Summation of RF exposure calculation

The device transmitters operate according to FCC part 15 subpart C sections 15.231(a), 15.249 and 15.209. The standards do not contain RF Exposure limits.
The device includes the single modular approved transmitters FCC ID:RI7HE910 and FCC ID:TFB-TIWI1-01.
The unit is classified as mobile device.
The power density $P\ (mW/cm^2)\ =\ P_T\ /\ 4\pi\ r^2$

1) Limit for power density is f/1500 = 0.55 mW/cm^2 for 824-849 MHz for general population/uncontrolled exposure. Maximum conducted output power given in **FCC ID:RI7HE910** module grant is 1995 mW. It is used with 12.5 % duty cycle according to RF Exposure Report provided by Telit, hence, corresponds to equivalent average power 33 dBm x 0.125 = 4.125 dBm in 824.2-848.8 band.

According to RF Exposure Report the 1738 mW peak power is used with 50 % duty cycle which corresponds to equivalent average power 32.4 dBm x 0. 5 = 16.2 dBm in 824.2-848.8 band.
The gain of antenna used with the module is 3 dBi.
The maximum equivalent isotropically radiated power EIRP is

$$P_T = 16.2\ dBm + 3\ dBi = 19.2\ dBm = 83.2\ mW$$

The power density at 20 cm is calculated as follows:

$$S1 = 83.2\ mW\ /\ 4\pi\ (20\ cm)^2 = 0.016\ mW/cm^2 < 0.55\ mW/cm^2$$

2) Max Power density at 20 cm of **FCC ID:TFB-TIWI1-01** module calculated in MPE report is S2=0.0177 mW/cm^2
Limit for power density for general population/uncontrolled exposure is P = 1 mW/cm^2 (for 2.4 GHz).

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

$$S1/Limit + S2/Limit < 1,\ i.e.$$
$$0.016\ mW/cm^2\ /0.55\ mW/cm^2 + 0.0177\ mW/cm^2\ /1\ mW/cm^2 = 0.03 + 0.018 = 0.048 < 1$$

Therefore, the management unit including approved modules complies with FCC RF exposure limit for mobile device for general population.

General public cannot be exposed to dangerous RF level.