



MET Laboratories, Inc. *Safety Certification - EMI - Telecom Environmental Simulation*
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**Electromagnetic Compatibility
MPE Calculation**

For the

**SRI International
PMX-4.0**

Tested under

**Title 47 of the Code of Federal Regulations (CFR),
Part 15 Subpart C**

MET Report: EMCS81150-MPE_Rev2

December 9, 2008

Prepared For:

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Engineering Statement: The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the applicable limits. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of Title 47 of the CFR, Part 15, Subpart C under normal use and maintenance.

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.247(b) Peak Power Output and RF Exposure

- Test Purpose:** Co-location of two modules, Ubiquiti Networks, FCC ID: SWX-SR4 (9dBi) and Ubiquiti Networks, FCC ID: SWX-XR5 (9dBi).
- RF Exposure Requirements:** **§1.1307(b)(1) and §1.1307(b)(2):** Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines.
- RF Radiation Exposure Limit:** **§1.1310:** As specified in this section, the Maximum Permissible Exposure (MPE) Limit shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in Sec. 1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of Sec. 2.1093 of this chapter.

MPE Calculation - Ubiquiti Networks Modules: 4.9GHz & 5.725-5.825GHz

Equation from page 18 of OET 65, Edition 97-01

$$P_1G_1/4\pi R^2 + P_2G_2/4\pi R^2 = 1 \text{ mW/cm}^2$$
$$1/4\pi R^2(P_1G_1 + P_2G_2) = 1$$
$$\sqrt{1/4\pi(P_1G_1 + P_2G_2)} = R$$

MPE Limit Calculation: EUT's operating frequencies @ **4942.5 - 4985MHz**; highest conducted power = 32.6dBm (peak) therefore, Limit for Uncontrolled exposure: 1 mW/cm² or 10 W/m²

EUT maximum antenna gain = **9 dBi**.

where, S = Power Density (mW/cm²)
P = Power Input to antenna (1819.701 mW)
G = Antenna Gain (7.94numeric)

P₁G₁:
1819.701*7.94 = 14454.4

MPE Limit Calculation: EUT's operating frequencies @ **5745 - 5805MHz**; highest conducted power = 27.0dBm (peak) therefore, Limit for Uncontrolled exposure: 1 mW/cm² or 10 W/m²

EUT maximum antenna gain = **9 dBi**.

where, S = Power Density (mW/cm²)
P = Power Input to antenna (501.1872mW)
G = Antenna Gain (7.94numeric)

P₂G₂:
501.1872*7.94 = 3981.072

MPE Calculation – Co-Location of Ubiquiti Networks Module, FCC ID: SWX-SR4 & Ubiquiti Networks Module, FCC ID: SWX-XR5

Test Requirements: $\sqrt{1/4\pi (P_1G_1 + P_2G_2)} = R$

Test Results:

P_1G_1	P_2G_2	$P_1G_1 + P_2G_2$	$\sqrt{1/4\pi (P_1G_1 + P_2G_2)}$
14454.4	3981.072	18435.48	38.31cm

$$14454.4 + 3981.072 = \sqrt{18435.48/4} \times 3.14 = \mathbf{38.31cm}$$