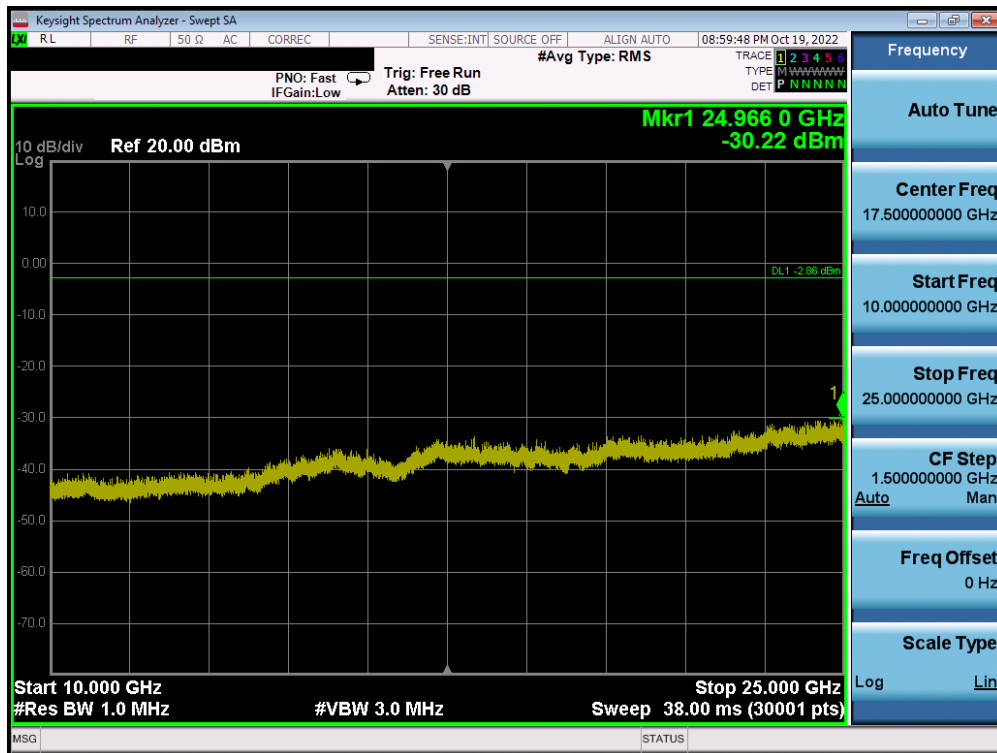
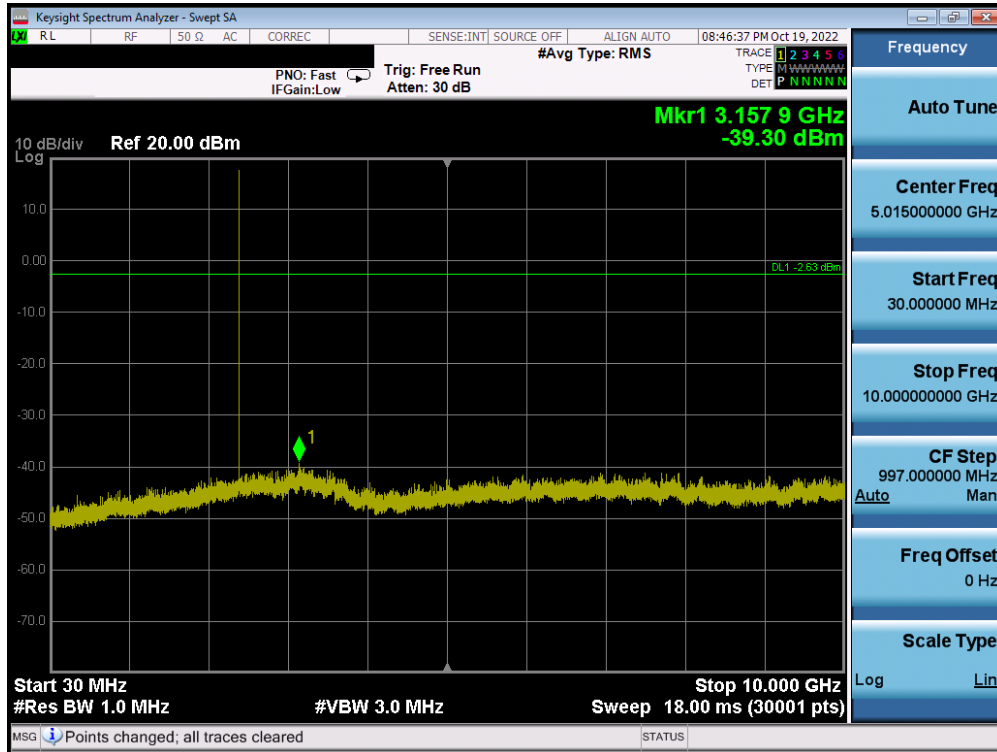


Plot 7-111. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 78) – Ant1

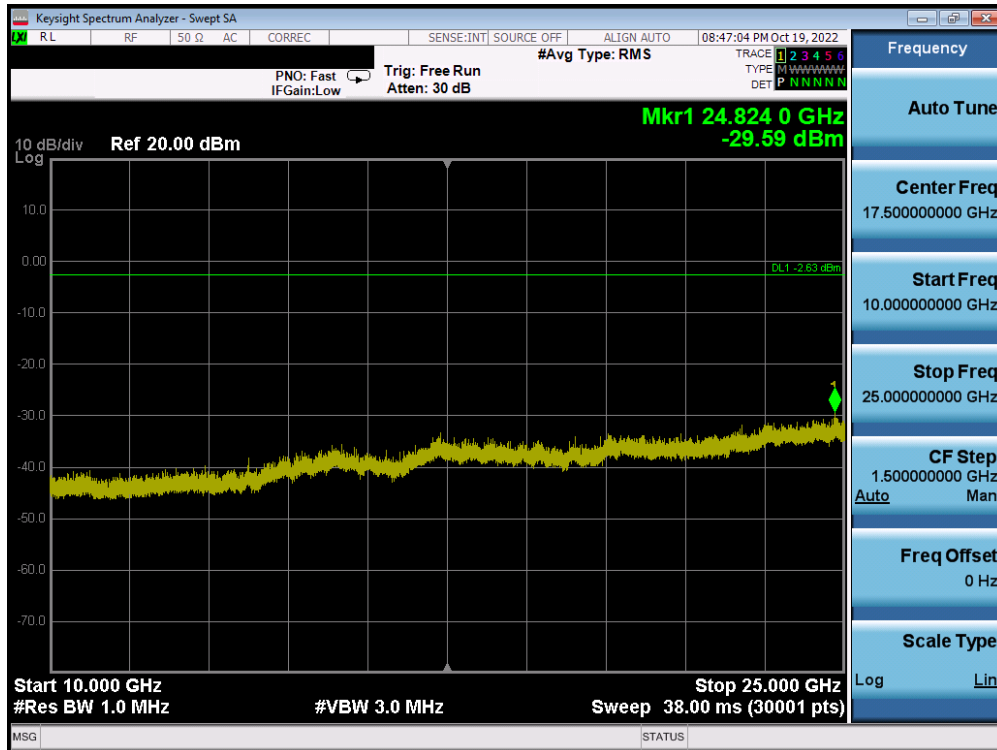


Plot 7-112. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 78) – Ant1

FCC ID: A3LSMS918U	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-20-R1.A3L	Test Dates: 9/08 – 11/14/2022	EUT Type: Portable Handset	Page 79 of 108

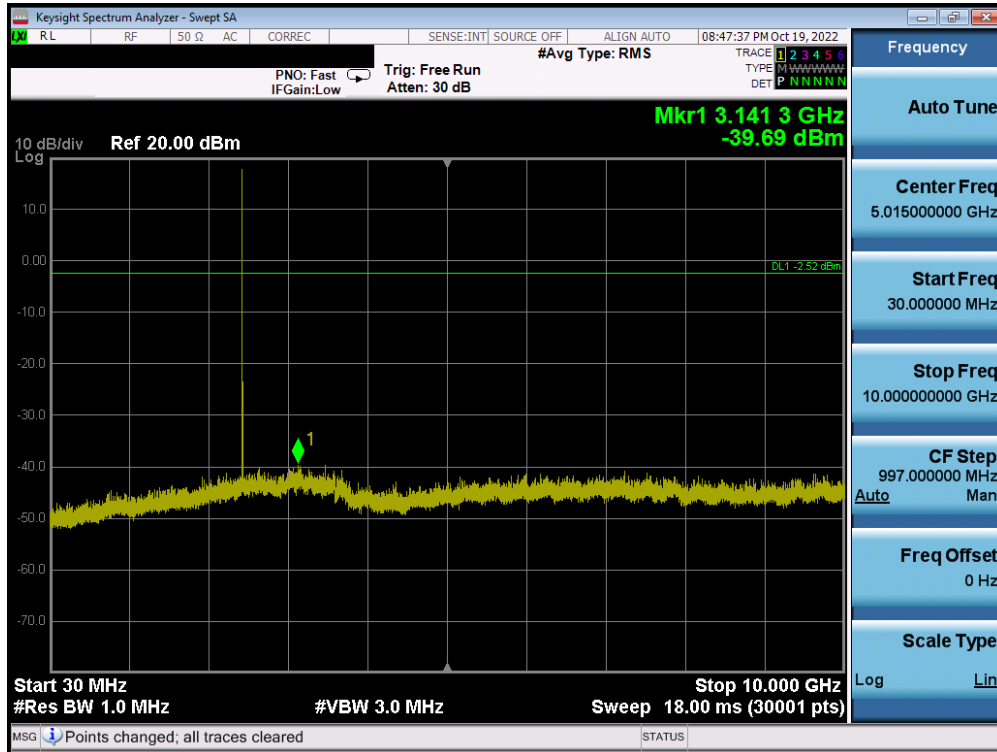


Plot 7-113. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 0) – Ant2

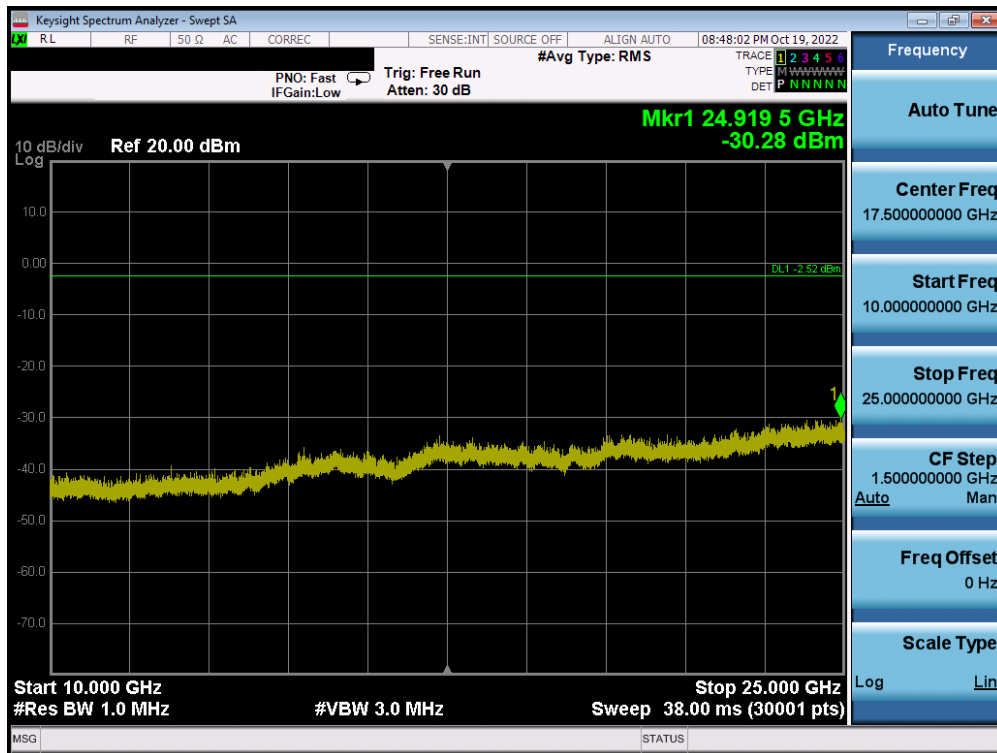


Plot 7-114. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 0) – Ant2

FCC ID: A3LSMS918U	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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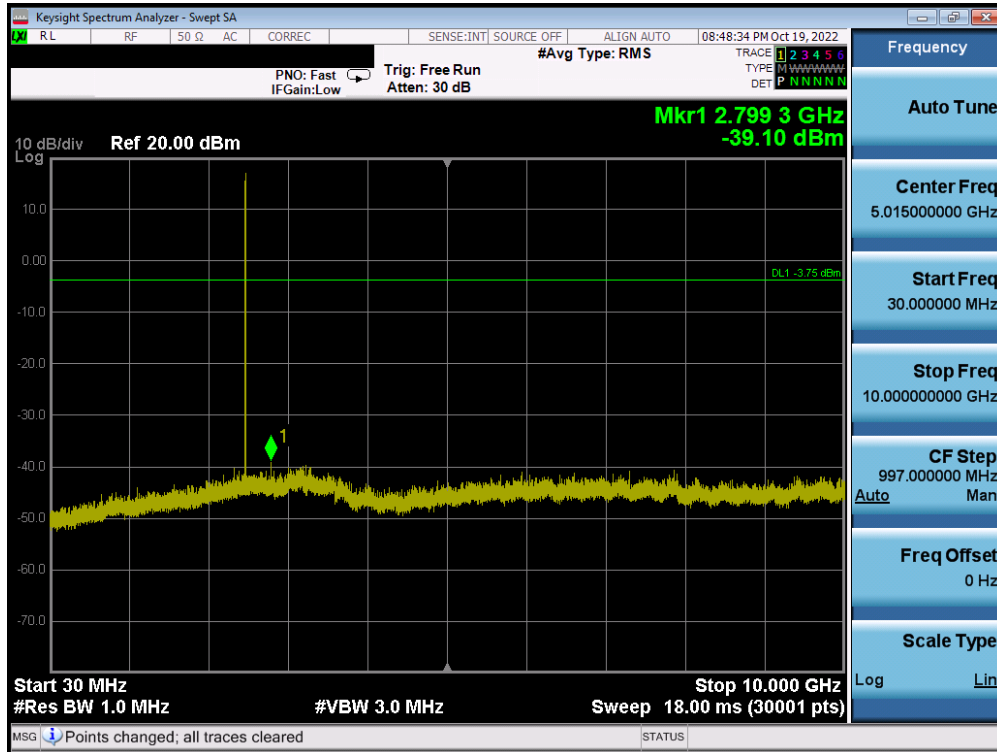


Plot 7-115. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 39) – Ant2

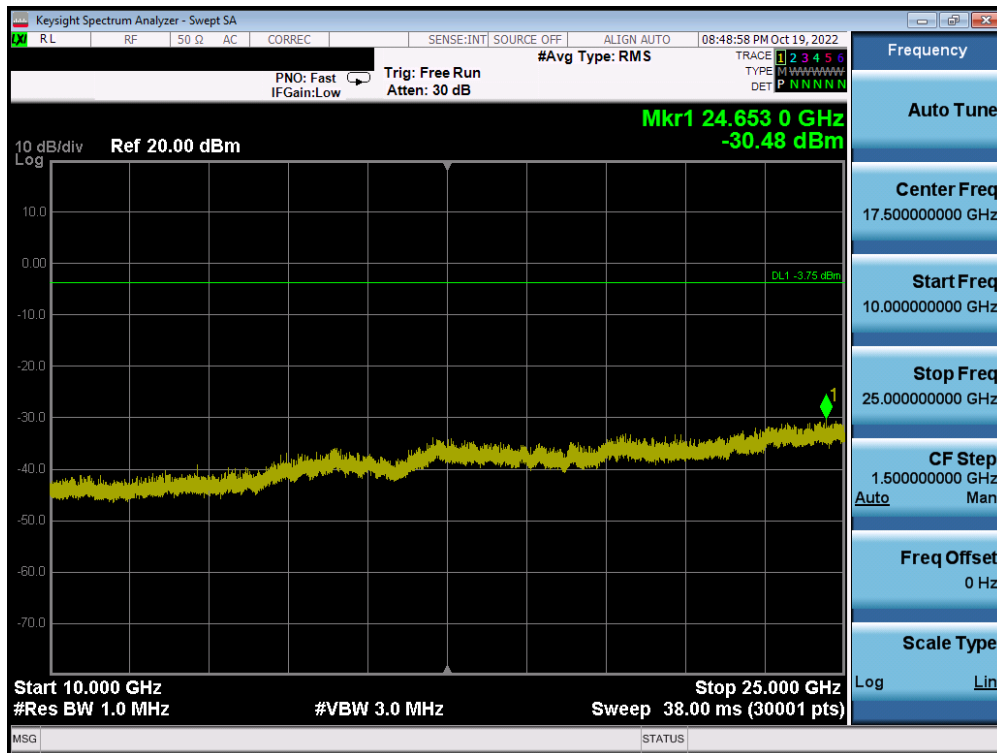


Plot 7-116. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 39) – Ant2

FCC ID: A3LSMS918U	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Plot 7-117. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 78) – Ant2



Plot 7-118. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 78) – Ant2

FCC ID: A3LSMS918U	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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**7.9 Radiated Spurious Emission Measurements – Above 1GHz**  
**§15.205 §15.209 §15.247 (d); 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 maximum power and at the appropriate frequencies. 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 below per Section 15.209 and RSS-Gen (8.9).***

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

**Table 7-9. Radiated Limits**

**Test Procedure Used**

ANSI C63.10-2013 – Section 6.6.4.3

**Test Settings**

**Average Field Strength Measurements per Section 4.1.4.2.3 of ANSI C63.10-2013**

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 1kHz  $\geq 1/\tau$  Hz, where  $\tau$  = pulse width in seconds
4. Averaging type was set to RMS to ensure that video filtering was applied in the power domain
5. Detector = peak
6. Sweep time = auto
7. Trace mode = max hold
8. Trace was allowed to stabilize

**Peak Field Strength Measurements per Section 4.1.4.2.2 of ANSI C63.10-2013**

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW is set depending on measurement frequency, as specified in Table 7-10 below
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

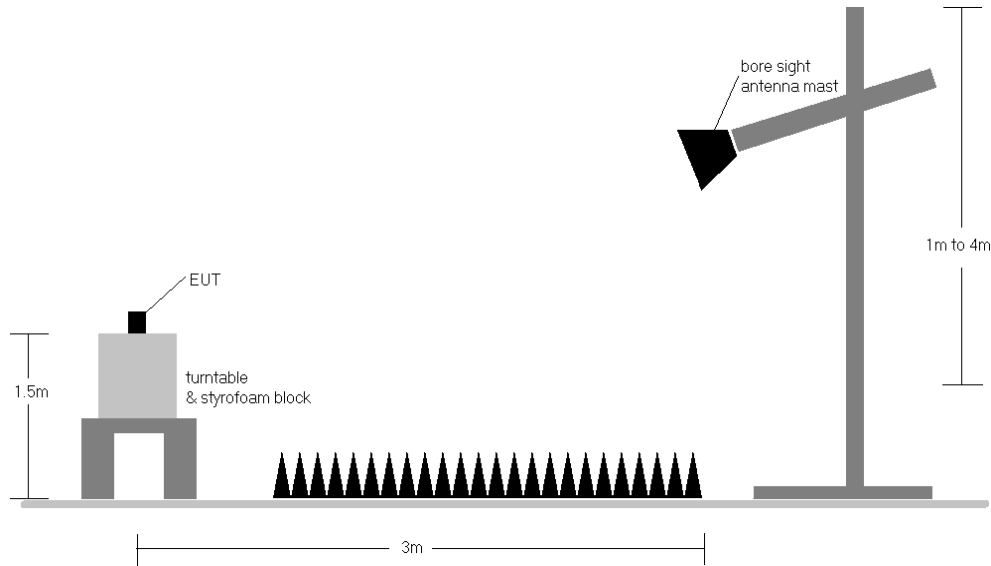
FCC ID: A3LSMS918U	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Technical Manager
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Frequency	RBW
9 – 150kHz	200 – 300Hz
0.15 – 30MHz	9 – 10kHz
30 – 1000MHz	100 – 120kHz
> 1000MHz	1MHz

**Table 7-10. RBW as a Function of Frequency**

### Test Setup

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



**Figure 7-8. Radiated Test Setup >1GHz**

### Test Notes

1. All emissions lying in restricted bands specified in §15.205 and Section 8.10 of RSS-Gen are below the limit shown in §15.209.
2. No significant radiated emissions were found in the 2310 - 2390MHz restricted band.
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 10<sup>th</sup> harmonic and the worst-case emissions are reported.
6. The duty cycle correction factor was not applied to noise floor measurements.
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 is used to denote a noise floor measurement.

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**Sample Calculation**

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

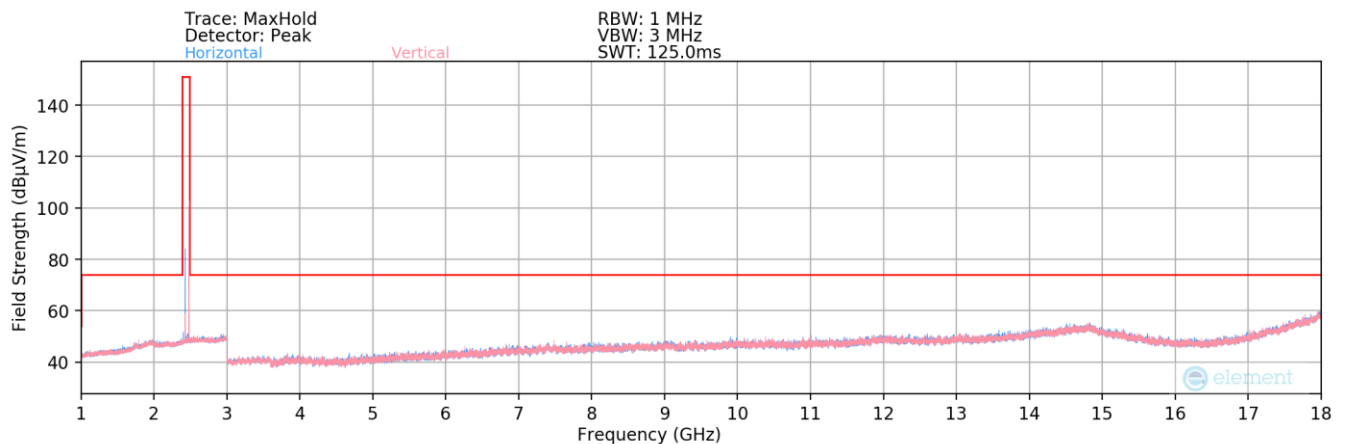
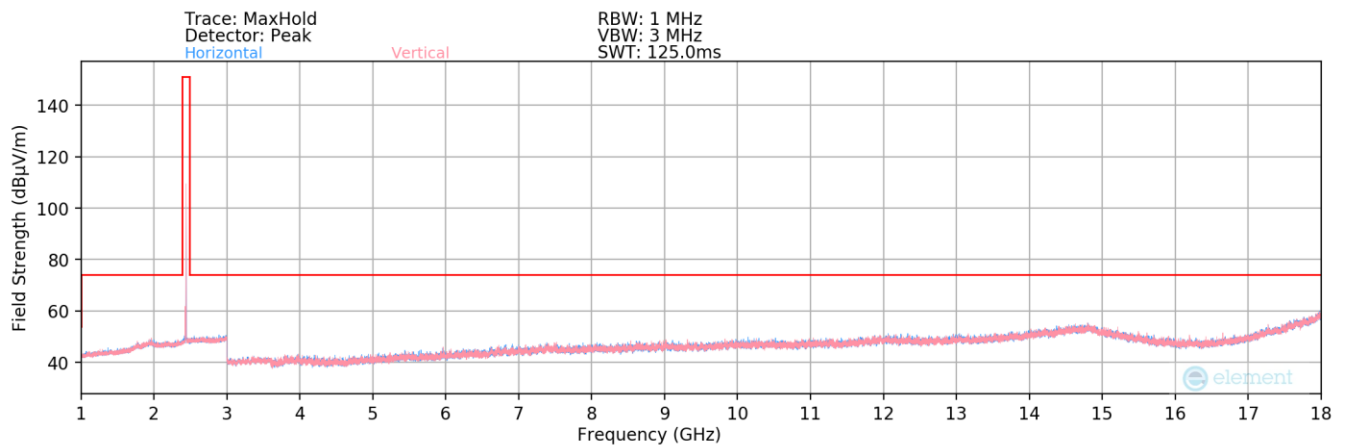
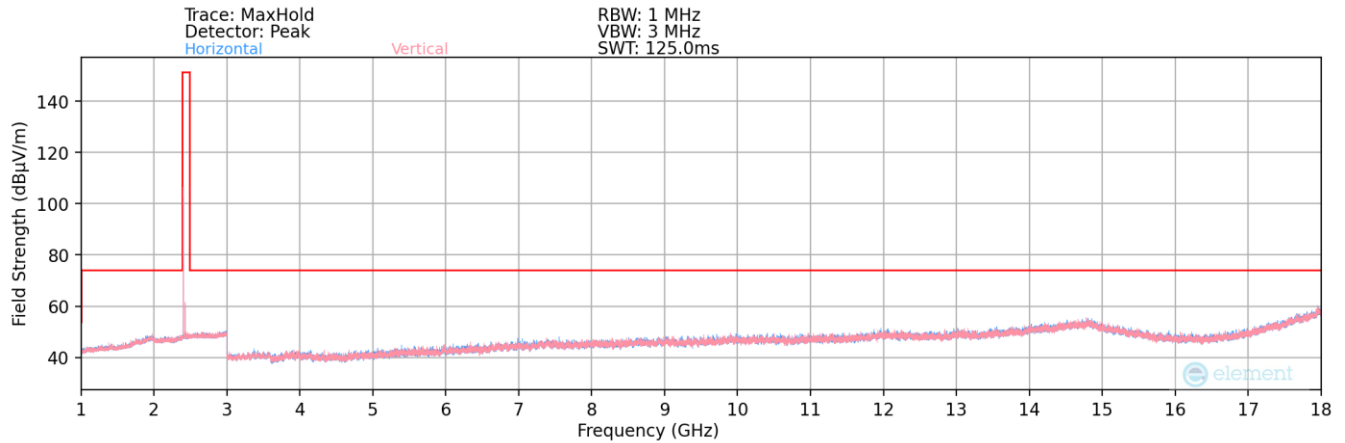
**Duty Cycle Correction Factor Calculation**

- Channel hop rate = 800 hops/second (AFH Mode)
- Adjusted channel hop rate for DH5 mode = 133.33 hops/second
- Time per channel hop =  $1 / 133.33 \text{ hops/second} = 7.50 \text{ ms}$
- Time to cycle through all channels =  $7.50 \times 20 \text{ channels} = 150 \text{ ms}$
- Number of times transmitter hits on one channel =  $100 \text{ ms} / 150 \text{ ms} = 1 \text{ time(s)}$
- Worst case dwell time = 7.5 ms
- Duty cycle correction factor =  $20\log_{10}(7.5\text{ms}/100\text{ms}) = -22.5 \text{ dB}$

FCC ID: A3LSMS918U	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Technical Manager
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## Radiated Spurious Emission Measurements – Ant1

§15.205 §15.209 §15.247 (d); RSS-Gen [8.9]

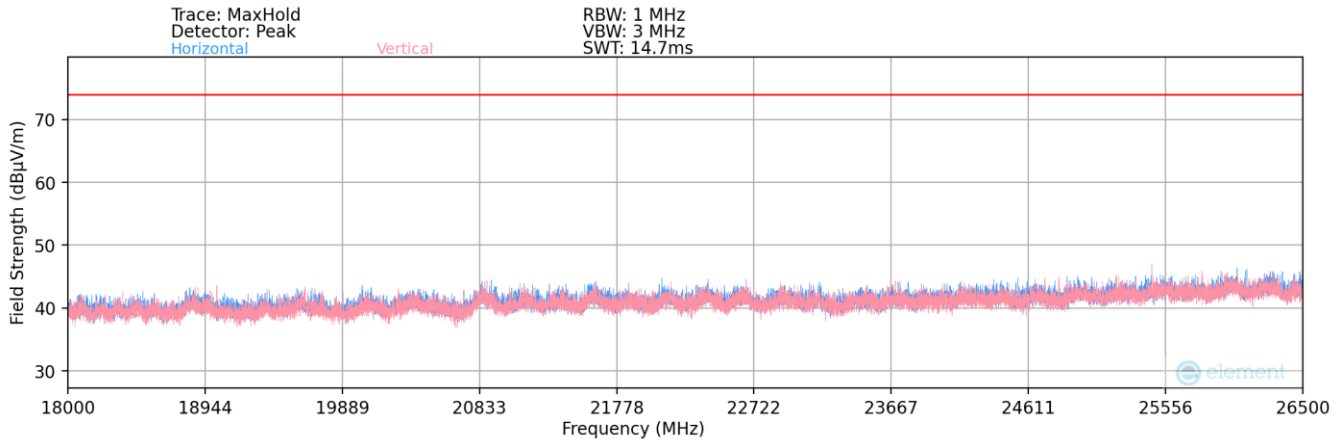


FCC ID: A3LSMS918U	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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**Radiated Spurious Emissions Measurements (Above 18GHz) – Ant1**  
**§15.209; RSS-Gen [8.9]**



**Plot 7-122. Radiated Spurious Plot above 18GHz – Ant1**

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**Radiated Spurious Emission Measurements – Ant1**  
**§15.205 §15.209 §15.247 (d); RSS-Gen [8.9]**

Worst Case Mode: Bluetooth  
 Worst Case Data Rate: 1 Mbps  
 Measurement Distance: 3 Meters  
 Operating Frequency: 2402MHz  
 Channel: 0

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Duty Cycle Correction [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4804.00	Avg	V	120	47	-75.37	-1.20	-22.50	7.93	53.98	-46.05
4804.00	Peak	V	120	47	-62.60	-1.20	0.00	43.20	73.98	-30.78
12010.00	Avg	V	-	-	-80.09	10.19	0.00	37.10	53.98	-16.88
12010.00	Peak	V	-	-	-66.74	10.19	0.00	50.45	73.98	-23.53

**Table 7-11. Radiated Measurements – Ant1**

Worst Case Mode: Bluetooth  
 Worst Case Data Rate: 1 Mbps  
 Measurement Distance: 3 Meters  
 Operating Frequency: 2441MHz  
 Channel: 39

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Duty Cycle Correction [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4882.00	Avg	V	201	55	-75.35	-1.12	-22.50	8.03	53.98	-45.94
4882.00	Peak	V	201	55	-62.36	-1.12	0.00	43.52	73.98	-30.46
7323.00	Avg	V	175	146	-77.12	4.65	-22.50	12.03	53.98	-41.95
7323.00	Peak	V	175	146	-63.86	4.65	0.00	47.79	73.98	-26.19
12205.00	Avg	V	-	-	-80.09	9.96	0.00	36.87	53.98	-17.11
12205.00	Peak	V	-	-	-67.65	9.96	0.00	49.31	73.98	-24.67

**Table 7-12. Radiated Measurements – Ant1**

FCC ID: A3LSMS918U	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Technical Manager
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Worst Case Mode: Bluetooth  
 Worst Case Data Rate: 1 Mbps  
 Measurement Distance: 3 Meters  
 Operating Frequency: 2480MHz  
 Channel: 78

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Duty Cycle Correction [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4960.00	Avg	V	125	31	-75.01	-0.95	-22.50	8.55	53.98	-45.43
4960.00	Peak	V	125	31	-62.73	-0.95	0.00	43.32	73.98	-30.66
7440.00	Avg	V	-	-	-77.42	4.64	0.00	34.22	53.98	-19.76
7440.00	Peak	V	-	-	-64.14	4.64	0.00	47.50	73.98	-26.48
12400.00	Avg	V	-	-	-79.82	10.24	0.00	37.42	53.98	-16.56
12400.00	Peak	V	-	-	-66.85	10.24	0.00	50.39	73.98	-23.59

**Table 7-13. Radiated Measurements – Ant1**

Worst Case Mode: Bluetooth  
 Worst Case Data Rate: 1 Mbps  
 Measurement Distance: 3 Meters  
 Operating Frequency: 2480MHz  
 Channel: 78

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Duty Cycle Correction [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4960.00	Avg	V	163	208	-79.28	-0.95	-22.50	4.28	53.98	-49.70
4960.00	Peak	V	163	208	-67.23	-0.95	0.00	38.82	73.98	-35.16
7440.00	Avg	V	166	314	-70.63	4.64	-22.50	18.51	53.98	-35.47
7440.00	Peak	V	166	314	-65.52	4.64	0.00	46.12	73.98	-27.86
12400.00	Avg	V	-	-	-82.95	10.24	0.00	34.29	53.98	-19.69
12400.00	Peak	V	-	-	-69.59	10.24	0.00	47.65	73.98	-26.33

**Table 7-14. Radiated Measurements – Ant1 - WCP**

FCC ID: A3LSMS918U	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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**Radiated Spurious Emission Measurements – Ant2**  
**§15.205 §15.209 §15.247 (d); RSS-Gen [8.9]**

Worst Case Mode: Bluetooth  
 Worst Case Data Rate: 1 Mbps  
 Measurement Distance: 3 Meters  
 Operating Frequency: 2402MHz  
 Channel: 0

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4804.00	Avg	H	-	-	-76.09	-1.20	29.71	53.98	-24.27
4804.00	Peak	H	-	-	-63.02	-1.20	42.78	73.98	-31.20
12010.00	Avg	H	-	-	-80.12	10.19	37.07	53.98	-16.91
12010.00	Peak	H	-	-	-65.78	10.19	51.41	73.98	-22.57

**Table 7-15. Radiated Measurements – Ant2**

Worst Case Mode: Bluetooth  
 Worst Case Data Rate: 1 Mbps  
 Measurement Distance: 3 Meters  
 Operating Frequency: 2441MHz  
 Channel: 39

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4882.00	Avg	H	-	-	-76.19	-1.12	29.69	53.98	-24.29
4882.00	Peak	H	-	-	-62.29	-1.12	43.59	73.98	-30.39
7323.00	Avg	H	-	-	-77.28	4.65	34.37	53.98	-19.61
7323.00	Peak	H	-	-	-63.57	4.65	48.08	73.98	-25.90
12205.00	Avg	H	-	-	-80.33	9.96	36.63	53.98	-17.35
12205.00	Peak	H	-	-	-66.06	9.96	50.90	73.98	-23.08

**Table 7-16. Radiated Measurements – Ant2**

FCC ID: A3LSMS918U	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Technical Manager
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Worst Case Mode: Bluetooth  
 Worst Case Data Rate: 1 Mbps  
 Measurement Distance: 3 Meters  
 Operating Frequency: 2480MHz  
 Channel: 78

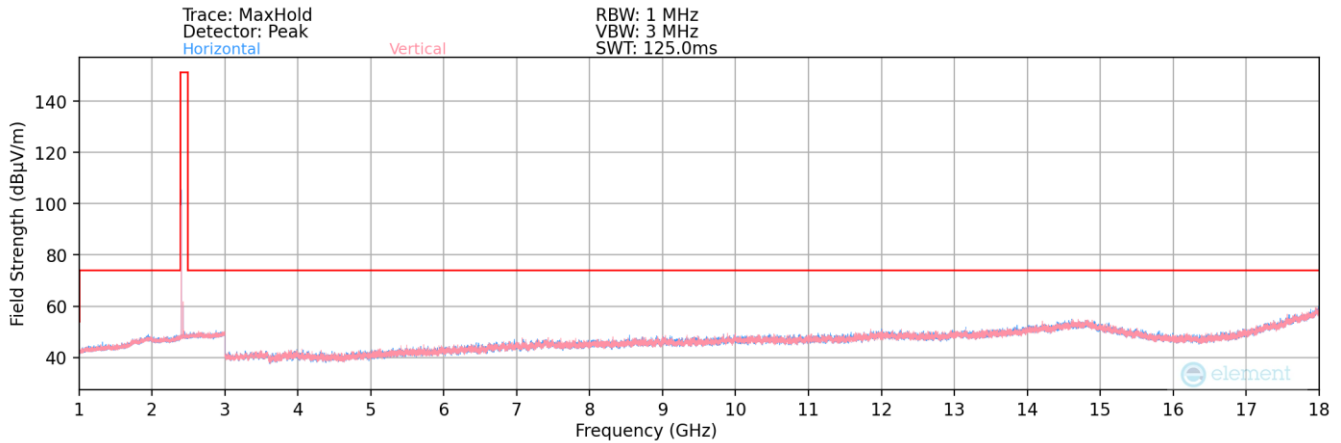
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]
4960.00	Avg	H	-	-	-76.10	-0.95	29.95	53.98	-24.03
4960.00	Peak	H	-	-	-63.22	-0.95	42.83	73.98	-31.15
7440.00	Avg	H	-	-	-77.42	4.64	34.22	53.98	-19.76
7440.00	Peak	H	-	-	-64.48	4.64	47.16	73.98	-26.82
12400.00	Avg	H	-	-	-79.87	10.24	37.37	53.98	-16.61
12400.00	Peak	H	-	-	-66.57	10.24	50.67	73.98	-23.31

**Table 7-17. Radiated Measurements – Ant2**

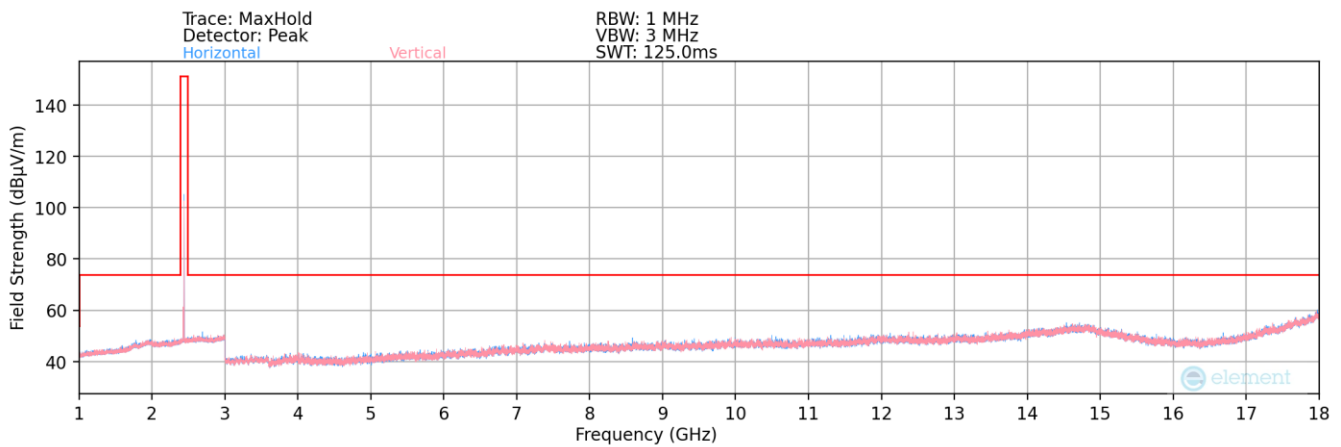
FCC ID: A3LSMS918U	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Technical Manager
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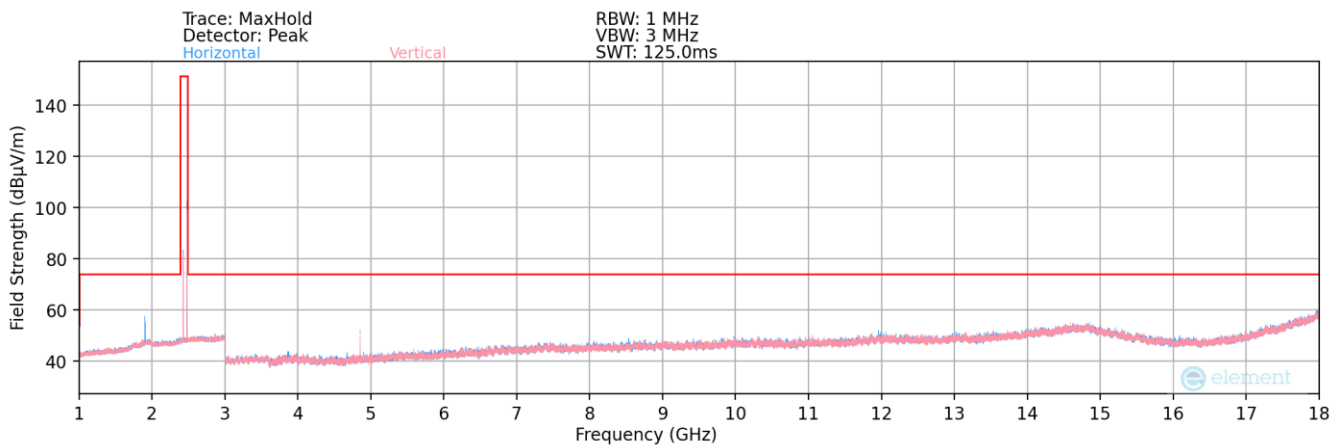
**Radiated Spurious Emission Measurements – Dual**  
**§15.205 §15.209 §15.247 (d); RSS-Gen [8.9]**



**Plot 7-123. Radiated Spurious Plot above 1GHz (BT- Ch. 0) – Dual**



**Plot 7-124. Radiated Spurious Plot above 1GHz (BT- Ch. 39) – Dual**

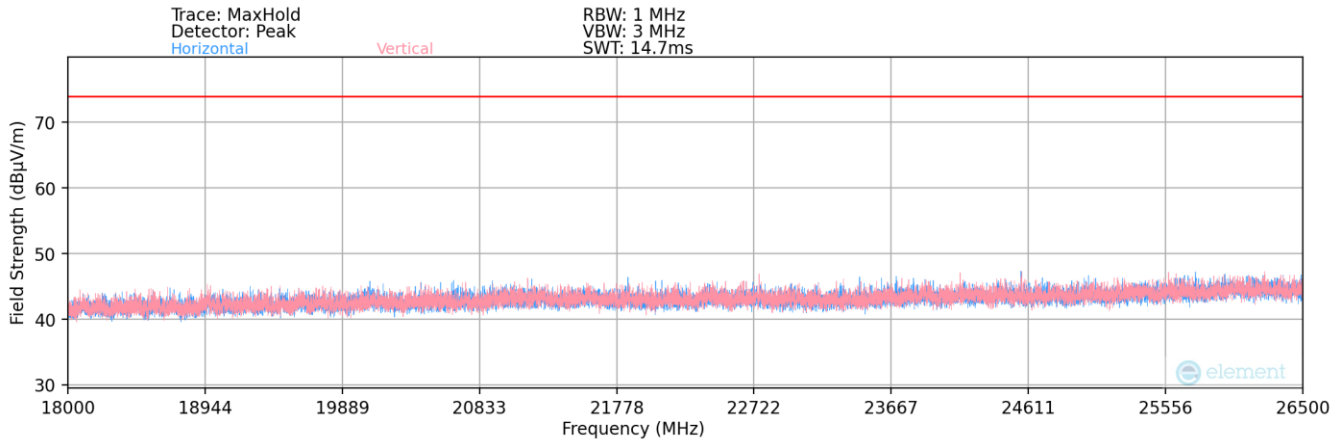


**Plot 7-125. Radiated Spurious Plot above 1GHz (BT- Ch. 78) – Dual**

FCC ID: A3LSMS918U	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Technical Manager
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**Radiated Spurious Emissions Measurements (Above 18GHz) – Dual**  
**§15.209; RSS-Gen [8.9]**



**Plot 7-126. Radiated Spurious Plot above 18GHz – Dual**

FCC ID: A3LSMS918U	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Technical Manager
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**Radiated Spurious Emission Measurements – Dual**  
**§15.205 §15.209 §15.247 (d); RSS-Gen [8.9]**

Worst Case Mode: Bluetooth  
 Worst Case Data Rate: 1 Mbps  
 Measurement Distance: 3 Meters  
 Operating Frequency: 2402MHz  
 Channel: 0

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4804.00	Avg	H	-	-	-79.75	4.12	31.37	53.98	-22.61
4804.00	Peak	H	-	-	-66.48	4.12	44.64	73.98	-29.34
12010.00	Avg	H	-	-	-82.19	13.62	38.43	53.98	-15.55
12010.00	Peak	H	-	-	-68.75	13.62	51.87	73.98	-22.11

**Table 7-18. Radiated Measurements – Dual**

Worst Case Mode: Bluetooth  
 Worst Case Data Rate: 1 Mbps  
 Measurement Distance: 3 Meters  
 Operating Frequency: 2441MHz  
 Channel: 39

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4882.00	Avg	H	-	-	-79.93	4.29	31.36	53.98	-22.62
4882.00	Peak	H	-	-	-66.79	4.29	44.50	73.98	-29.48
7323.00	Avg	H	-	-	-80.95	7.58	33.63	53.98	-20.35
7323.00	Peak	H	-	-	-66.91	7.58	47.67	73.98	-26.31
12205.00	Avg	H	-	-	-82.52	13.45	37.93	53.98	-16.05
12205.00	Peak	H	-	-	-69.15	13.45	51.30	73.98	-22.68

**Table 7-19. Radiated Measurements – Dual**

FCC ID: A3LSMS918U	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Technical Manager
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Worst Case Mode: Bluetooth  
 Worst Case Data Rate: 1 Mbps  
 Measurement Distance: 3 Meters  
 Operating Frequency: 2480MHz  
 Channel: 78

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4960.00	Avg	H	-	-	-80.24	4.33	31.09	53.98	-22.89
4960.00	Peak	H	-	-	-66.75	4.33	44.58	73.98	-29.40
7440.00	Avg	H	-	-	-80.45	7.25	33.80	53.98	-20.18
7440.00	Peak	H	-	-	-67.38	7.25	46.87	73.98	-27.11
12400.00	Avg	H	-	-	-82.91	13.57	37.66	53.98	-16.32
12400.00	Peak	H	-	-	-69.25	13.57	51.32	73.98	-22.66

Table 7-20. Radiated Measurements – Dual

Worst Case Mode: Bluetooth  
 Worst Case Data Rate: 1 Mbps  
 Measurement Distance: 3 Meters  
 Operating Frequency: 2441MHz  
 Channel: 39

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4882.00	Avg	H	-	-	-79.87	4.29	31.42	53.98	-22.56
4882.00	Peak	H	-	-	-67.33	4.29	43.96	73.98	-30.02
7323.00	Avg	H	-	-	-81.00	7.58	33.58	53.98	-20.40
7323.00	Peak	H	-	-	-67.81	7.58	46.77	73.98	-27.21
12205.00	Avg	H	-	-	-82.61	13.45	37.84	53.98	-16.14
12205.00	Peak	H	-	-	-69.69	13.45	50.76	73.98	-23.22

Table 7-21. Radiated Measurements – Dual - WCP

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**7.10 Radiated Restricted Band Edge Measurements**  
 §15.205 §15.209 §15.247 (d); RSS-Gen [8.9]

**Test Overview and Limit**

All out of band radiated emissions at the band edge are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at maximum power, at the appropriate frequencies, and with hopping disabled. 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 below per Section 15.209 and RSS-Gen (8.9).*

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

**Table 7-22. Radiated Limits**

**Test Procedure Used**

ANSI C63.10-2013 – Section 6.10.5.2

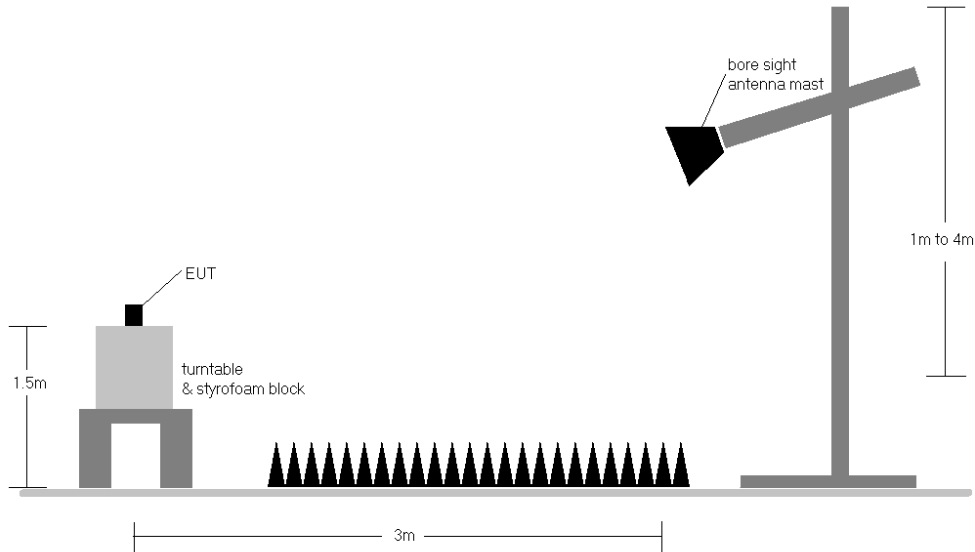
**Test Settings**

- Span is set large enough to capture the peak level of the emission operating on the channel closest to the band edge
- Reference level offset is set with the appropriate corrections for the frequencies shown in the plots
- Reference level is set to provide the appropriate amount of “head room” above the signal as specified in ANSI C63.10-2013 Section 4.1.5.2
- Attenuation is set to a low enough level to maintain enough dynamic range between the noise floor and the radiated limit
- Sweep time = Auto coupled
- RBW = 1MHz
- VBW = 3 x RBW for peak measurements and 1kHz for RMS measurements
- Detector = RMS and peak
- Trace = Max Hold
- 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 7-9. Radiated Test Setup >1GHz**

**Test Notes**

1. All emissions lying in restricted bands specified in §15.205 and Section 8.10 of RSS-Gen are below the limits shown in §15.209.
2. No significant radiated emissions were found in the 2310 - 2390MHz restricted band.
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 10<sup>th</sup> harmonic and the worst-case emissions are reported.
6. Two different amplitude offsets were used depending on whether peak or average measurements were measured. The average measurements use a duty cycle correction factor (DCCF).

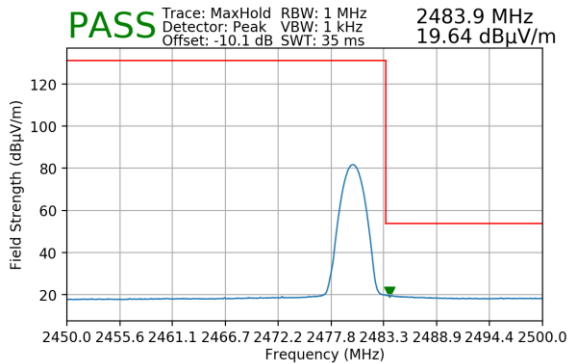
The amplitude offset shown in the following plots for average measurements was calculated using the formula:

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

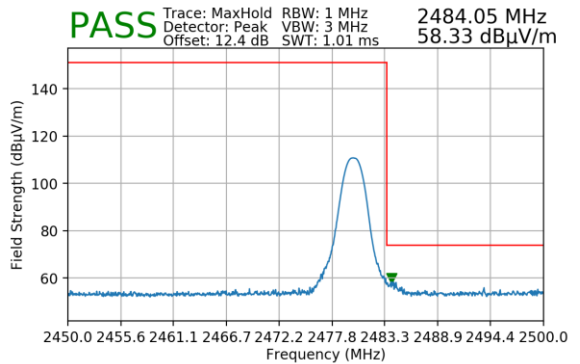
7. The "-" shown in the following RSE tables is used to denote a noise floor measurement.

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Worst Case Mode: Bluetooth  
 Worst Case Data Rate: 1 Mbps  
 Measurement Distance: 3 Meters  
 Operating Frequency: 2480MHz  
 Channel: 78

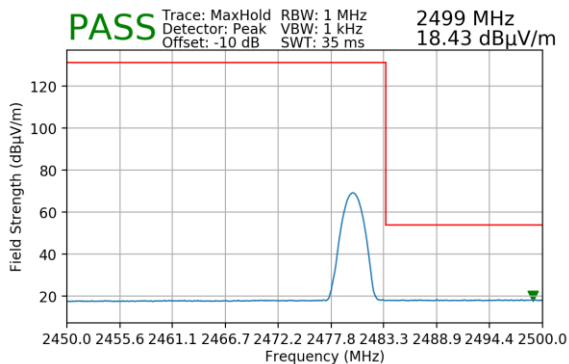


**Plot 7-127. Radiated Restricted Upper Band Edge Measurement (Average) – Ant1**

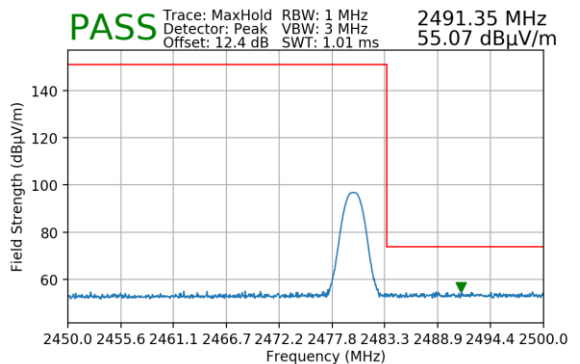


**Plot 7-128. Radiated Restricted Upper Band Edge Measurement (Peak) – Ant1**

Worst Case Mode: Bluetooth  
 Worst Case Data Rate: 1 Mbps  
 Measurement Distance: 3 Meters  
 Operating Frequency: 2480MHz  
 Channel: 78



**Plot 7-129. Radiated Restricted Upper Band Edge Measurement (Average) – Ant2**



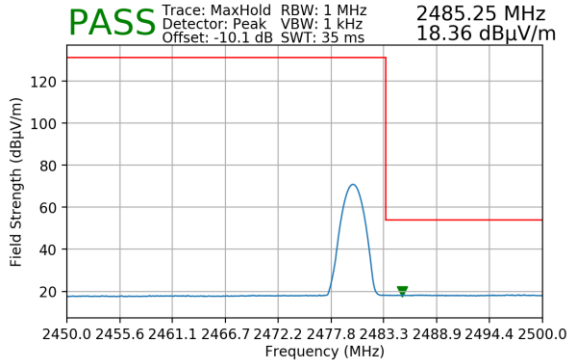
**Plot 7-130. Radiated Restricted Upper Band Edge Measurement (Peak) – Ant2**

Worst Case Mode: Bluetooth

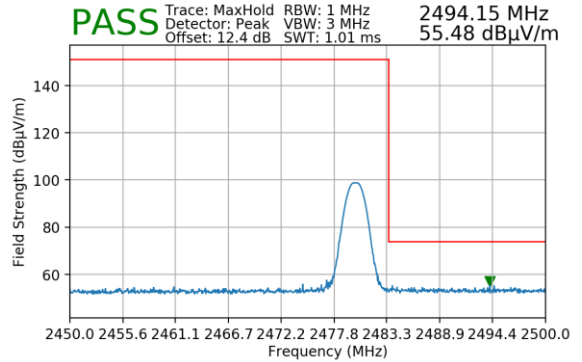
FCC ID: A3LSMS918U	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Technical Manager
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Worst Case Data Rate:	1 Mbps
Measurement Distance:	3 Meters
Operating Frequency:	2480MHz
Channel:	78

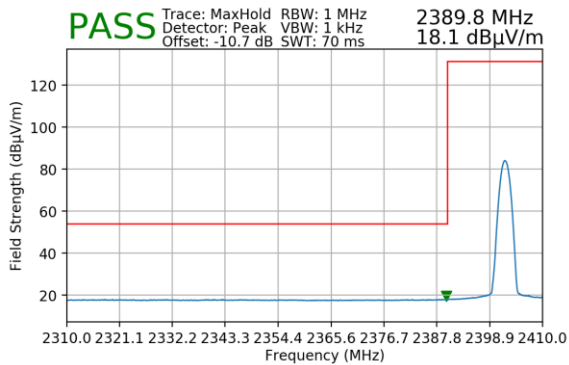


**Plot 7-131. Radiated Restricted Upper Band Edge Measurement (Average) – Dual**

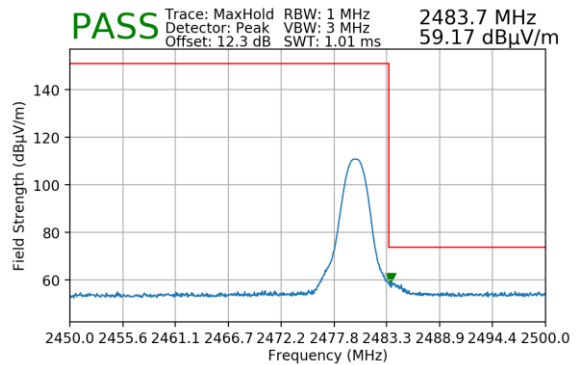


**Plot 7-132. Radiated Restricted Upper Band Edge Measurement (Peak) – Dual**

Worst Case Mode:	Bluetooth
Worst Case Data Rate:	1 Mbps
Measurement Distance:	3 Meters
Operating Frequency:	2480MHz
Channel:	78



**Plot 7-133. Radiated Restricted Upper Band Edge Measurement (Average) – with WCP**



**Plot 7-134. Radiated Restricted Upper Band Edge Measurement (Peak) – with WCP**

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## 7.11 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 must not exceed the limits shown below per Section 15.209 and RSS-Gen (8.9).***

Frequency	Field Strength [ $\mu\text{V/m}$ ]	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 7-23. Radiated Limits**

### Test Procedures Used

ANSI C63.10-2013

### Test Settings

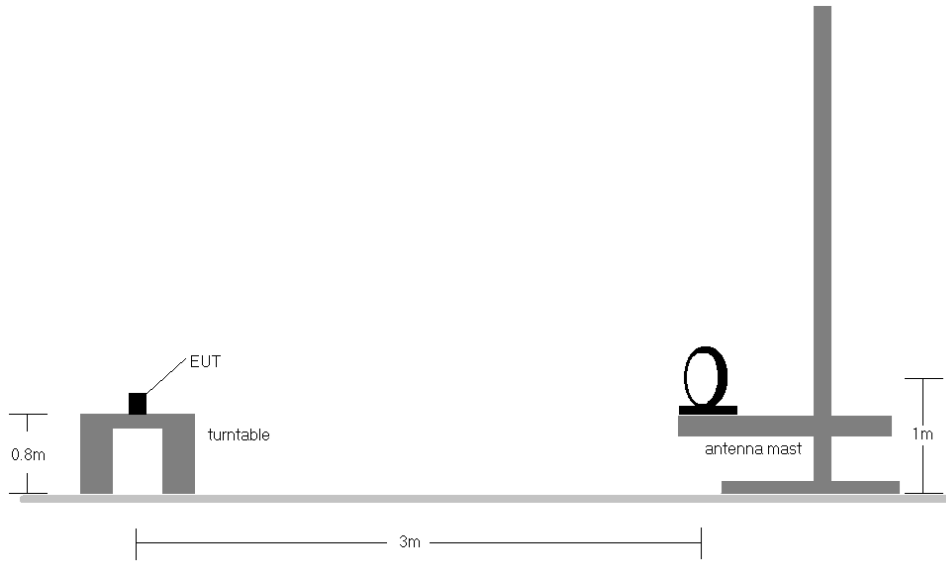
#### Quasi-Peak Field Strength Measurements

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

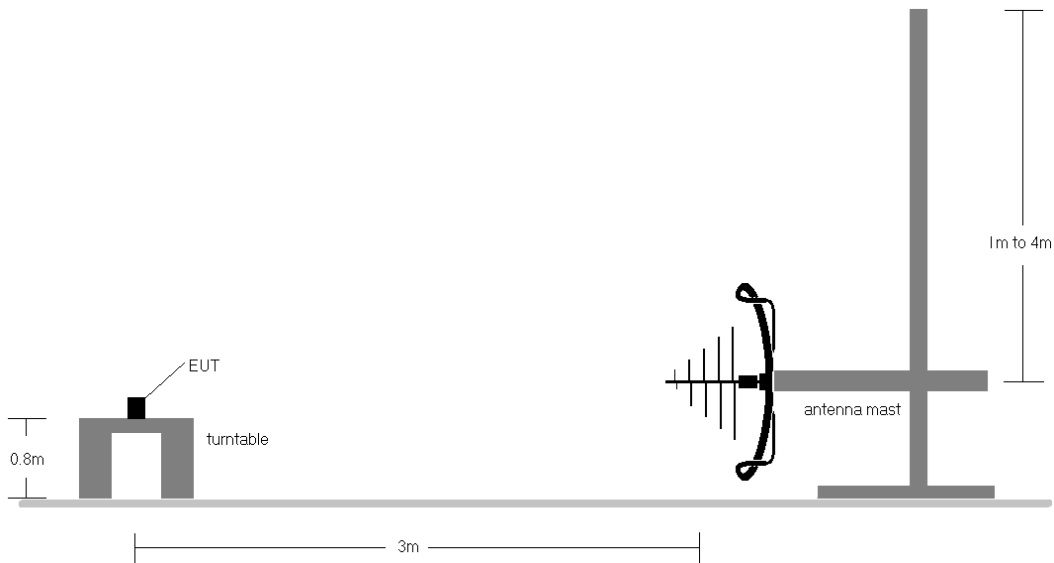
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**Test Setup**

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



**Figure 7-10. Radiated Test Setup < 30Mhz**



**Figure 7-11. Radiated Test Setup < 1GHz**

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**Test Notes**

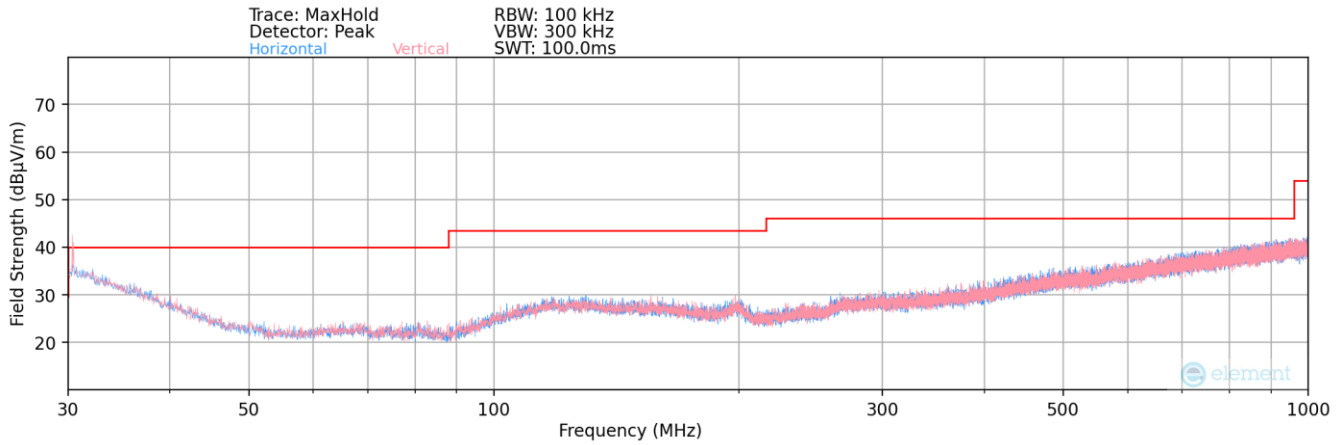
1. All emissions lying in restricted bands specified in §15.205 and RSS-Gen (8.10) are below the limits shown in §15.209.
2. The broadband receive antenna is manipulated through vertical and horizontal polarizations during the tests. The EUT is manipulated through three orthogonal planes.
3. This unit was tested with its standard battery.
4. The spectrum is investigated using a peak detector and final measurements are recorded using CISPR quasi peak detector. The worst-case emissions are reported however emissions whose levels were not within 20dB of the respective limits were not reported.
5. Emissions were measured at a 3 meter test distance.
6. Emissions are investigated while operating on the center channel of the mode, band, and modulation that produced the worst case results during the transmitter spurious emissions testing.
7. No spurious emissions were detected within 20dB of the limit below 30MHz.
8. The results recorded using the broadband antenna is known to correlate with the results obtained by using a tuned dipole with an acceptable degree of accuracy. The VSWR for the measurement antenna was found to be less than 2:1.
9. The wide spectrum spurious emissions plots shown on the following pages are used only for the purpose of emission identification. There were no emissions detected in the 30MHz – 1GHz frequency range, as shown in the subsequent plots.

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## Radiated Spurious Emissions Measurements (Below 1GHz)

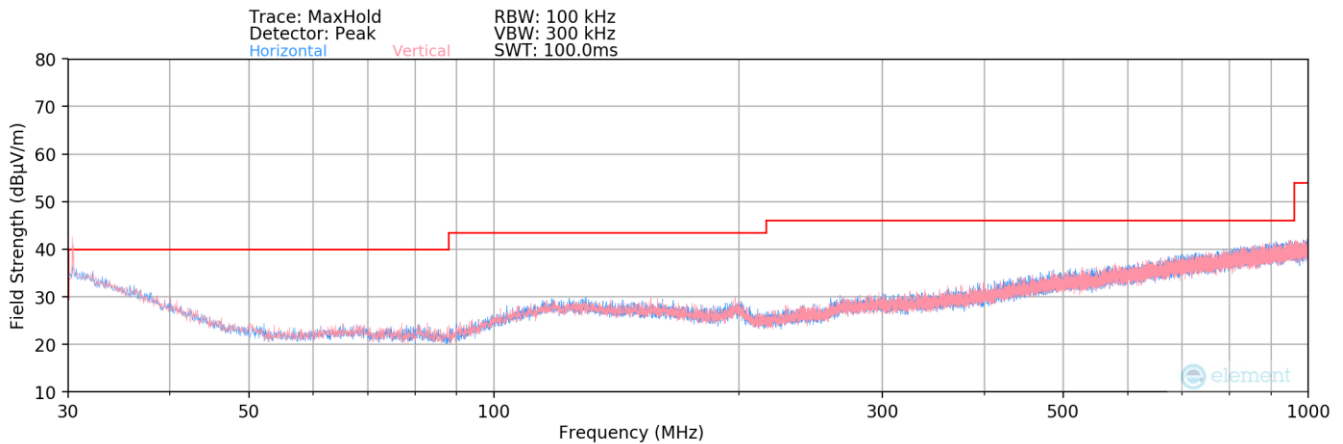
§15.209; RSS-Gen [8.9]



Plot 7-135. Radiated Spurious Plot below 1GHz – Ant1

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
200.00	Quasi-Peak	H	-	-	-98.01	20.30	29.29	43.52	-14.23

Table 7-24. Radiated Spurious Emissions Below 1GHz – Ant1



Plot 7-136. Radiated Spurious Plot below 1GHz – Dual

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
200.00	Quasi-Peak	H	-	-	-97.20	20.30	30.10	43.52	-13.42

Table 7-25. Radiated Spurious Emissions Below 1GHz – Dual

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## 7.12 Line Conducted Measurement Data

§15.207; 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 $\mu$ V)	
	Quasi-peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50

**Table 7-26. 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

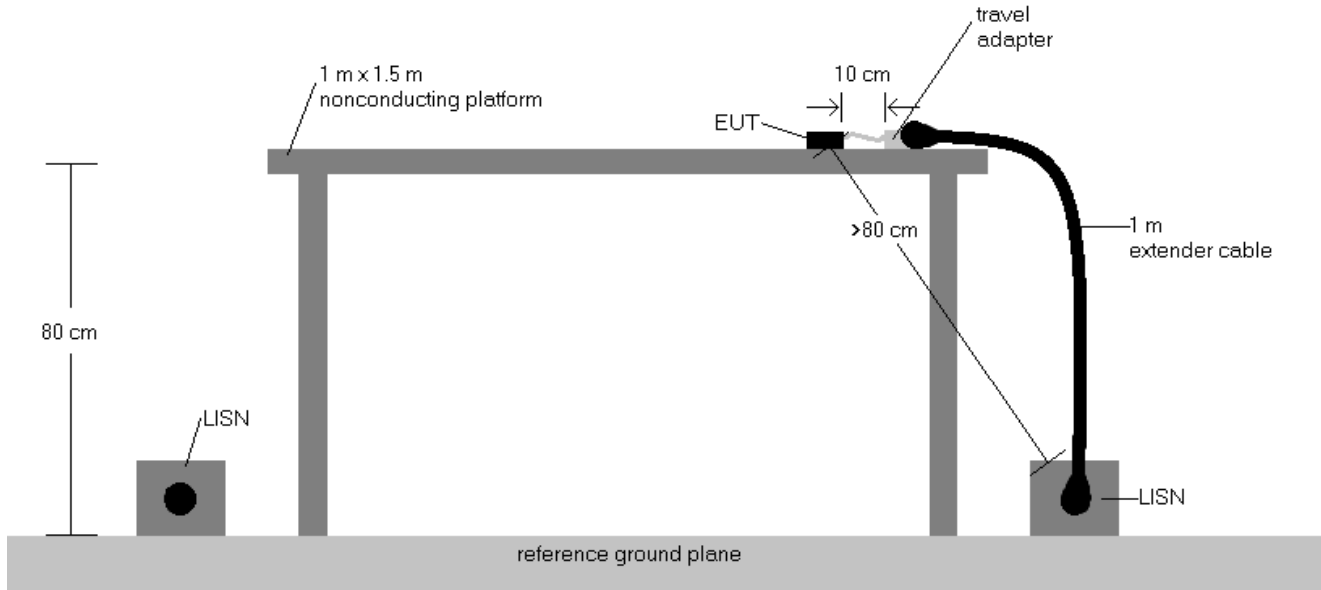
#### Average Field Strength Measurements

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.

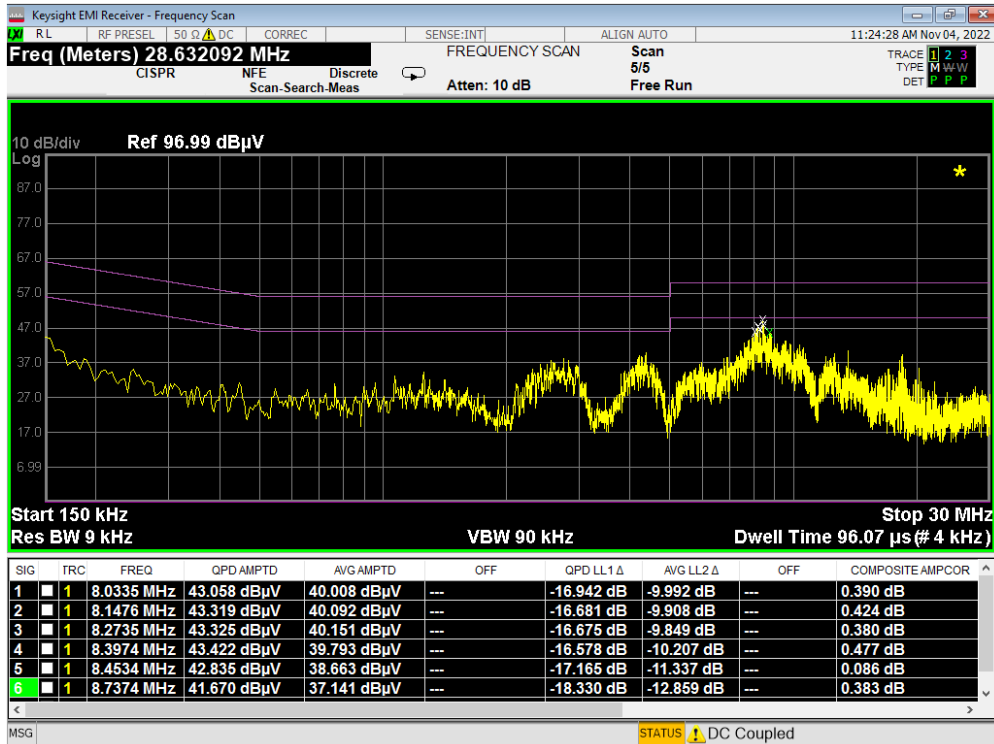


**Figure 7-12. Test Instrument & Measurement Setup**

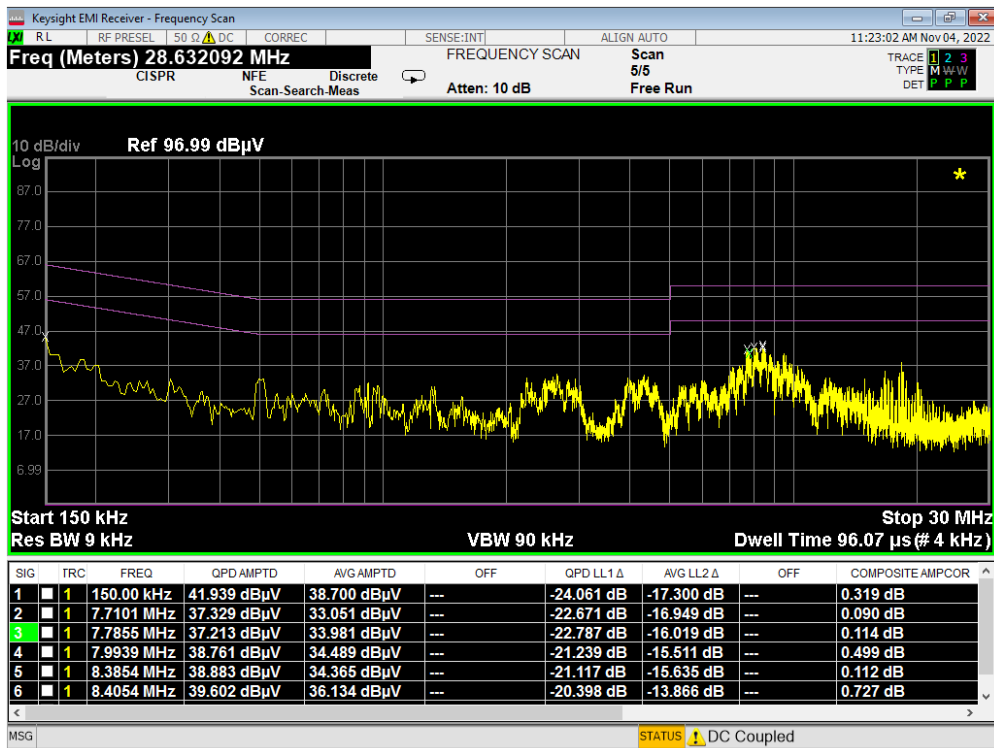
**Test Notes**

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.

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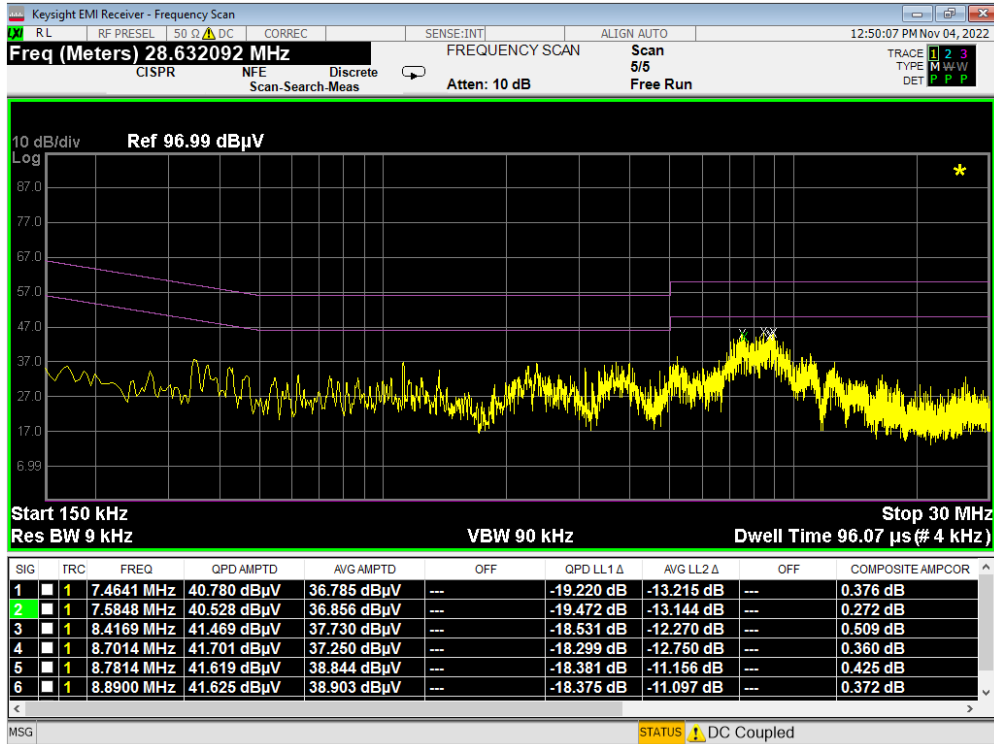


Plot 7-137. Line-Conducted Test Plot (L1)

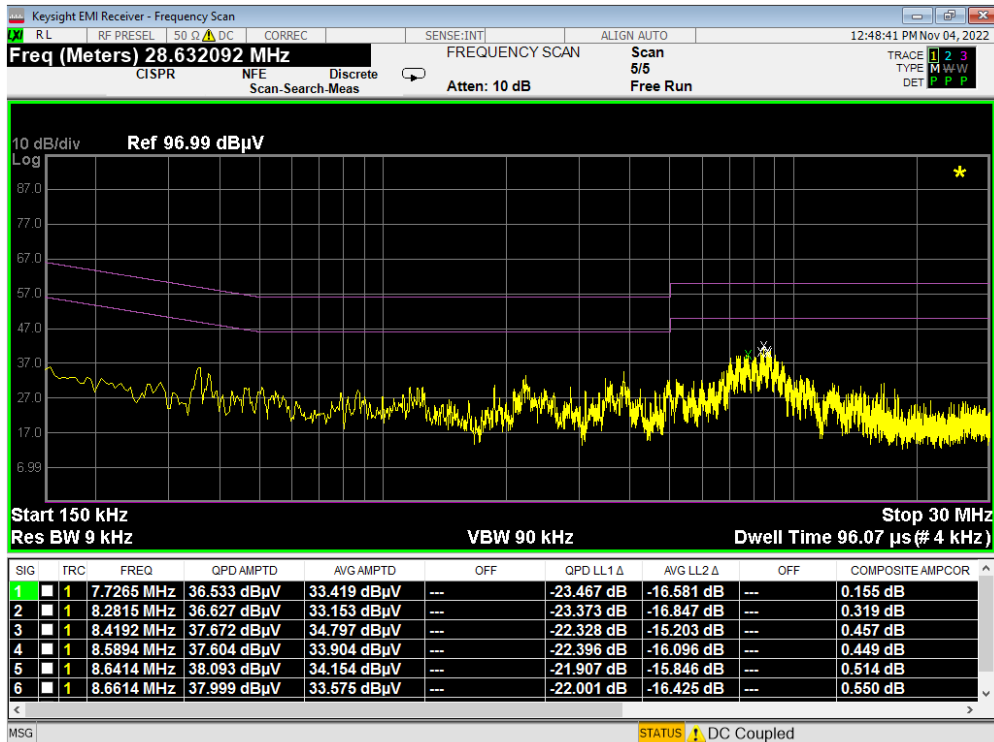


Plot 7-138. Line-Conducted Test Plot (N)

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Plot 7-139. Line-Conducted Test Plot (L1) with WCP



Plot 7-140. Line-Conducted Test Plot (N) with WCP

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## 8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMS918U** is in compliance with Part 15 Subpart C (15.247) of the FCC Rules.

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