RF Exposure information

The ES901BUL2 is classified as mobile.

The ES901BUL2 model includes 3 transmitters WiFi and BLE operating according to FCC part 15 subpart C section 15.247 in frequency range 2402MHz – 2480MHz and according to FCC part 18 in frequency 5.8GHz.

The RF technologies: WiFi and BLE is not transmitting simultaneously.

The RF technologies: WiFi and 5.8GHz can transmitting simultaneously.

Limit for power density for general population/uncontrolled exposure is 1mW/cm² for 1500-100000MHz frequency range:

P_T is the transmitted power, which is equal to the peak transmitter output power in WiFi modulation mode of 12.91dBm plus maximum antenna gain 2.5 dBi, the maximum equivalent isotropically radiated power EIRP is:

 $P_T = 12.91 \text{ dBm} + 2.5 \text{dBi} = 15.41 \text{dBm} = 34.75 \text{mW}.$

The power density at 20 cm (minimum safe distance, required for mobile devices), calculated as follows:

 $34.75 \text{ mW} / 4\pi (20 \text{ cm})^2 \approx 0.007 \text{ mW/cm}^2 < 1 \text{ mW/cm}^2$

PT is the transmitted power, which is equal to the peak transmitter output power in 5.8GHz mode of 17.68dBm plus maximum antenna gain 1.5 dBi, the maximum equivalent isotopically radiated power EIRP is:



Frequenc	Field strength,	Antenna	Antenna	Azimuth,	EUT antenna	Peak output
y, MHz	dB(µV/m)	polarization	height, m	degrees*	gain, dBi	power, dBm**
5803	114.68	Vertical	1.2	-19	1.5	17.68

P_T = 17.68dBm + 1.5dBi = 19.18dBm = 82.79mW

The power density at 20 cm (minimum safe distance, required for mobile devices), calculated as follows:

82.79 mW / 4π (20 cm)² ≈ 0.016 mW/cm² < 1 mW/cm²

Summation

When all the antennas are at least 20 cm away from the user but individual antennas cannot be separated by 20 cm from each other, the following equation shall be fulfilled

S1/Limit + S2/Limit < 1, i.e. 0.007mW/cm² /1mW/cm² + 0.016mW/cm² /1mW/cm² = 0.007 + 0.016 = 0.023 < 1

General public cannot be exposed to dangerous RF level.

According to customer request the maximum distance at which the power density is lower than 1mW/cm2 the following calculation was made:

34.75mW+82.79mW / 4π (x cm)² ≤ 1mW/cm² 117.54mW / 12.56 (x cm)² ≤ 1mW/cm² x (cm)² ≥117.54mW / 12.56 / 1mW/cm² x (cm)² ≥ 9.35 cm² x (cm) ≥ 3.05 cm