

## 4 §2.1091 & RSS- GEN 5.5 and RSS-102 – RF EXPOSURE

### 4.1 Applicability

According to §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 level in excess of the Commission's guidelines.

#### Limits for General Population/Uncontrolled Exposure

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minutes)
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	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

### 4.2 MPE Prediction

Prediction of MPE limit at a given distance

Equation from page 18 of 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

Maximum peak output power at antenna input terminal (dBm): 33.50

Maximum peak output power at antenna input terminal (mW): 2238.72

Prediction distance (cm): 71

Prediction frequency (MHz): 455

Maximum Antenna Gain, typical (dBi): 9.25

Maximum Antenna Gain (numeric): 8.41

Power density of prediction frequency at 71.0 cm (mW/cm<sup>2</sup>): 0.297

MPE limit for uncontrolled exposure at prediction frequency (mW/cm<sup>2</sup>): 0.303

### 4.3 Test Result

The EUT is a PCB device which when situated 71 cm from the general public has a power density of 0.297 mW/cm<sup>2</sup>, which is below the uncontrolled limit of 0.303 mW/cm<sup>2</sup>.