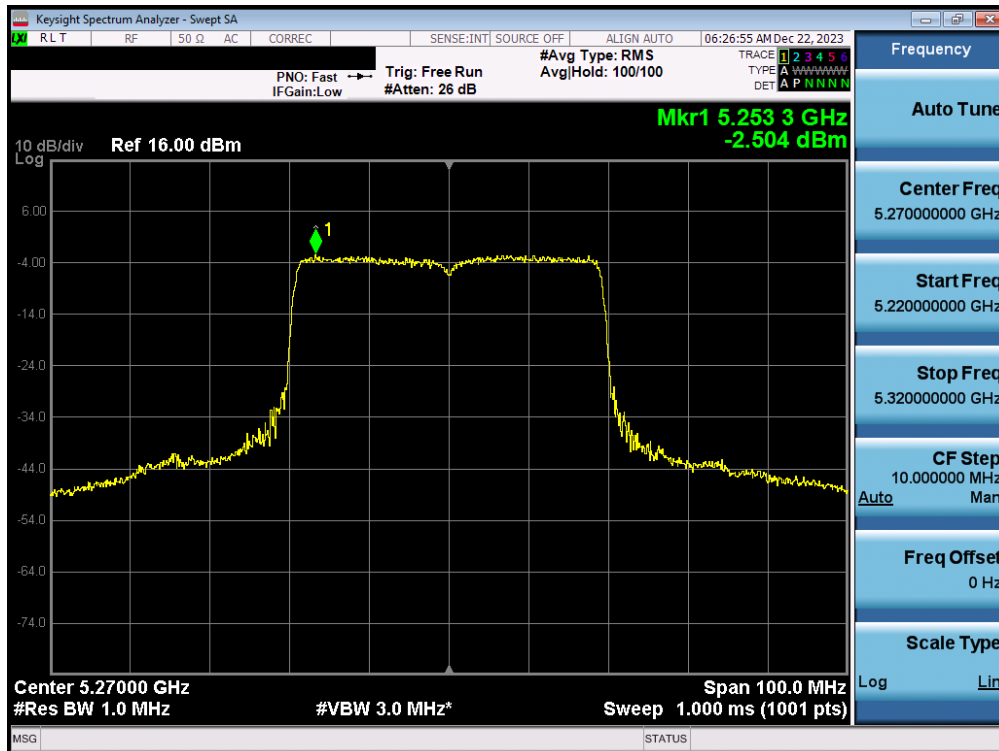
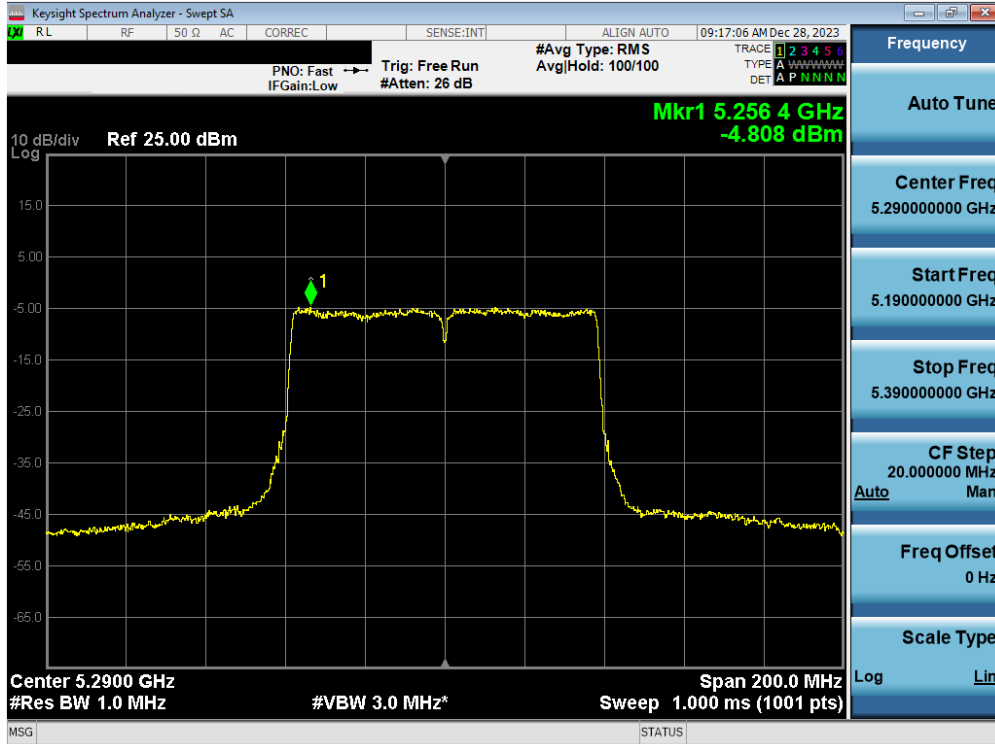


Plot 7-95. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11n (UNII Band 2A) – Ch. 54)

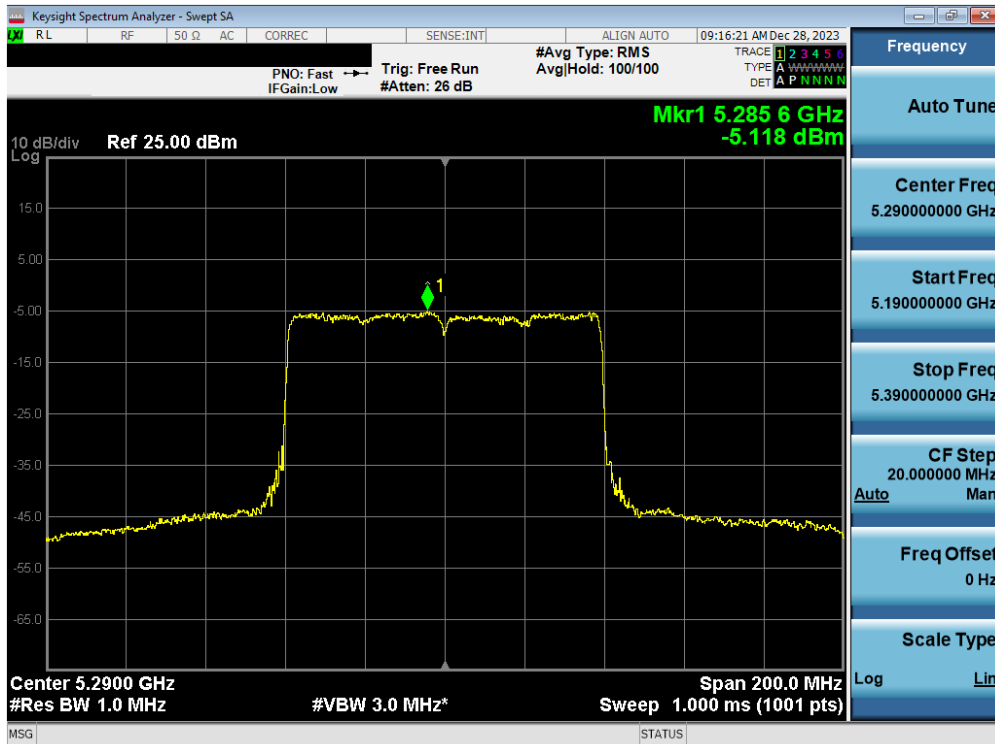


Plot 7-96. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax (UNII Band 2A) – Ch. 54)

FCC ID: A3LSMA356U	MEASUREMENT REPORT		Approved by: Technical Manager
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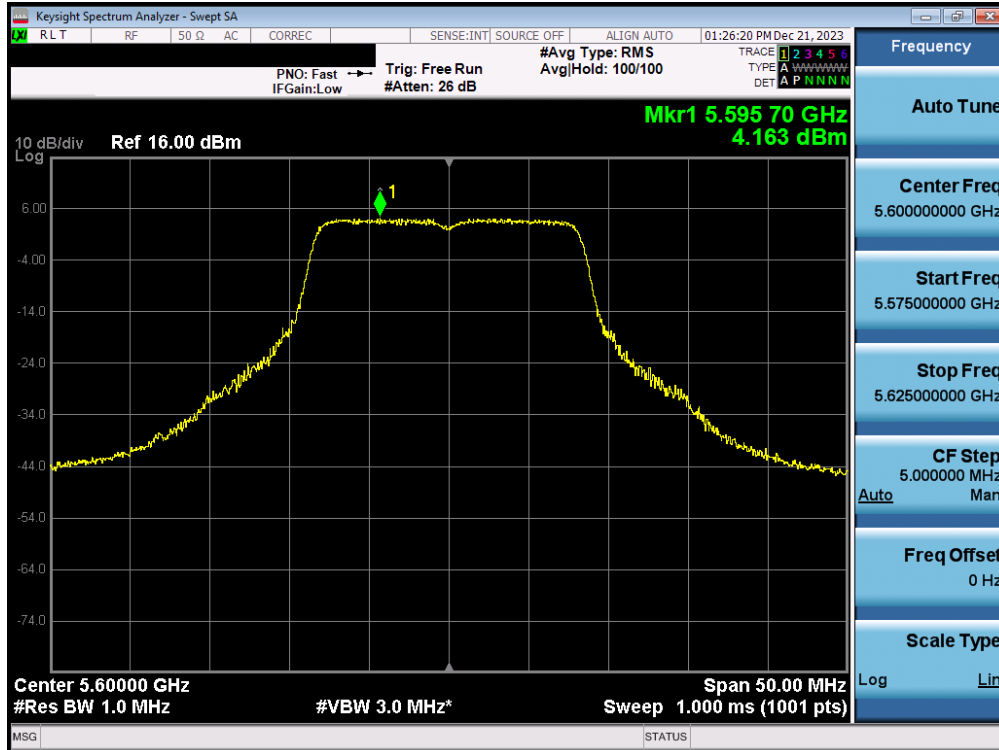


Plot 7-97. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ac (UNII Band 2A) – Ch. 58)

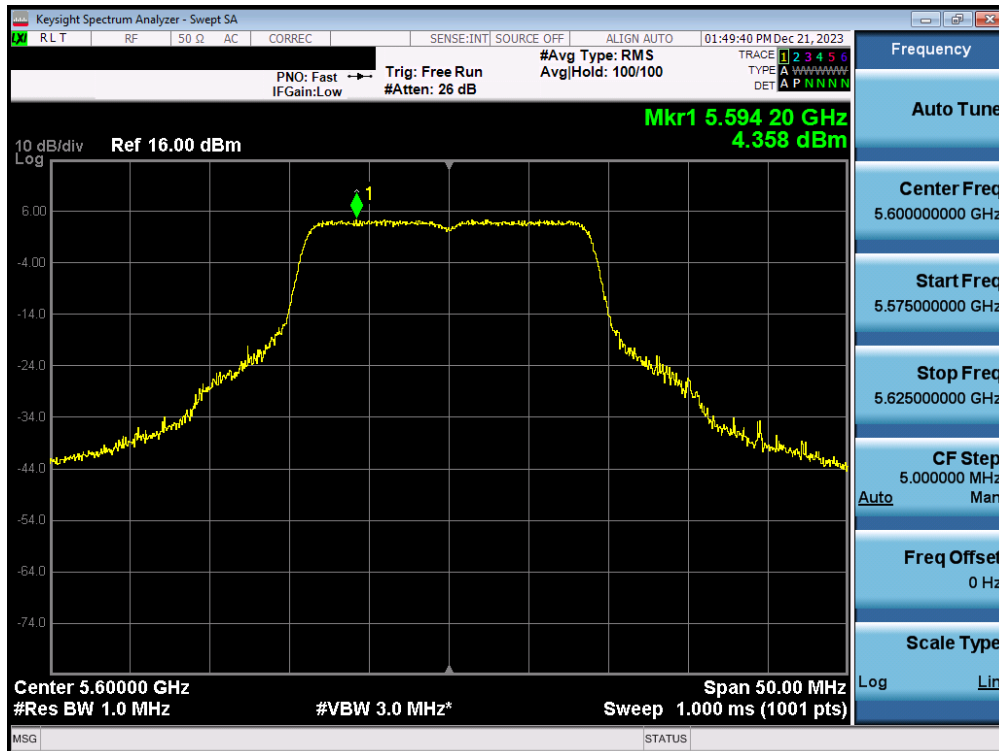


Plot 7-98. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax (UNII Band 2A) – Ch. 58)

FCC ID: A3LSMA356U	MEASUREMENT REPORT		Approved by: Technical Manager
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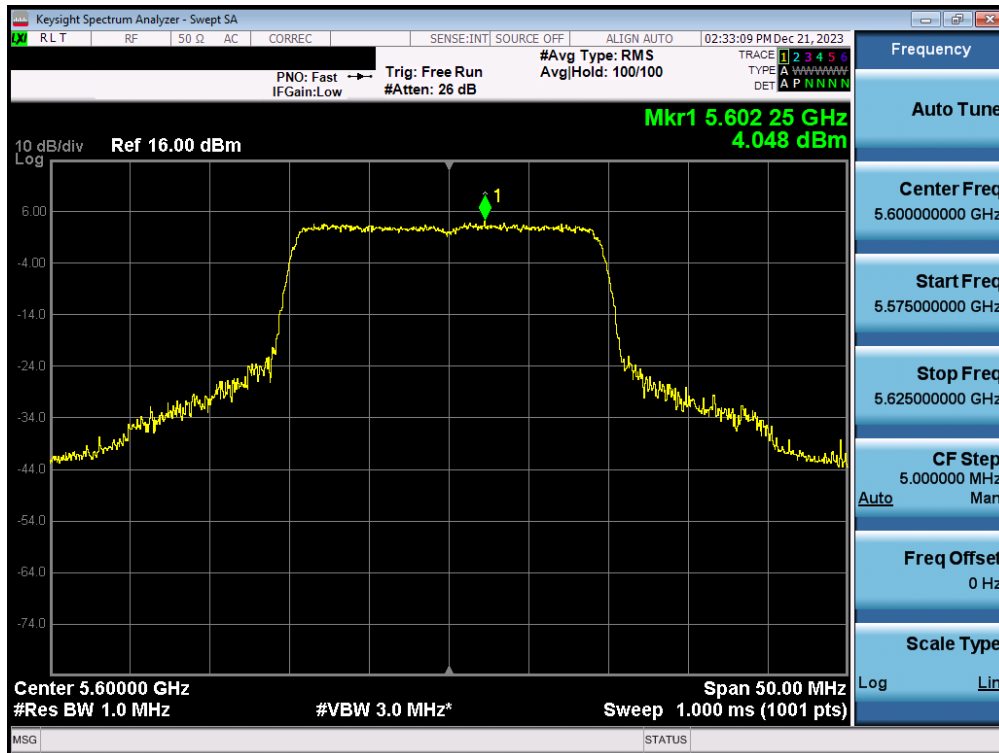


Plot 7-99. Power Spectral Density Plot MIMO ANT2 (802.11a (UNII Band 2C) – Ch. 120)

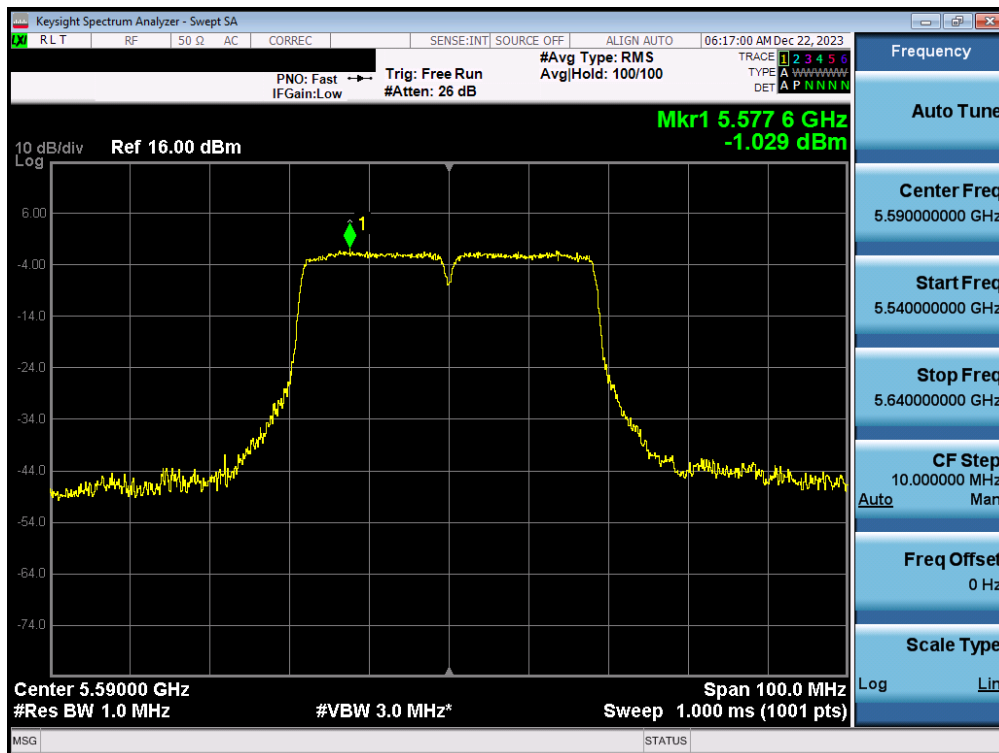


Plot 7-100. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11n (UNII Band 2C) – Ch. 120)

FCC ID: A3LSMA356U	MEASUREMENT REPORT		Approved by: Technical Manager
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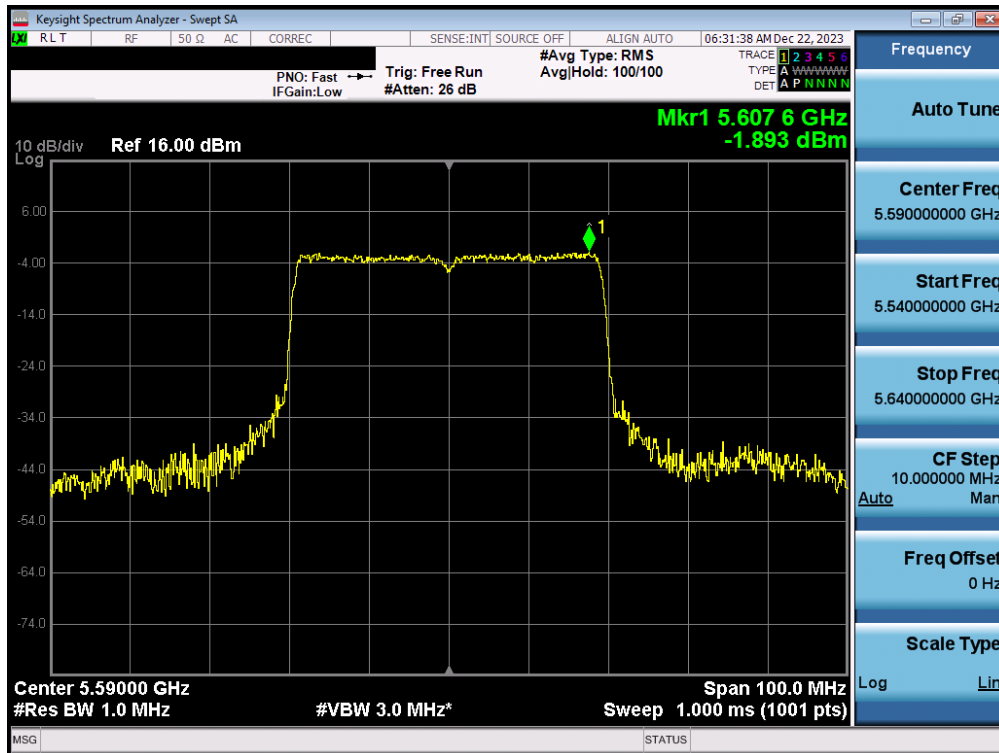


Plot 7-101. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax (UNII Band 2C) – Ch. 120)

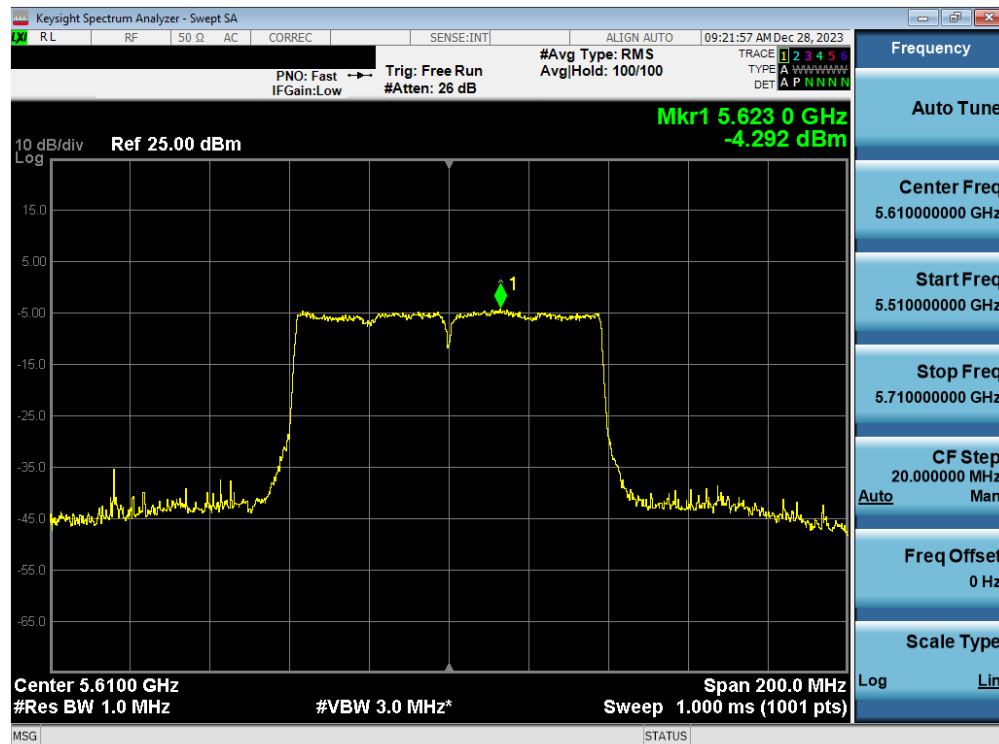


Plot 7-102. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11n (UNII Band 2C) – Ch. 118)

FCC ID: A3LSMA356U	MEASUREMENT REPORT		Approved by: Technical Manager
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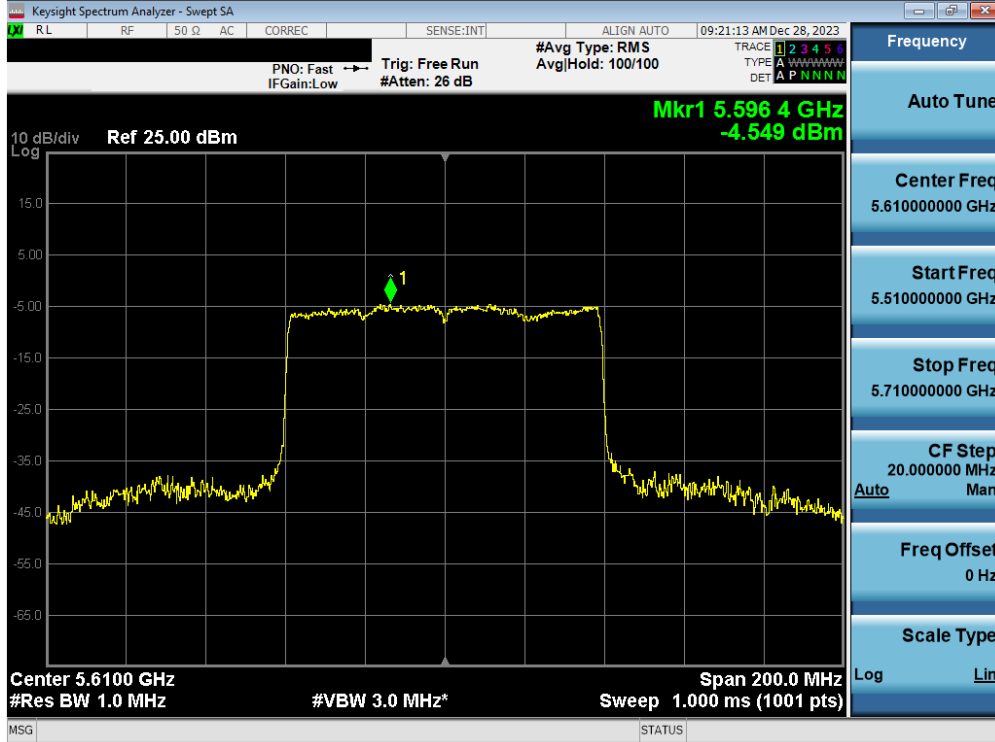


Plot 7-103. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax (UNII Band 2C) – Ch. 118)

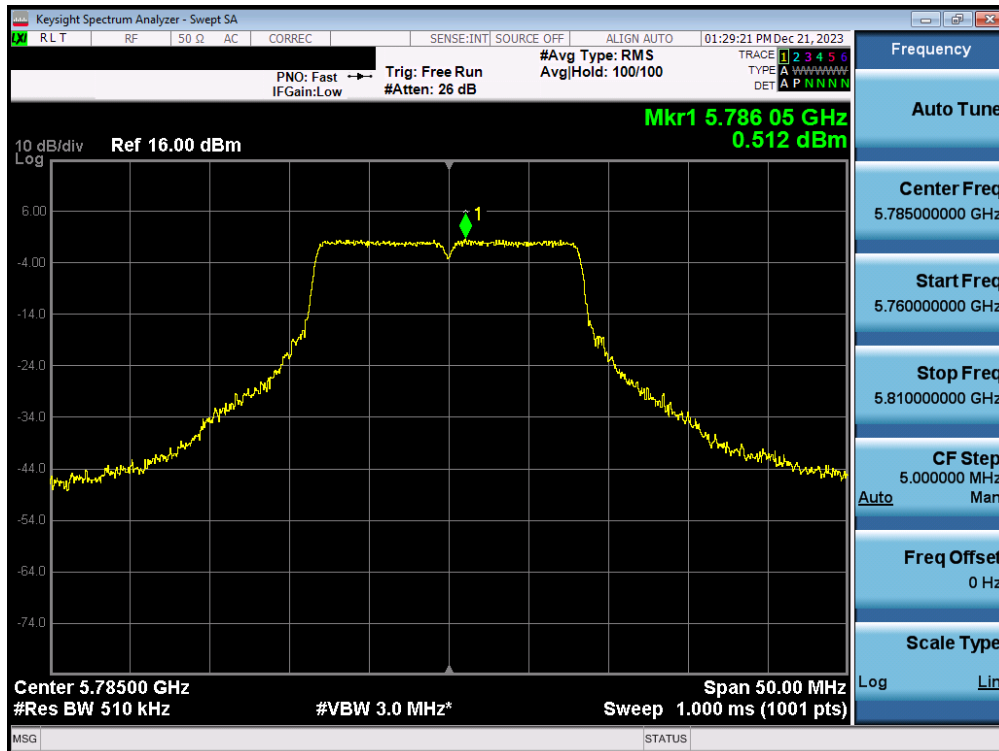


Plot 7-104. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ac (UNII Band 2C) – Ch. 122)

FCC ID: A3LSMA356U	MEASUREMENT REPORT		Approved by: Technical Manager
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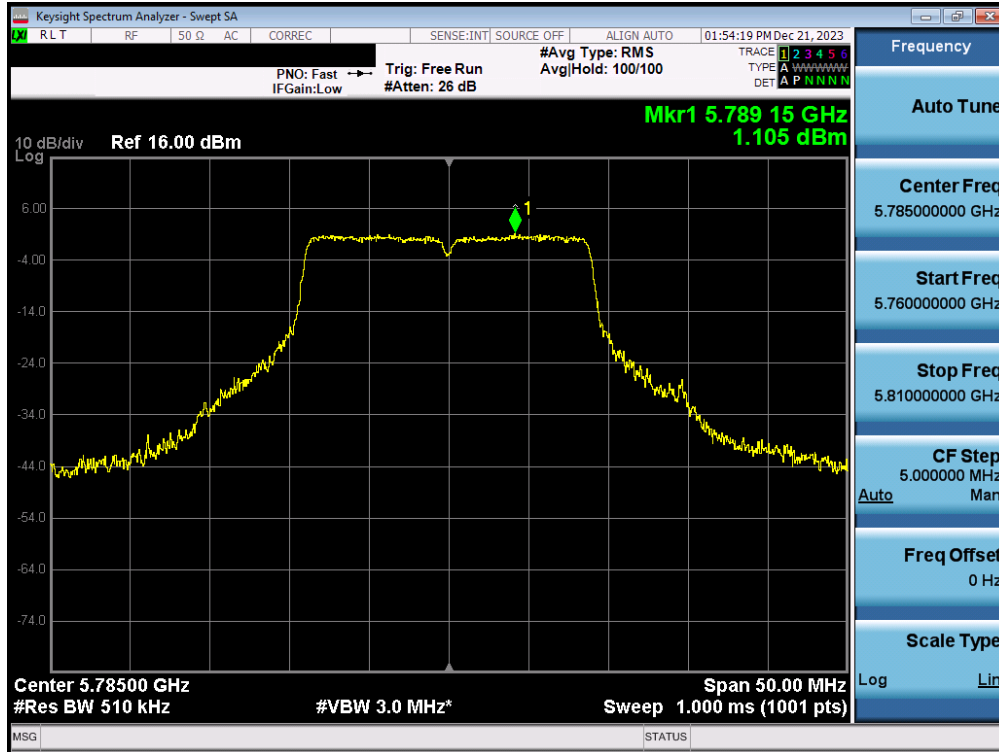


Plot 7-105. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax (UNII Band 2C) – Ch. 122)

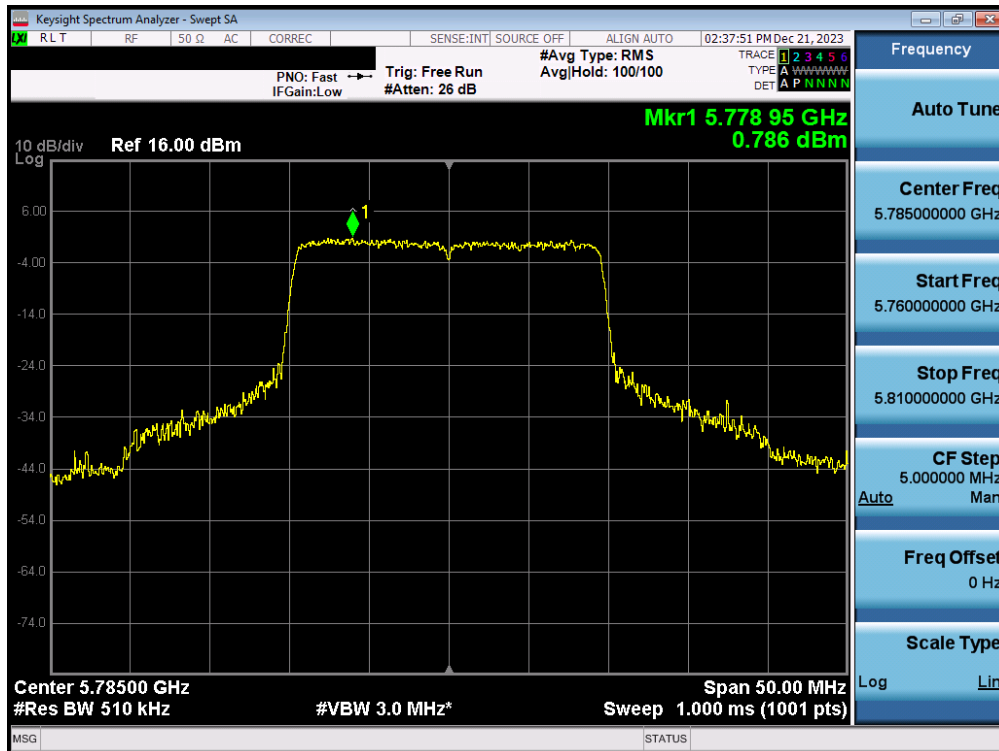


Plot 7-106. Power Spectral Density Plot MIMO ANT2 (802.11a (UNII Band 3) – Ch. 157)

FCC ID: A3LSMA356U	MEASUREMENT REPORT		Approved by: Technical Manager
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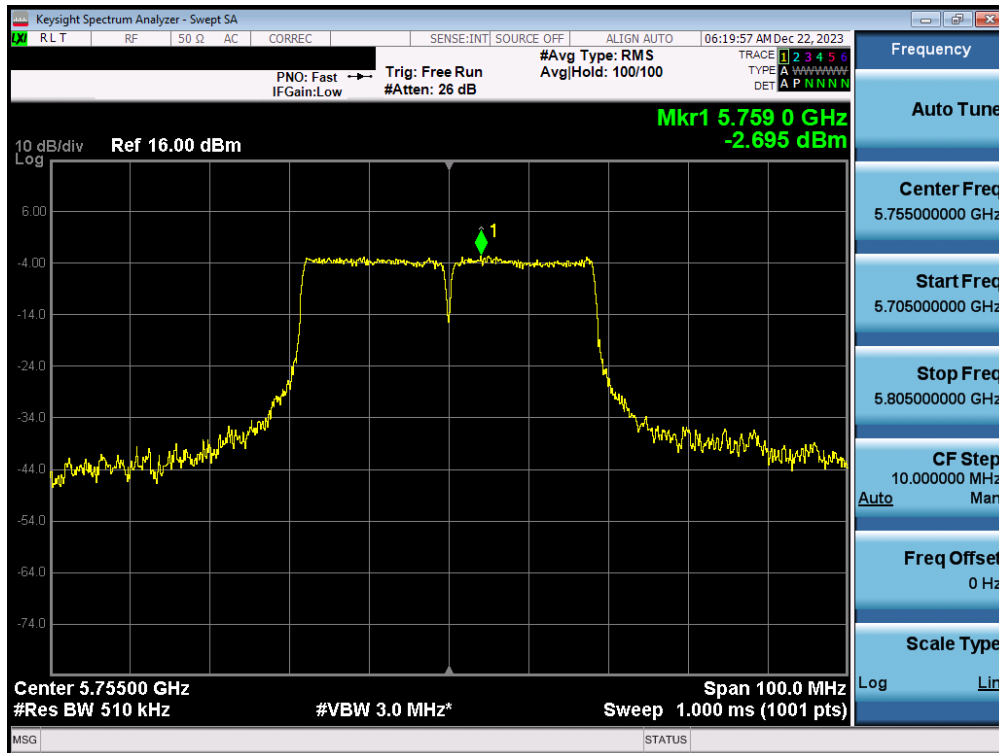


Plot 7-107. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11n (UNII Band 3) – Ch. 157)



Plot 7-108. Power Spectral Density Plot MIMO ANT2 (20MHz BW 802.11ax (UNII Band 3) – Ch. 157)

FCC ID: A3LSMA356U	MEASUREMENT REPORT		Approved by: Technical Manager
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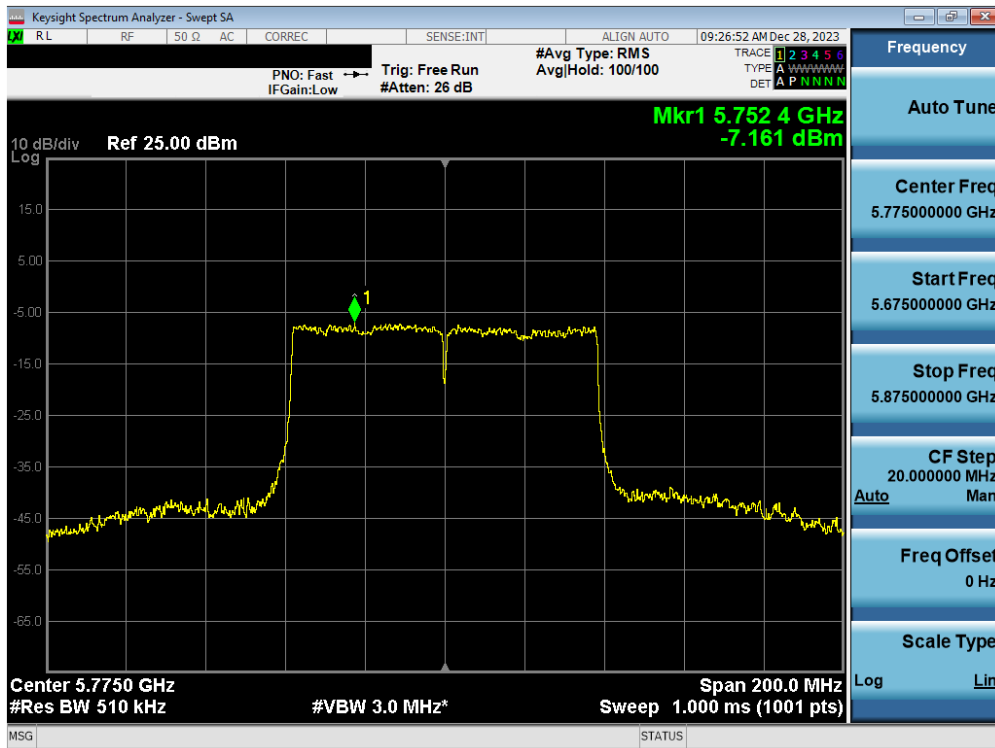
Plot 7-109. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11n (UNII Band 3) – Ch. 151)



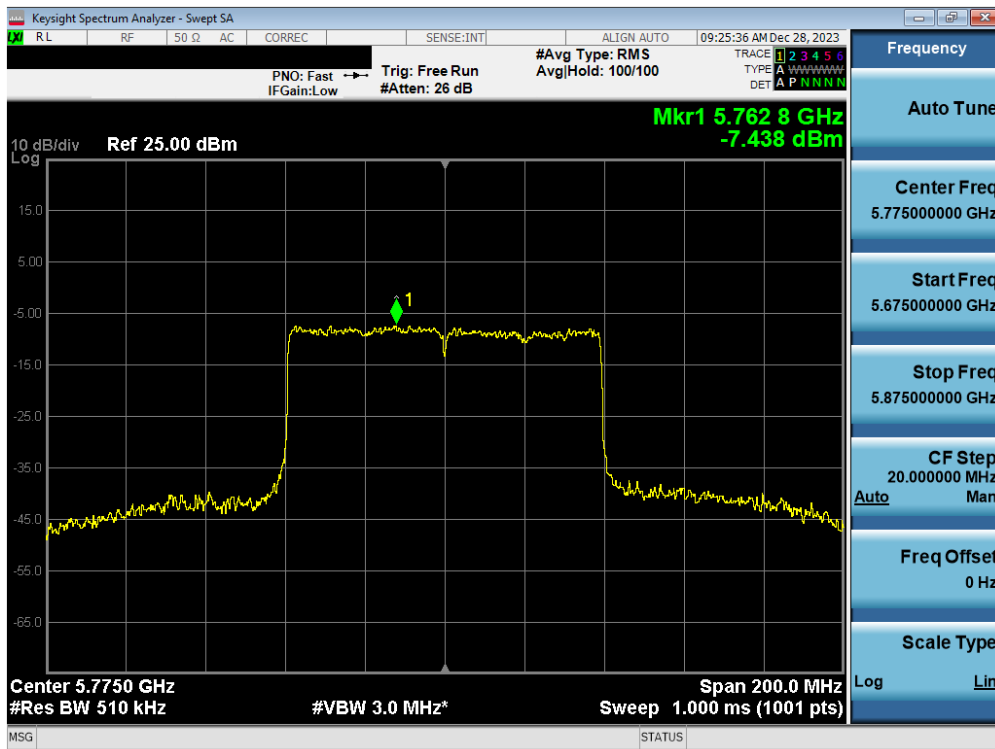
Plot 7-110. Power Spectral Density Plot MIMO ANT2 (40MHz BW 802.11ax (UNII Band 3) – Ch. 151)

FCC ID: A3LSMA356U	MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-111. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ac (UNII Band 3) – Ch. 155)



Plot 7-112. Power Spectral Density Plot MIMO ANT2 (80MHz BW 802.11ax (UNII Band 3) – Ch. 155)

FCC ID: A3LSMA356U	MEASUREMENT REPORT		Approved by: Technical Manager
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**Note:**

Per ANSI C63.10-2013 Section 14.3.2.2 and KDB 662911 v02r01 Section E)2), the power spectral density at Antenna-1 and Antenna-2 were first measured separately as shown in the section above. The measured values were then summed in linear power units then converted back to dBm.

**Sample MIMO Calculation:**

At 5180MHz in 802.11n (20MHz BW) mode, the average conducted power spectral density was measured to be 4.81 dBm for Antenna 1 and 3.38 dBm for Antenna 2.

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

$$(4.81 \text{ dBm} + 3.38 \text{ dBm}) = (3.03 \text{ mW} + 2.18 \text{ mW}) = 5.20 \text{ mW} = 7.16 \text{ dBm}$$

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## 7.6 Radiated Emission Measurements

### 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 at the appropriate frequencies. All channels, modes, and modulations/data rates were investigated among all UNII bands. Only the radiated emissions of the configuration that produced the worst-case emissions are reported in this section.

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

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

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

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

Frequency	Field Strength [ $\mu$ 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 7-15. Radiated Limits**

### Test Procedures Used

ANSI C63.10-2013 – Sections 12.7.7.2, 12.7.6, 12.7.5 (Radiated Spurious Emissions)

ANSI C63.10-2013 – Section 12.7.4.4 (Band Edge Measurements)

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**Test Settings – Above 1GHz**

**Average Field Strength Measurements (Method AD – Average Detection)**

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  $\geq 2 \times \text{span} \backslash \backslash \text{RBW}$ )
6. Sweep time = auto
7. Trace (RMS) averaging was performed over at least 100 traces.

**Peak Field Strength Measurements**

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.

**Test Settings – Below 1GHz**

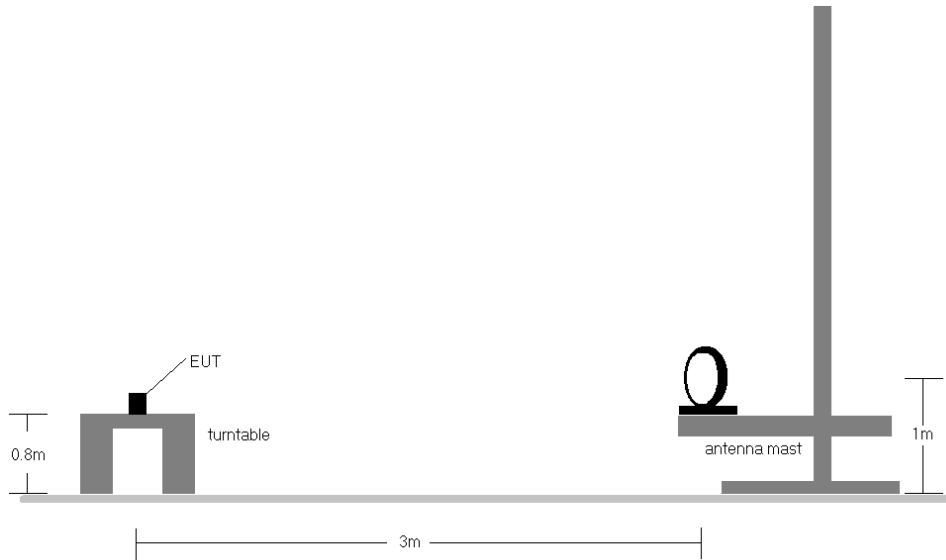
**Quasi-Peak Field Strength Measurements**

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.

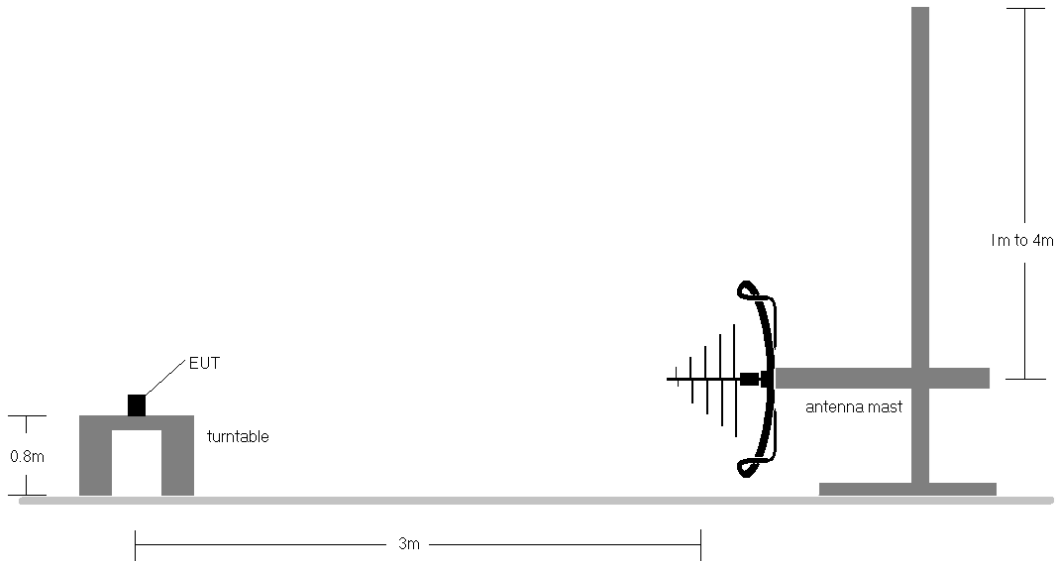
**Test Setup**

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

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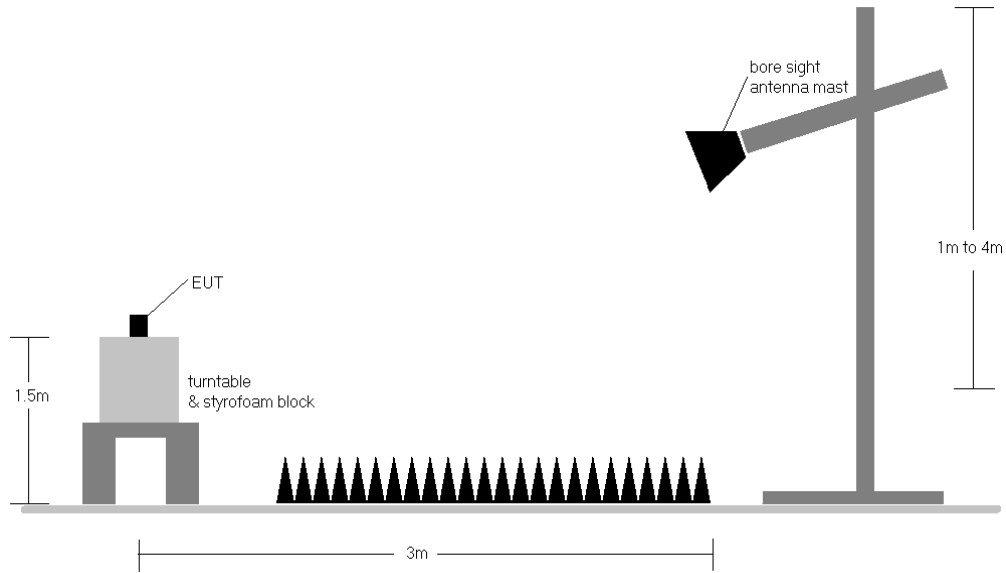


**Figure 7-5. Radiated Test Setup < 30MHz**



**Figure 7-6. Radiated Test Setup < 1GHz**

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**Figure 7-7. Radiated Test Setup > 1GHz**

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**Test Notes**

1. All spurious emissions lying in restricted bands specified in §15.205 are below the limits shown in §15.209. All spurious emissions that do not lie in a restricted band are subject to an average limit of -27dBm/MHz. At 3 meters, the field strength limit in dB $\mu$ V/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dB $\mu$ V/m.
2. All spurious emissions that do not lie in a restricted band are subject to a peak limit not to exceed 20dB of the average limit [68.2dB $\mu$ V/m]. If a peak measurement passes the average limit, it was determined no further investigation is necessary.
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. In the case where a peak-detector measurement passed the given RMS limit it was determined sufficient to demonstrate compliance.
10. The results recorded using the broadband antenna are 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.

**Sample Calculations**

**Determining Spurious Emissions Levels**

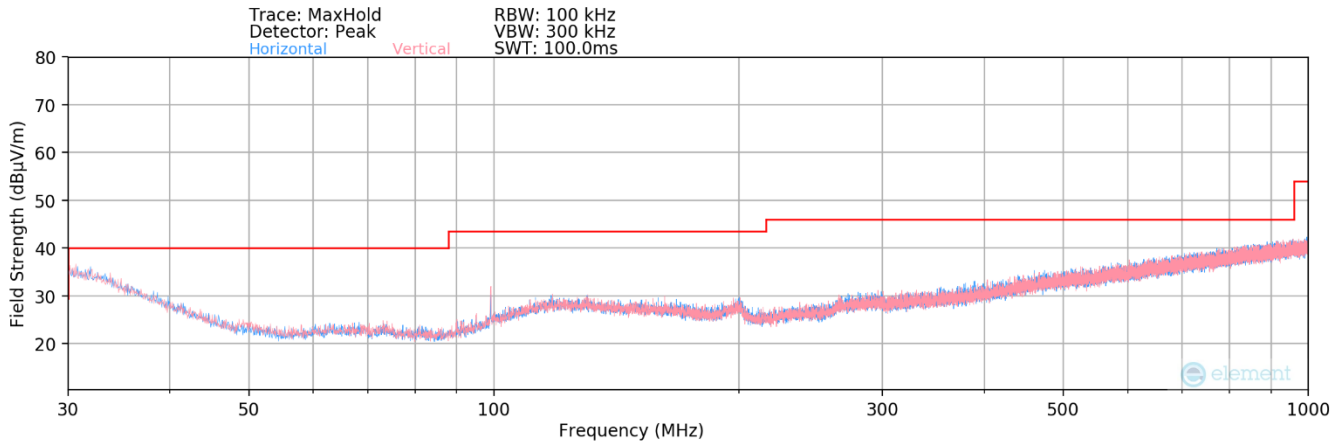
- Field Strength Level [dB $\mu$ V/m] = Analyzer Level [dBm] + 107 + AFCL [dB/m]
- AFCL [dB/m] = Antenna Factor [dB/m] + Cable Loss [dB]
- Margin [dB] = Field Strength Level [dB $\mu$ V/m] – Limit [dB $\mu$ V/m]

**Radiated Band Edge Measurement Offset**

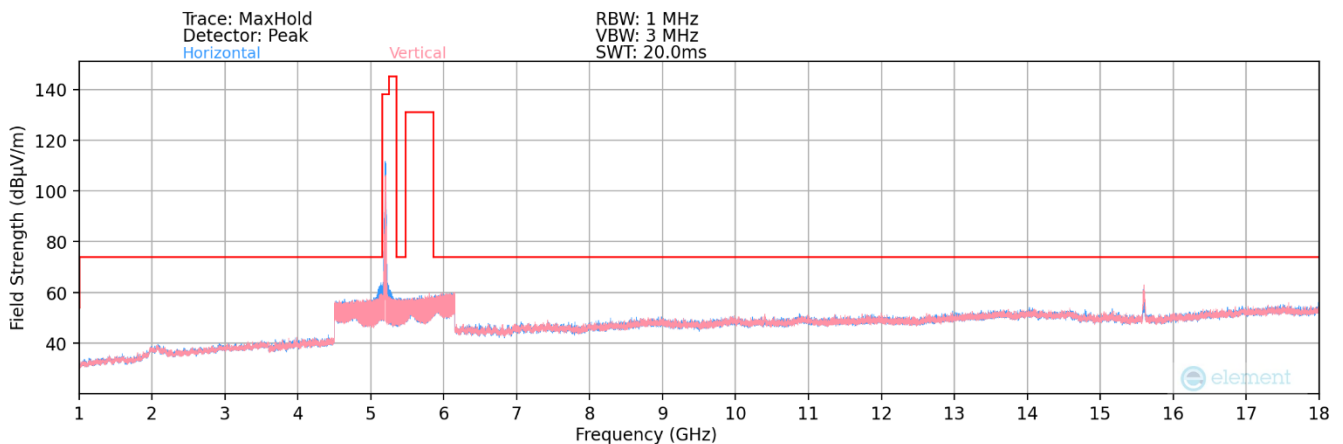
- The amplitude offset shown in the radiated restricted band edge plots was calculated using the formula:  
Offset (dB) = (Antenna Factor + Cable Loss + Attenuator) – Pre-amplifier Gain

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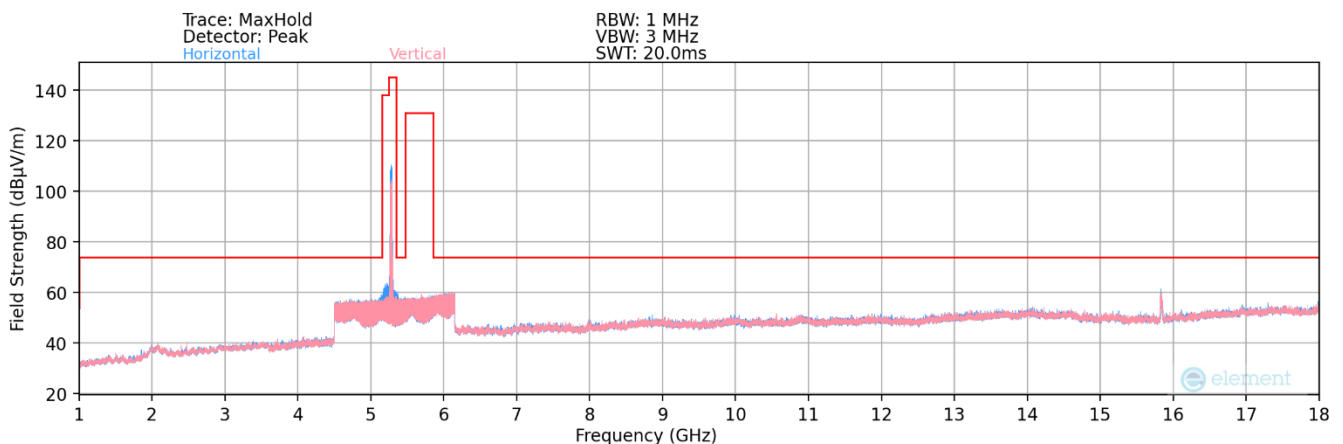
## 7.6.1 MIMO Radiated Spurious Emission Measurements



Plot 7-113. Radiated Spurious Plot below 1GHz MIMO (802.11a)



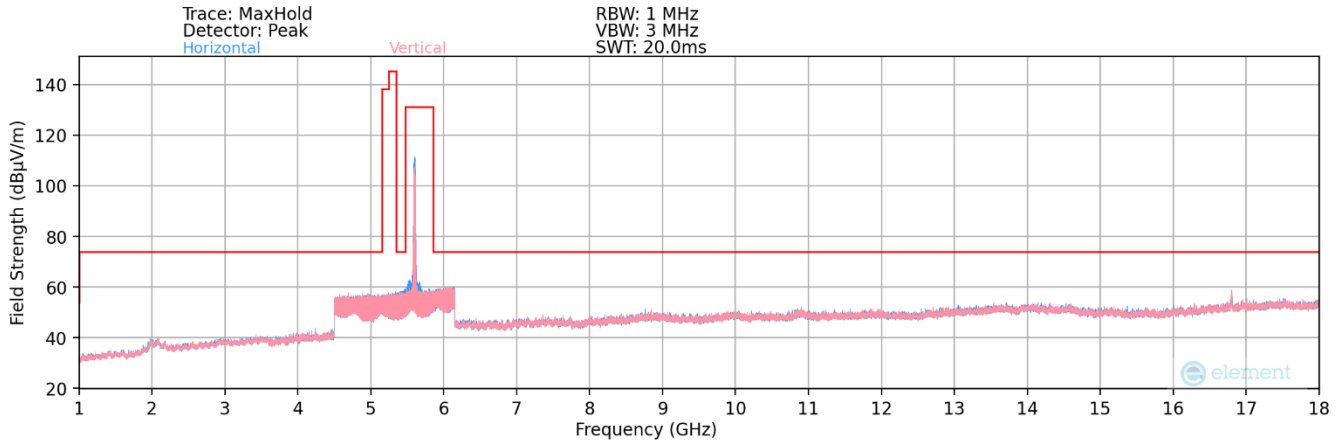
Plot 7-114. Radiated Spurious Plot above 1GHz MIMO (802.11ax – UNII Band 1 Ch. 40)



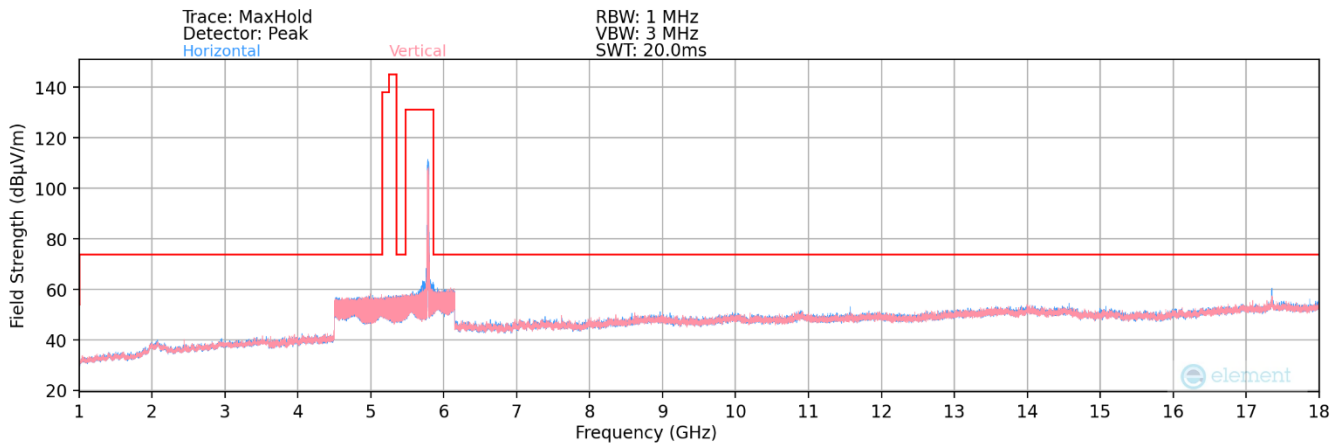
Plot 7-115. Radiated Spurious Plot above 1GHz MIMO (802.11ax – UNII Band 2A Ch. 56)

FCC ID: A3LSMA356U	MEASUREMENT REPORT		Approved by: Technical Manager
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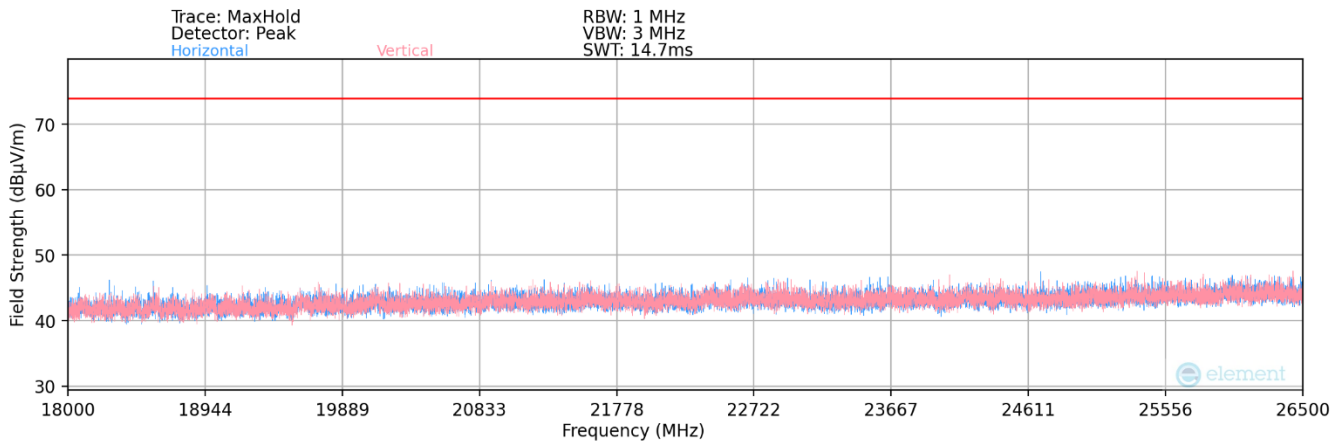




**Plot 7-116. Radiated Spurious Plot above 1GHz MIMO (802.11ax – UNII Band 2C Ch. 120)**

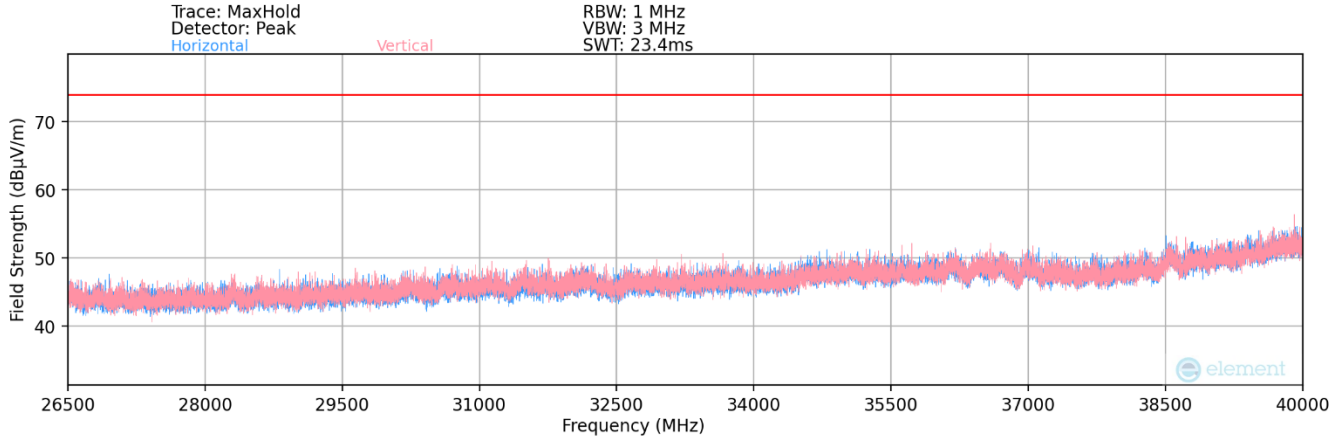


**Plot 7-117. Radiated Spurious Plot above 1GHz MIMO (802.11ax – UNII Band 3 Ch. 157)**



**Plot 7-118. Radiated Spurious Plot 18GHz – 26.5GHz MIMO (802.11ax)**

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**Plot 7-119. Radiated Spurious Plot 26.5GHz – 40GHz MIMO (802.11ax)**

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## MIMO Radiated Spurious Emission Measurements – UNII Band 1

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
10360.00	Peak	V	119	44	-65.19	12.12	0.00	53.93	68.20	-14.27
* 15540.00	Average	V	117	36	-73.15	14.11	0.00	47.96	53.98	-6.02
* 15540.00	Peak	V	117	36	-60.20	14.11	0.00	60.91	73.98	-13.07
* 20720.00	Average	V	-	-	-65.40	2.12	-9.54	34.17	53.98	-19.81
* 20720.00	Peak	V	-	-	-55.69	2.12	-9.54	43.88	73.98	-30.10
25900.00	Peak	V	-	-	-55.42	4.33	-9.54	46.37	68.20	-21.83

**Table 7-16. Radiated Measurements MIMO**

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
10400.00	Peak	V	118	45	-65.05	12.37	0.00	54.32	68.20	-13.88
* 15600.00	Average	V	118	30	-73.63	14.22	0.00	47.59	53.98	-6.39
* 15600.00	Peak	V	118	30	-59.69	14.22	0.00	61.53	73.98	-12.45
* 20800.00	Average	V	-	-	-65.69	2.34	-9.54	34.11	53.98	-19.87
* 20800.00	Peak	V	-	-	-56.62	2.34	-9.54	43.18	73.98	-30.80
26000.00	Peak	V	-	-	-56.22	4.46	-9.54	45.69	68.20	-22.51

**Table 7-17. Radiated Measurements MIMO**

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10480.00	Peak	V	118	43	-65.62	13.08	0.00	54.46	68.20	-13.74
* 15720.00	Average	V	117	28	-72.03	14.65	0.00	49.62	53.98	-4.36
* 15720.00	Peak	V	117	28	-58.68	14.65	0.00	62.97	73.98	-11.01
* 20960.00	Average	V	-	-	-66.36	2.48	-9.54	33.57	53.98	-20.41
* 20960.00	Peak	V	-	-	-56.28	2.48	-9.54	43.65	73.98	-30.33
26200.00	Peak	V	-	-	-55.98	4.69	-9.54	46.17	68.20	-22.03

**Table 7-18. Radiated Measurements MIMO**

FCC ID: A3LSMA356U	MEASUREMENT REPORT		Approved by: Technical Manager
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## MIMO Radiated Spurious Emission Measurements – UNII Band 2A

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
10520.00	Peak	V	125	43	-65.59	12.95	0.00	54.36	68.20	-13.84
* 15780.00	Average	V	117	29	-74.06	14.23	0.00	47.17	53.98	-6.81
* 15780.00	Peak	V	117	29	-60.63	14.23	0.00	60.60	73.98	-13.38
* 21040.00	Average	V	-	-	-65.42	2.59	-9.54	34.63	53.98	-19.35
* 21040.00	Peak	V	-	-	-55.68	2.59	-9.54	44.37	73.98	-29.61
26300.00	Peak	V	-	-	-55.83	4.68	-9.54	46.31	68.20	-21.89

**Table 7-19. Radiated Measurements MIMO**

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
10560.00	Peak	V	119	37	-66.13	12.97	0.00	53.84	68.20	-14.36
* 15840.00	Average	V	118	28	-72.87	14.09	0.00	48.22	53.98	-5.76
* 15840.00	Peak	V	118	28	-59.37	14.09	0.00	61.72	73.98	-12.26
* 21120.00	Average	V	-	-	-65.38	2.68	-9.54	34.75	53.98	-19.22
* 21120.00	Peak	V	-	-	-55.72	2.68	-9.54	44.41	73.98	-29.56
26400.00	Peak	V	-	-	-56.04	4.70	-9.54	46.12	68.20	-22.08

**Table 7-20. Radiated Measurements MIMO**

FCC ID: A3LSMA356U	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2311010111-13-R1.A3L	Test Dates: 11/07-12/22/2023	EUT Type: Portable Handset	Page 98 of 116



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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 10640.00	Average	V	124	41	-76.72	12.51	0.00	42.79	53.98	-11.19
* 10640.00	Peak	V	124	41	-65.50	12.51	0.00	54.01	73.98	-19.97
* 15960.00	Average	V	132	54	-75.43	15.27	0.00	46.84	53.98	-7.14
* 15960.00	Peak	V	132	54	-62.59	15.27	0.00	59.68	73.98	-14.30
* 21280.00	Average	V	-	-	-65.35	2.67	-9.54	34.77	53.98	-19.21
* 21280.00	Peak	V	-	-	-56.39	2.67	-9.54	43.73	73.98	-30.25
26600.00	Peak	V	-	-	-55.42	4.59	-9.54	46.63	68.20	-21.57

**Table 7-21. Radiated Measurements MIMO**

<b>FCC ID:</b> A3LSMA356U	<b>MEASUREMENT REPORT</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2311010111-13-R1.A3L	<b>Test Dates:</b> 11/07-12/22/2023	<b>EUT Type:</b> Portable Handset	Page 99 of 116



## MIMO Radiated Spurious Emission Measurements – UNII Band 2C

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11000.00	Average	V	383	32	-75.87	12.66	0.00	43.79	53.98	-10.19
* 11000.00	Peak	V	383	32	-64.04	12.66	0.00	55.62	73.98	-18.36
16500.00	Peak	V	179	319	-63.88	15.81	0.00	58.93	68.20	-9.27
22000.00	Peak	V	-	-	-56.48	2.95	-9.54	43.93	68.20	-24.27
27500.00	Peak	V	-	-	-55.98	4.79	-9.54	46.27	68.20	-21.93

**Table 7-22. Radiated Measurements MIMO**

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11200.00	Average	V	379	32	-75.85	12.68	0.00	43.83	53.98	-10.15
* 11200.00	Peak	V	379	32	-64.01	12.68	0.00	55.67	73.98	-18.31
16800.00	Peak	V	380	40	-67.29	16.36	0.00	56.07	68.20	-12.13
* 22400.00	Average	V	-	-	-65.48	3.11	-9.54	35.09	53.98	-18.89
* 22400.00	Peak	V	-	-	-55.46	3.11	-9.54	45.11	73.98	-28.87
28000.00	Peak	V	-	-	-55.32	4.95	-9.54	47.09	68.20	-21.11

**Table 7-23. Radiated Measurements MIMO**

FCC ID: A3LSMA356U	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2311010111-13-R1.A3L	Test Dates: 11/07-12/22/2023	EUT Type: Portable Handset	Page 100 of 116

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11440.00	Average	V	250	345	-78.10	13.54	0.00	42.44	53.98	-11.54
* 11440.00	Peak	V	250	345	-67.36	13.54	0.00	53.18	73.98	-20.80
17160.00	Peak	V	262	346	-63.18	16.79	0.00	60.61	68.20	-7.59
* 22880.00	Average	V	-	-	-65.42	3.05	-9.54	35.09	53.98	-18.89
* 22880.00	Peak	V	-	-	-56.53	3.05	-9.54	43.98	73.98	-30.00
28600.00	Peak	V	-	-	-55.48	4.92	-9.54	46.90	68.20	-21.30

**Table 7-24. Radiated Measurements MIMO**

FCC ID: A3LSMA356U	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2311010111-13-R1.A3L	Test Dates: 11/07-12/22/2023	EUT Type: Portable Handset	Page 101 of 116





### MIMO Radiated Spurious Emission Measurements – UNII Band 3

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
* 11490.00	Average	V	264	346	-77.40	13.10	0.00	42.70	53.98	-11.28
* 11490.00	Peak	V	264	346	-67.12	13.10	0.00	52.98	73.98	-21.00
17235.00	Peak	V	234	27	-61.61	16.91	0.00	62.30	68.20	-5.90
* 22980.00	Average	V	-	-	-65.48	3.05	-9.54	35.03	53.98	-18.95
* 22980.00	Peak	V	-	-	-56.55	3.05	-9.54	43.96	73.98	-30.02
28725.00	Peak	V	-	-	-55.78	4.97	-9.54	46.65	68.20	-21.55

**Table 7-25. Radiated Measurements MIMO**

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

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
* 11570.00	Average	V	196	339	-75.67	12.96	0.00	44.29	53.98	-9.69
* 11570.00	Peak	V	196	339	-65.57	12.96	0.00	54.39	73.98	-19.59
17355.00	Peak	V	196	344	-64.90	17.83	0.00	59.93	68.20	-8.27
23140.00	Peak	V	-	-	-56.63	3.10	-9.54	43.93	68.20	-24.27
28925.00	Peak	V	-	-	-55.87	4.78	-9.54	46.36	68.20	-21.84

**Table 7-26. Radiated Measurements MIMO**

FCC ID: A3LSMA356U	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2311010111-13-R1.A3L	Test Dates: 11/07-12/22/2023	EUT Type: Portable Handset	Page 102 of 116

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

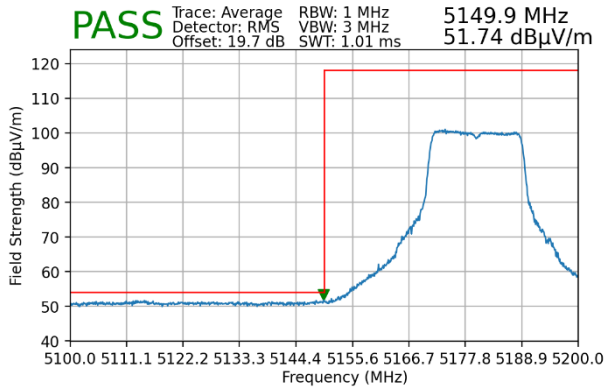
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11650.00	Average	V	162	345	-78.00	13.39	0.00	42.39	53.98	-11.59
* 11650.00	Peak	V	162	345	-67.88	13.39	0.00	52.51	73.98	-21.47
17475.00	Peak	V	158	351	-65.76	17.09	0.00	58.33	68.20	-9.87
23300.00	Peak	V	-	-	-55.87	3.28	-9.54	44.87	68.20	-23.33
29125.00	Peak	V	-	-	-56.35	4.84	-9.54	45.95	68.20	-22.25

**Table 7-27. Radiated Measurements MIMO**

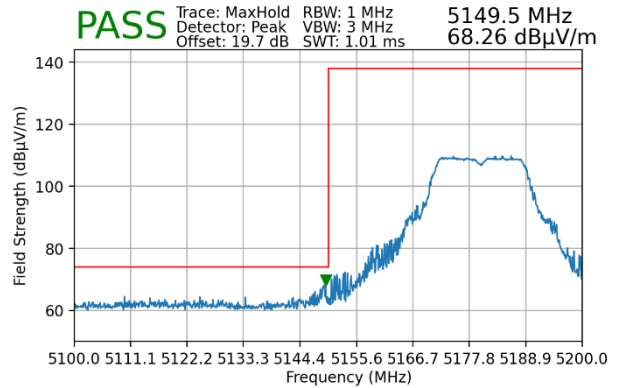
FCC ID: A3LSMA356U	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2311010111-13-R1.A3L	Test Dates: 11/07-12/22/2023	EUT Type: Portable Handset	Page 103 of 116

## 7.6.2 MIMO Radiated Band Edge Measurements (20MHz BW)

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

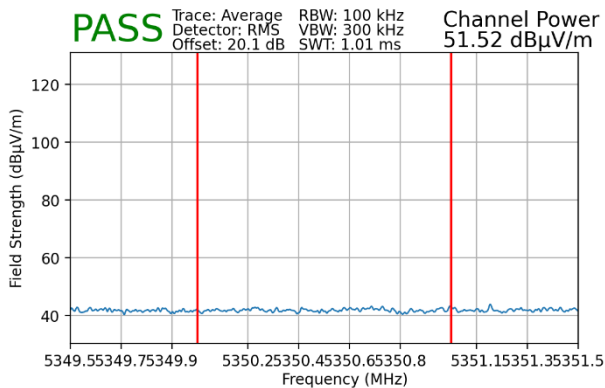


**Plot 7-120. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 1)**

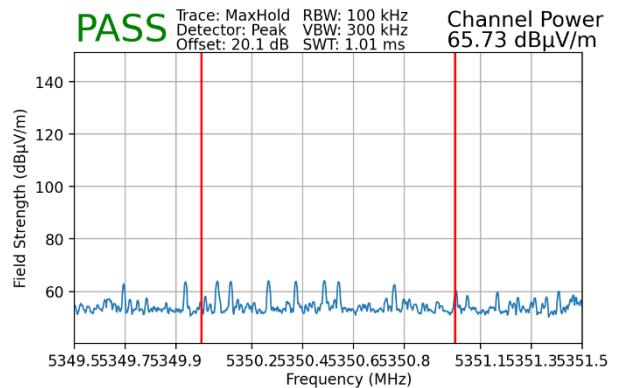


**Plot 7-121. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 1)**

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



**Plot 7-122. Radiated Upper Band Edge Plot MIMO (Average – UNII Band 2A)**

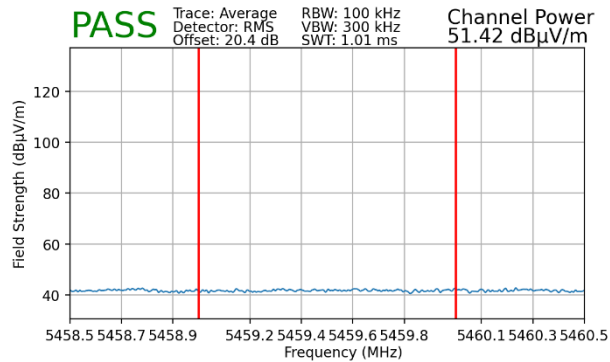


**Plot 7-123. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 2A)**

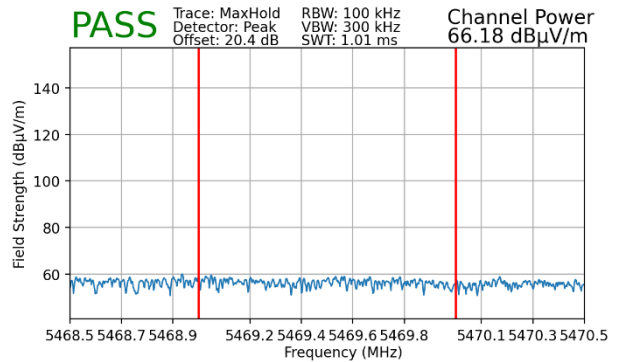
FCC ID: A3LSMA356U	MEASUREMENT REPORT		Approved by: Technical Manager
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Worst Case Mode: 802.11ac  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 3 Meters  
 Operating Frequency: 5500MHz  
 Channel: 100

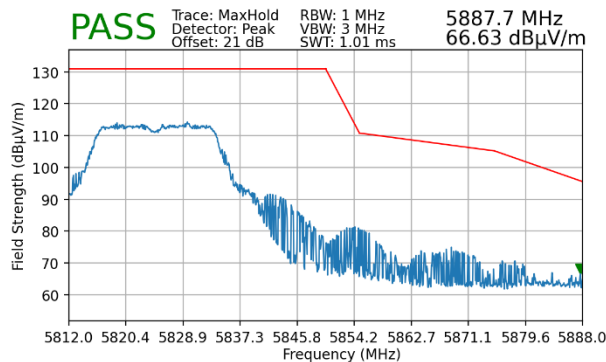


**Plot 7-124. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 2C)**



**Plot 7-125. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 2C)**

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

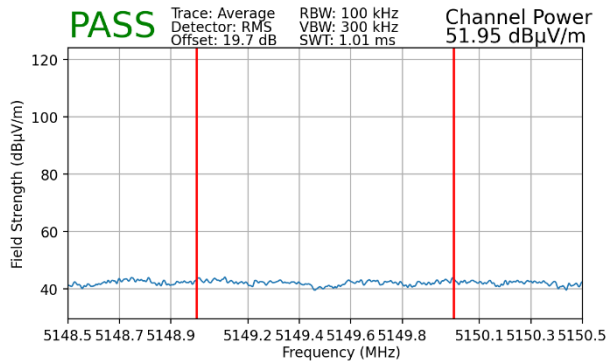


**Plot 7-126. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 3)**

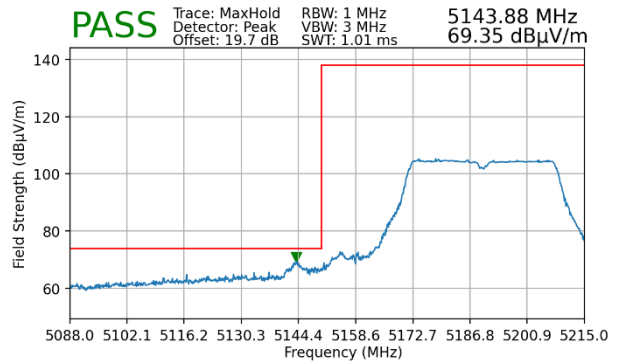
FCC ID: A3LSMA356U	MEASUREMENT REPORT		Approved by: Technical Manager
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### 7.6.3 MIMO Radiated Band Edge Measurements (40MHz BW)

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

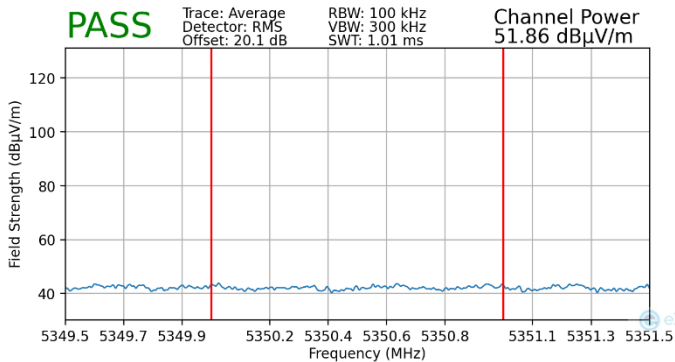


**Plot 7-127. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 1)**

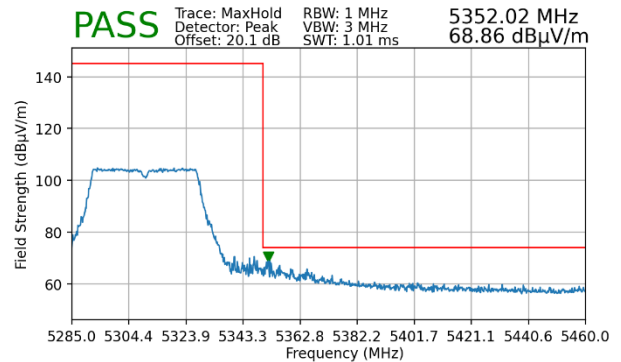


**Plot 7-128. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 1)**

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



**Plot 7-129. Radiated Upper Band Edge Plot MIMO (Average – UNII Band 2A)**

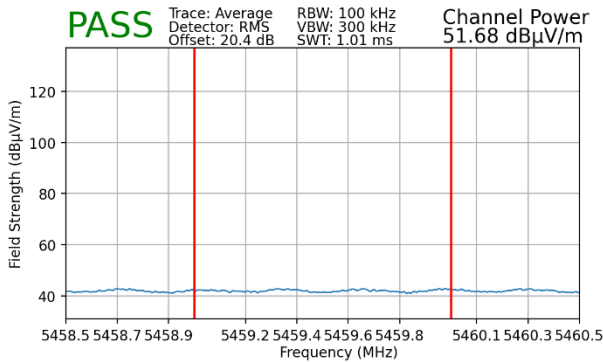


**Plot 7-130. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 2A)**

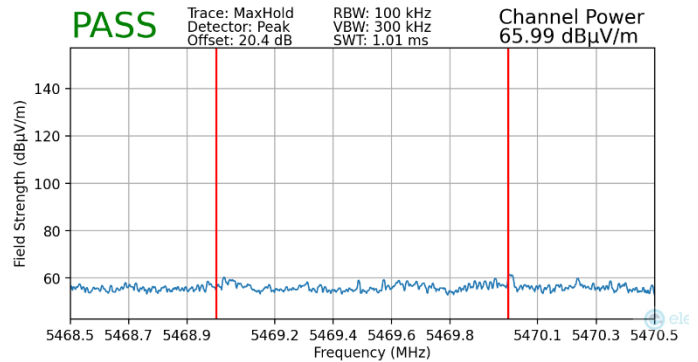
FCC ID: A3LSMA356U	<b>MEASUREMENT REPORT</b>		Approved by: Technical Manager
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Worst Case Mode: 802.11ac  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 3 Meters  
 Operating Frequency: 5510MHz  
 Channel: 102

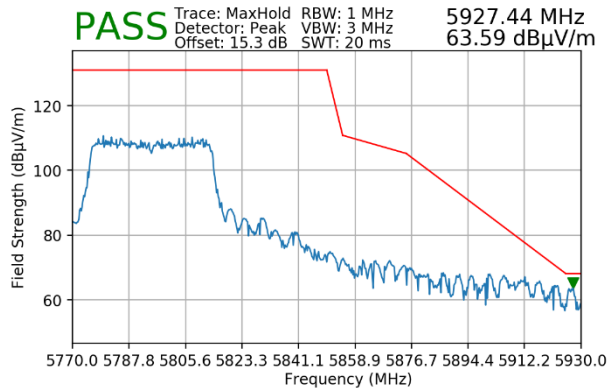


**Plot 7-131. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 2C)**



**Plot 7-132. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 2C)**

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

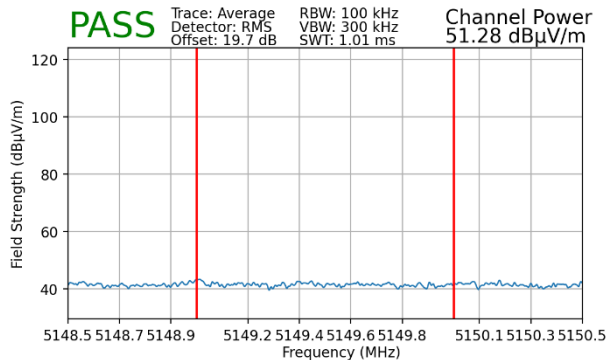


**Plot 7-133. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 3)**

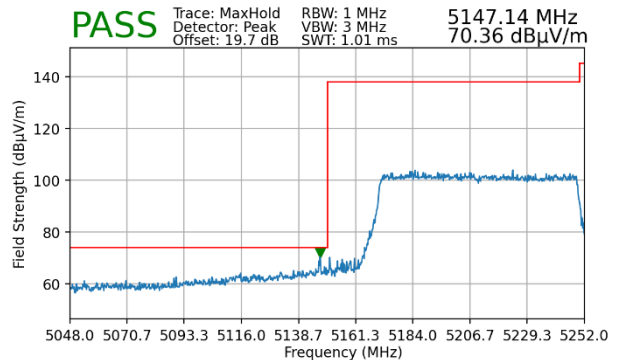
FCC ID: A3LSMA356U	MEASUREMENT REPORT		Approved by: Technical Manager
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### 7.6.4 MIMO Radiated Band Edge Measurements (80MHz BW)

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

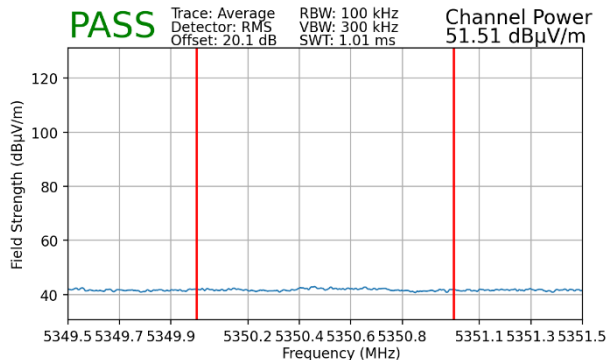


**Plot 7-134. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 1)**

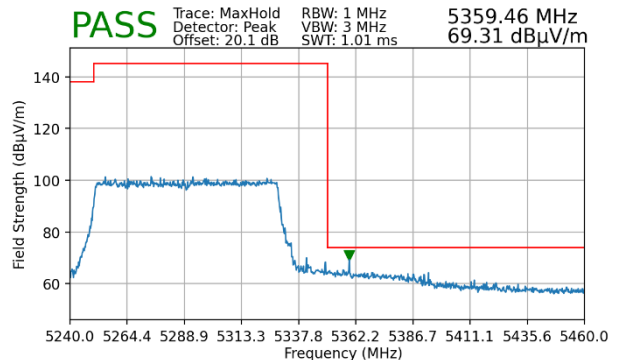


**Plot 7-135. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 1)**

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



**Plot 7-136. Radiated Upper Band Edge Plot MIMO (Average – UNII Band 2A)**

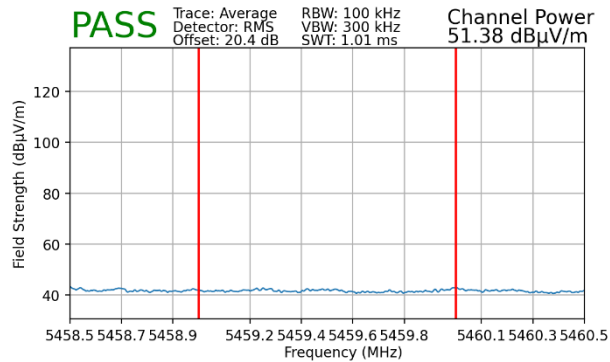


**Plot 7-137. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 2A)**

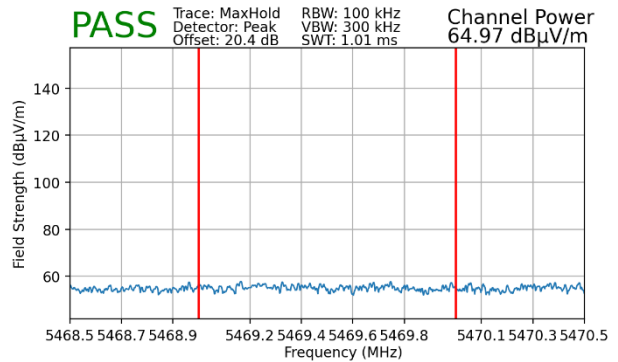
FCC ID: A3LSMA356U	MEASUREMENT REPORT		Approved by: Technical Manager
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Worst Case Mode: 802.11ax  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 3 Meters  
 Operating Frequency: 5530MHz  
 Channel: 106

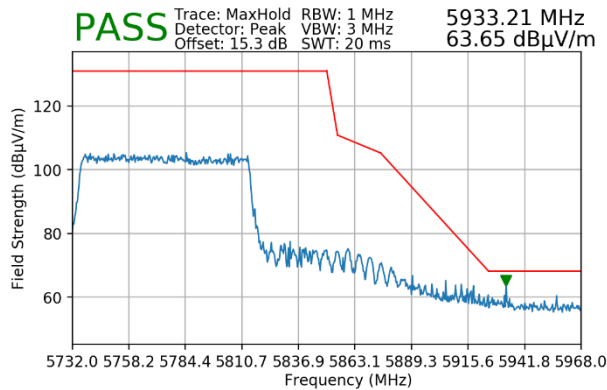


**Plot 7-138. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 2C)**



**Plot 7-139. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 2C)**

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



**Plot 7-140. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 3)**

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## 7.7 Line-Conducted Test Data

### 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 FCC §15.207 and RSS-Gen (8.8).**

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

**Table 7-28. 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

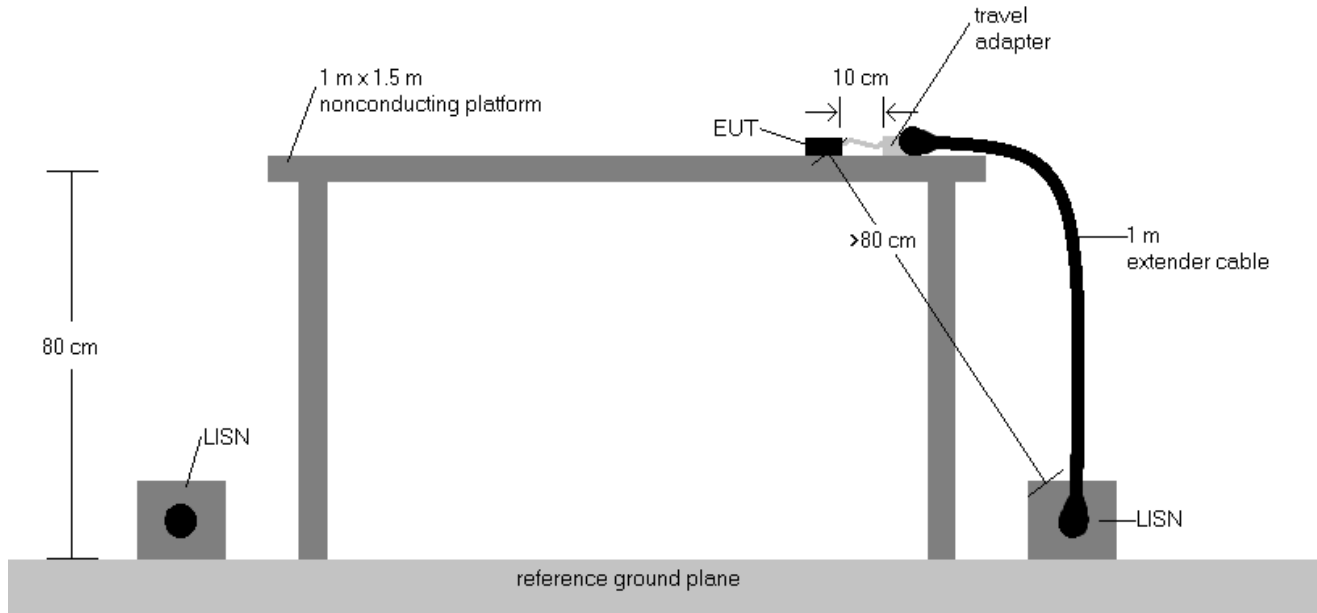
#### Average Field Strength Measurements

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.

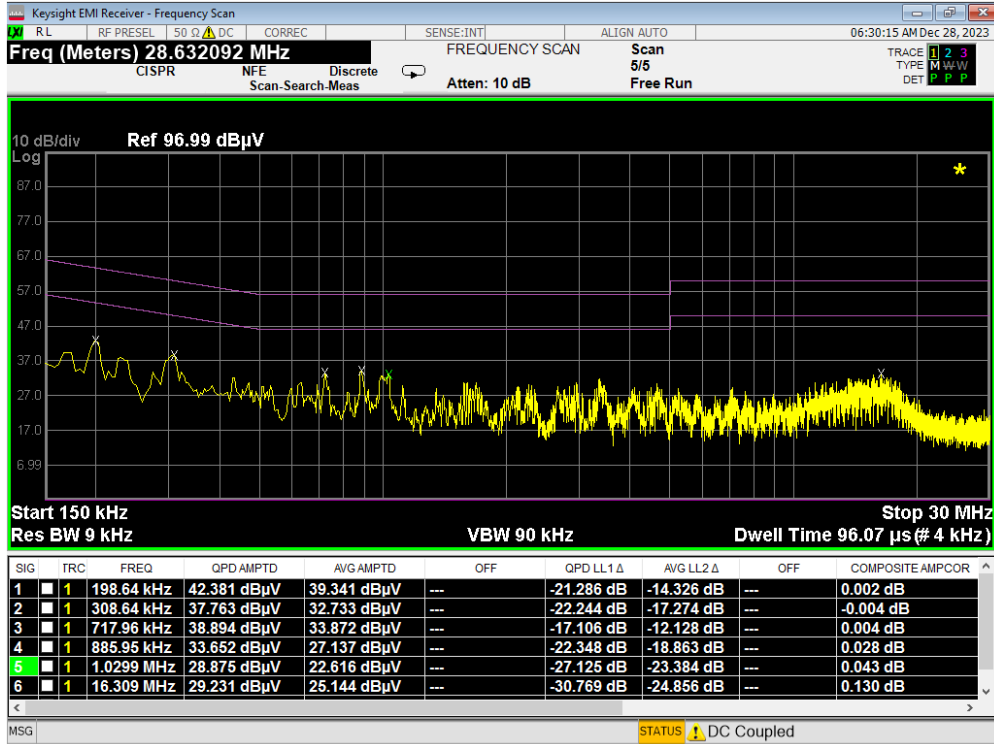


**Figure 7-8. Test Instrument & Measurement Setup**

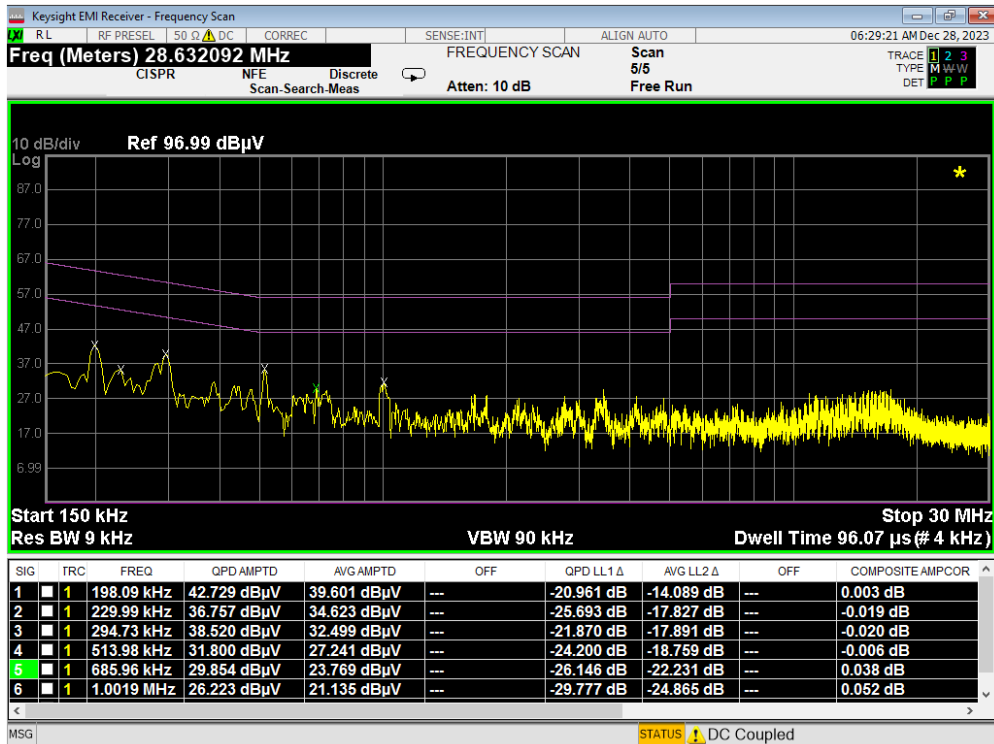
### Test Notes

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 is specified in §15.207 and RSS-Gen (8.8).
3.  $\text{Corr. (dB)} = \text{Cable loss (dB)} + \text{LISN insertion factor (dB)}$
4.  $\text{QP/AV Level (dB}\mu\text{V)} = \text{QP/AV Analyzer/Receiver Level (dB}\mu\text{V)} + \text{Corr. (dB)}$
5.  $\text{Margin (dB)} = \text{QP/AV Limit (dB}\mu\text{V)} - \text{QP/AV Level (dB}\mu\text{V)}$
6. Traces shown in plot are made using a peak detector.
7. Deviations to the Specifications: None.

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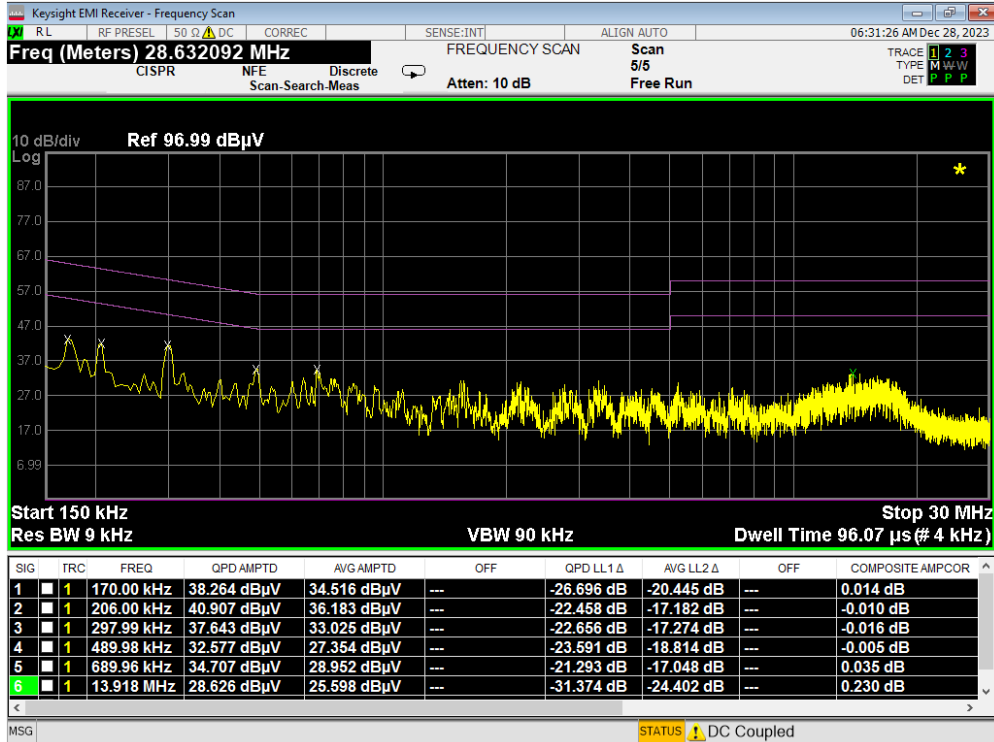


Plot 7-141. Line Conducted Plot with 802.11a UNII Band 1 (L1)

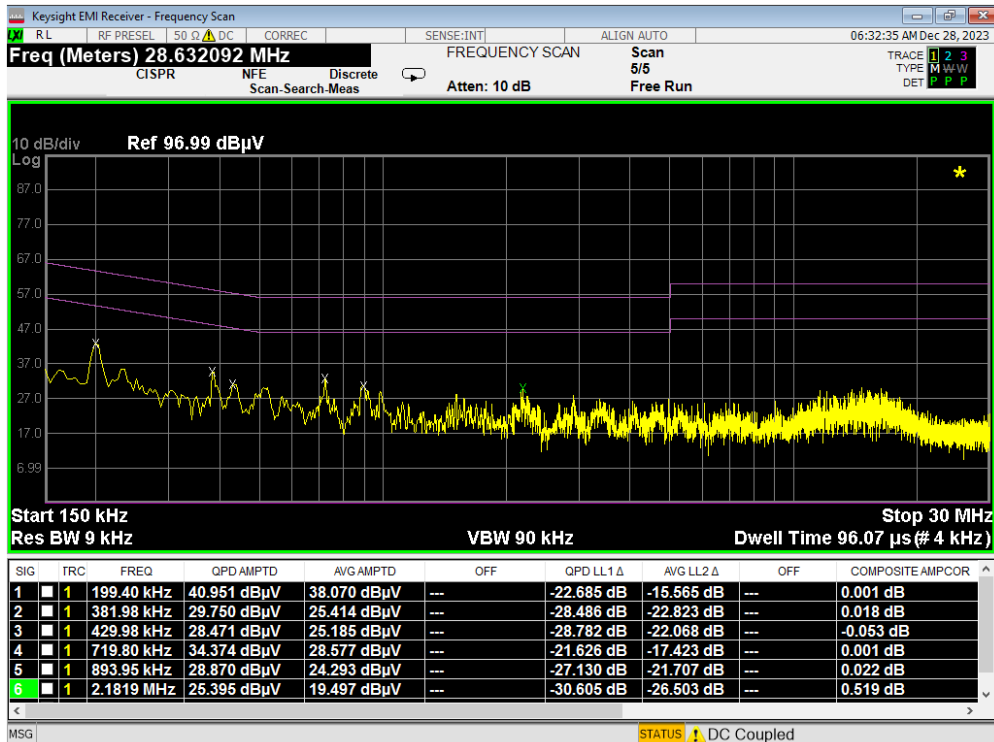


Plot 7-142. Line Conducted Plot with 802.11a UNII Band 1 (N)

FCC ID: A3LSMA356U	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2311010111-13-R1.A3L	Test Dates: 11/07-12/22/2023	EUT Type: Portable Handset	Page 112 of 116

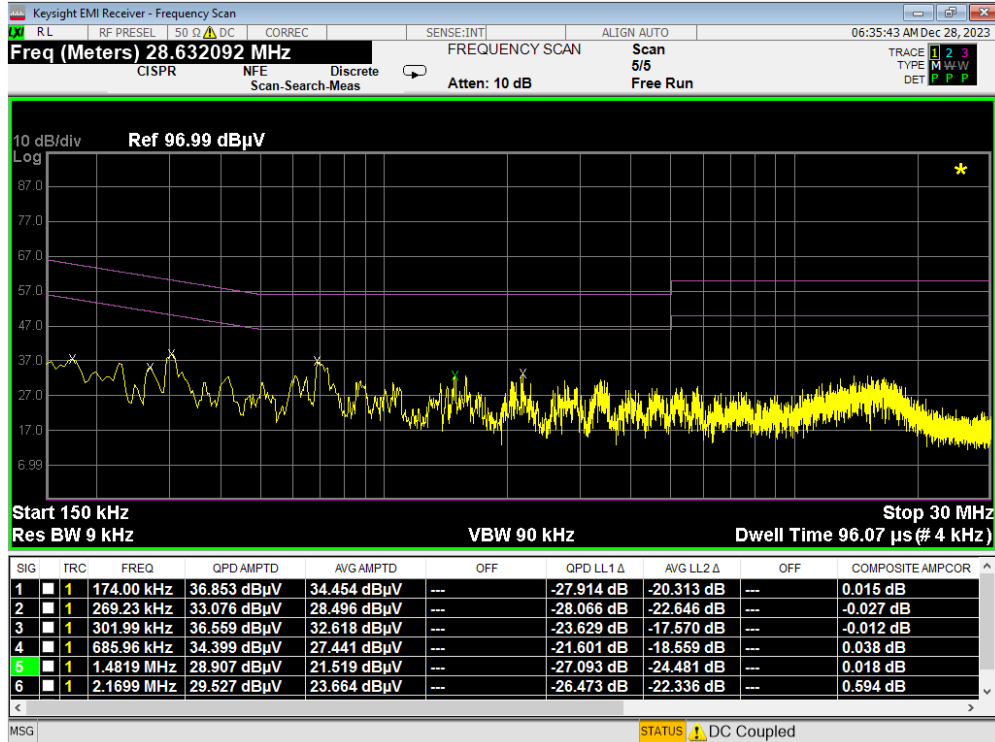


Plot 7-143. Line Conducted Plot with 802.11a UNII Band 2A (L1)

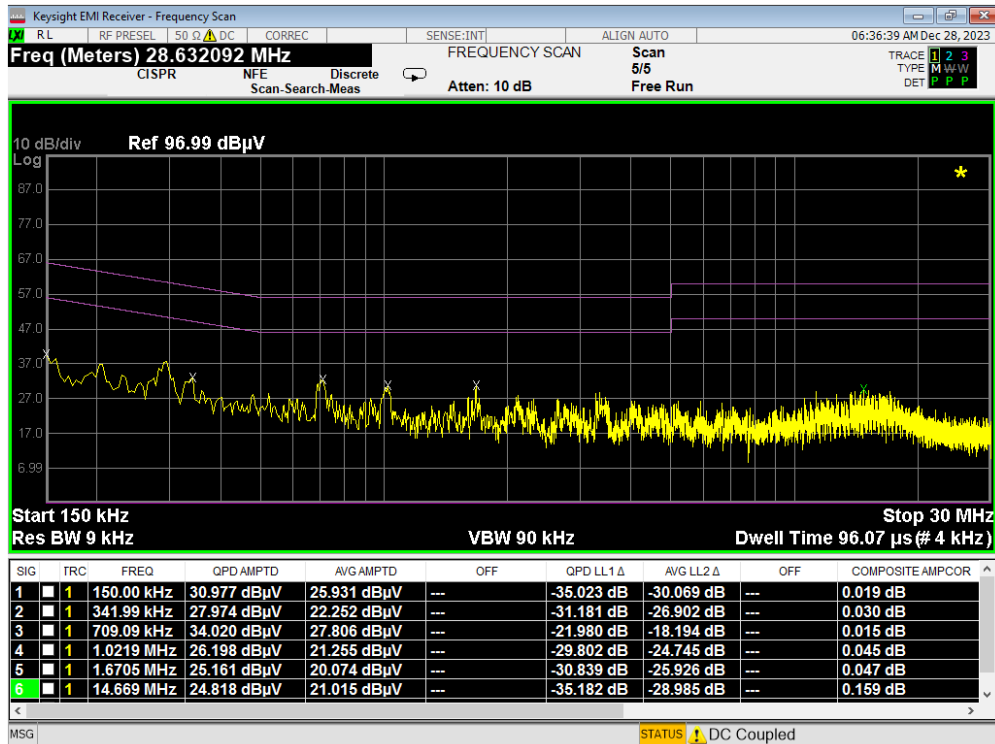


Plot 7-144. Line Conducted Plot with 802.11a UNII Band 2A (N)

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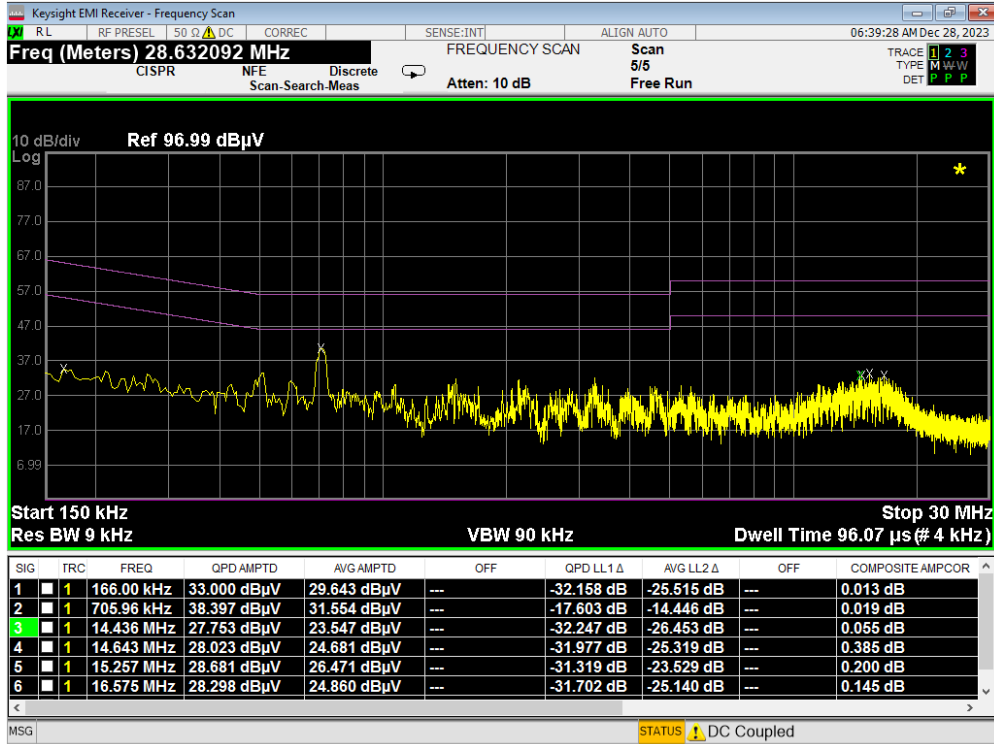


Plot 7-145. Line Conducted Plot with 802.11a UNII Band 2C (L1)

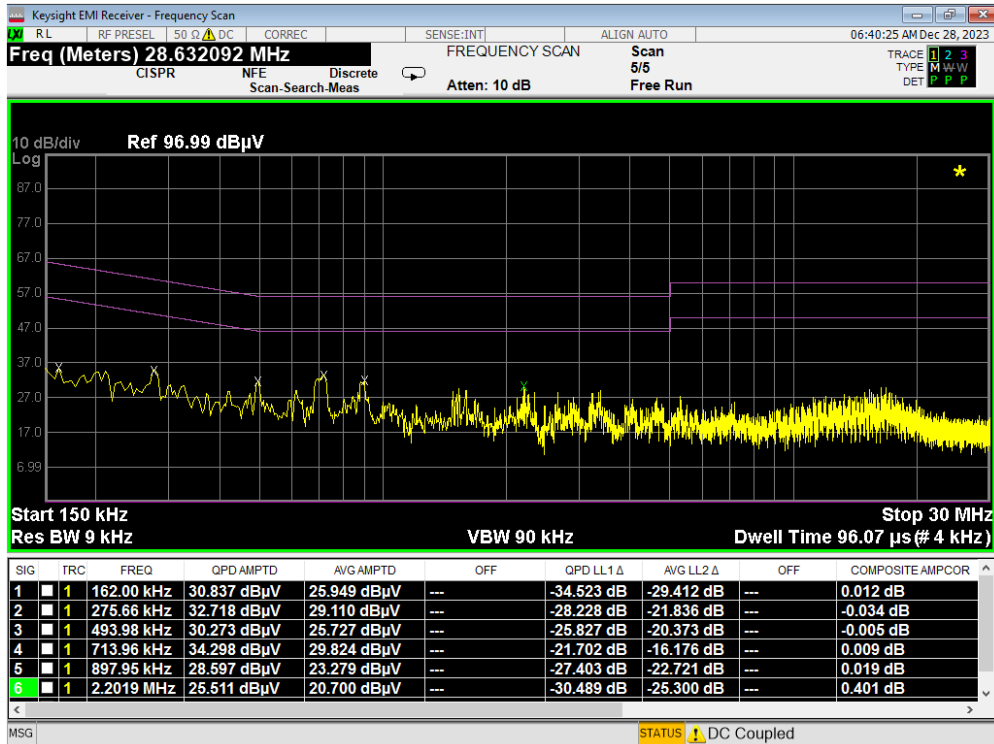


Plot 7-146. Line Conducted Plot with 802.11a UNII Band 2C (N)

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Plot 7-147. Line Conducted Plot with 802.11a UNII Band 3 (L1)



Plot 7-148. 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: A3LSMA356U** is in compliance with Part 15 Subpart E (15.407) of the FCC Rules.

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