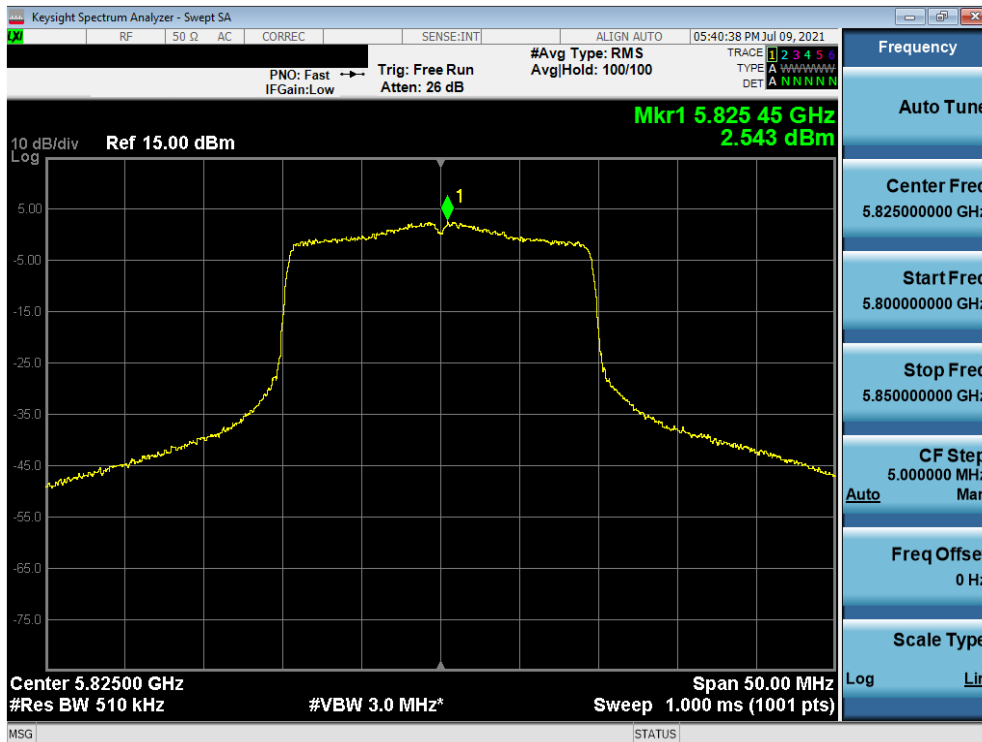
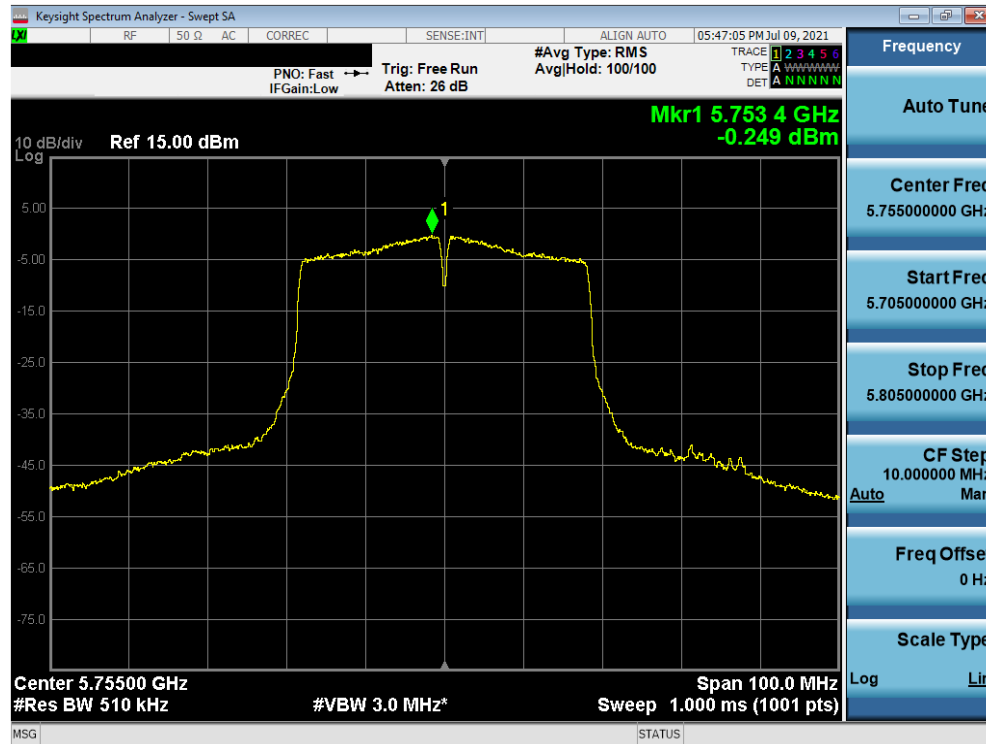


Plot 7-125. Power Spectral Density Plot (20MHz BW 802.11ax (UNII Band 3) – Ch. 157)

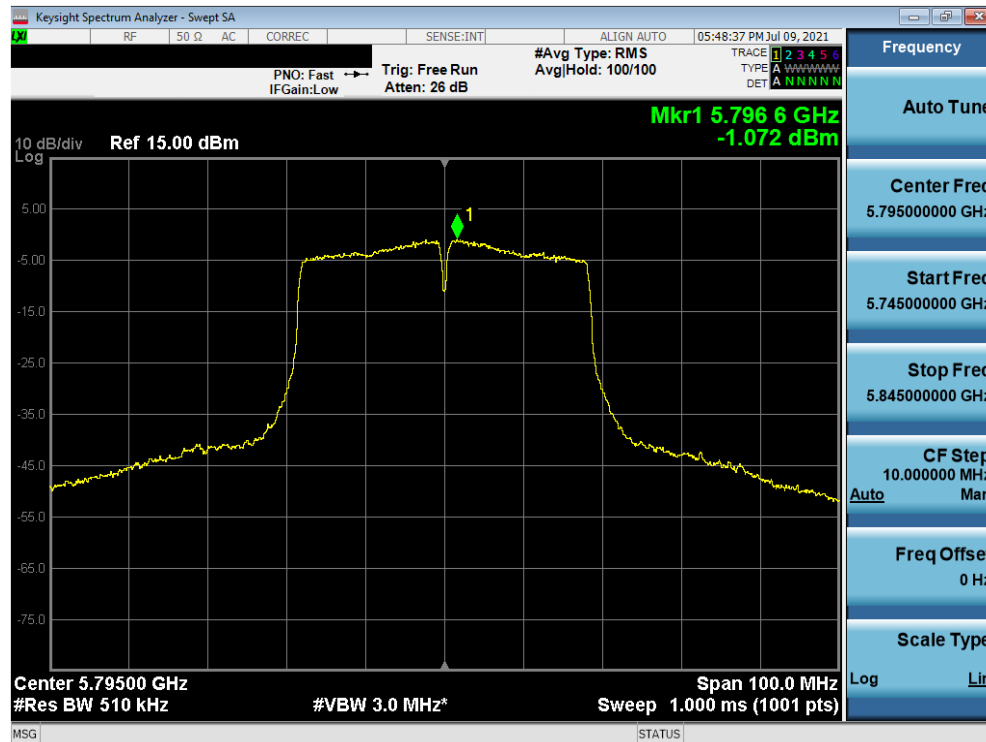


Plot 7-126. Power Spectral Density Plot (20MHz BW 802.11ax (UNII Band 3) – Ch. 165)

FCC ID: A3LSMA528B		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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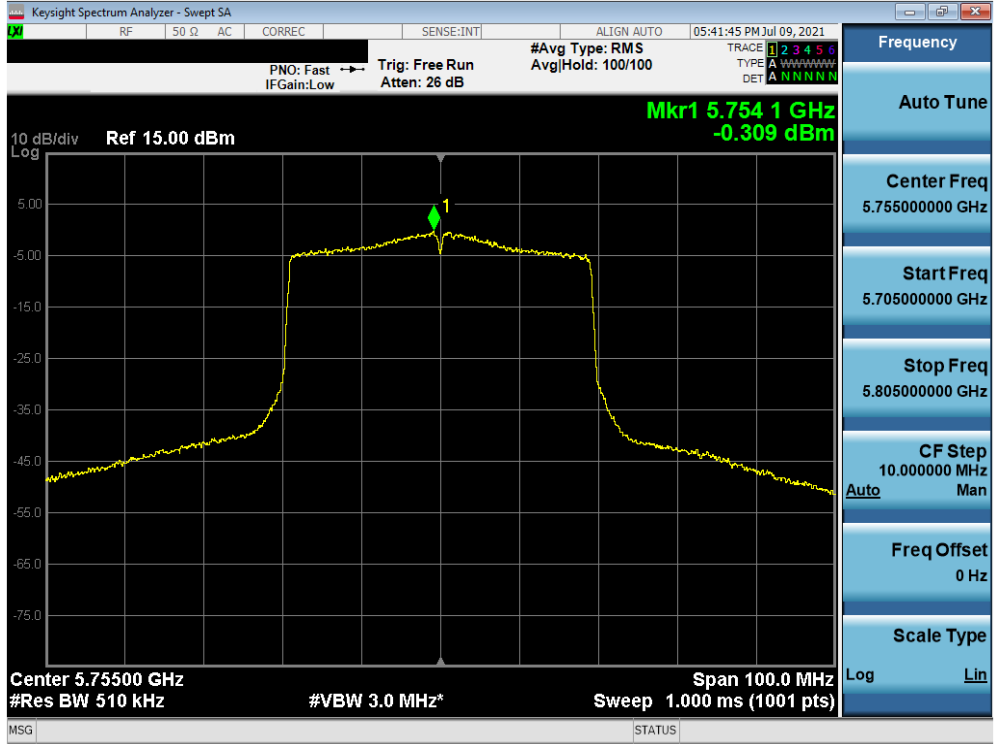


Plot 7-127. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 151)

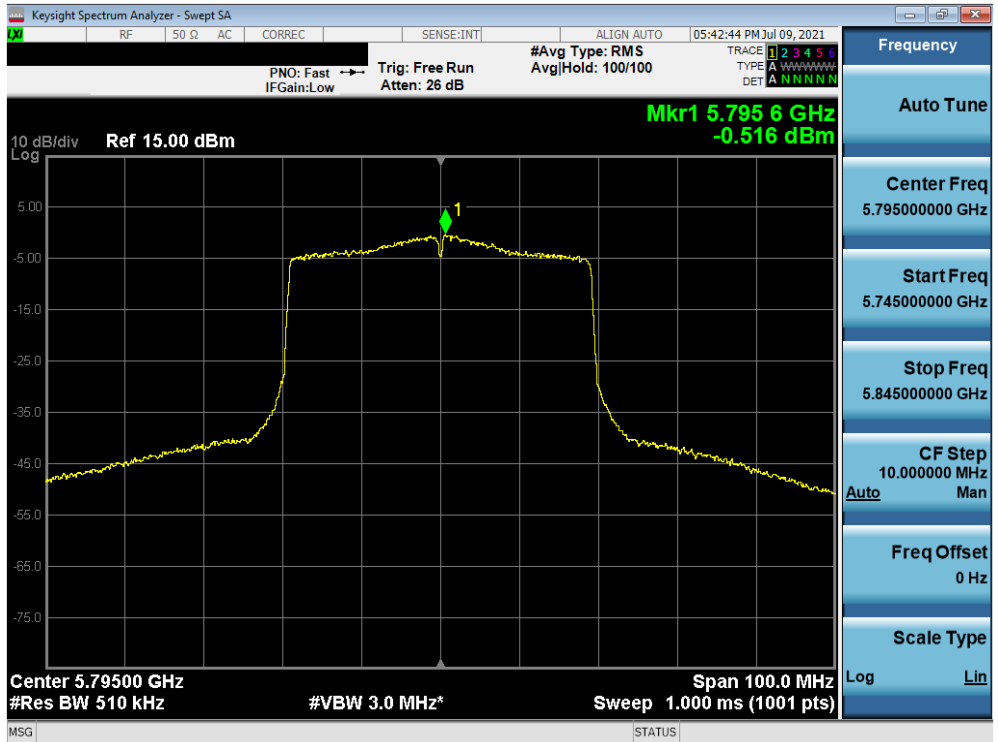


Plot 7-128. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 159)

FCC ID: A3LSMA528B	 <p>PCTEST[®] Proud to be part of element</p>	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2106280072-08.A3L	Test Dates: 06/30/2021 - 07/16/2021	EUT Type: Portable Handset	Page 88 of 119	

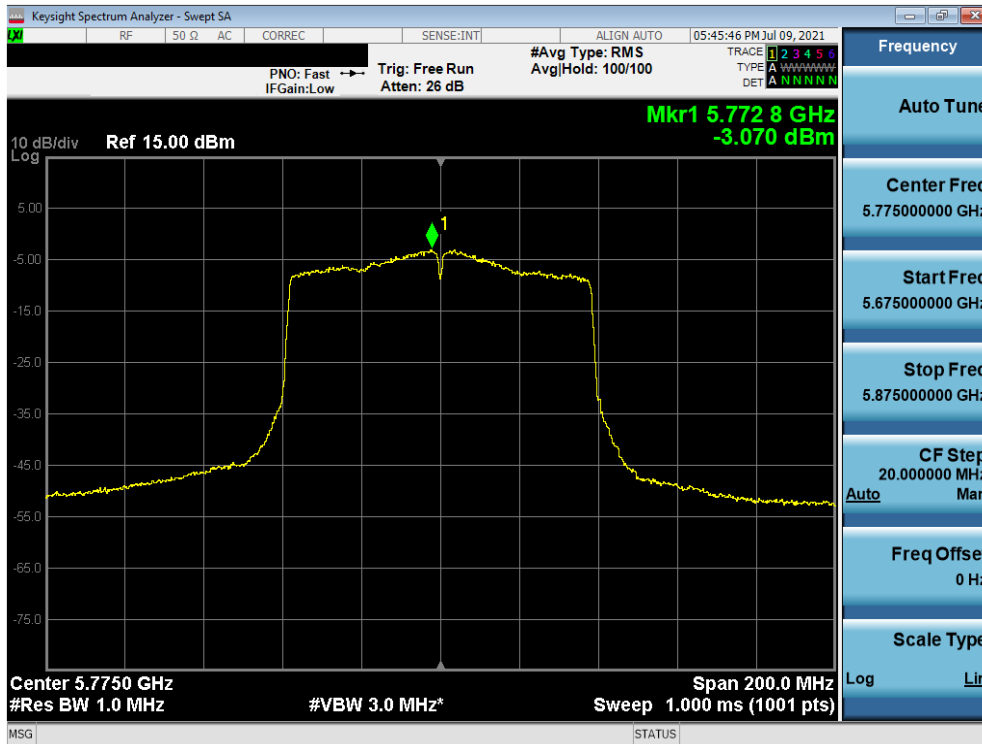


Plot 7-129. Power Spectral Density Plot (40MHz BW 802.11ax (UNII Band 3) – Ch. 151)

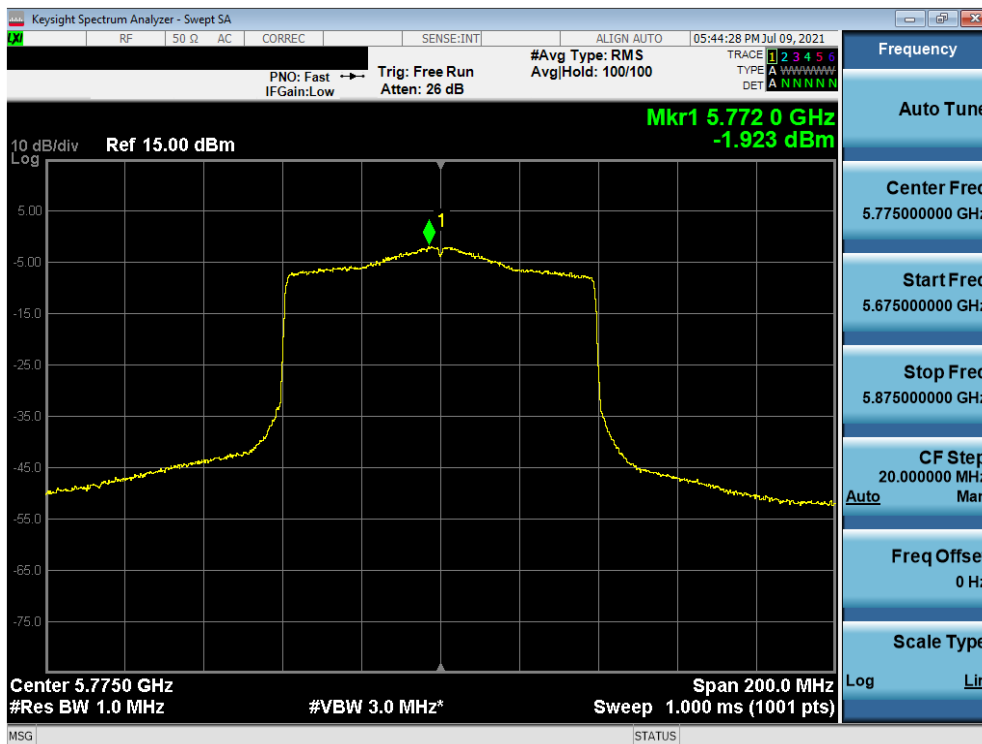


Plot 7-130. Power Spectral Density Plot (40MHz BW 802.11ax (UNII Band 3) – Ch. 159)

FCC ID: A3LSMA528B		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Plot 7-131. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 3) – Ch. 155)



Plot 7-132. Power Spectral Density Plot (80MHz BW 802.11ax (UNII Band 3) – Ch. 155)

FCC ID: A3LSMA528B	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2106280072-08.A3L	Test Dates: 06/30/2021 - 07/16/2021	EUT Type: Portable Handset		Page 90 of 119

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. 802.11a, 802.11n (20MHz BW), 802.11n (40MHz BW), 802.11ac (80MHz), and 802.11ax (80MHz)), and modulations/data rates were investigated among all UNII bands. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.

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 7-9 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 7-9. 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 $\geq 2 \times \text{span}/\text{RBW}$)
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.

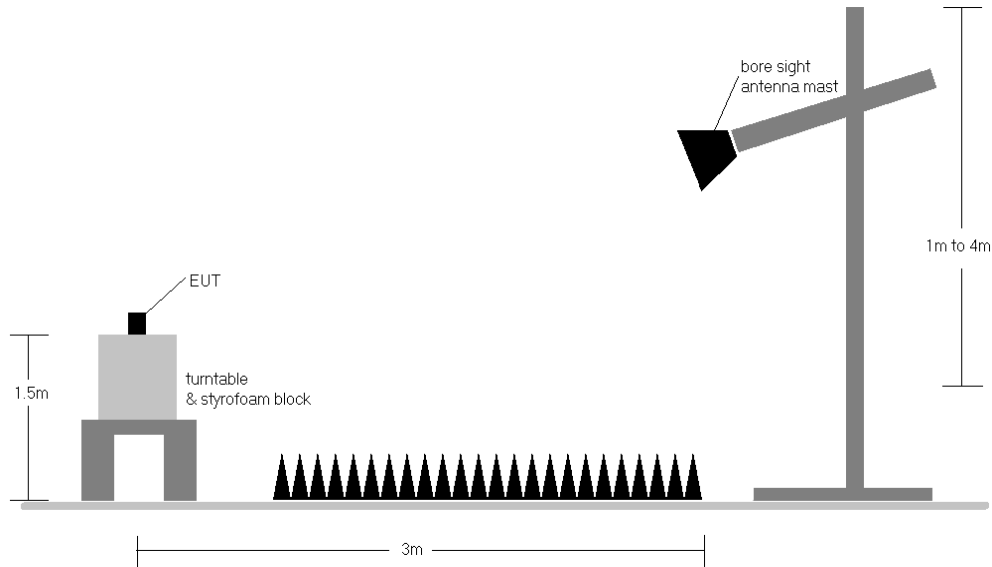


Figure 7-5. Test Instrument & Measurement Setup

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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 7-9.
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 7-9. 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. Radiated spurious emissions were investigated while operating in MIMO mode, however, it was determined that single antenna operation produced the worst case emissions. Since the emissions produced from MIMO operation were found to be more than 20dB below the limit, the MIMO emissions are not reported.
8. 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.
9. The "-" shown in the following RSE tables are used to denote a noise floor measurement.

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]

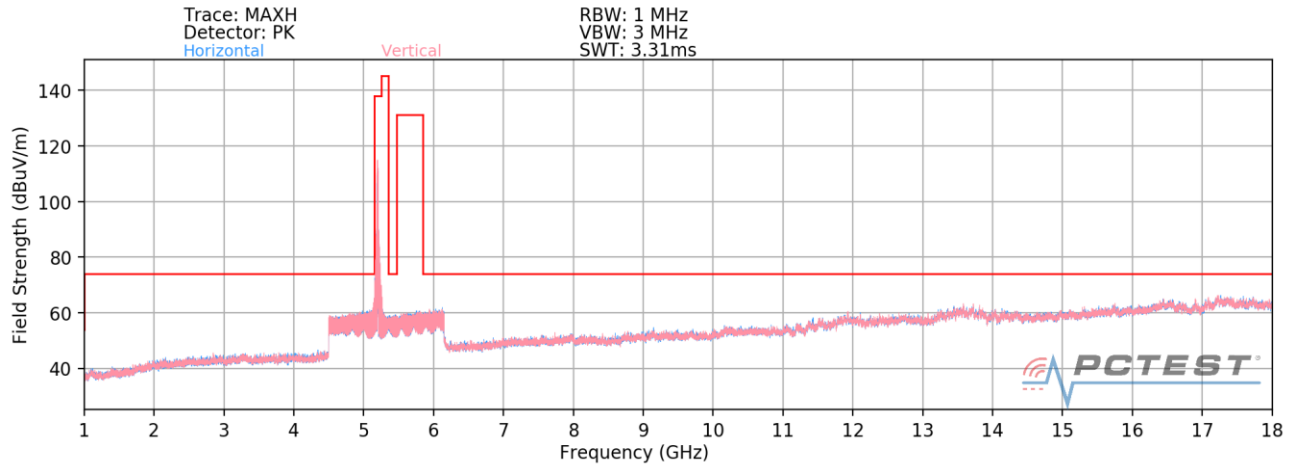
Radiated Band Edge Measurement Offset

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

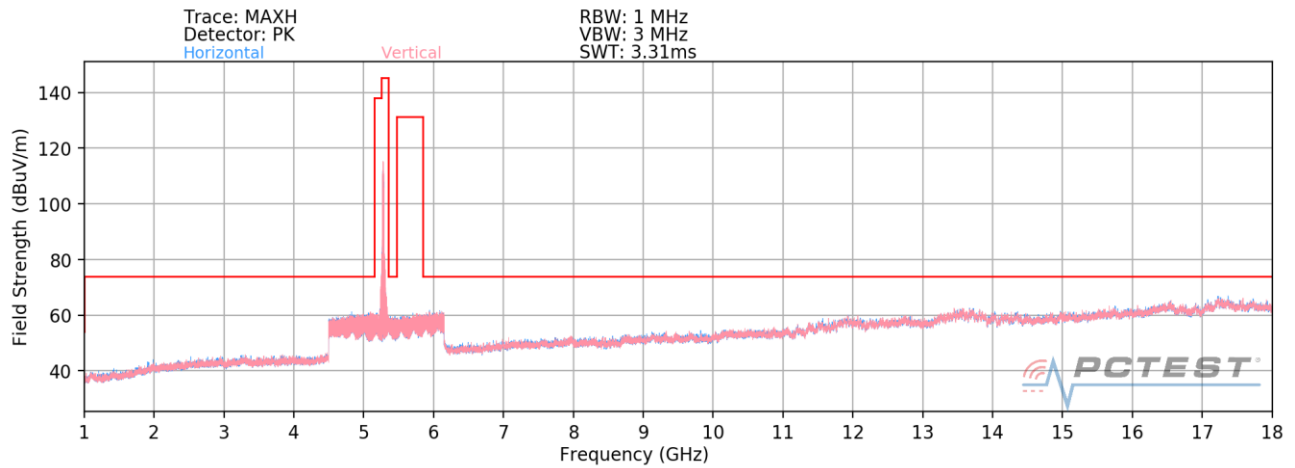
$$\text{Offset (dB)} = (\text{Antenna Factor} + \text{Cable Loss} + \text{Attenuator}) - \text{Preamplifier Gain}$$

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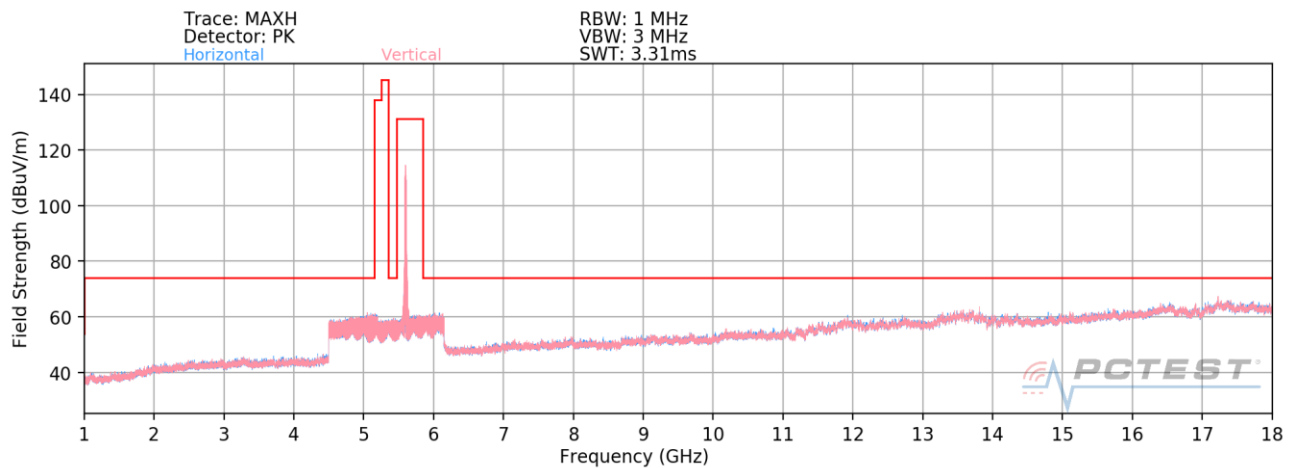
7.6.1 Radiated Spurious Emission Measurements



Plot 7-133. Radiated Spurious Plot above 1GHz (802.11a – U1 Ch. 40)

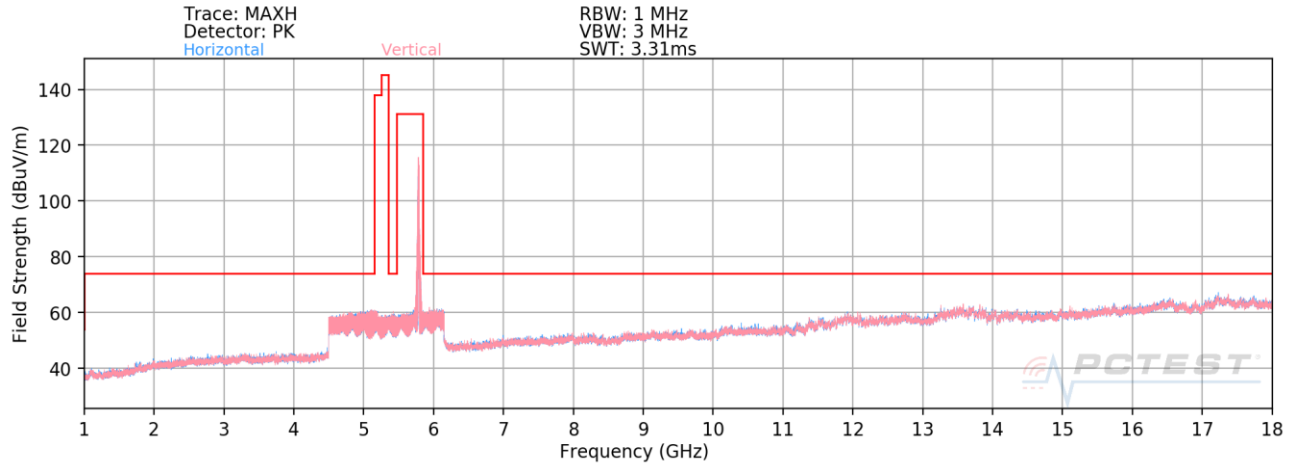


Plot 7-134. Radiated Spurious Plot above 1GHz (802.11a – U2A Ch. 56)



Plot 7-135. Radiated Spurious Plot above 1GHz (802.11a – U2C Ch. 120)

FCC ID: A3LSMA528B	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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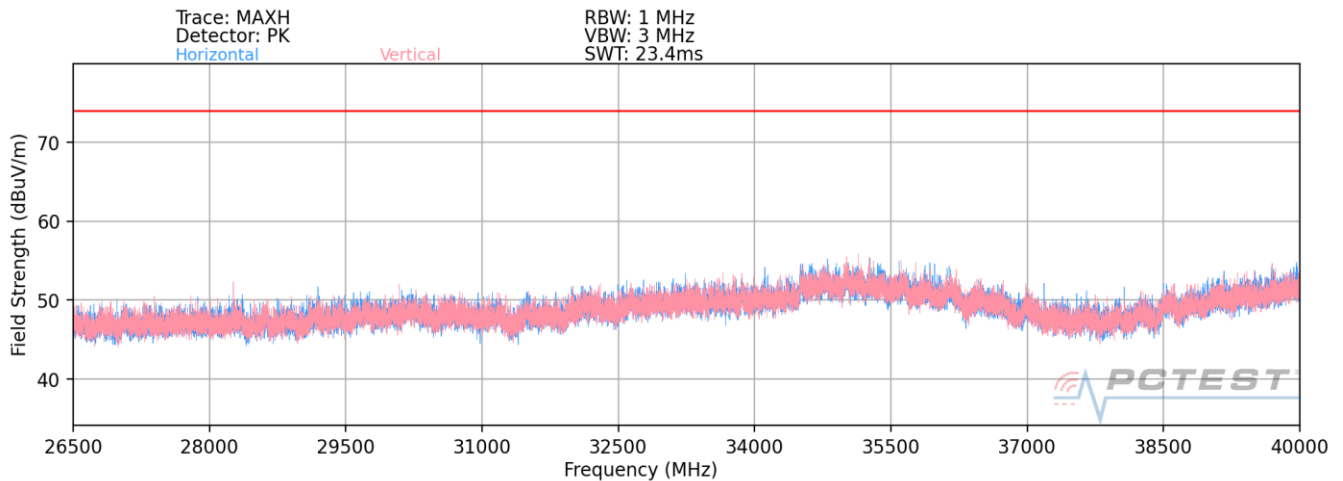
Plot 7-136. Radiated Spurious Plot above 1GHz (802.11a – U3 Ch. 157)

<p>FCC ID: A3LSMA528B</p>		<p>MEASUREMENT REPORT (CERTIFICATION)</p>	<p>Approved by: Technical Manager</p>
<p>Test Report S/N: 1M2106280072-08.A3L</p>	<p>Test Dates: 06/30/2021 - 07/16/2021</p>	<p>EUT Type: Portable Handset</p>	<p>Page 95 of 119</p>

Radiated Spurious Emissions Measurements (Above 18GHz)



Plot 7-137. Radiated Spurious Plot 18GHz - 26.5GHz (802.11a)



Plot 7-138. Radiated Spurious Plot 26.5GHz - 40GHz (802.11a)

FCC ID: A3LSMA528B		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Radiated Spurious Emission Measurements

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

Worst Case Mode: 802.11n
 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	-	-	-71.98	20.11	0.00	55.13	68.20	-13.07
15540.00	Average	V	-	-	-85.65	28.89	0.00	50.24	53.98	-3.73
15540.00	Peak	V	-	-	-74.57	28.89	0.00	61.32	73.98	-12.65
20720.00	Average	V	-	-	-67.33	-5.06	-9.54	25.07	53.98	-28.91
20720.00	Peak	V	-	-	-55.54	-5.06	-9.54	36.86	73.98	-37.12
25900.00	Peak	V	-	-	-56.45	-2.62	-9.54	38.38	68.20	-29.82

Table 7-10. Radiated Measurements

Worst Case Mode: 802.11n
 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	-	-	-72.41	20.61	0.00	55.20	68.20	-13.00
15600.00	Average	V	-	-	-85.69	29.15	0.00	50.46	53.98	-3.52
15600.00	Peak	V	-	-	-74.50	29.15	0.00	61.65	73.98	-12.33
20800.00	Average	V	-	-	-68.65	-4.66	-9.54	24.15	53.98	-29.83
20800.00	Peak	V	-	-	-56.12	-4.66	-9.54	36.68	73.98	-37.30
26000.00	Peak	V	-	-	-56.53	-2.44	-9.54	38.49	68.20	-29.71

Table 7-11. Radiated Measurements

FCC ID: A3LSMA528B		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Worst Case Mode: 802.11n
 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	-	-	-72.99	20.59	0.00	54.60	68.20	-13.60
15720.00	Average	V	-	-	-85.61	29.41	0.00	50.80	53.98	-3.17
15720.00	Peak	V	-	-	-74.56	29.41	0.00	61.85	73.98	-12.12
20960.00	Average	V	-	-	-68.99	-4.53	-9.54	23.94	53.98	-30.04
20960.00	Peak	V	-	-	-57.33	-4.53	-9.54	35.59	73.98	-38.39
26200.00	Peak	V	-	-	-55.88	-2.55	-9.54	39.02	68.20	-29.18

Table 7-12. Radiated Measurements

Worst Case Mode: 802.11n
 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	-	-	-71.98	20.35	0.00	55.37	68.20	-12.83
15780.00	Average	V	-	-	-85.68	28.97	0.00	50.29	53.98	-3.69
15780.00	Peak	V	-	-	-74.41	28.97	0.00	61.56	73.98	-12.42
21040.00	Average	V	-	-	-68.90	-4.65	-9.54	23.90	53.98	-30.07
21040.00	Peak	V	-	-	-57.18	-4.65	-9.54	35.62	73.98	-38.36
26300.00	Peak	V	-	-	-55.79	-2.48	-9.54	39.19	68.20	-29.01

Table 7-13. Radiated Measurements

FCC ID: A3LSMA528B		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Worst Case Mode: 802.11n
 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	-	-	-72.69	20.28	0.00	54.59	68.20	-13.61
15840.00	Average	V	-	-	-85.47	28.74	0.00	50.27	53.98	-3.71
15840.00	Peak	V	-	-	-74.24	28.74	0.00	61.50	73.98	-12.48
21120.00	Average	V	-	-	-68.70	-4.46	-9.54	24.30	53.98	-29.68
21120.00	Peak	V	-	-	-56.02	-4.46	-9.54	36.98	73.98	-37.00
26400.00	Peak	V	-	-	-56.49	-2.11	-9.54	38.86	68.20	-29.34

Table 7-14. Radiated Measurements

Worst Case Mode: 802.11n
 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	-	-	-84.03	20.26	0.00	43.23	53.98	-10.75
10640.00	Peak	V	-	-	-72.95	20.26	0.00	54.31	73.98	-19.67
15960.00	Average	V	-	-	-85.71	29.05	0.00	50.34	53.98	-3.64
15960.00	Peak	V	-	-	-74.67	29.05	0.00	61.38	73.98	-12.60
21280.00	Average	V	-	-	-68.73	-4.40	-9.54	24.32	53.98	-29.66
21280.00	Peak	V	-	-	-56.94	-4.40	-9.54	36.11	73.98	-37.87
26600.00	Peak	V	-	-	-56.35	-2.33	-9.54	38.78	68.20	-29.42

Table 7-15. Radiated Measurements

FCC ID: A3LSMA528B		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Worst Case Mode: 802.11n
 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	-	-	-84.76	21.18	0.00	43.42	53.98	-10.56
11000.00	Peak	V	-	-	-73.58	21.18	0.00	54.60	73.98	-19.38
16500.00	Peak	V	-	-	-73.82	30.45	0.00	63.63	68.20	-4.57
22000.00	Peak	V	-	-	-57.23	-4.38	-9.54	35.84	68.20	-32.36
27500.00	Peak	V	-	-	-56.05	-1.85	-9.54	39.57	68.20	-28.63

Table 7-16. Radiated Measurements

Worst Case Mode: 802.11n
 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	-	-	-84.34	22.64	0.00	45.30	53.98	-8.68
11200.00	Peak	V	-	-	-72.21	22.64	0.00	57.43	73.98	-16.55
16800.00	Peak	V	-	-	-74.00	29.97	0.00	62.97	68.20	-5.23
22400.00	Average	V	-	-	-68.08	-4.09	-9.54	25.29	53.98	-28.69
22400.00	Peak	V	-	-	-56.80	-4.09	-9.54	36.57	73.98	-37.41
28000.00	Peak	V	-	-	-56.63	-1.57	-9.54	39.26	68.20	-28.94

Table 7-17. Radiated Measurements

Worst Case Mode: 802.11n

FCC ID: A3LSMA528B		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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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	-	-	-84.67	22.34	0.00	44.67	53.98	-9.31
11440.00	Peak	V	-	-	-73.55	22.34	0.00	55.79	73.98	-18.19
17160.00	Peak	V	-	-	-73.72	30.35	0.00	63.63	68.20	-4.57
22880.00	Average	V	-	-	-68.16	-4.11	-9.54	25.18	53.98	-28.80
22880.00	Peak	V	-	-	-55.87	-4.11	-9.54	37.47	73.98	-36.50
28600.00	Peak	V	-	-	-56.32	-1.25	-9.54	39.89	68.20	-28.31

Table 7-18. Radiated Measurements

Worst Case Mode: 802.11n
 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	-	-	-84.47	22.32	0.00	44.85	53.98	-9.13
11490.00	Peak	V	-	-	-73.19	22.32	0.00	56.13	73.98	-17.85
17235.00	Peak	V	-	-	-73.99	32.10	0.00	65.11	68.20	-3.09
22980.00	Average	V	-	-	-68.84	-4.25	-9.54	24.37	53.98	-29.61
22980.00	Peak	V	-	-	-56.36	-4.25	-9.54	36.85	73.98	-37.13
28725.00	Peak	V	-	-	-56.76	-1.30	-9.54	39.39	68.20	-28.81

Table 7-19. Radiated Measurements

Worst Case Mode: 802.11n

FCC ID: A3LSMA528B		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2106280072-08.A3L	Test Dates: 06/30/2021 - 07/16/2021	EUT Type: Portable Handset	Page 101 of 119	

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	-	-	-84.68	24.34	0.00	46.66	53.98	-7.32
11570.00	Peak	V	-	-	-73.64	24.34	0.00	57.70	73.98	-16.28
17355.00	Peak	V	-	-	-73.87	31.97	0.00	65.10	68.20	-3.10
23140.00	Peak	V	-	-	-56.95	-4.20	-9.54	36.31	68.20	-31.89
28925.00	Peak	V	-	-	-56.37	-1.06	-9.54	40.03	68.20	-28.17

Table 7-20. Radiated Measurements

Worst Case Mode: 802.11n
 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	-	-	-84.60	23.47	0.00	45.87	53.98	-8.11
11650.00	Peak	V	-	-	-73.28	23.47	0.00	57.19	73.98	-16.79
17475.00	Peak	V	-	-	-74.24	30.72	0.00	63.48	68.20	-4.72
23300.00	Peak	V	-	-	-56.95	-4.25	-9.54	36.25	68.20	-31.95
29125.00	Peak	V	-	-	-56.42	-1.05	-9.54	39.99	68.20	-28.21

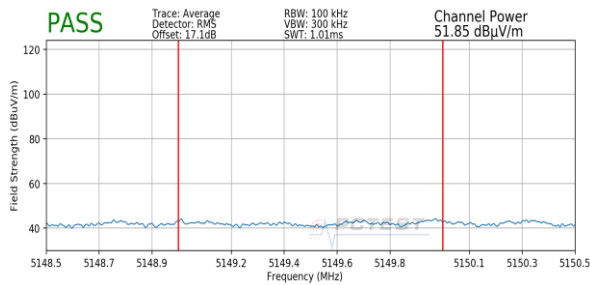
Table 7-21. Radiated Measurements

FCC ID: A3LSMA528B		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2106280072-08.A3L	Test Dates: 06/30/2021 - 07/16/2021	EUT Type: Portable Handset	Page 102 of 119	

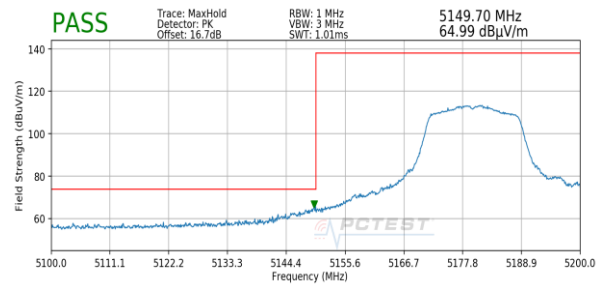
7.6.2 Radiated Band Edge Measurements (20MHz BW)

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

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

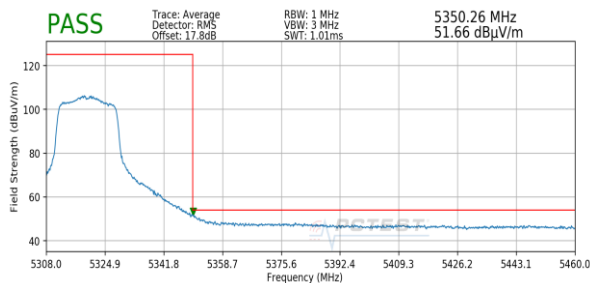


Plot 7-139. Radiated Lower Band Edge Plot (Average – UNII Band 1)

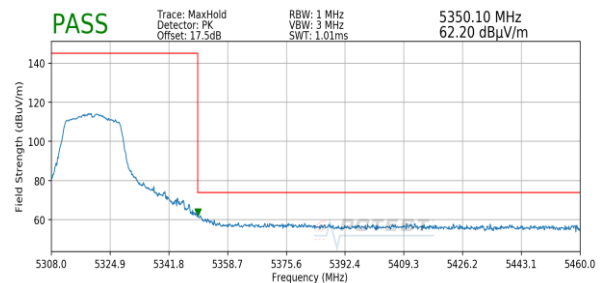


Plot 7-140. Radiated Lower Band Edge Plot (Peak – UNII Band 1)

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



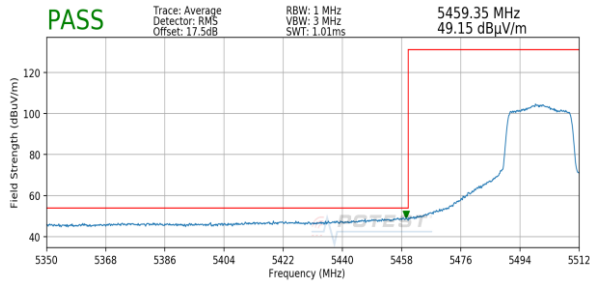
Plot 7-141. Radiated Upper Band Edge Plot (Average – UNII Band 2A)



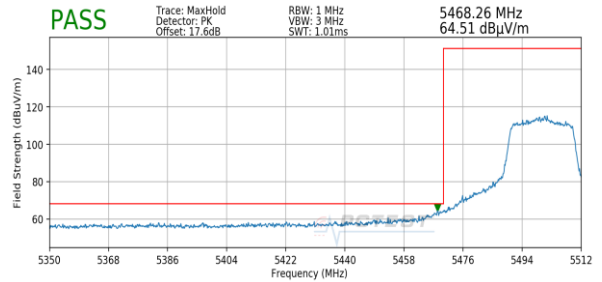
Plot 7-142. Radiated Upper Band Edge Plot (Peak – UNII Band 2A)

FCC ID: A3LSMA528B		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 Distance of Measurements: 3 Meters
 Operating Frequency: 5500MHz
 Channel: 100

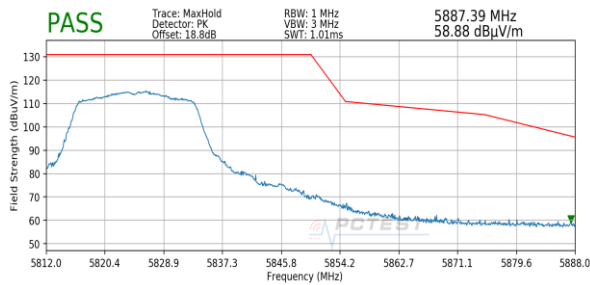


Plot 7-143. Radiated Lower Band Edge Plot (Average – UNII Band 2C)



Plot 7-144. Radiated Lower Band Edge Plot (Peak – UNII Band 2C)

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

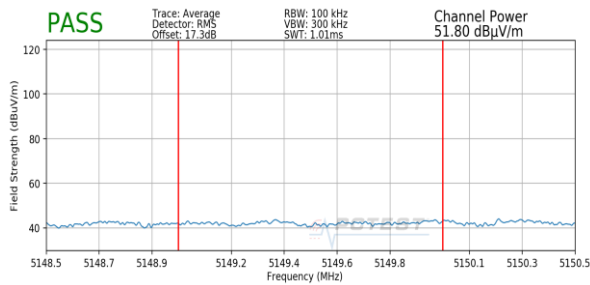


Plot 7-145. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

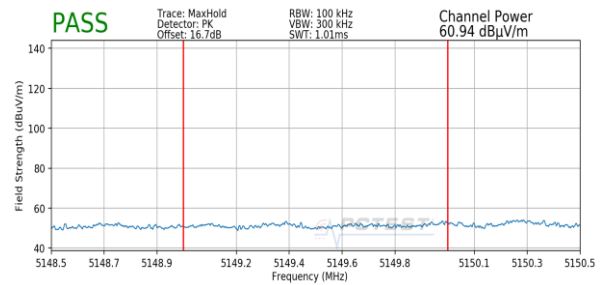
FCC ID: A3LSMA528B	 <p>PCTEST Proud to be part of element</p>	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2106280072-08.A3L	Test Dates: 06/30/2021 - 07/16/2021	EUT Type: Portable Handset	Page 104 of 119	

7.6.3 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

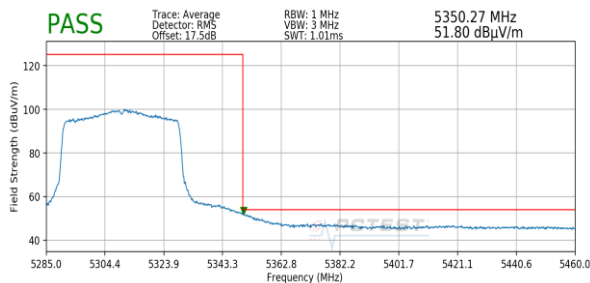


Plot 7-146. Radiated Lower Band Edge Plot (Average – UNII Band 1)

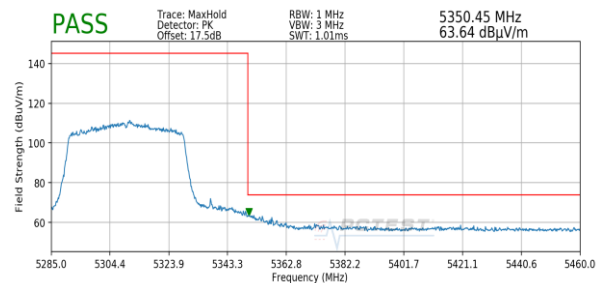


Plot 7-147. Radiated Lower Band Edge Plot (Peak – UNII Band 1)

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



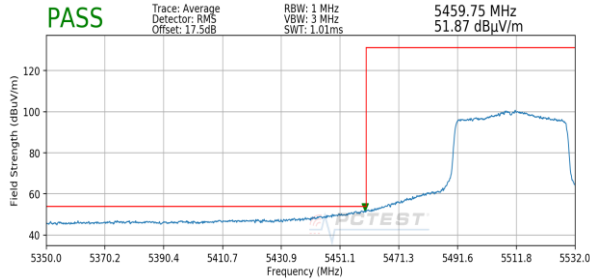
Plot 7-148. Radiated Upper Band Edge Plot (Average – UNII Band 2A)



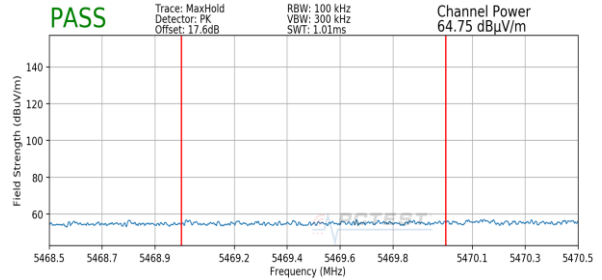
Plot 7-149. Radiated Upper Band Edge Plot (Peak – UNII Band 2A)

FCC ID: A3LSMA528B		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Worst Case Mode: 802.11nx
 Worst Case Transfer Rate: MCS0
 Distance of Measurements: 3 Meters
 Operating Frequency: 5510MHz
 Channel: 102

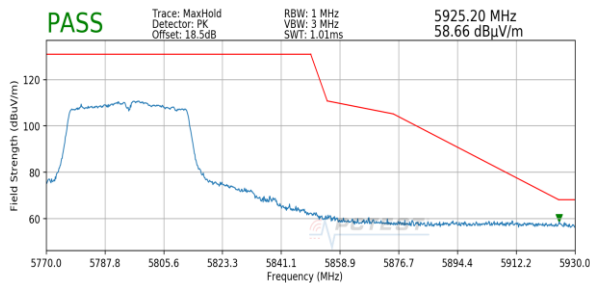


Plot 7-150. Radiated Lower Band Edge Plot (Average – UNII Band 2C)



Plot 7-151. Radiated Lower Band Edge Plot (Peak – UNII Band 2C)

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

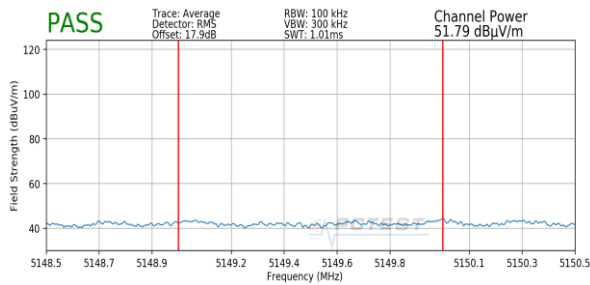


Plot 7-152. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

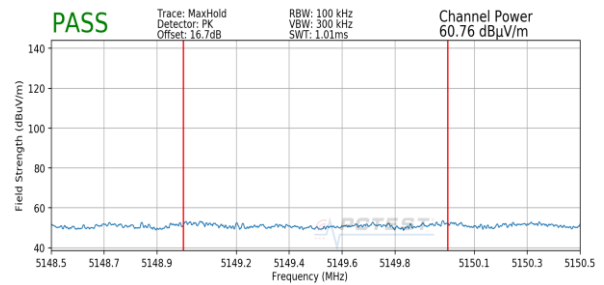
FCC ID: A3LSMA528B	 PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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7.6.4 Radiated Band Edge Measurements (80MHz BW) §15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

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

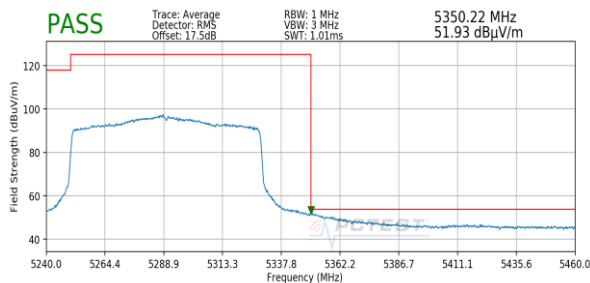


Plot 7-153. Radiated Lower Band Edge Plot (Average – UNII Band 1)

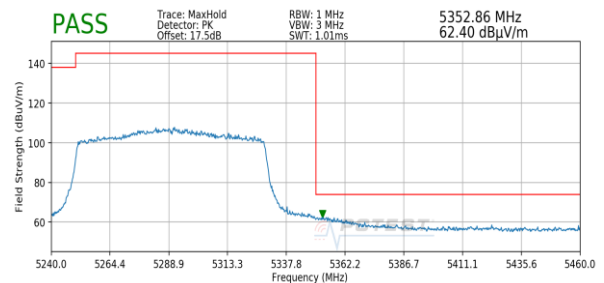


Plot 7-154. Radiated Lower Band Edge Plot (Peak – UNII Band 1)

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



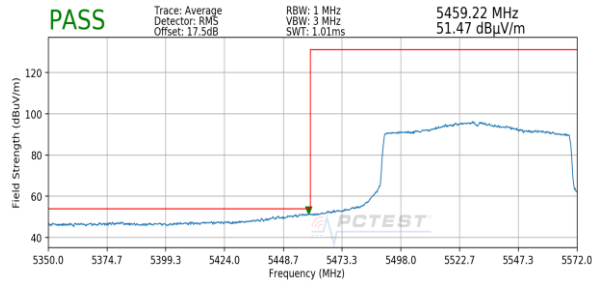
Plot 7-155. Radiated Upper Band Edge Plot (Average – UNII Band 2A)



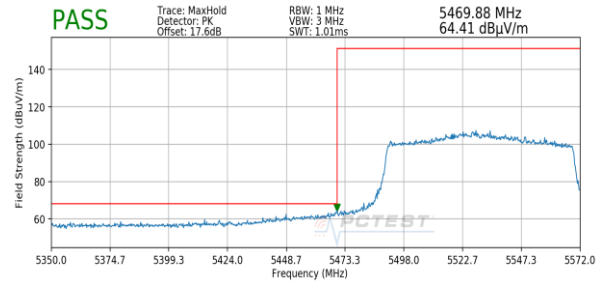
Plot 7-156. Radiated Upper Band Edge Plot (Peak – UNII Band 2A)

FCC ID: A3LSMA528B		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 Distance of Measurements: 3 Meters
 Operating Frequency: 5530MHz
 Channel: 106

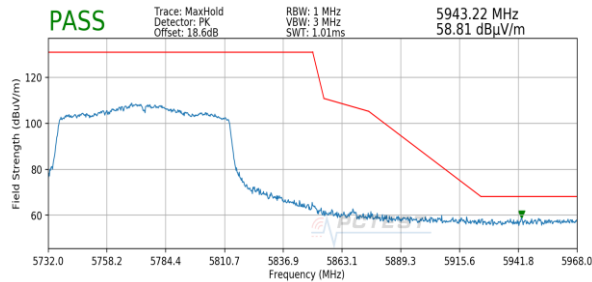


Plot 7-157. Radiated Lower Band Edge Plot (Average – UNII Band 2C)



Plot 7-158. Radiated Lower Band Edge Plot (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 7-159. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: A3LSMA528B	 Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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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 7-22 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 7-22. 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: A3LSMA528B		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Test Setup

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

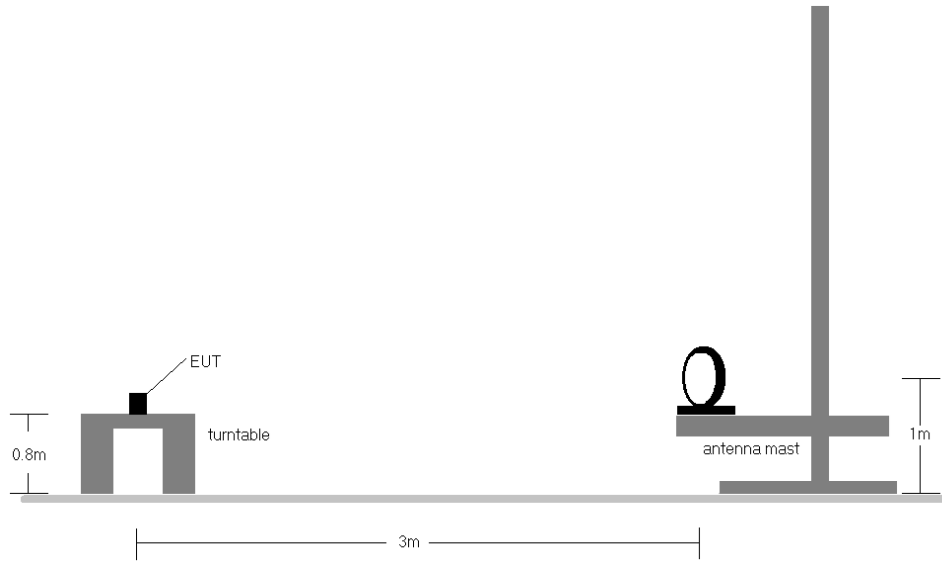


Figure 7-6. Radiated Test Setup < 30MHz

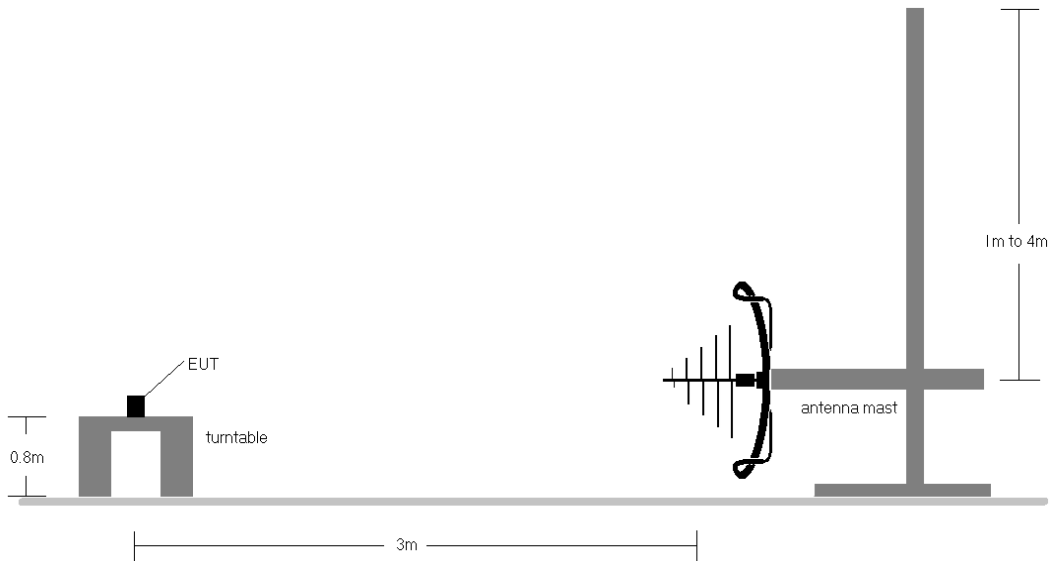


Figure 7-7. Radiated Test Setup < 1GHz

FCC ID: A3LSMA528B	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2106280072-08.A3L	Test Dates: 06/30/2021 - 07/16/2021	EUT Type: Portable Handset		Page 110 of 119

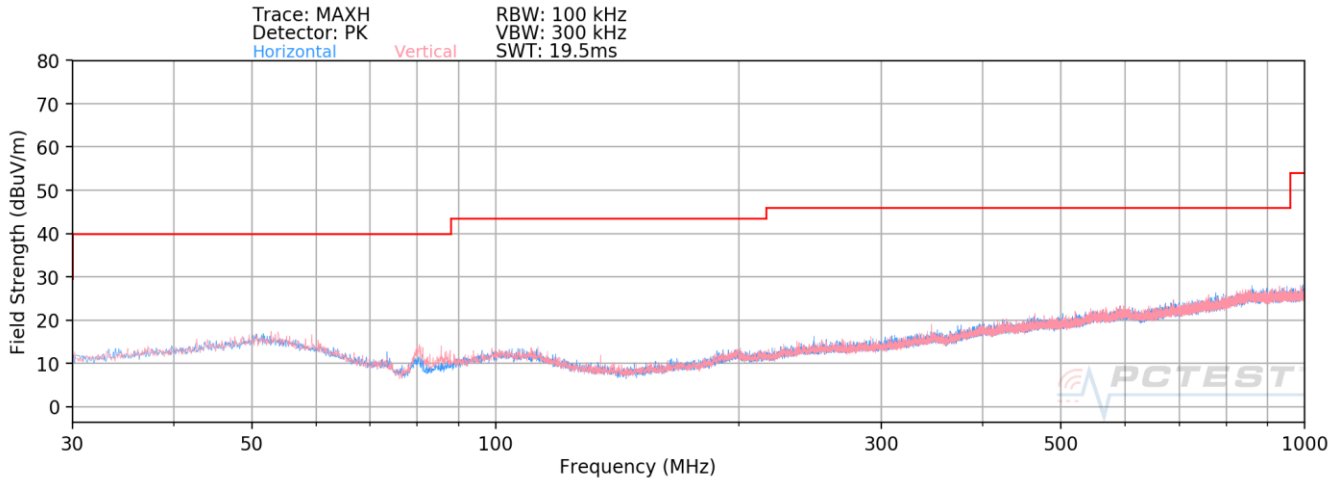
Test Notes

1. All emissions lying in restricted bands specified in §15.205 and RSS-Gen (8.10) are below the limit shown in Table 7-22.
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: A3LSMA528B		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Radiated Spurious Emissions Measurements (Below 1GHz)

§15.209; RSS-Gen [8.9]



Plot 7-160. Radiated Spurious Plot below 1GHz (802.11a – U3 Ch. 157)

FCC ID: A3LSMA528B		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical 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 (dB μ V)	
	Quasi-peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50

Table 7-23. 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.

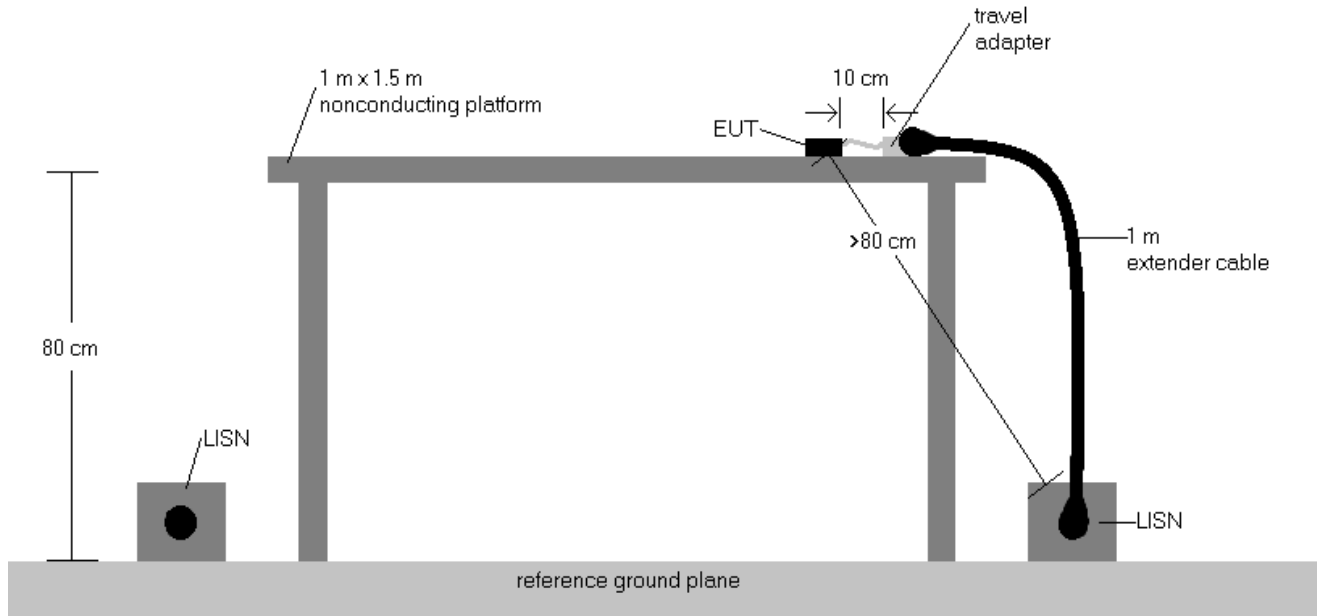
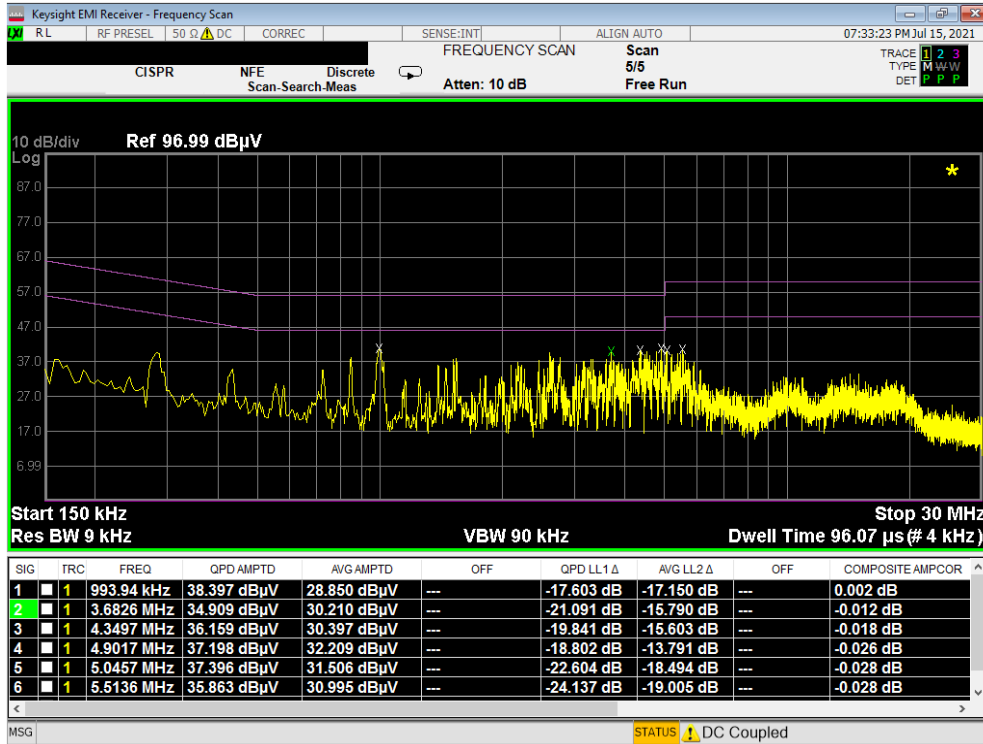


Figure 7-8. Test Instrument & Measurement Setup

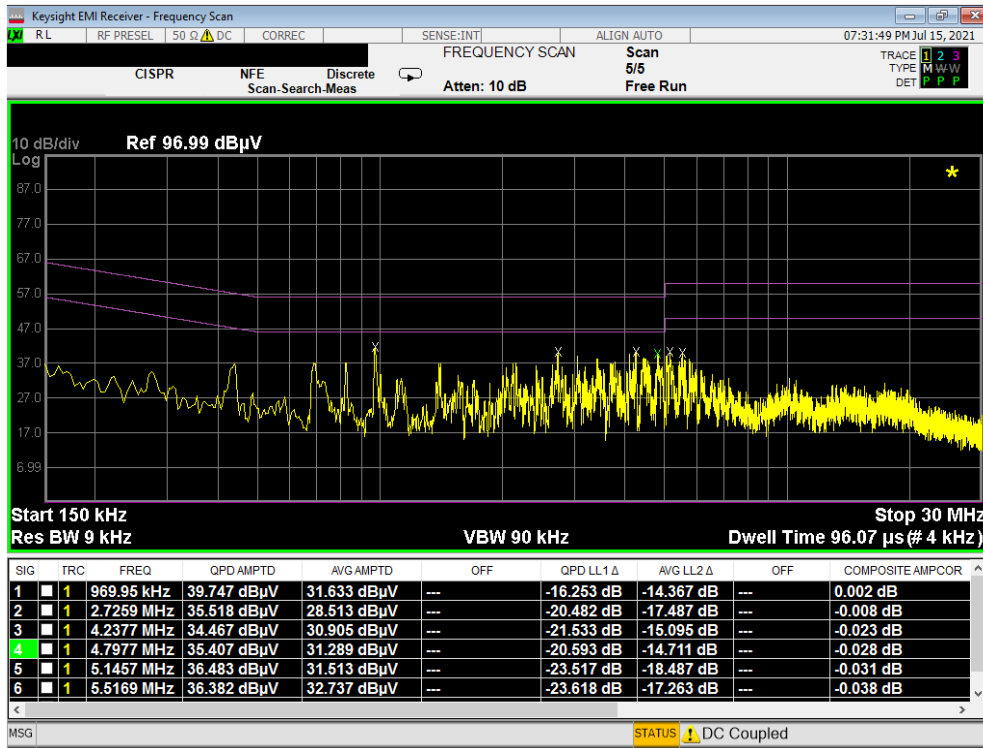
Test Notes

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. $Corr. (dB) = Cable\ loss (dB) + LISN\ insertion\ factor (dB)$
4. $QP/AV\ Level (dB\mu V) = QP/AV\ Analyzer/Receiver\ Level (dB\mu V) + Corr. (dB)$
5. $Margin (dB) = QP/AV\ Limit (dB\mu V) - QP/AV\ Level (dB\mu V)$
6. Traces shown in plot are made using a peak detector.
7. Deviations to the Specifications: None.

FCC ID: A3LSMA528B		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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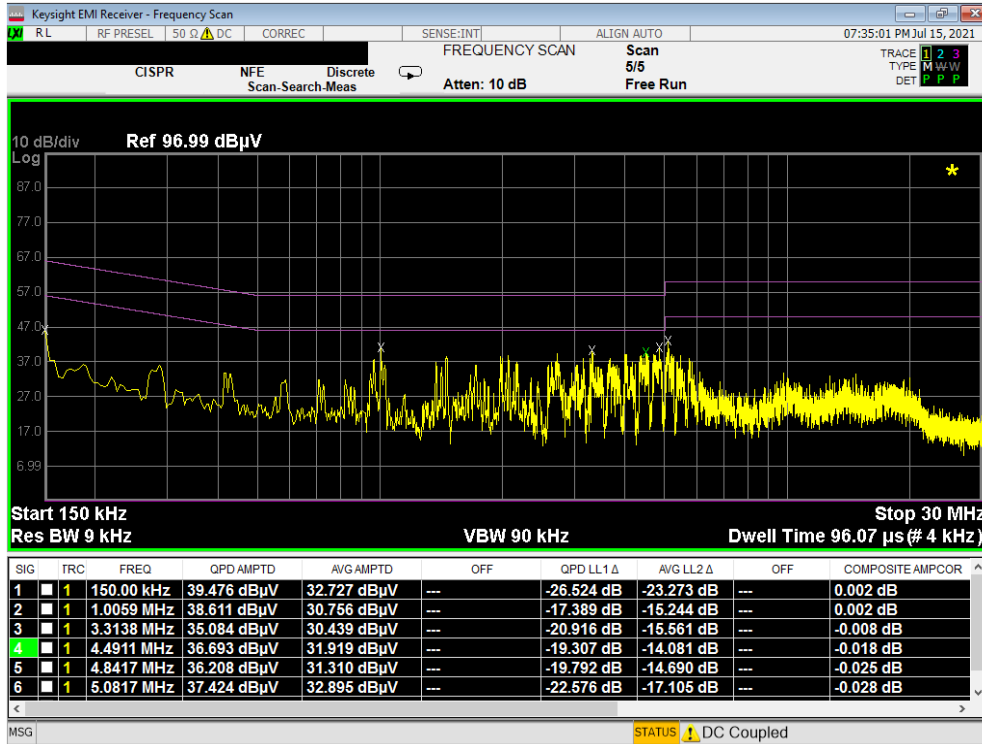


Plot 7-161. Line Conducted Plot with 802.11a UNII Band 1 (L1)

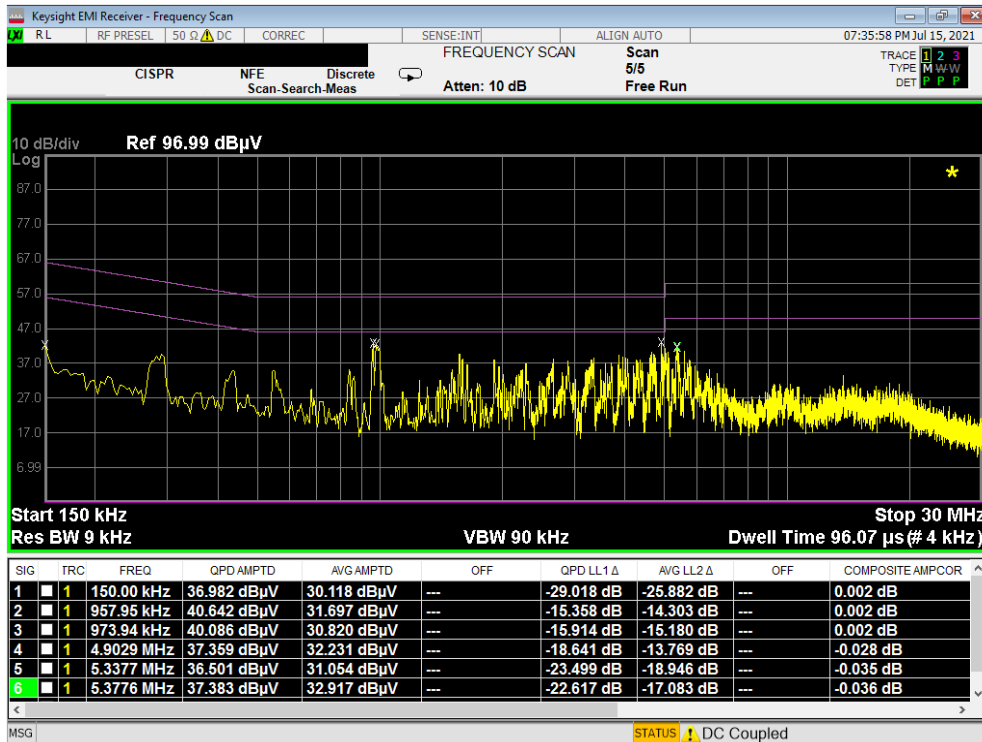


Plot 7-162. Line Conducted Plot with 802.11a UNII Band 1 (N)

FCC ID: A3LSMA528B	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2106280072-08.A3L	Test Dates: 06/30/2021 - 07/16/2021	EUT Type: Portable Handset		Page 115 of 119

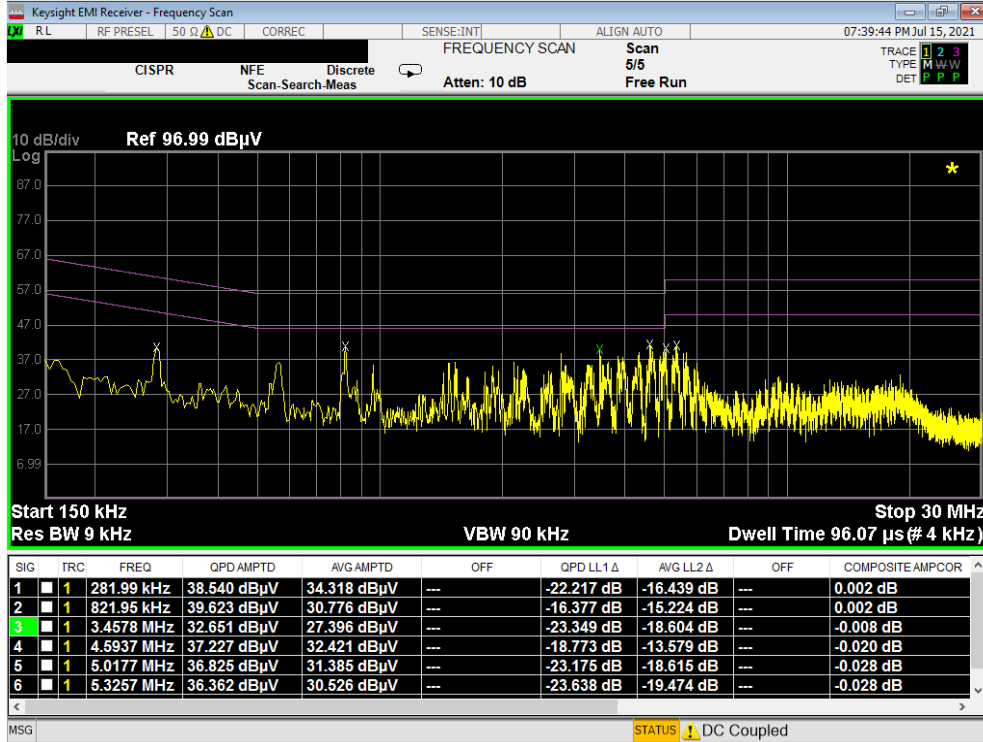


Plot 7-163. Line Conducted Plot with 802.11a UNII Band 2A (L1)

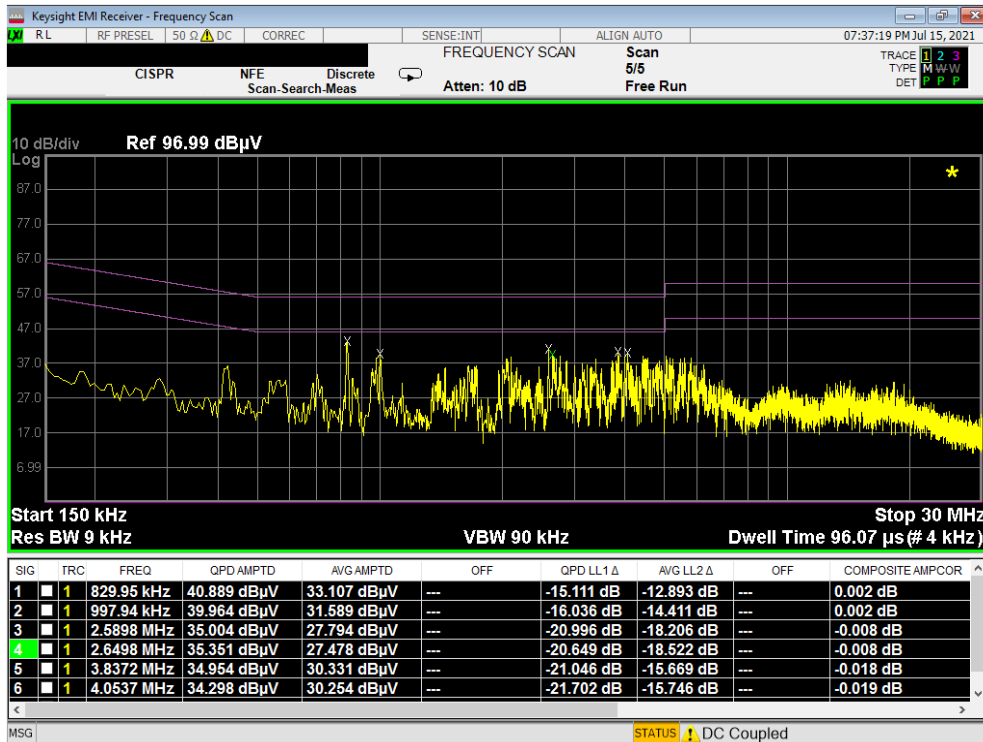


Plot 7-164. Line Conducted Plot with 802.11a UNII Band 2A (N)

FCC ID: A3LSMA528B		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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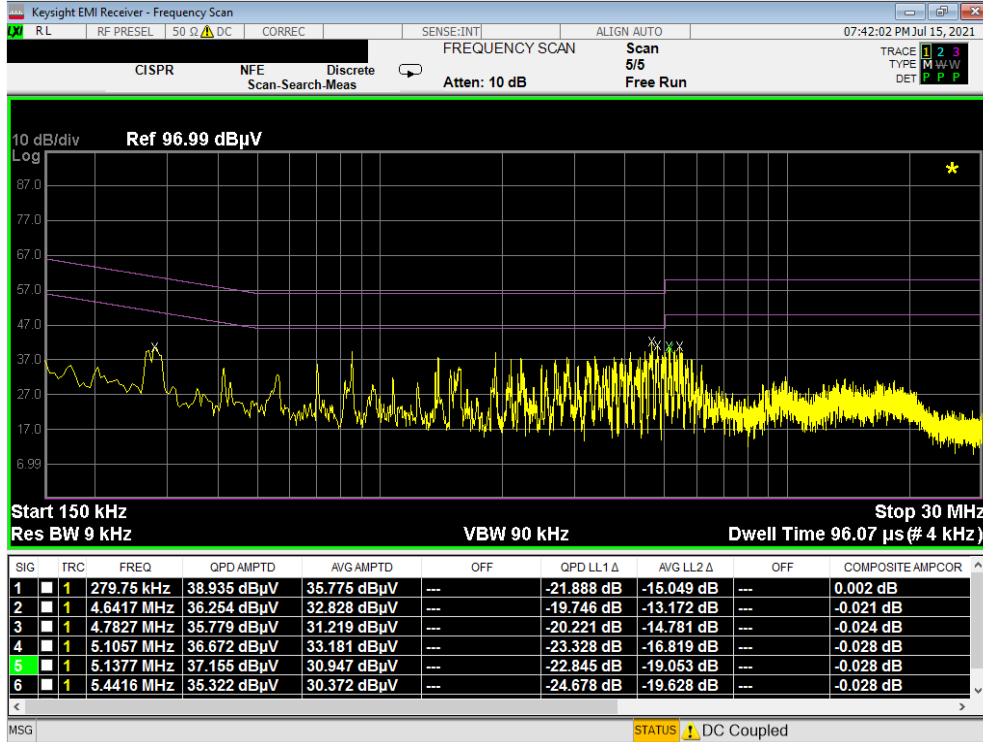


Plot 7-165. Line Conducted Plot with 802.11a UNII Band 2C (L1)

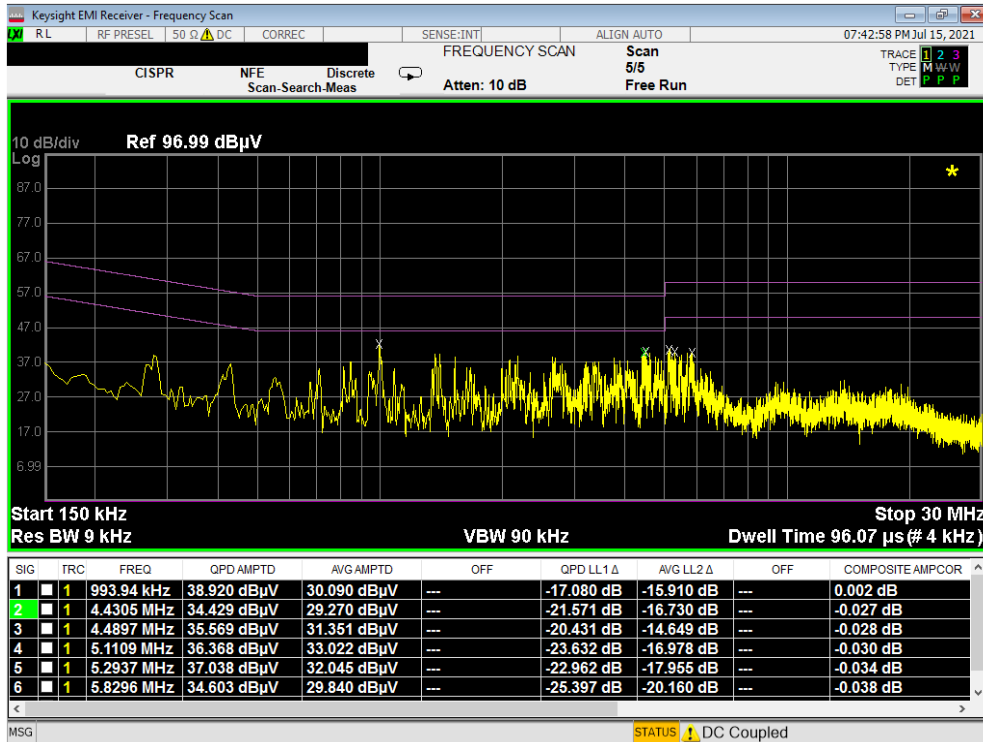


Plot 7-166. Line Conducted Plot with 802.11a UNII Band 2C (N)

FCC ID: A3LSMA528B	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Plot 7-167. Line Conducted Plot with 802.11a UNII Band 3 (L1)



Plot 7-168. Line Conducted Plot with 802.11a UNII Band 3 (N)

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8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMA528B** is in compliance with Part 15 Subpart E (15.407) of the FCC Rules.

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