

Requirements and Test Results (con't)

FCC Section 15.247 (i)

RF Exposure Limits

Spread Spectrum Transmitters operating under 15.247 must be operated in a manner that ensures the public is not exposed to RF energy levels in excess of the commission's guidelines. Based on the transmitter power and maximum antenna gain (see calculation below) the minimum separation distance was calculated to determine the distance for acceptable MPE power density levels to meet both the Occupational/Controlled Exposure and the General Population/Uncontrolled Exposure requirements of FCC Part 1.1310. The calculation below uses the more stringent General Population MPE Limits.

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

D = Minimum Separation Distance in cm

S = Max allowed Power Density in mW/cm²

Per 1.1310 for the Frequency of 902 MHz S = 0.6 mW/cm²

Power = Max Power Input to Antenna = 13.8 mW

Gain = Max Power Gain of Antenna = 2 dBi = 1.58 numeric

$$0.6 \text{ mW/cm}^2 = \frac{13.8 \times 1.58}{4 \times (3.14) \times D^2} = \frac{21.8}{12.56 \times D^2}$$

$$D^2 = \frac{21.8}{12.56 \times 0.6} = \sqrt{2.89}$$

D = 1.7 cm

The test sample has an internal antenna and the minimum separation distance will always be maintained.



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Note: The calculation below is for the cellular transmitter based on information found under modular approval for FCC ID: QIPELS31-V

D = Minimum Separation Distance in cm

S = Max allowed Power Density in mW/cmsq

Per 1.1310 for the Frequency of 1755 MHz S = 1 mW/cmsq

Power = Max Power Input to Antenna = 251 mW

Gain = Max Power Gain of Antenna = 2 dBi = 1.58 numeric

$$1 \text{ mW/cmsq} = \frac{251 \times 1.58}{4 \times (3.14) \times D^2} = \frac{396.58}{12.56 \times D^2}$$

$$D^2 = \frac{396.58}{12.56 \times 1} = \sqrt{31.57}$$

D = 5.6 cm

Max % MPE – 13.6%*

*In accordance with KDB 447498 D01 v06, section 7.2 Transmitters used in mobile device exposure conditions for simultaneous transmission operations, excel spreadsheet for simple antenna configurations.



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