The Device is a **mobile** Sensor for IoT applications. Smart Room Sensor (SRS) (COMFORT & VIVID) is suitable for commercial application.

SRS 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 902.3 MHz.

The maximum power density exposure is f/1500:

S = 0.60133 mW/cm^2, for uncontrolled exposure

LoRa and BLE RF conducted power measurement and antenna gain as per ETC test reports t29e21a232-DTS_FCC and t29e21a232-DSS_FCC section 2.3.5 are reported below. The maximum duty cycle of the radio in real life operation is 33%. The worst-case value is in bold below

TX	Frequency (MHz)	Conducted RF Output 100% Duty Cycle (dBm)	Max. antenna gain (dBi)	Conducted EIRP 100% duty Cycle(dBm)	EIRP 100% Duty Cycle (mW)	EIRP 33% Duty Cycle (mW)
LoRa 500 KHz	903	**13.5**	**2.2**	**15.70**	**37.1535**	**12.26**
	907.8	13.37	2.2	15.57	36.0579	11.9
	914.2	13.42	2.2	15.62	36.4754	12.04
LoRa 125 KHz	902.3	13.46	2.2	15.66	36.81	12.15
	908.7	13.35	2.2	15.55	35.9	11.85
	914.9	13.21	2.2	15.41	34.75	11.47
Worse Case		**15**	**2.2**	**17.2**	**52.5**	**17.325**
+15 dBm is the absolute maximum powers that LoRa chip is capable to handle.						

Using worst case scenario with **100% duty Cycle**, the highest measured EIRP or [P*G(numeric gain)] value for the LoRa transmitter was rounded up to **53.0 mW**.

Using the highest transmitted power at a distance of 20 cm in the equation below:

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

Where: S, power density in 'mW/cm^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.

$$S\ (mW/cm^2) = (53\ mW) / (4 \times \pi \times 20^2)$$

$$\mathbf{S = 0.010544014\ mW/cm^2 \quad <<< 0.60133\ mW/cm^2\ (max\ limit)}$$

Rounded up $\mathbf{S = 0.011\ mW/cm^2 \quad <<<<<<<<<<<<<<< \quad 0.60133\ mW/cm^2\ (max\ limit)}$

To determine the minimum safe distance

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

$$R = \sqrt{[53 / (4\pi \times 0.60133)]}$$

$$R = 2.65\ cm$$

The manufacturer manual specified a minimum safe distance of **20 cm**.