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EN 50385:2017

BS EN 50385:2017

ASSESSMENT REPORT

For

SHENZHEN TENDA TECHNOLOGY CO., LTD.

6-8 Floor, Tower E3, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, China. 518052

Tested Model: 4G08

Report Type: Original Report	Product Type: AC1200 Dual-band Wi-Fi 4G+ LTE Router
Report Number:	2402A113224E
Report Date:	2025/2/10
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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	2402A113224E	Original Report	2025/2/10

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product Name:		AC1200 Dual-band Wi-Fi 4G+ LTE Router
EUT Model:		4G08
Adapter 1# Information	Model:	BN073-A12012E
	Input:	100-240Vac 50/60Hz 0.4A
	Output:	DC12V 1A
Adapter 2# Information	Model:	BN073-A12012B
	Input:	100-240Vac 50/60Hz 0.4A
	Output:	DC12V 1A
Rated Input Voltage:		12Vdc from adapter
Serial Number:		2WU8-4
EUT Received Date:		2025/1/2
EUT Received Status:		Good

Objective

This report is prepared on behalf of ***SHENZHEN TENDA TECHNOLOGY CO., LTD.*** in accordance with EN 50385: 2017 and BS EN 50385: 2017 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.

The objective is to determine the compliance of EUT with EN 50385: 2017 and BS EN 50385: 2017.

Test Methodology

All measurements contained in this report were conducted with EN 50385: 2017 and BS EN 50385: 2017.

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China.

Declarations

The information marked ▲ is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

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Each test item follows test standards and with no deviation.

RF EXPOSURE ASSESSMENT METHOD

1. Introduction

This product standard is related to human exposure to radiofrequency electromagnetic fields transmitted by base station equipment in the frequency range 110 MHz to 100 GHz.

The object is to assess the compliance of such equipment with the general public basic restrictions (directly or indirectly via compliance with reference levels) and the workers' exposure limit values (directly or indirectly via compliance with action levels), when it is placed on the market.

2. Limit

2.1 General Public/Uncontrolled Environment Exposure Limits - For the assessment of general public exposure from the product, the relevant limits specified as basic restrictions, in Council Recommendation 1999/519/EC Annex II Table 1, or reference levels, in Council Recommendation 1999/519/EC Annex III Table 2, and the accompanying notes to these tables, shall be applied.

Table 2 **Reference levels for electric, magnetic and electromagnetic fields**

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (μT)	Equivalent plane wave power density S_{eq} (W/m ²)
0-1 Hz	—	$3,2 \times 10^4$	4×10^4	—
1-8 Hz	10 000	$3,2 \times 10^4/f^2$	$4 \times 10^4/f^2$	—
8-25 Hz	10 000	$4\,000/f$	$5\,000/f$	—
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
400-2 000 MHz	$1,375\ f^{1/2}$	$0,0037\ f^{1/2}$	$0,0046\ f^{1/2}$	$f/200$
2-300 GHz	61	0,16	0,20	10

Notes

1. f as indicated in the frequency range column.
2. For frequencies between 100 kHz and 10 GHz, S_{eq} , E^2 , H^2 , and B^2 are to be averaged over any six-minute period.
3. For frequencies exceeding 10 GHz, S_{eq} , E^2 , H^2 , and B^2 are to be averaged over any $68/f^{1.05}$ -minute period (f in GHz).
4. No E-field value is provided for frequencies < 1 Hz, which are effectively static electric fields. For most people the annoying perception of surface electric charges will not occur at field strengths less than 25 kV/m. Spark discharges causing stress or annoyance should be avoided.

(0 Hz to 300 GHz, unperturbed rms values)

2.2 Occupational/Controlled Environment Exposure Limits - For the assessment of worker exposure from the product, the relevant limits specified as exposure limit values, in Directive 2013/35/EU Annex III Tables A.1 and A.3, or action levels in Directive 2013/35/EU Annex III Table B1, and the accompanying notes to these tables, shall be applied.

Table B1

ALs for exposure to electric and magnetic fields from 100 kHz to 300 GHz

Frequency range	Electric field strength ALs(E) [Vm ⁻¹] (RMS)	Magnetic flux density ALs(B) [μT] (RMS)	Power density ALs(S) [Wm ⁻²]
100 kHz ≤ f < 1 MHz	$6,1 \times 10^2$	$2,0 \times 10^6/f$	—
1 ≤ f < 10 MHz	$6,1 \times 10^8/f$	$2,0 \times 10^6/f$	—
10 ≤ f < 400 MHz	61	0,2	—
400 MHz ≤ f < 2 GHz	$3 \times 10^{-3} f^{1/2}$	$1,0 \times 10^{-5} f^{1/2}$	—
2 ≤ f < 6 GHz	$1,4 \times 10^2$	$4,5 \times 10^{-1}$	—
6 ≤ f ≤ 300 GHz	$1,4 \times 10^2$	$4,5 \times 10^{-1}$	50

Note B1-1: f is the frequency expressed in hertz (Hz).

Note B1-2: [ALs(E)]² and [ALs(B)]² are to be averaged over a six-minute period. For RF pulses, the peak power density averaged over the pulse width shall not exceed 1 000 times the respective ALs(S) value. For multi-frequency fields, the analysis shall be based on summation, as explained in the practical guides referred to in Article 14.

Note B1-3: ALs(E) and ALs(B) represent maximum calculated or measured values at the workers' body position. This results in a conservative exposure assessment and automatic compliance with ELVs in all non-uniform exposure conditions. In order to simplify the assessment of compliance with ELVs, carried out in accordance with Article 4, in specific non-uniform conditions, criteria for the spatial averaging of measured fields based on established dosimetry will be laid down in the practical guides referred to in Article 14. In the case of a very localised source within a distance of a few centimetres from the body, compliance with ELVs shall be determined dosimetrically, case by case.

Note B1-4: The power density shall be averaged over any 20 cm² of exposed area. Spatial maximum power densities averaged over 1 cm² should not exceed 20 times the value of 50 Wm⁻². Power densities from 6 to 10 GHz are to be averaged over any six-minute period. Above 10 GHz, the power density shall be averaged over any 68/f^{1,05}-minute period (where f is the frequency in GHz) to compensate for progressively shorter penetration depth as the frequency increases.

3. Classification of the assessment methods

Far Field Calculation Formula

E-Field strength(E_s(E)):

$$E = \frac{\sqrt{30PG(\theta, \phi)}}{r}$$

Where:

P= Tune-up average conducted power

G= antenna gain relative to an isotropic antenna

θ, ϕ = elevation and azimuth angles to point of investigation

r= distance from observation point to the antenna

Power density(E_s(S)):

$$S = \frac{PG_{(\theta, \phi)}}{4\pi r^2}$$

Where:

P = Input Power of the antenna (W)

G = antenna gain relative to an isotropic antenna(numeric)

θ, ϕ = elevation and azimuth angles to point of investigation

r = distance from observation point to the antenna(m)

η_0 = characteristic impedance of free space

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

4. Test Results

WWAN:

RF Mode	Frequency	Tune-up average conducted power		Antenna Gain		Power Density Seq	Seq Limit	Result
	MHz	(dBm)	(W)	(dBi)	(numeric)	(W/m ²)	(W/m ²)	
WCDMA Band 1	1920-1980	25	0.32	1.36	1.37	0.87	9.6	Pass
WCDMA Band 5	824-849	25	0.32	2.13	1.63	1.04	4.12	Pass
WCDMA Band 8	880-915	25	0.32	2.46	1.76	1.12	4.4	Pass
LTE Band 1	1920-1980	25	0.32	1.36	1.37	0.87	9.6	Pass
LTE Band 3	1710-1785	25	0.32	1.57	1.44	0.92	8.55	Pass
LTE Band 5	824-849	25	0.32	2.13	1.63	1.04	4.12	Pass
LTE Band 7	2500-2570	25	0.32	2.68	1.85	1.18	10	Pass
LTE Band 8	880-915	25	0.32	2.46	1.76	1.12	4.4	Pass
LTE Band 20	832-862	25	0.32	2.29	1.69	1.08	4.16	Pass
LTE Band 28	703-748	25	0.32	3.6	2.29	1.46	3.52	Pass
LTE Band 38	2570-2620	25	0.32	2.04	1.6	1.02	10	Pass
LTE Band 40	2300-2400	25	0.32	1.5	1.41	0.9	10	Pass
LTE Band 41	2496-2690	25	0.32	2.3	1.7	1.08	10	Pass

WLAN:

Mode	Frequency	Tune-up average power (EIRP)		Power Density Seq	Seq Limit	Result
	MHz	(dBm)	(W)	(W/m ²)	(W/m ²)	
WiFi 2.4G	2412-2472	20	0.1	0.2	10	Pass
WiFi 5.2G	5180-5240	23	0.2	0.4	10	Pass

Note: The distance from observation point to the antenna is 20cm.

The EUT have two type RF transmitters, WWAN(3/4G), WLAN(WiFi), the simultaneously transmit should be as below:

$$\text{Sum}_{\text{Seq}} = \text{Seq}_{\text{WWAN}} / \text{Seq}_{\text{Limit}} + \text{Seq}_{\text{WLAN}} / \text{Seq}_{\text{Limit}} = 0.45 < 1$$

So $\text{Sum}_{\text{Seq}} < 1$.

Conclusion: Compliant

EXHIBIT A - EUT PHOTOGRAPHS

For photos in this section, please refer to report No.: 2402A113224E-02 EXHIBIT A.

*******END OF REPORT*******