

TEST REPORT

Product Name: AmazonBasics Wireless Tweaked Vertical Ergonomic Optical Mouse
Trade Mark: N/A
Model No.: B07M7VZ957
HVIN: MM8036
Report Number: 181203008RFC-1
FCC 47 CFR Part 15 Subpart C
Test Standards: RSS-Gen Issue 5
RSS-210 Issue 9
FCC ID: 2AAIL-MM8036
IC: 11188A-MM8036
Test Result: PASS
Date of Issue: March 13, 2019

Prepared for:

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Version

| Version No. | Date | Description |
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| V1.0 | March 13, 2019 | Original |



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1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

| | |
|---------------------------------|--|
| Applicant: | DongGuan Mae Tay Electronic Co.,Ltd |
| Address of Applicant: | Beihuanlu Industrial Area Changping Town Dongguan, Guangdong China |
| Manufacturer: | DongGuan Mae Tay Electronic Co.,Ltd |
| Address of Manufacturer: | Beihuanlu Industrial Area Changping Town Dongguan, Guangdong China |

1.2 EUT INFORMATION

1.2.1 General Description of EUT

| | |
|-------------------------------|---|
| Product Name: | AmazonBasics Wireless Tweaked Vertical Ergonomic Optical Mouse |
| Model No.: | B07M7VZ957 |
| Trade Mark: | N/A |
| DUT Stage: | Production Unit |
| EUT Supports Function: | General 2.4GHz Technique |
| Power Supply: | The mouse is supplied by 2x1.5V  AA batteries. |
| Sample Received Date: | December 4, 2018 |
| Sample Tested Date: | December 4, 2018 to December 17, 2018 |

1.2.2 Description of Accessories

None

1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

| | |
|--------------------------------|---|
| Frequency Band: | 2400 MHz to 2483.5 MHz |
| Frequency Range: | 2402.85 MHz to 2480.85 MHz |
| Modulation Technique: | Frequency Hopping Spread Spectrum(FHSS) |
| Type of Modulation: | GFSK |
| Number of Channels: | 16 |
| Channel Separation: | ≥2 MHz |
| Antenna Type: | PCB Antenna |
| Antenna Gain: | -1.0 dBi |
| Maximum Field Strength: | 82.71 dBμV/m |
| Normal Test Voltage: | 3.0 Vdc |

1.4 OTHER INFORMATION

| Operation Frequency Each of Channel | | | | | | | | |
|-------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| 信道 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 频率 (MHz) | 2402.85 | 2426.85 | 2441.85 | 2463.85 | 2407.85 | 2422.85 | 2445.85 | 2466.85 |
| 信道 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 频率 (MHz) | 2414.85 | 2436.85 | 2459.85 | 2473.85 | 2419.85 | 2439.85 | 2453.85 | 2480.85 |

1.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested with associated equipment below.

1) Support Equipment

| Description | Manufacturer | Model No. | Serial Number | Supplied by |
|-------------|--------------|-----------|---------------|-------------|
| Notebook | Lenovo | E450 | SL10G10780 | UnionTrust |

2) Support Cable

| Cable No. | Description | Connector | Length | Supplied by |
|-----------|-------------|-----------|--------|-------------|
| - | - | - | - | - |

1.6 TEST LOCATION

Shenzhen UnionTrust Quality and Technology Co., Ltd.

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1.7 TEST FACILITY

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L9069

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC/EN 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

IC-Registration No.: 21600-1

The 3m Semi-anechoic chamber of Shenzhen UnionTrust Quality and Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 21600-1.

A2LA-Lab Certificate No.: 4312.01

Shenzhen UnionTrust Quality and Technology Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC Accredited Lab.

Designation Number: CN1194

Test Firm Registration Number: 259480

1.8 DEVIATION FROM STANDARDS

None.

1.9 ABNORMALITIES FROM STANDARD CONDITIONS

None.

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1.10 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

1.11 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

| No. | Item | Measurement Uncertainty |
|-----|---------------------------------|-------------------------|
| 1 | Conducted emission 9KHz-150KHz | ±3.8 dB |
| 2 | Conducted emission 150KHz-30MHz | ±3.4 dB |
| 3 | Radiated emission 9KHz-30MHz | ±4.9 dB |
| 4 | Radiated emission 30MHz-1GHz | ±4.7 dB |
| 5 | Radiated emission 1GHz-18GHz | ±5.1 dB |
| 6 | Radiated emission 18GHz-26GHz | ±5.2 dB |
| 7 | Radiated emission 26GHz-40GHz | ±5.2 dB |

2. TEST SUMMARY

| FCC 47 CFR Part 15 Subpart C / RSS-210 Test Cases | | | |
|---|---|------------------|-------------------------|
| Test Item | Test Requirement | Test Method | Result |
| Antenna Requirement | FCC 47 CFR Part 15 Subpart C Section 15.203 RSS-Gen Issue 5, Section 6.8 | ANSI C63.10-2013 | PASS |
| Conducted Emission | FCC 47 CFR Part 15 Subpart C Section 15.207 RSS-Gen Issue 5, Section 8.8 | ANSI C63.10-2013 | PASS ^(Note2) |
| Radiated Emission | FCC 47 CFR Part 15 Subpart C Section 15.249 (a)/15.209 RSS-210 Issue 9 B.10 | ANSI C63.10-2013 | PASS |
| Restricted bands around fundamental frequency (Radiated Emission) | FCC 47 CFR Part 15 Subpart C Section 15.249(a)/15.205 RSS-210 Issue 9 B.10 | ANSI C63.10-2013 | PASS |
| 20dB Occupied Bandwidth | FCC 47 CFR Part 15 Subpart C Section 15.215 (c) RSS-Gen Issue 5, Section 6.7 | ANSI C63.10-2013 | PASS |
| Note: 1) N/A: In this whole report not application. 2) The mouse is supplied by 2×1.5V AA batteries. | | | |

3. EQUIPMENT LIST

| Radiated Emission Test Equipment List | | | | | | |
|---------------------------------------|---|---------------|------------|----------------------------|-------------------------|-----------------------------|
| Used | Equipment | Manufacturer | Model No. | Serial Number | Cal. date (mm dd, yyyy) | Cal. Due date (mm dd, yyyy) |
| <input checked="" type="checkbox"/> | 3M Chamber & Accessory Equipment | ETS-LINDGREN | 3M | N/A | Dec. 03, 2018 | Dec. 03, 2021 |
| <input checked="" type="checkbox"/> | Receiver | R&S | ESIB26 | 100114 | Nov. 24, 2018 | Nov. 24, 2019 |
| <input checked="" type="checkbox"/> | Loop Antenna | ETS-LINDGREN | 6502 | 00202525 | Dec. 03, 2018 | Dec. 03, 2019 |
| <input checked="" type="checkbox"/> | Broadband Antenna | ETS-LINDGREN | 3142E | 00201566 | Dec. 08, 2018 | Dec. 08, 2019 |
| <input checked="" type="checkbox"/> | 6dB Attenuator | Talent | RA6A5-N-18 | 18103001 | Dec. 08, 2018 | Dec. 08, 2019 |
| <input checked="" type="checkbox"/> | Preamplifier | HP | 8447F | 2805A02960 | Nov. 24, 2018 | Nov. 24, 2019 |
| <input checked="" type="checkbox"/> | Horn Antenna | ETS-LINDGREN | 3117 | 00164202 | Dec. 08, 2018 | Dec. 08, 2019 |
| <input checked="" type="checkbox"/> | Horn Antenna (Pre-amplifier) | ETS-LINDGREN | 3117-PA | 00201874 | May 22, 2018 | May 22, 2019 |
| <input checked="" type="checkbox"/> | Multi device Controller | ETS-LINDGREN | 7006-001 | 00160105 | N/A | N/A |
| <input checked="" type="checkbox"/> | Band Rejection Filter (2400MHz~2500MHz) | Micro-Tronics | BRM50702 | G248 | Jun. 06, 2018 | Jun. 06, 2019 |
| <input checked="" type="checkbox"/> | Test Software | Audix | e3 | Software Version: 9.160333 | | |

| Conducted RF test Equipment List | | | | | | |
|-------------------------------------|-----------------------|--------------|-----------|---------------|-------------------------|-----------------------------|
| Used | Equipment | Manufacturer | Model No. | Serial Number | Cal. date (mm dd, yyyy) | Cal. Due date (mm dd, yyyy) |
| <input checked="" type="checkbox"/> | EXA Spectrum Analyzer | KEYSIGHT | N9010A | MY51440197 | Nov. 24, 2018 | Nov. 24, 2019 |

4. TEST CONFIGURATION

4.1 ENVIRONMENTAL CONDITIONS FOR TESTING

4.1.1 Normal or Extreme Test Conditions

| Environment Parameter | Selected Values During Tests | | |
|---|------------------------------|---------------|-----------------------|
| Test Condition | Ambient | | |
| | Temperature (°C) | Voltage (Vdc) | Relative Humidity (%) |
| NT/NV | +15 to +35 | 3 | 20 to 75 |
| Remark: 1) NV: Normal Voltage; NT: Normal Temperature | | | |

4.1.2 Record of Normal Environment

| Test Item | Temperature (°C) | Relative Humidity (%) | Pressure (kPa) | Tested by |
|---|------------------|-----------------------|----------------|-----------|
| Radiated Emission | 25.4 | 57 | 99.8 | Andy Lin |
| Restricted bands around fundamental frequency (Radiated Emission) | 25.4 | 57 | 99.8 | Andy Lin |
| 20dB Occupied Bandwidth | 25.4 | 57 | 99.8 | Tony Kang |

4.2 TEST CHANNELS

| Type of Modulation | Tx/Rx Frequency | Test RF Channel Lists | | |
|--------------------|----------------------------------|-----------------------|-------------|-------------|
| GFSK | 2402.85 MHz to 2480.85 MHz | Lowest(L) | Middle(M) | Highest(H) |
| | | Channel 1 | Channel 3 | Channel 16 |
| | | 2402.85 MHz | 2441.85 MHz | 2480.85 MHz |

4.3 EUT TEST STATUS

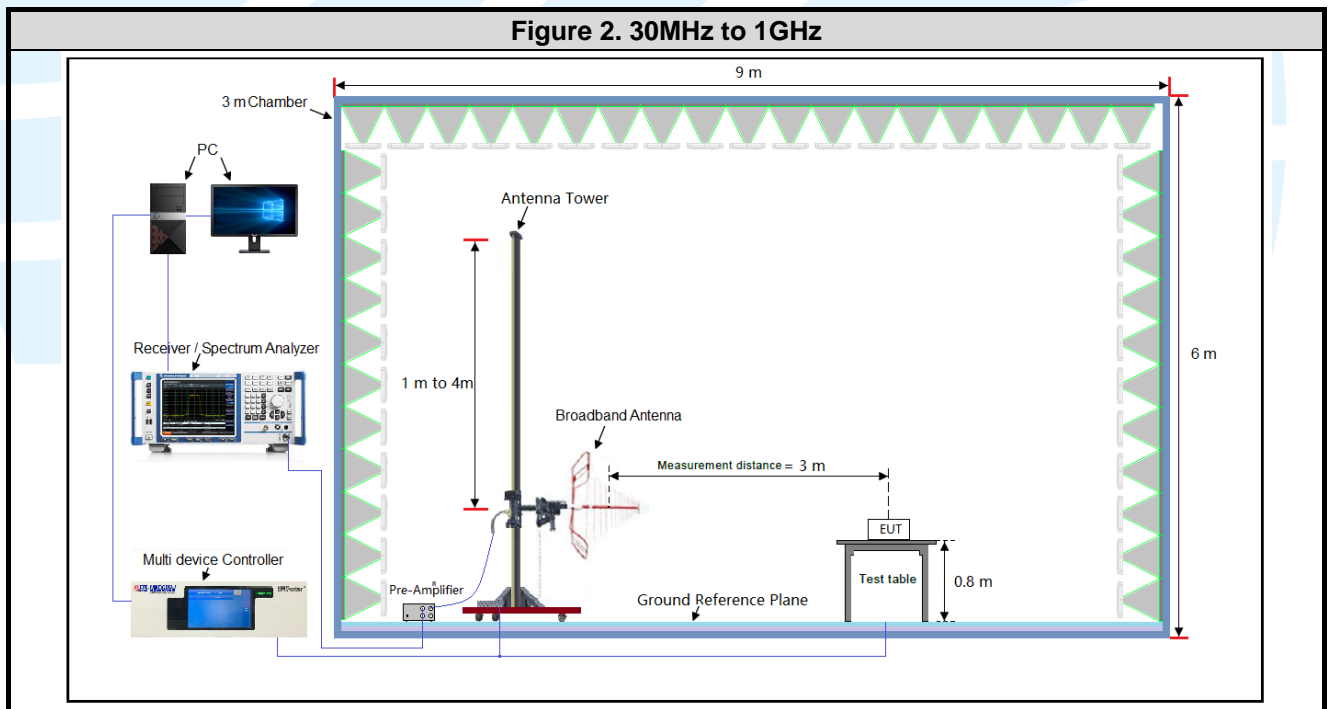
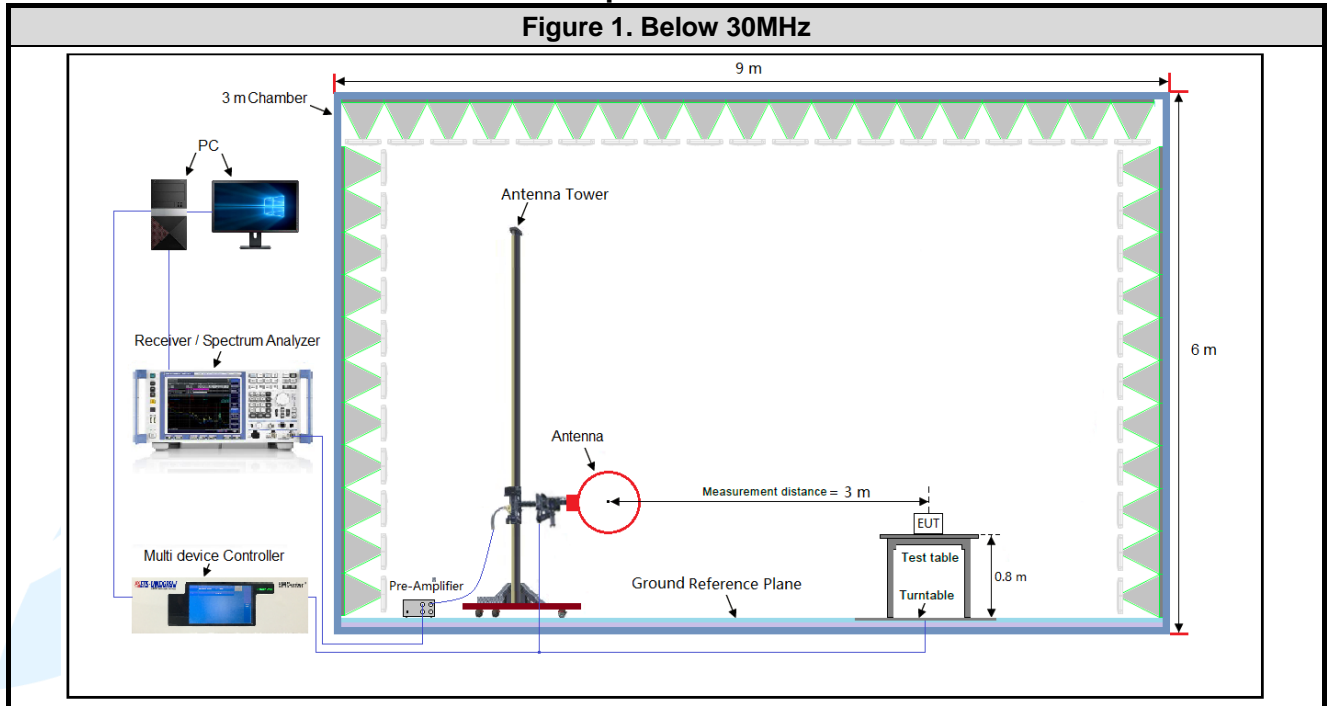
| Modulation Mode | Tx Function | Description |
|-----------------|-------------|--|
| GFSK | 1Tx | Keep the EUT in continuously transmitting with modulation test single. |

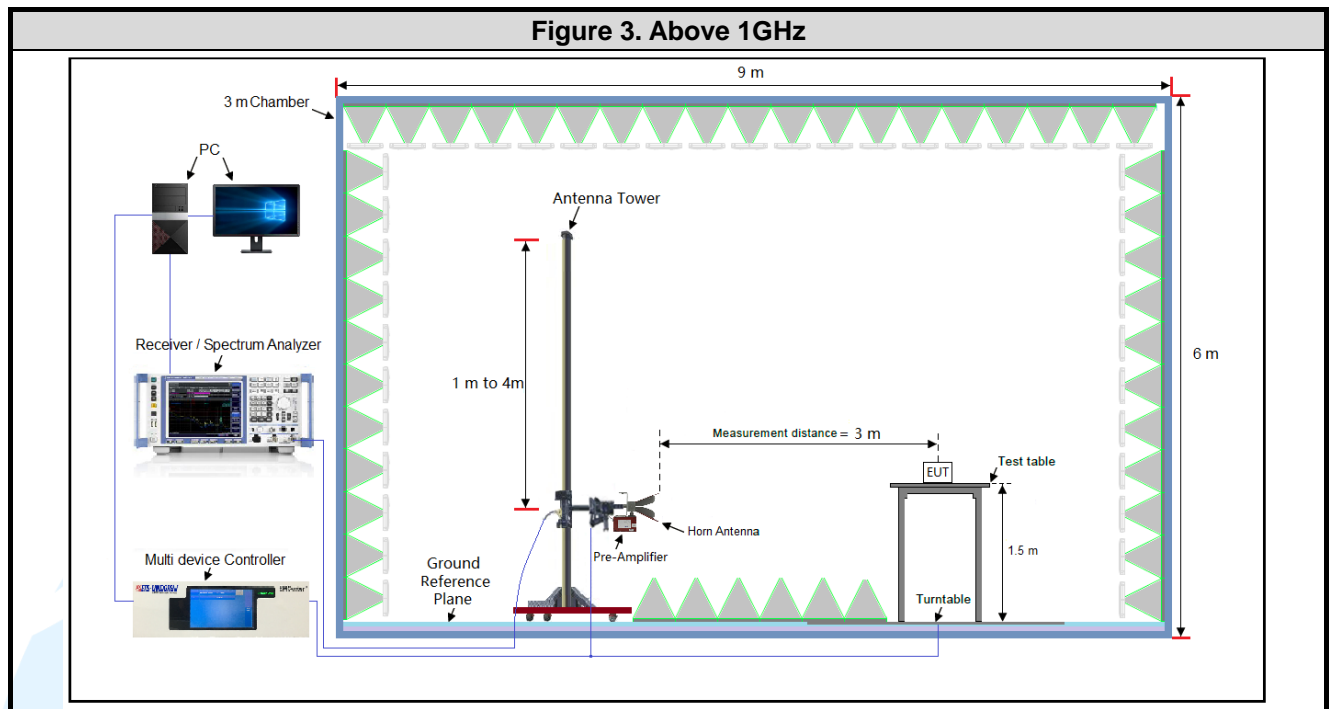
| Power Setting |
|--|
| Power Setting: not applicable, test used software default power level. |

| Test Software |
|------------------------------------|
| Test software name: CompXTest_V1.1 |

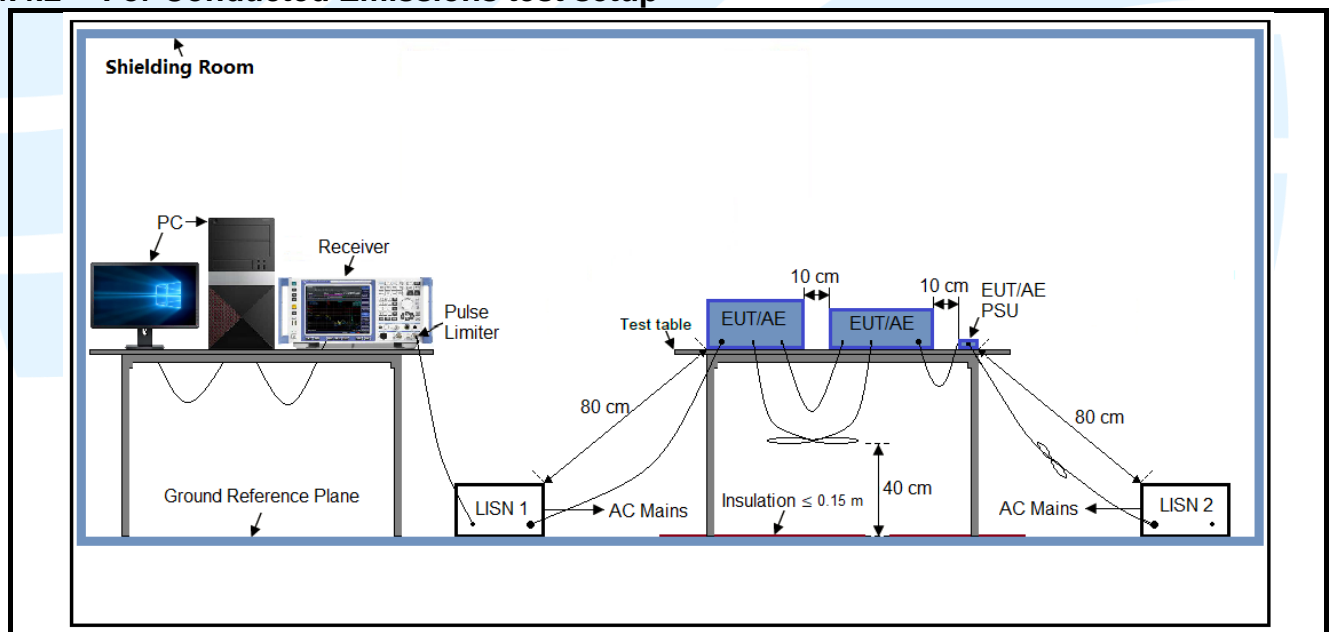
4.4 TEST SETUP

4.4.1 For Radiated Emissions test setup

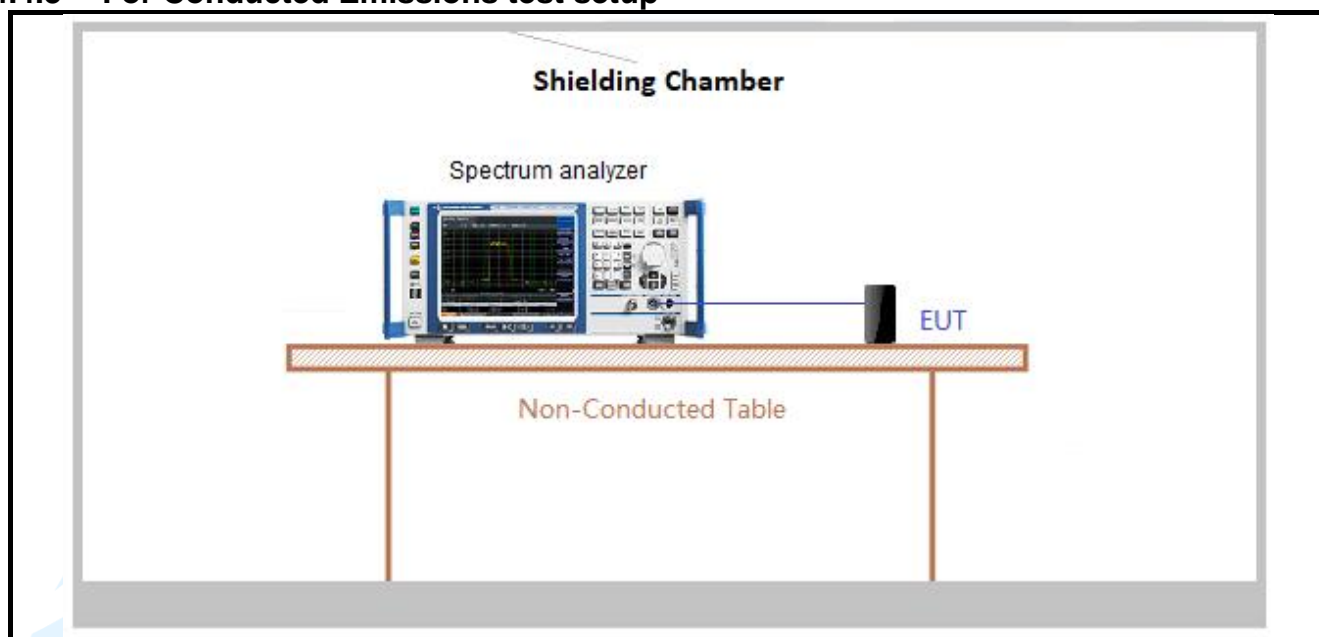




4.4.2 For Conducted Emissions test setup



4.4.3 For Conducted Emissions test setup



4.5 SYSTEM TEST CONFIGURATION

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, radiated emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario. Only the worst case data were recorded in this test report.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. Therefore, all final radiated testing was performed with the EUT in (see table below) orientation.

| Frequency | Mode | Antenna Port | Worst-case axis positioning |
|------------|------|--------------|-----------------------------|
| Above 1GHz | 1TX | Chain 0 | Z axis |

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000 MHz. The resolution is 1 MHz or greater for frequencies above 1000 MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

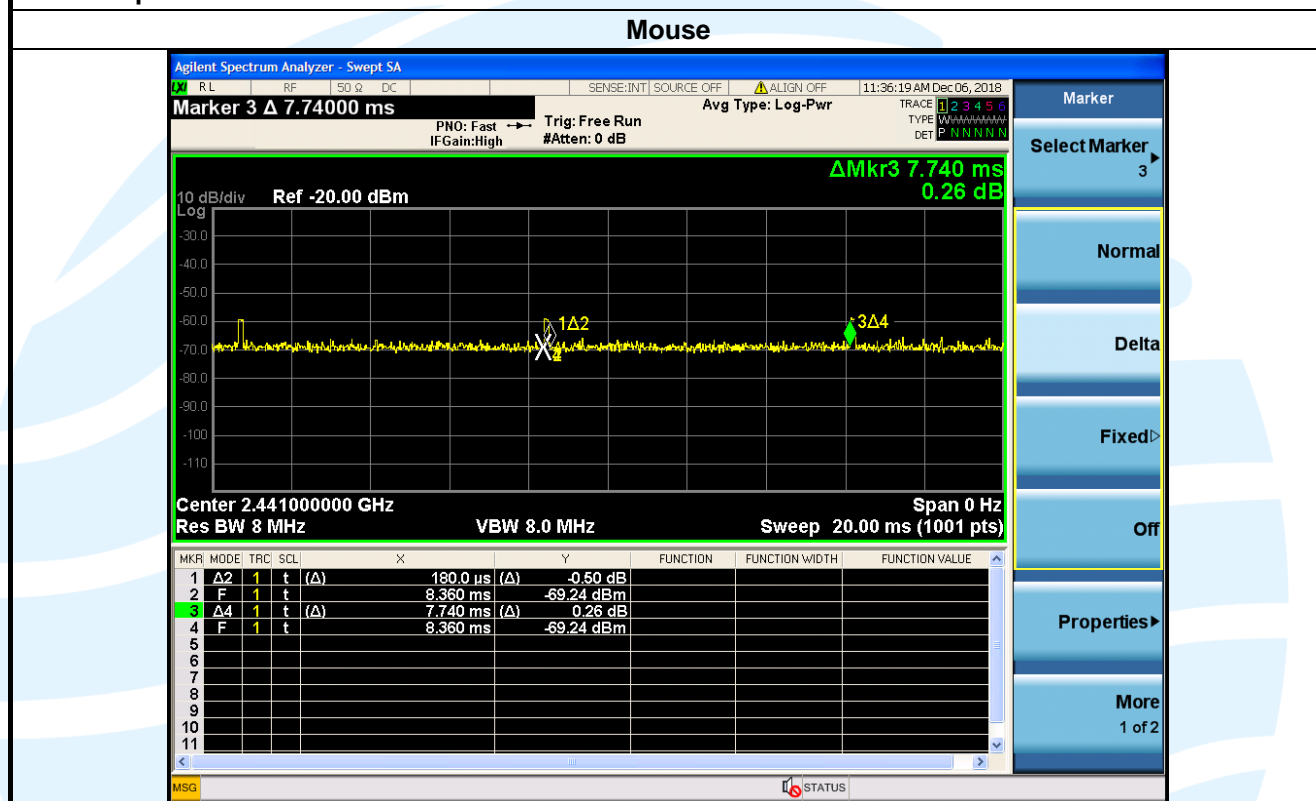
4.6 DUTY CYCLE

| Type of EUT | Type of Modulation | On Time (msec) | Period (msec) | Duty Cycle (linear) | Duty Cycle (%) | Average Factor (dB) |
|-------------|--------------------|----------------|---------------|---------------------|----------------|---------------------|
| Mouse | GFSK | 0.18 | 7.74 | 0.02 | 2.33 | -32.67 |

Remark:

- 1) Duty cycle= On Time/ Period;
- 2) Duty Cycle factor = $10 * \log(1/\text{Duty cycle})$;
- 3) Average factor = $20 \log_{10} \text{Duty Cycle}$.

The test plot as follows



5. RADIO TECHNICAL REQUIREMENTS SPECIFICATION

5.1 REFERENCE DOCUMENTS FOR TESTING

| No. | Identity | Document Title |
|-----|--------------------|--|
| 1 | FCC 47 CFR Part 15 | Radio Frequency Devices |
| 2 | RSS-210 Issue 9 | Licence-Exempt Radio Apparatus: Category I Equipment |
| 2 | ANSI C63.10-2013 | American National Standard for Testing Unlicensed Wireless Devices |

5.2 ANTENNA REQUIREMENT

| Standard Requirement |
|--|
| 15.203 Requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. |
| EUT Antenna: Antenna in the interior of the equipment and no consideration of replacement. The gain of the antenna is -1 dBi. |

5.3 RADIATED EMISSION

Test Requirement: FCC 47 CFR Part 15.209 and 15.249
RSS-210 Issue 9 B.10

Test Method: ANSI C63.10-2013 Section 6.6.4.3

Receiver Setup:

| Frequency | Detector | RBW | VBW | Remark |
|---------------------|------------|---------|---------|------------|
| 0.009 MHz-0.090 MHz | Peak | 10 kHz | 30 KHz | Peak |
| 0.009 MHz-0.090 MHz | Average | 10 kHz | 30 KHz | Average |
| 0.090 MHz-0.110 MHz | Quasi-peak | 10 kHz | 30 KHz | Quasi-peak |
| 0.110 MHz-0.490 MHz | Peak | 10 kHz | 30 KHz | Peak |
| 0.110 MHz-0.490 MHz | Average | 10 kHz | 30 KHz | Average |
| 0.490 MHz -30 MHz | Quasi-peak | 10 kHz | 30 kHz | Quasi-peak |
| 30 MHz-1 GHz | Quasi-peak | 100 kHz | 300 KHz | Quasi-peak |
| Above 1 GHz | Peak | 1 MHz | 3 MHz | Peak |
| | Peak | 1 MHz | 10 Hz | Average |

Limits:

Spurious Emissions

| Frequency | Field strength (microvolt/meter) | Limit (dBμV/m) | Remark | Measurement distance (m) |
|---------------------|----------------------------------|-----------------|------------|--------------------------|
| 0.009 MHz-0.490 MHz | 2400/F(kHz) | -- | -- | 300 |
| 0.490 MHz-1.705 MHz | 24000/F(kHz) | -- | -- | 30 |
| 1.705 MHz-30 MHz | 30 | -- | -- | 30 |
| 30 MHz-88 MHz | 100 | 40.0 | Quasi-peak | 3 |
| 88 MHz-216 MHz | 150 | 43.5 | Quasi-peak | 3 |
| 216 MHz-960 MHz | 200 | 46.0 | Quasi-peak | 3 |
| 960MHz-1GHz | 500 | 54.0 | Quasi-peak | 3 |
| Above 1 GHz | 500 | 54.0 | Average | 3 |

Field strength of the fundamental signal

| Frequency | Limit (dBμV/m @3m) | Remark |
|-----------|--------------------|--------|
|-----------|--------------------|--------|

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| | | |
|---------------------|-------|---------|
| 2400 MHz-2483.5 MHz | 94.0 | Average |
| | 114.0 | Peak |

Remark:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

Test Setup: Refer to section 4.4.1 for details.

Test Procedures:
1. From 30 MHz to 1GHz test procedure as below:

- 1) The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- 2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 3) The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 4) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rota table table was turned from 0 degrees to 360 degrees to find the maximum reading.
- 5) The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 6) If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

2. Above 1GHz test procedure as below:

- 1) Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter).
- 2) Test the EUT in the lowest channel ,middle channel, the Highest channel
- 3) The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the Z axis positioning which it is worse case.
- 4) Repeat above procedures until all frequencies measured was complete.

Equipment Used: Refer to section 3 for details.

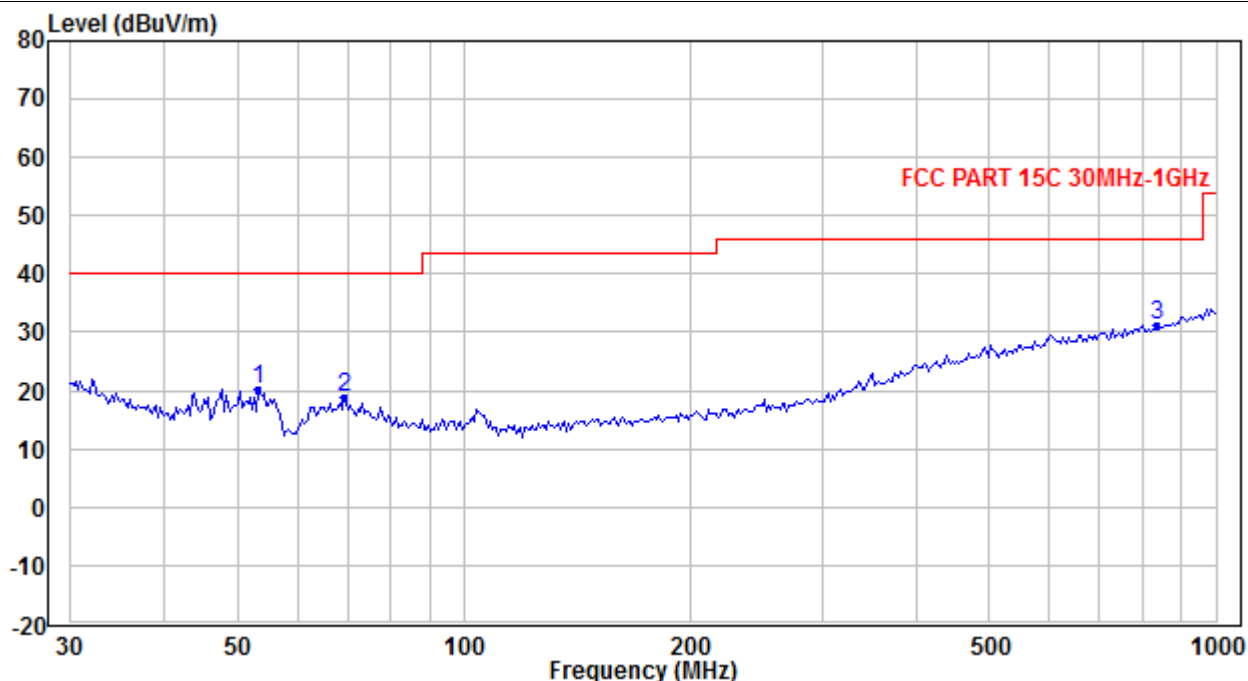
Test Result: Pass

The measurement data as follows:

| Field Strength of the Fundamental Signal | | | | | |
|--|----------------|-------------|---------|-----------------|-----------|
| Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Antenna Polaxis | Pass/Fail |
| Lowest Channel | | | | | |
| 38.18 | 94.00 | -55.82 | Average | Horizontal | Pass |
| 70.85 | 114.00 | -43.15 | Peak | Horizontal | Pass |
| 45.14 | 94.00 | -48.86 | Average | Vertical | Pass |
| 77.81 | 114.00 | -36.19 | Peak | Vertical | Pass |
| Middle Channel | | | | | |
| 39.04 | 94.00 | -54.96 | Average | Horizontal | Pass |
| 71.71 | 114.00 | -42.29 | Peak | Horizontal | Pass |
| 47.16 | 94.00 | -46.84 | Average | Vertical | Pass |
| 79.83 | 114.00 | -34.17 | Peak | Vertical | Pass |
| Highest Channel | | | | | |
| 45.47 | 94.00 | -48.53 | Average | Horizontal | Pass |
| 78.14 | 114.00 | -35.86 | Peak | Horizontal | Pass |
| 50.04 | 94.00 | -43.96 | Average | Vertical | Pass |
| 82.71 | 114.00 | -31.29 | Peak | Vertical | Pass |

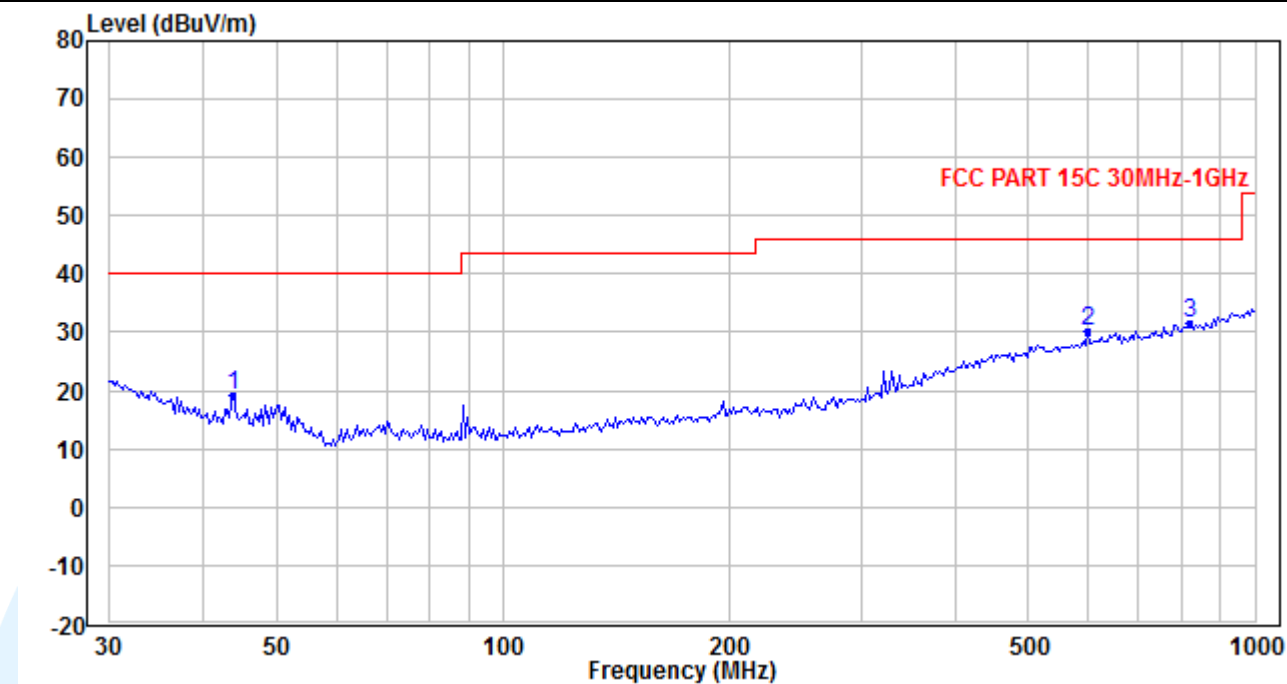
Radiated Emission Test Data (9 KHz ~ 30 MHz):

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

Radiated Emission Test Data (30 MHz ~ 1 GHz):
Lowest Channel
Horizontal


| No. | Frequency (MHz) | Reading (dBuV/m) | Correction factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|------------------------|-----------------|----------------|-------------|--------|
| 1 | 53.379 | 36.02 | -15.78 | 20.24 | 40.00 | -19.76 | Peak |
| 2* | 69.230 | 34.18 | -15.34 | 18.84 | 40.00 | -21.16 | Peak |
| 3 | 833.013 | 26.32 | 4.88 | 31.20 | 46.00 | -14.80 | Peak |

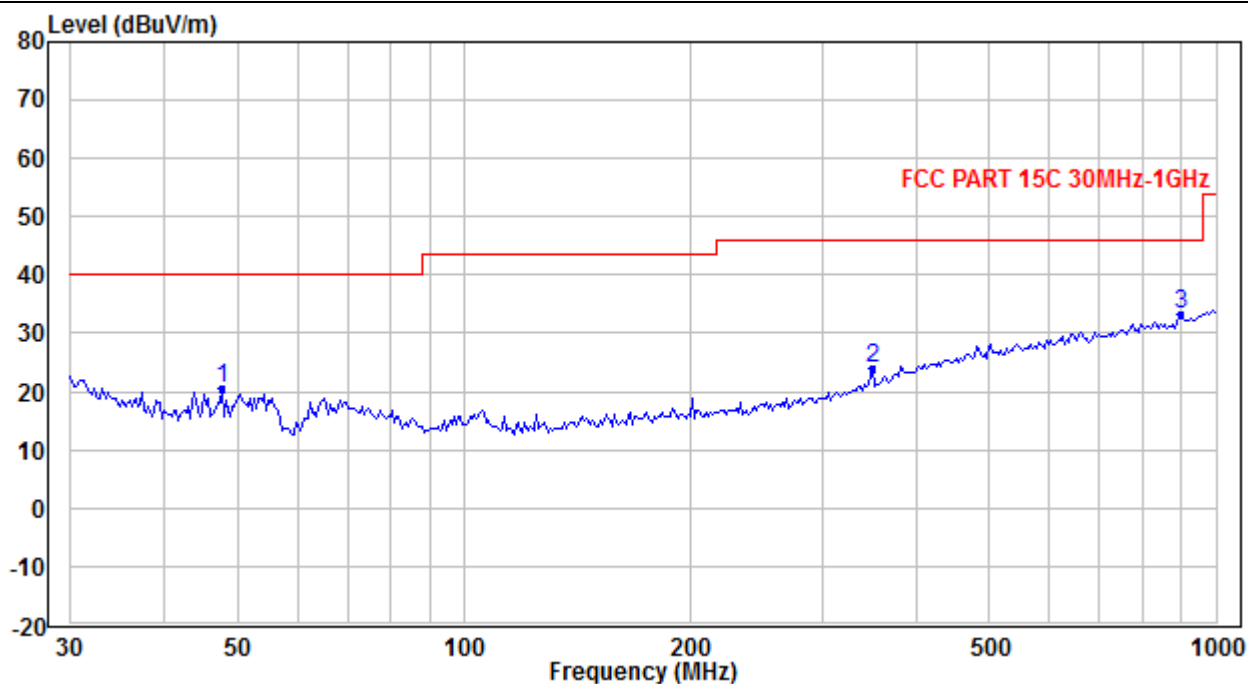
Vertical



| No. | Frequency (MHz) | Reading (dBuV/m) | Correction factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|------------------------|-----------------|----------------|-------------|--------|
| 1* | 43.845 | 32.37 | -13.23 | 19.14 | 40.00 | -20.86 | Peak |
| 2 | 598.707 | 28.28 | 1.89 | 30.17 | 46.00 | -15.83 | Peak |
| 3 | 821.387 | 26.84 | 4.64 | 31.48 | 46.00 | -14.52 | Peak |

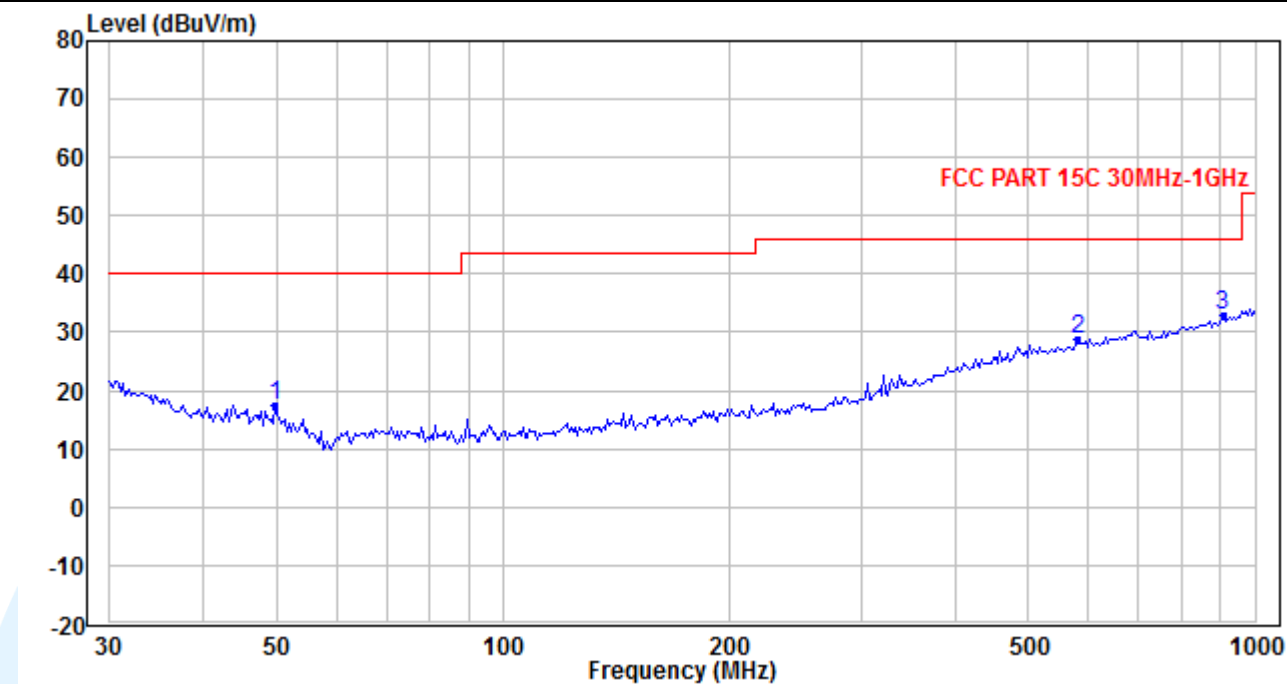
Middle Channel

Horizontal



| No. | Frequency (MHz) | Reading (dBuV/m) | Correction factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|------------------------|-----------------|----------------|-------------|--------|
| 1 | 47.703 | 35.64 | -14.92 | 20.72 | 40.00 | -19.28 | Peak |
| 2* | 348.514 | 28.61 | -4.55 | 24.06 | 46.00 | -21.94 | Peak |
| 3 | 899.958 | 27.25 | 6.03 | 33.28 | 46.00 | -12.72 | Peak |

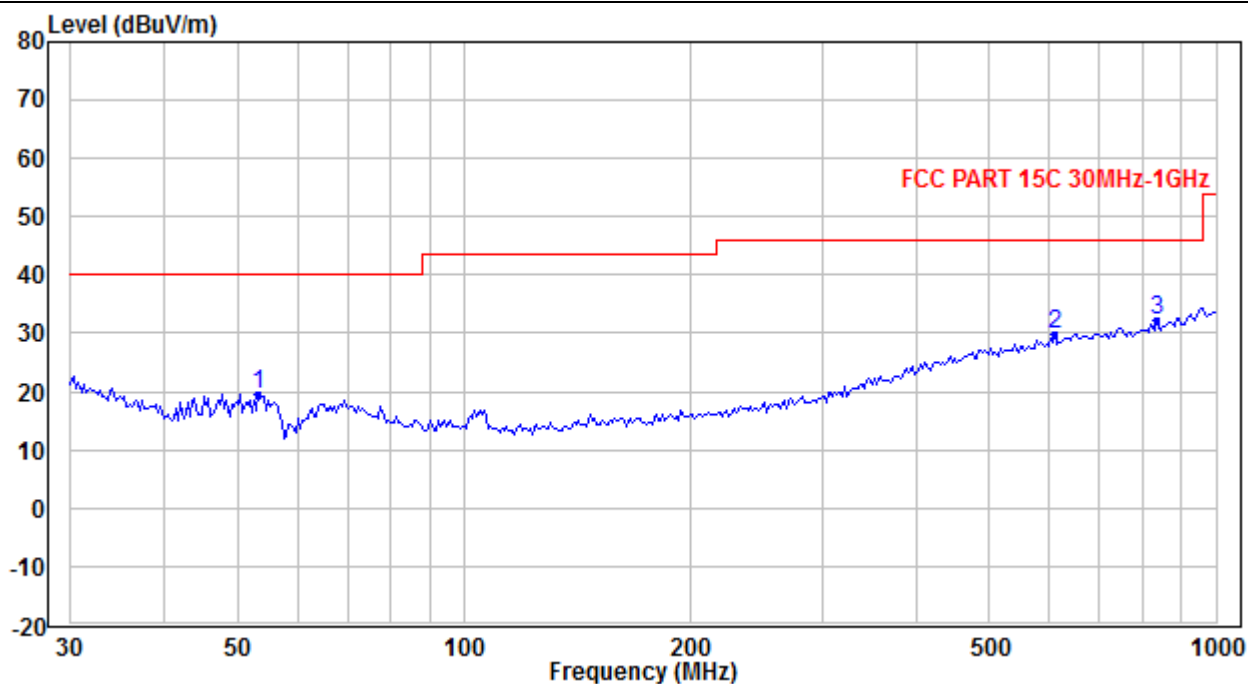
Vertical



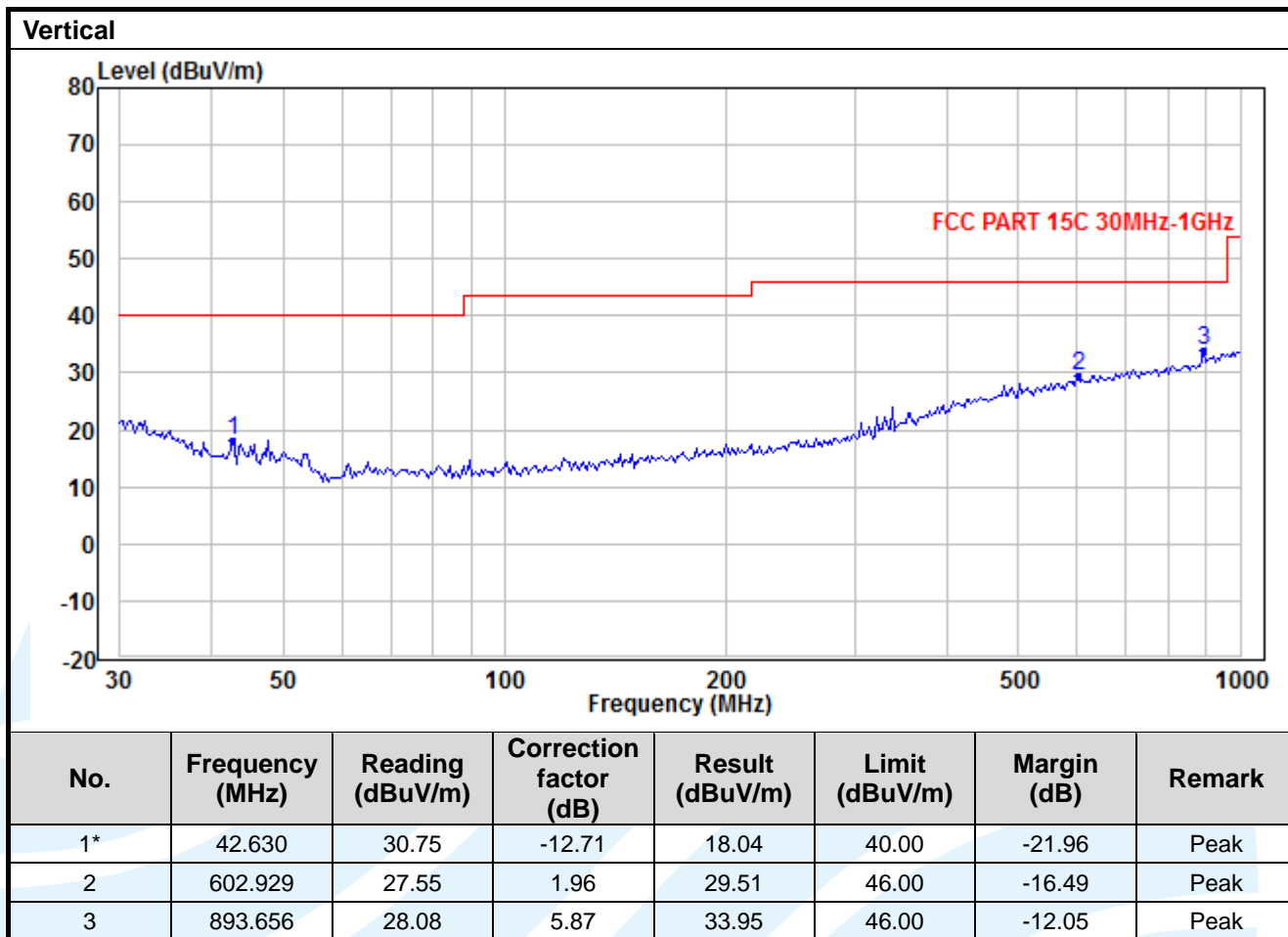
| No. | Frequency (MHz) | Reading (dBuV/m) | Correction factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|------------------------|-----------------|----------------|-------------|--------|
| 1* | 49.757 | 33.36 | -15.81 | 17.55 | 40.00 | -22.45 | Peak |
| 2 | 582.112 | 27.34 | 1.56 | 28.90 | 46.00 | -17.10 | Peak |
| 3 | 906.304 | 26.65 | 6.17 | 32.82 | 46.00 | -13.18 | Peak |

Highest Channel

Horizontal



| No. | Frequency (MHz) | Reading (dBuV/m) | Correction factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|------------------------|-----------------|----------------|-------------|--------|
| 1* | 53.379 | 35.38 | -15.78 | 19.60 | 40.00 | -20.40 | Peak |
| 2 | 611.462 | 27.72 | 2.06 | 29.78 | 46.00 | -16.22 | Peak |
| 3 | 833.013 | 27.29 | 4.88 | 32.17 | 46.00 | -13.83 | Peak |



Radiated Emission Test Data (Above 1GHz):
Lowest Channel:

| No. | Frequency (MHz) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Antenna Polaxis |
|-----|-----------------|-----------------|----------------|-------------|----------|-----------------|
| 1 | 4805.70 | 42.01 | 74.00 | -31.99 | Peak | Horizontal |
| 2 | 4805.70 | 9.34 | 54.00 | -44.66 | Average | Horizontal |
| 3 | 7208.55 | 43.28 | 74.00 | -30.72 | Peak | Horizontal |
| 4 | 7208.55 | 10.61 | 54.00 | -43.39 | Average | Horizontal |
| 5 | 4805.70 | 41.80 | 74.00 | -32.20 | Peak | Vertical |
| 6 | 4805.70 | 9.13 | 54.00 | -44.87 | Average | Vertical |
| 7 | 7208.55 | 43.16 | 74.00 | -30.84 | Peak | Vertical |
| 8 | 7208.55 | 10.49 | 54.00 | -43.51 | Average | Vertical |

Middle Channel:

| No. | Frequency (MHz) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Antenna Polaxis |
|-----|-----------------|-----------------|----------------|-------------|----------|-----------------|
| 1 | 4883.70 | 42.31 | 74.00 | -31.69 | Peak | Horizontal |
| 2 | 4883.70 | 9.64 | 54.00 | -44.36 | Average | Horizontal |
| 3 | 7325.55 | 42.96 | 74.00 | -31.04 | Peak | Horizontal |
| 4 | 7325.55 | 10.29 | 54.00 | -43.71 | Average | Horizontal |
| 5 | 4883.70 | 41.65 | 74.00 | -32.35 | Peak | Vertical |
| 6 | 4883.70 | 8.98 | 54.00 | -45.02 | Average | Vertical |
| 7 | 7325.55 | 43.38 | 74.00 | -30.62 | Peak | Vertical |
| 8 | 7325.55 | 10.71 | 54.00 | -43.29 | Average | Vertical |

Highest Channel:

| No. | Frequency (MHz) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Antenna Polaxis |
|-----|-----------------|-----------------|----------------|-------------|----------|-----------------|
| 1 | 4961.70 | 42.18 | 74.00 | -31.82 | Peak | Horizontal |
| 2 | 4961.70 | 9.51 | 54.00 | -44.49 | Average | Horizontal |
| 3 | 7442.55 | 44.12 | 74.00 | -29.88 | Peak | Horizontal |
| 4 | 7442.55 | 11.45 | 54.00 | -42.55 | Average | Horizontal |
| 5 | 4961.70 | 42.18 | 74.00 | -31.82 | Peak | Vertical |
| 6 | 4961.70 | 9.51 | 54.00 | -44.49 | Average | Vertical |
| 7 | 7442.55 | 43.36 | 74.00 | -30.64 | Peak | Vertical |
| 8 | 7442.55 | 10.69 | 54.00 | -43.31 | Average | Vertical |

5.4 RESTRICTED BANDS AROUND FUNDAMENTAL FREQUENCY

Test Requirement: FCC 47 CFR Part 15.209 and 15.205
RSS-210 B.10

Test Method: ANSI C63.10-2013

Limits:

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

| Frequency | Limit (dB μ V/m @3m) | Remark |
|-----------------|--------------------------|------------------|
| 30 MHz-88 MHz | 40.0 | Quasi-peak Value |
| 88 MHz-216 MHz | 43.5 | Quasi-peak Value |
| 216 MHz-960 MHz | 46.0 | Quasi-peak Value |
| 960 MHz-1 GHz | 54.0 | Quasi-peak Value |
| Above 1 GHz | 54.0 | Average Value |
| | 74.0 | Peak Value |

Test Setup: Refer to section 4.4.1 for details.

Test Procedures:

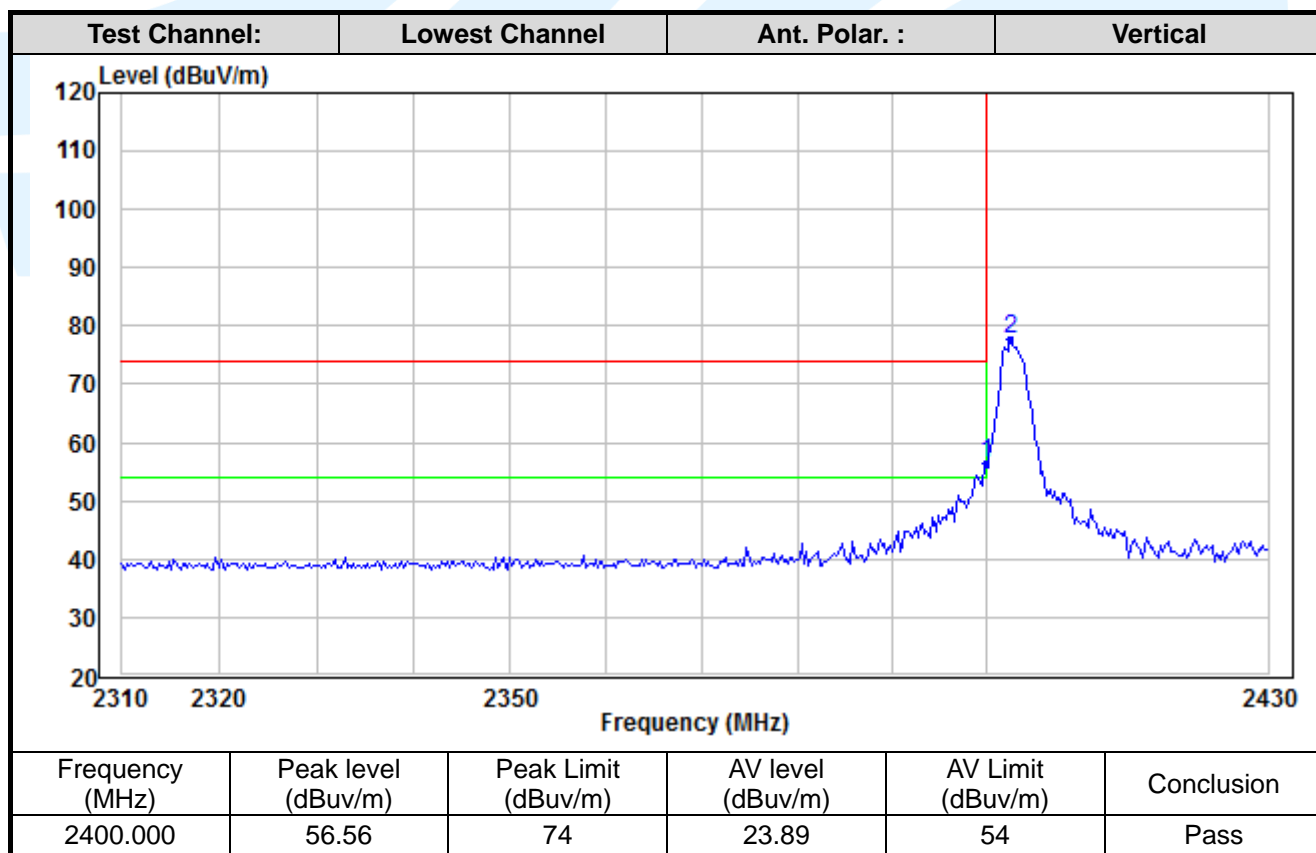
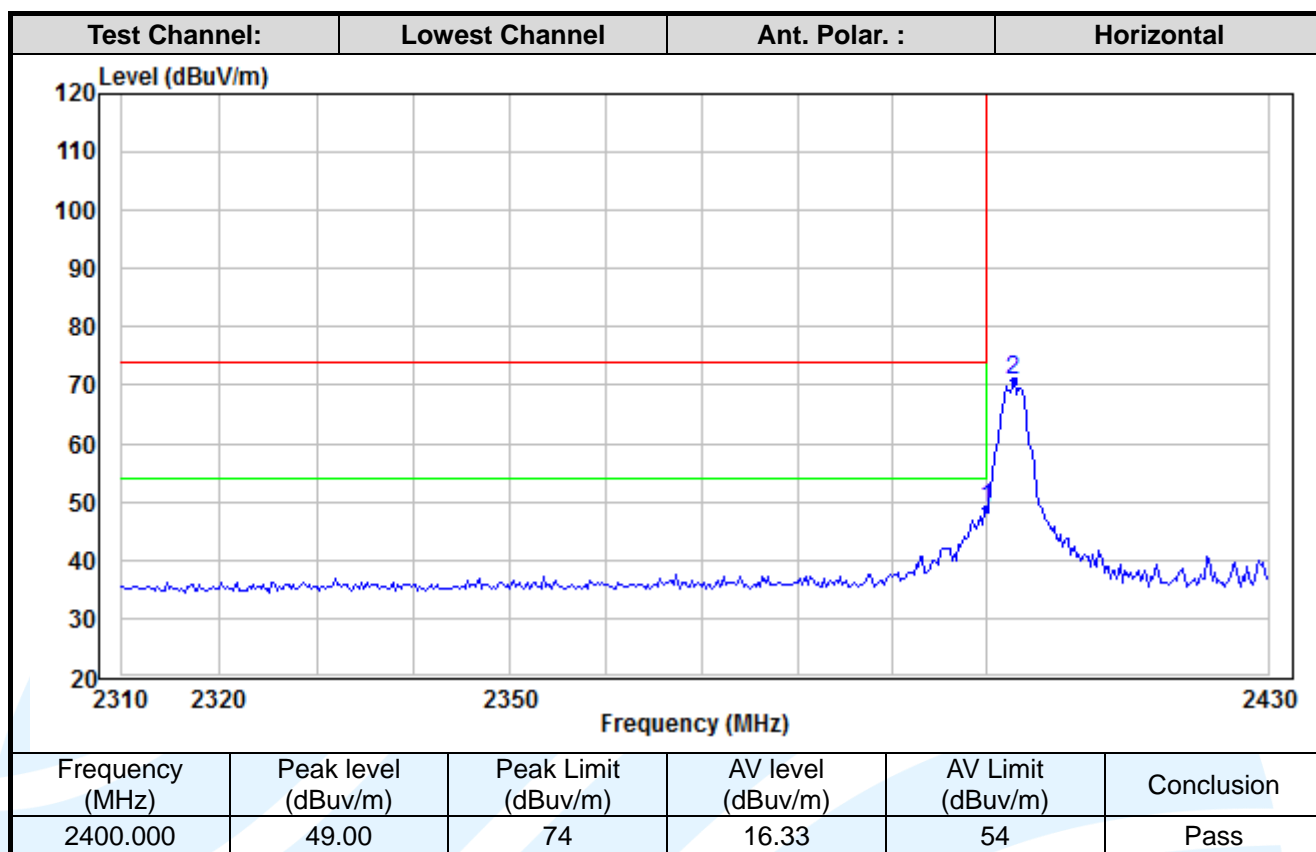
Radiated band edge measurements at 2400 MHz and 2483.5 MHz were made with the unit transmitting in the low end of the channel range and the high end closest to the restricted bands respectively. The emissions were made on the 966 Semi-Chamber. Use (resolution bandwidth (RBW) = 1 MHz, video bandwidth (VBW) = 3 MHz for peak levels and RBW = 1 MHz and VBW = 10 Hz or 1/T for average levels).

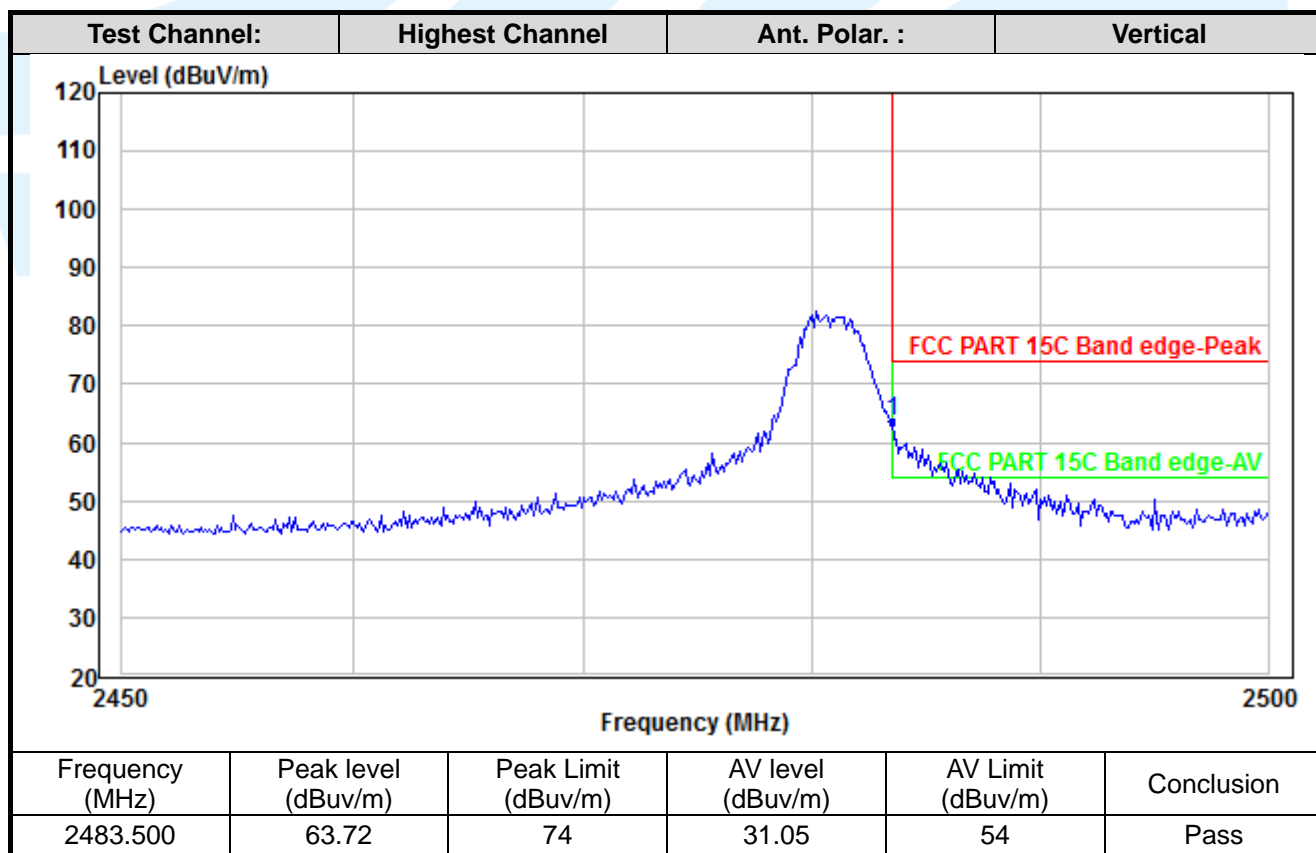
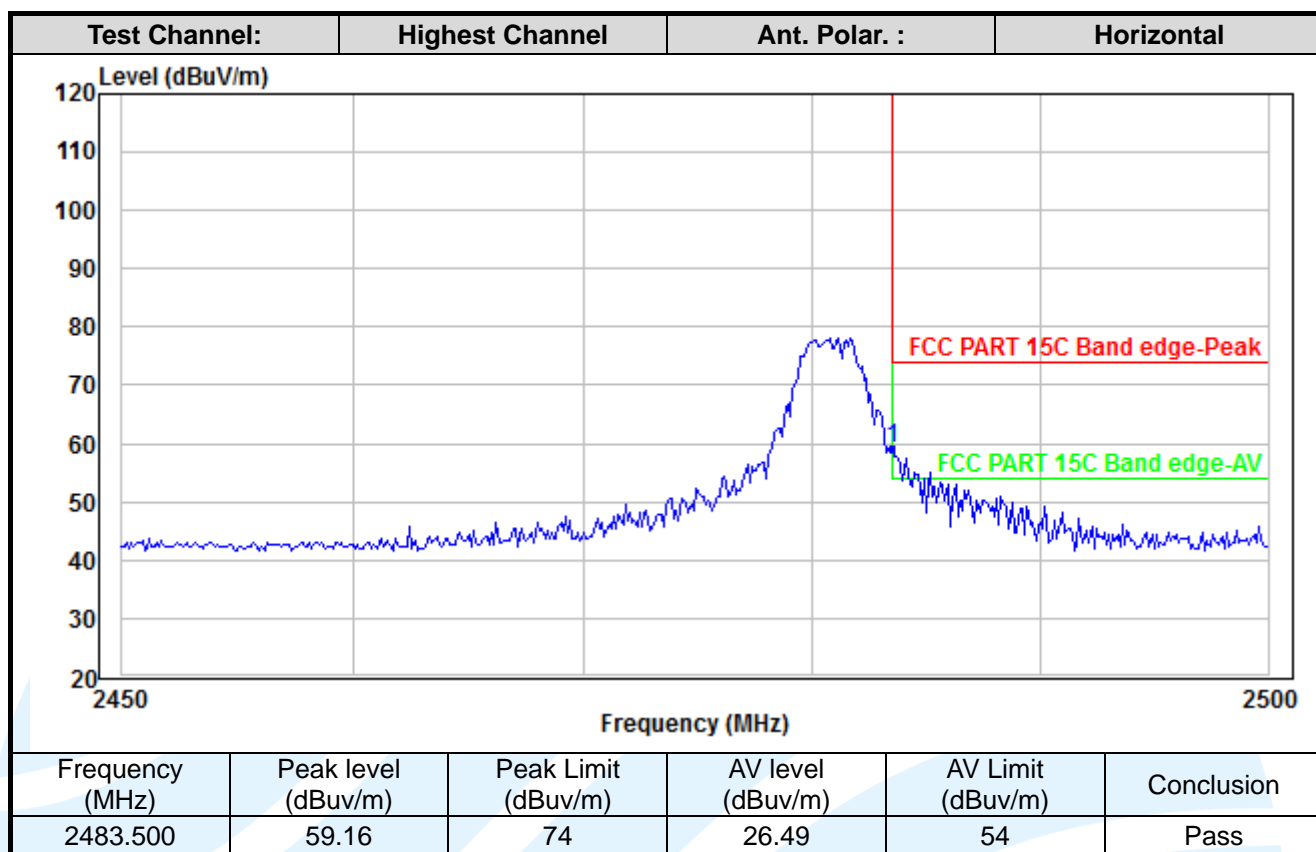
1. Use radiated spurious emission test procedure described in clause 5.3. The transmitter output (antenna port) was connected to the test receiver.
2. Set the PK and AV limit line.
3. Record the fundamental emission and emissions out of the band-edge.
4. Determine band-edge compliance as required.

Equipment Used: Refer to section 3 for details.

Test Result: Pass

The measurement data as follows:





Remark: Average result = Peak result + Average Factor

5.5 20DB OCCUPIED BANDWIDTH

Test Requirement: FCC 47 CFR Part 15.215
RSS-Gen Issue 5 Section 6.7

Test Method: ANSI C63.10-2013

Test Setup: Refer to section 4.4.3 for details.

Limits: N/A

Equipment Used: Refer to section 3 for details.

Test Result: Pass

The measurement procedure shall be as follows:

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

Use the following spectrum analyzer settings:

- a) Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel
- b) RBW \geq 1% of the 20 dB bandwidth
- c) VBW \geq RBW
- d) Sweep = auto;
- e) Detector function = peak
- f) Trace = max hold
- g) All the trace to stabilize, use the marker-to-peak function to set the marker to the peak of the emission, use the marker-delta function to measure and record the 20dB down bandwidth of the emission.

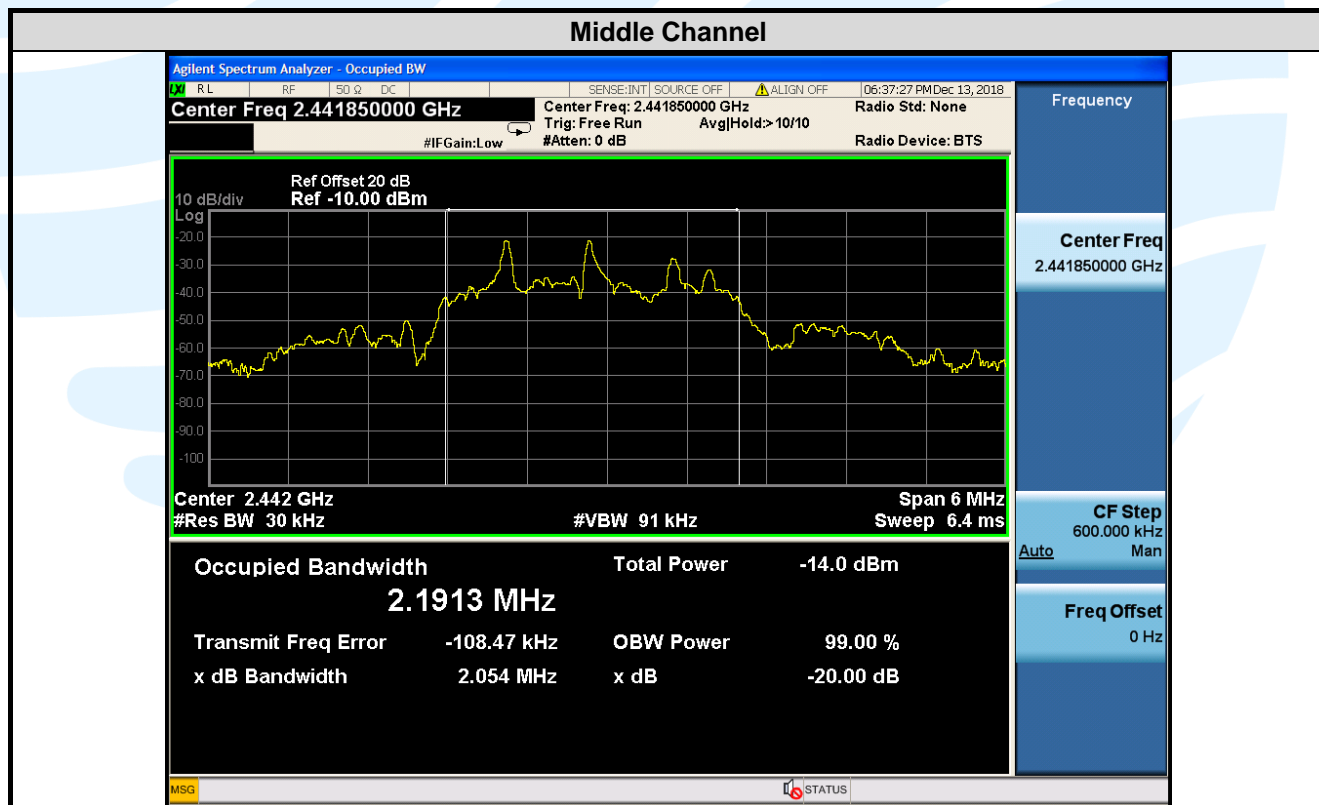
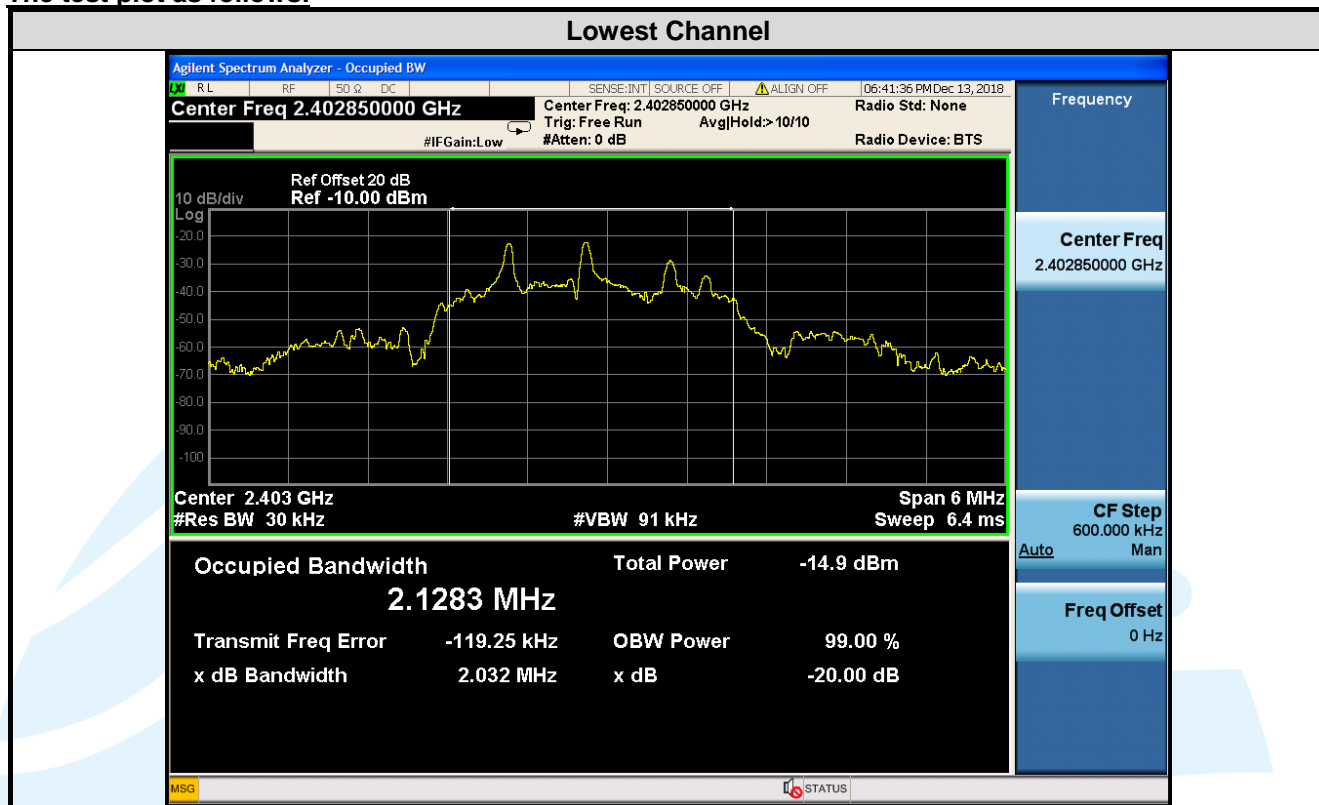
Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

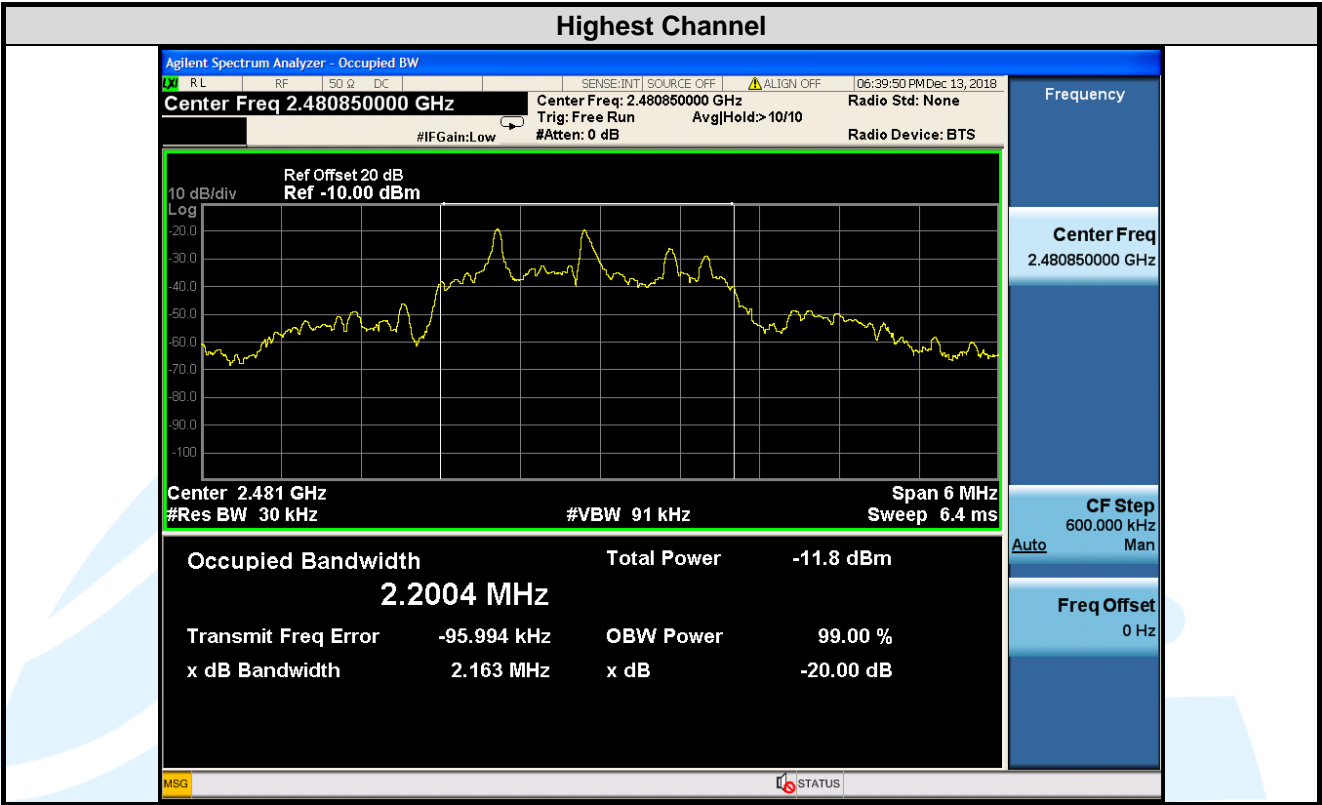
Test Result: Pass

The measurement data as follows:

| Mouse | |
|--------------|-----------------------|
| Test Channel | 20 dB Bandwidth (MHz) |
| Lowest | 2.032 |
| Middle | 2.054 |
| Highest | 2.163 |

The test plot as follows:





APPENDIX 1 PHOTOS OF TEST SETUP

See test photos attached in Appendix 1 for the actual connections between Product and support equipment.

APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal photos.

*** End of Report ***

The test report is effective only with both signature and specialized stamp. The result(s) shown in this report refer only to the sample(s) tested. Without written approval of UnionTrust, this report can't be reproduced except in full.
