



**MOBILE DEVICES BUSINESS**

**PRODUCT SAFETY AND COMPLIANCE  
EMC LABORATORY**

**EMC TEST REPORT**

**Test Report Number** – 22708-1 Supplement

**Report Date** – January 27, 2009

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: January 27, 2009

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A2LA Certificate Number: 2518-02

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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: 1090-1

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

Product Type: Cellular Phone

Signaling Capability: WCDMA 850/1900, GSM 850/900/1800/1900,  
HSDPA 3.6 Mbps (Category 5/6),  
EDGE Class 12, GPRS Class 12, aGPS,  
Bluetooth Class 1 Version 2.0+EDR

FCC ID : IHDT56KE1

Serial Numbers: LSSA2E0002

Testing Complete Date: January 7, 2009

## 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       | 838786/010    | 2/28/2009            |
| Rohde Schwarz | Receiver             | ESI26       | 100001        | 6/03/2009            |
| ETS           | DRG Horn Antenna     | 3115        | 6222          | 5/02/2009            |
| A.H. Systems  | DRG Horn Antenna     | SAS 200/571 | 265           | 1/18/09              |
| ETS           | Log-Periodic Antenna | 3148        | 1188          | 7/30/2009            |
| ETS           | Biconical Antenna    | 3110B       | 3370          | 7/29/2009            |
| Attenuator    | Weinschel            | AS-6        | 6675          | 6/13/2009            |
| Attenuator    | Weinschel            | AS-6        | 6677          | 6/17/2009            |
| ETS           | LISN                 | 3810/2NM    | 2179          | 1/23/2009            |
| ETS           | LISN                 | 3810/2NM    | 00023630      | 1/23/2009            |
| Dell          | Laptop Computer      | M20         | NA            | NA                   |
| Iomega        | Zip Drive            | Z250S       | P9HM1992CK    | NA                   |
| Olympus       | Camera               | D-600L      | 4020727       | NA                   |

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. 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.

Note: 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. |
|---------------|--------------|---------------|-----------|-----------|--------------|-----------|-----------|-----------|------|
| 70.72         | 35.03        | 17.97         | 8.6       | 8.5       | 40           | 5.0       | 100       | 231       | VERT |
| 71.60         | 36.03        | 18.88         | 8.7       | 8.5       | 40           | 4.0       | 100       | 221       | VERT |
| 74.96         | 33.69        | 16.23         | 8.9       | 8.6       | 40           | 6.3       | 100       | 224       | VERT |
| 142.32        | 37.64        | 15.05         | 13.1      | 9.5       | 43.5         | 5.9       | 100       | 174       | VERT |
| 147.16        | 38.13        | 16.00         | 12.6      | 9.6       | 43.5         | 5.4       | 231       | 339       | HORI |
| 320.64        | 43.53        | 17.21         | 15.1      | 11.2      | 46           | 2.5       | 119       | 262       | HORI |
| 384.76        | 39.17        | 11.57         | 15.9      | 11.7      | 46           | 6.8       | 150       | 175       | HORI |
| 468.68        | 27.95        | -2.28         | 17.9      | 12.3      | 46           | 18.1      | 277       | 43        | HORI |
| 916.16        | 37.83        | -1.16         | 24.4      | 14.6      | 46           | 8.2       | 118       | 56        | HORI |
| 924.60        | 37.95        | -1.11         | 24.4      | 14.7      | 46           | 8.0       | 150       | 11        | HORI |
| 951.72        | 37.58        | -1.16         | 23.9      | 14.8      | 46           | 8.4       | 365       | 331       | HORI |

Above 1 GHz

| Frequency MHz | Level dBμV/m | Measured dBμV | Transd dB | Gain dB | Limit dBμV/m | Margin dB | Height cm | Angle deg | Pol. |
|---------------|--------------|---------------|-----------|---------|--------------|-----------|-----------|-----------|------|
| 1063.9        | 39.40        | 32.99         | 23.6      | 17.2    | 54           | 14.6      | 208       | 42        | VERT |
| 1092.7        | 37.75        | 31.17         | 23.9      | 17.3    | 54           | 16.3      | 150       | 125       | HORI |
| 1098.6        | 37.48        | 30.99         | 23.8      | 17.3    | 54           | 16.5      | 250       | 314       | VERT |
| 1117.1        | 38.02        | 31.37         | 23.9      | 17.3    | 54           | 16.0      | 239       | 67        | VERT |
| 1118.2        | 40.52        | 33.86         | 23.9      | 17.3    | 54           | 13.5      | 240       | 75        | VERT |
| 1122.8        | 42.28        | 35.58         | 24        | 17.3    | 54           | 11.7      | 380       | 349       | VERT |
| 1125.9        | 41.99        | 35.26         | 24        | 17.3    | 54           | 12.0      | 375       | 359       | VERT |
| 1126.7        | 42.77        | 36.03         | 24        | 17.3    | 54           | 11.2      | 375       | 356       | VERT |
| 1127.1        | 43.28        | 36.54         | 24        | 17.3    | 54           | 10.7      | 374       | 341       | VERT |
| 1129.9        | 41.34        | 34.57         | 24        | 17.2    | 54           | 12.7      | 380       | 0         | VERT |
| 1484.1        | 37.67        | 29.98         | 24.6      | 16.9    | 54           | 16.3      | 384       | 30        | VERT |
| 1511.1        | 37.38        | 29.64         | 24.6      | 16.9    | 54           | 16.6      | 140       | 267       | VERT |
| 1512.8        | 37.40        | 29.65         | 24.6      | 16.9    | 54           | 16.6      | 137       | 267       | VERT |
| 1512.9        | 37.37        | 29.61         | 24.6      | 16.9    | 54           | 16.6      | 385       | 135       | VERT |
| 1996.4        | 40.12        | 27.81         | 28.1      | 15.8    | 54           | 13.9      | 384       | 185       | HORI |

Peak Radiated Data for Emissions Above 1GHz

| Frequency MHz | Level dBμV/m | Angle deg | Height cm | Pol. |
|---------------|--------------|-----------|-----------|------|
| 1062.12       | 52.49        | 55        | 400       | VER  |
| 1064.19       | 53.74        | 52        | 200       | VER  |
| 1092.18       | 52.86        | 127       | 100       | HOR  |
| 1094.19       | 49.26        | 359       | 200       | HOR  |
| 1098.20       | 50.63        | 180       | 300       | HOR  |
| 1100.20       | 52.95        | 317       | 300       | VER  |
| 1116.23       | 54.12        | 82        | 200       | VER  |
| 1118.24       | 53.72        | 56        | 200       | VER  |
| 1122.24       | 54.24        | 341       | 400       | VER  |
| 1124.25       | 53.63        | 355       | 400       | VER  |
| 1126.25       | 54.83        | 349       | 400       | VER  |
| 1128.26       | 53.7         | 357       | 400       | VER  |
| 1130.26       | 55.7         | 1         | 400       | VER  |
| 1482.97       | 50.47        | 260       | 300       | VER  |
| 1484.97       | 53.53        | 21        | 400       | VER  |
| 1509.02       | 53.07        | 268       | 100       | VER  |
| 1511.02       | 52.9         | 136       | 400       | VER  |
| 1513.03       | 55.56        | 266       | 100       | VER  |
| 1995.99       | 53.37        | 200       | 400       | HOR  |
| 1997.99       | 51.37        | 128       | 200       | HOR  |

## **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  $\Omega$ .

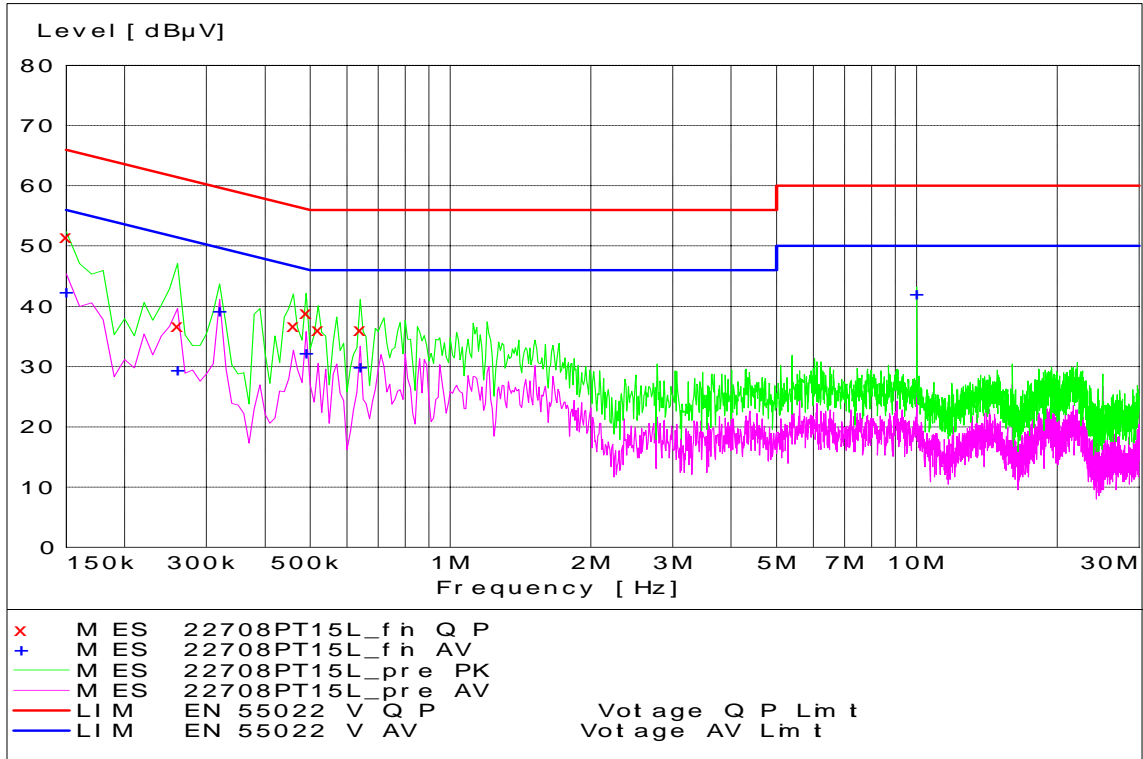
Detectors - Quasi Peak and Average Detector

### **Test Setup**

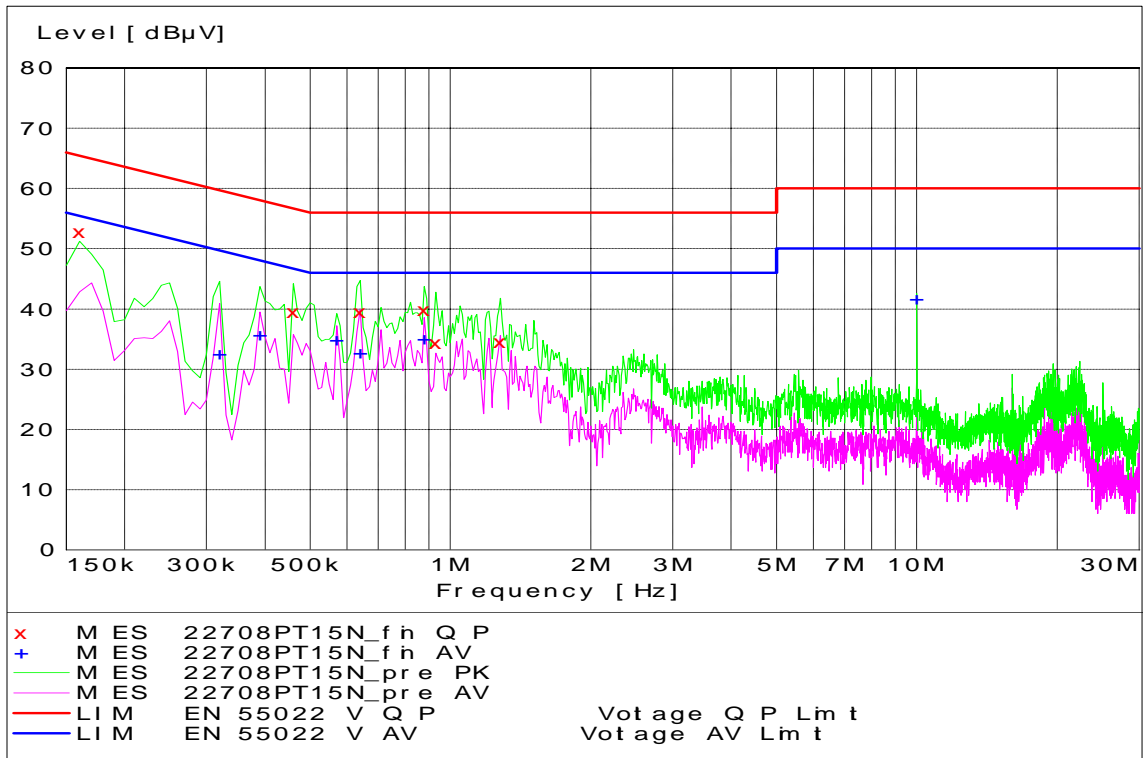
The EUT and the host equipment were setup according to the procedures in ANSI C63.4-2003. The EUT was connected to a laptop computer using a USB data cable. The USB data cable is 1 m in length. The parallel and the serial ports of the computer were populated. The EUT was communicating with the laptop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

### **Measurement Results**

See attached:



**Pt 15 - Tx Mode - Line Coupling**



**Pt 15 - Tx Mode - Neutral Coupling**

**End of Test Report**