ARCAM

RF Exposure Considerations for the A&R Cambridge Ltd, Bluetooth Module, Model: L221AY

FCC ID: YONDNW101020-00

As FCC rule part 2.1091(c) routine evaluation categorical exclusion applies for this device (see KDB 447498 D01 v05, section 7.1), an MPE calculation, to demonstrate 20cm compliance, is used.

The FCC requires that the calculated MPE (Maximum Permissible Exposure) be equal to or less than a given limit dependent on frequency at a distance of 20 cm from the device to the body of the user.

The MPE calculation as given in FCC OET Bulletin 65, page 19 is used to calculate the safe operating distance for the user.

This is a 2.4GHz Bluetooth module operates between 2400-2483.5MHz.

MPE calculation for the Bluetooth Module, Module: L221AY

The equation for this calculation is given in OET Bulletin 65, page 19 as:

$$S = EIRP/4 \pi R^2$$

Where S = Power density

EIRP = Effective Isotropically Radiated Power

R = distance to the centre of radiation of the antenna

For 2.4GHz band:

Values S = 1.0 mW/cm^2 for General population uncontrolled exposure
(FCC Part 1.1310, Table 1(B) Radiofrequency radiation exposure limits)

S = 1.0mW/cm^2

EIRP = Conducted power (dBm) + Antenna Gain (dBi)

Conducted power = 8.9dBm (7.8mW) measured

Antenna gain = 2dBi

EIRP = 10.9dBm (12.30mW)

R = 20cm

Calculation:

$S = EIRP/4 \pi R^2$

$S = 12.30/12.56 \times (20)^2$

$S = 12.30/5026$

$$S = 0.00245 mW^2$$

Conclusion

This confirms compliance to the required FCC Part 1.1310 Radio frequency radiation exposure limit of 1.0mW/cm^2 at 20cm operation and, hence, meets the requirements of FCC rule part 2.1091(c) and KDB447498 D01 v05, section 7.1.

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