

RF Exposure Considerations for FCC ID: OO4-IDS1014

1-mW Test Exemption for LF 125kHz

Per FCC KDB 447498 D04 Interim General RF Exposure Guidance v01, and per § 1.1307(b)(3)(i)(A), a single RF source is exempt RF device if the available maximum time-averaged power is no more than 1 mW, regardless of separation distance.

ERP calculation:

$$EIRP = (E \cdot d)^2 / 30$$

Where :

E is the field strength in V/m

d is the measurement distance in m

EIRP is the equivalent isotropically radiated power in W

Working in dB units:

$$ERIP[dBm] = E[dB\mu V/m] + 20 \log(3/d[m]) - 104.77$$

$$E[dB\mu V/m] = \text{Radiated field at distance } d[m]$$

$$ERP[dBm] = ERIP[dBm] - 2.14$$

Measure E field as per test reports:

IDS1014 (iMARK EC): 17.6dB μ V/m @ 300m (Average)

$$\rightarrow ERP[dBm] = -39.8dBm$$

$$\rightarrow ERP[mW] = 0.105\mu W$$

→ Below the 1mW test exemption

IDS1015 (iMARK EC): 5.6dB μ V/m @ 300m (Average)

$$\rightarrow ERP[dBm] = -51.8dBm$$

$$\rightarrow ERP[mW] = 0.007\mu W$$

→ Below the 1mW test exemption

MPE calculation for UHF transmitter (902.5-927.5MHz)

Prediction of MPE limit at a prediction distance:

$$S = \frac{P \cdot G}{4 \cdot \pi \cdot R^2} = \frac{E \cdot I \cdot R \cdot P}{4 \cdot \pi \cdot R^2}$$

S: Power density (mW/cm²)

P: Peak output power at antenna terminal (mW)

G: Numerical Antenna gain

R: Distance of radiation to antenna (cm)

Frequency (MHz)	Maximum E.I.R.P. (mW)	R (cm)	Power Density S (mW/cm ²)	MPE limit (mW/cm ²)	% of limit	Limit (%)	Verdict
902.5 to 927.5MHz	0.733 (1)	20	0.0001	0.6	0.015	100%	Below MPE limit for uncontrolled exposure
902.5 to 927.5MHz	0.688 (2)	20	0.0001	0.6	0.013	100%	

(1): Max EIRP for IDS1014 (iMARK EC)

(2): Max EIRP for IDS1015 (iMARK IC)

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***Conclusion:** Therefore, the device complies with FCC's RF radiation exposure limits for general population for a mobile device.*

Certified By

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