

Exposure limit according to §15.247(b)(4) and §1.1310

Limit for power density for general population/uncontrolled exposure is 1 mW/cm² (for 1500 – 100,000 MHz frequency range).

The power density P (mW/cm²) = $P_T / 4\pi r^2$

1) Full transmitter power

P_{T1} is the transmitted power, which is equal to the full transmitter output power 18.4 dBm plus maximum antenna gain 17 dBi, the maximum equivalent isotropically radiated power EIRP is

$$P_{T1} = 18.4 \text{ dBm} + 17 \text{ dBi} = 35.4 \text{ dBm} = 3467 \text{ mW}.$$

The minimum safe distance “r”, where RF exposure does not exceed FCC permissible limit, is 16.6 cm.

$$r1 = \sqrt{P_{T1} / (P \times 4\pi)} = \sqrt{3467 / 12.56} = 16.6 \text{ cm}$$

2) Reduced transmitter power

a) P_{T2} is the transmitted power, which is equal to the reduced transmitter output power 11 dBm (as shown in attachment to the test report, WAVRAD_FCC.15365_attach.doc) plus maximum antenna gain 24 dBi, the maximum equivalent isotropically radiated power EIRP is

$$P_{T2} = 11 \text{ dBm} + 24 \text{ dBi} = 35 \text{ dBm} = 3162 \text{ mW}.$$

b) P_{T3} is the transmitted power, which is equal to the reduced transmitter output power 17 dBm (refer to attachment to the test report, WAVRAD_FCC.15365_attach.doc) plus antenna gain 18 dBi, the maximum equivalent isotropically radiated power EIRP is

$$P_{T3} = 17 \text{ dBm} + 18 \text{ dBi} = 35 \text{ dBm} = 3162 \text{ mW}.$$

The minimum safe distance “r”, where RF exposure does not exceed FCC permissible limit, is 15.9 cm.

$$r2 = \sqrt{P_{T2} / (P \times 4\pi)} = \sqrt{3162 / 12.56} = 15.9 \text{ cm}$$