

TEST REPORT

Reference No. : WTD22D09190663W003
FCC ID : NZ3-WN0003
Applicant..... : Winstars Technology Limited
Address..... : Block 4, Taisong Industrial Park, Dalang Street, Longhua Town,
Bao'an District, Shenzhen, China
Manufacturer : Winstars Technology Limited
Address..... : Block 4, Taisong Industrial Park, Dalang Street, Longhua Town,
Bao'an District, Shenzhen, China
Product..... : High Power Wireless Repeater
Model(s) : WN572HP3, WN572HG3, WN570HA1, WN570HN2, WING 12M,
AERIAL HD2
Standards..... : 47CFR FCC Part 2 Subpart J Section 2.1091
Date of Receipt sample : 2022-09-21
Date of Test..... : 2022-09-21 to 2022-10-19
Date of Issue..... : 2022-11-11
Test Result..... : **Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

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3. Revision History

Test Report No.	Date of Receipt Sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTD22D09190663W003	2022-09-21	2022-09-21 to 2022-10-19	2022-11-11	Original	-	Valid

4. General Information

4.1. General Description of E.U.T.

Product:	High Power Wireless Repeater
Model(s):	WN572HP3, WN572HG3, WN570HA1, WN570HN2, WING 12M, AERIAL HD2
Model Description:	The models are same in all respects. Only the model names are different for different market requirement.
Wi-Fi Specification:	2.4G-802.11b/g/n HT20/n HT40 5G-802.11a/n(HT20/40)/ac(VHT20/40/80)
Hardware Version:	WS-WN572HP3-A1
Software Version:	M72HP3_V210414

4.2. Details of E.U.T.

Operation Frequency:	2.4G Wi-Fi: 802.11b/g/n (HT20), 2412-2462MHz 11CH 802.11n (HT40), 2422-2452MHz 7CH 5G Wi-Fi: U-NII-1 802.11a/n(HT20)/ac(VHT20), 5180-5240MHz 4CH 802.11n(HT40)/ac(VHT40), 5190-5230MHz 2CH 802.11ac(VHT80), 5210MHz 1CH U-NII-3 802.11a/n(HT20)/ac(VHT20), 5745-5825MHz 5CH 802.11n(HT40)/ac(VHT40), 5755-5795MHz 2CH 802.11ac(VHT80), 5775MHz 1CH
Max. conducted RF power:	2.4G Wi-Fi: Ant. 1 11.38dBm, Ant.2 10.80dBm, Total: 14.00dBm Max. 5G Wi-Fi: U-NII-1: Ant. 1 9.12dBm, Ant.2 9.12dBm, Total: 12.13dBm Max. U-NII-3: Ant. 1 13.20dBm, Ant.2 13.30dBm, Total: 16.22dBm Max.
Modulation Technology:	Wi-Fi: 802.11b: DBPSK, DQPSK, CCK 802.11a/g: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Antenna installation:	External antenna with RP-SMA connector
Antenna Gain:	2.4G Wi-Fi: Max. peak 4.62dBi, 5G Wi-Fi: U-NII-1: Max. peak 4.69dBi, U-NII-3: Max. peak 4.82dBi
Ratings:	DC24V 0.6A 14.4W
Adapter:	Manufacturer: PANFORE Model No.: PS240W0600U Input: 100-240V~, 50/60Hz, 0.5A Max Output: 24.0V  0.6A 14.4W

4.3. Test Facility

The test facility has a test site registered with the following organizations:

ISED CAB identifier: CN0013. Test Firm Registration No.: 7760A.

Waltek Testing Group Co., Ltd. Has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files.

Registration number 7760A, October 15, 2016.

FCC Designation No.: CN1201. Test Firm Registration No.: 523476.

Waltek Testing Group Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration number 523476, September 10, 2019.

4.4. Subcontracted

Whether parts of tests for the product have been subcontracted to other labs:

☐ Yes ☒ No

If Yes, list the related test items and lab information:

Test Lab: N/A

Lab address: N/A

Test items: N/A

4.5. Abnormalities from Standard Conditions

None.

5. Test Summary

Test Items	Test Requirement	Result
Maximum Permissible Exposure (Exposure of Humans to RF Fields)	FCC Part 2.1091	PASS

6. RF Exposure

Test Requirement: 47CFR FCC Part 2 Subpart J Section 2.1091
 Evaluation Method: 47CFR FCC Part 1 Subpart I Section 1.1307
 47CFR FCC Part 1 Subpart I Section 1.1310,
 KDB 447498 D04 General RF Exposure Guidance v06

6.1. Requirements

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device.

6.2. Simultaneous transmissions Exemption Thresholds

47CFR Part 1.1307 determination of exemption, details three options to determine exemption from routine evaluation.

Option A

1.1307(b)(3)(i)(A): Available maximum time-averaged power is no more than 1 mW

Limitation—when there are simultaneously operating transmitters this exclusion only applies when ALL simultaneously operating transmitters meet this exemption.

Option B

1.1307(b)(3)(i)(B): Device operates between 300 MHz and 6 GHz and the maximum time-averaged power or effective radiated power (ERP), whichever is greater, $\leq P_{th}$.

P_{th} is calculated based on separation distance d cm from transmitter to person for the device operating at f GHz.

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

Where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

d = the separation distance (cm);

Option C

1.1307(b)(3)(i)(C): ERP is below a threshold calculated based on the distance R between the person and the antenna / radiating structure, where $R > \lambda / 2 \pi$.

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	$1,920 R^2$.
1.34-30	$3,450 R^2/f^2$.
30-300	$3.83 R^2$.
300-1,500	$0.0128 R^{2f}$.
1,500-100,000	$19.2R^2$.
Note: R in meters, f in MHz	

According to 47CFR 1.1307(b)(3)(ii), the calculation formula is as follow:

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure Limit_k} \leq 1$$

6.3. Radiofrequency Radiation Exposure Evaluation

Option B is applicable.

Single Source Transmissions

Description	Frequency GHz	Conducted Power dBm	Gain dBi	Tune-up	ERP mW	ERP _{th} mW	Ratio
2.4G Wi-Fi (Ant. 1) 802.11n HT20 TX	2.4620	11.17	4.62	±1.0	29.12	3060	0.00952
2.4G Wi-Fi (Ant. 2) 802.11n HT20 TX	2.4620	10.80	4.62	±1.0	26.74	3060	0.00874
5G Wi-Fi (Ant. 1) U-NII-1 802.11n HT40 TX	5.2400	9.12	4.69	±1.0	18.46	3060	0.00603
5G Wi-Fi (Ant. 2) U-NII-1 802.11n HT40 TX	5.2400	9.12	4.69	±1.0	18.46	3060	0.00603
5G Wi-Fi (Ant. 1) U-NII-3 802.11ac VHT20 TX	5.2400	13.20	4.82	±1.0	48.66	3060	0.01590
5G Wi-Fi (Ant. 2) U-NII-3 802.11ac VHT20 TX	5.2400	13.22	4.82	±1.0	48.88	3060	0.01597

Simultaneous Transmissions

Description	Calculation	Limit
2.4G Wi-Fi (Ant. 1 + Ant. 2) + 5G Wi-Fi (Ant. 1 + Ant. 2)	0.05013	≤1.0

Note:

1. For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band.
2. Chose the maximum power to do MPE analysis.
3. 2.4G Wi-Fi and 5G Wi-Fi can transmit simultaneously.

Conclusion:

RF Exposure is FCC compliant.

=====End of Report=====