



MOTOROLA



CGISS EME Test Laboratory

8000 West Sunrise Blvd
Fort Lauderdale, FL. 33322

EME Compliance Test Report

Attention: Federal Communication Commission
Date of Report: March 26, 2002
Report Revision: Rev. O
Device Manufacturer: Motorola
Device Description: CDM1550 LS 1-15 watts Mobile Radio
746-794MHZ
Classification: General Population/Uncontrolled Exposure
FCC ID: ABZ99FT5001
Device Model: PMUF1111A

Test Period: 3/20/02

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EME Regulatory Affairs Liaison

Note: Based on the information and the testing results provided herein, the undersigned certifies that when used as stated in the operating instructions supplied, said product complies with all applicable national and international reference standards and guidelines.

Ken Enger

Senior Resource Manager, Product Safety and EME Director

3/26/02

Date Approved

Note: This report shall not be reproduced without written approval from an officially designated representative of the Motorola EME Laboratory.

1.0 Description of Test Sample



The CDM1550 LS, model PMUF1111A is a mobile transceiver that operates on trunked LTR (a transmission based trunking protocol for single site trunking) and Passport systems (an enhanced trunking protocol for wide area dispatch) as well as on conventional (single channel unit to unit communications) radio systems. The intended use of the radio is Push-To-Talk (PTT) while the device is properly installed in a vehicle with an external antenna mounted at the center of the roof or trunk.

The transmit frequency band for the CDM1550 LS is 746-794MHz. The rated power of the device is 1 to 15 watts with a maximum conducted power output of 18 watts.

The sample device tested for this report represent an identical prototype to those intended for production.

2.0 Accessories offered with the CDM1550 LS is presented below.

Antenna:

HAF4012A 746-794 ¼ wave whip

3.0 Measurement Standards

Measurements were performed according to FCC Limits Per 47 CFR 2.1091 (b) for General Population/Uncontrolled RF Exposure.

For frequencies ranging from 746-794 MHz the MPE (Maximum Permissible Exposure) limit to electromagnetic energy in equivalent plane wave free-space power density is 0.51 mW/cm² for internal and external exposures.

4.0 Data Collection Consideration

Power density testing was performed with EUT installed in a 1991 Ford Taurus (4-door). Measurement data was taken with the vehicle running at idle and the vehicle battery measuring 14.0 volts.

5.0 Test Results

Measurements were taken with the antenna located in two areas: the roof center, and trunk center. A summary of the highest power density levels measured in each area is provided in the following table. Results are based on 50% duty cycle applicable to informed and aware users operating this radio in accordance with the User Manual instructions.

Antenna Location	Antenna	External/Internal	Highest Result
Roof Center	HAF4012A	External	0.087 mW/cm ²
Trunk Center	HAF4012A	External	0.24 mW/cm ²
Roof Center	HAF4012A	Internal	<= 0.05 mW/cm ²
Trunk Center	HAF4012A	Internal	<= 0.10 mW/cm ²

6.0 Conclusion

Although the measured RF power of this radio ranged from 15.9 watts to 16.7 watts, under any condition of permissible tuning, frequency, voltage, and temperature, the maximum RF power delivered to the antenna connector of this radio can be as high as 18 watts. As a result, the calculated power density (mW/cm²) for the maximum power condition using the highest power density in the above table could be 0.26 mW/cm².

The measurement results clearly demonstrate compliance with the FCC Limits Per 47 CFR 2.1091 (b) for General Population/Uncontrolled RF Exposure.

7.0 Measurement System Uncertainty Levels

The information below presents an estimate of the possible errors that are associated with the measurement system.

<u>Description</u>	<u>Error</u>
NARDA Survey Meter	$\pm 3\%$
Repeatability Accuracy	$\pm 7\%$

8.0 Method of Measurement

- 8.1 EME MEASUREMENTS MADE ON CENTER ROOF MOUNTED ANTENNAS
(for reference, see Antenna Location Layout drawings in Appendix)

8.1.1 EXTERNAL VEHICLE EME MEASUREMENT

With the survey meter and probe, take ten (10) measurements, at the standard test distance of 30 cm from the vehicle-mounted antenna, in a vertical line and then average the results. These measurements are taken and recorded at every twenty (20) centimeters over a range starting at twenty (20) centimeters above ground and ending at 2.0 meters; this would be representative of a person standing next to a vehicle during a mobile radio transmission.

Note: Actual test distance was 110cm; this is the closest distance that can be achieved to a center roof mounted antenna.

8.1.2 INTERNAL VEHICLE EME MEASUREMENT

While rotating survey meter probe through 180 degrees to ensure that the highest level is found, scan the inside of the vehicle, both front and back seating areas, for the highest level in each location. After the highest level is found, scan vertically making two (2) additional measurements within an area approximately 40 cm wide (representing the width of a person) so as to have a total of three (3) measured points as indicated below that will be averaged.

- a) Head area
- b) Chest area
- c) Lower Trunk area

- 8.2 EME MEASUREMENTS MADE ON TRUNK MOUNTED ANTENNAS
(for reference, see Antenna Location Layout drawings in Appendix)

8.2.1 EXTERNAL VEHICLE EME MEASUREMENT

(Antenna mounted in trunk center)

With the survey meter and probe, take ten (10) measurements, at the standard test distance of 30 cm to the antenna, from the back of the vehicle in a vertical line and then average the results. These measurements are taken and recorded at every twenty (20) centimeters over a range starting at twenty (20) centimeters above ground and ending at 2.0 meters; this would be representative of a person standing behind a vehicle during a mobile radio transmission.

8.2.2 INTERNAL VEHICLE EME MEASUREMENT

(Antenna mounted in trunk center)

While rotating survey meter probe through 180 degrees to ensure that the highest level is found, scan the inside of the vehicle, both front and back seating areas, for the highest level in each location. After the highest level is found, scan vertically making two (2) additional measurements within an area approximately 40 cm wide (representing the width of a person) so as to have a total of three (3) measured points as indicated below that will be averaged.

- a) Head area
- b) Chest area
- c) Lower Trunk area

9.0 Test Site

The test site is the Motorola Commercial, Government, Industrial Solution Sector (CGISS) world wide electromagnetic exposure (EME) open area test site located at 8000 W. Sunrise Blvd., Plantation, Fl. 33322.

10.0 Measurement System/Equipment

The minimum equipment required will mainly consist of a test vehicle, radio frequency radiation test set consisting of an Electromagnetic Radiation Survey Meter, E-Field Test Probe, and typical antenna configurations.

Below are the test equipment used to assess compliance:

- a) Automobile: 1991 Ford Taurus, 4-Door
- b) Survey Meter - NARDA Model 8718
calibration due date: 10/10/02
- c) E-Field (Electric Field) Probe - NARDA Model 8722B (300 kHz - 40 Ghz)
calibration due date: 10/11/02
- f) Antennas - (Quarter wave and Gain)

11.0 Test Unit Description

Power density measurements were performed on a 1-15 watt mobile radio; model number PMUF111A and serial number XD8WE002. The frequency band of the mobile was 746-794 MHz; the test frequencies were 746 MHz, 764 MHz, and 793 MHz. A $\frac{1}{4}$ wave 0dB gain mobile antenna was used on this device for testing.

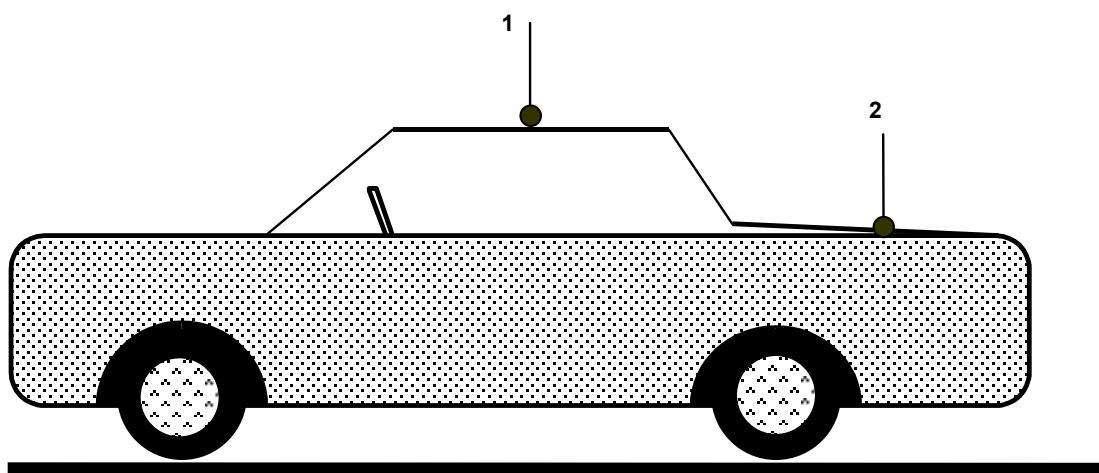
12.0 Test Set-Up Description

Following are the standard mobile antenna test configurations used for this product. (for reference, see Antenna Location Layout drawings in Appendix)

- a) $\frac{1}{4}$ wave antenna, HAF4012A, mounted in the center of the roof.
- b) $\frac{1}{4}$ wave antenna, HAF4012A, mounted in the center of the trunk.

APPENDIX

ANTENNA LOCATION DRAWING



- 1 - Roof (center)
- 2 - Trunk (center)

