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CERTIFICATION TEST REPORT

Manufacturer: Runwise, Inc.
104 West 27th Street, Floor 3
New York, New York 10001 USA

Applicant: Same as Above

Product Name: Gen2 Wireless Network Module

Product Description: Serial UART to RF network interface, 2.4 GHz Bluetooth Radio

**Operating Voltage/Freq.
of EUT During Testing:** Module is DC powered at 3.3VDC nominal

Model: V3.1

FCC ID: 2AQX2-G2RWMOD

Testing Commenced: 2024-01-10

Testing Ended: 2024-01-17

Summary of Test Results: In Compliance

The EUT complies with the EMC requirements when manufactured identically as the unit tested in this report, including any required modifications and/or manufacturer's statement. Any changes to the design or build of this unit subsequent to this testing may deem it non-compliant.

Standards:

- ❖ FCC Part 15 Subpart C, Section 15.249
- ❖ FCC Part 15 Subpart C, Section 15.215(c) – Additional provisions to the general radiated emission limitations
- ❖ FCC Part 15 Subpart A, Section 15.31(e) – Measurement Standards
- ❖ FCC15.207 - Conducted Limits



Order No(s): F2P30751A-C2

Applicant: Runwise, Inc.
Model: V3.1

Evaluation Conducted by:

Julius Chiller, Senior Wireless Project Engineer

Report Reviewed by:

Ken Littell, Vice President of Operations

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TABLE OF CONTENTS

- 1 [ADMINISTRATIVE INFORMATION](#)
- 2 [SUMMARY OF TEST RESULTS/MODIFICATIONS](#)
- 3 [TABLE OF MEASURED RESULTS](#)
- 4 [ENGINEERING STATEMENT](#)
- 5 [EUT INFORMATION AND DATA](#)
- 6 [LIST OF MEASUREMENT INSTRUMENTATION](#)
- 7 [OCCUPIED BANDWIDTH](#)
- 8 [FIELD STRENGTH OF EMISSIONS / SPURIOUS EMISSIONS](#)
- 9 [VOLTAGE VARIATIONS](#)
- 10 [CONDUCTED EMISSIONS](#)
- 11 [PHOTOGRAPH\(S\) - TEST SETUPS](#)



Order No(s): F2P30751A-C2

Applicant: Runwise, Inc.
Model: V3.1

1 ADMINISTRATIVE INFORMATION

1.1 Measurement Location:

F2 Labs in Middlefield, Ohio. Site description and attenuation data are on file with the FCC's Sampling and Measurement Branch at the FCC Laboratory in Columbia, MD.

1.2 Measurement Procedure:

All measurements were performed according to ANSI C63.10 and recommended FCC procedure of measurement under Section 15.249. A list of the measurement equipment can be found in Section 6.

1.3 Uncertainty Budget:

The uncertainty in EMC measurements arises from several factors which affect the results, some associated with environmental conditions in the measurement room, the test equipment being used, and the measurement techniques adopted.

The measurement uncertainty budgets detailed below are calculated from the test and calibration data and are expressed with a 95% confidence factor using a coverage factor of $k=2$. The Uncertainty for a laboratory is referred to as U_{lab} . For Radiated and Conducted Emissions, the Expanded Uncertainty is compared to the U_{cispr} values to determine if a specific margin is required to deem compliance.

U_{lab}

| Measurement Range | Combined Uncertainty | Expanded Uncertainty |
|---|----------------------|----------------------|
| Radiated Emissions <1 GHz @ 3m | 2.54dB | 5.07dB |
| Radiated Emissions <1 GHz @ 10m | 2.55 dB | 5.09dB |
| Radiated Emissions 1 GHz to 2.7 GHz | 1.81 dB | 3.62dB |
| Radiated Emissions 2.7 GHz to 18 GHz | 1.55 dB | 3.10dB |
| AC Power Line Conducted Emissions, 150kHz to 30 MHz | 1.38 dB | 2.76dB |
| AC Power Line Conducted Emissions, 9kHz to 150kHz | 1.66 dB | 3.32dB |

U_{cispr}

| Measurement Range | Expanded Uncertainty |
|---|----------------------|
| Radiated Emissions <1 GHz @ 3m | 5.2dB |
| Radiated Emissions <1 GHz @ 10m | 5.2dB |
| Radiated Emissions 1 GHz to 2.7 GHz | Under Consideration |
| Radiated Emissions 2.7 GHz to 18 GHz | Under Consideration |
| AC Power Line Conducted Emissions, 150kHz to 30 MHz | 3.6dB |
| AC Power Line Conducted Emissions, 9kHz to 150kHz | 4.0dB |

If U_{lab} is less than or equal to U_{cispr} , then:

- compliance is deemed to occur if no measured disturbance exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance exceeds the disturbance limit.

If U_{lab} is greater than U_{cispr} in table 1, then:

- compliance is deemed to occur if no measured disturbance, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit.

Note: Only measurements listed in the tables above that relate to tests included in this Test Report are applicable.



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Model: V3.1

1.4 Document History:

| Document Number | Description | Issue Date | Approved By |
|------------------|-------------|------------|-------------|
| F2P30751A-C2-02E | First Issue | 2024-02-05 | K. Littell |



Order No(s): F2P30751A-C2

Applicant: Runwise, Inc.
Model: V3.1

2 SUMMARY OF TEST RESULTS

| Test Name | Standard(s) | Results |
|------------------------------|--------------------------|----------|
| 99% Occupied Bandwidth | CFR 47 Part 15.215(c) | Complies |
| -20dB Occupied Bandwidth | CFR 47 Part 15.215(c) | Complies |
| Field Strength of Emissions | CFR 47 Part 15.249(a)(d) | Complies |
| Variation of the Input Power | CFR 47 Part 15.31(e) | Complies |
| Conducted Emissions | CFR 47 Part 15.207(a) | Complies |

| Modifications Made to the Equipment |
|-------------------------------------|
| None |

| Power Setting |
|---------------|
| 8 |



Order No(s): F2P30751A-C2

Applicant: Runwise, Inc.
Model: V3.1

3 TABLE OF MEASURED RESULTS

| Test | | Low Channel 2402 MHz | Mid Channel 2440 MHz | High Channel 2480 MHz |
|---------------------------------------|----------------------|---|---|---|
| Average Field Strength of Fundamental | Modulation: 1Mbps | 79.9 dB μ V/m / 9.8 mV/m | 78.7 dB μ V/m / 8.6 mV/m | 78.0 dB μ V/m / 7.9 mV/m |
| Average Field Strength of Fundamental | Modulation: 2Mbps | 76.2 dB μ V/m / 6.4 mV/m | 74.2 dB μ V/m / 5.1 mV/m | 73.9 dB μ V/m / 5.0 mV/m |
| Average Limit for Fundamental | | 50 millivolts/meter / 93.97 dB μ V/m | 50 millivolts/meter / 93.97 dB μ V/m | 50 millivolts/meter / 93.97 dB μ V/m |
| -20dB Occupied Bandwidth | 1Mbps | 1.192 MHz | 1.158 MHz | 1.186 MHz |
| | 2Mbps | 2.364 MHz | 2.349 MHz | 2.328 MHz |
| 99% Occupied Bandwidth | 1Mbps | 1.052 MHz | 1.043 MHz | 1.052 MHz |
| | 2Mbps | 2.089 MHz | 2.045 MHz | 2.057 MHz |
| Voltage Variations | Modulation: 1Mbps | -15% | 79.3 dB μ V/m | -- |
| | | +15% | 80.0 dB μ V/m | -- |
| | Modulation: 2Mbps | -15% | 76.1 dB μ V/m | -- |
| | | +15% | 76.6 dB μ V/m | -- |

*To meet the requirements of 15.31 the maximum voltage used is the manufacturer's specified limit. The minimum voltage of 2.7VDC is 0.1VDC above turn off.



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Model: V3.1

4 ENGINEERING STATEMENT

This report has been prepared on behalf of Runwise, Inc. to provide documentation for the testing described herein. This equipment has been tested and found to comply with part 15.249 of the FCC Rules using ANSI C63.10 standard. The test results found in this test report relate only to the items tested.



Order No(s): F2P30751A-C2

Applicant: Runwise, Inc.
Model: V3.1

5 EUT INFORMATION AND DATA

5.1 Equipment Under Test:

Product: Gen2 Wireless Network Module - 2.4 GHz Bluetooth Radio

Model: V3.1

Serial No.: 120

Firmware: V1.0

Hardware: V3.1

FCC ID: 2AQX2-G2RWMOD

5.2 Trade Name:

Runwise, Inc.

5.3 Power Supply:

Module is DC powered at 3.3VDC nominal

5.4 Applicable Rules:

CFR 47, Part 15.249, subpart C

5.5 Antenna:

Integral Chip Antenna

5.6 Accessories:

| Device | Manufacturer | Model Number | Serial Number |
|-----------------------------|-------------------|--------------|---------------|
| Test Fixture | Texas Instruments | CC1350 | Rev1.3.0 |
| Accessory Software Version: | | FW Rev:1.0 | |

5.7 Test Item Condition:

The equipment to be tested was received in good condition.

5.8 Testing Algorithm:

EUT was set to transmit a continuous modulated signal in the 2.4 GHz BLE band. Measurements were taken on low (2402 MHz), mid (2440 MHz) and high (2480 MHz) channels using 1Mbps and 2Mbps modulations.



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Model: V3.1

6 LIST OF MEASUREMENT INSTRUMENTATION

| Equipment Type | Asset Number | Manufacturer | Model | Serial Number | Calibration Due Date |
|--------------------------|------------------------|--------------------|------------------------------|---|----------------------|
| Shielded Chamber | CL166-E | Albatross Projects | B83117-DF435-T261 | US140023 | 2024-11-15 |
| Receiver | CL151 | Rohde & Schwarz | ESU40 | 100319 | 2025-04-09 |
| Low Loss Cable Set | CL315 / CL318 | Fairview Microwave | FMC0202914-72/FMC0202914-240 | None Spec. | 2024-04-14 |
| Horn Antenna | CL098 | Emco | 3115 | 9809-5580 | 2024-01-19 |
| Horn Antenna 18-26.5 GHz | CL114 | A.H. Systems, Inc. | SAS-572 | 237 | 2024-01-19 |
| Preamplifier | CL284 | A.H. Systems, Inc. | PAM-1001 | 131 | 2025-04-10 |
| Active 18" Loop Antenna | CL163-Loop | A.H. Systems, Inc. | EHA-52B | 100 | 2024-12-14 |
| Antenna, JB3 Combination | CL175 | Sunol Sciences | JB3 | A030315 | 2024-09-25 |
| Pre-Amplifier | CL153 | Agilent | 83006-69007 | MY57280115 | 2024-11-14 |
| Software: | Tile Version 3.4.B.3 | | | Software Verified: 2024-01-11 to 2024-01-17 | |
| Software: | EMC 32, Version 8.53.0 | | | Software Verified: 2024-01-11 to 2024-01-17 | |
| Temp/Hum. Recorder | CL293 | Thermpro | TP50 | 1 | 2025-05-31 |



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7 FCC PART 15.215(e), OCCUPIED BANDWIDTH

7.1 Requirements:

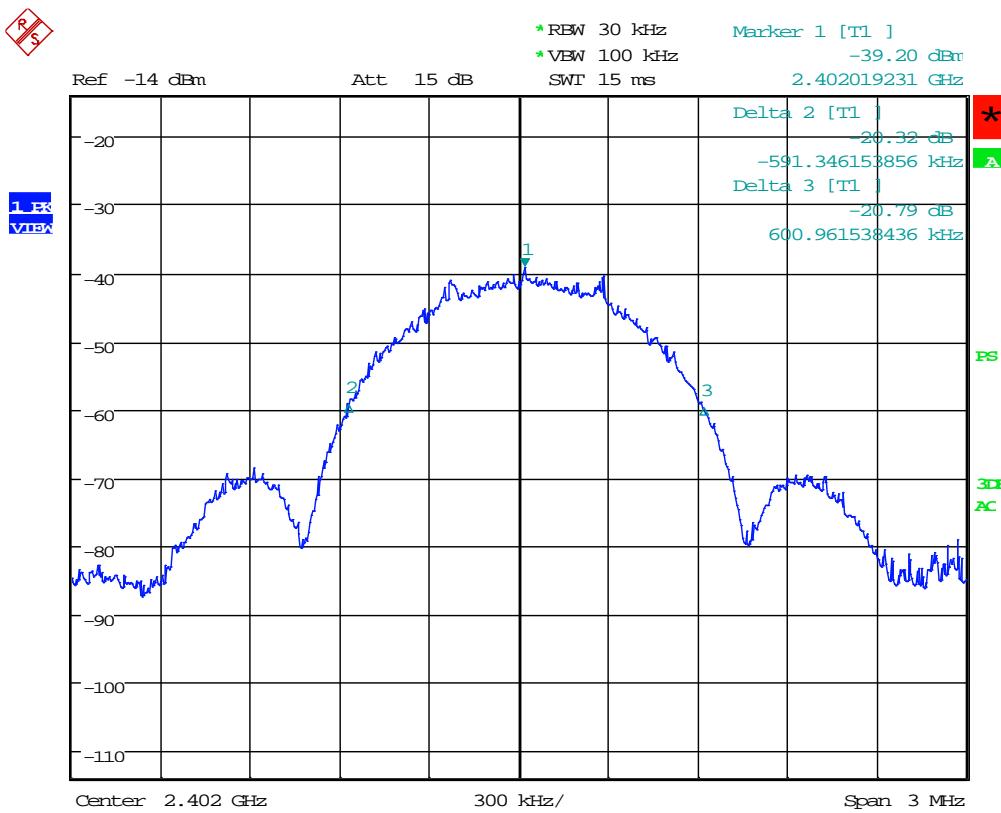
Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the -20dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage.

Bandwidth measurements were made at the low (2.402 GHz), mid (2.440 GHz) and upper (2.480 GHz) frequencies. The bandwidth was measured using the marker delta method.

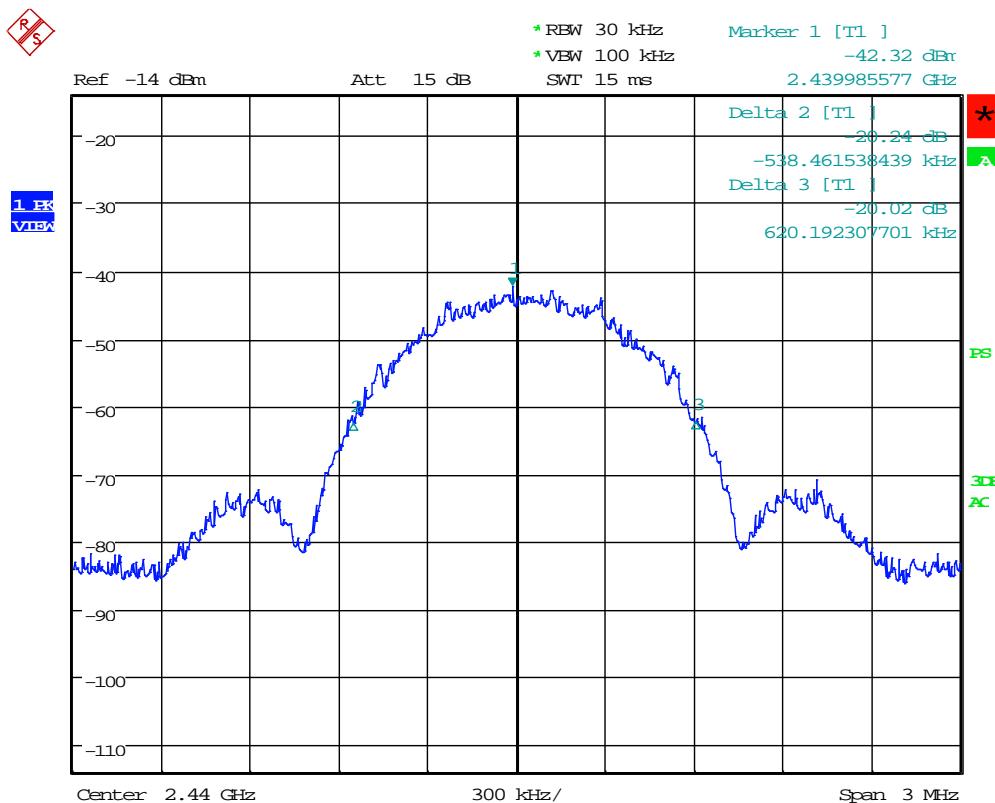
7.2 Occupied Bandwidth Test Data

| | | | |
|---------------|-----------------------|--------------------|------------|
| Test Date(s): | 2024-01-10 | Test Engineer(s): | J. Chiller |
| Standards: | CFR 47 Part 15.215(c) | Air Temperature: | 20.8°C |
| | | Relative Humidity: | 39% |

1Mbps: -20dB, Low Channel

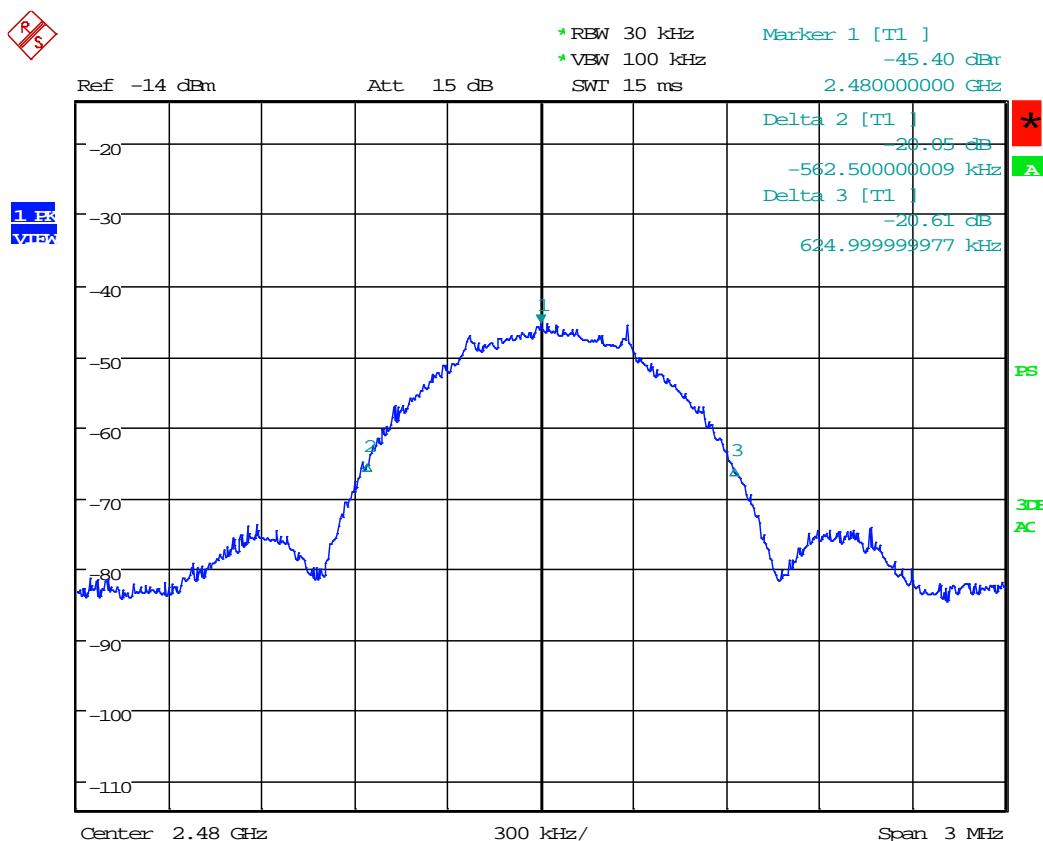


1Mbps: -20dB, Mid Channel



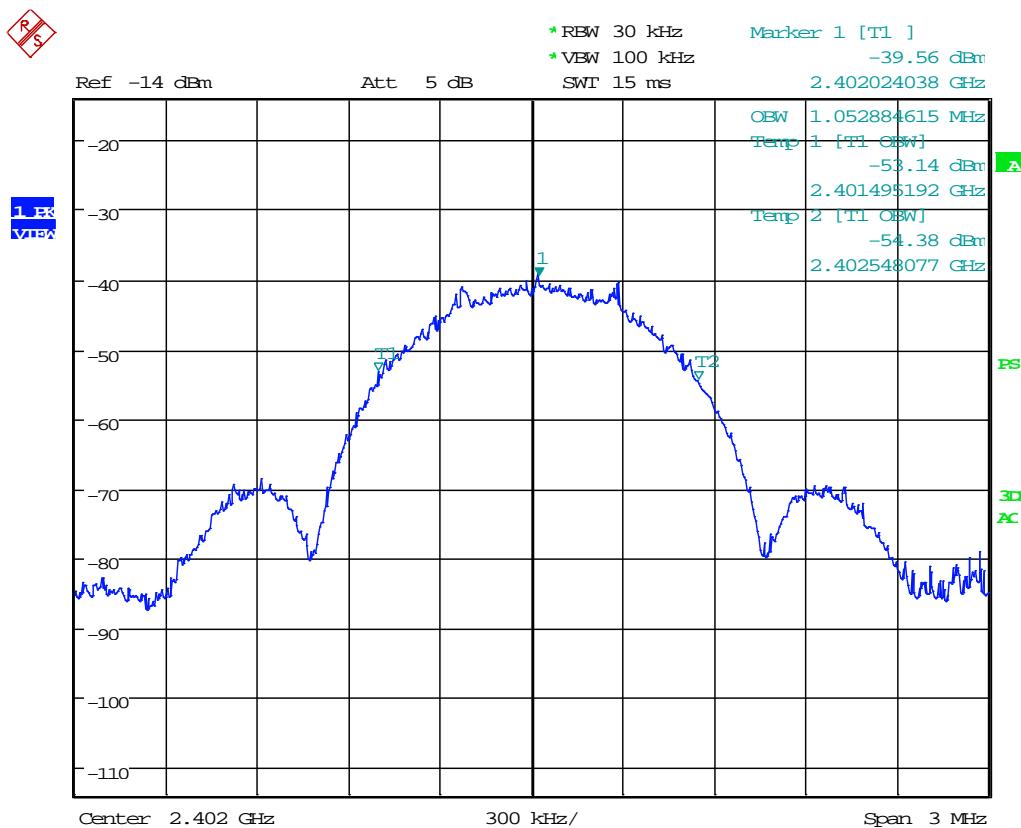
Date: 10.JAN.2024 09:20:27

1Mbps: -20dB, High Channel



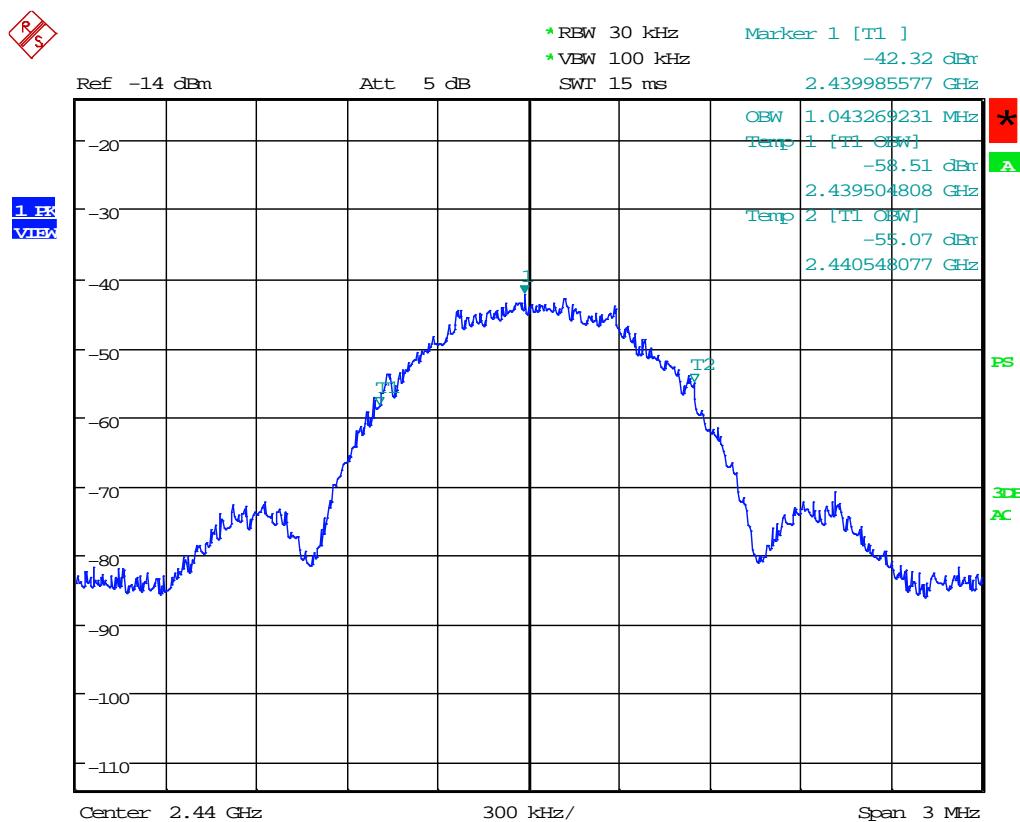
Date: 10.JAN.2024 09:22:37

1Mbps: 99%, Low Channel



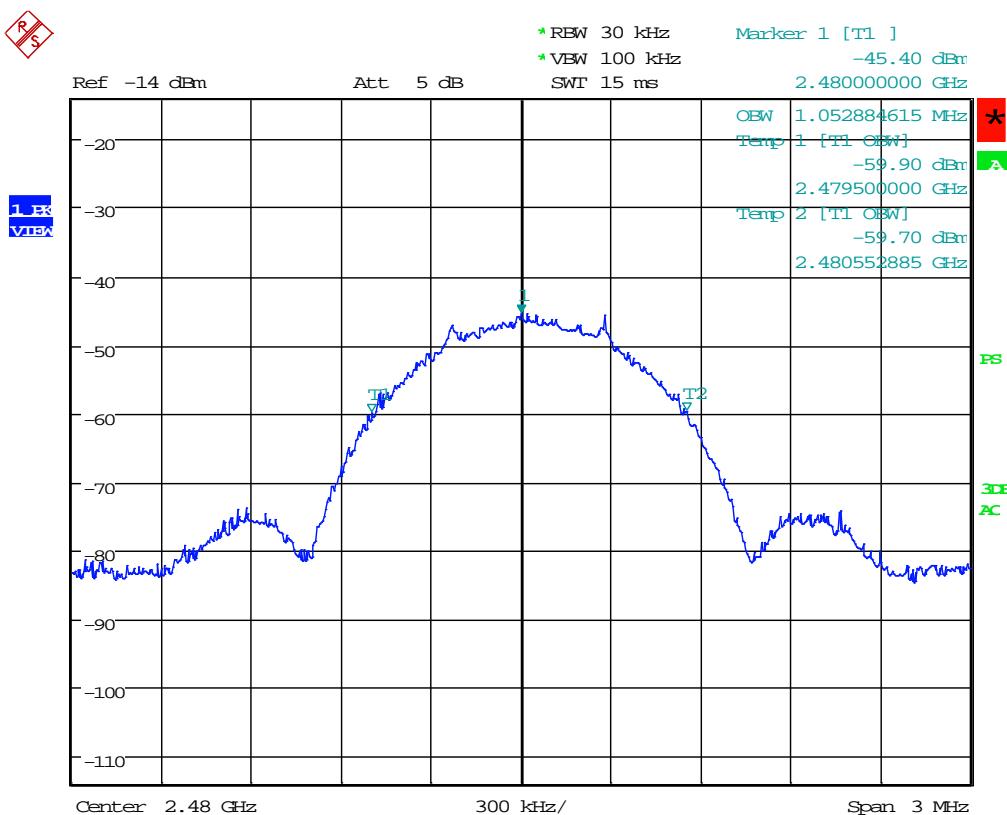
Date: 10.JAN.2024 09:13:24

1Mbps: 99%, Mid Channel

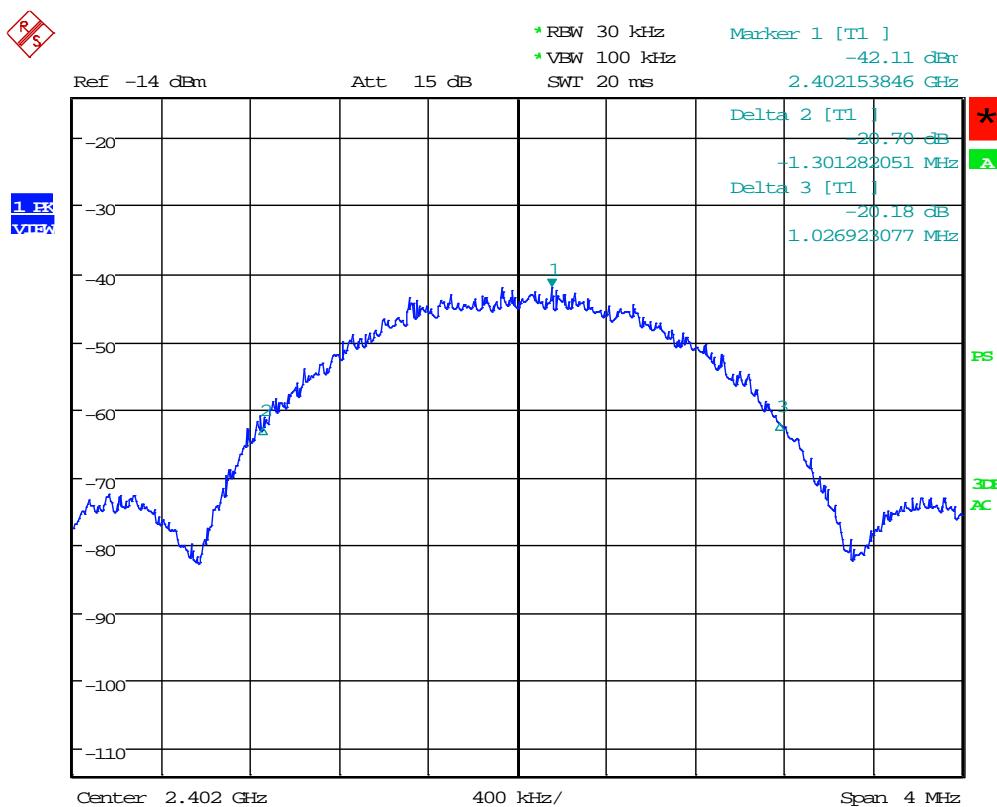


Date: 10.JAN.2024 09:19:13

1Mbps: 99%, High Channel

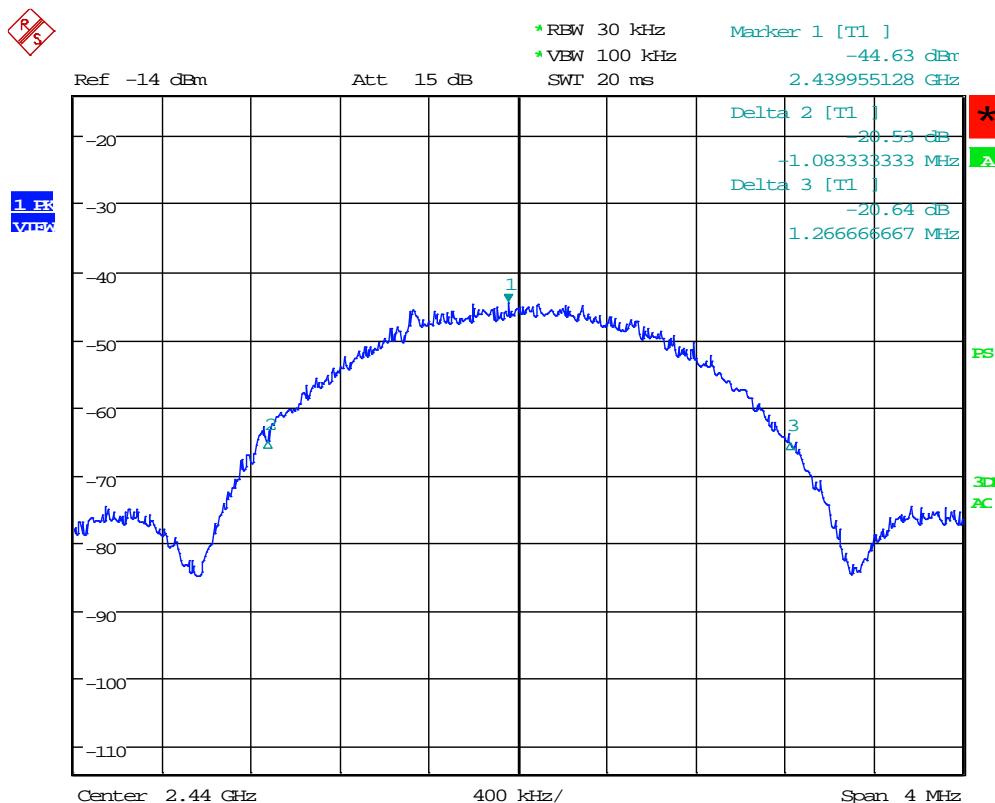


2Mbps: -20dB, Low Channel



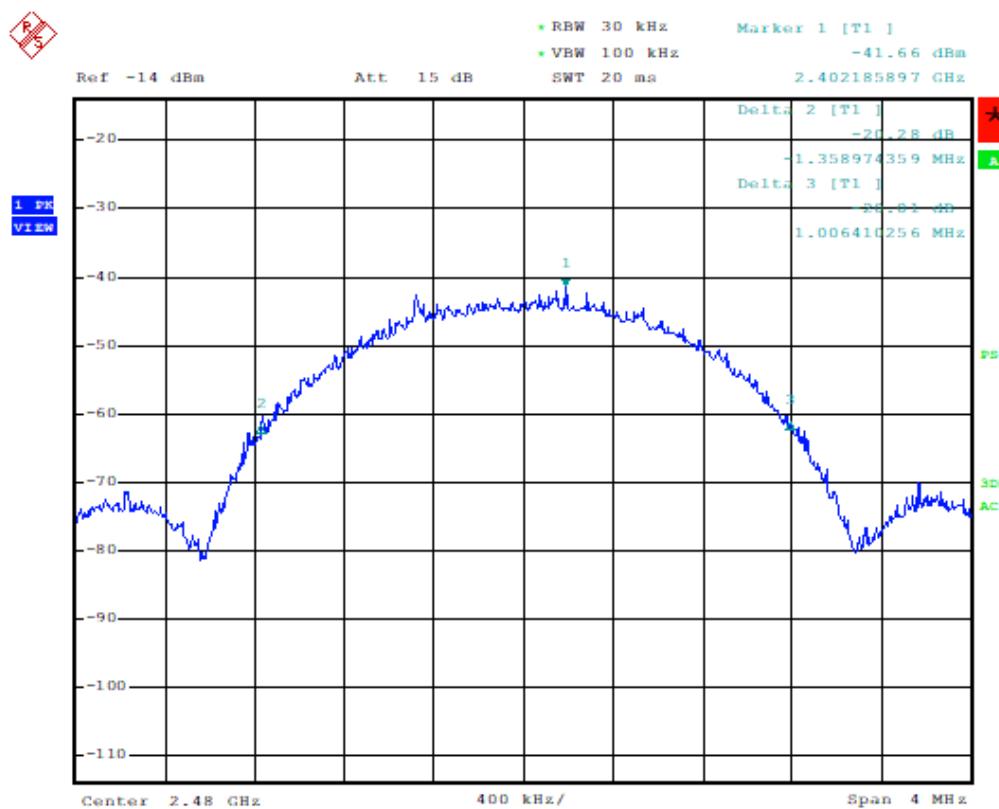
Date: 10.JAN.2024 09:33:15

2Mbps: -20dB, Mid Channel



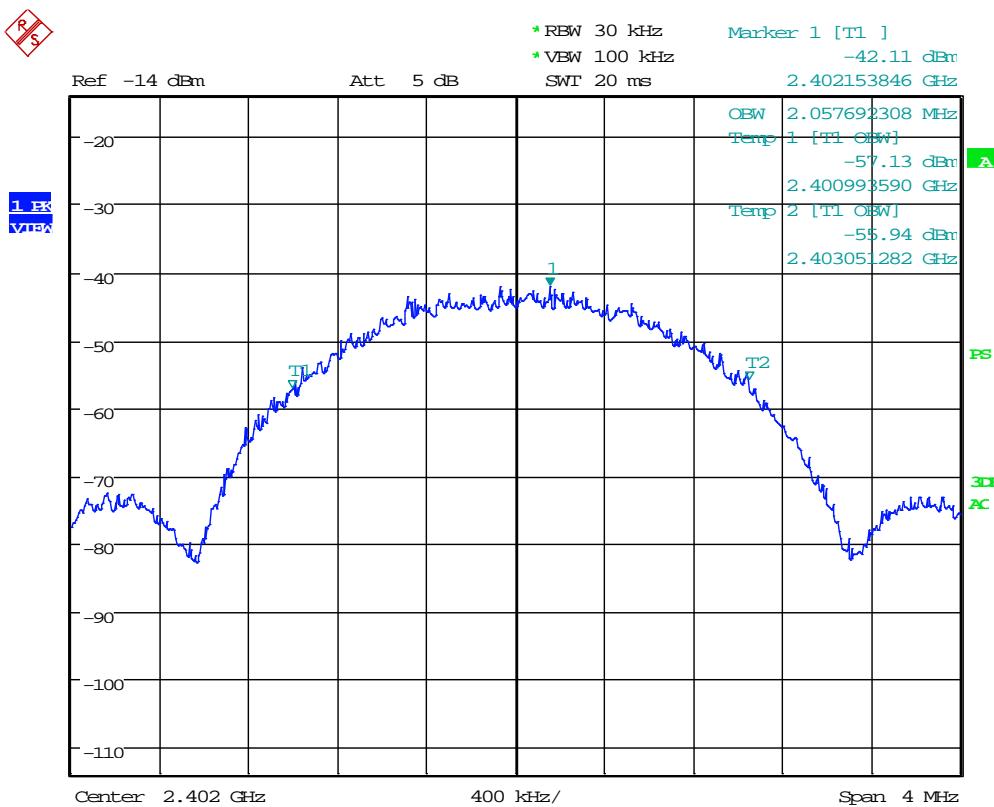
Date: 10.JAN.2024 09:31:03

2Mbps: -20dB, High Channel

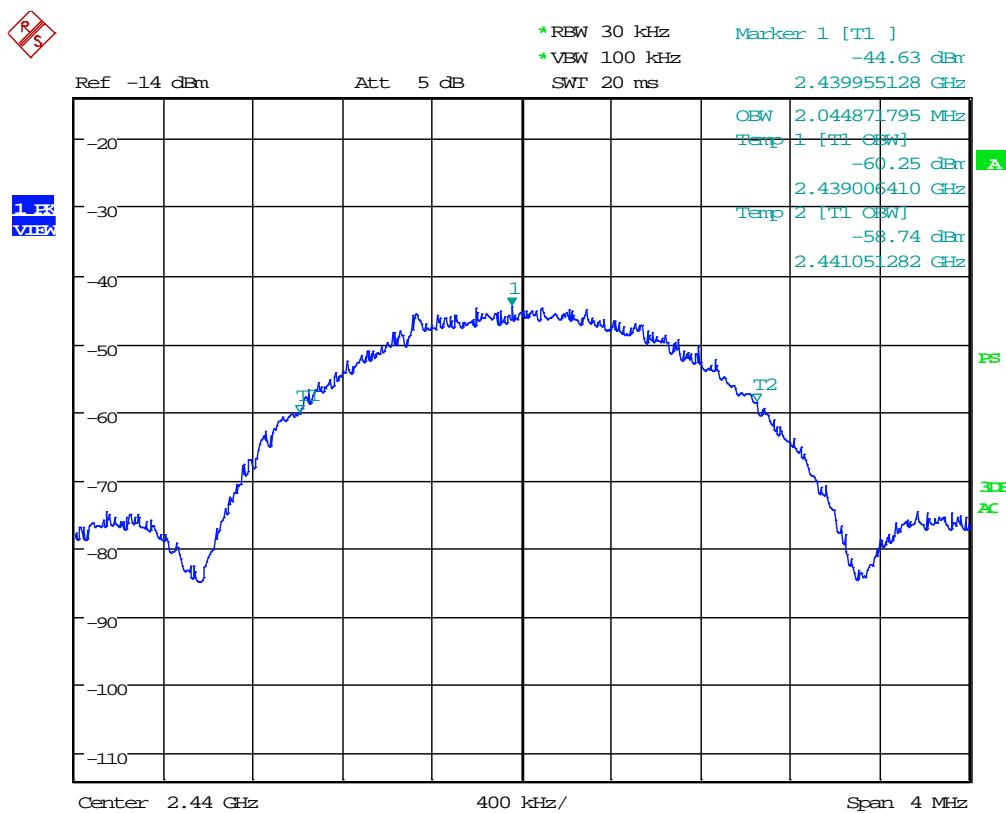


Date: 10.JAN.2024 09:27:11

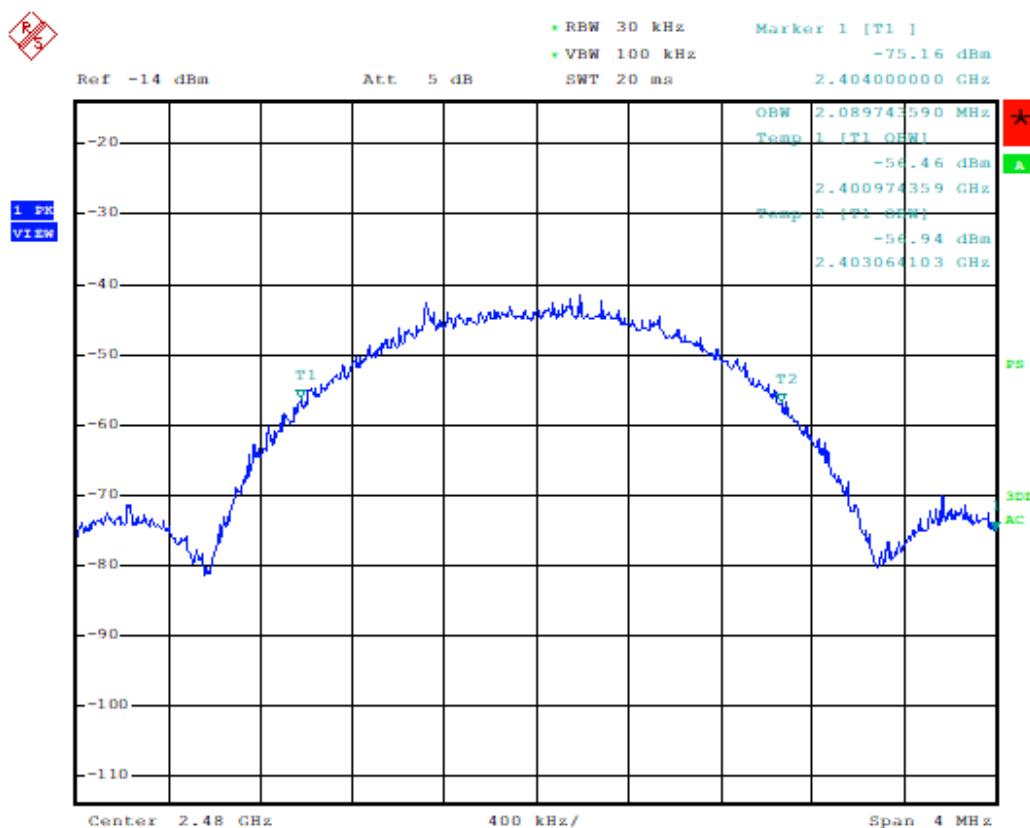
2Mbps: 99%, Low Channel



Date: 10.JAN.2024 09:32:32

2Mbps: 99%, Mid Channel

Date: 10.JAN.2024 09:30:19

2Mbps: 99%, High Channel

Date: 10.JAN.2024 09:26:25

8 FIELD STRENGTH OF EMISSIONS FROM INTENTIONAL RADIATORS

(a) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

| Fundamental Frequency | Field Strength of Fundamental (millivolts/meter) | Field Strength of Harmonics (microvolts/meter) |
|-----------------------|--|--|
| 902-928 MHz | 50 | 500 |
| 2400-2483.5 MHz | 50 | 500 |
| 5725-5875 MHz | 50 | 500 |
| 24.0-24.25 GHz | 250 | 2500 |

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

NOTE: During the pre-scan evaluation, the EUT was rotated in all possible directions to find the maximum emissions. The orthogonal position that showed the highest emissions was used. The antenna was raised between 1 and 4 meters and the EUT turntable was rotated 360 degrees to maximize the emissions.

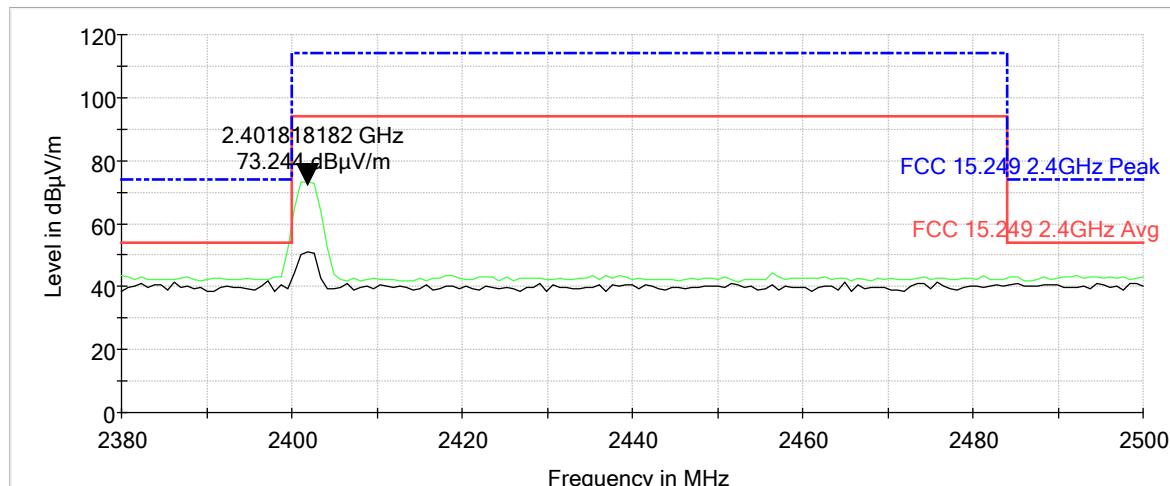
Note: Plots below are peak, max-hold pre-scan data included only to determine which frequencies to investigate and measure. The blue limit line is the Peak limit line which emissions on the graph do not exceed, and the table of FINAL measurements on pages 28 and 31 show compliance.

Power setting of 8 in the client's software was used.

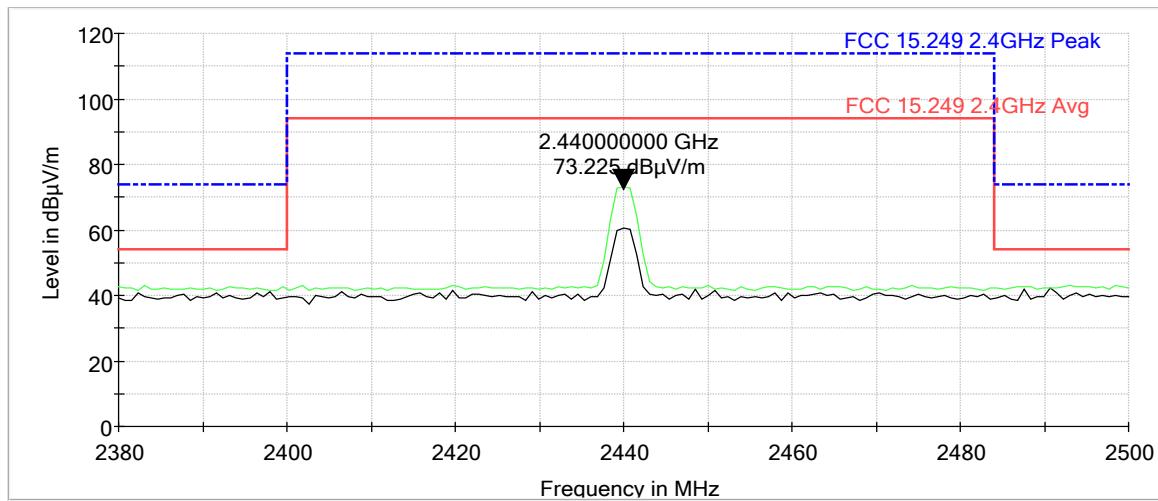
8.1 Test Data - Field Strength of Emissions from Intentional Radiators

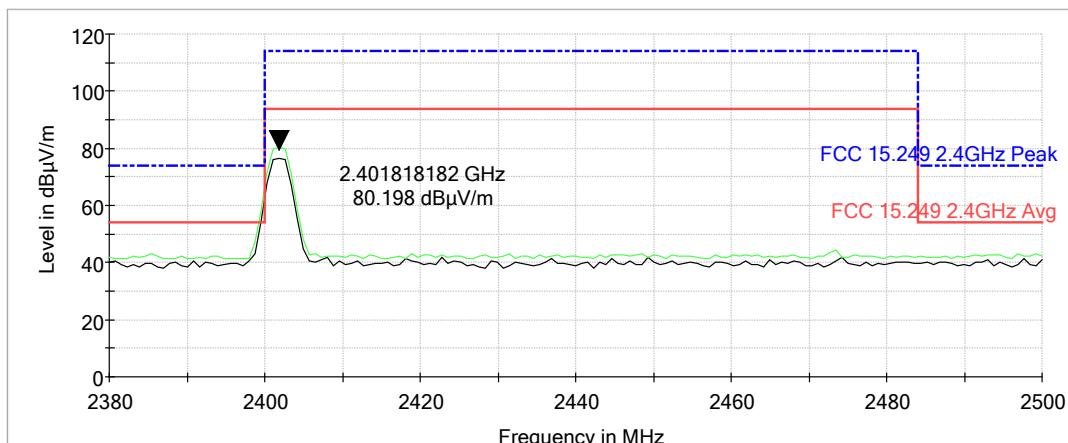
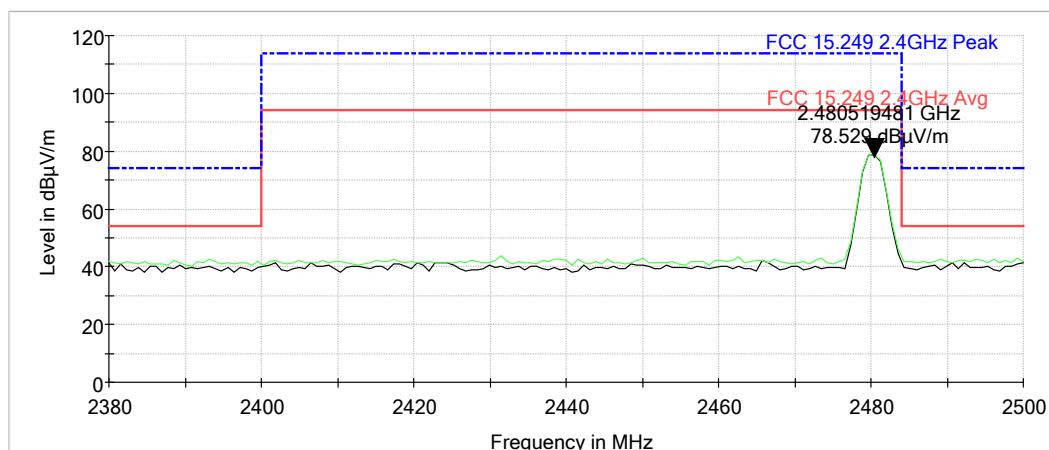
| | | | |
|---------------|-----------------------|--------------------|------------|
| Test Date(s): | 2024-01-17 | Test Engineer(s): | J. Chiller |
| Standards: | CFR 47 Part 15.249(a) | Air Temperature: | 21.3°C |
| | | Relative Humidity: | 38% |

1Mbps: Low Band Edge - Vertical



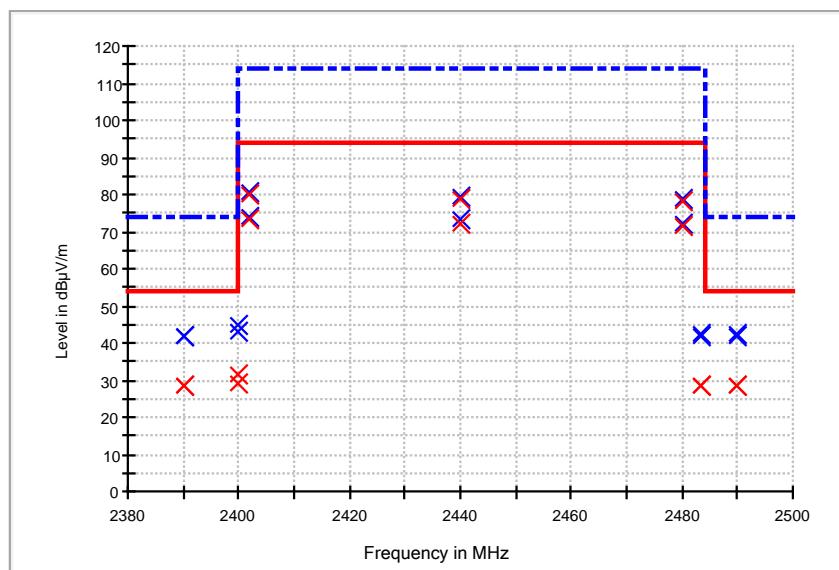
1Mbps: Mid Channel - Vertical



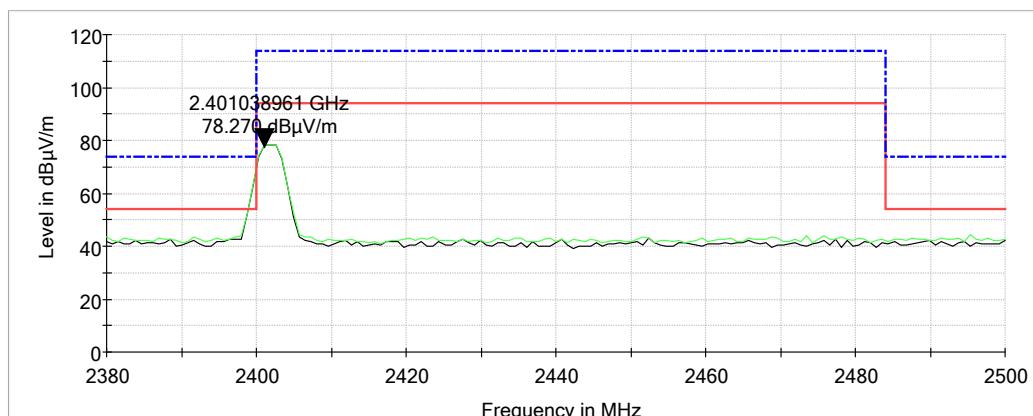
1Mbps: Lower Band Edge - Horizontal**1Mbps: Upper Band Edge - Horizontal**

1Mbps: Band Edge and Field Strength of the Fundamentals

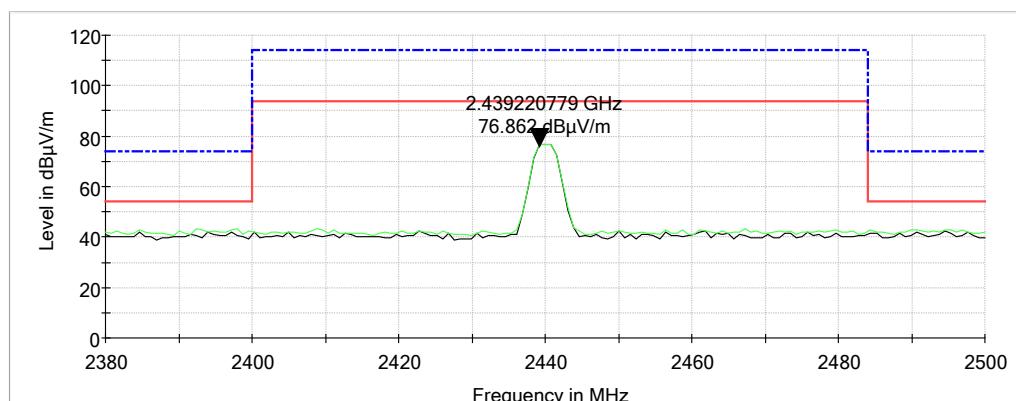
| Frequency (MHz) | MaxPeak (dB μ V/m) | Average (dB μ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin - AVG (dB) | Limit - AVG (dB μ V/m) |
|-----------------|------------------------|------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------------|----------------------------|
| 2390.000000 | 41.5 | 28.3 | 1000.0 | 1000.000 | 160.0 | H | 143.0 | 6.9 | 25.7 | 54.0 |
| 2390.000000 | 41.9 | 28.3 | 1000.0 | 1000.000 | 150.0 | V | 0.0 | 6.9 | 25.7 | 54.0 |
| 2400.000000 | 45.1 | 31.5 | 1000.0 | 1000.000 | 160.0 | H | 143.0 | 6.9 | 22.5 | 54.0 |
| 2400.000000 | 42.9 | 28.9 | 1000.0 | 1000.000 | 150.0 | V | 0.0 | 6.9 | 25.1 | 54.0 |
| 2402.000000 | 74.2 | 73.2 | 1000.0 | 1000.000 | 176.0 | V | 227.0 | 6.9 | 20.8 | 94.0 |
| 2402.000000 | 80.9 | 79.9 | 1000.0 | 1000.000 | 160.0 | H | 143.0 | 6.9 | 14.1 | 94.0 |
| 2440.000000 | 79.7 | 78.7 | 1000.0 | 1000.000 | 180.0 | H | 155.0 | 6.9 | 15.3 | 94.0 |
| 2440.000000 | 73.1 | 72.2 | 1000.0 | 1000.000 | 207.0 | V | 233.0 | 6.9 | 21.8 | 94.0 |
| 2480.000000 | 72.2 | 71.3 | 1000.0 | 1000.000 | 150.0 | V | 232.0 | 6.9 | 22.7 | 94.0 |
| 2480.000000 | 78.9 | 78.0 | 1000.0 | 1000.000 | 150.0 | H | 150.0 | 6.9 | 16.0 | 94.0 |
| 2483.500000 | 41.6 | 28.4 | 1000.0 | 1000.000 | 150.0 | V | 232.0 | 6.9 | 25.6 | 54.0 |
| 2483.500000 | 42.2 | 28.6 | 1000.0 | 1000.000 | 150.0 | H | 150.0 | 6.9 | 25.4 | 54.0 |
| 2490.000000 | 41.7 | 28.7 | 1000.0 | 1000.000 | 150.0 | V | 232.0 | 7.0 | 25.3 | 54.0 |
| 2490.000000 | 42.6 | 28.8 | 1000.0 | 1000.000 | 150.0 | H | 150.0 | 7.0 | 25.2 | 54.0 |



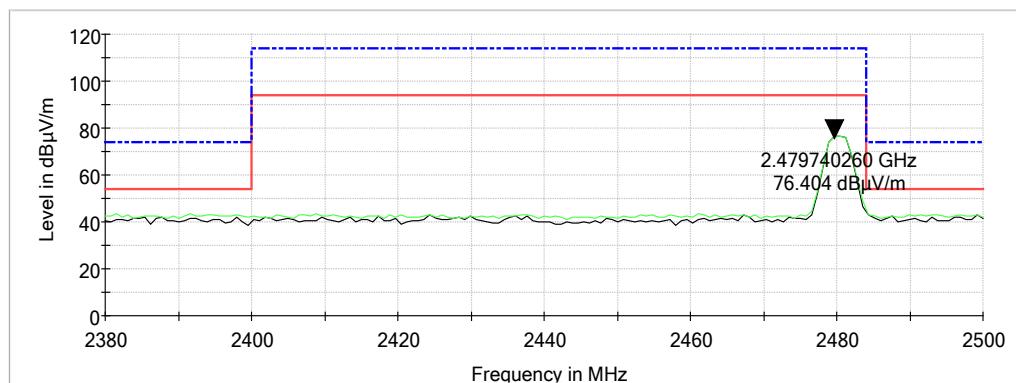
2Mbps: Low Band Edge - Vertical



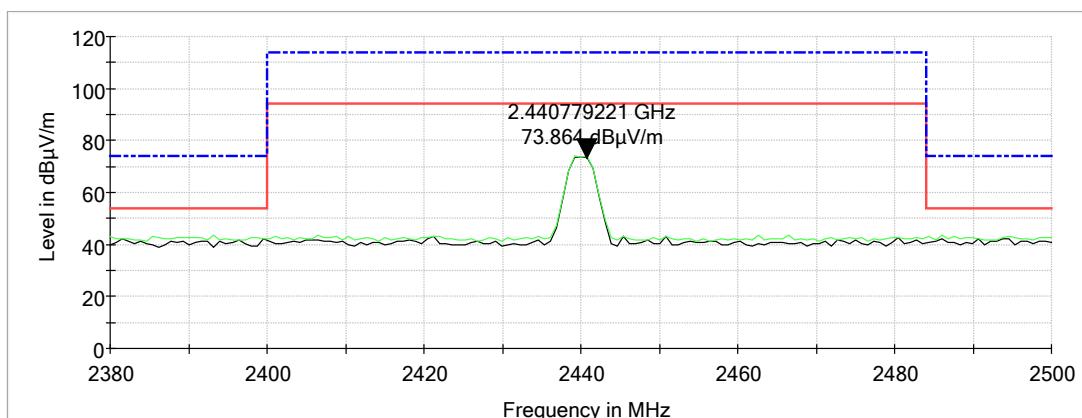
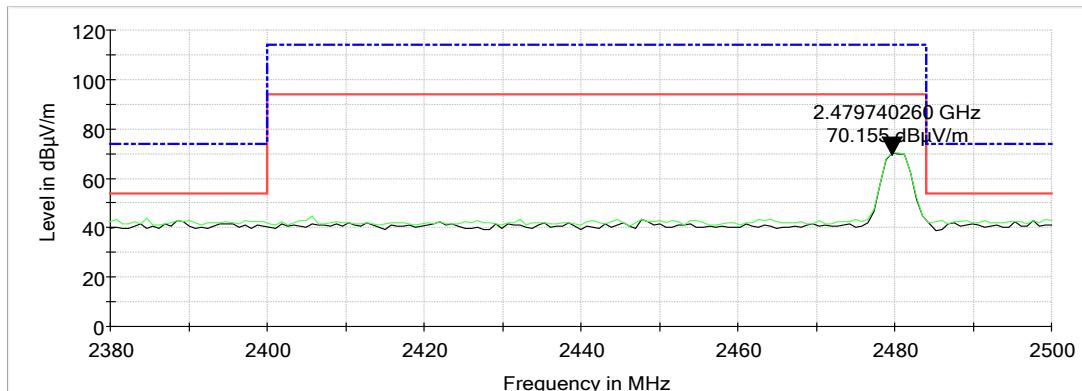
2Mbps: Middle - Vertical



2Mbps: Upper Band Edge - Vertical

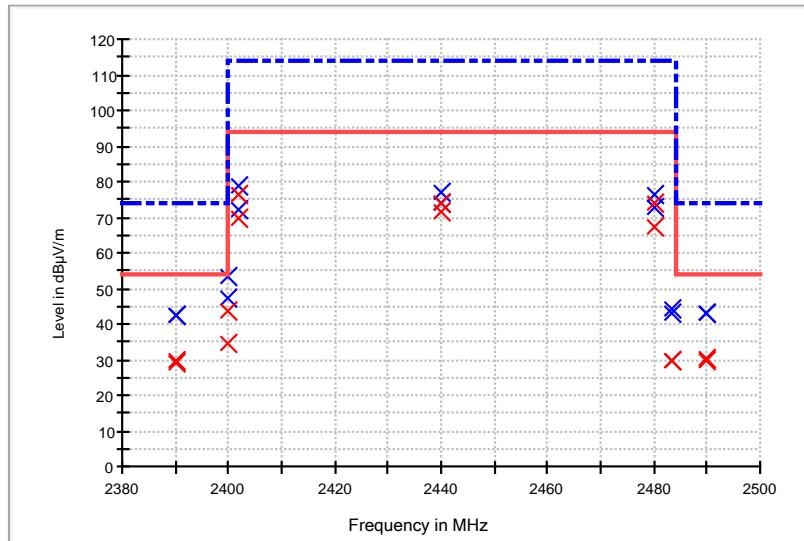


2Mbps: Low Band Edge - Horizontal

2Mbps: Middle - Horizontal

2Mbps: Upper Band Edge - Horizontal


2Mbps: Band Edge and Field Strength of the Fundamentals

| Frequency (MHz) | MaxPeak (dB μ V/m) | Average (dB μ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin - AVG (dB) | Limit - AVG (dB μ V/m) |
|-----------------|------------------------|------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------------|----------------------------|
| 2390.000000 | 42.2 | 29.2 | 1000.0 | 1000.000 | 150.0 | V | 333.0 | 8.2 | 14.8 | 54.0 |
| 2390.000000 | 42.5 | 29.5 | 1000.0 | 1000.000 | 210.0 | H | 232.0 | 8.2 | 14.5 | 54.0 |
| 2400.000000 | 47.0 | 34.7 | 1000.0 | 1000.000 | 210.0 | H | 232.0 | 8.2 | 59.3 | 54.0 |
| 2400.000000 | 53.5 | 43.6 | 1000.0 | 1000.000 | 150.0 | V | 333.0 | 8.2 | 50.4 | 54.0 |
| 2402.000000 | 78.5 | 76.2 | 1000.0 | 1000.000 | 150.0 | V | 333.0 | 8.2 | 17.8 | 94.0 |
| 2402.000000 | 72.2 | 69.5 | 1000.0 | 1000.000 | 210.0 | H | 232.0 | 8.2 | 24.5 | 94.0 |
| 2440.000000 | 76.7 | 74.2 | 1000.0 | 1000.000 | 150.0 | V | 182.0 | 8.2 | 19.8 | 94.0 |
| 2440.000000 | 74.1 | 71.7 | 1000.0 | 1000.000 | 150.0 | H | 221.0 | 8.2 | 22.3 | 94.0 |
| 2480.000000 | 72.7 | 67.3 | 1000.0 | 1000.000 | 150.0 | H | 108.0 | 8.3 | 26.7 | 94.0 |
| 2480.000000 | 76.2 | 73.9 | 1000.0 | 1000.000 | 160.0 | V | 214.0 | 8.3 | 20.1 | 94.0 |
| 2483.500000 | 43.1 | 29.5 | 1000.0 | 1000.000 | 150.0 | H | 108.0 | 8.3 | 24.5 | 54.0 |
| 2483.500000 | 44.5 | 30.0 | 1000.0 | 1000.000 | 160.0 | V | 214.0 | 8.3 | 24.0 | 54.0 |
| 2490.000000 | 43.3 | 29.8 | 1000.0 | 1000.000 | 150.0 | H | 108.0 | 8.4 | 24.2 | 54.0 |
| 2490.000000 | 42.9 | 30.1 | 1000.0 | 1000.000 | 160.0 | V | 214.0 | 8.4 | 23.9 | 54.0 |





Order No(s): F2P30751A-C2

Applicant: Runwise, Inc.
Model: V3.1

8.2 Test Data – Spurious Emissions

Notes: Plots are peak, max hold pre-scan data included only to determine what frequencies to investigate and measure. During the pre-scan evaluation, the EUT was rotated in all possible directions to find the maximum emissions. The orthogonal position that showed the highest emissions was used. At some frequencies, no emissions from the EUT were measurable over the ambient noise floor. The readings did not change with EUT on and EUT off.

At least 6 of the highest frequencies were measured per ANSI 63.4 in a 3-meter anechoic chamber. Frequencies below 1 GHz were measured using a quasi-peak detector. The antenna was raised between 1 and 4 meters and the EUT turntable was rotated 360 degrees to maximize the emissions. Some of the frequencies did not change with the EUT on or off. At those frequencies, the test distance was shortened to 1 meter and still no emissions from the EUT were visible or over the ambient or limit. Frequencies were scanned from 9kHz to 26 GHz and the highest emissions are listed below.

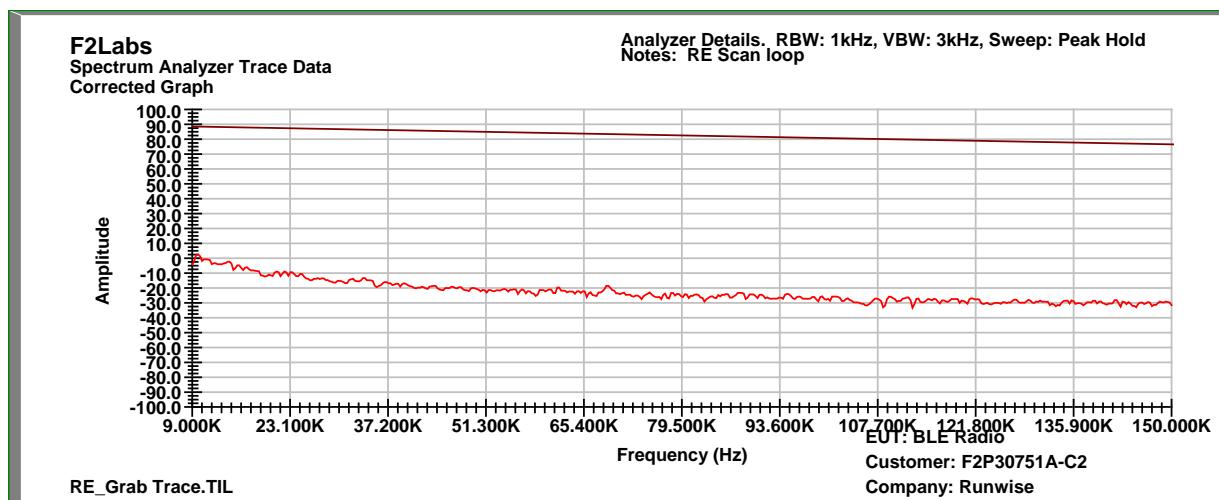


Order No(s): F2P30751A-C2

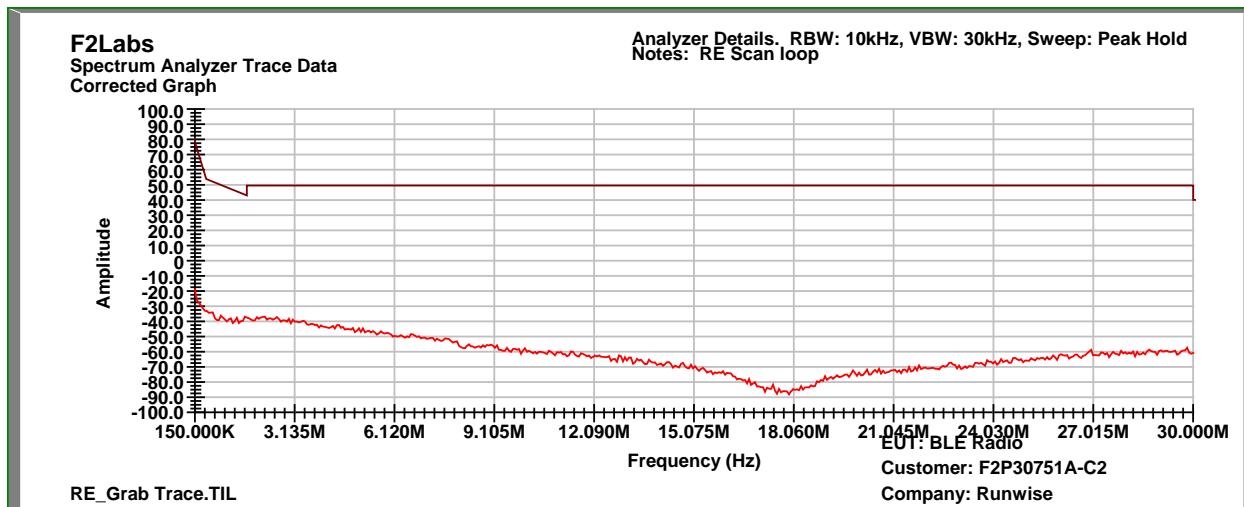
Applicant: Runwise, Inc.
Model: V3.1

| | | | |
|---------------|-------------------------------------|--------------------|------------|
| Test Date(s): | 2024-01-10 | Test Engineer(s): | J. Chiller |
| Standards: | CFR 47 Part 15.249(d) / Part 15.209 | Air Temperature: | 21.3°C |
| | | Relative Humidity: | 37% |

Characterization Scan, 9 kHz to 150 kHz



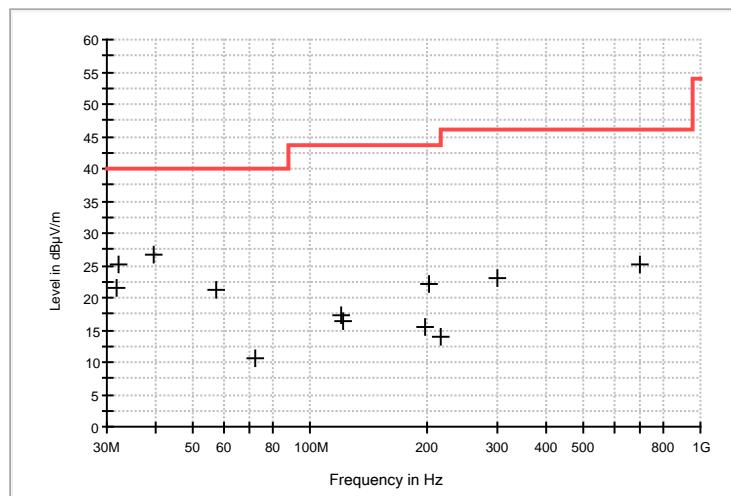
Characterization Scan, 150 kHz to 30 MHz

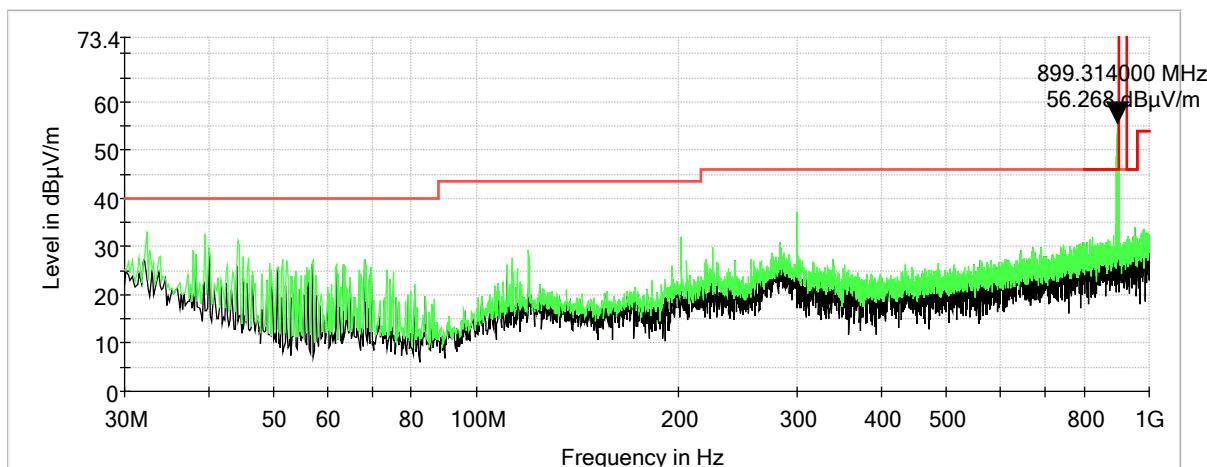
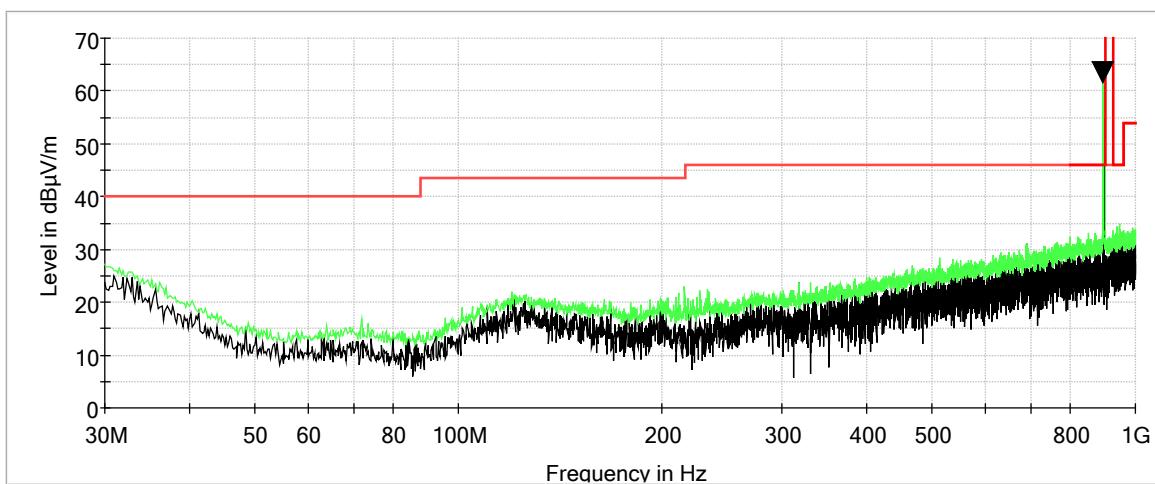


1Mbps: 30 MHz to 1000 MHz

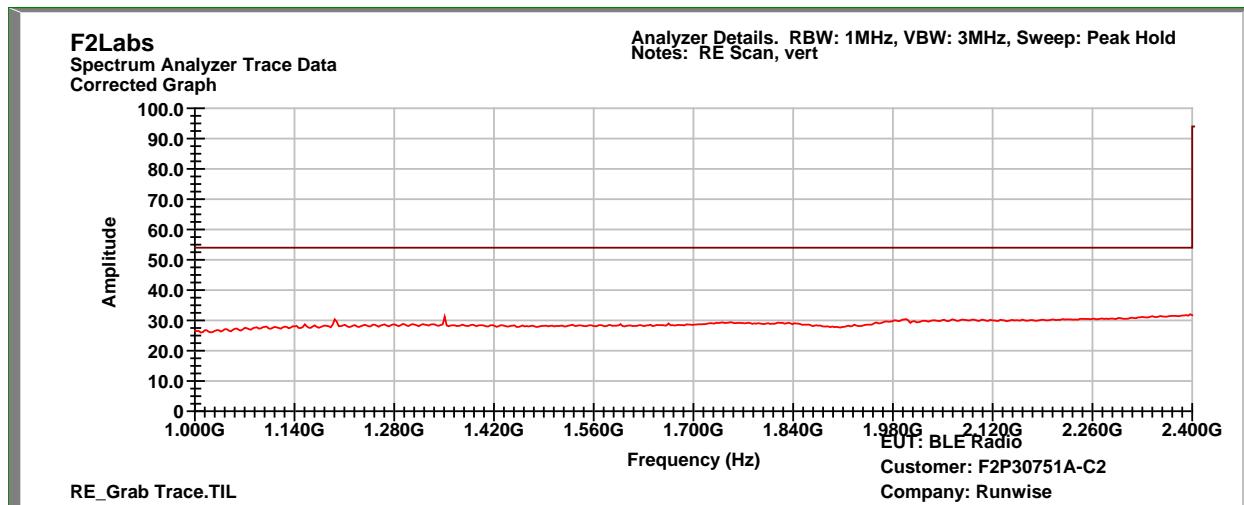
**Note: Chart below includes data from all three channels.
 No difference between 2Mbps and 1Mbps setting.**

| Frequency (MHz) | Ant. Pol. | Antenna Height (cm) | Azimuth (degrees) | Reading (dB μ V) | Corr. Factors (dB) | Emission (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) |
|-----------------|-----------|---------------------|-------------------|----------------------|--------------------|-------------------------|----------------------|-------------|
| 31.940000 | H | 100.00 | 0.00 | 42.1 | -20.5 | 21.60 | 40.0 | -18.4 |
| 32.330000 | V | 100.00 | 0.00 | 46.0 | -20.8 | 25.20 | 40.0 | -14.8 |
| 39.510000 | V | 100.00 | 0.00 | 52.8 | -26.2 | 26.60 | 40.0 | -13.4 |
| 57.160000 | V | 100.00 | 0.00 | 53.9 | -32.6 | 21.30 | 40.0 | -18.7 |
| 71.900000 | H | 100.00 | 0.00 | 42.0 | -31.5 | 10.50 | 40.0 | -29.5 |
| 119.630000 | V | 100.00 | 0.00 | 43.2 | -25.8 | 17.40 | 43.5 | -26.1 |
| 120.790000 | H | 100.00 | 0.00 | 42.1 | -25.7 | 16.40 | 43.5 | -27.1 |
| 197.030000 | H | 100.00 | 0.00 | 42.0 | -26.5 | 15.50 | 43.5 | -28.0 |
| 201.500000 | V | 100.00 | 0.00 | 48.5 | -26.4 | 22.10 | 43.5 | -21.4 |
| 215.660000 | H | 100.00 | 0.00 | 42.0 | -28.0 | 14.00 | 43.5 | -29.5 |
| 299.660000 | V | 100.00 | 0.00 | 48.2 | -25.1 | 23.10 | 46.0 | -22.9 |
| 695.610000 | H | 100.00 | 0.00 | 43.0 | -17.8 | 25.20 | 46.0 | -20.8 |

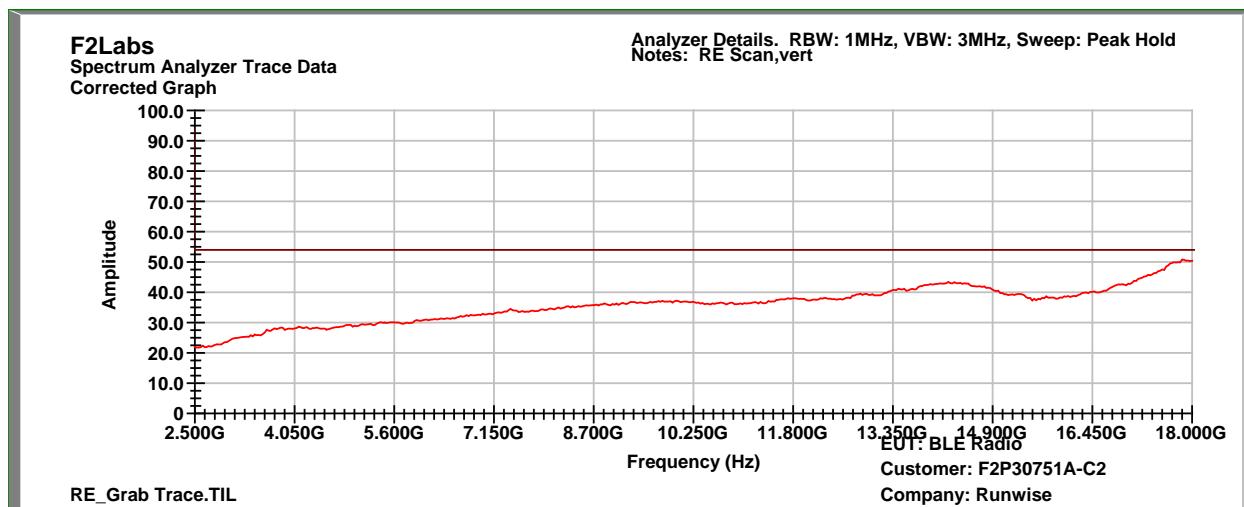


30 MHz to 1000 MHz, Vertical**30 MHz to 1000 MHz, Horizontal**

1Mbps: 1 GHz to 2.4 GHz, Vertical



1Mbps: 2.5 GHz to 18 GHz, Vertical



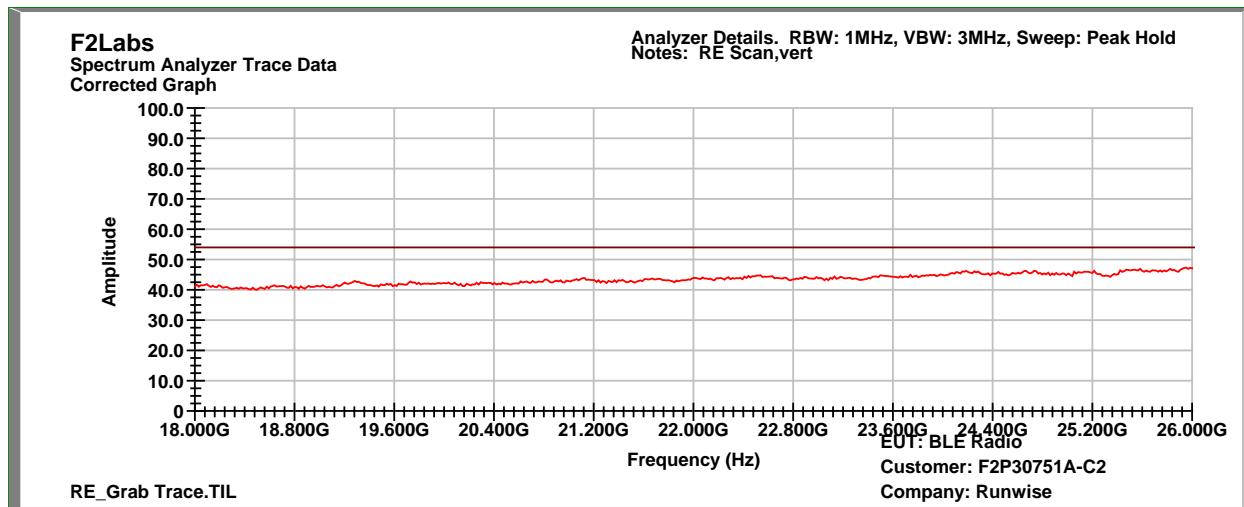


Order No(s): F2P30751A-C2

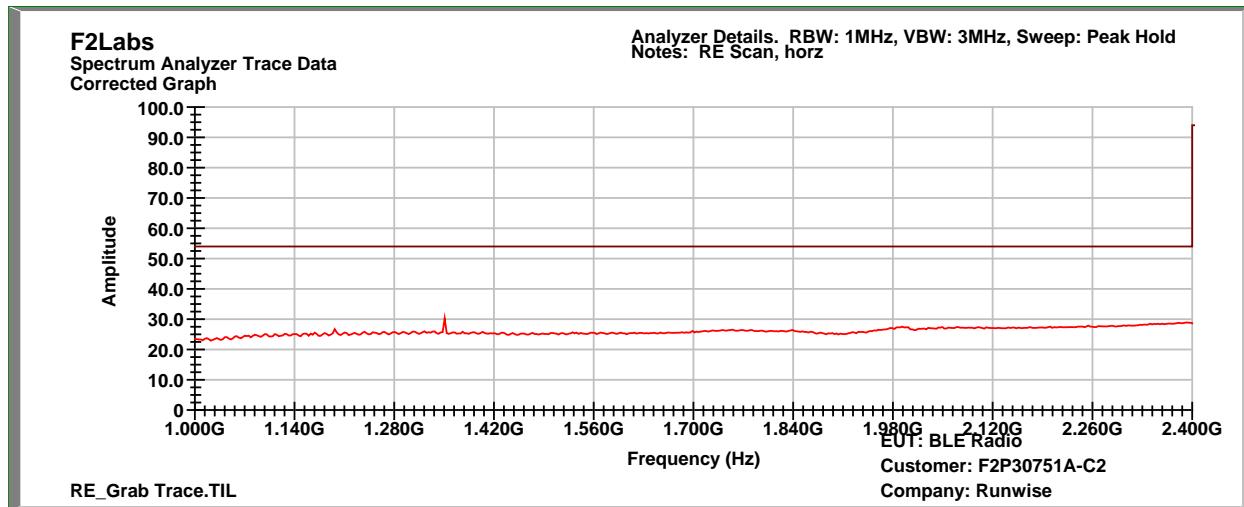
Applicant: Runwise, Inc.

Model: V3.1

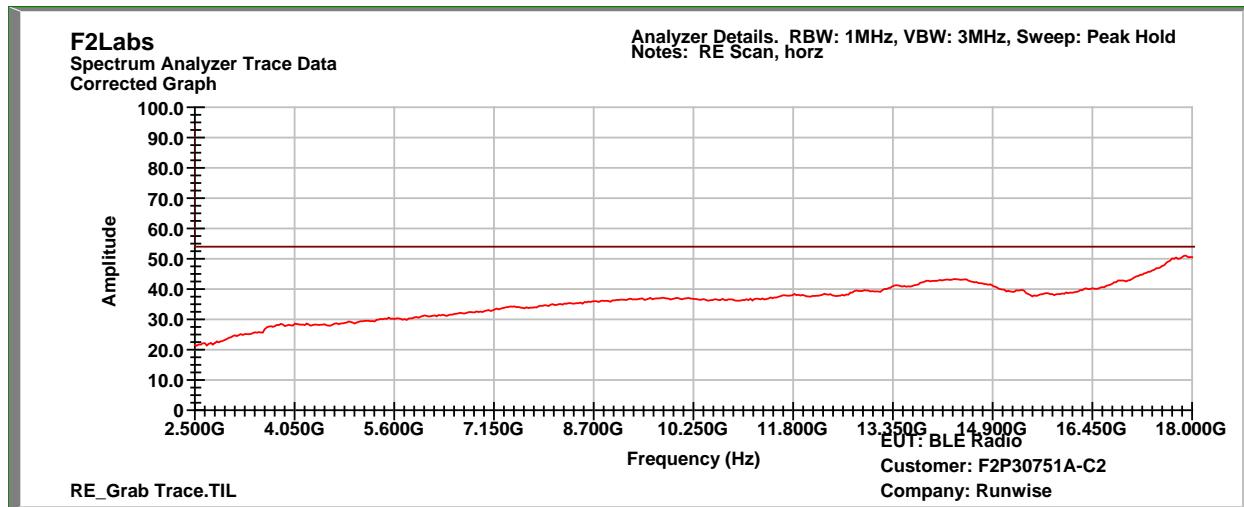
1Mbps: 18 GHz to 26 GHz, Vertical



1Mbps: 1 GHz to 2.4 GHz, Horizontal



1Mbps: 2.5 GHz to 18 GHz, Horizontal



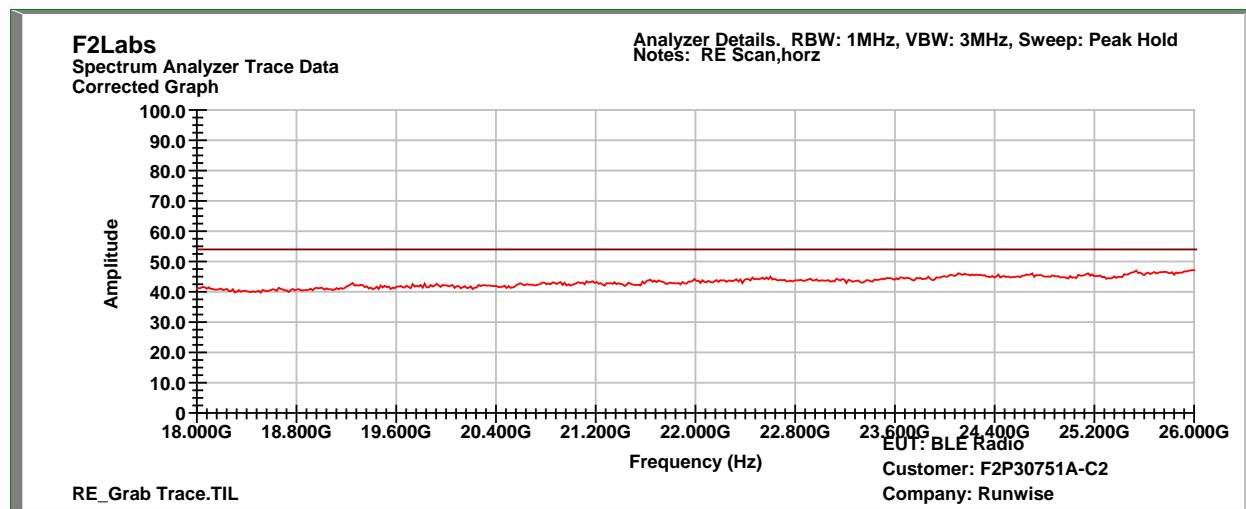


Order No(s): F2P30751A-C2

Applicant: Runwise, Inc.

Model: V3.1

1Mbps: 18 GHz to 26 GHz, Horizontal





Order No(s): F2P30751A-C2

Applicant: Runwise, Inc.
Model: V3.1

9 VOLTAGE VARIATIONS

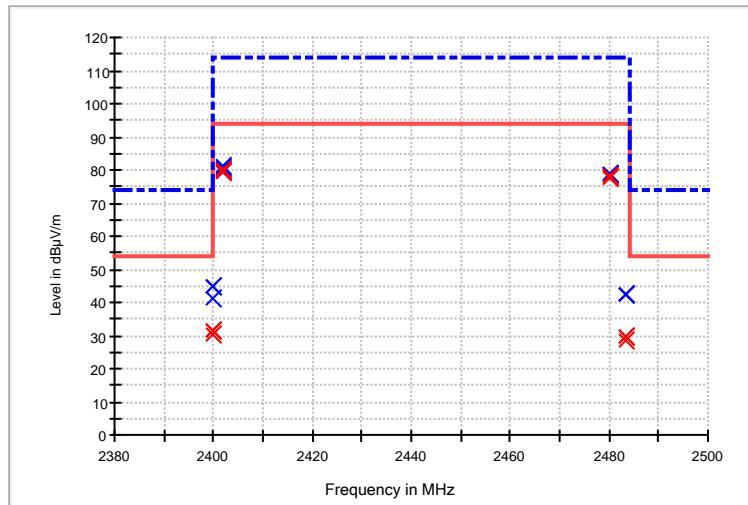
For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery. A nominal voltage of 120VAC was used and then 100VAC and 138VAC were used as the 85% and 115% variations.

RESULTS: The results showed that the fundamental frequency did not move outside the frequency band and the field strength did not increase above the limit during the variations.

| | | | |
|---------------|-------------------|--------------------|------------|
| Test Date: | 2024-01-17 | Test Engineer: | J. Chiller |
| Rule: | RSS GEN Part 6.11 | Air Temperature: | 21.0° C |
| Test Results: | Pass | Relative Humidity: | 38% |

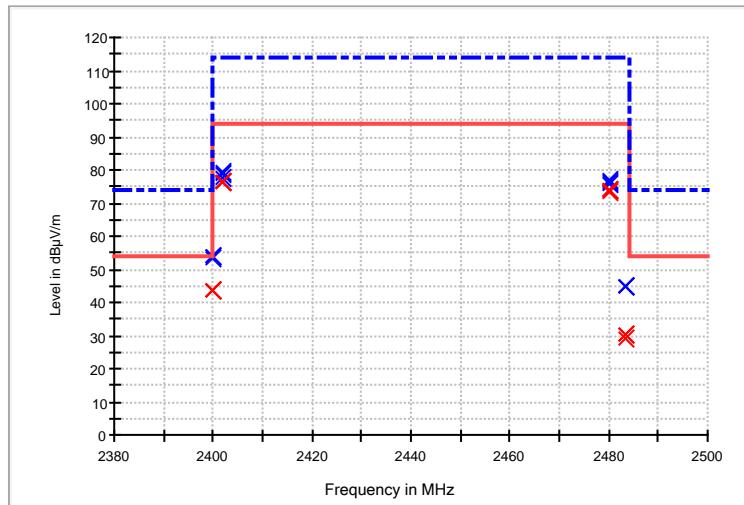
1Mbps

| Frequency (MHz) | MaxPeak (dB μ V/m) | Average (dB μ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin - AVG (dB) | Limit - AVG (dB μ V/m) | Comment |
|-----------------|------------------------|------------------------|-----------------|-----------------|-------------|--------------|---------------|------------|-------------------|----------------------------|---------|
| 2400.000000 | 41.3 | 30.6 | 1000.0 | 1000.000 | 160.0 | H | 143.0 | 6.9 | 23.4 | 54.0 | nominal |
| 2400.000000 | 45.0 | 31.6 | 1000.0 | 1000.000 | 160.0 | H | 143.0 | 6.9 | 22.4 | 54.0 | 3.8VDC |
| 2400.000000 | 45.1 | 31.5 | 1000.0 | 1000.000 | 160.0 | H | 143.0 | 6.9 | 22.5 | 54.0 | 2.7VDC |
| 2402.000000 | 81.0 | 80.0 | 1000.0 | 1000.000 | 160.0 | H | 143.0 | 6.9 | 14.0 | 94.0 | nominal |
| 2402.000000 | 79.2 | 79.3 | 1000.0 | 1000.000 | 160.0 | H | 143.0 | 6.9 | 14.7 | 94.0 | 3.8VDC |
| 2402.000000 | 80.9 | 79.9 | 1000.0 | 1000.000 | 160.0 | H | 143.0 | 6.9 | 14.1 | 94.0 | 2.7VDC |
| 2480.000000 | 79.0 | 78.1 | 1000.0 | 1000.000 | 150.0 | H | 150.0 | 6.9 | 15.9 | 94.0 | nominal |
| 2480.000000 | 78.5 | 78.0 | 1000.0 | 1000.000 | 150.0 | H | 150.0 | 6.9 | 16.2 | 94.0 | 3.8VDC |
| 2480.000000 | 78.9 | 77.8 | 1000.0 | 1000.000 | 150.0 | H | 150.0 | 6.9 | 16.0 | 94.0 | 2.7VDC |
| 2483.500000 | 42.1 | 29.7 | 1000.0 | 1000.000 | 150.0 | H | 150.0 | 6.9 | 24.3 | 54.0 | nominal |
| 2483.500000 | 42.7 | 29.7 | 1000.0 | 1000.000 | 150.0 | H | 150.0 | 6.9 | 24.3 | 54.0 | 3.8VDC |
| 2483.500000 | 42.2 | 28.6 | 1000.0 | 1000.000 | 150.0 | H | 150.0 | 6.9 | 25.4 | 54.0 | 2.7VDC |



2Mbps

| Frequency (MHz) | MaxPeak (dB μ V/m) | Average (dB μ V/m) | Meas-Time (ms) | Bandwidth (kHz) | Height (cm) | Polarization | Azimuth (deg) | Corr. (dB) | Margin - AVG (dB) | Limit - AVG (dB μ V/m) | Comment |
|-----------------|------------------------|------------------------|----------------|-----------------|-------------|--------------|---------------|------------|-------------------|----------------------------|---------|
| 2400.000000 | 53.7 | 43.8 | 1000.0 | 1000.000 | 160.0 | V | 333.0 | 6.9 | 10.2 | 54.0 | nominal |
| 2400.000000 | 54.1 | 43.8 | 1000.0 | 1000.000 | 160.0 | V | 333.0 | 6.9 | 10.2 | 54.0 | 3.8VDC |
| 2400.000000 | 53.2 | 43.5 | 1000.0 | 1000.000 | 160.0 | V | 333.0 | 6.9 | 10.5 | 54.0 | 2.7VDC |
| 2402.000000 | 78.7 | 76.5 | 1000.0 | 1000.000 | 160.0 | V | 333.0 | 6.9 | 17.5 | 94.0 | nominal |
| 2402.000000 | 79.1 | 76.6 | 1000.0 | 1000.000 | 160.0 | V | 333.0 | 6.9 | 17.4 | 94.0 | 3.8VDC |
| 2402.000000 | 77.8 | 76.1 | 1000.0 | 1000.000 | 160.0 | V | 333.0 | 6.9 | 17.9 | 94.0 | 2.7VDC |
| 2480.000000 | 76.5 | 74.1 | 1000.0 | 1000.000 | 150.0 | V | 214.0 | 6.9 | 19.9 | 94.0 | nominal |
| 2480.000000 | 76.8 | 74.1 | 1000.0 | 1000.000 | 150.0 | V | 214.0 | 6.9 | 19.9 | 94.0 | 3.8VDC |
| 2480.000000 | 76.0 | 73.6 | 1000.0 | 1000.000 | 150.0 | V | 214.0 | 6.9 | 20.4 | 94.0 | 2.7VDC |
| 2483.500000 | 44.7 | 30.5 | 1000.0 | 1000.000 | 150.0 | V | 214.0 | 6.9 | 23.5 | 54.0 | nominal |
| 2483.500000 | 44.7 | 30.5 | 1000.0 | 1000.000 | 150.0 | V | 214.0 | 6.9 | 23.5 | 54.0 | 3.8VDC |
| 2483.500000 | 44.6 | 29.2 | 1000.0 | 1000.000 | 150.0 | V | 214.0 | 6.9 | 24.8 | 54.0 | 2.7VDC |



10 CONDUCTED EMISSIONS

10.1 Requirements

In accordance with FCC CFR 47 Part 15.207(a), "Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

| Frequency of Emission (MHz) | Conducted Limit (dB μ V) | |
|-----------------------------|------------------------------|-----------|
| | Quasi-peak | Average |
| 0.15-0.5 | 66 to 56* | 56 to 46* |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

*Decreases with the logarithm of the frequency.

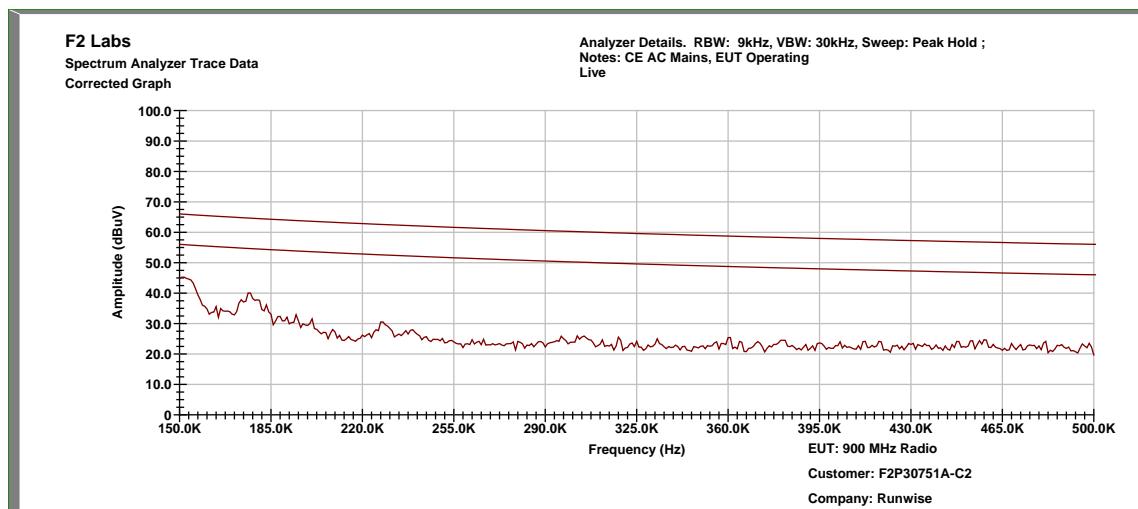
10.2 Procedure

The EUT was placed on a 1.0 x 1.5 meter non-conductive table, 0.8 meter above a horizontal ground plane and 0.4 meter from a vertical ground plane. Power was provided to the EUT through a LISN bonded to a 3 x 2 meter ground plane. The LISN and peripherals were supplied power through a filtered AC power source. The output of the LISN was connected to the input of the receiver via a transient limiter, and emissions in the range 150 kHz to 30 MHz were measured. The measurements were recorded using the quasi-peak and average detectors as directed by the standard, and the resolution bandwidth during testing was 9 kHz. The raw measurements were corrected to allow for attenuation from the LISN, transient limiter and cables.

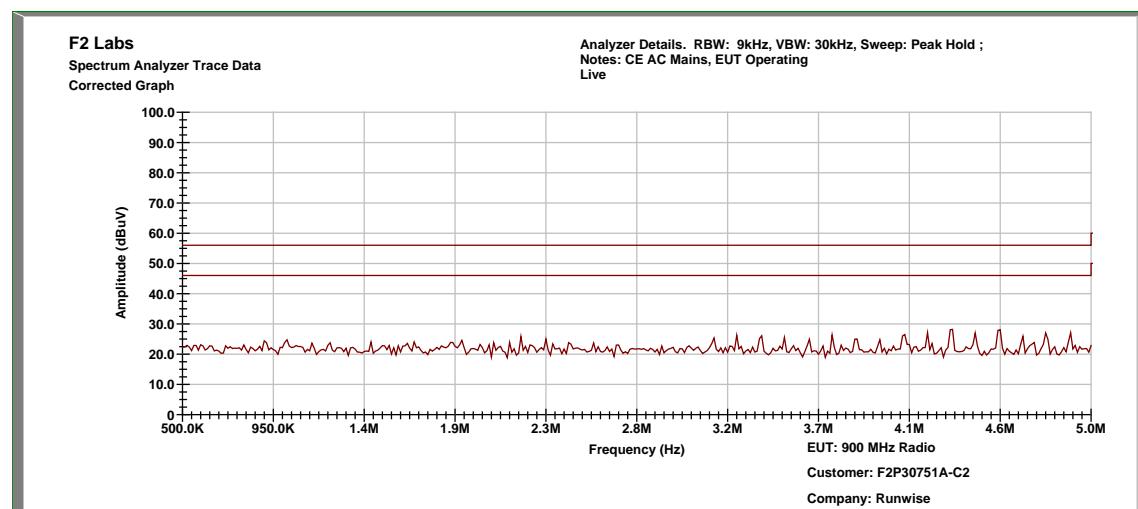
10.3 Conducted Emissions Test Data

| | | | |
|----------------------|------------|---------------------------|------------|
| Test Date(s): | 2024-01-11 | Test Engineer: | J. Chiller |
| Rule: | 15.207 | Air Temperature: | 21.3° C |
| Test Results: | Complies | Relative Humidity: | 41% |

Conducted Test – Live: 0.15 MHz to 0.5 MHz



Conducted Test – Live: 0.5 MHz to 5.0 MHz

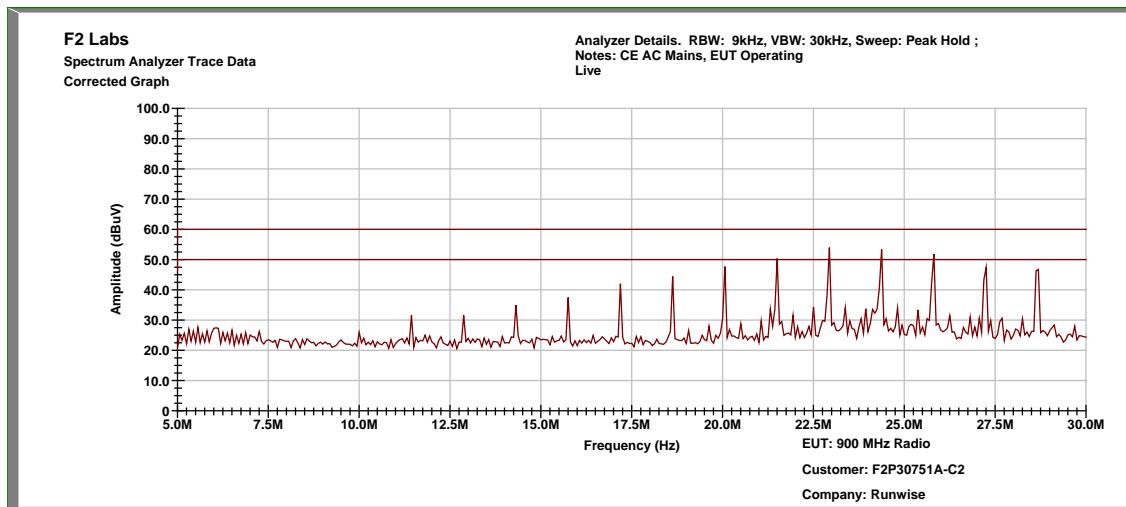




Order No(s): F2P30751A-C2

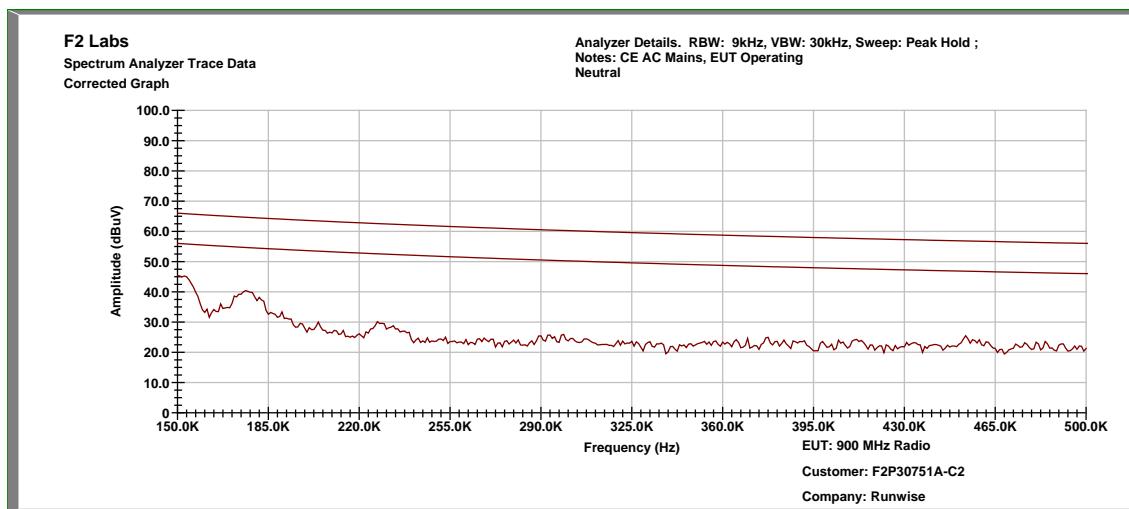
Applicant: Runwise, Inc.
Model: V3.1

Conducted Test – Live: 5.0 MHz to 30.0 MHz

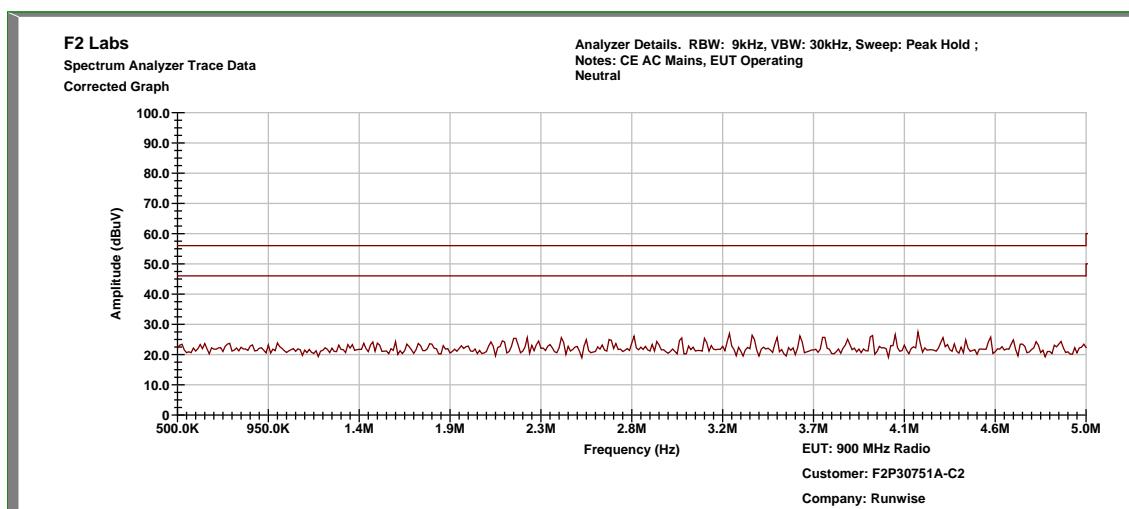


| Top Discrete Measurements | | | | | | | | | |
|---------------------------|-----------|-----------------|------------|--------------|-----------------|----------------|--------------|-------------|--|
| No. | Conductor | Frequency (MHz) | Detector | Level (dBµV) | Adjustment (dB) | Results (dBµV) | Limit (dBµV) | Margin (dB) | |
| 1 | Line 1 | 20.06 | Quasi-Peak | 35.51 | 10.896 | 46.41 | 60.0 | -13.6 | |
| | | | Average | 33.86 | 10.896 | 44.76 | 50.0 | -5.2 | |
| 2 | Line 1 | 21.5 | Quasi-Peak | 37.18 | 11.025 | 48.21 | 60.0 | -11.8 | |
| | | | Average | 34.71 | 11.025 | 45.74 | 50.0 | -4.3 | |
| 3 | Line 1 | 22.9 | Quasi-Peak | 40.8 | 11.092 | 51.89 | 60.0 | -8.1 | |
| | | | Average | 37.78 | 11.092 | 48.87 | 50.0 | -1.1 | |
| 4 | Line 1 | 24.3 | Quasi-Peak | 40.69 | 11.125 | 51.82 | 60.0 | -8.2 | |
| | | | Average | 37.56 | 11.125 | 48.69 | 50.0 | -1.3 | |
| 5 | Line 1 | 25.8 | Quasi-Peak | 38.05 | 11.286 | 49.34 | 60.0 | -10.7 | |
| | | | Average | 34.51 | 11.286 | 45.80 | 50.0 | -4.2 | |

Conducted Test – Neutral: 0.15 MHz to 0.5 MHz



Conducted Test – Neutral: 0.5 MHz to 5.0 MHz

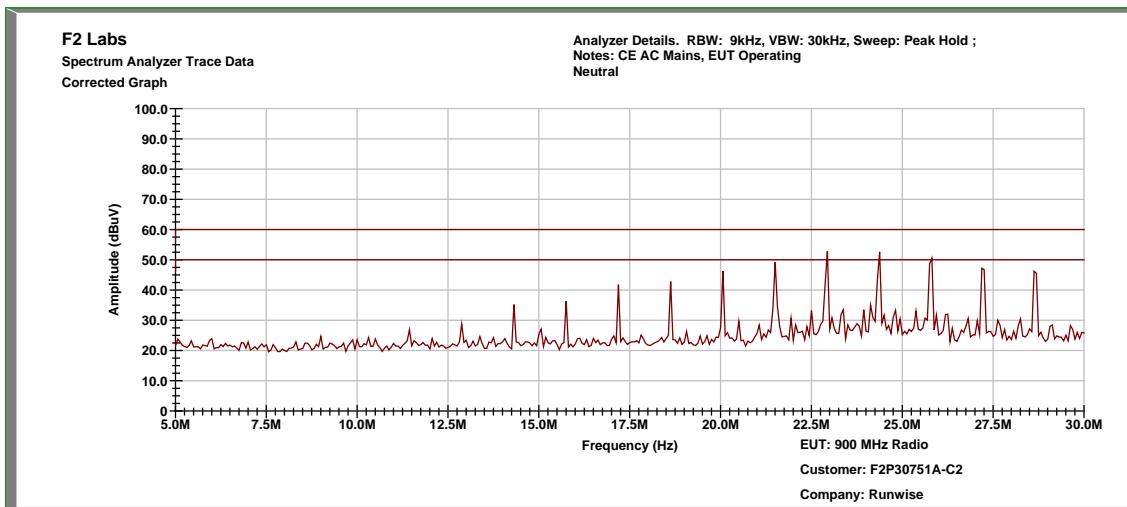




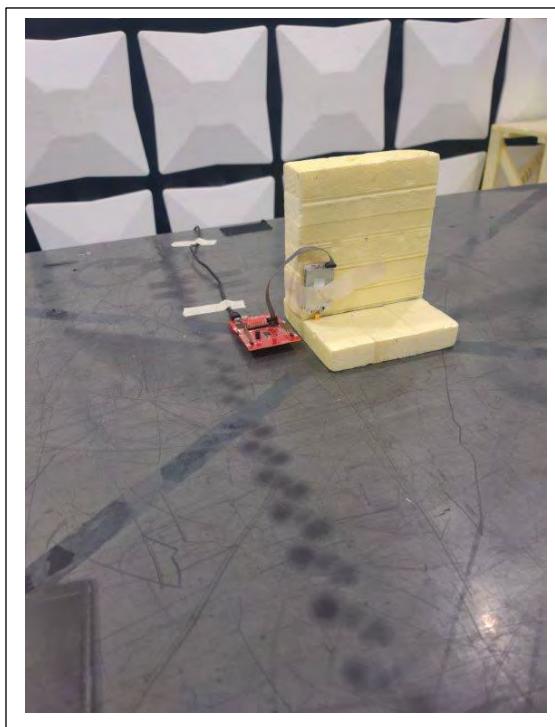
Order No(s): F2P30751A-C2

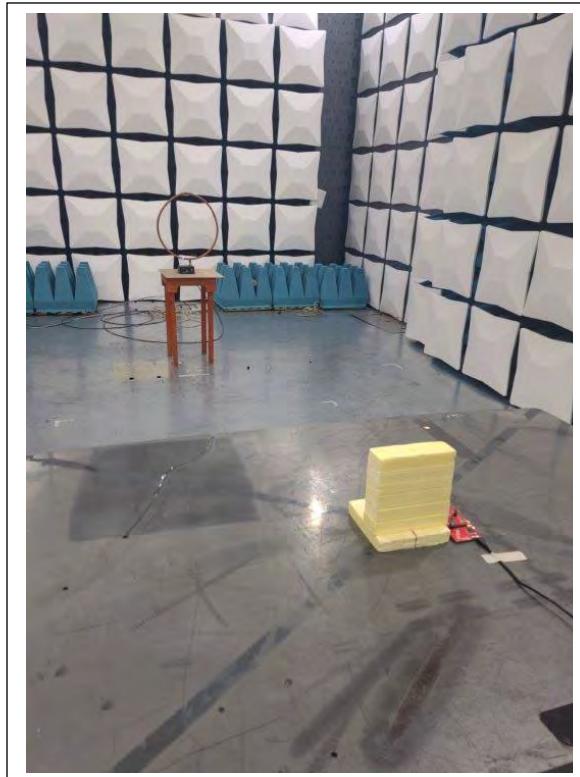
Applicant: Runwise, Inc.
Model: V3.1

Conducted Test – Neutral: 5.0 MHz to 30.0 MHz



| Top Discrete Measurements | | | | | | | | | |
|---------------------------|-----------|-----------------|------------|--------------------|-----------------|----------------------|--------------------|-------------|--|
| No. | Conductor | Frequency (MHz) | Detector | Level (dB μ V) | Adjustment (dB) | Results (dB μ V) | Limit (dB μ V) | Margin (dB) | |
| 1 | Neutral | 21.5 | Quasi-Peak | 36.57 | 10.983 | 47.55 | 60.00 | -12.4 | |
| | | | Average | 33.49 | 10.983 | 44.47 | 50.00 | -5.5 | |
| 2 | Neutral | 22.93 | Quasi-Peak | 40.30 | 11.042 | 51.34 | 60.00 | -8.7 | |
| | | | Average | 36.88 | 11.042 | 47.92 | 50.00 | -2.1 | |
| 3 | Neutral | 24.37 | Quasi-Peak | 40.05 | 11.161 | 51.21 | 60.00 | -8.8 | |
| | | | Average | 37.02 | 11.161 | 48.18 | 50.00 | -1.8 | |
| 4 | Neutral | 25.81 | Quasi-Peak | 38.01 | 11.196 | 49.21 | 60.00 | -10.8 | |
| | | | Average | 35.58 | 11.196 | 46.78 | 50.00 | -3.2 | |

11 PHOTOGRAPH(S) - TEST SETUPS**Radio Setup**

Radiated Spurious Emissions: 0.009 MHz to 30 MHz**Radiated Spurious Emissions: 30 MHz to 1000 MHz**

Radiated Spurious Emissions: Greater Than 1 GHz



Conducted Emissions

