Maximum Permissible Exposure (MPE) & Exposure evaluation

Report identification number: 1-0421/20-01-01 MPE (FCC_ISED)

Certification numbers and labeling requirements	
FCC ID	PJMLRU3000A
ISED number	6633A-LRU3000A
HVIN (Hardware Version Identification Number)	FE784
PMN (Product Marketing Name)	ID ISC.LRU3000-FCC ID ISC.LRU3500-FCC
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.

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EUT technologies:

Technologies:	Max. measured power conducted:	Max. antenna gain:	Max. declared EIRP
UHF RFID*	30 dBm	6 dBi	36 dBm

)* for detailed test results see CTC advanced test report 1-0421/20-01-08

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:	SRD	
	Frequency (MHz)	902	
PG	Declared max power (EIRP)	36	dBm
R	Distance	23	cm
S	MPE limit for uncontrolled exposure	0.601333333	mW/cm^2
	Calculated Power density:	0.5992	mW/cm²
	Calculated percentage of Limit:	99.64%	

This prediction demonstrates the following:

The power density levels for FCC at a distance of 23 cm are below the maximum levels allowed by regulations.

Prediction of MPE limit at given distance - ISED

RSS-102, general limitations for E- and H- Field

Reference levels for general public (uncontrolled environment) exposure to time-varying electric and magnetic fields

According to: RSS 102-ISSUE 05		
Frequency Range (MHz)	**Power density** (W/m²)	**Reference Period** (minutes)
0.003-10	--	**Instantaneous***
0.1-10	--	6**
1.1-10	--	6**
10-20	2	6
20-48	8.944 / $f^{0.5}$	6
48-300	1.291	6
300-6000	**$0.02619 \times f^{0.6834}$**	6
6000-15000	10	6
15000-150000	10	$616000 / f^{1.2}$
150000-300000	$6.67 \times 10^{-5} \times f$	$616000 / f^{1.2}$
Note: f is frequency in MHz. * Based on nerve stimulation (NS). ** Based on specific absorption rate (SAR).		

NOTE:
The resulting Limit for 902 MHz is 2.74W/m²

Prediction: worst case

		UHF RFID	
	Frequency	902	MHz
R	Distance	35	cm
PG	Maximum EIRP	36	dBm
PG	**Maximum EIRP**	3981.1	mW
S	**Power density**	2.6	W/m²
	Exclusion Limit from above:	2.74	W/m²
	Calculated percentage of Limit:	94.39%	

The power density levels for FCC at a distance of 35 cm are below the maximum levels allowed by regulations.