

Cougar RF Exposure:-

The Cougar module is intended to be fitted into mobile devices. A warning statement is included in the installation manual advising users to maintain a minimum distance of 20cm.

Evaluation is therefore for exposure potential against the MPE limits given in Appendix A of OET Bulletin 65, Supplement C: 1500-100,000MHz; 1mW/cm²

Compliance requirements are based upon General population / Uncontrolled exposure.

Equation (3) of OET Bulletin 65:

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density (in appropriate units, e.g. mW/cm²)
P = power input to the antenna (in appropriate units, e.g. mW)
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the centre of radiation of the antenna (appropriate units, e.g. cm)

WiFi RF worst case Peak conducted power, P = 72.44mW (+18.6dBm).

WiFi antenna gain (highest gain measured at 2412MHz), G = -1.1 dBi

n.b. although the specified gain for the chip antenna is 0dBi, this is the best gain (Low channel gain) measured in practice.

Distance, R = 20cm (for mobile use).

$$S = 0.0112 < 1\text{mW/cm}^2$$

The Cougar module has Bluetooth capability, which would therefore be co-located. The maximum MPE is therefore as follows.

Equation (3) of OET Bulletin 65:

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density (in appropriate units, e.g. mW/cm²)
P = power input to the antenna (in appropriate units, e.g. mW)
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the centre of radiation of the antenna (appropriate units, e.g. cm)

Bluetooth worst case Radiated Peak power, P = 1.57mW

Bluetooth antenna gain (included above as radiated field strength measured)), G = 0.

Distance, R = 20cm (for mobile use).

$$S = 0.0003 < 1\text{mW/cm}^2$$

For co-location we can compare both items to the limit and sum the percentage of limit to check 100% not exceeded:

$$0.0003/1 + 0.0112/1 = 1.15\% \text{ limit} < 100\%$$