Maximum Permissible Exposure (MPE) Calculation

Reference document:	**47 CFR §15.247(i) & §1.1310 & RSS 102 2.5.2**	
Test Requirements:	According to §1.1310, the criteria listed in tab. 1 shall be used to evaluate the environmental impact of human exposure to RF radiation as specified in §1.1307(b). For equipment authorization purposes the term co-location refers to simultaneously transmitting (co-transmitting) antennas located within 20cm of each other within a product.	
Limit	For FCC- 0.61 mW/cm^2 For IC= $0.0131\ f^{0.6834}$ W=1.385W EIRP	**Comply**
Calculation Result*:	For FCC-Power Density = 0.0223 mW/cm^2, on 20cm radius sphere. For IC- 0.112W EIRP	

The EUT is capable of operating in the range 902.3-916.3 MHz for LoRa transmission with a Rated maximum conducted power of 112.202 mW into a single antenna with a 0 dBi Antenna gain.

The maximum exposure level in this scenario is 0.0223 mW/cm^2 at a distance of 20 cm.

* Equation (3) given in OET Bulletin 65 is used to estimate the MPE distance.

$$S = \frac{PG}{4\pi R^2}$$

S=power density, in mW/cm2
P=power input to the antenna, in mW
G=numeric gain of the antenna,
R= distance to the center of the antenna, in cm

Calculation per OET Bulletin 65- FCC

Frequency Band (MHz)	MPE Distance [cm]	Output Power [mW]	Antenna Gain [dBi]	Power density [mW/cm2]	Limit [W] EIRP	Verdict
902.3-916.3	20	112.202	0	0.0223	0.61	Pass

Calculation per RSS 102 Clause 2.5.2

Frequency Band (MHz)	Distance [cm]	Output Power [dbm]	Antenna Gain [dBi]	EIRP Calculated [W]	Limit [W] EIRP	Verdict
902.3-916.3	greater than 20 cm	20.5	0	0.112	1.385	*Pass

*The EUT is exclsuded from Routine evaluation.