

RF Exposure Info / MPE Sample Calculation

Model: ION-M7P/7P 2x 700MHz Path
FCC-ID: XS5-ION-M77PMU

The ION-M7P/7P is a fibre optic based RF repeater for wireless applications. A RF signal is converted to an optical signal by directly modulation a laser.

The optical signal is converted back to RF, double converted, amplified and broadcast from an antenna or into a passive RF distribution system, such as radiating cable.

The System includes a double frequency conversion through a conversion module.

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 Repeater operates in the frequency range of 728 – 757 MHz, so that the Power Density Limit is **728/1500 = 0,48533**

The max measured conducted output power is:
- max composite output power based on one carrier (rated) per path: 20W (43.0dBm)

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 0,48533 mW/cm² is kept.

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.

G = 17dBi
 $R = \sqrt{\{(P \cdot G) / (S \cdot 4 \cdot \pi)\}} = 4,05m$