

## FCC EM Field exposure calculation calculation

### RF Exposure – USA

The 305-1007 remote unit is installed in a fixed location and designed to be used > 20cm from the body.

The device is designed to be used with a variety of antennas and EMF calculations have been done using 8dBi antenna which is higher gain than any of the recommended options so represents worst case for all of them.

### Demonstration of compliance

- As the product is installed in a fixed location, the power density can be calculated at 20cm and compared to the permitted exposure limits
- The product operates over a wide frequency range:
  - Worst case for 30-300 MHz band is operation at 150 MHz
  - Worst case for 300-1500 MHz region is operation at 406.1 MHz

Using the equation  $S = \frac{PG}{4\pi R^2}$ , the exposure level at 20 cm can be calculated and compared against the limit

P: power input to antenna in W

G: numeric gain of antenna relative to isotropic radiator

S: power density limit in W/m<sup>2</sup>

R: distance for evaluation in m, which is 0.2

Freq band	Freq (MHz)	Rated antenna port power (dBm)	EIRP (W)	S (W/m <sup>2</sup> )	FCC limit (W/m <sup>2</sup> )
< 300 MHz	150.0	20.0	0.631	1.26	2.00
300 - 1500 MHz	406.0	20.0	0.631	1.26	≥ 2.71 <sup>1</sup>
> 1500 MHz	1930.0	24.0	1.58	3.15	10.0

Table 1: Calculated Exposure levels at 20 cm

<sup>1</sup> Limit at 406 MHz which increases with frequency until it reaches 10.00 at 1500 MHz.