

## FCC Test Report (Zigbee)

**Report No.:** RF161201C02-3

**FCC ID:** G95-MGM0110VZN

**Equipment Name:** LTE Router

**Trade Name:** technicolor

**Model Number:** MBHA10

**Product Code:** DSLMVZ011GM

**Received Date:** Dec. 01, 2016

**Test Date:** Dec. 01, 2016 to Jan. 10, 2017

**Issued Date:** Mar. 08, 2017

**Applicant:** Technicolor Connected Home USA LLC

**Address:** 5030 Sugarloaf Parkway Building Lawrenceville Georgia United States  
30044

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Hsin Chu Laboratory

**Lab Address:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
Taiwan R.O.C.



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### Release Control Record

| Issue No.     | Description       | Date Issued   |
|---------------|-------------------|---------------|
| RF161201C02-3 | Original release. | Mar. 08, 2017 |

## 1 Certificate of Conformity

**Equipment Name:** LTE Router

**Trade Name:** technicolor

**Test Model:** MBHA10

**Product Code:** DSLMVZ011GM

**Sample Status:** Product Unit

**Applicant:** Technicolor Connected Home USA LLC

**Test Date:** Dec. 01, 2016 to Jan. 10, 2017

**Standards:** 47 CFR FCC Part 15, Subpart C (Section 15.247)  
ANSI C63.10: 2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF EMI characteristics under the conditions specified in this report.

**Prepared by :**

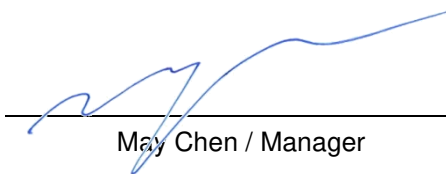


**Date:**

Mar. 08, 2017

Claire Kuan / Specialist

**Approved by :**



**Date:**

Mar. 08, 2017

May Chen / Manager

## 2 Summary of Test Results

| Applied Standard: 47 CFR FCC Part 15 Subpart C |                  |                                |                                  |            |        |
|------------------------------------------------|------------------|--------------------------------|----------------------------------|------------|--------|
| Section                                        | Ref. Std. Clause | Description                    | Measured                         | Limit      | Result |
| 3.9                                            | 15.203           | Antenna Requirements           | -                                | -          | PASS   |
| 4.1                                            | 15.207           | AC Power Conducted Emissions   | Margin is -8.80dB at 0.15000MHz. | -          | PASS   |
| 4.2                                            | 15.247(b)(3)     | Maximum Conducted Output Power | Power [dBm]: 17.64 dBm           | 30 dBm     | PASS   |
| 4.3                                            | 15.247(e)        | Power Spectral Density         | PSD [dBm/10kHz]: -7.70 dBm/10kHz | 8dBm/10kHz | PASS   |
| 4.4                                            | 15.247(a)(2)     | 6dB Spectrum Bandwidth         | Bandwidth [MHz]: 1.63 MHz        | ≥500kHz    | PASS   |
| 4.5                                            | -                | Occupied Bandwidth             | Bandwidth [MHz]: 2.26 MHz        | FCC 15.207 | -      |
| 4.6                                            | 15.247(d)        | Radiated Emissions             | Margin is -3.6dB at 39.65MHz.    | -          | PASS   |
| 4.7                                            | 15.247(a)(2)     | Band Edge Emissions            | Margin is -0.1dB at 2483.50MHz   | -          | PASS   |

### 2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

| Measurement                        | Frequency      | Expanded Uncertainty (k=2) (±) |
|------------------------------------|----------------|--------------------------------|
| Conducted Emissions at mains ports | 150kHz ~ 30MHz | 1.83 dB                        |
| Radiated Emissions up to 1 GHz     | 30MHz ~ 1GHz   | 5.36 dB                        |
| Radiated Emissions above 1 GHz     | 1GHz ~ 6GHz    | 3.47 dB                        |
|                                    | 6GHz ~ 18GHz   | 3.75 dB                        |
|                                    | 18GHz ~ 40GHz  | 3.30 dB                        |

### 2.2 Modification Record

There were no modifications required for compliance.

### 3 General Information

#### 3.1 Basic Description of Equipment Under Test (Zigbee)

| Items                                     | Description                                                                                                     |                                                        |  |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|--|
| Equipment Name                            | LTE Router                                                                                                      |                                                        |  |
| Trade Name                                | technicolor                                                                                                     |                                                        |  |
| Model Number                              | MBHA10                                                                                                          |                                                        |  |
| Product Code                              | DSL MVZ011GM                                                                                                    |                                                        |  |
| FCC ID                                    | G95-MGM0110VZN                                                                                                  |                                                        |  |
| Power Type                                | From power adapter                                                                                              |                                                        |  |
| Antenna                                   | Refer section 3.10                                                                                              |                                                        |  |
| EUT Stage                                 | <input checked="" type="checkbox"/> Product Unit                                                                | <input type="checkbox"/> Pre-Sample                    |  |
| Operating Band and Conducted Output Power | 2400~2483.5MHz                                                                                                  | <input checked="" type="checkbox"/> Zigbee : 17.64 dBm |  |
| Product Type                              | For IEEE 802.15.4: Zigbee :(1TX, 1RX)                                                                           |                                                        |  |
| Nominal Bandwidth                         | 2MHz                                                                                                            |                                                        |  |
| Modulation                                | O-QPSK                                                                                                          |                                                        |  |
| Data Rate (Mbps)                          | Zigbee : 250kbps                                                                                                |                                                        |  |
| I/O Ports                                 | LAN Port x 1<br>RJ31 Port x 1<br>FXS Port x 1<br>SIM Port x1<br>Console Port x 1 ( For engineer debug use only) |                                                        |  |
| Hardware Version                          | FGR1                                                                                                            |                                                        |  |
| Software Version                          | 16.4.7446-3130000-20161220230657-aa636a7383f23e65d07560e3fbe49cd6cbe<br>d2ce0                                   |                                                        |  |

### 3.2 Accessories

#### Li-ion Battery:

|              |                        |
|--------------|------------------------|
| Model        | BP-MGM0110             |
| Manufacturer | GETAC TECHNOLOGY CORP. |
| Rating       | 3.7V, 2500mAh / 9.25Wh |

#### Power supply:

|               |                             |
|---------------|-----------------------------|
| Model         | WAE002                      |
| P/N           | DSL37544940                 |
| Manufacturer  | AcBel                       |
| Input         | 100/240Vac , 50/60Hz , 0.7A |
| Output        | 12Vdc , 2A                  |
| DC power cord | 1.5m                        |

### 3.3 Feature of Equipment Under Test

Please refer to user manual.

### 3.4 Information Provided by the Manufacturer

#### Interface Availability

| Interface<br>Model | DC<br>12Vdc | RJ31-X<br>Alarm | Ethernet<br>10/100<br>Mbps | FXS           | SIM           | Zigbee | Z-Wave | BT | GPS | LTE<br>(4G) | WLAN<br>802.11a/b/g/n/ac<br>(2.4GHz 2*2)<br>(5GHz 2*2 ac) |
|--------------------|-------------|-----------------|----------------------------|---------------|---------------|--------|--------|----|-----|-------------|-----------------------------------------------------------|
| MBHA10             | ●<br>(2A)   | ●<br>(1 port )  | ●<br>(1 port )             | ●<br>(1 port) | ●<br>(1 port) | ●      | ●      | ●  | ●   | ●           | ●                                                         |

● : Equipped

○ : Not Equipped

### 3.5 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC Part 15, Subpart C (15.247)**

**KDB 558074 D01 DTS Meas Guidance v03r05, 04/08/2016**

**ANSI C63.10-2013**

All test items have been performed and recorded as per the above standards.

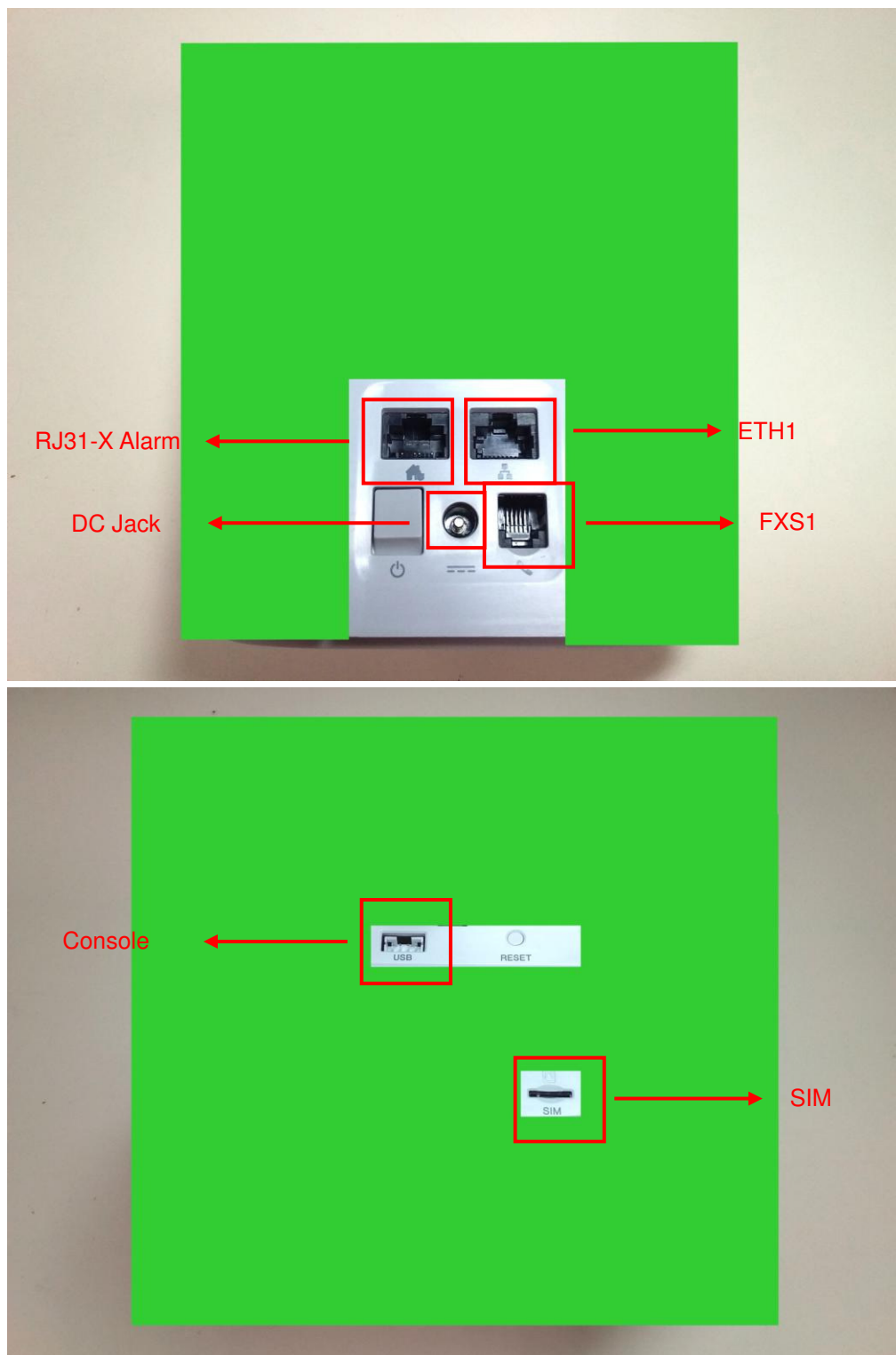
**NOTE:** The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

### 3.6 Cabling Attached to the Equipment

#### Cable and Interconnection

| Interface       | Cable Type | Cable Length<br>Delivered with<br>the Modem | "Real Life" Cable Length<br>that can be Attached to<br>this Type of Interface | Cable Length to<br>be used for<br>Testing | Internal/<br>External<br>Connection |
|-----------------|------------|---------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------------|-------------------------------------|
| ETH1            | UTP Cat 5  | 1 meter                                     | > 10 meter                                                                    | 10 meter                                  | Internal                            |
| RJ31-X<br>Alarm | UTP Cat 3  | 1 meter                                     | > 10 meter                                                                    | 10 meter                                  | Internal                            |
| FXS1            | UTP Cat 3  | 1 meter                                     | > 10 meter                                                                    | 10 meter flat<br>cable                    | Internal                            |
| AC power        | -          | -                                           | -                                                                             | -                                         | External                            |

### 3.7 Panel Drawing



### 3.8 Transmit Operating Mode

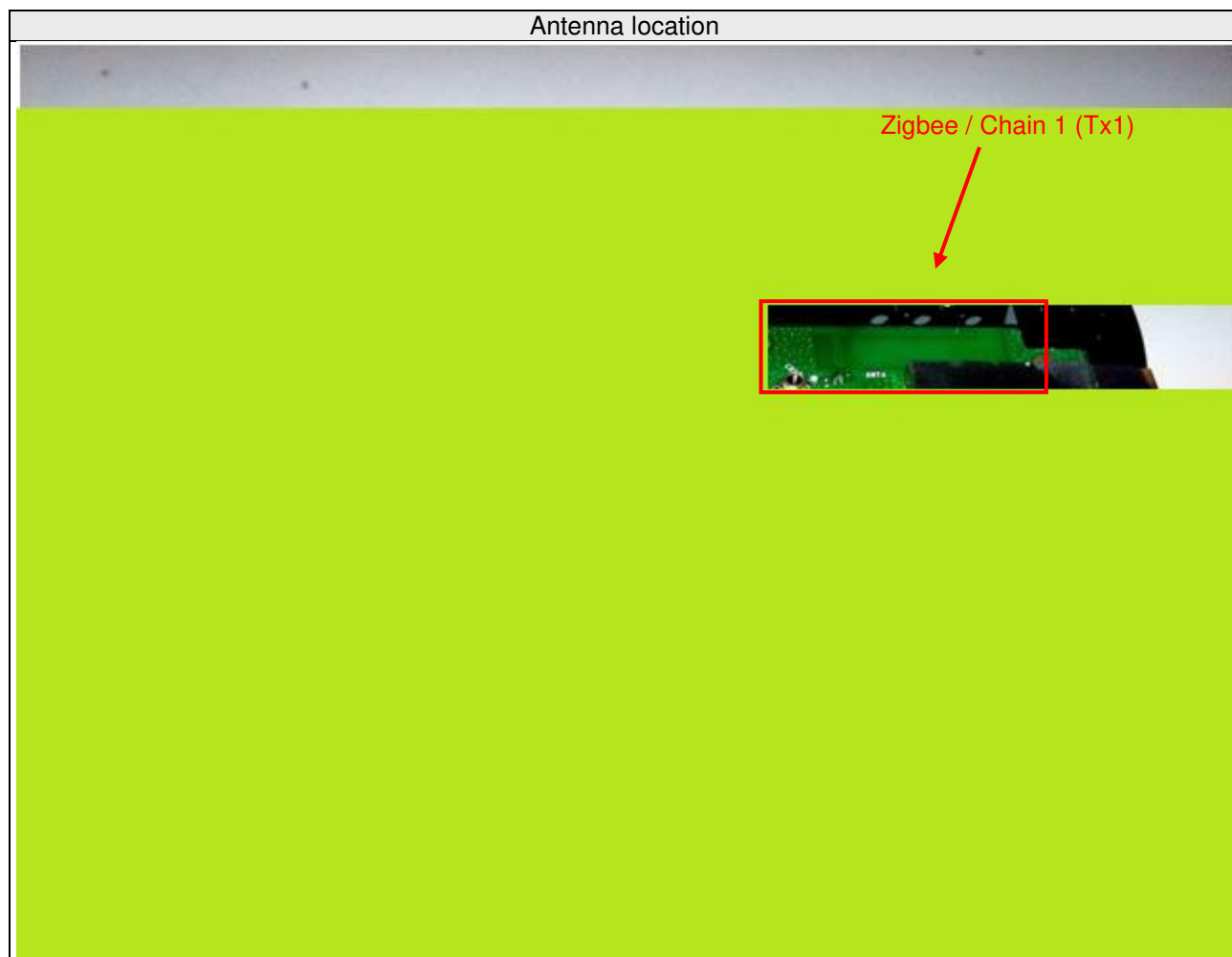
| Transmit Operating Mode |                                   | Transmit Multiple Antennas |     |
|-------------------------|-----------------------------------|----------------------------|-----|
| ■                       | Operating mode 1 (single antenna) | ■                          | 1TX |

### 3.9 Antenna Requirements

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

### 3.10 Antenna Information

| Antenna Information |         |           |                  |           |              |
|---------------------|---------|-----------|------------------|-----------|--------------|
| Ant.                | Brand   | Model No. | Antenna Type     | Connector | Cable Length |
| Zigbee              | Foxconn | -         | Printing Antenna | -         | -            |



#### For 2400~2483.5MHz

| Frequency | Antenna Gain (dBi) |
|-----------|--------------------|
|           | Ant. 1 (Cn12)      |
| 2405MHz   | 2.81               |
| 2440MHz   | 2.85               |
| 2475MHz   | 2.76               |
| 2480MHz   | 2.43               |

### 3.11 Table for Carrier Frequency

15 channels are provided for Zigbee:

| Frequency Band       | Channel No. | Frequency | Channel No. | Frequency |
|----------------------|-------------|-----------|-------------|-----------|
| 2400MHz ~ 2483.5 MHz | 11          | 2405 MHz  | 19          | 2445MHz   |
|                      | 12          | 2410MHz   | 20          | 2450MHz   |
|                      | 13          | 2415MHz   | 21          | 2455MHz   |
|                      | 14          | 2420MHz   | 22          | 2460MHz   |
|                      | 15          | 2425MHz   | 23          | 2465MHz   |
|                      | 16          | 2430MHz   | 24          | 2470MHz   |
|                      | 17          | 2435MHz   | 25          | 2475MHz   |
|                      | 18          | 2440MHz   | 26          | 2480MHz   |

### 3.12 Table for Test Modes

Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

| Test Items                        | Mode   | Note | Channel     | Data Rate | Antenna |
|-----------------------------------|--------|------|-------------|-----------|---------|
| AC Power Line Conducted Emissions | Zigbee | DSSS | 18          | -         | 1       |
| Conducted Output Power            | Zigbee | DSSS | 11/18/25/26 | 250kbps   | 1       |
| Power Spectral Density            | Zigbee | DSSS | 11/18/25/26 | 250kbps   | 1       |
| 6dB Bandwidth                     | Zigbee | DSSS | 11/18/25/26 | 250kbps   | 1       |
| Band Edge Emissions               | Zigbee | DSSS | 11/18/25/26 | 250kbps   | 1       |
| Radiated Emissions Above 1GHz     | Zigbee | DSSS | 11/18/25/26 | 250kbps   | 1       |
| Radiated Emissions Below 1GHz     | Zigbee | DSSS | 18          | -         | 1       |

Note:

1. The device with multiple operating mode, measurements on the middle channel were tested to determine the worst case mode.

### 3.13 Parameters of Test Software Setting

During testing, Channel & Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

| The Power Setting Parameter |                                                                               |                    |                                  |                  |                    |
|-----------------------------|-------------------------------------------------------------------------------|--------------------|----------------------------------|------------------|--------------------|
| Test Software Version       | 16.4.7446-3130000-20161220230657-aa636a7383f23e65d07560e3f<br>be49cd6cbcd2ce0 |                    |                                  |                  |                    |
| Worst Modulation Mode       | Number of<br>Transmit<br>Chains (NTX)                                         | Frequency<br>(MHz) | Maximum<br>Output Power<br>(dBm) | Power<br>Setting | Data Rate<br>/ MCS |
| Zigbee                      | 1                                                                             | 2405               | 15.88                            | 20               | 250kbps            |
|                             |                                                                               | 2440               | 17.72                            | 20               | 250kbps            |
|                             |                                                                               | 2475               | 16.17                            | 20               | 250kbps            |
|                             |                                                                               | 2480               | 10.85                            | 13               | 250kbps            |

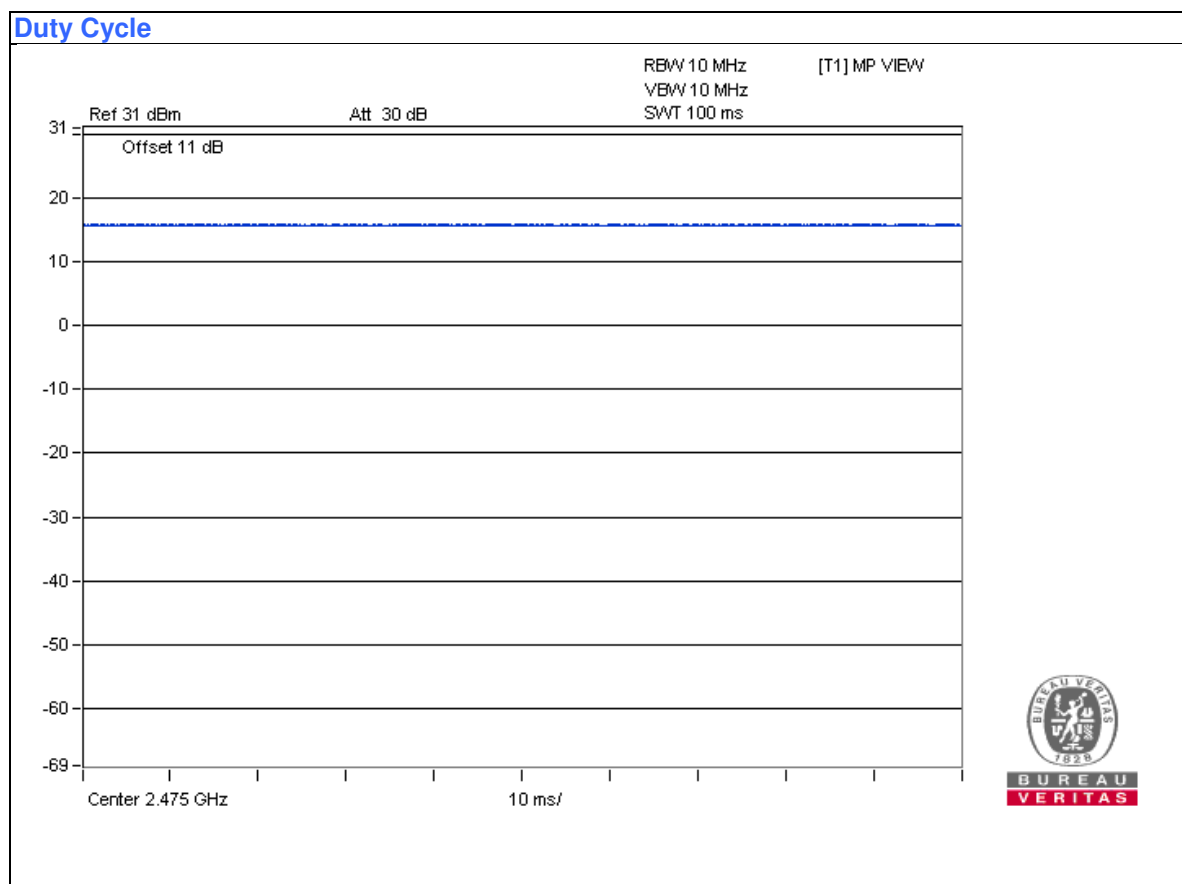
### 3.14 On Time and Duty Cycle

| Mode   | On Time (ms) | Period (ms) | Duty Cycle (%) | Duty Cycle Correction Factor (dB) | 1/T Minimum VBW (kHz) |
|--------|--------------|-------------|----------------|-----------------------------------|-----------------------|
| Zigbee | 100          | 0           | 100            | -                                 | -                     |

Note:

- Power measurement using sweep trigger and gating of the power meter, duty factor is not required.
- Duty cycle of test signal is  $\geq 98\%$ , duty factor is not required

#### Duty Cycle



### 3.15 Testing Location Information

| Test Site Location |                                                                                        |          |              |             |              |
|--------------------|----------------------------------------------------------------------------------------|----------|--------------|-------------|--------------|
| Address            | (1) E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C. |          |              |             |              |
| TEL                | 886-3-6668565                                                                          |          |              |             |              |
| FAX                | 886-3-6668323                                                                          |          |              |             |              |
| Test Site No.      | Site Category                                                                          | Location | FCC Reg. No. | IC Reg. No. | VCCI Reg. No |
| Conduction 1       | Conduction                                                                             | Hsinchu  | -            | -           | -            |
| Chamber 3          | 966 Chamber                                                                            | Hsinchu  | 147459       | 20331-1     | -            |
| Oven 2             | Oven                                                                                   | Hsinchu  | -            | -           | -            |

### 3.16 EUT Diagram and Support Equipment

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

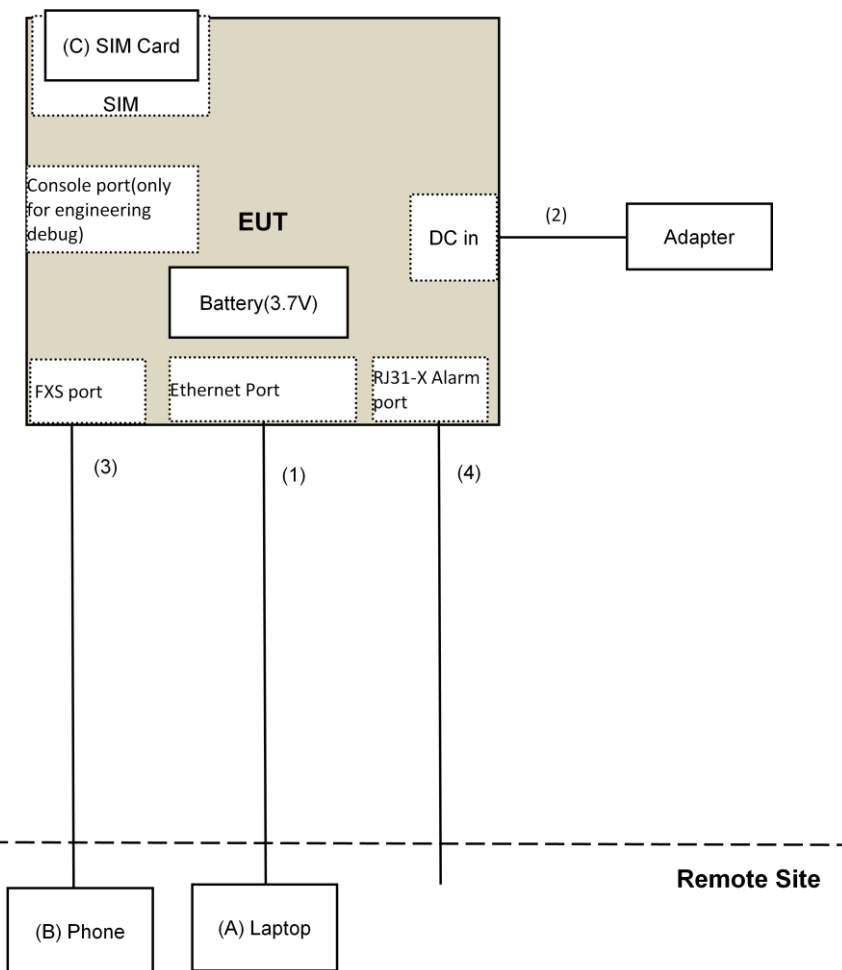
| ID | Product  | Brand  | Model No. | Serial No.  | FCC ID  | Remarks         |
|----|----------|--------|-----------|-------------|---------|-----------------|
| A. | Laptop   | DELL   | E6440     | F9LYQ32     | FCC DoC | Provided by Lab |
| B. | Phone    | WONDER | WD-303    | 8C17DA02763 | NA      | Provided by Lab |
| C. | SIM Card | R&S    | CRT-Z3    | NA          | NA      | Provided by Lab |

Note:

1. All power cords of the above support units are non-shielded (1.8m).

| ID | Descriptions | Qty. | Length (m) | Shielding (Yes/No) | Cores (Qty.) | Internal/external connection | Remarks            |
|----|--------------|------|------------|--------------------|--------------|------------------------------|--------------------|
| 1. | RJ-45 Cable  | 1    | 10         | No                 | 0            | External                     | Provided by Lab    |
| 2. | DC Cable     | 1    | 1.8        | No                 | 0            | Internal                     | Supplied by client |
| 3. | RJ-11 Cable  | 1    | 10         | No                 | 0            | External                     | Provided by Lab    |
| 4. | RJ-31 Cable  | 1    | 10         | No                 | 0            | External                     | Provided by Lab    |

## EUT Diagram



## 4 Test Types and Results

### 4.1 AC Power Conducted Emissions Measurement

#### 4.1.1 Limit

For this product which is designed to be connected to the AC power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed below limits table.

| Frequency (MHz) | Conducted Limit (dBuV) |         |
|-----------------|------------------------|---------|
|                 | Quasi-peak             | Average |
| 0.15 - 0.5      | 66 - 56                | 56 - 46 |
| 0.50 - 5.0      | 56                     | 46      |
| 5.0 - 30.0      | 60                     | 50      |

#### 4.1.2 Measuring Instruments and Setting

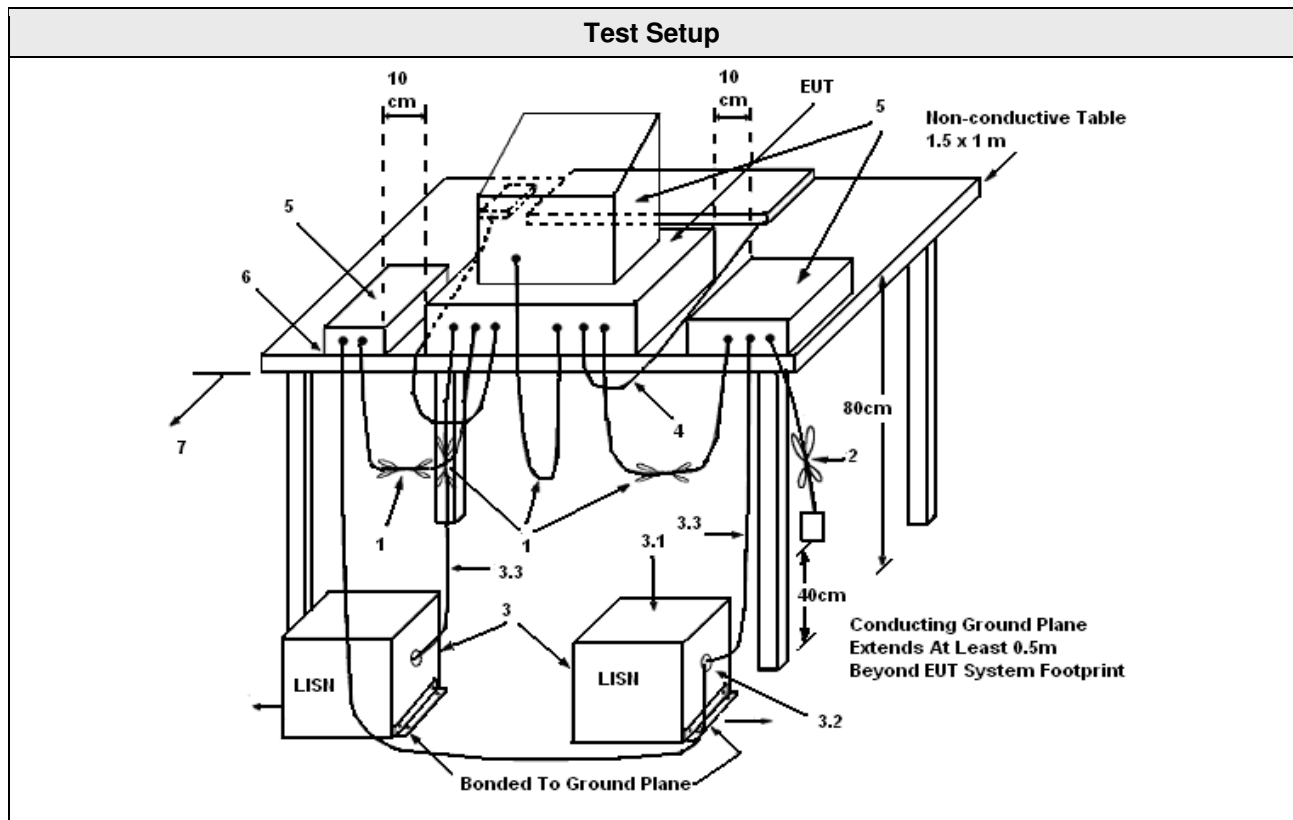
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver

| Receiver Parameters | Setting  |
|---------------------|----------|
| Attenuation         | 10 dB    |
| Start Frequency     | 0.15 MHz |
| Stop Frequency      | 30 MHz   |
| IF Bandwidth        | 9 kHz    |

#### 4.1.3 Test Procedures

1. Configure the EUT according to ANSI C63.10. The EUT or host of EUT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT or host of EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connected to the other LISNs. The LISN should provide 50uH/50ohms coupling impedance.
4. The frequency range from 150 kHz to 30 MHz was searched.
5. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. The measurement has to be done between each power line and ground at the power terminal.

#### 4.1.4 Test Setup Layout



1. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
2. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
3. EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50  $\Omega$ . LISN can be placed on top of, or immediately beneath, reference ground plane.
  - 3.1 All other equipment powered from additional LISN(s).
  - 3.2 Multiple outlet strip can be used for multiple power cords of non-EUT equipment.
  - 3.3 LISN at least 80 cm from nearest part of EUT chassis.
4. Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.
5. Non-EUT components of EUT system being tested.
6. Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop. Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.

#### 4.1.5 Test Deviation

There are no deviations with the original standard.

#### 4.1.6 EUT Operating during Test

The EUT was placed on the test table and programmed in normal function.

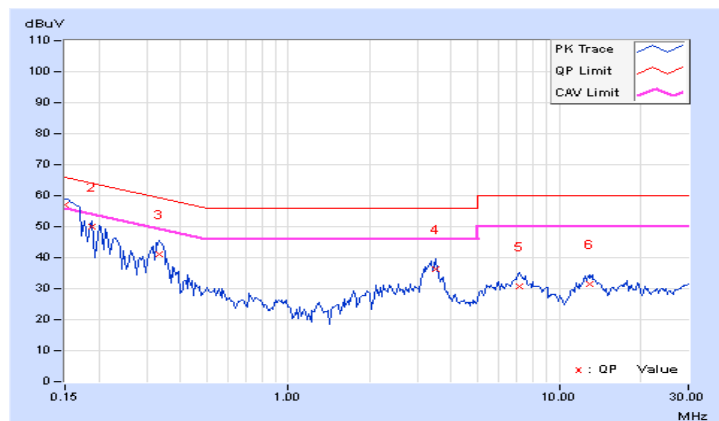
#### 4.1.7 Test Results of AC Power Conducted Emissions

|                        |                |                                                     |                                      |
|------------------------|----------------|-----------------------------------------------------|--------------------------------------|
| <b>Frequency Range</b> | 150kHz ~ 30MHz | <b>Detector Function &amp; Resolution Bandwidth</b> | Quasi-Peak (QP) / Average (AV), 9kHz |
| <b>Input Power</b>     | 120Vac, 60Hz   | <b>Environmental Conditions</b>                     | 25°C, 75%RH                          |
| <b>Tested by</b>       | Andy Ho        |                                                     |                                      |

| Phase Of Power : Line (L) |                 |                        |                      |       |                       |       |              |       |             |        |
|---------------------------|-----------------|------------------------|----------------------|-------|-----------------------|-------|--------------|-------|-------------|--------|
| No                        | Frequency (MHz) | Correction Factor (dB) | Reading Value (dBUV) |       | Emission Level (dBUV) |       | Limit (dBUV) |       | Margin (dB) |        |
|                           |                 |                        | Q.P.                 | AV.   | Q.P.                  | AV.   | Q.P.         | AV.   | Q.P.        | AV.    |
| 1                         | 0.15000         | 10.20                  | 46.80                | 33.00 | 57.00                 | 43.20 | 66.00        | 56.00 | -9.00       | -12.80 |
| 2                         | 0.18906         | 10.20                  | 39.72                | 27.03 | 49.92                 | 37.23 | 64.08        | 54.08 | -14.16      | -16.85 |
| 3                         | 0.33359         | 10.23                  | 30.71                | 16.98 | 40.94                 | 27.21 | 59.36        | 49.36 | -18.42      | -22.15 |
| 4                         | 3.50781         | 10.31                  | 26.15                | 20.25 | 36.46                 | 30.56 | 56.00        | 46.00 | -19.54      | -15.44 |
| 5                         | 7.16797         | 10.53                  | 20.38                | 14.51 | 30.91                 | 25.04 | 60.00        | 50.00 | -29.09      | -24.96 |
| 6                         | 12.92969        | 11.06                  | 20.41                | 14.75 | 31.47                 | 25.81 | 60.00        | 50.00 | -28.53      | -24.19 |

#### Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

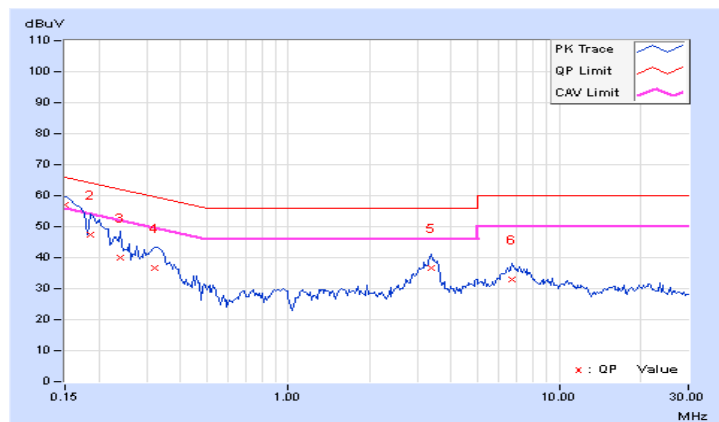


|                        |                |                                                     |                                      |
|------------------------|----------------|-----------------------------------------------------|--------------------------------------|
| <b>Frequency Range</b> | 150kHz ~ 30MHz | <b>Detector Function &amp; Resolution Bandwidth</b> | Quasi-Peak (QP) / Average (AV), 9kHz |
| <b>Input Power</b>     | 120Vac, 60Hz   | <b>Environmental Conditions</b>                     | 25°C, 75%RH                          |
| <b>Tested by</b>       | Andy Ho        |                                                     |                                      |

| Phase Of Power : Neutral (N) |                 |                        |                      |       |                       |       |              |       |             |        |
|------------------------------|-----------------|------------------------|----------------------|-------|-----------------------|-------|--------------|-------|-------------|--------|
| No                           | Frequency (MHz) | Correction Factor (dB) | Reading Value (dBUV) |       | Emission Level (dBUV) |       | Limit (dBUV) |       | Margin (dB) |        |
|                              |                 |                        | Q.P.                 | AV.   | Q.P.                  | AV.   | Q.P.         | AV.   | Q.P.        | AV.    |
| 1                            | 0.15000         | 10.19                  | 47.01                | 33.48 | 57.20                 | 43.67 | 66.00        | 56.00 | -8.80       | -12.33 |
| 2                            | 0.18516         | 10.18                  | 37.38                | 21.42 | 47.56                 | 31.60 | 64.25        | 54.25 | -16.69      | -22.65 |
| 3                            | 0.23984         | 10.18                  | 29.65                | 11.98 | 39.83                 | 22.16 | 62.10        | 52.10 | -22.27      | -29.94 |
| 4                            | 0.32188         | 10.21                  | 26.37                | 8.67  | 36.58                 | 18.88 | 59.66        | 49.66 | -23.08      | -30.78 |
| 5                            | 3.36328         | 10.25                  | 26.31                | 20.99 | 36.56                 | 31.24 | 56.00        | 46.00 | -19.44      | -14.76 |
| 6                            | 6.73047         | 10.41                  | 22.38                | 16.79 | 32.79                 | 27.20 | 60.00        | 50.00 | -27.21      | -22.80 |

**Remarks:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



## 4.2 Maximum Conducted Output Power Measurement

### 4.2.1 Limit

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm). The limit has to be reduced by the amount in dB that the gain of the antenna exceeds 6dBi. For point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

### 4.2.2 Measuring Instruments and Setting

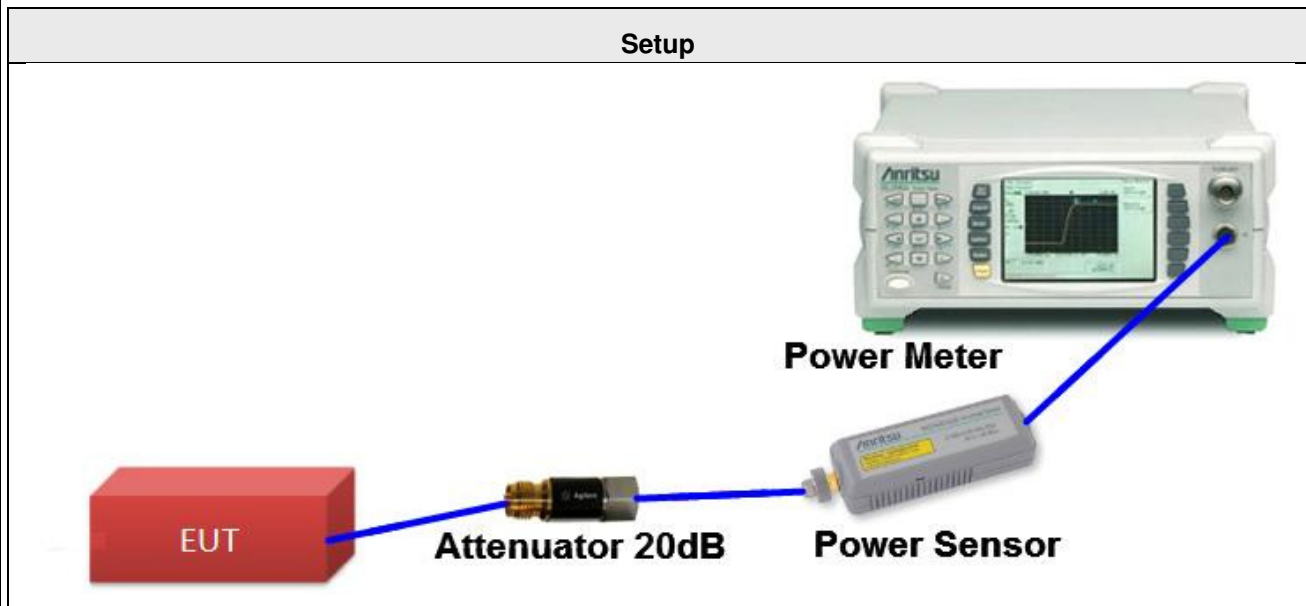
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

| Power Meter Parameter | Setting                    |
|-----------------------|----------------------------|
| Power Measurement     | Average(RMS), Peak         |
| Rise Time             | <8 ns typical 12ns maximum |
| Sensor Model          | MA2411B                    |

### 4.2.3 Test Procedures

- 1 Test was performed in accordance with Measurement of Digital Transmission Systems Operating under KDB558074 D01 DTS Meas Guidance v03r05, in section “Maximum conducted output power Method AVGPM-G”, 04/08/2016
- 2 The average power sensor was used on the output port of the EUT. A power meter was used to read the response of the average power sensor and enable the trigger function to get the all on time transmission . Record the average power level.
- 3 When measuring maximum conducted output power with multiple antenna systems, add every result of the values by mathematic formula.

#### 4.2.4 Test Setup Layout



#### 4.2.5 Test Deviation

There are no deviations with the original standard.

#### 4.2.6 EUT Operating Conditions

The EUT was programmed to be in continuously transmitting mode.

#### 4.2.7 Test Results of Maximum Conducted Output Power

|                      |               |                 |     |
|----------------------|---------------|-----------------|-----|
| <b>Temperature</b>   | 25°C          | <b>Humidity</b> | 60% |
| <b>Test Engineer</b> | Anderson Chen |                 |     |

| Channel | Frequency (MHz) | Conducted Power (dBm) | Directional Gain (dBi) | Max. Limit (dBm) | Result |
|---------|-----------------|-----------------------|------------------------|------------------|--------|
| 11      | 2405            | 15.79                 | 2.81                   | 30               | PASS   |
| 18      | 2440            | 17.64                 | 2.85                   | 30               | PASS   |
| 25      | 2475            | 16.06                 | 2.76                   | 30               | PASS   |
| 26      | 2480            | 10.71                 | 2.43                   | 30               | PASS   |

Note.1. Directional Gain <6dBi, so the limit doesn't reduce.

### 4.3 Power Spectral Density Measurement

#### 4.3.1 Limit

For digitally modulated systems, the conductive measured power spectral density(PSD) shall not be greater than 8 dBm in any 3 kHz bandwidth during any time interval of continuous transmission.

#### 4.3.2 Measuring Instruments and Setting

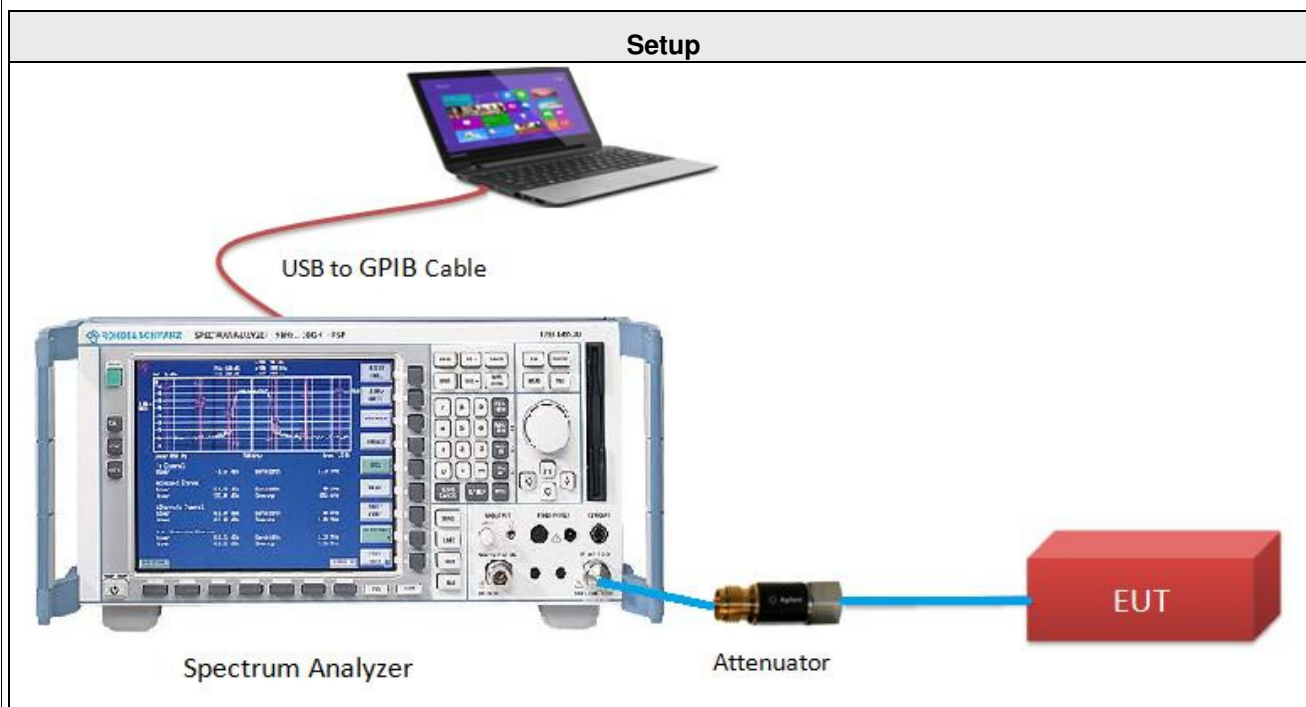
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

| Spectrum Parameter | Setting                                              |
|--------------------|------------------------------------------------------|
| Attenuation        | Auto                                                 |
| Span Frequency     | Set the span to 1.5 times the DTS channel bandwidth. |
| RBW                | Set the RBW $\geq 3$ kHz                             |
| VBW                | Set the VBW $\geq 3 \times$ RBW                      |
| Detector           | RMS                                                  |
| Trace              | Average sweep count 100                              |
| Sweep Time         | Auto couple                                          |

#### 4.3.3 Test Procedures

- 1 The transmitter output (antenna port) was connected to the spectrum analyzer.
- 2 Test was performed in accordance with Measurement of Digital Transmission Systems Operating under KDB558074 D01 DTS Meas Guidance v03r05, in section "Maximum power spectral density level in the fundamental emissions Method AVGPS-1", 04/08/2016.
- 3 This procedure may be used when the maximum (average) conducted output power was used to demonstrate compliance to the output power limit. The EUT must be configured to transmit continuously (duty cycle  $\geq 98\%$ ) to ensure that measurements are made only when the EUT is transmitting at its maximum power control level (no transmitter off time is to be considered).
- 4 Ensure that the number of measurement points in the sweep  $\geq 2 \times$  span/RBW (use of a greater number of measurement points than this minimum requirement is recommended).
- 5 When measuring first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and so on up to the Nth output to obtain the value for the first frequency bin of the summed spectrum. The summed spectrum value for each of the other frequency bins is computed in the same way.

#### 4.3.4 Test Setup Layout



#### 4.3.5 Test Deviation

There are no deviations with the original standard.

#### 4.3.6 EUT Operating Conditions

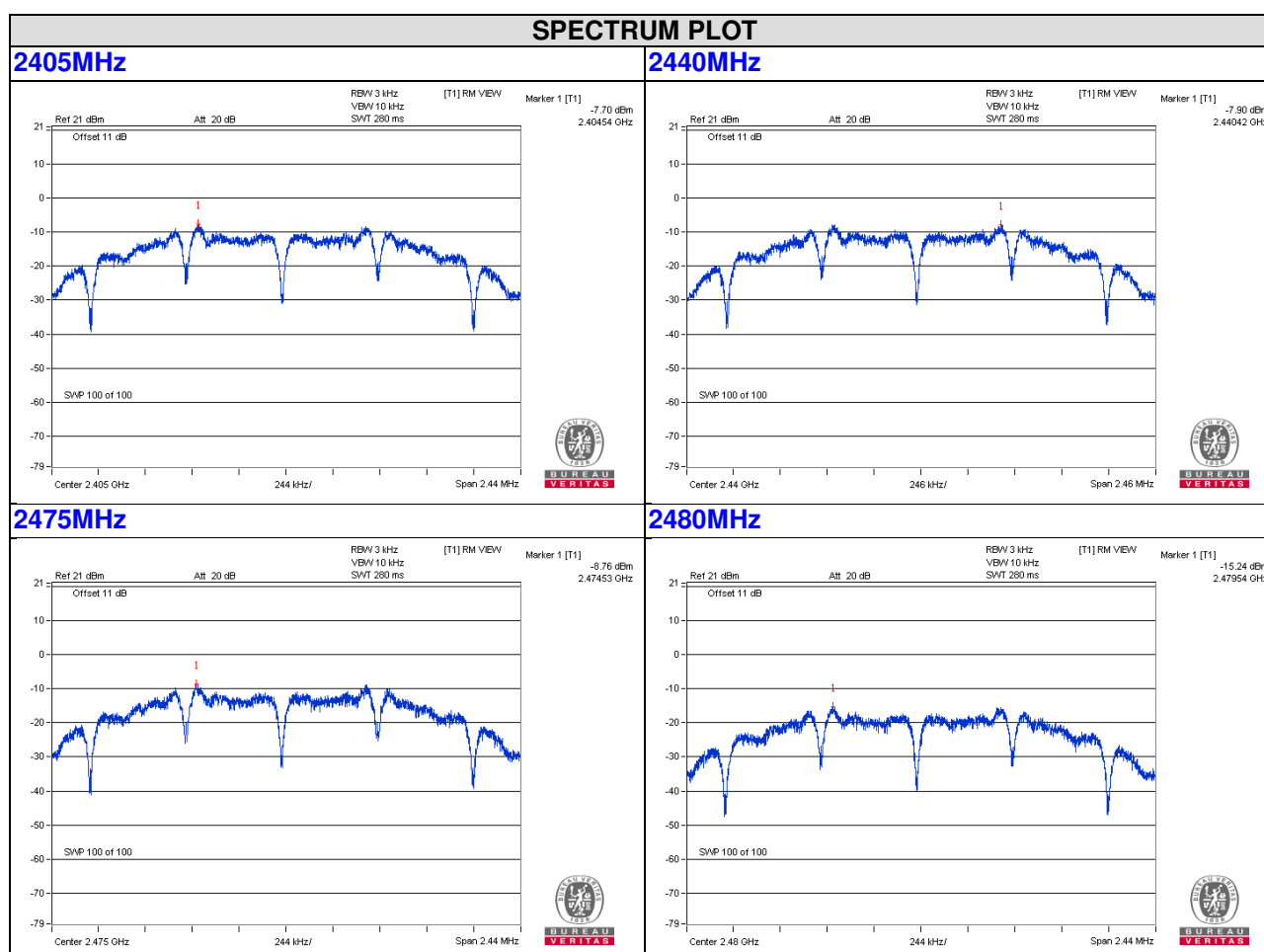
The EUT was programmed to be in continuously transmitting mode.

#### 4.3.7 Test Results of Power Spectral Density

|               |               |          |     |
|---------------|---------------|----------|-----|
| Temperature   | 25°C          | Humidity | 60% |
| Test Engineer | Anderson Chen |          |     |

| Channel | Frequency (MHz) | Power Density (dBm/3kHz) | Directional Gain (dBi) | Limit (dBm/3kHz) | Result |
|---------|-----------------|--------------------------|------------------------|------------------|--------|
| 11      | 2405            | -7.70                    | 2.81                   | 8                | PASS   |
| 18      | 2440            | -7.90                    | 2.85                   | 8                | PASS   |
| 25      | 2475            | -8.76                    | 2.76                   | 8                | PASS   |
| 26      | 2480            | -15.24                   | 2.43                   | 8                | PASS   |

Note.1. Directional Gain <6dBi, so the limit doesn't reduce.



#### 4.4 6dB Bandwidth Measurement

##### 4.4.1 Limit

For digital modulation systems, the minimum 6dB bandwidth shall be at least 500 kHz

##### 4.4.2 Measuring Instruments and Setting

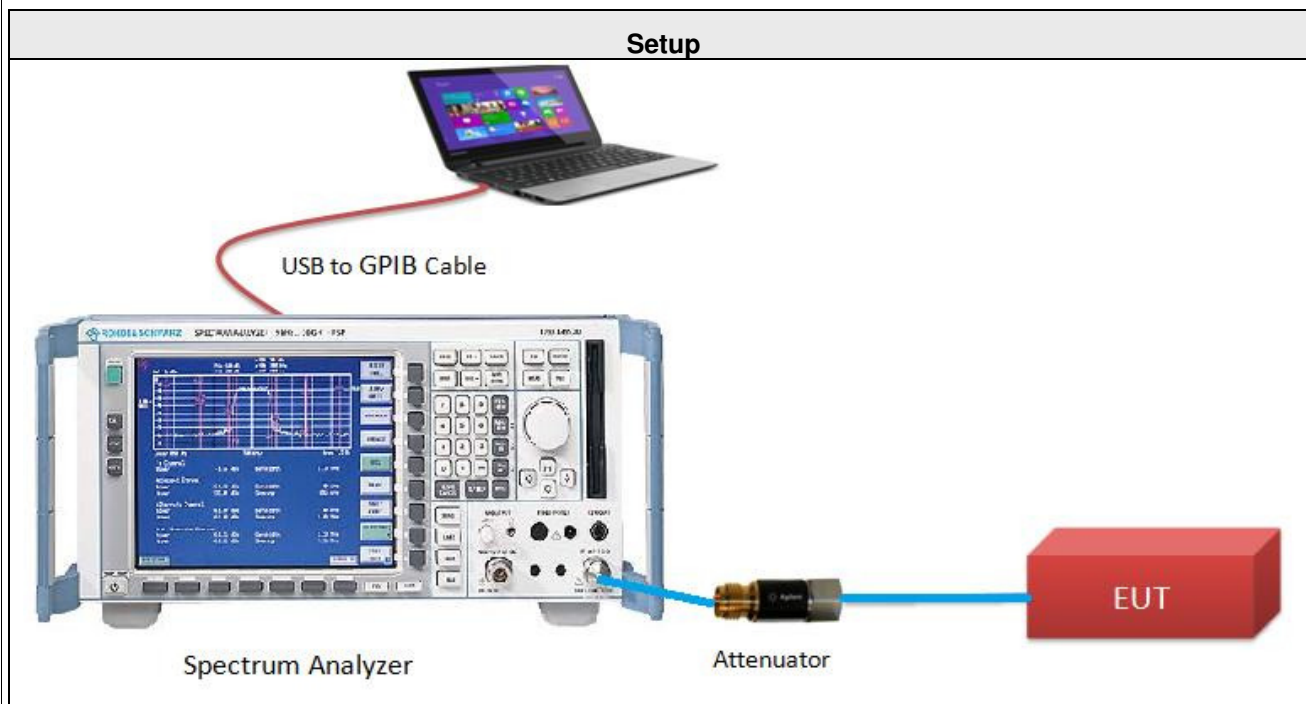
The following table is the setting of the Spectrum Analyzer.

| Spectrum Parameter | Setting                    |
|--------------------|----------------------------|
| Attenuation        | Auto                       |
| Span Frequency     | > 6dB Bandwidth            |
| RBW                | 100KHz                     |
| VBW                | $\geq 3 \times \text{RBW}$ |
| Detector           | Peak                       |
| Trace              | Max Hold                   |
| Sweep Time         | Auto couple                |

##### 4.4.3 Test Procedures

- 1 The transmitter output (antenna port) was connected to the spectrum analyzer in peak, Max hold mode.
- 2 For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier frequency. A peak reading was taken; two markers were set 6 dB below the maximum level on the right and the left side of the emissions.
- 3 The 6 dB bandwidth is the frequency difference between the two markers

#### 4.4.4 Test Setup Layout



#### 4.4.5 Test Deviation

There are no deviations with the original standard.

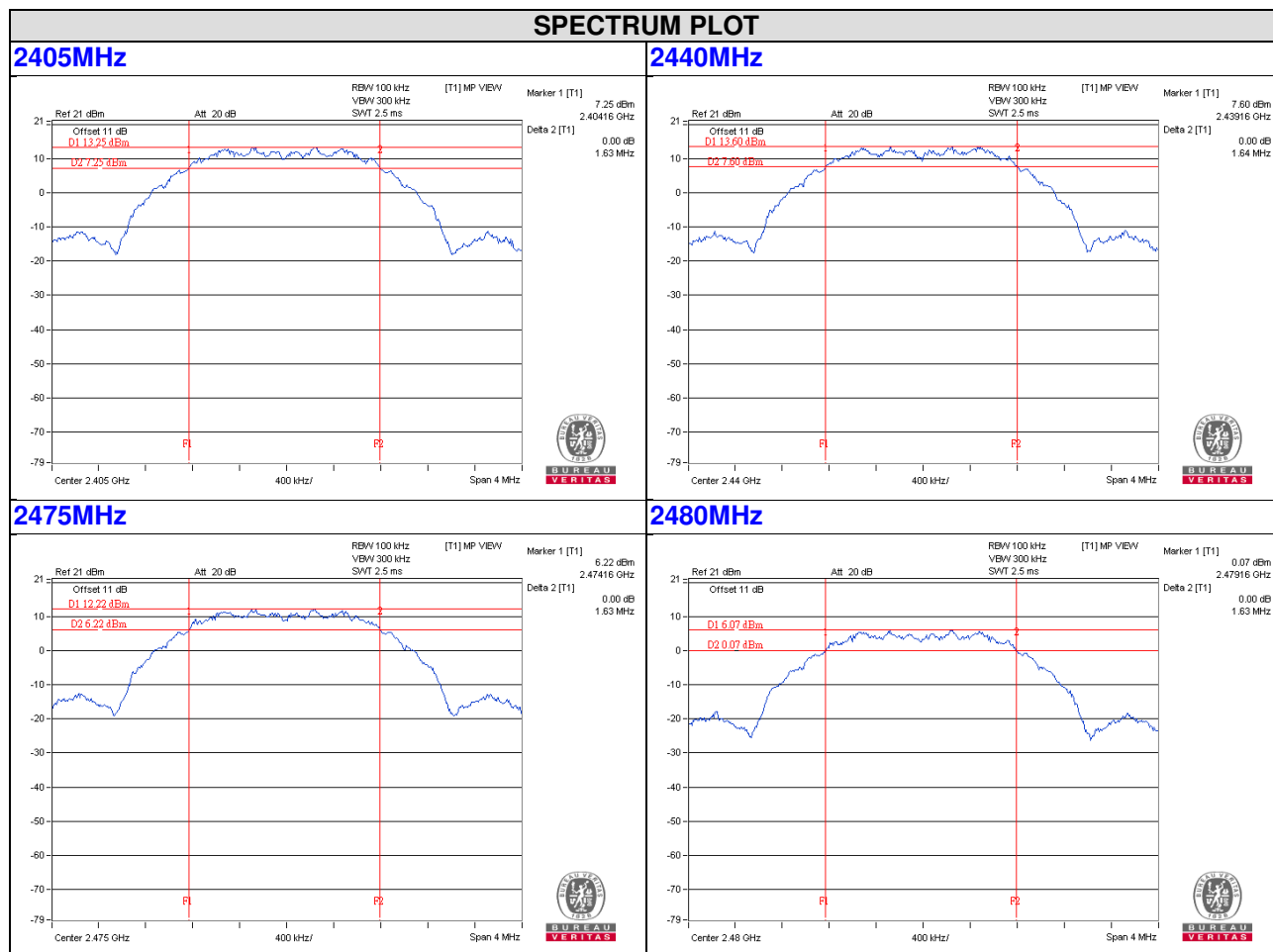
#### 4.4.6 EUT Operating Conditions

The EUT was programmed to be in continuously transmitting mode.

#### 4.4.7 Test Results of 6dB Bandwidth

|               |               |          |     |
|---------------|---------------|----------|-----|
| Temperature   | 20°C          | Humidity | 62% |
| Test Engineer | Anderson Chen |          |     |

| CHANNEL | FREQUENCY (MHz) | 6dB BANDWIDTH (MHz) | MINIMUM LIMIT (MHz) | PASS / FAIL |
|---------|-----------------|---------------------|---------------------|-------------|
| 11      | 2405            | 1.63                | 0.5                 | PASS        |
| 18      | 2440            | 1.64                | 0.5                 | PASS        |
| 25      | 2475            | 1.63                | 0.5                 | PASS        |
| 26      | 2480            | 1.63                | 0.5                 | PASS        |



## 4.5 Occupied Bandwidth Measurement

### 4.5.1 Measuring Instruments and Setting

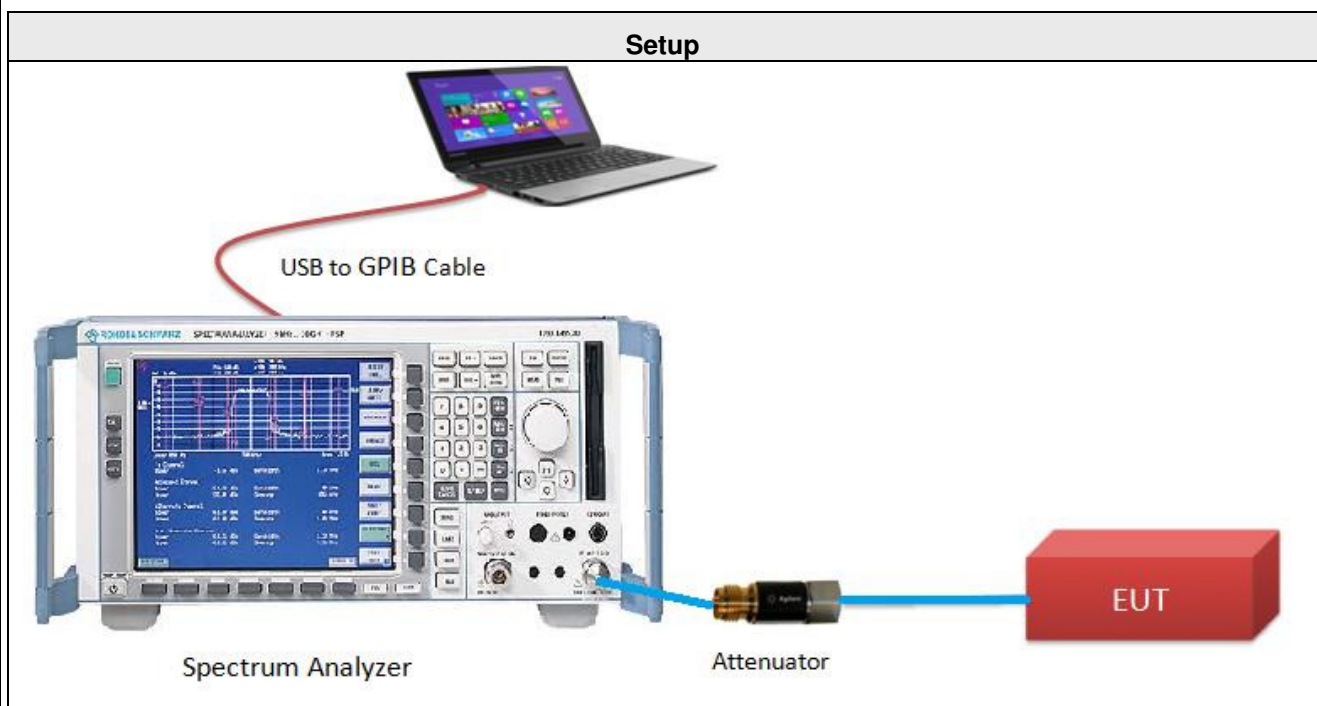
The following table is the setting of the Spectrum Analyzer.

| Spectrum Parameter | Setting                                        |
|--------------------|------------------------------------------------|
| Attenuation        | Auto                                           |
| RBW                | 1% to 5% of the anticipated emission bandwidth |
| VBW                | $\geq 3 \times \text{RBW}$                     |
| Detector           | Peak                                           |
| Trace              | Max Hold                                       |
| Sweep Time         | Auto couple                                    |

### 4.5.2 Test Procedure

- 1 The transmitter output (antenna port) was connected to the spectrum analyzer in peak, Max hold mode.
- 2 For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier frequency. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to peak.
- 3 The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

### 4.5.3 Test Setup Layout



#### 4.5.4 Test Deviation

There are no deviations with the original standard.

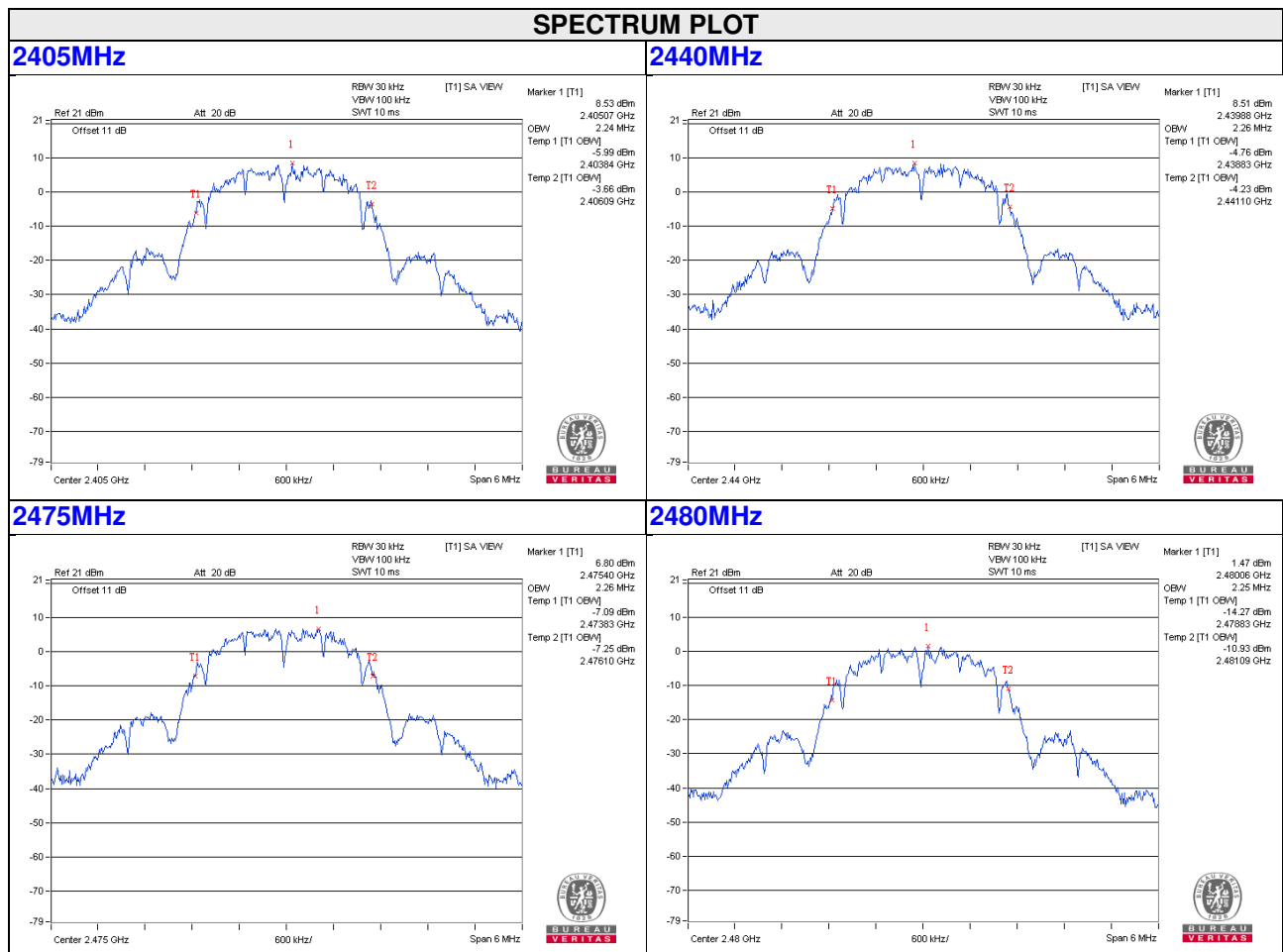
#### 4.5.5 EUT Operating Conditions

The EUT was programmed to be in continuously transmitting mode.

#### 4.5.6 Test Results of Occupied Bandwidth

|               |               |          |     |
|---------------|---------------|----------|-----|
| Temperature   | 20°C          | Humidity | 62% |
| Test Engineer | Anderson Chen |          |     |

| CHANNEL | FREQUENCY (MHz) | OCCUPIED BANDWIDTH (MHz) |
|---------|-----------------|--------------------------|
| 11      | 2405            | 2.24                     |
| 18      | 2440            | 2.26                     |
| 25      | 2475            | 2.26                     |
| 26      | 2480            | 2.25                     |



## 4.6 Radiated Emissions Measurement

### 4.6.1 Limit

30dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emissions fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

| Frequency Range (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|-----------------------|-----------------------------------|-------------------------------|
| 0.009 ~ 0.490         | 2400/F(kHz)                       | 300                           |
| 0.490 ~ 1.705         | 24000/F(kHz)                      | 30                            |
| 1.705 ~ 30.0          | 30                                | 30                            |
| 30 ~ 88               | 100                               | 3                             |
| 88 ~ 216              | 150                               | 3                             |
| 216 ~ 960             | 200                               | 3                             |
| Above 960             | 500                               | 3                             |

### 4.6.2 Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer and receiver.

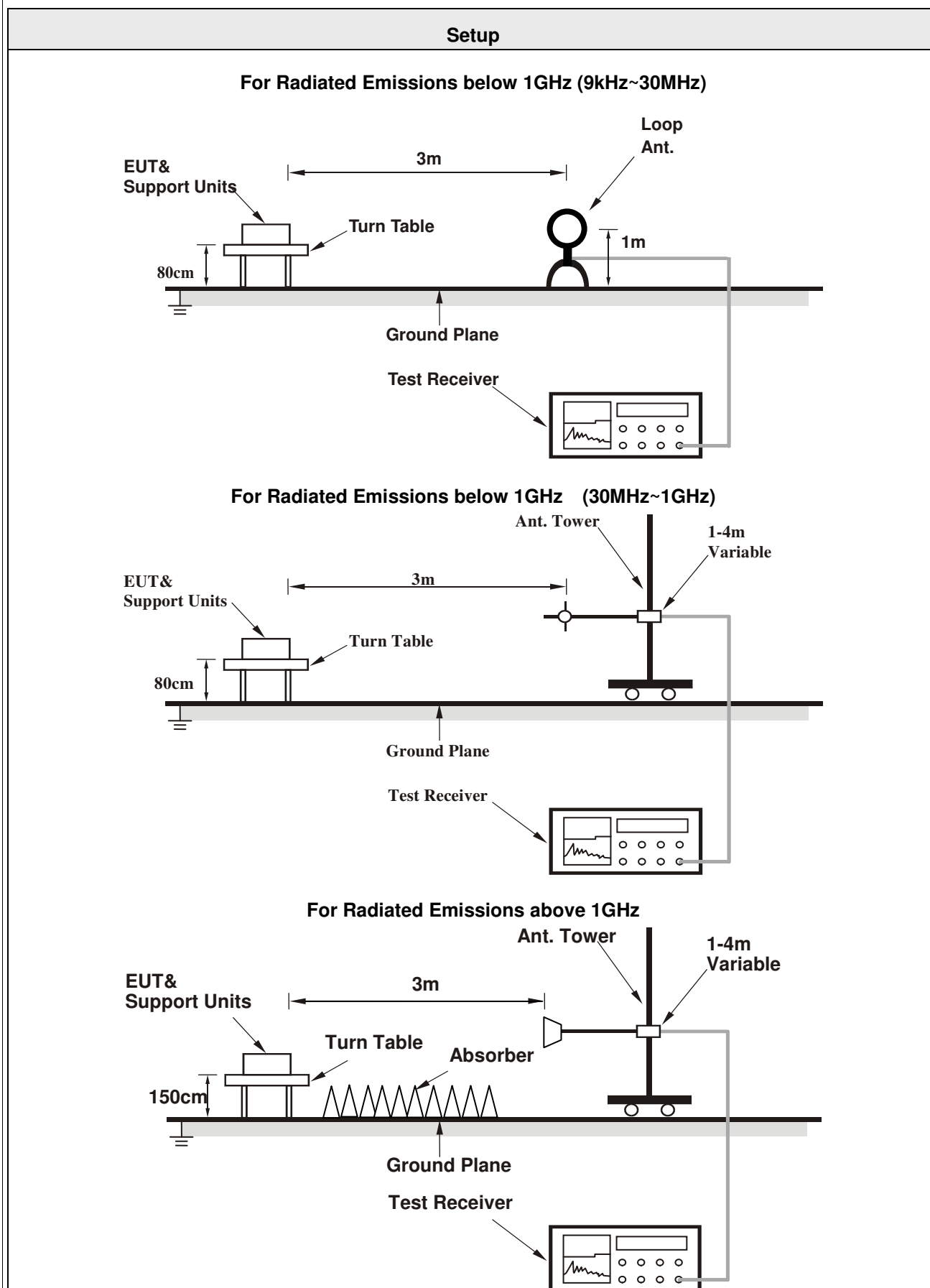
| Spectrum Parameter                           | Setting                                       |
|----------------------------------------------|-----------------------------------------------|
| Attenuation                                  | Auto                                          |
| Start Frequency                              | 1000 MHz                                      |
| Stop Frequency                               | 10th carrier harmonic                         |
| RBW / VBW (Emissions in restricted band)     | 1MHz / 3MHz for Peak, 1 MHz / 1/T for Average |
| RBW / VBW (Emissions in non-restricted band) | 100kHz / 300kHz for peak                      |

| Receiver Parameter     | Setting                           |
|------------------------|-----------------------------------|
| Attenuation            | Auto                              |
| Start ~ Stop Frequency | 9kHz~150kHz / RBW 200Hz for QP    |
| Start ~ Stop Frequency | 150kHz~30MHz / RBW 9kHz for QP    |
| Start ~ Stop Frequency | 30MHz~1000MHz / RBW 120kHz for QP |

#### 4.6.3 Test Procedure

- 1 Configure the EUT according to ANSI C63.10. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2 Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3 The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
- 4 For each suspected emissions, the antenna tower was scan (from 1 m to 4 m) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
- 5 Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode
- 6 For emissions above 1GHz, use 1MHz VBW and 3MHz RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer for Duty  $\geq 98\%$ , 1MHz RBW and VBW is  $\geq 1/T$  for average reading in spectrum analyzer for Duty  $< 98\%$ .
- 7 When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
- 8 If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
- 9 For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- 10 As the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

#### 4.6.4 Test Setup Layout



#### 4.6.5 Test Deviation

There are no deviations with the original standard.

#### 4.6.6 EUT Operating Conditions

The EUT was programmed to be in continuously transmitting mode.

#### 4.6.7 Test Results of Radiated Emissions

|               |           |          |     |
|---------------|-----------|----------|-----|
| Temperature   | 23°C      | Humidity | 70% |
| Test Engineer | Weiwei Lo |          |     |

#### Radiated Emissions Range 9kHz~30MHz

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

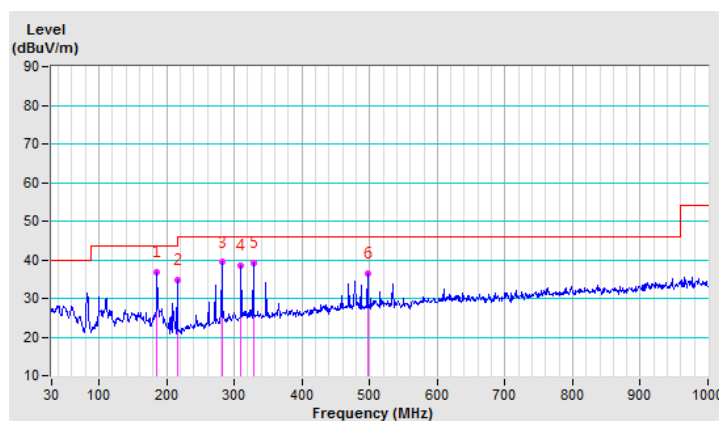
#### Radiated Emissions Range 30MHz~1GHz

|                 |               |                   |                 |
|-----------------|---------------|-------------------|-----------------|
| CHANNEL         | TX Channel 18 | DETECTOR FUNCTION | Quasi-Peak (QP) |
| FREQUENCY RANGE | 30MHz ~ 1GHz  |                   |                 |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|-----------------------------------------------------|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | 186.15      | 36.7 QP                 | 43.5           | -6.8        | 1.50 H             | 252                  | 47.3             | -10.6                    |
| 2                                                   | 215.63      | 34.7 QP                 | 43.5           | -8.8        | 1.00 H             | 306                  | 46.0             | -11.3                    |
| 3                                                   | 281.25      | 39.4 QP                 | 46.0           | -6.6        | 1.50 H             | 341                  | 47.5             | -8.1                     |
| 4                                                   | 309.38      | 38.4 QP                 | 46.0           | -7.6        | 1.00 H             | 183                  | 45.3             | -6.9                     |
| 5                                                   | 328.13      | 39.2 QP                 | 46.0           | -6.8        | 1.00 H             | 288                  | 45.6             | -6.4                     |
| 6                                                   | 496.86      | 36.4 QP                 | 46.0           | -9.6        | 1.50 H             | 24                   | 39.0             | -2.6                     |

#### REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

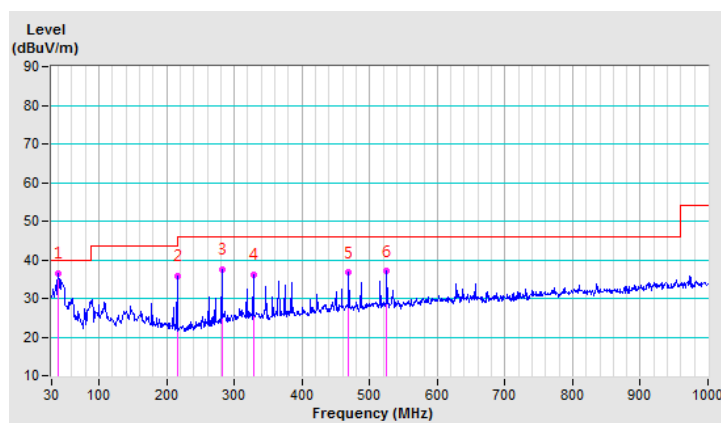


|                        |               |                              |                 |
|------------------------|---------------|------------------------------|-----------------|
| <b>CHANNEL</b>         | TX Channel 18 | <b>DETECTOR<br/>FUNCTION</b> | Quasi-Peak (QP) |
| <b>FREQUENCY RANGE</b> | 30MHz ~ 1GHz  |                              |                 |

| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|---------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                               | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                 | 39.65          | 36.4 QP                       | 40.0              | -3.6           | 1.00 V                   | 254                        | 45.4                   | -9.0                           |
| 2                                                 | 215.63         | 35.9 QP                       | 43.5              | -7.6           | 1.00 V                   | 122                        | 47.2                   | -11.3                          |
| 3                                                 | 281.23         | 37.4 QP                       | 46.0              | -8.6           | 1.50 V                   | 360                        | 45.5                   | -8.1                           |
| 4                                                 | 328.15         | 36.1 QP                       | 46.0              | -9.9           | 1.50 V                   | 39                         | 42.5                   | -6.4                           |
| 5                                                 | 468.76         | 36.6 QP                       | 46.0              | -9.4           | 1.00 V                   | 85                         | 39.7                   | -3.1                           |
| 6                                                 | 525.02         | 37.0 QP                       | 46.0              | -9.0           | 1.00 V                   | 64                         | 39.1                   | -2.1                           |

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value



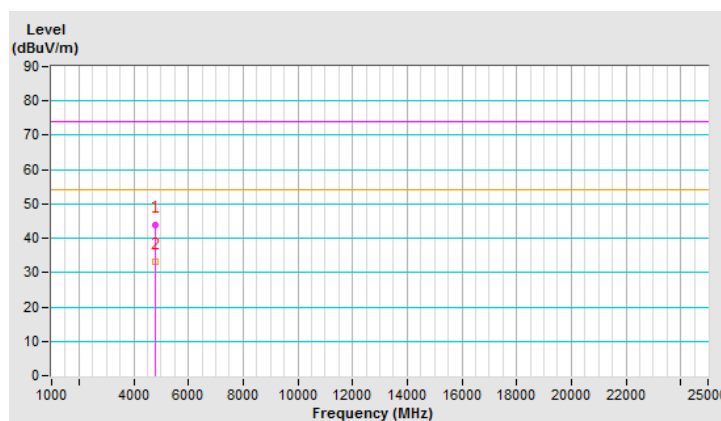
### Radiated Emission Range 1GHz~10th Harmonic

|                 |               |                      |              |
|-----------------|---------------|----------------------|--------------|
| CHANNEL         | TX Channel 11 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 25GHz  |                      | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 4810.00        | 43.7 PK                       | 74.0              | -30.3          | 1.09 H                   | 70                         | 41.4                   | 2.3                            |
| 2                                                   | 4810.00        | 33.2 AV                       | 54.0              | -20.8          | 1.09 H                   | 70                         | 30.9                   | 2.3                            |

#### REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

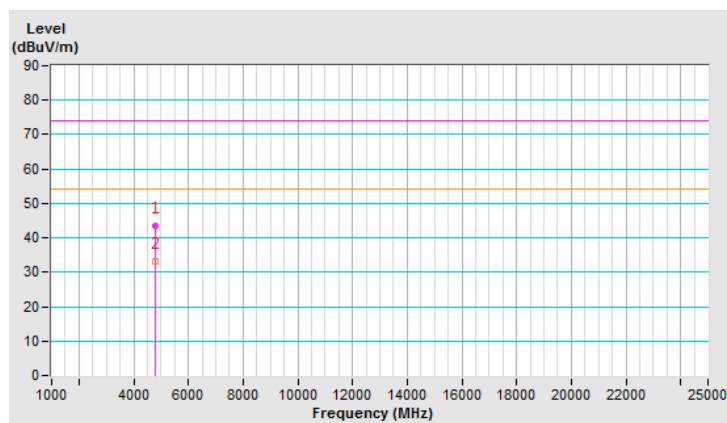


|                        |               |                          |              |
|------------------------|---------------|--------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 11 | <b>DETECTOR FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 25GHz  |                          | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|---------------------------------------------------|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.                                               | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                 | 4810.00     | 43.5 PK                 | 74.0           | -30.5       | 2.05 V             | 37                   | 41.2             | 2.3                      |
| 2                                                 | 4810.00     | 33.3 AV                 | 54.0           | -20.7       | 2.05 V             | 37                   | 31.0             | 2.3                      |

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

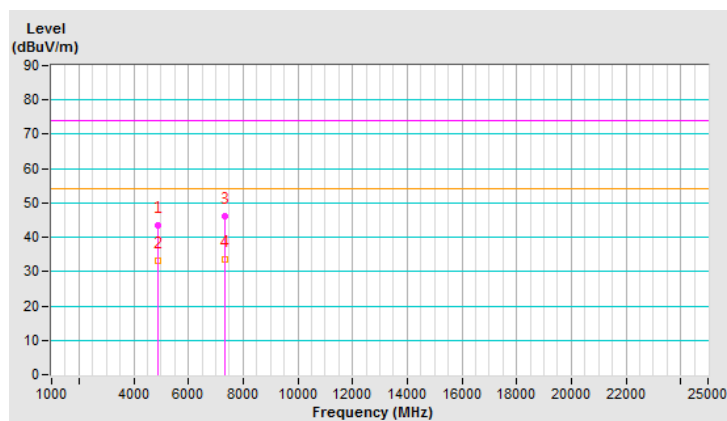


|                        |               |                          |              |
|------------------------|---------------|--------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 18 | <b>DETECTOR FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 25GHz  |                          | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|-----------------------------------------------------|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | 4880.00     | 43.3 PK                 | 74.0           | -30.7       | 1.03 H             | 98                   | 40.8             | 2.5                      |
| 2                                                   | 4880.00     | 33.0 AV                 | 54.0           | -21.0       | 1.03 H             | 98                   | 30.5             | 2.5                      |
| 3                                                   | 7320.00     | 46.1 PK                 | 74.0           | -27.9       | 1.46 H             | 360                  | 37.2             | 8.9                      |
| 4                                                   | 7320.00     | 33.5 AV                 | 54.0           | -20.5       | 1.46 H             | 360                  | 24.6             | 8.9                      |

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

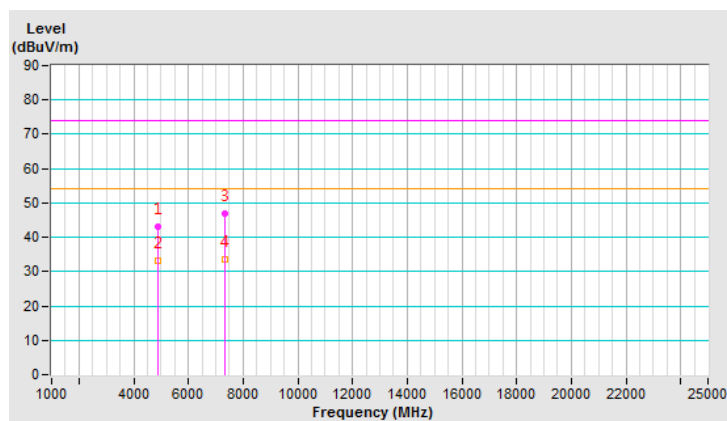


|                        |               |                          |              |
|------------------------|---------------|--------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 18 | <b>DETECTOR FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 25GHz  |                          | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|---------------------------------------------------|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.                                               | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                 | 4880.00     | 43.1 PK                 | 74.0           | -30.9       | 2.04 V             | 35                   | 40.6             | 2.5                      |
| 2                                                 | 4880.00     | 33.1 AV                 | 54.0           | -20.9       | 2.04 V             | 35                   | 30.6             | 2.5                      |
| 3                                                 | 7320.00     | 47.0 PK                 | 74.0           | -27.0       | 1.46 V             | 21                   | 38.1             | 8.9                      |
| 4                                                 | 7320.00     | 33.5 AV                 | 54.0           | -20.5       | 1.46 V             | 21                   | 24.6             | 8.9                      |

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

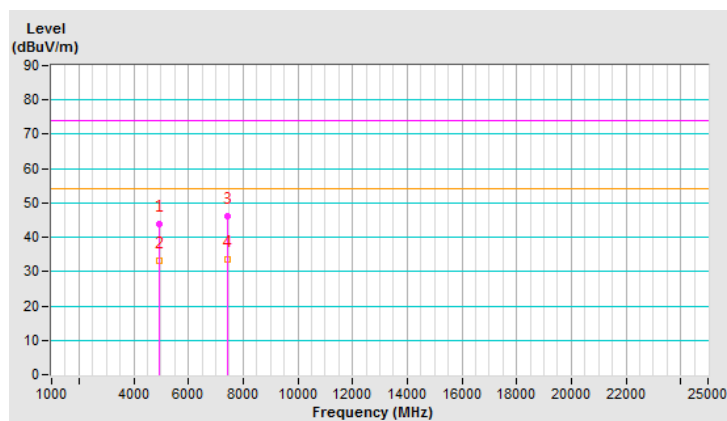


|                        |               |                          |              |
|------------------------|---------------|--------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 25 | <b>DETECTOR FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 25GHz  |                          | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|-----------------------------------------------------|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | 4950.00     | 43.7 PK                 | 74.0           | -30.3       | 1.04 H             | 85                   | 41.2             | 2.5                      |
| 2                                                   | 4950.00     | 33.1 AV                 | 54.0           | -20.9       | 1.04 H             | 85                   | 30.6             | 2.5                      |
| 3                                                   | 7425.00     | 46.1 PK                 | 74.0           | -27.9       | 1.50 H             | 360                  | 36.6             | 9.5                      |
| 4                                                   | 7425.00     | 33.5 AV                 | 54.0           | -20.5       | 1.50 H             | 360                  | 24.0             | 9.5                      |

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

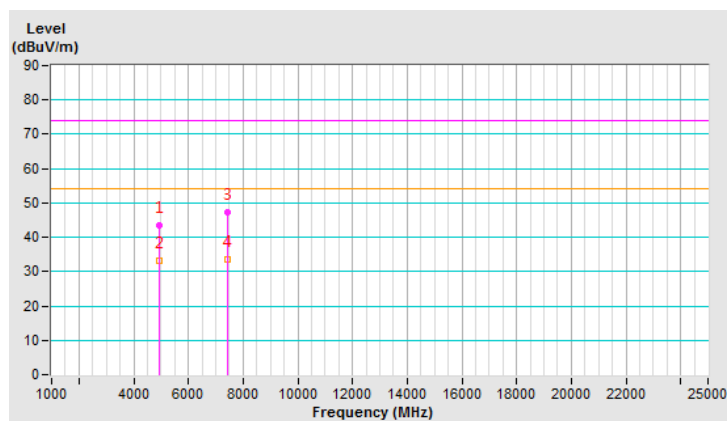


|                        |               |                          |              |
|------------------------|---------------|--------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 25 | <b>DETECTOR FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 25GHz  |                          | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|---------------------------------------------------|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.                                               | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                 | 4950.00     | 43.3 PK                 | 74.0           | -30.7       | 2.05 V             | 26                   | 40.8             | 2.5                      |
| 2                                                 | 4950.00     | 33.1 AV                 | 54.0           | -20.9       | 2.05 V             | 26                   | 30.6             | 2.5                      |
| 3                                                 | 7425.00     | 47.1 PK                 | 74.0           | -26.9       | 1.50 V             | 12                   | 37.6             | 9.5                      |
| 4                                                 | 7425.00     | 33.4 AV                 | 54.0           | -20.6       | 1.50 V             | 12                   | 23.9             | 9.5                      |

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

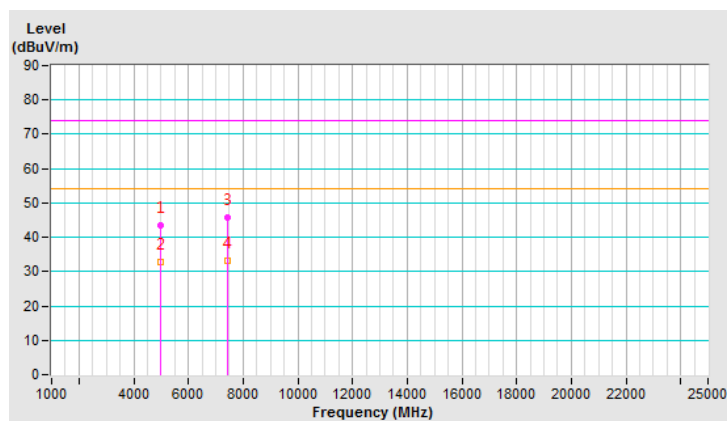


|                        |               |                          |              |
|------------------------|---------------|--------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 26 | <b>DETECTOR FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 25GHz  |                          | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|-----------------------------------------------------|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | 4960.00     | 43.4 PK                 | 74.0           | -30.6       | 1.01 H             | 86                   | 40.9             | 2.5                      |
| 2                                                   | 4960.00     | 32.9 AV                 | 54.0           | -21.1       | 1.01 H             | 86                   | 30.4             | 2.5                      |
| 3                                                   | 7440.00     | 45.6 PK                 | 74.0           | -28.4       | 1.51 H             | 360                  | 36.1             | 9.5                      |
| 4                                                   | 7440.00     | 33.2 AV                 | 54.0           | -20.8       | 1.51 H             | 360                  | 23.7             | 9.5                      |

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

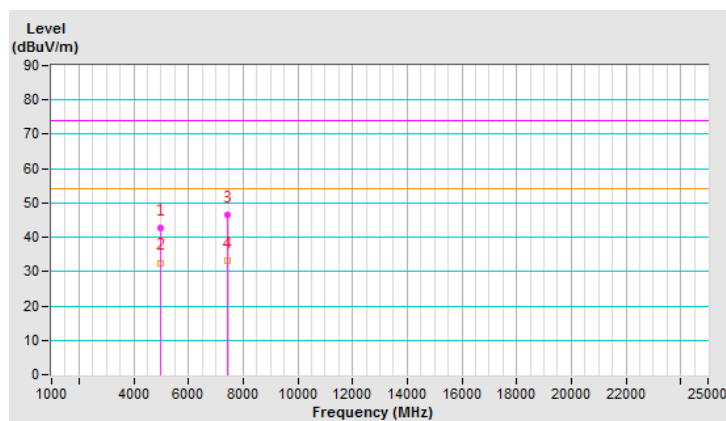


|                        |               |                          |              |
|------------------------|---------------|--------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 26 | <b>DETECTOR FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 25GHz  |                          | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|---------------------------------------------------|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.                                               | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                 | 4960.00     | 42.8 PK                 | 74.0           | -31.2       | 2.06 V             | 39                   | 40.3             | 2.5                      |
| 2                                                 | 4960.00     | 32.6 AV                 | 54.0           | -21.4       | 2.06 V             | 39                   | 30.1             | 2.5                      |
| 3                                                 | 7440.00     | 46.4 PK                 | 74.0           | -27.6       | 1.55 V             | 5                    | 36.9             | 9.5                      |
| 4                                                 | 7440.00     | 33.0 AV                 | 54.0           | -21.0       | 1.55 V             | 5                    | 23.5             | 9.5                      |

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value



## 4.7 Band Edge and Fundamental Emissions Measurement

### 4.7.1 Limit

30dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emissions fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed

| Frequency range (MHz) | Field Strength (mV/meter) | Measurement Distance (m) |
|-----------------------|---------------------------|--------------------------|
| 0.009~0.490           | 2400/F(kHz)               | 300                      |
| 0.490~1.705           | 24000/F(kHz)              | 30                       |
| 1.705~30.0            | 30                        | 30                       |
| 30~88                 | 100                       | 3                        |
| 88~216                | 150                       | 3                        |
| 216~960               | 200                       | 3                        |
| Above 960             | 500                       | 3                        |

### 4.7.2 Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer and receiver.

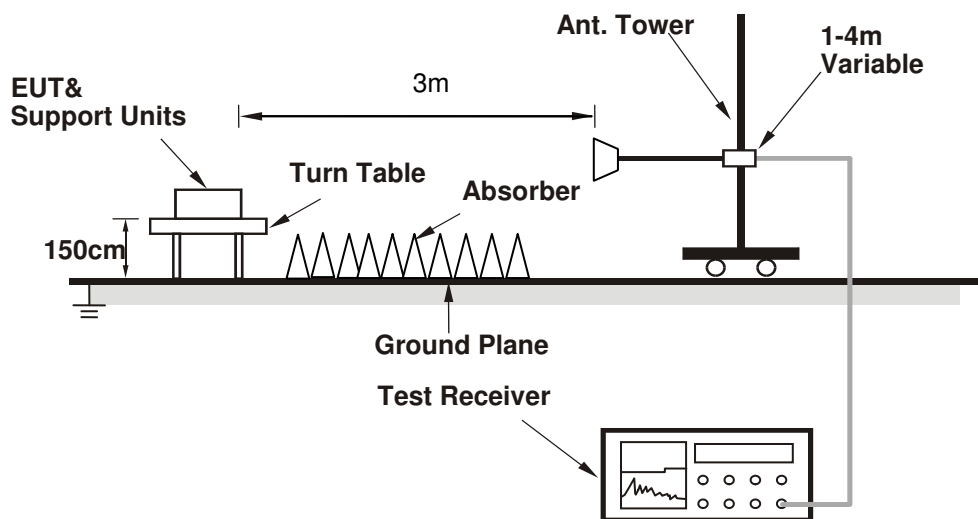
| Spectrum Parameter                           | Setting                                       |
|----------------------------------------------|-----------------------------------------------|
| Attenuation                                  | Auto                                          |
| Start Frequency                              | 1000 MHz                                      |
| Stop Frequency                               | 10th carrier harmonic                         |
| RBW / VBW (Emissions in restricted band)     | 1MHz / 3MHz for Peak, 1 MHz / 1/T for Average |
| RBW / VBW (Emissions in non-restricted band) | 100kHz / 300kHz for peak                      |

### 4.7.3 Test Procedure

- 1 The test procedure is the same as section 4.6.3; only the frequency range investigated is 2310MHz to 2500MHz
- 2 Test for Emissions in non-restricted band was performed in accordance with KDB 558074 D01 v03r05 for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 section 11 Unwanted Emissions into Non-Restricted Frequency Bands Measurement Procedure.

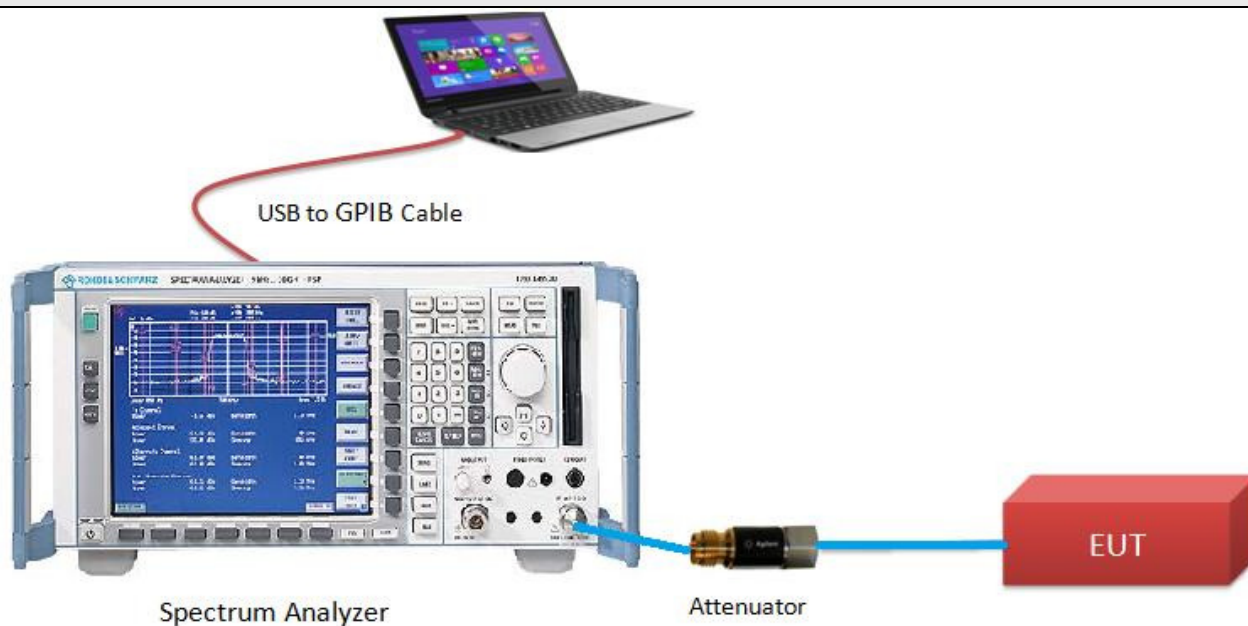
#### 4.7.4 Test Setup Layout

##### Setup in restricted band



For Radiated Emissions above 1GHz

##### Setup in non-restricted band



#### 4.7.5 Test Deviation

There are no deviations with the original standard.

#### 4.7.6 EUT Operating Conditions

The EUT was programmed to be in continuously transmitting mode.

#### 4.7.7 Test Results of Band Edge and Fundamental Emissions

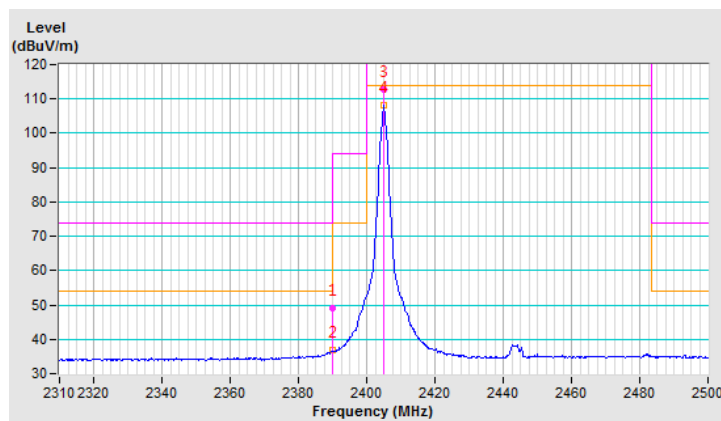
|               |           |          |     |
|---------------|-----------|----------|-----|
| Temperature   | 21°C      | Humidity | 71% |
| Test Engineer | Weiwei Lo |          |     |

|                 |               |                   |              |
|-----------------|---------------|-------------------|--------------|
| CHANNEL         | TX Channel 11 | DETECTOR FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 25GHz  |                   | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|-----------------------------------------------------|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | 2390.00     | 49.1 PK                 | 74.0           | -24.9       | 1.50 H             | 326                  | 53.3             | -4.2                     |
| 2                                                   | 2390.00     | 36.8 AV                 | 54.0           | -17.2       | 1.50 H             | 326                  | 41.0             | -4.2                     |
| 3                                                   | *2405.00    | 112.6 PK                |                |             | 1.50 H             | 326                  | 116.7            | -4.1                     |
| 4                                                   | *2405.00    | 108.2 AV                |                |             | 1.50 H             | 326                  | 112.3            | -4.1                     |

#### REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.

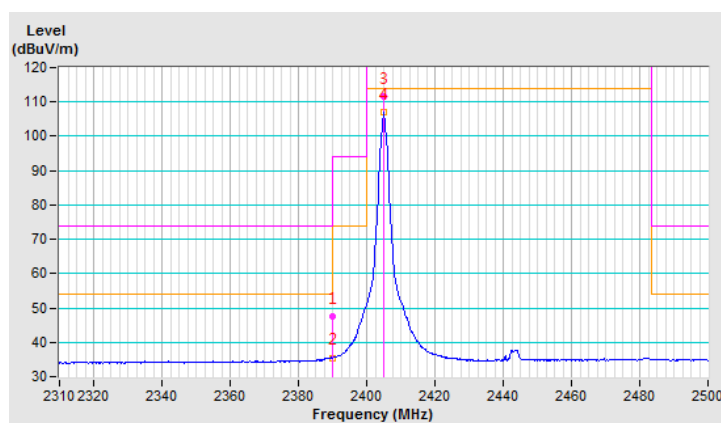


|                        |               |                              |              |
|------------------------|---------------|------------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 11 | <b>DETECTOR<br/>FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 25GHz  |                              | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|---------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                               | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                 | 2390.00        | 47.4 PK                       | 74.0              | -26.6          | 2.95 V                   | 291                        | 51.6                   | -4.2                           |
| 2                                                 | 2390.00        | 35.5 AV                       | 54.0              | -18.5          | 2.95 V                   | 291                        | 39.7                   | -4.2                           |
| 3                                                 | *2405.00       | 111.5 PK                      |                   |                | 2.95 V                   | 291                        | 115.6                  | -4.1                           |
| 4                                                 | *2405.00       | 107.1 AV                      |                   |                | 2.95 V                   | 291                        | 111.2                  | -4.1                           |

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.

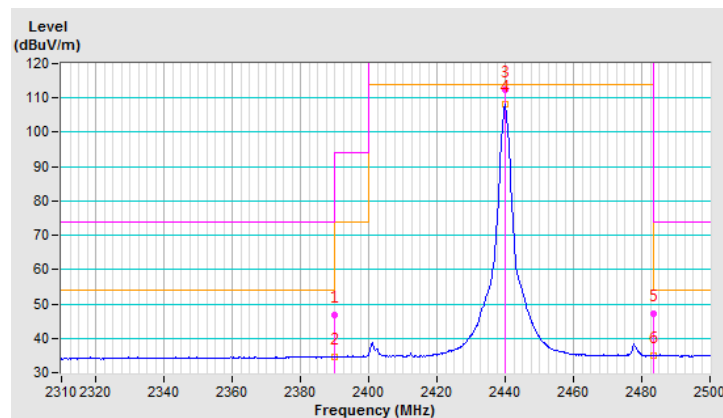


|                 |               |                      |              |
|-----------------|---------------|----------------------|--------------|
| CHANNEL         | TX Channel 18 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 25GHz  |                      | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 2390.00        | 46.7 PK                       | 74.0              | -27.3          | 2.28 H                   | 328                        | 50.9                   | -4.2                           |
| 2                                                   | 2390.00        | 34.5 AV                       | 54.0              | -19.5          | 2.28 H                   | 328                        | 38.7                   | -4.2                           |
| 3                                                   | *2440.00       | 112.5 PK                      |                   |                | 2.28 H                   | 328                        | 116.5                  | -4.0                           |
| 4                                                   | *2440.00       | 108.1 AV                      |                   |                | 2.28 H                   | 328                        | 112.1                  | -4.0                           |
| 5                                                   | 2483.50        | 47.3 PK                       | 74.0              | -26.7          | 2.28 H                   | 328                        | 51.3                   | -4.0                           |
| 6                                                   | 2483.50        | 34.9 AV                       | 54.0              | -19.1          | 2.28 H                   | 328                        | 38.9                   | -4.0                           |

#### REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.

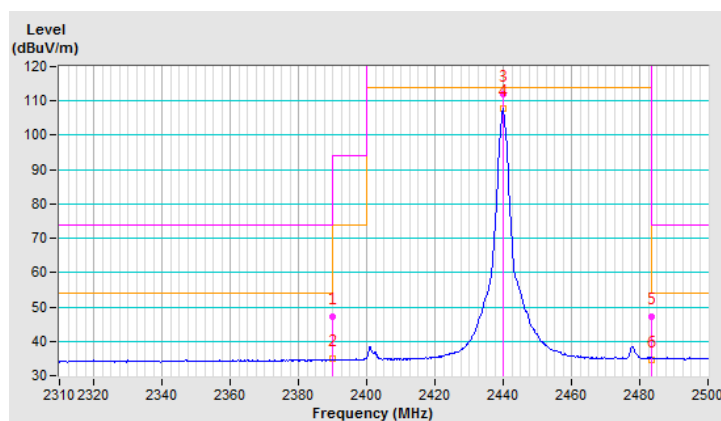


|                        |               |                              |              |
|------------------------|---------------|------------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 18 | <b>DETECTOR<br/>FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 25GHz  |                              | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|---------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                               | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                 | 2390.00        | 47.3 PK                       | 74.0              | -26.7          | 3.22 V                   | 265                        | 51.5                   | -4.2                           |
| 2                                                 | 2390.00        | 34.8 AV                       | 54.0              | -19.2          | 3.22 V                   | 265                        | 39.0                   | -4.2                           |
| 3                                                 | *2440.00       | 112.1 PK                      |                   |                | 3.22 V                   | 266                        | 116.1                  | -4.0                           |
| 4                                                 | *2440.00       | 107.7 AV                      |                   |                | 3.22 V                   | 266                        | 111.7                  | -4.0                           |
| 5                                                 | 2483.50        | 47.2 PK                       | 74.0              | -26.8          | 3.22 V                   | 266                        | 51.2                   | -4.0                           |
| 6                                                 | 2483.50        | 34.7 AV                       | 54.0              | -19.3          | 3.22 V                   | 266                        | 38.7                   | -4.0                           |

#### REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.

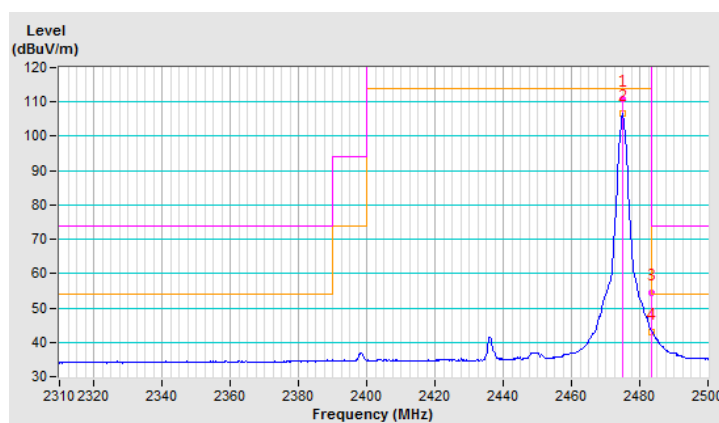


|                        |               |                          |              |
|------------------------|---------------|--------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 25 | <b>DETECTOR FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 25GHz  |                          | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|-----------------------------------------------------|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | *2475.00    | 110.8 PK                |                |             | 2.30 H             | 332                  | 114.8            | -4.0                     |
| 2                                                   | *2475.00    | 106.7 AV                |                |             | 2.30 H             | 332                  | 110.7            | -4.0                     |
| 3                                                   | 2483.50     | 54.5 PK                 | 74.0           | -19.5       | 2.30 H             | 332                  | 58.5             | -4.0                     |
| 4                                                   | 2483.50     | 43.1 AV                 | 54.0           | -10.9       | 2.30 H             | 332                  | 47.1             | -4.0                     |

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.

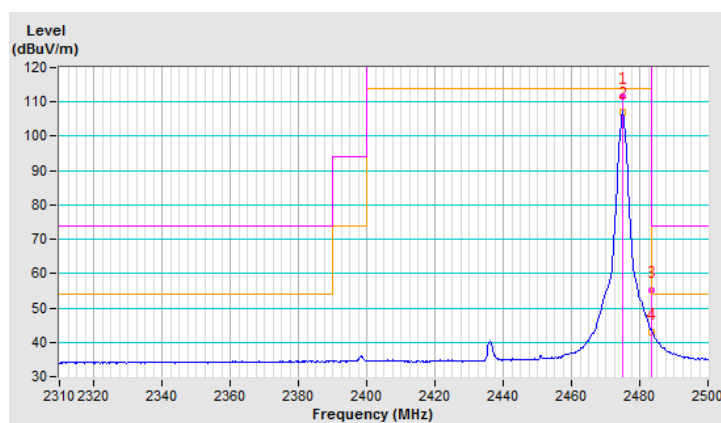


|                        |               |                          |              |
|------------------------|---------------|--------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 25 | <b>DETECTOR FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 25GHz  |                          | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|---------------------------------------------------|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.                                               | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                 | *2475.00    | 111.5 PK                |                |             | 3.11 V             | 297                  | 115.5            | -4.0                     |
| 2                                                 | *2475.00    | 107.2 AV                |                |             | 3.11 V             | 297                  | 111.2            | -4.0                     |
| 3                                                 | 2483.50     | 55.1 PK                 | 74.0           | -18.9       | 3.11 V             | 297                  | 59.1             | -4.0                     |
| 4                                                 | 2483.50     | 42.8 AV                 | 54.0           | -11.2       | 3.11 V             | 297                  | 46.8             | -4.0                     |

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.

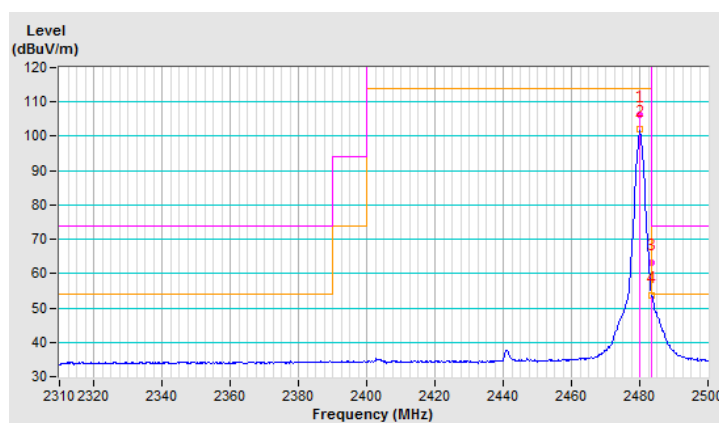


|                        |               |                          |              |
|------------------------|---------------|--------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 26 | <b>DETECTOR FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 25GHz  |                          | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|-----------------------------------------------------|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | *2480.00    | 106.1 PK                |                |             | 1.44 H             | 325                  | 110.1            | -4.0                     |
| 2                                                   | *2480.00    | 101.9 AV                |                |             | 1.44 H             | 325                  | 105.9            | -4.0                     |
| 3                                                   | 2483.50     | 63.3 PK                 | 74.0           | -10.7       | 1.44 H             | 325                  | 67.3             | -4.0                     |
| 4                                                   | 2483.50     | 53.5 AV                 | 54.0           | -0.5        | 1.44 H             | 325                  | 57.5             | -4.0                     |

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.

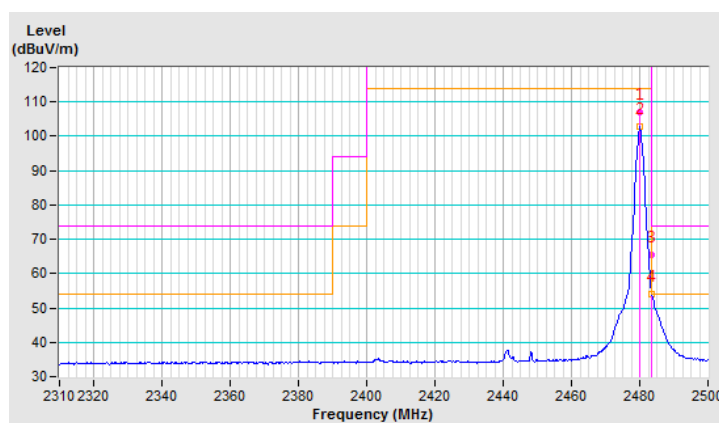


|                        |               |                          |              |
|------------------------|---------------|--------------------------|--------------|
| <b>CHANNEL</b>         | TX Channel 26 | <b>DETECTOR FUNCTION</b> | Peak (PK)    |
| <b>FREQUENCY RANGE</b> | 1GHz ~ 25GHz  |                          | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|---------------------------------------------------|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.                                               | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                 | *2480.00    | 107.1 PK                |                |             | 3.12 V             | 264                  | 111.1            | -4.0                     |
| 2                                                 | *2480.00    | 102.8 AV                |                |             | 3.12 V             | 264                  | 106.8            | -4.0                     |
| 3                                                 | 2483.50     | 65.6 PK                 | 74.0           | -8.4        | 3.12 V             | 264                  | 69.6             | -4.0                     |
| 4                                                 | 2483.50     | 53.9 AV                 | 54.0           | -0.1        | 3.12 V             | 264                  | 57.9             | -4.0                     |

**REMARKS:**

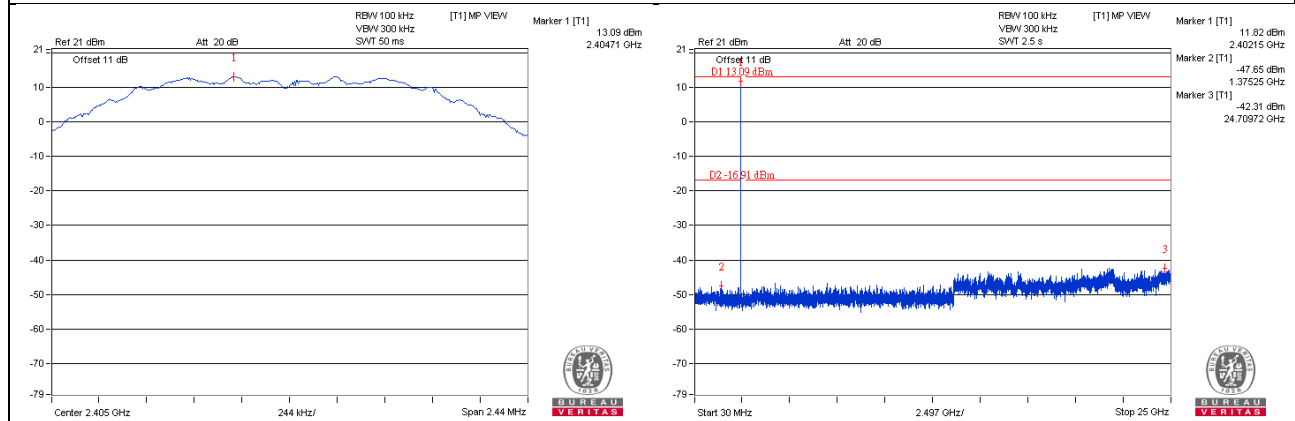
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.



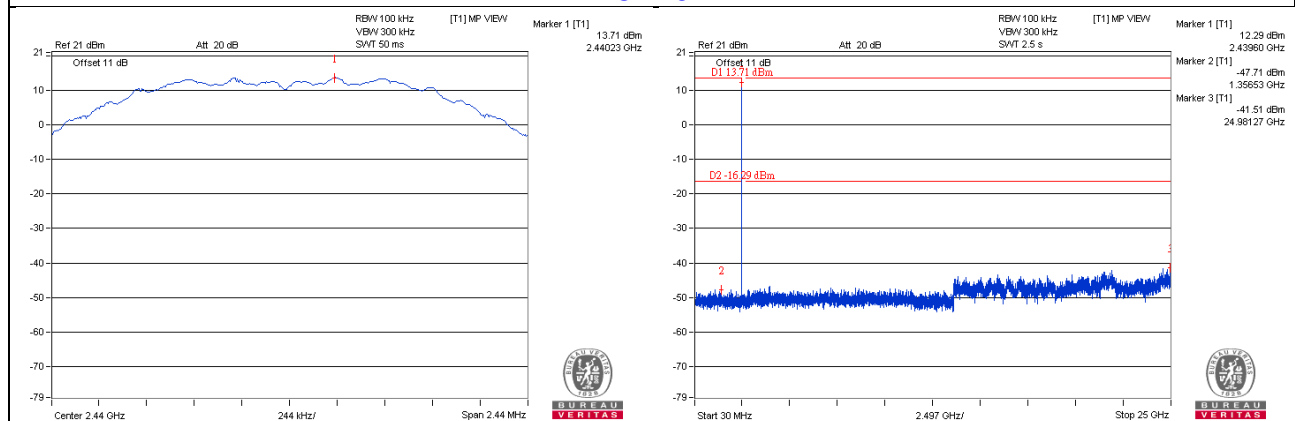
#### 4.7.8 Test Results of Band Edge and Emissions not in Restricted Bands

Below 30dB of the highest emissions level of operating band (in 100kHz Resolution Bandwidth).

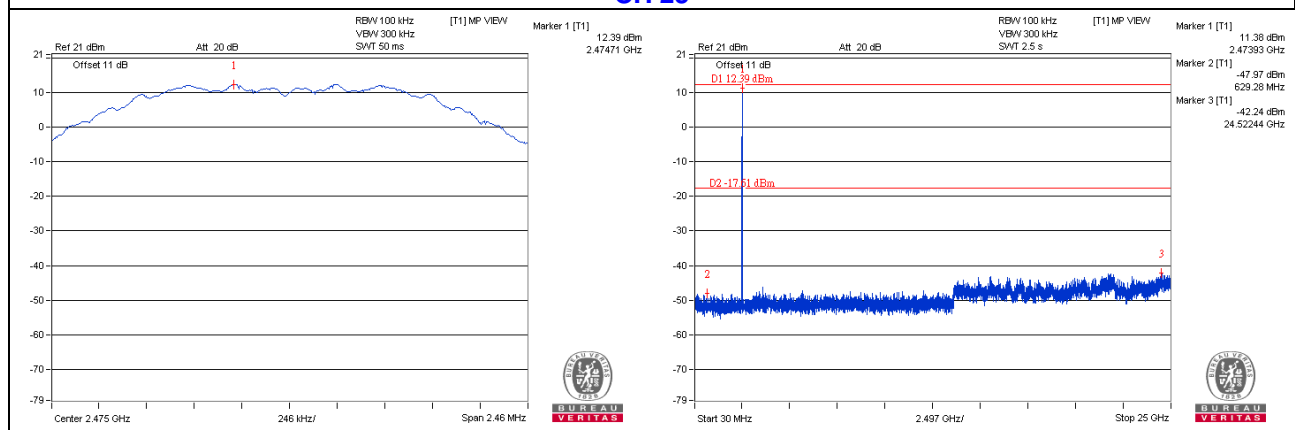
##### CH 11



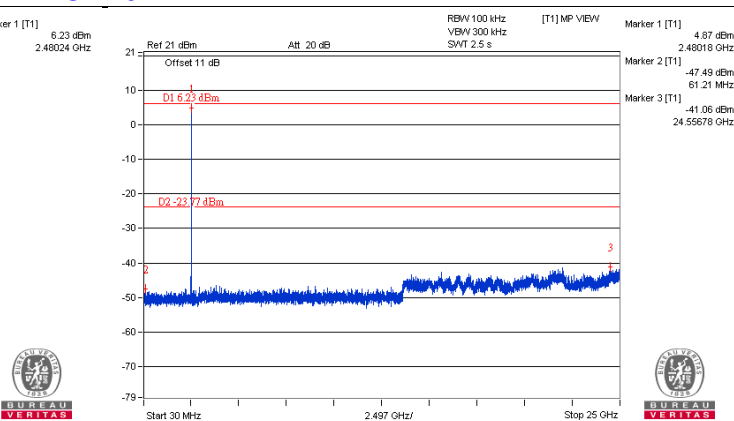
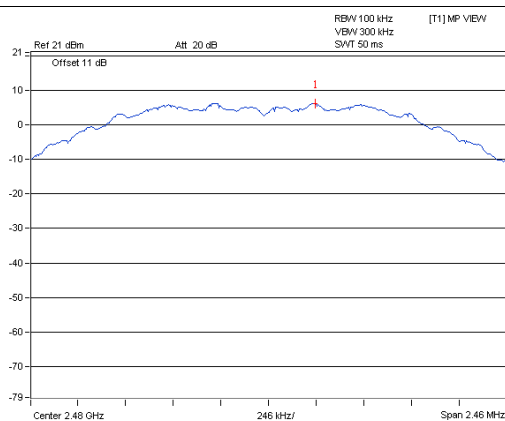
##### CH 18



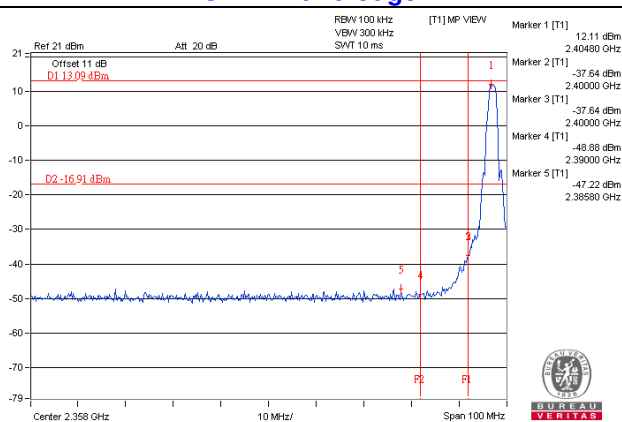
##### CH 25



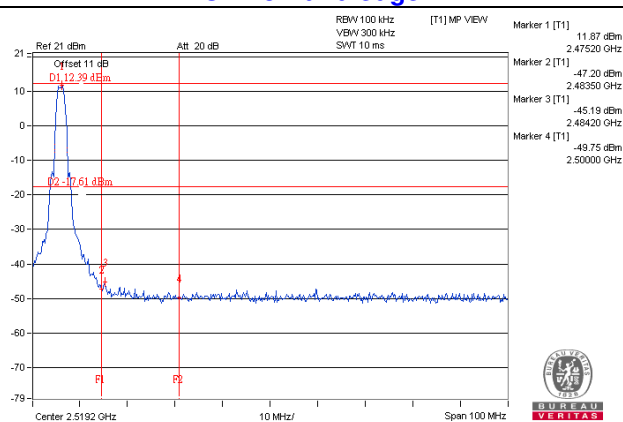
## CH 26



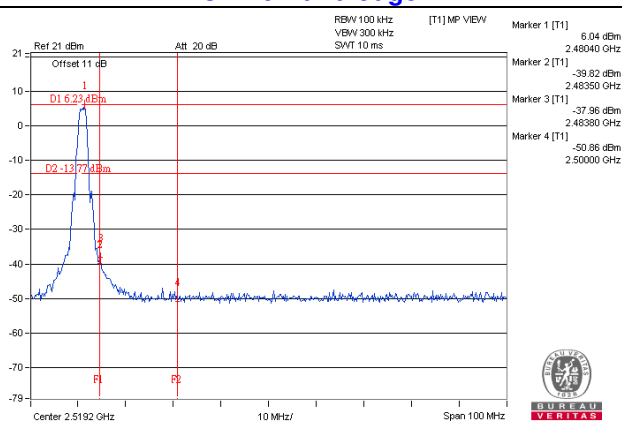
## CH 11 Band edge



## CH 25 Band edge



## CH 26 Band edge



#### 4.8 List of Test Instruments

| DESCRIPTION & MANUFACTURER                                  | MODEL NO.               | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|-------------------------------------------------------------|-------------------------|------------|-----------------|------------------|
| Test Receiver<br>R&S                                        | ESCS 30                 | 847124/029 | Oct. 24, 2016   | Oct. 23, 2017    |
| Line-Impedance<br>Stabilization Network (for<br>EUT)<br>R&S | ESH3-Z5                 | 848773/004 | Oct. 26, 2016   | Oct. 25, 2017    |
| RF Cable                                                    | 5D-FB                   | COCCAB-001 | Sep. 30, 2016   | Sep. 29, 2017    |
| 10 dB PAD<br>Mini-Circuits                                  | HAT-10+                 | CONATT-004 | June 20, 2016   | June 19, 2017    |
| Software<br>BVADT                                           | BVADT_Cond_<br>V7.3.7.4 | NA         | NA              | NA               |

**Note:**

1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. 1.
3. Tested Date: Dec. 01, 2016

| DESCRIPTION & MANUFACTURER                     | MODEL NO.                                                               | SERIAL NO.                    | CALIBRATED DATE | CALIBRATED UNTIL |
|------------------------------------------------|-------------------------------------------------------------------------|-------------------------------|-----------------|------------------|
| Test Receiver<br>Agilent                       | N9038A                                                                  | MY50010156                    | Aug. 18, 2016   | Aug. 17, 2017    |
| Pre-Amplifier <sup>(*)</sup><br>EMCI           | EMC001340                                                               | 980142                        | Jan. 20, 2016   | Jan. 19, 2018    |
| Loop Antenna <sup>(*)</sup><br>Electro-Metrics | EM-6879                                                                 | 264                           | Dec. 16, 2014   | Dec. 15, 2016    |
| RF Cable                                       | NA                                                                      | LOOPCAB-001<br>LOOPCAB-002    | Jan. 18, 2016   | Jan. 17, 2017    |
| Pre-Amplifier<br>Mini-Circuits                 | ZFL-1000VH2<br>B                                                        | AMP-ZFL-05                    | May 07, 2016    | May 06, 2017     |
| Trilog Broadband Antenna<br>SCHWARZBECK        | VULB 9168                                                               | 9168-156                      | Jan. 04, 2016   | Jan. 03, 2017    |
| RF Cable                                       | 8D                                                                      | 966-3-1<br>966-3-2<br>966-3-3 | Apr. 02, 2016   | Apr. 01, 2017    |
| Fixed attenuator<br>Mini-Circuits              | UNAT-5+                                                                 | PAD-3m-3-01                   | Oct. 05, 2016   | Oct. 04, 2017    |
| Horn_Antenna<br>SCHWARZBECK                    | BBHA9120-D                                                              | 9120D-406                     | Jan. 20, 2016   | Jan. 19, 2017    |
| Pre-Amplifier<br>Agilent                       | 8449B                                                                   | 3008A02465                    | Apr. 05, 2016   | Apr. 04, 2017    |
| RF Cable                                       | EMC104-SM-<br>SM-2000<br>EMC104-SM-<br>SM-5000<br>EMC104-SM-<br>SM-5000 | 150317<br>150321<br>150322    | Mar. 30, 2016   | Mar. 29, 2017    |
| Spectrum Analyzer<br>Keysight                  | N9030A                                                                  | MY54490520                    | July 29, 2016   | July 28, 2017    |
| Pre-Amplifier<br>EMCI                          | EMC184045                                                               | 980143                        | Jan. 15, 2016   | Jan. 14, 2017    |
| Horn_Antenna<br>SCHWARZBECK                    | BBHA 9170                                                               | BBHA9170608                   | Jan. 08, 2016   | Jan. 07, 2017    |
| RF Cable                                       | SUCOFLEX<br>102                                                         | 36432/2<br>36433/2            | Jan. 16, 2016   | Jan. 15, 2017    |
| Software                                       | ADT_Radiated<br>_V8.7.08                                                | NA                            | NA              | NA               |
| Antenna Tower & Turn Table<br>Max-Full         | MF-7802                                                                 | MF780208406                   | NA              | NA               |
| Boresight Antenna Fixture                      | FBA-01                                                                  | FBA-SIP01                     | NA              | NA               |

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. \*The calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in 966 Chamber No. 3.
4. The FCC Site Registration No. is 147459
5. The CANADA Site Registration No. is 20331-1
6. Tested Date: Dec. 13 to 14, 2016

| DESCRIPTION & MANUFACTURER                 | MODEL NO.                     | SERIAL NO.                           | CALIBRATED DATE | CALIBRATED UNTIL |
|--------------------------------------------|-------------------------------|--------------------------------------|-----------------|------------------|
| Spectrum Analyzer R&S                      | FSV40                         | 100964                               | June 28, 2016   | June 27, 2017    |
| Spectrum Analyzer Agilent                  | E4446A                        | MY48250253                           | Dec. 21, 2016   | Dec. 20, 2017    |
| Power meter Anritsu                        | ML2495A                       | 1014008                              | May 05, 2016    | May 04, 2017     |
| Power sensor Anritsu                       | MA2411B                       | 0917122                              | May 05, 2016    | May 04, 2017     |
| AC Power Source Extech Electronics         | 6205                          | 1440452                              | NA              | NA               |
| Temperature & Humidity Chamber Giant Force | GTH-150-40-SP-AR              | MAA0812-008                          | Jan. 15, 2016   | Jan. 14, 2017    |
| DC Power Supply Topward                    | 6603D                         | 795558                               | NA              | NA               |
| Digital Multimeter FLUKE                   | 87III                         | 73680266                             | Nov. 10, 2016   | Nov. 09, 2017    |
| ESG Vector signal generator Agilent        | E4438C                        | MY45094468/005<br>506 602 UK6<br>UNJ | Nov. 25, 2016   | Nov. 24, 2017    |
| Mech Switch Absorptive Mini-Circuits       | MSP4TA-18+                    | 0140                                 | Mar. 19, 2016   | Mar. 18, 2017    |
| FXD ATTEN Mini-Circuits                    | BW-S3W2+                      | MN71981                              | Mar. 19, 2016   | Mar. 18, 2017    |
| Software                                   | ADT_RF Test Software V6.6.5.4 | NA                                   | NA              | NA               |

- NOTE:**
1. The test was performed in Oven room 2.
  2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
  3. Tested Date: Jan. 10, 2017

## Appendix A. Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

**Linko EMC/RF Lab**

Tel: 886-2-26052180

Fax: 886-2-26051924

**Hsin Chu EMC/RF/Telecom Lab**

Tel: 886-3-6668565

Fax: 886-3-6668323

**Hwa Ya EMC/RF/Safety**

Tel: 886-3-3183232

Fax: 886-3-3270892

**Email:** [service.adt@tw.bureauveritas.com](mailto:service.adt@tw.bureauveritas.com)

**Web Site:** [www.bureauveritas-adt.com](http://www.bureauveritas-adt.com)

The address and road map of all our labs can be found in our web site also.

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