MOTOROLA

COMMERCIAL, GOVERNMENT, AND INDUSTRIAL
SOLUTION SECTOR (CGISS)

ELECTROMAGNETIC EXPOSURE (EME)
TESTING LABORATORY

M.P.E. TEST REPORT

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Prepared by

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Environmental Evaluation for Occupational/Controlled RF Exposure Limits - Pursuant 47 CFR 2.1091 (b)

1.0 FCC Limits Per 47 CFR 2.1091 (b) for Occupational/Controlled RF Exposure

MPE (Maximum Permissible Exposure) in Controlled Environments. For human exposure in controlled environments to electromagnetic energy at radio frequencies from 806 - 870 MHz, the MPE, in terms of rms electric/magnetic (E/H) field strengths, the equivalent plane wave free-space power density that can be associated with exposure to such fields is 2.84 mW/cm^2.

1.1 GENERAL INFORMATION

FCC ID: ABZ99FT3003

Device category: Mobile radio

RF exposure environment: Controlled

Test method: Power Density Measurement

1.2 ANTENNA DECSRIPTION

Antenna Kit #	Antenna Desc.	Antenna Gain	Antenna Length (cm)
HAF4002A	Roof Mount, ¼ Wave	0dB	7.6
RRA4914B	Trunk Mount, Gain	3dB	33

2.0 Data Collection Consideration

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

3.0 Test Results

Measurements were taken with the antenna located in three areas: the roof center, center trunk, and top center trunk. A summary of results (highest level in each area) is in the following table.

Antenna Location	Antenna	External/ Internal	Highest Result
Roof Center	HAF4002A	External	0.09 mW/cm^2
Center Trunk	RRA4914B	External	0.25 mW/cm^2
Roof Center	HAF4002A	Internal	0.027 mW/cm^2
Top Center Trunk	HAF4002A	Internal	0.178 mW/cm^2

Although the measured RF power of this radio was 33 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 40 watts. As a result, the calculated power density (mW/cm^2) for the maximum power condition using the highest power density in the above table could be is 0.30 mW/cm^2.

4.0 Measurement System Uncertainty Levels

Table 1.4 below lists an estimate of the possible errors that are associated with the measurement system.

Description	Error
NARDA Survey Meter	± 3%
Repeatability Accuracy	± 5%

5.0 Method of Measurement

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

5.1.1 EXTERNAL VEHICLE EME MEASUREMENT

With the survey meter and probe, take ten (10) measurements, at the standard test distance of 20 cm from the side 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 next to a vehicle during a mobile radio transmission.

5.1.2 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

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

5.2.1 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 60 cm to 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.

5.2.2 INTERNAL VEHICLE EME MEASUREMENT
(Antenna mounted at top center trunk)

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

6.0 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.

7.0 Measurement System/Equipment

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

Below is the specific equipment currently in use by CGISS:

a) Automobile: 1991 Ford Taurus, 4-Door

b) Survey Meter - NARDA Model 8718

c) E-Field (Electric Field) Probe - NARDA Model 8722B (300 kHz - 40 Ghz)

d) H-Field (Magnetic Field) Probe – NARDA Model 8731 (10 MHz – 300 MHz)

e) H-Field (Magnetic Field) Probe – NARDA Model 8732 (300 kHz – 200 MHz)

f) Antennas - (Quarter wave and 3 dB Gain)

8.0 Test Unit Description

Power density measurements were performed a GTX mobile transceiver; model number M11UGJ6CB1AN and serial number PROFZU0048. The frequency band of the radio was 806 - 870 MHz; the test frequency was 851.000 MHz. The mobile antennas used were a Quarter wave whip and 3 dB gain.

9.0 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) ¼ wave antenna, HAF4002A, mounted in the center of the roof.

b) ¼ wave antenna, HAF4002A, mounted in the center of the trunk.

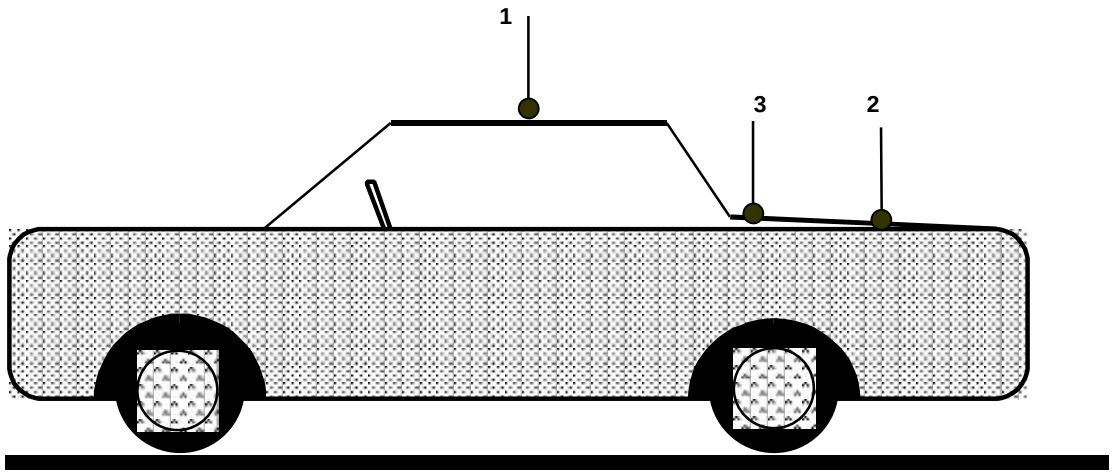
c) 3dB gain antenna, RRA4914B, mounted in the center of the trunk.

d) ¼ wave antenna, HAF4002A, mounted in the top center of the trunk for internal vehicle EME measurements only.

e) 3 dB gain antenna, RRA4914B, mounted in the top center of the trunk for internal vehicle EME measurements only.

APPENDIX

ANTENNA LOCATION DRAWING



1 - Roof (center)
2 - Trunk (center)
3 - Trunk lip mount (top/center)