

Maximum Permissible Exposure (MPE) & Exposure evaluation

Report identification number: 1-8774/19-01-09-A MPE (FCC_ISED)

Certification numbers and labeling requirements	
FCC ID	XXZ-INTC700
ISED number	26236-INTC700
HVIN (Hardware Version Identification Number)	C1-70-A00S and C1-70-A00R
PMN (Product Marketing Name)	Intellian C700
FVIN (Firmware Version Identification Number)	-/-
HMN (Host Marketing Name)	-/-

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Document History:

Version	Applied Changes	Date of Release
	Initial Release	2020-08-11
-A	Corrected EUT technologies on page 2.	2020-08-13

EUT technologies:

Technologies:	Max. power conducted:	Max. antenna gain:	Max. EIRP
Satellite Link 1616 – 1626 MHz	39.37 dBm	10.4 dBi	49.77 dBm
WLAN 2450 MHz	21.4dBm	2.0 dBi	23.4 dBm

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:	Satellite Link	WLAN	
Frequency (MHz)	1621	2450	
PG Declared max power (EIRP)	49.77	23.4	dBm
R Distance	100	100	cm
S MPE limit for uncontrolled exposure	1	1	mW/cm ²
Calculated Power density:	0.7551	0.0017	mW/cm ²
Calculated percentage of Limit:	75.51%	0.17%	

This prediction demonstrates the following:

The power density levels for FCC at a distance of 1.0 m 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/m ²)	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 1621MHz is 4.08W/m²

The resulting Limit for 2450MHz is 5.42W/m²

Prediction: worst case

		Satellite Link	WLAN	
	Frequency	1621	2450	MHz
R	Distance	150	150	cm
PG	Maximum EIRP	49.77	23.4	dBm
PG	Maximum EIRP	94841.8	218.8	mW
S	Power density	3.4	0.00774	W/m ²
	Exclusion Limit from above:	4.08	5.42	W/m ²
	Calculated percentage of Limit:	82.21%	0.14%	

This prediction demonstrates the following:

The power density levels for ISED at a distance of 1.5 m are below the maximum levels allowed by regulations.