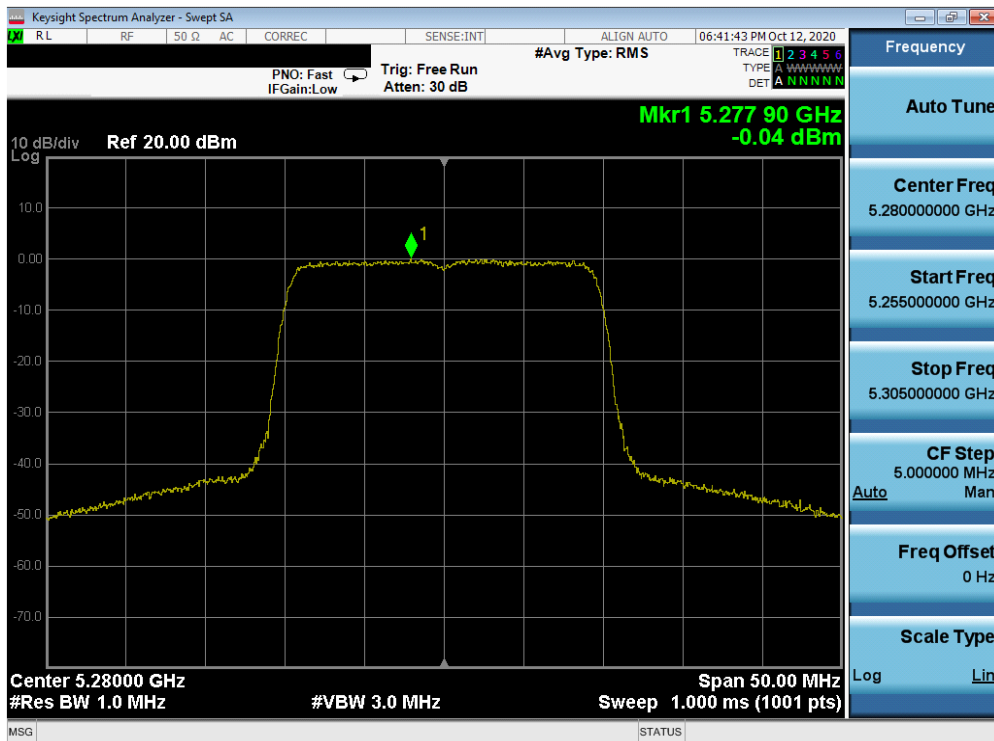
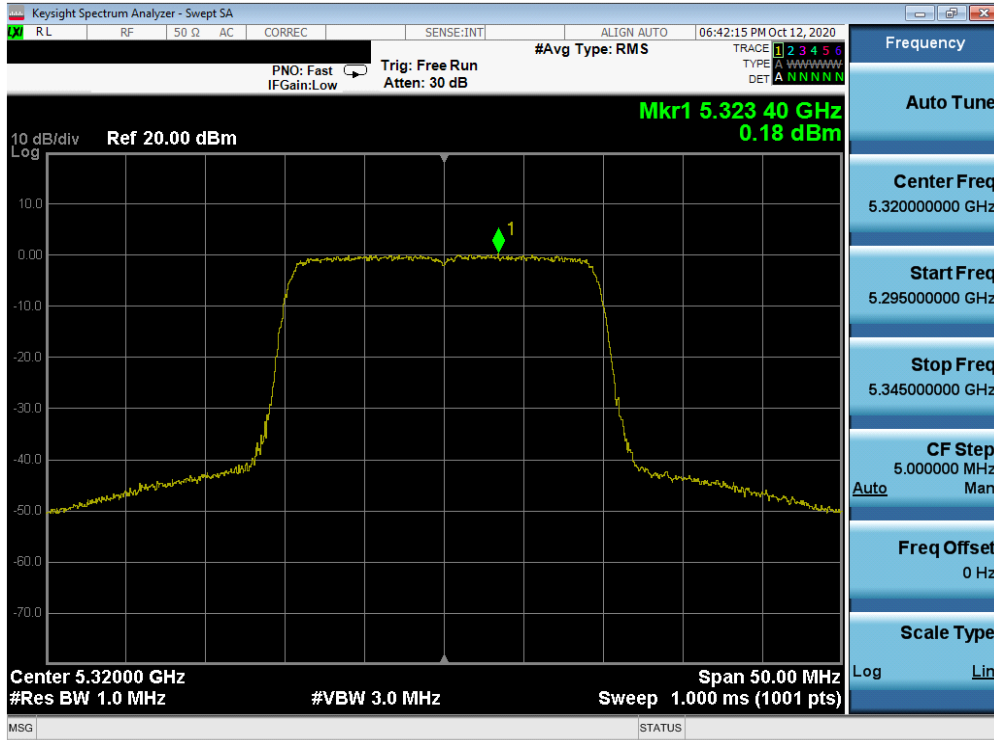


Plot 7-196. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 52)

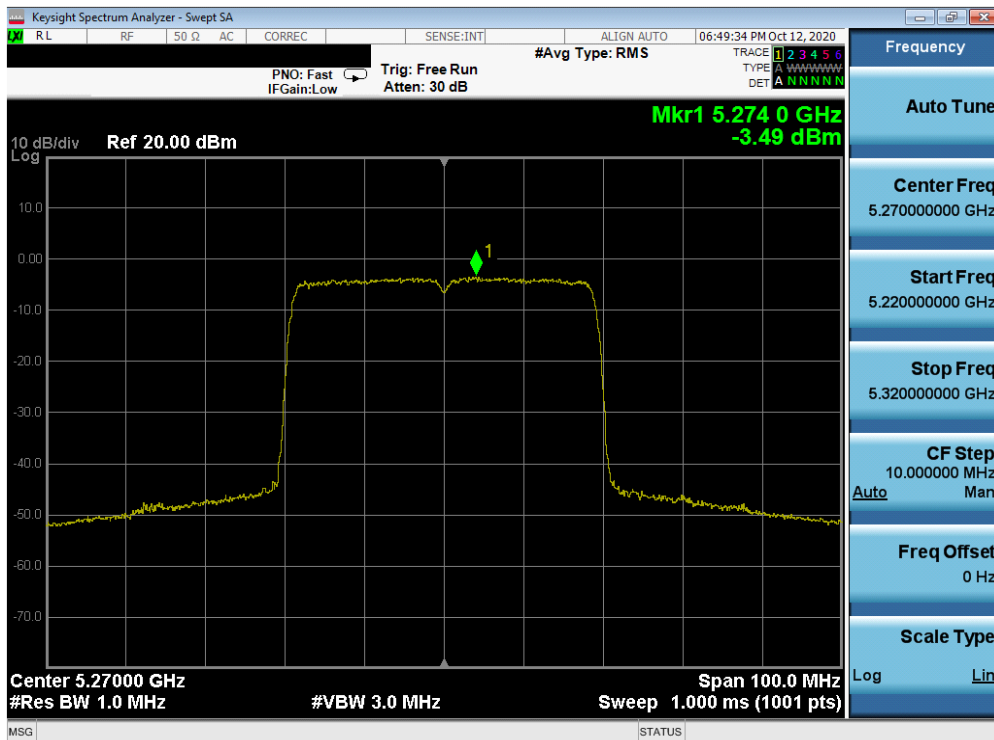


Plot 7-197. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 56)

FCC ID: A3LSMG998U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 134 of 176

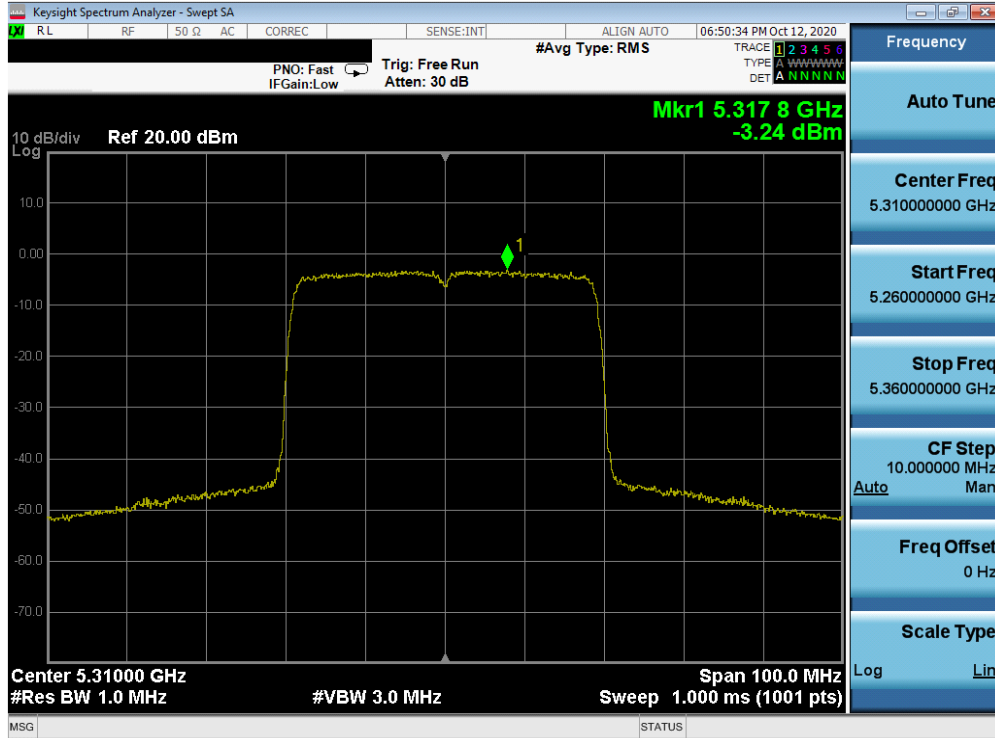


Plot 7-198. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 64)

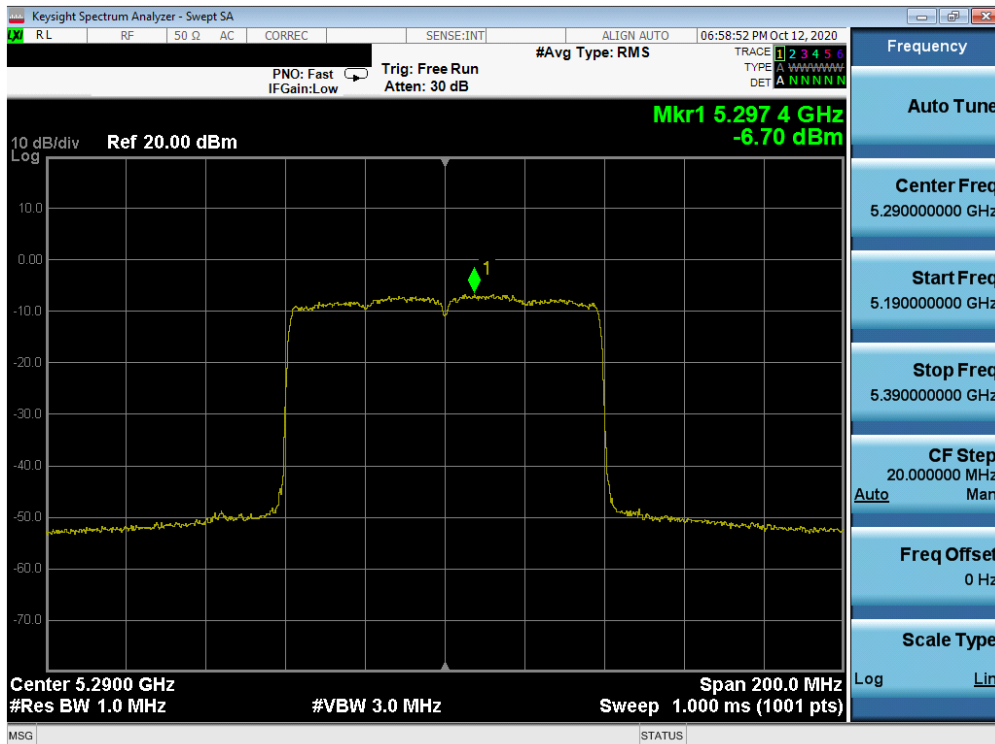


Plot 7-199. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 54)

FCC ID: A3LSMG998U	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 135 of 176

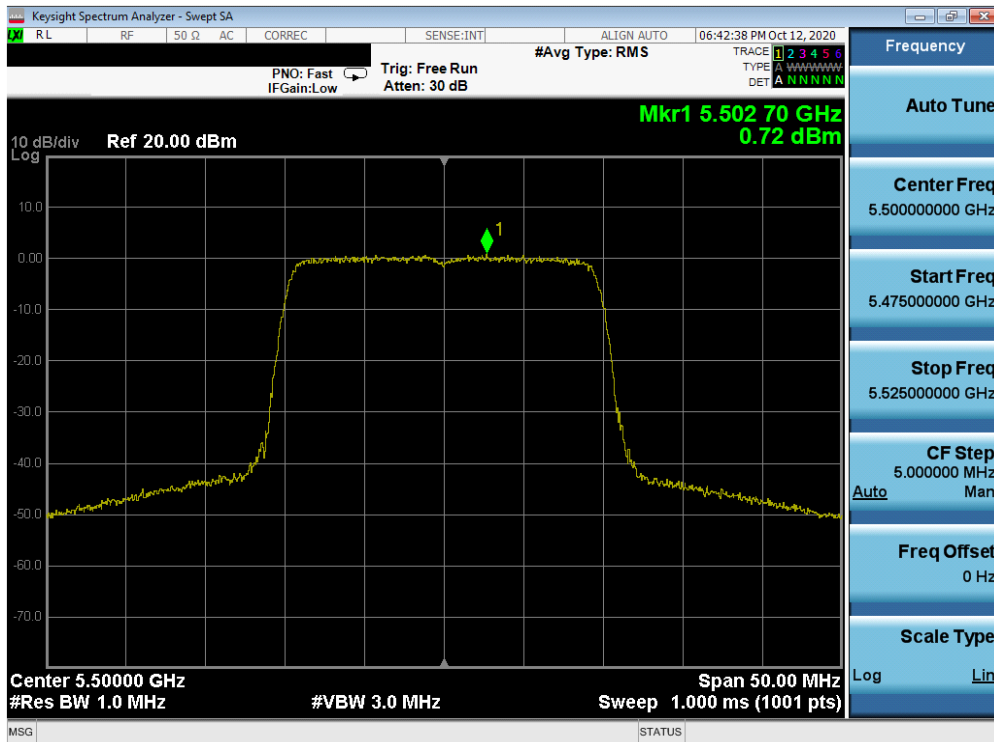


Plot 7-200. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 62)

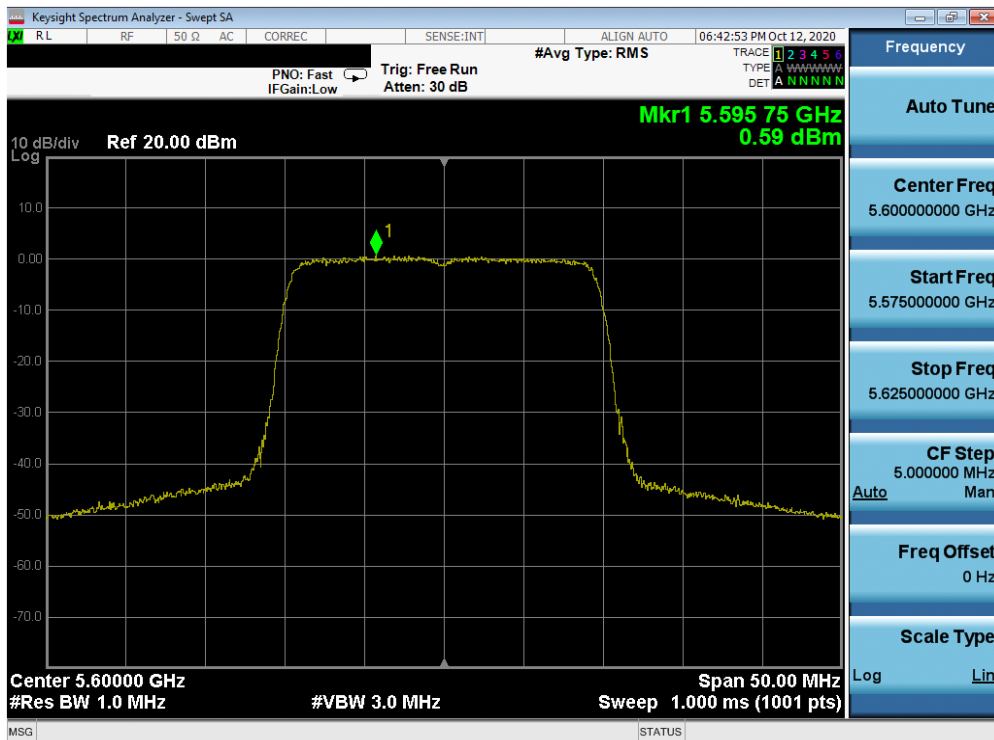


Plot 7-201. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – Full Tones (UNII Band 2A) – Ch. 58)

FCC ID: A3LSMG998U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 136 of 176

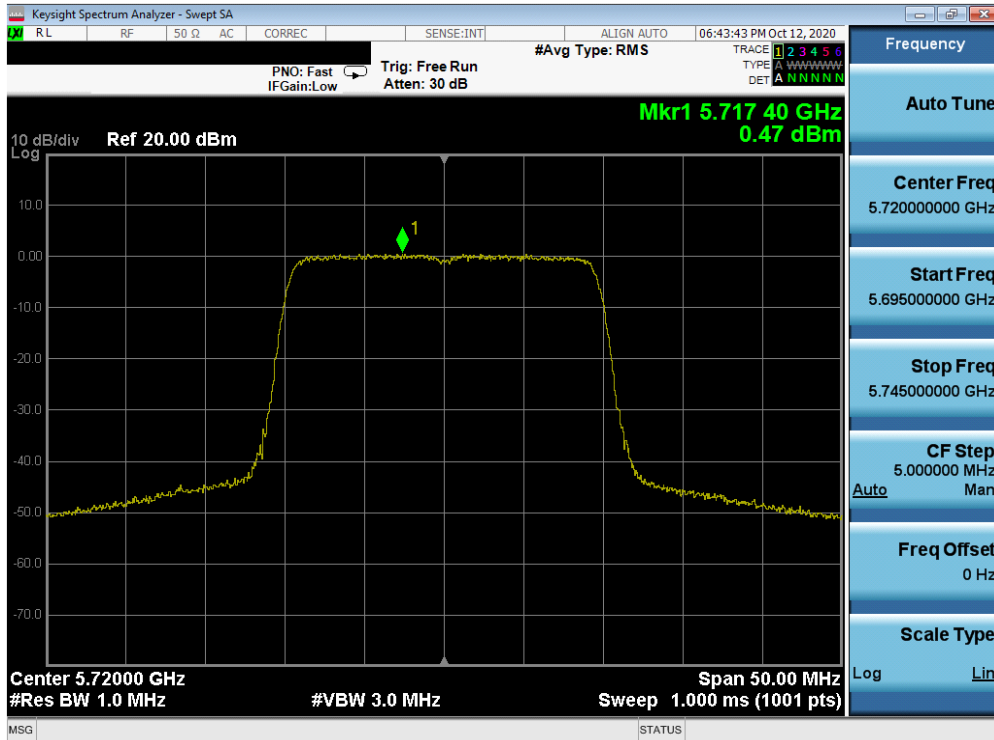


Plot 7-202. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 100)

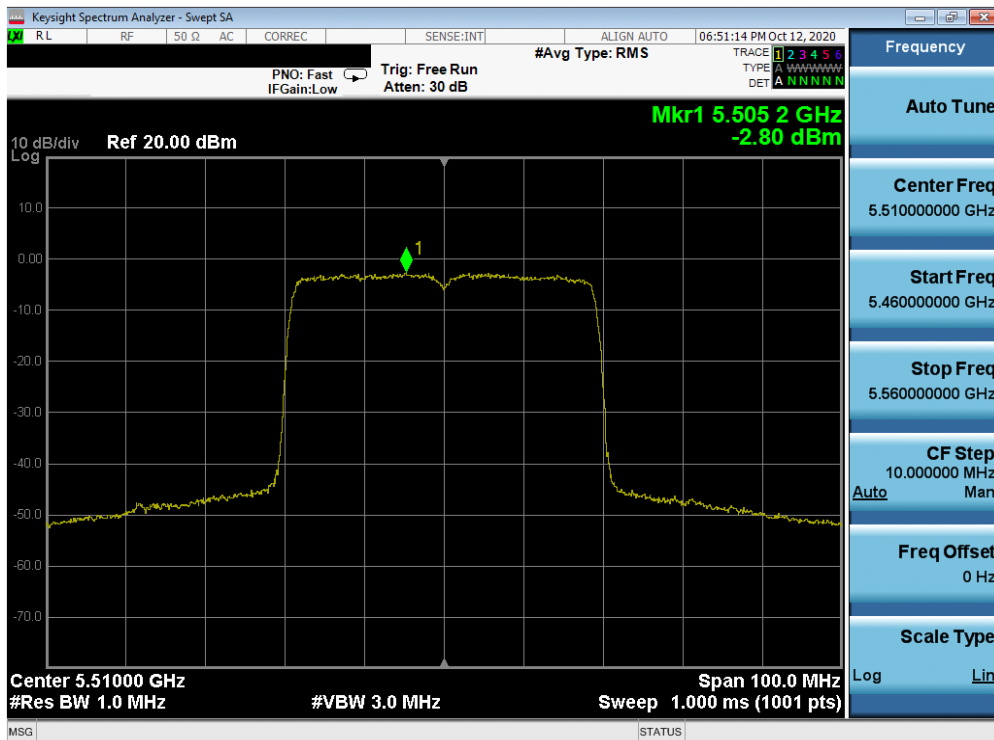


Plot 7-203. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 120)

FCC ID: A3LSMG998U	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 137 of 176

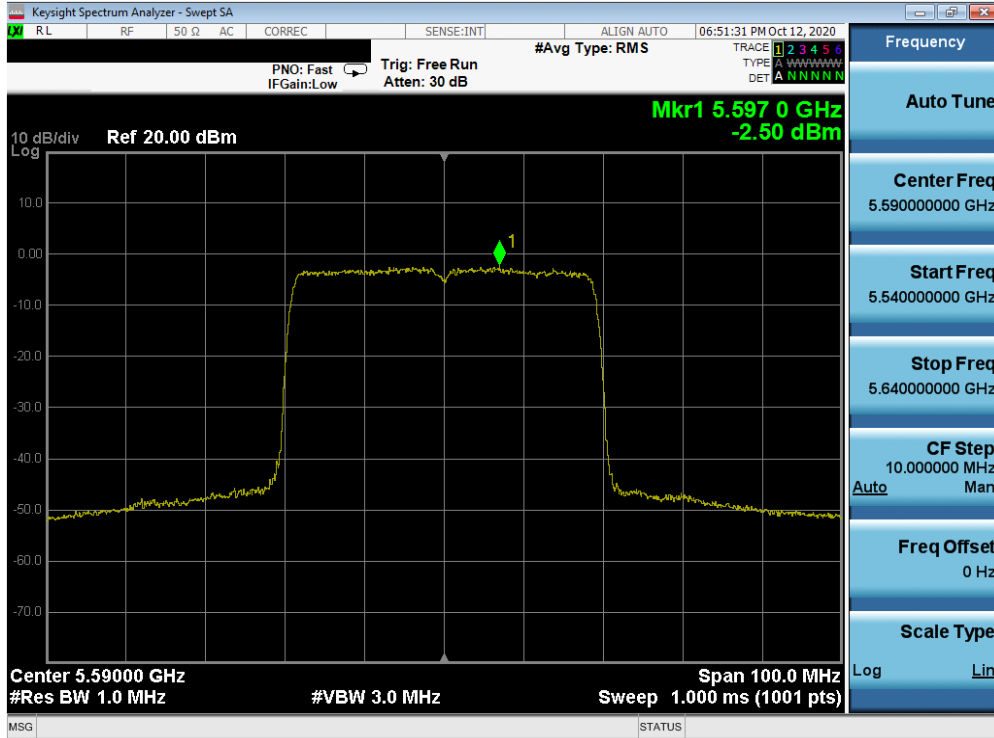


Plot 7-204. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 144)

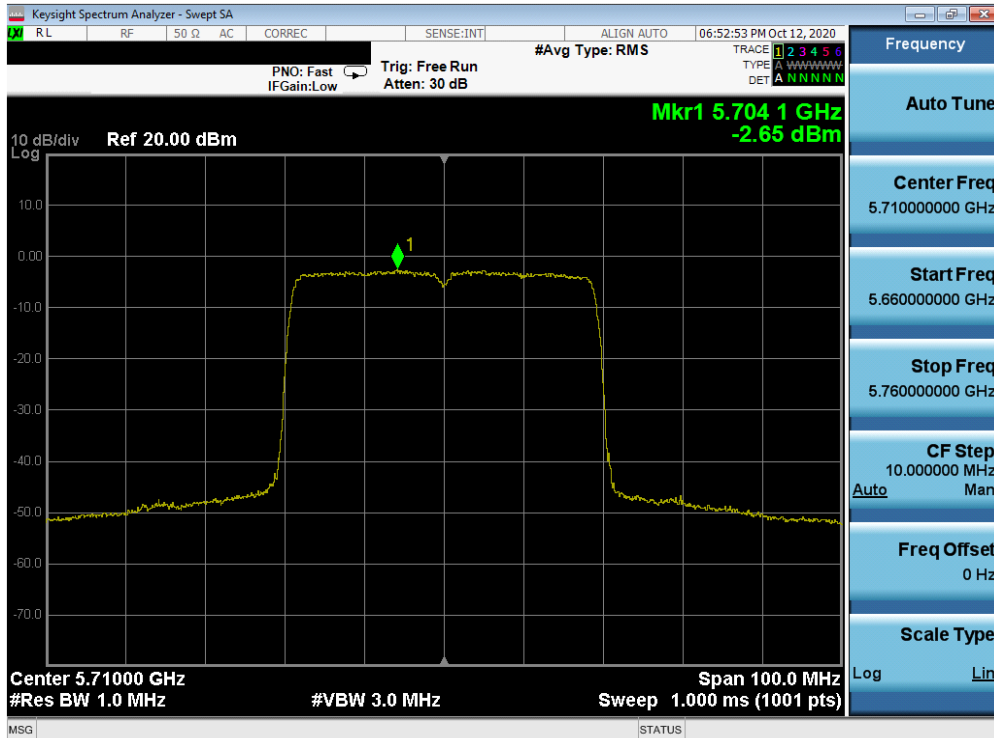


Plot 7-205. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 102)

FCC ID: A3LSMG998U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 138 of 176

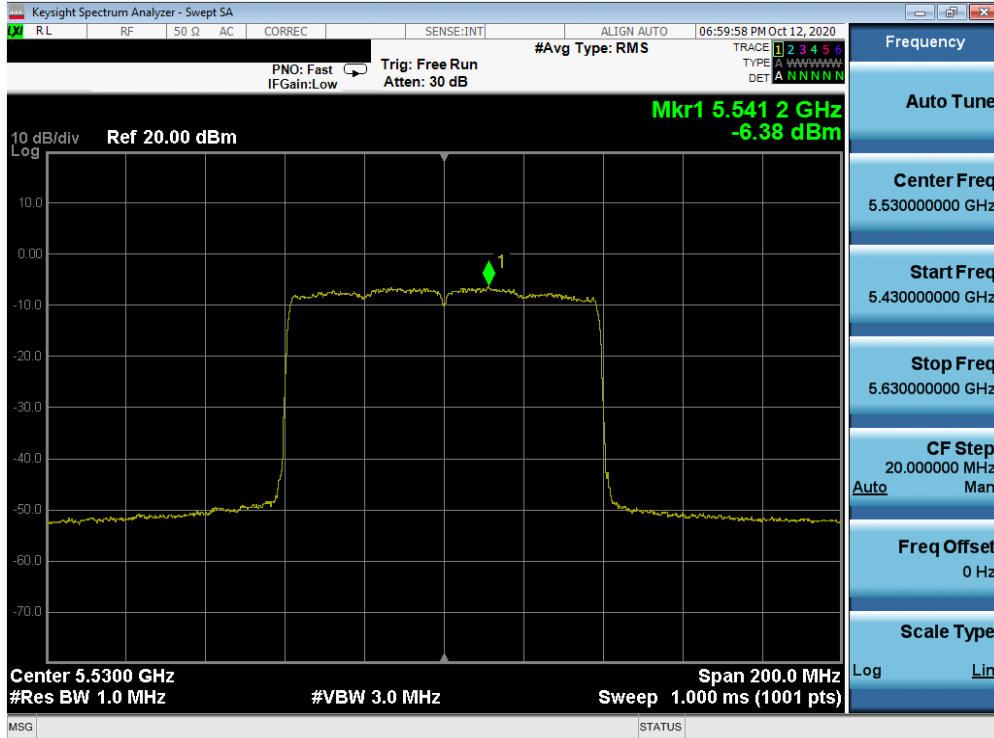


Plot 7-206. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 118)

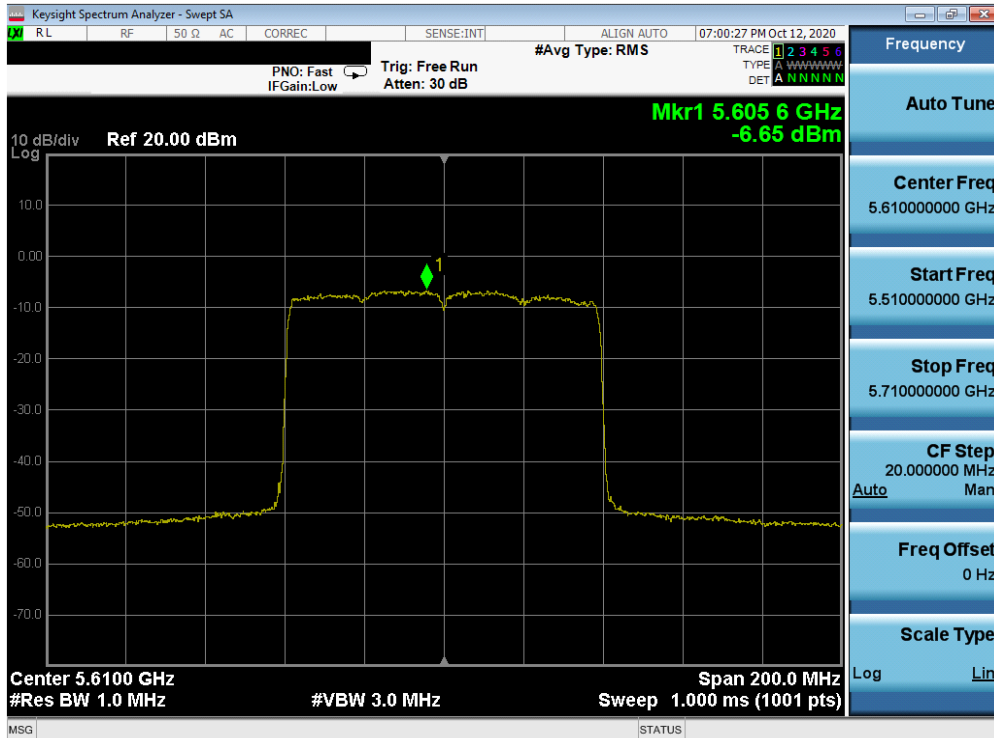


Plot 7-207. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 142)

FCC ID: A3LSMG998U	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 139 of 176

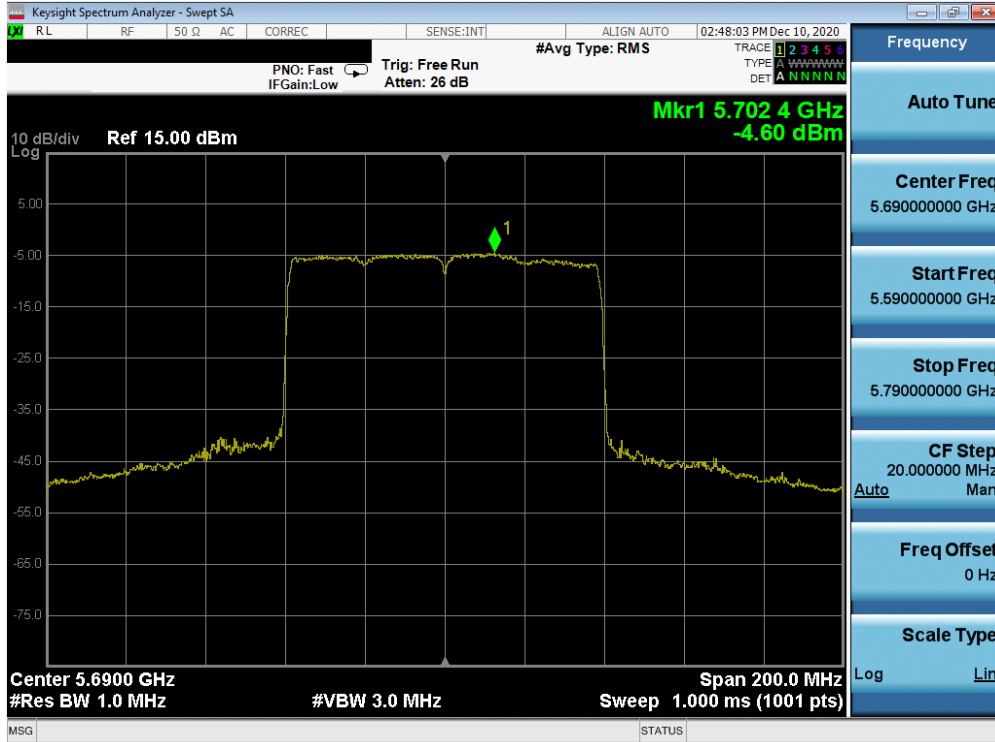


Plot 7-208. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 106)

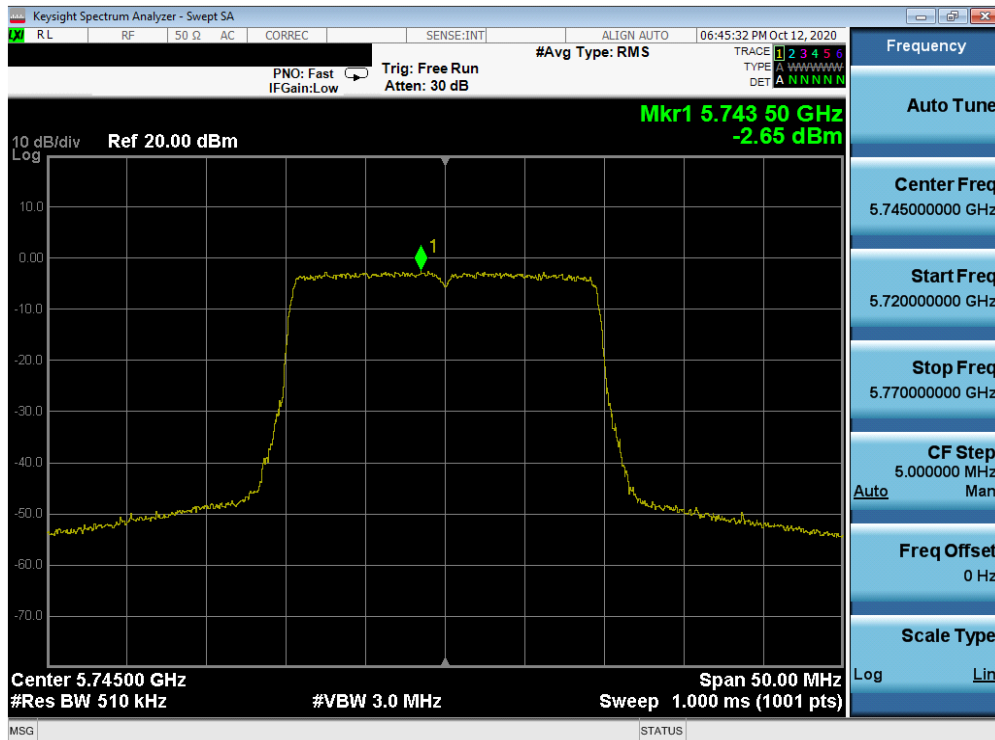


Plot 7-209. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 122)

FCC ID: A3LSMG998U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 140 of 176

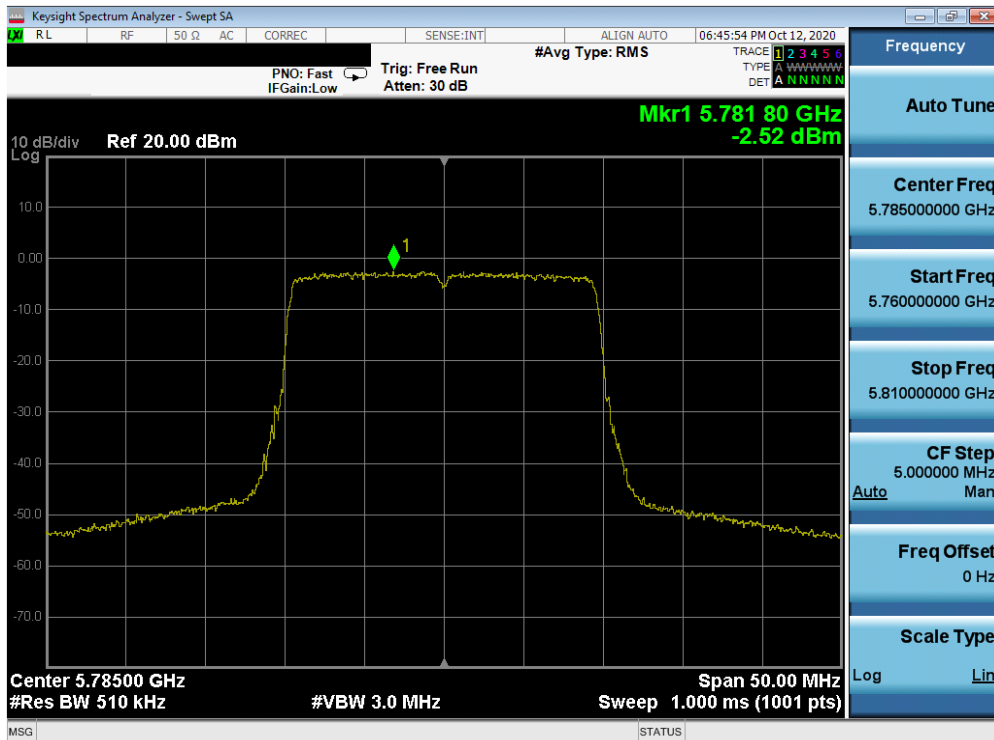


Plot 7-210. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – Full Tones (UNII Band 2C) – Ch. 138)

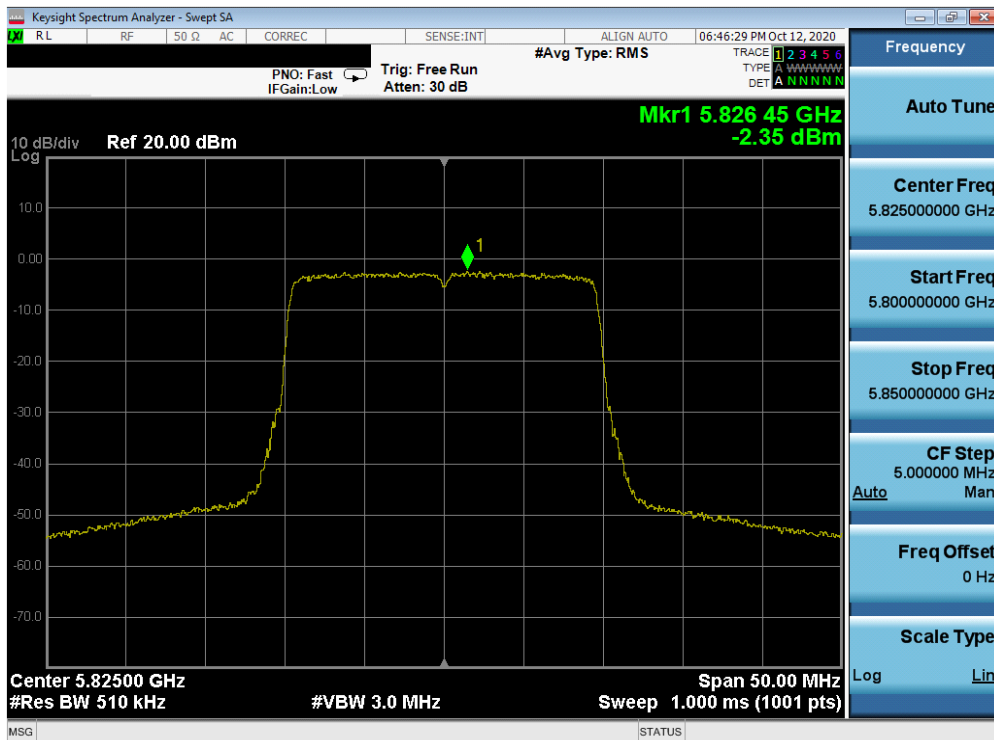


Plot 7-211. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 149)

FCC ID: A3LSMG998U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 141 of 176

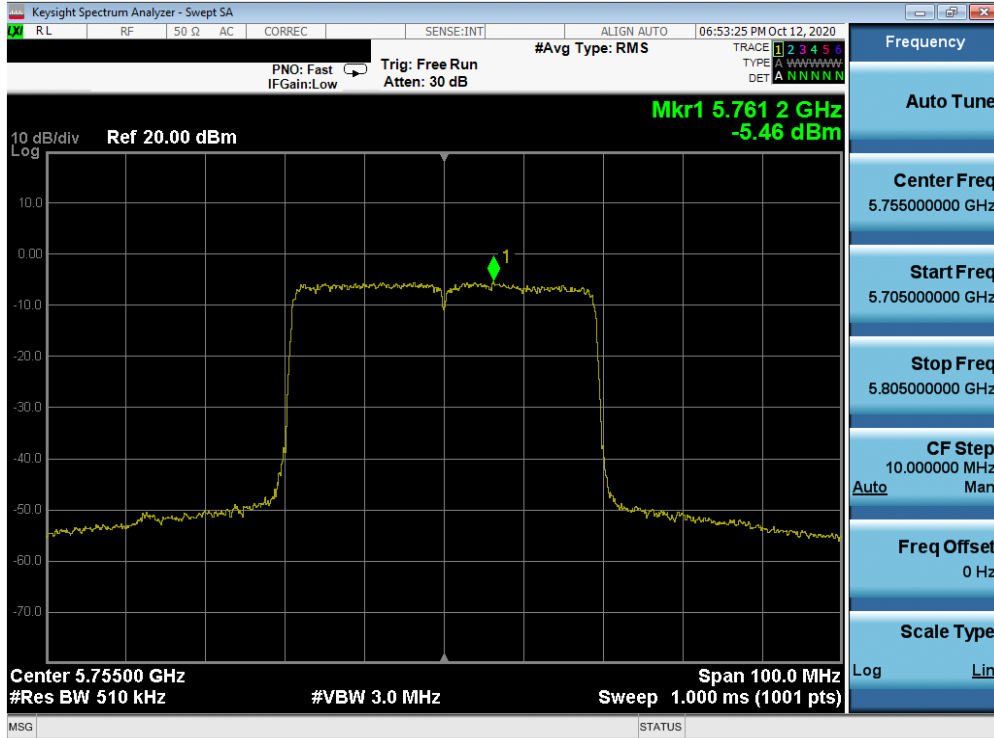


Plot 7-212. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 157)

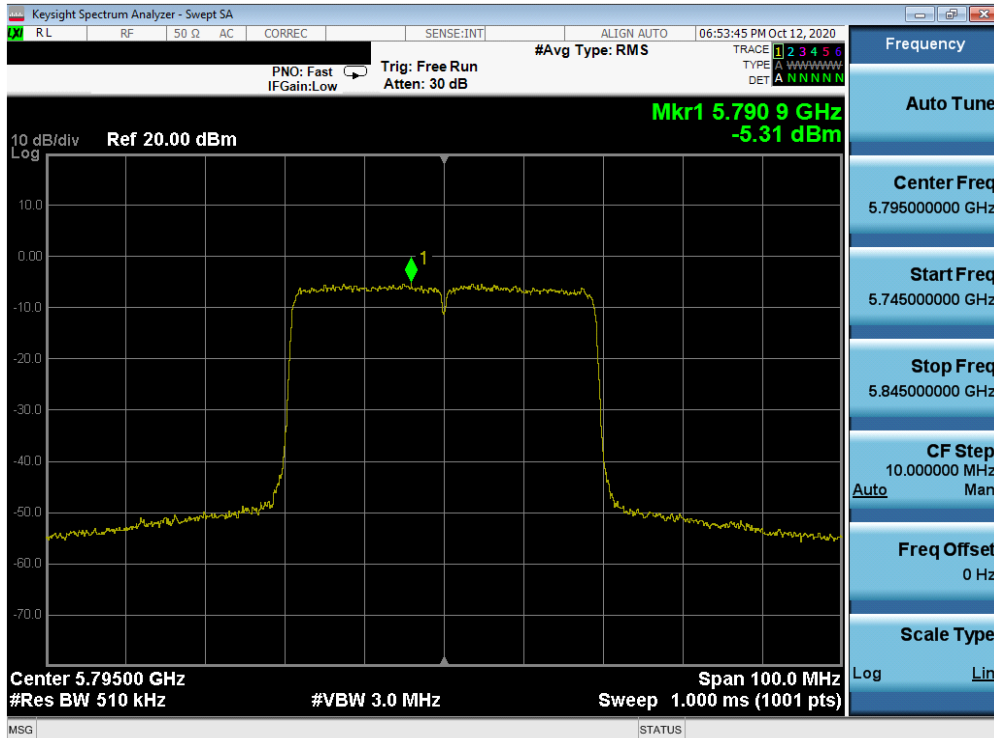


Plot 7-213. Power Spectral Density Plot MIMO ANT2 (20 MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 165)

FCC ID: A3LSMG998U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 142 of 176

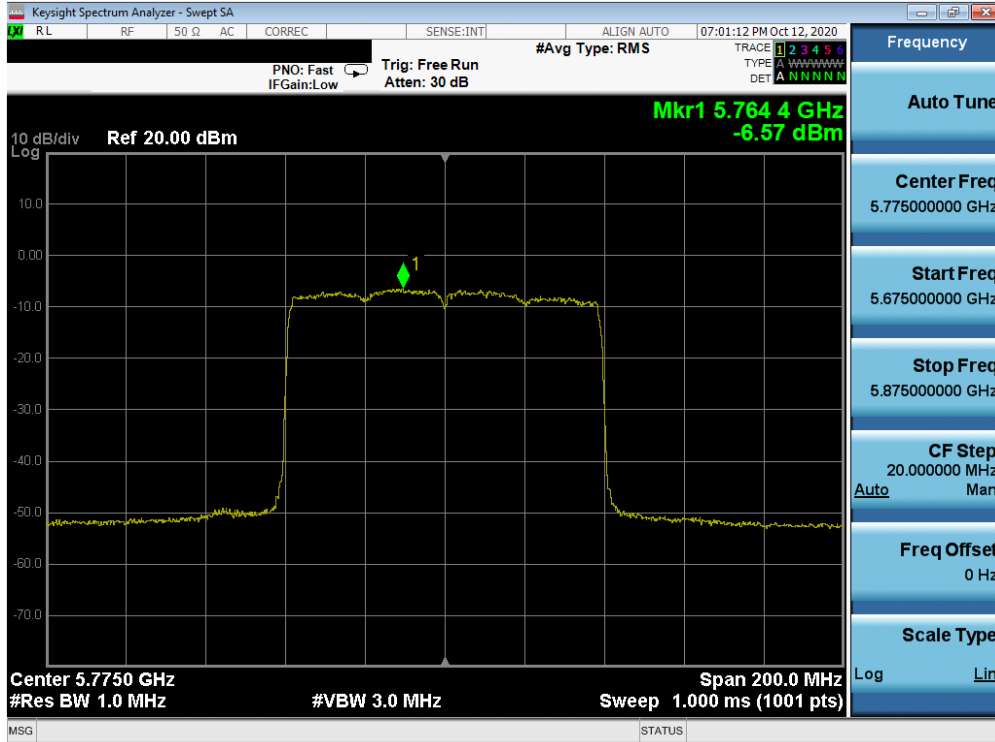


Plot 7-214. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 151)



Plot 7-215. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 159)

FCC ID: A3LSMG998U	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 143 of 176



Plot 7-216. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax – Full Tones (UNII Band 3) – Ch. 155)

FCC ID: A3LSMG998U	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 144 of 176

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 (e.g. 26 Tones, 52 Tones, 106 Tones, 242 Tones, 484 Tones and 996 Tones), 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 7-41 per Section 15.209 and RSS-Gen (8.9).

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

Table 7-41. 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

FCC ID: A3LSMG998U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 145 of 176

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.

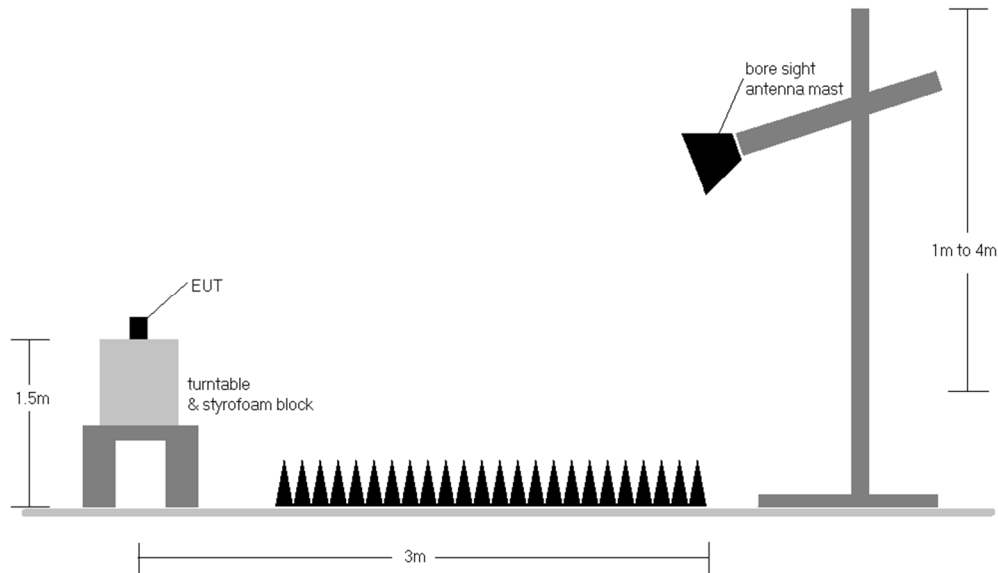


Figure 7-5. Test Instrument & Measurement Setup

FCC ID: A3LSMG998U	 Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 146 of 176

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 7-41.
2. All spurious emissions lying in restricted bands specified in §15.205 and Section 8.10 of RSS-Gen are below the limit shown in Table 7-41. All spurious emissions that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dBμV/m.
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.
9. For radiated measurements, emissions were investigated for the fully-loaded RU configuration and for all of the partially-loaded RU configurations. Among all of the available partially-loaded RU configurations, only the configuration with the worst case emissions is reported.

Sample Calculations

Determining Spurious Emissions Levels

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

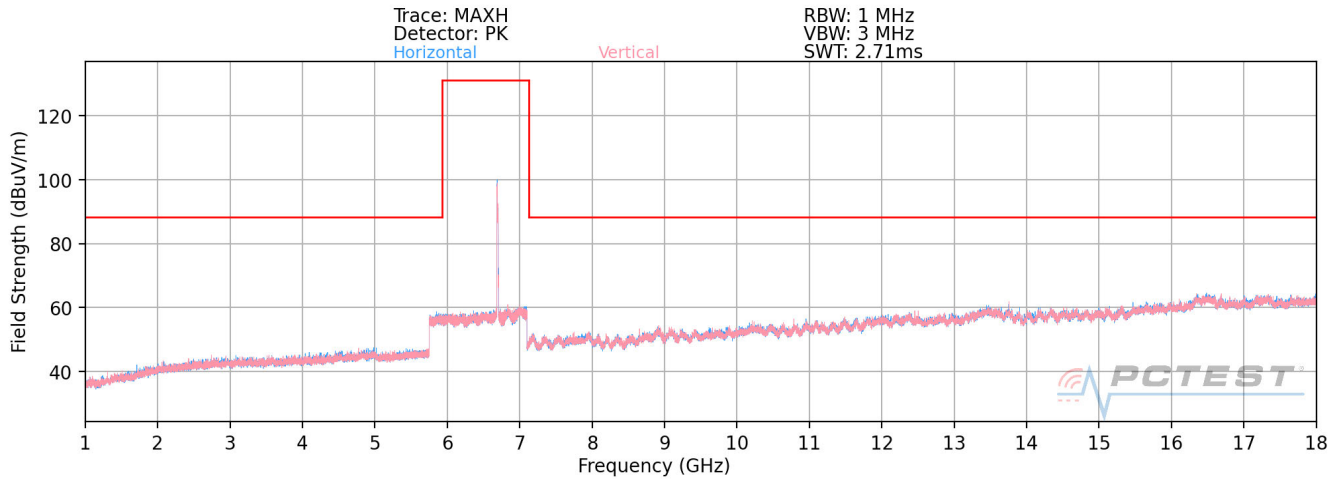
Radiated Band Edge Measurement Offset

- The amplitude offset shown in the radiated restricted band edge plots in Section 7.6 was calculated using the formula:
Offset (dB) = (Antenna Factor + Cable Loss + Attenuator) – Preamplifier Gain

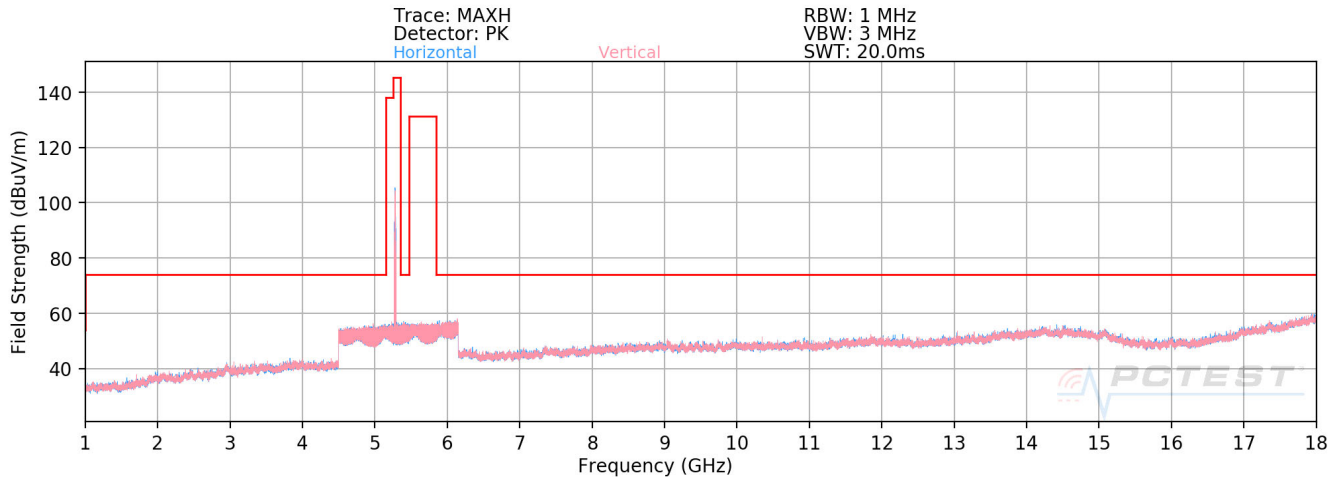
FCC ID: A3LSMG998U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 147 of 176

7.6.2 MIMO Radiated Spurious Emission Measurements

26 Tones

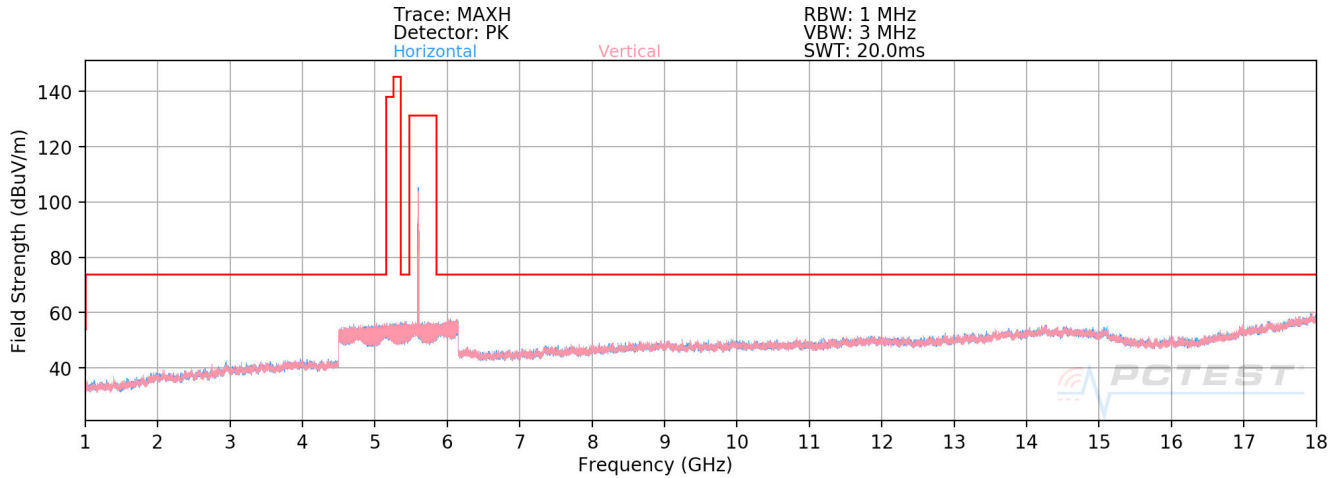


Plot 7-217. Radiated Spurious Plot above 1GHz MIMO (802.11ax – U1 Ch. 40 – 26 Tones)

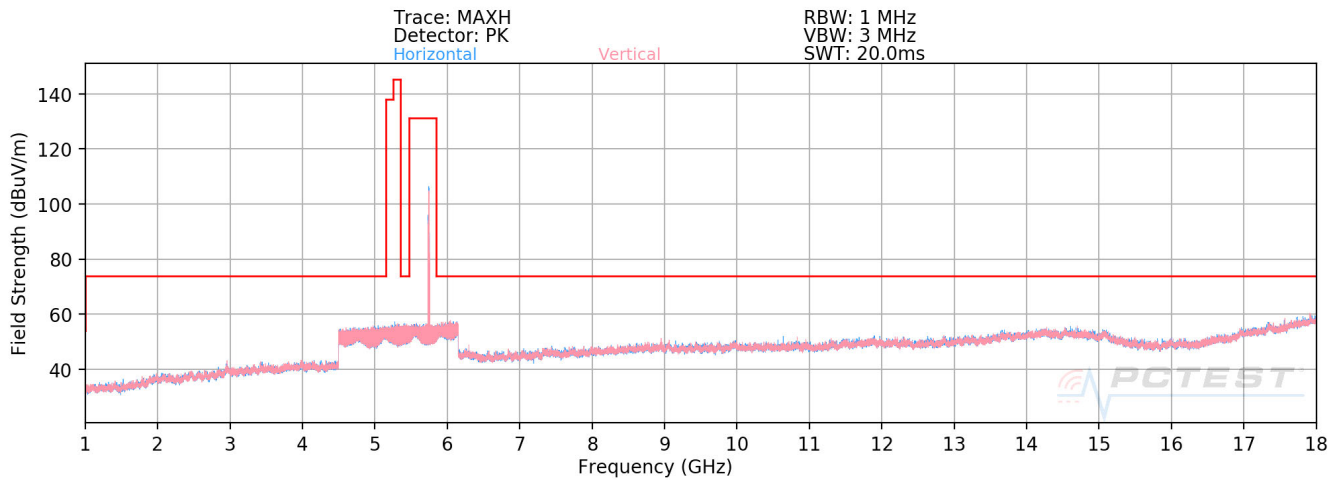


Plot 7-218. Radiated Spurious Plot above 1GHz MIMO (802.11ax – U2A Ch. 56 – 26 Tones)

FCC ID: A3LSMG998U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 148 of 176



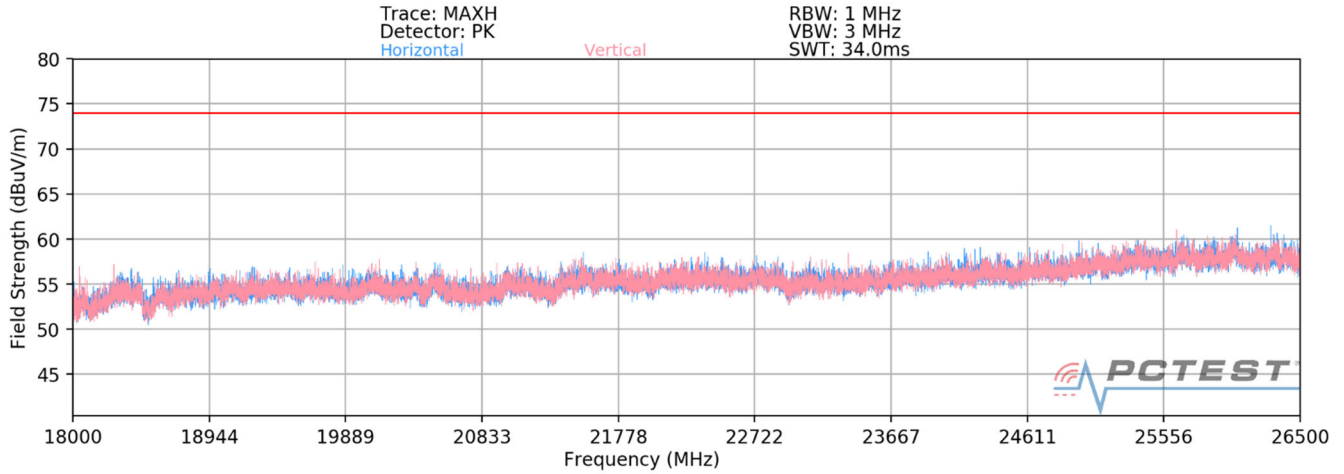
Plot 7-219. Radiated Spurious Plot above 1GHz MIMO (802.11ax – U2C Ch. 120 – 26 Tones)



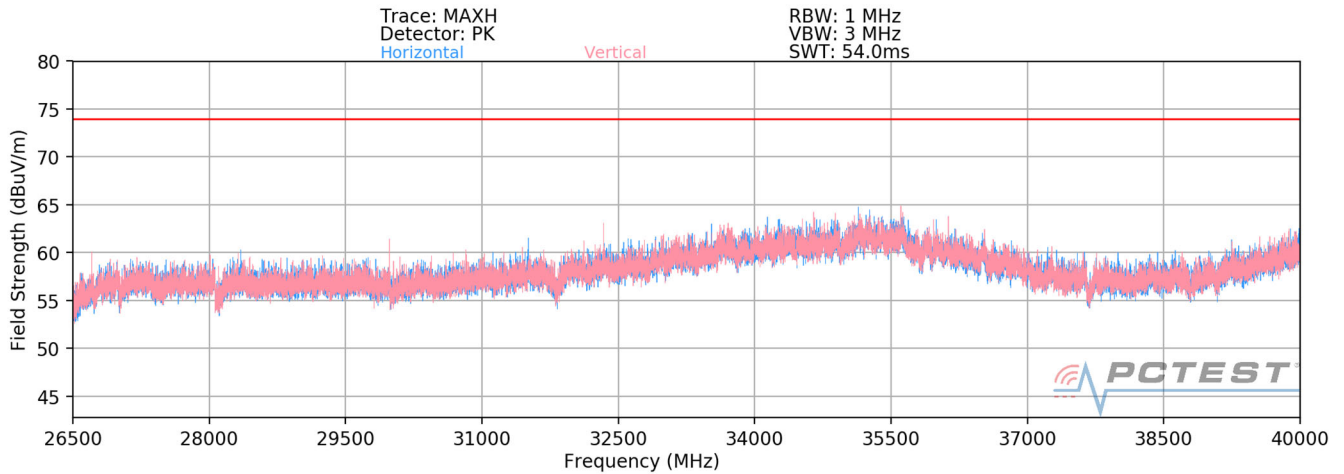
Plot 7-220. Radiated Spurious Plot above 1GHz MIMO (802.11ax – U3 Ch. 157 – 26 Tones)

FCC ID: A3LSMG998U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset	Page 149 of 176	

MIMO Radiated Spurious Emissions Measurements (Above 18GHz)



Plot 7-221. Radiated Spurious Plot 18GHz - 26.5GHz MIMO (802.11ax – 26 Tones)



Plot 7-222. Radiated Spurious Plot 26.5GHz - 40GHz MIMO (802.11ax – 26 Tones)

FCC ID: A3LSMG998U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset	Page 150 of 176	

MIMO Radiated Spurious Emission Measurements (26 Tones)

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

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 54
 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	-	-	-72.91	19.25	0.00	53.34	68.20	-14.86
* 15540.00	Average	V	-	-	-85.00	27.75	0.00	49.75	53.98	-4.23
* 15540.00	Peak	V	-	-	-74.61	27.75	0.00	60.14	73.98	-13.84
* 20720.00	Average	V	-	-	-63.63	1.63	-9.54	35.46	53.98	-18.52
* 20720.00	Peak	V	-	-	-52.39	1.63	-9.54	46.70	73.98	-27.28
25900.00	Peak	V	-	-	-50.34	4.37	-9.54	51.49	68.20	-16.71

Table 7-42. Radiated Measurements MIMO (26 Tones)

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 54
 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	-	-	-73.57	19.77	0.00	53.20	68.20	-15.00
* 15600.00	Average	V	-	-	-84.78	28.09	0.00	50.31	53.98	-3.67
* 15600.00	Peak	V	-	-	-74.01	28.09	0.00	61.08	73.98	-12.90
* 20800.00	Average	V	-	-	-63.92	1.54	-9.54	35.08	53.98	-18.90
* 20800.00	Peak	V	-	-	-51.35	1.54	-9.54	47.65	73.98	-26.33
26000.00	Peak	V	-	-	-49.79	4.18	-9.54	51.84	68.20	-16.36

Table 7-43. Radiated Measurements MIMO (26 Tones)

FCC ID: A3LSMG998U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 151 of 176

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 54
 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	-	-	-73.99	20.09	0.00	53.10	68.20	-15.10
* 15720.00	Average	V	-	-	-84.82	28.00	0.00	50.18	53.98	-3.80
* 15720.00	Peak	V	-	-	-74.62	28.00	0.00	60.38	73.98	-13.60
* 20960.00	Average	V	-	-	-63.08	1.82	-9.54	36.19	53.98	-17.78
* 20960.00	Peak	V	-	-	-50.95	1.82	-9.54	48.32	73.98	-25.65
26200.00	Peak	V	-	-	-50.06	4.39	-9.54	51.79	68.20	-16.41

Table 7-44. Radiated Measurements MIMO (26 Tones)

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 54
 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	-	-	-73.22	19.96	0.00	53.74	68.20	-14.46
* 15780.00	Average	V	-	-	-84.97	28.18	0.00	50.21	53.98	-3.77
* 15780.00	Peak	V	-	-	-74.22	28.18	0.00	60.96	73.98	-13.02
* 21040.00	Average	V	-	-	-63.05	1.91	-9.54	36.32	53.98	-17.66
* 21040.00	Peak	V	-	-	-50.69	1.91	-9.54	48.68	73.98	-25.30
26300.00	Peak	V	-	-	-50.83	4.34	-9.54	50.96	68.20	-17.24

Table 7-45. Radiated Measurements MIMO (26 Tones)

FCC ID: A3LSMG998U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset	Page 152 of 176	

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 54
 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	-	-	-73.30	19.69	0.00	53.39	68.20	-14.81
* 15840.00	Average	V	-	-	-84.44	28.17	0.00	50.73	53.98	-3.25
* 15840.00	Peak	V	-	-	-74.27	28.17	0.00	60.90	73.98	-13.08
* 21120.00	Average	V	-	-	-62.79	2.11	-9.54	36.77	53.98	-17.21
* 21120.00	Peak	V	-	-	-51.19	2.11	-9.54	48.37	73.98	-25.61
* 26400.00	Peak	V	-	-	-50.13	4.39	-9.54	51.72	68.20	-16.48

Table 7-46. Radiated Measurements MIMO (26 Tones)

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 54
 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	101	315	-82.92	20.14	0.00	44.22	53.98	-9.76
* 10640.00	Peak	V	101	315	-71.45	20.14	0.00	55.69	73.98	-18.29
* 15960.00	Average	V	-	-	-84.93	28.13	0.00	50.20	53.98	-3.78
* 15960.00	Peak	V	-	-	-74.88	28.13	0.00	60.25	73.98	-13.73
* 21280.00	Average	V	-	-	-63.30	2.09	-9.54	36.24	53.98	-17.74
* 21280.00	Peak	V	-	-	-51.28	2.09	-9.54	48.26	73.98	-25.72
* 26600.00	Peak	V	-	-	-50.03	4.43	-9.54	51.86	68.20	-16.34

Table 7-47. Radiated Measurements MIMO (26 Tones)

FCC ID: A3LSMG998U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 153 of 176

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 54
 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	-	-	-80.88	15.77	0.00	41.89	53.98	-12.09
* 11000.00	Peak	V	-	-	-68.80	15.77	0.00	53.97	73.98	-20.01
16500.00	Peak	V	-	-	-69.56	22.20	0.00	59.64	68.20	-8.56
22000.00	Peak	V	-	-	-50.75	2.04	-9.54	48.74	68.20	-19.46
27500.00	Peak	V	-	-	-49.40	3.49	-9.54	51.55	68.20	-16.65

Table 7-48. Radiated Measurements MIMO (26 Tones)

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 54
 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	-	-	-80.86	16.00	0.00	42.14	53.98	-11.84
* 11200.00	Peak	V	-	-	-69.56	16.00	0.00	53.44	73.98	-20.54
16800.00	Peak	V	-	-	-70.24	21.82	0.00	58.58	68.20	-9.62
* 22400.00	Average	V	-	-	-62.75	2.44	-9.54	37.15	53.98	-16.83
* 22400.00	Peak	V	-	-	-50.56	2.44	-9.54	49.34	73.98	-24.64
28000.00	Peak	V	-	-	-50.61	3.61	-9.54	50.46	68.20	-17.74

Table 7-49. Radiated Measurements MIMO (26 Tones)

FCC ID: A3LSMG998U	 Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 154 of 176

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 54
 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	-	-	-81.18	17.01	0.00	42.83	53.98	-11.15
* 11440.00	Peak	V	-	-	-69.71	17.01	0.00	54.30	73.98	-19.68
17160.00	Peak	V	-	-	-69.82	22.56	0.00	59.74	68.20	-8.46
* 22880.00	Average	V	-	-	-62.25	2.26	-9.54	37.47	53.98	-16.51
* 22880.00	Peak	V	-	-	-50.53	2.26	-9.54	49.19	73.98	-24.79
28600.00	Peak	V	-	-	-51.40	3.87	-9.54	49.93	68.20	-18.27

Table 7-50. Radiated Measurements MIMO (26 Tones)

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 54
 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	-	-	-81.15	17.50	0.00	43.35	53.98	-10.63
* 11490.00	Peak	V	-	-	-69.08	17.50	0.00	55.42	73.98	-18.56
17235.00	Peak	V	-	-	-69.30	21.94	0.00	59.64	68.20	-8.56
* 22980.00	Average	V	-	-	-62.98	2.17	-9.54	36.65	53.98	-17.33
* 22980.00	Peak	V	-	-	-50.53	2.17	-9.54	49.10	73.98	-24.88
28725.00	Peak	V	-	-	-50.70	3.73	-9.54	50.49	68.20	-17.71

Table 7-51. Radiated Measurements MIMO (26 Tones)

FCC ID: A3LSMG998U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset	Page 155 of 176	

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 54
 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	-	-	-81.01	16.66	0.00	42.65	53.98	-11.33
* 11570.00	Peak	V	-	-	-68.81	16.66	0.00	54.85	73.98	-19.13
17355.00	Peak	V	-	-	-70.38	23.75	0.00	60.37	68.20	-7.83
23140.00	Peak	V	-	-	-50.14	-7.44	-9.54	39.87	68.20	-28.33
28925.00	Peak	V	-	-	-51.47	-5.94	-9.54	40.05	68.20	-28.15

Table 7-52. Radiated Measurements MIMO (26 Tones)

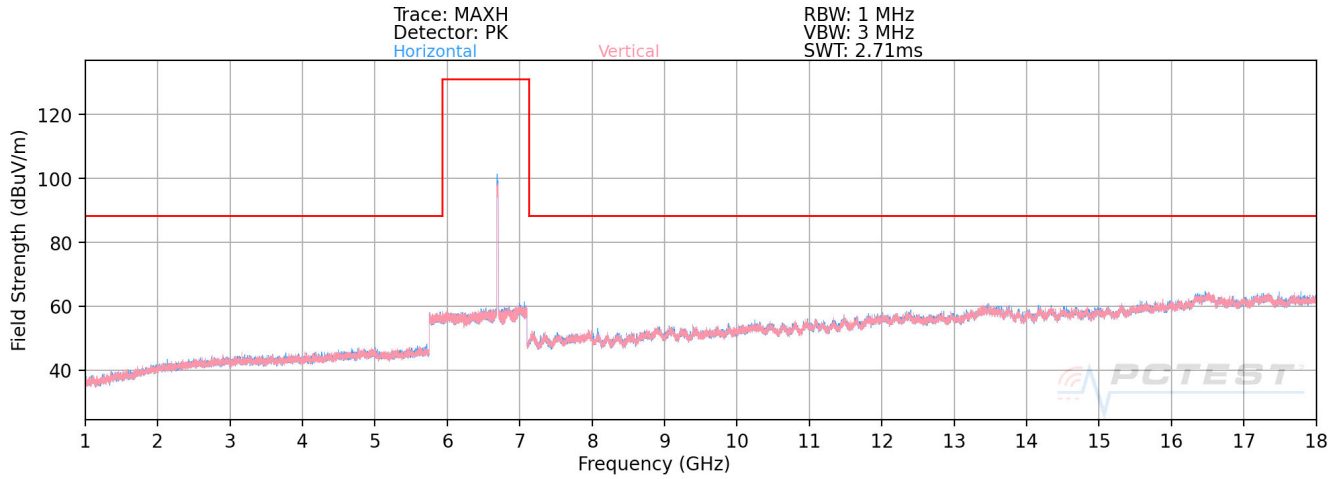
Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 54
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5825MHz
 Channel: 165

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	-	-	-81.51	17.12	0.00	42.61	53.98	-11.37
* 11650.00	Peak	V	-	-	-69.12	17.12	0.00	55.00	73.98	-18.98
17475.00	Peak	V	-	-	-70.13	22.42	0.00	59.29	68.20	-8.91
23300.00	Peak	V	-	-	-50.99	2.14	-9.54	48.61	68.20	-19.59
29125.00	Peak	V	-	-	-51.43	3.76	-9.54	49.78	68.20	-18.42

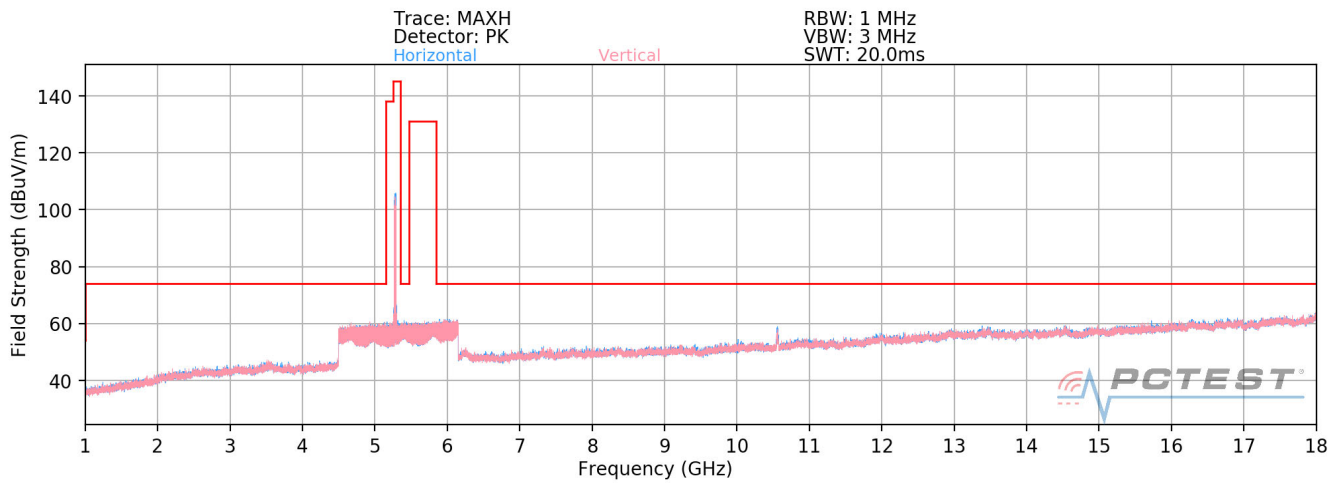
Table 7-53. Radiated Measurements MIMO (26 Tones)

FCC ID: A3LSMG998U	 Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 156 of 176

242 Tones

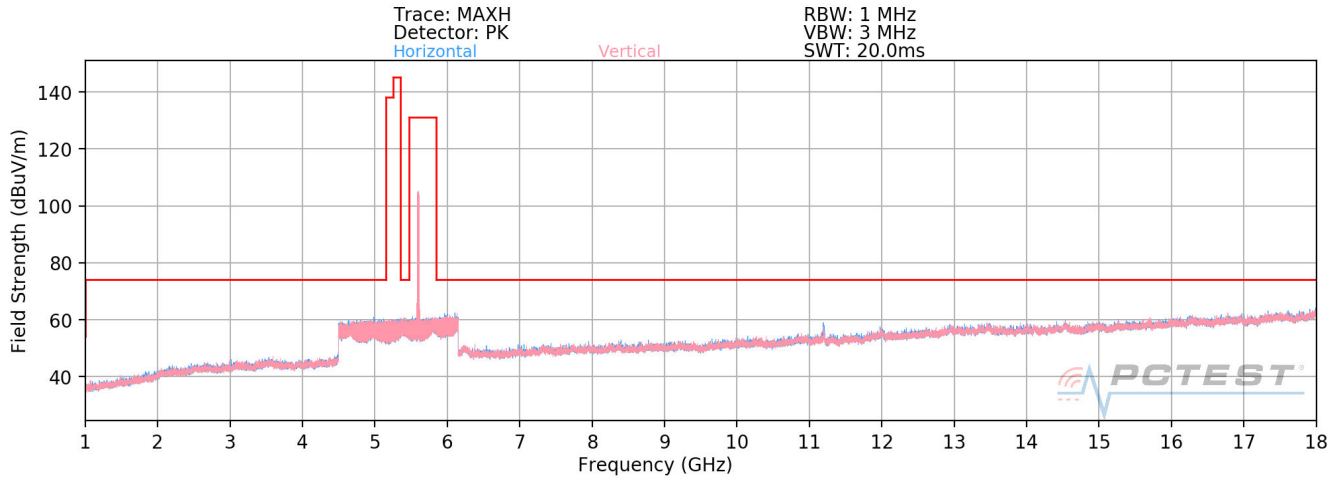


Plot 7-223. Radiated Spurious Plot above 1GHz MIMO (802.11ax – U1 Ch. 40 – 242 Tones)

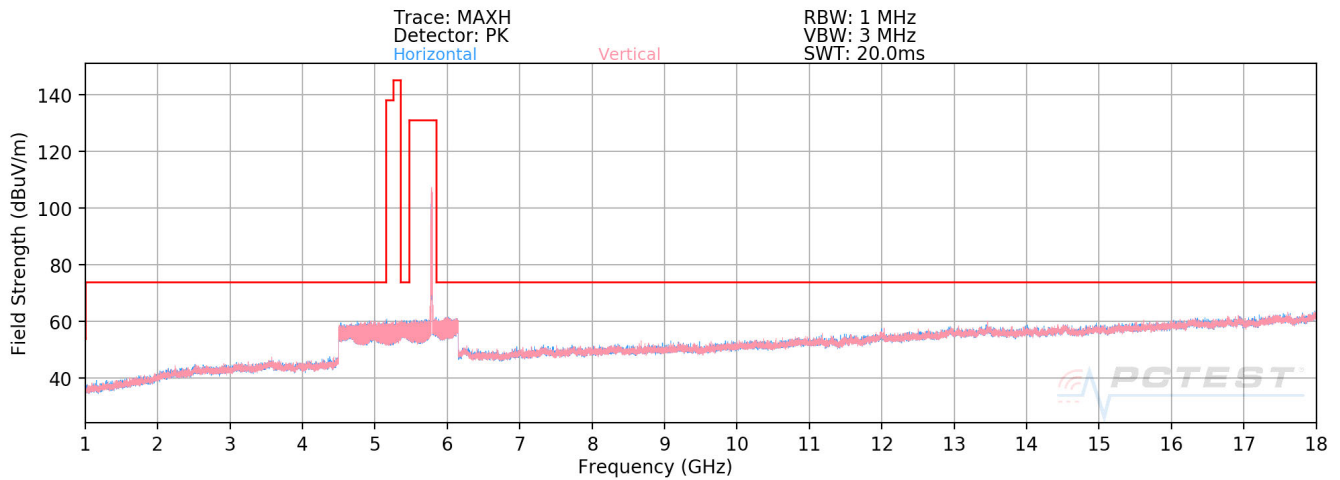


Plot 7-224. Radiated Spurious Plot above 1GHz MIMO (802.11ax – U2A Ch. 56 – 242 Tones)

FCC ID: A3LSMG998U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 157 of 176



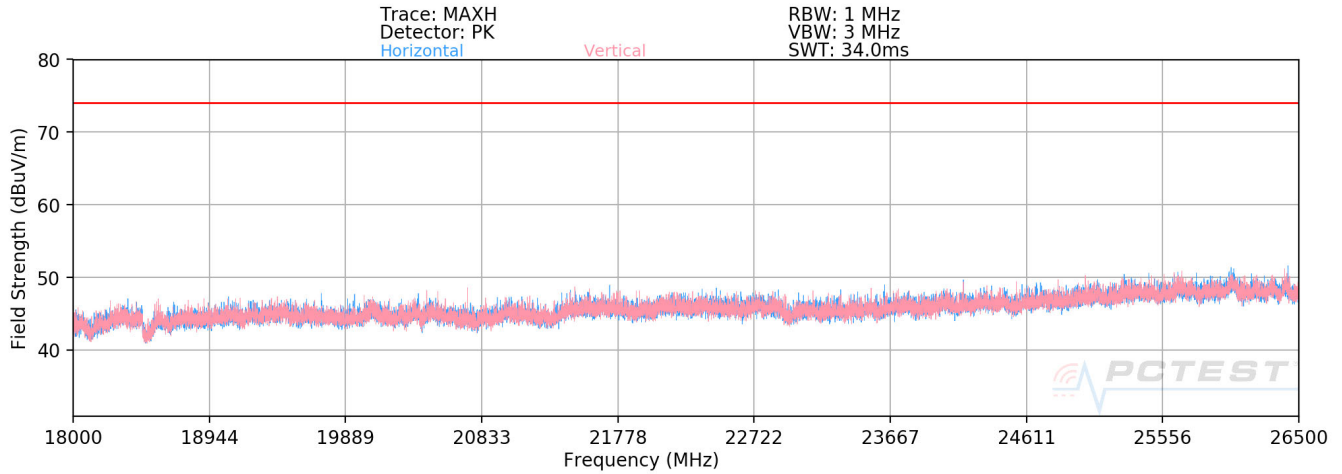
Plot 7-225. Radiated Spurious Plot above 1GHz MIMO (802.11ax – U2C Ch. 120 – 242 Tones)



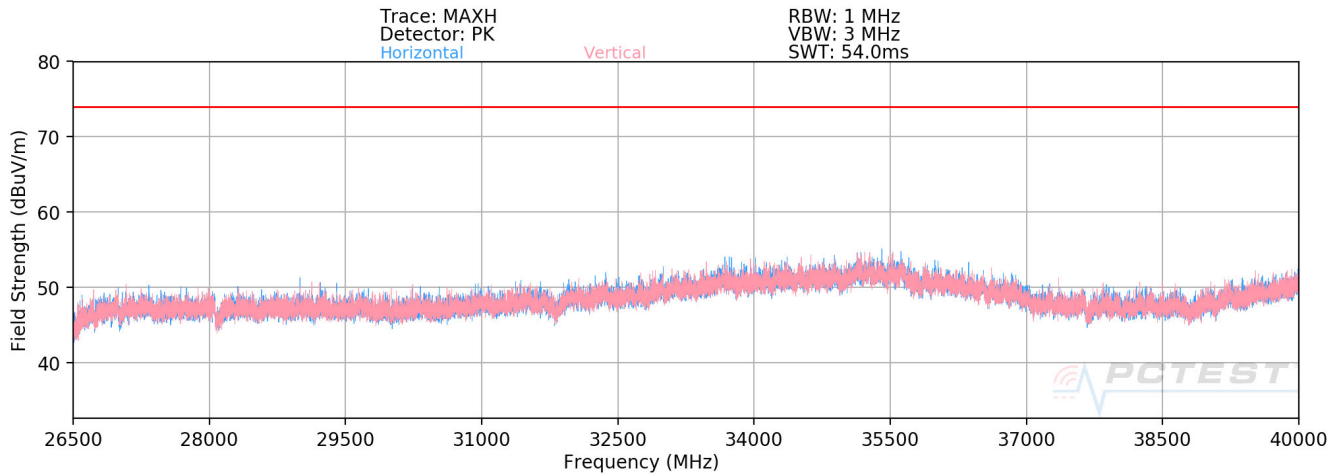
Plot 7-226. Radiated Spurious Plot above 1GHz MIMO (802.11ax – U3 Ch. 157 – 242 Tones)

FCC ID: A3LSMG998U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset	Page 158 of 176	

MIMO Radiated Spurious Emissions Measurements (Above 18GHz)



Plot 7-227. Radiated Spurious Plot 18GHz - 26.5GHz MIMO (802.11ax – 242 Tones)



Plot 7-228. Radiated Spurious Plot 26.5GHz - 40GHz MIMO (802.11ax – 242 Tones)

FCC ID: A3LSMG998U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset	Page 159 of 176	

MIMO Radiated Spurious Emission Measurements (242 Tones)

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

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 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	102	42	-58.62	15.24	0.00	63.62	68.20	-4.58
* 15540.00	Average	V	-	-	-81.36	21.48	0.00	47.12	53.98	-6.86
* 15540.00	Peak	V	-	-	-70.02	21.48	0.00	58.46	73.98	-15.52
* 20720.00	Average	V	-	-	-63.59	1.63	-9.54	35.50	53.98	-18.48
* 20720.00	Peak	V	-	-	-51.29	1.63	-9.54	47.80	73.98	-26.18
25900.00	Peak	V	-	-	-50.50	4.37	-9.54	51.33	68.20	-16.87

Table 7-54. Radiated Measurements MIMO (242 Tones)

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 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	112	41	-58.60	15.26	0.00	63.66	68.20	-4.54
* 15600.00	Average	V	-	-	-81.22	21.95	0.00	47.73	53.98	-6.24
* 15600.00	Peak	V	-	-	-69.49	21.95	0.00	59.46	73.98	-14.51
* 20800.00	Average	V	-	-	-61.92	1.54	-9.54	37.08	53.98	-16.90
* 20800.00	Peak	V	-	-	-51.35	1.54	-9.54	47.65	73.98	-26.33
26000.00	Peak	V	-	-	-50.33	4.18	-9.54	51.30	68.20	-16.90

Table 7-55. Radiated Measurements MIMO (242 Tones)

FCC ID: A3LSMG998U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 160 of 176

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 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	109	50	-59.21	15.18	0.00	62.97	68.20	-5.23
* 15720.00	Average	V	-	-	-81.25	21.96	0.00	47.71	53.98	-6.27
* 15720.00	Peak	V	-	-	-69.56	21.96	0.00	59.40	73.98	-14.58
* 20960.00	Average	V	-	-	-63.23	1.82	-9.54	36.04	53.98	-17.93
* 20960.00	Peak	V	-	-	-51.24	1.82	-9.54	48.03	73.98	-25.94
26200.00	Peak	V	-	-	-50.78	4.39	-9.54	51.07	68.20	-17.13

Table 7-56. Radiated Measurements MIMO (242 Tones)

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 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	101	228	-57.96	15.74	0.00	64.78	68.20	-3.42
* 15780.00	Average	V	-	-	-81.40	22.25	0.00	47.85	53.98	-6.13
* 15780.00	Peak	V	-	-	-69.19	22.25	0.00	60.06	73.98	-13.92
* 21040.00	Average	V	-	-	-63.00	1.91	-9.54	36.37	53.98	-17.61
* 21040.00	Peak	V	-	-	-51.38	1.91	-9.54	47.99	73.98	-25.99
26300.00	Peak	V	-	-	-50.37	4.34	-9.54	51.42	68.20	-16.78

Table 7-57. Radiated Measurements MIMO (242 Tones)

FCC ID: A3LSMG998U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset	Page 161 of 176	

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 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	101	224	-59.60	15.84	0.00	63.24	68.20	-4.96
* 15840.00	Average	V	-	-	-81.50	22.69	0.00	48.19	53.98	-5.79
* 15840.00	Peak	V	-	-	-69.59	22.69	0.00	60.10	73.98	-13.88
* 21120.00	Average	V	-	-	-63.42	2.11	-9.54	36.14	53.98	-17.84
* 21120.00	Peak	V	-	-	-50.86	2.11	-9.54	48.70	73.98	-25.28
26400.00	Peak	V	-	-	-49.88	4.39	-9.54	51.97	68.20	-16.23

Table 7-58. Radiated Measurements MIMO (242 Tones)

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 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	101	230	-73.26	16.29	0.00	50.03	53.98	-3.95
* 10640.00	Peak	V	101	230	-60.49	16.29	0.00	62.80	73.98	-11.18
* 15960.00	Average	V	-	-	-81.67	22.69	0.00	48.02	53.98	-5.96
* 15960.00	Peak	V	-	-	-70.24	22.69	0.00	59.45	73.98	-14.53
* 21280.00	Average	V	-	-	-63.32	2.09	-9.54	36.22	53.98	-17.76
* 21280.00	Peak	V	-	-	-51.18	2.09	-9.54	48.36	73.98	-25.62
26600.00	Peak	V	-	-	-50.84	4.43	-9.54	51.05	68.20	-17.15

Table 7-59. Radiated Measurements MIMO (242 Tones)

FCC ID: A3LSMG998U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 162 of 176

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 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	-	-	-80.47	16.43	0.00	42.96	53.98	-11.02
* 11000.00	Peak	V	-	-	-68.71	16.43	0.00	54.72	73.98	-19.26
16500.00	Peak	V	-	-	-70.10	23.48	0.00	60.38	68.20	-7.82
22000.00	Peak	V	-	-	-50.91	2.04	-9.54	48.58	68.20	-19.62
27500.00	Peak	V	-	-	-50.10	3.49	-9.54	50.85	68.20	-17.35

Table 7-60. Radiated Measurements MIMO (242 Tones)

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 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	313	287	-80.10	16.18	0.00	43.08	53.98	-10.89
* 11200.00	Peak	V	313	287	-67.81	16.18	0.00	55.37	73.98	-18.60
16800.00	Peak	V	-	-	-69.71	24.07	0.00	61.36	68.20	-6.84
* 22400.00	Average	V	-	-	-62.94	2.44	-9.54	36.96	53.98	-17.02
* 22400.00	Peak	V	-	-	-50.57	2.44	-9.54	49.33	73.98	-24.65
28000.00	Peak	V	-	-	-49.16	3.61	-9.54	51.91	68.20	-16.29

Table 7-61. Radiated Measurements MIMO (242 Tones)

FCC ID: A3LSMG998U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 163 of 176

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 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	101	55	-79.22	17.06	0.00	44.84	53.98	-9.14
* 11440.00	Peak	V	101	55	-66.88	17.06	0.00	57.18	73.98	-16.80
17160.00	Peak	V	-	-	-69.59	23.48	0.00	60.89	68.20	-7.31
* 22880.00	Average	V	-	-	-62.64	2.26	-9.54	37.08	53.98	-16.90
* 22880.00	Peak	V	-	-	-50.96	2.26	-9.54	48.76	73.98	-25.22
28600.00	Peak	V	-	-	-50.85	3.87	-9.54	50.48	68.20	-17.72

Table 7-62. Radiated Measurements MIMO (242 Tones)

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 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	144	18	-81.11	17.64	0.00	43.53	53.98	-10.45
* 11490.00	Peak	V	144	18	-68.49	17.64	0.00	56.15	73.98	-17.83
17235.00	Peak	V	-	-	-69.68	24.38	0.00	61.70	68.20	-6.50
* 22980.00	Average	V	-	-	-63.00	2.17	-9.54	36.63	53.98	-17.35
* 22980.00	Peak	V	-	-	-51.37	2.17	-9.54	48.26	73.98	-25.72
28725.00	Peak	V	-	-	-50.27	3.73	-9.54	50.92	68.20	-17.28

Table 7-63. Radiated Measurements MIMO (242 Tones)

FCC ID: A3LSMG998U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset	Page 164 of 176	

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 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	299	351	-80.85	16.94	0.00	43.09	53.98	-10.89
* 11570.00	Peak	V	299	351	-69.77	16.94	0.00	54.17	73.98	-19.81
17355.00	Peak	V	-	-	-70.35	24.85	0.00	61.50	68.20	-6.70
23140.00	Peak	V	-	-	-50.07	2.10	-9.54	49.48	68.20	-18.72
28925.00	Peak	V	-	-	-51.18	3.60	-9.54	49.88	68.20	-18.32

Table 7-64. Radiated Measurements MIMO (242 Tones)

Worst Case Mode: 802.11ax (20MHz BW)
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 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	387	79	-81.01	17.47	0.00	43.46	53.98	-10.52
* 11650.00	Peak	V	387	79	-69.18	17.47	0.00	55.29	73.98	-18.69
17475.00	Peak	V	-	-	-69.65	25.03	0.00	62.38	68.20	-5.82
23300.00	Peak	V	-	-	-50.89	2.14	-9.54	48.71	68.20	-19.49
29125.00	Peak	V	-	-	-51.13	3.76	-9.54	50.08	68.20	-18.12

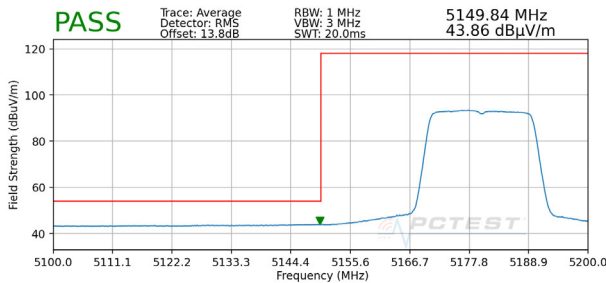
Table 7-65. Radiated Measurements MIMO (242 Tones)

FCC ID: A3LSMG998U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 165 of 176

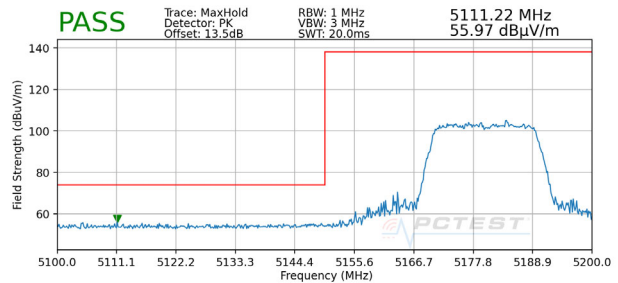
7.6.3 MIMO Radiated Band Edge Measurements (20MHz BW) §15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

242 Tones

Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	MCS0
RU Index:	61
Distance of Measurements:	3 Meters
Operating Frequency:	5180MHz
Channel:	36

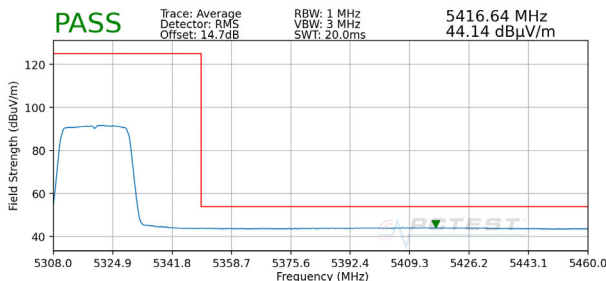


Plot 7-229. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 1 – 242 Tones)

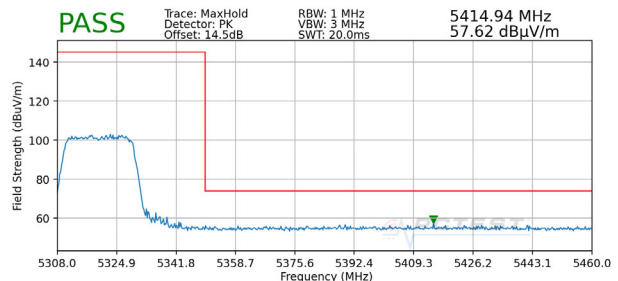


Plot 7-230. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 1 – 242 Tones)

Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	MCS0
RU Index:	61
Distance of Measurements:	3 Meters
Operating Frequency:	5320MHz
Channel:	64



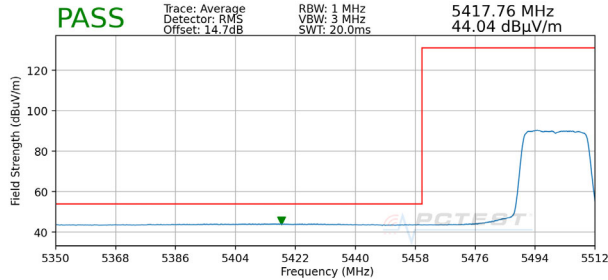
Plot 7-231. Radiated Upper Band Edge Plot MIMO (Average – UNII Band 2A – 242 Tones)



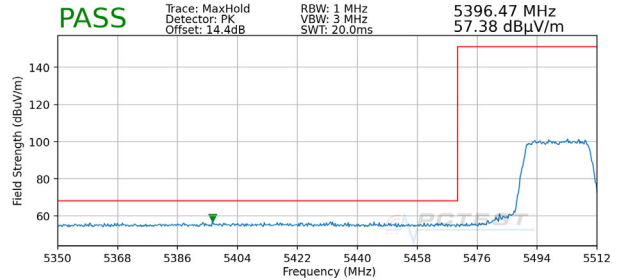
Plot 7-232. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 2A – 242 Tones)

FCC ID: A3LSMG998U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 166 of 176

Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 Distance of Measurements: 3 Meters
 Operating Frequency: 5500MHz
 Channel: 100

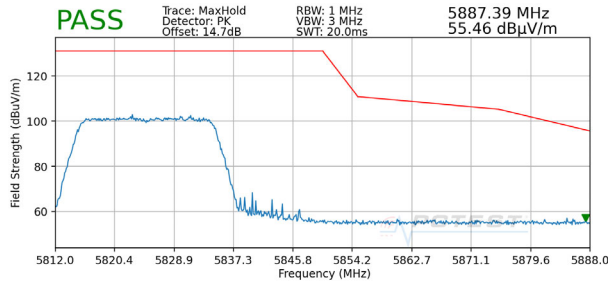


Plot 7-233. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 2C – 242 Tones)



Plot 7-234. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 2C – 242 Tones)

Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 Distance of Measurements: 3 Meters
 Operating Frequency: 5825MHz
 Channel: 165



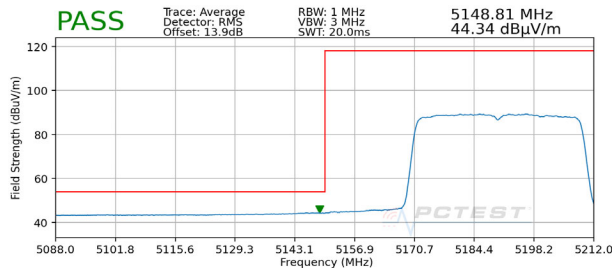
Plot 7-235. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 3 – 242 Tones)

FCC ID: A3LSMG998U	 <p>Proud to be part of </p>	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset	Page 167 of 176	

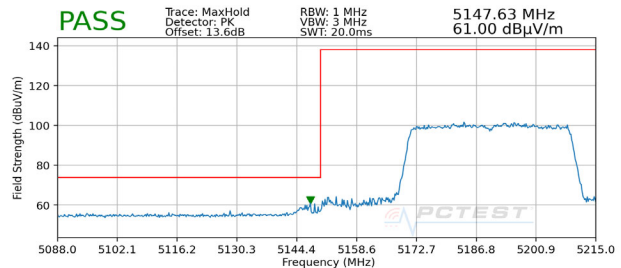
7.6.4 MIMO Radiated Band Edge Measurements (40MHz BW) §15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

484 Tones

Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	MCS0
RU Index:	65
Distance of Measurements:	3 Meters
Operating Frequency:	5190MHz
Channel:	38

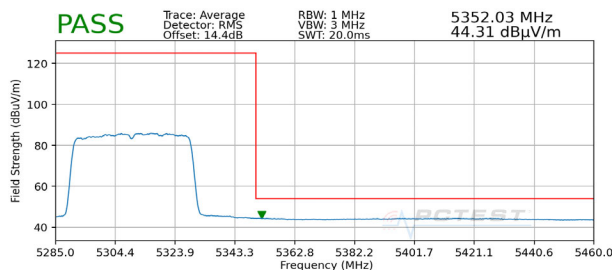


Plot 7-236. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 1 – 484 Tones)

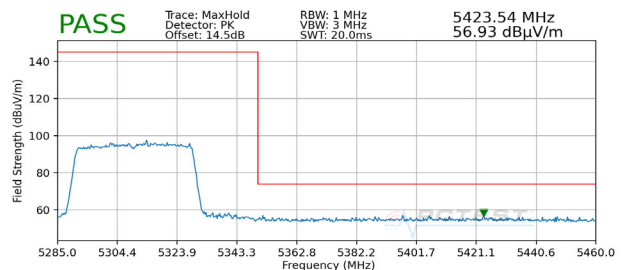


Plot 7-237. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 1 – 484 Tones)

Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	MCS0
RU Index:	65
Distance of Measurements:	3 Meters
Operating Frequency:	5310MHz
Channel:	62



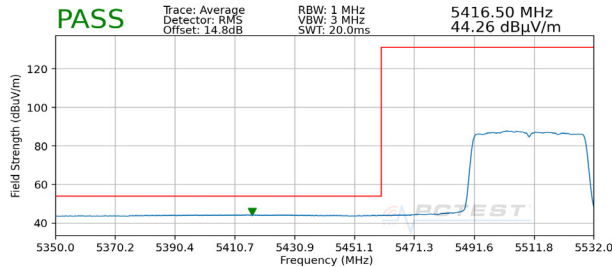
Plot 7-238. Radiated Upper Band Edge Plot MIMO (Average – UNII Band 2A – 484 Tones)



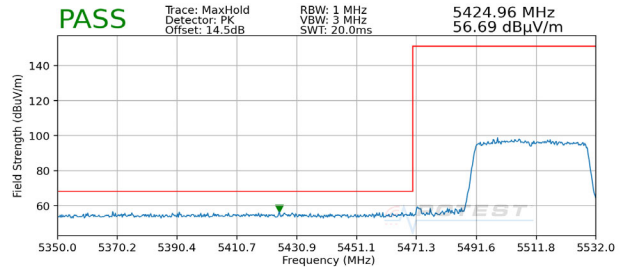
Plot 7-239. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 2A – 484 Tones)

FCC ID: A3LSMG998U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 168 of 176

Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 65
 Distance of Measurements: 3 Meters
 Operating Frequency: 5510MHz
 Channel: 102

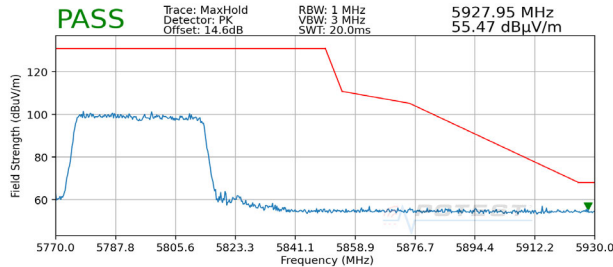


Plot 7-240. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 2C – 484 Tones)



Plot 7-241. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 2C – 484 Tones)

Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 65
 Distance of Measurements: 3 Meters
 Operating Frequency: 5795MHz
 Channel: 159



Plot 7-242. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 3 – 484 Tones)

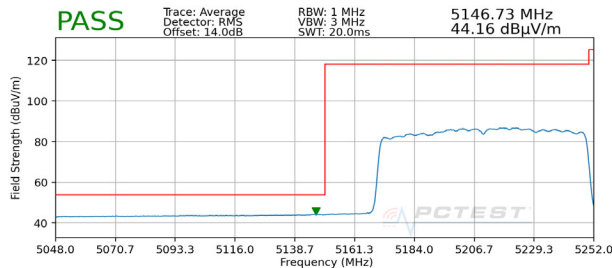
FCC ID: A3LSMG998U	 Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 169 of 176

7.6.5 MIMO Radiated Band Edge Measurements (80MHz BW)

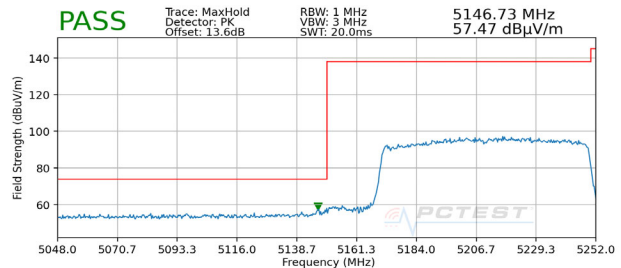
§15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

996 Tones

Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	MCS0
RU Index:	67
Distance of Measurements:	3 Meters
Operating Frequency:	5210MHz
Channel:	42

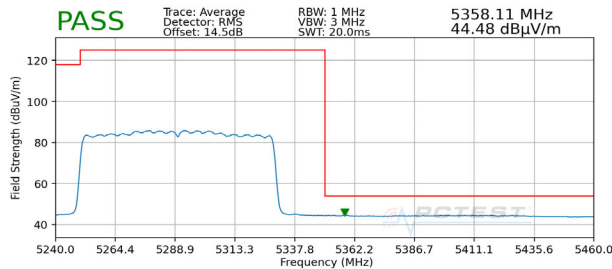


Plot 7-243. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 1 – 996 Tones)

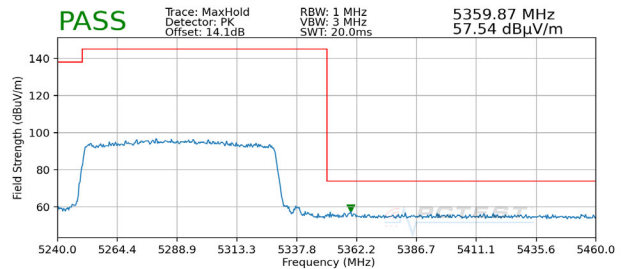


Plot 7-244. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 1 – 996 Tones)

Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	MCS0
RU Index:	67
Distance of Measurements:	3 Meters
Operating Frequency:	5290MHz
Channel:	58



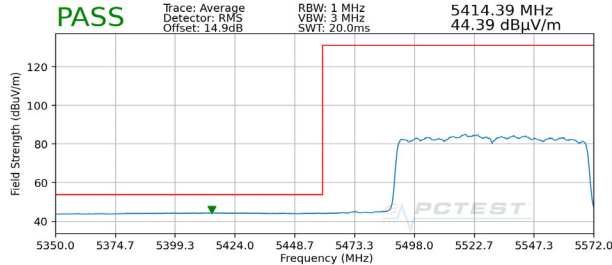
Plot 7-245. Radiated Upper Band Edge Plot MIMO (Average – UNII Band 2A – 996 Tones)



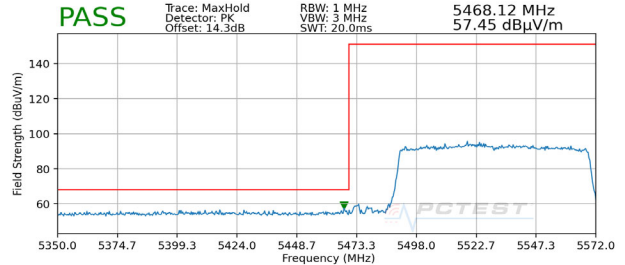
Plot 7-246. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 2A – 996 Tones)

FCC ID: A3LSMG998U	 Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 170 of 176

Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 67
 Distance of Measurements: 3 Meters
 Operating Frequency: 5530MHz
 Channel: 106

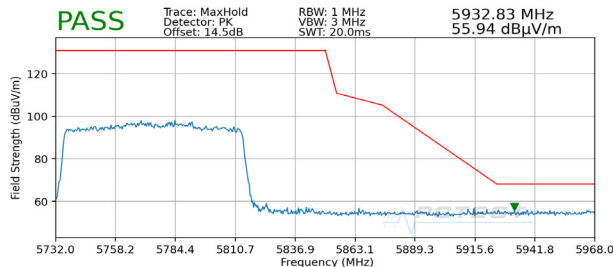


Plot 7-247. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 2C – 996 Tones)



Plot 7-248. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 2C – 996 Tones)

Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 67
 Distance of Measurements: 3 Meters
 Operating Frequency: 5775MHz
 Channel: 155



Plot 7-249. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 3 – 996 Tones)

FCC ID: A3LSMG998U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 171 of 176

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 7-66 per Section 15.209 and RSS-Gen (8.9).

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

Table 7-66. 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: A3LSMG998U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 172 of 176

Test Setup

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

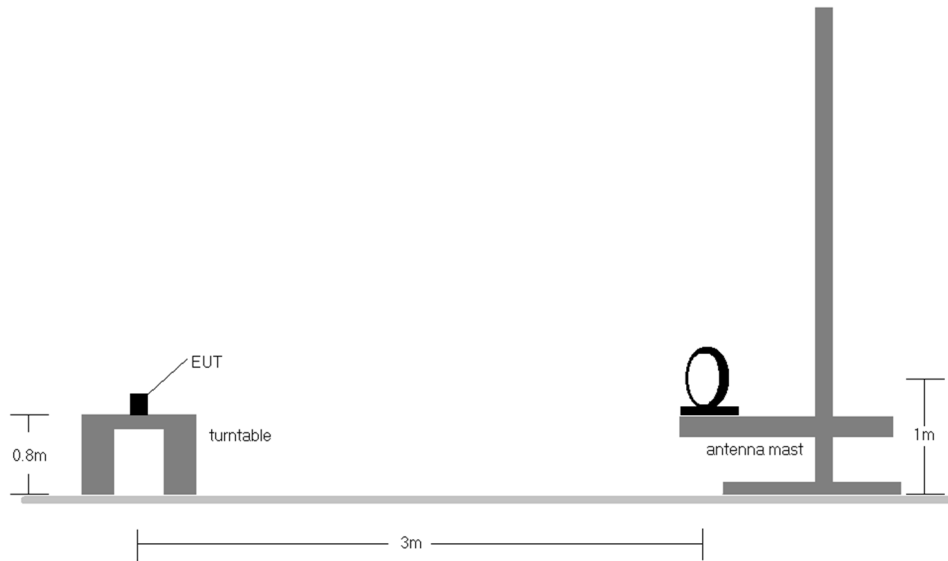


Figure 7-6. Radiated Test Setup < 30MHz

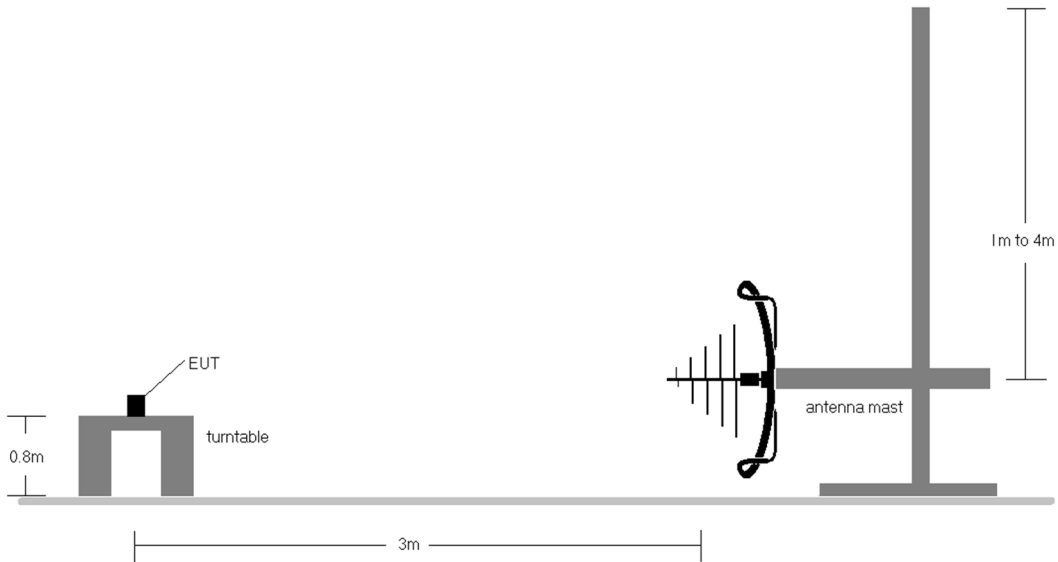


Figure 7-7. Radiated Test Setup < 1GHz

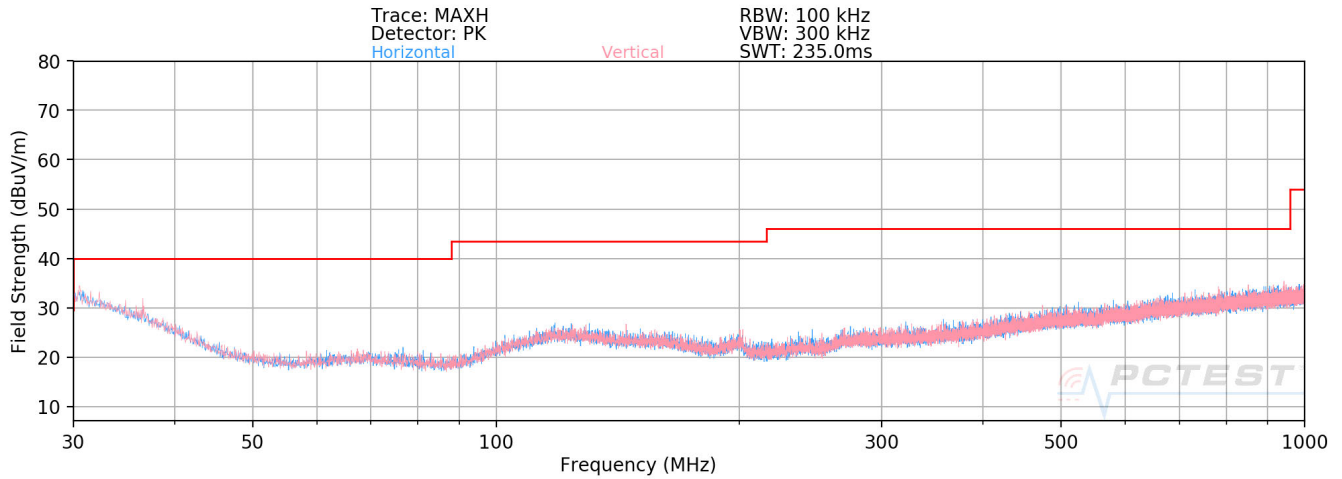
FCC ID: A3LSMG998U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 173 of 176

Test Notes

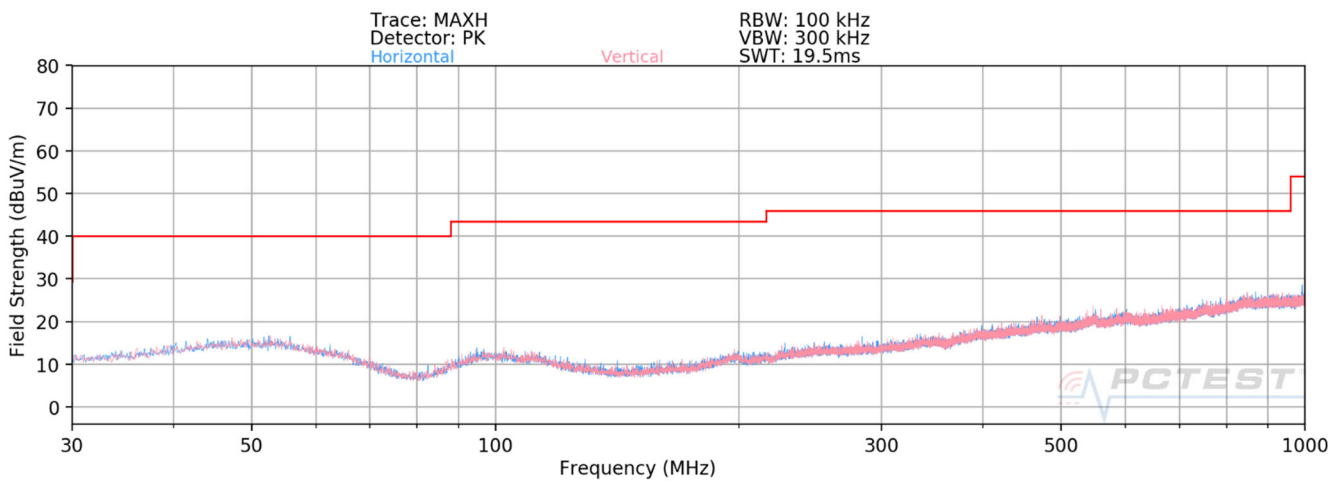
1. All emissions lying in restricted bands specified in §15.205 and RSS-Gen (8.10) are below the limit shown in Table 7-66.
2. The broadband receive antenna is manipulated through vertical and horizontal polarizations during the tests. The EUT is manipulated through three orthogonal planes.
3. This unit was tested with its standard battery.
4. The spectrum is investigated using a peak detector and final measurements are recorded using CISPR quasi peak detector. The worst-case emissions are reported however emissions whose levels were not within 20dB of the respective limits were not reported.
5. Emissions were measured at a 3 meter test distance.
6. Emissions are investigated while operating on the center channel of the mode, band, and modulation that produced the worst case results during the transmitter spurious emissions testing.
7. No spurious emissions were detected within 20dB of the limit below 30MHz.
8. The results recorded using the broadband antenna is known to correlate with the results obtained by using a tuned dipole with an acceptable degree of accuracy. The VSWR for the measurement antenna was found to be less than 2:1.
9. The wide spectrum spurious emissions plots shown on the following pages are used only for the purpose of emission identification. There were no emissions detected in the 30MHz – 1GHz frequency range, as shown in the subsequent plots.

FCC ID: A3LSMG998U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset	Page 174 of 176	

MIMO Radiated Spurious Emissions Measurements (Below 1GHz)
§15.209; RSS-Gen [8.9]



Plot 7-250. Radiated Spurious Plot below 1GHz SISO ANT1 (802.11ax – 26 Tones – U3 Ch. 157)



Plot 7-251. Radiated Spurious Plot below 1GHz MIMO (802.11ax – 242 Tones – U3 Ch. 157)

FCC ID: A3LSMG998U	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset		Page 175 of 176

8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMG998U** is in compliance with Part 15 Subpart E (15.407) of the FCC Rules.

FCC ID: A3LSMG998U	 <small>Proud to be part of  element</small>	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2009230152-10-R1.A3L	Test Dates: 10/05 – 12/11/2020	EUT Type: Portable Handset	Page 176 of 176	