MOBILE DEVICES BUSINESS

PRODUCT SAFETY AND COMPLIANCE
EMC LABORATORY

EMC TEST REPORT

Test Report Number – 25039-1JBP

Report Date – July 17, 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: July 17, 2012

2404

Table of Contents

Test Report Details

Tests Performed By:	ADR Testing Service Location Code: ADR LV Motorola Mobility LLC 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: 109O-1
Tests Requested By:	Motorola Mobility LLC 600 North US Hwy 45 Libertyville, IL 60048
Signaling Capability:	WCDMA 850/1900, GSM 850/1900, EDGE 850/1900, LTE Band 4/17, HSDPA, HSUPA, GPRS, Bluetooth LE + EDR, 802.11a/b/g/n
FCC ID:	IHDT56NG9
Serial Numbers:	LVML2A0014
Testing Complete Date:	May 18, 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

Manufacturer	Equipment Type	Model No.	Serial Number	Calibration Due Date
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.

Field Strength (dBuV/m) = EMI Receiver Level (dBuV) + Cable Loss (dB) - Amplifier Gain (dB) + 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
TCXO – 19.2MHz
Memory Size – 16GB LPDDR, 8GB eMMC
Video Resolution –1080P (HD display)
Video Clock: 83MHz (SMMU for Multimedia), 166MHz (MM Bus)
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.
31.04	32.88	13.43	12.7	6.8	40	7.1	101	165	VERT
33.2	33.12	14.27	12.0	6.8	40	6.9	99	184	VERT
38.64	32.31	14.59	10.8	6.9	40	7.7	100	80	VERT
62.00	31.46	15.56	8.8	7.1	40	8.5	100	259	VERT
108.32	31.63	12.86	11.2	7.6	43.5	11.9	99	121	VERT
142.00	37.08	16.41	12.9	7.7	43.5	6.4	99	80	VERT
158.52	33.81	12.28	13.7	7.8	43.5	9.7	100	167	VERT
209.64	34.10	15.26	10.6	8.2	43.5	9.4	98	191	HORI
233.16	33.84	13.76	11.7	8.4	46	12.2	100	139	HORI
283.72	40.26	18.52	13.1	8.6	46	5.7	250	152	VERT
355.24	35.79	12.23	14.6	9.0	46	10.2	99	125	HORI
425.72	35.10	9.85	16.0	9.3	46	10.9	189	338	VERT
924.68	34.74	-0.32	24.0	11.0	46	11.3	150	274	VERT
945.44	34.95	-0.18	24.1	11.0	46	11.1	150	228	HORI

Average Measurements Above 1 GHz

Frequency MHz	Level dBµV/m	Measured dBµV	Transd dB	Gain dB	Limit dBµV/m	Margin dB	Height cm	Angle deg	Pol.
1115.1	32.94	35.95	23.9	26.9	54	21.1	120	145	HORI
1137.3	32.65	35.50	24.0	26.8	54	21.4	234	147	HORI
1190.8	32.70	35.14	24.2	26.7	54	21.3	118	134	HORI
1267.1	31.98	33.99	24.5	26.5	54	22.0	327	140	HORI
1331.3	31.80	33.48	24.7	26.3	54	22.2	180	199	HORI
1593.8	33.04	33.41	25.3	25.7	54	21.0	304	358	VERT
1674.1	33.33	33.25	25.6	25.5	54	20.7	172	178	HORI
1947.2	34.75	32.21	27.4	24.9	54	19.2	153	267	VERT
1990.4	34.97	31.91	27.8	24.8	54	19.0	140	138	VERT
3210.6	39.81	31.04	31.8	23.1	54	14.2	295	296	VERT
3969.4	39.83	28.92	32.2	21.3	54	14.2	118	187	VERT
5204.7	42.21	27.88	34.1	19.8	54	11.8	100	360	HORI
6691.9	44.76	27.14	36.3	18.7	54	9.2	212	360	HORI
7369.1	45.68	26.71	37.2	18.2	54	8.3	326	341	HORI
7963.7	47.68	27.88	37.3	17.5	54	6.3	120	290	VERT

Peak Radiated Data for Emissions Above 1GHz

Frequency MHz	Level dBµV/m	Measured dBµV	Transd dB	Gain dB	Height cm	Angle deg	Pol.	Limit dBµV/m	Result
1115.1	51.51	54.53	23.9	26.9	54	2.5	120	74	Pass
1137.3	50.76	53.61	24.0	26.8	54	3.2	234	74	Pass
1190.8	48.59	51.02	24.2	26.7	54	5.4	118	74	Pass
1267.1	45.73	47.73	24.5	26.5	54	8.3	327	74	Pass
1331.3	46.30	47.98	24.7	26.3	54	7.7	180	74	Pass
1593.8	48.22	48.59	25.3	25.7	54	5.8	304	74	Pass
1674.1	49.29	49.21	25.6	25.5	54	4.7	172	74	Pass
1947.2	48.36	45.81	27.4	24.9	54	5.6	153	74	Pass
1990.4	48.27	45.20	27.8	24.8	54	5.7	140	74	Pass
3210.6	52.97	44.19	31.8	23.1	54	1	295	74	Pass
3969.4	52.92	42.01	32.2	21.3	54	1.1	118	74	Pass
5204.7	55.97	41.64	34.1	19.8	54	-2	100	74	Pass
6691.9	57.53	39.92	36.3	18.7	54	-3.5	212	74	Pass
7369.1	58.63	39.66	37.2	18.2	54	-4.6	326	74	Pass
7963.7	60.46	40.67	37.3	17.5	54	-6.5	120	74	Pass

Measurement Procedure

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

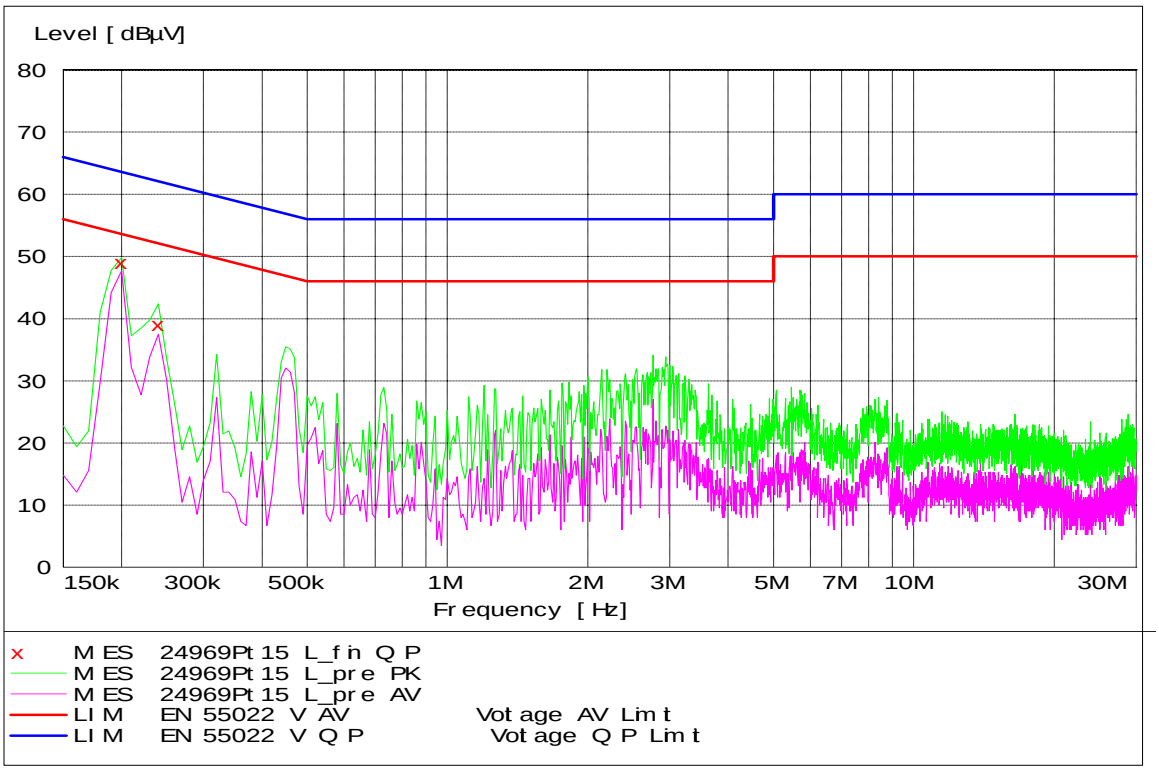
All radio-noise voltage and current measurements shall be made on each current-carrying conductor at the plug end of the EUT power cord or calibrated extension cord by the use of mating plugs and receptacles on the EUT and LISN. Equipment shall be tested with power cords that are normally supplied using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

Detectors - Quasi Peak and Average Detector

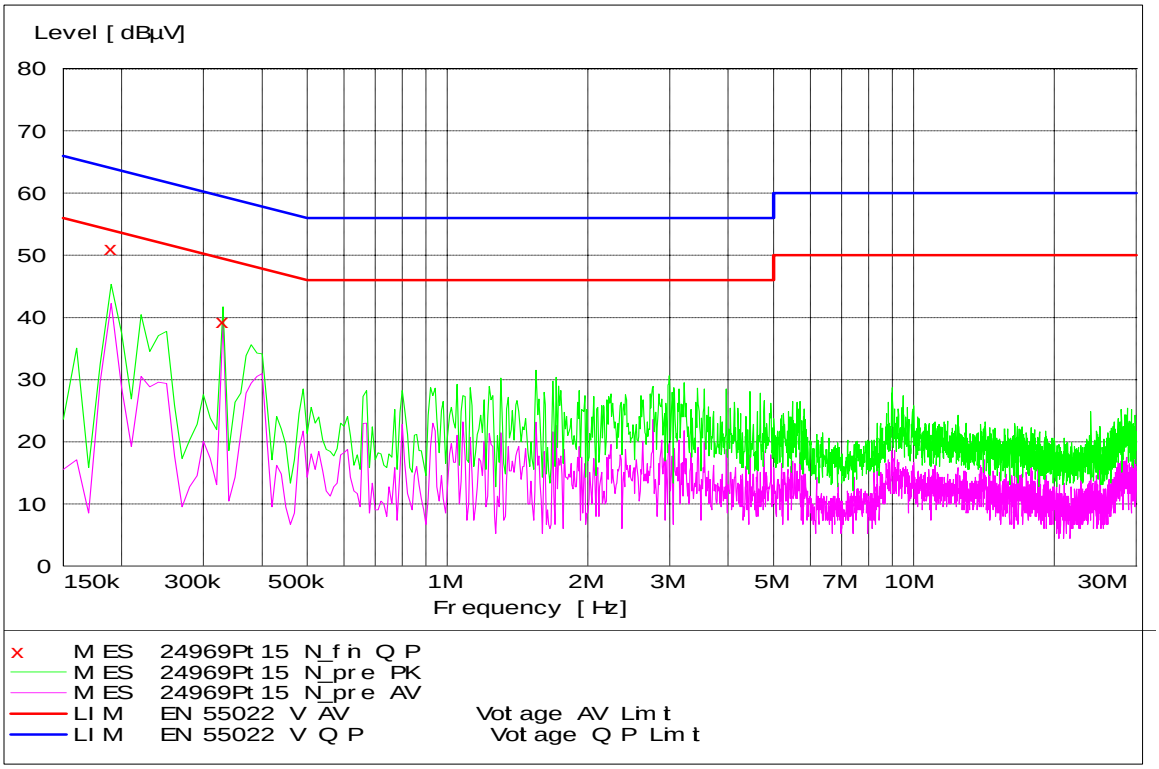
Test Setup

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.

Measurement Results



Tx Mode - Line Coupling



Tx Mode - Neutral Coupling

End of Test Report