

Radio Exposure Evaluation Report

FCC ID : TKZAW7615NP1

Equipment : WiFi5 11ac 4T4R module 1700Mbps

Brand Name : AsiaRF Co., Ltd.

Model Name : AW7615-NP1

Applicant : AsiaRF Co., Ltd.
1F, 7, Houde Street, Yonghe Dist. New Taipei City
Taiwan 23455

Manufacturer : AsiaRF Co., Ltd.
1F, 7, Houde Street, Yonghe Dist. New Taipei City
Taiwan 23455

Standard : 47 CFR FCC Part 2 Subpart J, section 2.1091

The product was received on Jul. 21, 2021, and testing was started from Aug. 02, 2021 and completed on Nov. 03, 2021. We, SPORTON INTERNATIONAL INC. Hsinhua Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in 47 CFR FCC Part 2 Subpart J, section 2.1091 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. Hsinhua Laboratory, the test report shall not be reproduced except in full.



Approved by: Allen Lin

SPORTON INTERNATIONAL INC. Hsinhua Laboratory
No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.)



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Photographs of EUT V01

History of this test report

[illegible]



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
2	-	Exposure evaluation	PASS	-

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

None

Reviewed by: Sam Tsai

Report Producer: Debby Hung

1 General Description

1.1 Information

1.1.1 EUT General Information

RF General Information			
Evaluation Mode	Frequency Range (MHz)	Operating Frequency (MHz)	Modulation Type
2.4GHz WLAN	2400-2483.5	2412-2462	802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) VHT: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
5GHz WLAN	5150-5250 5725-5850	5180-5240 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)

1.1.2 Antenna Information

Group	Ant.	Brand	Model Name	Antenna Type	Connector	Support
Group 1	1-4	Asiarf	ANT010-DAU	PCB	I-Pex	2.4G+5G
Group 2	5-8	Asiarf	A245005N	PCB	I-Pex	2.4G+5G
Group 3	9-12	Asiarf	A2405N	PCB	I-Pex	2.4G
Group 4	13-16	Asiarf	A5005N	PCB	I-Pex	5G
Group 5	17-20	Asiarf	A245004	Dipole	I-Pex	2.4G+5G
Group 6	21-24	Asiarf	A245002	Dipole	I-Pex	2.4G+5G

Group	Ant.	Gain (dBi)	
		2.4G	5G
Group 1	1-4	5.2	5.5
Group 2	5-8	4.0	5.1
Group 3	9-12	5.2	-
Group 4	13-16	-	5
Group 5	17-20	4.0	5.1
Group 6	21-24	2.0	2.0

Note 1: EUT can match with above antennas for using. Higher gain in each type of antenna was used to perform the worst configuration and result of that was recorded as the final test result.

For 2.4GHz function:

For IEEE 802.11 b/g/n/VHT mode (4TX/4RX)

Group 1 , Group 2 , Group 3 , Group 5 or Group 6 could transmit/receive .

**For 5GHz function:**

For IEEE 802.11 a/n/ac mode (4TX/4RX)

Group 1 , Group 2 , Group 4 , Group 5 or Group 6 could transmit/receive .

1.2 Testing Location

Test Lab. : Sporton International Inc. Hsinhua Laboratory		
☒	Hsinhua (TAF: 3785)	ADD: No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.) TEL: 886-3-327-3456 FAX: 886-3-327-0973
Test site Designation No. TW3785 with FCC.		
☐	Wen 33rd.St. (TAF: 3785)	ADD: No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: 886-3-318-0787 FAX: 886-3-318-0287
Test site Designation No. TW0008 with FCC.		

2 Maximum Permissible Exposure

2.1 Limit of Maximum Permissible Exposure

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f ²)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	F/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	F/1500	30
1500-100,000	-	-	1.0	30

Note: f = frequency in MHz ; *Plane-wave equivalent power density

2.2 MPE Calculation Method

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric field (V/m)

P = RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

2.3 Calculated Result and Limit

Wi-Fi 2.4G Function

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)
2.4G;G1D	5.20	23.80	29.00	0.50	29.50	0.89125	20	0.17731	1.00000
2.4G;D1D	5.20	25.49	30.69	0.50	31.19	1.31522	20	0.26165	1.00000
2.4G;D1D-BF	11.22	19.47	30.69	0.50	31.19	1.31522	20	0.26165	1.00000

Wi-Fi 5G Function

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)
5.2G;D1D	5.50	20.70	26.20	0.50	26.70	0.46774	20	0.09305	1.00000
5.8G;D1D	5.50	22.64	28.14	0.50	28.64	0.73114	20	0.14546	1.00000
5.2G;D1D-BF	11.52	14.68	26.20	0.50	26.70	0.46774	20	0.09305	1.00000
5.8G;D1D-BF	11.52	16.62	28.14	0.50	28.64	0.73114	20	0.14546	1.00000

————THE END————