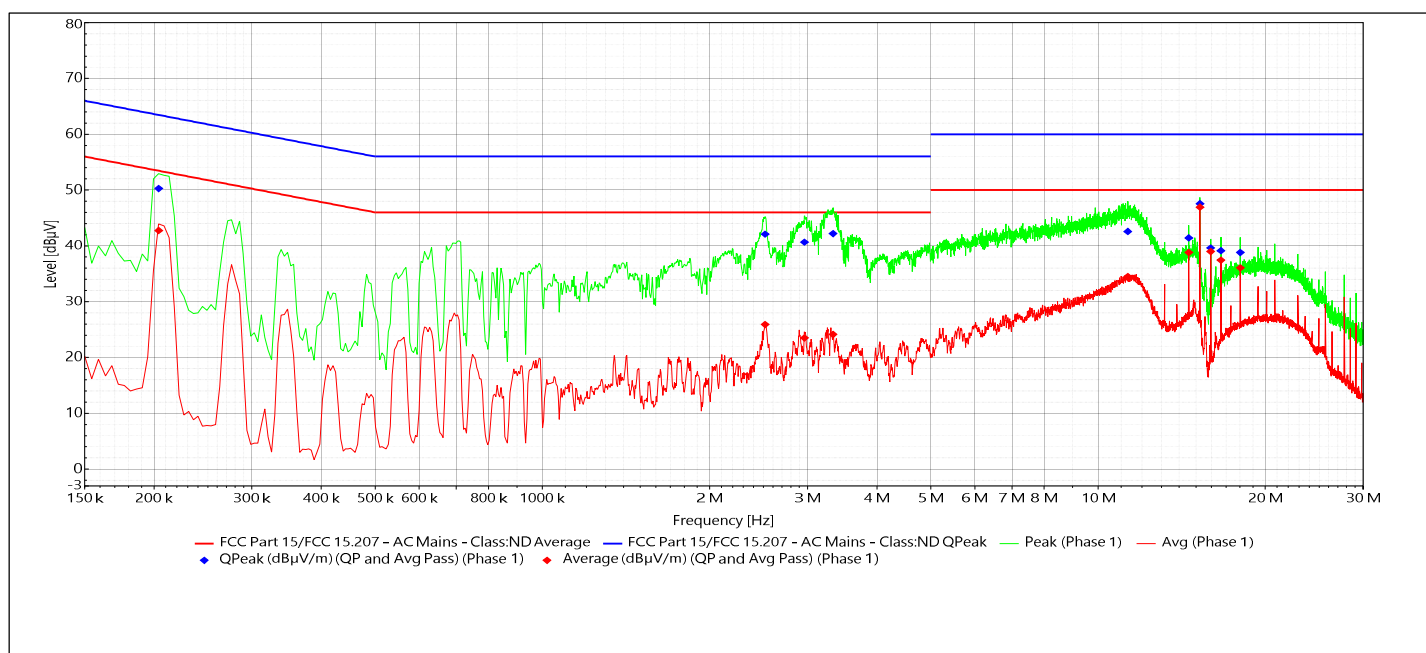




Mobile Mark LTMG511 Antenna - High CH 2476.8MHz - L2

Frequency Range	Line Tested	RBW	Step Size	Sweep Time
150 kHz - 30 MHz	L2	9 kHz	4.5 kHz	5 s/MHz



Limit: FCC Part 15/FCC 15.207 - AC Mains **Test Date:** 5/2/2023 **Test Results:** Pass

Test Notes: High Channel 2476.8MHz

Figure 2-44 – Graphical Results – AC Mains L2 Plot - Mobile Mark LTMG511 Antenna - High CH 2476.8MHz



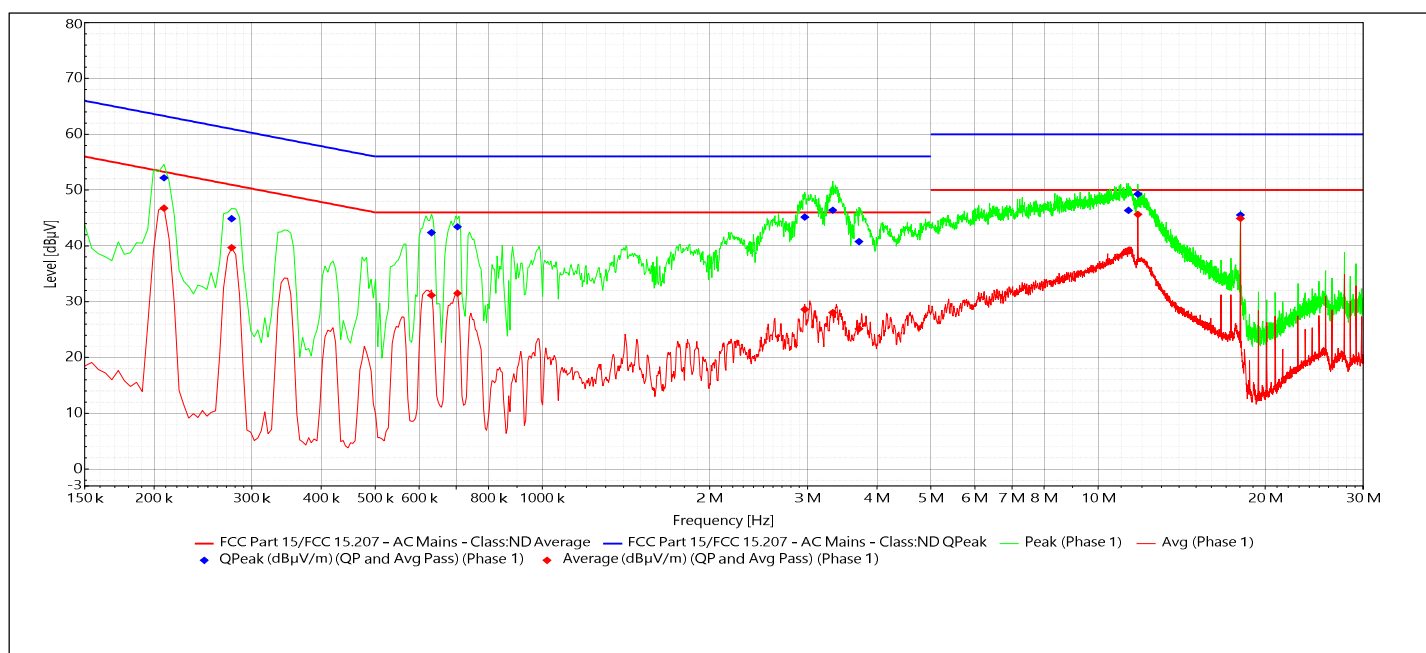
**Table 2.9-24 – Conducted Emissions Results on the AC Power Port (L2) - Mobile Mark LTMG511 Antenna
- High CH 2476.8MHz**

Frequency (MHz)	Average (dBuV)	Average Limit (dBuV)	Average Margin (dB)	QPeak (dBuV)	QPeak Limit (dBuV)	QPeak Margin (dB)	Result
0.20	42.73	53.45	-10.72	50.27	63.45	-13.18	Pass
2.52	25.90	46.00	-20.10	42.09	56.00	-13.91	Pass
2.96	23.51	46.00	-22.49	40.66	56.00	-15.34	Pass
3.34	24.13	46.00	-21.87	42.19	56.00	-13.81	Pass
11.31	34.52	50.00	-15.48	42.57	60.00	-17.43	Pass
14.56	38.82	50.00	-11.18	41.42	60.00	-18.58	Pass
15.26	46.93	50.00	-3.07	47.56	60.00	-12.44	Pass
15.95	38.97	50.00	-11.03	39.63	60.00	-20.37	Pass
16.64	37.44	50.00	-12.56	39.12	60.00	-20.88	Pass
18.03	36.05	50.00	-13.95	38.82	60.00	-21.18	Pass



Laird MAF94192 Antenna - Low CH 2401.024MHz - L1

Frequency Range	Line Tested	RBW	Step Size	Sweep Time
150 kHz - 30 MHz	L1	9 kHz	4.5 kHz	5 s/MHz



Limit: FCC Part 15/FCC 15.207 - AC Mains
Test Date: 5/2/2023
Test Results: Pass

Test Notes: Low Channel 2401.024MHz

Figure 2-45 – Graphical Results – AC Mains L1 Plot - Laird MAF94192 Antenna - Low CH 2401.024MHz



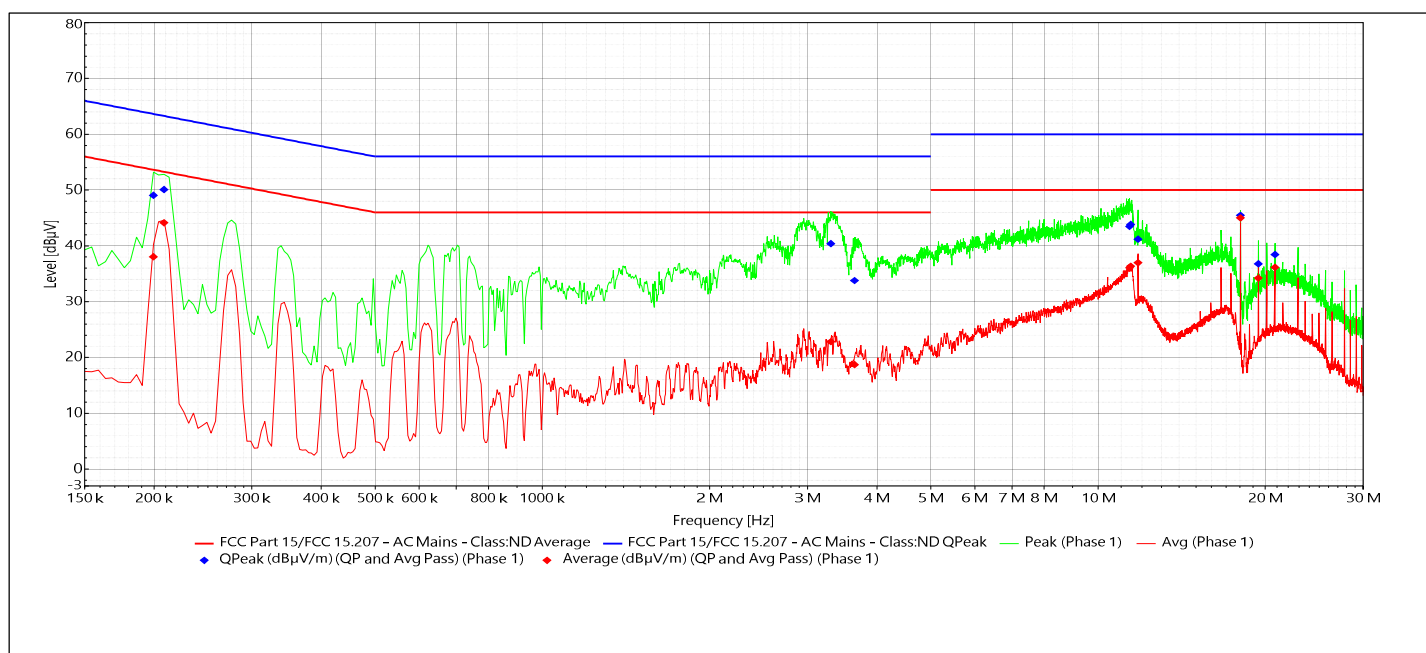
**Table 2.9-25 – Conducted Emissions Results on the AC Power Port (L1) - Laird MAF94192 Antenna - Low
CH 2401.024MHz**

Frequency (MHz)	Average (dBuV)	Average Limit (dBuV)	Average Margin (dB)	QPeak (dBuV)	QPeak Limit (dBuV)	QPeak Margin (dB)	Result
0.21	46.76	53.26	-6.51	52.18	63.26	-11.09	Pass
0.28	39.69	50.94	-11.25	44.86	60.94	-16.08	Pass
0.63	31.14	46.00	-14.86	42.37	56.00	-13.63	Pass
0.70	31.50	46.00	-14.50	43.41	56.00	-12.59	Pass
2.97	28.61	46.00	-17.39	45.16	56.00	-10.84	Pass
3.33	28.03	46.00	-17.97	46.39	56.00	-9.61	Pass
3.71	25.13	46.00	-20.87	40.75	56.00	-15.25	Pass
11.34	39.22	50.00	-10.78	46.36	60.00	-13.64	Pass
11.80	45.62	50.00	-4.38	49.28	60.00	-10.72	Pass
18.04	44.90	50.00	-5.10	45.53	60.00	-14.47	Pass



Laird MAF94192 Antenna - Low CH 2401.024MHz - L2

Frequency Range	Line Tested	RBW	Step Size	Sweep Time
150 kHz - 30 MHz	L2	9 kHz	4.5 kHz	5 s/MHz



Limit: FCC Part 15/FCC 15.207 - AC Mains
Test Date: 5/2/2023
Test Results: Pass

Test Notes: Low Channel 2401.024MHz

Figure 2-46 – Graphical Results – AC Mains L2 Plot - Laird MAF94192 Antenna - Low CH 2401.024MHz



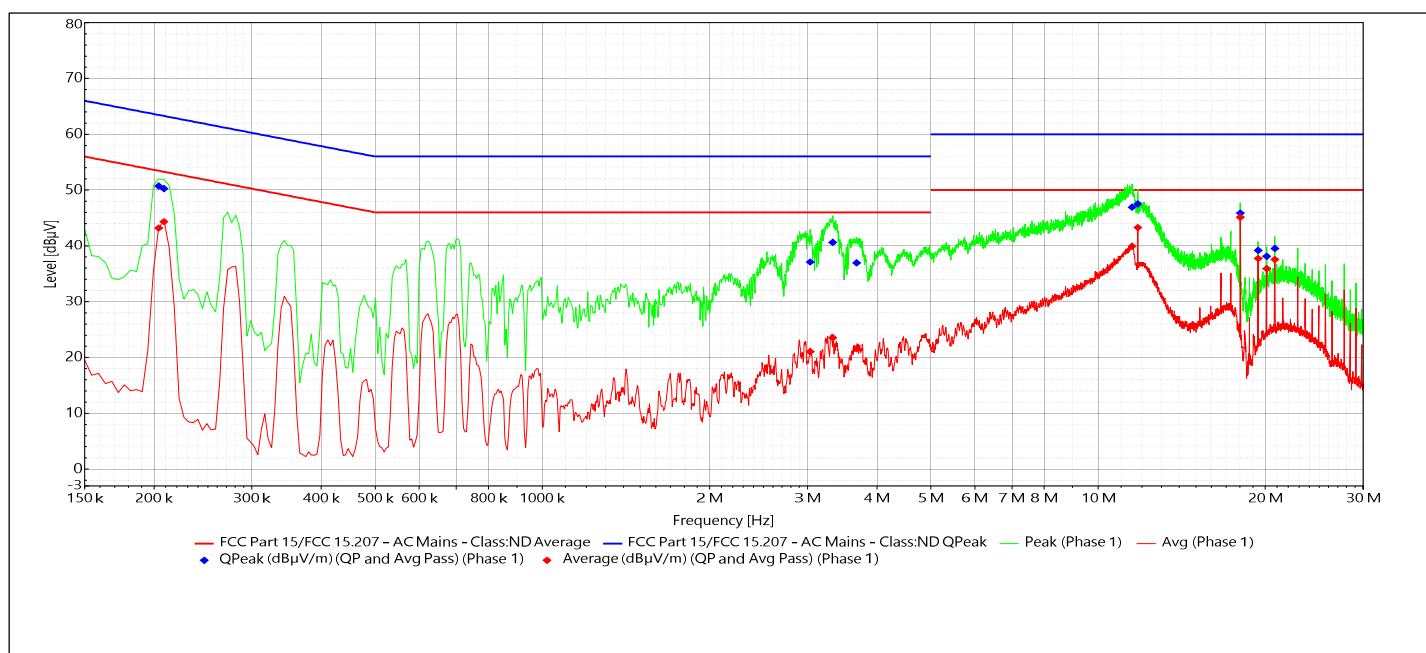
Table 2.9-26 – Conducted Emissions Results on the AC Power Port (L2) - Laird MAF94192 Antenna - Low CH 2401.024MHz

Frequency (MHz)	Average (dBuV)	Average Limit (dBuV)	Average Margin (dB)	QPeak (dBuV)	QPeak Limit (dBuV)	QPeak Margin (dB)	Result
0.20	38.05	53.63	-15.58	49.05	63.63	-14.58	Pass
0.21	44.13	53.26	-9.14	50.07	63.26	-13.20	Pass
3.30	22.83	46.00	-23.17	40.39	56.00	-15.61	Pass
3.65	18.72	46.00	-27.28	33.78	56.00	-22.22	Pass
11.39	36.09	50.00	-13.91	43.49	60.00	-16.51	Pass
11.45	36.34	50.00	-13.66	43.83	60.00	-16.17	Pass
11.80	36.97	50.00	-13.03	41.19	60.00	-18.81	Pass
18.04	45.00	50.00	-5.00	45.48	60.00	-14.52	Pass
19.43	34.23	50.00	-15.77	36.79	60.00	-23.21	Pass
20.82	36.15	50.00	-13.85	38.44	60.00	-21.56	Pass



Laird MAF94192 Antenna - Mid CH 2437.88MHz - L1

Frequency Range	Line Tested	RBW	Step Size	Sweep Time
150 kHz - 30 MHz	L1	9 kHz	4.5 kHz	5 s/MHz



Limit: FCC Part 15/FCC 15.207 - AC Mains
Test Date: 5/2/2023
Test Results: Pass

Test Notes: Mid Channel 2437.88MHz

Figure 2-47 – Graphical Results – AC Mains L1 Plot - Laird MAF94192 Antenna - Mid CH 2437.88MHz



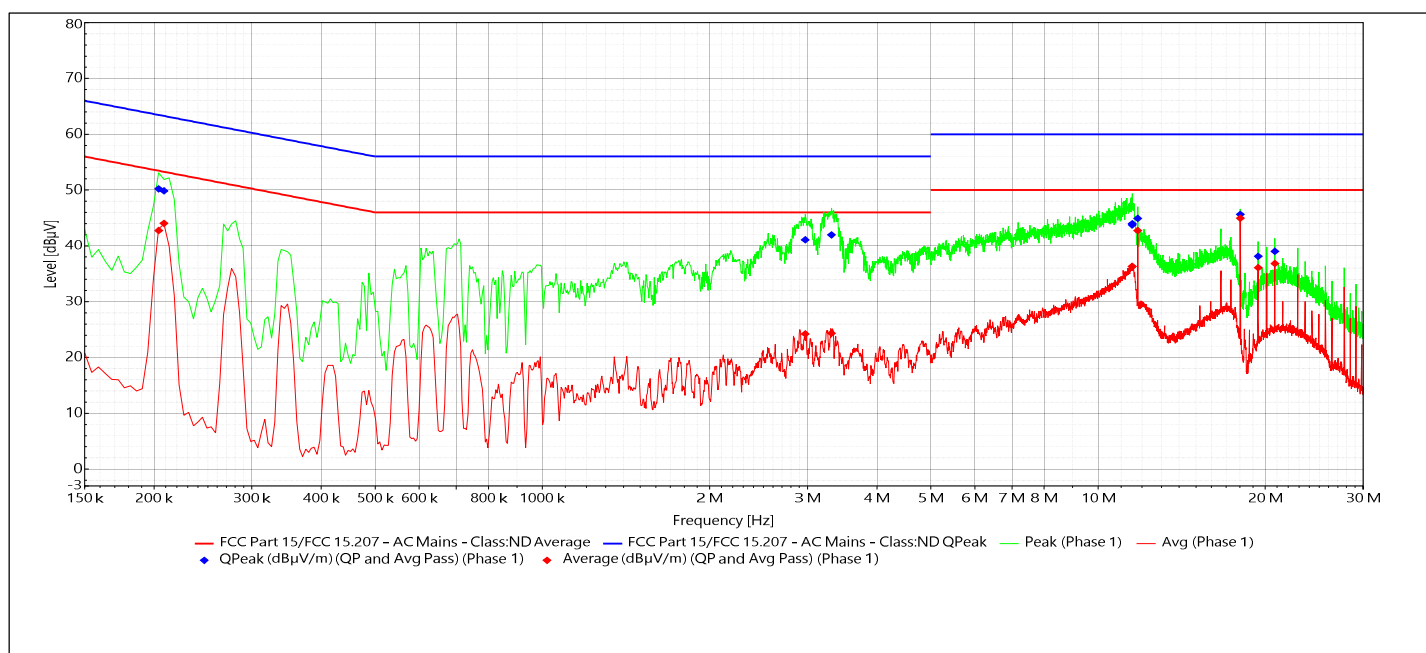
**Table 2.9-27 – Conducted Emissions Results on the AC Power Port (L1) - Laird MAF94192 Antenna - Mid
CH 2437.88MHz**

Frequency (MHz)	Average (dBuV)	Average Limit (dBuV)	Average Margin (dB)	QPeak (dBuV)	QPeak Limit (dBuV)	QPeak Margin (dB)	Result
0.20	43.18	53.45	-10.27	50.71	63.45	-12.74	Pass
0.21	44.33	53.26	-8.94	50.25	63.26	-13.01	Pass
3.03	21.03	46.00	-24.97	37.11	56.00	-18.89	Pass
3.33	23.54	46.00	-22.46	40.61	56.00	-15.39	Pass
3.68	21.59	46.00	-24.41	36.96	56.00	-19.04	Pass
11.51	39.93	50.00	-10.07	46.93	60.00	-13.07	Pass
11.79	43.28	50.00	-6.72	47.50	60.00	-12.50	Pass
18.03	45.12	50.00	-4.88	45.88	60.00	-14.12	Pass
19.42	37.74	50.00	-12.26	39.19	60.00	-20.81	Pass
20.11	35.93	50.00	-14.07	38.13	60.00	-21.87	Pass
20.81	37.55	50.00	-12.45	39.52	60.00	-20.48	Pass



Laird MAF94192 Antenna - Mid CH 2437.88MHz - L2

Frequency Range	Line Tested	RBW	Step Size	Sweep Time
150 kHz - 30 MHz	L2	9 kHz	4.5 kHz	5 s/MHz



Limit: FCC Part 15/FCC 15.207 - AC Mains
Test Date: 5/2/2023
Test Results: Pass

Test Notes: Mid Channel 2437.88MHz

Figure 2-48 – Graphical Results – AC Mains L2 Plot - Laird MAF94192 Antenna - Mid CH 2437.88MHz



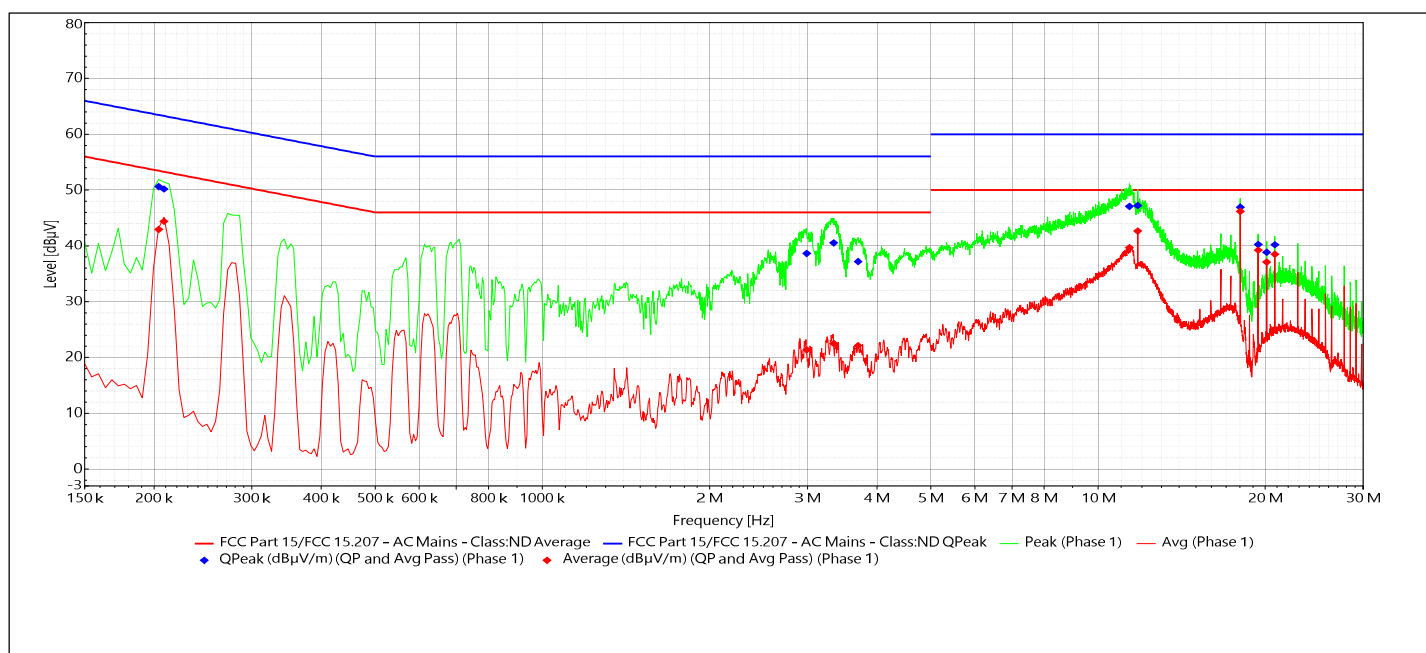
**Table 2.9-28 – Conducted Emissions Results on the AC Power Port (L2) - Laird MAF94192 Antenna - Mid
CH 2437.88MHz**

Frequency (MHz)	Average (dBuV)	Average Limit (dBuV)	Average Margin (dB)	QPeak (dBuV)	QPeak Limit (dBuV)	QPeak Margin (dB)	Result
0.20	42.75	53.45	-10.69	50.23	63.45	-13.22	Pass
0.21	44.02	53.26	-9.25	49.86	63.26	-13.40	Pass
2.97	24.23	46.00	-21.77	41.08	56.00	-14.92	Pass
3.31	24.33	46.00	-21.67	41.96	56.00	-14.04	Pass
11.52	36.33	50.00	-13.67	43.74	60.00	-16.26	Pass
11.53	36.29	50.00	-13.71	43.97	60.00	-16.03	Pass
11.79	42.74	50.00	-7.26	44.92	60.00	-15.08	Pass
18.03	44.94	50.00	-5.06	45.64	60.00	-14.36	Pass
19.42	36.10	50.00	-13.90	38.11	60.00	-21.89	Pass
20.81	36.83	50.00	-13.17	39.01	60.00	-20.99	Pass



Laird MAF94192 Antenna - High CH 2476.8MHz - L1

Frequency Range	Line Tested	RBW	Step Size	Sweep Time
150 kHz - 30 MHz	L1	9 kHz	4.5 kHz	5 s/MHz



Limit: FCC Part 15/FCC 15.207 - AC Mains
Test Date: 5/2/2023
Test Results: Pass

Test Notes: High Channel 2476.8MHz

Figure 2-49 – Graphical Results – AC Mains L1 Plot - Laird MAF94192 Antenna - High CH 2476.8MHz



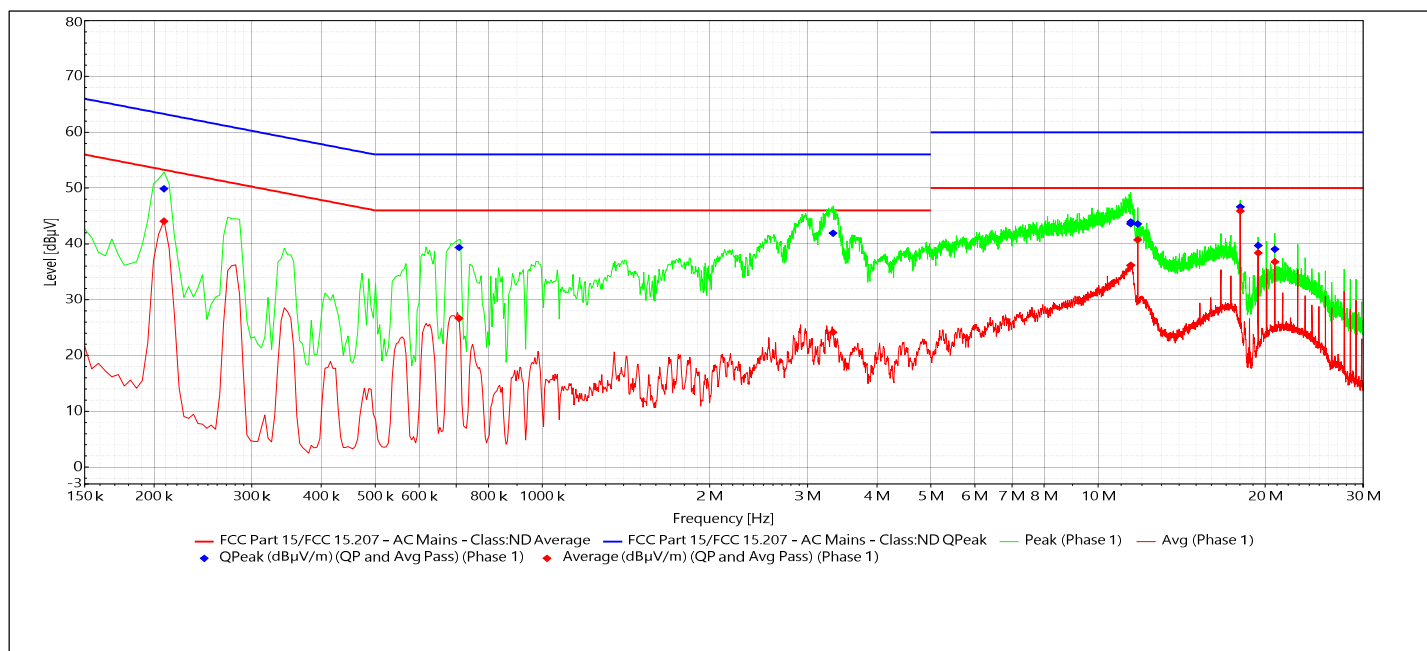
Table 2.9-29 – Conducted Emissions Results on the AC Power Port (L1) - Laird MAF94192 Antenna - High CH 2476.8MHz

Frequency (MHz)	Average (dBuV)	Average Limit (dBuV)	Average Margin (dB)	QPeak (dBuV)	QPeak Limit (dBuV)	QPeak Margin (dB)	Result
0.20	42.94	53.45	-10.50	50.63	63.45	-12.82	Pass
0.21	44.39	53.26	-8.88	50.18	63.26	-13.08	Pass
2.99	21.38	46.00	-24.62	38.64	56.00	-17.36	Pass
3.35	22.49	46.00	-23.51	40.53	56.00	-15.47	Pass
3.70	22.13	46.00	-23.87	37.18	56.00	-18.82	Pass
11.39	39.69	50.00	-10.31	47.06	60.00	-12.94	Pass
11.79	42.65	50.00	-7.35	47.21	60.00	-12.79	Pass
18.03	46.19	50.00	-3.81	46.92	60.00	-13.08	Pass
19.41	39.23	50.00	-10.77	40.25	60.00	-19.75	Pass
20.11	37.09	50.00	-12.91	38.85	60.00	-21.15	Pass
20.80	38.49	50.00	-11.51	40.20	60.00	-19.80	Pass



Laird MAF94192 Antenna - High CH 2476.8MHz - L2

Frequency Range	Line Tested	RBW	Step Size	Sweep Time
150 kHz - 30 MHz	L2	9 kHz	4.5 kHz	5 s/MHz



Limit: FCC Part 15/FCC 15.207 - AC Mains **Test Date:** 5/2/2023 **Test Results:** Pass

Test Notes: High Channel 2476.8MHz

Figure 2-50 – Graphical Results – AC Mains L2 Plot - Laird MAF94192 Antenna - High CH 2476.8MHz



Table 2.9-30 – Conducted Emissions Results on the AC Power Port (L2) - Laird MAF94192 Antenna - High CH 2476.8MHz

Frequency (MHz)	Average (dBuV)	Average Limit (dBuV)	Average Margin (dB)	QPeak (dBuV)	QPeak Limit (dBuV)	QPeak Margin (dB)	Result
0.21	44.05	53.26	-9.22	49.88	63.26	-13.39	Pass
0.71	26.66	46.00	-19.34	39.34	56.00	-16.66	Pass
3.34	24.16	46.00	-21.84	41.90	56.00	-14.10	Pass
11.45	36.12	50.00	-13.88	43.61	60.00	-16.39	Pass
11.45	36.17	50.00	-13.83	43.93	60.00	-16.07	Pass
11.79	40.74	50.00	-9.26	43.56	60.00	-16.44	Pass
18.03	45.89	50.00	-4.11	46.60	60.00	-13.40	Pass
19.41	38.38	50.00	-11.62	39.70	60.00	-20.30	Pass
20.81	36.79	50.00	-13.21	39.05	60.00	-20.95	Pass



2.9.9 Test Location and Test Equipment Used

The tests were carried out in New Brighton, MN.

Test Area: GRP2

Table 2.9-31 – Conducted Emissions Test Equipment List

Device #	Manufacturer	Description	Model	Serial #	Cal Code	Cal Date	Cal Due
NBLE10465	Weinschel	Attenuator, 20 dB	34-20-34	BR2600	B	04.01.2023	04.01.2024
WRLE10942	Fischer Custom Comm.	LISN	FCC-LISN-50-25-2-10	120306	G	23.08.2021	23.08.2023
NBLE11592	Rohde & Schwarz	Receiver, 10 Hz-7 GHz	ESR7	101771	G	14.03.2023	14.03.2024

Cal Code G = Calibration performed by an accredited outside source.

Cal Code B = Calibration verification performed internally.

Cal Code Y = Passive Device, or Calibration not required when used with other calibrated equipment.



2.10 Radiated Spurious Emissions

2.10.1 Specification Reference

FCC 47 CFR Part 15 Subpart C, 15.247
RSS-GEN Issue 5

2.10.2 Equipment Under Test and Modification State

As shown in §1.4 with modification state "0", as noted in §1.6.

2.10.3 Date of Test

29 April 2023

2.10.4 Test Method

The EUT was set up in a semi-anechoic chamber on a remotely controlled turntable and placed on a non-conductive table 0.8 m above a reference ground plane for 30-1000 MHz and 1.5m above the ground plane for above 1 GHz.

For 30-1000 MHz a pre-scan of the EUT emissions profile was made while varying the antenna-to-EUT azimuth and antenna-to-EUT polarization using a peak detector; measurements were taken at a 3m distance.

For above 1 GHz a pre-scan of the EUT emissions profile was made while varying the antenna-to-EUT azimuth and antenna-to-EUT polarization using peak and average detectors; measurements were taken at a 3m distance.

For all frequency ranges the final readings were maximized by adjusting the antenna height, polarization and turntable azimuth, in accordance with the specification. For final measurements below 1 GHz a quasi-peak detector was used and above 1 GHz final measurements were re-measured with peak and average detectors.

The EUT was assessed against the limits specified in FCC 47 CFR Part 15C §15.209.

2.10.5 Environmental Conditions

The EUT was evaluated within the climatic range of the EUT as specified by the manufacturer. When the manufacturer does not specify climatic parameters for the EUT, all tests are performed within the ambient climatic conditions of the laboratory.



2.10.6 Additional Observations

The highest frequency to which the DUT was measured in accordance with §15.33(a)(1).

Automated measurements used BAT-EMC (v2022.0.27.0) software. Measurements were done at a 3m distance. Reported level is the actual level with all the correction factors factored in. Correction Factor column is for informational purposes only.

2.10.7 Sample Computation (Radiated Emissions)

Measuring equipment raw measurement (dBμV) @ 30 MHz		20.0
Correction Factor (dB)	Cable 2	0.24
	TEMC00011 (antenna)	18.70
Reported Quasi-peak Final Measurement (dBμV/m) @ 30 MHz		38.94

2.10.8 Test Results

Test Summary: Measurements between 1-18 GHz were taken with a 2.4 GHz notch filter in front of the pre-amp to prevent overloading. EUT operated as intended before, during, and after testing.

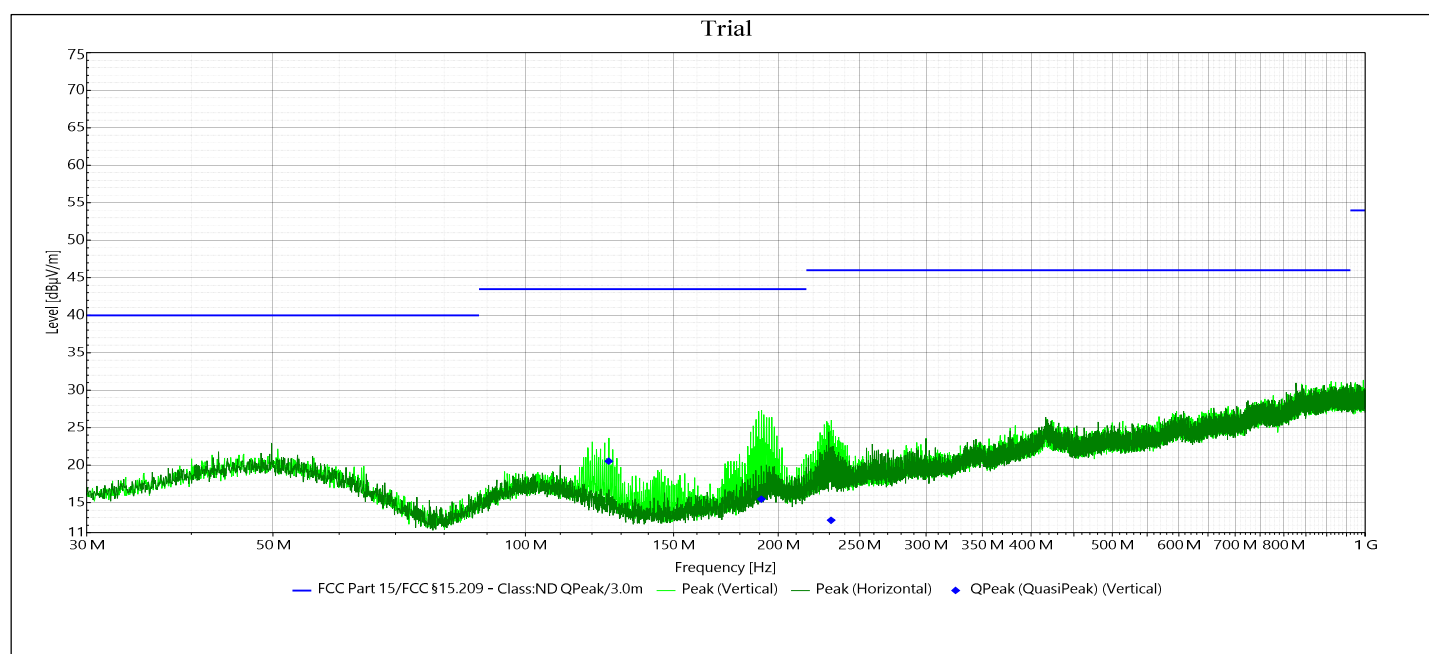
Test Result: Pass

See data below for detailed results.



Spurious Emissions 30M - 1GHz - Mobile Mark DM2 Antenna - Low Channel 2401.024MHz

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	120 kHz	18001 Pts	1 ms/MHz
30 MHz - 1 GHz	3m	Horizontal	120 kHz	18001 Pts	1 ms/MHz



Limit: FCC Part 15/FCC §15.209 **Test Date:** 4/29/2023 **EUT Orientation:** **Test Results:** Pass

Test Notes: Low Channel 2401.024MHz

Figure 2-51 – RE Spurious Emissions 30-1000 MHz – Mobile Mark DM2 Antenna - Low Channel 2401.024MHz



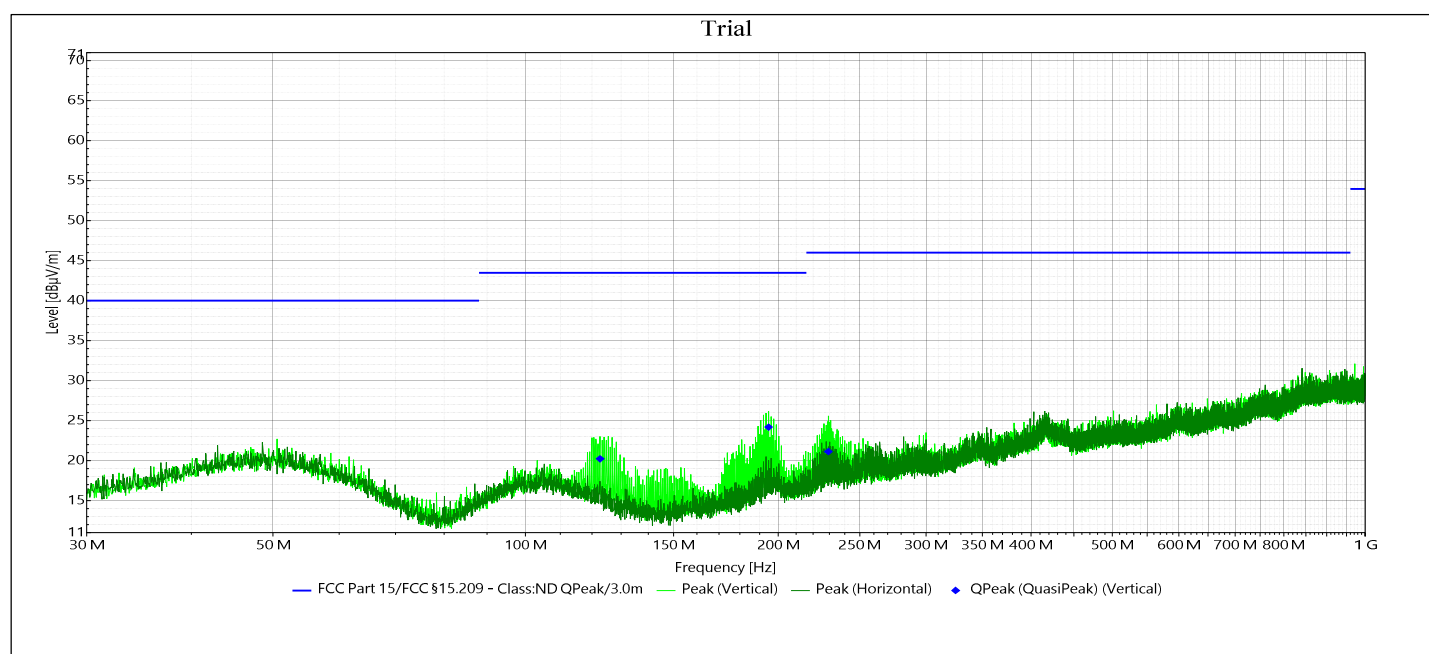
**Table 2.10-1 – RE Spurious Emissions 30-1000 MHz – Mobile Mark DM2 Antenna - Low Channel
2401.024MHz**

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
125.597	20.54	43.50	-22.96	137.00	1.00	Vertical	Pass
190.909	15.47	43.50	-28.03	137.00	1.00	Vertical	Pass
231.172	12.65	46.00	-33.35	179.00	2.62	Vertical	Pass



Spurious Emissions 30M - 1GHz - Mobile Mark DM2 Antenna - Mid Channel 2437.88MHz

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	120 kHz	18001 Pts	1 ms/MHz
30 MHz - 1 GHz	3m	Horizontal	120 kHz	18001 Pts	1 ms/MHz



Limit: FCC Part 15/FCC §15.209 **Test Date:** 4/29/2023 **EUT Orientation:** **Test Results:** Pass

Test Notes: Mid Channel 2437.88MHz

**Figure 2-52 – RE Spurious Emissions 30-1000 MHz – Mobile Mark DM2 Antenna - Mid Channel
2437.88MHz**



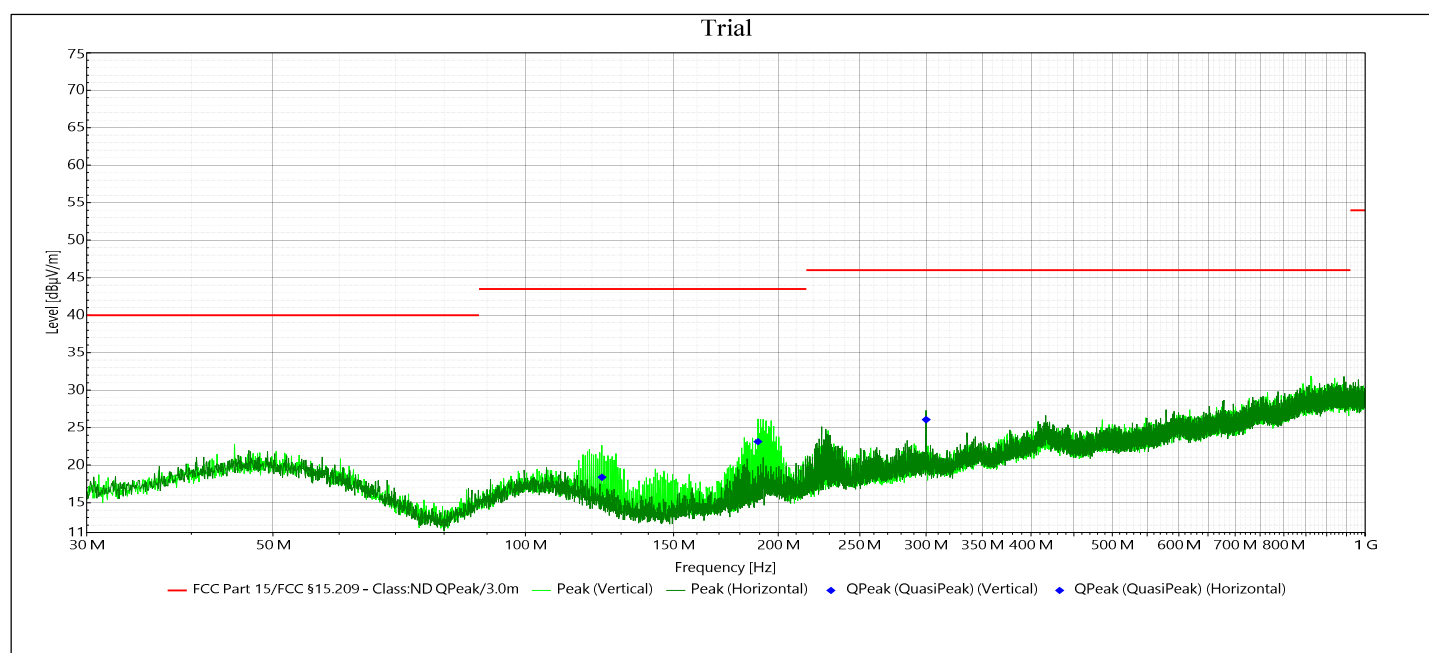
**Table 2.10-2 – RE Spurious Emissions 30-1000 MHz – Mobile Mark DM2 Antenna - Mid Channel
2437.88MHz**

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
122.680	20.23	43.50	-23.27	124.00	1.12	Vertical	Pass
194.749	24.20	43.50	-19.30	151.00	1.00	Vertical	Pass
229.387	21.13	46.00	-24.87	165.00	1.12	Vertical	Pass



Spurious Emissions 30M - 1GHz - Mobile Mark DM2 Antenna - High Channel 2476.8MHz

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	120 kHz	18001 Pts	1 ms/MHz
30 MHz - 1 GHz	3m	Horizontal	120 kHz	18001 Pts	1 ms/MHz



Limit: FCC Part 15/FCC §15.209 **Test Date:** 4/29/2023 **EUT Orientation:** **Test Results:** Pass

Test Notes: High Channel 2476.8MHz

Figure 2-53 – RE Spurious Emissions 30-1000 MHz – Mobile Mark DM2 Antenna - High Channel 2476.8MHz



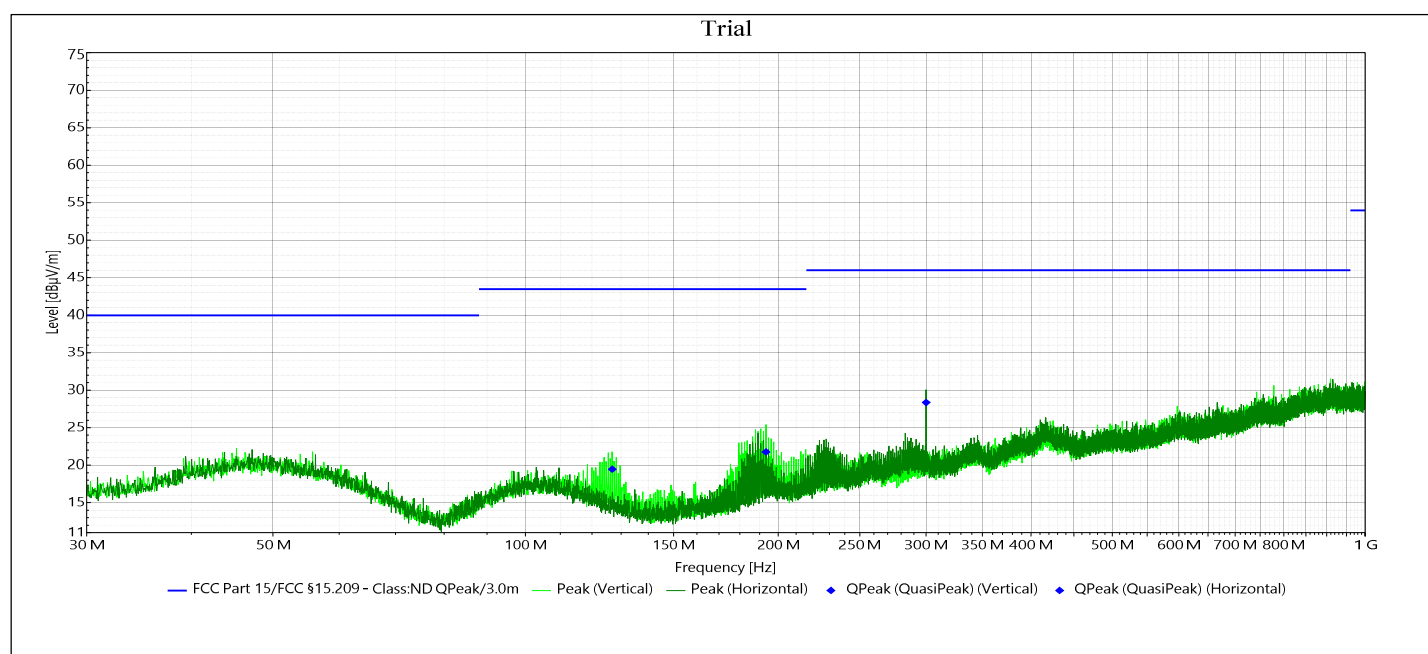
**Table 2.10-3 – RE Spurious Emissions 30-1000 MHz – Mobile Mark DM2 Antenna - High Channel
2476.8MHz**

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
123.331	18.39	43.50	-25.11	109.00	1.12	Vertical	Pass
189.152	23.13	43.50	-20.37	165.00	1.00	Vertical	Pass
299.993	26.07	46.00	-19.93	179.00	1.00	Horizontal	Pass



Spurious Emissions 30M - 1GHz - How Tsen S-001 Antenna - Low Channel 2401.024MHz

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	120 kHz	18001 Pts	1 ms/MHz
30 MHz - 1 GHz	3m	Horizontal	120 kHz	18001 Pts	1 ms/MHz



Limit: FCC Part 15/FCC §15.209 **Test Date:** 4/29/2023 **EUT Orientation:** **Test Results:** Pass

Test Notes: Low Channel 2401.024MHz

**Figure 2-54 – RE Spurious Emissions 30-1000 MHz – How Tsen S-001 Antenna - Low Channel
2401.024MHz**



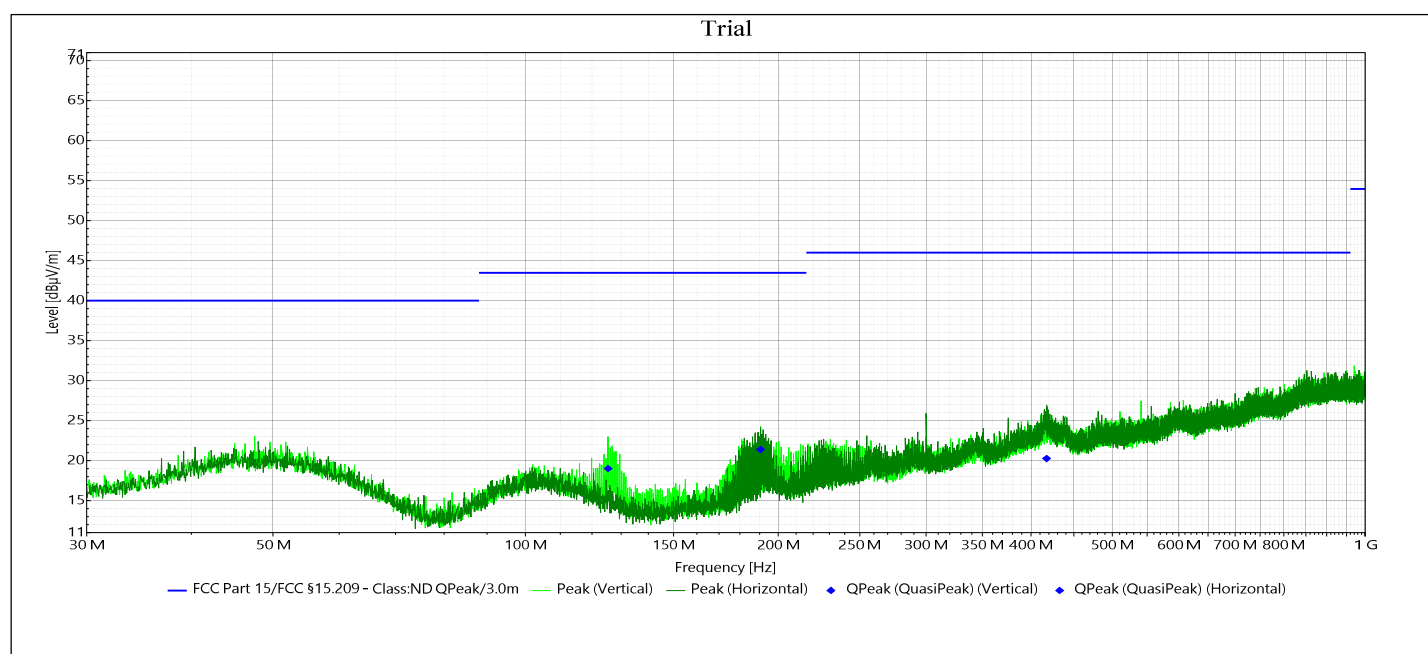
Table 2.10-4 – RE Spurious Emissions 30-1000 MHz – How Tsen S-001 Antenna - Low Channel 2401.024MHz

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
126.831	19.46	43.50	-24.04	221.00	1.00	Vertical	Pass
193.366	21.77	43.50	-21.73	320.00	1.00	Vertical	Pass
299.993	28.36	46.00	-17.64	250.00	1.00	Horizontal	Pass



Spurious Emissions 30M - 1GHz - How Tsen S-001 Antenna - Mid Channel 2437.88MHz

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	120 kHz	18001 Pts	1 ms/MHz
30 MHz - 1 GHz	3m	Horizontal	120 kHz	18001 Pts	1 ms/MHz



Limit: FCC Part 15/FCC §15.209 **Test Date:** 4/29/2023 **EUT Orientation:** **Test Results:** Pass

Test Notes: Mid Channel 2437.88MHz

Figure 2-55 – RE Spurious Emissions 30-1000 MHz – How Tsen S-001 Antenna - Mid Channel 2437.88MHz



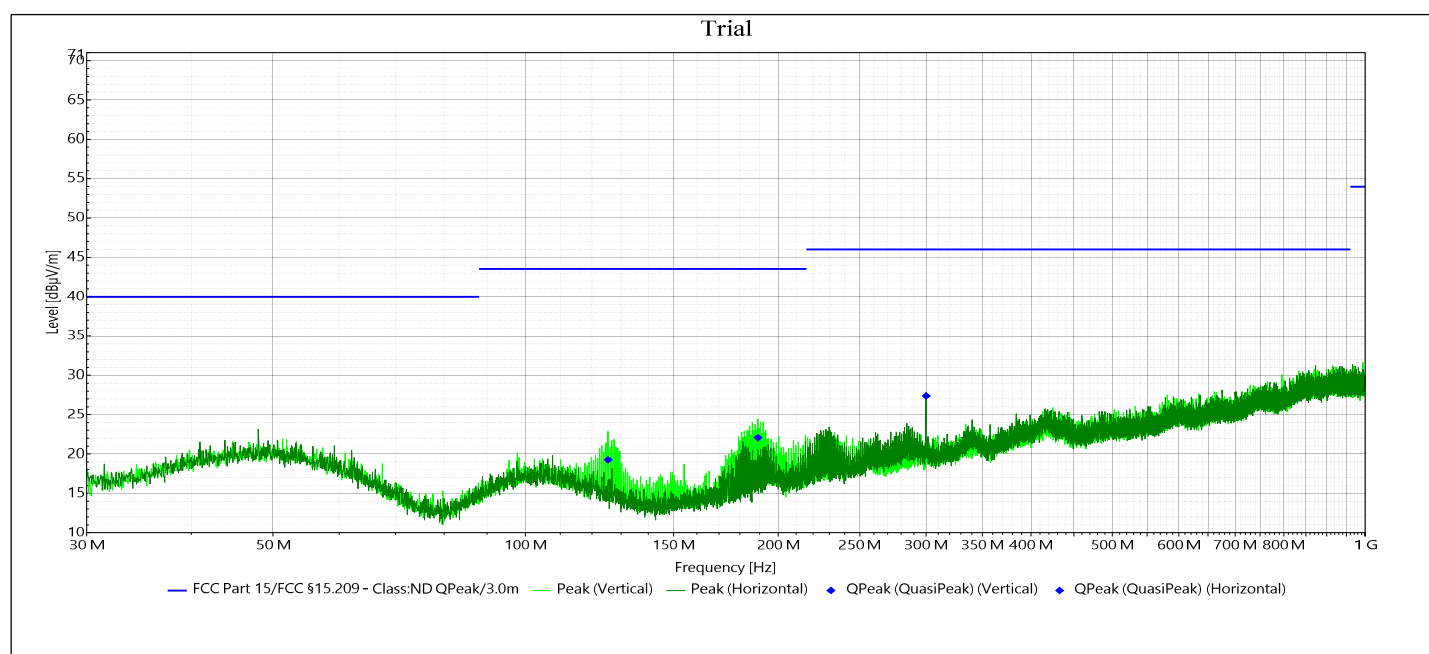
**Table 2.10-5 – RE Spurious Emissions 30-1000 MHz – How Tsen S-001 Antenna - Mid Channel
2437.88MHz**

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
125.397	19.02	43.50	-24.48	206.00	1.12	Vertical	Pass
190.510	21.40	43.50	-22.10	264.00	1.00	Vertical	Pass
417.395	20.28	46.00	-25.72	181.00	1.00	Horizontal	Pass



Spurious Emissions 30M - 1GHz - How Tsen S-001 Antenna - High Channel 2476.8MHz

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	120 kHz	18001 Pts	1 ms/MHz
30 MHz - 1 GHz	3m	Horizontal	120 kHz	18001 Pts	1 ms/MHz



Limit: FCC Part 15/FCC §15.209 **Test Date:** 4/29/2023 **EUT Orientation:** **Test Results:** Pass

Test Notes: High Channel 2476.8MHz

Figure 2-56 – RE Spurious Emissions 30-1000 MHz – How Tsen S-001 Antenna - High Channel 2476.8MHz

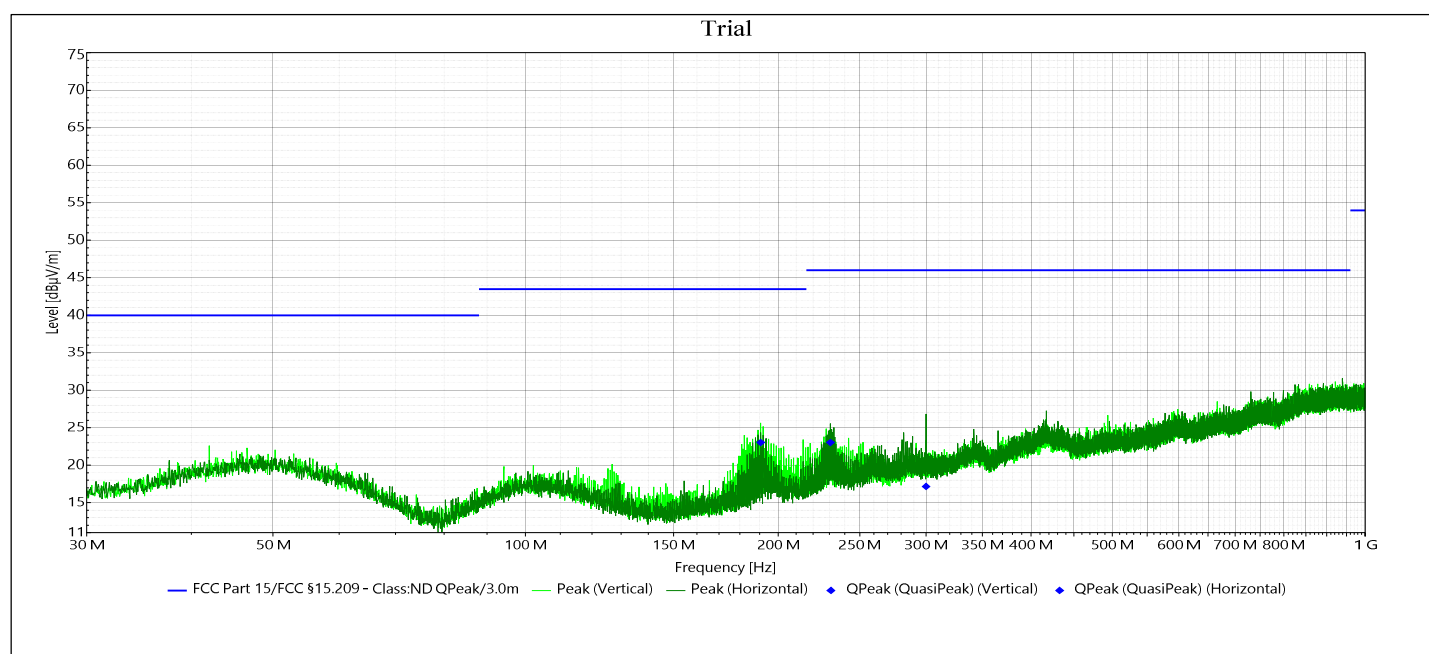
**Table 2.10-6 – RE Spurious Emissions 30-1000 MHz – How Tsen S-001 Antenna - High Channel 2476.8MH**

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
125.388	19.27	43.50	-24.23	193.00	1.12	Vertical	Pass
189.115	22.07	43.50	-21.43	278.00	1.00	Vertical	Pass
299.993	27.39	46.00	-18.61	264.00	1.00	Horizontal	Pass



Spurious Emissions 30M - 1GHz - Mobile Mark SMW-304 Antenna - Low Channel 2401.024MHz

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	120 kHz	18001 Pts	1 ms/MHz
30 MHz - 1 GHz	3m	Horizontal	120 kHz	18001 Pts	1 ms/MHz



Limit: FCC Part 15/FCC §15.209 **Test Date:** 4/29/2023 **EUT Orientation:** **Test Results:** Pass

Test Notes: Low Channel 2401.024MHz

Figure 2-57 – RE Spurious Emissions 30-1000 MHz – Mobile Mark SMW-304 Antenna - Low Channel 2401.024MHz



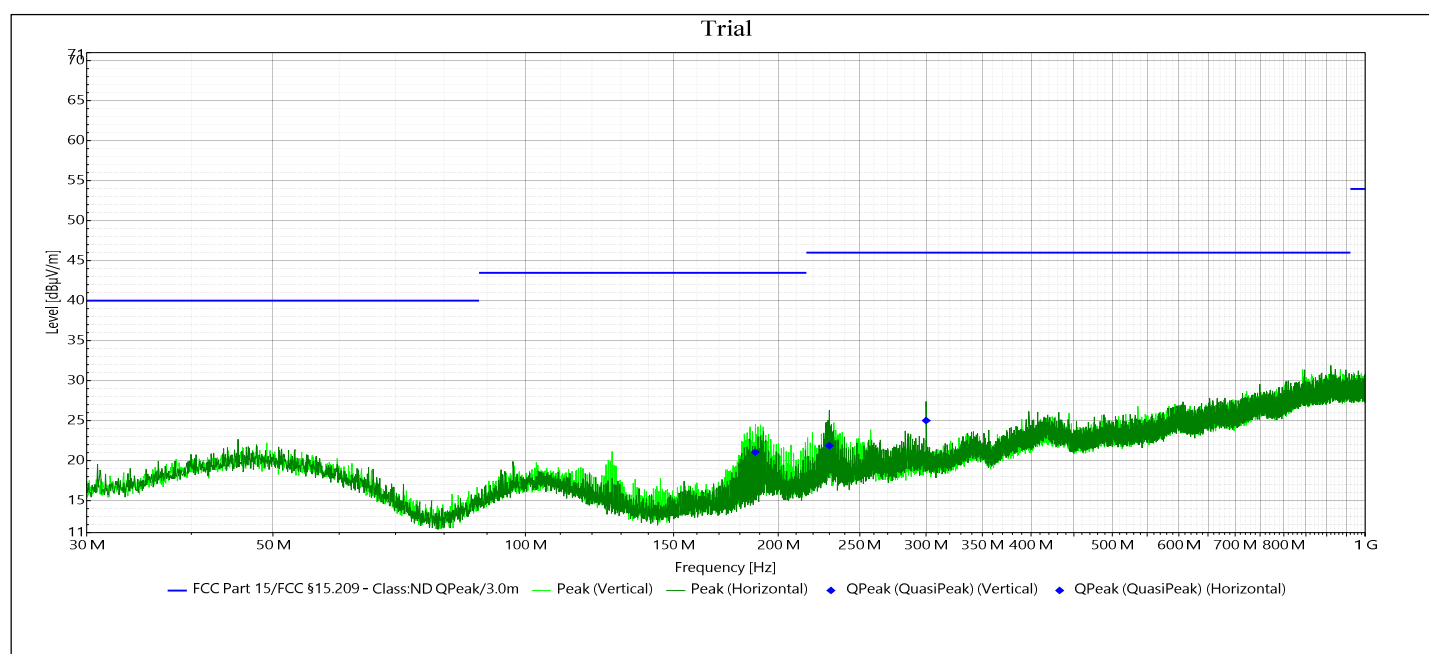
**Table 2.10-7 – RE Spurious Emissions 30-1000 MHz – Mobile Mark SMW-304 Antenna - Low Channel
2401.024MHz**

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
190.574	23.02	43.50	-20.48	249.00	1.00	Vertical	Pass
230.759	23.02	46.00	-22.98	209.00	1.12	Horizontal	Pass
299.915	17.16	46.00	-28.84	56.00	1.00	Horizontal	Pass



Spurious Emissions 30M - 1GHz - Mobile Mark SMW-304 Antenna - Mid Channel 2437.88MHz

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	120 kHz	18001 Pts	1 ms/MHz
30 MHz - 1 GHz	3m	Horizontal	120 kHz	18001 Pts	1 ms/MHz



Limit: FCC Part 15/FCC §15.209 **Test Date:** 4/29/2023 **EUT Orientation:** **Test Results:** Pass

Test Notes: Mid Channel 2437.88MHz

Figure 2-58 – RE Spurious Emissions 30-1000 MHz – Mobile Mark SMW-304 Antenna - Mid Channel 2437.88MHz



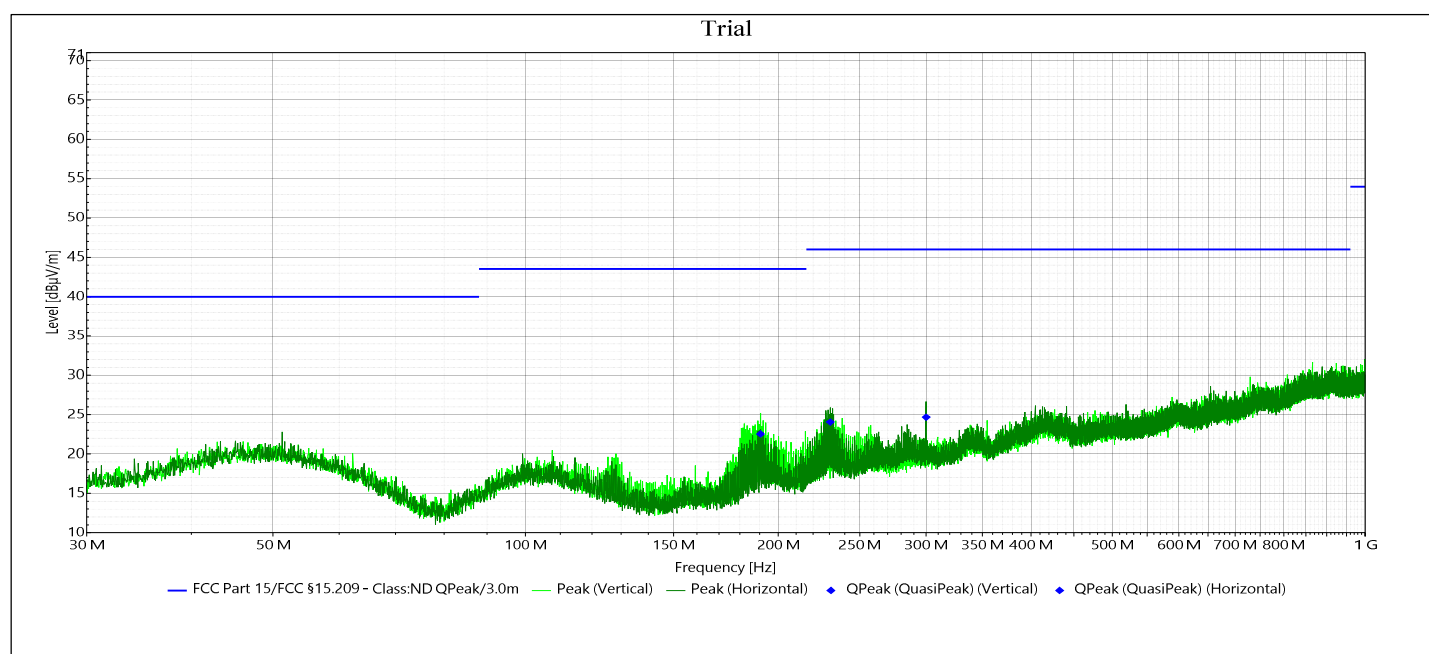
**Table 2.10-8 – RE Spurious Emissions 30-1000 MHz – Mobile Mark SMW-304 Antenna - Mid Channel
2437.88MHz**

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
187.767	21.07	43.50	-22.43	290.00	1.00	Vertical	Pass
230.018	21.88	46.00	-24.12	181.00	1.12	Horizontal	Pass
299.993	25.02	46.00	-20.98	70.00	1.34	Horizontal	Pass



Spurious Emissions 30M - 1GHz - Mobile Mark SMW-304 Antenna - High Channel 2476.8MHz

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	120 kHz	18001 Pts	1 ms/MHz
30 MHz - 1 GHz	3m	Horizontal	120 kHz	18001 Pts	1 ms/MHz



Limit: FCC Part 15/FCC §15.209 **Test Date:** 4/29/2023 **EUT Orientation:** **Test Results:** Pass

Test Notes: High Channel 2476.8MHz

Figure 2-59 – RE Spurious Emissions 30-1000 MHz – Mobile Mark SMW-304 Antenna - High Channel 2476.8MHz



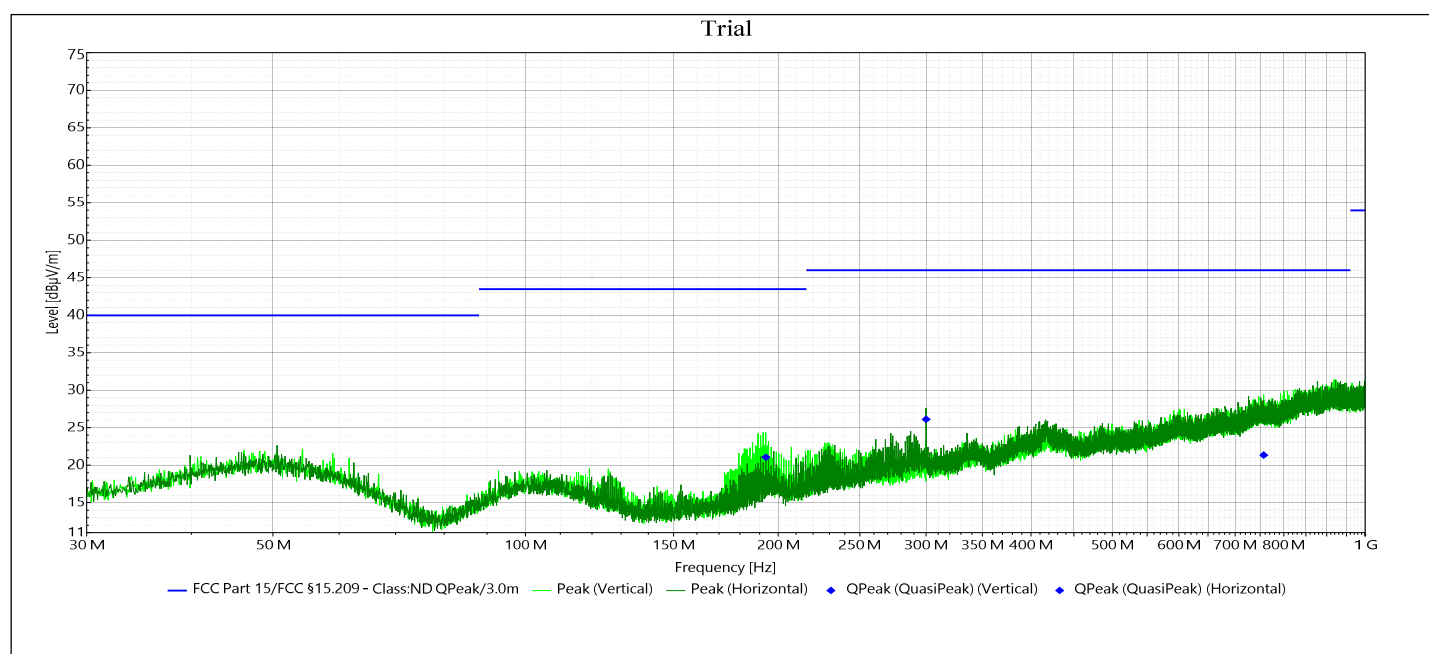
**Table 2.10-9 – RE Spurious Emissions 30-1000 MHz – Mobile Mark SMW-304 Antenna - High Channel
2476.8MHz**

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
190.506	22.54	43.50	-20.96	290.00	1.00	Vertical	Pass
230.684	24.07	46.00	-21.93	195.00	1.12	Horizontal	Pass
299.993	24.67	46.00	-21.33	195.00	1.00	Horizontal	Pass



Spurious Emissions 30M - 1GHz - Mobile Mark LTMG511 Antenna - Low Channel 2401.024MHz

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	120 kHz	18001 Pts	1 ms/MHz
30 MHz - 1 GHz	3m	Horizontal	120 kHz	18001 Pts	1 ms/MHz



Limit: FCC Part 15/FCC §15.209 **Test Date:** 4/29/2023 **EUT Orientation:** **Test Results:** Pass

Test Notes: Low Channel 2401.024MHz

Figure 2-60 – RE Spurious Emissions 30-1000 MHz – Mobile Mark LTMG511 Antenna - Low Channel 2401.024MHz



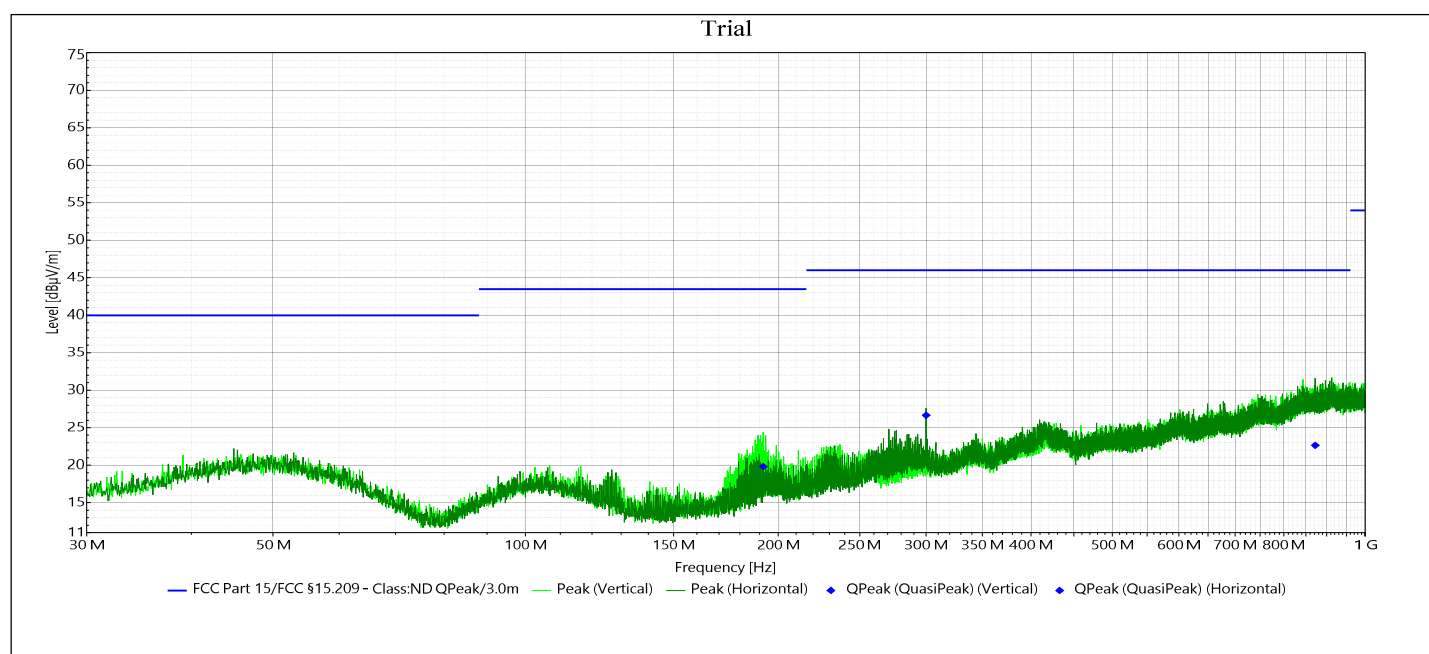
**Table 2.10-10 – RE Spurious Emissions 30-1000 MHz – Mobile Mark LTMG511 Antenna - Low Channel
2401.024MHz**

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
193.341	21.07	43.50	-22.43	249.00	1.12	Vertical	Pass
757.173	21.34	46.00	-24.66	250.00	3.50	Vertical	Pass
299.992	26.12	46.00	-19.88	237.00	1.00	Horizontal	Pass



Spurious Emissions 30M - 1GHz - Mobile Mark LTMG511 Antenna - Mid Channel 2437.88MHz

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	120 kHz	18001 Pts	1 ms/MHz
30 MHz - 1 GHz	3m	Horizontal	120 kHz	18001 Pts	1 ms/MHz



Limit: FCC Part 15/FCC §15.209 **Test Date:** 4/29/2023 **EUT Orientation:** **Test Results:** Pass

Test Notes: Mid Channel 2437.88MHz

Figure 2-61 – RE Spurious Emissions 30-1000 MHz – Mobile Mark LTMG511 Antenna - Mid Channel 2437.88MHz



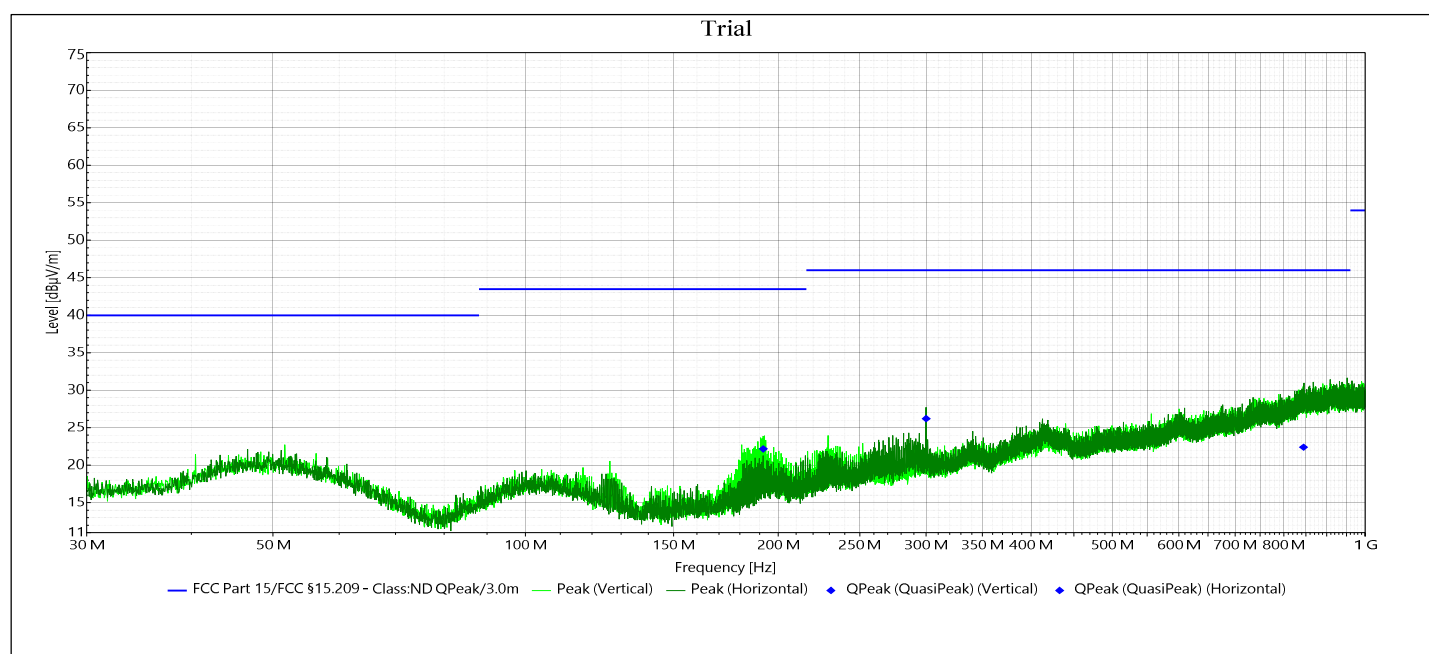
**Table 2.10-11 – RE Spurious Emissions 30-1000 MHz – Mobile Mark LTMG511 Antenna - Mid Channel
2437.88MHz**

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
191.896	19.81	43.50	-23.69	234.00	1.12	Vertical	Pass
299.992	26.65	46.00	-19.35	348.00	1.00	Horizontal	Pass
871.900	22.64	46.00	-23.36	223.00	3.49	Horizontal	Pass



Spurious Emissions 30M - 1GHz - Mobile Mark LTMG511 Antenna - High Channel 2476.8MHz

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	120 kHz	18001 Pts	1 ms/MHz
30 MHz - 1 GHz	3m	Horizontal	120 kHz	18001 Pts	1 ms/MHz



Limit: FCC Part 15/FCC §15.209 **Test Date:** 4/29/2023 **EUT Orientation:** **Test Results:** Pass

Test Notes: High Channel 2476.8MHz

Figure 2-62 – RE Spurious Emissions 30-1000 MHz – Mobile Mark LTMG511 Antenna - High Channel 2476.8MHz



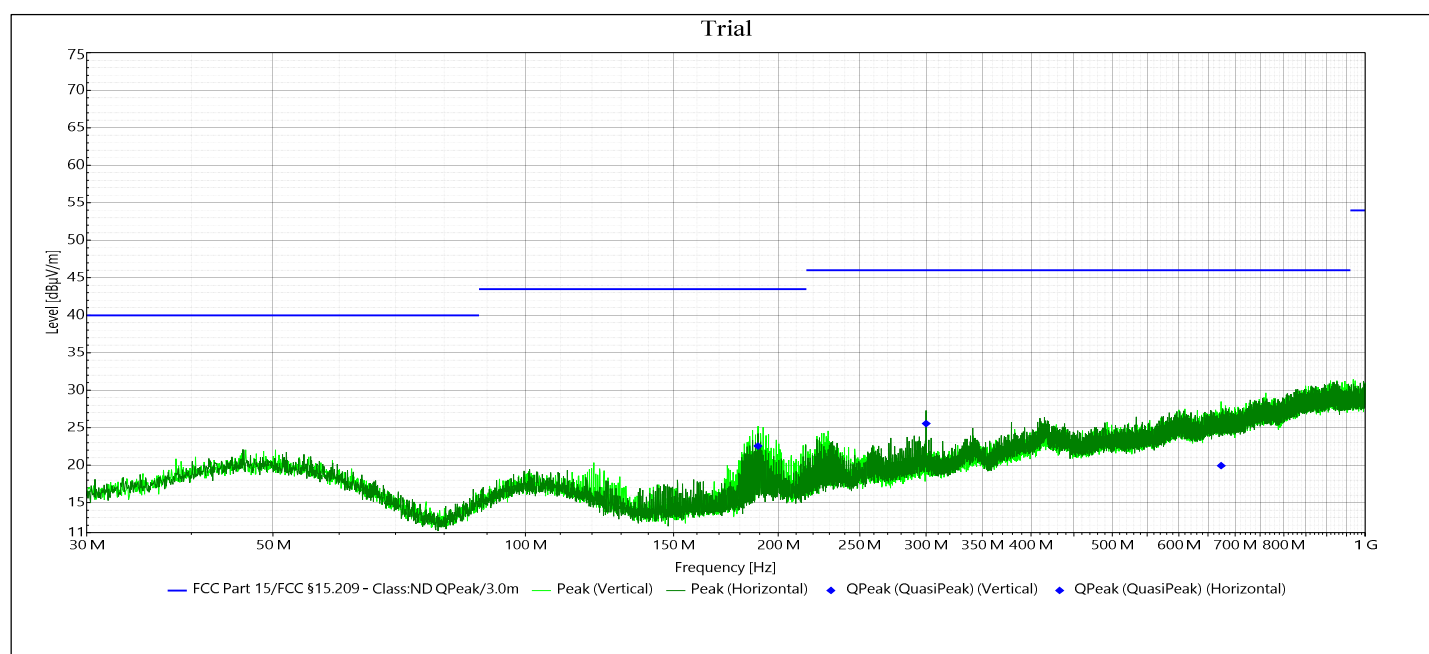
Table 2.10-12 – RE Spurious Emissions 30-1000 MHz – Mobile Mark LTMG511 Antenna - High Channel 2476.8MHz

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
191.892	22.18	43.50	-21.32	262.00	1.00	Vertical	Pass
844.599	22.40	46.00	-23.60	334.00	3.91	Vertical	Pass
299.992	26.21	46.00	-19.79	237.00	1.00	Horizontal	Pass



Spurious Emissions 30M - 1GHz - Laird MAF94192 Antenna - Low Channel 2401.024MHz

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	120 kHz	18001 Pts	1 ms/MHz
30 MHz - 1 GHz	3m	Horizontal	120 kHz	18001 Pts	1 ms/MHz



Limit: FCC Part 15/FCC §15.209 **Test Date:** 4/29/2023 **EUT Orientation:** **Test Results:** Pass

Test Notes: Low Channel 2401.024MHz

**Figure 2-63 – RE Spurious Emissions 30-1000 MHz – Laird MAF94192 Antenna - Low Channel
2401.024MHz**



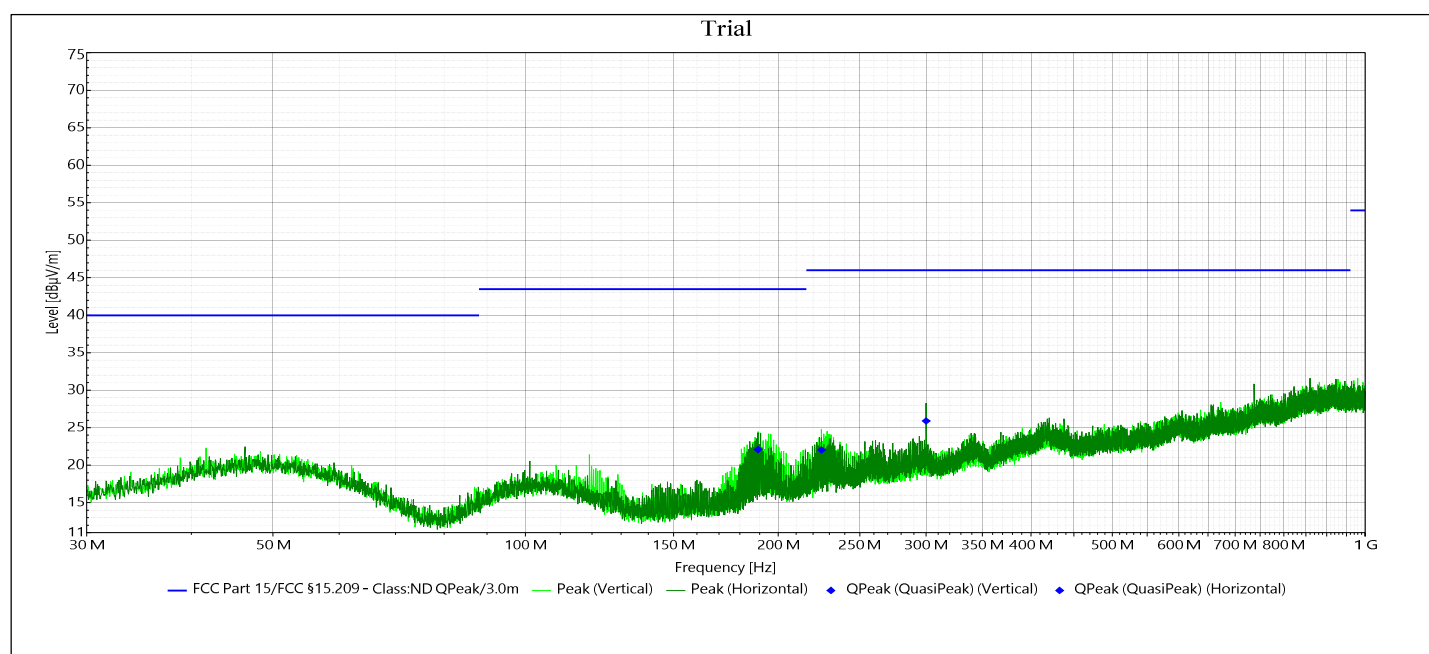
**Table 2.10-13 – RE Spurious Emissions 30-1000 MHz – Laird MAF94192 Antenna - Low Channel
2401.024MHz**

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
189.178	22.56	43.50	-20.94	262.00	1.00	Vertical	Pass
673.655	19.94	46.00	-26.06	139.00	2.20	Vertical	Pass
299.992	25.55	46.00	-20.45	346.00	1.33	Horizontal	Pass



Spurious Emissions 30M - 1GHz - Laird MAF94192 Antenna - Mid Channel 2437.88MHz

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	120 kHz	18001 Pts	1 ms/MHz
30 MHz - 1 GHz	3m	Horizontal	120 kHz	18001 Pts	1 ms/MHz



Limit: FCC Part 15/FCC §15.209 **Test Date:** 4/29/2023 **EUT Orientation:** **Test Results:** Pass

Test Notes: Mid Channel 2437.88MHz

Figure 2-64 – RE Spurious Emissions 30-1000 MHz – Laird MAF94192 Antenna - Mid Channel 2437.88MHz



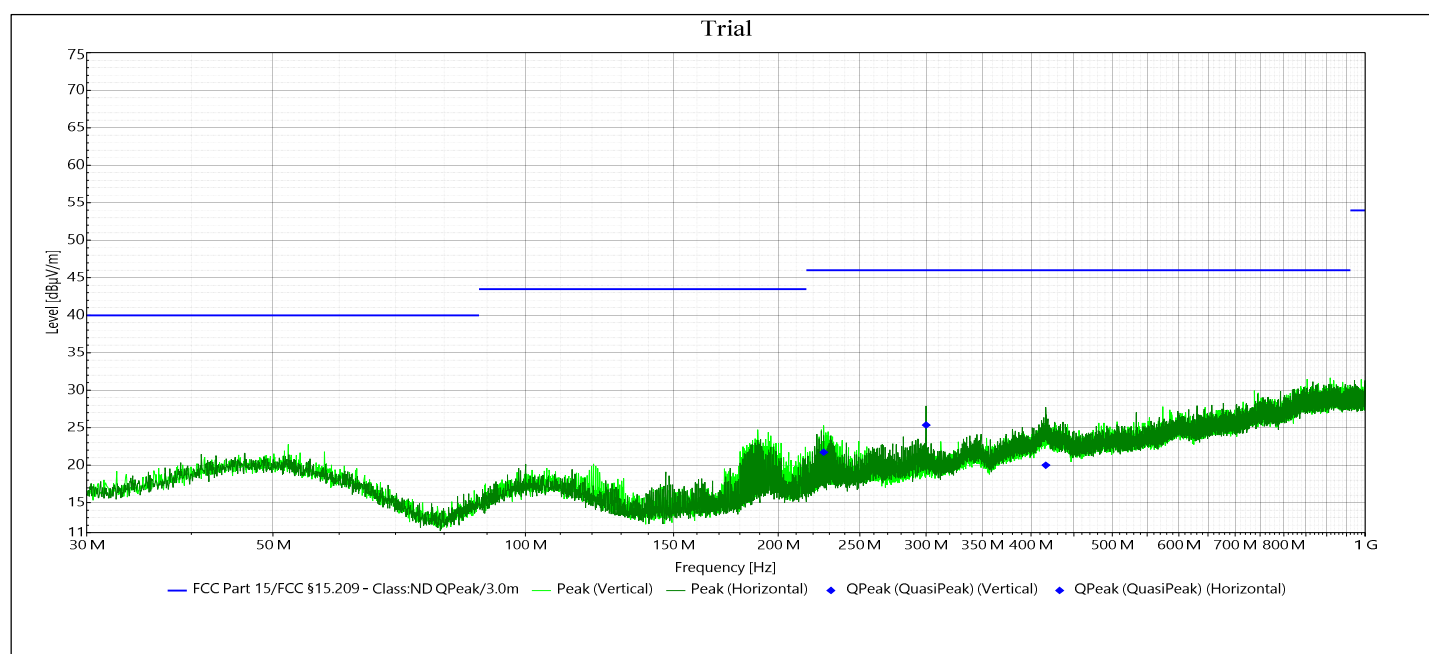
**Table 2.10-14 – RE Spurious Emissions 30-1000 MHz – Laird MAF94192 Antenna - Mid Channel
2437.88MHz**

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
189.134	22.08	43.50	-21.42	304.00	1.00	Vertical	Pass
225.161	22.02	46.00	-23.98	236.00	1.12	Vertical	Pass
299.992	25.90	46.00	-20.10	195.00	1.12	Horizontal	Pass



Spurious Emissions 30M - 1GHz - Laird MAF94192 Antenna - High Channel 2476.8MHz

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	120 kHz	18001 Pts	1 ms/MHz
30 MHz - 1 GHz	3m	Horizontal	120 kHz	18001 Pts	1 ms/MHz



Limit: FCC Part 15/FCC §15.209 **Test Date:** 4/29/2023 **EUT Orientation:** **Test Results:** Pass

Test Notes: High Channel 2476.8MHz

Figure 2-65 – RE Spurious Emissions 30-1000 MHz – Laird MAF94192 Antenna - High Channel 2476.8MHz



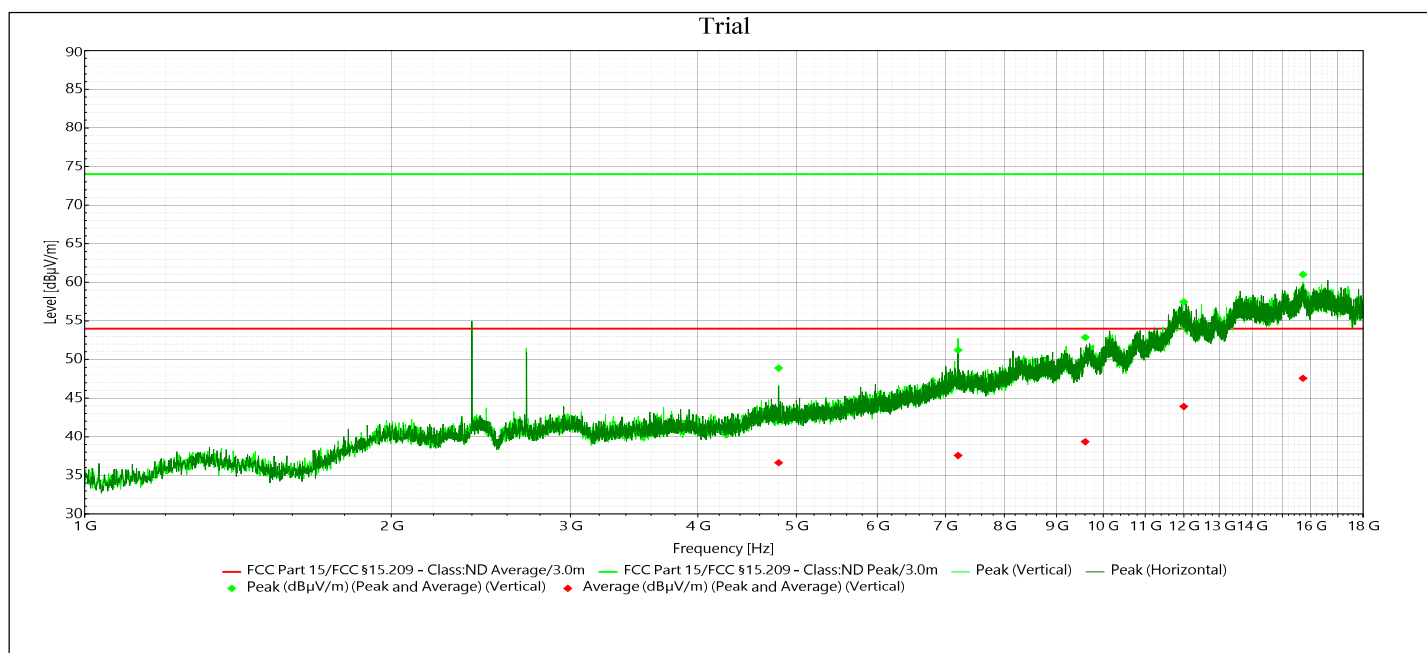
Table 2.10-15 – RE Spurious Emissions 30-1000 MHz – Laird MAF94192 Antenna - High Channel 2476.8MHz

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
226.516	21.73	46.00	-24.27	248.00	1.12	Vertical	Pass
299.992	25.36	46.00	-20.64	195.00	1.00	Horizontal	Pass
416.549	19.99	46.00	-26.01	139.00	1.00	Horizontal	Pass



Spurious Emissions 1 - 18GHz - Mobile Mark DM2 Antenna - Low Channel

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
1 GHz - 18 GHz	3m	Vertical	1 MHz	18001 Pts	Auto
1 GHz - 18 GHz	3m	Horizontal	1 MHz	18001 Pts	Auto



Limit: FCC Part 15/FCC §15.209 **Test Date:** 4/14/2023 **EUT Orientation:** **Test Results:** Pass

Test Notes: Low Channel 2401.02MHz

Figure 2-66 – RE Spurious Emissions 1-18 GHz – Mobile Mark DM2 Antenna - Low Channel

**Table 2.10-16 – RE Spurious Emissions 1-18 GHz – Mobile Mark DM2 Antenna - Low Channel**

Frequency (MHz)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)	Average Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
4802.333	48.88	74.00	-25.12	36.63	54.00	-17.37	0.00	4.00	Vertical	Pass
7203.111	51.23	74.00	-22.77	37.57	54.00	-16.43	132.00	4.00	Vertical	Pass
9603.889	52.86	74.00	-21.14	39.35	54.00	-14.65	360.00	1.00	Vertical	Pass
11999.944	57.46	74.00	-16.54	43.91	54.00	-10.09	228.00	1.00	Vertical	Pass
15710.667	61.01	74.00	-12.99	47.57	54.00	-6.43	227.00	1.00	Vertical	Pass