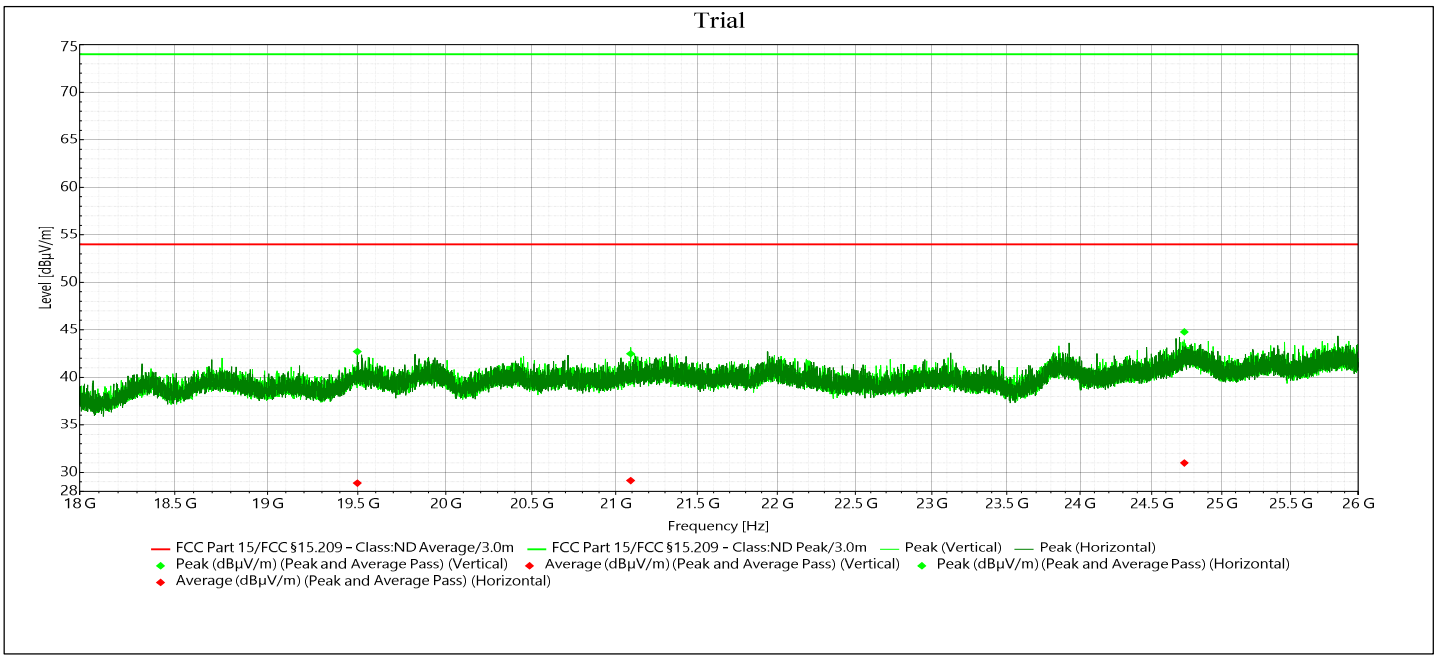
# Spurious Emissions 18 - 26GHz - Mobile Mark LTMG511 Antenna - Mid CH 2437.88MHz

| Frequency Range | Antenna Distance | Antenna Polarization | RBW | Step Size | Sweep Time |
|---|---|---|---|---|---|
| *18 GHz - 26 GHz* | 3m | *Vertical* | 1 MHz | *18001 Pts* | *Auto* |
| *18 GHz - 26 GHz* | 3m | *Horizontal* | 1 MHz | *18001 Pts* | *Auto* |




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

Test Notes: Mid Ch 2437.88MHz

**Figure 2-91 – RE Spurious Emissions 18-26 GHz – Mobile Mark LTMG511 Antenna - Mid CH 2437.88MHz**

**Table 2.10-41 – RE Spurious Emissions 18-26 GHz – Mobile Mark LTMG511 Antenna - Mid CH 2437.88MHz**

| 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 (º) | Height (m) | Polarity | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 21091.111 | 42.48 | 74.00 | -31.52 | 29.13 | 54.00 | -24.87 | 131.00 | 3.97 | Vertical | Pass |
| 24732.000 | 44.78 | 74.00 | -29.22 | 30.98 | 54.00 | -23.02 | 331.00 | 4.00 | Vertical | Pass |
| 19497.333 | 42.70 | 74.00 | -31.30 | 28.86 | 54.00 | -25.14 | 95.00 | 3.97 | Horizontal | Pass |

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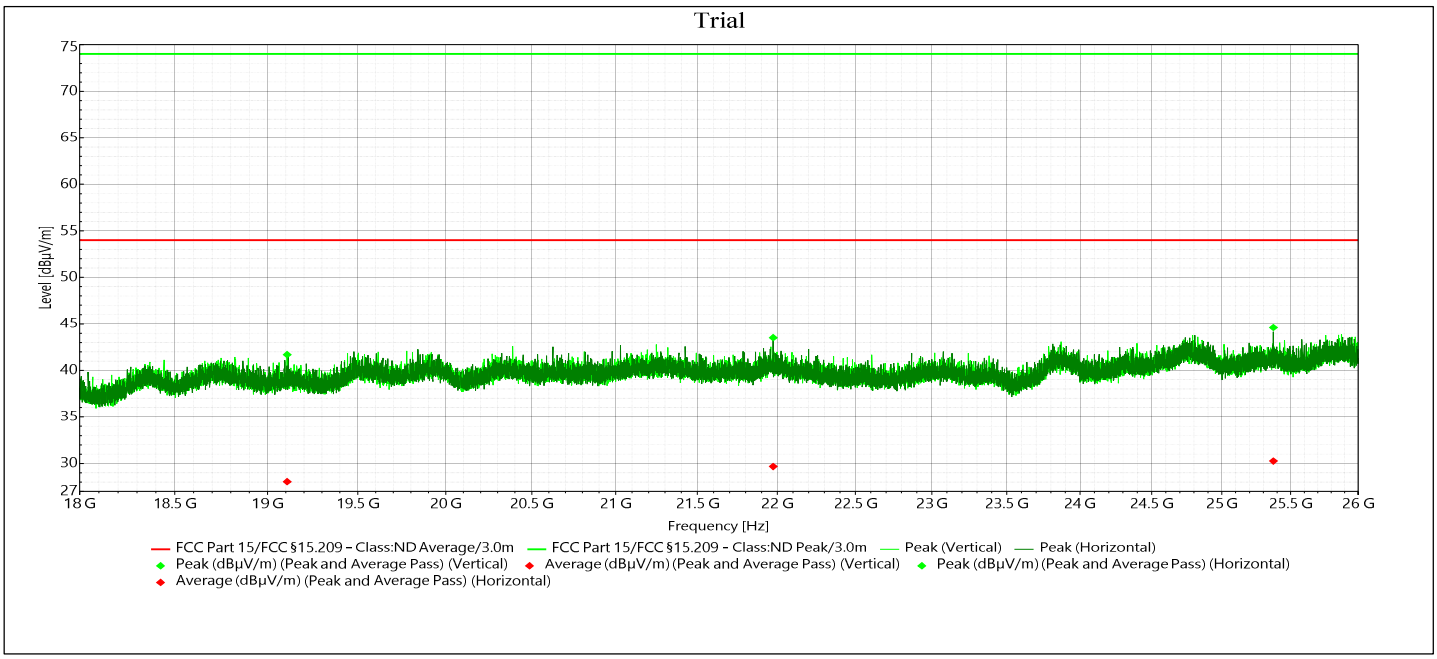
# Spurious Emissions 18 - 26GHz - Mobile Mark LTMG511 Antenna - High CH 2476.8MHz

| Frequency Range | Antenna Distance | Antenna Polarization | RBW | Step Size | Sweep Time |
|---|---|---|---|---|---|
| *18 GHz - 26 GHz* | 3m | *Vertical* | 1 MHz | *18001 Pts* | *Auto* |
| *18 GHz - 26 GHz* | 3m | *Horizontal* | 1 MHz | *18001 Pts* | *Auto* |




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

Test Notes: High Ch 2476.8MHz

**Figure 2-92 – RE Spurious Emissions 18-26 GHz – Mobile Mark LTMG511 Antenna - High CH 2476.8MHz**

**Table 2.10-42 – RE Spurious Emissions 18-26 GHz – Mobile Mark LTMG511 Antenna - High CH 2476.8MHz**

| 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 (º) | Height (m) | Polarity | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 19107.111 | 41.69 | 74.00 | -32.31 | 28.04 | 54.00 | -25.96 | 198.00 | 2.44 | Vertical | Pass |
| 21974.222 | 43.52 | 74.00 | -30.48 | 29.67 | 54.00 | -24.33 | 29.00 | 2.44 | Horizontal | Pass |
| 25373.333 | 44.61 | 74.00 | -29.39 | 30.25 | 54.00 | -23.75 | 265.00 | 4.00 | Horizontal | Pass |

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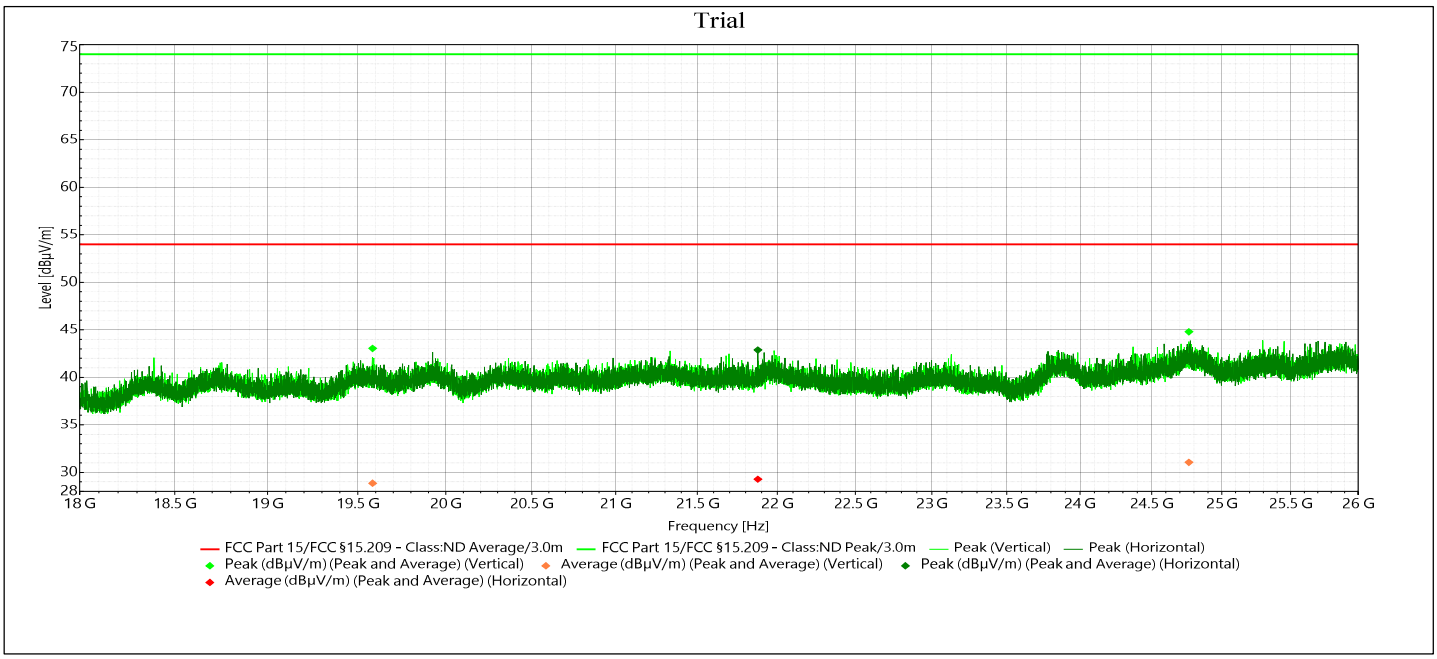
# Spurious Emissions 18 - 26GHz - Laird MAF94192 Antenna - Low CH 2401.024GHz

| Frequency Range | Antenna Distance | Antenna Polarization | RBW | Step Size | Sweep Time |
|---|---|---|---|---|---|
| *18 GHz - 26 GHz* | 3m | *Vertical* | 1 MHz | *18001 Pts* | *Auto* |
| *18 GHz - 26 GHz* | 3m | *Horizontal* | 1 MHz | *18001 Pts* | *Auto* |




| Limit: | Test Date: | EUT Orientation: | Test Results: |
|---|---|---|---|
| FCC Part 15/FCC §15.209 | 4/28/2023 | | Pass |

Test Notes: Low CH 2401.024GHz

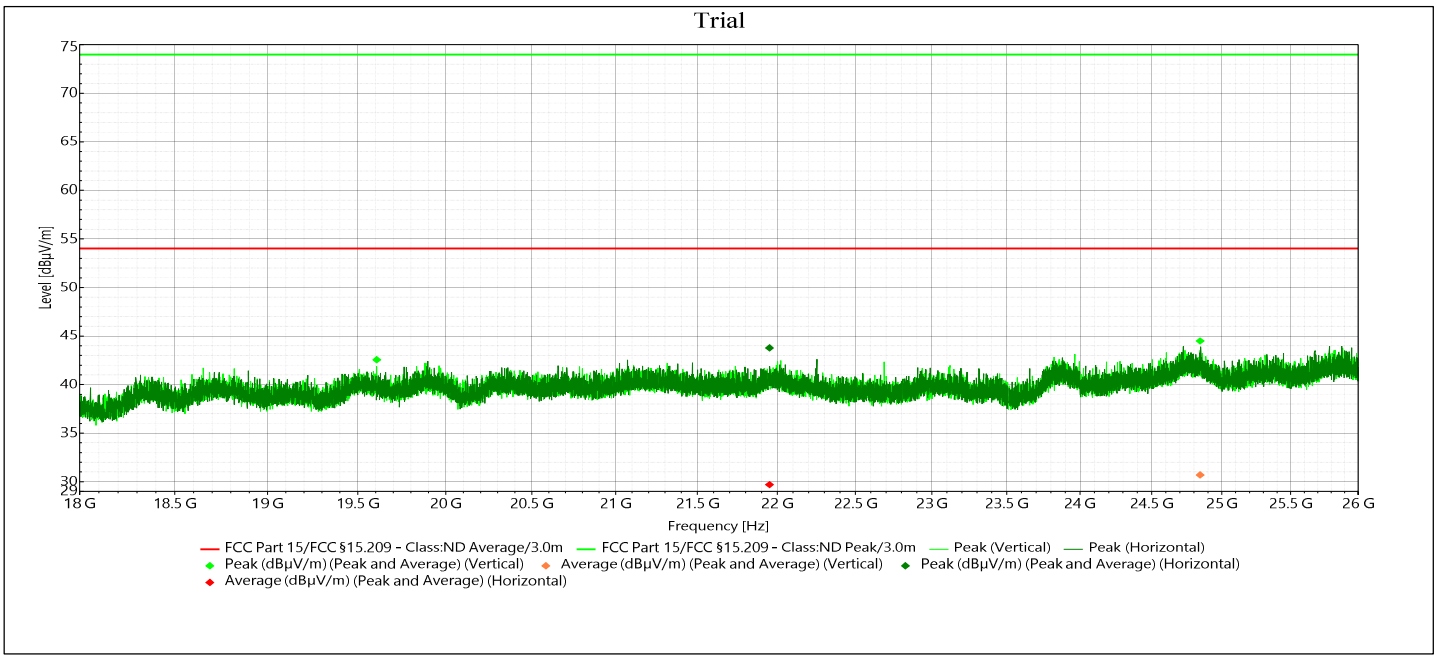
**Figure 2-93 – RE Spurious Emissions 18-26 GHz – Laird MAF94192 Antenna - Low CH 2401.024GHz**

**Table 2.10-43 – RE Spurious Emissions 18-26 GHz – Laird MAF94192 Antenna - Low CH 2401.024GHz**

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 19582.667 | 43.04 | 74.00 | -30.96 | 28.85 | 54.00 | -25.15 | 65.00 | 2.44 | Vertical | Pass |
| 24764.889 | 44.80 | 74.00 | -29.20 | 31.05 | 54.00 | -22.95 | 132.00 | 1.00 | Vertical | Pass |
| 21876.889 | 42.87 | 74.00 | -31.13 | 29.28 | 54.00 | -24.72 | 331.00 | 1.00 | Horizontal | Pass |

# Spurious Emissions 18 - 26GHz - Laird MAF94192 Antenna - Mid CH 2437.88MHz

| Frequency Range | Antenna Distance | Antenna Polarization | RBW | Step Size | Sweep Time |
|---|---|---|---|---|---|
| *18 GHz - 26 GHz* | 3m | *Vertical* | 1 MHz | *18001 Pts* | *Auto* |
| *18 GHz - 26 GHz* | 3m | *Horizontal* | 1 MHz | *18001 Pts* | *Auto* |




| Limit: | Test Date: | EUT Orientation: | Test Results: |
|---|---|---|---|
| FCC Part 15/FCC §15.209 | 4/28/2023 | | Pass |

Test Notes: Mid CH 2437.88MHz

**Figure 2-94 – RE Spurious Emissions 18-26 GHz – Laird MAF94192 Antenna - Mid CH 2437.88MHz**

**Table 2.10-44 – RE Spurious Emissions 18-26 GHz – Laird MAF94192 Antenna - Mid CH 2437.88MHz**

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 19605.778 | 42.56 | 74.00 | -31.44 | 28.67 | 54.00 | -25.33 | 132.00 | 1.00 | Vertical | Pass |
| 24844.889 | 44.49 | 74.00 | -29.51 | 30.69 | 54.00 | -23.31 | 265.00 | 2.44 | Vertical | Pass |
| 21951.111 | 43.78 | 74.00 | -30.22 | 29.69 | 54.00 | -24.31 | 0.00 | 3.97 | Horizontal | Pass |

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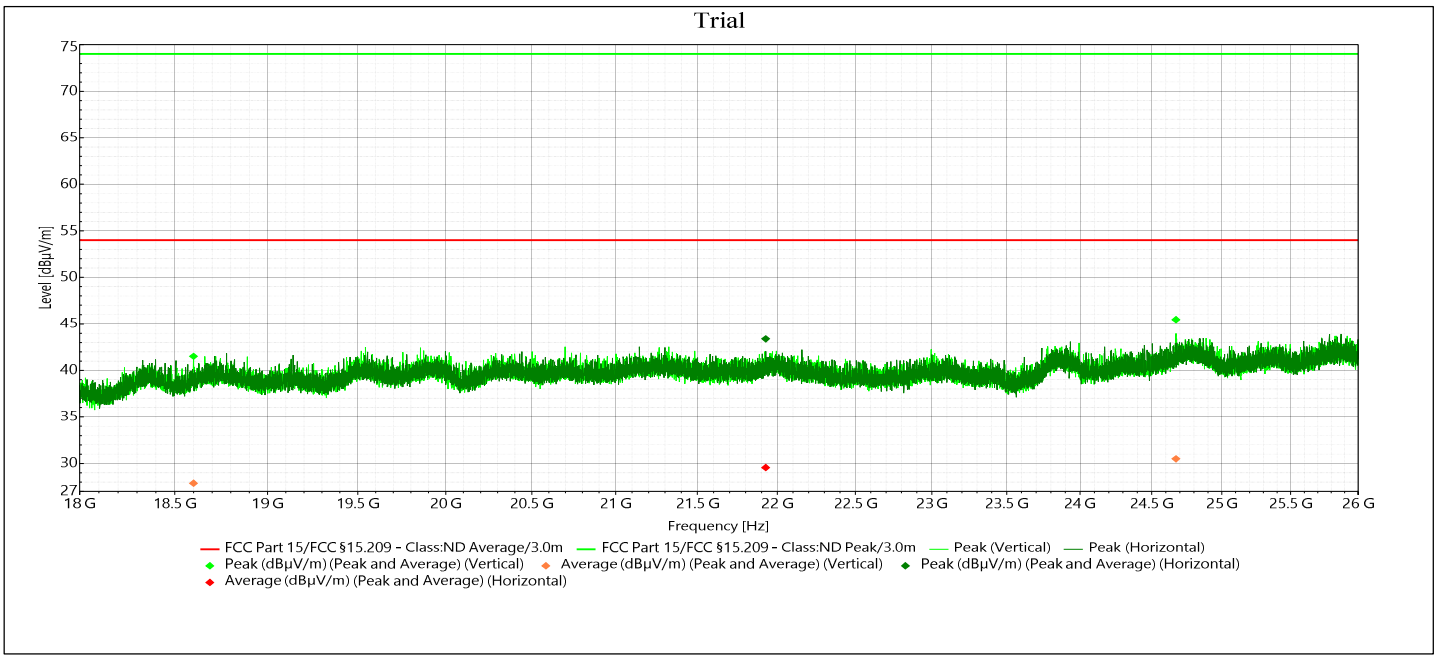
# Spurious Emissions 18 - 26GHz - Laird MAF94192 Antenna - High CH 2476.8MHz

| Frequency Range | Antenna Distance | Antenna Polarization | RBW | Step Size | Sweep Time |
|---|---|---|---|---|---|
| *18 GHz - 26 GHz* | 3m | *Vertical* | 1 MHz | *18001 Pts* | *Auto* |
| *18 GHz - 26 GHz* | 3m | *Horizontal* | 1 MHz | *18001 Pts* | *Auto* |




| Limit: | Test Date: | EUT Orientation: | Test Results: |
|---|---|---|---|
| FCC Part 15/FCC §15.209 | 4/28/2023 | | Pass |

Test Notes: High CH 2476.8MHz

**Figure 2-95 – RE Spurious Emissions 18-26 GHz – Laird MAF94192 Antenna - High CH 2476.8MHz**

**Table 2.10-45 – RE Spurious Emissions 18-26 GHz – Laird MAF94192 Antenna - High CH 2476.8MHz**

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 18600.000 | 41.51 | 74.00 | -32.49 | 27.87 | 54.00 | -26.13 | 360.00 | 3.97 | Vertical | Pass |
| 24672.444 | 45.44 | 74.00 | -28.56 | 30.50 | 54.00 | -23.50 | 295.00 | 3.97 | Vertical | Pass |
| 21926.222 | 43.40 | 74.00 | -30.60 | 29.55 | 54.00 | -24.45 | 95.00 | 3.97 | Horizontal | Pass |

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### 2.10.9 Test Location and Test Equipment Used

The tests were carried out in New Brighton, MN.
Test Area: 3mSAC

**Table 2.10-46 – Radiated Emissions Equipment List**

| Device # | Manufacturer | Description | Model | Serial # | Cal Code | Cal Date | Cal Due |
|---|---|---|---|---|---|---|---|
| NBLE11142 | Hewlett-Packard | Preamplifier, 0.1 to 1300 MHz | 8447D | 2727A05370 | B | 10/19/2022 | 10/19/2023 |
| WRLE11519 | Com-Power Corp. | Preamplifier, 500 MHz-18 GHz | PAM-118A | 18040002 | B | 01/23/2023 | 01/23/2024 |
| NBLE11579 | Schwarzbeck | Antenna, Broadband Trilog | VULB 9162 | 9162-196 | G | 06/03/2021 | 06/03/2023 |
| NBLE11630 | ETS-Lindgren | Antenna, 1-18 GHz | 3117 | 00218816 | G | 09/27/2022 | 09/27/2024 |
| NBLE11689 | ATM | Antenna, DRG 18-40 GHz | 180-442-KF | 102040 | G | 06/02/2021 | 06/02/2023 |
| NBLE11688 | Rohde & Schwarz | Preamplifier, 18-40 GHz | TRS-PR1840 | 10006 | B | 06/10/2021 | 06/10/2023 |
| NBLE11699 | Microwave Circuits | Notch Filter, 2.4-2.4837 GHz | N0324415 | 502922 DC1947 | B | 03/27/2023 | 03/27/2024 |
| NBLE11754 | Rohde & Schwarz | Receiver, 1 Hz-44 GHz | ESW44 | 103037 | G | 08/28/2022 | 08/28/2023 |

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.

## 2.11 Radiated Band-Edge

### 2.11.1 Specification Reference

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

### 2.11.2 Equipment Under Test and Modification State

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

### 2.11.3 Date of Test

14 April 2023

### 2.11.4 Test Method

The EUT was set up in a semi-anechoic chamber on a remotely controlled turntable and placed on a non-conductive table 1.5 m above a reference ground plane. Measurements were taken at a 3m distance. The fundamental signal was maximized while varying the antenna-to-EUT azimuth and antenna-to-EUT polarization using a peak detector. Band-edge measurements were made with the device in its maximized position using a peak and average detector as described in ANSI C63.10.

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

### 2.11.5 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.

### 2.11.6 Test Results

**Test Summary**: EUT operated as intended before, during, and after testing.
.

**Test Result: Pass**

See data below for detailed results.

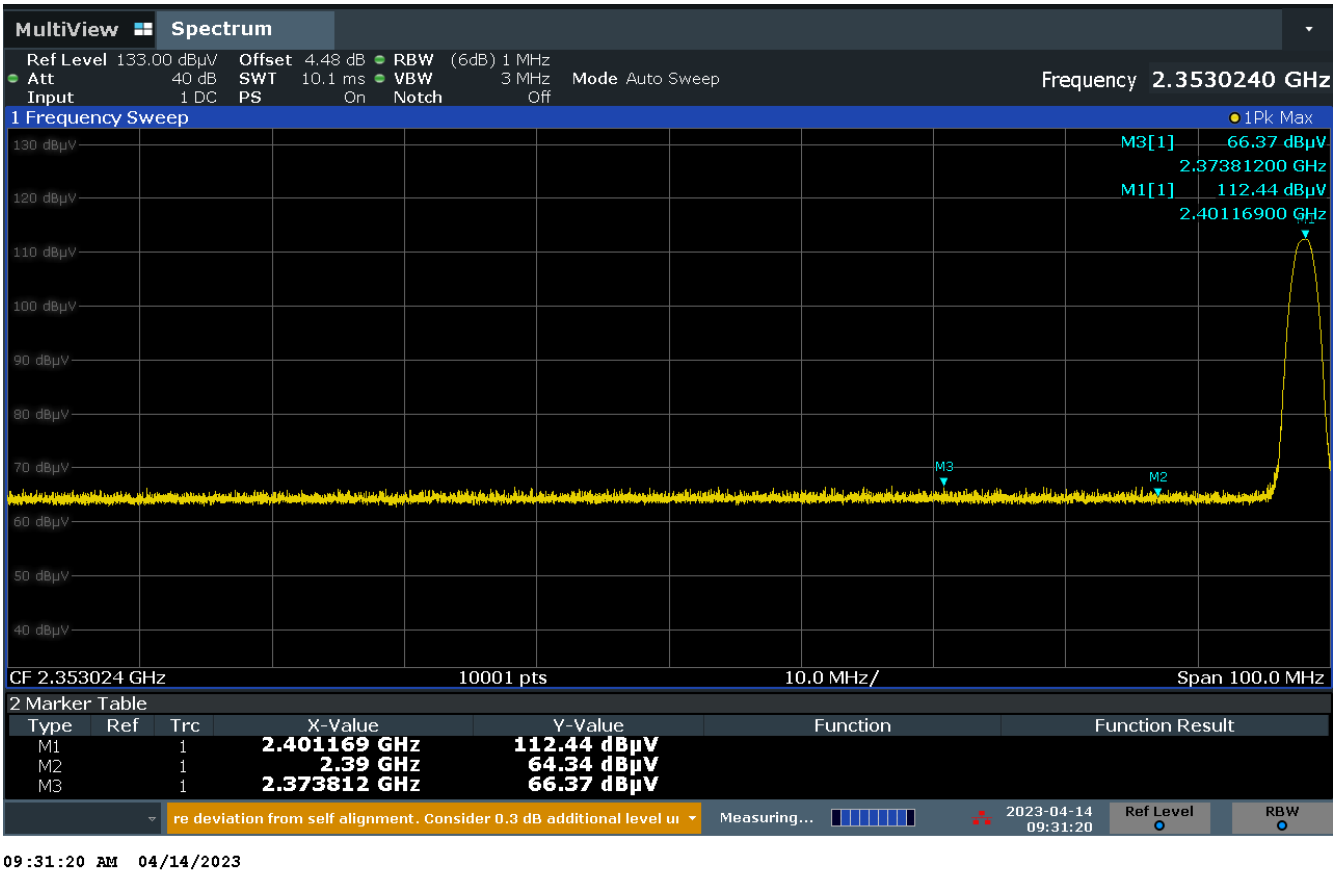


**Figure 2-96 – Band-Edge, Mobile Mark DM2 Antenna Low Channel – Peak**

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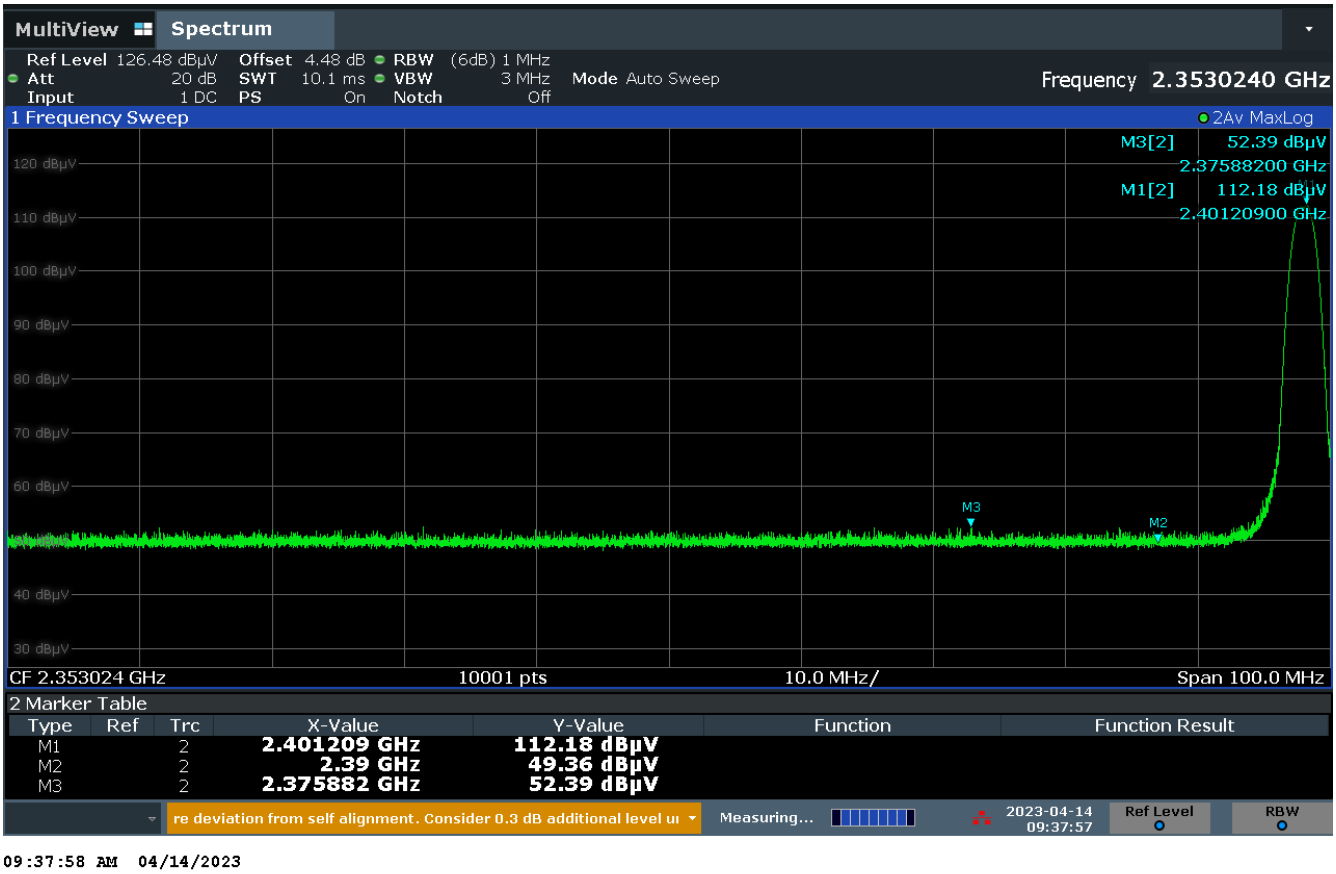


**Figure 2-97 – Band-Edge, Mobile Mark DM2 Antenna Low Channel – Average**

**Table 2.11-1 – Restricted Band Edge – Mobile Mark DM2 Antenna Low Channel – Peak**

| Frequency (MHz) | Peak Level (dBuV/m) | Peak Limit (dBuV/m) | Peak Margin (dB) | Peak Result |
|---|---|---|---|---|
| 2390 | 64.34 | 74.00 | -9.66 | Pass |
| 2373.81 | 66.37 | 74.00 | -7.63 | Pass |

**Note:** Peak level calculation: Final Peak level = analyzer level + correction factor.
Margin Calculation: Peak Margin = Peak Level – Peak Limit.

**Table 2.11-2 – Restricted Band Edge – Mobile Mark DM2 Antenna Low Channel – Average**

| Frequency (MHz) | Average Level (dBuV/m) | Average Limit (dBuV/m) | Average Margin (dB) | Average Result |
|---|---|---|---|---|
| 2390 | 49.36 | 54.00 | -4.64 | Pass |
| 2375.88 | 52.39 | 54.00 | -1.61 | Pass |

**Note:** Peak level calculation: Final Average level = analyzer level + correction factor.
Margin Calculation: Average Margin = Average Level – Average Limit.

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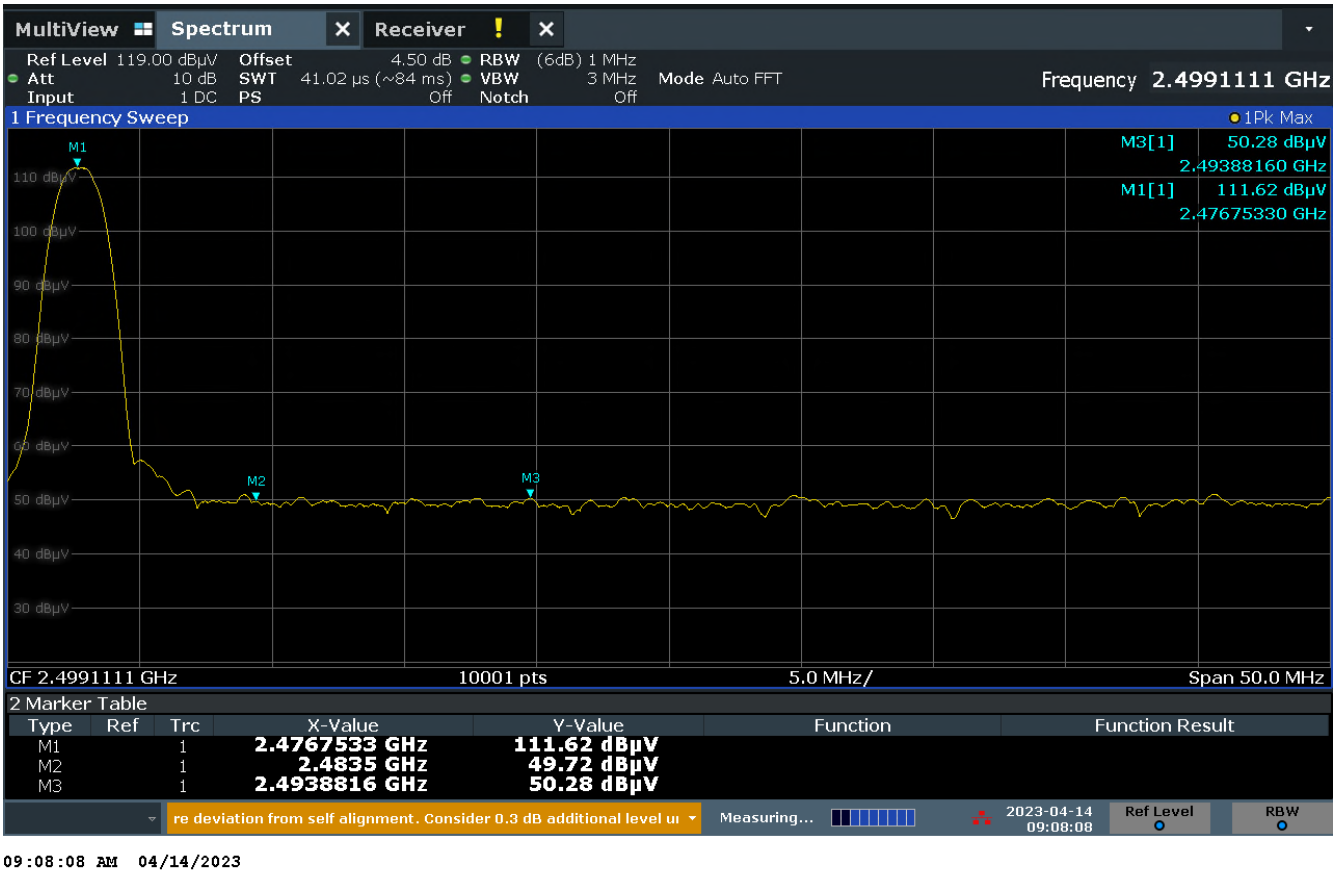


**Figure 2-98 – Band-edge, Mobile Mark DM2 Antenna High Channel – Peak**

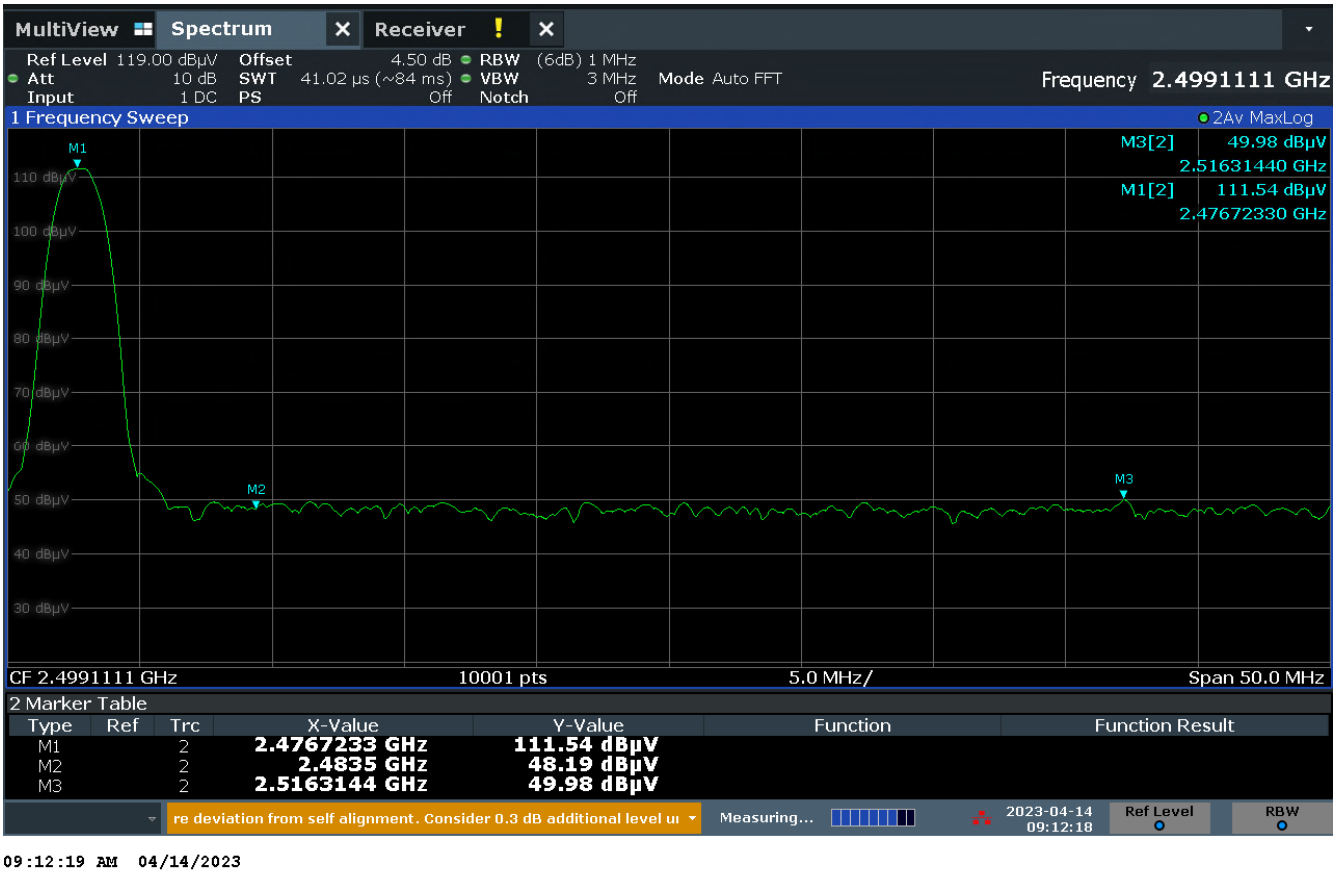


**Figure 2-99 – Band-edge, Mobile Mark DM2 Antenna High Channel – Average**

**Table 2.11-3 – Restricted Band Edge – Mobile Mark DM2 Antenna High Channel – Peak**

| Frequency (MHz) | Peak Level (dBuV/m) | Peak Limit (dBuV/m) | Peak Margin (dB) | Peak Result |
|---|---|---|---|---|
| 2483.5 | 49.72 | 74.00 | -24.28 | Pass |
| 2493.88 | 50.28 | 74.00 | -23.72 | Pass |

**Note:** Peak level calculation: Final Peak level = analyzer level + correction factor.
Margin Calculation: Peak Margin = Peak Level – Peak Limit.

**Table 2.11-4 – Restricted Band Edge – Mobile Mark DM2 Antenna High Channel – Average**

| Frequency (MHz) | Average Level (dBuV/m) | Average Limit (dBuV/m) | Average Margin (dB) | Average Result |
|---|---|---|---|---|
| 2483.5 | 48.19 | 54.00 | -5.81 | Pass |
| 2516.31 | 49.98 | 54.00 | -4.11 | Pass |

**Note:** Peak level calculation: Final Average level = analyzer level + correction factor.
Margin Calculation: Average Margin = Average Level – Average Limit.

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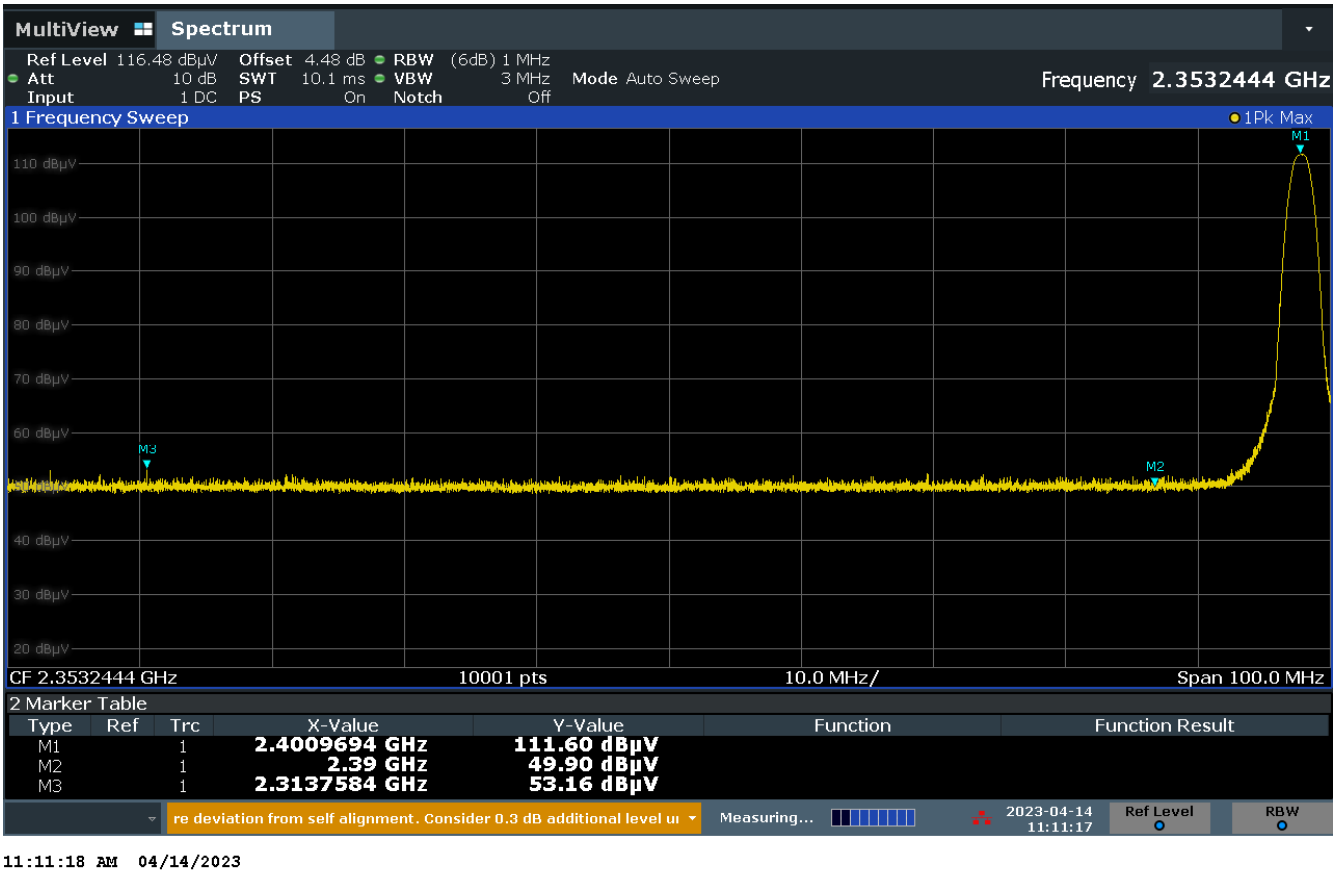


**Figure 2-100 – Band-Edge, Mobile Mark SMW-304 Antenna Low Channel – Peak**

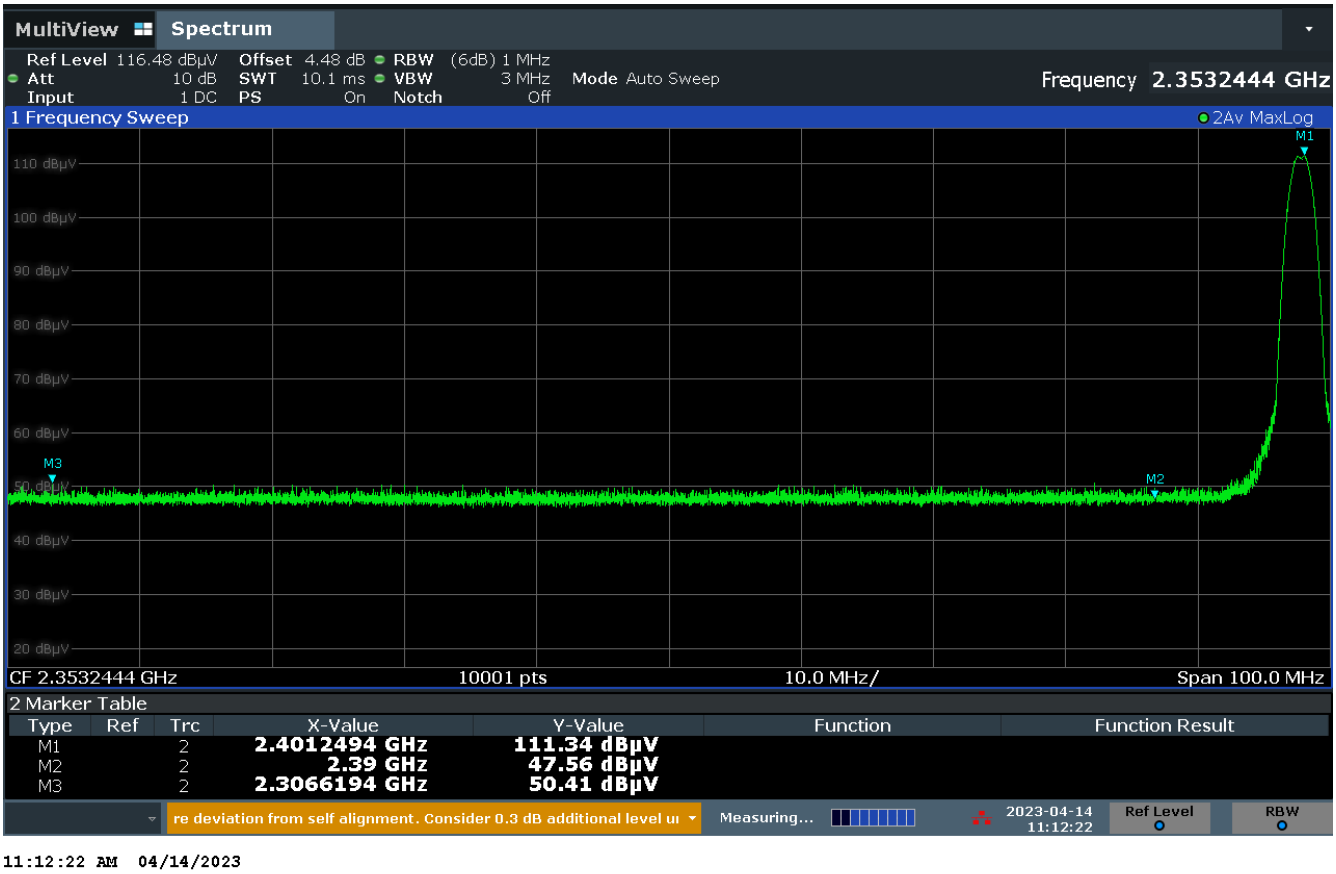


**Figure 2-101 – Band-Edge, Mobile Mark SMW-304 Antenna Low Channel – Average**

**Table 2.11-5 – Restricted Band Edge – Mobile Mark SMW-304 Antenna Low Channel – Peak**

| Frequency (MHz) | Peak Level (dBuV/m) | Peak Limit (dBuV/m) | Peak Margin (dB) | Peak Result |
|---|---|---|---|---|
| 2390 | 49.90 | 74.00 | -24.10 | Pass |
| 2313.75 | 53.16 | 74.00 | -20.84 | Pass |

**Note:** Peak level calculation: Final Peak level = analyzer level + correction factor.
Margin Calculation: Peak Margin = Peak Level – Peak Limit.

**Table 2.11-6 – Restricted Band Edge – Mobile Mark SMW-304 Antenna Low Channel – Average**

| Frequency (MHz) | Average Level (dBuV/m) | Average Limit (dBuV/m) | Average Margin (dB) | Average Result |
|---|---|---|---|---|
| 2390 | 47.56 | 54.00 | -6.44 | Pass |
| 2306.61 | 50.41 | 54.00 | -3.59 | Pass |

**Note:** Peak level calculation: Final Average level = analyzer level + correction factor.
Margin Calculation: Average Margin = Average Level – Average Limit.

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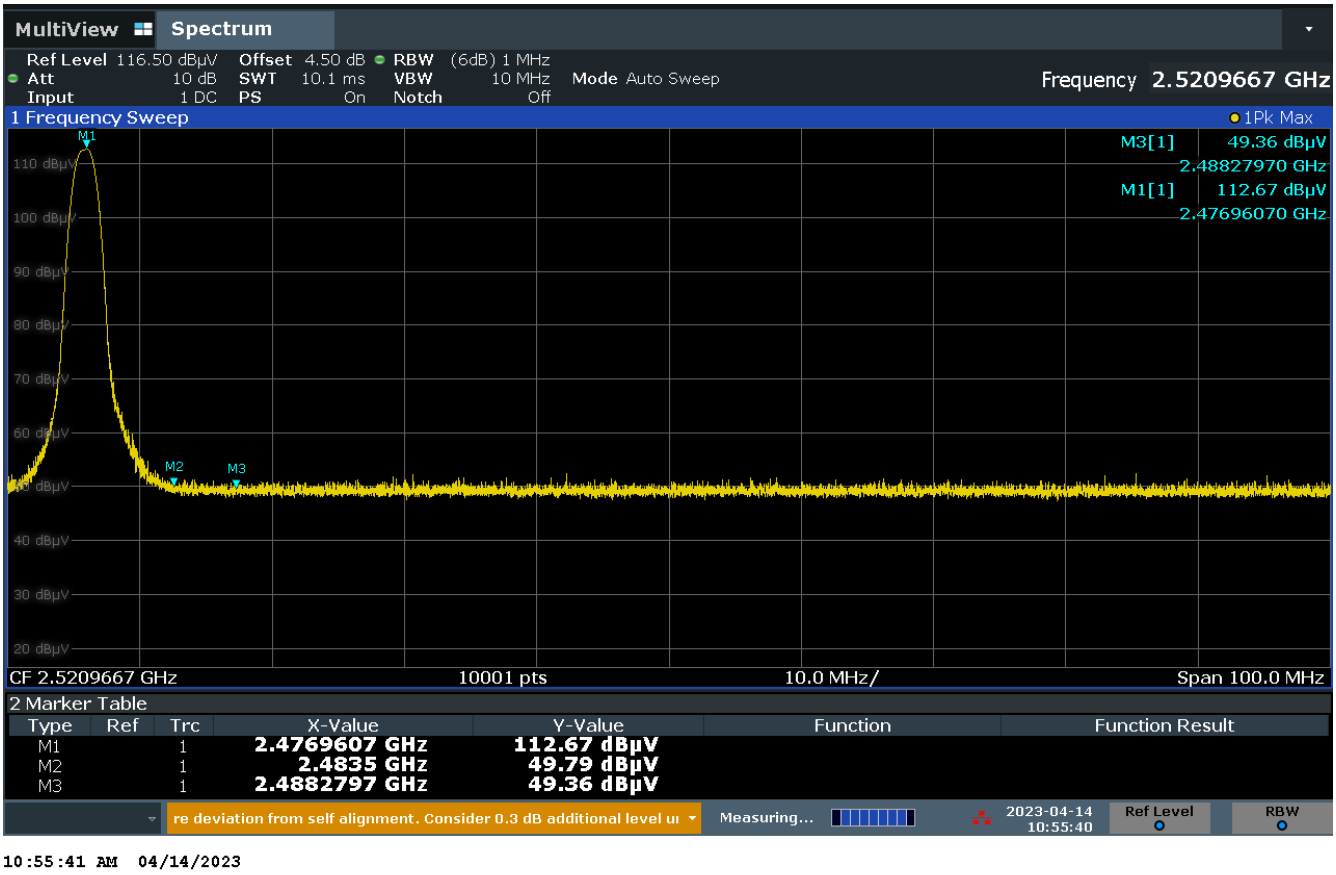


**Figure 2-102 – Band-edge, Mobile Mark SMW-304 Antenna High Channel – Peak**

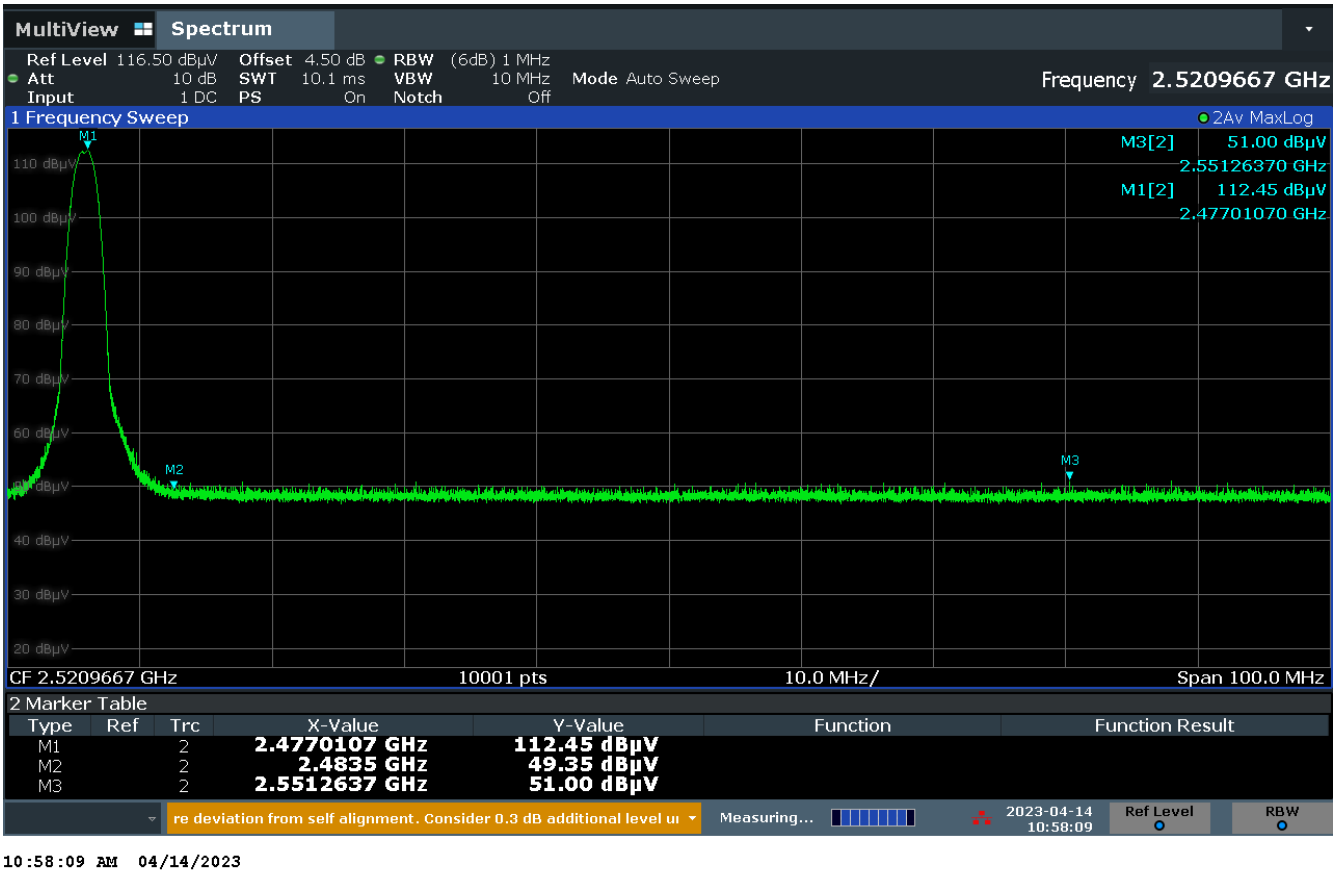


**Figure 2-103 – Band-edge, Mobile Mark SMW-304 Antenna High Channel – Average**

**Table 2.11-7 – Restricted Band Edge – Mobile Mark SMW-304 Antenna High Channel – Peak**

| Frequency (MHz) | Peak Level (dBuV/m) | Peak Limit (dBuV/m) | Peak Margin (dB) | Peak Result |
|---|---|---|---|---|
| 2483.5 | 49.79 | 74.00 | -24.21 | Pass |
| 2488.27 | 49.36 | 74.00 | -24.64 | Pass |

**Note:** Peak level calculation: Final Peak level = analyzer level + correction factor.
Margin Calculation: Peak Margin = Peak Level – Peak Limit.

**Table 2.11-8 – Restricted Band Edge – Mobile Mark SMW-304 Antenna High Channel – Average**

| Frequency (MHz) | Average Level (dBuV/m) | Average Limit (dBuV/m) | Average Margin (dB) | Average Result |
|---|---|---|---|---|
| 2483.5 | 49.35 | 54.00 | -4.65 | Pass |
| 2551.26 | 51.00 | 54.00 | -3.00 | Pass |

**Note:** Peak level calculation: Final Average level = analyzer level + correction factor.
Margin Calculation: Average Margin = Average Level – Average Limit.

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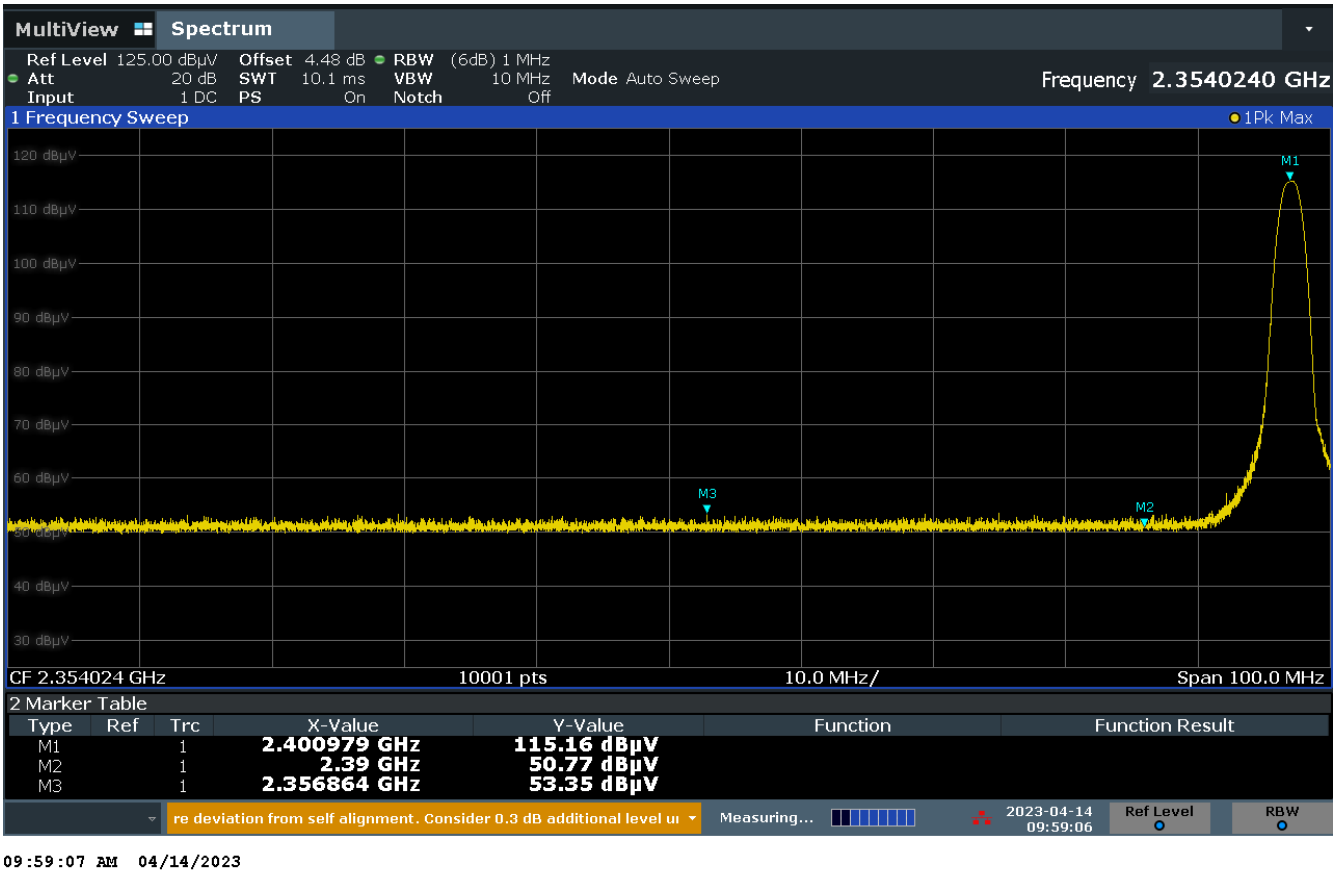


**Figure 2-104 – Band-Edge, How Tsen S-001 Antenna Low Channel – Peak**

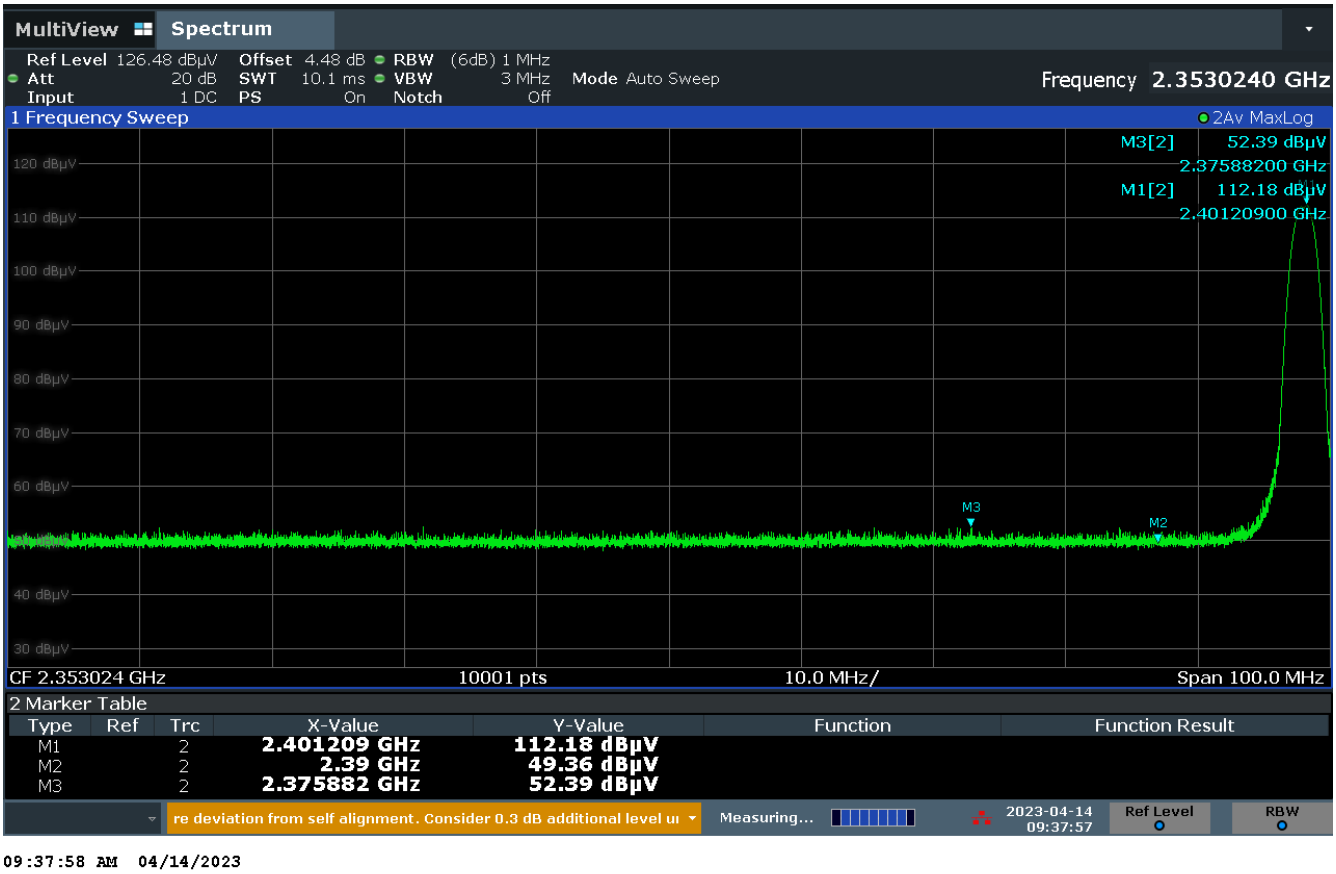


**Figure 2-105 – Band-Edge, How Tsen S-001 Antenna Low Channel – Average**

**Table 2.11-9 – Restricted Band Edge – How Tsen S-001 Antenna Low Channel – Peak**

| Frequency (MHz) | Peak Level (dBuV/m) | Peak Limit (dBuV/m) | Peak Margin (dB) | Peak Result |
|---|---|---|---|---|
| 2390 | 50.77 | 74.00 | -23.23 | Pass |
| 2356.86 | 53.35 | 74.00 | -20.65 | Pass |

**Note:** Peak level calculation: Final Peak level = analyzer level + correction factor.
Margin Calculation: Peak Margin = Peak Level – Peak Limit.

**Table 2.11-10 – Restricted Band Edge – How Tsen S-001 Antenna Low Channel – Average**

| Frequency (MHz) | Average Level (dBuV/m) | Average Limit (dBuV/m) | Average Margin (dB) | Average Result |
|---|---|---|---|---|
| 2390 | 49.36 | 54.00 | -4.64 | Pass |
| 2375.88 | 52.39 | 54.00 | -1.61 | Pass |

**Note:** Peak level calculation: Final Average level = analyzer level + correction factor.
Margin Calculation: Average Margin = Average Level – Average Limit.

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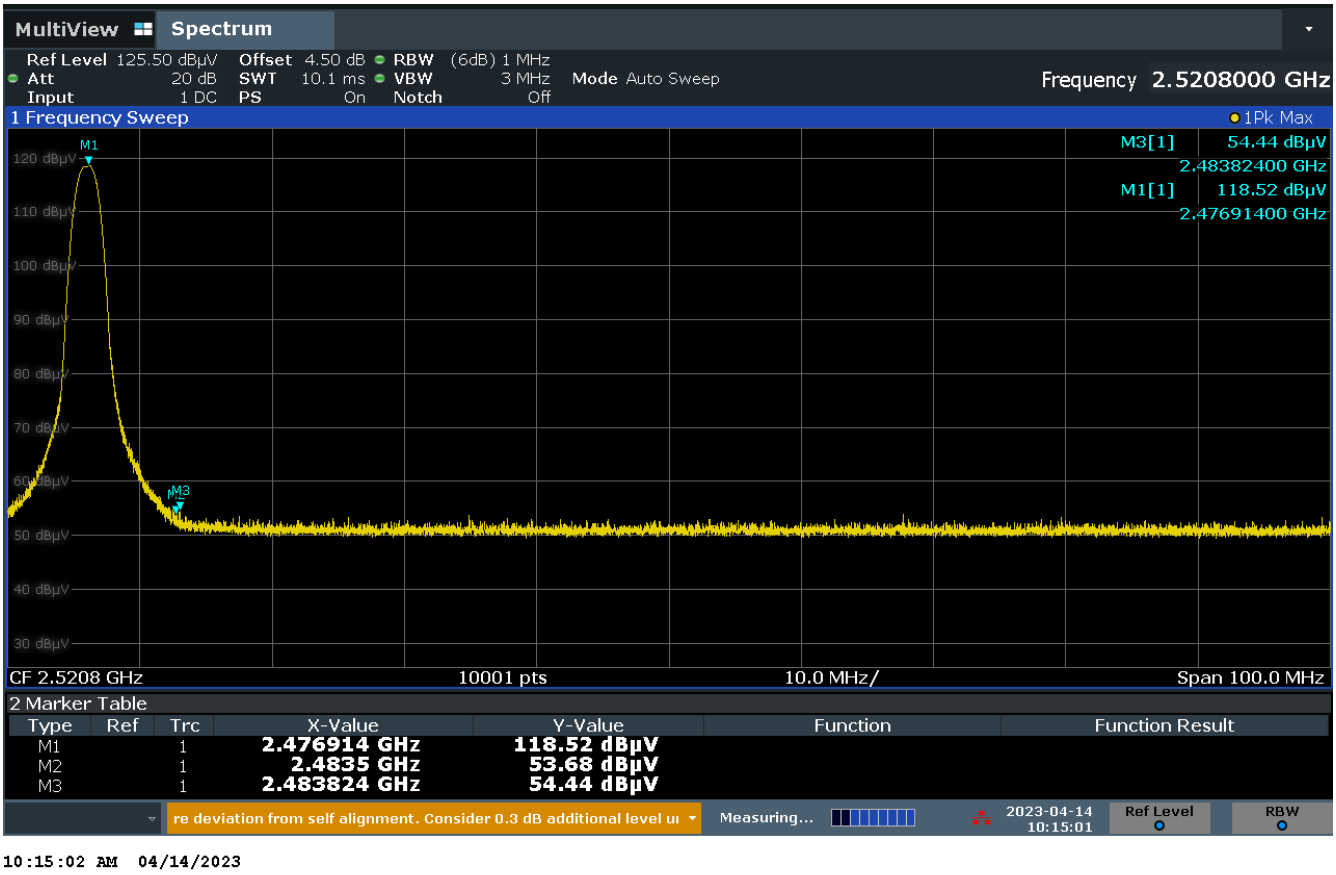


**Figure 2-106 – Band-edge, How Tsen S-001 Antenna High Channel – Peak**

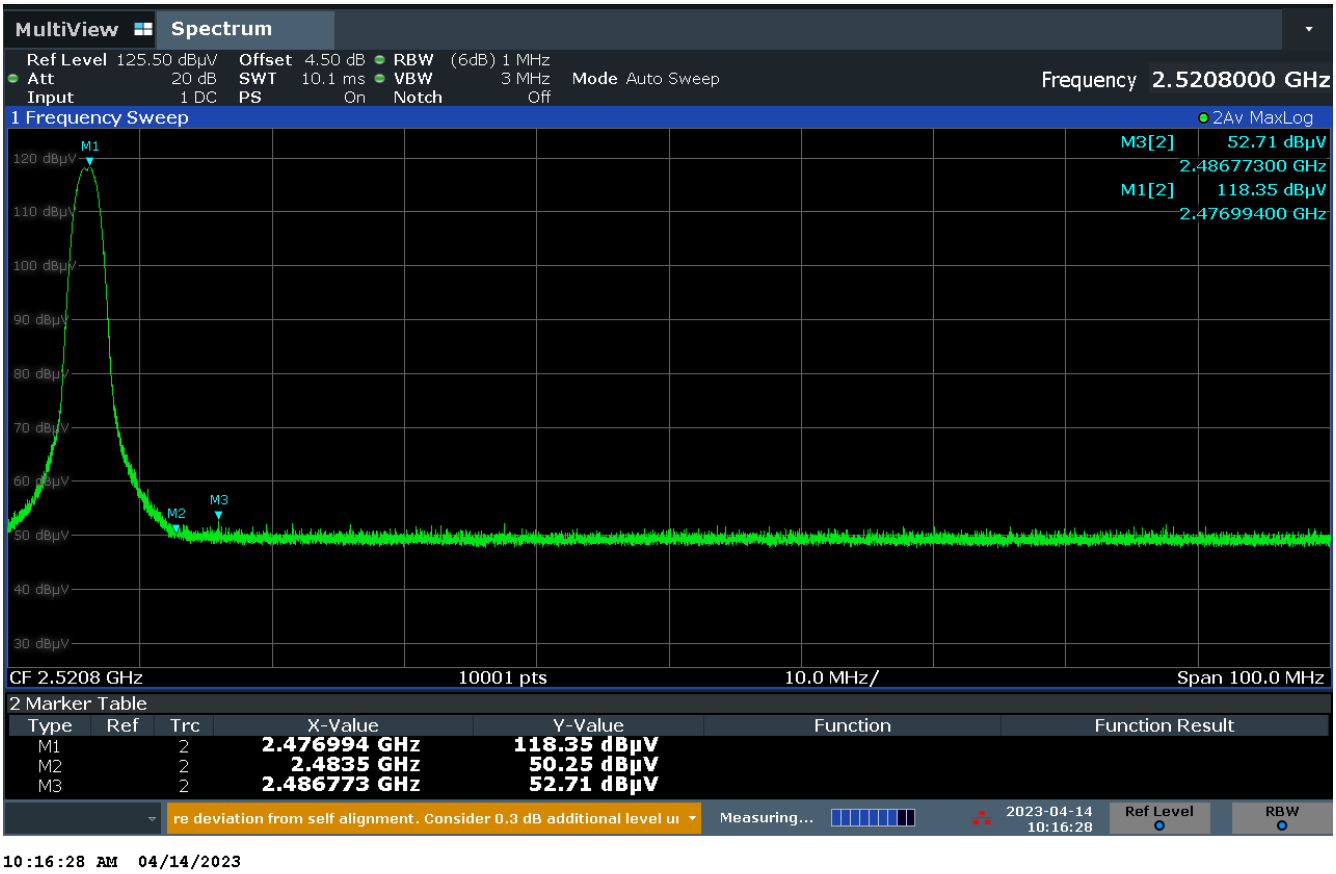


**Figure 2-107 – Band-edge, How Tsen S-001 Antenna High Channel – Average**

**Table 2.11-11 – Restricted Band Edge – How Tsen S-001 Antenna High Channel – Peak**

| Frequency (MHz) | Peak Level (dBuV/m) | Peak Limit (dBuV/m) | Peak Margin (dB) | Peak Result |
|---|---|---|---|---|
| 2483.5 | 53.68 | 74.00 | -20.32 | Pass |
| 2483.82 | 54.44 | 74.00 | -19.56 | Pass |

**Note:** Peak level calculation: Final Peak level = analyzer level + correction factor.
Margin Calculation: Peak Margin = Peak Level – Peak Limit.

**Table 2.11-12 – Restricted Band Edge – How Tsen S-001 Antenna High Channel – Average**

| Frequency (MHz) | Average Level (dBuV/m) | Average Limit (dBuV/m) | Average Margin (dB) | Average Result |
|---|---|---|---|---|
| 2483.5 | 50.25 | 54.00 | -3.75 | Pass |
| 2486.77 | 52.71 | 54.00 | -1.29 | Pass |

**Note:** Peak level calculation: Final Average level = analyzer level + correction factor.
Margin Calculation: Average Margin = Average Level – Average Limit.

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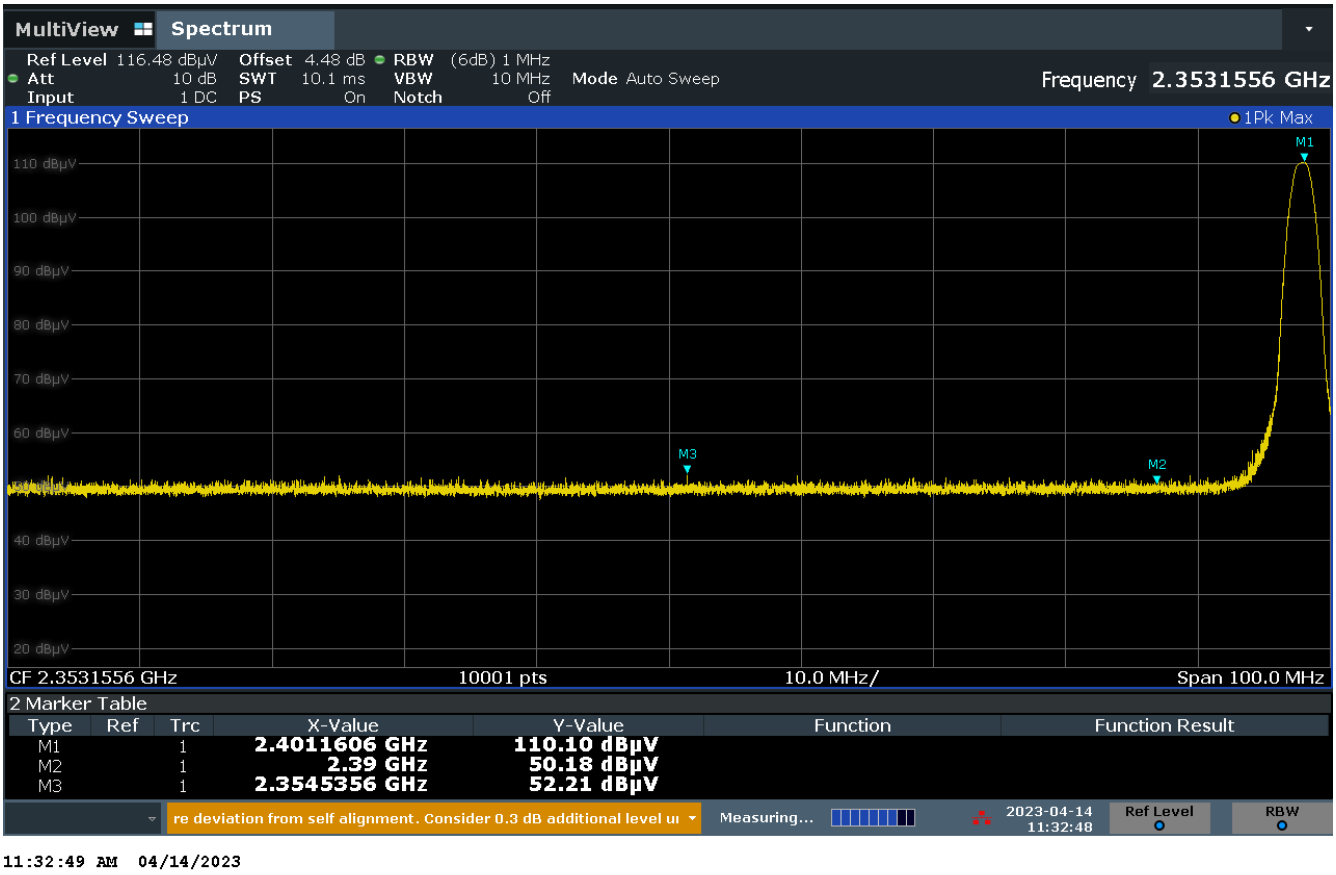


**Figure 2-108 – Band-Edge, Mobile Mark LTMG511 Antenna Low Channel – Peak**

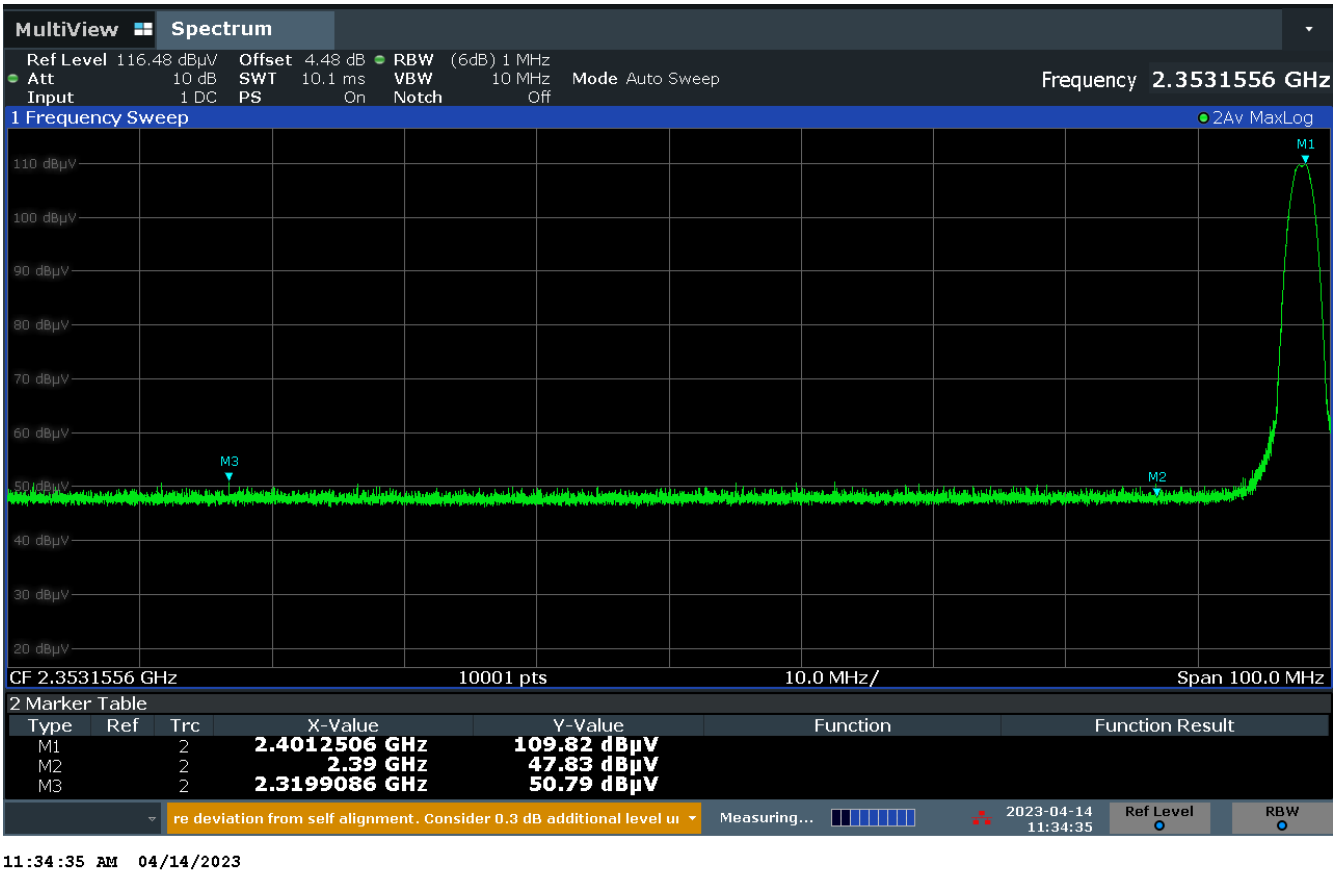


**Figure 2-109 – Band-Edge, Mobile Mark LTMG511 Antenna Low Channel – Average**

**Table 2.11-13 – Restricted Band Edge – Mobile Mark LTMG511 Antenna Low Channel – Peak**

| Frequency (MHz) | Peak Level (dBuV/m) | Peak Limit (dBuV/m) | Peak Margin (dB) | Peak Result |
|---|---|---|---|---|
| 2390 | 50.18 | 74.00 | -23.82 | Pass |
| 2354.53 | 52.21 | 74.00 | -21.79 | Pass |

**Note:** Peak level calculation: Final Peak level = analyzer level + correction factor.
Margin Calculation: Peak Margin = Peak Level – Peak Limit.

**Table 2.11-14 – Restricted Band Edge – Mobile Mark LTMG511 Antenna Low Channel – Average**

| Frequency (MHz) | Average Level (dBuV/m) | Average Limit (dBuV/m) | Average Margin (dB) | Average Result |
|---|---|---|---|---|
| 2390 | 47.83 | 54.00 | -6.17 | Pass |
| 2319.90 | 50.79 | 54.00 | -3.21 | Pass |

**Note:** Peak level calculation: Final Average level = analyzer level + correction factor.
Margin Calculation: Average Margin = Average Level – Average Limit.

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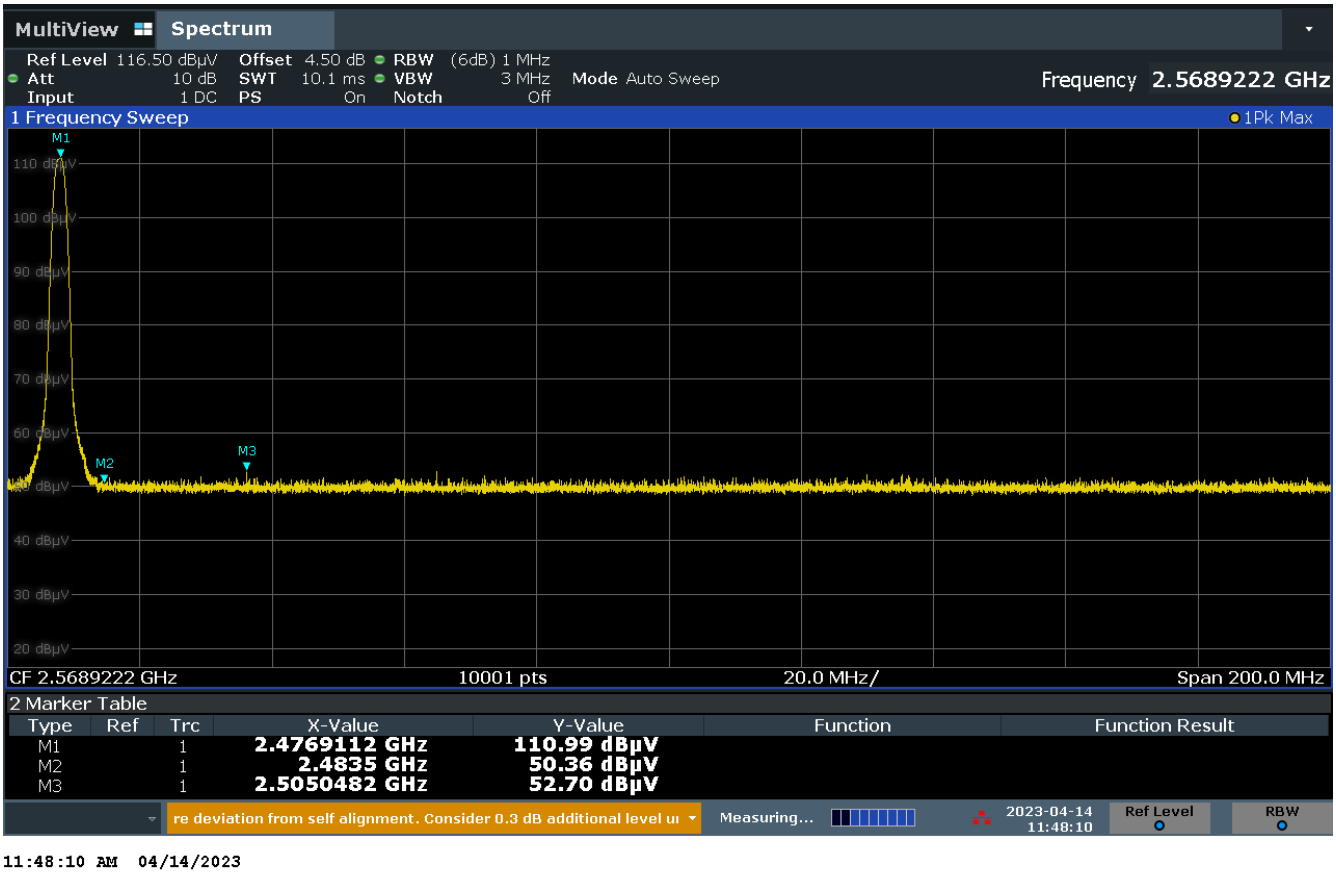


**Figure 2-110 – Band-edge, Mobile Mark LTMG511 Antenna High Channel – Peak**

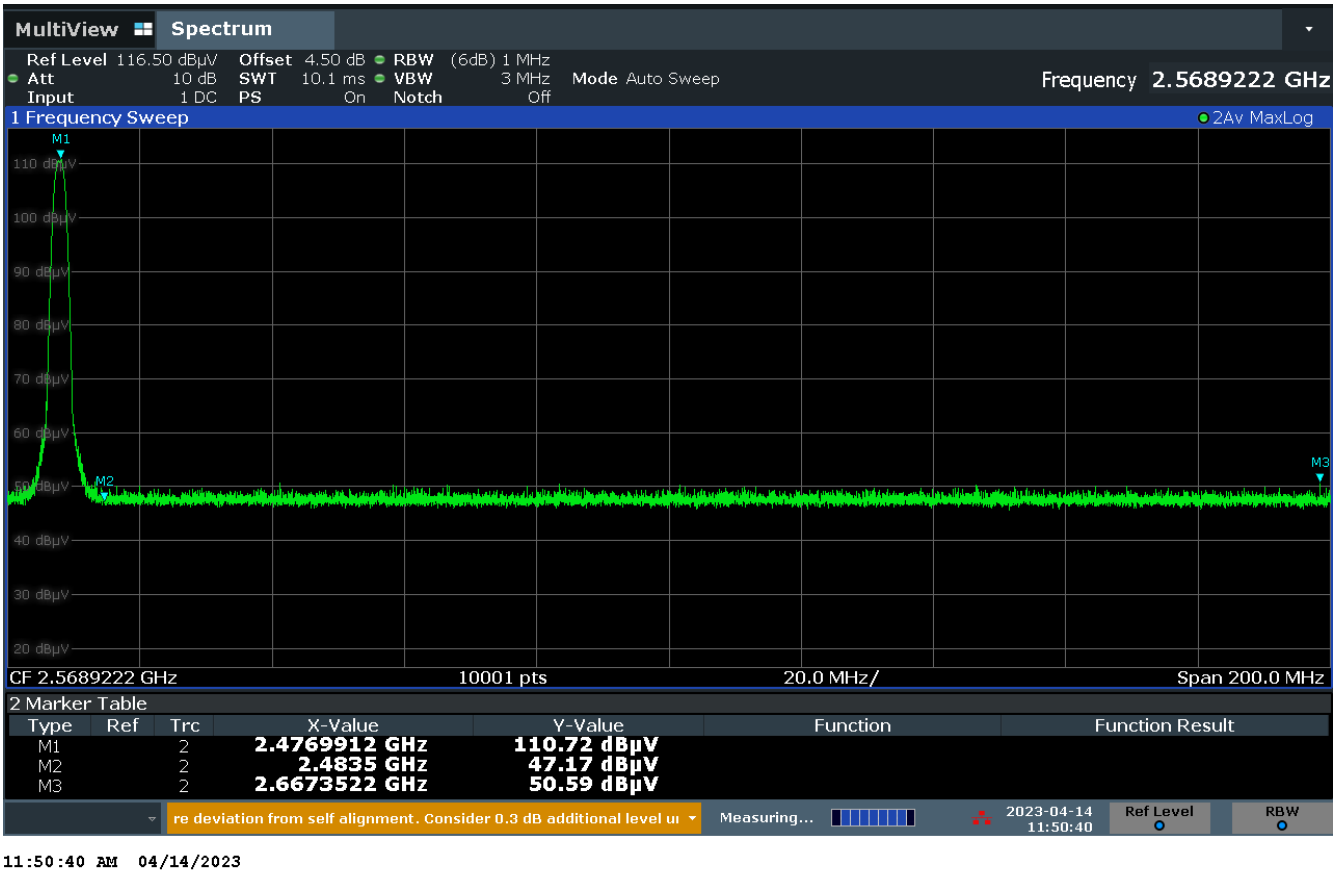


**Figure 2-111 – Band-edge, Mobile Mark LTMG511 Antenna High Channel – Average**

**Table 2.11-15 – Restricted Band Edge – Mobile Mark LTMG511 Antenna High Channel – Peak**

| Frequency (MHz) | Peak Level (dBuV/m) | Peak Limit (dBuV/m) | Peak Margin (dB) | Peak Result |
|---|---|---|---|---|
| 2483.5 | 50.36 | 74.00 | -23.64 | Pass |
| 2505.04 | 52.70 | 74.00 | -21.30 | Pass |

**Note:** Peak level calculation: Final Peak level = analyzer level + correction factor.
Margin Calculation: Peak Margin = Peak Level – Peak Limit.

**Table 2.11-16 – Restricted Band Edge – Mobile Mark LTMG511 Antenna High Channel – Average**

| Frequency (MHz) | Average Level (dBuV/m) | Average Limit (dBuV/m) | Average Margin (dB) | Average Result |
|---|---|---|---|---|
| 2483.5 | 47.17 | 54.00 | -6.83 | Pass |
| 2667.35 | 50.59 | 54.00 | -3.41 | Pass |

**Note:** Peak level calculation: Final Average level = analyzer level + correction factor.
Margin Calculation: Average Margin = Average Level – Average Limit.

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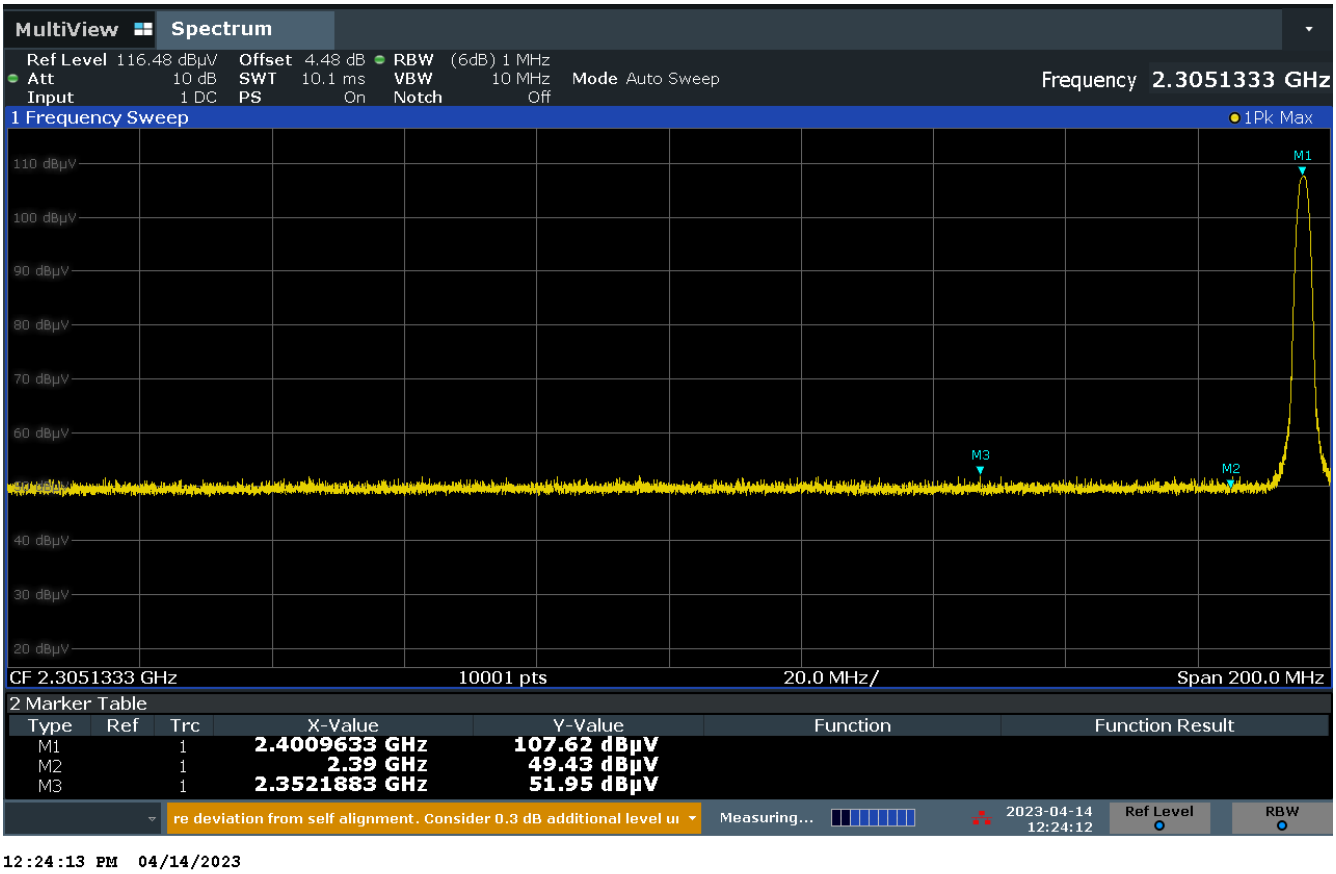


**Figure 2-112 – Band-Edge, Laird MAF94192 Antenna Low Channel – Peak**

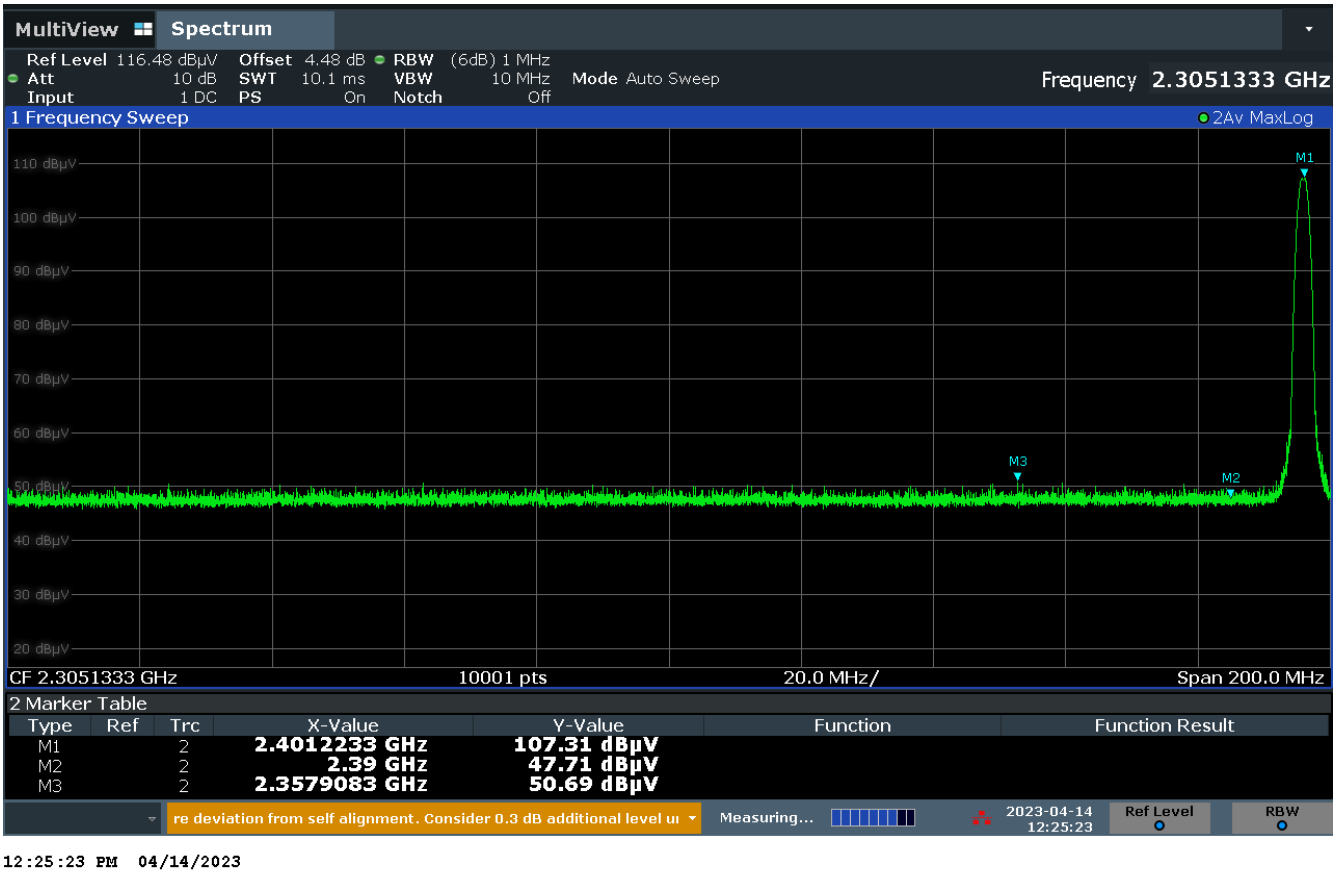


**Figure 2-113 – Band-Edge, Laird MAF94192 Antenna Low Channel – Average**

**Table 2.11-17 – Restricted Band Edge – Laird MAF94192 Antenna Low Channel – Peak**

| Frequency (MHz) | Peak Level (dBuV/m) | Peak Limit (dBuV/m) | Peak Margin (dB) | Peak Result |
|---|---|---|---|---|
| 2390 | 49.43 | 74.00 | -24.57 | Pass |
| 2352.18 | 51.95 | 74.00 | -22.05 | Pass |

**Note:** Peak level calculation: Final Peak level = analyzer level + correction factor.
Margin Calculation: Peak Margin = Peak Level – Peak Limit.

**Table 2.11-18 – Restricted Band Edge – Laird MAF94192 Antenna Low Channel – Average**

| Frequency (MHz) | Average Level (dBuV/m) | Average Limit (dBuV/m) | Average Margin (dB) | Average Result |
|---|---|---|---|---|
| 2390 | 47.71 | 54.00 | -6.29 | Pass |
| 2357.90 | 50.69 | 54.00 | -3.31 | Pass |

**Note:** Peak level calculation: Final Average level = analyzer level + correction factor.
Margin Calculation: Average Margin = Average Level – Average Limit.

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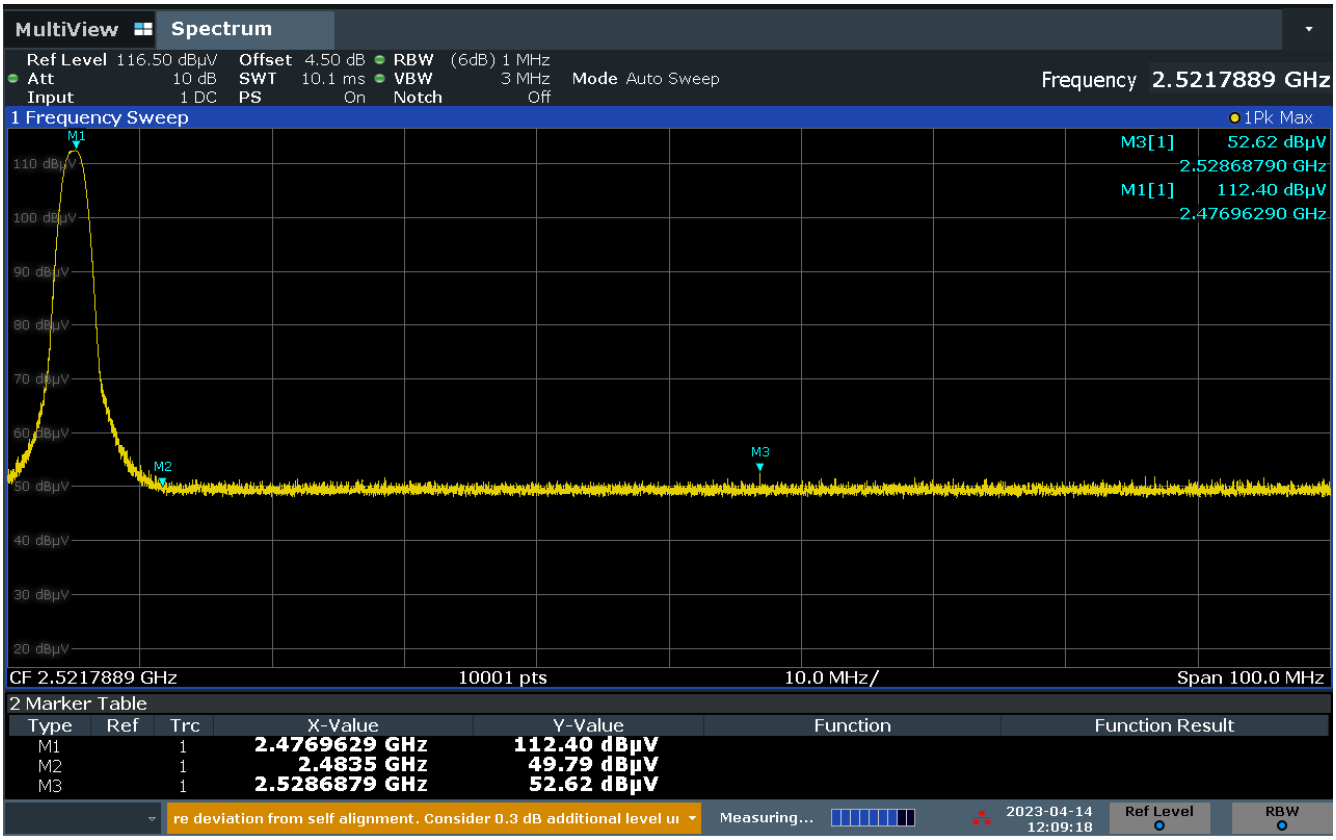


**Figure 2-114 – Band-edge, Laird MAF94192 Antenna High Channel – Peak**

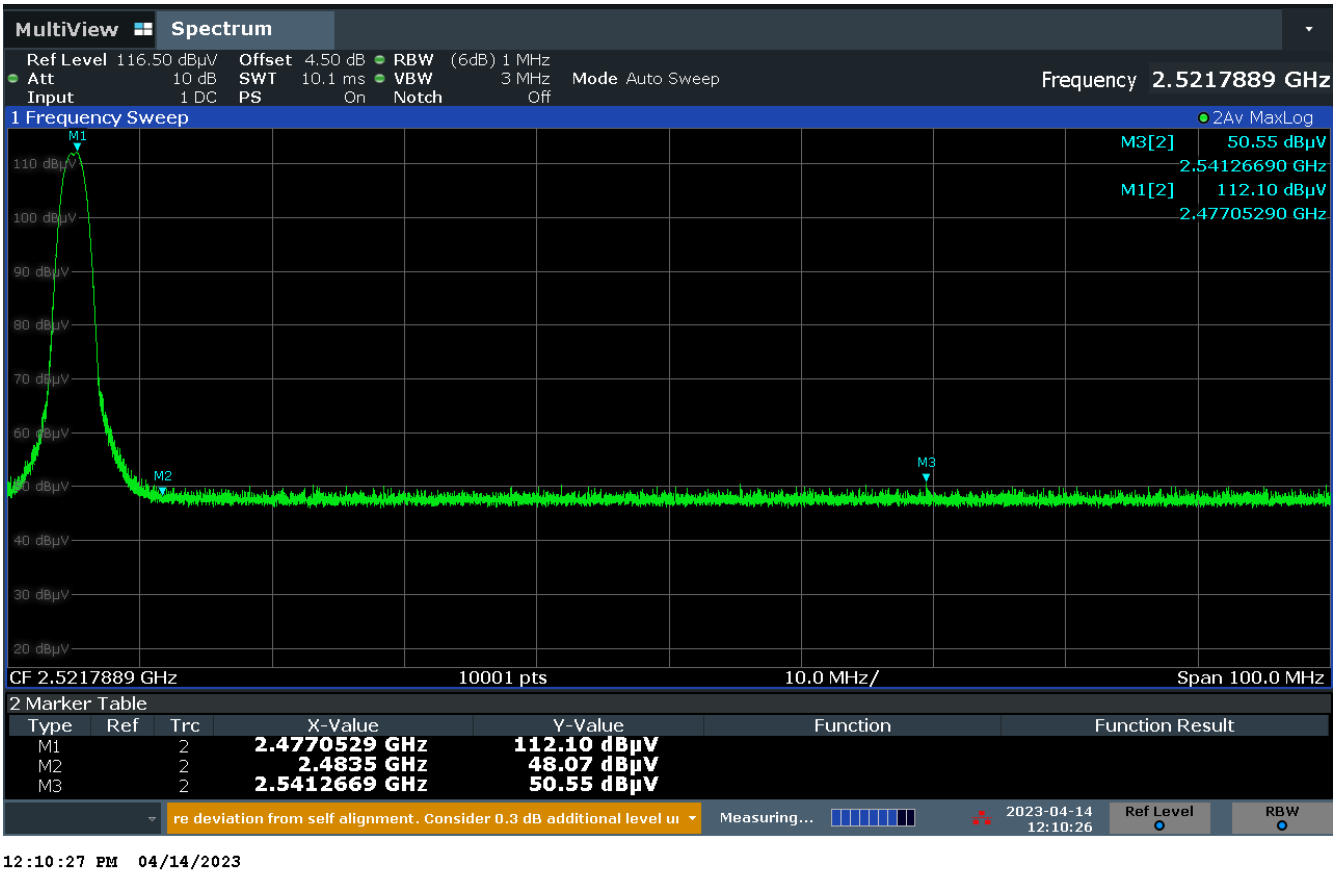


**Figure 2-115 – Band-edge, Laird MAF94192 Antenna High Channel – Average**

**Table 2.11-19 – Restricted Band Edge – Laird MAF94192 Antenna High Channel – Peak**

| Frequency (MHz) | Peak Level (dBuV/m) | Peak Limit (dBuV/m) | Peak Margin (dB) | Peak Result |
|---|---|---|---|---|
| 2483.5 | 49.79 | 74.00 | -24.21 | Pass |
| 2528.68 | 52.62 | 74.00 | -21.38 | Pass |

**Note:** Peak level calculation: Final Peak level = analyzer level + correction factor.
Margin Calculation: Peak Margin = Peak Level – Peak Limit.

**Table 2.11-20 – Restricted Band Edge – Laird MAF94192 Antenna High Channel – Average**

| Frequency (MHz) | Average Level (dBuV/m) | Average Limit (dBuV/m) | Average Margin (dB) | Average Result |
|---|---|---|---|---|
| 2483.5 | 48.07 | 54.00 | -5.93 | Pass |
| 2541.26 | 50.55 | 54.00 | -3.45 | Pass |

**Note:** Peak level calculation: Final Average level = analyzer level + correction factor.
Margin Calculation: Average Margin = Average Level – Average Limit.

### 2.11.7 Test Location and Test Equipment Used

The tests were carried out in New Brighton, MN.
Test Area: 3mSAC

**Table 2.11-21 – Restricted Band Edge Equipment List**

| Device # | Manufacturer | Description | Model | Serial # | Cal Code | Cal Date | Cal Due |
|---|---|---|---|---|---|---|---|
| WRLE11519 | Com-Power Corp. | Preamplifier, 500 MHz-18 GHz | PAM-118A | 18040002 | B | 01/23/2023 | 01/23/2024 |
| NBLE11630 | ETS-Lindgren | Antenna, 1-18 GHz | 3117 | 00218816 | G | 09/27/2022 | 09/27/2024 |
| NBLE11754 | Rohde & Schwarz | Receiver, 1 Hz-44 GHz | ESW44 | 103037 | G | 08/28/2022 | 08/28/2023 |

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.

# 3 Diagram of Test Setups

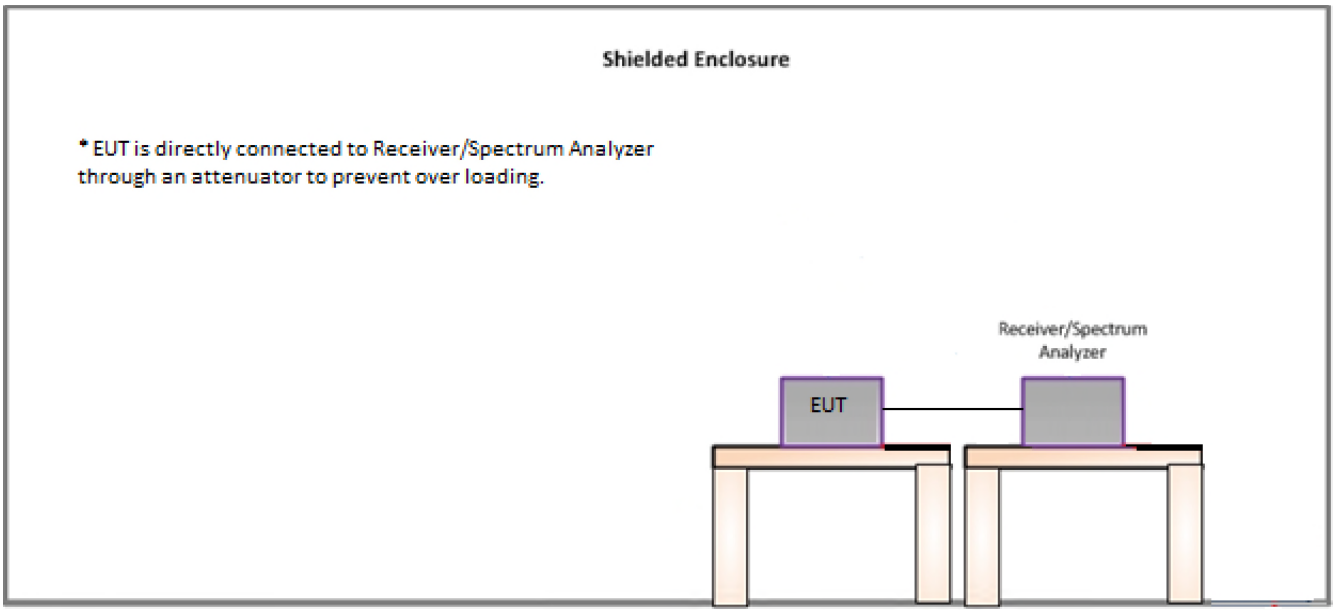


**Figure 3-1 – Conducted Test Setup**

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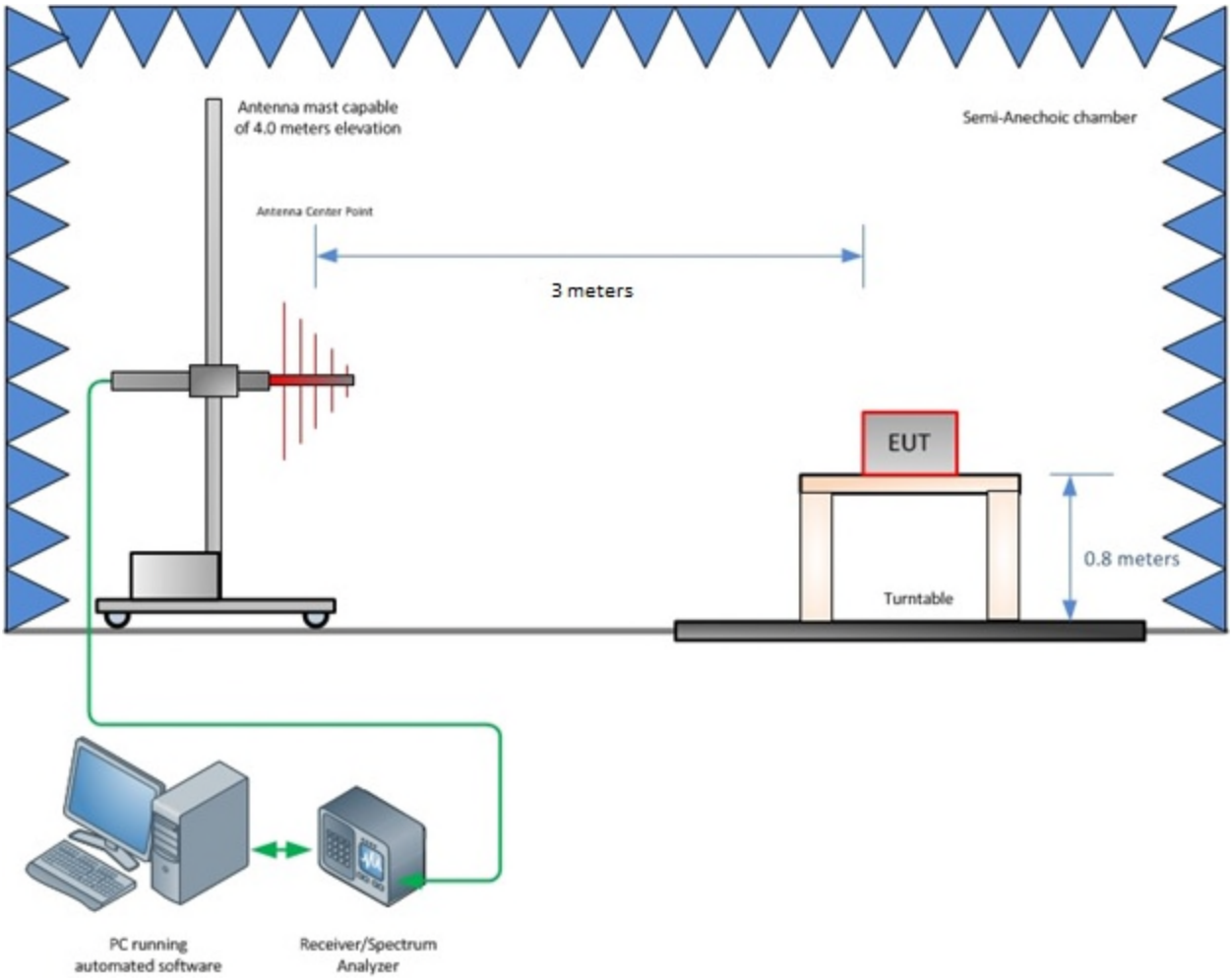


**Figure 3-2 – Radiated Emissions Test Setup up to 1 GHz**

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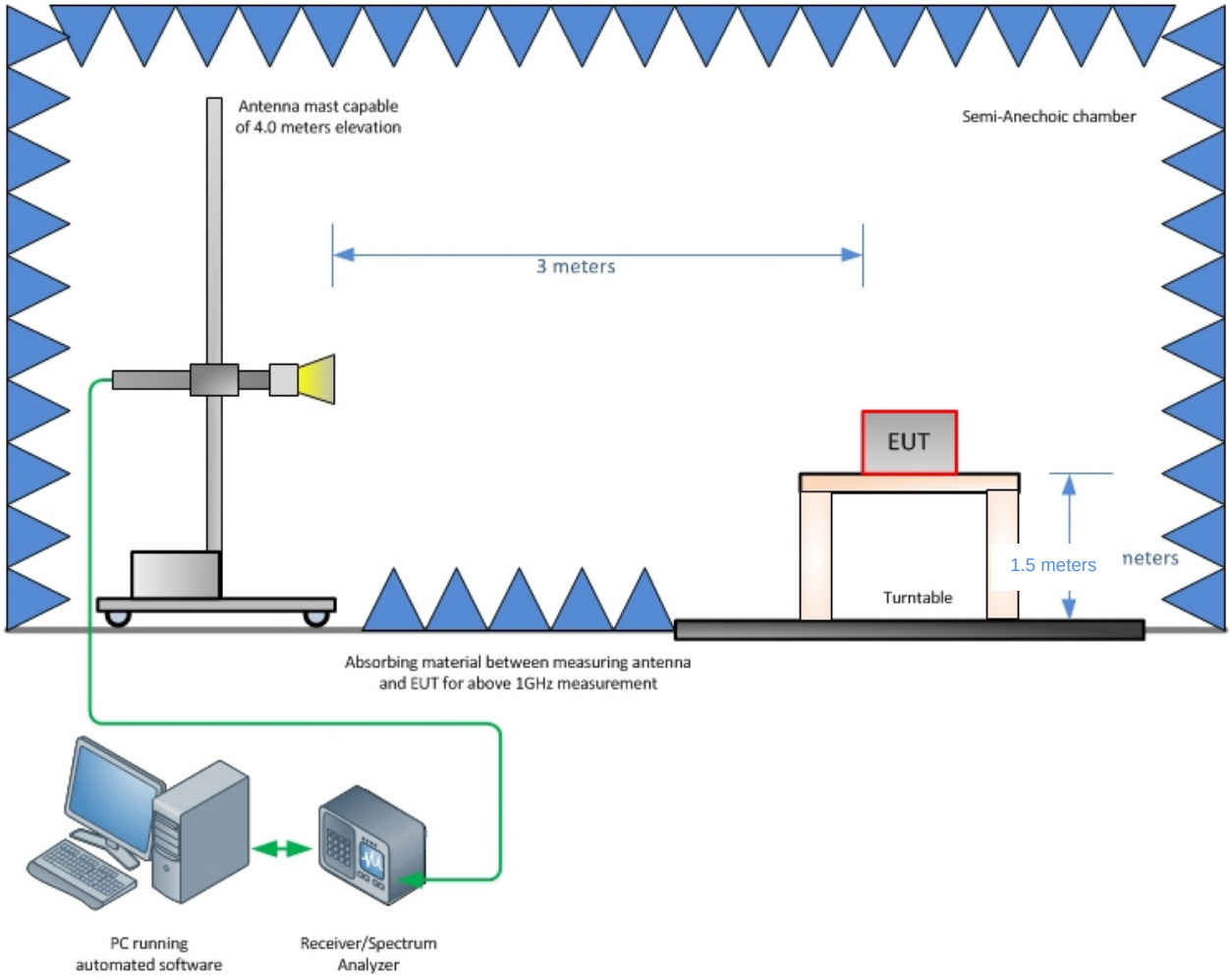


**Figure 3-3 – Radiated Emissions Test Setup above 1 GHz**

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**STATEMENT OF MEASUREMENT UNCERTAINTY – Emissions**

The test system for conducted emissions is defined as the LISN, tuned receiver or spectrum analyzer, and coaxial cable. This test system has a measurement uncertainty of ±3.30 dB. The test system for radiated emissions is defined as the antenna, the pre-amplifier, the spectrum analyzer and the coaxial cable. This test system for 30 MHz-1000 MHz has a measurement uncertainty of ±5.88 dB and above 1 GHz a measurement uncertainty of ±4.47 dB. The measurement uncertainty values for conducted and radiated emissions meet the requirements as expressed in CISPR 16-4-2. The equipment comprising the test systems is calibrated on an annual basis.

**TEST EQUIPMENT**

All measurement instrumentation is traceable to the National Institute of Standards and Technology and is calibrated to meet test method standard requirements and/or manufacturer's specifications

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