



# FCC RF Test Report

**APPLICANT** : Motorola Mobility, LLC  
**EQUIPMENT** : Mobile Cellular Phone  
**BRAND NAME** : Motorola  
**MODEL NAME** : 7524  
**FCC ID** : IHDT56VC2  
**STANDARD** : FCC Part 15 Subpart E §15.407  
**CLASSIFICATION** : (NII) Unlicensed National Information Infrastructure

The product was received on Jul. 28, 2016 and testing was completed on Jul. 30, 2016. 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 : IHDT56VC2

Page Number : 1 of 22

Report Issued Date : Aug. 05, 2016

Report Version : Rev. 01

Report Template No.: BU5-FR15EWLB4 AC MA Version 1.2



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## REVISION HISTORY

| REPORT NO.   | VERSION | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                          | ISSUED DATE   |
|--------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| FR651612-16E | Rev. 01 | This is a variant report. All the test cases were performed base on the worst case identified in the original report. The test purpose is to verify the influence caused by additional accessory applied, hence only RSE and AC conducted emission need to be considered. Please referred to appendix D for the original report.(Sporton Report Number FR651612-02E) | Aug. 05, 2016 |
|              |         |                                                                                                                                                                                                                                                                                                                                                                      |               |
|              |         |                                                                                                                                                                                                                                                                                                                                                                      |               |
|              |         |                                                                                                                                                                                                                                                                                                                                                                      |               |
|              |         |                                                                                                                                                                                                                                                                                                                                                                      |               |
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|              |         |                                                                                                                                                                                                                                                                                                                                                                      |               |
|              |         |                                                                                                                                                                                                                                                                                                                                                                      |               |
|              |         |                                                                                                                                                                                                                                                                                                                                                                      |               |
|              |         |                                                                                                                                                                                                                                                                                                                                                                      |               |
|              |         |                                                                                                                                                                                                                                                                                                                                                                      |               |
|              |         |                                                                                                                                                                                                                                                                                                                                                                      |               |
|              |         |                                                                                                                                                                                                                                                                                                                                                                      |               |



## SUMMARY OF TEST RESULT

| Report Section | FCC Rule  | Description           | Limit                         | Result | Remark                                   |
|----------------|-----------|-----------------------|-------------------------------|--------|------------------------------------------|
| 3.1            | 15.407(b) | Unwanted Emissions    | 15.407(b)(4)(i)<br>&15.209(a) | Pass   | Under limit<br>4.38 dB at<br>243.300 MHz |
| 3.2            | 15.207    | AC Conducted Emission | 15.207(a)                     | Pass   | Under limit<br>4.10 dB at<br>0.246 MHz   |



# 1 General Description

## 1.1 Applicant

**Motorola Mobility, LLC**

222 W Merchandise Mart Plaza, Suite 1800, Chicago, IL 60654, United States

## 1.2 Manufacturer

**Motorola Mobility, LLC**

222 W Merchandise Mart Plaza, Suite 1800, Chicago, IL 60654, United States

## 1.3 Product Feature of Equipment Under Test

| Product Feature                 |                                                                                                                      |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Equipment                       | Mobile Cellular Phone                                                                                                |
| Brand Name                      | Motorola                                                                                                             |
| Model Name                      | 7524                                                                                                                 |
| FCC ID                          | IHDT56VC2                                                                                                            |
| IMEI Code                       | Radiation      IMEI 1: 354131070010793<br>IMEI 2: 354131070010801                                                    |
|                                 | Conduction      IMEI 1: 354131070017814<br>IMEI 2: 354131070017822                                                   |
| EUT supports Radios application | GSM/EGPRS/WCDMA/HSPA/LTE/NFC<br>WLAN 11b/g/n HT20<br>WLAN 11a/n HT20/HT40<br>Bluetooth v3.0 EDR<br>Bluetooth v4.0 LE |
| HW Version                      | DVT2                                                                                                                 |
| EUT Stage                       | Identical Prototype                                                                                                  |

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

| Accessory List |                          |
|----------------|--------------------------|
| WPC Cover      | Brand Name : INCIPIO     |
|                | Model Name : MT-043-CASE |

## 1.4 Product Specification of Equipment Under Test

| Standards-related Product Specification |                                                                  |              |              |
|-----------------------------------------|------------------------------------------------------------------|--------------|--------------|
| <b>Tx/Rx Channel Frequency Range</b>    | 5745 MHz ~ 5825 MHz                                              |              |              |
| <b>Type of Modulation</b>               | 802.11 a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)                  |              |              |
| <b>Antenna Type</b>                     | ILA Antenna<br>(The antenna peak gain of EUT is less than 6 dBi) |              |              |
| <b>Antenna Function Description</b>     |                                                                  | <b>Ant.1</b> | <b>Ant.2</b> |
|                                         | 802.11 a/n<br>MIMO                                               | V            | V            |

## 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>                                                                                                                                          |  |  |
|                           | CO05-HY                                                                                                                                                          |  |  |

**Note:** The test site complies with ANSI C63.4 2014 requirement.

|                           |                                                                                                                                        |  |  |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------|--|--|
| <b>Test Site</b>          | SPORTON INTERNATIONAL INC.                                                                                                             |  |  |
| <b>Test Site Location</b> | No.58, Aly. 75, Ln. 564, Wenhua 3rd Rd. Guishan Dist,<br>Taoyuan City, Taiwan (R.O.C.)<br>TEL: +886-3-327-0868<br>FAX: +886-3-327-0855 |  |  |
| <b>Test Site No.</b>      | <b>Sporton Site No.</b>                                                                                                                |  |  |
|                           | 03CH11-HY                                                                                                                              |  |  |

**Note:** The test site complies with ANSI C63.4 2014 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 E
- ♦ FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r02
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ♦ KDB 648474 D03 Handset Wireless Chargers Battery Covers v01r04
- ♦ ANSI C63.10-2013

### **Remark:**

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

## 2 Test Configuration of Equipment Under Test

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: conducted emission (150 kHz to 30 MHz) and radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

### 2.1 Carrier Frequency and Channel

| Frequency Band                       | Channel    | Freq. (MHz) | Channel    | Freq. (MHz) |
|--------------------------------------|------------|-------------|------------|-------------|
| 5725-5850 MHz<br>Band 4<br>(U-NII-3) | 149        | 5745        | <b>159</b> | <b>5795</b> |
|                                      | <b>151</b> | <b>5755</b> | 161        | 5805        |
|                                      | 153        | 5765        | 165        | 5825        |
|                                      | 157        | 5785        |            |             |

**Note:** The above Frequency and Channel in boldface were 802.11n HT40.

### 2.2 Test Mode

Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates as below table.

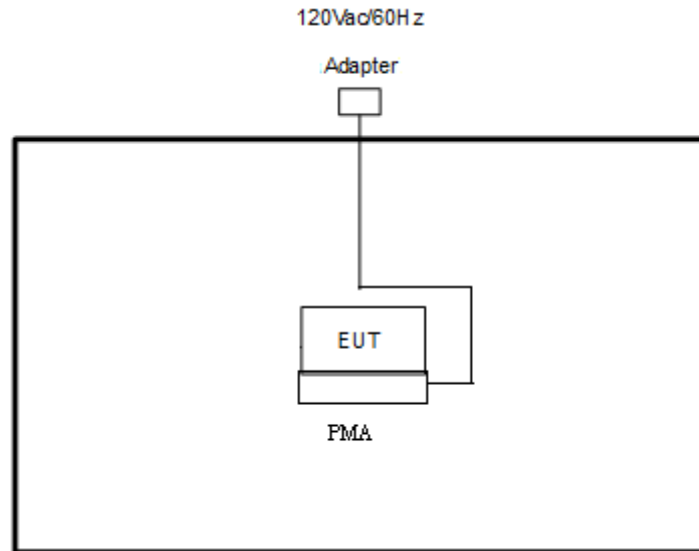
| Modulation          | Data Rate   |
|---------------------|-------------|
| <b>802.11n HT40</b> | <b>MCS0</b> |

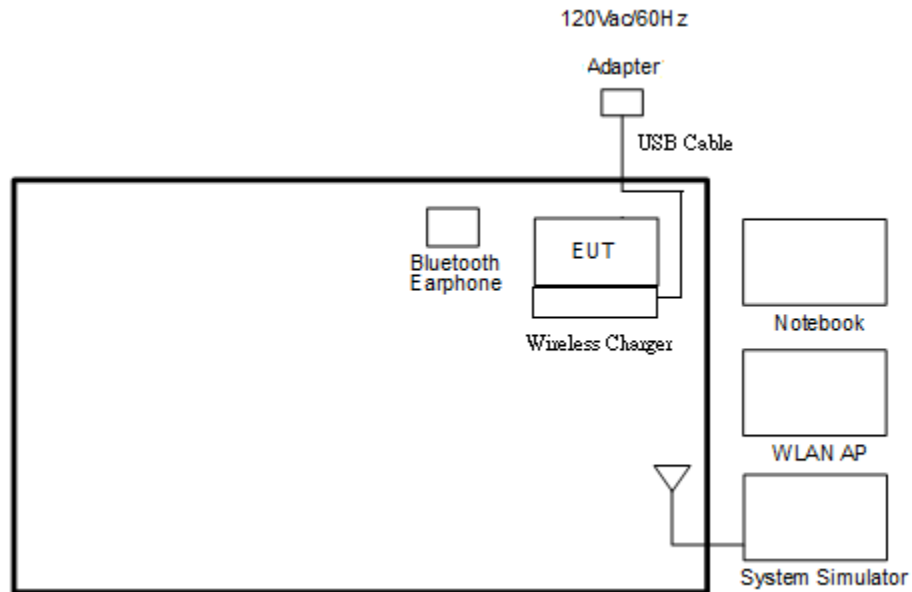
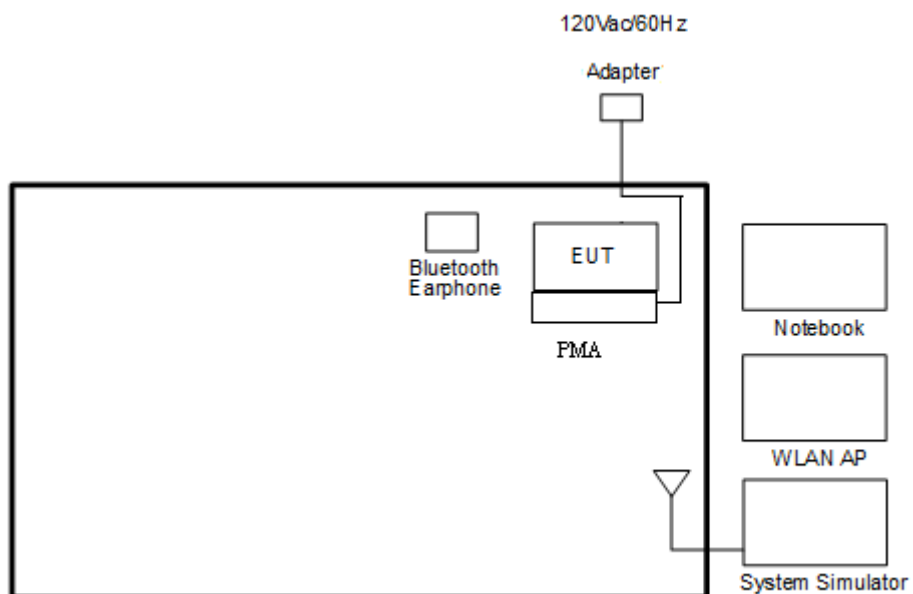
|                                      |                                                                                                                                                                                                                                                                    |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AC<br/>Conducted<br/>Emission</b> | Mode 1 : GSM1900 Idle + Bluetooth Link + WLAN (5GHz) Link + Camera + WPC Back Cover + WPC Charging Pad + USB Cable (Charging from Adapter)<br>Mode 2 : WCDMA Band V Idle + Bluetooth Link + WLAN (5GHz) Link + MPEG4 + WPC Back Cover + PMA Charging Pad + Adapter |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| Ch. #    |               | Band IV : 5725-5850 MHz |
|----------|---------------|-------------------------|
|          |               | 802.11n HT40            |
| <b>L</b> | <b>Low</b>    | -                       |
| <b>M</b> | <b>Middle</b> | -                       |
| <b>H</b> | <b>High</b>   | 159                     |

## 2.3 Connection Diagram of Test System

<WLAN Tx with PMA Charging Mode>



**<AC Conducted Emission with WPC Charging Mode>****<AC Conducted Emission with PMA Charging Mode>**

## 2.4 Support Unit used in test configuration and system

| Item | Equipment          | Trade Name    | Model Name     | FCC ID                                       | Data Cable | Power Cord                                                 |
|------|--------------------|---------------|----------------|----------------------------------------------|------------|------------------------------------------------------------|
| 1.   | System Simulator   | Anritsu       | MT8820C        | N/A                                          | N/A        | Unshielded, 1.8 m                                          |
| 2.   | WLAN AP            | D-Link        | DIR-628        | KA2DIR628A2                                  | N/A        | Unshielded, 1.8 m                                          |
| 3.   | 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 |
| 4.   | Bluetooth Earphone | Sony Ericsson | MW600          | PY7DDA-2029                                  | N/A        | N/A                                                        |
| 5.   | SD Card            | SanDisk       | MicroSD HC     | FCC DoC                                      | N/A        | N/A                                                        |
| 6.   | Wireless Charger   | LG            | WCD-100        | FCC DoC                                      | N/A        | N/A                                                        |
| 7.   | PMA                | DURACELL      | M-018B-518A    | FCC DoC                                      | N/A        | N/A                                                        |
| 8.   | USB Cable          | Motorola      | SKN6461A       | N/A                                          | USB Cable  | Motorola                                                   |
| 9.   | Adapter            | Motorola      | SPN5865A       | N/A                                          | Adapter    | Motorola                                                   |

## 2.5 EUT Operation Test Setup

For WLAN function, programmed RF utility, "QRCT" installed in the notebook make the EUT provide functions like channel selection and power level for continuous transmitting and receiving signals.

### 3 Test Result

#### 3.1 Unwanted Emissions Measurement

This section as specified in FCC Part 15.407(b) is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement. The unwanted emissions shall comply with 15.407(b)(1) to (6), and restricted bands per FCC Part 15.205.

##### 3.1.1 Limit of Unwanted Emissions

- (1) For transmitters operating in the 5.725-5.85 GHz band:

15.407(b)(4)(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

- (2) Unwanted spurious emissions fallen in restricted bands per FCC Part 15.205 shall comply with the general field strength limits set forth in § 15.209 as below table,

| 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                                |

**Note:** The following formula is used to convert the EIRP to field strength.

$$E = \frac{1000000\sqrt{30P}}{3} \quad \mu\text{V/m, where P is the eirp (Watts)}$$

| EIRP (dBm) | Field Strength at 3m (dBμV/m) |
|------------|-------------------------------|
| -17        | 78.3                          |
| - 27       | 68.3                          |

- (3) KDB 789033 D02 General UNII Test Procedures New Rules v01r02 G)2)c) As specified in 15.407(b), emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz (or -17 dBm/MHz as specified in 15.407(b)(4)). However, an out-of-band emission that complies with both the average and peak limits of 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz peak emission limit.



### 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 testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r02.

Section G) Unwanted emissions measurement.

(1) Procedure for Unwanted Emissions Measurements Below 1000MHz

- RBW = 120 kHz
- VBW = 300 kHz
- Detector = Peak
- Trace mode = max hold

(2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz

- RBW = 1 MHz
- VBW  $\geq$  3 MHz
- Detector = Peak
- Sweep time = auto
- Trace mode = max hold

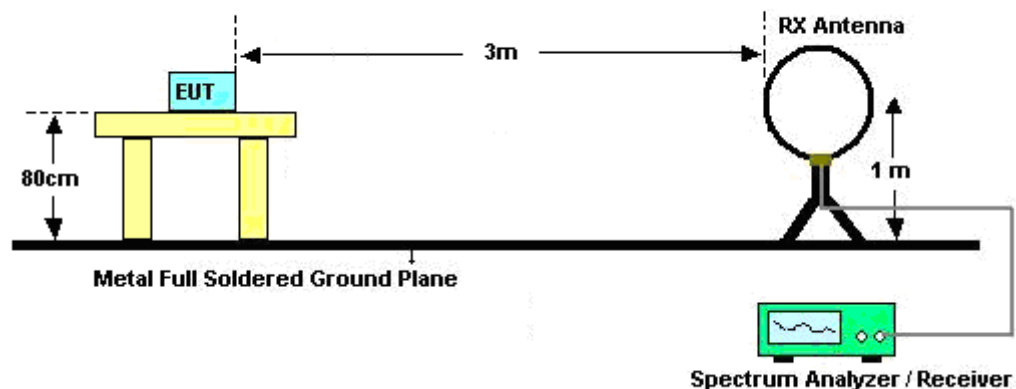
(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- VBW  $\geq$  1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

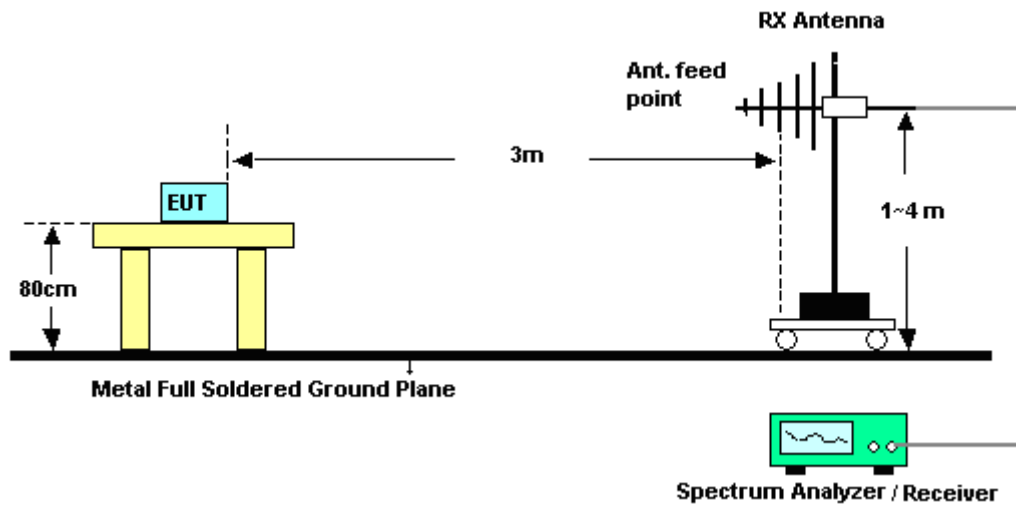
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

### 3.1.4 Test Setup

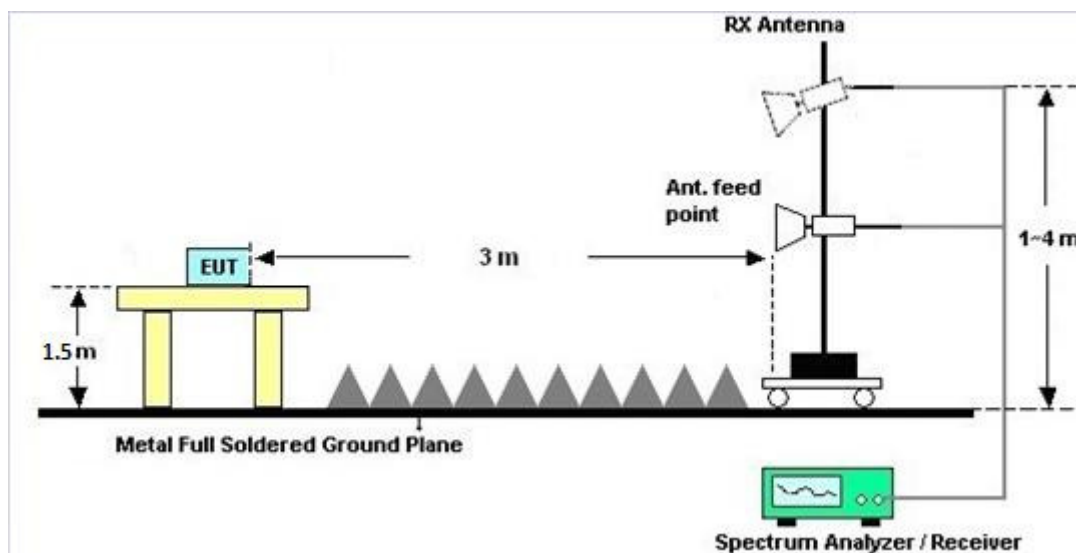
**For radiated emissions below 30MHz**



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz





### **3.1.5 Test Results of Radiated 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 Test Result of Radiated Band Edges**

Please refer to Appendix A and B.

### **3.1.7 Duty Cycle**

Please refer to Appendix C.

### **3.1.8 Test Result of Unwanted Radiated Emission (30MHz ~ 10th Harmonic)**

Please refer to Appendix A and B.

## 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.

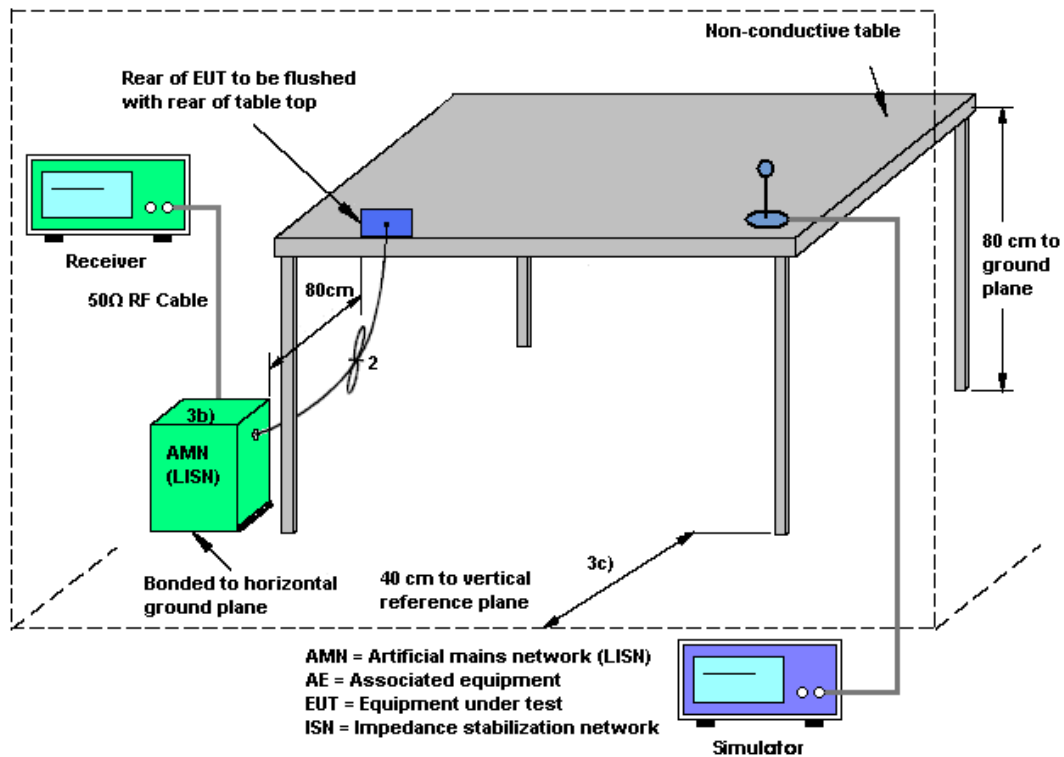
### 3.2.2 Measuring Instruments

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

### 3.2.3 Test Procedures

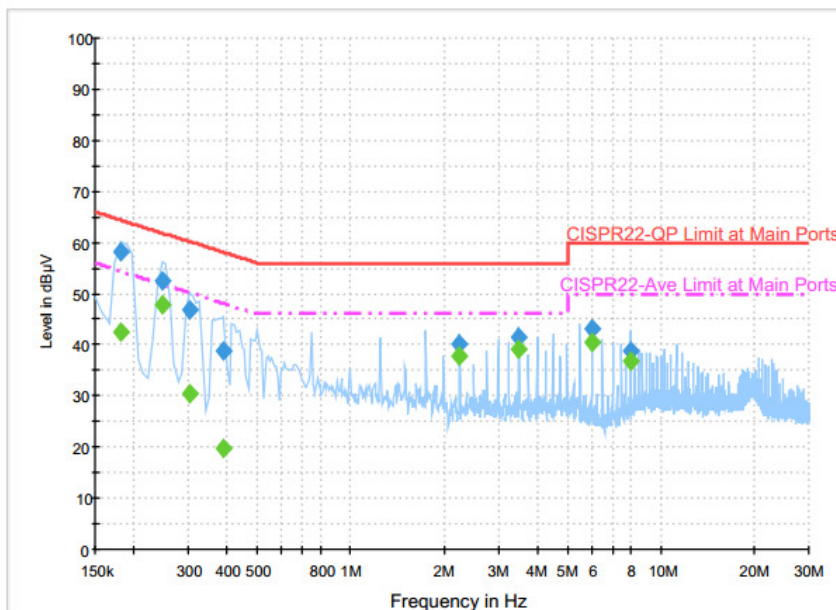
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
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 with Maximum Hold Mode.

### 3.2.4 Test Setup



### 3.2.5 Test Result of AC Conducted Emission

|                        |                                                                                                                |                            |         |
|------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------|---------|
| <b>Test Mode :</b>     | Mode 2                                                                                                         | <b>Temperature :</b>       | 22~23°C |
| <b>Test Engineer :</b> | Arthur Hsieh                                                                                                   | <b>Relative Humidity :</b> | 51~52%  |
| <b>Test Voltage :</b>  | 120Vac / 60Hz                                                                                                  | <b>Phase :</b>             | Line    |
| <b>Function Type :</b> | WCDMA Band V Idle + Bluetooth Link + WLAN (5GHz) Link + MPEG4 + WPC<br>Back Cover + PMA Charging Pad + Adapter |                            |         |



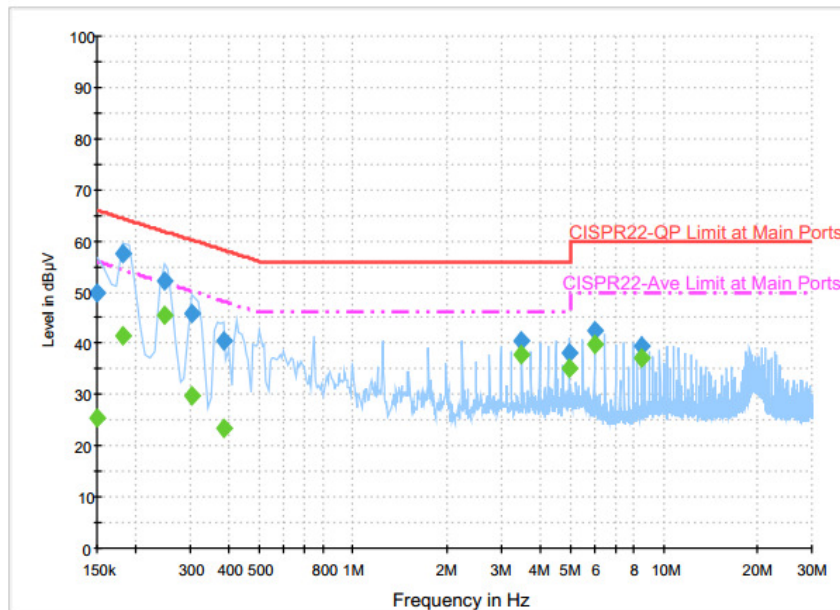
#### Final Result : QuasiPeak

| Frequency (MHz) | QuasiPeak (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|------------------|--------|------|------------|-------------|--------------|
| 0.182000        | 58.3             | Off    | L1   | 19.6       | 6.1         | 64.4         |
| 0.246000        | 52.6             | Off    | L1   | 19.6       | 9.3         | 61.9         |
| 0.302000        | 47.0             | Off    | L1   | 19.6       | 13.2        | 60.2         |
| 0.390000        | 38.8             | Off    | L1   | 19.6       | 19.3        | 58.1         |
| 2.246000        | 40.2             | Off    | L1   | 18.4       | 15.8        | 56.0         |
| 3.494000        | 41.6             | Off    | L1   | 19.7       | 14.4        | 56.0         |
| 5.990000        | 43.0             | Off    | L1   | 19.9       | 17.0        | 60.0         |
| 7.990000        | 38.9             | Off    | L1   | 20.0       | 21.1        | 60.0         |

#### Final Result : Average

| Frequency (MHz) | Average (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|----------------|--------|------|------------|-------------|--------------|
| 0.182000        | 42.5           | Off    | L1   | 19.6       | 11.9        | 54.4         |
| 0.246000        | 47.8           | Off    | L1   | 19.6       | 4.1         | 51.9         |
| 0.302000        | 30.5           | Off    | L1   | 19.6       | 19.7        | 50.2         |
| 0.390000        | 19.7           | Off    | L1   | 19.6       | 28.4        | 48.1         |
| 2.246000        | 37.6           | Off    | L1   | 18.4       | 8.4         | 46.0         |
| 3.494000        | 39.3           | Off    | L1   | 19.7       | 6.7         | 46.0         |
| 5.990000        | 40.4           | Off    | L1   | 19.9       | 9.6         | 50.0         |
| 7.990000        | 36.6           | Off    | L1   | 20.0       | 13.4        | 50.0         |

|                        |                                                                                                                                   |                            |         |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------|
| <b>Test Mode :</b>     | Mode 2                                                                                                                            | <b>Temperature :</b>       | 22~23°C |
| <b>Test Engineer :</b> | Arthur Hsieh                                                                                                                      | <b>Relative Humidity :</b> | 51~52%  |
| <b>Test Voltage :</b>  | 120Vac / 60Hz                                                                                                                     | <b>Phase :</b>             | Neutral |
| <b>Function Type :</b> | GSM1900 Idle + Bluetooth Link + WLAN (5GHz) Link + Camera + WPC Back Cover + WPC Charging Pad + USB Cable (Charging from Adapter) |                            |         |


**Final Result : QuasiPeak**

| Frequency (MHz) | QuasiPeak (dBµV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|------------------|--------|------|------------|-------------|--------------|
| 0.150000        | 49.9             | Off    | N    | 19.6       | 16.1        | 66.0         |
| 0.182000        | 57.6             | Off    | N    | 19.6       | 6.8         | 64.4         |
| 0.246000        | 52.2             | Off    | N    | 19.6       | 9.7         | 61.9         |
| 0.302000        | 45.9             | Off    | N    | 19.6       | 14.3        | 60.2         |
| 0.382000        | 40.4             | Off    | N    | 19.6       | 17.8        | 58.2         |
| 3.494000        | 40.4             | Off    | N    | 19.7       | 15.6        | 56.0         |
| 4.990000        | 38.2             | Off    | N    | 19.8       | 17.8        | 56.0         |
| 5.990000        | 42.3             | Off    | N    | 19.9       | 17.7        | 60.0         |
| 8.486000        | 39.5             | Off    | N    | 20.1       | 20.5        | 60.0         |

**Final Result : Average**

| Frequency (MHz) | Average (dBµV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|----------------|--------|------|------------|-------------|--------------|
| 0.150000        | 25.5           | Off    | N    | 19.6       | 30.5        | 56.0         |
| 0.182000        | 41.6           | Off    | N    | 19.6       | 12.8        | 54.4         |
| 0.246000        | 45.5           | Off    | N    | 19.6       | 6.4         | 51.9         |
| 0.302000        | 29.8           | Off    | N    | 19.6       | 20.4        | 50.2         |
| 0.382000        | 23.4           | Off    | N    | 19.6       | 24.8        | 48.2         |
| 3.494000        | 37.9           | Off    | N    | 19.7       | 8.1         | 46.0         |
| 4.990000        | 35.2           | Off    | N    | 19.8       | 10.8        | 46.0         |
| 5.990000        | 39.9           | Off    | N    | 19.9       | 10.1        | 50.0         |
| 8.486000        | 37.1           | Off    | N    | 20.1       | 12.9        | 50.0         |



## 4 List of Measuring Equipment

| Instrument           | Manufacturer    | Model No.                  | Serial No.  | Characteristics | Calibration Date | Test Date                        | Due Date      | Remark                   |
|----------------------|-----------------|----------------------------|-------------|-----------------|------------------|----------------------------------|---------------|--------------------------|
| Loop Antenna         | Rohde & Schwarz | HFH2-Z2                    | 100315      | 9 kHz~30 MHz    | Sep. 02, 2015    | Jul. 29, 2016 ~<br>Jul. 30, 2016 | Sep. 01, 2016 | Radiation<br>(03CH11-HY) |
| Amplifier            | SONOMA          | 310N                       | 187312      | 9kHz~1GHz       | Nov. 20, 2015    | Jul. 29, 2016 ~<br>Jul. 30, 2016 | Nov. 19, 2016 | Radiation<br>(03CH11-HY) |
| Bilog Antenna        | TESEQ           | CBL 6111D                  | 35414       | 30MHz~1GHz      | Nov. 17, 2015    | Jul. 29, 2016 ~<br>Jul. 30, 2016 | Nov. 16, 2016 | Radiation<br>(03CH11-HY) |
| Horn Antenna         | SCHWARZBECK     | BBHA 9120 D                | 9120D-1326  | 1GHz ~ 18GHz    | Oct. 08, 2015    | Jul. 29, 2016 ~<br>Jul. 30, 2016 | Oct. 07, 2016 | Radiation<br>(03CH11-HY) |
| Preamplifier         | Keysight        | 83017A                     | MY53270080  | 1GHz~26.5GHz    | Nov. 19, 2015    | Jul. 29, 2016 ~<br>Jul. 30, 2016 | Nov. 18, 2016 | Radiation<br>(03CH11-HY) |
| Preamplifier         | MITEQ           | AMF-7D-0010<br>1800-30-10P | 1902247     | 1GHz~18GHz      | Jul. 22, 2016    | Jul. 29, 2016 ~<br>Jul. 30, 2016 | Jun. 21, 2017 | Radiation<br>(03CH11-HY) |
| Spectrum Analyzer    | Keysight        | N9010A                     | MY54200486  | 10Hz ~ 44GHZ    | Sep. 24, 2015    | Jul. 29, 2016 ~<br>Jul. 30, 2016 | Sep. 23, 2016 | Radiation<br>(03CH11-HY) |
| Antenna Mast         | EMEC            | AM-BS-4500-B               | N/A         | 1~4m            | N/A              | Jul. 29, 2016 ~<br>Jul. 30, 2016 | N/A           | Radiation<br>(03CH11-HY) |
| Turn Table           | EMEC            | TT 2000                    | N/A         | 0~360 Degree    | N/A              | Jul. 29, 2016 ~<br>Jul. 30, 2016 | N/A           | Radiation<br>(03CH11-HY) |
| SHF-EHF Horn Antenna | SCHWARZBECK     | BBHA 9170                  | BBHA9170584 | 18GHz- 40GHz    | Nov. 02, 2015    | Jul. 29, 2016 ~<br>Jul. 30, 2016 | Nov. 01, 2016 | Radiation<br>(03CH11-HY) |
| Preamplifier         | MITEQ           | TTA0204                    | 1872107     | 2GHz~40GHz      | Feb. 15, 2016    | Jul. 29, 2016 ~<br>Jul. 30, 2016 | Feb. 14, 2017 | Radiation<br>(03CH11-HY) |
| AC Power Source      | ChainTek        | APC-1000W                  | N/A         | N/A             | N/A              | Jul. 29, 2016                    | N/A           | Conduction<br>(CO05-HY)  |
| EMI Test Receiver    | Rohde & Schwarz | ESCI 7                     | 100724      | 9kHz~7GHz       | Aug. 26, 2015    | Jul. 29, 2016                    | Aug. 25, 2016 | Conduction<br>(CO05-HY)  |
| LISN                 | Rohde & Schwarz | ENV216                     | 100080      | 9kHz~30MHz      | Dec. 02, 2015    | Jul. 29, 2016                    | Dec. 01, 2016 | Conduction<br>(CO05-HY)  |



## 5 Uncertainty of Evaluation

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

|                                                                         |      |
|-------------------------------------------------------------------------|------|
| 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% ( $U = 2Uc(y)$ ) | 3.37 |
|-------------------------------------------------------------------------|------|



## **Appendix A. Radiated Spurious Emission**

|                        |                                  |                            |         |
|------------------------|----------------------------------|----------------------------|---------|
| <b>Test Engineer :</b> | J.C. Liang, Jacky Su, and Ken Wu | <b>Temperature :</b>       | 20~23°C |
|                        |                                  | <b>Relative Humidity :</b> | 50~54%  |



## Band 4 - 5725~5850MHz

## WIFI 802.11n HT40 (Band Edge @ 3m)

## &lt;PMA Charging Mode&gt;

| WIFI<br>Ant.                         | Note                                                                                        | Frequency | Level      | Over<br>Limit | Limit<br>Line | Read<br>Level | Antenna<br>Factor | Cable<br>Loss | Preamp<br>Factor | Ant<br>Pos | Table<br>Pos | Peak<br>Avg. | Pol.    |
|--------------------------------------|---------------------------------------------------------------------------------------------|-----------|------------|---------------|---------------|---------------|-------------------|---------------|------------------|------------|--------------|--------------|---------|
| 1+2                                  |                                                                                             | ( MHz )   | ( dBμV/m ) | ( dB )        | ( dBμV/m )    | ( dBμV )      | ( dB/m )          | ( dB )        | ( dB )           | ( cm )     | ( deg )      | ( P/A )      | ( H/V ) |
| 802.11n<br>HT40<br>CH 159<br>5795MHz |                                                                                             | 5649.8    | 48.06      | -20.14        | 68.2          | 38.69         | 32.22             | 10.69         | 33.54            | 385        | 118          | P            | H       |
|                                      |                                                                                             | 5687.6    | 48.8       | -47.25        | 96.05         | 39.42         | 32.27             | 10.67         | 33.56            | 385        | 118          | P            | H       |
|                                      |                                                                                             | 5711.6    | 48.64      | -59.81        | 108.45        | 39.27         | 32.29             | 10.65         | 33.57            | 385        | 118          | P            | H       |
|                                      |                                                                                             | 5721.8    | 46.68      | -68.22        | 114.9         | 37.29         | 32.31             | 10.65         | 33.57            | 385        | 118          | P            | H       |
|                                      |                                                                                             | 5795      | 95.04      | -             | -             | 85.61         | 32.41             | 10.61         | 33.59            | 385        | 118          | P            | H       |
|                                      |                                                                                             | 5795      | 87.29      | -             | -             | 77.86         | 32.41             | 10.61         | 33.59            | 385        | 118          | A            | H       |
|                                      |                                                                                             | 5852      | 53.18      | -64.46        | 117.64        | 43.53         | 32.48             | 10.78         | 33.61            | 385        | 118          | P            | H       |
|                                      |                                                                                             | 5855.2    | 52.84      | -57.9         | 110.74        | 43.16         | 32.51             | 10.78         | 33.61            | 385        | 118          | P            | H       |
|                                      |                                                                                             | 5880.6    | 48.36      | -52.68        | 101.04        | 38.51         | 32.53             | 10.94         | 33.62            | 385        | 118          | P            | H       |
|                                      |                                                                                             | 5947.8    | 48.32      | -19.88        | 68.2          | 38.07         | 32.63             | 11.27         | 33.65            | 385        | 118          | P            | H       |
|                                      |                                                                                             |           |            |               |               |               |                   |               |                  |            |              |              | H       |
|                                      |                                                                                             |           |            |               |               |               |                   |               |                  |            |              |              | H       |
|                                      |                                                                                             | 5637.6    | 48         | -20.2         | 68.2          | 38.66         | 32.19             | 10.69         | 33.54            | 255        | 58           | P            | V       |
|                                      |                                                                                             | 5700      | 49.06      | -56.14        | 105.2         | 39.68         | 32.27             | 10.67         | 33.56            | 255        | 58           | P            | V       |
|                                      |                                                                                             | 5719.4    | 52.31      | -58.32        | 110.63        | 42.92         | 32.31             | 10.65         | 33.57            | 255        | 58           | P            | V       |
|                                      |                                                                                             | 5720.6    | 51.06      | -61.11        | 112.17        | 41.67         | 32.31             | 10.65         | 33.57            | 255        | 58           | P            | V       |
|                                      |                                                                                             | 5795      | 102.86     | -             | -             | 93.43         | 32.41             | 10.61         | 33.59            | 255        | 58           | P            | V       |
|                                      |                                                                                             | 5795      | 93.27      | -             | -             | 83.84         | 32.41             | 10.61         | 33.59            | 255        | 58           | A            | V       |
|                                      |                                                                                             | 5852.8    | 58.64      | -57.18        | 115.82        | 48.99         | 32.48             | 10.78         | 33.61            | 255        | 58           | P            | V       |
|                                      |                                                                                             | 5855.1    | 56.78      | -53.99        | 110.77        | 47.1          | 32.51             | 10.78         | 33.61            | 255        | 58           | P            | V       |
|                                      |                                                                                             | 5877      | 52.83      | -50.88        | 103.71        | 42.98         | 32.53             | 10.94         | 33.62            | 255        | 58           | P            | V       |
|                                      |                                                                                             | 5941.2    | 48.82      | -19.38        | 68.2          | 38.57         | 32.63             | 11.27         | 33.65            | 255        | 58           | P            | V       |
|                                      |                                                                                             |           |            |               |               |               |                   |               |                  |            |              |              | V       |
|                                      |                                                                                             |           |            |               |               |               |                   |               |                  |            |              |              | V       |
| Remark                               | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |           |            |               |               |               |                   |               |                  |            |              |              |         |



**Band 4 5725~5850MHz**  
**WIFI 802.11n HT40 (Harmonic @ 3m)**

**<PMA Charging Mode>**

| WIFI<br>Ant.<br>1+2                  | Note                                                                                        | Frequency<br>( MHz ) | Level<br>( dBμV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBμV/m ) | Read<br>Level<br>( dBμV ) | Antenna<br>Factor<br>( dB/m ) | Cable<br>Loss<br>( dB ) | Preamp<br>Factor<br>( dB ) | Ant<br>Pos<br>( cm ) | Table<br>Pos<br>( deg ) | Peak<br>Avg.<br>(P/A) | Pol.<br>(H/V) |
|--------------------------------------|---------------------------------------------------------------------------------------------|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|-------------------------|----------------------------|----------------------|-------------------------|-----------------------|---------------|
| 802.11n<br>HT40<br>CH 159<br>5795MHz |                                                                                             | 11590                | 42.64               | -31.36                  | 74                          | 38.51                     | 39.73                         | 15.66                   | 51.26                      | 100                  | 0                       | P                     | H             |
|                                      |                                                                                             | 17385                | 44.83               | -23.37                  | 68.2                        | 36.73                     | 41.45                         | 18.66                   | 52.01                      | 100                  | 0                       | P                     | H             |
|                                      |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                       | H             |
|                                      |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                       | H             |
|                                      |                                                                                             | 11590                | 43.01               | -30.99                  | 74                          | 38.88                     | 39.73                         | 15.66                   | 51.26                      | 100                  | 0                       | P                     | V             |
|                                      |                                                                                             | 17385                | 44.78               | -23.42                  | 68.2                        | 36.68                     | 41.45                         | 18.66                   | 52.01                      | 100                  | 0                       | P                     | V             |
|                                      |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                       | V             |
|                                      |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                       | V             |
| Remark                               | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                       |               |

## Band 4 5725~5850MHz

## Emission below 1GHz

**5GHz WIFI 802.11n HT40 (LF @ 3m)**

### <PMA Charging Mode>

| WIFI                          | Note                                                                       | Frequency | Level      | Over   | Limit      | Read   | Antenna  | Cable  | Preamp | Ant    | Table   | Peak  | Pol.  |
|-------------------------------|----------------------------------------------------------------------------|-----------|------------|--------|------------|--------|----------|--------|--------|--------|---------|-------|-------|
| Ant.                          |                                                                            |           |            | Limit  | Line       | Level  | Factor   | Loss   | Factor | Pos    | Pos     | Avg.  |       |
| 1+2                           |                                                                            | ( MHz )   | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | (dBμV) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | (P/A) | (H/V) |
| 5GHz<br>802.11n<br>HT40<br>LF |                                                                            | 129.63    | 22.62      | -20.88 | 43.5       | 34.92  | 18       | 1.48   | 31.78  |        |         | P     | H     |
|                               |                                                                            | 186.06    | 36.38      | -7.12  | 43.5       | 51.16  | 15.26    | 1.74   | 31.78  |        |         | P     | H     |
|                               |                                                                            | 243.3     | 41.62      | -4.38  | 46         | 53.35  | 18.06    | 1.98   | 31.77  | 212    | 313     | P     | H     |
|                               |                                                                            | 561.1     | 25.84      | -20.16 | 46         | 29.78  | 25.01    | 3.03   | 31.98  |        |         | P     | H     |
|                               |                                                                            | 708.8     | 28         | -18    | 46         | 29.61  | 26.88    | 3.54   | 32.03  |        |         | P     | H     |
|                               |                                                                            | 906.9     | 32.07      | -13.93 | 46         | 30.19  | 29.39    | 3.86   | 31.37  |        |         | P     | H     |
|                               |                                                                            |           |            |        |            |        |          |        |        |        |         |       | H     |
|                               |                                                                            |           |            |        |            |        |          |        |        |        |         |       | H     |
|                               |                                                                            |           |            |        |            |        |          |        |        |        |         |       | H     |
|                               |                                                                            |           |            |        |            |        |          |        |        |        |         |       | H     |
|                               |                                                                            |           |            |        |            |        |          |        |        |        |         |       | H     |
|                               |                                                                            |           |            |        |            |        |          |        |        |        |         |       | H     |
|                               |                                                                            | 40.8      | 32.09      | -7.91  | 40         | 43.24  | 19.74    | 0.93   | 31.82  | 342    | 125     | P     | V     |
|                               |                                                                            | 184.71    | 30.12      | -13.38 | 43.5       | 44.92  | 15.24    | 1.74   | 31.78  |        |         | P     | V     |
|                               |                                                                            | 244.65    | 31.04      | -14.96 | 46         | 42.68  | 18.15    | 1.98   | 31.77  |        |         | P     | V     |
|                               |                                                                            | 458.2     | 24.11      | -21.89 | 46         | 28.86  | 23.42    | 3.68   | 31.85  |        |         | P     | V     |
|                               |                                                                            | 659.1     | 27.36      | -18.64 | 46         | 29.74  | 26.3     | 3.36   | 32.04  |        |         | P     | V     |
|                               |                                                                            | 859.3     | 30.89      | -15.11 | 46         | 29.79  | 28.96    | 3.77   | 31.63  |        |         | P     | V     |
|                               |                                                                            |           |            |        |            |        |          |        |        |        |         |       | V     |
|                               |                                                                            |           |            |        |            |        |          |        |        |        |         |       | V     |
|                               |                                                                            |           |            |        |            |        |          |        |        |        |         | V     |       |
|                               |                                                                            |           |            |        |            |        |          |        |        |        |         | V     |       |
|                               |                                                                            |           |            |        |            |        |          |        |        |        |         | V     |       |
|                               |                                                                            |           |            |        |            |        |          |        |        |        |         | V     |       |
| Remark                        | 1. No other spurious found.<br>2. All results are PASS against limit line. |           |            |        |            |        |          |        |        |        |         |       |       |



**Note symbol**

|     |                                                                                                                                                          |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| *   | <b>Fundamental Frequency</b> which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency. |
| !   | Test result is <b>over limit</b> line.                                                                                                                   |
| P/A | <b>Peak</b> or <b>Average</b>                                                                                                                            |
| H/V | <b>Horizontal</b> or <b>Vertical</b>                                                                                                                     |



A calculation example for radiated spurious emission is shown as below:

| WIFI    | Note | Frequency | Level      | Over   | Limit      | Read     | Antenna  | Cable  | Preamp | Ant    | Table   | Peak    | Pol.    |
|---------|------|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|
| Ant.    |      |           |            | Limit  | Line       | Level    | Factor   | Loss   | Factor | Pos    | Pos     | Avg.    |         |
| 1+2     |      | ( MHz )   | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | ( P/A ) | ( H/V ) |
| 802.11b |      | 2390      | 55.45      | -18.55 | 74         | 54.51    | 32.22    | 4.58   | 35.86  | 103    | 308     | P       | H       |
| CH 01   |      |           |            |        |            |          |          |        |        |        |         |         |         |
| 2412MHz |      | 2390      | 43.54      | -10.46 | 54         | 42.6     | 32.22    | 4.58   | 35.86  | 103    | 308     | A       | H       |

1. Level(dBμV/m) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

#### For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

#### For Average Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

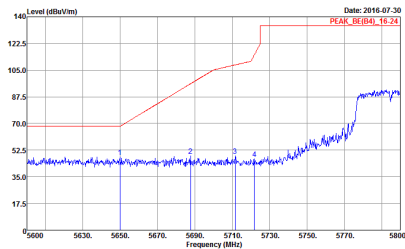
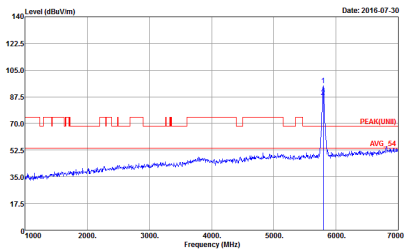
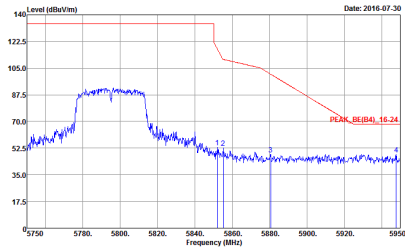
Both peak and average measured complies with the limit line, so test result is “PASS”.



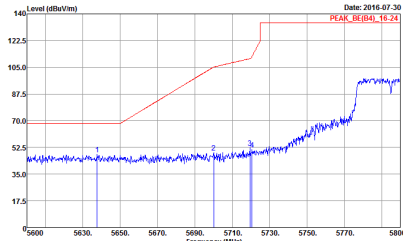
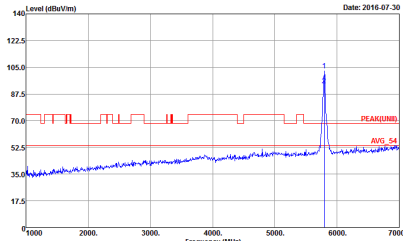
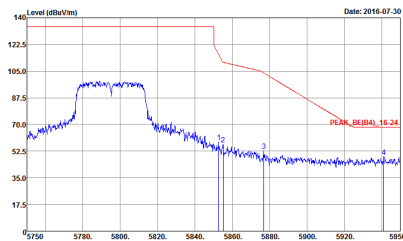
## **Appendix B. Radiated Spurious Emission Plots**

|                        |                                  |                            |         |
|------------------------|----------------------------------|----------------------------|---------|
| <b>Test Engineer :</b> | J.C. Liang, Jacky Su, and Ken Wu | <b>Temperature :</b>       | 20~23°C |
|                        |                                  | <b>Relative Humidity :</b> | 50~54%  |

**Band 4 - 5725~5850MHz**
**WIFI 802.11n HT40 (Band Edge @ 3m)**
**<PMA Charging Mode>**

| WIFI | Band 4 5725~5850MHz Band Edge @ 3m                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                           |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11n HT40 CH159 5795MHz                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                           |
| 1+2  | Horizontal                                                                                                                                                                                                                                                                                                                        | Fundamental                                                                                                                                                                                                                                                                                                               |
| Peak |  <p>           Site : 03CH11-HY<br/>           Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL<br/>           Detector : Peak<br/>           Project : 651612-16<br/>           Mode : 2<br/>           WPC cover : PMA         </p>   |  <p>           Site : 03CH11-HY<br/>           Condition : PEAK(UNIT) 3m HORN 9120D-HF HORIZONTAL<br/>           Detector : Peak<br/>           Project : 651612-16<br/>           Mode : 2<br/>           WPC cover : PMA         </p> |
| Peak |  <p>           Site : 03CH11-HY<br/>           Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL<br/>           Detector : Peak<br/>           Project : 651612-16<br/>           Mode : 2<br/>           WPC cover : PMA         </p> |                                                                                                                                                                                                                                                                                                                           |



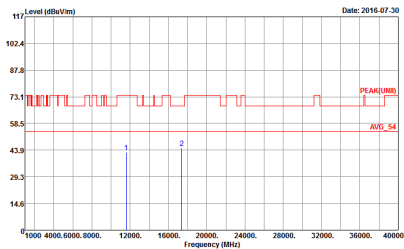
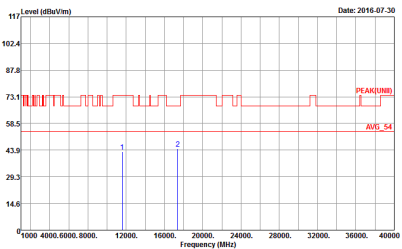
| WIFI | Band 4 5725~5850MHz Band Edge @ 3m                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                        |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11n HT40 CH159 5795MHz                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                        |
| 1+2  | Vertical                                                                                                                                                                                                                                                       | Fundamental                                                                                                                                                                                                                                            |
| Peak | <div><p>Site : 03CH11-HY<br/>Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL<br/>Detector : Peak<br/>Project : 651612-16<br/>Mode : 2<br/>WPC cover + PMA</p></div>   | <div><p>Site : 03CH11-HY<br/>Condition : PEAK(FUND) 3m HORN 9120D-HF VERTICAL<br/>Detector : Peak<br/>Project : 651612-16<br/>Mode : 2<br/>WPC cover + PMA</p></div> |
| Peak | <div><p>Site : 03CH11-HY<br/>Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF VERTICAL<br/>Detector : Peak<br/>Project : 651612-16<br/>Mode : 2<br/>WPC cover + PMA</p></div> |                                                                                                                                                                                                                                                        |



Band 4 - 5725~5850MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

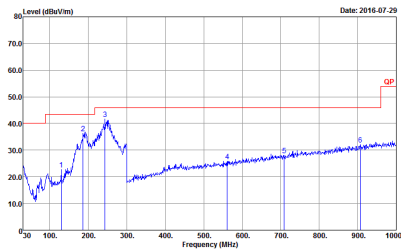
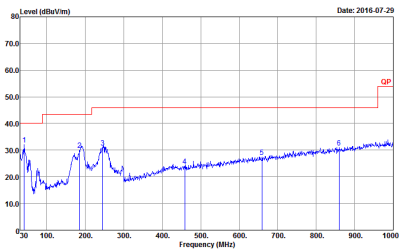
<PMA Charging Mode>

| WIFI         | Band 4 5725~5850MHz Harmonic @ 3m                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                        |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT          | 802.11n HT40 CH159 5795MHz                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                        |
| 1+2          | Horizontal                                                                                                                                                                                                                                              | Vertical                                                                                                                                                                                                                                               |
| Peak<br>Avg. | <div><p>Site : 03CH11-HY<br/>Condition : PEAK(UNIT) 3m HORN 9120D-HF HORIZONTAL<br/>Detector : Peak<br/>Project : 651612-16<br/>Mode : 2<br/>WPC cover + PMA</p></div> | <div><p>Site : 03CH11-HY<br/>Condition : PEAK(UNIT) 3m HORN 9120D-HF VERTICAL<br/>Detector : Peak<br/>Project : 651612-16<br/>Mode : 2<br/>WPC cover + PMA</p></div> |



Emission below 1GHz  
5GHz WIFI 802.11n HT40 (LF)

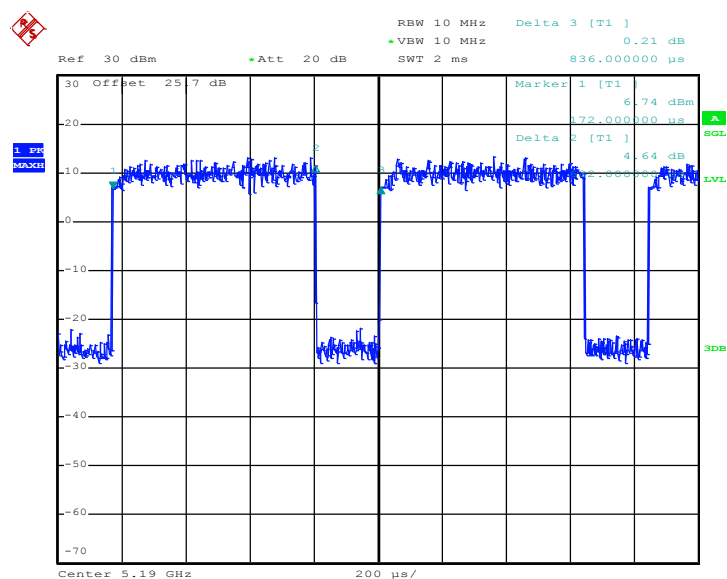
<PMA Charging Mode>

| WIFI         | 5GHz 5725~5850MHz                                                                                                                                                                                                                           |                                                                                                                                                                                                                                            |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT          | 802.11n HT40 LF                                                                                                                                                                                                                             |                                                                                                                                                                                                                                            |
| 1+2          | Horizontal                                                                                                                                                                                                                                  | Vertical                                                                                                                                                                                                                                   |
| QP /<br>Peak |  <p>Site : 03CH11-HY<br/>Condition : QP 3m BE-LOG 6111D-LF_ETC HORIZONTAL<br/>Detector : Peak<br/>Project : 651612-16<br/>Mode : 2<br/>WPC cover : PMA</p> |  <p>Site : 03CH11-HY<br/>Condition : QP 3m BE-LOG 6111D-LF_ETC VERTICAL<br/>Detector : Peak<br/>Project : 651612-16<br/>Mode : 2<br/>WPC cover : PMA</p> |
|              |                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                            |

## Appendix C. Duty Cycle Plots

| Antenna | Band              | Duty Cycle(%) | T(us) | 1/T(kHz) | VBW Setting |
|---------|-------------------|---------------|-------|----------|-------------|
| 1+2     | 5GHz 802.11n HT40 | 75.598        | 632   | 1.582    | 3kHz        |

### 802.11n HT40



Date: 22.MAY.2016 09:23:04



## **Appendix D. Original Report**

Please refer to Sporton report number FR651612-02E as below.



# FCC RF Test Report

**APPLICANT** : Motorola Mobility, LLC  
**EQUIPMENT** : Mobile Cellular Phone  
**BRAND NAME** : Motorola  
**MODEL NAME** : 7524  
**FCC ID** : IHDT56VC2  
**STANDARD** : FCC Part 15 Subpart E §15.407  
**CLASSIFICATION** : (NII) Unlicensed National Information Infrastructure

This is a variant report which is only valid together with the original test report. The product was received on May 16, 2016. 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

---

Approved by: Jones Tsai / Manager



## **SPORTON INTERNATIONAL INC.**

**No. 52, Hwa Ya 1<sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.**



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## REVISION HISTORY

| REPORT NO.   | VERSION | DESCRIPTION             | ISSUED DATE   |
|--------------|---------|-------------------------|---------------|
| FR651612-02E | Rev. 01 | Initial issue of report | Jun. 30, 2016 |
|              |         |                         |               |
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|              |         |                         |               |



# 1 General Description

## 1.1 Applicant

**Motorola Mobility, LLC**

222 W Merchandise Mart Plaza, Suite 1800, Chicago, IL 60654, United States

## 1.2 Manufacturer

**Motorola Mobility, LLC**

222 W Merchandise Mart Plaza, Suite 1800, Chicago, IL 60654, United States

## 1.3 Product Feature of Equipment Under Test

| Product Feature                 |                                                                                                                      |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Equipment                       | Mobile Cellular Phone                                                                                                |
| Brand Name                      | Motorola                                                                                                             |
| Model Name                      | 7524                                                                                                                 |
| FCC ID                          | IHDT56VC2                                                                                                            |
| EUT supports Radios application | GSM/EGPRS/WCDMA/HSPA/LTE/NFC<br>WLAN 11b/g/n HT20<br>WLAN 11a/n HT20/HT40<br>Bluetooth v3.0 EDR<br>Bluetooth v4.0 LE |
| HW Version                      | DVT2                                                                                                                 |
| EUT Stage                       | Identical Prototype                                                                                                  |

**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 Re-use of Measured Data**

### **1.4.1 Introduction Section**

This application re-uses data collected on a similar device. The subject device of this application (Model 7524, FCC ID IDHT56VC2) is electrically identical to the reference device (Model 5892, FCC ID IDHT56VC1) for the portions of the circuitry corresponding to the data being re-used, as treated by KDB Publication 178919 D01.

### **1.4.2 Difference Section**

For details concerning the similarity with respect to component placement, mechanical/electrical design etc., please refer to the Operational Description.

The re-used RF data includes the following bands provided in Appendix A (Sporton RF Report No. FR651612E for the reference device Model 5892, FCC ID IDHT56VC1):

- 5GHz WLAN

### **1.4.3 Spot Check Verification Data Section**

In order to confirm hardware similarity of the subject device with the reference device, spot check measurements were performed on the subject device for radiated spurious emission, the test result were consistent with FCC ID IDHT56VC1.

Assertions concerning the similarity of these devices are based on representations by the applicant. The applicant accepts full responsibility for the validity of the similarity claim, and for the determination that verification test data are sufficient to support it.

### **1.4.4 Reference detail Section:**

| Equipment Class | Reference FCC ID | Folder Test/RF Exposure | Report Title/Section    |
|-----------------|------------------|-------------------------|-------------------------|
| NII             | IDHT56VC1        | Part15E (FR651612E)     | All sections applicable |

## **1.5 Modification of EUT**

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



## **Appendix A. Original Report**

Please refer to Sporton report number FR651612E.