FCC RF Exposure report

for

Lighthouse

Model No.: CY-LH0-22-XB1

FCC ID: 2AVNXCYLH022

of

Applicant: Airgain

Address: 3611 Valley Centre Drive, Ste. 150 San Diego, CA 92130 USA

Tested and Prepared

by

Worldwide Testing Services (Taiwan) Co., Ltd.

FCC Registration No.: TW1072, TW1140, TW1146, TW1477, TW0037

Industry Canada filed test laboratory Reg. No.: 20037, 31634

Report No.: W6M22502-24125-EE

6F, NO. 58, LANE 188, RUEY-KUANG RD., NEIHU TAIPEI 114, TAIWAN, R.O.C.
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1 General Information

1.1 Notes

The purpose of conformity testing is to increase the probability of adherence to the essential requirements or conformity specifications, as appropriate.
The complexity of the technical specifications, however, means that full and thorough testing is impractical for both technical and economic reasons.
Furthermore, there is no guarantee that a test sample which has passed all the relevant tests conforms to a specification.
Neither is there any guarantee that such a test sample will interwork with other genuinely open systems.
The existence of the tests nevertheless provides the confidence that the test sample possesses the qualities as maintained and that is performance generally conforms to representative cases of communications equipment.

Laboratory disclaimer-
1. The test results of this test report relate exclusively to the item tested as specified in 1.5.
2. The test report may only be reproduced or published in full.
3. Reproduction or publication of extracts from the report requires the prior written approval of the Worldwide Testing Services(Taiwan) Co., Ltd.
4. Antenna gain is provided by applicant and laboratory issue relevant data and results.

Tester:

Date	WTS-Lab.	Name	Signature
June 03, 2025		Robert Ron	Robert Ron

Technical responsibility for area of testing:

Date	WTS	Name	Signature
June 03, 2025		Kevin Wang	Kevin Wang

1.2 Testing laboratory

1.2.1 Location

10m OATS
No.5-1, Lishui, Shuang Sing Village, Wanli Dist.,
New Taipei City 207, Taiwan (R.O.C.)

3 meter semi-anechoic chamber/Conducted Emission
No. 99, Sec. 1, Balian Rd., Xizhi Dist.,
New Taipei City 221032, Taiwan (R.O.C.)

Worldwide Testing Services (Taiwan) Co., Ltd.
6F., No. 58, Ln. 188, Ruiguang Rd., Neihu Dist.,
Taipei City 114 , Taiwan (R.O.C.)
Tel: 886-2-6606-8877

1.2.2 Details of accreditation status

Accredited testing laboratory
FCC filed test laboratory Reg. No.: TW1072, TW1140, TW1146, TW1477, TW0037
Industry Canada filed test laboratory Reg. No.: 20037, 31634

Test location, where different from Worldwide Testing Services (Taiwan) Co., Ltd. :

Name:	./.
Accredited no.:	./.
Street:	./.
Town:	./.
Country:	./.

1.3 Application details

Approval holder

Name:	Airgain
Street:	3611 Valley Centre Drive, Ste. 150 San Diego,
Town:	CA 92130
Country:	USA

Manufacturer: (if applicable)

Name:	./.
Street:	./.
Town:	./.
Country:	./.

Date of receipt of test item: February 10, 2025

Date of test: from February 11, 2025 to May 05, 2025

1.4 General information of Test item

Type of test item: Lighthouse

Model no.: CY-LH0-22-XB1

Multi-listing model no.: ./.

Brand name: Airgain

Power supply: 120Va.c.

Technical data:

WLAN		
Mode	Channel	Conducted Power (dBm)
802.11b	Ch 1 : 2412 MHz	11.48
	Ch 6 : 2437 MHz	11.57
	Ch 11 : 2462 MHz	11.78
802.11g	Ch 1 : 2412 MHz	10.63
	Ch 6 : 2437 MHz	11.02
	Ch 11 : 2462 MHz	11.26
802.11n20MHz	Ch 1 : 2412 MHz	10.50
	Ch 6 : 2437 MHz	10.89
	Ch 11 : 2462 MHz	11.13
802.11n40MHz	Ch 1 : 2422 MHz	12.73
	Ch 4 : 2437 MHz	12.90
	Ch 7 : 2452 MHz	12.94

Type of antenna: N01AGCYM Embedded Antenna

Antenna gain: 5dBi

Operation modes: Duplex

Modulation type: GFSK、π/4DQPSK、8DPSK

Sample no.: #01

Classification:

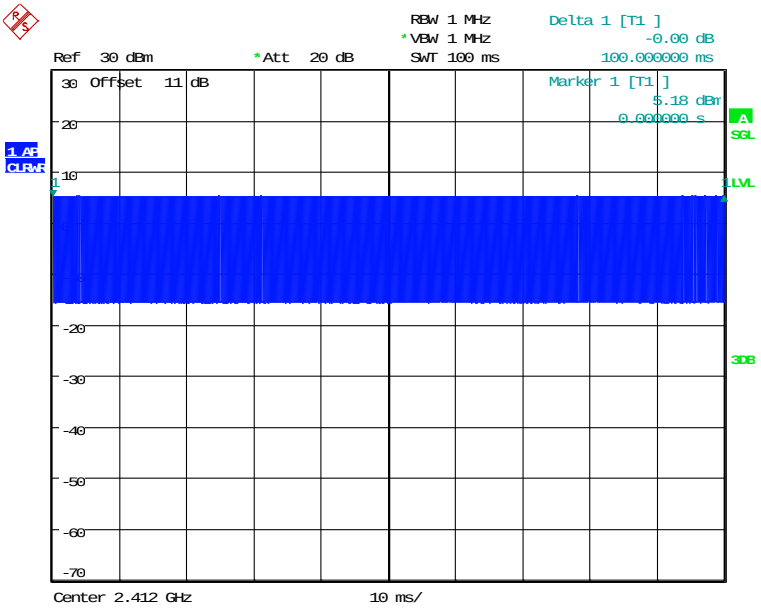
Fixed Device	☒
Mobile Device (Human Body distance ＞ 20cm)	☐
Portable Device (Human Body distance ＜ 20cm)	☐
Modular Radio Device	☐

1.5 Duty cycle and factor

The duty factor is computed as [10 log (1 / D)], where D is the duty cycle.

Mode	Ton (ms)	Ton+Toff (ms)	Duty cycle (%)	Duty Factor (dB)	1/T - VBW (KHz)
802.11 B	100	100	100.00%	0.00	0.01
802.11 G	100	100	100.00%	0.00	0.01
802.11n (20MHz)	100	100	100.00%	0.00	0.01
802.11n (40MHz)	100	100	100.00%	0.00	0.01

Duty cycle plot



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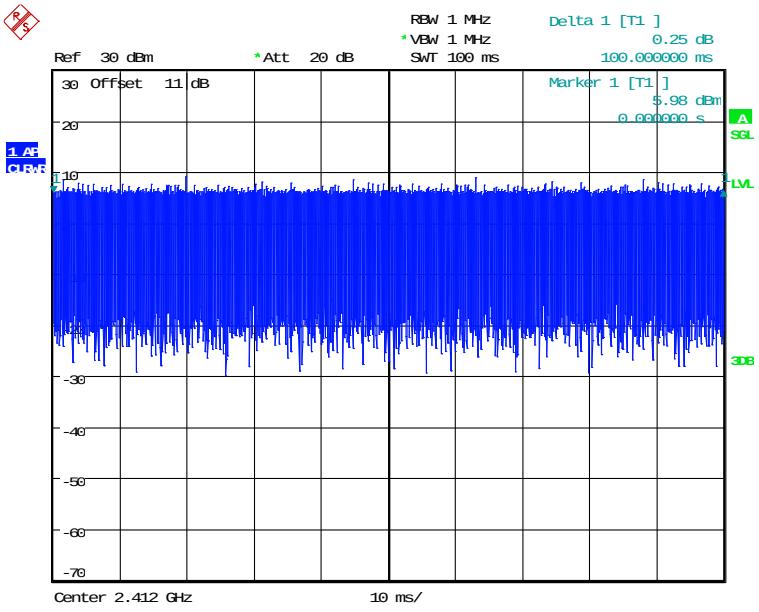

DUTY 802.11G
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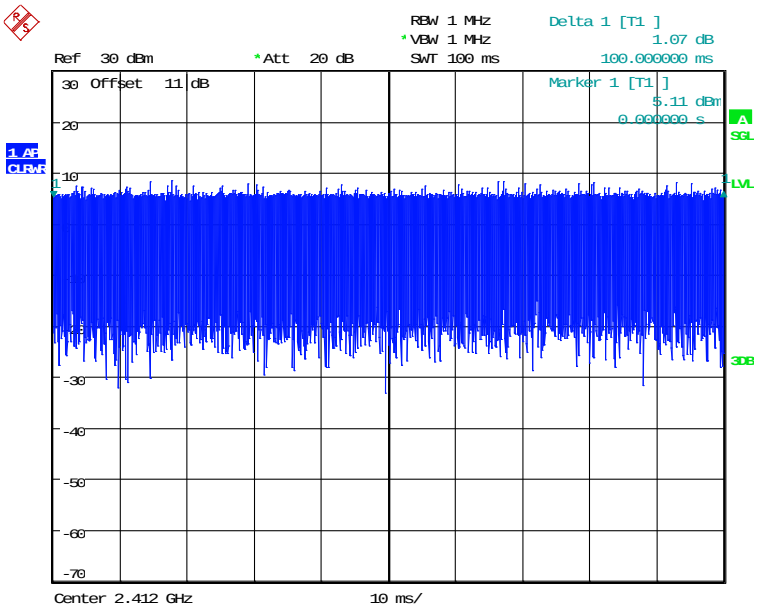

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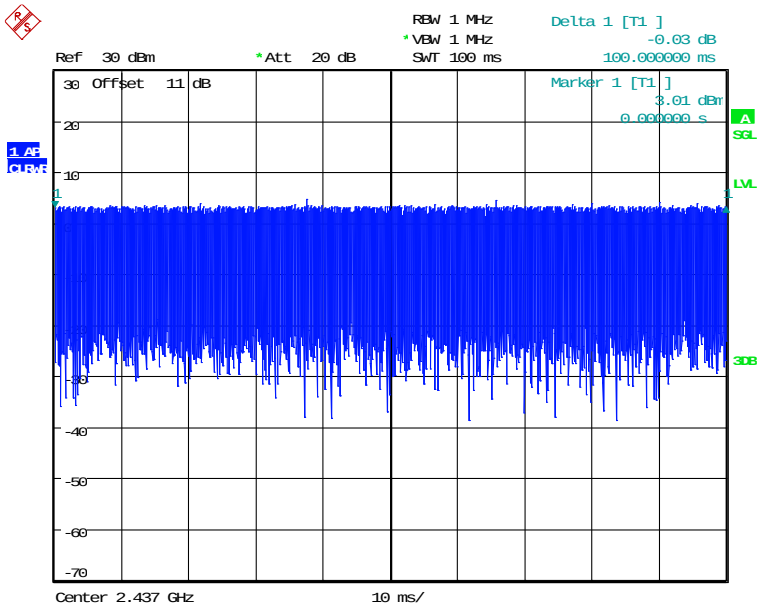
Registration number: W6M22502-24125-EE
FCC ID: 2AVNXCYLH022



DUTY 802.11N40
Date: 29.APR.2025 20:24:57

1.7 Test standards

FCC KDB Publication
447498 D01 General RF Exposure Guidance v06

2 Test configuration

2.1 Test environment

Relative humidity content: 20 ... 75 %

Air pressure: 86 ... 103 kPa

Extreme conditions parameters: ./.

2.2 Measurement uncertainty

Test item Name	Uncertainty
Estimation Result of Uncertainty of Conducted Output Power Measurement (Peak Output Power (transmitter))	Expanded Uncertainty：1.63 dB

The decision rule is: Measurement uncertainty is not included in the calculation of test results.

2.3 Test Equipment List

Max Output Power

Code No.	Test equipment	Mode No.	Serial No.	Brand	Cal. Date	Next Cal. Date
ETSTW-RE 050	Attenuator 10dB	50HF-010-1	None	JFW	2025/2/14	2026/2/13
ETSTW-RE 055	SPECTRUM ANALYZER	FSU 26	200074	R&S	2025/3/5	2026/3/4
ETSTW-RE 099	DC Block	50DB-007-1	None	JFW	2025/2/14	2026/2/13
ETSTW-Cable 030	Microwave Cable	SUCOFLEX 104 （S_Cable 9）	279067	HUBER+SUHNER	2025/2/14	2026/2/13

3 Equivalent Isotropic Radiated Power (EIRP)

FCC Rule: 15.247

WLAN 2.4G
EIRP = max. conducted output power + antenna gain
EIRP = 12.94 dBm+ (5 dBi [antenna gain claimed by manufacturer]) = 17.94dBm = 62.23mW

5G NR77
EIRP = max. conducted output power + antenna gain
EIRP = 28.21 dBm+ (13 dBi [antenna gain claimed by manufacturer]) = 41.21dBm = 13212.96mW

3.1 Exemption Limits for Routine Evaluation according to 47 CFR FCC Part 2 Subpart J, section 2.1091

FCC OET Bulletin 65 Edition 97.01 determines the equations for predicting RF fields and applicable limits.
The prediction for power density in the far-field but will over-predict power density in the near field, where it could be used for walking a “worst case” or conservative prediction.
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 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 20 cm normally can be maintained between the user and the device.

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MPE Calculation Method

(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

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

E = Electric field (V/m) P = output power (W) G = EUT Antenna numeric gain (numeric)
d = Separation distance between radiator and human body (m)
The formula can be changed to

$$Pd = \frac{30 \times P \times G}{3770 \times d^2}$$

mW/cm^2.

WLAN 2.4G
Established separation distance is 35 cm.
Operating frequency band: 2412-2462 MHz

The product meets RF exposure requirement.
Because the power density of 0.0128 mW/cm^2 at 2452 MHz is below the power density limit of 1 mW/cm^2.

5G NR77
Established separation distance is 35 cm.
Operating frequency band: 3455-3975 MHz

The product meets RF exposure requirement.
Because the power density of 0.8583 mW/cm^2 at 3840 MHz is below the power density limit of 1 mW/cm^2.

0.0128 (WLAN 2.4G) + 0.8583 (5G NR77) = 0.8711<1