

# Queclink Wireless Solutions Co., Ltd

## GPS Tracker

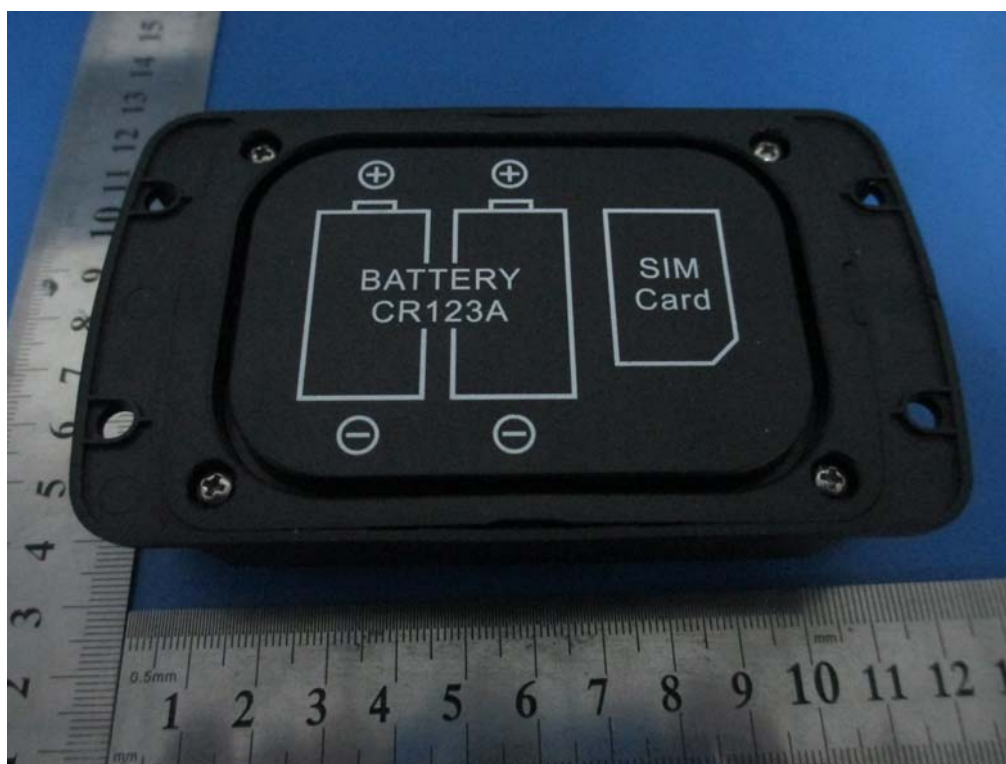
Main Model: GL500

Serial Model: GL505

March 27, 2013




Report No.: 13020158-FCC-H1

(This report supersedes NONE)



Modifications made to the product : None

This Test Report is Issued Under the Authority of:

		
William Long Compliance Engineer	Alex Liu Technical Manager	

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Test result presented in this test report is applicable to the representative sample only.

## RF Exposure Evaluation Report

To: FCC 2.1091: 2012

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Country/Region	Accreditation Body	Scope
USA	FCC, A2LA	EMC , RF/Wireless , Telecom
Canada	IC, A2LA, NIST	EMC, RF/Wireless , Telecom
Taiwan	BSMI , NCC , NIST	EMC, RF, Telecom , Safety
Hong Kong	OFTA , NIST	RF/Wireless ,Telecom
Australia	NATA, NIST	EMC, RF, Telecom , Safety
Korea	KCC/RRA, NIST	EMI, EMS, RF , Telecom, Safety
Japan	VCCI, JATE, TELEC, RFT	EMI, RF/Wireless, Telecom
Mexico	NOM, COFETEL, Caniety	Safety, EMC , RF/Wireless, Telecom
Europe	A2LA, NIST	EMC, RF, Telecom , Safety

### Accreditations for Product Certifications

Country/Region	Accreditation Body	Scope
USA	FCC TCB, NIST	EMC , RF , Telecom
Canada	IC FCB , NIST	EMC , RF , Telecom
Singapore	iDA, NIST	EMC , RF , Telecom
EU	NB	EMC & R&TTE Directive
Japan	MIC, (RCB 208)	RF , Telecom
Hong Kong	OFTA (US002)	RF , Telecom

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## 1. EXECUTIVE SUMMARY & EUT INFORMATION

The purpose of this test programme was to demonstrate compliance of the Queclink Wireless Solutions Co., Ltd, GPS Tracker and model: GL500 against the current Stipulated Standards. The GPS Tracker has demonstrated compliance with the FCC 2.1091: 2012.

### EUT Information

<b>EUT Description</b>	: GPS Tracker
<b>Main Model</b>	: GL500
<b>Serial Model</b>	: GL505
<b>Antenna Gain</b>	: GSM850: 1.52 dBi PCS1900: 2.67 dBi GPS: 2.46 dBi
<b>Input Power</b>	: 2*3V battery
<b>Maximum Conducted Peak Power to Antenna</b>	: GSM850: 32.33 dBm PCS1900: 30.33 dBm
<b>Classification Per Stipulated Test Standard</b>	: FCC 2.1091: 2012

## 2. TECHNICAL DETAILS

<b>Purpose</b>	<b>Compliance testing of GPS Tracker with stipulated standard</b>
<b>Applicant / Client</b>	<b>Queclink Wireless Solutions Co., Ltd Room 501, Building 9, No 99 ,TianZhou Road ,Shanghai ,China</b>
<b>Manufacturer</b>	<b>Queclink Wireless Solutions Co., Ltd Room 501, Building 9, No 99 ,TianZhou Road ,Shanghai ,China</b>
<b>Laboratory performing the tests</b>	<b>SIEMIC Nanjing (China) Laboratories NO.2-1,Longcang Dadao, Yuhua Economic Development Zone, Nanjing, China Tel:+86(25)86730128/86730129 Fax:+86(25)86730127 Email:info@siemic.com</b>
<b>Test report reference number</b>	<b>13020158-FCC-H1</b>
<b>Date EUT received</b>	<b>March 07, 2013</b>
<b>Standard applied</b>	<b>FCC 2.1091: 2012</b>
<b>Dates of test</b>	<b>March 19, 2013</b>
<b>No of Units</b>	<b>#1</b>
<b>Equipment Category</b>	<b>PCT</b>
<b>Trade Name</b>	<b>Queclink</b>
<b>RF Operating Frequency (ies)</b>	<b>GSM850 TX : 824.2 ~ 848.8 MHz; RX : 869.2 ~ 893.8 MHz PCS1900 TX : 1850.2 ~ 1909.8 MHz; RX : 1930.2 ~ 1989.8 MHz GPS:1575.42MHz(Rx)</b>
<b>Number of Channels</b>	<b>299CH (PCS1900) and 124CH (GSM850)</b>
<b>Modulation</b>	<b>GSM/GPRS: GMSK</b>
<b>FCC ID</b>	<b>YQD-GL500</b>

### 3. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

#### FCC §2.1091 - MAXIMUM PERMISSIBLE EXPOSURE (MPE)

##### Applicable Standard

According to §1.1307(b)(1), 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 level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for General Population/Uncontrolled Exposure

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minutes)
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	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

Test Data

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

Where: S = power density (in appropriate units, e.g. mW/cm<sup>2</sup>)

P = power input to the antenna (in appropriate units, e.g., mW).

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

## Result

### Conducted Power

Burst Average Power (dBm)								
Band	GSM850				GSM1900			
Channel	128	190	251	Tune up Power tolerant	512	661	810	Tune up Power tolerant
Frequency (MHz)	824.2	836.6	848.8	/	1850.2	1880	1909.8	/
GSM Voice (1 uplink)	32.08	32.16	32.03	33±1	29.64	30.02	29.54	30±1
GPRS Multi-Slot Class 8 (1 uplink)	<b>32.33</b>	32.29	32.27	33±1	29.68	30.01	<b>30.33</b>	30±1
GPRS Multi-Slot Class 10 (2 uplink)	30.72	30.15	30.63	30±1	28.7	28.92	28.78	28±1
GPRS Multi-Slot Class 12 (4 uplink)	N/A	N/A	N/A	28±1	N/A	N/A	N/A	26±1
Remark : GPRS, CS1 coding scheme. Multi-Slot Class 8 , Support Max 4 downlink, 1 uplink , 5 working link Multi-Slot Class 10 , Support Max 4 downlink, 2 uplink , 5 working link Multi-Slot Class 12 , Support Max 4 downlink, 4 uplink , 5 working link								

1> The maximum power density at a distance of 0.2 m for GSM 850 MHz is shown as below:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max Tune up power (dBm)	Average Output Power (mW)	Duty factor	The maximum sourced based time-averaged transmit power(mW)	Calculated RF Exposure (mW/m <sup>2</sup> )	Limit (mW/m <sup>2</sup> )
1.52	1.419	34	2511.89	1/8	313.9858	0.089	0.549

2> The maximum power density at a distance of 0.2 m for GPRS850 CLASS8 MHz is shown as below:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max Tune up power (dBm)	Average Output Power (mW)	Duty factor	The maximum sourced based time-averaged transmit power(mW)	Calculated RF Exposure (mW/m <sup>2</sup> )	Limit (mW/m <sup>2</sup> )
1.52	1.419	34	2511.89	1/8	313.9858	0.089	0.549

3> The maximum power density at a distance of 0.2 m for GPRS850 CLASS10 MHz (multi-class 10) is shown as below:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max Tune up power (dBm)	Average Output Power (mW)	Duty factor	The maximum sourced based time-averaged transmit power(mW)	Calculated RF Exposure (mW/m <sup>2</sup> )	Limit (mW/m <sup>2</sup> )
1.52	1.419	34	2511.89	1/4	627.9716	0.177	0.549



4> The maximum power density at a distance of 0.2 m for GSM1900 MHz (multi-class 10) is shown as below:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max Tune up power (dBm)	Average Output Power (mW)	Duty factor	The maximum sourced based time-averaged transmit power(mW)	Calculated RF Exposure (mW/m <sup>2</sup> )	Limit (mW/m <sup>2</sup> )
2.67	1.849	31	1258.93	1/8	157.3657	0.058	1

5> The maximum power density at a distance of 0.2 m for GPRS1900 MHz (multi-class 8) is shown as below:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max Tune up power (dBm)	Average Output Power (mW)	Duty factor	The maximum sourced based time-averaged transmit power(mW)	Calculated RF Exposure (mW/m <sup>2</sup> )	Limit (mW/m <sup>2</sup> )
2.67	1.849	31	1258.93	1/8	157.3657	0.058	1

6> The maximum power density at a distance of 0.2 m for GPRS1900 MHz (multi-class 10) is shown as below:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max Tune up power (dBm)	Average Output Power (mW)	Duty factor	The maximum sourced based time-averaged transmit power(mW)	Calculated RF Exposure (mW/m <sup>2</sup> )	Limit (mW/m <sup>2</sup> )
2.67	1.849	31	1258.93	1/4	314.7314	0.116	1

**Result: Pass**