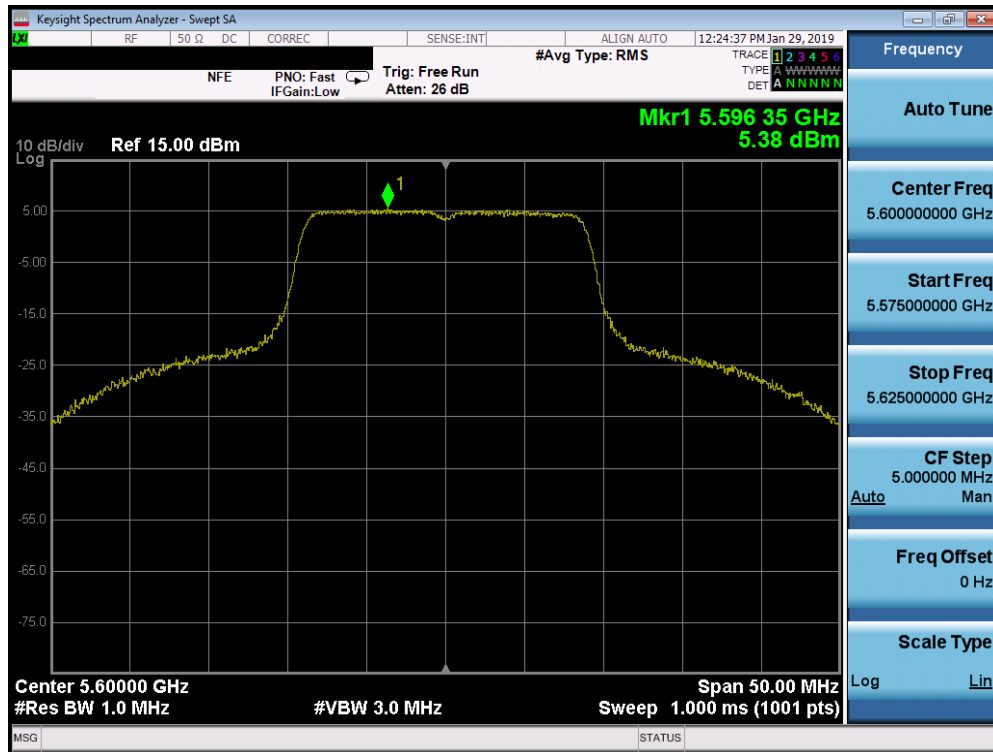
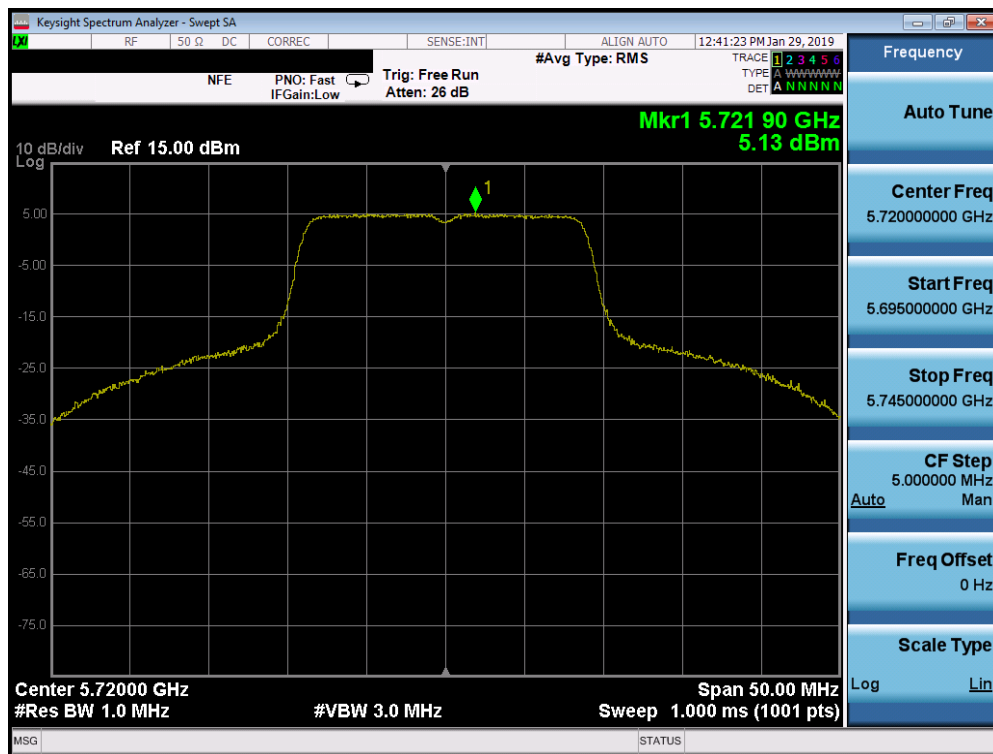


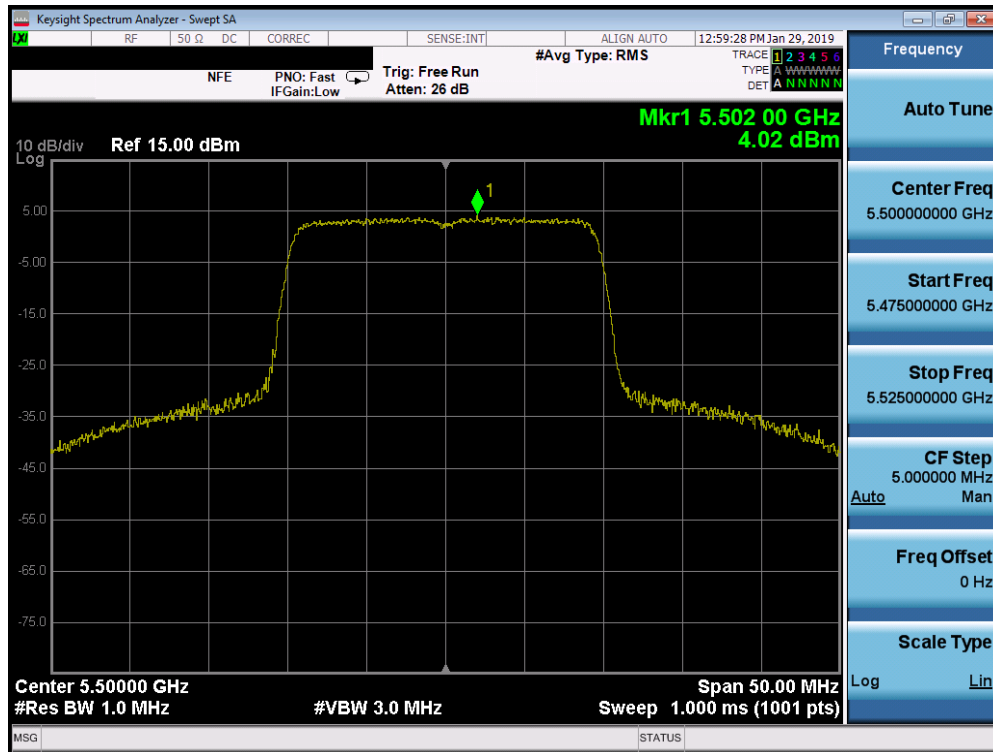


Plot 7-233. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11n (UNII Band 2C) – Ch. 120)

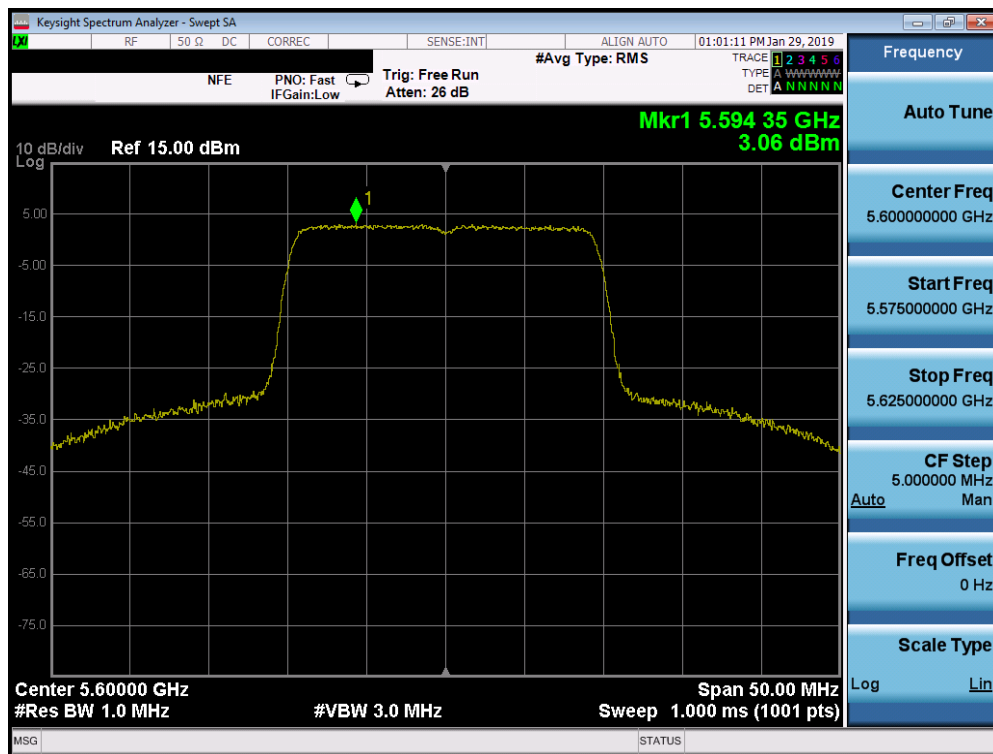


Plot 7-234. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11n (UNII Band 2C) – Ch. 144)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 152 of 259

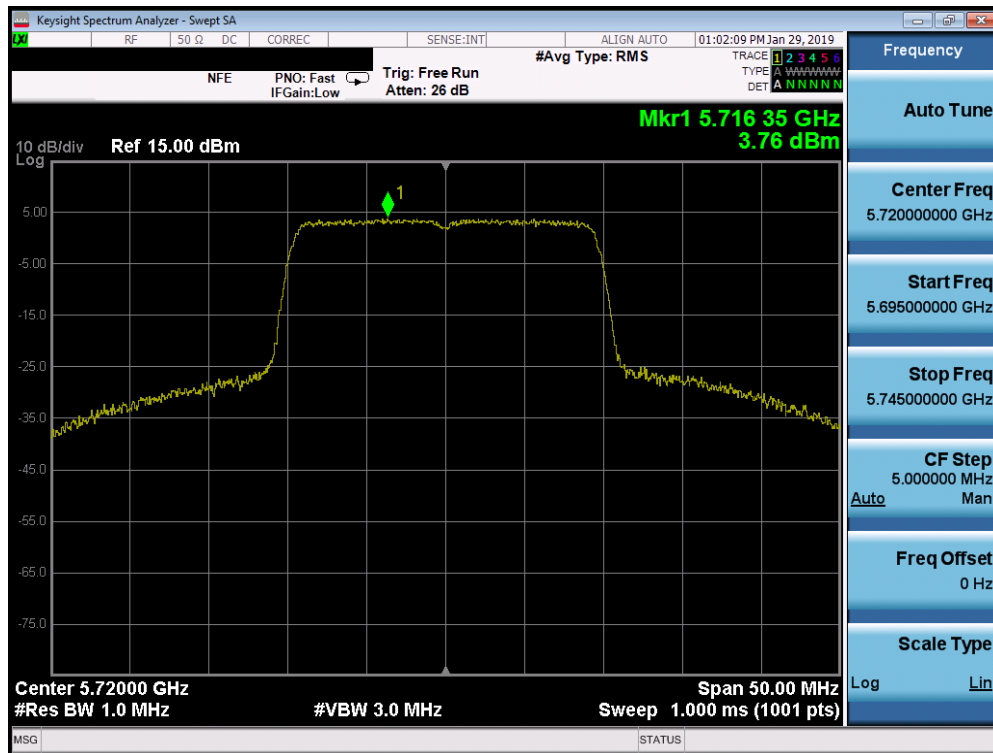


Plot 7-235. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax (UNII Band 2C) – Ch. 100)

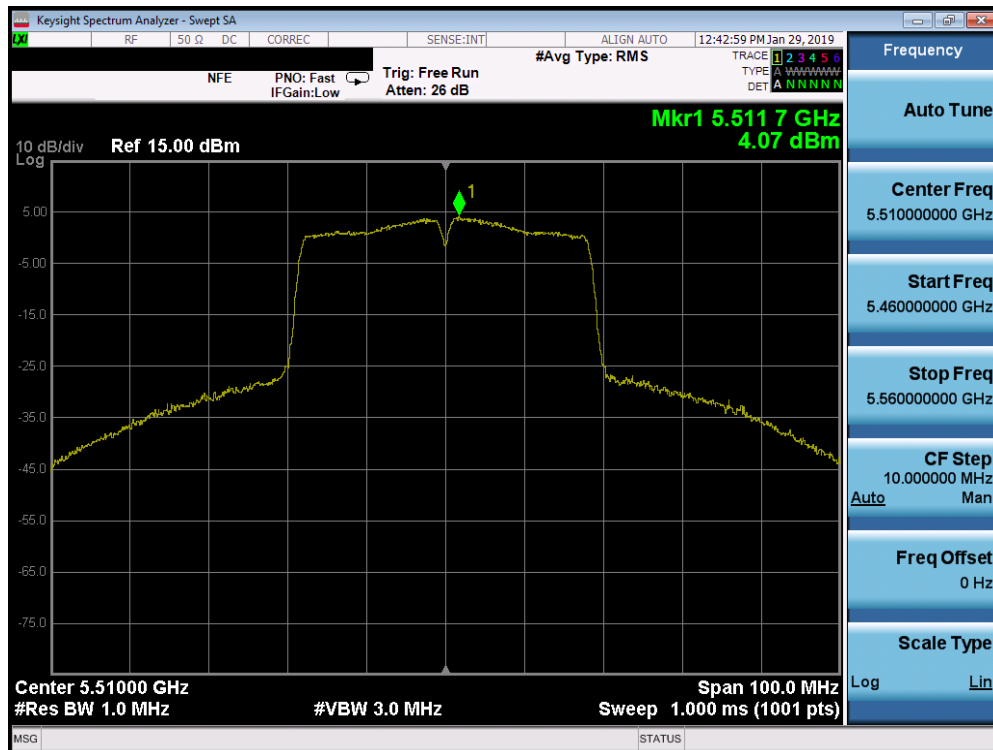


Plot 7-236. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax (UNII Band 2C) – Ch. 120)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 153 of 259

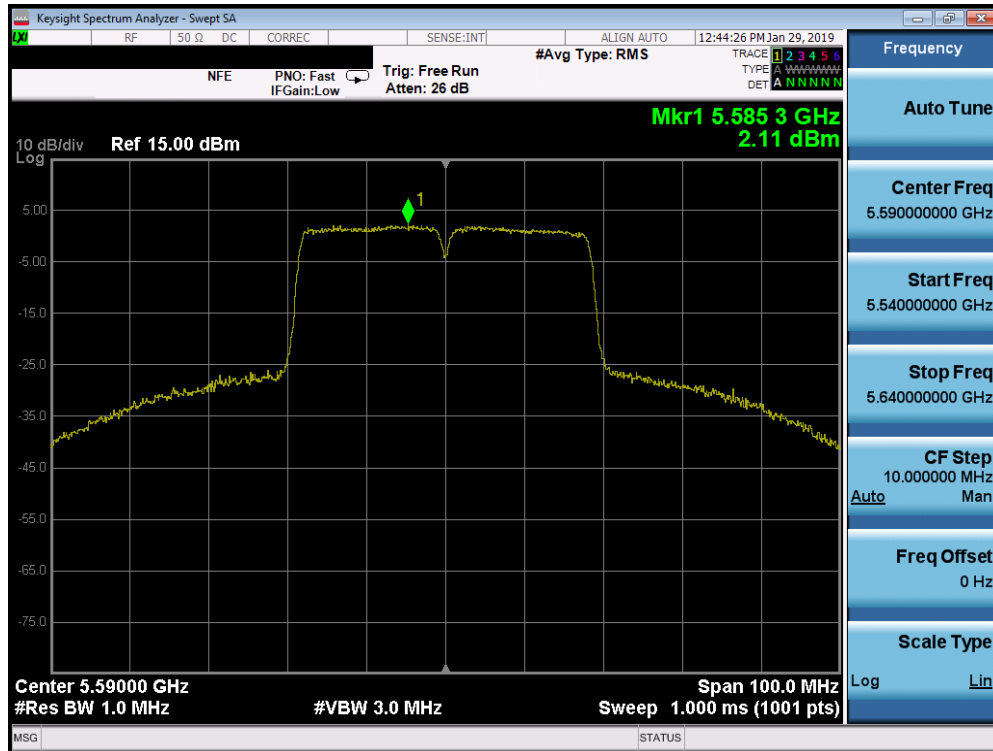


Plot 7-237. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax (UNII Band 2C) – Ch. 144)

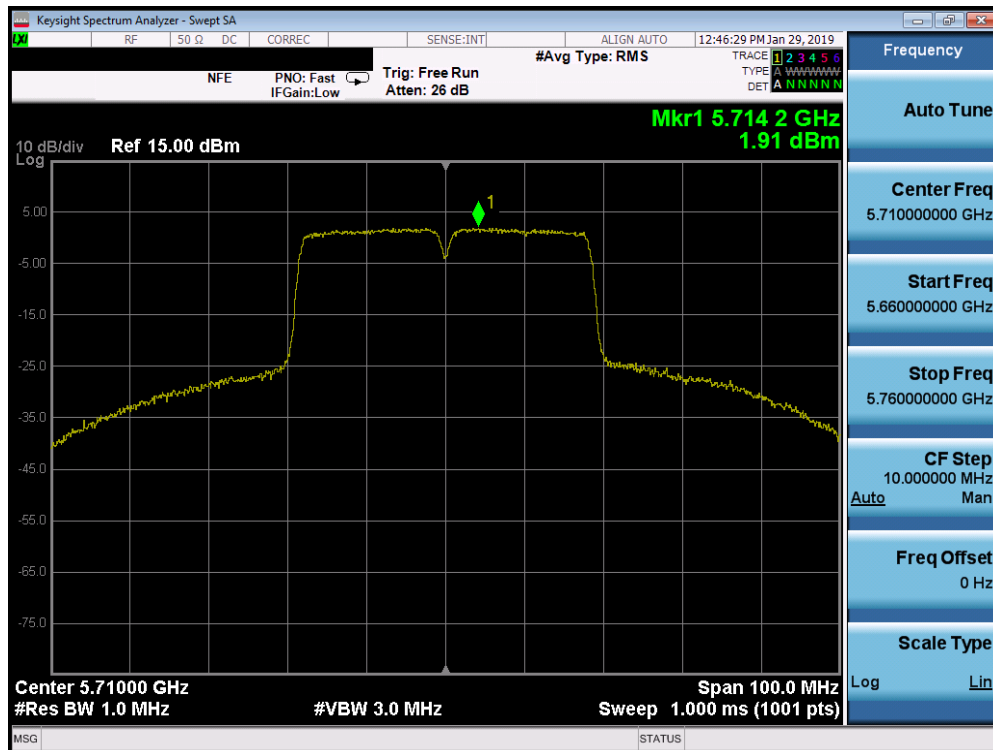


Plot 7-238. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11n (UNII Band 2C) – Ch. 102)

FCC ID: A3LSMG977U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 154 of 259

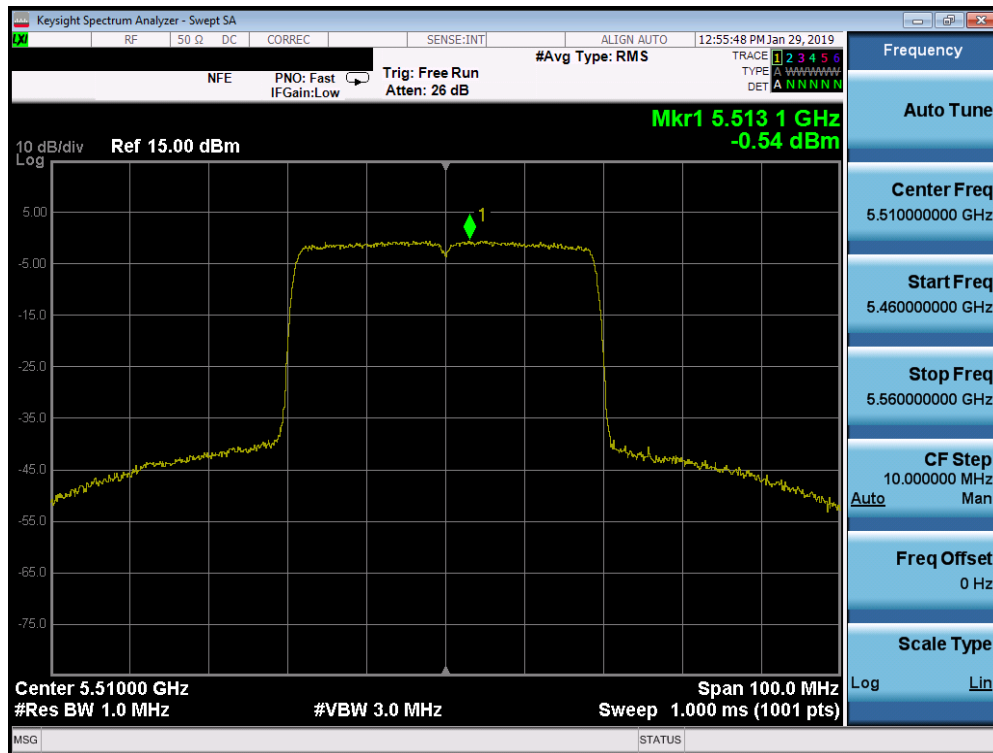


Plot 7-239. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11n (UNII Band 2C) – Ch. 118)

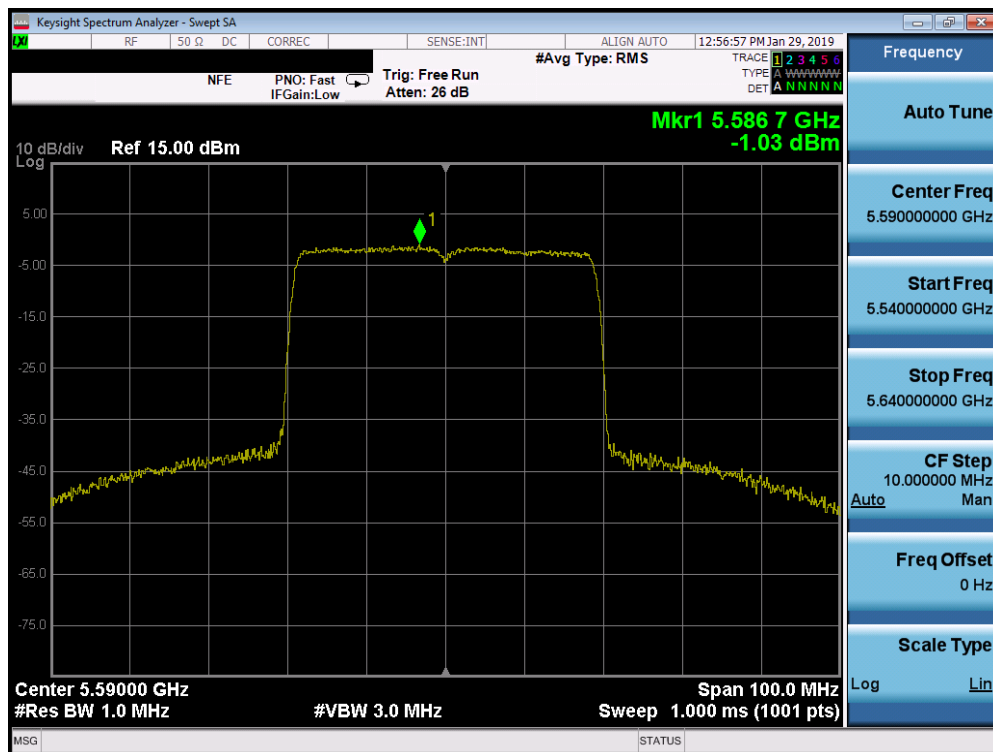


Plot 7-240. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11n (UNII Band 2C) – Ch. 142)

FCC ID: A3LSMG977U	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 155 of 259

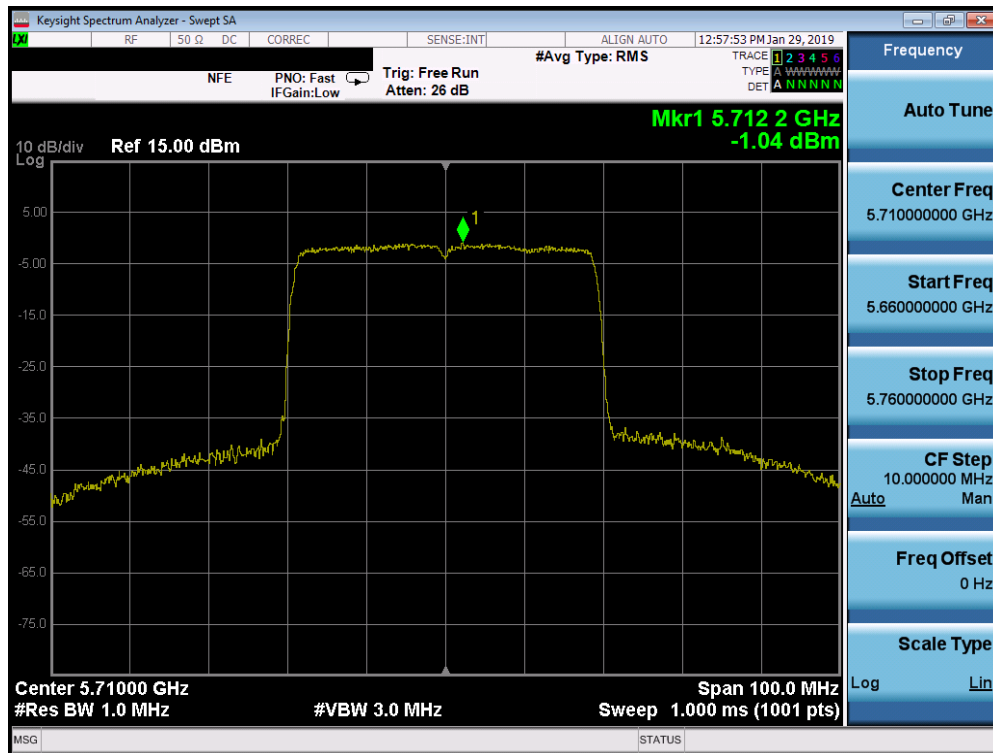


Plot 7-241. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax (UNII Band 2C) – Ch. 102)

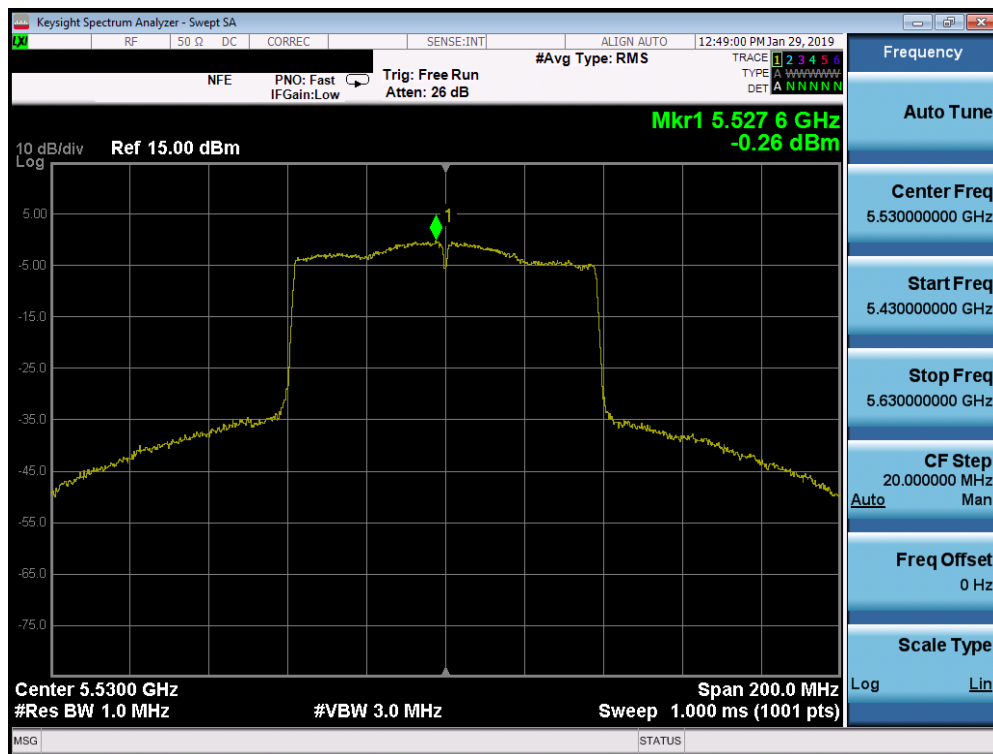


Plot 7-242. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax (UNII Band 2C) – Ch. 118)

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 156 of 259



Plot 7-243. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax (UNII Band 2C) – Ch. 142)

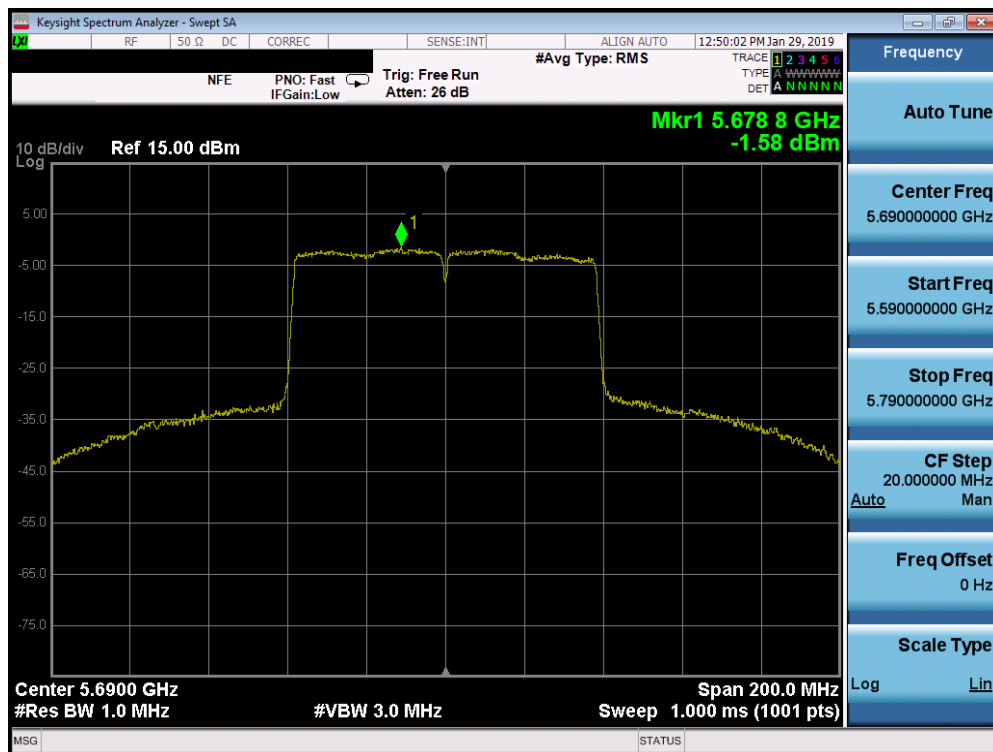


Plot 7-244. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ac (UNII Band 2C) – Ch. 106)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 157 of 259

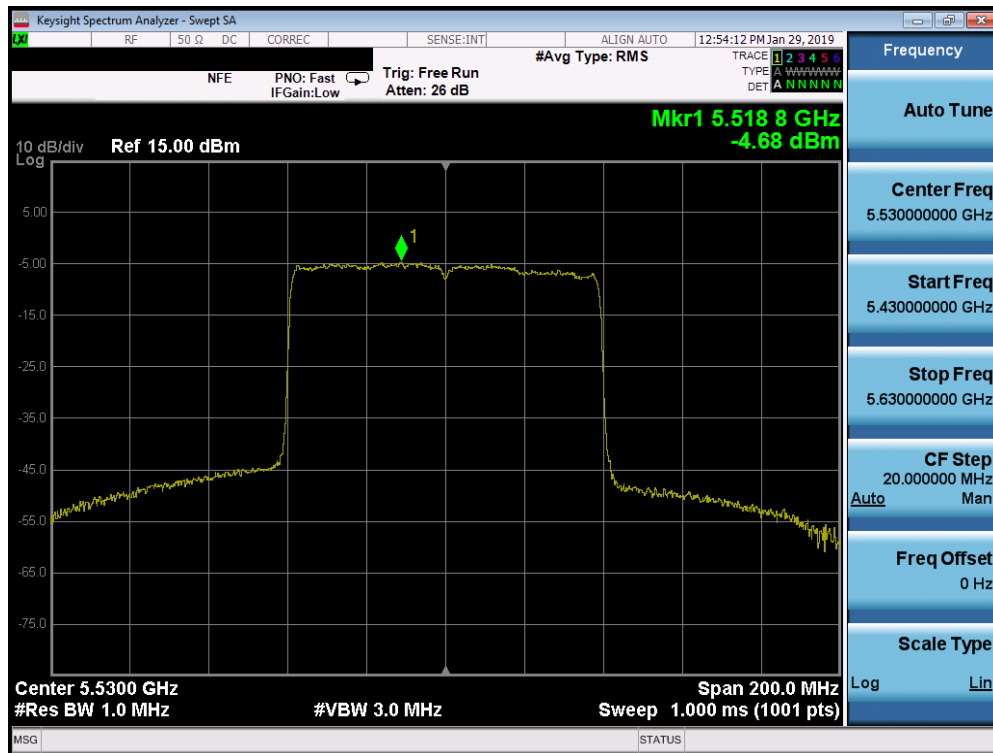


Plot 7-245. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ac (UNII Band 2C) – Ch. 122)

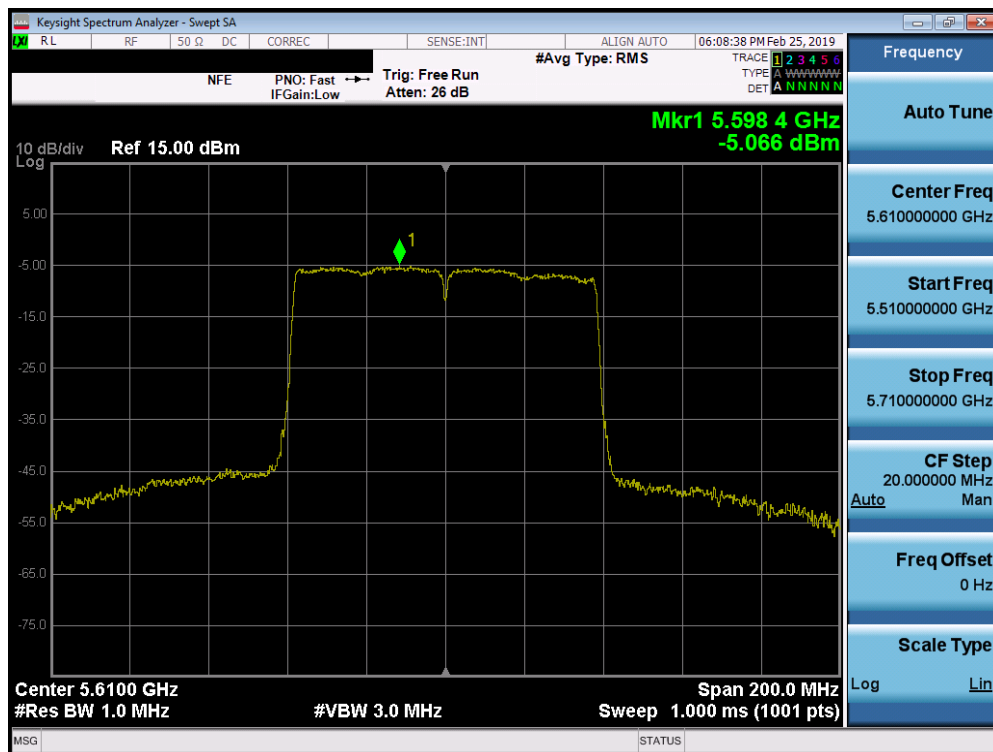


Plot 7-246. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ac (UNII Band 2C) – Ch. 138)

FCC ID: A3LSMG977U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 158 of 259	

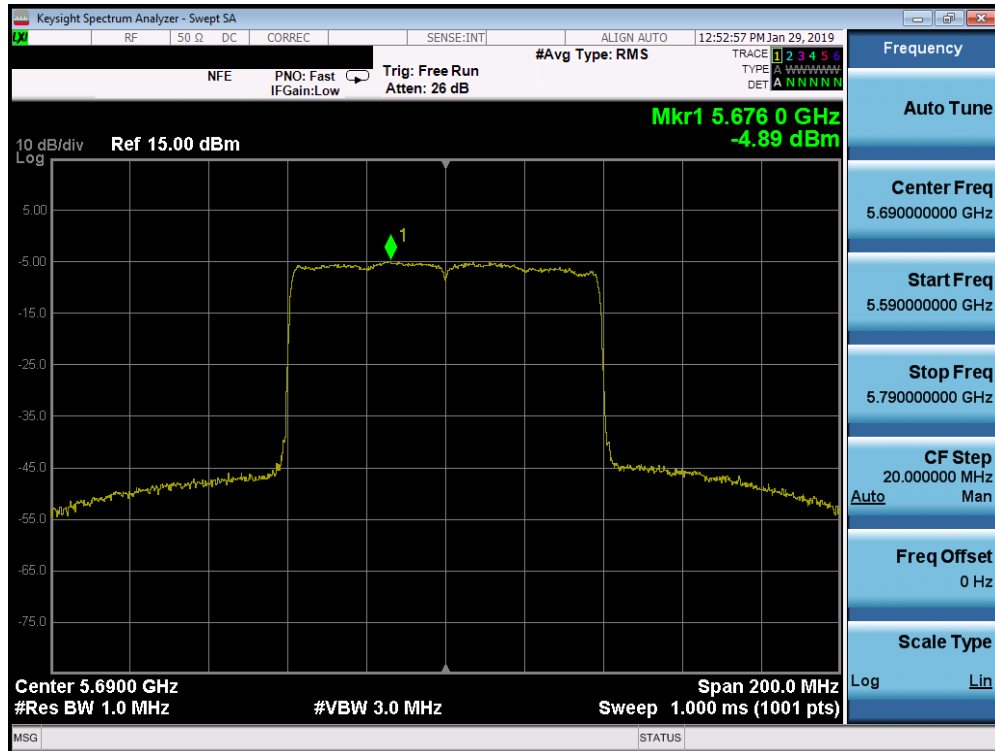


Plot 7-247. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ax (UNII Band 2C) – Ch. 106)



Plot 7-248. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ax (UNII Band 2C) – Ch. 122)

FCC ID: A3LSMG977U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 159 of 259

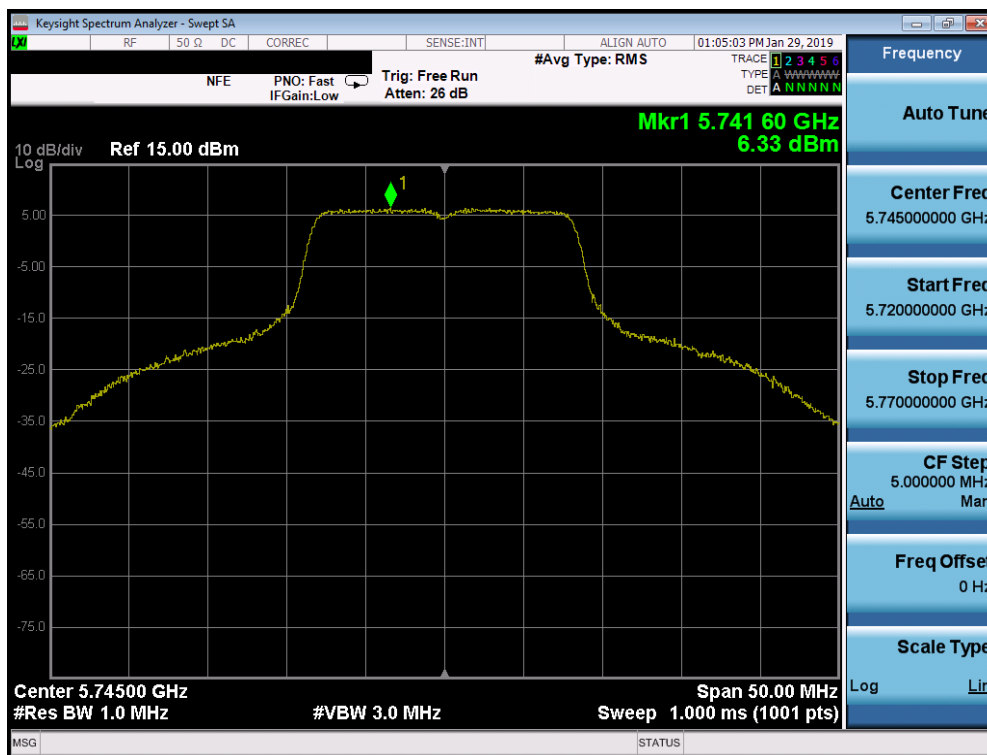


Plot 7-249. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ax (UNII Band 2C) – Ch. 138)

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 160 of 259

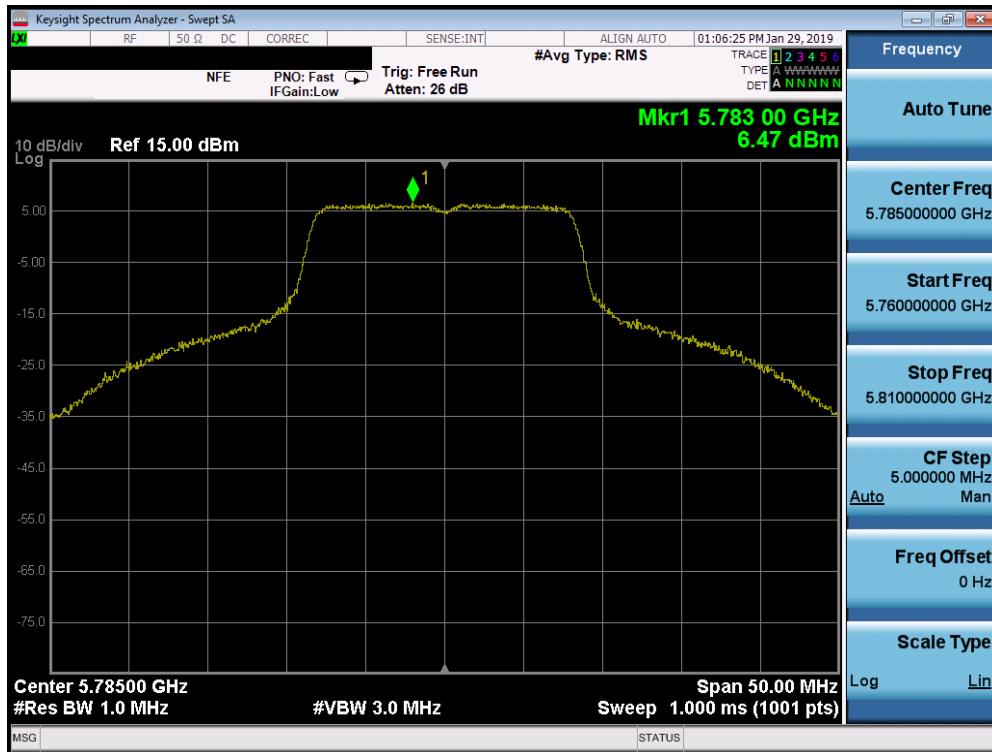
	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured Power Density [dBm]	Max Permissible Power Density [dBm/500kHz]	Margin [dB]
Band 3	5745	149	a	6	6.33	30.0	-23.67
	5785	157	a	6	6.47	30.0	-23.53
	5825	165	a	6	3.91	30.0	-26.09
	5745	149	n (20MHz)	6.5/7.2 (MCS0)	6.00	30.0	-24.00
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	6.16	30.0	-23.84
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	6.12	30.0	-23.88
	5745	149	ax (20MHz)	6.5/7.2 (MCS0)	4.54	30.0	-25.46
	5785	157	ax (20MHz)	6.5/7.2 (MCS0)	4.33	30.0	-25.67
	5825	165	ax (20MHz)	6.5/7.2 (MCS0)	3.78	30.0	-26.22
	5755	151	n (40MHz)	13.5/15 (MCS0)	2.81	30.0	-27.19
	5795	159	n (40MHz)	13.5/15 (MCS0)	2.37	30.0	-27.63
	5755	151	ax (40MHz)	13.5/15 (MCS0)	-0.44	30.0	-30.44
	5795	159	ax (40MHz)	13.5/15 (MCS0)	-0.80	30.0	-30.80
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	-1.29	30.0	-31.29
	5775	155	ax (80MHz)	29.3/32.5 (MCS0)	-4.31	30.0	-34.31

Table 7-24. Band 3 Conducted Power Spectral Density Measurements SISO ANT2

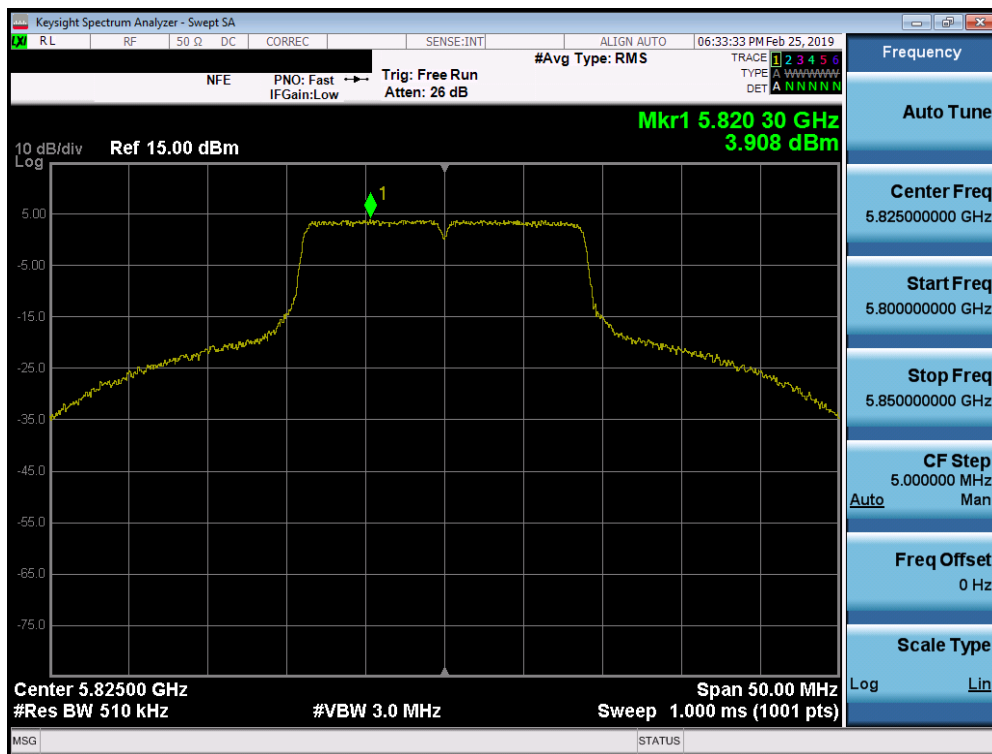


Plot 7-250. Power Spectral Density Plot SISO ANT2 (802.11a (UNII Band 3) – Ch. 149)

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 161 of 259

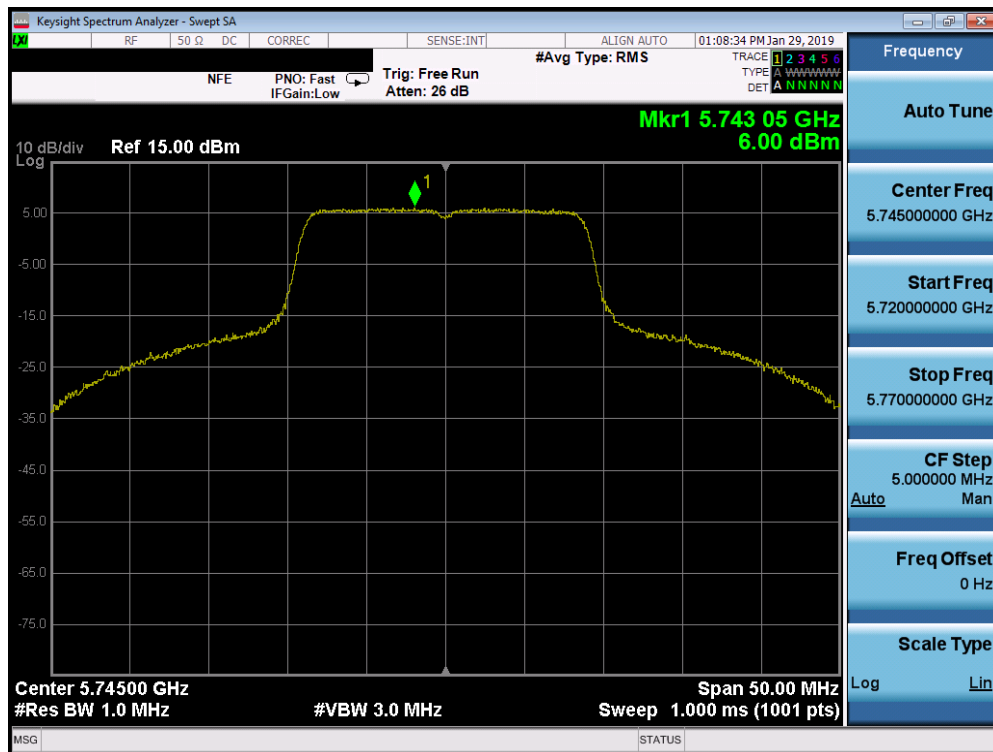


Plot 7-251. Power Spectral Density Plot SISO ANT2 (802.11a (UNII Band 3) – Ch. 157)

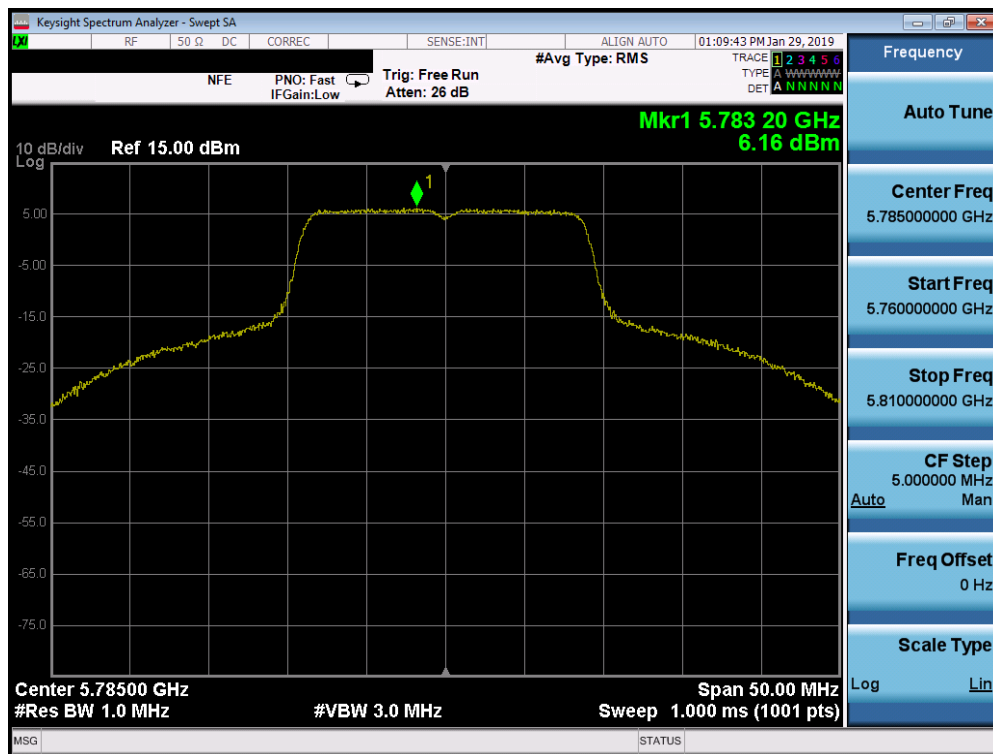


Plot 7-252. Power Spectral Density Plot SISO ANT2 (802.11a (UNII Band 3) – Ch. 165)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 162 of 259

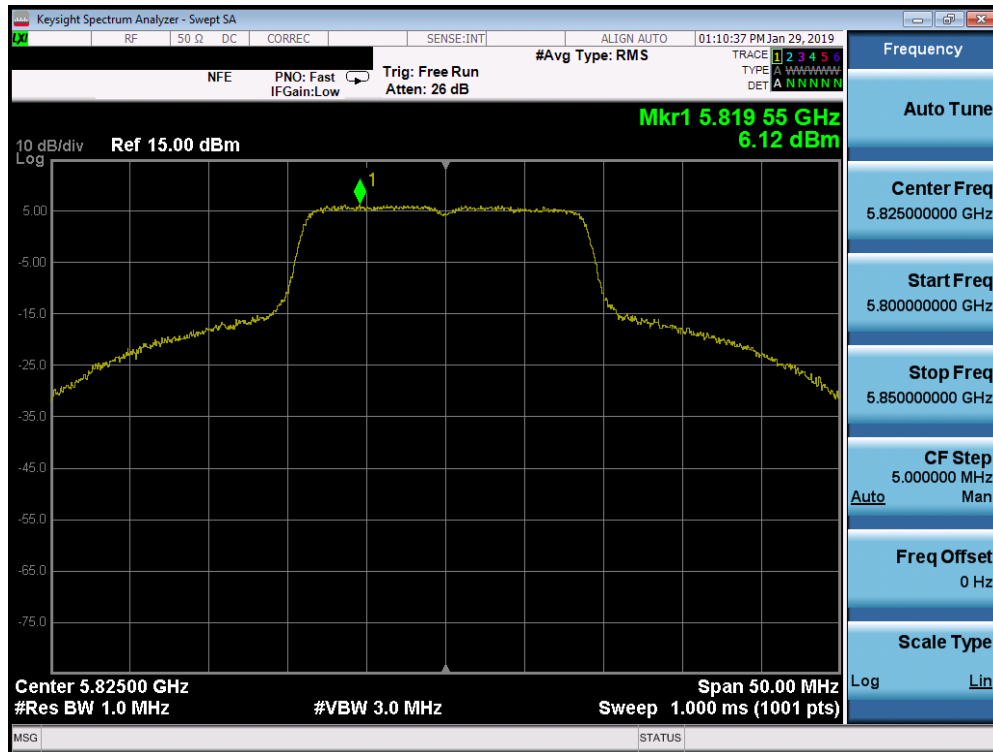


Plot 7-253. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11n (UNII Band 3) – Ch. 149)

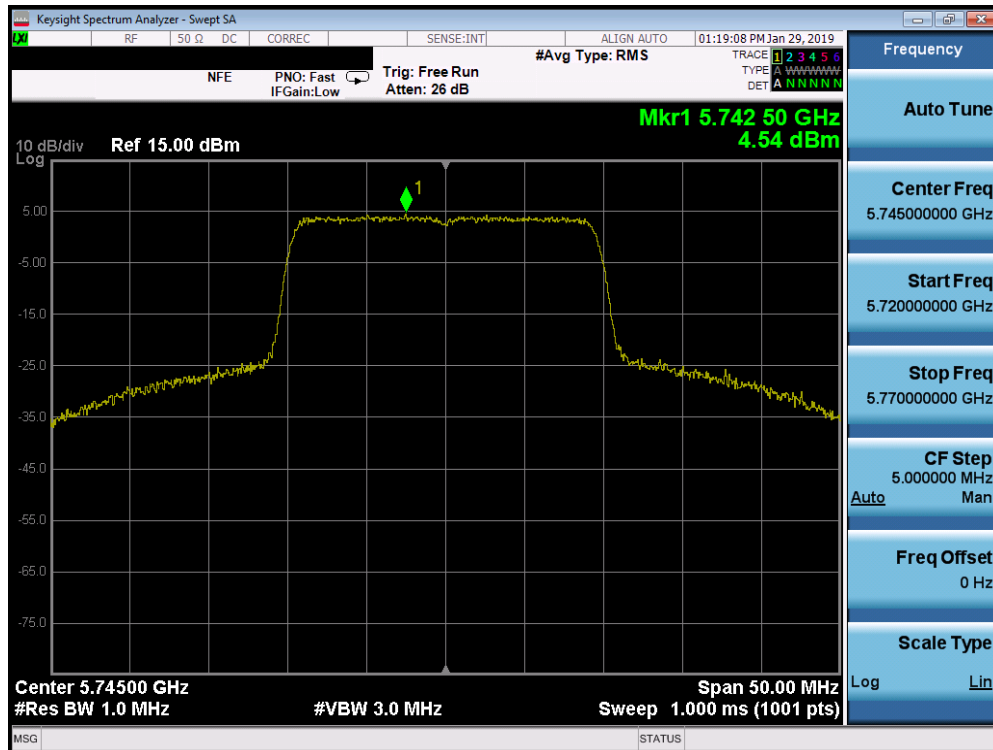


Plot 7-254. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11n (UNII Band 3) – Ch. 157)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 163 of 259

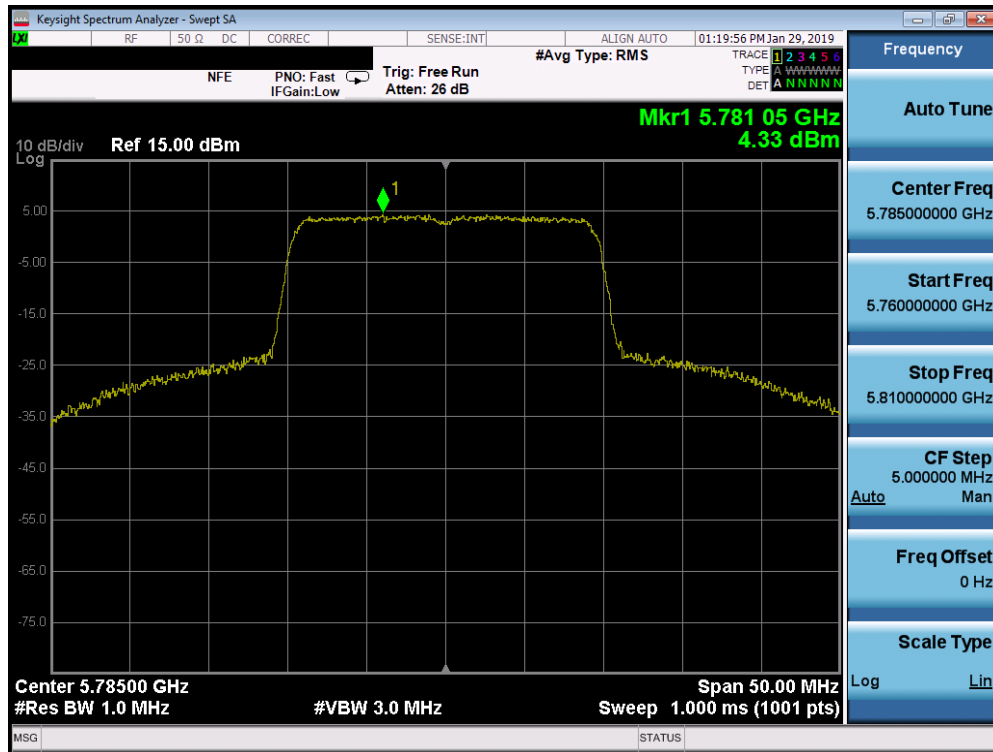


Plot 7-255. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11n (UNII Band 3) – Ch. 165)

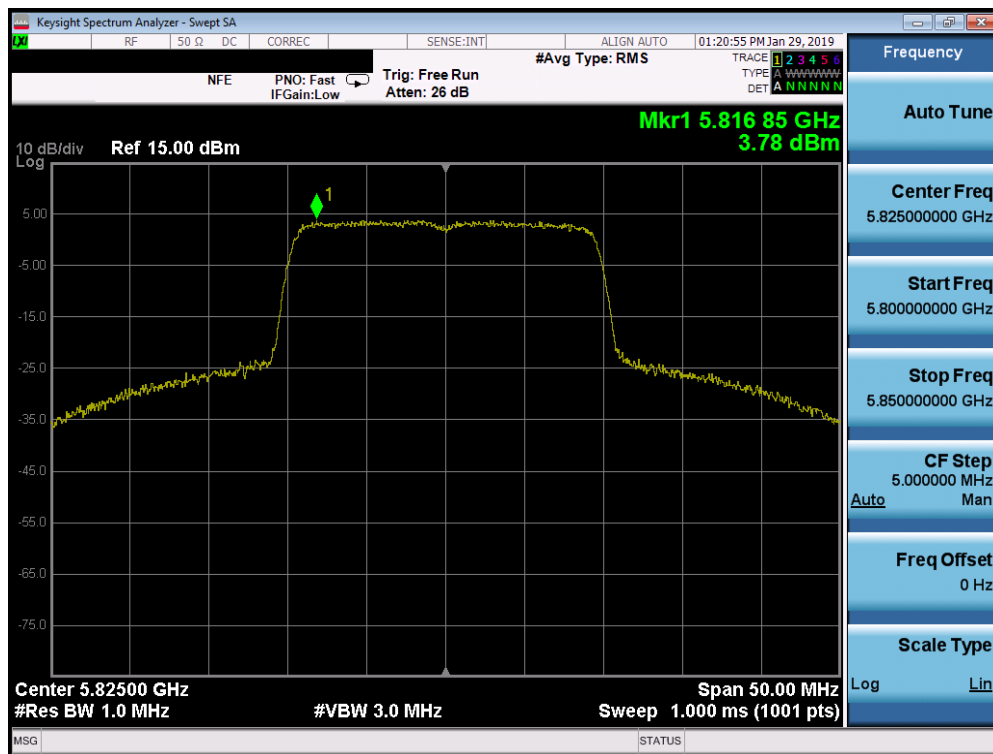


Plot 7-256. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax (UNII Band 3) – Ch. 149)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 164 of 259

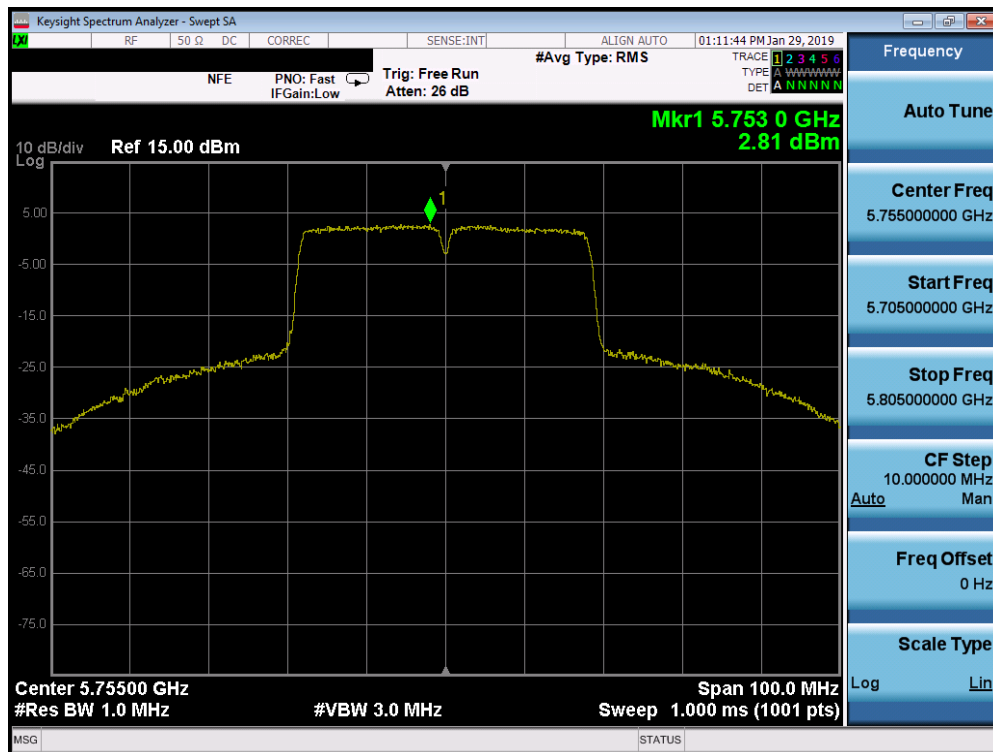


Plot 7-257. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax (UNII Band 3) – Ch. 157)

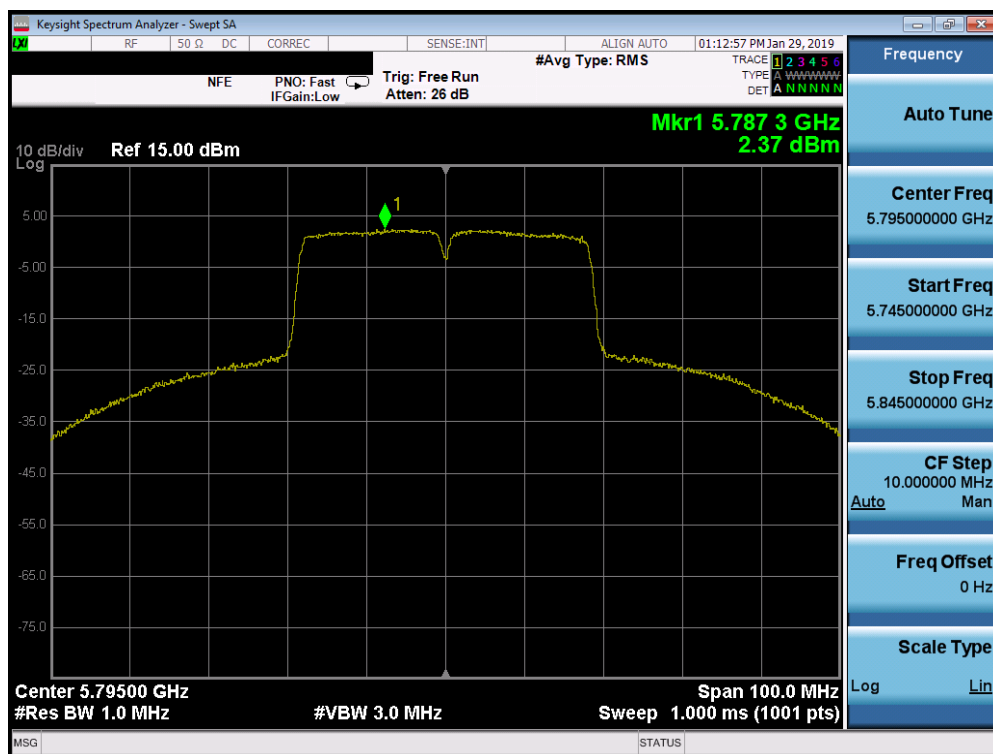


Plot 7-258. Power Spectral Density Plot SISO ANT2 (20MHz BW 802.11ax (UNII Band 3) – Ch. 165)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 165 of 259

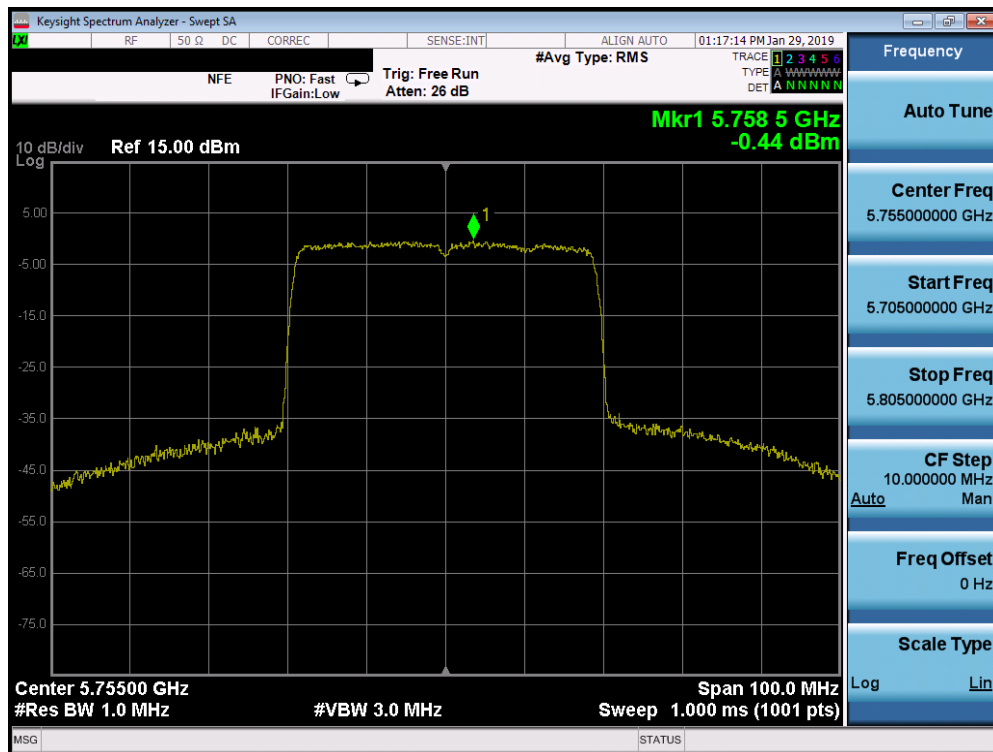


Plot 7-259. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11n (UNII Band 3) – Ch. 151)

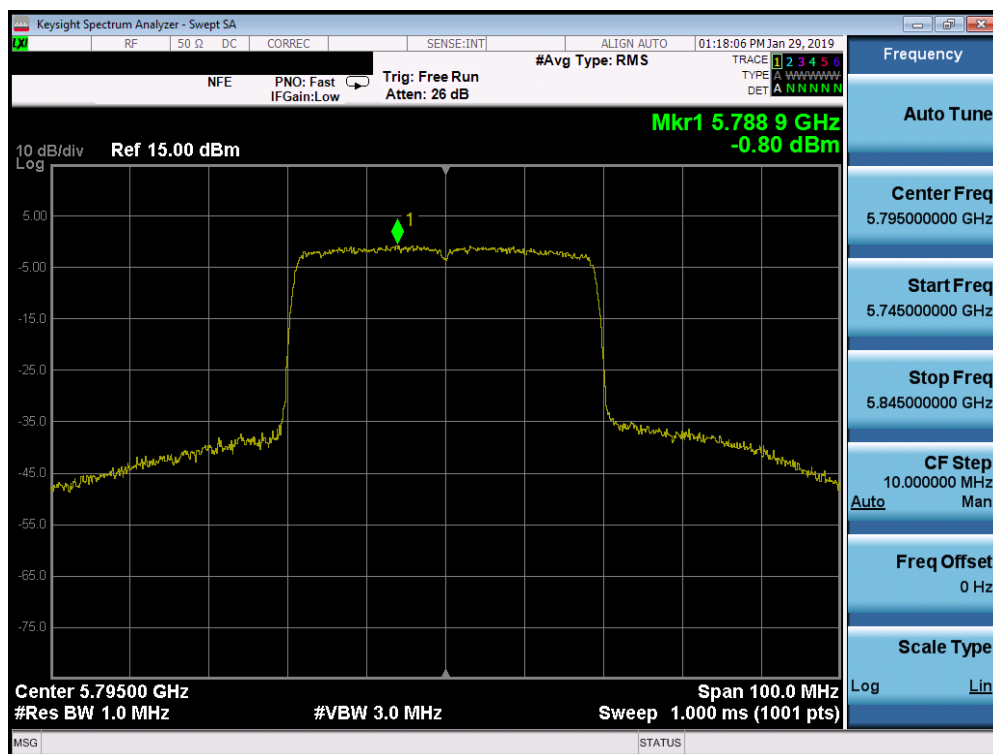


Plot 7-260. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11n (UNII Band 3) – Ch. 159)

FCC ID: A3LSMG977U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 166 of 259

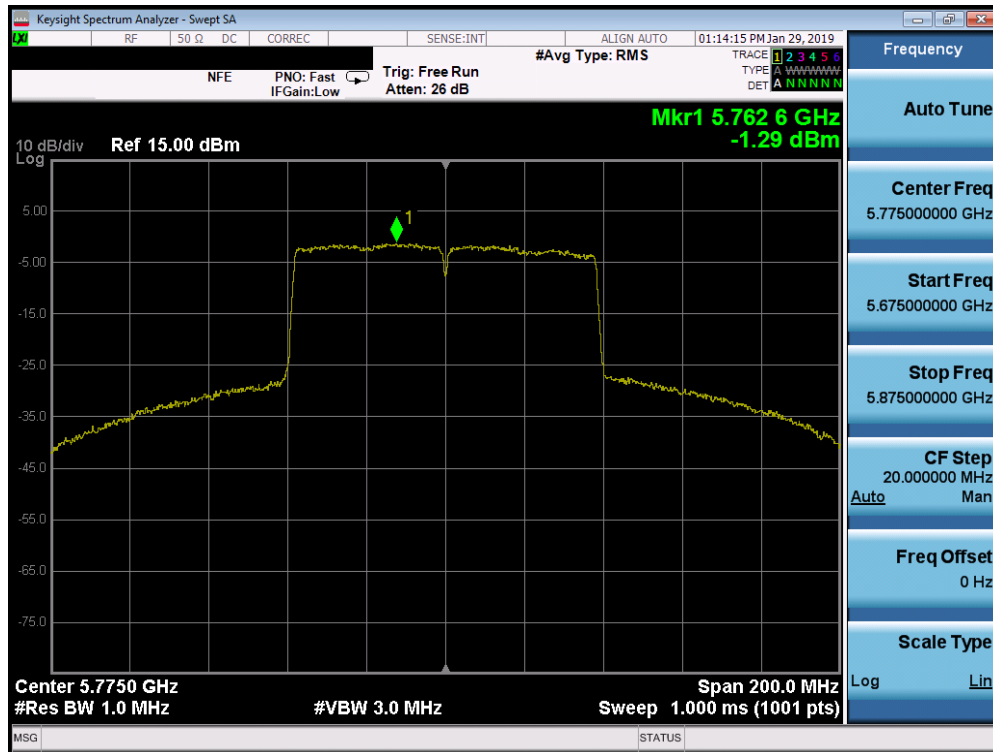


Plot 7-261. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax (UNII Band 3) – Ch. 151)

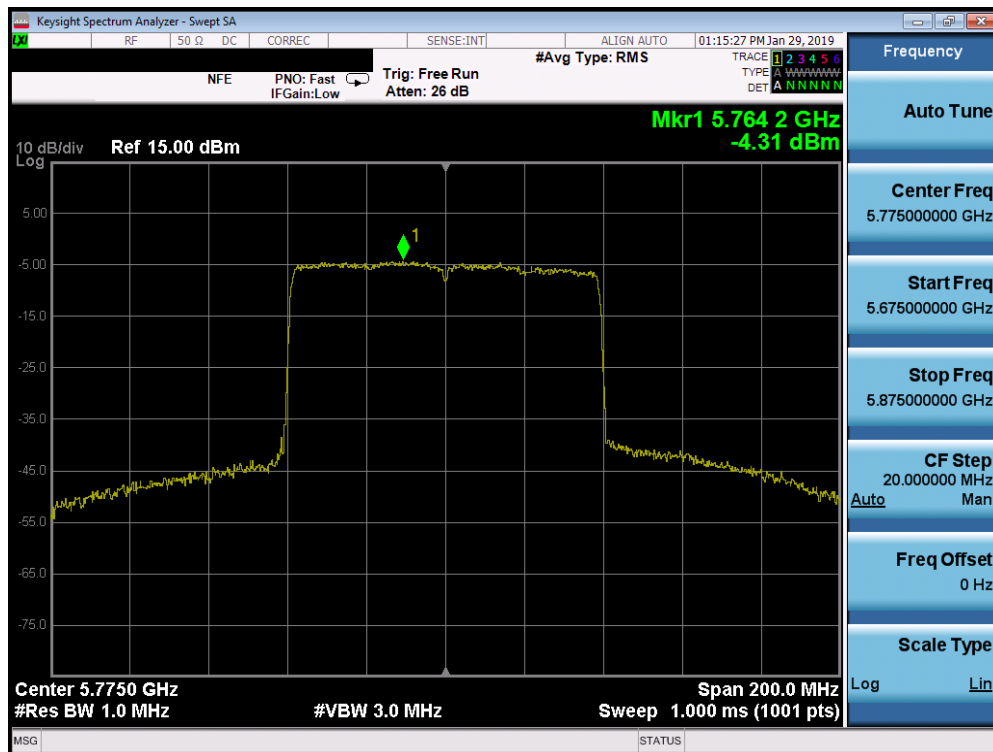


Plot 7-262. Power Spectral Density Plot SISO ANT2 (40MHz BW 802.11ax (UNII Band 3) – Ch. 159)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 167 of 259



Plot 7-263. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ac (UNII Band 3) – Ch. 155)



Plot 7-264. Power Spectral Density Plot SISO ANT2 (80MHz BW 802.11ax (UNII Band 3) – Ch. 155)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 168 of 259

Summed MIMO Power Spectral Density Measurements

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Antenna-1 Power Density [dBm]	Antenna-2 Power Density [dBm]	Summed MIMO Power Density [dBm]	Max Power Density [dBm/MHz]	Margin [dB]
Band 1	5180	36	a	6.5/7.2 (MCS0)	6.35	5.68	9.04	11.0	-1.96
	5200	40	a	6.5/7.2 (MCS0)	5.30	4.74	8.04	11.0	-2.96
	5240	48	a	6.5/7.2 (MCS0)	5.80	5.20	8.52	11.0	-2.48
	5180	36	n (20MHz)	6.5/7.2 (MCS0)	6.40	5.82	9.13	11.0	-1.87
	5200	40	n (20MHz)	6.5/7.2 (MCS0)	4.87	4.87	7.88	11.0	-3.12
	5240	48	n (20MHz)	6.5/7.2 (MCS0)	5.48	5.77	8.64	11.0	-2.36
	5180	36	ax (20MHz)	6.5/7.2 (MCS0)	2.89	2.37	5.65	11.0	-5.35
	5200	40	ax (20MHz)	6.5/7.2 (MCS0)	3.11	2.52	5.84	11.0	-5.16
	5240	48	ax (20MHz)	6.5/7.2 (MCS0)	3.37	3.41	6.40	11.0	-4.60
	5190	38	n (40MHz)	13.5/15 (MCS0)	3.29	2.81	6.07	11.0	-4.93
	5230	46	n (40MHz)	13.5/15 (MCS0)	2.57	2.46	5.53	11.0	-5.47
	5190	38	ax (40MHz)	13.5/15 (MCS0)	-1.21	-1.57	1.62	11.0	-9.38
	5230	46	ax (40MHz)	13.5/15 (MCS0)	-0.86	-0.76	2.20	11.0	-8.80
	5210	42	ac (80MHz)	29.3/32.5 (MCS0)	-0.56	-1.15	2.17	11.0	-8.83
	5210	42	ax (80MHz)	29.3/32.5 (MCS0)	-4.63	-4.79	-1.70	11.0	-12.70
Band 2A	5260	52	a	6.5/7.2 (MCS0)	5.97	5.44	8.72	11.0	-2.28
	5280	56	a	6.5/7.2 (MCS0)	5.91	5.61	8.77	11.0	-2.23
	5320	64	a	6.5/7.2 (MCS0)	6.44	6.28	9.37	11.0	-1.63
	5260	52	n (20MHz)	6.5/7.2 (MCS0)	5.56	5.65	8.62	11.0	-2.38
	5280	56	n (20MHz)	6.5/7.2 (MCS0)	5.50	5.81	8.67	11.0	-2.33
	5320	64	n (20MHz)	6.5/7.2 (MCS0)	7.01	6.88	9.96	11.0	-1.04
	5260	52	ax (20MHz)	6.5/7.2 (MCS0)	3.48	3.49	6.50	11.0	-4.50
	5280	56	ax (20MHz)	6.5/7.2 (MCS0)	3.35	3.16	6.27	11.0	-4.73
	5320	64	ax (20MHz)	6.5/7.2 (MCS0)	3.57	3.29	6.44	11.0	-4.56
	5270	54	n (40MHz)	13.5/15 (MCS0)	2.13	2.08	5.12	11.0	-5.88
	5310	62	n (40MHz)	13.5/15 (MCS0)	3.85	2.93	6.42	11.0	-4.58
	5270	54	ax (40MHz)	13.5/15 (MCS0)	-0.40	-1.07	2.29	11.0	-8.71
	5310	62	ax (40MHz)	13.5/15 (MCS0)	-1.10	-1.33	1.80	11.0	-9.20
	5290	58	ac (80MHz)	29.3/32.5 (MCS0)	-0.51	-0.57	2.47	11.0	-8.53
	5290	58	ax (80MHz)	29.3/32.5 (MCS0)	-4.98	-4.64	-1.80	11.0	-12.80
Band 2C	5500	100	a	6.5/7.2 (MCS0)	6.90	6.86	9.89	11.0	-1.11
	5600	120	a	6.5/7.2 (MCS0)	5.59	5.04	8.33	11.0	-2.67
	5720	144	a	6.5/7.2 (MCS0)	5.49	5.44	8.48	11.0	-2.52
	5500	100	n (20MHz)	6.5/7.2 (MCS0)	6.68	7.25	9.98	11.0	-1.02
	5600	120	n (20MHz)	6.5/7.2 (MCS0)	5.29	5.38	8.35	11.0	-2.65
	5720	144	n (20MHz)	6.5/7.2 (MCS0)	5.27	5.13	8.21	11.0	-2.79
	5500	100	ax (20MHz)	6.5/7.2 (MCS0)	3.48	4.02	6.77	11.0	-4.23
	5600	120	ax (20MHz)	6.5/7.2 (MCS0)	2.89	3.06	5.99	11.0	-5.01
	5720	144	ax (20MHz)	6.5/7.2 (MCS0)	3.20	3.76	6.50	11.0	-4.50
	5510	102	n (40MHz)	13.5/15 (MCS0)	3.51	4.07	6.81	11.0	-4.19
	5590	118	n (40MHz)	13.5/15 (MCS0)	1.49	2.11	4.82	11.0	-6.18
	5710	142	n (40MHz)	13.5/15 (MCS0)	2.19	1.91	5.06	11.0	-5.94
	5510	102	ax (40MHz)	13.5/15 (MCS0)	-0.64	-0.54	2.42	11.0	-8.58
	5590	118	ax (40MHz)	13.5/15 (MCS0)	-1.04	-1.03	1.98	11.0	-9.02
	5710	142	ax (40MHz)	13.5/15 (MCS0)	-1.17	-1.04	1.91	11.0	-9.09
	5530	106	ac (80MHz)	29.3/32.5 (MCS0)	-0.29	-0.26	2.74	11.0	-8.26
	5610	122	ac (80MHz)	29.3/32.5 (MCS0)	-2.18	-2.26	0.79	11.0	-10.21
	5690	138	ac (80MHz)	29.3/32.5 (MCS0)	-2.07	-1.58	1.19	11.0	-9.81
	5530	106	ax (80MHz)	29.3/32.5 (MCS0)	-4.92	-4.68	-1.79	11.0	-12.79
	5610	122	ax (80MHz)	29.3/32.5 (MCS0)	-5.01	-5.07	-2.03	11.0	-13.03
	5690	138	ax (80MHz)	29.3/32.5 (MCS0)	-4.65	-4.89	-1.76	11.0	-12.76

Table 7-25. Bands 1, 2A, 2C MIMO Conducted Power Spectral Density Measurements

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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	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]
Band 3	5745	149	a	6.5/7.2 (MCS0)	5.84	6.33	9.10	30.0	-20.90
	5785	157	a	6.5/7.2 (MCS0)	6.14	6.47	9.32	30.0	-20.68
	5825	165	a	6.5/7.2 (MCS0)	6.15	3.91	8.18	30.0	-21.82
	5745	149	n (20MHz)	6.5/7.2 (MCS0)	6.01	6.00	9.02	30.0	-20.98
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	6.25	6.16	9.22	30.0	-20.78
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	5.73	6.12	8.94	30.0	-21.06
	5745	149	ax (20MHz)	6.5/7.2 (MCS0)	3.70	4.54	7.15	30.0	-22.85
	5785	157	ax (20MHz)	6.5/7.2 (MCS0)	4.08	4.33	7.22	30.0	-22.78
	5825	165	ax (20MHz)	6.5/7.2 (MCS0)	3.34	3.78	6.58	30.0	-23.42
	5755	151	n (40MHz)	13.5/15 (MCS0)	2.15	2.81	5.50	30.0	-24.50
	5795	159	n (40MHz)	13.5/15 (MCS0)	2.20	2.37	5.30	30.0	-24.70
	5755	151	ax (40MHz)	13.5/15 (MCS0)	-0.80	-0.44	2.39	30.0	-27.61
	5795	159	ax (40MHz)	13.5/15 (MCS0)	-0.71	-0.80	2.26	30.0	-27.74
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	-1.62	-1.29	1.56	30.0	-28.44
	5775	155	ax (80MHz)	29.3/32.5 (MCS0)	-4.60	-4.31	-1.44	30.0	-31.44

Table 7-26. Band 3 MIMO Conducted Power Spectral Density Measurements

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Note:

Per ANSI C63.10-2013 Section 14.3.2.2 and 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:

Assuming the average conducted power spectral density for Ant1 is measured to be 6.40 dBm for Antenna-1 and the average conducted power spectral density for Ant2 is 5.82 dBm.

Antenna 1 + Antenna 2 = MIMO

$$(6.40 \text{ dBm} + 5.82 \text{ dBm}) = (4.37 \text{ mW} + 3.82 \text{ mW}) = 8.18 \text{ mW} = 9.13 \text{ dBm}$$

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7.6 Radiated Spurious Emission Measurements – Above 1GHz

§15.407(b) §15.205 §15.209; RSS-Gen [8.9]

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 ANSI C63.10-2013 and KDB 789033 D02 v02r01, and at the appropriate frequencies. All channels, modes 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.

For transmitters operating in the 5.15-5.25 GHz and 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.

For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR and Table 6 of RSS-Gen (8.10) must not exceed the limits shown in Table 7-27 per Section 15.209 and RSS-Gen (8.9).

Frequency	Field Strength [$\mu\text{V/m}$]	Measured Distance [Meters]
Above 960.0 MHz	500	3

Table 7-27. Radiated Limits

Test Procedures Used

ANSI C63.10-2013 – Sections 12.7.7.2, 12.7.6, 12.7.5
KDB 789033 D02 v02r01 – Section G

Test Settings

Average Measurements above 1GHz (Method AD)

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = power average (RMS)
5. Number of measurement points = 1001 (Number of points must be $\geq 2 \times \text{span/RBW}$)
6. Averaging type = power (RMS)
7. Sweep time = auto couple
8. Trace was averaged over 100 sweeps

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Peak Measurements above 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Peak Measurements below 1GHz

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

Test Setup

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

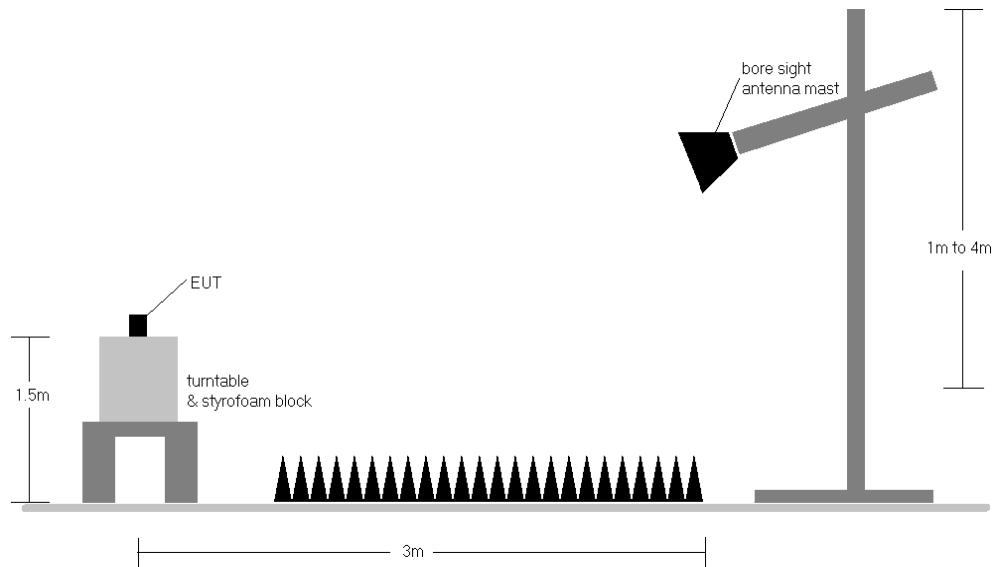


Figure 7-5. Test Instrument & Measurement Setup

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Test Notes

1. All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 and Section 8.10 of RSS-Gen are below the limit shown in Table 7-27.
2. 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 dB μ V/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 68.2dB μ V/m.
3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
4. This unit was tested with its standard battery.
5. 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.
6. 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.
7. 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.
8. The “-” shown in the following RSE tables are used to denote a noise floor measurement.

Sample Calculations

Determining Spurious Emissions Levels

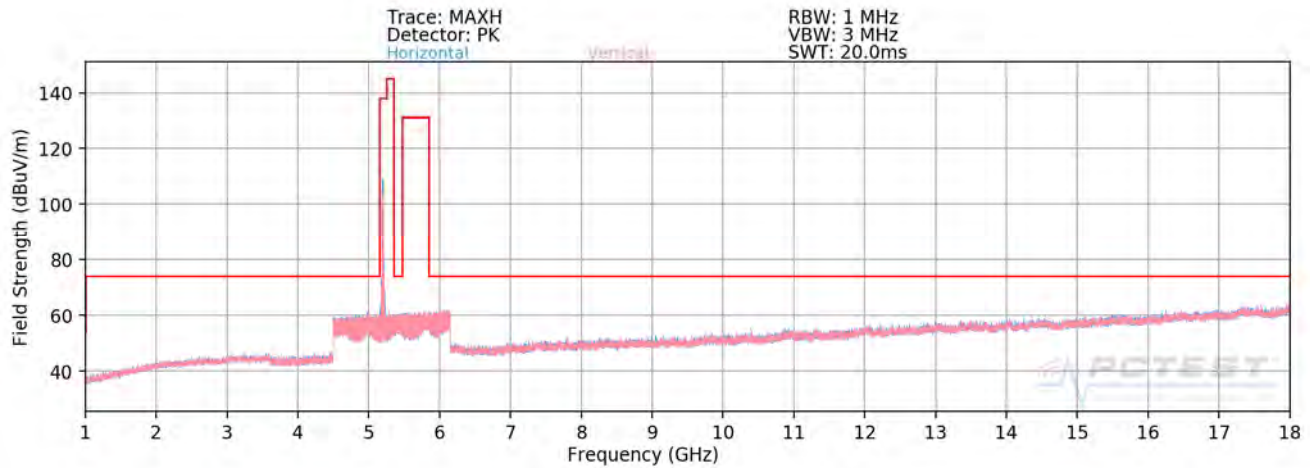
- o Field Strength Level [dB μ V/m] = Analyzer Level [dBm] + 107 + AFCL [dB/m]
- o AFCL [dB/m] = Antenna Factor [dB/m] + Cable Loss [dB]
- o Margin [dB] = Field Strength Level [dB μ V/m] – Limit [dB μ V/m]

Radiated Band Edge Measurement Offset

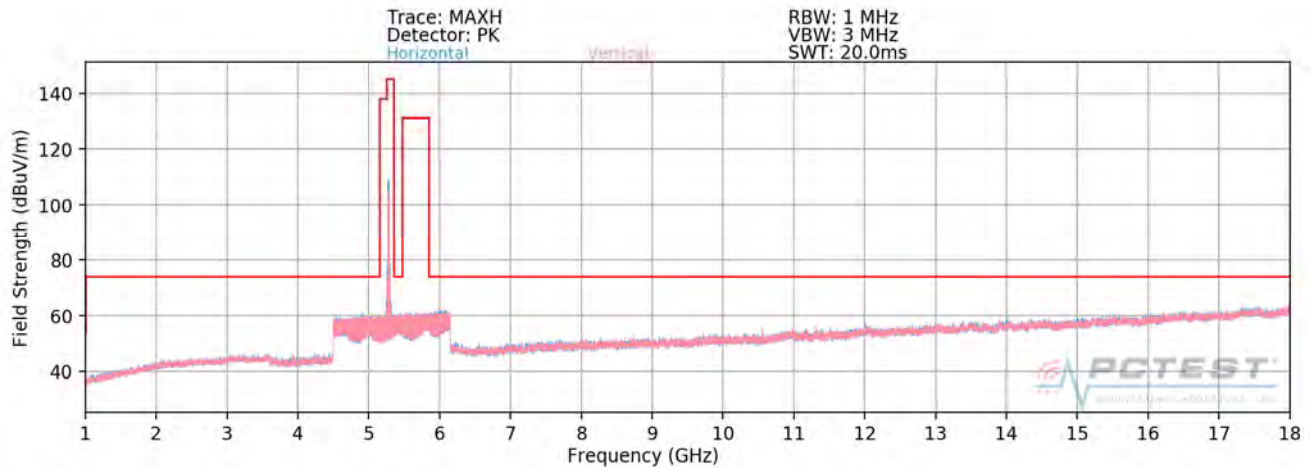
- o The amplitude offset shown in the radiated restricted band edge plots in Section Radiated Spurious Emission Measurements – Above 1GHz was calculated using the formula:
Offset (dB) = (Antenna Factor + Cable Loss + Attenuator) – Preamplifier Gain

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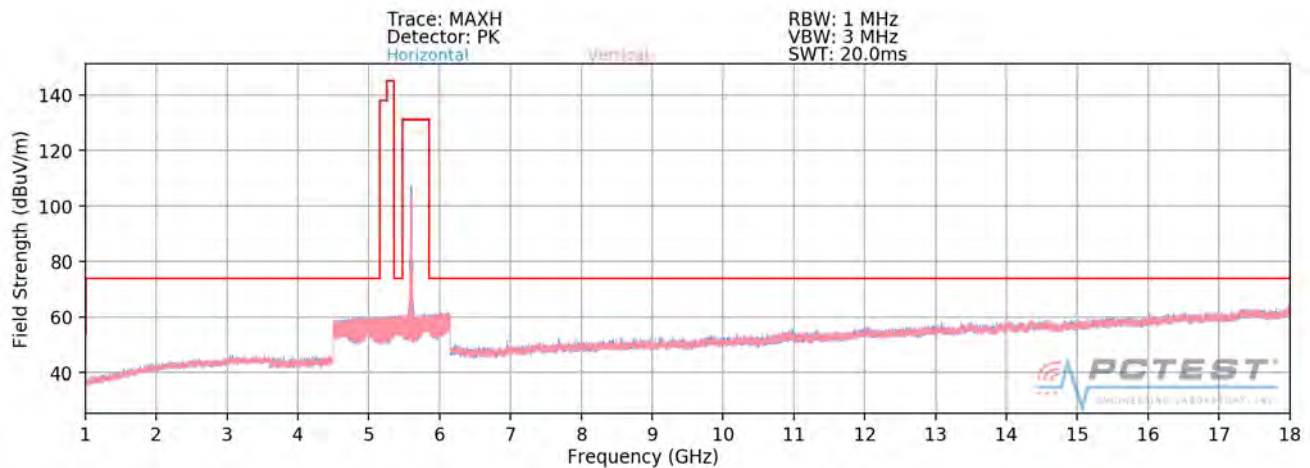
7.6.1 SISO Antenna-1 Radiated Spurious Emission Measurements



Plot 7-265. Radiated Spurious Plot above 1GHz SISO ANT1 (802.11a – U1 Ch. 40)

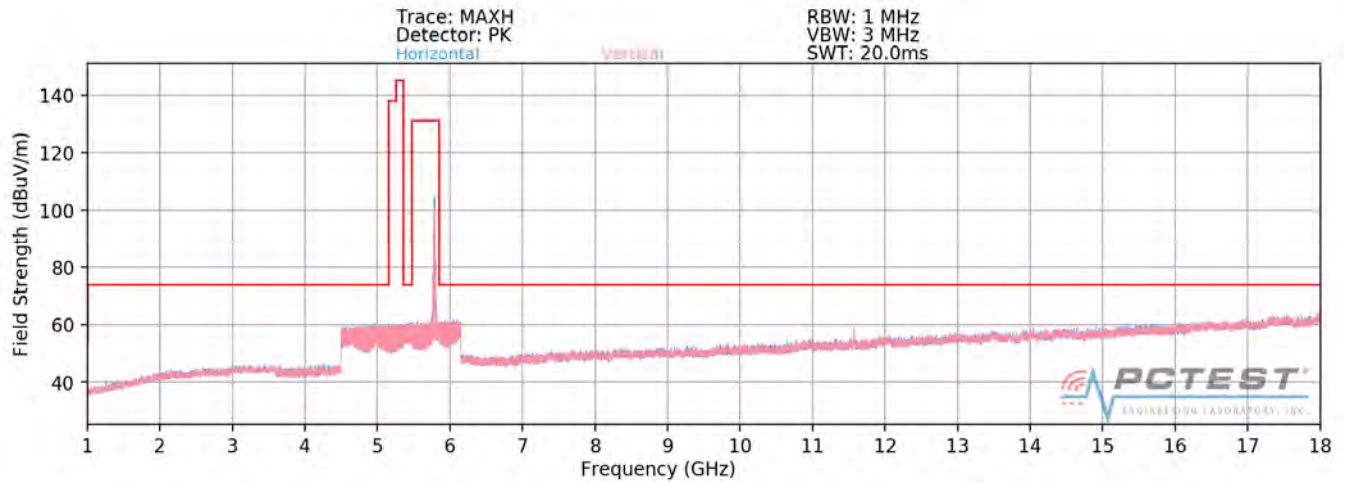


Plot 7-266. Radiated Spurious Plot above 1GHz SISO ANT1 (802.11a – U2A Ch. 56)



Plot 7-267. Radiated Spurious Plot above 1GHz SISO ANT1 (802.11a – U2C Ch. 120)

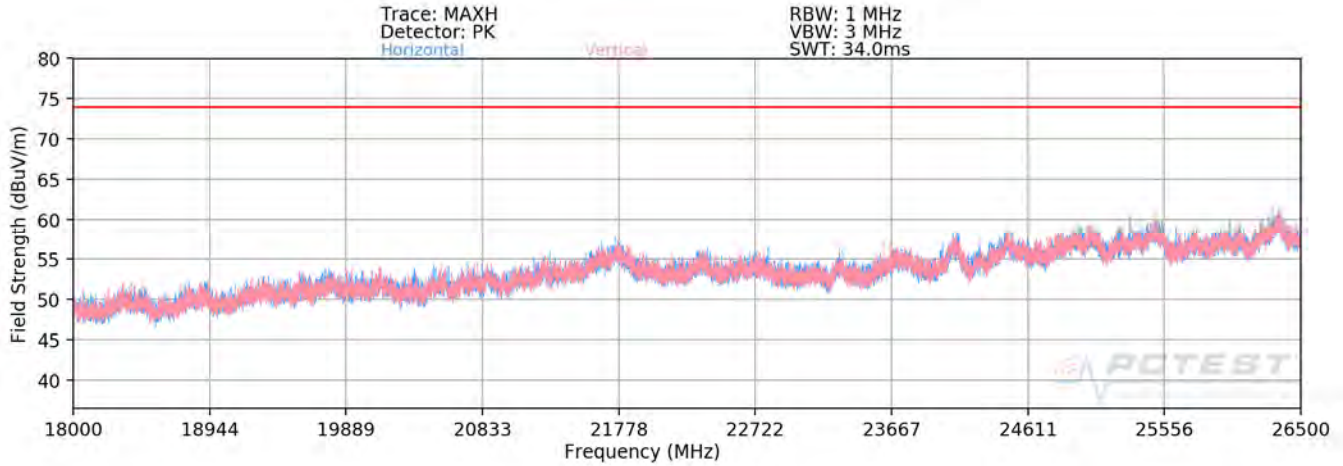
FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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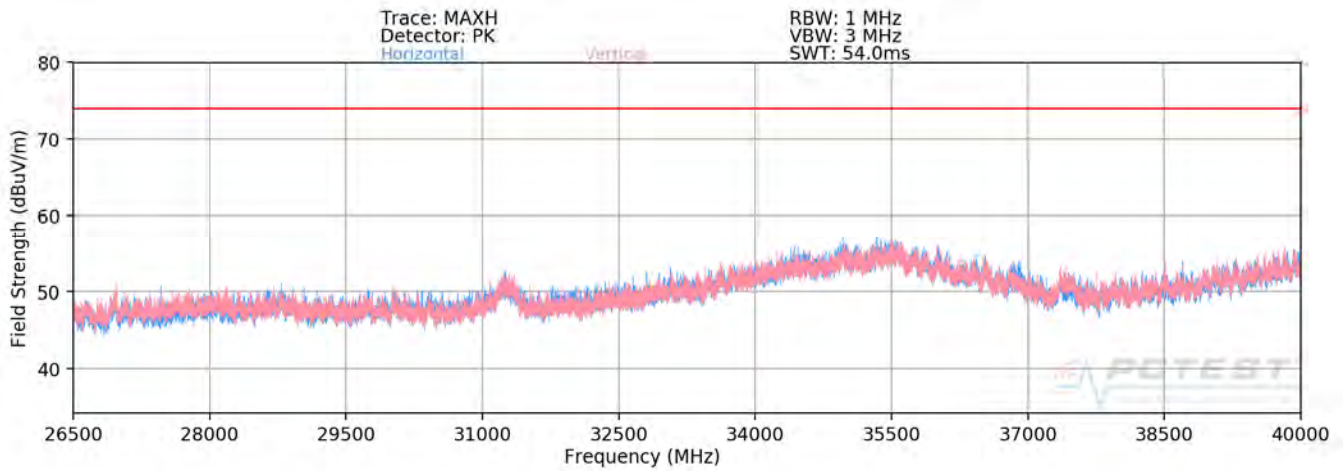
Plot 7-268. Radiated Spurious Plot above 1GHz SISO ANT1 (802.11a – U3 Ch. 157)

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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SISO Antenna-1 Radiated Spurious Emissions Measurements (Above 18GHz)



Plot 7-269. Radiated Spurious Plot 18GHz - 26.5GHz SISO ANT1 (802.11a)



Plot 7-270. Radiated Spurious Plot 26.5GHz - 40GHz SISO ANT1 (802.11a)

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SISO Antenna-1 Radiated Spurious Emission Measurements

§15.407(b) §15.205 & §15.209; RSS-Gen [8.9]

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10360.00	Peak	H	253	361	-68.08	18.99	0.00	57.91	68.20	-10.29
* 15540.00	Average	H	-	-	-85.42	27.73	0.00	49.31	53.98	-4.67
* 15540.00	Peak	H	-	-	-74.07	27.73	0.00	60.66	73.98	-13.32
* 20720.00	Average	H	-	-	-77.78	17.17	-9.54	36.85	53.98	-17.13
* 20720.00	Peak	H	-	-	-65.71	17.17	-9.54	48.92	73.98	-25.06
25900.00	Peak	H	-	-	-65.32	19.93	-9.54	52.07	68.20	-16.13

Table 7-28. Radiated Measurements SISO ANT1

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10400.00	Peak	H	254	359	-68.23	19.36	0.00	58.13	68.20	-10.07
* 15600.00	Average	H	-	-	-85.38	27.61	0.00	49.23	53.98	-4.75
* 15600.00	Peak	H	-	-	-74.29	27.61	0.00	60.32	73.98	-13.66
* 20800.00	Average	H	-	-	-77.93	17.65	-9.54	37.18	53.98	-16.80
* 20800.00	Peak	H	-	-	-66.47	17.65	-9.54	48.64	73.98	-25.34
26000.00	Peak	H	-	-	-65.32	20.68	-9.54	52.82	68.20	-15.38

Table 7-29. Radiated Measurements SISO ANT1

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5240MHz
Channel: 48

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10480.00	Peak	H	-	-	-72.75	19.72	0.00	53.97	68.20	-14.23
* 15720.00	Average	H	-	-	-85.12	27.41	0.00	49.29	53.98	-4.69
* 15720.00	Peak	H	-	-	-74.08	27.41	0.00	60.33	73.98	-13.65
* 20960.00	Average	H	-	-	-77.98	17.53	-9.54	37.01	53.98	-16.97
* 20960.00	Peak	H	-	-	-66.84	17.53	-9.54	48.15	73.98	-25.83
26200.00	Peak	H	-	-	-64.91	20.23	-9.54	52.78	68.20	-15.42

Table 7-30. Radiated Measurements SISO ANT1

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10400.00	Peak	H	120	291	-63.10	12.24	0.00	56.14	68.20	-12.06
* 15600.00	Average	H	-	-	-79.41	15.40	0.00	42.99	53.98	-10.98
* 15600.00	Peak	H	-	-	-68.52	15.40	0.00	53.88	73.98	-20.09
* 20800.00	Average	H	-	-	-77.72	17.65	-9.54	37.39	53.98	-16.59
* 20800.00	Peak	H	-	-	-66.31	17.65	-9.54	48.80	73.98	-25.18
26000.00	Peak	H	-	-	-64.34	20.68	-9.54	53.80	68.20	-14.40

Table 7-31. Radiated Measurements SISO ANT1 with WCP

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5260MHz
Channel: 52

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10520.00	Peak	H	-	-	-68.55	13.16	0.00	51.61	68.20	-16.59
* 15780.00	Average	H	-	-	-80.06	16.21	0.00	43.15	53.98	-10.83
* 15780.00	Peak	H	-	-	-68.64	16.21	0.00	54.57	73.98	-19.41
* 21040.00	Average	H	-	-	-77.98	17.48	-9.54	36.95	53.98	-17.03
* 21040.00	Peak	H	-	-	-66.29	17.48	-9.54	48.64	73.98	-25.34
26300.00	Peak	H	-	-	-64.43	20.33	-9.54	53.36	68.20	-14.84

Table 7-32. Radiated Measurements SISO ANT1

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10560.00	Peak	H	115	359	-68.14	13.66	0.00	52.52	68.20	-15.68
* 15840.00	Average	H	-	-	-79.81	15.64	0.00	42.83	53.98	-11.15
* 15840.00	Peak	H	-	-	-69.55	15.64	0.00	53.09	73.98	-20.89
* 21120.00	Average	H	-	-	-77.38	17.27	-9.54	37.34	53.98	-16.63
* 21120.00	Peak	H	-	-	-66.08	17.27	-9.54	48.64	73.98	-25.33
26400.00	Peak	H	-	-	-64.56	20.27	-9.54	53.17	68.20	-15.03

Table 7-33. Radiated Measurements SISO ANT1

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5320MHz
Channel: 64

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 10640.00	Average	H	117	8	-79.44	14.15	0.00	41.71	53.98	-12.27
* 10640.00	Peak	H	117	8	-67.84	14.15	0.00	53.31	73.98	-20.67
* 15960.00	Average	H	-	-	-79.69	15.01	0.00	42.32	53.98	-11.66
* 15960.00	Peak	H	-	-	-68.89	15.01	0.00	53.12	73.98	-20.86
* 21280.00	Average	H	-	-	-77.38	17.58	-9.54	37.66	53.98	-16.32
* 21280.00	Peak	H	-	-	-65.99	17.58	-9.54	49.05	73.98	-24.93
26600.00	Peak	H	-	-	-51.36	3.11	-9.54	49.21	68.20	-18.99

Table 7-34. Radiated Measurements SISO ANT1

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 10640.00	Average	H	-	-	-79.23	14.15	0.00	41.92	53.98	-12.06
* 10640.00	Peak	H	-	-	-68.39	14.15	0.00	52.76	73.98	-21.22
* 15960.00	Average	H	-	-	-79.78	15.01	0.00	42.23	53.98	-11.75
* 15960.00	Peak	H	-	-	-68.94	15.01	0.00	53.07	73.98	-20.91
* 21280.00	Average	H	-	-	-77.23	17.58	-9.54	37.81	53.98	-16.17
* 21280.00	Peak	H	-	-	-65.51	17.58	-9.54	49.53	73.98	-24.45
26600.00	Peak	H	-	-	-47.78	3.11	-9.54	52.79	68.20	-15.41

Table 7-35. Radiated Measurements SISO ANT1 with WCP

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5500MHz
Channel: 100

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11000.00	Average	H	-	-	-84.30	20.31	0.00	43.01	53.98	-10.97
* 11000.00	Peak	H	-	-	-73.15	20.31	0.00	54.16	73.98	-19.82
16500.00	Peak	H	-	-	-73.93	28.49	0.00	61.56	68.20	-6.64
22000.00	Peak	H	-	-	-66.23	18.05	-9.54	49.28	68.20	-18.92
27500.00	Peak	H	-	-	-49.69	2.08	-9.54	49.85	68.20	-18.35

Table 7-36. Radiated Measurements SISO ANT1

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11200.00	Average	H	-	-	-83.88	19.97	0.00	43.09	53.98	-10.89
* 11200.00	Peak	H	-	-	-72.53	19.97	0.00	54.44	73.98	-19.54
16800.00	Peak	H	-	-	-73.40	28.82	0.00	62.42	68.20	-5.78
* 22400.00	Average	H	-	-	-77.73	19.05	-9.54	38.78	53.98	-15.20
* 22400.00	Peak	H	-	-	-65.86	19.05	-9.54	50.65	73.98	-23.33
28000.00	Peak	H	-	-	-50.36	3.19	-9.54	50.29	68.20	-17.91

Table 7-37. Radiated Measurements SISO ANT1

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 182 of 259

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11440.00	Average	H	249	338	-80.32	20.26	0.00	46.94	53.98	-7.04
* 11440.00	Peak	H	249	338	-67.62	20.26	0.00	59.64	73.98	-14.34
17160.00	Peak	H	-	-	-73.34	29.62	0.00	63.28	68.20	-4.92
* 22880.00	Average	H	-	-	-77.84	18.60	-9.54	38.22	53.98	-15.76
* 22880.00	Peak	H	-	-	-66.56	18.60	-9.54	49.50	73.98	-24.48
28600.00	Peak	H	-	-	-49.03	1.74	-9.54	50.17	68.20	-18.03

Table 7-38. Radiated Measurements SISO ANT1

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11440.00	Average	H	126	322	-75.88	15.10	0.00	46.22	53.98	-7.76
* 11440.00	Peak	H	126	322	-64.59	15.10	0.00	57.51	73.98	-16.47
17160.00	Peak	H	-	-	-68.74	18.83	0.00	57.09	68.20	-11.11
* 22880.00	Average	H	-	-	-78.25	18.60	-9.54	37.81	53.98	-16.17
* 22880.00	Peak	H	-	-	-66.35	18.60	-9.54	49.71	73.98	-24.27
28600.00	Peak	H	-	-	-49.18	1.74	-9.54	50.02	68.20	-18.18

Table 7-39. Radiated Measurements SISO ANT1 with WCP

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	
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Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5745MHz
Channel: 149

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11490.00	Average	H	384	356	-80.70	20.36	0.00	46.66	53.98	-7.32
* 11490.00	Peak	H	384	356	-69.10	20.36	0.00	58.26	73.98	-15.72
17235.00	Peak	H	-	-	-72.86	29.51	0.00	63.65	68.20	-4.55
* 22980.00	Average	H	-	-	-77.55	18.46	-9.54	38.37	53.98	-15.61
* 22980.00	Peak	H	-	-	-66.29	18.46	-9.54	49.63	73.98	-24.35
28725.00	Peak	H	-	-	-49.90	2.47	-9.54	50.03	68.20	-18.17

Table 7-40. Radiated Measurements SISO ANT1

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11570.00	Average	H	387	358	-79.50	21.02	0.00	48.52	53.98	-5.46
* 11570.00	Peak	H	387	358	-67.27	21.02	0.00	60.75	73.98	-13.23
17355.00	Peak	H	-	-	-73.54	29.63	0.00	63.09	68.20	-5.11
23140.00	Peak	H	-	-	-66.45	18.84	-9.54	49.85	68.20	-18.35
28925.00	Peak	H	-	-	-49.59	2.80	-9.54	50.67	68.20	-17.53

Table 7-41. Radiated Measurements SISO ANT1

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	
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Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5825MHz
Channel: 165

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11650.00	Average	H	161	59	-83.42	21.21	0.00	44.79	53.98	-9.19
* 11650.00	Peak	H	161	59	-71.78	21.21	0.00	56.43	73.98	-17.55
17475.00	Peak	H	-	-	-74.33	29.76	0.00	62.43	68.20	-5.77
23300.00	Peak	H	-	-	-66.30	19.55	-9.54	50.71	68.20	-17.49
29125.00	Peak	H	-	-	-48.71	1.07	-9.54	49.82	68.20	-18.38

Table 7-42. Radiated Measurements SISO ANT1

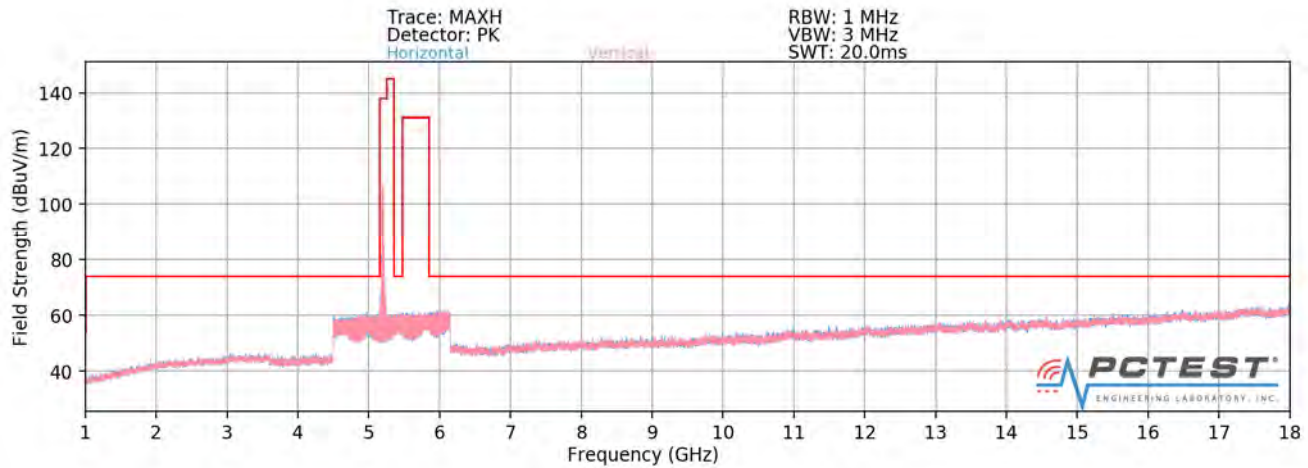
Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5785MHz
Channel: 157

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11570.00	Average	H	116	325	-78.12	15.02	0.00	43.90	53.98	-10.08
* 11570.00	Peak	H	116	325	-66.66	15.02	0.00	55.36	73.98	-18.62
17355.00	Peak	H	-	-	-70.06	23.41	0.00	60.35	68.20	-7.85
23140.00	Peak	H	-	-	-66.86	18.84	-9.54	49.44	68.20	-18.76
28925.00	Peak	H	-	-	-49.48	2.80	-9.54	50.78	68.20	-17.42

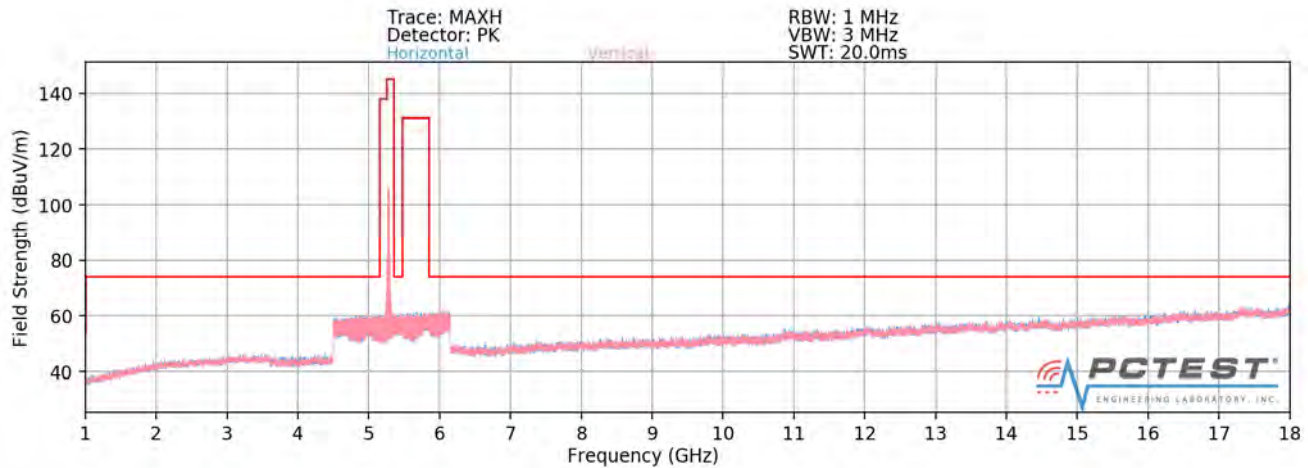
Table 7-43. Radiated Measurements SISO ANT1 with WCP

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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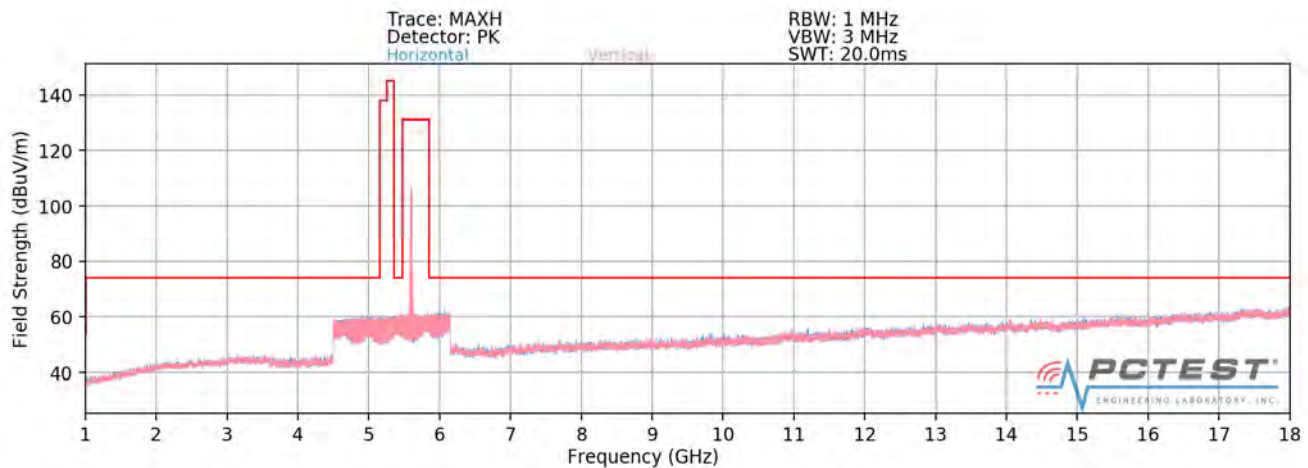
7.6.2 SISO Antenna-2 Radiated Spurious Emission Measurements



Plot 7-271. Radiated Spurious Plot above 1GHz SISO ANT2 (802.11a – U1 Ch. 40)

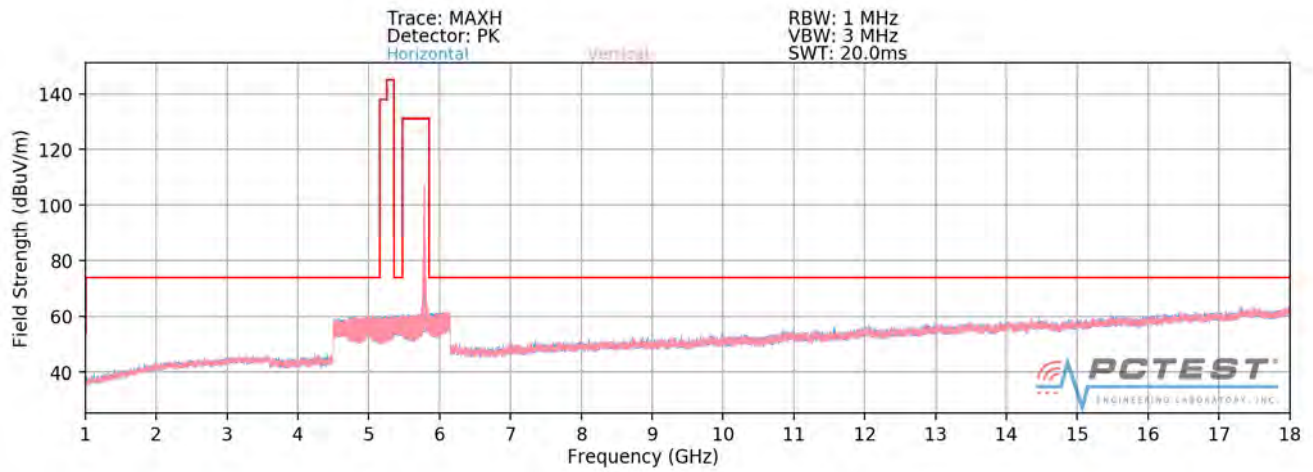


Plot 7-272. Radiated Spurious Plot above 1GHz SISO ANT2 (802.11a – U2A Ch. 56)



Plot 7-273. Radiated Spurious Plot above 1GHz SISO ANT2 (802.11a – U2C Ch. 120)

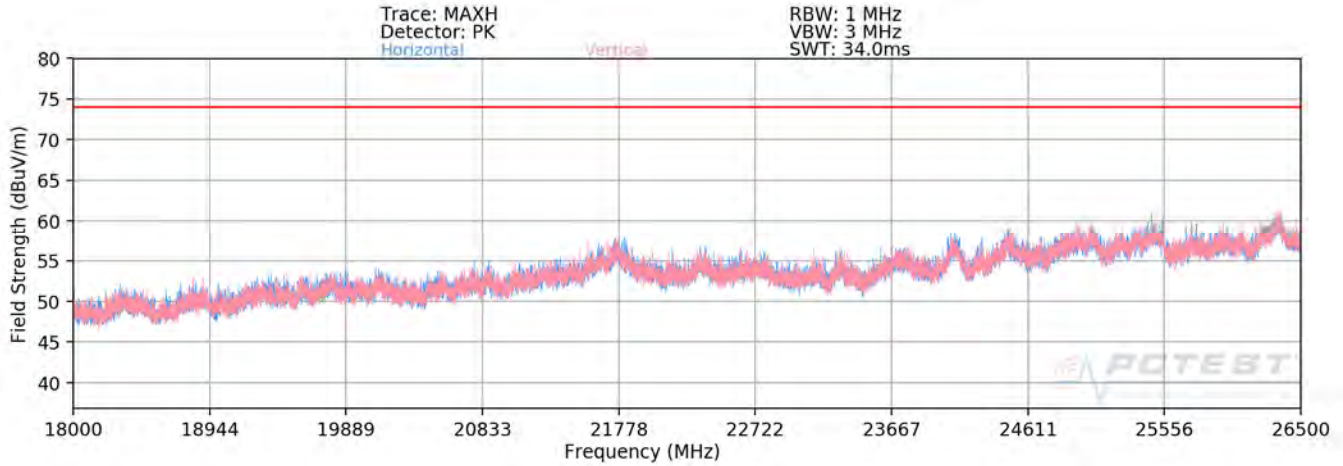
FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 186 of 259



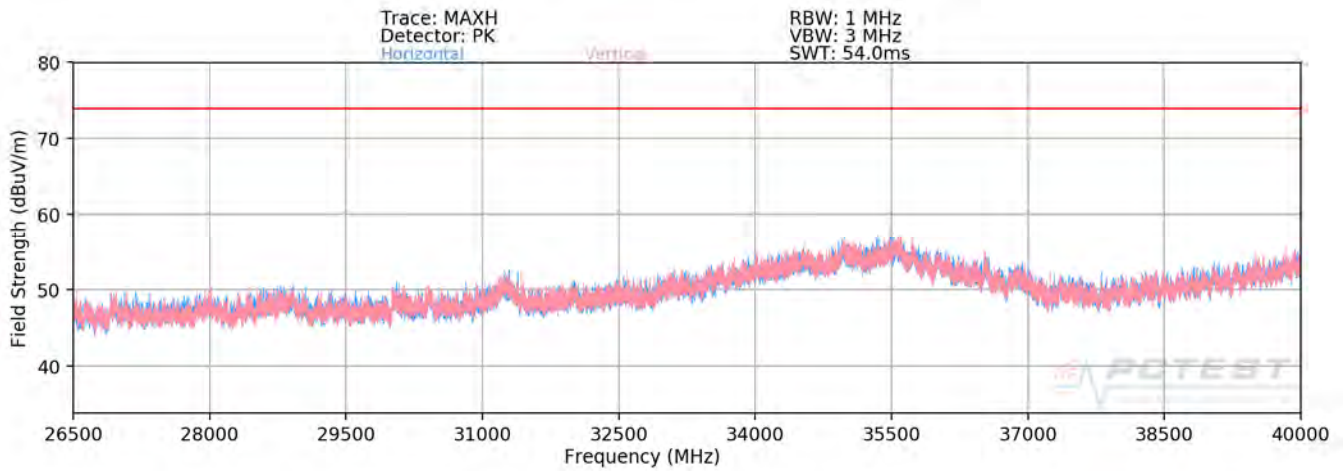
Plot 7-274. Radiated Spurious Plot above 1GHz SISO ANT2 (802.11a – U3 Ch. 157)

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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SISO Antenna-2 Radiated Spurious Emissions Measurements (Above 18GHz)



Plot 7-275. Radiated Spurious Plot above 18GHz - 26.5GHz SISO ANT2 (802.11a)



Plot 7-276. Radiated Spurious Plot 26.5GHz - 40GHz SISO ANT2 (802.11a)

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 188 of 259

SISO Antenna-2 Radiated Spurious Emission Measurements

§15.407(b) §15.205 & §15.209; RSS-Gen [8.9]

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10360.00	Peak	H	111	60	-68.07	12.74	0.00	51.67	68.20	-16.53
* 15540.00	Average	H	-	-	-79.83	15.28	0.00	42.45	53.98	-11.53
* 15540.00	Peak	H	-	-	-69.16	15.28	0.00	53.12	73.98	-20.86
* 20720.00	Average	H	-	-	-77.67	17.17	-9.54	36.95	53.98	-17.03
* 20720.00	Peak	H	-	-	-66.31	17.17	-9.54	48.31	73.98	-25.67
25900.00	Peak	H	-	-	-65.37	19.93	-9.54	52.01	68.20	-16.19

Table 7-44. Radiated Measurements SISO ANT2

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10400.00	Peak	H	-	-	-67.95	12.24	0.00	51.29	68.20	-16.91
* 15600.00	Average	H	-	-	-79.70	15.40	0.00	42.70	53.98	-11.27
* 15600.00	Peak	H	-	-	-68.49	15.40	0.00	53.91	73.98	-20.06
* 20800.00	Average	H	-	-	-77.79	17.65	-9.54	37.32	53.98	-16.66
* 20800.00	Peak	H	-	-	-66.45	17.65	-9.54	48.66	73.98	-25.32
26000.00	Peak	H	-	-	-65.36	20.68	-9.54	52.78	68.20	-15.42

Table 7-45. Radiated Measurements SISO ANT2

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 189 of 259

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10480.00	Peak	H	-	-	-67.11	12.41	0.00	52.30	68.20	-15.90
* 15720.00	Average	H	-	-	-79.81	16.70	0.00	43.89	53.98	-10.09
* 15720.00	Peak	H	-	-	-68.57	16.70	0.00	55.13	73.98	-18.85
* 20960.00	Average	H	-	-	-78.05	17.53	-9.54	36.94	53.98	-17.04
* 20960.00	Peak	H	-	-	-66.71	17.53	-9.54	48.28	73.98	-25.70
26200.00	Peak	H	-	-	-65.74	20.23	-9.54	51.95	68.20	-16.25

Table 7-46. Radiated Measurements SISO ANT2

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10360.00	Peak	H	117	293	-68.36	12.74	0.00	51.38	68.20	-16.82
* 15540.00	Average	H	-	-	-79.68	15.28	0.00	42.60	53.98	-11.38
* 15540.00	Peak	H	-	-	-68.96	15.28	0.00	53.32	73.98	-20.66
* 20720.00	Average	H	-	-	-77.46	17.17	-9.54	37.16	53.98	-16.82
* 20720.00	Peak	H	-	-	-65.99	17.17	-9.54	48.63	73.98	-25.35
25900.00	Peak	H	-	-	-64.72	19.93	-9.54	52.66	68.20	-15.54

Table 7-47. Radiated Measurements SISO ANT2 with WCP

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	
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Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5260MHz
Channel: 52

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10520.00	Peak	H	-	-	-68.55	13.16	0.00	51.61	68.20	-16.59
* 15780.00	Average	H	-	-	-80.06	16.21	0.00	43.15	53.98	-10.83
* 15780.00	Peak	H	-	-	-68.64	16.21	0.00	54.57	73.98	-19.41
* 21040.00	Average	H	-	-	-77.98	17.48	-9.54	36.95	53.98	-17.03
* 21040.00	Peak	H	-	-	-66.29	17.48	-9.54	48.64	73.98	-25.34
26300.00	Peak	H	-	-	-64.43	20.33	-9.54	53.36	68.20	-14.84

Table 7-48. Radiated Measurements SISO ANT2

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10560.00	Peak	H	115	359	-68.14	13.66	0.00	52.52	68.20	-15.68
* 15840.00	Average	H	-	-	-79.81	15.64	0.00	42.83	53.98	-11.15
* 15840.00	Peak	H	-	-	-69.55	15.64	0.00	53.09	73.98	-20.89
* 21120.00	Average	H	-	-	-77.38	17.27	-9.54	37.34	53.98	-16.63
* 21120.00	Peak	H	-	-	-66.08	17.27	-9.54	48.64	73.98	-25.33
26400.00	Peak	H	-	-	-64.56	20.27	-9.54	53.17	68.20	-15.03

Table 7-49. Radiated Measurements SISO ANT2

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	
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Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5320MHz
Channel: 64

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 10640.00	Average	H	117	8	-79.44	14.15	0.00	41.71	53.98	-12.27
* 10640.00	Peak	H	117	8	-67.84	14.15	0.00	53.31	73.98	-20.67
* 15960.00	Average	H	-	-	-79.69	15.01	0.00	42.32	53.98	-11.66
* 15960.00	Peak	H	-	-	-68.89	15.01	0.00	53.12	73.98	-20.86
* 21280.00	Average	H	-	-	-77.38	17.58	-9.54	37.66	53.98	-16.32
* 21280.00	Peak	H	-	-	-65.99	17.58	-9.54	49.05	73.98	-24.93
26600.00	Peak	H	-	-	-51.36	3.11	-9.54	49.21	68.20	-18.99

Table 7-50. Radiated Measurements SISO ANT2

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 10640.00	Average	H	-	-	-79.23	14.15	0.00	41.92	53.98	-12.06
* 10640.00	Peak	H	-	-	-68.39	14.15	0.00	52.76	73.98	-21.22
* 15960.00	Average	H	-	-	-79.78	15.01	0.00	42.23	53.98	-11.75
* 15960.00	Peak	H	-	-	-68.94	15.01	0.00	53.07	73.98	-20.91
* 21280.00	Average	H	-	-	-77.23	17.58	-9.54	37.81	53.98	-16.17
* 21280.00	Peak	H	-	-	-65.51	17.58	-9.54	49.53	73.98	-24.45
26600.00	Peak	H	-	-	-47.78	3.11	-9.54	52.79	68.20	-15.41

Table 7-51. Radiated Measurements SISO ANT2 with WCP

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 192 of 259

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11000.00	Average	H	116	328	-74.71	13.55	0.00	45.84	53.98	-8.14
* 11000.00	Peak	H	116	328	-62.85	13.55	0.00	57.70	73.98	-16.28
16500.00	Peak	H	162	12	-67.95	16.10	0.00	55.15	68.20	-13.05
22000.00	Peak	H	-	-	-66.30	18.05	-9.54	49.21	68.20	-18.99
27500.00	Peak	H	-	-	-48.25	2.08	-9.54	51.29	68.20	-16.91

Table 7-52. Radiated Measurements SISO ANT2

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11200.00	Average	H	113	326	-75.62	13.31	0.00	44.69	53.98	-9.29
* 11200.00	Peak	H	113	326	-63.17	13.31	0.00	57.14	73.98	-16.84
16800.00	Peak	H	-	-	-67.41	17.53	0.00	57.12	68.20	-11.08
* 22400.00	Average	H	-	-	-78.07	19.05	-9.54	38.44	53.98	-15.54
* 22400.00	Peak	H	-	-	-66.33	19.05	-9.54	50.18	73.98	-23.80
28000.00	Peak	H	-	-	-49.61	3.19	-9.54	51.03	68.20	-17.17

Table 7-53. Radiated Measurements SISO ANT2

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5720MHz
Channel: 144

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11440.00	Average	H	115	321	-77.72	15.10	0.00	44.38	53.98	-9.60
* 11440.00	Peak	H	115	321	-63.35	15.10	0.00	58.75	73.98	-15.23
17160.00	Peak	H	-	-	-68.87	18.83	0.00	56.96	68.20	-11.24
* 22880.00	Average	H	-	-	-78.13	18.60	-9.54	37.92	53.98	-16.06
* 22880.00	Peak	H	-	-	-67.05	18.60	-9.54	49.00	73.98	-24.98
28600.00	Peak	H	-	-	-46.11	1.74	-9.54	53.08	68.20	-15.12

Table 7-54. Radiated Measurements SISO ANT2

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11000.00	Average	H	123	317	-78.88	13.55	0.00	41.67	53.98	-12.31
* 11000.00	Peak	H	123	317	-67.28	13.55	0.00	53.27	73.98	-20.71
16500.00	Peak	H	-	-	-68.39	16.10	0.00	54.71	68.20	-13.49
22000.00	Peak	H	-	-	-66.41	18.05	-9.54	49.10	68.20	-19.10
27500.00	Peak	H	-	-	-47.49	2.08	-9.54	52.05	68.20	-16.15

Table 7-55. Radiated Measurements SISO ANT2 with WCP

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	
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Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5745MHz
Channel: 149

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11490.00	Average	H	112	327	-76.02	15.22	0.00	46.20	53.98	-7.78
* 11490.00	Peak	H	112	327	-62.18	15.22	0.00	60.04	73.98	-13.94
17235.00	Peak	H	-	-	-68.42	19.54	0.00	58.12	68.20	-10.08
* 22980.00	Average	H	-	-	-77.56	18.46	-9.54	38.36	53.98	-15.62
* 22980.00	Peak	H	-	-	-66.10	18.46	-9.54	49.82	73.98	-24.16
28725.00	Peak	H	-	-	-46.63	2.47	-9.54	53.30	68.20	-14.90

Table 7-56. Radiated Measurements SISO ANT2

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11570.00	Average	H	117	324	-74.33	15.02	0.00	47.69	53.98	-6.29
* 11570.00	Peak	H	117	324	-61.51	15.02	0.00	60.51	73.98	-13.47
17355.00	Peak	H	-	-	-69.93	23.41	0.00	60.48	68.20	-7.72
23140.00	Peak	H	-	-	-66.50	18.84	-9.54	49.80	68.20	-18.40
28925.00	Peak	H	-	-	-44.60	2.80	-9.54	55.66	68.20	-12.54

Table 7-57. Radiated Measurements SISO ANT2

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 195 of 259

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11650.00	Average	H	114	323	-74.31	14.92	0.00	47.61	53.98	-6.37
* 11650.00	Peak	H	114	323	-61.39	14.92	0.00	60.53	73.98	-13.45
17475.00	Peak	H	-	-	-69.66	21.86	0.00	59.20	68.20	-9.00
23300.00	Peak	H	-	-	-65.84	19.55	-9.54	51.16	68.20	-17.04
29125.00	Peak	H	-	-	-44.84	1.07	-9.54	53.69	68.20	-14.51

Table 7-58. Radiated Measurements SISO ANT2

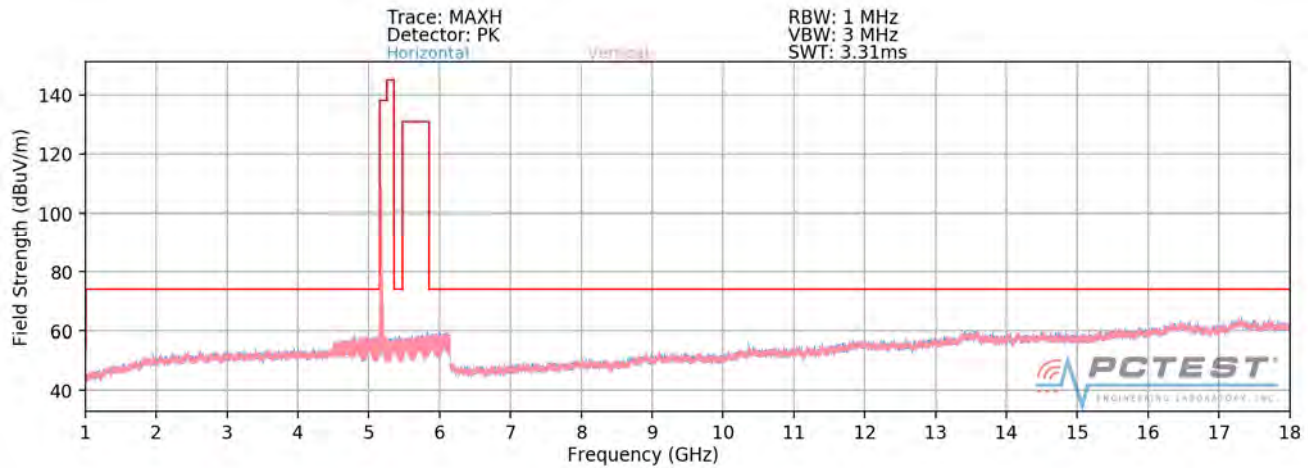
Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5785MHz
Channel: 157

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11570.00	Average	H	119	30	-78.72	15.02	0.00	43.30	53.98	-10.68
* 11570.00	Peak	H	119	30	-67.80	15.02	0.00	54.22	73.98	-19.76
17355.00	Peak	H	-	-	-70.12	23.41	0.00	60.29	68.20	-7.91
23140.00	Peak	H	-	-	-66.07	18.84	-9.54	50.23	68.20	-17.97
28925.00	Peak	H	-	-	-44.11	2.80	-9.54	56.15	68.20	-12.05

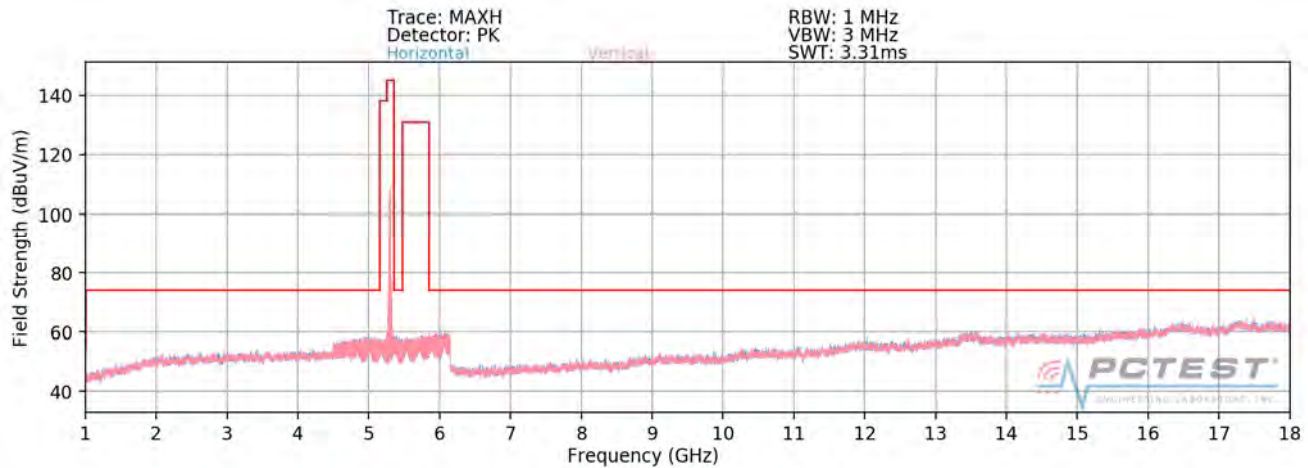
Table 7-59. Radiated Measurements SISO ANT2 with WCP

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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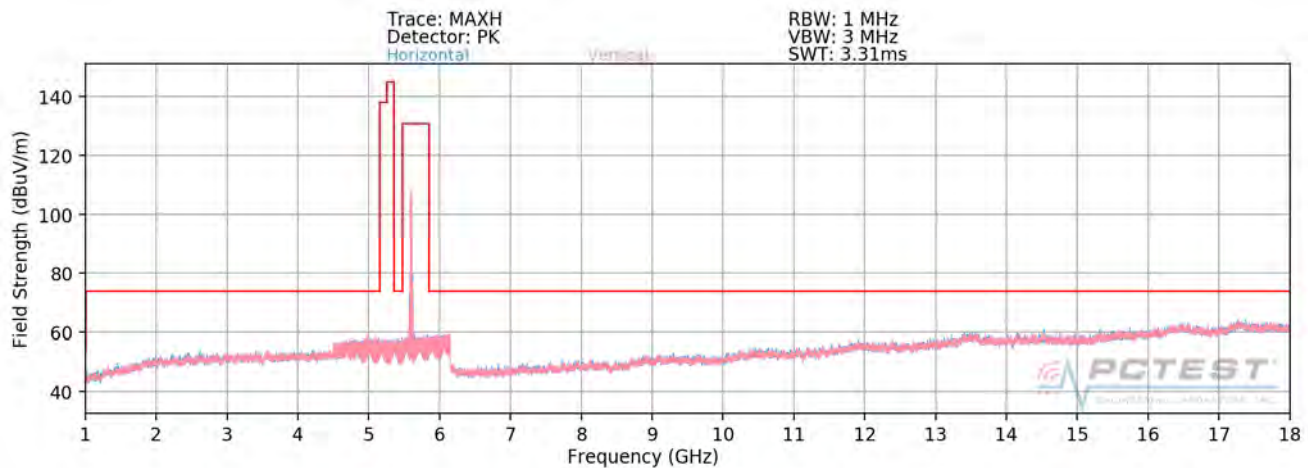
7.6.3 MIMO/CDD Radiated Spurious Emission Measurements



Plot 7-277. Radiated Spurious Plot above 1GHz MIMO/CDD (802.11a – U1 Ch. 40)

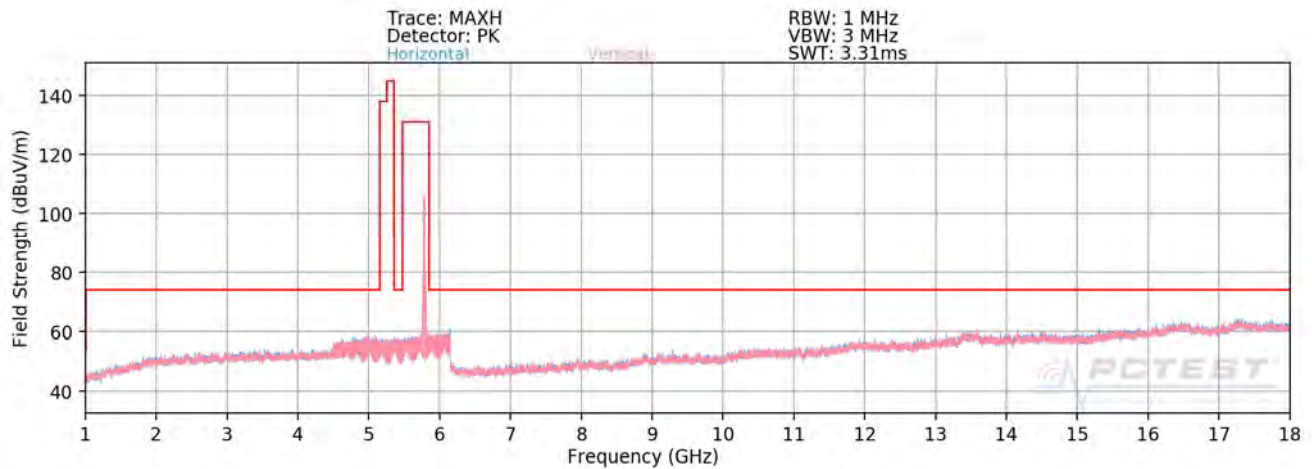


Plot 7-278. Radiated Spurious Plot above 1GHz MIMO/CDD (802.11a – U2A Ch. 56)



Plot 7-279. Radiated Spurious Plot above 1GHz MIMO/CDD (802.11a – U2C Ch. 120)

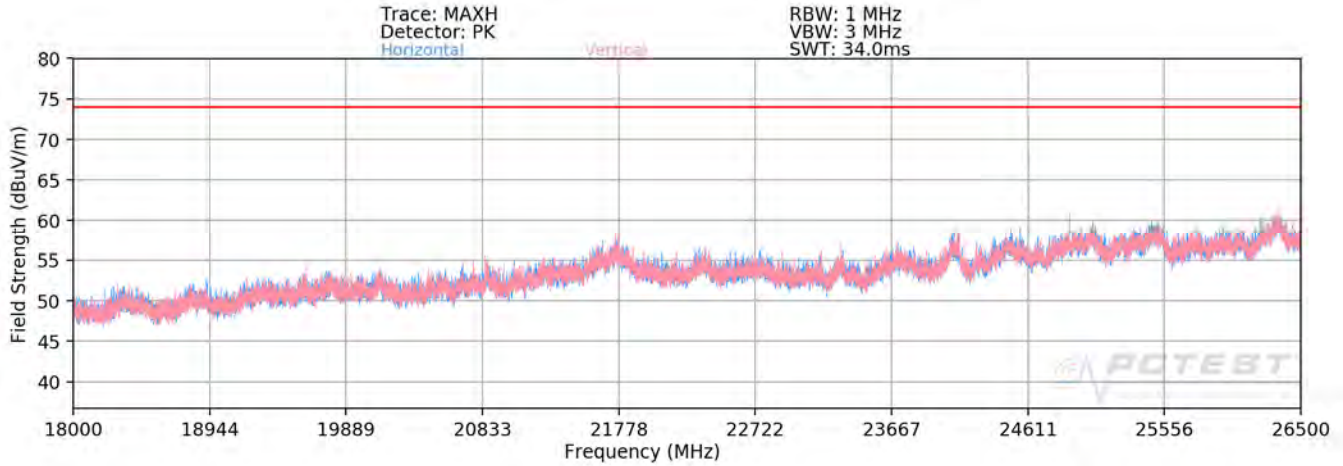
FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 197 of 259



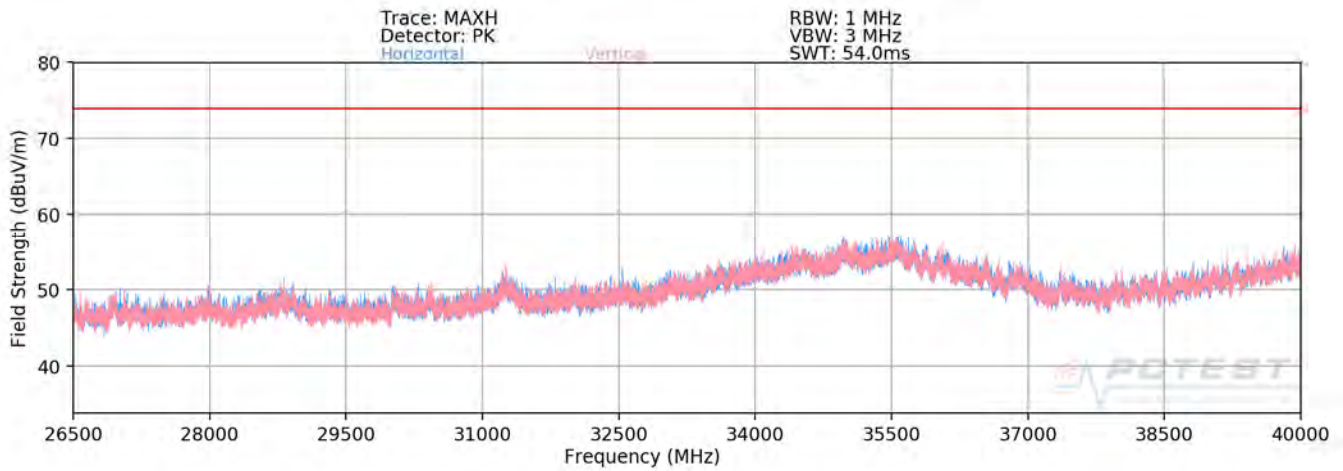
Plot 7-280. Radiated Spurious Plot above 1GHz MIMO/CDD (802.11a – U3 Ch. 157)

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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MIMO/CDD Radiated Spurious Emissions Measurements (Above 18GHz)



Plot 7-281. Radiated Spurious Plot above 18GHz - 26.5GHz MIMO/CDD (802.11a)



Plot 7-282. Radiated Spurious Plot 26.5GHz - 40GHz MIMO/CDD (802.11a)

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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MIMO/CDD Radiated Spurious Emission Measurements

§15.407(b) §15.205 & §15.209; RSS-Gen [8.9]

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10360.00	Peak	V	116	329	-58.68	12.74	0.00	61.06	68.20	-7.14
* 15540.00	Average	V	152	332	-78.77	15.28	0.00	43.51	53.98	-10.47
* 15540.00	Peak	V	152	332	-66.21	15.28	0.00	56.07	73.98	-17.91
* 20720.00	Average	V	-	-	-77.68	17.17	-9.54	36.94	53.98	-17.04
* 20720.00	Peak	V	-	-	-66.34	17.17	-9.54	48.28	73.98	-25.70
25900.00	Peak	V	-	-	-65.28	19.93	-9.54	52.10	68.20	-16.10

Table 7-60. Radiated Measurements MIMO/CDD

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10400.00	Peak	V	126	331	-59.09	12.24	0.00	60.15	68.20	-8.05
* 15600.00	Average	V	174	337	-78.69	15.40	0.00	43.71	53.98	-10.26
* 15600.00	Peak	V	174	337	-66.10	15.40	0.00	56.30	73.98	-17.67
* 20800.00	Average	V	-	-	-77.63	17.65	-9.54	37.48	53.98	-16.50
* 20800.00	Peak	V	-	-	-65.80	17.65	-9.54	49.31	73.98	-24.67
26000.00	Peak	V	-	-	-65.24	20.68	-9.54	52.90	68.20	-15.30

Table 7-61. Radiated Measurements MIMO/CDD

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 200 of 259

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10480.00	Peak	V	117	325	-58.97	12.41	0.00	60.44	68.20	-7.76
* 15720.00	Average	V	124	5	-78.64	16.70	0.00	45.06	53.98	-8.92
* 15720.00	Peak	V	124	5	-67.38	16.70	0.00	56.32	73.98	-17.66
* 20960.00	Average	V	-	-	-77.43	17.53	-9.54	37.56	53.98	-16.42
* 20960.00	Peak	V	-	-	-65.57	17.53	-9.54	49.42	73.98	-24.56
26200.00	Peak	V	-	-	-63.78	20.23	-9.54	53.91	68.20	-14.29

Table 7-62. Radiated Measurements MIMO/CDD

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10360.00	Peak	V	114	337	-58.98	12.74	0.00	60.76	68.20	-7.44
* 15540.00	Average	V	137	346	-79.28	15.28	0.00	43.00	53.98	-10.98
* 15540.00	Peak	V	137	346	-68.64	15.28	0.00	53.64	73.98	-20.34
* 20720.00	Average	V	-	-	-77.89	17.17	-9.54	36.73	53.98	-17.25
* 20720.00	Peak	V	-	-	-66.50	17.17	-9.54	48.12	73.98	-25.86
25900.00	Peak	V	-	-	-64.57	19.93	-9.54	52.81	68.20	-15.39

Table 7-63. Radiated Measurements MIMO/CDD with WCP

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	
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Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5260MHz
Channel: 52

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10520.00	Peak	V	112	326	-59.98	13.16	0.00	60.18	68.20	-8.02
* 15780.00	Average	V	192	10	-78.57	16.21	0.00	44.64	53.98	-9.34
* 15780.00	Peak	V	192	10	-65.19	16.21	0.00	58.02	73.98	-15.96
* 21040.00	Average	V	-	-	-77.82	17.48	-9.54	37.11	53.98	-16.87
* 21040.00	Peak	V	-	-	-65.94	17.48	-9.54	48.99	73.98	-24.99
26300.00	Peak	V	-	-	-63.54	20.33	-9.54	54.25	68.20	-13.95

Table 7-64. Radiated Measurements MIMO/CDD

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10560.00	Peak	V	113	322	-60.01	13.66	0.00	60.65	68.20	-7.55
* 15840.00	Average	V	187	1	-77.62	15.64	0.00	45.02	53.98	-8.96
* 15840.00	Peak	V	187	1	-63.56	15.64	0.00	59.08	73.98	-14.90
* 21120.00	Average	V	-	-	-77.33	17.27	-9.54	37.39	53.98	-16.58
* 21120.00	Peak	V	-	-	-65.50	17.27	-9.54	49.22	73.98	-24.75
26400.00	Peak	V	-	-	-63.08	20.27	-9.54	54.65	68.20	-13.55

Table 7-65. Radiated Measurements MIMO/CDD

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	
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Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5320MHz
Channel: 64

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 10640.00	Average	V	116	327	-74.10	14.15	0.00	47.05	53.98	-6.93
* 10640.00	Peak	V	116	327	-62.90	14.15	0.00	58.25	73.98	-15.73
* 15960.00	Average	V	195	9	-76.70	15.01	0.00	45.31	53.98	-8.67
* 15960.00	Peak	V	195	9	-63.29	15.01	0.00	58.72	73.98	-15.26
* 21280.00	Average	V	-	-	-77.19	17.58	-9.54	37.85	53.98	-16.13
* 21280.00	Peak	V	-	-	-66.04	17.58	-9.54	49.00	73.98	-24.98
26600.00	Peak	V	-	-	-50.07	3.11	-9.54	50.50	68.20	-17.70

Table 7-66. Radiated Measurements MIMO/CDD

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 10640.00	Average	V	145	43	-78.53	14.15	0.00	42.62	53.98	-11.36
* 10640.00	Peak	V	145	43	-67.85	14.15	0.00	53.30	73.98	-20.68
* 15960.00	Average	V	114	342	-79.22	15.01	0.00	42.79	53.98	-11.19
* 15960.00	Peak	V	114	342	-68.83	15.01	0.00	53.18	73.98	-20.80
* 21280.00	Average	V	-	-	-77.20	17.58	-9.54	37.84	53.98	-16.14
* 21280.00	Peak	V	-	-	-66.73	17.58	-9.54	48.31	73.98	-25.67
26600.00	Peak	V	-	-	-50.98	3.11	-9.54	49.59	68.20	-18.61

Table 7-67. Radiated Measurements MIMO/CDD with WCP

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5500MHz
Channel: 100

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11000.00	Average	V	112	326	-77.21	13.55	0.00	43.34	53.98	-10.64
* 11000.00	Peak	V	112	326	-65.87	13.55	0.00	54.68	73.98	-19.30
16500.00	Peak	V	169	339	-65.19	16.10	0.00	57.91	68.20	-10.29
22000.00	Peak	V	-	-	-66.45	18.05	-9.54	49.06	68.20	-19.14
27500.00	Peak	V	-	-	-43.99	2.08	-9.54	55.55	68.20	-12.65

Table 7-68. Radiated Measurements MIMO/CDD

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11200.00	Average	V	396	36	-77.91	13.31	0.00	42.40	53.98	-11.58
* 11200.00	Peak	V	396	36	-66.84	13.31	0.00	53.47	73.98	-20.51
16800.00	Peak	V	174	337	-62.62	17.53	0.00	61.91	68.20	-6.29
* 22400.00	Average	V	-	-	-77.87	19.05	-9.54	38.64	53.98	-15.34
* 22400.00	Peak	V	-	-	-66.44	19.05	-9.54	50.07	73.98	-23.91
28000.00	Peak	V	-	-	-45.94	3.19	-9.54	54.70	68.20	-13.50

Table 7-69. Radiated Measurements MIMO/CDD

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 204 of 259

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11440.00	Average	V	115	36	-76.83	15.10	0.00	45.27	53.98	-8.71
* 11440.00	Peak	V	115	36	-63.59	15.10	0.00	58.51	73.98	-15.47
17160.00	Peak	V	123	335	-66.92	18.83	0.00	58.91	68.20	-9.29
* 22880.00	Average	V	-	-	-77.93	18.60	-9.54	38.12	53.98	-15.86
* 22880.00	Peak	V	-	-	-66.63	18.60	-9.54	49.42	73.98	-24.56
28600.00	Peak	V	-	-	-44.54	1.74	-9.54	54.65	68.20	-13.55

Table 7-70. Radiated Measurements MIMO/CDD

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11200.00	Average	V	149	41	-72.56	13.31	0.00	47.75	53.98	-6.23
* 11200.00	Peak	V	149	41	-60.68	13.31	0.00	59.63	73.98	-14.35
16800.00	Peak	V	142	315	-68.35	17.53	0.00	56.18	68.20	-12.02
* 22400.00	Average	V	-	-	-77.93	19.05	-9.54	38.58	53.98	-15.40
* 22400.00	Peak	V	-	-	-66.47	19.05	-9.54	50.04	73.98	-23.94
28000.00	Peak	V	-	-	-45.73	3.19	-9.54	54.91	68.20	-13.29

Table 7-71. Radiated Measurements MIMO/CDD with WCP

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	
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Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5745MHz
Channel: 149

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11490.00	Average	V	112	44	-74.15	15.22	0.00	48.07	53.98	-5.91
* 11490.00	Peak	V	112	44	-60.86	15.22	0.00	61.36	73.98	-12.62
17235.00	Peak	V	153	334	-66.35	19.54	0.00	60.19	68.20	-8.01
* 22980.00	Average	V	-	-	-77.14	18.46	-9.54	38.78	53.98	-15.20
* 22980.00	Peak	V	-	-	-65.67	18.46	-9.54	50.25	73.98	-23.73
28725.00	Peak	V	-	-	-45.87	2.47	-9.54	54.06	69.20	-15.14

Table 7-72. Radiated Measurements MIMO/CDD

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11570.00	Average	V	113	20	-71.43	15.02	0.00	50.59	53.98	-3.39
* 11570.00	Peak	V	113	20	-58.32	15.02	0.00	63.70	73.98	-10.28
17355.00	Peak	V	-	-	-69.61	23.41	0.00	60.80	68.20	-7.40
23140.00	Peak	V	-	-	-66.69	18.84	-9.54	49.61	68.20	-18.59
28925.00	Peak	V	-	-	-44.93	2.80	-9.54	55.33	68.20	-12.87

Table 7-73. Radiated Measurements MIMO/CDD

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 206 of 259

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11650.00	Average	V	115	18	-71.43	14.92	0.00	50.49	53.98	-3.49
* 11650.00	Peak	V	115	18	-57.17	14.92	0.00	64.75	73.98	-9.23
17475.00	Peak	V	122	342	-68.95	21.86	0.00	59.91	68.20	-8.29
23300.00	Peak	V	-	-	-66.47	19.55	-9.54	50.53	68.20	-17.67
29125.00	Peak	V	-	-	-44.60	1.07	-9.54	53.93	68.20	-14.27

Table 7-74. Radiated Measurements MIMO/CDD

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11570.00	Average	V	123	320	-74.09	15.02	0.00	47.93	53.98	-6.05
* 11570.00	Peak	V	123	320	-61.87	15.02	0.00	60.15	73.98	-13.83
17355.00	Peak	V	-	-	-69.58	23.41	0.00	60.83	68.20	-7.37
23140.00	Peak	V	-	-	-66.65	18.84	-9.54	49.65	68.20	-18.55
28925.00	Peak	V	-	-	-43.26	2.80	-9.54	57.00	68.20	-11.20

Table 7-75. Radiated Measurements MIMO/CDD with WCP

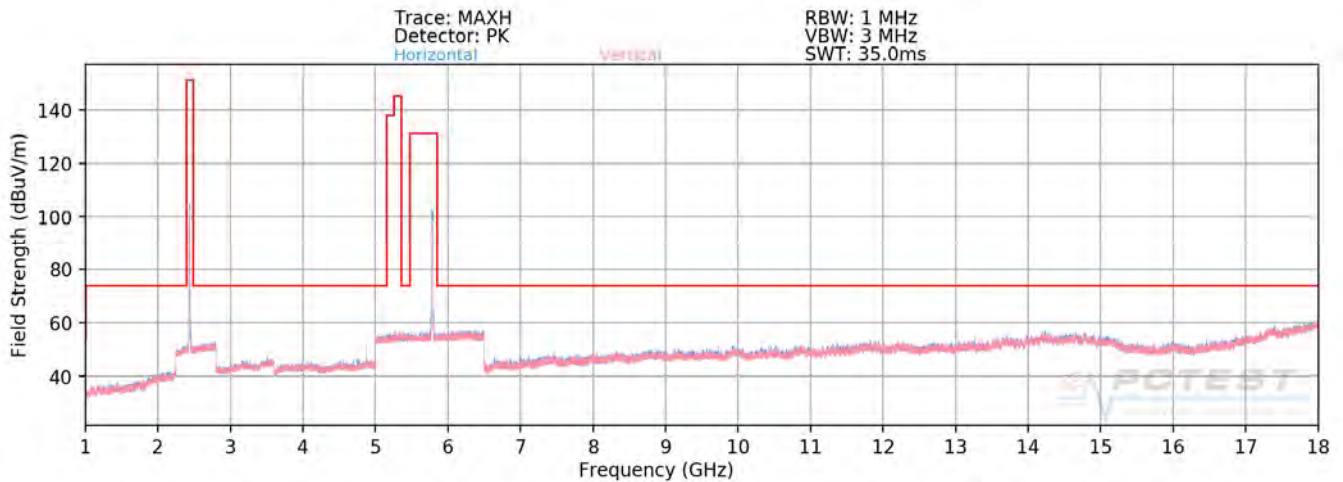
FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 207 of 259

7.6.4 Simultaneous Tx Radiated Spurious Emissions Measurements

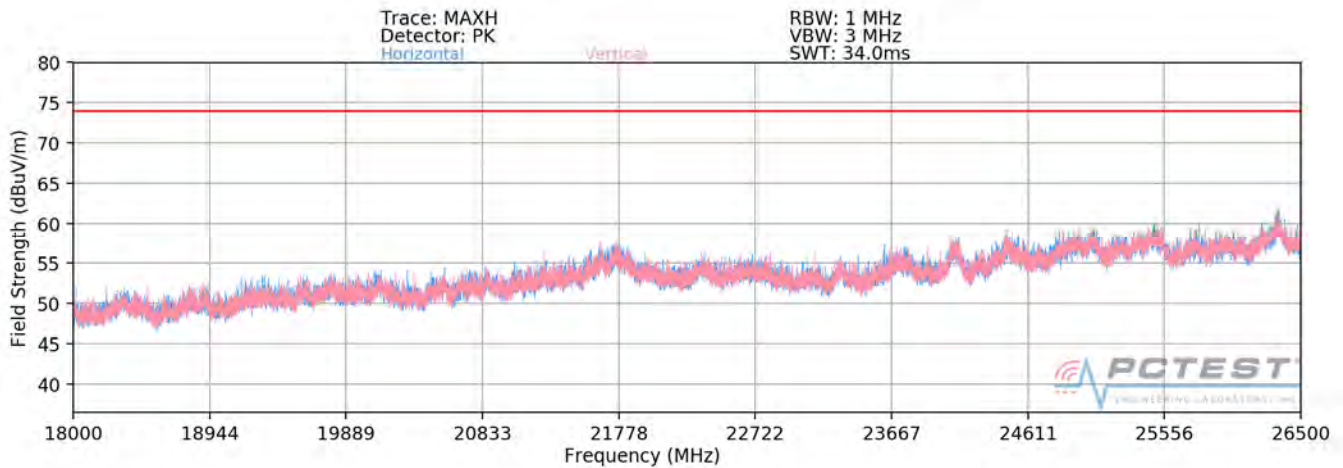
§15.407(b) §15.205 & §15.209; RSS-Gen [8.9]

Description	2.4 GHz Emission	5 GHz Emission
Antenna	1	2
Channel	6	157
Operating Frequency (MHz)	2437	5785
Data Rate (Mbps)	1	6
Mode	802.11b	802.11a

Table 7-76. Simultaneous Transmission Config-1

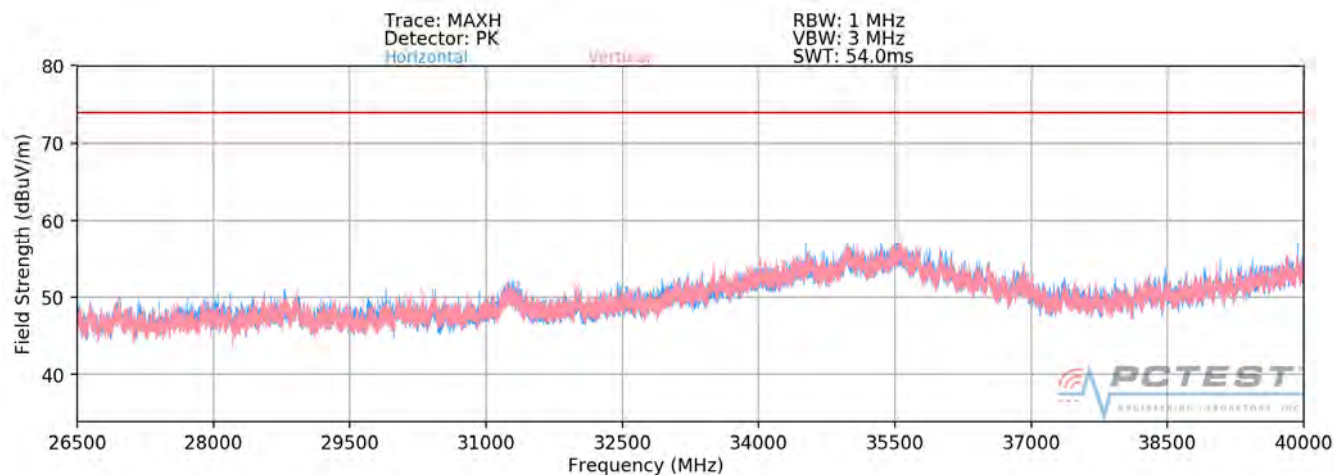


Plot 7-283. Radiated Spurious Plot above 1GHz (2.4GHz – 5GHz)



Plot 7-284. Radiated Spurious Plot 18GHz – 26.5GHz (2.4GHz – 5GHz)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 208 of 259

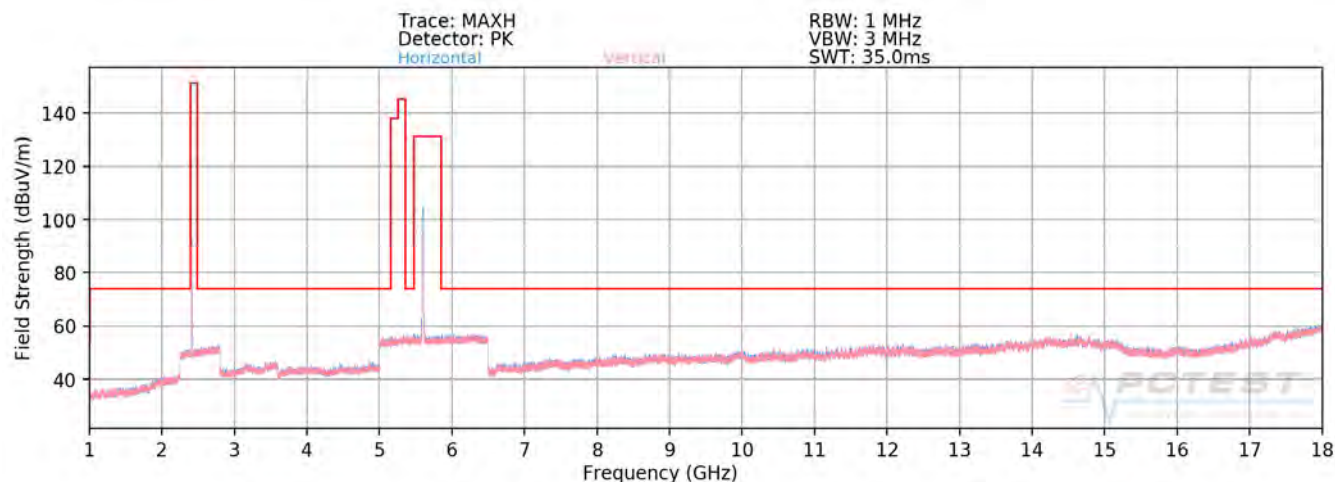


Plot 7-285. Radiated Spurious Plot above 26.5GHz (2.4GHz – 5GHz)

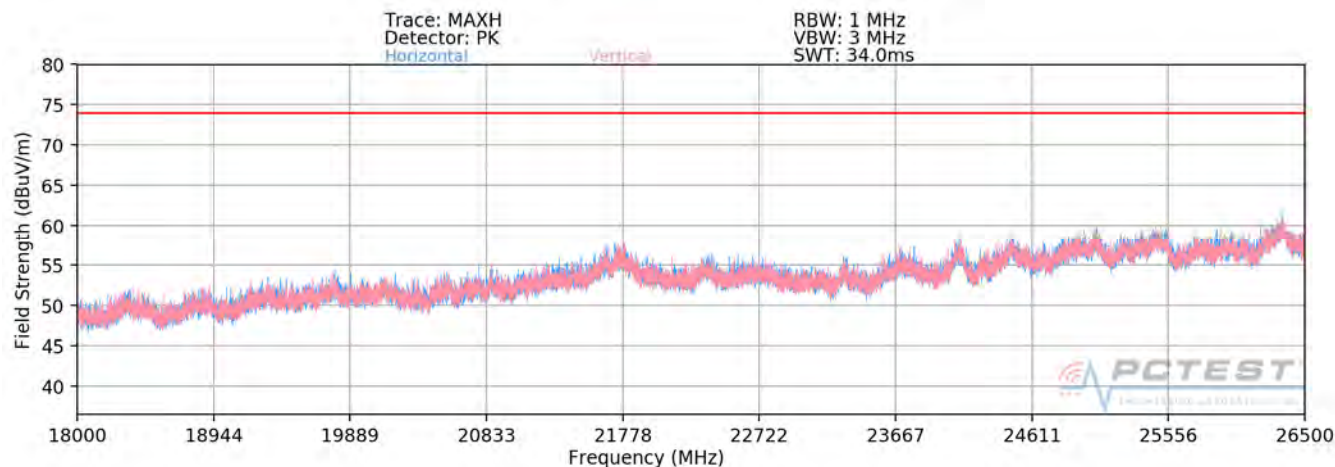
FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 209 of 259

Description	2.4 GHz Emission	5 GHz Emission
Antenna	2	1
Channel	1	120
Operating Frequency (MHz)	2412	5600
Data Rate (Mbps)	1	6
Mode	802.11b	802.11a

Table 7-77. Simultaneous Transmission Config-2

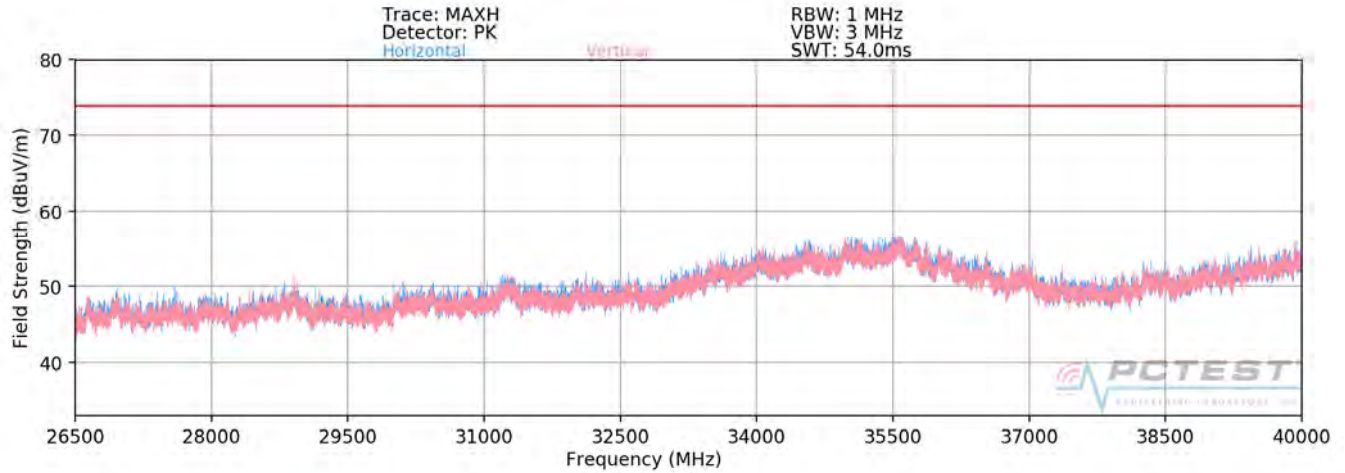


Plot 7-286. Radiated Spurious Plot above 1GHz (5GHz – 2.4 GHz)



Plot 7-287. Radiated Spurious Plot 18GHz – 26.5GHz (5GHz – 2.4 GHz)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 210 of 259

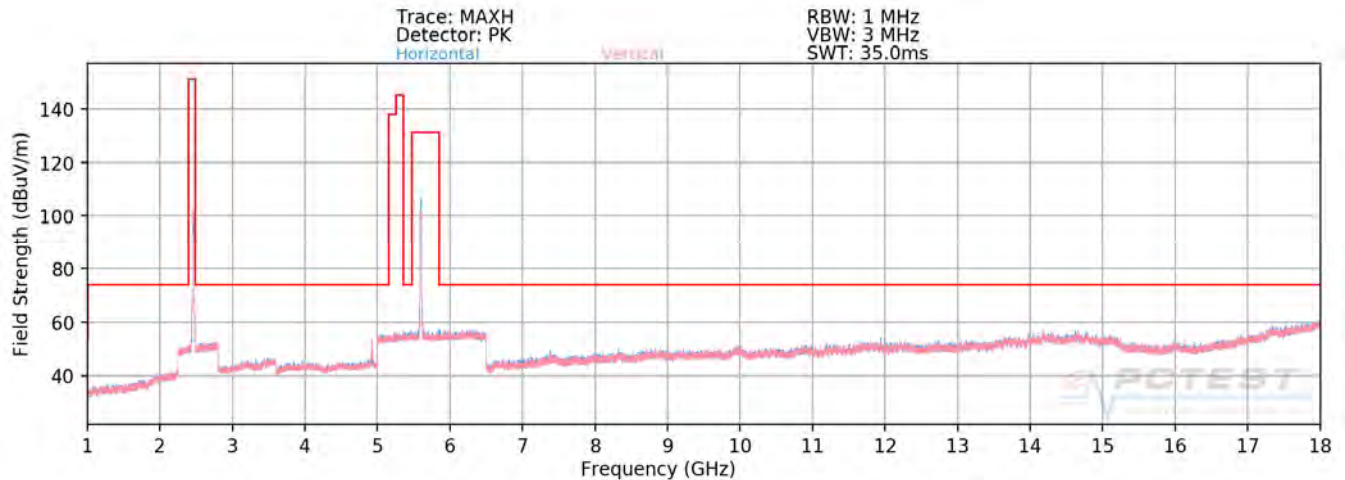


Plot 7-288. Radiated Spurious Plot above 26.5GHz (5GHz – 2.4 GHz)

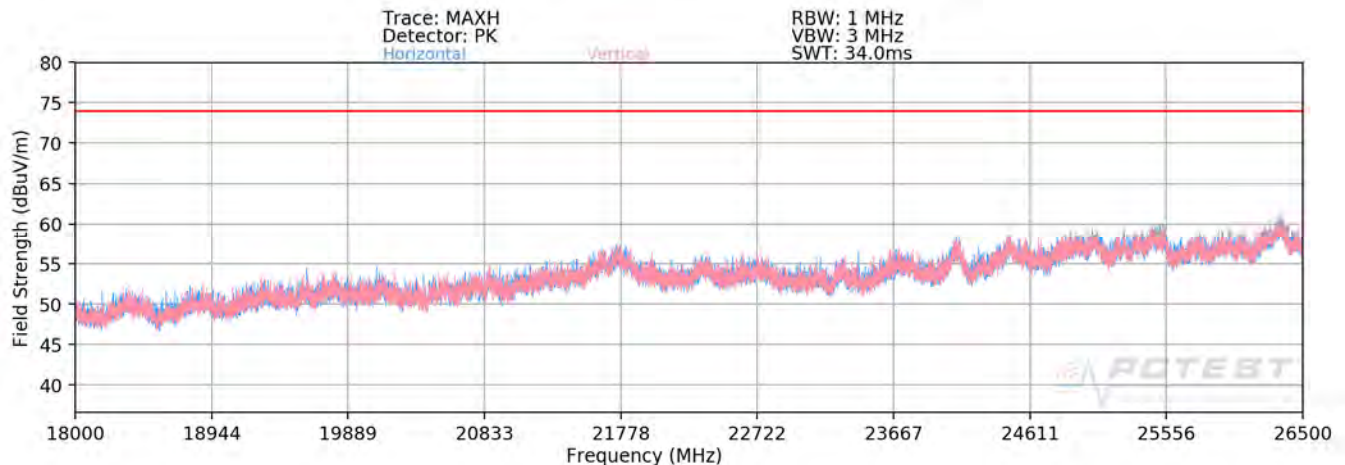
FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 211 of 259

Description	2.4 GHz Emission	5 GHz Emission
Antenna	1, 2	1, 2
Channel	11	120
Operating Frequency (MHz)	2462	5600
Data Rate (Mbps)	6	6
Mode	802.11g	802.11a

Table 7-78. Dual Band Simultaneous Transmission

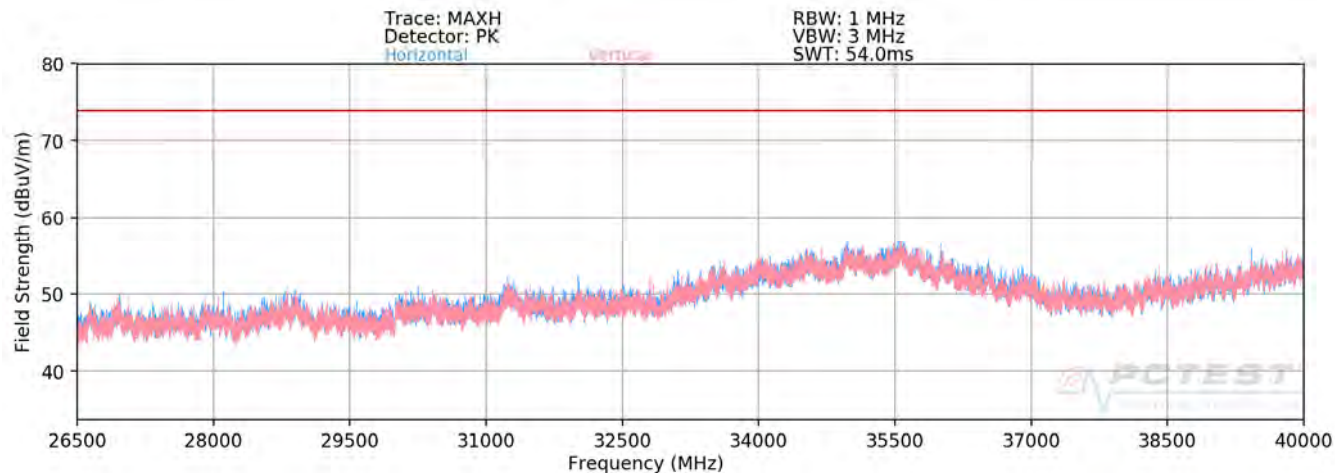


Plot 7-289. Radiated Spurious Plot above 1GHz (Dual Band Simult. Tx)



Plot 7-290. Radiated Spurious Plot 18GHz – 26.5GHz (Dual Band Simult. Tx)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 212 of 259



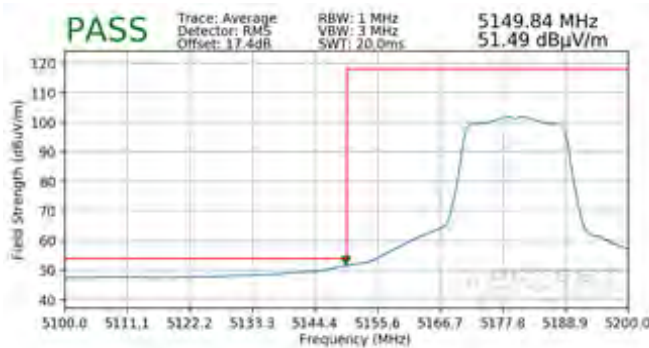
Plot 7-291. Radiated Spurious Plot above 26.5GHz (Dual Band Simult. Tx)

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 213 of 259

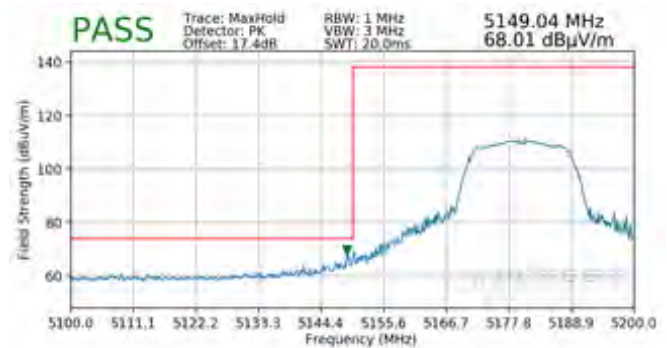
7.6.5 SISO Antenna-1 Radiated Band Edge Measurements (20MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209; RSS-Gen [8.9]; RSS-Gen [8.9]

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

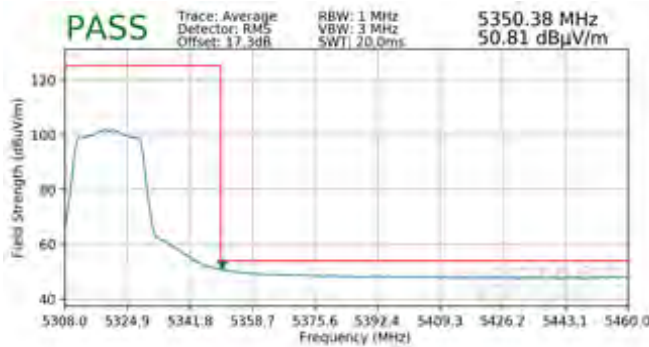


Plot 7-292. Radiated Lower Band Edge Plot SISO ANT1 (Average – UNII Band 1)



Plot 7-293. Radiated Lower Band Edge Plot SISO ANT1 (Peak – UNII Band 1)

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5320MHz
Channel:	64



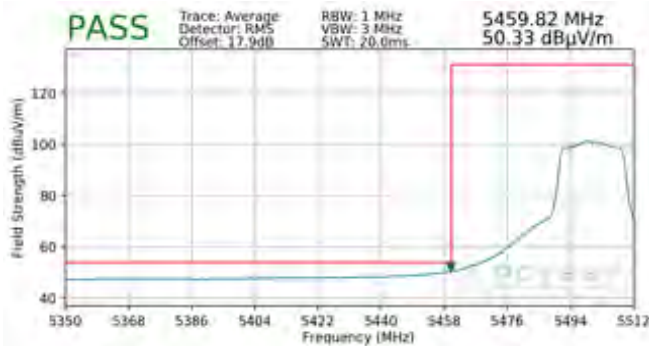
Plot 7-294. Radiated Upper Band Edge Plot SISO ANT1 (Average – UNII Band 2A)



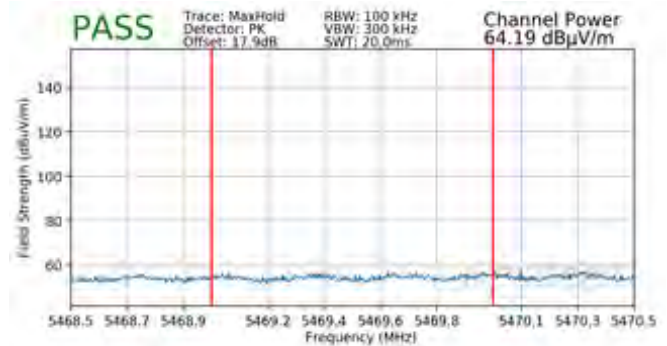
Plot 7-295. Radiated Upper Band Edge Plot SISO ANT1 (Peak – UNII Band 2A)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 214 of 259

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

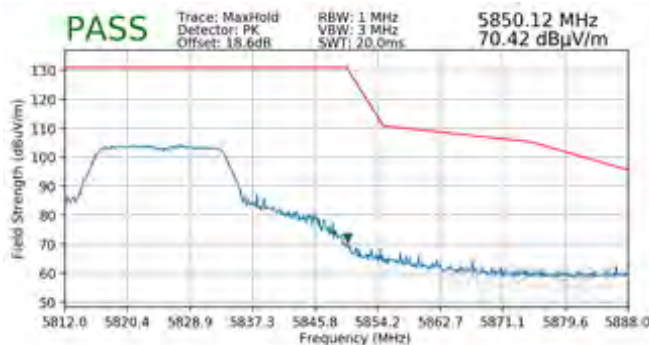


Plot 7-296. Radiated Lower Band Edge Plot SISO ANT1 (Average – UNII Band 2C)



Plot 7-297. Radiated Lower Band Edge Plot SISO ANT1 (Peak – UNII Band 2C)

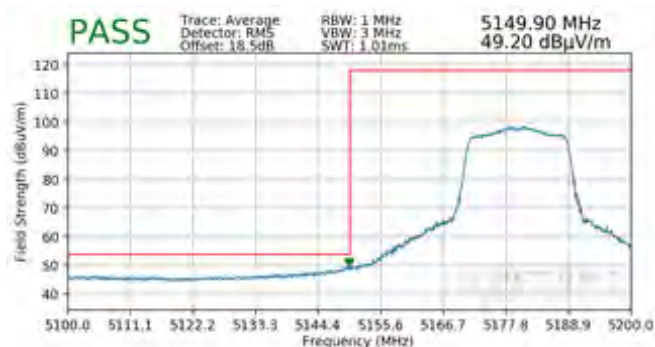
Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5825MHz
Channel:	165



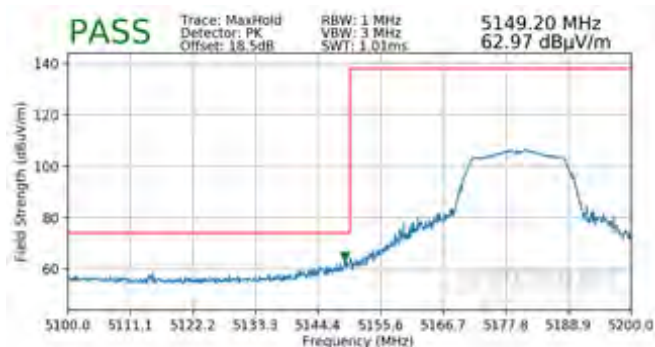
Plot 7-298. Radiated Upper Band Edge Plot SISO ANT1 (Peak – UNII Band 3)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 215 of 259

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



**Plot 7-299. Radiated Band Edge Plot SISO ANT1
(Average – WCP)**



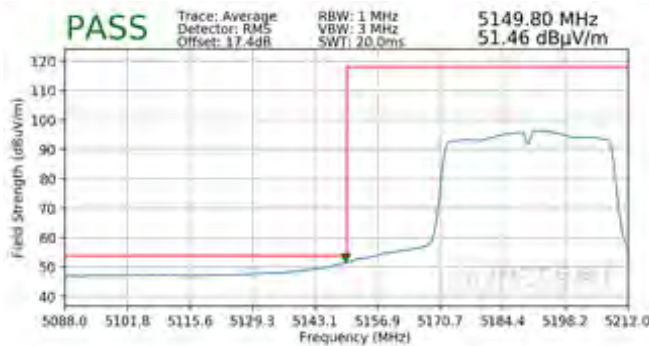
**Plot 7-300. Radiated Band Edge Plot SISO ANT1
(Peak – WCP)**

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 216 of 259

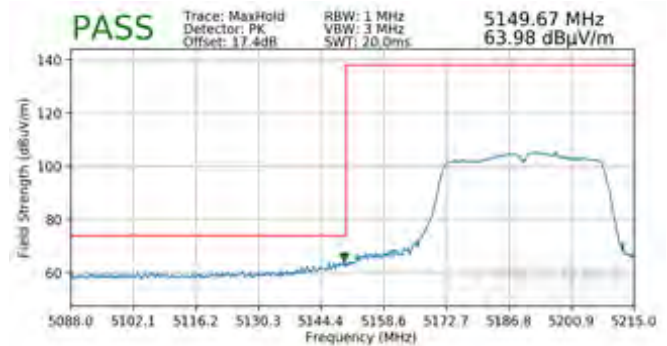
7.6.6 SISO Antenna-1 Radiated Band Edge Measurements (40MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209; RSS-Gen [8.9]

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

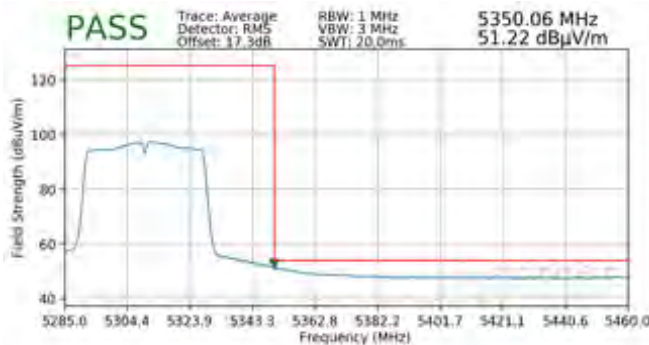


Plot 7-301. Radiated Lower Band Edge Plot SISO ANT1 (Average – UNII Band 1)



Plot 7-302. Radiated Lower Band Edge Plot SISO ANT1 (Peak – UNII Band 1)

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5310MHz
Channel:	62



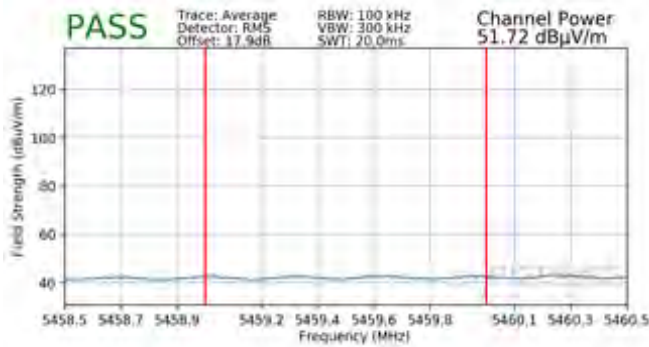
Plot 7-303. Radiated Upper Band Edge Plot SISO ANT1 (Average – UNII Band 2A)



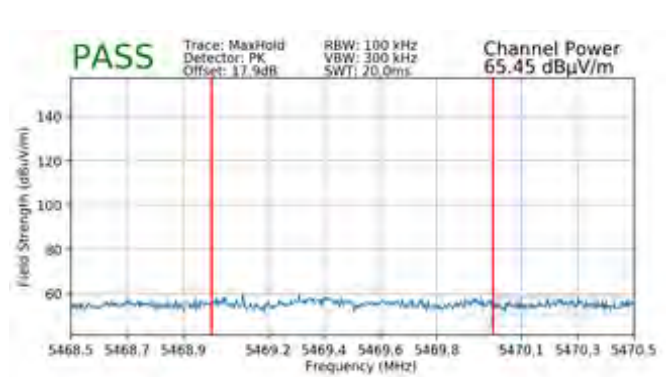
Plot 7-304. Radiated Upper Band Edge Plot SISO ANT1 (Peak – UNII Band 2A)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 217 of 259

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

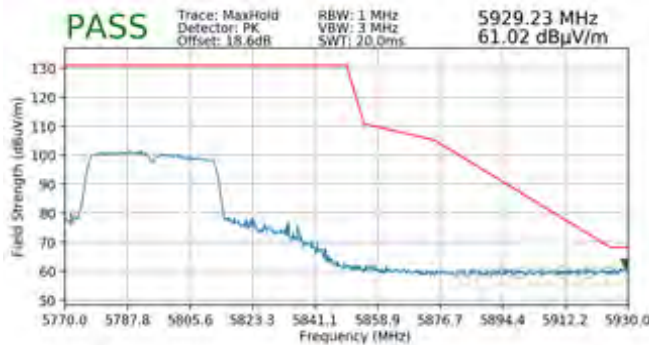


Plot 7-305. Radiated Lower Band Edge Plot SISO ANT1 (Average – UNII Band 2C)



Plot 7-306. Radiated Lower Band Edge Plot SISO ANT1 (Peak – UNII Band 2C)

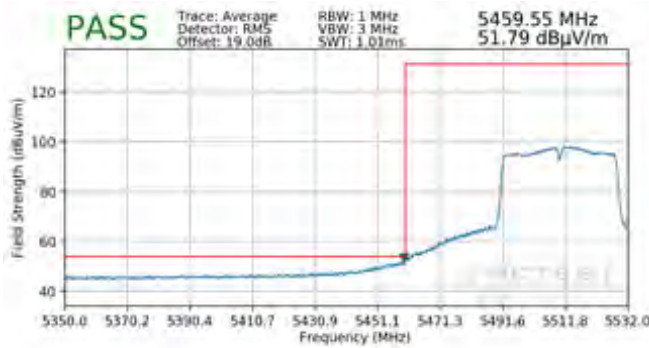
Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5795MHz
Channel:	159



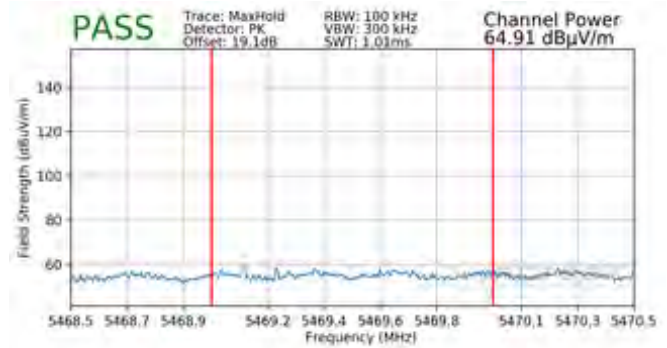
Plot 7-307. Radiated Upper Band Edge Plot SISO ANT1 (Peak – UNII Band 3)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 218 of 259

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



**Plot 7-308. Radiated Band Edge Plot SISO ANT1
(Average – WCP)**



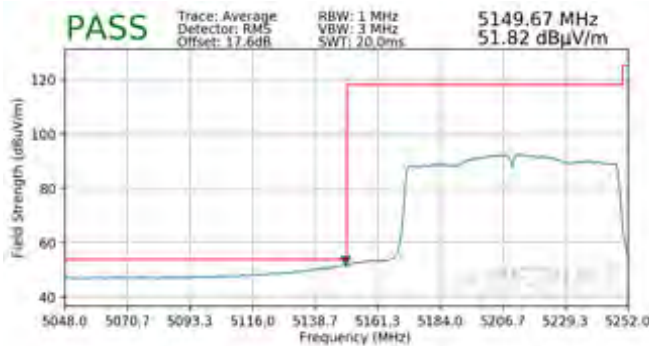
**Plot 7-309. Radiated Band Edge Plot SISO ANT1
(Peak – WCP)**

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 219 of 259

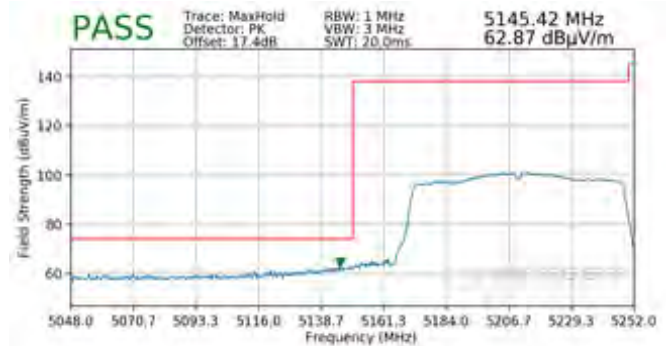
7.6.7 SISO Antenna-1 Radiated Band Edge Measurements (80MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209; RSS-Gen [8.9]

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

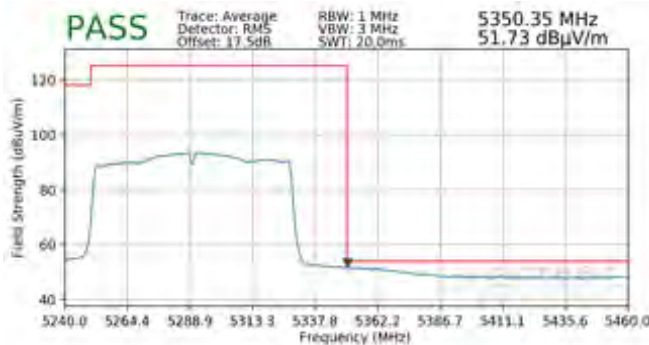


Plot 7-310. Radiated Lower Band Edge Plot SISO ANT1 (Average – UNII Band 1)

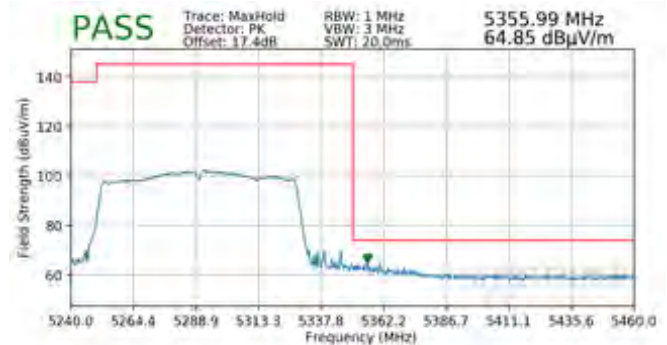


Plot 7-311. Radiated Lower Band Edge Plot SISO ANT1 (Peak – UNII Band 1)

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



Plot 7-312. Radiated Upper Band Edge Plot SISO ANT1 (Average – UNII Band 2A)



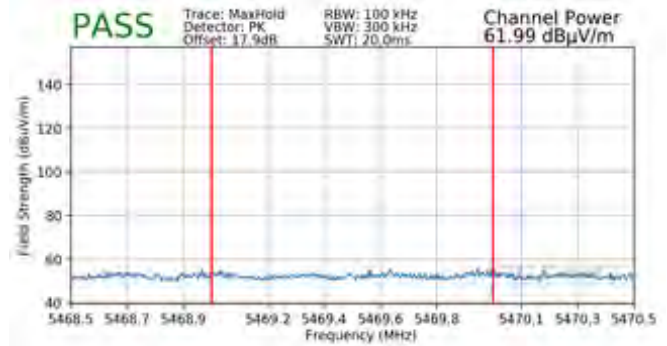
Plot 7-313. Radiated Upper Band Edge Plot SISO ANT1 (Peak – UNII Band 2A)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Worst Case Mode: 802.11ac
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 5530MHz
Channel: 106

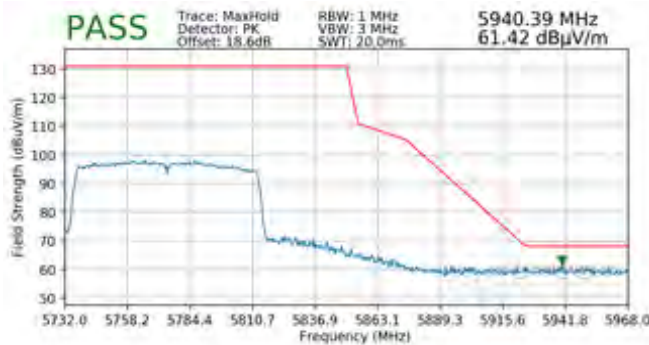


Plot 7-314. Radiated Lower Band Edge Plot SISO ANT1 (Average – UNII Band 2C)



Plot 7-315. Radiated Lower Band Edge Plot SISO ANT1 (Peak – UNII Band 2C)

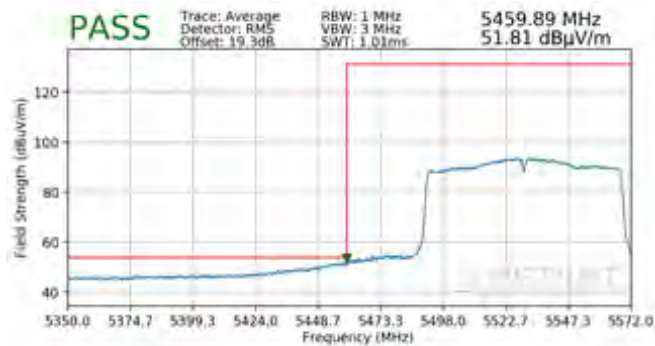
Worst Case Mode: 802.11ac
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 5775MHz
Channel: 155



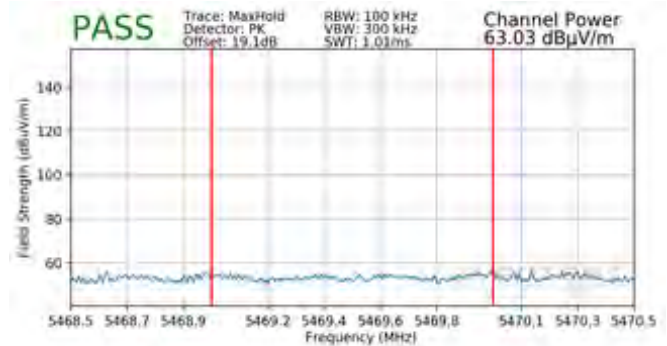
Plot 7-316. Radiated Upper Band Edge Plot SISO ANT1 (Peak – UNII Band 3)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 221 of 259

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



**Plot 7-317. Radiated Band Edge Plot SISO ANT1
(Average – WCP)**



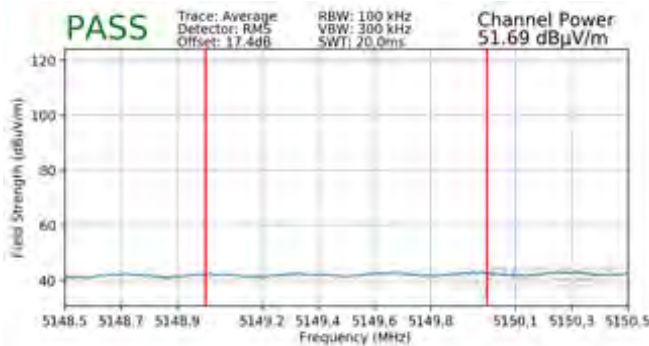
**Plot 7-318. Radiated Band Edge Plot SISO ANT1
(Peak – WCP)**

FCC ID: A3LSMG977U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 222 of 259

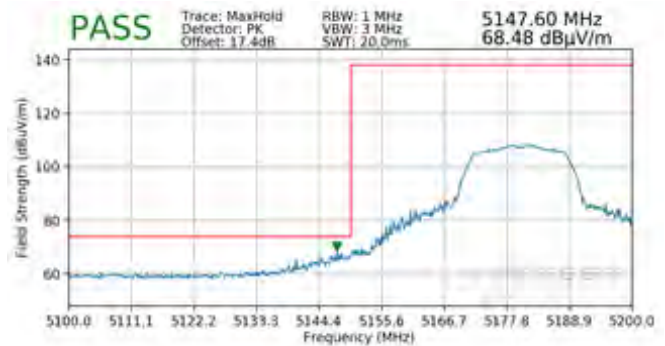
7.6.8 SISO Antenna-2 Radiated Band Edge Measurements (20MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209; RSS-Gen [8.9]

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

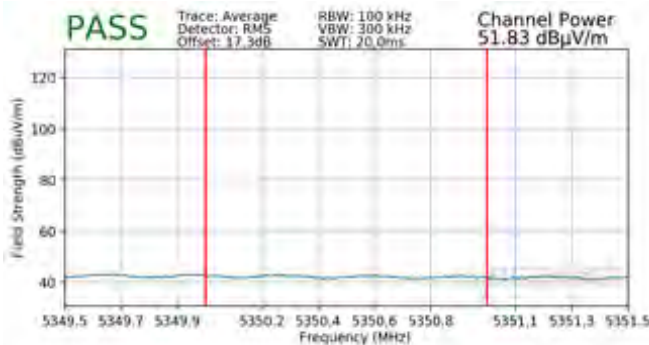


Plot 7-319. Radiated Lower Band Edge Plot SISO ANT2 (Average – UNII Band 1)

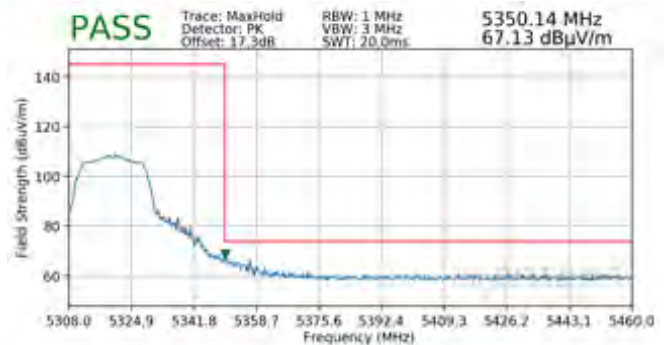


Plot 7-320. Radiated Lower Band Edge Plot SISO ANT2 (Peak – UNII Band 1)

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5320MHz
Channel:	64



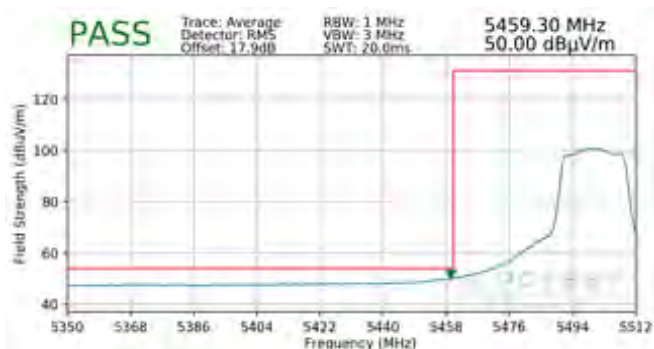
Plot 7-321. Radiated Upper Band Edge Plot SISO ANT2 (Average – UNII Band 2A)



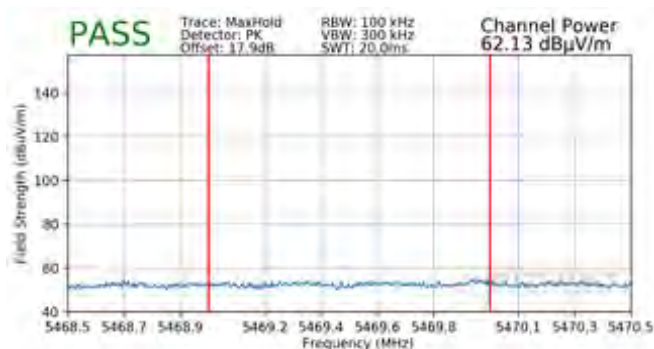
Plot 7-322. Radiated Upper Band Edge Plot SISO ANT2 (Peak – UNII Band 2A)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 223 of 259

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

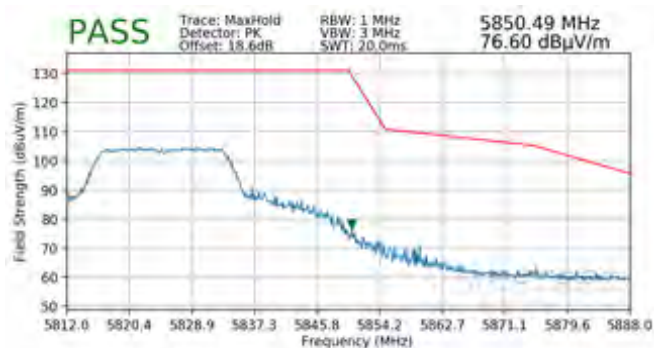


Plot 7-323. Radiated Lower Band Edge Plot SISO ANT2 (Average – UNII Band 2C)



Plot 7-324. Radiated Lower Band Edge Plot SISO ANT2 (Peak – UNII Band 2C)

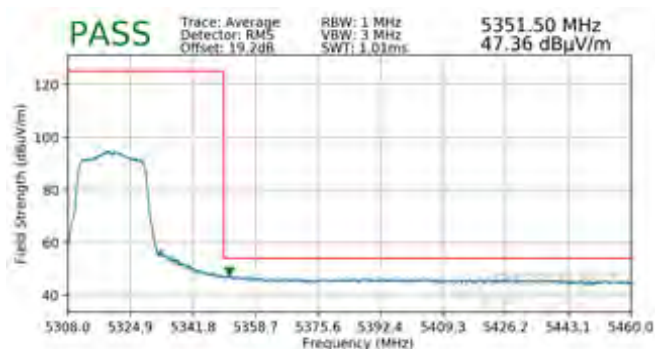
Worst Case Mode: 802.11ac
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 5825MHz
Channel: 165



Plot 7-325. Radiated Upper Band Edge Plot SISO ANT2 (Peak – UNII Band 3)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 224 of 259

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5320MHz
Channel:	64



**Plot 7-326. Radiated Band Edge Plot SISO ANT2
(Average - WCP)**



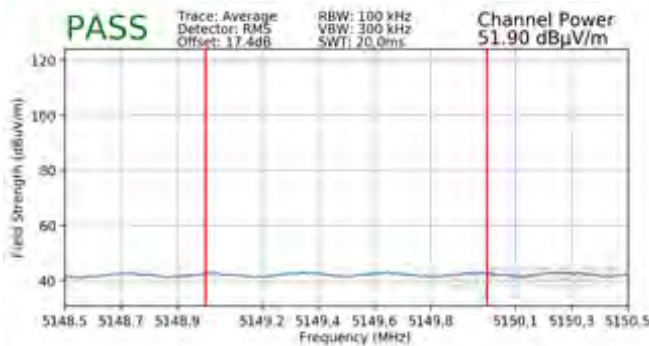
**Plot 7-327. Radiated Band Edge Plot SISO ANT2
(Peak - WCP)**

FCC ID: A3LSMG977U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 225 of 259

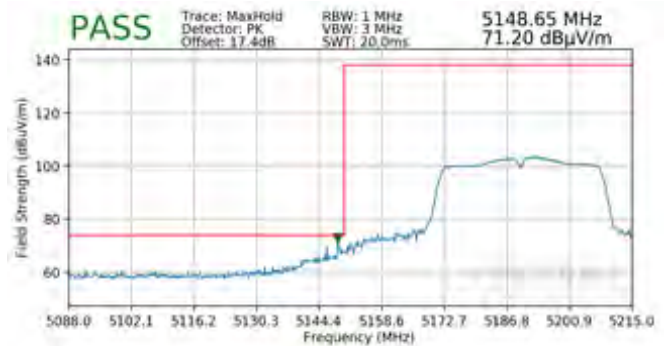
7.6.9 SISO Antenna-2 Radiated Band Edge Measurements (40MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209; RSS-Gen [8.9]

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

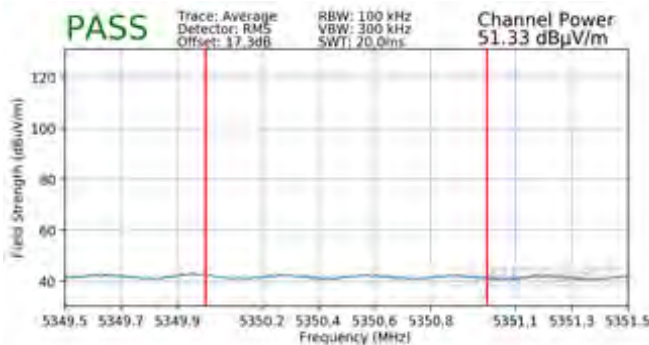


Plot 7-328. Radiated Lower Band Edge Plot SISO ANT2 (Average – UNII Band 1)

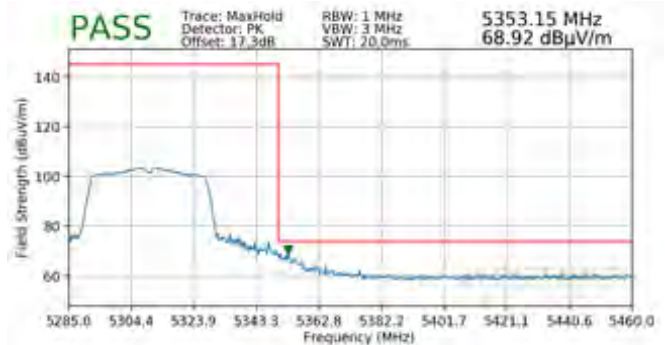


Plot 7-329. Radiated Lower Band Edge Plot SISO ANT2 (Peak – UNII Band 1)

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5310MHz
Channel:	62



Plot 7-330. Radiated Upper Band Edge Plot SISO ANT2 (Average – UNII Band 2A)



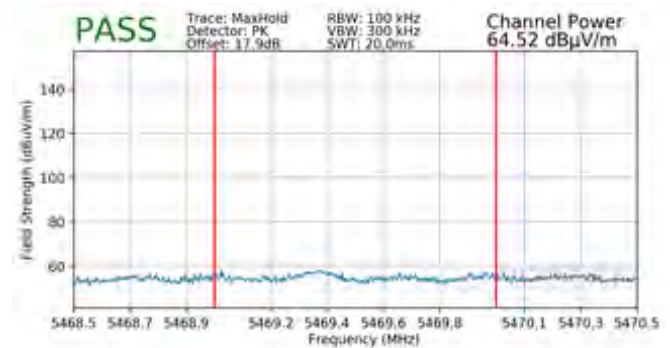
Plot 7-331. Radiated Upper Band Edge Plot SISO ANT2 (Peak – UNII Band 2A)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Worst Case Mode: 802.11ac
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 5510MHz
Channel: 102

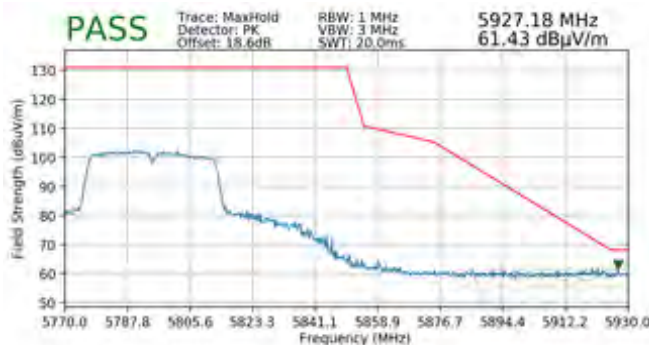


Plot 7-332. Radiated Lower Band Edge Plot SISO ANT2 (Average – UNII Band 2C)



Plot 7-333. Radiated Lower Band Edge Plot SISO ANT2 (Peak – UNII Band 2C)

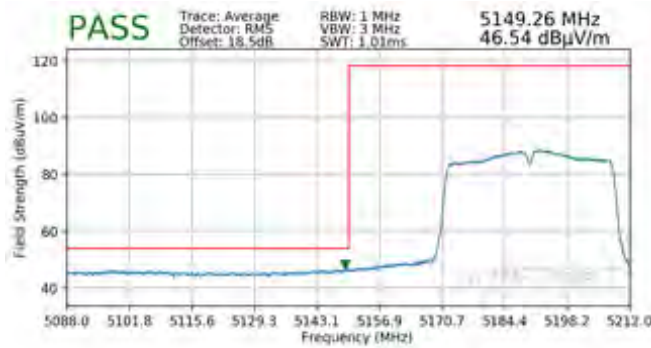
Worst Case Mode: 802.11ac
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 5795MHz
Channel: 159



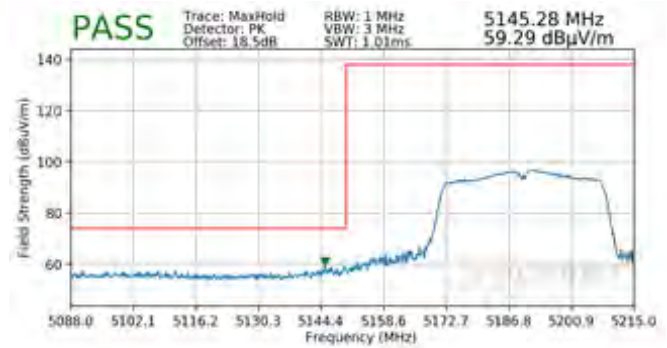
Plot 7-334. Radiated Upper Band Edge Plot SISO ANT2 (Peak – UNII Band 3)

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 227 of 259

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



**Plot 7-335. Radiated Band Edge Plot SISO ANT2
(Average – WCP)**

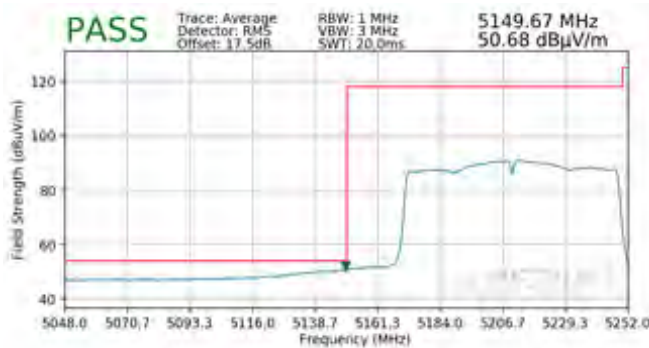


**Plot 7-336. Radiated Band Edge Plot SISO ANT2
(Peak – WCP)**

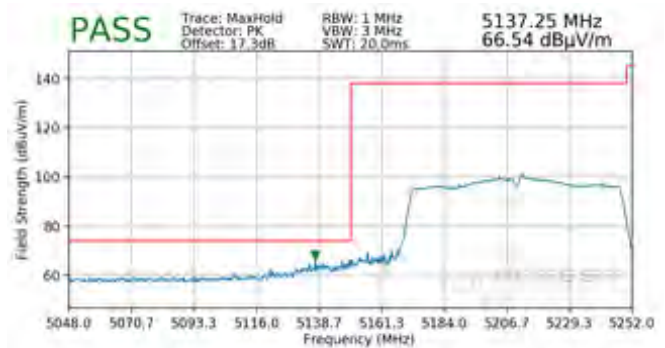
FCC ID: A3LSMG977U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 228 of 259	

7.6.10 SISO Antenna-2 Radiated Band Edge Measurements (80MHz BW) §15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

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

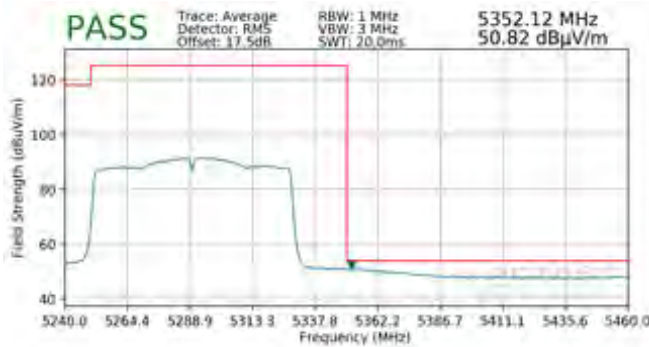


Plot 7-337. Radiated Lower Band Edge Plot SISO ANT2 (Average – UNII Band 1)

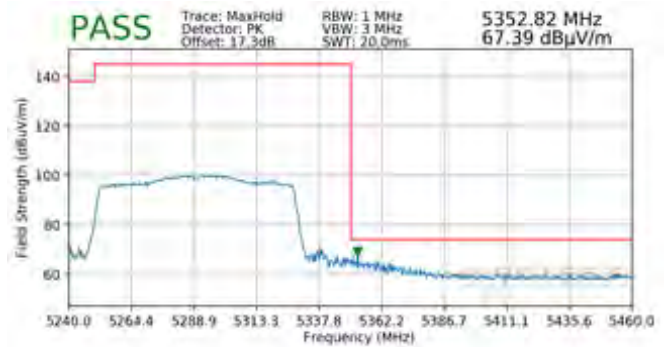


Plot 7-338. Radiated Lower Band Edge Plot SISO ANT2 (Peak – UNII Band 1)

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



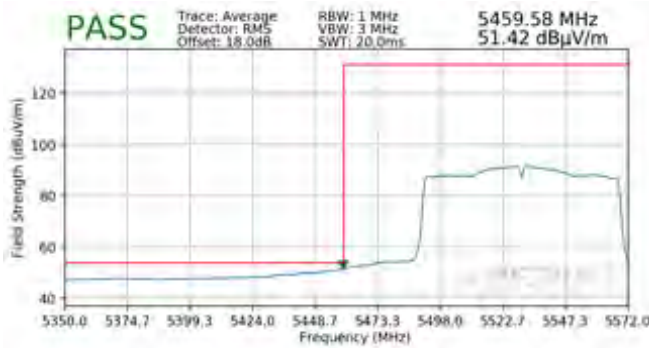
Plot 7-339. Radiated Upper Band Edge Plot SISO ANT2 (Average – UNII Band 2A)



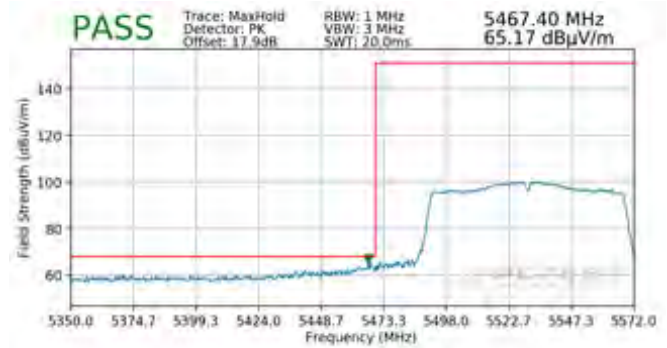
Plot 7-340. Radiated Upper Band Edge Plot SISO ANT2 (Peak – UNII Band 2A)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Worst Case Mode: 802.11ac
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 5530MHz
Channel: 106

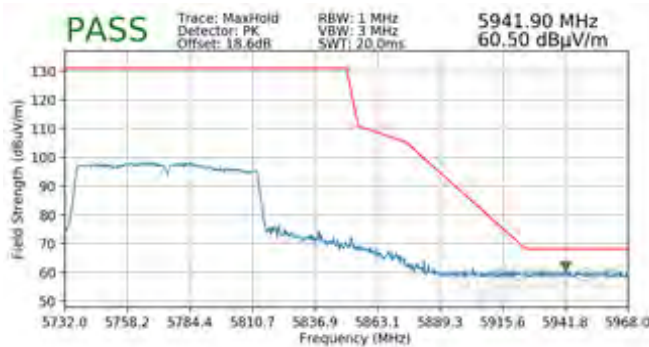


Plot 7-341. Radiated Lower Band Edge Plot SISO ANT2 (Average – UNII Band 2C)



Plot 7-342. Radiated Lower Band Edge Plot SISO ANT2 (Peak – UNII Band 2C)

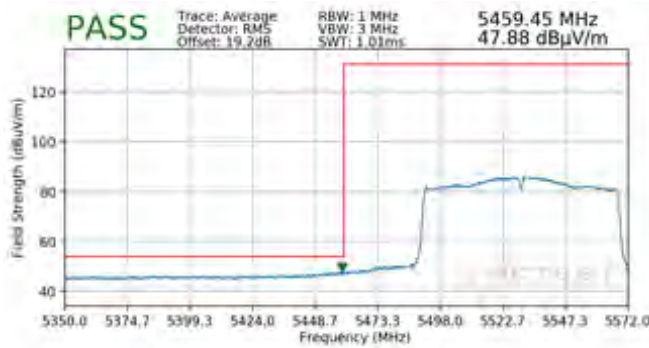
Worst Case Mode: 802.11ac
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 5775MHz
Channel: 155



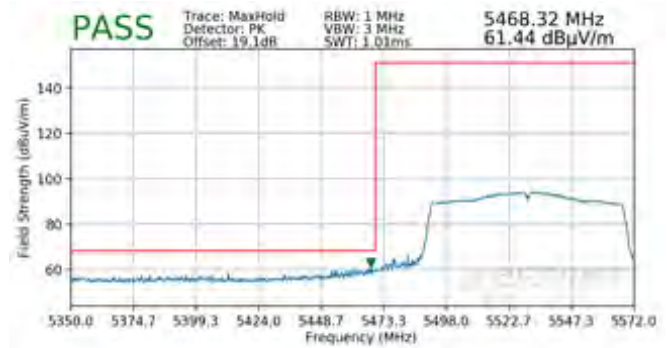
Plot 7-343. Radiated Upper Band Edge Plot SISO ANT2 (Peak – UNII Band 3)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 230 of 259

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



**Plot 7-344. Radiated Band Edge Plot SISO ANT2
(Average – WCP)**



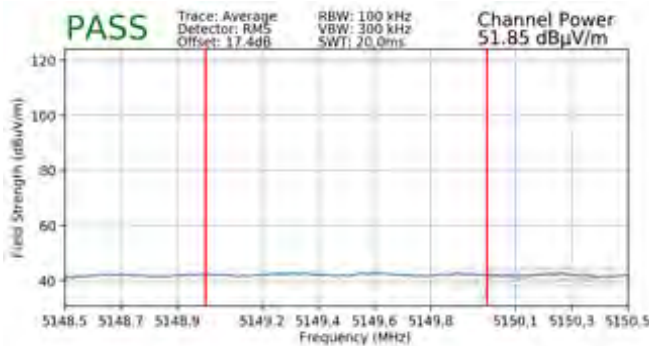
**Plot 7-345. Radiated Band Edge Plot SISO ANT2
(Peak – WCP)**

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 231 of 259

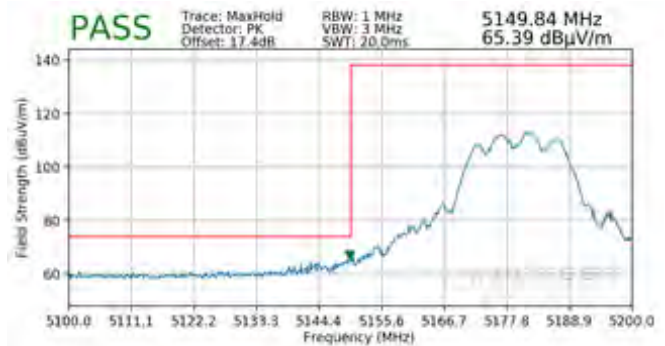
7.6.11 CDD Radiated Band Edge Measurements (20MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209; RSS-Gen [8.9]

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

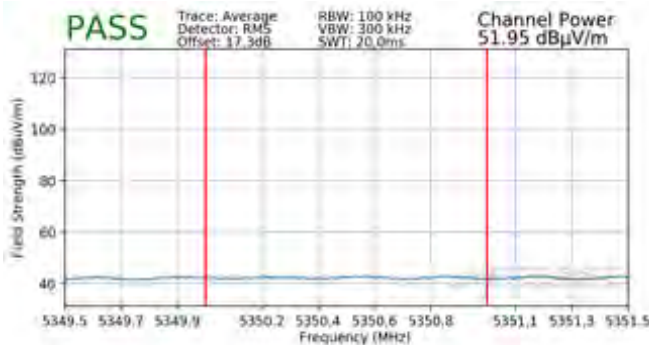


**Plot 7-346. Radiated Lower Band Edge Plot CDD
(Average – UNII Band 1)**

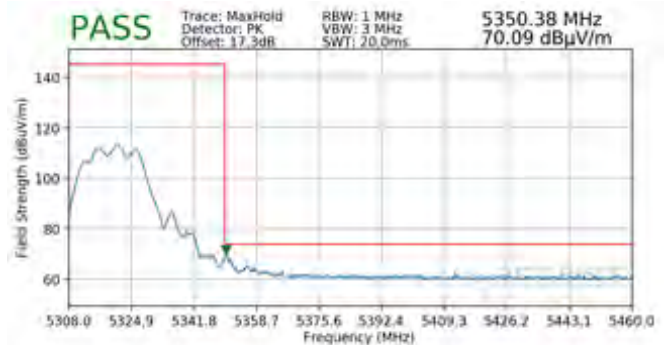


**Plot 7-347. Radiated Lower Band Edge Plot CDD
(Peak – UNII Band 1)**

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



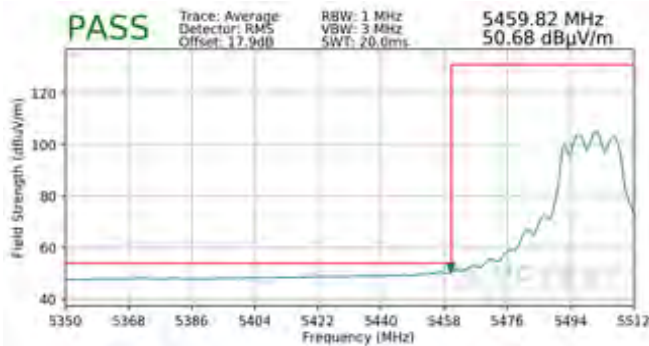
**Plot 7-348. Radiated Upper Band Edge Plot CDD
(Average – UNII Band 2A)**



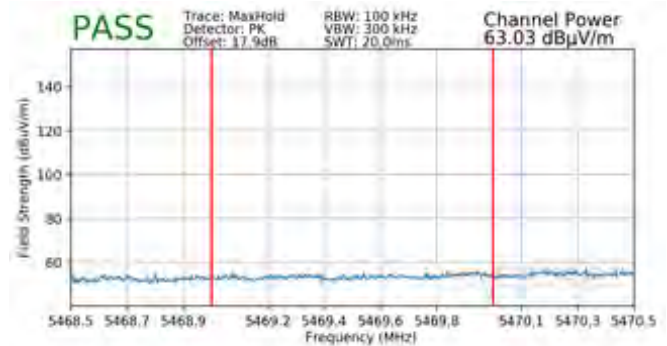
**Plot 7-349. Radiated Upper Band Edge Plot CDD
(Peak – UNII Band 2A)**

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 232 of 259

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

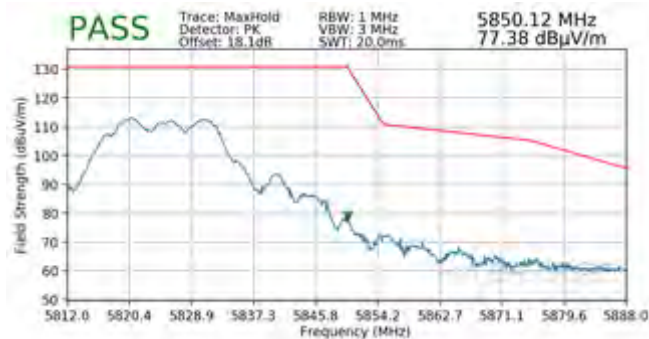


**Plot 7-350. Radiated Lower Band Edge Plot CDD
(Average – UNII Band 2C)**



**Plot 7-351. Radiated Lower Band Edge Plot CDD
(Peak – UNII Band 2C)**

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



**Plot 7-352. Radiated Upper Band Edge Plot CDD
(Peak – UNII Band 3)**

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 233 of 259

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



Plot 7-353. Radiated Band Edge Plot CDD (Average – WCP)



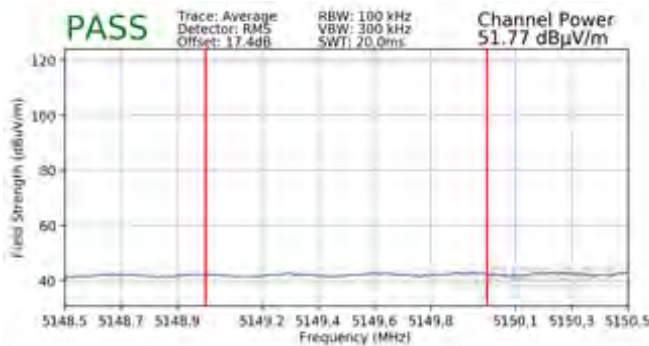
Plot 7-354. Radiated Band Edge Plot CDD (Peak – WCP)

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 234 of 259

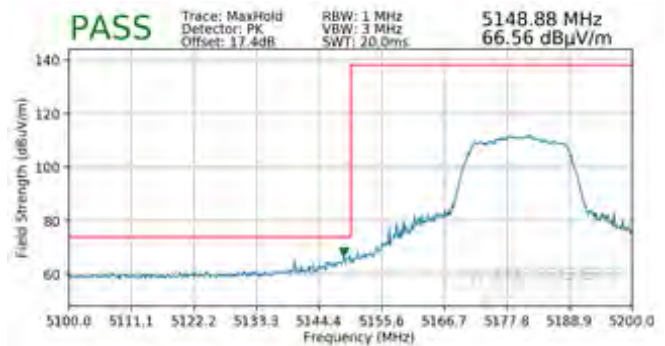
7.6.12 MIMO Radiated Band Edge Measurements (20MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209; RSS-Gen [8.9]

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

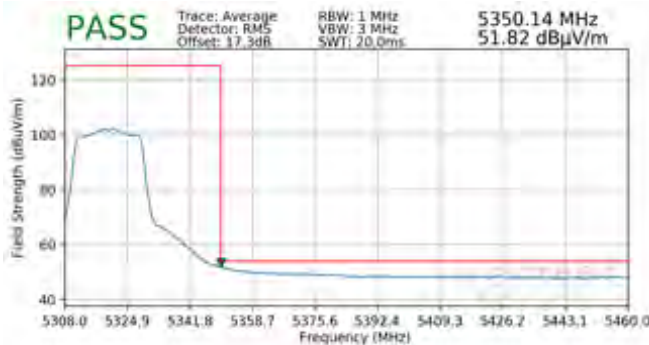


Plot 7-355. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 1)

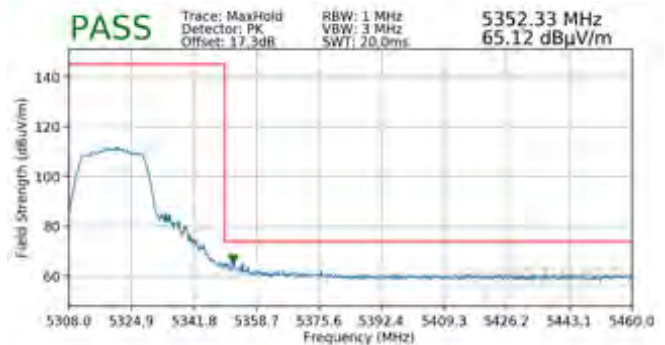


Plot 7-356. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 1)

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



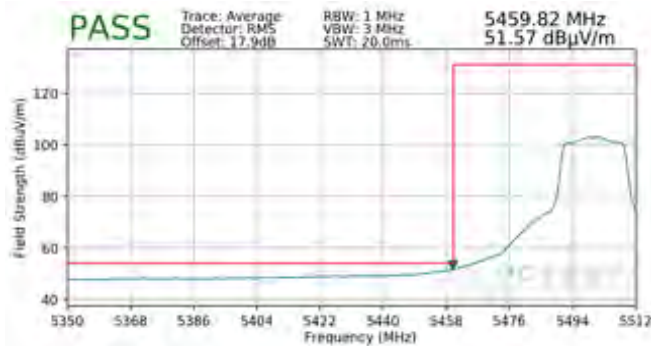
Plot 7-357. Radiated Upper Band Edge Plot MIMO (Average – UNII Band 2A)



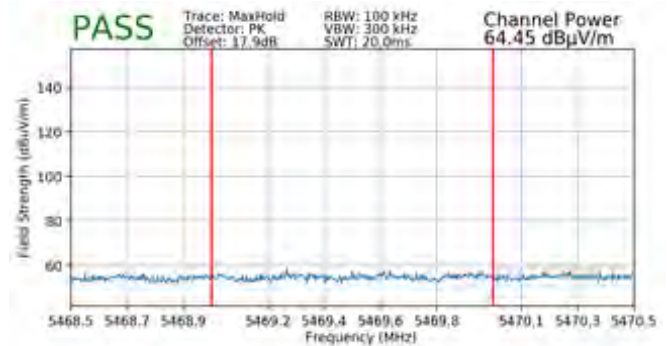
Plot 7-358. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 2A)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 235 of 259

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

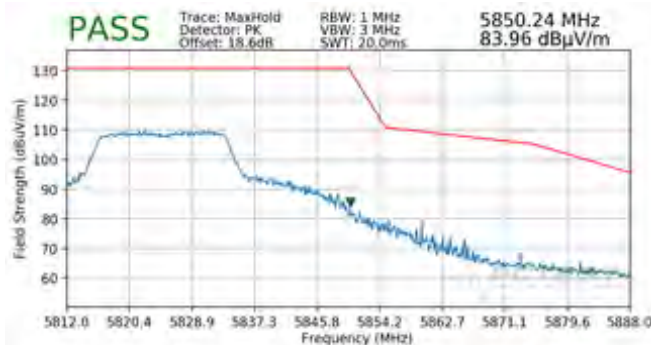


Plot 7-359. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 2C)



Plot 7-360. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 2C)

Worst Case Mode:	802.11n
Worst Case Transfer Rate:	MCS8
Distance of Measurements:	3 Meters
Operating Frequency:	5825MHz
Channel:	165



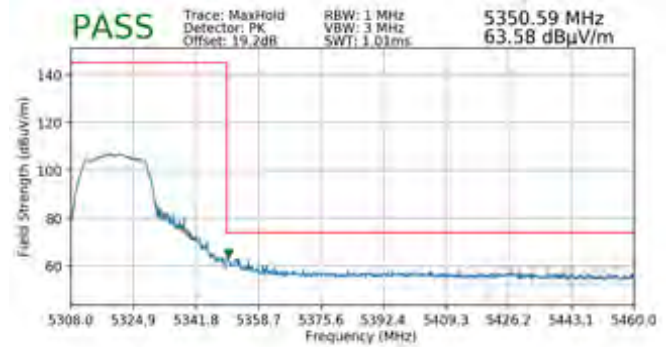
Plot 7-361. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 3)

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 236 of 259

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



**Plot 7-362. Radiated Band Edge Plot MIMO
(Average – WCP)**



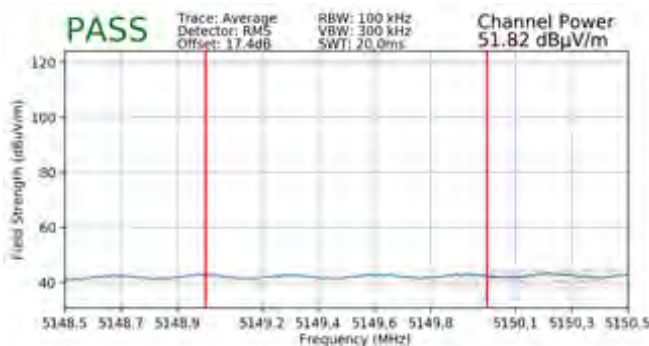
**Plot 7-363. Radiated Band Edge Plot MIMO (Peak –
WCP)**

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 237 of 259

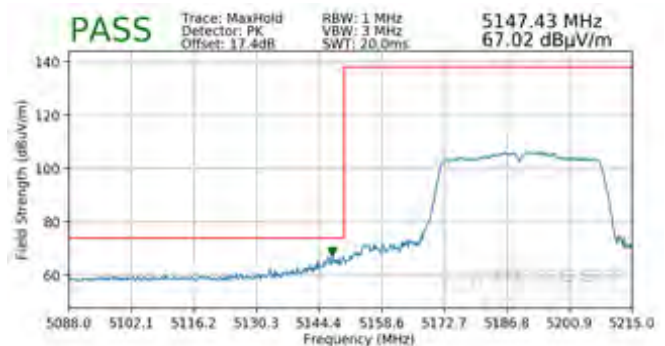
7.6.13 MIMO Radiated Band Edge Measurements (40MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209; RSS-Gen [8.9]

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

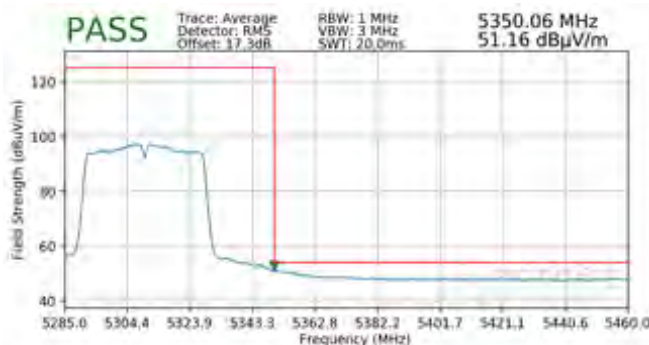


Plot 7-364. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 1)

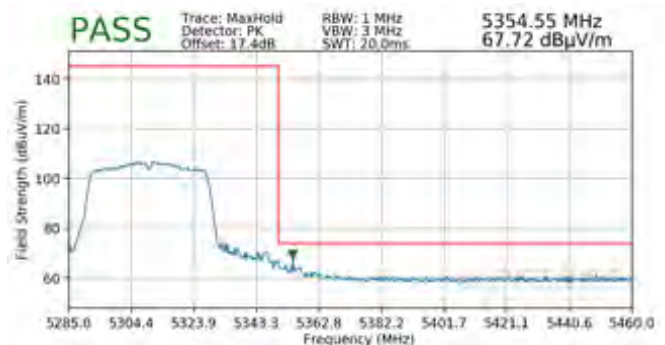


Plot 7-365. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 1)

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



Plot 7-366. Radiated Upper Band Edge Plot MIMO (Average – UNII Band 2A)



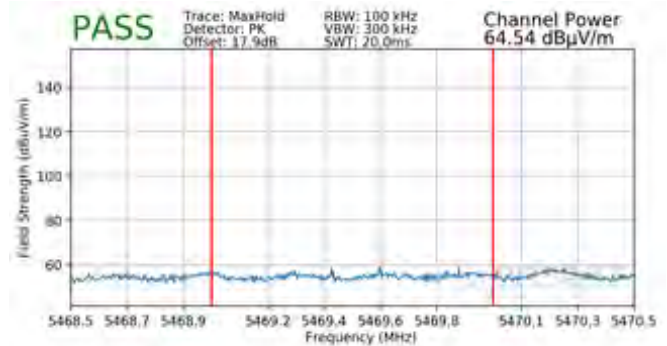
Plot 7-367. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 2A)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Worst Case Mode: 802.11n
Worst Case Transfer Rate: MCS8
Distance of Measurements: 3 Meters
Operating Frequency: 5510MHz
Channel: 102

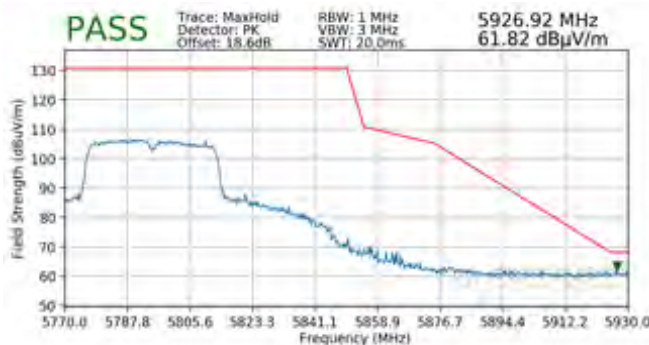


Plot 7-368. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 2C)



Plot 7-369. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 2C)

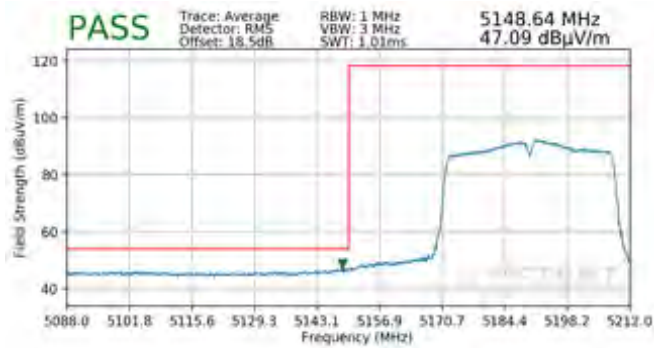
Worst Case Mode: 802.11n
Worst Case Transfer Rate: MCS8
Distance of Measurements: 3 Meters
Operating Frequency: 5795MHz
Channel: 159



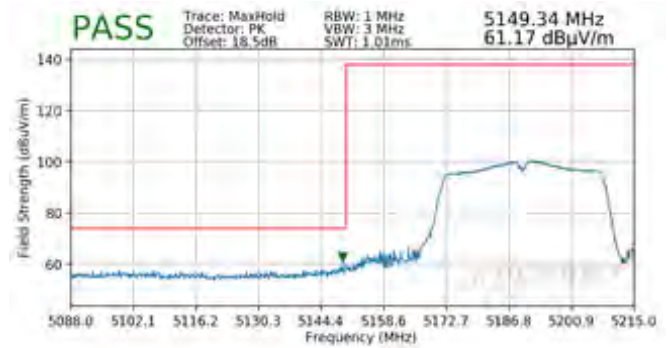
Plot 7-370. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 3)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 239 of 259

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



Plot 7-371. Radiated Band Edge Plot ANT (Average - WCP)



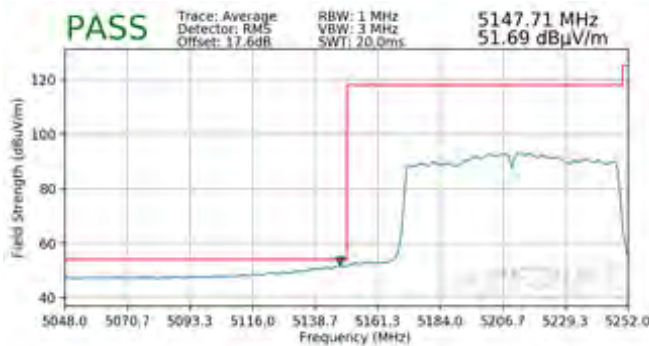
Plot 7-372. Radiated Band Edge Plot ANT (Peak - WCP)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 240 of 259

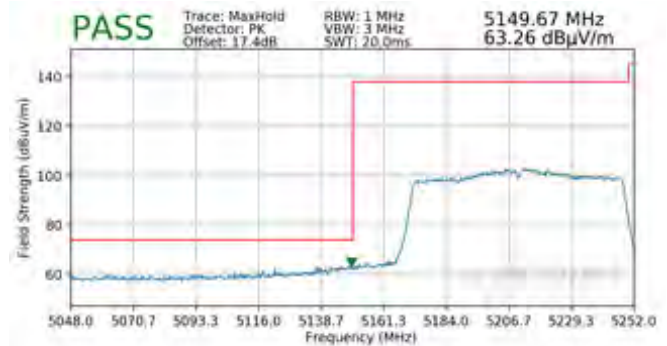
7.6.14 MIMO Radiated Band Edge Measurements (80MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209; RSS-Gen [8.9]

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

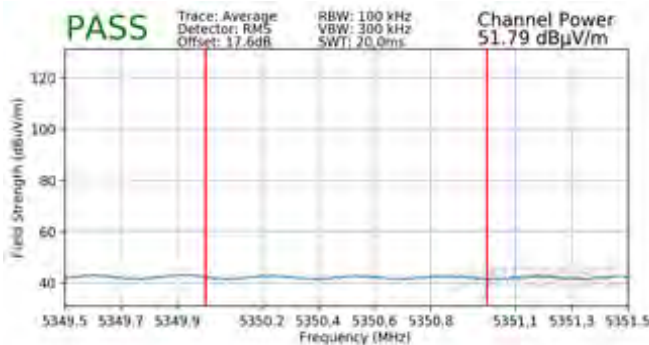


Plot 7-373. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 1)

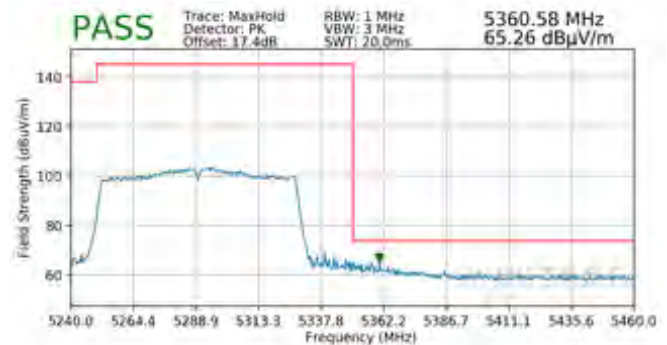


Plot 7-374. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 1)

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



Plot 7-375. Radiated Upper Band Edge Plot MIMO (Average – UNII Band 2A)



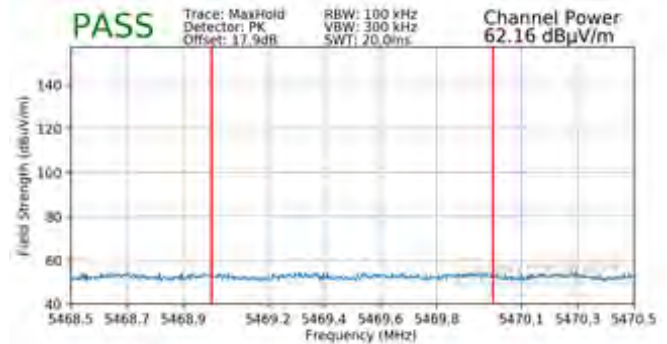
Plot 7-376. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 2A)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Worst Case Mode: 802.11ac
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 5530MHz
Channel: 106

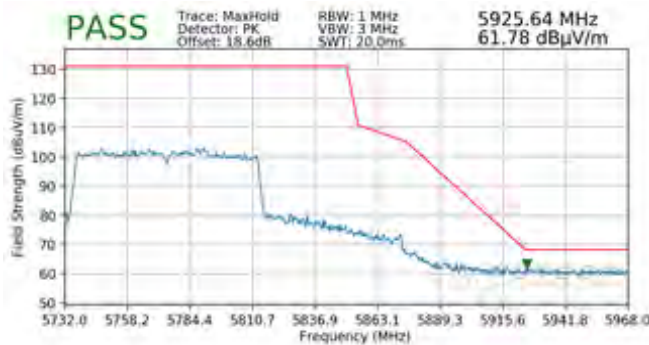


Plot 7-377. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 2C)



Plot 7-378. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 2C)

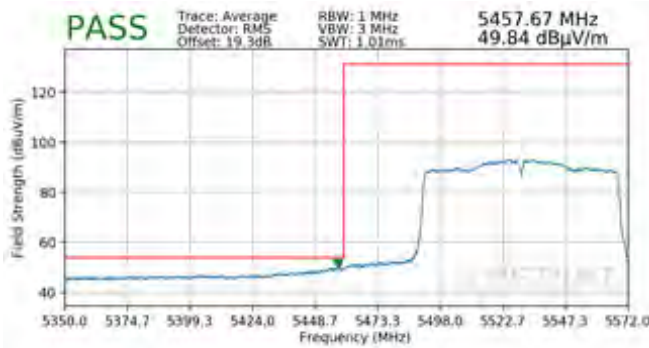
Worst Case Mode: 802.11ac
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 5775MHz
Channel: 155



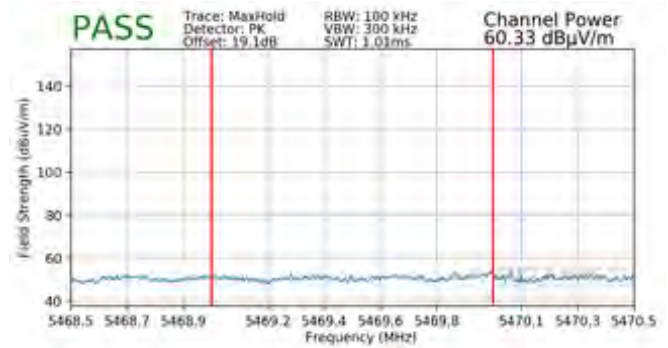
Plot 7-379. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 3)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 242 of 259

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



Plot 7-380. Radiated Band Edge Plot ANT (Average – WCP)



Plot 7-381. Radiated Band Edge Plot ANT (Peak – WCP)

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 243 of 259

7.7 Radiated Spurious Emissions Measurements – Below 1GHz

§15.209; RSS-Gen [8.9]

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 and Table 6 of RSS-Gen (8.10) must not exceed the limits shown in Table 7-79 per Section 15.209 and RSS-Gen (8.9).

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

Table 7-79. 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: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Test Setup

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

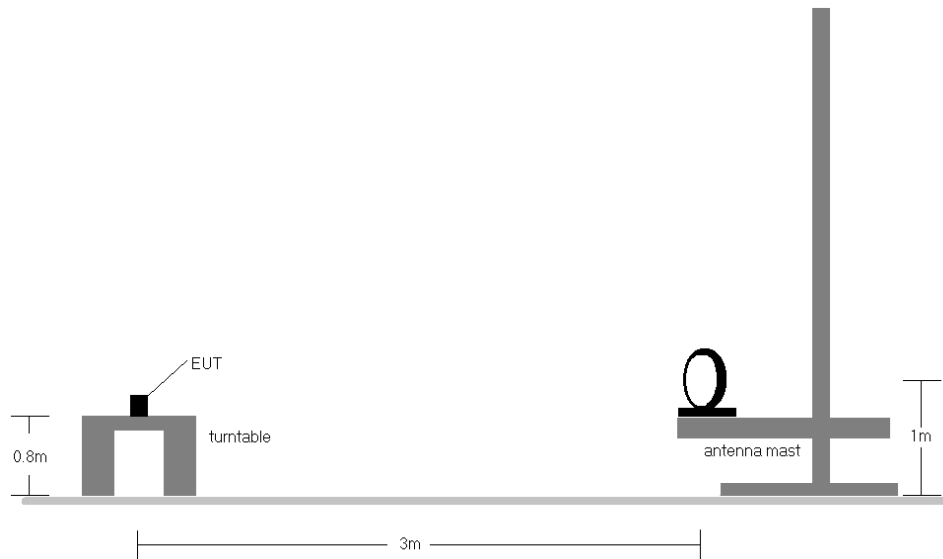


Figure 7-6. Radiated Test Setup < 30MHz

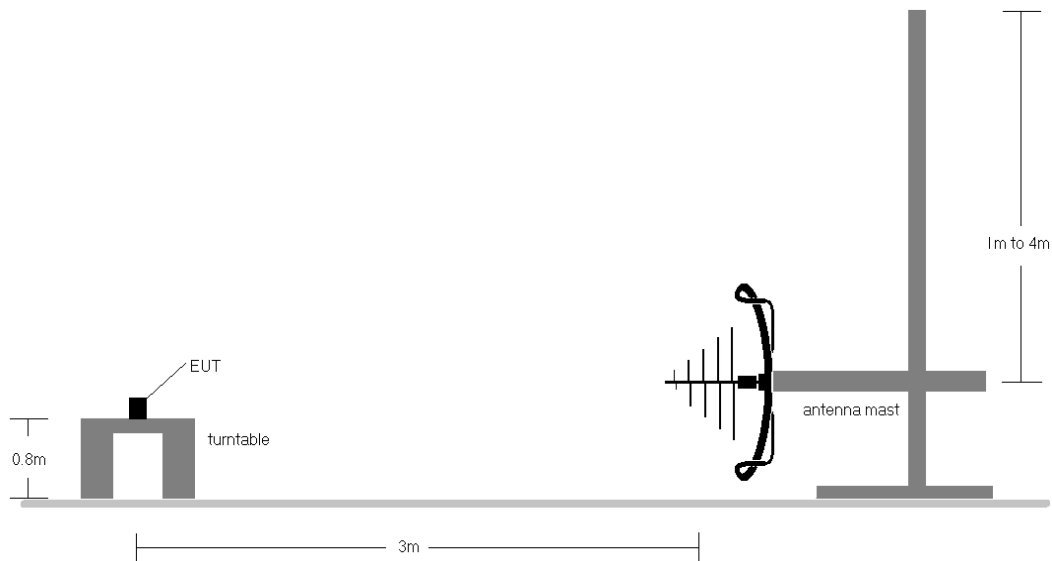


Figure 7-7. Radiated Test Setup < 1GHz

FCC ID: A3LSMG977U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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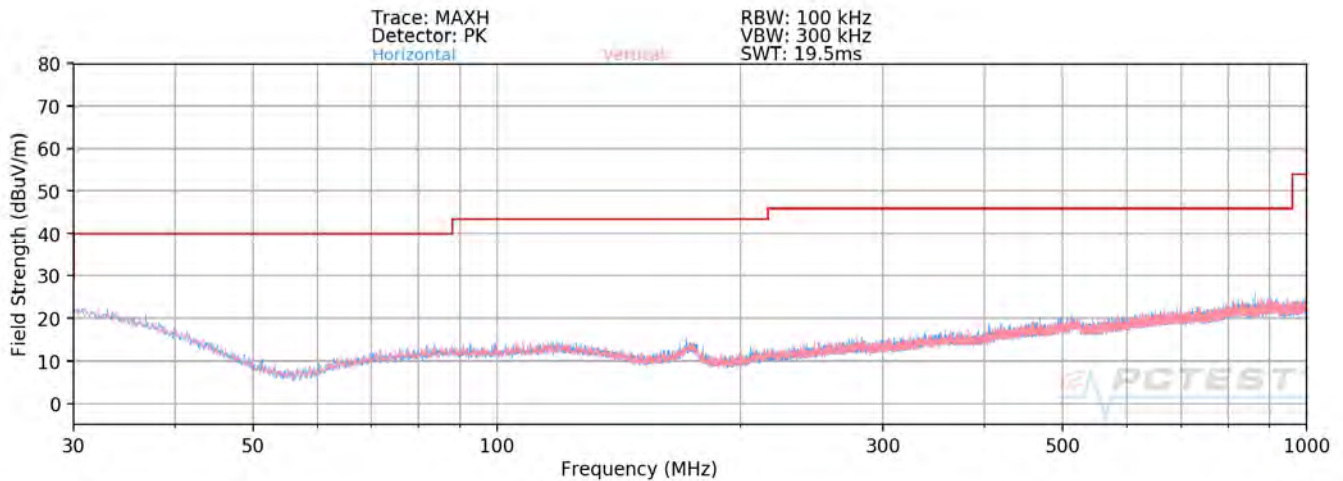
Test Notes

1. All emissions lying in restricted bands specified in §15.205 and RSS-Gen (8.10) are below the limit shown in Table 7-79.
2. The broadband receive antenna is manipulated through vertical and horizontal polarizations during the tests. The EUT is manipulated through three orthogonal planes.
3. This unit was tested with its standard battery.
4. The spectrum is investigated using a peak detector and final measurements are recorded using CISPR quasi peak detector. The worst-case emissions are reported however emissions whose levels were not within 20dB of the respective limits were not reported.
5. Emissions were measured at a 3 meter test distance.
6. Emissions are investigated while operating on the center channel of the mode, band, and modulation that produced the worst case results during the transmitter spurious emissions testing.
7. No spurious emissions were detected within 20dB of the limit below 30MHz.
8. The results recorded using the broadband antenna is known to correlate with the results obtained by using a tuned dipole with an acceptable degree of accuracy. The VSWR for the measurement antenna was found to be less than 2:1.
9. The wide spectrum spurious emissions plots shown on the following pages are used only for the purpose of emission identification. There were no emissions detected in the 30MHz – 1GHz frequency range, as shown in the subsequent plots.

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

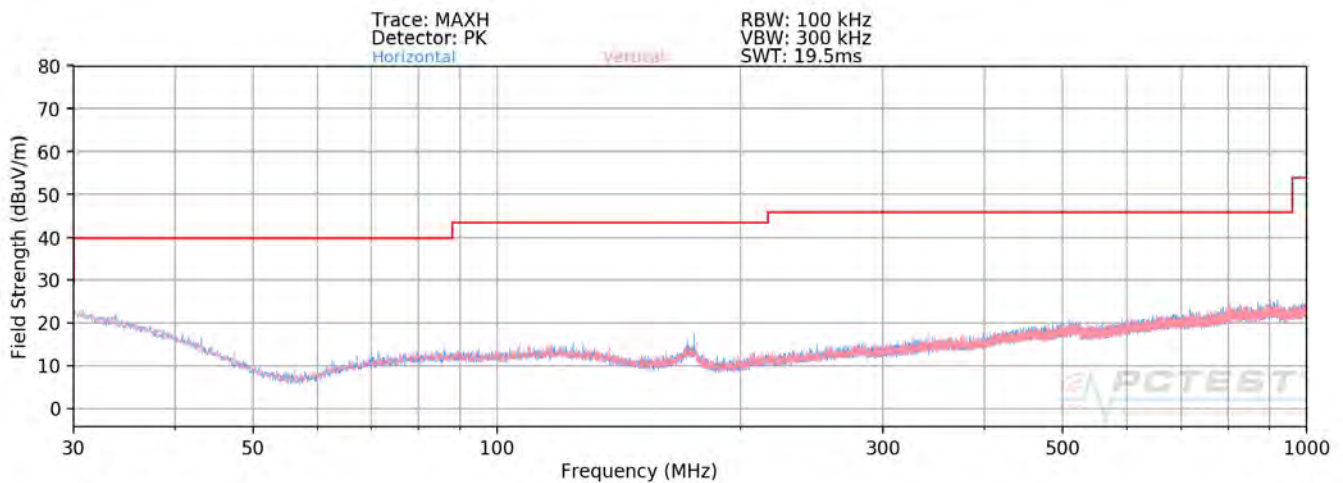
§15.209; RSS-Gen [8.9]



Plot 7-382. Radiated Spurious Plot below 1GHz SISO ANT1 (802.11a – U3 Ch. 157)

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

§15.209; RSS-Gen [8.9]

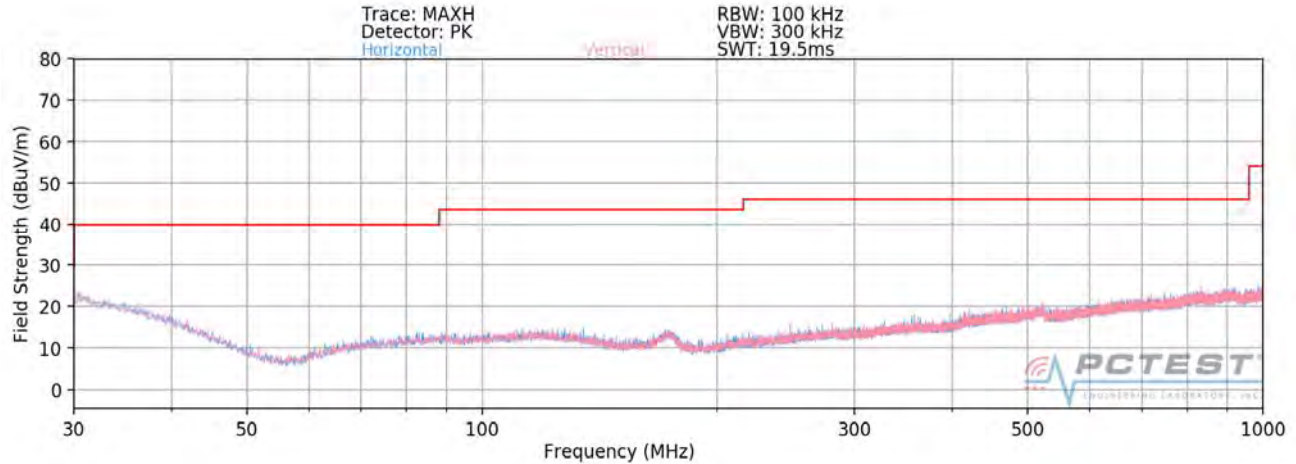


Plot 7-383. Radiated Spurious Plot below 1GHz SISO ANT2 (802.11a – U3 Ch. 157)

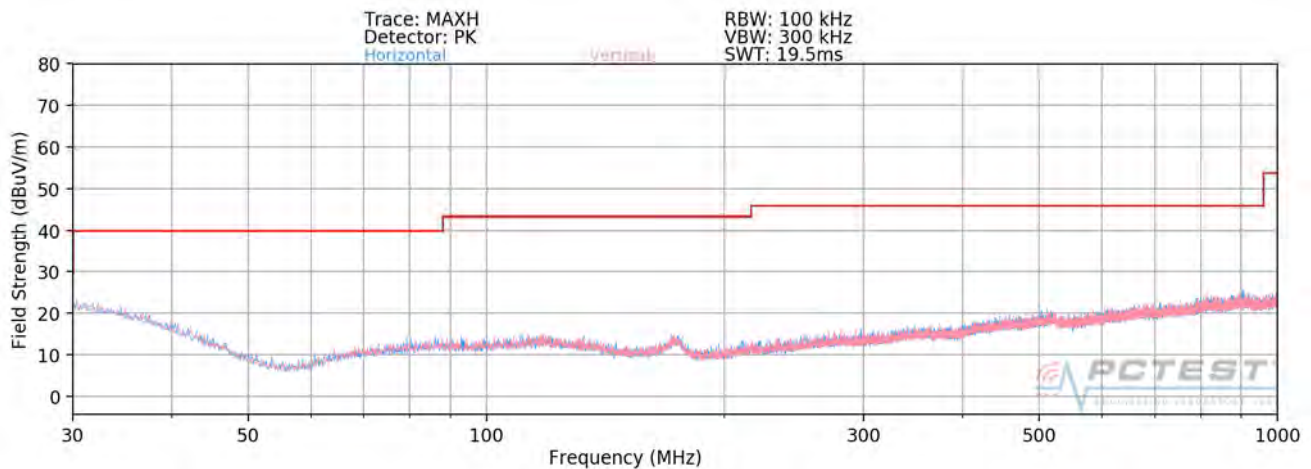
FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Simultaneous Tx Radiated Spurious Emissions Measurements (Below 1GHz)

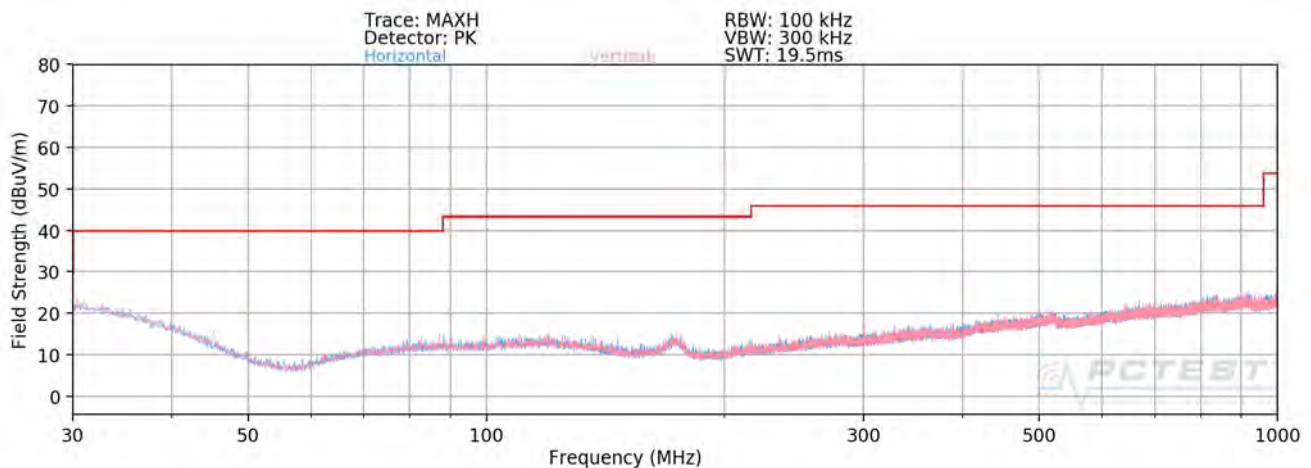
§15.209; RSS-Gen [8.9]



Plot 7-384. Radiated Spurious Plot below 1GHz (2.4GHz – 5GHz)



Plot 7-385. Radiated Spurious Plot below 1GHz (5GHz – 2.4 GHz)



Plot 7-386. Radiated Spurious Plot below 1GHz (Dual Band Simult. Tx)

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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7.8 Line-Conducted Test Data

§15.407; RSS-Gen [8.8]

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 and RSS-Gen (8.8).

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

Table 7-80. 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.

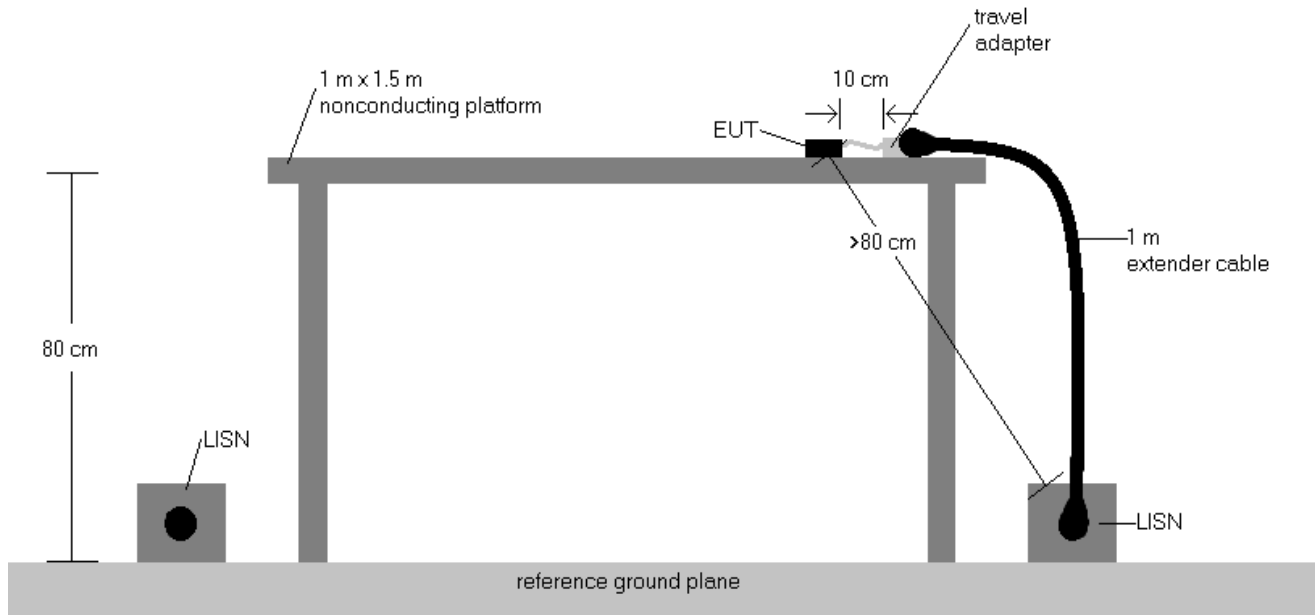
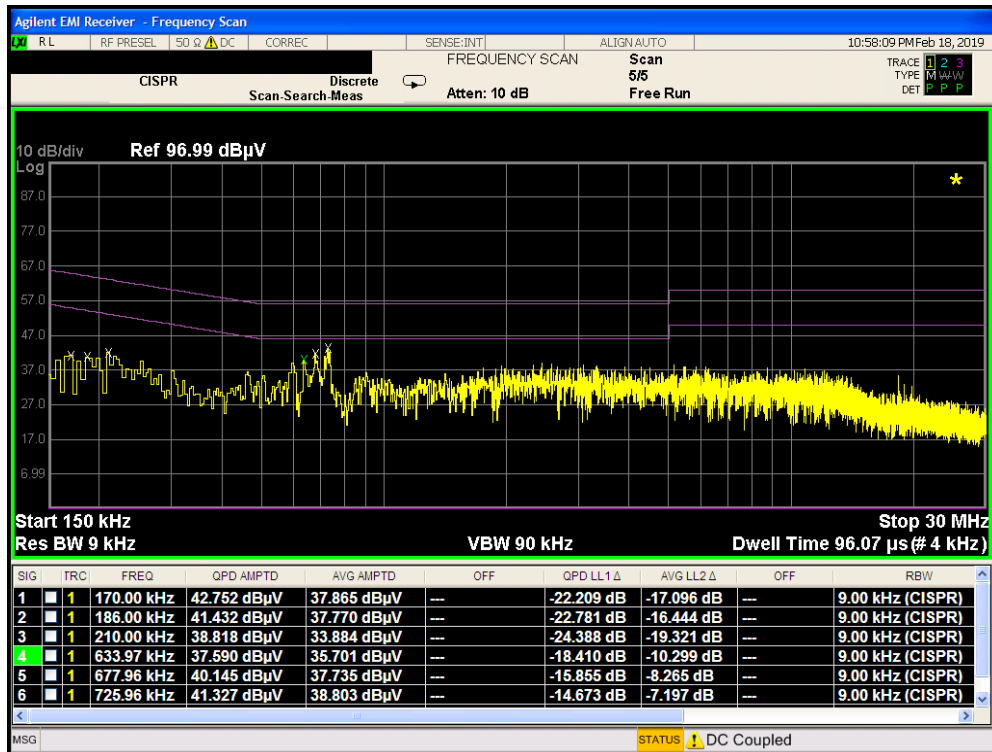


Figure 7-8. Test Instrument & Measurement Setup

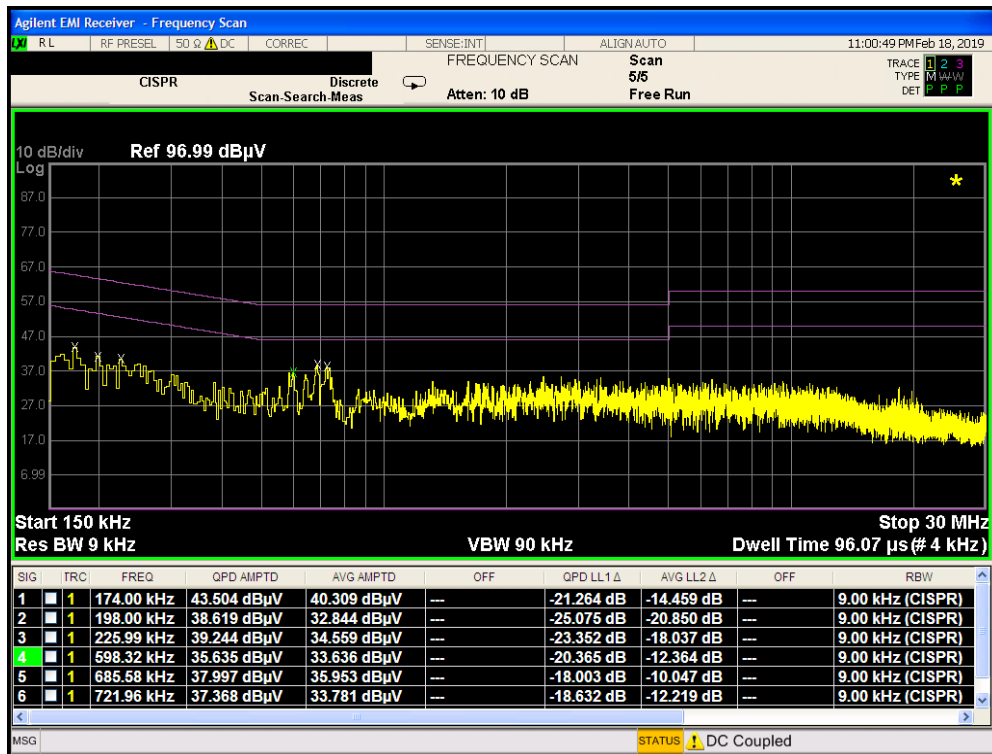
Test Notes

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 and RSS-Gen (8.8).
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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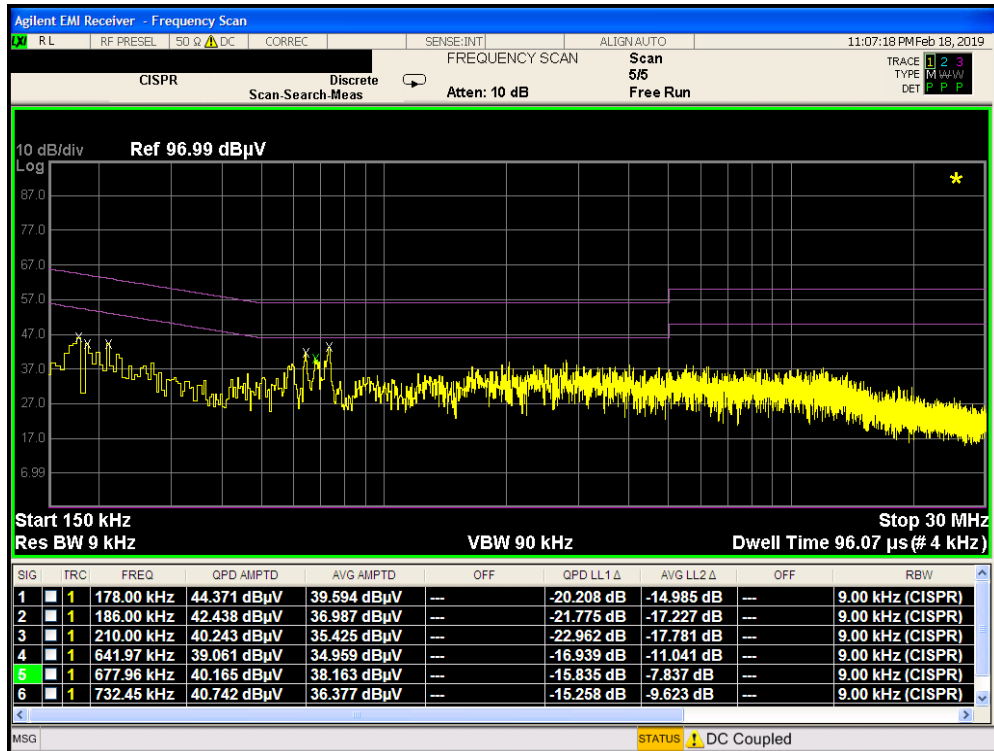


Plot 7-387. Line Conducted Plot with 802.11a UNII Band 1 (L1) with Travel Adapter

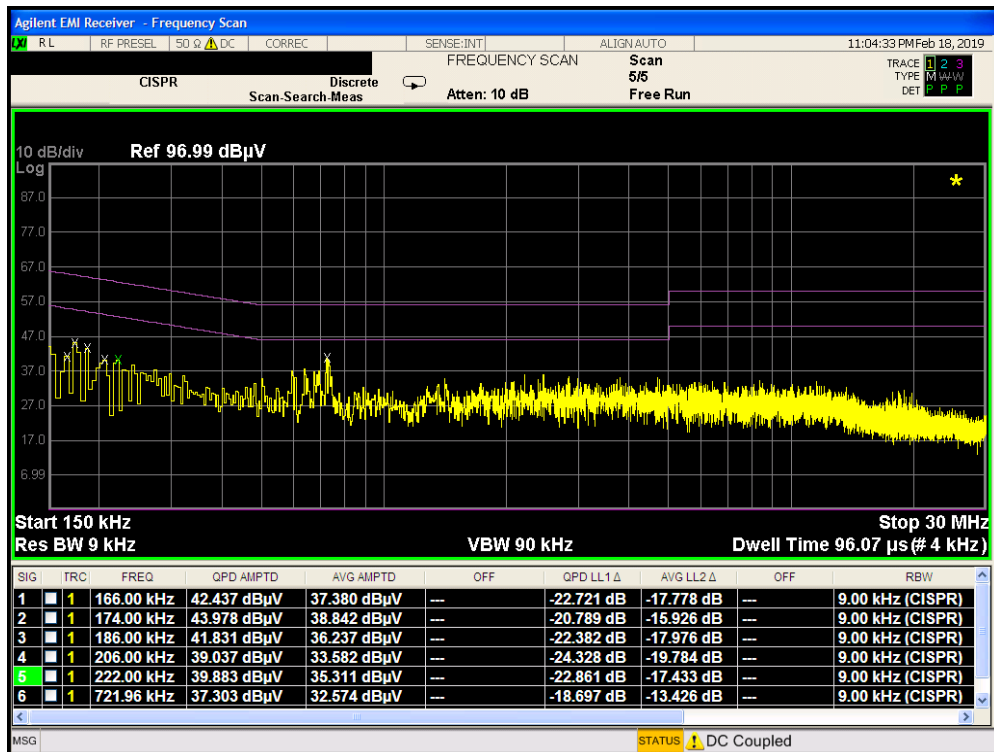


Plot 7-388. Line Conducted Plot with 802.11a UNII Band 1 (N) with Travel Adapter

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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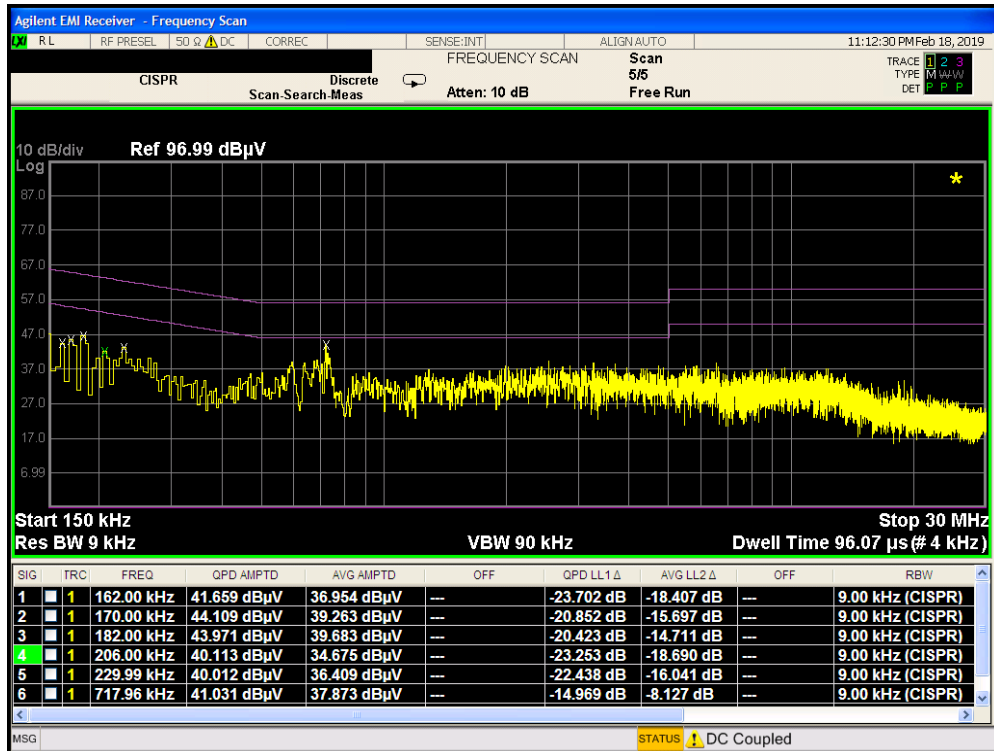


Plot 7-389. Line Conducted Plot with 802.11a UNII Band 2A (L1) with Travel Adapter

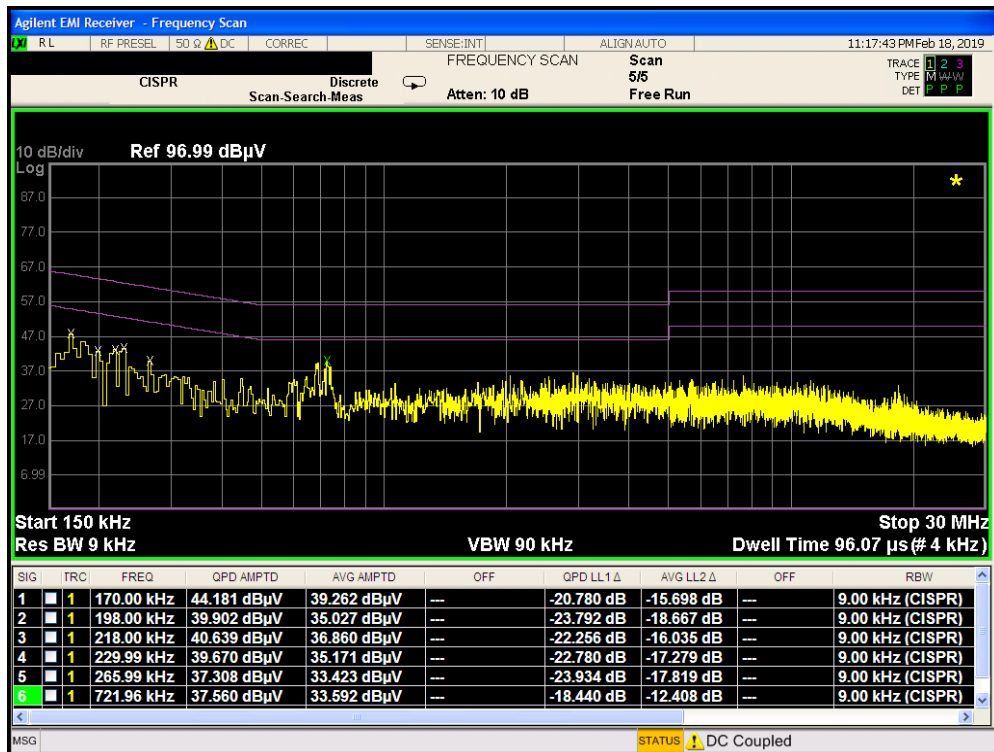


Plot 7-390. Line Conducted Plot with 802.11a UNII Band 2A (N) with Travel Adapter

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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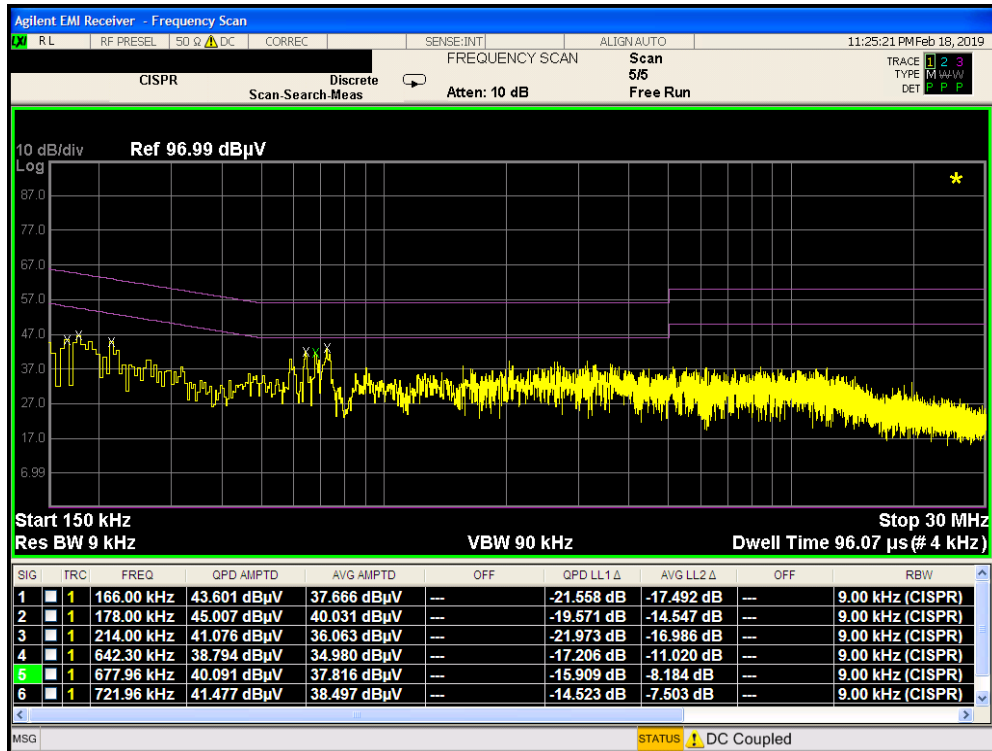


Plot 7-391. Line Conducted Plot with 802.11a UNII Band 2C (L1) with Travel Adapter

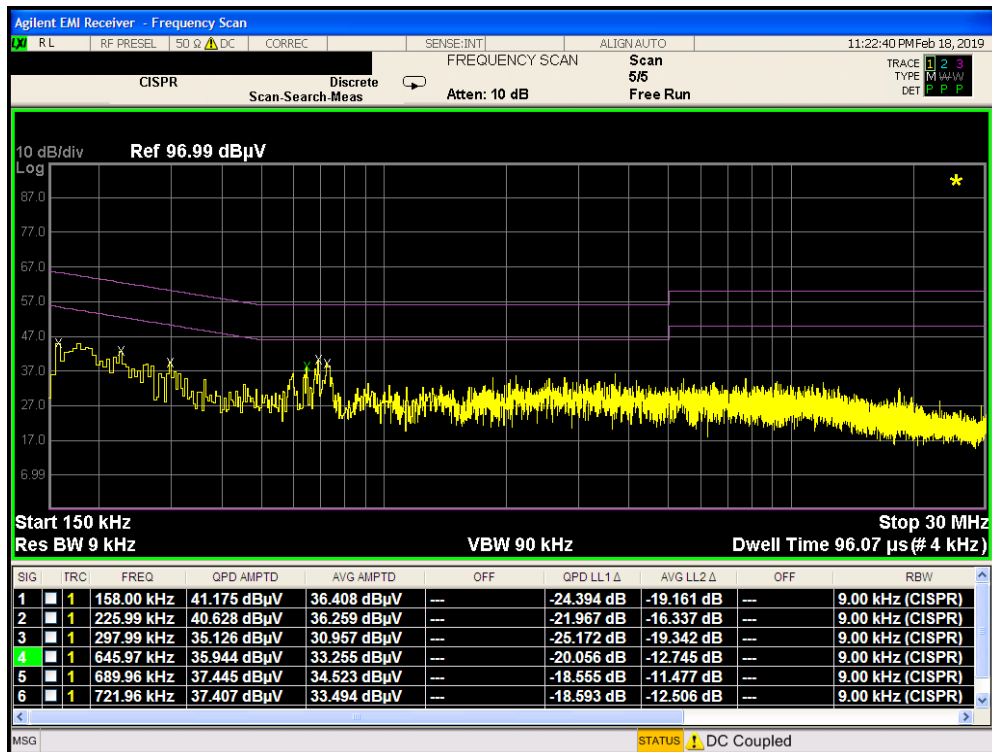


Plot 7-392. Line Conducted Plot with 802.11a UNII Band 2C (N) with Travel Adapter

FCC ID: A3LSMG977U	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
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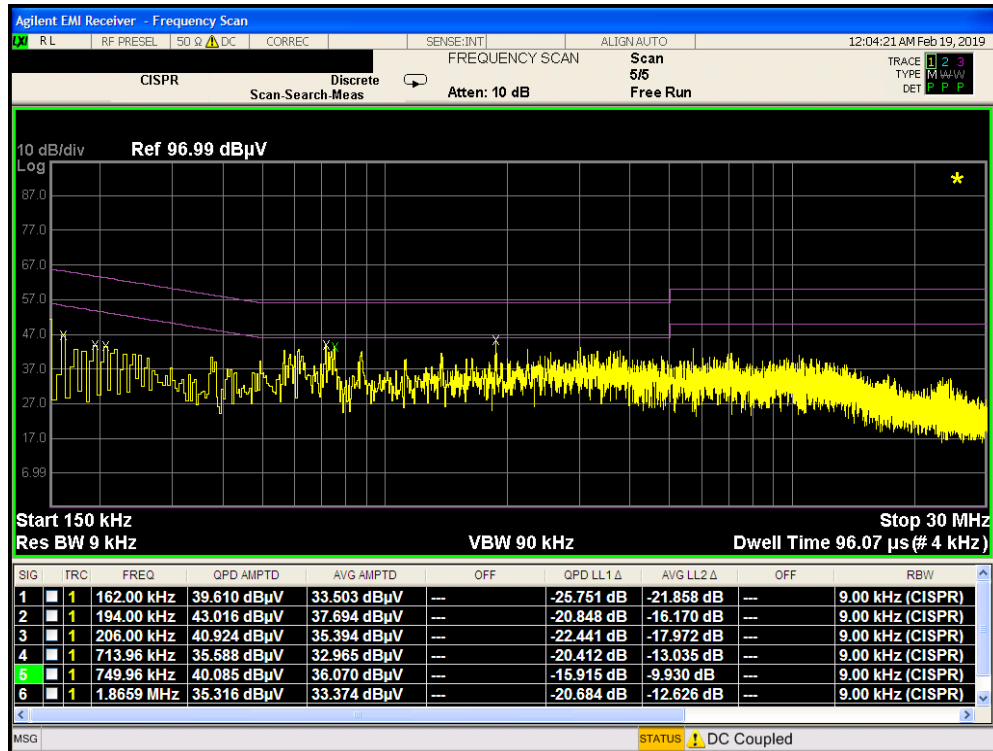


Plot 7-393. Line Conducted Plot with 802.11a UNII Band 3 (L1) with Travel Adapter

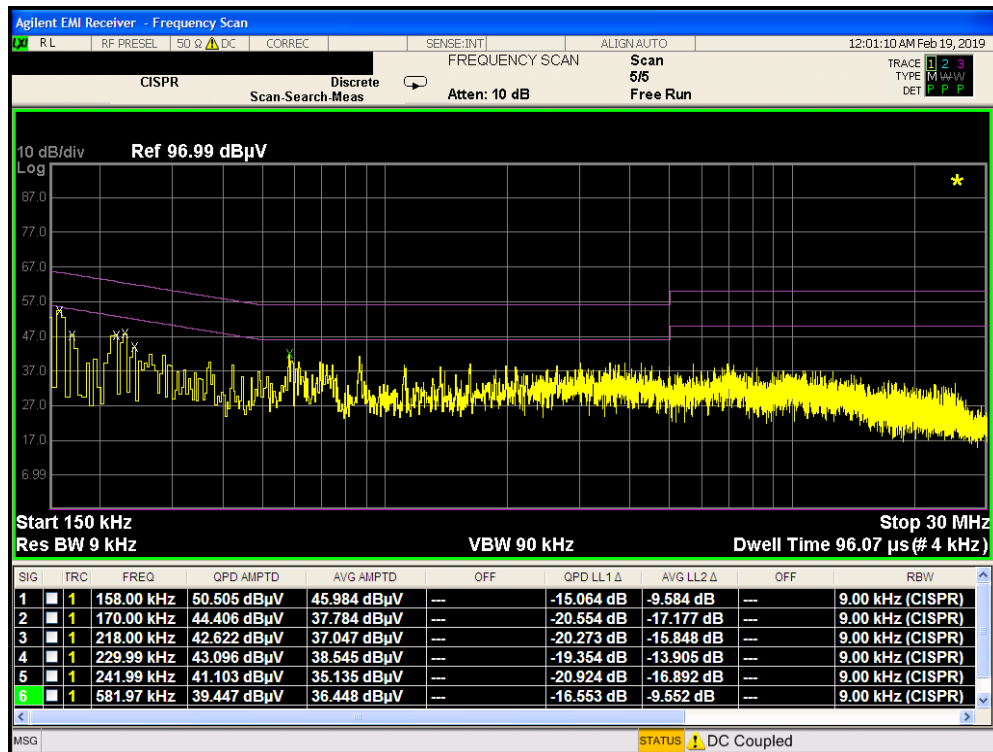


Plot 7-394. Line Conducted Plot with 802.11a UNII Band 3 (N) with Travel Adapter

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 254 of 259

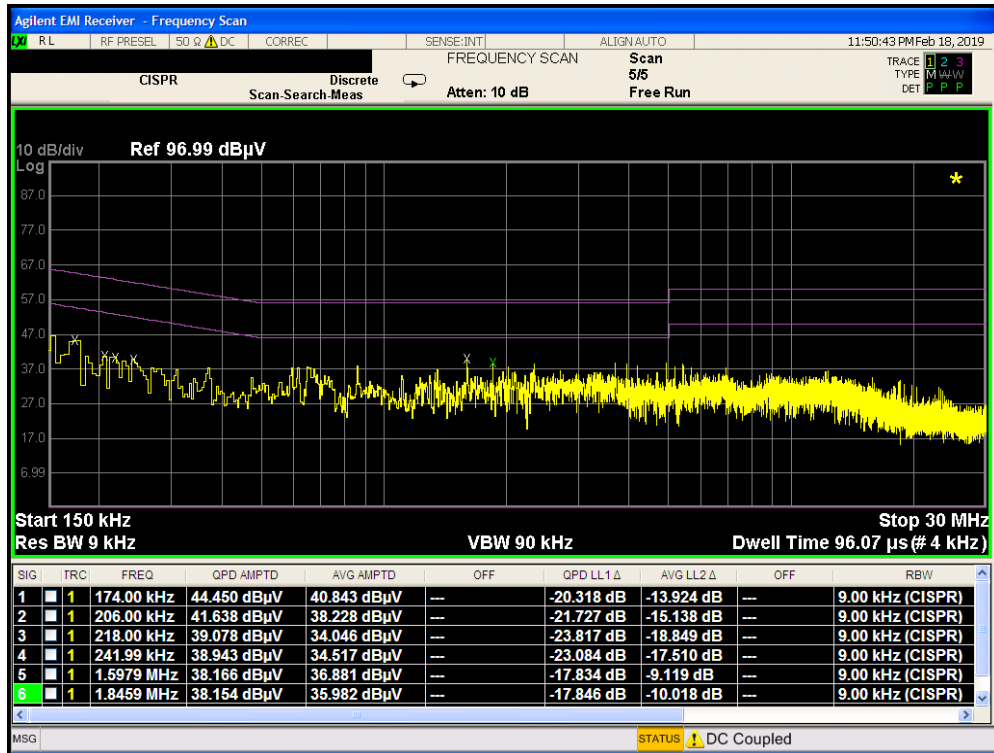


Plot 7-395. Line Conducted Plot with 802.11a UNII Band 1 (L1) with Wireless Charging Pad

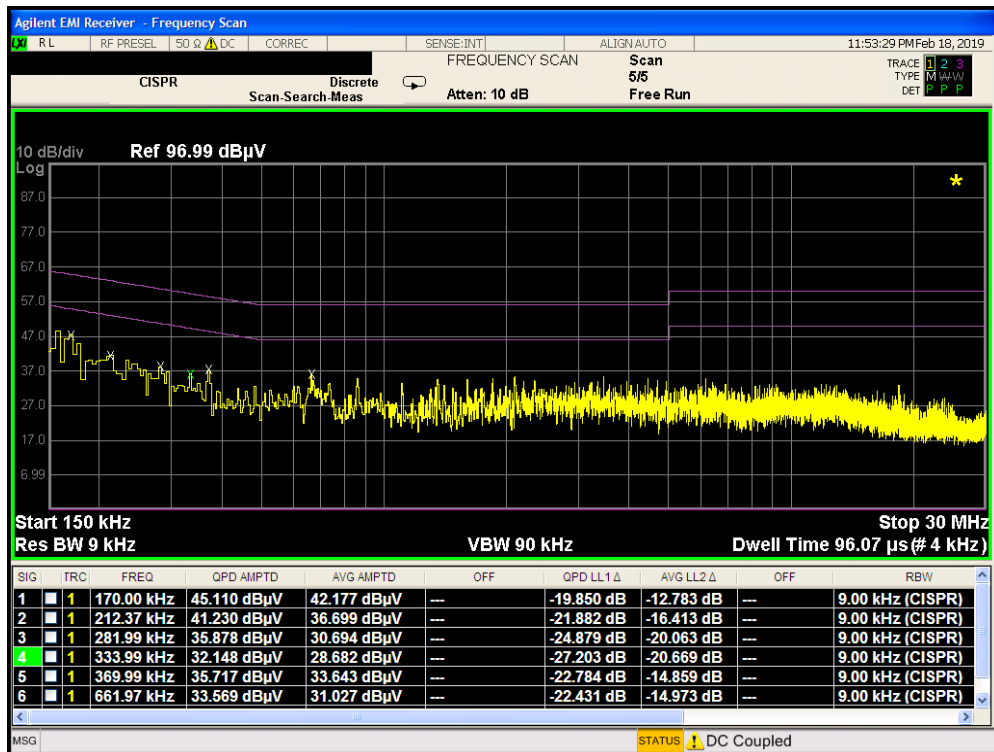


Plot 7-396. Line Conducted Plot with 802.11a UNII Band 1 (N) with Wireless Charging Pad

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 255 of 259

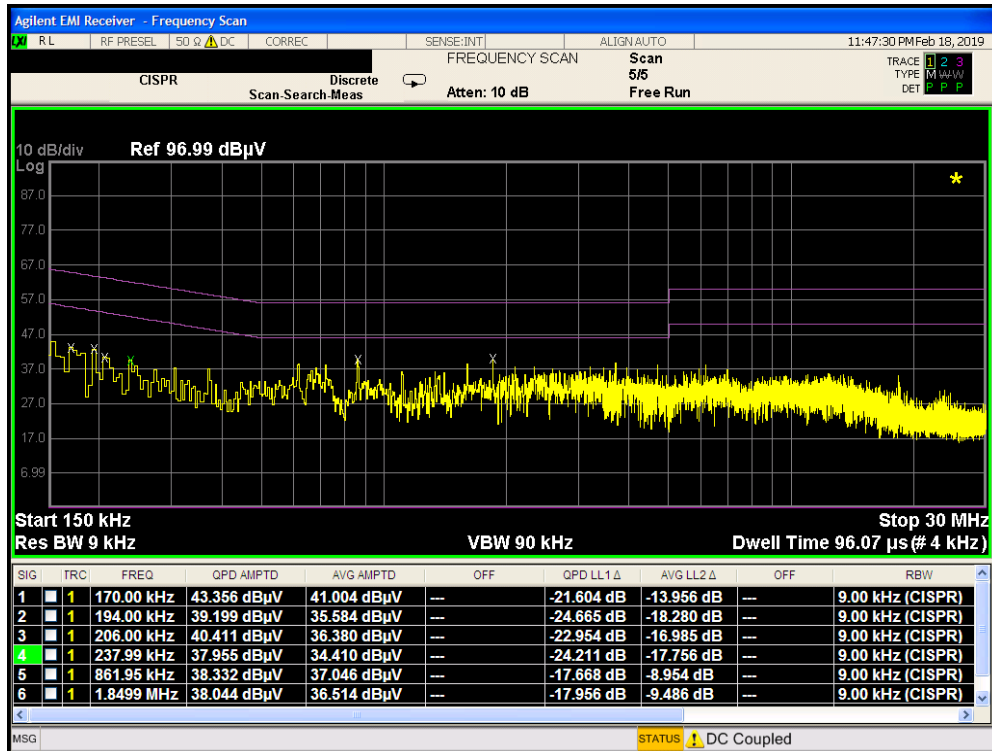


Plot 7-397. Line Conducted Plot with 802.11a UNII Band 2A (L1) with Wireless Charging Pad

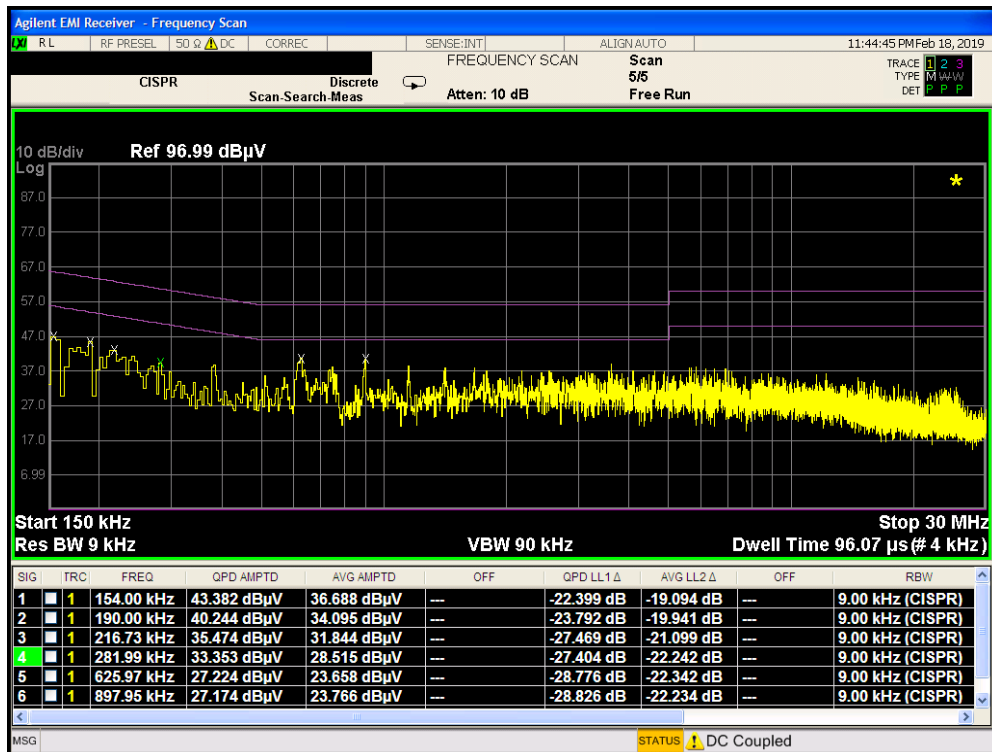


Plot 7-398. Line Conducted Plot with 802.11a UNII Band 2A (N) with Wireless Charging Pad

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 256 of 259

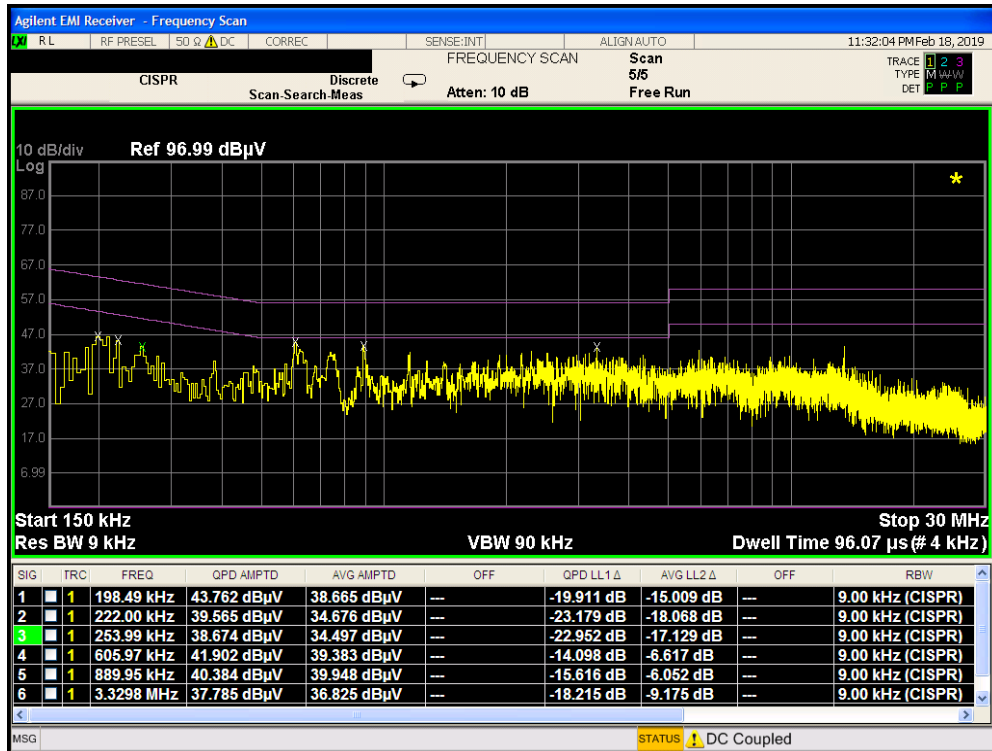


Plot 7-399. Line Conducted Plot with 802.11a UNII Band 2C (L1) with Wireless Charging Pad

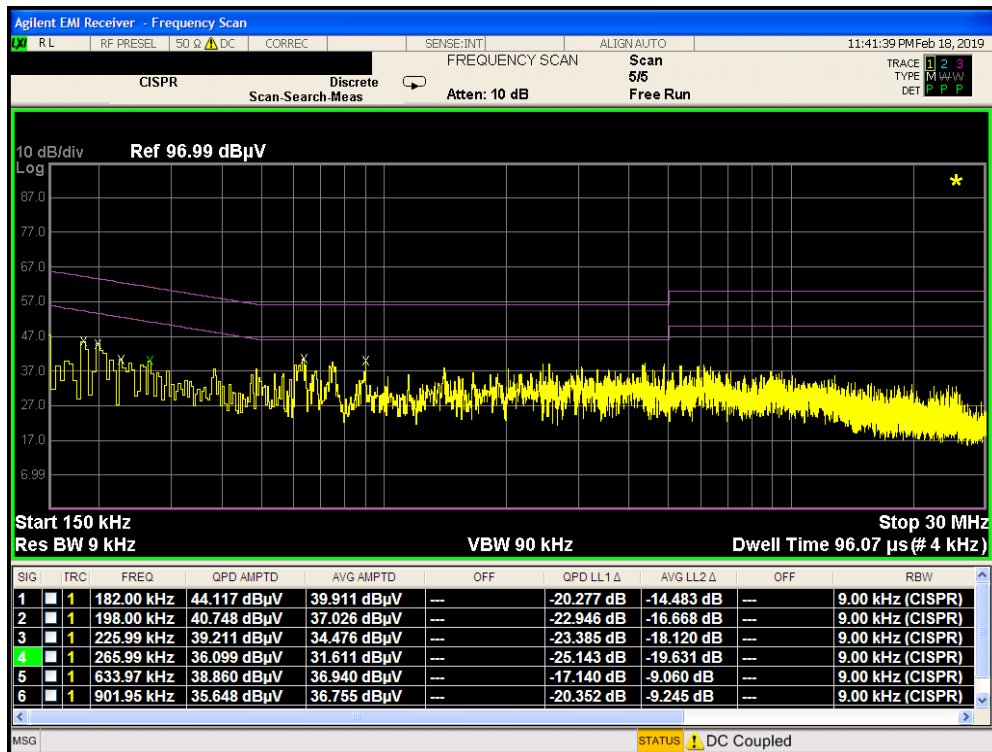


Plot 7-400. Line Conducted Plot with 802.11a UNII Band 2C (N) with Wireless Charging Pad

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 257 of 259



Plot 7-401. Line Conducted Plot with 802.11a UNII Band 3 (L1) with Wireless Charging Pad



Plot 7-402. Line Conducted Plot with 802.11a UNII Band 3 (N) with Wireless Charging Pad

FCC ID: A3LSMG977U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset		Page 258 of 259

8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMG977U** is in compliance with Part 15 Subpart E (15.407) of the FCC Rules.

FCC ID: A3LSMG977U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901100003-09.A3L	Test Dates: 01/22/2019 - 03/25/2019	EUT Type: Portable Handset	Page 259 of 259	