

# FCC RF Test Report

APPLICANT : FUJITSU LIMITED  
EQUIPMENT : STYLISTIC Q series  
BRAND NAME : FUJITSU  
MODEL NAME : Q736  
FCC ID : EJE-WB0097  
STANDARD : FCC Part 15 Subpart C §15.247  
CLASSIFICATION : (DSS) Spread Spectrum Transmitter

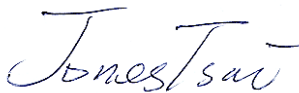
This is a partial report which is included the RF conducted power, radiated band edges, radiated spurious emission, and AC conducted emission test items. The product was received on Oct. 06, 2015 and testing was completed on Oct. 27, 2015. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.



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Reviewed by: Joseph Lin / Supervisor



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Approved by: Jones Tsai / Manager



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FCC ID : EJE-WB0097

Page Number : 1 of 23

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## REVISION HISTORY

| REPORT NO. | VERSION | DESCRIPTION             | ISSUED DATE   |
|------------|---------|-------------------------|---------------|
| FR5O0601A  | Rev. 01 | Initial issue of report | Nov. 06, 2015 |
|            |         |                         |               |
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## SUMMARY OF TEST RESULT

| Report Section | FCC Rule              | IC Rule        | Description                                              | Limit                 | Result | Remark                                   |
|----------------|-----------------------|----------------|----------------------------------------------------------|-----------------------|--------|------------------------------------------|
| 3.1            | 15.247(d)             | RSS-247<br>5.5 | Radiated Band Edges<br>and Radiated Spurious<br>Emission | 15.209(a) & 15.247(d) | Pass   | Under limit<br>0.50 dB at<br>216.030 MHz |
| 3.2            | 15.207                | RSS-Gen<br>8.8 | AC Conducted<br>Emission                                 | 15.207(a)             | Pass   | Under limit<br>13.80 dB at<br>0.190 MHz  |
| 3.3            | 15.203 &<br>15.247(b) | N/A            | Antenna Requirement                                      | N/A                   | Pass   | -                                        |

# 1 General Description

## 1.1 Applicant

**FUJITSU LIMITED**

1-1, Kamikonadaka 4-chome, Nakahara-ku, Kawasaki, 211-8588 Japan

## 1.2 Manufacturer

**FUJITSU LIMITED**

1-1, Kamikonadaka 4-chome, Nakahara-ku, Kawasaki, 211-8588 Japan

## 1.3 Product Feature of Equipment Under Test

| Product Feature                 |                                                                                  |
|---------------------------------|----------------------------------------------------------------------------------|
| Equipment                       | STYLISTIC Q series                                                               |
| Brand Name                      | FUJITSU                                                                          |
| Model Name                      | Q736                                                                             |
| FCC ID                          | EJE-WB0097                                                                       |
| Integrated the WLAN Module      | Brand Name: Intel<br>Model Name: 8260NGW<br>FCC ID: PD98260NG, PD98260NGU        |
| EUT supports Radios application | WLAN 11a/b/g/n HT20/HT40<br>WLAN 11ac VHT20/VHT40/VHT80<br>Bluetooth v4.0 EDR/LE |
| EUT Stage                       | Pre-Production Unit                                                              |

**Remark:** The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

## 1.4 Product Specification subjective to this standard

| Product Specification subjective to this standard |                                                                                                                                         |
|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Tx/Rx Frequency Range                             | 2402 MHz ~ 2480 MHz                                                                                                                     |
| Number of Channels                                | 79                                                                                                                                      |
| Carrier Frequency of Each Channel                 | 2402+n*1 MHz; n=0~78                                                                                                                    |
| Maximum Output Power to Antenna                   | Bluetooth BR(1Mbps) : 5.58 dBm (0.0036 W)<br>Bluetooth EDR (2Mbps) : 7.61 dBm (0.0058 W)<br>Bluetooth EDR (3Mbps) : 7.60 dBm (0.0058 W) |
| Antenna Type                                      | PIFA Antenna type with gain -1.79 dBi                                                                                                   |
| Type of Modulation                                | Bluetooth BR (1Mbps) : GFSK<br>Bluetooth EDR (2Mbps) : $\pi/4$ -DQPSK<br>Bluetooth EDR (3Mbps) : 8-DPSK                                 |

## 1.5 Modification of EUT

No modifications are made to the EUT during all test items.

## 1.6 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1022 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

|                           |                                                                                                                                                                  |         |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| <b>Test Site</b>          | SPORTON INTERNATIONAL INC.                                                                                                                                       |         |
| <b>Test Site Location</b> | No. 52, Hwa Ya 1 <sup>st</sup> Rd., Hwa Ya Technology Park,<br>Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.<br>TEL: +886-3-327-3456<br>FAX: +886-3-328-4978 |         |
| <b>Test Site No.</b>      | <b>Sporton Site No.</b>                                                                                                                                          |         |
|                           | TH05-HY                                                                                                                                                          | CO05-HY |

**Note:** The test site complies with ANSI C63.4 2009 requirement.

|                           |                                                                                                                                                                  |  |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>Test Site</b>          | SPORTON INTERNATIONAL INC.                                                                                                                                       |  |
| <b>Test Site Location</b> | No. 52, Hwa Ya 1 <sup>st</sup> Rd., Hwa Ya Technology Park,<br>Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.<br>TEL: +886-3-327-3456<br>FAX: +886-3-328-4978 |  |
| <b>Test Site No.</b>      | <b>Sporton Site No.</b>                                                                                                                                          |  |
|                           | 03CH11-HY                                                                                                                                                        |  |

**Note:** The test site complies with ANSI C63.4 2009 requirement.

## 1.7 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart C §15.247
- ANSI C63.10-2009

### Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. FCC permits the use of the 1.5 meter table as an alternative in C63.10-2013 through inquiry tracking number 961829.

## 2 Test Configuration of Equipment Under Test

### 2.1 Descriptions of Test Mode

Preliminary tests were performed in different data rates and recorded the RF output power in the following table:

| Channel | Frequency | Bluetooth RF Output Power |                 |          |
|---------|-----------|---------------------------|-----------------|----------|
|         |           | Data Rate / Modulation    |                 |          |
|         |           | GFSK                      | $\pi$ /4-DQPSK  | 8-DPSK   |
|         |           | 1Mbps                     | 2Mbps           | 3Mbps    |
| Ch00    | 2402MHz   | 5.20 dBm                  | 7.16 dBm        | 7.13 dBm |
| Ch39    | 2441MHz   | 5.52 dBm                  | 7.55 dBm        | 7.54 dBm |
| Ch78    | 2480MHz   | 5.58 dBm                  | <b>7.61 dBm</b> | 7.60 dBm |

**Remark:**

1. All the test data for each data rate were verified, but only the worst case was reported.
  2. The data rate was set in 2Mbps for all the test items due to the highest RF output power.
- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction (150 kHz to 30 MHz), radiation (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). Pre-scanned tests, X, Y, Z in three orthogonal panels, and different data rates were conducted to determine the final configuration (Y plane as worst plane) from all possible combinations, and the worst mode of radiated spurious emissions is Bluetooth 2Mbps mode, and recorded in this report.
- b. AC power line Conducted Emission was tested under maximum output power.

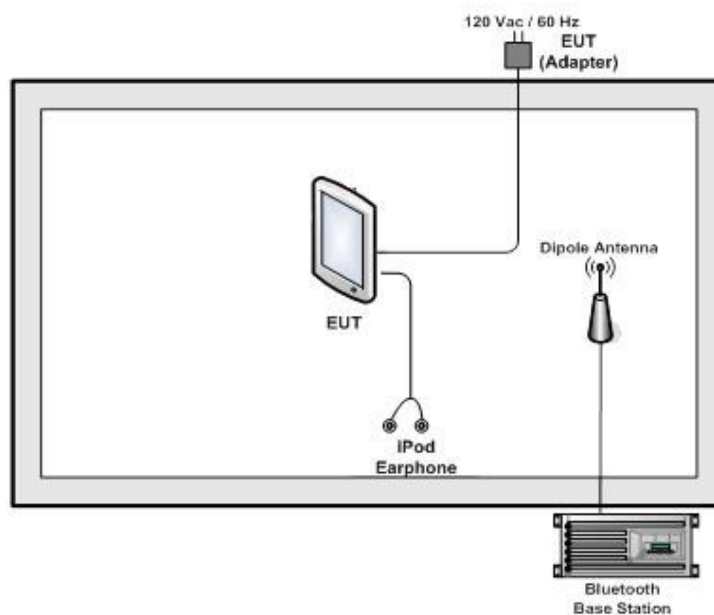
## 2.2 Test Mode

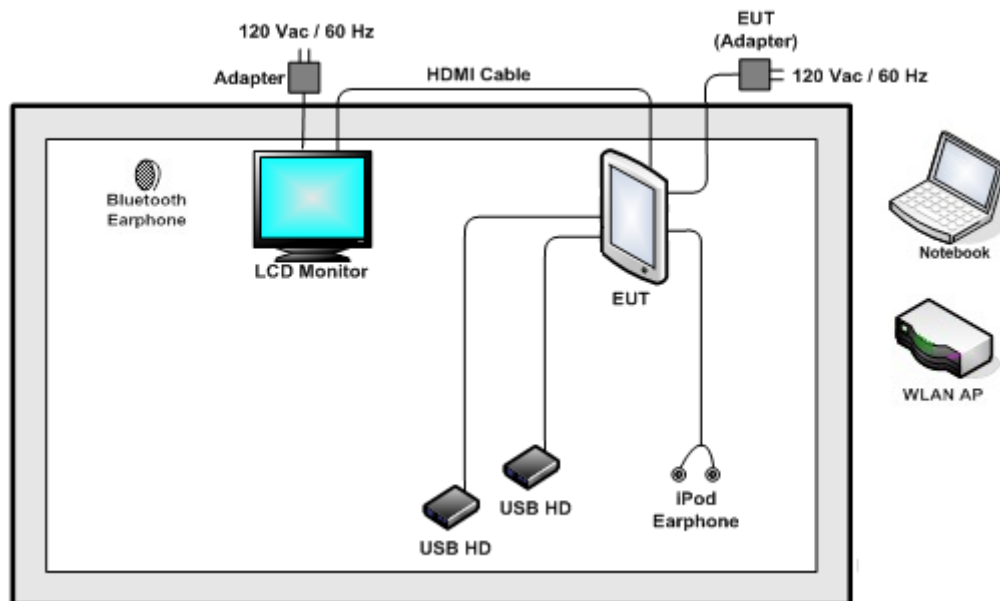
The following summary table is showing all test modes to demonstrate in compliance with the standard.

| Summary table of Test Cases                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| Test Item                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Data Rate / Modulation               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Bluetooth EDR 2Mbps $\pi/4$ -DQPSK   |
| Radiated Test Cases                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Mode 1: CH00_2402 MHz                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Mode 2: CH39_2441 MHz                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Mode 3: CH78_2480 MHz                |
| AC Conducted Emission                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Mode 1 :WLAN (2.4GHz) Link + TC + TF |
| <b>Remark:</b> <ol style="list-style-type: none"> <li>For radiated test cases, the worst mode data rate 2Mbps was reported only, because this data rate has the highest RF output power at preliminary tests, and the conducted spurious emissions and conducted band edge measurement for each data rate are no worse than 2Mbps, and no other significantly frequencies found in conducted spurious emission.</li> <li>TC stands for Test Configuration, and consists of USB HD, SD Card, HDMI Cable, iPod Earphone, and Adapter.</li> <li>TF stands for Test Function, and consists of H Pattern, Camera, MPEG4, and Bluetooth Link.</li> </ol> |                                      |

## 2.3 Connection Diagram of Test System

<Bluetooth Tx Mode>



**<AC Conducted Emission Mode>**

**2.4 Support Unit used in test configuration and system**

| Item | Equipment              | Trade Name    | Model Name             | FCC ID                                       | Data Cable        | Power Cord                                                 |
|------|------------------------|---------------|------------------------|----------------------------------------------|-------------------|------------------------------------------------------------|
| 1.   | Bluetooth Earphone     | Sony Ericsson | MW600                  | PY7DDA-2029                                  | N/A               | N/A                                                        |
| 2.   | WLAN AP                | D-Link        | DIR-628                | KA2DIR628A2                                  | N/A               | Unshielded, 1.8 m                                          |
| 3.   | iPod Earphone          | Apple         | N/A                    | Verification                                 | Unshielded, 1.0 m | N/A                                                        |
| 4.   | Notebook               | DELL          | Latitude E6320         | FCC DoC/<br>Contains FCC ID:<br>QDS-BRCM1054 | N/A               | AC I/P:<br>Unshielded, 1.2 m<br>DC O/P:<br>Shielded, 1.8 m |
| 5.   | USB HD                 | WD            | WDBAAR3200A<br>BK-PESN | FCC DoC                                      | Unshielded, 0.5 m | N/A                                                        |
| 6.   | Bluetooth Base Station | R&S           | CBT32                  | N/A                                          | N/A               | Unshielded, 1.8 m                                          |
| 7.   | LCD Monitor            | DELL          | U2410                  | FCC DoC                                      | Shielded, 1.6 m   | Unshielded, 1.8 m                                          |
| 8.   | SD Card                | SanDisk       | MicroSD HC             | FCC DoC                                      | N/A               | N/A                                                        |



## **2.5 EUT Operation Test Setup**

For Bluetooth function, the RF utility, “DRTU” was installed in EUT which was programmed in order to make the EUT get into the engineering modes to contact with Bluetooth base station for continuous transmitting and receiving signals.



### 3 Test Result

#### 3.1 Radiated Band Edges and Spurious Emission Measurement

##### 3.1.1 Limit of Radiated Band Edges and Spurious Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

| Frequency<br>(MHz) | Field Strength<br>(microvolts/meter) | Measurement Distance<br>(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                                |

##### 3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.



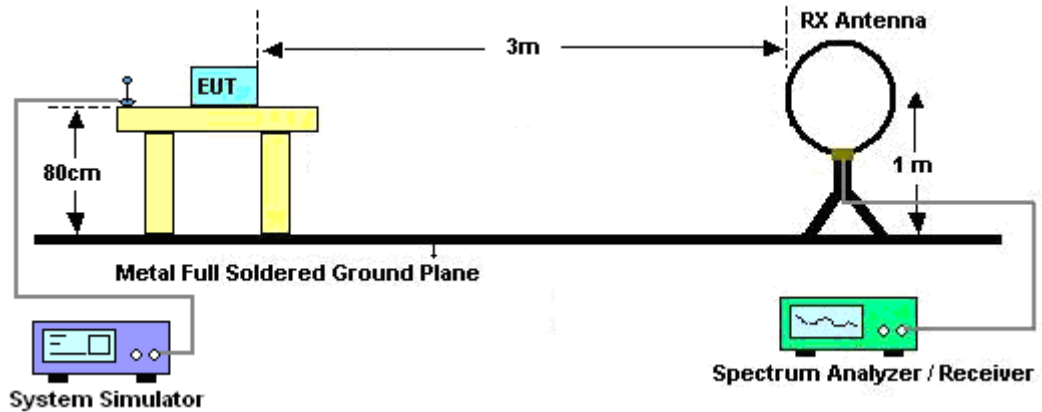
### 3.1.3 Test Procedures

1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
1. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
2. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Use the following spectrum analyzer settings:
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Set RBW=100 kHz for  $f < 1 \text{ GHz}$ , RBW=1MHz for  $f > 1 \text{ GHz}$  ; VBW  $\geq$  RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak
  - (3) For average measurement: use duty cycle correction factor method per 15.35(c).  
Duty cycle = On time/100 milliseconds  
On time =  $N_1 * L_1 + N_2 * L_2 + \dots + N_{n-1} * L_{n-1} + N_n * L_n$   
Where  $N_1$  is number of type 1 pulses,  $L_1$  is length of type 1 pulses, etc.  
Average Emission Level = Peak Emission Level +  $20 * \log(\text{Duty cycle})$
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

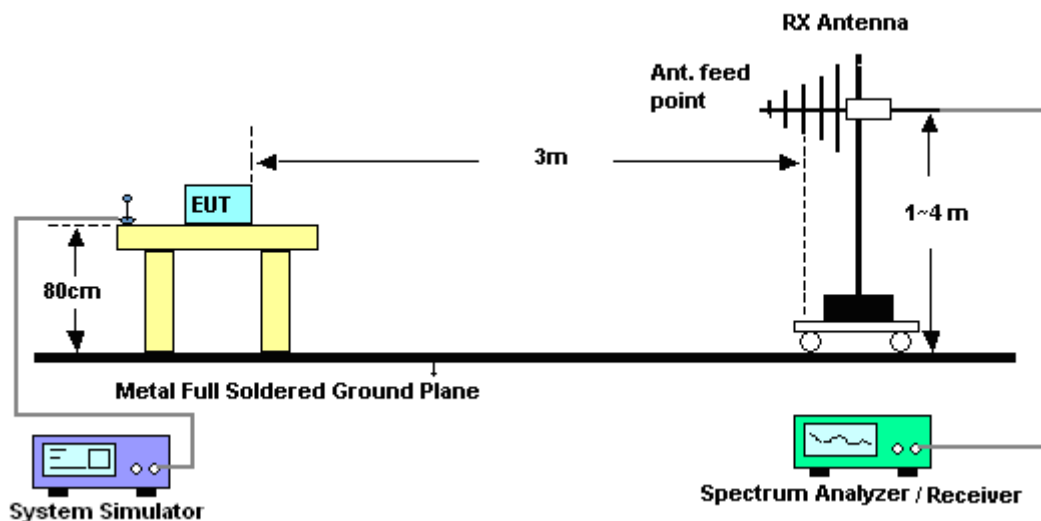
Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (-24.76dB) derived from  $20 \log(\text{dwell time}/100\text{ms})$ . This correction is only for signals that hop with the fundamental signal, such as band-edge and harmonic. Other spurious signals that are independent of the hopping signal would not use this correction.

### 3.1.4 Test Setup

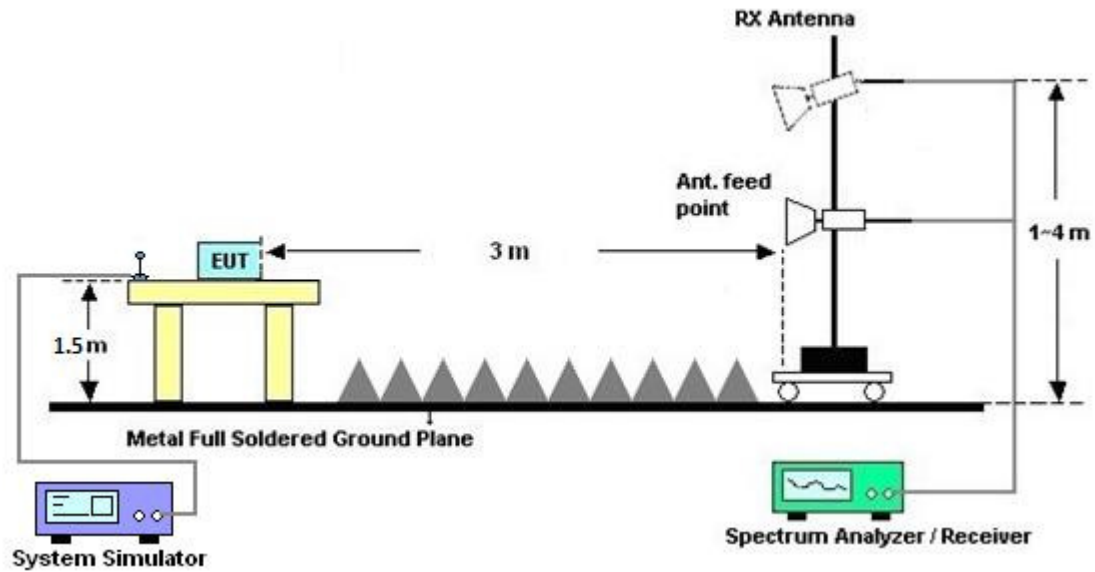
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz

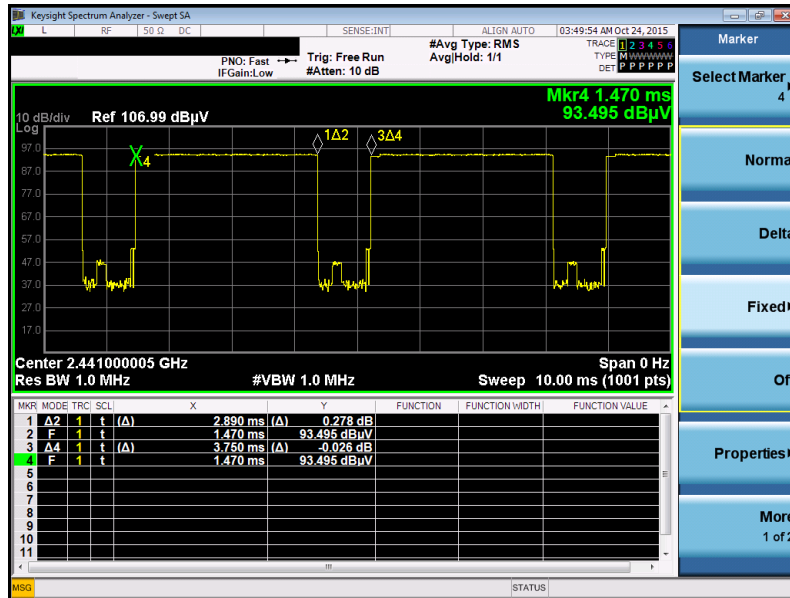


### 3.1.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

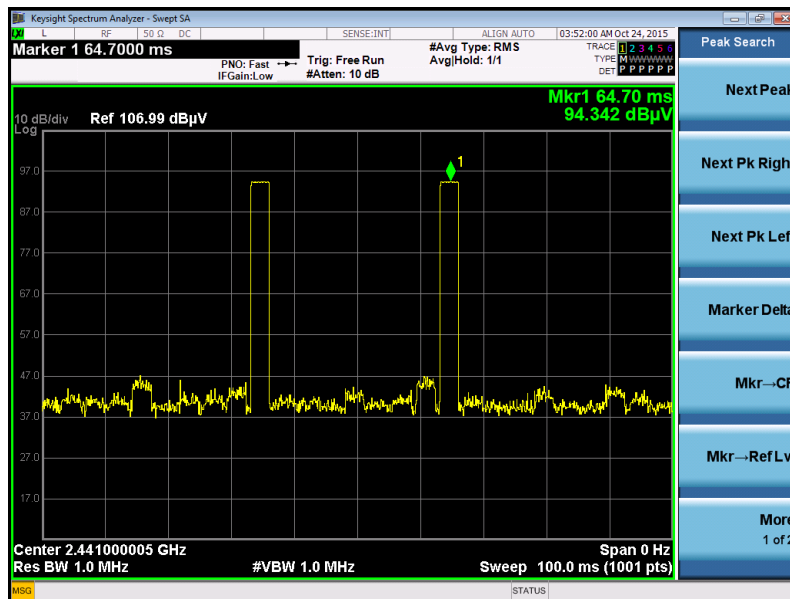
The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

### 3.1.6 Duty cycle correction factor for average measurement

#### 2DH5 on time (One Pulse) Plot on Channel 39



#### 2DH5 on time (Count Pulses) Plot on Channel 39



#### Note:

1. Worst case Duty cycle = on time/100 milliseconds =  $2 * 2.89 / 100 = 5.78 \%$
2. Worst case Duty cycle correction factor =  $20 * \log(\text{Duty cycle}) = -24.76 \text{ dB}$
3. 2DH5 has the highest duty cycle worst case and is reported.

**Duty Cycle Correction Factor Consideration for AFH mode:**

Bluetooth normal hopping rate is 1600Hz and reduced to 800Hz in AFH mode; due to the reduced number of hopping frequencies, with the same packet configuration the dwell time in each channel frequency within 100msec period is longer in AFH mode than normal mode.

In AFH mode, the minimum hopping frequencies are 20, to get the longest dwell time DH5 packet is observed; the period to have DH5 packet completing one hopping sequence is

$$2.89 \text{ ms} \times 20 \text{ channels} = 57.8 \text{ ms}$$

There cannot be 2 complete hopping sequences within 100ms period, considering the random hopping behavior, maximum 2 hops can be possibly observed within the period.  $[100\text{ms} / 57.6\text{ms}] = 2 \text{ hops}$

Thus, the maximum possible ON time:

$$2.89 \text{ ms} \times 2 = 5.78 \text{ ms}$$

Worst case Duty Cycle Correction factor, which is derived from the maximum possible ON time,

$$20 \times \log(5.78 \text{ ms}/100\text{ms}) = -24.76 \text{ dB}$$

**3.1.7 Test Result of Radiated Spurious at Band Edges**

Please refer to Appendix A.

**3.1.8 Test Result of Radiated Spurious Emission (30MHz ~ 10<sup>th</sup> Harmonic)**

Please refer to Appendix A.

## 3.2 AC Conducted Emission Measurement

### 3.2.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (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 the limits in the following table.

| Frequency of emission (MHz) | Conducted limit (dB $\mu$ V) |           |
|-----------------------------|------------------------------|-----------|
|                             | Quasi-peak                   | Average   |
| 0.15-0.5                    | 66 to 56*                    | 56 to 46* |
| 0.5-5                       | 56                           | 46        |
| 5-30                        | 60                           | 50        |

\*Decreases with the logarithm of the frequency.

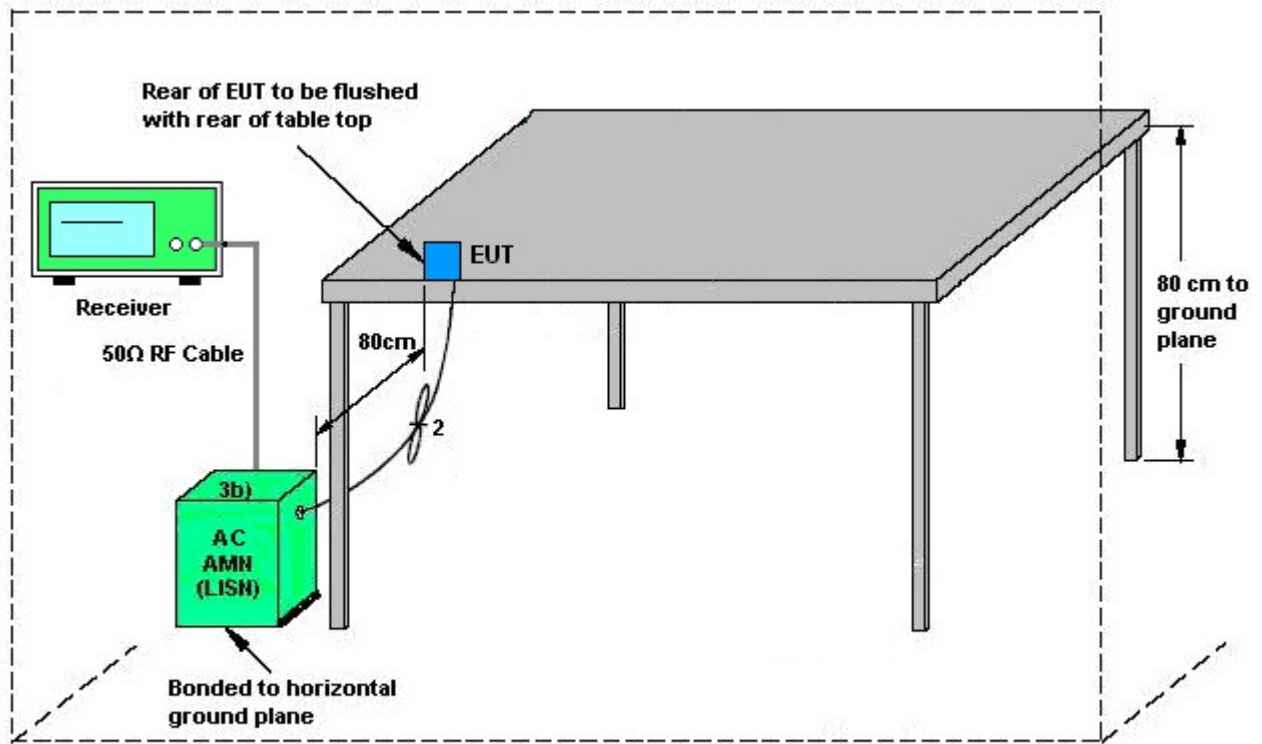
### 3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

### 3.2.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

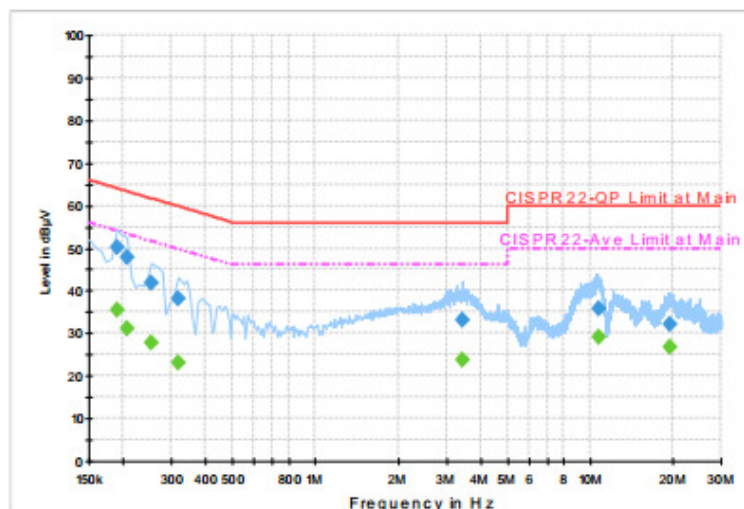
### 3.2.4 Test Setup



AMN = Artificial mains network (LISH)  
 AE = Associated equipment  
 EUT = Equipment under test  
 ISN = Impedance stabilization network

### 3.2.5 Test Result of AC Conducted Emission

|                        |                              |                            |         |
|------------------------|------------------------------|----------------------------|---------|
| <b>Test Mode :</b>     | Mode 1                       | <b>Temperature :</b>       | 21~22°C |
| <b>Test Engineer :</b> | Derreck Chen                 | <b>Relative Humidity :</b> | 55~56%  |
| <b>Test Voltage :</b>  | 120Vac / 60Hz                | <b>Phase :</b>             | Line    |
| <b>Function Type :</b> | WLAN (2.4GHz) Link + TC + TF |                            |         |



#### Final Result : Quasi-Peak

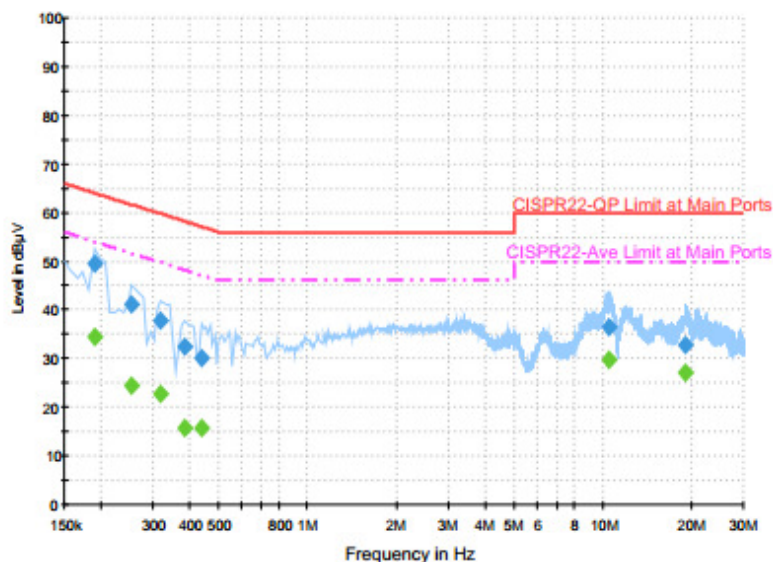
| Frequency (MHz) | Quasi-Peak (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-------------------|--------|------|------------|-------------|--------------|
| 0.190000        | 50.2              | Off    | L1   | 19.5       | 13.8        | 64.0         |
| 0.206000        | 47.8              | Off    | L1   | 19.4       | 15.6        | 63.4         |
| 0.254000        | 41.9              | Off    | L1   | 19.6       | 19.7        | 61.6         |
| 0.318000        | 38.1              | Off    | L1   | 19.5       | 21.7        | 59.8         |
| 3.446000        | 33.0              | Off    | L1   | 19.6       | 23.0        | 56.0         |
| 10.814000       | 35.9              | Off    | L1   | 19.8       | 24.1        | 60.0         |
| 19.542000       | 32.2              | Off    | L1   | 19.9       | 27.8        | 60.0         |

#### Final Result : Average

| Frequency (MHz) | Average (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|----------------|--------|------|------------|-------------|--------------|
| 0.190000        | 35.4           | Off    | L1   | 19.5       | 18.6        | 54.0         |
| 0.206000        | 31.1           | Off    | L1   | 19.4       | 22.3        | 53.4         |
| 0.254000        | 27.7           | Off    | L1   | 19.6       | 23.9        | 51.6         |
| 0.318000        | 23.1           | Off    | L1   | 19.5       | 26.7        | 49.8         |
| 3.446000        | 23.9           | Off    | L1   | 19.6       | 22.1        | 46.0         |
| 10.814000       | 29.3           | Off    | L1   | 19.8       | 20.7        | 50.0         |
| 19.542000       | 26.7           | Off    | L1   | 19.9       | 23.3        | 50.0         |



|                 |                              |                     |         |
|-----------------|------------------------------|---------------------|---------|
| Test Mode :     | Mode 1                       | Temperature :       | 21~22°C |
| Test Engineer : | Derreck Chen                 | Relative Humidity : | 55~56%  |
| Test Voltage :  | 120Vac / 60Hz                | Phase :             | Neutral |
| Function Type : | WLAN (2.4GHz) Link + TC + TF |                     |         |

**Final Result : Quasi-Peak**

| Frequency (MHz) | Quasi-Peak (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-------------------|--------|------|------------|-------------|--------------|
| 0.190000        | 49.5              | Off    | N    | 19.5       | 14.5        | 64.0         |
| 0.254000        | 41.2              | Off    | N    | 19.6       | 20.4        | 61.6         |
| 0.318000        | 37.7              | Off    | N    | 19.5       | 22.1        | 59.8         |
| 0.382000        | 32.4              | Off    | N    | 19.6       | 25.8        | 58.2         |
| 0.438000        | 30.3              | Off    | N    | 19.5       | 26.8        | 57.1         |
| 10.582000       | 36.5              | Off    | N    | 19.8       | 23.5        | 60.0         |
| 19.094000       | 32.9              | Off    | N    | 20.0       | 27.1        | 60.0         |

**Final Result : Average**

| Frequency (MHz) | Average (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|----------------|--------|------|------------|-------------|--------------|
| 0.190000        | 34.5           | Off    | N    | 19.5       | 19.5        | 54.0         |
| 0.254000        | 24.5           | Off    | N    | 19.6       | 27.1        | 51.6         |
| 0.318000        | 22.9           | Off    | N    | 19.5       | 26.9        | 49.8         |
| 0.382000        | 15.6           | Off    | N    | 19.6       | 32.6        | 48.2         |
| 0.438000        | 15.8           | Off    | N    | 19.5       | 31.3        | 47.1         |
| 10.582000       | 29.9           | Off    | N    | 19.8       | 20.1        | 50.0         |
| 19.094000       | 27.1           | Off    | N    | 20.0       | 22.9        | 50.0         |



### **3.3 Antenna Requirements**

#### **3.3.1 Standard Applicable**

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

#### **3.3.2 Antenna Anti-Replacement Construction**

An embedded-in antenna design is used.

#### **3.3.3 Antenna Gain**

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.



## 4 List of Measuring Equipment

| Instrument        | Manufacturer    | Model No.                  | Serial No.      | Characteristics | Calibration Date | Test Date                        | Due Date      | Remark                |
|-------------------|-----------------|----------------------------|-----------------|-----------------|------------------|----------------------------------|---------------|-----------------------|
| Power Meter       | Agilent         | E4416A                     | GB41292344      | 300MHz~40GHz    | Jan. 14, 2015    | Oct. 07, 2015                    | Jan. 13, 2016 | Conducted (TH05-HY)   |
| Power Sensor      | Agilent         | E9327A                     | US40441548      | 300MHz~40GHz    | Jan. 14, 2015    | Oct. 07, 2015                    | Jan. 13, 2016 | Conducted (TH05-HY)   |
| Spectrum Analyzer | Rohde & Schwarz | FSP40                      | 100055          | 9kHz~40GHz      | Jun. 18, 2015    | Oct. 07, 2015                    | Jun. 17, 2016 | Conducted (TH05-HY)   |
| Bilog Antenna     | Teseq GmbH      | CBL6112D                   | 35379           | 30MHz~2GHz      | Oct. 15, 2015    | Oct. 24, 2015 ~<br>Oct. 27, 2015 | Oct. 14, 2016 | Radiation (03CH11-HY) |
| Horn Antenna      | SCHWARZBECK     | BBHA 9170                  | BBHA91705<br>84 | 18GHz- 40GHz    | Nov. 03, 2014    | Oct. 24, 2015 ~<br>Oct. 27, 2015 | Nov. 02, 2015 | Radiation (03CH11-HY) |
| Loop Antenna      | Rohde & Schwarz | HFH2-Z2                    | 100315          | 9 kHz~30 MHz    | Sep. 02, 2015    | Oct. 24, 2015 ~<br>Oct. 27, 2015 | Sep. 01, 2016 | Radiation (03CH11-HY) |
| EMI Test Receiver | Keysight        | N9038A                     | MY54130085      | 20Hz ~ 8.4GHz   | Nov. 05, 2014    | Oct. 24, 2015 ~<br>Oct. 27, 2015 | Nov. 04, 2015 | Radiation (03CH11-HY) |
| Amplifier         | SONOMA          | 310N                       | 187312          | 9kHz~1GHz       | Nov. 24, 2014    | Oct. 24, 2015 ~<br>Oct. 27, 2015 | Nov. 23, 2015 | Radiation (03CH11-HY) |
| Horn Antenna      | SCHWARZBECK     | BBHA 9120 D                | 9120D-1326      | 1GHz ~ 18GHz    | Oct. 08, 2015    | Oct. 24, 2015 ~<br>Oct. 27, 2015 | Oct. 07, 2016 | Radiation (03CH11-HY) |
| Preamplifier      | Keysight        | 83017A                     | MY53270080      | 1GHz~26.5GHz    | Nov. 20, 2014    | Oct. 24, 2015 ~<br>Oct. 27, 2015 | Nov. 19, 2015 | Radiation (03CH11-HY) |
| Preamplifier      | MITEQ           | AMF-7D-0010<br>1800-30-10P | 1902247         | 1GHz~18GHz      | Jul. 01, 2015    | Oct. 24, 2015 ~<br>Oct. 27, 2015 | Jun. 30, 2016 | Radiation (03CH11-HY) |
| Spectrum Analyzer | Keysight        | N9010A                     | MY54200486      | 10Hz ~ 44GHZ    | Sep. 24, 2015    | Oct. 24, 2015 ~<br>Oct. 27, 2015 | Sep. 23, 2016 | Radiation (03CH11-HY) |
| Antenna Mast      | EMEC            | AM-BS-4500-B               | N/A             | 1~4m            | N/A              | Oct. 24, 2015 ~<br>Oct. 27, 2015 | N/A           | Radiation (03CH11-HY) |
| Turn Table        | EMEC            | TT 2000                    | N/A             | 0-360 degree    | N/A              | Oct. 24, 2015 ~<br>Oct. 27, 2015 | N/A           | Radiation (03CH11-HY) |
| Preamplifier      | MITEQ           | JS44-180040<br>00-33-8P    | 1840917         | 18GHz ~ 40GHz   | Jun. 02, 2015    | Oct. 24, 2015 ~<br>Oct. 27, 2015 | Jun. 01, 2016 | Radiation (03CH11-HY) |
| EMI Test Receiver | Rohde & Schwarz | ESCS 30                    | 100356          | 9kHz – 2.75GHz  | Dec. 01, 2014    | Oct. 23, 2015                    | Nov. 30, 2015 | Conduction (CO05-HY)  |
| LISN              | Rohde & Schwarz | ENV216                     | 100080          | 9kHz~30MHz      | Dec. 02, 2014    | Oct. 23, 2015                    | Dec. 01, 2015 | Conduction (CO05-HY)  |
| AC Power Source   | ChainTek        | APC-1000W                  | N/A             | N/A             | N/A              | Oct. 23, 2015                    | N/A           | Conduction (CO05-HY)  |



## 5 Uncertainty of Evaluation

### Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

|                                                                         |      |
|-------------------------------------------------------------------------|------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 2.26 |
|-------------------------------------------------------------------------|------|

### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

|                                                                         |      |
|-------------------------------------------------------------------------|------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 4.90 |
|-------------------------------------------------------------------------|------|