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## **RF Exposure Considerations for the 2ALA3-CBUASR**

### **FCC ID: 2ALA3-CBUASR**

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

The transmitter operation for the 2ALA3-CBUASR covers the 2.4GHz operating band using LE Bluetooth technology

The following FCC Rule Parts and procedures are applicable:

Part 1.1310 – Radiofrequency radiation exposure limits

Part 2.1091 – Radiofrequency radiation exposure evaluation: mobile devices

KDB447498 D01 v06

Mobile and Portable Devices RF Exposure Procedures and Equipment Authorisation Policies

### **MPE CALCULATIONS**

The MPE calculation used to calculate the safe operating distance for the user is:

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

which can be transposed to:

$$R = \sqrt{EIRP/4\pi S}$$

**Where**

S = Power density

EIRP = Effective Isotropic Radiated Power (EIRP = P x G)

P = Conducted Transmitter Power

G = Antenna Gain (relative to an isotropic radiator)

R = distance to the centre of radiation of the antenna (safe operating distance)

## For 2.4GHz

### Power Density Requirement

From table 1 (b) - Limits for General Population/ Uncontrolled Exposure of FCC Rule Part 1.1310 for 2.4GHz

$$S_{req1} = 1.0 \text{ mW/cm}^2$$

### Values:

Transmitter frequency range = 2400 MHz to 2480 MHz

P = 0 dBm (+3 dbm) max. (2.0 mW)

G = 2.0 dBi (x1.58)

EIRP = 3.16 mW (= 2.0 mW x 1.58)

S = 1.0 mW/cm<sup>2</sup>

### Calculation:

$$R = \sqrt{3.16 \text{ mW} / 4\pi \times 1.0 \text{ mW/cm}^2}$$

$$R = \sqrt{3.16 \text{ mW} / 12.5664 \text{ mW/cm}^2}$$

$$R = \sqrt{0.2515 \text{ cm}^2}$$

$$R = 0.5015 \text{ cm}$$

## Conclusion

The required 20cm RF exposure limits for General Population/ Uncontrolled Exposure will not be exceeded for the 2ALA3-CBUASR using antennas having a maximum gain of 2.0 dBi.