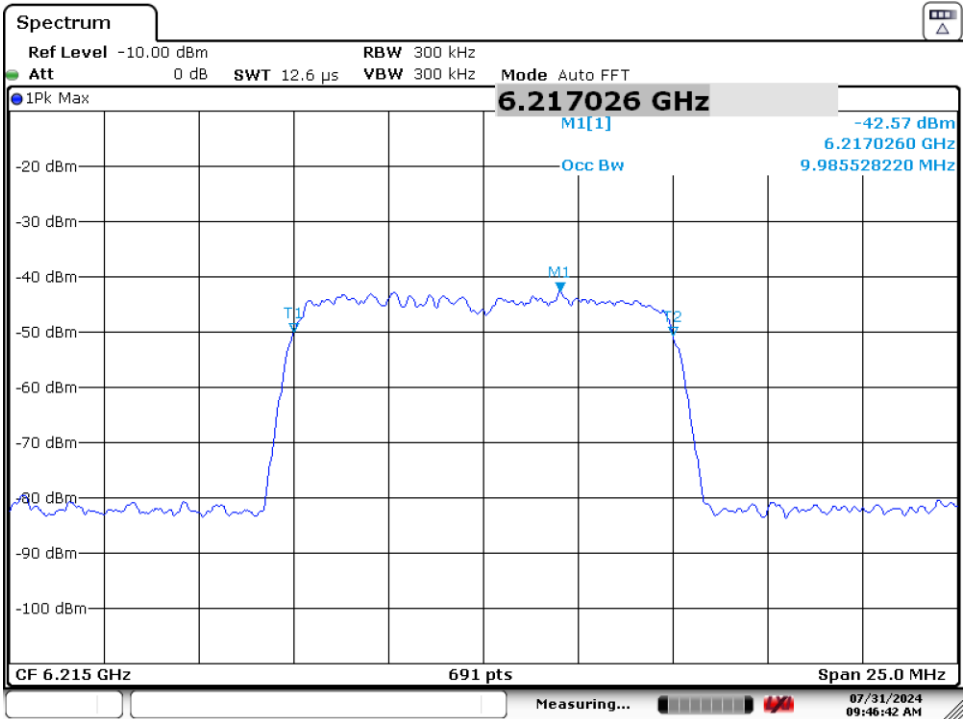


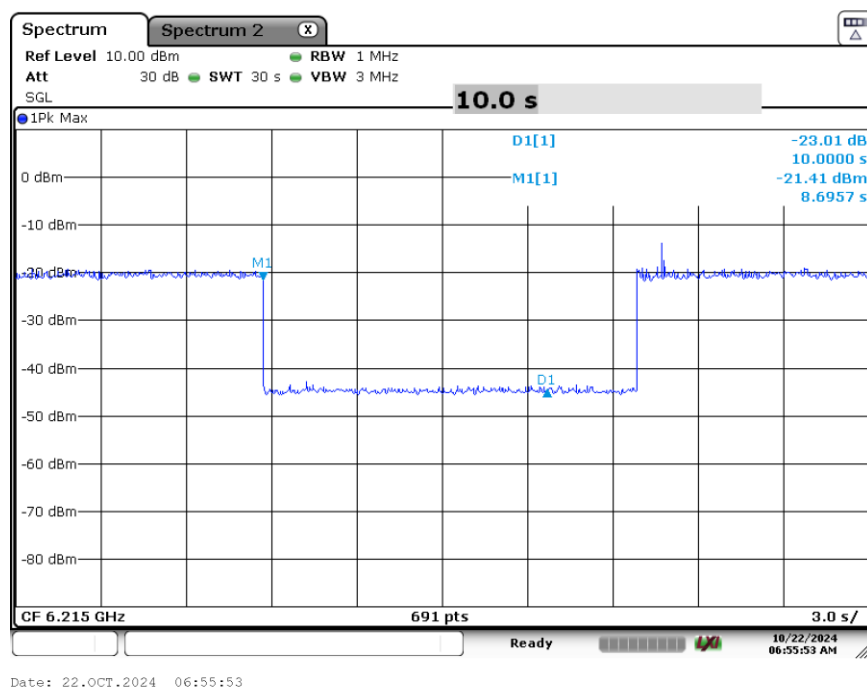
7.7.1 AWGN Plots



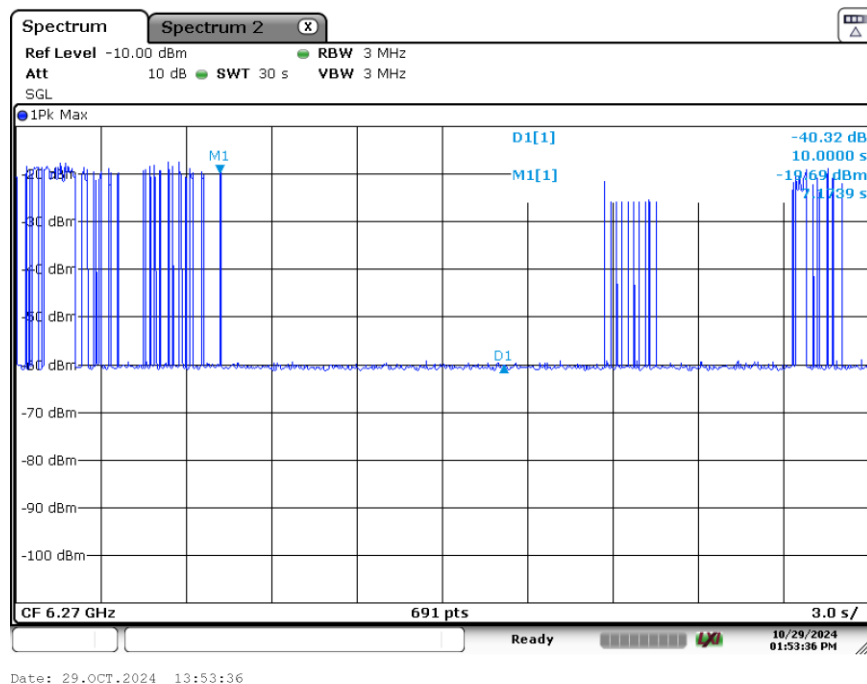
Plot 7-62. AWGN Signal (Demonstration)

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7.7.2 CBP Timing Plots

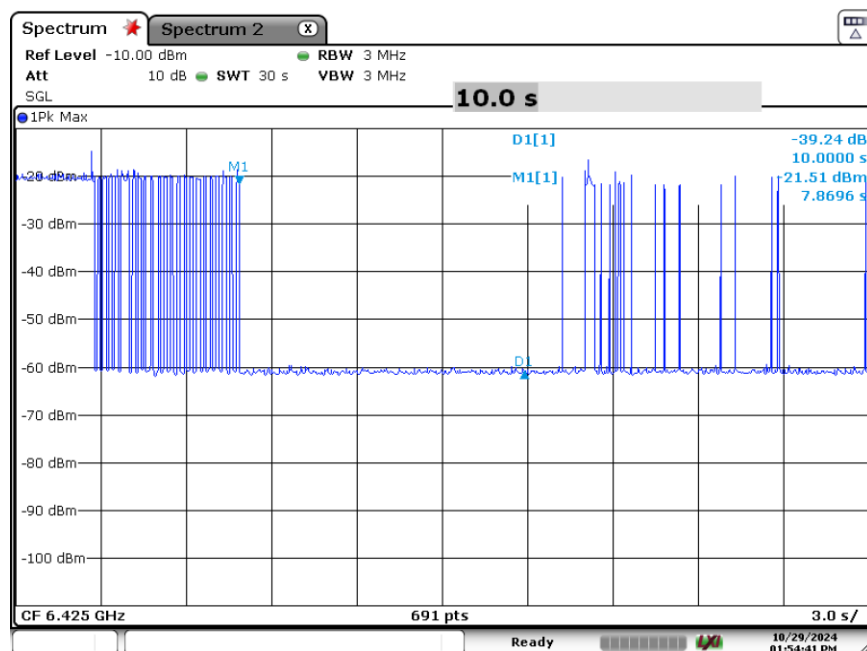


Plot 7-63. Contention Based Protocol Timing Plot (20MHz (UNII Band 5) – Ch. 53)



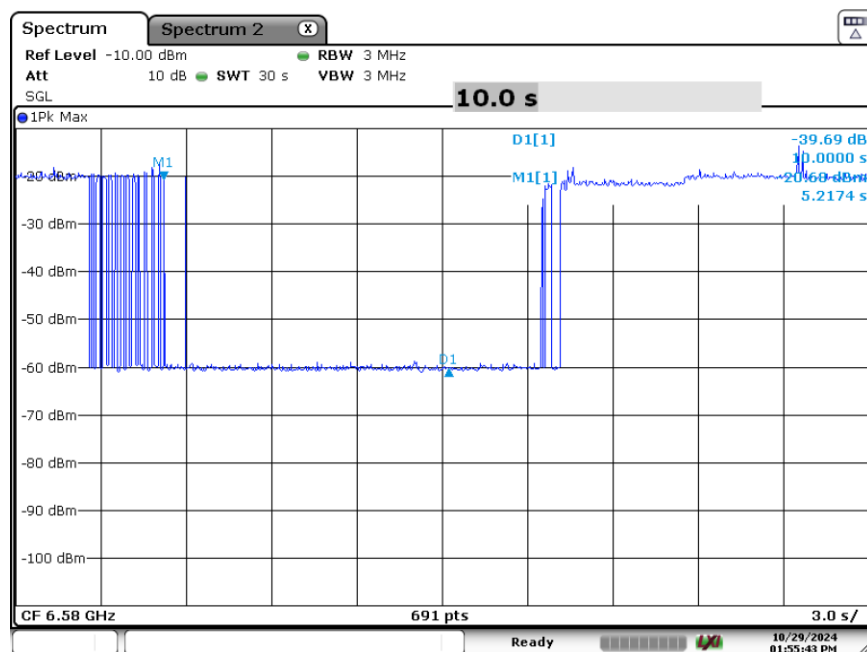
Plot 7-64. Contention Based Protocol Timing Plot (320MHz (UNII Band 5) – Ch. 47 Low)

FCC ID: A3LSMS938B	MEASUREMENT REPORT		Approved by: Technical Manager
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Date: 29.OCT.2024 13:54:41

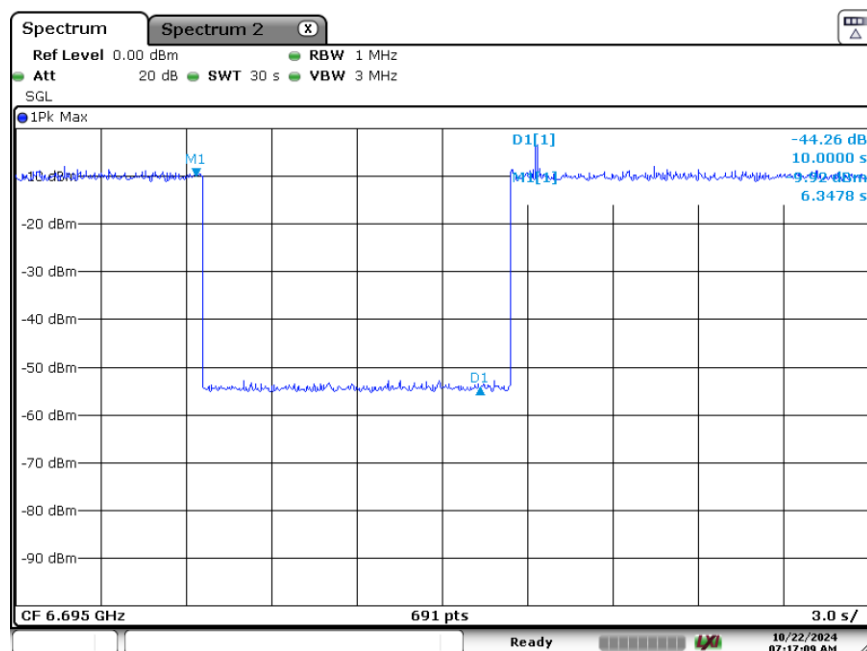
Plot 7-65. Contention Based Protocol Timing Plot (320MHz (UNII Band 5) – Ch. 47 Mid)



Date: 29.OCT.2024 13:55:43

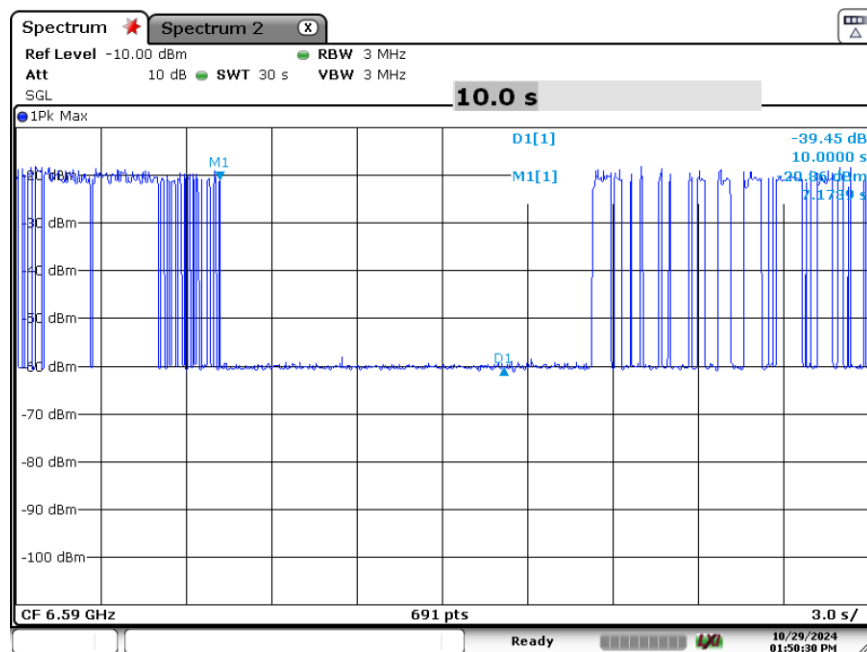
Plot 7-66. Contention Based Protocol Timing Plot (320MHz (UNII Band 5) – Ch. 47 High)

FCC ID: A3LSMS938B	MEASUREMENT REPORT		Approved by: Technical Manager
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Date: 22.OCT.2024 07:17:09

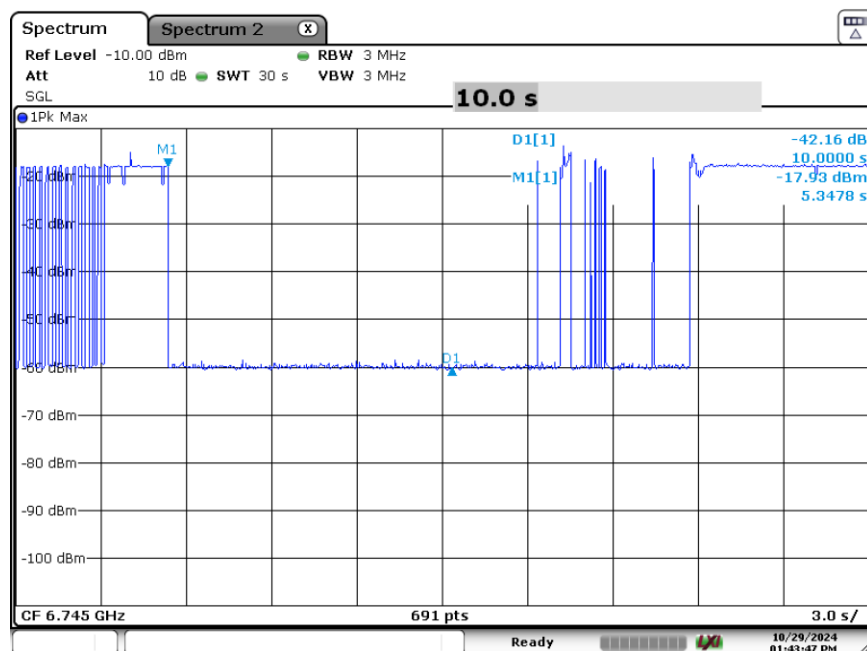
Plot 7-67. Contention Based Protocol Timing Plot (20MHz (UNII Band 7) – Ch. 149)



Date: 29.OCT.2024 13:50:29

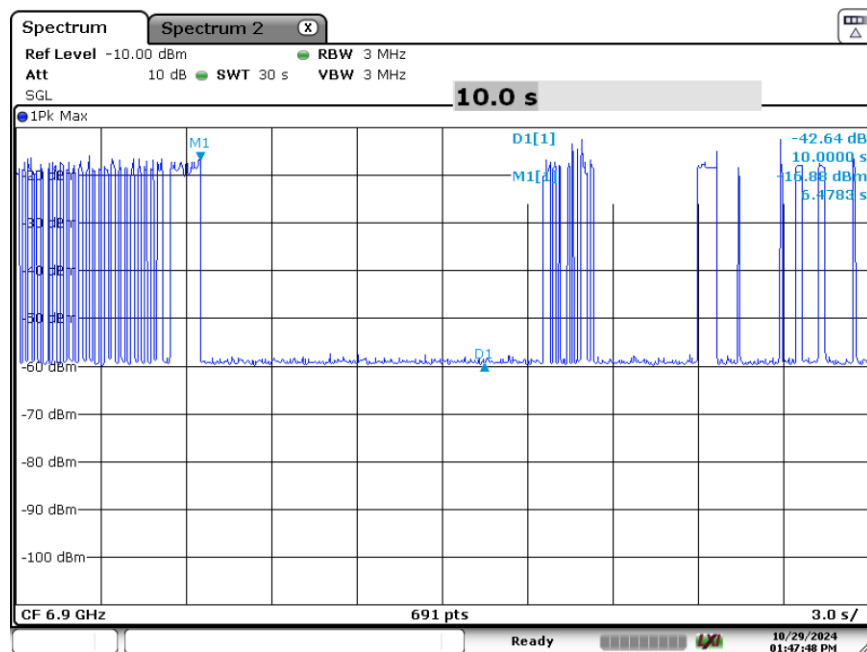
Plot 7-68. Contention Based Protocol Timing Plot (320MHz (UNII Band 7) – Ch. 175 Low)

FCC ID: A3LSMS938B	MEASUREMENT REPORT		Approved by: Technical Manager
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Date: 29.OCT.2024 13:43:46

Plot 7-69. Contention Based Protocol Timing Plot (320MHz (UNII Band 7) – Ch. 175 Mid)



Date: 29.OCT.2024 13:47:48

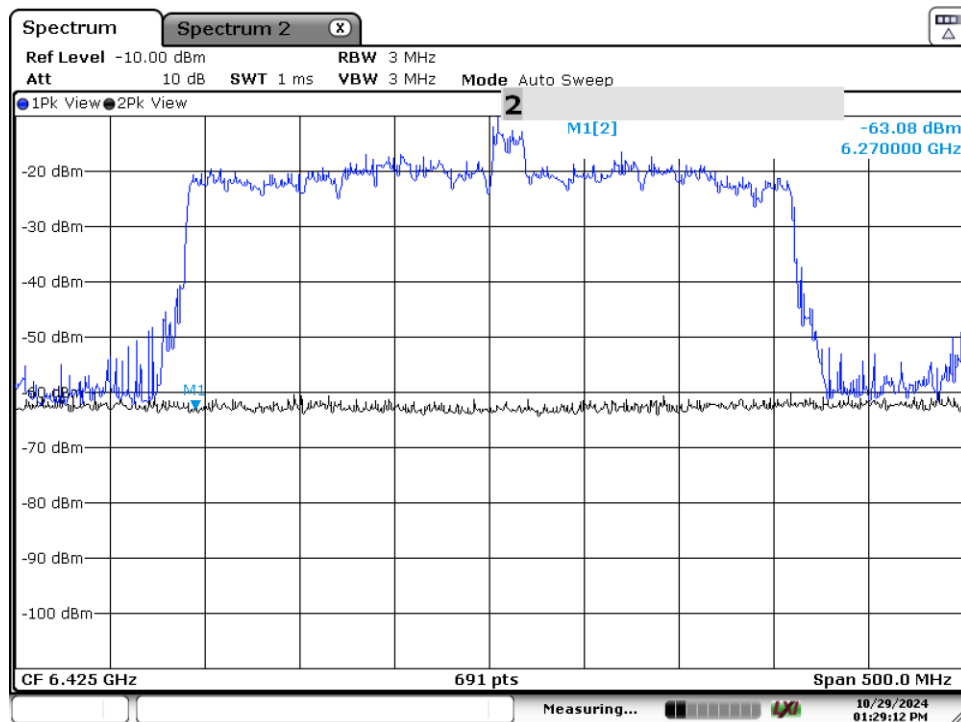
Plot 7-70. Contention Based Protocol Timing Plot (320MHz (UNII Band 7) – Ch. 175 High)

FCC ID: A3LSMS938B	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260069-25.A3L	Test Dates: 09/03/2024 - 11/05/2024	EUT Type: Portable Handset	Page 81 of 109

7.7.3 Channel Move Plots

This section demonstrates the effect of injecting the AWGN signal at various locations throughout the 802.11be 320MHz signal. The blue trace shows the full 320MHz signal prior to AWGN injection while the black trace shows the spectrum following AWGN injection. The following items were observed as demonstrated in the three plots shown below:

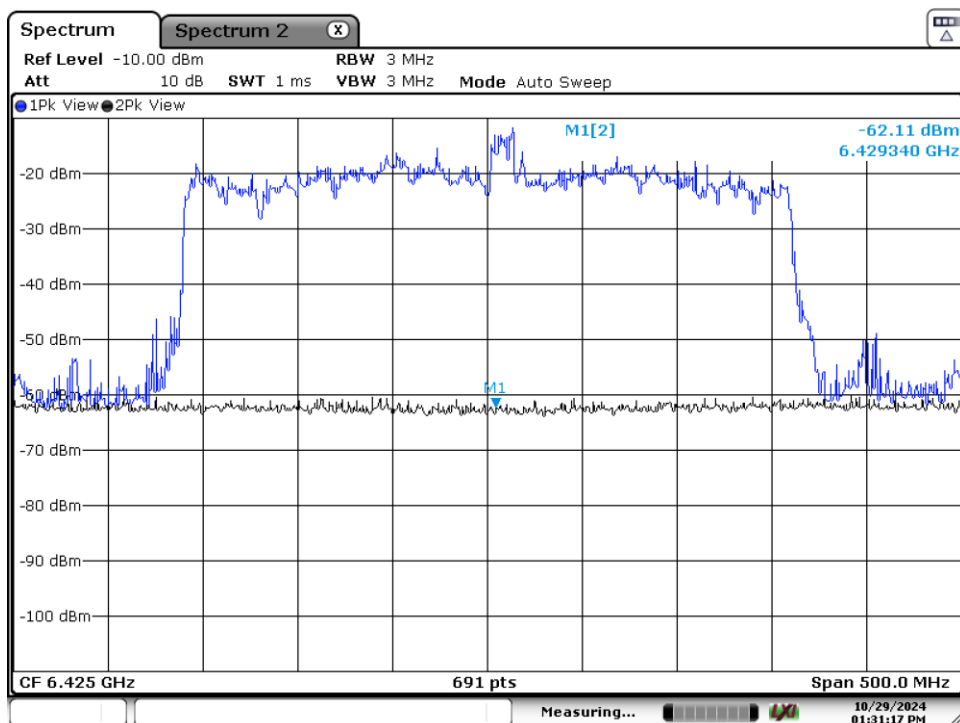
- When a 10 MHz AWGN signal centered at 6270 MHz (lower edge of channel) is injected, the channel completely stops transmitting.
- When a 10 MHz AWGN signal centered at 6425 MHz (middle of channel) is injected, the channel completely stops transmitting.
- When a 10 MHz AWGN signal centered at 6580 MHz (upper edge of channel) is injected, the channel completely stops transmitting.



Date: 29.OCT.2024 13:29:12

Plot 7-71. CBP 320MHz Channel - Injection Lower Edge – [6270 MHz]

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Transmit Power Control

Test Overview and Limit

Very low-power devices operating in the 5.925–6.425 and 6.525-6.875 GHz bands shall employ a TPC mechanism. A very low-power device must demonstrate the capability to operate at least 6 dB below the maximum EIRP PSD value of -5 dBm/MHz.

Test Procedures Used

KDB 987594 D02 v03
ANSI C63.10-2013 Section 12.5 (Using Method SA-3)

Test Settings

1. Analyzer was set to the center frequency of the UNII channel under investigation
2. Span was set to encompass the entire emission bandwidth of the signal
3. RBW = 1MHz
4. VBW = 3MHz
5. Number of sweep points = 1001
6. Sweep time = 2s (i.e. sweep time < # points x T, per Section 12.3.2.6)
7. Detector = power averaging (RMS)
8. Trace was set to max hold to allow the trace to stabilize
9. Trigger was set to free run for all modes
10. The peak search function of the spectrum analyzer was used to find the peak of the spectrum.

Test Setup

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

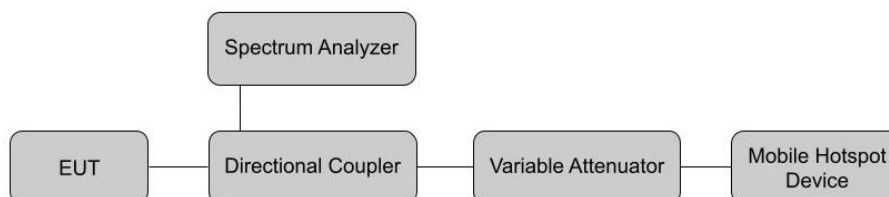


Figure 7-6. Test Instrument & Measurement Setup

This test demonstrates the ability of the device to increase and decrease power by the required 6dB as the RSSI is decreased and increased via attenuation from a variable attenuator.

1. Configure EUT and Mobile Hotspot Device for connection as shown in figure above
2. Set variable attenuator to 0dB (noise free spectral environment, high RSSI simulation)
3. Establish connection between EUT and Mobile Hotspot Device
4. Capture PSD on Spectrum analyzer
5. Adjust attenuator to set high attenuation (noisy spectral environment, low RSSI simulation)
6. Capture PSD on Spectrum analyzer
7. Compare the highest PSD captured in step 4 to the highest PSD on step 6

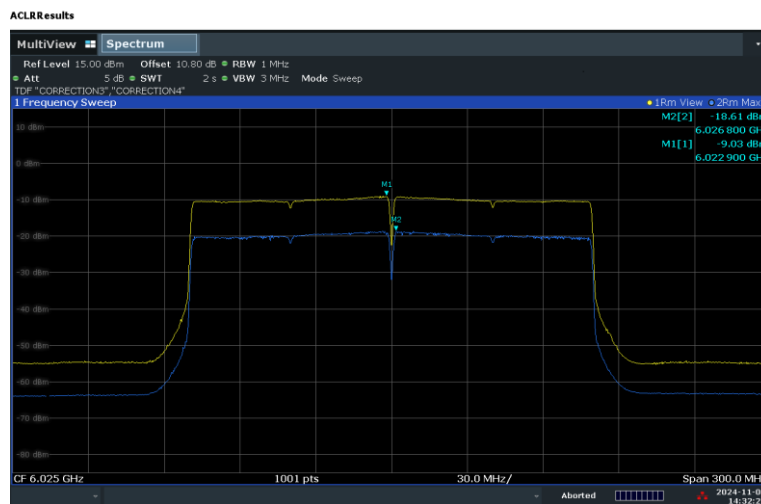
FCC ID: A3LSMS938B	MEASUREMENT REPORT		Approved by: Technical Manager
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Test Notes

1. TPC is triggered when high RSSI condition is detected. As RSSI decreases via an increase in channel attenuation, the transmitters' output power will increase back to maximum allowed power
2. Implementation Expectation: Tx power Backoff is enabled at -26dBm or higher RSSI level. Backoff is disabled at -35dBm or lower RSSI Level.
3. The e.i.r.p. density is measured across both antenna ports and accounting for directional gain as shown below.

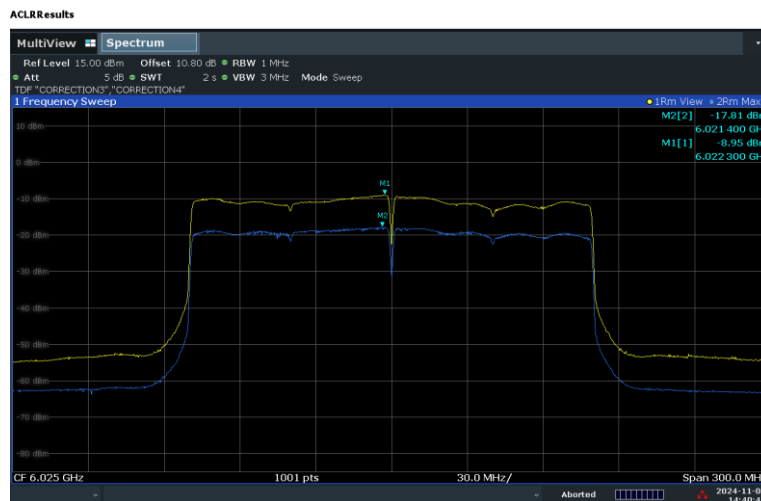
Frequency [MHz]	Channel	802.11 MODE	RSSI Level [dBm]	Antenna-1 Power Density [dBm]	Antenna-2 Power Density [dBm]	Antenna-1 Gain [dBi]	Antenna-2 Gain [dBi]	Summed MIMO Power Density [dBm/MHz]	Directional Gain [dBi]	e.i.r.p. Density [dBm/MHz]	Max EIRP Density [dBm/MHz]	Margin [dB]
6025	15	ax (160MHz)	-35	-9.03	-8.95	-6.12	-5.01	-5.98	-2.54	-8.52	-5	-3.52
			-26	-18.61	-17.81	-6.12	-5.01	-15.18	-2.54	-17.72	-11	-6.72
			-21	-23.86	-23.25	-6.12	-5.01	-20.53	-2.54	-23.07	-11	-12.07

Table 7-51. e.i.r.p. Power Spectral Density Measurements



Plot 7-74. Power Spectral Density Plot –

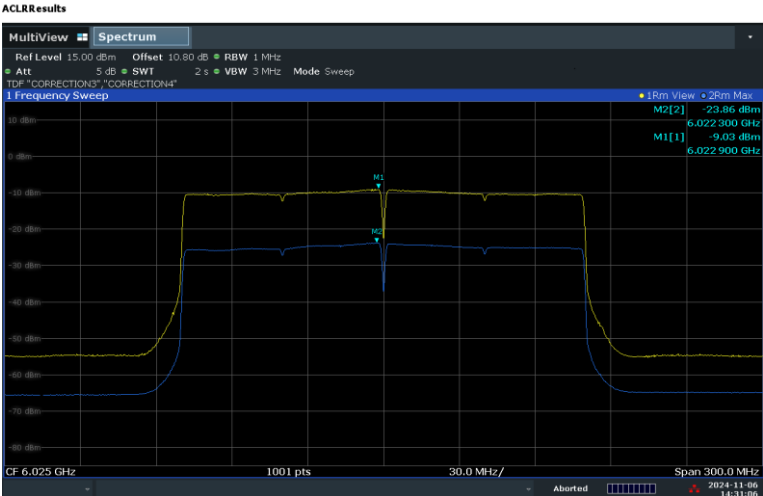
ANT1 (160MHz Bandwidth, RSSI level at -35dBm (yellow) and -26dBm (blue))



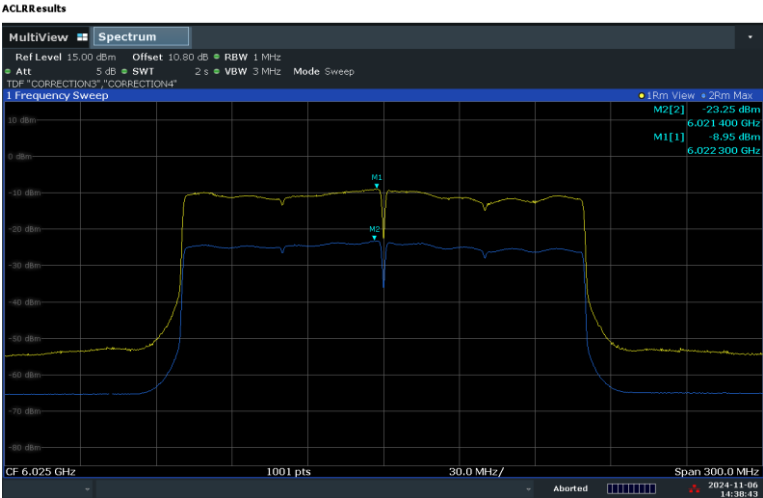
Plot 7-75. Power Spectral Density Plot –

ANT2 (160MHz Bandwidth, RSSI level at -35dBm (yellow) and -26dBm (blue))

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Plot 7-76. Power Spectral Density Plot –
ANT1 (160MHz Bandwidth, RSSI level at -35dBm (yellow) and -21dBm (blue))



Plot 7-77. Power Spectral Density Plot –
ANT2 (160MHz Bandwidth, RSSI level at -35dBm (yellow) and -21dBm (blue))

FCC ID: A3LSMS938B	MEASUREMENT REPORT		Approved by: Technical Manager
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7.8 Radiated Emission Measurements

Test Overview and Limit

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013, and at the appropriate frequencies. All channels, modes (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 [$\mu\text{V/m}$]	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 7-52. Radiated Limits

Test Procedures Used

ANSI C63.10-2013 – Sections 12.7.7.2, 12.7.6, 12.7.5

Test Settings – Above 1GHz

Average Field Strength Measurements (Method AD – Average Detection)

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest.
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = power average (RMS)
5. Number of measurement points = 1001 (Number of points must be $\geq 2 \times \text{span} \backslash \text{RBW}$)
6. Sweep time = auto
7. Trace (RMS) averaging was performed over at least 100 traces.

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Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest.
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize.

Test Settings – Below 1GHz

Quasi-Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest.
2. RBW = 120kHz (for emissions from 30MHz – 1GHz)
3. Detector = quasi-peak
4. Sweep time = auto couple
5. Trace mode = max hold
6. Trace was allowed to stabilize.

Test Setup

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

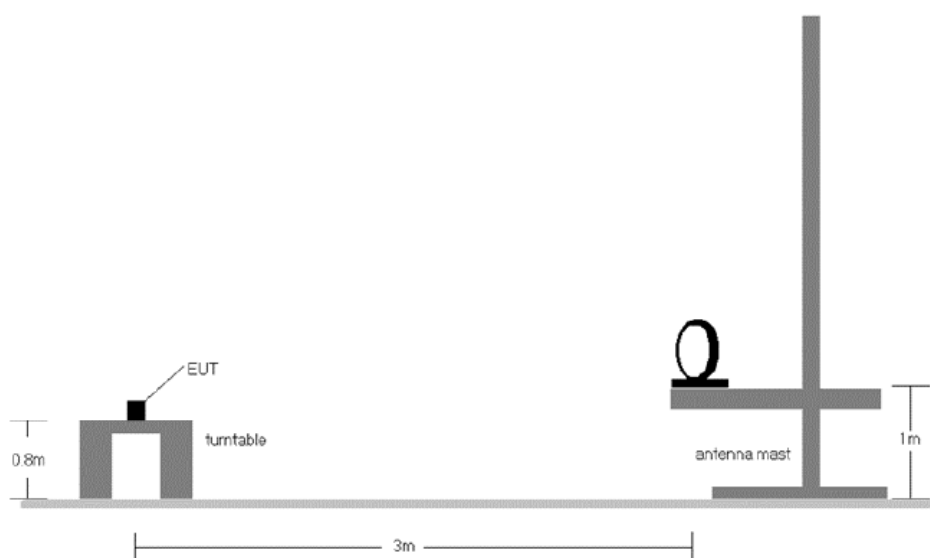


Figure 7-7. Radiated Test Setup < 30MHz

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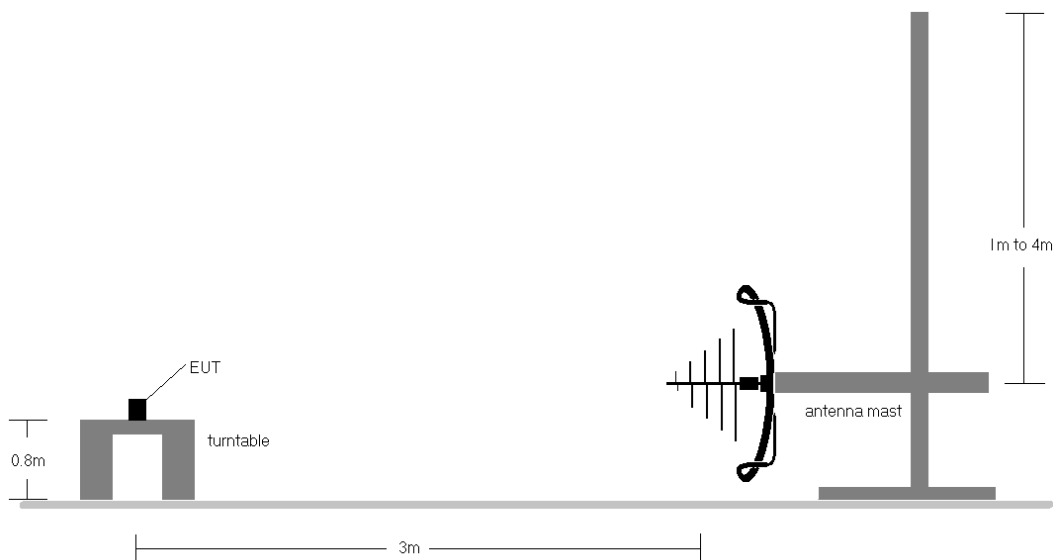


Figure 7-8. Radiated Test Setup < 1GHz

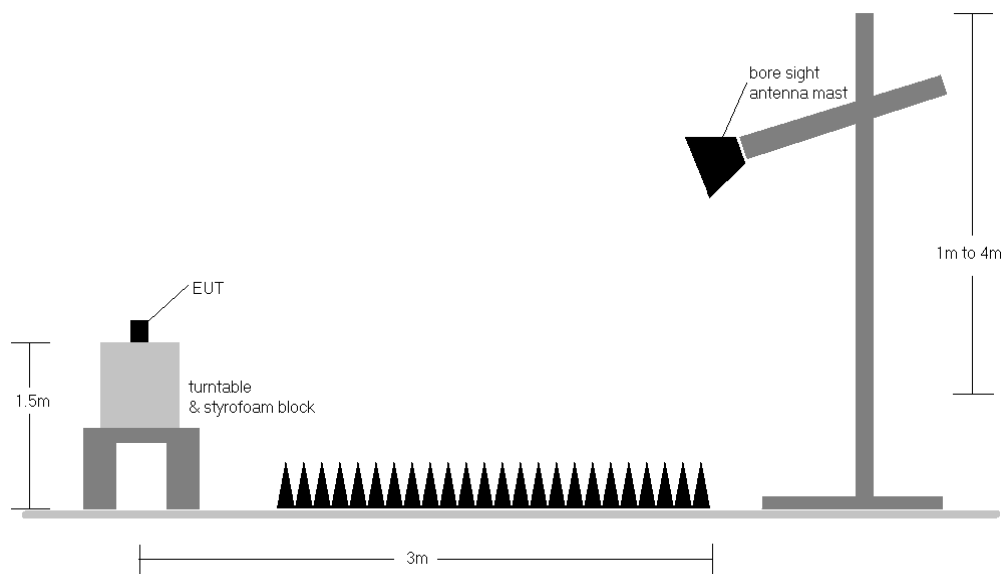


Figure 7-9. Radiated Test Setup > 1GHz

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Test Notes

1. All spurious emissions lying in restricted bands specified in §15.205 are below the limits specified in §15.209. All spurious emissions that do not lie in a restricted band are subject to an average limit of -27dBm/MHz. At 3 meters, the field strength limit in dB 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.
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 μ 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. The “-” shown in the following RSE tables are used to denote a noise floor measurement.
8. In the case where a peak-detector measurement passed the given RMS limit it was determined sufficient to demonstrate compliance.
9. The results recorded using the broadband antenna are known to correlate with the results obtained by using a tuned dipole with an acceptable degree of accuracy. The VSWR for the measurement antenna was found to be less than 2:1.

Sample Calculations

Determining Spurious Emissions Levels

- Field Strength Level [dB 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]

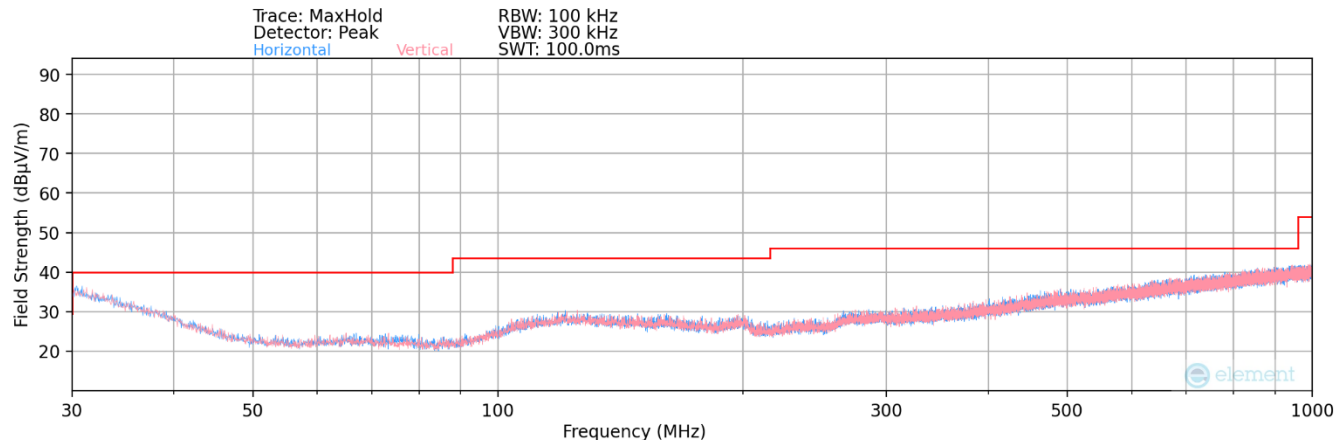
Radiated Band Edge Measurement Offset

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

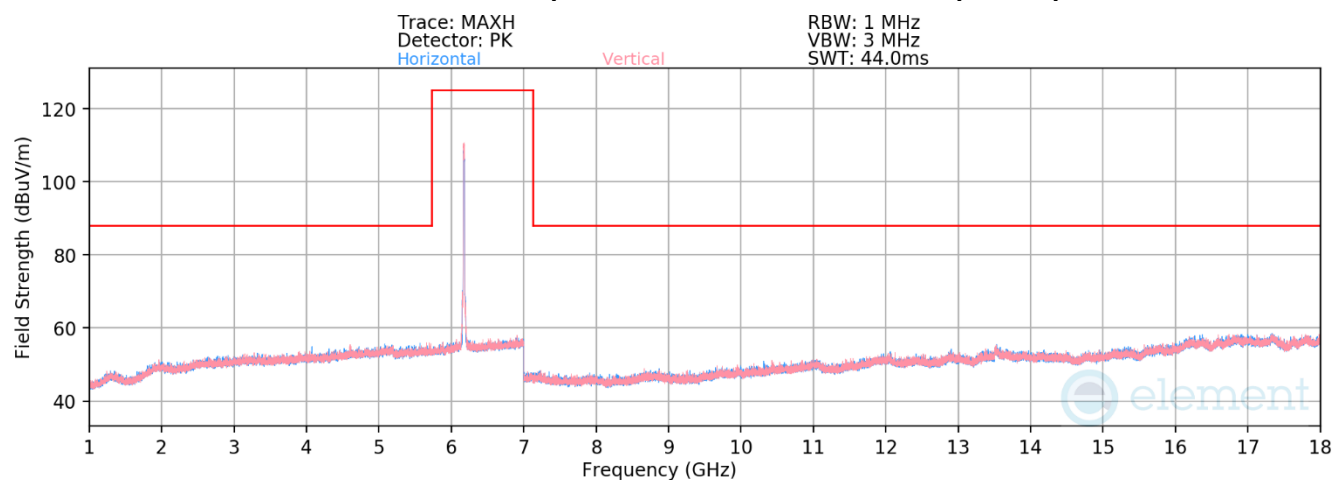
Offset (dB) = (Antenna Factor + Cable Loss + Attenuator) – Preamplifier Gain

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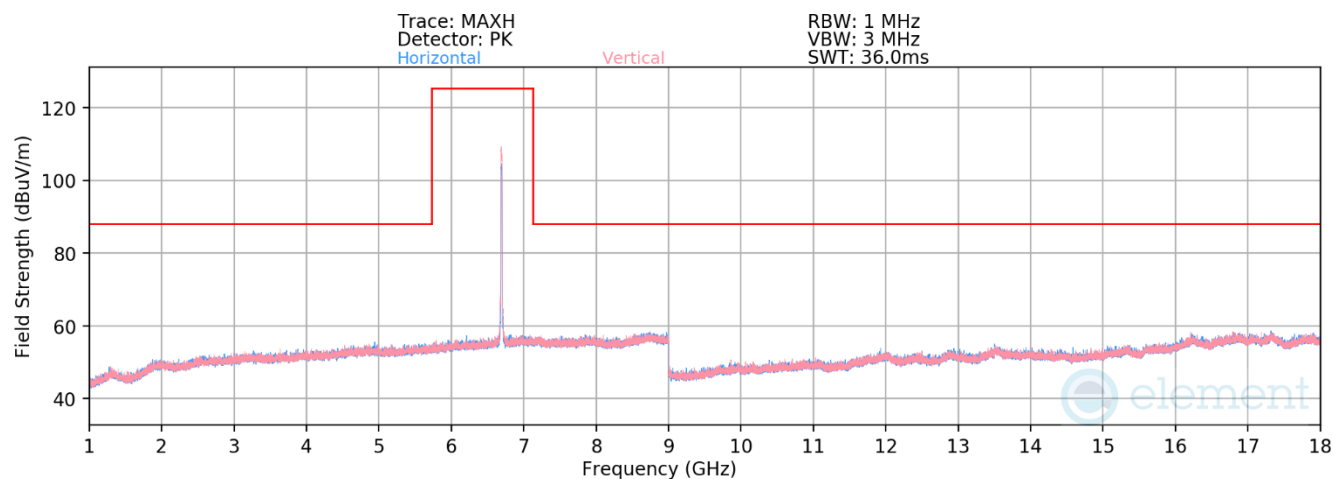
7.8.1 MIMO Radiated Spurious Emission Measurements



Plot 7-78. Radiated Spurious Plot below 1GHz MIMO (802.11a)

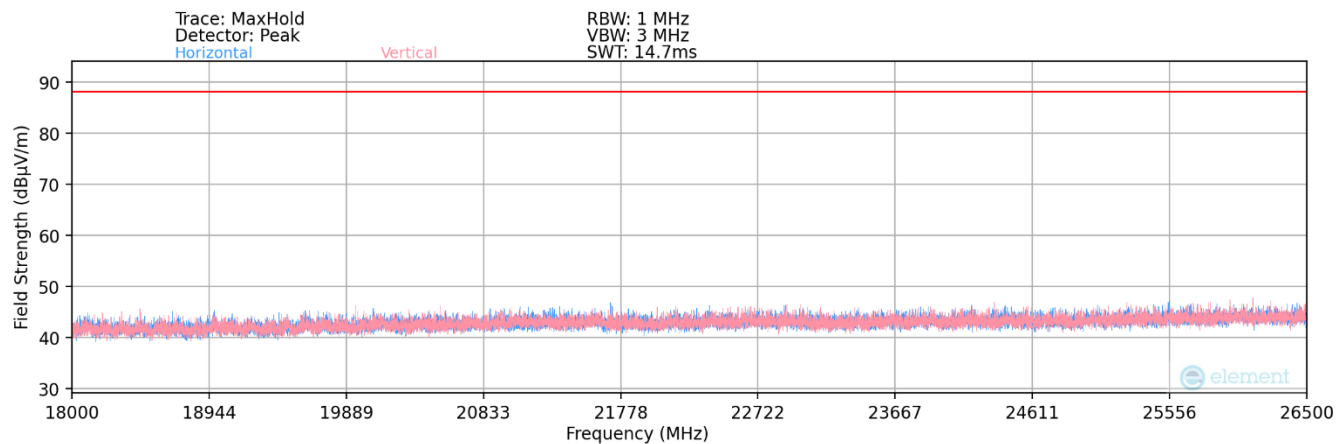


Plot 7-79. Radiated Spurious Plot 1GHz – 18GHz MIMO (802.11a – UNII Band 5 Ch. 45)

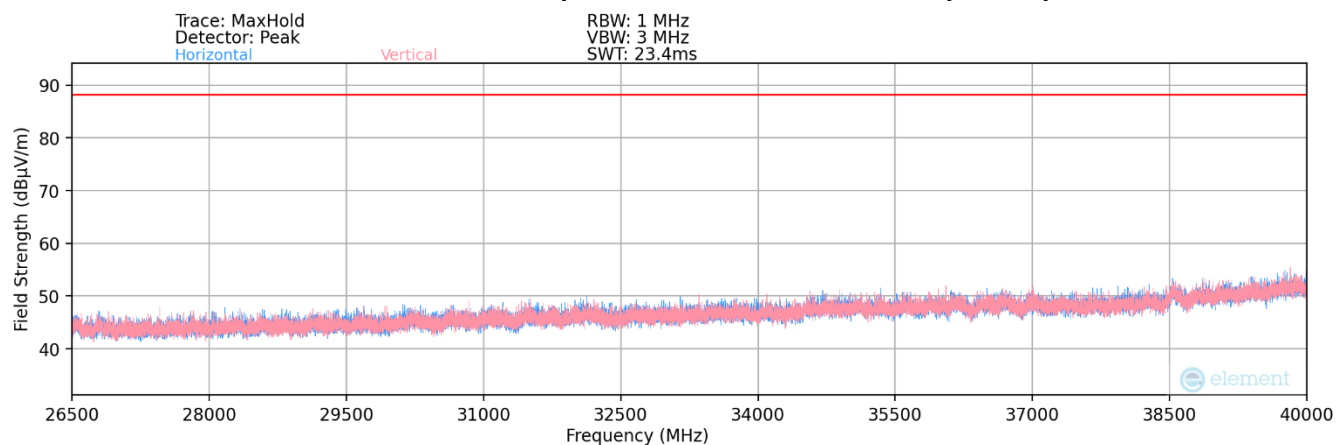


Plot 7-80. Radiated Spurious Plot 1GHz – 18GHz MIMO (802.11a – UNII Band 7 Ch. 149)

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Plot 7-81. Radiated Spurious Plot 18GHz - 26.5GHz (802.11a)



Plot 7-82. Radiated Spurious Plot 26.5GHz - 40GHz (802.11a)

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MIMO Radiated Spurious Emission Measurements – UNII Band 5

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters

Mode	Antenna	UNII Band	Channel	Test Channel Freq. [MHz]	Restricted	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]
802.11a	MIMO	5	2	5935	*	11870.00	Average	H	-	-	-82.71	16.47	0.00	40.76	53.98	-13.22
					*	11870.00	Peak	H	-	-	-71.51	16.47	0.00	51.96	73.98	-22.02
					*	17805.00	Average	V	-	-	-84.26	24.15	0.00	46.89	53.98	-7.09
					*	17805.00	Peak	V	-	-	-72.93	24.15	0.00	58.22	73.98	-15.76
					*	23740.00	Average	V	-	-	-66.15	3.58	-9.54	34.89	53.98	-19.09
					*	23740.00	Peak	V	-	-	-56.36	3.58	-9.54	44.68	73.98	-29.30
			45	6175		29675.00	Peak	V	-	-	-55.37	5.33	-9.54	47.42	68.20	-20.78
					*	12350.00	Average	V	-	-	-83.05	17.23	0.00	41.18	53.98	-12.80
					*	12350.00	Peak	V	-	-	-71.26	17.23	0.00	52.97	73.98	-21.01
					*	18525.00	Average	V	-	-	-64.74	1.16	-9.54	33.88	53.98	-20.10
					*	18525.00	Peak	V	-	-	-55.18	1.16	-9.54	43.44	73.98	-30.54
						24700.00	Peak	V	-	-	-56.25	3.72	-9.54	44.93	68.20	-23.27
			93	6415		30875.00	Peak	V	-	-	-55.90	6.32	-9.54	47.88	68.20	-20.32
						12830.00	Peak	V	-	-	-72.07	17.82	0.00	52.75	68.20	-15.45
					*	19245.00	Average	V	-	-	-65.22	1.84	-9.54	34.08	53.98	-19.90
					*	19245.00	Peak	V	-	-	-54.12	1.84	-9.54	45.18	73.98	-28.80
						25660.00	Peak	V	-	-	-54.66	3.90	-9.54	46.70	68.20	-21.50
						32075.00	Peak	V	-	-	-56.84	6.64	-9.54	47.26	68.20	-20.94

Table 7-53. Radiated Measurements MIMO

FCC ID: A3LSMS938B	MEASUREMENT REPORT		Approved by: Technical Manager
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MIMO Radiated Spurious Emission Measurements – UNII Band 7

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters

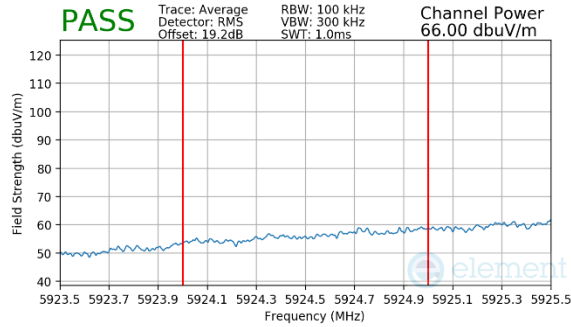
Mode	Antenna	UNII Band	Channel	Test Channel Freq. [MHz]	Restricted	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
802.11a	MIMO	7	117	6535		13070.00	Peak	V	-	-	-71.75	18.33	0.00	53.58	68.20	-14.62
					*	19605.00	Average	V	-	-	-65.41	2.38	-9.54	34.43	53.98	-19.55
					*	19605.00	Peak	V	-	-	-54.68	2.38	-9.54	45.16	73.98	-28.82
						26140.00	Peak	V	-	-	-56.48	4.03	-9.54	45.01	68.20	-23.19
						32675.00	Peak	V	-	-	-56.56	6.46	-9.54	47.36	68.20	-20.84
			149	6695	*	13390.00	Average	V	-	-	-83.55	17.66	0.00	41.11	53.98	-12.87
					*	13390.00	Peak	V	-	-	-72.47	17.68	0.00	52.21	73.98	-21.77
					*	20085.00	Average	V	-	-	-65.64	2.58	-9.54	34.40	53.98	-19.58
					*	20085.00	Average	V	-	-	-55.24	2.58	-9.54	44.80	73.98	-29.18
						26780.00	Average	V	-	-	-56.91	4.33	-9.54	44.88	68.20	-23.32
			185	6875		33475.00	Peak	V	-	-	-56.60	6.96	-9.54	47.82	68.20	-20.38
						13750.00	Peak	H	-	-	-70.91	17.56	0.00	53.65	68.20	-14.55
					*	20625.00	Average	V	-	-	-65.87	3.01	-9.54	34.60	53.98	-19.38
					*	20625.00	Peak	V	-	-	-55.09	3.01	-9.54	45.38	73.98	-28.60
						27500.00	Peak	V	-	-	-56.70	3.97	-9.54	44.73	68.20	-23.47
						34375.00	Peak	V	-	-	-56.52	7.33	-9.54	48.27	68.20	-19.93

Table 7-54. Radiated Measurements MIMO

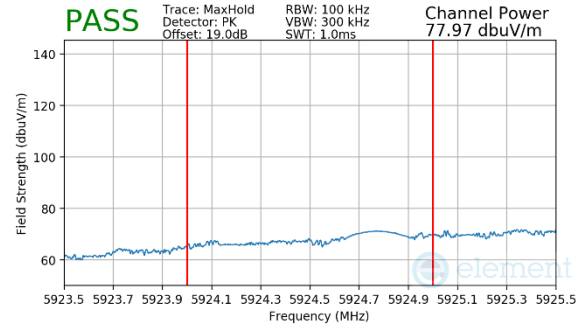
FCC ID: A3LSMS938B	MEASUREMENT REPORT		Approved by: Technical Manager
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7.8.2 MIMO Radiated Band Edge Measurements (20MHz BW)

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	5935MHz
Channel:	2

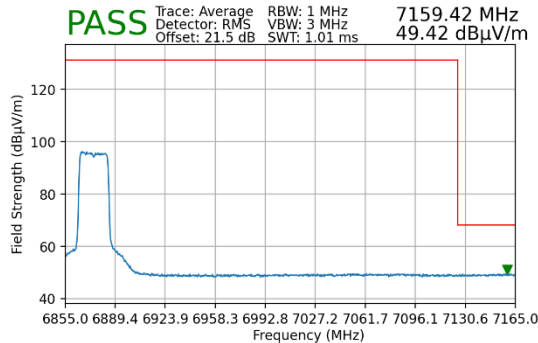


Plot 7-83. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 5)

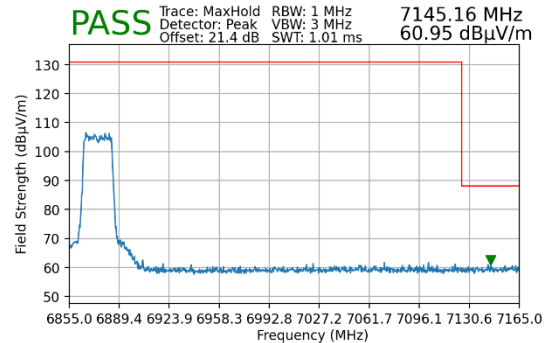


Plot 7-84. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 5)

Worst Case Mode:	802.11be
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	6875MHz
Channel:	185



Plot 7-85. Radiated Upper Band Edge Plot MIMO (Average – UNII Band 7)



Plot 7-86. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 7)

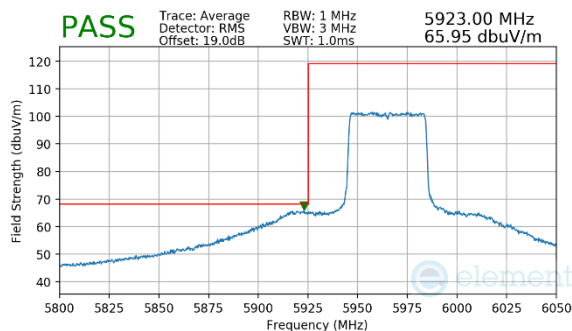
Note:

The highest channel of operation for VLP mode lies within the UNII-7 band (6525 - 6875MHz) which is far from the band edge at 7125MHz. We have investigated the band edge emissions at the upper edge of 7125MHz and are only including the worst-case upper band edge measurements as shown on this page.

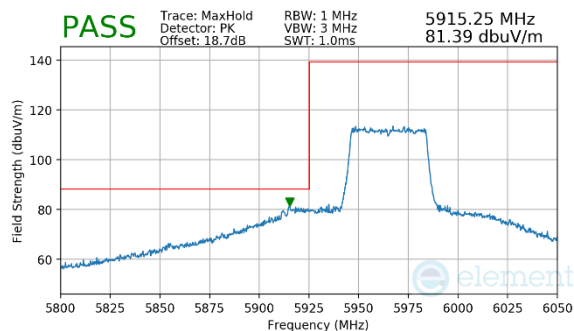
FCC ID: A3LSMS938B	MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260069-25.A3L	Test Dates: 09/03/2024 - 11/05/2024	EUT Type: Portable Handset	Page 95 of 109

7.8.3 MIMO Radiated Band Edge Measurements (40MHz BW)

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



Plot 7-87. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 5)

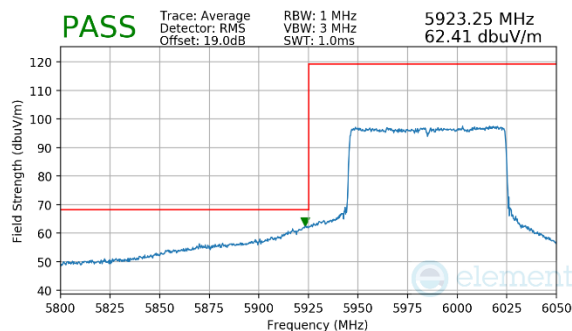


Plot 7-88. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 5)

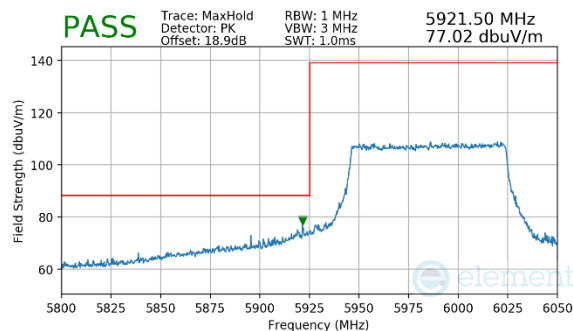
FCC ID: A3LSMS938B	MEASUREMENT REPORT		Approved by: Technical Manager
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7.8.4 MIMO Radiated Band Edge Measurements (80MHz BW)

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



Plot 7-89. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 5)

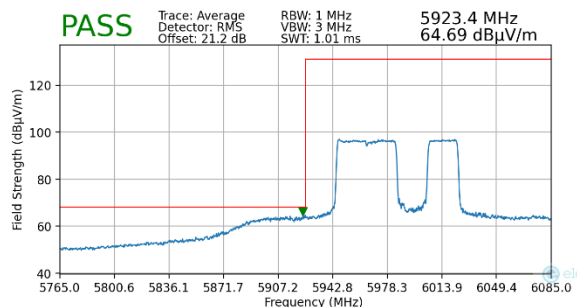


Plot 7-90. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 5)

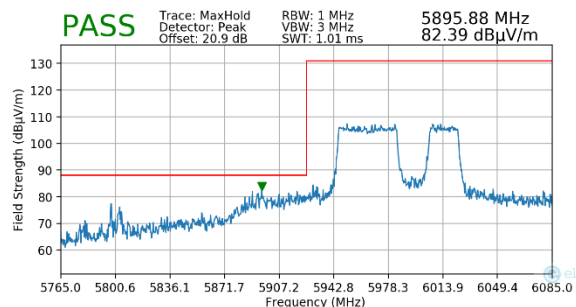
FCC ID: A3LSMS938B	MEASUREMENT REPORT		Approved by: Technical Manager
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7.8.5 MIMO Radiated Band Edge Measurements (80MHz BW - Punctured)

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



**Plot 7-91. Radiated Lower Band Edge Plot MIMO
(Average – UNII Band 5)**

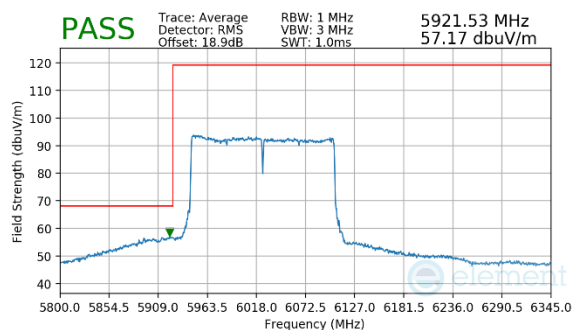


**Plot 7-92. Radiated Lower Band Edge Plot MIMO
(Peak – UNII Band 5)**

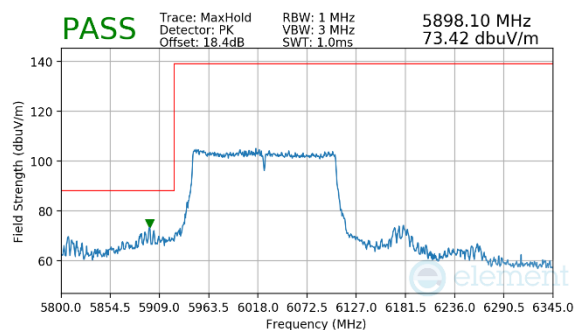
FCC ID: A3LSMS938B	MEASUREMENT REPORT		Approved by: Technical Manager
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7.8.6 MIMO Radiated Band Edge Measurements (160MHz BW)

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



**Plot 7-93. Radiated Lower Band Edge Plot MIMO
(Average – UNII Band 5)**

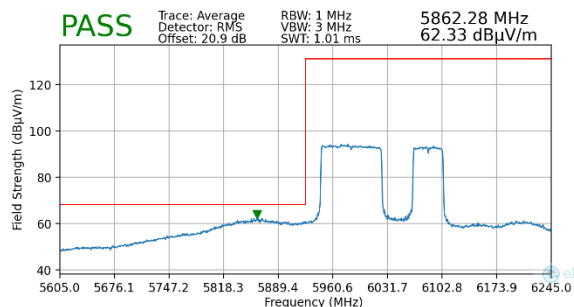


**Plot 7-94. Radiated Lower Band Edge Plot MIMO
(Peak – UNII Band 5)**

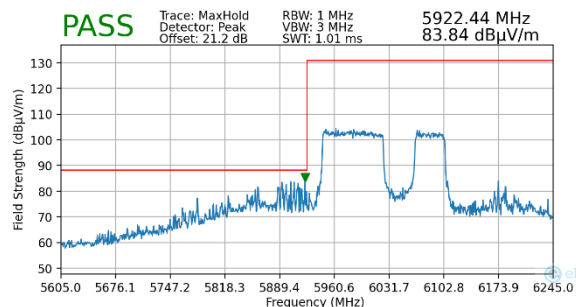
FCC ID: A3LSMS938B	MEASUREMENT REPORT		Approved by: Technical Manager
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7.8.7 MIMO Radiated Band Edge Measurements (160MHz BW - Punctured)

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



Plot 7-95. Radiated Lower Band Edge Plot MIMO
(Average – UNII Band 5)

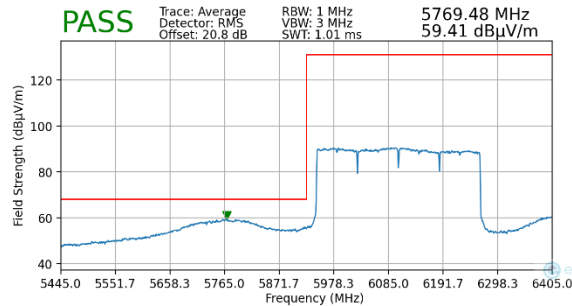


Plot 7-96. Radiated Lower Band Edge Plot MIMO
(Peak – UNII Band 5)

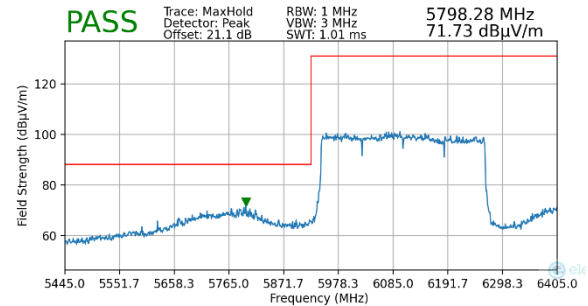
FCC ID: A3LSMS938B	MEASUREMENT REPORT		Approved by: Technical Manager
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7.8.8 MIMO Radiated Band Edge Measurements (320MHz BW)

Worst Case Mode:	802.11be
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	6105MHz
Channel:	31

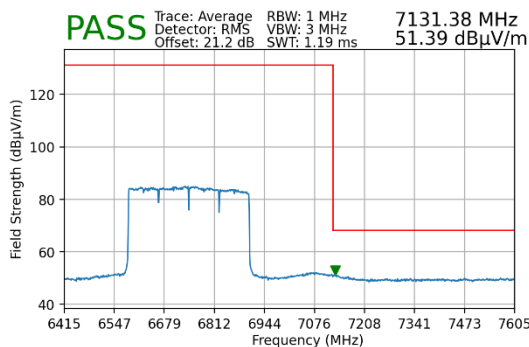


**Plot 7-97. Radiated Lower Band Edge Plot MIMO
(Average – UNII Band 5)**

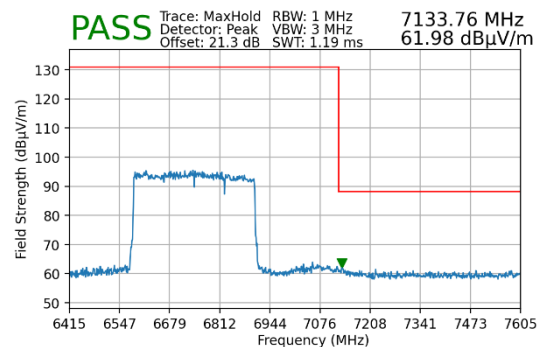


**Plot 7-98. Radiated Lower Band Edge Plot MIMO
(Peak – UNII Band 5)**

Worst Case Mode:	802.11be
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	6745MHz
Channel:	159



**Plot 7-99. Radiated Upper Band Edge Plot MIMO
(Average – UNII Band 7)**



**Plot 7-100. Radiated Upper Band Edge Plot MIMO
(Peak – UNII Band 7)**

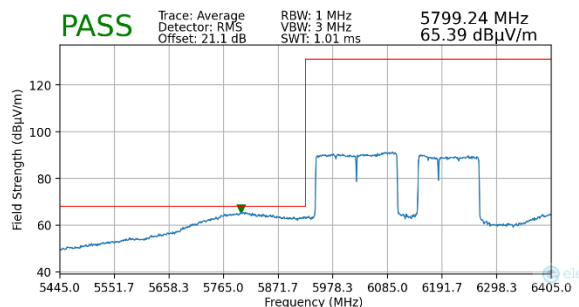
Note:

The highest channel of operation for VLP mode lies within the UNII-7 band (6525 - 6875MHz) which is far from the band edge at 7125MHz. We have investigated the band edge emissions at the upper edge of 7125MHz and are only including the worst-case upper band edge measurements as shown on this page.

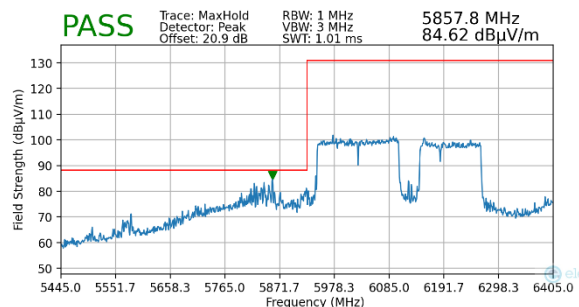
FCC ID: A3LSMS938B	MEASUREMENT REPORT		Approved by: Technical Manager
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7.8.9 MIMO Radiated Band Edge Measurements (320MHz BW – Punctured)

Worst Case Mode:	802.11be
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	6105MHz
Channel:	31



Plot 7-101. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 5)



Plot 7-102. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 5)

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7.9 Line Conducted Test Data

Test Overview and Limit

All AC line conducted spurious emissions are measured with a receiver connected to a grounded LISN while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates and modes were investigated for conducted spurious emissions. Only the conducted emissions of the configuration that produced the worst-case emissions are reported in this section.

All conducted emissions must not exceed the limits shown in the table below, per Section 15.207.

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

Table 7-55. 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.

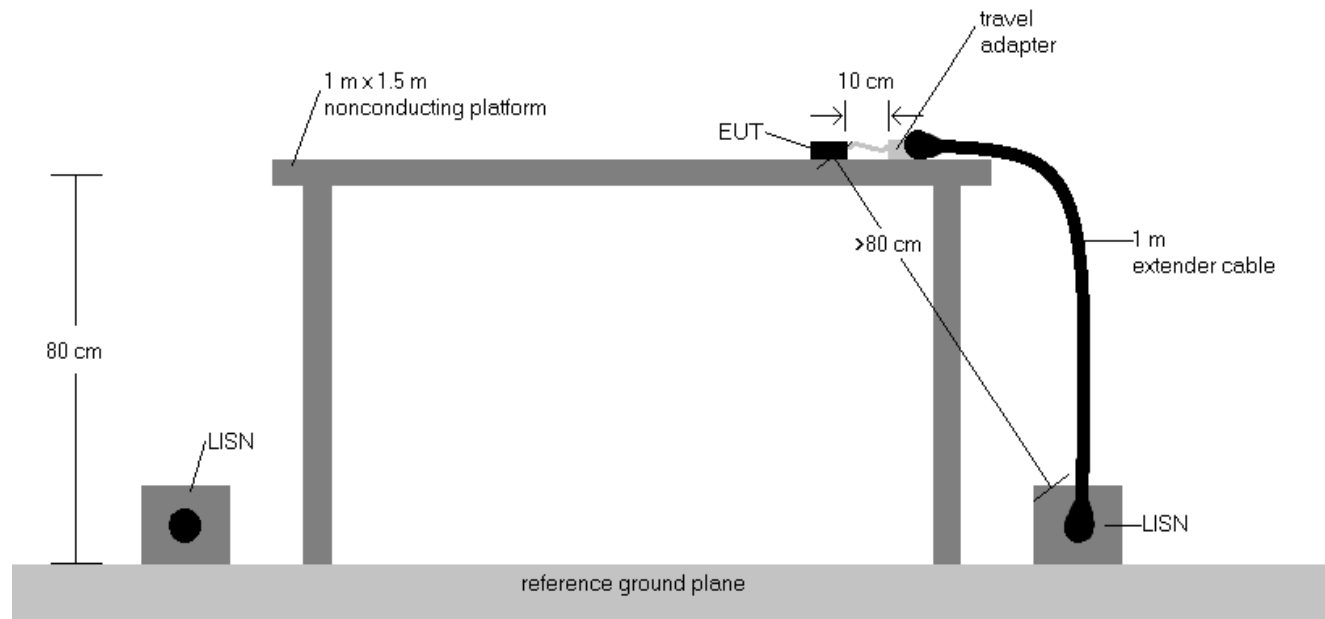
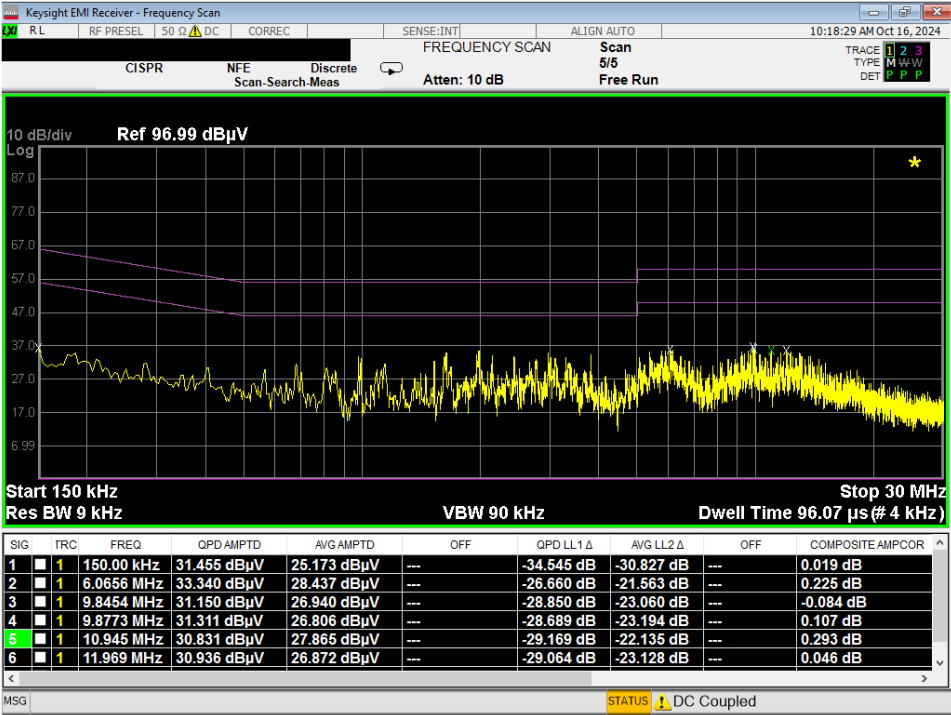


Figure 7-10. Test Instrument & Measurement Setup

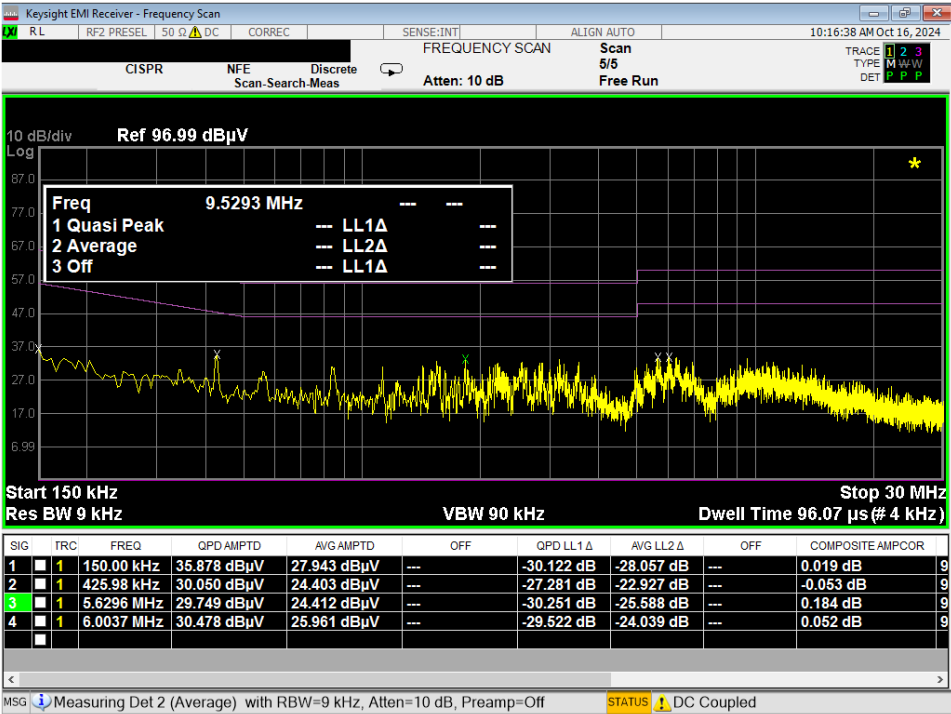
Test Notes

1. All modes of operation were investigated, and the worst-case emissions are reported using mid channel. The emissions found were not affected by the choice of channel used during testing.
2. The limit for an intentional radiator from 150kHz to 30MHz is specified in 15.207.
3. $\text{Corr. (dB)} = \text{Cable loss (dB)} + \text{LISN insertion factor (dB)}$
4. $\text{QP/AV Level (dB}\mu\text{V)} = \text{QP/AV Analyzer/Receiver Level (dB}\mu\text{V)} + \text{Corr. (dB)}$
5. $\text{Margin (dB)} = \text{QP/AV Limit (dB}\mu\text{V)} - \text{QP/AV Level (dB}\mu\text{V)}$
6. Traces shown in plot are made using a peak detector.
7. Deviations to the Specifications: None.

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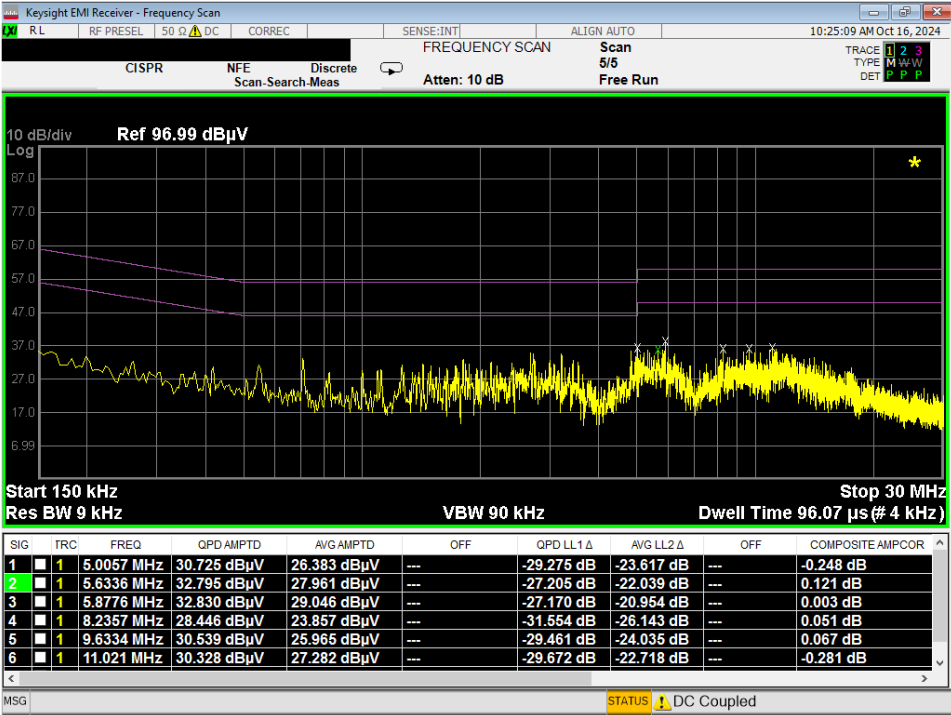


Plot 7-103. Line Conducted Plot with 802.11a UNII Band 5 (L1)

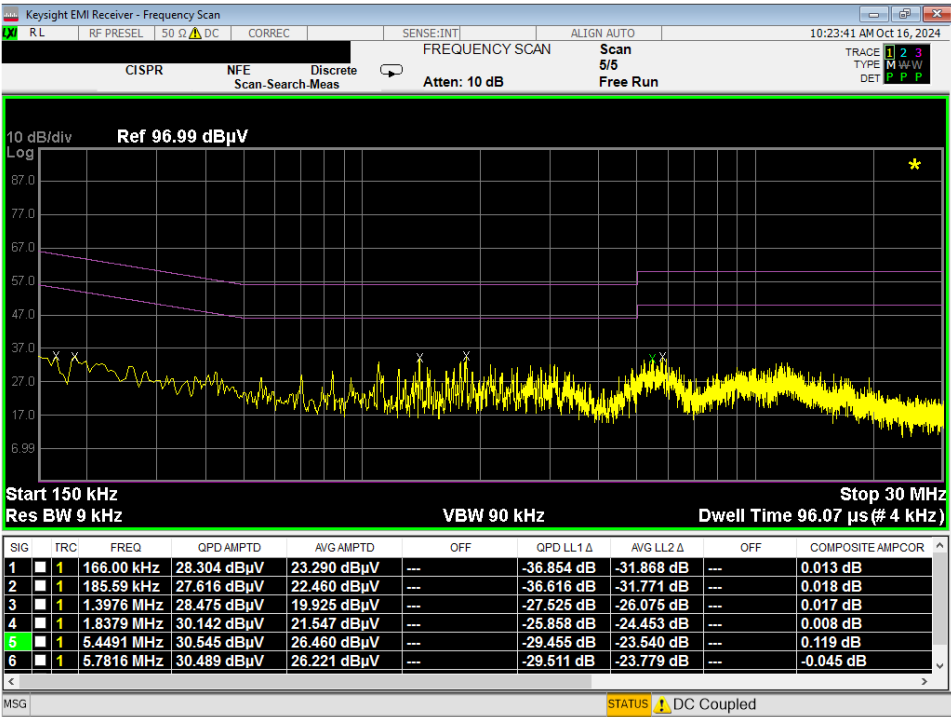


Plot 7-104. Line Conducted Plot with 802.11a UNII Band 5 (N)

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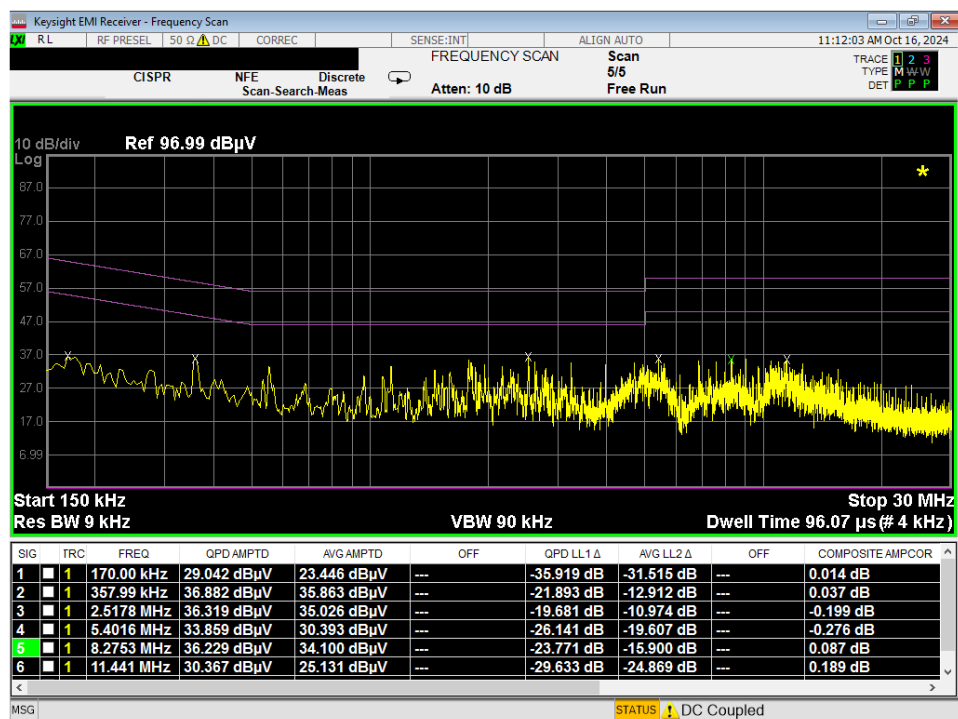


Plot 7-105. Line Conducted Plot with 802.11a UNII Band 7 (L1)

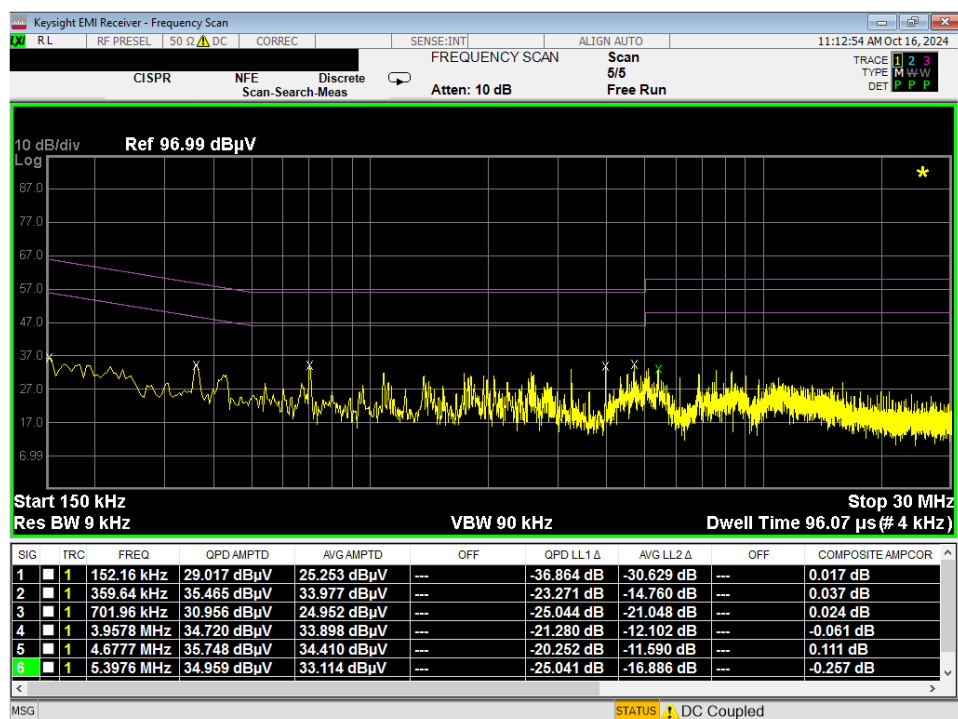


Plot 7-106. Line Conducted Plot with 802.11a UNII Band 7 (N)

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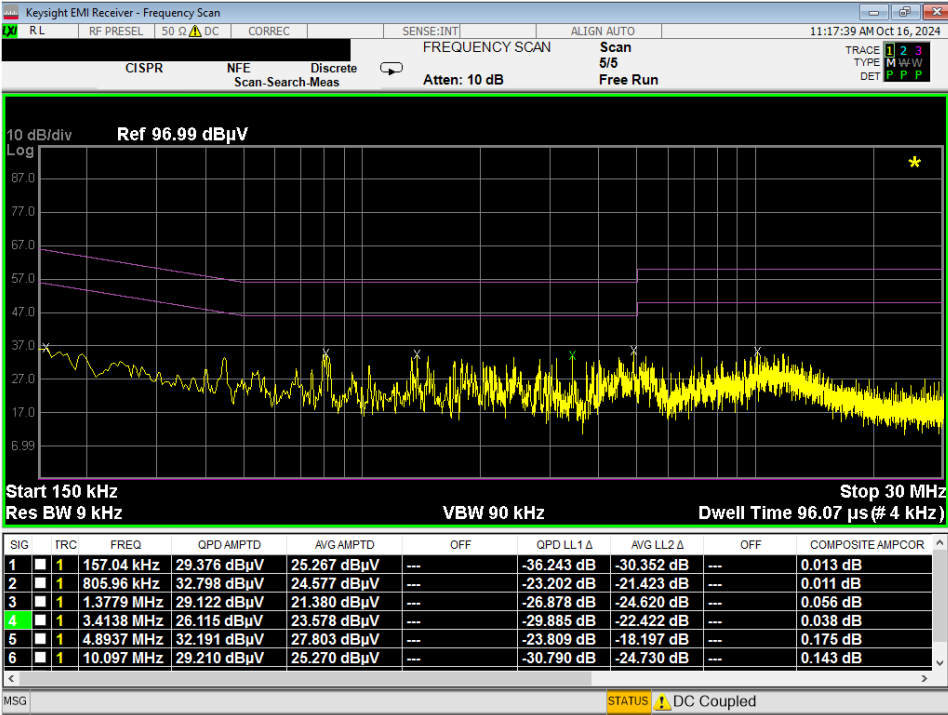


Plot 7-107. Line Conducted Plot with 802.11a UNII Band 5 (L1) with WCP

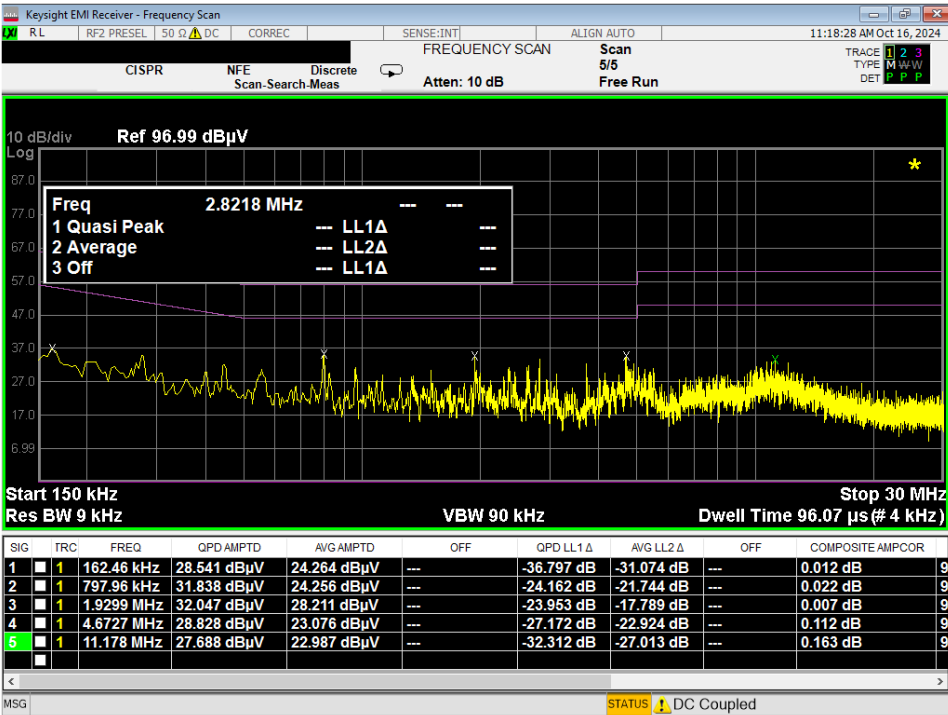


Plot 7-108. Line Conducted Plot with 802.11a UNII Band 5 (N) with WCP

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Plot 7-109. Line Conducted Plot with 802.11a UNII Band 7 (L1) with WCP



Plot 7-110. Line Conducted Plot with 802.11a UNII Band 7 (N) with WCP

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8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMS938B** is in compliance with FCC Part Subpart E (15.407) of the FCC rules for operation as a Very Low Power Device.

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