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RF Exposure

Regulation

FCC rule part 1.1307(b)
KDB 447498 D04 Interim General RF Exposure Guidance v01

Part 1.1307(b)(3) - Determination of exemption.

(i) For single RF sources (i.e., any single fixed RF source, mobile device, or portable device, as defined in paragraph (b)(2) of this section): A single RF source is exempt if:

(A) The available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(ii)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(ii)(A);

KDB 447498 D04 2.1.2 - 1-mW Test Exemption

Per § 1.1307(b)(3)(i)(A), a single RF source is exempt RF device (from the requirement to show data demonstrating compliance to RF exposure limits, as previously mentioned) if the available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption applies to all operating configurations and exposure conditions, for the frequency range 100 kHz to 100 GHz, regardless of fixed, mobile, or portable device exposure conditions. This is a standalone exemption, and it cannot be applied in conjunction with any other test exemption.

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Evaluation Method

OET Bulletin 65 Section 3: Methods of Predicting Human Exposure

* Equation 1

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

S = power density (in appropriate units, e.g. mW/cm2)
P = power input to the antenna (in appropriate units, e.g., mW)
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 (appropriate units, e.g., cm)

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

EIRP = equivalent (or effective) isotropically radiated power

OET Bulletin 65 Section 2: FCC Exposure Guidelines and Their Application

* Equation 2

$$S = E \times H = \frac{E^2}{10Z_0}$$

S = power density (in appropriate units, e.g. mW/cm2)

E = electric field strength (V/m)

H = magnetic field strength (A/m)

Z_0 = Impedance of free space (Ω)

* Equation 3, By equations 1 and 2

$$EIRP(dBm) = E(dB\mu\text{V/m}) - 104.77 + 20\text{Log}[\text{R(m)}]$$

EIRP at distance R = 3 m

$$EIRP(dBm) = E(dB\mu\text{V/m}) - 95.23$$

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Limit

FCC rule part 1.1307(b)(3)
For determination of exemption. available maximum time-averaged power is no more than ***1 mW***, regardless of separation distance

Result

Mode	Frequency [MHz]	Maximum field strength @3m (dBμV/m)	Calculated E.I.R.P. (dBm)	Maximum Output power (mW)	Limit (mW)	Result
ASK	13.56	38.60	-56.63	0.000 002 2	1	PASS