**CTC Laboratories, Inc.**

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# TEST REPORT

| | |
|---|---|
| **Report No. ·····:** | **CTC20211351E08** |
| **FCC ID·····:** | **PADWF142** |
| **Applicant·····:** | **Wahoo Fitness LLC** |
| Address·····: | 90 W. Wieuca Road #110, Atlanta, GA 30342, United States |
| Manufacturer·····: | Wahoo Fitness LLC |
| Address·····: | 90 W. Wieuca Road #110, Atlanta, GA 30342, United States |
| **Product Name·····:** | **KICKR ROLLR** |
| Trade Mark·····: | N/A |
| Model/Type reference·····: | WF142 |
| Listed Model(s) ·····: | N/A |
| **Standard·····:** | **FCC CFR Title 47 Part 15 Subpart C Section 15.249** |
| Date of receipt of test sample…: | Aug. 06, 2021 |
| Date of testing……..: | Aug. 07, 2021 to Sep. 07, 2021 |
| Date of issue……....: | Sep. 14, 2021 |
| **Result……:** | **PASS** |

| | | |
|---|---|---|
| Compiled by:<br>(Printed name+signature) | Terry Su |  |
| Supervised by:<br>(Printed name+signature) | Miller Ma |  |
| Approved by:<br>(Printed name+signature) | Walter Chen |  |

| | |
|---|---|
| **Testing Laboratory Name……:** | **CTC Laboratories, Inc.** |
| Address……: | 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China |

## Table of Contents Page


**1. TEST SUMMARY ..... 3**

1.1. TEST STANDARDS ..... 3
1.2. REPORT VERSION ..... 3
1.3. TEST DESCRIPTION ..... 4
1.4. TEST FACILITY ..... 5
1.5. MEASUREMENT UNCERTAINTY ..... 5
1.6. ENVIRONMENTAL CONDITIONS ..... 6

**2. GENERAL INFORMATION ..... 7**

2.1. CLIENT INFORMATION ..... 7
2.2. GENERAL DESCRIPTION OF EUT ..... 7
2.3. DESCRIPTION OF TEST MODES ..... 8
2.4. ACCESSORY EQUIPMENT INFORMATION ..... 8
2.5. MEASUREMENT INSTRUMENTS LIST ..... 9

**3. TEST ITEM AND RESULTS ..... 10**

3.1. AC POWER LINE CONDUCTED EMISSIONS ..... 10
3.2. 20 DB OCCUPIED BANDWIDTH ..... 13
3.3. RADIATED FIELD STRENGTH OF THE FUNDAMENTAL SIGNAL ..... 15
3.4. RADIATED SPURIOUS EMISSIONS AND BANDEDGE EMISSION ..... 18
3.5. ANTENNA REQUIREMENT ..... 26

# 1. TEST SUMMARY

## 1.1. Test Standards

The tests were performed according to following standards:

FCC Rules Part 15.249: Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz.
RSS-210: Licence-Exempt Radio Apparatus: Category I Equipment
ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.

## 1.2. Report version

| Revised No. | Date of issue | Description |
|---|---|---|
| 01 | Sep. 08, 2021 | Original |
| 02 | Sep. 14, 2021 | Update product name and factory information |
| | | |
| | | |

## 1.3. Test Description

| Test Item | Section in CFR 47 | RSS-210 | Result | Test Engineer |
|---|---|---|---|---|
| AC Power Line Conducted Emissions | 15.207 | RSS-Gen 8.8 | PASS | Jojo He |
| 20dB Occupied Bandwidth | 15.215/15.249 | / | PASS | Alicia Liu |
| Field strength of the Fundamental signal | 15.249(a) | RSS-210 F.1.a | PASS | Terry Su |
| Spurious Emissions | 15.209/15.249(a) | RSS-210 F.1.e | PASS | Terry Su |
| Band edge Emissions | 15.205/15.249(d) | / | PASS | Terry Su |
| Antenna requirement | 15.203 | / | PASS | Terry Su |

Note: The measurement uncertainty is not included in the test result.

"N/A" This device is only powered battery, no need for part 15.207.

## 1.4. Test Facility

**Address of the report laboratory**

**CTC Laboratories, Inc.**

Add: 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China

**Laboratory accreditation**

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

**CNAS-Lab Code: L5365**

CTC Laboratories, Inc. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation. Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025:2017 General Requirements) f or the Competence of Testing and Calibration Laboratories.

**A2LA-Lab Cert. No.: 4340.01**

CTC Laboratories, Inc. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in th e identified field of testing.

**Industry Canada （Registration No.: 9783A, CAB Identifier: CN0029）**

CTC Laboratories, Inc. EMC Laboratory has been registered by Certification and Engineer Bureau of Indus try Canada for the performance of with Registration NO.: 9783A on Jan, 2016.

**FCC (Registration No.: 951311, Designation Number CN1208)**

CTC Laboratories, Inc. EMC Laboratory has been registered and fully described in a report filed with the (F CC) Federal Communications Commission. The acceptance letter from the FCC is maintained inour files. Registration 951311, Aug 26, 2017.

## 1.5. Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01” Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1” and TR-100028-02 “Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 “ and is documented in the CTC Laboratories, Inc.quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Below is the best measurement capability for CTC Laboratories, Inc.

| Test Items | Measurement Uncertainty | Notes |
|---|---|---|
| Transmitter power conducted | 0.42 dB | (1) |
| Transmitter power Radiated | 2.14 dB | (1) |
| Conducted spurious emissions 9kHz~40GHz | 1.60 dB | (1) |
| Radiated spurious emissions 9kHz~40GHz | 2.20 dB | (1) |
| Conducted Emissions 9kHz~30MHz | 3.20 dB | (1) |
| Radiated Emissions 30~1000MHz | 4.70 dB | (1) |
| Radiated Emissions 1~18GHz | 5.00 dB | (1) |
| Radiated Emissions 18~40GHz | 5.54 dB | (1) |
| Occupied Bandwidth | --------- | (1) |

**Note (1):** This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

## 1.6. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

| | |
|---|---|
| Temperature: | 21°C ~ 27°C |
| Relative Humidity: | 40% ~ 60% |
| Air Pressure: | 101kPa |

# 2. GENERAL INFORMATION

## 2.1. Client Information

| | |
|---|---|
| Applicant: | Wahoo Fitness L.L.C. |
| Address: | 90 W. Wieuca Road #110, Atlanta, GA 30342, United States |
| Manufacturer: | Wahoo Fitness L.L.C. |
| Address: | 90 W. Wieuca Road #110, Atlanta, GA 30342, United States |
| Factory | Zhejiang Everbright Industry,Inc |
| Address: | Kandun Industr Zone, Cixi City, Ningbo City, Zhejiang Province, China |

## 2.2. General Description of EUT

| | |
|---|---|
| Product Name: | KICKR ROLLR |
| Trade Mark: | N/A |
| Model/Type reference: | WF142 |
| Listed Model(s): | N/A |
| Power supply: | 12Vdc/5A from AC/DC Adapter |
| Adapter Model: | SUN-1200500<br>Input: 100-240V~ 50/60Hz Max 1.7A<br>Output: 12V/5A |
| Hardware version: | N/A |
| Software version: | N/A |
| **ANT+ Specification** | |
| Modulation: | GFSK |
| Operation frequency: | 2457MHz |
| Antenna type: | Chip Antenna |
| Antenna gain: | 5.46dBi |

## 2.3. Description of Test Modes

The EUT has been tested under test mode condition. The Applicant provides software to control the EUT for staying in continuous transmitting and receiving mode for testing.

**Operation Frequency List:**

| Channel | Frequency (MHz) |
|---|---|
| 01 | 2457 |

**Test Mode:**

| For RF test items |
|---|
| The engineering test program was provided and enabled to make EUT continuous transmit. (duty cycle>98%). |
| For AC power line conducted emissions: |
| The EUT was set to connect with large package sizes transmission. |
| For Radiated spurious emissions test item: |
| The engineering test program was provided and enabled to make EUT continuous transmit. The EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report. |

## 2.4. Accessory Equipment Information

| **Equipment Information** | | | |
|---|---|---|---|
| Name | Model | S/N | Manufacturer |
| / | / | / | / |
| **Cable Information** | | | |
| Name | Shielded Type | Ferrite Core | Length |
| / | / | / | / |
| **Test Software Information** | | | |
| Name | Versions | / | / |
| / | / | / | / |

## 2.5. Measurement Instruments List

| Tonscend JS0806-2 Test system | | | | | |
|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Calibrated until |
| 1 | Spectrum Analyzer | Rohde & Schwarz | FSU26 | 100105 | Dec. 25, 2021 |
| 2 | Spectrum Analyzer | Rohde & Schwarz | FUV40-N | 101331 | Mar. 15, 2022 |
| 3 | MXG Vector Signal Generator | Agilent | N5182A | MY47420864 | Dec. 25, 2021 |
| 4 | Signal Generator | Agilent | E8257D | MY46521908 | Dec. 25, 2021 |
| 5 | Power Sensor | Agilent | U2021XA | MY5365004 | Mar. 15, 2022 |
| 6 | Power Sensor | Agilent | U2021XA | MY5365006 | Mar. 15, 2022 |
| 7 | High and low temperature box | ESPEC | MT3035 | N/A | Mar. 24, 2022 |
| 8 | Wideband Radio Communication Tester | Rohde & Schwarz | CMW500 | 102414 | Dec. 25, 2021 |
| 9 | 300328 v2.2.2 test system | TONSCEND | v2.6 | / | / |

| Radiated emission(3m chamber 2) | | | | | |
|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Calibrated Until |
| 1 | Trilog-Broadband Antenna | Schwarzbeck | VULB 9168 | 9168-1013 | Jan.12, 2022 |
| 2 | Horn Antenna | Schwarzbeck | BBHA 9120D | 9120D-647 | Dec. 24, 2021 |
| 3 | Spectrum Analyzer | R&S | FSU26 | 100105 | Dec. 25, 2021 |
| 4 | Spectrum Analyzer | R&S | FSV40-N | 101331 | Mar. 15, 2022 |
| 5 | Pre-Amplifier | SONOMA | 310 | 186194 | Dec. 25, 2021 |
| 6 | Low Noise Pre-Amplifier | EMCI | EMC051835 | 980075 | Dec. 25, 2021 |
| 7 | Test Receiver | R&S | ESCI7 | 100967 | Dec. 25, 2021 |

| Radiated emission(3m chamber 3) | | | | | |
|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Calibrated Until |
| 1 | Trilog-Broadband Antenna | Schwarzbeck | VULB 9168 | 9168-759 | Nov.09, 2021 |
| 2 | Horn Antenna | Schwarzbeck | BBHA 9120D | 9120D-647 | Dec. 24, 2021 |
| 3 | Test Receiver | Keysight | N9038A | MY56400071 | Dec. 25, 2021 |
| 4 | Broadband Premplifier | SCHWARZBECK | BBV9743B | 259 | Dec. 25, 2021 |
| 5 | Mirowave Broadband Amplifier | SCHWARZBECK | BBV9718C | 111 | Dec. 25, 2021 |

| Conducted Emission | | | | | |
|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Calibrated until |
| 1 | LISN | R&S | ENV216 | 101112 | Dec. 25, 2021 |
| 2 | LISN | R&S | ENV216 | 101113 | Dec. 25, 2021 |
| 3 | EMI Test Receiver | R&S | ESCS30 | 100353 | Dec. 25, 2021 |

Note: 1. The Cal. Interval was one year.
2. The cable loss has calculated in test result which connection between each test instruments.

# 3. TEST ITEM AND RESULTS

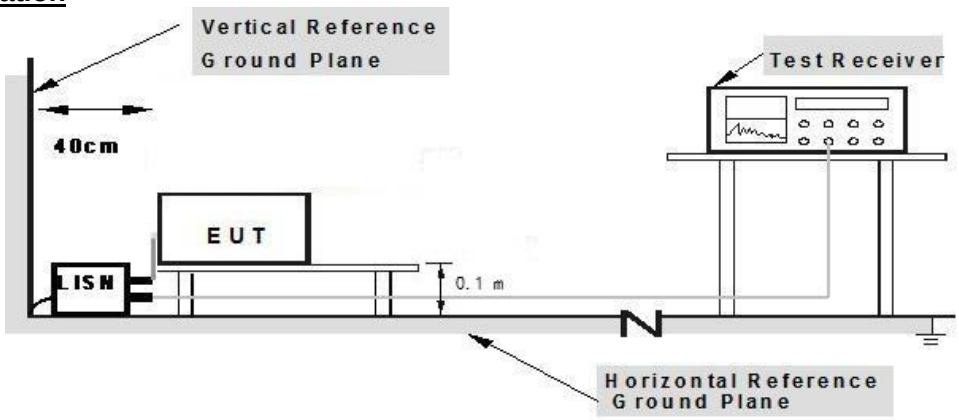
## 3.1. AC Power Line Conducted Emissions

**Limit**

| Frequency | Maximum RF Line Voltage (dBμV) | |
|---|---|---|
| | Quasi-peak Level | Average Level |
| 150kHz~500kHz | 66 ~ 56 * | 56 ~ 46 * |
| 500kHz~5MHz | 56 | 46 |
| 5MHz~30MHz | 60 | 50 |

Notes:
(1) *Decreasing linearly with logarithm of the frequency.
(2) The lower limit shall apply at the transition frequencies.
(3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

**Test Configuration**




Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

**Test Procedure**

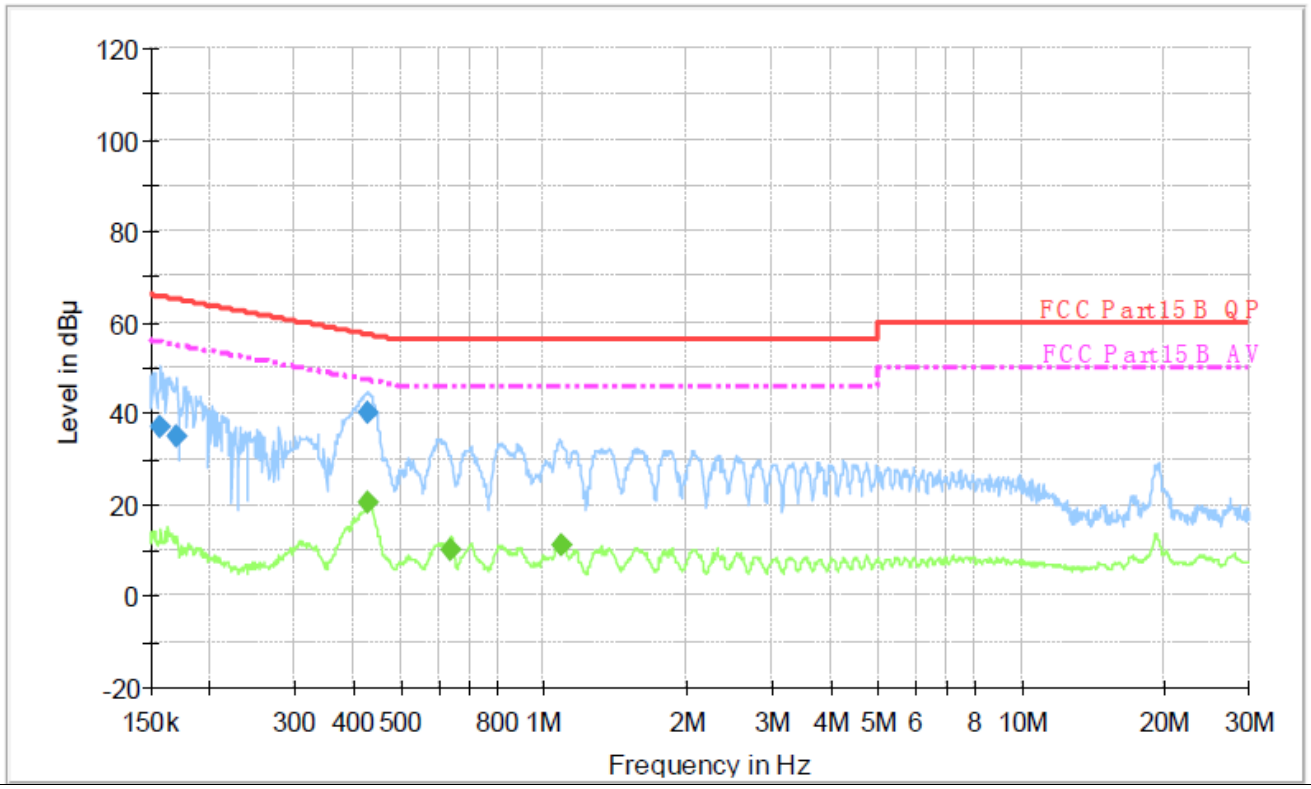
1. The EUT was setup according to ANSI C63.10:2013 requirements.
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 10 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 10 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedances stabilization network (LISN). The LISN provides a 50ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
4. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
5. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
6. Conducted Emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
7. During the above scans, the emissions were maximized by cable manipulation.

**Test Mode**

Please refer to the clause 2.3

**Test Results**

| | |
|---|---|
| **Test Voltage:** | AC 120V/60 Hz |
| **Terminal:** | Line |




## Final Measurement Detector 1

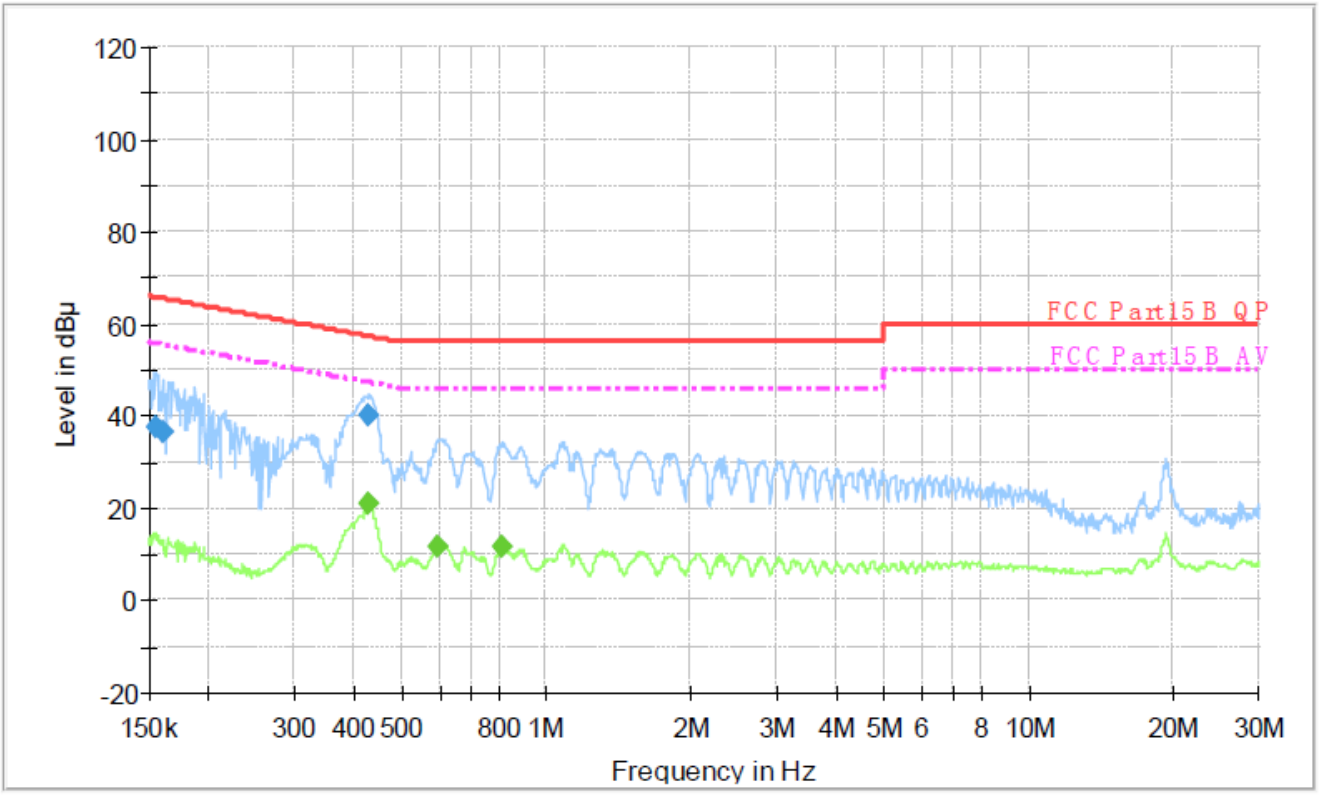
| Frequency (MHz) | QuasiPeak (dBµ V) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµ V) | Comment |
|---|---|---|---|---|---|---|---|---|---|
| 0.157360 | 37.0 | 1000.00 | 9.000 | On | L1 | 9.7 | 28.6 | 65.6 | |
| 0.170440 | 35.1 | 1000.00 | 9.000 | On | L1 | 9.7 | 29.8 | 64.9 | |
| 0.426900 | 40.0 | 1000.00 | 9.000 | On | L1 | 9.7 | 17.3 | 57.3 | |

## Final Measurement Detector 2

| Frequency (MHz) | Average (dBµ V) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµ V) | Comment |
|---|---|---|---|---|---|---|---|---|---|
| 0.430320 | 20.5 | 1000.00 | 9.000 | On | L1 | 9.7 | 26.7 | 47.2 | |
| 0.638890 | 10.0 | 1000.00 | 9.000 | On | L1 | 9.7 | 36.0 | 46.0 | |
| 1.090800 | 11.2 | 1000.00 | 9.000 | On | L1 | 9.7 | 34.8 | 46.0 | |

Emission Level= Read Level+ Correct Factor

| | |
|---|---|
| **Test Voltage:** | AC 120V/60 Hz |
| **Terminal:** | Neutral |




## Final Measurement Detector 1

| Frequency (MHz) | QuasiPeak (dBµ V) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµ V) | Comment |
|---|---|---|---|---|---|---|---|---|---|
| 0.154870 | 37.8 | 1000.00 | 9.000 | On | N | 10.0 | 27.9 | 65.7 | |
| 0.159890 | 36.7 | 1000.00 | 9.000 | On | N | 10.0 | 28.8 | 65.5 | |
| 0.430320 | 40.4 | 1000.00 | 9.000 | On | N | 10.0 | 16.8 | 57.2 | |

## Final Measurement Detector 2

| Frequency (MHz) | Average (dBµ V) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµ V) | Comment |
|---|---|---|---|---|---|---|---|---|---|
| 0.430320 | 20.8 | 1000.00 | 9.000 | On | N | 10.0 | 26.4 | 47.2 | |
| 0.596980 | 11.9 | 1000.00 | 9.000 | On | N | 10.0 | 34.2 | 46.0 | |
| 0.811810 | 11.6 | 1000.00 | 9.000 | On | N | 10.0 | 34.4 | 46.0 | |

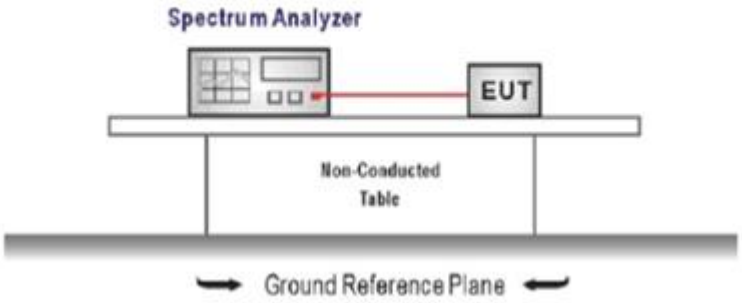
Emission Level= Read Level+ Correct Factor

## 3.2. 20 dB Occupied Bandwidth

**Limit**

Operation frequency range 2400MHz~2483.5MHz.

**Test Configuration**




**Test Procedure**

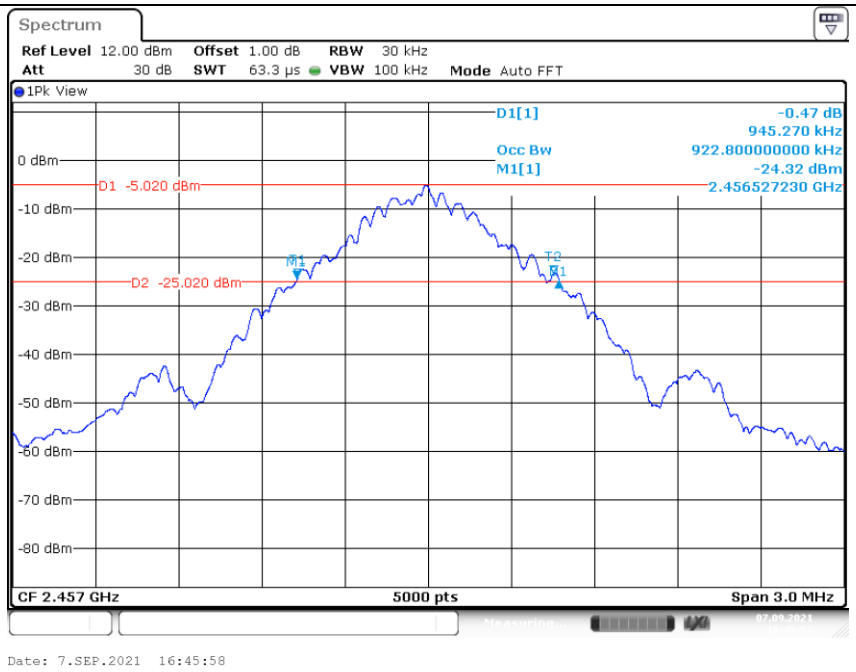
1. The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously
3. Use the following spectrum analyzer settings:
   Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a test channel
   RBW ≥ 1% of the 20 dB bandwidth, VBW ≥ RBW
   Sweep = auto, Detector function = peak, Trace = max hold
4. Measure and record the results in the test report.

**Test Mode:**

Please refer to the clause 2.3

**Test Results**

| Channel | 20dB Bandwidth (KHz) | 99% Bandwidth (KHz) | Result |
|---|---|---|---|
| 01 | 945.27 | 922.80 | Pass |

| | |
|---|---|
| 99% & 20dB Bandwidth |  |

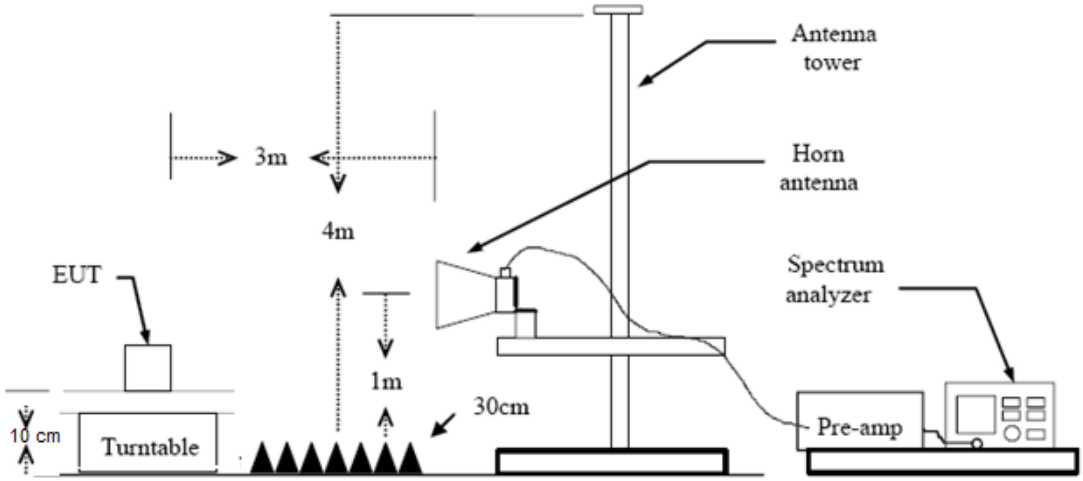
## 3.3. Radiated field strength of the fundamental signal

**Limit**

| Fundamental frequency | Field strength of fundamental (millivolts/meter/ AVG) | Field strength of harmonics (microvolts/meter/ AVG) |
|---|---|---|
| 902-928 MHz | 50 (94dBuV/m @3m) | 500 (54dBuV/m @3m) |
| 2400-2483.5 MHz | 50 (94dBuV/m @3m) | 500 (54dBuV/m @3m) |
| 5725-5875 MHz | 50 (94dBuV/m @3m) | 500 (54dBuV/m @3m) |
| 24.0-24.25 GHz | 250 (108dBuV/m @3m) | 2500 (68dBuV/m @3m) |

Frequencies above 1000 MHz, the field strength limits are based on average limits

**Test Configuration**




**Test Procedure**

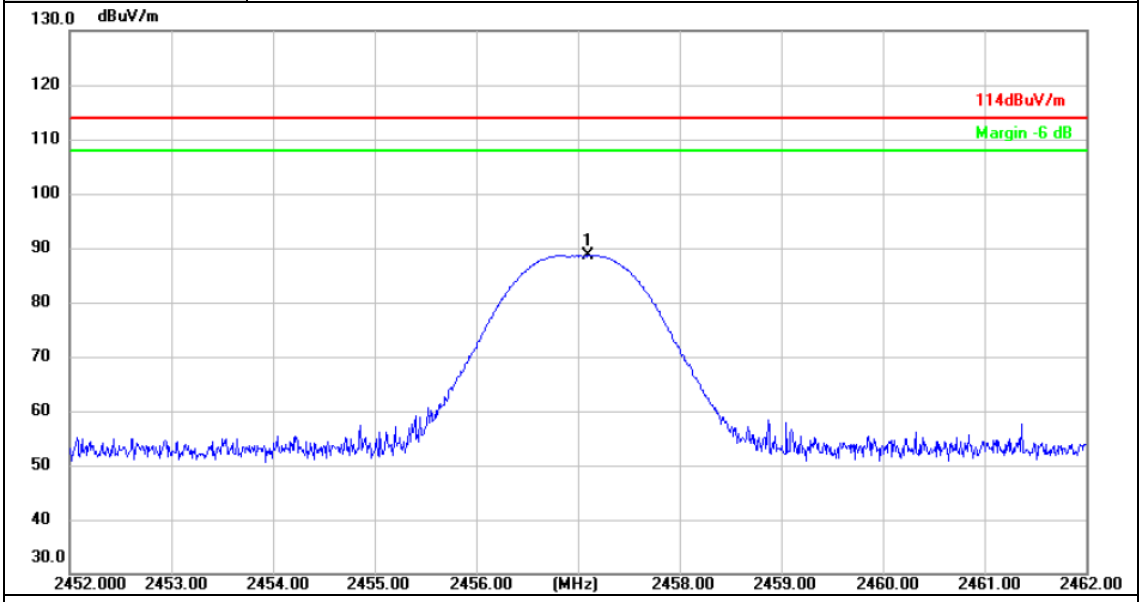
1. The EUT was setup and tested according to ANSI C63.10:2013 requirements.
2. The EUT is placed on a turn table which is 0.1 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.
5. The receiver set as follow:
   RBW=1MHz, VBW=3MHz Peak detector for Peak value.

**Test Mode**

Please refer to the clause 2.3

## Test Results

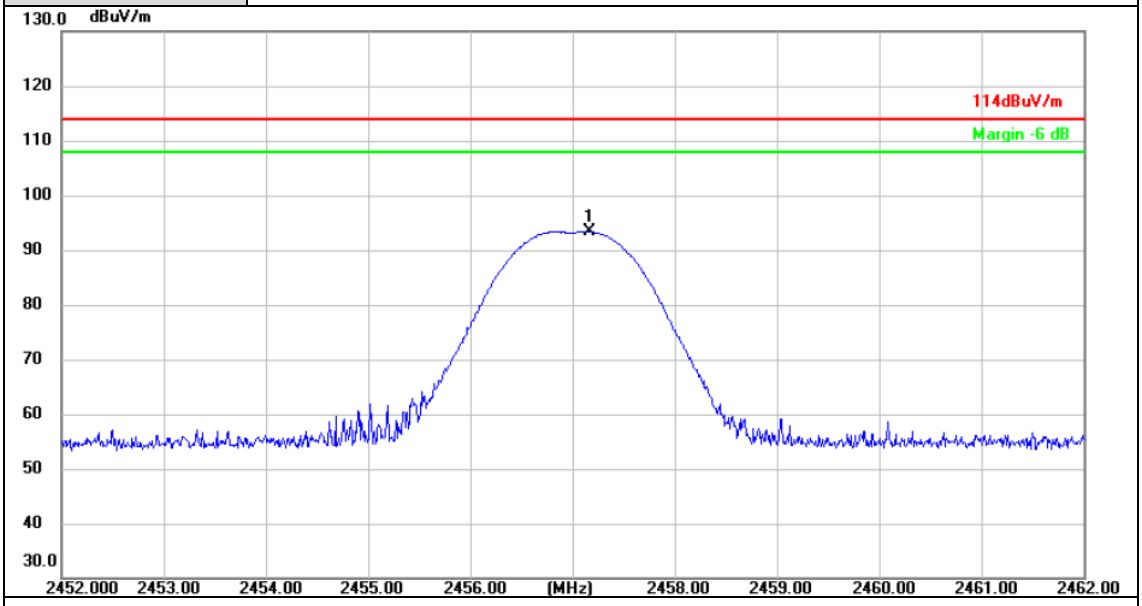
| Ant. Pol. | Horizontal |
|---|---|
| Test Mode: | TX ANT+ Mode 2457MHz |




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 * | 2457.100 | 57.48 | 31.12 | 88.60 | 114.00 | -25.40 | peak |

Remarks:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

| Ant. Pol. | Vertical |
|---|---|
| Test Mode: | TX ANT+ Mode 2457MHz |




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 * | 2457.160 | 62.25 | 31.12 | 93.37 | 114.00 | -20.63 | peak |

Remarks:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

## 3.4. Radiated Spurious Emissions and Bandedge Emission

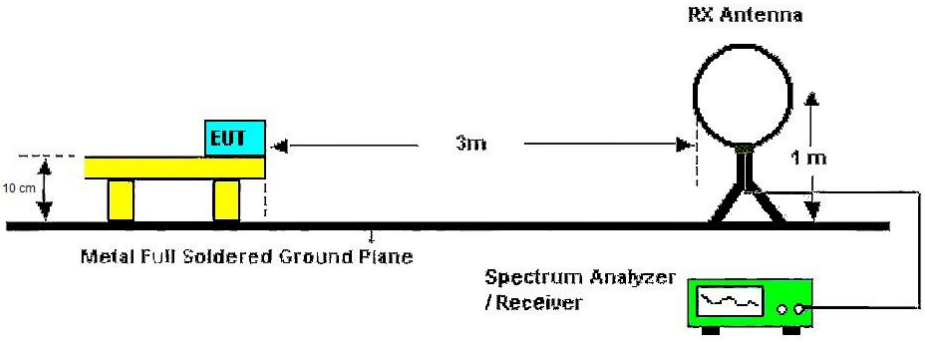
**Limit**

**FCC CFR Title 47 Part 15 Subpart C Section 15.209**

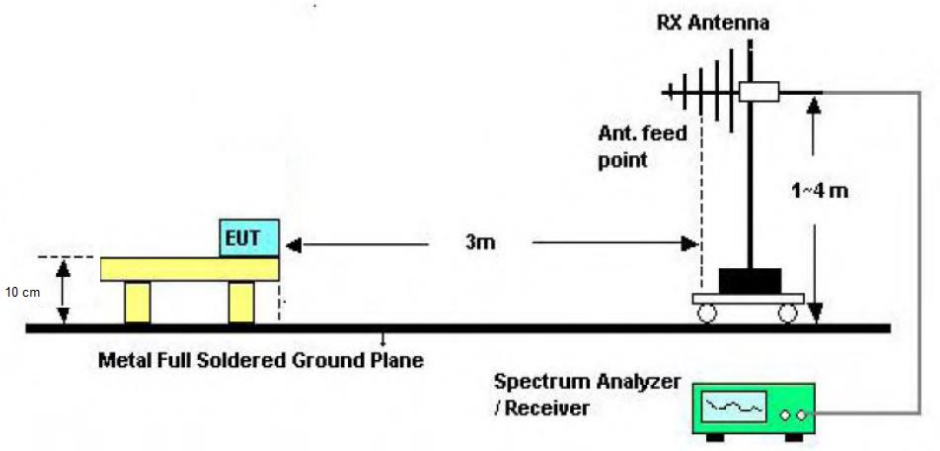
| Frequency | Limit (dBuV/m @3m) | Value |
|---|---|---|
| 30MHz~88MHz | 40.00 | Quasi-peak |
| 88MHz~216MHz | 43.50 | Quasi-peak |
| 216MHz~960MHz | 46.00 | Quasi-peak |
| 960MHz~1GHz | 54.00 | Quasi-peak |
| Above 1GHz | 54.00 | Average |
| | 74.00 | Peak |

**Test Configuration**

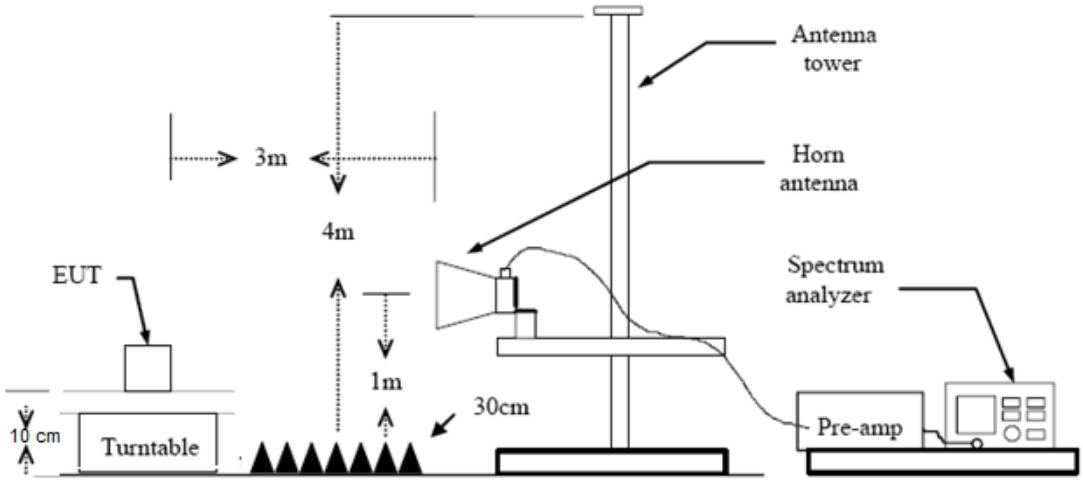
- 9 kHz ~ 30 MHz




- 30 MHz ~ 1 GHz




- Above 1 GHz




**Test Procedure**

1. The EUT was setup and tested according to ANSI C63.10:2013 requirements.
2. The EUT is placed on a turn table which is 0.1 meter above ground for below 1 GHz, and 0.1 m for above 1 GHz. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
4. Set to the maximum power setting and enable the EUT transmit continuously.
5. Use the following spectrum analyzer settings

   Span shall wide enough to fully capture the emission being measured;
   (1)Below 1 GHz:
   RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold;
   If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
   (2)From 1 GHz to 10th harmonic:
   RBW=1MHz, VBW=3MHz Peak detector for Peak value.
   RBW=1MHz, VBW=3MHz RMS detector for Average value.

**Test Mode:**

Please refer to the clause 2.3

**Test Results**

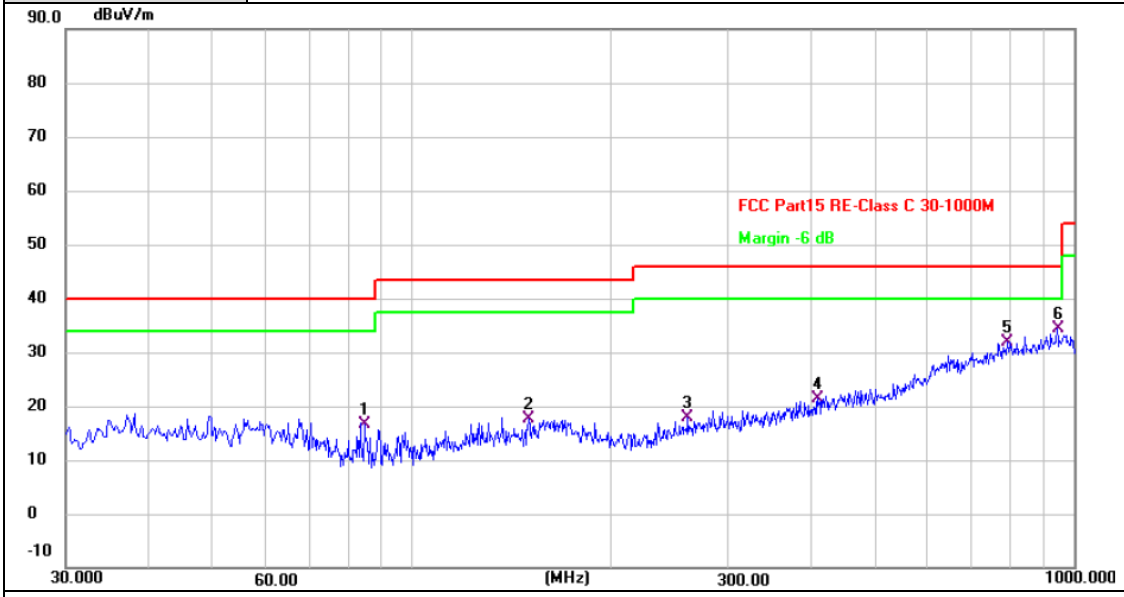
**Radiated Spurious Emissions**

- **9 kHz ~ 30 MHz**

  The EUT was pre-scanned the frequency band (9 kHz ~ 30 MHz), found the radiated level lower than the limit, so don't show on the report.

■ **30 MHz ~ 1 GHz**

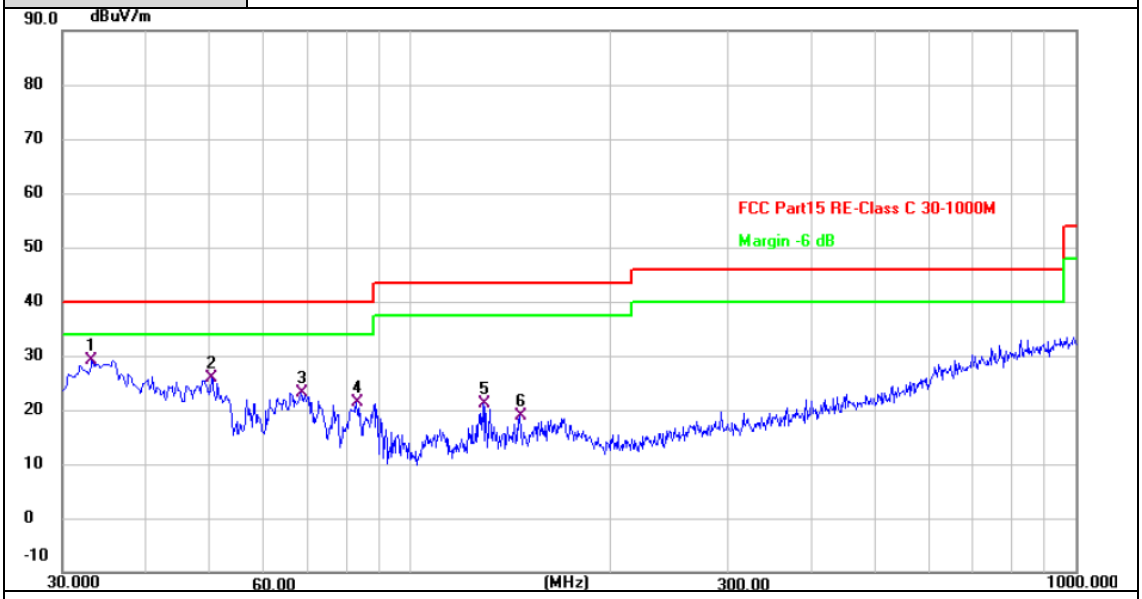
| **Ant. Pol.** | Horizontal |
|---|---|
| **Test Mode:** | TX ANT+ Mode 2457MHz |




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 84.9666 | 35.54 | -19.03 | 16.51 | 40.00 | -23.49 | QP |
| 2 | 150.2800 | 32.05 | -14.47 | 17.58 | 43.50 | -25.92 | QP |
| 3 | 261.8299 | 33.57 | -15.73 | 17.84 | 46.00 | -28.16 | QP |
| 4 | 411.5333 | 32.91 | -11.52 | 21.39 | 46.00 | -24.61 | QP |
| 5 | 793.7133 | 34.72 | -2.93 | 31.79 | 46.00 | -14.21 | QP |
| 6 * | 942.4467 | 35.12 | -0.77 | 34.35 | 46.00 | -11.65 | QP |

Remarks:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

| Ant. Pol. | Vertical |
|---|---|
| Test Mode: | TX ANT+ Mode 2457MHz |

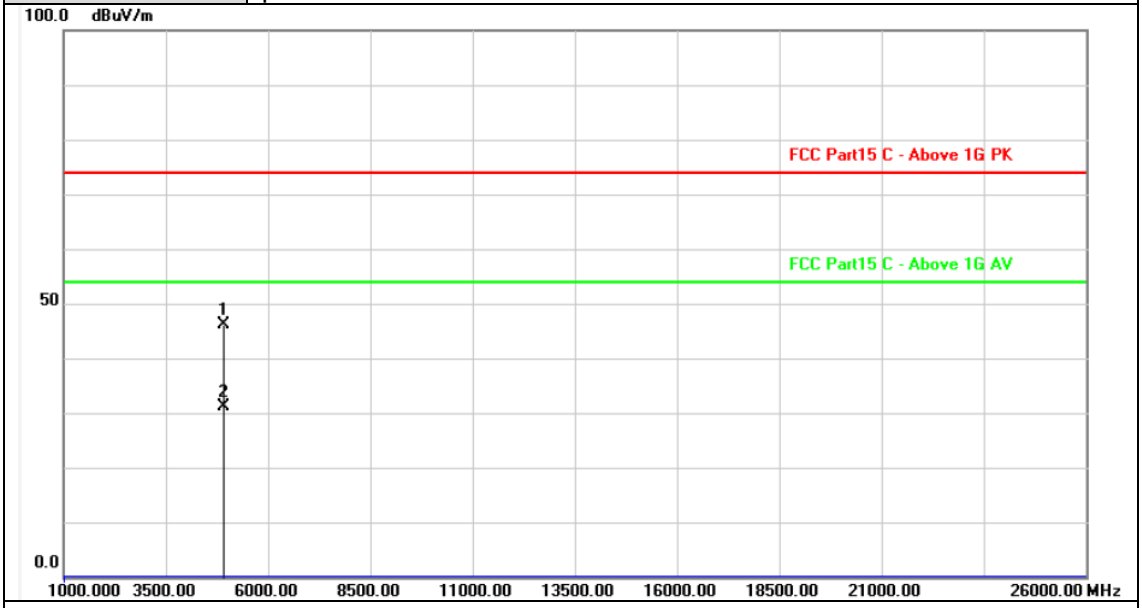



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 * | 33.2333 | 44.33 | -15.19 | 29.14 | 40.00 | -10.86 | QP |
| 2 | 50.3700 | 40.53 | -14.63 | 25.90 | 40.00 | -14.10 | QP |
| 3 | 68.4767 | 39.76 | -16.70 | 23.06 | 40.00 | -16.94 | QP |
| 4 | 83.0267 | 40.34 | -19.03 | 21.31 | 40.00 | -18.69 | QP |
| 5 | 128.6167 | 36.98 | -15.81 | 21.17 | 43.50 | -22.33 | QP |
| 6 | 146.0767 | 33.59 | -14.78 | 18.81 | 43.50 | -24.69 | QP |

Remarks:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

■ **Above 1 GHz**

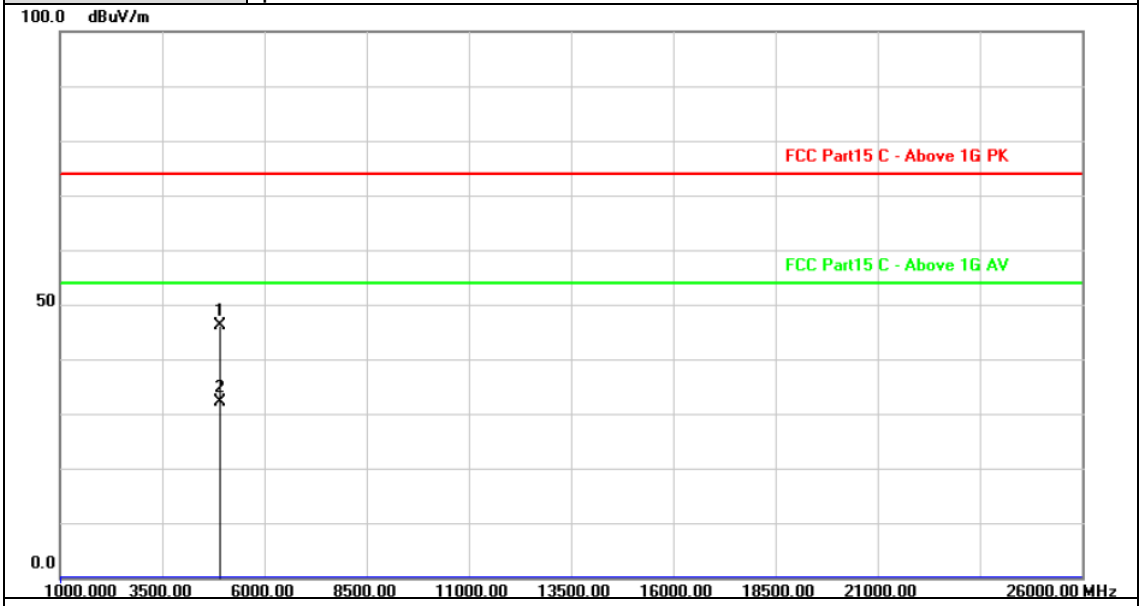
| | |
|---|---|
| **Ant. Pol.** | Horizontal |
| **Test Mode:** | TX ANT+ Mode 2457MHz |
| **Remark:** | No report for the emission which more than 10 dB below the prescribed limit. |




| No. | Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 4913.985 | 3.44 | 42.68 | 46.12 | 74.00 | -27.88 | peak |
| 2 | 4914.015 | 3.44 | 27.81 | 31.25 | 54.00 | -22.75 | AVG |

Remarks:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

| | |
|---|---|
| **Ant. Pol.** | Vertical |
| **Test Mode:** | TX ANT+ Mode 2457MHz |
| **Remark:** | No report for the emission which more than 10 dB below the prescribed limit. |

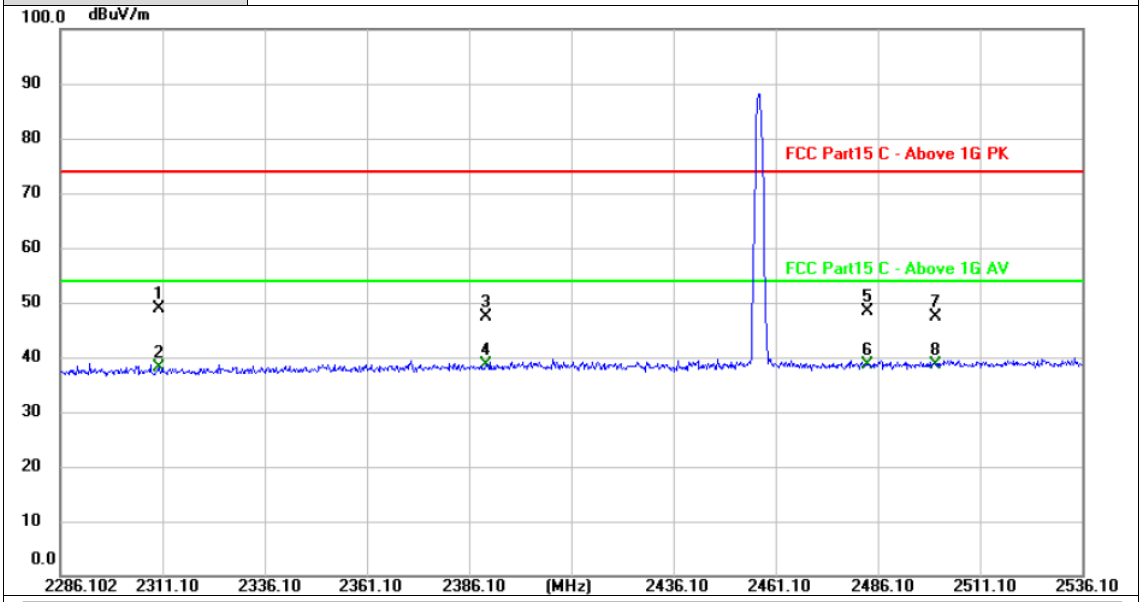



| No. | Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 4914.012 | 3.44 | 42.79 | 46.23 | 74.00 | -27.77 | peak |
| 2 | 4914.142 | 3.44 | 28.71 | 32.15 | 54.00 | -21.85 | AVG |

Remarks:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

## Bandedge Emission

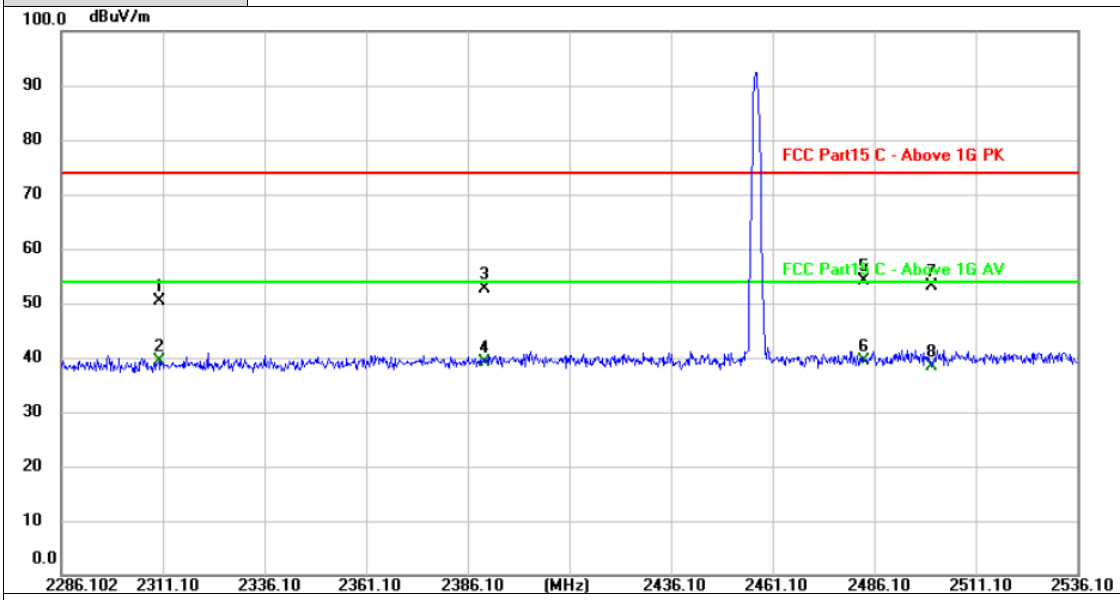
| Ant. Pol. | Horizontal |
|---|---|
| Test Mode: | TX ANT+ Mode 2457MHz |




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 2310.000 | 18.48 | 30.49 | 48.97 | 74.00 | -25.03 | peak |
| 2 | 2310.000 | 7.67 | 30.49 | 38.16 | 54.00 | -15.84 | AVG |
| 3 | 2390.000 | 16.65 | 30.84 | 47.49 | 74.00 | -26.51 | peak |
| 4 | 2390.000 | 7.81 | 30.84 | 38.65 | 54.00 | -15.35 | AVG |
| 5 | 2483.500 | 17.07 | 31.24 | 48.31 | 74.00 | -25.69 | peak |
| 6 | 2483.500 | 7.29 | 31.24 | 38.53 | 54.00 | -15.47 | AVG |
| 7 | 2500.000 | 16.12 | 31.31 | 47.43 | 74.00 | -26.57 | peak |
| 8 * | 2500.000 | 7.42 | 31.31 | 38.73 | 54.00 | -15.27 | AVG |

Remark:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

| Ant. Pol. | Vertical |
|---|---|
| Test Mode: | TX ANT+ Mode 2457MHz |




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 2310.000 | 19.93 | 30.49 | 50.42 | 74.00 | -23.58 | peak |
| 2 | 2310.000 | 8.77 | 30.49 | 39.26 | 54.00 | -14.74 | AVG |
| 3 | 2390.000 | 21.67 | 30.84 | 52.51 | 74.00 | -21.49 | peak |
| 4 | 2390.000 | 8.25 | 30.84 | 39.09 | 54.00 | -14.91 | AVG |
| 5 | 2483.500 | 22.84 | 31.24 | 54.08 | 74.00 | -19.92 | peak |
| 6 * | 2483.500 | 8.19 | 31.24 | 39.43 | 54.00 | -14.57 | AVG |
| 7 | 2500.000 | 21.74 | 31.31 | 53.05 | 74.00 | -20.95 | peak |
| 8 | 2500.000 | 7.11 | 31.31 | 38.42 | 54.00 | -15.58 | AVG |

Remark:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

## 3.5. Antenna requirement

**Requirement**

**FCC CFR Title 47 Part 15 Subpart C Section 15.203:**

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 anantenna 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.

(i) Systems operating in the 2400~2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

**Test Result**

The directional gain of the antenna less than 6dBi, please refer to the EUT internal photographs antenna photo.

************************THE END*************************