
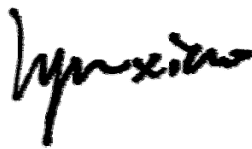



**TEST REPORT**

|  |   |   |                       |
|--|---|---|-----------------------|
| <b>Report No.:</b>   | <b>EM201500406-1</b>  | <b>Application No.:</b>   | <b>ZJ20150005-E-1</b> |
| <b>Client:</b>   | CHAUVET & SONS,INC.   |   |                       |
| <b>Address:</b>  | 5200 NW 108TH AVENUE SUNRISE,FLORIDA,33351, USA                                     |   |                       |
| <b>Sample Description:</b>   | Wireless Module   |   |                       |
| <b>Model:</b>  | CC2500MPATR   |   |                       |
| <b>FCC ID:</b>   | XAO-CC2500MPATR   |   |                       |
| <b>Test Specification:</b>   | FCC 15.249:2015   |   |                       |
| <b>Test Date:</b>  | 2015-05-15 to 2015-07-07  |   |                       |
| <b>Issue Date:</b>   | 2015-07-07  |   |                       |
| <b>Test Result:</b>  | <i>Pass.</i>  |   |                       |
| <b>Prepared By:</b>  | <b>Reviewed By:</b>   | <b>Approved By:</b>   |                       |
| Bruce Li / Test Engineer   | Lynn Xiao / Technical Manager   | Yong Dai / Technical Manager  |                       |
|   |  |  |                       |
| Date:2015-07-07  | Date:2015-07-07   | Date:2015-07-07   |                       |
| <b>Other Aspects:</b>  |   |   |                       |
| <i>None</i>  |   |   |                       |
| <b>Abbreviations:</b> <i>ok / P = passed; fail / F = failed; n.a. / N = not applicable</i>   |   |   |                       |
| The test result in this test report refers exclusively to the presented test sample. This report shall not be reproduced except in full, without the written approval of GRGT. |   |   |                       |

## **DIRECTIONS OF TEST**

- 1. This station carries out test task according to the national regulation of verifications which can be traced to National Primary Standards and BIPM.**
- 2. The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test result without the written permission of the test laboratory.**
- 3. If there is any objection concerning the test, the client should inform the laboratory within 15 days from the date of receiving the test report.**

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**1. TEST RESULT SUMMARY**

| <b>FCC 15.249:2015</b> |                                      |                         |               |
|------------------------|--------------------------------------|-------------------------|---------------|
| <b>Standard</b>        | <b>Item</b>                          | <b>Limit / Severity</b> | <b>Result</b> |
| <b>FCC 15.249:2015</b> | Antenna Requirement                  | FCC Part 15.203         | PASS          |
|                        | Intentional radiators Field Strength | FCC Part 15.249(a)      | PASS          |
|                        | Radiated Electromagnetic Disturbance | FCC Part 15.249 (d)     | PASS          |
|                        | Conduction Emissions                 | /                       | PASS          |
|                        | Out of Band Emissions                | FCC Part 15.249(d)      | PASS          |

## 2. GENERAL DESCRIPTION OF EUT

### 2.1 APPLICANT

Name: CHAUVET & SONS,INC.  
 Address: 5200 NW 108TH AVENUE SUNRISE,FLORIDA,33351, USA

### 2.2 MANUFACTURER

Name: CHAUVET & SONS,INC.  
 Address: 5200 NW 108TH AVENUE SUNRISE,FLORIDA,33351, USA

### 2.3 BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Equipment: Wireless Module  
 Model No.: CC2500MPATR  
 Trade Name: CHAUVET  
 EUT power supply: DC 1.8V-3.6V  
 Host: Model:2402E  
 Power supply:DC USB 5V  
 Frequency Range: 2409.3MHz~2457.3MHz  
 Type of Modulation: MSK  
 Channels: 16 Channels with 3.2MHz step  
 Antenna Type: Spring antenna on the host  
 Note: /

### 2.4 TEST OPERATION MODES

Test mode: Mode 1:continuous transmission

### 2.5 LOCAL SUPPORTIVE INSTRUMENTS

| Name of Equipment | Manufacturer | Model     | Factor   |
|-------------------|--------------|-----------|--|
| Adapter           | JBL          | F5V-1C-1U | Input:<br>AC 100-240V~50/60Hz<br>Output: DC 5V |

### 3. LABORATORY AND ACCREDITATIONS

#### 3.1 LABORATORY

The tests and measurements refer to this report were performed by EMC Laboratory of Guangzhou GRG Metrology and Test Co., Ltd.

Add. : 163 Pingyun Rd, West of Huangpu Ave, Guangzhou, 510656, P. R. China

Telephone: +86-20-38699959, 38699960, 38699961

Fax : +86-20-38695185

#### 3.2 ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

|               |                           |
|---------------|---------------------------|
| <b>USA</b>    | FCC Listed Lab No. 688188 |
| <b>Canada</b> | Registration No.:8355A-1  |

#### 3.3 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     | Uncertainty |
|-------------------|------------|---------------|-------------|
| Radiated Emission | Horizontal | 30MHz~1000MHz | 4.2dB       |
|                   | Horizontal | 1GHz~18GHz    | 4.2dB       |
|                   | Vertical   | 30MHz~1000MHz | 4.4dB       |
|                   | Vertical   | 1GHz~18GHz    | 4.4dB       |

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

**3.4 LIST OF USED TEST EQUIPMENT AT GRGT**

| Name of Equipment  | Manufacturer                       | Model            | Serial Number | Calibration Due |
|--|------------------------------------|------------------|---------------|-----------------|
| <b>Conducted Emissions</b>   |                                    |                  |               |                 |
| EMI Receiver   | R&S                                | ESU26            | 100526        | 2016-03-08      |
| L.I.S.N  | SCHWARZBECK                        | NSLK 8127        | 8127450       | 2015-08-18      |
| <b>Occupied Bandwidth / carrier frequencies separated/ hopping channel number/ dwell time/ maximum peak output power/100kHz bandwidth of frequency band edge/ Spurious Emissions at Antenna Port/ Restricted Bands</b> |                                    |                  |               |                 |
| Spectrum analyzer  | R&S                                | FSV30            | 001           | 2016-05-08      |
| <b>Spurious Emissions</b>  |                                    |                  |               |                 |
| Receiver   | R&S                                | ESU26            | 100526        | 2016-03-08      |
| Loop antenna   | R&S                                | HFH2-Z2          | 881058/28     | 2016-04-17      |
| Biconical Log-periodic Antenna   | ETS.LINDGREN                       | 3142C            | 00075971      | 2016-04-17      |
| Signal Generator   | Agilent                            | N5183A-540       | 50142096      | 2015-09-28      |
| Biconical antenna  | ELECTRO-METRICS                    | BIA-30S          | 166           | 2016-04-17      |
| log-periodical antenna   | ELECTRO-METRICS                    | LPA-30           | 383           | 2016-04-17      |
| Horn antenna   | ETS.LINDGREN                       | 3117C            | 00075824      | 2015-08-02      |
| Horn antenna   | SCHWARZBECK                        | BBHA9120D        | 752           | 2016-04-17      |
| Per-Amplifier (0.1-26.5GHz)  | Compliance Directions systems Inc. | PAP-0126         | 25002         | 2016-01-02      |
| Semi-anechoic chamber  | ETS                                | 966(RFD-F/A-100) | 3730          | 2016-02-25      |

NOTE: The calibration interval of the above test instruments is 12 months.

## 4. TEST REQUIREMENT

### 4.1 E.U.T. TEST CONDITIONS

**Type of antenna:** spring antenna

**Temperature:** 21.0 °C

**Humidity:** 54 % RH

**Atmospheric Pressure:** 1011 mbar

**Test frequencies:** According to the 15.31(m) Measurements on intentional radiators or receivers, other than TV broadcast receivers, shall be performed and, if required, reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table:

| Frequency range over which device operates | Number of frequencies | Location in the range of operation          |
|--|-----------------------|---|
| 1 MHz or less                              | 1                     | Middle                                      |
| 1 to 10 MHz                                | 2                     | 1 near top and 1 near bottom                |
| More than 10 MHz                           | 3                     | 1 near top, 1 near middle and 1 near bottom |

#### EUT channels and frequencies list:

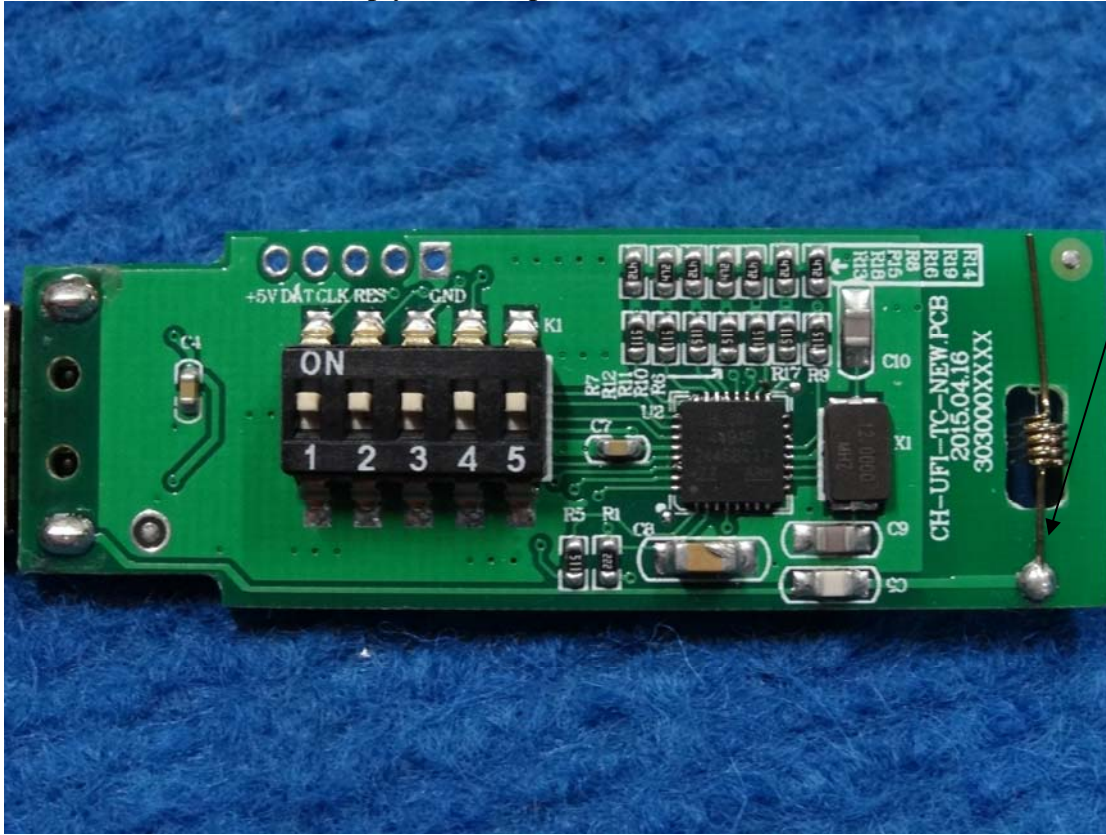
| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---------|-----------------|---------|-----------------|
| 0       | 2409.3          | 8       | 2434.9          |
| 1       | 2412.5          | 9       | 2438.1          |
| 2       | 2415.7          | 10      | 2441.3          |
| 3       | 2418.9          | 11      | 2444.5          |
| 4       | 2422.1          | 12      | 2447.7          |
| 5       | 2425.3          | 13      | 2450.9          |
| 6       | 2428.5          | 14      | 2454.1          |
| 7       | 2431.7          | 15      | 2457.3          |

Test frequency is the lowest channel: 0 channel(2409.3MHz), middle channel: 8 channel(2434.9MHz) and highest channel: 15 channel(2457.3MHz)



### 4.2 ANTENNA REQUIREMENT

The EUT use spring antenna on the host. Antenna gain is 2.0dBi .which accordance 15.203.is considered sufficient to comply with the provisions of this section.



Internal Antenna

## 5. EMISSION TEST

### 5.1 OCCUPIED BANDWIDTH

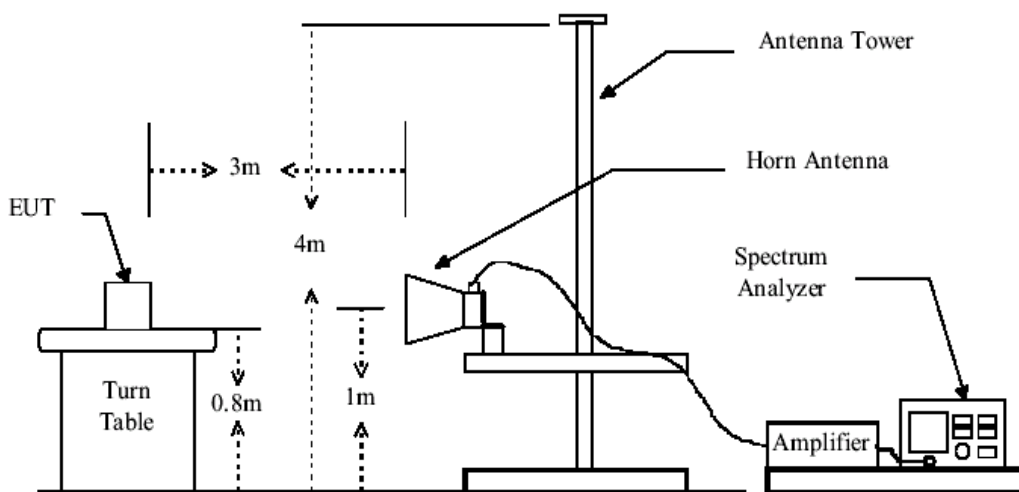
#### 5.1.1 LIMITS

/

#### 5.1.2 TEST PROCEDURES

1. Make the equipment in test mode.
2. Set the spectrum analyzer: Span = approximately 2 to 3 times the 20dB bandwidth, centered on a hopping channel;
3. Set the spectrum analyzer: RBW  $\geq$  1% of the 20dB bandwidth (set 10kHz). VBW  $\geq$  RBW. Sweep = auto; Detector Function = Peak. Trace = Max Hold.
4. Mark the peak frequency and -20dB points bandwidth.
5. Bandwidth value is OBW value.

#### 5.1.3 TEST SETUP

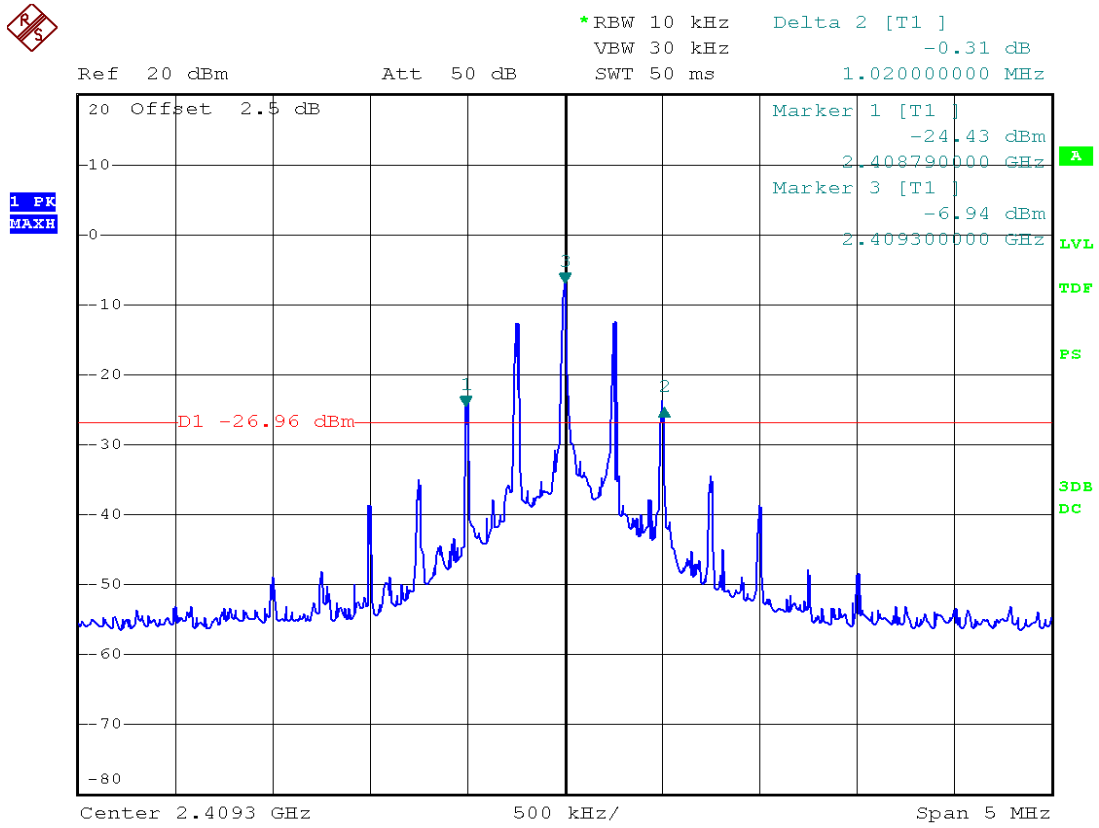


#### 5.1.4 TEST RESULTS

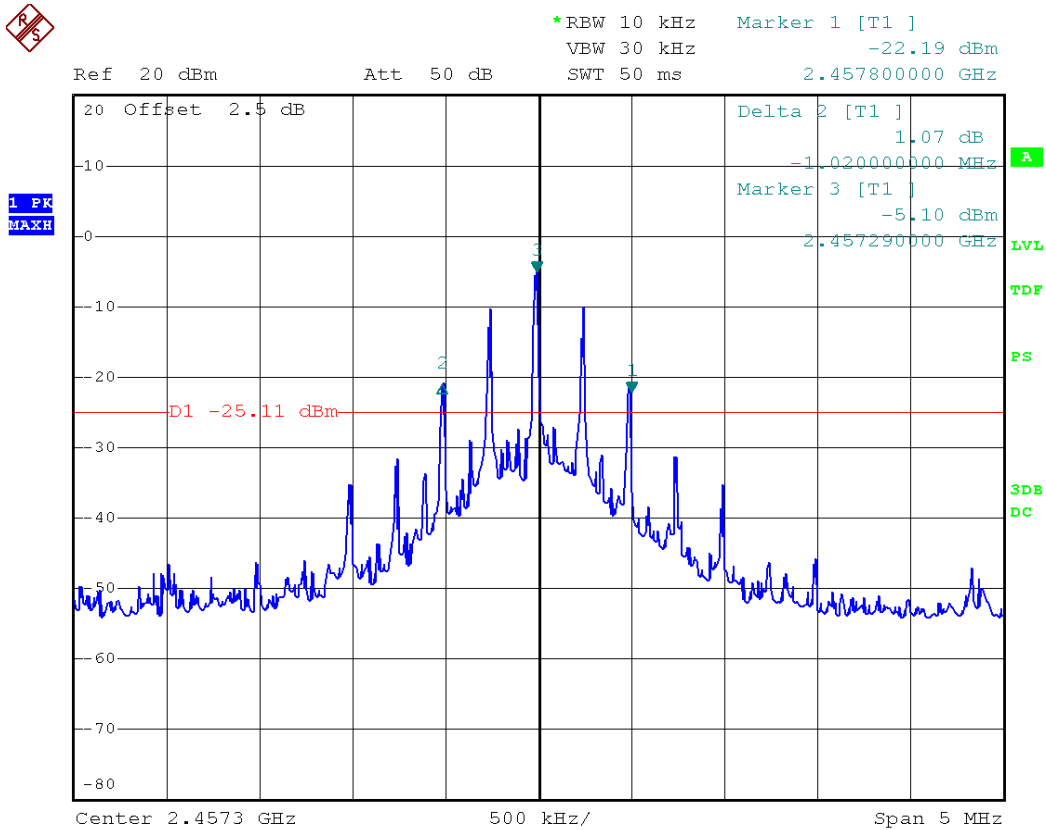
| Frequency (MHz) | 20dB Bandwidth Emission (kHz) | Low Frequency at 20dB OBW (MHz) | High Frequency at 20dB OBW (MHz) |
|-----------------|-------------------------------|---------------------------------|----------------------------------|
| 2409.3          | 1020                          | 2408.79                         | /                                |
| 2457.3          | 1020                          | /                               | 2457.29                          |
| <b>LIMIT</b>    |                               | <b>FL&gt;2400.0</b>             | <b>FH&lt; 2483.5</b>             |

FCC ID: XAO-CC2500MPATR

Refer to attached plots:  
Channel 2409.3MHz



Channel 2457.3MHz



FCC ID: XAO-CC2500MPATR

## 5.2 INTENTIONAL RADIATORS FIELD STRENGTH

### 5.2.1 LIMITS

| Frequency (MHz)             | Field Strength                     |
|-----------------------------|------------------------------------|
| 2400-2483.5 MHz             | 50(millivolts/meter)/93.98dBuV/m   |
| Field Strength of Harmonics | 500(microvolts/meter) /53.98dBuV/m |

### 5.2.2 TEST PROCEDURE

#### Procedure of Test

Radiated emission tests shall be made with the receive or transmit antenna located at a horizontal distance of 3 m plus half of the maximum width of the EUT being tested, measured from the centre of the EUT. The tests shall be performed with the equipment configured as closely as possible to its typical, practical operation. Unless stated otherwise, cables and wiring shall be as specified by the manufacturer and the equipment shall be in its housing (or cabinet) with all covers and access panels in place. Any deviation from normal EUT operating conditions shall be included in the test report.

The EUT (on a non-conductive support structure, where applicable) shall be placed on a remotely operated turntable, to allow the EUT to be rotated. The height of the EUT above the ground plane shall be according to the following requirements.

- Table-top equipment is placed on a non-conductive set-up table with height 0,8 m  $\pm$  0,01 m, ANSI C63.10:2009 specifies the method to determine the impact of the non-conductive set-up table on test results.
- Floor-standing equipment is placed on a non-conductive support, as specified in the applicable product standard. If there are no EUT height placement requirements in the product standard, the EUT shall be placed on a non-conductive support at a height of 5 cm to 15 cm above the ground plane.

Interface cables, loads, and devices should be connected to at least one of each type of the interface ports of the EUT and, where practical, each cable shall be terminated in a device typical for its actual use. Where there are multiple interface ports of the same type, a typical number of these devices shall be connected to devices or loads. It is sufficient to connect only one of the loads, provided that it can be shown, for example by preliminary testing, that the connection of further ports would not significantly increase the level of disturbance (that is, more than 2 dB) or significantly degrade the immunity level.

The test mode(s) described in Item 2.4 were scanned during the preliminary test. After the preliminary scan, we found the test mode described in Item 2.4 producing the highest emission level. The EUT and cable configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for the test.

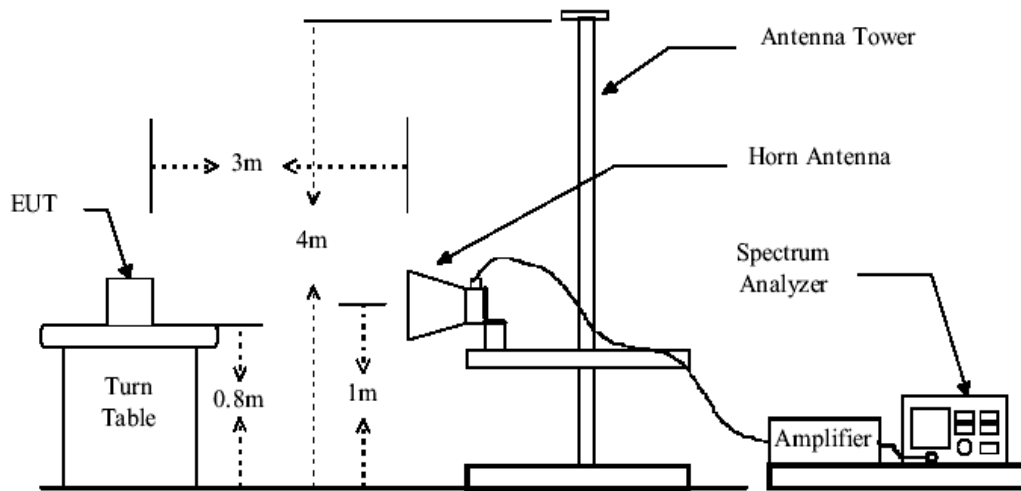
Note: 1. RF Field Strength (dBuV) = 20 log RF Voltage (uV)

2.Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

Set 1MHz RBW/VBW for peak detector at a distance of 3m.

3. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.

### 5.2.3 TEST SETUP



### 5.2.4 TEST RESULTS

#### Average factor measurement

$T_p = 1000\text{ms}$

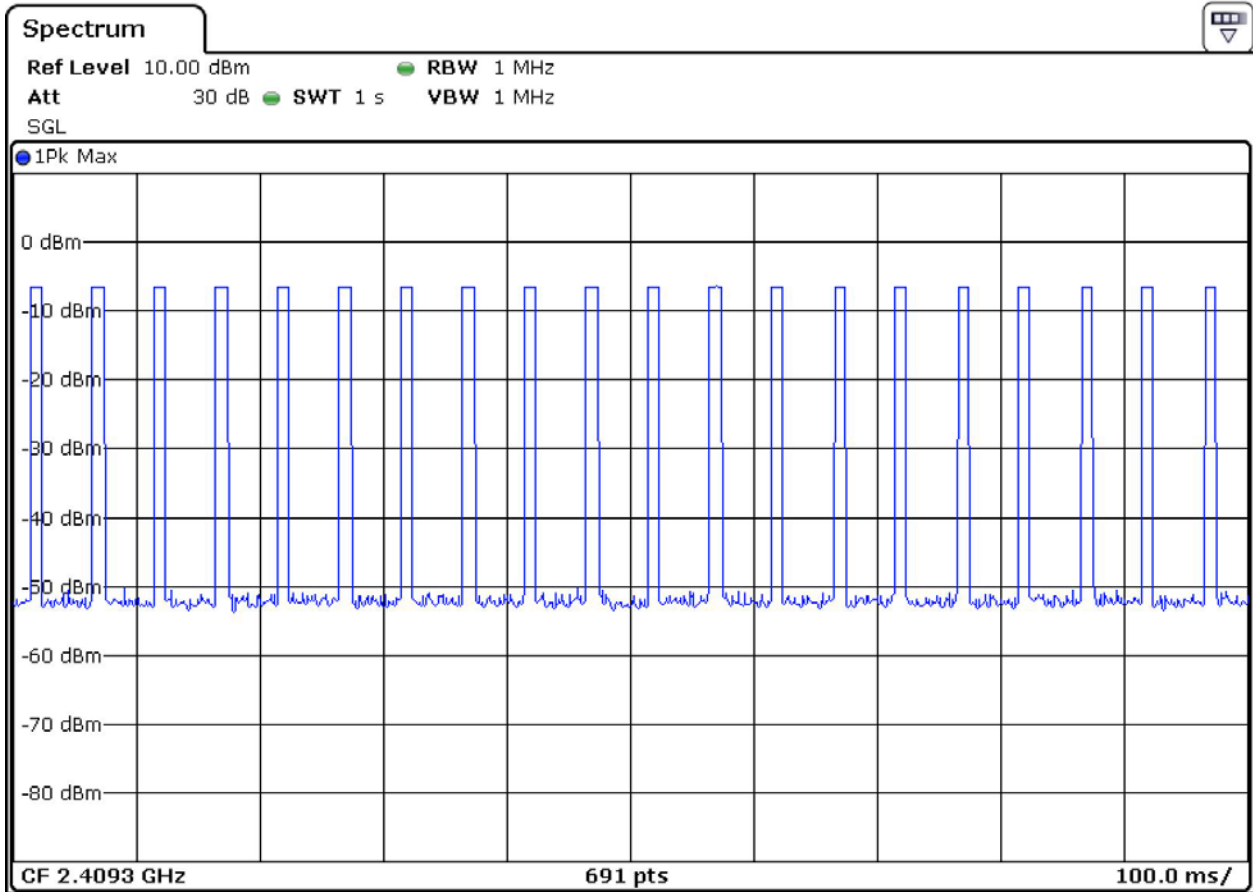
$T_{on1} = 9.13\text{ms}$

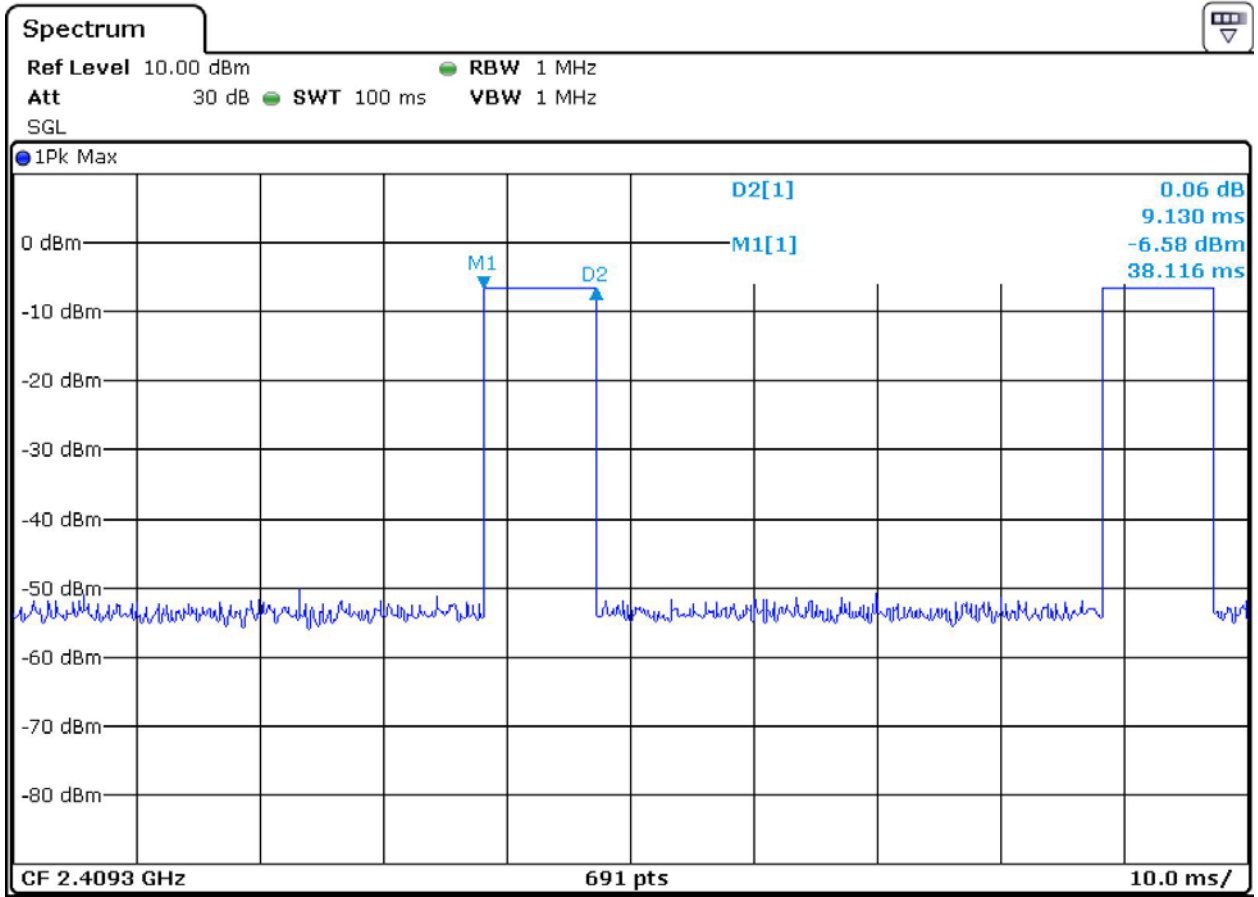
Average Factor =  $20\log(T_{on}/T_p) = 20\log[(9.13*20)/1000] = -14.77$

Average = Peak(dBuV/m)+Average Factor (dB)

Refer to attached plots for detail:

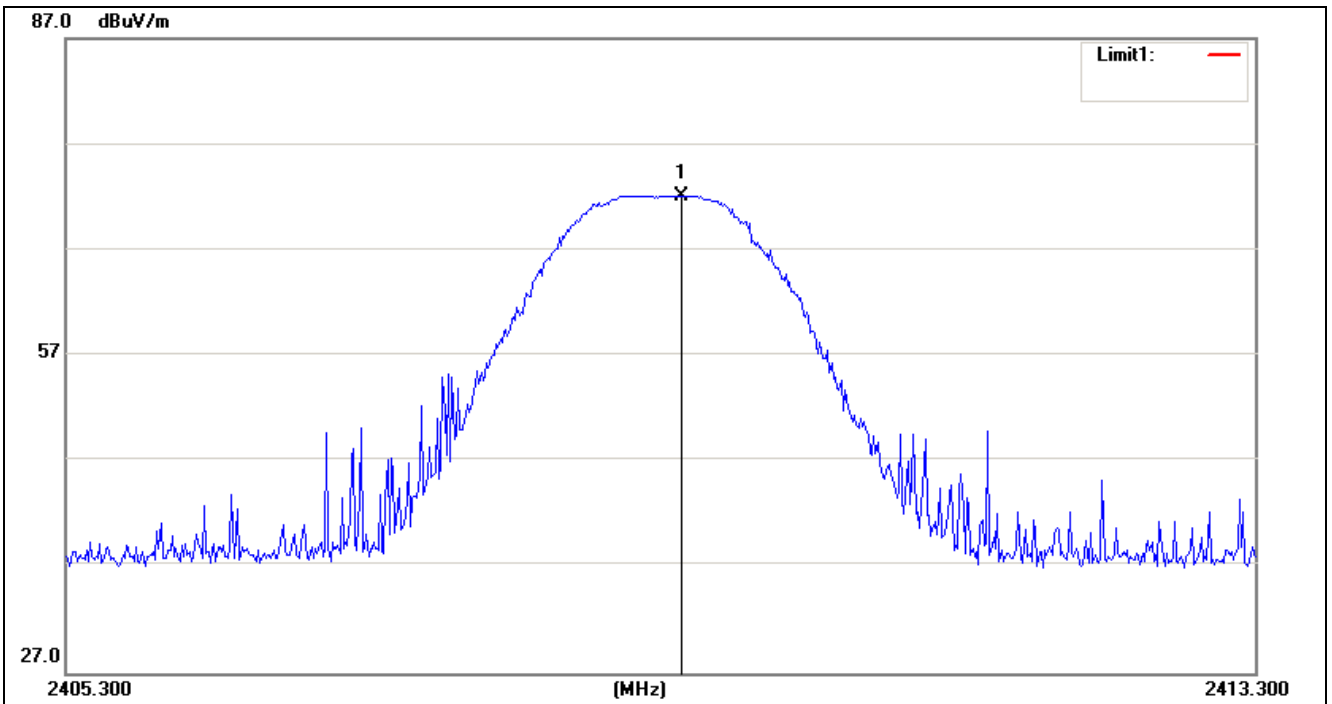
Channel 2409.3MHz:





Channel 2409.3MHz:

|                         |                        |                      |                  |
|-------------------------|------------------------|----------------------|------------------|
| <b>Project No.:</b>     | <b>ZJ20150005-E-1</b>  | <b>Polarization:</b> | <b>Vertical</b>  |
| <b>Standard:</b>        | <b>FCC Part15.249</b>  | <b>Power Source:</b> | <b>DC 5V</b>     |
| <b>Test item:</b>       | <b>Radiation Test</b>  | <b>Date:</b>         | <b>2015-6-25</b> |
| <b>Temp./Hum.(%RH):</b> | <b>21.5/54%RH</b>      | <b>Time:</b>         | <b>9:41:30</b>   |
| <b>EUT:</b>             | <b>Wireless Module</b> | <b>Distance:</b>     | <b>3m</b>        |
| <b>Model:</b>           | <b>CC2500MPATR</b>     | <b>Test Result:</b>  | <b>Pass</b>      |
| <b>Note:</b>            |                        |                      |                  |

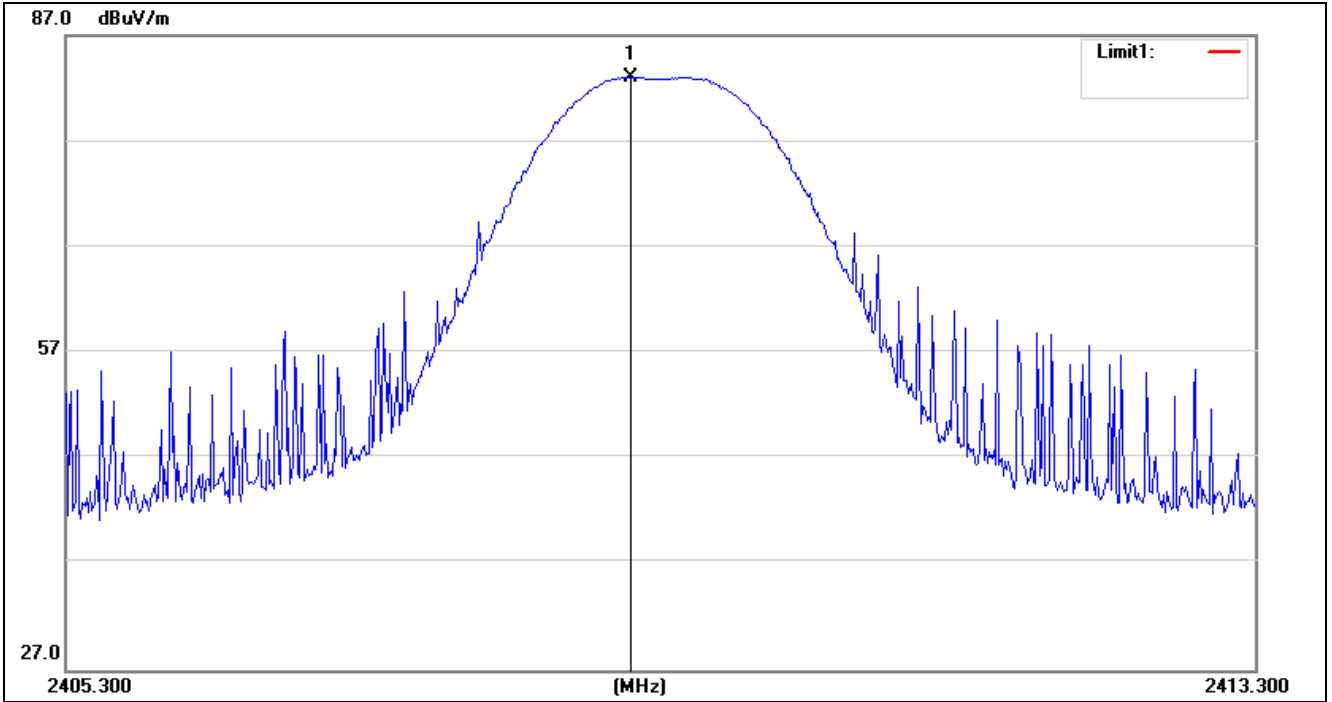


| No. | Frequency (MHz) | Reading (dBuV/m) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-------------|--------|
| 1   | 2409.441        | 61.56            | 10.57                | 72.13           | 113.98         | -41.85      | peak   |

| No. | Frequency (MHz) | Average Factor | Peak dBuV/m | Average (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|----------------|-------------|------------------|----------------|-------------|--------|
| 1   | 2409.441        | -14.77         | 72.13       | 57.36            | 93.98          | -36.62      | AVG    |



|                         |                        |                      |                   |
|-------------------------|------------------------|----------------------|-------------------|
| <b>Project No.:</b>     | <b>ZJ20150005-E-1</b>  | <b>Polarziation:</b> | <b>Horizontal</b> |
| <b>Standard:</b>        | <b>FCC Part15.249</b>  | <b>Power Source:</b> | <b>DC 5V</b>      |
| <b>Test item:</b>       | <b>Radiation Test</b>  | <b>Date:</b>         | <b>2015-6-25</b>  |
| <b>Temp./Hum.(%RH):</b> | <b>21.5/54%RH</b>      | <b>Time:</b>         | <b>9:42:42</b>    |
| <b>EUT:</b>             | <b>Wireless Module</b> | <b>Distance:</b>     | <b>3m</b>         |
| <b>Model:</b>           | <b>CC2500MPATR</b>     | <b>Test Result:</b>  | <b>Pass</b>       |
| <b>Note:</b>            |                        |                      |                   |

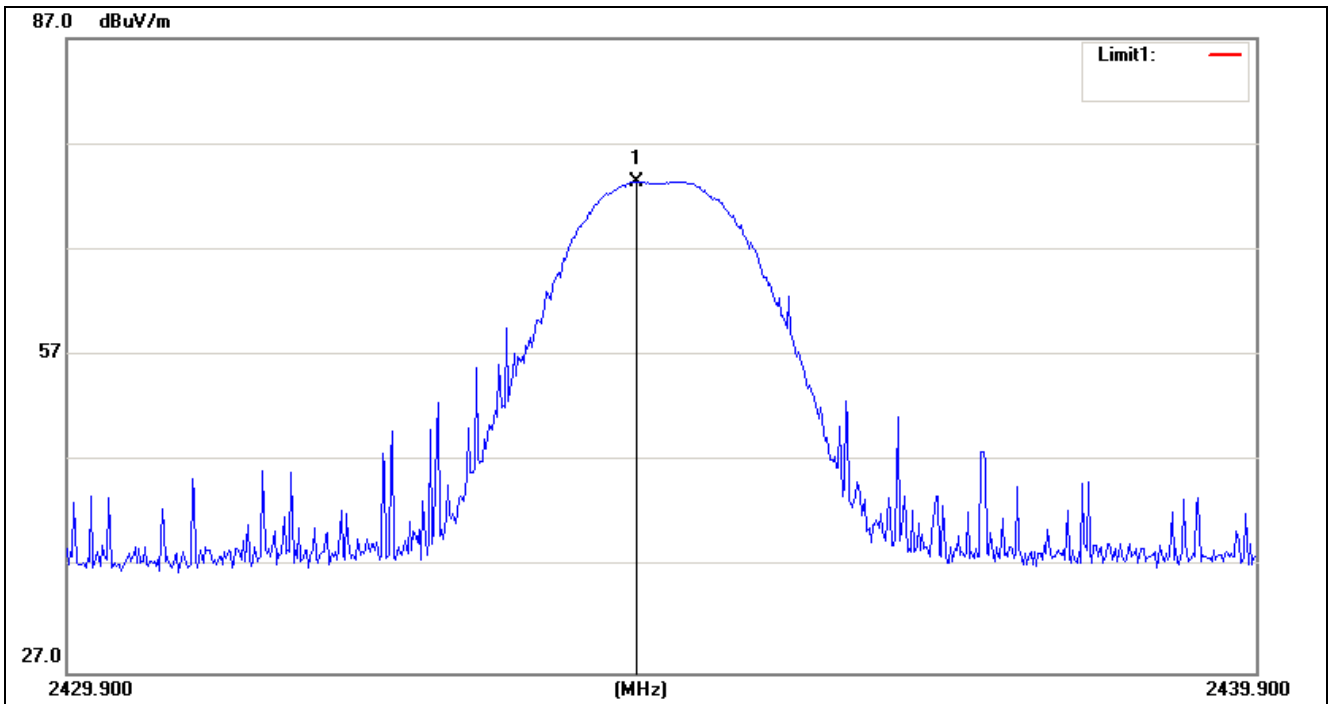


| No. | Frequency (MHz) | Reading (dBuV/m) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-------------|--------|
| 1   | 2409.108        | 72.44            | 10.57                | 83.01           | 113.98         | -30.97      | peak   |

| No. | Frequency (MHz) | Average Factor | Peak dBuV/m | Average (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|----------------|-------------|------------------|----------------|-------------|--------|
| 1   | 2409.108        | -14.77         | 83.01       | 68.24            | 93.98          | -25.74      | AVG    |

Channel 2434.9MHz:

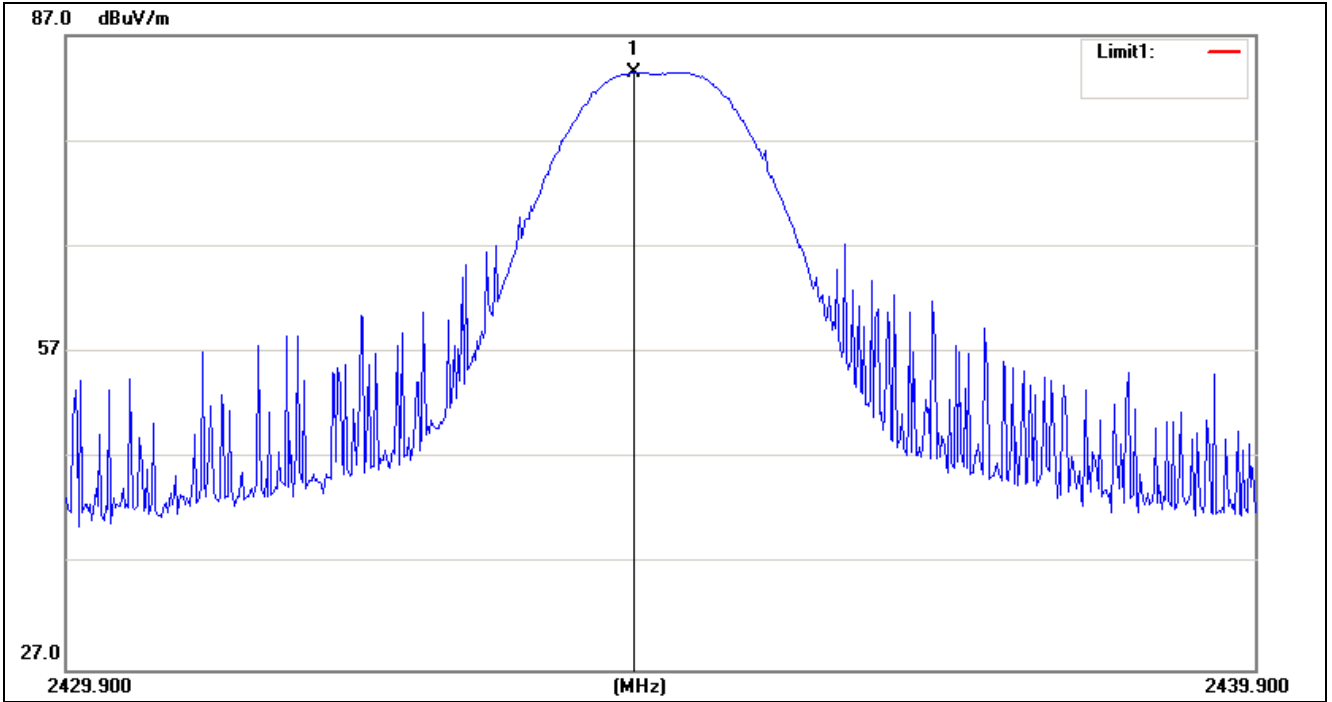
|                         |                        |                      |                  |
|-------------------------|------------------------|----------------------|------------------|
| <b>Project No.:</b>     | <b>ZJ20150005-E-1</b>  | <b>Polarziation:</b> | <b>Vertical</b>  |
| <b>Standard:</b>        | <b>FCC Part15.249</b>  | <b>Power Source:</b> | <b>DC 5V</b>     |
| <b>Test item:</b>       | <b>Radiation Test</b>  | <b>Date:</b>         | <b>2015-6-25</b> |
| <b>Temp./Hum.(%RH):</b> | <b>21.5/54%RH</b>      | <b>Time:</b>         | <b>10:06:47</b>  |
| <b>EUT:</b>             | <b>Wireless Module</b> | <b>Distance:</b>     | <b>3m</b>        |
| <b>Model:</b>           | <b>CC2500MPATR</b>     | <b>Test Result:</b>  | <b>Pass</b>      |
| <b>Note:</b>            |                        |                      |                  |



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-------------|--------|
| 1   | 2434.692        | 62.91            | 10.58                | 73.49           | 113.98         | -40.49      | peak   |

| No. | Frequency (MHz) | Average Factor | Peak dBuV/m | Average (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|----------------|-------------|------------------|----------------|-------------|--------|
| 1   | 2434.692        | -14.77         | 73.49       | 58.72            | 93.98          | -35.26      | AVG    |

|                         |                        |                      |                   |
|-------------------------|------------------------|----------------------|-------------------|
| <b>Project No.:</b>     | <b>ZJ20150005-E-1</b>  | <b>Polarziation:</b> | <b>Horizontal</b> |
| <b>Standard:</b>        | <b>FCC Part15.249</b>  | <b>Power Source:</b> | <b>DC 5V</b>      |
| <b>Test item:</b>       | <b>Radiation Test</b>  | <b>Date:</b>         | <b>2015-6-25</b>  |
| <b>Temp./Hum.(%RH):</b> | <b>21.5/54%RH</b>      | <b>Time:</b>         | <b>10:05:58</b>   |
| <b>EUT:</b>             | <b>Wireless Module</b> | <b>Distance:</b>     | <b>3m</b>         |
| <b>Model:</b>           | <b>CC2500MPATR</b>     | <b>Test Result:</b>  | <b>Pass</b>       |
| <b>Note:</b>            |                        |                      |                   |

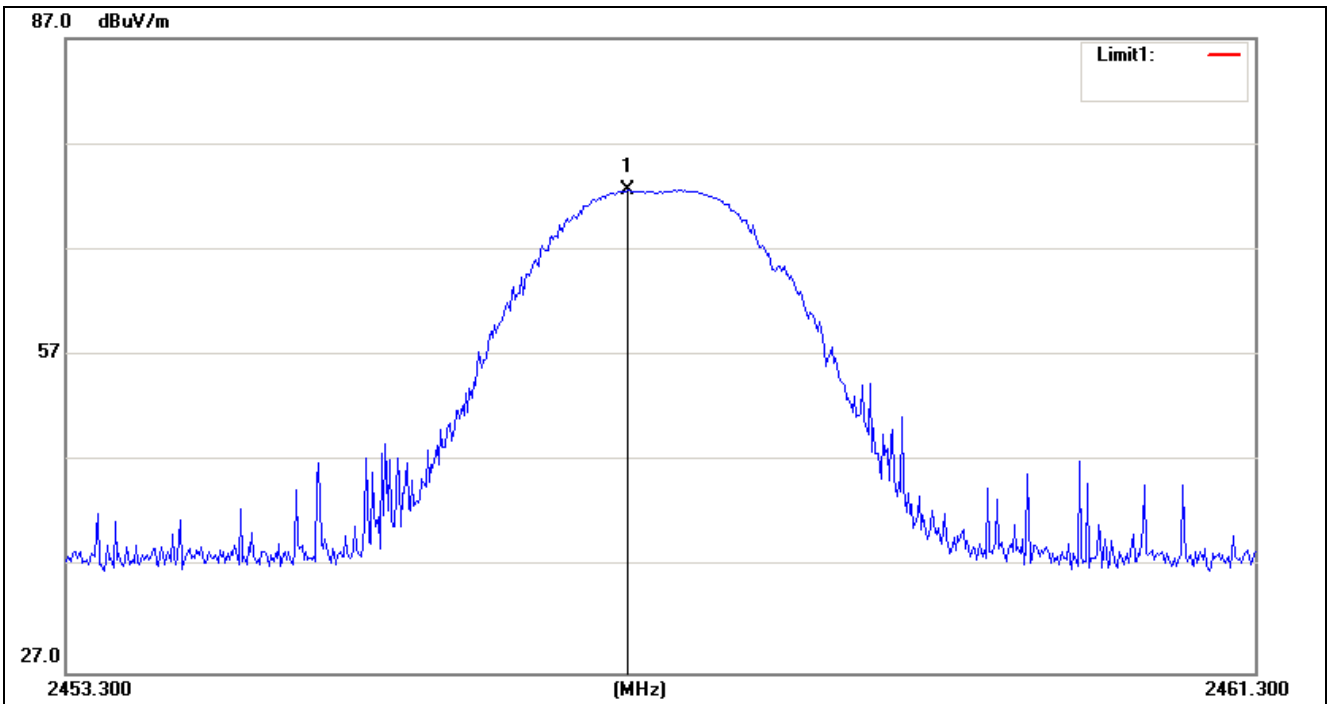


| No. | Frequency (MHz) | Reading (dBuV/m) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-------------|--------|
| 1   | 2434.676        | 72.9             | 10.58                | 83.48           | 113.98         | -30.5       | peak   |

| No. | Frequency (MHz) | Average Factor | Peak dBuV/m | Average (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|----------------|-------------|------------------|----------------|-------------|--------|
| 1   | 2434.676        | -14.77         | 83.48       | 68.71            | 93.98          | -25.27      | AVG    |

Channel 2457.3MHz:

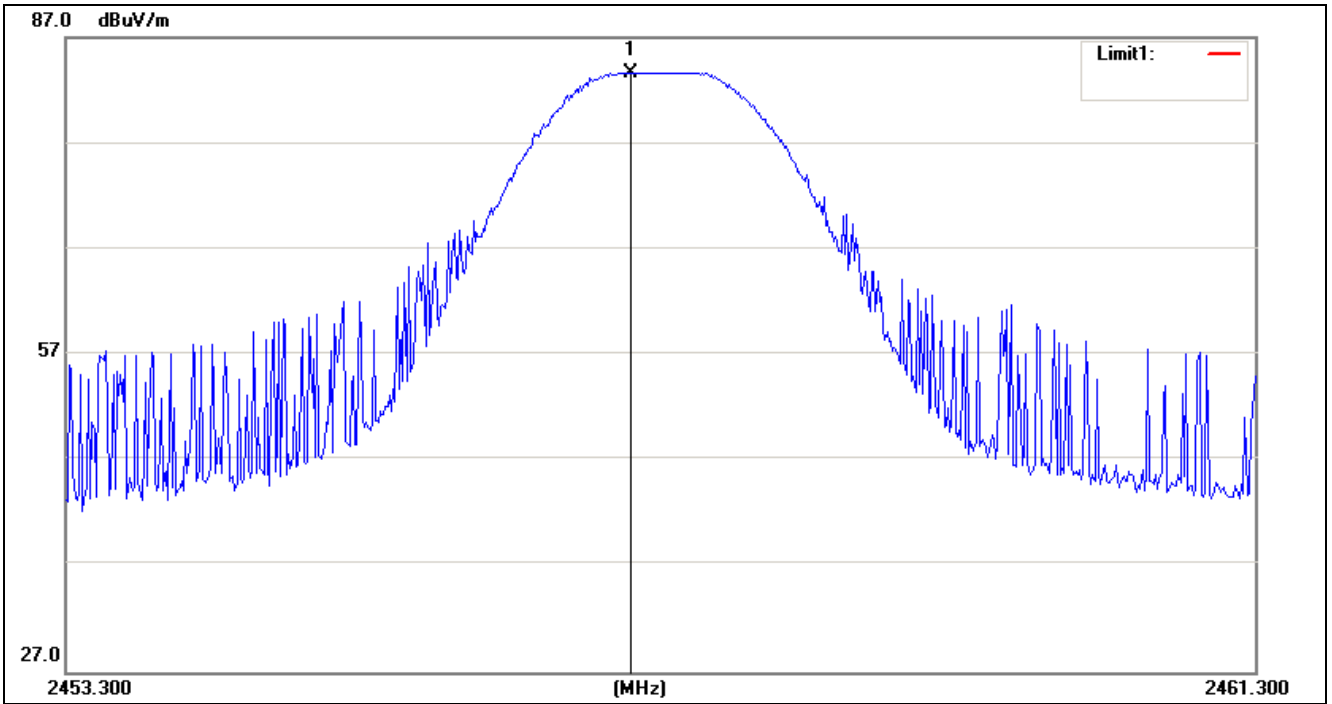
|                         |                        |                      |                  |
|-------------------------|------------------------|----------------------|------------------|
| <b>Project No.:</b>     | <b>ZJ20150005-E-1</b>  | <b>Polarziation:</b> | <b>Vertical</b>  |
| <b>Standard:</b>        | <b>FCC Part15.249</b>  | <b>Power Source:</b> | <b>DC 5V</b>     |
| <b>Test item:</b>       | <b>Radiation Test</b>  | <b>Date:</b>         | <b>2015-6-25</b> |
| <b>Temp./Hum.(%RH):</b> | <b>21.5/54%RH</b>      | <b>Time:</b>         | <b>9:58:11</b>   |
| <b>EUT:</b>             | <b>Wireless Module</b> | <b>Distance:</b>     | <b>3m</b>        |
| <b>Model:</b>           | <b>CC2500MPATR</b>     | <b>Test Result:</b>  | <b>Pass</b>      |
| <b>Note:</b>            |                        |                      |                  |



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-------------|--------|
| 1   | 2457.082        | 62.07            | 10.6                 | 72.67           | 113.98         | -41.31      | peak   |

| No. | Frequency (MHz) | Average Factor | Peak dBuV/m | Average (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|----------------|-------------|------------------|----------------|-------------|--------|
| 1   | 2457.082        | -14.77         | 72.67       | 57.9             | 93.98          | -36.08      | AVG    |

|                         |                        |                      |                   |
|-------------------------|------------------------|----------------------|-------------------|
| <b>Project No.:</b>     | <b>ZJ20150005-E-1</b>  | <b>Polarization:</b> | <b>Horizontal</b> |
| <b>Standard:</b>        | <b>FCC Part15.249</b>  | <b>Power Source:</b> | <b>DC 5V</b>      |
| <b>Test item:</b>       | <b>Radiation Test</b>  | <b>Date:</b>         | <b>2015-6-25</b>  |
| <b>Temp./Hum.(%RH):</b> | <b>21.5/54%RH</b>      | <b>Time:</b>         | <b>9:57:04</b>    |
| <b>EUT:</b>             | <b>Wireless Module</b> | <b>Distance:</b>     | <b>3m</b>         |
| <b>Model:</b>           | <b>CC2500MPATR</b>     | <b>Test Result:</b>  | <b>Pass</b>       |
| <b>Note:</b>            |                        |                      |                   |



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-------------|--------|
| 1   | 2457.104        | 73.07            | 10.6                 | 83.67           | 113.98         | -30.31      | peak   |

| No. | Frequency (MHz) | Average Factor | Peak dBuV/m | Average (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|----------------|-------------|------------------|----------------|-------------|--------|
| 1   | 2457.104        | -14.77         | 83.67       | 68.9             | 93.98          | -25.08      | AVG    |

## 5.3 RADIATED ELECTROMAGNETIC DISTURBANCE

### 5.3.1 LIMITS

| Frequency (MHz) | Quasi-peak(dB $\mu$ V/m) |
|-----------------|--------------------------|
| 30 ~ 88         | 40                       |
| 88~216          | 43.5                     |
| 216 ~ 960       | 46                       |
| Above 960       | 54                       |

**NOTE:** (1) The lower limit shall apply at the transition frequencies.

| Frequency (GHz) | PEAK and AVG(dB $\mu$ V/m) |
|-----------------|----------------------------|
| Above 1G        | 74 PEAK                    |
| Above 1G        | 54 AVG                     |

### 5.3.2 TEST PROCEDURES

#### Procedure of Preliminary Test

Radiated emission tests shall be made with the receive or transmit antenna located at a horizontal distance of 3 m plus half of the maximum width of the EUT being tested, measured from the centre of the EUT. The tests shall be performed with the equipment configured as closely as possible to its typical, practical operation. Unless stated otherwise, cables and wiring shall be as specified by the manufacturer and the equipment shall be in its housing (or cabinet) with all covers and access panels in place. Any deviation from normal EUT operating conditions shall be included in the test report.

The EUT (on a non-conductive support structure, where applicable) shall be placed on a remotely operated turntable, to allow the EUT to be rotated. The height of the EUT above the ground plane shall be according to the following requirements.

- Table-top equipment is placed on a non-conductive set-up table with height 0,8 m  $\pm$  0,01 m, ANSI C63.10:2009 specifies the method to determine the impact of the non-conductive set-up table on test results.
- Floor-standing equipment is placed on a non-conductive support, as specified in the applicable product standard. If there are no EUT height placement requirements in the product standard, the EUT shall be placed on a non-conductive support at a height of 5 cm to 15 cm above the ground plane.

Interface cables, loads, and devices should be connected to at least one of each type of the interface ports of the EUT and, where practical, each cable shall be terminated in a device typical for its actual use. Where there are multiple interface ports of the same type, a typical number of these devices shall be connected to devices or loads. It is sufficient to connect only one of the loads, provided that it can be shown, for example by preliminary testing, that the connection of further ports would not significantly increase the level of disturbance (that is, more than 2 dB) or significantly degrade the immunity level.

The test mode(s) described in Item 2.4 were scanned during the preliminary test. After the preliminary scan, we found the test mode described in Item 2.4 producing the highest emission level. The EUT and cable configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for the final test.

**Procedure of Final Test**

EUT and support equipment were set up on the turntable as per the configuration with highest emission level in the preliminary test. The Analyzer / Receiver scanned from 30MHz to 1000MHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level. Record at least six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and only QP reading is presented. The test data of the worst-case condition(s) was recorded.

**Procedure of Final Test**

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test. A scan was taken on both power lines, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. The test data of the worst-case condition(s) was recorded.

Below 1GHz Set the spectrum analyzer: RBW =100KHz VBW  $\geq$  RBW , Span = enough to catch the trace. Sweep = auto; Detector Function = Peak. Trace = Max,hold.

Above 1GHz Set the spectrum analyzer: RBW =1MHz VBW  $\geq$  RBW , Span = enough to catch the trace. Sweep = auto; Detector Function = Peak. Trace = Max,hold.

**The worst case emissions were reported.**

### 5.3.3 TEST SETUP

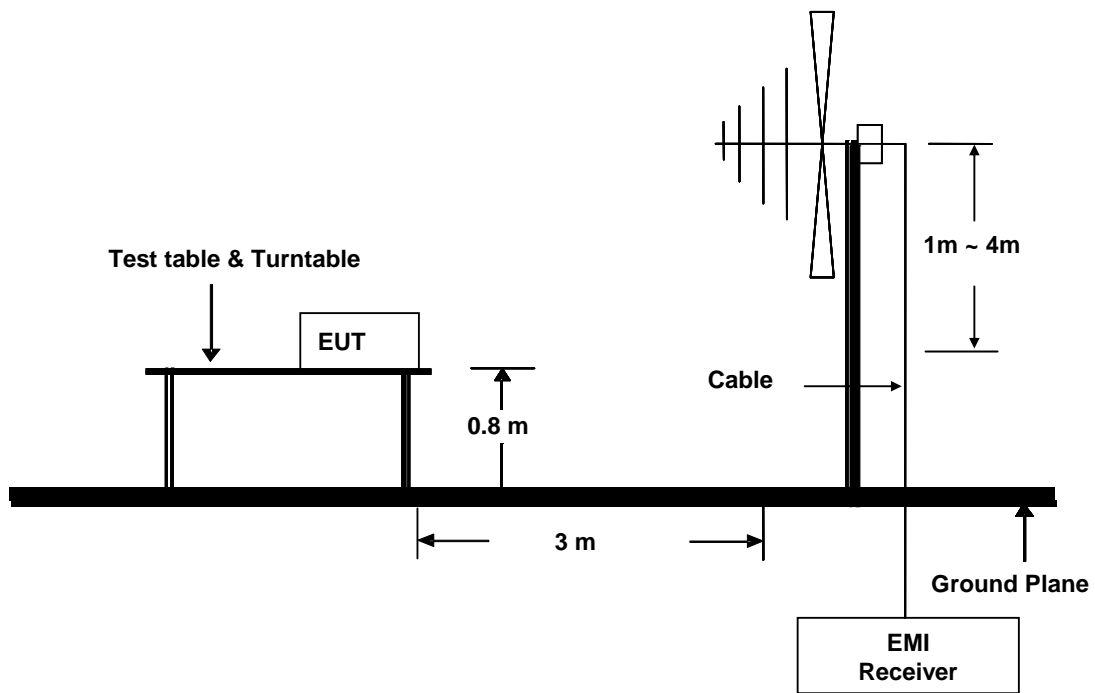


Figure 1. 30MHz to 1GHz radiated emissions test configuration



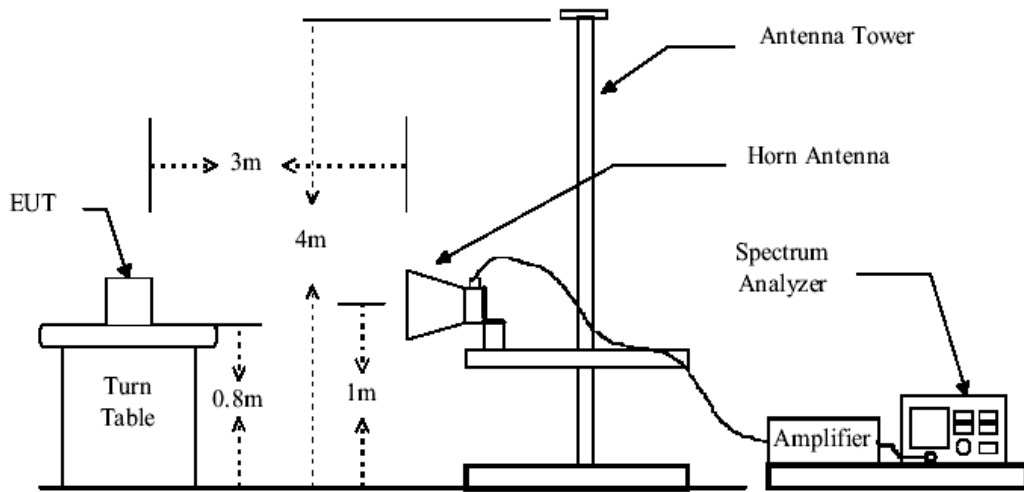


Figure 2 Above 1GHz radiated emissions test configuration

### 5.3.4 TEST RESULTS

#### 1. Low Frequency 2409.3MHz

##### 30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement

| No. | Frequency (MHz) | Reading (dBuV/m) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Antenna polarization |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-----------------|----------------------|
| 1   | 115.5696        | 6.04             | 9.16                 | 15.20           | 43.50          | -28.30          | Vertical             |
| 2   | 139.9011        | 14.51            | 9.19                 | 23.70           | 43.50          | -19.80          | Vertical             |
| 3   | 168.4062        | 12.86            | 10.54                | 23.40           | 43.50          | -20.10          | Vertical             |
| 4   | 193.8076        | 7.37             | 11.43                | 18.80           | 43.50          | -24.70          | Vertical             |
| 5   | 231.9889        | 4.51             | 12.99                | 17.50           | 46.00          | -28.50          | Vertical             |
| 6   | 406.9286        | 5.26             | 18.24                | 23.50           | 46.00          | -22.50          | Vertical             |
| 7   | 117.5344        | 10.35            | 9.05                 | 19.40           | 43.50          | -24.10          | Horizontal           |
| 8   | 145.5140        | 16.80            | 9.70                 | 26.50           | 43.50          | -17.00          | Horizontal           |
| 9   | 170.3095        | 18.06            | 10.54                | 28.60           | 43.50          | -14.90          | Horizontal           |
| 10  | 184.2495        | 19.56            | 11.24                | 30.80           | 43.50          | -12.70          | Horizontal           |
| 11  | 259.5837        | 6.78             | 13.92                | 20.70           | 46.00          | -25.30          | Horizontal           |
| 12  | 363.6705        | 7.00             | 17.50                | 24.50           | 46.00          | -21.50          | Horizontal           |

##### 1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Vertical:

| No. | Frequency (MHz) | Reading (dBuV/m) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Remark: |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-----------------|---------|
| 1   | 1326.511        | 31.99            | 10.58                | 42.57           | 74.00          | -31.43          | peak    |
| 2   | 1326.511        | 18.79            | 10.58                | 29.37           | 54.00          | -24.63          | AVG     |
| 3   | 1711.402        | 40.45            | 9.84                 | 50.29           | 74.00          | -23.71          | peak    |
| 4   | 1711.402        | 24.37            | 9.84                 | 34.21           | 54.00          | -19.79          | AVG     |
| 5   | 1912.633        | 39.36            | 9.96                 | 49.32           | 74.00          | -24.68          | peak    |
| 6   | 1912.633        | 17.38            | 9.96                 | 27.34           | 54.00          | -26.66          | AVG     |
| 7   | 6804.951        | 26.25            | 20.10                | 46.35           | 74.00          | -27.65          | peak    |
| 8   | 6804.951        | 13.13            | 20.10                | 33.23           | 54.00          | -20.77          | AVG     |
| 9   | 11538.614       | 25.77            | 29.87                | 55.64           | 74.00          | -18.36          | peak    |
| 10  | 11538.614       | 13.06            | 29.87                | 42.93           | 54.00          | -11.07          | AVG     |
| 11  | 14212.750       | 25.32            | 31.59                | 56.91           | 74.00          | -17.09          | peak    |
| 12  | 14212.750       | 13.45            | 31.59                | 45.04           | 54.00          | -8.96           | AVG     |

FCC ID: XAO-CC2500MPATR

Horizontal:

| No. | Frequency (MHz) | Reading (dBuV/m) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Remark: |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-----------------|---------|
| 1   | 1711.401        | 40.28            | 9.84                 | 50.12           | 74.00          | -23.88          | peak    |
| 2   | 1711.401        | 16.53            | 9.84                 | 26.37           | 54.00          | -27.63          | AVG     |
| 3   | 1912.633        | 36.04            | 9.96                 | 46.00           | 74.00          | -28.00          | peak    |
| 4   | 1912.633        | 16.32            | 9.96                 | 26.28           | 54.00          | -27.72          | AVG     |
| 5   | 2147.450        | 33.06            | 10.21                | 43.27           | 74.00          | -30.73          | peak    |
| 6   | 2147.450        | 16.47            | 10.21                | 26.68           | 54.00          | -27.32          | AVG     |
| 7   | 7892.198        | 24.58            | 23.40                | 47.98           | 74.00          | -26.02          | peak    |
| 8   | 7892.198        | 13.52            | 23.40                | 36.92           | 54.00          | -17.08          | AVG     |
| 9   | 11118.864       | 24.97            | 29.93                | 54.90           | 74.00          | -19.10          | peak    |
| 10  | 11118.864       | 13.38            | 29.93                | 43.31           | 54.00          | -10.69          | AVG     |
| 11  | 13887.365       | 26.18            | 31.47                | 57.65           | 74.00          | -16.35          | peak    |
| 12  | 13887.365       | 13.64            | 31.47                | 45.11           | 54.00          | -8.89           | AVG     |

The field strength is calculated by adding the Antenna Factor. Correct Factor.

The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Correct Factor

## 2. Middle Frequency 2434.9MHz

## 30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement

| No. | Frequency (MHz) | Reading (dBuV/m) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Antenna polarization |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-----------------|----------------------|
| 1   | 89.2442         | 4.36             | 9.54                 | 13.90           | 43.50          | -29.60          | Vertical             |
| 2   | 103.2840        | 4.87             | 9.83                 | 14.70           | 43.50          | -28.80          | Vertical             |
| 3   | 136.0250        | 13.32            | 8.98                 | 22.30           | 43.50          | -21.20          | Vertical             |
| 4   | 143.8876        | 15.15            | 9.55                 | 24.70           | 43.50          | -18.80          | Vertical             |
| 5   | 161.9103        | 12.84            | 10.66                | 23.50           | 43.50          | -20.00          | Vertical             |
| 6   | 400.1259        | 6.01             | 18.19                | 24.20           | 46.00          | -21.80          | Vertical             |
| 7   | 117.5344        | 10.35            | 9.05                 | 19.40           | 43.50          | -24.10          | Horizontal           |
| 8   | 139.9011        | 17.31            | 9.19                 | 26.50           | 43.50          | -17.00          | Horizontal           |
| 9   | 176.1497        | 19.86            | 10.84                | 30.70           | 43.50          | -12.80          | Horizontal           |
| 10  | 184.2495        | 19.96            | 11.24                | 31.20           | 43.50          | -12.30          | Horizontal           |
| 11  | 259.5837        | 6.68             | 13.92                | 20.60           | 46.00          | -25.40          | Horizontal           |
| 12  | 363.6705        | 7.30             | 17.50                | 24.80           | 46.00          | -21.20          | Horizontal           |

## 1~25 GHz Harmonics &amp; Spurious Emissions. Peak &amp; Average Measurement

Vertical:

| No. | Frequency (MHz) | Reading (dBuV/m) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Remark: |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-----------------|---------|
| 1   | 1102.160        | 43.20            | 9.38                 | 52.58           | 74.00          | -21.42          | peak    |
| 2   | 1102.160        | 18.60            | 9.38                 | 27.98           | 54.00          | -26.02          | AVG     |
| 3   | 1719.347        | 41.41            | 9.85                 | 51.26           | 74.00          | -22.74          | peak    |
| 4   | 1719.347        | 25.41            | 9.85                 | 35.26           | 54.00          | -18.74          | AVG     |
| 5   | 1912.633        | 40.01            | 9.96                 | 49.97           | 74.00          | -24.03          | peak    |
| 6   | 1912.633        | 17.27            | 9.96                 | 27.23           | 54.00          | -26.77          | AVG     |
| 7   | 8618.256        | 25.14            | 25.22                | 50.36           | 74.00          | -23.64          | peak    |
| 8   | 8618.256        | 12.66            | 25.22                | 37.88           | 54.00          | -16.12          | AVG     |
| 9   | 11067.480       | 26.03            | 29.94                | 55.97           | 74.00          | -18.03          | peak    |
| 10  | 11067.480       | 13.34            | 29.94                | 43.28           | 54.00          | -10.72          | AVG     |
| 11  | 14147.069       | 26.43            | 31.61                | 58.04           | 74.00          | -15.96          | peak    |
| 12  | 14147.069       | 13.49            | 31.61                | 45.10           | 54.00          | -8.90           | AVG     |

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Horizontal:

| No. | Frequency (MHz) | Reading (dBuV/m) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Remark: |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-----------------|---------|
| 1   | 1626.386        | 31.58            | 9.78                 | 41.36           | 74.00          | -32.64          | peak    |
| 2   | 1626.386        | 16.70            | 9.78                 | 26.48           | 54.00          | -27.52          | AVG     |
| 3   | 2147.450        | 34.36            | 10.21                | 44.57           | 74.00          | -29.43          | peak    |
| 4   | 2147.450        | 18.18            | 10.21                | 28.39           | 54.00          | -25.61          | AVG     |
| 5   | 3541.455        | 29.79            | 11.14                | 40.93           | 74.00          | -33.07          | peak    |
| 6   | 3541.455        | 17.16            | 11.14                | 28.30           | 54.00          | -25.70          | AVG     |
| 7   | 6557.402        | 25.48            | 19.77                | 45.25           | 74.00          | -28.75          | peak    |
| 8   | 6557.402        | 13.72            | 19.77                | 33.49           | 54.00          | -20.51          | AVG     |
| 9   | 10864.310       | 24.87            | 29.61                | 54.48           | 74.00          | -19.52          | peak    |
| 10  | 10864.310       | 12.88            | 29.61                | 42.49           | 54.00          | -11.51          | AVG     |
| 11  | 13887.365       | 26.71            | 31.47                | 58.18           | 74.00          | -15.82          | peak    |
| 12  | 13887.365       | 13.46            | 31.47                | 44.93           | 54.00          | -9.07           | AVG     |

The field strength is calculated by adding the Antenna Factor. Correct Factor.

The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Correct Factor

## 3. High Frequency 2457.3MHz

## 30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement

| No. | Frequency (MHz) | Reading (dBuV/m) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Antenna polarization |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-----------------|----------------------|
| 1   | 131.5150        | 11.05            | 8.75                 | 19.80           | 43.50          | -23.70          | Vertical             |
| 2   | 137.5622        | 15.24            | 9.06                 | 24.30           | 43.50          | -19.20          | Vertical             |
| 3   | 149.6605        | 14.70            | 10.10                | 24.80           | 43.50          | -18.70          | Vertical             |
| 4   | 170.3095        | 13.16            | 10.54                | 23.70           | 43.50          | -19.80          | Vertical             |
| 5   | 186.3318        | 10.78            | 11.32                | 22.10           | 43.50          | -21.40          | Vertical             |
| 6   | 367.7807        | 3.92             | 17.58                | 21.50           | 46.00          | -24.50          | Vertical             |
| 7   | 117.5345        | 9.55             | 9.05                 | 18.60           | 43.50          | -24.90          | Horizontal           |
| 8   | 145.5140        | 17.10            | 9.70                 | 26.80           | 43.50          | -16.70          | Horizontal           |
| 9   | 168.4062        | 19.56            | 10.54                | 30.10           | 43.50          | -13.40          | Horizontal           |
| 10  | 178.1407        | 20.43            | 10.97                | 31.40           | 43.50          | -12.10          | Horizontal           |
| 11  | 190.5677        | 18.74            | 11.46                | 30.20           | 43.50          | -13.30          | Horizontal           |
| 12  | 363.6705        | 6.60             | 17.50                | 24.10           | 46.00          | -21.90          | Horizontal           |

## 1~25 GHz Harmonics &amp; Spurious Emissions. Peak &amp; Average Measurement

Vertical:

| No. | Frequency (MHz) | Reading (dBuV/m) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Remark: |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-----------------|---------|
| 1   | 1912.633        | 40.41            | 9.96                 | 50.37           | 74.00          | -23.63          | peak    |
| 2   | 1912.633        | 17.00            | 9.96                 | 26.96           | 54.00          | -27.04          | AVG     |
| 3   | 2050.248        | 37.31            | 10.09                | 47.40           | 74.00          | -26.60          | peak    |
| 4   | 2050.248        | 15.36            | 10.09                | 25.45           | 54.00          | -28.55          | AVG     |
| 5   | 2942.494        | 29.41            | 10.39                | 39.80           | 74.00          | -34.20          | peak    |
| 6   | 2942.494        | 15.69            | 10.39                | 26.08           | 54.00          | -27.92          | AVG     |
| 7   | 4852.597        | 26.74            | 15.15                | 41.89           | 74.00          | -32.11          | peak    |
| 8   | 4852.597        | 15.34            | 15.15                | 30.49           | 54.00          | -23.51          | AVG     |
| 9   | 11274.451       | 25.20            | 29.93                | 55.13           | 74.00          | -18.87          | peak    |
| 10  | 11274.451       | 13.39            | 29.93                | 43.32           | 54.00          | -10.68          | AVG     |
| 11  | 14147.069       | 25.05            | 31.61                | 56.66           | 74.00          | -17.34          | peak    |
| 12  | 14147.069       | 13.41            | 31.61                | 45.02           | 54.00          | -8.98           | AVG     |

FCC ID: XAO-CC2500MPATR

Horizontal:

| No. | Frequency (MHz) | Reading (dBuV/m) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Remark: |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-----------------|---------|
| 1   | 1695.620        | 33.79            | 9.83                 | 43.62           | 74.00          | -30.38          | peak    |
| 2   | 1695.620        | 16.64            | 9.83                 | 26.47           | 54.00          | -27.53          | AVG     |
| 3   | 1903.794        | 35.87            | 9.97                 | 45.84           | 74.00          | -28.16          | peak    |
| 4   | 1903.794        | 16.39            | 9.97                 | 26.36           | 54.00          | -27.64          | AVG     |
| 5   | 3867.258        | 28.46            | 12.82                | 41.28           | 74.00          | -32.72          | peak    |
| 6   | 3867.258        | 17.25            | 12.82                | 30.07           | 54.00          | -23.93          | AVG     |
| 7   | 6964.394        | 24.56            | 20.32                | 44.88           | 74.00          | -29.12          | peak    |
| 8   | 6964.394        | 13.65            | 20.32                | 33.97           | 54.00          | -20.03          | AVG     |
| 9   | 11222.348       | 24.75            | 29.92                | 54.67           | 74.00          | -19.33          | peak    |
| 10  | 11222.348       | 13.29            | 29.92                | 43.21           | 54.00          | -10.79          | AVG     |
| 11  | 14081.691       | 26.37            | 31.62                | 57.99           | 74.00          | -16.01          | peak    |
| 12  | 14081.691       | 13.45            | 31.62                | 45.07           | 54.00          | -8.93           | AVG     |

Remark:

- 1). No any other emissions level which are attenuated less than 20dB below the limit.  
According to 15.31(o), The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part. Hence there no other emissions have been reported.
- 2). As shown in Section, for frequencies above 1000 MHz. the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.
- 3). The test only perform the EUT in transmitting status since the test frequencies were over 1GHz only required transmitting status.

**Test result: The unit does meet the FCC requirements.**

## 5.4 OUT OF BAND EMISSIONS

### 5.4.1 LIMITS

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

### 5.4.2 TEST PROCEDURES

#### Procedure of Test

Radiated emission tests shall be made with the receive or transmit antenna located at a horizontal distance of 3 m plus half of the maximum width of the EUT being tested, measured from the centre of the EUT. The tests shall be performed with the equipment configured as closely as possible to its typical, practical operation. Unless stated otherwise, cables and wiring shall be as specified by the manufacturer and the equipment shall be in its housing (or cabinet) with all covers and access panels in place. Any deviation from normal EUT operating conditions shall be included in the test report.

The EUT (on a non-conductive support structure, where applicable) shall be placed on a remotely operated turntable, to allow the EUT to be rotated. The height of the EUT above the ground plane shall be according to the following requirements.

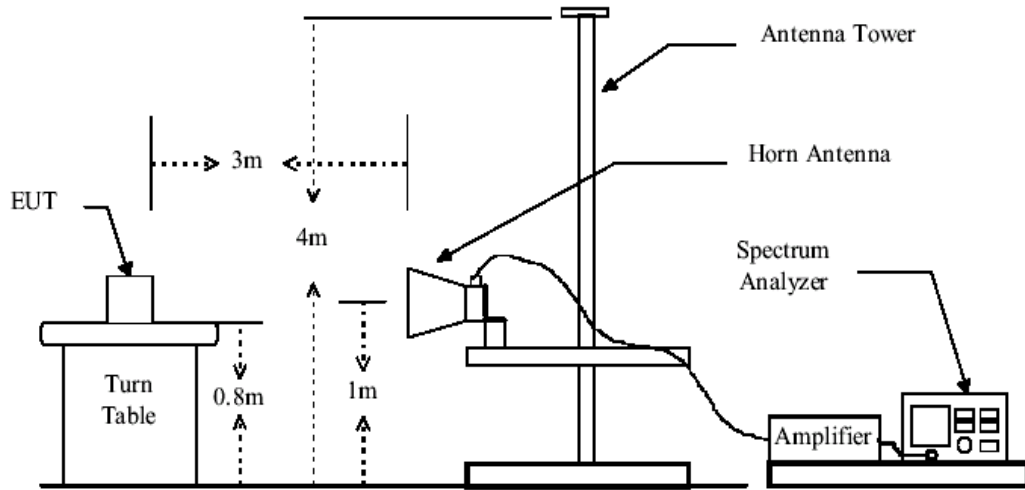
- Table-top equipment is placed on a non-conductive set-up table with height  $0,8\text{ m} \pm 0,01\text{ m}$ , ANSI C63.10:2009 specifies the method to determine the impact of the non-conductive set-up table on test results.
- Floor-standing equipment is placed on a non-conductive support, as specified in the applicable product standard. If there are no EUT height placement requirements in the product standard, the EUT shall be placed on a non-conductive support at a height of 5 cm to 15 cm above the ground plane.

Interface cables, loads, and devices should be connected to at least one of each type of the interface ports of the EUT and, where practical, each cable shall be terminated in a device typical for its actual use. Where there are multiple interface ports of the same type, a typical number of these devices shall be connected to devices or loads. It is sufficient to connect only one of the loads, provided that it can be shown, for example by preliminary testing, that the connection of further ports would not significantly increase the level of disturbance (that is, more than 2 dB) or significantly degrade the immunity level.

The test mode(s) described in Item 2.4 were scanned during the preliminary test. After the preliminary scan, we found the test mode described in Item 2.4 producing the highest emission level. The EUT and cable configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for the test.



### 5.4.3 TEST SETUP

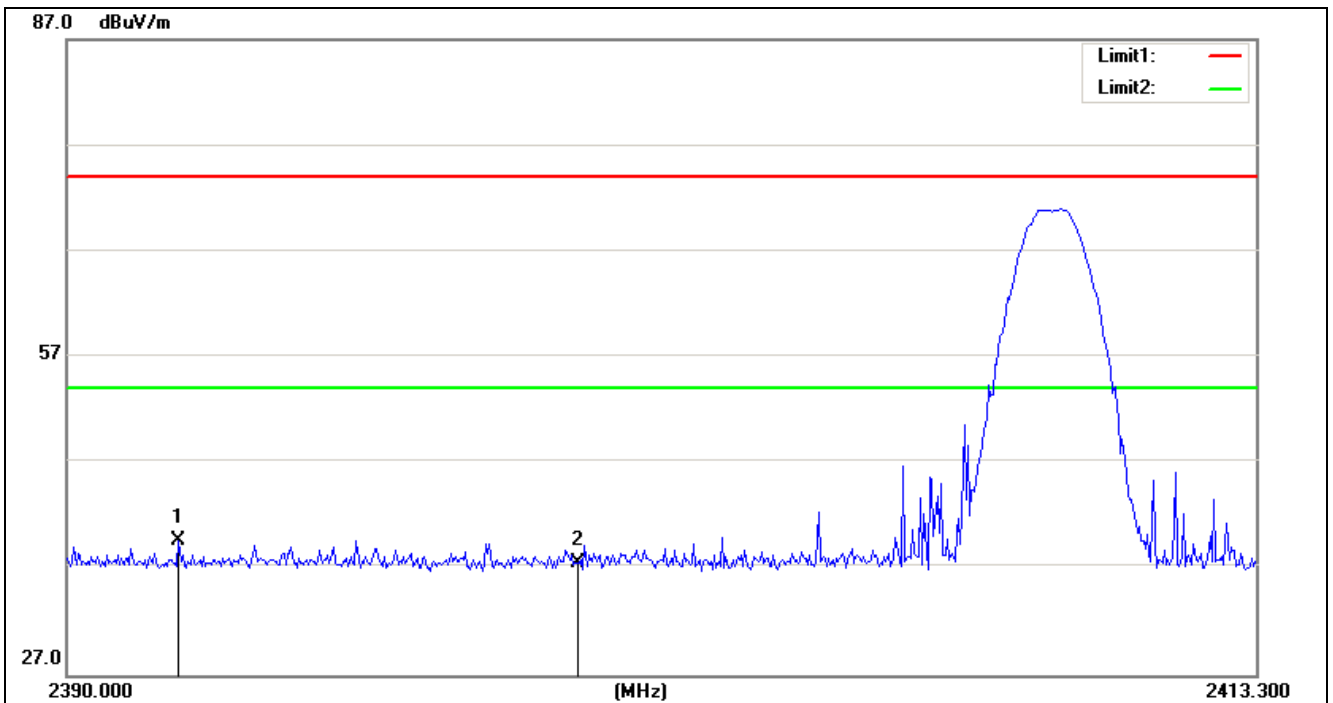


### 5.4.4 TEST RESULTS

The field strength was measured with an EMI measuring receiver and 1 MHz RBW / VBW for peak and with 1MHz RBW / 10Hz VBW for average at a distance of 3m.

**The lowest channel Measurement:**

|                         |                                |                      |                  |
|-------------------------|--------------------------------|----------------------|------------------|
| <b>Project No.:</b>     | <b>ZJ20150005-E-1</b>          | <b>Polarziation:</b> | <b>Vertical</b>  |
| <b>Standard:</b>        | <b>(RE)FCC PART 15 class B</b> | <b>Power Source:</b> | <b>DC 5V</b>     |
|                         | <b>3m_PEAK</b>                 |                      |                  |
| <b>Test item:</b>       | <b>Radiation Test</b>          | <b>Date:</b>         | <b>2015-6-25</b> |
| <b>Temp./Hum.(%RH):</b> | <b>21.5/54%RH</b>              | <b>Time:</b>         | <b>9:44:26</b>   |
| <b>EUT:</b>             | <b>Wireless Module</b>         | <b>Distance:</b>     | <b>3m</b>        |
| <b>Model:</b>           | <b>CC2500MPATR</b>             | <b>Test Result:</b>  | <b>Pass</b>      |
| <b>Note:</b>            |                                |                      |                  |

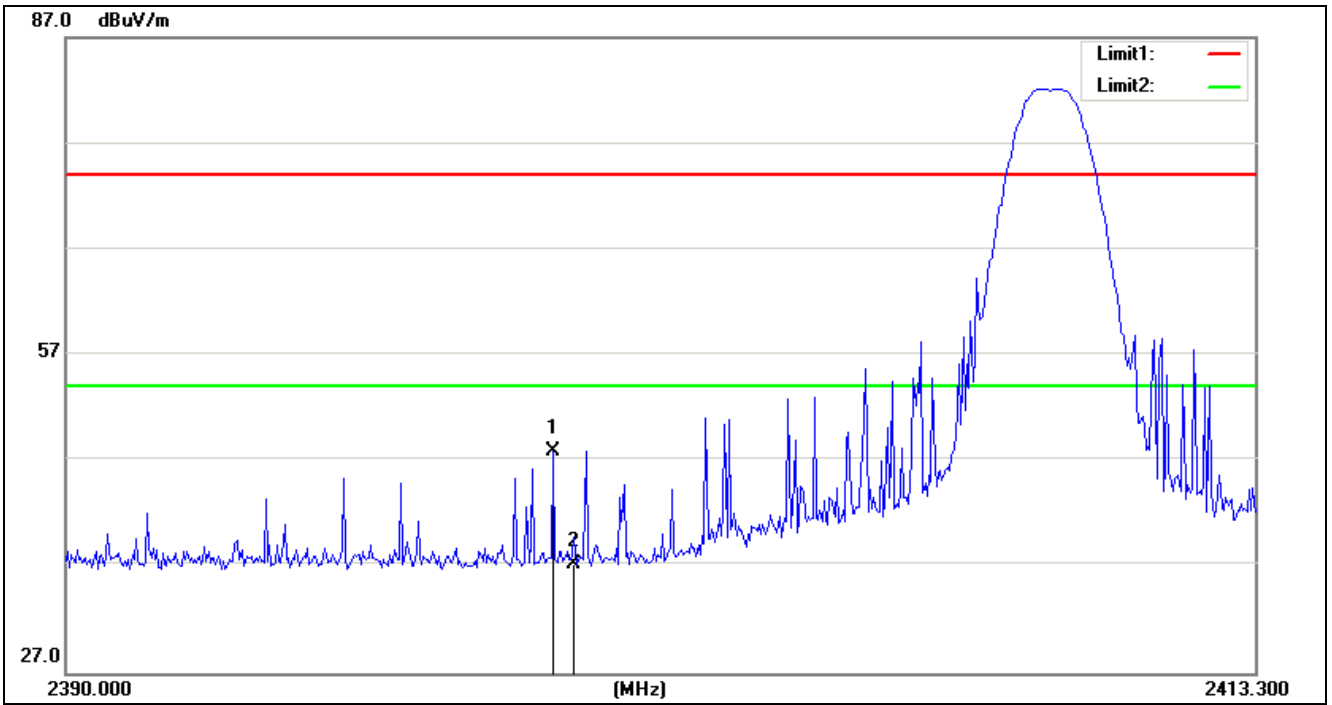


| No. | Frequency (MHz) | Reading (dBuV/m) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-------------|--------|
| 1   | 2392.203        | 29.12            | 10.55                | 39.67           | 74.00          | -34.33      | peak   |
| 2   | 2400.000        | 27.07            | 10.56                | 37.63           | 74.00          | -36.37      | peak   |

**Note:**

1. The field strength is calculated by adding the Correct Factor.
2. The basic equation with a sample calculation is as follows:  
Final Test Level =Receiver Reading + Correct Factor
3. The peak level is lower than AVG limit,no need to test the AVG level.

|                         |  |                      |                   |
|-------------------------|--|----------------------|-------------------|
| <b>Project No.:</b>     | <b>ZJ20150005-E-1</b>                      | <b>Polarization:</b> | <b>Horizontal</b> |
| <b>Standard:</b>        | <b>(RE)FCC PART 15 class B<br/>3m_PEAK</b> | <b>Power Source:</b> | <b>DC 5V</b>      |
| <b>Test item:</b>       | <b>Radiation Test</b>                      | <b>Date:</b>         | <b>2015-6-25</b>  |
| <b>Temp./Hum.(%RH):</b> | <b>21.5/54%RH</b>                          | <b>Time:</b>         | <b>9:45:09</b>    |
| <b>EUT:</b>             | <b>Wireless Module</b>                     | <b>Distance:</b>     | <b>3m</b>         |
| <b>Model:</b>           | <b>CC2500MPATR</b>                         | <b>Test Result:</b>  | <b>Pass</b>       |
| <b>Note:</b>            |  |                      |                   |



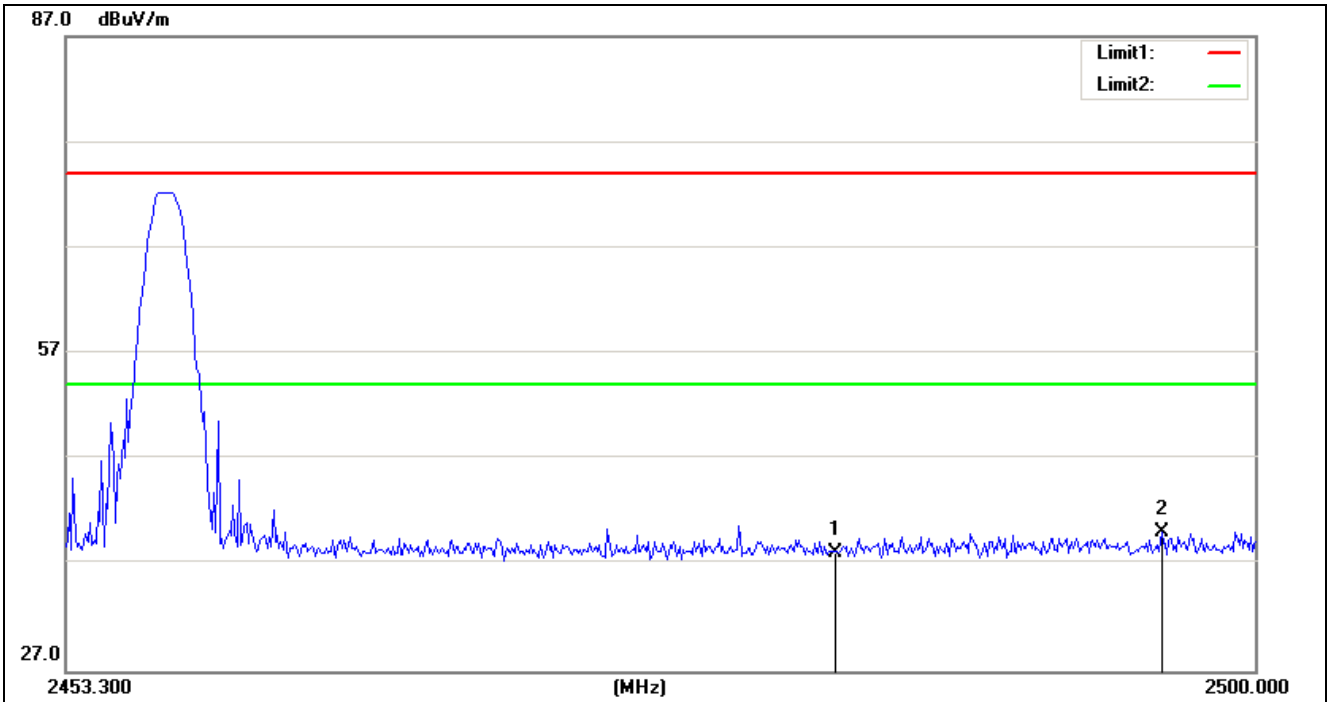
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-------------|--------|
| 1   | 2399.559        | 37.41            | 10.56                | 47.97           | 74.00          | -26.03      | peak   |
| 2   | 2400.000        | 26.70            | 10.56                | 37.26           | 74.00          | -36.74      | peak   |

**Note:**

1. The field strength is calculated by adding the Correct Factor.
2. The basic equation with a sample calculation is as follows:  
Final Test Level =Receiver Reading + Correct Factor
3. The peak level is lower than AVG limit,no need to test the AVG level.

**The highest channel Measurement:**

|                         |                                |                      |                  |
|-------------------------|--------------------------------|----------------------|------------------|
| <b>Project No.:</b>     | <b>ZJ20150005-E-1</b>          | <b>Polarziation:</b> | <b>Vertical</b>  |
| <b>Standard:</b>        | <b>(RE)FCC PART 15 class B</b> | <b>Power Source:</b> | <b>DC 5V</b>     |
|                         | <b>3m_PEAK</b>                 |                      |                  |
| <b>Test item:</b>       | <b>Radiation Test</b>          | <b>Date:</b>         | <b>2015-6-25</b> |
| <b>Temp./Hum.(%RH):</b> | <b>21.5/54%RH</b>              | <b>Time:</b>         | <b>9:52:36</b>   |
| <b>EUT:</b>             | <b>Wireless Module</b>         | <b>Distance:</b>     | <b>3m</b>        |
| <b>Model:</b>           | <b>CC2500MPATR</b>             | <b>Test Result:</b>  | <b>Pass</b>      |
| <b>Note:</b>            |                                |                      |                  |



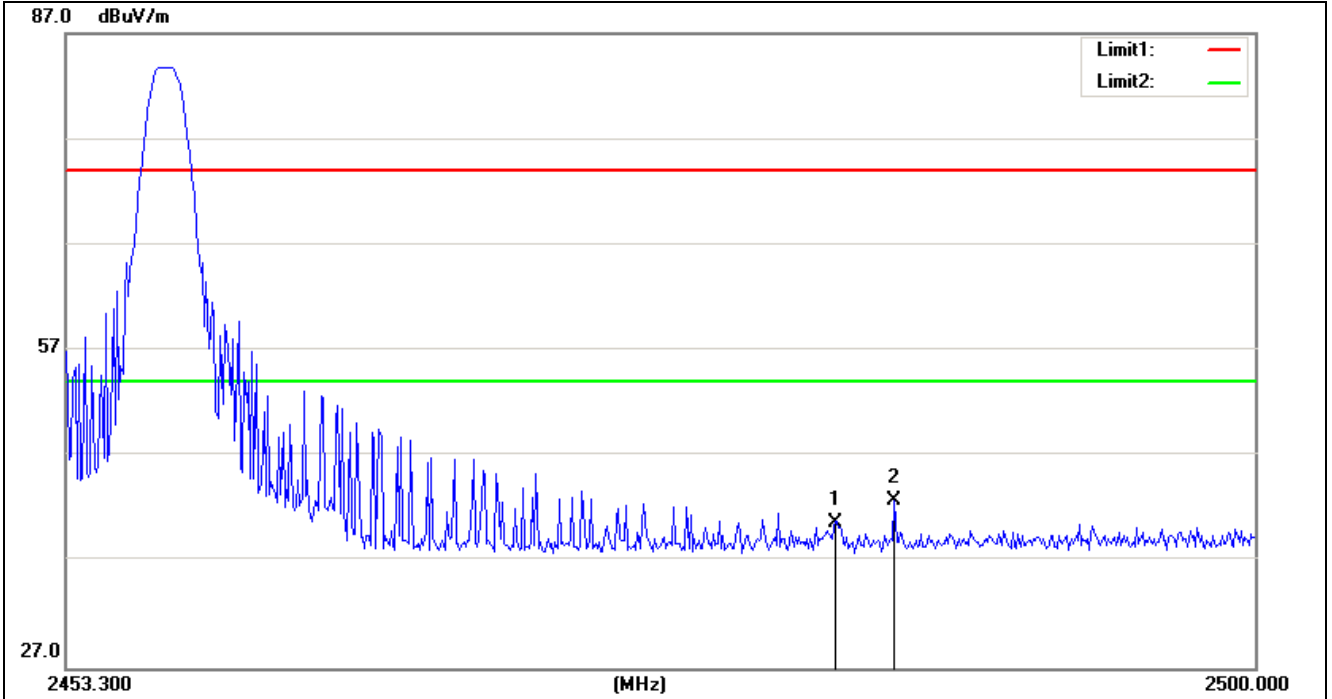
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-------------|--------|
| 1   | 2483.500        | 27.64            | 10.61                | 38.25           | 74.00          | -35.75      | peak   |
| 2   | 2496.333        | 29.55            | 10.62                | 40.17           | 74.00          | -33.83      | peak   |

**Note:**

1. The field strength is calculated by adding the Correct Factor.
2. The basic equation with a sample calculation is as follows:  
Final Test Level =Receiver Reading + Correct Factor
3. The peak level is lower than AVG limit,no need to test the AVG level.

CC2500MPATR

|                         |  |                      |                   |
|-------------------------|--|----------------------|-------------------|
| <b>Project No.:</b>     | <b>ZJ20150005-E-1</b>                      | <b>Polarization:</b> | <b>Horizontal</b> |
| <b>Standard:</b>        | <b>(RE)FCC PART 15 class B<br/>3m_PEAK</b> | <b>Power Source:</b> | <b>DC 5V</b>      |
| <b>Test item:</b>       | <b>Radiation Test</b>                      | <b>Date:</b>         | <b>2015-6-25</b>  |
| <b>Temp./Hum.(%RH):</b> | <b>21.5/54%RH</b>                          | <b>Time:</b>         | <b>9:53:27</b>    |
| <b>EUT:</b>             | <b>Wireless Module</b>                     | <b>Distance:</b>     | <b>3m</b>         |
| <b>Model:</b>           | <b>CC2500MPATR</b>                         | <b>Test Result:</b>  | <b>Pass</b>       |
| <b>Note:</b>            |  |                      |                   |



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-------------|--------|
| 1   | 2483.500        | 30.19            | 10.61                | 40.80           | 74.00          | -33.20      | peak   |
| 2   | 2485.780        | 32.19            | 10.62                | 42.81           | 74.00          | -31.19      | peak   |

**Note:**

1. The field strength is calculated by adding the Correct Factor.
2. The basic equation with a sample calculation is as follows:  
Final Test Level =Receiver Reading + Correct Factor
3. The peak level is lower than AVG limit,no need to test the AVG level.

## 5.5 CONDUCTED EMISSION MEASUREMENT

### 5.5.1 LIMITS

| Frequency range | Limits (dB $\mu$ V) |         |
|-----------------|---------------------|---------|
|                 | Quasi-peak          | Average |
| 150kHz ~ 0.5MHz | 66~56               | 56~46   |
| 0.5 MHz ~ 5 MHz | 56                  | 46      |
| 5 MHz ~ 30 MHz  | 60                  | 50      |

**NOTE:** (1) The lower limit shall apply at the transition frequencies.

(2) The limit decreases in line with the logarithm of the frequency in the range of 150kHz to 0.5MHz.

### 5.5.2 TEST PROCEDURES

#### Procedure of Preliminary Test

For measurement of the disturbance voltage the equipment under test (EUT) is connected to the power supply mains and any other extended network via one or more artificial network(s). An EUT, whether intended to be grounded or not, and which is to be used on a table is configured as follows:

- Either the bottom or the rear of the EUT shall be at a controlled distance of 40 cm from a reference ground plane. This ground plane is normally the wall or floor of a shielded room. It may also be a grounded metal plane of at least 2 m by 2 m. This is physically accomplished as follows:

- 1) place the EUT on a table of non-conducting material which is at least 80 cm high. Place the EUT so that it is 40 cm from the wall of the shielded room, or

- 2) place the EUT on a table of non-conducting material which is 40 cm high so that the bottom of the EUT is 40 cm above the ground plane;

- All other conductive surfaces of the EUT shall be at least 80 cm from the reference ground plane;

- The EUT are placed on the floor that one side of the housings is 40 cm from the vertical reference ground plane and other metallic parts;

- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth forming a bundle 30 cm to 40 cm long, hanging approximately in the middle between the ground plane and the table.

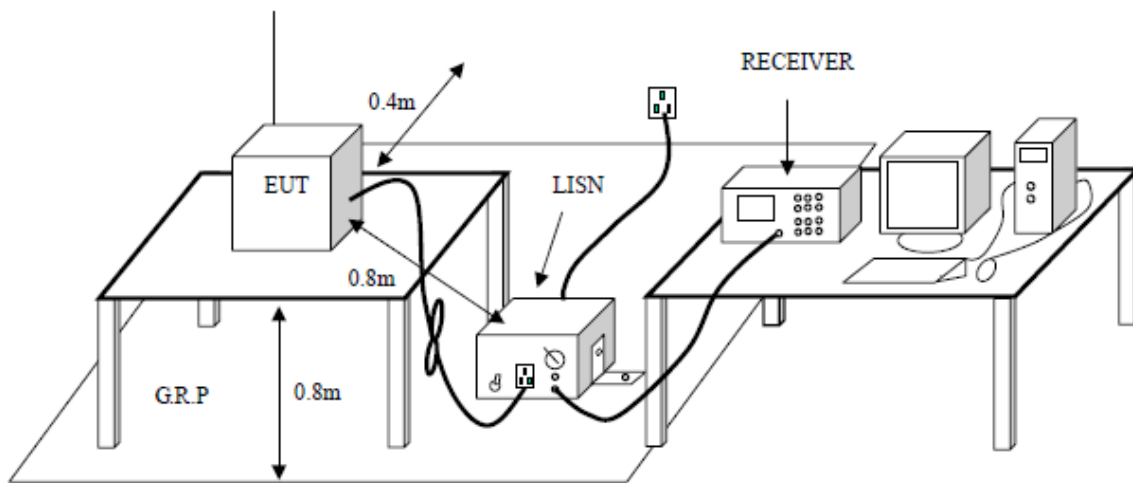
- I/O cables that are connected to a peripheral shall be bundled in the centre. The end of the cable may be terminated if required using correct terminating impedance. The total length shall not exceed 1 m.

The test mode(s) described in Item 2.4 were scanned during the preliminary test. After the preliminary scan, we found the test mode described in Item 2.4 producing the highest emission level. The EUT configuration and cable configuration of the above highest emission levels were recorded for reference of the final test.

### Procedure of Final Test

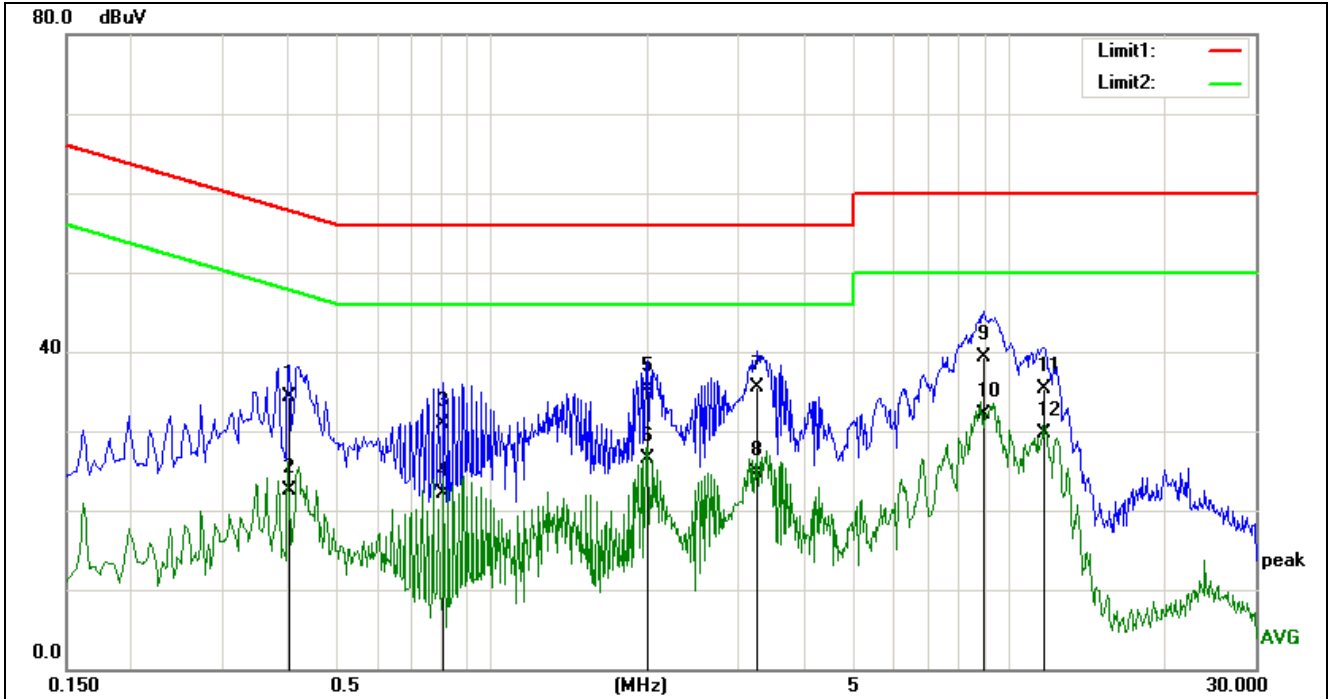
EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test. A scan was taken on both power lines, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. The test data of the worst-case condition(s) was recorded.

### 5.5.3 TEST SETUP



### 5.5.4 TEST RESULTS

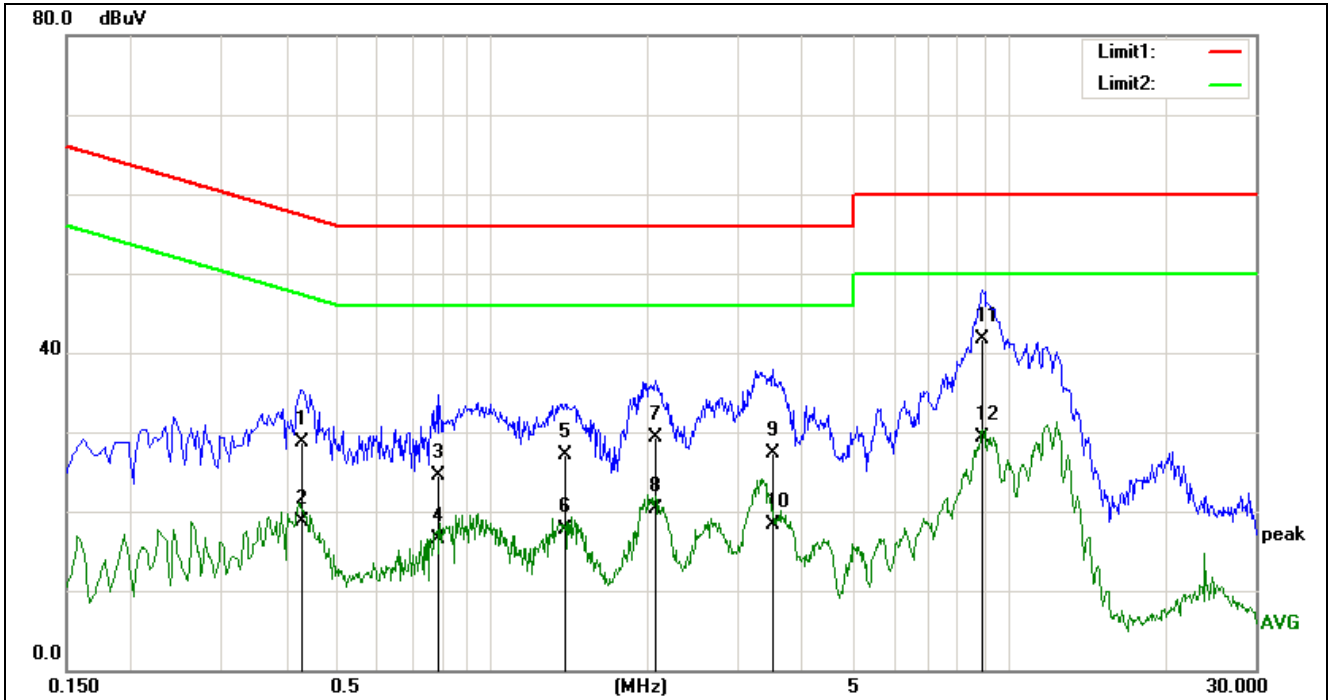
|                         |                        |                      |          |
|-------------------------|------------------------|----------------------|----------|
| <b>Project No.:</b>     | ZJ20150005-E-1         | <b>Probe:</b>        | L1       |
| <b>Standard:</b>        | (CE)EN55022 class B_QP | <b>Power Source:</b> | DC 5V    |
| <b>Test item:</b>       | Conduction Test        | <b>Date:</b>         | 2015-7-7 |
| <b>Temp./Hum.(%RH):</b> | 22.8/63.2%RH           | <b>Time:</b>         | 14:09:07 |
| <b>EUT:</b>             | Wireless Module        | <b>Test Result:</b>  | Pass     |
| <b>Model:</b>           | CC2500MPATR            |                      |          |
| <b>Note:</b>            |                        |                      |          |



| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB) | Result (dBuV) | Limit (dBuV) | Margin (dB) | Remark |
|-----|-----------------|----------------|--------------------|---------------|--------------|-------------|--------|
| 1   | 0.4060          | 28.18          | 6.12               | 34.30         | 57.73        | -23.43      | QP     |
| 2   | 0.4060          | 16.38          | 6.12               | 22.50         | 47.73        | -25.23      | AVG    |
| 3   | 0.8059          | 24.77          | 6.13               | 30.90         | 56.00        | -25.10      | QP     |
| 4   | 0.8059          | 16.07          | 6.13               | 22.20         | 46.00        | -23.80      | AVG    |
| 5   | 2.0100          | 29.05          | 6.25               | 35.30         | 56.00        | -20.70      | QP     |
| 6   | 2.0100          | 20.35          | 6.25               | 26.60         | 46.00        | -19.40      | AVG    |
| 7   | 3.2659          | 29.28          | 6.32               | 35.60         | 56.00        | -20.40      | QP     |
| 8   | 3.2659          | 18.48          | 6.32               | 24.80         | 46.00        | -21.20      | AVG    |
| 9   | 8.9459          | 32.79          | 6.61               | 39.40         | 60.00        | -20.60      | QP     |
| 10  | 8.9459          | 25.59          | 6.61               | 32.20         | 50.00        | -17.80      | AVG    |
| 11  | 11.7099         | 28.55          | 6.75               | 35.30         | 60.00        | -24.70      | QP     |
| 12  | 11.7099         | 22.95          | 6.75               | 29.70         | 50.00        | -20.30      | AVG    |



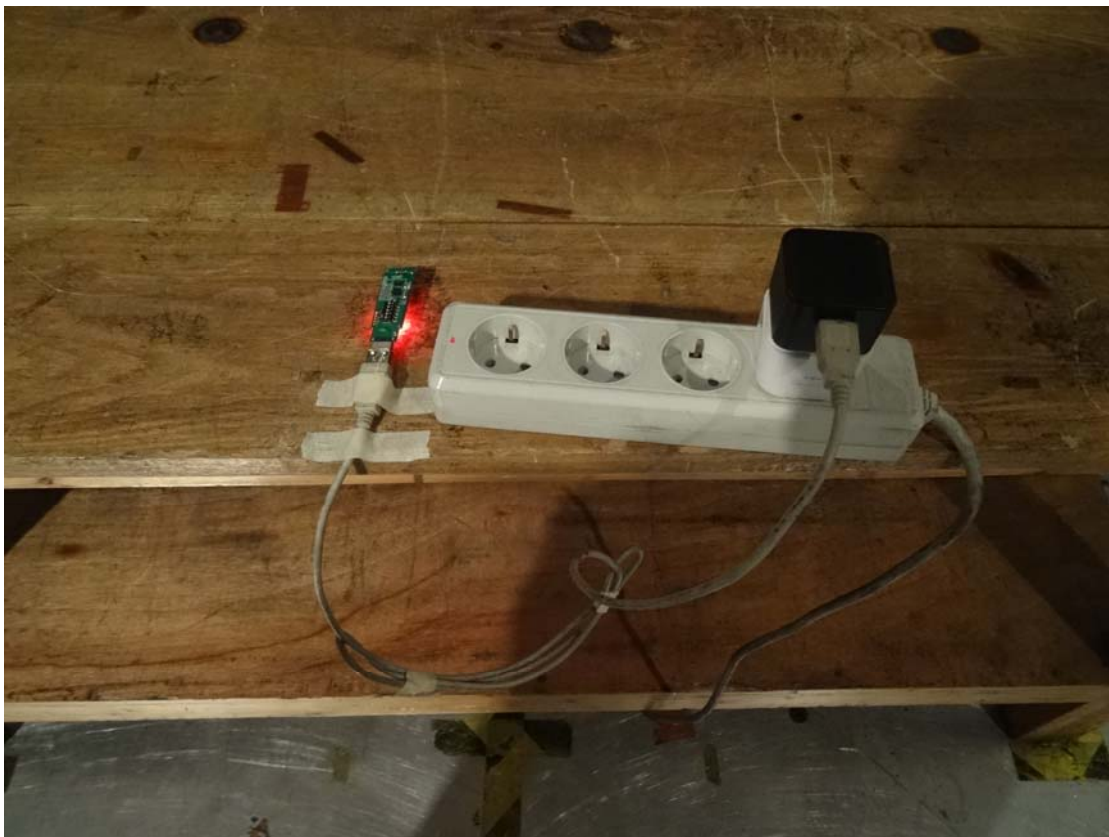
|                         |                               |                      |                 |
|-------------------------|-------------------------------|----------------------|-----------------|
| <b>Project No.:</b>     | <b>ZJ20150005-E-1</b>         | <b>Probe:</b>        | <b>N</b>        |
| <b>Standard:</b>        | <b>(CE)EN55022 class B_QP</b> | <b>Power Source:</b> | <b>DC 5V</b>    |
| <b>Test item:</b>       | <b>Conduction Test</b>        | <b>Date:</b>         | <b>2015-7-7</b> |
| <b>Temp./Hum.(%RH):</b> | <b>22.8/63.2%RH</b>           | <b>Time:</b>         | <b>14:03:52</b> |
| <b>EUT:</b>             | <b>Wireless Module</b>        | <b>Test Result:</b>  | <b>Pass</b>     |
| <b>Model:</b>           | <b>CC2500MPATR</b>            |                      |                 |
| <b>Note:</b>            |                               |                      |                 |



| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB) | Result (dBuV) | Limit (dBuV) | Margin (dB) | Remark |
|-----|-----------------|----------------|--------------------|---------------|--------------|-------------|--------|
| 1   | 0.4300          | 22.58          | 6.12               | 28.70         | 57.25        | -28.55      | QP     |
| 2   | 0.4300          | 12.68          | 6.12               | 18.80         | 47.25        | -28.45      | AVG    |
| 3   | 0.7860          | 18.37          | 6.13               | 24.50         | 56.00        | -31.50      | QP     |
| 4   | 0.7860          | 10.47          | 6.13               | 16.60         | 46.00        | -29.40      | AVG    |
| 5   | 1.3820          | 20.94          | 6.16               | 27.10         | 56.00        | -28.90      | QP     |
| 6   | 1.3820          | 11.64          | 6.16               | 17.80         | 46.00        | -28.20      | AVG    |
| 7   | 2.0740          | 23.05          | 6.25               | 29.30         | 56.00        | -26.70      | QP     |
| 8   | 2.0740          | 14.05          | 6.25               | 20.30         | 46.00        | -25.70      | AVG    |
| 9   | 3.4980          | 21.10          | 6.30               | 27.40         | 56.00        | -28.60      | QP     |
| 10  | 3.4980          | 12.00          | 6.30               | 18.30         | 46.00        | -27.70      | AVG    |
| 11  | 8.8860          | 35.19          | 6.61               | 41.80         | 60.00        | -18.20      | QP     |
| 12  | 8.8860          | 22.69          | 6.61               | 29.30         | 50.00        | -20.70      | AVG    |

## APPENDIX A: PHOTOGRAPH OF THE TEST ARRANGEMENT

RSE (Below 1GHz)

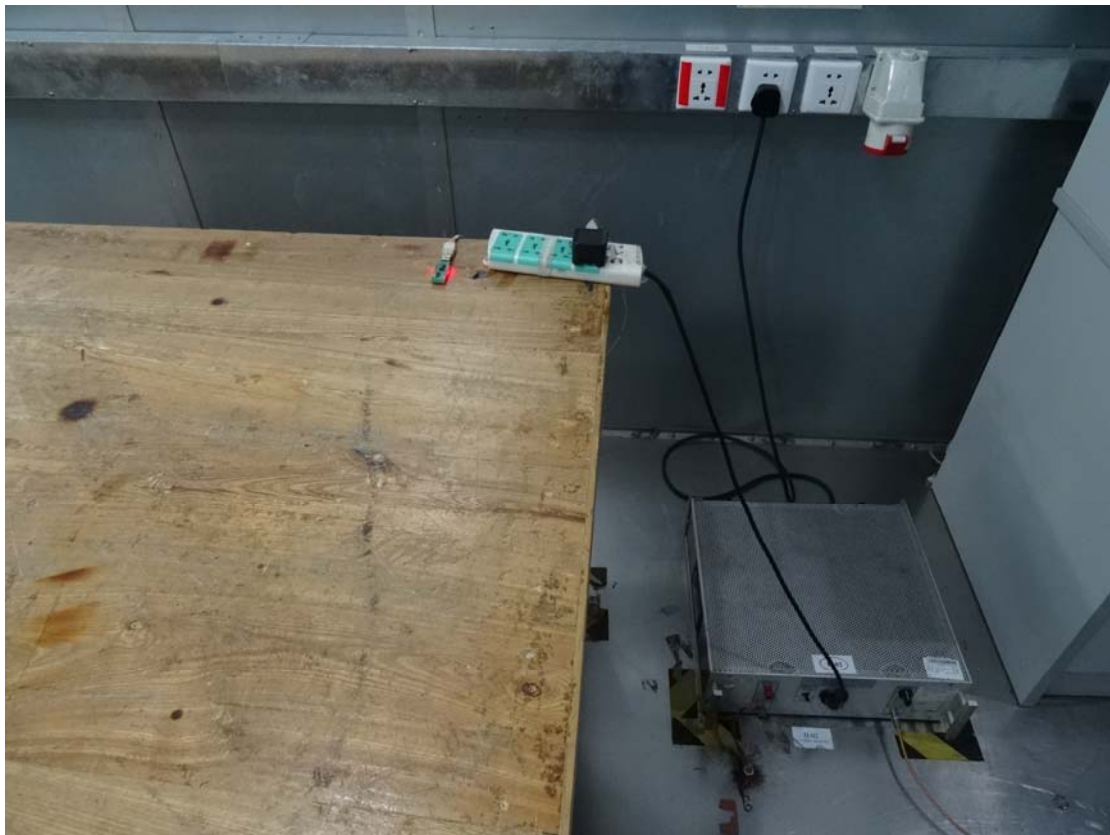


FCC ID: XAO-CC2500MPATR

RSE (Above 1GHz)



CE

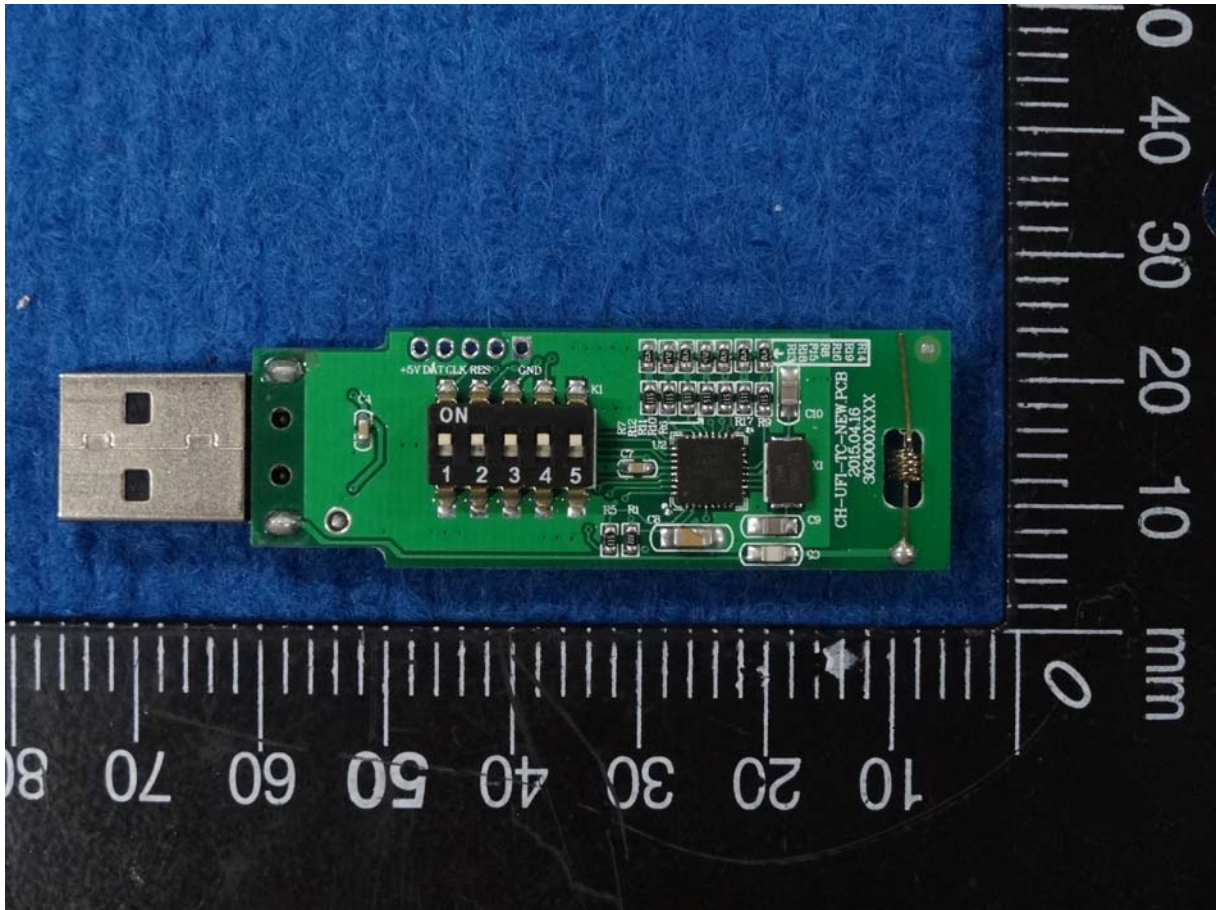


FCC ID: XAO-CC2500MPATR

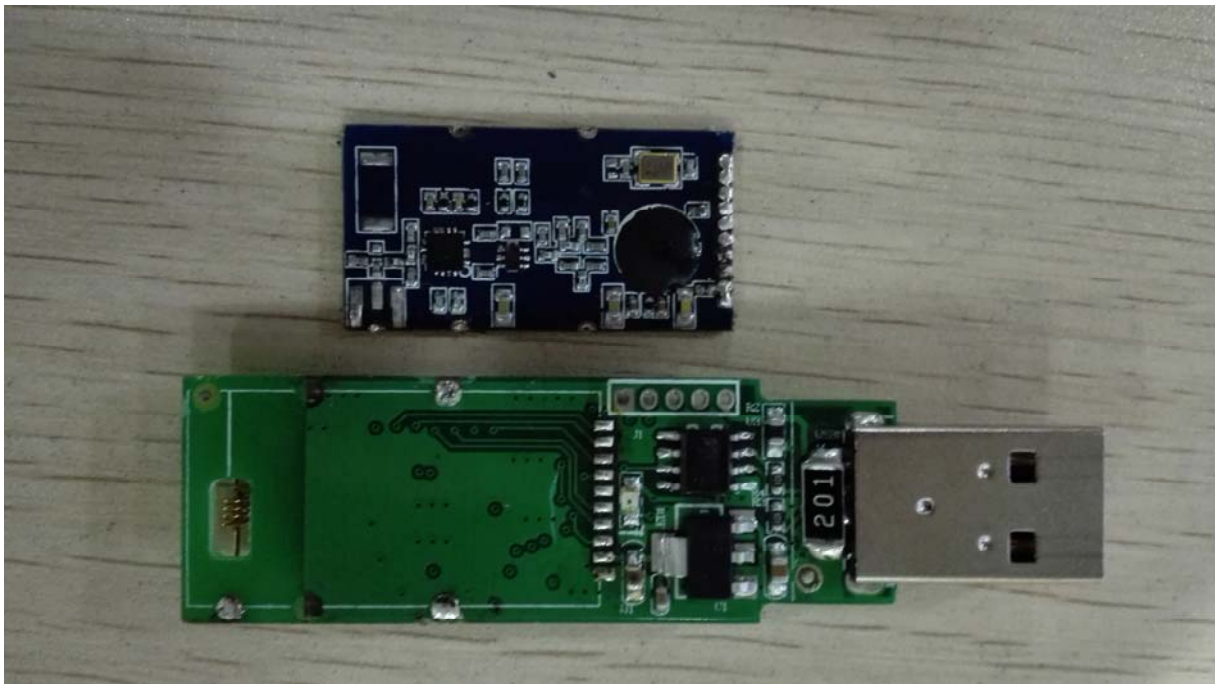
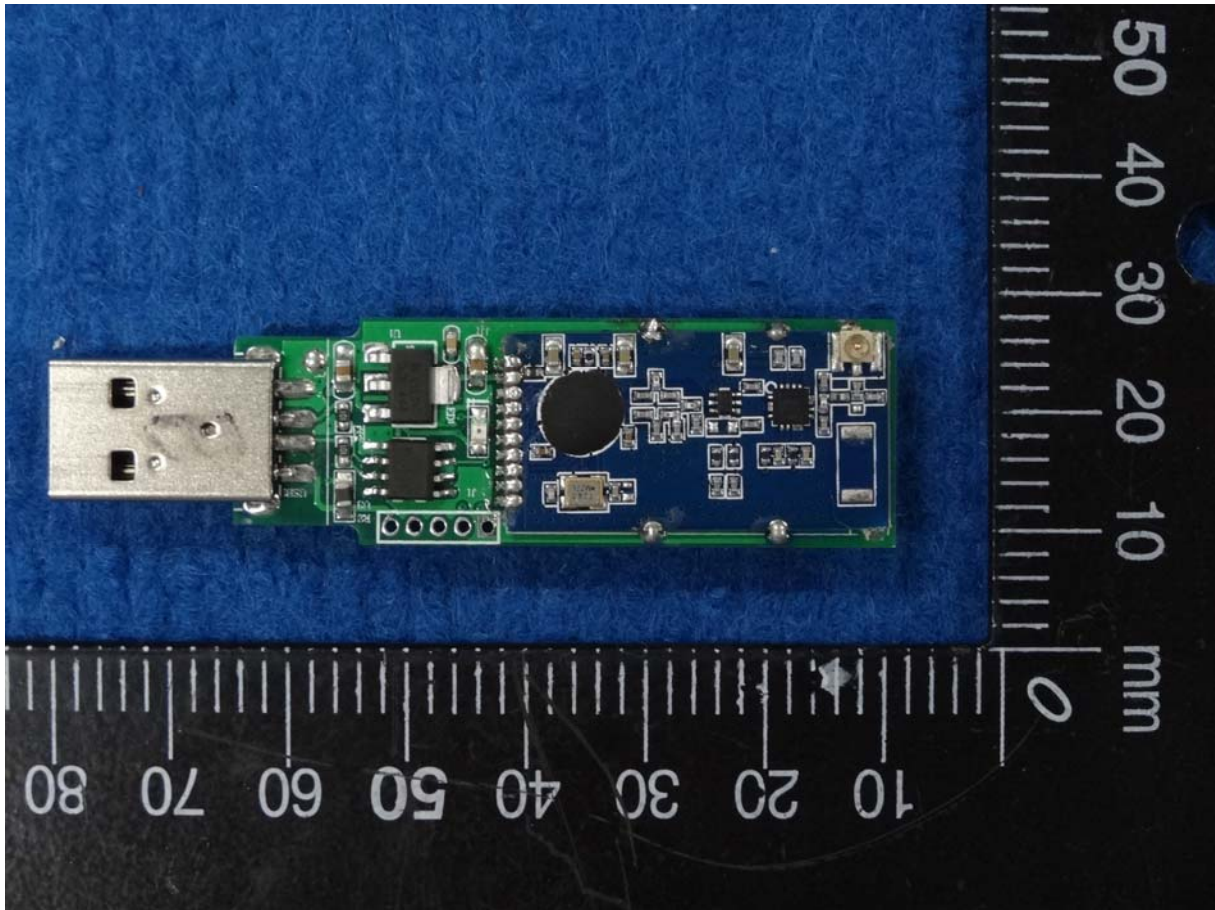
**APPENDIX B: PHOTOGRAPH OF THE EUT**



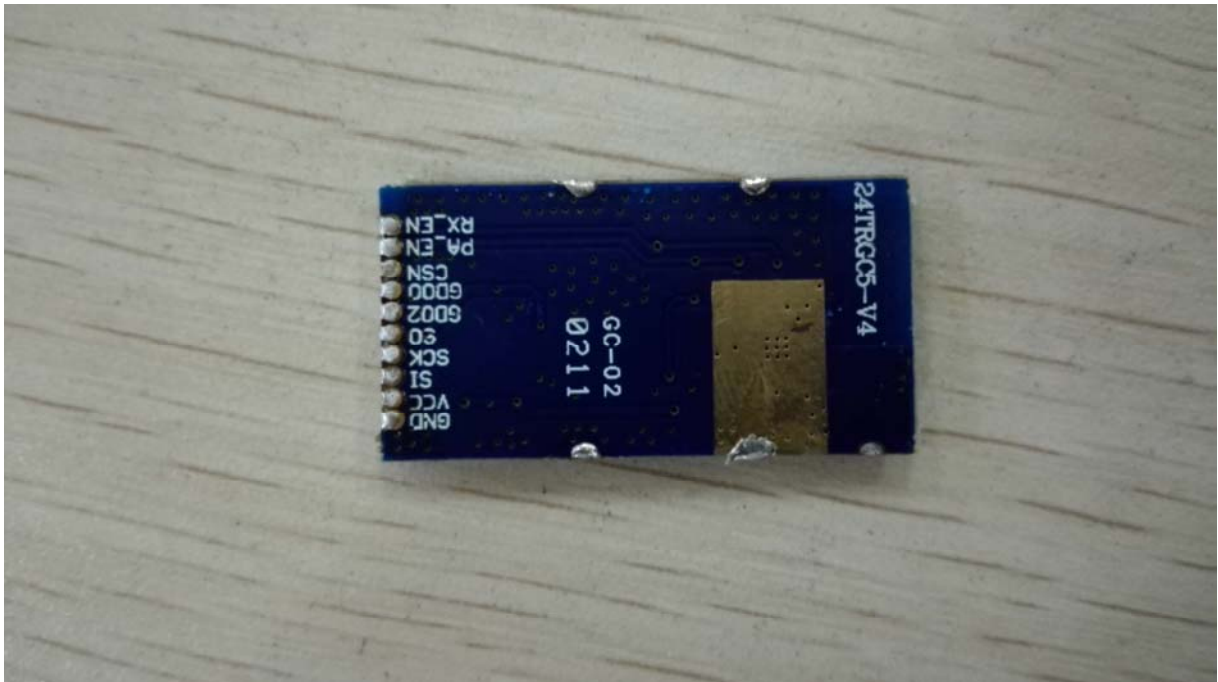
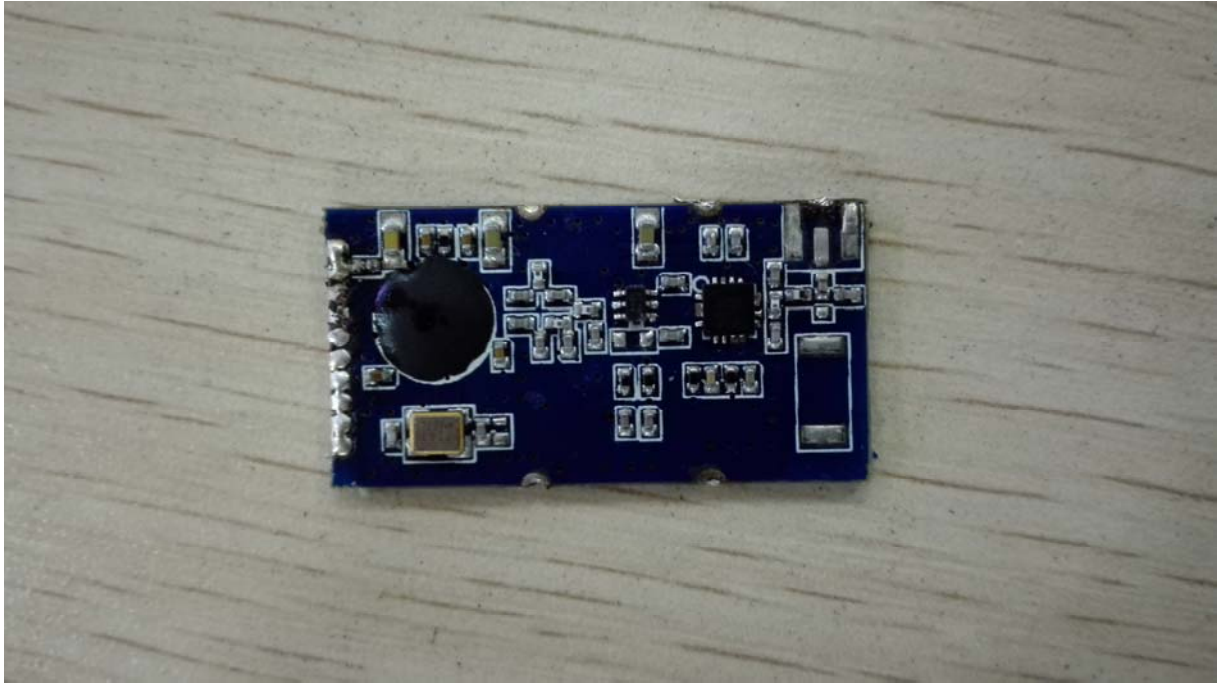
FCC ID: XAO-CC2500MPATR



FCC ID: XAO-CC2500MPATR



FCC ID: XAO-CC2500MPATR



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