Wireless Beehive LLC.

Maximum Permitted Exposure Note

The Stinger Subscriber Module (SM) must be installed to provide a separation distance of at least 32 cm from all persons.

When adding the Classic Stinger slip on reflector the system must be installed to provide a separation distance of at least 60cm from all persons.

When adding the Super Stinger slip on parasitic antenna the system must be installed to provide a separation distance of at least 1m from all persons.

When adding the Stinger reflector dish (in the 2.4 GHz band), the reflector dish must be installed to provide a separation distance of at least 1.6m from all persons.

In all configurations the maximum RMS power does not exceed 500mW.

The applicable power density exposure limit is 10 Watt/m^2, according to the FCC OET Bulletin 65, the ICNIRP guidelines, and the Health Canada Safety Code 6. The corresponding compliance distances referenced above have been determined by assuming worst-case scenarios. The peak power density (S) in the far-field of a radio-frequency source with rms transmit power P and antenna gain G at a distance d is

$$S = \frac{P \cdot G}{4\pi \, d^2}$$

In the case of the Stinger SM without reflector, the gain is 8 dBi (a factor of 6.3), so the peak power density equals the exposure limit at a distance of 16 cm. A four-fold additional compliance margin is artificially introduced by doubling the distance to 32 cm.

In the case of the Stinger SM with classic Stinger slip on plastic reflector, the gain is 14 dBi (a factor of 25.12), so the peak power density equals the exposure limit at a distance of 30 cm. A four-fold additional compliance margin is artificially introduced by doubling the distance to 60 cm.

In the case of the Stinger SM with classic Stinger slip on plastic reflector, the gain is 18 dBi (a factor of 63), so the peak power density equals the exposure limit at a distance of 50 cm. A four-fold additional compliance margin is artificially introduced by doubling the distance to 1m cm.

In the case of the Stinger SM with the largest reflector, the gain is 22 dBi (a factor of 158), so the peak power density equals the exposure limit at a distance of about 80 cm. A four-fold additional compliance margin is artificially introduced by defining the compliance distance of 1.6 m.

The compliance distance is greatly overestimated in this these cases because the far-field equation neglects the physical dimension of the antenna, which is modeled as a point-source.