Application: M9H95V3

Prediction of MPE limit at 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 the antenna
G = Antenna gain
R = Distance to the center of radiation of the antenna

Solving this equation for G

$G = S (4\pi R^2) / P$

The table below is excerpted from Table 1B of 47 CFR 1.1310 titled "Limits for Maximum Permissible Exposure (MPE), Limits for General Population/Uncontrolled Exposure"

Frequency Range (MHz)	Power Density (mW/cm^2)	Averaging Time (minutes)
300 -1500	f/1500	30
1500 - 100000	1.0	30

where f = Frequency (MHz)

Based on the above table the limits are for
Part 24 device: 1 mW/cm^2
Part 22 device: 0.567 mW/cm^2

Prediction for Part 24:

P	Max power input to the antenna:	30.0 dBm / 1000 mW
R	Distance:	20 cm
S	MPE limit for uncontrolled exposure:	1 mW/cm^2
G	Antenna gain:	5.0256 numerical
G	**Antenna gain:**	**7.01 dBi**

Prediction for Part 22:

P	Max power input to the antenna:	32.8 dBm / 1905.5 mW
R	Distance:	20 cm
S	MPE limit for uncontrolled exposure:	0.567 mW/cm^2
G	Antenna gain:	1.4957 numerical
G	**Antenna gain:**	**1.75 dBi**

This prediction demonstrates the following:

The antenna gain where the limit would be reached at 20 cm distance is 7.01 dBi for Part 24 and 1.75 dBi for Part 22.