



TEST REPORT

Verified code: 837907

Report No.:	E202002244903-6	Application No.:	E202002244903
Client:	Winstars Technology Limited		
Address:	1-5F, NO.5, Taisong Industrial Zone, Dalang Community, Dalang Street, Longhua District, Shenzhen China		
Sample Description:	Wireless AC750 Dual-Band Range Extender		
Model:	WS-WN576A2		
Serial Model NO.:	WL-WN576A2, SWV 733 B3 (IAN: 324886)		
Test Location:	Guangzhou GRG Metrology & Test Co., Ltd.		
Test Specification:	EN 50665:2017		
Issue Date:	2020/05/26		
Test Result:	Pass		
Prepared By: Test Engineer Wu Haoming	Reviewed By: Technical Manager Wu Chengrong	Approved By: Manager Zhu Yan	
Other Aspects:			
Note: /			
Abbreviations: ok / P = passed; fail / F = failed; n.a. / N = not applicable;			
The test result in this test report refers exclusively to the presented test sample. This report shall not be reproduced except in full, without the written approval of GRGT.			



DIRECTIONS OF TEST

1. This company carries out test task according to the national regulation of verifications which can be traced to National Primary Standards and BIPM.
2. The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test result without the written permission of the test laboratory.
3. If there is any objection concerning the test, the client should inform the laboratory within 15 days from the date of receiving the test report.

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1. GENERAL DESCRIPTION OF EUT

1.1 Applicant

Name: Winstars Technology Limited
Address: 1-5F, NO.5, Taisong Industrial Zone, Dalang Community, Dalang Street, Longhua District, Shenzhen, China

1.2 Manufacturer

Name: Winstars Technology Limited
Address: 1-5F, NO.5, Taisong Industrial Zone, Dalang Community, Dalang Street, Longhua District, Shenzhen, China

1.4 BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Equipment: Wireless AC750 Dual-Band Range Extender
Model: WS-WN576A2
Adding Model: WL-WN576A2, SWV 733 B3 (IAN: 324886)
Trade Name: /
Power Supply: AC 100-240V;50/60Hz;0.3A
Frequency Range: **2.4GHz:**
2412MHz~2472MHz: 802.11b; 802.11g; 802.11n(HT20)
2422MHz~2462MHz: 802.11n(HT40);
5GHz:
5150 ~ 5350 MHz / 5470 ~ 5725 MHz: 802.11a, 802.11n HT20
5150 ~ 5350 MHz / 5470 ~ 5725 MHz: 802.11n HT40
5150 ~ 5350 MHz / 5470 ~ 5725 MHz: 802.11ac 80:
Antenna Type: PCB
Antenna Gain: 3dBi
Note: /

2. LABORATORY AND ACCREDITATIONS

2.1 LABORATORY

The tests and measurements refer to this report were performed by Shenzhen EMC Laboratory of Guangzhou GRG Metrology & Test Co., Ltd.

Add : No.1301 Guangguang Road Xinlan Community, Guanlan Street, Longhua District Shenzhen, 518110, People's Republic of China

P.C. : 518000

Tel : 0755-61180008

Fax : 0755-61180008

2.2 ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies.

A2LA	Certificate Number 2861.01
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2.3 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Uncertainty
RF frequency	$\pm 8.6 \times 10^{-7}$
RF power conducted	± 1.5 dB
Occupied channel bandwidth	± 1.4 %
Unwanted emission, conducted	± 0.5 dB
Humidity	± 5 %
Temperature	± 1 °C

Measurement		Frequency	Uncertainty
Radiated Emission	Horizontal	30MHz~1000MHz	4.8dB
		1GHz~12.75GHz	5.8dB
	Vertical	30MHz~1000MHz	4.8dB
		1GHz~12.75GHz	5.9dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

3. Technical Requirements Specification in EN 50665

3.1 General Description of Applied Standards

EN 50665 Generic standard for assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz) is to demonstrate the compliance of apparatus with the basic restrictions or reference levels on exposure of the general public related to electric, magnetic, electromagnetic fields as well as induced and contact current.

3.2 RF Exposure Evaluation

3.2.1 LIMIT:

According to EN 62311, If the average power emitted by the base station is less than or equal to 20 mW then the base station is deemed to comply without testing.

If the average power emitted by the base station is less than or equal to 20 mW then the base station is deemed to comply without testing.

If the average power emitted by the base station is more than 20 mW, then E, H or SAR calculations and/or measurements shall be performed according to Clause 4. The results of calculations and/or measurements shall be compared directly to the limits.

The product is deemed to fulfil the requirements of this standard if the calculated and/or measured

values are less than or equal to the limits.

NOTE In the setting of basic restrictions and the derived reference levels, safety factors have been taken into account. In the specification of the assessment method, uncertainty has been constrained. This is the reason for not requiring that the measured values shall be compared to the limit reduced by the measurement uncertainty.

Test conclusion:

MPE calculate procedure:

According to the formula
$$S = \frac{PG}{4\pi R^2}$$

Where: S = power density (in appropriate units, e.g. mW/cm²)

P = power input to the antenna (in appropriate units, e.g., mW)

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 (appropriate units, e.g., cm)

And the limit of table 2 of Council Recommendation 1999/519/EC

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

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	$1,375 \cdot f^{1/2}$	$0,0037 \cdot f^{1/2}$	$0,0046 \cdot f^{1/2}$	$f/200$
2-300 GHz	61	0,16	0,20	10

Notes:

1. f as indicated in the frequency range column.

Now the EUT frequency range in 2400-2483.5MHz,5150MHz-5725MHz,5745MHz-5825MHz, so the limit S for it are 10W/m^2 .

For 2.4G WIFI, the antenna port of EUT Max output power are 18.29dBm (67.5mW), the antenna gain is generally as 3dBi in the actual use. 3dB logarithmic terms convert to numeric result is nearly 2.

For 5G WIFI, the antenna port of EUT Max output power are 20.68dBm (116.9mW), the antenna gain is generally as 3dBi in the actual use. 3dB logarithmic terms convert to numeric result is nearly 2.

So the

$$R = \sqrt{\frac{P_1 G_1}{4\pi S}} + \sqrt{\frac{P_2 G_2}{4\pi S}} = \sqrt{\frac{67.5 \times 2}{4 \times 3.14 \times 10000}} + \sqrt{\frac{116.9 \times 2}{4 \times 3.14 \times 10000}} = 0.043 \text{ m},$$

So the recommend use distance for EUT external antenna is larger than 0.043 meter.

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