



# FCC RF Test Report

**APPLICANT** : Motorola Mobility, LLC  
**EQUIPMENT** : Mobile Cellular Phone  
**BRAND NAME** : Motorola  
**MODEL NAME** : 6576  
**FCC ID** : IHDT56VB4  
**STANDARD** : FCC Part 15 Subpart C §15.247  
**CLASSIFICATION** : (DSS) Spread Spectrum Transmitter

The product was received on Jul. 28, 2016 and testing was completed on Aug. 03, 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.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager



## **SPORTON INTERNATIONAL INC.**

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FCC ID : IHDT56VB4

Page Number : 1 of 23

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### SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.42 dB at 41.070 MHz
3.2	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 2.20 dB at 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	6576
FCC ID	IHDT56VB4
IMEI Code	358180070001654 (for Radiation) 358180070002314 (for Conduction)
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/LTE/NFC WLAN 11b/g/n HT20/VHT20 WLAN 11a/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80 Bluetooth v3.0 EDR Bluetooth v4.2 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	
Tx/Rx Frequency Range	2402 MHz ~ 2480 MHz
Number of Channels	79
Carrier Frequency of Each Channel	2402+n*1 MHz; n=0~78
Antenna Type	Fixed Internal Antenna (The antenna peak gain of EUT is less than 6 dBi)
Type of Modulation	Bluetooth BR (1Mbps) : GFSK Bluetooth EDR (2Mbps) : $\pi/4$ -DQPSK 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.

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

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

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No. 52, Hwa Ya 1 <sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	<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 C §15.247
- ♦ 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

### 2.1 Descriptions of Test Mode

- 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).

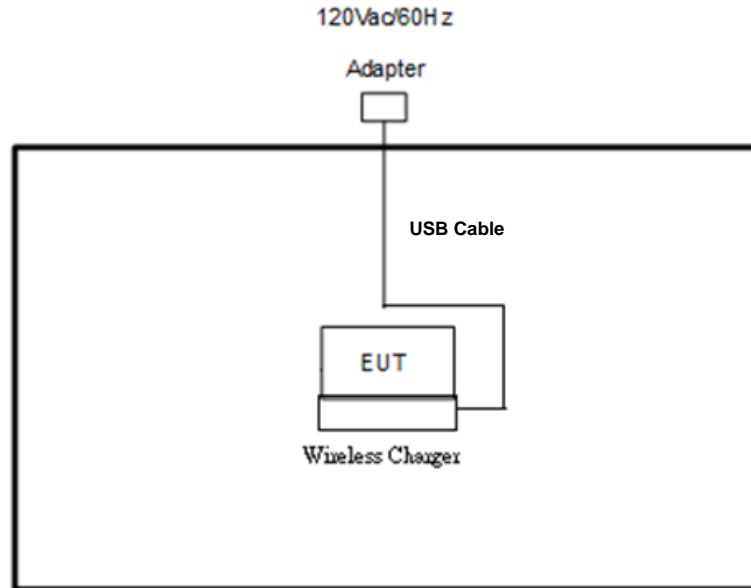
### 2.2 Test Mode

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

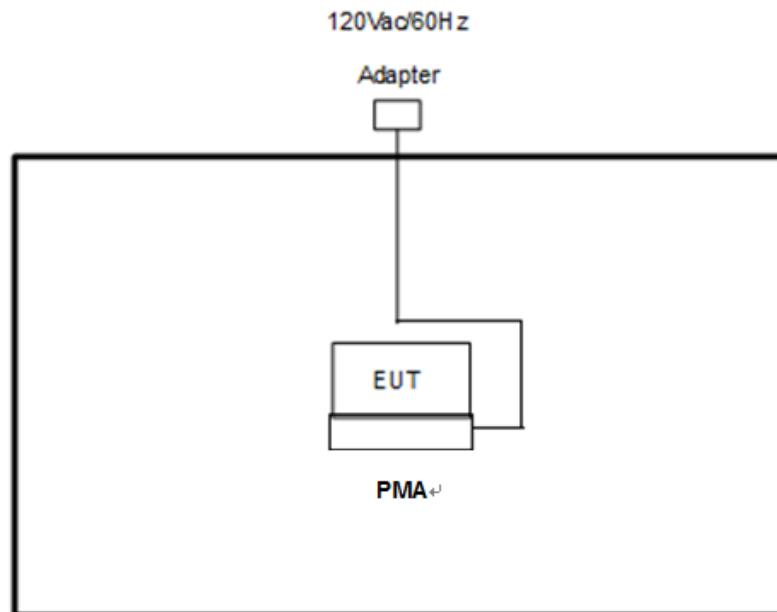
Summary table of Test Cases	
Radiated Test Cases	<b>Bluetooth EDR 3Mbps 8-DPSK</b>
	Mode 1: CH78_2480 MHz with WPC Charger Mode 2: CH78_2480 MHz with PMA Charger
AC Conducted Emission	Mode 1 :GSM1900 Idle + Bluetooth Link + WLAN (2.4GHz) Link + Camera + WPC Back Cover + WPC Charging Pad + USB Cable (Charging from Adapter) Mode 2 : WCDMA Band V Idle + Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + WPC Back Cover + PMA Charging Pad + Adapter
<b>Remark:</b> The worst case of conducted emission is mode 2; only the test data of it was reported.	

## 2.3 Connection Diagram of Test System

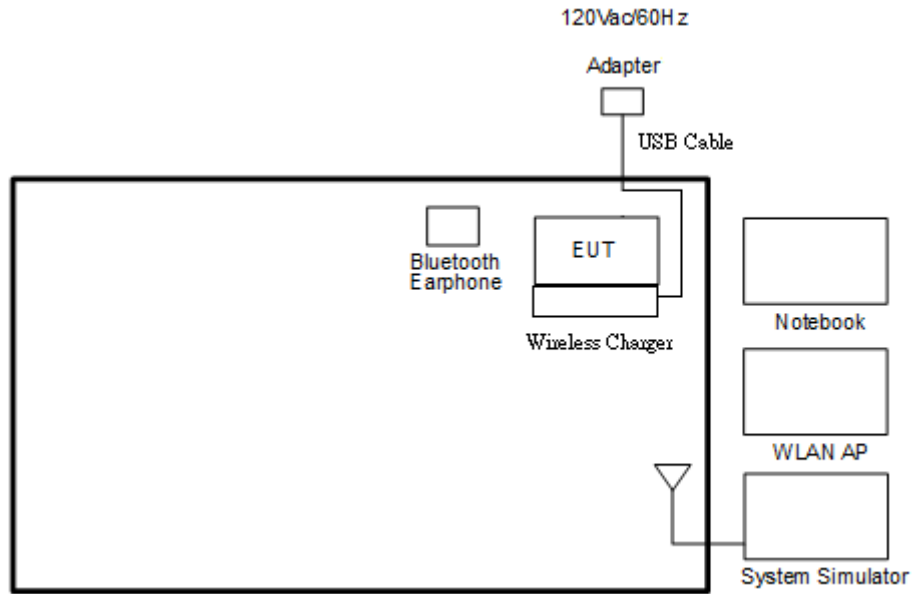
### <Bluetooth Tx with WPC Charging Mode>



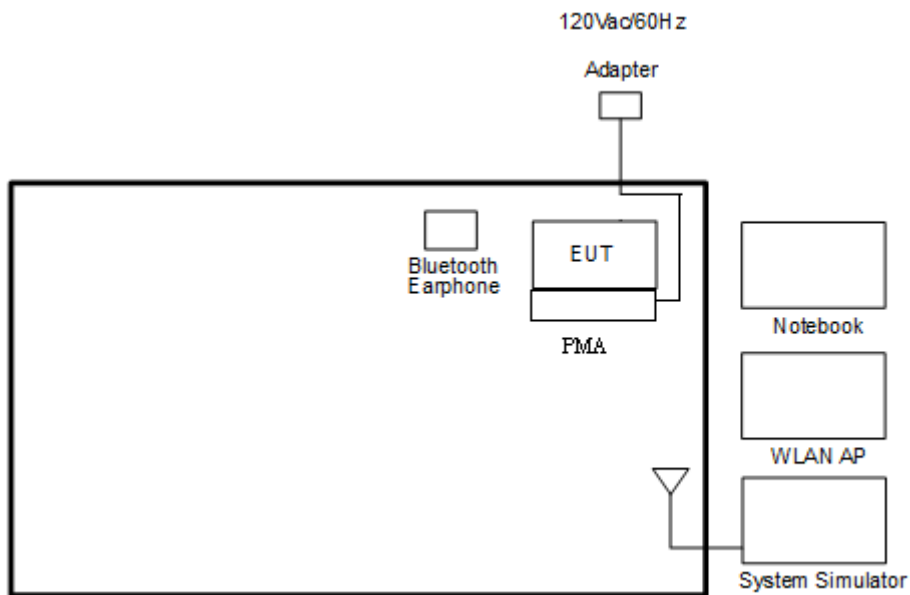
### <Bluetooth Tx with PMA Charging Mode>



<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	KA2IR628LA1	N/A	Unshielded, 1.8 m
3.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
4.	Notebook	DELL	Latitude E6320	FCC DoC/ Contains FCC ID: QDS-BRCM1054	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
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	SKN6473A	N/A	Unshielded, 1.0 m	N/A
9.	Adapter	Motorola	SPN5913A	N/A	N/A	N/A

## 2.5 EUT Operation Test Setup

For Bluetooth function, programmed RF utility, "QRCT" installed in the EUT provide functions like channel selection and power level 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 (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

##### 3.1.2 Measuring Instruments

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



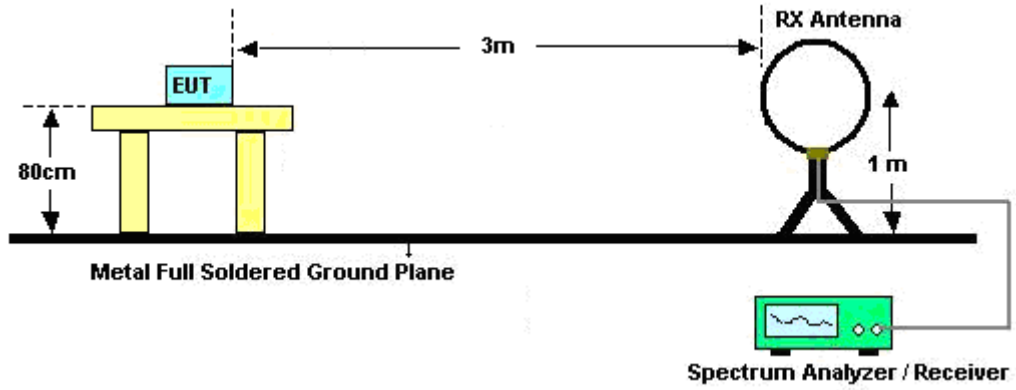
### 3.1.3 Test Procedures

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

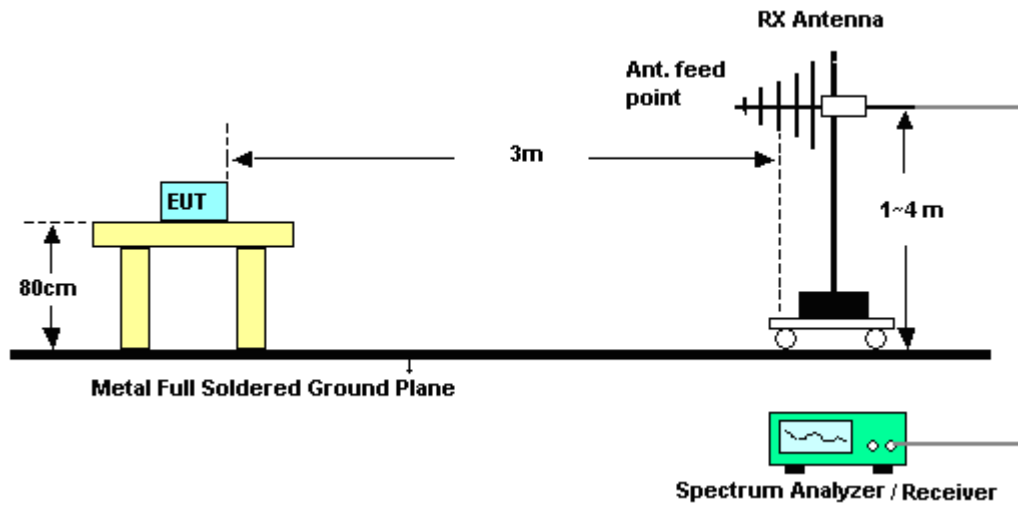
Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (24.79dB) derived from  $20 \log (\text{dwell time}/100\text{ms})$ . This correction is only for signals that hop with the fundamental signal, such as band-edge and harmonic. Other spurious signals that are independent of the hopping signal would not use this correction.

### 3.1.4 Test Setup

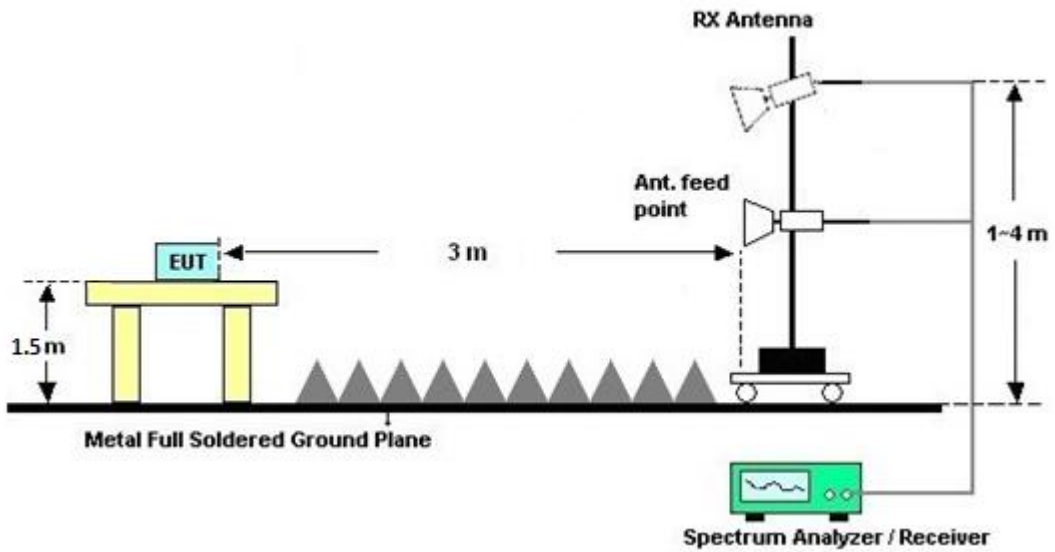
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



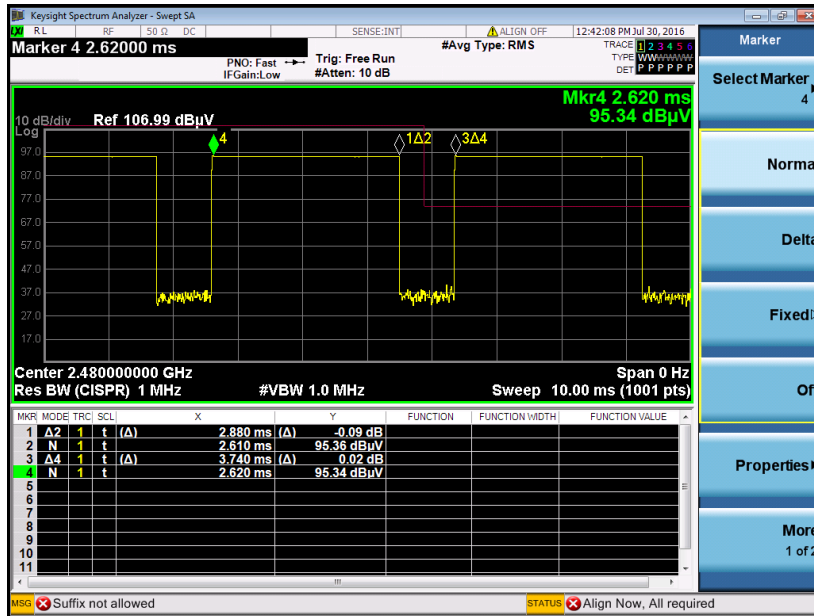
### 3.1.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

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.

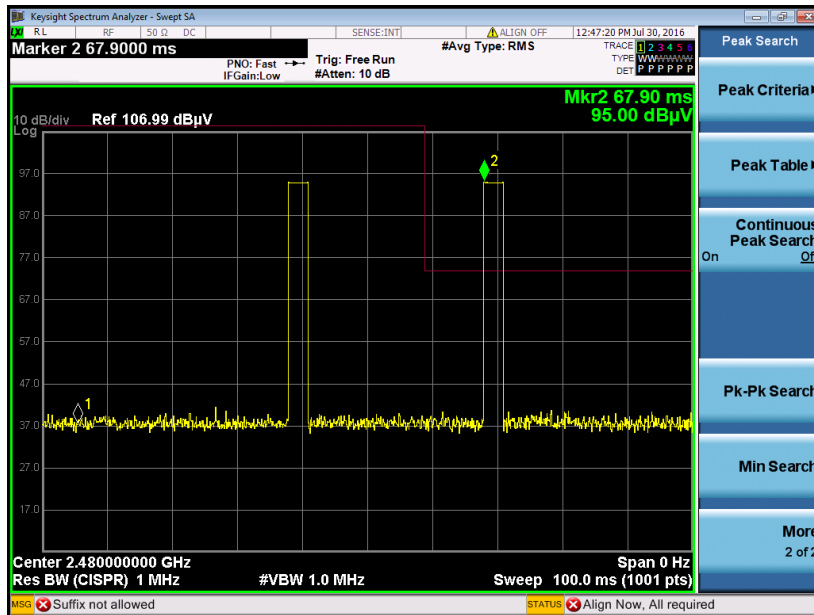


### 3.1.6 Duty cycle correction factor for average measurement

DH5 on time (One Pulse) Plot on Channel 39



DH5 on time (Count Pulses) Plot on Channel 39



**Note:**

1. Worst case Duty cycle = on time/100 milliseconds = 2 \* 2.88 / 100 = 5.76 %
2. Worst case Duty cycle correction factor = 20\*log(Duty cycle) = -24.79 dB
3. DH5 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

$$2.88 \text{ ms} \times 20 \text{ channels} = 57.6 \text{ ms}$$

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:

$$2.88 \text{ ms} \times 2 = 5.76 \text{ ms}$$

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

$$20 \times \log(5.76 \text{ ms}/100\text{ms}) = -24.79 \text{ dB}$$

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

Please refer to Appendix A and B.

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

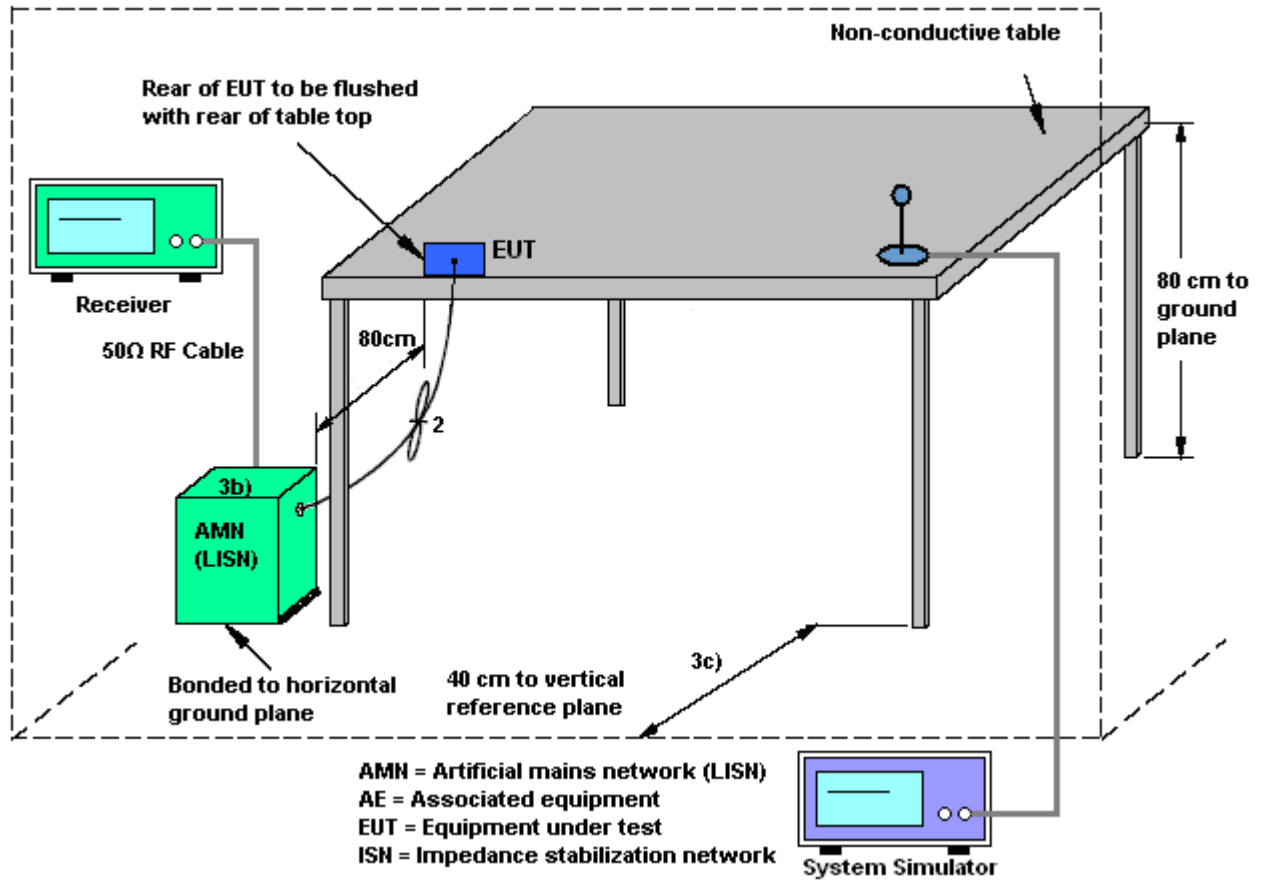
#### 3.2.2 Measuring Instruments

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.

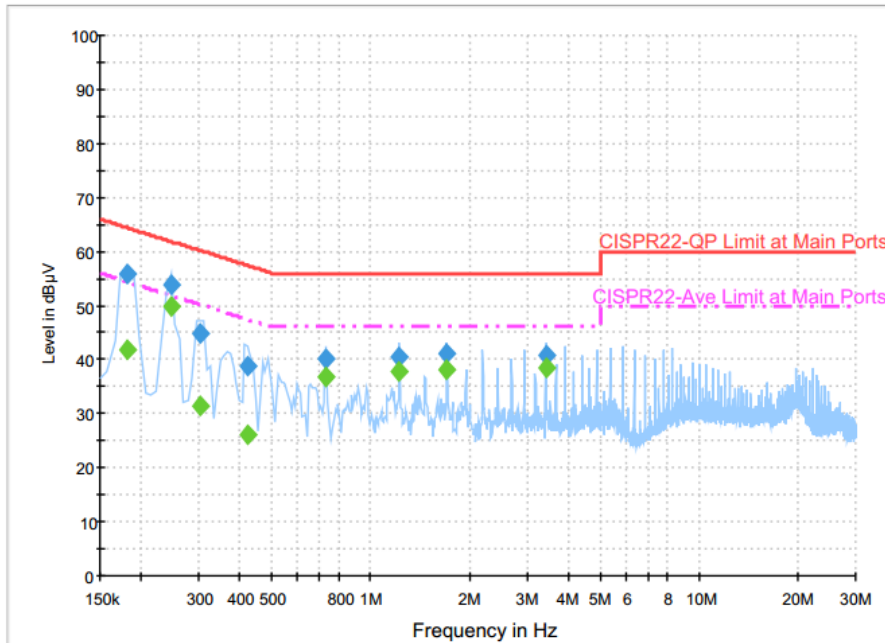
### 3.2.4 Test Setup





3.2.5 Test Result of AC Conducted Emission

Test Mode :	Mode 2	Temperature :	22~23°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	51~52%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WCDMA Band V Idle + Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + WPC Back Cover + PMA Charging Pad + Adapter		



Final Result : Quasi-Peak

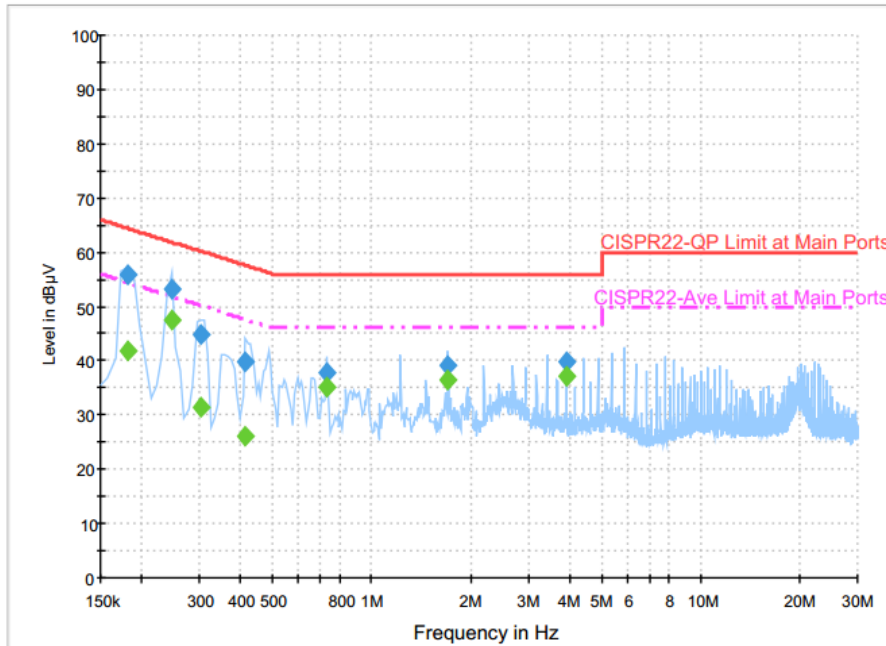
Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	55.9	Off	L1	19.6	8.5	64.4
0.246000	53.9	Off	L1	19.6	8.0	61.9
0.302000	44.7	Off	L1	19.6	15.5	60.2
0.422000	38.9	Off	L1	19.6	18.5	57.4
0.734000	40.0	Off	L1	19.6	16.0	56.0
1.222000	40.5	Off	L1	19.7	15.5	56.0
1.710000	41.0	Off	L1	19.7	15.0	56.0
3.422000	41.0	Off	L1	19.7	15.0	56.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	41.8	Off	L1	19.6	12.6	54.4
0.246000	49.7	Off	L1	19.6	2.2	51.9
0.302000	31.5	Off	L1	19.6	18.7	50.2
0.422000	26.2	Off	L1	19.6	21.2	47.4
0.734000	36.9	Off	L1	19.6	9.1	46.0
1.222000	37.8	Off	L1	19.7	8.2	46.0
1.710000	38.2	Off	L1	19.7	7.8	46.0
3.422000	38.5	Off	L1	19.7	7.5	46.0



Test Mode :	Mode 2	Temperature :	22~23°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	51~52%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WCDMA Band V Idle + Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + WPC Back Cover + PMA Charging Pad + Adapter		



**Final Result : Quasi-Peak**

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	55.8	Off	N	19.6	8.6	64.4
0.246000	53.3	Off	N	19.6	8.6	61.9
0.302000	44.9	Off	N	19.6	15.3	60.2
0.414000	39.8	Off	N	19.6	17.8	57.6
0.734000	37.8	Off	N	19.6	18.2	56.0
1.710000	39.0	Off	N	19.7	17.0	56.0
3.910000	39.8	Off	N	19.8	16.2	56.0

**Final Result : Average**

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	41.9	Off	N	19.6	12.5	54.4
0.246000	47.4	Off	N	19.6	4.5	51.9
0.302000	31.3	Off	N	19.6	18.9	50.2
0.414000	26.0	Off	N	19.6	21.6	47.6
0.734000	35.0	Off	N	19.6	11.0	46.0
1.710000	36.6	Off	N	19.7	9.4	46.0
3.910000	37.3	Off	N	19.8	8.7	46.0



## 4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Jul. 29, 2016 ~ Jul. 30, 2016	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Aug. 26, 2015	Jul. 29, 2016 ~ Jul. 30, 2016	Aug. 25, 2016	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Dec. 02, 2015	Jul. 29, 2016 ~ Jul. 30, 2016	Dec. 01, 2016	Conduction (CO05-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Sep. 02, 2015	Jul. 30, 2016 ~ Aug. 03, 2016	Sep. 01, 2016	Radiation (03CH11-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Nov. 20, 2015	Jul. 30, 2016 ~ Aug. 03, 2016	Nov. 19, 2016	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D	35414	30MHz~1GHz	Nov. 17, 2015	Jul. 30, 2016 ~ Aug. 03, 2016	Nov. 16, 2016	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1326	1GHz ~ 18GHz	Oct. 08, 2015	Jul. 30, 2016 ~ Aug. 03, 2016	Oct. 07, 2016	Radiation (03CH11-HY)
Preamplifier	Keysight	83017A	MY53270080	1GHz~26.5GHz	Nov. 19, 2015	Jul. 30, 2016 ~ Aug. 03, 2016	Nov. 18, 2016	Radiation (03CH11-HY)
Preamplifier	MITEQ	AMF-7D-00101 800-30-10P	1902247	1GHz~18GHz	Jul. 22, 2016	Jul. 30, 2016 ~ Aug. 03, 2016	Jun. 21, 2017	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz ~ 44GHZ	Sep. 24, 2015	Jul. 30, 2016 ~ Aug. 03, 2016	Sep. 23, 2016	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	Jul. 30, 2016 ~ Aug. 03, 2016	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	N/A	Jul. 30, 2016 ~ Aug. 03, 2016	N/A	Radiation (03CH11-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA91705 84	18GHz- 40GHz	Nov. 02, 2015	Jul. 30, 2016 ~ Aug. 03, 2016	Nov. 01, 2016	Radiation (03CH11-HY)
Preamplifier	MITEQ	TTA0204	1872107	2GHz~40GHz	Feb. 15, 2016	Jul. 30, 2016 ~ Aug. 03, 2016	Feb. 14, 2017	Radiation (03CH11-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
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### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	5.20
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### Appendix A. Radiated Spurious Emission

Test Engineer :	J.C. Liang	Temperature :	20~23°C
		Relative Humidity :	50~54%

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

<WPC Charging Mode>

BT	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.	
		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )	
BT CH 78 2480MHz	*	2480	95.73	-	-	95.66	27.25	6.77	33.95	100	227	P	H	
		2480	70.94	-	-	-	-	-	-	-	-	A	H	
		2483.88	44.17	-29.83	74	44.1	27.25	6.77	33.95	100	227	P	H	
		2483.88	19.38	-34.62	54	-	-	-	-	-	-	A	H	
													H	
														H
	*	2480	99.02	-	-	98.95	27.25	6.77	33.95	351	116	P	V	
		2480	74.23	-	-	-	-	-	-	-	-	-	A	V
		2483.64	44.98	-29.02	74	44.91	27.25	6.77	33.95	351	116	P	V	
		2483.64	20.19	-33.81	54	-	-	-	-	-	-	-	A	V
													V	
													V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.													



2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

<PMA Charging Mode>

BT	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.	
		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )	
BT CH 78 2480MHz	*	2480	96.01	-	-	95.94	27.25	6.77	33.95	103	55	P	H	
		2480	71.22	-	-	-	-	-	-	-	-	A	H	
		2483.68	43.66	-30.34	74	43.59	27.25	6.77	33.95	103	55	P	H	
		2483.68	18.87	-35.13	54	-	-	-	-	-	-	A	H	
													H	
														H
	*	2480	99.22	-	-	99.15	27.25	6.77	33.95	188	114	P	V	
		2480	74.43	-	-	-	-	-	-	-	-	-	A	V
		2483.96	46.42	-27.58	74	46.35	27.25	6.77	33.95	188	114	P	V	
		2483.96	21.63	-32.37	54	-	-	-	-	-	-	A	V	
														V
														V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.													



2.4GHz 2400~2483.5MHz

BT (Harmonic @ 3m)

<WPC Charging Mode>

BT	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. ( P/A )	Pol. ( H/V )
BT CH 78 2480MHz		4960	36.17	-37.83	74	45.57	31.34	10.29	51.03	100	0	P	H
		4960	11.38	-42.62	54	-	-	-	-	-	-	A	H
		7440	41.11	-32.89	74	42.68	36.39	12.55	50.51	100	0	P	H
		7440	16.32	-37.68	54	-	-	-	-	-	-	A	H
		4962	36.85	-37.15	74	46.25	31.34	10.29	51.03	100	0	P	V
		4962	12.06	-41.94	54	-	-	-	-	-	-	A	V
		7440	40.05	-33.95	74	41.62	36.39	12.55	50.51	100	0	P	V
		7440	15.26	-38.74	54	-	-	-	-	-	-	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

BT (Harmonic @ 3m)

<PMA Charging Mode>

BT	Note	Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB/m )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. ( P/A )	Pol. ( H/V )
BT CH 78 2480MHz		4960	37.11	-36.89	74	46.51	31.34	10.29	51.03	100	0	P	H
		4960	12.32	-41.68	54	-	-	-	-	-	-	A	H
		7440	41.12	-32.88	74	42.69	36.39	12.55	50.51	100	0	P	H
		7440	16.33	-37.67	54	-	-	-	-	-	-	A	H
		4960	37.55	-36.45	74	46.95	31.34	10.29	51.03	100	0	P	V
		4960	12.76	-41.24	54	-	-	-	-	-	-	A	V
		7440	40.5	-33.5	74	42.07	36.39	12.55	50.51	100	0	P	V
		7440	15.71	-38.29	54	-	-	-	-	-	-	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz

2.4GHz BT (LF)

<WPC Charging Mode>

BT	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.	
		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )	
2.4GHz BT LF		95.34	34.39	-9.11	43.5	49.5	15.5	1.17	31.78			P	H	
		211.44	39.95	-3.55	43.5	53.79	16.2	1.74	31.78	172	52	P	H	
		252.21	34.24	-11.76	46	45.13	18.9	1.98	31.77			P	H	
		317.5	33.66	-12.34	46	43.02	20.18	2.23	31.77			P	H	
		446.3	27.55	-18.45	46	32.48	23.23	3.68	31.84			P	H	
		967.8	33.29	-20.71	54	29.73	30.56	3.89	30.89			P	H	
														H
														H
														H
														H
														H
														H
			41.07	36.58	-3.42	40	47.73	19.74	0.93	31.82	293	275	P	V
			91.56	29.16	-14.34	43.5	44.75	15.02	1.17	31.78			P	V
			210.9	37.86	-5.64	43.5	51.7	16.2	1.74	31.78			P	V
			321.7	29.34	-16.66	46	38.56	20.32	2.23	31.77			P	V
			778.8	30.46	-15.54	46	30.74	28.05	3.62	31.95			P	V
			958.7	33	-13	46	29.49	30.58	3.89	30.96			P	V
														V
													V	
													V	
													V	
													V	
													V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.													



Emission below 1GHz

2.4GHz BT (LF)

<PMA Charging Mode>

BT	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.	
		( MHz )	( dBμV/m )	( dB )	( dBμV/m )	( dBμV )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )	
2.4GHz BT LF		55.38	25.17	-14.83	40	42.64	13.4	0.93	31.8			P	H	
		84.54	32.42	-7.58	40	48.86	14.18	1.17	31.79	289	92	P	H	
		163.38	29.02	-14.48	43.5	42.62	16.5	1.68	31.78			P	H	
		734	29.59	-16.41	46	30.66	27.39	3.54	32			P	H	
		858.6	32.23	-13.77	46	31.14	28.95	3.77	31.63			P	H	
		990.9	32.96	-21.04	54	29.23	30.52	3.92	30.71			P	H	
														H
														H
														H
														H
														H
														H
			40.8	36.04	-3.96	40	47.19	19.74	0.93	31.82	317	124	P	V
			84	31.38	-8.62	40	47.82	14.18	1.17	31.79			P	V
			162.57	25.17	-18.33	43.5	38.67	16.6	1.68	31.78			P	V
			664.7	28.82	-17.18	46	31.07	26.34	3.45	32.04			P	V
			834.1	31.14	-14.86	46	30.41	28.71	3.77	31.75			P	V
			946.8	33.19	-12.81	46	29.84	30.52	3.89	31.06			P	V
														V
														V
													V	
													V	
													V	
													V	
Remark	1. No other spurious found. 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

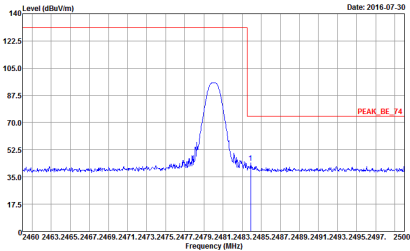
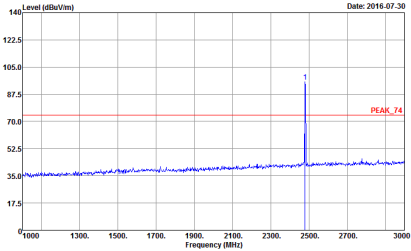
<b>Test Engineer :</b>	J.C. Liang	<b>Temperature :</b>	20~23°C
		<b>Relative Humidity :</b>	50~54%



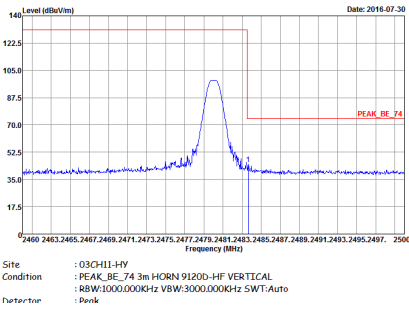
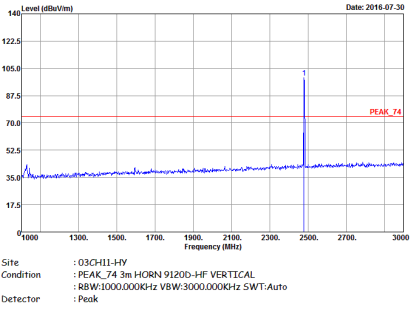
2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

<WPC Charging Mode>

BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH78 2480MHz	
1+2	Horizontal	Fundamental
Peak	 <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 9120D-HF HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Peak</p>	 <p>Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Peak</p>



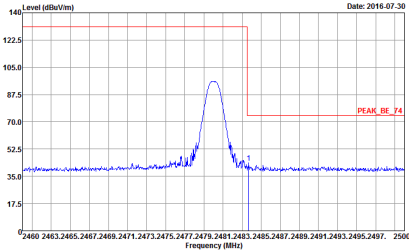
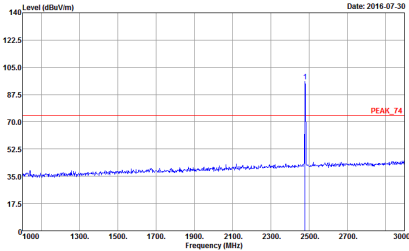
BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH78 2480MHz	
1+2	Vertical	Fundamental
Peak	 <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector: Peak</p>	 <p>Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector: Peak</p>



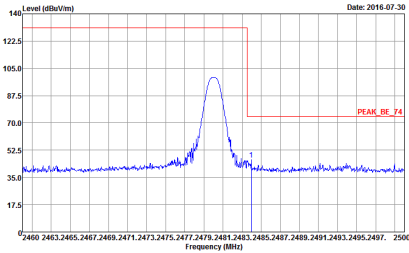
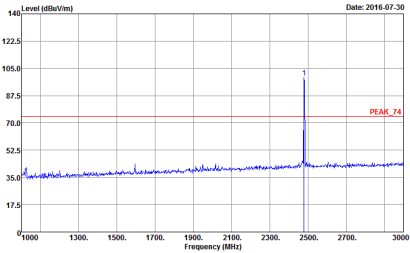
2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

<PMA Charging Mode>

BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH78 2480MHz	
1+2	Horizontal	Fundamental
Peak	 <p>Site : 03CH11-HY  Condition : PEAK_BE_74 3m HORN 9120D-HF HORIZONTAL  RBW:1000.000KHz VBW:3000.000KHz SWT:Auto  Detector : Peak</p>	 <p>Site : 03CH11-HY  Condition : PEAK_74 3m HORN 9120D-HF HORIZONTAL  RBW:1000.000KHz VBW:3000.000KHz SWT:Auto  Detector : Peak</p>



BT	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BT CH78 2480MHz	
1+2	Vertical	Fundamental
Peak	 <p>             Site : 03CH11-HY              Condition : PEAK_BE_74 3m HORN 9120D-HF VERTICAL              RBW:1000.000KHz VBW:3000.000KHz SWT:Auto              Detector : Peak         </p>	 <p>             Site : 03CH11-HY              Condition : PEAK_74 3m HORN 9120D-HF VERTICAL              RBW:1000.000KHz VBW:3000.000KHz SWT:Auto              Detector : Peak         </p>



2.4GHz 2400~2483.5MHz

BT (Harmonic @ 3m)

<WPC Charging Mode>

BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BT CH78 2480MHz	
1+2	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH11-1Y Condition : PEAK_74 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH11-1Y Condition : PEAK_74 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak</p>



2.4GHz 2400~2483.5MHz

BT (Harmonic @ 3m)

<PMA Charging Mode>

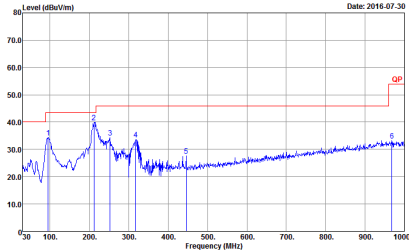
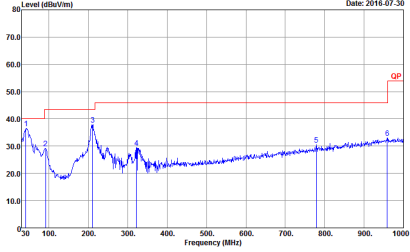
BT	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BT CH78 2480MHz	
1+2	Horizontal	Vertical
Peak Avg.	<p>Site : 03CH11-1Y Condition : PEAK_74 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak</p>	<p>Site : 03CH11-1Y Condition : PEAK_74 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak</p>



Emission below 1GHz

2.4GHz BT (LF)

<WPC Charging Mode>

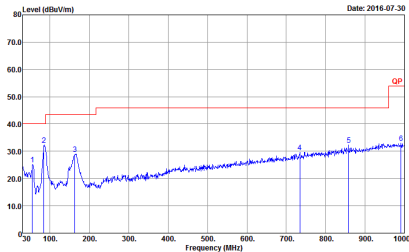
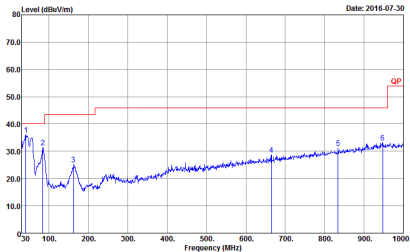
BT	2.4GHz 2400~2483.5MHz	
ANT	BT LF	
1+2	Horizontal	Vertical
QP / Peak	 <p data-bbox="347 1102 619 1137">Site : 03CH11-HY Condition : QP 3m BT-LOG 6111D-LF_ETC HORIZONTAL Detector : Peak</p>	 <p data-bbox="944 1102 1216 1137">Site : 03CH11-HY Condition : QP 3m BT-LOG 6111D-LF_ETC VERTICAL Detector : Peak</p>



Emission below 1GHz

2.4GHz BT (LF)

<PMA Charging Mode>

BT	2.4GHz 2400~2483.5MHz	
ANT	BT LF	
1+2	Horizontal	Vertical
<p>QP / Peak</p>	 <p>Site : 03CH11-1#Y Condition : QP 3m BE-LOG 6111D-LF_ETC HORIZONTAL Detector : Peak</p>	 <p>Site : 03CH11-1#Y Condition : QP 3m BE-LOG 6111D-LF_ETC VERTICAL Detector : Peak</p>



## **Appendix C. Original Report**

Please refer to Sporton report number FR632103A as below.



# FCC RF Test Report

**APPLICANT** : Motorola Mobility, LLC  
**EQUIPMENT** : Mobile Cellular Phone  
**BRAND NAME** : Motorola  
**MODEL NAME** : 6576  
**FCC ID** : IHDT56VB4  
**STANDARD** : FCC Part 15 Subpart C §15.247  
**CLASSIFICATION** : (DSS) Spread Spectrum Transmitter

This is a variant report which is only valid together with the original test report. The product was received on Apr. 29, 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.

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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**APPENDIX A. ORIGINAL REPORT**





# 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	6576
FCC ID	IHDT56VB4
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/LTE/NFC 2.4GHz WLAN 11b/g/n HT20 WLAN 11ac VHT20 5GHz WLAN 11a/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80 Bluetooth v3.0 EDR Bluetooth v4.2 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 6576, FCC ID IHDT56VB4) is electrically identical to the reference device (Model 4237, FCC ID IHDT56VB1) 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. FR631828A for the reference device Model 4237, FCC ID IHDT56VB1):

- Bluetooth

### 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 IHDT56VB1.

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
DSS	IHDT56VB1	Part15C (FR631828A)	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 FR631828A.