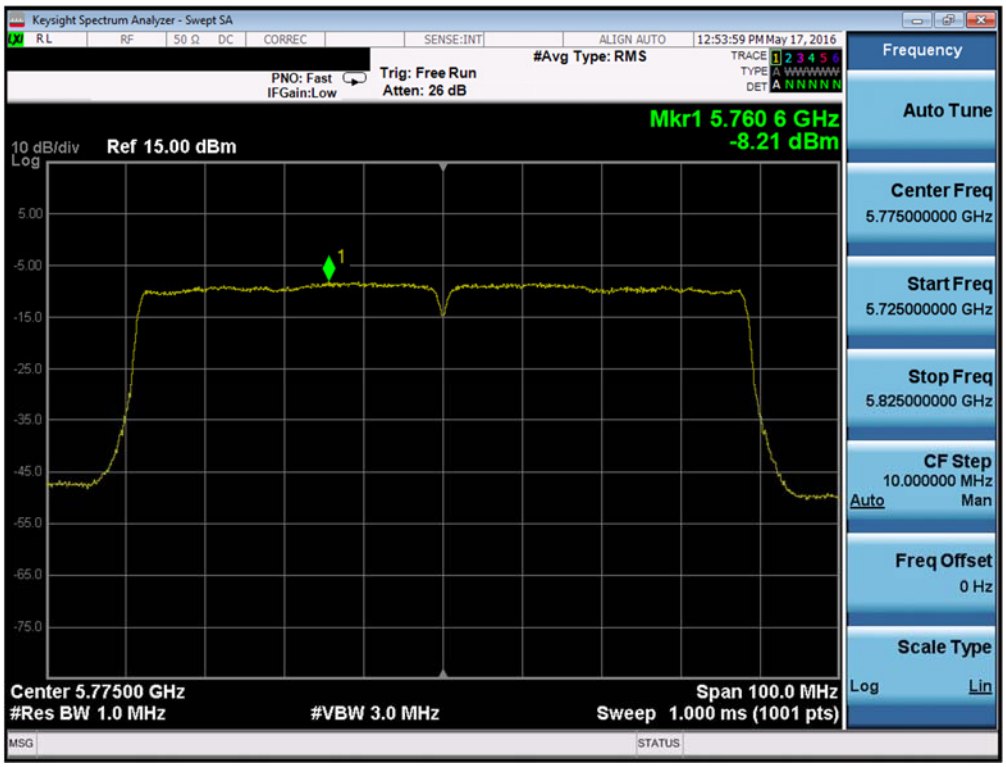

Plot 7-51. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 3) – Ch. 155)

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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 2C	5600	120	a	6	4.29	11.0	-6.71	Pass
	5720	144	a	6	4.26	11.0	-6.74	Pass
	5600	120	n (20MHz)	6.5/7.2 (MCS0)	2.38	11.0	-8.62	Pass
	5720	144	n (20MHz)	6.5/7.2 (MCS0)	2.46	11.0	-8.55	Pass
	5590	118	n (40MHz)	13.5/15 (MCS0)	-2.79	11.0	-13.79	Pass
	5710	142	n (40MHz)	13.5/15 (MCS0)	-2.23	11.0	-13.23	Pass
	5610	122	ac (80MHz)	29.3/32.5 (MCS0)	-5.84	11.0	-16.84	Pass
	5690	138	ac (80MHz)	29.3/32.5 (MCS0)	-8.12	11.0	-19.12	Pass

Table 7-19. Conducted Power Spectral Density Measurements

Plot 7-52. Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 120)

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Plot 7-53. Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 144)

Plot 7-54. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 120)

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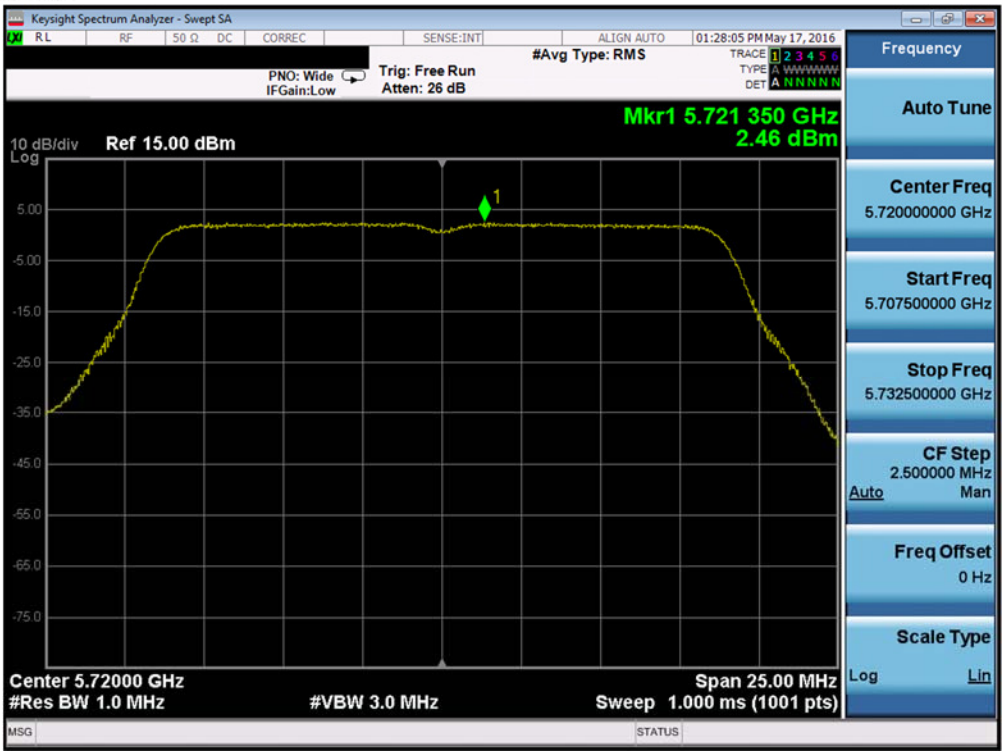
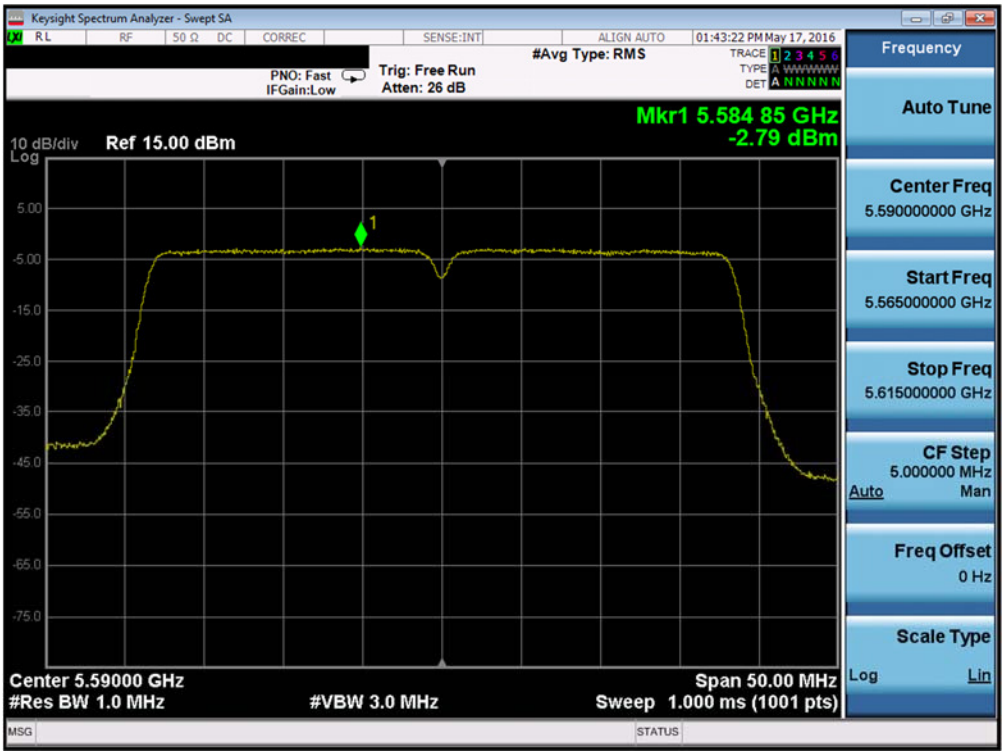


Plot 7-55. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 144)



Plot 7-56. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 118)

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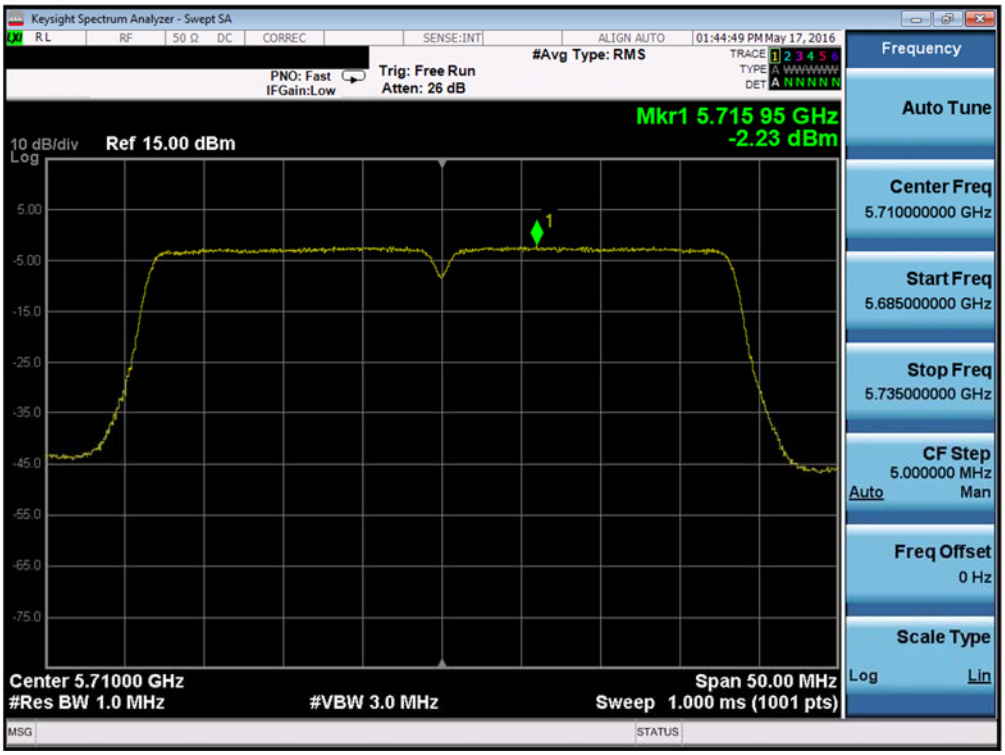
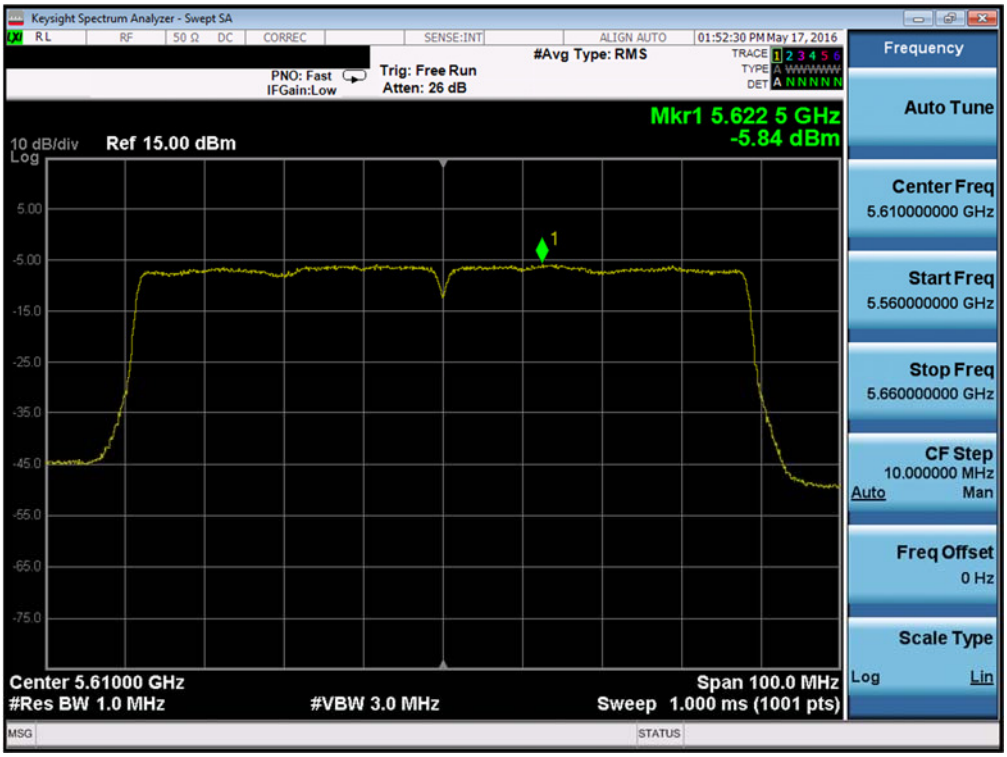


Plot 7-57. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 142)



Plot 7-58. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 2C) – Ch. 122)

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Plot 7-59. 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	-0.50	30.0	-30.50	Pass
	5785	157	a	6	-1.47	30.0	-31.47	Pass
	5825	165	a	6	-1.66	30.0	-31.66	Pass
	5745	149	n (20MHz)	6.5/7.2 (MCS0)	-1.19	30.0	-31.19	Pass
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	-1.51	30.0	-31.51	Pass
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	-1.40	30.0	-31.40	Pass
	5755	151	n (40MHz)	13.5/15 (MCS0)	-5.41	30.0	-35.41	Pass
	5795	159	n (40MHz)	13.5/15 (MCS0)	-5.45	30.0	-35.45	Pass
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	-5.88	30.0	-35.88	Pass

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

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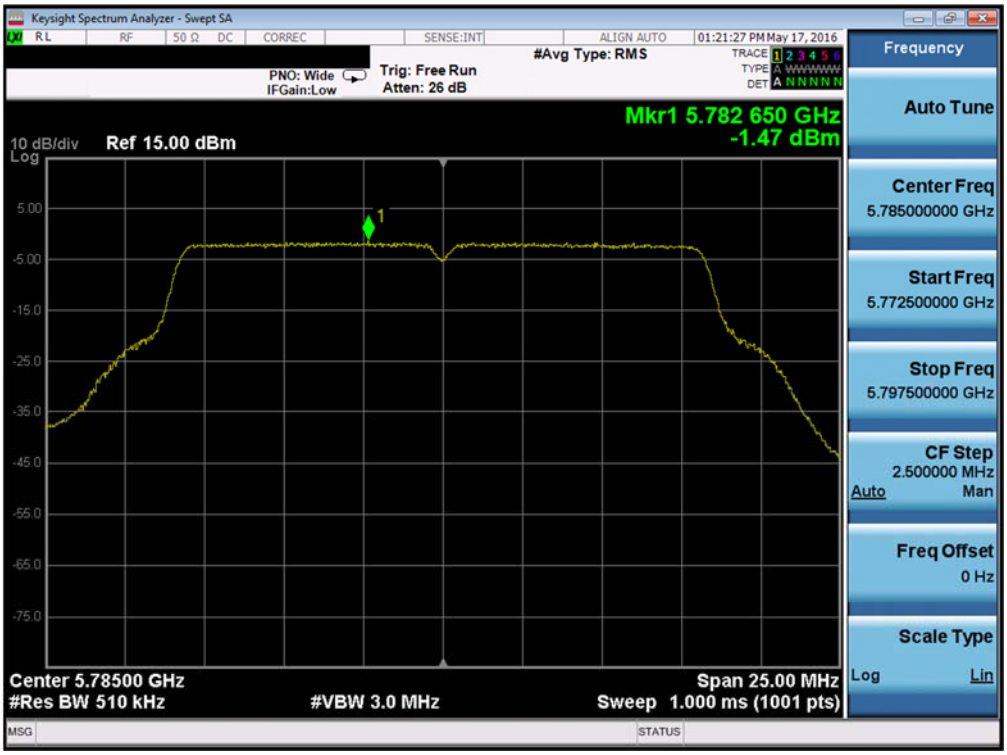
Plot 7-60. Power Spectral Density Plot (802.11a (UNII Band 3) – Ch. 149)



Plot 7-61. Power Spectral Density Plot (802.11a (UNII Band 3) – Ch. 157)

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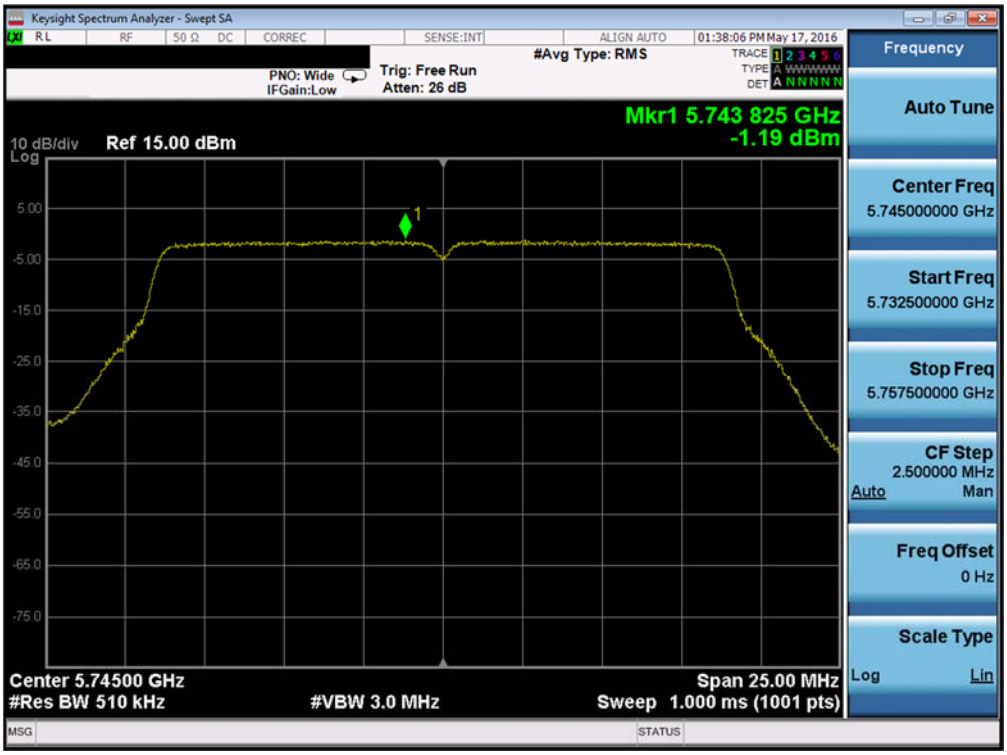
Plot 7-62. Power Spectral Density Plot (802.11a (UNII Band 3) – Ch. 165)



Plot 7-63. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 149)

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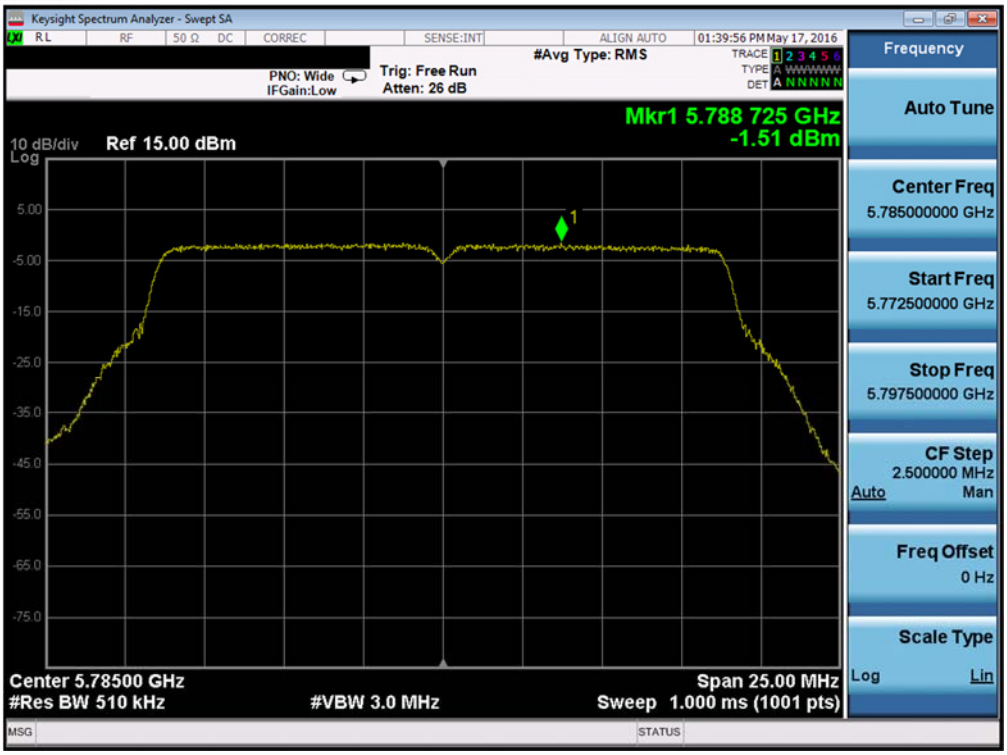

Plot 7-64. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 157)

Plot 7-65. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 165)

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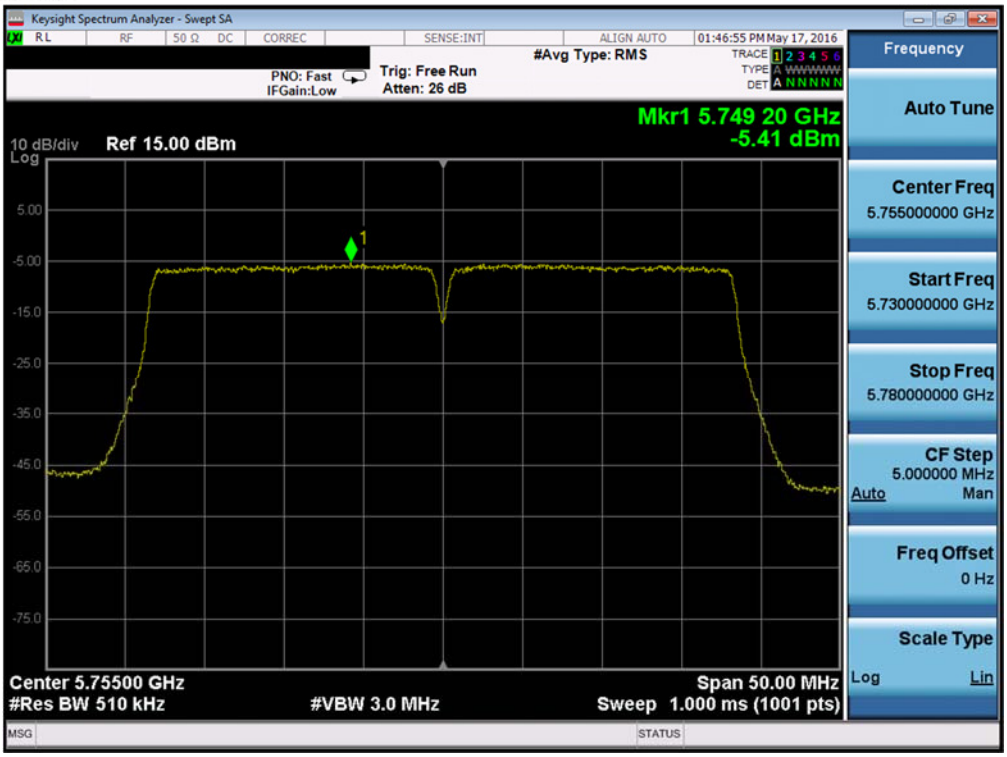
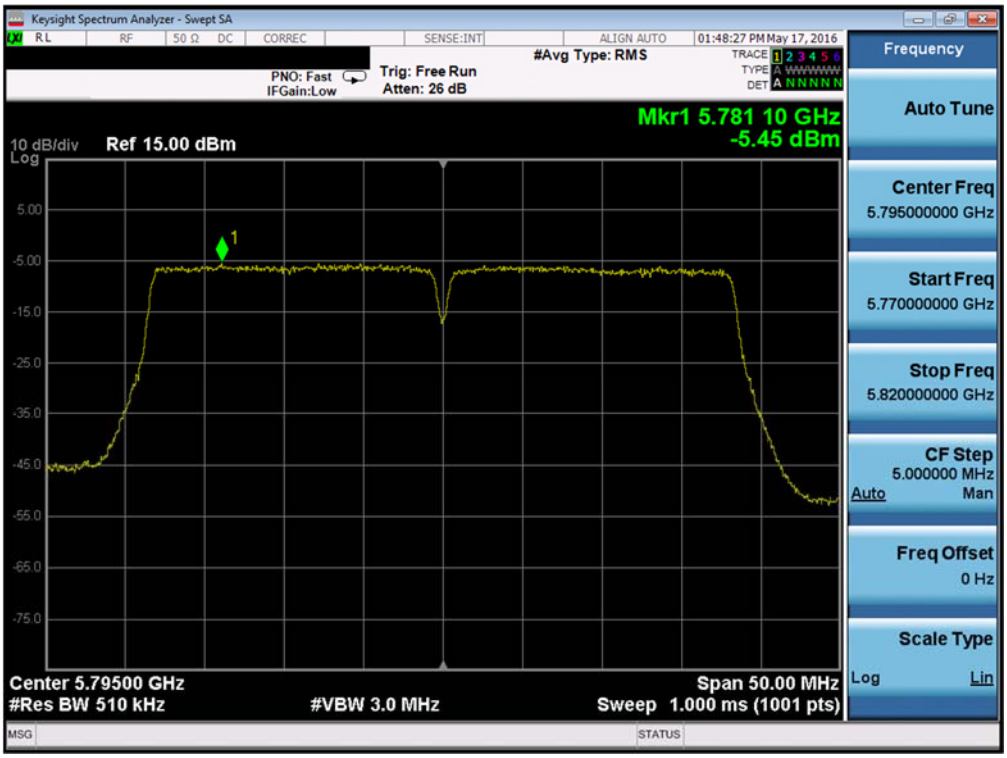


Plot 7-66. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 151)



Plot 7-67. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 159)

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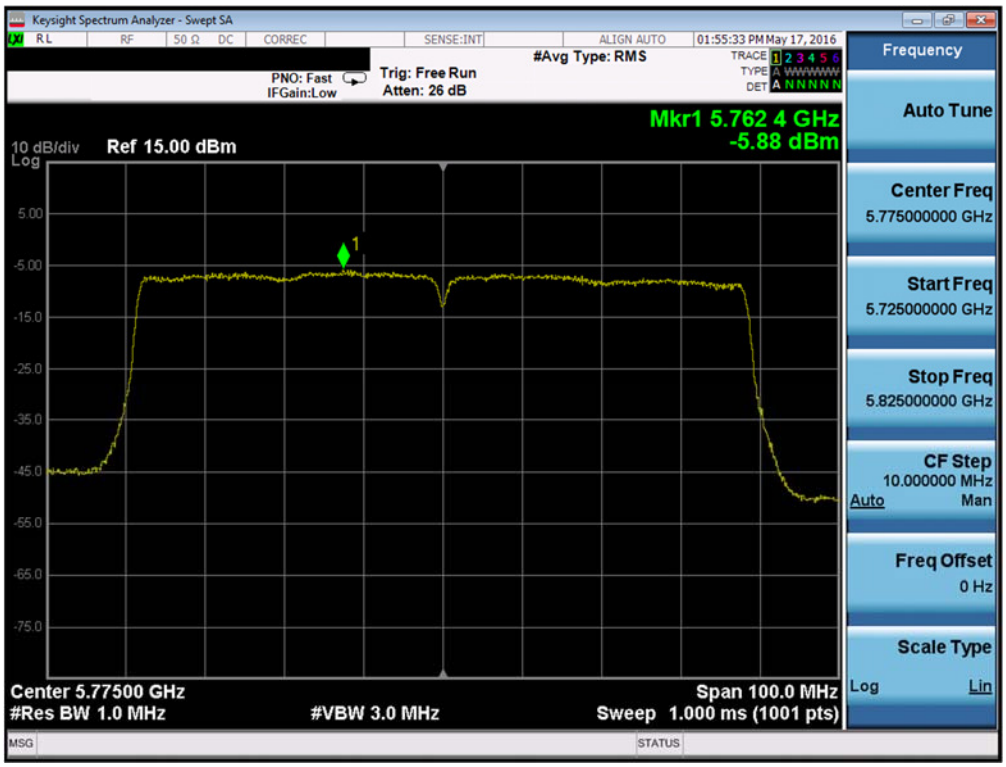

Plot 7-68. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 3) – Ch. 155)

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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 2C	5600	120	n (20MHz)	6.5/7.2 (MCS0)	1.58	2.38	5.01	11.0	-5.99	Pass
	5720	144	n (20MHz)	6.5/7.2 (MCS0)	1.90	2.46	5.20	11.0	-5.80	Pass
	5590	118	n (40MHz)	13.5/15 (MCS0)	-2.74	-2.79	0.25	11.0	-10.75	Pass
	5710	142	n (40MHz)	13.5/15 (MCS0)	-1.06	-2.23	1.40	11.0	-9.60	Pass
	5610	122	ac (80MHz)	29.3/32.5 (MCS0)	-6.01	-5.84	-2.91	11.0	-13.91	Pass
	5690	138	ac (80MHz)	29.3/32.5 (MCS0)	-8.60	-8.12	-5.34	11.0	-16.34	Pass

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

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Antenn-1 Power Density [dBm]	Antenn-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Max Permissible Power Density [dBm/500kHz]	Margin [dB]	Pass / Fail
Band 3	5745	149	n (20MHz)	6.5/7.2 (MCS0)	-3.14	-1.19	0.95	30.0	-29.05	Pass
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	-2.97	-1.51	0.83	30.0	-29.17	Pass
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	-3.86	-1.40	0.55	30.0	-29.45	Pass
	5755	151	n (40MHz)	13.5/15 (MCS0)	-6.57	-5.41	-2.94	30.0	-32.94	Pass
	5795	159	n (40MHz)	13.5/15 (MCS0)	-7.35	-5.45	-3.29	30.0	-33.29	Pass
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	-8.21	-5.88	-3.88	30.0	-33.88	Pass

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

Note:

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

Sample MIMO Calculation:

At 5600MHz the average conducted power spectral density was measured to be 1.58 dBm for Antenna-1 and 2.38 dBm for Antenna-2.

Antenna 1 + Antenna 2 = MIMO

(1.58 dBm + 2.38 dBm) = (1.44 mW + 1.73 mW) = 3.17 mW = 5.01 dBm

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7.6 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 v1r02, and at the appropriate frequencies. All channels, modes (e.g. 802.11a, 802.11n (20MHz BW), 802.11n (40MHz BW), and 802.11ac (80MHz)), and modulations/data rates were investigated among all UNII bands. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table 7-23 per Section 15.209.

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

Table 7-23. Radiated Limits

Test Procedures Used

KDB 789033 D02 v1r02 – 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

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Peak Measurements below 1GHz

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

Test Setup

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

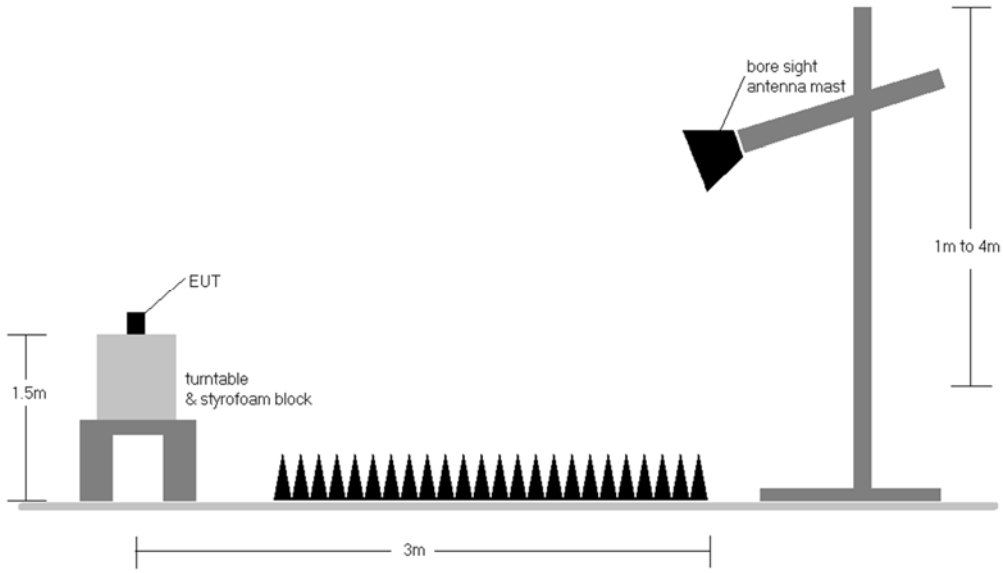

Figure 7-5. Test Instrument & Measurement Setup

Test Notes

1. All radiated spurious emissions levels were measured in a radiated test setup per the guidance of KDB 789033 D02 v1r02 Section G and ANSI C63.10-2013.
2. All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 7-23.
3. All spurious emissions lying in restricted bands specified in §15.205 are below the limit shown in Table 7-23. 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.

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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.
9. The wide spectrum spurious emissions plots shown on the following pages are used only for the purpose of emission identification. Any emissions found to be within 20dB of the limit are fully investigated and the results are shown in this section. Rohde & Schwarz EMC32, Version 9.15.00 automated test software was used to perform the Radiated Spurious Emissions Pre-Scan testing.
10. The "-" shown in the following RSE tables are used to denote a noise floor measurement.

Sample Calculations

Determining Spurious Emissions Levels

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

Radiated Band Edge Measurement Offset

- The amplitude offset shown in the radiated restricted band edge plots in Section 7.6.3 was calculated using the formula:
  Offset (dB) = (Antenna Factor + Cable Loss + 10 dB Attenuator) – Preamplifier Gain

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7.6.1 Antenna-1 Radiated Spurious Emission Measurements

§15.247(d) §15.205 & §15.209

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

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10360.00	Peak	H	-	-	-96.97	47.29	0.00	57.32	68.20	-10.88
*	15540.00	Average	H	-	-	-111.32	54.74	0.00	50.42	53.98	-3.56
*	15540.00	Peak	H	-	-	-97.08	54.74	0.00	64.66	73.98	-9.32
*	20720.00	Average	H	-	-	-107.18	44.39	-9.54	34.66	53.98	-19.32
*	20720.00	Peak	H	-	-	-97.42	44.39	-9.54	44.42	73.98	-29.56
	25900.00	Peak	H	-	-	-94.79	45.11	-9.54	47.78	68.20	-20.42

Table 7-24. 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: 5200MHz
Channel: 40

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10400.00	Peak	H	-	-	-96.52	47.47	0.00	57.95	68.20	-10.25
*	15600.00	Average	H	-	-	-111.14	55.03	0.00	50.89	53.98	-3.09
*	15600.00	Peak	H	-	-	-96.20	55.03	0.00	65.83	73.98	-8.15
*	20800.00	Average	H	-	-	-106.79	44.39	-9.54	35.06	53.98	-18.92
*	20800.00	Peak	H	-	-	-96.52	44.39	-9.54	45.33	73.98	-28.65
	26000.00	Peak	H	-	-	-94.19	45.12	-9.54	48.38	68.20	-19.82

Table 7-25. Radiated Measurements

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

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10480.00	Peak	H	-	-	-96.82	47.84	0.00	58.03	68.20	-10.17
*	15720.00	Average	H	-	-	-111.19	54.36	0.00	50.17	53.98	-3.81
*	15720.00	Peak	H	-	-	-96.65	54.36	0.00	64.71	73.98	-9.27
*	20960.00	Average	H	-	-	-107.35	44.31	-9.54	34.42	53.98	-19.56
*	20960.00	Peak	H	-	-	-96.96	44.31	-9.54	44.81	73.98	-29.17
	26200.00	Peak	H	-	-	-94.32	45.01	-9.54	48.15	68.20	-20.05

Table 7-26. 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: 5260MHz
Channel: 52

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10520.00	Peak	H	-	-	-96.76	47.90	0.00	58.14	68.20	-10.06
*	15780.00	Average	H	-	-	-110.23	54.15	0.00	50.92	53.98	-3.06
*	15780.00	Peak	H	-	-	-98.12	54.15	0.00	63.03	73.98	-10.95
*	21040.00	Average	H	-	-	-106.56	44.29	-9.54	35.19	53.98	-18.79
*	21040.00	Peak	H	-	-	-96.48	44.29	-9.54	45.27	73.98	-28.71
	26300.00	Peak	H	-	-	-93.89	45.00	-9.54	48.56	68.20	-19.64

Table 7-27. Radiated Measurements

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

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10560.00	Peak	H	-	-	-96.74	47.83	0.00	58.09	68.20	-10.11
*	15840.00	Average	H	-	-	-110.63	54.39	0.00	50.76	53.98	-3.22
*	15840.00	Peak	H	-	-	-97.81	54.39	0.00	63.58	73.98	-10.40
*	21120.00	Average	H	-	-	-106.19	44.28	-9.54	35.54	53.98	-18.44
*	21120.00	Peak	H	-	-	-95.62	44.28	-9.54	46.11	73.98	-27.87
	26400.00	Peak	H	-	-	-92.75	45.02	-9.54	49.73	68.20	-18.47

Table 7-28. 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: 5320MHz
Channel: 64

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	10640.00	Average	H	-	-	-110.01	47.73	0.00	44.73	53.98	-9.25
*	10640.00	Peak	H	-	-	-97.50	47.73	0.00	57.24	73.98	-16.74
*	15960.00	Average	H	-	-	-111.12	55.06	0.00	50.94	53.98	-3.04
*	15960.00	Peak	H	-	-	-97.56	55.06	0.00	64.50	73.98	-9.48
*	21280.00	Average	H	-	-	-106.82	44.26	-9.54	34.90	53.98	-19.07
*	21280.00	Peak	H	-	-	-97.11	44.26	-9.54	44.61	73.98	-29.36
	26600.00	Peak	H	-	-	-102.94	47.61	-9.54	42.12	68.20	-26.08

Table 7-29. 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]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11000.00	Average	H	-	-	-109.74	48.21	0.00	45.47	53.98	-8.51
*	11000.00	Peak	H	-	-	-98.99	48.21	0.00	56.22	73.98	-17.76
	16500.00	Peak	H	-	-	-99.24	55.31	0.00	63.07	68.20	-5.13
	22000.00	Peak	H	-	-	-95.11	44.50	-9.54	46.85	68.20	-21.35
	27500.00	Peak	H	-	-	-103.79	47.97	-9.54	41.64	68.20	-26.56

Table 7-30. 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: 5600MHz
Channel: 120

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11200.00	Average	H	-	-	-109.26	48.10	0.00	45.84	53.98	-8.14
*	11200.00	Peak	H	-	-	-99.02	48.10	0.00	56.08	73.98	-17.90
	16800.00	Peak	H	-	-	-99.03	56.29	0.00	64.26	68.20	-3.94
*	22400.00	Average	H	-	-	-106.24	44.57	-9.54	35.79	53.98	-18.19
*	22400.00	Peak	H	-	-	-94.91	44.57	-9.54	47.12	73.98	-26.86
	28000.00	Peak	H	-	-	-102.82	48.11	-9.54	42.75	68.20	-25.45

Table 7-31. Radiated Measurements

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

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11440.00	Average	H	-	-	-108.99	49.05	0.00	47.06	53.98	-6.92
*	11440.00	Peak	H	-	-	-98.58	49.05	0.00	57.47	73.98	-16.51
	17160.00	Peak	H	-	-	-100.17	55.29	0.00	62.12	68.20	-6.08
*	22880.00	Average	H	-	-	-106.82	44.61	-9.54	35.25	53.98	-18.73
*	22880.00	Peak	H	-	-	-93.85	44.61	-9.54	48.22	73.98	-25.76
	28600.00	Peak	H	-	-	-103.71	48.29	-9.54	42.04	68.20	-26.16

Table 7-32. 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: 5745MHz
Channel: 149

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11490.00	Average	H	-	-	-111.72	49.21	0.00	44.49	53.98	-9.49
*	11490.00	Peak	H	-	-	-98.60	49.21	0.00	57.61	73.98	-16.37
	17235.00	Peak	H	-	-	-99.79	55.17	0.00	62.38	68.20	-5.82
*	22980.00	Average	H	-	-	-115.32	44.68	-9.54	26.82	53.98	-27.16
*	22980.00	Peak	H	-	-	-103.88	44.68	-9.54	38.26	73.98	-35.72
	28725.00	Peak	H	-	-	-104.09	48.26	-9.54	41.63	68.20	-26.57

Table 7-33. Radiated Measurements

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

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11570.00	Average	H	-	-	-111.96	49.05	0.00	44.09	53.98	-9.89
*	11570.00	Peak	H	-	-	-100.05	49.05	0.00	56.00	73.98	-17.98
	17355.00	Peak	H	-	-	-100.06	55.36	0.00	62.30	68.20	-5.90
	23140.00	Peak	H	-	-	-103.04	44.75	-9.54	39.17	68.20	-29.03
	28925.00	Peak	H	-	-	-104.72	48.29	-9.54	41.03	68.20	-27.17

Table 7-34. 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:	5825MHz
Channel:	165

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11650.00	Average	H	-	-	-112.47	48.98	0.00	43.51	53.98	-10.47
*	11650.00	Peak	H	-	-	-100.35	48.98	0.00	55.63	73.98	-18.35
	17475.00	Peak	H	-	-	-101.31	56.09	0.00	61.77	68.20	-6.43
	23300.00	Peak	H	-	-	-103.74	44.75	-9.54	38.47	68.20	-29.73
	29125.00	Peak	H	-	-	-104.76	48.28	-9.54	40.98	68.20	-27.22

Table 7-35. Radiated Measurements

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7.6.2 Antenna-2 Radiated Spurious Emission Measurements

§15.247(d) §15.205 & §15.209

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

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10360.00	Peak	H	-	-	-99.09	47.29	0.00	55.20	68.20	-13.00
*	15540.00	Average	H	-	-	-111.34	54.74	0.00	50.40	53.98	-3.58
*	15540.00	Peak	H	-	-	-99.41	54.74	0.00	62.33	73.98	-11.65
*	20720.00	Average	H	-	-	-106.45	44.39	-9.54	35.39	53.98	-18.59
*	20720.00	Peak	H	-	-	-96.52	44.39	-9.54	45.32	73.98	-28.66
	25900.00	Peak	H	-	-	-95.63	45.11	-9.54	46.94	68.20	-21.26

Table 7-36. Radiated Measurements

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

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10400.00	Peak	H	-	-	-98.75	47.47	0.00	55.72	68.20	-12.48
*	15600.00	Average	H	-	-	-111.15	55.03	0.00	50.88	53.98	-3.10
*	15600.00	Peak	H	-	-	-99.66	55.03	0.00	62.37	73.98	-11.61
*	20800.00	Average	H	-	-	-106.23	44.39	-9.54	35.62	53.98	-18.36
*	20800.00	Peak	H	-	-	-96.43	44.39	-9.54	45.42	73.98	-28.56
	26000.00	Peak	H	-	-	-94.90	45.12	-9.54	47.67	68.20	-20.53

Table 7-37. 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]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10480.00	Peak	H	-	-	-98.88	47.84	0.00	55.97	68.20	-12.23
*	15720.00	Average	H	-	-	-111.36	54.36	0.00	50.00	53.98	-3.98
*	15720.00	Peak	H	-	-	-99.06	54.36	0.00	62.30	73.98	-11.68
*	20960.00	Average	H	-	-	-107.36	44.31	-9.54	34.41	53.98	-19.57
*	20960.00	Peak	H	-	-	-96.15	44.31	-9.54	45.62	73.98	-28.36
	26200.00	Peak	H	-	-	-95.95	45.01	-9.54	46.52	68.20	-21.68

Table 7-38. 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]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10520.00	Peak	H	-	-	-99.35	47.90	0.00	55.55	68.20	-12.65
*	15780.00	Average	H	-	-	-111.01	54.15	0.00	50.14	53.98	-3.84
*	15780.00	Peak	H	-	-	-99.93	54.15	0.00	61.22	73.98	-12.76
*	21040.00	Average	H	-	-	-106.46	44.29	-9.54	35.29	53.98	-18.69
*	21040.00	Peak	H	-	-	-97.76	44.29	-9.54	43.99	73.98	-29.99
	26300.00	Peak	H	-	-	-93.87	45.00	-9.54	48.58	68.20	-19.62

Table 7-39. 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]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
	10560.00	Peak	H	-	-	-99.15	47.83	0.00	55.68	68.20	-12.52
*	15840.00	Average	H	-	-	-110.96	54.39	0.00	50.43	53.98	-3.55
*	15840.00	Peak	H	-	-	-100.05	54.39	0.00	61.34	73.98	-12.64
*	21120.00	Average	H	-	-	-106.74	44.28	-9.54	34.99	53.98	-18.99
*	21120.00	Peak	H	-	-	-96.72	44.28	-9.54	45.01	73.98	-28.97
	26400.00	Peak	H	-	-	-92.08	45.02	-9.54	50.40	68.20	-17.80

Table 7-40. Radiated Measurements

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

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	10640.00	Average	H	-	-	-110.69	47.73	0.00	44.05	53.98	-9.93
*	10640.00	Peak	H	-	-	-99.59	47.73	0.00	55.15	73.98	-18.83
*	15960.00	Average	H	-	-	-111.15	55.06	0.00	50.91	53.98	-3.07
*	15960.00	Peak	H	-	-	-99.97	55.06	0.00	62.09	73.98	-11.89
*	21280.00	Average	H	-	-	-106.09	44.26	-9.54	35.63	53.98	-18.34
*	21280.00	Peak	H	-	-	-97.61	44.26	-9.54	44.11	73.98	-29.86
	26600.00	Peak	H	-	-	-103.35	47.61	-9.54	41.71	68.20	-26.49

Table 7-41. 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]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11000.00	Average	H	-	-	-111.28	48.21	0.00	43.93	53.98	-10.05
*	11000.00	Peak	H	-	-	-99.18	48.21	0.00	56.03	73.98	-17.95
	16500.00	Peak	H	-	-	-99.74	55.31	0.00	62.57	68.20	-5.63
	22000.00	Peak	H	-	-	-96.64	44.50	-9.54	45.32	68.20	-22.88
	27500.00	Peak	H	-	-	-103.77	47.97	-9.54	41.66	68.20	-26.54

Table 7-42. Radiated Measurements

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

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11200.00	Average	H	-	-	-110.81	48.10	0.00	44.29	53.98	-9.69
*	11200.00	Peak	H	-	-	-98.80	48.10	0.00	56.30	73.98	-17.68
	16800.00	Peak	H	-	-	-99.76	56.29	0.00	63.53	68.20	-4.67
*	22400.00	Average	H	-	-	-106.91	44.57	-9.54	35.12	53.98	-18.86
*	22400.00	Peak	H	-	-	-96.17	44.57	-9.54	45.86	73.98	-28.12
	28000.00	Peak	H	-	-	-103.53	48.11	-9.54	42.04	68.20	-26.16

Table 7-43. 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: 5720MHz
Channel: 144

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11440.00	Average	H	-	-	-110.42	49.05	0.00	45.63	53.98	-8.35
*	11440.00	Peak	H	-	-	-98.90	49.05	0.00	57.15	73.98	-16.83
	17160.00	Peak	H	-	-	-100.04	55.29	0.00	62.25	68.20	-5.95
*	22880.00	Average	H	-	-	-106.27	44.61	-9.54	35.80	53.98	-18.18
*	22880.00	Peak	H	-	-	-95.36	44.61	-9.54	46.71	73.98	-27.27
	28600.00	Peak	H	-	-	-103.67	48.29	-9.54	42.08	68.20	-26.12

Table 7-44. Radiated Measurements

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

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11490.00	Average	H	-	-	-111.96	49.21	0.00	44.25	53.98	-9.73
*	11490.00	Peak	H	-	-	-100.67	49.21	0.00	55.54	73.98	-18.44
	17235.00	Peak	H	-	-	-100.86	55.17	0.00	61.31	68.20	-6.89
*	22980.00	Average	H	-	-	-115.20	44.68	-9.54	26.94	53.98	-27.04
*	22980.00	Peak	H	-	-	-102.92	44.68	-9.54	39.22	73.98	-34.76
	28725.00	Peak	H	-	-	-104.77	48.26	-9.54	40.95	68.20	-27.25

Table 7-45. 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: 5785MHz
Channel: 157

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11570.00	Average	H	-	-	-111.86	49.05	0.00	44.19	53.98	-9.79
*	11570.00	Peak	H	-	-	-100.65	49.05	0.00	55.40	73.98	-18.58
	17355.00	Peak	H	-	-	-101.06	55.36	0.00	61.30	68.20	-6.90
	23140.00	Peak	H	-	-	-103.36	44.75	-9.54	38.85	68.20	-29.35
	28925.00	Peak	H	-	-	-104.10	48.29	-9.54	41.65	68.20	-26.55

Table 7-46. Radiated Measurements

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

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11650.00	Average	H	-	-	-112.44	48.98	0.00	43.54	53.98	-10.44
*	11650.00	Peak	H	-	-	-100.00	48.98	0.00	55.98	73.98	-18.00
	17475.00	Peak	H	-	-	-101.02	56.09	0.00	62.06	68.20	-6.14
	23300.00	Peak	H	-	-	-103.80	44.75	-9.54	38.41	68.20	-29.79
	29125.00	Peak	H	-	-	-103.53	48.28	-9.54	42.21	68.20	-25.99

Table 7-47. Radiated Measurements

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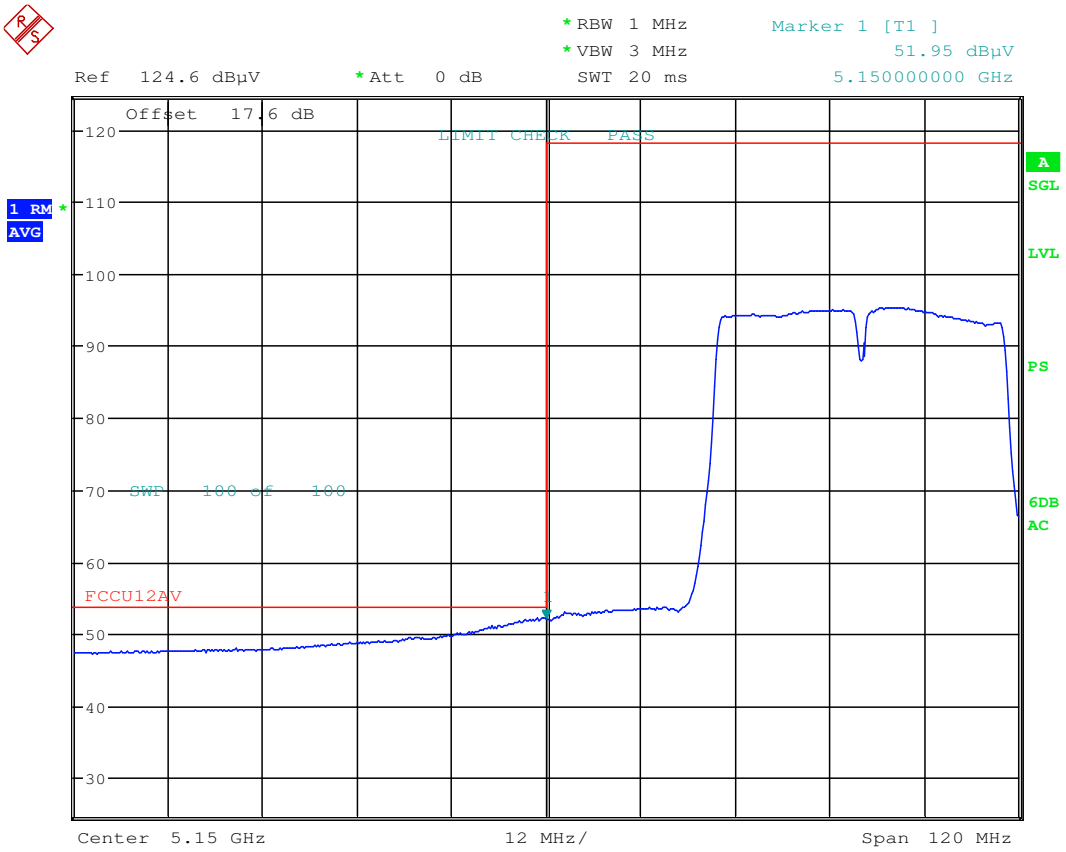
7.6.3 Antenna-1 Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

Note:

Band edge emissions were investigated for all antennas, modes, channels, and bandwidths. Only the data from the worst case configuration is shown in this section.

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



Date: 24.MAY.2016 00:13:24

Plot 7-69. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

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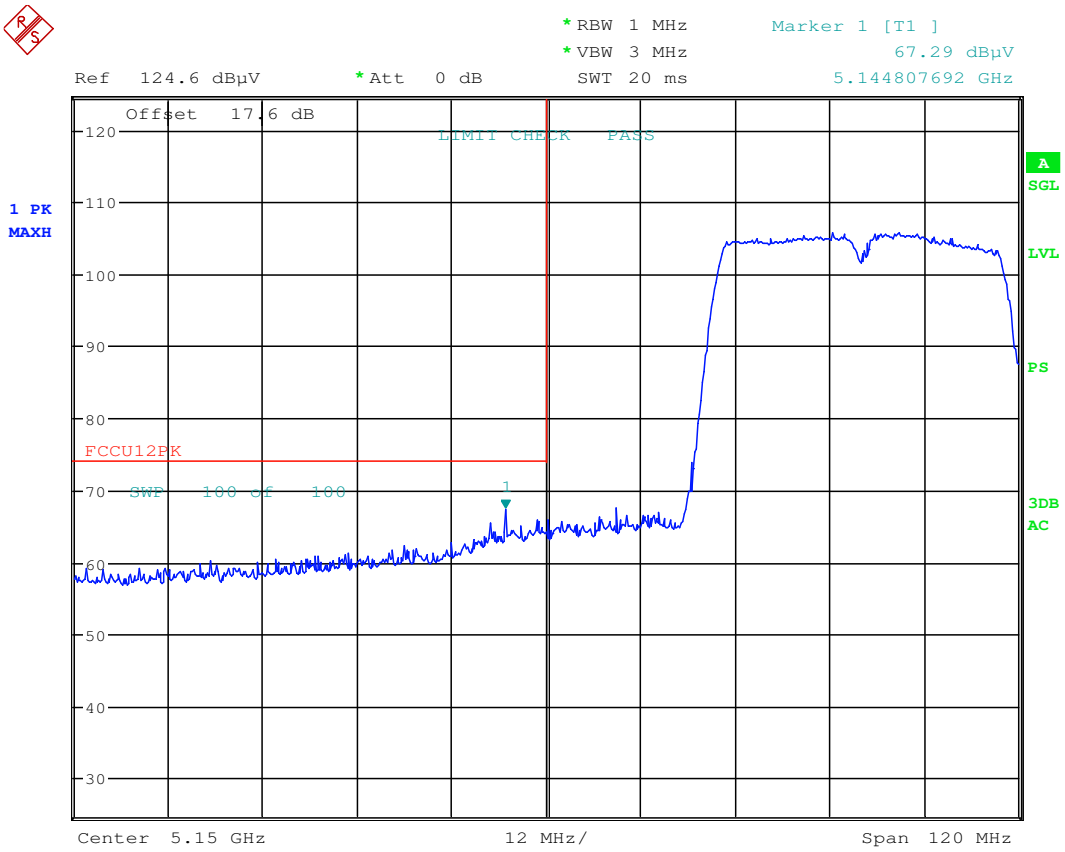
Antenna-1 Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 24.MAY.2016 00:10:16

Plot 7-70. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

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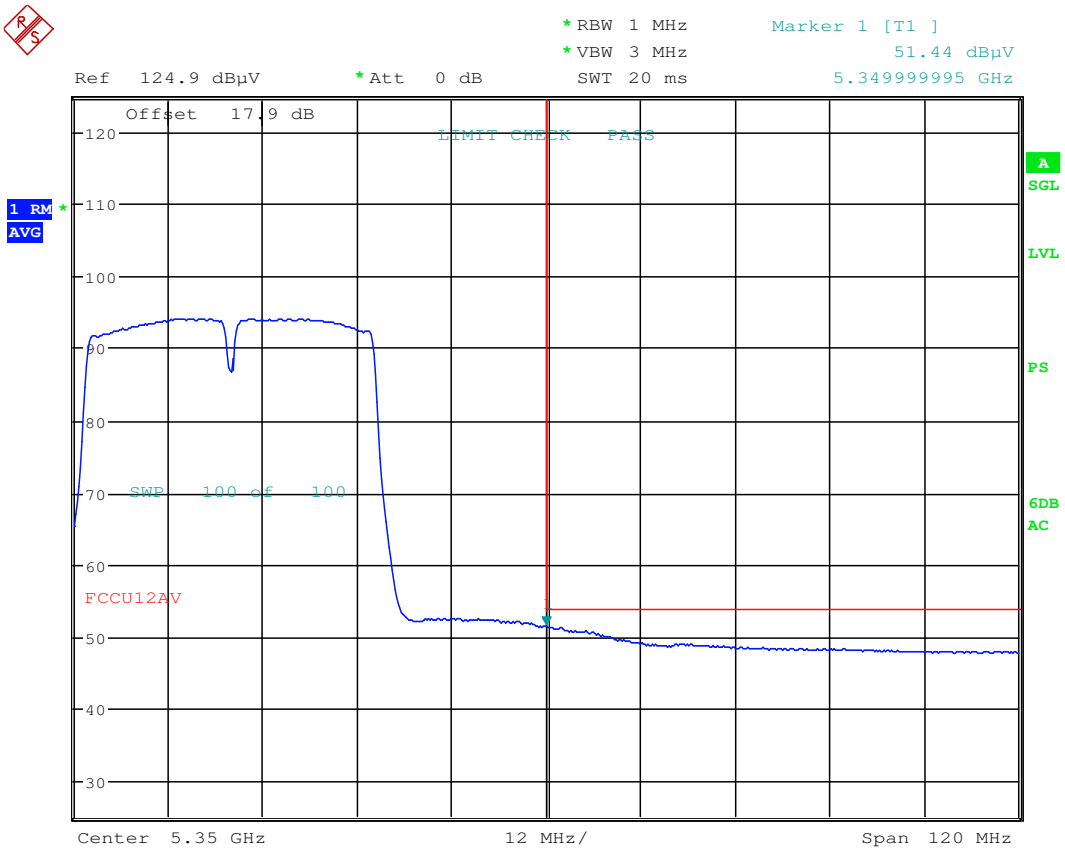
Antenna-1 Radiated Band Edge Measurements (40MHz BW)

§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: 24.MAY.2016 00:18:45

Plot 7-71. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

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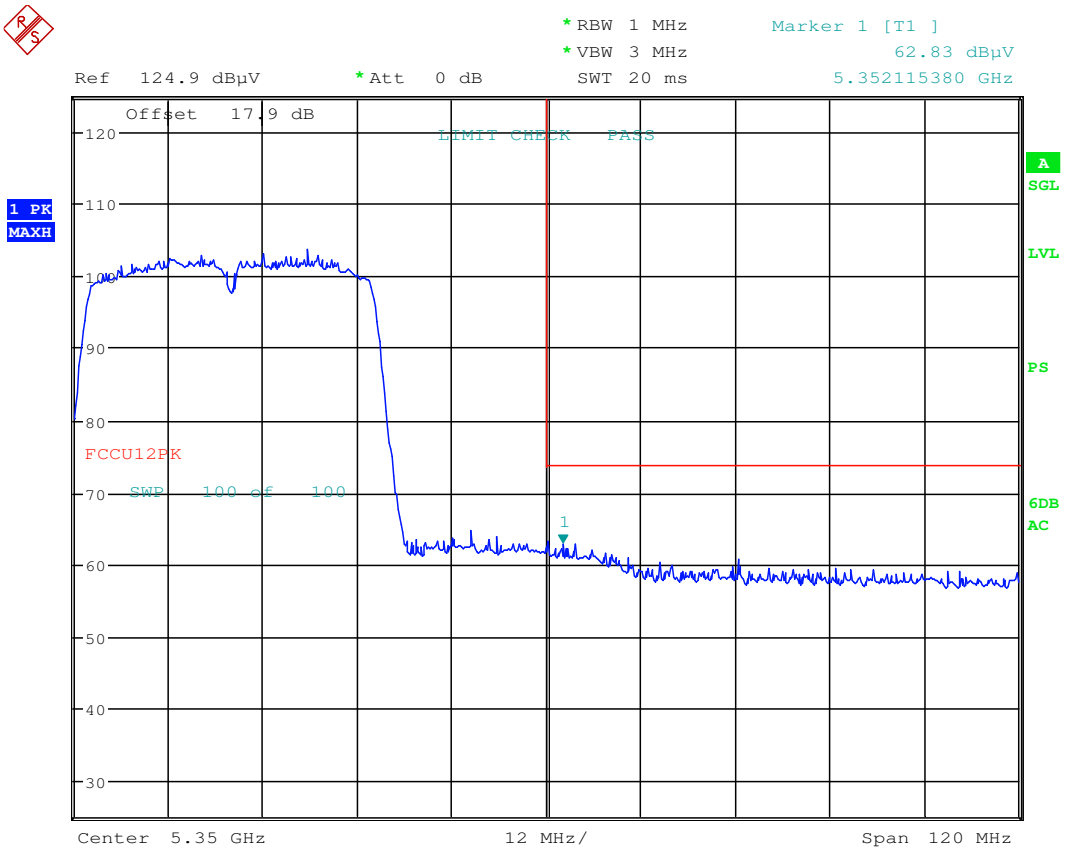
Antenna-1 Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 24.MAY.2016 00:19:45

Plot 7-72. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

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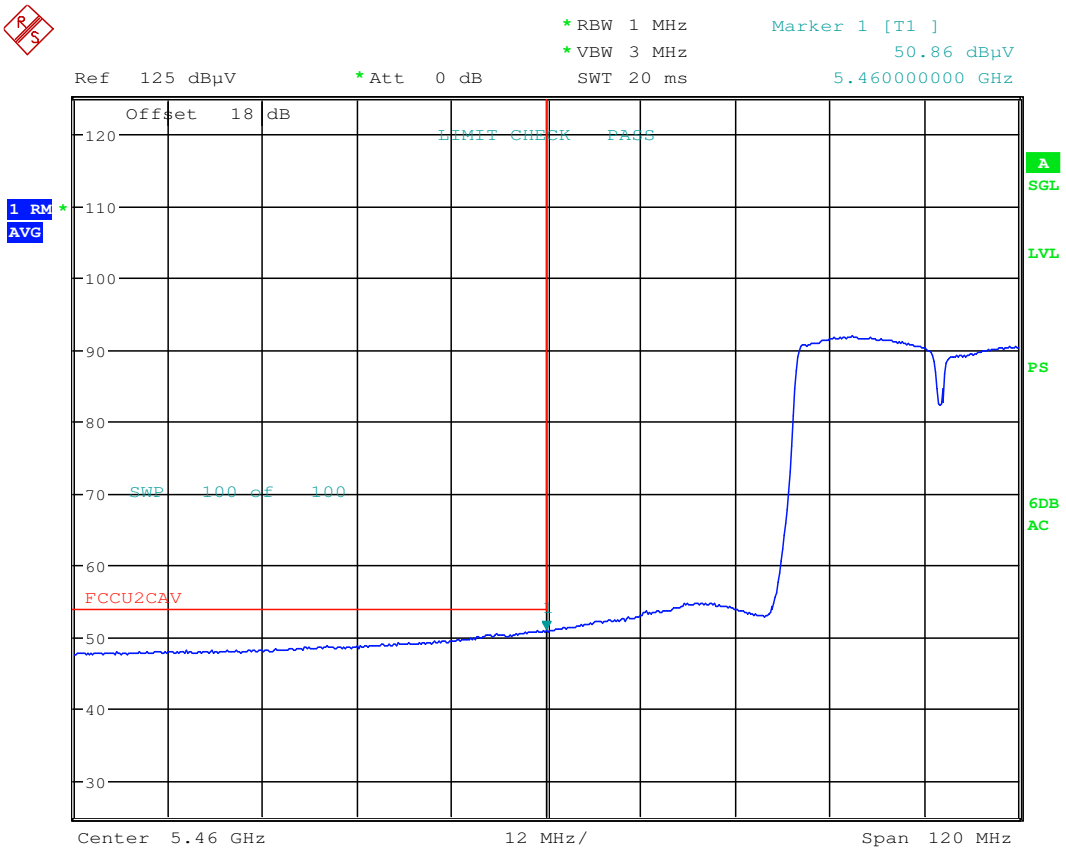
Antenna-1 Radiated Band Edge Measurements (40MHz BW)

§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: 24.MAY.2016 00:25:48

Plot 7-73. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

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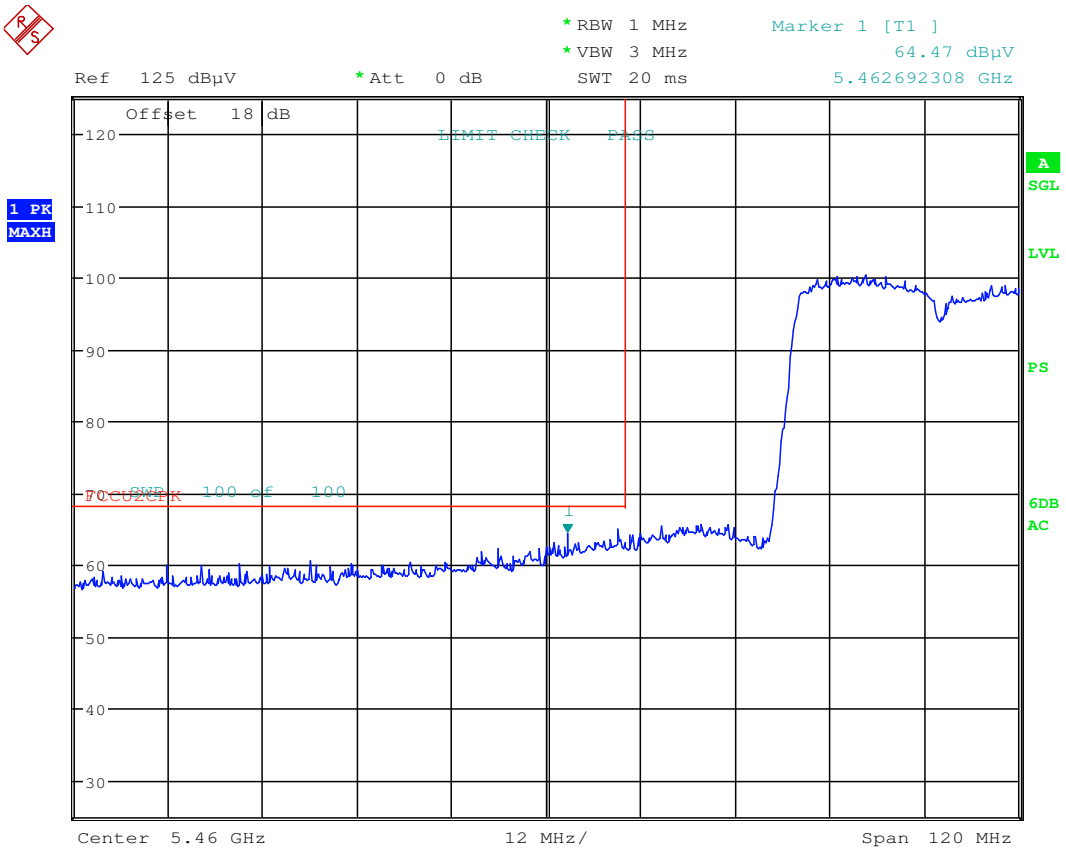
Antenna-1 Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 24.MAY.2016 00:25:17

Plot 7-74. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

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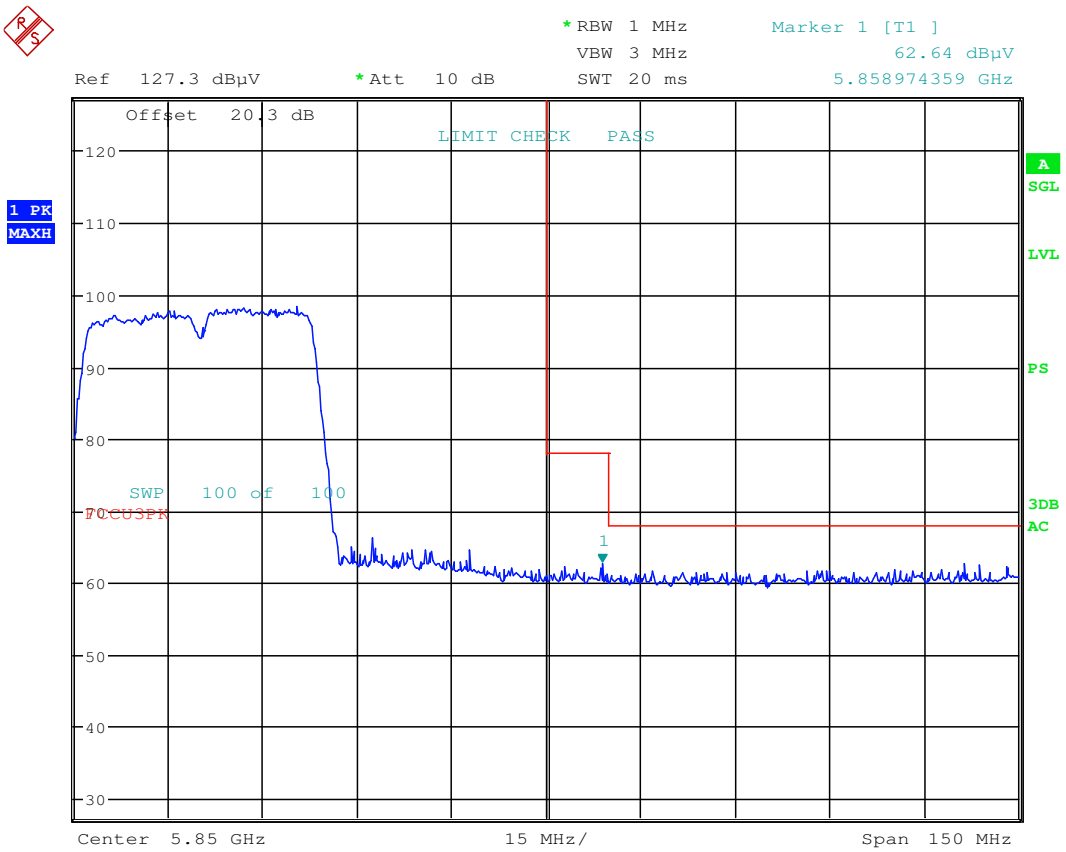
Antenna-1 Radiated Band Edge Measurements (40MHz BW)

§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: 16.MAY.2016 20:07:18

Plot 7-75. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

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7.7 Line-Conducted Test Data
§15.407

Test Overview and Limit

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

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

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

Table 7-48. Conducted Limits

*Decreases with the logarithm of the frequency.

Test Procedures Used

ANSI C63.10-2013, Section 6.2

Test Settings

Quasi-Peak Field Strength Measurements

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

Average Field Strength Measurements

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

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Test Setup

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

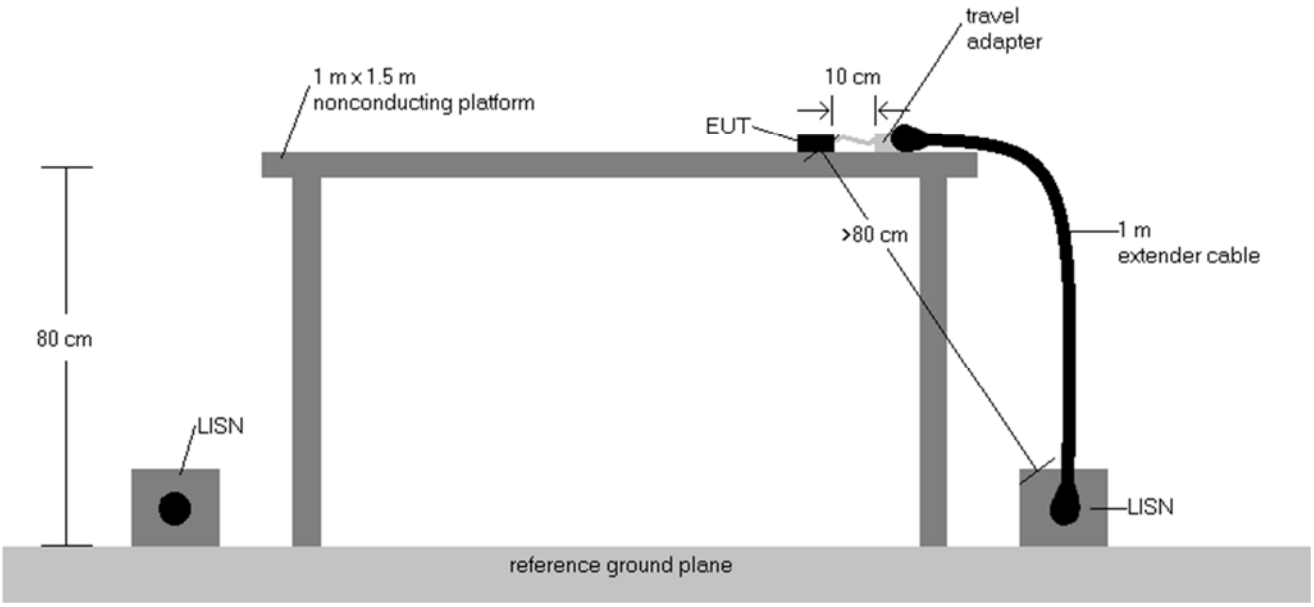

Figure 7-6. Test Instrument & Measurement Setup

Test Notes

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

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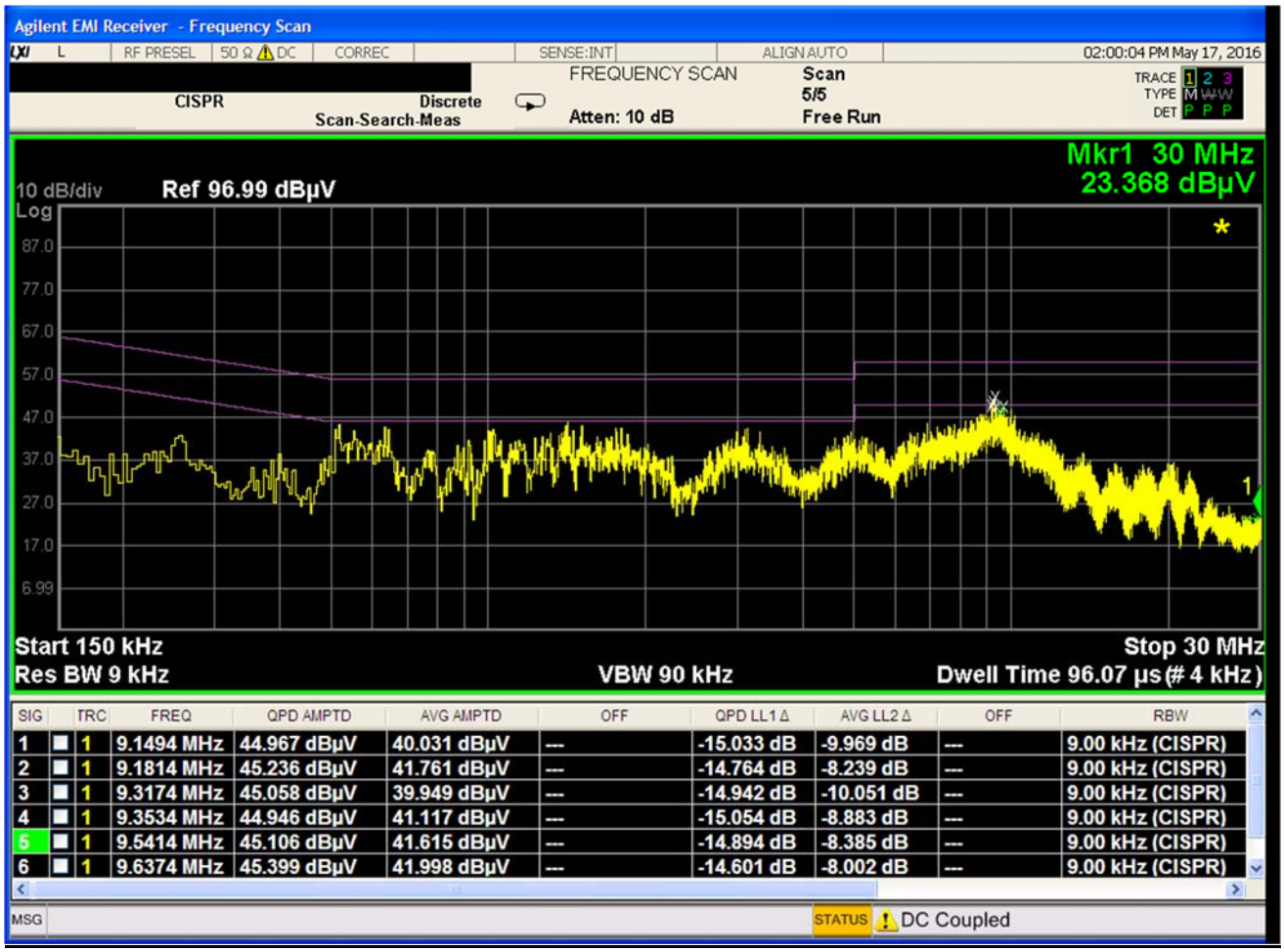
Line-Conducted Test Data

§15.407



SIG		TRC	FREQ	QPD AMPTD	AVG AMPTD	OFF	QPD LL1 Δ	AVG LL2 Δ	OFF	RBW
1	■	1	9.1494 MHz	44.967 dBµV	40.031 dBµV	---	-15.033 dB	-9.969 dB	---	9.00 kHz (CISPR)
2	■	1	9.1814 MHz	45.236 dBµV	41.761 dBµV	---	-14.764 dB	-8.239 dB	---	9.00 kHz (CISPR)
3	■	1	9.3174 MHz	45.058 dBµV	39.949 dBµV	---	-14.942 dB	-10.051 dB	---	9.00 kHz (CISPR)
4	■	1	9.3534 MHz	44.946 dBµV	41.117 dBµV	---	-15.054 dB	-8.883 dB	---	9.00 kHz (CISPR)
5	■	1	9.5414 MHz	45.106 dBµV	41.615 dBµV	---	-14.894 dB	-8.385 dB	---	9.00 kHz (CISPR)
6	■	1	9.6374 MHz	45.399 dBµV	41.998 dBµV	---	-14.601 dB	-8.002 dB	---	9.00 kHz (CISPR)

Plot 7-76. Line Conducted Plot with 802.11a UNII Band 3 (L1)

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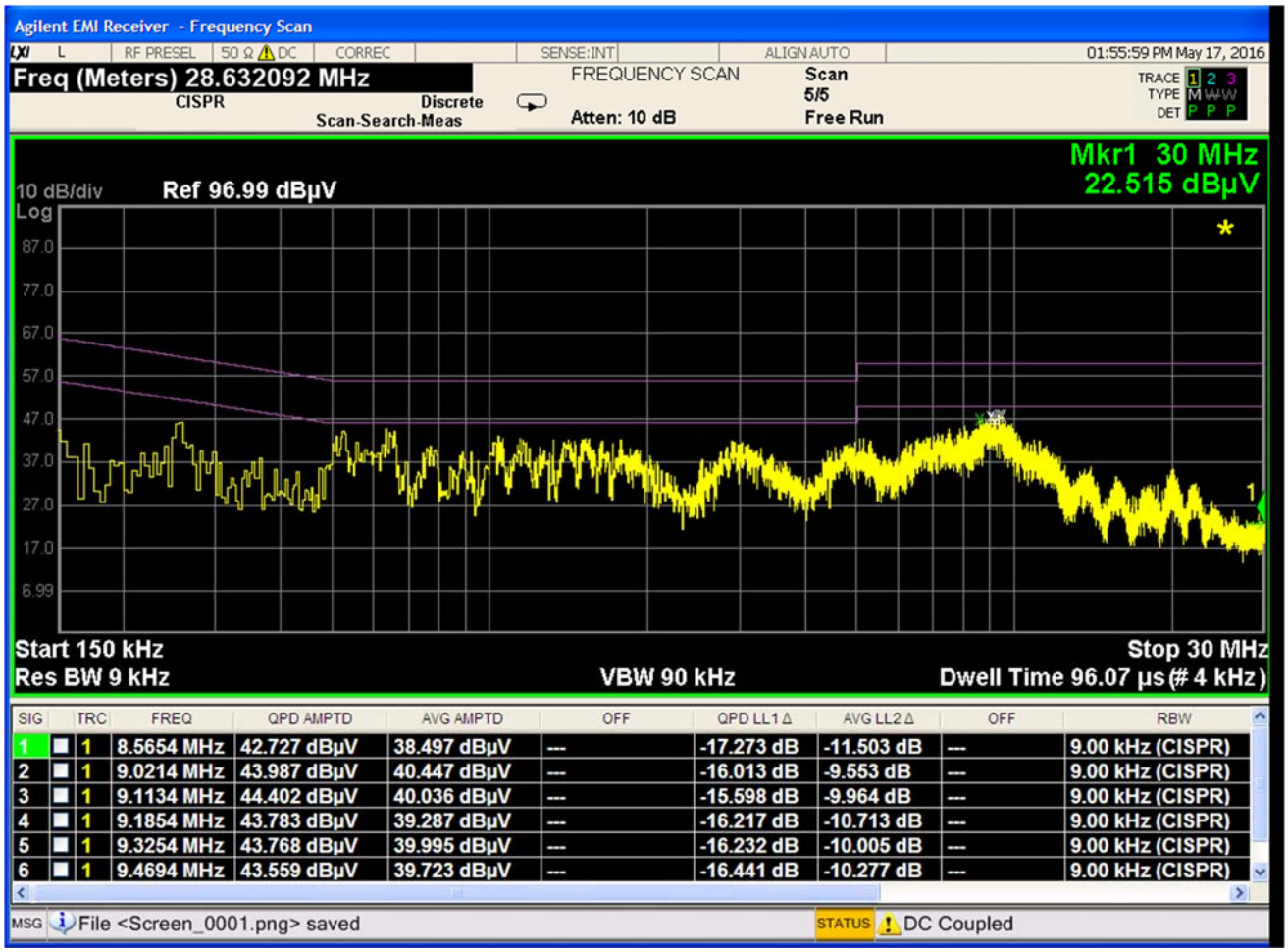
Line-Conducted Test Data

§15.407



SIG		TRC	FREQ	QPD AMPTD	AVG AMPTD	OFF	QPD LL1 Δ	AVG LL2 Δ	OFF	RBW
1	■	1	8.5654 MHz	42.727 dBµV	38.497 dBµV	---	-17.273 dB	-11.503 dB	---	9.00 kHz (CISPR)
2	■	1	9.0214 MHz	43.987 dBµV	40.447 dBµV	---	-16.013 dB	-9.553 dB	---	9.00 kHz (CISPR)
3	■	1	9.1134 MHz	44.402 dBµV	40.036 dBµV	---	-15.598 dB	-9.964 dB	---	9.00 kHz (CISPR)
4	■	1	9.1854 MHz	43.783 dBµV	39.287 dBµV	---	-16.217 dB	-10.713 dB	---	9.00 kHz (CISPR)
5	■	1	9.3254 MHz	43.768 dBµV	39.995 dBµV	---	-16.232 dB	-10.005 dB	---	9.00 kHz (CISPR)
6	■	1	9.4694 MHz	43.559 dBµV	39.723 dBµV	---	-16.441 dB	-10.277 dB	---	9.00 kHz (CISPR)

Plot 7-77. Line Conducted Plot with 802.11a UNII Band 3 (N)

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8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMG900T** is in compliance with Part 15E of the FCC Rules.

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