FCC RF EXPOSURE REPORT

FCC ID: HLZT7

Report No.	:	BTL-FCCP-5-2311H013
Equipment	:	Connect T7 Wi-Fi 7 Mesh Router
Model Name	:	T7
Brand Name	:	Predator
Applicant	:	Acer Incorporated
Address	:	8F, 88, Sec. 1, Xintai 5th Rd., Xizhi, New Taipei City 221, Taiwan, R.O.C.
Radio Function	:	WLAN 2.4 GHz, RLAN 5 GHz (U-NII 1, U-NII 2A, U-NII 2C, U-NII 3), U-NII 6 GHz (U-NII 5, U-NII 6, U-NII 7, U-NII 8)
FCC Rule Part(s)	:	FCC Guidelines for Human Exposure IEEE C95.1 & FCC Part 2.1091 FCC Title 47 Part 2.1091
Date of Receipt	:	2023/11/9
Date of Test	:	2023/12/4 ~ 2024/3/14
Issued Date	:	2024/6/12

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

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Testing Laboratory 0659

BTL Inc.

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REPORT ISSUED HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FCCP-5-2311H013	R00	Original Report.	2024/5/20	Invalid
BTL-FCCP-5-2311H013	R01	Revised report to address comments.	2024/6/12	Valid

1. TEST FACILIT

The test locations stated below are under the TAF Accreditation Number 0659.
The test location(s) used to collect the test data in this report are:
No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan
(FCC DN: TW0659)

☐ C05 ☐ CB08 ☐ CB11 ☐ SR10 ☒ SR11

2. 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

3. ANTENNA SPECIFICATION

For 2.4GHz:

Ant.	Brand	Part number	Type	Connector	Gain (dBi)
1	SUNNYWAY	SH23227IB65-1	PIFA	I-PEX	1.43
2	SUNNYWAY	SH23227IB65-2	PIFA	I-PEX	0.84

NOTE:
a) The EUT incorporates a CDD function. Physically, the EUT provides two completed transmitters and receivers (2T2R).
b) For Output Power
For N_{ANT} = 2 < 5,
Direction gain = G_{ANT} + 0 = 1.43 + 0 = 1.43 dBi.
The Direction gain is less than 6 dBi, so output power limits will not be reduced.
c) For Beamforming:
Beamforming Gain: 3dB
so Directional gain=1.43+3 =4.43dBi. , so output power limits will not be reduced.

For 5GHz:

Ant.	Brand	Part number	Type	Connector	Gain (dBi)
1	SUNNYWAY	SH23227IB65-1	PIFA	I-PEX	5.38
2	SUNNYWAY	SH23227IB65-2	PIFA	I-PEX	4.06

Note:
a) The EUT incorporates a CDD function. Physically, the EUT provides two completed transmitters and receivers (2T2R).
b) For Output Power
For No Beamforming, N_{ANT} = 2 < 5; so Directional gain=5.38.
The Direction gain is less than 6 dBi, so output power limits will not be reduced.
For Beamforming, Beamforming Gain: 3 dBi, so Directional gain=5.38+3 = 8.38dBi.
To UNII-1, UNII-3, the reduced output power limits (dBm) = 30 - (8.38 - 6) =27.62.
To UNII-2A, UNII-2C, the reduced output power limits (dBm) = 24 - (8.38 - 6) = 21.62
c) For Power Spectral Density
Directional Gain = 10log $[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{Gn/20})^2/N_{ANT}]$ = 7.76 dBi > 6dBi.
To UNII-1, the reduced power spectral density limits (dBm/MHz) = 17 - (7.76 - 6) = 15.24.
To UNII-2A, UNII-2C, the reduced power spectral density limits (dBm/MHz) = 11 - (7.76 - 6) = 9.24.
To UNII-3, the reduced power spectral density limits (dBm/500 kHz) = 30 - (7.76 - 6) = 28.24.

For WIFI 6E:

Ant.	Brand	Part number	Type	Connector	Frequency Range (MHz)	Gain (dBi)
1	SUNNYWAY	SH23227IB65-1	PIFA	I-PEX	5950-7120	3.23
2	SUNNYWAY	SH23227IB65-2	PIFA	I-PEX	5950-7120	3.61

Note:
CDD Directional Gain = Antenna Gain + Array Gain, Array Gain = 0 dB for $N_{ANT} \leq 4$;
CDD Directional Gain =3.61+0=3.61
Beamforming Directional Gain = Antenna Gain + 10*log (N_{ANT}/N_{SS}).
Beamforming Directional Gain =3.61+3=6.61

4. TABLE FOR ANTENNA CONFIGURATION

For 2.4GHz:

For No 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)
IEEE 802.11be (EHT20)	V (Ant. 1+Ant. 2)
IEEE 802.11be (EHT40)	V (Ant. 1+Ant. 2)

For 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)
IEEE 802.11be (EHT20)	V (Ant. 1+Ant. 2)
IEEE 802.11be (EHT40)	V (Ant. 1+Ant. 2)

For 5GHz:

For No Beamforming

Operating Mode / TX Mode	2TX
IEEE 802.11a	V (Ant. 1+Ant. 2)
IEEE 802.11n (HT20)	V (Ant. 1+Ant. 2)
IEEE 802.11n (HT40)	V (Ant. 1+Ant. 2)
IEEE 802.11ac (VHT80)	V (Ant. 1+Ant. 2)
IEEE 802.11ac (VHT160)	V (Ant. 1+Ant. 2)
IEEE 802.11ax (HE20)	V (Ant. 1+Ant. 2)
IEEE 802.11ax (HE40)	V (Ant. 1+Ant. 2)
IEEE 802.11ax (HE80)	V (Ant. 1+Ant. 2)
IEEE 802.11ax (HE160)	V (Ant. 1+Ant. 2)
IEEE 802.11be (EHT20)	V (Ant. 1+Ant. 2)
IEEE 802.11be (EHT40)	V (Ant. 1+Ant. 2)
IEEE 802.11be (EHT80)	V (Ant. 1+Ant. 2)
IEEE 802.11be (EHT160)	V (Ant. 1+Ant. 2)

For Beamforming

TX Mode \ Operating Mode	2TX
IEEE 802.11n (HT20)	V (Ant. 1+Ant. 2)
IEEE 802.11n (HT40)	V (Ant. 1+Ant. 2)
IEEE 802.11ac (VHT80)	V (Ant. 1+Ant. 2)
IEEE 802.11ac (VHT160)	V (Ant. 1+Ant. 2)
IEEE 802.11ax (HE20)	V (Ant. 1+Ant. 2)
IEEE 802.11ax (HE40)	V (Ant. 1+Ant. 2)
IEEE 802.11ax (HE80)	V (Ant. 1+Ant. 2)
IEEE 802.11ax (HE160)	V (Ant. 1+Ant. 2)
IEEE 802.11be (EHT20)	V (Ant. 1+Ant. 2)
IEEE 802.11be (EHT40)	V (Ant. 1+Ant. 2)
IEEE 802.11be (EHT80)	V (Ant. 1+Ant. 2)
IEEE 802.11be (EHT160)	V (Ant. 1+Ant. 2)

For WIFI 6E:

TX Mode \ Operating Mode	2TX
IEEE 802.11ax (HE20)	V (Ant. 1 + Ant. 2)
IEEE 802.11ax (HE40)	V (Ant. 1 + Ant. 2)
IEEE 802.11ax (HE80)	V (Ant. 1 + Ant. 2)
IEEE 802.11ax (HE160)	V (Ant. 1 + Ant. 2)
IEEE 802.11be (EHT20)	V (Ant. 1 + Ant. 2)
IEEE 802.11be (EHT40)	V (Ant. 1 + Ant. 2)
IEEE 802.11be (EHT80)	V (Ant. 1 + Ant. 2)
IEEE 802.11be (EHT160)	V (Ant. 1 + Ant. 2)
IEEE 802.11be (EHT320)	V (Ant. 1 + Ant. 2)

5. CALCULATED RESULT

For 2.4GHz_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
1.43	1.3900	25.55	358.9219	0.0993	1	Complies

For 2.4GHz_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
4.43	2.7733	24.98	314.7748	0.1738	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
5.38	3.4514	27.32	539.5106	0.3706	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
8.38	6.8865	26.44	440.5549	0.6039	1	Complies

For WIFI 6E_Non Beamforming:

Max. e.i.r.p. (dBm)	Max. e.i.r.p. (mW)	Power Density (S) (mW/cm^2)	Limit of Power Density (S) (mW/cm^2)	Test Result
26.12	409.2607	0.0815	1	Complies

For WIFI 6E_Beamforming:

Max. e.i.r.p. (dBm)	Max. e.i.r.p. (mW)	Power Density (S) (mW/cm^2)	Limit of Power Density (S) (mW/cm^2)	Test Result
28.67	736.2071	0.1465	1	Complies

For the max simultaneous transmission MPE:

Ratio			Total	Limit of Ratio	Test Result
2.4GHz	5GHz	6E			
0.1738	0.6039	0.14654	0.9242	1	Complies

Note: The calculated distance is 20 cm.

End of Test Report