

FCC RF EXPOSURE REPORT

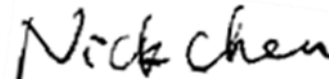
FCC ID: 2BCGWEAP650DT

Project No. : 2407G075
Equipment : AX3000 Desktop Wi-Fi 6 Access Point
Brand Name : tp-link
Test Model : EAP650-Desktop
Series Model : N/A
Applicant : TP-LINK CORPORATION PTE. LTD.
Address : 7 Temasek Boulevard #29-03 Suntec Tower One, Singapore 038987
Manufacturer : TP-LINK CORPORATION PTE. LTD.
Address : 7 Temasek Boulevard #29-03 Suntec Tower One, Singapore 038987
Date of Receipt : Jul. 22, 2024
Date of Test : Jul. 22, 2024 ~ Oct. 12, 2024
Issued Date : Oct. 25, 2024
Report Version : R00
Test Sample : Engineering Sample No.: SSL20240722106 for LE, SSL20240722105 for WIFI.
Standard(s) : FCC Guidelines for Human Exposure IEEE C95.1 & FCC Part 2.1091
FCC Title 47 Part 2.1091 & KDB 447498 D01 v06

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.

Prepared by :

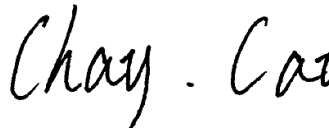
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Nick Chen

Approved by :

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Chay Cai

Room 108, Building 2, No.1, Yile Road, Songshan Lake Zone, Dongguan City, Guangdong,
People's Republic of China.

Tel: +86-769-8318-3000 Web: www.newbtl.com Service mail: btl_qa@newbtl.com

REPORT ISSUED HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FCCP-5-2407G075	R00	Original Report.	Oct. 25, 2024	Valid

1. MPE CALCULATION METHOD

Calculation Method of RF Safety Distance:

$$S = \frac{PG}{4\pi^2} = \frac{EIRP}{4\pi^2}$$

where:

S = power density

P = power input to the antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

2. ANTENNA SPECIFICATION

For LE:

Ant.	Manufacturer	P/N	Antenna Type	Connector	Gain (dBi)
1	TP-LINK CORPORATION PTE. LTD.	EAP650-Desktop-Ant3	Dipole	N/A	3

Note: The antenna gain is provided by the manufacturer.

For WIFI 2.4G:

Ant.	Manufacturer	P/N	Antenna Type	Connector	Gain (dBi)
1	TP-LINK CORPORATION PTE. LTD.	EAP650-Desktop-Ant1	Dipole	N/A	3
2	TP-LINK CORPORATION PTE. LTD.	EAP650-Desktop-Ant2	Dipole	N/A	3

Note:

- 1) This EUT supports CDD, and all antennas have the same gain, Directional gain = $G_{ANT} + \text{Array Gain}$. For power measurements, Array Gain=0dB ($N_{ANT} \leq 4$), so the Directional gain=3. For power spectral density measurements, $N_{ANT}=2$, $N_{SS} = 1$. So the Directional gain= $G_{ANT} + \text{Array Gain} = G_{ANT} + 10\log(N_{ANT}/N_{SS})\text{dBi} = 3 + 10\log(2/1)\text{dBi} = 6.01$.
- 2) Beamforming Gain: 3 dB. So Beamforming Directional gain = $3 + 3 = 6$.
- 3) The antenna gain and beamforming gain are provided by the manufacturer.

For WIFI 5G:

Ant.	Manufacturer	P/N	Antenna Type	Connector	Gain (dBi)
1	TP-LINK CORPORATION PTE. LTD.	EAP650-Desktop-Ant1	Dipole	N/A	2
2	TP-LINK CORPORATION PTE. LTD.	EAP650-Desktop-Ant2	Dipole	N/A	2
3	TP-LINK CORPORATION PTE. LTD.	EAP650-Desktop-Ant3	Dipole	N/A	2

Note:

- 1) This EUT supports CDD, and all antennas have the same gain, so Directional gain = $G_{ANT} + \text{Array Gain}$. For power measurements, Array Gain=0dB ($N_{ANT} \leq 4$), so the Directional gain=2. For power spectral density measurements, $N_{ANT}=3$, $N_{SS} = 1$. So the Directional gain= $G_{ANT} + \text{Array Gain} = G_{ANT} + 10\log(N_{ANT}/N_{SS})\text{dBi} = 2 + 10\log(3/1)\text{dBi} = 6.77$.
- 2) Beamforming Gain: 5 dB. So Beamforming Directional gain = $2 + 5 = 7$.
- 3) Ant.3 is used as an intelligent switching antenna, and the antenna data stream is NSS2 when used.
- 4) The antenna gain and beamforming gain are provided by the manufacturer.

3. TABLE FOR ANTENNA CONFIGURATION

For WIFI 2.4G:

Non Beamforming:

Operating Mode	TX Mode	2TX
IEEE 802.11b		V (Ant. 1+Ant. 2)
IEEE 802.11g		V (Ant. 1+Ant. 2)
IEEE 802.11n(HT20)		V (Ant. 1+Ant. 2)
IEEE 802.11n(HT40)		V (Ant. 1+Ant. 2)
IEEE 802.11ax(HE20)		V (Ant. 1+Ant. 2)
IEEE 802.11ax(HE40)		V (Ant. 1+Ant. 2)

Beamforming:

Operating Mode	TX Mode	2TX
IEEE 802.11n(HT20)		V (Ant. 1+Ant. 2)
IEEE 802.11n(HT40)		V (Ant. 1+Ant. 2)
IEEE 802.11ax(HE20)		V (Ant. 1+Ant. 2)
IEEE 802.11ax(HE40)		V (Ant. 1+Ant. 2)

For WIFI 5G:

Non Beamforming:

Operating Mode	TX Mode	3TX
IEEE 802.11a		V (Ant. 1+Ant. 2+Ant. 3)
IEEE 802.11n(HT20)		V (Ant. 1+Ant. 2+Ant. 3)
IEEE 802.11n(HT40)		V (Ant. 1+Ant. 2+Ant. 3)
IEEE 802.11ac(VHT20)		V (Ant. 1+Ant. 2+Ant. 3)
IEEE 802.11ac(VHT40)		V (Ant. 1+Ant. 2+Ant. 3)
IEEE 802.11ac(VHT80)		V (Ant. 1+Ant. 2+Ant. 3)
IEEE 802.11ac(VHT160)		V (Ant. 1+Ant. 2+Ant. 3)
IEEE 802.11ax(HE20)		V (Ant. 1+Ant. 2+Ant. 3)
IEEE 802.11ax(HE40)		V (Ant. 1+Ant. 2+Ant. 3)
IEEE 802.11ax(HE80)		V (Ant. 1+Ant. 2+Ant. 3)
IEEE 802.11ax(HE160)		V (Ant. 1+Ant. 2+Ant. 3)

Beamforming:

Operating Mode	TX Mode	3TX
IEEE 802.11n(HT20)		V (Ant. 1+Ant. 2+Ant. 3)
IEEE 802.11n(HT40)		V (Ant. 1+Ant. 2+Ant. 3)
IEEE 802.11ac(VHT20)		V (Ant. 1+Ant. 2+Ant. 3)
IEEE 802.11ac(VHT40)		V (Ant. 1+Ant. 2+Ant. 3)
IEEE 802.11ac(VHT80)		V (Ant. 1+Ant. 2+Ant. 3)
IEEE 802.11ac(VHT160)		V (Ant. 1+Ant. 2+Ant. 3)
IEEE 802.11ax(HE20)		V (Ant. 1+Ant. 2+Ant. 3)
IEEE 802.11ax(HE40)		V (Ant. 1+Ant. 2+Ant. 3)
IEEE 802.11ax(HE80)		V (Ant. 1+Ant. 2+Ant. 3)
IEEE 802.11ax(HE160)		V (Ant. 1+Ant. 2+Ant. 3)

4. CALCULATED RESULT

For LE:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Peak Output Power (dBm)	Max. Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
3	1.9953	18.00	63.0957	0.0160	1	Complies

For 2.4GHz_Non Beamforming:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
3	1.9953	26.71	468.8134	0.1192	1	Complies

For 2.4GHz_Beamforming:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
6	3.9811	26.25	421.6965	0.2139	1	Complies

For 5GHz_Non Beamforming:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
2	1.5849	27.87	612.3504	0.1236	1	Complies

For 5GHz_Beamforming:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
7	5.0119	27.36	544.5027	0.3476	1	Complies

For the max simultaneous transmission MPE:

Ratio			Total	Limit of Ratio	Test Result
LE	2.4GHz	5GHz			
0.01604	0.21386	0.34764	0.5775	1	Complies

Note:

- (1) The calculated distance is 25 cm.
- (2) Ratio=Power Density (S) (mW/cm²)/Limit of Power Density (S) (mW/cm²)

End of Test Report