

## Maximum Permissible Exposure (MPE) & Exposure evaluation

**Report identification number: 1-1068/20-01-08 MPE (FCC\_ISED)**


Certification numbers and labeling requirements	
FCC ID	JFZR4180LK
ISED number	1752B-R4180LK
HVIN (Hardware Version Identification Number)	ESW-R4180LK
PMN (Product Marketing Name)	ESW-R4180LK
FVIN (Firmware Version Identification Number)	-/-
HMN (Host Marketing Name)	ESW-R4180LK

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### Document authorised:



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**EUT technologies:**

Technologies:	Max. declared power [dBm]		Antenna gain max.: [dBi]
	conducted	EIRP	
UPCS 1925	20.0 (avg)	decl. 23. (avg)	3.0

**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

	Technology	UPCS
	Frequency	1925 MHz
P	Declared max power input to the antenna	20 dBm
R	Distance	20 cm
G	Antenna gain	3 dBi
S	MPE limit for uncontrolled exposure	1.0000 mW/cm <sup>2</sup>
	<b>Calculated Power density:</b>	0.0397 mW/cm <sup>2</sup>
	<b>Calculated percentage of limit:</b>	3.97%

**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

		UPCS	
	Frequency	1920	MHz
R	Distance	20	cm
P	Max power input to the antenna	20	dBm
G	Antenna gain	3	dBi
PG	Maximum EIRP	23	dBm
PG	<b>Maximum EIRP</b>	199.5	mW
	<b>Exclusion Limit from above:</b>	2.30	W
	<b>Calculated percentage of Limit:</b>	8.69%	

**Conclusion:** RF exposure evaluation is not required.