

FCC RF EXPOSURE REPORT

FCC ID: V7TA27

Project No. : 2108C113
Equipment : AX1800 Wi-Fi 6 Range Extender
Brand Name : Tenda
Test Model : A27
Series Model : N/A
Applicant : SHENZHEN TENDA TECHNOLOGY CO.,LTD.
Address : 6-8 Floor, Tower E3, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, China. 518052
Manufacturer : SHENZHEN TENDA TECHNOLOGY CO.,LTD.
Address : 6-8 Floor, Tower E3, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, China. 518052
Date of Receipt : Aug. 12, 2021
Date of Test : Aug. 13, 2021 ~ Oct. 11, 2021
Issued Date : Oct. 18, 2021
Report Version : R01
Test Sample : Engineering Sample No.: DG202108137
Standard(s) : FCC Guidelines for Human Exposure IEEE C95.1 & FCC Part 2.1091
FCC Title 47 Part 2.1091, OET Bulletin 65 Supplement C

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



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TESTING CERT #5123.02

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REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue	Oct. 12, 2021
R01	Added the data of simultaneous transmission.	Oct. 18, 2021

1. TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No. 3 Jinshagang 1st Rd. Shixia, Dalang Town, Dongguan City, Guangdong, People's Republic of China.

BTL's Test Firm Registration Number for FCC: 357015

BTL's Designation Number for FCC: CN1240

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

For 2.4GHz:

Antenna Specification:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	Tenda	N/A	Dipole	N/A	4.23
2	Tenda	N/A	Dipole	N/A	4.23

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=4.23. For power spectral density measurements, $N_{ANT}=2$, $N_{SS} = 1$. So the Directional gain= $G_{ANT} + \text{Array Gain} = G_{ANT} + 10\log(N_{ANT}/N_{SS})\text{dBi} = 4.23 + 10\log(2/1)\text{dBi} = 7.24$. Then, the power spectral density limit is $8 - (7.24 - 6) = 6.76$.
- 2) Beamforming Gain: 3 dB. So Directional gain= $3 + 4.23 = 7.23$. Then, output power limit is $30 - (7.23 - 6) = 28.77$.
- 3) The antenna gain and beamforming gain are provided by the manufacturer.

Table for Antenna Configuration:

For Non Beamforming:

Operating Mode TX Mode	1TX	2TX
IEEE 802.11b	V (Ant. 1)	-
IEEE 802.11g	V (Ant. 1)	-
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 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 5GHz:

Antenna Specification:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	Tenda	N/A	Dipole	N/A	4.84
2	Tenda	N/A	Dipole	N/A	4.84

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=4.84. For power spectral density measurements, $N_{ANT}=2$, $N_{SS} = 1$. So the Directional gain= $G_{ANT} + \text{Array Gain} = G_{ANT} + 10\log(N_{ANT}/N_{SS})\text{dBi} = 4.84 + 10\log(2/1)\text{dBi} = 7.85$. Then, the UNII-1 power spectral density limit is $11 - (7.85 - 6) = 9.15$, the UNII-3 power spectral density limit is $30 - (7.85 - 6) = 28.15$.
- 2) Beamforming Gain: 3dB. So, Directional gain= $3 + 4.84 = 7.84$. Then, the UNII-1 output power limit is $23.98 - (7.84 - 6) = 22.14$, the UNII-3 output power limit is $30 - (7.84 - 6) = 28.16$.
- 3) The antenna gain and beamforming gain are provided by the manufacturer.

Table for Antenna Configuration:

For Non Beamforming:

Operating Mode	TX Mode	1TX	2TX
IEEE 802.11a		V (Ant. 1)	-
IEEE 802.11n(HT20)		-	V (Ant. 1 + Ant. 2)
IEEE 802.11n(HT40)		-	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)
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)

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 802.11ac(VHT20)		V (Ant. 1 + Ant. 2)
IEEE 802.11ac(VHT40)		V (Ant. 1 + Ant. 2)
IEEE 802.11ac(VHT80)		V (Ant. 1 + Ant. 2)
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)

3. TEST RESULTS

For 2.4GHz Non Beamforming:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Average Output Power (dBm)	Max. Average Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
7.24	5.2966	22.55	179.8871	0.18965	1	Complies

For 2.4GHz Beamforming:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Average Output Power (dBm)	Max. Average Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
7.23	5.2845	22.30	169.8244	0.17863	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
7.85	6.0954	24.85	305.4921	0.37064	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
7.84	6.0814	24.62	289.7344	0.35071	1	Complies

For the max simultaneous transmission MPE:

Power Density (S) (mW/cm ²)	Power Density (S) (mW/cm ²)	Total	Limit of Power Density (S) (mW/cm ²)	Test Result
2.4GHz	5GHz			
0.18965	0.37064	0.56029	1	Complies

Note: The calculated distance is 20 cm.

End of Test Report