



**MOBILE DEVICES BUSINESS**

**PRODUCT SAFETY AND COMPLIANCE  
EMC LABORATORY**

**EMC TEST REPORT**

**Test Report Number** – 24813-1 Supplement

**Report Date** – October 20, 2011

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: October 20, 2011

This report must not be reproduced, except in full, without written approval from this laboratory.

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



UKAS Certificate Number: 2404

## Table of Contents

<u>Description</u>	<u>Page</u>
Test Report Details	3
Applicable Standards	3
Summary of Testing	4
General and Special Conditions	4
Equipment and Cable Configuration	5
Measurement Procedures and Data	6

**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

Product Type: Cellular Phone

Signaling Capability: WCDMA 850/1900, GSM 850/1900,  
HSDPA, HSUPA, EDGE, GPRS,  
Bluetooth, 802.11a/802.11b/802.11g/802.11n

FCC ID: IHDP56ME4

Serial Numbers: LS3A280005

Testing Complete Date: August 21, 2011

**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	ESIB26	100001	09/23/2011
ETS	DRG Horn Antenna	SAS 200/571	265	9/09/2011
ETS	Log-Periodic Antenna	3148	1189	1/19/2012
ETS	Biconical Antenna	3110B	3370	1/19/2012
Agilent	Microwave Preamplifier	8449B	3008A00535	10/05/2011
Attenuator	Weinschel	AS-6	6675	NCR
Attenuator	Weinschel	AS-6	6677	NCR
ETS	LISN	3810/2	00062907	9/08/2011
ETS	LISN	3810/2	00062912	9/08/2011
Dell	Laptop Computer	M20	NA	NA
Iomega	Zip Drive	Z250S	P9HM1992CK	NA
Olympus	Camera	D-600L	4020727	NA

All equipment is on a one-year calibration cycle.

All test equipment was within their calibration date during the time of testing. When equipment went out of calibration during testing it was replaced using a similar piece of calibrated equipment. All these equipments are listed in the equipment list.

The Dell M20 Laptop Computer, Iomega Z250S Zip Drive and the Olympus D-600L Camera 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. The final radiated emissions are then measured using an EMI receiver employing a CISPR quasi-peak detector function below 1000 MHz and an average detector function above 1000 MHz. 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 EUT was connected to a laptop computer using a USB data cable. The USB data cable is 1 m in length. The parallel and the serial ports of the computer were populated. The EUT was communicating with the laptop computer continuously.

Additional EUT information:

Processor Speed – Up to 1.2GHz

Xtal – 32kHz, 19.2MHz

TCXO – 26MHz

Memory Size – 1GB LPDDR2 SDRAM, 16GB eMMC

Video Resolution – qHD 960x540

Video Clock – Max 240MHz

Refresh rate – 60Hz

Testing was conducted up to and including 5GHz.

**Measurement Results**

Operating Mode – Rx Mode, Data Transfer Mode.

Notes: Worst Case emissions reported.

30 MHz – 1000 MHz

Frequency MHz	Level dB $\mu$ V/m	Measured dB $\mu$ V	Transd dB	Cables dB	Limit dB $\mu$ V/m	Margin dB	Height cm	Angle deg	Pol.
39.68	37.15	18.58	11.5	7.1	40	2.9	99	192	VERT
43.92	36.05	18.19	10.7	7.2	40	3.9	99	45	VERT
72.16	35.58	18.77	9.3	7.5	40	4.4	100	218	VERT
75.88	36.58	19.82	9.2	7.5	40	3.4	100	231	VERT
116.96	36.30	17.27	11.1	7.9	43.5	7.2	101	241	VERT
229.08	37.92	18.76	10.6	8.6	46	8.1	150	219	HORI
320.64	42.71	20.13	13.5	9.1	46	3.3	100	264	HORI
352.72	37.73	14.15	14.3	9.3	46	8.3	100	243	HORI
366.48	36.80	13.52	13.9	9.4	46	9.2	178	176	VERT
384.76	39.90	15.62	14.8	9.5	46	6.1	100	183	HORI
909.08	34.67	-0.56	23.8	11.4	46	11.3	150	329	HORI

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

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.
1082.9	31.18	30.39	23.6	22.8	54	22.8	100	128	HORI
1122.8	36.87	35.96	23.5	22.6	54	17.1	209	336	VERT
1254.7	30.49	28.17	24.5	22.2	54	23.5	234	67	VERT
1509.2	31.28	28.01	24.6	21.3	54	22.7	100	266	VERT
3185.8	39.04	25.05	31.4	17.4	54	15.0	100	325	VERT
3854.2	38.66	23.67	31.1	16.1	54	15.3	100	237	VERT
4884.1	41.09	22.51	33.2	14.6	54	12.9	99	35	VERT
4955.9	41.59	22.61	33.5	14.5	54	12.4	245	0	VERT
4977.7	41.72	22.75	33.4	14.5	54	12.3	173	353	HORI
4978.7	41.78	22.81	33.4	14.4	54	12.2	150	203	HORI

Peak Radiated Data for Emissions Above 1GHz					
Frequency MHz	Level dB $\mu$ V/m	Angle deg	Height cm	Pol.	Limit 74dB $\mu$ V/m
1080.16	43.79	126	100	HOR	Pass
1082.16	44.05	180	100	HOR	Pass
1122.24	48.15	333	200	VER	Pass
1124.25	46.44	337	200	VER	Pass
1254.51	44.24	33	200	VER	Pass
1256.51	46.26	48	200	VER	Pass
1507.01	46.59	268	100	VER	Pass
1509.02	45.33	268	100	VER	Pass
1511.02	44.56	35	100	VER	Pass
3182.36	50.27	257	100	VER	Pass
3186.37	50.95	337	100	VER	Pass
3851.70	50.06	285	100	VER	Pass
3855.71	51.02	251	100	VER	Pass
4883.77	52.15	36	200	VER	Pass
4885.77	54.25	33	100	VER	Pass
4953.91	54.40	0	200	VER	Pass
4955.91	52.78	53	200	HOR	Pass
4957.92	52.95	146	100	VER	Pass
4975.96	54.04	6	200	HOR	Pass
4977.96	54.20	204	100	HOR	Pass
4979.96	53.16	21	100	HOR	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 an 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  $\Omega$ .

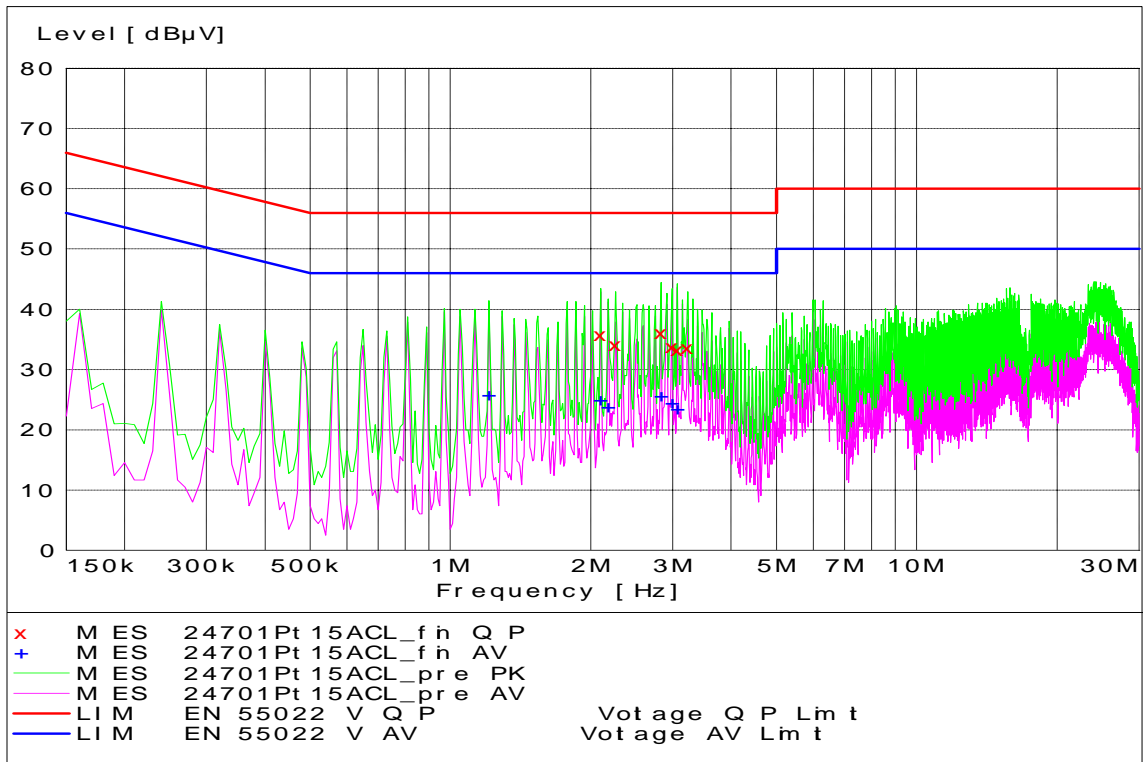
Detectors - Quasi Peak and Average Detector

### **Test Setup**

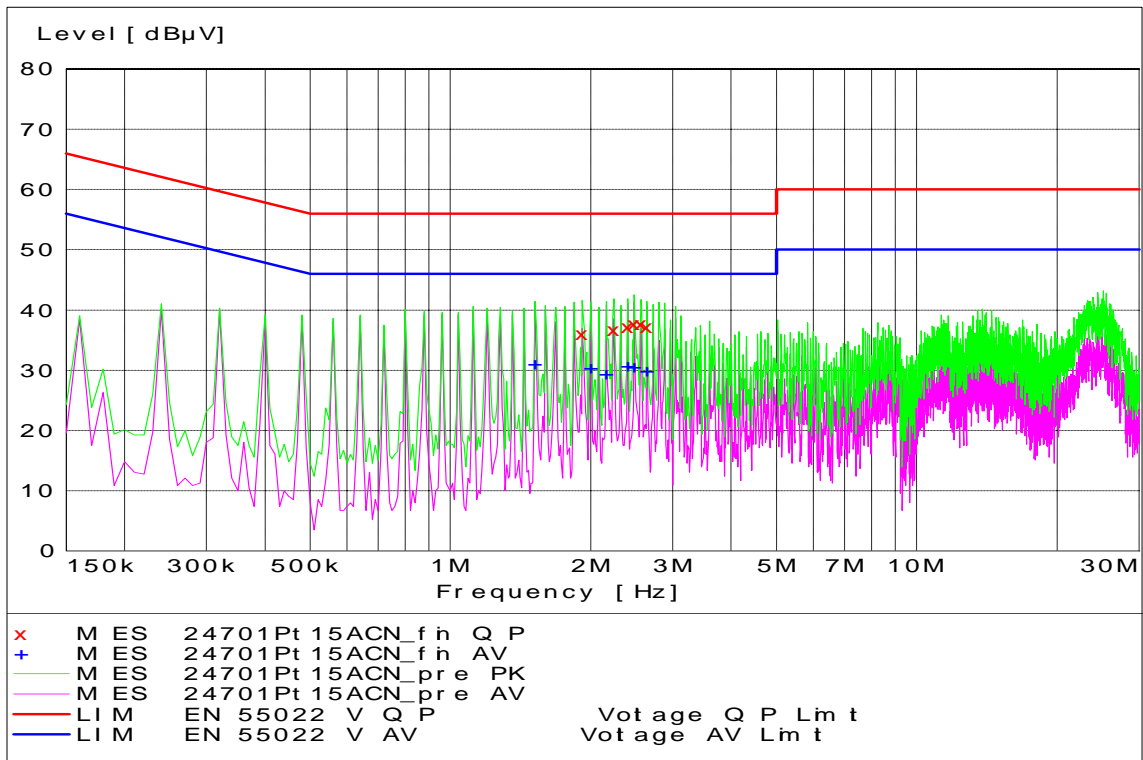
The EUT and the host equipment were setup according to the procedures in ANSI C63.4-2003. The EUT was connected to a laptop computer using a USB data cable. The USB data cable is 1 m in length. The parallel and the serial ports of the computer were populated. The EUT was communicating with the laptop computer continuously.

### **Measurement Results**

See attached:



**Tx Mode - Line Coupling**



**Tx Mode - Neutral Coupling**

**End of Test Report**