

RF Exposure Info / MPE Sample Calculation

Model: ION-M80/90/19P
FCC-ID: XS5-IONM8919P

ION-M80/90/19P is a multi-band, multi-operator remote unit configuration used in conjunction with a master unit in the ION optical distribution system. This system transports up to four frequency bands simultaneously (800 MHz, 900 MHz, 1900 MHz), providing a cost-effective solution for distributing capacity from one or more base stations.

The user would inject an RF signal to produce the appropriate RF output power from the ION-M remote unit. The receive path will always terminate in an RF source, such as a base station or repeater, and will not be directly connected to any antenna.

The specific device generally will be professionally installed.

Hereby the gain of the finally installed antenna(s), cable attenuation and antenna height will be defined site specific at the time of licensing with the appropriate FCC Bureau(s).

The maximum permissible exposure limit is defined in **47 CFR 1.1310 (B)**.

Limits for General Population / Uncontrolled Exposures

| Frequency Range (MHz) | Power Density (mW/cm ²) |
|-----------------------|-------------------------------------|
| 300 – 1500 | f/1500 |

The EUT operates in the 3 frequency bands: 800, 900, and 1900 MHz.

The lowest limit for Power Density is at the lowest frequency in the 800MHz band. At 851MHz the Power Density Limit is **0,567 mW/cm²**.

But the max measured conducted output power is 43,0 dBm (20 W) at 1930 MHz and so the Power Density Limit is 1 mW/cm².

The maximum permitted level is to be calculated using general equation:

$$S = P \cdot G / 4\pi R^2$$

P = 20W; G = antenna-cable attenuation to be defined (numeric gain); $\pi = 3,1416$

The min separation distance between the antenna and any human body is to be calculated (solving for R in cm) with the final actual antenna gain/cable attenuation where the limit of 1mW/cm² is kept.

Example:

For a antenna gain = **17 dBi** the distance, were the power density reached at 1930 MHz (1mW/cm² P=43 dBm), is **R=2,82 m**.

Or for f=851MHz (0,57 mW/cm² and P=40 dBm) and a gain = **17 dBi** the distance is **R=2,65m**.

The antenna(s) used with device must be fixed-mounted on permanent structures with a distance to any human body to comply with the RF Exposure limit.