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ADR TESTING SERVICE
EMC LABORATORY

EMC TEST REPORT

Test Report Number – 25493-1JBP

The test results and statements contained herein relate only to the model(s) identified and tested. 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: September 17, 2013

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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 FCC Registration Number: 316588 Industry Canada Number: 109O-1
Tests Requested By:	Motorola Mobility LLC 600 North US Hwy 45 Libertyville, IL 60048
Product Type :	Portable Cellular Phone
Signaling Capability:	GSM 850/900/1800/1900, EDGE Class 12, WCDMA 850/1700/1900, HSDPA 21.1Mbps (Category 14), HSUPA 5.76Mbps, Bluetooth Class 1, Version 4.0 LE+EDR, 802.11b/802.11g/802.11n
FCC ID:	IHDT56PF2
Serial Numbers:	LDXU220006, LDXU220033
Testing Complete Date:	September 12 – September 17, 2013

Applicable Standards

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

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. See Results
2	AC Line Conducted Emissions from Unintentional Radiators	Pass. See Results

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	838786/010	9/24/2013
A. H. Systems	Horn Antenna	SAS 200/571	265	1/24/2014
ETS	Log-Periodic Antenna	3148	1189	7/29/2014
ETS	Biconical Antenna	3110B	3370	7/25/2014
Attenuator	Weinschel	AS-6	6675	NCR
Attenuator	Weinschel	AS-6	6677	NCR
ETS	LISN	3810/2NM	00023630	7/19/2014
ETS	LISN	3810/2NM	2179	7/22/2014
ETS	Loop Antenna	6507	00049471	1/7/2014
Hewlett Packard	Laptop Computer	8440P	CND04111C8	NA
Linksys	8-Port 10/100 hub	EFAH08W	RA93059001502	NA
N/A	1GB Flash Drive	N/A	N/A	NA

All 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, 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 center of the turntable. Initially, for all radiated emissions from 9 kHz to 30 MHz, the turntable is rotated 45 degrees to obtain a maximum reading on the spectrum analyzer using the peak detector function. All final readings are then taken at the worst case EUT orientation. For all radiated emissions from 30 MHz to 1 GHz, 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 1000 MHz, 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 1000 MHz. Above 1000 MHz, the EMI receiver VBW of 3 MHz and RBW of 1 MHz is used. 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 are also used. A 1GB flash drive was connected to the laptop computer eSata port and a wired router was connected to the laptop computer LAN port. The EUT was communicating with the laptop computer continuously.

Additional EUT information:

Processor Speed – Up to 1.2GHz

Xtal – N/A

TCXO – 19.2MHz

Memory Size – 1024MB LPDDR2 SDRAM, 8/16GB eMMC

Video Resolution – 1280x720 (HD)

Video Clock: 450MHz

Refresh rate – 60Hz

Testing was conducted up to and including 10GHz.

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.

30 MHz – 1000 MHz

Frequency MHz	Level dB μ V/m	Measured dB μ V	Transd dB	Cables dB	Limit dB μ V/m	Margin dB	Height cm	Angle deg	Pol.
56.12	35.90	19.80	9.6	6.5	40	4.1	122	115	VERT
56.96	37.28	21.26	9.5	6.5	40	2.7	102	75	VERT
57.28	37.34	21.32	9.5	6.5	40	2.7	96	87	VERT
57.76	36.36	20.34	9.5	6.5	40	3.6	136	56	VERT
58.40	36.44	20.42	9.5	6.5	40	3.6	150	99	VERT
58.68	35.15	19.12	9.5	6.5	40	4.9	101	113	VERT
108.80	37.29	19.84	10.6	6.8	43.5	6.2	99	251	VERT
166.24	35.37	14.93	13.3	7.1	43.5	8.1	100	202	VERT
168.36	31.03	10.49	13.4	7.1	43.5	12.5	247	193	VERT
176.08	25.20	4.15	13.9	7.1	43.5	18.3	334	347	VERT
265.52	33.25	13.43	12.4	7.4	46	12.7	312	174	VERT
290.00	33.44	12.84	13.2	7.4	46	12.6	173	184	HORI
297.76	22.19	1.20	13.5	7.5	46	23.8	352	185	HORI
299.84	26.53	5.41	13.6	7.5	46	19.5	353	186	HORI
360.00	29.28	6.30	15.2	7.8	46	16.7	313	203	HORI
959.96	33.76	2.07	23.0	8.7	46	12.2	123	310	HORI

Notes: Worst Case emissions reported.

Average Measurements above 1 GHz

Frequency MHz	Level dB μ V/m	Measured dB μ V	Transd dB	Gain dB	Limit dB μ V/m	Margin dB	Height cm	Angle deg	Pol.
1593.8	23.94	24.46	24.7	25.2	54	30.1	237	0	VERT
1919.7	35.86	33.96	26.8	24.9	54	18.1	239	337	VERT
1921.7	25.10	23.17	26.8	24.9	54	28.9	361	95	HORI
2519.5	27.24	22.16	29.2	24.1	54	26.8	153	0	VERT
3528.7	28.35	21.40	29.9	22.9	54	25.7	274	131	VERT
6314.8	34.73	19.32	35.0	19.6	54	19.3	203	237	VERT
6549.6	35.75	19.04	35.9	19.2	54	18.2	383	68	VERT
6561.5	35.42	18.71	35.9	19.2	54	18.6	135	216	VERT
6643.0	34.65	18.18	36.1	19.6	54	19.3	124	259	HORI
6812.4	34.95	18.00	36.3	19.4	54	19.1	134	59	VERT
8869.9	38.18	18.09	37.6	17.5	54	15.8	221	97	HORI
9259.6	38.44	17.40	37.8	16.7	54	15.6	124	360	VERT
9415.8	38.46	17.55	37.7	16.8	54	15.5	400	360	VERT
9585.9	38.57	17.56	37.9	16.9	54	15.4	100	292	HORI
9660.8	38.62	17.52	37.9	16.8	54	15.4	146	116	HORI

Peak Measurements above 1 GHz

Frequency MHz	Level dB μ V/m	Measured dB μ V	Transd dB	Gain dB	Height cm	Angle deg	Pol.	Limit dB μ V/m	Margin dB	Result
1593.8	42.11	42.63	24.7	25.2	237	0	VERT	74	31.89	Pass
1919.7	42.51	40.62	26.8	24.9	239	337	VERT	74	31.49	Pass
1921.7	38.35	36.42	26.8	24.9	361	95	HORI	74	35.65	Pass
2519.5	40.32	35.25	29.2	24.1	153	0	VERT	74	33.68	Pass
3528.7	41.14	34.19	29.9	22.9	274	131	VERT	74	32.86	Pass
6314.8	47.40	31.99	35.0	19.6	203	237	VERT	74	26.60	Pass
6549.6	48.69	31.99	35.9	19.2	383	68	VERT	74	25.31	Pass
6561.5	48.29	31.58	35.9	19.2	135	216	VERT	74	25.71	Pass
6643.0	47.38	30.90	36.1	19.6	124	259	HORI	74	26.62	Pass
6812.4	48.25	31.30	36.3	19.4	134	59	VERT	74	25.75	Pass
8869.9	51.65	31.55	37.6	17.5	221	97	HORI	74	22.35	Pass
9259.6	51.04	29.99	37.8	16.7	124	360	VERT	74	22.96	Pass
9415.8	51.42	30.51	37.7	16.8	400	360	VERT	74	22.58	Pass
9585.9	51.00	29.99	37.9	16.9	100	292	HORI	74	23.00	Pass
9660.8	51.48	30.38	37.9	16.8	146	116	HORI	74	22.52	Pass

AC Line Conducted Emissions

Measurements Procedure

AC power-line conducted emission measurements are made over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from all of the EUT current-carrying power input terminals that are directly or indirectly connected to a public power network. The measurements are 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. The EUT is tested using a LISN and the supporting equipments are connected to another LISN. Preliminary measurements are made using a peak detector and final measurements are performed using Quasi Peak and Average Detectors. The RBW of the EMI receiver is set to 9 kHz for all final measurements.

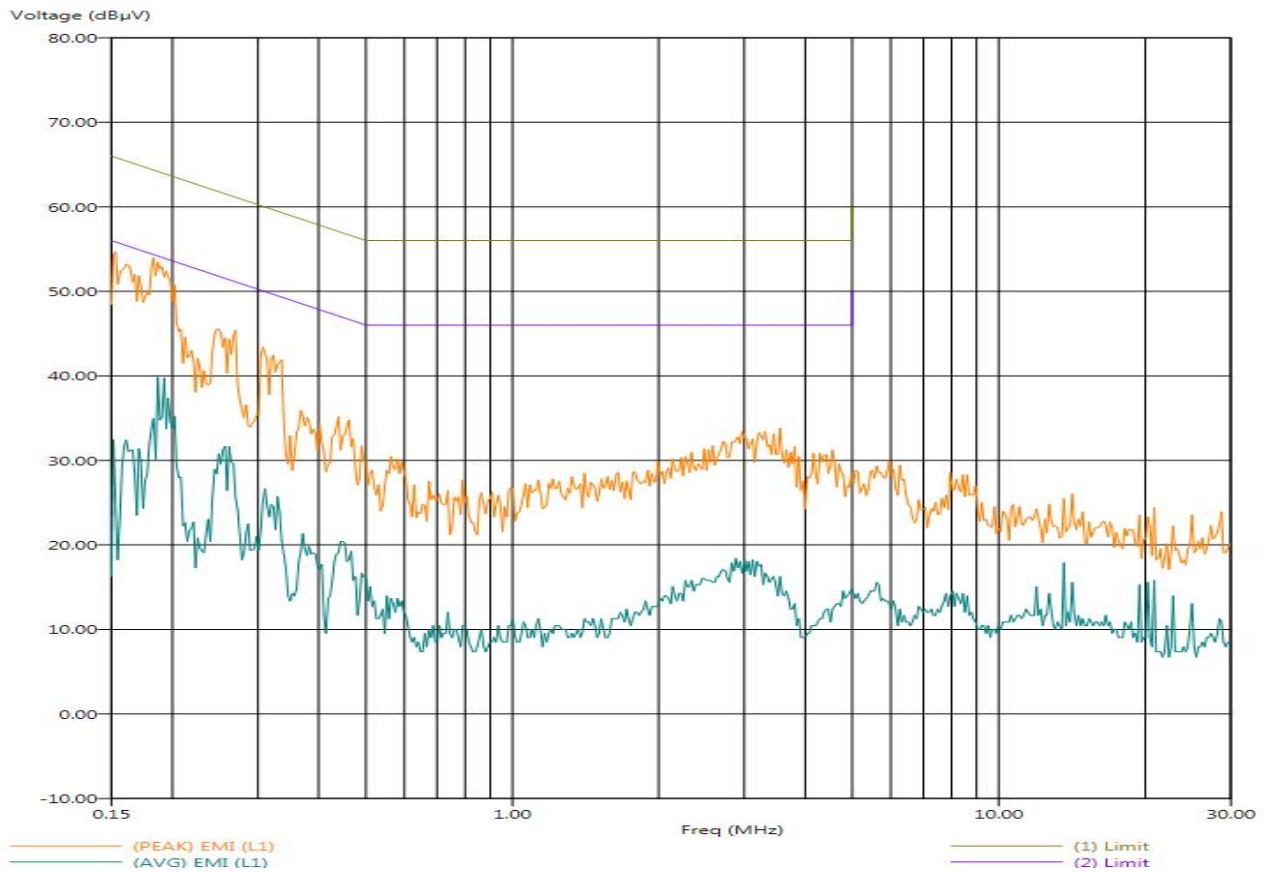
Conducted Emission (dBuV) = EMI Receiver Level (dBuV) + Loss (dB)

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 are also used. A 1GB flash drive was connected to the laptop computer eSata port and a wired router was connected to the laptop computer LAN port. The EUT was communicating with the laptop computer continuously.

Measurement results

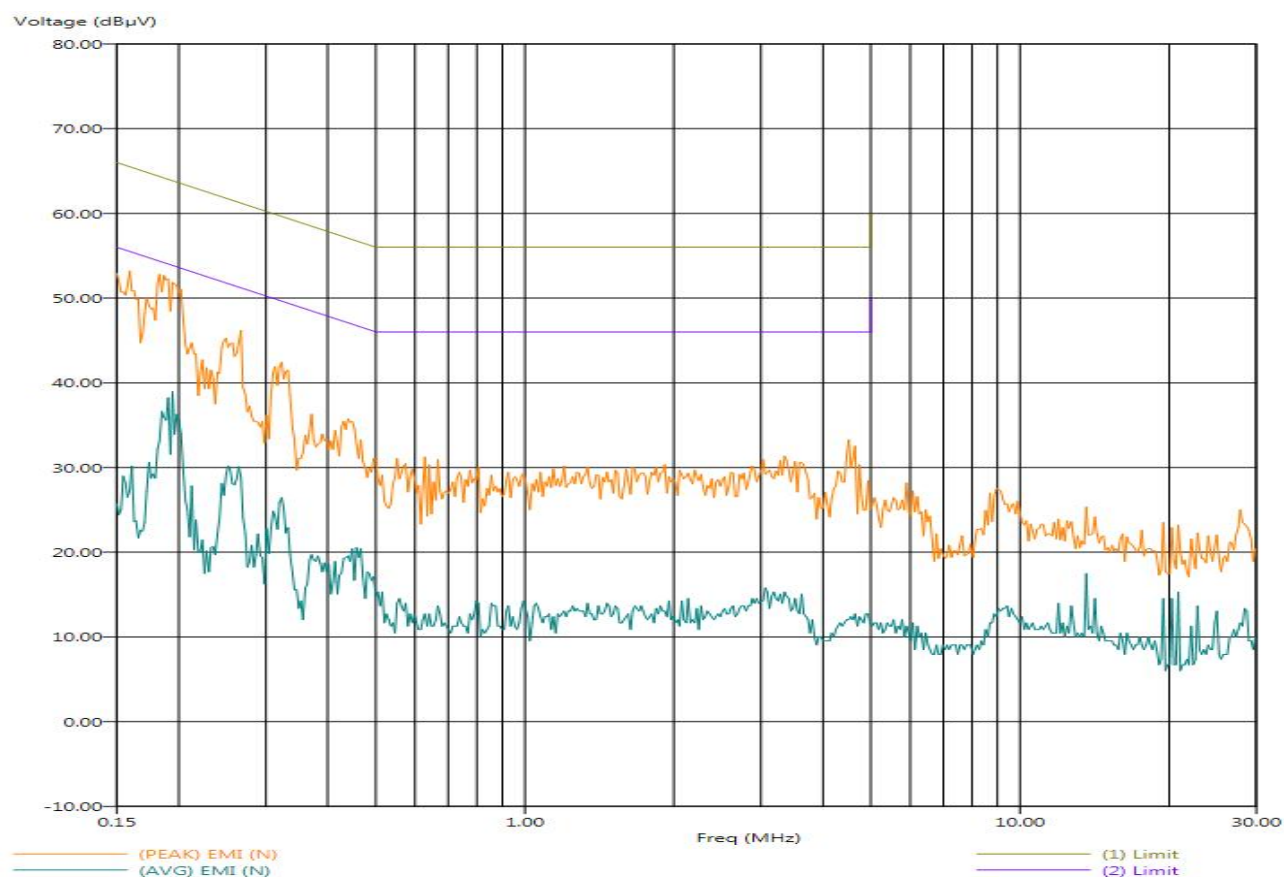
Tx Mode - Line Coupling



Frequency MHz	QuasiPeak Conducted Emission dBuV	Limit dBuV	Margin dB
0.15	54.66	65.83	11.19
0.19	52.94	64.02	11.08

Frequency MHz	Average Conducted Emission dBuV	Limit dBuV	Margin dB
0.19	39.82	54.18	14.36
0.19	39.75	53.93	14.18

Tx Mode - Neutral Coupling



Frequency MHz	QuasiPeak Conducted Emission dBuV	Limit dBuV	Margin dB
0.16	53.20	65.50	12.30
0.18	52.80	64.35	11.55

Frequency MHz	Average Conducted Emission dBuV	Limit dBuV	Margin dB
0.19	38.24	54.02	15.78
0.19	38.95	53.85	14.90

End of test Report