4 FCC §1.1307(b) (1) & §2.1091 - RF Exposure

4.1 Applicable Standards

FCC §2.1091, (a) Requirements of this section are a consequence of Commission responsibilities under the National Environmental Policy Act to evaluate the environmental significance of its actions. See subpart I of part 1 of this chapter, in particular §1.1307(b).

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	1842/f	4.89/f	$*900/f^2$	30
30-300	61.4	0.163	1.0	30
300-1500			f/300	30
1500-100,000			5	30

Note: f = frequency in MHz
* = Plane-wave equivalent power density

4.2 MPE Prediction

Predication of MPE limit at a given distance, Equation from OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2$$

Where: S = power density
P = power input to antenna
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna

4.3 Test Results

Maximum average output power at antenna input terminal (dBm):	47
Maximum average output power at antenna input terminal (mW):	50118.7
Prediction frequency (MHz):	454.675
Antenna Gain, typical (dBi):	0
Maximum Antenna Gain (numeric):	1
Prediction distance (cm):	51.22

The average output power was derived from the maximum peak turn-up power (50 dBm) and duty cycle (50%). The average output power = peak output power – 10*log(1/duty cycle).

Results

In order to pass the controlled exposure limit of 1.52 mW/cm^2 with the maximum turn-up power being 50 dBm, 50% duty cycle, and antenna gain of 0 dBi, the EUT must have a separation distance of at least 51.22 cm.