Project: 04CA02341 File: MC2371 Underwriters Laboratories, Inc.
Test Report on Electromagnetic Compatibility

Issued: 01/25/05

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FCC ID: MMF8485SESM Test Report: 050010MPE

Maximum Permissible Exposure

Test Requirement: 47 CFR Part 1

Test Specification: 47 CFR Part 1, Section 1.1307

Test Procedure:

Maximum Permissible Exposure limits are as follows:

FCC Limits for Occupational/Controlled Exposure

1 00 Emilio for Occupational Control Expectato				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm²)	Averaging Time E ² , H ² . or S (minutes)
0.3 - 3.0	614	1.63	(100)*	6
3.0 - 30	1824/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	-	-	5.0	6

^{*} Plane-wave equivalent power density

FCC Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm²)	Averaging Time E ² , H ² . or S (minutes)
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

^{*}Plane-wave equivalent power density

Test Details: This device is considered to possibly be located in either environment. See calculation for

assumptions.

Background: Per the following guidance from OET Bulletin 65 Supplement C required minimum spacings are

provided to the professional installer.

Transmitter or Device Type ¹⁸	Output ¹⁹	Applicable Methods to Ensure Compliance ²⁰
Transmitters using indoor antennas that operate at 20 cm or more from nearby persons	>2.5 W at 915 MHz	If the MPE distance is greater than that required for normal operation of the device, operating instructions, warning instructions and/or warning labels may be used to ensure compliance by indicating the minimal separation distance to comply with MPE limits.
		If the antennas are professionally installed to ensure compliance, warning instructions and warning labels are not necessary.
	=< 2.5 W at 915 MHz or	Transmitters operating at 2.5 W EIRP (1.5 W

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Test Report: 050010MPF

FCC ID. WIWIF04033E3W	rest Report. 0300 TOMPE		
	=< 4 W at 2450 MHz	ERP) or less at 915 MHz, or at 4 W EIRP (2.4	
		W ERP) or less at 2450 MHz, generally are not	
		expected to exceed MPE limits when nearby	
		persons are 20 cm or more from most antennas.	
		Therefore, special instructions and warnings are	
		normally not necessary to ensure compliance.	

MPE Calculation:

With tested antenna of -2.5 dBi gain, it is shown that 20 cm spacing is sufficient to comply with RF Uncontrolled/General Exposure Limits at full power of the device.

$$S = EIRP / (4 * Pi * R^2),$$

Uncontrolled/General Exposure – Calculation 0.535 Watt -2.5 dBi antenna, 20 cm spacing

0.535 Watt, -2.5 dBi antenr	na, 20 cm spacing		
Operating Frequency	902 MHz		
Output Power (Peak)	0.535 Watts		
Antenna Gain	-2.5 dB	or (linear)	0.5623 (unitless)
Separation Distance	0.2 m	-or-	7.874 inches
Peak Power Density	$0.599W/m^2$	- or -	$0.0599\mathrm{mW/cm^2}$
Exposure % (over 6 min timespan for uncontrolled)	100%		
Transmit Duty Cycle (Peak-to-Average Ratio)	100%		
Average Power Density	0.599 W/m ²	- or -	0.0599 mW/cm ²
Limit for Uncontrolled Exposure at Operating Frequency	6.01333 W/m ²	- or -	0.601333 mW/cm ²