To meet the FCC's exposure rules and regulations:

- The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all the persons.
- Any transmitter installed in the CF card slot must not exceed 4 W of e.i.r.p. To check if a particular equipment complies with this restriction you need to know its FCC ID number and visit the searching engine in FCC web site in the following Internet address, where you can find the output power by the equipment in the grant of the equipment

https://gullfoss2.fcc.gov/prod/oet/cf/eas/reports/GenericSearch.cfm

If this link does not work properly please visit FCC website (http://www.fcc.gov) and follow the following steeps to find the searching engine:

FCC website → Office of Engineering Technology → Equipment Authorization Electronic Filing → Generic Search

Please notice that the output power listed in the grant uses different units depending on the type of the equipment, e.g.:

1. The output power for 802.11a/b/g/h equipment or similar equipment approved under §15.247 or §15.407 is listed as Conducted RF power. §15.247 or §15.407 limit the e.i.r.p. to 4 W, so this restriction is fulfilled.
2. The output power for Part 22 cellular equipment is listed as e.r.p. The relationship between e.r.p. and e.i.r.p. is the following one:

   e.i.r.p. = 1.64 x e.r.p.

3. The output power for Part 24 PCS equipment is listed as e.i.r.p.
4. For other type of equipment please consult the distributor in order to assure the restriction is fulfilled.

NOTE – DEFINITIONS:

Effective Radiated Power (e.r.p.) (in a given direction): The product of the power supplied to the antenna and its gain relative to half-wave dipole in a given direction.

Equivalent Isotropically Radiated Power (e.i.r.p.) (in a given direction): The product of the power supplied to the antenna and its gain relative to an isotropic antenna.

The table below is excerpted from Table 1B of 47 CFR 1.1310 titled Limits for Maximum Permissible Exposure (MPE), Limits for General Population/Uncontrolled Exposure:

Frequency Range (MHz)	Power Density (mW/cm^2)
300 – 1500	f/1500
1500 – 100.000	1.0

The equipment **WRAP Multiradio Access Server** transmits in the 2400 - 2483.5 MHz frequency range, so the applicable MPE limit is 1 mW/cm^2. The equipment can be provided with up to 4 Bluetooth modules WRAP THOR 2022-1-B2B (FCC ID: QOQWRAP2022-1-B2B):

Under the conditions stated above MPE limits can be guaranteed as the calculation below shows:

Example 1: 15.247 or 15.407 Compact Flash Card with maximum allowed e.i.r.p. of 4 W

Using Equation from page 18 of OET Bulletin 65, Edition 97-01:

$$S = P \cdot G/4pR^2 = Prad \ (e.i.r.p.)/4pR^2$$

Where,

S = power density in mW/cm^2 (1 mW/cm^2 used for G)
P = power input to the antenna
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the centre of radiation of the antenna in cm (20 cm Prediction distance)

$$S_{Compact\ Flash\ card} = Prad\ (e.i.r.p.)_{Compact\ Flash\ card}/4pR^2 = 4000\ mW/4p\ (20\ cm)^2$$

We obtain the following results:

$$S_{Compact\ Flash\ card} = 0.795774\ mW/cm2$$

$$S_{Total} = 4\ x\ S_{module} + S_{Compact\ Flash\ card} = 4\ x\ 0.003579\ mW/cm2 + 0.795774\ mW/cm2$$

$$S_{Total} = 0.014316\ mW/cm2 + 0.795774\ mW/cm2 = 0.795774\ mW/cm2 < 1\ mW/cm2$$

Example 2: Part 22 Compact Flash Card with maximum e.r.p. of 1.5 W (Category excluded of MPE evaluation according to §2.1091)

Using Equation from page 18 of OET Bulletin 65, Edition 97-01 and considering that e.i.r.p. = 1.64 x e.r.p.:

S $_{\text{Compact Flash card}}$ = Prad (e.i.r.p.) $_{\text{Compact Flash card}}$ /$4\pi R^2$ = 1500·1.64 mW/4π (20 cm) ^{2}

S $_{\text{Compact Flash card}}$ = 0.489401 mW/cm2

S $_{\text{Total}}$ = 4 x S $_{\text{module}}$ + S $_{\text{Compact Flash card}}$ = 4 x 0.003579 mW/cm2 + 0.489401 mW/cm2

S $_{\text{Total}}$ = 0.014316 mW/cm2 + 0.489401 mW/cm2 = 0.503717 mW/cm2 < 1 mW/cm2

Example 3: Part 2 4 Compact Flash Card with maximum e.r.p. of 3 W (Category excluded of MPE evaluation according to §2.1091)

Using Equation from page 18 of OET Bulletin 65, Edition 97-01 and considering that e.i.r.p. = 1.64 x e.r.p.:

S $_{\text{Compact Flash card}}$ = Prad (e.i.r.p) $_{\text{Compact Flash card}}$ /$4\pi R^2$ = 3000·1.64 mW/4π (20 cm) ^{2}

S $_{\text{Compact Flash card}}$ = 0.978803 mW/cm2

S $_{\text{Total}}$ = 4 x S $_{\text{module}}$ + S $_{\text{Compact Flash card}}$ = 4 x 0.003579 mW/cm2 + 0.978803 mW/cm2

S $_{\text{Total}}$ = 0.014316 mW/cm2 + 0.978803 mW/cm2 = 0.993119 mW/cm2 < 1 mW/cm2