

Test Report

Verified code: 238413

Report No.: E202211048579-3

Customer: Queclink Wireless Solutions Co., Ltd.

Address: No.30, Lane 500, Xinlong Road, Minhang District, Shanghai, China 201101

Sample Name: Box-Disguised Rechargeable Tracker

Sample Model: GL33

Receive Sample Date: Nov.15,2022

Test Date: Nov.16,2022 ~ Nov.30,2022

Reference Document: CFR 47, FCC Part 2.1091 Radio frequency radiation exposure evaluation: mobile devices.

Test Result: Pass

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GUANGZHOU GRG METROLOGY & TEST CO., LTD

Issued Date: 2023-02-03

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REPORT ISSUED HISTORY

Report Version	Report No.	Description	Compile Date
1.0	E202211048579-3	Original Issue	2023-01-11

Note:

1. The maximum output Power of GSM is refer to the module report. (Report No.: E202211048579-1)

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1. GENERAL DESCRIPTION OF EUT

1.1 APPLICANT

Name: Queclink Wireless Solutions Co., Ltd.
Address: No.30, Lane 500, Xinlong Road, Minhang District, Shanghai, China 201101

1.2 MANUFACTURER

Name: Queclink Wireless Solutions Co., Ltd.
Address: No.30, Lane 500, Xinlong Road, Minhang District, Shanghai, China 201101

1.3 FACTORY

Name: Queclink Wireless Solutions Co., Ltd.
Address: No.30, Lane 500, Xinlong Road, Minhang District, Shanghai, China 201101

1.4 BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Equipment: Box-Disguised Rechargeable Tracker
Model No.: GL33
Adding Model: /
Trade Name: Queclink
FCC ID: YQD-GL33
Power Supply: Input power: 5V ---- 1A
DC 3.7V power supplied by battery
Battery Specification: Model: GSP104065
Nominal Voltage: 3.7Vdc
Rated Capacity: 2800mAh
Frequency Range: GSM 850 TX: 824 MHz ~ 849 MHz
GSM 1900 TX: 1850 MHz ~ 1910 MHz
Transmit Power: Reference Section 5 Table 3
Modulation type: GPRS: GMSK
Antenna Specification: Reference Section 5 Table 1
Temperature Range: -20°C~60°C
Hardware Version: GL33R00A01V44N32
Software Version: R104V1.04
Sample No: /
Note: /

2. LABORATORY AND ACCREDITATIONS

2.1 LABORATORY

The tests & measurements refer to this report were performed by Shenzhen EMC Laboratory of Guangzhou GRG Metrology & Test Co., Ltd.

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2.2 ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

USA A2LA(Certificate #2861.01)

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

Canada ISED (Company Number: 24897, CAB identifier:CN0069)

USA FCC (Registration Number: 759402, Designation Number:CN1198)

Copies of granted accreditation certificates are available for downloading from our web site,
<http://www.grgtest.com>

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3. EVALUATION METHOD

Exposure category: General population/uncontrolled environment

EUT Type: Production Unit

Device Type: Mobile Device

Systems operating under the provisions of FCC 47 CFR section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as mobile device whereby a distance of 0.2m normally can be maintained between the user and the device, and below RF Permissible Exposure limit shall comply with.

In accordance with KDB447498D01 for Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modeled or measured field strengths or power density, is ≤ 1.0 . The MPE ratio of each antenna is determined at the minimum test separation distance required by the operating configurations and exposure conditions of the host device, according to the ratio of field strengths or power density to MPE limit, at the test frequency. Either the maximum peak or spatially averaged results from measurements or numerical simulations may be used to determine the MPE ratios. Spatial averaging does not apply when MPE is estimated using simple calculations based on far-field plane-wave equivalent conditions. The antenna installation and operating requirements for the host device must meet the minimum test separation distances required by all antennas, in both standalone and simultaneous transmission operations, to satisfy compliance.

LIMITS FOR GENERAL POPULATION/UNCONTROLLEDEXPOSURE

(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)*	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

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4. CALCULATION METHOD

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = PG / 4\pi R^2$$

Where: S=power density

P=power input to antenna

G=power gain of the antenna in the direction of interest relative to anisotropic radiator

R=distance to the center of radiation of the antenna

From the EUT RF output power, the minimum mobile separation distance, d=20cm, as well as the maximum gain of the used as following information, the RF power density can be obtained.

Table 1 Antenna Specification

Frequency Band	Antenna type	Internal Identification	Maximum antenna gain
GSM 850	PCB antenna	Antenna 1	-4.62 dBi
GSM 1900			0.15 dBi

Table 2 Transmit Power

Frequency Band	Maximum Output Power (dBm)	Tune-up Output Power Range (dBm)
GSM 850	32.43	33.00
GSM 1900	29.06	30.00

Note:

1. The maximum output Power of GSM is refer to the module report. (Report No.: E202211048579-1)

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5. ESTIMATION RESULT

5.1 MEASUREMENT RESULTS

STANDALONE MPE

Mode	Frequency (MHz)	Antenna Gain (dBi)	Tune-up Output power (dBm)	EIRP (mW)	MPE (mW/cm ²)	MPE Limits (mW/cm ²)	Results
GSM 850	824 - 849	-4.62	33.0	1995.26	0.14	0.55	Pass
GSM 1900	1850 - 1910	0.15	30.0	1000.00	0.21	1.00	Pass

Remark: 1. MPE use distance is 20cm from manufacturer declaration of user manual.

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6. CONCLUSION

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

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