



STATEMENT OF COMPLIANCE - MPE EVALUATION

1.1 Details of applicant

Name Wireless Matrix Corporation
Street 12369-B Sunrise Valley Drive
City / Zip Code /Country Reston, VA 20191, USA

1.2 Details of Test lab

Name Cetecom Inc
Street 411 Dixon Landing Road
City / Zip Code /Country Milpitas, CA-95035, USA

1.3 Test item

Manufacturer Wireless Matrix Corporation
Marketing Name Mobile Base Station 2 Low Profile with EDGE(MBS2-LP EDGE)
Model No. MBS2-LP EDGE
Description Satellite, EDGE, 802.11,GPS in one unit with RS-232 and Ethernet capabilities.
Frequency 824.2MHz – 848.8MHz for GSM 850
1850.2MHz – 1909.8MHz for PCS 1900
Antenna GSM:Monopole @ 6-7 dBi max, Satellite: Spiral @ 4.5 dBi max,802.11: Elevated Dipole @ 6.5 dBi max
Power supply 13.6VDC Nominal voltage
Value of MPE measured 0.725mW/cm²

This mobile transmitter has been shown to be compliant for localized Maximum Permissible Exposure (MPE) for uncontrolled environment / general population exposure limits specified in ANSI/IEEE Std. C95.1- 1992 and has been tested in accordance with the measurement procedures specified in ANSI/IEEE Std. C95.3-1999. This device complies with the rules and regulations specified for Maximum Permissible Exposure (MPE) by the Federal Communications Commission and Industry Canada.

I attest to the accuracy of data. All measurements were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

This test report shall not be reproduced partially, or in full, without the prior written approval of Cetecom Inc. The results and statements contained in this report pertain only to the device(s) evaluated.

**Pete Krebill
(EMC Project Engineer)**

Name

Signature



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2.1 MPE MEASUREMENT GUIDELINES

The safety limits used for the RF exposure environmental evaluation measurements are based on the criteria published by the American National Standards Institute (ANSI) for localized MPE in IEEE/ANSI C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz - 300 GHz (see reference [1]).

The measurement procedure described in IEEE/ANSI C95.3-1992 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave (see reference [2]) is used for guidance in measuring MPE due to RF exposure from the particular transmitting device. The new guidelines incorporate limits for MPE in terms of electric and magnetic field strength, and power density for transmitters operating at frequencies between 300 kHz and 100 GHz.

The criteria for MPE evaluation is also described in FCC OET Bulletin 65, Supplement C (01-01), Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields (see reference [3]), and Industry Canada's Radio Standards Specification RSS-102 Issue 1 (Provisional), Evaluation Procedure for Mobile and Portable Radio Transmitters with respect to Health Canada's Safety Code 6 for Exposure of Humans to Radio Frequency Fields (see reference [4]).

2.2 MPE DEFINITION

MPE is the RMS and peak electric and magnetic field strength, their squares, or the plane-wave equivalent power densities associated with these fields to which a person may be exposed without harmful effect, and with an acceptable safety factor.

The MPE prescribed by the standard are set in terms of different parameters of effects, depending on the frequency generated by the device. The MPE levels are set in terms of power density, whose definition and relationship to electric and magnetic field strengths are described by the following equation:



$$S(mW/cm^2) = (E^2 / 3770) = 37.7H^2$$

where: $S = \text{Power density (mW/cm}^2\text{)}$

Power per unit area normal to the direction of propagation usually expressed in units of watts per square meter (W/m²), or units of milliwatts per square centimeter (mW/cm²).

For plane waves, power density, electric field strength (E), and magnetic field strength (H) are related by the impedance of free space (377Ω).

$E = \text{Electric field strength (V/m)}$ and $H = \text{Magnetic field strength (A/m)}$

2.3 LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE

The table below is excerpted from 47 CFR 1.1310 titled "Limits for Maximum Permissible Exposure (MPE), Limits for General Population/Uncontrolled Exposure"

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)				
Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f ²)	6
30–300	61.4	0.163	1.0	6
300–1500 .....	.....	.....	f/300	6
1500–100,000 .....	.....	.....	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500 .....	.....	.....	f/1500	30
1500–100,000 .....	.....	.....	1.0	30
f = frequency in MHz * = Plane-wave equivalent power density NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure. NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.				



3.1 RESULTS OF MPE MEASUREMENT

A Holaday RF Probe was placed at a distance of 20 cm from the EUT. For the purpose of this measurement the EUT was operated in the satellite mode. The channel was set to 34000(1643.5 MHz). The position of the probe was varied and the maximum value of MPE was measured at an angle of 30° to the horizontal surface of the EUT.

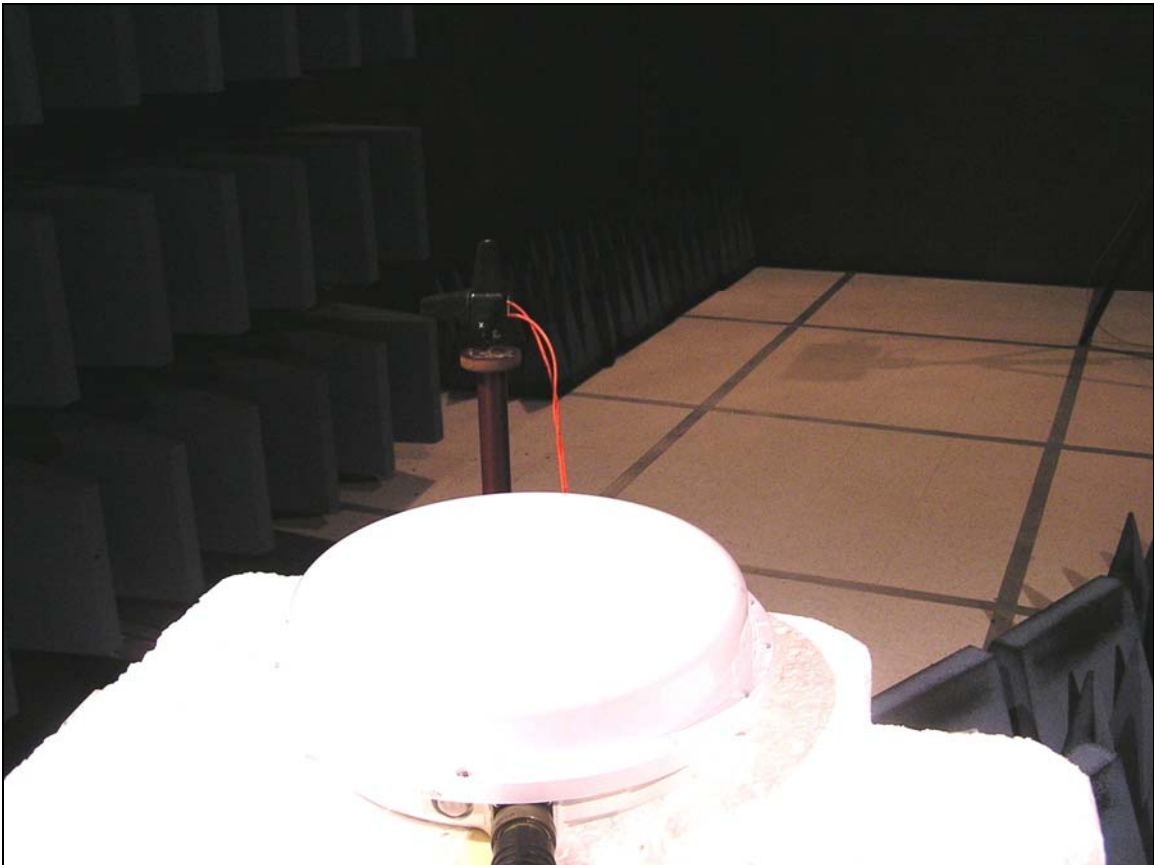
The value of MPE measured was **0.725mW/cm²**. As seen above in **table 1B** the MPE limit for devices operating in the **1500-100000** frequency range is **1 mW/cm²** therefore the device meets the specifications.

Result: Configuration complies with rules as power density is below MPE limit.

3.2 MPE TEST SETUP PHOTOGRAPHS



MPE TEST SETUP PHOTOGRAPHS





4.1 REFERENCE

- [1] ANSI/IEEE C95.1-1992, IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3kHz to 300GHz.
- [2] ANSI/IEEE C95.3-1992, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave.
- [3] FCC OET Bulletin 65, Supplement C (Edition 01-01), Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.
- [4] Industry Canada, Radio Standards Specification RSS-102 Issue 1 (Provisional), Evaluation Procedure for Mobile and Portable Radio Transmitters with respect to Health Canada's Safety Code 6 for Exposure of Humans to Radio Frequency Fields.