

### Prediction of MPE limit at a given distance

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

Wall Sensor (915 MHz)		Maximum peak output power at the antenna terminal:	4.90 (dBm)
		Maximum peak output power at the antenna terminal:	3.090295433 (mW)
		Antenna gain(typical):	-2 (dBi)
		Maximum antenna gain:	0.630957344 (numeric)
		Prediction distance:	20 (cm)
		Prediction frequency:	915 (MHz)
		MPE limit for uncontrolled exposure at prediction frequency:	0.6 (mW/cm^2)
		Power density at prediction frequency:	0.000388 (mW/cm^2)
		Maximum allowable antenna gain:	29.89421106 (dBi)

Wall Sensor (2.4GHz)		Maximum peak output power at the antenna terminal:	-21.00 (dBm)
		Maximum peak output power at the antenna terminal:	0.007943282 (mW)
		Antenna gain(typical):	1.7 (dBi)
		Maximum antenna gain:	1.479108388 (numeric)
		Prediction distance:	20 (cm)
		Prediction frequency:	2402 (MHz)
		MPE limit for uncontrolled exposure at prediction frequency:	1 (mW/cm^2)
		Power density at prediction frequency:	0.000002 (mW/cm^2)
		Maximum allowable antenna gain:	58.01269855 (dBi)

	(power density)	(MPE limit)	(pwr density / MPE limit)
	mW/cm^2	mW/cm^2	numeric
915 MHz radio	0.000388	0.6000	0.000647
2.4GHz radio	0.000002	1.0000	0.000002

SUM (Power Density / Limit): 0.000649  
OVERALL LIMIT (numeric): 1.0  
RESULT: **Pass**