Prediction of MPE Limit for a Specified Distance

Reference: OET Bulletin 65, Edition 97-01

The power density formula is as follows:

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

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

Table 1 – MPE Calculation for OET Bulletin 65 Compliance

Maximum peak output power at antenna terminal:	20.35	(dBm)
Maximum peak output power at antenna terminal:	108.39	(mW)
Antenna Gain (typical):	-2.00	(dBi)
Maximum Antenna Gain:	0.63	(numeric)
Prediction Distance:	20.00	(cm)
Prediction Frequency:	903.05	(MHz)
MPE Limit for Uncontrolled Exposure at Prediction Frequency:	0.60	(mW/cm^2)
Power Density at the Prediction Frequency:	0.0136	(mW/cm^2)
Maximum Allowable Antenna Gain:	14.46	(dBi)
Margin of Compliance at 20 cm:	16.46	(dB)

Table 2 – RSS-102 Duty Cycle Correction Calculation

Total Frequency Hopping Period:	20	seconds
Channel Occupancy Period:	0.3604	seconds
Number of Channels:	50	seconds
Cumulative On Time for Transmission:	18.02	seconds
Duty Cycle:	0.901	
Duty Cycle Correction Factor:	-0.9	dB

Table 3 – MPE Calculation for RSS-102 Compliance

Maximum peak output power at antenna terminal:	20.35	(dBm)
Maximum peak output power at antenna terminal:	108.39	(mW)
Antenna Gain (typical):	-2.90	(dBi)
Maximum Antenna Gain:	0.51	(numeric)
Prediction Distance:	20.00	(cm)
Prediction Frequency:	903.05	(MHz)
MPE Limit for Uncontrolled Exposure at Prediction Frequency:	0.60	(mW/cm^2)
Power Density at the Prediction Frequency:	0.0111	(mW/cm^2)
Maximum Allowable Antenna Gain:	14.46	(dBi)
Margin of Compliance at 20 cm:	17.36	(dB)