

1. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

1.1 General Information

Client Information

Applicant: Trend-tech Technology Co., Limited
Address of applicant: Room 205, Building No. 5, YaoXing HuaYuan, XinHuiDaDao
No. 45, XinHui District, JiangMen City, GuangDong Province,
China | Postage Code:529100

Manufacturer: Trend-tech Technology Co., Limited
Address of manufacturer: Room 205, Building No. 5, YaoXing HuaYuan, XinHuiDaDao
No. 45, XinHui District, JiangMen City, GuangDong Province,
China | Postage Code:529100

General Description of EUT:

Product Name: AC1200 Dual Band USB WiFi Adapter
Trade Name: BrosTrend
Model No.: AC3
Adding Model(s): AC1, AC5, AC1L, AC3L, AC5L
FCC ID: 2ABM8-AC3
Rated Voltage: DC5V

Technical Characteristics of EUT:	
2.4G WiFi	
Support Standards:	802.11b, 802.11g, 802.11n
Frequency Range:	2412-2462MHz for 802.11b/g/n(HT20) 2422-2452MHz for 802.11n(HT40)
RF Output Power:	17.20dBm (Conducted)
Type of Modulation:	DBPSK,BPSK,DQPSK,QPSK,16QAM,64QAM
Data Rate:	1-11Mbps, 6-54Mbps, up to 300Mbps
Quantity of Channels:	11 for 802.11b/g/n(HT20); 7 for 802.11n(HT40)
Channel Separation:	5MHz
Type of Antenna:	External Antenna
Antenna Gain:	5.0dBi
5G WiFi	
Support Standards:	802.11a, 802.11n(HT20) , 802.11n-HT40, 802.11ac-VH80
Frequency Range:	5150-5250MHz, 5725-5850MHz
RF Output Power:	16.35dBm (Conducted)
Type of Modulation:	BPSK, QPSK,16QAM,64QAM, 256QAM
Data Rate:	6-54Mbps, up to 866.6Mbps
Type of Antenna:	External Antenna
Antenna Gain:	5.0dBi

1.2 Standard Applicable

According to § 1.1307(b)(1) and KDB 447498 D01 General RF Exposure Guidance v06, 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

1.3 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)

1.4 MPE Calculation Result

For 2.4G WiFi:

Maximum Tune-Up output power: 18(dBm)

Maximum peak output power at antenna input terminal: 63.10(mW)

Prediction distance: >20(cm)

Prediction frequency: 2412 (MHz)

Antenna gain:5.0(dBi)

Directional gain (numeric gain): 3.16

The worst case is power density at prediction frequency at 20cm: 0.0397(mw/cm²)

MPE limit for general population exposure at prediction frequency: 1 (mw/cm²)

The exclusion thresholds is $0.0397\text{mw/cm}^2 < 1 \text{mw/cm}^2$

For 5G WiFi:

For U-NII-1:5150-5250MHz:

Maximum Tune-Up output power: 17(dBm)

Maximum peak output power at antenna input terminal: 50.12 (mW)

Prediction distance: >20(cm)

Prediction frequency: 5230 (MHz)

Antenna gain:5.0(dBi)

Directional gain (numeric gain): 3.16

The worst case is power density at prediction frequency at 20cm: 0.0315(mw/cm²)

MPE limit for general population exposure at prediction frequency: 1 (mw/cm²)

The exclusion thresholds is $0.0315\text{mw/cm}^2 < 1 \text{mw/cm}^2$

For U-NII-3: 5725-5850MHz:

Maximum Tune-Up output power: 17(dBm)

Maximum peak output power at antenna input terminal: 50.12 (mW)

Prediction distance: >20(cm)

Prediction frequency: 5825 (MHz)

Antenna gain:5.0(dBi)

Directional gain (numeric gain): 3.16

The worst case is power density at prediction frequency at 20cm: 0.0315(mw/cm²)

MPE limit for general population exposure at prediction frequency: 1 (mw/cm²)

The exclusion thresholds is $0.0315\text{mw/cm}^2 < 1 \text{mw/cm}^2$

Result: Pass