

RF Exposure Info / MPE Sample Calculation

ION-B Series Booster for 700 MHz Commercial Band

Model: ION-B-TFBM7/70

FCC ID: XS5-ION-BTFBM770

The ION-B is a fibre optic based RF repeater for wireless applications. A RF signal is converted to an optical signal by directly modulating a laser. There is no frequency conversion in this system.

The optical signal is converted back to RF at the ION-B remote unit. An external booster is connected to the remote unit, amplified and broadcasted through antenna or into a passive RF distribution system, such as radiating cable.

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) and installed by professional installers.

The maximum permissible exposure limit is defined in 47 CFR 1.1310 (B) Limits for General Population / Uncontrolled Exposures)

Frequency Range (MHz)
300 – 1500

Power Density (mW/cm²)
f/1500

The Repeater operates in the frequency range of 728 – 763 MHz, so that the Power Density Limit can be calculated with $728/1500 \sim \mathbf{0.485 \text{ mW/cm}^2}$.

The max measured conducted output power is:

- max output power based on one carrier (rated) per path: 0.25 W (24.0 dBm)

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

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

P = 250 mW; 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 0.485 mW/cm² is kept.

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