FCC RF EXPOSURE REPORT

FCC ID: V7TMESH12

Project No.	:	2003C093
Equipment	:	AC2100 Tri-band Whole Home Mesh WiFi System
Brand Name	:	Tenda
Test Model	:	Mesh12
Series Model	:	MW12, MW12a, MW12c, CM12
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	:	Mar. 12, 2020
Date of Test	:	Mar. 19, 2020 ~ Apr. 09, 2020
Issued Date	:	Jun. 28, 2020
Report Version	:	R00
Test Sample	:	Engineering Sample No.: DG2020031237
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	Jun. 28, 2020

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

Table for Filed Antenna:
For 2.4GHz

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	Internal	N/A	3.52
2	N/A	N/A	Internal	N/A	3.52

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=3.52.
   For power spectral density measurements, Array Gain=10log(N_{ANT}/N_{SS}) dB, so the Directional gain=3.52+10log(2/1)=6.53. So, the power spectral density limit is 8-(6.53-6)=7.47.
2) For Beamforming, Beamforming Gain: 3dB. So the Directional gain=3+3.52=6.52. So the output power limit is 30-(6.52-6)=29.48

For 5GHz:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	Internal	N/A	4
2	N/A	N/A	Internal	N/A	4

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=4.
   For power spectral density measurements, Array Gain=10log(N_{ANT}/N_{SS}) dB, so the Directional gain=4+10log(2/1)=7.01. So, the UNII-1 power spectral density limit is 17-(7.01-6)=15.99, the UNII-3 power spectral density limit is 30-(7.01-6)=28.99.
2) For Beamforming, Beamforming Gain: 3dB. So the Directional gain=3+4=7. So the output power limit is 30-(7-6)=29.

Table for Antenna Configuration:
For 2.4GHz:
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)

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^2)	Limit of Power Density (S) (mW/cm^2)	Test Result
3.52	2.2491	29.98	995.4054	0.33694	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^2)	Limit of Power Density (S) (mW/cm^2)	Test Result
6.52	4.4875	26.42	438.5307	0.29618	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^2)	Limit of Power Density (S) (mW/cm^2)	Test Result
4	2.5119	23.9	245.4709	0.09280	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^2)	Limit of Power Density (S) (mW/cm^2)	Test Result
4	2.5119	29.93	984.0111	0.37201	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^2)	Limit of Power Density (S) (mW/cm^2)	Test Result
7	5.0119	23.94	247.7422	0.18688	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^2)	Limit of Power Density (S) (mW/cm^2)	Test Result
7	5.0119	29.37	864.9679	0.65246	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			
0.33694	0.65246	0.9894	1	Complies

Note: The calculated distance is 23 cm.

End of Test Report