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Maximum Permissible Exposure Evaluation

FCC ID: PADWF144

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) Radiation as specified in §1.1307(b)

EUT Specification

Product Name:	ELEMNT ROAM V2
Trade Mark:	WAHOO FITNESS
Model/Type reference:	WF144
Listed Model(s):	/
Frequency band (Operating)	BLE: 2.402GHz ~ 2.480GHz WLAN: 2.412GHz ~ 2.462GHz
Device category	☐ Portable (<5mm separation) ☐ Mobile (>20cm separation) ☒ Fixed (>20cm separation) ☐ Others ____
Exposure classification	☐ Occupational/Controlled exposure (S=5mW/cm ²) ☒ General Population/Uncontrolled exposure (S=1mW/cm ²)
Antenna diversity	☒ Single antenna ☐ Multiple antennas ☐ Tx diversity ☐ Rx diversity ☐ Tx/Rx diversity
Antenna gain	BT: 1.90dBi WIFI: 5.46dBi
Evaluation applied	☒ MPE Evaluation ☐ SAR Evaluation

Limits for Maximum Permissible Exposure (MPE)

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density(mW/cm ²)	Average Time
(A) Limits for Occupational/Control Exposures				
300-1500	--	--	F/300	6
1500-100000	--	--	5	6
(B) Limits for General Population/Uncontrol Exposures				
300-1500	--	--	F/1500	6
1500-100000	--	--	1	30

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Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where

P_d = Power density in mW/cm^2

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d the limit of MPE $1mW/cm^2$. If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, We will know the distance where the MPE limit is reached.

Measurement Result

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Tune up tolerance (dBm)	Max. Tune up Power (dBm)	Power Density at 20cm (mW/cm^2)	Limit (mW/cm^2)
GFSK (BLE)	2440	1.90	0.60	0 ± 1	1	0.00039	1.000
WLAN 802.11b	2412	5.46	20.44	20 ± 1	21	0.08805	1.000
WLAN 802.11g	2412	5.46	16.27	16 ± 1	17	0.03505	1.000
WLAN 802.11n(HT20)	2462	5.46	15.21	15 ± 1	16	0.02784	1.000
WLAN 802.11n(HT40)	2422	5.46	11.77	12 ± 1	13	0.01396	1.000

The WLAN and BT can transmit simultaneously

WLAN Power density at 20cm (mW/cm^2)	BT Power density at 20cm (mW/cm^2)	Total Power density at 20cm	Power density Limits
0.08805	0.00039	0.08844	1

Note:

For a more detailed features description, Please refer to the RF Test Report.

*****THE END*****