

# Prediction of MPE limit at given distance

**Product Description: GPON ONT**

**Type: ZXA10F660**

## 1. Introduction

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

$$S = \frac{PG}{4 \pi R^2}$$

Where:

S = power density

P = power input to the 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

## 2. Limits for Maximum Permissible Exposure

According to FCC Part 1.1307, 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 FCC Part 1.1310 RF exposure is calculated.

### Limits for General Population/ Uncontrolled Exposure

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/cm <sup>2</sup> )
0.3-1.34	614	1.63	(100)*
1.34-30	824/f	2.19/f	(180/f2)*
30-300	27.5	0.073	0.2
300-1500			f/1500
1500-100,000			1.0

### 3. Test result

Chain1 Maximum peak output power at antenna input terminal(dBm):	<b>22.89</b>
Chain2 Maximum peak output power at antenna input terminal(dBm)	<b>23.05</b>
Total Maximum peak output power at antenna input terminal(mW):	<b>396.38</b>
Prediction distance(cm):	<b>20</b>
Predication frequency(MHz):	<b>2437</b>
Antenna Gain (typical) (dBi):	<b>4</b>
Power density at predication frequency at <u>20</u> cm(mW/cm <sup>2</sup> ):	<b>0.197</b>
MPE limit for RF exposure at prediction frequency(mW/cm <sup>2</sup> ):	<b>1</b>

### 4. Conclusion

The predicted power density level at 20cm is 0.197mw/cm<sup>2</sup> which is below the uncontrolled exposure limit of 1.0mw/cm<sup>2</sup>. The EUT is used at least 20cm away from user's body. It is determined as mobile equipment and complied with the MPE limit.