FCC ID: QQ2-GAOFDM900

Subject: Environmental evaluation and Exposure limit according to FCC CFR 47 §15.247(b)(5) and §1.1307, §1.1310

Limit for power density for general population /uncontrolled exposure is 0.618 mW/cm² (for 928MHz)

The Power density:

$$P \text{ (mW/cm}^2) = P_T / 4\pi R^2 \qquad \text{where}$$

P_T is the maximum transmitted power, which is equal to the transmitter output power 26.22 dBm plus the maximum antenna gain 12.5 dBi, the maximum equivalent isotropically radiated power EIRP is:

$$P_R = P_T + \text{antenna gain} = 26.22 \text{ dBm} + 12.5 \text{dBi} = 38.72 \text{ dBm} = 7.45\text{W}$$

Hence, according to 15.247(b)(4) the maximum transmitted power shall be reduced below the limit stated in 15.247(b)(3) by:
Power Limit Correction factor = (maximum antenna gain dBi - 6 dB) dB

In our case the transmitted power shall be reduced below:

$$\text{Power Limit Correction factor} = 12.5 \text{ dBi} - 6 \text{ dBi} = 6.5 \text{ dB}$$
$$P_{Limit1} = P_{Limit} - \text{Power Limit Correction factor} = 30 \text{ dBm} - 6.5 \text{ dB} = \textbf{23.5 dBm}$$

$$\text{Power Reduction factor} = P_T - P_{Limit1} = 26.22 \text{ dBm} - 23.5 \text{ dBm} = \textbf{2.72 dB}$$

$$P_{T1} = P_T - \text{Power Reduction factor} = 26.22 \text{ dBm} - 2.72 \text{ dB} = 23.5 \text{ dBm}$$
$$\textbf{Corrected radiated } P_R = \textbf{23.5 dBm} + \textbf{12.5dBi} = \textbf{36 dBm} = \textbf{4 W}$$

The minimum safe distance "R" where RF exposure does not exceed FCC permitted limit is 17.5 cm.

$$R = \text{sqrt} (P_R / 0.618 \text{ mW/cm}^2 * 4\pi) = \text{sqrt} (4000/7.77) = 22.6 \text{ cm}$$
The actual Safety distance shall be Not less than 30 cm