

1. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

1.1 Standard Applicable

According to § 1.1307(b)(1), system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

(a) Limits for Occupational / Controlled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	F/300	6
1500-100000	/	/	5	6

(b) Limits for General Population / Uncontrolled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-100000	/	/	1	30

Note: f = frequency in MHz; * = Plane-wave equivalent power density

1.2 MPE Calculation Method

$$S = (30 * P * G) / (377 * R^2)$$

S = power density (in appropriate units, e.g., mw/cm²)

P = power input to the antenna (in appropriate units, e.g., mw)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor is normally numeric gain.

R = distance to the center of radiation of the antenna (in appropriate units, e.g., cm)

1.3 MPE Calculation Result

Product Description: WiFi USB Dongle
 Model No.: AWUHN2405-2
 FCC ID: TKZAWUHN2405-2
 Device Category: Mobile Device
 Antenna-to-tissue separation: ≥ 20 cm

Calculation result based on maximum output power mode:

Tx Freq.	Power	Power	Gain	Gain	Mobile	S	Limit	Result
MHz	dBm	mW	dBi	Num	cm	mW/cm2	mW/cm2	
802.11b								
2412	26.81	479.73	4.0	2.51	20.00	0.2397	1.00	PASS
2437	26.15	412.10	4.0	2.51	20.00	0.2059	1.00	PASS
2462	25.23	333.43	4.0	2.51	20.00	0.1666	1.00	PASS
802.11g								
2422	26.27	423.64	4.00	2.51	20.00	0.2117	1.00	PASS
2437	25.51	355.63	4.00	2.51	20.00	0.1777	1.00	PASS
2452	24.42	276.69	4.00	2.51	20.00	0.1383	1.00	PASS
802.11n (HT20)								
2412	26.26	422.67	4.00	2.51	20.00	0.2112	1.00	PASS
2437	26.46	442.59	4.00	2.51	20.00	0.2212	1.00	PASS
2462	24.42	276.69	4.00	2.51	20.00	0.1383	1.00	PASS
802.11n (HT40)								
2422	24.33	271.02	4.00	2.51	20.00	0.1354	1.00	PASS
2437	24.00	251.19	4.00	2.51	20.00	0.1255	1.00	PASS
2452	23.05	201.84	4.00	2.51	20.00	0.1009	1.00	PASS

Therefore, the antenna of this device must be installed to provide a separation distance of at least 20 cm from all persons, to ensure satisfy the requirement of the RF Exposure.