



7.7 Radiated Spurious Emission Measurements – Above 1GHz

§15.205, §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 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. 802.11ax (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 within the 5.925-7.125 GHz band: Any emissions outside of the 5.925-7.125 GHz band must not exceed an e.i.r.p. of -27 dBm/MHz

Emissions found in a restricted band are subject to the limits of 15.209 as shown in the table below.

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

Table 7-57. 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

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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.

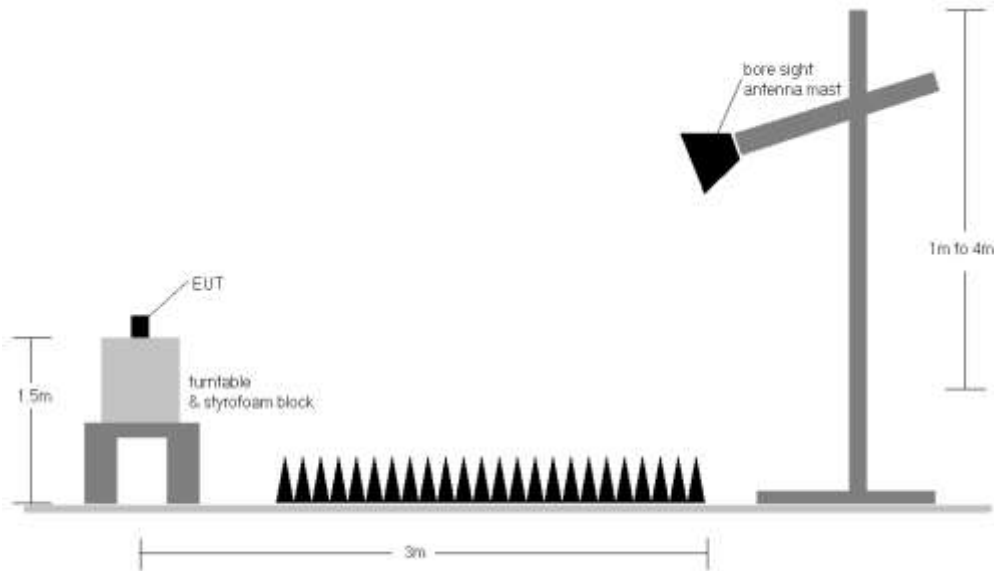


Figure 7-6. Test Instrument & Measurement Setup

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Test Notes

1. All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 7-57.
2. All spurious emissions lying in restricted bands specified in §15.205 are below the limit shown in Table 7-57. 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 μ 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 μ V/m.
3. 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 μ V/m]. If a peak measurement passes the average limit it was determined no further investigation is necessary.
4. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
5. This unit was tested with its standard battery.
6. 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.
7. 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.
8. Radiated spurious emissions were investigated while operating in MIMO mode, however, it was determined that single antenna operation produced the worst case emissions. Since the emissions produced from MIMO operation were found to be more than 20dB below the limit, the MIMO emissions are not reported.
9. 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.
10. The "-" shown in the following RSE tables are used to denote a noise floor measurement.

Sample Calculations

Determining Spurious Emissions Levels

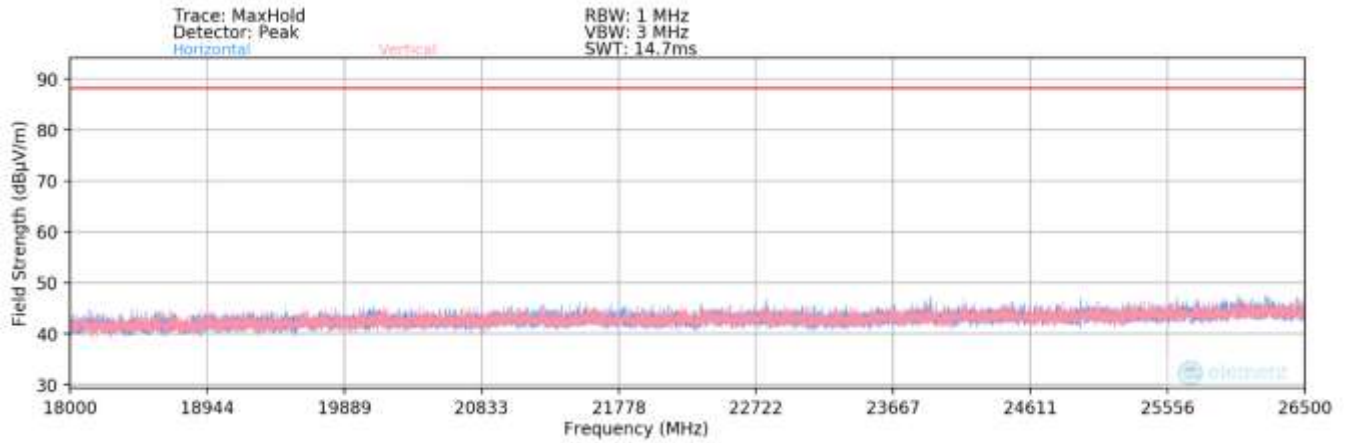
- Field Strength Level [dB μ V/m] = Analyzer Level [dBm] + 107 + AFCL [dB/m]
- AFCL [dB/m] = Antenna Factor [dB/m] + Cable Loss [dB]
- Margin [dB] = Field Strength Level [dB μ V/m] – Limit [dB μ V/m]

Radiated Band Edge Measurement Offset

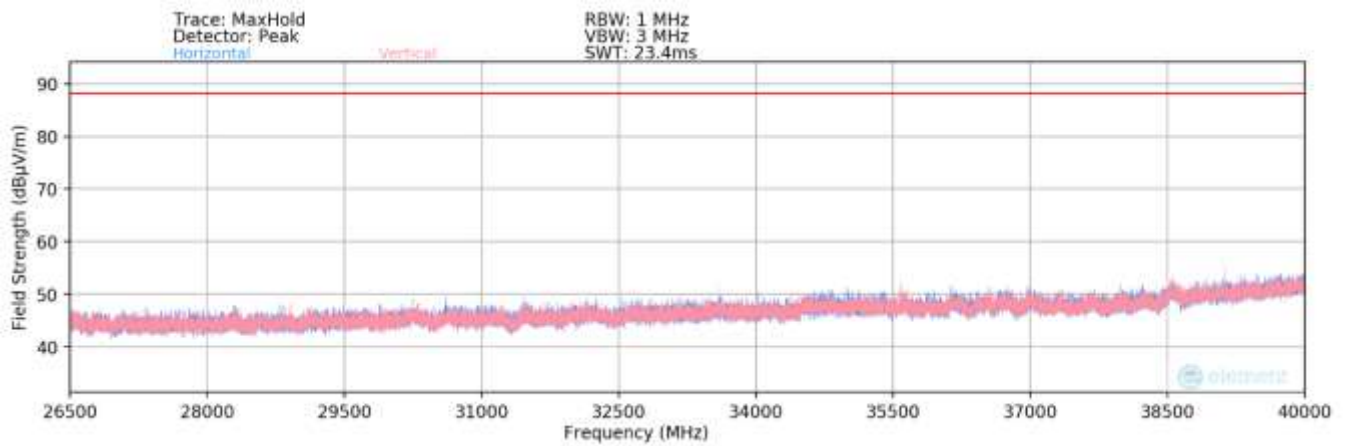
- The amplitude offset shown in the radiated restricted band edge plots was calculated using the formula:
Offset (dB) = (Antenna Factor + Cable Loss + Attenuator) – Preamplifier Gain

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7.7.1 MIMO Radiated Spurious Emission Measurements (26 Tones)



Plot 7-663. Radiated Spurious Plot above 18GHz - 26.5GHz MIMO (802.11ax) - SP

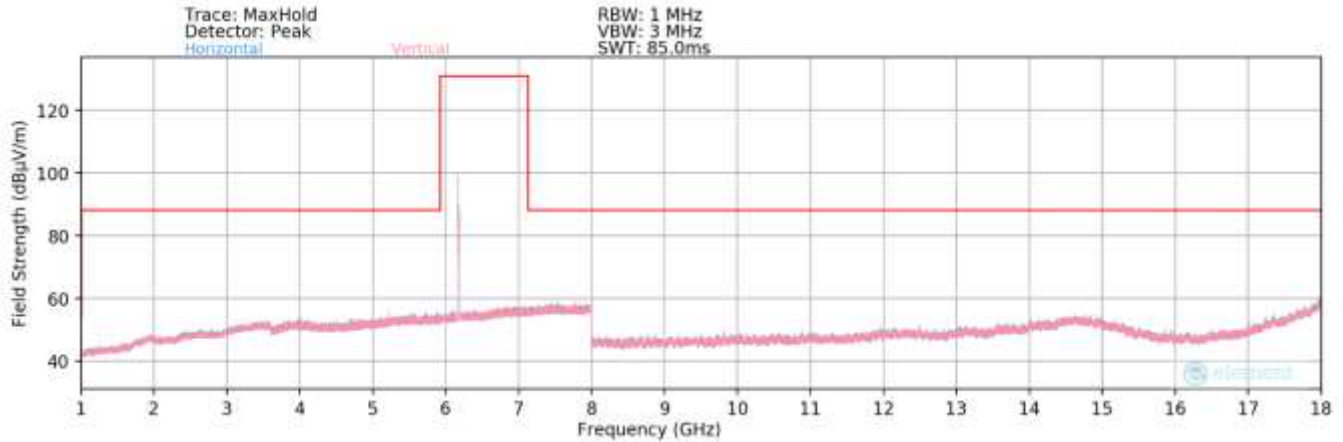


Plot 7-664. Radiated Spurious Plot 26.5GHz - 40GHz MIMO (802.11ax) - SP

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MIMO Radiated Spurious Emission Measurements (26 Tones) – UNII Band 5



Plot 7-665. Radiated Spurious Plot above 1GHz MIMO (802.11ax – UNII Band 5 – 20MHz – Ch.45) - SP

Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 4
 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	H	246	24	-75.60	9.59	0.00	40.99	53.98	-12.99
* 11870.00	Peak	H	246	24	-61.87	9.59	0.00	54.72	73.98	-19.26
* 17805.00	Average	H	-	-	-77.11	16.68	0.00	46.57	53.98	-7.41
* 17805.00	Peak	H	-	-	-64.90	16.68	0.00	58.78	73.98	-15.20
* 23740.00	Average	H	-	-	-68.07	3.89	-9.54	33.28	53.98	-20.70
* 23740.00	Peak	H	-	-	-57.78	3.89	-9.54	43.57	73.98	-30.41
29675.00	Peak	H	-	-	-58.09	6.04	-9.54	45.41	68.20	-22.79

Table 7-58. Radiated Measurements MIMO (26 Tones) - SP

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Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 4
 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	H	-	-	-78.21	9.88	0.00	38.67	53.98	-15.31
* 12350.00	Peak	H	-	-	-65.80	9.88	0.00	51.08	73.98	-22.90
* 18525.00	Average	H	-	-	-67.01	1.68	0.00	41.67	53.98	-12.31
* 18525.00	Peak	H	-	-	-56.99	1.68	-9.54	42.15	73.98	-31.83
24700.00	Peak	H	-	-	-56.96	4.25	-9.54	44.75	68.20	-23.45
30875.00	Peak	H	-	-	-57.58	6.73	-9.54	46.61	68.20	-21.59

Table 7-59. Radiated Measurements MIMO (26 Tones) - SP

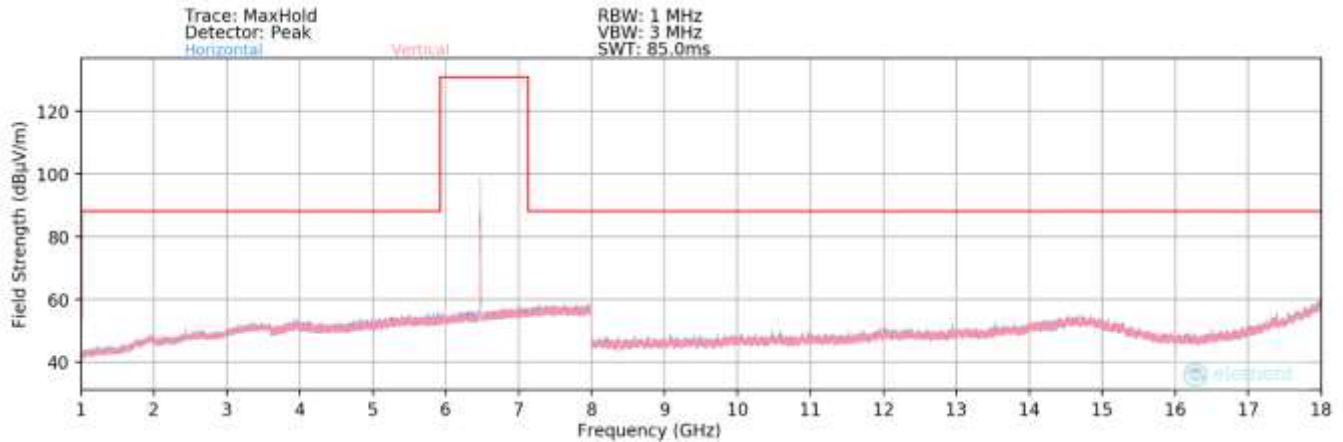
Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 4
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 6415MHz
 Channel: 93

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	H	151	122	-64.87	10.00	0.00	52.13	68.20	-16.07
* 19245.00	Average	H	-	-	-67.24	2.45	-9.54	32.68	53.98	-21.30
* 19245.00	Peak	H	-	-	-56.73	2.45	-9.54	43.18	73.98	-30.79
25660.00	Peak	H	-	-	-56.75	4.57	-9.54	45.28	68.20	-22.92
32075.00	Peak	H	-	-	-57.65	6.88	-9.54	46.69	68.20	-21.51

Table 7-60. Radiated Measurements MIMO (26 Tones) - SP

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MIMO Radiated Spurious Emission Measurements (26 Tones) – UNII Band 6



Plot 7-666. Radiated Spurious Plot above 1GHz MIMO (802.11ax– UNII Band 6 – 20MHz – Ch.105) - LPI

Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 4
 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	H	180	83	-57.85	12.51	0.00	61.66	68.20	-6.54
* 19305.00	Average	H	-	-	-66.05	2.29	-9.54	33.70	53.98	-20.28
* 19305.00	Peak	H	-	-	-55.70	2.29	-9.54	44.05	73.98	-29.93
25740.00	Peak	H	-	-	-55.86	4.49	-9.54	46.09	68.20	-22.11
32175.00	Peak	H	-	-	-55.41	7.04	-9.54	49.09	68.20	-19.11

Table 7-61. Radiated Measurements MIMO (26 Tones) - LPI

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 4
 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	H	202	80	-58.67	12.67	0.00	61.00	68.20	-7.20
* 19425.00	Average	H	-	-	-66.25	2.36	-9.54	33.57	53.98	-20.41
* 19425.00	Peak	H	-	-	-55.50	2.36	-9.54	44.32	73.98	-29.66
25900.00	Peak	H	-	-	-55.48	4.84	-9.54	46.82	68.20	-21.38
32375.00	Peak	H	-	-	-56.37	6.78	-9.54	47.87	68.20	-20.33

Table 7-62. Radiated Measurements MIMO (26 Tones) - LPI

Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 4
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 6515MHz
 Channel: 113

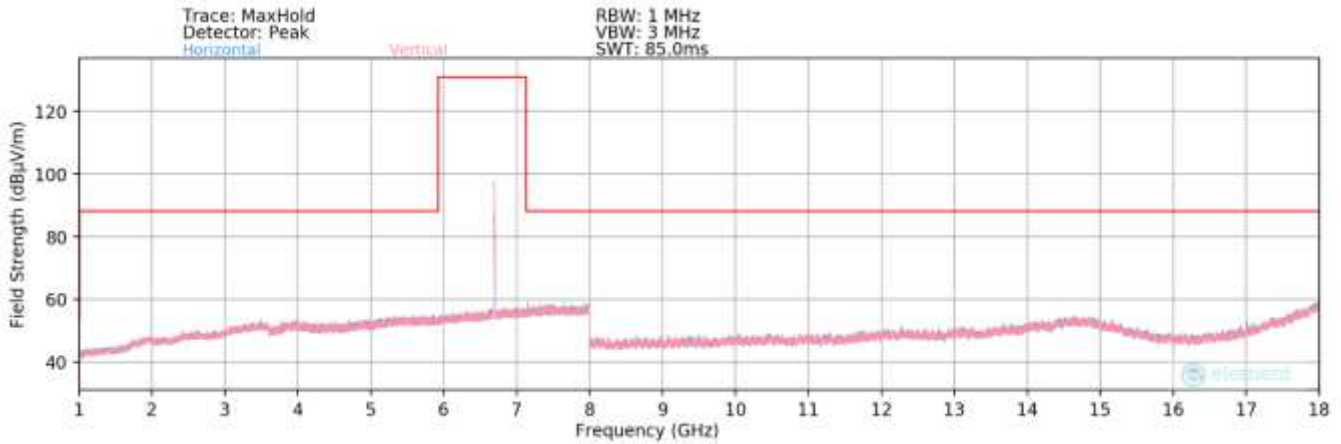
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
13030.00	Peak	H	327	60	-59.91	12.83	0.00	59.92	68.20	-8.28
* 19545.00	Average	H	-	-	-66.09	2.31	-9.54	33.68	53.98	-20.30
* 19545.00	Peak	H	-	-	-55.81	2.31	-9.54	43.96	73.98	-30.02
26060.00	Peak	H	-	-	-55.70	4.92	-9.54	46.68	68.20	-21.52
32575.00	Peak	H	-	-	-54.63	6.55	-9.54	49.38	68.20	-18.82

Table 7-63. Radiated Measurements MIMO (26 Tones) - LPI

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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MIMO Radiated Spurious Emission Measurements (26 Tones) – UNII Band 7



Plot 7-667. Radiated Spurious Plot above 1GHz MIMO (802.11ax– UNII Band 7 – 20MHz – Ch.149) - SP

Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 4
 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	H	222	126	-63.00	10.44	0.00	54.44	68.20	-13.76
* 19605.00	Average	H	-	-	-67.16	2.79	-9.54	33.09	53.98	-20.89
* 19605.00	Peak	H	-	-	-55.94	2.79	-9.54	44.31	73.98	-29.67
26140.00	Peak	H	-	-	-57.06	4.83	-9.54	45.24	68.20	-22.96
32675.00	Peak	H	-	-	-58.42	6.85	-9.54	45.89	68.20	-22.31

Table 7-64. Radiated Measurements MIMO (26 Tones) - SP

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Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 4
 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	H	361	71	-75.95	10.71	0.00	41.76	53.98	-12.22
* 13390.00	Peak	H	361	71	-62.53	10.71	0.00	55.18	73.98	-18.80
* 20085.00	Average	H	-	-	-67.08	3.04	-9.54	33.42	53.98	-20.56
* 20085.00	Peak	H	-	-	-57.68	3.04	-9.54	42.82	73.98	-31.16
26780.00	Peak	H	-	-	-58.39	5.16	-9.54	44.23	68.20	-23.97
33475.00	Peak	H	-	-	-57.70	7.26	-9.54	47.02	68.20	-21.18

Table 7-65. Radiated Measurements MIMO (26 Tones) - SP

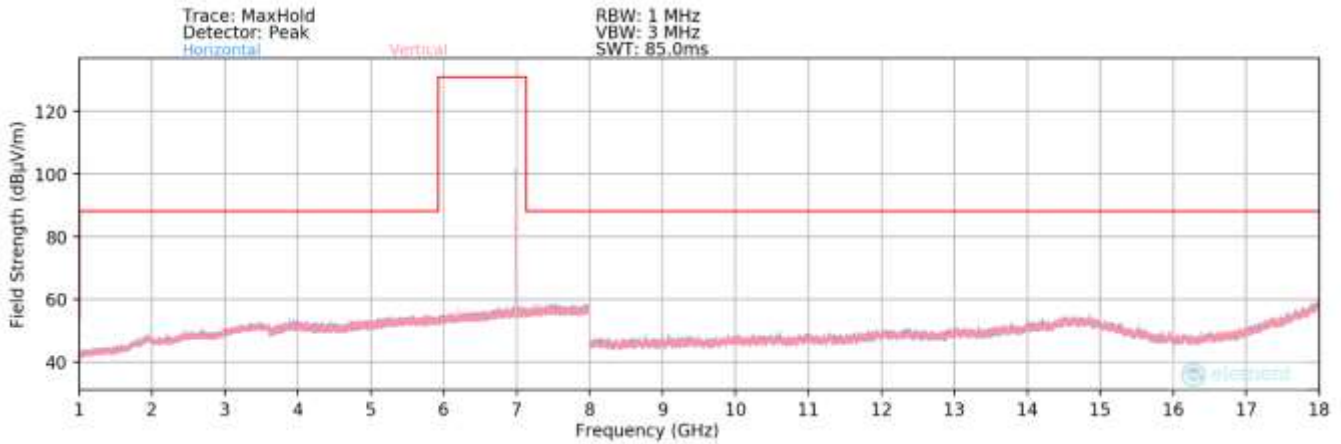
Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 4
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 6875MHz
 Channel: 185

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	H	-	-	-66.30	11.50	0.00	52.20	68.20	-16.00
* 20625.00	Average	H	-	-	-68.39	3.28	-9.54	32.35	53.98	-21.63
* 20625.00	Peak	H	-	-	-57.30	3.28	-9.54	43.44	73.98	-30.54
27500.00	Peak	H	-	-	-56.87	4.79	-9.54	45.38	68.20	-22.82
34375.00	Peak	H	-	-	-66.25	7.69	-9.54	38.90	68.20	-29.30

Table 7-66. Radiated Measurements MIMO (26 Tones) - SP

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MIMO Radiated Spurious Emission Measurements (26 Tones) – UNII Band 8



Plot 7-668. Radiated Spurious Plot above 1GHz MIMO (802.11ax– UNII Band 8 – 20MHz – Ch.209) - LPI

Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 4
 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	H	-	-	-65.56	13.66	0.00	55.10	68.20	-13.10
* 20685.00	Average	H	-	-	-66.70	3.27	-9.54	34.03	53.98	-19.95
* 20685.00	Peak	H	-	-	-56.39	3.27	-9.54	44.34	73.98	-29.64
27580.00	Peak	H	-	-	-55.20	5.23	-9.54	47.49	68.20	-20.71
34475.00	Peak	H	-	-	-55.39	7.64	-9.54	49.71	68.20	-18.49

Table 7-67. Radiated Measurements MIMO (26 Tones) - LPI

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Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 4
 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	H	-	-	-65.63	13.89	0.00	55.26	68.20	-12.94
* 20985.00	Average	H	-	-	-66.85	3.46	-9.54	34.07	53.98	-19.91
* 20985.00	Peak	H	-	-	-56.45	3.46	-9.54	44.47	73.98	-29.51
27980.00	Peak	H	-	-	-55.74	5.02	-9.54	46.74	68.20	-21.46
34975.00	Peak	H	-	-	-54.08	7.91	-9.54	51.29	68.20	-16.91

Table 7-68. Radiated Measurements MIMO (26 Tones) - LPI

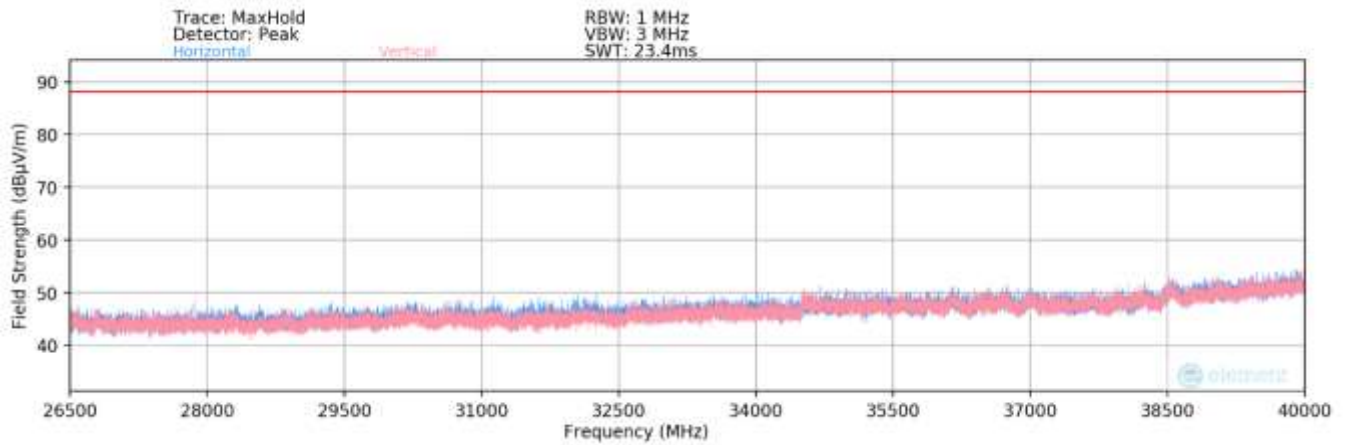
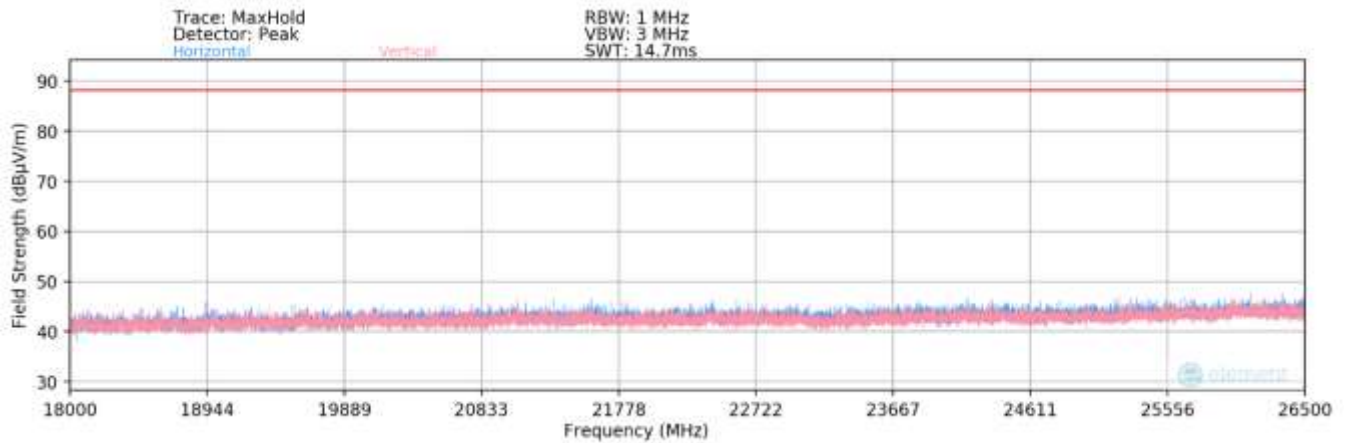
Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 4
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 7115MHz
 Channel: 233

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	H	-	-	-65.99	14.92	0.00	55.93	68.20	-12.27
* 21345.00	Average	H	-	-	-66.05	3.78	-9.54	35.19	53.98	-18.79
21345.00	Peak	H	-	-	-56.05	3.78	-9.54	45.19	73.98	-28.79
28460.00	Peak	H	-	-	-55.83	5.45	-9.54	47.08	68.20	-21.12
35575.00	Peak	H	-	-	-54.08	7.65	-9.54	51.03	68.20	-17.17

Table 7-69. Radiated Measurements MIMO (26 Tones) - LPI

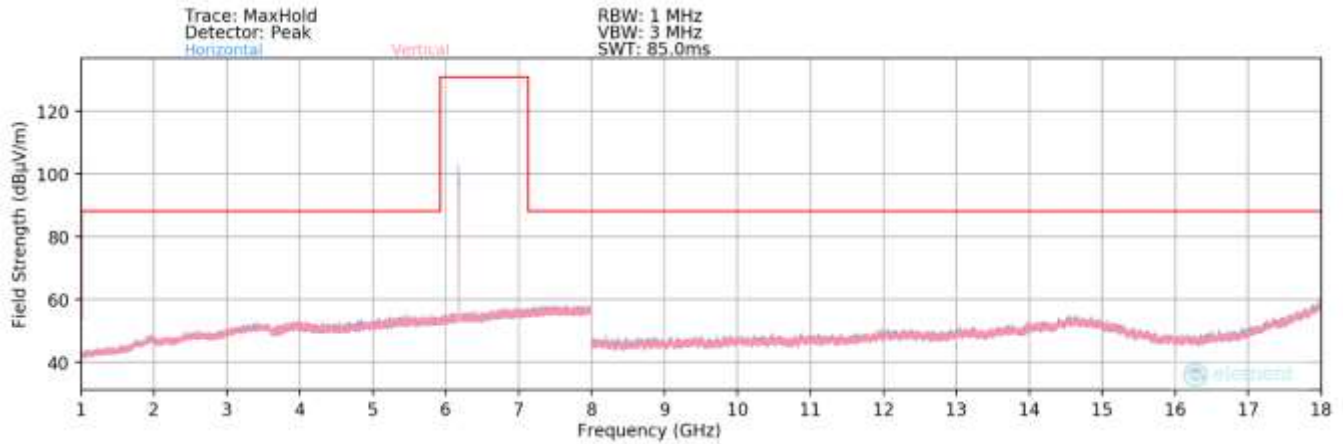
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7.7.2 MIMO Radiated Spurious Emission Measurements (242 Tones)



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Test Report S/N: 1M2212080136-13-R1.A3L	Test Dates: 9/03/2022 – 11/23/2022	EUT Type: Portable Handset	Page 385 of 399

MIMO Radiated Spurious Emission Measurements (242 Tones) – UNII Band 5



Plot 7-671. Radiated Spurious Plot above 1GHz MIMO (802.11ax – UNII Band 5 – 20MHz – Ch.45) – LPI/SP

Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 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	H	-	-	-76.92	13.10	0.00	43.18	53.98	-10.80
* 11870.00	Peak	H	-	-	-65.46	13.10	0.00	54.64	73.98	-19.34
* 17805.00	Average	H	-	-	-75.66	18.32	0.00	49.66	53.98	-4.32
* 17805.00	Peak	H	-	-	-64.76	18.32	0.00	60.56	73.98	-13.42
* 23740.00	Average	H	-	-	-66.73	3.93	-9.54	34.66	53.98	-19.32
* 23740.00	Peak	H	-	-	-56.39	3.93	-9.54	45.00	73.98	-28.98
29675.00	Peak	H	-	-	-56.15	6.11	-9.54	47.42	68.20	-20.78

Table 7-70. Radiated Measurements MIMO (242 Tones) – LPI/SP

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2212080136-13-R1.A3L	Test Dates: 9/03/2022 – 11/23/2022	EUT Type: Portable Handset	Page 386 of 399



Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 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	H	-	-	-75.89	13.25	0.00	44.36	53.98	-9.62
* 12350.00	Peak	H	-	-	-65.74	13.25	0.00	54.51	73.98	-19.47
* 18525.00	Average	H	-	-	-66.28	1.68	-9.54	32.86	53.98	-21.12
* 18525.00	Peak	H	-	-	-56.24	1.68	-9.54	42.90	73.98	-31.08
24700.00	Peak	H	-	-	-56.35	4.25	-9.54	45.36	68.20	-22.84
30875.00	Peak	H	-	-	-56.41	6.73	-9.54	47.78	68.20	-20.42

Table 7-71. Radiated Measurements MIMO (242 Tones) – LPI/SP

Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 6415MHz
 Channel: 93

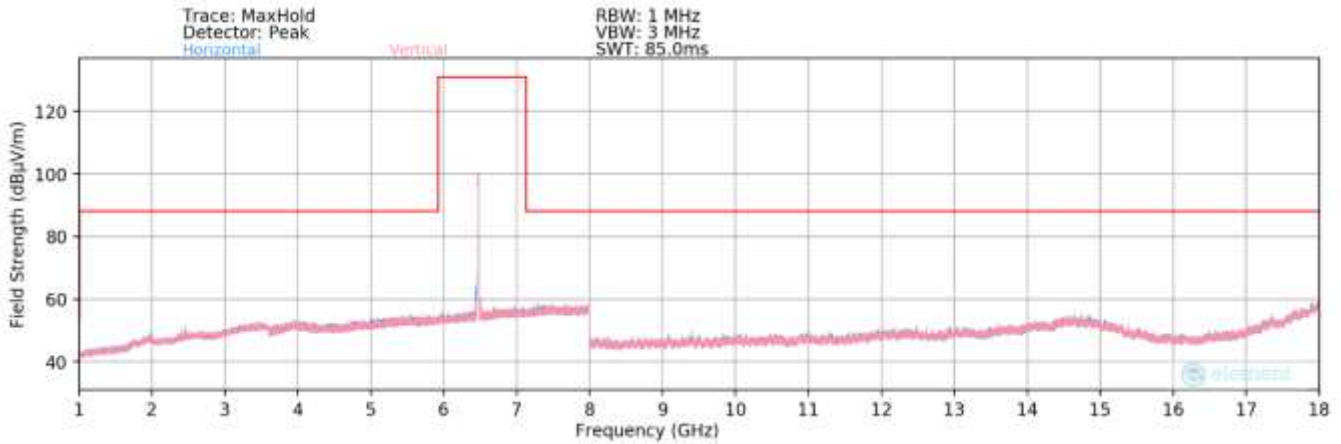
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
12830.00	Peak	H	-	-	-65.80	14.45	0.00	55.65	68.20	-12.55
* 19245.00	Average	H	-	-	-66.49	2.45	-9.54	33.42	53.98	-20.56
* 19245.00	Peak	H	-	-	-55.82	2.45	-9.54	44.09	73.98	-29.89
25660.00	Peak	H	-	-	-54.94	4.57	-9.54	47.09	68.20	-21.11
32075.00	Peak	H	-	-	-56.01	6.88	-9.54	48.32	68.20	-19.88

Table 7-72. Radiated Measurements MIMO (242 Tones) – LPI/SP

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2212080136-13-R1.A3L	Test Dates: 9/03/2022 – 11/23/2022	EUT Type: Portable Handset	Page 387 of 399



MIMO Radiated Spurious Emission Measurements (242 Tones) – UNII Band 6



Plot 7-672. Radiated Spurious Plot above 1GHz MIMO (802.11ax– UNII Band 6 – 20MHz – Ch.105) – LPI

Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 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	H	-	-	-65.77	14.14	0.00	55.37	68.20	-12.83
* 19305.00	Average	H	-	-	-66.12	2.29	-9.54	33.63	53.98	-20.35
* 19305.00	Peak	H	-	-	-55.51	2.29	-9.54	44.24	73.98	-29.74
25740.00	Peak	H	-	-	-55.62	4.49	-9.54	46.32	68.20	-21.88
32175.00	Peak	H	-	-	-55.50	7.04	-9.54	49.00	68.20	-19.20

Table 7-73. Radiated Measurements MIMO (242 Tones) – LPI

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 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	H	-	-	-65.50	14.37	0.00	55.87	68.20	-12.33
* 19425.00	Average	H	-	-	-66.10	2.36	-9.54	33.72	53.98	-20.26
* 19425.00	Peak	H	-	-	-56.15	2.36	-9.54	43.67	73.98	-30.31
25900.00	Peak	H	-	-	-55.29	4.84	-9.54	47.00	68.20	-21.20
32375.00	Peak	H	-	-	-56.02	6.78	-9.54	48.22	68.20	-19.98

Table 7-74. Radiated Measurements MIMO (242 Tones) – LPI

Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 6515MHz
 Channel: 113

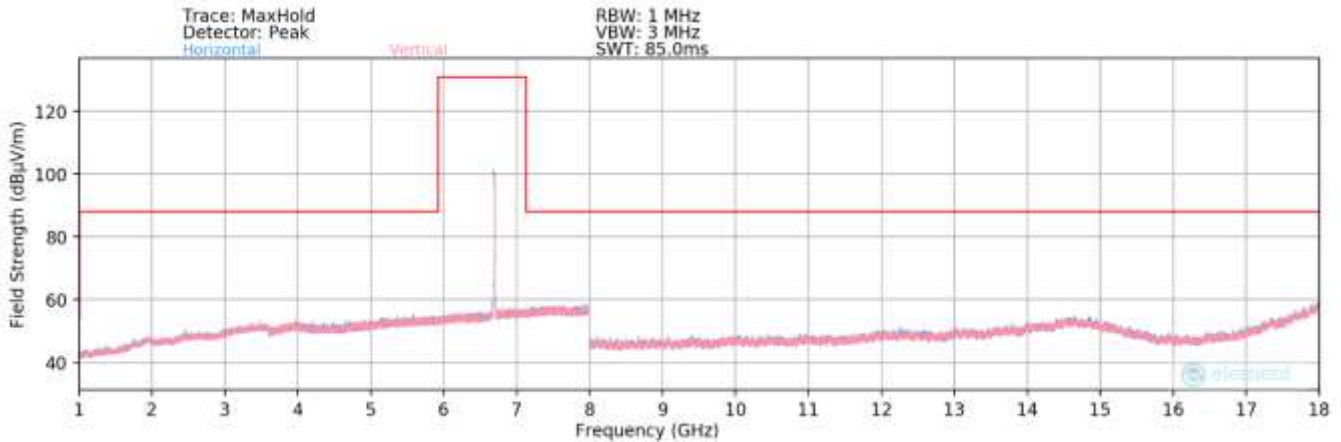
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
13030.00	Peak	H	-	-	-76.55	14.39	0.00	44.84	68.20	-23.36
* 19545.00	Average	H	-	-	-66.05	2.31	-9.54	33.72	53.98	-20.26
* 19545.00	Peak	H	-	-	-55.58	2.31	-9.54	44.19	73.98	-29.79
26060.00	Peak	H	-	-	-56.25	4.92	-9.54	46.13	68.20	-22.07
32575.00	Peak	H	-	-	-55.46	6.55	-9.54	48.55	68.20	-19.65

Table 7-75. Radiated Measurements MIMO (242 Tones) – LPI

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2212080136-13-R1.A3L	Test Dates: 9/03/2022 – 11/23/2022	EUT Type: Portable Handset	Page 389 of 399



MIMO Radiated Spurious Emission Measurements (242 Tones) – UNII Band 7



Plot 7-673. Radiated Spurious Plot above 1GHz MIMO (802.11ax– UNII Band 7 – 20MHz – Ch.149) – LPI/SP

Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 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	H	-	-	-66.01	14.13	0.00	55.12	68.20	-13.08
* 19605.00	Average	H	-	-	-66.17	2.79	-9.54	34.08	53.98	-19.90
* 19605.00	Peak	H	-	-	-54.92	2.79	-9.54	45.33	73.98	-28.65
26140.00	Peak	H	-	-	-55.61	4.83	-9.54	46.68	68.20	-21.52
32675.00	Peak	H	-	-	-55.89	6.85	-9.54	48.42	68.20	-19.78

Table 7-76. Radiated Measurements MIMO (242 Tones) – LPI/SP

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2212080136-13-R1.A3L	Test Dates: 9/03/2022 – 11/23/2022	EUT Type: Portable Handset	Page 390 of 399



Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 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	H	-	-	-76.76	13.84	0.00	44.08	53.98	-9.89
* 13390.00	Peak	H	-	-	-66.60	13.84	0.00	54.24	73.98	-19.73
* 20085.00	Average	H	-	-	-65.83	3.04	-9.54	34.67	53.98	-19.31
* 20085.00	Peak	H	-	-	-55.54	3.04	-9.54	44.96	73.98	-29.02
26780.00	Peak	H	-	-	-56.02	5.16	-9.54	46.60	68.20	-21.60
33475.00	Peak	H	-	-	-54.92	7.26	-9.54	49.80	68.20	-18.40

Table 7-77. Radiated Measurements MIMO (242 Tones) – LPI/SP

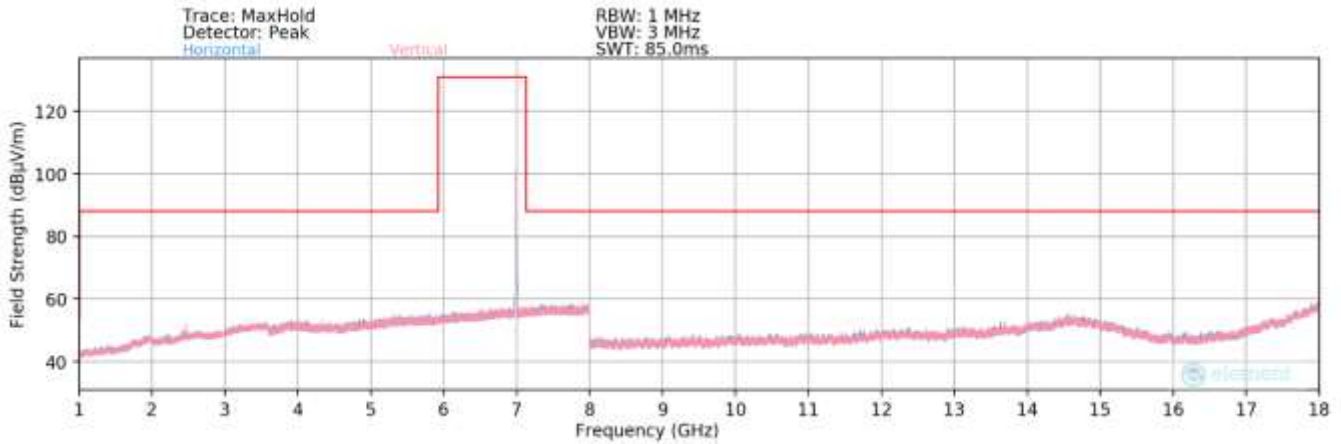
Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 6875MHz
 Channel: 185

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	H	-	-	-76.94	14.30	0.00	44.36	68.20	-23.84
* 20625.00	Average	H	-	-	-66.93	3.28	-9.54	33.81	53.98	-20.17
* 20625.00	Peak	H	-	-	-56.01	3.28	-9.54	44.73	73.98	-29.25
27500.00	Peak	H	-	-	-55.18	4.79	-9.54	47.06	68.20	-21.14
34375.00	Peak	H	-	-	-55.87	7.69	-9.54	49.28	68.20	-18.92

Table 7-78. Radiated Measurements MIMO (242 Tones) – LPI/SP

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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MIMO Radiated Spurious Emission Measurements (242 Tones) – UNII Band 8



Plot 7-674. Radiated Spurious Plot above 1GHz MIMO (802.11ax– UNII Band 8 – 20MHz – Ch.209) – LPI

Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 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	H	-	-	-66.07	14.46	0.00	55.39	68.20	-12.81
* 20685.00	Average	H	-	-	-66.52	3.27	-9.54	34.21	53.98	-19.77
* 20685.00	Peak	H	-	-	-55.91	3.27	-9.54	44.82	73.98	-29.16
27580.00	Peak	H	-	-	-55.38	5.23	-9.54	47.31	68.20	-20.89
34475.00	Peak	H	-	-	-55.45	7.64	-9.54	49.64	68.20	-18.56

Table 7-79. Radiated Measurements MIMO (242 Tones) – LPI

FCC ID: A3LSMS911JPN	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: 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	H	-	-	-65.15	14.06	0.00	55.91	68.20	-12.29
* 20985.00	Average	H	-	-	-66.66	3.46	-9.54	34.26	53.98	-19.72
* 20985.00	Peak	H	-	-	-56.65	3.46	-9.54	44.27	73.98	-29.71
27980.00	Peak	H	-	-	-55.06	5.02	-9.54	47.41	68.20	-20.79
34975.00	Peak	H	-	-	-53.92	7.91	-9.54	51.44	68.20	-16.76

Table 7-80. Radiated Measurements MIMO (242 Tones) – LPI

Worst Case Mode: 802.11ax
 Worst Case Transfer Rate: MCS0
 RU Index: 61
 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	H	-	-	-66.43	14.64	0.00	55.21	68.20	-12.99
* 21345.00	Average	H	-	-	-66.52	3.78	-9.54	34.72	53.98	-19.26
* 21345.00	Peak	H	-	-	-56.06	3.78	-9.54	45.18	73.98	-28.80
28460.00	Peak	H	-	-	-55.79	5.45	-9.54	47.12	68.20	-21.08
35575.00	Peak	H	-	-	-53.73	7.65	-9.54	51.38	68.20	-16.82

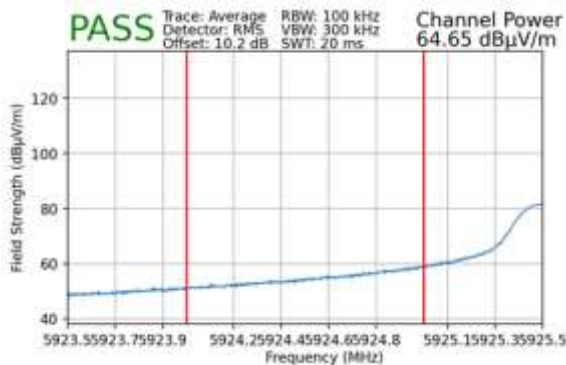
Table 7-81. Radiated Measurements MIMO (242 Tones) – LPI

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2212080136-13-R1.A3L	Test Dates: 9/03/2022 – 11/23/2022	EUT Type: Portable Handset	Page 393 of 399

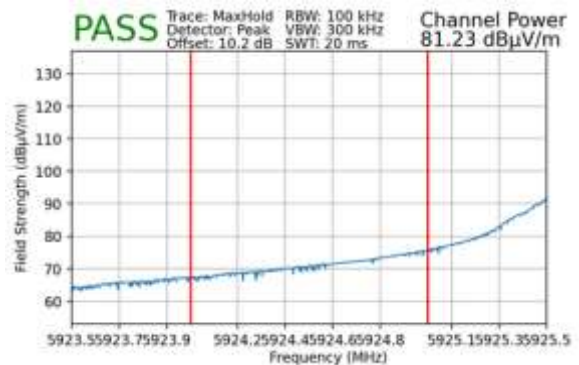
7.7.3 MIMO Radiated Band Edge Measurements (20MHz BW – Partial Tone – 106T)

§15.407(b.6) §15.205 §15.209

Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	MCS0
RU Index	53
Distance of Measurements:	3 Meters
Operating Frequency:	5935MHz
Channel:	2

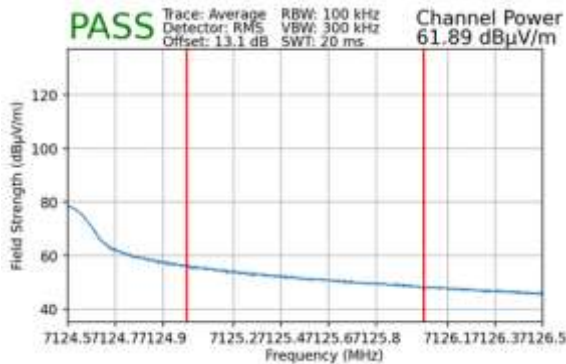


Plot 7-675. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 5) SP

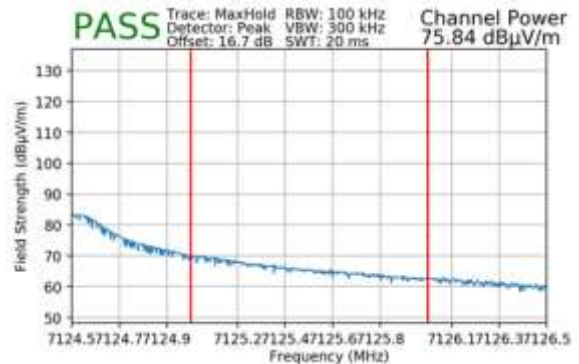


Plot 7-676. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 5) SP

Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	MCS0
RU Index	54
Distance of Measurements:	3 Meters
Operating Frequency:	7115MHz
Channel:	233



Plot 7-677. Radiated Upper Band Edge Plot MIMO (Average – UNII Band 8) LPI



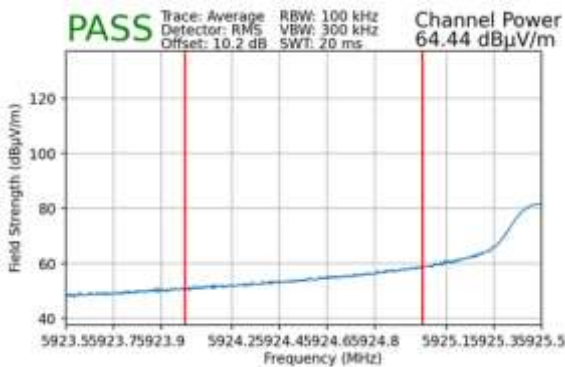
Plot 7-678. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 8) LPI

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2212080136-13-R1.A3L	Test Dates: 9/03/2022 – 11/23/2022	EUT Type: Portable Handset	Page 394 of 399

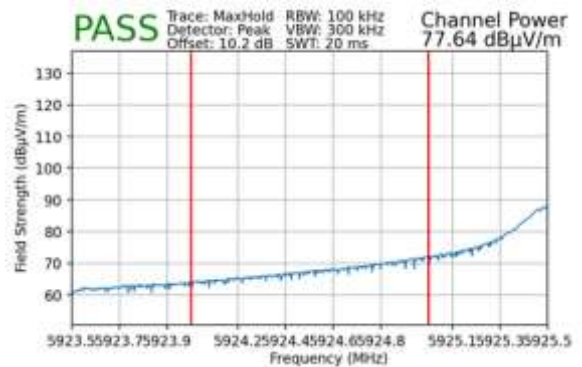
7.7.4 MIMO Radiated Band Edge Measurements (20MHz BW – Full Tone – 242T)

§15.407(b.6) §15.205 §15.209

Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	MCS0
RU Index	61
Distance of Measurements:	3 Meters
Operating Frequency:	5935MHz
Channel:	2

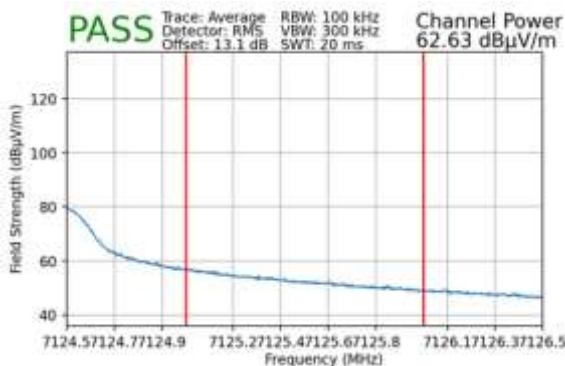


Plot 7-679. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 5) SP

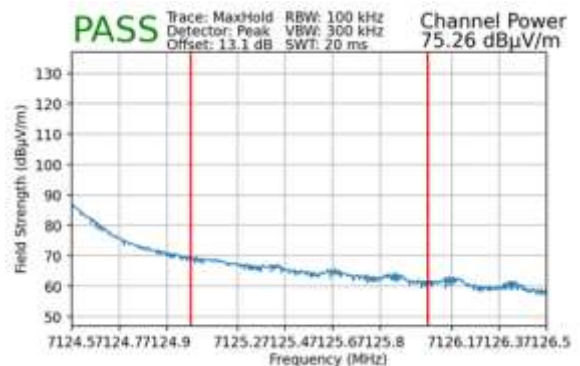


Plot 7-680. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 5) SP

Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	MCS0
RU Index	61
Distance of Measurements:	3 Meters
Operating Frequency:	7115MHz
Channel:	233



Plot 7-681. Radiated Upper Band Edge Plot MIMO (Average – UNII Band 8) LPI



Plot 7-682. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 8) LPI

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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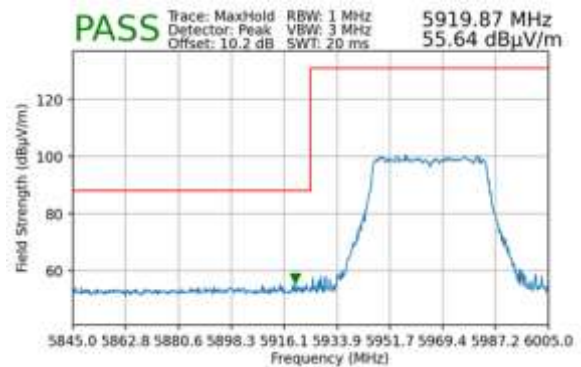
7.7.5 MIMO Radiated Band Edge Measurements (40MHz BW – Full Tone – 484T)

§15.407(b.5) §15.205 §15.209

Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	MCS0
RU Index	65
Distance of Measurements:	3 Meters
Operating Frequency:	5965MHz
Channel:	3

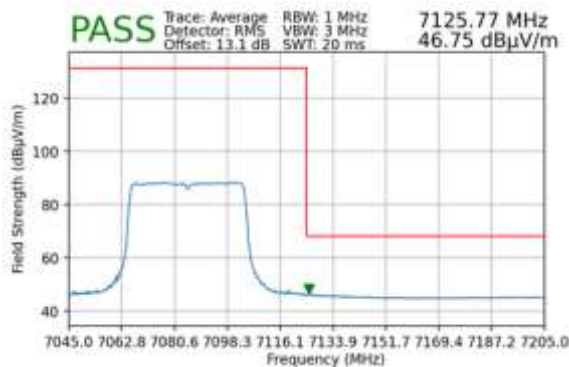


Plot 7-683. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 5) LPI/SP



Plot 7-684. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 5) LPI/SP

Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	MCS0
RU Index	65
Distance of Measurements:	3 Meters
Operating Frequency:	7085MHz
Channel:	227



Plot 7-685. Radiated Upper Band Edge Plot MIMO (Average – UNII Band 8) LPI



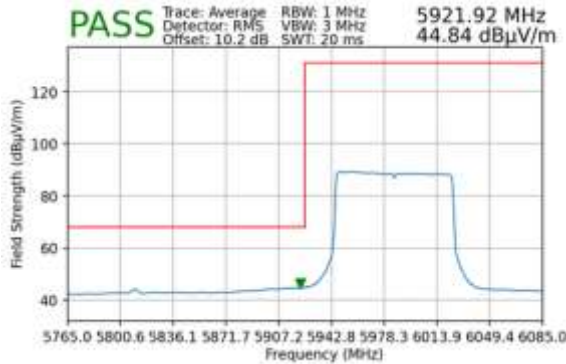
Plot 7-686. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 8) LPI

FCC ID: A3LSMS911JPN		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2212080136-13-R1.A3L	Test Dates: 9/03/2022 – 11/23/2022	EUT Type: Portable Handset		Page 396 of 399

7.7.6 MIMO Radiated Band Edge Measurements (80MHz BW Full Tone – 996T)

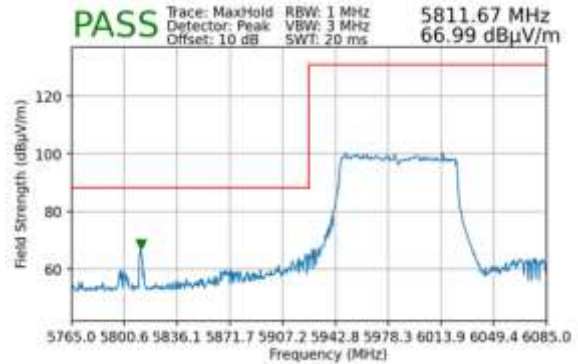
\$15.407(b.5) \$15.205 \$15.209

Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	MCS0
RU Index	67
Distance of Measurements:	3 Meters
Operating Frequency:	5985MHz
Channel:	7

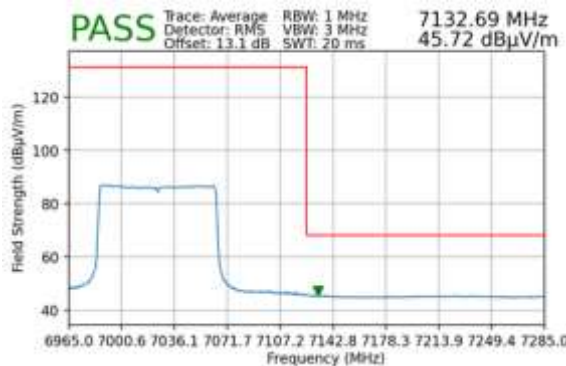


Plot 7-687. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 5) LPI/SP

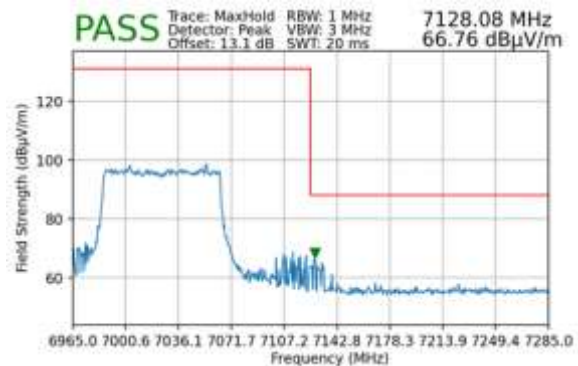
Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	MCS0
RU Index	67
Distance of Measurements:	3 Meters
Operating Frequency:	7025MHz
Channel:	215



Plot 7-688. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 5) LPI/SP



Plot 7-689. Radiated Upper Band Edge Plot MIMO (Average – UNII Band 8) LPI

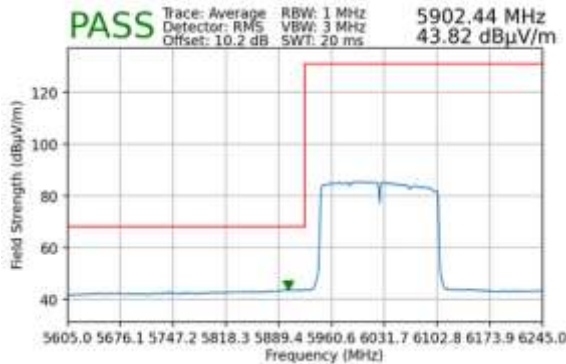


Plot 7-690. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 8) LPI

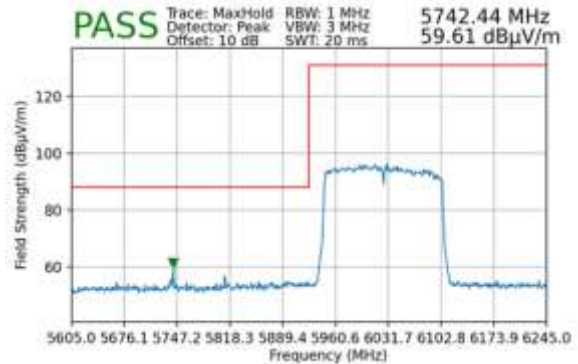
FCC ID: A3LSMS911JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2212080136-13-R1.A3L	Test Dates: 9/03/2022 – 11/23/2022	EUT Type: Portable Handset	Page 397 of 399

7.7.7 MIMO Radiated Band Edge Measurements (160MHz BW Full Tone - 2x996T) §15.407(b.5) §15.205 §15.209

Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	MCS0
RU Index	67
Distance of Measurements:	3 Meters
Operating Frequency:	6025MHz
Channel:	15



Plot 7-691. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 5) LPI/SP

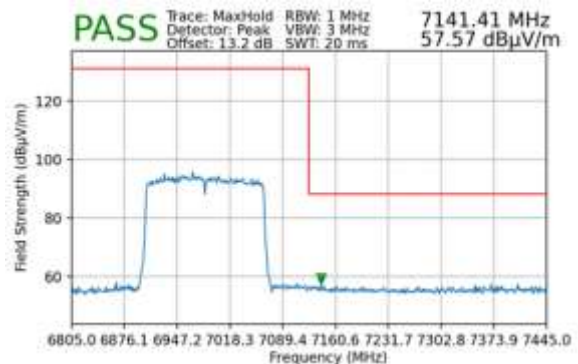


Plot 7-692. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 5) LPI/SP

Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	MCS0
RU Index	67
Distance of Measurements:	3 Meters
Operating Frequency:	6985MHz
Channel:	207



Plot 7-693. Radiated Upper Band Edge Plot MIMO (Average – UNII Band 8) LPI



Plot 7-694. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 8) LPI

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2212080136-13-R1.A3L	Test Dates: 9/03/2022 – 11/23/2022	EUT Type: Portable Handset	Page 398 of 399

8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMS911JPN** is in compliance with Part 15 Subpart E (15.407) of the FCC Rules for operation as a client device.

FCC ID: A3LSMS911JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2212080136-13-R1.A3L	Test Dates: 9/03/2022 – 11/23/2022	EUT Type: Portable Handset	Page 399 of 399