FCC Radio Test Report

FCC ID: 2BCGWH500

Report No.	:	BTL-FCCP-5-2404G123
Equipment	:	Smart HomeBase
Model Name	:	Tapo H500
Brand Name	:	tp-link, tapo
Applicant	:	TP-LINK CORPORATION PTE. LTD.
Address	:	7 Temasek Boulevard #29-03 Suntec Tower One, Singapore 038987
Radio Function	:	WLAN 2.4 GHz, RLAN 5 GHz (U-NII 1, U-NII 2A, U-NII 2C, U-NII 3), SRD (908 - 922MHz)
FCC Rule Part(s)	:	FCC Guidelines for Human Exposure IEEE C95.1 & KDB 447498 D04
Date of Receipt	:	2024/5/31
Date of Test	:	2024/6/4 ~ 2024/6/26
Issued Date	:	2024/9/14

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

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REPORT ISSUED HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FCCP-5-2404G123	R00	Original Report.	2024/9/14	Valid

1. MPE CALCULATION METHOD

Calculation Method of RF Safety Distance:

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

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

Antenna Specification:
For 2.4GHz:

Ant.	Brand Name	P/N	Type	Connector	Gain (dBi)
1	TP-LINK CORPORATION PTE. LTD.	3101506738	Dipole	N/A	2.00
2	TP-LINK CORPORATION PTE. LTD.	3101506739	Dipole	N/A	2.00

NOTE:
1) The EUT incorporates a CDD function. Physically, the EUT provides two completed transmitters and receivers (2T2R).
For Output Power
For N_{ANT} = 2 < 4,
Direction gain = G_{ANT} + 0 = 2.00 + 0 = 2.00 dBi.
The Direction gain is less than 6 dBi, so output power limits will not be reduced.
2) The above Antenna information are derived from the antenna data sheet provided by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

For 5GHz:

Ant.	Brand Name	P/N	Type	Connector	Gain (dBi)
1	TP-LINK CORPORATION PTE. LTD.	3101506738	Dipole	N/A	3.00
2	TP-LINK CORPORATION PTE. LTD.	3101506739	Dipole	N/A	3.00

Note:
1) This EUT supports CDD, and all antennas have the same gain, Directional gain = G_{ANT}+Array Gain.
For power measurements, Array Gain=3.00dB (N_{ANT}≤4), so the Directional gain=3.00.
For power spectral density measurements, N_{ANT}=4, N_{SS} = 1.
So the Directional gain=G_{ANT}+Array Gain=G_{ANT}+10log(N_{ANT}/ N_{SS})dBi=3.00+10log(2/1)dBi=6.01.
Then, the UNII-1 power spectral density limit is 17-(6.01-6)=16.99. the UNII-2A, UNII-2C power spectral density limit is 11-(6.01-6)=10.99, the UNII-3 power spectral density limit is 30-(6.01-6)=29.99.
2) Beamforming Gain: 3.00dB, so the Directional gain=3.00+3.00=6.00dB.
3) The above Antenna information are derived from the antenna data sheet provided by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

For Sub 1G:

Ant.	Brand Name	P/N	Type	Connector	Gain (dBi)
1	TP-LINK CORPORATION PTE. LTD.	3101506737	Dipole	N/A	-6.10

Note:

1) The above Antenna information are derived from the antenna data sheet provided by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

3. TABLE FOR ANTENNA CONFIGURATION

For 2.4GHz:

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)

For 5GHz Non Beamforming:

Operating Mode / TX Mode	2TX
IEEE 802.11a	V (Ant. 1+Ant. 2)
IEEE 802.11ac (VHT20)	V (Ant. 1+Ant. 2)
IEEE 802.11ac (VHT40)	V (Ant. 1+Ant. 2)
IEEE 802.11ac (VHT80)	V (Ant. 1+Ant. 2)

For 5GHz Beamforming:

Operating Mode / TX Mode	2TX
IEEE 802.11ac (VHT20)	V (Ant. 1+Ant. 2)
IEEE 802.11ac (VHT40)	V (Ant. 1+Ant. 2)
IEEE 802.11ac (VHT80)	V (Ant. 1+Ant. 2)

4. CALCULATED RESULT

For 2.4GHz:

Direction Gain (dBi)	Direction 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
2.00	1.5849	29.03	799.8343	0.25232	1	Complies

For 5GHz Non Beamforming:

Direction Gain (dBi)	Direction 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
3.00	1.9953	23.97	249.4595	0.09907	1	Complies

For 5GHz Beamforming:

Direction Gain (dBi)	Direction 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
6.00	3.9811	23.47	222.3310	0.17618	1	Complies

For Sub 1G:

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
-6.10	0.2455	15.21	33.1894	0.00162	1	Complies

For the max simultaneous transmission MPE:

Ratio			Total	Limit of Ratio	Test Result
Sub 1G	2.4GHz	5GHz			
0.00162	0.25232	0.17618	0.43012	1	Complies

Note: The calculated distance is 20 cm.
Output power including tune up tolerance.

End of Test Report