

RF Exposure Info / MPE Sample Calculation

Model: ION-M7P/7P/85P/19P

FCC-ID: XS5-M778519P

The ION-M7P/7P/85P/19P is a LTE MIMO, 850 MHz, and 1900 MHz CDMA/WCDMA multi-operator Remote Unit with various Extension Units. It is used in conjunction with a Master Unit in the ION optical distribution system. This system transports multiple LTE channels, a 850 MHz, and a 1900 MHz wideband signal simultaneously, providing a cost-effective solution for distributing capacity from one or more base stations.

The ION-M7P/7P/85P/19P transports signals on the RF layer in a very inexpensive manner. This means that multiple operators and multiple technologies are moved simultaneously from a cluster of base stations to a remote location over the same fiber.

The ION optical distribution system is a coverage solution for dense urban areas, tunnels, subway, airports, convention centers, high-rise buildings and other locations where physical structures increase path loss. It has been specifically designed to reduce zoning problems and to provide homogeneous coverage. The compact, mechanical design is specifically architected to mount inside of poles or along side structures in such a way that it has a minimal visual impact.

The ION-M7P/7P/85P/19P is available in single (SISO) or multi-channel (MIMO) configuration supporting 700 MHz, LTE, 850 MHz, and 1900 MHz in parallel. It has been specifically tested and optimized for LTE, OFDM, CDMA, and WCDMA signals.

The ION is easily set-up and supervised via a graphical user interface (GUI). Remote Units can be commissioned through the use of built-in test equipment. An auto-levelling function compensates for the optical link loss making installation easy and quick. The entire system may be monitored remotely via an Andrew OMC. This platform uses SNMP protocol and is compliant to X.733 standard.

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
1550 – 100,000	1

The EUT operates in the 3 frequency bands: 700, 850 and 1900 MHz.

The worst case limit for Power Density is for the lowest frequency. The lowest frequency is 728 MHz.

The max measured conducted output power is 43.0 dBm (20 W) at the all frequency paths.

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

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

P = 40W; 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 f = 728 MHz (0.485 mW/cm² and P=43 dBm) and a gain = **12 dBi** the calculated distance is **R = 2.277 m**.

Frequency [MHz]	Max Power out [dBm]	Antenna gain f.E. [dBi]	Distance [m]
728	43	12	2.277
728	43	9	1.612
869	43	12	2.084
869	43	9	1.476
1930	43	12	1.586
1930	43	9	1.123

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.