

# CE RF Exposure Report

**Project No.** : 2207C142  
**Equipment** : AX1800 Wi-Fi 6 5G NR Router  
**Brand Name** : Tenda  
**Test Model** : 5G03  
**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** : Jul. 29, 2022  
**Date of Test** : Aug. 02, 2022 ~ Aug. 31, 2022  
**Issued Date** : Sep. 14, 2022  
**Report Version** : R01  
**Test Sample** : Engineering Sample No.: DG2022072964  
**Standard(s)** : EN 50385:2017  
EN IEC 62311:2020  
EN 62232:2017

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

## BTL Inc.

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**REPORT ISSUED HISTORY**

Report No.	Version	Description	Issued Date	Note
BTL-ETSP-9-2207C142	R00	Original Report.	Sep. 09, 2022	Invalid
BTL-ETSP-9-2207C142	R01	Updated the antenna gain and recalculated test results.	Sep. 14, 2022	Valid

## 1. GENERAL INFORMATION

### 1.1 GENERAL DESCRIPTION OF EUT

Equipment	AX1800 Wi-Fi 6 5G NR Router	
Brand Name	Tenda	
Test Model	5G03	
Series Model	N/A	
Model Difference(s)	N/A	
Power Source	DC Voltage supplied from AC adapter. 1# Model: BN026-A24012E (EU) 2# Model: BN026-A24012B (UK) Only differ in plug.	
Power Rating	I/P: 100-240V~ 50/60Hz 0.7A O/P: 12.0V $\equiv$ 2.0A 24W	
Product Description for WCDMA	Operation Frequency Band	TX: 824 MHz ~ 849 MHz RX: 869 MHz ~ 894 MHz
	Modulation Type	UL: QPSK DL: QPSK; 16QAM
	Power Class	3
	IMEI NO.   Radiated	869263050070535
	Max. Tune Up Power	Band V: 25 dBm
Product Description for LTE	Operation Frequency Bands	LTE Band 5: Uplink: 824-849 MHz, Downlink: 869-894 MHz LTE Band 41: Uplink: 2496-2690MHz, Downlink : 2496-2690 MHz
	Modulation Type	UL: QPSK; 16QAM; 64QAM; 256QAM DL: QPSK; 16QAM; 64QAM; 256QAM
	Power Class	3
	IMEI NO.   Radiated	869263050070535
	Max. Tune Up Power	Band 5/41: 25 dBm

Note:

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

## 2. Channel List:

For WCDMA:

Bands	Sub-test	Channel	Frequency (MHz)	
WCDMA Band V	---	4133	Low	826.6
		4175	Mid	835.0
		4232	High	846.4

For LTE:

Band	Bandwidth	Low Channel	Mid Channel	High Channel	Low Frequency	Mid Frequency	High Frequency
5	1.4	20407	20525	20643	824.7	836.5	848.3
5	3	20415	20525	20635	825.5	836.5	847.5
5	5	20425	20525	20625	826.5	836.5	846.5
5	10	20450	20525	20600	829.0	836.5	844.0

Band	Bandwidth	Low Channel	Mid Channel	High Channel	Low Frequency	Mid Frequency	High Frequency
41	5	39675	40620	41565	2498.5	2593.0	2687.5
41	10	39700	40620	41540	2501.0	2593.0	2685.0
41	15	39725	40620	41515	2503.5	2593.0	2682.5
41	20	39750	40620	41490	2506.0	2593.0	2680.0

## 3. Table for Filed Antenna:

Ant. Model Name	Type	Antenna Brand	Antenna Gain (dBi)	Note
N/A	PCB	N/A	1.50	WCDMA Band V
			1.50	LTE Band 5
			5.45	LTE Band 41

Note: The antenna gain is provided by the manufacturer.

### 3. MAXIMUM PERMISSIBLE EXPOSURE

#### 3.1 Applicable Standard

According to its specifications, the EUT must comply with the requirements of the following standards:

EN 50385 - Product standard to demonstrate the compliance of base station equipment with radiofrequency electromagnetic field exposure limits (110 MHz - 100 GHz), when placed on the market

EN IEC 62311 - Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz to 300 GHz)

EN 62232 - Determination of RF field strength, power density and SAR in the vicinity of radio communication base stations for the purpose of evaluating human exposure

#### 1 LIMIT

Council Recommendation 1999/519/EC Annex III

Reference levels for electric, magnetic and electromagnetic fields (0Hz to 300GHz)

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field ( $\mu\text{ T}$ )	Equivalent plane wave power density Seq ( $\text{W/m}^2$ )
0-1 Hz	-	$3.2 \times 10^4$	$4 \times 10^4$	-
1-8 Hz	10000	$3.2 \times 10^4/f^2$	$4 \times 10^4/f^2$	-
8-25 Hz	10000	$4000/f$	$4000/f$	-
0.025-0.8 KHz	$250/f$	$4/f$	$5/f$	-
0.8-3 KHz	$250/f$	5	6.25	-
3-150 KHz	87	5	6.25	-
0.15-1 MHz	87	$0.73/f$	$0.92/f$	-
1-10 MHz	$87/ f^{1/2}$	$0.73/f$	$0.92/f$	-
10-400 MHz	28	0.073	0.092	2
400-2000 MHz	$1.375 f^{1/2}$	$0.0037 f^{1/2}$	$0.0046 f^{1/2}$	$f/200$
2-300 GHz	61	0.16	0.2	10

## 2 MPE Calculation Method

If a reflecting ground plane is present (e.g. see Figure B.14), use Equation (B.18):

$$S = (1 + |\Gamma|)^2 \frac{\bar{P}_{\text{net}} G_{\theta, \phi}}{4\pi r^2} \quad (\text{B.18})$$

with reflection coefficient  $|\Gamma| = 1$  for the theoretical highest field strength scenario of a perfectly conducting ground plane (e.g. flat metallic roof) or with reflection coefficient  $|\Gamma| = 0,6$  for typical [15] ground reflection conditions. Use of the far-field spherical formulas in the near-field region will overestimate the field strength levels.

$$|\Gamma| = 0.6$$

$$\bar{P}_{\text{net}} = \text{Output Power (W)}$$

$$G_{\theta, \phi} = \text{EUT Antenna gain (Linear ratio)}$$

$$\text{e.i.r.p. (W)} = \bar{P}_{\text{net}} * G_{\theta, \phi}$$

$r=0.30\text{m}$ , as the calculated distance.

**4. TEST RESULTS****For WCDMA:**

Band	Frequency (MHz)	Max. Tune Up Power (dBm)	Max. Tune Up Power (W)	Antenna Gain (dBi)	Antenna Gain (Linear ratio)	Power density (W/m <sup>2</sup> )	Limit (W/m <sup>2</sup> )	Result
Band V	826.6	25	0.3162	1.50	1.4125	1.0116	4.133	Pass

**For LTE:**

Band	Frequency (MHz)	Max. Tune Up Power (dBm)	Max. Tune Up Power (W)	Antenna Gain (dBi)	Antenna Gain (Linear ratio)	Power density (W/m <sup>2</sup> )	Limit (W/m <sup>2</sup> )	Result
Band 5	824.7	25	0.3162	1.50	1.4125	1.0116	4.1235	Pass
Band 41	2557.5	25	0.3162	5.45	3.5075	2.5119	10	Pass

RF exposure assessment has been performed above to prove that this unit will not generate the harmful EM emission above the reference level as specified in EC Council Recommendation (1999/519/EC).

**End of Test Report**