The Device is a is a multi-purpose LoRaWAN IoT sensor. The sensor is designed to be used as indoor equipment for home and office.

Sensor evaluated for RF radiation exposure according to the provisions of FCC §2.1091, MPE guidelines identified in FCC §1.1310 and FCC KDB 447498:2015.

Limits for General Population/Uncontrolled Exposure: 47 CFR 1.1310 Table 1 (B)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f^2	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

Where *f* is in MHz

The worst-case scenario is provided at 903 MHz.

The maximum power density exposure is:

S = 0.602 mW/cm^2, for uncontrolled exposure

RF conducted power measurement and antenna gain as per ETC test reports t29e19a225-DTS_FCC section 2.3.5 are reported below. The worst case value is in bold below

TX	Frequency (MHz)	RF Output **100%** Duty Cycle (dBm)	Max. antenna gain (dBi)	**EIRP 100%** duty Cycle(dBm)	**EIRP 100%** duty Cycle (mW)	**EIRP 33%** duty Cycle(mW)
500 KHz	**903**	**15.31**	**2**	**17.31**	**53.8**	**17.8**
	909.4	12.99	2	14.99	31.6	1-.4
	914.9	14.17	2	16.17	41.4	13.7

Using worst case scenario, the highest measured EIRP or [P*G(numeric gain)] value for the transmitter was rounded up to **17.8 mW**.

Using the highest transmitted power general equation, at a distance of 20 cm

$S = EIRP / (4 \pi R^2)$

Where: S, power density in 'mW/cm^2' (we use the value for the LoRa band of 0.60153 W/m^2)
EIRP, Effective Isotropic Radiated Power in 'mW'
R, distance to the center of the radiation of the antenna in 'cm'

The RF exposure from the radio is less than the limit specified as shown below and meets the exemption criteria.

$0.0035 \text{ mW/cm}^2 = (17.8 \text{ mW}) / (4 \times \pi \times 20^2)$

$S = 0.0035 \text{ mW/cm}^2$ <<< 0.602 mW/cm^2 (max limit)

In addition, we re-arrange the above equation to determine the minimum safe distance.

$R = \sqrt{[EIRP / (4 \pi S)]}$

$1.53 \text{ cm} = \sqrt{[17.8\text{mW} / (4 \times \pi \times 0.602\text{mw/cm}^2)]}$

R = 1.5 cm, for uncontrolled exposure (rounded up to the first decimal)