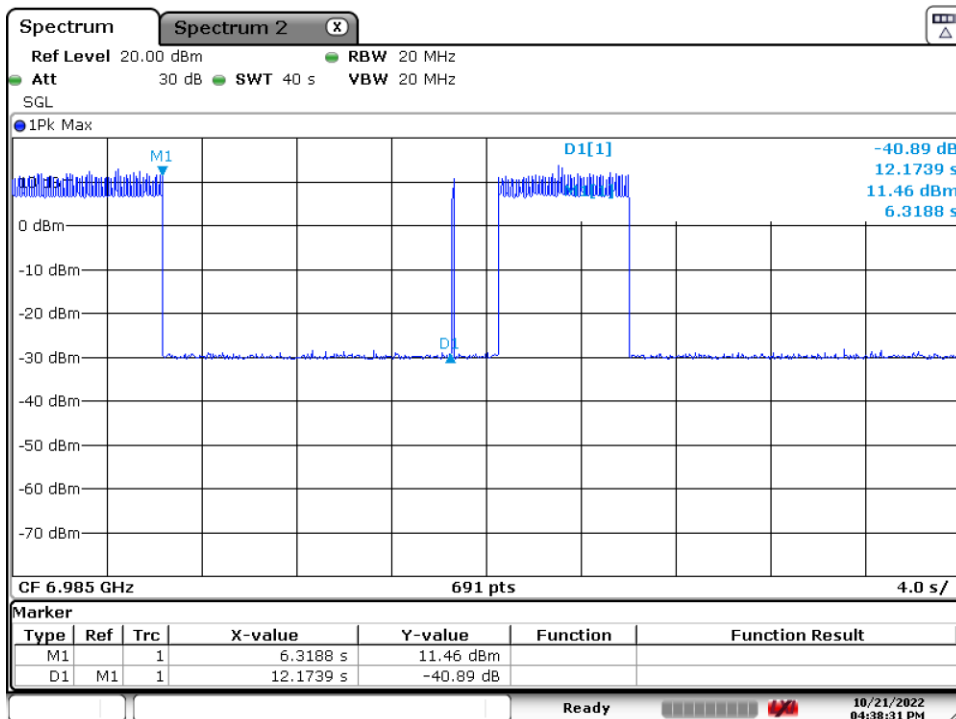


Date: 21.OCT.2022 16:33:21

Plot 7-343. Contention Based Protocol Timing Plot – UNII 8 – 160MHz Ch207 – Mid



Date: 21.OCT.2022 16:38:30

Plot 7-344. Contention Based Protocol Timing Plot – UNII 8 – 160MHz Ch207 - High

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**7.7 Radiated Spurious Emission Measurements – Above 1GHz**  
**§15.205, §15.209, §15.407(b)(6)**

**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, 802.11ax (20/40/80/160MHz), 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 5.925-7.125 GHz band: All emissions outside of the 5.925-7.125 GHz band shall not exceed an EIRP of -27dBm/MHz (68.2dBuV/m at a 3m distance). Emissions found in a restricted band are subject to the limits of 15.209 as shown in the table below.***

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

**Table 7-11. Radiated Limits**

**Test Procedures Used**

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

**Test Settings**

**Average Measurements above 1GHz (Method AD)**

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

**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

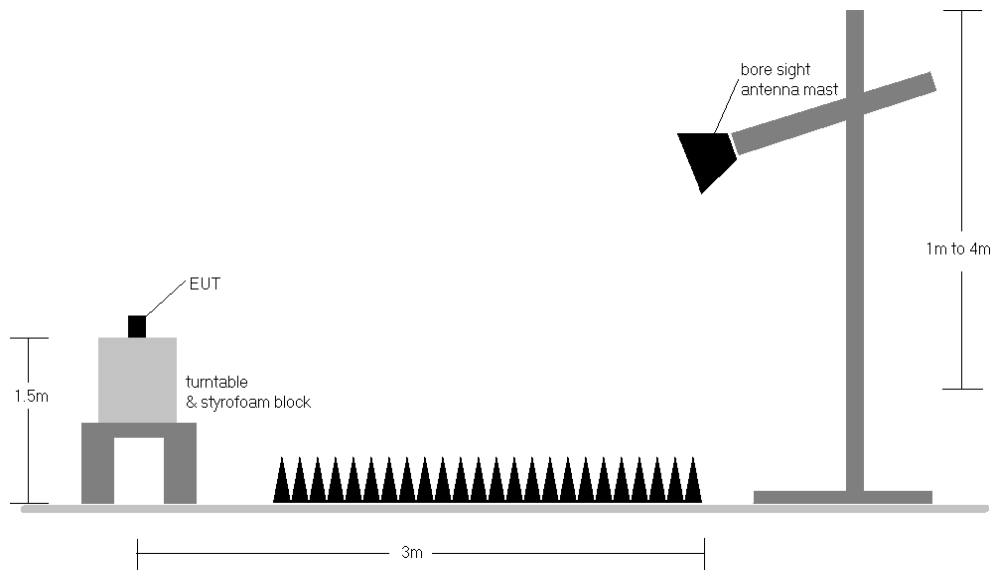
<b>FCC:</b> A3LSMS918JPN	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2212080137-13-R1.A3L	<b>Test Dates:</b> 9/3/2022 – 11/8/2022	<b>EUT Type:</b> Portable Handset	Page 207 of 238

**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 7-6. Test Instrument & Measurement Setup**

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**Test Notes**

1. All spurious emissions lying in restricted bands specified in §15.205 are below the limit shown in Table 7-11. All spurious emissions that do not lie in a restricted band are subject to an average limit of -27dBm/MHz. At a distance of 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.

**Sample Calculations**

**Determining Spurious Emissions Levels**

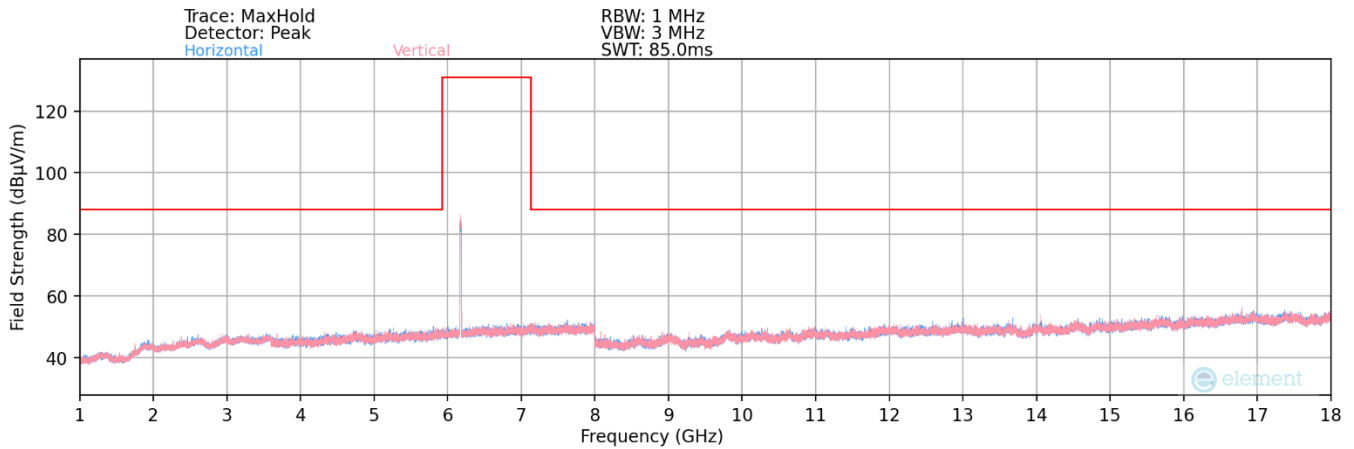
- Field Strength Level [dB $\mu$ V/m] = Analyzer Level [dBm] + 107 + AFCL [dB/m]
- AFCL [dB/m] = Antenna Factor [dB/m] + Cable Loss [dB]
- Margin [dB] = Field Strength Level [dB $\mu$ V/m] – Limit [dB $\mu$ V/m]

**Radiated Band Edge Measurement Offset**

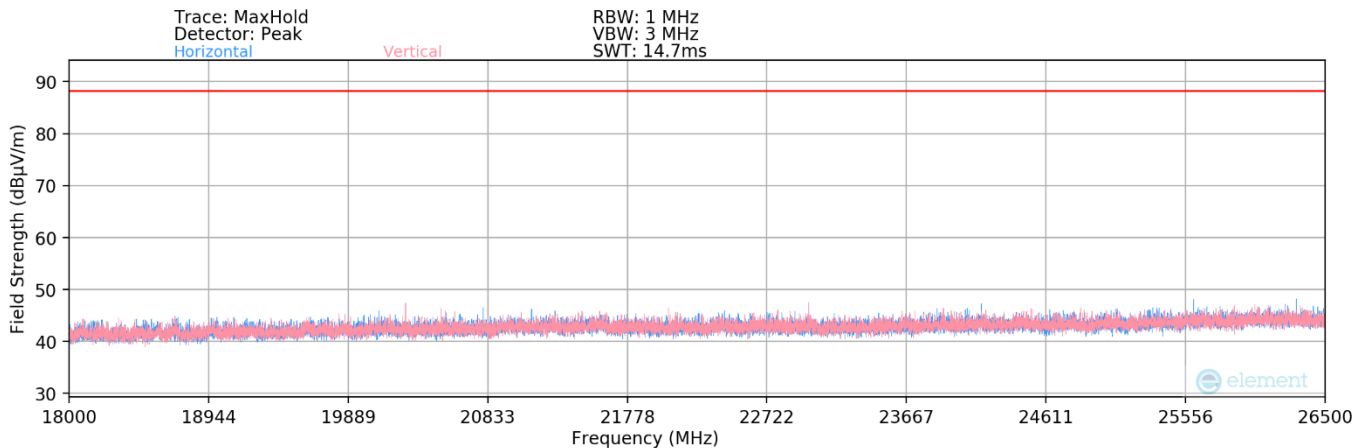
- The amplitude offset shown in the radiated restricted band edge plots was calculated using the formula:  
Offset (dB) = (Antenna Factor + Cable Loss + Attenuator) – Preamplifier Gain

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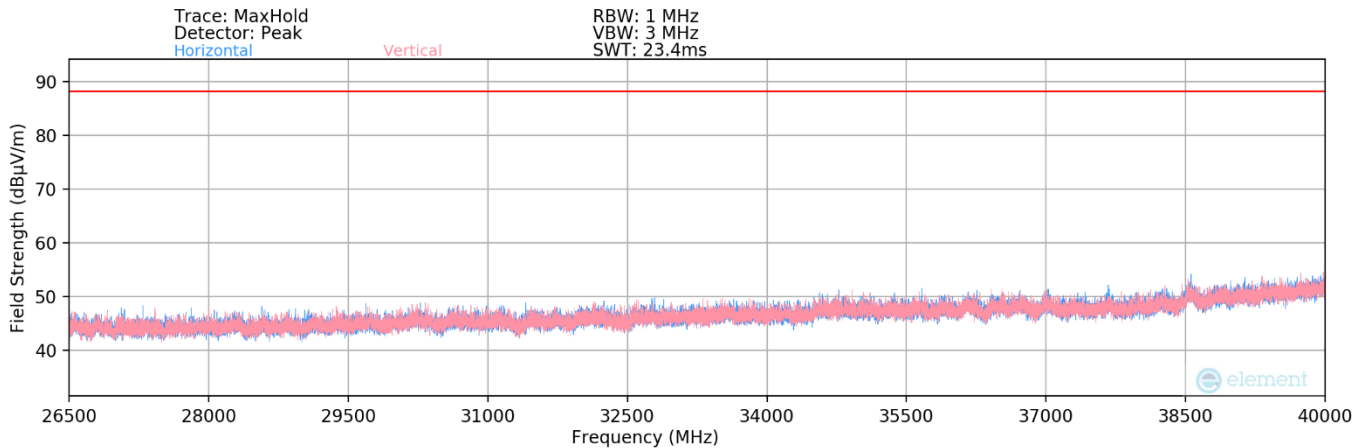
## 7.7.1 MIMO Radiated Spurious Emission Measurements



**Plot 7-345. Radiated Spurious Plot above 1GHz MIMO (802.11ax – UNII Band 5 – 20MHz – Ch.45)**



**Plot 7-346. Radiated Spurious Plot above 18GHz - 26.5GHz – CH 45 - MIMO (802.11ax)**



**Plot 7-347. Radiated Spurious Plot 26.5GHz - 40GHz – CH 45 - MIMO (802.11ax)**

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**MIMO Radiated Spurious Emission Measurements**  
 §15.407(b) §15.205 & §15.209

Worst Case Mode: 802.11ax  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5935MHz  
 Channel: 2

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]
* 11870.00	Average	V	-	-	-81.76	14.16	0.00	39.40	53.98	-14.58
* 11870.00	Peak	V	-	-	-71.01	14.16	0.00	50.15	73.98	-23.83
* 17865.00	Average	V	-	-	-82.50	18.26	0.00	42.76	53.98	-11.22
* 17865.00	Peak	V	-	-	-71.98	18.26	0.00	53.28	73.98	-20.70
* 23820.00	Average	V	-	-	-64.99	3.99	-9.54	36.46	53.98	-17.52
* 23820.00	Peak	V	-	-	-58.71	3.99	-9.54	42.74	73.98	-31.24
29775.00	Peak	V	-	-	-55.01	6.33	-9.54	48.78	68.20	-19.42

**Table 7-12. Radiated Measurements MIMO (UNII Band 5 – Low Channel – 20MHz)**

Worst Case Mode: 802.11ax  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 6175MHz  
 Channel: 45

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]
* 12350.00	Average	V	-	-	-81.57	13.85	0.00	39.28	53.98	-14.70
* 12350.00	Peak	V	-	-	-71.01	13.85	0.00	49.84	73.98	-24.14
* 18525.00	Average	V	-	-	-69.20	1.68	-9.54	29.94	53.98	-24.04
* 18525.00	Peak	V	-	-	-57.67	1.68	-9.54	41.47	73.98	-32.51
24700.00	Peak	V	-	-	-57.85	4.25	-9.54	43.86	68.20	-24.34
30875.00	Peak	V	-	-	-59.19	6.73	-9.54	45.00	68.20	-23.20

**Table 7-13. Radiated Measurements MIMO (UNII Band 5 – Mid Channel – 20MHz)**

FCC: A3LSMS918JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Worst Case Mode: 802.11ax  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 6415MHz  
 Channel: 93

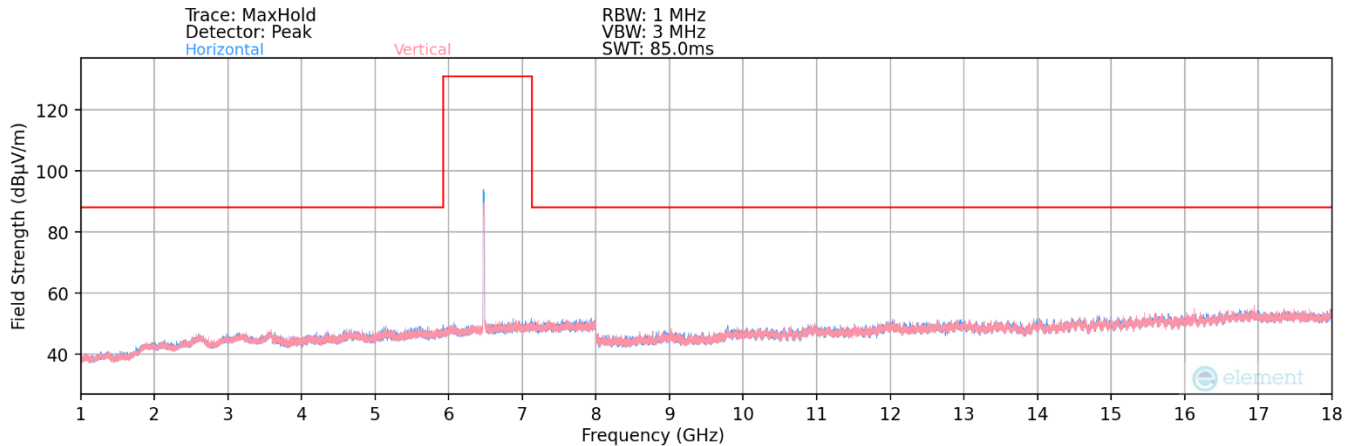
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
12830.00	Peak	V	-	-	-82.51	14.78	0.00	39.27	68.20	-28.93
* 19245.00	Average	V	-	-	-71.11	2.30	-9.54	28.65	53.98	-25.33
* 19245.00	Peak	V	-	-	-59.05	2.30	-9.54	40.71	73.98	-33.27
25660.00	Peak	V	-	-	-58.16	4.61	-9.54	43.91	68.20	-24.29
32075.00	Peak	V	-	-	-59.36	7.18	-9.54	45.28	68.20	-22.92

**Table 7-14. Radiated Measurements MIMO (UNII Band 5 – High Channel – 20MHz)**

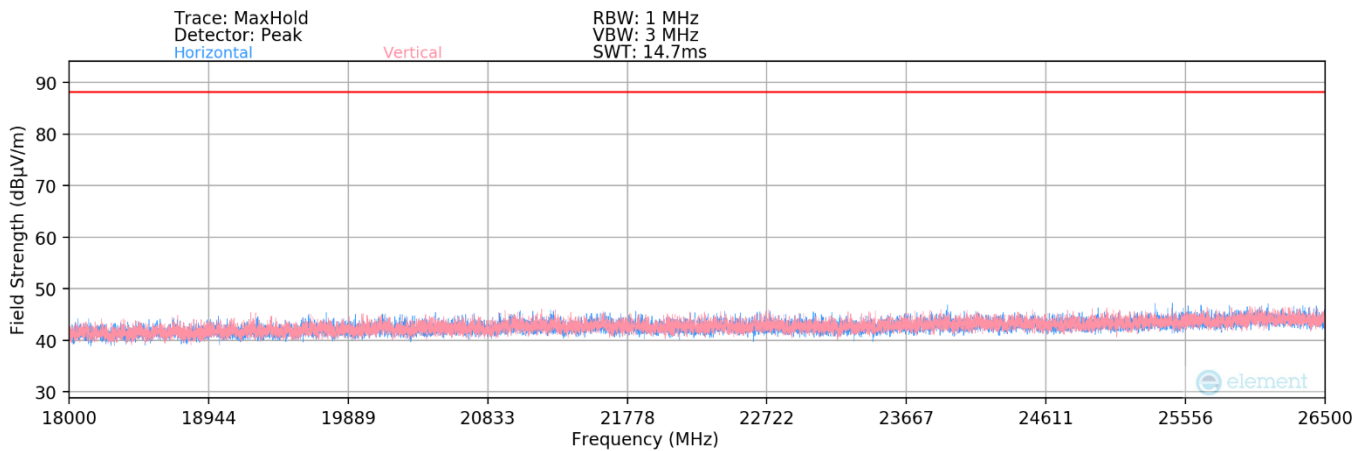
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 12350.00	Average	V	242	229	-74.94	9.80	0.00	41.86	53.98	-12.12
* 12350.00	Peak	V	242	229	-62.12	9.80	0.00	54.68	73.98	-19.30

**Table 7-15. Radiated Measurements MIMO (UNII Band 5 – Mid Channel – 20MHz) with WCP**

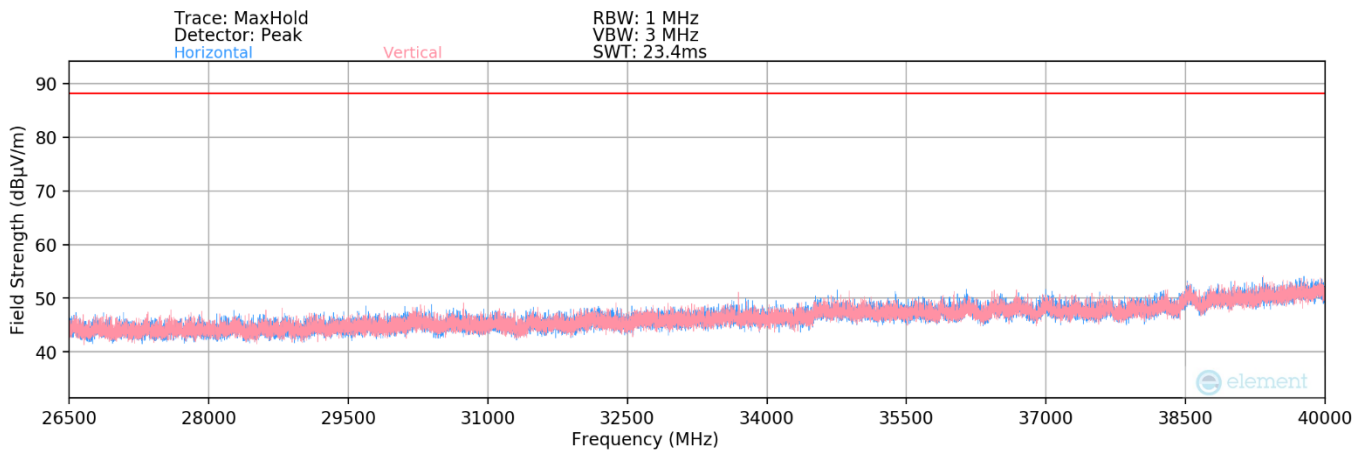
FCC: A3LSMS918JPN	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Technical Manager
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**Plot 7-348. Radiated Spurious Plot above 1GHz MIMO (802.11ax- UNII Band 6 - 20MHz - Ch.105)**



**Plot 7-349. Radiated Spurious Plot above 18GHz - 26.5GHz - CH 105 - MIMO (802.11ax)**



**Plot 7-350. Radiated Spurious Plot 26.5GHz - 40GHz - CH 105 - MIMO (802.11ax)**

FCC: A3LSMS918JPN		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Technical Manager
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**MIMO Radiated Spurious Emission Measurements**  
§15.407(b) §15.205 & §15.209

Worst Case Mode: 802.11ax  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 6435MHz  
 Channel: 97

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]
12870.00	Peak	V	-	-	-71.66	14.51	0.00	49.85	68.20	-18.35
* 19305.00	Average	V	-	-	-65.33	2.61	-9.54	34.74	53.98	-19.24
* 19305.00	Peak	V	-	-	-70.98	2.61	-9.54	29.09	73.98	-44.89
25740.00	Peak	V	-	-	-57.64	4.71	-9.54	44.53	68.20	-23.67
32175.00	Peak	V	-	-	-58.34	7.21	-9.54	46.33	68.20	-21.87

**Table 7-16. Radiated Measurements MIMO (UNII Band 6 – Low Channel – 20MHz)**

Worst Case Mode: 802.11ax  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 6475MHz  
 Channel: 105

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]
12950.00	Peak	V	-	-	-70.89	14.59	0.00	50.70	68.20	-17.50
* 19425.00	Average	V	-	-	-64.33	2.67	-9.54	35.80	53.98	-18.18
* 19425.00	Peak	V	-	-	-54.69	2.67	-9.54	45.44	73.98	-28.54
25900.00	Peak	V	-	-	-54.88	4.77	-9.54	47.35	68.20	-20.85
32375.00	Peak	V	-	-	-55.61	6.96	-9.54	48.81	68.20	-19.39

**Table 7-17. Radiated Measurements MIMO (UNII Band 6 – Mid Channel – 20MHz)**

FCC: A3LSMS918JPN	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Technical Manager
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Worst Case Mode: 802.11ax  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 6515MHz  
 Channel: 113

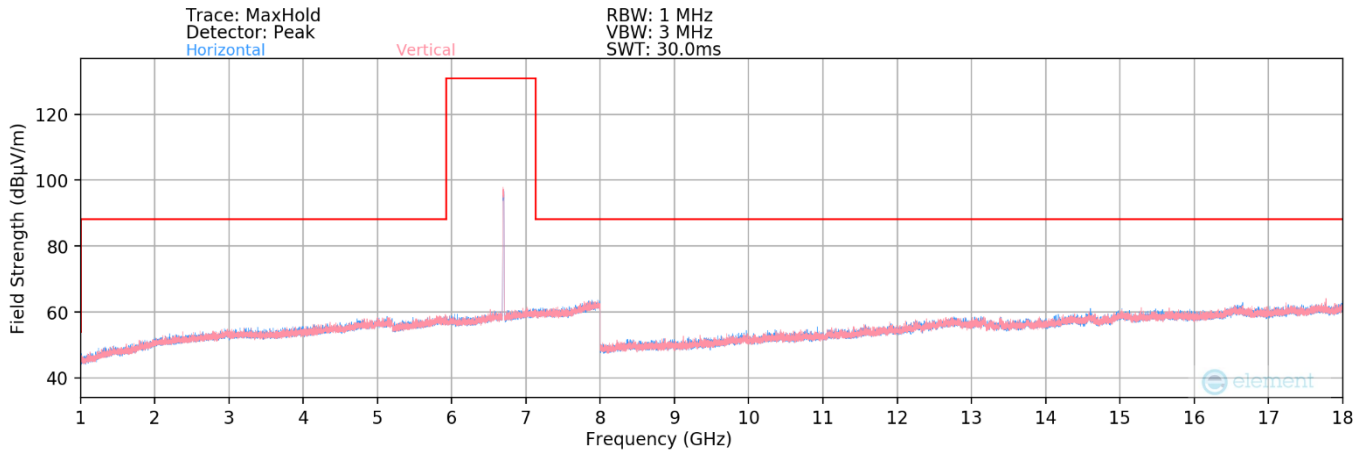
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
13030.00	Peak	V	-	-	-70.56	14.61	0.00	51.05	68.20	-17.15
* 19545.00	Average	V	-	-	-64.39	2.63	-9.54	35.70	53.98	-18.28
* 19545.00	Peak	V	-	-	-53.88	2.63	-9.54	46.21	73.98	-27.77
26060.00	Peak	V	-	-	-54.69	4.83	-9.54	47.60	68.20	-20.60
32575.00	Peak	V	-	-	-55.54	6.80	-9.54	48.72	68.20	-19.48

**Table 7-18. Radiated Measurements MIMO (UNII Band 6 – High Channel – 20MHz)**

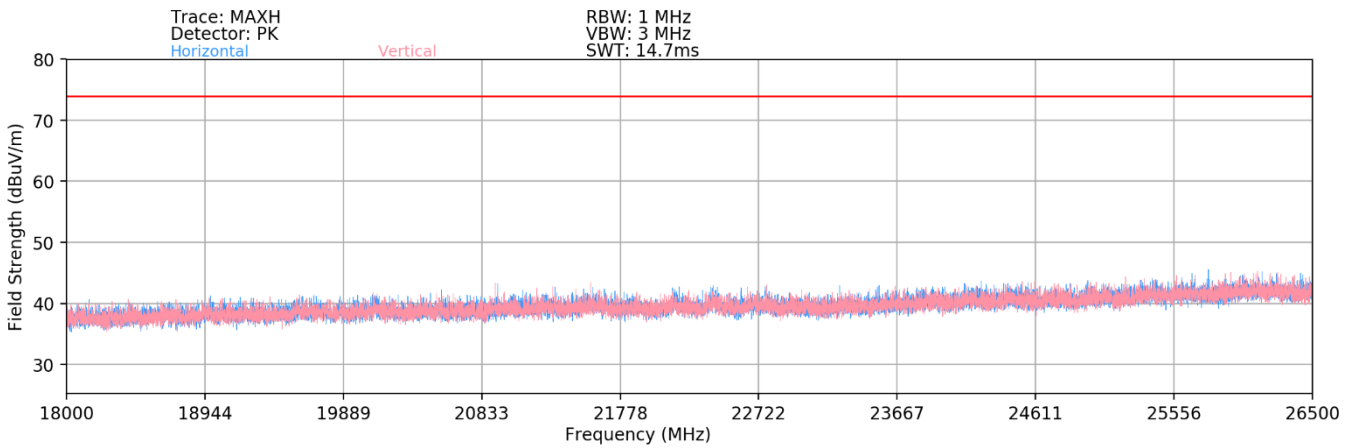
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
12950.00	Peak	V	163	43	-58.62	10.31	0.00	58.69	68.20	-9.51

**Table 7-19. Radiated Measurements MIMO (UNII Band 6 – Mid Channel – 20MHz) with WCP**

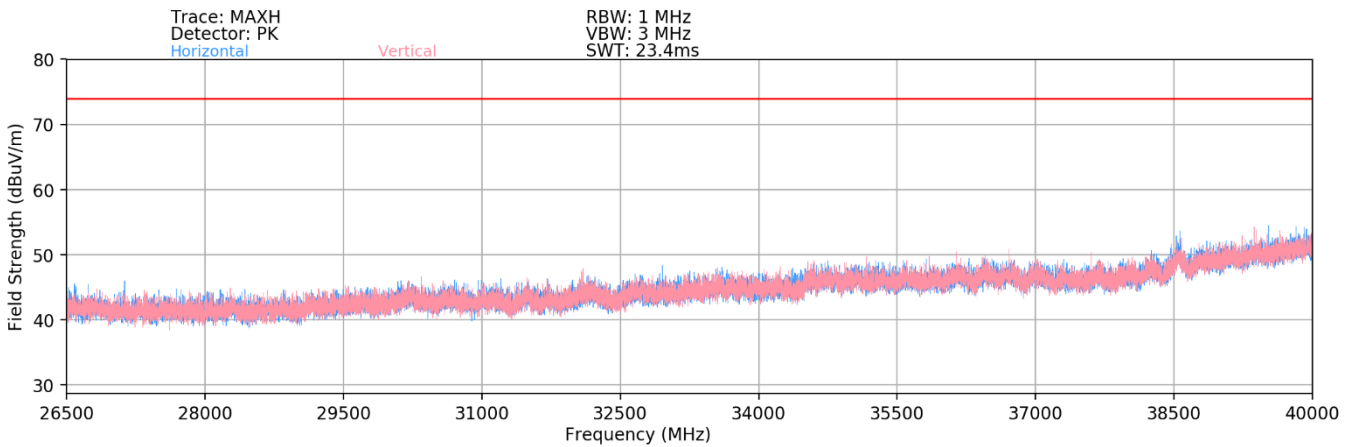
FCC: A3LSMS918JPN	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Technical Manager
Test Report S/N: 1M2212080137-13-R1.A3L	Test Dates: 9/3/2022 – 11/8/2022	EUT Type: Portable Handset	Page 215 of 238



**Plot 7-351. Radiated Spurious Plot above 1GHz MIMO (802.11ax- UNII Band 7 - 20MHz - Ch.149)**



**Plot 7-352. Radiated Spurious Plot above 18GHz - 26.5GHz - CH 149 - MIMO (802.11ax)**



**Plot 7-353. Radiated Spurious Plot 26.5GHz - 40GHz - CH 149 - MIMO (802.11ax)**

FCC: A3LSMS918JPN	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Technical Manager
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**MIMO Radiated Spurious Emission Measurements**  
§15.407(b) §15.205 & §15.209

Worst Case Mode: 802.11ax  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 6535MHz  
 Channel: 117

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]
13070.00	Peak	V	-	-	-70.58	14.41	0.00	50.83	68.20	-17.37
* 19605.00	Average	V	-	-	-64.38	2.75	-9.54	35.83	53.98	-18.15
* 19605.00	Peak	V	-	-	-53.91	2.75	-9.54	46.30	73.98	-27.68
26140.00	Peak	V	-	-	-64.36	5.14	-9.54	38.24	68.20	-29.96
32675.00	Peak	V	-	-	-55.37	7.15	-9.54	49.24	68.20	-18.96

**Table 7-20. Radiated Measurements MIMO (UNII Band 7 – Low Channel – 20MHz)**

Worst Case Mode: 802.11ax  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 6695MHz  
 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]
* 13390.00	Average	V	-	-	-71.22	14.18	0.00	49.96	53.98	-4.02
* 13390.00	Peak	V	-	-	-67.11	14.18	0.00	54.07	73.98	-19.91
* 20085.00	Average	V	-	-	-65.29	3.06	-9.54	35.23	53.98	-18.75
* 20085.00	Peak	V	-	-	-56.21	3.06	-9.54	44.31	73.98	-29.67
26780.00	Peak	V	-	-	-57.33	5.33	-9.54	45.46	68.20	-22.74
33475.00	Peak	V	-	-	-56.51	7.51	-9.54	48.46	68.20	-19.74

**Table 7-21. Radiated Measurements MIMO (UNII Band 7 – Mid Channel – 20MHz)**

FCC: A3LSMS918JPN	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Technical Manager
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Worst Case Mode: 802.11ax  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 6875MHz  
 Channel: 185

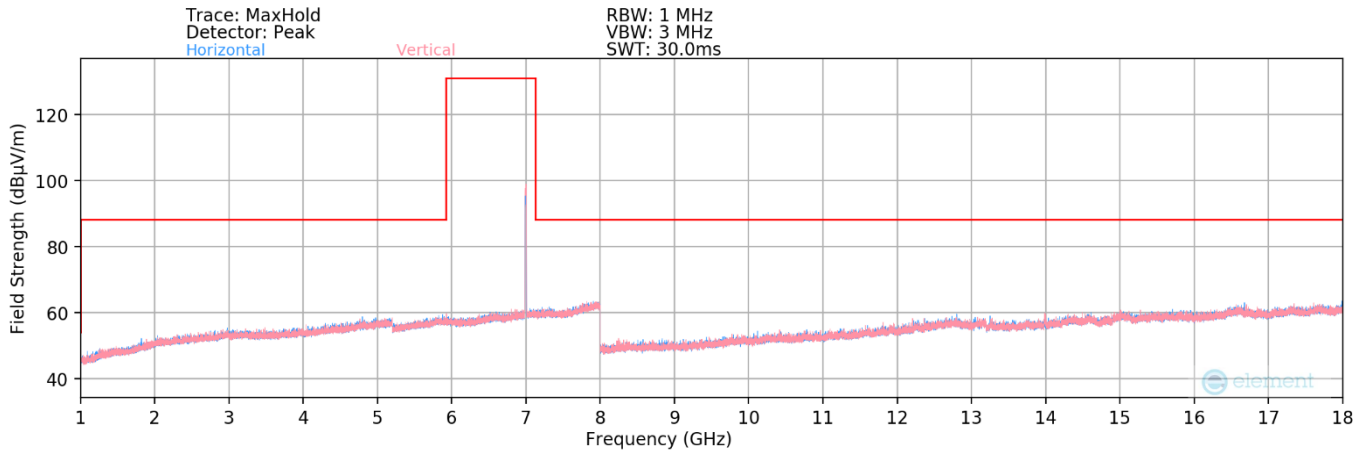
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
13750.00	Peak	V	-	-	-72.01	14.18	0.00	49.17	68.20	-19.03
* 20625.00	Average	V	-	-	-67.21	3.32	-9.54	33.57	53.98	-20.41
* 20625.00	Peak	V	-	-	-56.32	3.32	-9.54	44.46	73.98	-29.52
27500.00	Peak	V	-	-	-56.98	4.97	-9.54	45.45	68.20	-22.75
34375.00	Peak	V	-	-	-56.47	7.82	-9.54	48.81	68.20	-19.39

**Table 7-22. Radiated Measurements MIMO (UNII Band 7 – High Channel – 20MHz)**

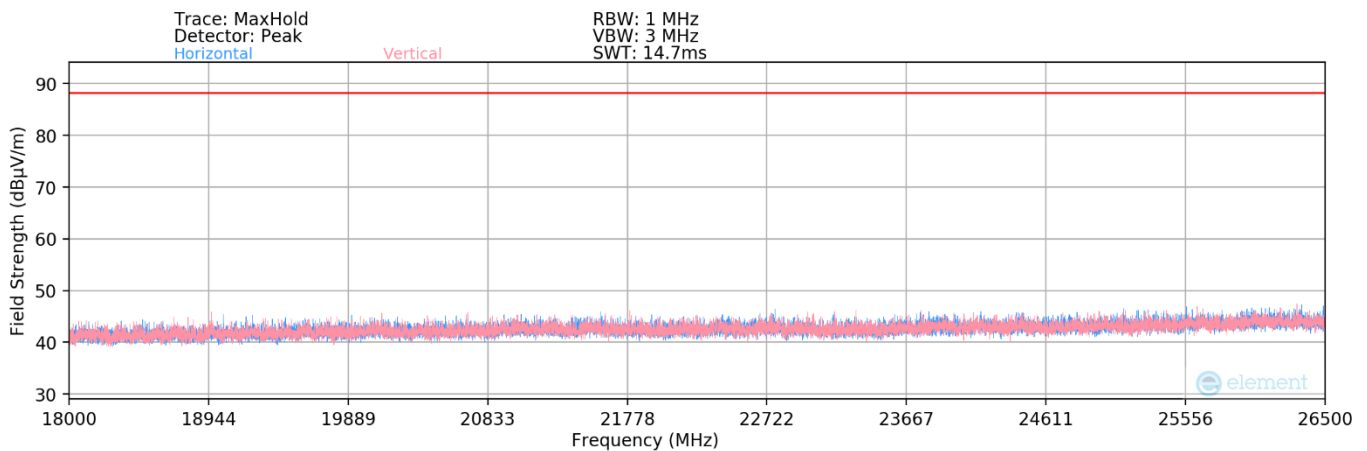
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 13390.00	Average	V	282	232	-70.26	10.71	0.00	47.45	53.98	-6.53
* 13390.00	Peak	V	282	232	-56.74	10.71	0.00	60.97	73.98	-13.01

**Table 7-23. Radiated Measurements MIMO (UNII Band 7 – Mid Channel – 20MHz) with WCP**

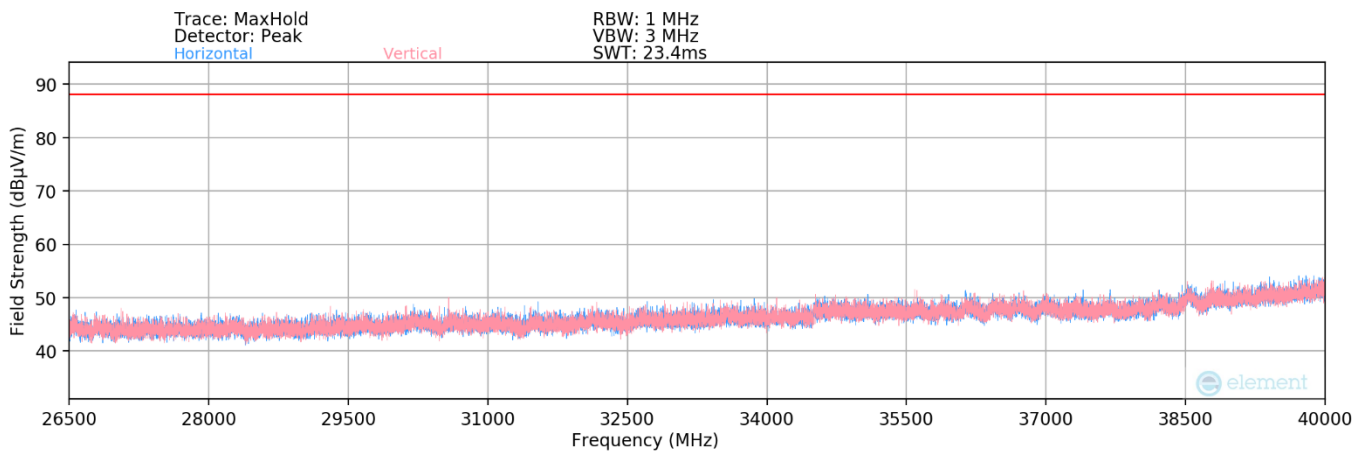
FCC: A3LSMS918JPN	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Technical Manager
Test Report S/N: 1M2212080137-13-R1.A3L	Test Dates: 9/3/2022 – 11/8/2022	EUT Type: Portable Handset	Page 218 of 238



**Plot 7-354. Radiated Spurious Plot above 1GHz MIMO (802.11ax- UNII Band 8 - 20MHz - Ch.209)**



**Plot 7-355. Radiated Spurious Plot above 18GHz - 26.5GHz - CH 209 - MIMO (802.11ax)**



**Plot 7-356. Radiated Spurious Plot 26.5GHz - 40GHz - CH 209 - MIMO (802.11ax)**

<b>FCC:</b> A3LSMS918JPN	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2212080137-13-R1.A3L	<b>Test Dates:</b> 9/3/2022 - 11/8/2022	<b>EUT Type:</b> Portable Handset	Page 219 of 238



## MIMO Radiated Spurious Emission Measurements

§15.407(b) §15.205 & §15.209

Worst Case Mode: 802.11ax  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 6895MHz  
 Channel: 189

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]
13790.00	Peak	V	-	-	-71.00	14.62	0.00	50.62	68.20	-17.58
* 20685.00	Average	V	-	-	-66.54	3.24	-9.54	34.16	53.98	-19.82
* 20685.00	Peak	V	-	-	-55.69	3.24	-9.54	45.01	73.98	-28.97
27580.00	Peak	V	-	-	-56.89	5.11	-9.54	45.68	68.20	-22.52
34475.00	Peak	V	-	-	-57.01	7.75	-9.54	48.20	68.20	-20.00

**Table 7-24. Radiated Measurements MIMO (UNII Band 8 – Low Channel – 20MHz)**

Worst Case Mode: 802.11ax  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 6995MHz  
 Channel: 209

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]
13990.00	Peak	V	-	-	-70.55	14.50	0.00	50.95	68.20	-17.25
* 20985.00	Average	V	-	-	-66.39	3.52	-9.54	34.59	53.98	-19.39
* 20985.00	Peak	V	-	-	-55.21	3.52	-9.54	45.77	73.98	-28.21
27980.00	Peak	V	-	-	-56.32	4.92	-9.54	46.06	68.20	-22.14
34975.00	Peak	V	-	-	-57.14	8.03	-9.54	48.35	68.20	-19.85

**Table 7-25. Radiated Measurements MIMO (UNII Band 8 – Mid Channel – 20MHz)**

FCC: A3LSMS918JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2212080137-13-R1.A3L	Test Dates: 9/3/2022 – 11/8/2022	EUT Type: Portable Handset	Page 220 of 238

Worst Case Mode: 802.11ax  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 7115MHz  
 Channel: 233

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]
14230.00	Peak	V	-	-	-69.66	15.54	0.00	52.88	68.20	-15.32
* 21345.00	Average	V	-	-	-65.66	3.97	-9.54	35.77	53.98	-18.21
* 21345.00	Peak	V	-	-	-57.01	3.97	-9.54	44.42	73.98	-29.56
28460.00	Peak	V	-	-	-58.01	5.18	-9.54	44.63	68.20	-23.57
35575.00	Peak	V	-	-	-57.66	7.82	-9.54	47.62	68.20	-20.58

**Table 7-26. Radiated Measurements MIMO (UNII Band 8 – High Channel – 20MHz)**

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]
13990.00	Peak	V	257	232	-54.38	11.70	0.00	64.32	68.20	-3.88

**Table 7-27. Radiated Measurements MIMO (UNII Band 8 – Mid Channel – 20MHz) with WCP**

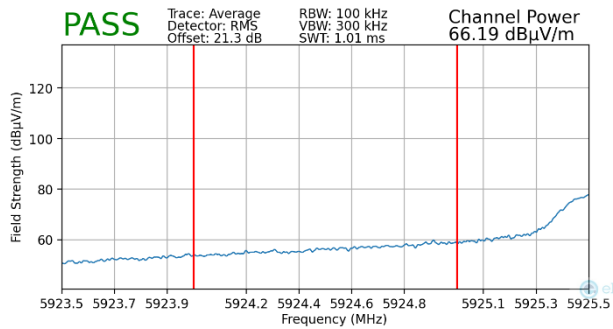
FCC: A3LSMS918JPN	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Technical Manager
Test Report S/N: 1M2212080137-13-R1.A3L	Test Dates: 9/3/2022 – 11/8/2022	EUT Type: Portable Handset	Page 221 of 238



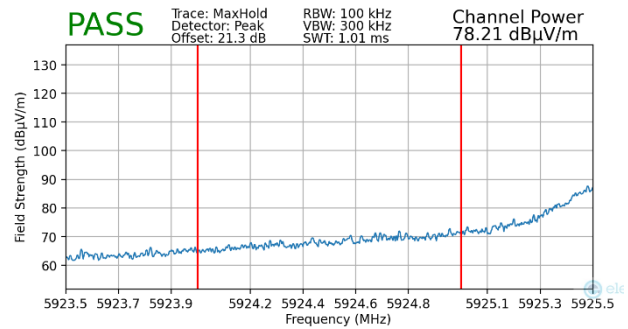
## 7.7.2 MIMO Radiated Band Edge Measurements (20MHz BW)

**§15.407(b)(6) §15.205 §15.209**

Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5935MHz
Channel:	2

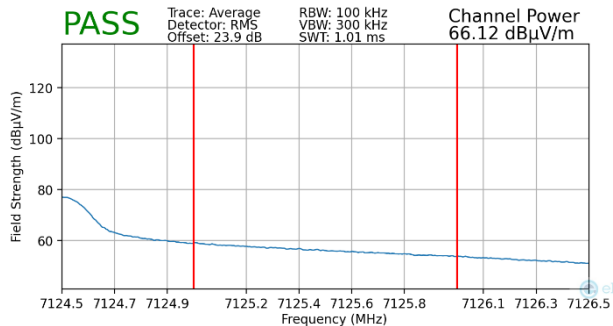


**Plot 7-357. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 5)**

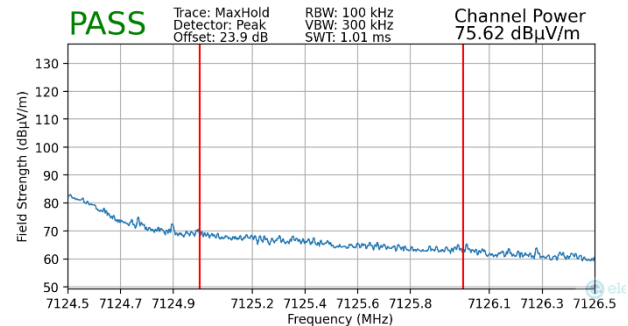


**Plot 7-358. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 5)**

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	7115MHz
Channel:	233



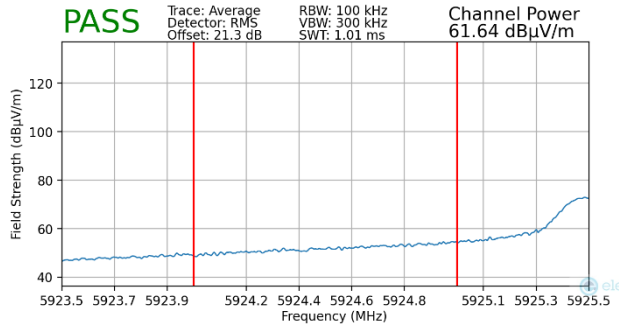
**Plot 7-359. Radiated Upper Band Edge Plot MIMO (Average – UNII Band 8)**



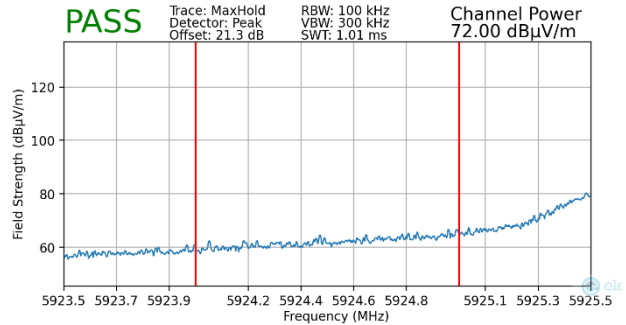
**Plot 7-360. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 8)**

FCC: A3LSMS918JPN	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Technical Manager
Test Report S/N: 1M2212080137-13-R1.A3L	Test Dates: 9/3/2022 – 11/8/2022	EUT Type: Portable Handset	Page 222 of 238

Worst Case Mode: 802.11ax  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 3 Meters  
 Operating Frequency: 5935MHz  
 Channel: 2

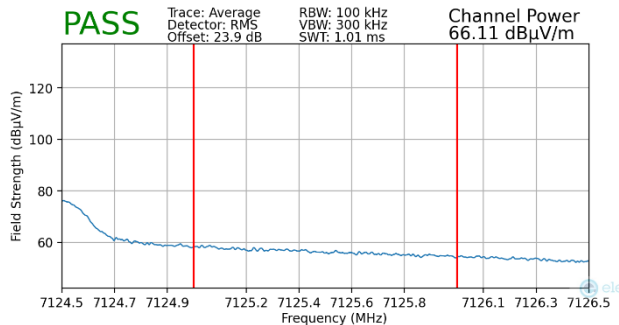


**Plot 7-361. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 5) with WCP**

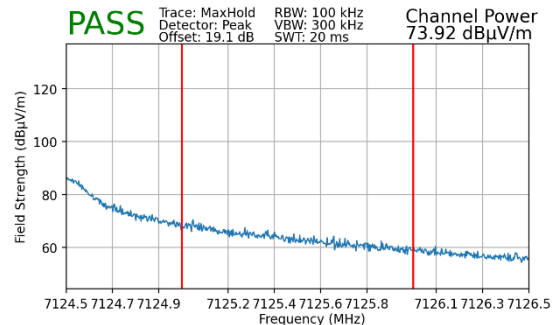


**Plot 7-362. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 5) with WCP**

Worst Case Mode: 802.11a  
 Worst Case Transfer Rate: 6Mbps  
 Distance of Measurements: 3 Meters  
 Operating Frequency: 7115MHz  
 Channel: 233



**Plot 7-363. Radiated Upper Band Edge Plot MIMO (Average – UNII Band 8) with WCP**



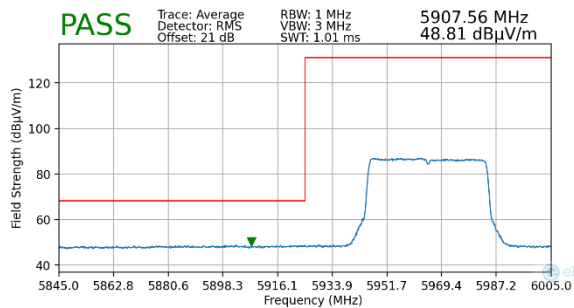
**Plot 7-364. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 8) with WCP**

FCC: A3LSMS918JPN		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Technical Manager
Test Report S/N: 1M2212080137-13-R1.A3L	Test Dates: 9/3/2022 – 11/8/2022	EUT Type: Portable Handset		Page 223 of 238

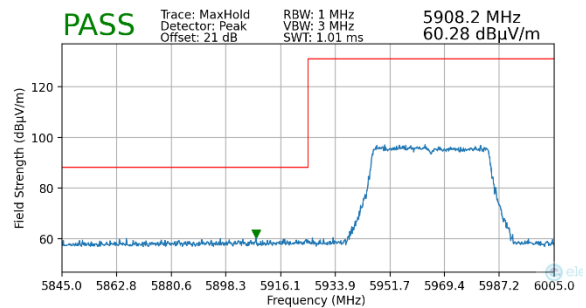
### 7.7.3 MIMO Radiated Band Edge Measurements (40MHz BW)

**§15.407(b.5) §15.205 §15.209**

Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5965MHz
Channel:	3

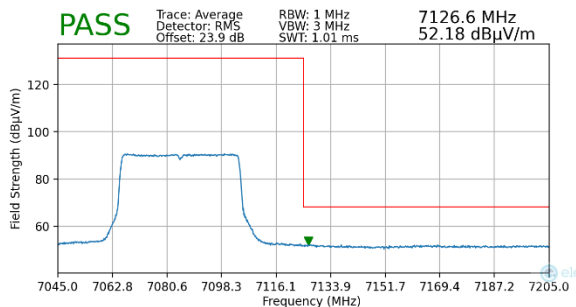


**Plot 7-365. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 5)**

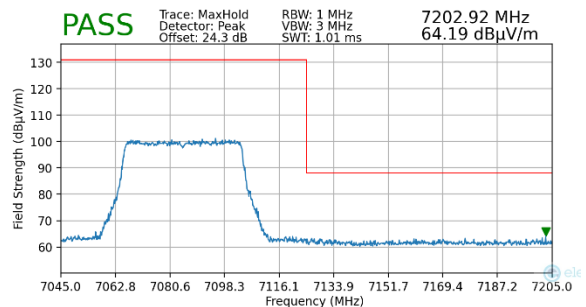


**Plot 7-366. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 5)**

Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	7085MHz
Channel:	227



**Plot 7-367. Radiated Upper Band Edge Plot MIMO (Average – UNII Band 8)**



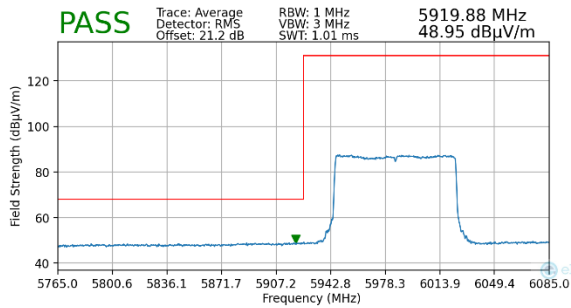
**Plot 7-368. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 8)**

FCC: A3LSMS918JPN		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Technical Manager
Test Report S/N: 1M2212080137-13-R1.A3L	Test Dates: 9/3/2022 – 11/8/2022	EUT Type: Portable Handset		Page 224 of 238

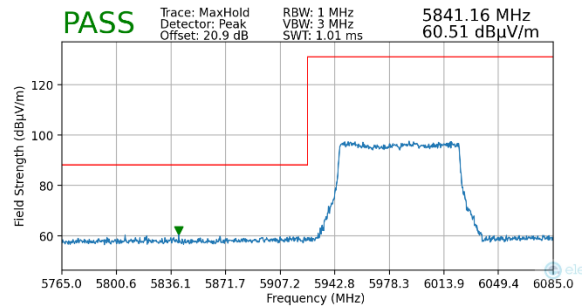
## 7.7.4 MIMO Radiated Band Edge Measurements (80MHz BW)

**\$15.407(b.5) \$15.205 \$15.209**

Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5985MHz
Channel:	7

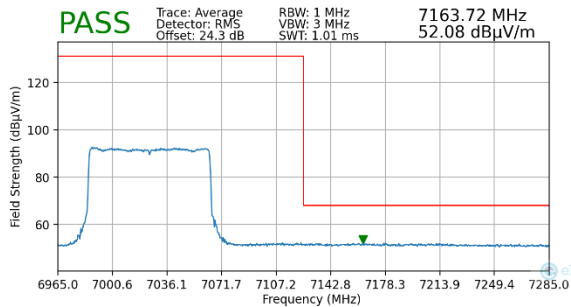


**Plot 7-369. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 5)**

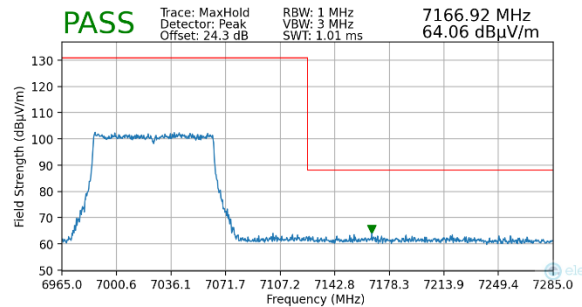


**Plot 7-370. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 5)**

Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	7025MHz
Channel:	215



**Plot 7-371. Radiated Upper Band Edge Plot MIMO (Average – UNII Band 8)**



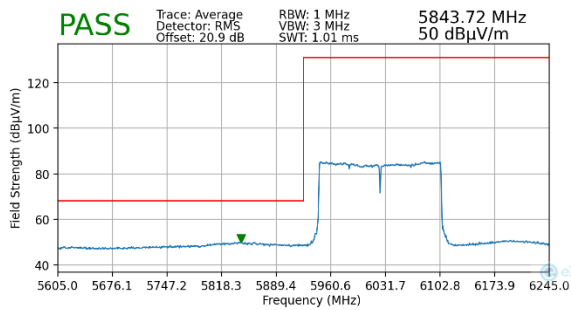
**Plot 7-372. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 8)**

FCC: A3LSMS918JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2212080137-13-R1.A3L	Test Dates: 9/3/2022 – 11/8/2022	EUT Type: Portable Handset	Page 225 of 238

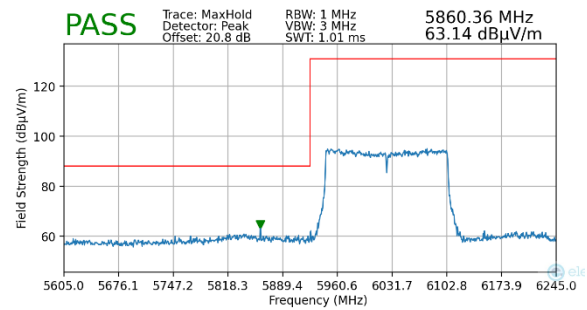
## 7.7.5 MIMO Radiated Band Edge Measurements (160MHz BW)

**§15.407(b.5) §15.205 §15.209**

Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	6025MHz
Channel:	15

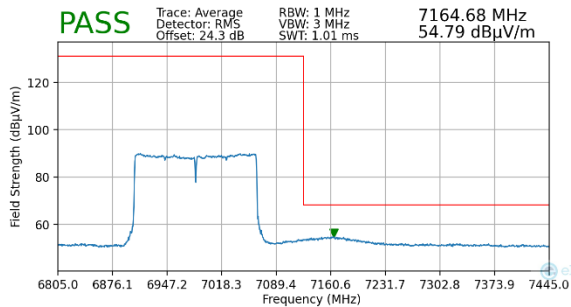


**Plot 7-373. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 5)**

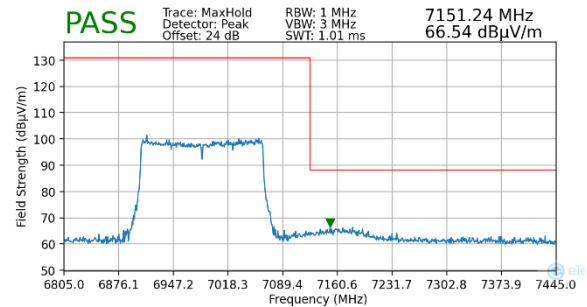


**Plot 7-374. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 5)**

Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	6985MHz
Channel:	207



**Plot 7-375. Radiated Upper Band Edge Plot MIMO (Average – UNII Band 8)**



**Plot 7-376. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 8)**

FCC: A3LSMS918JPN	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Technical Manager
Test Report S/N: 1M2212080137-13-R1.A3L	Test Dates: 9/3/2022 – 11/8/2022	EUT Type: Portable Handset	Page 226 of 238

## 7.8 Radiated Spurious Emissions Measurements – Below 1GHz

§15.209

### 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 emissions < 960MHz must not exceed the limit shown in Table 7-28 per Section 15.209**

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 7-28. Radiated Limits**

### Test Procedures Used

ANSI C63.10-2013

### Test Settings

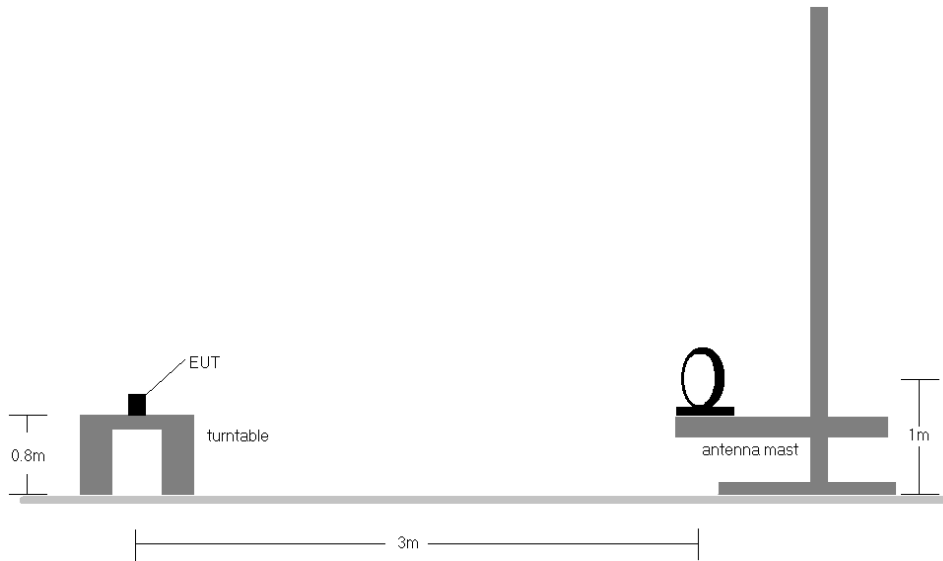
#### Quasi-Peak Field Strength Measurements

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

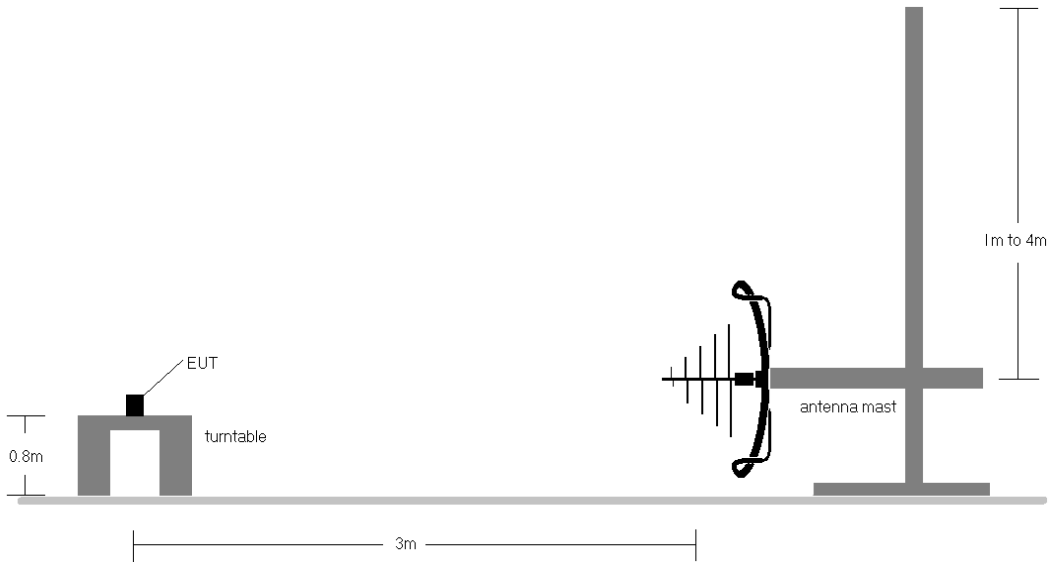
FCC: A3LSMS918JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2212080137-13-R1.A3L	Test Dates: 9/3/2022 – 11/8/2022	EUT Type: Portable Handset	Page 227 of 238

**Test Setup**

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



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



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

<b>FCC:</b> A3LSMS918JPN	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2212080137-13-R1.A3L	<b>Test Dates:</b> 9/3/2022 – 11/8/2022	<b>EUT Type:</b> Portable Handset	Page 228 of 238

**Test Notes**

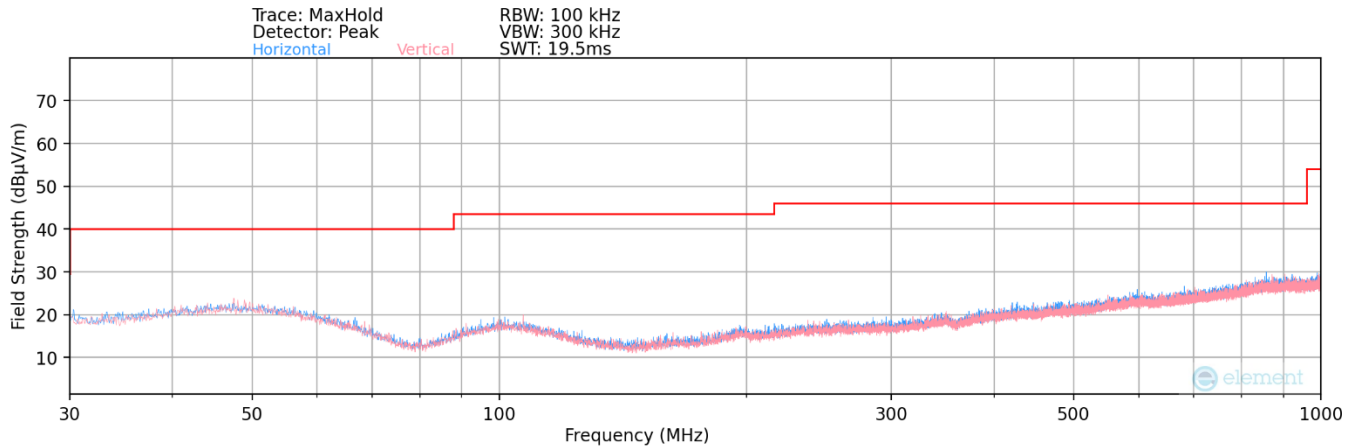
1. All emissions lying in restricted bands specified in §15.205 are below the limit shown in Table 7-28.
2. The broadband receive antenna is manipulated through vertical and horizontal polarizations during the tests. The EUT is manipulated through three orthogonal planes.
3. This unit was tested with 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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<b>Test Report S/N:</b> 1M2212080137-13-R1.A3L	<b>Test Dates:</b> 9/3/2022 – 11/8/2022	<b>EUT Type:</b> Portable Handset	Page 229 of 238



## Radiated Spurious Emissions Measurements (Below 1GHz)

§15.209



Plot 7-377. Radiated Spurious Plot below 1GHz

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]
834.00	Quasi-Peak	V	-	-	-91.11	-4.48	11.41	46.02	-34.61

Plot 7-378. Radiated Spurious Data below 1GHz

FCC: A3LSMS918JPN		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2212080137-13-R1.A3L	Test Dates: 9/3/2022 – 11/8/2022	EUT Type: Portable Handset		Page 230 of 238

## 7.9 Line-Conducted Test Data

§15.407(b)(9)

### 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.**

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 7-29. 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

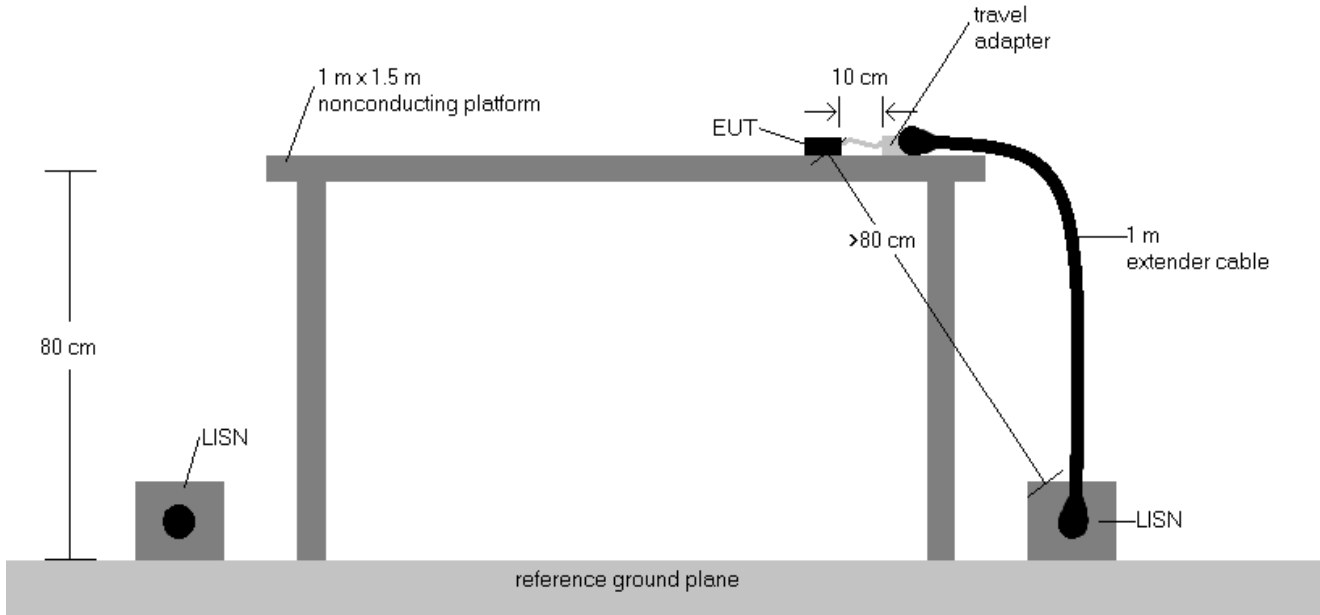
#### Average Field Strength Measurements

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

FCC: A3LSMS918JPN	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 diagram below.

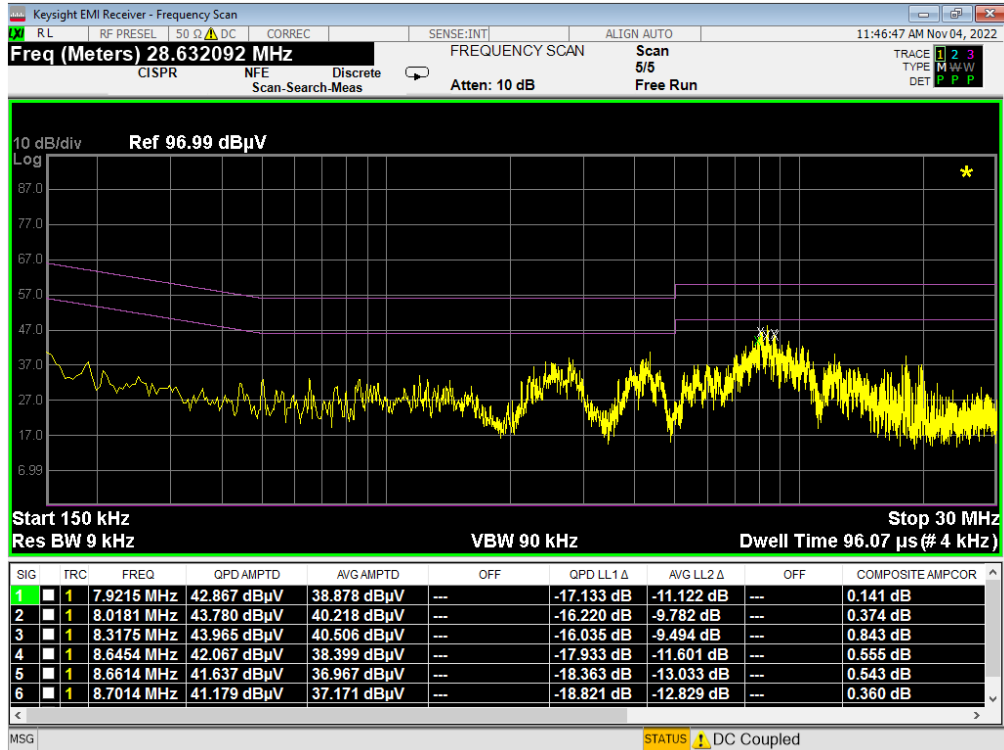


**Figure 7-9. Test Instrument & Measurement Setup**

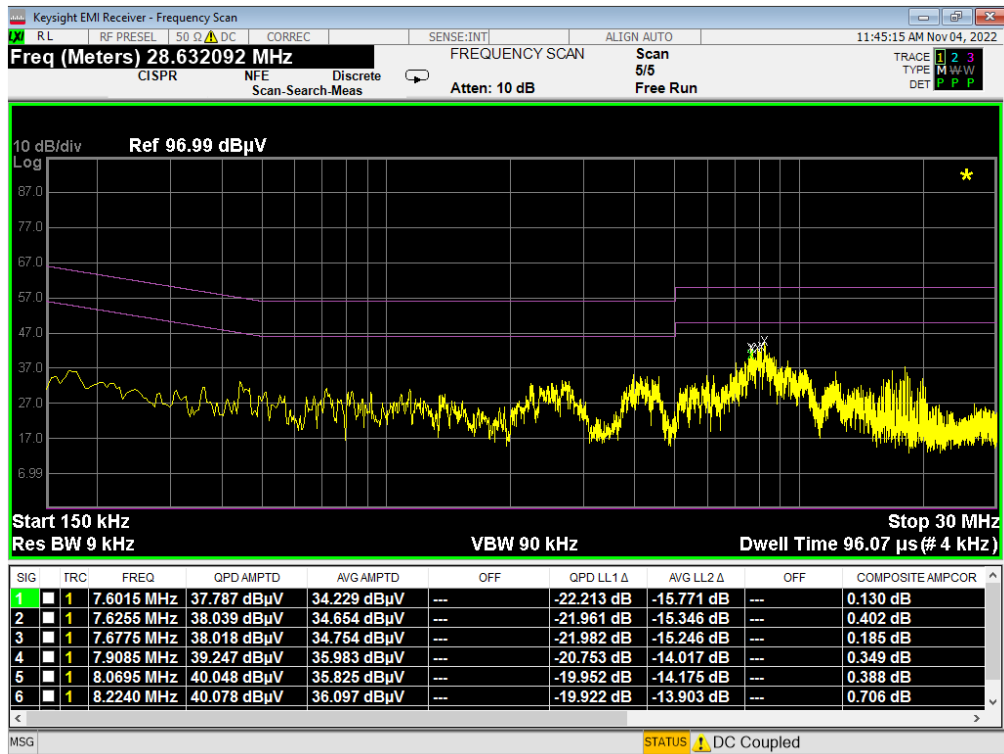
**Test Notes**

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.
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: A3LSMS918JPN	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Technical Manager
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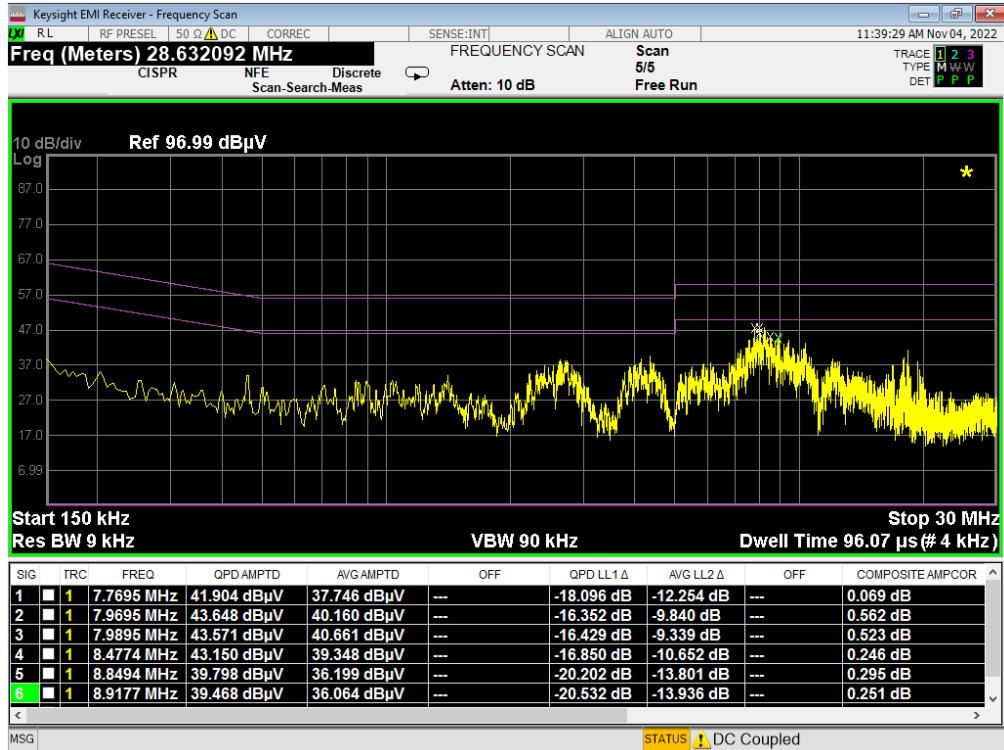


Plot 7-379. Line Conducted Plot with 802.11a UNII Band 5 (L1)

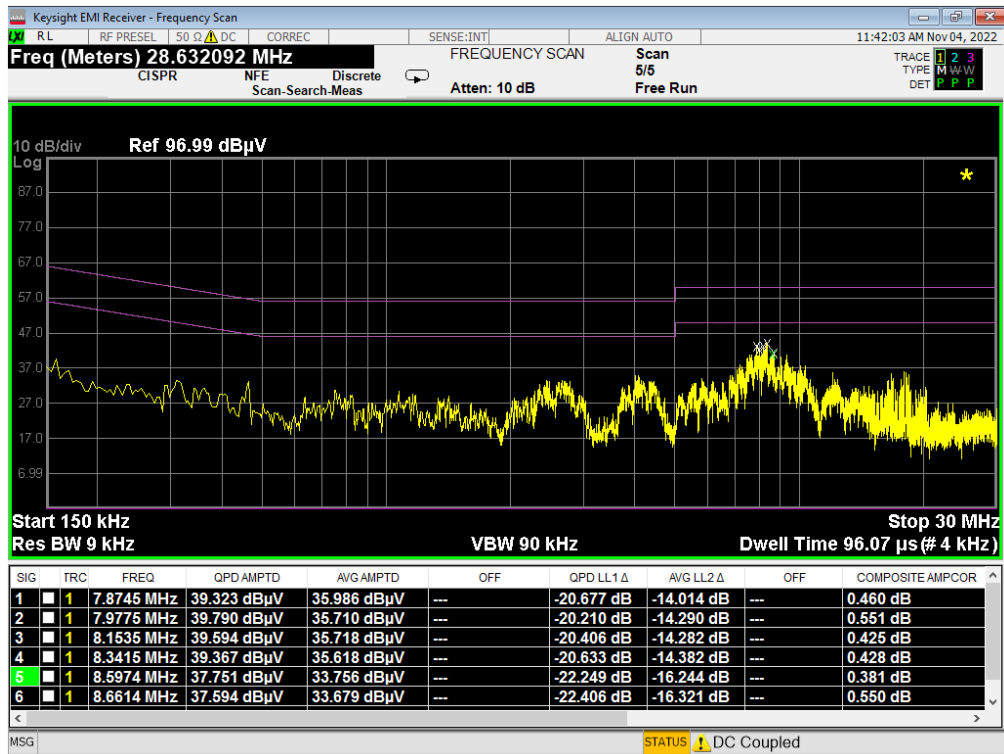


Plot 7-380. Line Conducted Plot with 802.11a UNII Band 5 (N)

FCC: A3LSMS918JPN		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2212080137-13-R1.A3L	Test Dates: 9/3/2022 – 11/8/2022	EUT Type: Portable Handset		Page 233 of 238

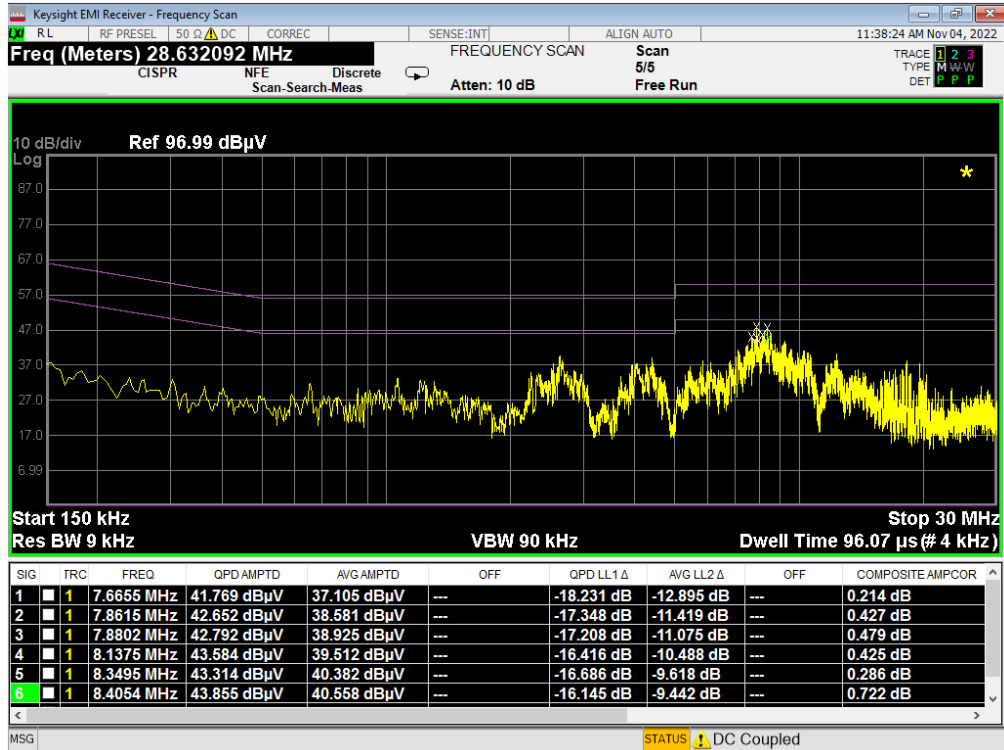


Plot 7-381. Line Conducted Plot with 802.11a UNII Band 6 (L1)

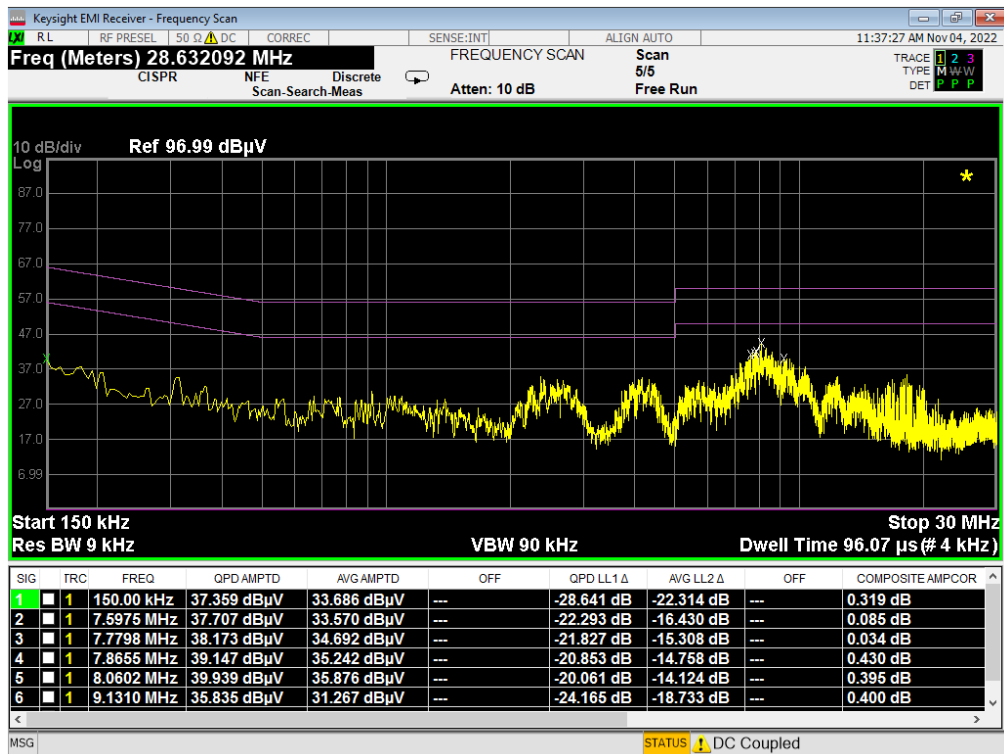


Plot 7-382. Line Conducted Plot with 802.11a UNII Band 6 (N)

MEASUREMENT REPORT (CERTIFICATION)			Approved by: Technical Manager
FCC: A3LSMS918JPN	Test Report S/N: 1M2212080137-13-R1.A3L	Test Dates: 9/3/2022 – 11/8/2022	Page 234 of 238
EUT Type: Portable Handset			

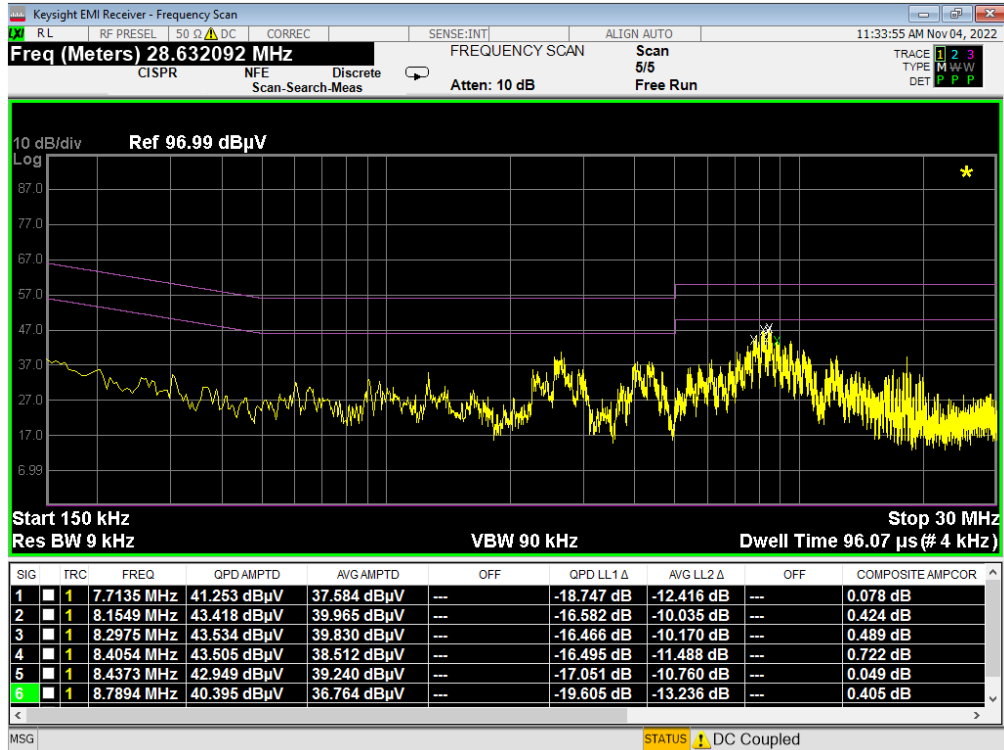


Plot 7-383. Line Conducted Plot with 802.11a UNII Band 7 (L1)

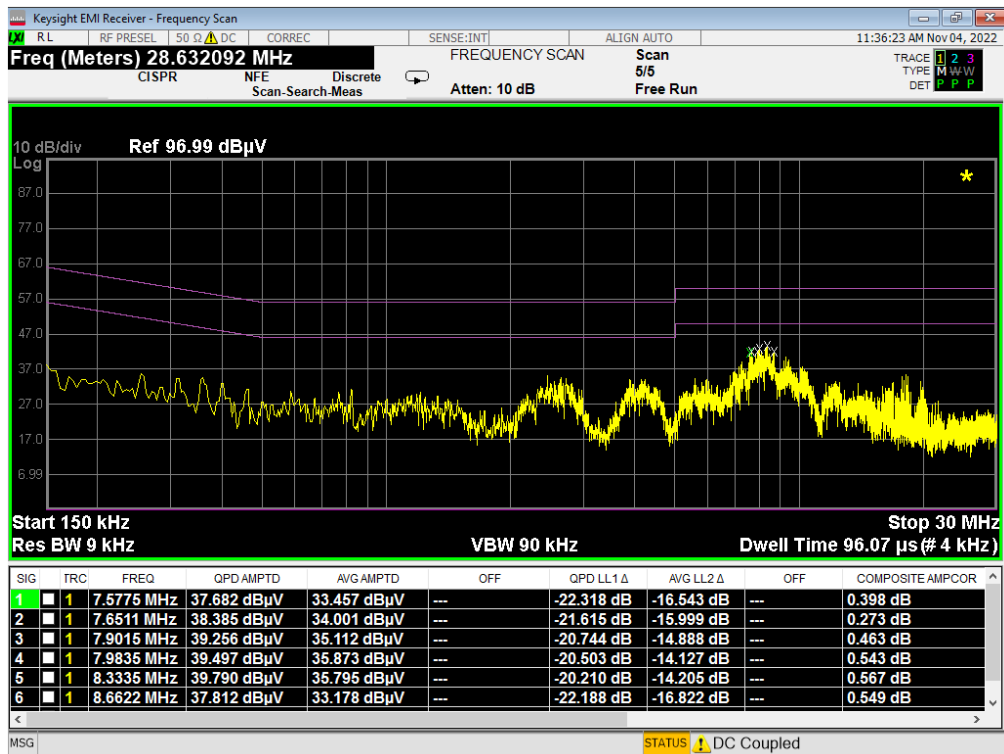


Plot 7-384. Line Conducted Plot with 802.11a UNII Band 7 (N)

FCC: A3LSMS918JPN		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2212080137-13-R1.A3L	Test Dates: 9/3/2022 – 11/8/2022	EUT Type: Portable Handset		Page 235 of 238

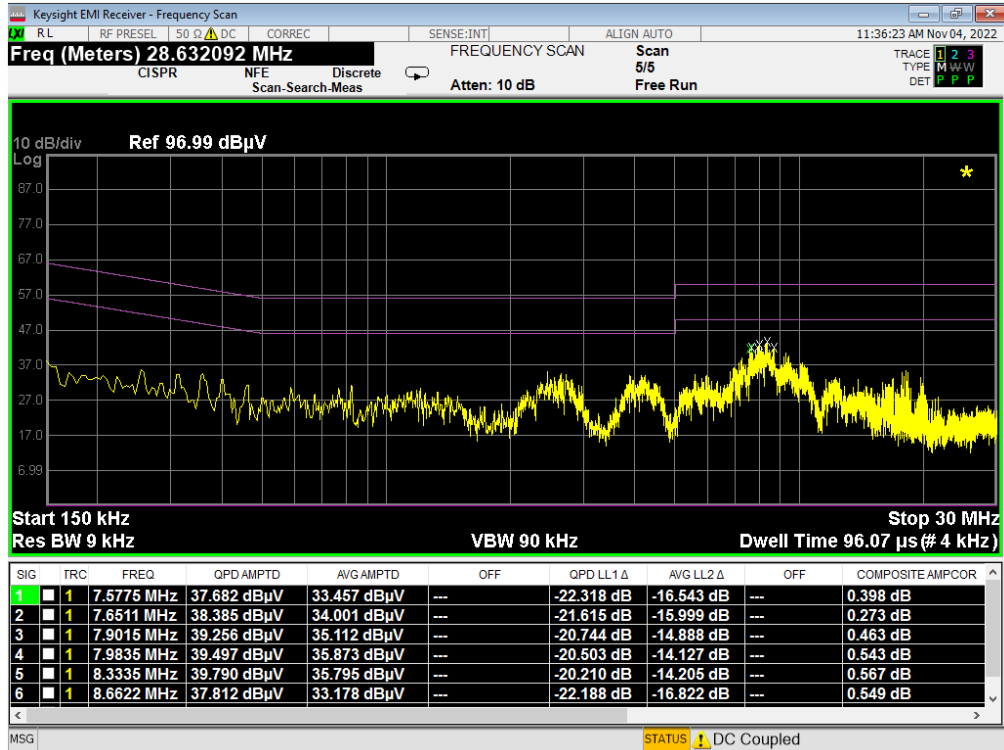


Plot 7-385. Line Conducted Plot with 802.11a UNII Band 8 (L1)

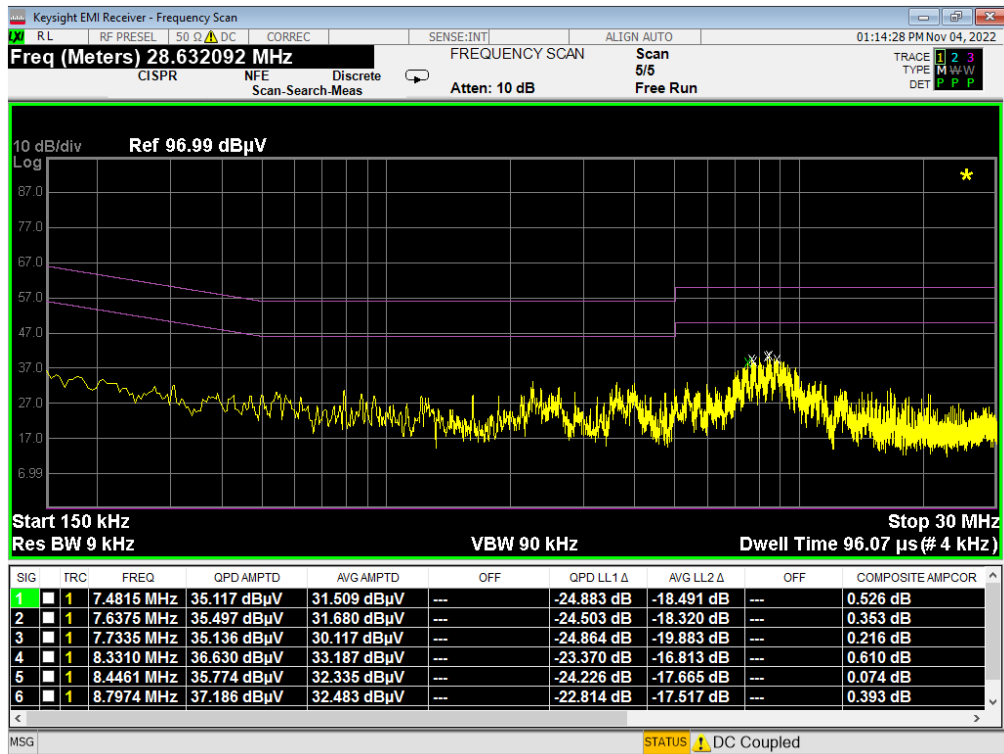


Plot 7-386. Line Conducted Plot with 802.11a UNII Band 8 (N)

MEASUREMENT REPORT (CERTIFICATION)			Approved by: Technical Manager
FCC: A3LSMS918JPN	Test Report S/N: 1M2212080137-13-R1.A3L	Test Dates: 9/3/2022 – 11/8/2022	EUT Type: Portable Handset
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Plot 7-387. Line Conducted Plot with 802.11a UNII Band 5 (L1) with WCP



Plot 7-388. Line Conducted Plot with 802.11a UNII Band 5 (N) with WCP

FCC: A3LSMS918JPN		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2212080137-13-R1.A3L	Test Dates: 9/3/2022 – 11/8/2022	EUT Type: Portable Handset		Page 237 of 238



## 8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Samsung Portable Handset FCC: A3LSMS918JPN** is in compliance with FCC Part Subpart E (15.407) of the FCC rules for operation as a client device.

FCC: A3LSMS918JPN	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2212080137-13-R1.A3L	<b>Test Dates:</b> 9/3/2022 – 11/8/2022	<b>EUT Type:</b> Portable Handset	Page 238 of 238