

Maximum Permissible Exposure (MPE) & Exposure evaluation

Report identification number: 1-0927/20-01-13 MPE (FCC_ISED)

Certification numbers and labeling requirements	
FCC ID	WM7CONFIG4WDU
ISED number	7932A-CONFIG4WDU
HVIN (Hardware Version Identification Number)	71.98.0081
PMN (Product Marketing Name)	CONFIDEA G4 FLEX
FVIN (Firmware Version Identification Number)	-/-
HMN (Host Marketing Name)	-/-

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EUT technologies:

Technologies:	Max. measured power conducted [dBm]:	Max. antenna gain [dBi]:	Max. declared EIRP [dBm]:
Bluetooth 2450 MHz	11.76	2.6	14.36
BTLE 2450 MHz	3.01	2.6	5.61
WLAN 2450 MHz	26.86	2.6	29.46
WLAN 5.8GHz	19.03	3.3	22.33

RFID 13.56 MHz exempt from routine evaluation

Collocation overview:

Technology \ Active scenario:	1	2	3	4
BT	x		x	
WLAN	x	x		

NOTES:

- In the following Scenario 4 is used as it represents the highest possible output for the device.
- WLAN 2450 MHz is used for the calculations as WLAN 5.8GHz has the lower output power.

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:		BT	WLAN	
	Frequency (MHz)	2450	2450	
PG	Declared max power (EIRP)	14.36	29.46	dBm
R	Distance	20	20	cm
S	MPE limit for uncontrolled exposure	1	1	mW/cm ²
	Calculated Power density:	0.0054	0.1758	mW/cm ²
	Calculated percentage of Limit:	0.54%	17.58%	
Collocation:				
	Scenario 1: BT + WLAN 2.4 MHz Calculated percentage of Limit:	18.12%		

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

		BT	WLAN	
	Frequency	2450	2450	MHz
R	Distance	20	20	cm
PG	Maximum EIRP	14.36	29.46	dBm
PG	Maximum EIRP	27.3	883.1	mW
	Exclusion Limit from above:	2.71	2.71	W
	Calculated percentage of Limit:	1.01%	32.55%	
	Collocation:			
	Scenario 1: BT + WLAN 2.4 MHz	Calculated percentage of Limit:		33.56%

Conclusion: RF exposure evaluation is not required.