

Maximum Permissible Exposure (MPE) & Exposure evaluation

Report identification number: 1-8063/19-03-05 MPE (FCC_ISED)

Certification numbers and labeling requirements	
FCC ID	IREIURF190
ISED number	7037A-IURF190
HVIN (Hardware Version Identification Number)	IURF190
PMN (Product Marketing Name)	IURF190
FVIN (Firmware Version Identification Number)	-/-
HMN (Host Marketing Name)	-/-

This report is electronically signed and valid without handwriting signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

Document authorised:

Alexander Hnatovskiy
Lab Manager
Radio Communications & EMC

Marco Scigliano
Testing Manager
Radio Communications & EMC

EUT technologies:

Technologies:	Max. power [dBm]	Antenna gain max.: [dBi] **	Declared by customer
	EIRP		
ISM / RFID 902 to 928 MHz	decl. 31.0	0.0	30 dBm +/-1 dB

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

where f = Frequency (MHz)

Prediction: worst case

Technologies:	ISM / RFID	
Frequency (MHz)	915	
PG Declared max power (EIRP)	31	dBm
R Distance	20	cm
S MPE limit for uncontrolled exposure	0.61	mW/cm ²
Calculated Power density:	0.2506	mW/cm ²
Calculated percentage of Limit:	41.08%	

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.

Prediction of MPE limit at given distance - ISED

RSS-102, Issue 5, 2.5.2

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $4.49/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

Prediction: worst case

		ISM / RFID	
	Frequency	915	MHz
R	Distance	20	cm
PG	Maximum EIRP	31	dBm
PG	Maximum EIRP	1258.9	mW
	Exclusion Limit from above:	1.38	W
	Calculated percentage of Limit:	90.97%	

Conclusion: RF exposure evaluation is not required.