



RADIO EXPOSURE TEST REPORT

FCC ID : RRK-W1700A3
Equipment : Wi-Fi 7 Router
Brand Name : Quantum Fiber from AT&T / Lumen
Model Name : W1700A
Applicant : Alpha Networks Inc.
No.8 Li-Hsin 7th Rd., Hsinchu Science Park,
Hsinchu 300094. Taiwan, R.O.C.
Standard : 47 CFR Part 2.1091

The product was received on Feb. 04, 2026, and testing was started from Feb. 04, 2026 and completed on May 19, 2026. We, Sporton International Inc. Hsinchu Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in 47 CFR Part 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. Hsinchu Laboratory, the test report shall not be reproduced except in full.

Approved by: Sam Chen

Sporton International Inc. Hsinchu Laboratory

No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)



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Photographs of EUT v01



History of this test report

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB-A1_1 Ver1.1

Page Number : 3 of 10
Issued Date : Jul. 20, 2026
Report Version : 02



Summary of Test Result

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

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacture who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the chapter "Measurement Uncertainty".

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Sam Chen

Report Producer: Muse Chan

1 General Description

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, 1024QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM) 802.11be: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 4096QAM)
5GHz WLAN	5150-5250 5250-5350 5470-5725 5725-5850	5180-5250 5250-5320 5500-5720 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM) 802.11be: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 4096QAM)
6GHz WLAN	5925-7125	5955-7115	802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM) 802.11be: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 4096QAM)
Bluetooth	2400-2483.5	2402-2480	LE: GFSK
IEEE802.15.4	2400-2483.5	2405-2480	O-QPSK



1.2 Antenna Information

Ant.	RF Port	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	1	AOT	ANT-M2458-AL17	PIFA	I-PEX(MHF)	Note 1
2	2	AOT	ANT-M2458-AL15	PIFA	I-PEX(MHF)	
3	3	AOT	ANT-M2458-AL14	PIFA	I-PEX(MHF)	
4	4	AOT	ANT-M2458-AL16	PIFA	I-PEX(MHF)	
5	1	AOT	ANT-P5972-AL21	PIFA	I-PEX(MHF)	
6	2	AOT	ANT-M5972-AL18	PIFA	I-PEX(MHF)	
7	3	AOT	ANT-M5972-AL19	PIFA	I-PEX(MHF)	
8	4	AOT	ANT-P5972-AL20	PIFA	I-PEX(MHF)	
9	1	AOT	ANT-GPSL1-AL22	PIFA	I-PEX(MHF)	
10	1	N/A	Print on board	Monopole	I-PEX	

Note1:

Ant.	Antenna Gain (dBi)					
	WLAN 2.4GHz	WLAN 5GHz UNII 1-3				
	2.45GHz	5.2GHz	5.3GHz	5.6GHz	5.785GHz	
1	3.08	3.28	3.12	2.53	2.49	
2	2.69	2.18	2.2	4.18	4.13	
3	2.1	2.11	2.04	3.04	3.35	
4	2.09	2.14	2.33	2.87	4.32	
Ant.	WLAN 6GHz UNII 5-8				Bluetooth / Zigbee	GPS
	6.175GHz	6.475GHz	6.695GHz	6.995GHz		
5	5.27	4.43	3.07	3.59	-	-
6	2.61	2.85	3.72	2.91	-	-
7	3.62	2.06	3.4	3.55	-	-
8	5.1	4.94	3.46	3.8	-	-
9	-	-	-	-	-	5.2
10	-	-	-	-	1.5	-



Directional Gain (dBi)									
Item	WLAN 2.4GHz	WLAN 5GHz UNII 1-3				WLAN 6GHz UNII 5-8			
	2.45GHz	5.2GHz	5.3GHz	5.6GHz	5.785GHz	6.175GHz	6.475GHz	6.695GHz	6.995GHz
4T1S	6.75	5.06	4.96	6.14	5.96	5.56	5.31	4.62	5.33
4T2S	3.75	3.28	3.12	4.18	4.32	5.27	4.94	3.72	3.8
4T4S	3.08	3.28	3.12	4.18	4.32	5.27	4.94	3.72	3.8

Note 2: The above information (excepting Ant. 1-8 antenna gain and directional gain) was declared by Manufacturer.

Note 3: Maximum Directional Gain following KDB662911 D03.

Note 4: **2.4GHz IEEE 802.11b/g/n/VHT/ax/be mode (4TX/4RX)**

Port 1~4 can be used as transmitting/receiving antenna.

Port 1~4 could transmit/receive simultaneously.

5GHz (UNII 1-3) IEEE 802.11a/n/ac/ax/be mode (4TX/4RX)

Port 1~4 can be used as transmitting/receiving antenna.

Port 1~4 could transmit/receive simultaneously.

6GHz (UNII 5-8) IEEE 802.11ax/be mode (4TX/4RX)

Port 1~4 can be used as transmitting/receiving antenna.

Port 1~4 could transmit/receive simultaneously.

Bluetooth and Zigbee mode (1TX/1RX)

Only Port 1 can be used as transmitting/receiving antenna.

GPS mode (1RX)

Only Port 1 can be used as receiving antenna.

1.3 Table for Multiple Listing

The brand/model names in the following table are all refer to the identical product.

Equipment Name	Brand Name	Model Name	Description of Models
Wi-Fi 7 Router	Quantum Fiber by AT&T	W1700A	1. For different marketing purposes. 2. The hardware and software of the product are identical; the only difference is the brand printed on the enclosure.
	Lumen		

Note 1: From the above models, Brand: Lumen and model: W1700A was selected as representative model for the test and its data was recorded in this report.

Note 2: The above information was declared by manufacturer.



1.4 Accessories

Accessories			
Equipment Name	Brand Name	Model Name	Rating
Adapter 1	LUCENT TRANS	1A133-LHHL	Input: 100-125V~1.4A, 50/60Hz Output: 12.0V, 4.0A, 48.0W
Adapter 2	Frecom	F48L1-120400SPAU	Input: 100-240V~50/60Hz, 1.4A Output: 12.0V, 4.0A, 48.0W
Adapter 3	LEI	ML48-8120400-A1	Input: 100-120V~ 50/60Hz, 1.5A Output: 12V, 4A
Adapter 4	mentech	MAUS-1204004811	Input: 100-240V~50/60Hz, 1.2A Output: 12V, 4.0A

1.5 Testing Location

Testing Location Information	
Test Lab. : Sporton International Inc. Hsinchu Laboratory	
Hsinchu	ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)
(TAF: 3787)	TEL: 886-3-656-9065 FAX: 886-3-656-9085
	Test site Designation No. TW3787 with FCC.
	Conformity Assessment Body Identifier (CABID) TW3787 with ISED.



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 26 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

Exposure Environment: General Population / Uncontrolled Exposure

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)	Ratio (S/Limit)
2.4G;D1D	6.75	28.66	35.41	0.50	35.91	26	0.45903	1.00000	0.45903
5.2G;D1D	5.06	29.63	34.69	0.50	35.19	26	0.38890	1.00000	0.3889
5.3G;D1D	4.96	23.87	28.83	0.50	29.33	26	0.10089	1.00000	0.10089
5.6G;D1D	6.14	23.82	29.96	0.01	29.97	26	0.11691	1.00000	0.11691
5.8G;D1D	5.96	28.98	34.94	0.50	35.44	26	0.41195	1.00000	0.41195
6.2G;D1D	-	-	28.10	0.50	28.60	26	0.08528	1.00000	0.08528
6.4G;D1D	-	-	26.82	0.50	27.32	26	0.06351	1.00000	0.06351
6.7G;D1D	-	-	27.70	0.50	28.20	26	0.07778	1.00000	0.07778
7.0G;D1D	-	-	22.81	0.50	23.31	26	0.02523	1.00000	0.02523
2.4G;BT-LE	1.50	8.89	10.39	0.50	10.89	26	0.00144	1.00000	0.00144
Zigbee	1.50	9.48	10.98	0.50	11.48	26	0.00166	1.00000	0.00166

Simultaneous Transmission Analysis Mode:

Mode 1: WLAN 2.4GHz + WLAN 5GHz + WLAN 6GHz + Bluetooth

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)	Ratio (S/Limit)
2.4G;D1D	6.75	28.66	35.41	0.50	35.91	26	0.45903	1.00000	0.45903
5.8G;D1D	5.96	28.98	34.94	0.50	35.44	26	0.41195	1.00000	0.41195
6.2G;D1D	-	-	28.10	0.50	28.60	26	0.08528	1.00000	0.08528
2.4G;BT-LE	1.50	8.89	10.39	0.50	10.89	26	0.00144	1.00000	0.00144
Sum S/Limit Ratio	0.9577								
Ratio Limit	1								

Mode 2: WLAN 2.4GHz + WLAN 5GHz + WLAN 6GHz + Zigbee

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)	Ratio (S/Limit)
2.4G;D1D	6.75	28.66	35.41	0.50	35.91	26	0.45903	1.00000	0.45903
5.8G;D1D	5.96	28.98	34.94	0.50	35.44	26	0.41195	1.00000	0.41195
6.2G;D1D	-	-	28.10	0.50	28.60	26	0.08528	1.00000	0.08528
Zigbee	1.50	9.48	10.98	0.50	11.48	26	0.00166	1.00000	0.00166
Sum S/Limit Ratio	0.95792								
Ratio Limit	1								

—THE END—