

TEST REPORT

Applicant: REOLINK TECHNOLOGY PTE. LTD.
Address: 31 KAKI BUKIT ROAD 3, #06-02, TECHLINK,
SINGAPORE 417818
Equipment Type: WiFi module
Model Name: WL1NM1001
Brand Name: Reolink
FCC ID: 2BN5S-2503H
Test Standard: 47 CFR Part 2.1091
KDB 447498 D04 v01
Sample Arrival Date: Apr. 22, 2025
Test Date: May 08, 2025 - May 14, 2025
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ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

Tested by: Xiong Lining

Xiong Li Ning

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(Testing Director)

Tolan Tu

Revision History

<u>Version</u>	<u>Issue Date</u>	<u>Revisions Content</u>
<u>Rev. 01</u>	<u>Jun. 17, 2025</u>	<u>Initial Issue</u>

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1 GENERAL INFORMATION

1.1 Test Laboratory

Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6685 0100

1.2 Test Location

Name	Shenzhen BALUN Technology Co., Ltd.
Location	☐ Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
	☒ 1/F, Building B, Ganghongji High-tech Intelligent Industrial Park, No. 1008, Songbai Road, Yangguang Community, Xili Sub-district, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Accreditation Certificate	The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196.

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	REOLINK TECHNOLOGY PTE. LTD.
Address	31 KAKI BUKIT ROAD 3, #06-02, TECHLINK, SINGAPORE 417818

2.2 Manufacturer Information

Manufacturer	REOLINK TECHNOLOGY PTE. LTD.
Address	31 KAKI BUKIT ROAD 3, #06-02, TECHLINK, SINGAPORE 417818

2.3 General Description for Equipment under Test (EUT)

EUT Name	WiFi module
Model Name Under Test	WL1NM1001
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	N/A
Software Version	N/A
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

Antenna Information:

Serial Number	Antenna Name	Antenna Manufacturer	Model	Antenna Type
ANT1	Argus 4 Pro Argus 4	SHENZHEN LINRONG TECHNOLOGY CO., LTD	03.10.03.003	FPC Antenna
ANT2	Argus PT Ultra@Reolink Argus PT	SHENZHENYINGJIACHUANG ELECTRONICTECHNOLOGY CO. LTD.	54.07.001.0147	Dipole Antenna
ANT3	Reolink Altas PT Ultra	Shenzhen Be-Comfortable Technology Co. Ltd	53.05.004.0014	Dipole Antenna
ANT4	Reolink Altas	SHENZHEN LINRONG TECHNOLOGY CO., LTD	03.14.03.001	Dipole Antenna
ANT5	Reolink TrackMix	Shenzhen Be-Comfortable Technology Co. Ltd	62.04.042.0055	Dipole Antenna

Note: All antenna model are alternative antenna, the max gain antenna is chosen for all test.

2.4 Technical Information

Network and Wireless connectivity	Bluetooth (BR+EDR+BLE) WIFI 802.11a, 802.11b, 802.11g, 802.11n, 802.11ac and 802.11ax
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The requirement for the following technical information of the EUT was tested in this report:

Operating Mode	Bluetooth, WIFI	
Frequency Range	802.11b/g/n(HT20)/ax(HE20)	2412 MHz ~ 2462 MHz
	802.11a/n(HT20)/ac(VHT20)/ax(HE20)	5150 MHz ~ 5250 MHz
		5250 MHz ~ 5350 MHz
		5470 MHz ~ 5725 MHz
		5725 MHz ~ 5850 MHz
	Bluetooth	2402 MHz ~ 2480 MHz
Antenna Type	WIFI	Dipole Antenna
	Bluetooth	Dipole Antenna
Exposure Category	General Population/Uncontrolled Exposure	
Product Type	Mobile Device	

3 SUMMARY OF TEST RESULT

3.1 Test Standards

No.	Identity	Document Title
1	KDB 447498 D04 v01	447498 D04 Interim General RF Exposure Guidance v01

3.2 Limit Standards

No.	Identity	Document Title
1	47 CFR Part 2.1091	Radiofrequency radiation exposure evaluation: mobile devices

4 DEVICE CATEGORY AND LEVELS LIMITS

Mobile Devices:

CFR Title 47 §2.1091(b)

For purposes of this section, a mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons.

FCC KDB 447498 D04 General RF Exposure Guidance v01 Limit

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)].

$$P_{th} \text{ (mW)} = ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases} \quad (\text{B.1})$$

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.

The SAR-based exemption formula of § 1.1307(b)(3)(i)(B), repeated here as Formula (B.2), applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power or effective radiated power (ERP), whichever is greater, of less than or equal to the threshold P_{th} (mW).

This method shall only be used at separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by Formula (B.2).

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases} \quad (\text{B. 2})$$

where

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

and f is in GHz, d is the separation distance (cm), and $ERP_{20 \text{ cm}}$ is per Formula (B.1).
The example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

Frequency (MHz)	Distance (mm)										
		5	10	15	20	25	30	35	40	45	50
300		39	65	88	110	129	148	166	184	201	217
450		22	44	67	89	112	135	158	180	203	226
835		9	25	44	66	90	116	145	175	207	240
1900		3	12	26	44	66	92	122	157	195	236
2450		3	10	22	38	59	83	111	143	179	219
3600		2	8	18	32	49	71	96	125	158	195
5800		1	6	14	25	40	58	80	106	136	169

5 ASSESSMENT RESULT

5.1 Output Power

Mode	Bluetooth	2.4G WIFI	5.2G WIFI	5.3G WIFI	5.6G WIFI	5.8G WIFI
Conducted Power (dBm)	4.40	16.04	16.04	16.06	15.88	16.07
Antenna Gain (dBi)	4.4	4.4	3.75	4.5	3.78	4.29
EIRP (dBm)	8.80	20.44	19.79	20.56	19.66	20.36

Note: This report listed the worst case conducted power value, please refer to BL-SZ2541261-601, BL-SZ2541261-602, BL-SZ2541261-603 report for more details.

5.2 Tune-up power

Mode	Conducted Power Range (dBm)	EIRP Range (dBm)	ERP Range (dBm)
Bluetooth	[2.50, 4.50]	[6.90, 8.90]	[4.75, 6.75]
2.4G WIFI	[14.50, 16.50]	[18.90, 20.90]	[16.75, 18.75]
5.2G WIFI	[14.50, 16.50]	[18.25, 20.25]	[16.10, 18.10]
5.3G WIFI	[14.50, 16.50]	[19.00, 21.00]	[16.85, 18.85]
5.6G WIFI	[14.00, 16.00]	[17.78, 19.78]	[15.63, 17.63]
5.8G WIFI	[14.50, 16.50]	[18.79, 20.79]	[16.64, 18.64]

Note1: ERP= EIRP -2.15dB.
 Note2: According KDB 447498 D04, used the greater of maximum conducted power and ERP to compare with the threshold value Pth.

5.3 RF Exposure Evaluation Result

Evolution Mode	Frequency (MHz)	Maximum power (dBm)	Maximum power (mw)	Distance (mm)	Threshold Power (mW)	Verdict
Bluetooth	2402	6.75	4.73	200	3060.00	Pass
2.4G WIFI	2412	18.75	74.99	200	3060.00	Pass
5.2G WIFI	5150	18.10	64.57	200	3060.00	Pass
5.3G WIFI	5250	18.85	76.74	200	3060.00	Pass
5.6G WIFI	5470	17.63	57.94	200	3060.00	Pass
5.8G WIFI	5725	18.64	73.11	200	3060.00	Pass

5.4 Conclusion

This EUT is deemed to comply with the reference level limits, therefore the basic restrictions are compliant with human exposure limits.

Statement

1. The laboratory guarantees the scientificity, accuracy and impartiality of the test, and is responsible for all the information in the report, except the information provided by the customer. The customer is responsible for the impact of the information provided on the validity of the results.
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