



**MOBILE DEVICES BUSINESS**

**PRODUCT SAFETY AND COMPLIANCE  
EMC LABORATORY**

**EMC TEST REPORT**

**Test Report Number** – 19491-1 Supplement

**Report Date** – December 15, 2006

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: December 15, 2006

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A2LA Certificate Number: 1651-01

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## Test Report Details

Tests Performed By: Motorola Mobile Devices business (MDb)  
Product Safety and Compliance Group  
600 North US Hwy 45  
Libertyville, IL 60048  
PH (847) 523-6167 Fax (847) 523-4538  
Motorola MDb FRN: 0004321311  
FCC Registration Number: 316588  
Industry Canada Number: IC3908-1

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

Signaling Capability: GSM 850, GSM 1900

FCC ID : IHDT56GR1

Serial Numbers: 004401022813535, 004401022813816,  
004401022834226

Testing Complete Date: December 15, 2006

## 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

**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**

The EUT was tested using a fully charged battery.  
 All testing was done in an indoor controlled environment with an average temperature of 22° C and relative humidity of 50%.

**Equipment List**

Manufacturer	Equipment Type	Model No.	Serial Number	Calibration Due Date
Rohde Schwarz	Receiver	ESI26	100001	3/08/07
Rohde Schwarz	Receiver	ESI40	100226	6/05/07
A.H. Systems Inc.	DRG Horn Antenna	SAS 200/571	365	5/12/07
ETS	Log-Periodic Antenna	3148	1188	6/05/07
ETS	Biconical Antenna	3110B	3370	3/03/07
Attenuator	Weinschel	AS-6	6675	1/06/07
Attenuator	Weinschel	AS-6	7075	06/29/07
ETS	LISN	3810/2NM	00062907	5/10/07
ETS	LISN	3810/2NM	00062912	5/10/07
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.

The Dell M20 Laptop Computer, the 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. For each radiated emission, the antenna mast is raised and lowered from 1 to 4 meters and the turntable is rotated 360 degrees to obtain a maximum peak reading on the spectrum analyzer. 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. 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 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**

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.
31.04	33.5	12.4	13.3	7.8	40	6.5	150	15	VERT
34.72	35.49	15.35	12.3	7.8	40	4.5	100	351	VERT
95.28	33.95	14.3	10.5	9.1	43.5	9.5	150	345	VERT
96.12	35.98	16.31	10.5	9.2	43.5	7.5	151	359	VERT
166.4	30.67	7.71	12.7	10.3	43.5	12.8	184	18	HORI
166.48	30.98	8.02	12.7	10.3	43.5	12.5	191	21	HORI
233.16	30.11	7.1	12.1	10.9	46	15.9	120	345	HORI
366.44	38.42	10.79	15.4	12.3	46	7.6	188	11	VERT
964.36	39.57	-0.32	23.7	16.2	54	14.4	115	359	HORI
972.04	38.55	-0.27	22.6	16.2	54	15.4	163	346	VERT

Above 1 GHz

Frequency MHz	Level dBµV/m	Measured dBµV	Transd dB	Gain dB	Limit dBµV/m	Margin dB	Height cm	Angle deg	Pol.
1118.3	37.83	22.8	23.8	8.8	53.9	16.1	219	7	VERT
1130.4	38.87	23.65	23.9	8.7	53.9	15	169	10	VERT
1817.9	39.56	19.35	26.7	6.5	53.9	14.3	148	346	HORI
1960.5	41.81	19.63	28.3	6.1	53.9	12.1	123	0	HORI
1967.1	41.89	19.49	28.4	6	53.9	12	150	21	HORI
1995.8	42.2	19.37	28.8	6	53.9	11.7	100	20	HORI
2002.3	41.82	19.28	28.5	6	53.9	12.1	188	4	VERT

Notes: Worst Case emissions reported.

**Peak Radiated Data for Emissions Above 1GHz**

Frequency MHz	Level dBµV/m	Angle deg	Height cm	Pol.
1118.24	49.8	0	200	VER
1120.24	47.35	0	100	VER
1130.26	50.45	0	200	VER
1132.26	45.42	0	200	VER
1817.64	50.05	0	100	HOR
1819.64	48.65	0	100	HOR
1959.92	49.24	0	200	VER
1961.92	52.24	0	100	HOR
1965.93	50.5	0	200	VER
1967.94	52.07	0	200	HOR
1993.99	52.19	0	100	HOR
1995.99	50.17	0	100	HOR
2000.00	51.91	0	200	VER

## **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  $\Omega$ .

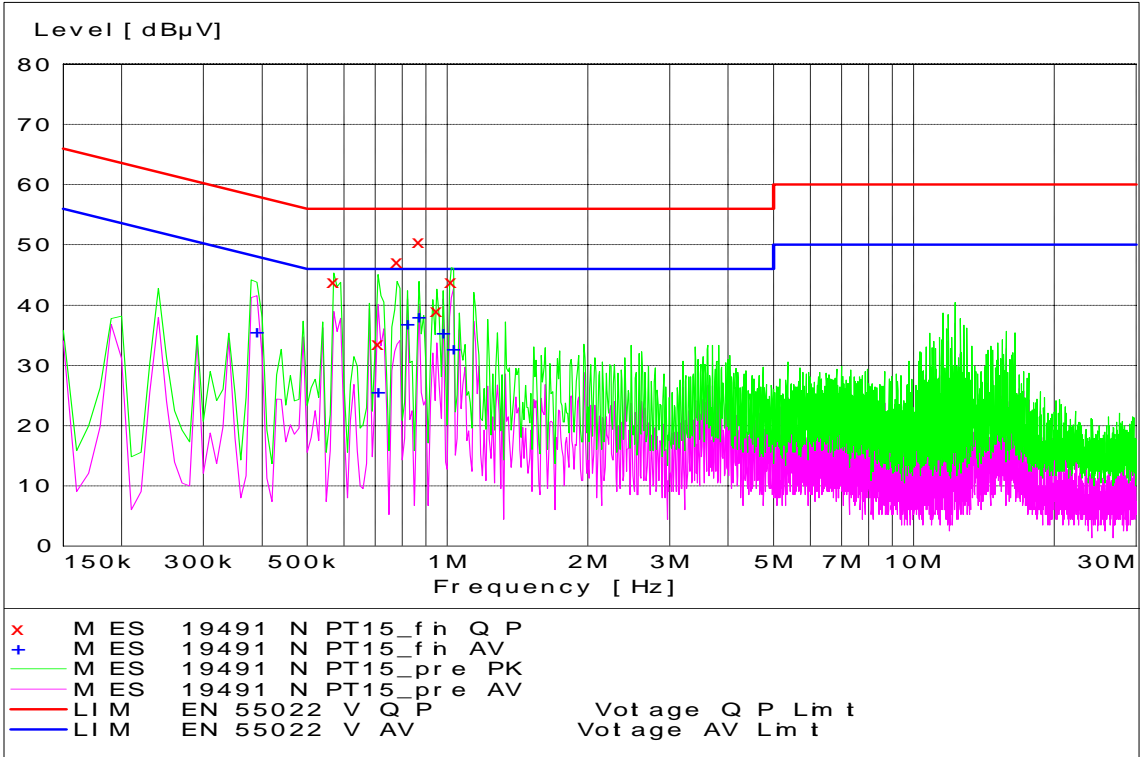
Detectors - Quasi Peak and Average Detector

### **Test Setup**

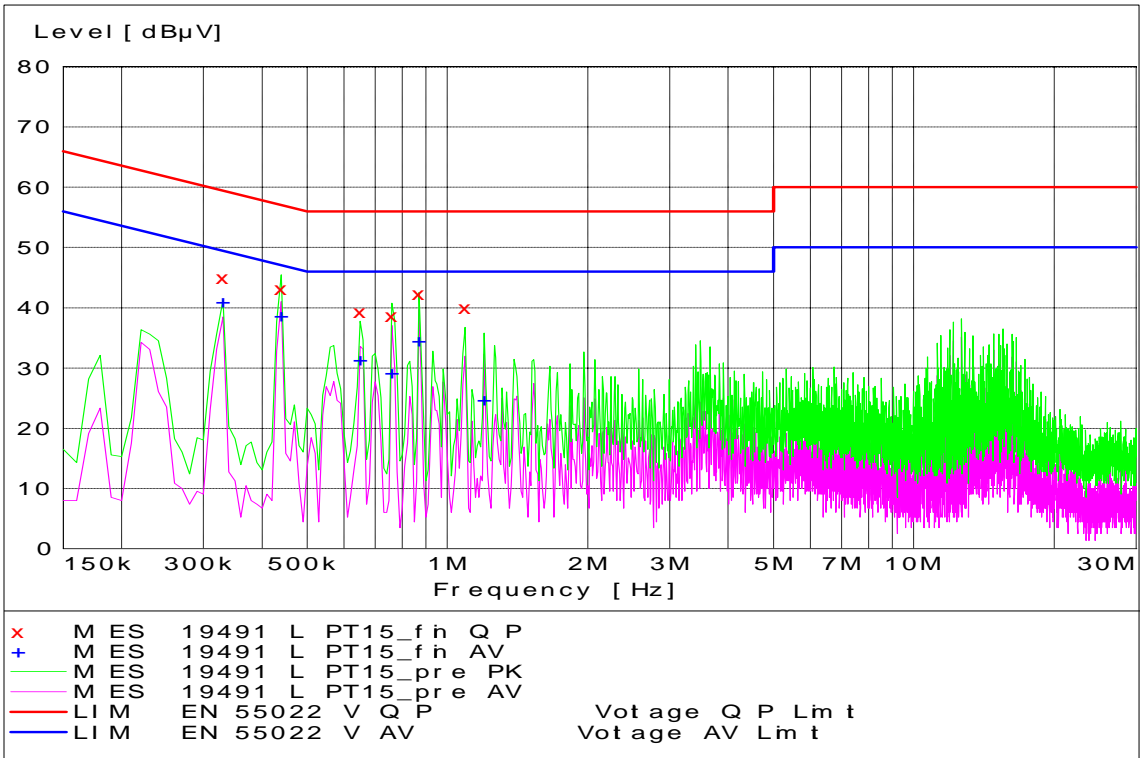
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### **Measurement Results**

See attached:



**AC LINE COMPUTER PERIPHERAL ( NEUTRAL )**



**AC LINE COMPUTER PERIPHERAL ( LINE )**

**End of Test Report**