



**MOBILE DEVICES BUSINESS**

**PRODUCT SAFETY AND COMPLIANCE  
EMC LABORATORY**

**EMC TEST REPORT**

**Test Report Number** – 24956-1JBP

**Report Date** – June 14, 2012

The test results contained herein relate only to the model(s) identified. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics.

As the responsible EMC Engineer, I hereby declare that the equipment tested as specified in this report conforms to the requirements indicated.

Signature: 

Name: Albert J. Patapack

Title: EMC Engineer

Date: June 14, 2012

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THIS REPORT MUST NOT BE USED TO CLAIM PRODUCT ENDORSEMENT BY UKAS OR ANY AGENCY OF THE U.S. GOVERNMENT.



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**Test Report Details**

Tests Performed By: ADR Testing Service  
Location Code: ADR LV  
Motorola Mobility Inc  
Product Safety and Compliance Group  
600 North US Hwy 45  
Libertyville, IL 60048  
PH (847) 523-6167 Fax (847) 523-4538  
FCC Registration Number: 316588  
Industry Canada Number: 1090-1

Tests Requested By: Motorola Mobility Inc.  
600 North US Hwy 45  
Libertyville, IL 60048

Signaling Capability: CDMA 800/1900, CDMA 1X/EV-DO Release A,  
LTE Band 13, WCDMA 850/1900, GSM 850/1900,  
850/1900 EDGE, HSDPA, HSUPA, GPRS,  
Bluetooth LE + EDR, 802.11a/b/g/n

**Note:** The GSM/EDGE/WCDMA network  
functions have been disabled by firmware and are  
SIM locked for all US operators.

FCC ID: IHDT56NG1

Serial Numbers: LVQV2L0058

Testing Complete Date: May 9, 2012

**Applicable Standards**

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47:

  X   Part 15 Subpart B – Unintentional Radiators

Applicable Standards: ANSI 63.4 2003, RSS-210 Issue 8

**Summary of Testing**

Test #	Test Name	Pass/Fail
1	Field Strength of Spurious Emissions from Unintentional Radiators	Pass
2	AC Line Conducted Emissions	Pass

Test #	Test Name	Margin with respect to the Limit
1	Field Strength of Spurious Emissions from Unintentional Radiators	see results
2	AC Line Conducted Emissions	see results

The margin with respect to the limit is the minimum margin for all modes and bands.

**General and Special Conditions**

This product utilizes an internal battery that is not removable. When applicable, EMC testing was performed with the internal battery fully charged.

All testing was done in an indoor controlled environment. The temperature and the relative humidity were maintained within the ANSI C63.4 2003 Standard requirements during the entire duration of testing.

**Equipment and Cable Configurations**

The EUT was tested in a configuration as specified by ANSI C63.4 2003 Standard requirements.

**Equipment List**

<b>Manufacturer</b>	<b>Equipment Type</b>	<b>Model No.</b>	<b>Serial Number</b>	<b>Calibration Due Date</b>
Rohde & Schwarz	Receiver	ESI26	100001	12/30/2012
Rohde & Schwarz	Receiver	ESU40	100286	7/13/2012
A. H. Systems	DRG Horn Antenna	SAS 200/571	365	8/24/2012
ETS	Log-Periodic Antenna	3148	1188	12/12/2012
ETS	Biconical Antenna	3110B	3369	12/14/2012
Attenuator	Weinschel	AS-6	6675	NCR
Attenuator	Weinschel	AS-6	6677	NCR
ETS	LISN	3810/2NM	00023630	9/02/2012
ETS	LISN	3810/2NM	2179	9/02/2012
ETS	Loop Antenna	6507	00049471	12/13/2012
Hewlett Packard	Laptop Computer	8440P	CND04111C8	NA
Hewlett Packard	Monitor	HP2311X	CNT101X68Q	NA
Dell	Mouse	M-UVDEL1	HCJ43516737	NA

Note that the microwave preamplifier is on a two-year calibration cycle. All other equipment is on a one-year calibration cycle. All testing was performed using equipment that was within calibration at the time that the test was performed. No equipment listed in the table above was used after the specified calibration due date. If, during the course of product testing, a piece of equipment went out of calibration and that piece of equipment was needed to complete product testing, a similar piece of calibrated equipment was substituted. If a substitution was made, that new piece of equipment would be listed in the above table along with the piece that was removed from service.

The HP 8440P Laptop Computer, HP Monitor and the Dell Mouse are labeled as DoC.

## **Measurement Procedures and Data**

### **FIELD STRENGTH OF EMISSIONS FROM UNINTENTIONAL RADIATORS**

#### **Measurement Procedure**

The equipment under test is placed inside the semi-anechoic chamber on a wooden table on the turntable center. Initially, for all radiated emissions, the antenna mast is varied from 1 to 4 meters and the turntable is rotated 360 degrees to obtain a maximum reading on the spectrum analyzer using the peak detector function. Below 1000MHz, the final radiated emissions are then measured using an EMI receiver employing a CISPR quasi-peak detector. The receiver used has an average detector function and an RMS detector function. The average detector function is used for final radiated emissions measurements above 1000MHz. Above 1000MHz, the EMI receiver VBW and RBW are both set to 1MHz. This is repeated for both horizontal and vertical polarizations of the receive antenna.

The field strength of each radiated emission is calculated by correcting the EMI receiver level for cable loss, amplifier gain and antenna correction factors.

$$\text{Field Strength (dBuV/m)} = \text{EMI Receiver Level (dBuV)} + \text{Cable Loss (dB)} - \text{Amplifier Gain (dB)} + \text{Antenna Correction Factor (1/m)}$$

#### **Test Setup**

The EUT and the host equipment were setup according to the procedures in ANSI C63.4-2003. The test is performed with the EUT connected to a laptop computer using a USB data cable. The USB data cable is 1 m in length. Two additional peripherals, a USB mouse and a VGA monitor, are also connected to the laptop computer through the appropriate port. The EUT was communicating with the laptop computer continuously.

Additional EUT information:

Processor Speed – Up to 1.5GHz

Xtal – 27MHz, 19.2MHz, 48MHz

TCXO – none

Memory Size – 1GB LPDDR2 RAM, 16GB eMMC

Video Resolution – 720P (HD display)

Refresh rate – 60Hz

Testing was conducted up to and including 8GHz.

**Measurement Results**

Radiated emissions were measured from 9 kHz to 30 MHz and all emissions were 20 dB below the limit.

Operating Mode – Rx Mode, Data Transfer Mode.

Notes: Worst Case emissions reported.

30 MHz – 1000 MHz

Frequency MHz	Level dBµV/m	Measured dBµV	Transd dB	Cables dB	Limit dBµV/m	Margin dB	Height cm	Angle deg	Pol.
32.80	31.52	12.49	12.2	6.8	40	8.5	97	121	VERT
37.52	32.84	14.96	11.0	6.9	40	7.2	100	84	VERT
63.88	31.62	15.88	8.6	7.2	40	8.4	134	239	VERT
139.84	37.38	17.00	12.6	7.7	43.5	6.1	100	54	VERT
142.04	36.39	15.72	12.9	7.7	43.5	7.1	100	18	VERT
164.04	33.60	11.81	13.9	7.9	43.5	9.9	100	155	VERT
213.04	33.95	15.10	10.6	8.3	43.5	9.5	97	196	HORI
283.40	40.46	18.72	13.1	8.6	46	5.5	206	150	VERT
354.72	36.19	12.62	14.6	9.0	46	9.8	250	27	VERT
418.36	34.31	8.92	16.2	9.2	46	11.7	206	338	VERT
496.72	31.99	3.62	18.8	9.5	46	14.0	100	151	VERT
638.12	35.60	5.09	20.5	10.1	46	10.4	191	124	VERT
710.60	33.16	1.08	21.8	10.3	46	12.8	249	154	VERT
919.76	34.92	-0.51	24.5	11.0	46	11.1	150	240	HORI

Average Measurements Above 1 GHz

Frequency MHz	Level dB $\mu$ V/m	Measured dB $\mu$ V	Transd dB	Gain dB	Limit dB $\mu$ V/m	Margin dB	Height cm	Angle deg	Pol.
1129.6	31.59	34.49	23.9	26.8	54	22.4	275	141	HORI
1200.1	32.09	34.45	24.3	26.7	54	21.9	258	134	VERT
1254.0	31.30	33.42	24.4	26.5	54	22.7	136	198	VERT
1594.0	35.81	36.18	25.3	25.7	54	18.2	101	1	VERT
1678.9	33.76	33.65	25.6	25.5	54	20.2	400	181	VERT
3174.9	39.70	31.06	31.8	23.1	54	14.3	235	166	VERT
3949.8	39.72	28.88	32.2	21.3	54	14.3	159	304	VERT
4743.7	41.85	28.44	33.6	20.2	54	12.1	115	19	VERT
5451.2	41.59	27.57	33.6	19.5	54	12.4	118	313	VERT
6082.0	43.33	27.21	35.1	19.0	54	10.7	268	88	HORI
6745.3	44.92	27.24	36.4	18.7	54	9.1	99	326	VERT
6895.3	44.75	26.82	36.6	18.7	54	9.3	100	360	VERT
7224.5	45.99	26.89	37.5	18.4	54	8.0	208	200	HORI
7374.9	45.64	26.69	37.1	18.2	54	8.4	301	300	VERT
7752.2	46.04	26.63	37.1	17.7	54	8.0	244	247	HORI
7933.7	47.94	28.16	37.3	17.5	54	6.1	100	164	HORI

Peak Radiated Data for Emissions Above 1GHz

Frequency MHz	Level dB $\mu$ V/m	Measured dB $\mu$ V	Transd dB	Gain dB	Height cm	Angle deg	Pol.	Limit dB $\mu$ V/m	Result
1129.6	46.41	49.32	23.9	26.8	275	141	HORI	74	Pass
1200.1	46.48	48.85	24.3	26.7	258	134	VERT	74	Pass
1254.0	45.34	47.46	24.4	26.5	136	198	VERT	74	Pass
1594.0	53.44	53.80	25.3	25.7	101	1	VERT	74	Pass
1678.9	49.20	49.09	25.6	25.5	400	181	VERT	74	Pass
3174.9	52.83	44.19	31.8	23.1	235	166	VERT	74	Pass
3949.8	52.36	41.51	32.2	21.3	159	304	VERT	74	Pass
4743.7	54.80	41.39	33.6	20.2	115	19	VERT	74	Pass
5451.2	54.18	40.16	33.6	19.5	118	313	VERT	74	Pass
6082.0	56.40	40.28	35.1	19.0	268	88	HORI	74	Pass
6745.3	57.84	40.16	36.4	18.7	99	326	VERT	74	Pass
6895.3	57.85	39.92	36.6	18.7	100	360	VERT	74	Pass
7224.5	59.02	39.92	37.5	18.4	208	200	HORI	74	Pass
7374.9	58.74	39.79	37.1	18.2	301	300	VERT	74	Pass
7752.2	59.20	39.79	37.1	17.7	244	247	HORI	74	Pass
7933.7	60.69	40.91	37.3	17.5	100	164	HORI	74	Pass

## AC LINE CONDUCTED EMISSIONS

**Measurement Procedure**

Measured levels of ac power line conducted emission shall be the radio-noise voltage from the line probe or across the 50  $\Omega$  LISN port, where permitted, terminated into a 50  $\Omega$  noise meter, or where permitted or required, the radio-noise current on the power line sensed by a current probe.

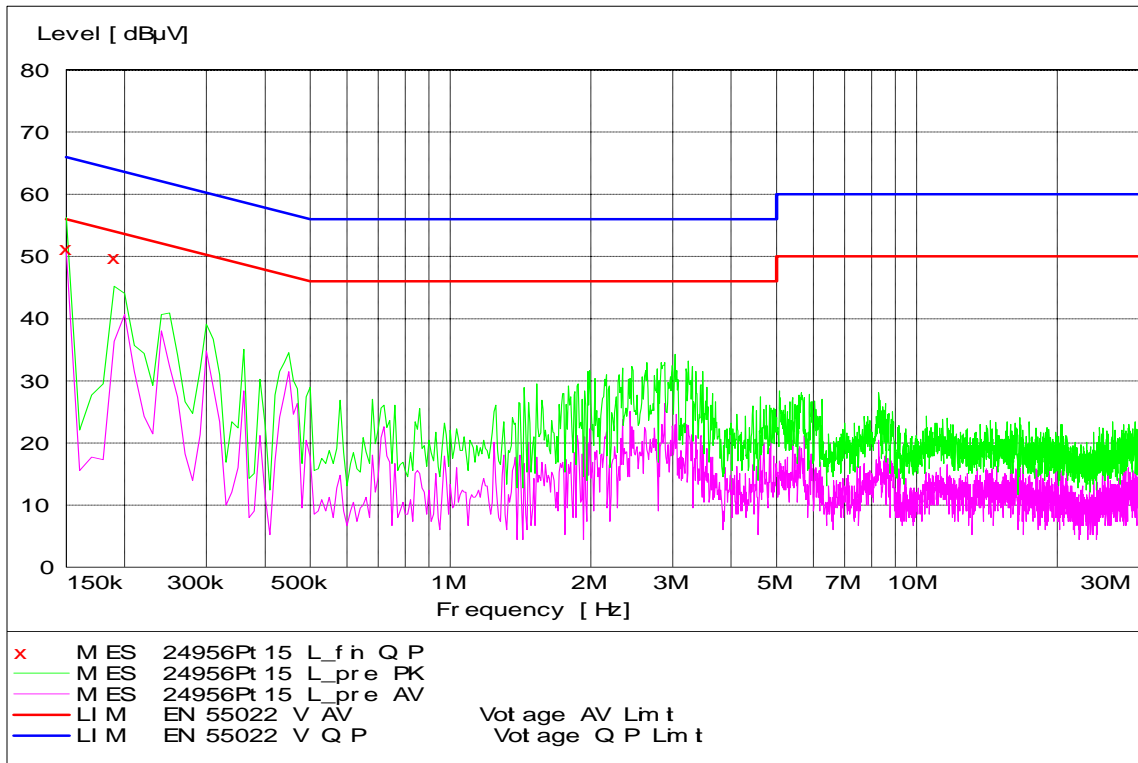
All radio-noise voltage and current measurements shall be made on each current-carrying conductor at the plug end of the EUT power cord or calibrated extension cord by the use of mating plugs and receptacles on the EUT and LISN. Equipment shall be tested with power cords that are normally supplied using a LISN, the 50  $\Omega$  measuring port is terminated by a 50  $\Omega$  radio-noise meter or a 50  $\Omega$  resistive load. All other ports are terminated in 50  $\Omega$ .

Detectors - Quasi Peak and Average Detector

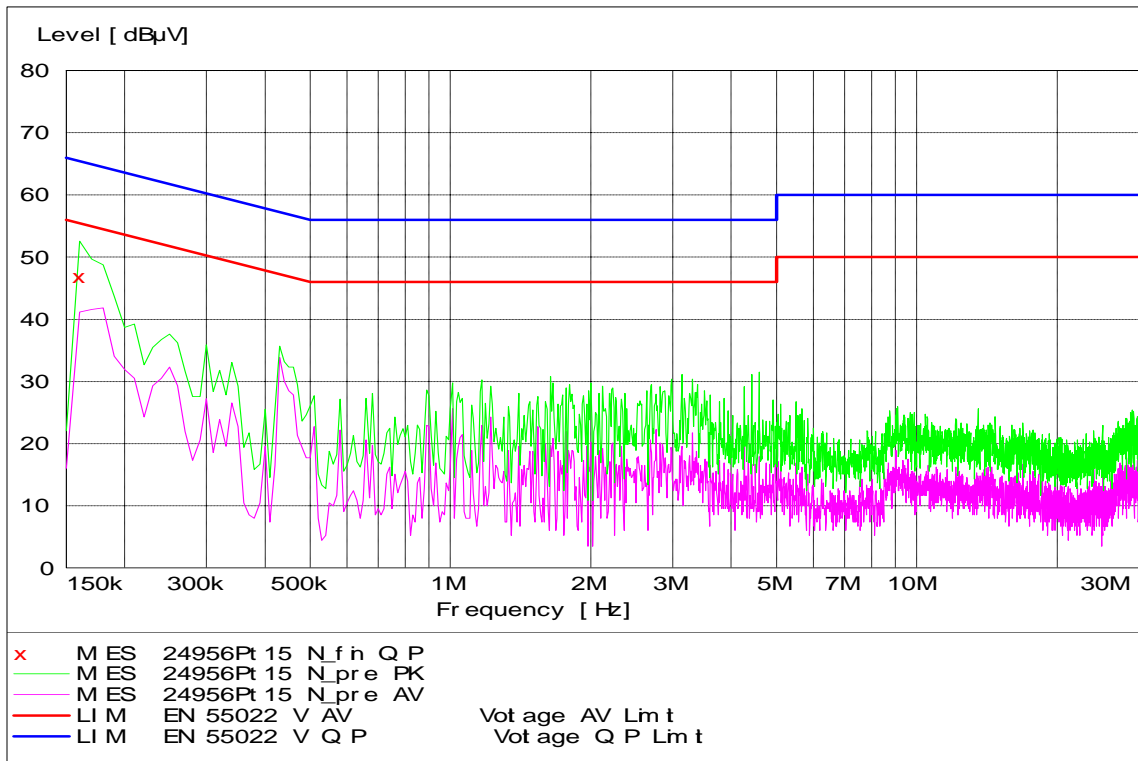
**Test Setup**

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**Measurement Results**



**Tx Mode - Line Coupling**



**Tx Mode - Neutral Coupling**

**End of Test Report**