

# TEST REPORT

For

**Prolycht directional LED fixture**

**Model Number: Prolycht Orion 300**

**FCC ID: 2AXKOORION300-C4**

**Report Number : WT208001787**

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## TEST REPORT DECLARATION

Applicant : Shenzhen Chromatech Lighting CO.LTD

Address : 29 Gaoxin South Ring Road,#1 Room 901,Shenzhen,Guangdong,518000

Manufacturer : Shenzhen Chromatech Lighting CO.LTD

Address : 29 Gaoxin South Ring Road,#1 Room 901,Shenzhen,Guangdong,518000

EUT Description : Prolycht directional LED fixture

Model No. : Prolycht Orion 300

Trade mark : PROLYCHT

Serial Number : /

FCC ID : 2AXKOORION300-C4

### Test Standards:

**FCC Part 15 15.207, 15.209, 15.247 (2019)**

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 report is valid for above tested sample only and shall not be reproduced in part without written approval of the laboratory.

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## 1. TEST RESULTS SUMMARY

Table 1 Test Results Summary

| Test Items                                | FCC Rules                      | Test Results |
|---|--------------------------------|--------------|
| 6dB DTS Bandwidth                         | 15.247 (a) (2)                 | Pass         |
| Maximum Peak Conducted Power              | 15.247 (b) (3)                 | Pass         |
| Maximum Power Spectral Density Level      | 15.247 (e)                     | 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 Requirements                      | 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.

The lab will not be liable for any loss or damage resulting for false, inaccurate, inappropriate or incomplete product information provided by the applicant/manufacturer.

### 2.2. Laboratory Accreditation and Relationship to Customer

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 Accredited Testing Laboratory of FCC with Designation number CN1165 and Site registration number 582918.

The Laboratory is registered to perform emission tests with Innovation, Science and Economic Development (ISED), and the registration number is 11177A.

The Laboratory is registered to perform emission tests with VCCI, and the registration number are C-20048, G20076, R-20077, R-20078 and T-20047.

The Laboratory is Accredited Testing Laboratory of American Association for Laboratory Accreditation (A2LA) and certificate number is 3292.01.

### **2.3.Measurement Uncertainty**

Conducted Emission

9 kHz~150 kHz 3.7dB

150 kHz~30MHz 3.3dB

Radiated Emission

30MHz~1000MHz 4.3dB

1GHz~6GHz 4.6 dB

6GHz~18GHz 5.1dB

18GHz~26.5GHz 5.1dB

### 3. PRODUCT DESCRIPTION

NOTE: The extreme test conditions for temperature and antenna gain were declared by the manufacturer.

#### 3.1.EUT Description

Description : Prolycht directional LED fixture  
Manufacturer : Shenzhen Chromatech Lighting CO.LTD  
Model Number : Prolycht Orion 300  
Operate Frequency : 2.402GHz~2.480GHz  
Antenna Designation : BT: PIFA ANTENNA  
Operating voltage : AC100V (Low)/AC 120V (Nominal)/ AC 240V (Max)  
Software Version : v1.0  
Hardware Version : v1.0  
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: **2AXKOORION300-C4** 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.Direction 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 |
|------|----------|-----|--------------|
| --   | --       | --  | --           |

### **3.7.Test Conditions**

Date of test : Sep.9, 2020- Sep.15, 2020

Date of EUT Receive : Aug.7, 2020

Temperature: 23°C-25°C

Relative Humidity: 36%-51%

### **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 |
|-----------|--|--------------|--------------|--------------|---------------|
| SB9058/05 | Test Receiver                          | R&S          | ESCI 3       | Sep.25,2020  | 1 Year        |
| SB4357    | AMN                                    | R&S          | ENN216       | Aug.26,2020  | 1 Year        |
| SB13956   | Test Receiver                          | R&S          | ESR26        | Feb.14,2020  | 1 Year        |
| SB3955    | Broadband Antenna                      | Schwarzbeck  | VULB 9163    | Jan.10,2020  | 1 Year        |
| SB8501/09 | Test Receiver                          | R&S          | ESU40        | Feb.14,2020  | 1 Year        |
| SB3435    | Horn Antenna                           | R&S          | HF906        | Dec.17,2019  | 1 Year        |
| SB5472/02 | Broadband Antenna                      | Schwarzbeck  | VULB 9163    | Jan.10,2020  | 1 Year        |
| SB9058/03 | Pre-Amplifier                          | R&S          | SCU 18       | Feb.14,2020  | 1 Year        |
| SB8501/10 | Horn Antenna                           | R&S          | 3160-09      | Mar.10,2020  | 3 Years       |
| SB8501/11 | Horn Antenna                           | R&S          | 3160-09      | Mar.09,2020  | 3 Years       |
| SB8501/12 | Horn Antenna                           | R&S          | 3160-10      | Mar.17,2020  | 3 Years       |
| SB8501/13 | Horn Antenna                           | R&S          | 3160-10      | Mar.10,2020  | 3 Years       |
| SB3345    | Loop Antenna                           | Schwarzbeck  | FMZB1516-113 | Feb.14,2020  | 1 Year        |
| SB8501/14 | Pre-Amplifier                          | R&S          | SCU-03       | Feb.14,2020  | 1 Year        |
| SB8501/15 | Pre-Amplifier                          | R&S          | SCU-03       | Feb.14,2020  | 1 Year        |
| SB8501/16 | Pre-Amplifier                          | R&S          | SCU 26       | Feb.14,2020  | 1 Year        |
| SB8501/17 | Pre-Amplifier                          | R&S          | SCU-18       | Feb.14,2020  | 1 Year        |
| SB9060    | Signal Analyzer                        | R&S          | FSQ40        | May.18, 2020 | 1 Year        |
| SB13989   | Wireless Wideband Communication Tester | R&S          | CMW270       | May.18, 2020 | 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 v05r02

### 5.2. Test Procedure

The transmitter output was connected to the spectrum analyzer.

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW)  $\geq 3 \times$  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.

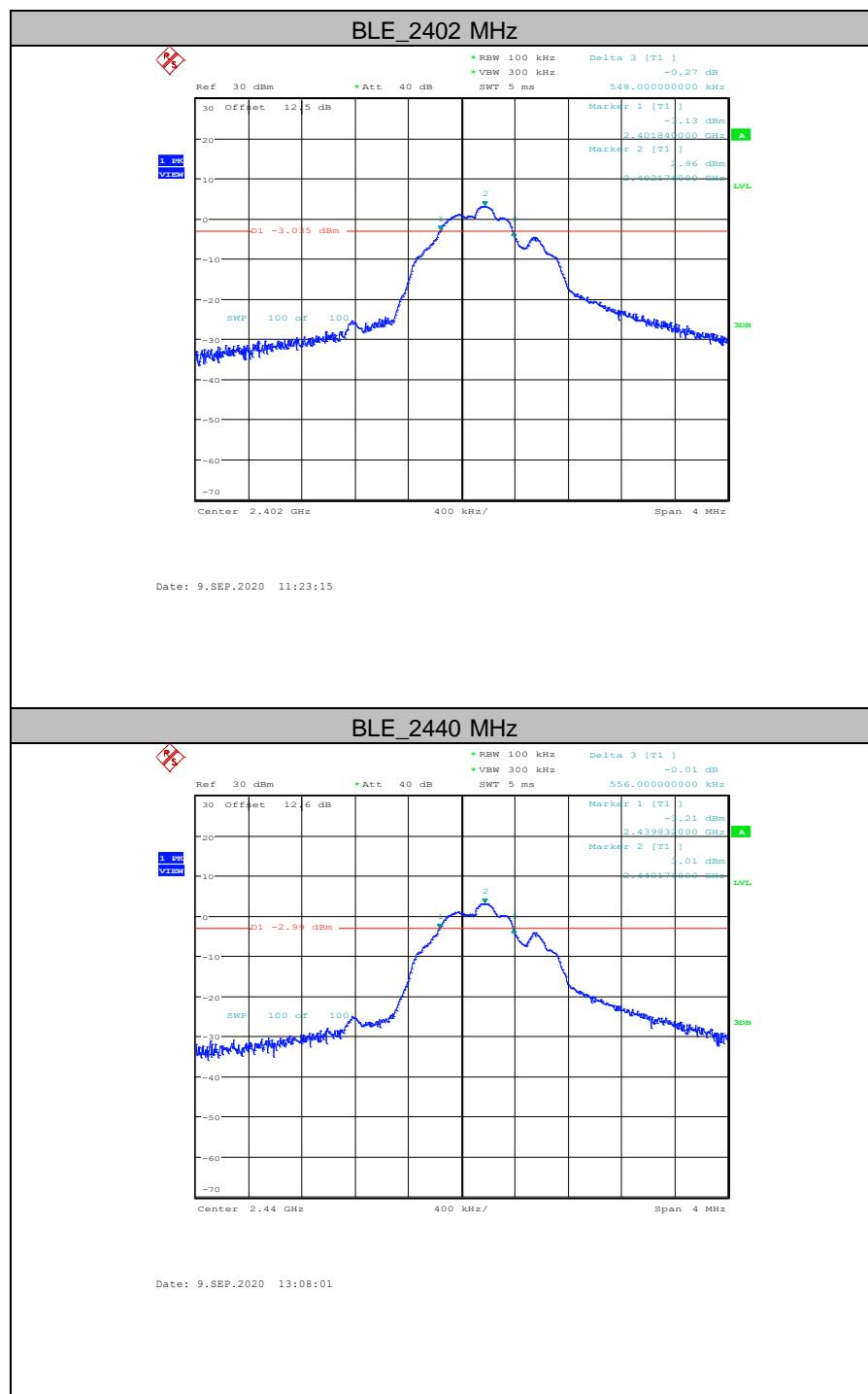
### 5.3. Test Setup

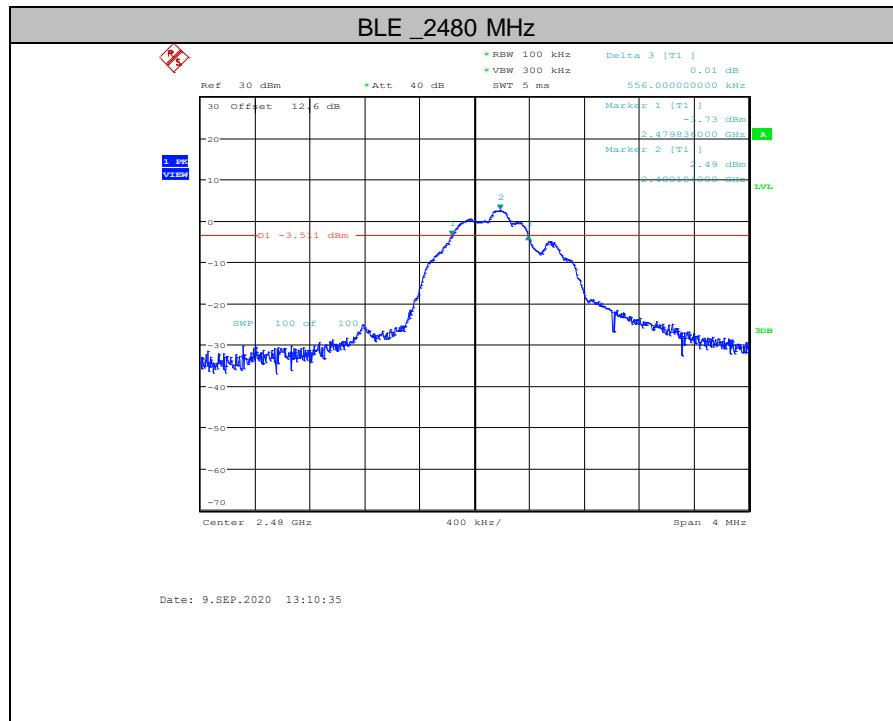


### 5.4. Test Data

Table 5 6dB Bandwidth Test Data BLE

| Channel Frequency [MHz] | 6dB Bandwidth [MHz] | Limit [MHz] | Result |
|-------------------------|---------------------|-------------|--------|
| 2402                    | 0.55                | $\geq 0.50$ | Pass   |
| 2440                    | 0.56                | $\geq 0.50$ | Pass   |
| 2480                    | 0.56                | $\geq 0.50$ | Pass   |





## 6. MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

### 6.1. Limits of Maximum Conducted Output Power Measurement

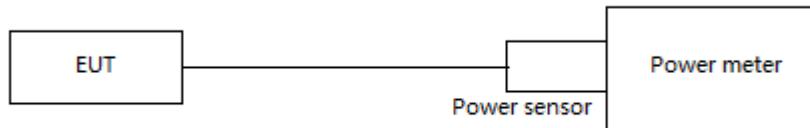
CFR 47 (FCC) part 15.247 (b) (3), 558074 D01 DTS Meas Guidance v05r02

### 6.2. Test Procedure

The transmitter output was connected to the spectrum analyzer.

- a) Set the RBW  $\geq$  DTS bandwidth.
- b) Set VBW  $\geq 3 \times$  RBW.
- c) Set span  $\geq 3 \times$  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.

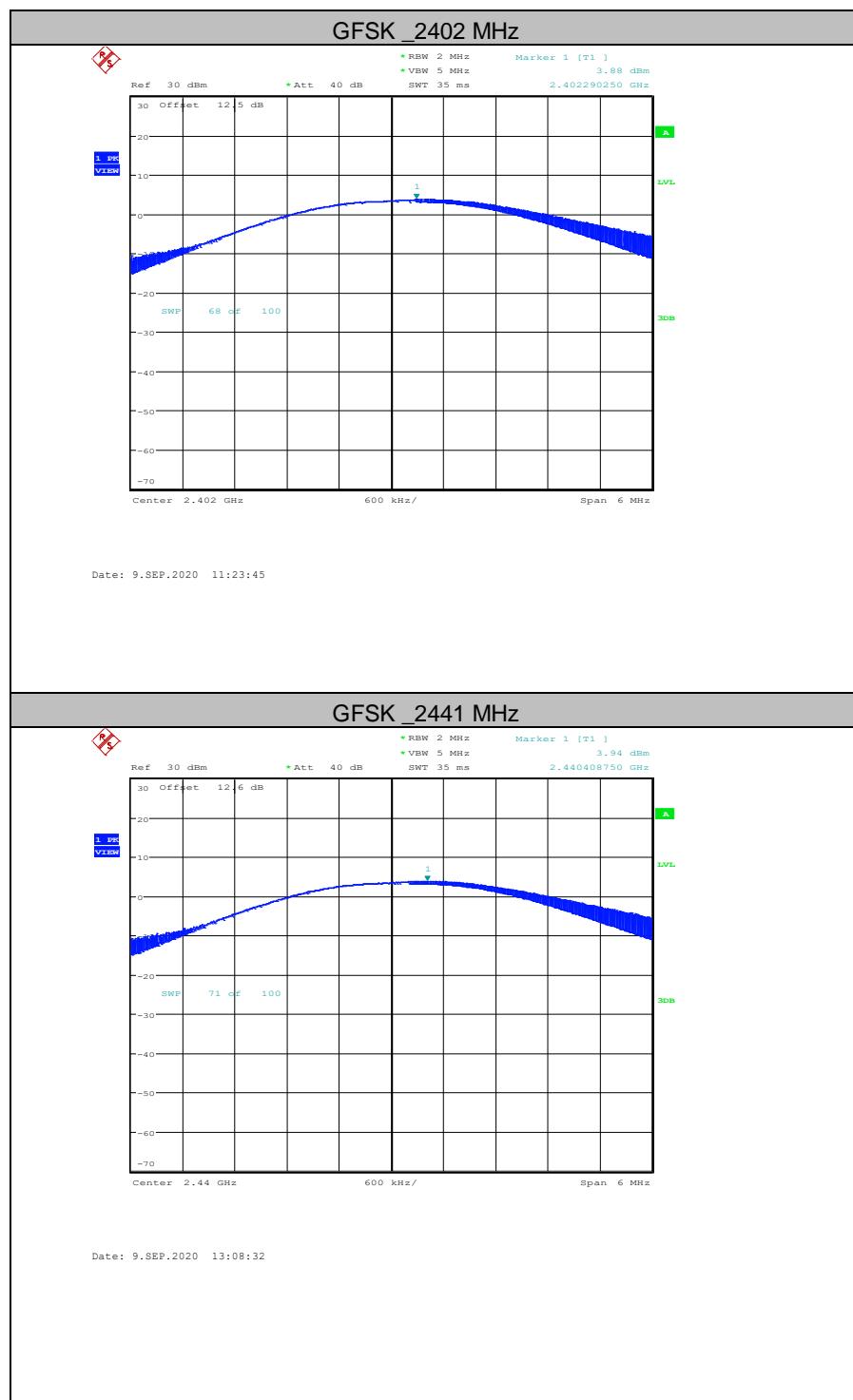
### 6.3. Test Setup

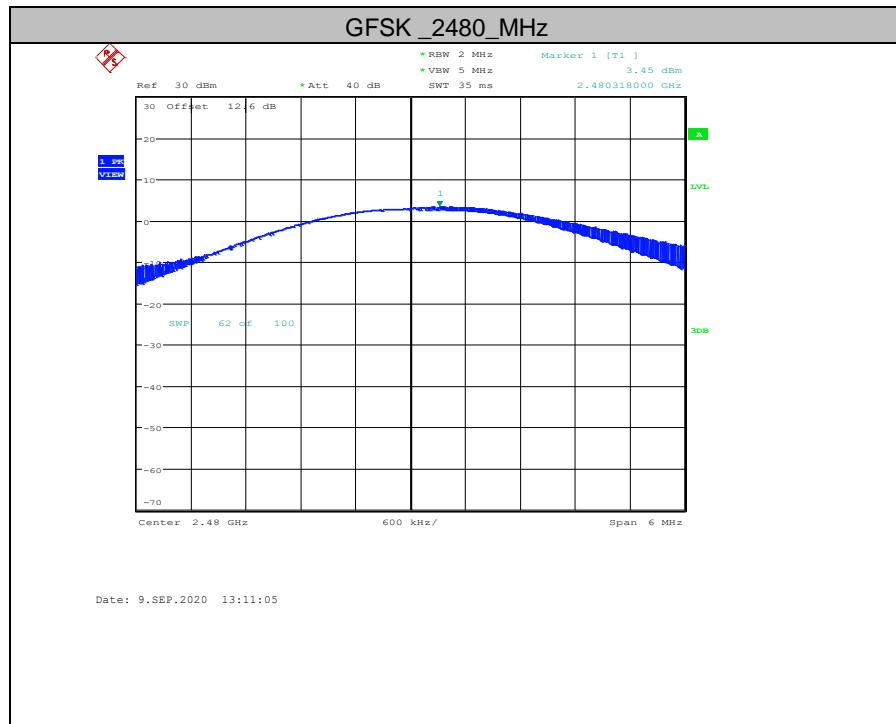


### 6.4. Test Data

Table 6 Maximum Conducted Output Power Test Data BLE

| Center Freq. [MHz] | Meas. Level (Cond.) [dBm] | Limit [dBm] | Result |
|--------------------|---------------------------|-------------|--------|
| 2402               | 3.88                      | <=30        | Pass   |
| 2440               | 3.94                      | <=30        | Pass   |
| 2480               | 3.45                      | <=30        | Pass   |





## 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 v05r02

### 7.2. Test Procedure

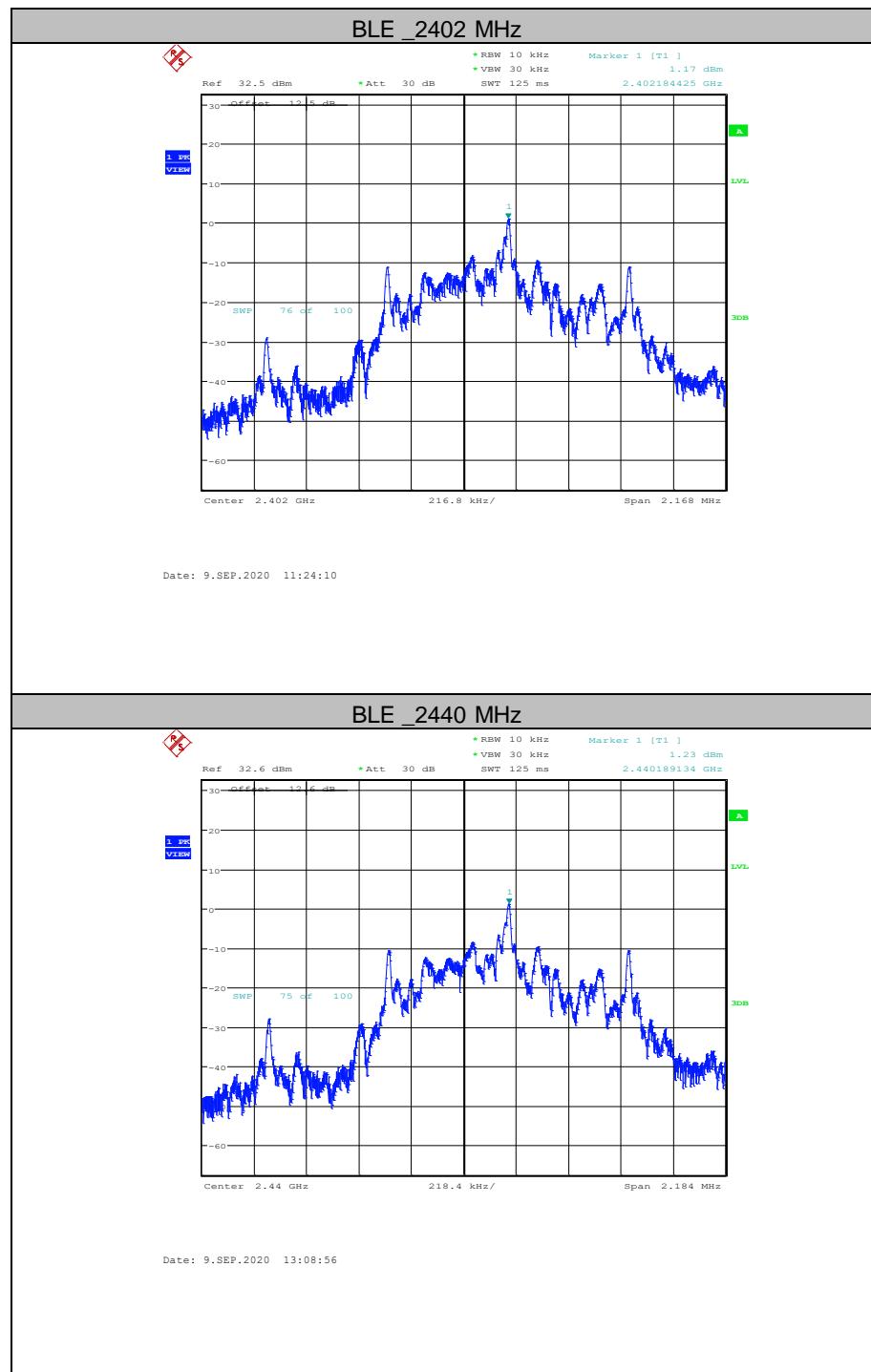
The transmitter output was connected to the spectrum analyzer.

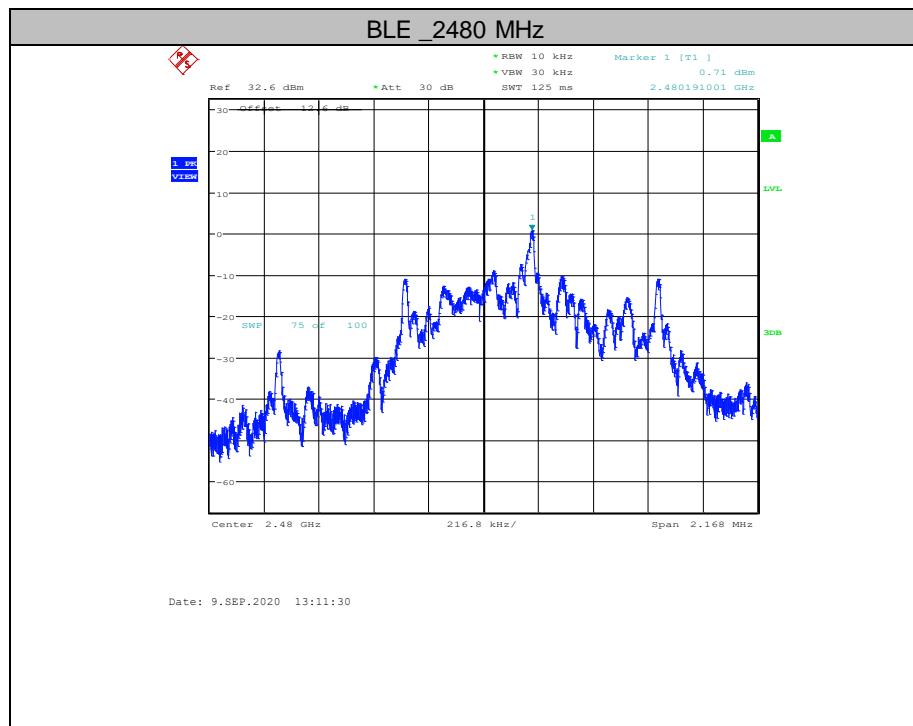
- a) Set analyzer center frequency to DTS channel center frequency.
- b) Set the span to 1.5 times the DTS bandwidth.
- c) Set RBW to:  $3\text{kHz} \leq \text{RBW} \leq 100\text{ kHz}$ .
- d) Set VBW  $\geq 3 \times \text{RBW}$ .
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = 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       | 1.17      | <=8         | Pass   |
| 2440       | 1.23      | <=8         | Pass   |
| 2480       | 0.71      | <=8         | Pass   |





## 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 v05r02

### 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  $\geq 1.5$  times the DTS bandwidth.

c) Set the RBW = 100 kHz.

d) Set the VBW  $\geq 3 \times$  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  $\geq 3 \times$  RBW.

d) Detector = peak.

e) Ensure that the number of measurement points  $\geq$  span/RBW

f) Sweep time = auto couple.

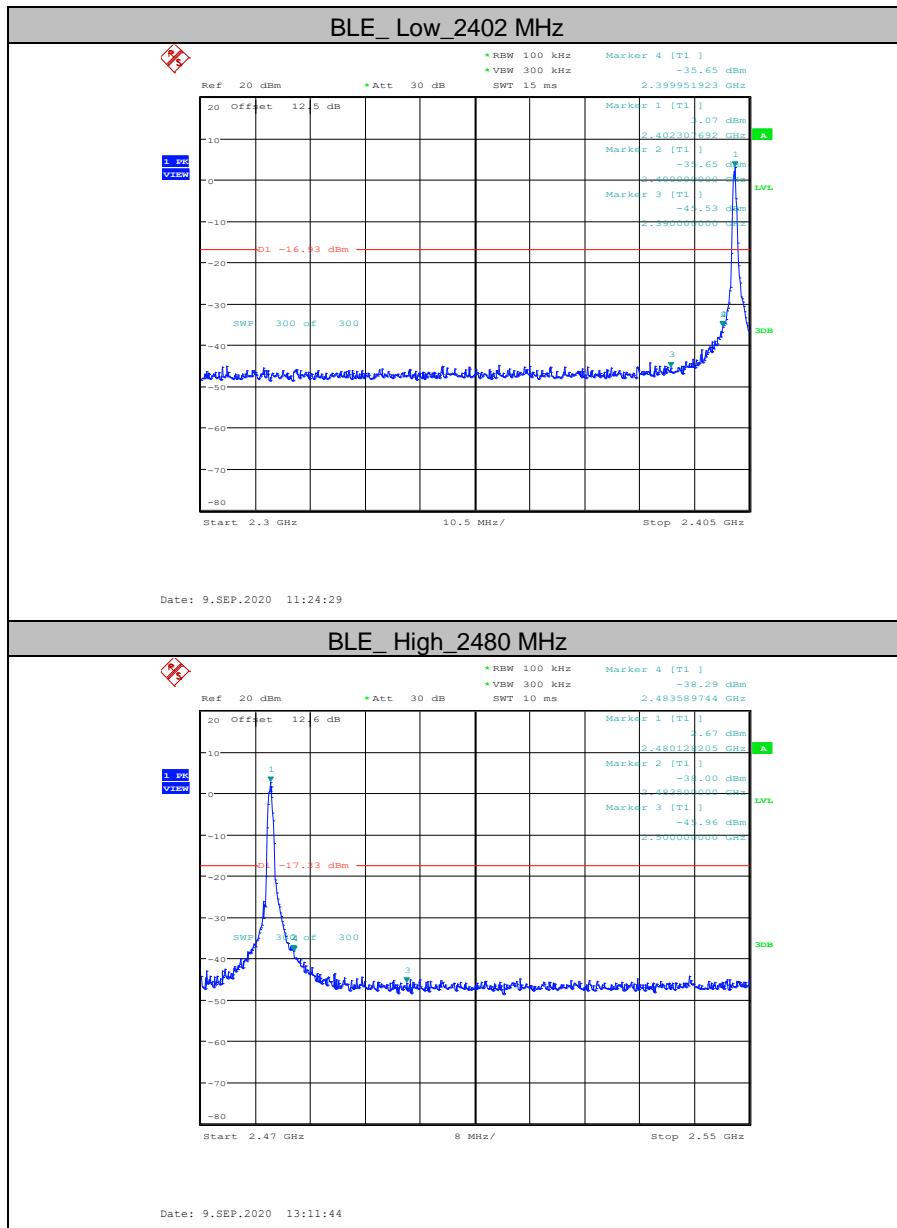
g) Trace mode = max hold.

h) Allow trace to fully stabilize.

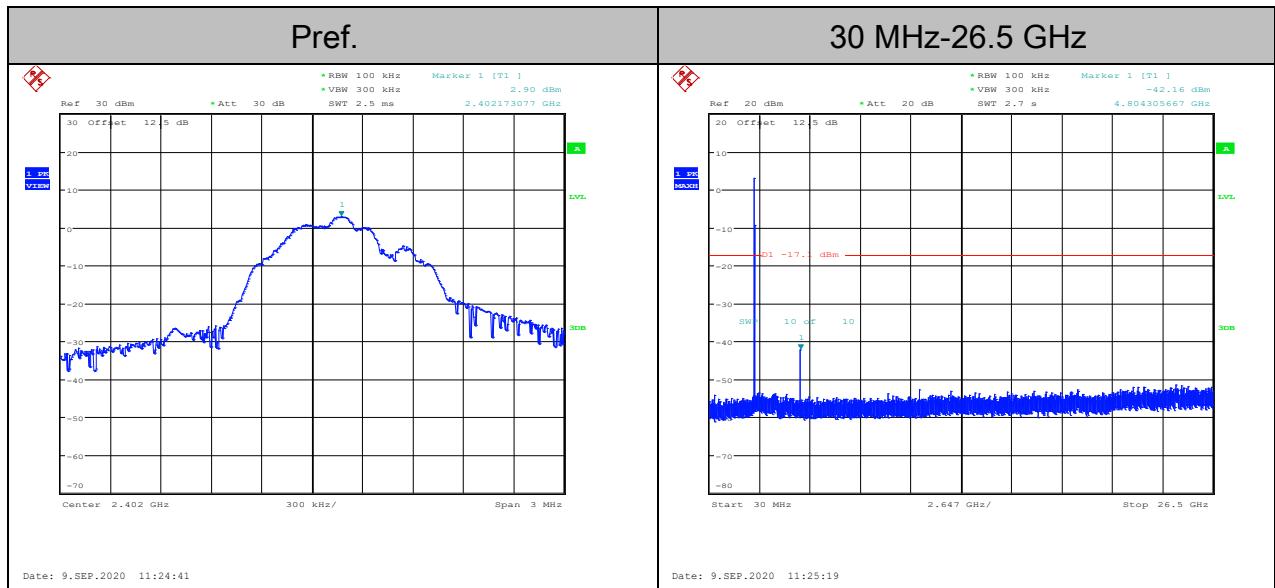
i) Use the peak marker function to determine the maximum amplitude level.

### 8.3. Test Data

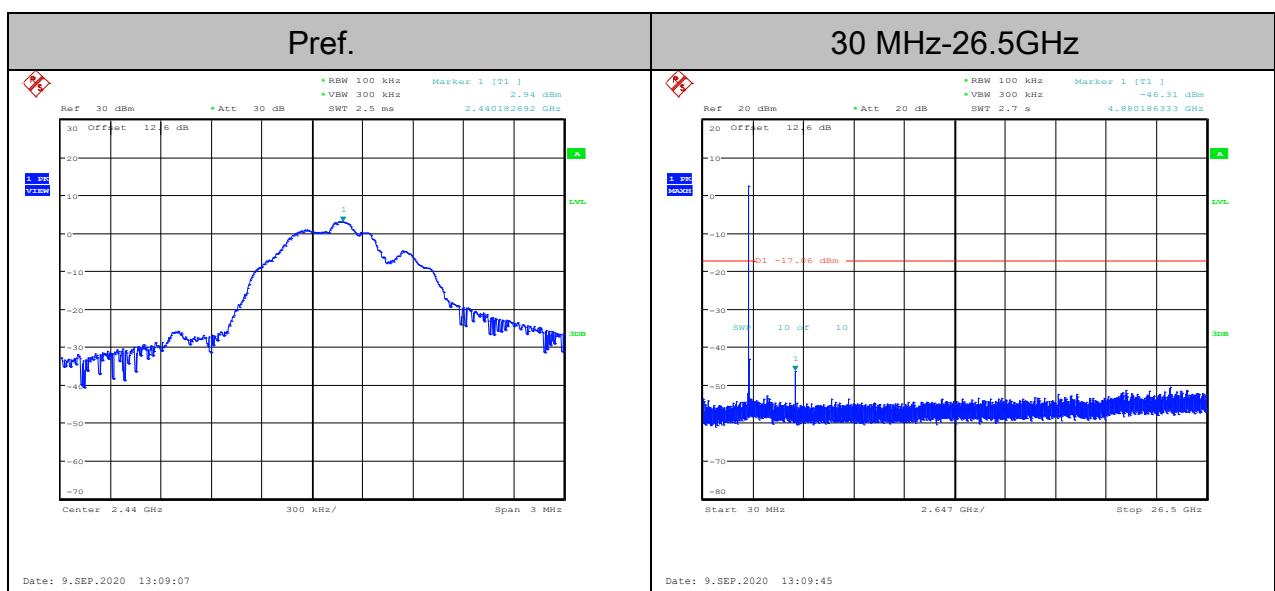
## BLE Band Edge



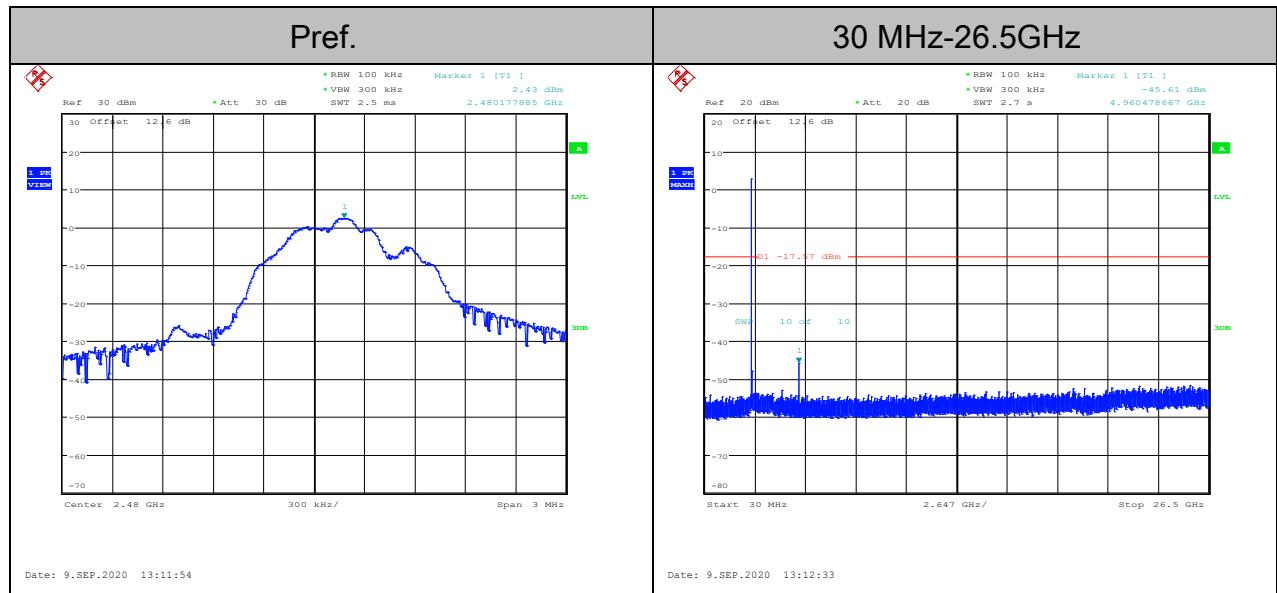
## Conducted Spurious Emission Low Channel



## Conducted Spurious Emission Mid. Channel



## Conducted Spurious Emission High Channel



## 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 v05r02

### 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 0.8meter, 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  $\geq$  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

### 9 kHz-30 MHz

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 +preamp (dB) | Antenna Factor (dB) | Reading (dB $\mu$ V/m) | Level (dB $\mu$ V/m) | Polarity (H/V) | Limit (dB $\mu$ V/m) | Margin (dB) | Note |
|-----------------|-------------------------|---------------------|------------------------|----------------------|----------------|----------------------|-------------|------|
| --              | --                      | --                  | --                     | --                   | --             | --                   | --          | --   |
| --              | --                      | --                  | --                     | --                   | --             | --                   | --          | --   |
| --              | --                      | --                  | --                     | --                   | --             | --                   | --          | --   |
| --              | --                      | --                  | --                     | --                   | --             | --                   | --          | --   |
| --              | --                      | --                  | --                     | --                   | --             | --                   | --          | --   |
| --              | --                      | --                  | --                     | --                   | --             | --                   | --          | --   |
| --              | --                      | --                  | --                     | --                   | --             | --                   | --          | --   |
| --              | --                      | --                  | --                     | --                   | --             | --                   | --          | --   |
| --              | --                      | --                  | --                     | --                   | --             | --                   | --          | --   |
| --              | --                      | --                  | --                     | --                   | --             | --                   | --          | --   |

### 30 MHz-1 GHz

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

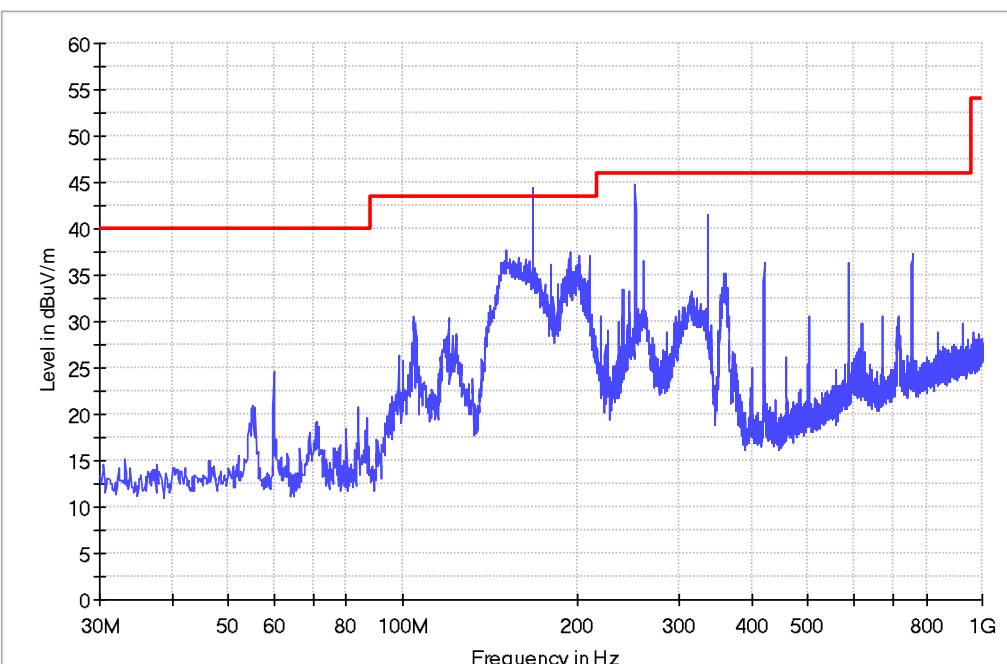
| Frequency (MHz) | Cable Loss +preamp (dB) | Antenna Factor (dB) | Reading (dB $\mu$ V/m) | Level (dB $\mu$ V/m) | Polarity (Horizontal/Vertical) | Limit (dB $\mu$ V/m) | Margin (dB) | Note |
|-----------------|-------------------------|---------------------|------------------------|----------------------|--------------------------------|----------------------|-------------|------|
| 150.643         | 1.4                     | 8.3                 | 26.0                   | 35.7                 | Horizontal                     | 43.5                 | 7.8         | QP   |
| 167.982         | 1.5                     | 8.7                 | 33.1                   | 43.3                 | Horizontal                     | 43.5                 | 0.2         | QP   |
| 194.293         | 1.7                     | 10.6                | 24.2                   | 36.5                 | Horizontal                     | 43.5                 | 7.0         | QP   |
| 252.008         | 1.9                     | 12.1                | 30.1                   | 44.1                 | Horizontal                     | 46.0                 | 1.9         | QP   |
| 335.913         | 2.1                     | 13.3                | 25.0                   | 40.4                 | Horizontal                     | 46.0                 | 5.6         | QP   |
| 756.045         | 3.4                     | 18.8                | 15.1                   | 37.3                 | Horizontal                     | 46.0                 | 8.7         | QP   |
| 52.673          | 0.7                     | 13.3                | 14.8                   | 28.8                 | Vertical                       | 40                   | 11.2        | QP   |
| 149.673         | 1.5                     | 10.5                | 29.1                   | 41.1                 | Vertical                       | 43.5                 | 2.4         | QP   |
| 167.982         | 1.5                     | 8.7                 | 33.2                   | 43.4                 | Vertical                       | 43.5                 | 0.1         | QP   |
| 202.175         | 1.6                     | 10.6                | 22.0                   | 34.2                 | Vertical                       | 43.5                 | 9.3         | QP   |
| 252.008         | 1.9                     | 12.1                | 25.2                   | 39.2                 | Vertical                       | 46                   | 6.8         | QP   |
| 419.940         | 2.5                     | 15.1                | 19.1                   | 36.7                 | Vertical                       | 46                   | 9.3         | QP   |

Remark: Emission level (dB $\mu$ V)=Read Value(dB $\mu$ V/m) + Antenna Factor(dB)+ Cable Loss +preamp(dB)

## Radiated Emission

EUT Name: Orion 300  
Operating Condition: Charging and Transmitting  
Test Site: SMQ NETC EMC Lab.  
Antenna Position: Vertical & Horizontal  
Test Voltage: AC 120V/60Hz  
Horizontal

Copy of Field strength 30M-1GHz



Vertical

Copy of Field strength 30M-1GHz

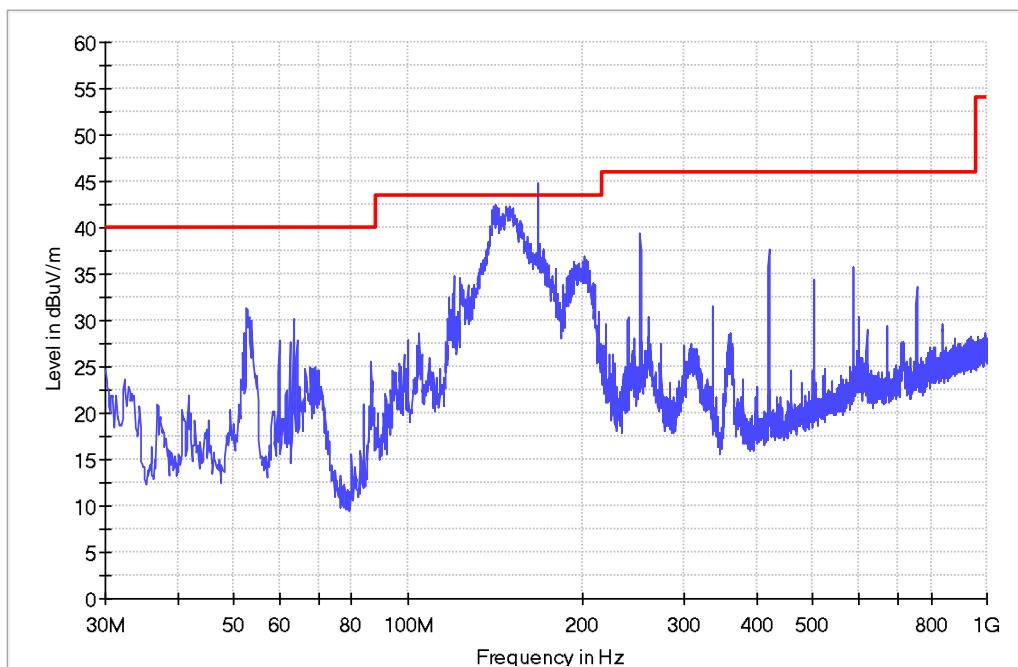


Table 10 Radiated Emission Test Data 1GHz -18GHz

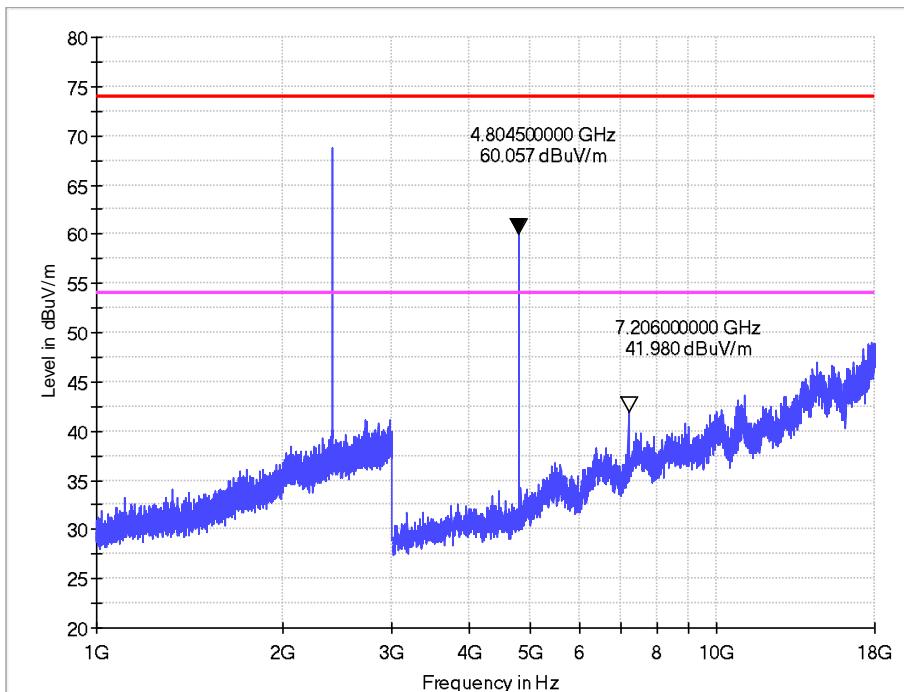
| Channel | Frequency (MHz) | Cable Loss +preamp (dB) | Antenna Factor (dB) | Reading (dB $\mu$ V/m) | Level (dB $\mu$ V/m) | Polarity (Horizontal/Vertical) | Limit (dB $\mu$ V/m) | Margin (dB) | Note |
|---------|-----------------|-------------------------|---------------------|------------------------|----------------------|--------------------------------|----------------------|-------------|------|
| CH0     | 4803.836        | -39.4                   | 33.4                | 70.4                   | 64.4                 | Horizontal                     | 74                   | 9.6         | PK   |
| CH0     | 4803.836        | -39.4                   | 33.4                | 56.3                   | 50.3                 | Horizontal                     | 54                   | 3.7         | AV   |
| CH0     | 7206.467        | -38.3                   | 35.6                | 57.4                   | 54.7                 | Horizontal                     | 74                   | 19.3        | PK   |
| CH0     | 7206.467        | -38.3                   | 35.6                | 43.5                   | 40.8                 | Horizontal                     | 54                   | 13.2        | AV   |
| CH0     | 4803.851        | -39.4                   | 33.4                | 64.2                   | 58.2                 | Vertical                       | 74                   | 15.8        | PK   |
| CH0     | 4803.851        | -39.4                   | 33.4                | 50.4                   | 44.4                 | Vertical                       | 54                   | 9.6         | AV   |
| CH0     | 7206.132        | -38.3                   | 35.6                | 57.2                   | 54.5                 | Vertical                       | 74                   | 19.5        | PK   |
| CH0     | 7206.132        | -38.3                   | 35.6                | 44.0                   | 41.3                 | Vertical                       | 54                   | 12.7        | AV   |
| CH19    | 4880.325        | -39.4                   | 33.4                | 67.0                   | 61.0                 | Horizontal                     | 74                   | 13.0        | PK   |
| CH19    | 4880.325        | -39.4                   | 33.4                | 55.0                   | 49.0                 | Horizontal                     | 54                   | 5.0         | AV   |
| CH19    | 4880.313        | -39.4                   | 33.4                | 63.2                   | 57.2                 | Vertical                       | 74                   | 16.8        | PK   |
| CH19    | 4880.313        | -39.4                   | 33.4                | 51.2                   | 45.2                 | Vertical                       | 54                   | 8.8         | AV   |
| CH39    | 7440.457        | -37.7                   | 35.6                | 59.7                   | 57.6                 | Horizontal                     | 74                   | 16.4        | PK   |
| CH39    | 7440.457        | -37.7                   | 35.6                | 45.5                   | 43.4                 | Horizontal                     | 54                   | 10.6        | AV   |

Remark: Emission level (dB $\mu$ V)=Read Value(dB $\mu$ V/m) + Antenna Factor(dB)+ Cable Loss +preamp(dB)

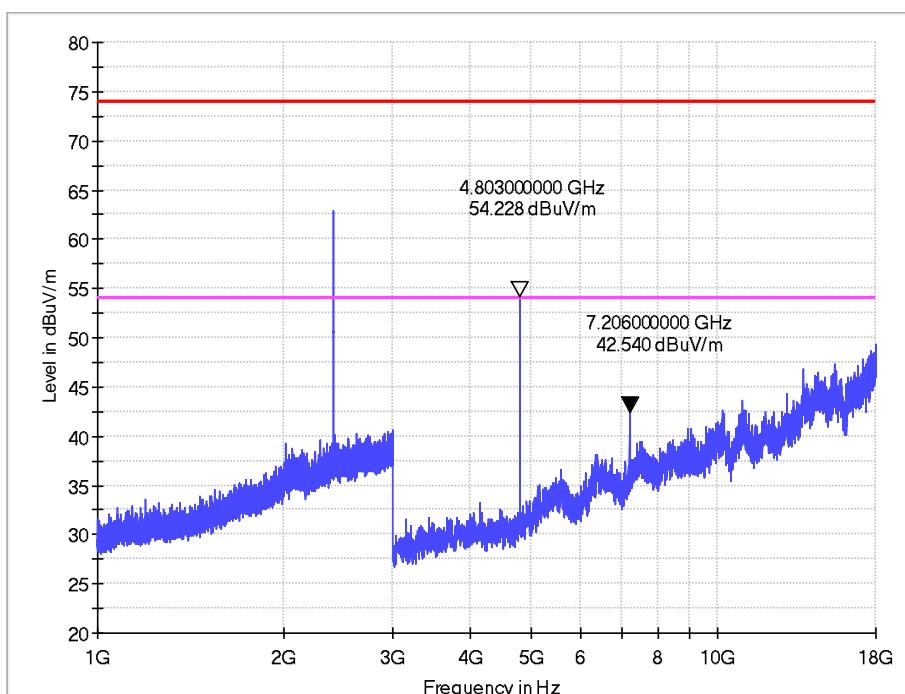
1-18 GHz

BLE CH0

Horizontal



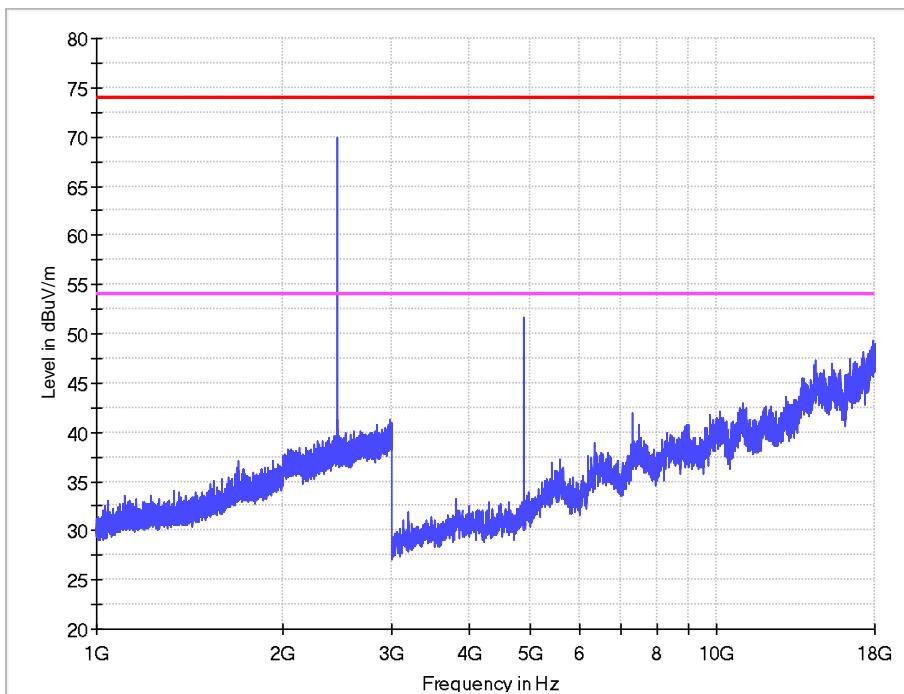
Vertical



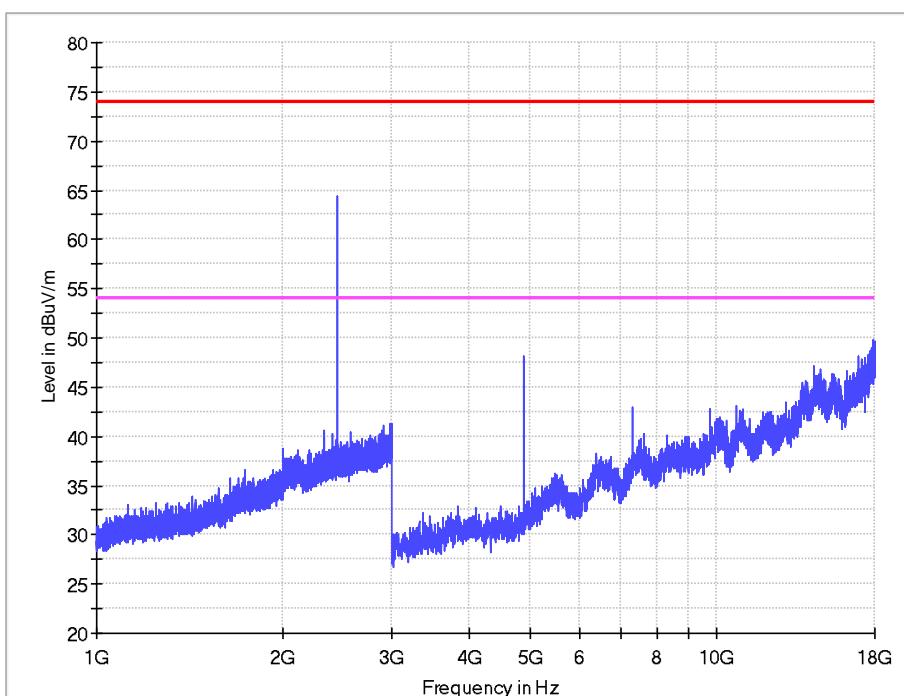
1-18 GHz

BLE CH19

Horizontal



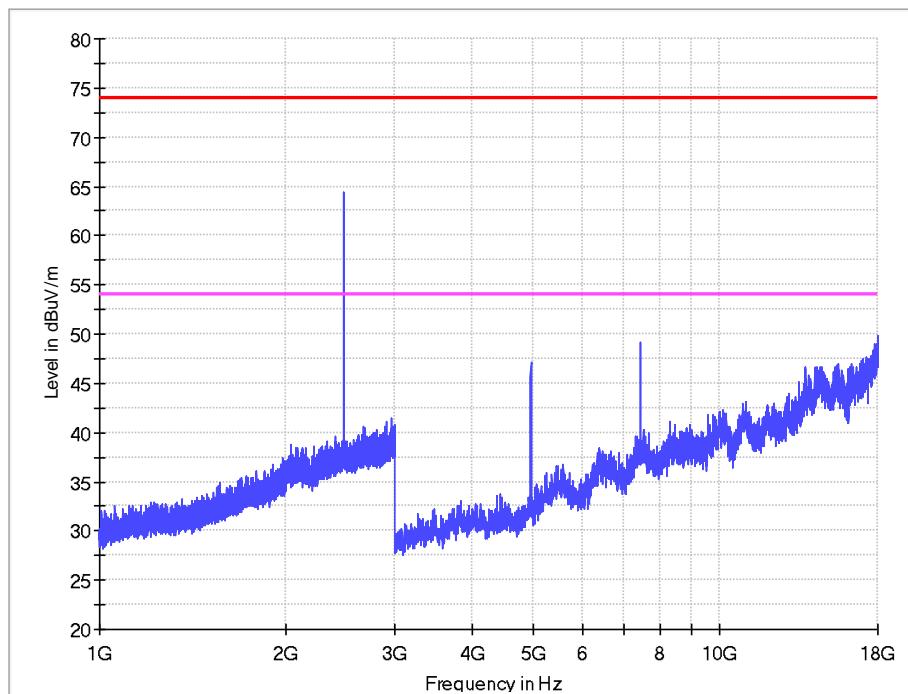
Vertical



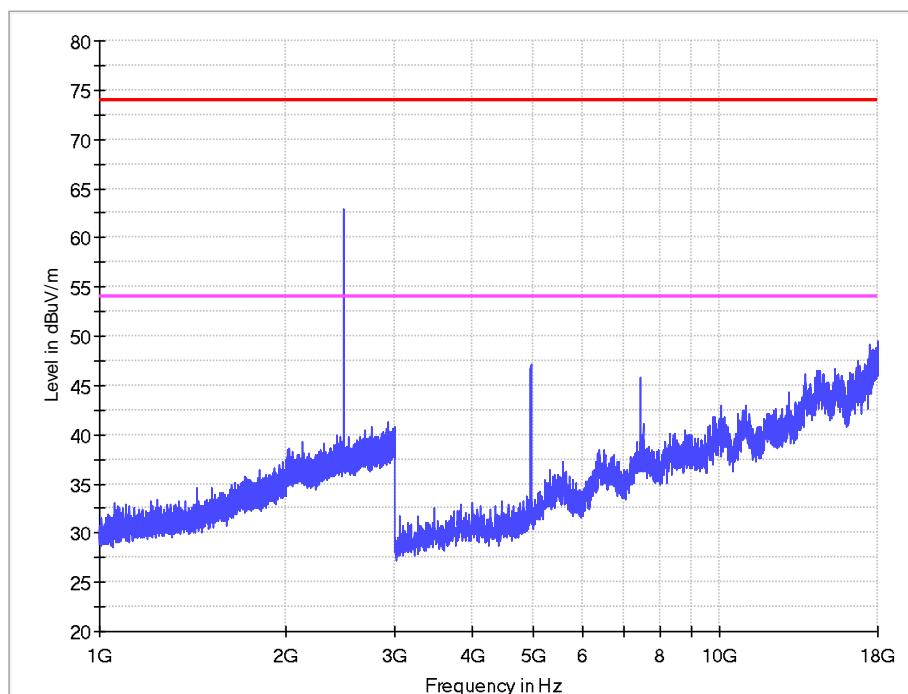
1-18 GHz

BLE CH39

Horizontal



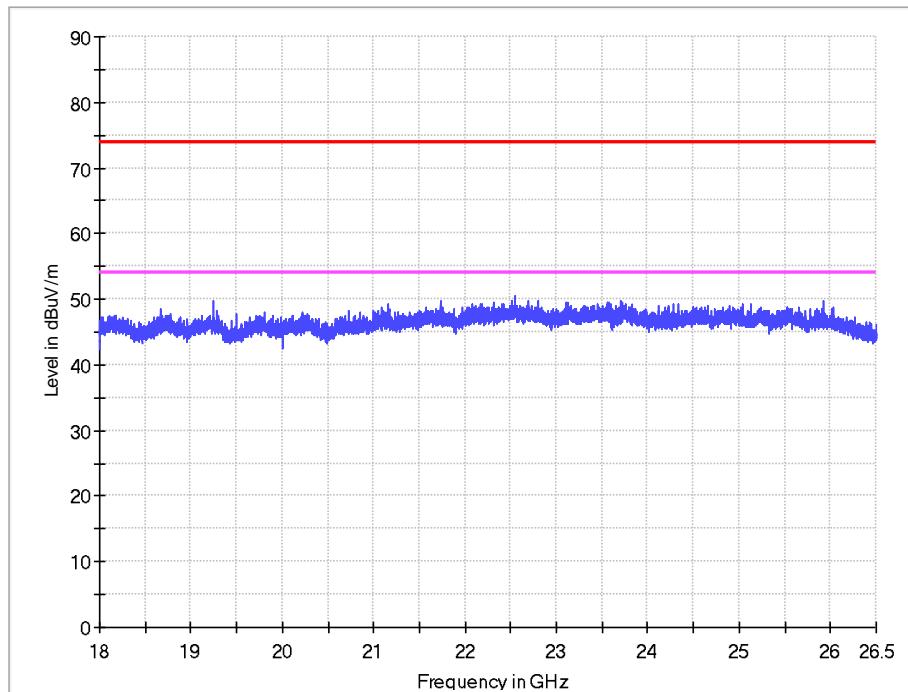
Vertical



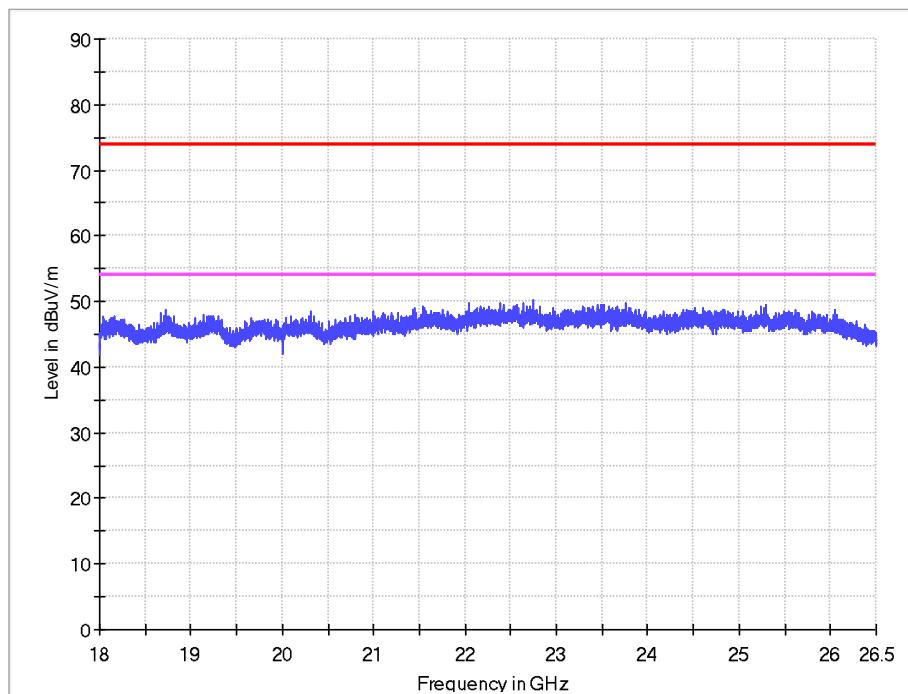
18-26.5 GHz

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

Horizontal



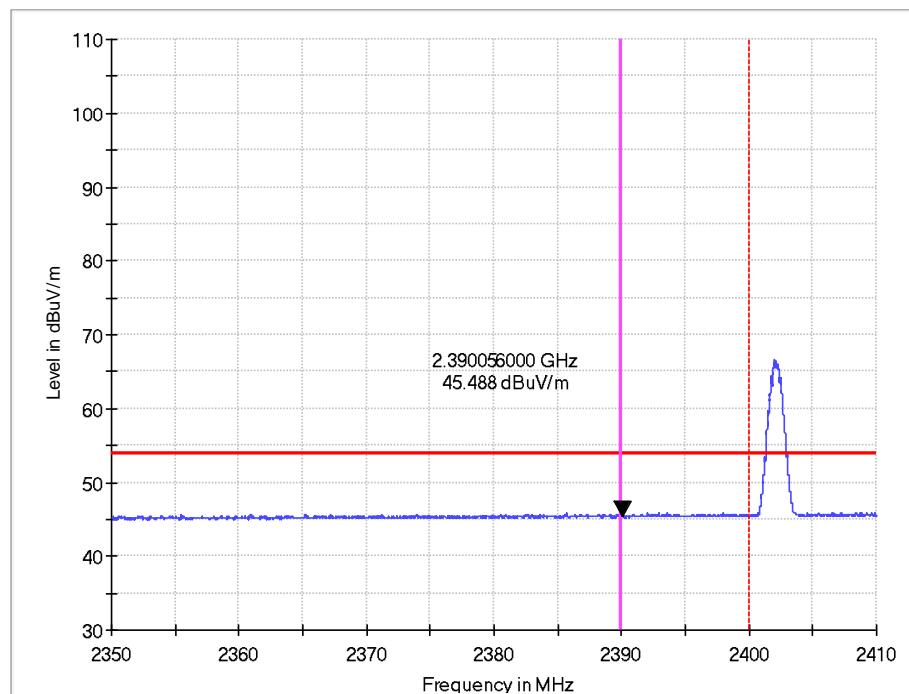
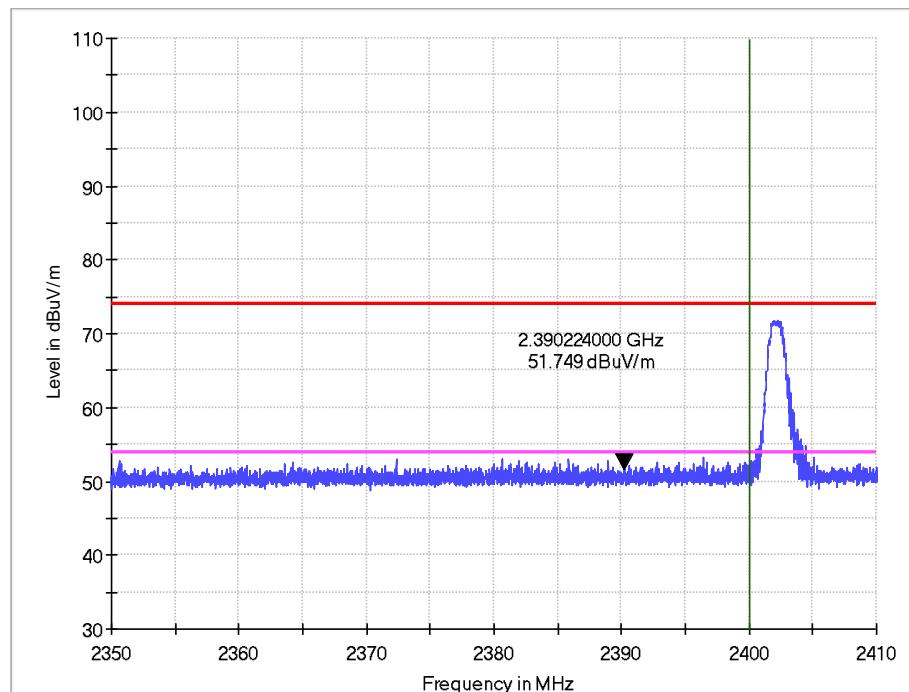
Vertical



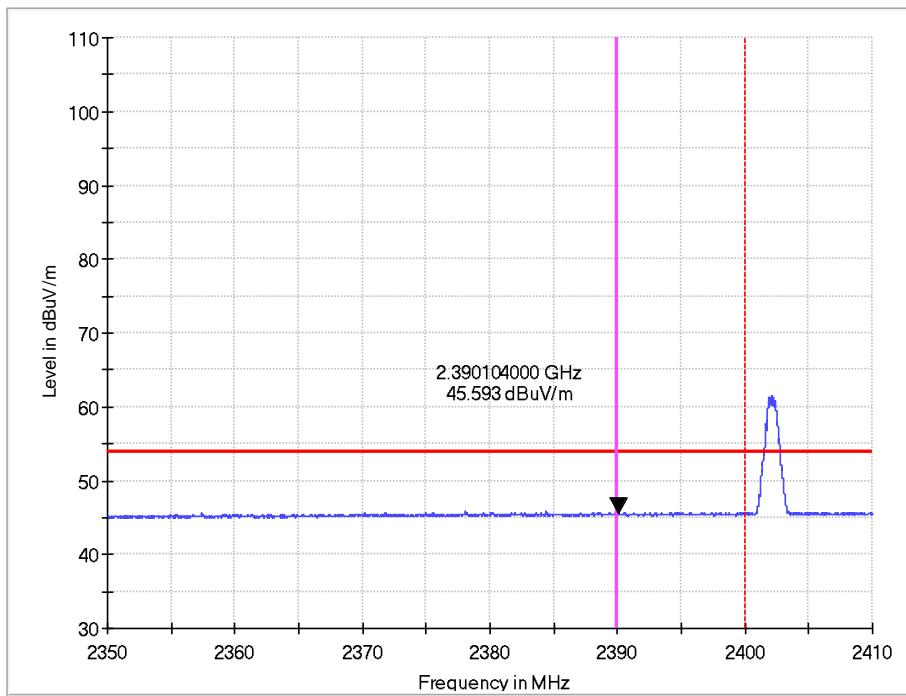
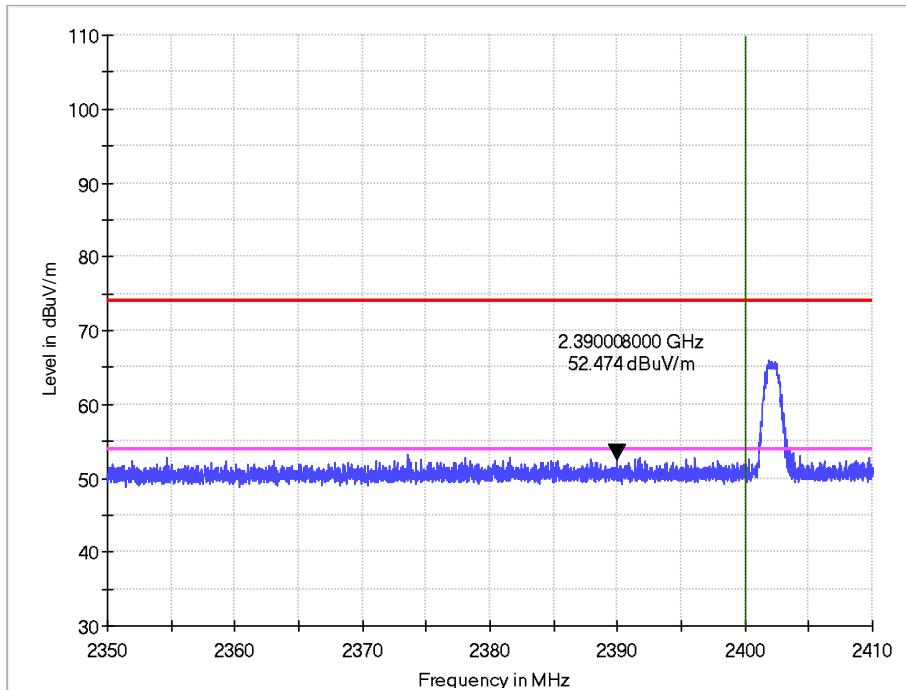
Band Edge

BLE CH0

Horizontal



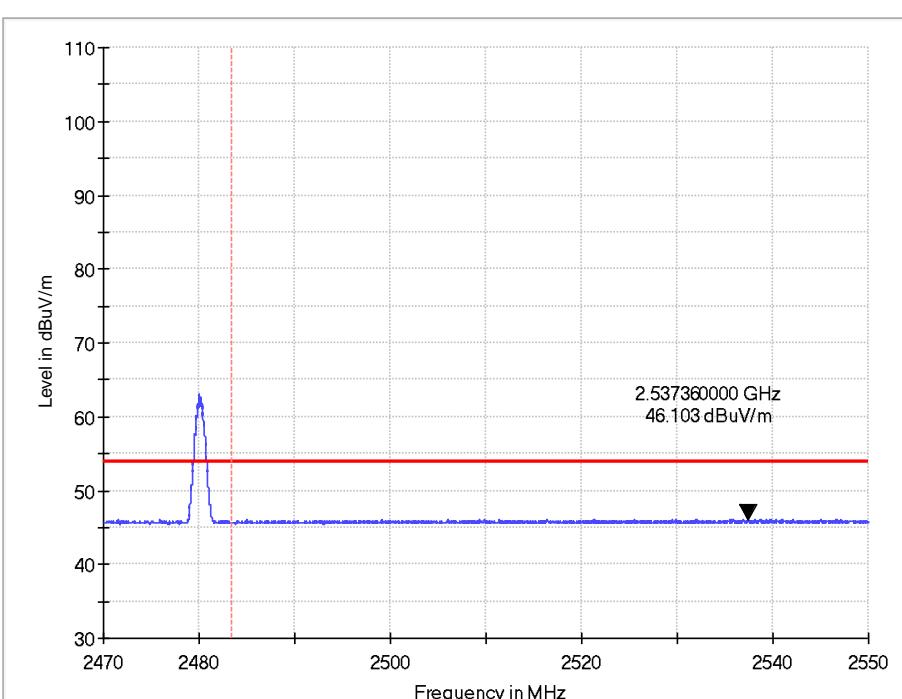
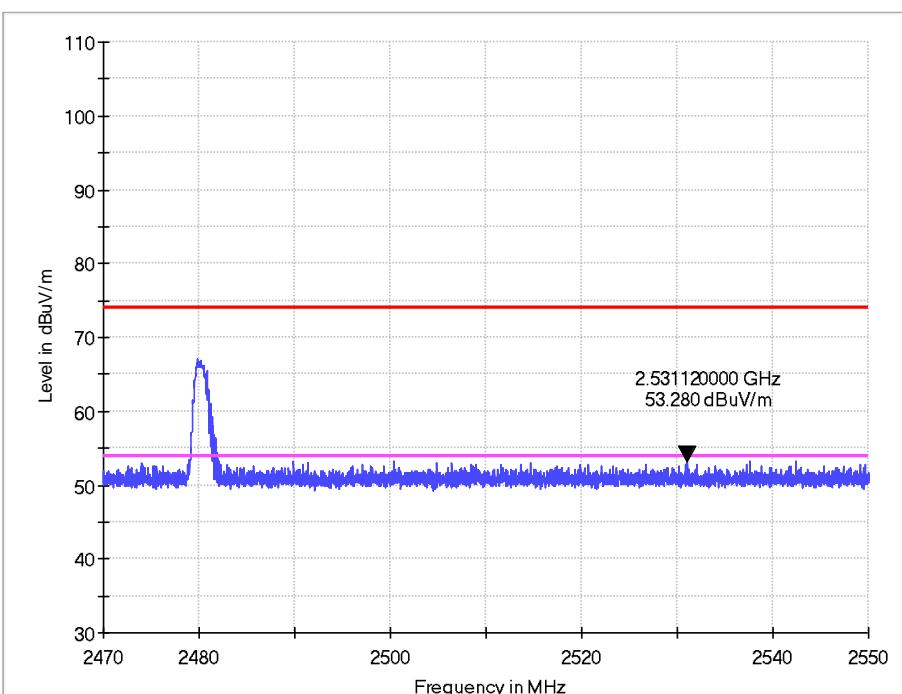
## Vertical



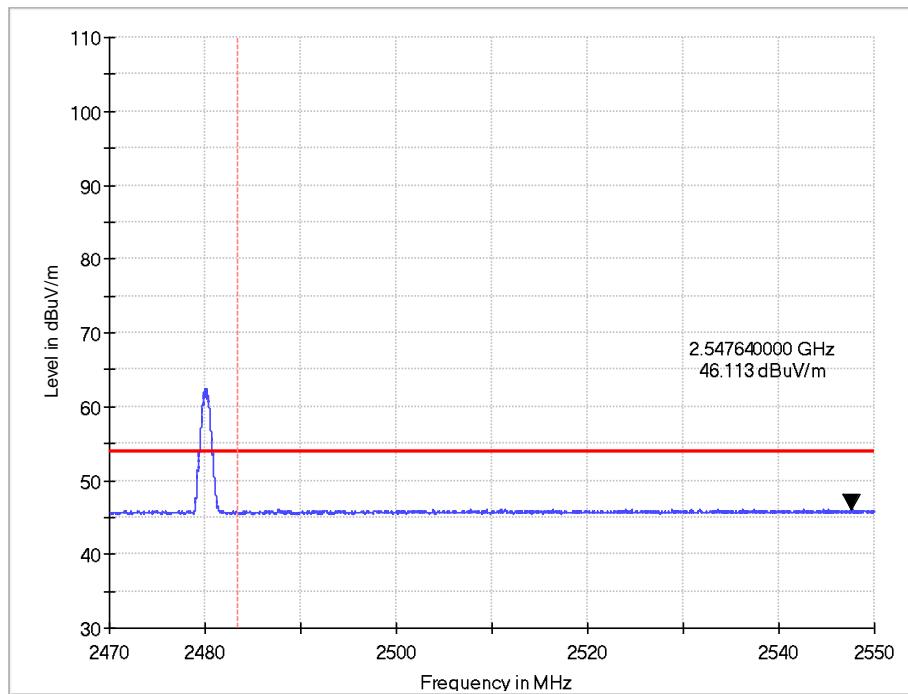
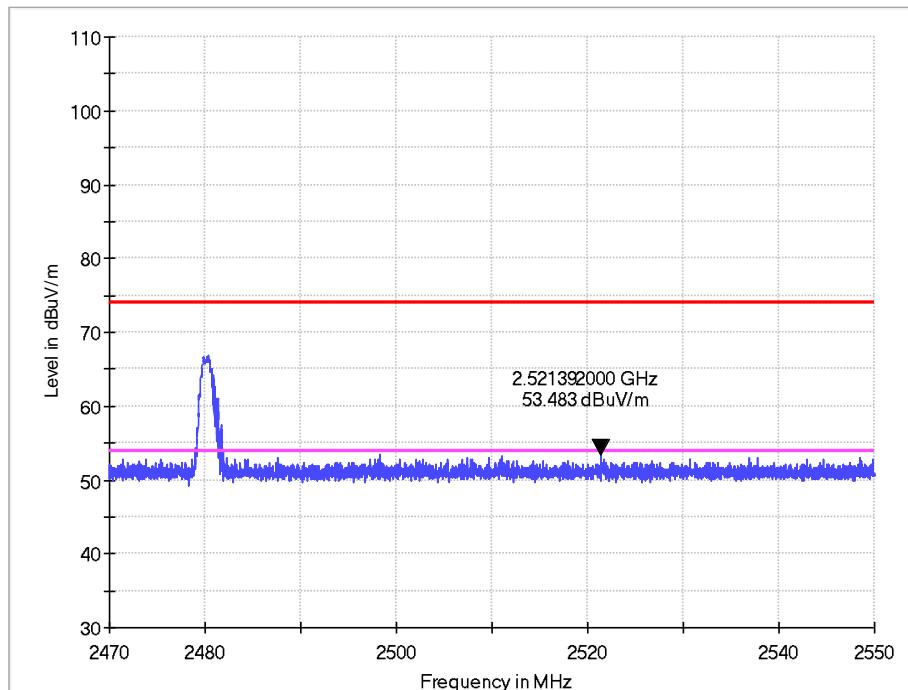
Band Edge

BLE CH39

Horizontal



## Vertical



## 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 11 Conducted Emission Test Limit

| Frequency     | Maximum RF Line Voltage (dB $\mu$ V) |               |
|---------------|--------------------------------------|---------------|
|               | 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 12 Conducted Emission Test Data

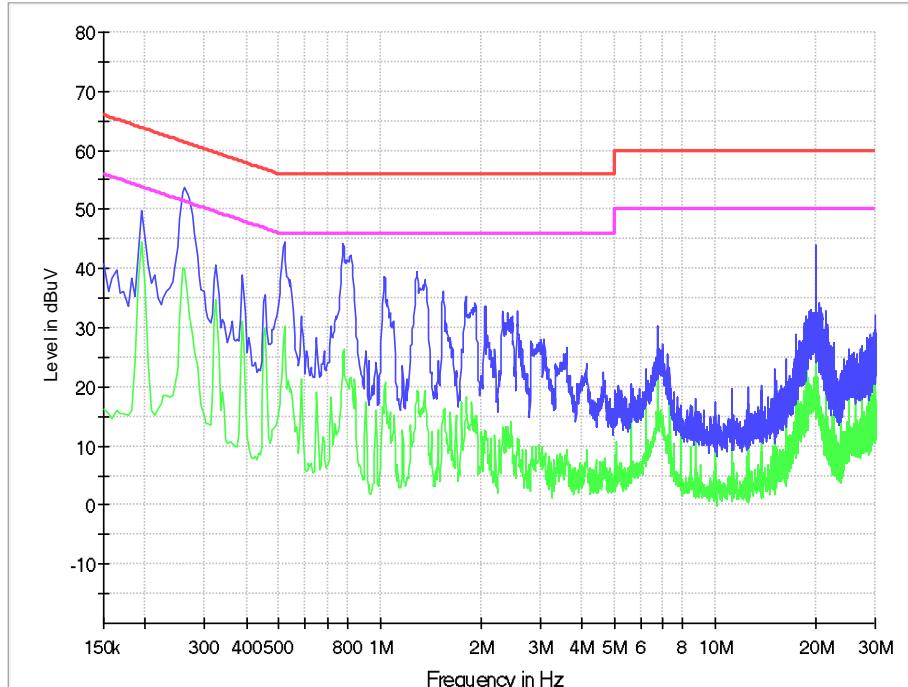
| Test mode: Charging and Transmitting |                    |                              |                         |                                   |                       |                         |                                   |                       |
|--------------------------------------|--------------------|------------------------------|-------------------------|-----------------------------------|-----------------------|-------------------------|-----------------------------------|-----------------------|
|                                      | Frequency<br>(MHz) | Correction<br>Factor<br>(dB) | Quasi-Peak              |                                   |                       | Average                 |                                   |                       |
|                                      |                    |                              | Reading<br>(dB $\mu$ V) | Emission<br>Level<br>(dB $\mu$ V) | Limit<br>(dB $\mu$ V) | Reading<br>(dB $\mu$ V) | Emission<br>Level<br>(dB $\mu$ V) | Limit<br>(dB $\mu$ V) |
| Line                                 | 0.195              | 9.7                          | 38.4                    | 48.1                              | 63.8                  | 34.6                    | 44.3                              | 53.8                  |
|                                      | 0.262              | 9.7                          | 40.6                    | 50.3                              | 61.4                  | 29.4                    | 39.1                              | 51.4                  |
|                                      | 0.519              | 9.8                          | 30.8                    | 40.6                              | 56                    | 20.7                    | 30.5                              | 46                    |
|                                      | 0.780              | 9.8                          | 29.8                    | 39.6                              | 56                    | 15.5                    | 25.3                              | 46                    |
|                                      | 1.288              | 9.8                          | 26.5                    | 36.3                              | 56                    | 8.9                     | 18.7                              | 46                    |
|                                      | 19.999             | 9.9                          | 33.2                    | 43.1                              | 60                    | 33.0                    | 42.9                              | 50                    |
| Neutral                              | 0.195              | 9.7                          | 39.2                    | 48.9                              | 63.8                  | 33.6                    | 43.3                              | 53.8                  |
|                                      | 0.258              | 9.7                          | 41.0                    | 50.7                              | 61.5                  | 30.4                    | 40.1                              | 51.5                  |
|                                      | 0.519              | 9.8                          | 32.1                    | 41.9                              | 56                    | 21.2                    | 31                                | 46                    |
|                                      | 0.775              | 9.8                          | 31.1                    | 40.9                              | 56                    | 16.0                    | 25.8                              | 46                    |
|                                      | 1.032              | 9.8                          | 27.9                    | 37.7                              | 56                    | 11.1                    | 20.9                              | 46                    |
|                                      | 19.999             | 9.9                          | 30.9                    | 40.8                              | 60                    | 30.7                    | 40.6                              | 50                    |

REMARKS: 1. Emission level (dB $\mu$ V) =Read Value (dB $\mu$ V) + Correction Factor (dB)

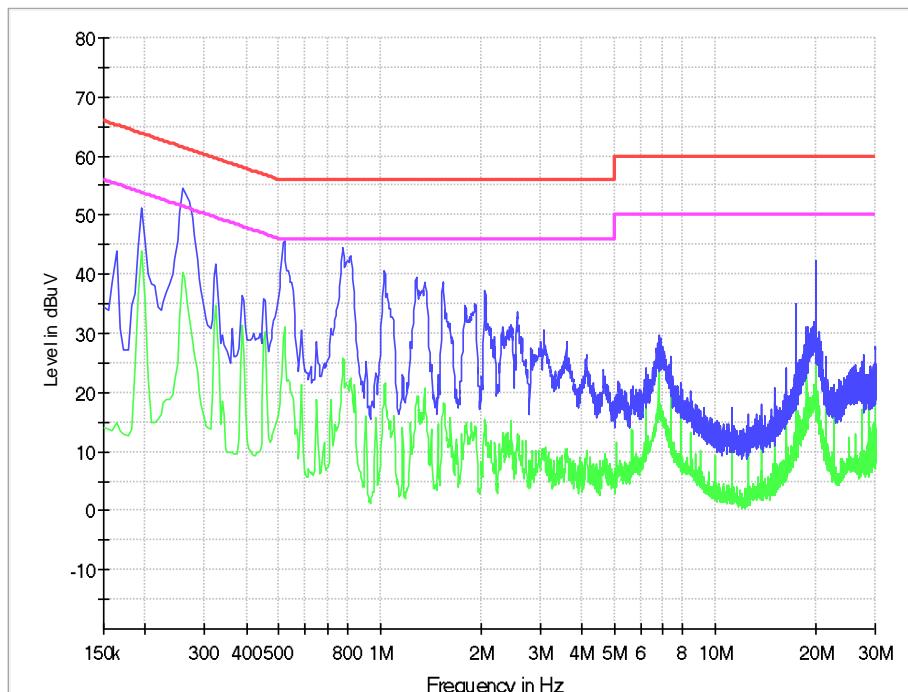
2. Correction Factor (dB) =LISN Factor (dB) + Cable Factor (dB) +Limiter Factor (dB)

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

## Line



## Neutral



## 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.

-----End of Report-----