

APPENDIX A: FCC PART 1.1307, 1.1310, 2.1091, 2.1093: RF EXPOSURE

Please refer to the MPE calculations that follow.

SUBJECT: MPE Calculations

MPE calculations were made assuming worst case in each band with respect to frequency, ERP and Limit. The maximum allowable ERP was determined from the applicable part 90 rules regarding power limitation (90.205, 90.309, 90.635). The formula used was derived from OET 65, section 2, equation 4. The limit used was for "Occupational / Controlled Exposure", derived from 47 CFR Part 1.1310 table 1.

The radius for a given exposure level is:

$$R = \sqrt{\frac{\text{EIRP}}{4 \cdot \pi \cdot S}}$$

where R is the radius, EIRP is the effective radiated power, and S is the allowable limit.

The limit over the range 300-1500 MHz is $F/300$ in mw / cm^2 , where F is the frequency.

Thus, worst-case exposure is at the minimum frequency in each band. Adding a factor of 1.64 for the gain of a half-wave dipole over an isotropic antenna, this gives a worst-case minimum radius of:

425-450 MHz:

$$R := \sqrt{\frac{1000 \cdot 10^3 \cdot 1.64}{4 \cdot \pi \cdot \frac{425}{300}}} \cdot \text{cm}$$

$$R = 303.517 \text{ cm}$$

$$R = 119.495 \text{ in}$$

$$R = 9.958 \text{ ft}$$