

# TEST REPORT

**Applicant:** Queclink Wireless Solutions Co., Ltd.  
**Address:** No.30, Lane 500, Xinlong Road, Minhang District, Shanghai, China  
**Equipment Type:** RFID Reader  
**Model Name:** GPScanID 150  
**Brand Name:** QUECLINK  
**FCC ID:** YQD-GPSCANID150  
**Test Standard:** 47 CFR Part 2.1093  
KDB 447498 D01 v06  
**Sample Arrival Date:** Sep. 05, 2022  
**Test Date:** Sep. 13, 2022 – Apr. 24, 2023  
**Date of Issue:** May 10, 2023

**ISSUED BY:**

Shenzhen BALUN Technology Co., Ltd.

**Tested by:** Julie Zhu

**Checked by:** Xu Rui

**Approved by:** Tolan Tu  
(Testing Director)

*Julie Zhu*

*Xu Rui*

*Tolan Tu*

### Revision History

Version	Issue Date	Revisions Content
<u>Rev. 01</u>	<u>May 04, 2023</u>	<u>Initial Issue</u>
<u>Rev. 02</u>	<u>May 10, 2023</u>	<u>Updated Antenna Location, Antenna Type and Turn-up power</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	<input checked="" type="checkbox"/> Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
	<input type="checkbox"/> 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	Queclink Wireless Solutions Co., Ltd.
Address	No.30, Lane 500, Xinlong Road, Minhang District, Shanghai, China

### 2.2 Manufacturer Information

Manufacturer	Queclink Wireless Solutions Co., Ltd.
Address	No.30, Lane 500, Xinlong Road, Minhang District, Shanghai, China

### 2.3 Factory Information

Factory	N/A
Address	N/A

### 2.4 General Description for Equipment under Test (EUT)

EUT Name	RFID Reader
Model Name Under Test	GPScanID 150
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

### 2.5 Ancillary Equipment

Ancillary Equipment 1	Battery	
	Brand Name	N/A
	Model No.	18650 2S1P 2900mAh
	Serial No.	N/A
	Capacity	2900mAh
	Rated Voltage	7.4V
	Manufacturer	Jiangxi BetterPower New Energy Limited Liability Company

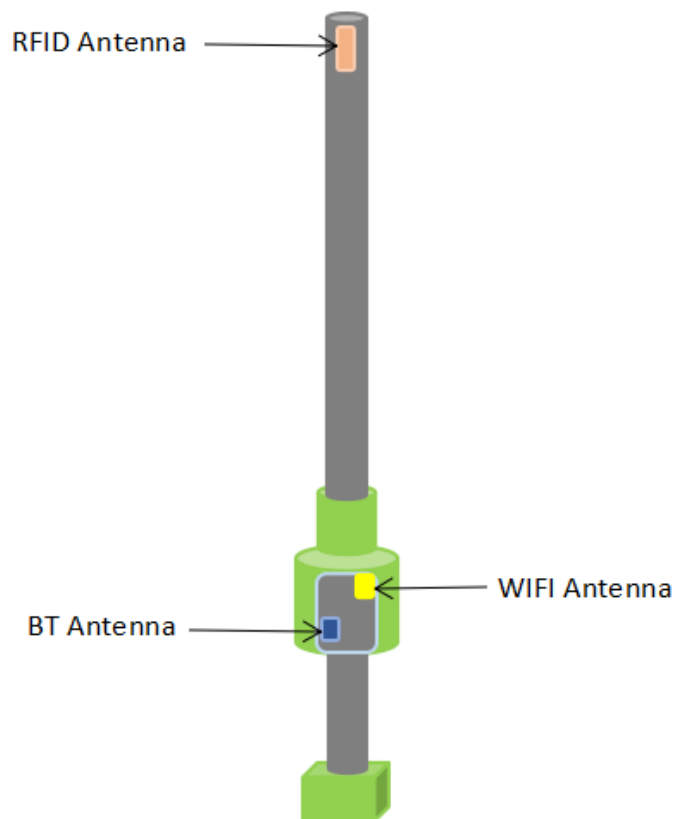
## 2.6 Technical Information

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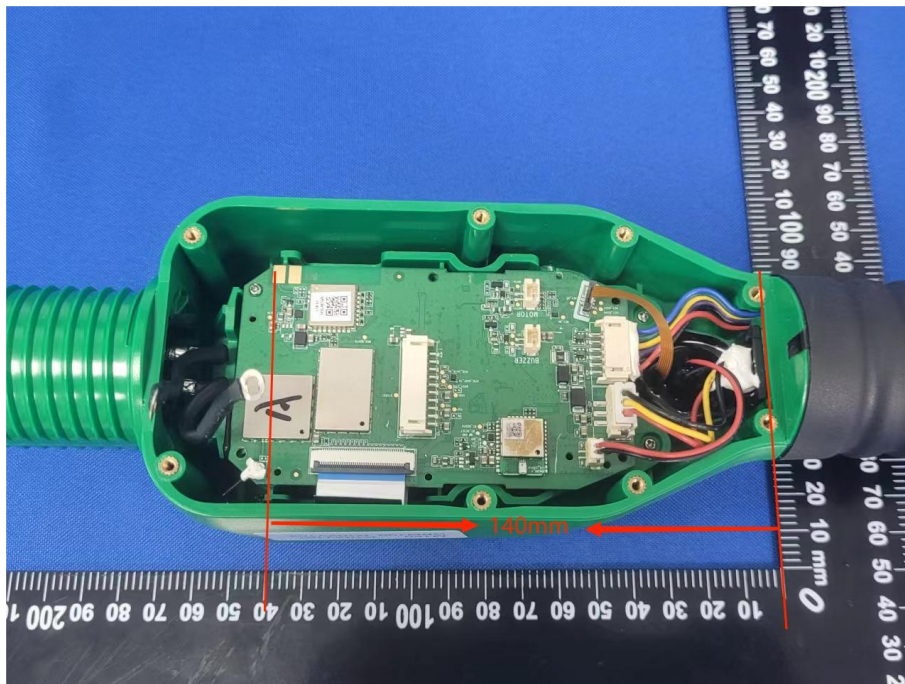
The requirement for the following technical information of the EUT was tested in this report:

Operating Mode	Bluetooth	
Frequency Range	Bluetooth	2400 ~ 2483.5 MHz
	WLAN	2412 ~ 2462 MHz
Antenna Type	Bluetooth	Chip Antenna
	WLAN	PIFA Antenna
Exposure Category	General Population/Uncontrolled Exposure	
EUT Type	Portable Device	

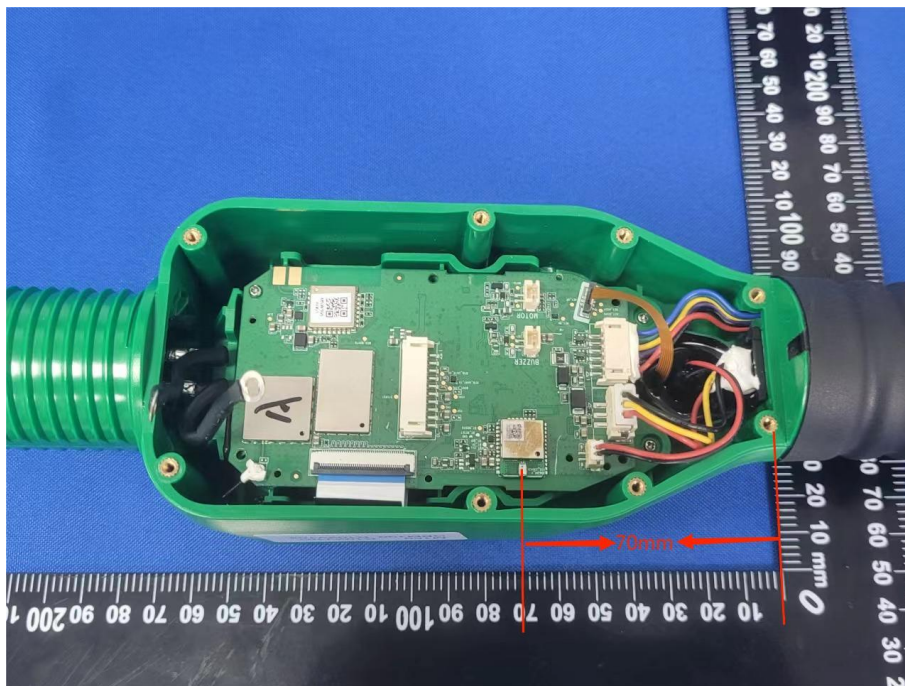
## 2.7 Antenna Location



The user's hand is 140mm away from the WIFI antenna.



The user's hand is 70mm away from the Bluetooth antenna.



### 3 SUMMARY OF TEST RESULT

#### 3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 2.1093	Radiofrequency radiation exposure evaluation: portable devices
2	KDB 447498 D01 v06	KDB 447498 General RF Exposure Guidance D01 v06

## 4 DEVICE CATEGORY AND LEVELS LIMITS

### Portable Derives:

CFR Title 47 §2.1093(b)

(b) For purposes of this section, a portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user.

### FCC KDB 447498 D01 General RF Exposure Guidance v06 Limit

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Test Exclusion Threshold condition, listed below, is satisfied. These test exclusion conditions are based on source-based time-averaged maximum conducted output power of the RF channel requiring evaluation, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions. The minimum test separation distance is determined by the smallest distance from the antenna and radiating structures or outer surface of the device, according to the host form factor, exposure conditions and platform requirements, to any part of the body or extremity of a user or bystander.

### SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and > 50 mm

Approximate SAR test exclusion power thresholds at selected frequencies and test separation distances are illustrated in the following table. The equation and threshold in 4.3.1 must be applied to determine SAR test exclusion.

MHz	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	mm
100	474	481	487	494	501	507	514	521	527	534	541	547	554	561	567	mW
150	387	397	407	417	427	437	447	457	467	477	487	497	507	517	527	
300	274	294	314	334	354	374	394	414	434	454	474	494	514	534	554	
450	224	254	284	314	344	374	404	434	464	494	524	554	584	614	644	
835	164	220	275	331	387	442	498	554	609	665	721	776	832	888	943	
900	158	218	278	338	398	458	518	578	638	698	758	818	878	938	998	
1500	122	222	322	422	522	622	722	822	922	1022	1122	1222	1322	1422	1522	
1900	109	209	309	409	509	609	709	809	909	1009	1109	1209	1309	1409	1509	
2450	96	196	296	396	496	596	696	796	896	996	1096	1196	1296	1396	1496	
3600	79	179	279	379	479	579	679	779	879	979	1079	1179	1279	1379	1479	
5200	66	166	266	366	466	566	666	766	866	966	1066	1166	1266	1366	1466	
5400	65	165	265	365	465	565	665	765	865	965	1065	1165	1265	1365	1465	
5800	62	162	262	362	462	562	662	762	862	962	1062	1162	1262	1362	1462	



## 5 ASSESSMENT RESULT

### 5.1 Output Power

Bluetooth			
Mode	GFSK	$\pi/4$ -DQPSK	8-DPSK
Conducted Power (dBm)	10.02	10.05	10.07
Antenna Gain (dBi)	0.91		
EIRP (dBm)	10.93	10.96	10.98

Note: This report listed the worst case power value, please refer to BL-EC2290276-601 report for more details.

Bluetooth			
Mode	GFSK (BLE)		
	Low Channel	Middle Channel	High Channel
Conducted Power (dBm)	9.64	9.89	9.79
Antenna Gain (dBi)	0.91		
EIRP (dBm)	10.55	10.80	10.70

Note: This report listed the worst case power value, please refer to BL-EC2290276-602 report for more details.

WLAN 2.4G			
Mode	802.11b		
	Low Channel	Middle Channel	High Channel
Conducted Power (dBm)	17.67	17.75	17.83
Antenna Gain (dBi)	1.51		
EIRP (dBm)	19.18	19.26	19.34

Note: This report listed the worst case power value, please refer to BL-EC2290276-603 report for more details.

WLAN 2.4G			
Mode	802.11g		
	Low Channel	Middle Channel	High Channel
Conducted Power (dBm)	20.81	20.90	20.95
Antenna Gain (dBi)	1.51		
EIRP (dBm)	22.32	22.41	22.46

Note: This report listed the worst case power value, please refer to BL-EC2290276-603 report for more details.

WLAN 2.4G			
Mode	802.11n20		
	Low Channel	Middle Channel	High Channel
Conducted Power (dBm)	20.70	20.83	20.87
Antenna Gain (dBi)	1.51		
EIRP (dBm)	22.21	22.34	22.38
Note: This report listed the worst case power value, please refer to BL-EC2290276-603 report for more details.			

## 5.2 Turn-up power

Mode	Conducted Power Range (dBm)	EIRP Range (dBm)	ERP Range (dBm)
Bluetooth	[9.00, 11.00]	[9.91, 11.91]	[7.76, 9.76]
Max WLAN 2.4G	[21.00, 23.00]	[22.51, 24.51]	[20.36, 22.36]

## 5.3 RF Exposure Evaluation Result

Mode	Maximum power (dBm)	Maximum power (mw)	Distance (mm)	Threshold Power (mW)	Power/Limit	Verdict
Bluetooth	11.00	12.59	70.00	296.00	0.04	Pass
Max WLAN 2.4G	23.00	199.53	140.00	996.00	0.20	Pass

The use scenario of this product detects animals. For people, it is only handheld use. When using, the user's hand is 70mm away from the Bluetooth antenna and 140mm away from the WIFI antenna.

## 5.4 Collocated Power Calculation

Evolution mode	Frequency (MHz)	Power/Limit	$\Sigma(\text{Power} / \text{Limit})$ of Bluetooth + WLAN	Verdict
Bluetooth	2480	0.04	0.24	Pass
Max WLAN 2.4G	2462	0.20		

Note:

1.  $\Sigma(\text{Power} / \text{Limit})$ : This is a summation of [(power for each transmitter/ antenna included in the simultaneous transmission)/ (corresponding Power limit)], for Bluetooth + WLAN.
2. Both of the Bluetooth/WLAN can transmit simultaneously, the formula of calculated the Power is  $CP1 / LP1 + CP2 / LP2 + \dots \text{etc.} < 1$   
 CP = Calculation power  
 LP = Limit of power
3. The worst-case situation is 0.24, which is less than "1". This confirmed that the device comply with FCC KDB 447498 D01 Power limit.
4. The DUT work frequency range used is 2400 MHz ~ 2483.5 MHz and 2412 ~ 2462 MHz the result close to the limit by the above formula, so we select worst case power to calculate the exclusion power threshold.
5. More power list please refer to BL-EC2290276-601, BL-EC2290276-602 and BL-EC2290276-603 test report.

## 5.5 Conclusion

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

## Statement

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--END OF REPORT--