Appendix G: MPE Calculation

47 CFR §§1.1307 and 2.1091 RSS-102

Radio frequency radiation exposure evaluation against the limits defined in the quoted rule parts:

Prediction of MPE limit at a given distance

Equation from IEEE C95.1

$$S = \frac{EIRP}{4\pi R^2} \quad \text{re - arranged } R = \sqrt{\frac{EIRP}{S4\pi}}$$

where:

S = power density
R = distance to the centre of radiation of the antenna
EIRP = EUT Maximum power

Note:

The EIRP measurement was calculated from the peak conducted carrier power plus the antenna gain.

Result

Prediction Frequency (MHz)	Conducted Output Power dBm	Maximum Antenna Gain (dBi)	Peak Output Power EIRP (dBm)	Peak Output Power EIRP (mW)	Power Density limit (S) (mW/cm^2)	Distance (R) cm required to be less than (S)
902.2	27.03	8	35.03	3184.1975	0.601	21
910	27.57	8	35.57	3605.7864	0.607	22
918.1	27.1	8	35.10	3235.9366	0.612	21

$1mW/cm^2 \equiv 10W/m^2$