



TESTING LABORATORY
CERTIFICATE#4323.01



FCC PART 15B

TEST REPORT

For

Quealink Wireless Solutions Co.,Ltd

3 Floor, Building 2, No.717 Yishan Road, Xuhui District, shanghai, 200233 China

FCC ID: YQD-GB100MGLITE

Report Type: Original Report	Product Type: GPS Tracker
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Report Number: RSHA200106001-00A	
Report Date: 2020-01-17	
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant	Queclink Wireless Solutions Co.,Ltd
Test Model	GB100MG Lite
Series Model	GB100MG_S Lite
Model Difference	Model Name
Product	GPS Tracker
Rate Voltage	DC 8-32V

**All measurement and test data in this report was gathered from production sample serial number: 20200106001. (Assigned by the BACL. The EUT supplied by the applicant was received on 2020-01-06)*

Objective

This report is prepared on behalf of *Queclink Wireless Solutions Co., Ltd* in accordance with Part 2-Subpart J, and Part 15-Subparts A and B of the Federal Communication Commission's rules.

The objective of the manufacturer is to determine the compliance of EUT with FCC Part 15, Class B device.

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Kunshan). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Kunshan) to collect test data is located on the No.248 Chenghu Road, Kunshan, Jiangsu province, China.

Bay Area Compliance Laboratories Corp. (Kunshan) Lab is accredited to ISO/IEC 17025 by A2LA (Lab code: 4323.01) and the FCC designation No. CN1185 under the FCC KDB 974614 D01 and CAB identifier CN0004 under the ISED requirement. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

SYSTEM TEST CONFIGURATION

Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

Test mode 1: GPRS Link + DC power supply + GPS on(Worst case)

Test mode 2: GPRS idle + DC power supply + GPS on

Test mode 3: LTE link + DC power supply + GPS on

Test mode 4: LTE idle + DC power supply + GPS on

EUT Exercise Software

No exercise software was used to test.

Special Accessories

No special accessory was used.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

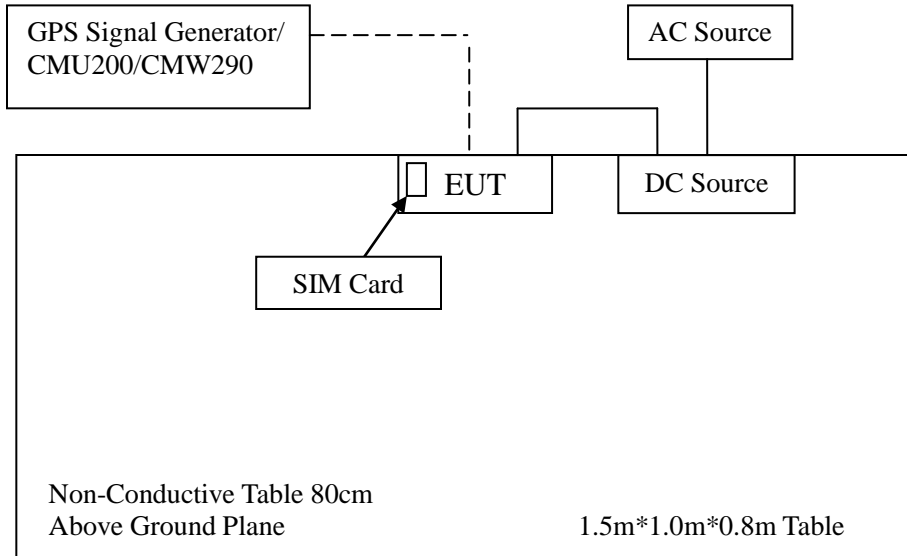
Manufacturer	Description	Model	Serial Number
MCH	DC Source	MCH-303D-II	14070562
Rohde & Schwarz	WIDEBAND RADIO COMMUNICATION TESTER	CMU200	103113
Rohde & Schwarz	Functional radio communication tester	CMW290	101742
Rohde & Schwarz	SIM Card	AG8960	/
MEGURO	GPS Signal Generator	MSG-2050	/

External I/O Cable

Cable Description	Length (m)	From/Port	To
Power Cable 1	0.3	EUT	DC Source
Power Cable 2	0.8	DC Source	AC Source

Block Diagram of Radiated Test Setup

Test mode 1 to Test mode 4:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§15.107	Conducted Emissions	Not Applicable (See the note)
§15.109	Radiated Emissions	Compliant

Note: the EUT no powered by a dedicated AC/DC power converter , that connects to a DC supply network.

FCC §15.109 - RADIATED EMISSIONS

Applicable Standard

FCC §15.109

Measurement Uncertainty

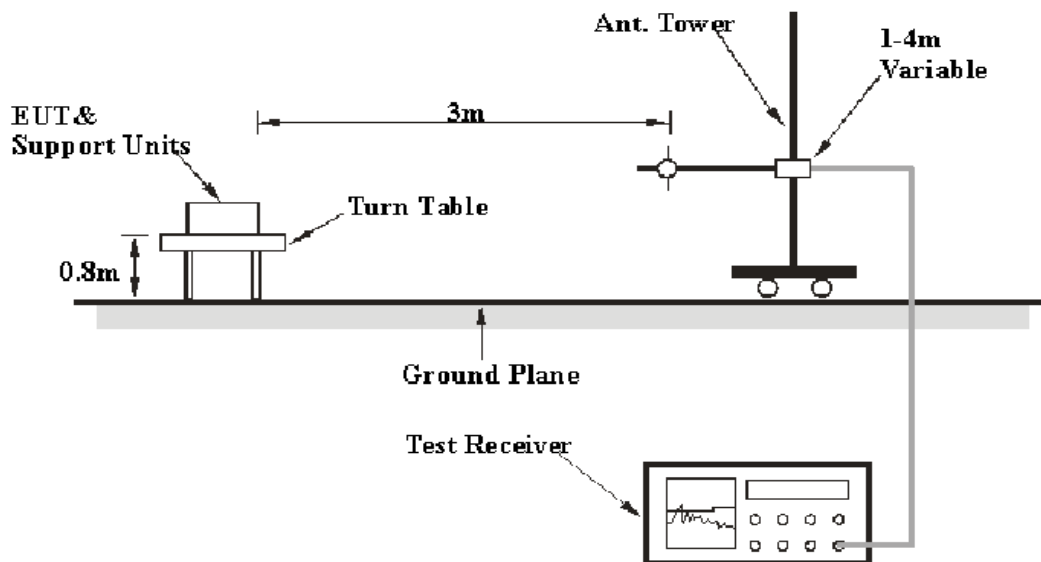
All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average) and system repeatability.

Item	Measurement Uncertainty	U_{cispr}
Radiated Emission	30MHz~1GHz	6.11dB
	1GHz~6GHz	4.45dB
	6 GHz ~18 GHz	5.23dB

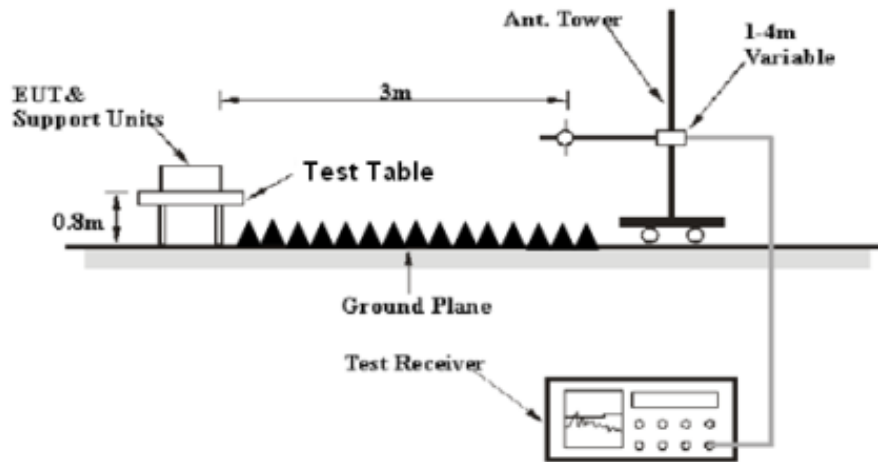
Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2014. The specification used was the FCC Part 15.109 Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 18 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30MHz – 1000 MHz	120 kHz	300 kHz	120kHz	QP
Above 1 GHz	1MHz	3 MHz	/	Peak
	1MHz	3 MHz	1MHz	AVG

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Quasi-peak detector mode from 30 MHz to 1 GHz, Peak and average detection mode above 1 GHz.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sonoma Instrument	Amplifier	310N	185700	2019-08-14	2020-08-13
Rohde & Schwarz	EMI Test Receiver	ESR	1316.3003K03 -101746-zn	2019-07-11	2020-07-10
Sunol Sciences	Broadband Antenna	JB3	A090413-1	2019-12-26	2022-12-25
Champrotek	Chamber	Chamber A	T-KSEMC049	-	-
Champrotek	Chamber	Chamber B	T-KSEMC080	-	-
Audix	Test Software	e3	V9	--	--
Rohde & Schwarz	Auto test Software	EMC32	100361	-	-
ETS	Horn Antenna	3115	6229	2019-12-12	2022-12-11
Rohde & Schwarz	EMI Receiver	ESU40	100207	2019-08-27	2020-08-26
A.H.Systems, inc	Amplifier	2641-1	491	2019-02-20	2020-02-19
MICRO-COAX	Coaxial Cable	Cable-8	008	2019-08-15	2020-08-14
MICRO-COAX	Coaxial Cable	Cable-9	009	2019-08-15	2020-08-14
MICRO-COAX	Coaxial Cable	Cable-10	010	2019-08-15	2020-08-14
MICRO-COAX	Coaxial Cable	Cable-4	004	2019-12-12	2020-12-11
MICRO-COAX	Coaxial Cable	Cable-5	005	2019-12-12	2020-12-11

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Kunshan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Data

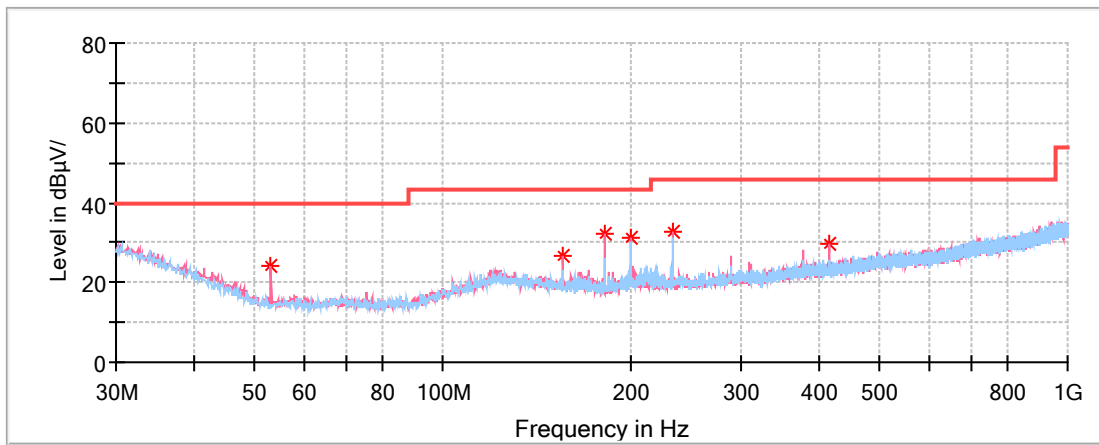
Environmental Conditions

Temperature:	22.1°C
Relative Humidity:	53 %
ATM Pressure:	101.1 kPa

The testing was performed by Cody Lu 2020-01-12.

Test mode 1 (Worst case):

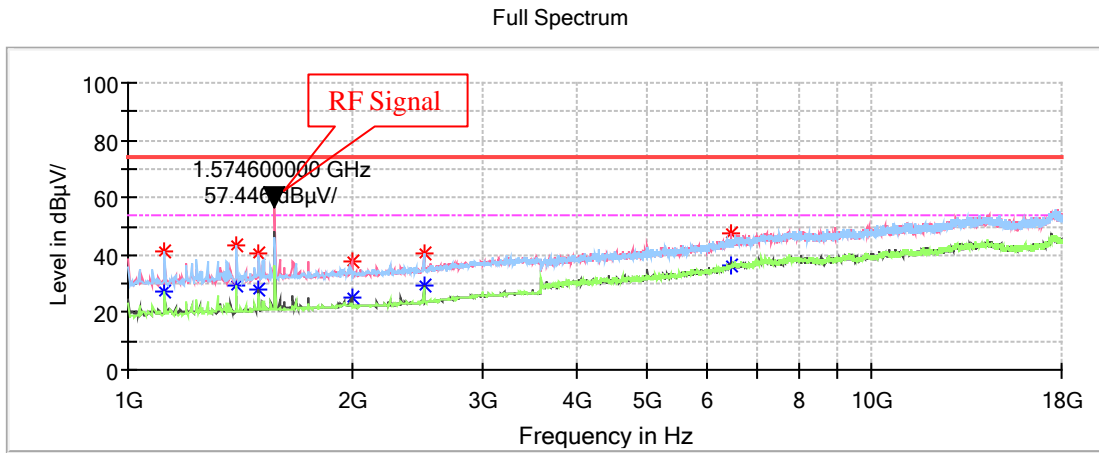
Below 1 GHz:



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
53.158750	24.17	40.00	15.83	100.0	V	133.0	-17.6
155.978750	26.53	43.50	16.97	100.0	V	265.0	-12.6
181.926250	32.11	43.50	11.39	100.0	V	244.0	-13.5
199.992500	31.03	43.50	12.47	100.0	V	214.0	-12.3
233.942500	32.55	46.00	13.45	200.0	V	69.0	-12.2
415.211250	29.54	46.00	16.46	100.0	V	27.0	-7.9

Note:
The emissions are more below the limit, so test the Peak.

Above 1 GHz:



Frequency (MHz)	MaxPeak (dB µ V/m)	Average (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1119.000000	---	27.43	54.00	26.57	100.0	H	300.0	-12.0
1119.000000	41.46	---	74.00	32.54	100.0	H	300.0	-12.0
1397.800000	---	29.26	54.00	24.74	100.0	H	347.0	-10.5
1397.800000	43.19	---	74.00	30.81	100.0	H	347.0	-10.5
1499.800000	---	28.17	54.00	25.83	100.0	V	186.0	-9.9
1499.800000	40.52	---	74.00	33.48	100.0	V	186.0	-9.9
1999.600000	---	25.00	54.00	29.00	200.0	V	196.0	-8.2
1999.600000	37.69	---	74.00	36.31	200.0	V	196.0	-8.2
2499.400000	---	29.12	54.00	24.88	100.0	V	168.0	-6.9
2499.400000	40.83	---	74.00	33.17	100.0	V	168.0	-6.9
6484.200000	---	36.18	54.00	17.82	100.0	V	0.0	4.3
6484.200000	47.37	---	74.00	26.63	100.0	V	0.0	4.3

*******END OF REPORT*******