



MOBILE DEVICES BUSINESS

**PRODUCT SAFETY AND COMPLIANCE
EMC LABORATORY**

EMC TEST REPORT

Test Report Number – 25258-1JBP

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: February 5, 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: 1090-1

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

Product Type : Portable Cellular Phone

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

FCC ID: IHDP56ND1

Serial Numbers: 353208050050477, 353208050050717

Testing Complete Date: February 5, 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	ESI40	100226	5/15/2013
A. H. Systems	DRG Horn Antenna	3115	6222	7/26/2013
ETS	Log-Periodic Antenna	3148	1189	3/8/2013
ETS	Biconical Antenna	3110B	3370	3/8/2013
Attenuator	Weinschel	AS-6	6675	NCR
Attenuator	Weinschel	AS-6	6677	NCR
ETS	LISN	3810/2NM	00062907	8/7/2013
ETS	LISN	3810/2NM	00062912	8/6/2013
ETS	Loop Antenna	6507	00049471	1/7/2014
Hewlett Packard	Laptop Computer	8440P	CND04111C8	NA
Hewlett Packard	Monitor	HP2311X	CNT101X68Q	NA
Dell	Mouse	M-UVDEL1	HCJ43516737	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, 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 1.2GHz

Xtal – 27MHz, 32.768kHz

TCXO – 26MHz

Memory Size – 8GB LPDDR2 SDRAM, 4GB eMMC

Video Resolution – 720P, 1280x720

Video Clock: Max 450MHz

Refresh rate – 60Hz

Testing was conducted up to and including 8 GHz.

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 dBμV/m	Measured dBμV	Transd dB	Cables dB	Limit dBμV/m	Margin dB	Height cm	Angle deg	Pol.
33.20	32.86	14.50	12.0	6.3	40	7.1	329	183	VERT
39.52	30.94	13.85	10.7	6.4	40	9.1	237	71	VERT
68.60	29.26	14.24	8.4	6.6	40	10.7	224	60	VERT
139.84	34.46	14.93	12.6	6.9	43.5	9.0	101	40	VERT
171.88	33.97	13.79	13.0	7.1	43.5	9.5	225	171	HORI
284.04	39.51	18.99	13.1	7.4	46	6.5	192	149	VERT
348.68	41.38	18.79	15.0	7.6	46	4.6	146	151	VERT
426.16	33.65	9.76	16.0	7.9	46	12.3	121	159	VERT
480.00	41.29	14.83	18.5	8.0	46	4.7	100	222	VERT
497.28	37.01	10.20	18.8	8.0	46	9.0	119	171	VERT
710.48	39.37	9.23	21.8	8.4	46	6.6	188	135	HORI
767.52	35.22	5.09	21.7	8.5	46	10.8	243	139	VERT
915.68	31.25	-1.32	23.9	8.7	46	14.7	111	232	VERT

Notes: Worst Case emissions reported.

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.
1137.3	24.13	25.24	24.8	26.0	54	29.9	167	0	VERT
1198.1	26.02	26.75	25.2	25.9	54	28.0	388	132	VERT
1279.3	25.39	25.88	25.3	25.8	54	28.6	165	152	HORI
1346.3	25.88	26.24	25.3	25.6	54	28.1	180	148	VERT
1497.6	24.30	24.53	25.3	25.5	54	29.7	203	18	VERT
1597.1	27.64	27.51	25.4	25.2	54	26.4	193	360	VERT
1634.8	25.87	25.47	25.6	25.2	54	28.1	194	142	VERT
1680.4	25.43	24.72	25.9	25.2	54	28.6	171	124	VERT
2169.8	25.14	22.07	27.7	24.6	54	28.9	180	128	HORI
2245.3	25.75	22.55	27.6	24.4	54	28.3	184	205	HORI
2661.0	28.61	23.58	28.8	23.8	54	25.4	132	0	VERT
3199.0	29.74	22.41	30.7	23.4	54	24.3	209	165	VERT
3231.4	29.35	22.00	30.8	23.4	54	24.6	337	136	HORI
6748.6	33.93	18.15	35.1	19.3	54	20.1	98	138	HORI
6883.0	34.19	18.25	35.2	19.2	54	19.8	133	313	HORI
7143.9	36.94	19.94	35.7	18.7	54	17.1	100	14	HORI
7260.9	37.73	19.85	36.3	18.4	54	16.3	254	343	VERT
7394.7	38.35	20.07	36.7	18.4	54	15.7	345	81	VERT
7936.3	37.82	19.17	36.8	18.2	54	16.2	259	45	VERT

Peak Measurements above 1 GHz

Frequency MHz	Level dBµV/m	Measured dBµV	Transd dB	Gain dB	Height cm	Angle deg	Pol.	Limit dBµV/m	Result
1137.3	38.76	39.87	24.8	26.0	167	0	VERT	74	Pass
1198.1	45.33	46.06	25.2	25.9	388	132	VERT	74	Pass
1279.3	43.8	44.30	25.3	25.8	165	152	HORI	74	Pass
1346.3	43.54	43.89	25.3	25.6	180	148	VERT	74	Pass
1497.6	44.06	44.30	25.3	25.5	203	18	VERT	74	Pass
1597.1	46.72	46.59	25.4	25.2	193	360	VERT	74	Pass
1634.8	47.49	47.09	25.6	25.2	194	142	VERT	74	Pass
1680.4	43.00	42.29	25.9	25.2	171	124	VERT	74	Pass
2169.8	40.20	37.12	27.7	24.6	180	128	HORI	74	Pass
2245.3	44.22	41.02	27.6	24.4	184	205	HORI	74	Pass
2661.0	49.60	44.57	28.8	23.8	132	0	VERT	74	Pass
3199.0	46.95	39.62	30.7	23.4	209	165	VERT	74	Pass
3231.4	42.52	35.17	30.8	23.4	337	136	HORI	74	Pass
6748.6	46.72	30.94	35.1	19.3	98	138	HORI	74	Pass
6883.0	47.28	31.34	35.2	19.2	133	313	HORI	74	Pass
7143.9	49.75	32.76	35.7	18.7	100	14	HORI	74	Pass
7260.9	50.42	32.53	36.3	18.4	254	343	VERT	74	Pass
7394.7	50.81	32.53	36.7	18.4	345	81	VERT	74	Pass
7936.3	50.63	31.97	36.8	18.2	259	45	VERT	74	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.

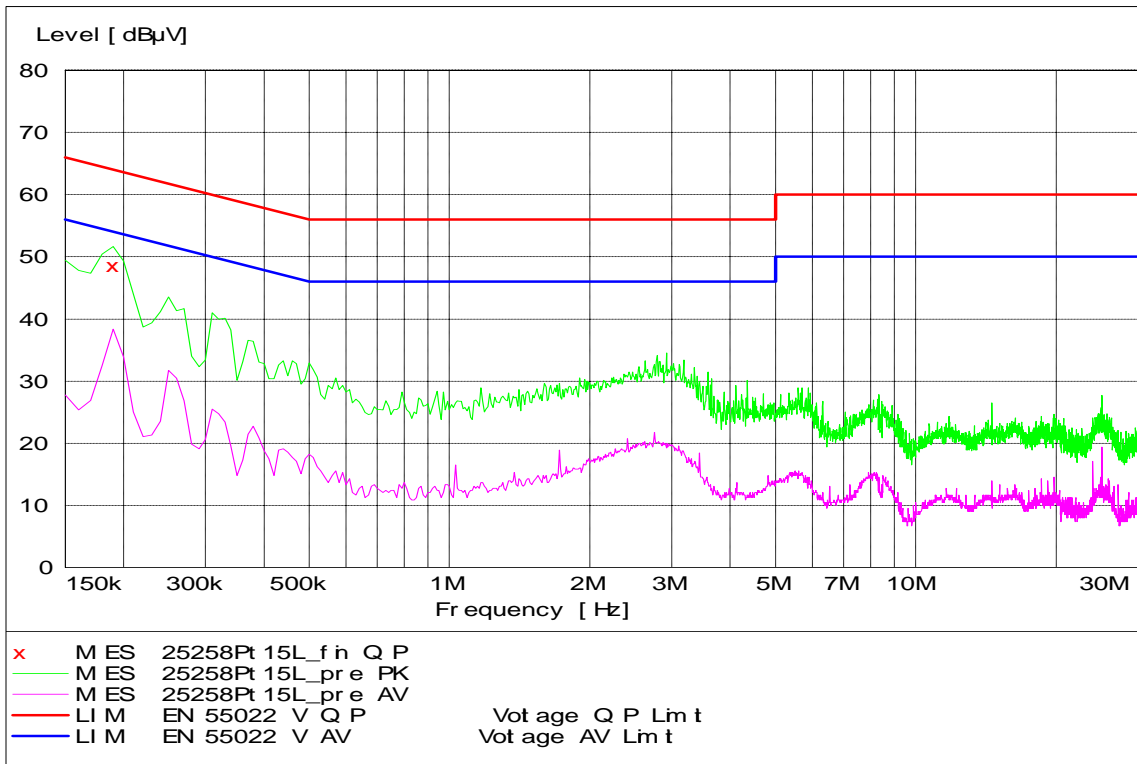
Conducted Emission (dBuV) = EMI Receiver Level (dBuV) + Loss (dB)

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, 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.

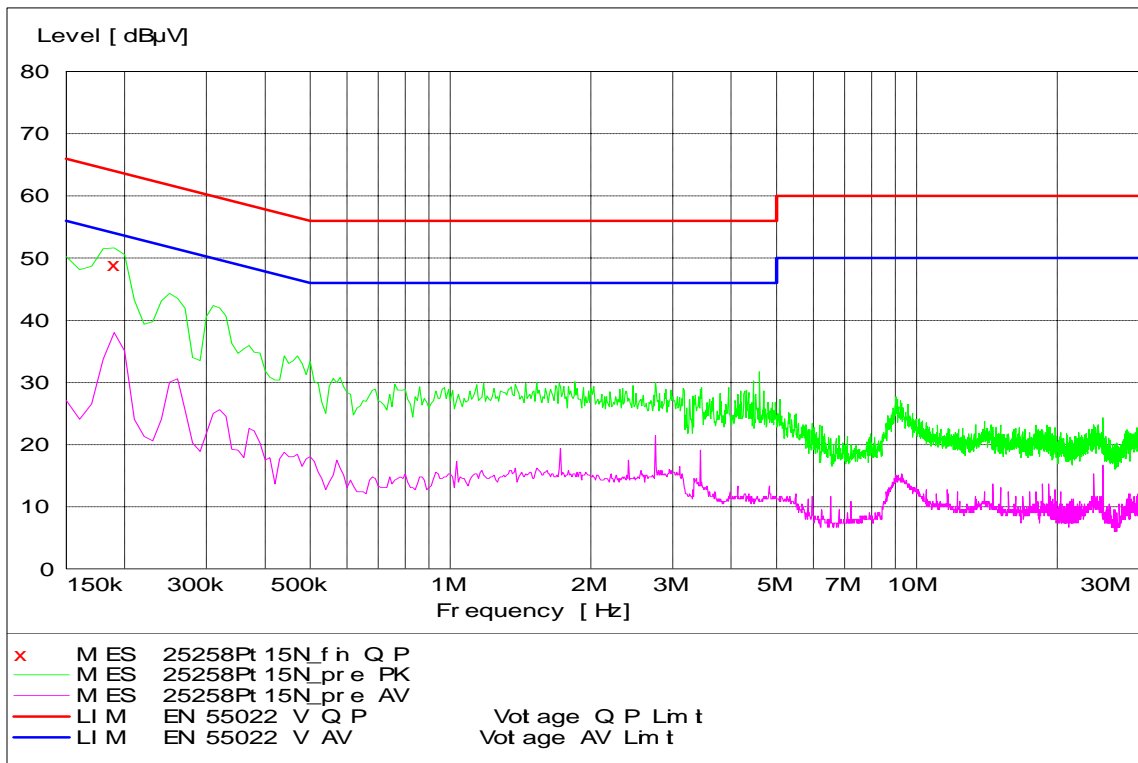
Measurement results

Tx Mode - Line Coupling



Frequency MHz	QuasiPeak dBuV	Correction dB	Limit dBuV	Margin dB
0.19	48.6	10	64	15.4

Tx Mode - Neutral Coupling



Frequency MHz	QuasiPeak dBuV	Correction dB	Limit dBuV	Margin dB
0.19	49	10	64	15.1

End of test Report