



## Maximum Permissible Exposure (MPE) & Exposure evaluation

Report identification number: 1-5727/18-04-07 MPE (FCC\_IC)

Certification numbers and labeling requirements	
FCC ID	R7T1001102
IC number	5136A-1001102
HVIN (Hardware Version Identification Number)	1001102
PMN (Product Marketing Name)	1001102
FVIN (Firmware Version Identification Number)	2610011025000
HMN (Host Marketing Name)	-/-

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**EUT technologies:**

Technologies:	Max. measured output power: )*	Max. measured antenna gain: )*
WLAN 2.4 GHz	Measured peak: <b>17.3 dBm</b> Measured AVG: 15.9 dBm duty cycle <b>72.2% (1.4 dB)</b> (n HT20-mode – middle channel)	Internal: 1.1 dBi <b>External: 2.5 dBi</b>

)\* worst case result taken from CTC advanced test report 1-5727/18-04-03

**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
<b>1500 - 100000</b>	<b>1.0</b>	<b>30</b>

where f = Frequency (MHz)

Prediction: worst case

Technologies:	WLAN 2.4 GHz	
Frequency (MHz)	2450	
PG Declared max power (EIRP)	18.4	dBm
R Distance	20	cm
S MPE limit for uncontrolled exposure	1	mW/cm <sup>2</sup>
<b>Calculated Power density:</b>	0.0138	mW/cm <sup>2</sup>
<b>Calculated percentage of Limit:</b>	1.38%	

**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 - IC

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

		WLAN 2.4 GHz	
	Frequency	2450	MHz
R	Distance	20	cm
PG	Maximum EIRP	18.4	dBm
PG	<b>Maximum EIRP</b>	69.2	mW
	<b>Exclusion Limit from above:</b>	2.71	W
	<b>Calculated percentage of Limit:</b>	2.55%	

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

For applications where minimum distance to radiating element is 20cm Annex C of RSS-102 should be filled out.