

# MPE CALCULATION (FCC ID: 2ALBDPT40)

**RF Exposure Requirements:** 47 CFR §1.1307(b)

**RF Radiation Exposure Limits:** 47 CFR §1.1310

**RF Radiation Exposure Guidelines:** FCC OST/OET Bulletin Number 65

**EUT Frequency Band:** BLE: 2402-2480MHz  
 LTE Cat-M1 Band 2: 1850.7-1909.3MHz  
 LTE Cat-M1 Band 4: 1710.7-1754.3MHz  
 LTE Cat-M1 Band 5: 824.7-836.5MHz  
 LTE Cat-M1 Band 12: 699.7-715.3MHz  
 LTE Cat-M1 Band 13: 777.7-786.3MHz

**Limits for General Population/Uncontrolled Exposure in the band of:** 300 - 1500 MHz,  
**Power Density Limit:** f/1500 mW/cm<sup>2</sup>

**Limits for General Population/Uncontrolled Exposure in the band of:** 1500 - 100,000 MHz  
**Power Density Limit:** 1 mW / cm<sup>2</sup>

**Equation:**  $S = PG / 4\pi R^2$  or  $R = \sqrt{PG / 4\pi S}$   
 Where, S = Power Density  
 P = Power Input to Antenna  
 G = Antenna Gain  
 R = distance to the center of radiated antenna

Prediction distance 20 cm

**EUT: Telematics Device**

Radio	Frequency (MHz)	Conducted Output Power (dBm)	Antenna Gain (dBi)	Tune up tolerance (dB)	Max Tune up output power (dBm)	Separation distance (cm)	Power Density (mW/ cm <sup>2</sup> )	MPE Limit (mW/ cm <sup>2</sup> )
BLE	2402-2480	3.99	5.3	±0.5	4.49	20	0.0019	1
LTE Band2	1850.7-1909.3	23.50	0	±1	24.50	20	0.0561	1
LTE Band4	1710.7-1754.3	23.30	0	±1	24.50	20	0.0561	1
LTE Band5	824.7-836.5	24.09	0	±1	25.09	20	0.0642	0.550
LTE Band12	699.7-715.3	24.50	0	±1	25.50	20	0.0706	0.466
LTE Band13	777.7-786.3	24.43	0	±1	25.43	20	0.0695	0.518

The above results show that the device complies with the MPE requirement.

The BLE is able to transmit simultaneously with LTE.

The ratio =  $0.0019/1 + 0.0706/0.466 = 0.153 < 1.0$

The above results show that the device complies with the simultaneous transmission MPE requirement.

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