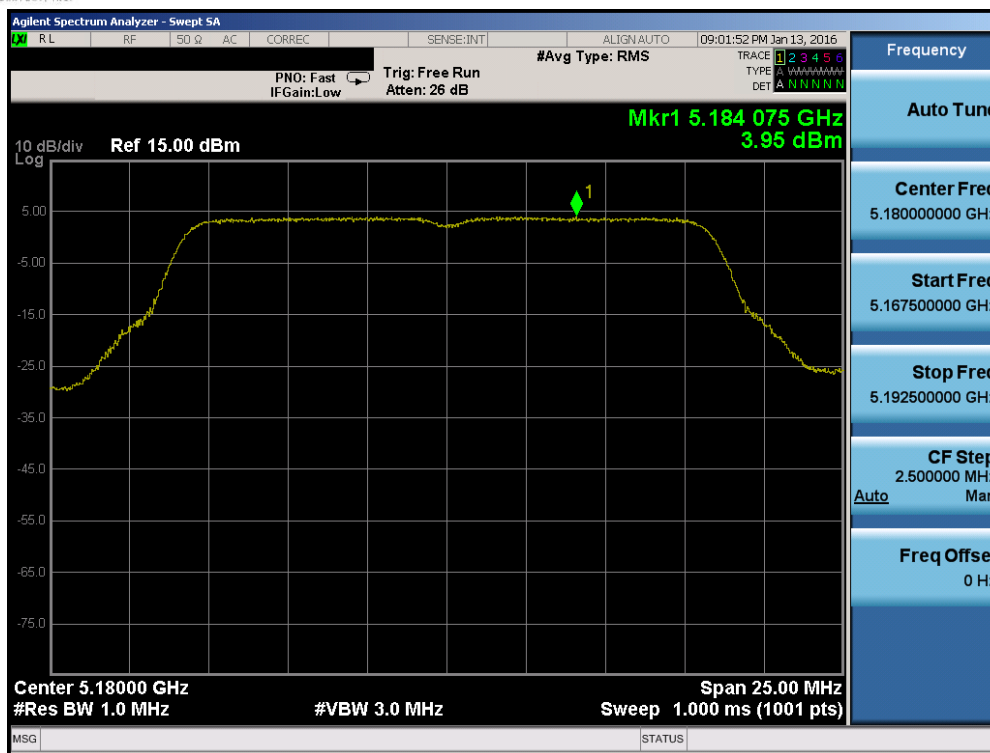


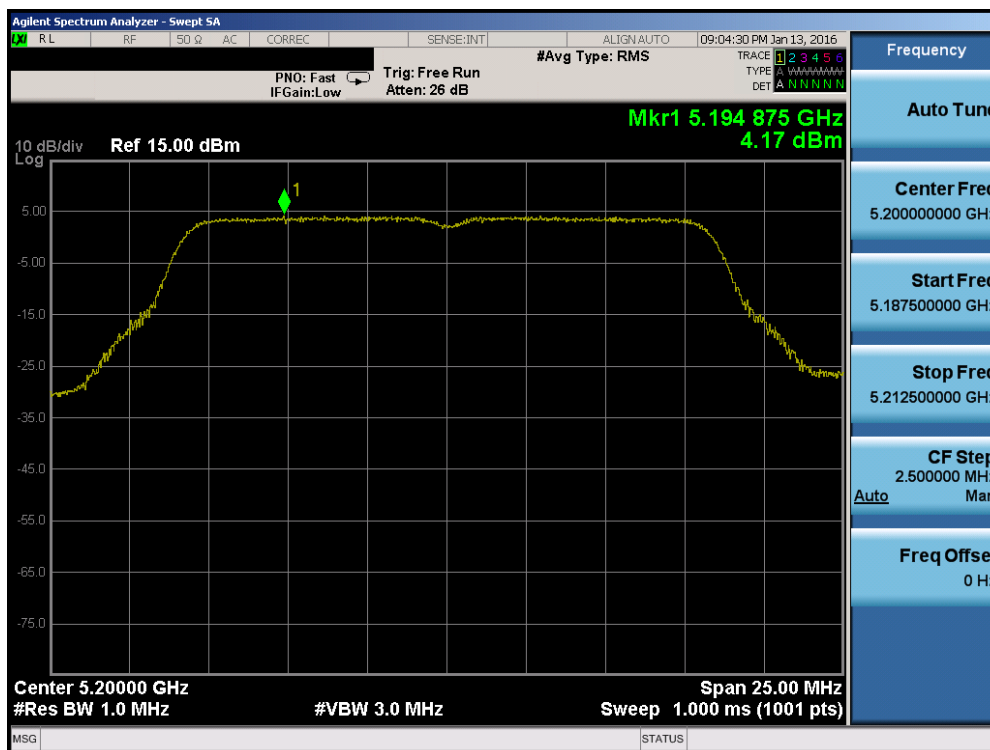
Antenna-2 Power Spectral Density Measurements

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured Power Density [dBm]	Max Permissible Power Density [dBm/MHz]	Margin [dB]	Pass / Fail
Band 1	5180	36	a	6	3.95	11.0	-7.06	Pass
	5200	40	a	6	4.17	11.0	-6.83	Pass
	5240	48	a	6	4.18	11.0	-6.82	Pass
	5180	36	n (20MHz)	6.5/7.2 (MCS0)	4.06	11.0	-6.94	Pass
	5200	40	n (20MHz)	6.5/7.2 (MCS0)	3.97	11.0	-7.03	Pass
	5240	48	n (20MHz)	6.5/7.2 (MCS0)	3.54	11.0	-7.46	Pass
	5190	38	n (40MHz)	13.5/15 (MCS0)	-0.20	11.0	-11.20	Pass
	5230	46	n (40MHz)	13.5/15 (MCS0)	-0.26	11.0	-11.26	Pass
	5210	42	ac (80MHz)	29.3/32.5 (MCS0)	-3.32	11.0	-14.32	Pass
Band 2A	5260	52	a	6	4.12	11.0	-6.89	Pass
	5280	56	a	6	4.04	11.0	-6.96	Pass
	5320	64	a	6	4.43	11.0	-6.58	Pass
	5260	52	n (20MHz)	6.5/7.2 (MCS0)	3.50	11.0	-7.50	Pass
	5280	56	n (20MHz)	6.5/7.2 (MCS0)	3.81	11.0	-7.19	Pass
	5320	64	n (20MHz)	6.5/7.2 (MCS0)	4.07	11.0	-6.93	Pass
	5270	54	n (40MHz)	13.5/15 (MCS0)	-0.25	11.0	-11.25	Pass
	5310	62	n (40MHz)	13.5/15 (MCS0)	-0.27	11.0	-11.27	Pass
	5290	58	ac (80MHz)	29.3/32.5 (MCS0)	-3.23	11.0	-14.23	Pass
Band 2C	5500	100	a	6	4.10	11.0	-6.90	Pass
	5580	116	a	6	4.25	11.0	-6.76	Pass
	5720	144	a	6	4.33	11.0	-6.67	Pass
	5500	100	n (20MHz)	6.5/7.2 (MCS0)	3.71	11.0	-7.29	Pass
	5580	116	n (20MHz)	6.5/7.2 (MCS0)	3.86	11.0	-7.14	Pass
	5720	144	n (20MHz)	6.5/7.2 (MCS0)	3.94	11.0	-7.06	Pass
	5510	102	n (40MHz)	13.5/15 (MCS0)	-0.66	11.0	-11.66	Pass
	5550	110	n (40MHz)	13.5/15 (MCS0)	-0.30	11.0	-11.30	Pass
	5710	142	n (40MHz)	13.5/15 (MCS0)	-0.33	11.0	-11.33	Pass
	5530	106	ac (80MHz)	29.3/32.5 (MCS0)	-4.31	11.0	-15.31	Pass

Table 7-19. Conducted Power Spectral Density Measurements

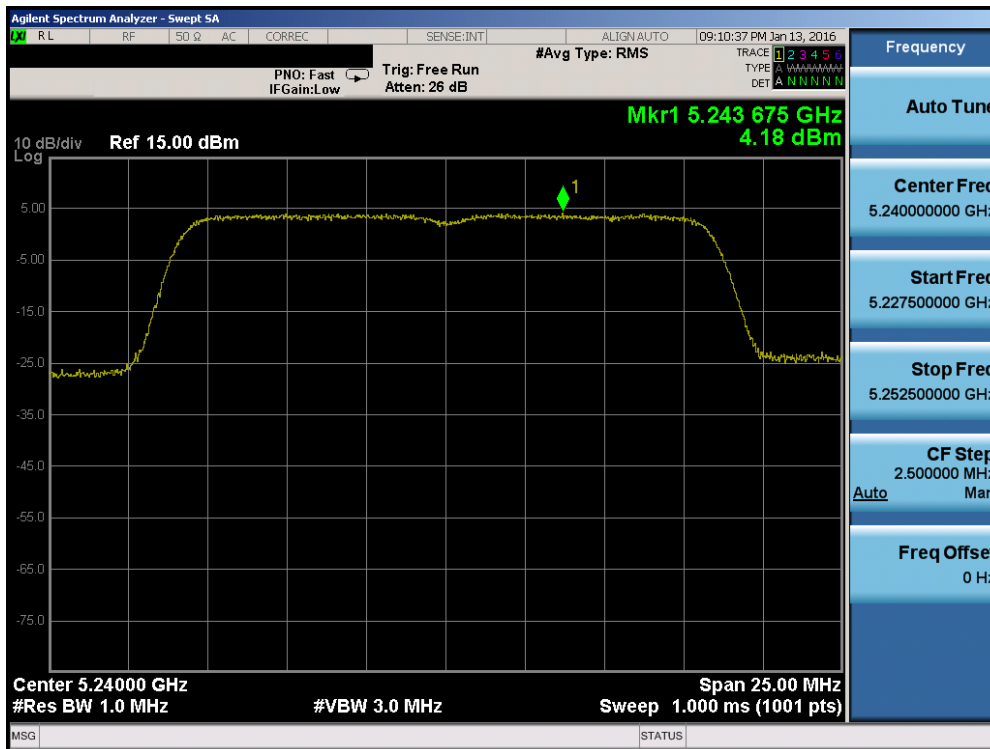


Plot 7-115. Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 36)

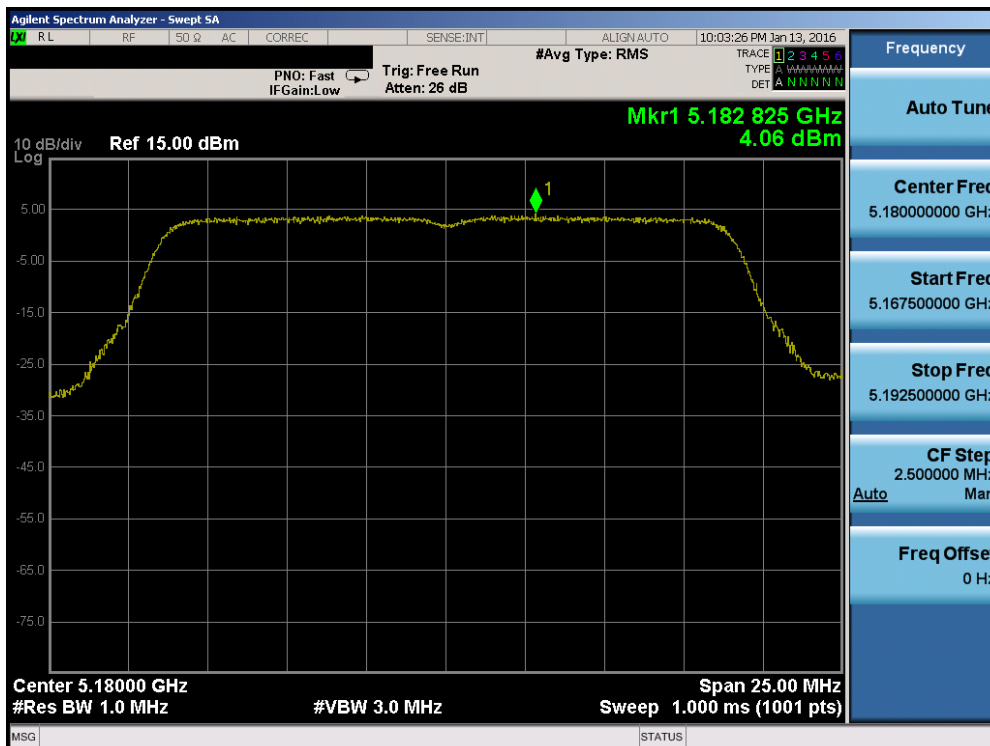


Plot 7-116. Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 40)

FCC ID: ZNFH830	 FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset	Page 88 of 220

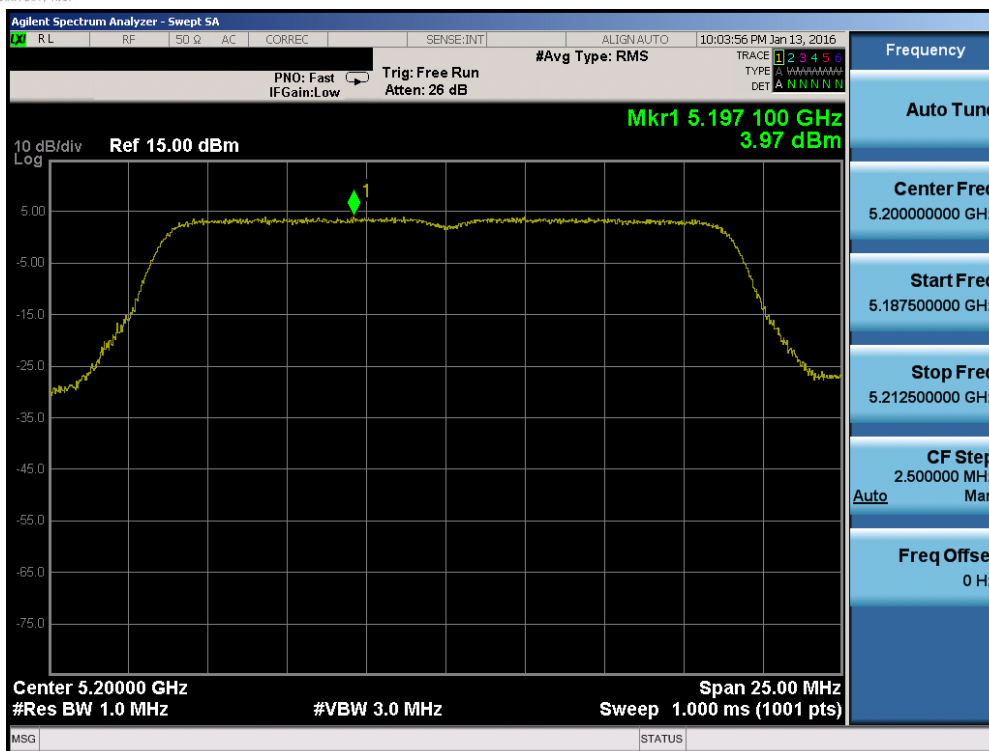


Plot 7-117. Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 48)

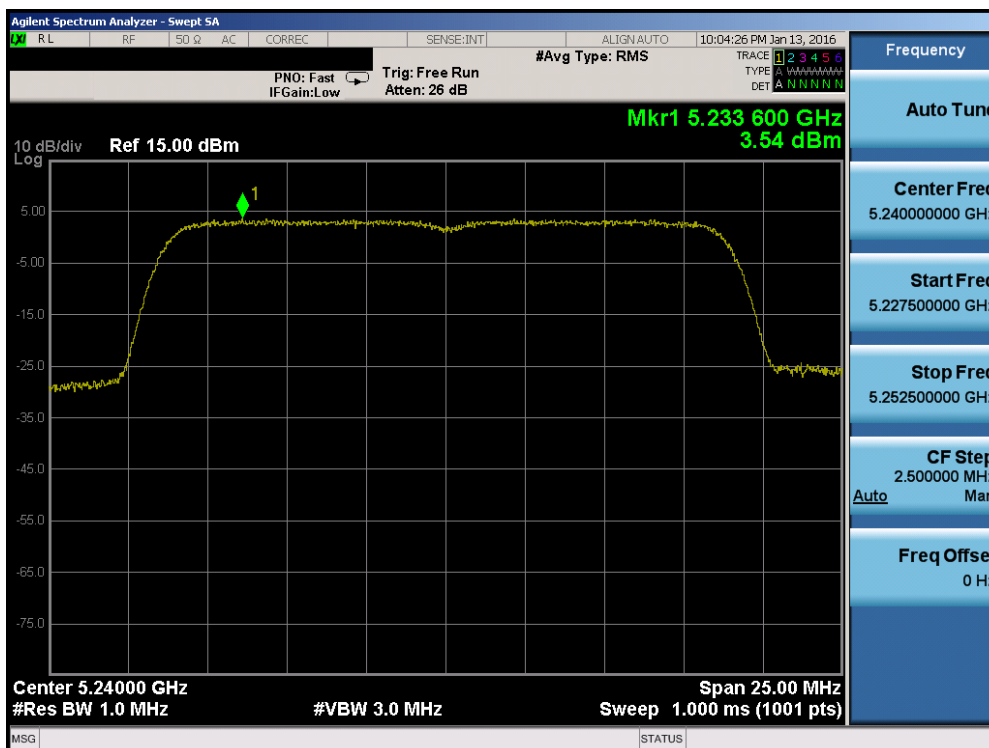


Plot 7-118. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 36)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 89 of 220

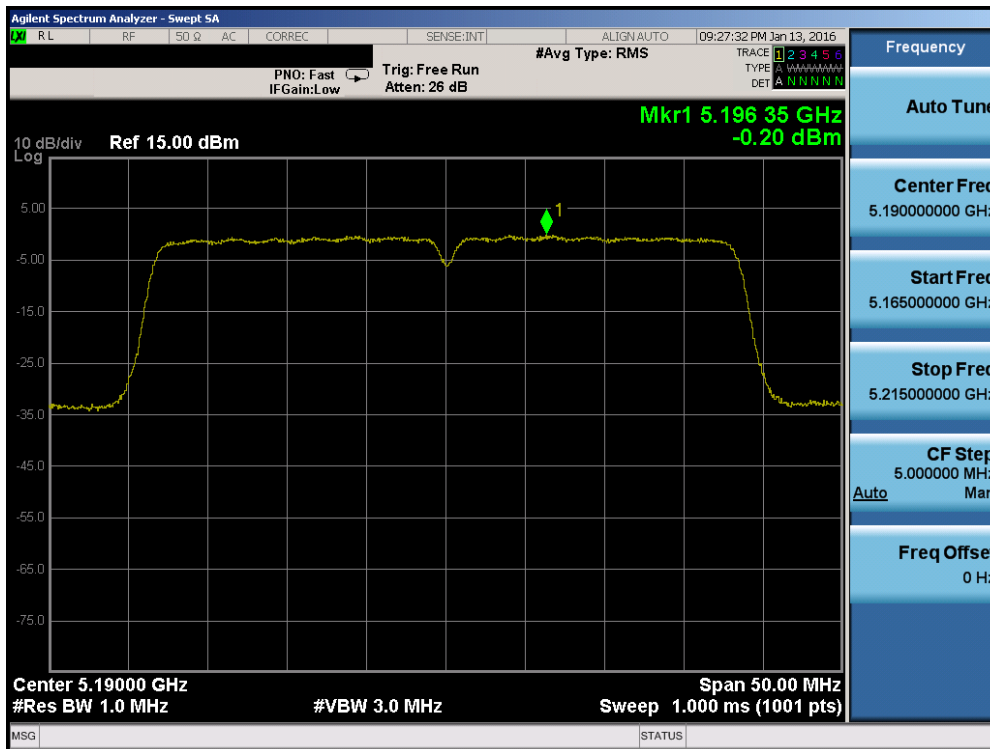


Plot 7-119. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 40)

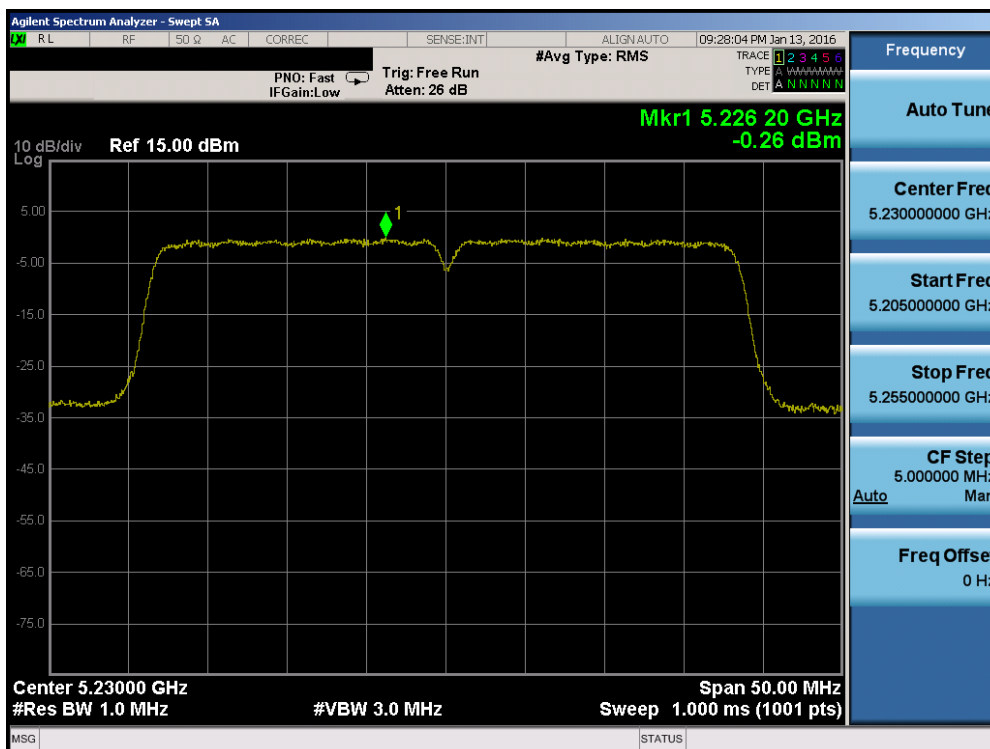


Plot 7-120. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 48)

FCC ID: ZNFB830	 FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset	Page 90 of 220

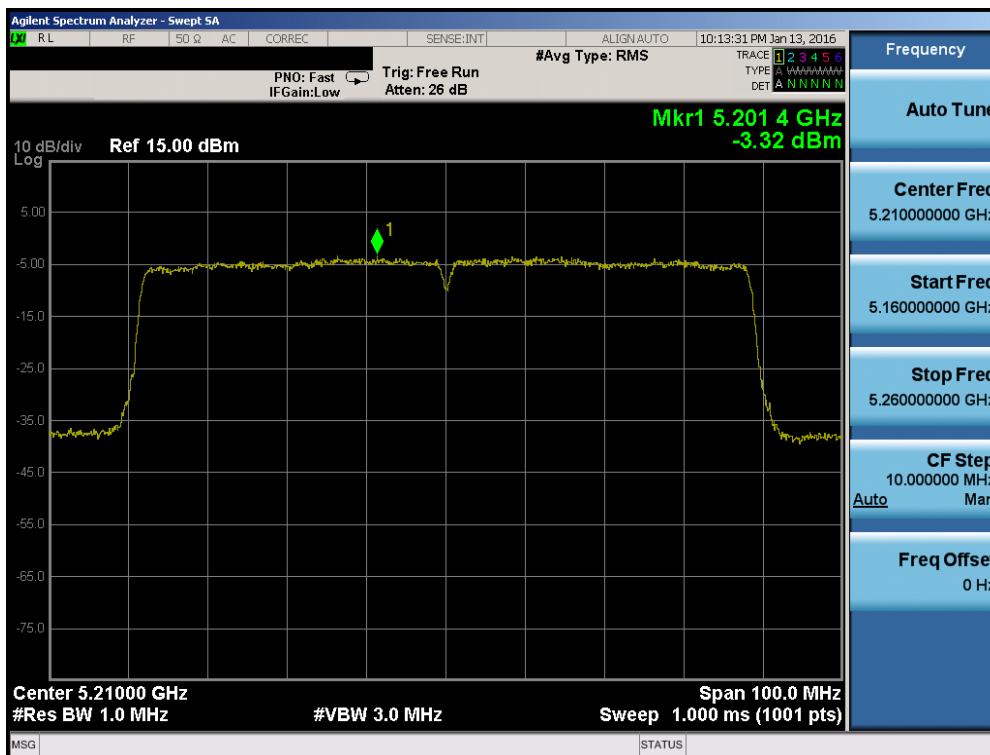


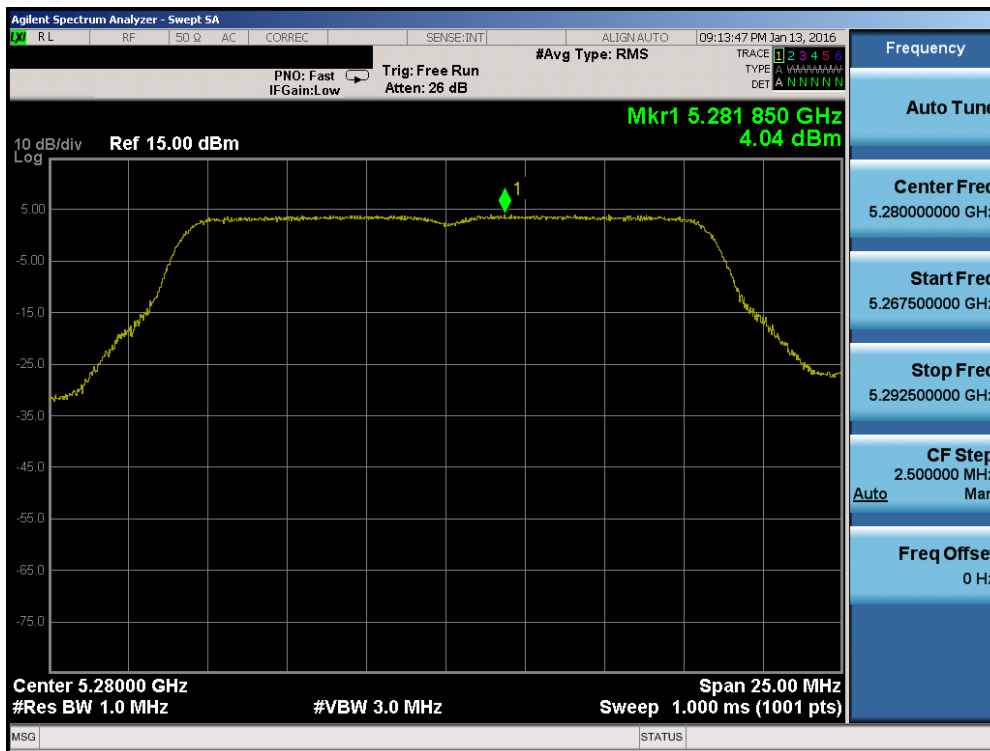
Plot 7-121. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 1) – Ch. 38)



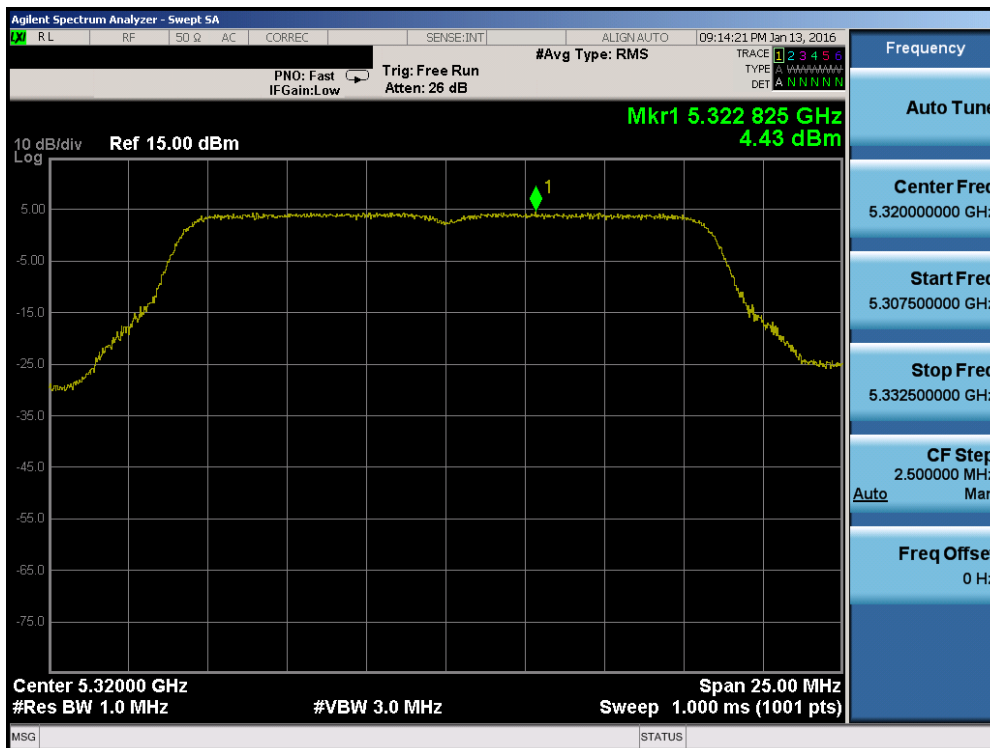
Plot 7-122. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 1) – Ch. 46)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 91 of 220



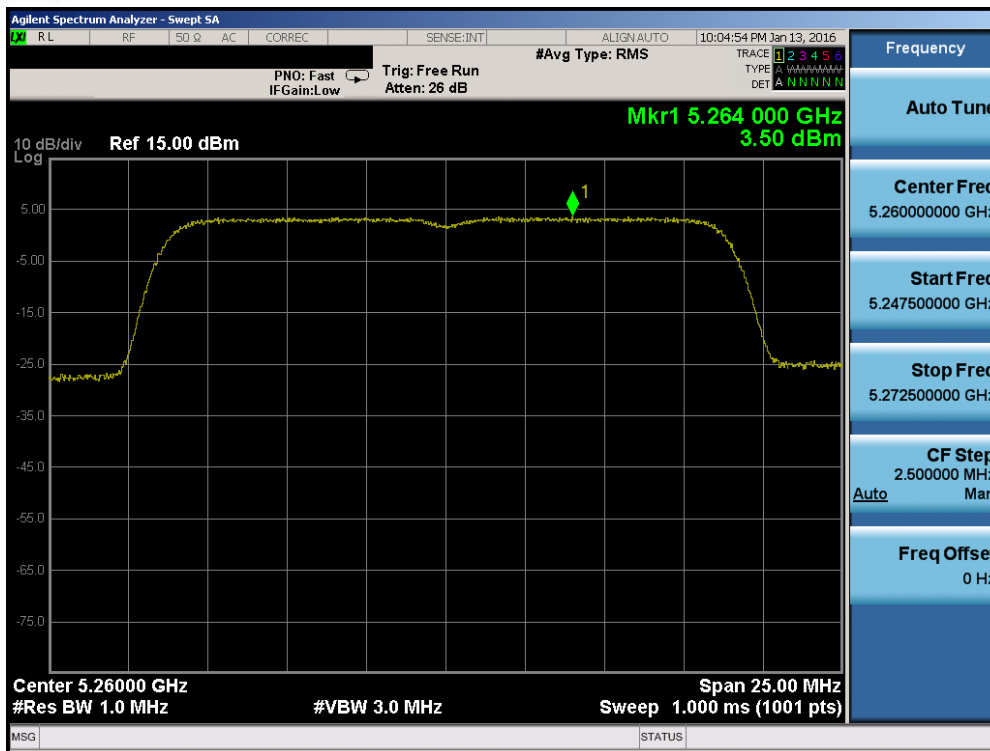


Plot 7-125. Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 56)

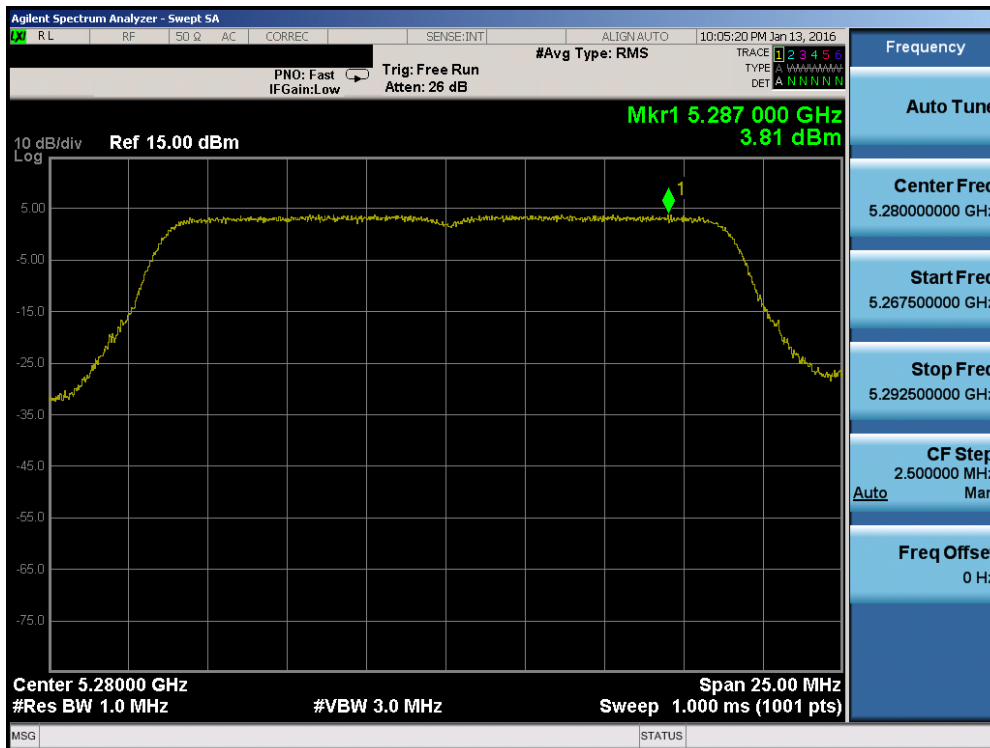


Plot 7-126. Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 64)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 93 of 220

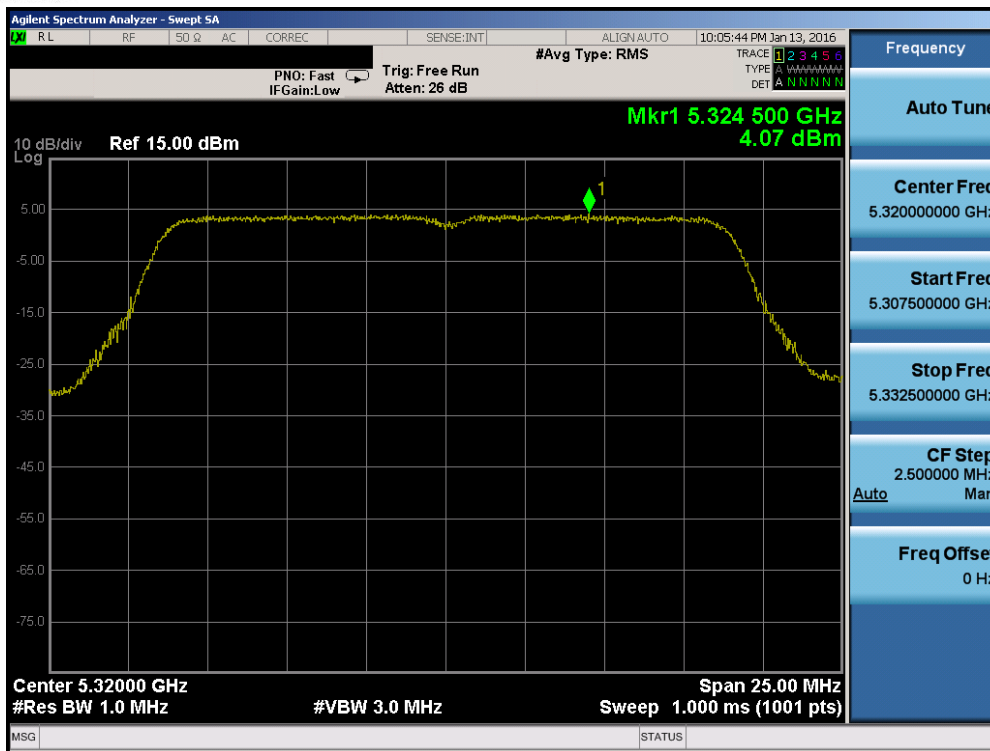


Plot 7-127. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2A) – Ch. 52)

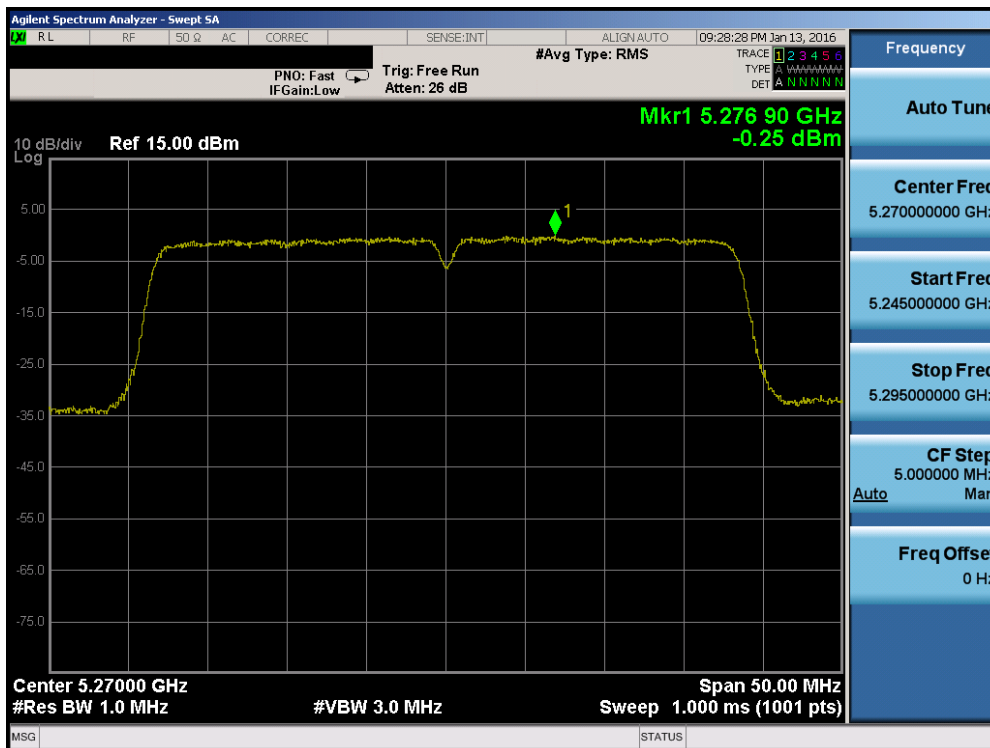


Plot 7-128. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2A) – Ch. 56)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 94 of 220

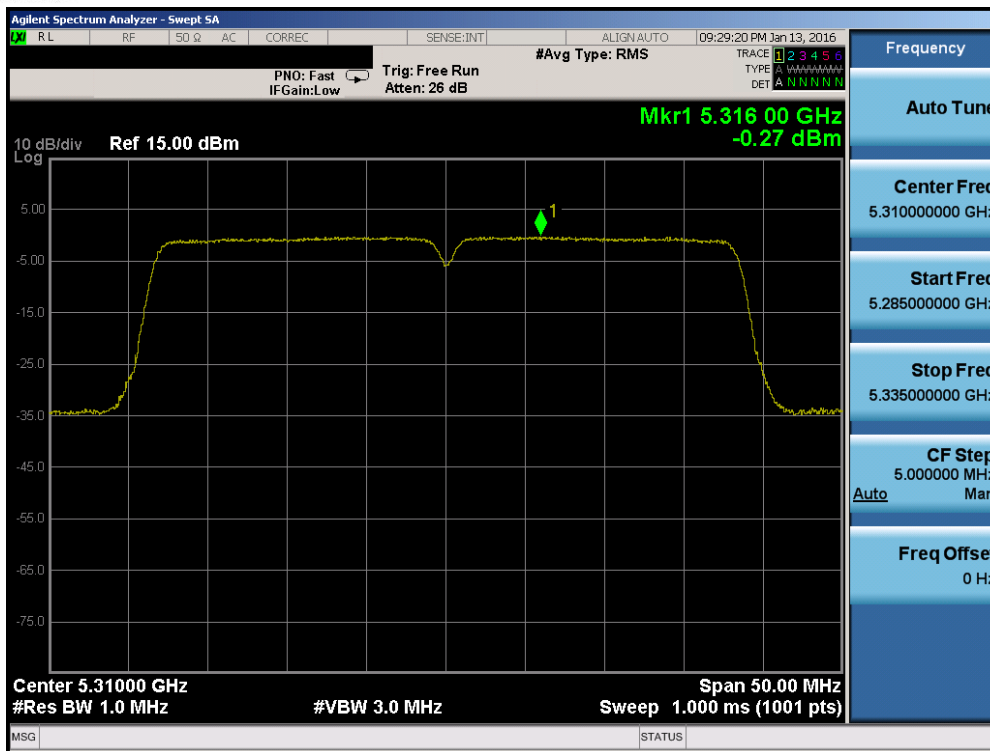


Plot 7-129. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2A) – Ch. 64)

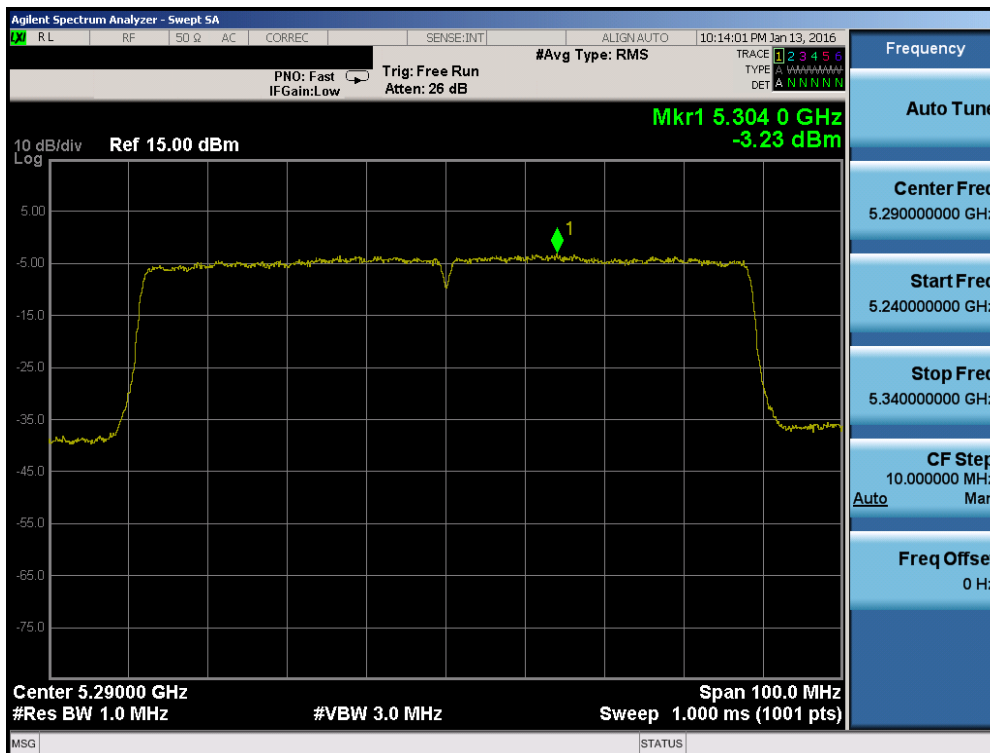


Plot 7-130. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2A) – Ch. 54)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 95 of 220

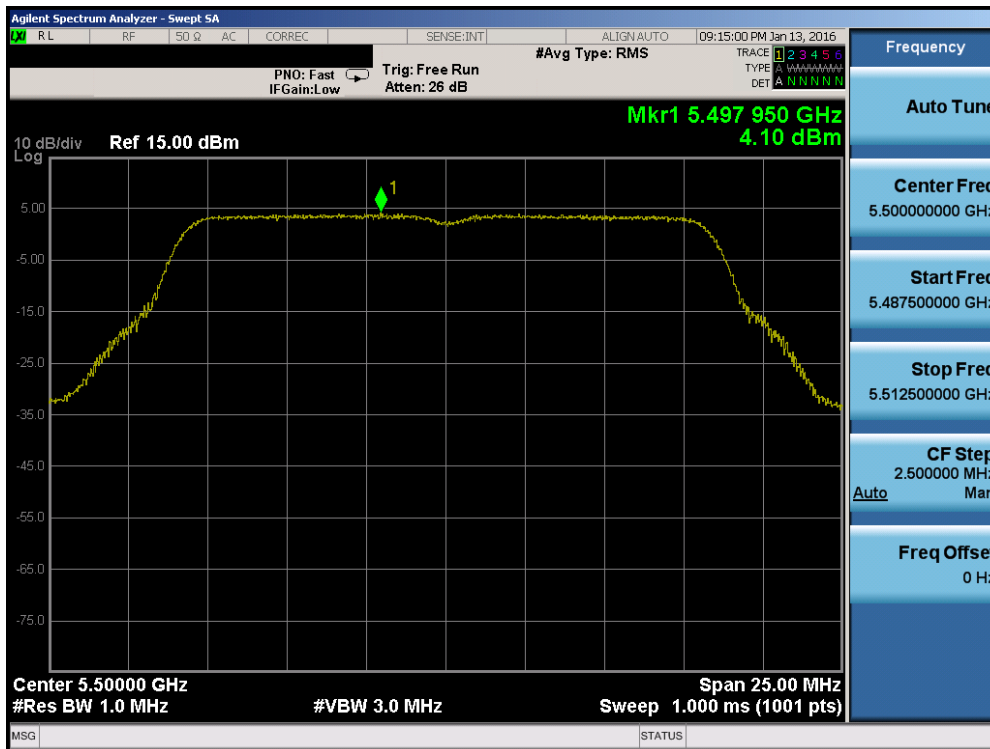


Plot 7-131. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2A) – Ch. 62)

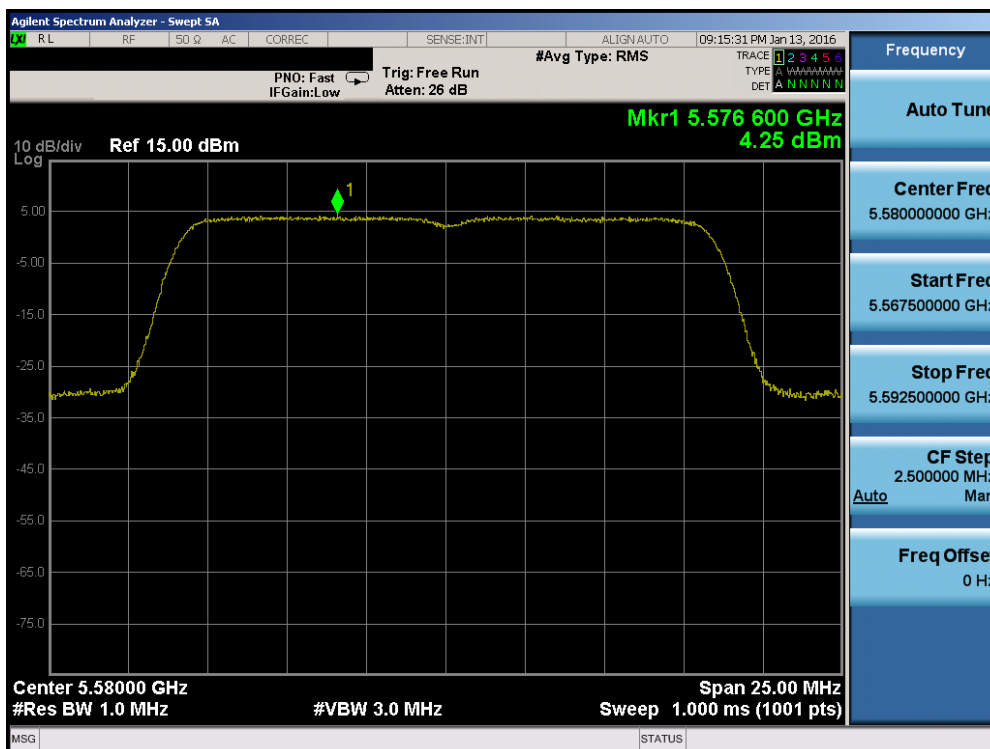


Plot 7-132. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 2A) – Ch. 58)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 96 of 220

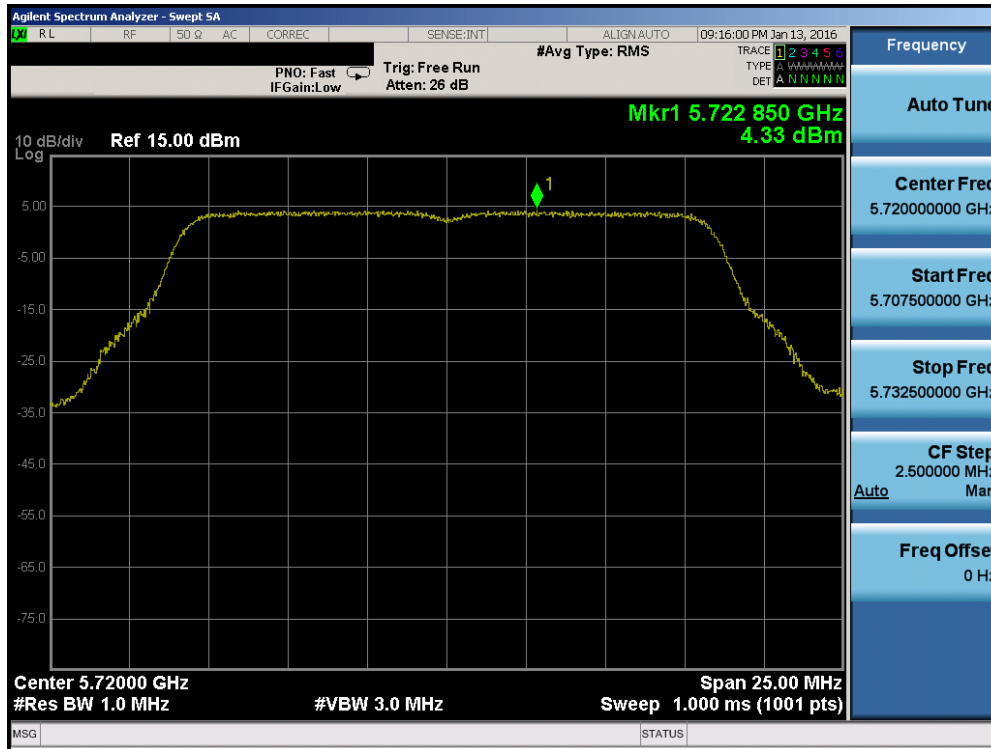


Plot 7-133. Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 100)

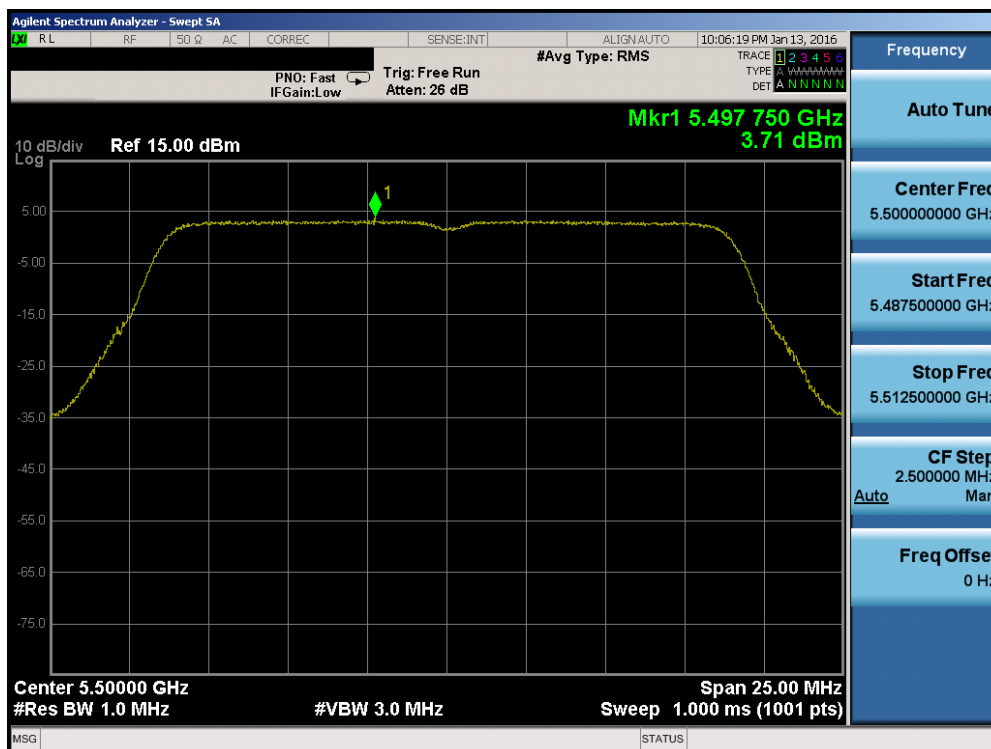


Plot 7-134. Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 116)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 97 of 220

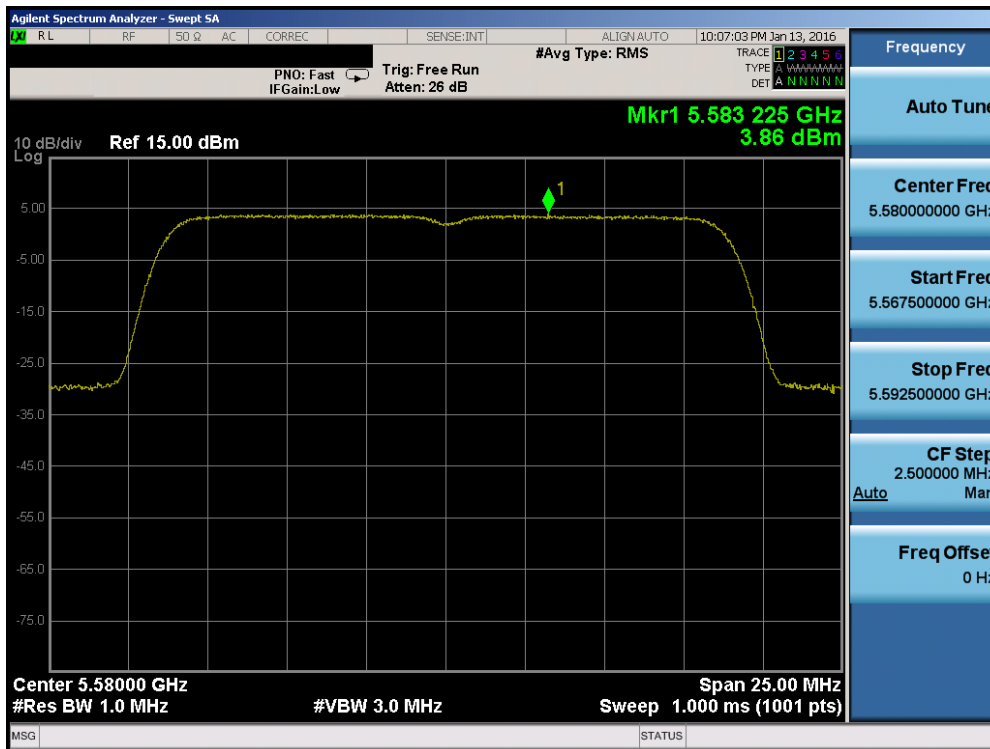


Plot 7-135. Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 144)

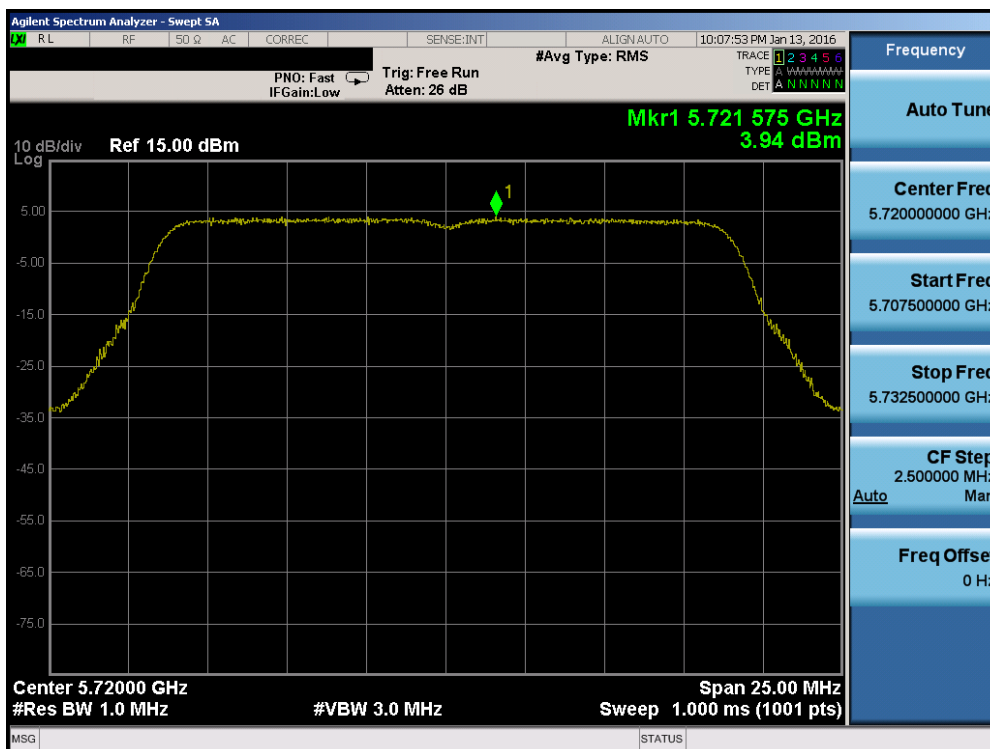


Plot 7-136. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 100)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 98 of 220

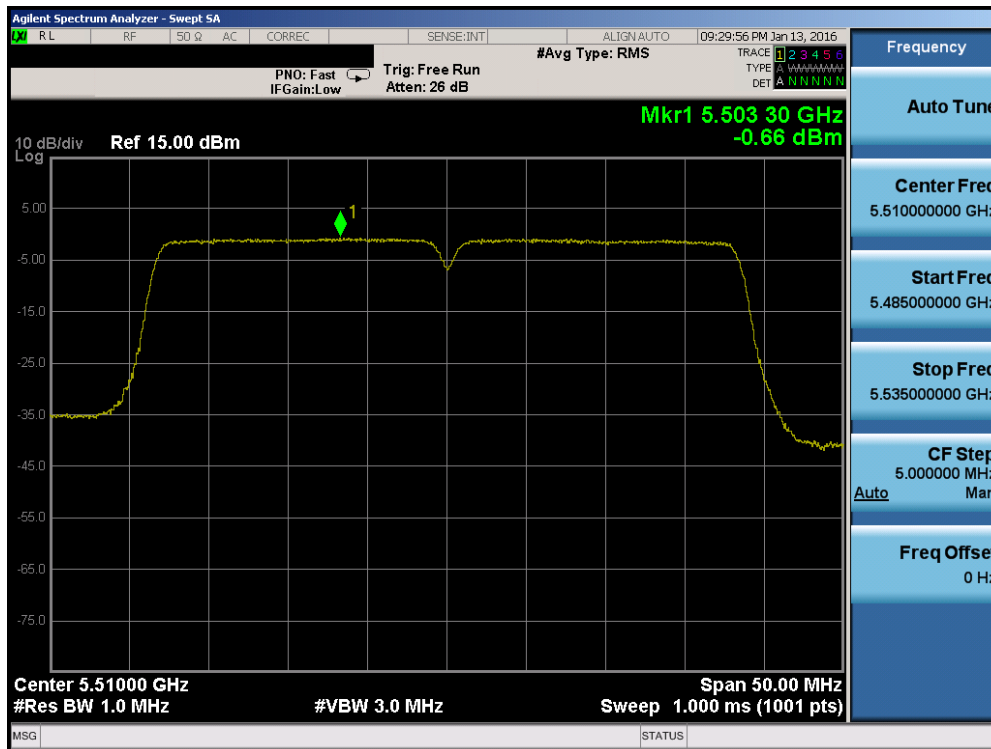


Plot 7-137. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 116)

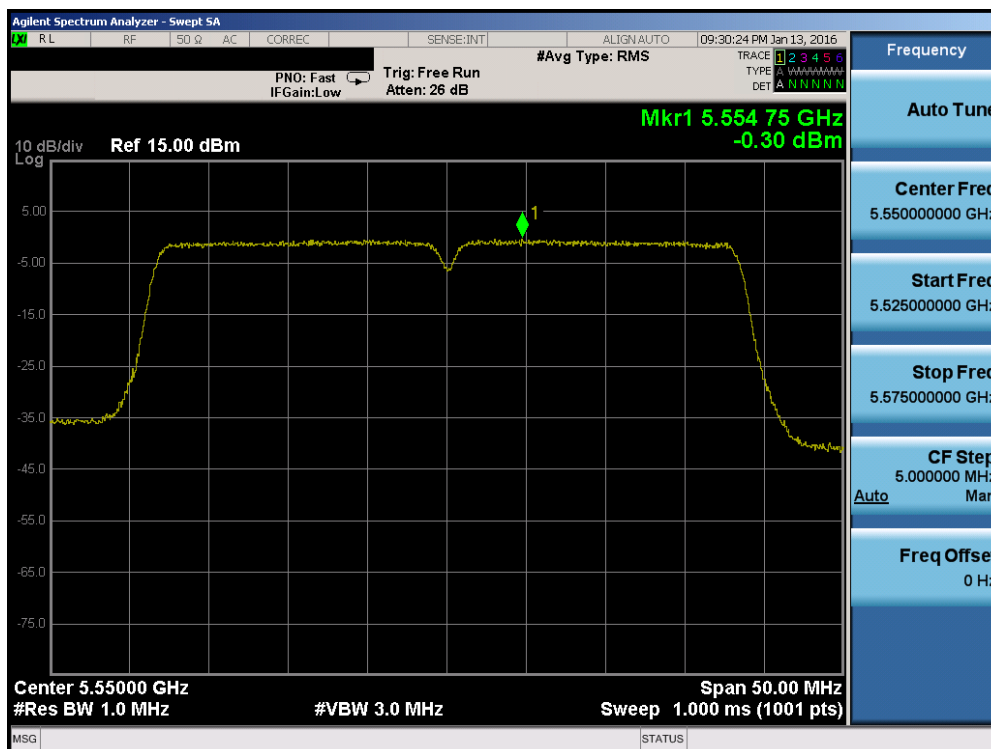


Plot 7-138. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 144)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 99 of 220

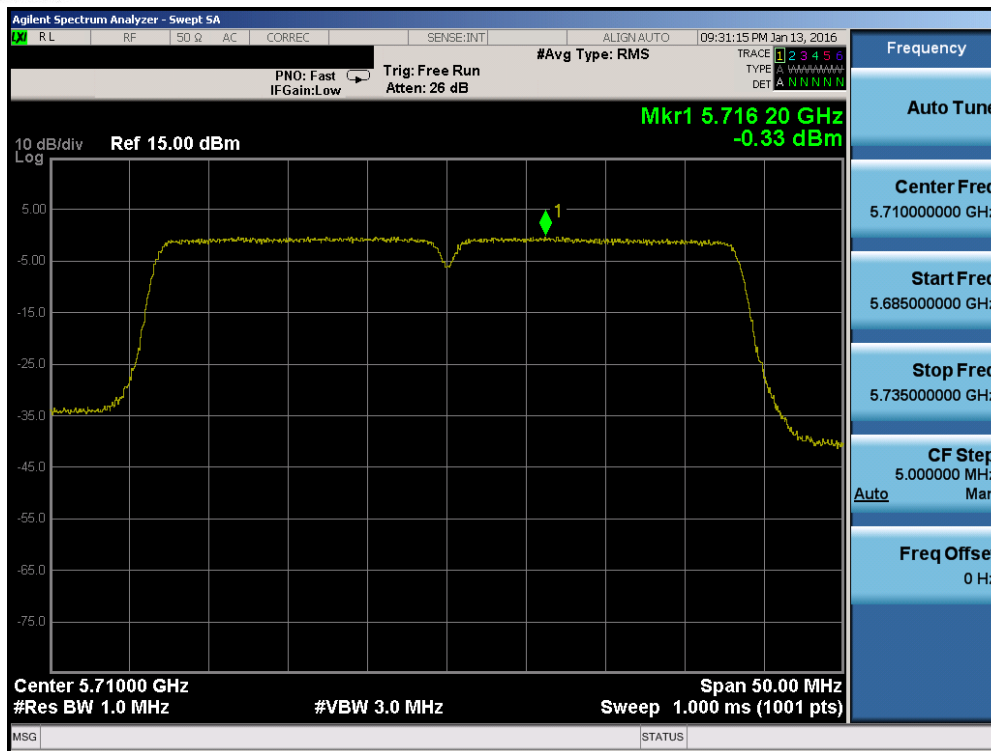


Plot 7-139. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 102)

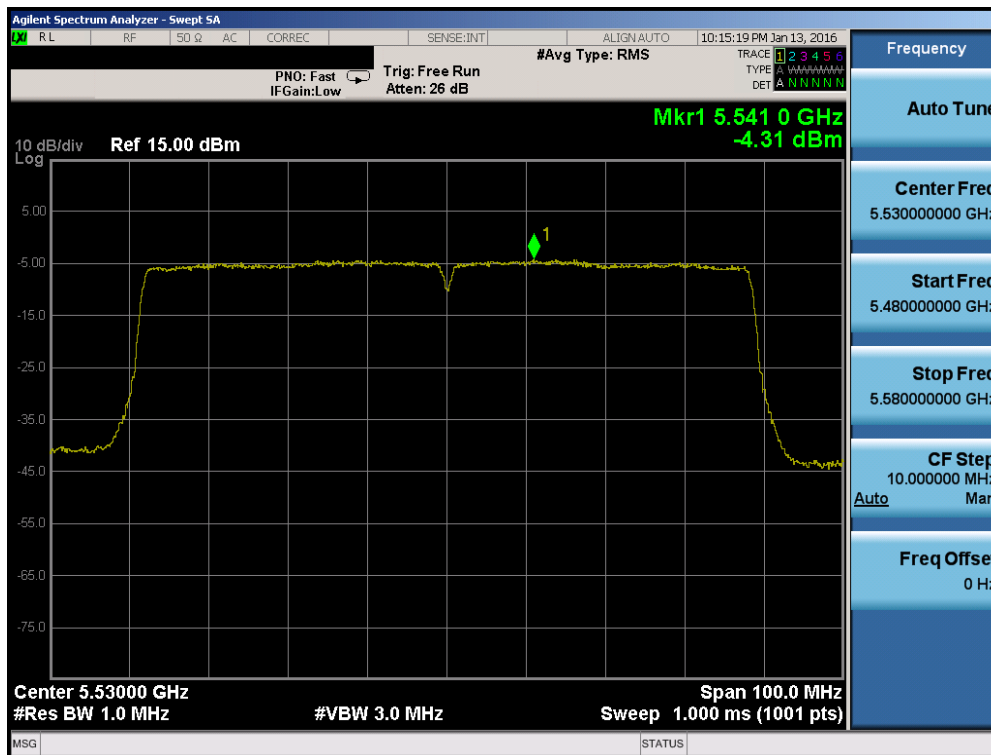


Plot 7-140. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 110)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 100 of 220

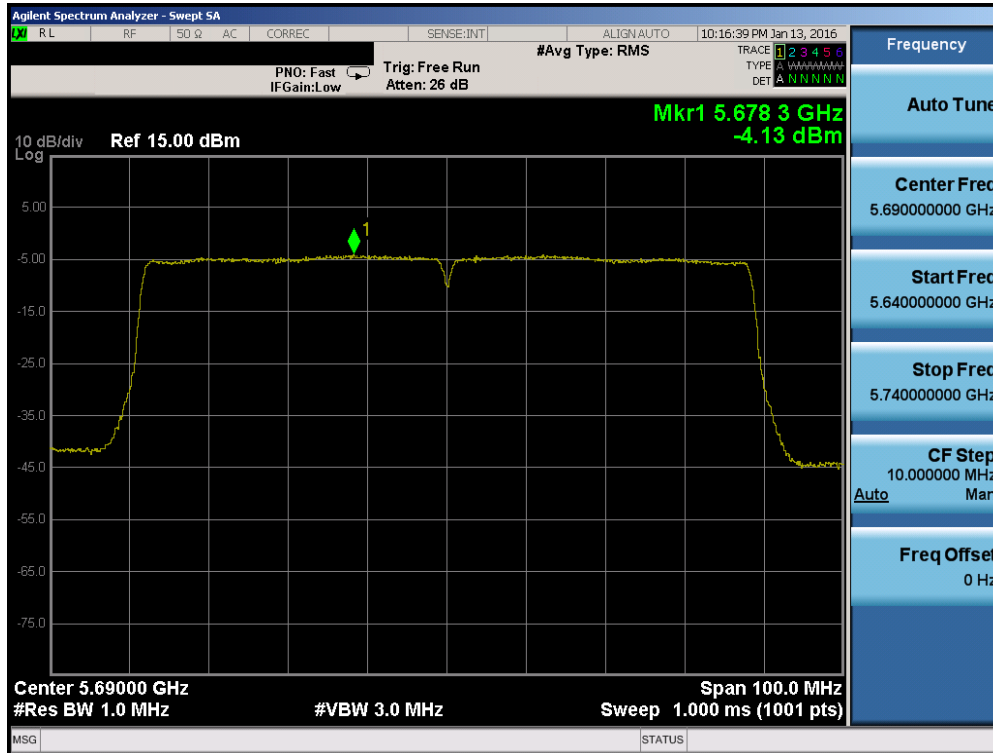


Plot 7-141. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 142)



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

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 101 of 220

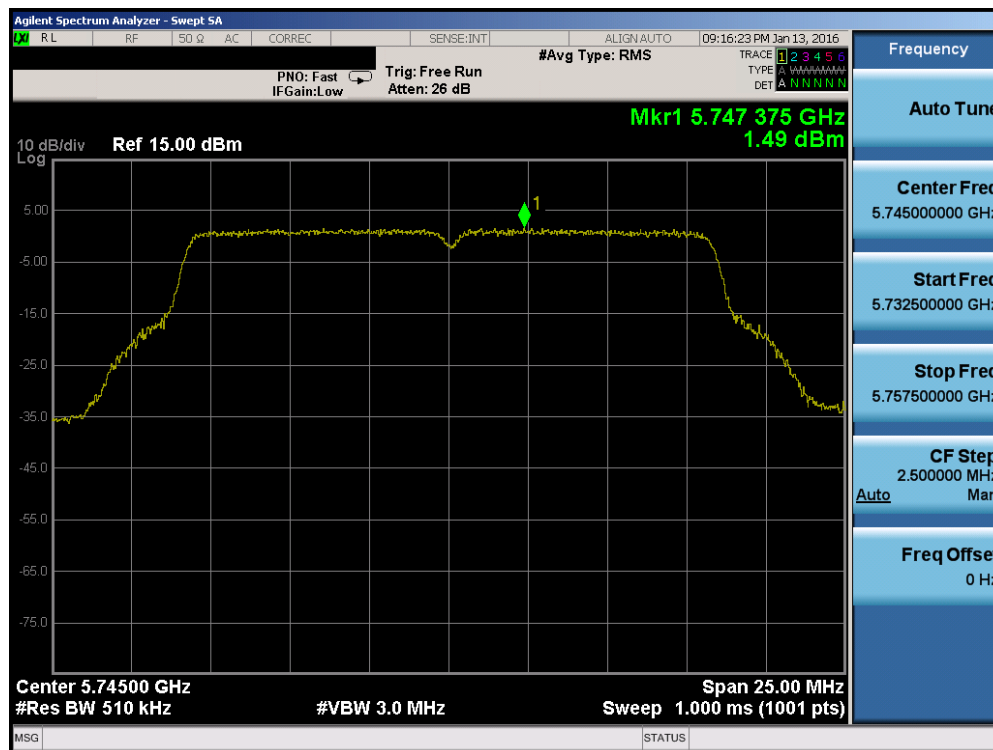


Plot 7-143. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 2C) – Ch. 138)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 102 of 220

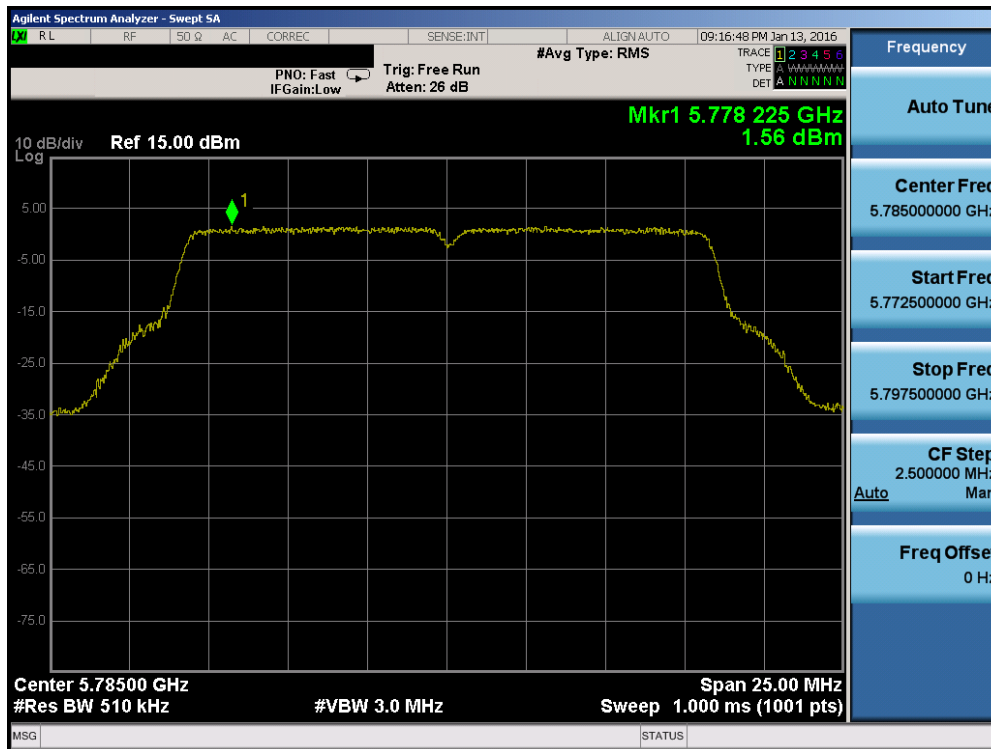
	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured Power Density [dBm]	Max Permissible Power Density [dBm/500kHz]	Margin [dB]	Pass / Fail
Band 3	5745	149	a	6	1.49	30.0	-28.51	Pass
	5785	157	a	6	1.56	30.0	-28.44	Pass
	5825	165	a	6	1.30	30.0	-28.70	Pass
	5745	149	n (20MHz)	6.5/7.2 (MCS0)	1.14	30.0	-28.86	Pass
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	0.97	30.0	-29.04	Pass
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	1.07	30.0	-28.93	Pass
	5755	151	n (40MHz)	13.5/15 (MCS0)	-3.15	30.0	-33.15	Pass
	5795	159	n (40MHz)	13.5/15 (MCS0)	-3.19	30.0	-33.19	Pass
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	-6.66	30.0	-36.66	Pass

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

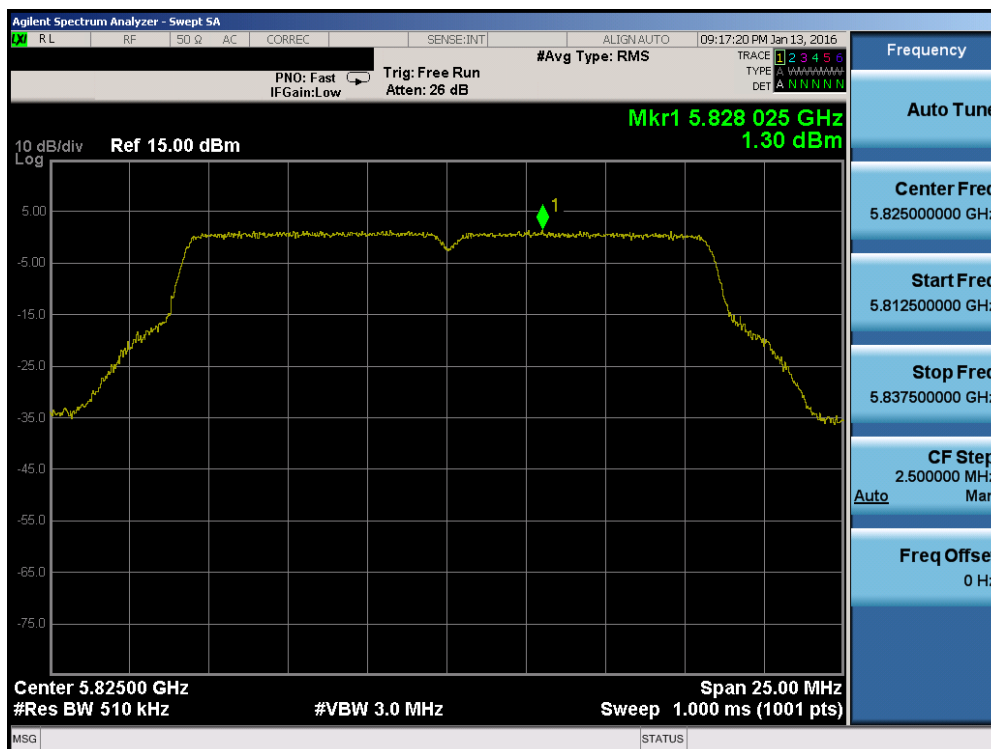


Plot 7-144. Power Spectral Density Plot (802.11a (UNII Band 3) – Ch. 149)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 103 of 220

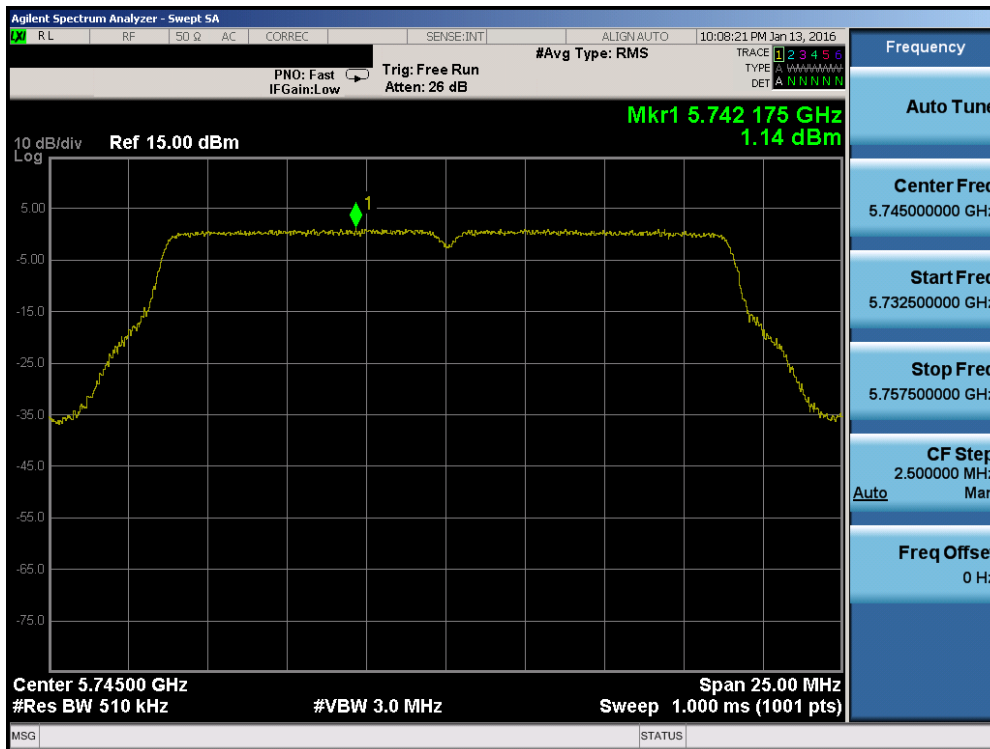


Plot 7-145. Power Spectral Density Plot (802.11a (UNII Band 3) – Ch. 157)

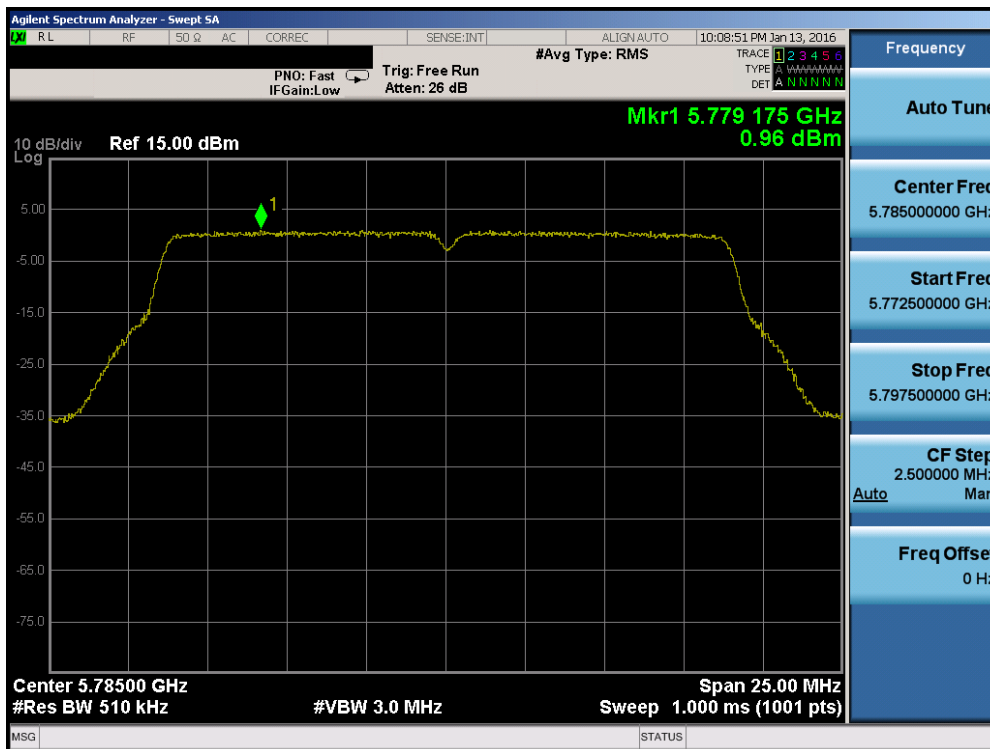


Plot 7-146. Power Spectral Density Plot (802.11a (UNII Band 3) – Ch. 165)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 104 of 220

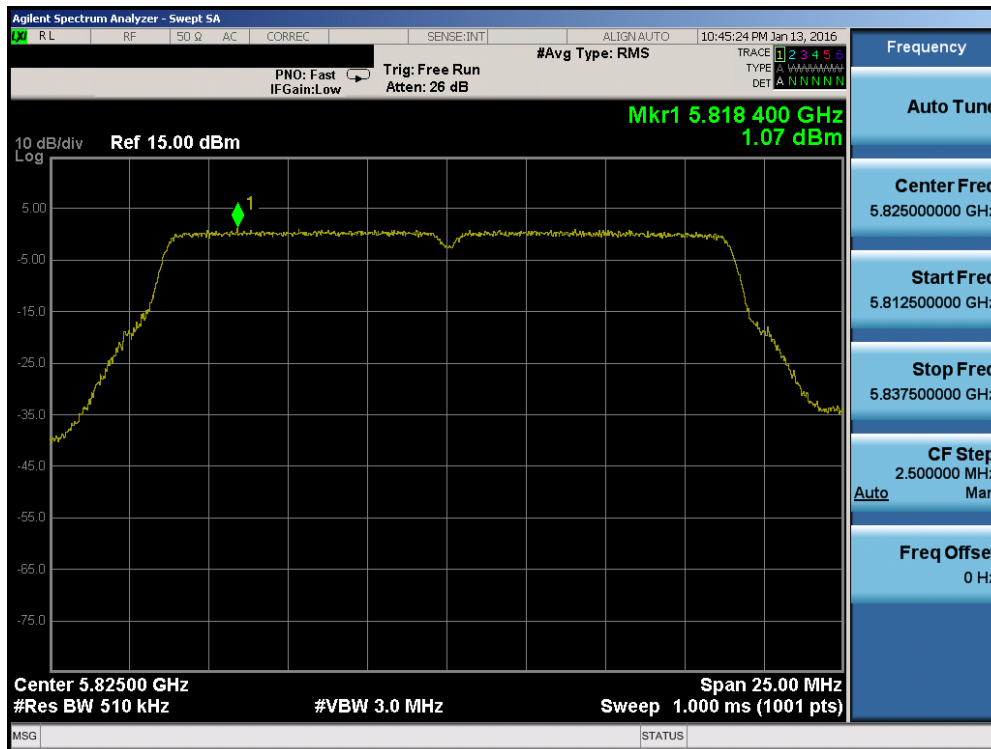


Plot 7-147. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 149)

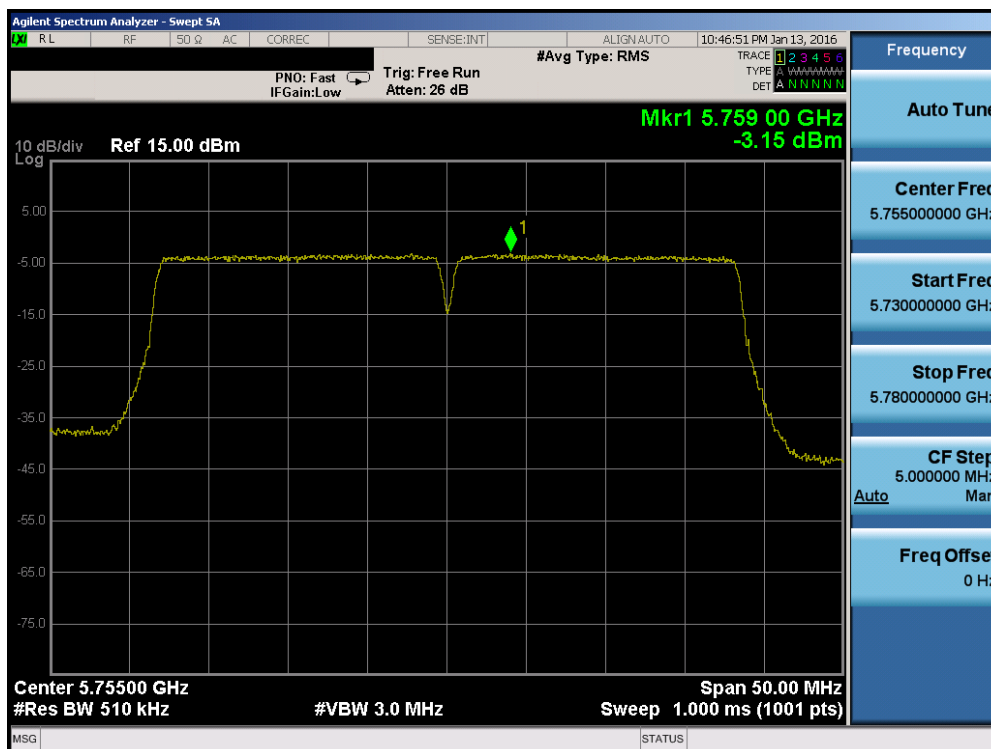


Plot 7-148. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 157)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 105 of 220

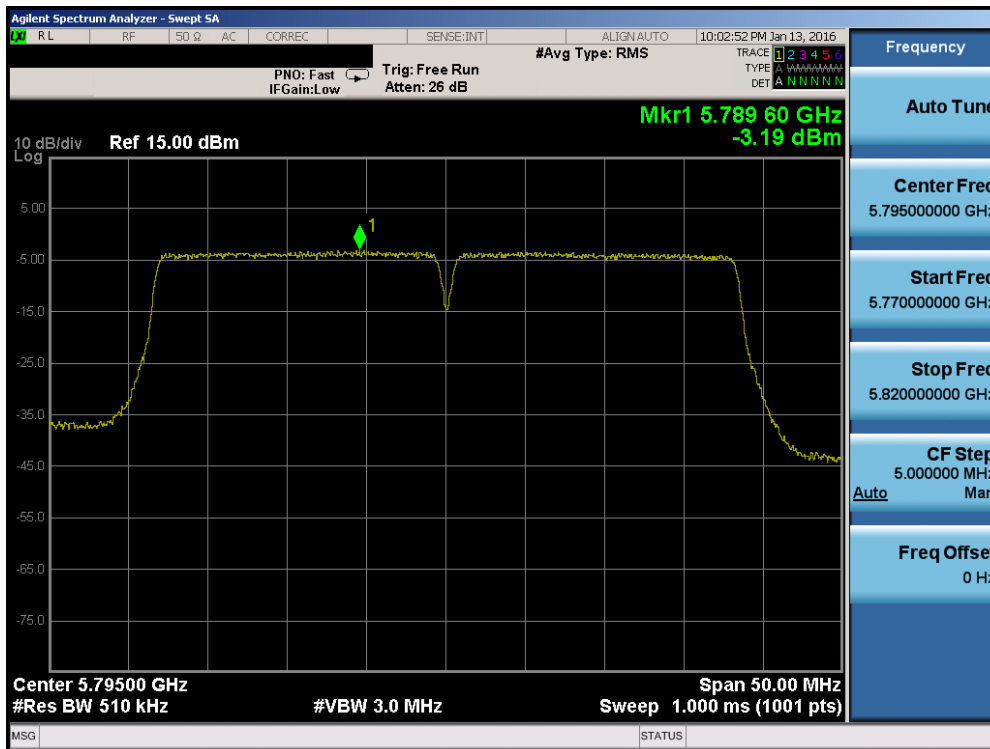


Plot 7-149. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 165)

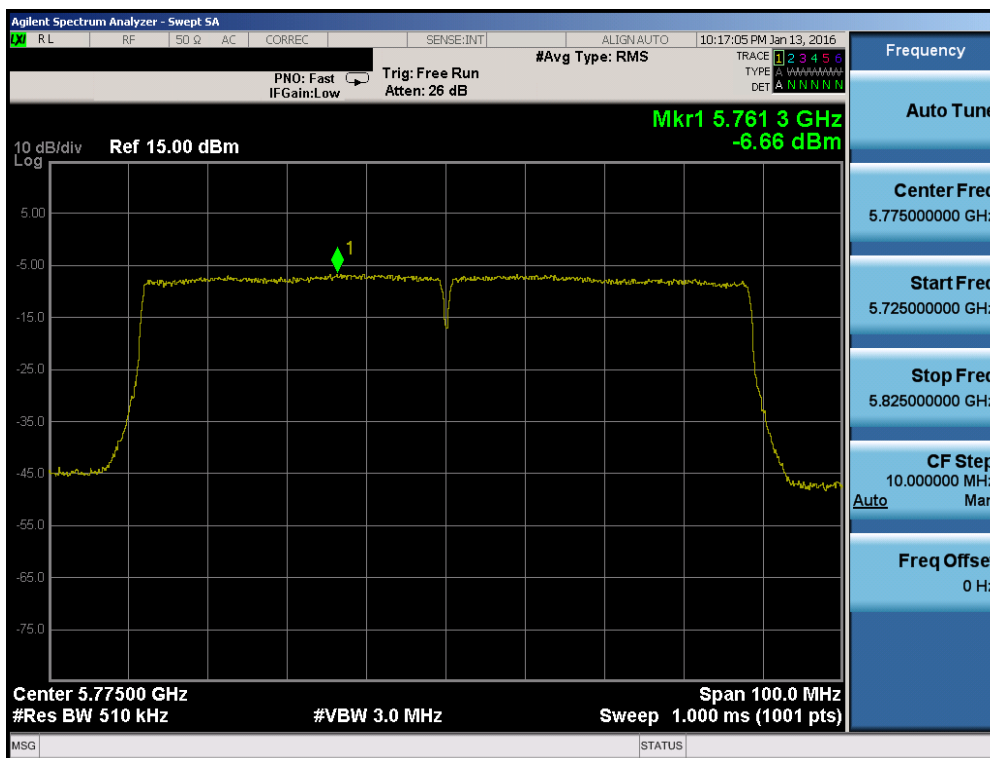


Plot 7-150. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 151)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 106 of 220



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



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

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 107 of 220

Summed MIMO Power Spectral Density Measurements

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Antenn-1 Power Density [dBm]	Antenn-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Max Permissible Power Density [dBm/MHz]	Margin [dB]	Pass / Fail
Band 1	5180	36	n (20MHz)	6.5/7.2 (MCS0)	2.53	4.06	6.37	11.0	-4.63	Pass
	5200	40	n (20MHz)	6.5/7.2 (MCS0)	3.67	3.97	6.83	11.0	-4.17	Pass
	5240	48	n (20MHz)	6.5/7.2 (MCS0)	3.51	3.54	6.54	11.0	-4.46	Pass
	5190	38	n (40MHz)	13.5/15 (MCS0)	-1.57	-0.20	2.18	11.0	-8.82	Pass
	5230	46	n (40MHz)	13.5/15 (MCS0)	-0.64	-0.26	2.57	11.0	-8.43	Pass
	5210	42	ac (80MHz)	29.3/32.5 (MCS0)	-4.66	-3.32	-0.93	11.0	-11.93	Pass
Band 2A	5260	52	n (20MHz)	6.5/7.2 (MCS0)	3.73	3.50	6.62	11.0	-4.38	Pass
	5280	56	n (20MHz)	6.5/7.2 (MCS0)	3.42	3.81	6.63	11.0	-4.37	Pass
	5320	64	n (20MHz)	6.5/7.2 (MCS0)	3.92	4.07	7.01	11.0	-3.99	Pass
	5270	54	n (40MHz)	13.5/15 (MCS0)	-0.92	-0.25	2.44	11.0	-8.56	Pass
	5310	62	n (40MHz)	13.5/15 (MCS0)	-0.45	-0.27	2.65	11.0	-8.35	Pass
	5290	58	ac (80MHz)	29.3/32.5 (MCS0)	-4.07	-3.23	-0.62	11.0	-11.62	Pass
Band 2C	5500	100	n (20MHz)	6.5/7.2 (MCS0)	4.13	3.71	6.93	11.0	-4.07	Pass
	5580	116	n (20MHz)	6.5/7.2 (MCS0)	4.07	3.86	6.97	11.0	-4.03	Pass
	5720	144	n (20MHz)	6.5/7.2 (MCS0)	3.36	3.94	6.67	11.0	-4.33	Pass
	5510	102	n (40MHz)	13.5/15 (MCS0)	-0.38	-0.66	2.49	11.0	-8.51	Pass
	5550	110	n (40MHz)	13.5/15 (MCS0)	-0.28	-0.30	2.72	11.0	-8.28	Pass
	5710	142	n (40MHz)	13.5/15 (MCS0)	-1.28	-0.33	2.23	11.0	-8.77	Pass
	5530	106	ac (80MHz)	29.3/32.5 (MCS0)	-3.96	-4.31	-1.12	11.0	-12.12	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)	1.50	1.14	4.34	30.0	-25.66	Pass
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	1.56	0.97	4.28	30.0	-25.72	Pass
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	-1.52	1.07	2.98	30.0	-27.02	Pass
	5755	151	n (40MHz)	13.5/15 (MCS0)	-2.41	-3.15	0.25	30.0	-29.75	Pass
	5795	159	n (40MHz)	13.5/15 (MCS0)	-2.72	-3.19	0.06	30.0	-29.94	Pass
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	-5.87	-6.66	-3.24	30.0	-33.24	Pass

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

Note:

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

Sample MIMO Calculation:

At 5180MHz the average conducted power spectral density was measured to be 2.53 dBm for Antenna-1 and 4.06 dBm for Antenna-2.

$$\text{Antenna 1} + \text{Antenna 2} = \text{MIMO}$$

$$(2.53 \text{ dBm} + 4.06 \text{ dBm}) = (1.79 \text{ mW} + 2.55 \text{ mW}) = 4.34 \text{ mW} = 6.37 \text{ dBm}$$

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7.6 Frequency Stability

§15.407(g)

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between -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)	5,179,999,833	-167	-0.00000322
100 %		- 30	5,179,999,744	-256	-0.00000494
100 %		- 20	5,179,999,971	-29	-0.00000056
100 %		- 10	5,180,000,064	64	0.00000124
100 %		0	5,180,000,052	52	0.00000100
100 %		+ 10	5,180,000,060	60	0.00000116
100 %		+ 20	5,180,000,053	53	0.00000102
100 %		+ 30	5,180,000,029	29	0.00000056
100 %		+ 40	5,180,000,058	58	0.00000112
100 %		+ 50	5,179,999,946	-54	-0.00000104
BATT. ENDPOINT	3.40	+ 20	5,179,999,994	-6	-0.00000012

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

Note:

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

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Frequency Stability

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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)	5,260,000,058	58	0.00000110
100 %		- 30	5,259,999,848	-152	-0.00000289
100 %		- 20	5,260,000,097	97	0.00000184
100 %		- 10	5,260,000,138	138	0.00000262
100 %		0	5,260,000,041	41	0.00000078
100 %		+ 10	5,259,999,817	-183	-0.00000348
100 %		+ 20	5,260,000,324	324	0.00000616
100 %		+ 30	5,260,000,235	235	0.00000447
100 %		+ 40	5,259,999,919	-81	-0.00000154
100 %		+ 50	5,260,000,060	60	0.00000114
BATT. ENDPOINT	3.40	+ 20	5,259,999,880	-120	-0.00000228

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

Note:

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

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Frequency Stability

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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)	5,500,000,089	89	0.00000162
100 %		- 30	5,500,000,133	133	0.00000242
100 %		- 20	5,500,000,172	172	0.00000313
100 %		- 10	5,499,999,796	-204	-0.00000371
100 %		0	5,499,999,769	-231	-0.00000420
100 %		+ 10	5,499,999,877	-123	-0.00000224
100 %		+ 20	5,499,999,959	-41	-0.00000075
100 %		+ 30	5,499,999,976	-24	-0.00000044
100 %		+ 40	5,500,000,036	36	0.00000065
100 %		+ 50	5,499,999,839	-161	-0.00000293
BATT. ENDPOINT	3.40	+ 20	5,500,000,038	38	0.00000069

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

Note:

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

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Frequency Stability

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

OPERATING FREQUENCY: 5,745,000,000 Hz
 CHANNEL: 149
 REFERENCE VOLTAGE: 3.80 VDC

VOLTAGE (%)	POWER (VDC)	TEMP ($^{\circ}\text{C}$)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	5,745,000,179	179	0.00000312
100 %		- 30	5,744,999,949	-51	-0.00000089
100 %		- 20	5,744,999,688	-312	-0.00000543
100 %		- 10	5,744,999,845	-155	-0.00000270
100 %		0	5,744,999,845	-155	-0.00000270
100 %		+ 10	5,744,999,989	-11	-0.00000019
100 %		+ 20	5,744,999,900	-100	-0.00000174
100 %		+ 30	5,745,000,081	81	0.00000141
100 %		+ 40	5,745,000,132	132	0.00000230
100 %		+ 50	5,745,000,022	22	0.00000038
BATT. ENDPOINT	3.40	+ 20	5,745,000,387	387	0.00000674

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

Note:

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

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7.7 Radiated Spurious Emission Measurements – Above 1GHz

§15.407(b.1)(b.6) §15.205 §15.209

Test Overview and Limit

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in KDB 789033 D02 v01, and at the appropriate frequencies. All channels, modes (e.g. 802.11a, 802.11n (20MHz BW), 802.11n (40MHz BW), and 802.11ac (80MHz)), and modulations/data rates were investigated among all UNII bands. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.

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

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

Table 7-27. Radiated Limits

Test Procedures Used

KDB 789033 D02 v01 – Section G

Test Settings

Average Measurements above 1GHz (Method AD)

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = power average (RMS)
5. Number of measurement points = 1001 (Number of points must be $\geq 2 \times \text{span/RBW}$)
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.

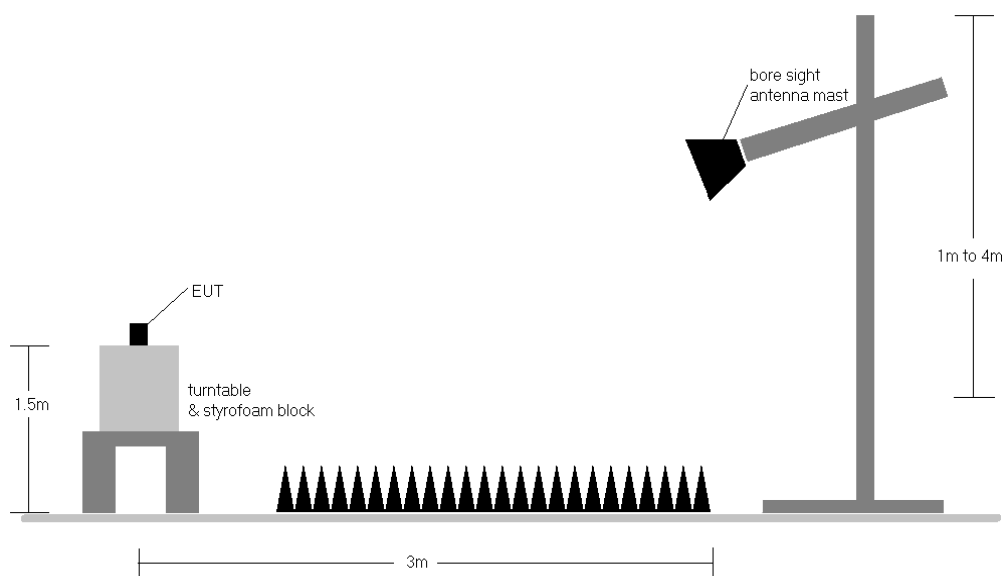


Figure 7-5. Test Instrument & Measurement Setup

Test Notes

1. All radiated spurious emissions levels were measured in a radiated test setup per the guidance of KDB 789033 D02 v01 Section H.
2. All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 7-27.
3. All spurious emissions lying in restricted bands specified in §15.205 are below the limit shown in Table 6-11. All spurious emissions that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dBμV/m.

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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. Since the emissions produced from MIMO operation were found to be more than 20dB below the limit, the MIMO emissions are not reported.
9. The wide spectrum spurious emissions plots shown on the following pages are used only for the purpose of emission identification. Any emissions found to be within 20dB of the limit are fully investigated and the results are shown in this section. Rohde & Schwarz EMC32, Version 9.15.00 automated test software was used to perform the Radiated Spurious Emissions Pre-Scan testing.

Sample Calculations

Determining Spurious Emissions Levels

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

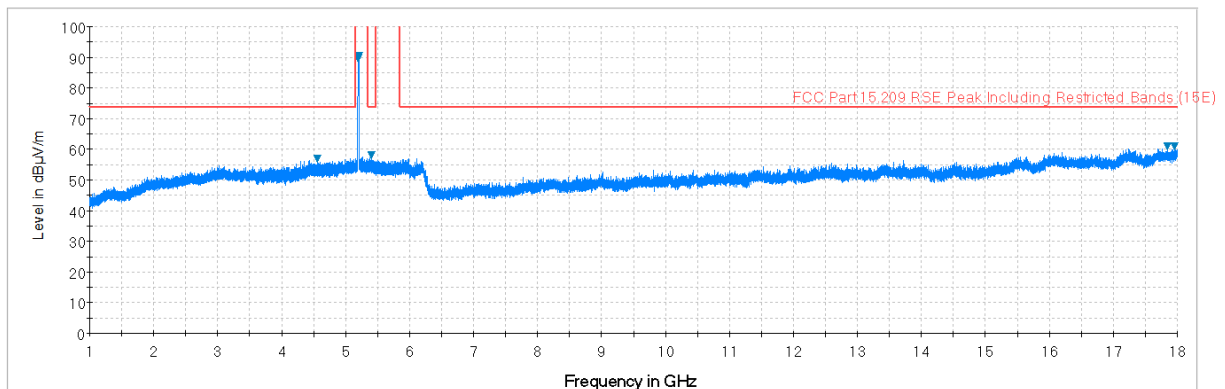
Radiated Band Edge Measurement Offset

- The amplitude offset shown in the radiated restricted band edge plots in Section 6.8 was calculated using the formula:

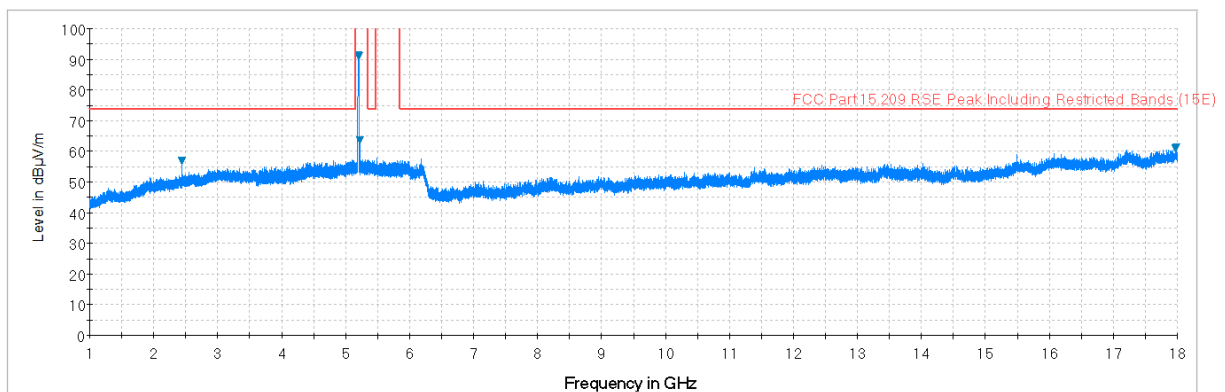
$$\text{Offset (dB)} = (\text{Antenna Factor} + \text{Cable Loss} + 10 \text{ dB Attenuator}) - \text{Preamplifier Gain}$$

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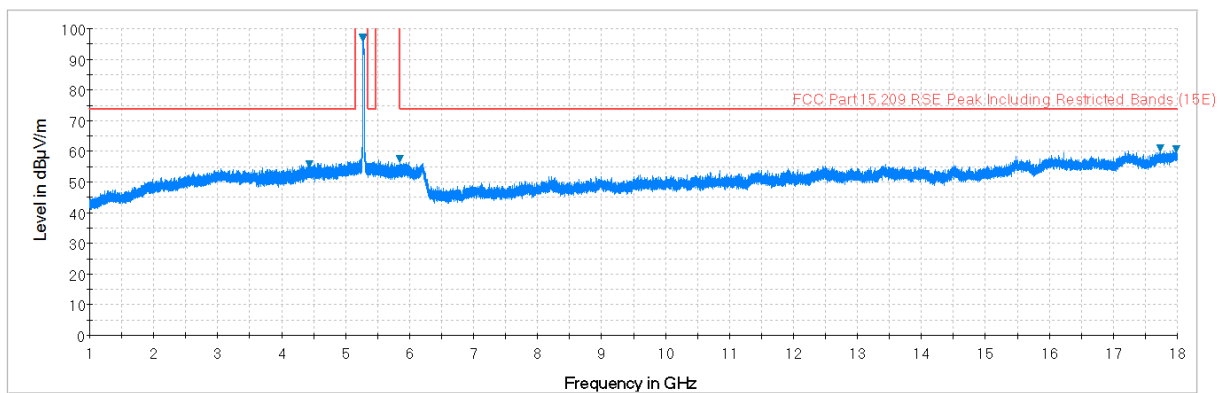
7.7.1 Antenna-1 Radiated Spurious Emission Measurements



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

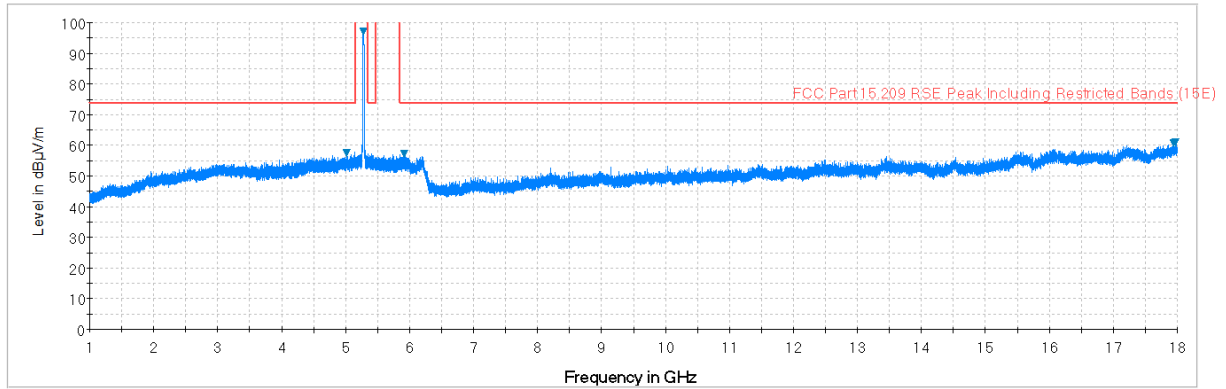


Plot 7-154. Radiated Spurious Plot above 1GHz (802.11a – U1 Ch. 40, Ant. Pol. V)

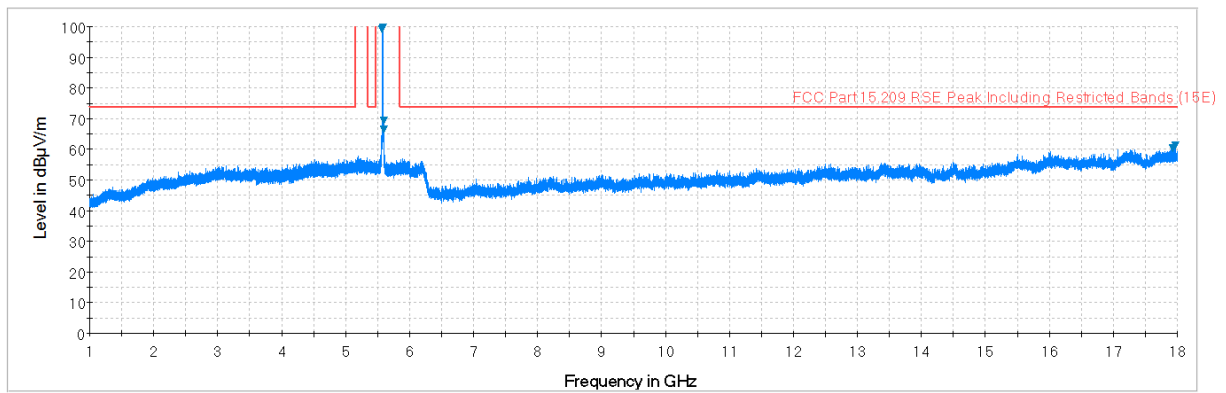


Plot 7-155. Radiated Spurious Plot above 1GHz (802.11a – U2A Ch. 56, Ant. Pol. H)

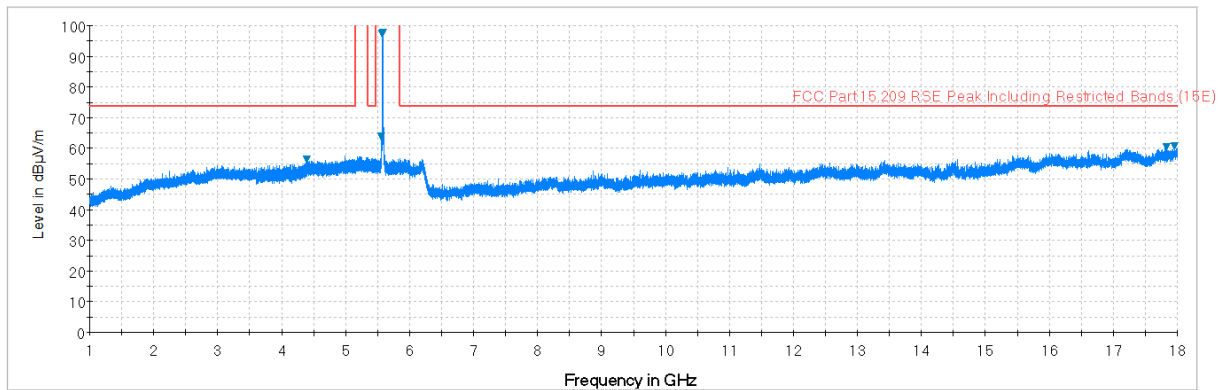
FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
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Plot 7-156. Radiated Spurious Plot above 1GHz (802.11a – U2A Ch. 56, Ant. Pol. V)

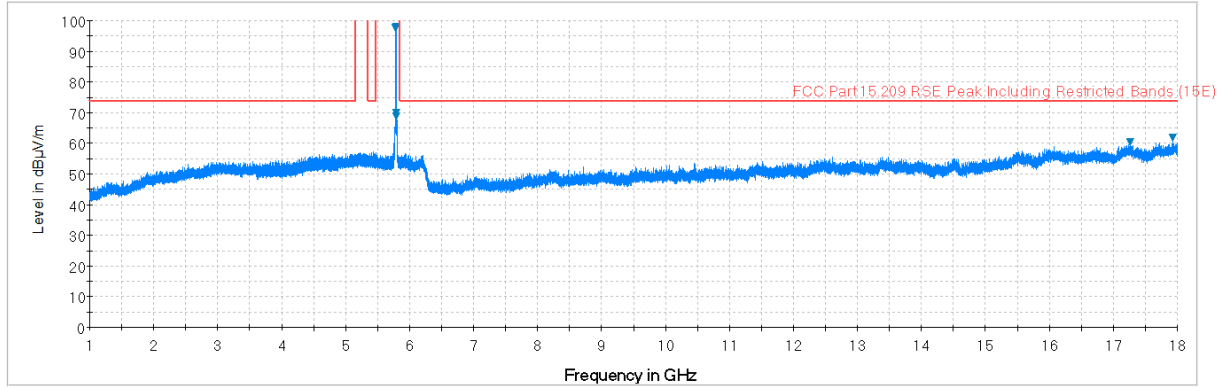


Plot 7-157. Radiated Spurious Plot above 1GHz (802.11a – U2C Ch. 116, Ant. Pol. H)

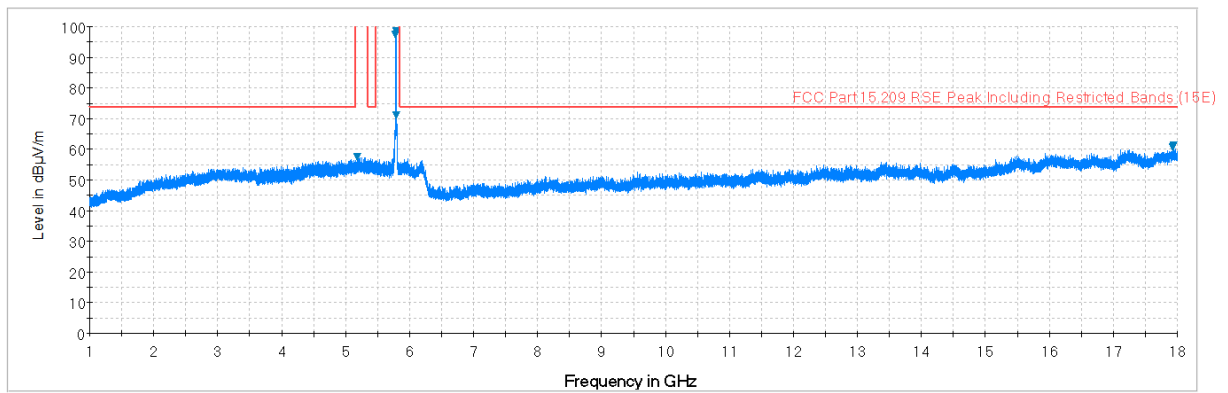


Plot 7-158. Radiated Spurious Plot above 1GHz (802.11a – U2C Ch. 116, Ant. Pol. V)

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

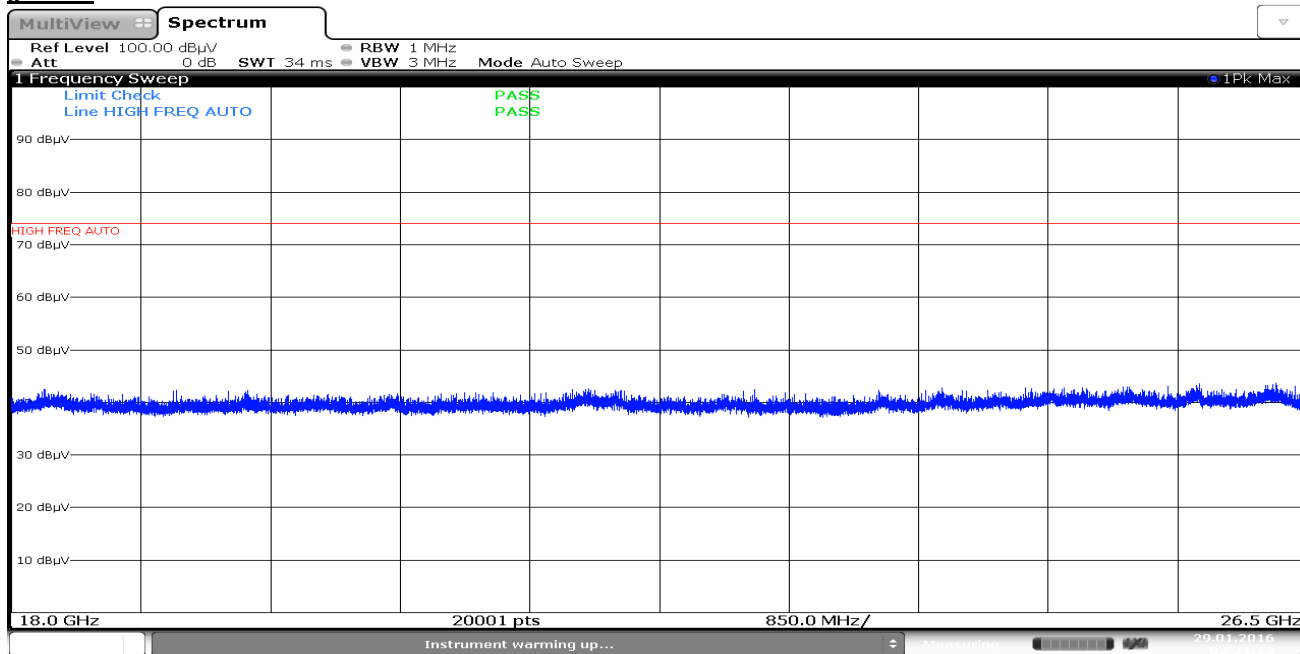


Plot 7-160. Radiated Spurious Plot above 1GHz (802.11a – U3 Ch. 157, Ant. Pol. V)

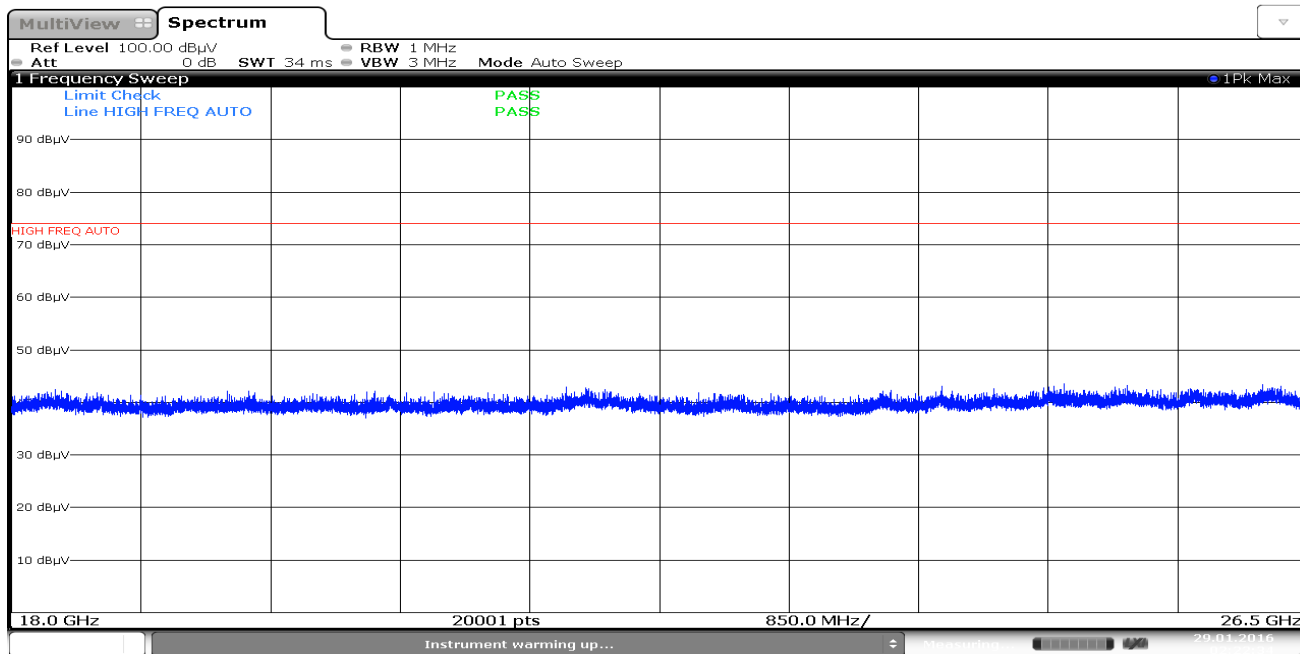
FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
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Antenna-1 Radiated Spurious Emissions Measurements (Above 18GHz)

\$15.209



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



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

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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 [m]	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	-	-	-99.47	48.05	0.00	55.58	68.20	-12.62
* 15540.00	Average	H	-	-	-111.66	53.93	0.00	49.27	53.98	-4.71
* 15540.00	Peak	H	-	-	-99.17	53.93	0.00	61.76	73.98	-12.22
* 20720.00	Average	H	-	-	-113.24	44.39	-9.54	28.61	53.98	-25.37
* 20720.00	Peak	H	-	-	-101.60	44.39	-9.54	40.25	73.98	-33.73
25900.00	Peak	H	-	-	-99.54	45.11	-9.54	43.03	68.20	-25.17

Table 7-28. Radiated Measurements

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [m]	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	-	-	-99.42	48.16	0.00	55.73	68.20	-12.47
* 15600.00	Average	H	-	-	-111.23	53.51	0.00	49.27	53.98	-4.71
* 15600.00	Peak	H	-	-	-99.14	53.51	0.00	61.36	73.98	-12.62
* 20800.00	Average	H	-	-	-112.94	44.39	-9.54	28.91	53.98	-25.07
* 20800.00	Peak	H	-	-	-100.94	44.39	-9.54	40.91	73.98	-33.07
26000.00	Peak	H	-	-	-100.45	45.12	-9.54	42.12	68.20	-26.08

Table 7-29. Radiated Measurements

FCC ID: ZNFH830		FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 120 of 220

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 [m]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10480.00	Peak	H	-	-	-99.59	48.37	0.00	55.79	68.20	-12.41
* 15720.00	Average	H	-	-	-111.23	52.90	0.00	48.66	53.98	-5.31
* 15720.00	Peak	H	-	-	-97.69	52.90	0.00	62.20	73.98	-11.77
* 20960.00	Average	H	-	-	-113.04	44.31	-9.54	28.73	53.98	-25.25
* 20960.00	Peak	H	-	-	-101.94	44.31	-9.54	39.83	73.98	-34.15
26200.00	Peak	H	-	-	-100.59	45.01	-9.54	41.88	68.20	-26.32

Table 7-30. Radiated Measurements

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [m]	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	-	-	-97.97	48.42	0.00	57.45	68.20	-10.75
* 15780.00	Average	H	-	-	-112.71	52.64	0.00	46.93	53.98	-7.05
* 15780.00	Peak	H	-	-	-101.02	52.64	0.00	58.62	73.98	-15.36
* 21040.00	Average	H	-	-	-112.67	44.29	-9.54	29.07	53.98	-24.91
* 21040.00	Peak	H	-	-	-100.64	44.29	-9.54	41.10	73.98	-32.88
26300.00	Peak	H	-	-	-100.42	45.00	-9.54	42.04	68.20	-26.16

Table 7-31. Radiated Measurements

FCC ID: ZNFH830		FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 121 of 220

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 [m]	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	-	-	-99.96	48.40	0.00	55.44	68.20	-12.76
* 15840.00	Average	H	-	-	-112.47	52.60	0.00	47.13	53.98	-6.85
* 15840.00	Peak	H	-	-	-101.05	52.60	0.00	58.55	73.98	-15.43
* 21120.00	Average	H	-	-	-112.73	44.28	-9.54	29.01	53.98	-24.97
* 21120.00	Peak	H	-	-	-100.91	44.28	-9.54	40.83	73.98	-33.15
26400.00	Peak	H	-	-	-99.81	45.02	-9.54	42.67	68.20	-25.53

Table 7-32. Radiated Measurements

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [m]	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	-	-	-110.92	48.40	0.00	44.48	53.98	-9.50
* 10640.00	Peak	H	-	-	-98.77	48.40	0.00	56.63	73.98	-17.35
* 15960.00	Average	H	-	-	-111.79	52.79	0.00	47.99	53.98	-5.99
* 15960.00	Peak	H	-	-	-99.95	52.79	0.00	59.83	73.98	-14.15
* 21280.00	Average	H	-	-	-112.60	44.26	-9.54	29.12	53.98	-24.86
* 21280.00	Peak	H	-	-	-101.24	44.26	-9.54	40.48	73.98	-33.50
26600.00	Peak	H	-	-	-101.88	47.61	-9.54	43.19	68.20	-25.01

Table 7-33. Radiated Measurements

FCC ID: ZNFH830		FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 122 of 220

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 [m]	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	-	-	-111.02	48.20	0.00	44.18	53.98	-9.80
*	11000.00	Peak	H	-	-	-99.69	48.20	0.00	55.51	73.98	-18.47
	16500.00	Peak	H	-	-	-101.00	51.96	0.00	57.96	68.20	-10.24
	22000.00	Peak	H	-	-	-100.96	44.50	-9.54	40.99	68.20	-27.21
	27500.00	Peak	H	-	-	-101.70	47.97	-9.54	43.73	68.20	-24.47

Table 7-34. Radiated Measurements

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

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [m]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
*	11160.00	Average	H	-	-	-110.65	48.34	0.00	44.69	53.98	-9.29
*	11160.00	Peak	H	-	-	-98.80	48.34	0.00	56.54	73.98	-17.44
	16740.00	Peak	H	-	-	-99.73	52.35	0.00	59.62	68.20	-8.58
*	22320.00	Average	H	-	-	-112.16	44.56	-9.54	29.86	53.98	-24.12
*	22320.00	Peak	H	-	-	-100.82	44.56	-9.54	41.20	73.98	-32.78
	27900.00	Peak	H	-	-	-102.23	48.08	-9.54	43.31	68.20	-24.89

Table 7-35. Radiated Measurements

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

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [m]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
*	11440.00	Average	H	-	-	-111.29	48.28	0.00	44.00	53.98	-9.98
*	11440.00	Peak	H	-	-	-99.77	48.28	0.00	55.52	73.98	-18.46
	17160.00	Peak	H	-	-	-99.52	54.24	0.00	61.72	68.20	-6.48
*	22880.00	Average	H	-	-	-112.84	44.61	-9.54	29.23	53.98	-24.75
*	22880.00	Peak	H	-	-	-101.65	44.61	-9.54	40.42	73.98	-33.56
	28600.00	Peak	H	-	-	-101.72	48.29	-9.54	44.03	68.20	-24.17

Table 7-36. 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 [m]	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	-	-	-111.34	48.29	0.00	43.96	53.98	-10.02
*	11490.00	Peak	H	-	-	-99.11	48.29	0.00	56.19	73.98	-17.79
	17235.00	Peak	H	-	-	-99.26	54.54	0.00	62.29	68.20	-5.91
*	22980.00	Average	H	-	-	-113.16	44.68	-9.54	28.98	53.98	-25.00
*	22980.00	Peak	H	-	-	-101.86	44.68	-9.54	40.28	73.98	-33.70
	28725.00	Peak	H	-	-	-101.71	48.26	-9.54	44.01	68.20	-24.19

Table 7-37. Radiated Measurements

FCC ID: ZNFH830		FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 124 of 220

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 [m]	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	-	-	-111.28	48.63	0.00	44.35	53.98	-9.63
* 11570.00	Peak	H	-	-	-99.54	48.63	0.00	56.09	73.98	-17.89
17355.00	Peak	H	-	-	-100.31	54.81	0.00	61.50	68.20	-6.70
23140.00	Peak	H	-	-	-101.08	44.75	-9.54	41.13	68.20	-27.07
28925.00	Peak	H	-	-	-101.36	48.29	-9.54	44.39	68.20	-23.81

Table 7-38. Radiated Measurements

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [m]	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	-	-	-111.17	48.87	0.00	44.70	53.98	-9.27
* 11650.00	Peak	H	-	-	-100.03	48.87	0.00	55.84	73.98	-18.13
17475.00	Peak	H	-	-	-99.36	55.45	0.00	63.09	68.20	-5.11
23300.00	Peak	H	-	-	-101.64	44.75	-9.54	40.56	68.20	-27.64
29125.00	Peak	H	-	-	-102.15	48.28	-9.54	43.60	68.20	-24.60

Table 7-39. Radiated Measurements

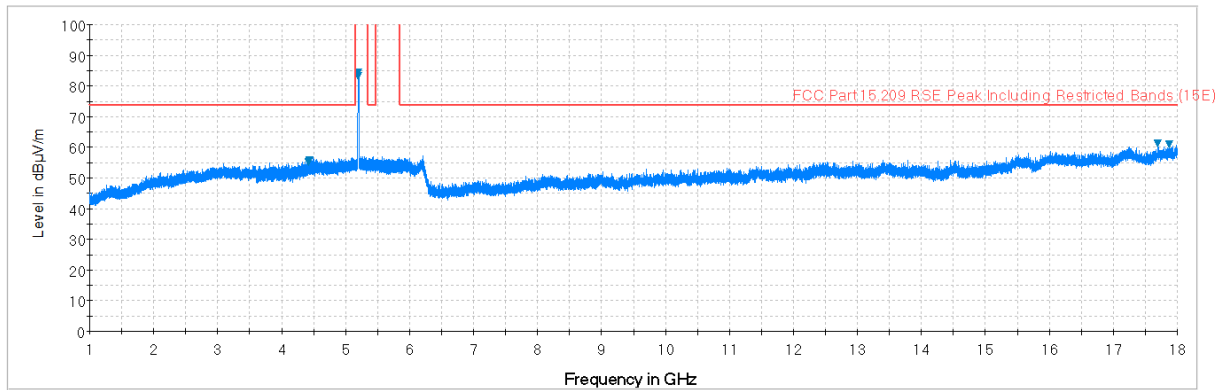
FCC ID: ZNFH830		FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 125 of 220

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

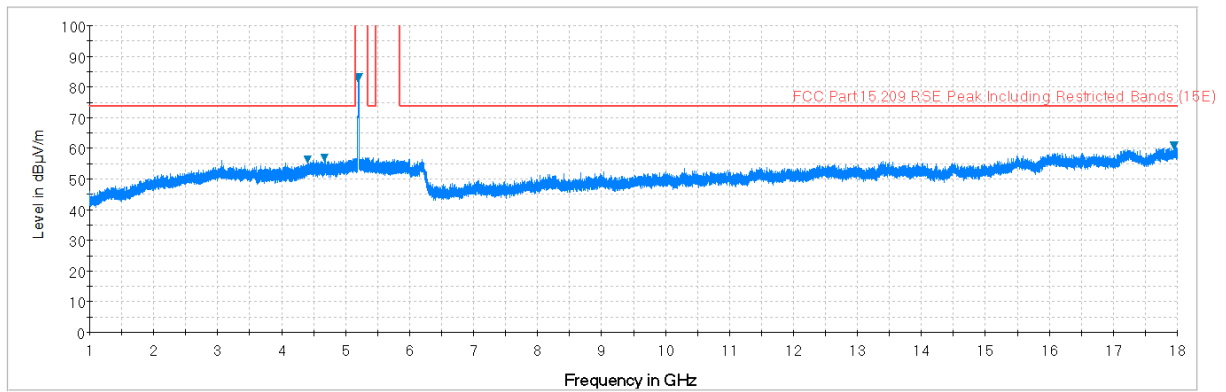
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [m]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10360.00	Peak	H	-	-	-100.14	48.05	0.00	54.91	68.20	-13.29
* 15540.00	Average	H	-	-	-112.08	53.93	0.00	48.85	53.98	-5.13
* 15540.00	Peak	H	-	-	-100.16	53.93	0.00	60.77	73.98	-13.21

Table 7-40. Radiated Measurements with Camera Module Accessory

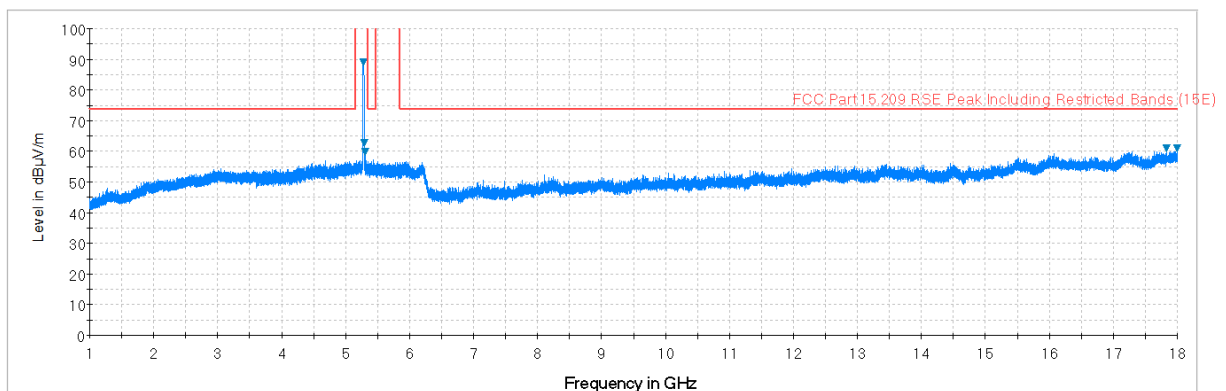
7.7.2 Antenna-2 Radiated Spurious Emission Measurements



Plot 7-163. Radiated Spurious Plot above 1GHz (802.11a – U1 Ch. 40, Ant. Pol. H)

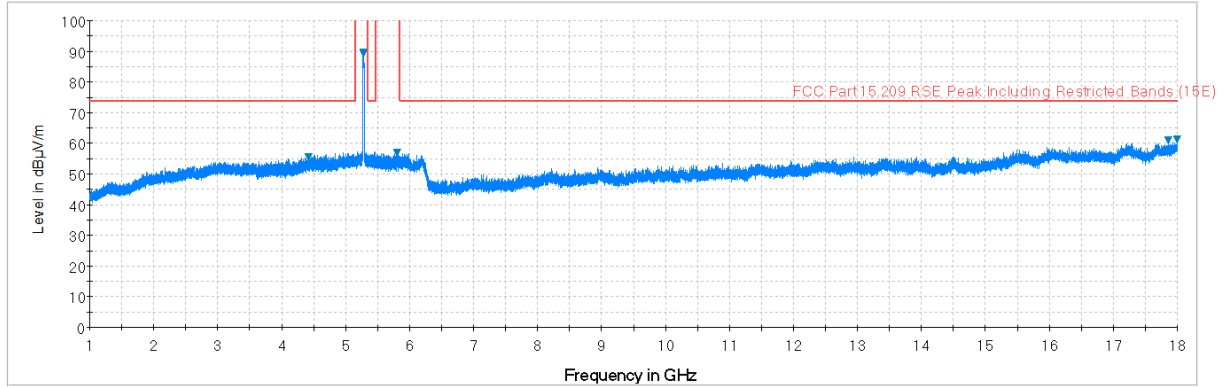


Plot 7-164. Radiated Spurious Plot above 1GHz (802.11a – U1 Ch. 40, Ant. Pol. V)

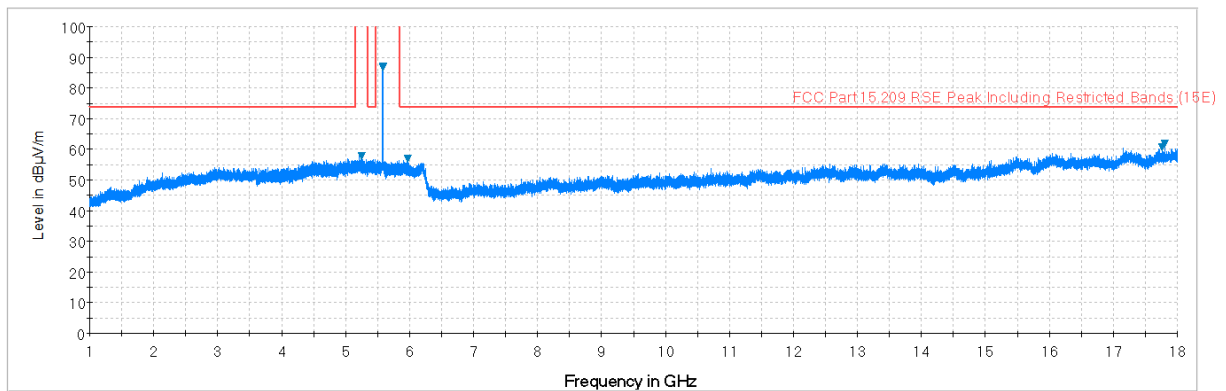


Plot 7-165. Radiated Spurious Plot above 1GHz (802.11a – U2A Ch. 56, Ant. Pol. H)

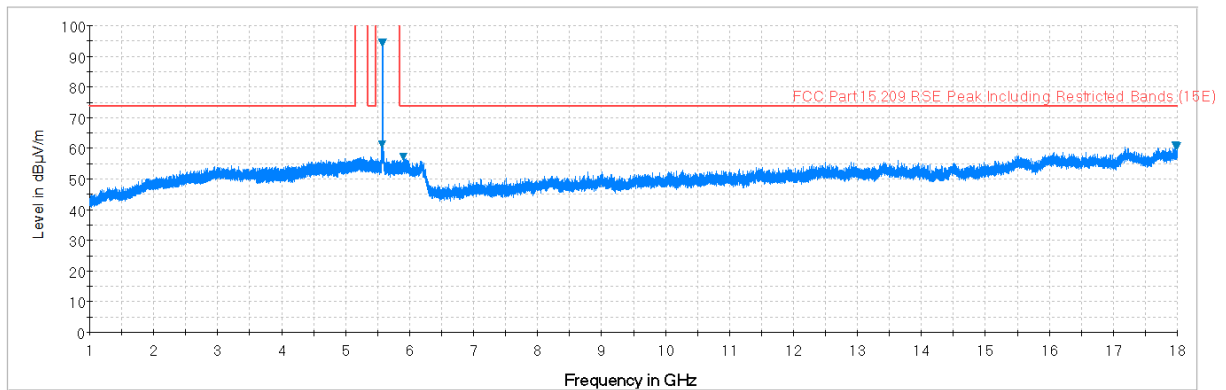
FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 127 of 220



Plot 7-166. Radiated Spurious Plot above 1GHz (802.11a – U2A Ch. 56, Ant. Pol. V)

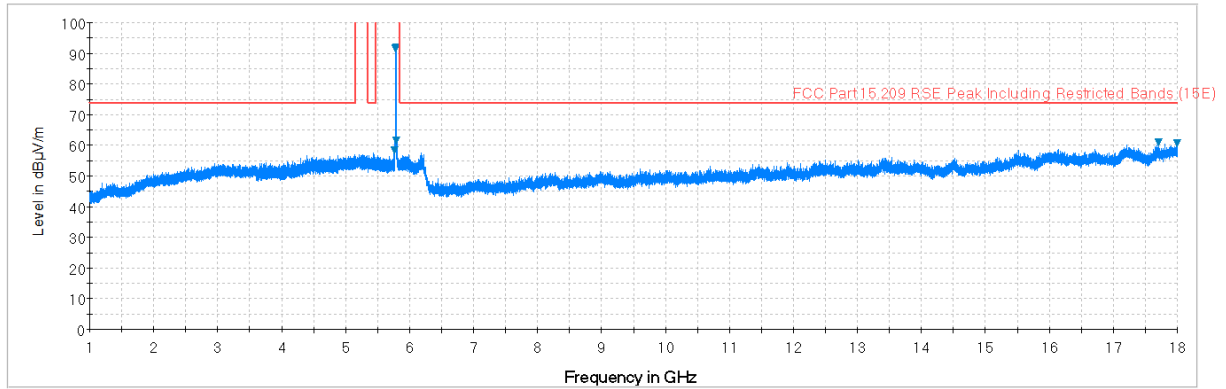


Plot 7-167. Radiated Spurious Plot above 1GHz (802.11a – U2C Ch. 116, Ant. Pol. H)

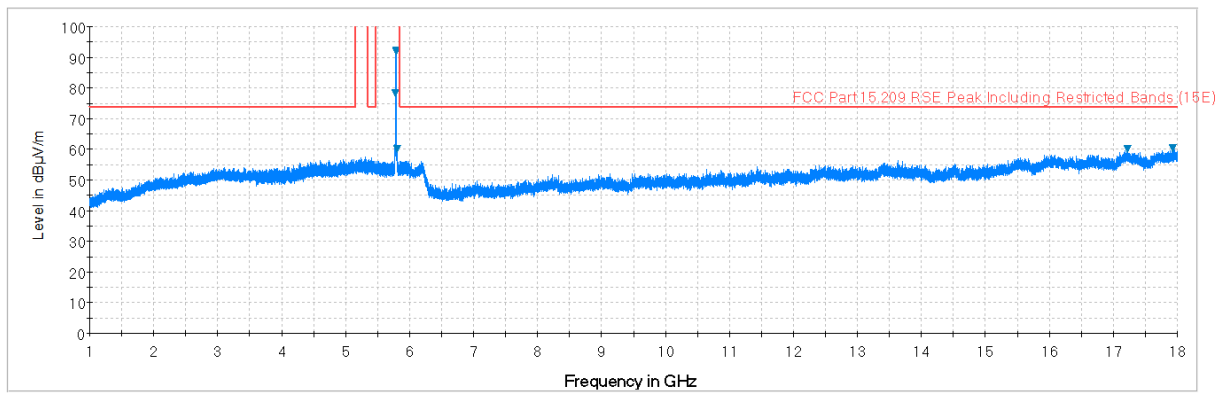


Plot 7-168. Radiated Spurious Plot above 1GHz (802.11a – U2C Ch. 116, Ant. Pol. V)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 128 of 220



Plot 7-169. Radiated Spurious Plot above 1GHz (802.11a – U3 Ch. 157, Ant. Pol. H)

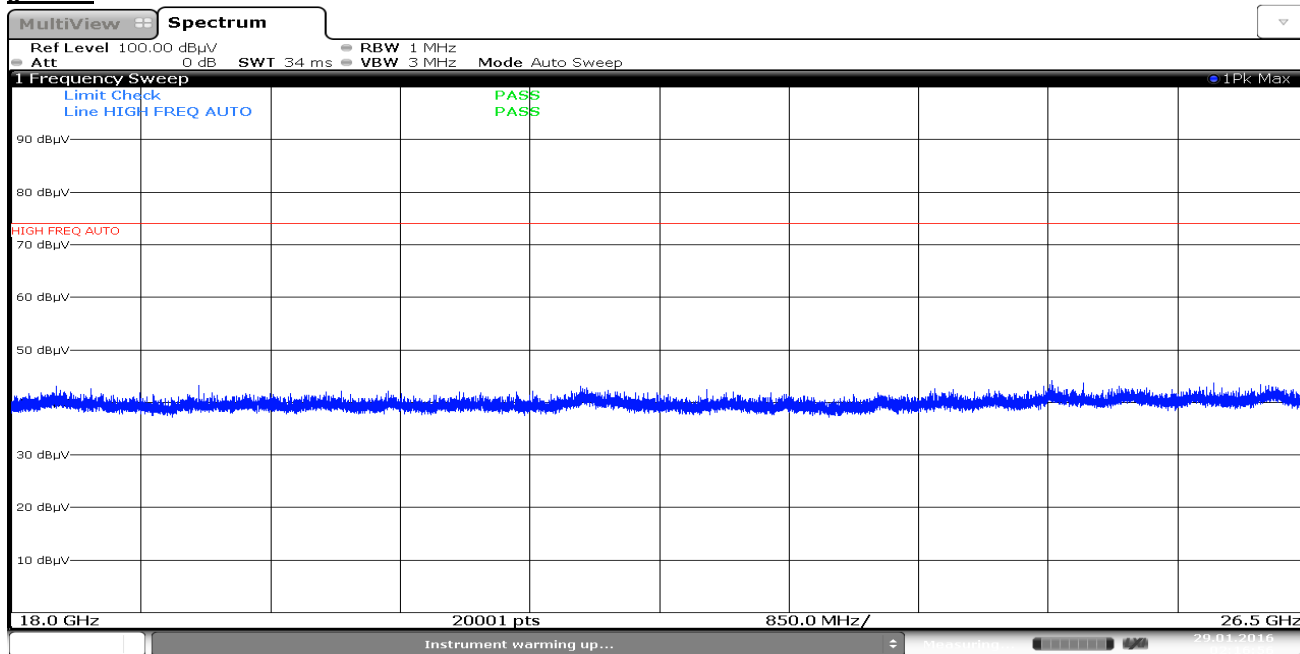


Plot 7-170. Radiated Spurious Plot above 1GHz (802.11a – U3 Ch. 157, Ant. Pol. V)

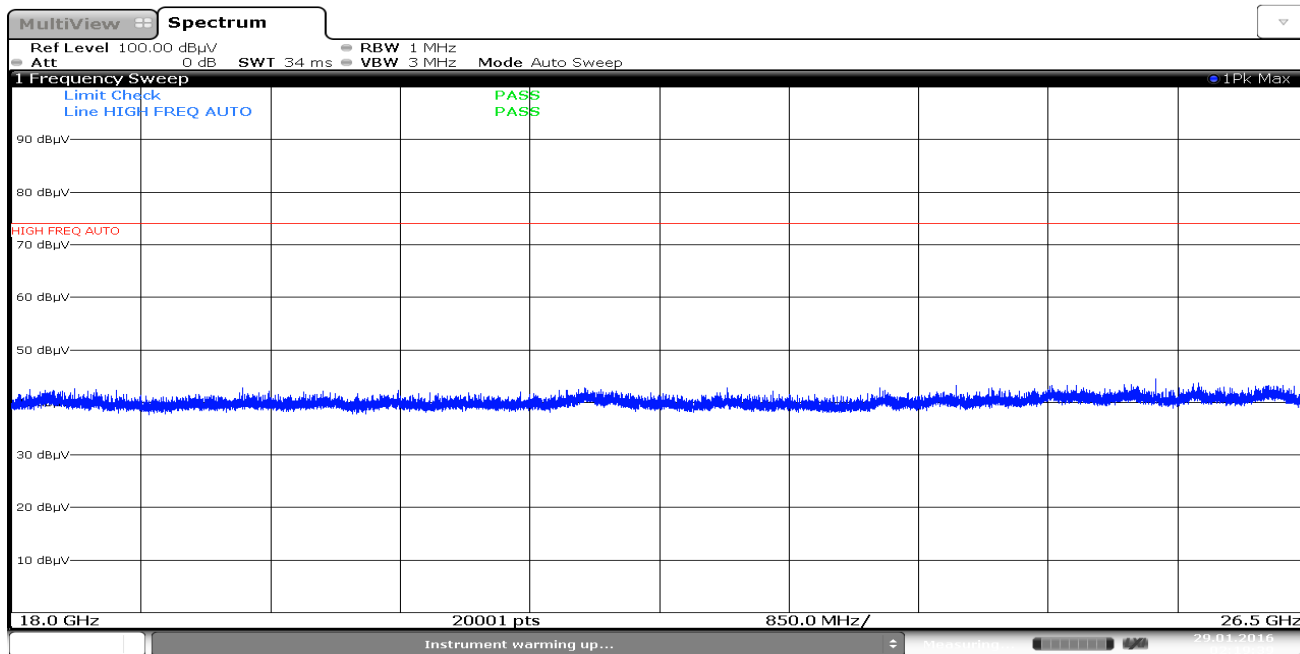
FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 129 of 220

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

\$15.209



Plot 7-171. Radiated Spurious Plot above 18GHz (802.11a – Ant. Pol. H)



Plot 7-172. Radiated Spurious Plot above 18GHz (802.11a – Ant. Pol. V)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 130 of 220

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 [m]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10360.00	Peak	H	-	-	-98.04	48.05	0.00	57.01	68.20	-11.19
* 15540.00	Average	H	-	-	-111.43	53.93	0.00	49.50	53.98	-4.48
* 15540.00	Peak	H	-	-	-99.48	53.93	0.00	61.45	73.98	-12.53
* 20720.00	Average	H	-	-	-112.90	44.39	-9.54	28.95	53.98	-25.03
* 20720.00	Peak	H	-	-	-101.82	44.39	-9.54	40.03	73.98	-33.95
25900.00	Peak	H	-	-	-99.62	45.11	-9.54	42.95	68.20	-25.25

Table 7-41. Radiated Measurements

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [m]	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	-	-	-99.48	48.16	0.00	55.67	68.20	-12.53
* 15600.00	Average	H	-	-	-111.43	53.51	0.00	49.07	53.98	-4.91
* 15600.00	Peak	H	-	-	-99.38	53.51	0.00	61.12	73.98	-12.86
* 20800.00	Average	H	-	-	-113.11	44.39	-9.54	28.74	53.98	-25.24
* 20800.00	Peak	H	-	-	-101.69	44.39	-9.54	40.16	73.98	-33.82
26000.00	Peak	H	-	-	-100.54	45.12	-9.54	42.03	68.20	-26.17

Table 7-42. Radiated Measurements

FCC ID: ZNFH830		FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 131 of 220

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 [m]	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	-	-	-98.77	48.37	0.00	56.61	68.20	-11.59
* 15720.00	Average	H	-	-	-111.38	52.90	0.00	48.51	53.98	-5.46
* 15720.00	Peak	H	-	-	-99.46	52.90	0.00	60.43	73.98	-13.54
* 20960.00	Average	H	-	-	-112.91	44.31	-9.54	28.86	53.98	-25.12
* 20960.00	Peak	H	-	-	-101.40	44.31	-9.54	40.37	73.98	-33.61
26200.00	Peak	H	-	-	-100.55	45.01	-9.54	41.92	68.20	-26.28

Table 7-43. Radiated Measurements

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [m]	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	-	-	-99.41	48.42	0.00	56.01	68.20	-12.19
* 15780.00	Average	H	-	-	-112.26	52.64	0.00	47.38	53.98	-6.60
* 15780.00	Peak	H	-	-	-100.60	52.64	0.00	59.04	73.98	-14.94
* 21040.00	Average	H	-	-	-112.78	44.29	-9.54	28.96	53.98	-25.02
* 21040.00	Peak	H	-	-	-101.69	44.29	-9.54	40.05	73.98	-33.93
26300.00	Peak	H	-	-	-98.70	45.00	-9.54	43.76	68.20	-24.44

Table 7-44. Radiated Measurements

FCC ID: ZNFH830		FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 132 of 220

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 [m]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10560.00	Peak	H	-	-	-98.68	48.40	0.00	56.72	68.20	-11.48
* 15840.00	Average	H	-	-	-112.51	52.60	0.00	47.09	53.98	-6.89
* 15840.00	Peak	H	-	-	-100.47	52.60	0.00	59.13	73.98	-14.85
* 21120.00	Average	H	-	-	-112.81	44.28	-9.54	28.93	53.98	-25.05
* 21120.00	Peak	H	-	-	-101.53	44.28	-9.54	40.21	73.98	-33.77
26400.00	Peak	H	-	-	-98.55	45.02	-9.54	43.93	68.20	-24.27

Table 7-45. Radiated Measurements

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [m]	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	-	-	-111.10	48.40	0.00	44.30	53.98	-9.68
* 10640.00	Peak	H	-	-	-99.14	48.40	0.00	56.26	73.98	-17.72
* 15960.00	Average	H	-	-	-111.98	52.79	0.00	47.80	53.98	-6.18
* 15960.00	Peak	H	-	-	-99.91	52.79	0.00	59.87	73.98	-14.11
* 21280.00	Average	H	-	-	-112.57	44.26	-9.54	29.15	53.98	-24.83
* 21280.00	Peak	H	-	-	-100.36	44.26	-9.54	41.36	73.98	-32.62
26600.00	Peak	H	-	-	-102.00	47.61	-9.54	43.07	68.20	-25.13

Table 7-46. Radiated Measurements

FCC ID: ZNFH830		FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 133 of 220

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 [m]	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	-	-	-111.02	48.20	0.00	44.18	53.98	-9.80
* 11000.00	Peak	H	-	-	-99.27	48.20	0.00	55.93	73.98	-18.05
16500.00	Peak	H	-	-	-99.69	51.96	0.00	59.27	68.20	-8.93
22000.00	Peak	H	-	-	-100.01	44.50	-9.54	41.94	68.20	-26.26
27500.00	Peak	H	-	-	-101.47	47.97	-9.54	43.96	68.20	-24.24

Table 7-47. Radiated Measurements

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [m]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11160.00	Average	H	-	-	-110.67	48.34	0.00	44.67	53.98	-9.31
* 11160.00	Peak	H	-	-	-99.05	48.34	0.00	56.29	73.98	-17.69
16740.00	Peak	H	-	-	-100.65	52.35	0.00	58.70	68.20	-9.50
* 22320.00	Average	H	-	-	-112.52	44.56	-9.54	29.50	53.98	-24.48
* 22320.00	Peak	H	-	-	-101.24	44.56	-9.54	40.78	73.98	-33.20
27900.00	Peak	H	-	-	-101.70	48.08	-9.54	43.84	68.20	-24.36

Table 7-48. Radiated Measurements

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

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [m]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
*	11440.00	Average	H	-	-	-111.30	48.28	0.00	43.99	53.98	-9.99
*	11440.00	Peak	H	-	-	-99.62	48.28	0.00	55.67	73.98	-18.31
	17160.00	Peak	H	-	-	-98.33	54.24	0.00	62.91	68.20	-5.29
*	22880.00	Average	H	-	-	-112.68	44.61	-9.54	29.39	53.98	-24.59
*	22880.00	Peak	H	-	-	-100.48	44.61	-9.54	41.59	73.98	-32.39
	28600.00	Peak	H	-	-	-102.13	48.29	-9.54	43.62	68.20	-24.58

Table 7-49. Radiated Measurements

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

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [m]	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	-	-	-111.25	48.29	0.00	44.05	53.98	-9.93
*	11490.00	Peak	H	-	-	-98.71	48.29	0.00	56.59	73.98	-17.39
	17235.00	Peak	H	-	-	-98.29	54.54	0.00	63.26	68.20	-4.94
*	22980.00	Average	H	-	-	-112.93	44.68	-9.54	29.21	53.98	-24.77
*	22980.00	Peak	H	-	-	-102.08	44.68	-9.54	40.06	73.98	-33.92
	28725.00	Peak	H	-	-	-101.42	48.26	-9.54	44.30	68.20	-23.90

Table 7-50. Radiated Measurements

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [m]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11570.00	Average	H	-	-	-110.75	48.63	0.00	44.88	53.98	-9.10
* 11570.00	Peak	H	-	-	-99.15	48.63	0.00	56.48	73.98	-17.50
17355.00	Peak	H	-	-	-99.98	54.81	0.00	61.83	68.20	-6.37
23140.00	Peak	H	-	-	-100.33	44.75	-9.54	41.88	68.20	-26.32
28925.00	Peak	H	-	-	-102.69	48.29	-9.54	43.06	68.20	-25.14

Table 7-51. Radiated Measurements

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [m]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11650.00	Average	H	-	-	-110.71	48.87	0.00	45.16	53.98	-8.81
* 11650.00	Peak	H	-	-	-99.43	48.87	0.00	56.44	73.98	-17.53
17475.00	Peak	H	-	-	-98.77	55.45	0.00	63.68	68.20	-4.52
23300.00	Peak	H	-	-	-101.39	44.75	-9.54	40.81	68.20	-27.39
29125.00	Peak	H	-	-	-101.46	48.28	-9.54	44.29	68.20	-23.91

Table 7-52. Radiated Measurements

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 [m]	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	-	-	-100.44	48.05	0.00	54.61	68.20	-13.59
* 15540.00	Average	H	-	-	-112.13	53.93	0.00	48.80	53.98	-5.18
* 15540.00	Peak	H	-	-	-99.80	53.93	0.00	61.13	73.98	-12.85

Table 7-53. Radiated Measurements with Camera Module Accessory

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

§15.407(b.1)(b.2) §15.205 §15.209

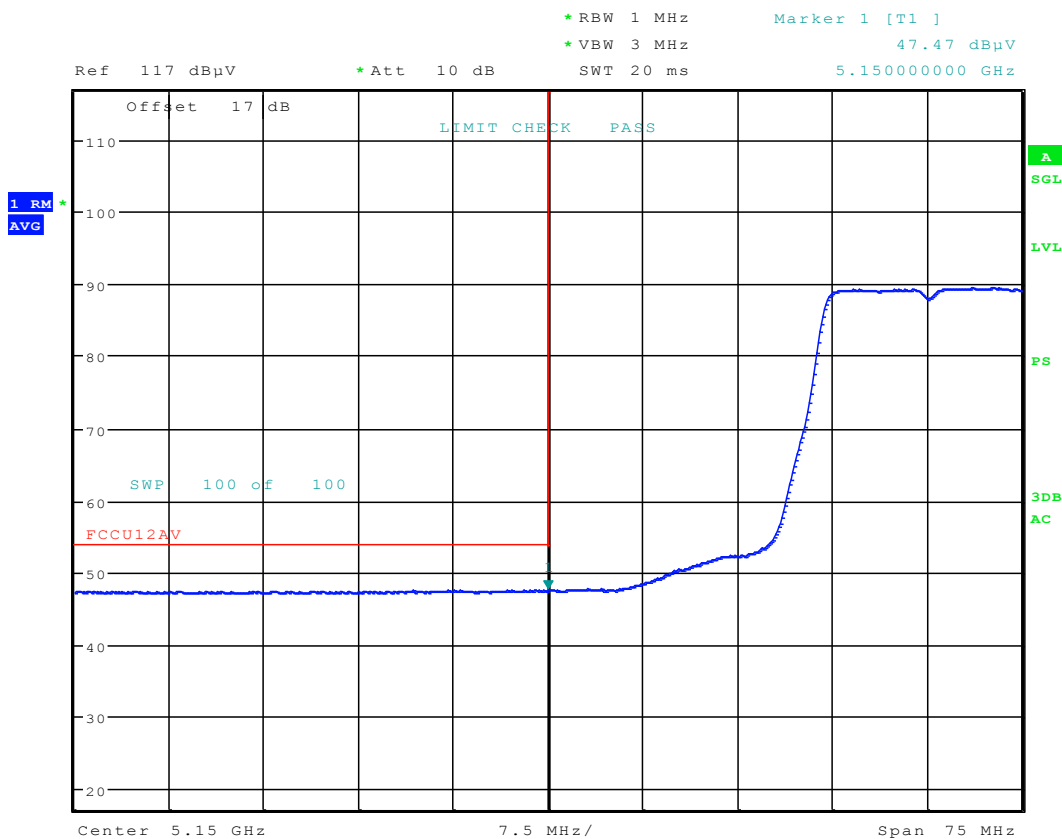
Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 5180MHz

Channel: 36



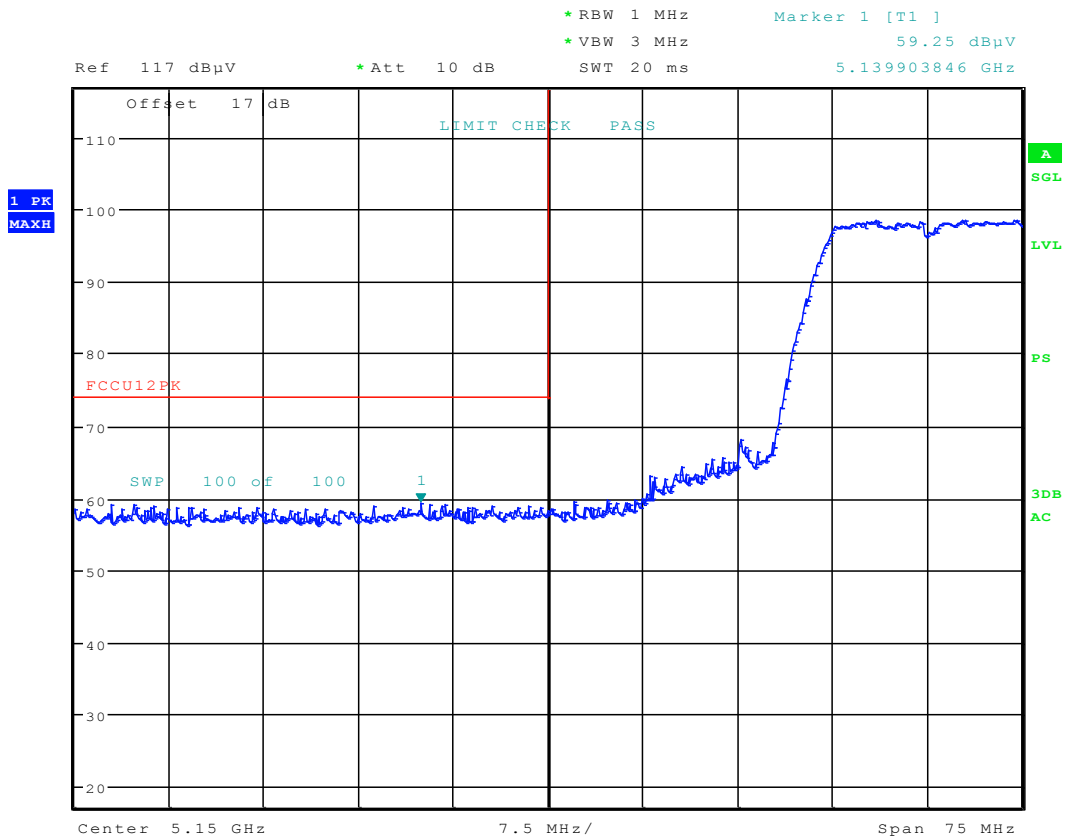
Date: 27.JAN.2016 19:23:41

Plot 7-173. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 138 of 220

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

\$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 27.JAN.2016 19:24:02

Plot 7-174. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 139 of 220

Antenna-1 Radiated Band Edge Measurements (20MHz BW) **§15.407(b.1)(b.2) §15.205 §15.209**

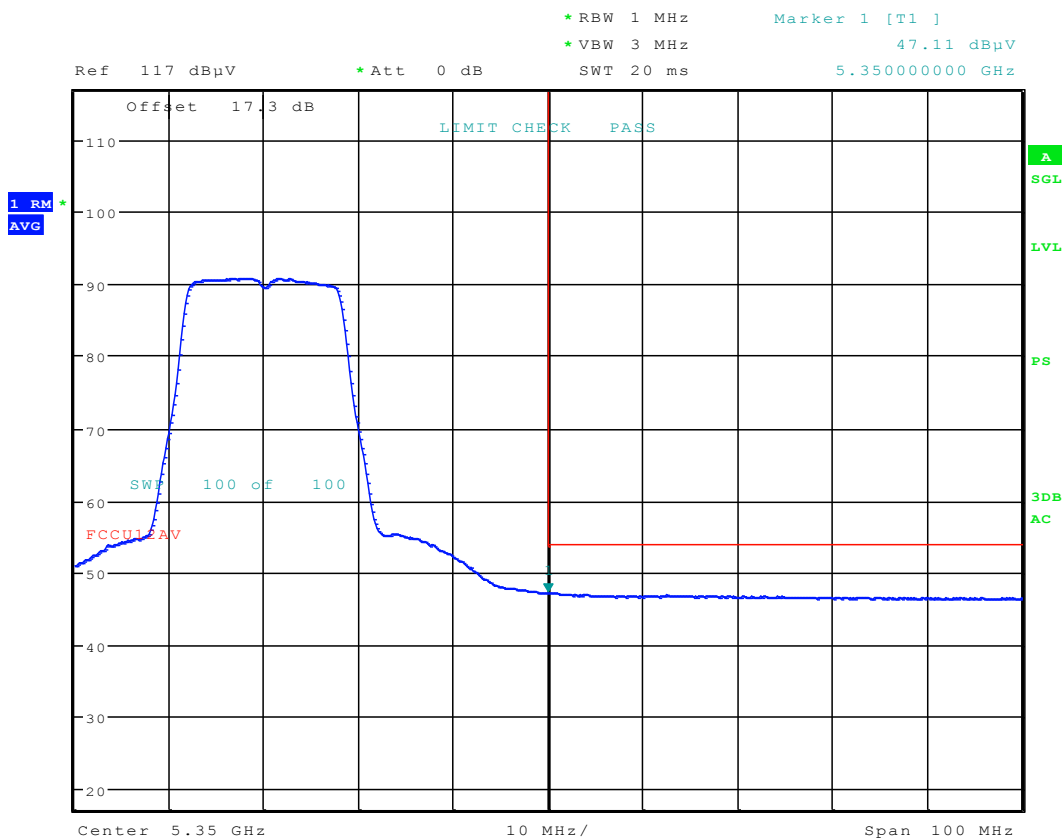
Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 5320MHz

Channel: 64



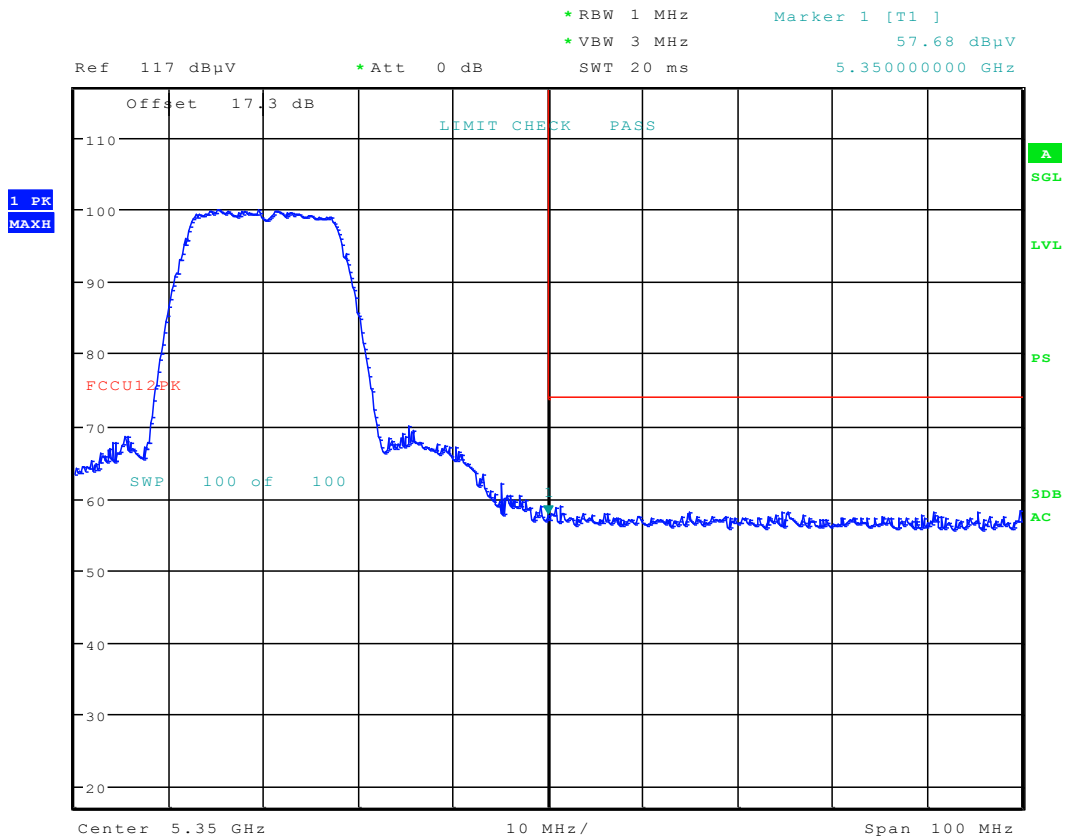
Date: 27.JAN.2016 20:02:18

Plot 7-175. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 140 of 220

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

\$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 27.JAN.2016 20:02:36

Plot 7-176. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 141 of 220

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

§15.407(b.1)(b.2) §15.205 §15.209

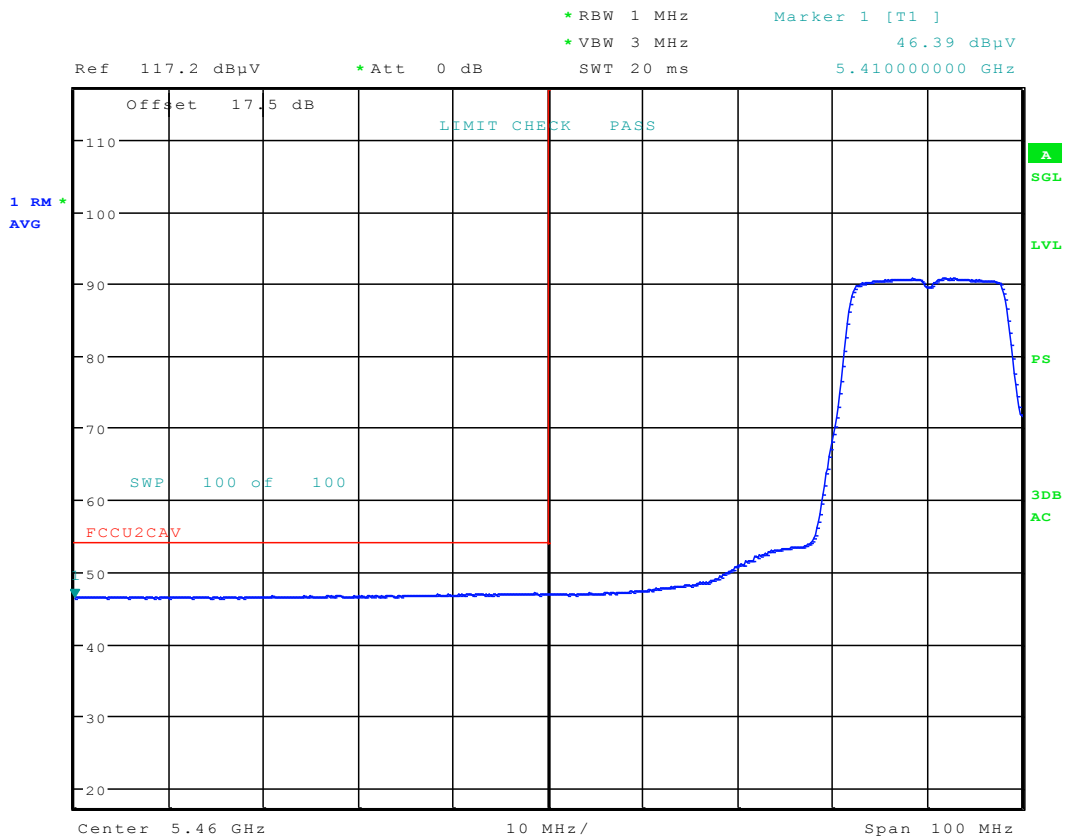
Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 5500MHz

Channel: 100



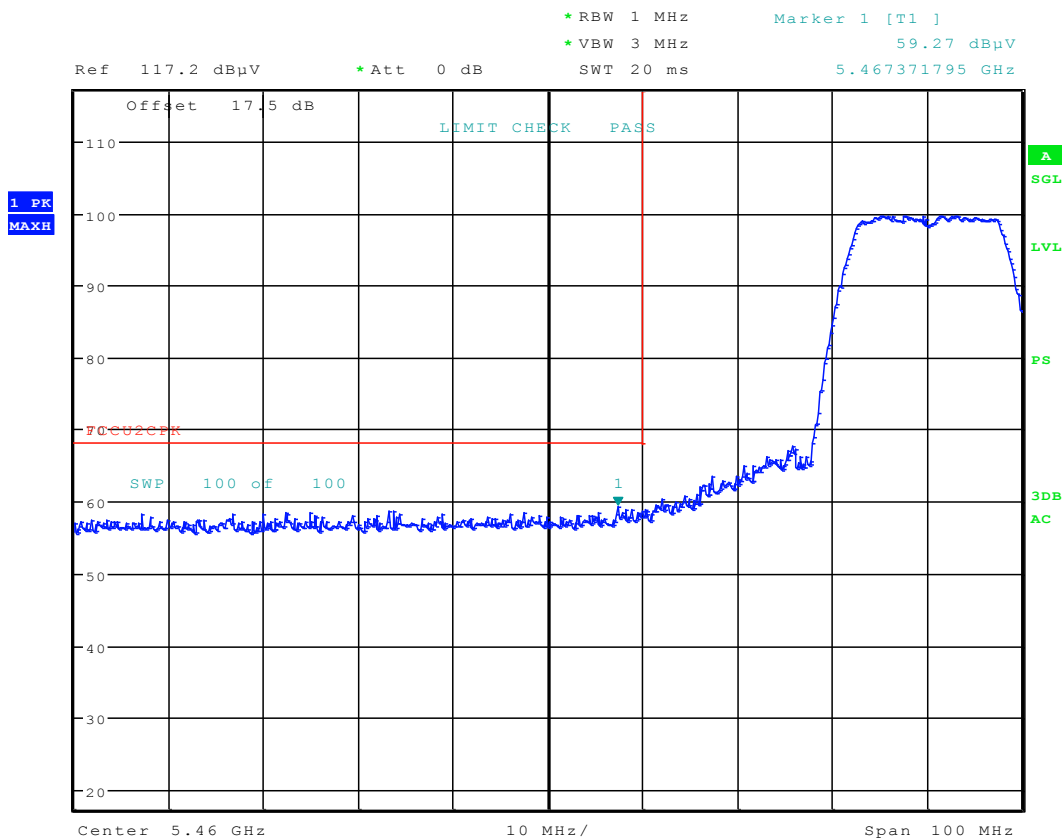
Date: 27.JAN.2016 20:45:39

Plot 7-177. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 142 of 220

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

\$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 27.JAN.2016 20:46:06

Plot 7-178. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 143 of 220

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

§15.407(b.1)(b.2) §15.205 §15.209

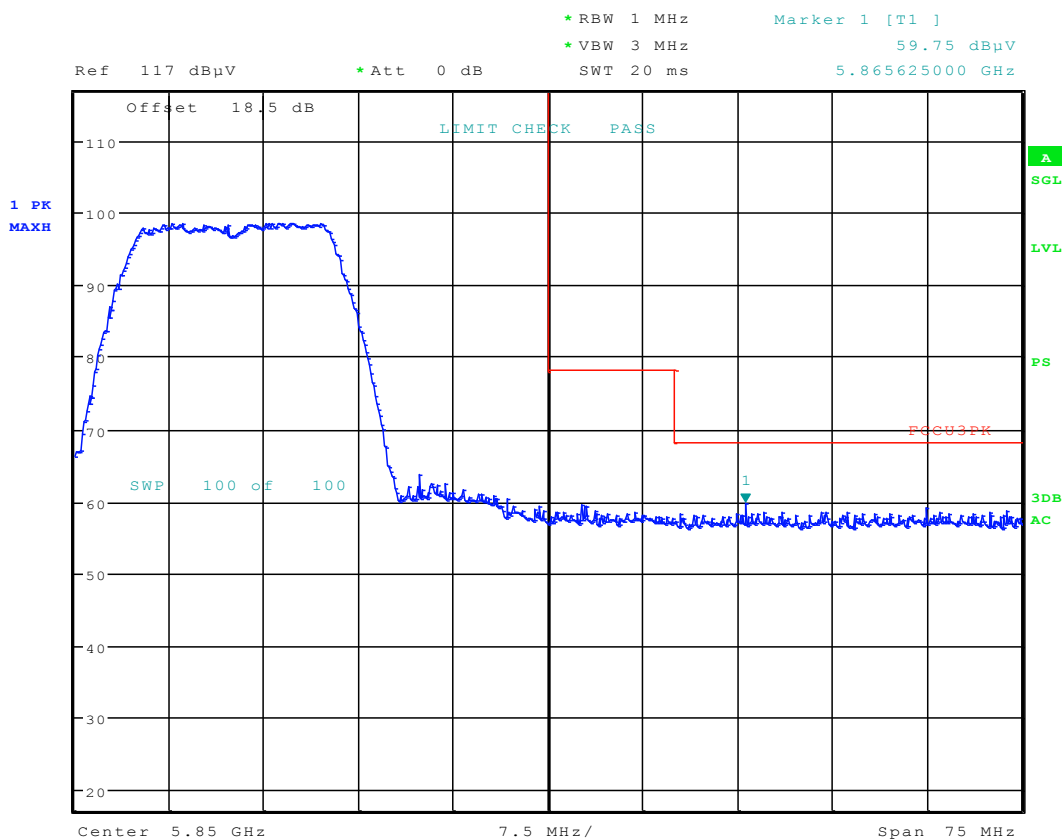
Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 5825MHz

Channel: 165



Date: 27.JAN.2016 21:02:20

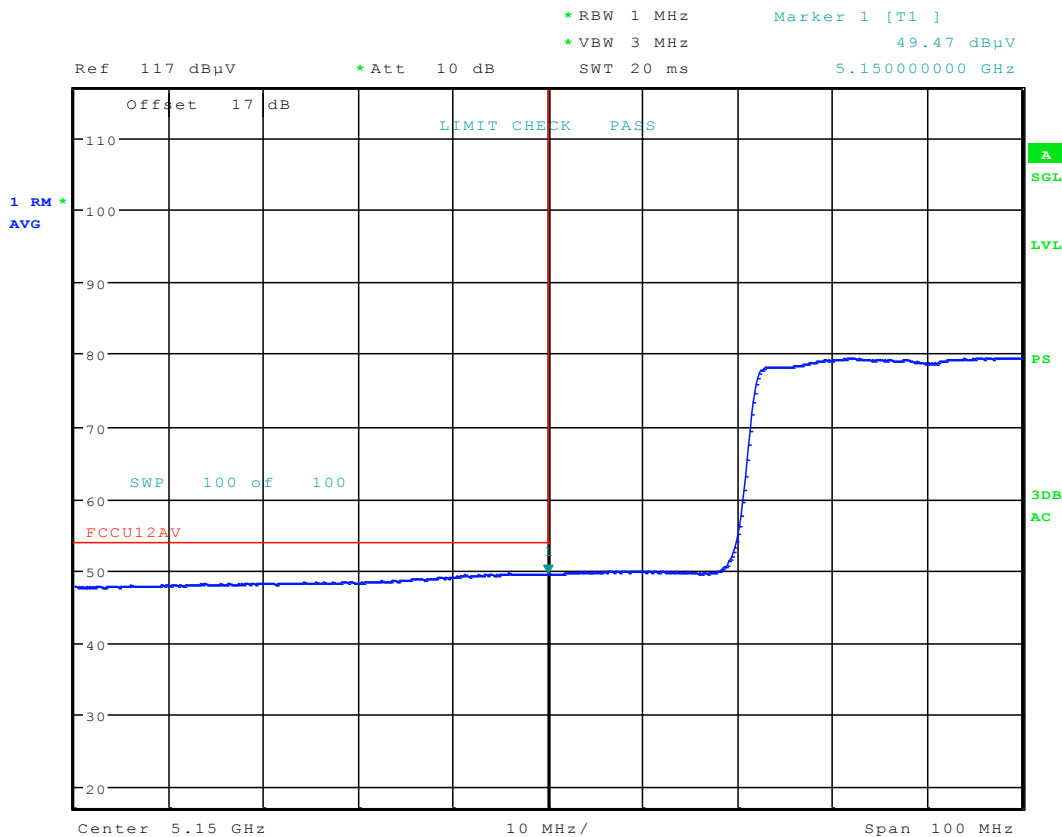
Plot 7-179. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 144 of 220

7.7.4 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



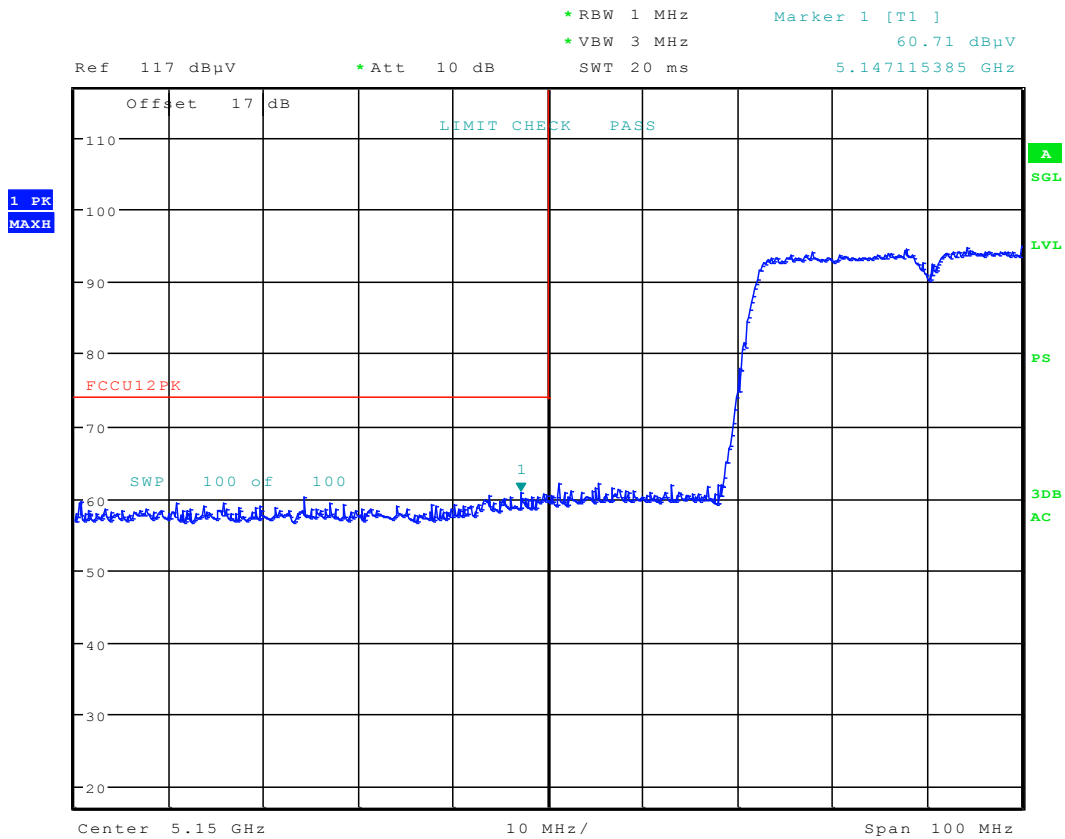
Date: 27.JAN.2016 19:46:28

Plot 7-180. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 145 of 220

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

\$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 27.JAN.2016 19:39:16

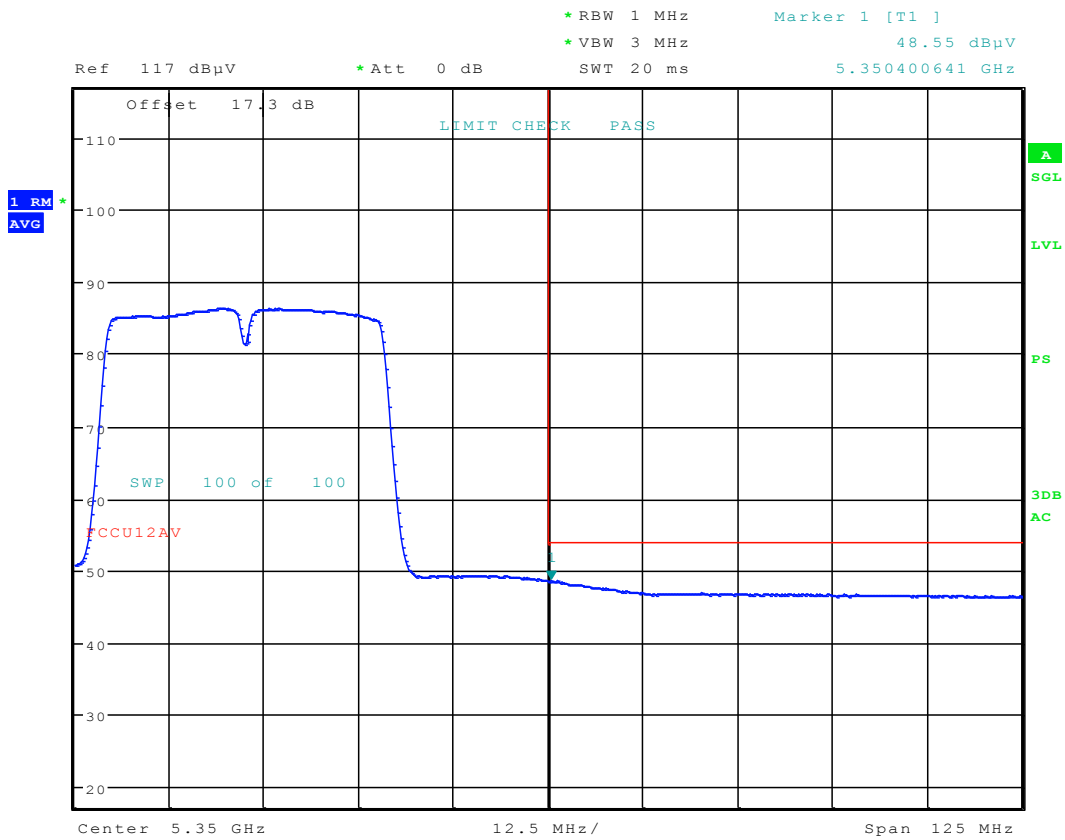
Plot 7-181. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 146 of 220

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



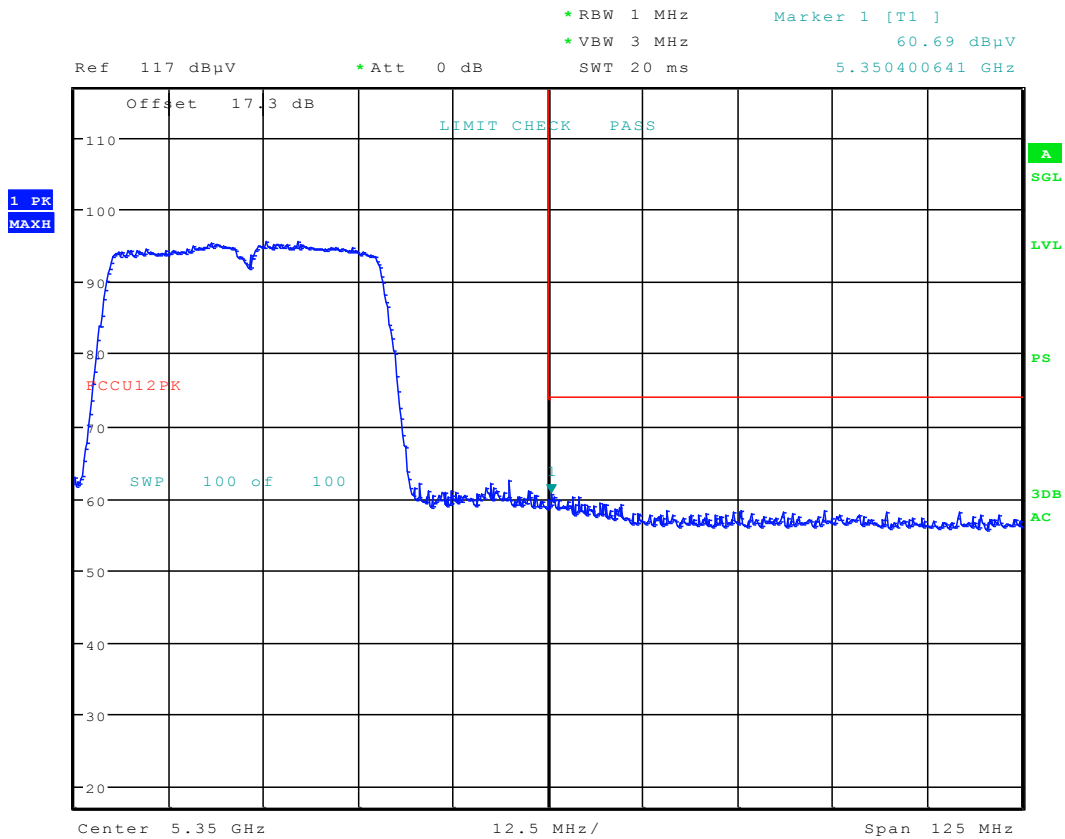
Date: 27.JAN.2016 20:05:15

Plot 7-182. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 147 of 220

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

\$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 27.JAN.2016 20:04:43

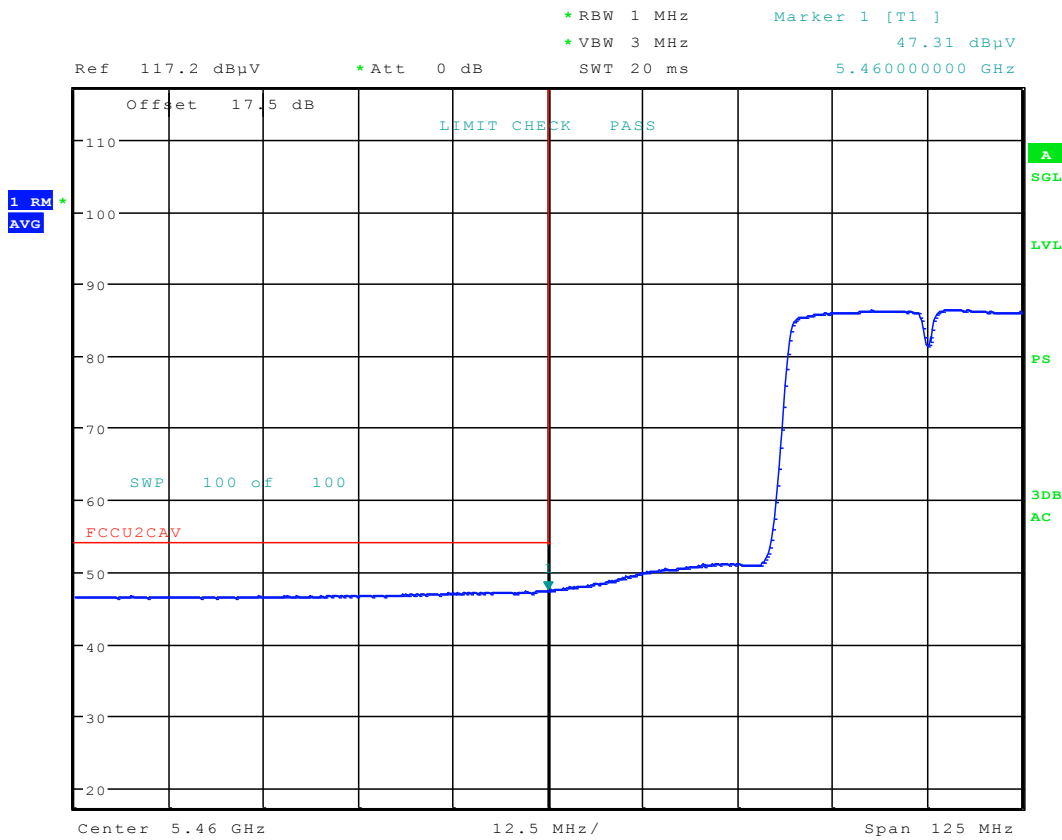
Plot 7-183. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 148 of 220

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



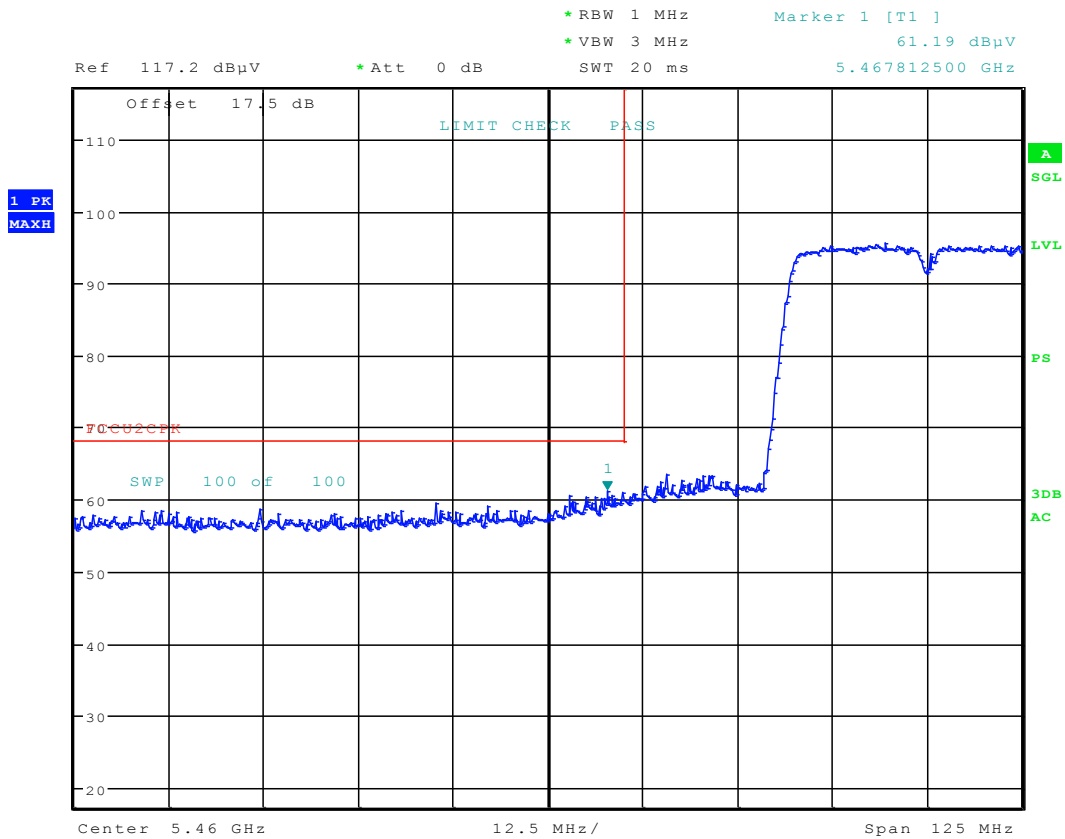
Date: 27.JAN.2016 20:49:29

Plot 7-184. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 149 of 220

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

\$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 27.JAN.2016 20:49:07

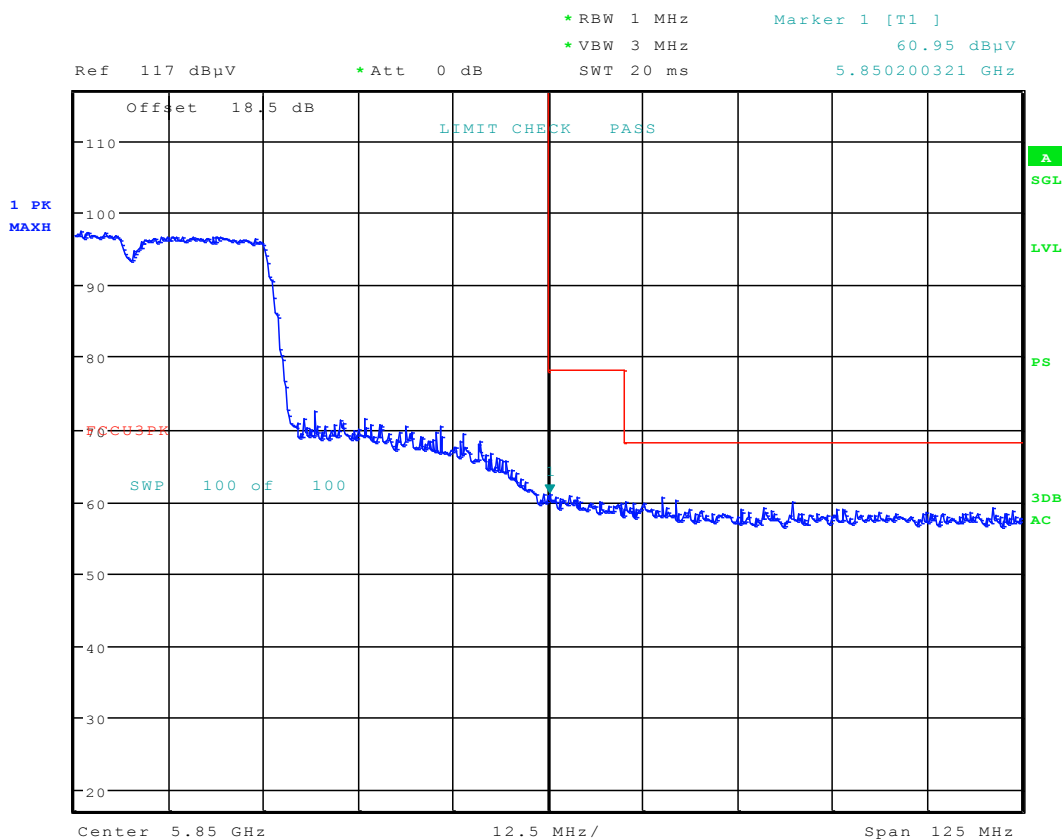
Plot 7-185. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 150 of 220

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: 27.JAN.2016 21:06:40

Plot 7-186. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 151 of 220

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

§15.407(b.1)(b.2) §15.205 §15.209

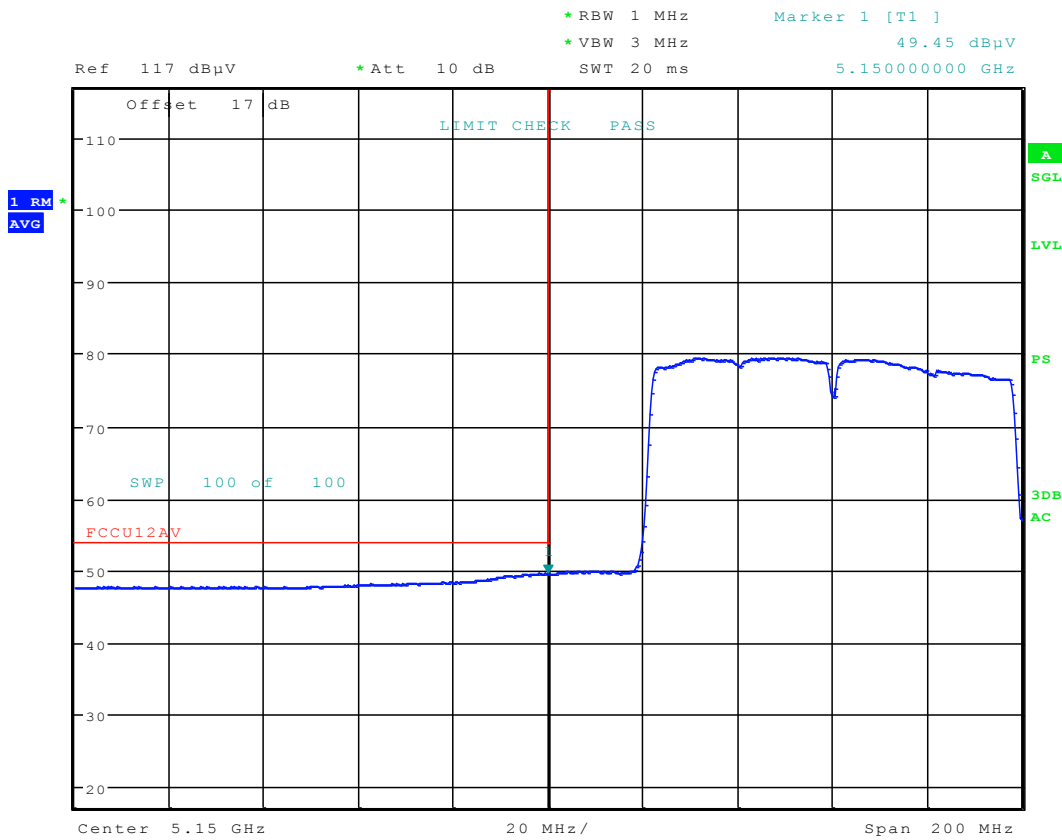
Worst Case Mode: 802.11n (80MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5210MHz

Channel: 42



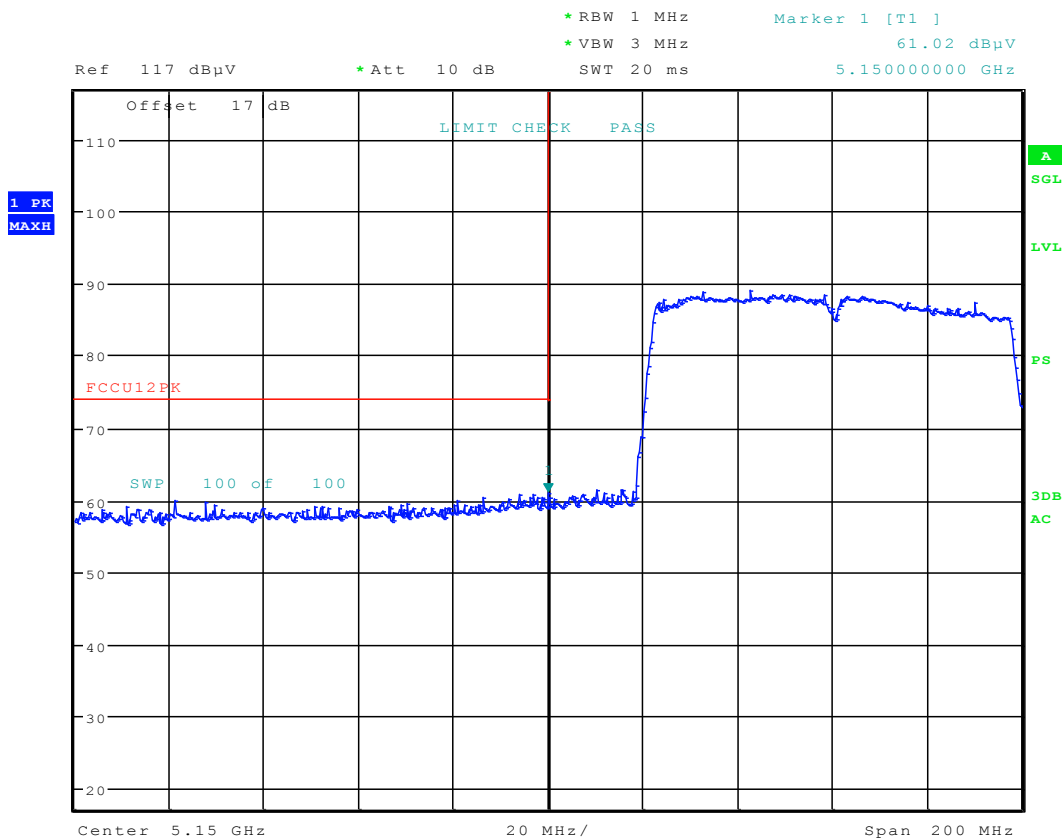
Date: 27.JAN.2016 19:47:49

Plot 7-187. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 152 of 220

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

\$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 27.JAN.2016 19:48:25

Plot 7-188. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 153 of 220

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

§15.407(b.1)(b.2) §15.205 §15.209

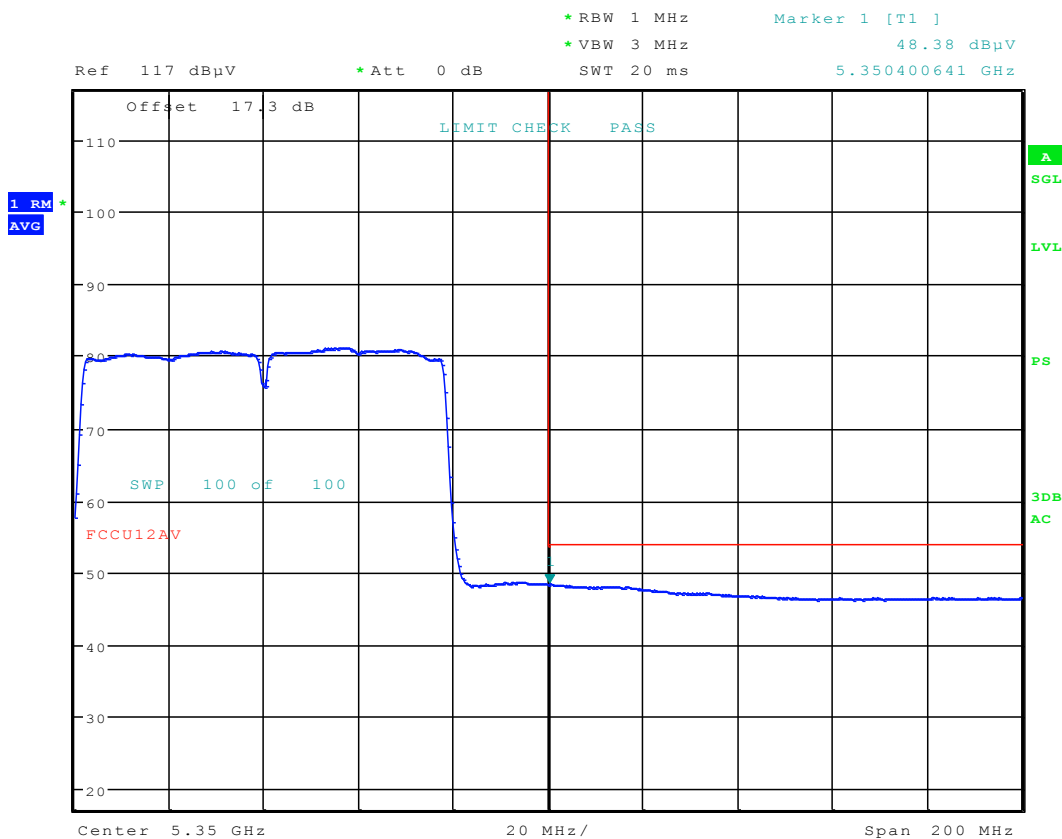
Worst Case Mode: 802.11ac (80MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5290MHz

Channel: 58



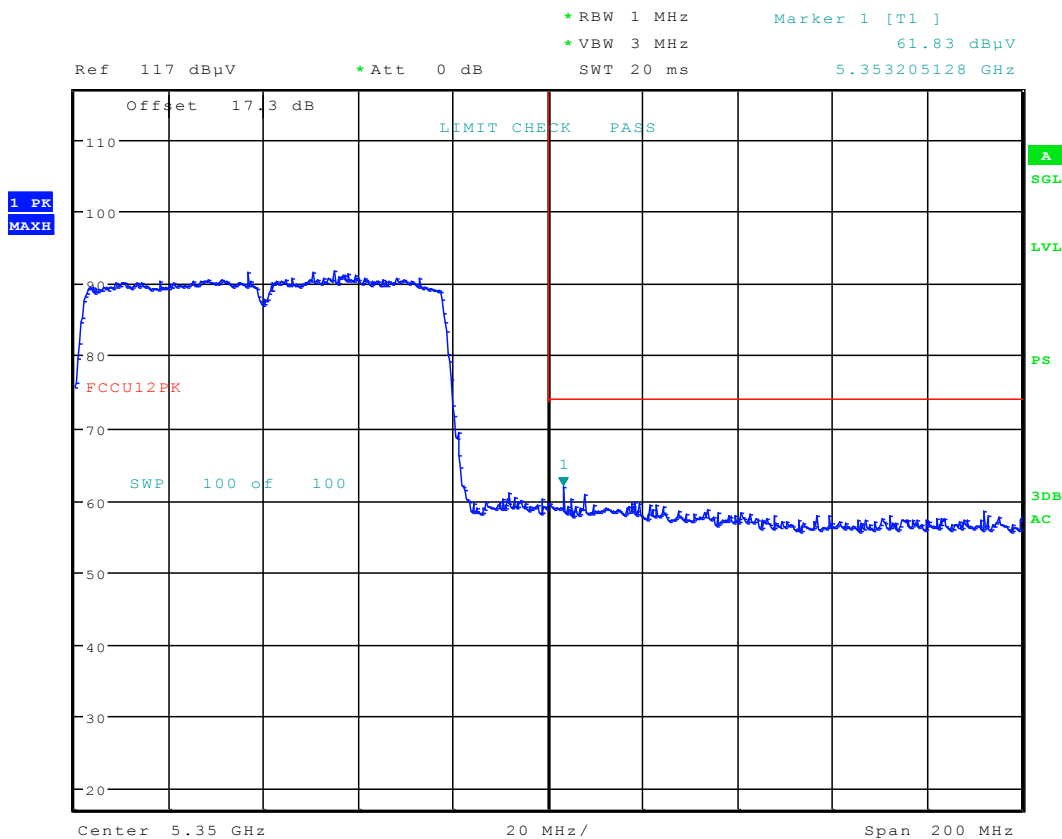
Date: 27.JAN.2016 20:08:27

Plot 7-189. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 154 of 220

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

\$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 27.JAN.2016 20:09:05

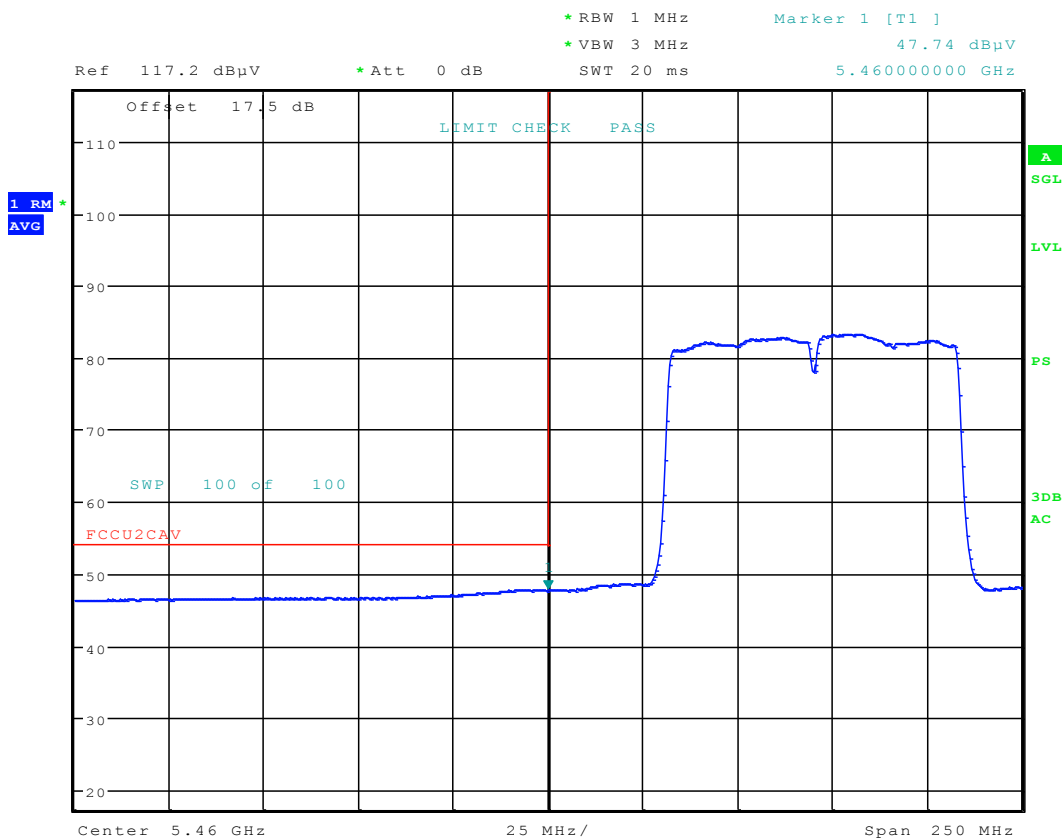
Plot 7-190. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 155 of 220

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

§15.407(b.1)(b.2) §15.205 §15.209

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



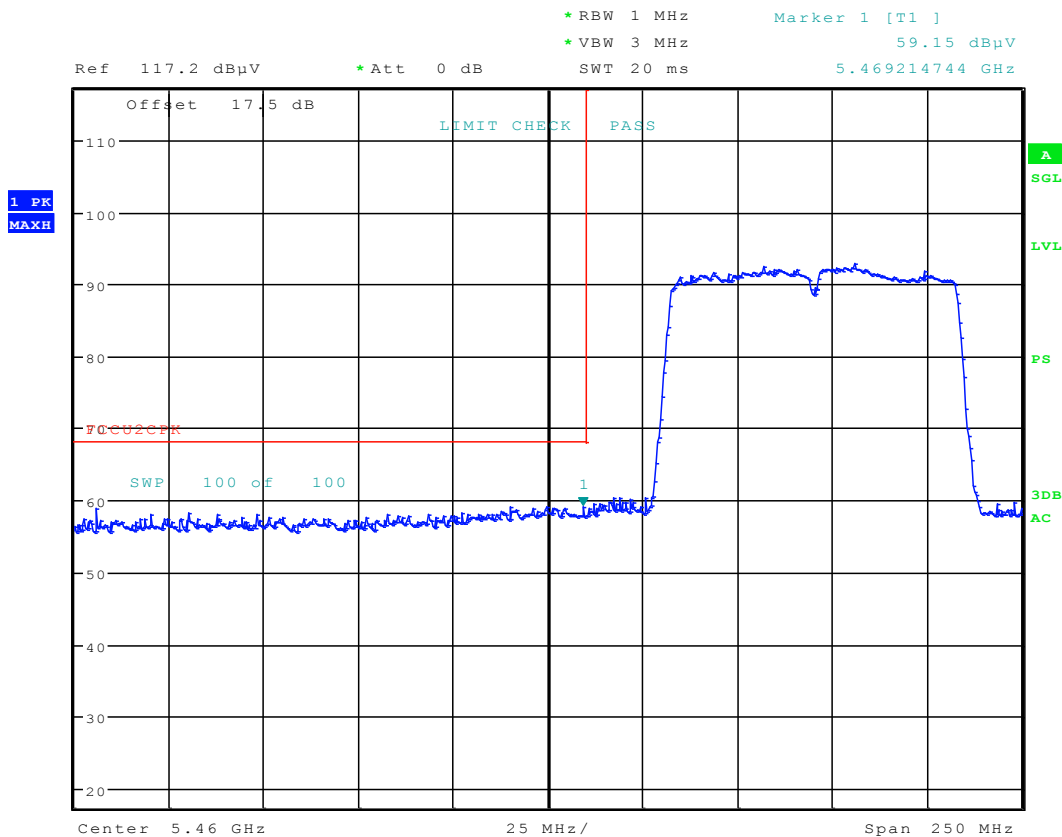
Date: 27.JAN.2016 20:55:31

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

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 156 of 220

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

\$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 27.JAN.2016 20:54:55

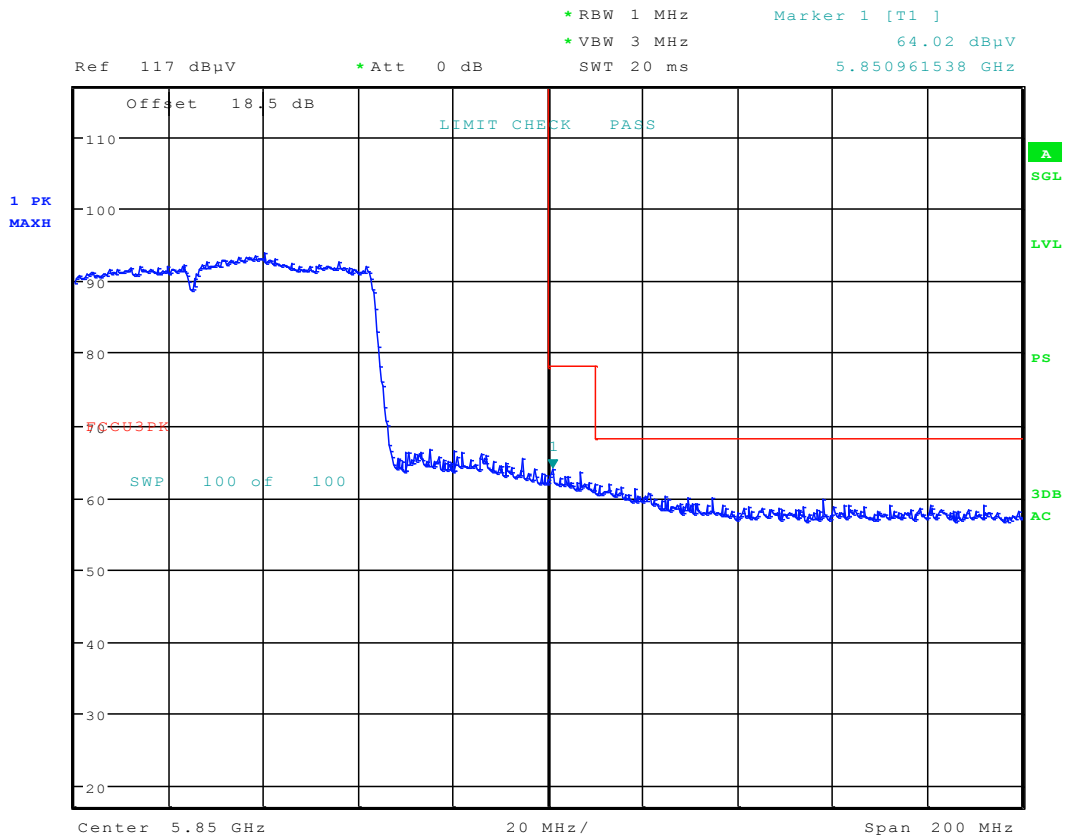
Plot 7-192. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 157 of 220

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

§15.407(b.1)(b.2) §15.205 §15.209

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



Date: 27.JAN.2016 21:08:41

Plot 7-193. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 158 of 220

Antenna-1 Radiated Band Edge Measurements CM Accessory (40MHz BW) §15.407(b.1)(b.2) §15.205 §15.209

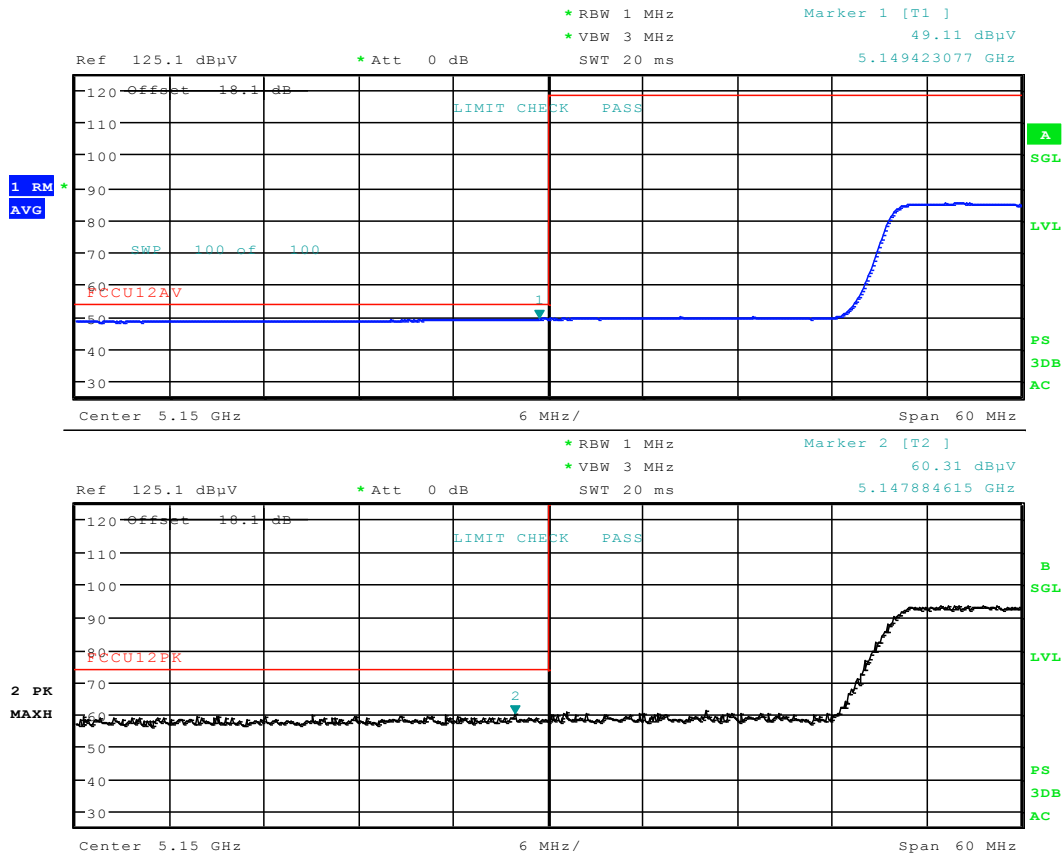
Worst Case Mode: 802.11n (40MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5190MHz

Channel: 38



Date: 22.FEB.2016 20:23:04

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

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 159 of 220

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

§15.407(b.1)(b.2) §15.205 §15.209

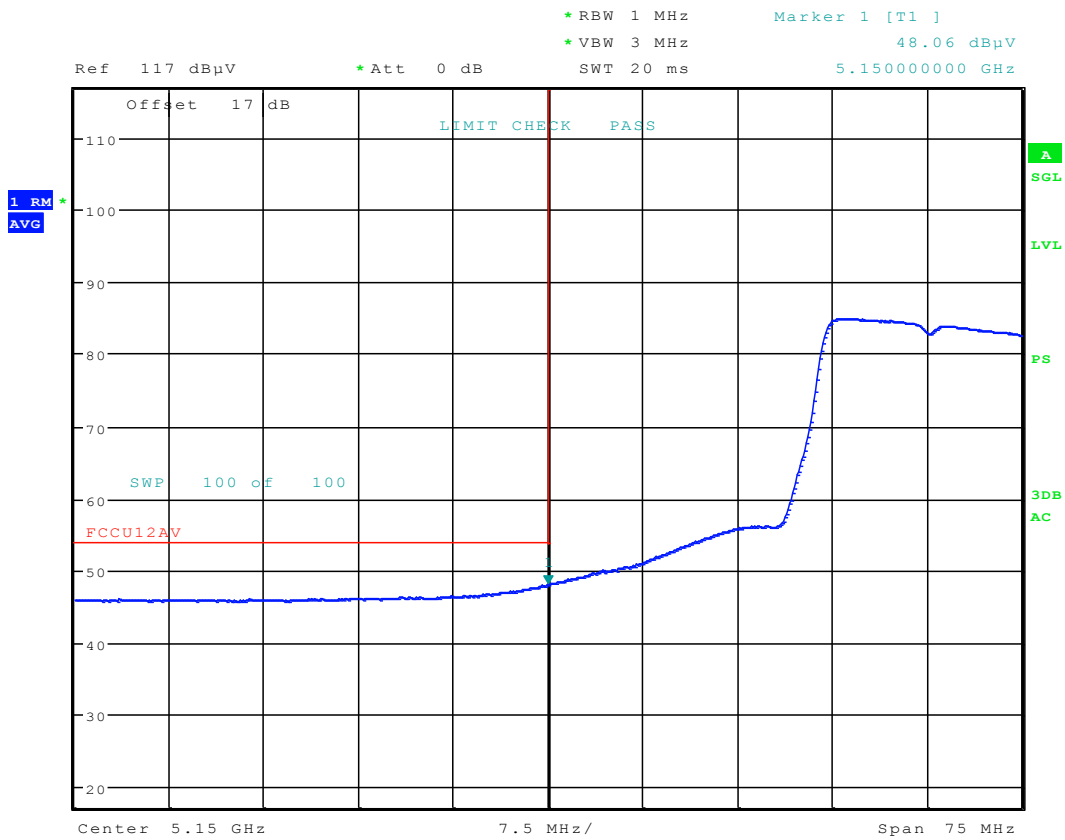
Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 5180MHz

Channel: 36



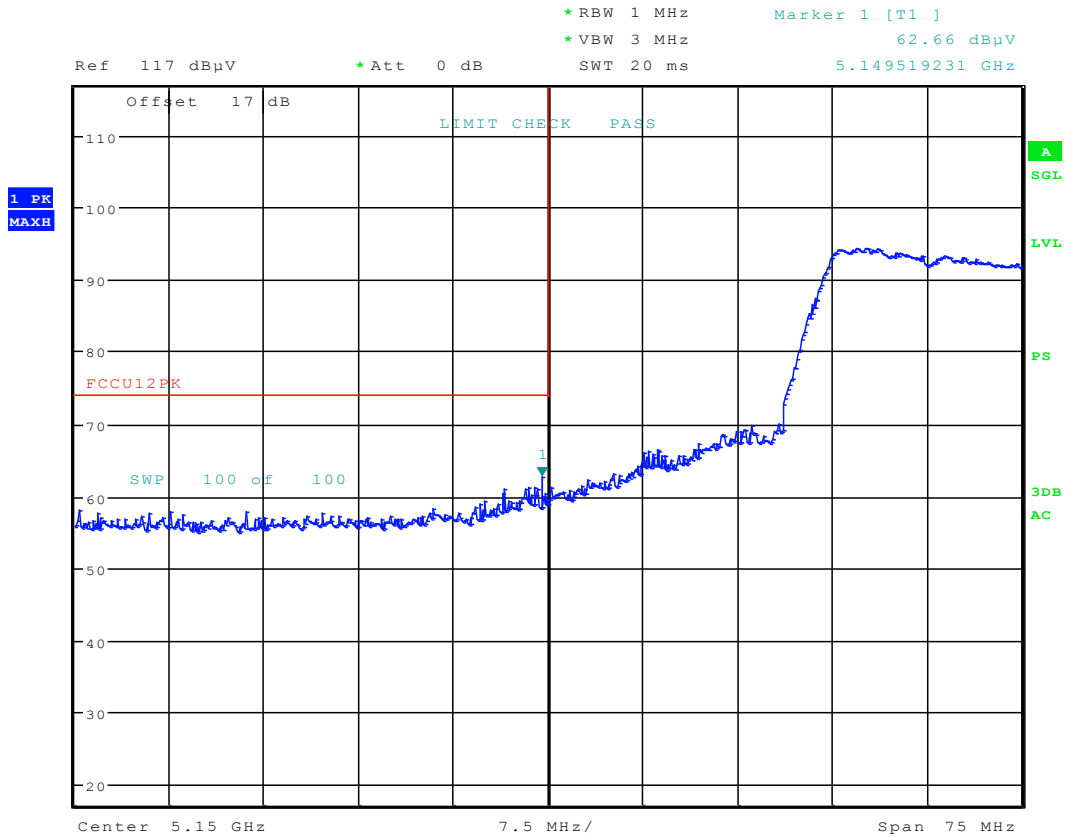
Date: 27.JAN.2016 21:35:08

Plot 7-195. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 160 of 220

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

\$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 27.JAN.2016 21:35:28

Plot 7-196. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 161 of 220

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

§15.407(b.1)(b.2) §15.205 §15.209

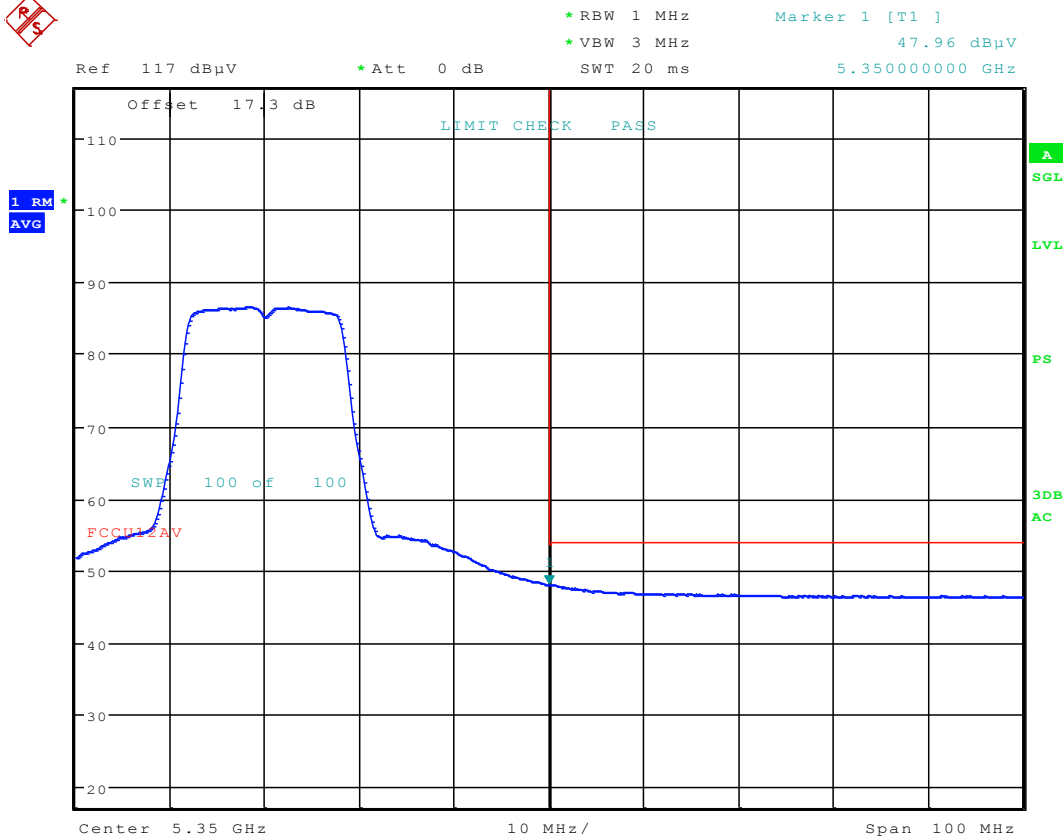
Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 5320MHz

Channel: 64



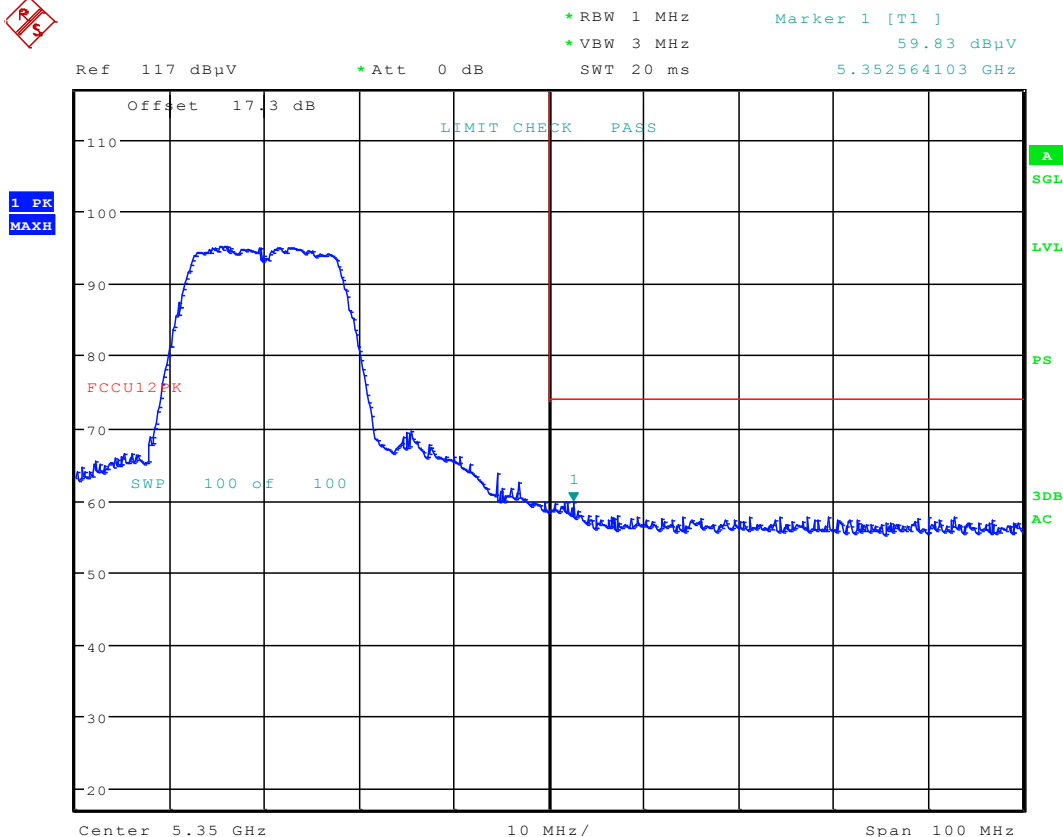
Date: 29.JAN.2016 18:56:19

Plot 7-197. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 162 of 220

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

\$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 29.JAN.2016 18:56:41

Plot 7-198. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 163 of 220

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

§15.407(b.1)(b.2) §15.205 §15.209

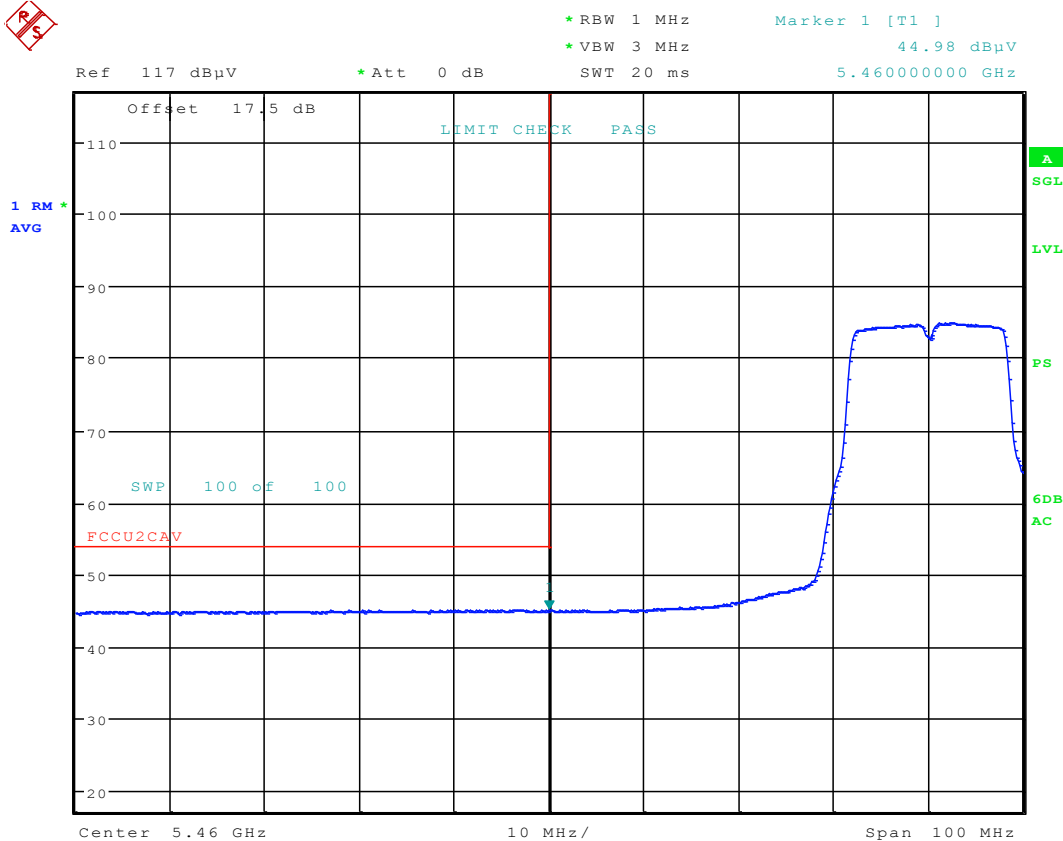
Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 5500MHz

Channel: 100



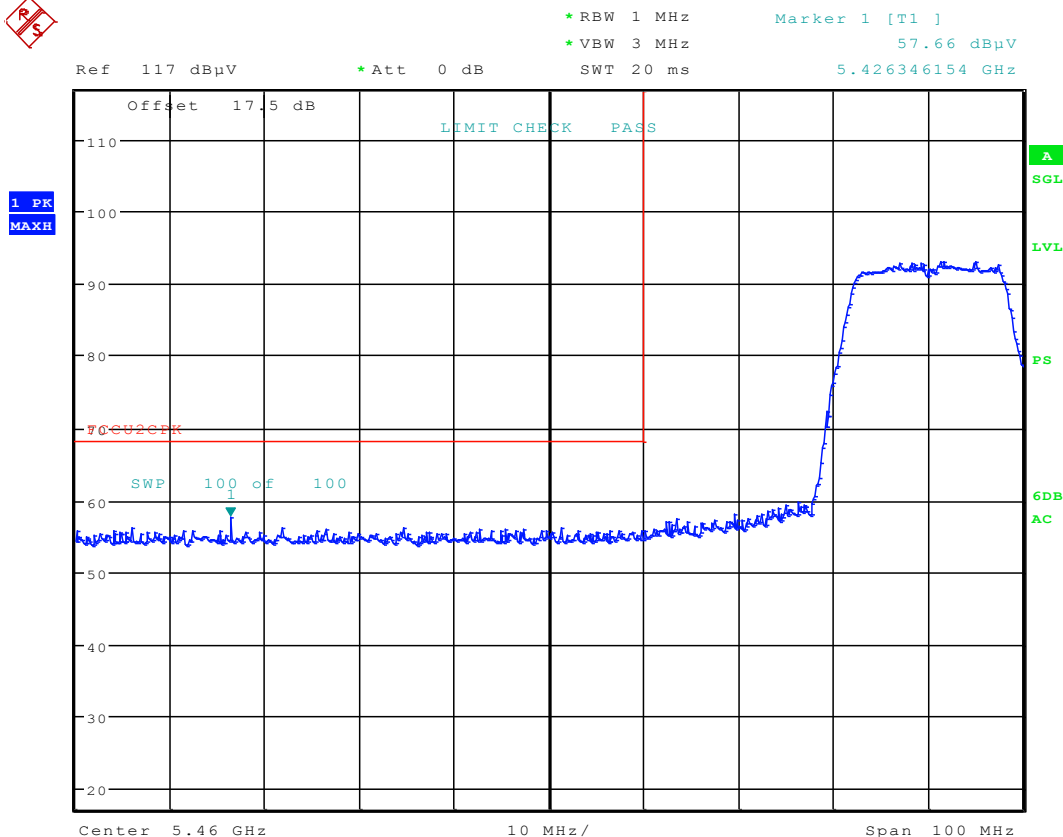
Date: 29.JAN.2016 19:15:34

Plot 7-199. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 164 of 220

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

§15.407(b.1)(b.2) §15.205 §15.209



Date: 29.JAN.2016 19:16:10

Plot 7-200. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 165 of 220

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

§15.407(b.1)(b.2) §15.205 §15.209

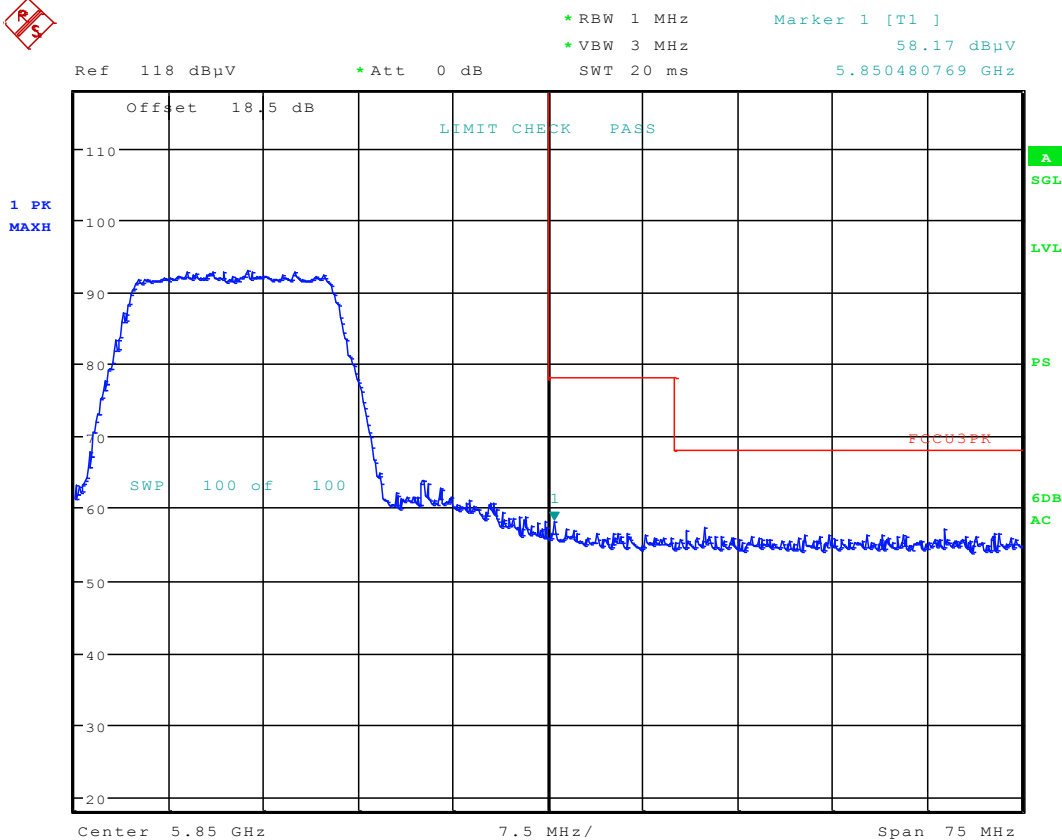
Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 5825MHz

Channel: 165



Date: 29.JAN.2016 19:39:58

Plot 7-201. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 166 of 220

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

§15.407(b.1)(b.2) §15.205 §15.209

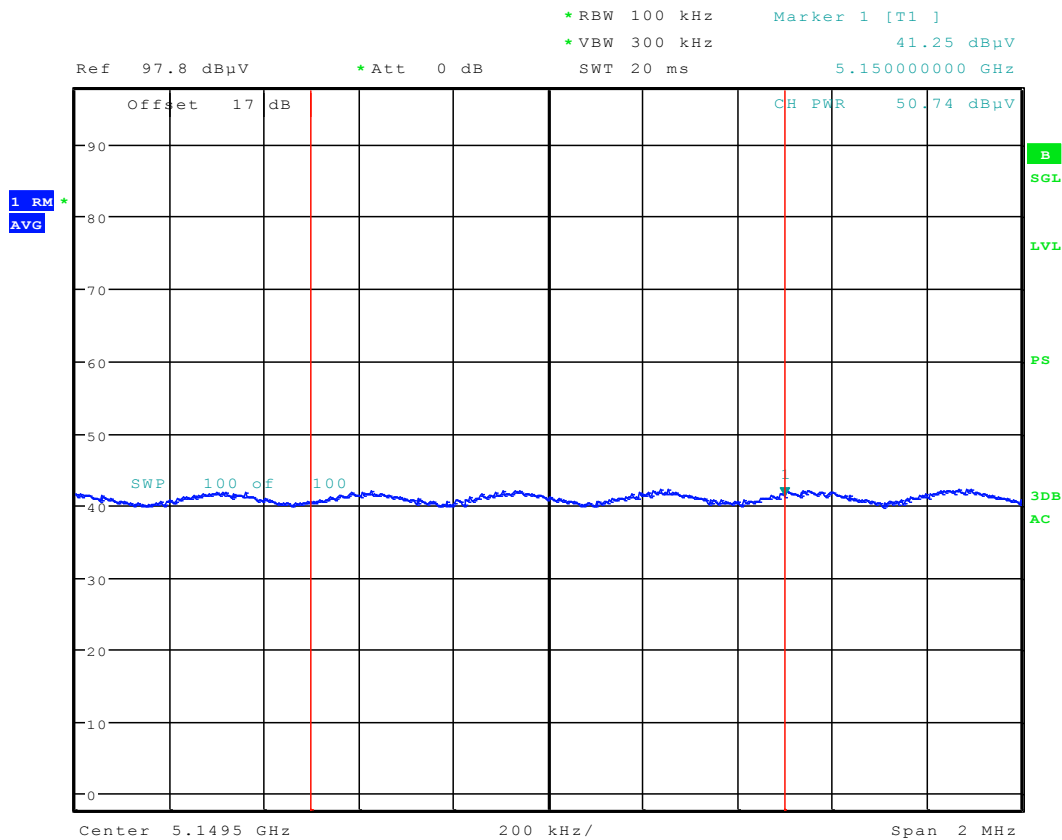
Worst Case Mode: 802.11n (40MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5190MHz

Channel: 38



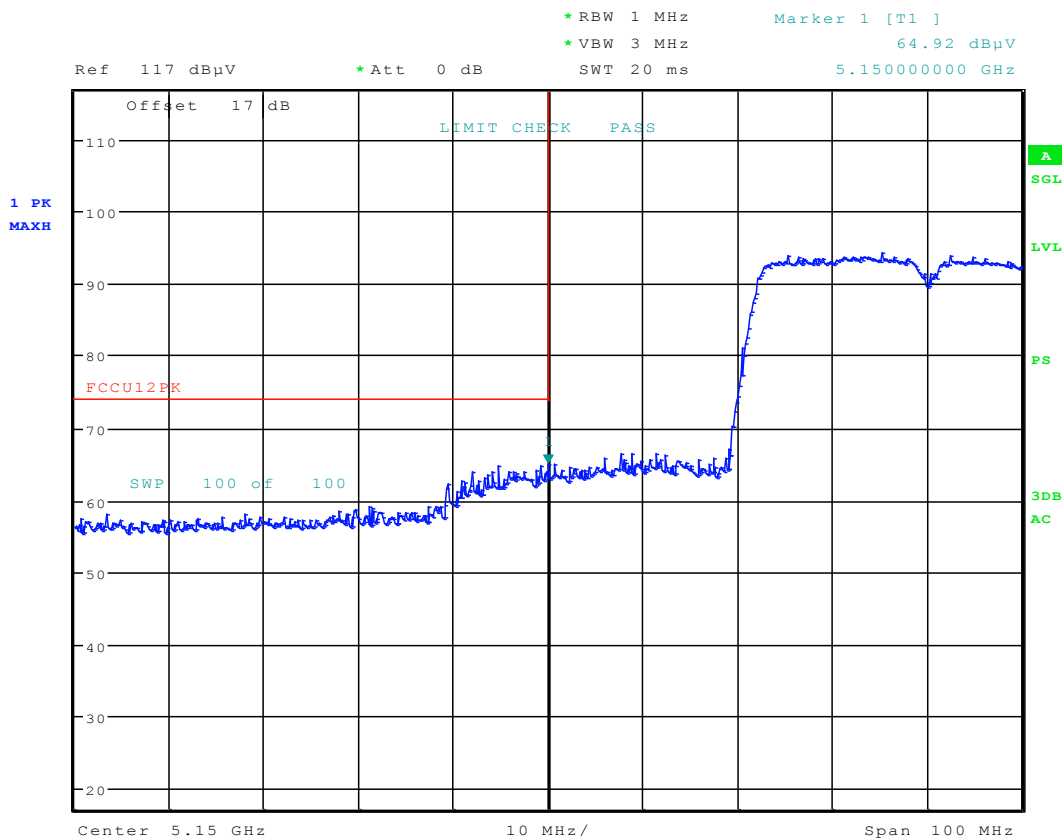
Date: 19.FEB.2016 18:19:23

Plot 7-202. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 167 of 220

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

§15.407(b.1)(b.2) §15.205 §15.209



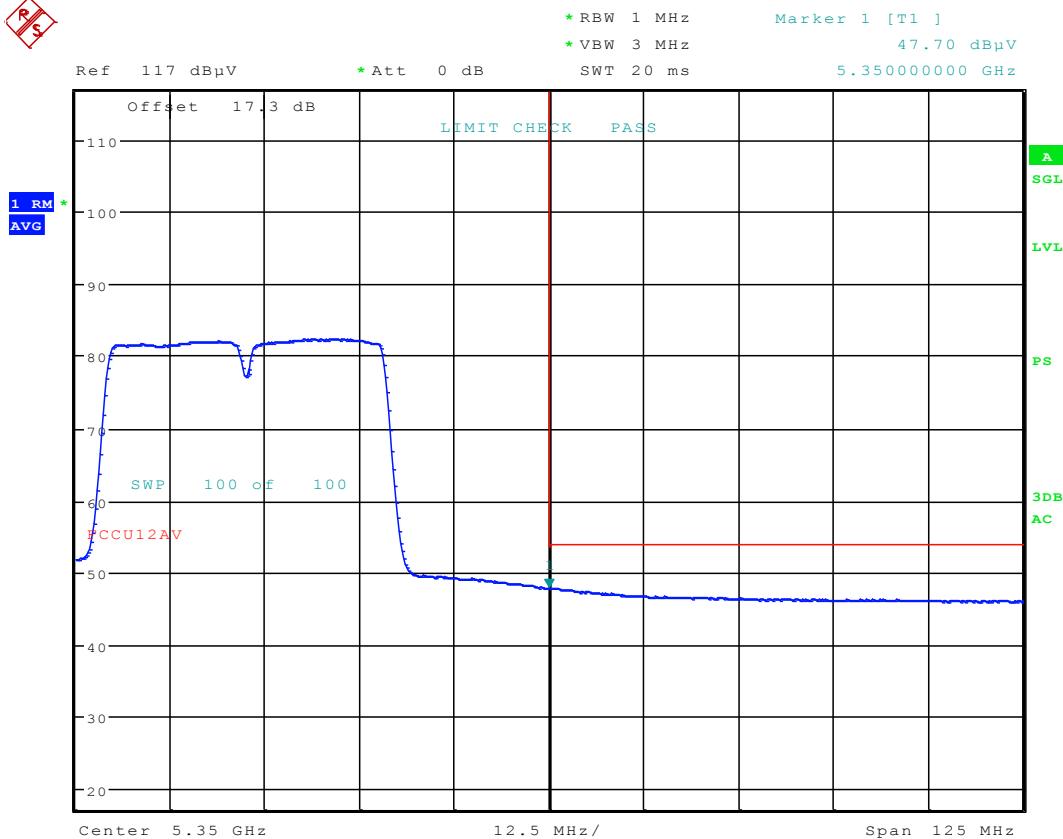
Date: 27.JAN.2016 21:43:22

Plot 7-203. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 168 of 220

Antenna-2 Radiated Band Edge Measurements (40MHz BW) §15.407(b.1)(b.2) §15.205 §15.209

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

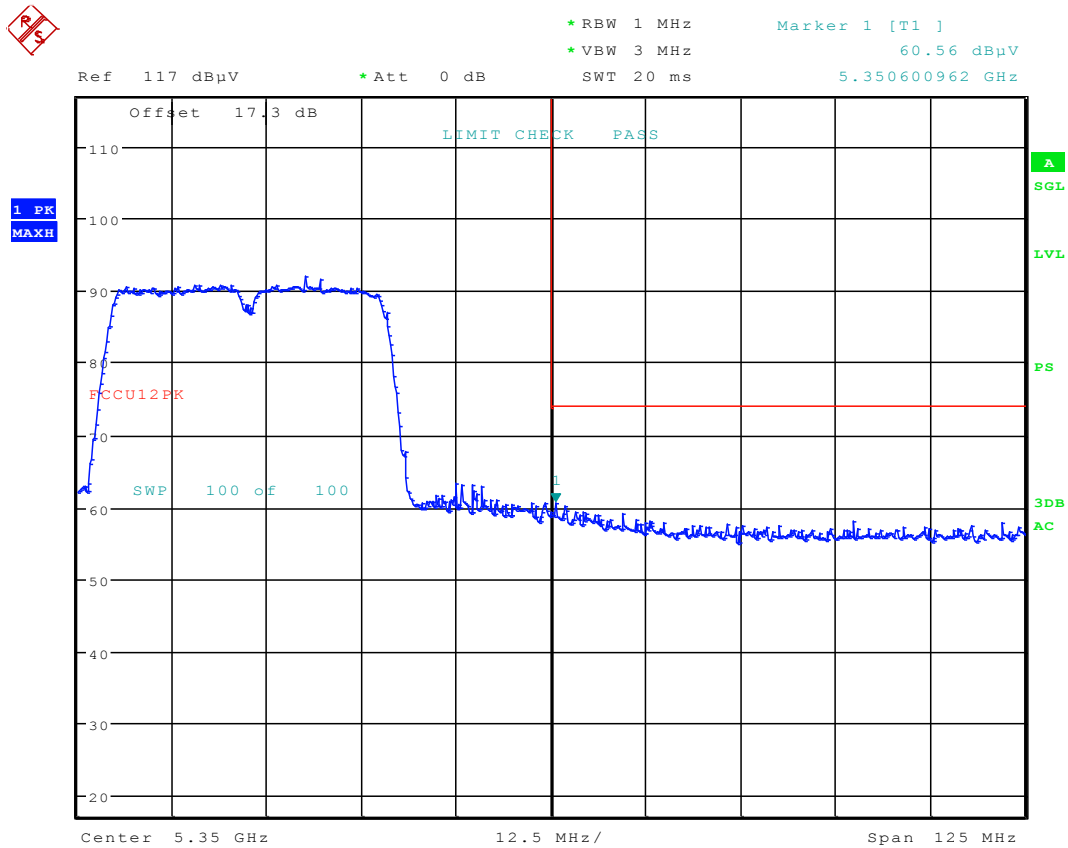


Date: 29.JAN.2016 19:01:49

Plot 7-204. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 169 of 220

Antenna-2 Radiated Band Edge Measurements (40MHz BW)
§15.407(b.1)(b.2) §15.205 §15.209



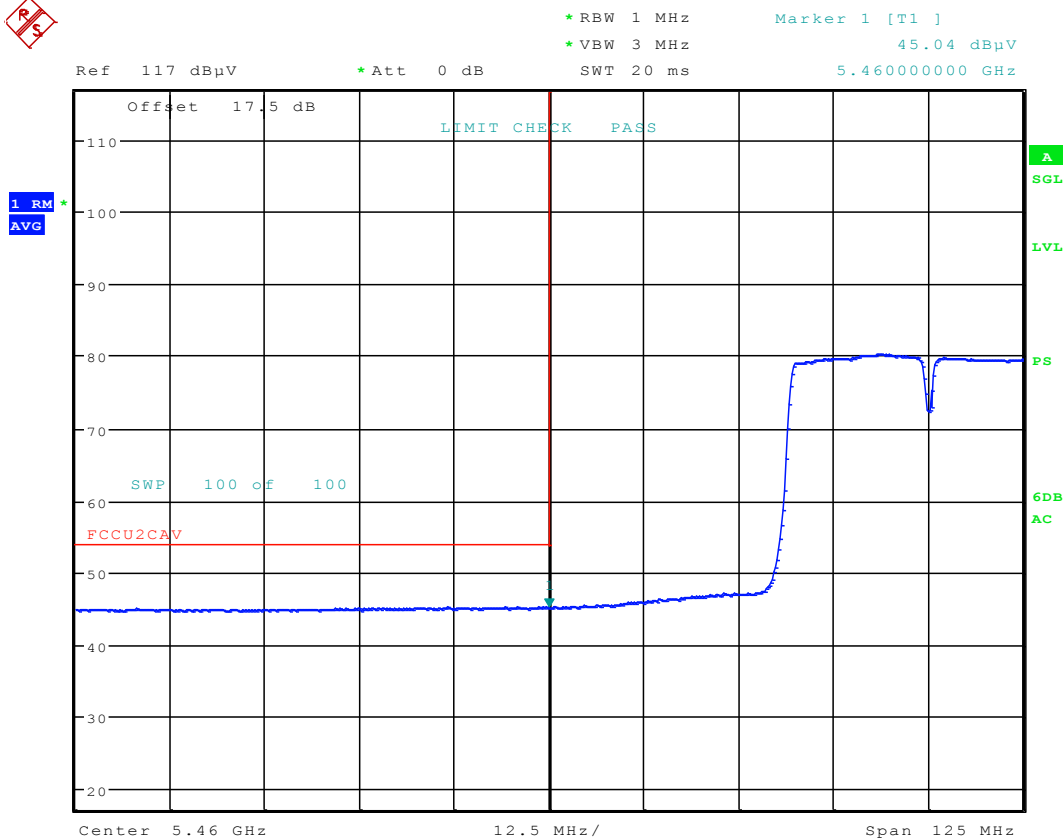
Date: 29.JAN.2016 18:59:25

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

FCC ID: ZNFH830		 FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 170 of 220

Antenna-2 Radiated Band Edge Measurements (40MHz BW) §15.407(b.1)(b.2) §15.205 §15.209

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



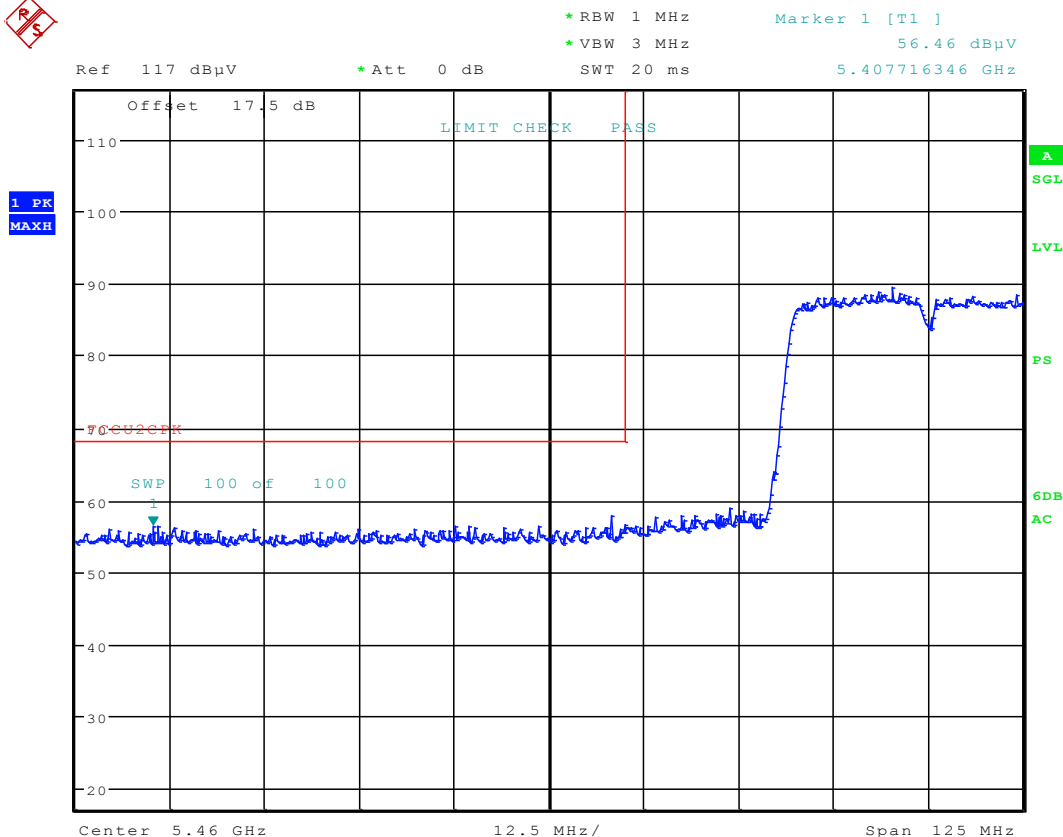
Date: 29.JAN.2016 19:20:22

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

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 171 of 220

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

§15.407(b.1)(b.2) §15.205 §15.209



Date: 29.JAN.2016 19:19:55

Plot 7-207. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 172 of 220

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

§15.407(b.1)(b.2) §15.205 §15.209

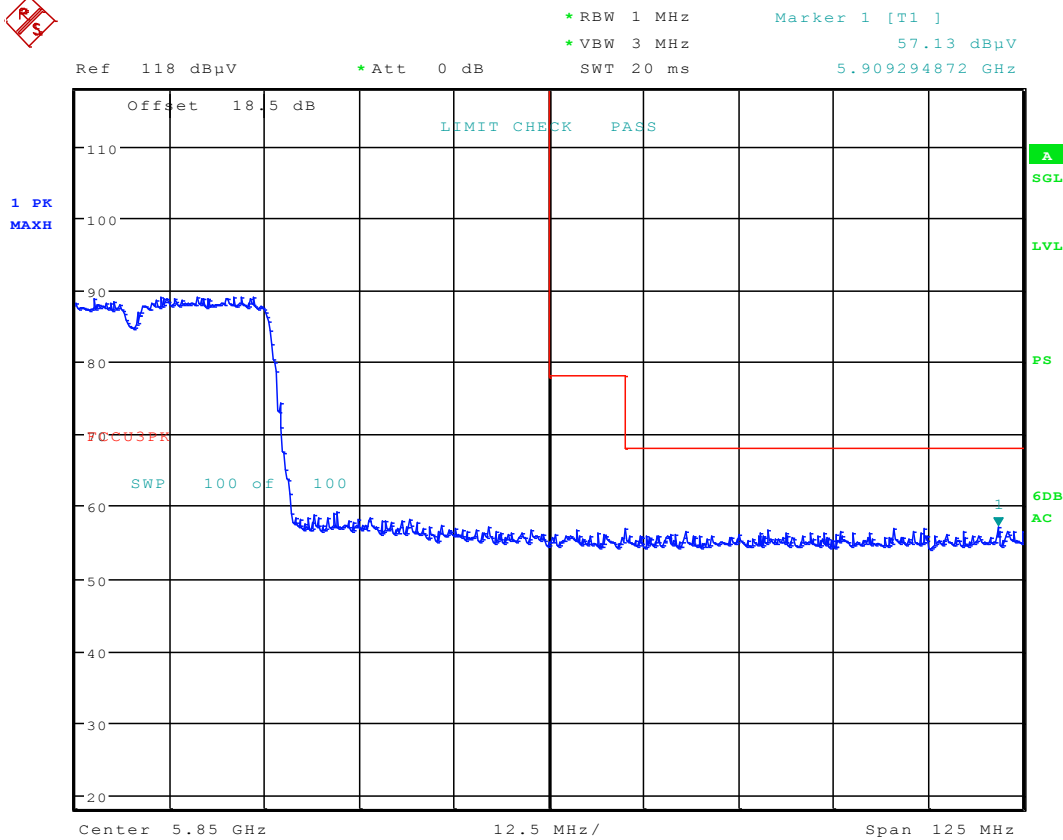
Worst Case Mode: 802.11n (40MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5795MHz

Channel: 159



Date: 29.JAN.2016 19:38:19

Plot 7-208. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 173 of 220

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

§15.407(b.1)(b.2) §15.205 §15.209

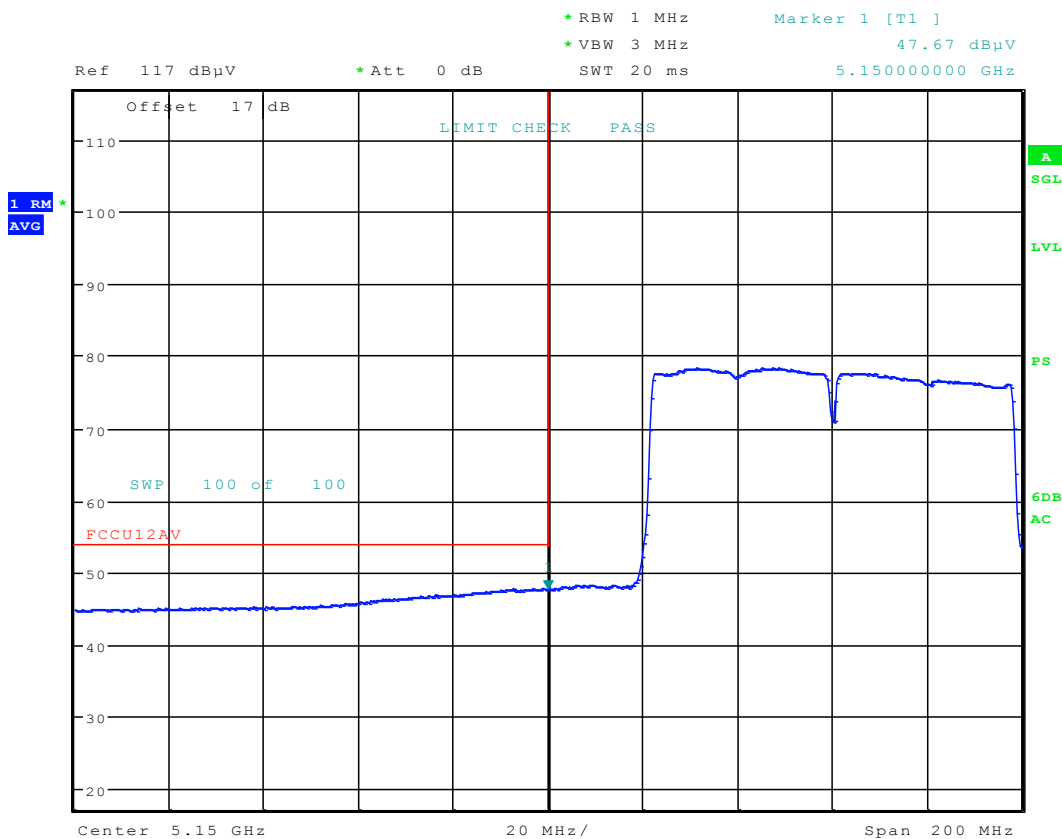
Worst Case Mode: 802.11n (80MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5210MHz

Channel: 42



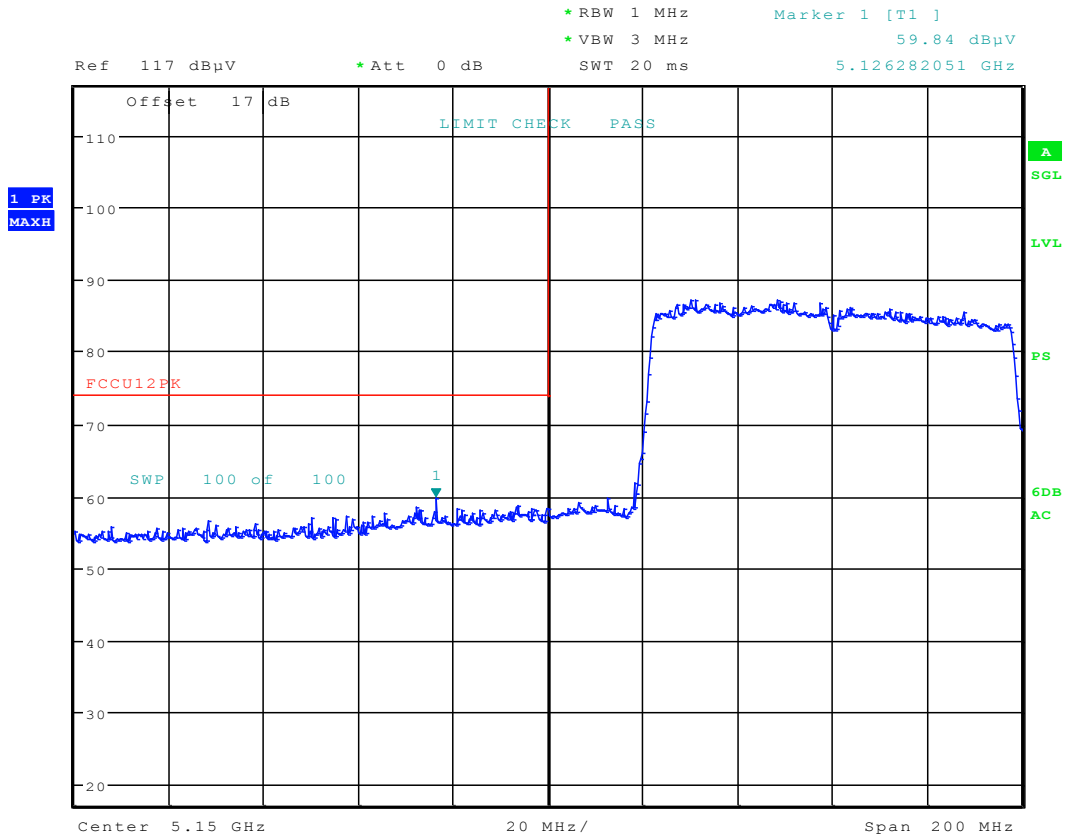
Date: 27.JAN.2016 21:53:26

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

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 174 of 220

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

\$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 27.JAN.2016 21:54:13

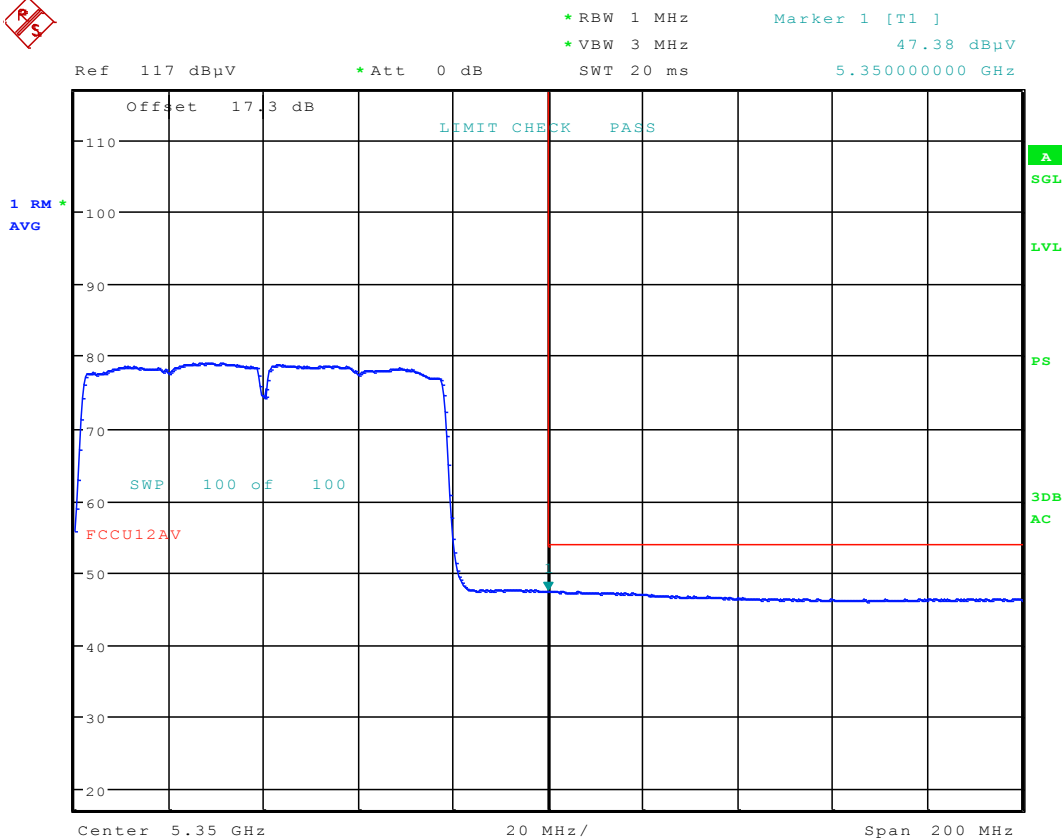
Plot 7-210. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 175 of 220

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

§15.407(b.1)(b.2) §15.205 §15.209

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



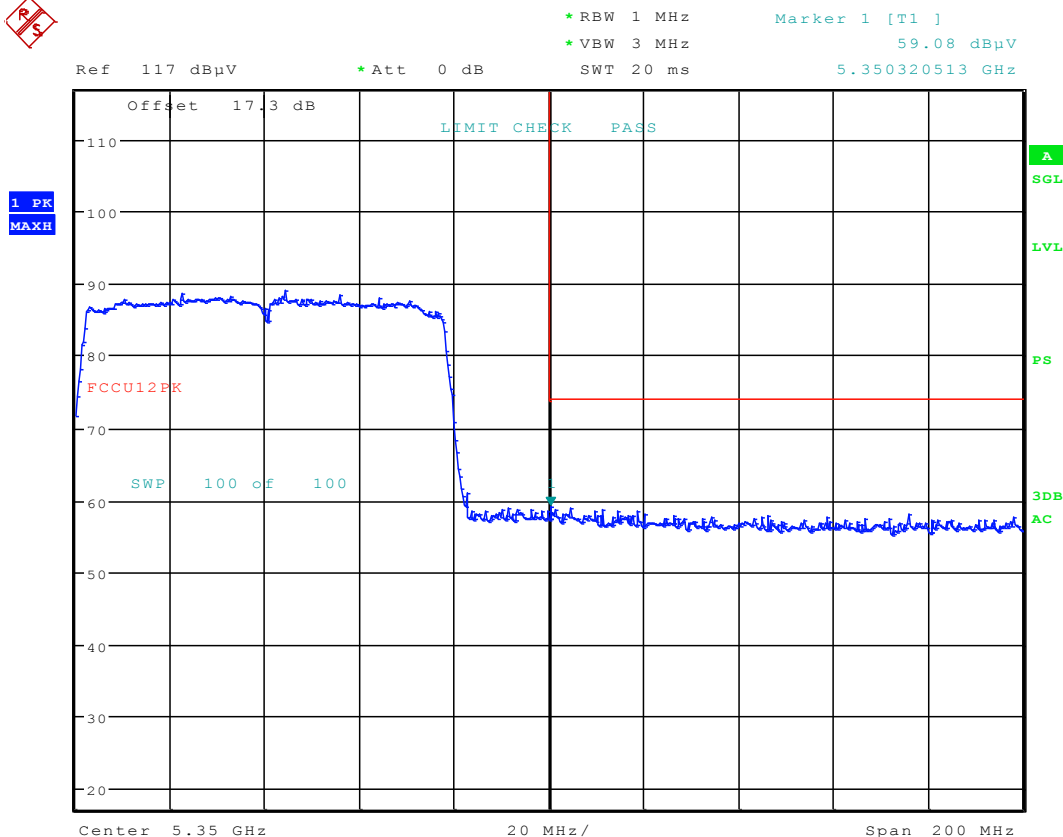
Date: 29.JAN.2016 19:05:48

Plot 7-211. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 176 of 220

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

\$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 29.JAN.2016 19:06:32

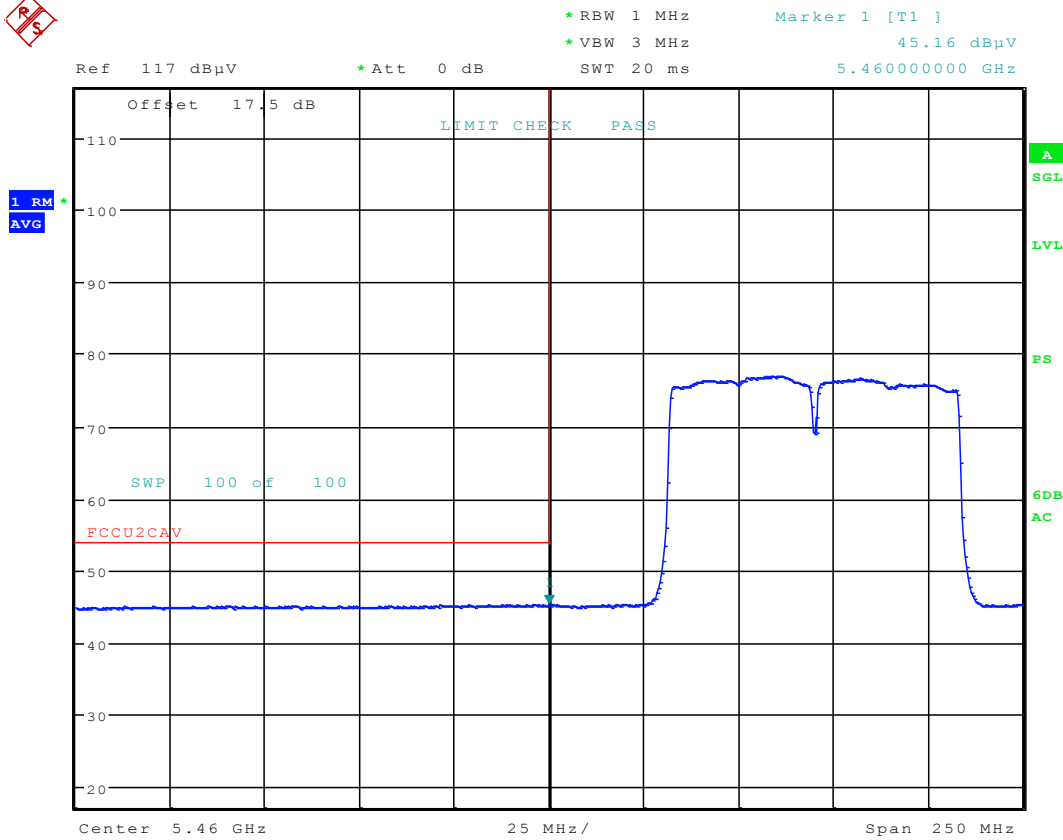
Plot 7-212. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 177 of 220

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

§15.407(b.1)(b.2) §15.205 §15.209

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



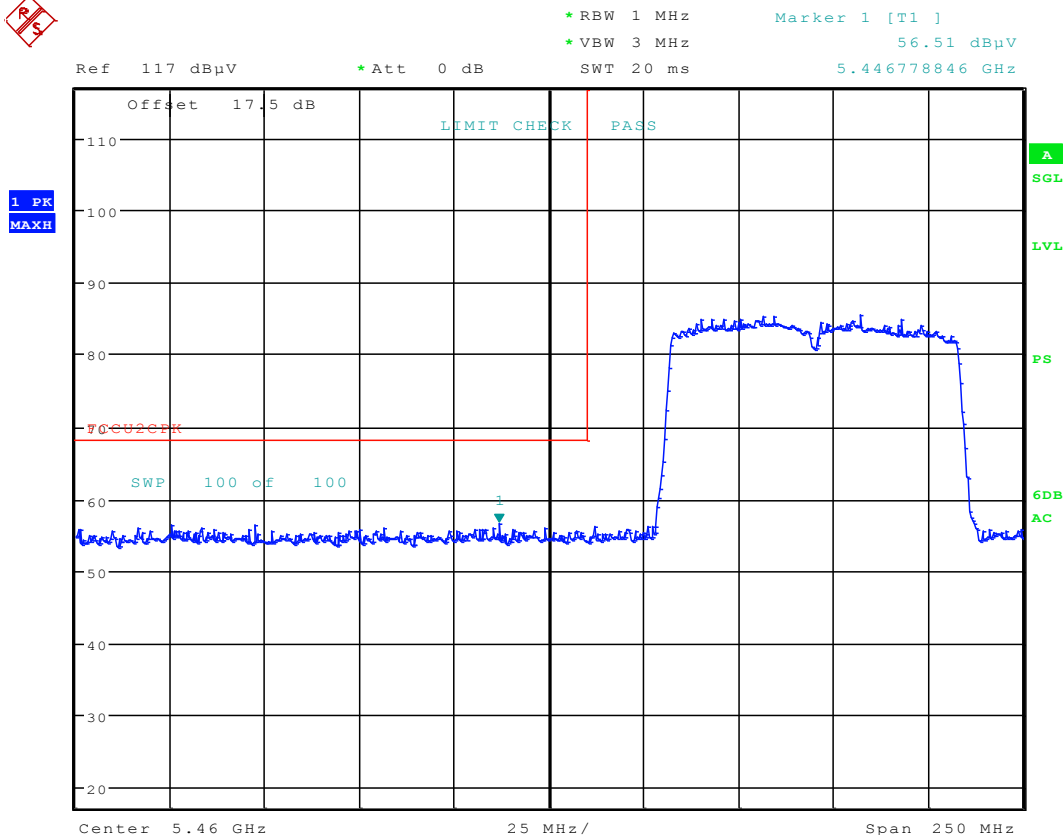
Date: 29.JAN.2016 19:24:44

Plot 7-213. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 178 of 220

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

§15.407(b.1)(b.2) §15.205 §15.209



Date: 29.JAN.2016 19:26:02

Plot 7-214. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 179 of 220

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

§15.407(b.1)(b.2) §15.205 §15.209

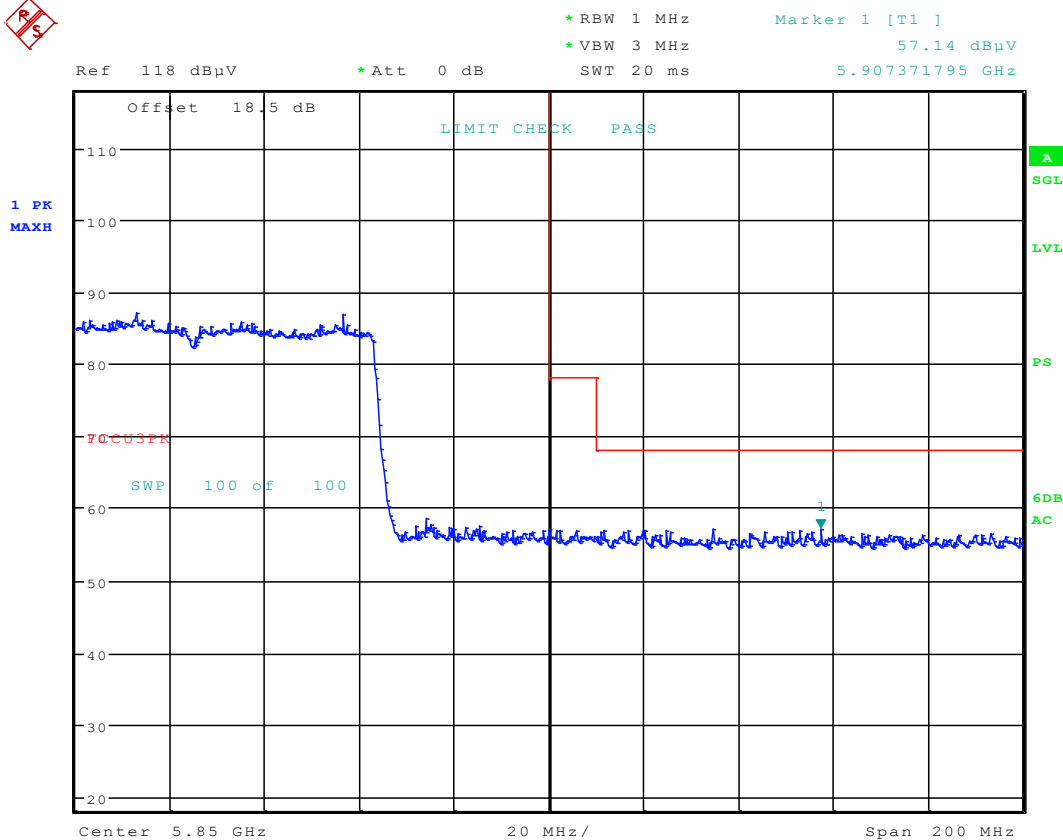
Worst Case Mode: 802.11ac (80MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5775MHz

Channel: 155



Date: 29.JAN.2016 19:36:29

Plot 7-215. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 180 of 220

Antenna-2 Radiated Band Edge Measurements with CM Accessory (20MHz BW) §15.407(b.1)(b.2) §15.205 §15.209

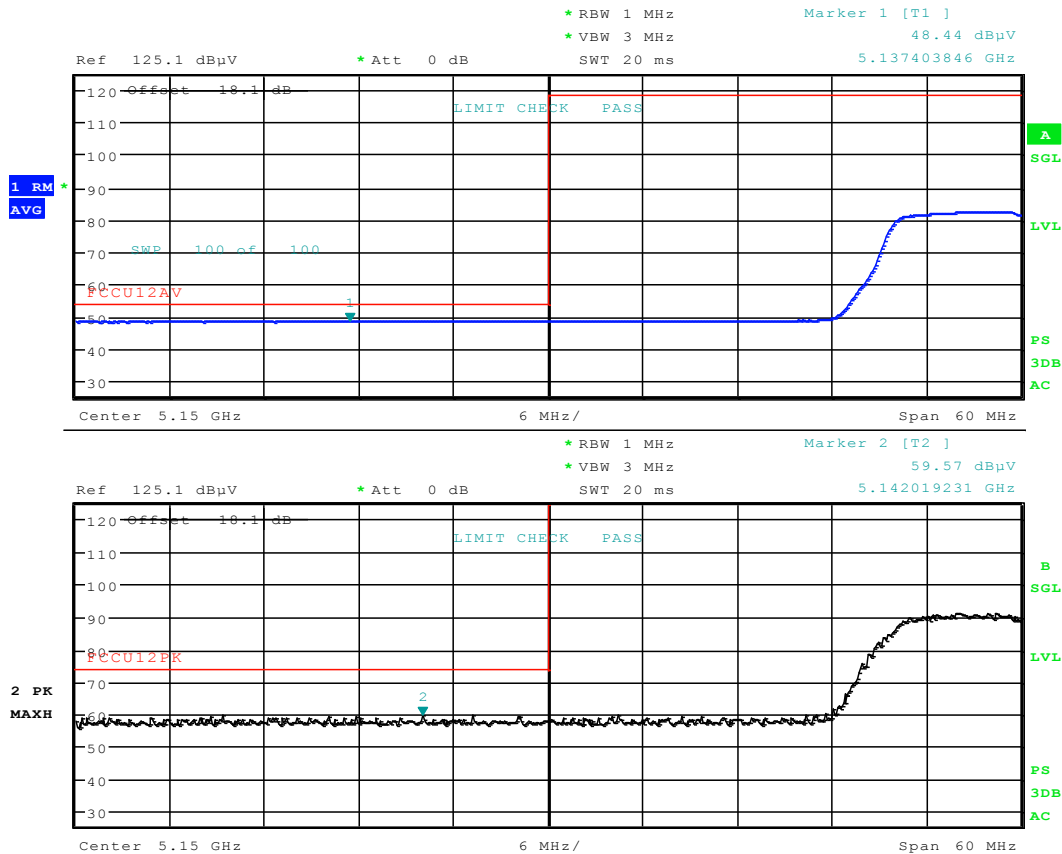
Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 5180MHz

Channel: 36



Date: 22.FEB.2016 20:33:02

Plot 7-216. Radiated Restricted Lower Band Edge Plot (Average & Peak – UNII Band 1)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 181 of 220

7.7.9 MIMO Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

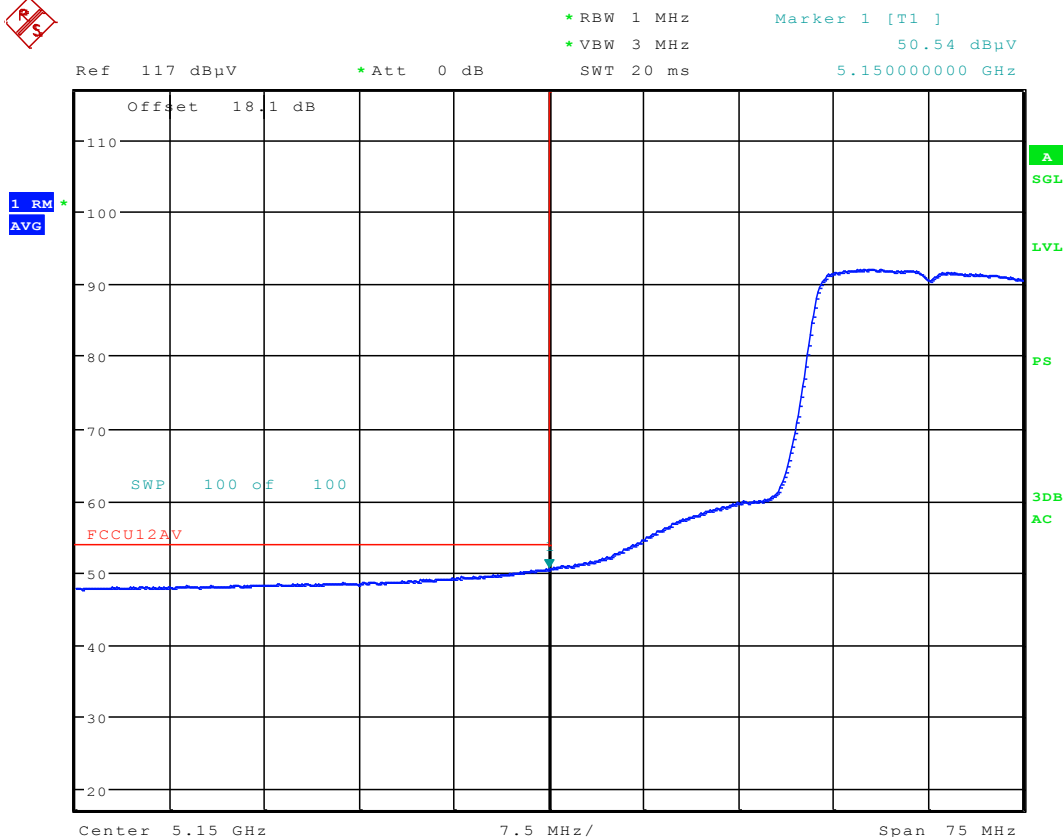
Worst Case Mode: 802.11n (20MHz)

Worst Case Transfer Rate: MCS8

Distance of Measurements: 3 Meters

Operating Frequency: 5180MHz

Channel: 36



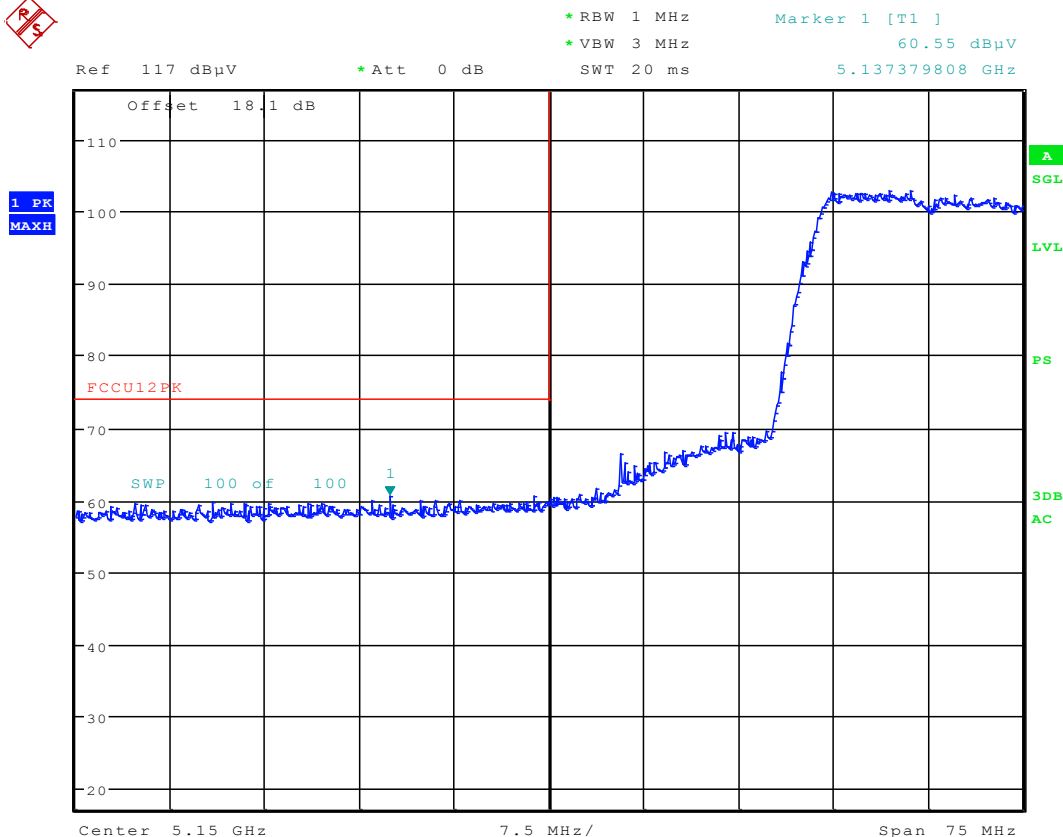
Date: 9.FEB.2016 16:36:49

Plot 7-217. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 182 of 220

MIMO Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 9.FEB.2016 16:47:17

Plot 7-218. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 183 of 220

MIMO Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

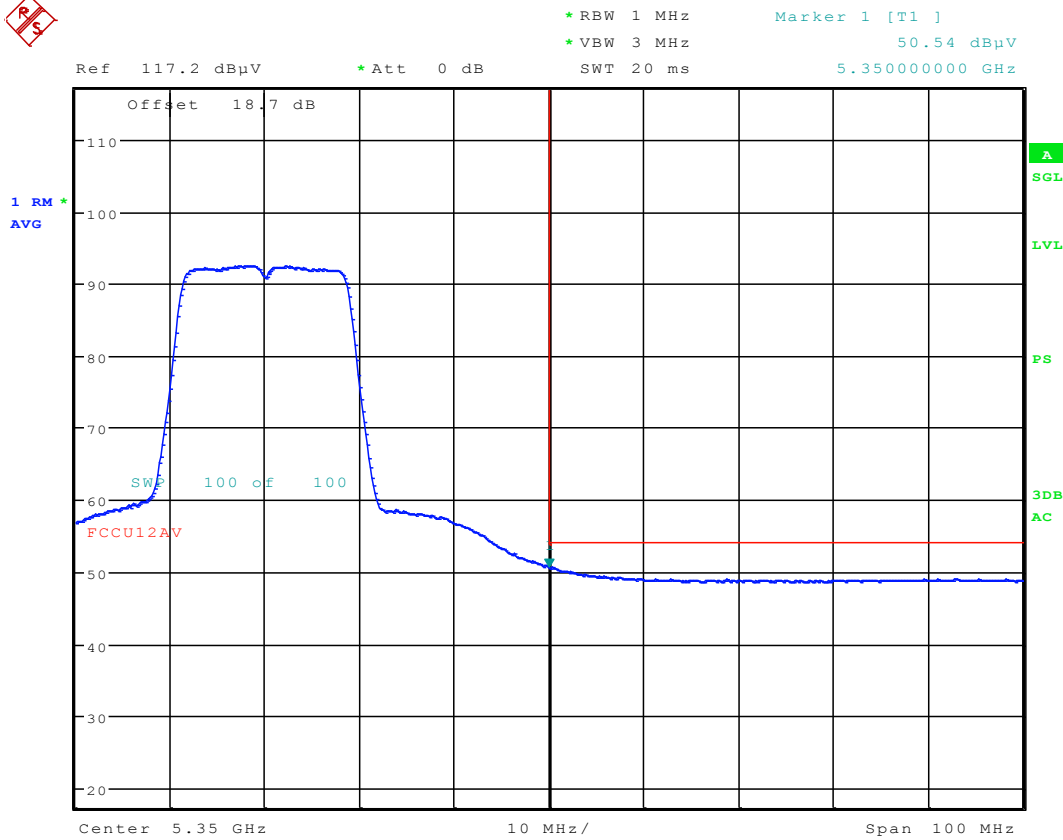
Worst Case Mode: 802.11n (20MHz)

Worst Case Transfer Rate: MCS8

Distance of Measurements: 3 Meters

Operating Frequency: 5320MHz

Channel: 64

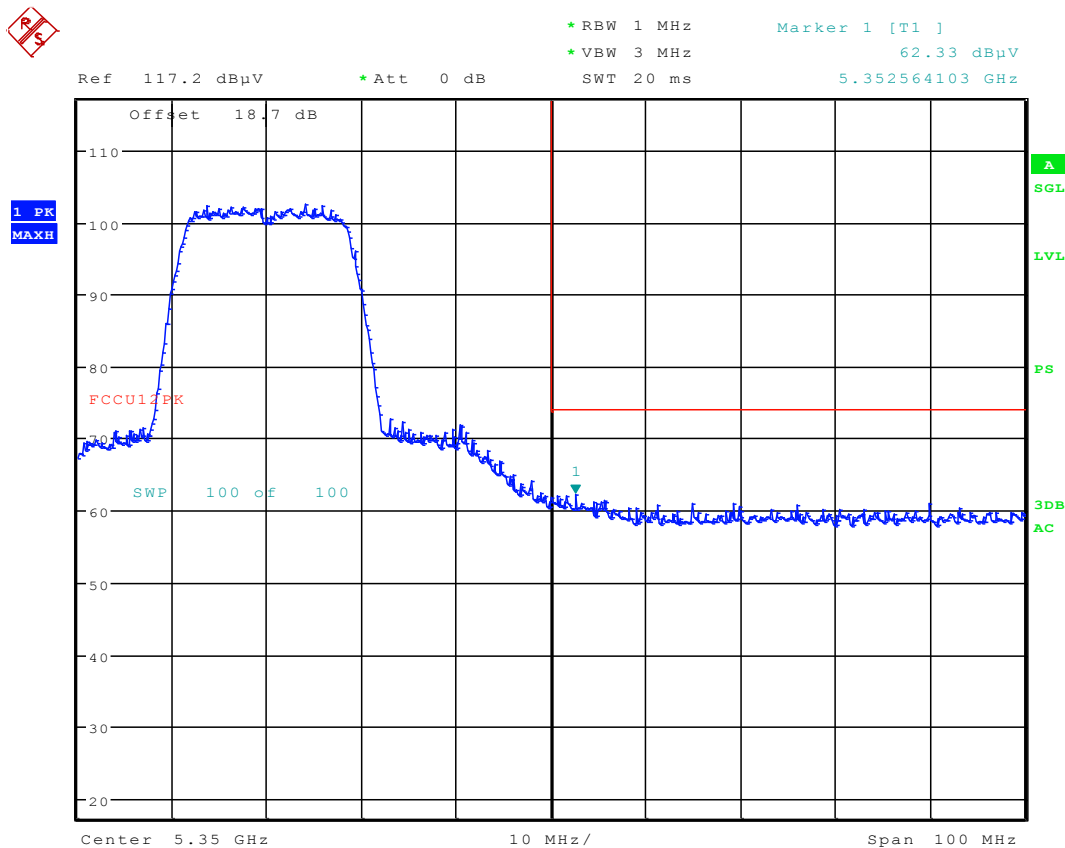


Date: 9.FEB.2016 17:09:38

Plot 7-219. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 184 of 220

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



Date: 9.FEB.2016 17:09:59

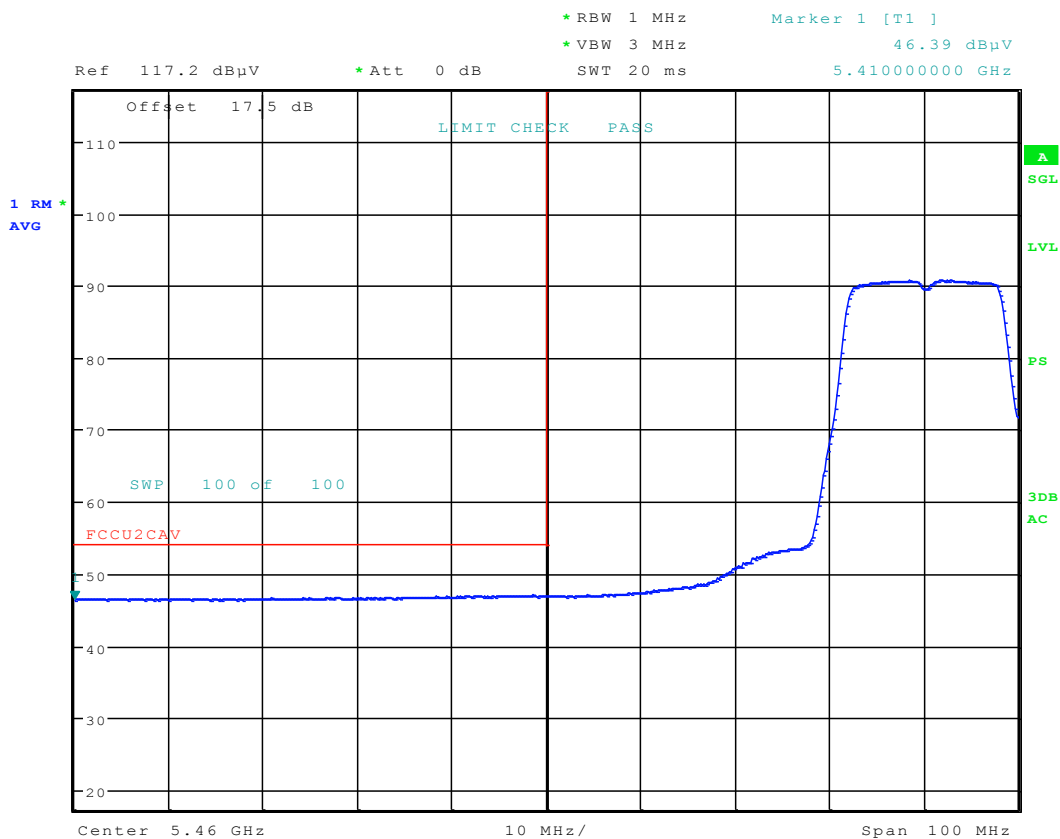
Plot 7-220. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

FCC ID: ZNFH830	 FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset	Page 185 of 220

MIMO Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

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



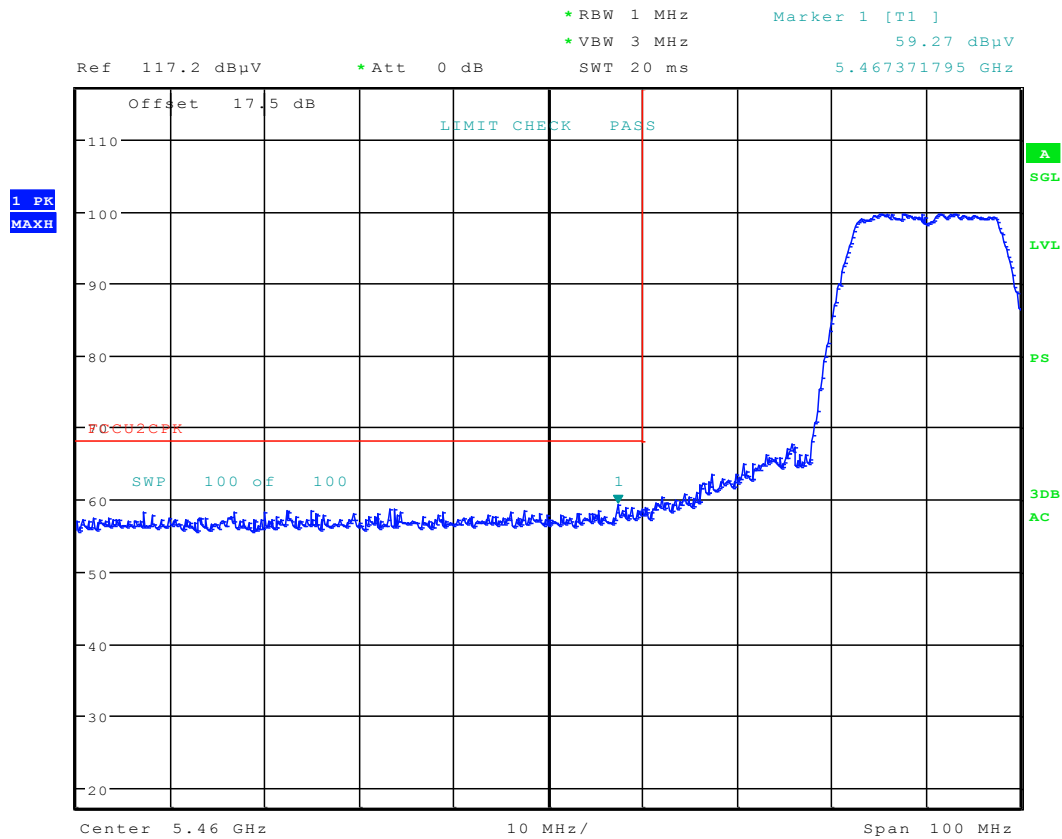
Date: 27.JAN.2016 20:45:39

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

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 186 of 220

MIMO Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 27.JAN.2016 20:46:06

Plot 7-222. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 187 of 220

MIMO Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

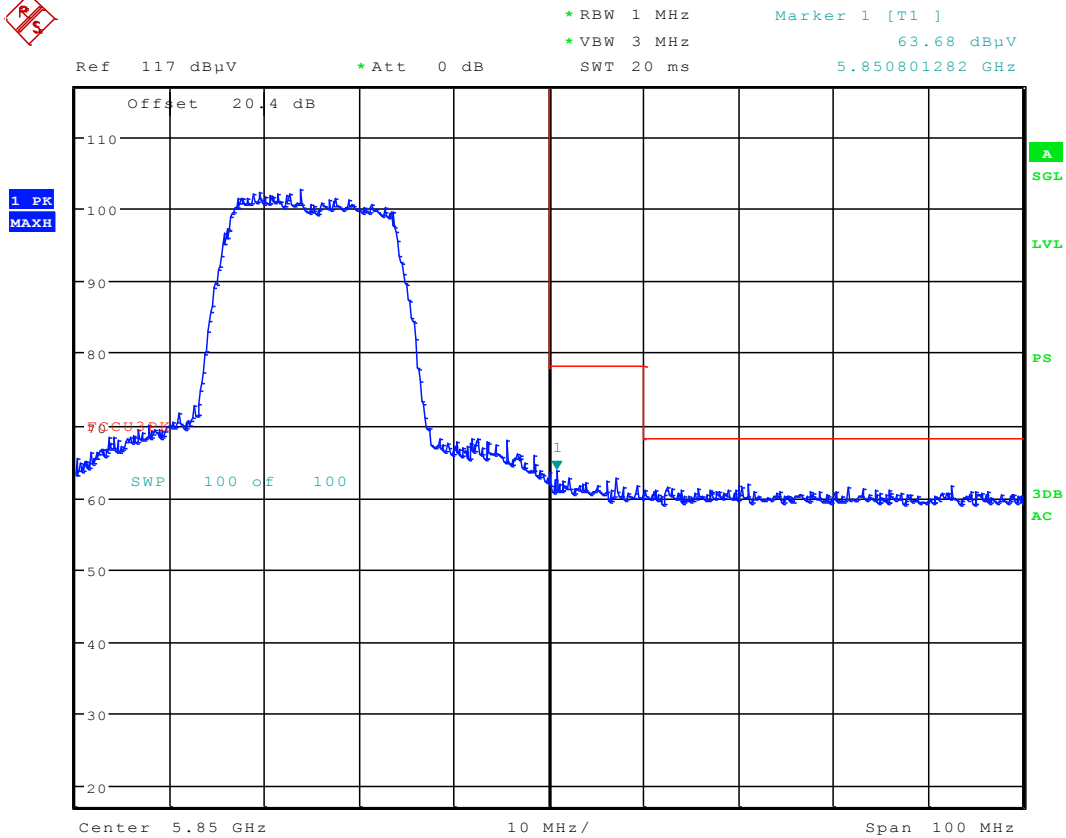
Worst Case Mode: 802.11n (20MHz)

Worst Case Transfer Rate: MCS8

Distance of Measurements: 3 Meters

Operating Frequency: 5825MHz

Channel: 165



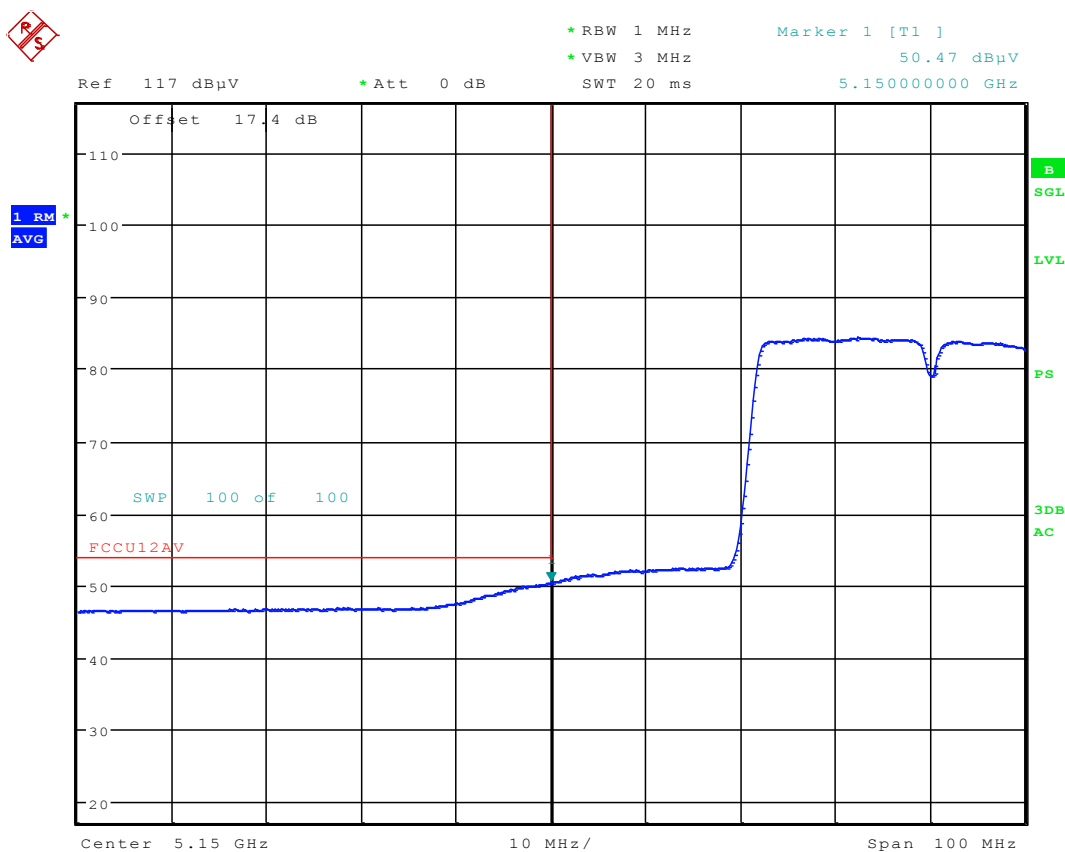
Date: 9.FEB.2016 17:39:36

Plot 7-223. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 188 of 220

7.7.10 MIMO Radiated Band Edge Measurements (40MHz BW)
§15.407(b.1)(b.2) §15.205 §15.209

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



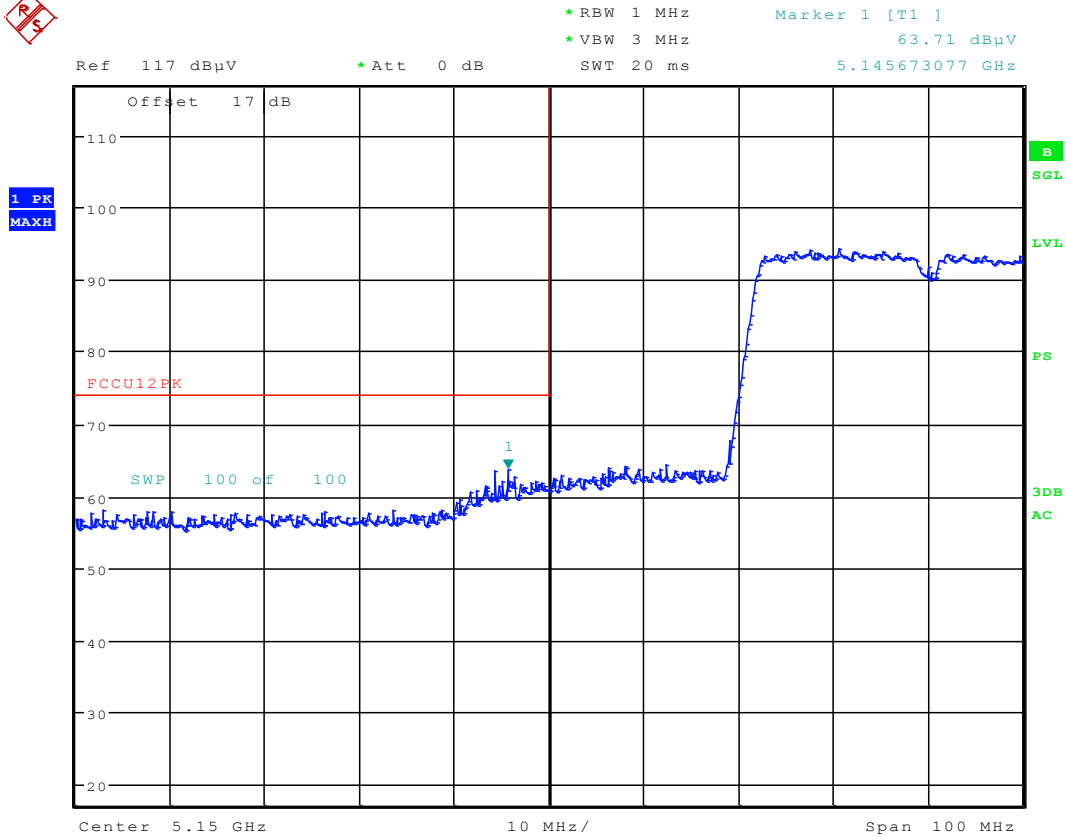
Date: 10.FEB.2016 01:04:53

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

FCC ID: ZNFH830	 FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset	Page 189 of 220

MIMO Radiated Band Edge Measurements (40MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 10.FEB.2016 01:05:26

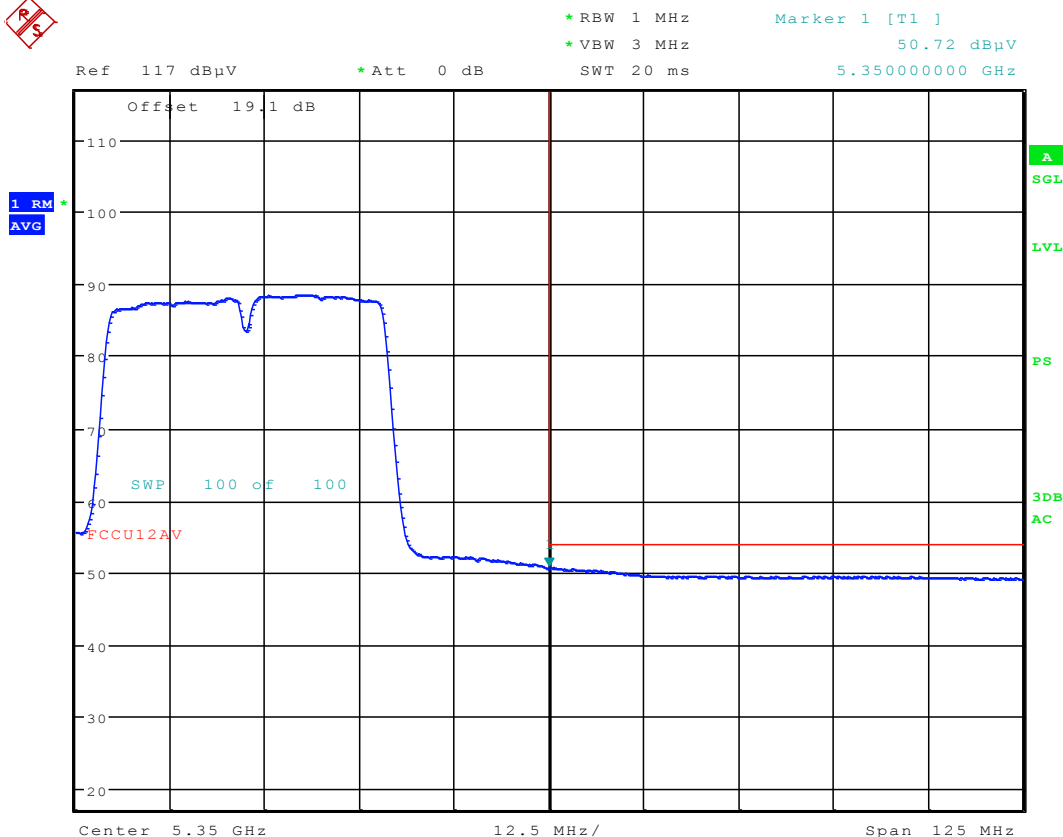
Plot 7-225. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 190 of 220

MIMO Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

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



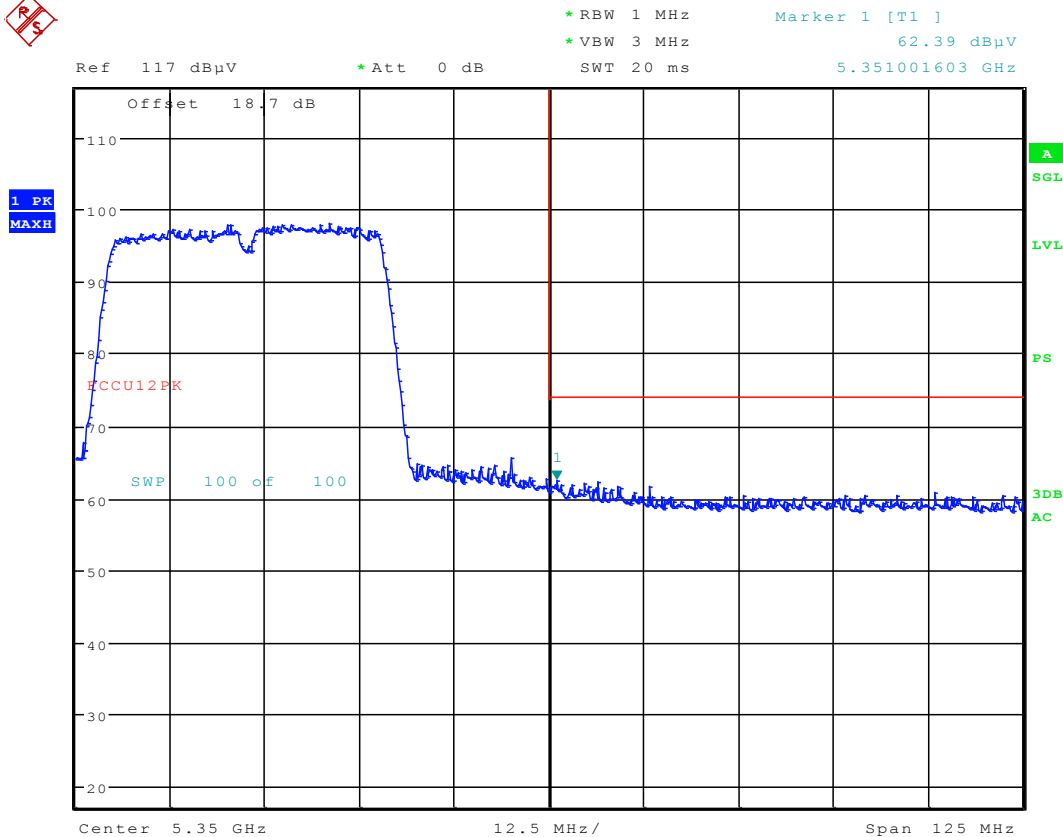
Date: 9.FEB.2016 17:12:44

Plot 7-226. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 191 of 220

MIMO Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 9.FEB.2016 17:12:00

Plot 7-227. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 192 of 220

MIMO Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

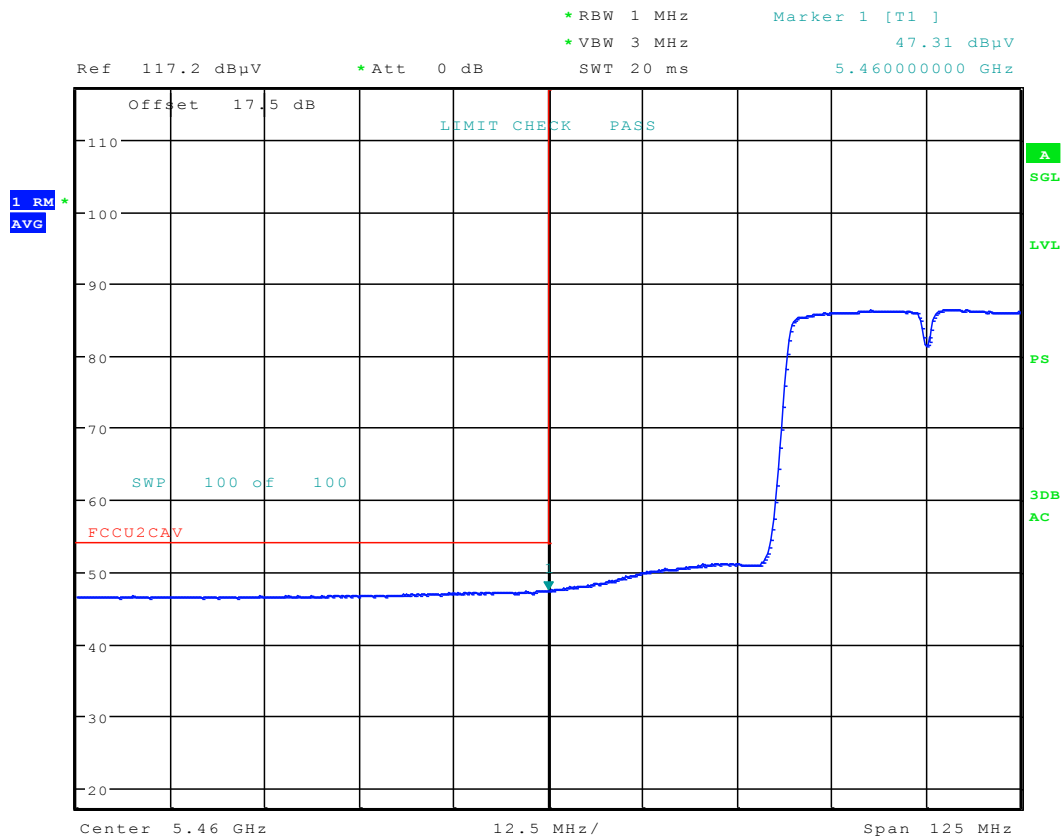
Worst Case Mode: 802.11n (40MHz)

Worst Case Transfer Rate: MCS8

Distance of Measurements: 3 Meters

Operating Frequency: 5510MHz

Channel: 102



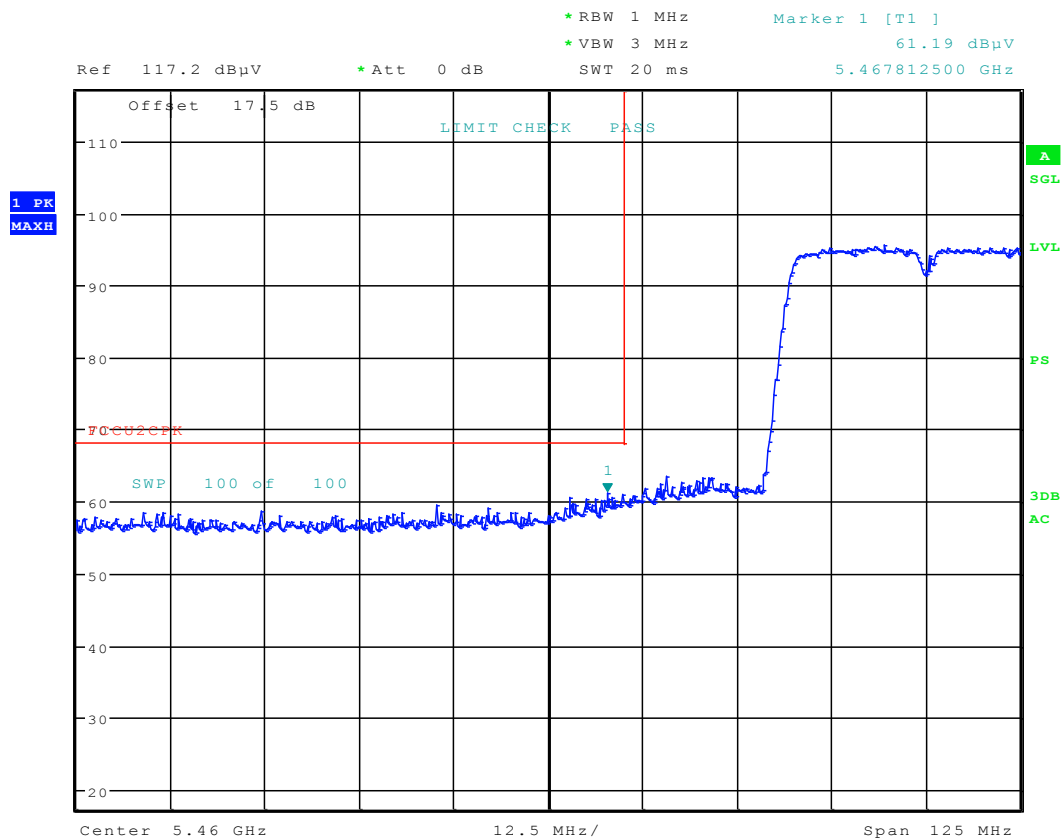
Date: 27.JAN.2016 20:49:29

Plot 7-228. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 193 of 220

MIMO Radiated Band Edge Measurements (40MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 27.JAN.2016 20:49:07

Plot 7-229. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 194 of 220

MIMO Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

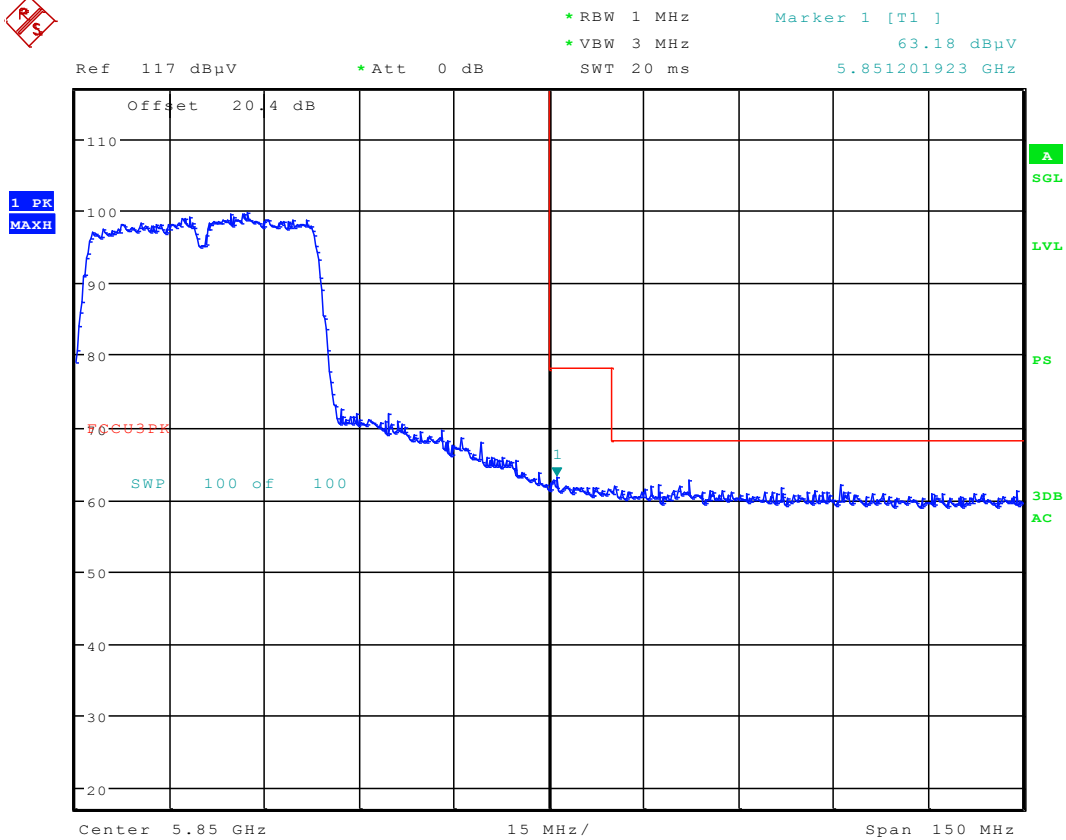
Worst Case Mode: 802.11n (40MHz)

Worst Case Transfer Rate: MCS8

Distance of Measurements: 3 Meters

Operating Frequency: 5795MHz

Channel: 159



Date: 9.FEB.2016 17:41:01

Plot 7-230. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 195 of 220

7.7.11 MIMO Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

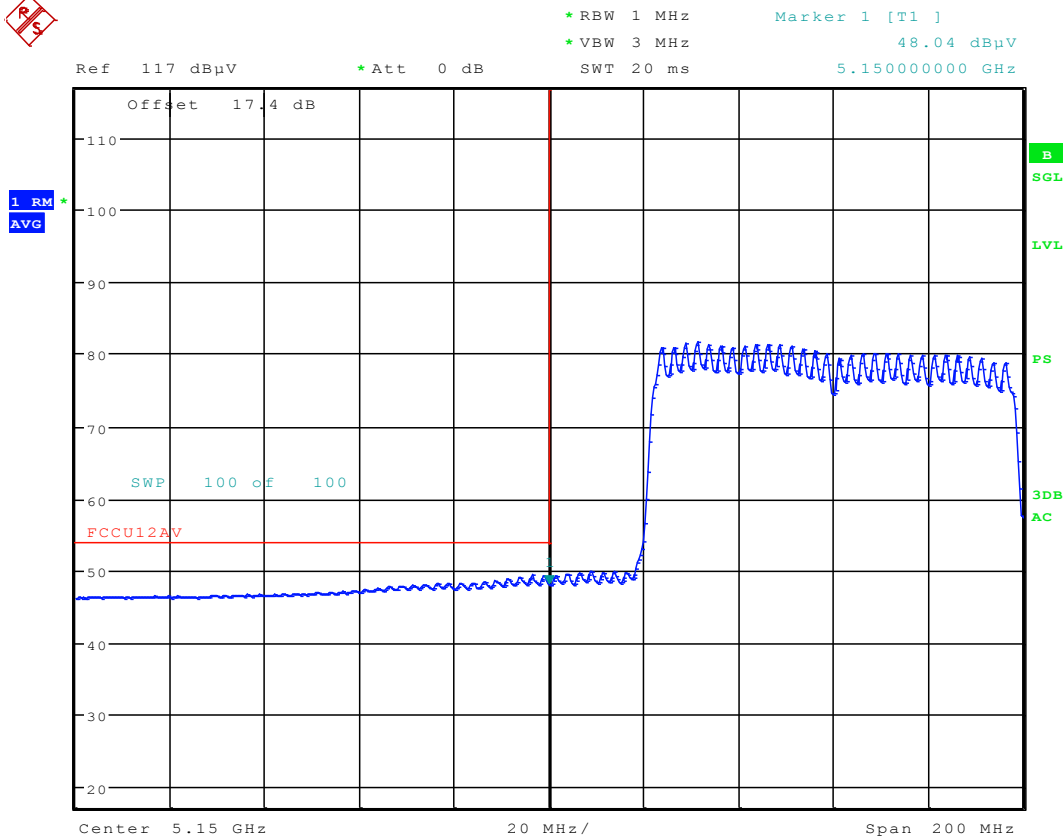
Worst Case Mode: 802.11ac (80MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5210MHz

Channel: 42



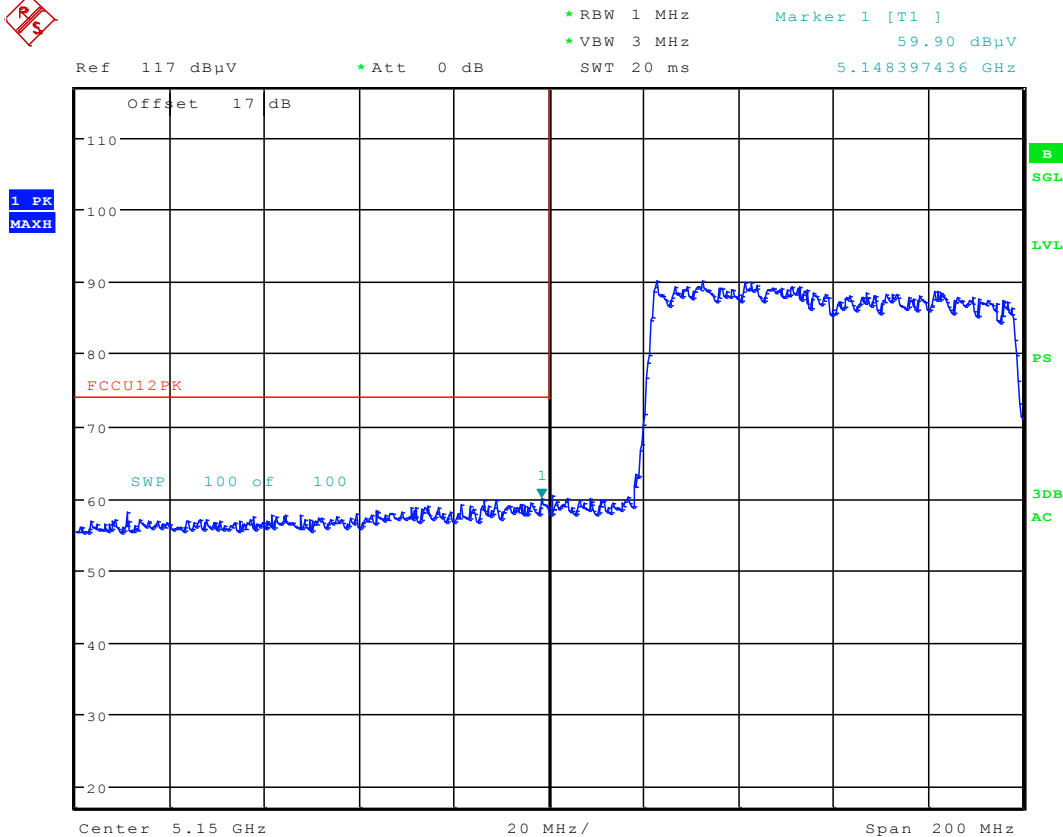
Date: 10.FEB.2016 01:09:00

Plot 7-231. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 196 of 220

MIMO Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 10.FEB.2016 01:07:17

Plot 7-232. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 197 of 220

MIMO Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

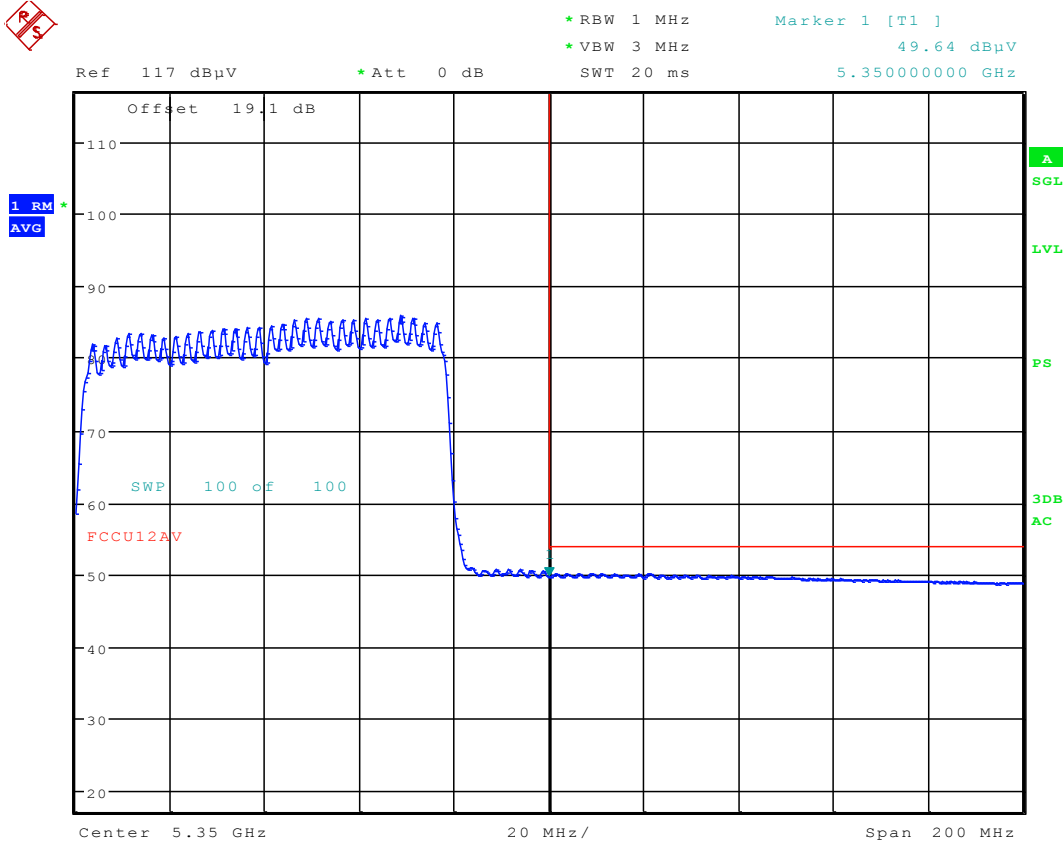
Worst Case Mode: 802.11ac (80MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5290MHz

Channel: 58



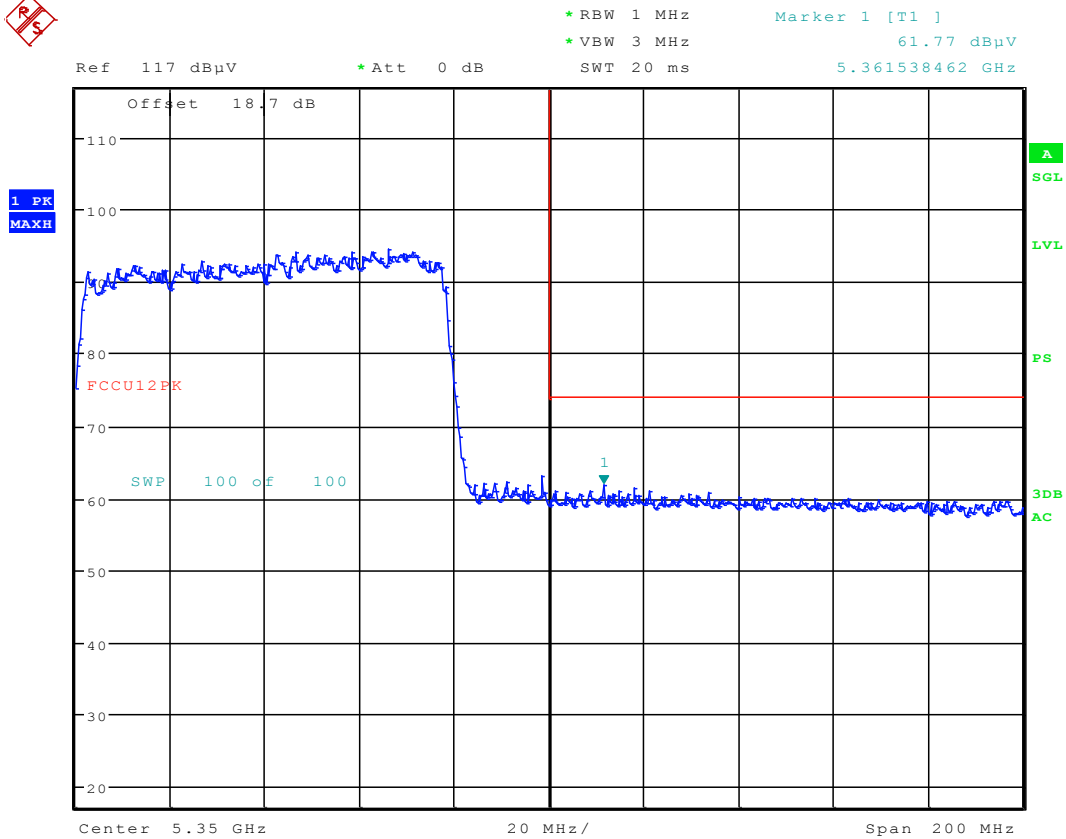
Date: 9.FEB.2016 17:15:16

Plot 7-233. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 198 of 220

MIMO Radiated Band Edge Measurements (80MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 9.FEB.2016 17:19:36

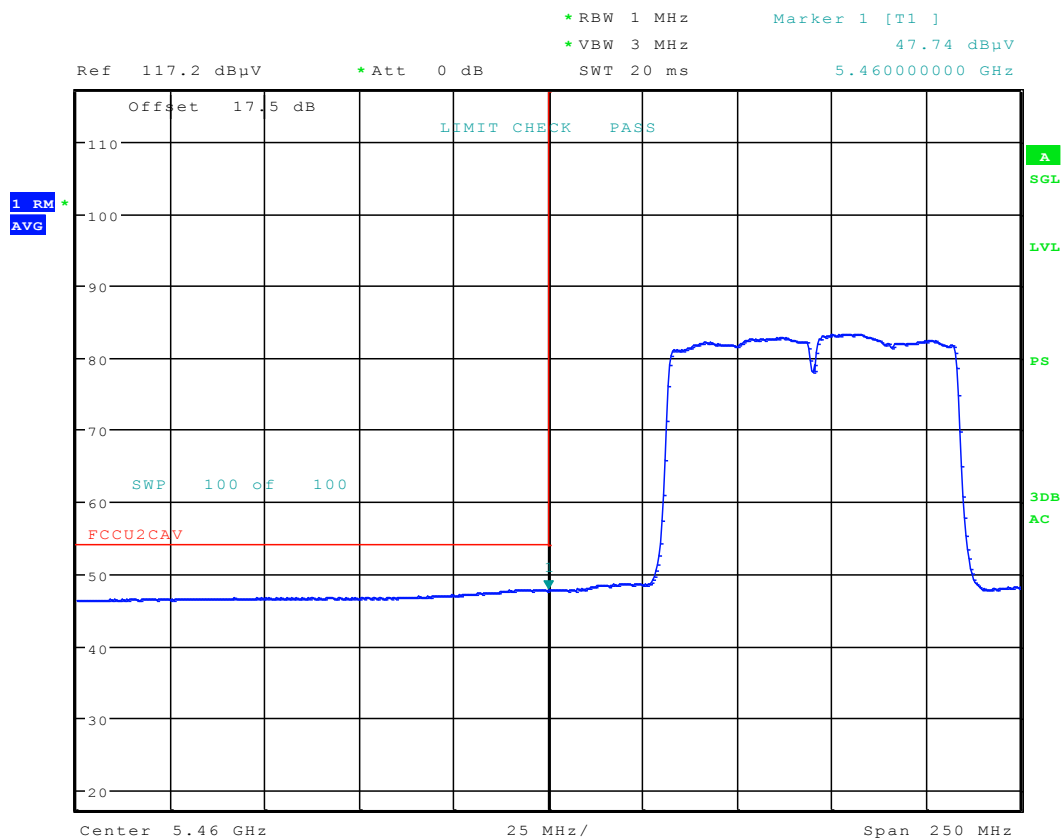
Plot 7-234. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 199 of 220

MIMO Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

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



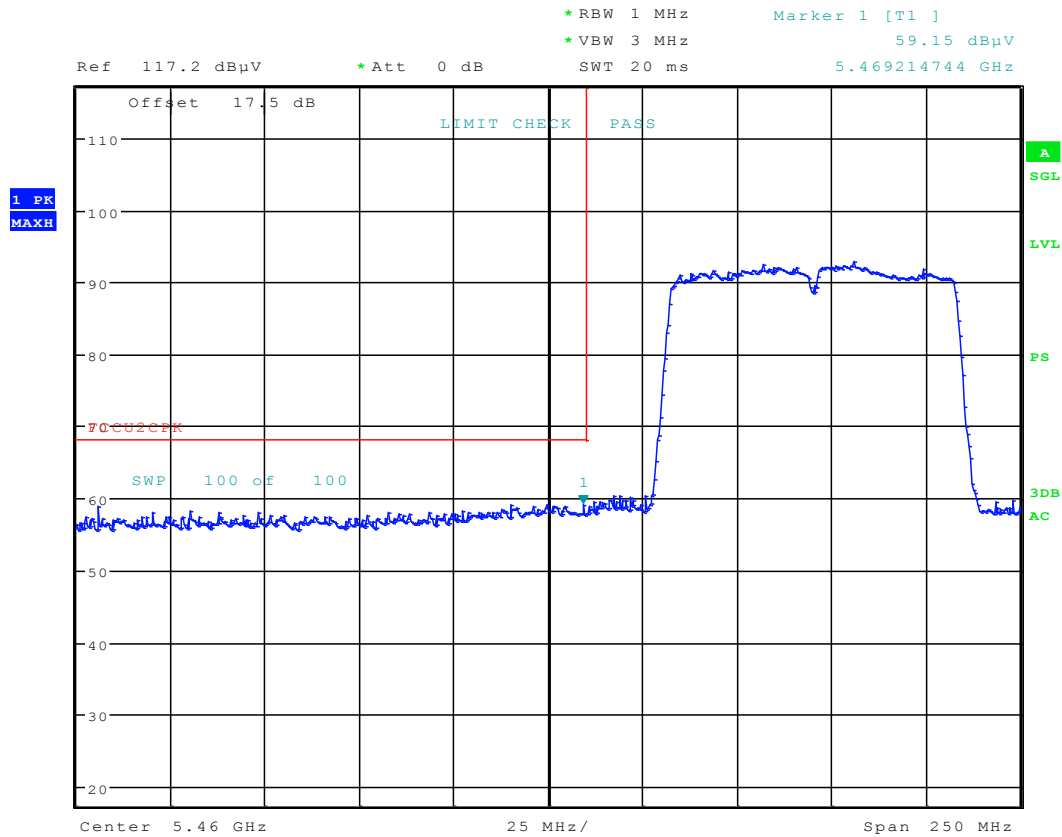
Date: 27.JAN.2016 20:55:31

Plot 7-235. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 200 of 220

MIMO Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 27.JAN.2016 20:54:55

Plot 7-236. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 201 of 220

MIMO Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

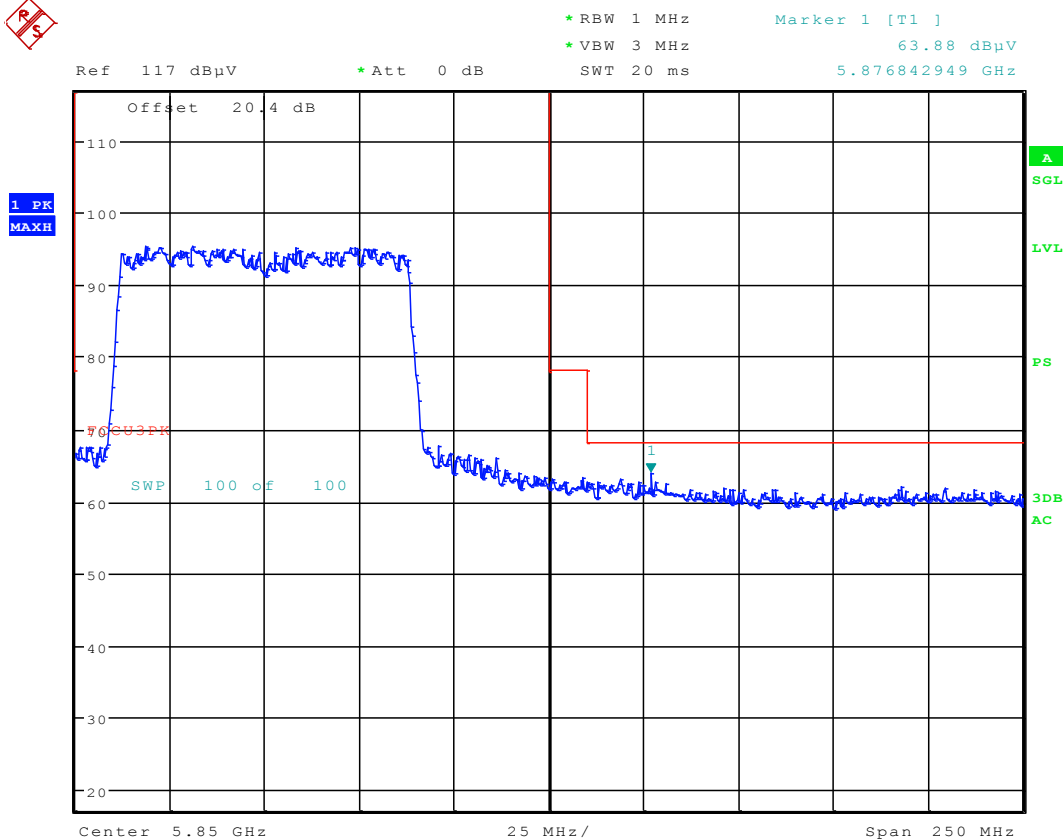
Worst Case Mode: 802.11ac (80MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5775MHz

Channel: 155



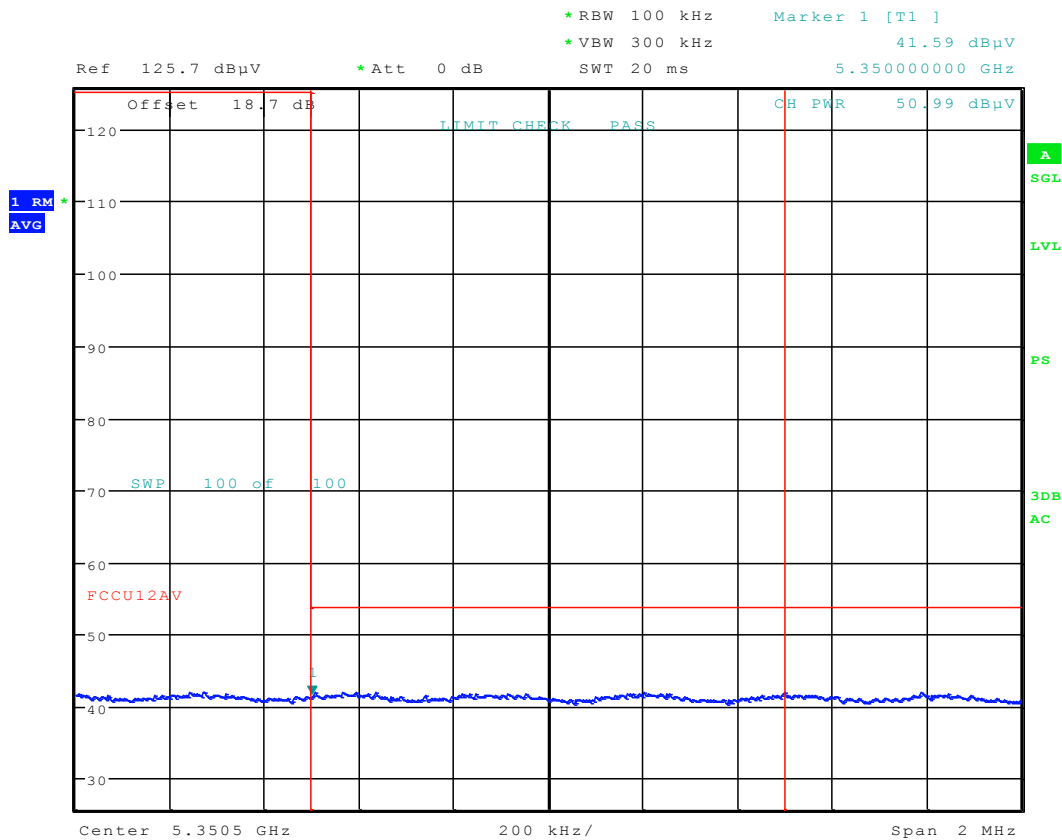
Date: 9.FEB.2016 17:42:28

Plot 7-237. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 202 of 220

MIMO Radiated Band Edge Measurements with CM Accessory (40MHz BW) §15.407(b.1)(b.2) §15.205 §15.209

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



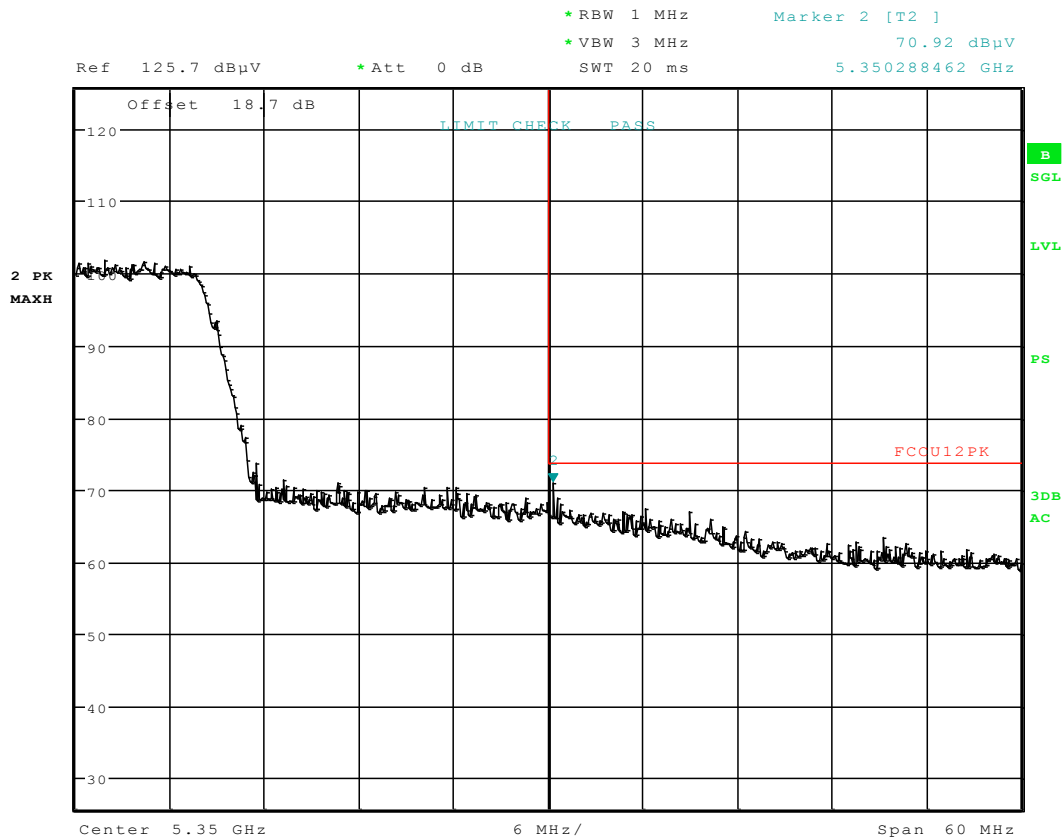
Date: 22.FEB.2016 20:47:28

Plot 7-238. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 203 of 220

MIMO Radiated Band Edge Measurements with CM Accessory (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209



Date: 22.FEB.2016 20:46:15

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

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7.8 Radiated Spurious Emissions Measurements – Below 1GHz

§15.209

Test Overview and Limit

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

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table 7-54 per Section 15.209.

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

Table 7-54. Radiated Limits

Test Procedures Used

ANSI C63.4-2014

Test Settings

Quasi-Peak Field Strength Measurements

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

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Test Setup

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

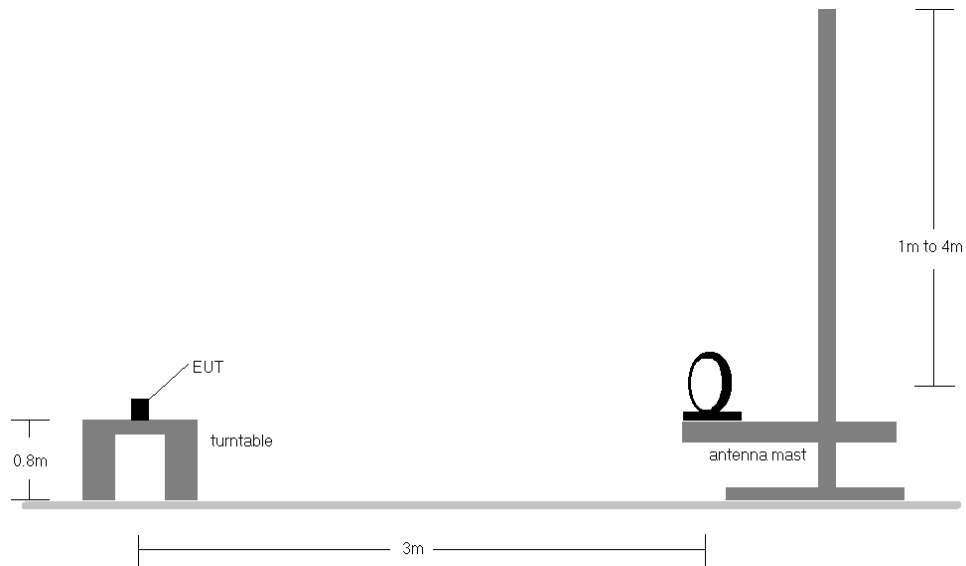


Figure 7-6. Radiated Test Setup < 30MHz

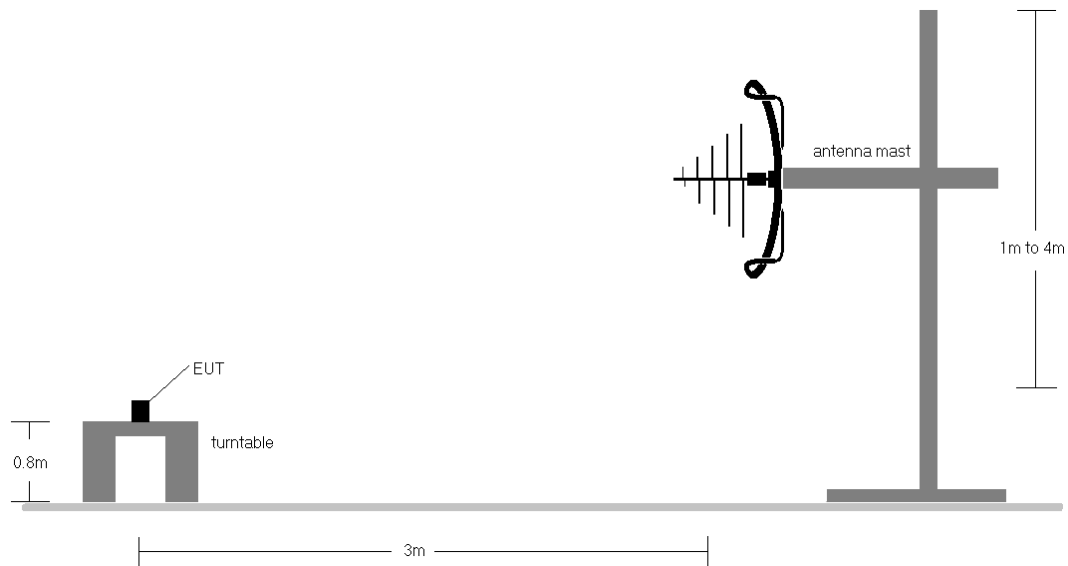


Figure 7-7. Radiated Test Setup < 1GHz

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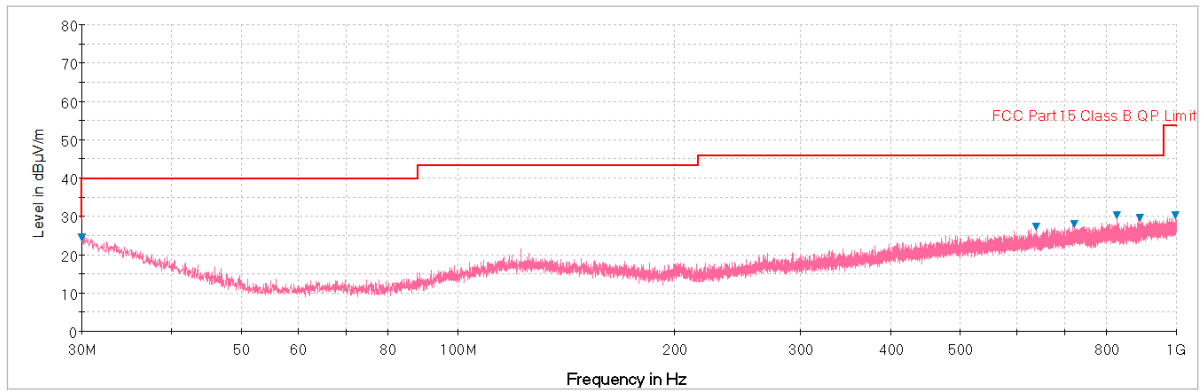
Test Notes

1. All emissions lying in restricted bands specified in §15.205 are below the limit shown in Table 7-27.
2. The broadband receive antenna is manipulated through vertical and horizontal polarizations during the tests. The EUT is manipulated through three orthogonal planes.
3. This unit was tested with its standard battery.
4. The spectrum is investigated using a peak detector and final measurements are recorded using CISPR quasi peak detector. The worst-case emissions are reported however emissions whose levels were not within 20dB of the respective limits were not reported.
5. Emissions were measured at a 3 meter test distance.
6. Emissions are investigated while operating on the center channel of the mode, band, and modulation that produced the worst case results during the transmitter spurious emissions testing.
7. No spurious emissions were detected within 20dB of the limit below 30MHz.
8. The results recorded using the broadband antenna is known to correlate with the results obtained by using a tuned dipole with an acceptable degree of accuracy. The VSWR for the measurement antenna was found to be less than 2:1.
9. The wide spectrum spurious emissions plots shown on the following pages are used only for the purpose of emission identification. There were no emissions detected in the 30MHz – 1GHz frequency range, as shown in the subsequent plots.

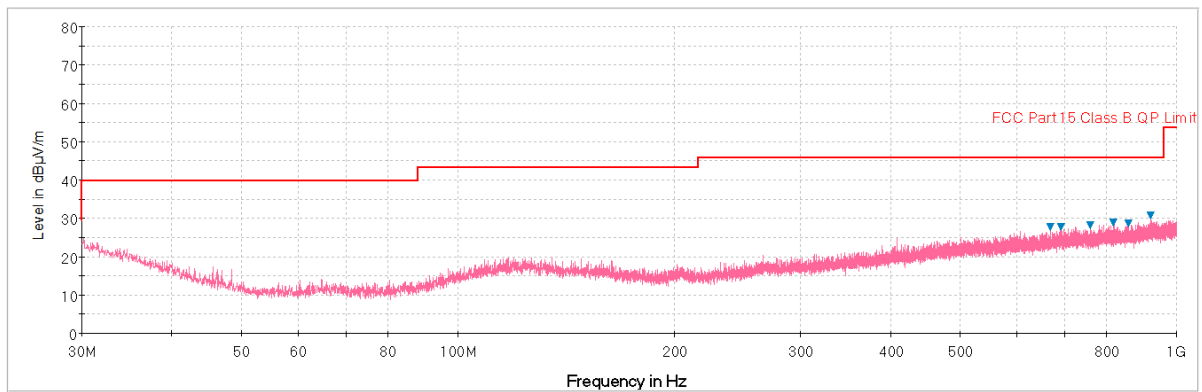
FCC ID: ZNFH830	 PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	 LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601190141.ZNF	Test Dates: 1/21 - 2/12/16	EUT Type: Portable Handset		Page 207 of 220

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

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Plot 7-240. Radiated Spurious Plot below 1GHz (802.11a – U3 Ch. 157, Ant. Pol. H)

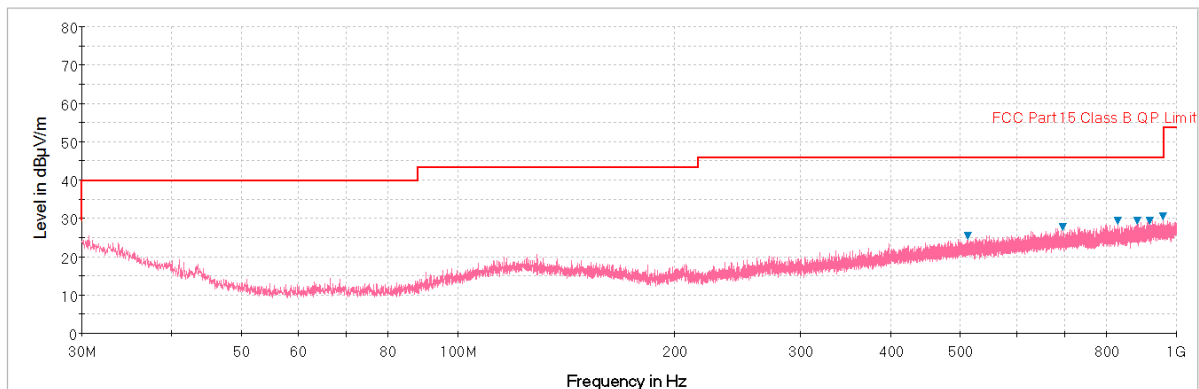


Plot 7-241. Radiated Spurious Plot below 1GHz (802.11a – U3 Ch. 157, Ant. Pol. V)

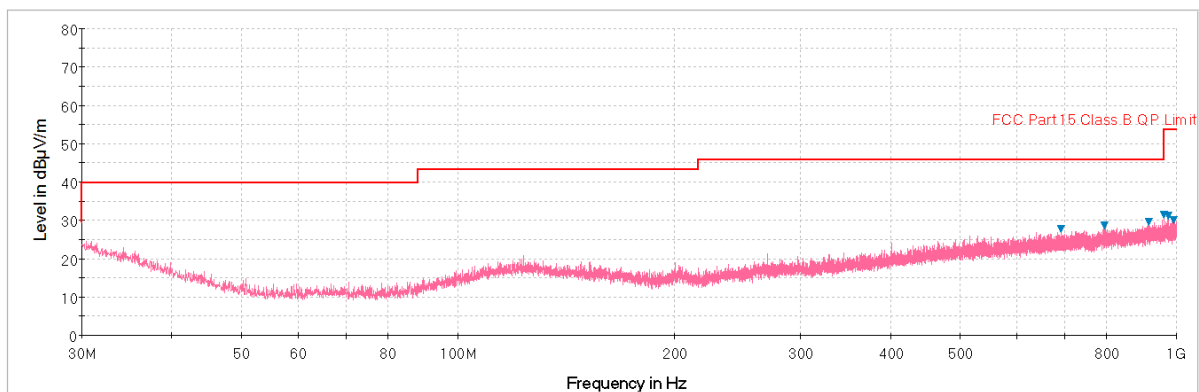
FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
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Antenna-2 Radiated Spurious Emissions Measurements (Below 1GHz)

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Plot 7-242. Radiated Spurious Plot below 1GHz (802.11a – U3 Ch. 157, Ant. Pol. H)



Plot 7-243. Radiated Spurious Plot below 1GHz (802.11a – U3 Ch. 157, Ant. Pol. V)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
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7.9 Line-Conducted Test Data

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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 7-55. 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.

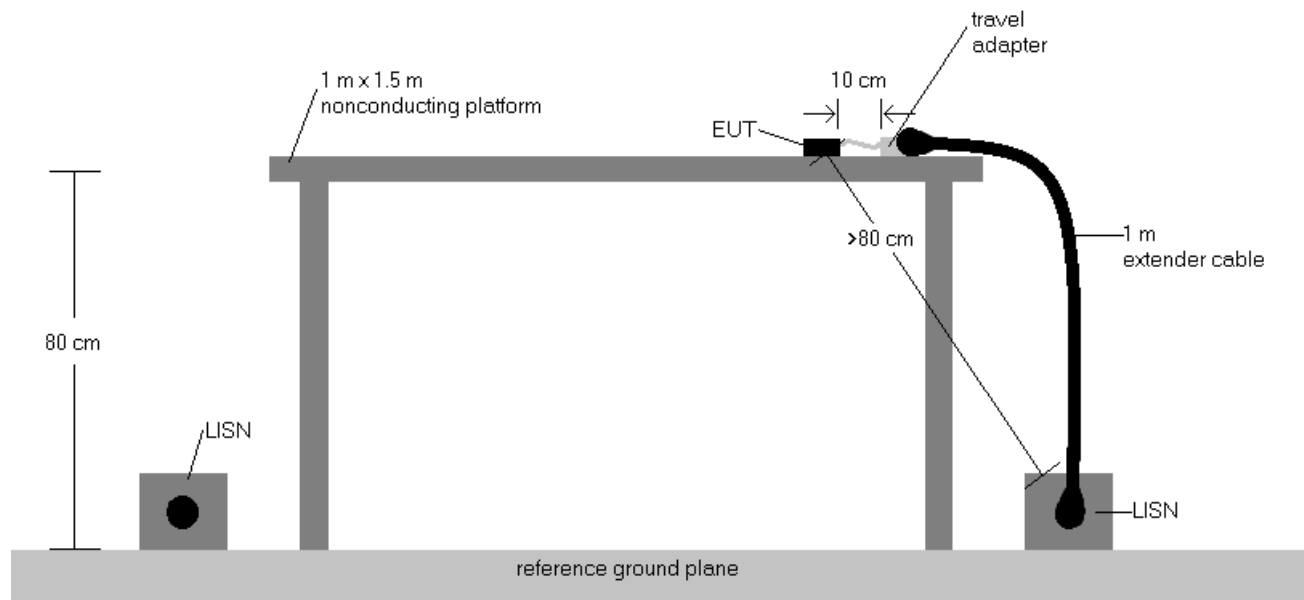


Figure 7-8. Test Instrument & Measurement Setup

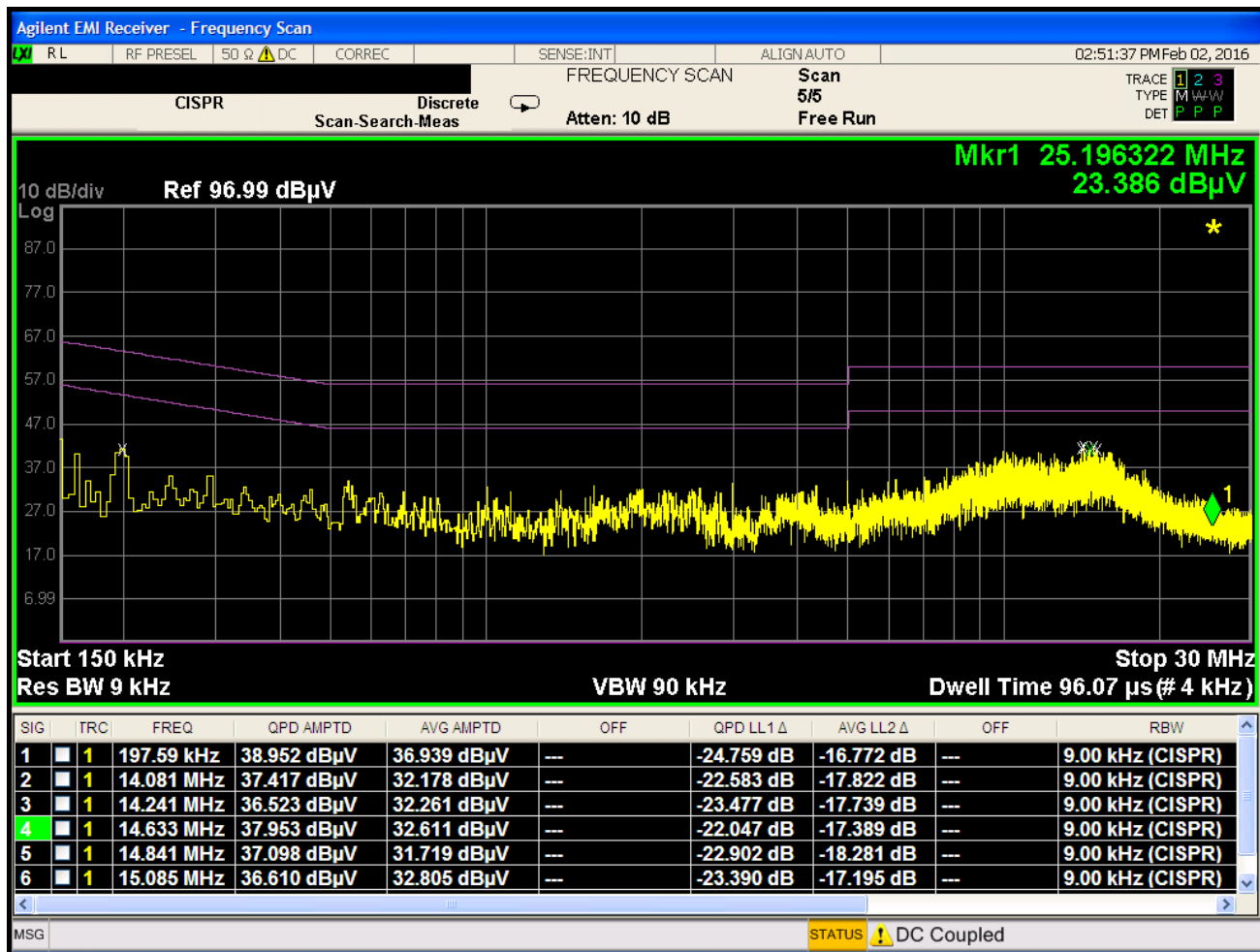
Test Notes

1. All modes of operation were investigated and the worst-case emissions are reported using mid channel. The emissions found were not affected by the choice of channel used during testing.
2. The limit for an intentional radiator from 150kHz to 30MHz are specified in 15.207.
3. $\text{Corr. (dB)} = \text{Cable loss (dB)} + \text{LISN insertion factor (dB)}$
4. $\text{QP/AV Level (dB}\mu\text{V)} = \text{QP/AV Analyzer/Receiver Level (dB}\mu\text{V)} + \text{Corr. (dB)}$
5. $\text{Margin (dB)} = \text{QP/AV Limit (dB}\mu\text{V)} - \text{QP/AV Level (dB}\mu\text{V)}$
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

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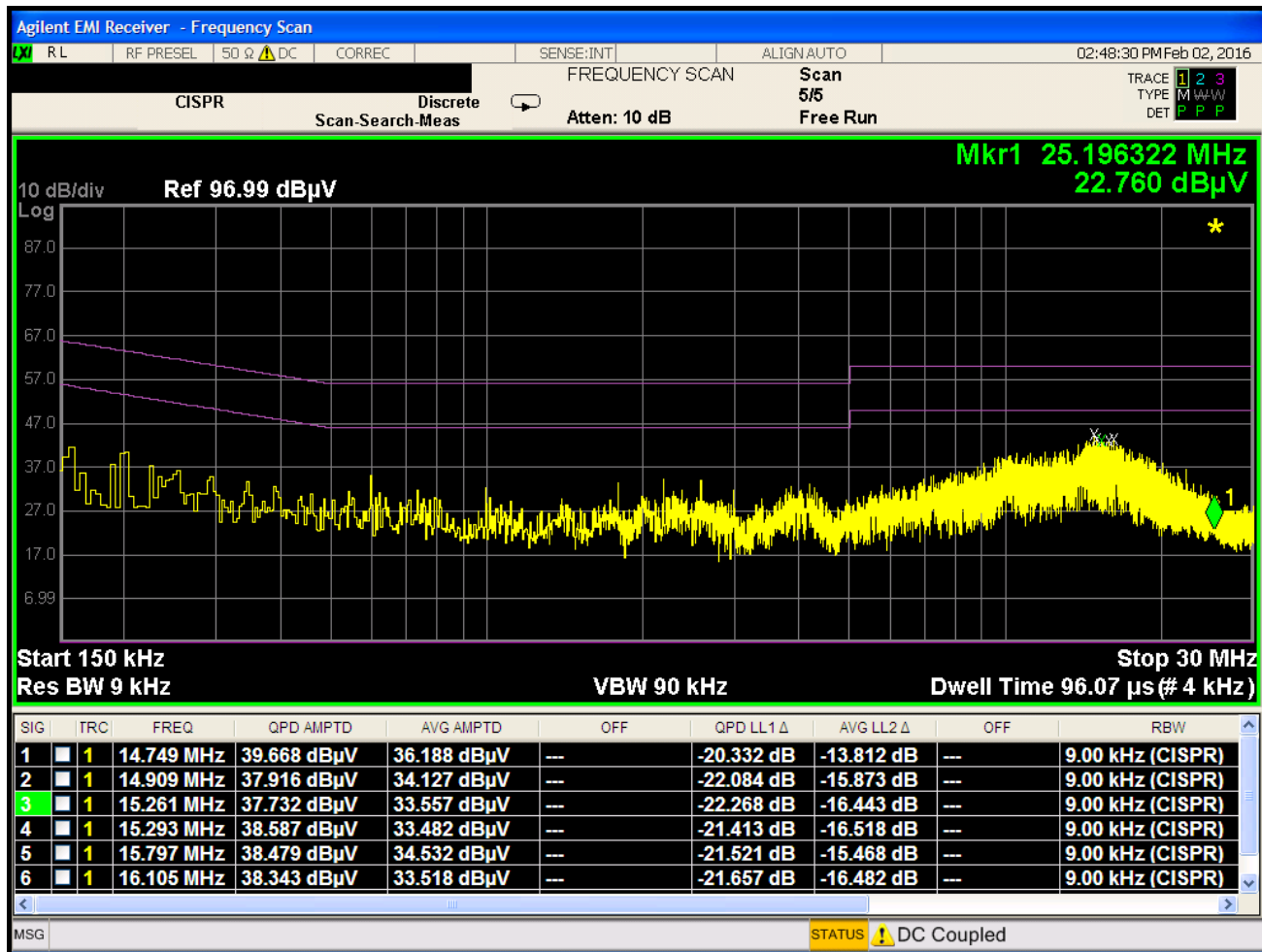


Plot 7-244. Line Conducted Plot with 802.11a UNII Band 1 (L1)

FCC ID: ZNFH830			FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Line-Conducted Test Data

\$15.407

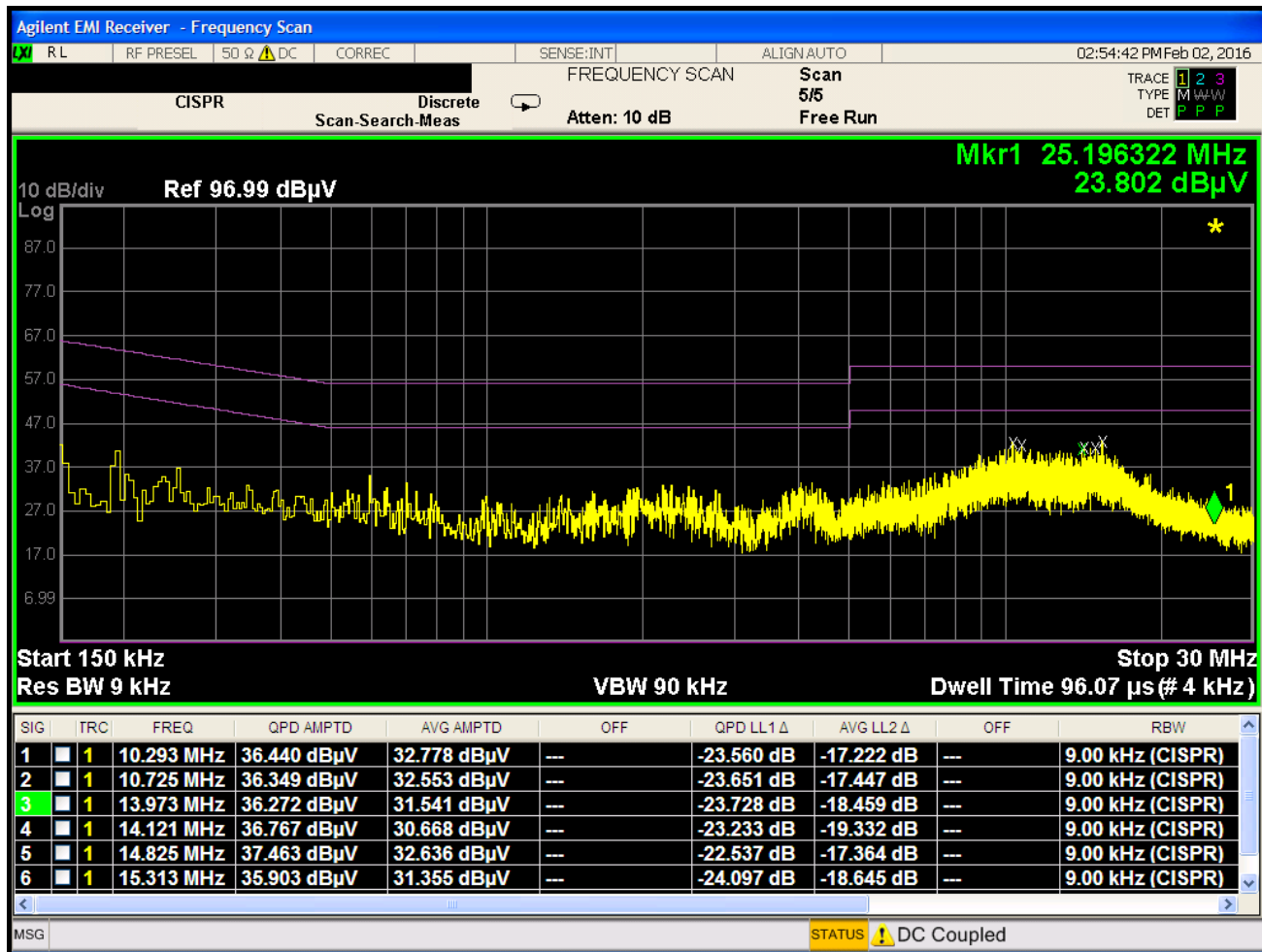


Plot 7-245. Line Conducted Plot with 802.11a UNII Band 1 (N)

FCC ID: ZNFH830	 PCTEST ENGINEERING LABORATORY, INC.		FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	 LG	Reviewed by: Quality Manager
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Line-Conducted Test Data

\$15.407

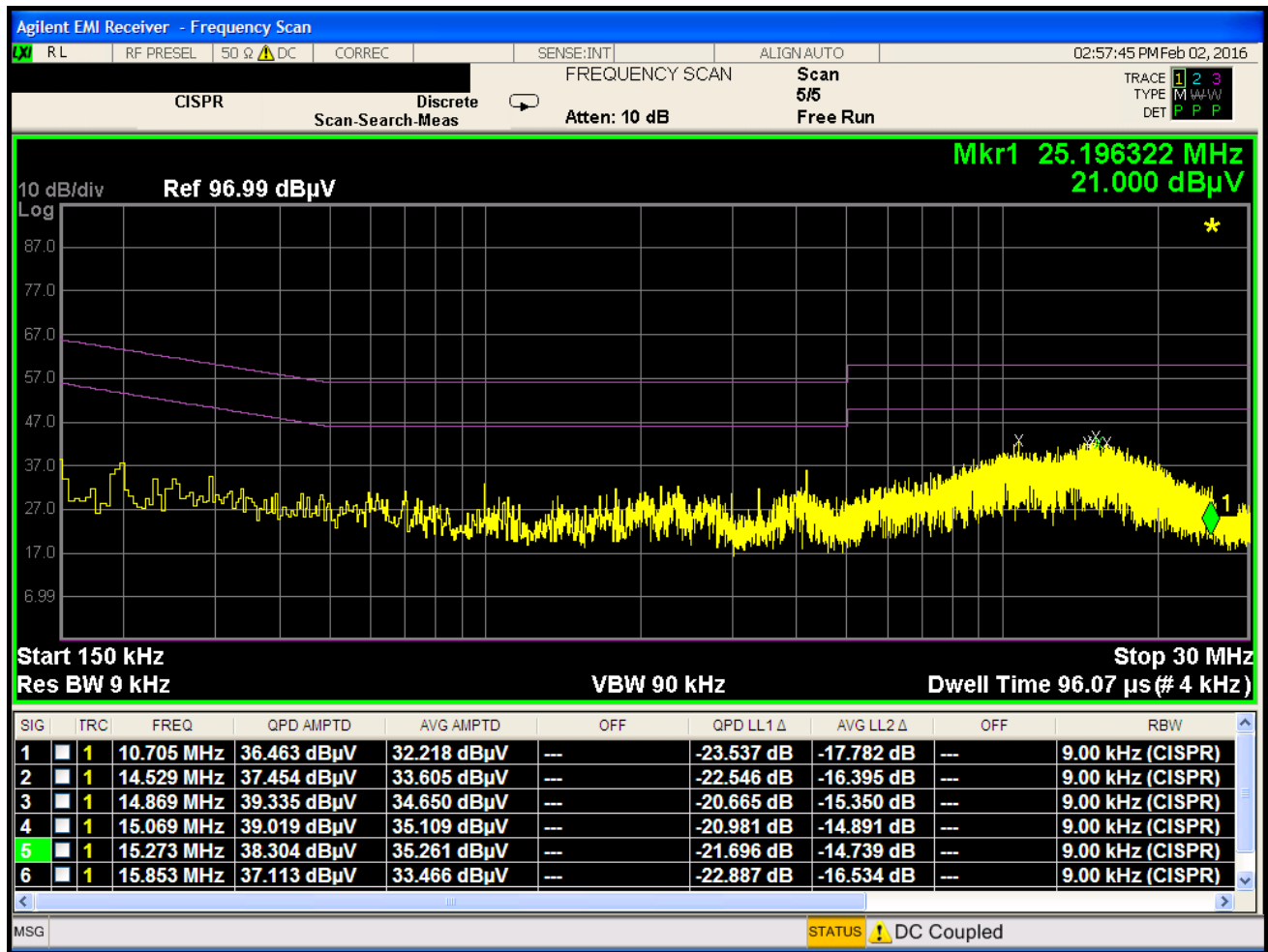


Plot 7-246. Line Conducted Plot with 802.11a UNII Band 2A (L1)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
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Line-Conducted Test Data

\$15.407

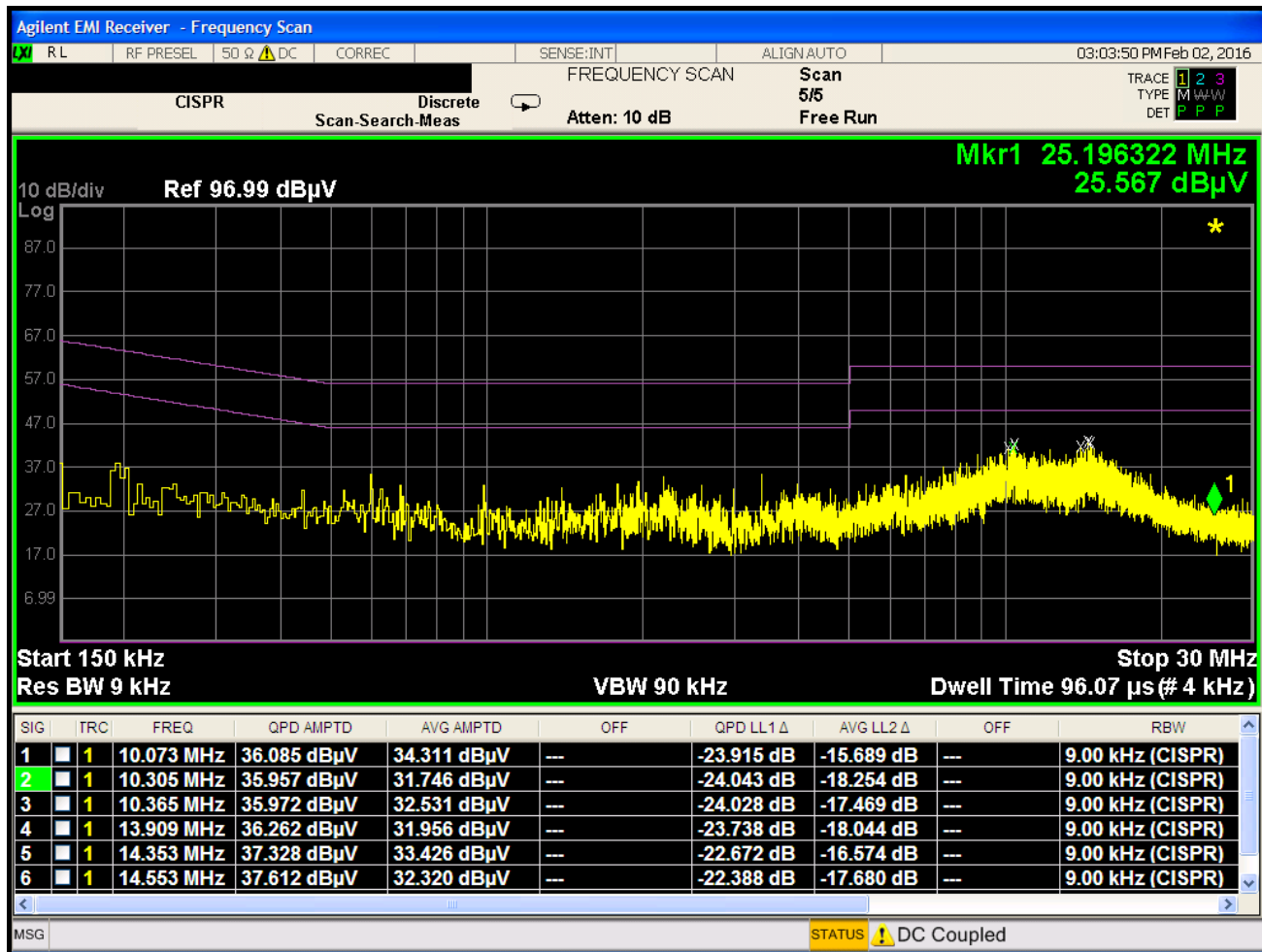


Plot 7-247. Line Conducted Plot with 802.11a UNII Band 2A (N)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
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Line-Conducted Test Data

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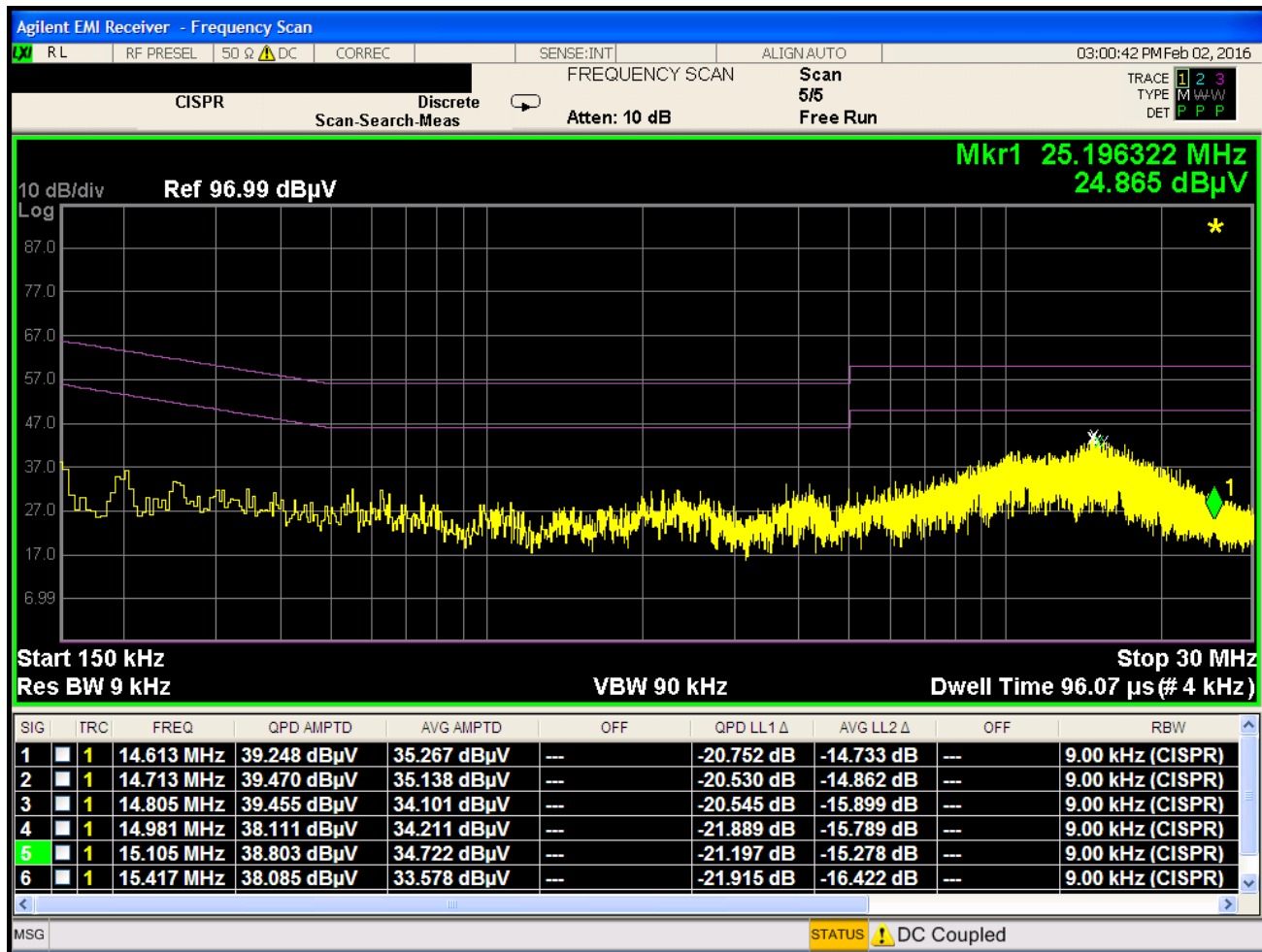


Plot 7-248. Line Conducted Plot with 802.11a UNII Band 2C (L1)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
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Line-Conducted Test Data

\$15.407

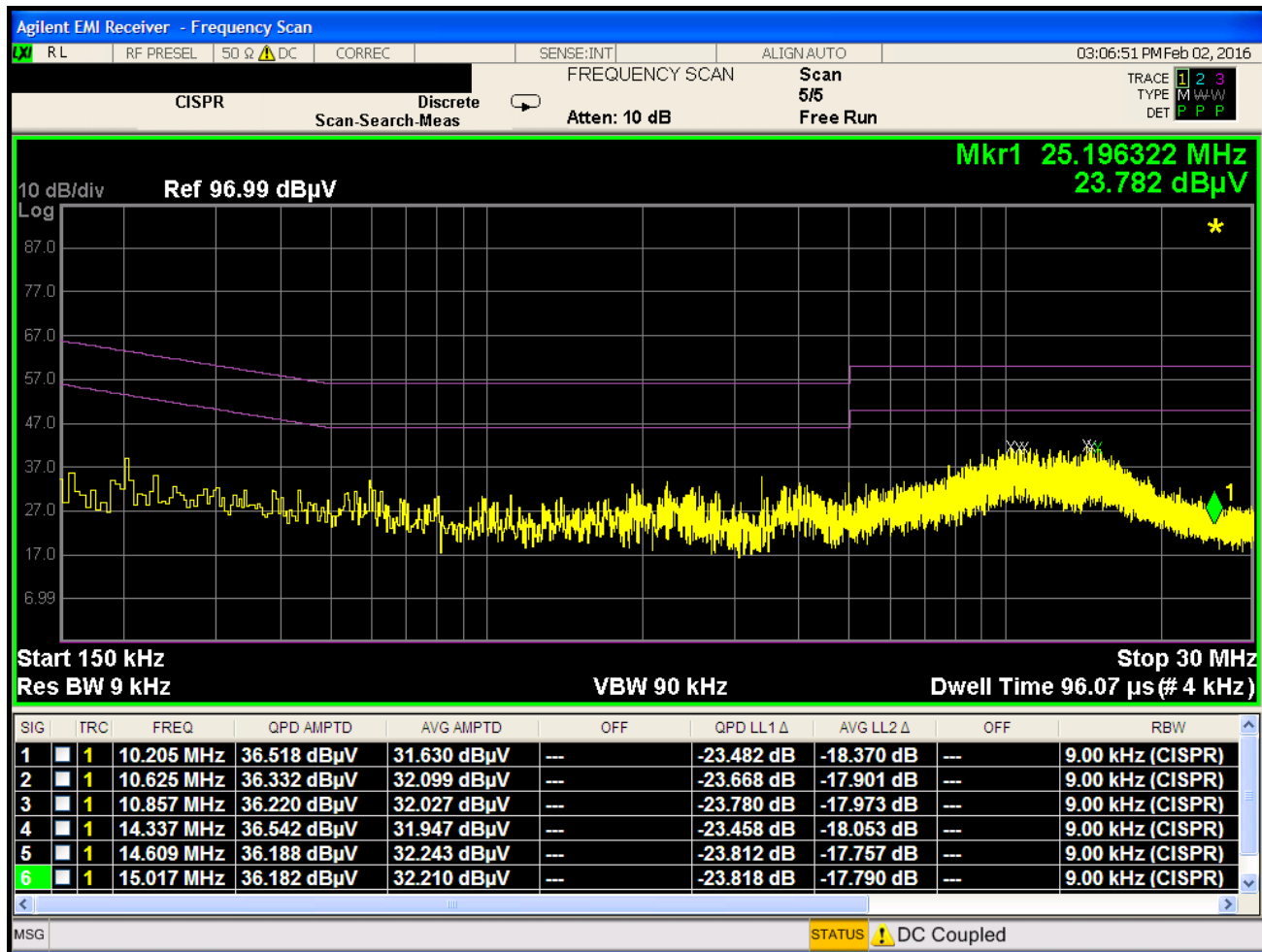


Plot 7-249. Line Conducted Plot with 802.11a UNII Band 2C (N)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
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Line-Conducted Test Data

\$15.407

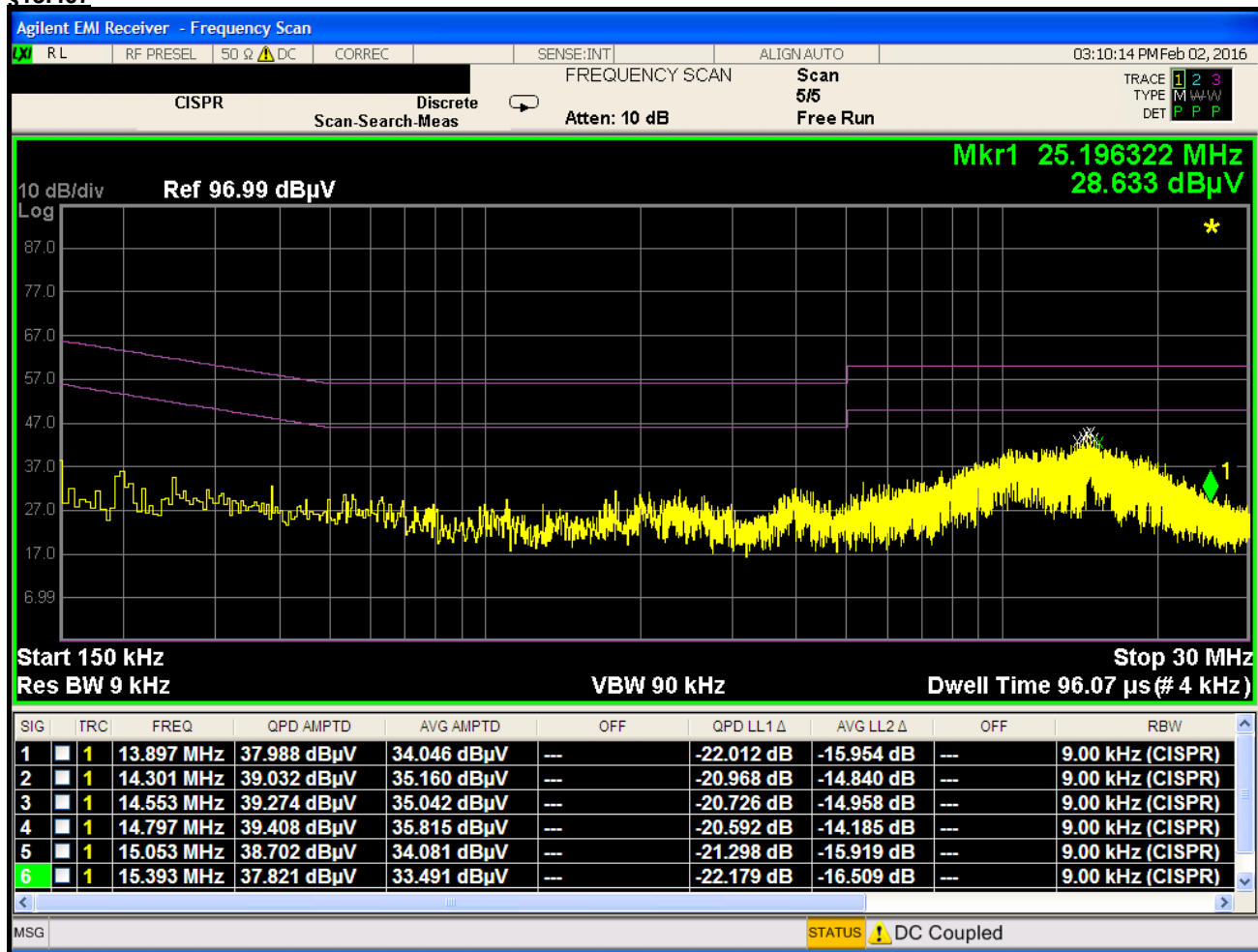


Plot 7-250. Line Conducted Plot with 802.11a UNII Band 3 (L1)

FCC ID: ZNFH830	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
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Line-Conducted Test Data

\$15.407



Plot 7-251. 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 **LG Portable Handset** **FCC ID: ZNFH830** is in compliance with Part 15E of the FCC Rules.

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