

## RF EXPOSURE

According to §15.247(b)(4) and §1.1307(b)(1), 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.

According to §1.1310 and §2.1093 RF exposure is calculated.

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minute)
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 <sup>2</sup> )	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-15000	/	/	1.0	30

f = frequency in MHz

\* = Plane-wave equivalent power density

### MPE Prediction

Predication 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: 3.5 (dBm)

Maximum peak output power at antenna input terminal: 2.239 (mW)

Prediction distance: 2.5 (cm)

Predication frequency: 2450 (MHz)

For Antenna BY27:

Antenna Gain (typical): -0.6418 (dBi)

Maximum antenna gain: 0.86 (numeric)

Power density at predication frequency at 2.5 cm: 0.024 (mW/cm<sup>2</sup>)

For Antenna ZI1S:

Antenna Gain (typical): -2.29 (dBi)

Maximum antenna gain: 0.59 (numeric)

Power density at predication frequency at 2.5 cm: 0.0168 (mW/cm<sup>2</sup>)

MPE limit for uncontrolled exposure at prediction frequency: 1 (mW/cm<sup>2</sup>)

## **Test Result**

The predicted power density level at 2.5 cm is 0.024 mW/cm<sup>2</sup> for antenna BY27 and 0.0168 for the antenna Z11S. This is below the uncontrolled exposure limit of 1mW/cm<sup>2</sup> at 2450 MHz. The EUT is a portable equipment, it is used at least 2.5cm away from user's body