FCC RF Test Report

APPLICANT	:	**Motorola Mobility LLC**
EQUIPMENT	:	**Mobile Cellular Phone**
BRAND NAME	:	**Motorola**
FCC ID	:	**IHDT56XE1**
STANDARD	:	**FCC Part 15 Subpart C §15.247**
CLASSIFICATION	:	**(DTS) Digital Transmission System**

This is partial report. The product was received on Mar. 07, 2018 and testing was completed on Mar. 23, 2018. 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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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR811821-09C	Rev. 01	Initial issue of report	Apr. 23, 2018

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 6.94 dB at 0.242 MHz
3.2	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Motorola Mobility LLC
222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

1.2 Manufacturer

Motorola Mobility LLC
222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Cellular Phone
Brand Name	Motorola
FCC ID	IHDT56XE1
EUT supports Radios application	CDMA/EV-DO/GSM/EGPRS/WCDMA/HSPA/LTE/GNSS/NFC WLAN 11b/g/n HT20 WLAN 11a/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE
HW Version	DVT2
EUT Stage	Identical Prototype

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. This is a variant report by adding WPC Back Cover. All the test cases were performed on original report which can be referred to Sporton Report Number FR811821C. Based on the original report, only worst case was verified.

Accessory List		
WPC Cover	Brand Name :	Motorola
	Model Name :	MD100W

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Channel Frequency Range	2412 MHz ~ 2462 MHz
Antenna Type / Gain	Loop Antenna with gain -5.00 dBi
Type of Modulation	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

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. TW1190 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 1st 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.	**Sporton Site No.**
	CO05-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
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v04
- 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

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 emission (150 kHz to 30 MHz),

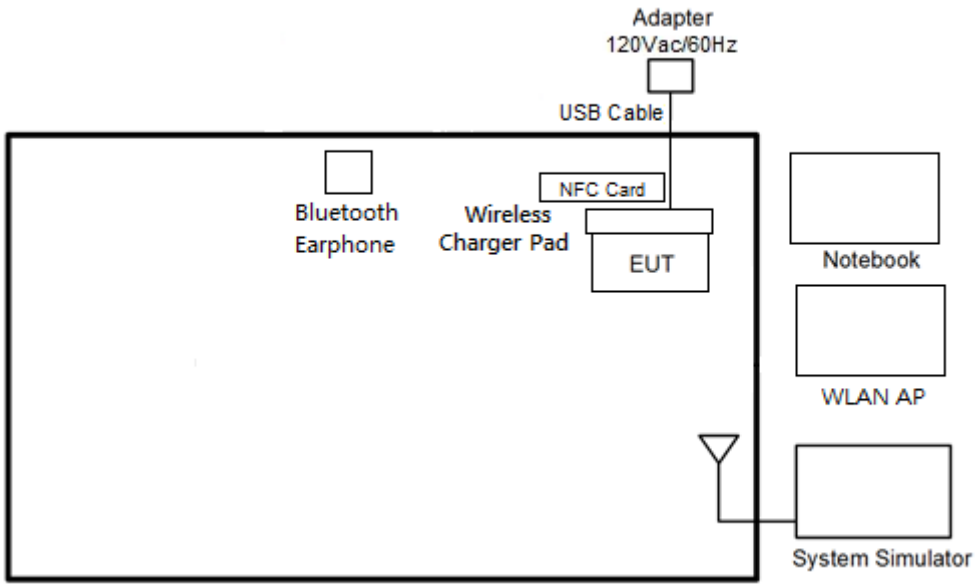
b. AC power line Conducted Emission was tested under maximum output power.

2.1 Test Mode

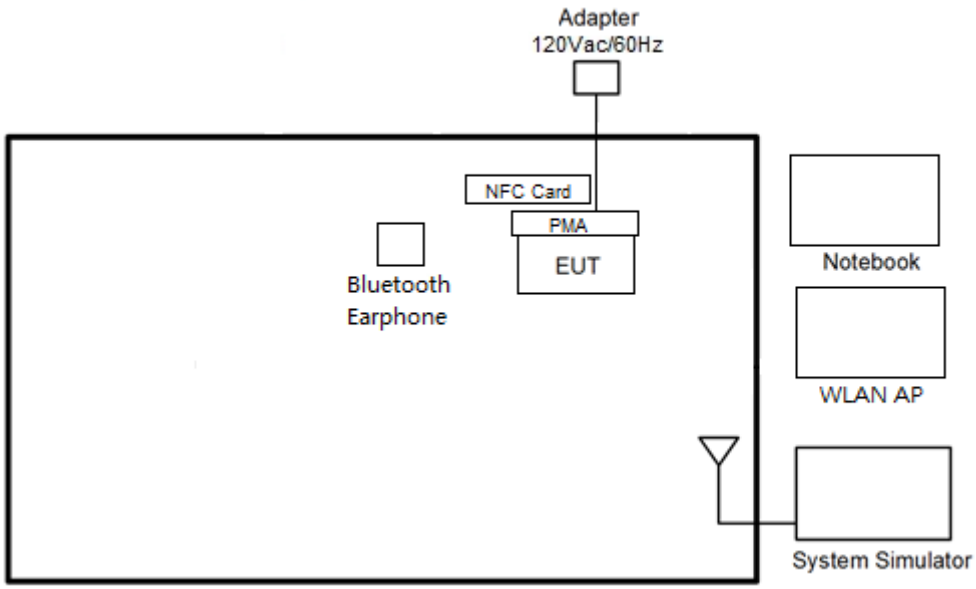
Test Cases	
AC Conducted Emission	Mode 1 :GSM1900 Idle + Bluetooth Link + WLAN (2.4GHz) Link + Camera + WPC Back cover + Battery + LG Charging pad + USB Cable (Charging from Adapter) Mode 2 :WCDMA Band V Idle + Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + WPC Back cover + Battery + PMA Charging pad + Adapter
Remark: The worst case of conducted emission is mode 2; only the test data of it was reported.	

2.2 Connection Diagram of Test System

<AC Conducted Emission with WPC Charging Mode>



<AC Conducted Emissions with PMA Charging Mode>



2.3 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	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8m
3.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A
4.	Bluetooth Earphone	lenovo	LBH 301	FCC DoC	N/A	N/A
5.	Notebook	DELL	Latitude E6320	FCC DoC	N/A	AC I/P： Unshielded, 1.2m DC O/P： Shielded, 1.8m
6.	LG Charging pad	LG	WCD-110	FCC DoC	N/A	N/A
7.	PMA Charging pad	Moto	kinxie	FCC DoC	N/A	N/A
8.	Adapter	N/A	N/A	N/A	N/A	N/A
9.	USB Cable	N/A	N/A	N/A	N/A	N/A

3 Test Result

3.1 AC Conducted Emission Measurement

3.1.1 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.

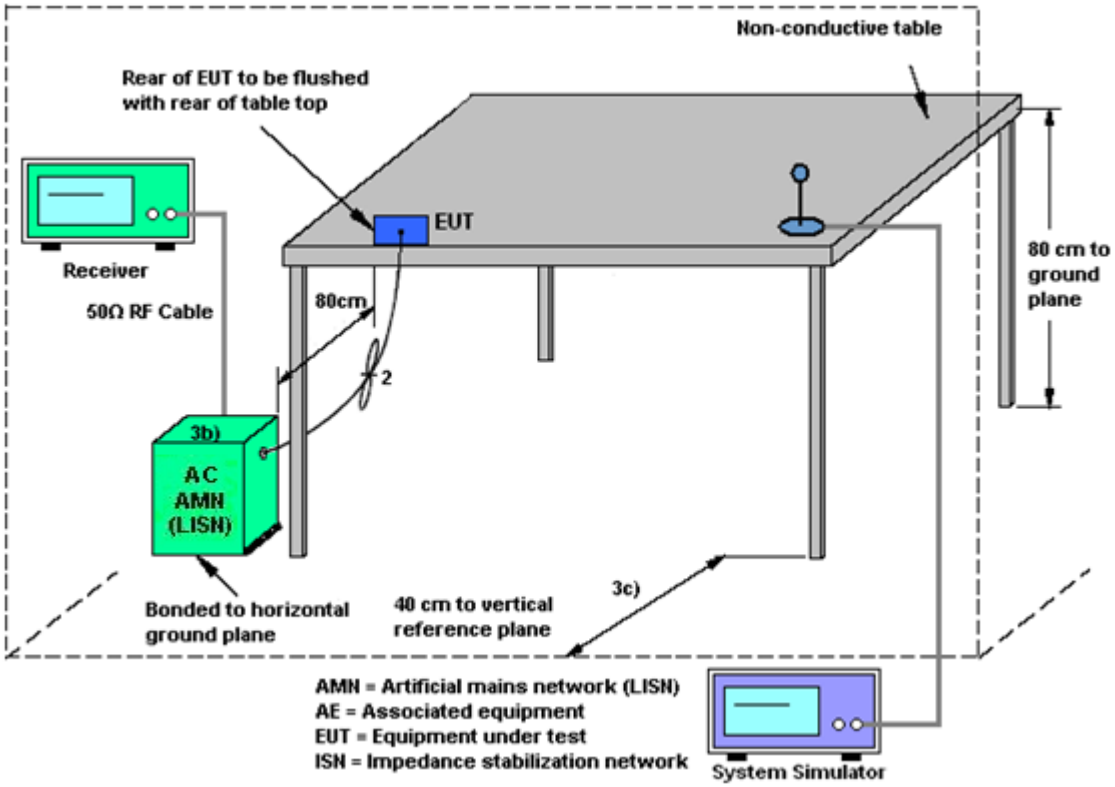
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it 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.

3.1.4 Test Setup



3.1.5 Test Result of AC Conducted Emission

Please refer to Appendix A.

3.2 Antenna Requirements

3.2.1 Standard Applicable

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

3.2.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.2.3 Antenna Gain

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

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Mar. 23, 2018	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	3.6GHz	Dec. 08, 2017	Mar. 23, 2018	Dec. 07, 2018	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 30, 2017	Mar. 23, 2018	Nov. 29, 2018	Conduction (CO05-HY)
LF Cable	HUBER + SUHNER	RG-214/U	LF01	N/A	Jan. 03, 2018	Mar. 23, 2018	Jan. 02, 2019	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Jan. 03, 2018	Mar. 23, 2018	Jan. 02, 2019	Conduction (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))	**2.70**

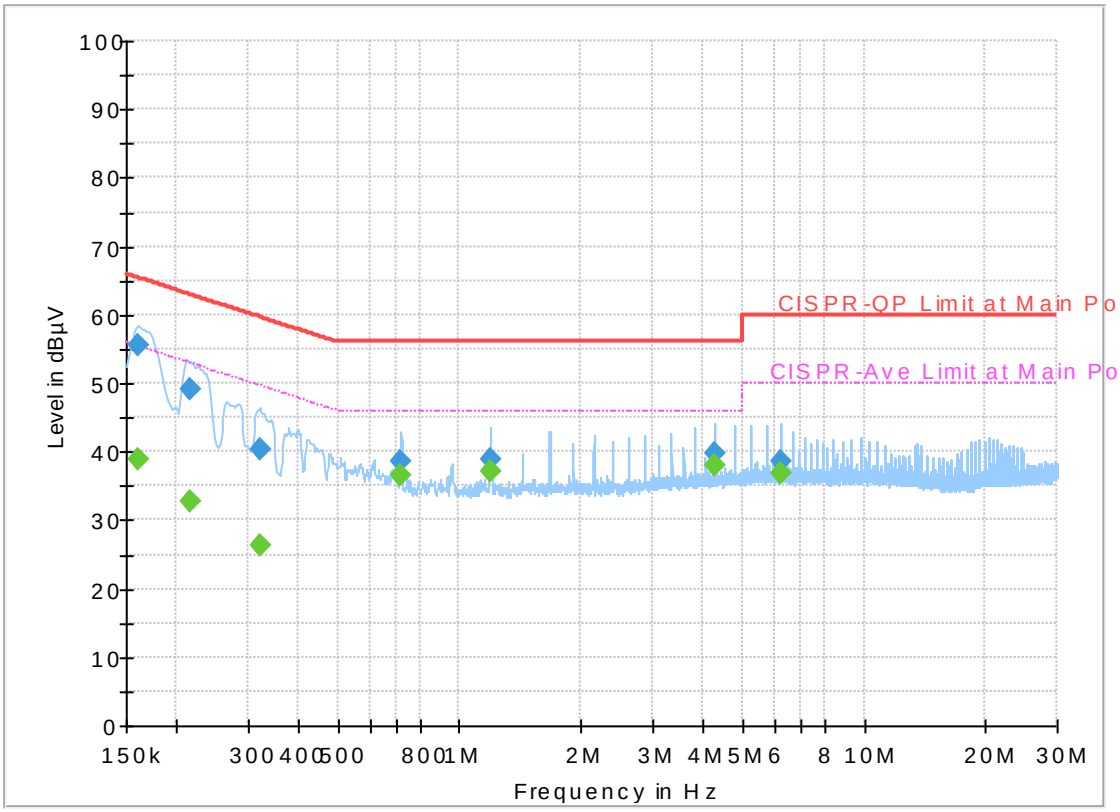
Appendix A. AC Conducted Emission Test Results

Test Engineer :	Blue Lan	**Temperature :**	23~26℃
		Relative Humidity :	53~56%

EUT Information

Report NO :	811821-09
Test Mode :	Mode 2
Test Voltage :	120Vac/60Hz
Phase :	Line

Full Spectrum



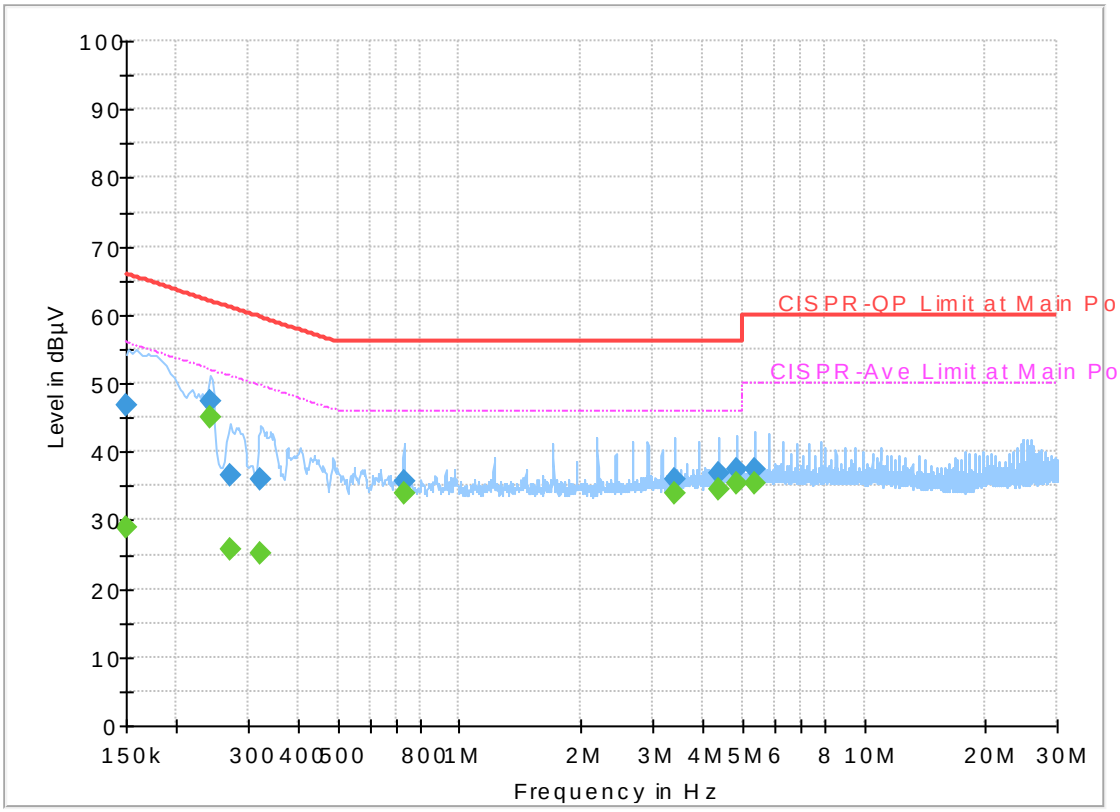
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.161250	---	38.96	55.40	16.44	L1	OFF	19.5
0.161250	55.69	---	65.40	9.71	L1	OFF	19.5
0.215250	---	32.87	53.00	20.13	L1	OFF	19.5
0.215250	49.25	---	63.00	13.75	L1	OFF	19.5
0.321000	---	26.35	49.68	23.33	L1	OFF	19.5
0.321000	40.22	---	59.68	19.46	L1	OFF	19.5
0.717000	---	36.60	46.00	9.40	L1	OFF	19.5
0.717000	38.74	---	56.00	17.26	L1	OFF	19.5
1.194000	---	37.01	46.00	8.99	L1	OFF	19.6
1.194000	38.81	---	56.00	17.19	L1	OFF	19.6
4.294500	---	37.91	46.00	8.09	L1	OFF	19.6
4.294500	39.62	---	56.00	16.38	L1	OFF	19.6
6.202500	---	36.85	50.00	13.15	L1	OFF	19.6
6.202500	38.48	---	60.00	21.52	L1	OFF	19.6

EUT Information

Report NO :	811821-09
Test Mode :	Mode 2
Test Voltage :	120Vac/60Hz
Phase :	Neutral

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150000	---	28.83	56.00	27.17	N	OFF	19.5
0.150000	46.83	---	66.00	19.17	N	OFF	19.5
0.242250	---	45.08	52.02	6.94	N	OFF	19.5
0.242250	47.37	---	62.02	14.65	N	OFF	19.5
0.271500	---	25.69	51.07	25.38	N	OFF	19.5
0.271500	36.66	---	61.07	24.41	N	OFF	19.5
0.323250	---	25.06	49.62	24.56	N	OFF	19.5
0.323250	35.94	---	59.62	23.68	N	OFF	19.5
0.730500	---	33.81	46.00	12.19	N	OFF	19.5
0.730500	35.80	---	56.00	20.20	N	OFF	19.5
3.405750	---	33.81	46.00	12.19	N	OFF	19.6
3.405750	35.82	---	56.00	20.18	N	OFF	19.6
4.380000	---	34.65	46.00	11.35	N	OFF	19.6
4.380000	36.76	---	56.00	19.24	N	OFF	19.6
4.866000	---	35.39	46.00	10.61	N	OFF	19.6
4.866000	37.45	---	56.00	18.55	N	OFF	19.6
5.352000	---	35.32	50.00	14.68	N	OFF	19.6
5.352000	37.30	---	60.00	22.70	N	OFF	19.6