

RF Exposure Info / MPE estimation

General Limits:

§1.1310 LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

(B) Limits for General Population/Uncontrolled Exposure

1500–100,000 MHz: 1.0 mW/cm²

§2.1091

No routine evaluation required when the device ...operate at frequencies of 1.5 GHz or below and their effective radiated power (ERP) is 1.5 watts or more, or if they operate at frequencies above 1.5 GHz and their ERP is 3 watts or more.

§24.204

(a) In bands shared coequally with terrestrial radio communication services, the equivalent isotropically radiated power transmitted in any direction towards the horizon by an earth station, other than an ESV, operating in frequency bands between 1 and 15 GHz, shall not exceed the following limits except as provided for in paragraph (c) of this section:

+40 dBW in any 4 kHz band for $q \leq 0^\circ$

+40 + 3q dBW in any 4 kHz band for $0^\circ < q \leq 5^\circ$

where q is the angle of elevation of the horizon viewed from the center of radiation of the antenna of the earth station and measured in degrees as positive above the horizontal plane and negative below it.

Formulas: $P_{rad} = S \times 4 \times \pi \times R^2$

Max gain: $G = P_{rad} - P_{cond}$

Measured max. conducted power @ 1644 MHz: 35.0 dBm

Lowest limit for 1600 MHz fixed operations (@20cm) specified in § 1.1310 : 1 mW/cm²

$$G = 10 \log (1 \text{ mW/cm}^2 \times 4 \times \pi \times 400 \text{ cm}^2) - 35 \text{ dBm} = 2.01 \text{ dBi}$$

Lowest limit for 1600 MHz mobile operations (@20cm) where no routine evaluation is required specified in § 2.1091 : 3W ERP.

$$G = 10 \log 3000 \text{ mW [ERP]} - 35 \text{ dB} = -0.23 \text{ dBi}$$

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