

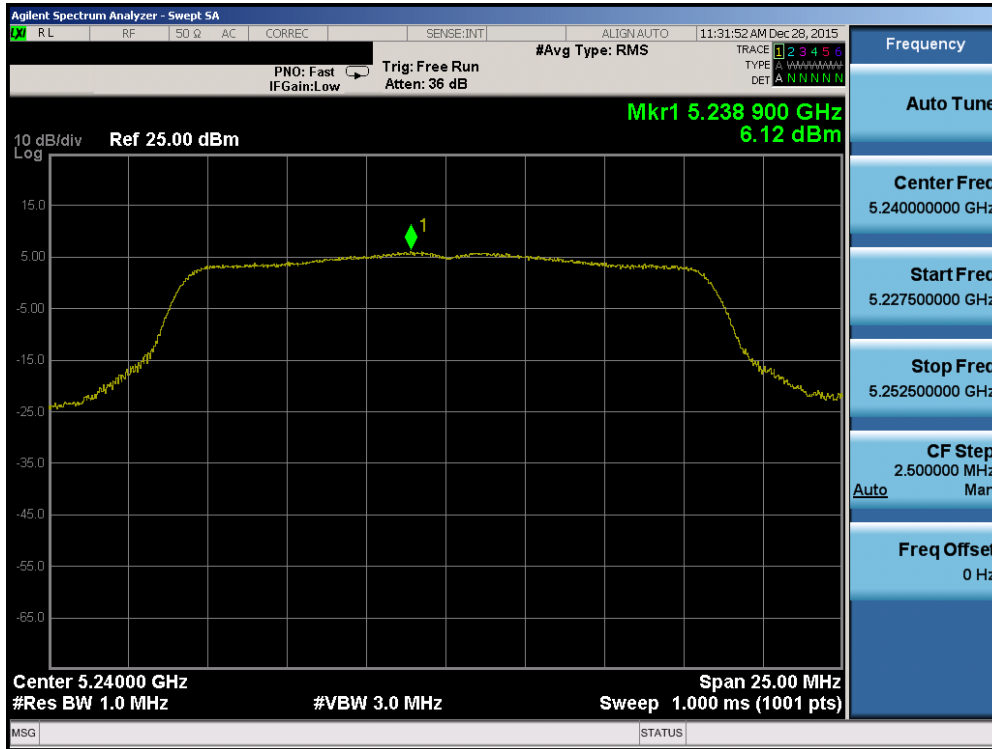


Antenna-2 Power Spectral Density Measurements

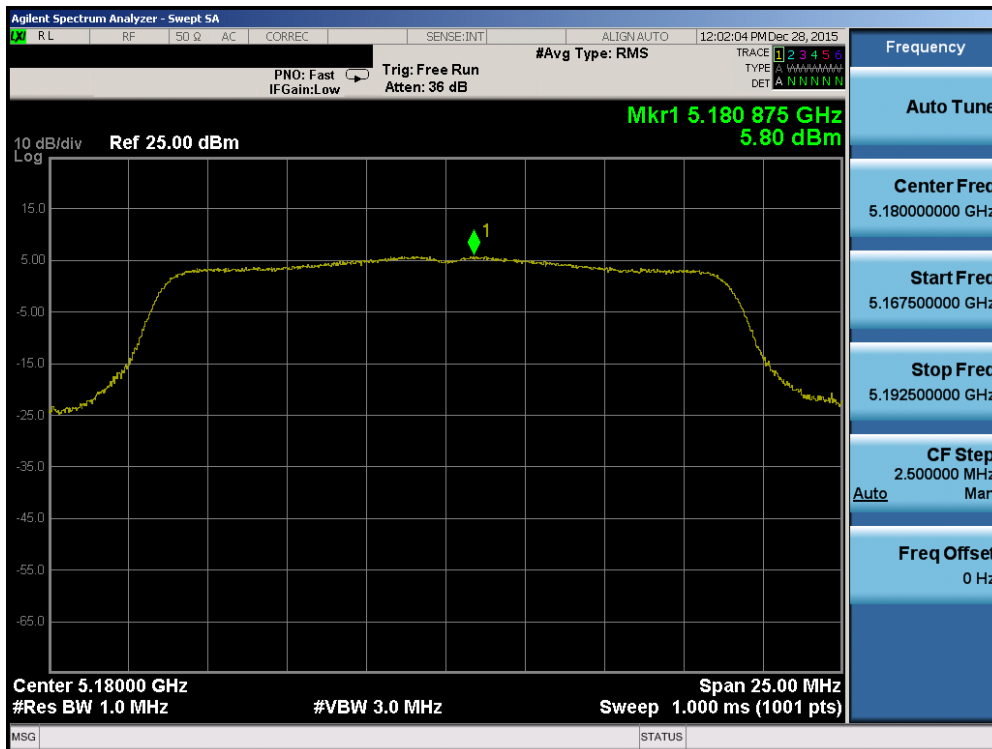
	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured Power Density [dBm]	Max Permissible Power Density [dBm/MHz]	Margin [dB]	Pass / Fail
Band 1	5180	36	a	6	6.32	11.0	-4.69	Pass
	5200	40	a	6	6.10	11.0	-4.90	Pass
	5240	48	a	6	6.12	11.0	-4.88	Pass
	5180	36	n (20MHz)	6.5/7.2 (MCS0)	5.80	11.0	-5.20	Pass
	5200	40	n (20MHz)	6.5/7.2 (MCS0)	5.79	11.0	-5.21	Pass
	5240	48	n (20MHz)	6.5/7.2 (MCS0)	5.46	11.0	-5.54	Pass
	5190	38	n (40MHz)	13.5/15 (MCS0)	3.16	11.0	-7.84	Pass
	5230	46	n (40MHz)	13.5/15 (MCS0)	2.79	11.0	-8.21	Pass
	5210	42	ac (80MHz)	29.3/32.5 (MCS0)	-2.12	11.0	-13.12	Pass
Band 2A	5260	52	a	6	6.06	11.0	-4.95	Pass
	5280	56	a	6	6.21	11.0	-4.79	Pass
	5320	64	a	6	6.28	11.0	-4.72	Pass
	5260	52	n (20MHz)	6.5/7.2 (MCS0)	5.73	11.0	-5.27	Pass
	5280	56	n (20MHz)	6.5/7.2 (MCS0)	5.96	11.0	-5.04	Pass
	5320	64	n (20MHz)	6.5/7.2 (MCS0)	6.01	11.0	-4.99	Pass
	5270	54	n (40MHz)	13.5/15 (MCS0)	2.92	11.0	-8.08	Pass
	5310	62	n (40MHz)	13.5/15 (MCS0)	3.23	11.0	-7.77	Pass
	5290	58	ac (80MHz)	29.3/32.5 (MCS0)	-1.98	11.0	-12.98	Pass
Band 2C	5500	100	a	6	6.52	11.0	-4.48	Pass
	5600	120	a	6	6.49	11.0	-4.51	Pass
	5720	144	a	6	6.55	11.0	-4.45	Pass
	5500	100	n (20MHz)	6.5/7.2 (MCS0)	6.13	11.0	-4.87	Pass
	5600	120	n (20MHz)	6.5/7.2 (MCS0)	6.06	11.0	-4.94	Pass
	5720	144	n (20MHz)	6.5/7.2 (MCS0)	6.25	11.0	-4.75	Pass
	5510	102	n (40MHz)	13.5/15 (MCS0)	3.27	11.0	-7.73	Pass
	5590	118	n (40MHz)	13.5/15 (MCS0)	3.10	11.0	-7.90	Pass
	5710	142	n (40MHz)	13.5/15 (MCS0)	3.27	11.0	-7.73	Pass
	5530	106	ac (80MHz)	29.3/32.5 (MCS0)	-2.11	11.0	-13.11	Pass
	5610	122	ac (80MHz)	29.3/32.5 (MCS0)	-2.37	11.0	-13.37	Pass
5690	138	ac (80MHz)	29.3/32.5 (MCS0)	-5.13	11.0	-16.13	Pass	

Table 7-19. Conducted Power Spectral Density Measurements

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 89 of 261	

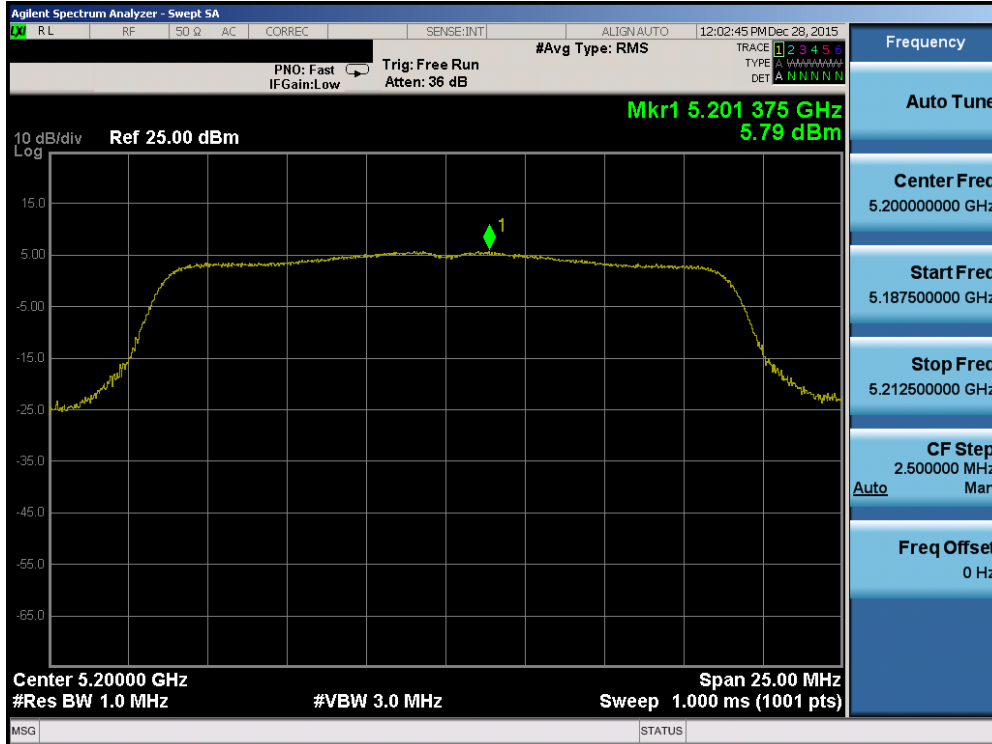


Plot 7-120. Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 48)

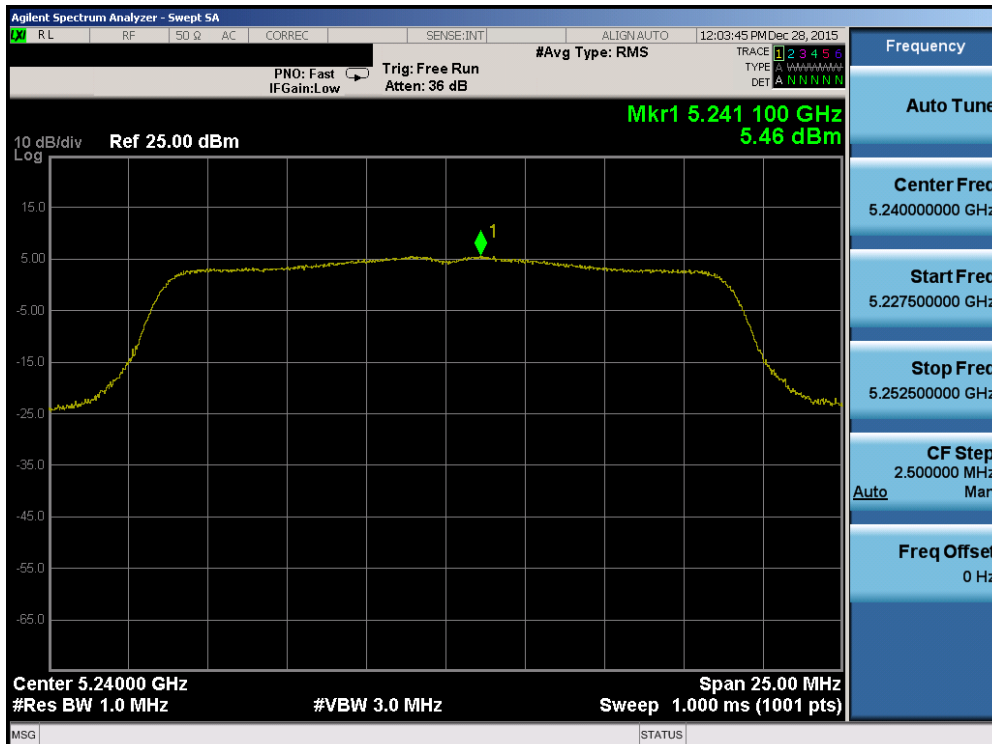


Plot 7-121. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 36)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 91 of 261

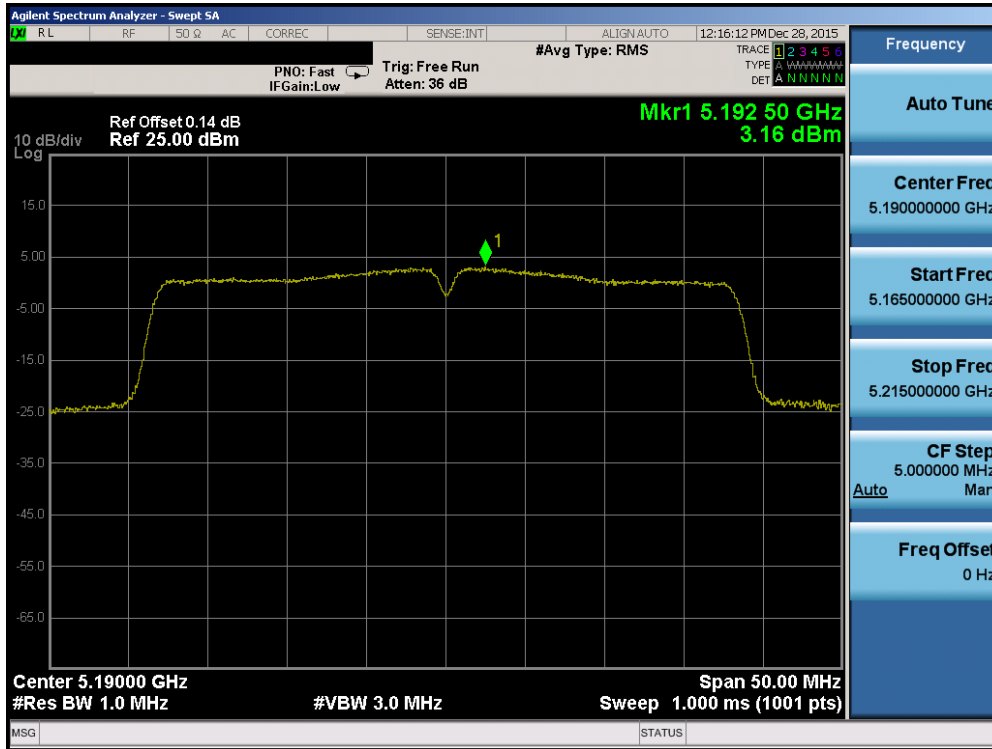


Plot 7-122. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 40)

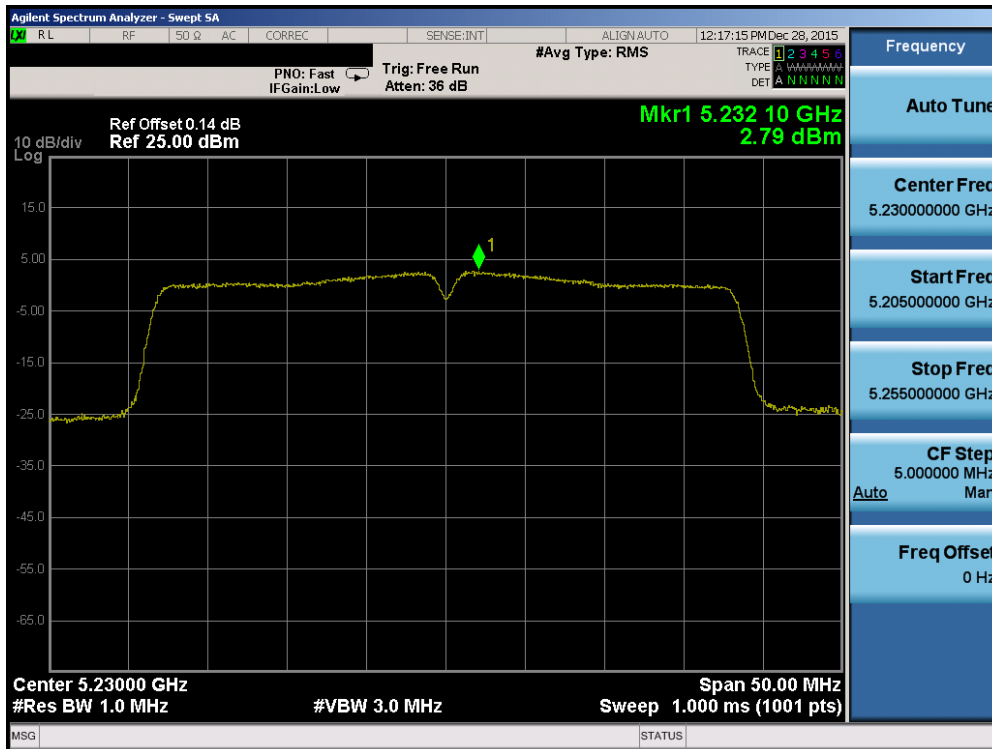


Plot 7-123. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 48)

FCC ID: A3LSMG930X	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 92 of 261

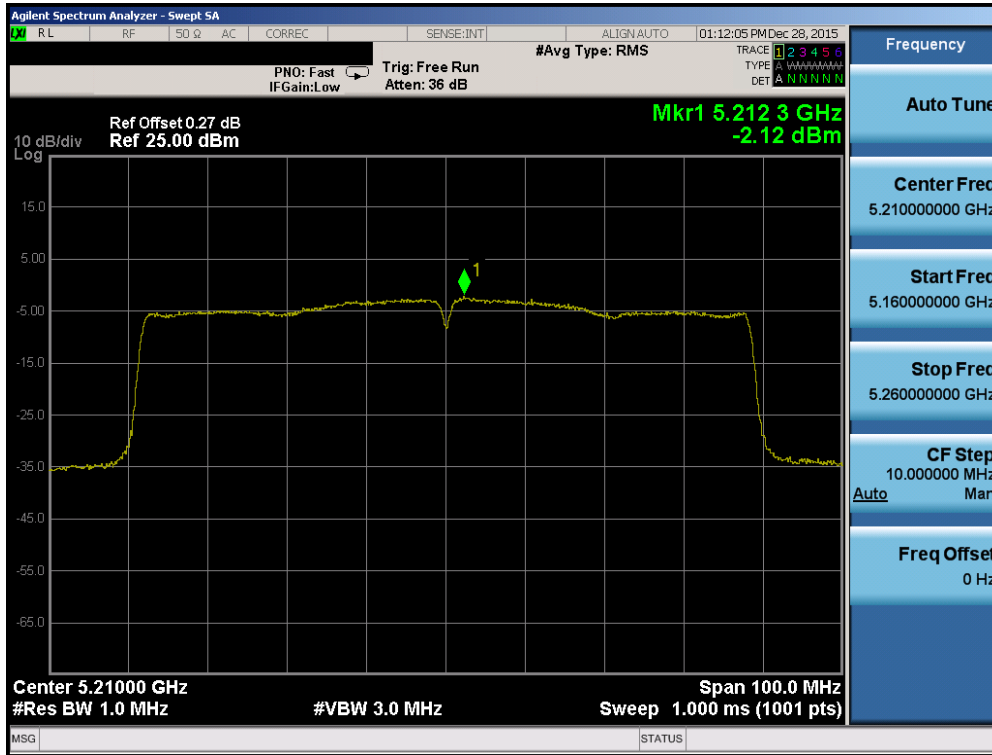


Plot 7-124. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 1) – Ch. 38)

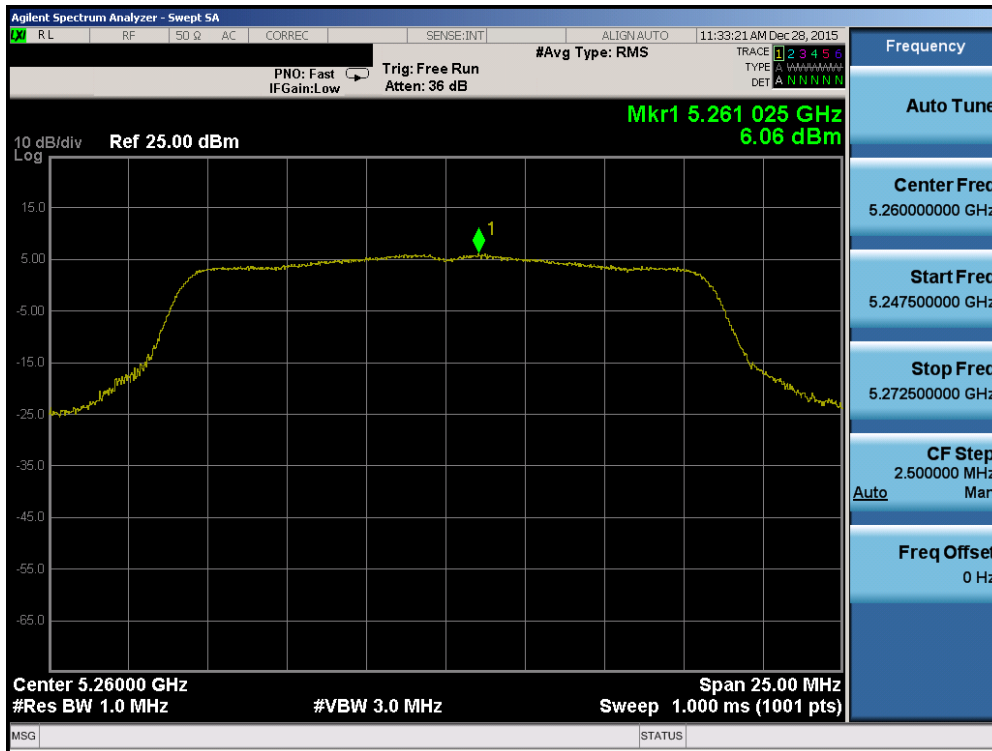


Plot 7-125. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 1) – Ch. 46)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 93 of 261

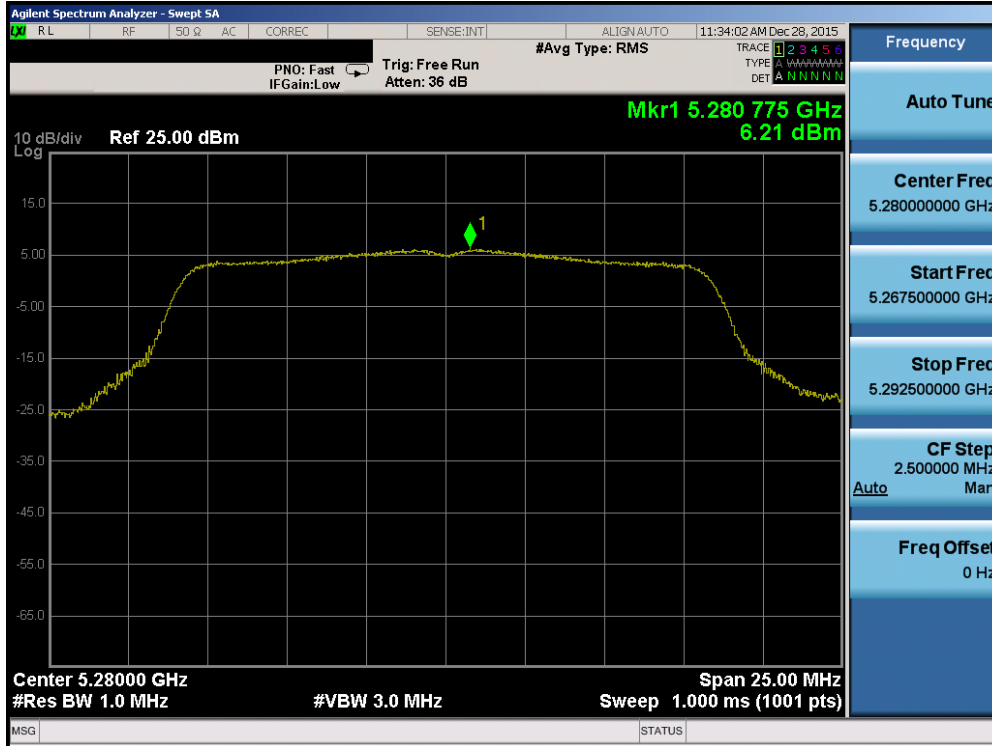


Plot 7-126. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 1) – Ch. 42)

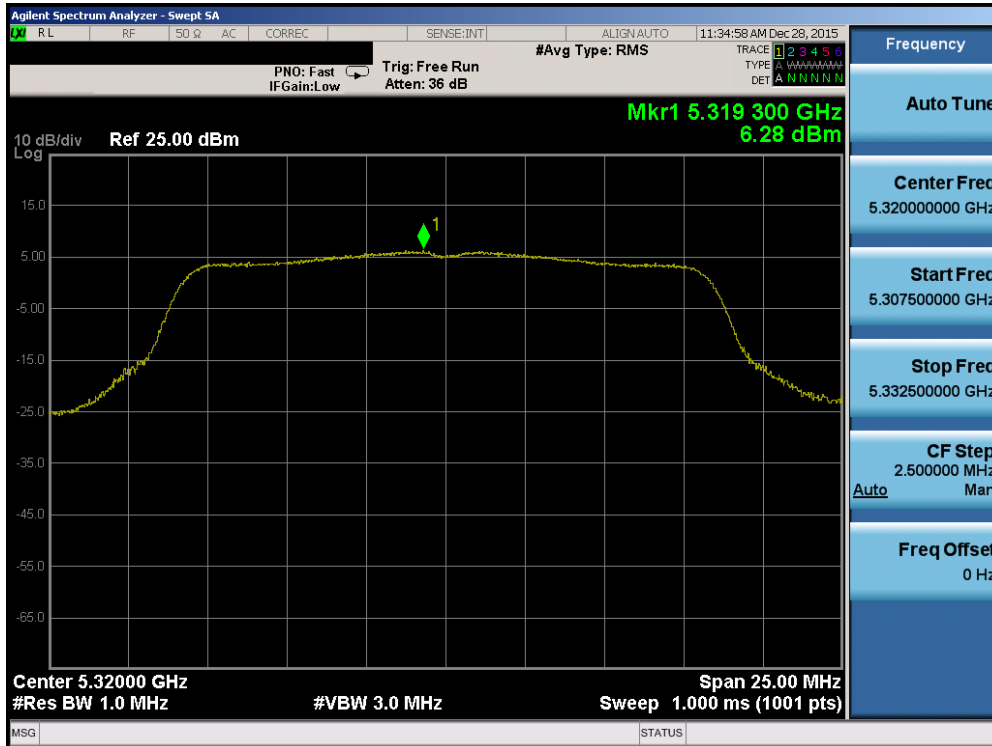


Plot 7-127. Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 52)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 94 of 261

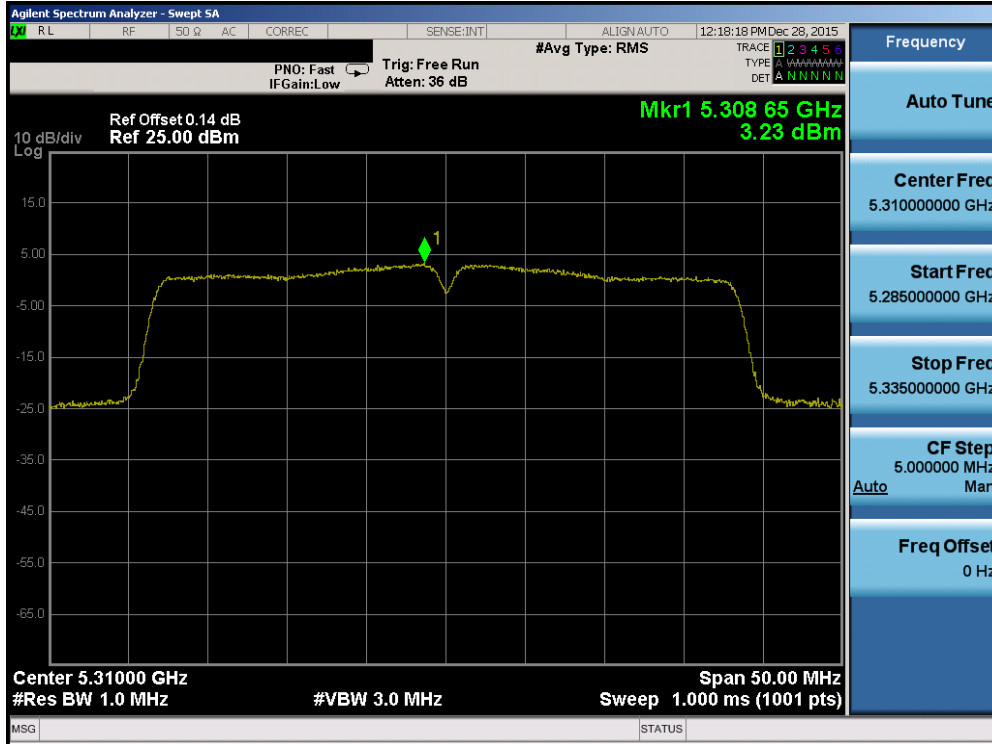


Plot 7-128. Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 56)

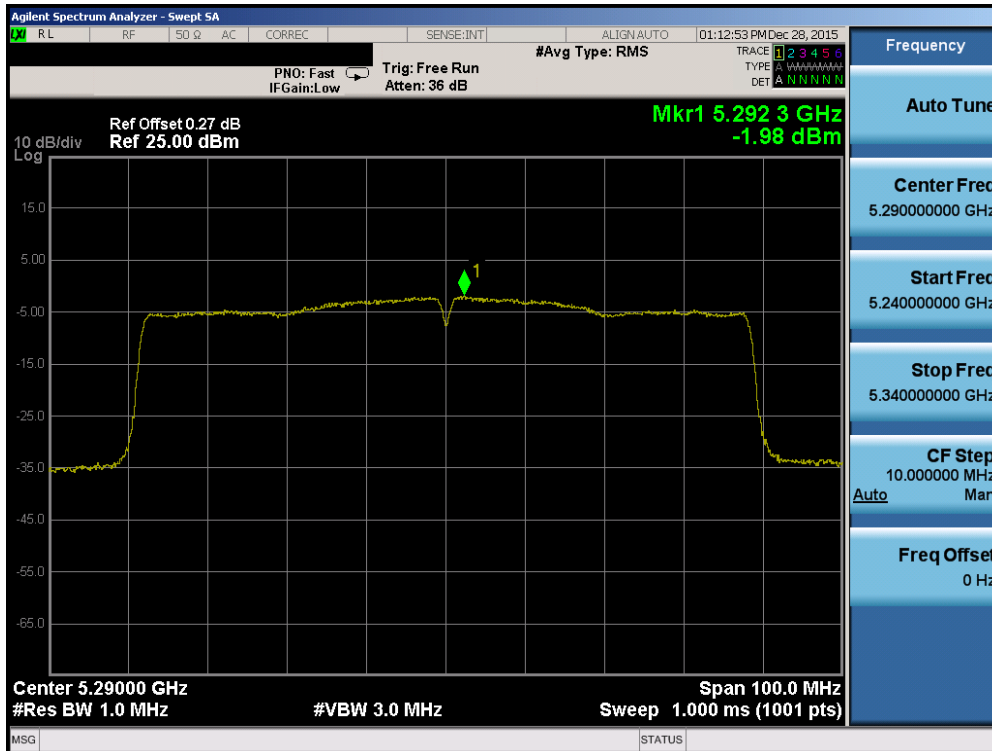


Plot 7-129. Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 64)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 95 of 261

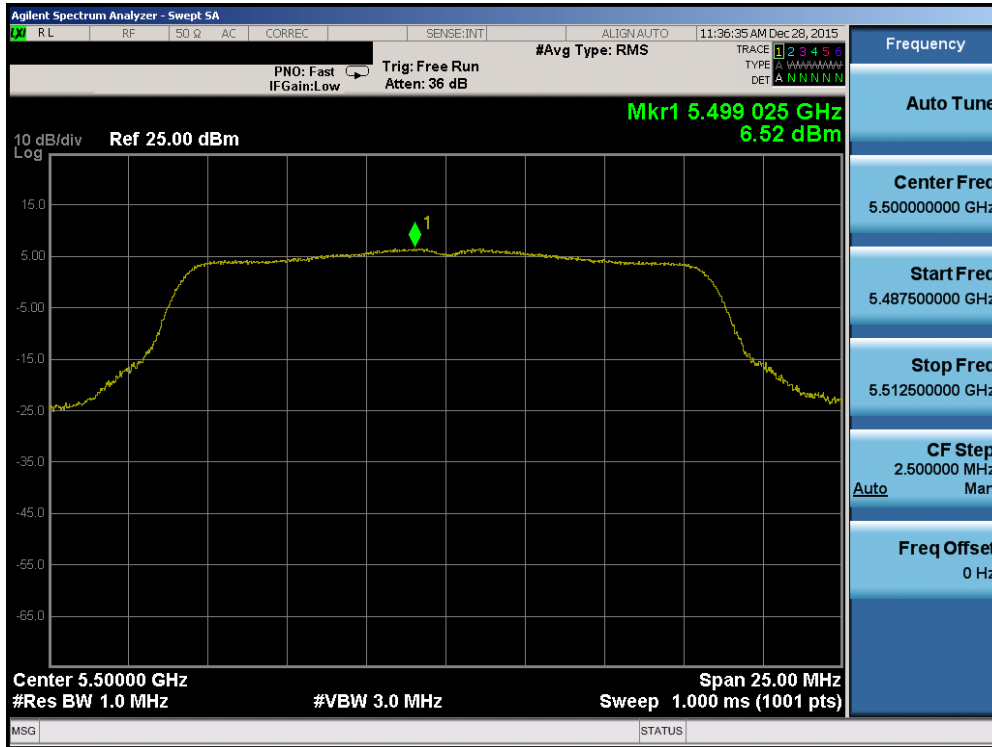


Plot 7-134. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2A) – Ch. 62)

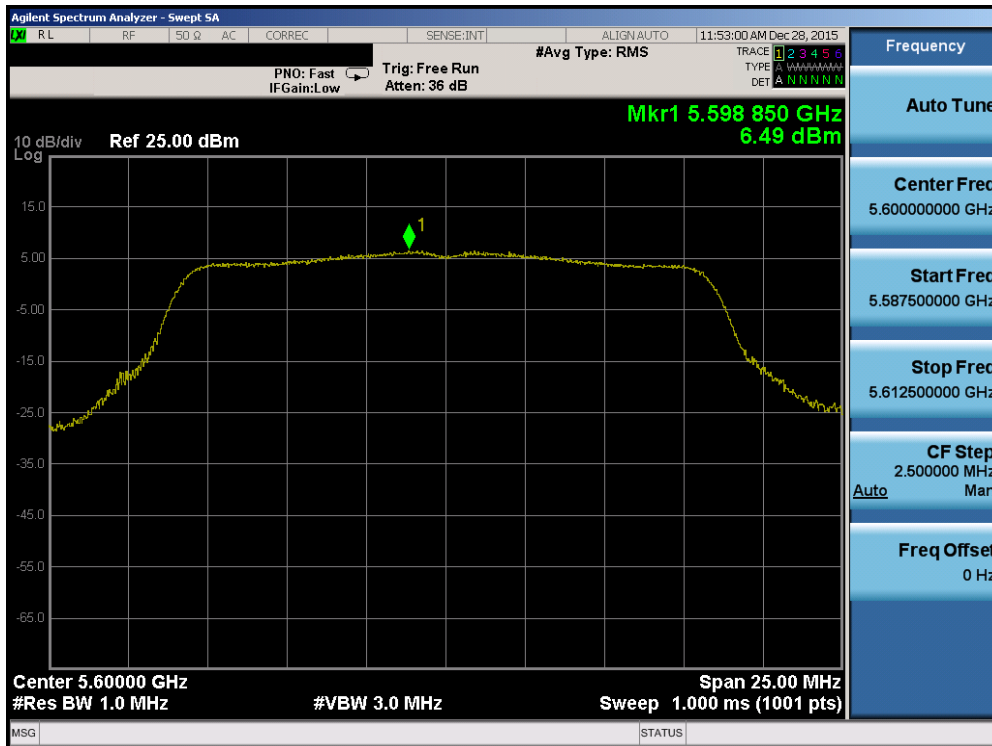


Plot 7-135. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 2A) – Ch. 58)

FCC ID: A3LSMG930X	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 98 of 261

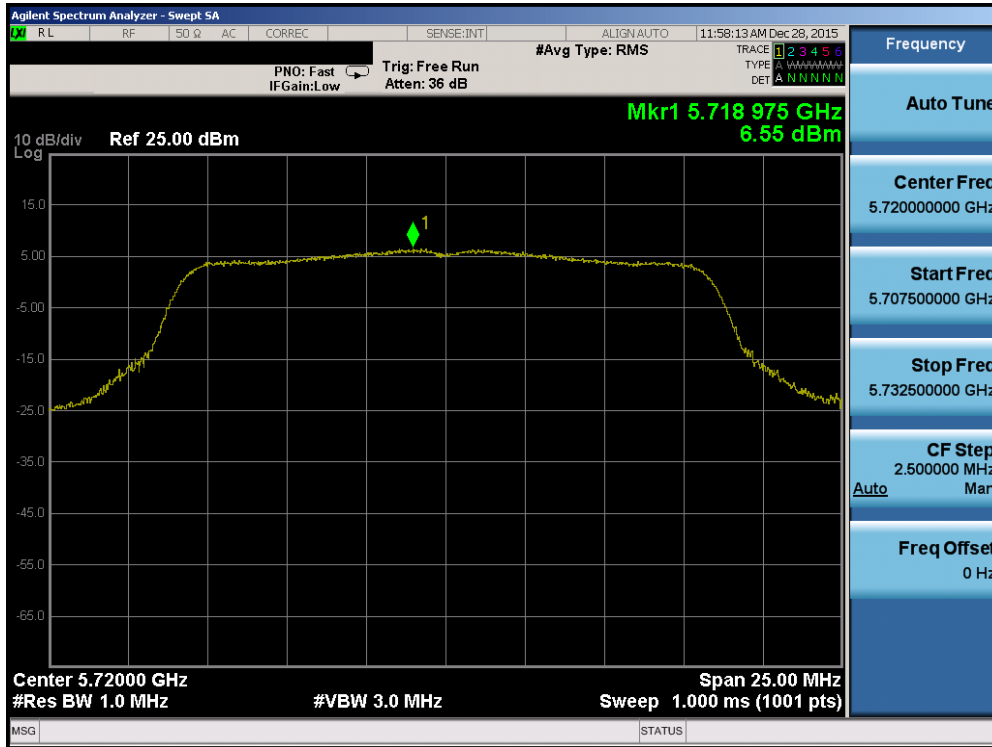


Plot 7-136. Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 100)

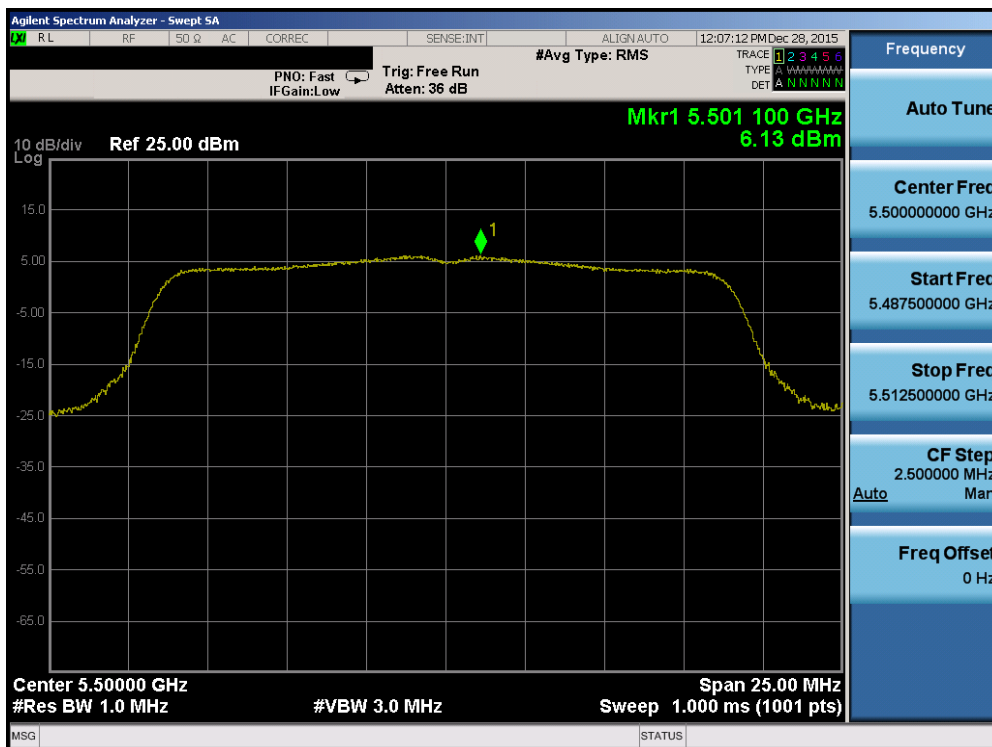


Plot 7-137. Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 120)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 99 of 261

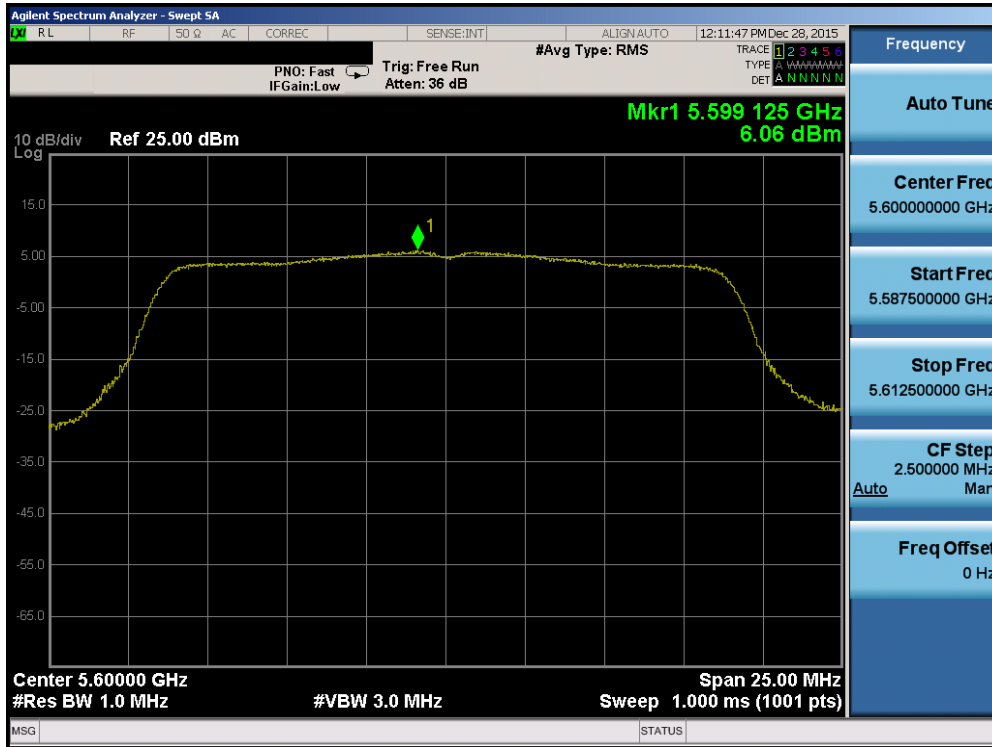


Plot 7-138. Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 144)

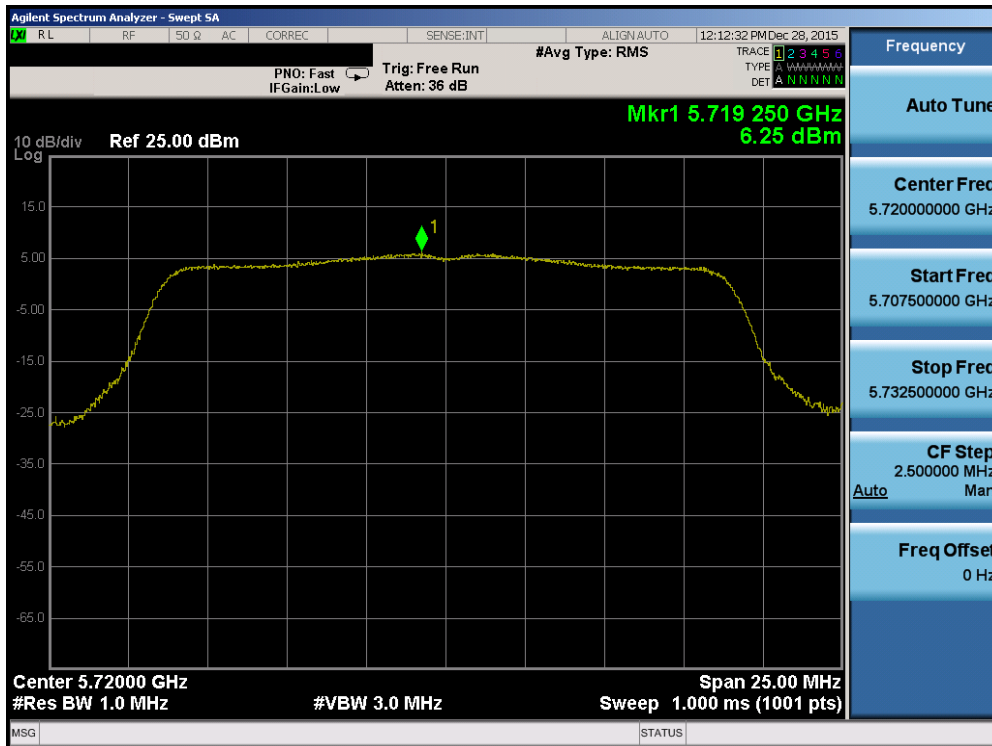


Plot 7-139. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 100)

FCC ID: A3LSMG930X	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 100 of 261

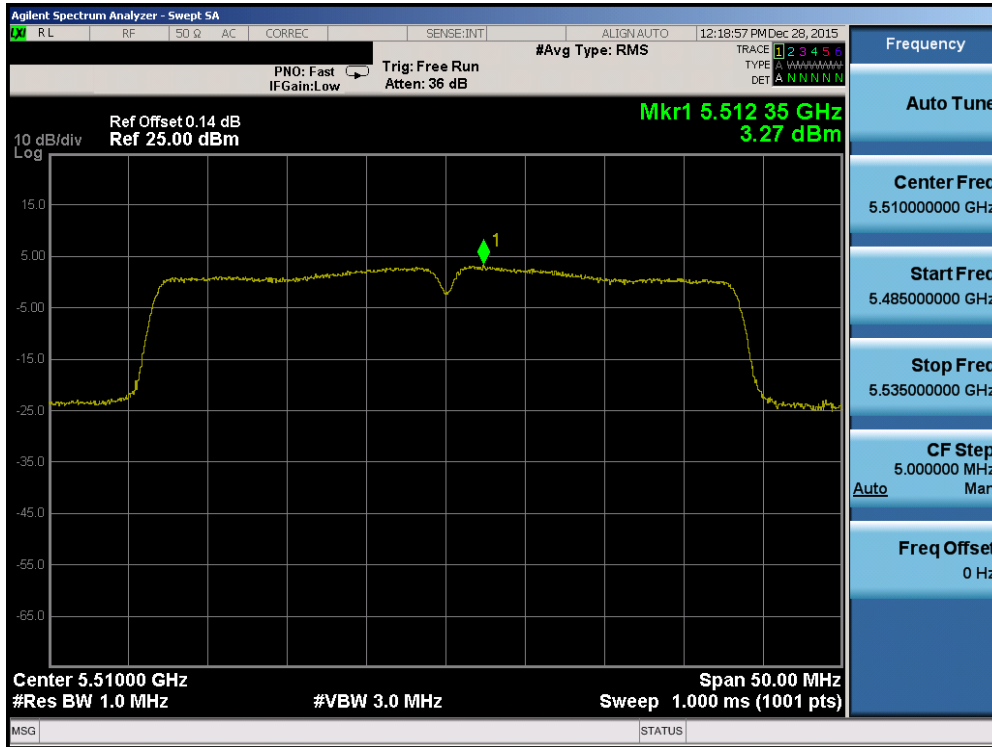


Plot 7-140. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 120)

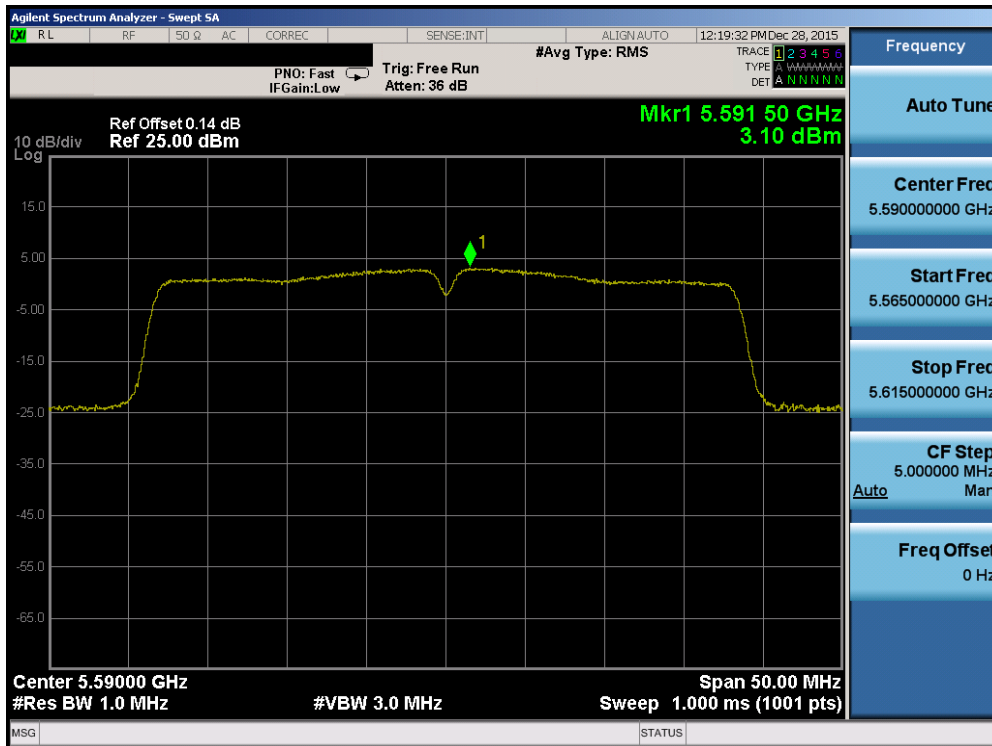


Plot 7-141. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 144)

FCC ID: A3LSMG930X	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 101 of 261

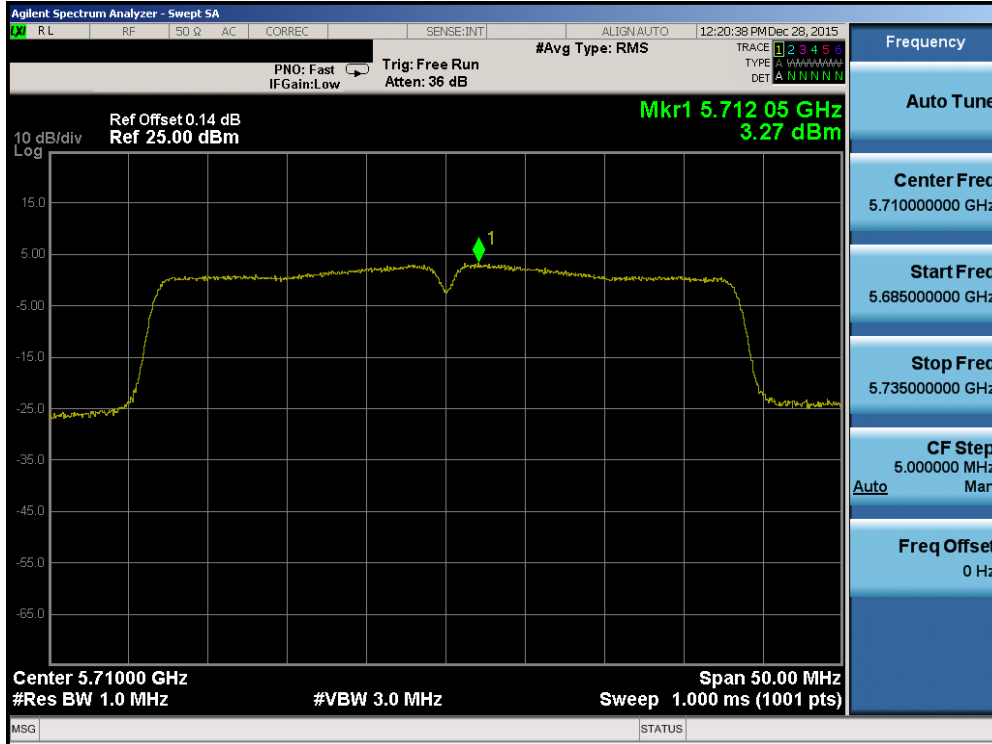


Plot 7-142. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 102)

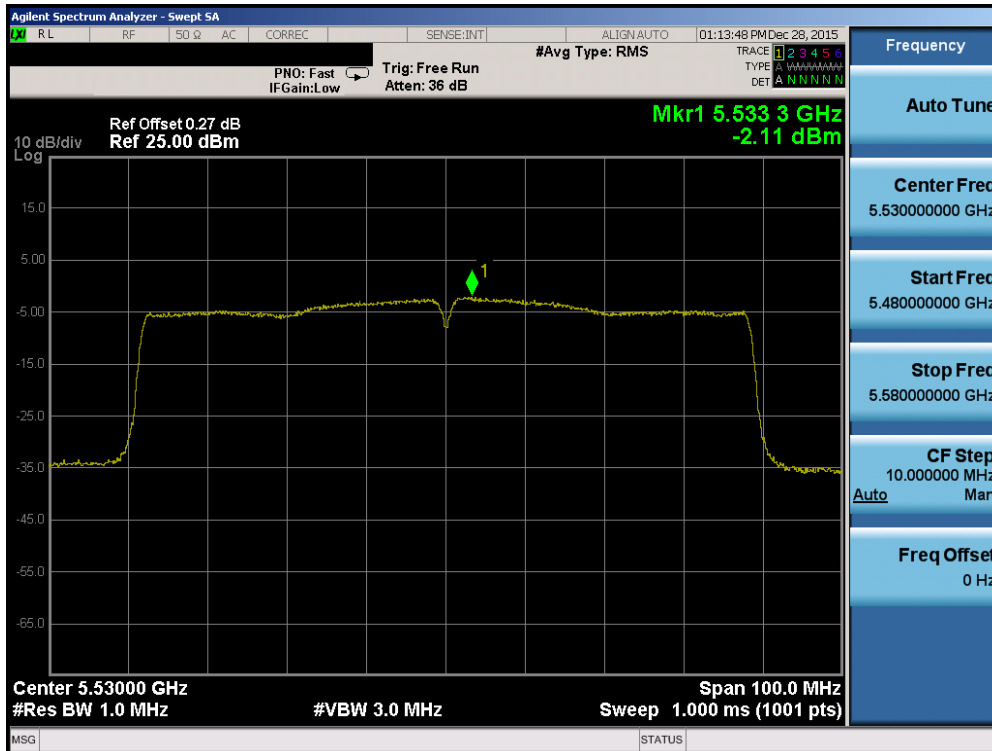


Plot 7-143. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 118)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 102 of 261

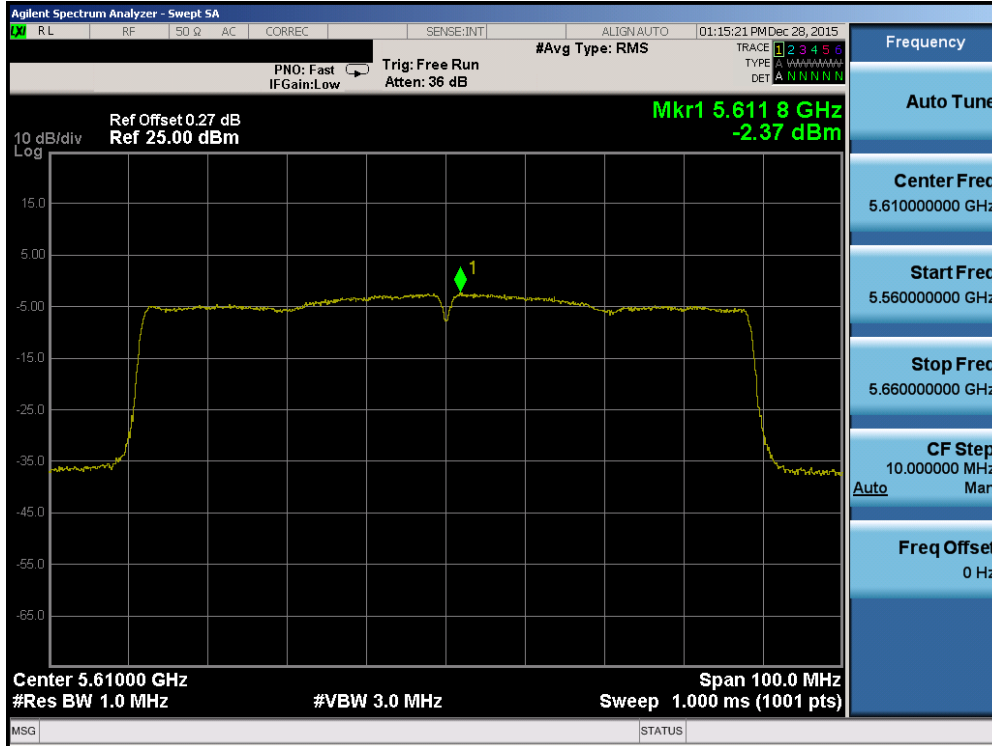


Plot 7-144. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 142)

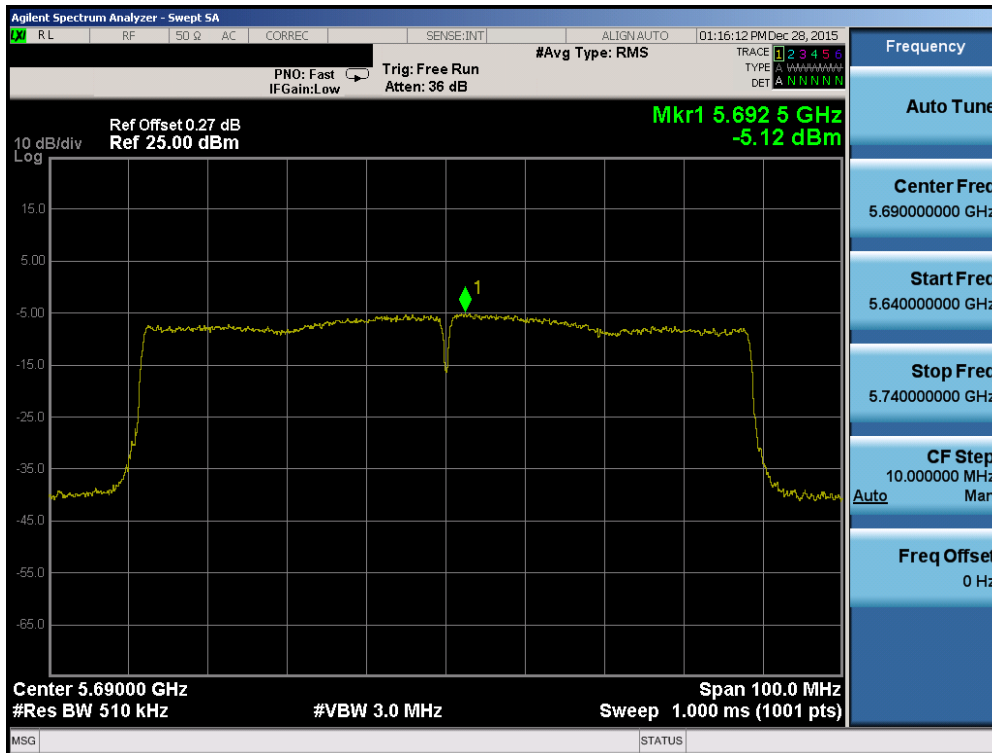


Plot 7-145. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 2C) – Ch. 106)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 103 of 261



Plot 7-146. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 2C) – Ch. 122)

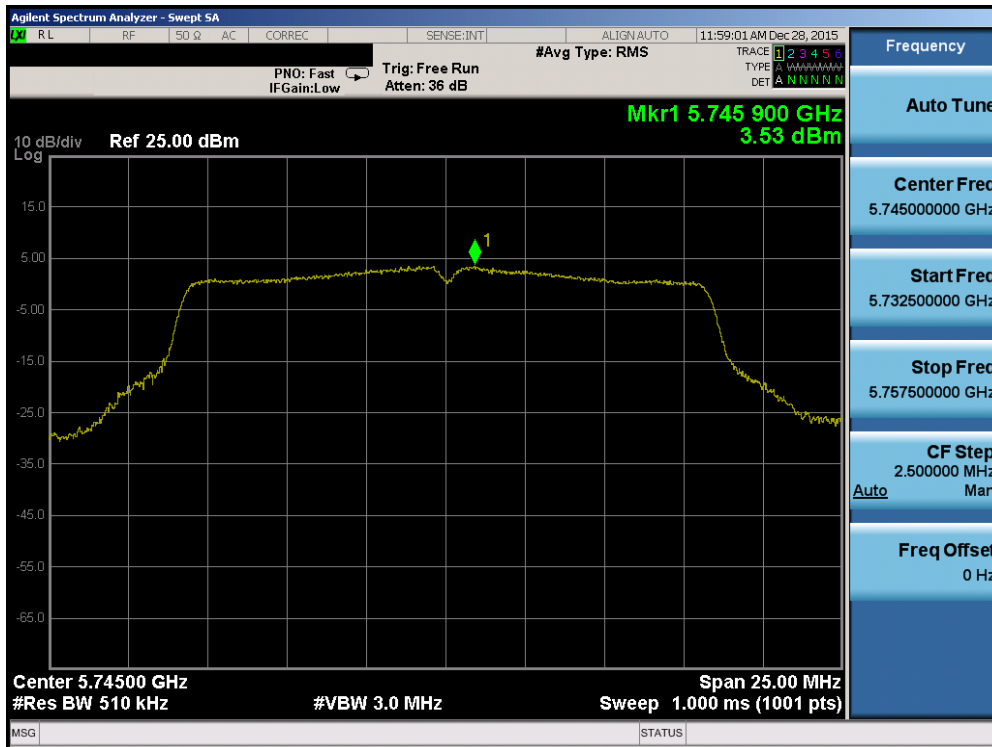


Plot 7-147. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 2C) – Ch. 138)

FCC ID: A3LSMG930X	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 104 of 261

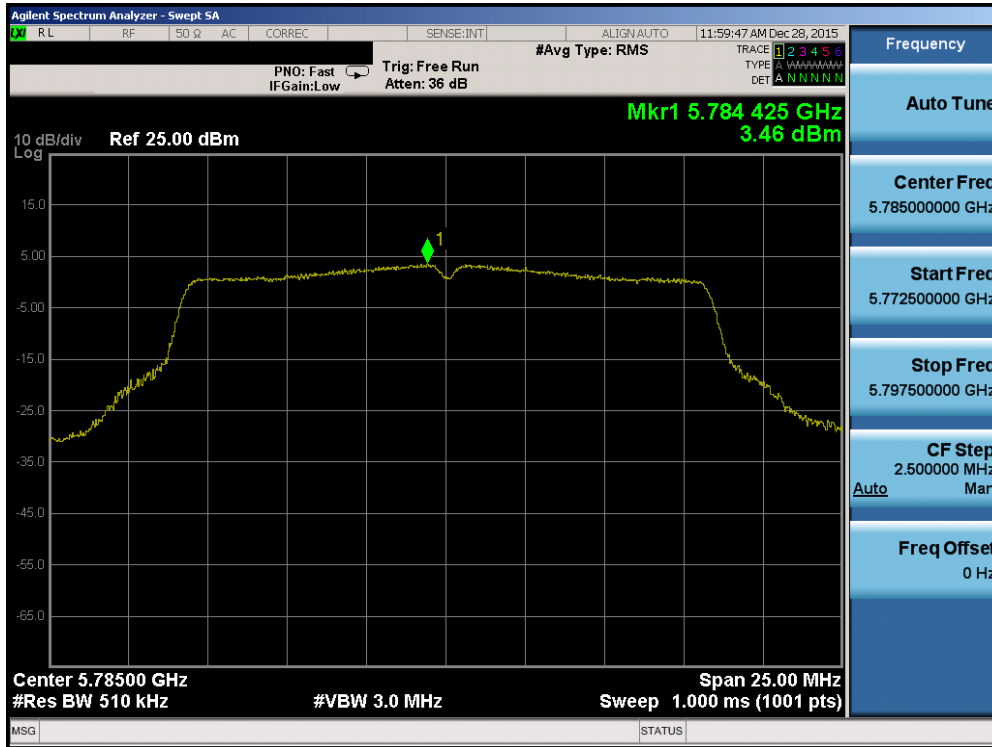
	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured Power Density [dBm]	Max Permissible Power Density [dBm/500kHz]	Margin [dB]	Pass / Fail
Band 3	5745	149	a	6	3.53	30.0	-26.48	Pass
	5785	157	a	6	3.46	30.0	-26.54	Pass
	5825	165	a	6	3.84	30.0	-26.16	Pass
	5745	149	n (20MHz)	6.5/7.2 (MCS0)	3.30	30.0	-26.70	Pass
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	3.42	30.0	-26.58	Pass
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	3.28	30.0	-26.72	Pass
	5755	151	n (40MHz)	13.5/15 (MCS0)	0.47	30.0	-29.54	Pass
	5795	159	n (40MHz)	13.5/15 (MCS0)	0.20	30.0	-29.80	Pass
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	-2.50	30.0	-32.50	Pass

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

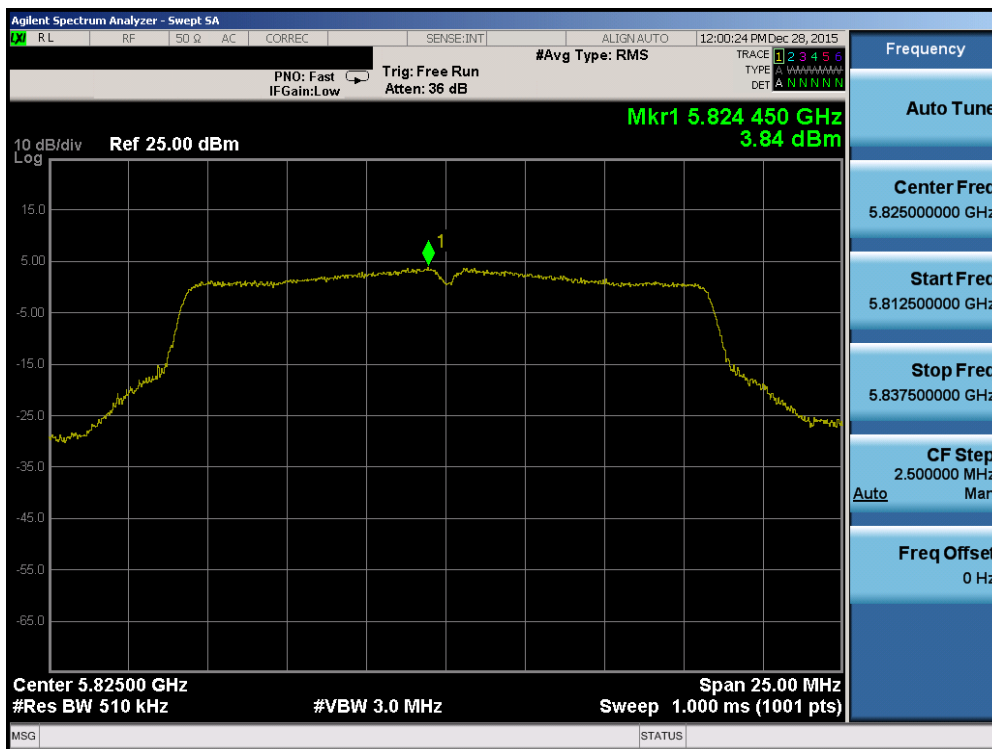


Plot 7-148. Power Spectral Density Plot (802.11a (UNII Band 3) – Ch. 149)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 105 of 261	

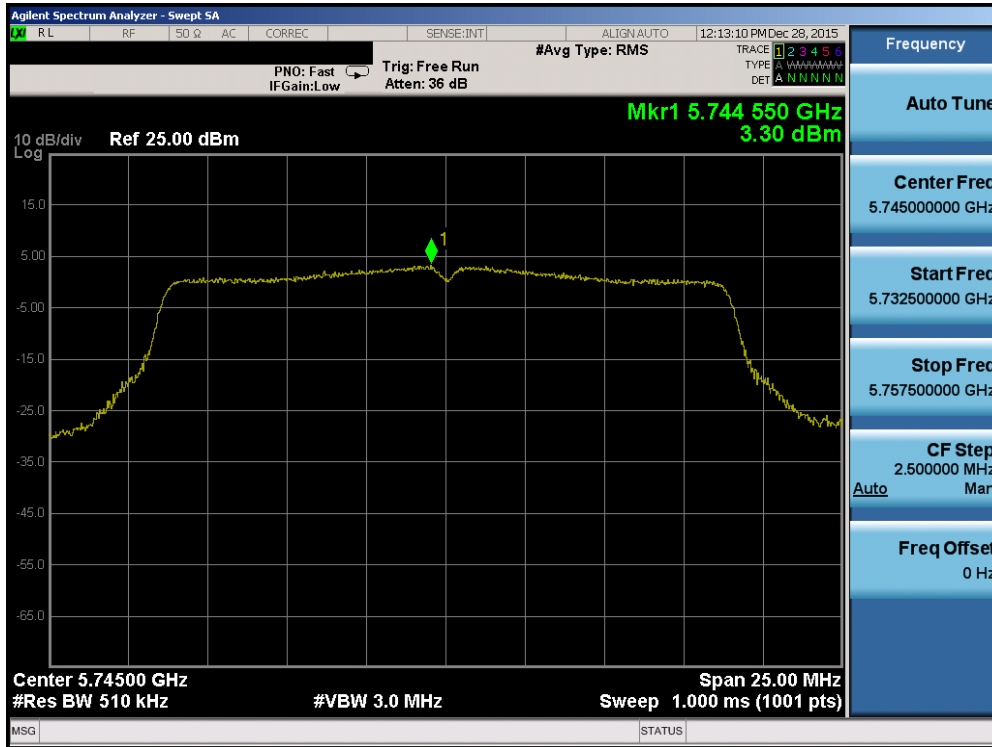


Plot 7-149. Power Spectral Density Plot (802.11a (UNII Band 3) – Ch. 157)

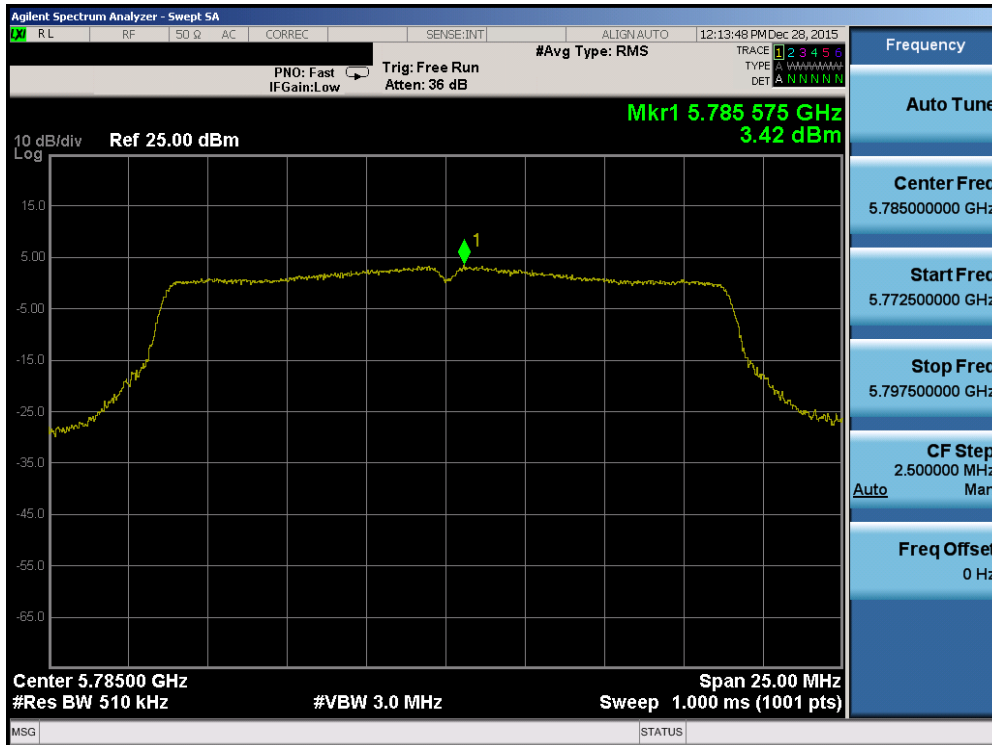


Plot 7-150. Power Spectral Density Plot (802.11a (UNII Band 3) – Ch. 165)

FCC ID: A3LSMG930X	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 106 of 261

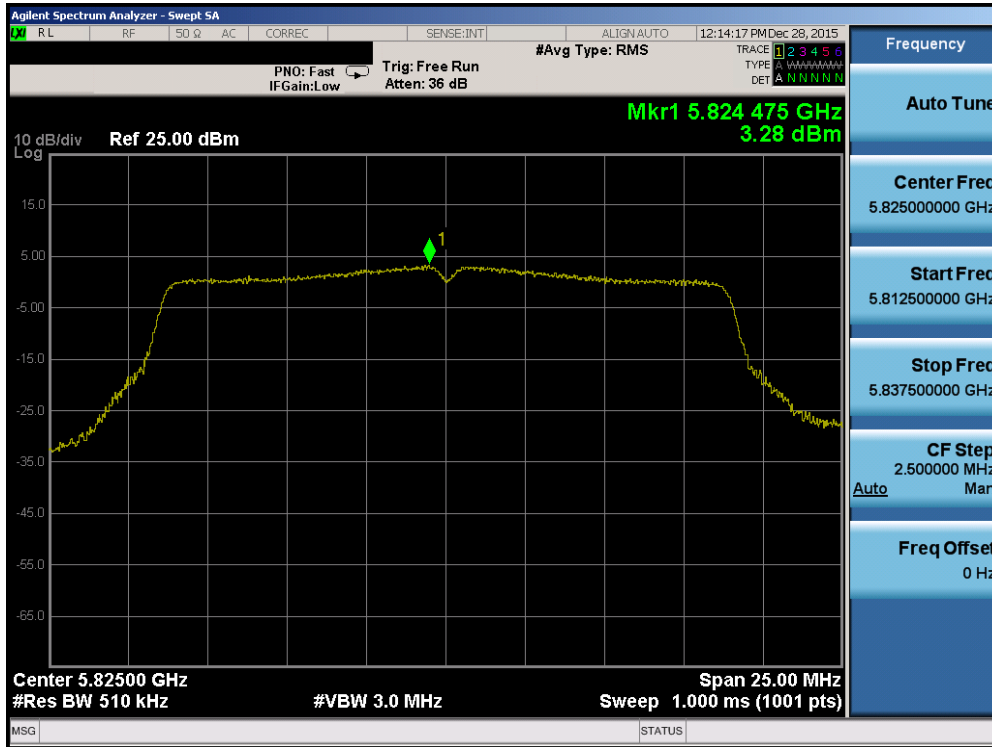


Plot 7-151. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 149)

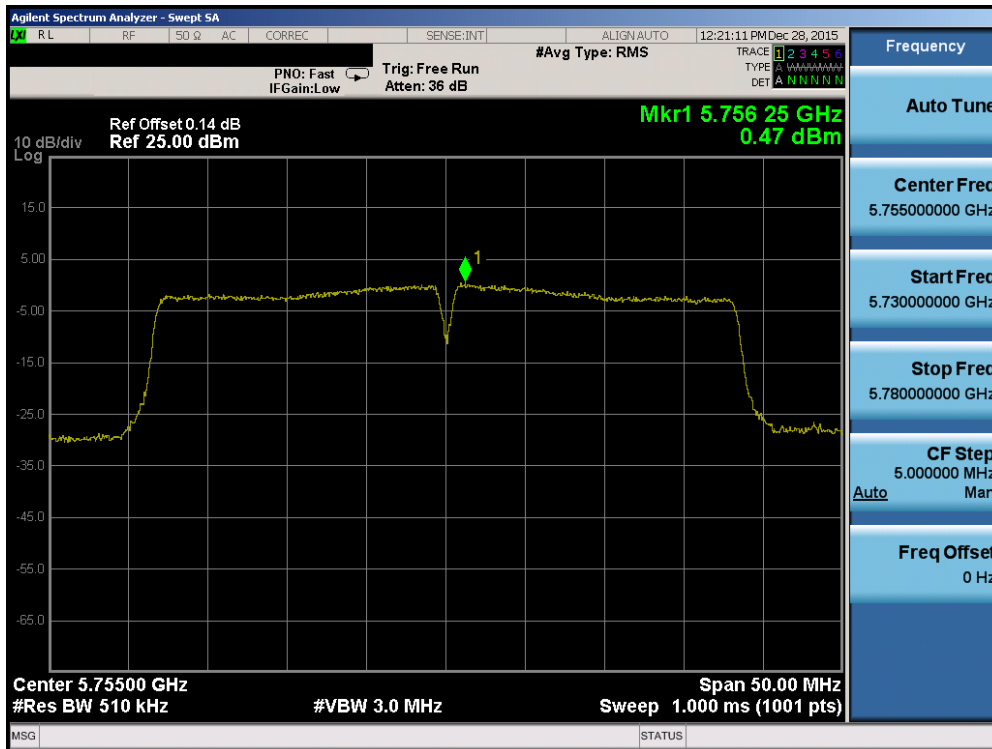


Plot 7-152. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 157)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 107 of 261

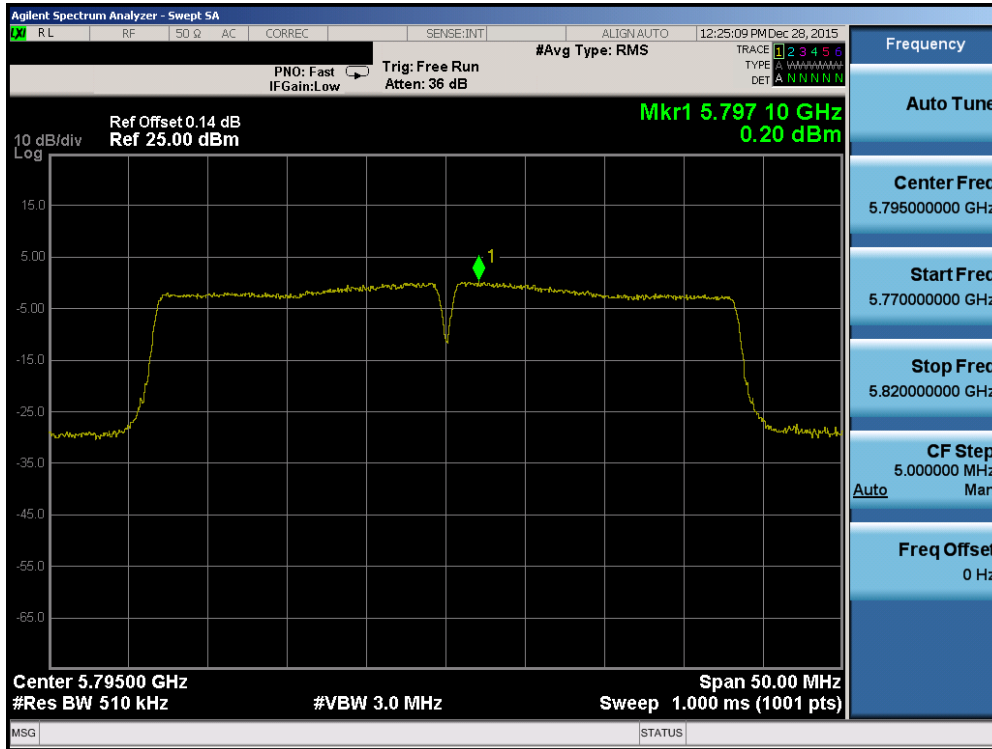


Plot 7-153. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 165)

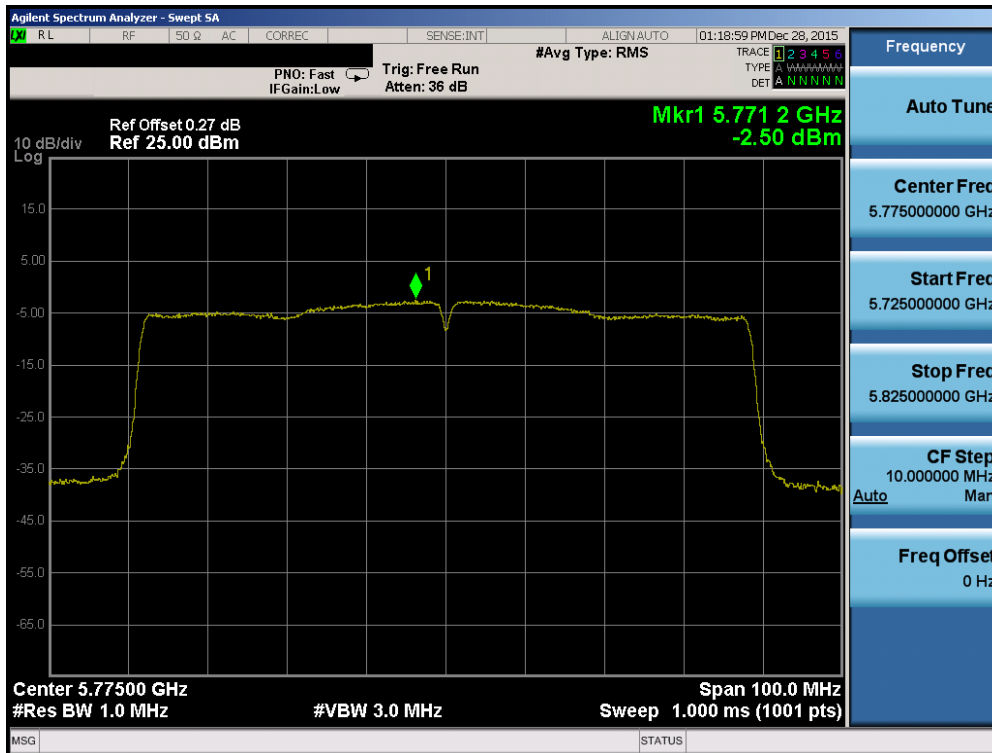


Plot 7-154. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 151)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 108 of 261



Plot 7-155. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 159)



Plot 7-156. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 3) – Ch. 155)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 109 of 261

Summed MIMO Power Spectral Density Measurements

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Antenn-1 Power Density [dBm]	Antenn-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Max Permissible Power Density [dBm/MHz]	Margin [dB]	Pass / Fail
Band 1	5180	36	n (20MHz)	6.5/7.2 (MCS0)	5.63	5.80	8.72	11.0	-2.28	Pass
	5200	40	n (20MHz)	6.5/7.2 (MCS0)	5.93	5.79	8.87	11.0	-2.13	Pass
	5240	48	n (20MHz)	6.5/7.2 (MCS0)	6.23	5.46	8.88	11.0	-2.12	Pass
	5190	38	n (40MHz)	13.5/15 (MCS0)	3.19	3.16	6.18	11.0	-4.82	Pass
	5230	46	n (40MHz)	13.5/15 (MCS0)	3.54	2.79	6.19	11.0	-4.81	Pass
	5210	42	ac (80MHz)	29.3/32.5 (MCS0)	0.19	-2.12	2.20	11.0	-8.80	Pass
Band 2A	5260	52	n (20MHz)	6.5/7.2 (MCS0)	6.19	5.73	8.98	11.0	-2.02	Pass
	5280	56	n (20MHz)	6.5/7.2 (MCS0)	5.93	5.96	8.96	11.0	-2.04	Pass
	5320	64	n (20MHz)	6.5/7.2 (MCS0)	6.43	6.01	9.24	11.0	-1.76	Pass
	5270	54	n (40MHz)	13.5/15 (MCS0)	3.30	2.92	6.12	11.0	-4.88	Pass
	5310	62	n (40MHz)	13.5/15 (MCS0)	3.54	3.23	6.40	11.0	-4.60	Pass
	5290	58	ac (80MHz)	29.3/32.5 (MCS0)	0.29	-1.98	2.32	11.0	-8.68	Pass
Band 2C	5500	100	n (20MHz)	6.5/7.2 (MCS0)	6.59	6.13	9.38	11.0	-1.62	Pass
	5600	120	n (20MHz)	6.5/7.2 (MCS0)	6.38	6.06	9.24	11.0	-1.76	Pass
	5720	144	n (20MHz)	6.5/7.2 (MCS0)	6.13	6.25	9.20	11.0	-1.80	Pass
	5510	102	n (40MHz)	13.5/15 (MCS0)	3.86	3.27	6.59	11.0	-4.41	Pass
	5590	118	n (40MHz)	13.5/15 (MCS0)	3.75	3.10	6.45	11.0	-4.55	Pass
	5710	142	n (40MHz)	13.5/15 (MCS0)	3.39	3.27	6.34	11.0	-4.66	Pass
	5530	106	ac (80MHz)	29.3/32.5 (MCS0)	0.39	-2.11	2.33	11.0	-8.67	Pass
	5610	122	ac (80MHz)	29.3/32.5 (MCS0)	-0.10	-2.37	1.92	11.0	-9.08	Pass
	5690	138	ac (80MHz)	29.3/32.5 (MCS0)	-2.84	-5.13	-0.83	11.0	-11.83	Pass

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

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Antenn-1 Power Density [dBm]	Antenn-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Max Permissible Power Density [dBm/500kHz]	Margin [dB]	Pass / Fail
Band 3	5745	149	n (20MHz)	6.5/7.2 (MCS0)	3.29	3.30	6.31	30.0	-23.69	Pass
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	3.59	3.43	6.52	30.0	-23.48	Pass
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	3.19	3.28	6.25	30.0	-23.75	Pass
	5755	151	n (40MHz)	13.5/15 (MCS0)	0.33	0.47	3.41	30.0	-26.59	Pass
	5795	159	n (40MHz)	13.5/15 (MCS0)	0.82	0.20	3.53	30.0	-26.47	Pass
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	-0.17	-2.50	1.83	30.0	-28.17	Pass

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

Note:



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

Sample MIMO Calculation:

At 5180MHz the average conducted power spectral density was measured to be 5.63 dBm for Antenna-1 and 5.80 dBm for Antenna-2.

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

$$(5.63 \text{ dBm} + 5.80 \text{ dBm}) = (3.65 \text{ mW} + 3.80 \text{ mW}) = 7.45 \text{ mW} = 8.72 \text{ dBm}$$

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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: 3.85 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	5,180,000,223	223	0.00000431
100 %		- 30	5,180,000,020	20	0.00000039
100 %		- 20	5,179,999,589	-411	-0.00000793
100 %		- 10	5,179,999,555	-445	-0.00000859
100 %		0	5,180,000,293	293	0.00000566
100 %		+ 10	5,180,000,095	95	0.00000183
100 %		+ 20	5,180,000,010	10	0.00000019
100 %		+ 30	5,179,999,959	-41	-0.00000079
100 %		+ 40	5,180,000,086	86	0.00000166
100 %		+ 50	5,179,999,745	-255	-0.00000492
BATT. ENDPOINT		3.45	+ 20	5,179,999,903	-97

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

§15.407(g)

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



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

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	5,259,999,742	-258	-0.00000490
100 %		- 30	5,259,999,971	-29	-0.00000055
100 %		- 20	5,259,999,796	-204	-0.00000388
100 %		- 10	5,260,000,220	220	0.00000418
100 %		0	5,260,000,069	69	0.00000131
100 %		+ 10	5,259,999,939	-61	-0.00000116
100 %		+ 20	5,260,000,162	162	0.00000308
100 %		+ 30	5,259,999,880	-120	-0.00000228
100 %		+ 40	5,260,000,385	385	0.00000732
100 %		+ 50	5,259,999,820	-180	-0.00000342
BATT. ENDPOINT	3.45	+ 20	5,259,999,849	-151	-0.00000287

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: 3.85 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	5,499,999,723	-277	-0.00000504
100 %		- 30	5,499,999,827	-173	-0.00000315
100 %		- 20	5,499,999,790	-210	-0.00000382
100 %		- 10	5,499,999,727	-273	-0.00000496
100 %		0	5,499,999,849	-151	-0.00000275
100 %		+ 10	5,499,999,954	-46	-0.00000084
100 %		+ 20	5,499,999,885	-115	-0.00000209
100 %		+ 30	5,499,999,891	-109	-0.00000198
100 %		+ 40	5,500,000,099	99	0.00000180
100 %		+ 50	5,500,000,042	42	0.00000076
BATT. ENDPOINT		3.45	+ 20	5,499,999,888	-112

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 §15.407(g)

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



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

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	5,745,000,160	160	0.00000279
100 %		- 30	5,745,000,024	24	0.00000042
100 %		- 20	5,745,000,117	117	0.00000204
100 %		- 10	5,745,000,055	55	0.00000096
100 %		0	5,744,999,733	-267	-0.00000465
100 %		+ 10	5,745,000,175	175	0.00000305
100 %		+ 20	5,744,999,804	-196	-0.00000341
100 %		+ 30	5,745,000,119	119	0.00000207
100 %		+ 40	5,744,999,990	-10	-0.00000017
100 %		+ 50	5,744,999,673	-327	-0.00000569
BATT. ENDPOINT		3.45	+ 20	5,744,999,751	-249

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 [$\mu\text{V}/\text{m}$]	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 $\geq 2 \times \text{span}/\text{RBW}$)
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.

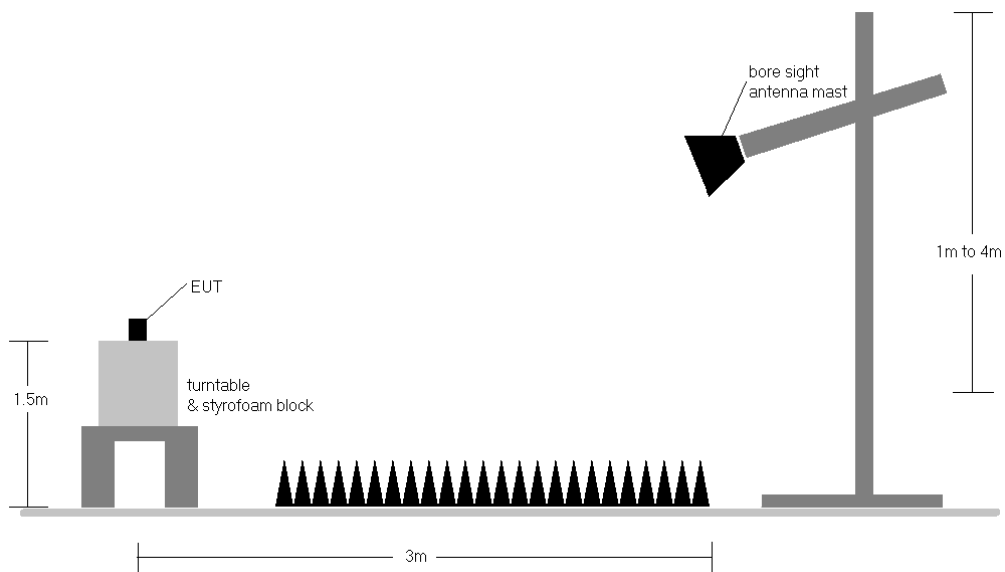




Figure 7-5. Test Instrument & Measurement Setup

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.
10. The “-” shown in the following RSE tables are used to denote a noise floor measurement.

Sample Calculations



Determining Spurious Emissions Levels

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

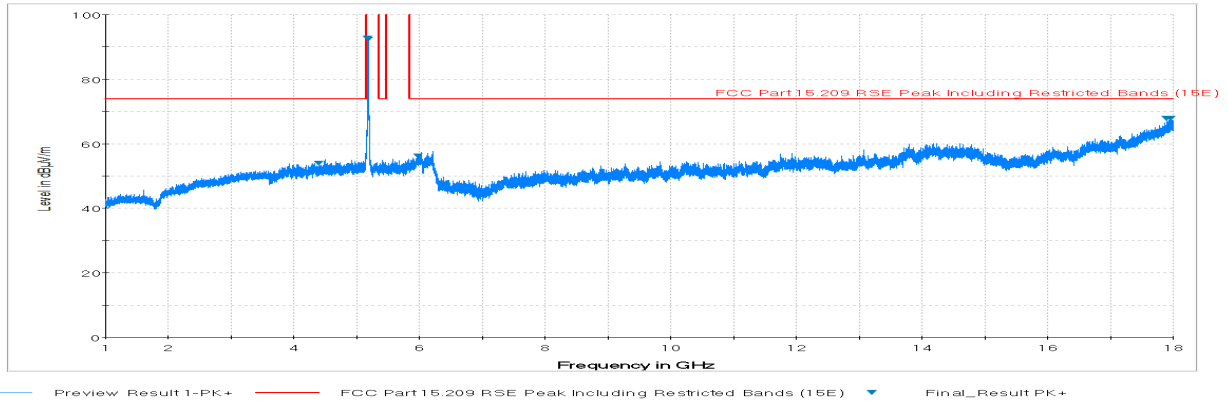
Radiated Band Edge Measurement Offset

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

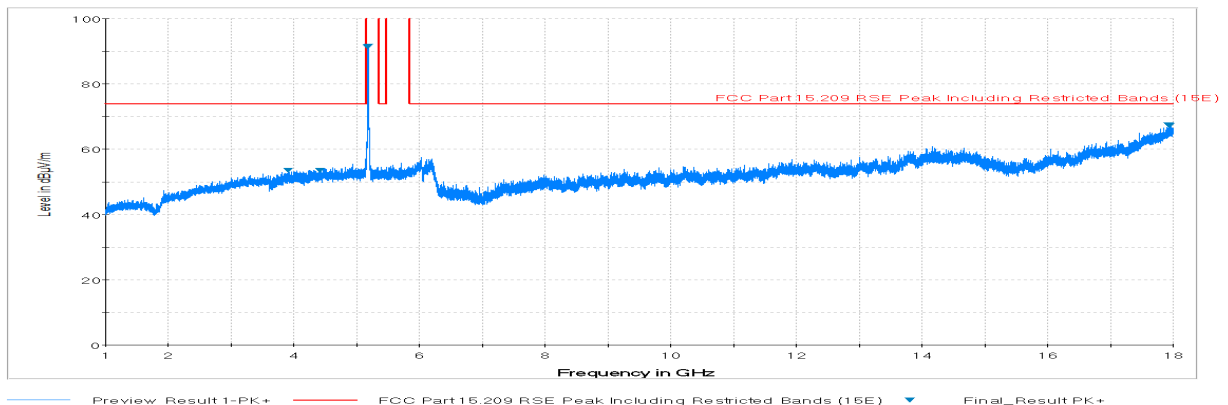
$$\text{Offset (dB)} = (\text{Antenna Factor} + \text{Cable Loss} + 10 \text{ dB Attenuator}) - \text{Preamplifier Gain}$$

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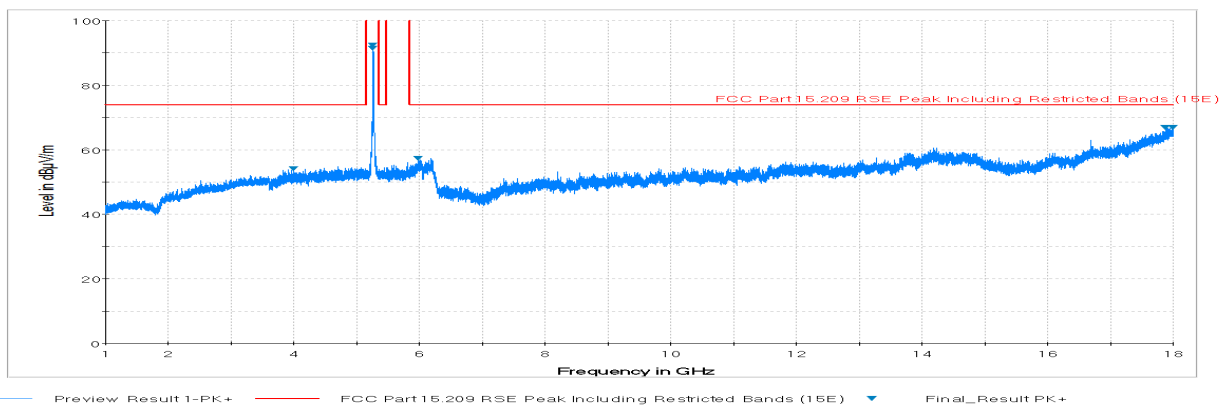
7.7.1 Antenna-1 Radiated Spurious Emission Measurements





Plot 7-157. Radiated Spurious Plot above 1GHz (802.11a – U1 Ch. 40, Ant. Pol. H)

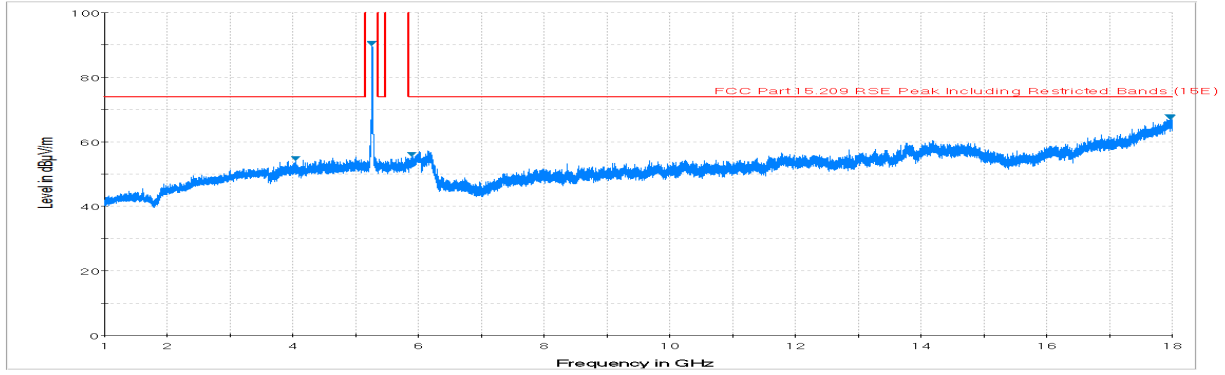


Plot 7-158. Radiated Spurious Plot above 1GHz (802.11a – U1 Ch. 40, Ant. Pol. V)

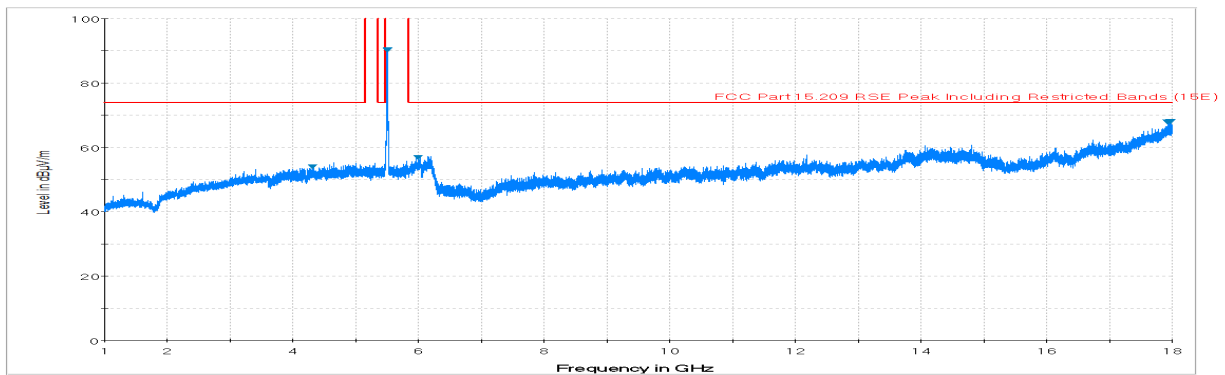


Plot 7-159. Radiated Spurious Plot above 1GHz (802.11a – U2A Ch. 56, Ant. Pol. H)

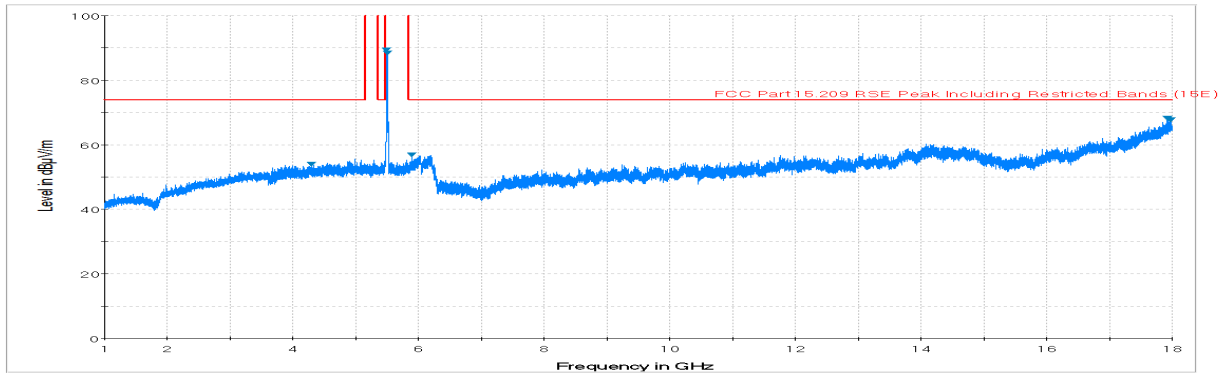
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Plot 7-160. Radiated Spurious Plot above 1GHz (802.11a – U2A Ch. 56, Ant. Pol. V)

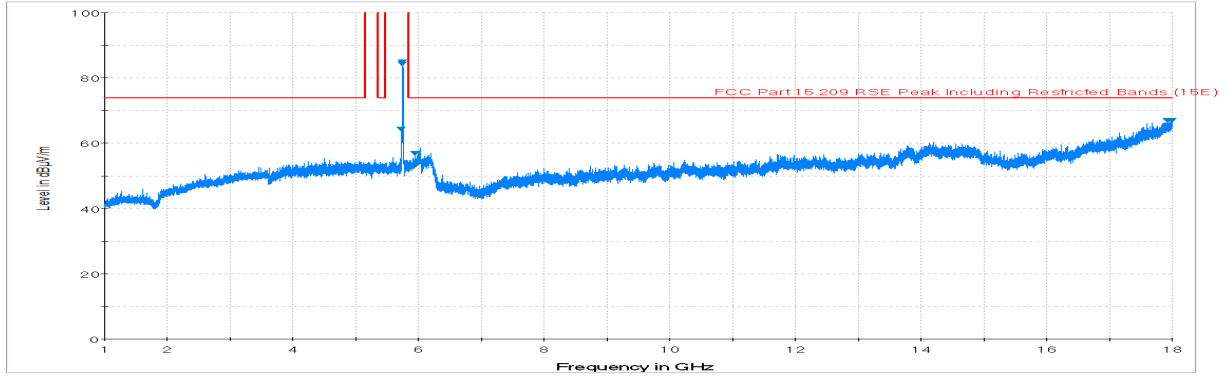


Plot 7-161. Radiated Spurious Plot above 1GHz (802.11a – U2C Ch. 116, Ant. Pol. H)

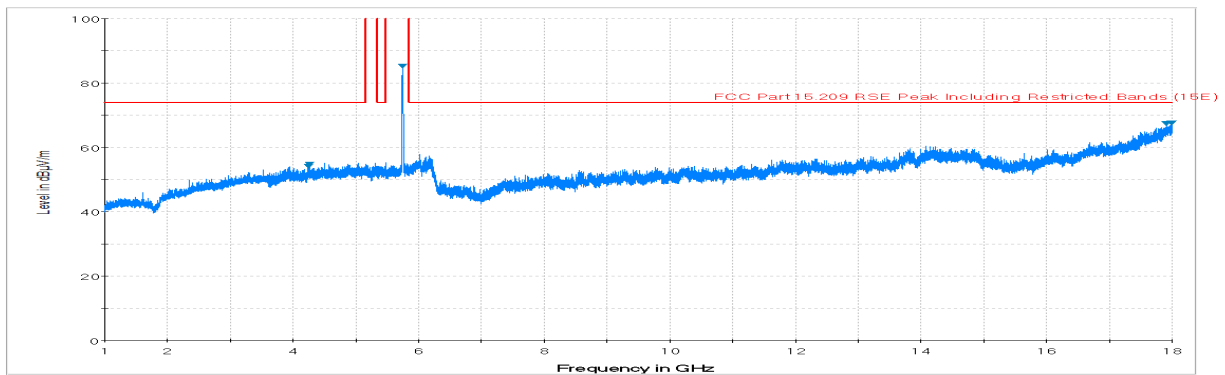


Plot 7-162. Radiated Spurious Plot above 1GHz (802.11a – U2C Ch. 116, Ant. Pol. V)



FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Preview Result 1-PK+ FCC Part 15.209 RSE Peak Including Restricted Bands (15E) Final_Result PK+
Plot 7-163. Radiated Spurious Plot above 1GHz (802.11a – U3 Ch. 157, Ant. Pol. H)

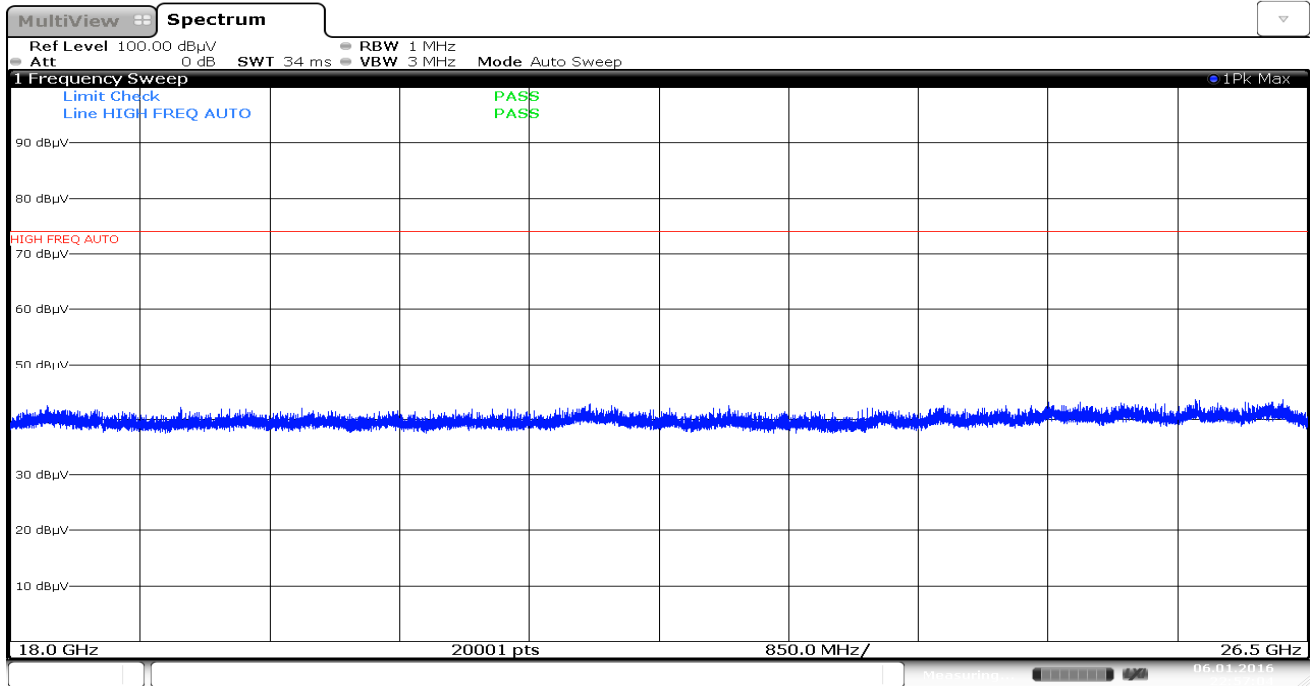


Preview Result 1-PK+ FCC Part 15.209 RSE Peak Including Restricted Bands (15E) Final_Result PK+
Plot 7-164. Radiated Spurious Plot above 1GHz (802.11a – U3 Ch. 157, Ant. Pol. V)

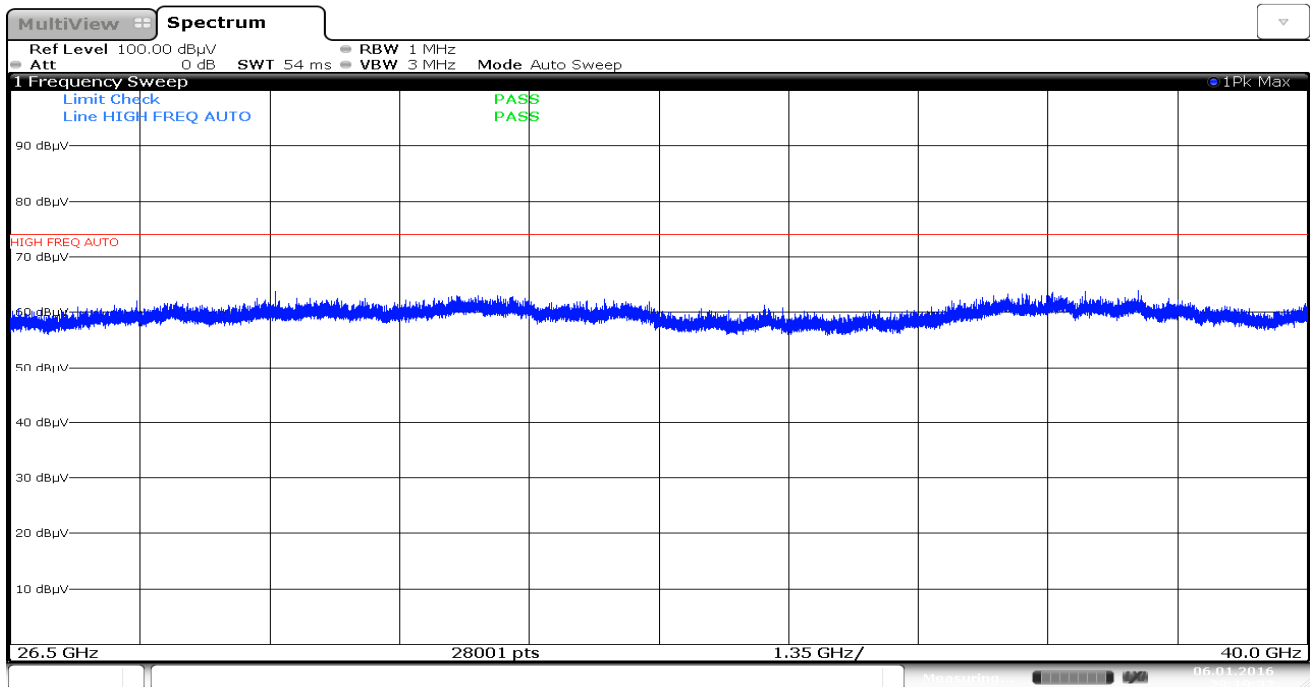
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 120 of 261	

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

§15.209

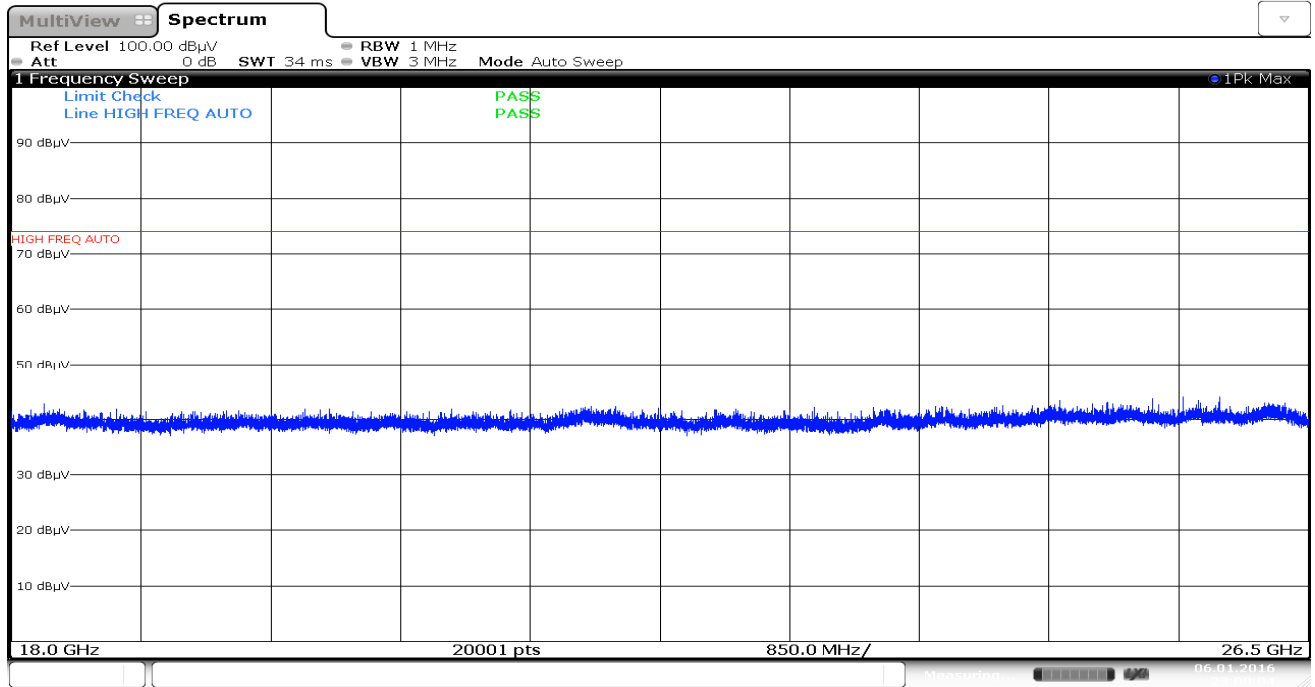


Plot 7-165. Radiated Spurious Plot above 18GHz (802.11a – Ant. Pol. H)

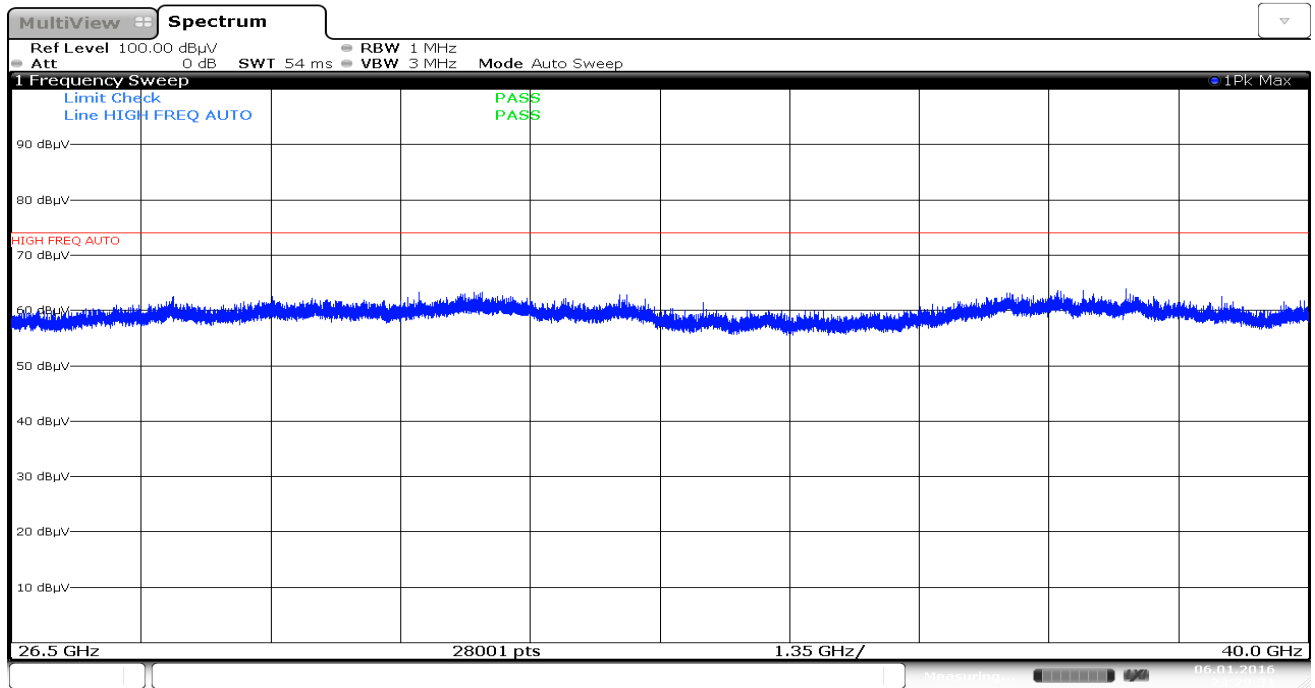


Plot 7-166. Radiated Spurious Plot above 18GHz (802.11a – Ant. Pol. H)

FCC ID: A3LSMG930X	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 121 of 261	



Plot 7-167. Radiated Spurious Plot above 18GHz (802.11a – Ant. Pol. V)



Plot 7-168. Radiated Spurious Plot above 18GHz (802.11a – Ant. Pol. V)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 122 of 261	

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	-	-	-98.04	47.31	0.00	56.27	68.20	-11.93
* 15540.00	Average	H	-	-	-111.30	51.34	0.00	47.04	53.98	-6.94
* 15540.00	Peak	H	-	-	-99.36	51.34	0.00	58.98	73.98	-15.00
* 20720.00	Average	H	1.00	290	-108.37	44.39	-9.54	33.48	53.98	-20.50
* 20720.00	Peak	H	1.00	290	-100.09	44.39	-9.54	41.76	73.98	-32.22
25900.00	Peak	H	-	-	-99.83	45.11	-9.54	42.74	68.20	-25.46

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	-	-	-97.40	47.33	0.00	56.93	68.20	-11.27
* 15600.00	Average	H	-	-	-110.95	50.86	0.00	46.90	53.98	-7.07
* 15600.00	Peak	H	-	-	-98.34	50.86	0.00	59.51	73.98	-14.46
* 20800.00	Average	H	1.00	277	-107.89	44.39	-9.54	33.96	53.98	-20.02
* 20800.00	Peak	H	1.00	277	-99.40	44.39	-9.54	42.45	73.98	-31.53
26000.00	Peak	H	-	-	-100.20	45.12	-9.54	42.37	68.20	-25.83

Table 7-29. Radiated Measurements

FCC ID: A3LSMG930X			FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset			Page 123 of 261

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	-	-	-98.80	47.37	0.00	55.58	68.20	-12.62
* 15720.00	Average	H	-	-	-110.66	50.12	0.00	46.46	53.98	-7.52
* 15720.00	Peak	H	-	-	-98.03	50.12	0.00	59.09	73.98	-14.89
* 20960.00	Average	H	1.00	272	-106.02	44.31	-9.54	35.75	53.98	-18.23
* 20960.00	Peak	H	1.00	272	-98.62	44.31	-9.54	43.15	73.98	-30.83
26200.00	Peak	H	-	-	-99.91	45.01	-9.54	42.56	68.20	-25.64

Table 7-30. Radiated Measurements

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [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	-	-	-99.89	47.37	0.00	54.49	68.20	-13.71
* 15720.00	Average	H	-	-	-111.95	50.12	0.00	45.17	53.98	-8.81
* 15720.00	Peak	H	-	-	-99.74	50.12	0.00	57.38	73.98	-16.60
* 20960.00	Average	H	-	-	-112.31	44.31	-9.54	29.46	53.98	-24.52
* 20960.00	Peak	H	-	-	-100.25	44.31	-9.54	41.52	73.98	-32.46
26200.00	Peak	H	-	-	-99.14	45.01	-9.54	43.33	68.20	-24.87

Table 7-31. Radiated Measurements with WCP

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 124 of 261	

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	-	-	-98.36	47.39	0.00	56.04	68.20	-12.16
* 15780.00	Average	H	-	-	-111.06	49.96	0.00	45.90	53.98	-8.08
* 15780.00	Peak	H	-	-	-98.69	49.96	0.00	58.27	73.98	-15.71
* 21040.00	Average	H	1.00	293	-108.43	44.29	-9.54	33.31	53.98	-20.67
* 21040.00	Peak	H	1.00	293	-100.26	44.29	-9.54	41.48	73.98	-32.50
26300.00	Peak	H	-	-	-99.19	45.00	-9.54	43.27	68.20	-24.93

Table 7-32. Radiated Measurements

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [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	-	-	-98.49	47.41	0.00	55.91	68.20	-12.29
* 15840.00	Average	H	-	-	-111.13	50.16	0.00	46.03	53.98	-7.95
* 15840.00	Peak	H	-	-	-98.87	50.16	0.00	58.29	73.98	-15.69
* 21120.00	Average	H	1.00	293	-107.76	44.28	-9.54	33.98	53.98	-20.00
* 21120.00	Peak	H	1.00	293	-99.47	44.28	-9.54	42.27	73.98	-31.71
26400.00	Peak	H	-	-	-99.69	45.02	-9.54	42.79	68.20	-25.41

Table 7-33. Radiated Measurements

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 125 of 261	

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	-	-	-110.13	47.46	0.00	44.34	53.98	-9.64
* 10640.00	Peak	H	-	-	-97.82	47.46	0.00	56.65	73.98	-17.33
* 15960.00	Average	H	-	-	-110.94	50.83	0.00	46.89	53.98	-7.09
* 15960.00	Peak	H	-	-	-98.54	50.83	0.00	59.29	73.98	-14.69
* 21280.00	Average	H	1.00	286	-107.78	44.26	-9.54	33.94	53.98	-20.04
* 21280.00	Peak	H	1.00	286	-99.71	44.26	-9.54	42.01	73.98	-31.97
26600.00	Peak	H	-	-	-102.66	47.61	-9.54	42.41	68.20	-25.79

Table 7-34. Radiated Measurements

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [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	-	-	-99.61	47.41	0.00	54.79	68.20	-13.41
* 15840.00	Average	H	-	-	-112.03	50.16	0.00	45.13	53.98	-8.85
* 15840.00	Peak	H	-	-	-99.86	50.16	0.00	57.30	73.98	-16.68
* 21120.00	Average	H	-	-	-113.22	44.28	0.00	38.06	53.98	-15.92
* 21120.00	Peak	H	-	-	-101.07	44.28	-9.54	40.67	73.98	-33.31
26400.00	Peak	H	-	-	-98.90	45.02	-9.54	43.58	68.20	-24.62

Table 7-35. Radiated Measurements with WCP

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 126 of 261	

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	1.65	360	-108.55	47.69	0.00	46.14	53.98	-7.84
* 11000.00	Peak	H	1.65	360	-96.91	47.69	0.00	57.78	73.98	-16.20
16500.00	Peak	H	-	-	-99.44	52.33	0.00	59.88	68.20	-8.32
22000.00	Peak	H	1.00	158	-98.87	44.50	-9.54	43.08	68.20	-25.12
27500.00	Peak	H	-	-	-102.62	47.97	-9.54	42.81	68.20	-25.39

Table 7-36. Radiated Measurements

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [m]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11200.00	Average	H	1.68	35	-109.17	47.88	0.00	45.71	53.98	-8.27
* 11200.00	Peak	H	1.68	35	-96.91	47.88	0.00	57.97	73.98	-16.01
16800.00	Peak	H	-	-	-99.01	53.52	0.00	61.52	68.20	-6.68
* 22400.00	Average	H	1.00	190	-107.00	44.56	-9.54	35.02	53.98	-18.96
* 22400.00	Peak	H	1.00	190	-99.18	44.56	-9.54	42.84	73.98	-31.14
28000.00	Peak	H	-	-	-103.28	48.08	-9.54	42.26	68.20	-25.94

Table 7-37. Radiated Measurements

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 127 of 261	

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	1.68	72	-106.56	48.49	0.00	48.92	53.98	-5.06
* 11440.00	Peak	H	1.68	72	-94.99	48.49	0.00	60.49	73.98	-13.49
17160.00	Peak	H	-	-	-98.03	55.12	0.00	64.09	68.20	-4.11
* 22880.00	Average	H	1.00	224	-108.74	44.56	-9.54	33.27	53.98	-20.71
* 22880.00	Peak	H	1.00	224	-98.03	44.56	-9.54	43.98	73.98	-30.00
28600.00	Peak	H	-	-	-102.84	48.32	-9.54	42.94	68.20	-25.26

Table 7-38. Radiated Measurements

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [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	-	-	-110.06	47.69	0.00	44.63	53.98	-9.35
* 11000.00	Peak	H	-	-	-97.71	47.69	0.00	56.98	73.98	-17.00
16500.00	Peak	H	-	-	-99.99	52.33	0.00	59.33	68.20	-8.87
22000.00	Peak	H	1.00	224	-100.24	44.50	-9.54	41.71	68.20	-26.49
27500.00	Peak	H	-	-	-102.94	47.97	-9.54	42.49	68.20	-25.71

Table 7-39. Radiated Measurements with WCP

FCC ID: A3LSMG930X			FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset			Page 128 of 261

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	1.50	301	-108.16	48.89	0.00	47.73	53.98	-6.25
* 11490.00	Peak	H	1.50	301	-96.26	48.89	0.00	59.63	73.98	-14.35
17235.00	Peak	H	-	-	-98.86	56.10	0.00	64.24	68.20	-3.96
* 22980.00	Average	H	1.00	214	-108.08	44.68	-9.54	34.06	53.98	-19.92
* 22980.00	Peak	H	1.00	214	-97.96	44.68	-9.54	44.18	73.98	-29.80
28725.00	Peak	H	-	-	-102.43	48.26	-9.54	43.29	68.20	-24.91

Table 7-40. Radiated Measurements

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [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	1.61	161	-109.22	49.13	0.00	46.91	53.98	-7.07
* 11570.00	Peak	H	1.61	161	-96.67	49.13	0.00	59.46	73.98	-14.52
17355.00	Peak	H	-	-	-98.25	56.44	0.00	65.19	68.20	-3.01
23140.00	Peak	H	1.00	230	-97.57	44.75	-9.54	44.64	68.20	-23.56
28925.00	Peak	H	-	-	-100.88	48.29	-9.54	44.87	68.20	-23.33

Table 7-41. Radiated Measurements

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 129 of 261	

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	-	-	-110.41	49.22	0.00	45.81	53.98	-8.17
* 11650.00	Peak	H	-	-	-97.86	49.22	0.00	58.36	73.98	-15.62
17475.00	Peak	H	-	-	-99.50	57.10	0.00	64.61	68.20	-3.59
23300.00	Peak	H	1.00	172	-97.02	44.75	-9.54	45.18	68.20	-23.02
29125.00	Peak	H	-	-	-98.42	48.28	-9.54	47.33	68.20	-20.87

Table 7-42. Radiated Measurements

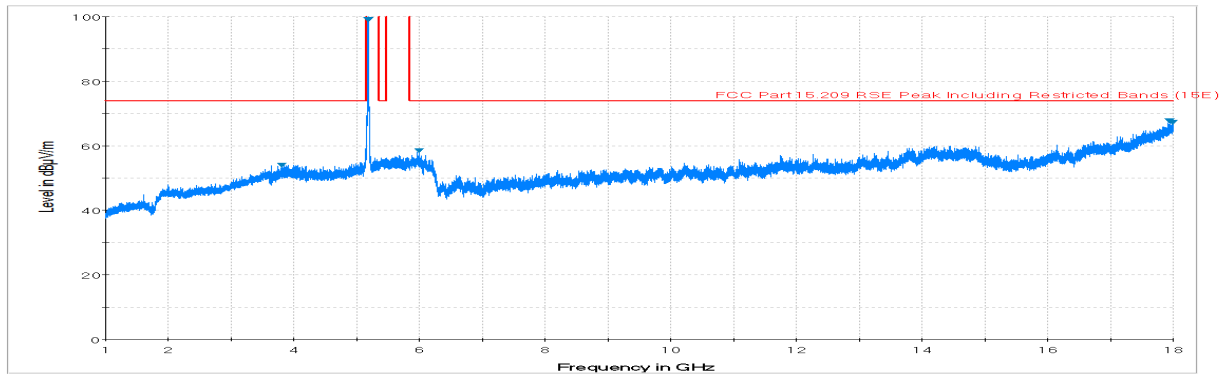
Worst Case Mode: 802.11a
 Worst Case Transfer Rate: 6 Mbps
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5825MHz
 Channel: 165

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [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	-	-	-111.87	49.22	0.00	44.35	53.98	-9.63
* 11650.00	Peak	H	-	-	-99.34	49.22	0.00	56.88	73.98	-17.10
17475.00	Peak	H	-	-	-98.92	57.10	0.00	65.19	68.20	-3.01
23300.00	Peak	H	-	-	-100.56	44.75	-9.54	41.64	68.20	-26.56
29125.00	Peak	H	-	-	-102.33	48.28	-9.54	43.42	68.20	-24.78

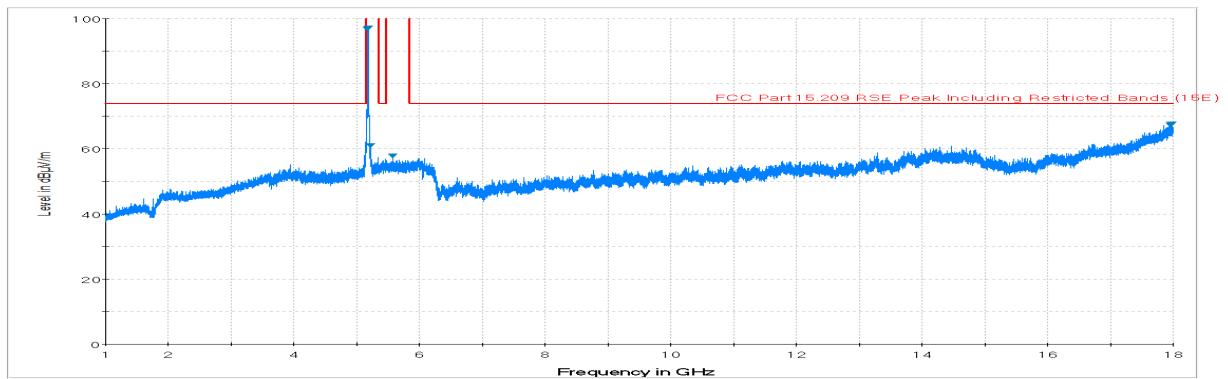
Table 7-43. Radiated Measurements with WCP

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 130 of 261	

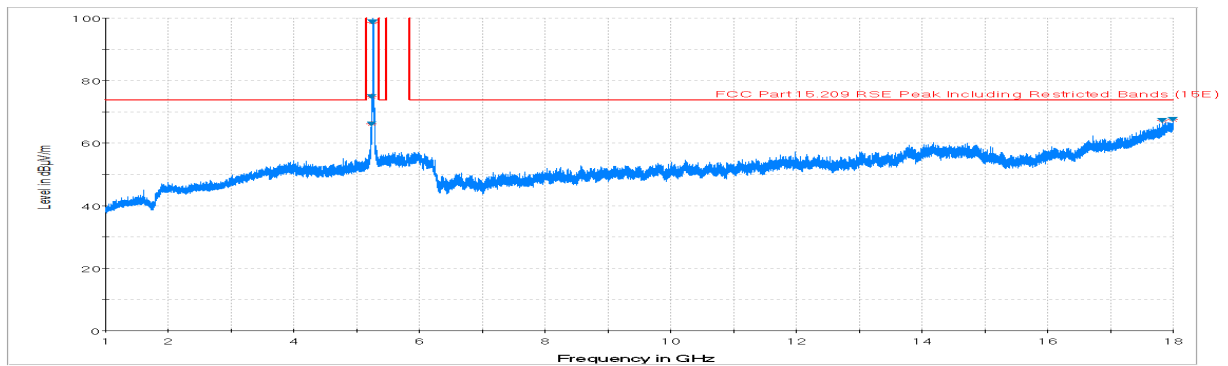
7.7.2 Antenna-2 Radiated Spurious Emission Measurements



Plot 7-169. Radiated Spurious Plot above 1GHz (802.11a – U1 Ch. 40, Ant. Pol. H)

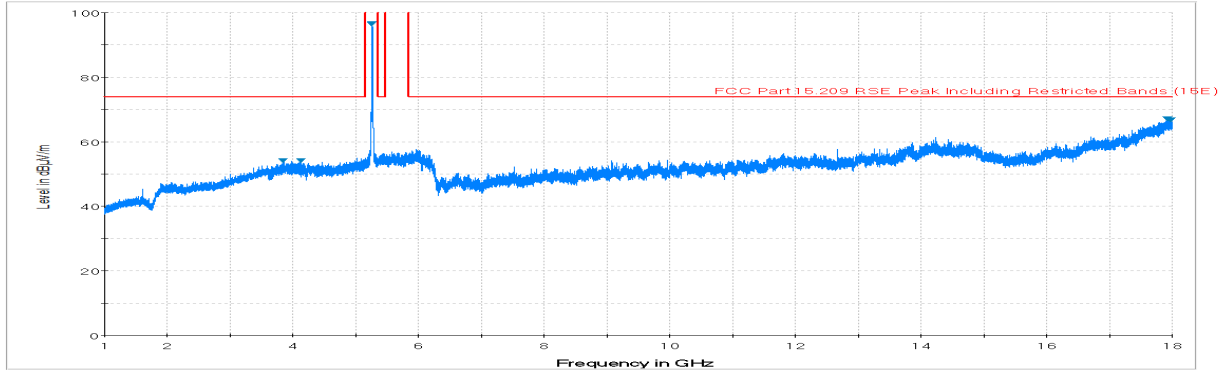


Plot 7-170. Radiated Spurious Plot above 1GHz (802.11a – U1 Ch. 40, Ant. Pol. V)



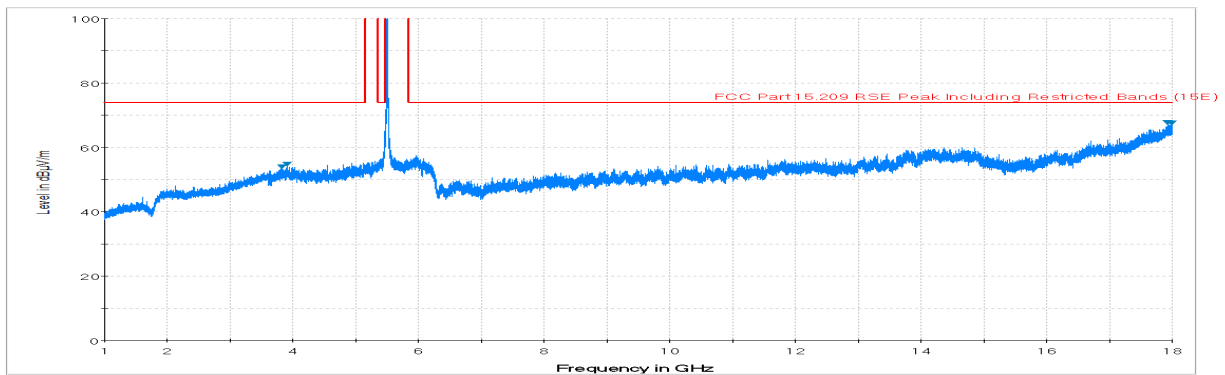
Plot 7-171. Radiated Spurious Plot above 1GHz (802.11a – U2A Ch. 56, Ant. Pol. H)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 131 of 261



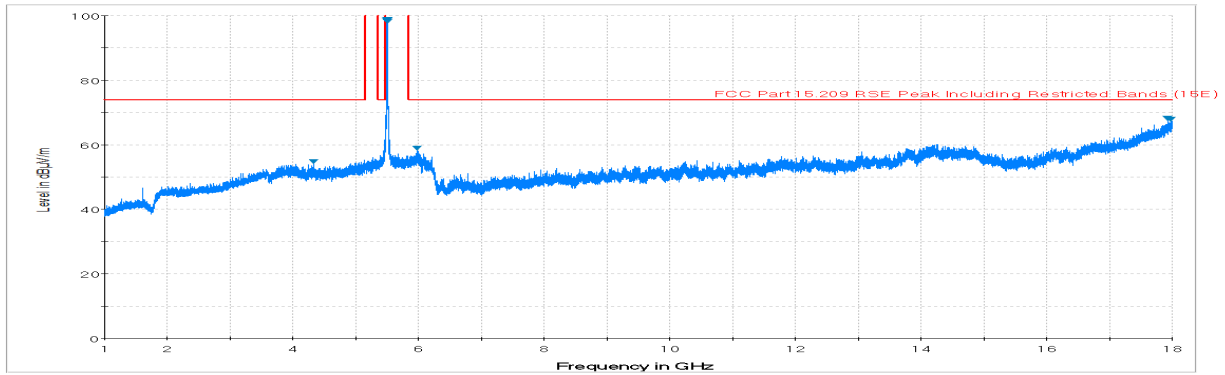
Preview Result 1-PK+ FCC Part 15.209 RSE Peak Including Restricted Bands (15E) Final_Result PK+

Plot 7-172. Radiated Spurious Plot above 1GHz (802.11a – U2A Ch. 56, Ant. Pol. V)





Preview Result 1-PK+ FCC Part 15.209 RSE Peak Including Restricted Bands (15E) Final_Result PK+

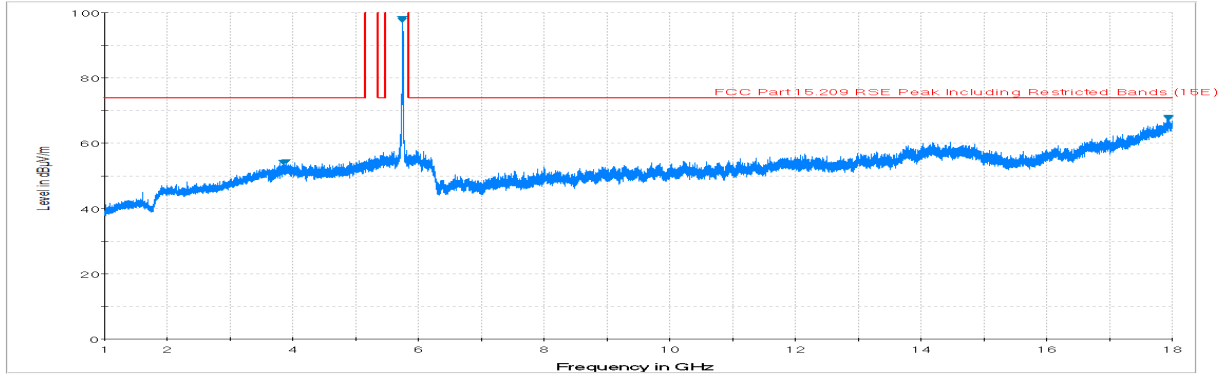
Plot 7-173. Radiated Spurious Plot above 1GHz (802.11a – U2C Ch. 116, Ant. Pol. H)



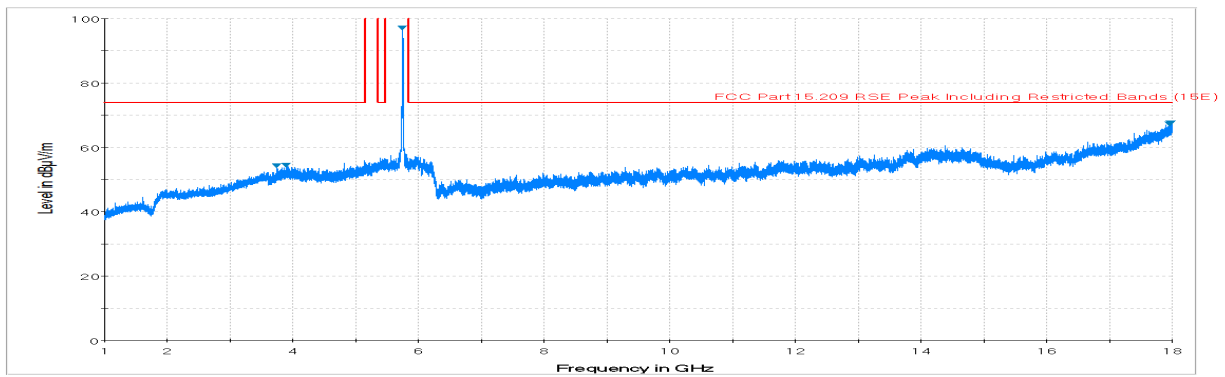
Preview Result 1-PK+ FCC Part 15.209 RSE Peak Including Restricted Bands (15E) Final_Result PK+

Plot 7-174. Radiated Spurious Plot above 1GHz (802.11a – U2C Ch. 116, Ant. Pol. V)



FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 132 of 261	



Plot 7-175. Radiated Spurious Plot above 1GHz (802.11a – U3 Ch. 157, Ant. Pol. H)

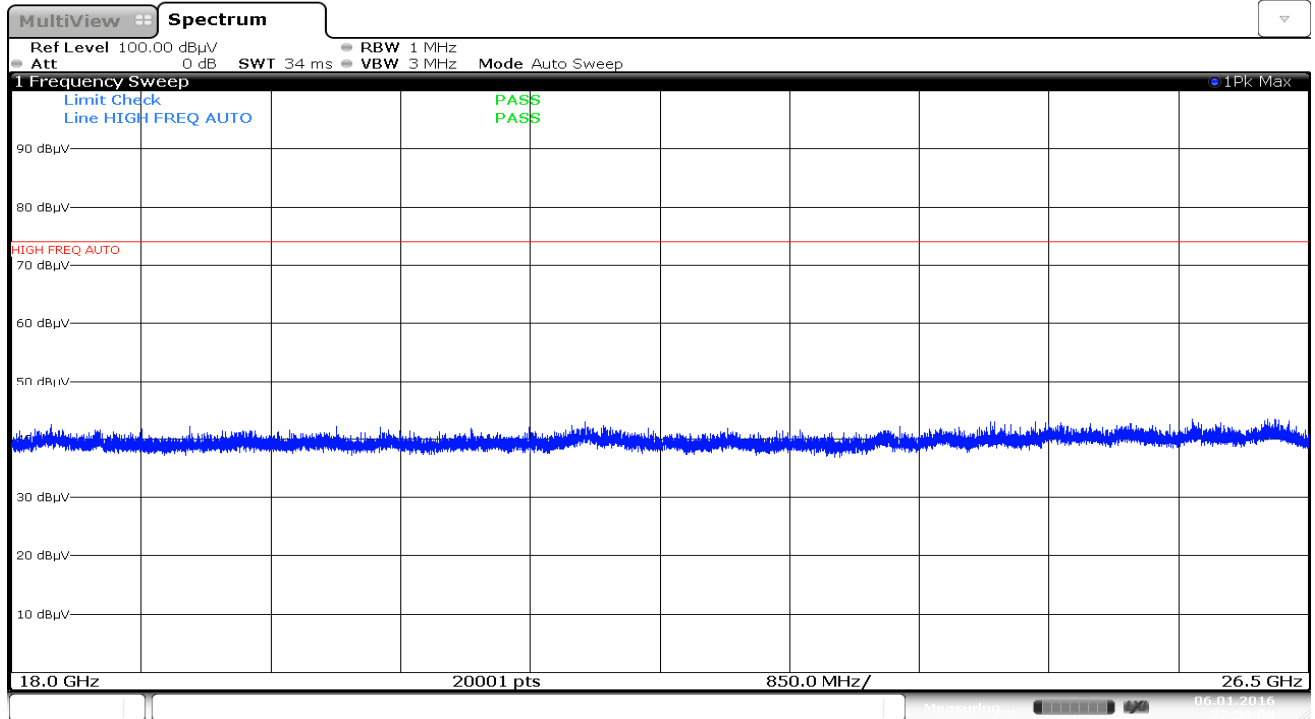


Plot 7-176. Radiated Spurious Plot above 1GHz (802.11a – U3 Ch. 157, Ant. Pol. V)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 133 of 261	

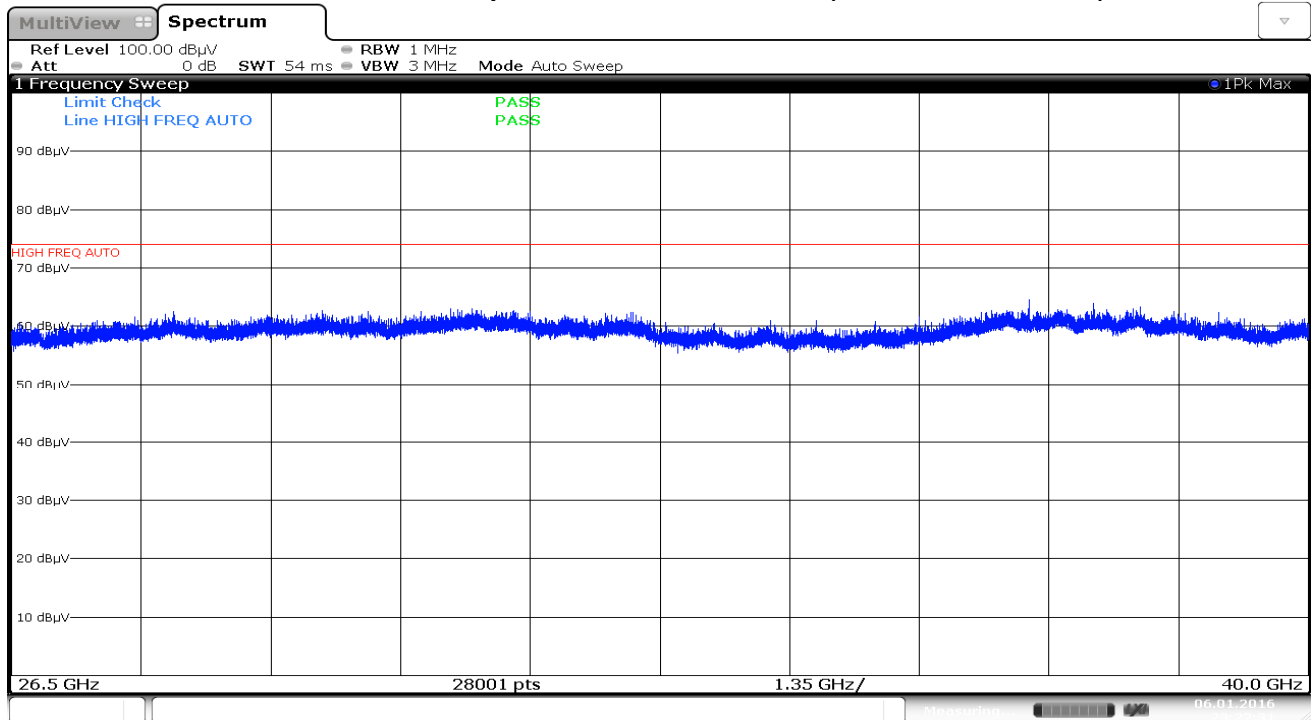
Antenna-2 Radiated Spurious Emissions Measurements (Above 18GHz)

§15.209



Date: 6. JAN.2016 22:54:09

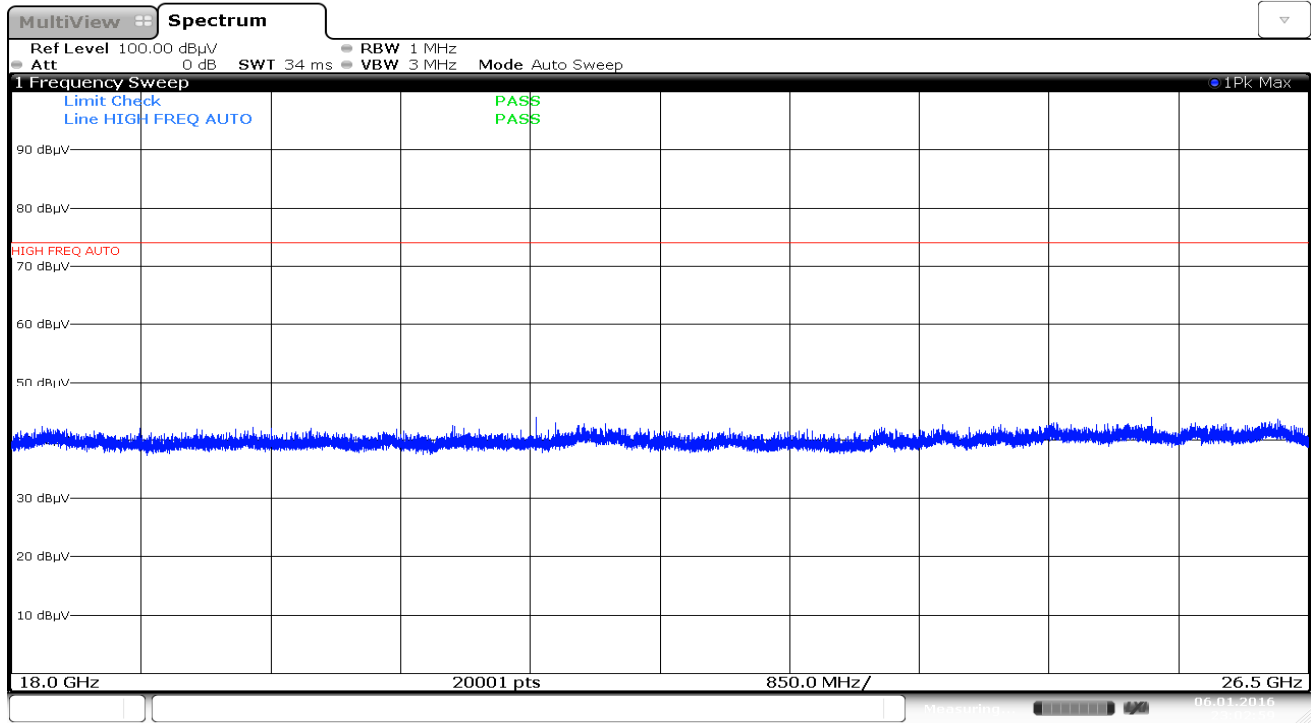
Plot 7-177. Radiated Spurious Plot above 18GHz (802.11a – Ant. Pol. H)



Date: 6. JAN.2016 23:22:31

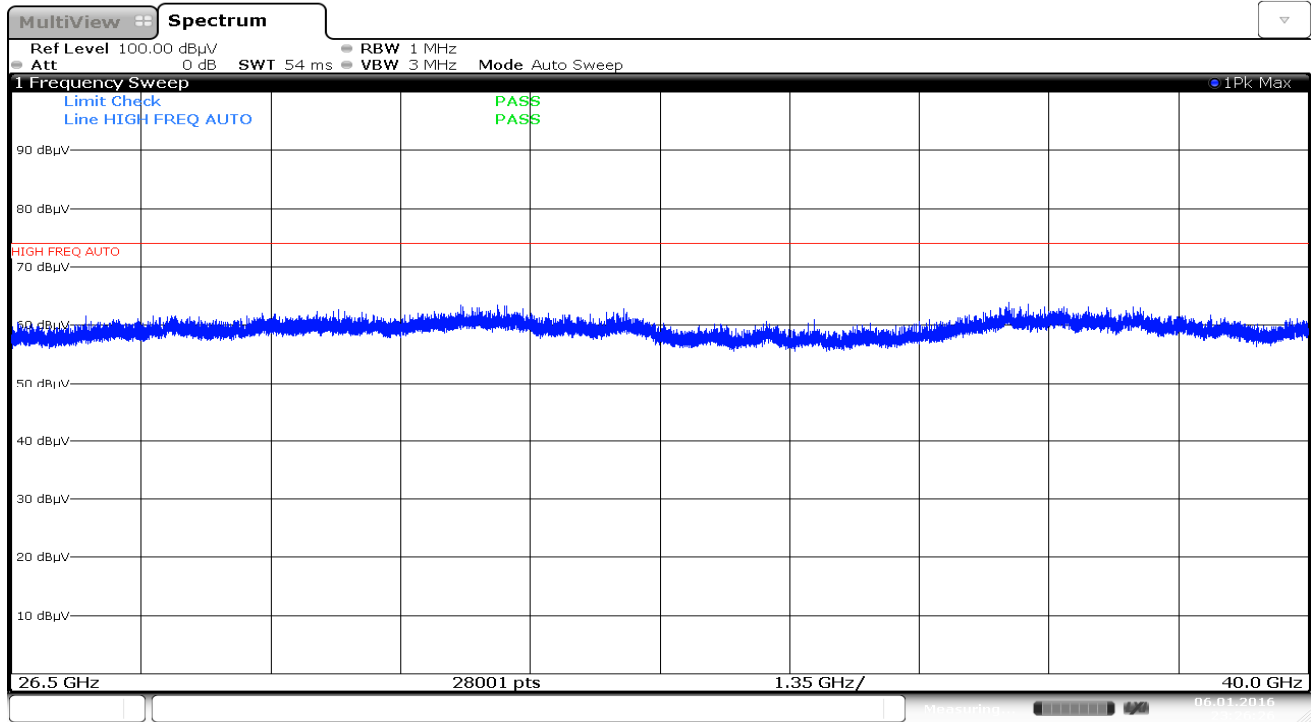
Plot 7-178. Radiated Spurious Plot above 18GHz (802.11a – Ant. Pol. H)

FCC ID: A3LSMG930X	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 134 of 261	



Date: 6. JAN.2016 23:02:59

Plot 7-179. Radiated Spurious Plot above 18GHz (802.11a – Ant. Pol. V)



Date: 6. JAN.2016 23:26:25

Plot 7-180. Radiated Spurious Plot above 18GHz (802.11a – Ant. Pol. V)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 135 of 261

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	1.49	296	-94.43	47.31	0.00	59.88	68.20	-8.32
* 15540.00	Average	H	-	-	-111.29	51.34	0.00	47.05	53.98	-6.93
* 15540.00	Peak	H	-	-	-99.18	51.34	0.00	59.16	73.98	-14.82
* 20720.00	Average	H	1.00	277	-111.29	44.39	-9.54	30.56	53.98	-23.42
* 20720.00	Peak	H	1.00	277	-99.54	44.39	-9.54	42.31	73.98	-31.67
25900.00	Peak	H	-	-	-100.13	45.11	-9.54	42.44	68.20	-25.76



Table 7-44. Radiated Measurements

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [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	1.41	291	-94.19	47.33	0.00	60.14	68.20	-8.06
* 15600.00	Average	H	-	-	-110.97	50.86	0.00	46.88	53.98	-7.09
* 15600.00	Peak	H	-	-	-98.69	50.86	0.00	59.16	73.98	-14.81
* 20800.00	Average	H	1.00	20	-110.13	44.39	-9.54	31.72	53.98	-22.26
* 20800.00	Peak	H	1.00	20	-99.26	44.39	-9.54	42.59	73.98	-31.39
26000.00	Peak	H	-	-	-100.37	45.12	-9.54	42.20	68.20	-26.00

Table 7-45. Radiated Measurements

Worst Case Mode: 802.11a

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 136 of 261	

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	1.42	360	-95.28	47.37	0.00	59.10	68.20	-9.10
* 15720.00	Average	H	1.42	360	-106.89	50.12	0.00	50.23	53.98	-3.75
* 15720.00	Peak	H	-	-	-98.69	50.12	0.00	58.43	73.98	-15.55
* 20960.00	Average	H	1.00	28	-109.19	44.31	-9.54	32.58	53.98	-21.40
* 20960.00	Peak	H	1.00	28	-97.63	44.31	-9.54	44.14	73.98	-29.84
26200.00	Peak	H	-	-	-99.72	45.01	-9.54	42.75	68.20	-25.45

Table 7-46. Radiated Measurements

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [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	-	-	-99.01	47.37	0.00	55.37	68.20	-12.83
* 15720.00	Average	H	-	-	-112.47	50.12	0.00	44.65	53.98	-9.33
* 15720.00	Peak	H	-	-	-100.47	50.12	0.00	56.65	73.98	-17.33
* 20960.00	Average	H	-	-	-111.50	44.31	-9.54	30.27	53.98	-23.71
* 20960.00	Peak	H	-	-	-100.12	44.31	-9.54	41.65	73.98	-32.33
26200.00	Peak	H	-	-	-100.18	45.01	-9.54	42.29	68.20	-25.91

Table 7-47. Radiated Measurements with WCP

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [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	1.65	16	-95.72	47.39	0.00	58.68	68.20	-9.52
* 15780.00	Average	H	-	-	-111.04	49.96	0.00	45.92	53.98	-8.06
* 15780.00	Peak	H	-	-	-99.55	49.96	0.00	57.41	73.98	-16.57
* 21040.00	Average	H	1.00	198	-109.02	44.29	-9.54	32.72	53.98	-21.26
* 21040.00	Peak	H	1.00	198	-98.81	44.29	-9.54	42.93	73.98	-31.05
26300.00	Peak	H	-	-	-98.81	45.00	-9.54	43.65	68.20	-24.55

Table 7-48. Radiated Measurements

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [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	1.60	10	-96.33	47.41	0.00	58.07	68.20	-10.13
* 15840.00	Average	H	-	-	-111.19	50.16	0.00	45.97	53.98	-8.01
* 15840.00	Peak	H	-	-	-99.25	50.16	0.00	57.91	73.98	-16.07
* 21120.00	Average	H	1.00	198	-110.30	44.28	-9.54	31.44	53.98	-22.54
* 21120.00	Peak	H	1.00	198	-96.84	44.28	-9.54	44.90	73.98	-29.08
26400.00	Peak	H	-	-	-99.50	45.02	-9.54	42.98	68.20	-25.22

Table 7-49. Radiated Measurements

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



Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [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	1.66	34	-107.26	47.46	0.00	47.21	53.98	-6.77
* 10640.00	Peak	H	1.66	34	-95.40	47.46	0.00	59.07	73.98	-14.91
* 15960.00	Average	H	-	-	-110.95	50.83	0.00	46.88	53.98	-7.10
* 15960.00	Peak	H	-	-	-99.08	50.83	0.00	58.75	73.98	-15.23
* 21280.00	Average	H	1.00	15	-106.45	44.26	-9.54	35.27	53.98	-18.71
* 21280.00	Peak	H	1.00	15	-97.78	44.26	-9.54	43.94	73.98	-30.04
26600.00	Peak	H	-	-	-101.49	47.61	-9.54	43.58	68.20	-24.62

Table 7-50. Radiated Measurements

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [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	-	-	-111.71	47.46	0.00	42.76	53.98	-11.22
* 10640.00	Peak	H	-	-	-99.59	47.46	0.00	54.88	73.98	-19.10
* 15960.00	Average	H	-	-	-111.02	50.83	0.00	46.81	53.98	-7.17
* 15960.00	Peak	H	-	-	-98.03	50.83	0.00	59.80	73.98	-14.18
* 21280.00	Average	H	-	-	-111.32	44.26	-9.54	30.40	53.98	-23.58
21280.00	Peak	H	-	-	-100.73	44.26	-9.54	40.99	73.98	-32.99
26600.00	Peak	H	-	-	-101.27	47.61	-9.54	43.80	68.20	-24.40

Table 7-51. Radiated Measurements with WCP

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 139 of 261	

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	1.43	43	-108.78	47.69	0.00	45.91	53.98	-8.07
* 11000.00	Peak	H	1.43	43	-96.97	47.69	0.00	57.72	73.98	-16.26
16500.00	Peak	H	-	-	-98.89	52.33	0.00	60.43	68.20	-7.77
22000.00	Peak	H	1.00	152	-96.46	44.50	-9.54	45.49	68.20	-22.71
27500.00	Peak	H	1.00	152	-126.02	47.97	-9.54	19.41	68.20	-48.79

Table 7-52. 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]
* 11200.00	Average	H	-	-	-109.26	47.88	0.00	45.62	53.98	-8.36
* 11200.00	Peak	H	-	-	-97.18	47.88	0.00	57.70	73.98	-16.28
16800.00	Peak	H	-	-	-98.79	53.52	0.00	61.74	68.20	-6.46
* 22400.00	Average	H	1.00	222	-97.43	44.56	-9.54	44.59	53.98	-9.39
* 22400.00	Peak	H	1.00	222	-105.38	44.56	-9.54	36.64	73.98	-37.34
28000.00	Peak	H	-	-	-103.06	48.08	-9.54	42.48	68.20	-25.72

Table 7-53. Radiated Measurements

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 140 of 261	

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	1.43	360	-109.72	48.49	0.00	45.76	53.98	-8.22
* 11440.00	Peak	H	1.43	360	-97.63	48.49	0.00	57.85	73.98	-16.13
17160.00	Peak	H	-	-	-98.53	55.12	0.00	63.59	68.20	-4.61
* 22880.00	Average	H	1.00	181	-107.14	44.56	-9.54	34.87	53.98	-19.11
* 22880.00	Peak	H	1.00	181	-99.66	44.56	-9.54	42.35	73.98	-31.63
28600.00	Peak	H	-	-	-103.10	48.32	-9.54	42.68	68.20	-25.52

Table 7-54. Radiated Measurements

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [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	-	-	-111.42	48.49	0.00	44.06	53.98	-9.92
* 11440.00	Peak	H	-	-	-98.70	48.49	0.00	56.78	73.98	-17.20
17160.00	Peak	H	-	-	-101.37	55.12	0.00	60.75	68.20	-7.45
22880.00	Peak	H	1.00	181	-111.05	44.56	-9.54	30.96	73.98	-43.02
28600.00	Peak	H	1.00	181	-122.39	48.32	-9.54	23.39	68.20	-44.81

Table 7-55. Radiated Measurements with WCP

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 141 of 261	

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	-	-	-110.61	48.89	0.00	45.28	53.98	-8.70
* 11490.00	Peak	H	-	-	-97.99	48.89	0.00	57.90	73.98	-16.08
17235.00	Peak	H	-	-	-98.31	56.10	0.00	64.79	68.20	-3.41
* 22980.00	Average	H	1.00	192	-107.30	44.68	-9.54	34.84	53.98	-19.14
* 22980.00	Peak	H	1.00	192	-99.51	44.68	-9.54	42.63	73.98	-31.35
28725.00	Peak	H	-	-	-102.60	48.26	-9.54	43.12	68.20	-25.08

Table 7-56. Radiated Measurements

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [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	-	-	-110.63	49.13	0.00	45.50	53.98	-8.48
* 11570.00	Peak	H	-	-	-98.88	49.13	0.00	57.25	73.98	-16.73
17355.00	Peak	H	-	-	-98.76	56.44	0.00	64.68	68.20	-3.52
23140.00	Peak	H	1.00	221	-99.63	44.75	-9.54	42.58	68.20	-25.62
28925.00	Peak	H	-	-	-102.73	48.29	-9.54	43.02	68.20	-25.18

Table 7-57. Radiated Measurements

FCC ID: A3LSMG930X			FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset			Page 142 of 261

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	-	-	-110.36	49.22	0.00	45.86	53.98	-8.12
* 11650.00	Peak	H	-	-	-98.72	49.22	0.00	57.50	73.98	-16.48
17475.00	Peak	H	-	-	-99.38	57.10	0.00	64.73	68.20	-3.47
23300.00	Peak	H	1.00	346	-99.14	44.75	-9.54	43.06	68.20	-25.14
29125.00	Peak	H	-	-	-102.59	48.28	-9.54	43.16	68.20	-25.04

Table 7-58. 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	-	-	-111.52	48.89	0.00	44.37	53.98	-9.61
* 11490.00	Peak	H	-	-	-99.27	48.89	0.00	56.62	73.98	-17.36
17235.00	Peak	H	-	-	-101.38	56.10	0.00	61.72	68.20	-6.48
22980.00	Peak	H	1.00	137	-100.65	44.68	-9.54	41.49	73.98	-32.49
28725.00	Peak	H	-	-	-102.84	48.26	-9.54	42.88	68.20	-25.32

Table 7-59. Radiated Measurements with WCP

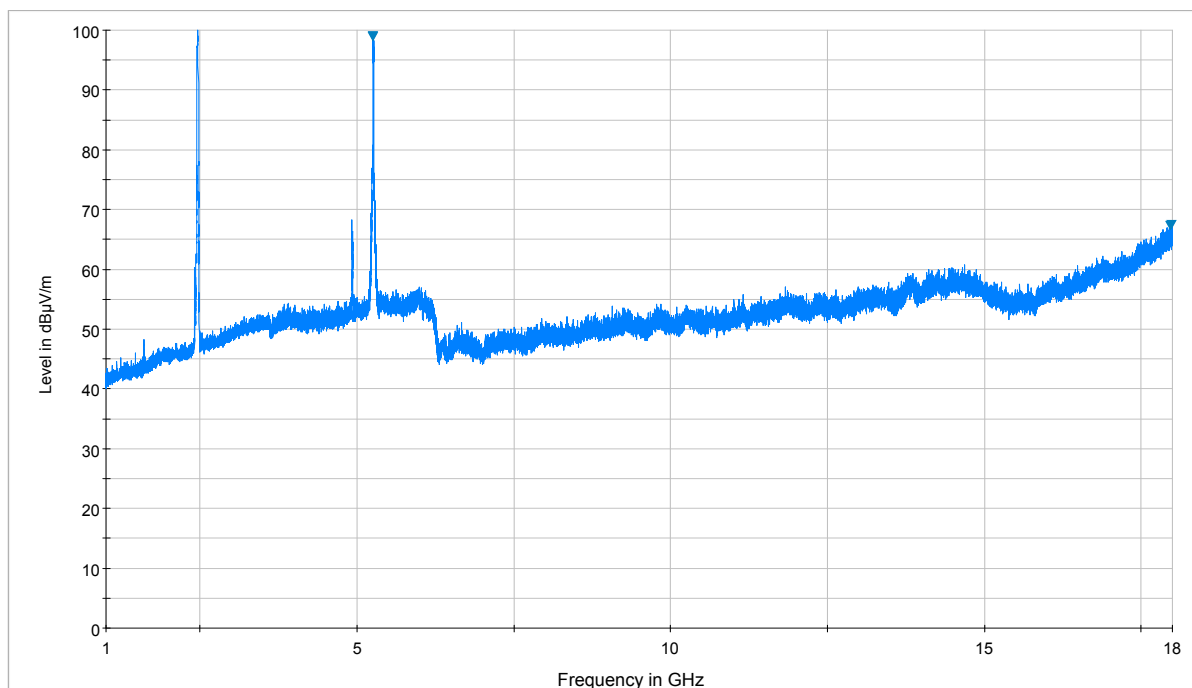
FCC ID: A3LSMG930X			FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset			Page 143 of 261

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

§15.209



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

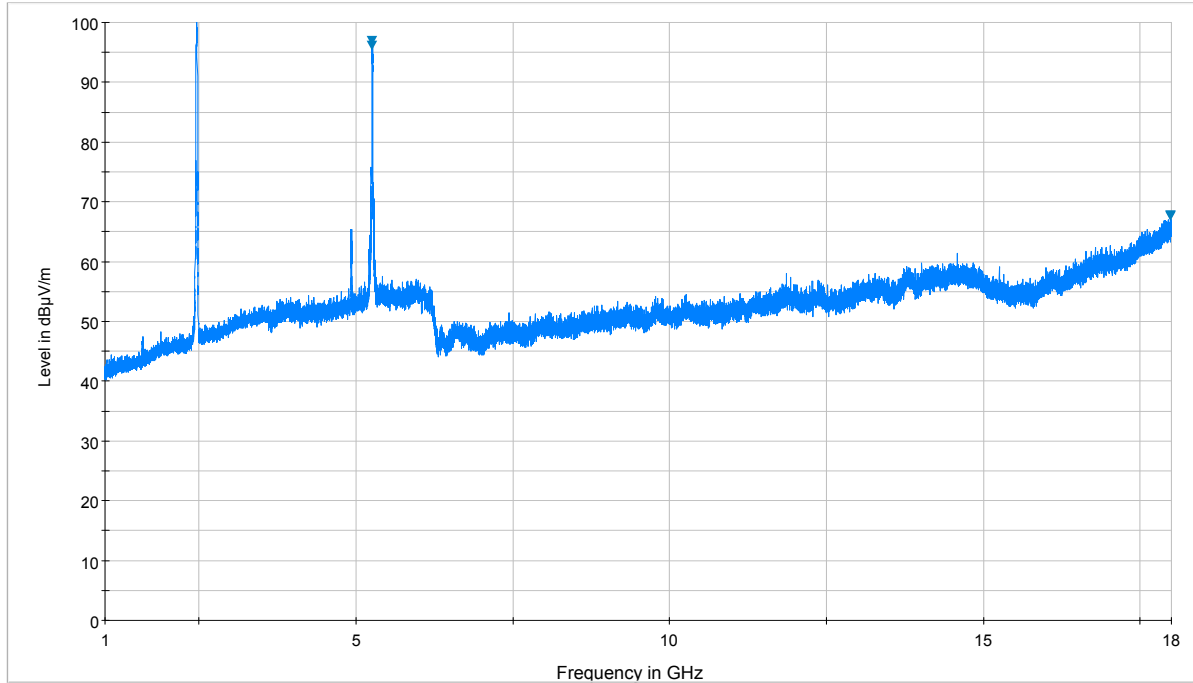
Table 7-60. Simultaneous Transmission Config-1



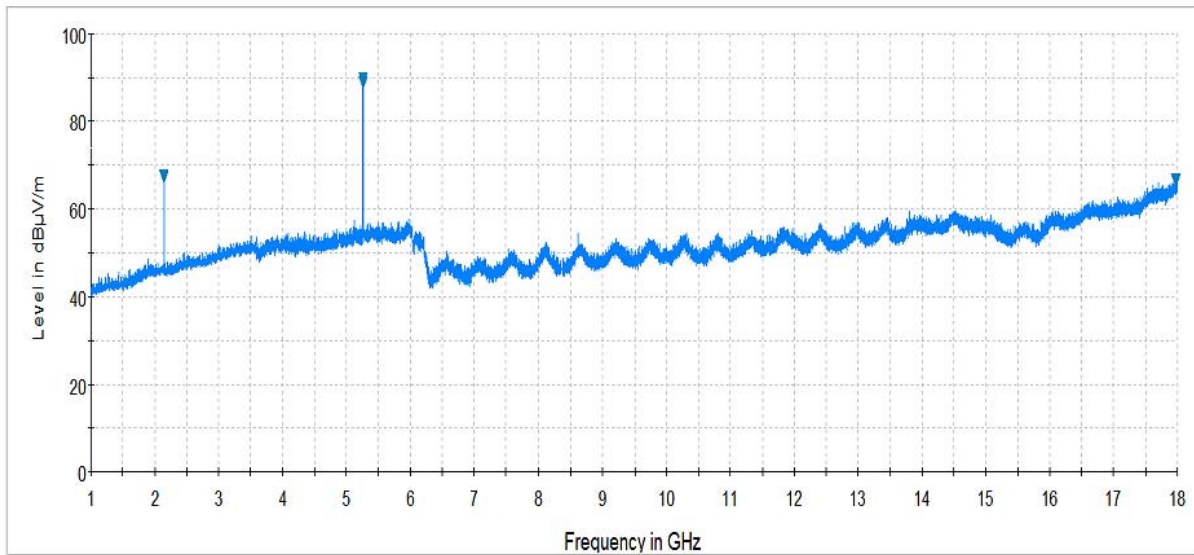
Preview Result 1-PK+ Final_Result PK+

Plot 7-181. Radiated Spurious Plot above 1GHz (2.4GHz – 5GHz, Ant. Pol. H)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 144 of 261	

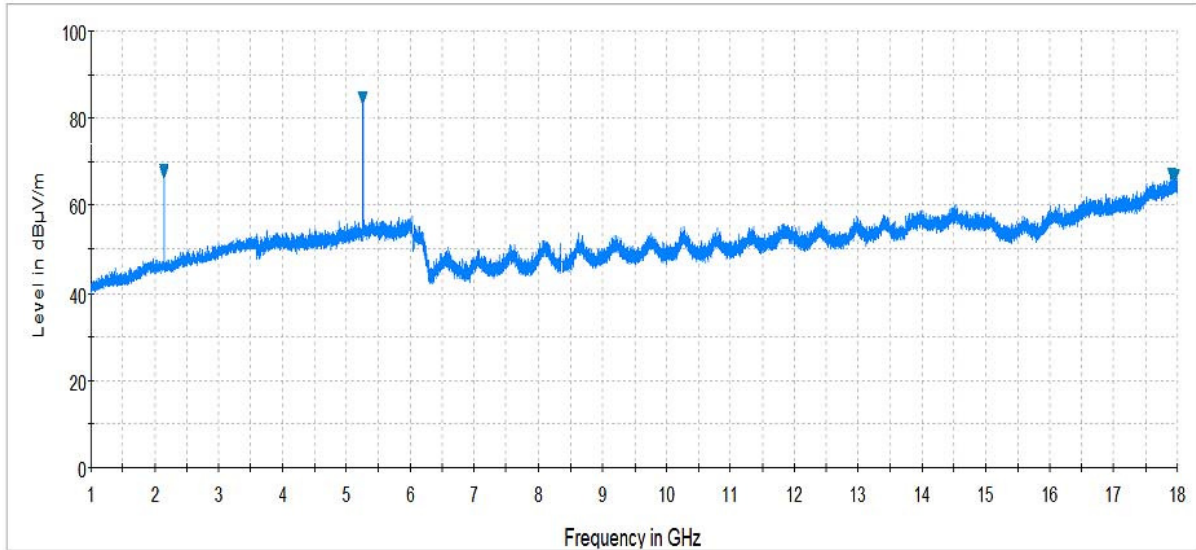


Plot 7-182. Radiated Spurious Plot above 1GHz (2.4GHz – 5GHz, Ant. Pol. V)



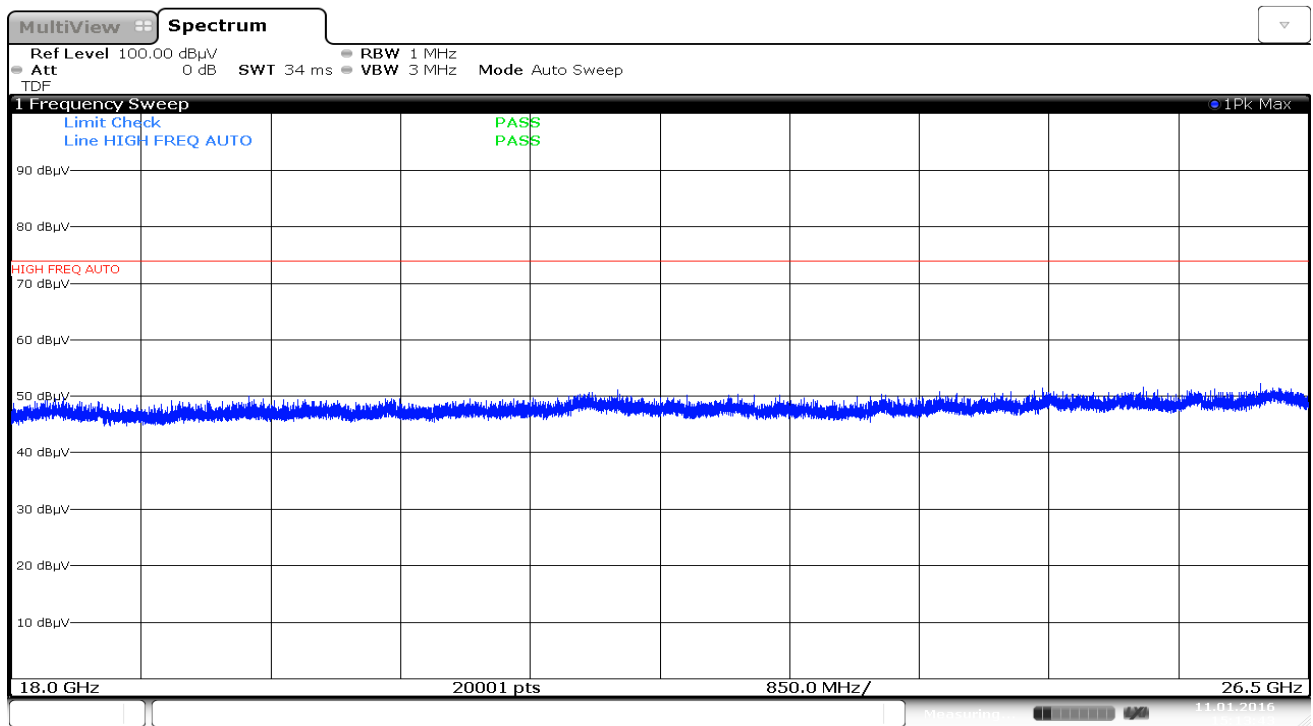
Plot 7-183. Radiated Spurious Plot above 1GHz (5GHz – 2.4 GHz, Ant. Pol. H)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 145 of 261	



Preview Result 1-PK+ FCC Part 15.209 RSE Peak Including Restricted Bands (15E) Final_Result PK+

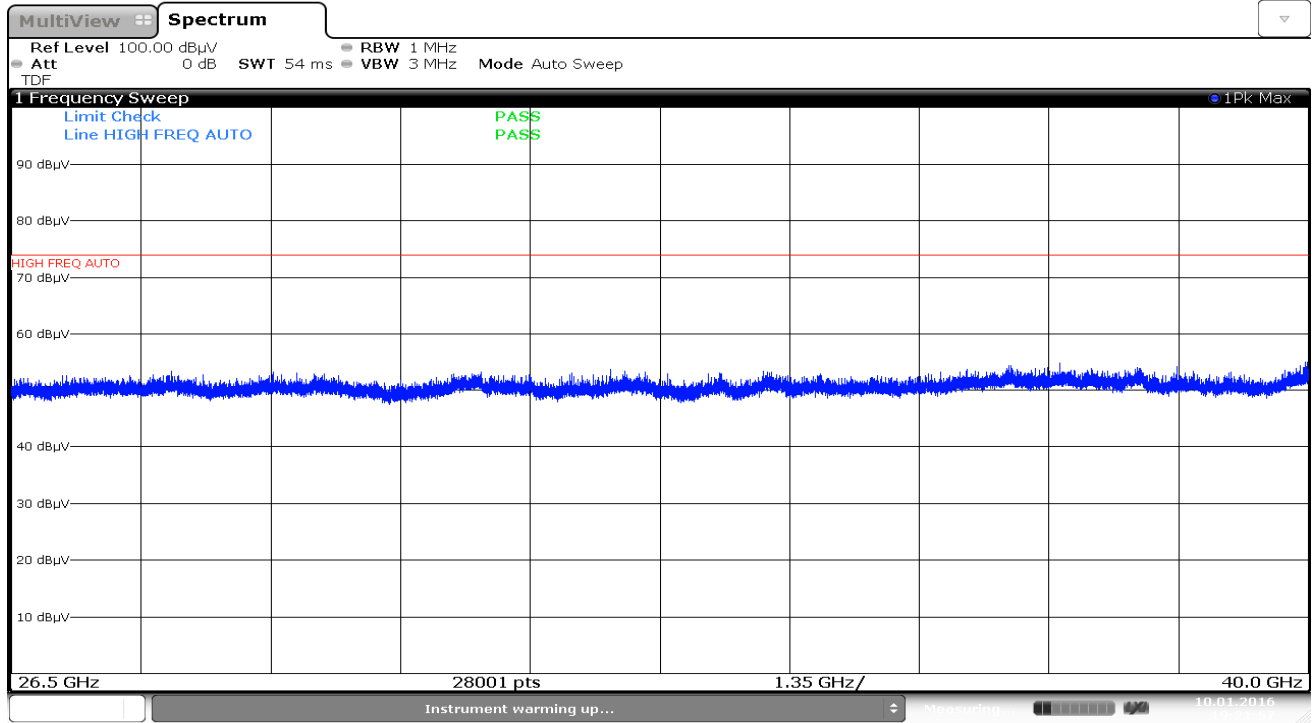
Plot 7-184. Radiated Spurious Plot above 1GHz (5GHz – 2.4 GHz, Ant. Pol. V)



Date: 11.JAN.2016 15:13:43

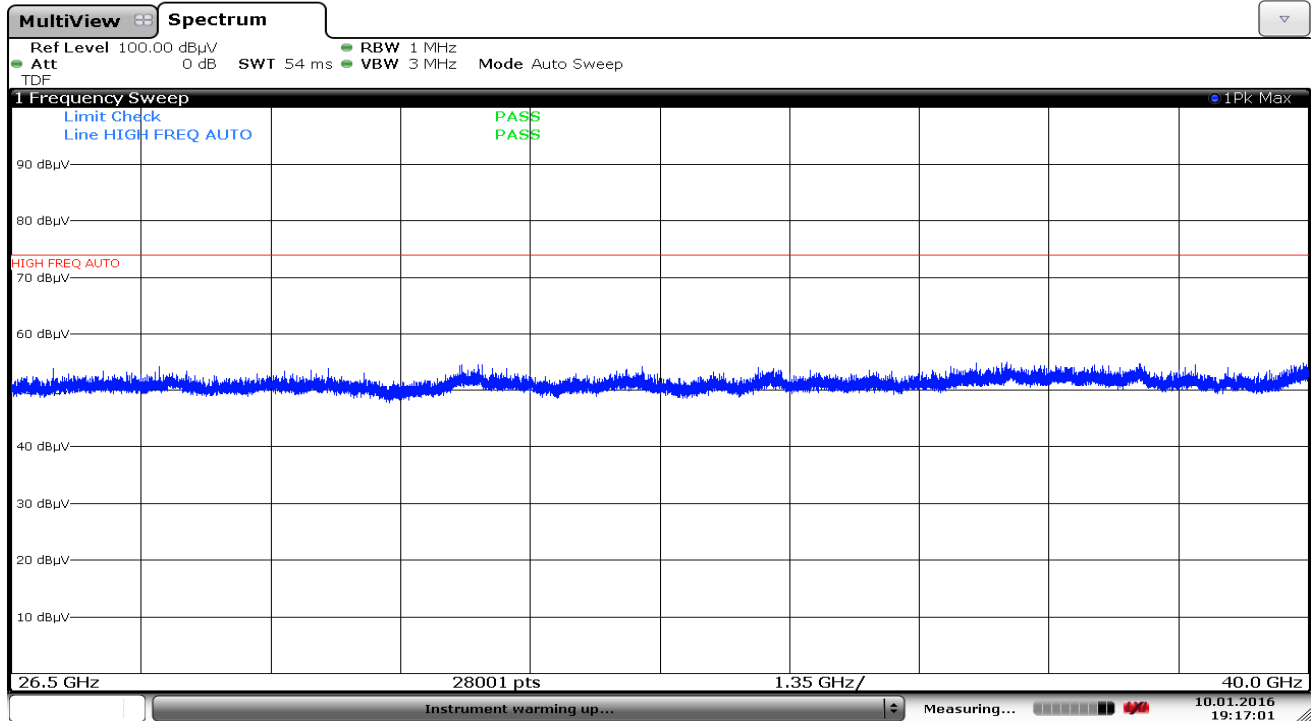
Plot 7-185. Radiated Spurious Plot above 18GHz (2.4 GHz – 5 GHz, Ant. Pol. H)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 146 of 261	





Date: 10.JAN.2016 19:21:58

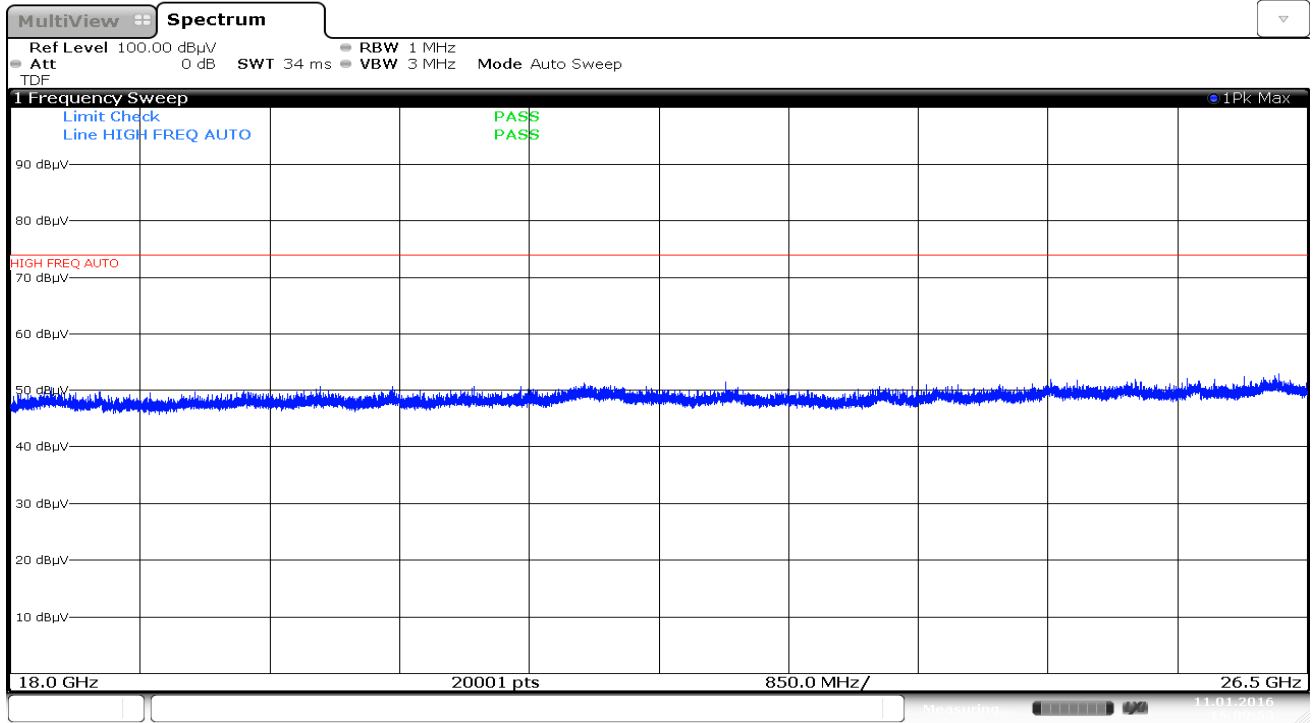
Plot 7-186. Radiated Spurious Plot above 18GHz (2.4 GHz – 5 GHz, Ant. Pol. H)



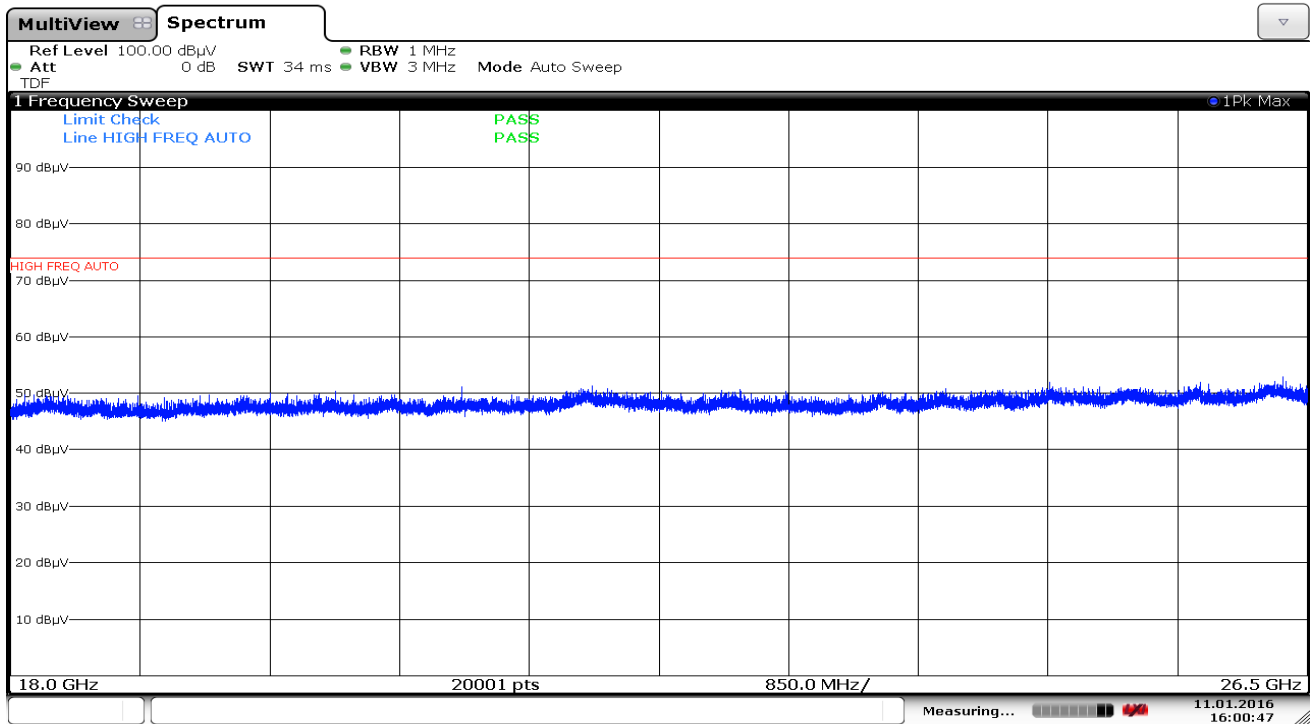
Date: 10.JAN.2016 19:17:01

Plot 7-187. Radiated Spurious Plot above 18GHz (2.4 GHz – 5 GHz, Ant. Pol. V)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 147 of 261	

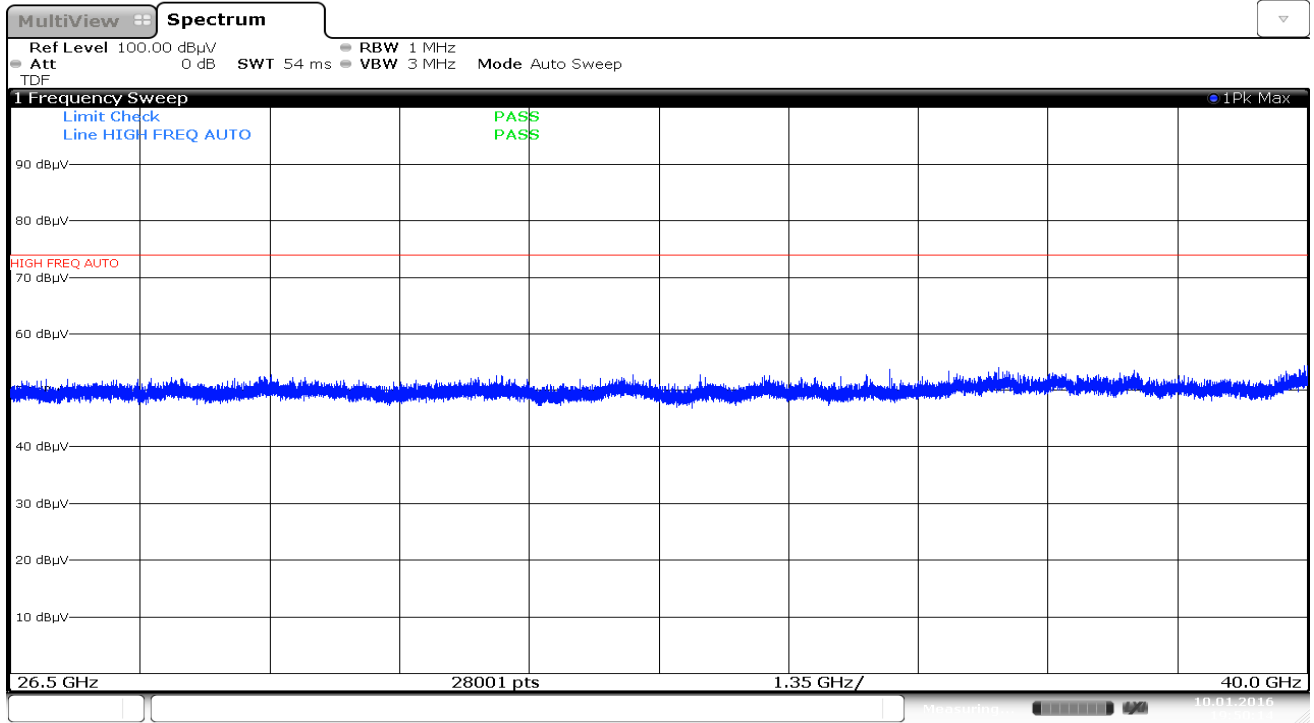


Plot 7-188. Radiated Spurious Plot above 18GHz (2.4 GHz – 5 GHz, Ant. Pol. V)



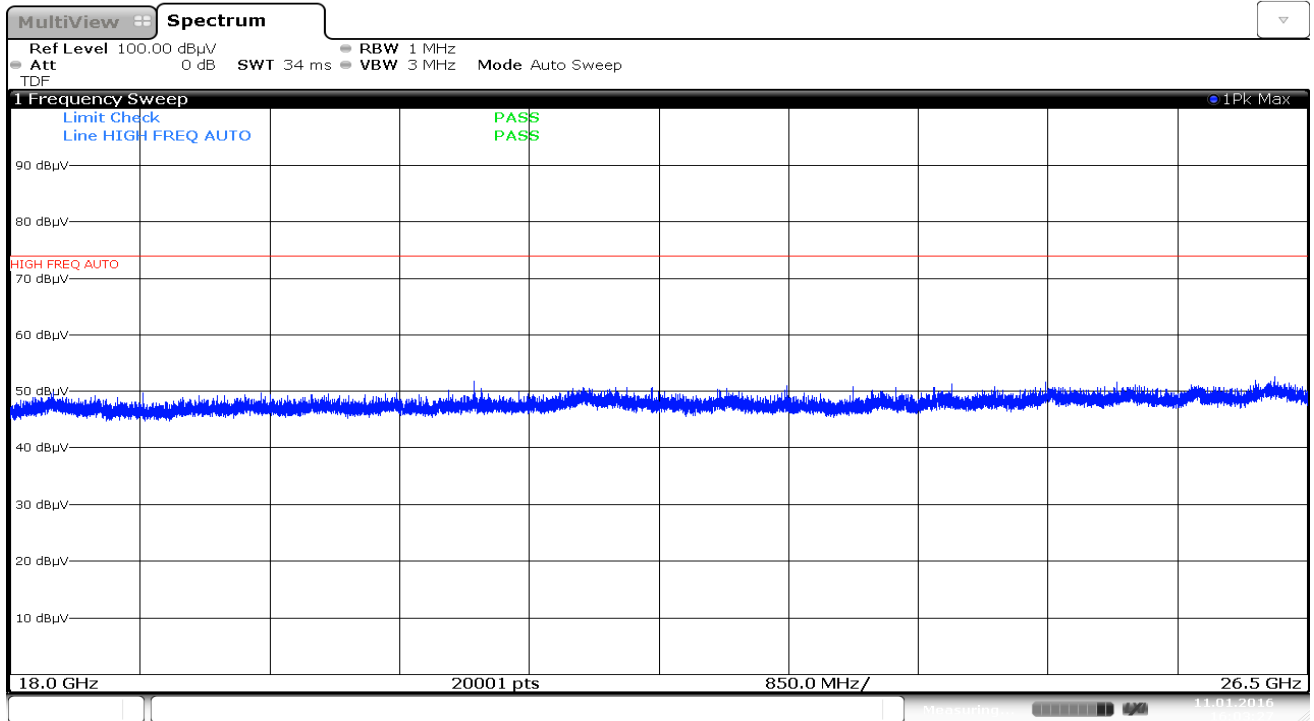
Plot 7-189. Radiated Spurious Plot above 18GHz (5 GHz – 2.4 GHz, Ant. Pol. H)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 148 of 261





Date: 10. JAN. 2016 19:50:14

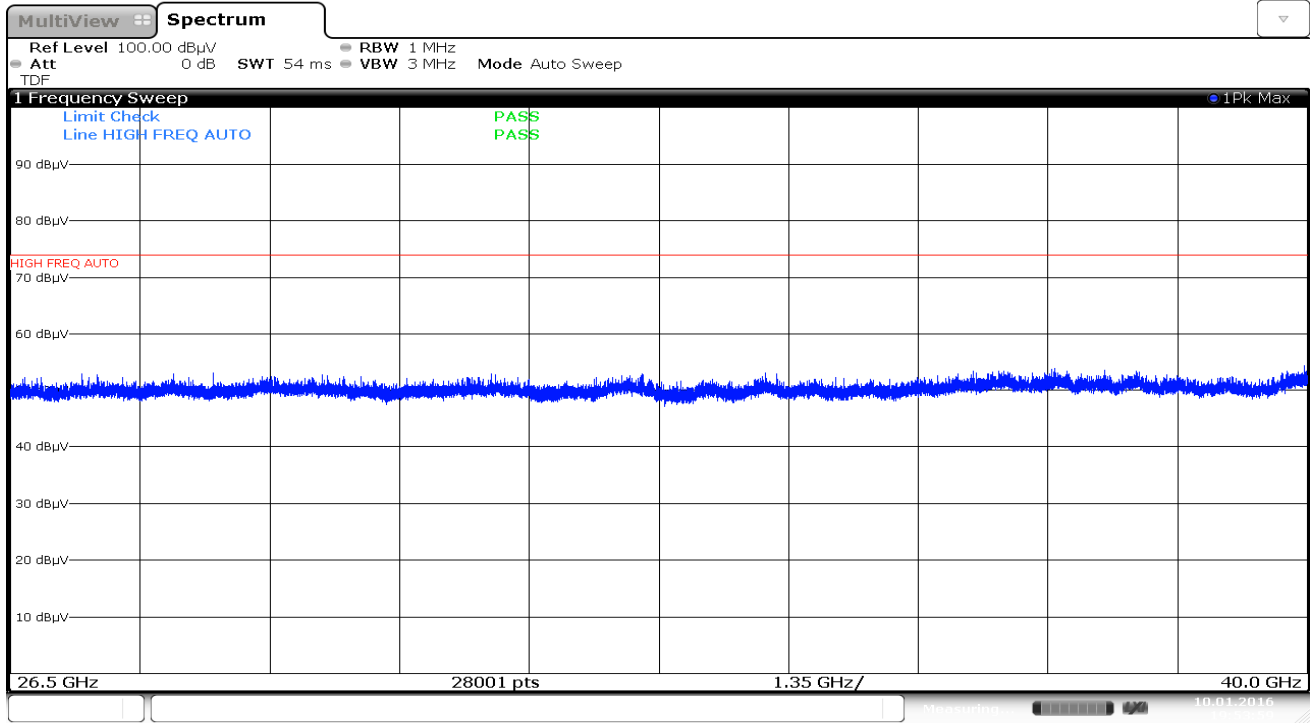
Plot 7-190. Radiated Spurious Plot above 18GHz (5 GHz – 2.4 GHz, Ant. Pol. H)



Date: 11. JAN. 2016 16:03:27



Plot 7-191. Radiated Spurious Plot above 18GHz (5 GHz – 2.4 GHz, Ant. Pol. V)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)	 Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 149 of 261



Date: 10.JAN.2016 19:53:59

Plot 7-192. Radiated Spurious Plot above 18GHz (5 GHz – 2.4 GHz, Ant. Pol. V)



FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)	 Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 150 of 261

Simultaneous Tx Radiated Spurious Emission Measurements

§15.247(d) §15.205 & §15.209



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]
* 2798.00	Average	H	-	-	-110.95	43.16	0.00	39.21	53.98	-14.77
* 2798.00	Peak	H	-	-	-97.58	43.16	0.00	52.58	73.98	-21.40
* 4924.00	Average	H	-	-	-110.79	49.74	0.00	45.94	53.98	-8.03
* 4924.00	Peak	H	-	-	-98.44	49.74	0.00	58.29	73.98	-15.68
* 7722.00	Average	H	-	-	-110.91	44.65	0.00	40.74	53.98	-13.24
* 7722.00	Peak	H	-	-	-98.37	44.65	0.00	53.28	73.98	-20.70
* 8058.00	Average	H	-	-	-111.25	45.82	0.00	41.58	53.98	-12.40
* 8058.00	Peak	H	-	-	-98.51	45.82	0.00	54.32	73.98	-19.66
10184.00	Average	H	-	-	-111.38	47.62	0.00	43.24	53.98	-10.74
* 11490.00	Average	H	-	-	-111.64	48.89	0.00	44.25	53.98	-9.73
12982.00	Peak	H	-	-	-98.57	50.41	0.00	58.84	73.98	-15.14

Table 7-61. Radiated Measurements (ANT1 2.4GHz – ANT2 5GHz)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 151 of 261	

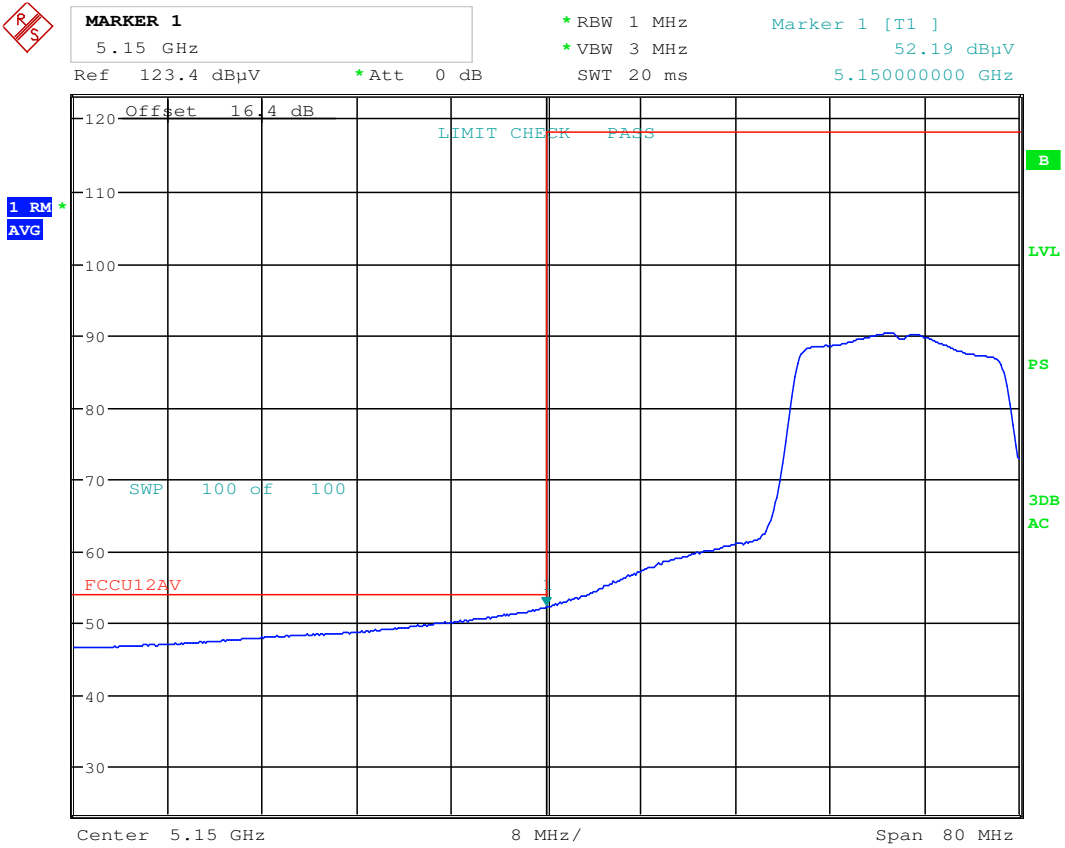
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [m]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]
* 2798.00	Average	H	-	-	-111.37	43.16	0.00	38.79	53.98	-15.19
* 2798.00	Peak	H	-	-	-98.58	43.16	0.00	51.58	73.98	-22.40
* 4924.00	Average	H	-	-	-108.19	49.74	0.00	48.54	53.98	-5.43
* 4924.00	Peak	H	-	-	-98.21	49.74	0.00	58.52	73.98	-15.45
* 7722.00	Average	H	-	-	-107.82	44.65	0.00	43.83	53.98	-10.15
* 7722.00	Peak	H	-	-	-98.56	44.65	0.00	53.09	73.98	-20.89
* 8058.00	Average	H	-	-	-108.61	45.82	0.00	44.22	53.98	-9.76
* 8058.00	Peak	H	-	-	-97.55	45.82	0.00	55.28	73.98	-18.70
10184.00	Average	H	-	-	-109.06	47.62	0.00	45.56	53.98	-8.42
* 11490.00	Average	H	-	-	-111.68	48.89	0.00	44.21	53.98	-9.77
12982.00	Peak	H	-	-	-98.80	50.41	0.00	58.61	73.98	-15.37

Table 7-62. Radiated Measurements (ANT1 5GHz – ANT2 2.4GHz)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 152 of 261

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

Worst Case Mode: 802.11ac
 Worst Case Transfer Rate: MCS0
 Distance of Measurements: 3 Meters
 Operating Frequency: 5180MHz
 Channel: 36



Date: 23.DEC.2015 14:40:21

Plot 7-193. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 153 of 261	

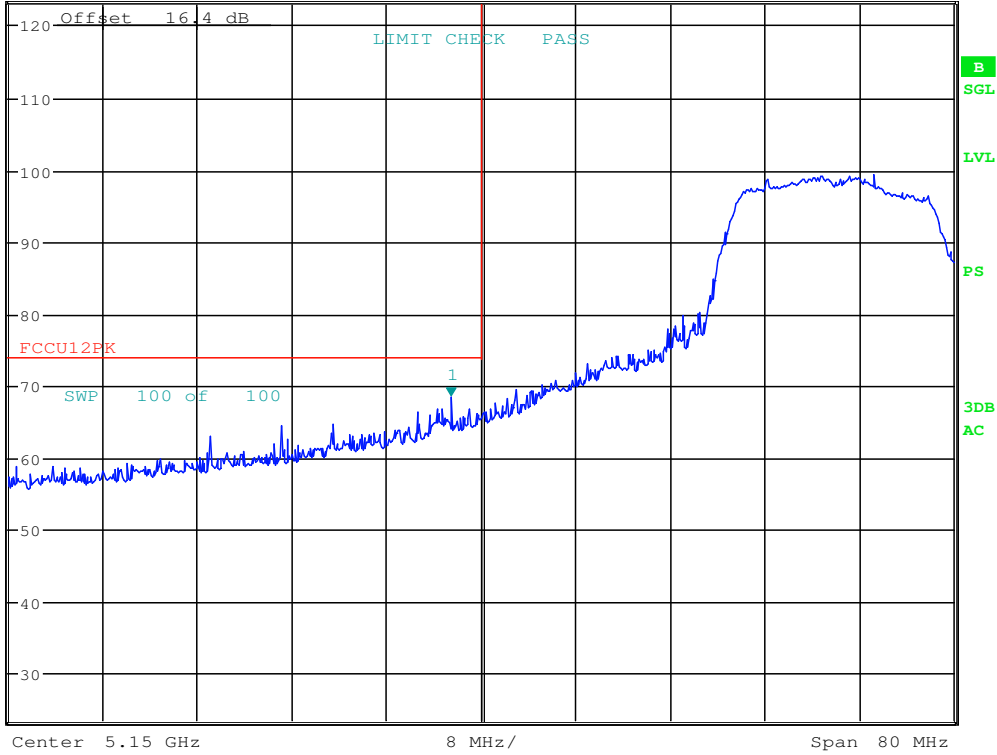
Antenna-1 Radiated Band Edge Measurements (20MHz BW)
§15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
5.147435897 GHz
Ref 123.4 dBµV *Att 0 dB

*RBW 1 MHz *VBW 3 MHz SWT 20 ms
Marker 1 [T1] 68.55 dBµV
5.147435897 GHz

1 PK
MAXH



Date: 23.DEC.2015 14:41:01

Plot 7-194. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 154 of 261	

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

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode: 802.11ac

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

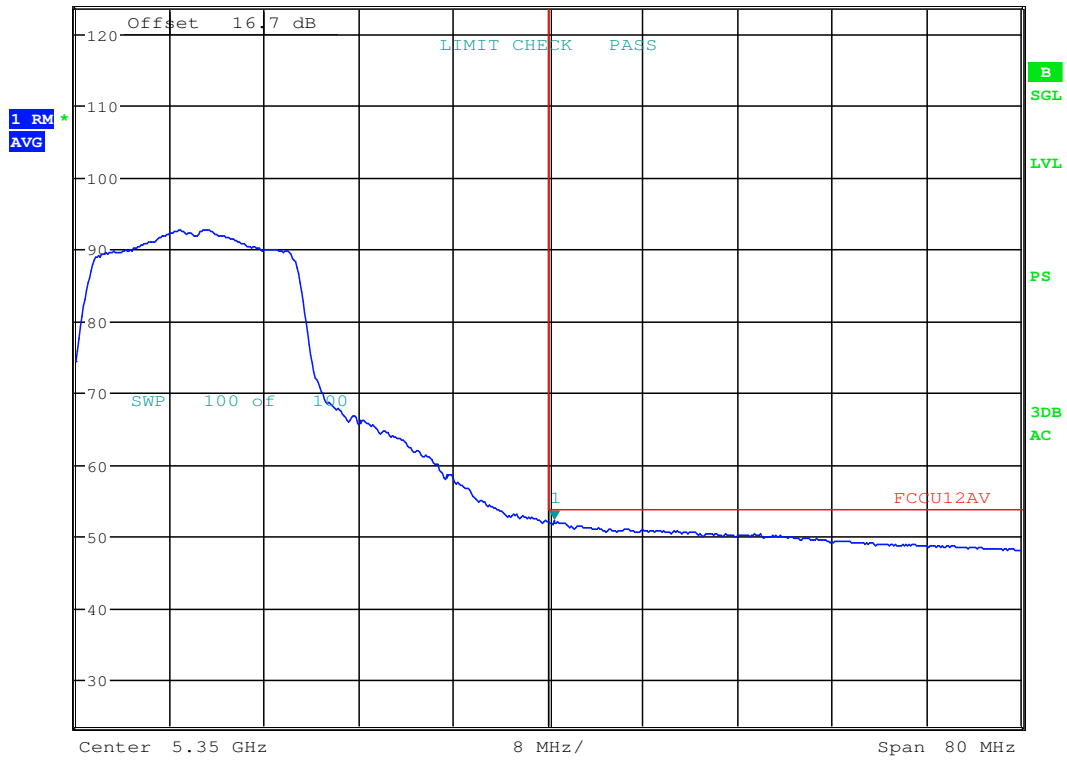
Operating Frequency: 5320MHz

Channel: 64



MARKER 1
 5.350512821 GHz
 Ref 123.7 dBµV *Att 0 dB

*RBW 1 MHz
 *VBW 3 MHz
 SWT 20 ms
 Marker 1 [T1]
 52.30 dBµV
 5.350512821 GHz



Date: 23.DEC.2015 15:04:17

Plot 7-195. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

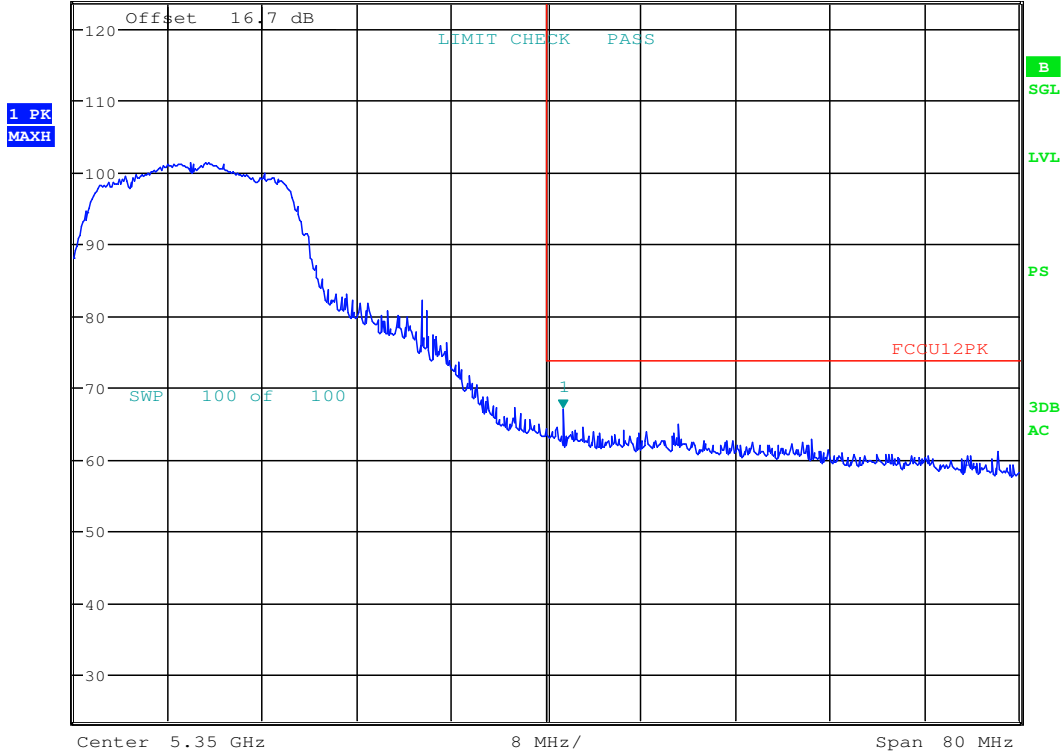
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 155 of 261	

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



MARKER 1
5.351410256 GHz
Ref 123.7 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 67.04 dBµV
SWT 20 ms 5.351410256 GHz



Date: 23.DEC.2015 15:04:56

Plot 7-196. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 156 of 261	

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

§15.407(b.1)(b.2) §15.205 §15.209

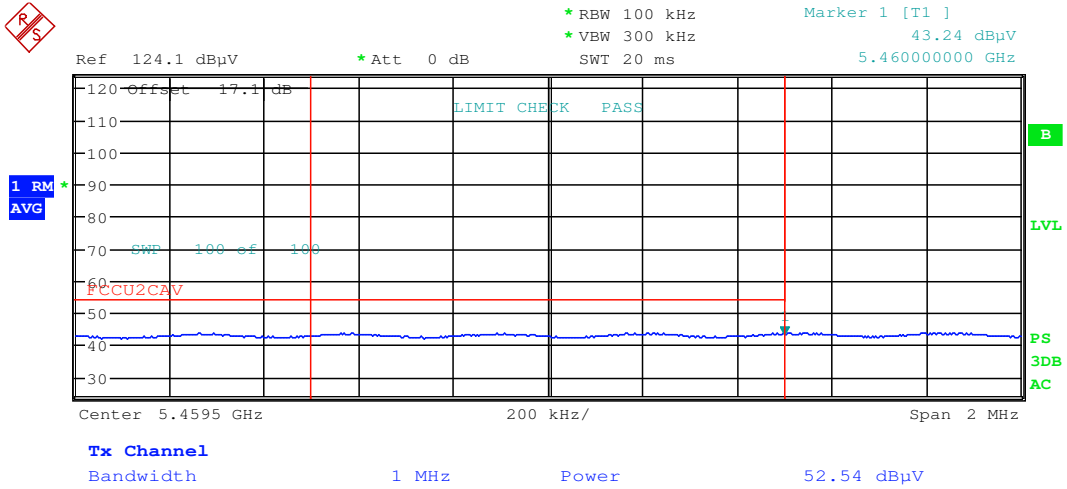
Worst Case Mode: 802.11ac

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5500MHz

Channel: 100



Date: 23.DEC.2015 15:27:54

Plot 7-197. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

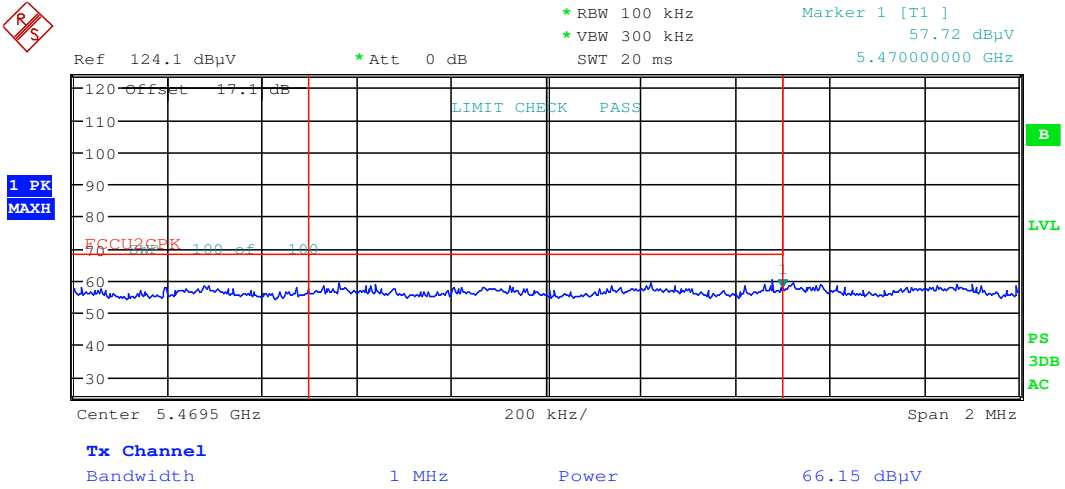
Note:

Per KDB 789033 Section II)G)3)d)ii, the Integration method was used to determine compliance with the out-of-band emission limits.

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 157 of 261	

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

§15.407(b.1)(b.2) §15.205 §15.209



Date: 23.DEC.2015 15:31:12

Plot 7-198. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

Note:

Per KDB 789033 Section II)G)3)d)ii, the Integration method was used to determine compliance with the out-of-band emission limits.

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 158 of 261

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

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode: 802.11ac

Worst Case Transfer Rate: MCS0

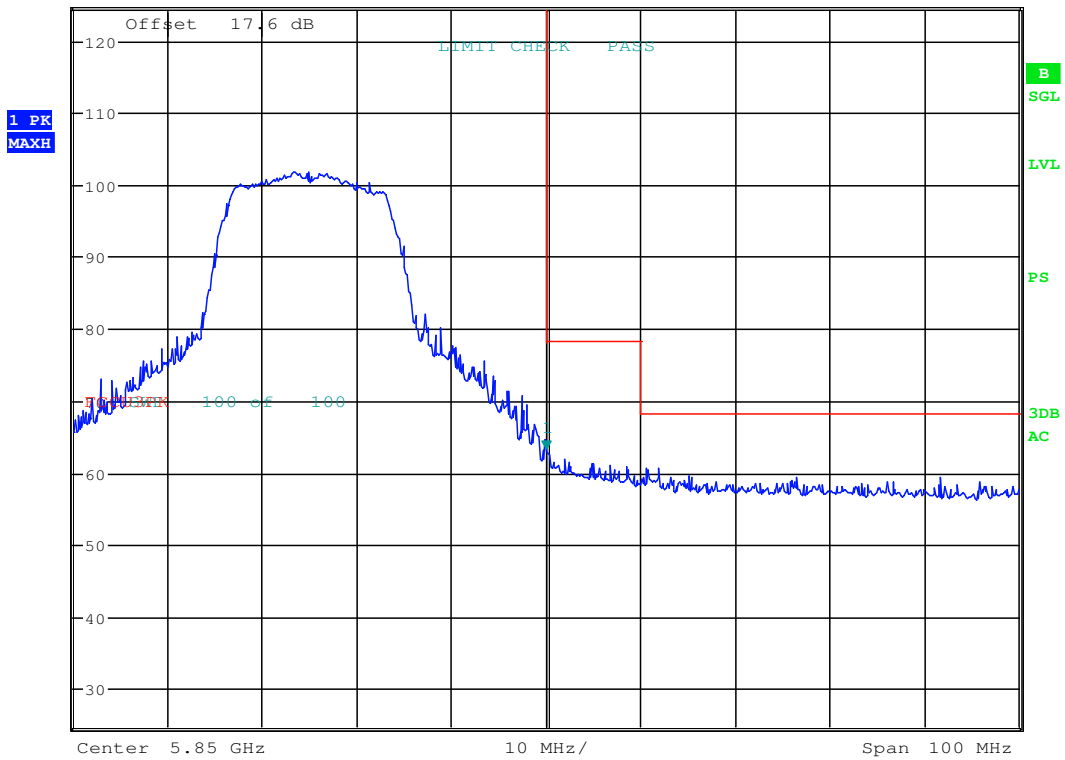
Distance of Measurements: 3 Meters

Operating Frequency: 5825MHz

Channel: 165



MARKER 1
 5.85 GHz
 Ref 124.6 dBµV * Att 0 dB
 * RBW 1 MHz Marker 1 [T1]
 * VBW 3 MHz 63.23 dBµV
 SWT 20 ms 5.85000000 GHz



Date: 23.DEC.2015 16:01:29

Plot 7-199. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

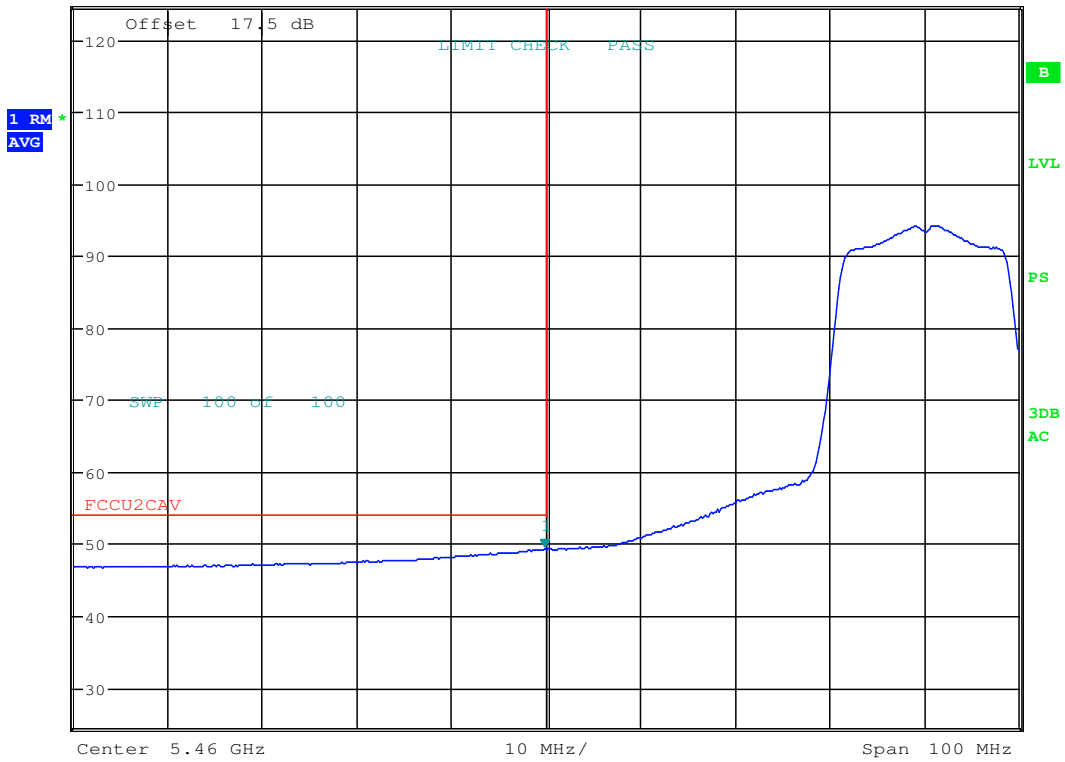
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 159 of 261

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

Worst Case Mode: 802.11ac
 Worst Case Transfer Rate: MCS0
 Distance of Measurements: 3 Meters
 Operating Frequency: 5500MHz
 Channel: 100



MARKER 1
 5.459839744 GHz *RBW 1 MHz Marker 1 [T1]
 Ref 124.5 dBµV *Att 0 dB *VBW 3 MHz 49.29 dBµV
 SWT 20 ms 5.459839744 GHz



Date: 8.JAN.2016 19:46:07

Plot 7-200. Radiated Restricted Band Edge Plot with WCP

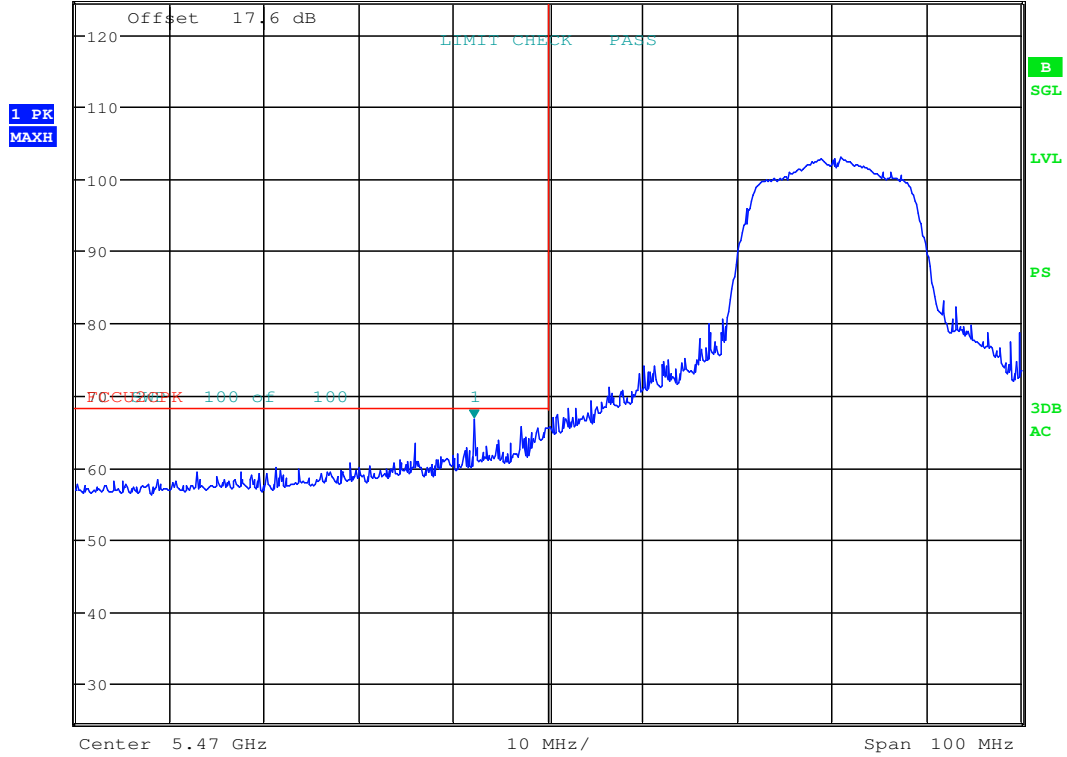
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 160 of 261	

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



MARKER 1
5.462147436 GHz
Ref 124.6 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 66.69 dBµV
SWT 20 ms 5.462147436 GHz



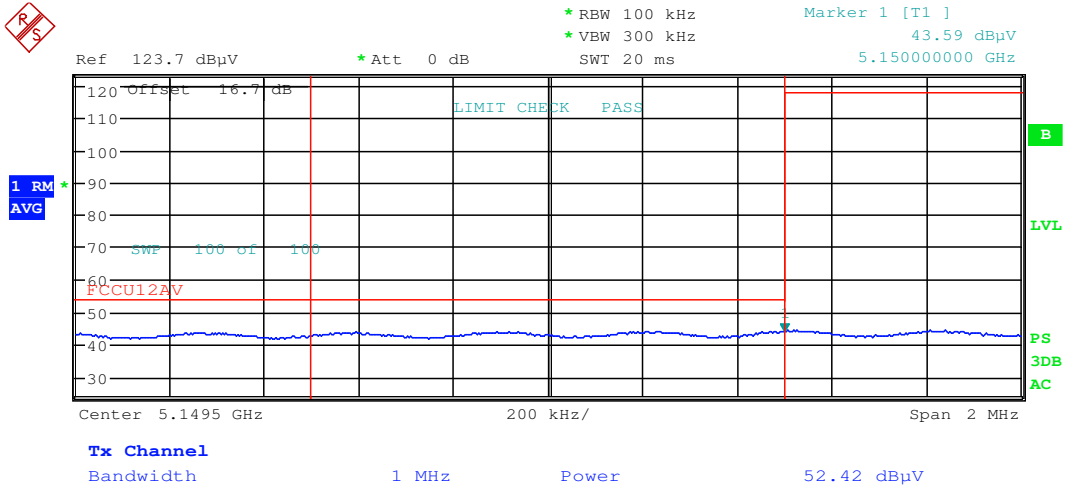
Date: 8.JAN.2016 19:47:15

Plot 7-201. Radiated Restricted Band Edge Plot with WCP

<p>FCC ID: A3LSMG930X</p>		<p>FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)</p>		<p>Reviewed by: Quality Manager</p>
<p>Test Report S/N: 0Y1601060064.A3L</p>	<p>Test Dates: 12/22/2015-1/15/2016, 1/15/2016</p>	<p>EUT Type: Portable Handset</p>	<p>Page 161 of 261</p>	

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

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



Date: 23.DEC.2015 14:54:19

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

Note:

Per KDB 7890336 Section II)G)3)d)ii, the Integration method was used to determine compliance with the out-of-band emission limits.

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 162 of 261	

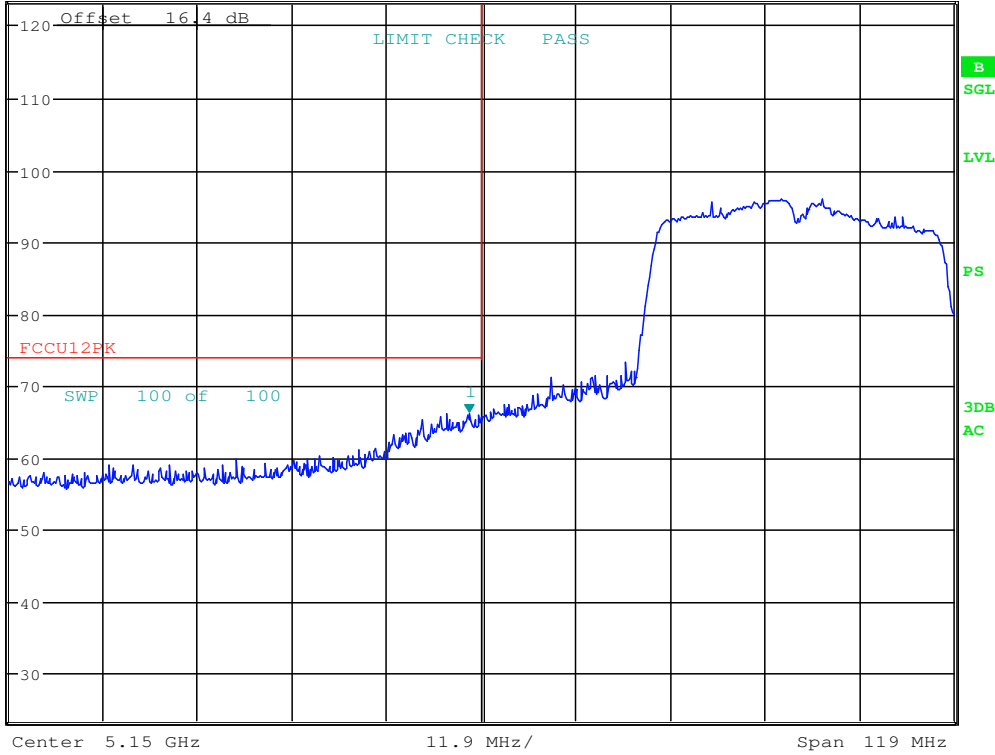
Antenna-1 Radiated Band Edge Measurements (40MHz BW) §15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
5.148474359 GHz
Ref 123.4 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 66.11 dBµV
SWT 20 ms 5.148474359 GHz

1 PK
MAXH



Date: 23.DEC.2015 14:55:59

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

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 163 of 261	

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

§15.407(b.1)(b.2) §15.205 §15.209

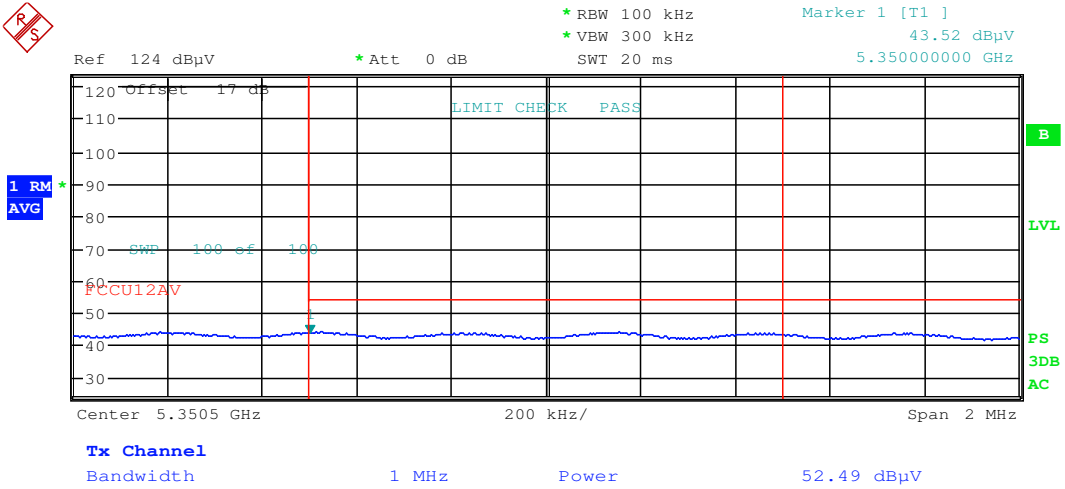
Worst Case Mode: 802.11ac (40MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5310MHz

Channel: 62



Date: 23.DEC.2015 15:10:57

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

Note:

Per KDB 7890336 Section II)G)3)d)ii, the Integration method was used to determine compliance with the out-of-band emission limits.

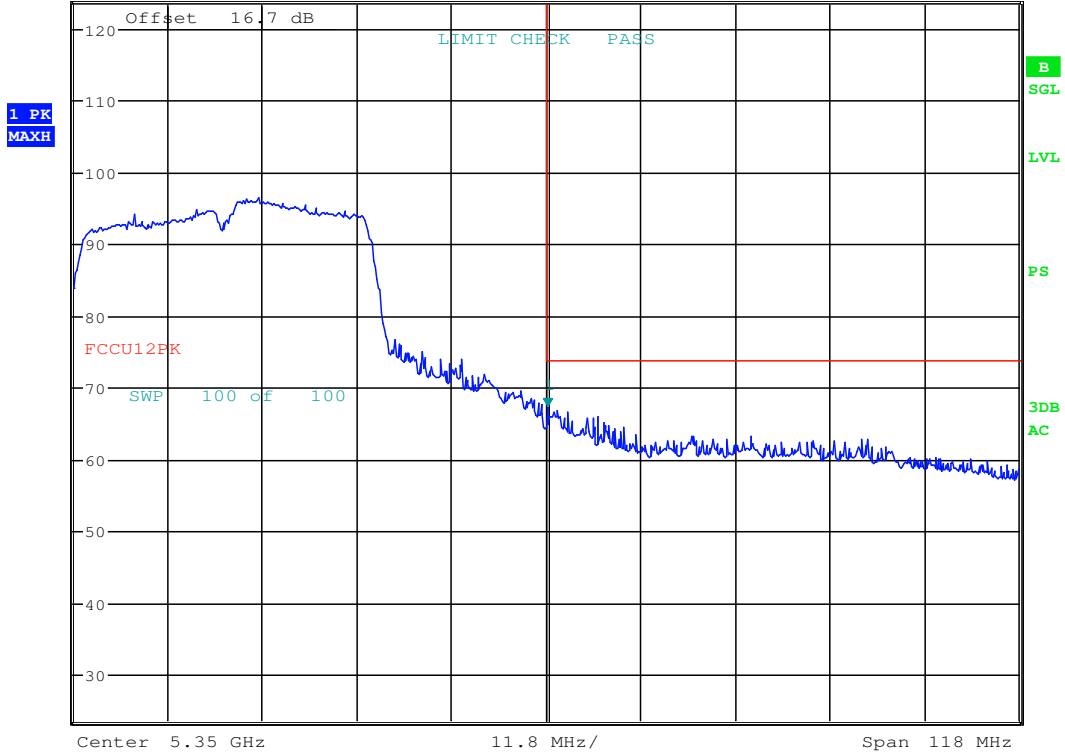
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 164 of 261	

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





MARKER 1
5.350189103 GHz
Ref 123.7 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 67.37 dBµV
SWT 20 ms 5.350189103 GHz



Date: 23.DEC.2015 15:12:44

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

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 165 of 261	

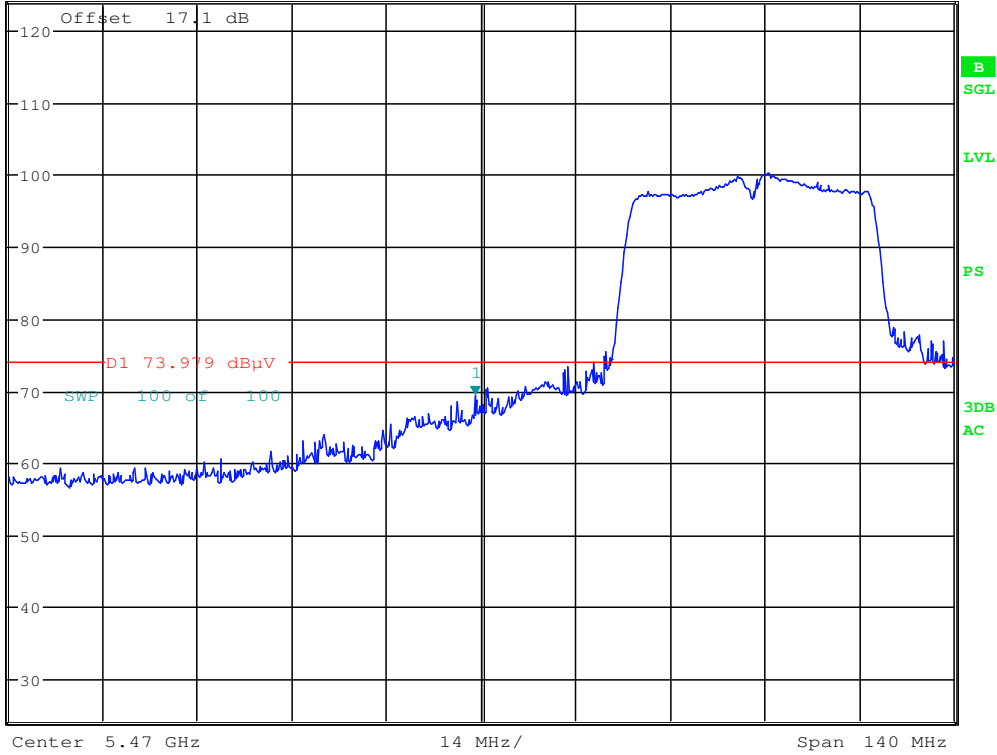
Antenna-1 Radiated Band Edge Measurements (40MHz BW)
§15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
5.469102564 GHz
Ref 124.1 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 69.31 dBµV
SWT 20 ms 5.469102564 GHz

1 PK
MAXH



Date: 23.DEC.2015 15:41:21

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

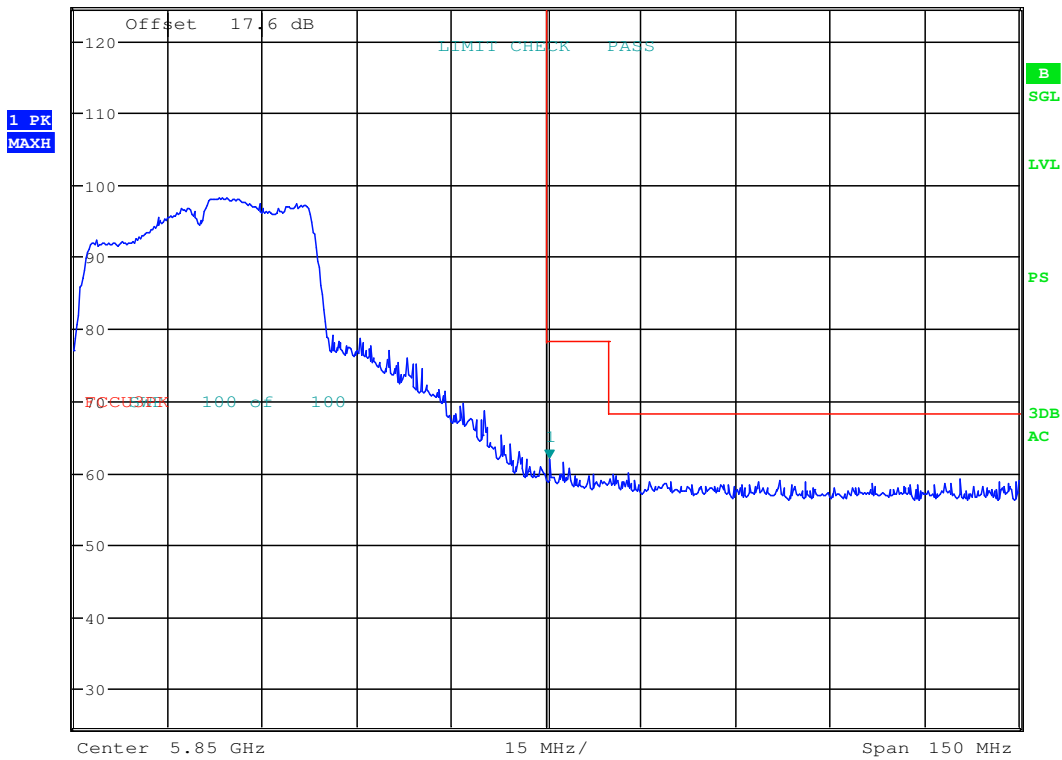
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 167 of 261

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

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



MARKER 1
 5.850480769 GHz
 Ref 124.6 dBµV * Att 0 dB
 * RBW 1 MHz Marker 1 [T1]
 * VBW 3 MHz 61.84 dBµV
 SWT 20 ms 5.850480769 GHz



Date: 23.DEC.2015 16:03:54

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

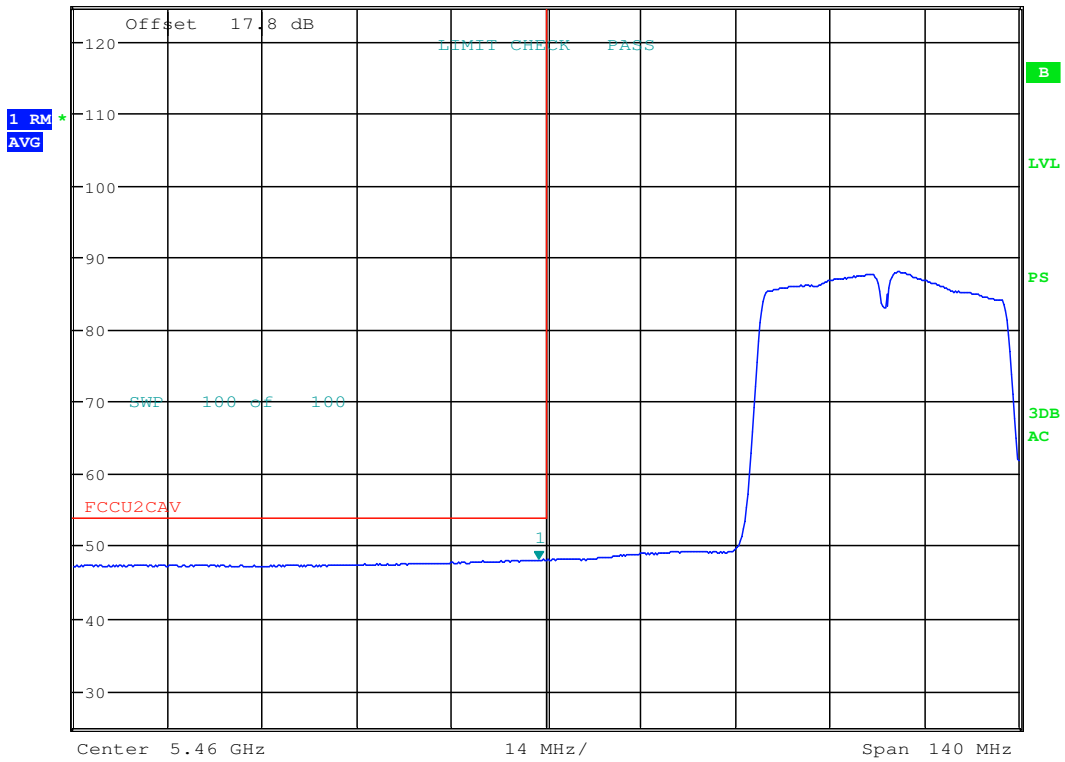
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 168 of 261	

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

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



MARKER 1
 5.458878205 GHz
 Ref 124.8 dBµV *Att 0 dB
 *RBW 1 MHz Marker 1 [T1]
 *VBW 3 MHz 48.06 dBµV
 SWT 20 ms 5.458878205 GHz



Date: 8.JAN.2016 19:50:05

Plot 7-209. Radiated Restricted Band Edge Plot with WCP

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 169 of 261	

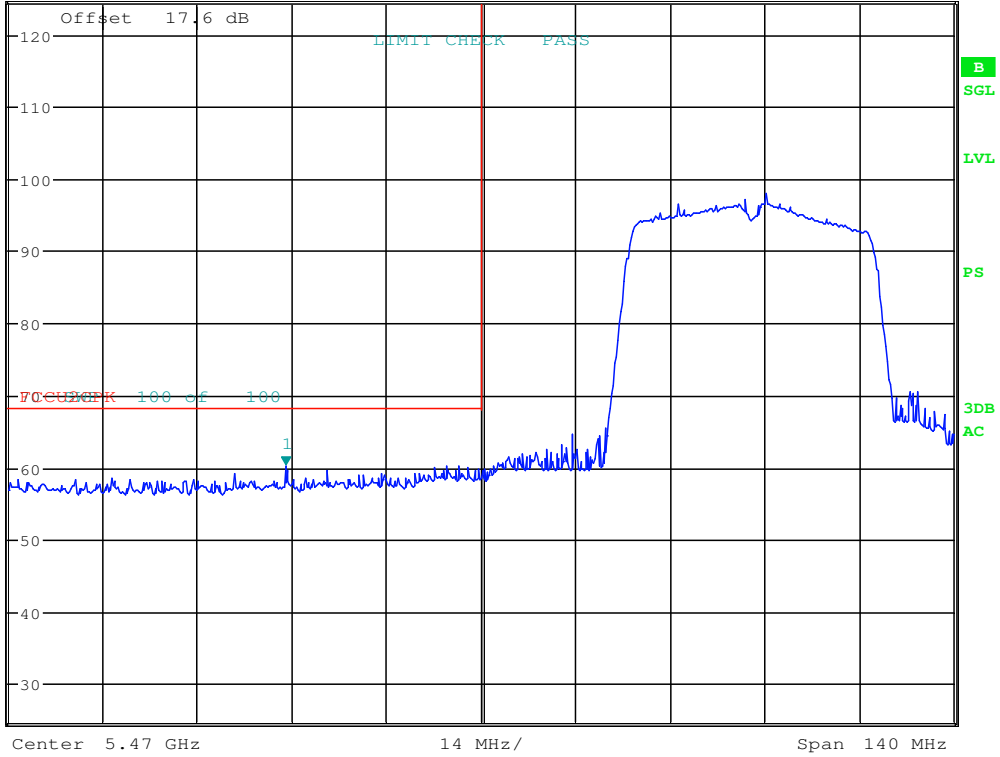
Antenna-1 WCP Radiated Band Edge Measurements (40MHz BW)
§15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
5.441057692 GHz
Ref 124.6 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 60.29 dBµV
SWT 20 ms 5.441057692 GHz

1 PK
MAXH



Date: 8.JAN.2016 19:50:43

Plot 7-210. Radiated Restricted Band Edge Plot with WCP

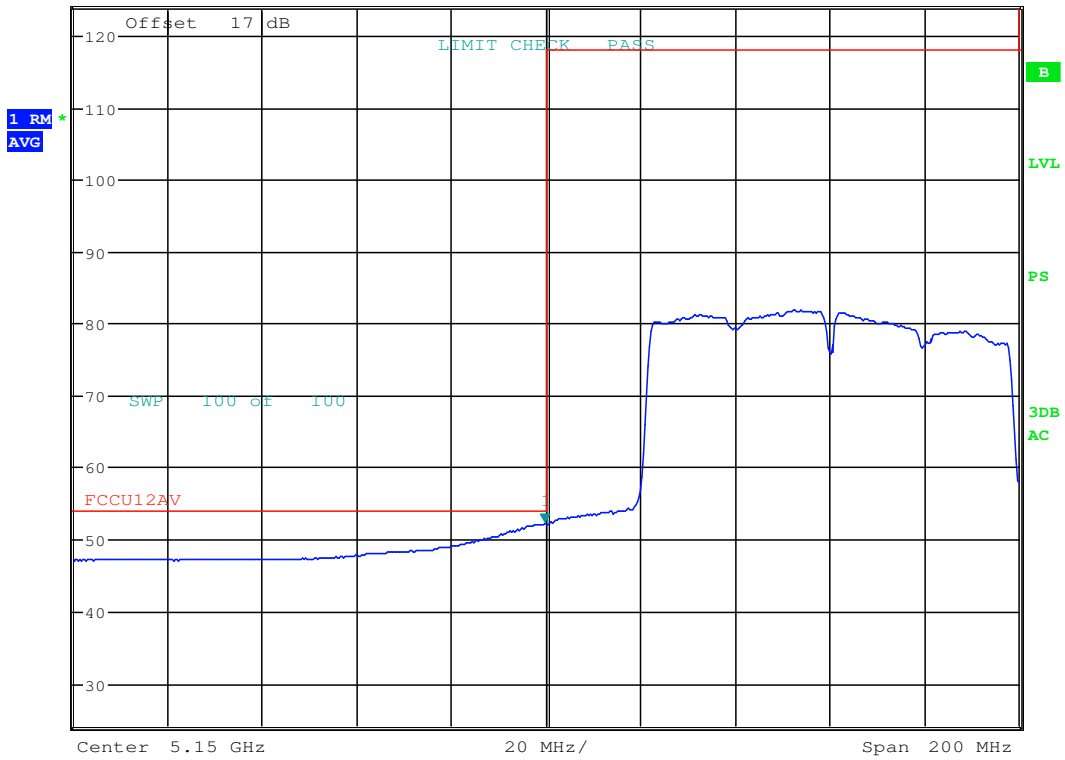
<p>FCC ID: A3LSMG930X</p>		<p>FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)</p>	<p>Reviewed by: Quality Manager</p>
<p>Test Report S/N: 0Y1601060064.A3L</p>	<p>Test Dates: 12/22/2015-1/15/2016, 1/15/2016</p>	<p>EUT Type: Portable Handset</p>	<p>Page 170 of 261</p>

7.7.6 Antenna-1 Radiated Band Edge Measurements (80MHz BW) §15.407(b.1)(b.2) §15.205 §15.209

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



MARKER 1
 5.149679487 GHz
 Ref 124 dBuV *Att 0 dB
 *RBW 1 MHz *VBW 3 MHz SWT 20 ms
 Marker 1 [T1] 52.21 dBuV
 5.149679487 GHz



Date: 23.DEC.2015 14:58:13

Plot 7-211. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

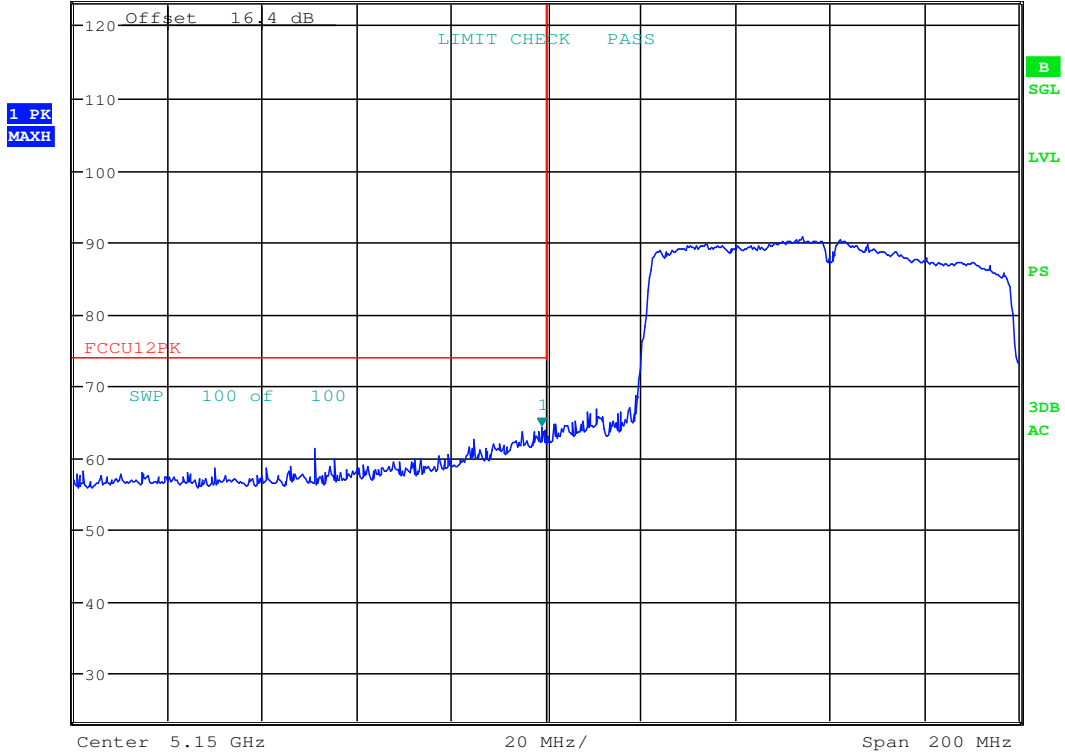
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 171 of 261	

Antenna-1 Radiated Band Edge Measurements (80MHz BW)
§15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
5.149038462 GHz
Ref 123.4 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 64.25 dBµV
SWT 20 ms 5.149038462 GHz



Date: 23.DEC.2015 14:58:55

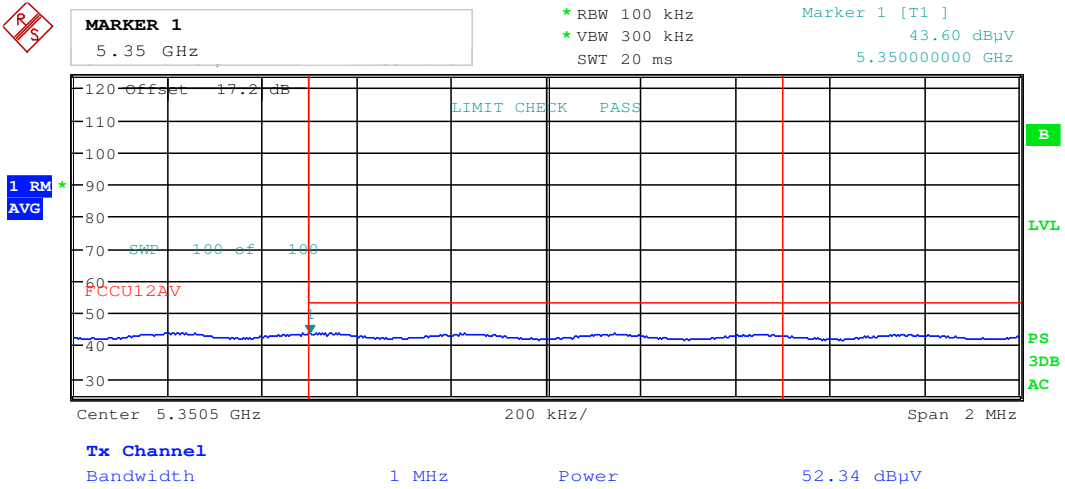
Plot 7-212. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 172 of 261	

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: 23.DEC.2015 15:18:54

Plot 7-213. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

Note:

Per KDB 789033 Section II)G)3)d)ii, the Integration Method was used to determine compliance with the out-of-band emission limits.

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 173 of 261

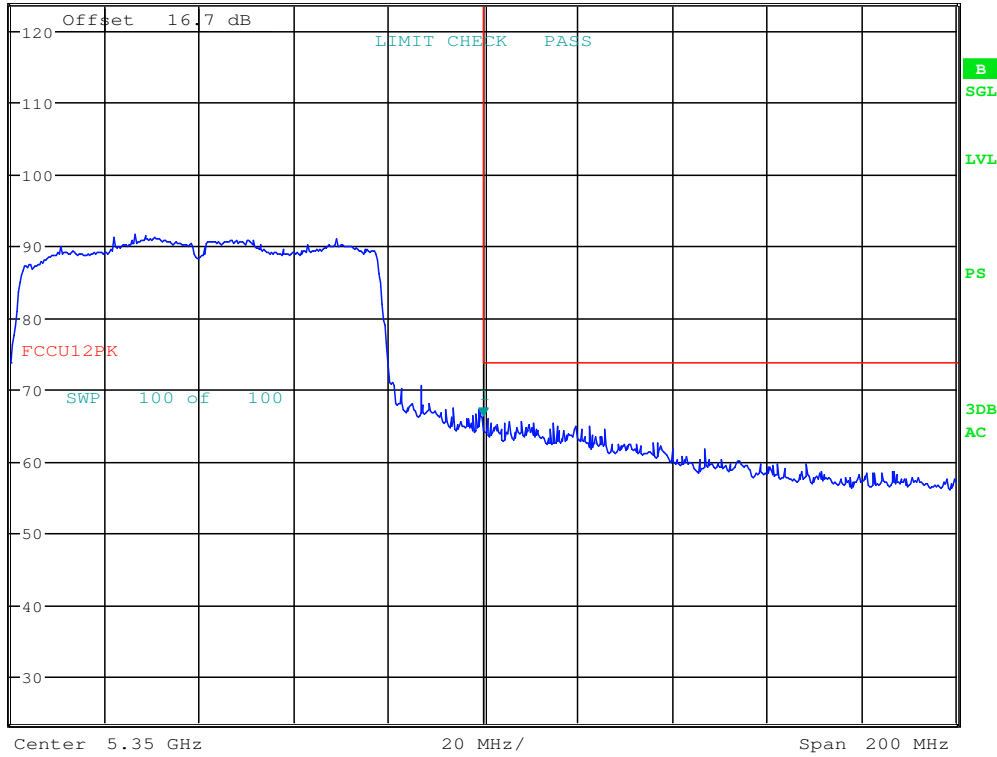
Antenna-1 Radiated Band Edge Measurements (80MHz BW) §15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
5.35 GHz
Ref 123.7 dBµV *Att 0 dB



*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 66.33 dBµV
SWT 20 ms 5.35000000 GHz

1 PK
MAXH



Date: 23.DEC.2015 15:20:30

Plot 7-214. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 174 of 261	

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

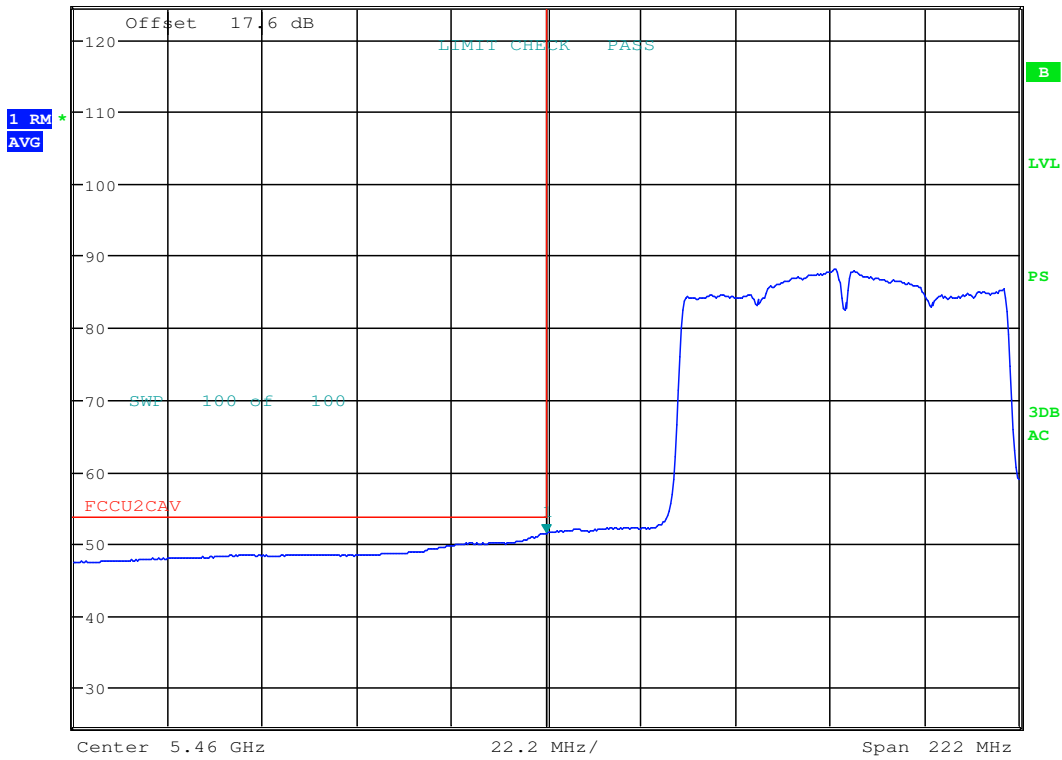
Channel: 106



MARKER 1
 5.46 GHz
 out of range

* RBW 1 MHz
 * VBW 3 MHz
 SWT 20 ms

Marker 1 [T1]
 51.44 dBµV
 5.460000000 GHz



Date: 23.DEC.2015 15:53:01

Plot 7-215. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 175 of 261

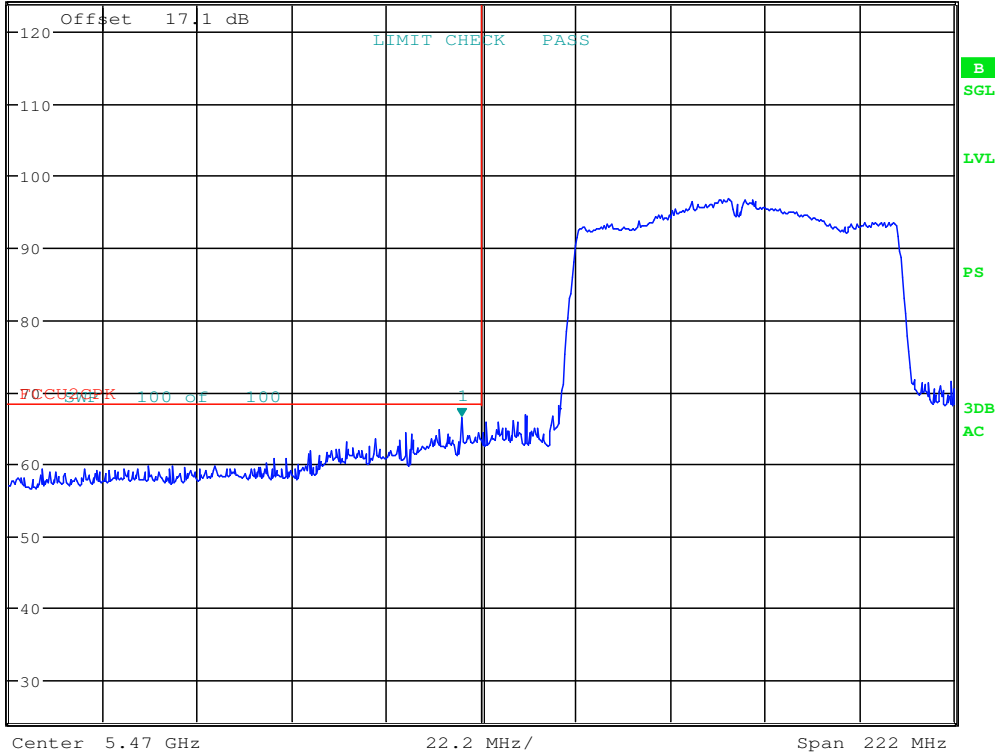
Antenna-1 Radiated Band Edge Measurements (80MHz BW)
§15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
5.465375 GHz
Ref 124.1 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 66.44 dBµV
SWT 20 ms 5.465375000 GHz

1 PK
MAXH



Date: 23.DEC.2015 15:54:19

Plot 7-216. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 176 of 261	

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

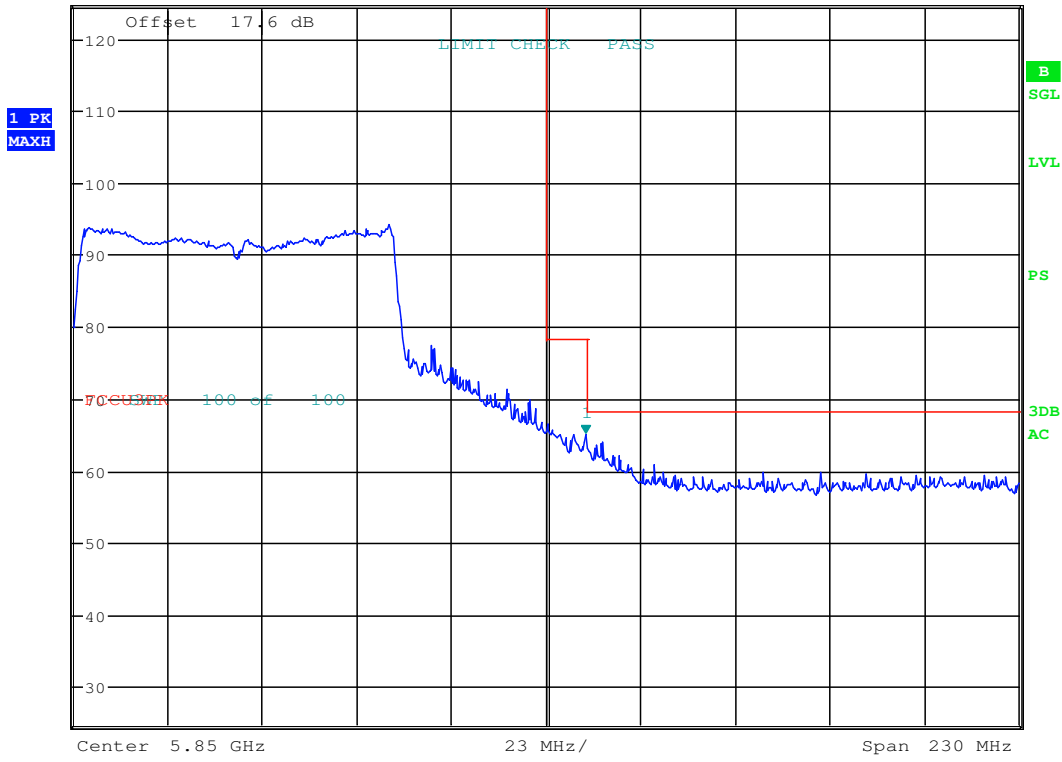
Distance of Measurements: 3 Meters

Operating Frequency: 5775MHz

Channel: 155



MARKER 1
 5.859583333 GHz
 Ref 124.6 dBµV * Att 0 dB
 * RBW 1 MHz Marker 1 [T1]
 * VBW 3 MHz 65.03 dBµV
 SWT 20 ms 5.859583333 GHz



Date: 23.DEC.2015 16:06:13

Plot 7-217. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 177 of 261	

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

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode: 802.11ac (80MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5530

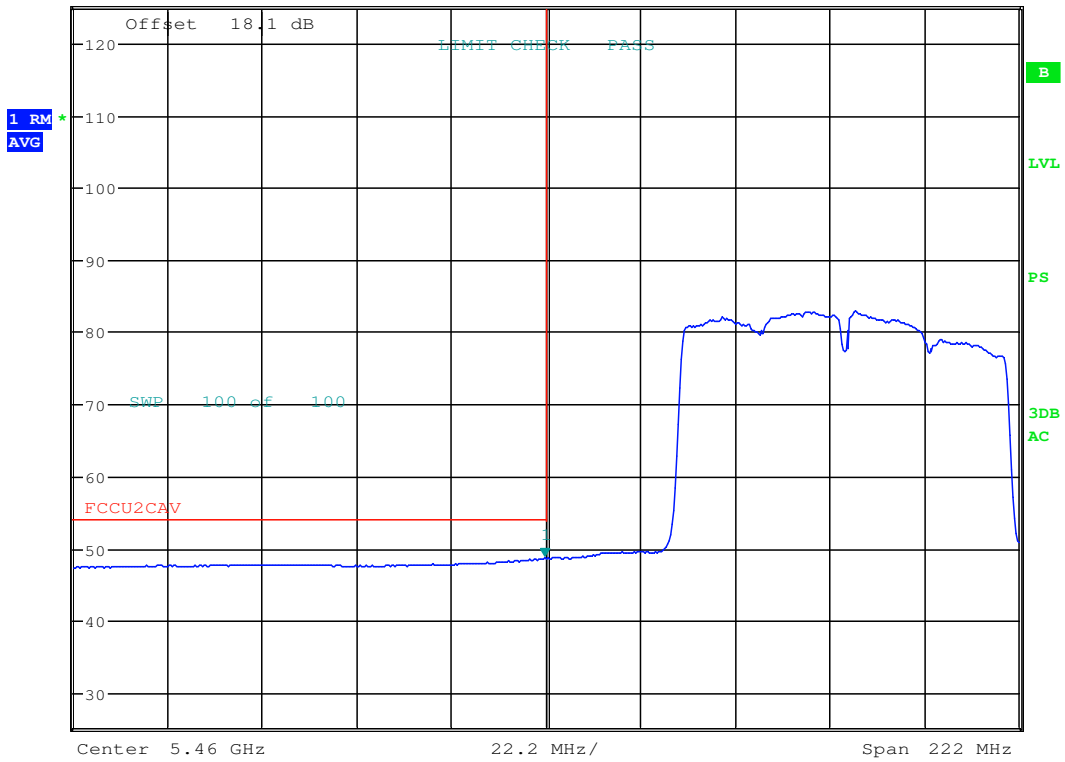
Channel: 106



MARKER 1
 5.459644231 GHz
 Ref 125.1 dBµV *Att 0 dB

*RBW 1 MHz
 *VBW 3 MHz
 SWT 20 ms

Marker 1 [T1]
 48.65 dBµV
 5.459644231 GHz



Date: 8.JAN.2016 19:54:12

Plot 7-218. Radiated Restricted Band Edge Plot with WCP

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 178 of 261	

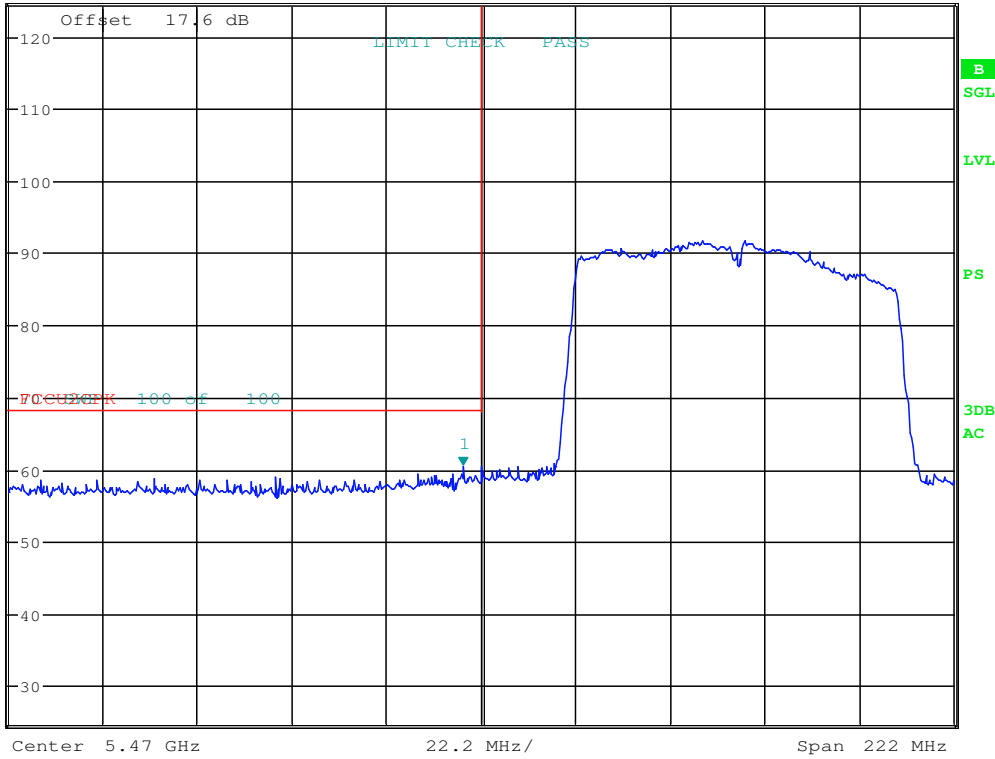
Antenna-1 WCP Radiated Band Edge Measurements (80MHz BW)
§15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
5.465730769 GHz
Ref 124.6 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 60.41 dBµV
SWT 20 ms 5.465730769 GHz

1 PK
MAXH



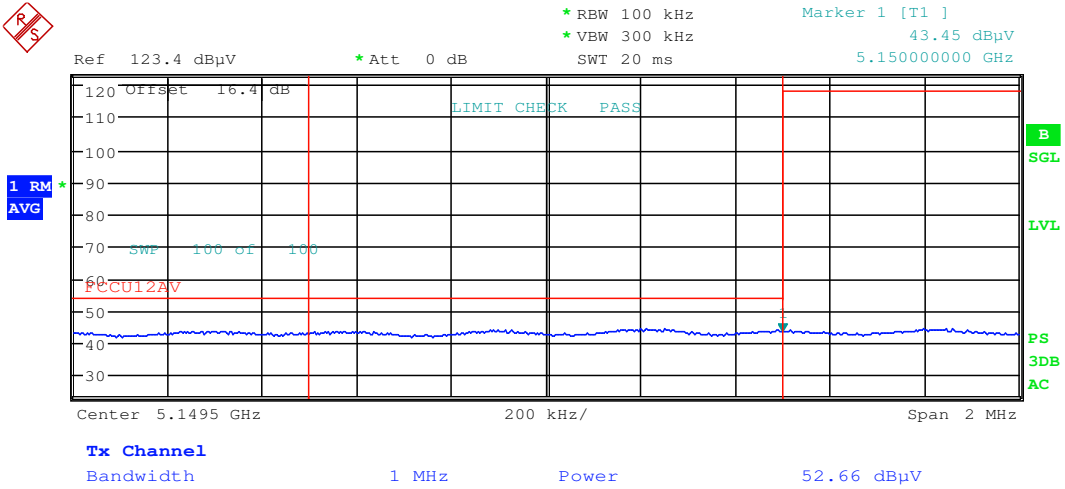
Date: 8.JAN.2016 19:55:01

Plot 7-219. Radiated Restricted Band Edge Plot with WCP

<p>FCC ID: A3LSMG930X</p>		<p>FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)</p>		<p>Reviewed by: Quality Manager</p>
<p>Test Report S/N: 0Y1601060064.A3L</p>	<p>Test Dates: 12/22/2015-1/15/2016, 1/15/2016</p>	<p>EUT Type: Portable Handset</p>	<p>Page 179 of 261</p>	

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

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



Date: 24.DEC.2015 08:35:19

Plot 7-220. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

Note:

Per KDB 7890933 Section II)G)d)ii, the Integration Method was used to determine compliance with the out-of-band emission limits.

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 180 of 261	

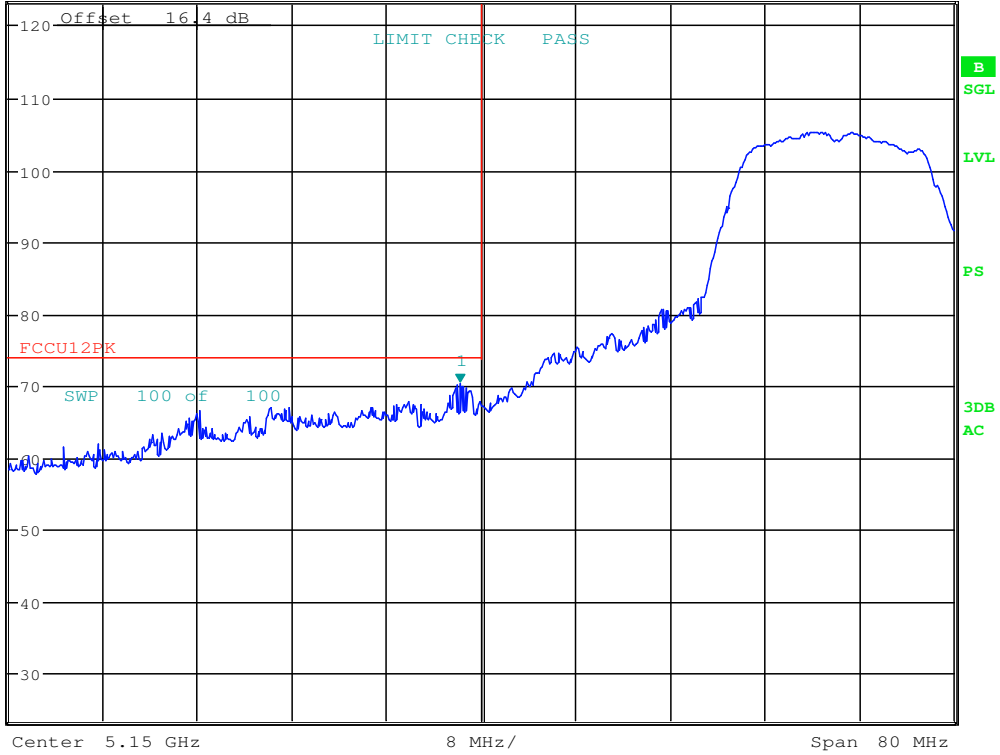
Antenna-2 Radiated Band Edge Measurements (20MHz BW) §15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
5.148205128 GHz
Ref 123.4 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 70.39 dBµV
SWT 20 ms 5.148205128 GHz

1 PK
MAXH



Date: 24.DEC.2015 08:36:33

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

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 181 of 261	

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

§15.407(b.1)(b.2) §15.205 §15.209

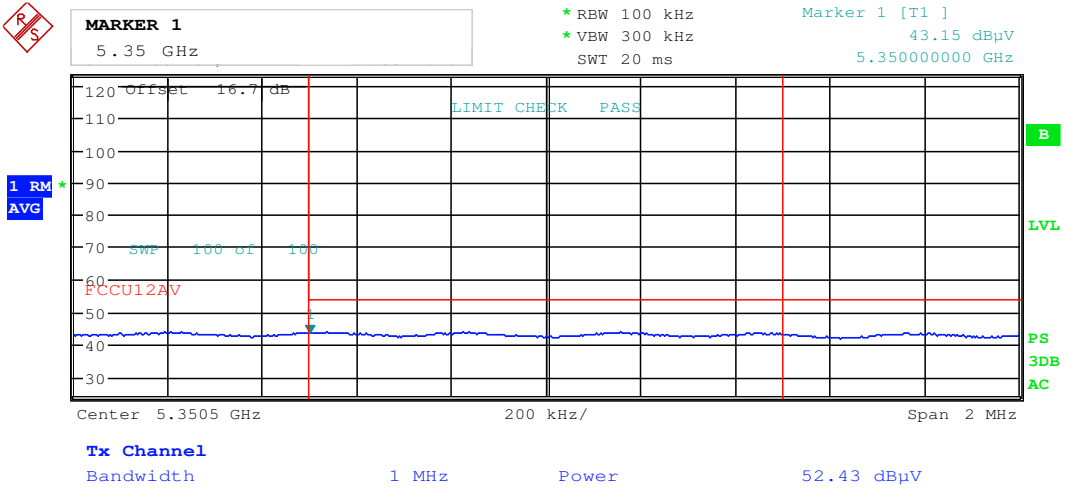
Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 5320MHz

Channel: 64



Date: 24.DEC.2015 08:59:25

Plot 7-222. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

Note:

Per KDB 7890933 Section II)G)d)ii, the Integration Method was used to determine compliance with the out-of-band emission limits.

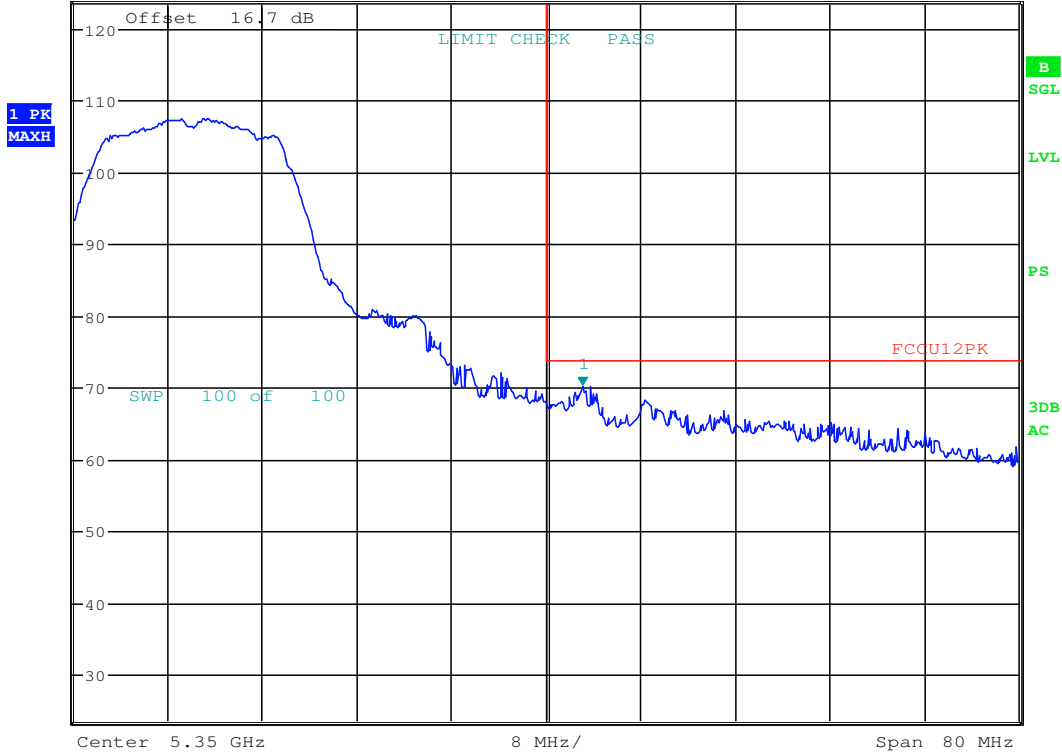
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 182 of 261

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



MARKER 1
5.353076923 GHz
Ref 123.7 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 70.15 dBµV
SWT 20 ms 5.353076923 GHz



Date: 24.DEC.2015 09:00:17

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

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 183 of 261	

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

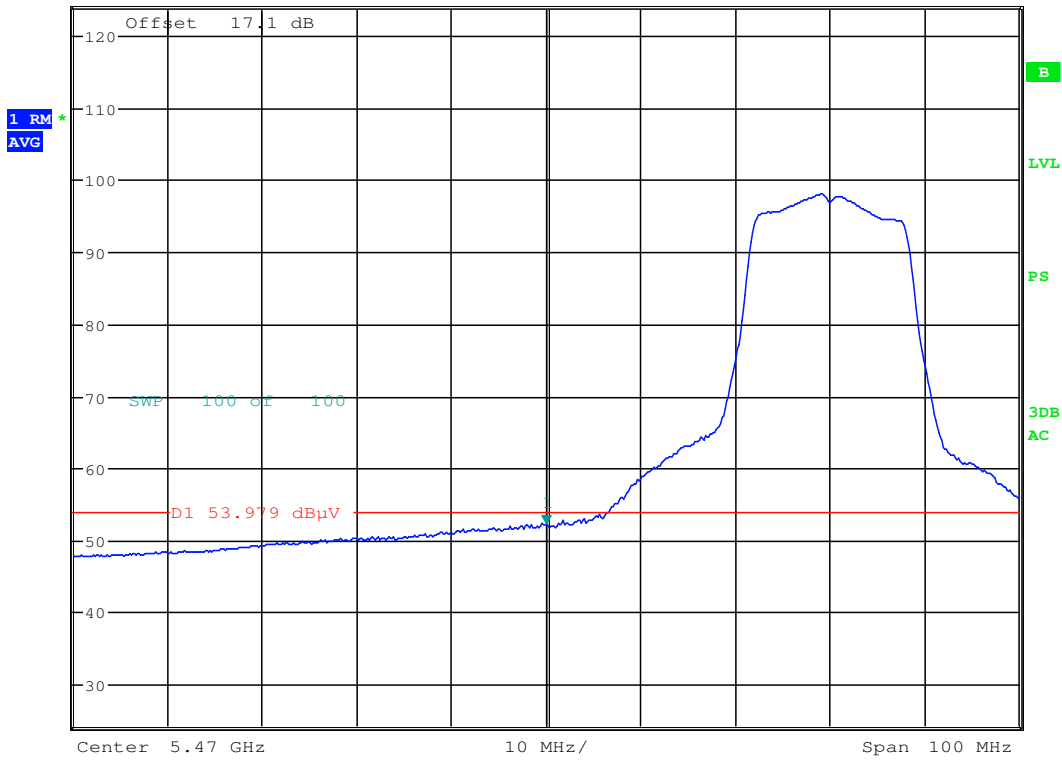
Channel: 100



MARKER 1
 5.47 GHz
 Ref 124.1 dBµV *Att 0 dB

*RBW 1 MHz
 *VBW 3 MHz
 SWT 20 ms

Marker 1 [T1]
 52.10 dBµV
 5.470000000 GHz



Date: 24.DEC.2015 09:29:52

Plot 7-224. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 184 of 261	

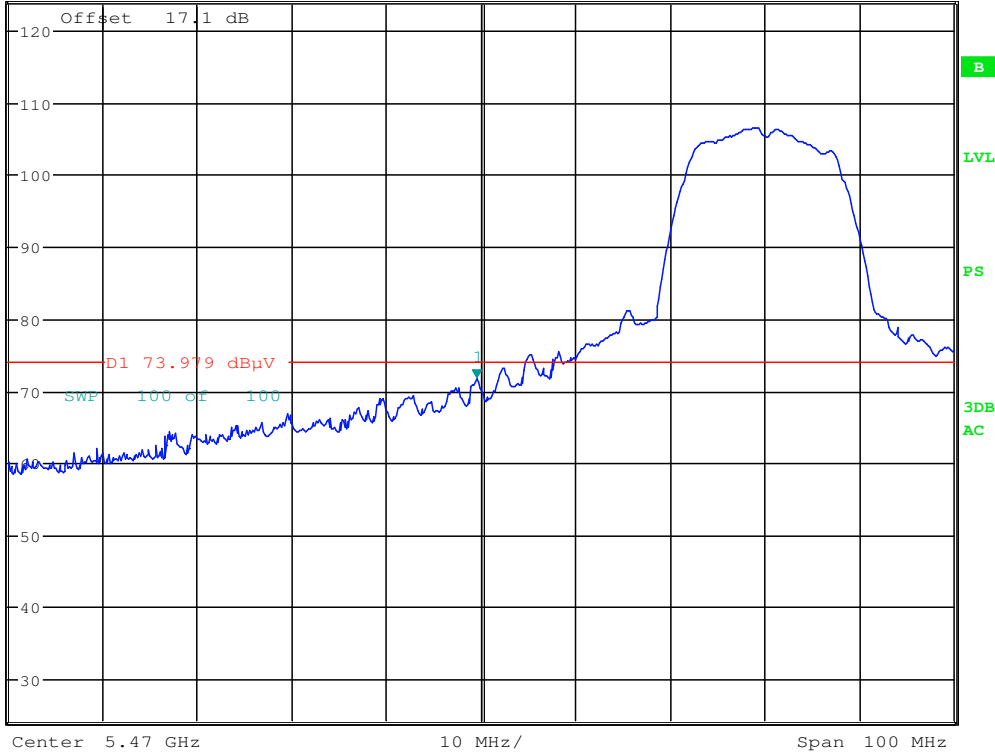
Antenna-2 Radiated Band Edge Measurements (20MHz BW)
§15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
5.469519231 GHz
Ref 124.1 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 71.59 dBµV
SWT 20 ms 5.469519231 GHz

1 PK
MAXH



Date: 24.DEC.2015 09:30:43

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

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 185 of 261	

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

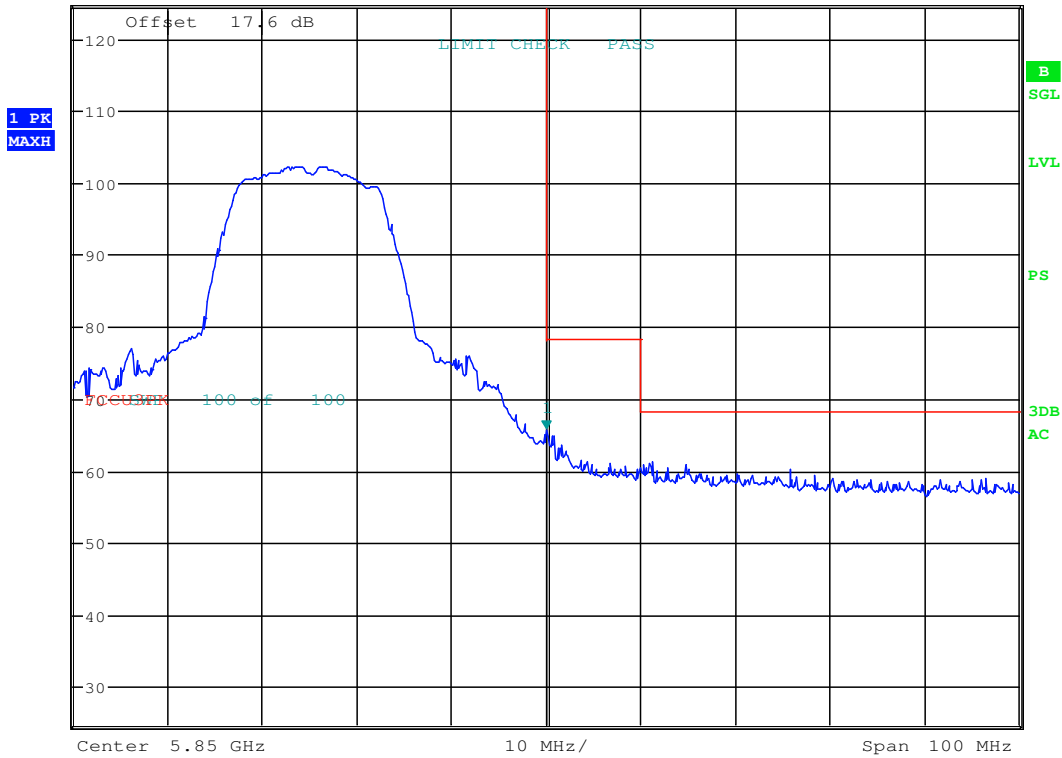
Distance of Measurements: 3 Meters

Operating Frequency: 5825MHz

Channel: 165



MARKER 1
 5.85 GHz
 Ref 124.6 dBµV * Att 0 dB
 * RBW 1 MHz
 * VBW 3 MHz
 SWT 20 ms
 Marker 1 [T1]
 65.65 dBµV
 5.85000000 GHz



Date: 24.DEC.2015 10:10:33

Plot 7-226. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 186 of 261	

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

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 5180MHz

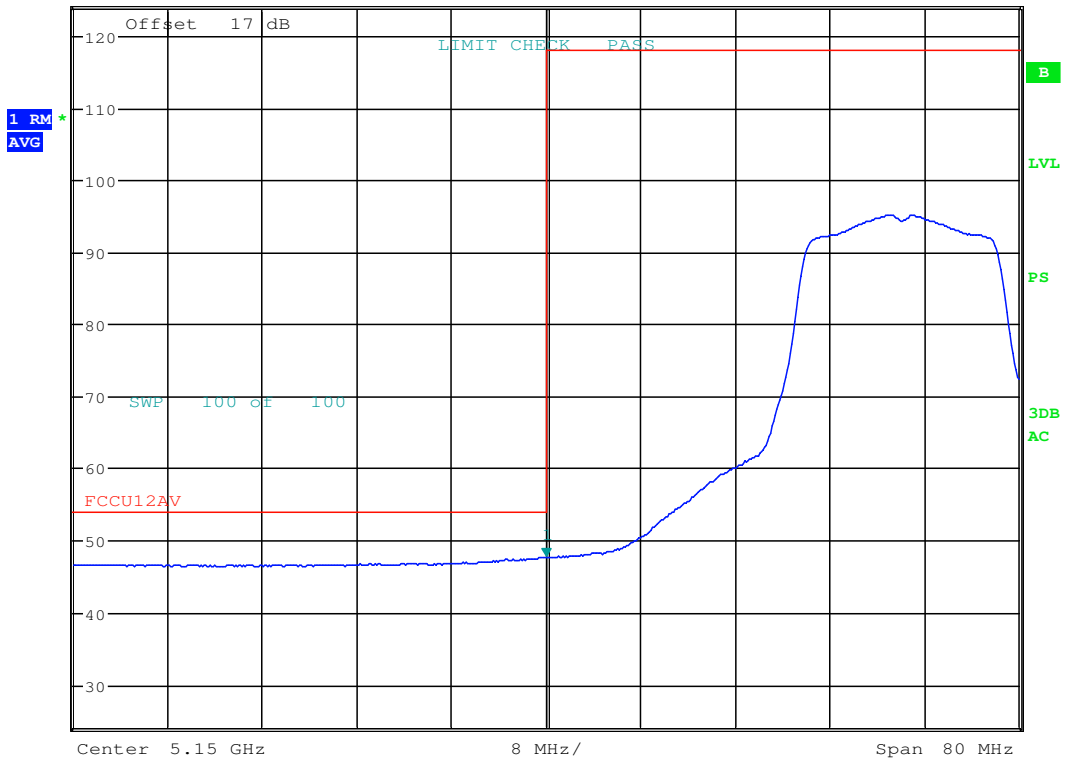
Channel: 36



MARKER 1
 5.15 GHz
 Ref 124 dBµV *Att 0 dB

*RBW 1 MHz
 *VBW 3 MHz
 SWT 20 ms

Marker 1 [T1]
 47.65 dBµV
 5.15000000 GHz



Date: 8.JAN.2016 20:01:48

Plot 7-227. Radiated Restricted Band Edge Plot with WCP

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)	 Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 187 of 261

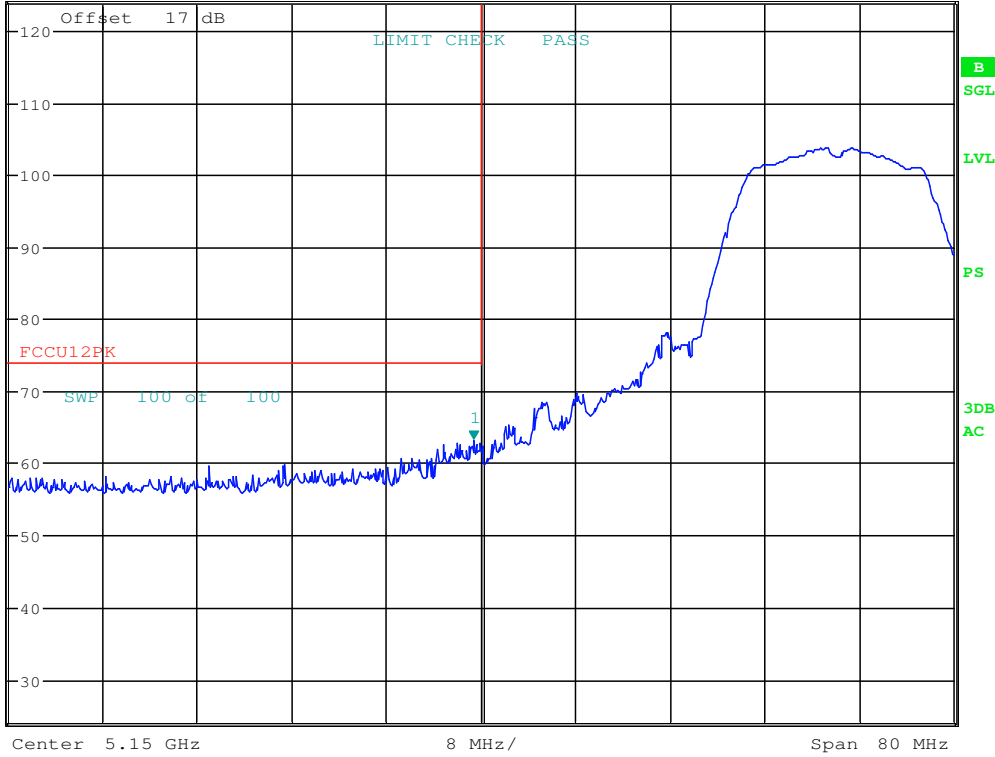
Antenna-2 WCP Radiated Band Edge Measurements (20MHz BW)
§15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
5.149358974 GHz
Ref 124 dBµV *Att 0 dB



*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 63.22 dBµV
SWT 20 ms 5.149358974 GHz

1 PK
MAXH



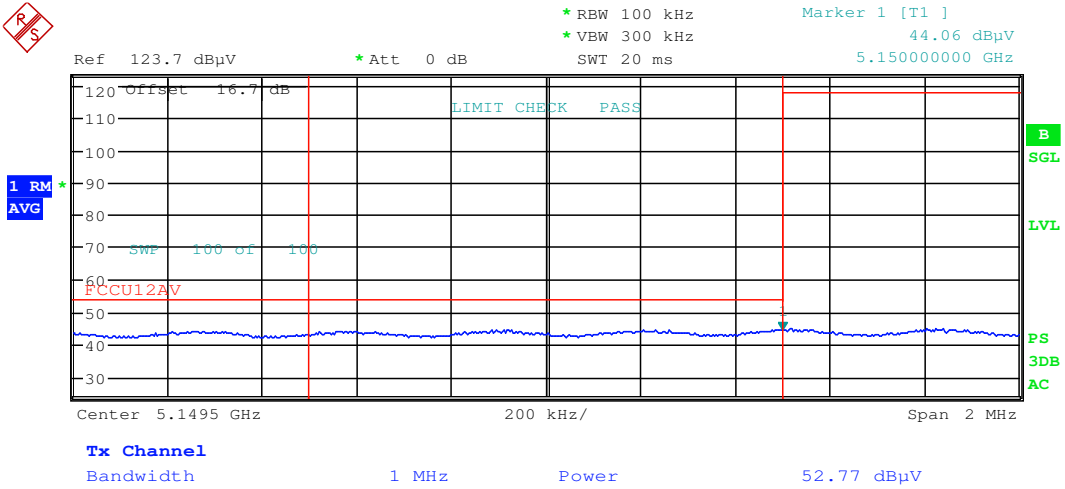
Date: 8.JAN.2016 20:03:08

Plot 7-228. Radiated Restricted Band Edge Plot with WCP

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 188 of 261	

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

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



Date: 24.DEC.2015 08:43:26

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

Note:

Per KDB 7890933 Section II)G)d)ii, the Integration Method was used to determine compliance with the out-of-band emission limits.

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 189 of 261

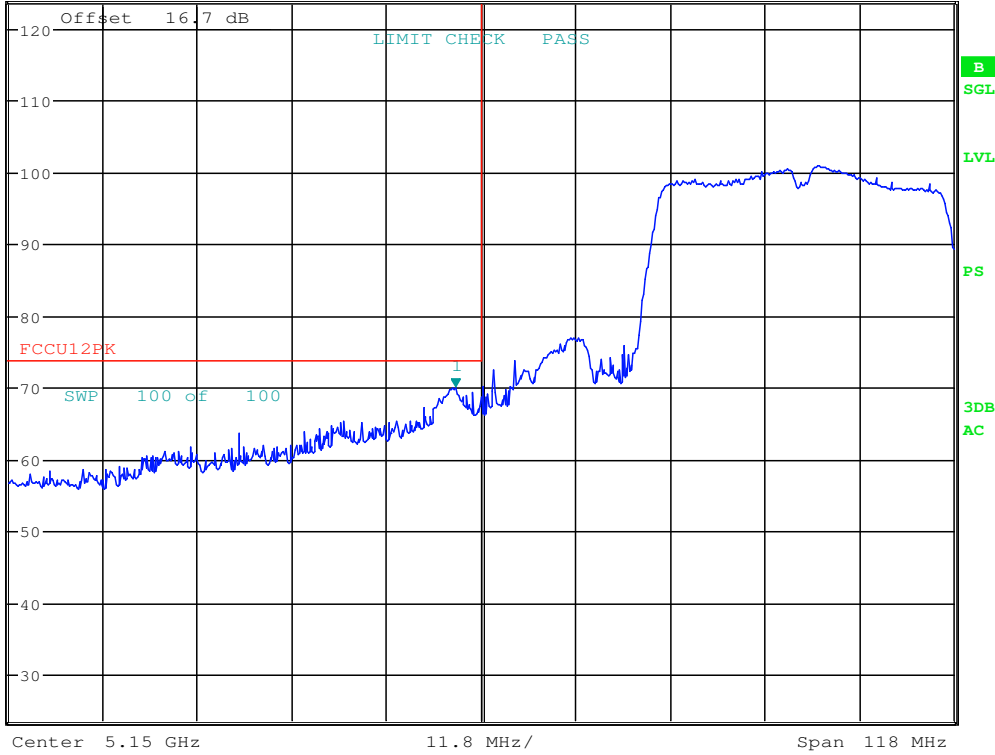
Antenna-2 Radiated Band Edge Measurements (40MHz BW)
§15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
5.146785256 GHz
Ref 123.7 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 70.11 dBµV
SWT 20 ms 5.146785256 GHz

1 PK
MAXH



Date: 24.DEC.2015 08:45:25

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

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 190 of 261

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

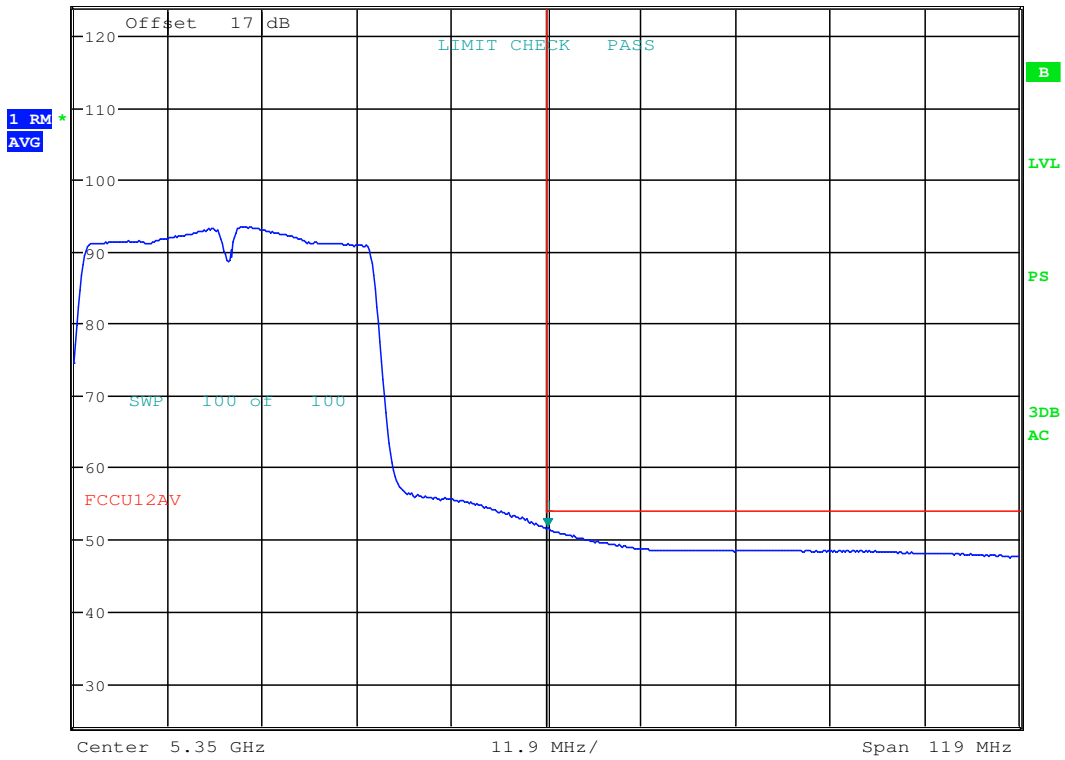
Channel: 62



MARKER 1
 5.350190705 GHz
 Ref 124 dBµV *Att 0 dB

*RBW 1 MHz
 *VBW 3 MHz
 SWT 20 ms

Marker 1 [T1]
 51.57 dBµV
 5.350190705 GHz



Date: 24.DEC.2015 09:08:21

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

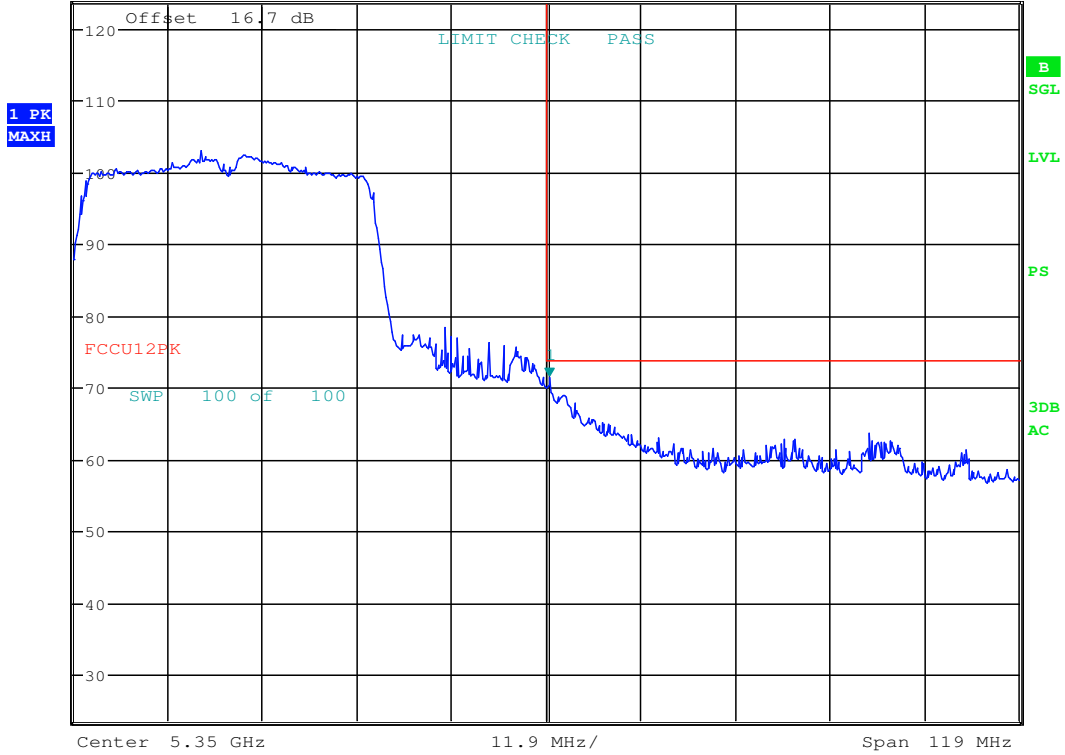
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 191 of 261	

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



MARKER 1
5.35038141 GHz
Ref 123.7 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 71.42 dBµV
SWT 20 ms 5.350381410 GHz



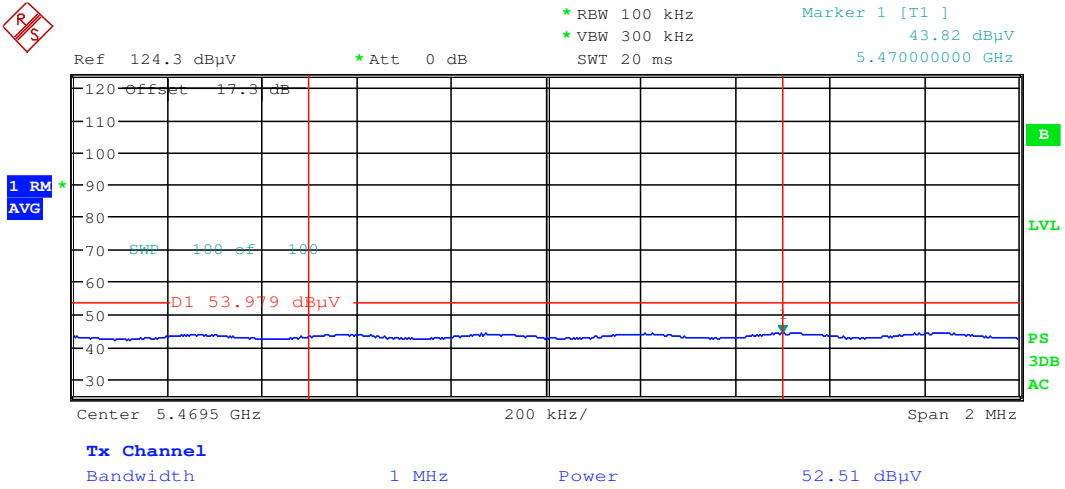
Date: 24.DEC.2015 09:09:50

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

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 192 of 261	

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: 24.DEC.2015 09:50:13

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

Note:

Per KDB 7890933 Section II)G)d)ii, the Integration Method was used to determine compliance with the out-of-band emission limits.

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 193 of 261

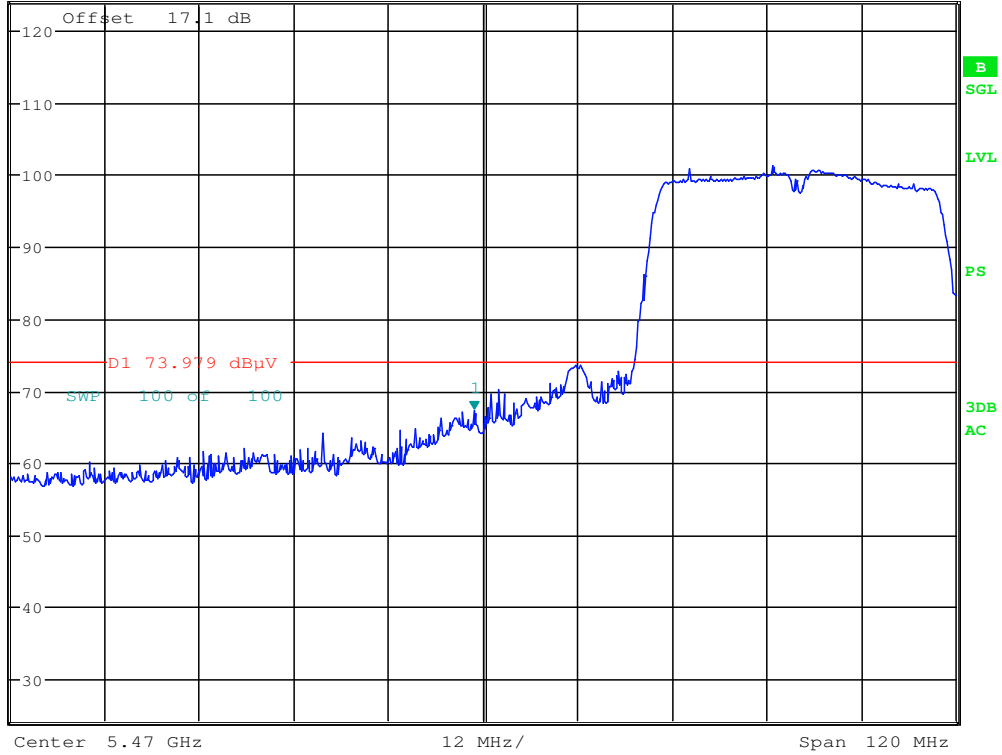
Antenna-2 Radiated Band Edge Measurements (40MHz BW) §15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
5.468846154 GHz
Ref 124.1 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 67.29 dBµV
SWT 20 ms 5.468846154 GHz

1 PK
MAXH



Date: 24.DEC.2015 09:51:40

Plot 7-234. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

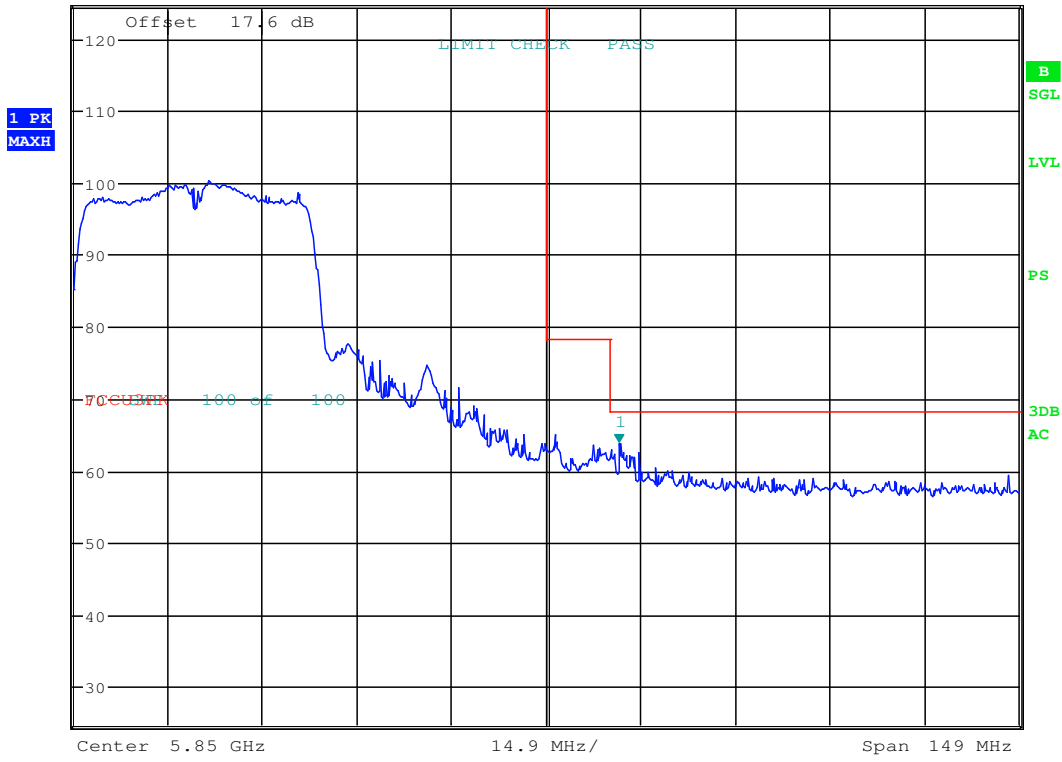
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 194 of 261	

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



MARKER 1
 5.861461538 GHz
 Ref 124.6 dBµV * Att 0 dB
 * RBW 1 MHz Marker 1 [T1]
 * VBW 3 MHz 63.83 dBµV
 SWT 20 ms 5.861461538 GHz



Date: 24.DEC.2015 10:12:52

Plot 7-235. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 195 of 261	

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

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode: 802.11n (40MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5190MHz

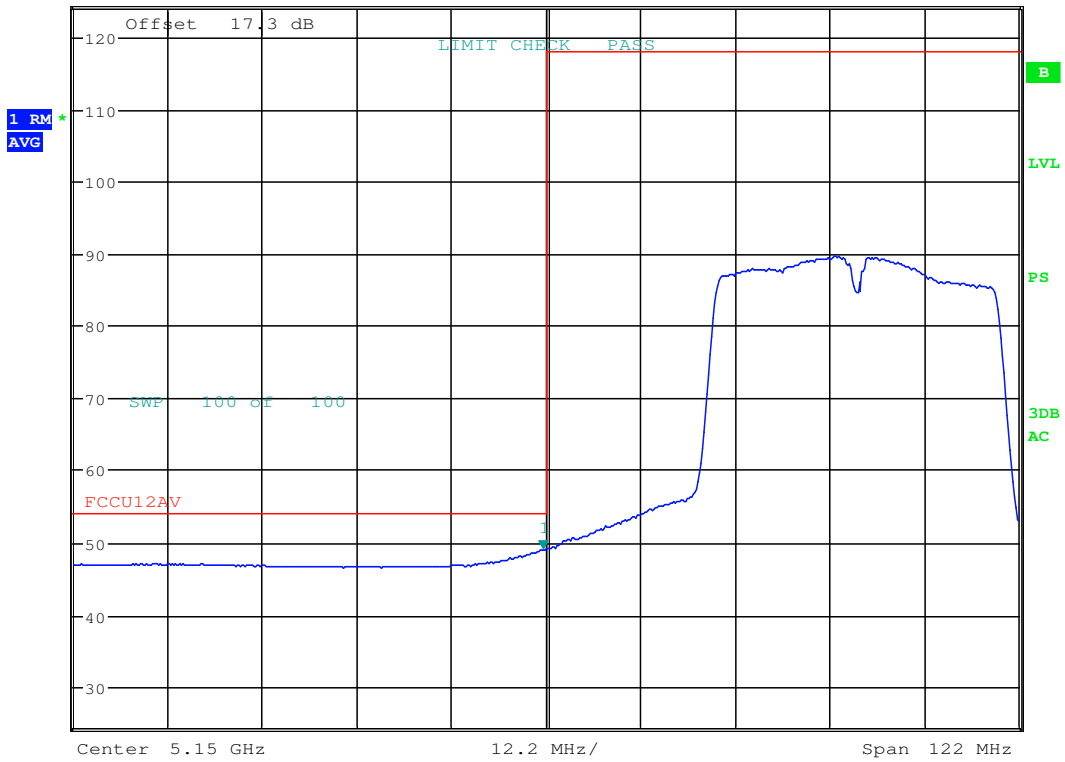
Channel: 38



MARKER 1
 5.149608974 GHz
 Ref 124.3 dBµV *Att 0 dB

*RBW 1 MHz
 *VBW 3 MHz
 SWT 20 ms

Marker 1 [T1]
 49.06 dBµV
 5.149608974 GHz



Date: 8.JAN.2016 20:05:41

Plot 7-236. Radiated Restricted Band Edge Plot with WCP

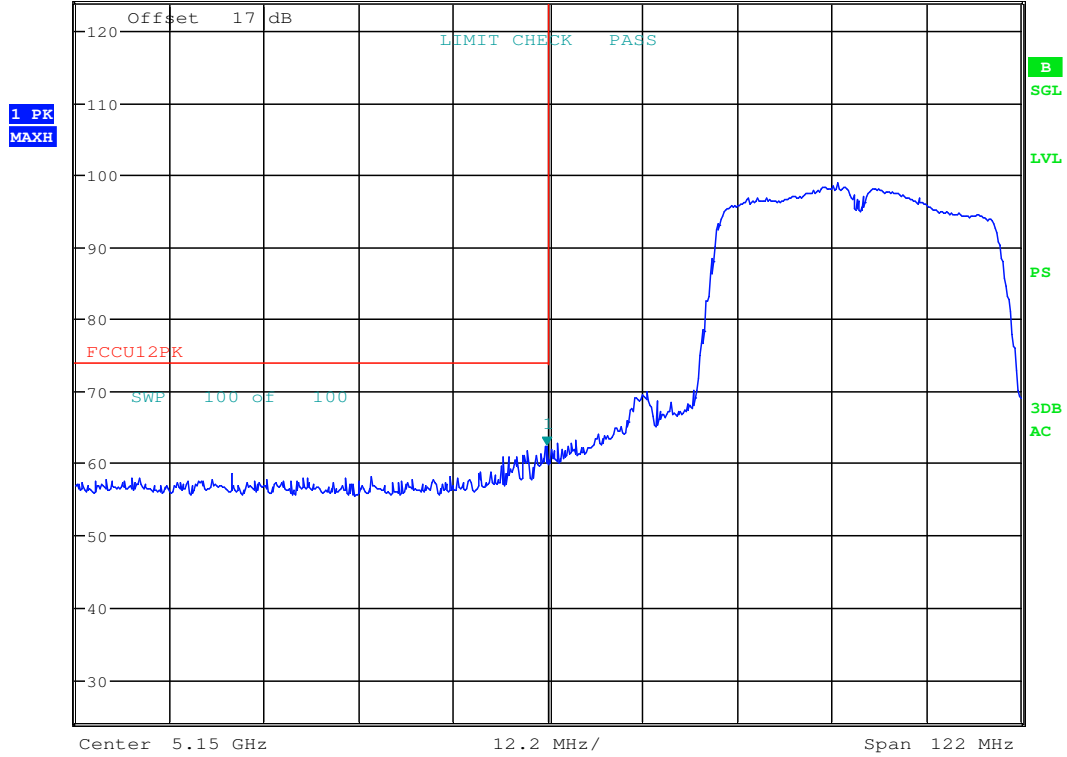
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 196 of 261

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



MARKER 1
5.149804487 GHz
Ref 124 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1] 62.39 dBµV
*VBW 3 MHz
SWT 20 ms 5.149804487 GHz



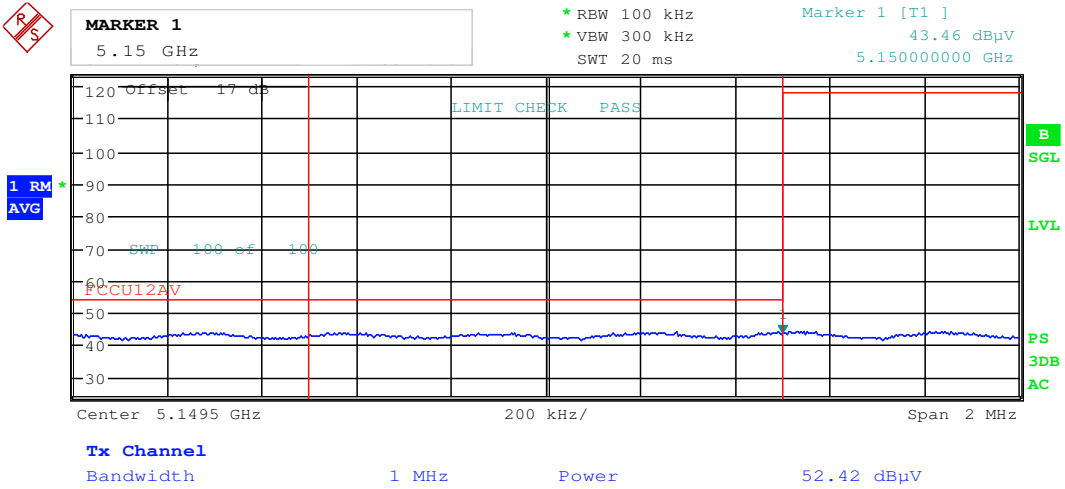
Date: 8.JAN.2016 20:06:12

Plot 7-237. Radiated Restricted Band Edge Plot with WCP

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 197 of 261	

7.7.9 Antenna-2 Radiated Band Edge Measurements (80MHz BW) §15.407(b.1)(b.2) §15.205 §15.209

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



Date: 24.DEC.2015 08:52:18

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

Note:

Per KDB 789033 Section II)G)3)d)ii, the Integration Method was used to determine compliance with the out-of-band emission limits.

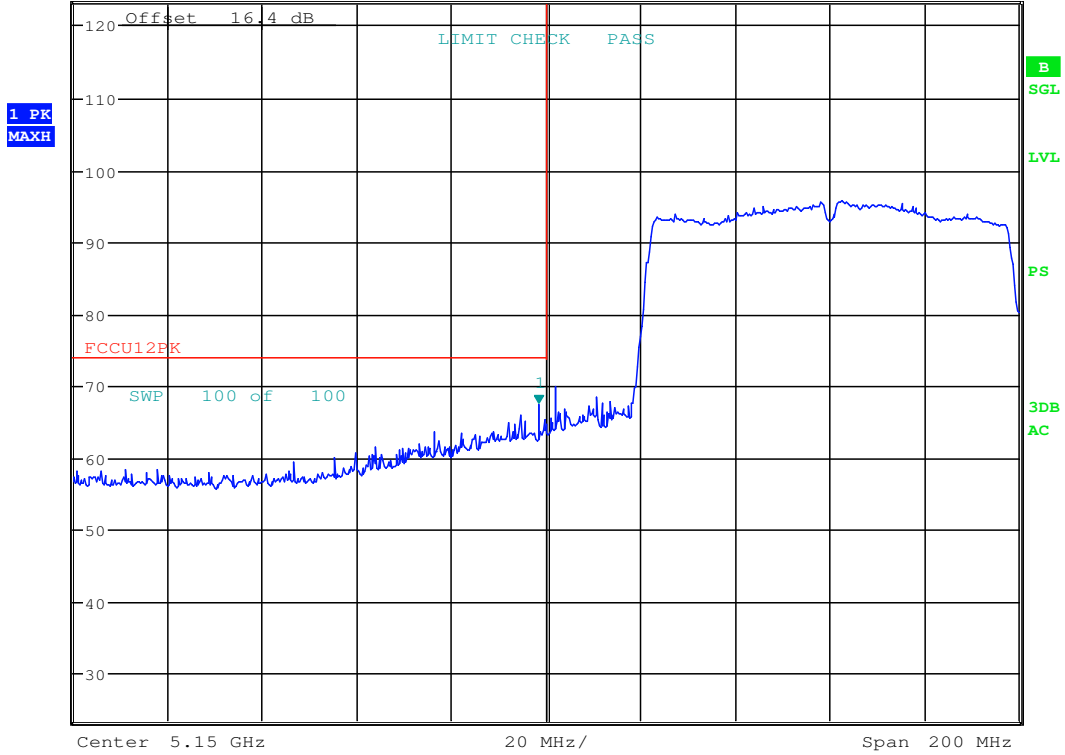
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 198 of 261	

Antenna-2 Radiated Band Edge Measurements (80MHz BW)
§15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
5.148397436 GHz
Ref 123.4 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 67.42 dBµV
SWT 20 ms 5.148397436 GHz



Date: 24.DEC.2015 08:53:49

Plot 7-239. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

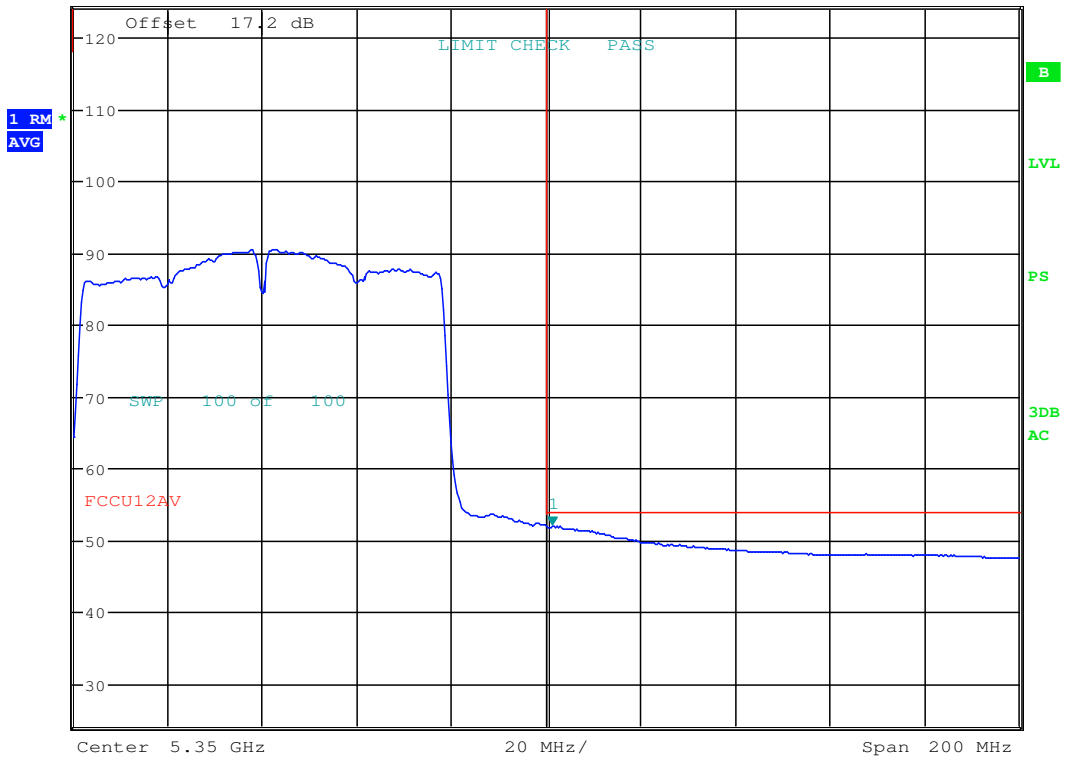
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 199 of 261

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



MARKER 1
 5.351282051 GHz
 Ref 124.2 dBµV *Att 0 dB
 *RBW 1 MHz Marker 1 [T1]
 *VBW 3 MHz 52.02 dBµV
 SWT 20 ms 5.351282051 GHz



Date: 24.DEC.2015 09:13:44

Plot 7-240. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

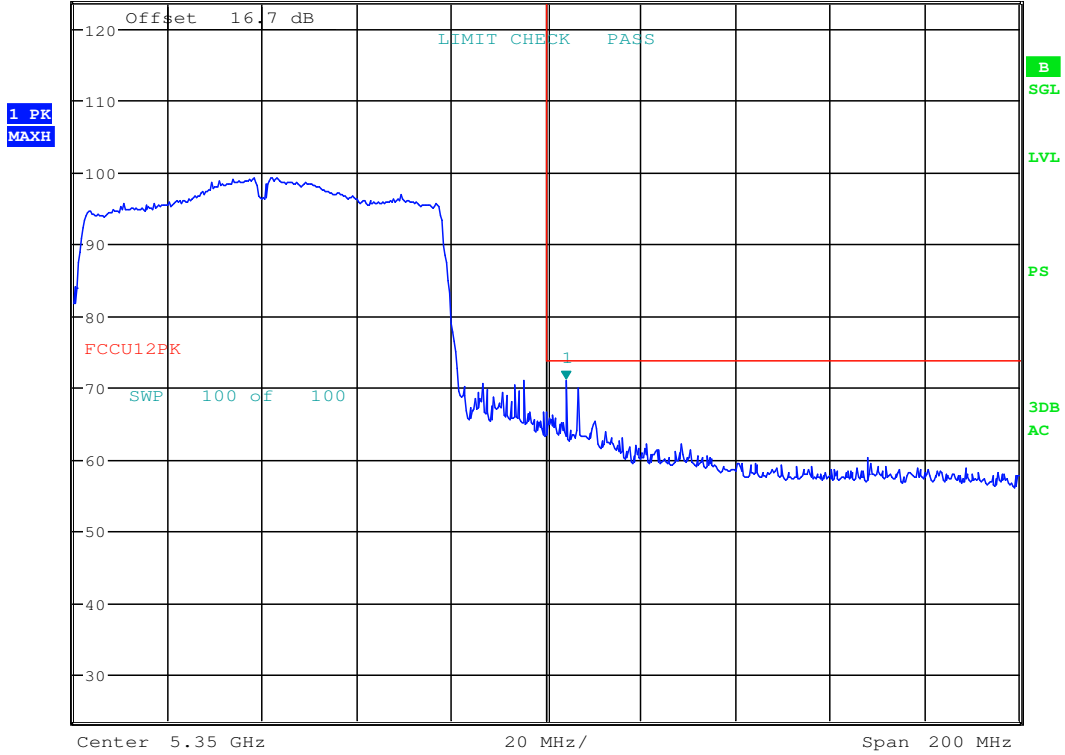
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 200 of 261	

Antenna-2 Radiated Band Edge Measurements (80MHz BW)
§15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
5.354166667 GHz
Ref 123.7 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 71.09 dBµV
SWT 20 ms 5.354166667 GHz



Date: 24.DEC.2015 09:14:46

Plot 7-241. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 201 of 261	

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

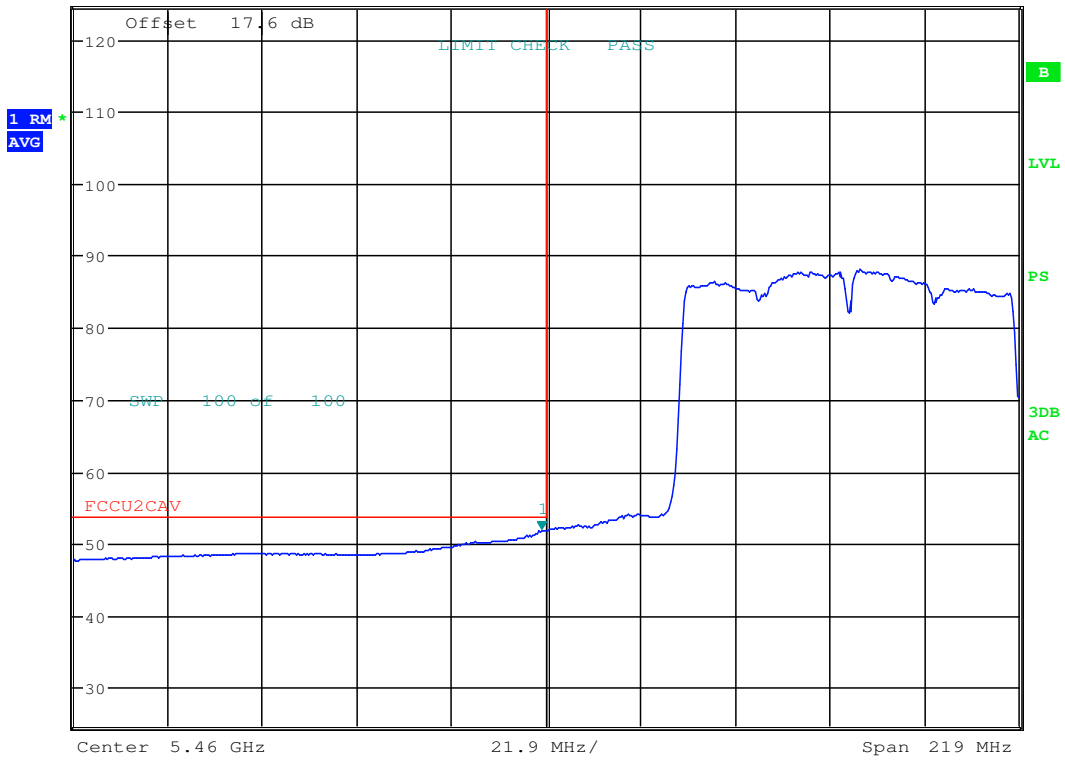
Channel: 106



MARKER 1
 5.458947115 GHz
 Ref 124.6 dBµV *Att 0 dB

*RBW 1 MHz
 *VBW 3 MHz
 SWT 20 ms

Marker 1 [T1]
 51.84 dBµV
 5.458947115 GHz



Date: 24.DEC.2015 10:03:54

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

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 202 of 261	

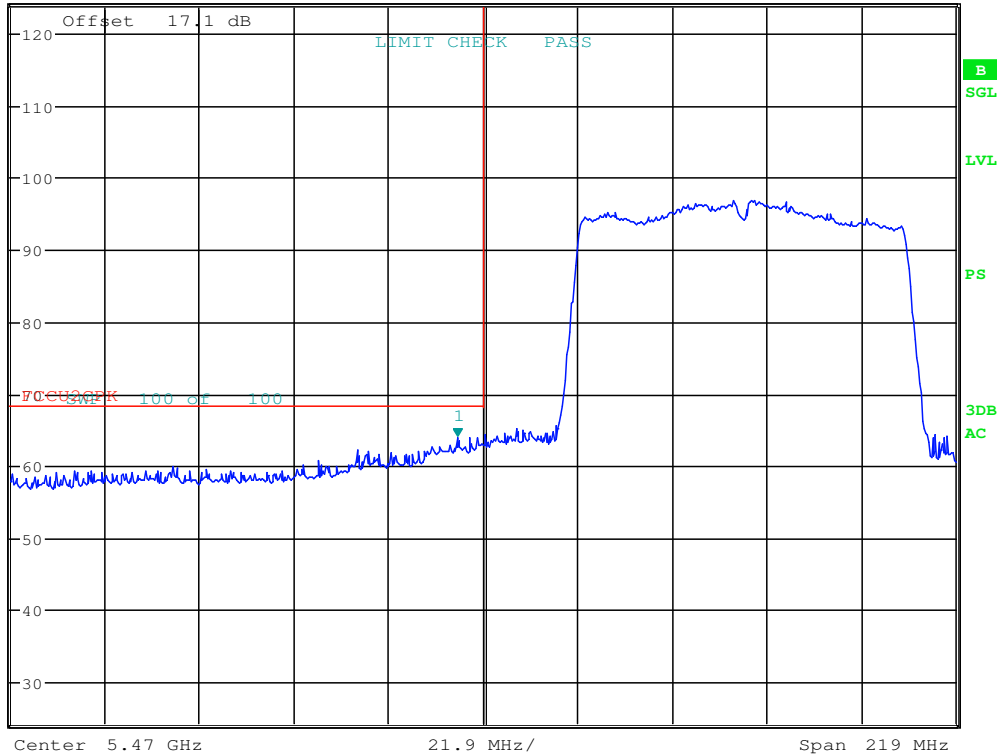
Antenna-2 Radiated Band Edge Measurements (80MHz BW) §15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
5.464033654 GHz
Ref 124.1 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 63.97 dBµV
SWT 20 ms 5.464033654 GHz

1 PK
MAXH



Date: 24.DEC.2015 10:04:57

Plot 7-243. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

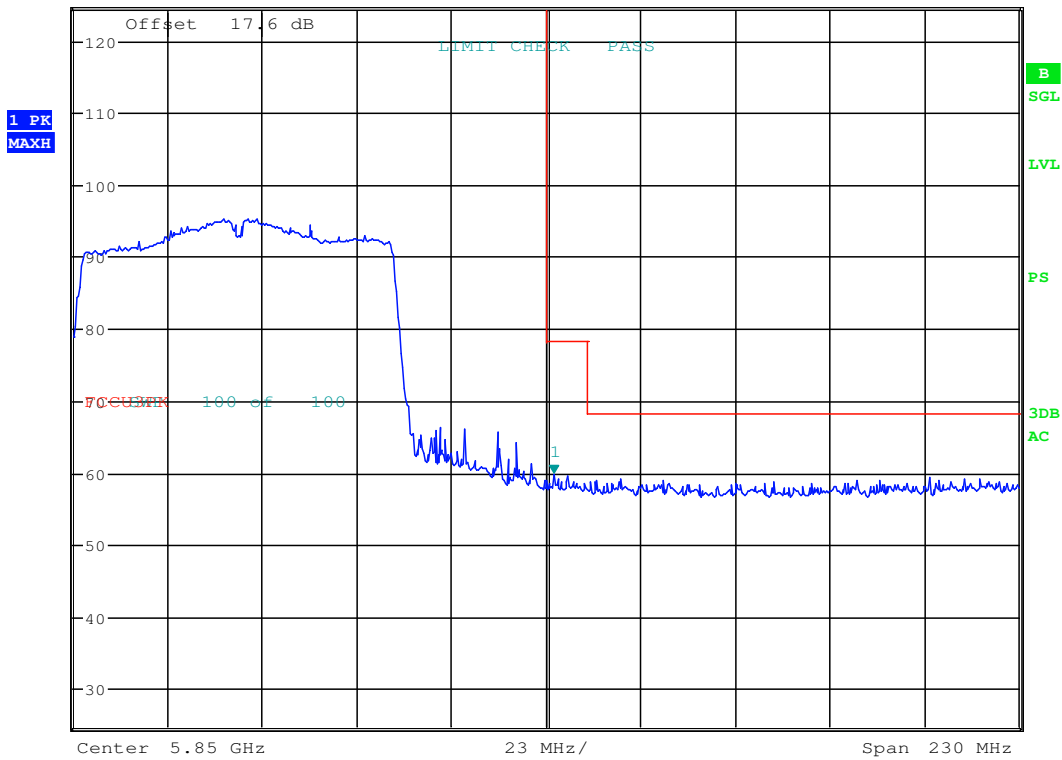
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 203 of 261	

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



MARKER 1
 5.851842949 GHz
 Ref 124.6 dBµV * Att 0 dB
 * RBW 1 MHz Marker 1 [T1]
 * VBW 3 MHz 59.74 dBµV
 SWT 20 ms 5.851842949 GHz



Date: 24.DEC.2015 10:14:49

Plot 7-244. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

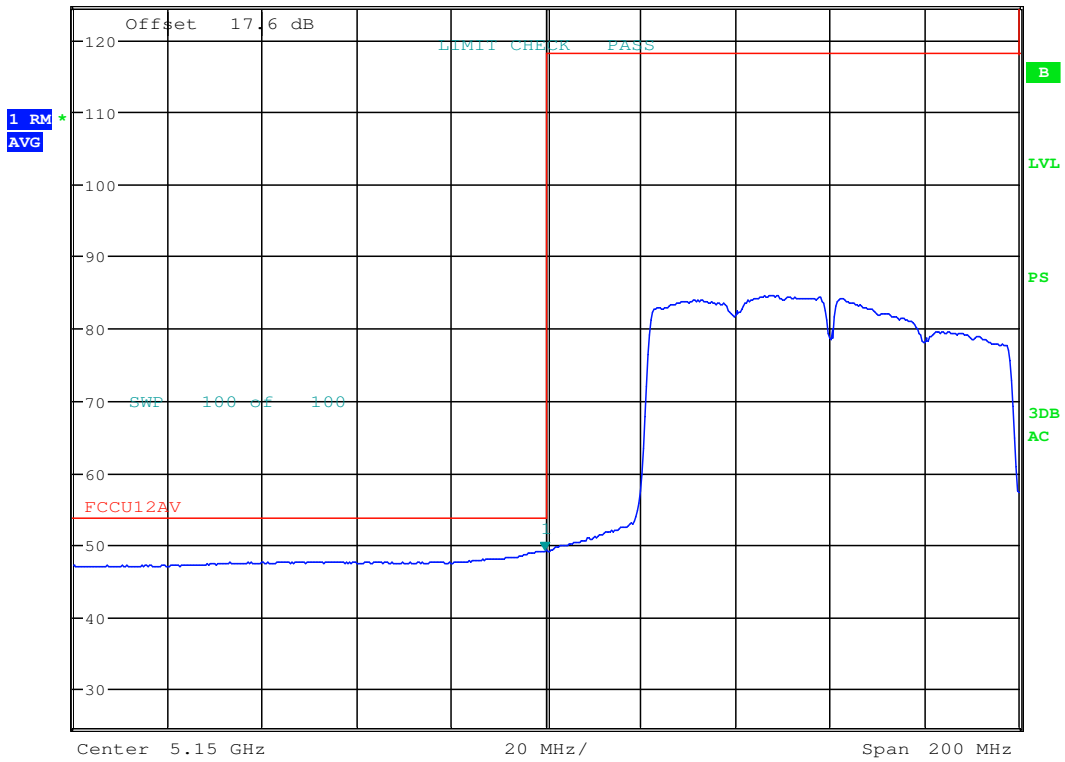
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 204 of 261	

Antenna-2 WCP Radiated Band Edge Measurements (80MHz BW)
§15.407(b.1)(b.2) §15.205 §15.209

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



MARKER 1
 5.149679487 GHz
 Ref 124.6 dBµV *Att 0 dB
 *RBW 1 MHz Marker 1 [T1]
 *VBW 3 MHz 49.17 dBµV
 SWT 20 ms 5.149679487 GHz



Date: 8.JAN.2016 20:13:13

Plot 7-245. Radiated Restricted Band Edge Plot with WCP

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 205 of 261

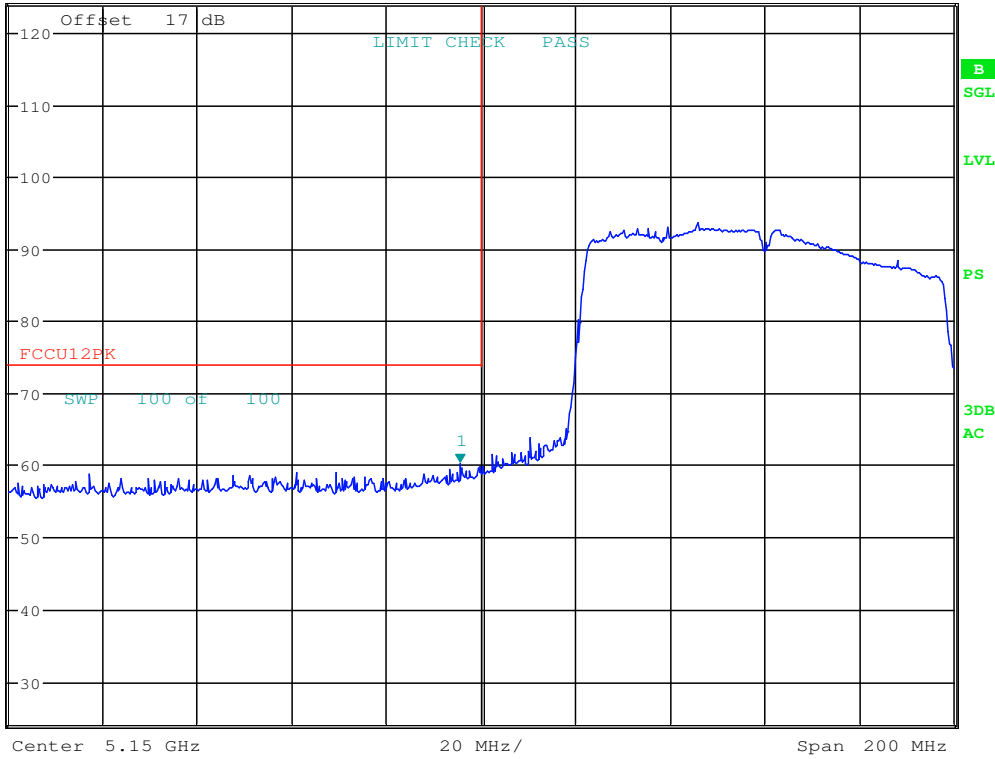
Antenna-2 WCP Radiated Band Edge Measurements (80MHz BW)
§15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
5.145512821 GHz
Ref 124 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1] 60.30 dBµV
*VBW 3 MHz 5.145512821 GHz
SWT 20 ms

1 PK
MAXH



Date: 8.JAN.2016 20:14:08

Plot 7-246. Radiated Restricted Band Edge Plot with WCP

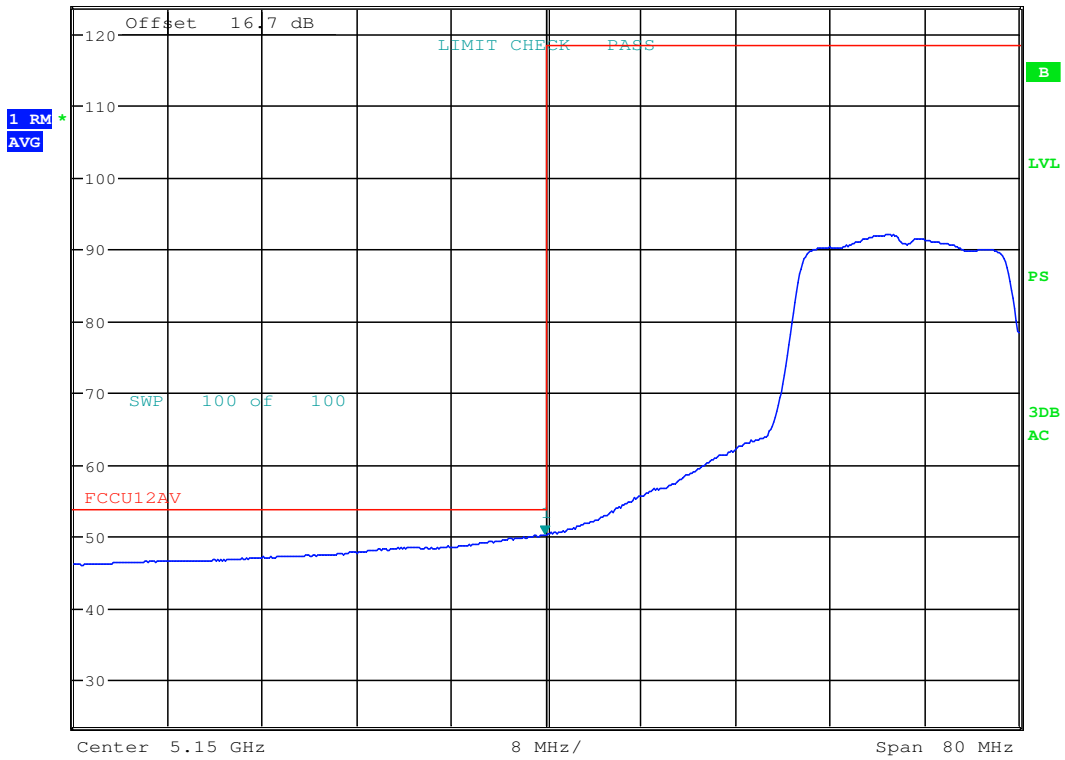
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 206 of 261	

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

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



MARKER 1
 5.149871795 GHz
 Ref 123.7 dBµV *Att 0 dB
 *RBW 1 MHz Marker 1 [T1]
 *VBW 3 MHz 50.38 dBµV
 SWT 20 ms 5.149871795 GHz



Date: 29.DEC.2015 10:22:59

Plot 7-247. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 207 of 261	

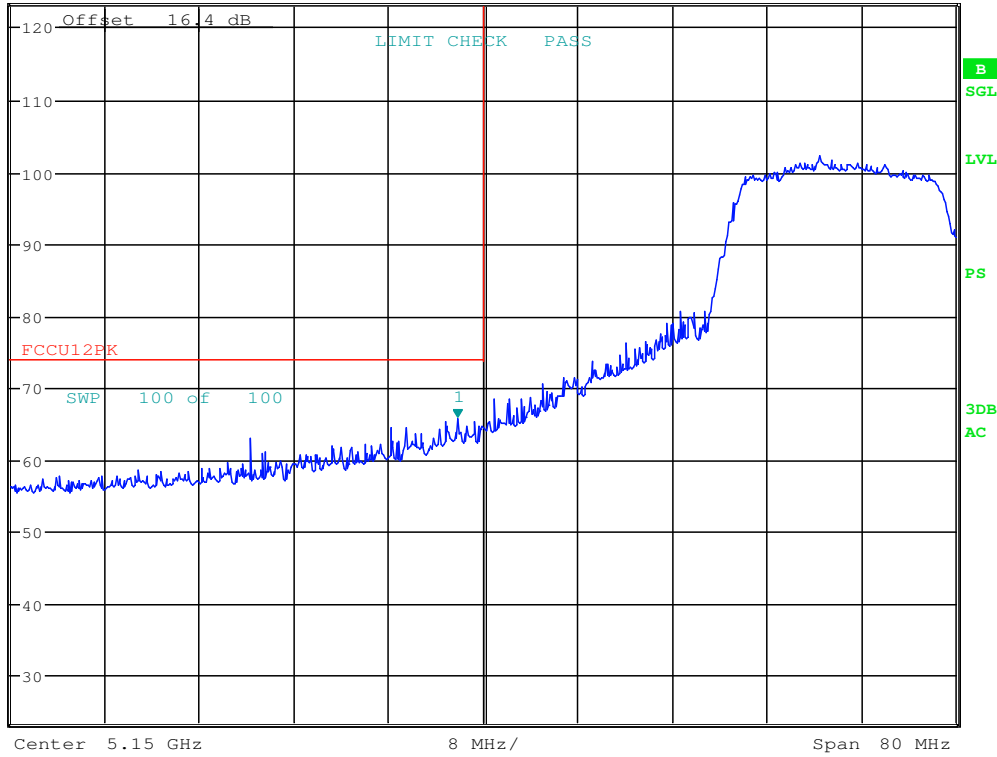
MIMO Radiated Band Edge Measurements (20MHz BW)
§15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
5.147820513 GHz
Ref 123.4 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1] 65.82 dBµV
*VBW 3 MHz
SWT 20 ms 5.147820513 GHz

1 PK
MAXH



Date: 29.DEC.2015 10:23:38

Plot 7-248. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 208 of 261	

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

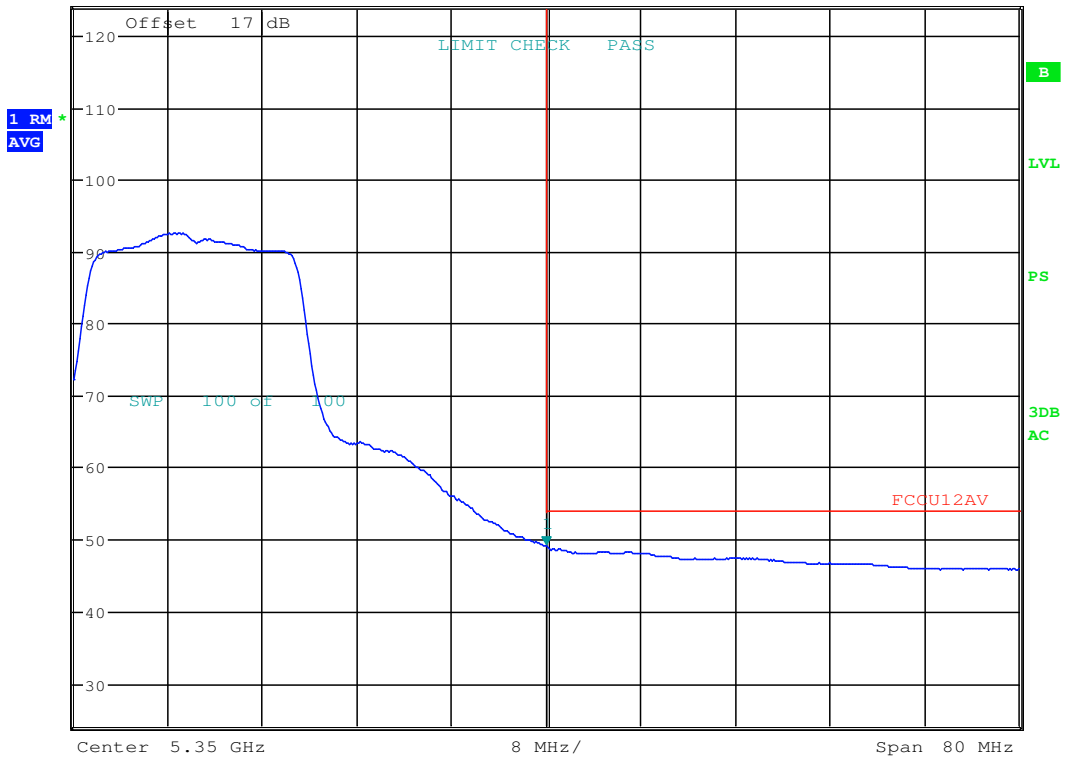
Distance of Measurements: 3 Meters

Operating Frequency: 5320MHz

Channel: 64



MARKER 1
 5.35 GHz
 Ref 124 dBµV *Att 0 dB
 *RBW 1 MHz *VBW 3 MHz
 Marker 1 [T1] 49.02 dBµV
 5.35000000 GHz
 SWT 20 ms



Date: 29.DEC.2015 11:21:48

Plot 7-249. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

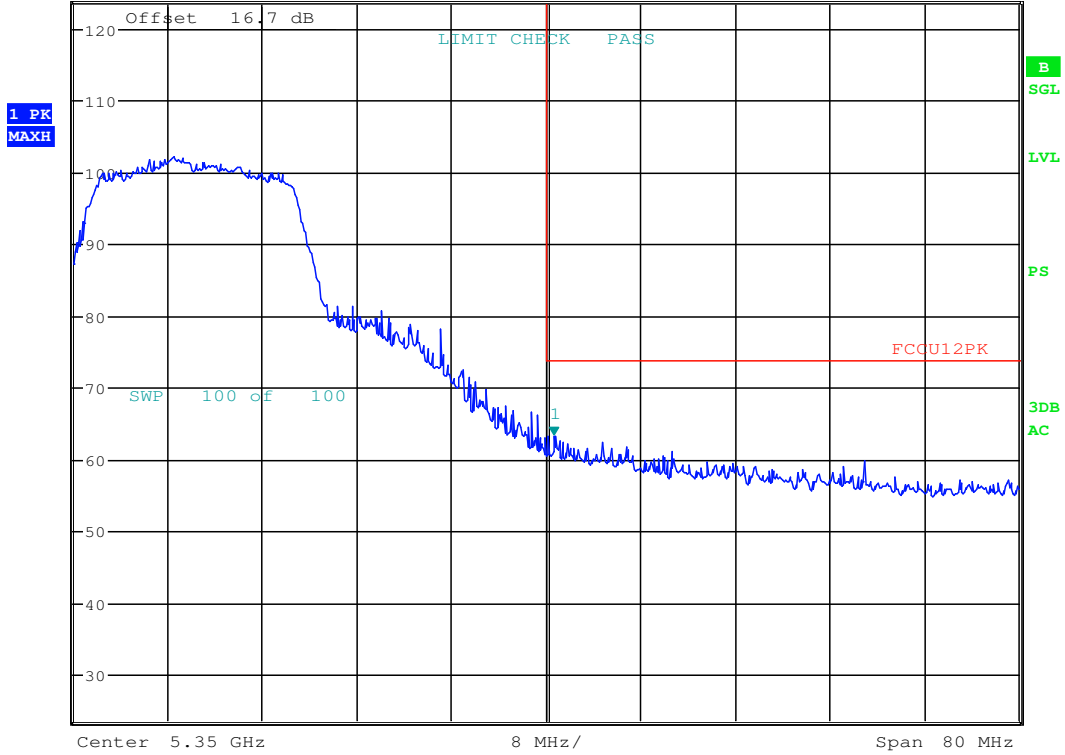
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 209 of 261

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





MARKER 1
5.350641026 GHz
Ref 123.7 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 63.35 dBµV
SWT 20 ms 5.350641026 GHz



Date: 29.DEC.2015 11:22:27

Plot 7-250. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

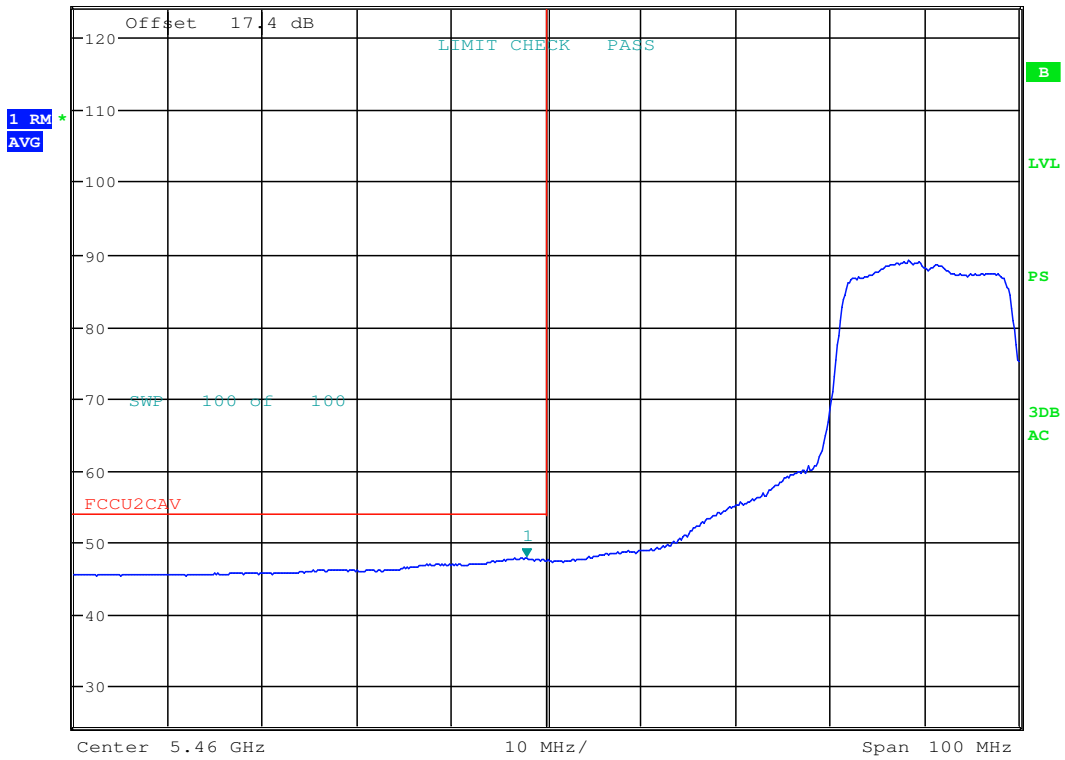
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 210 of 261	

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



MARKER 1
 5.457916667 GHz
 Ref 124.4 dBµV *Att 0 dB
 *RBW 1 MHz Marker 1 [T1]
 *VBW 3 MHz 47.76 dBµV
 SWT 20 ms 5.457916667 GHz



Date: 29.DEC.2015 11:37:56

Plot 7-251. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 211 of 261	

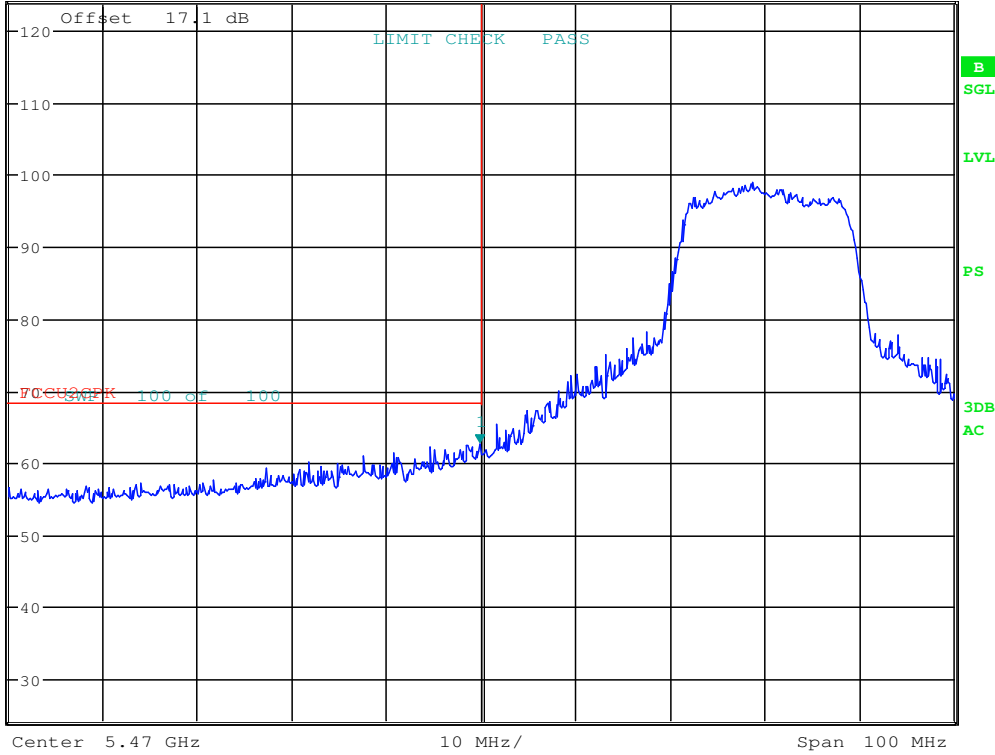
MIMO Radiated Band Edge Measurements (20MHz BW)
§15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
5.469839744 GHz
Ref 124.1 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 62.57 dBµV
SWT 20 ms 5.469839744 GHz

1 PK
MAXH



Date: 29.DEC.2015 11:38:38

Plot 7-252. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 212 of 261	

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

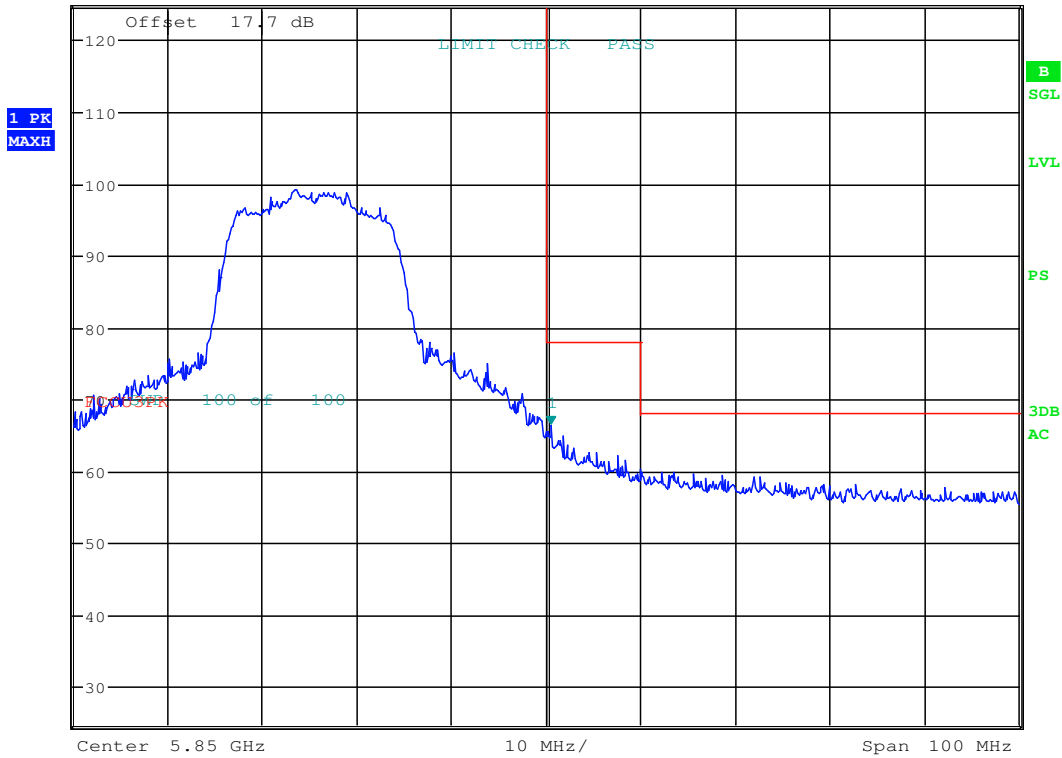
Distance of Measurements: 3 Meters

Operating Frequency: 5825MHz

Channel: 165



MARKER 1
 5.850480769 GHz
 Ref 124.7 dBµV * Att 0 dB
 * RBW 1 MHz
 * VBW 3 MHz
 SWT 20 ms
 Marker 1 [T1]
 66.39 dBµV
 5.850480769 GHz



Date: 29.DEC.2015 12:03:58

Plot 7-253. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

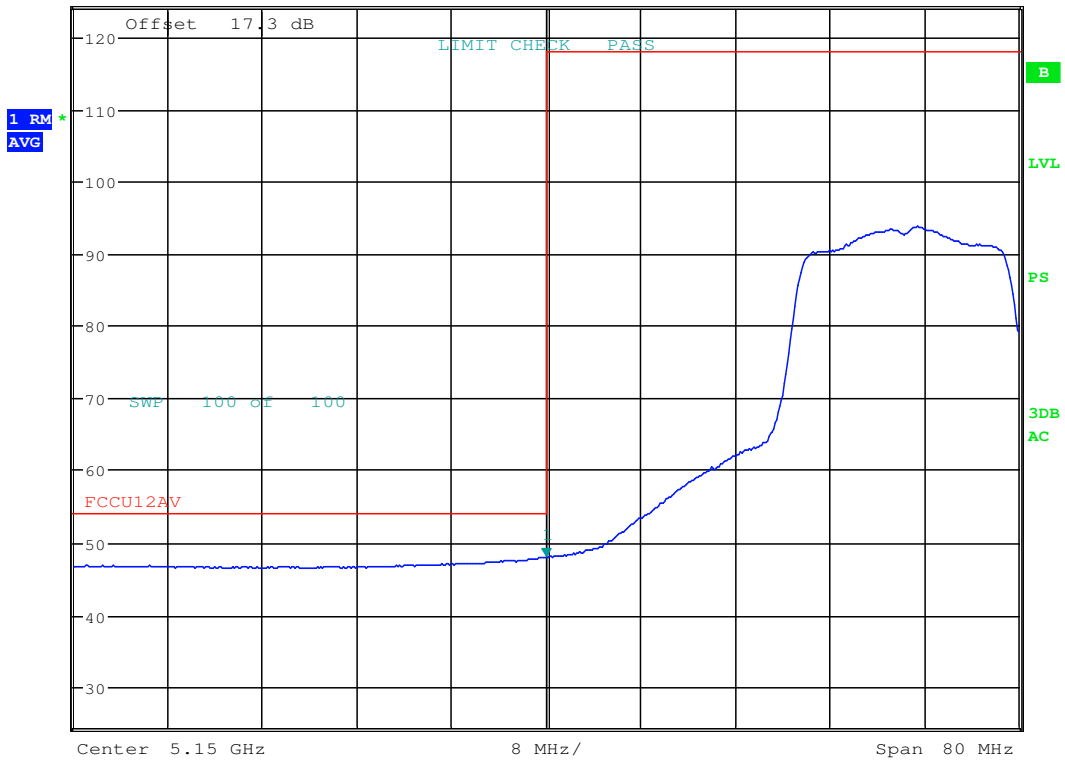
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 213 of 261

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

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



MARKER 1
 5.15 GHz
 Ref 124.3 dBµV *Att 0 dB
 *RBW 1 MHz Marker 1 [T1]
 *VBW 3 MHz 47.99 dBµV
 SWT 20 ms 5.15000000 GHz



Date: 8.JAN.2016 20:29:08

Plot 7-254. Radiated Restricted Band Edge Plot with WCP

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 214 of 261	

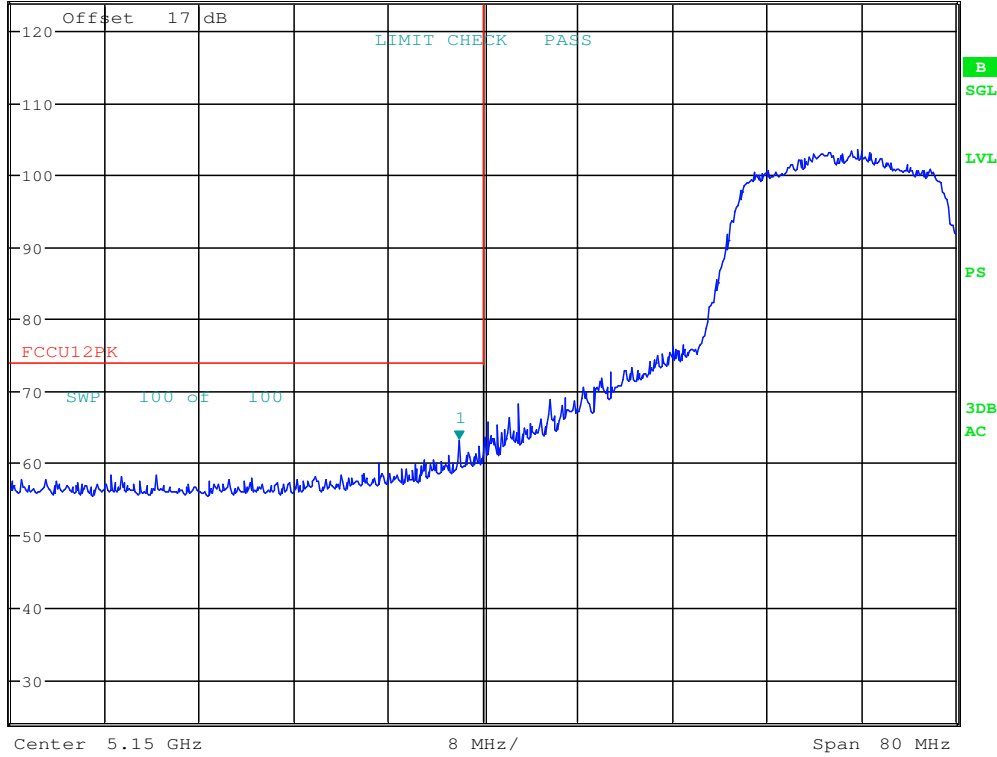
MIMO WCP Radiated Band Edge Measurements (20MHz BW)
§15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
5.147948718 GHz
Ref 124 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 63.19 dBµV
SWT 20 ms 5.147948718 GHz

1 PK
MAXH



Date: 8.JAN.2016 20:29:42

Plot 7-255. Radiated Restricted Band Edge Plot with WCP

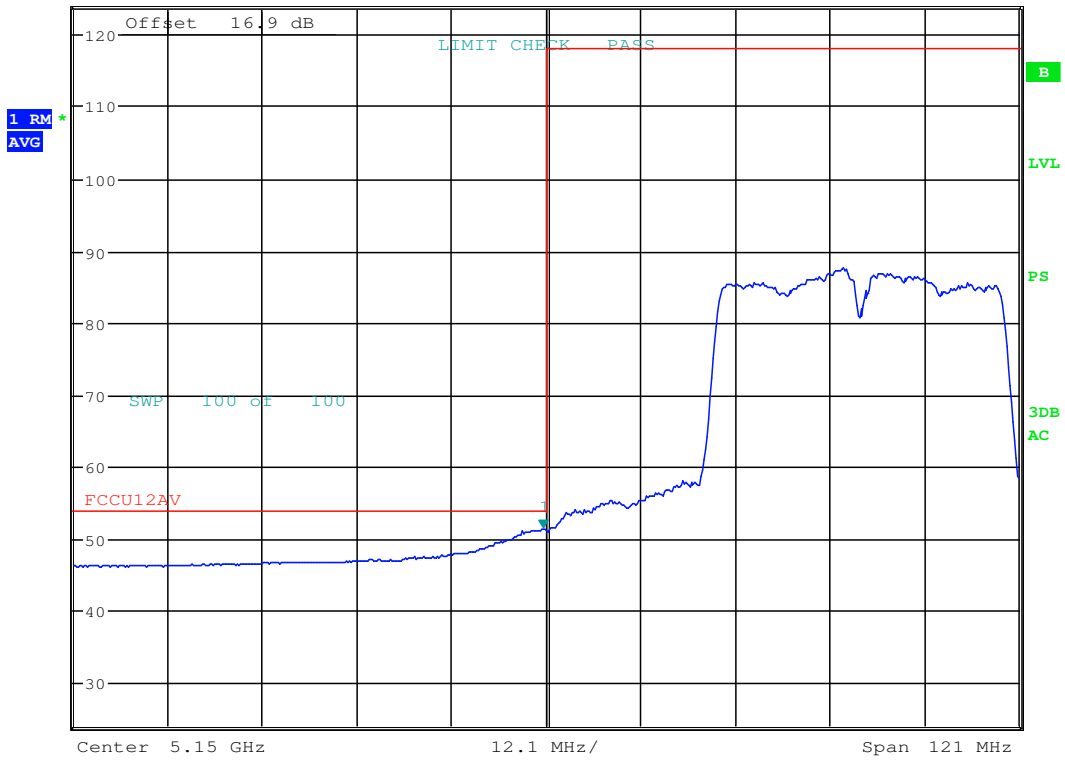
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 215 of 261

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

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



MARKER 1
 5.149612179 GHz
 Ref 123.9 dBµV *Att 0 dB
 *RBW 1 MHz *VBW 3 MHz
 SWT 20 ms
 Marker 1 [T1]
 51.35 dBµV
 5.149612179 GHz



Date: 29.DEC.2015 11:07:36

Plot 7-256. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

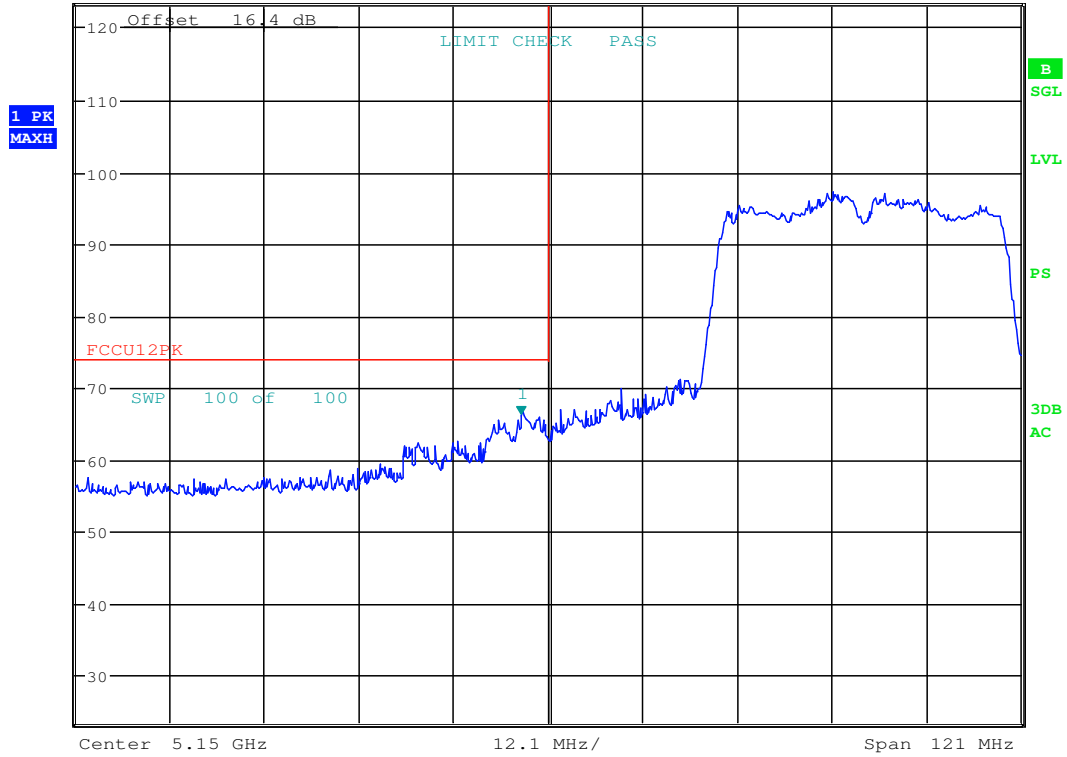
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 216 of 261	

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



MARKER 1
5.146509615 GHz
Ref 123.4 dBµV *Att 0 dB

*RBW 1 MHz *VBW 3 MHz SWT 20 ms
Marker 1 [T1] 66.23 dBµV
5.146509615 GHz



Date: 29.DEC.2015 11:08:06

Plot 7-257. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

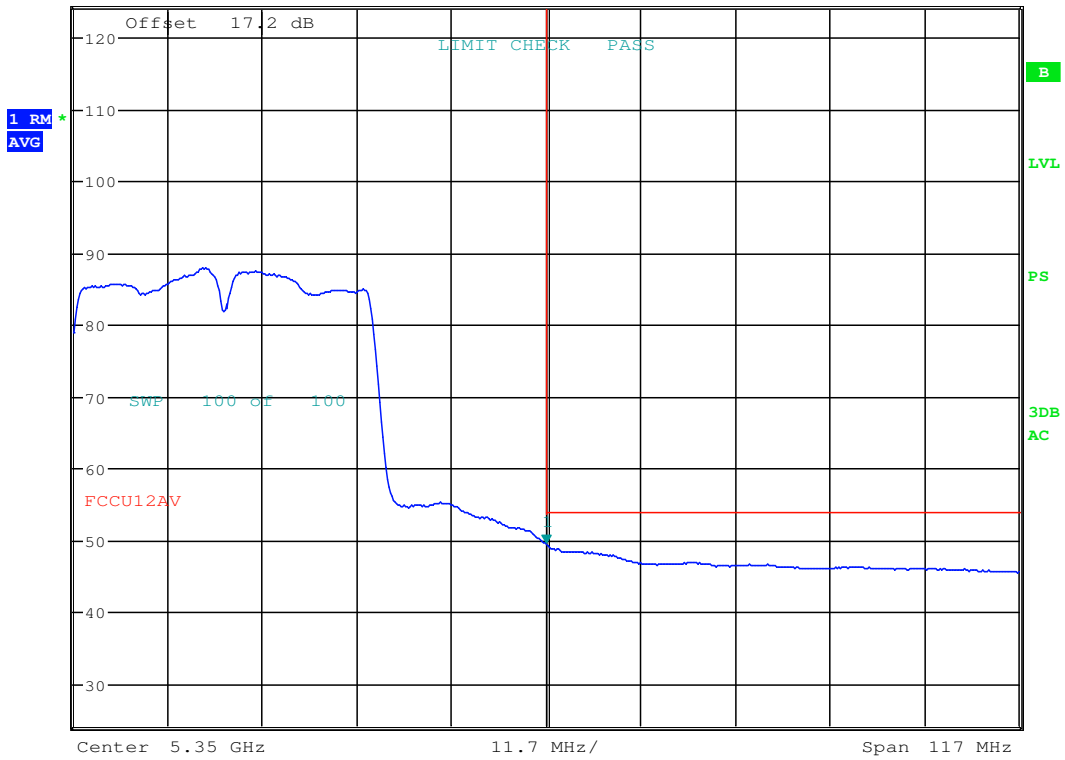
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 217 of 261	

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



MARKER 1
 5.35 GHz
 Ref 124.2 dBµV *Att 0 dB
 *RBW 1 MHz Marker 1 [T1]
 *VBW 3 MHz 49.45 dBµV
 SWT 20 ms 5.35000000 GHz



Date: 29.DEC.2015 11:29:44

Plot 7-258. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

FCC ID: A3LSMG930X	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 218 of 261	

MIMO Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

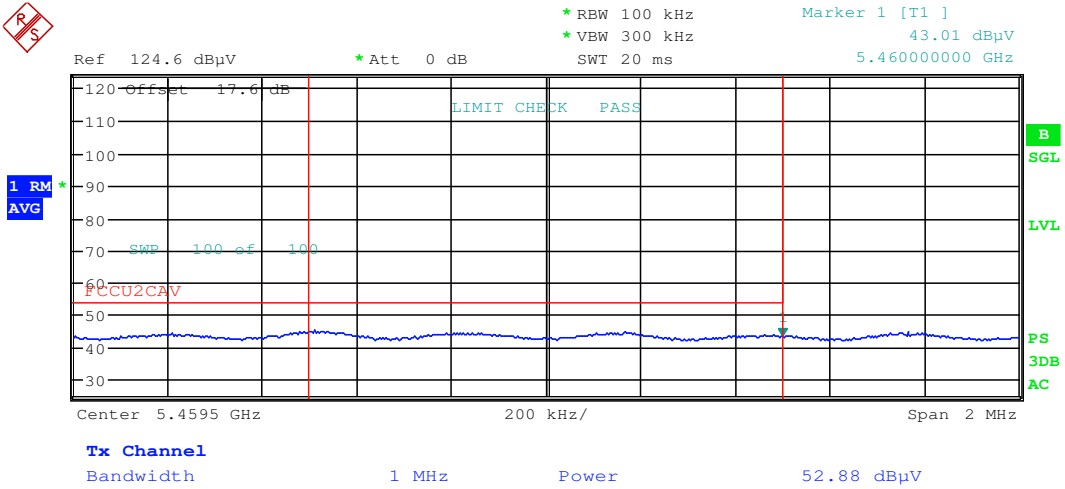
Worst Case Mode: 802.11n (40MHz)

Worst Case Transfer Rate: MCS8

Distance of Measurements: 3 Meters

Operating Frequency: 5510MHz

Channel: 102



Date: 29.DEC.2015 11:42:28

Plot 7-260. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

Note:

Per KDB 789033 Section II)G)3)d)ii, the Integration Method was used to determine compliance with the out-of-band emissions limits.

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 220 of 261	

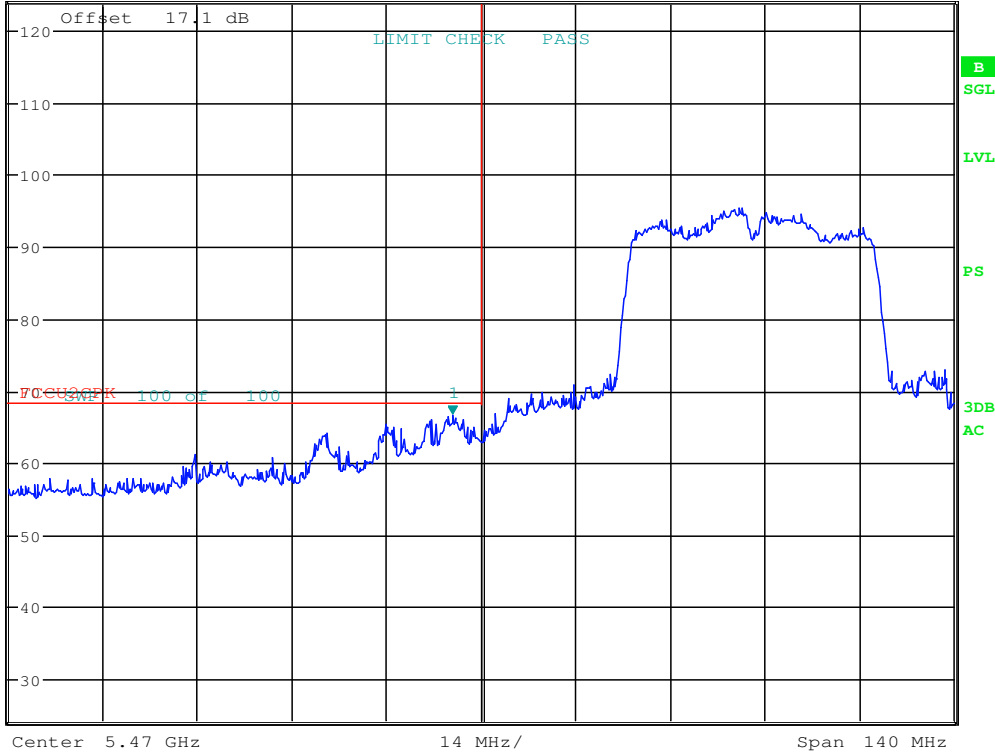
MIMO Radiated Band Edge Measurements (40MHz BW)
§15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
5.465737179 GHz
Ref 124.1 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 66.71 dBµV
SWT 20 ms 5.465737179 GHz

1 PK
MAXH



Date: 29.DEC.2015 11:48:42

Plot 7-261. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 221 of 261	

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

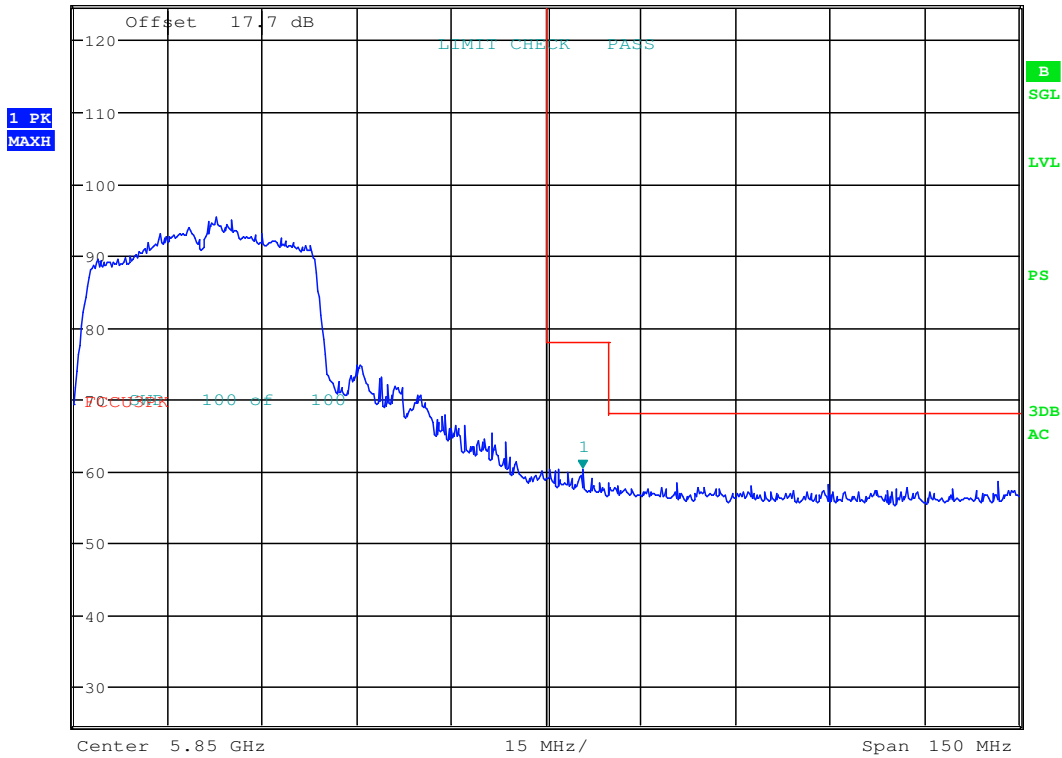
Distance of Measurements: 3 Meters

Operating Frequency: 5795MHz

Channel: 159



MARKER 1
 5.855769231 GHz
 Ref 124.7 dBµV * Att 0 dB
 * RBW 1 MHz Marker 1 [T1]
 * VBW 3 MHz 60.37 dBµV
 SWT 20 ms 5.855769231 GHz



Date: 29.DEC.2015 12:05:26

Plot 7-262. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

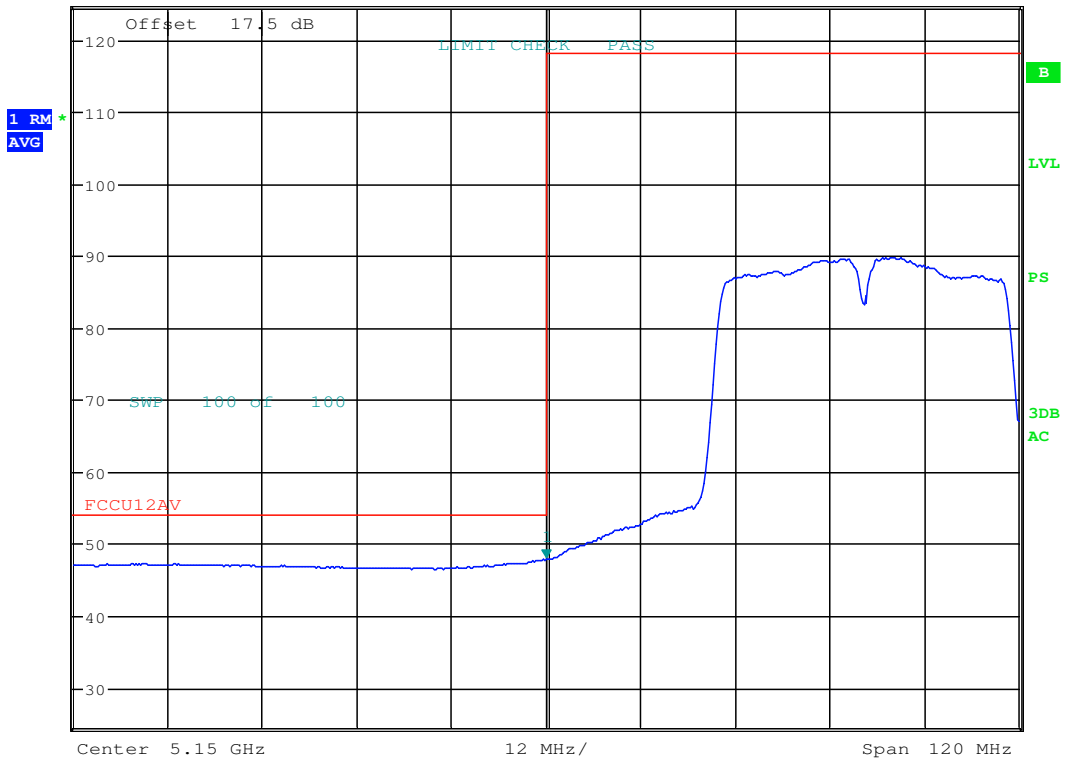
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 222 of 261

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

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



MARKER 1
 5.15 GHz
 Ref 124.5 dBµV *Att 0 dB
 *RBW 1 MHz Marker 1 [T1]
 *VBW 3 MHz 47.90 dBµV
 SWT 20 ms 5.15000000 GHz



Date: 8.JAN.2016 20:32:34

Plot 7-263. Radiated Restricted Band Edge Plot with WCP

<p>FCC ID: A3LSMG930X</p>		<p>FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)</p>	<p>Reviewed by: Quality Manager</p>
<p>Test Report S/N: 0Y1601060064.A3L</p>	<p>Test Dates: 12/22/2015-1/15/2016, 1/15/2016</p>	<p>EUT Type: Portable Handset</p>	<p>Page 223 of 261</p>

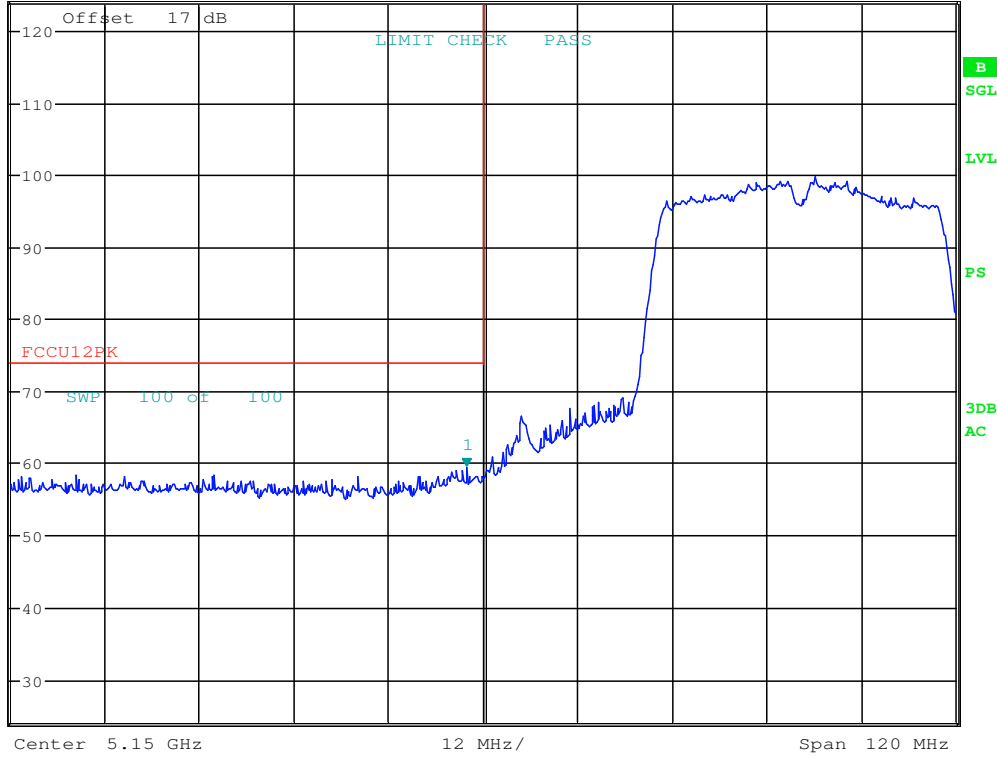
MIMO WCP Radiated Band Edge Measurements (40MHz BW)
§15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
5.147884615 GHz
Ref 124 dBµV *Att 0 dB



*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 59.36 dBµV
SWT 20 ms 5.147884615 GHz

1 PK
MAXH



Date: 8.JAN.2016 20:33:11

Plot 7-264. Radiated Restricted Band Edge Plot with WCP

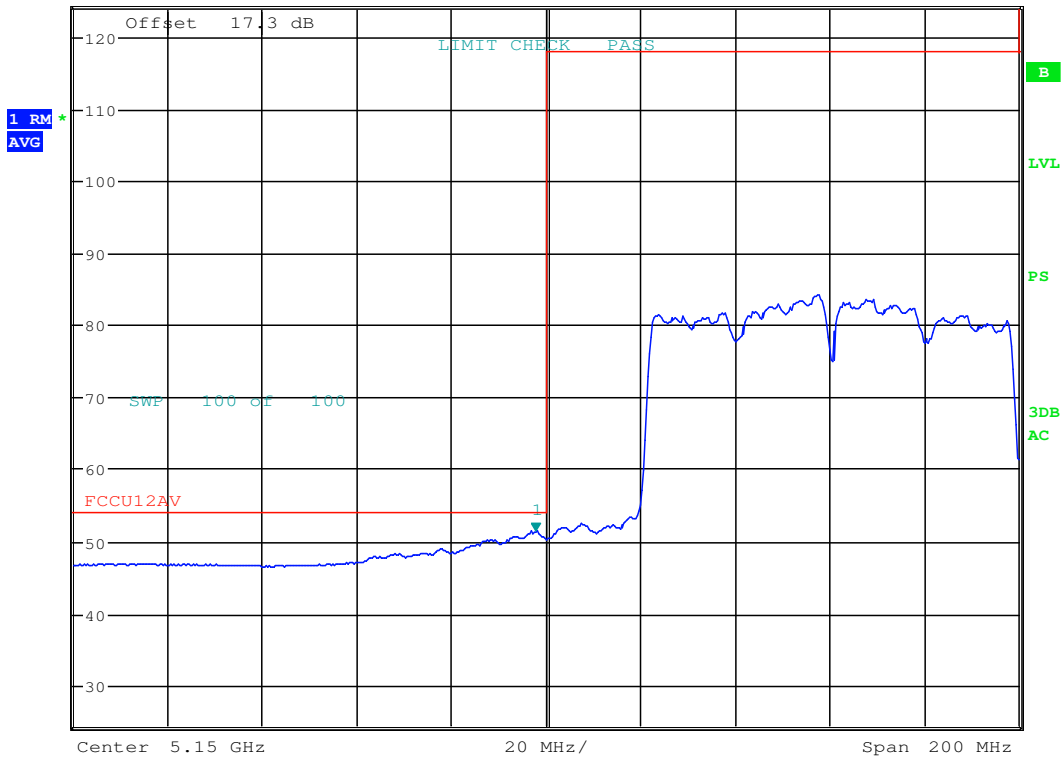
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 224 of 261	

7.7.12 MIMO Radiated Band Edge Measurements (80MHz BW) §15.407(b.1)(b.2) §15.205 §15.209

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



MARKER 1
 5.14775641 GHz *RBW 1 MHz Marker 1 [T1]
 Ref 124.3 dBµV *Att 0 dB *VBW 3 MHz 51.39 dBµV
 SWT 20 ms 5.147756410 GHz



Date: 29.DEC.2015 11:13:55

Plot 7-265. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

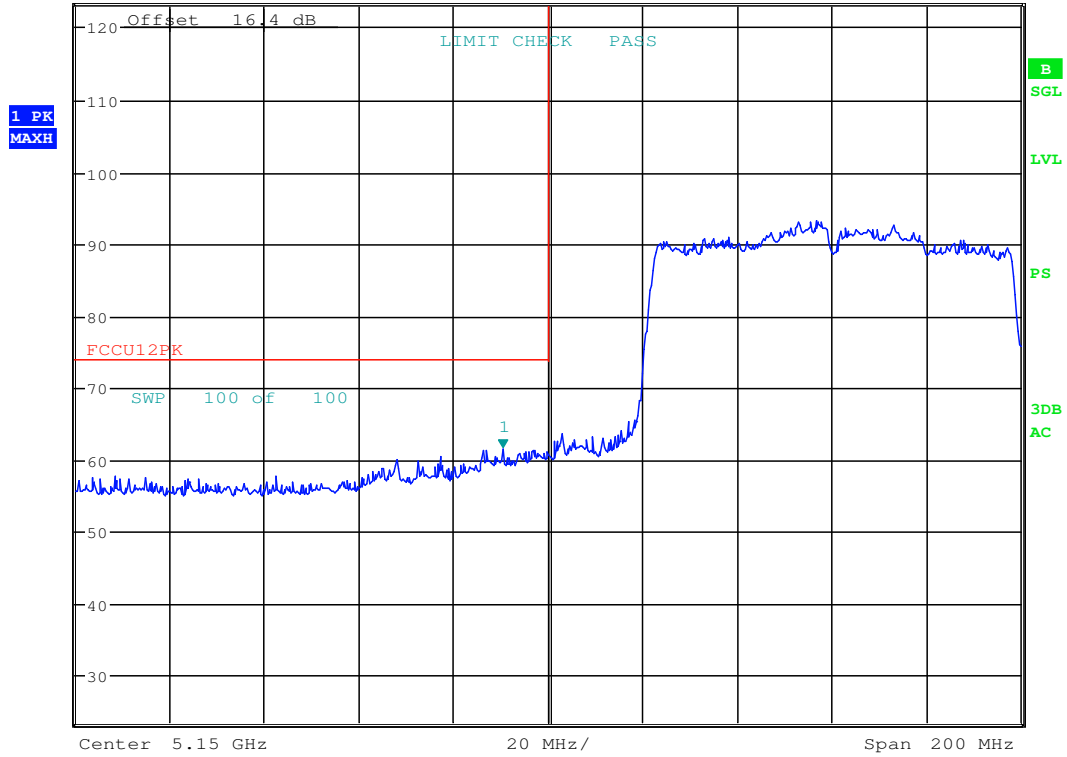
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 225 of 261	

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



MARKER 1
5.140384615 GHz
Ref 123.4 dBµV *Att 0 dB

*RBW 1 MHz *VBW 3 MHz SWT 20 ms
Marker 1 [T1] 61.53 dBµV
5.140384615 GHz



Date: 29.DEC.2015 11:14:43

Plot 7-266. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 226 of 261	

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

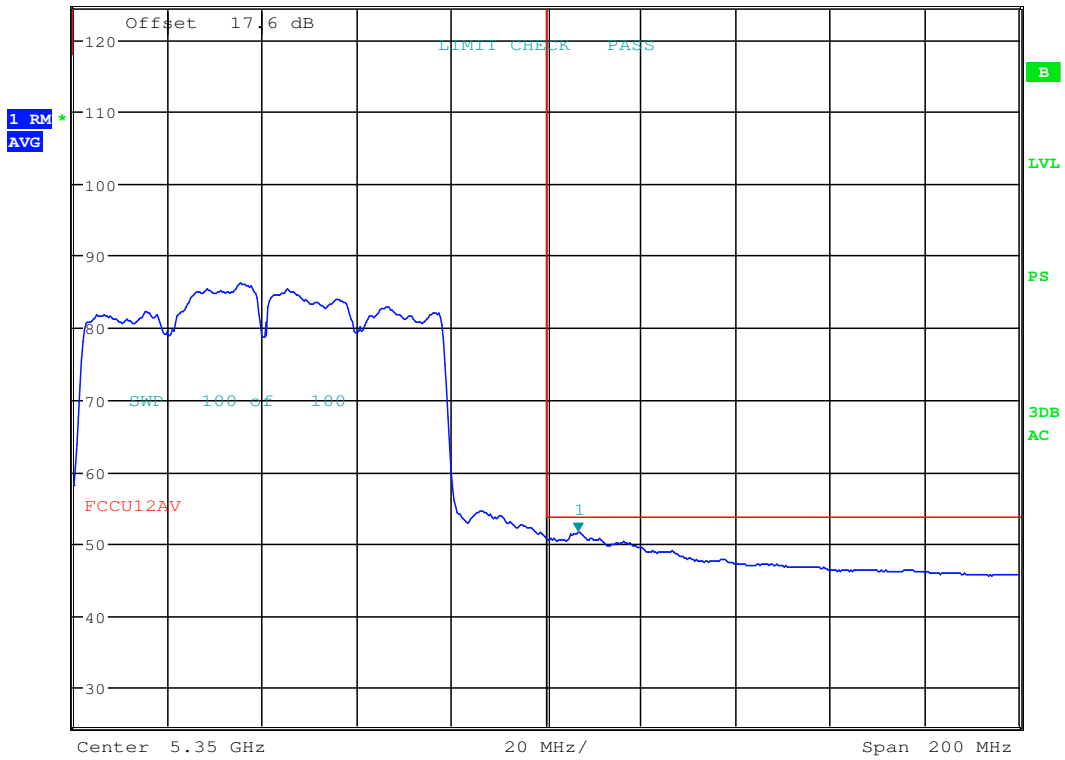
Channel: 58



MARKER 1
 5.356730769 GHz
 Ref 124.6 dBµV *Att 0 dB

*RBW 1 MHz
 *VBW 3 MHz
 SWT 20 ms

Marker 1 [T1]
 51.65 dBµV
 5.356730769 GHz



Date: 29.DEC.2015 11:32:20

Plot 7-267. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

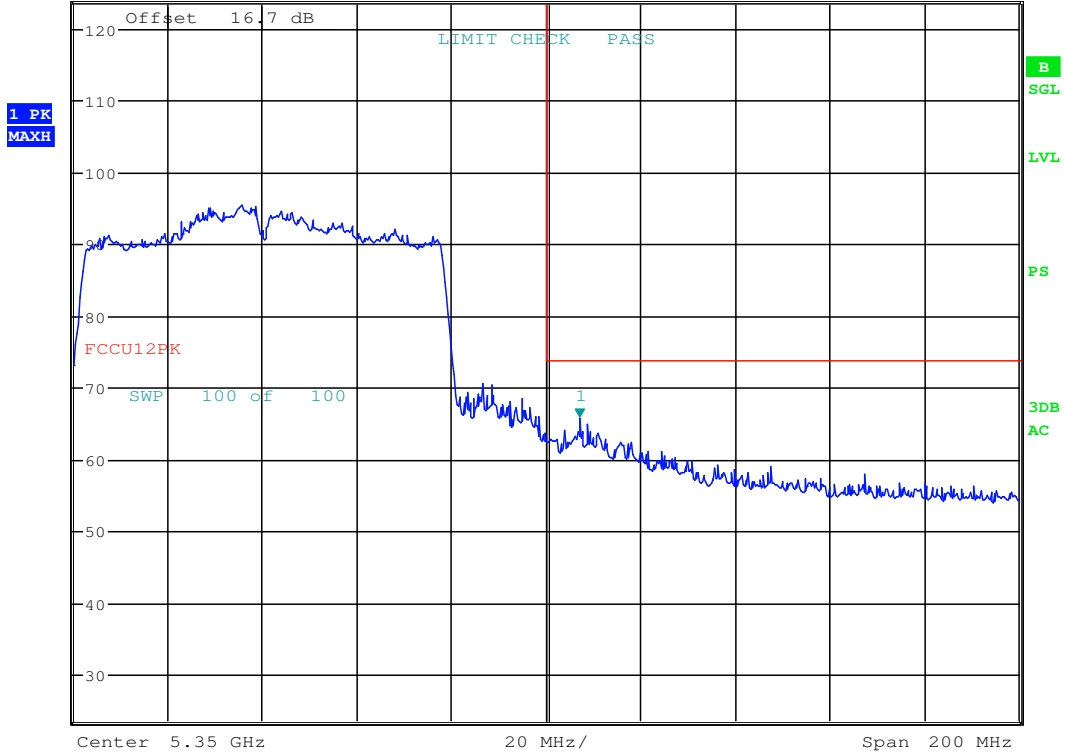
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 227 of 261

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



MARKER 1
5.357051282 GHz
Ref 123.7 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 65.84 dBµV
SWT 20 ms 5.357051282 GHz



Date: 29.DEC.2015 11:33:00

Plot 7-268. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 228 of 261	

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

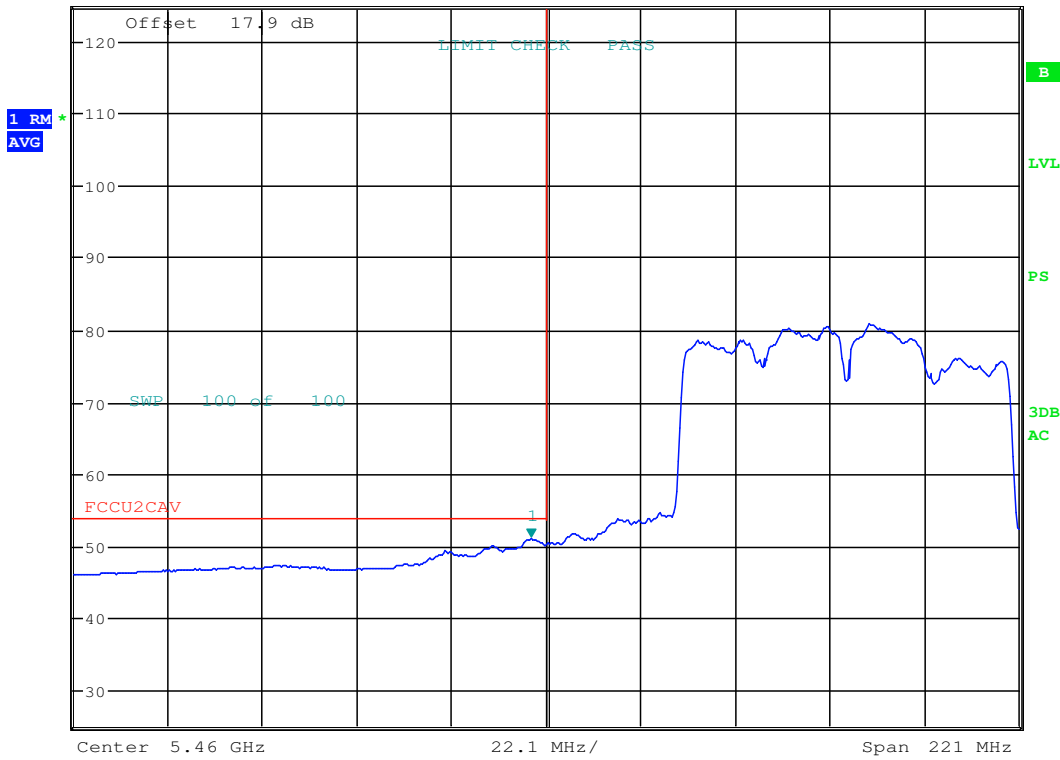
Channel: 106



MARKER 1
 5.456458333 GHz
 Ref 124.9 dBµV *Att 0 dB

*RBW 1 MHz
 *VBW 3 MHz
 SWT 20 ms

Marker 1 [T1]
 51.07 dBµV
 5.456458333 GHz



Date: 29.DEC.2015 11:58:09

Plot 7-269. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 229 of 261	

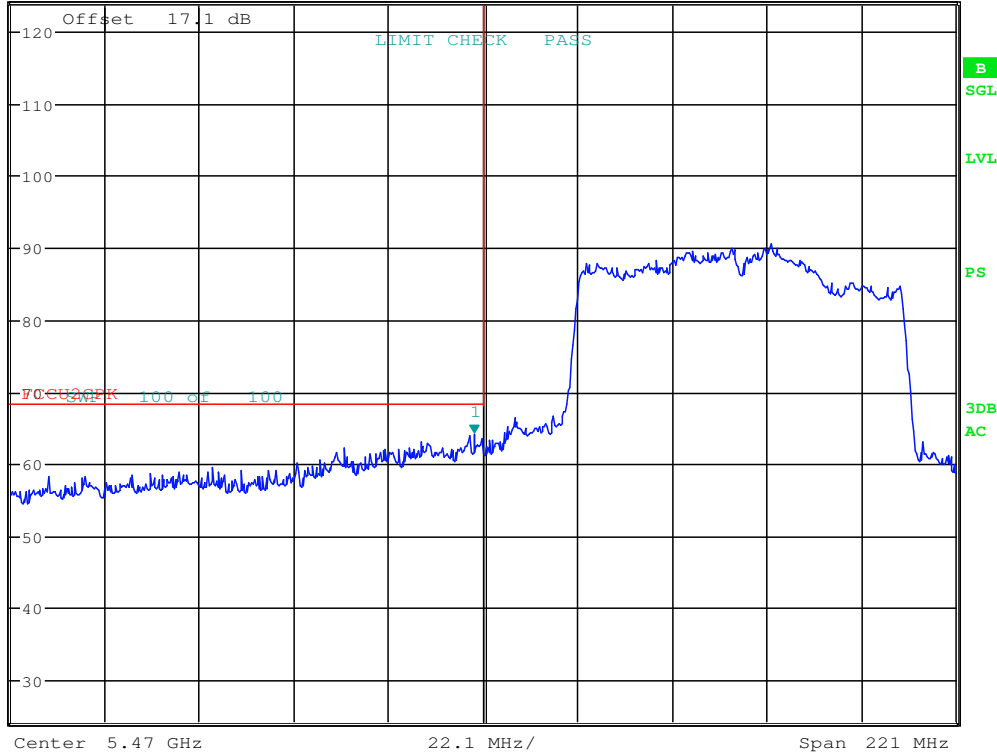
MIMO Radiated Band Edge Measurements (80MHz BW)
§15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
5.467875 GHz
Ref 124.1 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 64.08 dBµV
SWT 20 ms 5.467875000 GHz

1 PK
MAXH



Date: 29.DEC.2015 11:58:52

Plot 7-270. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 230 of 261	

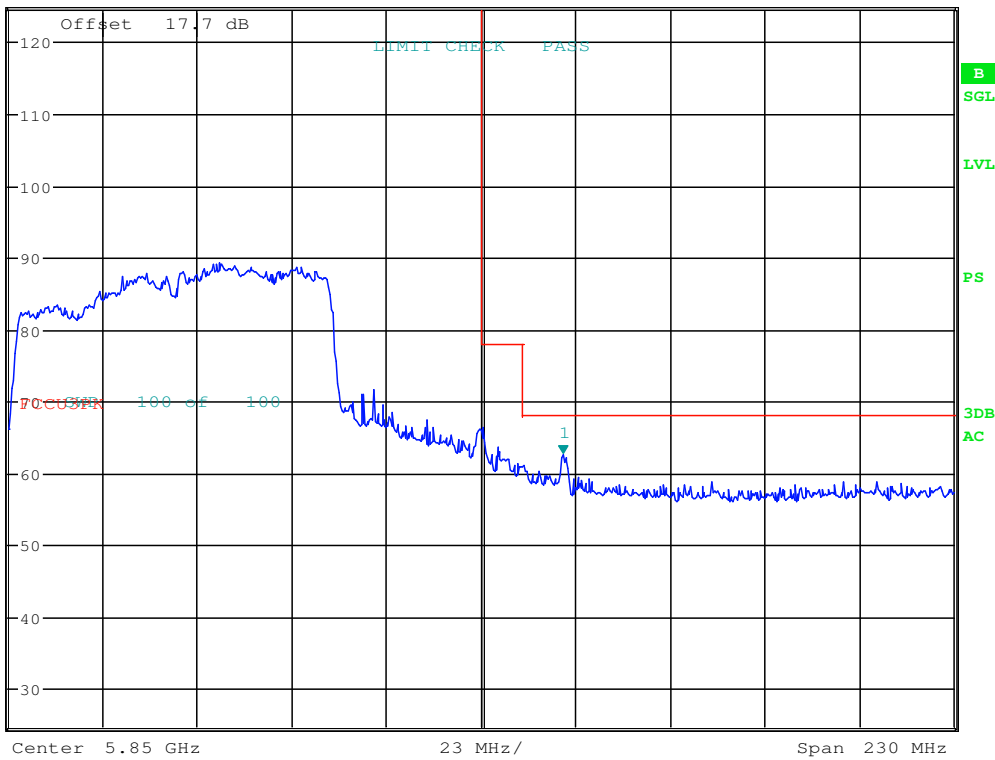
MIMO Radiated Band Edge Measurements (80MHz BW)
§15.407(b.1)(b.2) §15.205 §15.209

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



MARKER 1
 5.869903846 GHz
 * RBW 1 MHz
 * VBW 3 MHz
 Ref 124.7 dBµV * Att 0 dB SWT 20 ms
 Marker 1 [T1]
 62.68 dBµV
 5.869903846 GHz

1 PK
MAXH



Date: 29.DEC.2015 12:07:21

Plot 7-271. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

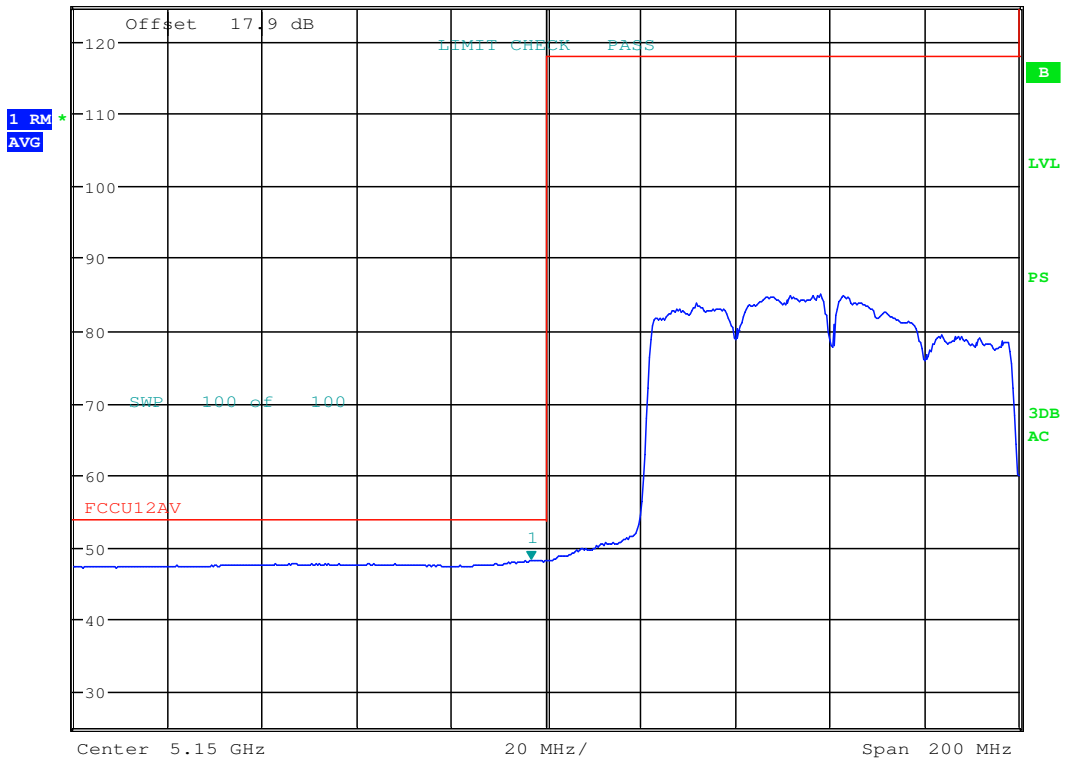
FCC ID: A3LSMG930X	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 231 of 261

MIMO WCP Radiated Band Edge Measurements (80MHz BW)
§15.407(b.1)(b.2) §15.205 §15.209

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



MARKER 1
 5.146794872 GHz
 Ref 124.9 dBµV *Att 0 dB
 *RBW 1 MHz Marker 1 [T1]
 *VBW 3 MHz 48.16 dBµV
 SWT 20 ms 5.146794872 GHz



Date: 8.JAN.2016 20:35:49

Plot 7-272. Radiated Restricted Band Edge Plot with WCP

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 232 of 261	

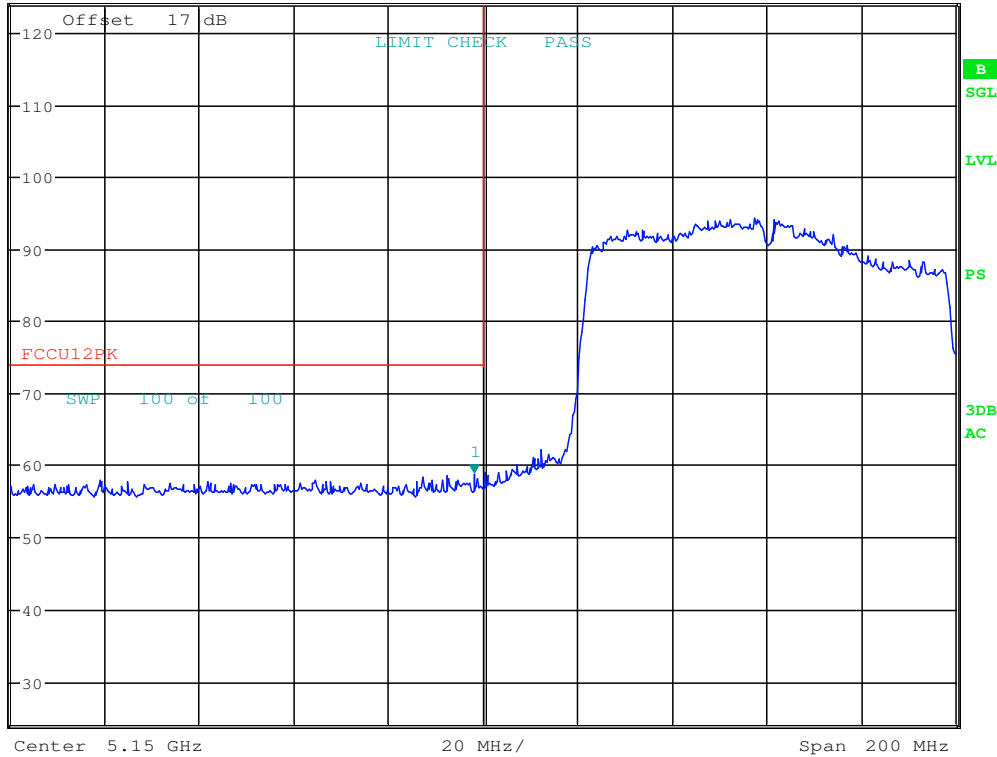
MIMO WCP Radiated Band Edge Measurements (80MHz BW)
§15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
5.148076923 GHz
Ref 124 dBµV *Att 0 dB

*RBW 1 MHz *VBW 3 MHz SWT 20 ms
Marker 1 [T1] 58.67 dBµV
5.148076923 GHz

1 PK
MAXH



Date: 8.JAN.2016 20:36:31

Plot 7-273. Radiated Restricted Band Edge Plot with WCP

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 233 of 261	

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 7-63 per Section 15.209.

Frequency	Field Strength [μ 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 7-63. Radiated Limits



Test Procedures Used

ANSI C63.10-2013

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

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 234 of 261	

Test Setup

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

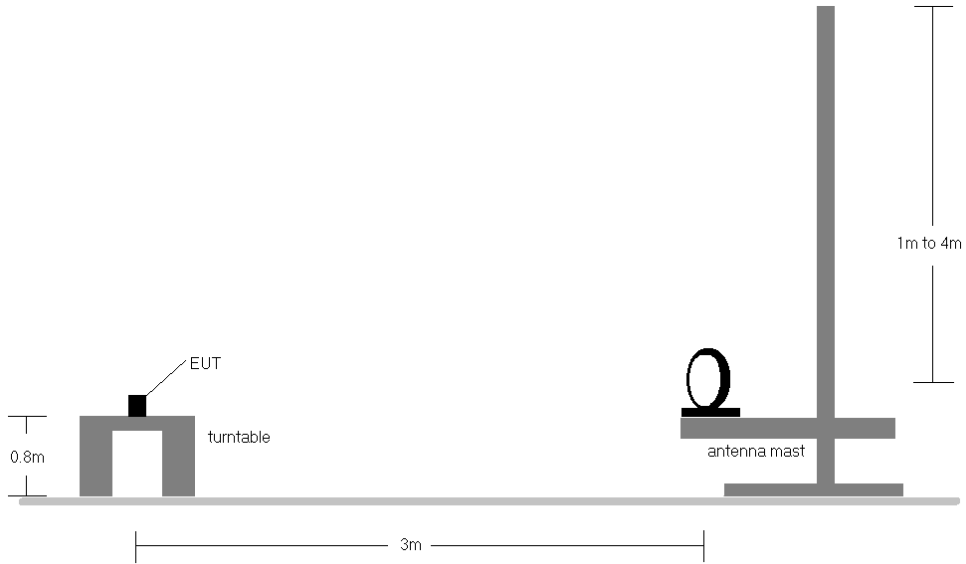


Figure 7-6. Radiated Test Setup < 30MHz

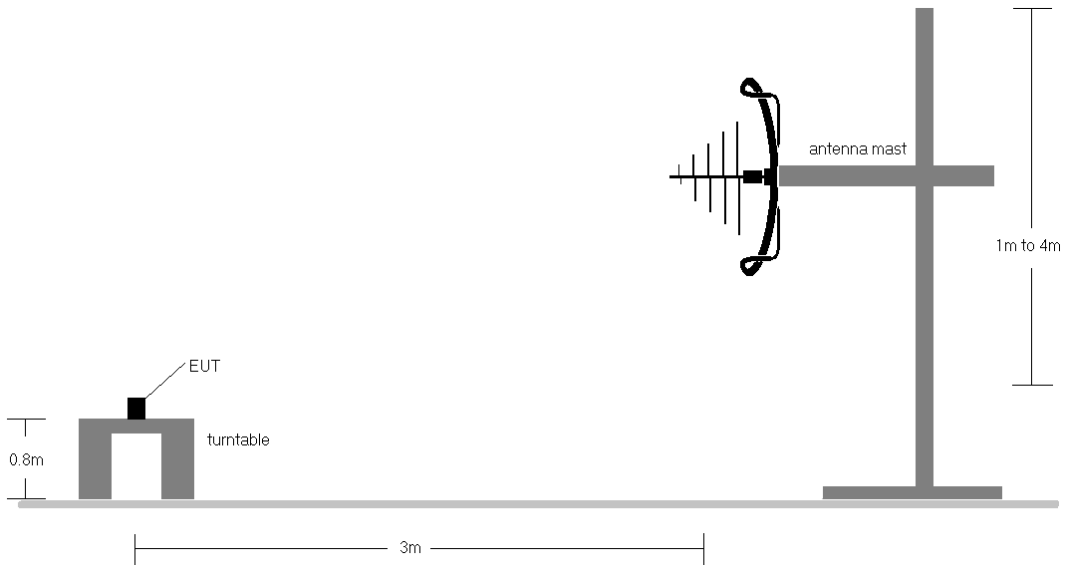






Figure 7-7. Radiated Test Setup < 1GHz

Test Notes

1. All emissions lying in restricted bands specified in §15.205 are below the limit shown in Table 7-63.
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.

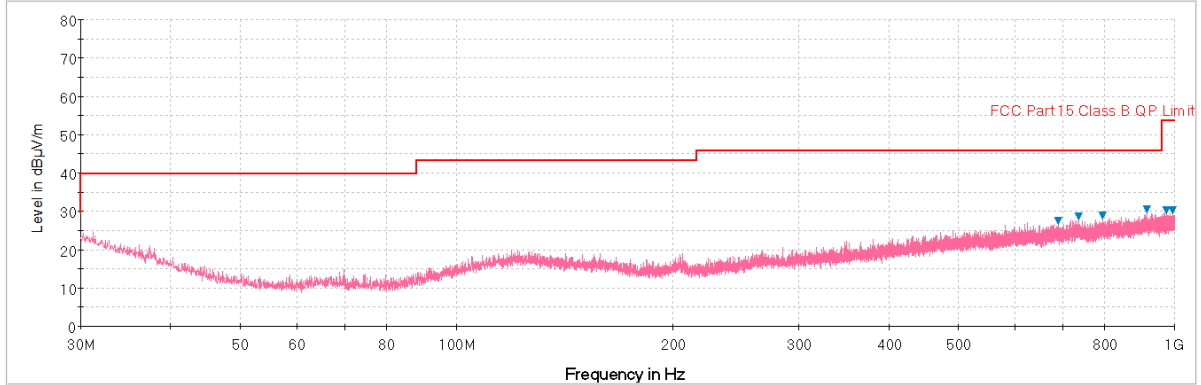
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)	 Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 235 of 261

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.

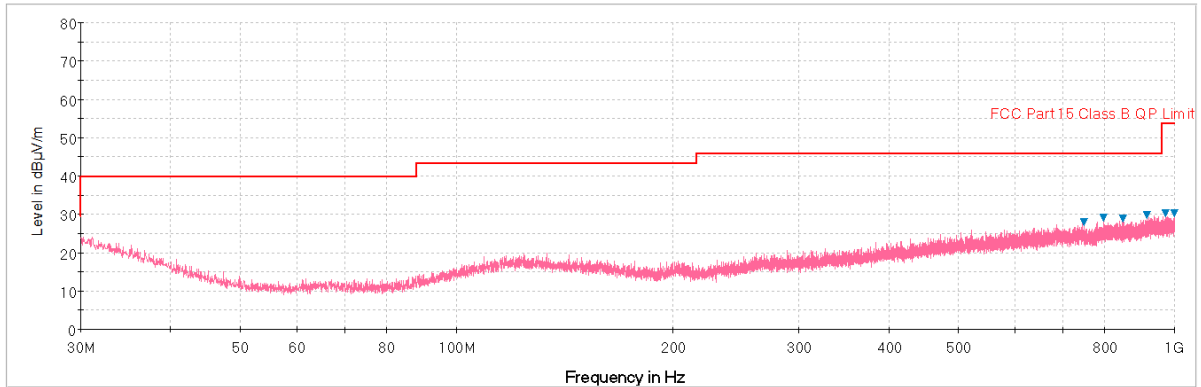
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 236 of 261	

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



§15.209



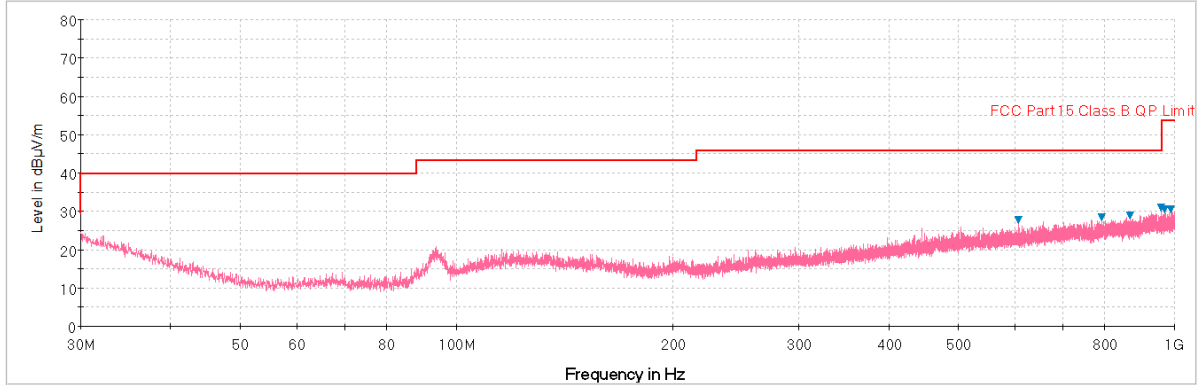
Plot 7-274. Radiated Spurious Plot below 1GHz (802.11a – U3 Ch. 157, Ant. Pol. H)



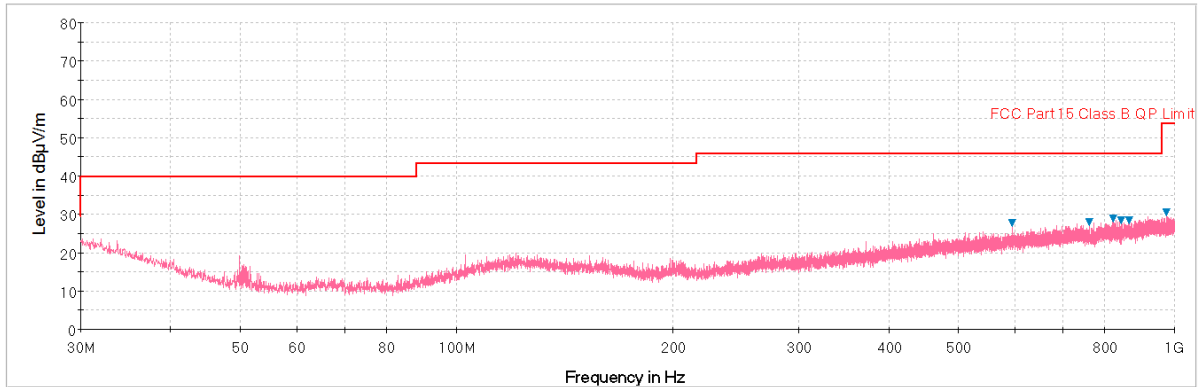
Plot 7-275. Radiated Spurious Plot below 1GHz (802.11a – U3 Ch. 157, Ant. Pol. V)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Antenna-2 Radiated Spurious Emissions Measurements (Below 1GHz) §15.209



Plot 7-276. Radiated Spurious Plot below 1GHz (802.11a – U3 Ch. 157, Ant. Pol. H)

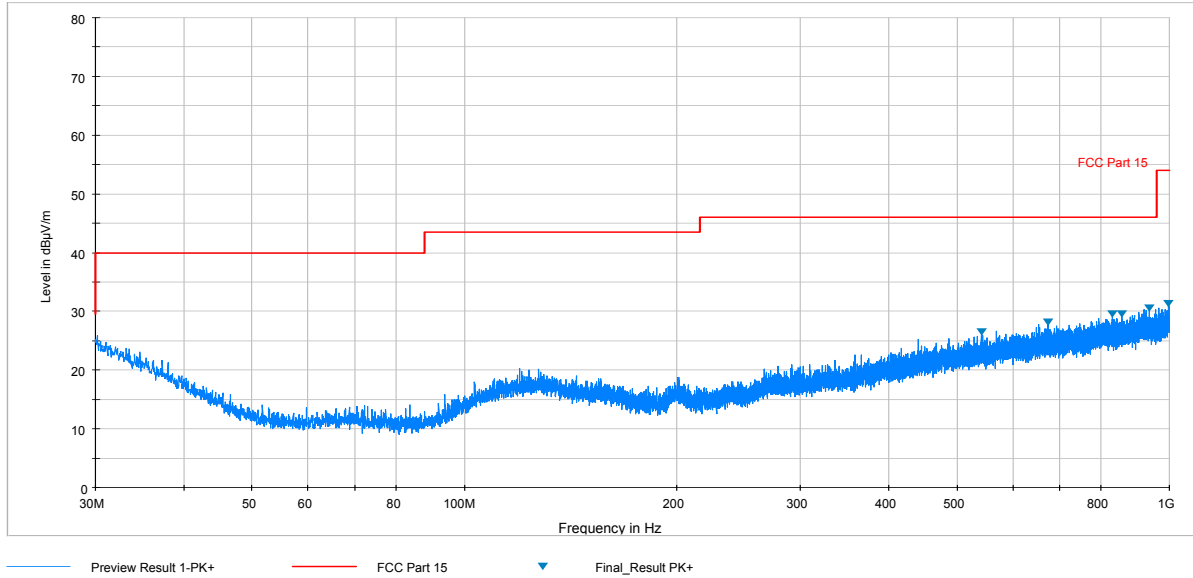


Plot 7-277. Radiated Spurious Plot below 1GHz (802.11a – U3 Ch. 157, Ant. Pol. V)

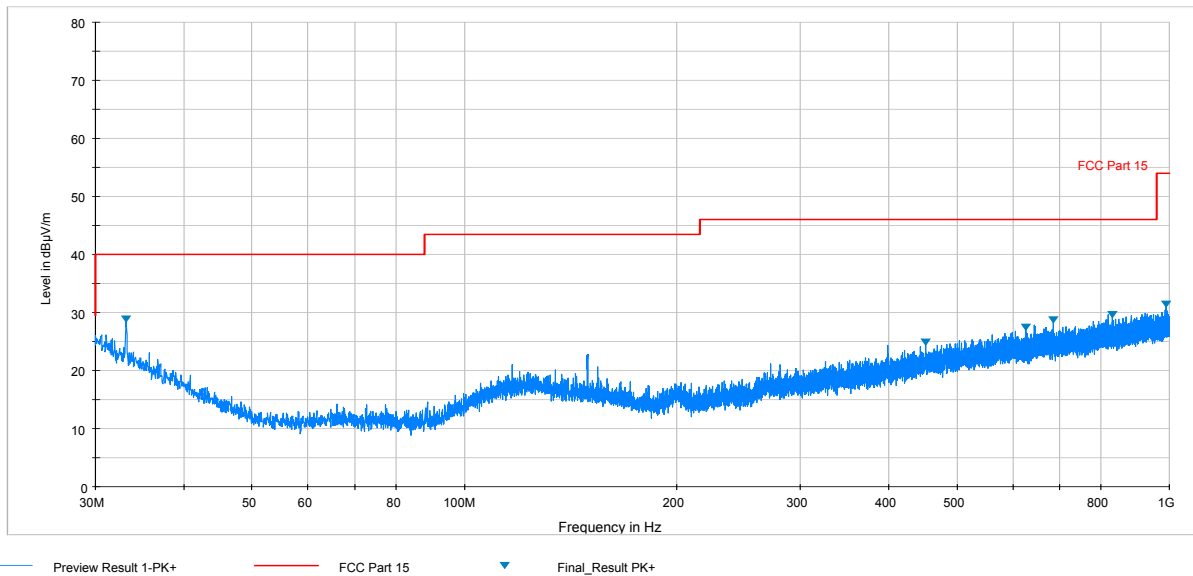
FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)	 Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 238 of 261

Simultaneous Transmission Radiated Spurious Emissions Measurements (Below 1GHz)



§15.209

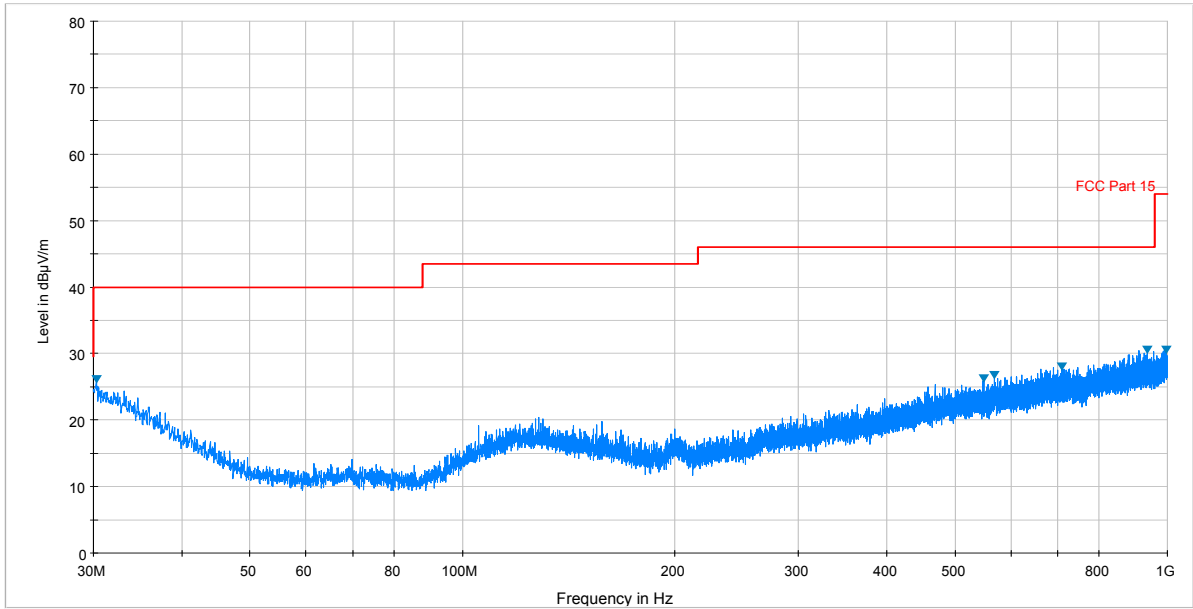


Plot 7-278. Radiated Spurious Plot below 1GHz (2.4GHz – 5GHz, Ant. Pol. H)



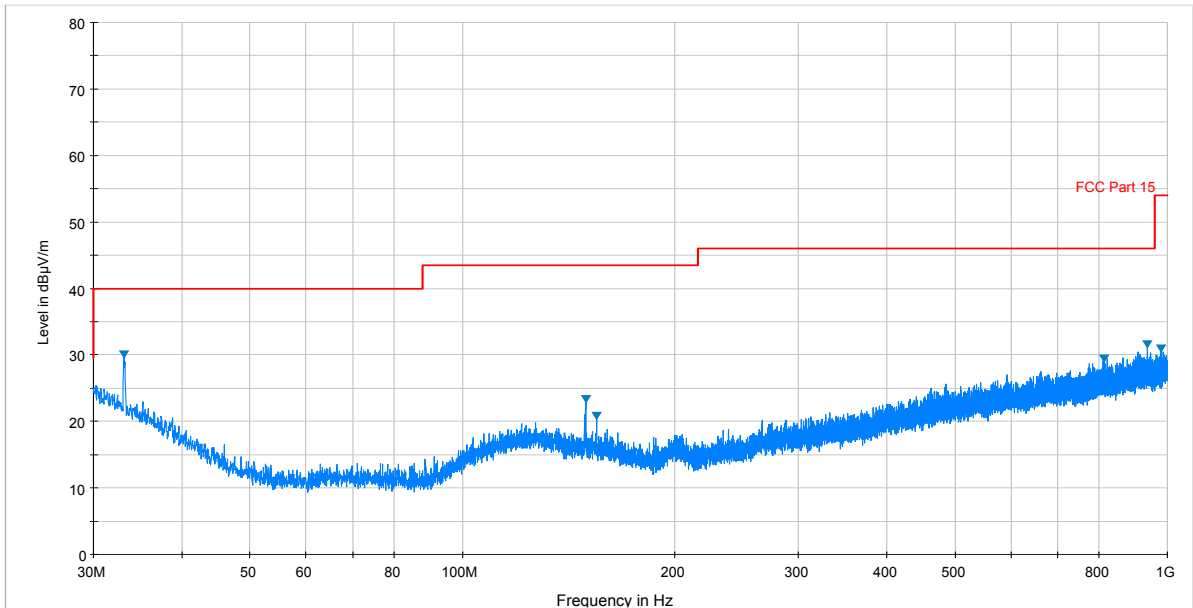
Plot 7-279. Radiated Spurious Plot below 1GHz (2.4GHz – 5GHz, Ant. Pol. V)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)	 Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 239 of 261



Preview Result 1-PK+ FCC Part 15 Final_Result PK+

Plot 7-280. Radiated Spurious Plot below 1GHz (5GHz – 2.4 GHz, Ant. Pol. H)



Preview Result 1-PK+ FCC Part 15 Final_Result PK+

Plot 7-281. Radiated Spurious Plot below 1GHz (5GHz – 2.4 GHz, Ant. Pol. V)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 240 of 261	

7.9 Line-Conducted Test Data

§15.407

Test Overview and Limit

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

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

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

Table 7-64. 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.

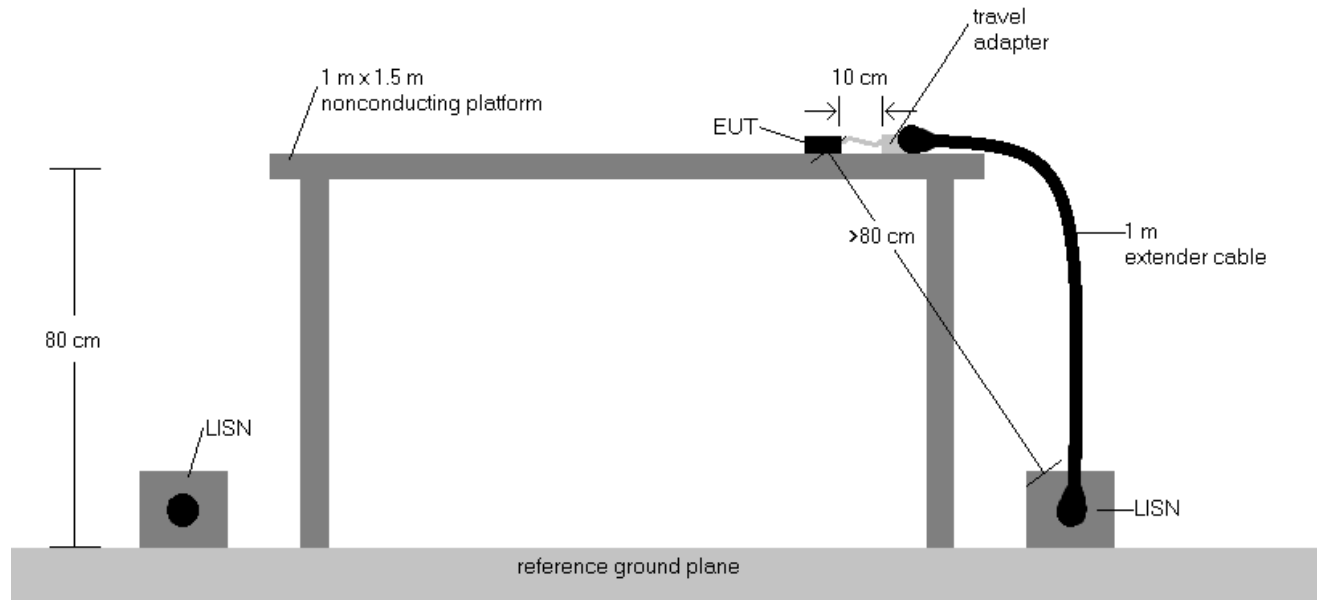




Figure 7-8. Test Instrument & Measurement Setup

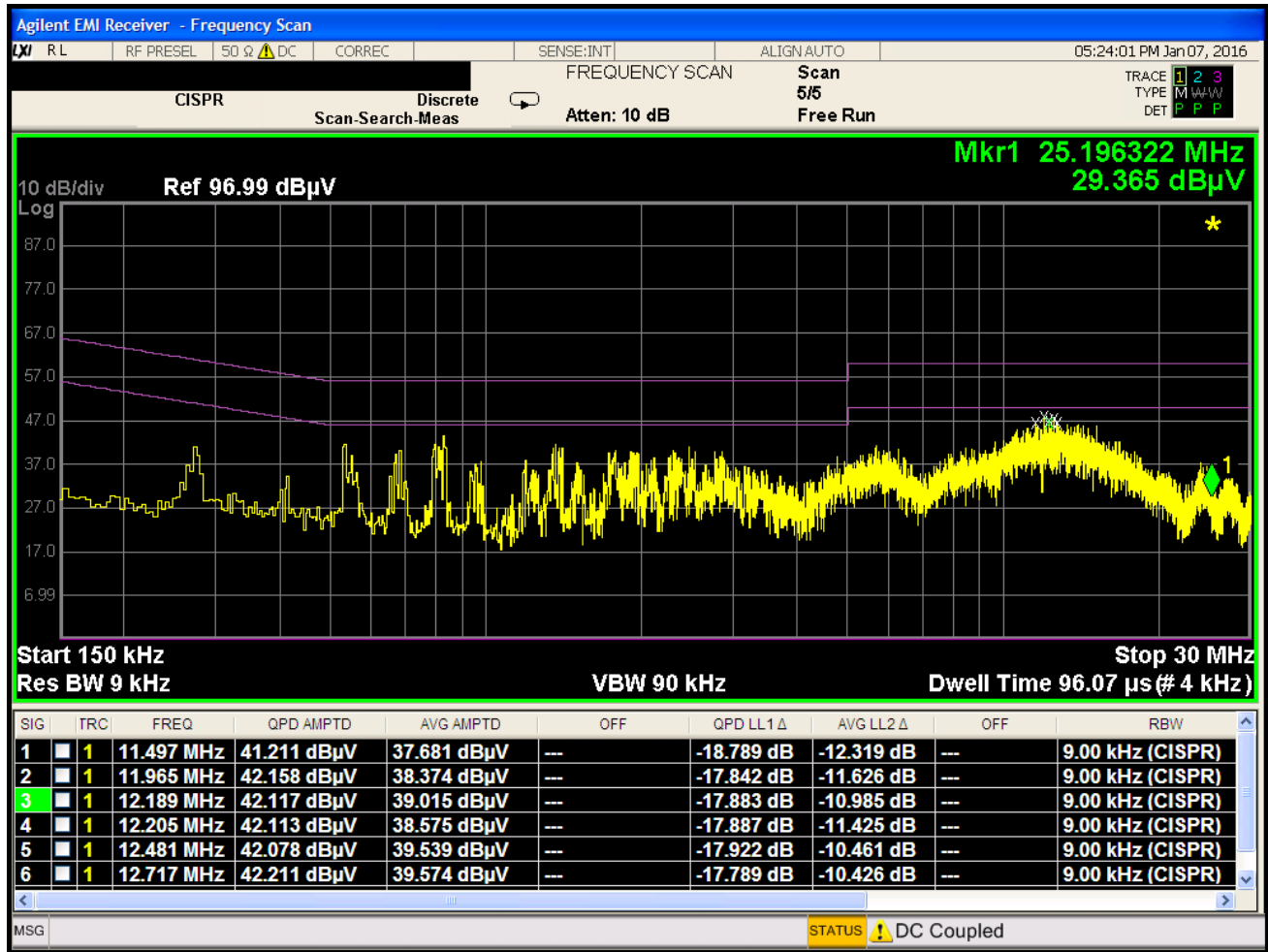
Test Notes

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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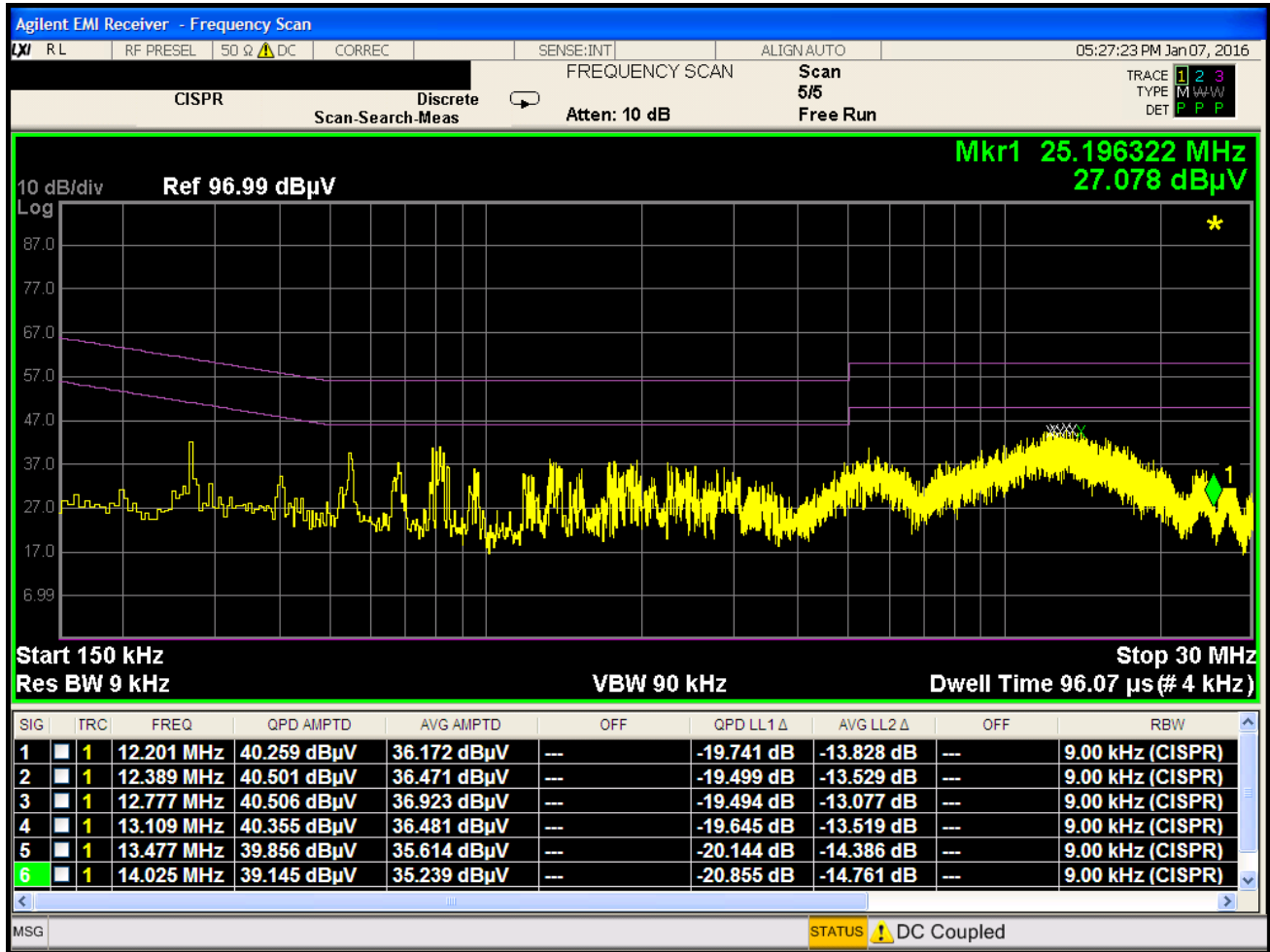


Plot 7-282. Line Conducted Plot with 802.11a UNII Band 1 (L1)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 243 of 261

Line-Conducted Test Data

§15.407

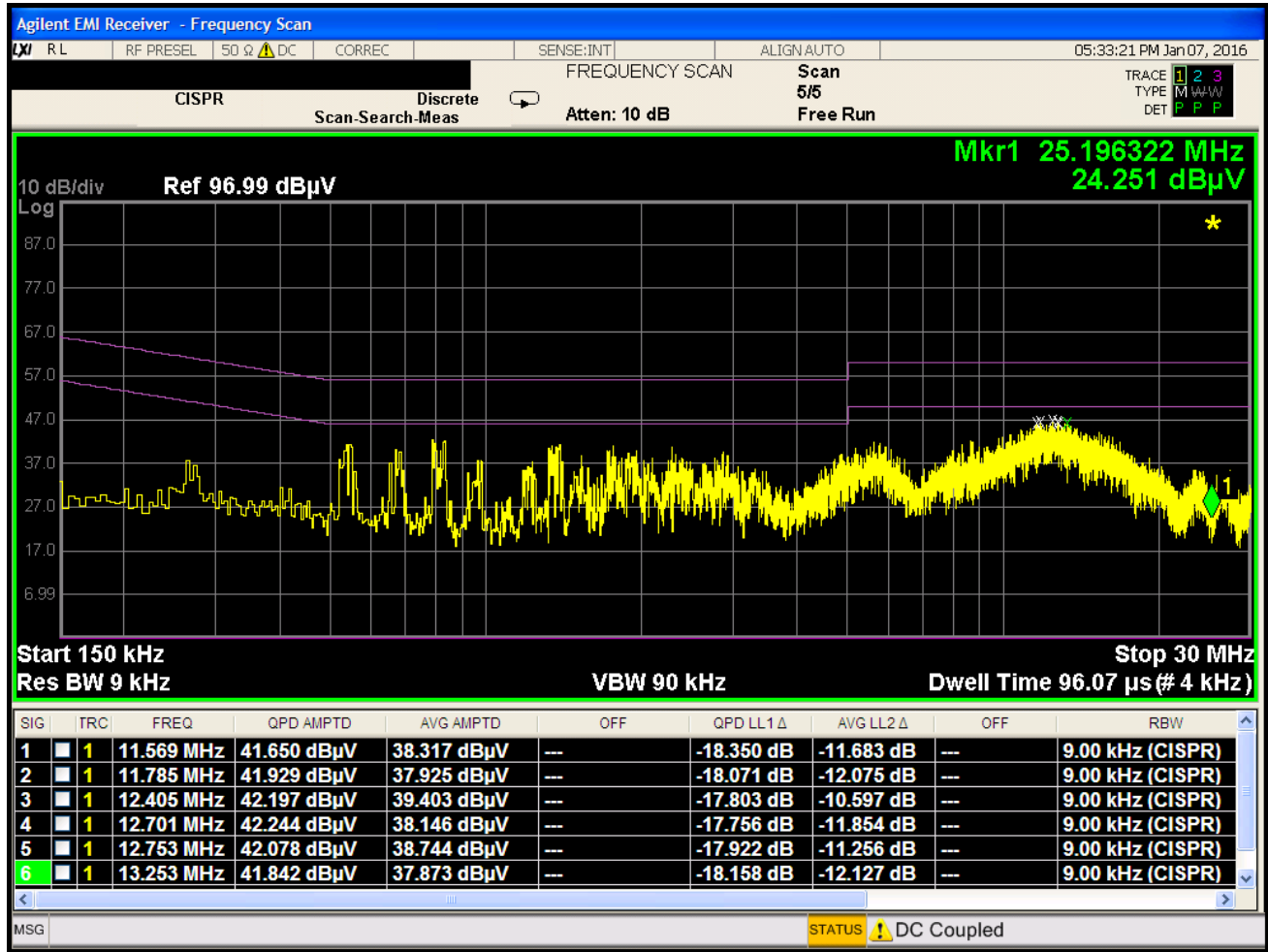


Plot 7-283. Line Conducted Plot with 802.11a UNII Band 1 (N)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Line-Conducted Test Data

§15.407

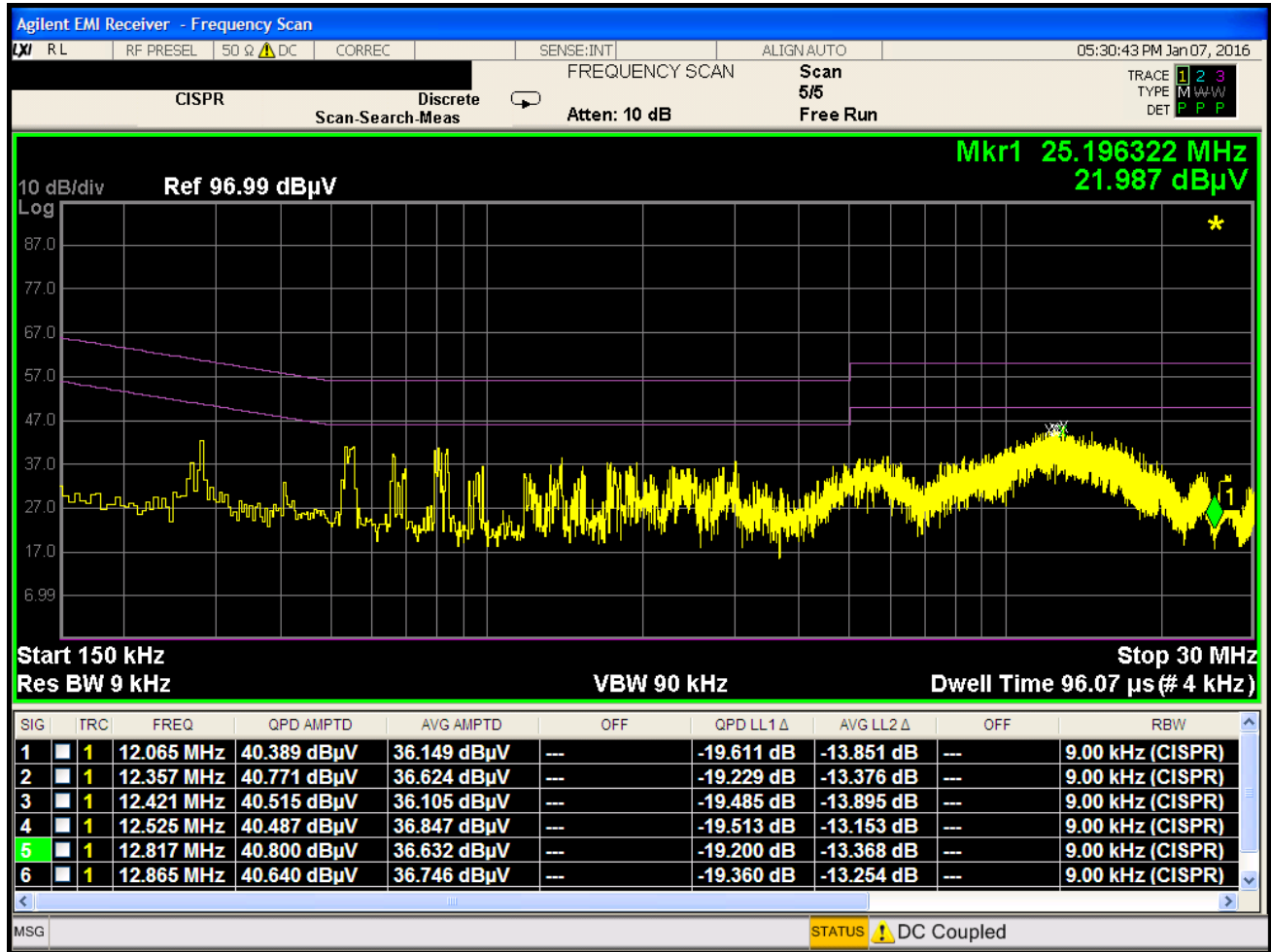


Plot 7-284. Line Conducted Plot with 802.11a UNII Band 2A (L1)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 245 of 261

Line-Conducted Test Data

§15.407

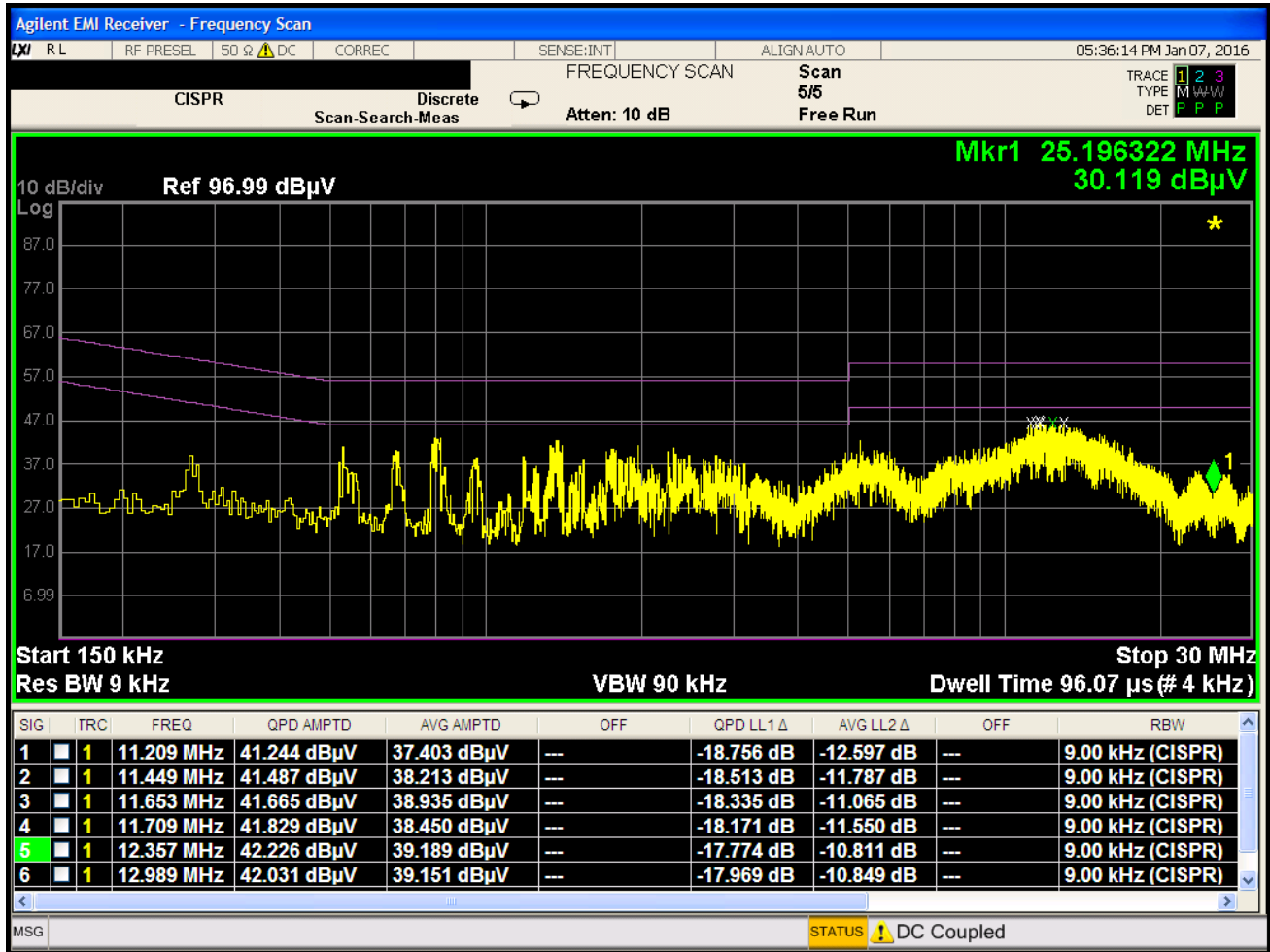


Plot 7-285. Line Conducted Plot with 802.11a UNII Band 2A (N)

FCC ID: A3LSMG930X	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 246 of 261

Line-Conducted Test Data

§15.407

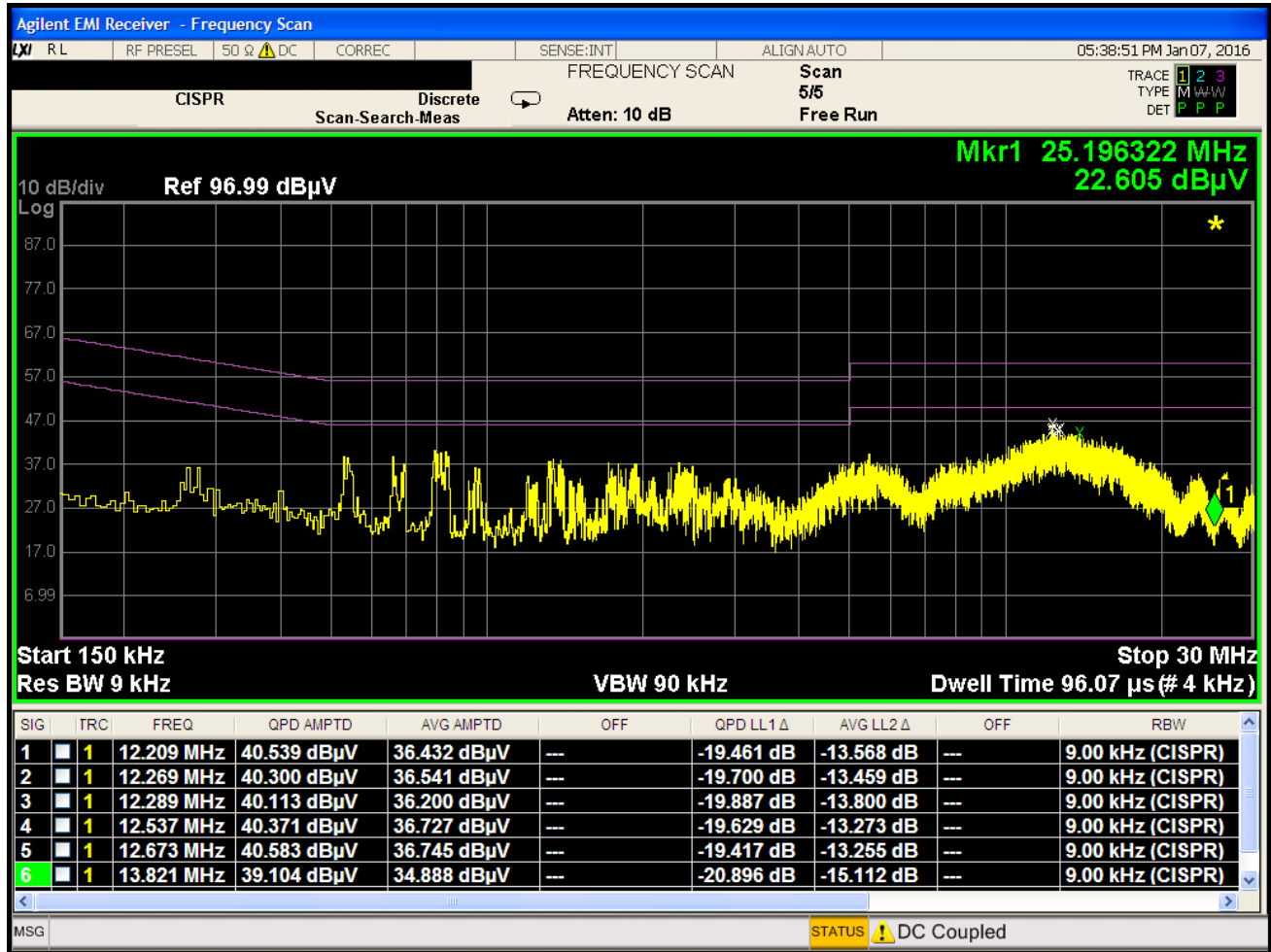


Plot 7-286. Line Conducted Plot with 802.11a UNII Band 2C (L1)

FCC ID: A3LSMG930X	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 247 of 261

Line-Conducted Test Data

§15.407

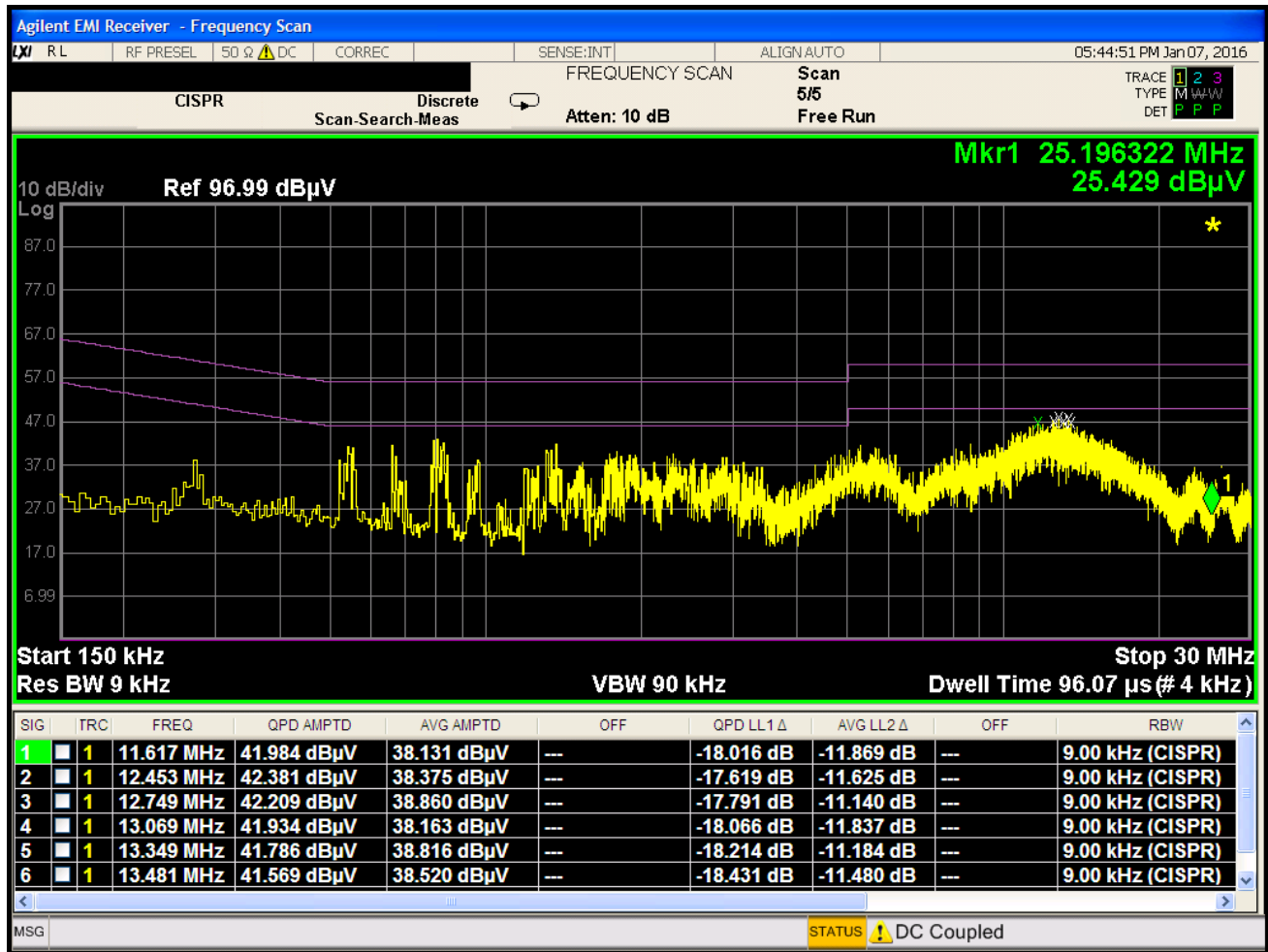


Plot 7-287. Line Conducted Plot with 802.11a UNII Band 2C (N)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 248 of 261

Line-Conducted Test Data

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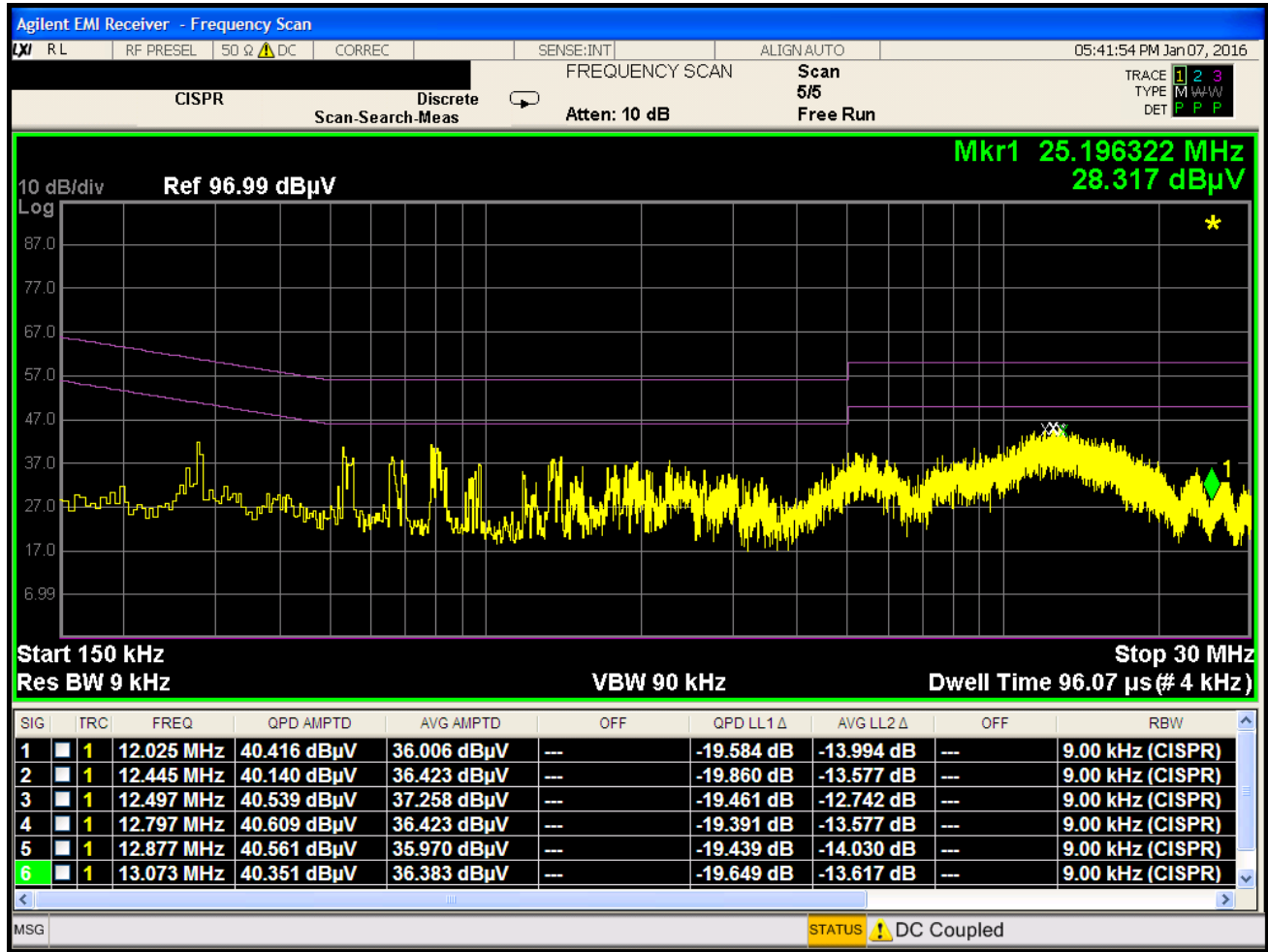


Plot 7-288. Line Conducted Plot with 802.11a UNII Band 3 (L1)

FCC ID: A3LSMG930X	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 249 of 261

Line-Conducted Test Data

§15.407





Plot 7-289. Line Conducted Plot with 802.11a UNII Band 3 (N)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 250 of 261

8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMG930X** is in compliance with Part 15E of the FCC Rules.

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APPENDIX A. 802.11A DUAL TX



A.1 Summary

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
TRANSMITTER MODE (TX)					
15.407 (a.1)	Maximum Conducted Output Power	< 250mW (23.98dBm) (5150-5250MHz) < 250mW (5250-5350MHz) < 250mW (5470-5725MHz) < 1W (30dBm) (5725-5850MHz)	CONDUCTED	PASS	Section A.2
15.407 (a.1), (5)	Maximum Power Spectral Density	< 11 dBm/MHz (5150-5250MHz, 5250-5350MHz, 5470-5725MHz) < 30 dBm/500kHz (5725-5850MHz)		PASS	Section A.3
15.205, 15.407(b.1),(5),(6)	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209		PASS	Section A.4

Table A.1-1. Summary of Test Results

Notes:

- 1) This device employs dual transmission in 802.11a and 802.11g modes using Cyclic Delay Diversity. For all test cases, the device was set to transmit from both antennas simultaneously. The data in this section demonstrates compliance to the dual-transmission requirements specified in KDB 662911 v02r01.
- 2) All data found in this section is compiled from plots found in the main body of this test report.
- 3) Since this device is able to transmit the same data through both of its antennas in a given symbol period, then, by the definition specified in KDB 662911 v02r01 Section F)1), the transmission symbols are correlated.
- 4) Since two antennas are supported in this device and a minimum of $N_{ss} = 1$ antenna can operate at any given time, the maximum array gain for two correlated signals is $10\log_{10}(N_{ant}/N_{ss}) = 3\text{dB}$, where N_{ss} is the number of spatial streams and N_{ant} is the total number of antennas.
- 5) For conducted spurious emissions, per KDB 662911 v02r01 Section E)3)b), the emissions on each individual output complied with its corresponding relative limit for that output, so additional testing was not required for dual transmission operation.

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A.2 Output Power Measurement
§15.247(b.3)

Test Overview

Using the “Measure and Sum” technique, the measured conducted power values were summed in linear power units then converted back to dBm.

Freq [MHz]	Channel	Detector	5GHz (20MHz) Conducted Power [dBm]		
			IEEE Transmission Mode 802.11a		
			ANT1	ANT2	MIMO
5180	36	AVG	11.94	12.16	15.06
5200	40	AVG	12.62	13.09	15.87
5220	44	AVG	13.15	13.15	16.16
5240	48	AVG	12.96	13.13	16.06
5260	52	AVG	12.88	13.22	16.06
5280	56	AVG	12.81	13.11	15.97
5300	60	AVG	13.03	13.14	16.10
5320	64	AVG	11.94	12.33	15.15
5500	100	AVG	11.93	12.29	15.12
5560	112	AVG	12.86	13.12	16.00
5580	116	AVG	12.65	13.15	15.92
5600	120	AVG	12.66	13.00	15.84
5620	124	AVG	12.73	13.20	15.98
5640	128	AVG	12.43	13.03	15.75
5660	132	AVG	12.49	13.09	15.81
5700	140	AVG	11.41	12.24	14.86
5720	144	AVG	12.38	13.01	15.72
5745	149	AVG	12.40	12.98	15.71
5785	157	AVG	12.33	12.95	15.66
5825	165	AVG	12.31	12.94	15.65

Table A2-1. Dual Tx 802.11a-mode Conducted Output Power Measurements

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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A.3 Power Spectral Density



§15.247(e)

Test Overview

Using the “Measure and Sum” technique, the measured conducted power density values were summed in linear power units then converted back to dBm. Original measured values are found in Section 7.5 of this report.

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Antenn-1 Power Density	Antenn-2 Power Density	Summed MIMO Power	Max Permissible Power Density [dBm/MHz]	Margin [dB]	Pass / Fail
Band 1	5180	36	a	6	6.82	6.32	9.59	11.0	-1.41	Pass
	5200	40	a	6	7.27	6.10	9.73	11.0	-1.27	Pass
	5240	48	a	6	7.27	6.12	9.74	11.0	-1.26	Pass
Band 2A	5260	52	a	6	7.42	6.06	9.80	11.0	-1.20	Pass
	5280	56	a	6	7.44	6.21	9.88	11.0	-1.12	Pass
	5320	64	a	6	8.04	6.28	10.26	11.0	-0.74	Pass
Band 2C	5500	100	a	6	7.97	6.52	10.32	11.0	-0.68	Pass
	5600	120	a	6	7.70	6.49	10.15	11.0	-0.85	Pass
	5720	144	a	6	7.31	6.55	9.96	11.0	-1.04	Pass
Band 3	5745	149	n	6.5/7.2	4.62	3.53	7.12	30.0	-22.88	Pass
	5785	157	n	6.5/7.2	4.79	3.46	7.19	30.0	-22.81	Pass
	5825	165	n	6.5/7.2	4.69	3.84	7.30	30.0	-22.70	Pass

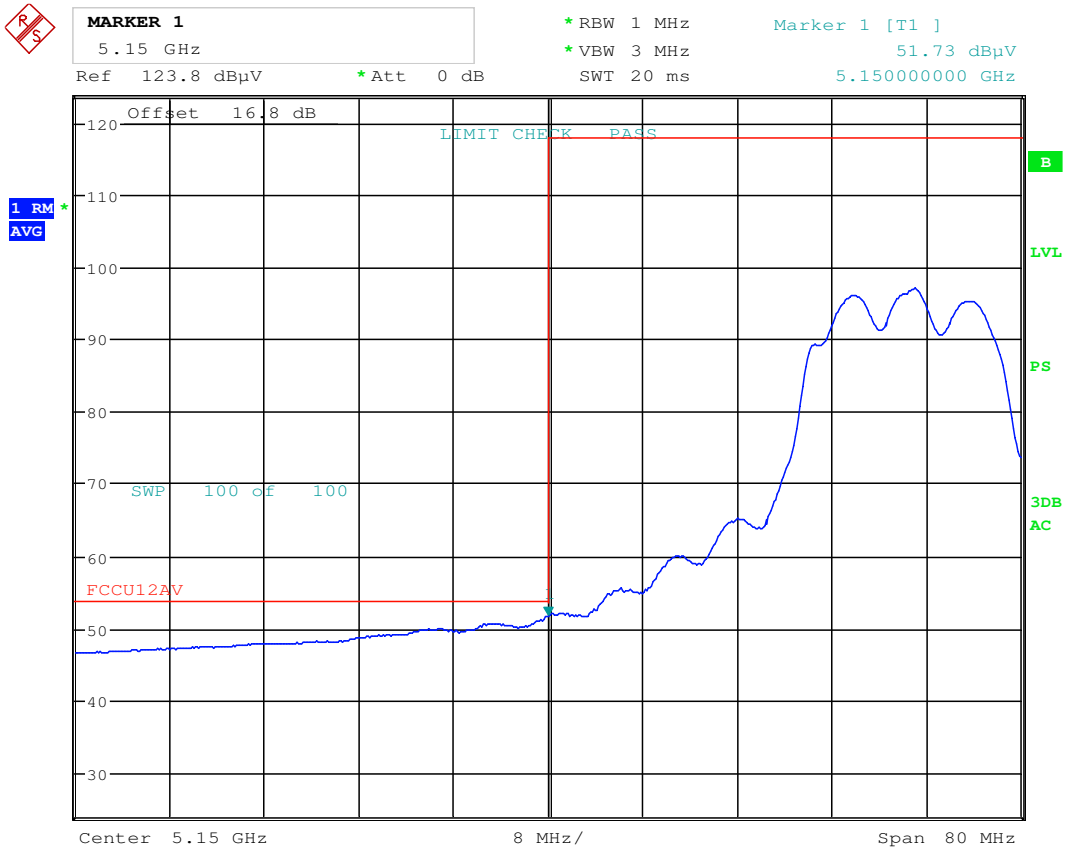
Table A3-1.802.11a Dual Tx Conducted Power Density Measurements

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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A.4 Dual Tx Radiated Restricted Band Edge Measurements §15.205 §15.209

The radiated restricted band edge measurements are measured with an EMI test receiver connected to the receive antenna while the EUT is transmitting on both outputs in 802.11a mode.

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



Date: 30.DEC.2015 11:31:10

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

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Dual Tx Radiated Restricted Band Edge Measurements

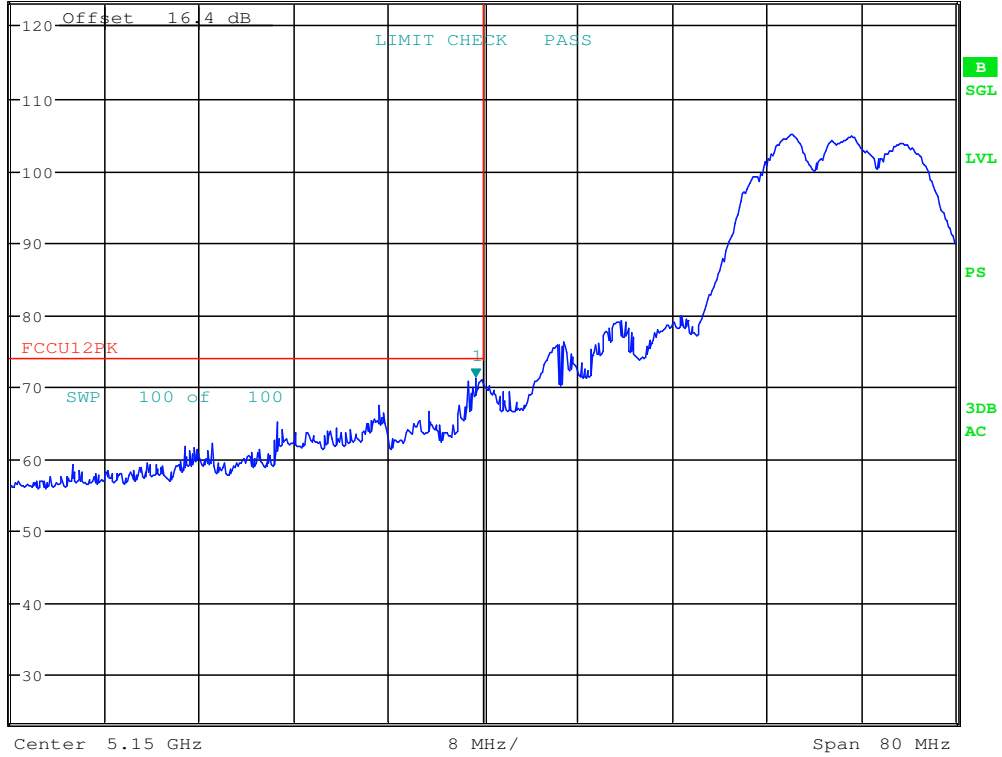
§15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
5.149358974 GHz
Ref 123.4 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 71.27 dBµV
SWT 20 ms 5.149358974 GHz

1 PK
MAXH



Date: 30.DEC.2015 11:31:48

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

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Dual Tx Radiated Restricted Band Edge Measurements

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6Mbps

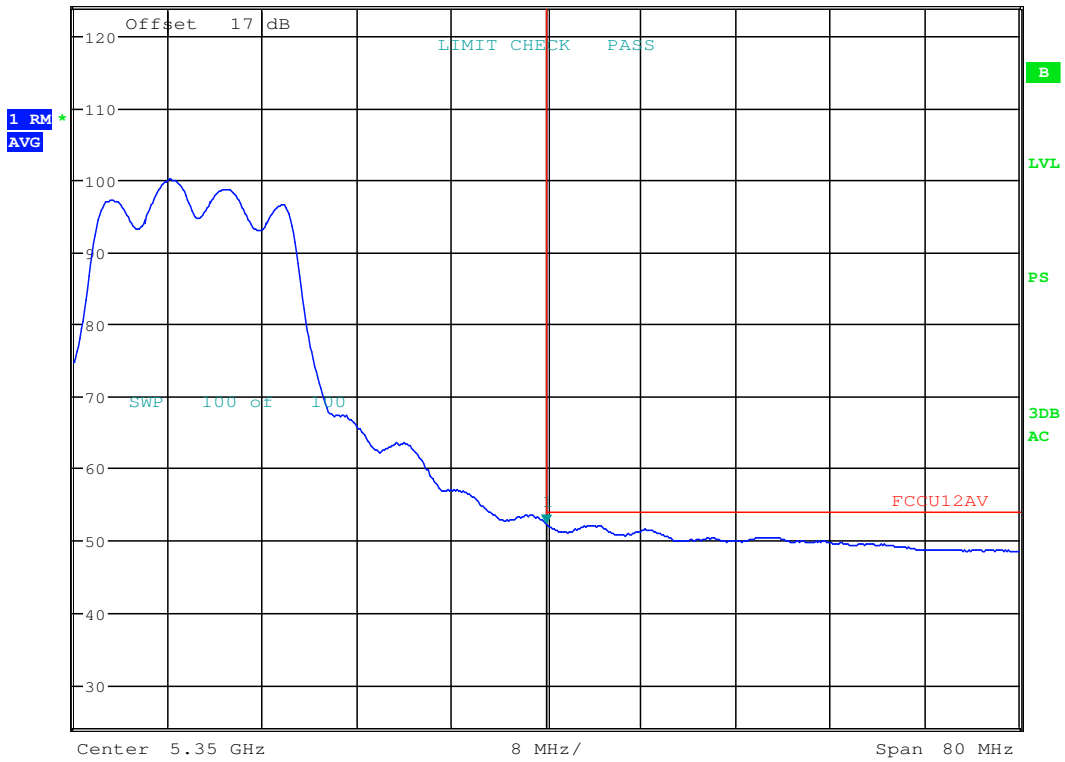
Distance of Measurements: 3 Meters

Operating Frequency: 5320MHz

Channel: 64



MARKER 1
 5.35 GHz
 Ref 124 dBµV *Att 0 dB
 *RBW 1 MHz Marker 1 [T1]
 *VBW 3 MHz 52.33 dBµV
 SWT 20 ms 5.35000000 GHz



Date: 30.DEC.2015 11:38:51

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

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 257 of 261

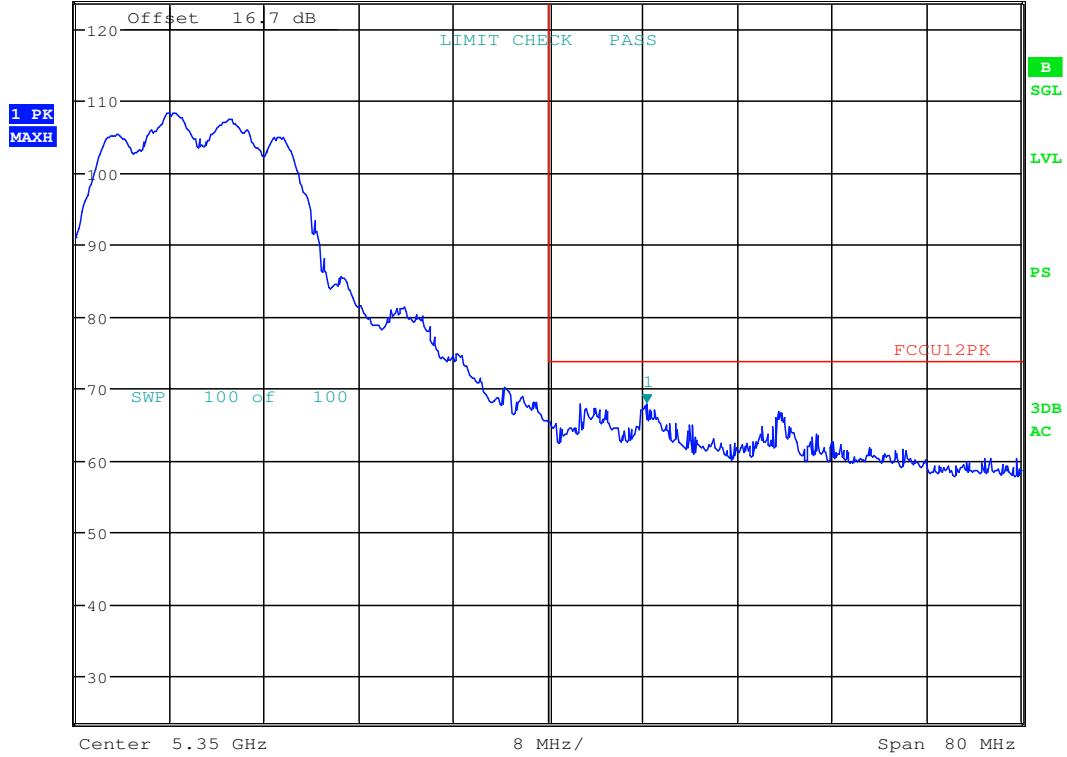
Dual Tx Radiated Restricted Band Edge Measurements

§15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
 5.358333333 GHz
 Ref 123.7 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
 *VBW 3 MHz 67.88 dBµV
 SWT 20 ms 5.358333333 GHz



Date: 30.DEC.2015 11:39:49

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

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Dual Tx Radiated Restricted Band Edge Measurements

§15.407(b.1)(b.2) §15.205 §15.209

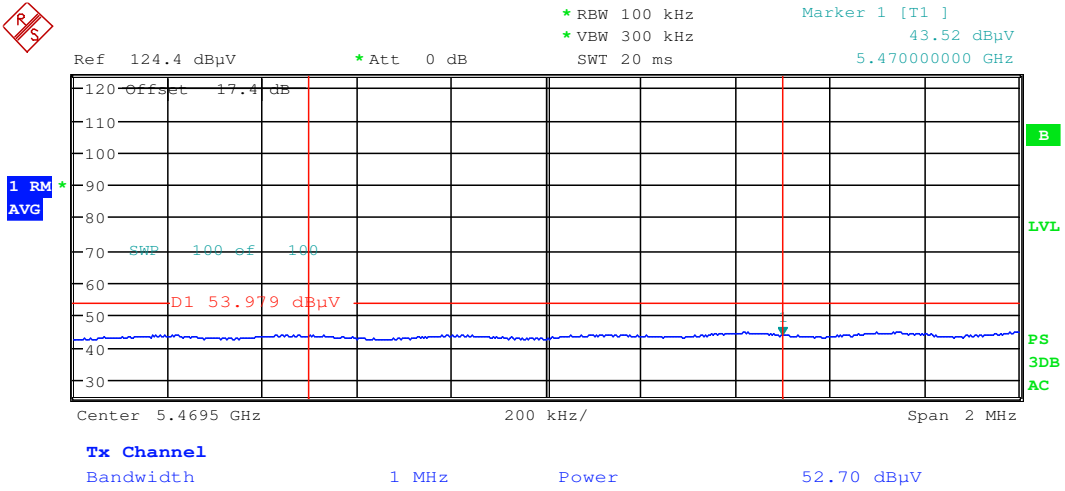
Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 5500MHz

Channel: 100



Date: 30.DEC.2015 11:50:37

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

Note:

Per KDB 789033 Section II)G)3)d)ii, the Integration Method was used to determine compliance with the out-of-band emission limits.

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 259 of 261	

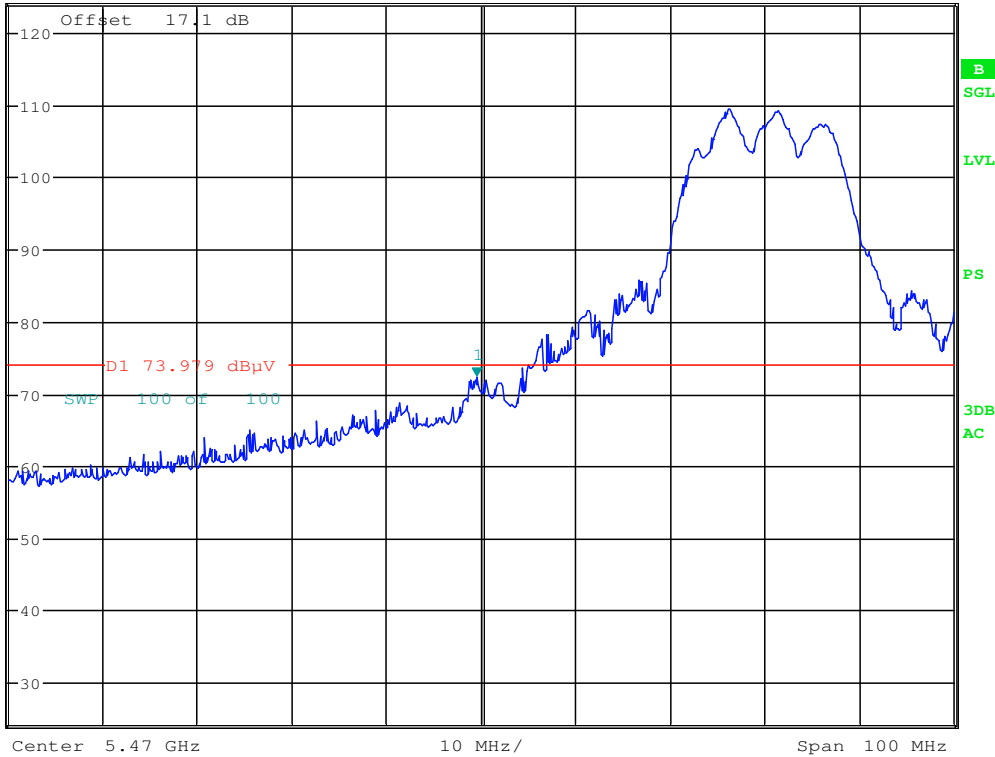
Dual Tx Radiated Restricted Band Edge Measurements §15.407(b.1)(b.2) §15.205 §15.209



MARKER 1
5.469519231 GHz
Ref 124.1 dBµV *Att 0 dB

*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 72.22 dBµV
SWT 20 ms 5.469519231 GHz

1 PK
MAXH



Date: 30.DEC.2015 11:51:41

Plot A.4-6. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset		Page 260 of 261

Dual Tx Radiated Restricted Band Edge Measurements

§15.407(b.1)(b.2) §15.205 §15.209

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6Mbps

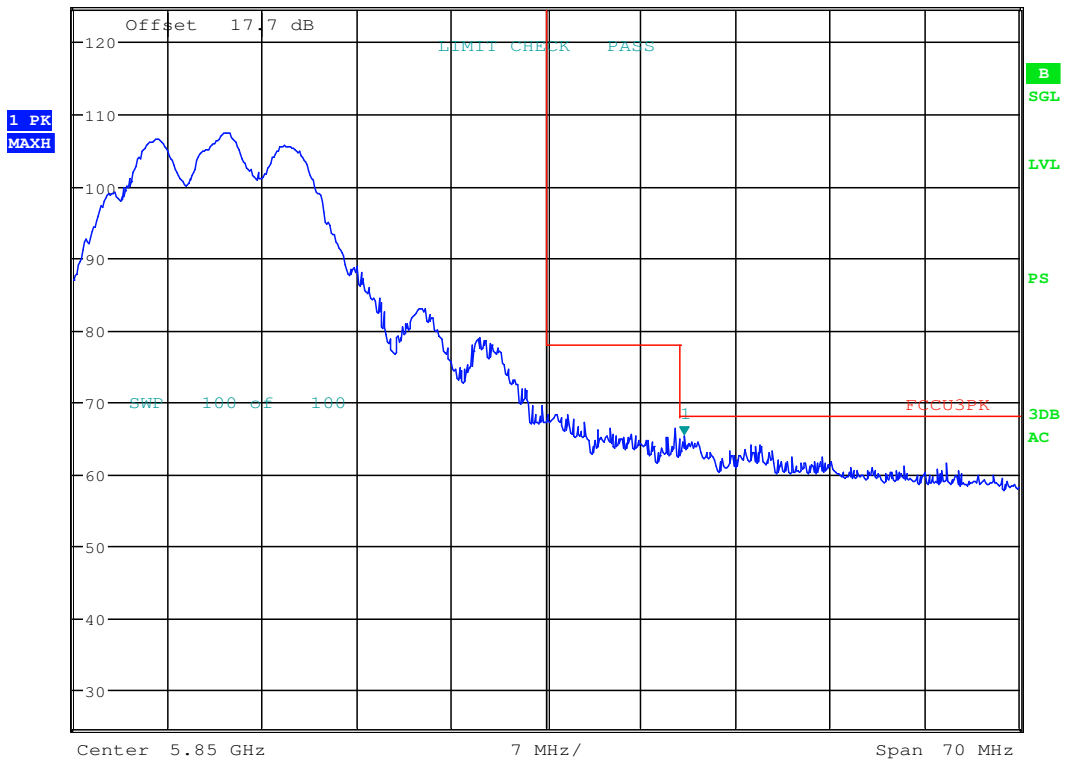
Distance of Measurements: 3 Meters

Operating Frequency: 5825MHz

Channel: 165



MARKER 1
5.860208333 GHz
Ref 124.7 dBµV * Att 0 dB
* RBW 1 MHz
* VBW 3 MHz
SWT 20 ms
Marker 1 [T1]
65.35 dBµV
5.860208333 GHz



Date: 30.DEC.2015 12:02:14

Plot A.4-9. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: A3LSMG930X		FCC Pt. 15.407 802.11a UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1601060064.A3L	Test Dates: 12/22/2015-1/15/2016, 1/15/2016	EUT Type: Portable Handset	Page 261 of 261	