

# Maximum Permissible Exposure (MPE) & Exposure evaluation

Report identification number: 1-6484/18-04-09 MPE (FCC)

Certification numbers and labeling requirements	
FCC ID	U3Z-ARF8119

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**EUT technologies:**

Technologies:	Max. power conducted: (AVG)	Max. antenna gain:
SigFox - RC2 Band 902 – 904 MHz	Declared 23 dBm	Measured : 1.65 dBi
SigFox – RC4 Band 920 – 922 MHz	Declared 23 dBm	Measured : 1.13 dBi

**Prediction of MPE limit at given distance - FCC**

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

$$S = PG / 4\pi R^2$$

where: S = Power density  
 P = Power input to the antenna  
 G = Antenna gain  
 R = Distance to the center of radiation of the antenna  
 PG = Output Power including antenna gain

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 <sup>2</sup> )	Averaging Time (minutes)
300 -1500	f/1500	30
1500 - 100000	1.0	30

where f = Frequency (MHz)

**Prediction: worst case**

Technologies:	RC 2	RC 4	
Frequency (MHz)	903	921	
PG Declared max power (EIRP)	24.65	24.13	dBm
R Distance	20	20	cm
S MPE limit for uncontrolled exposure	0.602	0.614	mW/cm <sup>2</sup>
<b>Calculated Power density:</b>	0.0581	0.0515	mW/cm <sup>2</sup>
<b>Calculated percentage of Limit:</b>	9.65%	8.39%	

**This prediction demonstrates the following:**

The power density levels for FCC at a distance of 20 cm are below the maximum levels allowed by regulations.