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

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

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-CBUTED 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

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

### **Values:**

Transmitter frequency range = 2400 MHz to 2480 MHz

P = +6 dBm (+4 dbm) max. (10.0 mW)

G = 2.0 dBi (x1.58)

EIRP = 15.8 mW (= 10.0 mW x 1.58)

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

### **Calculation:**

$$R = \sqrt{15.8 \text{ mW} / 4\pi \times 1.0 \text{ mW/cm}^2}$$

$$R = \sqrt{15.8 \text{ mW} / 12.5664 \text{ mW/cm}^2}$$

$$R = \sqrt{1.2573 \text{ cm}^2}$$

$$R = 1.1213 \text{ cm}$$

## **Conclusion**

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