

# FCC RF EXPOSURE REPORT

## FCC ID: V7TAC7V3

**Project No.** : 1911C209  
**Equipment** : AC1200 Smart Dual-Band WiFi Router  
**Brand Name** : Tenda  
**Test Model** : AC7  
**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** : Dec. 05, 2019  
**Date of Test** : Mar. 15, 2020 ~ Apr. 10, 2020  
**Issued Date** : Apr. 29, 2020  
**Report Version** : R00  
**Test Sample** : Engineering Sample No.: DG2019110753  
**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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**REPORT ISSUED HISTORY**

| Report Version | Description    | Issued Date   |
|----------------|----------------|---------------|
| R00            | Original Issue | Apr. 29, 2020 |

## 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

Table for Filed Antenna:

For 2.4GHz

| Ant. | Brand | Model Name | Antenna Type | Connector | Gain (dBi) |
|------|-------|------------|--------------|-----------|------------|
| 1    | N/A   | N/A        | Dipole       | N/A       | 5          |
| 2    | N/A   | N/A        | Dipole       | N/A       | 5          |

Note: This EUT supports CDD, and all antennas have the same gain, so,

- 1) For Non Beamforming, Directional gain= $G_{ANT}$ +Array Gain.

For output power measurements, Array Gain=0 ( $N_{ANT} \leq 4$ ), so the Directional gain=5.

For power spectral density measurements, Array Gain= $10\log(N_{ANT}/N_{SS})$  dB, so the Directional gain= $5+10\log(2/1)=8.01$ . So, the power spectral density limit is  $8-(8.01-6)=5.99$ .

- 2) For Beamforming, Beamforming Gain: 3dB. So the Directional gain= $3+5=8$ . So the output power limit is  $30-(8-6)=28$ .

For 5GHz:

| Ant. | Brand | Model Name | Antenna Type | Connector | Gain (dBi) |
|------|-------|------------|--------------|-----------|------------|
| 1    | N/A   | N/A        | Dipole       | N/A       | 5          |
| 2    | N/A   | N/A        | Dipole       | N/A       | 5          |

Note: This EUT supports CDD, and all antennas have the same gain, so,

- 1) For Non Beamforming, Directional gain= $G_{ANT}$ +Array Gain.

For output power measurements, Array Gain=0 ( $N_{ANT} \leq 4$ ), so the Directional gain=5.

For power spectral density measurements, Array Gain= $10\log(N_{ANT}/N_{SS})$  dB, so the Directional gain= $5+10\log(2/1)=8.01$ . So, the UNII-1 power spectral density limit is  $17-(8.01-6)=14.99$ , the UNII-3 power spectral density limit is  $30-(8.01-6)=27.99$ .

- 2) For Beamforming, Beamforming Gain: 3dB. So the Directional gain= $3+5=8$ . So the output power limit is  $30-(8-6)=28$ .

## Table for Antenna Configuration:

For 2.4GHz:

Non Beamforming:

| Operating Mode / TX Mode | 1TX        | 2TX                 |
|--------------------------|------------|---------------------|
| IEEE 802.11b             | V (Ant. 2) | -                   |
| IEEE 802.11g             | V (Ant. 2) | -                   |
| IEEE 802.11n (HT20)      | -          | V (Ant. 1 + Ant. 2) |
| IEEE 802.11n (HT40)      | -          | 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) |

For 5GHz:

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) |

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) |

## 2. TEST RESULTS

For 2.4GHz Non Beamforming:

| Directional Gain (dBi) | Directional Gain (numeric) | Max. Output Power (dBm) | Max. Output Power (mW) | Power Density (S) (mW/cm <sup>2</sup> ) | Limit of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result |
|------------------------|----------------------------|-------------------------|------------------------|-----------------------------------------|--------------------------------------------------|-------------|
| 5                      | 3.1623                     | 29.93                   | 984.0111               | 0.39640                                 | 1                                                | Complies    |

For 2.4GHz Beamforming:

| Directional Gain (dBi) | Directional Gain (numeric) | Max. Output Power (dBm) | Max. Output Power (mW) | Power Density (S) (mW/cm <sup>2</sup> ) | Limit of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result |
|------------------------|----------------------------|-------------------------|------------------------|-----------------------------------------|--------------------------------------------------|-------------|
| 8                      | 6.3096                     | 27.94                   | 622.3003               | 0.50018                                 | 1                                                | Complies    |

For 5GHz UNII-1 Non Beamforming:

| Directional Gain (dBi) | Directional Gain (numeric) | Max. Output Power (dBm) | Max. Output Power (mW) | Power Density (S) (mW/cm <sup>2</sup> ) | Limit of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result |
|------------------------|----------------------------|-------------------------|------------------------|-----------------------------------------|--------------------------------------------------|-------------|
| 5                      | 3.1623                     | 26.4                    | 436.5158               | 0.17585                                 | 1                                                | Complies    |

For 5GHz UNII-3 Non Beamforming:

| Directional Gain (dBi) | Directional Gain (numeric) | Max. Output Power (dBm) | Max. Output Power (mW) | Power Density (S) (mW/cm <sup>2</sup> ) | Limit of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result |
|------------------------|----------------------------|-------------------------|------------------------|-----------------------------------------|--------------------------------------------------|-------------|
| 5                      | 3.1623                     | 25.79                   | 379.3150               | 0.15280                                 | 1                                                | Complies    |

For 5GHz UNII-1 Beamforming:

| Directional Gain (dBi) | Directional Gain (numeric) | Max. Output Power (dBm) | Max. Output Power (mW) | Power Density (S) (mW/cm <sup>2</sup> ) | Limit of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result |
|------------------------|----------------------------|-------------------------|------------------------|-----------------------------------------|--------------------------------------------------|-------------|
| 8                      | 6.3096                     | 26.43                   | 439.5416               | 0.35329                                 | 1                                                | Complies    |

For 5GHz UNII-3 Beamforming:

| Directional Gain (dBi) | Directional Gain (numeric) | Max. Output Power (dBm) | Max. Output Power (mW) | Power Density (S) (mW/cm <sup>2</sup> ) | Limit of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result |
|------------------------|----------------------------|-------------------------|------------------------|-----------------------------------------|--------------------------------------------------|-------------|
| 8                      | 6.3096                     | 25.78                   | 378.4426               | 0.30418                                 | 1                                                | Complies    |

**For the max simultaneous transmission MPE:**

| Power Density (S) (mW/cm <sup>2</sup> ) | Power Density (S) (mW/cm <sup>2</sup> ) | Total   | Limit of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result |
|-----------------------------------------|-----------------------------------------|---------|--------------------------------------------------|-------------|
| 2.4GHz                                  | 5GHz                                    |         |                                                  |             |
| 0.50018                                 | 0.35329                                 | 0.85347 | 1                                                | Complies    |

Note: The calculated distance is 25 cm.

**End of Test Report**