



RF Exposure and Transmitter Power Considerations for the EndPoint 915

FCC ID: Q8Q-SRE

The FCC requires that the calculated MPE be equal to or less than a given limit dependent on frequency at a distance of 20 cm from a device to the body of a user.

The transmitter operation for the EndPont 915 covers ISM 915 MHz operating bands.

The following FCC Rule Parts are applicable:

Part 1.1310 – Radiofrequency radiation exposure limits

Part 2.1091 – Radiofrequency radiation exposure evaluation: mobile devices

Part 15.247(b)(2) - The maximum peak conducted output power of the intentional radiator shall not exceed the following: For frequency hopping systems operating in the 902–928 MHz band: 1 watt for systems employing at least 50 hopping channels.

Part 15.247(b)(4) - The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi.

The MPE calculation as given in FCC OET Bulletin 65, page 19 is used to calculate the safe operating distance for the user.

Maximum Transmitter Power for EndPoint 915

Nominal Operating Frequency: 915 MHz

Number of Hopping Channels: 50

Max. Conducted Transmitter Power for the EndPoint 915, P = 29.4 dBm (871 mW) @ antenna socket (measured)

Maximum specified antenna gain = -0.85 dBi

Therefore the EndPoint 915 meets Part 15.247(b)(2) and 15.247(b)(4) power limits (1 W).



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MPE Calculation for the EndPoint 915

The MPE calculation as given in FCC OET Bulletin 65, page 19 is used to calculate the safe operating distance for the user.

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

Where

S = Power density

EIRP = Effective Isotropic Radiated Power ($\text{EIRP} = P \times G$)

P = Conducted Transmitter Power

G = Antenna Gain (relative to an isotropic radiator)

R = distance to the centre of radiation of the antenna (safe operating distance)

Values:

Transmitter frequency range = 902.5 MHz to 927.5 MHz

Max. Conducted Transmitter Power = 29.4 dBm (871 mW) @ antenna socket (measured)

$\text{EIRP} = 29.4 - 0.85 = 28.55 \text{ dBm}$ (716 mW) for -0.85 dBi antenna

Power Density Requirement

From table 1 (b) - Limits for General Population/ Uncontrolled Exposure of FCC Rule Part 1.1310 for ISM 915 MHz

$S = f / 1500 \text{ mW/cm}^2$ (f = operating frequency)

$S_{\text{req}} = 902.5 / 1500 = 0.61 \text{ mW/cm}^2$ (worst case)



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Calculation:

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

$$0.61 = 716 / (12.56 \times R^2)$$

$$R^2 = 716 / (12.56 \times 0.61)$$

$$R = 9.7 \text{ cm } (<20\text{cm})$$

Conclusion

The required 20cm RF exposure limits for General Population/ Uncontrolled Exposure FCC Rule Parts 1.1310, 2.1091 and 15.247(b)(2) maximum transmitter power limits will not be exceeded for the EndPoint 915 using antennas having a maximum gain of -0.85 dBi.