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RF Exposure Evaluation Report

Report No.: CQASZ20240400712E-03
Applicant: Winstars Technology Limited
Address of Applicant: 1-5F, NO.5, Taisong Industrial Zone, Dalang Community, Dalang Street, Longhua District, Shenzhen, China
Equipment Under Test (EUT):
EUT Name: Wireless AP/Repeater
Model No.: WS-WN573HX3, WL-WN573HX3, WS-WN573HX1, WL-WN573HX1, AERIAL HD6, AERIAL HD9
Test Model No.: WS-WN573HX3
Brand Name: N/A
FCC ID: NZ3-WN0007
Standards: 47 CFR Part 1.1307
47 CFR Part 1.1310
447498 D04 Interim General RF Exposure Guidance v01
Date of Receipt: 2024-04-25
Date of Test: 2024-04-25 to 2024-05-29
Date of Issue: 2024-06-18
Test Result: **PASS***

*In the configuration tested, the EUT complied with the standards specified above

Tested By: Lewis Zhou
(Lewis Zhou)

Reviewed By: Timo Lei
(Timo Lei)

Approved By: Alex
(Alex Wang)



The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CQA, this report can't be reproduced except in full.

1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20240400712E-03	Rev.01	Initial report	2024-06-18

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3 General Information

3.1 Client Information

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

3.2 General Description of EUT

Product Name:	Wireless AP/Repeater
Model No.:	WS-WN573HX3, WL-WN573HX3, WS-WN573HX1, WL-WN573HX1, AERIAL HD6, AERIAL HD9
Test Model No.:	WS-WN573HX3
Trade Mark:	N/A
Software Version:	M73HX3_V240229
Hardware Version:	WS-WN573HX3-A
EUT Power Supply:	Power supply POE

3.3 General Description of 2.4G WIFI Classic

Operation Frequency:	2412MHz~2462MHz
Type of Modulation:	802.11b: DSSS(CCK/QPSK/BPSK) 802.11g: OFDM(BPSK/QPSK/16QAM/64QAM) 802.11n (HT20)(HT40): OFDM (64QAM, 16QAM, QPSK, BPSK) 802.11ax(HT20)(HT40) :OFDMA(1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK)
Number of Channel:	2.4GHz: Wi-Fi: 802.11b/g/n(HT20)/ax(HE20): 2412MHz~2462MHz; 802.11n(HT40)/ax(HE40): 2422MHz~2452MHz
Channel Separation:	5MHz
Transfer Rate:	802.11b: 1M/2M/5.5M/11M bps 802.11g: 6M/9M/12M/18M/24M/36M/48M/54M bps 802.11n(HT20)(HT40): 7.2M/14.4M/21.7M/28.9M/43.3M/57.8M/65M/72.2M bps 802.11ax(HT20)(HT40): 8.6M/17.2M/25.8M/34.4M/51.6M/68.8M/77.4M/86M/103.2M/114.7M/129M/143.4Mbps
Sample Type:	☒ Mobile ☐ Portable
Antenna Type:	External antenna

Antenna Gain:	Ant1:8.05dBi Ant2:8.05dBi Ant1+Ant2:11.06dBi
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3.4 General Description of 5G WIFI Classic

Operation Frequency:	5150MHz ~5250 MHz
Type of Modulation:	IEEE for 802.11ax: OFDMA(1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11a/n/ac: OFDM(256QAM, 64QAM, 16QAM, QPSK, BPSK)
Number of Channel:	IEEE 802.11a/n/ac/ax(20M): 5150MHz ~5250MHz/ 4 channel IEEE 802.11n/ac/ax(40M): 5150MHz ~5250MHz/ 2 channel IEEE 802.11ac/ax(80M): 5150MHz ~5250MHz/ 1 channel IEEE 802.11a/n/ac/ax(20M): 5725MHz ~5850MHz/ 5 channel IEEE 802.11n/ac/ax(40M): 5725MHz ~5850MHz/ 2 channel IEEE 802.11ac/ax(80M): 5725MHz ~5850MHz/ 1 channel
Channel Separation:	5MHz
Operation Frequency:	IEEE 802.11a/n/ac/ax(20M): 5150MHz ~5250 MHz IEEE802.11n/ac/ax(40M): 5150MHz ~5250 MHz IEEE802.11ac/ax(80M): 5150MHz ~5250 MHz IEEE 802.11a/n/ac/ax(20M): 5725MHz ~5850 MHz IEEE802.11n/ac/ax(40M): 5725MHz ~5850 MHz IEEE802.11ac/ax(80M): 5725MHz ~5850 MHz
Sample Type:	☒ Mobile ☐ Portable
Antenna Type:	External antenna
Antenna Gain:	Ant1:6.7dBi@5GHz: Wi-Fi: U-NII-1, 6.71dBi@5GHz: Wi-Fi: U-NII-3 Ant2:6.7dBi@5GHz: Wi-Fi: U-NII-1, 6.71dBi@5GHz: Wi-Fi: U-NII-3 Ant1+Ant2: 9.71dBi@5GHz: Wi-Fi: U-NII-1, 9.72dBi@5GHz: Wi-Fi: U-NII-3

Note:

The above parameters will directly affect the test results. The information is provided by the applicant.

4 MPE Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 Limits

The table applies to any RF source (i.e., single fixed, mobile, and portable transmitters) and specifies power and distance criteria for each of the five frequency ranges used for the MPE limits. These criteria apply at separation distances from any part of the radiating structure of at least $\lambda/2\pi$. The thresholds are based on the general population MPE limits with a single perfect reflection, outside of the reactive near-field, and in the main beam of the radiator. For mobile devices that are not exempt per Table B.1 [Table 1 of § 1.1307(b)(1)(i)(C)] at distances from 20 cm to 40 cm and in 0.3 GHz to 6 GHz, evaluation of compliance with the exposure limits in § 1.1310 is necessary if the ERP of the device is greater than ERP_{20cm} in Formula (B.1) [repeated from § 2.1091(c)(1) and § 1.1307(b)(1)(i)(B)].

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

If the ERP is not easily obtained, then the available maximum time-averaged power may be used (i.e., without consideration of ERP only if the physical dimensions of the radiating structure(s) do not exceed the electrical length of $\lambda/4$ or if the antenna gain is less than that of a half-wave Dipole.

SAR-based exemptions are constant at separation distances between 20 cm and 40 cm to avoid discontinuities in the threshold when transitioning between SAR-based and MPE-based exemption criteria at 40 cm, considering the importance of reflections.

4.1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

4.1.3 EUT RF Exposure

1) For 2.4G WIFI Classic

Measurement Data

ANT1

11B mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(2412MHz)	14.75	12.60	12.5±1	13.5	22.39
Middle(2437MHz)	13.73	11.58	11.5±1	12.5	17.78
Highest(2462MHz)	13.90	11.75	11.5±1	12.5	17.78
11G mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(2412MHz)	13.84	11.69	11.5±1	12.5	17.78
Middle(2437MHz)	12.65	10.50	10.5±1	11.5	14.13
Highest(2462MHz)	12.73	10.58	10.5±1	11.5	14.13
11N20 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(2412MHz)	13.3	11.15	11.0±1	12	15.85
Middle(2437MHz)	12.07	9.92	10.0±1	11	12.59
Highest(2462MHz)	12.15	10	10.0±1	11	12.59
11N40 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(2422MHz)	11.46	9.31	9.5±1	10.5	11.22
Middle(2437MHz)	11.4	9.25	9.5±1	10.5	11.22
Highest(2452MHz)	11.15	9	9.0±1	10	10.00
11AX20 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(2412MHz)	13.02	10.87	11.0±1	12	15.85
Middle(2437MHz)	11.71	9.56	9.5±1	10.5	11.22
Highest(2462MHz)	11.67	9.52	9.5±1	10.5	11.22
11AX40 mode					

Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(2422MHz)	11.60	9.45	9.5±1	10.5	11.22
Middle(2437MHz)	11.44	9.29	9.5±1	10.5	11.22
Highest(2452MHz)	10.25	8.1	8.0±1	9	7.94

ANT2

11B mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(2412MHz)	15.45	13.30	13.5±1	14.5	28.18
Middle(2437MHz)	14.21	12.06	12.0±1	13	19.95
Highest(2462MHz)	14.18	12.03	12.0±1	13	19.95
11G mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(2412MHz)	14.26	12.11	12.0±1	13	19.95
Middle(2437MHz)	12.89	10.74	10.5±1	11.5	14.13
Highest(2462MHz)	12.99	10.84	10.5±1	11.5	14.13
11N20 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(2412MHz)	13.94	11.79	11.5±1	12.5	17.78
Middle(2437MHz)	12.9	10.75	10.5±1	11.5	14.13
Highest(2462MHz)	12.95	10.8	10.5±1	11.5	14.13
11N40 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(2422MHz)	11.7	9.55	9.5±1	10.5	11.22
Middle(2437MHz)	11.61	9.46	9.5±1	10.5	11.22
Highest(2452MHz)	11.41	9.26	9.5±1	10.5	11.22
11AX20 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(2412MHz)	13.32	11.17	11.0±1	12	15.85
Middle(2437MHz)	12.12	9.97	10.0±1	11	12.59
Highest(2462MHz)	12.24	10.09	10.0±1	11	12.59
11AX40 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(2422MHz)	11.86	9.71	10.0±1	11	12.59

Middle(2437MHz)	11.82	9.67	9.5±1	10.5	11.22
Highest(2452MHz)	11.41	9.26	9.5±1	10.5	11.22

ANT1+ANT2

11N20 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(2412MHz)	19.65	17.50	17.5±1	18.5	70.79
Middle(2437MHz)	18.53	16.38	16.5±1	17.5	56.23
Highest(2462MHz)	18.59	16.44	16.5±1	17.5	56.23
11N40 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(2422MHz)	17.60	15.45	15.5±1	16.5	44.67
Middle(2437MHz)	17.53	15.38	15.5±1	16.5	44.67
Highest(2452MHz)	17.3	15.15	15.0±1	16	39.81
11AX20 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(2412MHz)	19.19	17.04	17.0±1	18	63.10
Middle(2437MHz)	17.94	15.79	15.5±1	16.5	44.67
Highest(2462MHz)	17.98	15.83	15.5±1	16.5	44.67
11AX40 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(2422MHz)	17.75	15.6	15.5±1	16.5	44.67
Middle(2437MHz)	17.65	15.5	15.5±1	16.5	44.67
Highest(2452MHz)	16.89	14.74	14.5±1	15.5	35.48

The ERP of this product is less than 3060mW

Note: 1) Refer to report No. CQASZ20240400712E-01 for EUT test Max Conducted AV Output Power value.
2) EUT's module is more than 20cm away from the human body.

2) For 5G WIFI Classic

Measurement Data

11A mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(5180MHz)	10.21	8.06	8.0±1	9	7.94
Middle(5200MHz)	9.76	7.61	7.5±1	8.5	7.08
Highest(5240MHz)	10.55	8.40	8.5±1	9.5	8.91
11N20 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(5180MHz)	9.09	6.94	7.0±1	8	6.31
Middle(5200MHz)	8.64	6.49	7.0±1	8	6.31
Highest(5240MHz)	9.19	7.04	7.0±1	8	6.31
11N40 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(5190MHz)	9.3	7.15	7.0±1	8	6.31
Highest(5230MHz)	9.84	7.69	7.5±1	8.5	7.08
11AC20 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(5180MHz)	10.5	8.35	8.5±1	9.5	8.91
Middle(5200MHz)	10.08	7.93	8.0±1	9	7.94
Highest(5240MHz)	10.4	8.25	8.5±1	9.5	8.91
11AC40 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(5190MHz)	10.04	7.89	8.0±1	9	7.94
Highest(5230MHz)	10.20	8.05	8.0±1	9	7.94

11AC80 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Middle(5210MHz)	9.74	7.59	7.5±1	8.5	7.08
11AX20 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(5180MHz)	10.56	8.41	8.5±1	9.5	8.91
Middle(5200MHz)	9.98	7.83	8.0±1	9	7.94
Highest(5240MHz)	10.56	8.41	8.5±1	9.5	8.91
11AX40 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(5190MHz)	10.53	8.38	8.5±1	9.5	8.91
Highest(5230MHz)	10.66	8.51	8.5±1	9.5	8.91
11AX80 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Middle(5210MHz)	10.02	7.87	8.0±1	9	7.94

11A mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(5745MHz)	12.89	10.74	10.5±1	11.5	14.13
Middle(5785MHz)	12.58	10.43	10.5±1	11.5	14.13
Highest(5825MHz)	12.20	10.05	10.0±1	11	12.59
11N20 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(5745MHz)	10.85	8.70	8.5±1	9.5	8.91
Middle(5785MHz)	11.18	9.03	9.0±1	10	10
Highest(5825MHz)	12.56	10.41	10.5±1	11.5	14.13
11N40 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(5755MHz)	12.17	10.02	10.0±1	11	12.59
Highest(5795MHz)	11.9	9.75	10.0±1	11	12.59
11AC20 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(5745MHz)	12.4	10.25	10.5±1	11.5	14.13
Middle(5785MHz)	12.12	9.97	10.0±1	11	12.59
Highest(5825MHz)	13.45	11.3	11.5±1	12.5	17.78
11AC40 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(5755MHz)	12.87	10.72	10.5±1	11.5	14.13
Highest(5795MHz)	12.56	10.41	10.5±1	11.5	14.13

11AC80 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Middle(5775MHz)	12.27	10.12	10.0±1	11	12.59
11AX20 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(5745MHz)	14.47	12.32	12.5±1	13.5	22.39
Middle(5785MHz)	14.17	12.02	12.0±1	13	19.95
Highest(5825MHz)	15.37	13.22	13.0±1	14	25.12
11AX40 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(5755MHz)	14.88	12.73	12.5±1	13.5	22.39
Highest(5795MHz)	14.66	12.51	12.5±1	13.5	22.39
11AX80 mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Middle(5775MHz)	14.37	12.22	12.5±1	13.5	22.39

The ERP of this product is less than 3060mW

Note: 1) Refer to report No. CQASZ20240400712E-02 for EUT test Max Conducted AV Output Power value.
2) EUT's module is more than 20cm away from the human body.

*** END OF REPORT ***