# TEST REPORT

For

**Wearable Data Terminal**

**Model Number: U2**

**FCC ID: SWSU2**

**Report Number : WT178005941**


| | | |
|---|---|---|
| Test Laboratory | : | Shenzhen Academy of Metrology and Quality Inspection<br>National Digital Electronic Product Testing Center |
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# TEST REPORT DECLARATION

| | | |
|---|---|---|
| Applicant | : | Shenzhen Urovo Technology Co., Ltd |
| Address | : | A7, Zondy Cyber Building, Nanshan, Shenzhen, China |
| Manufacturer | : | Shenzhen Urovo Technology Co., Ltd |
| Address | : | A7, Zondy Cyber Building, Nanshan, Shenzhen, China |
| EUT Description | : | Wearable Data Terminal |
| Model No | : | U2 |
| Trade mark | : | UROVO |
| Serial Number | : | / |
| FCC ID | : | SWSU2 |

Test Standards:

**FCC Part 15 15.207, 15.209, 15.247(2016)**

The EUT described above is tested by Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory to determine the maximum emissions from the EUT. Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory is assumed full responsibility for the accuracy of the test results. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with FCC Rules Part 15.207, 15.209, 15.247 .
The test report is valid for above tested sample only and shall not be reproduced in part without written approval of the laboratory.

| | | | |
|---|---|---|---|
| Project Engineer: | (Chen Silin 陈司林) | Date: | Oct.24, 2017 |
| Checked by: | (Lin Yixiang 林奕翔) | Date: | Oct.24, 2017 |
| Approved by: | (Lin Bin 林斌) | Date: | Oct.24, 2017 |

# TABLE OF CONTENTS

# 1. TEST RESULTS SUMMARY

Table 1 Test Results Summary

| Test Items | FCC Rules | Test Results |
|---|---|---|
| 6dB DTS bandwidth measurement | 15.247 (a) (2) | Pass |
| Maximum Peak Conducted Power | 15.247 (b) (3) | Pass |
| Maximum Power Spectral Density Level | 15.247 (3) | Pass |
| Conducted Bandedge and Spurious | 15.247 (d) | Pass |
| Radiated Bandedge and Spurious | 15.247 (d)<br>15.209<br>15.205 | Pass |
| Conducted emission test for AC power port | 15.207 | Pass |
| Antenna Requirment | 15.203 | Pass |

Remark: “N/A” means “Not applicable.”

# 2. GENERAL INFORMATION

## 2.1. Report information

This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that SMQ approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that SMQ in any way guarantees the later performance of the product/equipment.

The sample/s mentioned in this report is/are supplied by Applicant, SMQ therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through SMQ, unless the applicant has authorized SMQ in writing to do so.

## 2.2. Laboratory Accreditation and Relationship to Customer

The testing report were performed by the Shenzhen Academy of Metrology and The testing report were performed by the Shenzhen Academy of Metrology and quality Inspection EMC Laboratory (Guangdong EMC compliance testing center), in their facilities located at NETC Building, No.4 Tongfa Rd., Xili, Nanshan, Shenzhen, China. At the time of testing, Laboratory is accredited by the following organizations:

China National Accreditation Service for Conformity Assessment (CNAS) accredits the Laboratory for conformance to FCC standards, EMC international standards and EN standards. The Registration Number is CNAS L0579.

The Laboratory is accreditated by the United States of American Federal Comm unications Commission (FCC), and the registration number is 582918.

The Laboratory is registered to perform emission tests with Industry Canada (IC), and the registration number is 11177A-1 11177A-2.

TUV Rhineland accredits the Laboratory for conformance to IEC and EN standards, the registration number is E2024086Z02.

## 2.3. Measurement Uncertainty

Conducted Emission
9kHz~30MHz 3.5dB

Radiated Emission
30MHz~1000MHz 4.5dB
1GHz~26.5GHz 4.6dB

# 3. PRODUCT DESCRIPTION

## 3.1. EUT Description

| | | |
|---|---|---|
| Description | : | Wearable Data Terminal |
| Manufacturer | : | Shenzhen Urovo Technology Co., Ltd |
| Model Number | : | U2 |
| Operate Frequency | : | 2.402GHz~2.480GHz |
| Antenna Designation | : | BT: PIFA ANTENNA -1.6dBi |
| Operating voltage | : | 3.5V (Low)/3.7V (Nominal)/ 4.35V (Max) |
| Software Version | : | SQ46_P1_00WE_YBXX_AU816_404_R_0_170526_01 |
| Hardware Version | : | SQ46/PCB/SQ46W_MB_V01,8 Layer |

Remark: --

Bluetooth Low Energy :

Table 2 Working Frequency List

| Regulatory Range | RF Channels |
|---|---|
| 2.400-2.4835 GHz | f=2402+k*2 MHz, k=0, … ,39 |

## 3.2. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **SWSU2** filing to comply with Section 15.207，15.209，15.247 of the FCC Part 15, Subpart C Rules.

## 3.3. Block Diagram of EUT Configuration


Figure 1 EUT setup

## 3.4. Operating Condition of EUT

Worst-case mode and channel used for 30-1000 MHz radiated and power line conducted emissions was the mode and channel with the highest output power.
Worst-case data rates as provided by the client were:
Bluetooth low energy
Test mode is configured to be with duty cycle >98%

## 3.5. Directional Antenna Gain

The EUT does NOT support a WIFI MIMO function.
Directional gain need NOT to be considered.

## 3.6. Support Equipment List

Table 3 Support Equipment List

| Name | Model No | S/N | Manufacturer |
|---|---|---|---|
| Adaptor for EUT | ZAC-A050150A-02 | -- | SHEN ZHEN ZHONG LIN TECHNOLOGY CO.,LTD |
| Battery for EUT | HBLU2 | -- | ICON ENERGY SYSTEM(SHEN ZHEN) CO.,LTD |
| USB for EUT | -- | -- | -- |

## 3.7. Test Conditions

Date of test：Sep.29, 2017- Oct.24, 2017
Date of EUT Receive：Sep.21, 2017
Temperature: 18-24 ℃
Relative Humidity: 39-61%

## 3.8. Special Accessories

Not available for this EUT intended for grant.

## 3.9. Equipment Modifications

Not available for this EUT intended for grant.

# 4. TEST EQUIPMENT USED

Table 4 Test Equipment

| No. | Equipment | Manufacturer | Model No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|
| SB3319 | EMI Test Receiver | Rohde & Schwarz | ESCS30 | Nov.29, 2016 | 1 Year |
| SB4357 | AMN | Rohde & Schwarz | ENV216 | Sep.22, 2017 | 1 Year |
| SB3436 | EMI Test Receiver | Rohde & Schwarz | ESI26 | Nov.29, 2016 | 1 Year |
| SB8501/09 | EMI Test Receiver | Rohde & Schwarz | ESU40 | Mar.21, 2017 | 1 Year |
| SB8501/04 | Bilog Antenna | Schwarzbeck | VULB9163 | Mar.21, 2017 | 1 Year |
| SB3955 | Bilog Antenna | Schwarzbeck | VULB9163 | Mar.22 ,2017 | 1 Year |
| SB3435 | Horn Antenna | Rohde & Schwarz | HF906 | Jan.03, 2017 | 1 Year |
| SB8501/01 | Horn Antenna | Rohde & Schwarz | HF907 | Mar.22, 2017 | 1 Year |
| SB8501/11 | Horn Antenna | ETS-Lindgren | 3160-09 | Mar.1,2017 | 1 Year |
| SB3345 | Loop Antenna | Schwarzbeck | FMZB1516 | Mar.22, 2017 | 2 Years |
| SB8501/14 | Preamplifier | Rohde & Schwarz | SCU-03 | Mar.19, 2017 | 1 Year |
| SB8501/16 | Preamplifier | Rohde & Schwarz | SCU-26 | Mar.06, 2017 | 1 Year |
| SB8501/17 | Preamplifier | Rohde & Schwarz | SCU-18 | Mar.06, 2017 | 1 Year |
| SB12827/01 | Power Sensor | Rohde & Schwarz | NRP-Z22 | Jun.19, 2017 | 1 Year |
| SB11873/01 | Power Sensor | Rohde & Schwarz | OSP120+OSP-B157 | Mar.13, 2017 | 1 Year |
| -- | Test Software | Rohde & Schwarz | Power Viewer Plus | -- | -- |
| SB7941/02 | Signal Analyzer | Rohde & Schwarz | FSU26 | Jun.19,2017 | 1 Year |

# 5. 6DB BANDWIDTH MEASUREMENT

## 5.1. LIMITS OF 6dB BANDWIDTH MEASUREMENT

CFR 47 (FCC) part 15.247 (a) (2) , 558074 D01 DTS Meas Guidance v03r05

## 5.2. TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer.
a) Set RBW = 100 kHz.

b) Set the video bandwidth (VBW) ≥ 3 x RBW.

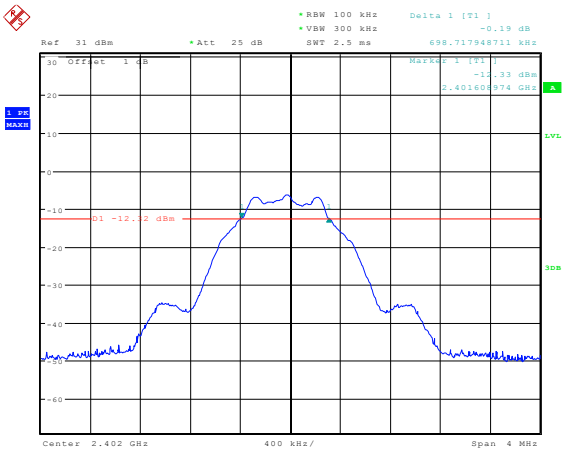
c)Detector = Peak.
d)Trace mode = max hold.
e)Sweep = auto couple.
f)Allow the trace to stabilize.
g)Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

## 5.3. TEST SETUP

Test Data

Table 5 6dB Bandwidth Test Data BLE

| CHANNEL FREQUENCY (MHz) | 6dB BANDWIDTH (MHz) | results |
|---|---|---|
| 2402 | 0.6987 | Pass |
| 2440 | 0.6987 | Pass |
| 2480 | 0.6859 | Pass |

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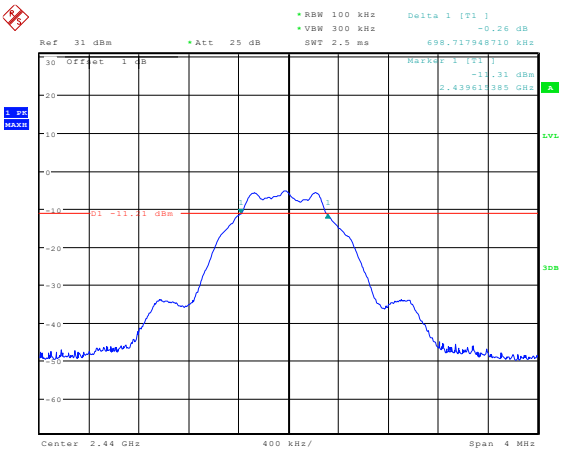


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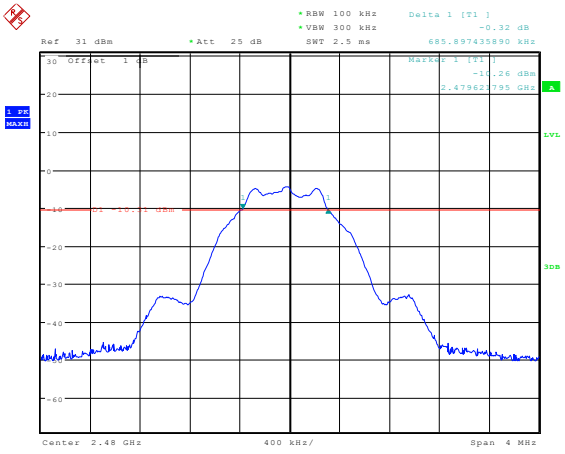


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# 6. MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

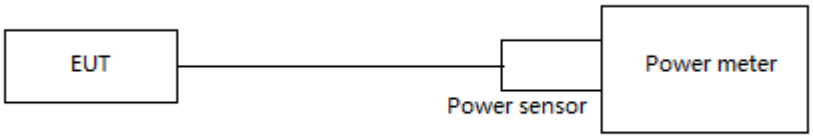
## 6.1. LIMITS OF Maximum Conducted Output Power Measurement

CFR 47 (FCC) part 15.247 (b) (3), 558074 D01 DTS Meas Guidance v03r05

## 6.2. TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer.
a)Set the RBW ⩾ DTS bandwidth.
b)Set VBW ⩾ 3 x RBW.
c)Set span ⩾ 3 x RBW
d)Sweep time = auto couple.
e)Detector = peak.
f)Trace mode = max hold.
g)Allow trace to fully stabilize.
h)Use peak marker function to determine the peak amplitude level.

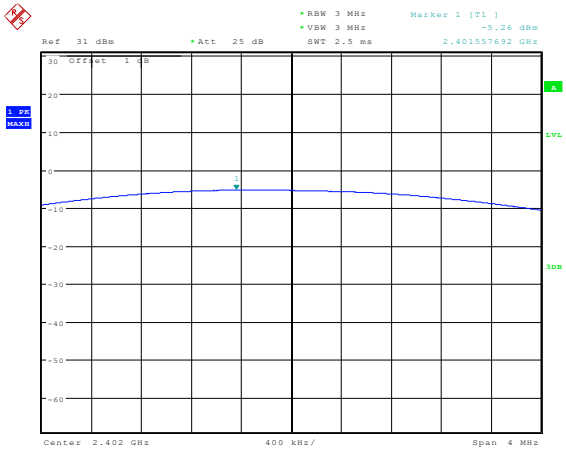
## 6.3. TEST SETUP




## 6.4. TEST DATA

Table 6 Maximum Conducted Output Power Test Data BLE

| Center Freq.[MHz] | Meas. Level (Cond.) [dBm] | Limit [dBm] | Result |
|---|---|---|---|
| 2402 | -5.26 | < 30 | Pass |
| 2440 | -4.92 | < 30 | Pass |
| 2480 | -3.66 | < 30 | Pass |

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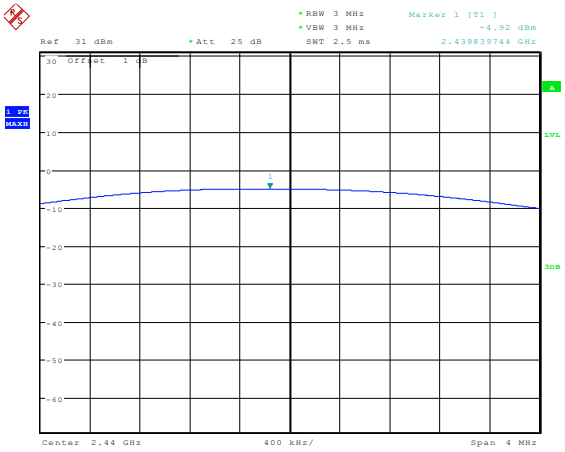


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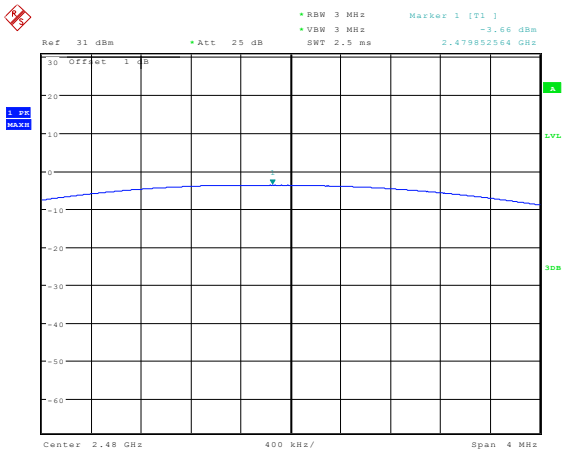


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# 7. MAXIMUM POWER SPECTRAL DENSITY LEVEL MEASUREMENT

## 7.1. LIMITS OF Maximum Power Spectral Density Level Measurement

CFR 47 (FCC) part 15.247 (e) , 558074 D01 DTS Meas Guidance v03r05

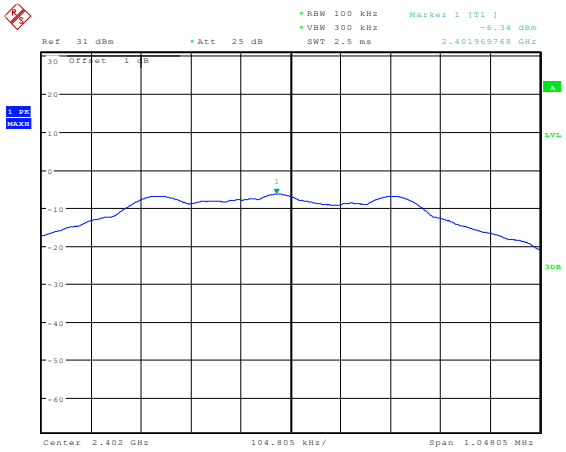
## 7.2. TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer.
a)Set analyzer center frequency to DTS channel center frequency.
b) Set the span to 1.5 times the DTS bandwidth.
c) Set RBW to：3kHz≤RBW≤100 kHz.
d) Set VBW ≥ 3 x RBW.
e) Detector = peak.
f) Sweep time = auto couple.
g) Trace mode = max hold.
h)Allow trace to fully stabilize.
i)Use the peak marker function to determine the maximum amplitude level within the RBW.
j)If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

## 7.3. TEST DATA

Table 7 Maximum Power Spectral Density Level Test Data BLE

| Freq.[MHz] | PSD [dBm] | Limit [dBm] | Result |
|---|---|---|---|
| 2402 | -6.34 | 8 | Pass |
| 2440 | -5.24 | 8 | Pass |
| 2480 | -4.37 | 8 | Pass |

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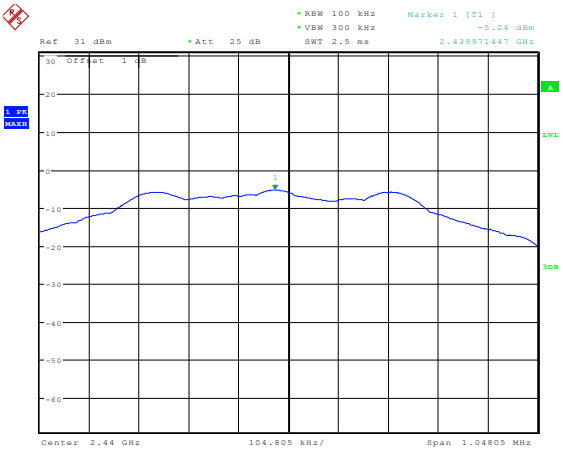


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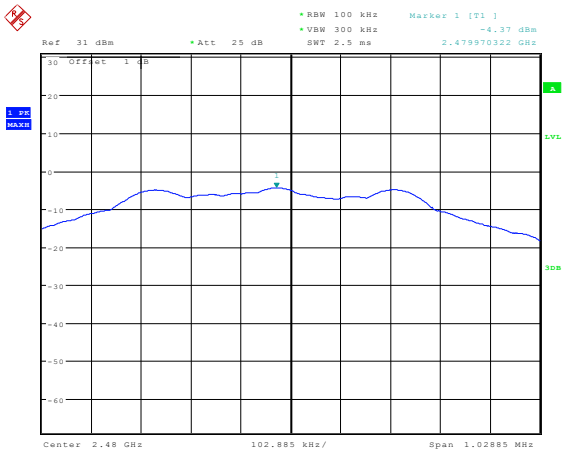


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# 8. CONDUCTED BANDEDGE AND SPURIOUS MEASURMENT

## 8.1. LIMITS OF Conducted Bandedge and Spurious Measurement

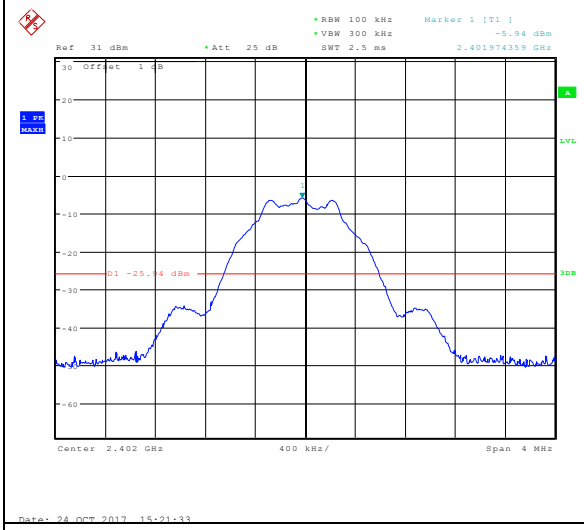
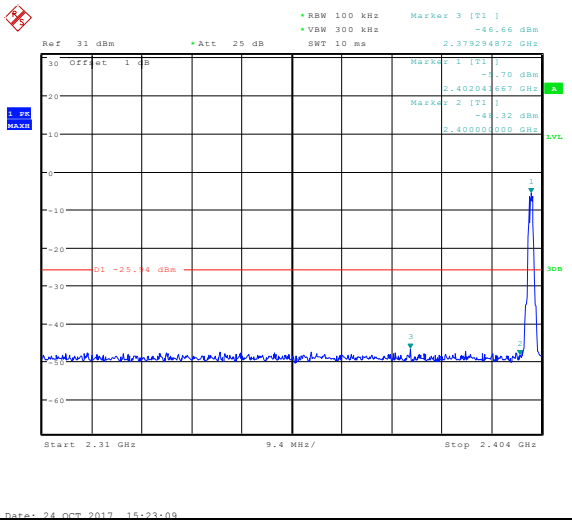
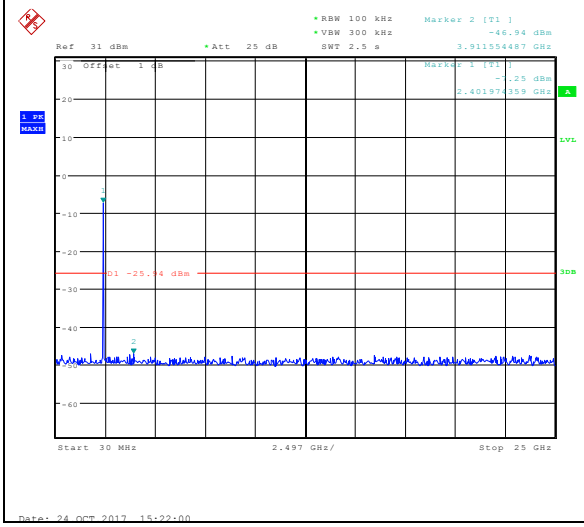
CFR 47 (FCC) part 15.247 (d) and 558074 D01 DTS Meas Guidance v03r05

## 8.2. TEST PROCEDURE

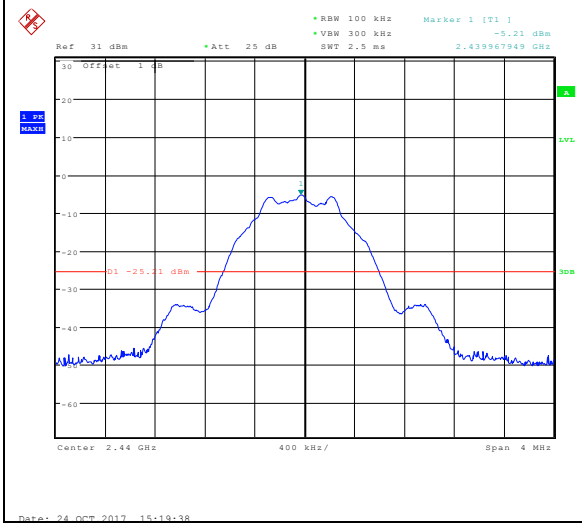
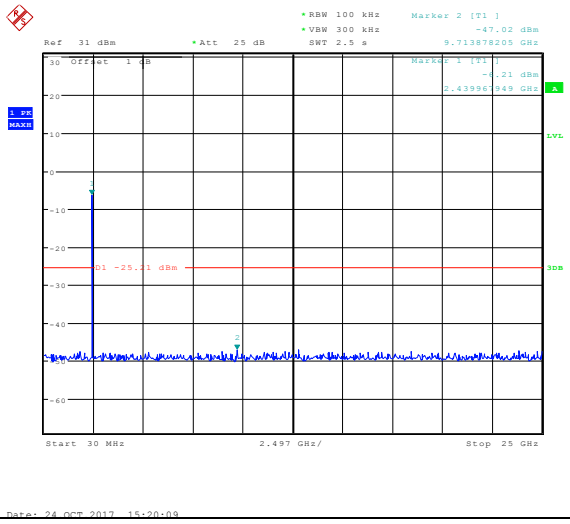
The transmitter output was connected to the spectrum analyzer.
Establish a reference level by using the following procedure:
a)Set instrument center frequency to DTS channel center frequency.
b)Set the span to ≥ 1.5 times the DTS bandwidth.
c)Set the RBW = 100 kHz.
d)Set the VBW ≥ 3 x RBW.
e)Detector = peak.
f)Sweep time = auto couple.
g)Trace mode = max hold.
h)Allow trace to fully stabilize.
i)Use the peak marker function to determine the maximum PSD level.
Emission level measurement
a)Set the center frequency and span to encompass frequency range to be measured.
b)Set the RBW = 100 kHz.
c)Set the VBW ≥ 3 x RBW.
d)Detector = peak.
e)Ensure that the number of measurement points ≥ span/RBW
f)Sweep time = auto couple.
g)Trace mode = max hold.
h)Allow trace to fully stabilize.
i)Use the peak marker function to determine the maximum amplitude level.

## 8.3.TEST DATA

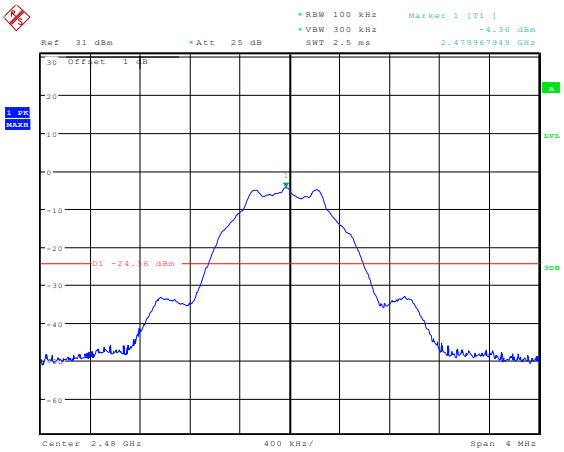
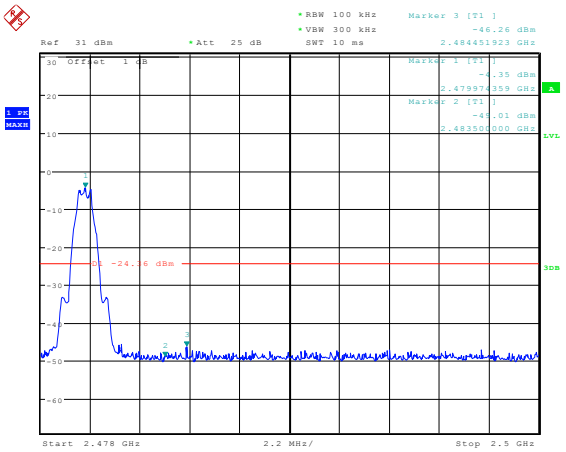
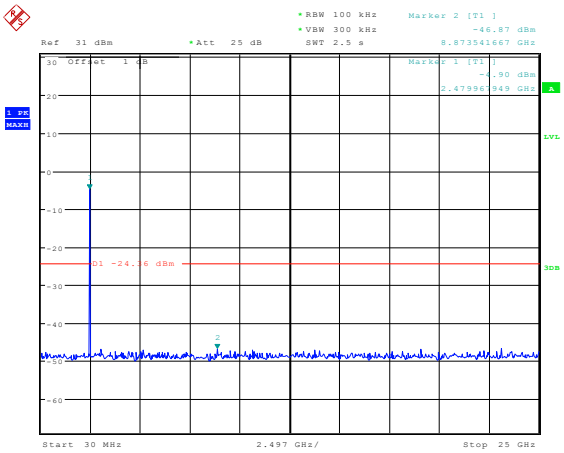
BLE CH0

| Pref | Lower Edge |
| --- | --- |
|  |  |
| 30MHz-25GHz | --- |
|  | --- |

BLE CH19

| Pref | 30MHz-25GHz |
| --- | --- |
|  |  |

BLE CH39

| Pref | Upper Edge |
| --- | --- |
|  <br>Date: 24.OCT.2017 15:15:37 |  <br>Date: 24.OCT.2017 15:18:16 |
| 30MHz-25GHz | --- |
|  <br>Date: 24.OCT.2017 15:16:45 | --- |

# 9. RADIATED BANDEDGE AND SPURIOUS MEASUREMENT

## 9.1. LIMITS OF Radiated Bandedge and Spurious Measurement

CFR 47 (FCC) part 15.247 (d) and 558074 D01 DTS Meas Guidance v03r05

## 9.2. TEST PROCEDURE

1. The testing follows the guidelines in ANSI C63.10-2013.
2. 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.
3. For measurement below 1GHz, the EUT was placed on a turntable with 0.8 meter,above ground. For measurement above 1 GHz, test at FAR, the EUT is placed on a non-conductive table, which is 1.5 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For measurement below 1GHz, 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.
7. Use the following spectrum analyzer settings:
(1) Span shall wide enough to fully capture the emission being measured;
(2) Set RBW=100 kHz for f < 1 GHz; VBW >= RBW; Sweep = auto; Detector function = peak; Trace = max hold;
(3) Set RBW = 1 MHz, VBW= 3MHz for f > 1 GHz for peak measurement.
Set RBW = 1 MHz, and 1/T (on time) for average measurement.

## 9.3. TEST DATA

9KHz-30MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

Table 8 Radiated Emission Test Data 9k Hz-30MHz

| Frequency MHz | Cable Loss(dB) | Antenna Factor(dB) | Readings(dBμV/m) | Level(dBμV/m) | Polarity(H/V) | Turntable Angle(deg) | Antenna Height(m) | Limits(dBμV/m) | Margin(dB) |
|---|---|---|---|---|---|---|---|---|---|
| -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

30MHz-1GHz

Worst case is shown below for 30MHz-1GHz only.

The emissions don't show in following result tables are more than 20dB below the limits.

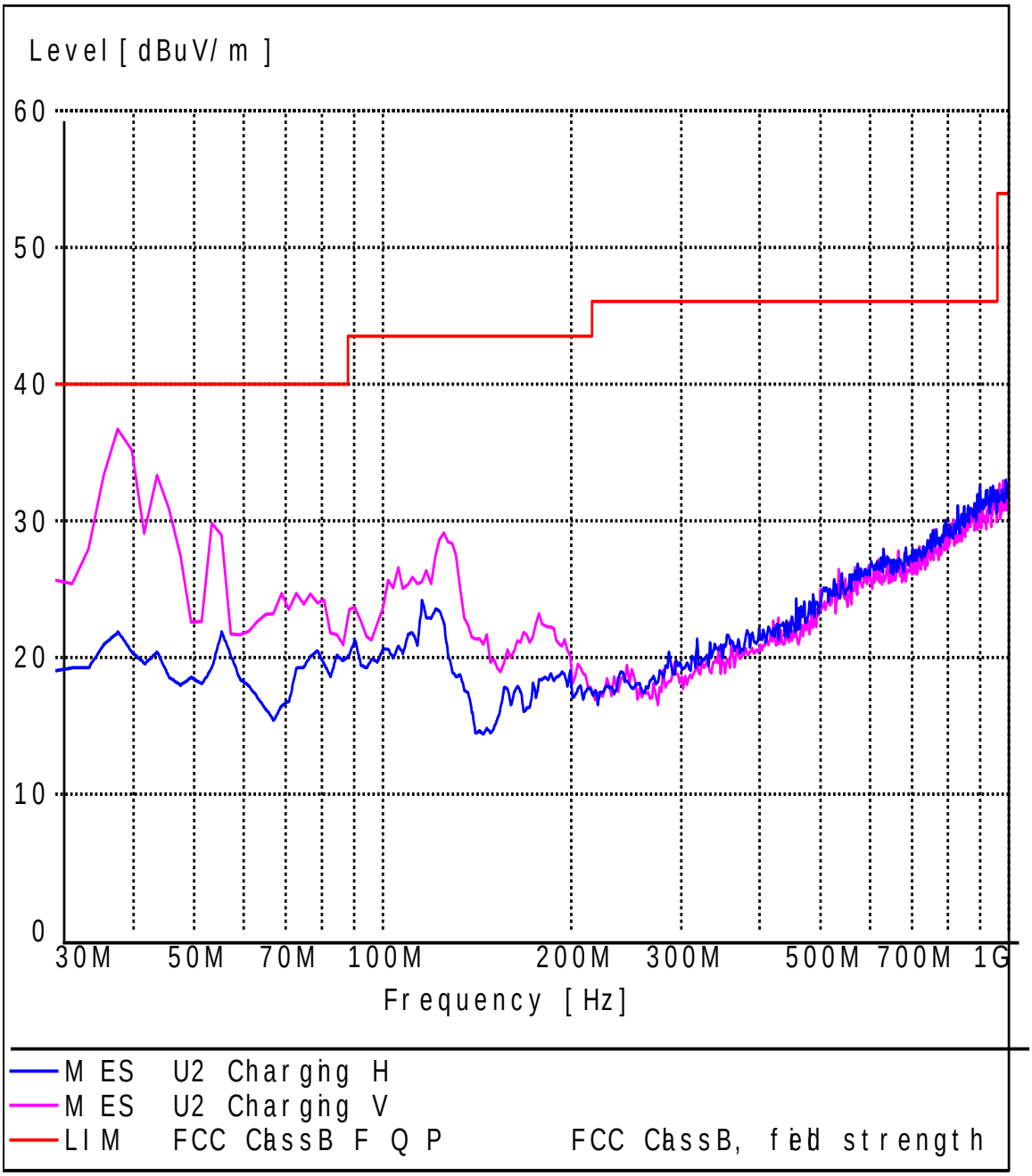
Table 9 Radiated Emission Test Data 30MHz-1GHz

| Frequency MHz | Cable Loss(dB) | Antenna Factor(dB) | Readings(dBμV/m) | Level(dBμV/m) | Polarity(H/V) | Turntable Angle(deg) | Antenna Height(m) | Limits(dBμV/m) | Margin(dB) |
|---|---|---|---|---|---|---|---|---|---|
| 30.026 | 0.6 | 12.3 | 9.8 | 22.7 | V | 30 | 100 | 40 | 17.3 |
| 37.966 | 0.7 | 12.3 | 20.9 | 33.9 | V | 20 | 100 | 40 | 6.1 |
| 43.686 | 0.7 | 13.6 | 16.1 | 30.4 | V | 50 | 100 | 40 | 9.6 |
| 53.326 | 0.7 | 13.3 | 12.7 | 26.7 | V | 30 | 100 | 40 | 13.3 |
| 105.811 | 1.2 | 13.2 | 9.2 | 23.6 | V | 50 | 100 | 43.5 | 19.9 |
| 125.251 | 1.2 | 10.5 | 15.3 | 27.0 | V | 60 | 100 | 43.5 | 16.5 |
| 37.563 | 0.6 | 12.3 | 5.2 | 18.1 | H | 50 | 100 | 40 | 21.9 |
| 55.331 | 0.8 | 13.0 | 4.7 | 18.5 | H | 30 | 100 | 40 | 21.5 |
| 78.597 | 1.0 | 7.8 | 8.8 | 17.6 | H | 30 | 100 | 40 | 22.4 |
| 109.699 | 1.2 | 13.2 | 3.6 | 18.0 | H | 50 | 100 | 43.5 | 25.5 |
| 115.661 | 1.2 | 12.3 | 8.0 | 21.5 | H | 50 | 100 | 43.5 | 22.0 |
| 121.362 | 1.3 | 10.5 | 8.5 | 20.3 | H | 60 | 100 | 43.5 | 23.2 |

REMARK: Emission level(dBuV)=Read Value(dBuV/m) + Antenna Factor(dB)+ Cable Loss +preamp(dB)

***Radiated Emission***

EUT Name: U2
Operating Condition: Charging and Transmitting
Test site: SMQ NETC EMC Lab.
Antenna Position: Vertical & Horizontal
Comment: 120V/60Hz



1-18G

BLE CH0

# Radiated Emission

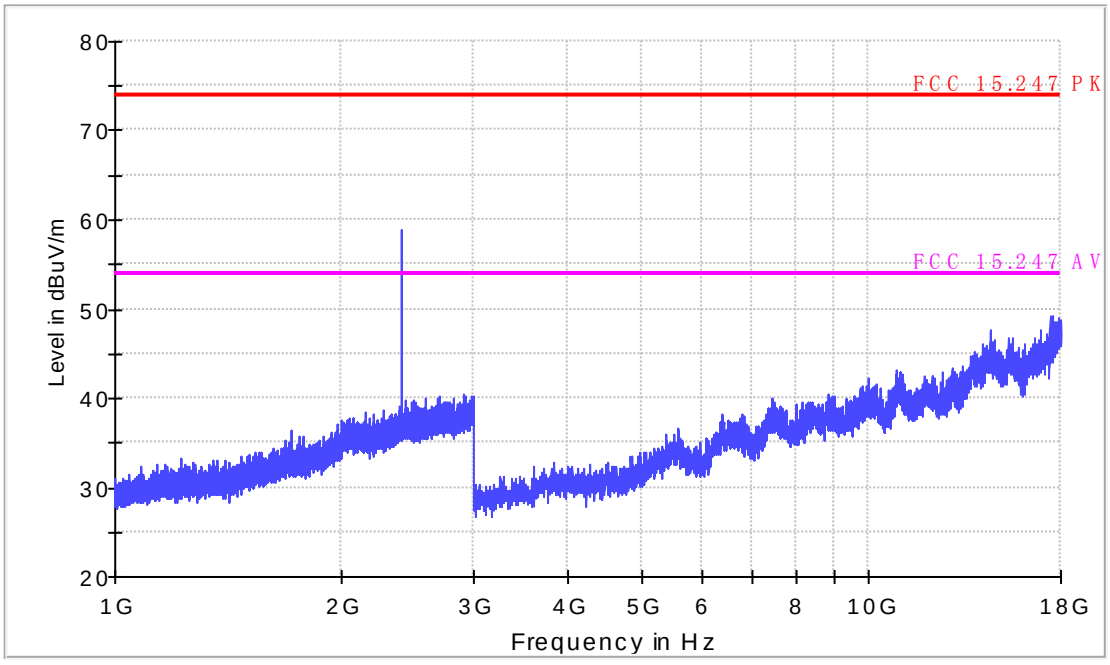
## EUT Information

| | |
|---|---|
| EUT Model Name: | U2 |
| Operation mode: | BT BLE CH0 TX |
| Test Voltage: | |
| Comment: | |

## Common Information

| | |
|---|---|
| Test Site: | SMQ EMC Lab. |
| Environment | |
| Antenna Polarization: | Horizontal |
| Operator Name: | |
| Comment: | |

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



# Radiated Emission

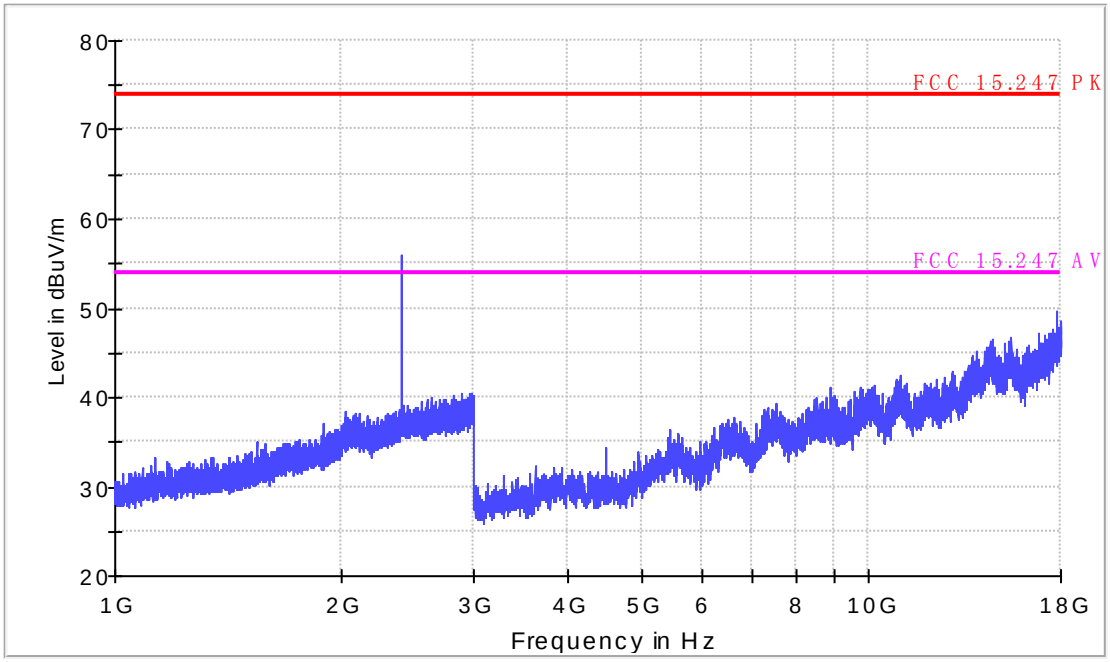
## EUT Information

| | |
|---|---|
| EUT Model Name: | U2 |
| Operation mode: | BT BLE CH0 TX |
| Test Voltage: | |
| Comment: | |

## Common Information

| | |
|---|---|
| Test Site: | SMQ EMC Lab. |
| Environment | |
| Antenna Polarization: | Vertical |
| Operator Name: | |
| Comment: | |

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



1-18G

BLE CH19

# Radiated Emission

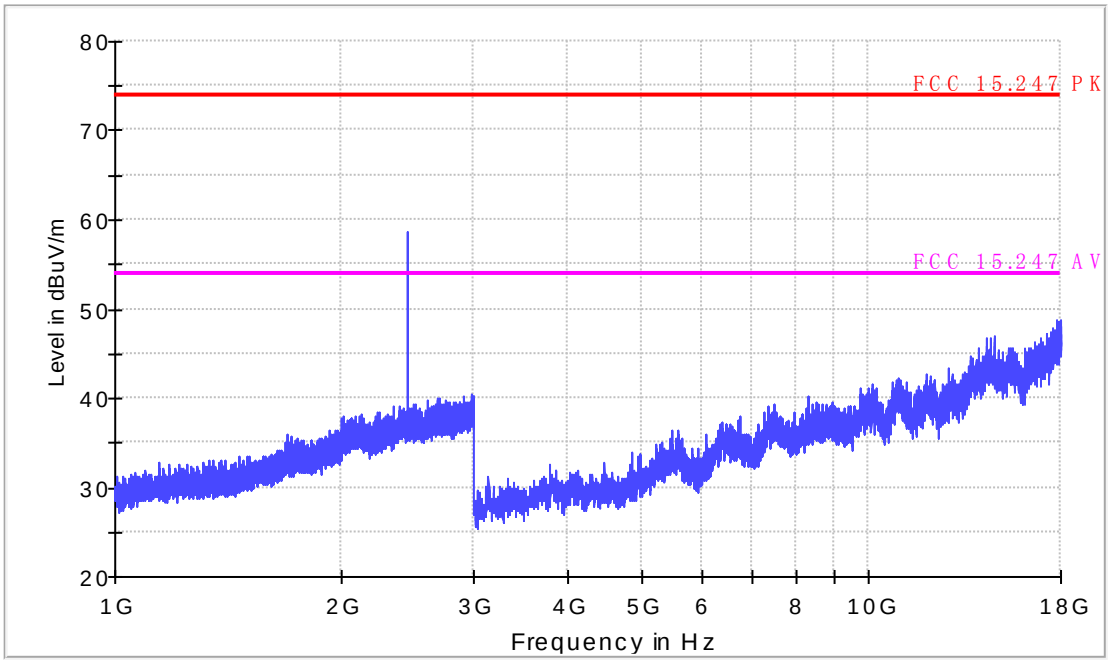
## EUT Information

| | |
|---|---|
| EUT Model Name: | U2 |
| Operation mode: | BT BLE CH19 TX |
| Test Voltage: | |
| Comment: | |

## Common Information

| | |
|---|---|
| Test Site: | SMQ EMC Lab. |
| Environment | |
| Antenna Polarization: | Horizontal |
| Operator Name: | |
| Comment: | |

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



# Radiated Emission

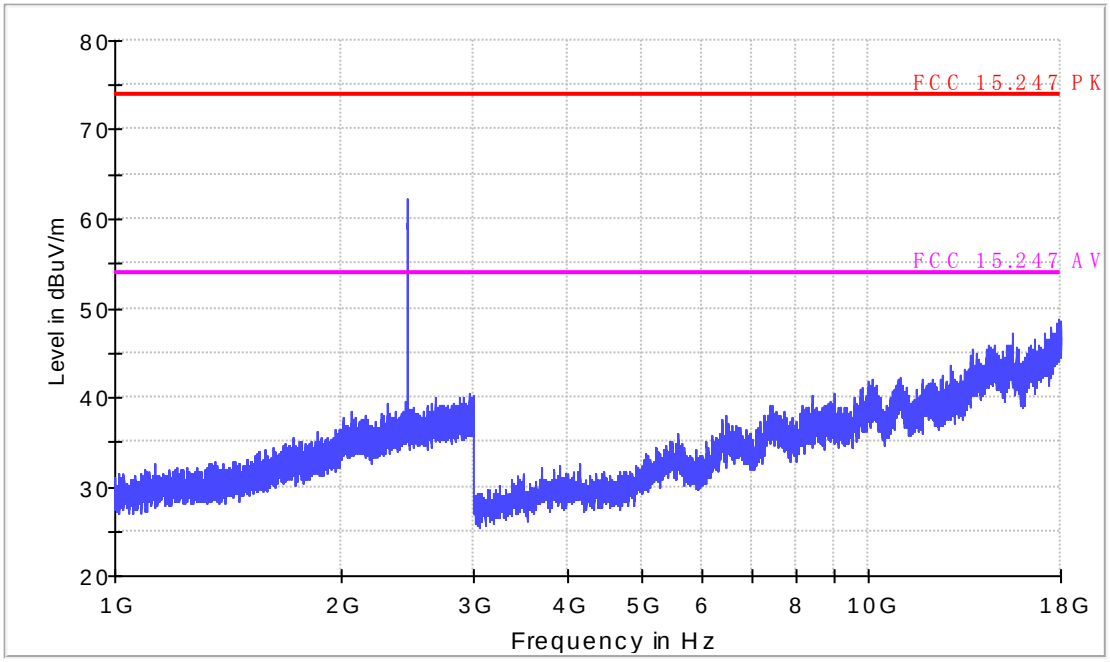
## EUT Information

| | |
|---|---|
| EUT Model Name: | U2 |
| Operation mode: | BT BLE CH19 TX |
| Test Voltage: | |
| Comment: | |

## Common Information

| | |
|---|---|
| Test Site: | SMQ EMC Lab. |
| Environment | |
| Antenna Polarization: | Vertical |
| Operator Name: | |
| Comment: | |

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



1-18G

BLE CH39

# Radiated Emission

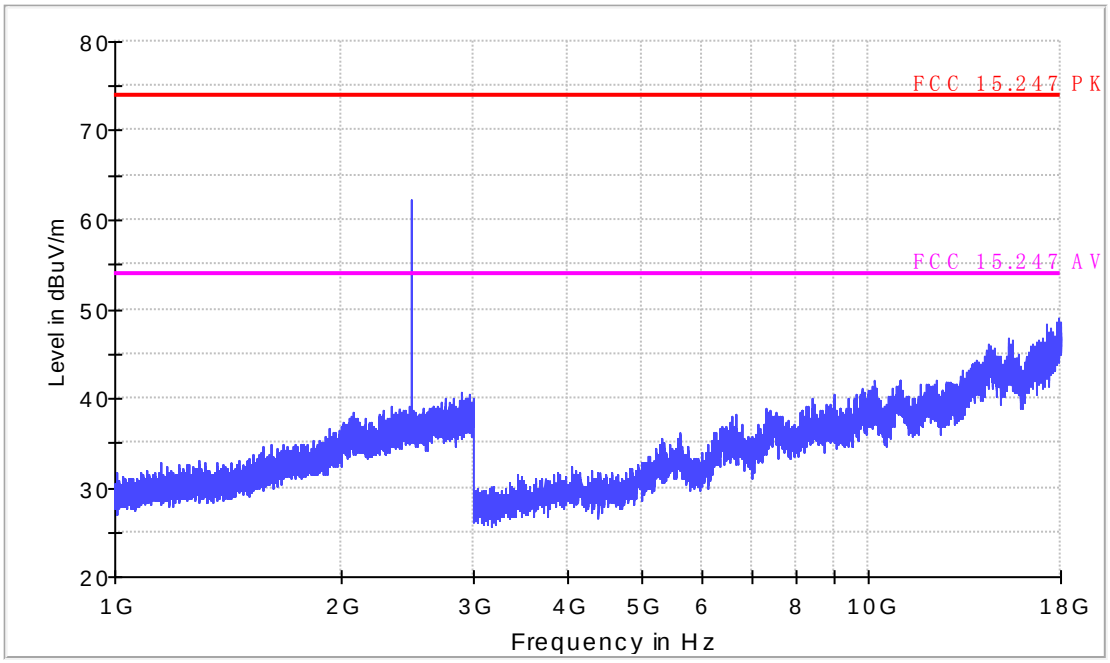
## EUT Information

| | |
|---|---|
| EUT Model Name: | U2 |
| Operation mode: | BT BLE CH39 TX |
| Test Voltage: | |
| Comment: | |

## Common Information

| | |
|---|---|
| Test Site: | SMO EMC Lab. |
| Environment | |
| Antenna Polarization: | |
| Operator Name: | |
| Comment: | |

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



# Radiated Emission

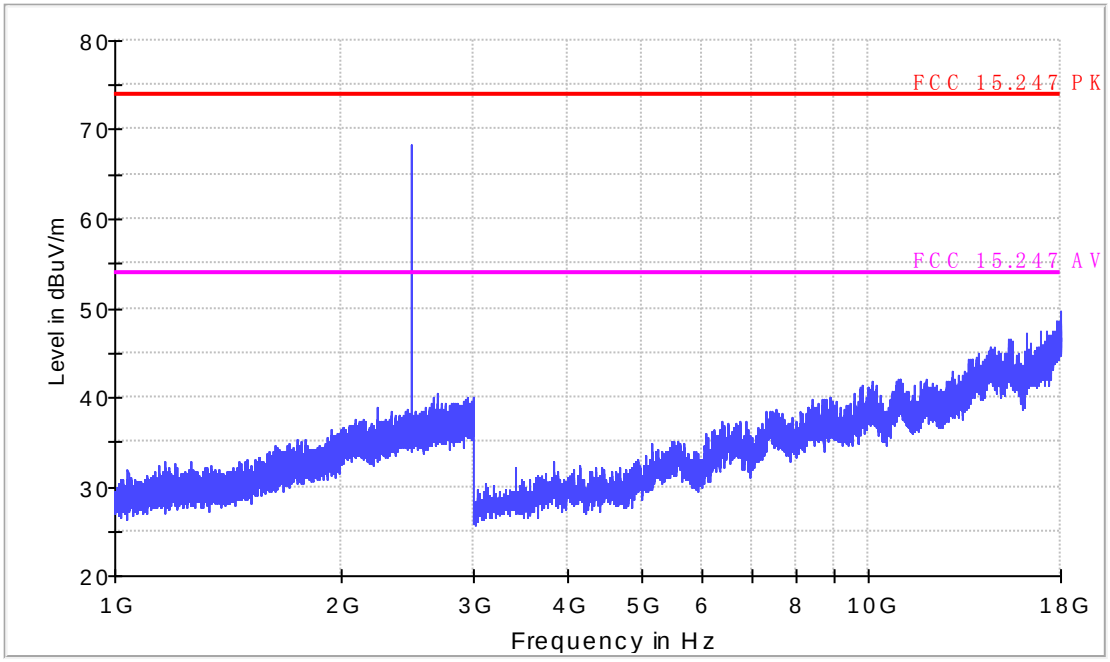
## EUT Information

| | |
|---|---|
| EUT Model Name: | U2 |
| Operation mode: | BT BLE CH39 TX |
| Test Voltage: | |
| Comment: | |

## Common Information

| | |
|---|---|
| Test Site: | SMQ EMC Lab. |
| Environment | |
| Antenna Polarization: | Vertical |
| Operator Name: | |
| Comment: | |

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



18-25G

No Peak found in pre-scan, only worst case result is listed in this report.

# Radiated Emission

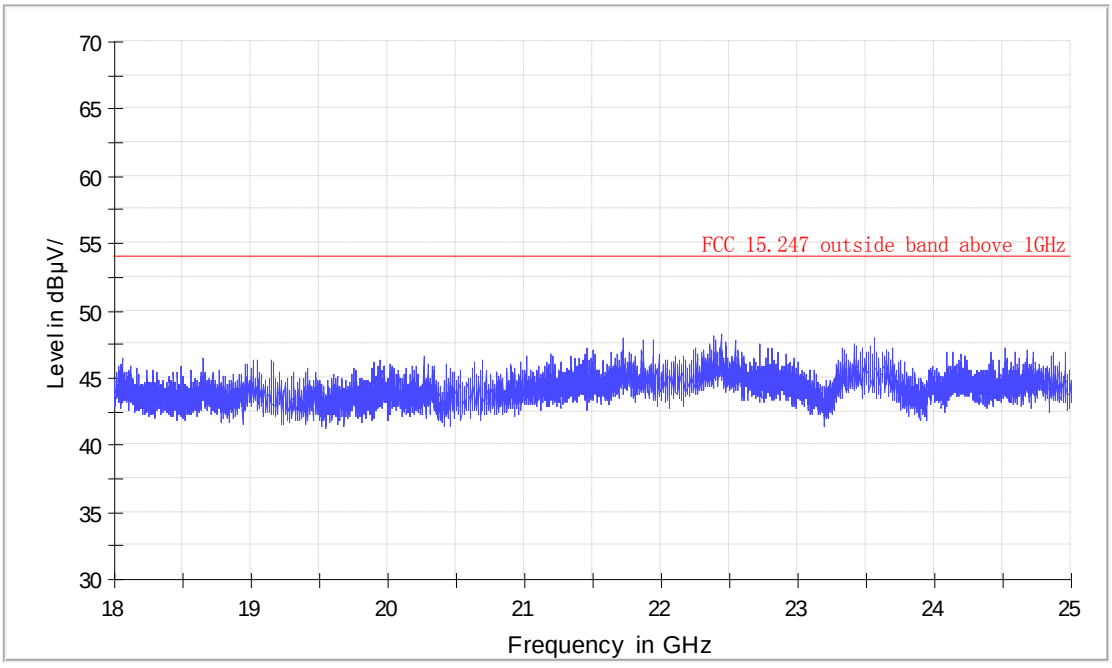
## EUT Information

| | |
|---|---|
| EUT Model Name: | U2 |
| Operation mode: | BLE |
| Test Voltage: | |
| Comment: | |

## Common Information

| | |
|---|---|
| Test Site: | SMO EMC Lab. |
| Environment | |
| Antenna Polarization: | Horizontal |
| Operator Name: | |
| Comment: | |

FCC Electric Field Strength 18-26.5GHz



# Radiated Emission

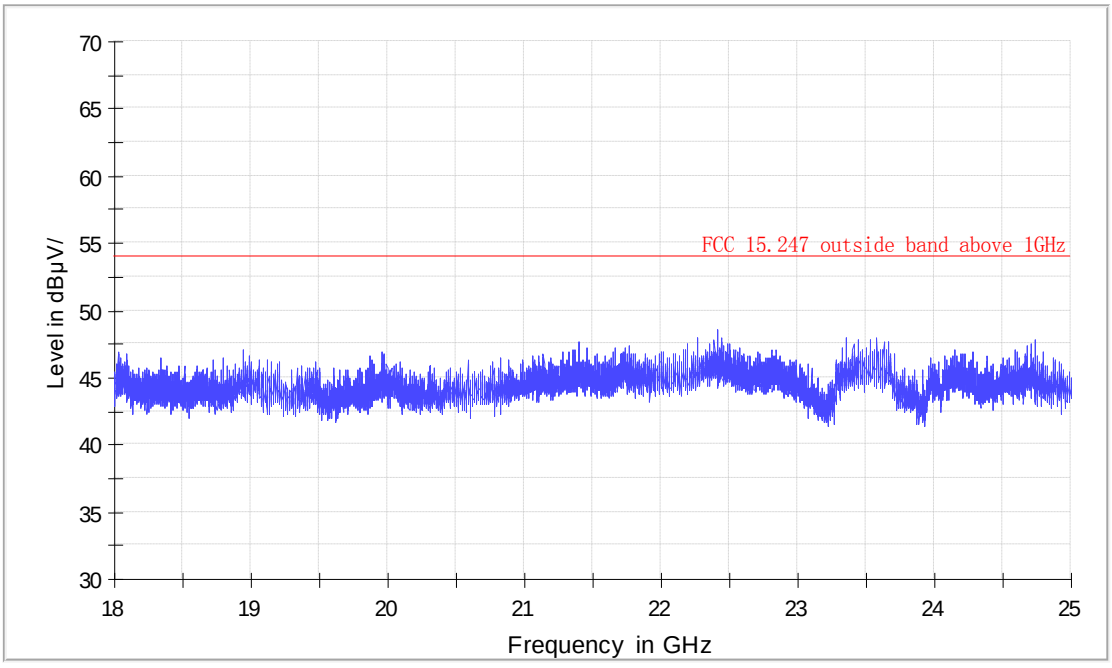
## EUT Information

| | |
|---|---|
| EUT Model Name: | U2 |
| Operation mode: | BLE |
| Test Voltage: | |
| Comment: | |

## Common Information

| | |
|---|---|
| Test Site: | SMQ EMC Lab. |
| Environment | |
| Antenna Polarization: | Vertical |
| Operator Name: | |
| Comment: | |

FCC Electric Field Strength 18-26.5GHz



Band edge

BLE CH0

# Radiated Emission

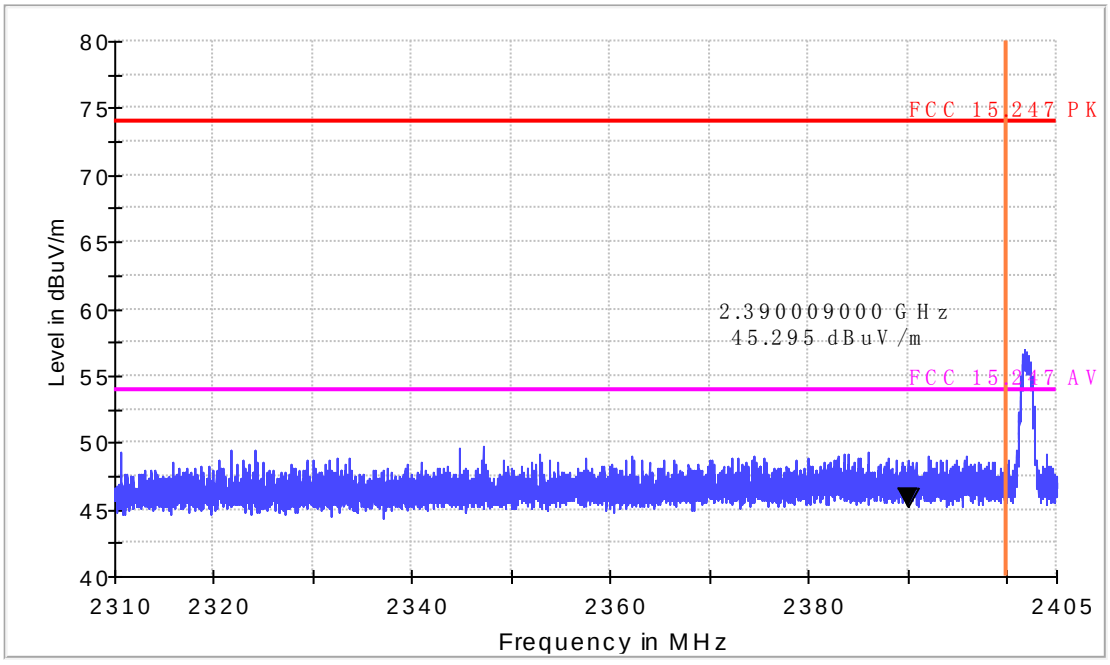
## EUT Information

| | |
|---|---|
| EUT Model Name: | U2 |
| Operation mode: | BT BLE CH0 TX |
| Test Voltage: | |
| Comment: | |

## Common Information

| | |
|---|---|
| Test Site: | SMQ EMC Lab. |
| Environment | |
| Antenna Polarization: | Horizontal |
| Operator Name: | |
| Comment: | |

FCC Electric Field Strength 2.4GHz Bandedge-PK



# Radiated Emission

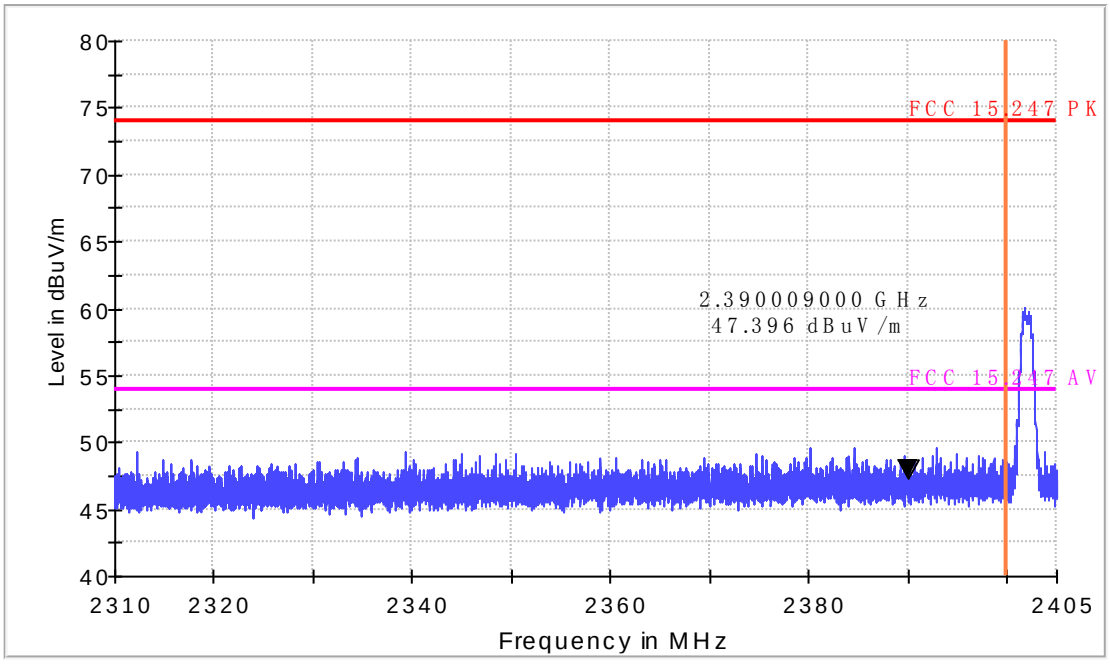
## EUT Information

| | |
|---|---|
| EUT Model Name: | U2 |
| Operation mode: | BT BLE CH0 TX |
| Test Voltage: | |
| Comment: | |

## Common Information

| | |
|---|---|
| Test Site: | SMO EMC Lab. |
| Environment | |
| Antenna Polarization: | Vertical |
| Operator Name: | |
| Comment: | |

FCC Electric Field Strength 2.4GHz Bandedge-PK



# Radiated Emission

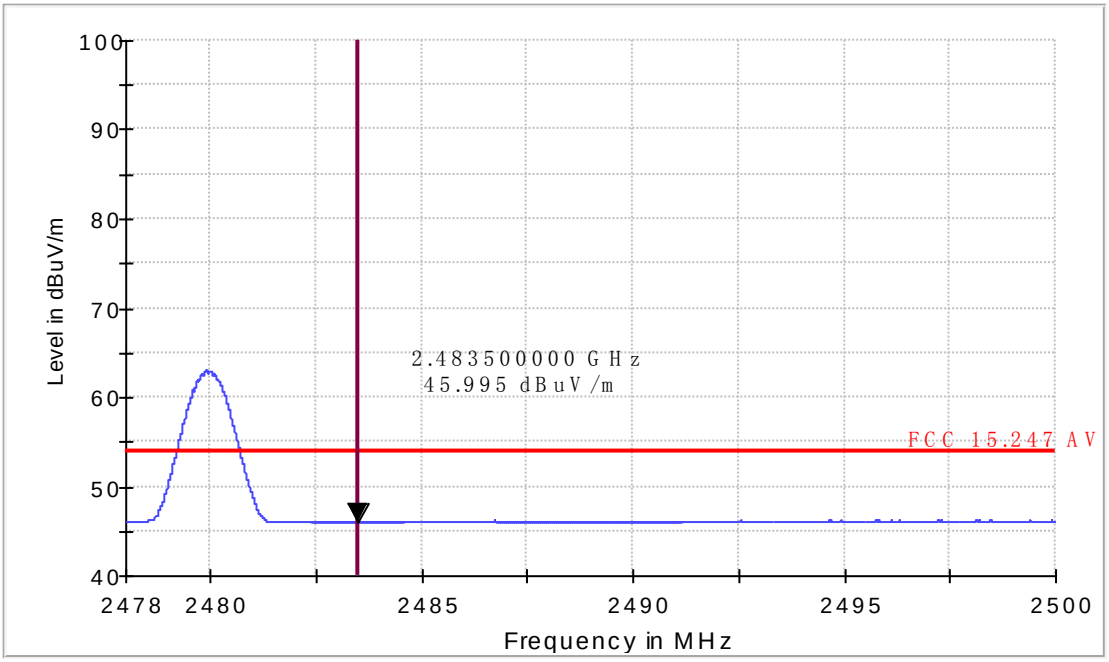
## EUT Information

| | |
|---|---|
| EUT Model Name: | U2 |
| Operation mode: | BT BLE CH39 TX |
| Test Voltage: | |
| Comment: | |

## Common Information

| | |
|---|---|
| Test Site: | SMQ EMC Lab. |
| Environment | |
| Antenna Polarization: | Horizontal |
| Operator Name: | |
| Comment: | |

FCC Electric Field Strength 2.4GHz Bandedge-AV



# Radiated Emission

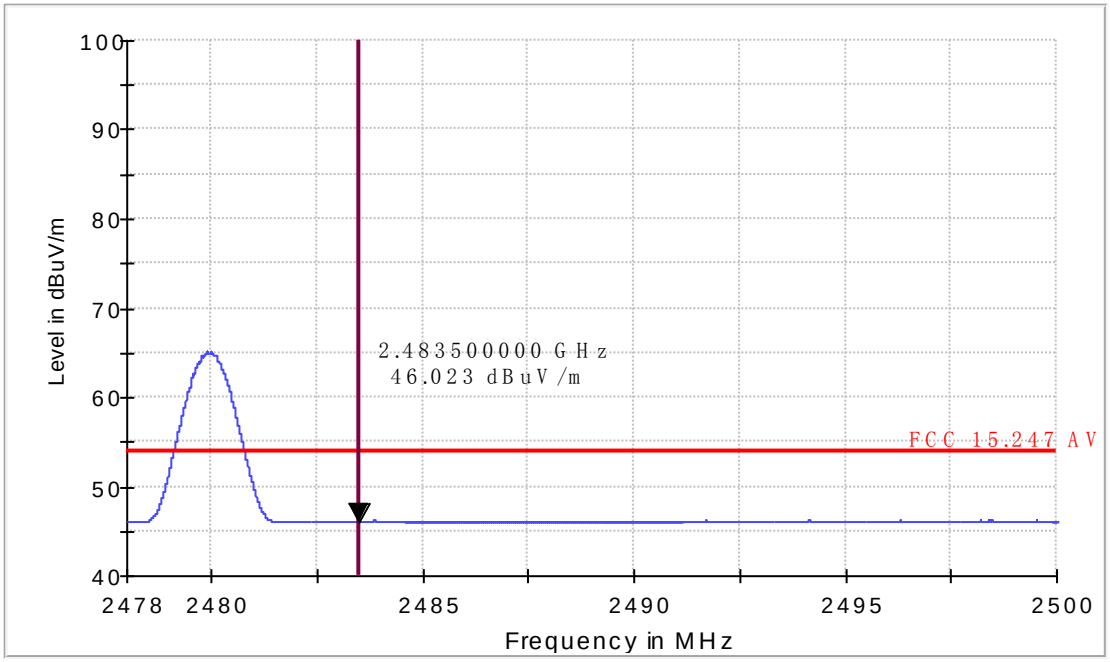
## EUT Information

| | |
|---|---|
| EUT Model Name: | U2 |
| Operation mode: | BT BLE CH39 TX |
| Test Voltage: | |
| Comment: | |

## Common Information

| | |
|---|---|
| Test Site: | SMQ EMC Lab. |
| Environment | |
| Antenna Polarization: | Vertical |
| Operator Name: | |
| Comment: | |

FCC Electric Field Strength 2.4GHz Bandedge-AV



Band edge

BLE CH39

# Radiated Emission

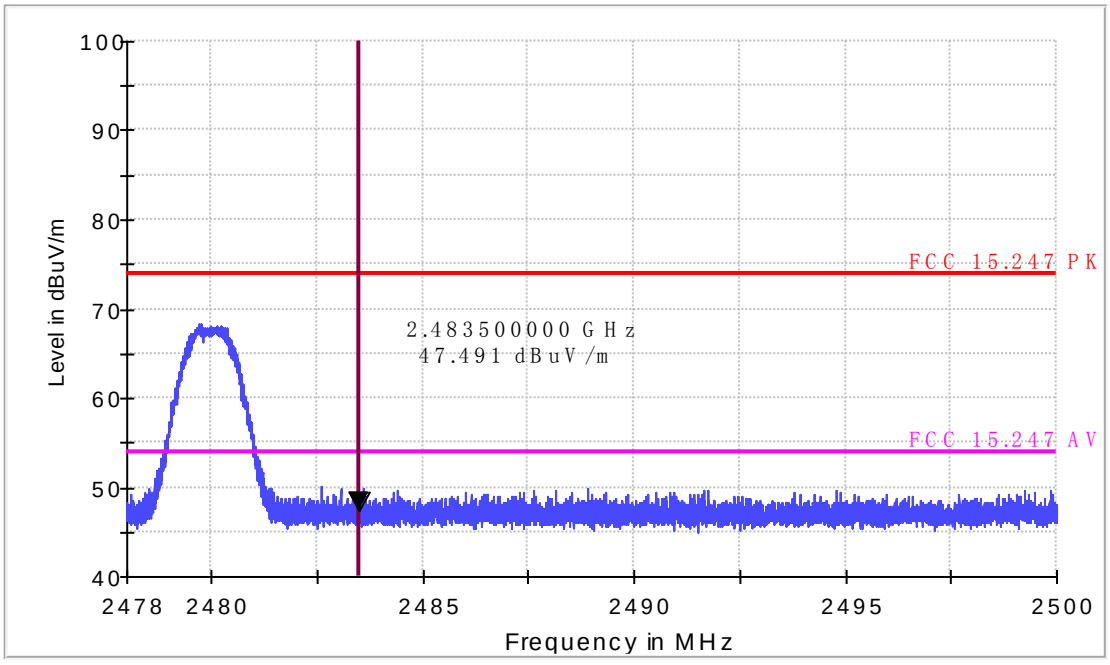
## EUT Information

| | |
|---|---|
| EUT Model Name: | U2 |
| Operation mode: | BT BLE CH39 TX |
| Test Voltage: | |
| Comment: | |

## Common Information

| | |
|---|---|
| Test Site: | SMQ EMC Lab. |
| Environment | |
| Antenna Polarization: | Horizontal |
| Operator Name: | |
| Comment: | |

FCC Electric Field Strength 2.4GHz Bandedge-PK



# Radiated Emission

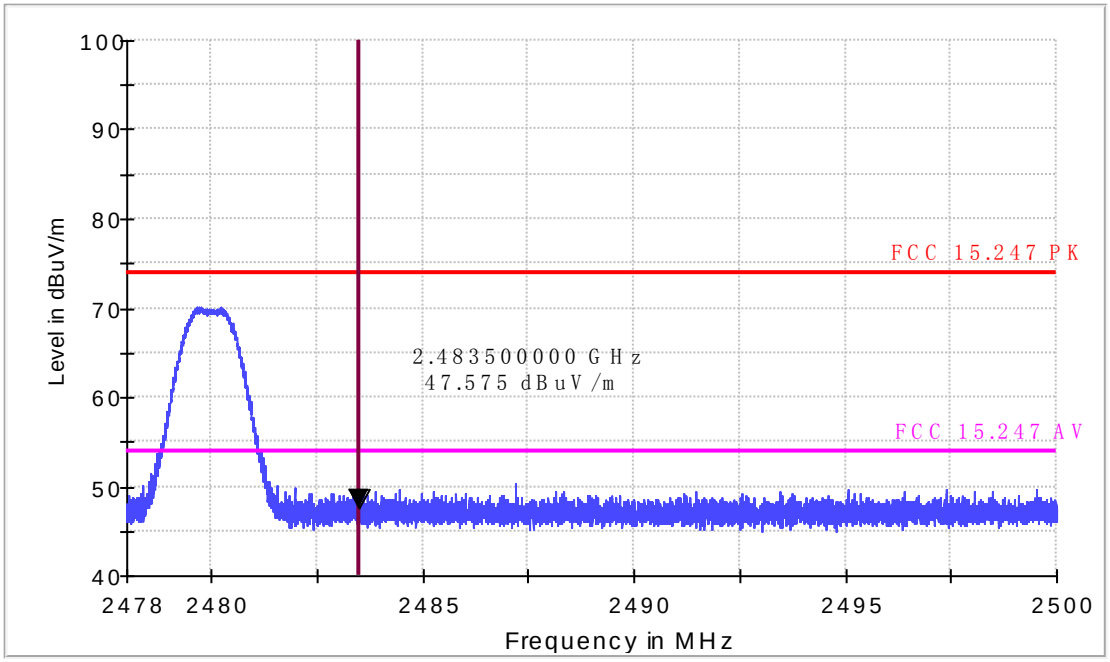
## EUT Information

| | |
|---|---|
| EUT Model Name: | U2 |
| Operation mode: | BT BLE CH39 TX |
| Test Voltage: | |
| Comment: | |

## Common Information

| | |
|---|---|
| Test Site: | SMQ EMC Lab. |
| Environment | |
| Antenna Polarization: | Vertical |
| Operator Name: | |
| Comment: | |

FCC Electric Field Strength 2.4GHz Bandedge-PK



# Radiated Emission

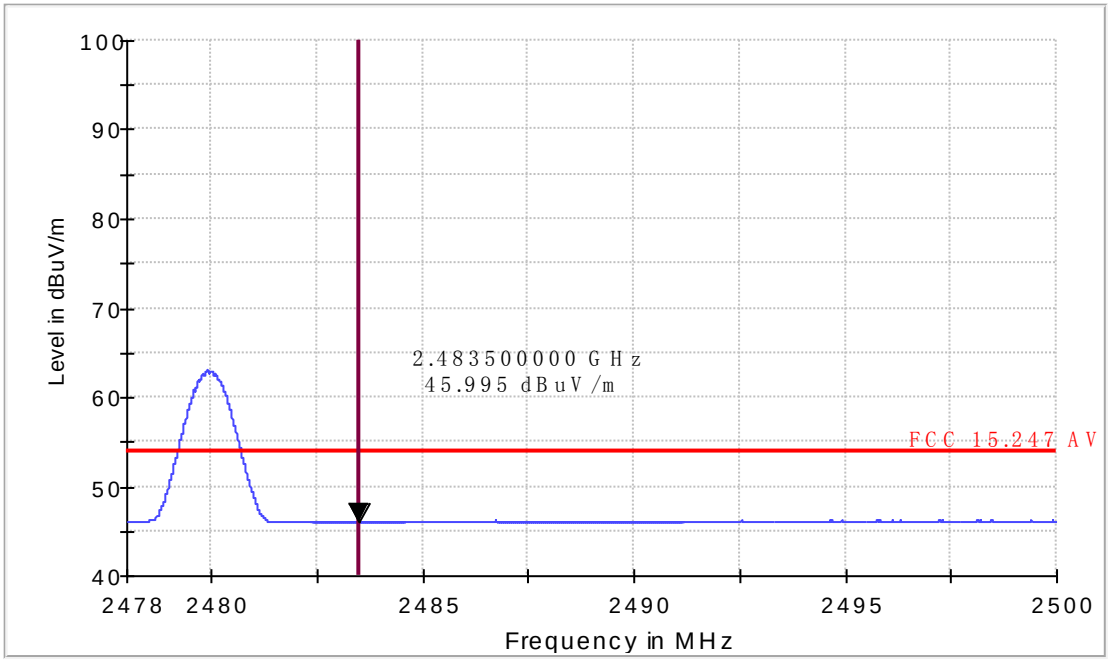
## EUT Information

| | |
|---|---|
| EUT Model Name: | U2 |
| Operation mode: | BT BLE CH39 TX |
| Test Voltage: | |
| Comment: | |

## Common Information

| | |
|---|---|
| Test Site: | SMQ EMC Lab. |
| Environment | |
| Antenna Polarization: | Horizontal |
| Operator Name: | |
| Comment: | |

FCC Electric Field Strength 2.4GHz Bandedge-AV



# Radiated Emission

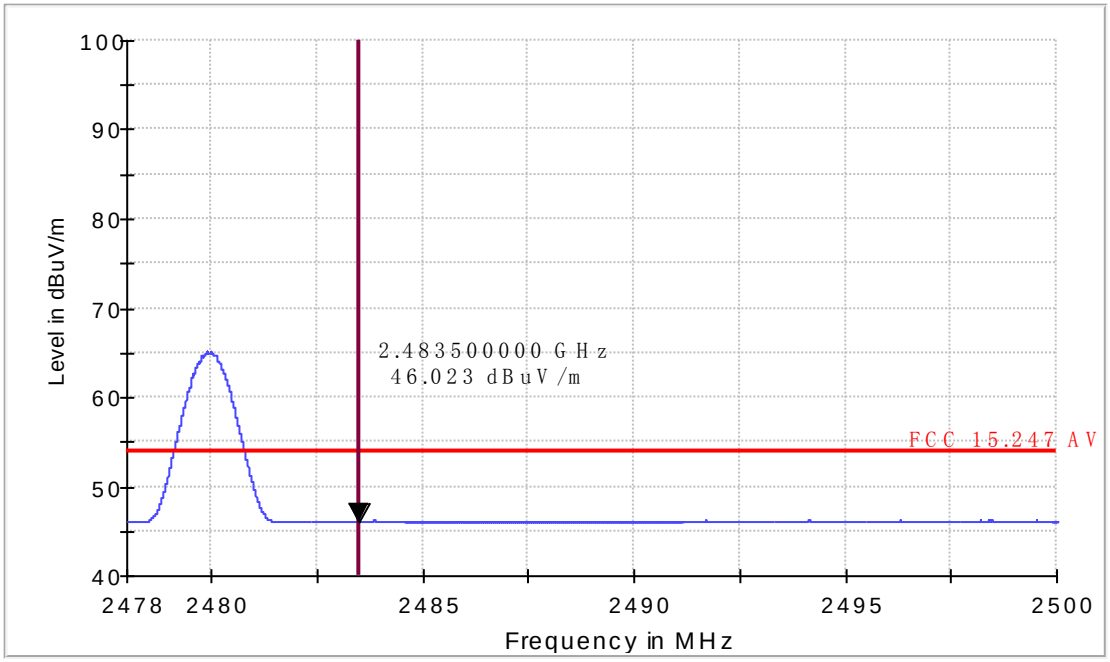
## EUT Information

| | |
|---|---|
| EUT Model Name: | U2 |
| Operation mode: | BT BLE CH39 TX |
| Test Voltage: | |
| Comment: | |

## Common Information

| | |
|---|---|
| Test Site: | SMQ EMC Lab. |
| Environment | |
| Antenna Polarization: | Vertical |
| Operator Name: | |
| Comment: | |

FCC Electric Field Strength 2.4GHz Bandedge-AV



# 10. CONDUCTED EMISSION TEST FOR AC POWER PORT MEASUREMENT

## 10.1. Test Standard and Limit

### 10.1.1. Test Standard

FCC Part 15.207

### 10.1.2. Test Limit

Table 10 Conducted Disturbance Test 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 |

* Decreasing linearly with logarithm of the frequency
* The lower limit shall apply at the transition frequency.

## 10.2. Test Procedure

The EUT is put on a table of non-conducting material that is 80cm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI test receiver (R&S Test Receiver ESCS30) is used to test the emissions form both sides of AC line. According to the requirements of ANSI C63.10-2013.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode.
The bandwidth of EMI test receiver is set at 9kHz.

## 10.3. Test Arrangement

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application. The detailed information refers to test picture.

## 10.4. Test Data

The emissions don’t show in below are too low against the limits. Refer to the test curves.

Table 11 Conducted Disturbance Test Data

Model No.: U2

Test mode: Charging and Transmitting

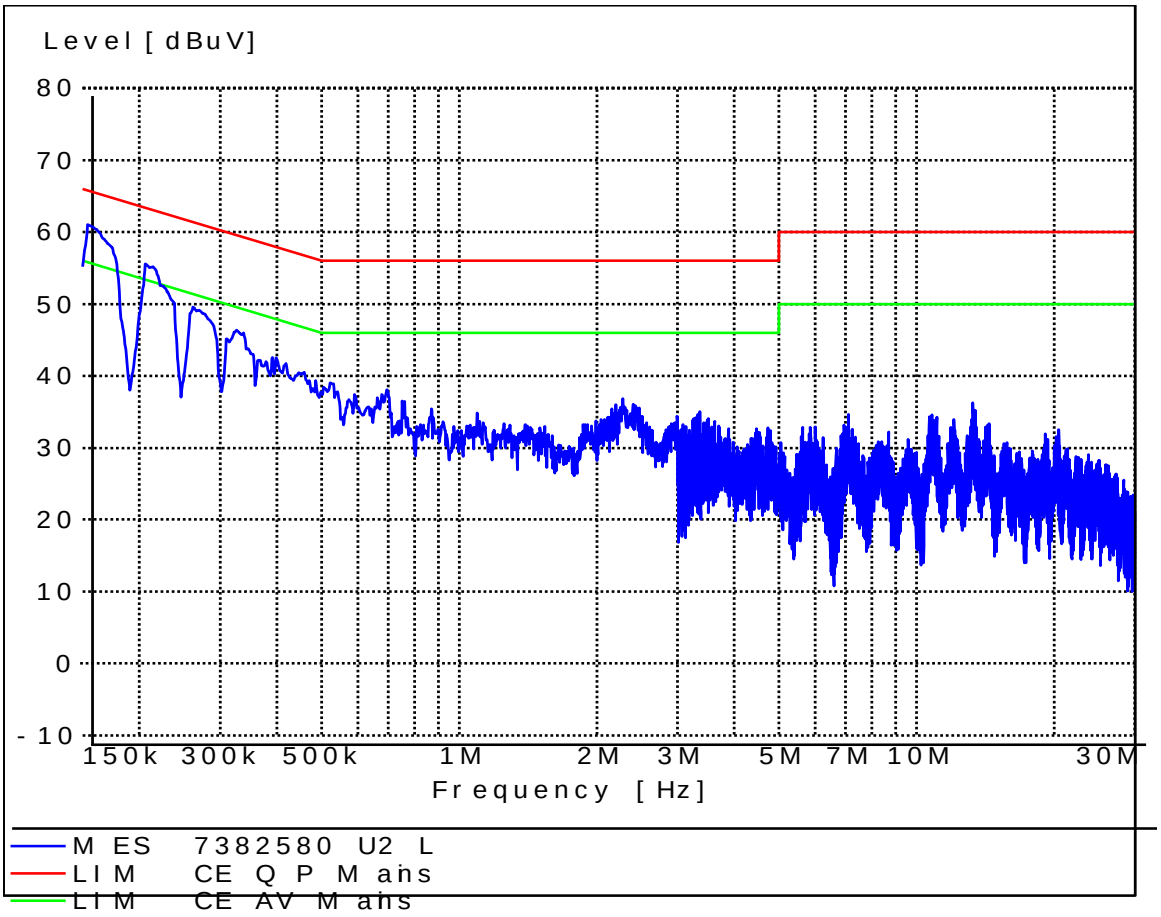
| | Frequency (MHz) | Correction Factor (dB) | Quasi-Peak | | | Average | | |
|---|---|---|---|---|---|---|---|---|
| | | | Reading (dBμV) | Emission Level (dBμV) | Limits (dBμV) | Reading (dBμV) | Emission Level (dBμV) | Limits (dBμV) |
| Line | 0.158 | 9.7 | 48.9 | 58.6 | 65.6 | 33.8 | 43.5 | 55.6 |
| | 0.206 | 9.7 | 38.5 | 48.2 | 63.4 | 21.3 | 31.0 | 53.4 |
| | 0.266 | 9.7 | 35.1 | 44.8 | 61.2 | 21.4 | 31.1 | 51.2 |
| | 0.326 | 9.7 | 30.6 | 40.3 | 59.6 | 19.8 | 29.5 | 49.6 |
| | 0.694 | 9.8 | 22.1 | 31.9 | 56 | 13.5 | 23.3 | 46 |
| | 2.278 | 9.9 | 20.6 | 30.5 | 56 | 11.6 | 21.5 | 46 |
| Neutral | 0.158 | 9.7 | 52.2 | 61.9 | 65.6 | 37.6 | 47.3 | 55.6 |
| | 0.210 | 9.7 | 44.7 | 54.4 | 63.2 | 30.1 | 39.8 | 53.2 |
| | 0.262 | 9.7 | 37.9 | 47.6 | 61.4 | 22.8 | 32.5 | 51.4 |
| | 0.314 | 9.7 | 32.8 | 42.5 | 59.9 | 20.7 | 30.4 | 49.9 |
| | 0.694 | 9.8 | 26.3 | 36.1 | 56 | 17.1 | 26.9 | 46 |
| | 2.506 | 9.9 | 23.8 | 33.7 | 56 | 16.5 | 26.4 | 46 |

REMARKS: 1. Emission level(dBuV)=Read Value(dBuV) + Correction Factor(dB)

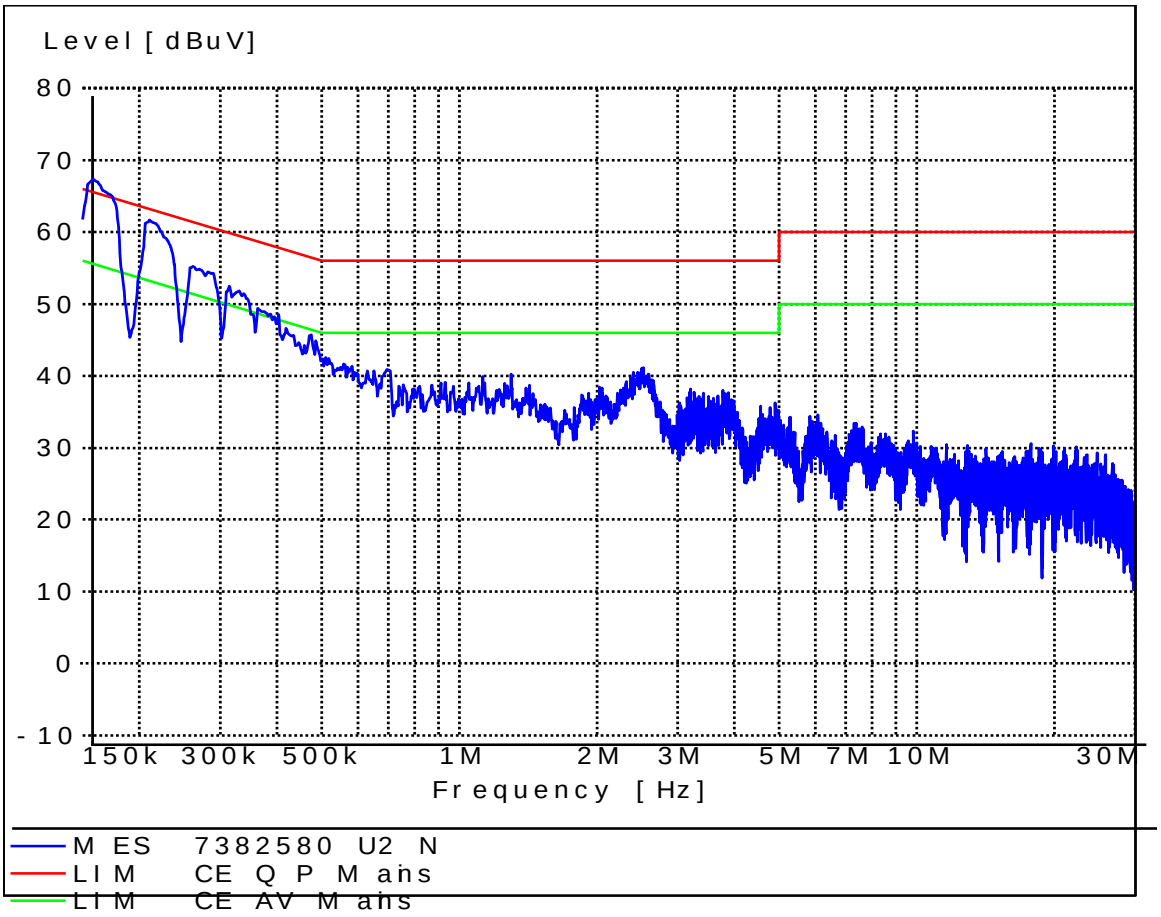
2. Correction Factor(dB) =LISN Factor (dB) + Cable Factor (dB)+Limiter Factor(dB)

3. The other emission levels were very low against the limit.

EUT: U2
Manufacturer:
Operating Condition: Charging and Transmitting
Test Site:
Operator:
Test Specification: L
Comment: AC 120V/60Hz



EUT: U2
Manufacturer:
Operating Condition: Charging and Transmitting
Test Site:
Operator:
Test Specification: N
Comment: AC 120V/60Hz



# 11. ANTENNA REQUIREMENTS

## 11.1. Applicable requirements

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

## 11.2. Antenna Connector

Antenna Connector is on the PCB within enclosure and not accessible to user.

## 11.3. Antenna Gain

The antenna gain of EUT is less than 6 dBi.