RF Exposure information

The PureBeacon3.0 is classified as mobile.
The PureBeacon3.0 includes BLE transmitter operating according to FCC part 15 subpart C section 15.247 (DTS) and approved Cellular and Wi-Fi modules. The Cellular module approved under FCC ID: RI7LE910CXWWX. The Wi-Fi module approved under FCC ID: XPYNINAW13.

The RF technologies: BLE and LTE can transmit simultaneously.
The Wi-Fi module cannot transmit with BLE or LTE.

The FCC power density limit for general population/uncontrolled exposure is 1 mW/cm^2 for 2.4 GHz for BLE transmitter.

The power density $\mathbf{P\ (mW/cm^2) = P_T / 4\pi r^2}$

BLE transmitter

P_T is the transmitted power, which is equal to the peak transmitter output power 4.28 dBm plus maximum antenna gain 3.0 dBi, the maximum equivalent isotopically radiated power EIRP is

$$P_T = 4.28\ dBm + 3.0\ dBi = 7.28\ dBm = 5.35\ mW.$$

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

$$5.35\ mW / 4\pi\ (20\ cm)^2 = 0.0011\ mW/cm^2 << 1\ mW/cm^2$$

Maximum conducted output power given in FCC ID: RI7LE910CXWWX module grant is 1.434W (31.57 dBm) in 824.2 – 848.8 MHz band.
Limit for power density is f/1500 = 0.56 mW/cm^2 for 824.2 – 848.8 MHz frequency range for general population/uncontrolled exposure.

The maximum antenna gain that can be used with this module is 2.83 dBi.

The maximum equivalent isotopically radiated power EIRP is

$$P_T = 31.57\ dBm + 2.83\ dBi = 34.4\ dBm = 2754\ mW$$

The power density at 20 cm is calculated as follows:

$$2754\ mW / 4\pi\ (20\ cm)^2 = 0.54\ mW/cm^2 < 0.56\ mW/cm^2$$

Assessment of RF hazard from BLE and Cellular module:

$$S1/Limit + S2/Limit < 1, \text{ i.e}$$

$$0.0011 /1 + 0.54 /0.56 = 0.965 < 1$$

The aggregated ratio of transmit power to the relevant power limits does not exceed 100 % and meets the safety requirements.