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FCC MPE REPORT

Application No.:	SHEM1306001020RF
Applicant:	Queclink Wireless Solutions Co., Ltd
Equipment Under Test (EUT):	
NOTE: The following sample(s) submitted was/were identified on behalf of the client as	
Product Name:	GPS Locator
Brand Name:	Queclink
Model:	GL300
Added Model:	N/A
FCC ID:	YQD-GL300
Standards:	FCC Rules 47 CFR §2.1093 KDB 447498 D01 General RF Exposure Guidance
Date of Receipt:	June 06, 2013
Date of Test:	June 20, 2013 to June 26, 2013
Date of Issue:	July 03, 2013
Test Result:	**PASS***

* In the configuration tested, the EUT complied with the standards specified above.

Tony Wu
E&E Section Manager
SGS-CSTC (Shanghai) Co., Ltd.

2 Version

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
00	/	July 03, 2013	/	Original

Authorized for issue by:				
Engineer		Zenger Zhang **Print Name**		Zenger Zhang
Clerk		Susie Liu **Print Name**		Susie Liu
Reviewer		Keny Xu **Print Name**		Keny.xu

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4 General Information

4.1 Client Information

Applicant:	Queclink Wireless Solutions Co., Ltd
Address of Applicant:	Room 501, Building 9, No 99, TianZhou Road, Shanghai, China
Manufacturer:	Queclink Wireless Solutions Co., Ltd
Address of Manufacturer:	Room 501, Building 9, No 99, TianZhou Road, Shanghai, China

4.2 General Description of E.U.T.

Product Name	GPS Locator
Brand Name:	Queclink
Model No:	GL300
Added Model:	N/A
Product Description:	N/A

4.3 Technical Specifications:

Operation Frequency:	GSM850 and PCS1900
GPRS Operation mode:	Class B
GPRS Class:	Multislot Class 12
Power Supply:	3.7V DC Battery 5V DC (For Charger)
Antenna Type	Integral

4.4 Accessories of Product:

Battery:	Battery Type:	DC 3.7V
Adapter:	Model No.:	RCL-050500UL
	Rated Input:	AC 100V-240V 47/63Hz 0.35A
	Rated Output:	DC 5.0V 500mA

4.5 Support equipments for Testing

The EUT has been tested independently.

4.6 Test Location

All tests were performed at SGS E&E EMC lab

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
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4.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing. Date of expiry: 2014-07-26.

- **FCC – Registration No.: 402683**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683, Expiry Date: 2015-02-22.

- **Industry Canada (IC) – IC Assigned Code: 8617A**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A. Expiry Date: 2014-09-20.

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-3868 and C-4336 respectively. Date of Registration: 2012-05-29. Date of Expiry: 2015-05-28.

5 Test Standards and Limits

FCC Rules 47 CFR §2.1093(d)

(4) For purposes of analyzing portable transmitting devices under the occupational/controlled criteria, the time-averaging provisions of the MPE guidelines identified in § 1.1310 of this chapter can be used in conjunction with typical maximum duty factors to determine maximum likely exposure levels.

(5) Time-averaging provisions of the MPE guidelines identified in § 1.1310 of this chapter may not be used in determining typical exposure levels for portable devices intended for use by consumers, such as hand-held cellular telephones, that are considered to operate in general population/uncontrolled environments as defined above. However, “source-based” time-averaging based on an inherent property or duty-cycle of a device is allowed. An example of this would be the determination of exposure from a device that uses digital technology such as a time-division multiple-access (TDMA) scheme for transmission of a signal. In general, maximum average power levels must be used to determine compliance.

KDB 447498 D01 General RF Exposure Guidance

According to the Section 4.3.1 of KDB 447498 D01:

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 (see 5) of section 4.1). To qualify for SAR test exclusion, the test separation distances applied must be fully explained and justified by the operating configurations and exposure conditions of the transmitter and applicable host platform requirements, typically in the SAR measurement or SAR analysis report, according to the required published RF exposure KDB procedures. When no other RF exposure testing or reporting is required, a statement of justification and compliance must be included in the equipment approval, in lieu of the SAR report, to qualify for the SAR test exclusion. When required, the device specific conditions described in the other published RF exposure KDB procedures must be satisfied before applying these SAR test exclusion provisions; for example, handheld PTT two-way radios, handsets, laptops & tablets etc.

1) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR,

Where:

• f(GHz) is the RF channel transmit frequency in GHz

• Power and distance are rounded to the nearest mW and mm before calculation

• The result is rounded to one decimal place for comparison

• 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

6 Measurement and Calculation

6.1 Maximum ERP/EIRP

Test Date: Apr 22, 2013(From RF test Reprot SHEM130600102001)

EUT Operation: Test in fixing frequency operating mode at lowest, middle and highest frequency.

Test Results record:

Frequency (MHz)	CH	Coducted Output Power (dBm)	Tune Up Max. Power (dBm)	Duty Cycle (dB)	Max. Average Output Power (dBm)	Max. Average Output Power (mW)
824.20	128	31.50	32.0	-27.16	4.84	3.05
836.60	190	31.40	32.0	-27.16	4.84	3.05
848.80	251	31.60	32.0	-27.16	4.84	3.05
Frequency (MHz)	**CH**	**Coducted Output Power (dBm)**	**Tune Up Max. Power (dBm)**	**Duty Cycle**	**Max. Average Output Power (dBm)**	**Max. Average Output Power (mW)**
1850.20	512	28.30	29.0	-27.16	1.84	1.53
1880.00	661	28.10	29.0	-27.16	1.84	1.53
1908.80	810	27.90	29.0	-27.16	1.84	1.53

6.2 Duty Cycle Measurement

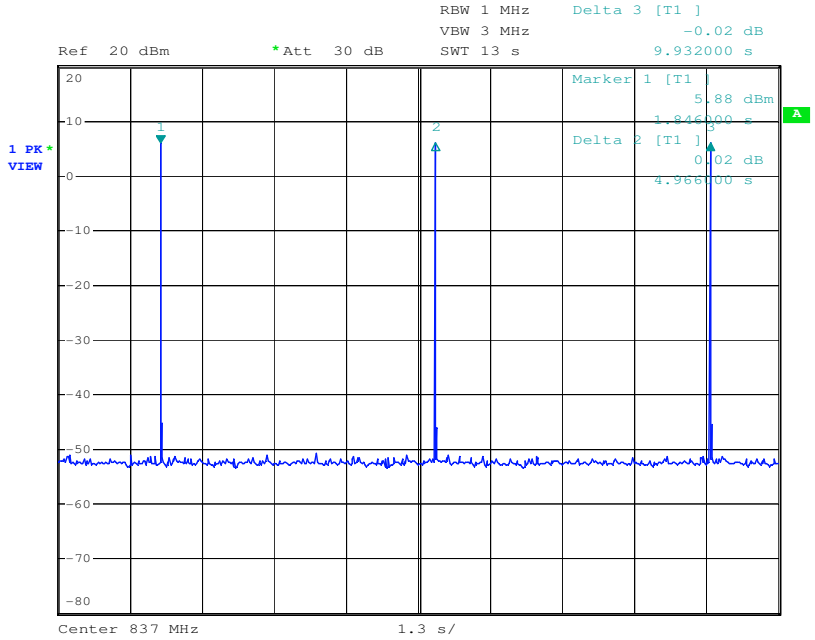

Figure 1 Transmitting Time Interval

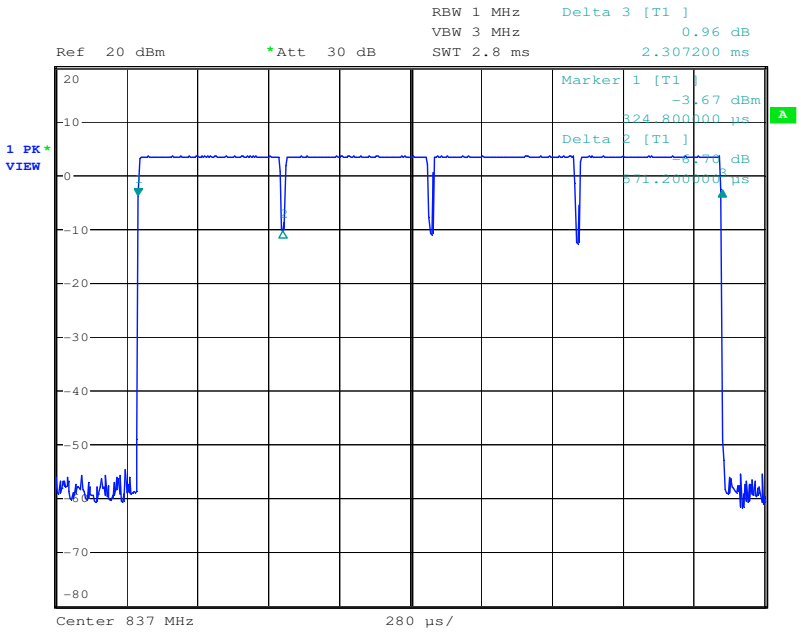

Figure 2 Transmitting Burst Time

In addition, we confirm the maximum turn/transmit time among all modes is less than 50 bursts/1minutes, each burst is 577us length.

The follows is analyses:
The device is designed to provide two applications, one is continuous tracking and another is position request. Under every applications the location info can be send to one preset number or server or both through SMS or HTTP, this can be set by user refer to user manual.
(1) In continuous tracking mode, Tracker will report position through HTTP to server at the some interval(1min~1440min),the interval can be set by the user.
(2) In position request mode, when the tracker received the request through SMS or CALL, it will start to acquire position through GPS. Once the position is acquired and fixed, it will report the current position through SMS to mobile or through HTTP to server. And the tracker will report the latest position if position fix fails.
(3)If 2 requests are received nearly at the same time, if the service for the first is not finished, it will skip the second. If the service for the first has finished, it will process the service for the second.
(4)The incoming request for location may meet or happen with continuous tracking at the same time, system will handle incoming request for location for the first priority task, and skip the continuous tracking event.
(5) The class 12 service support three up two down or four up one down. The number of slots be used is the lesser of what the particular cell supports and the maximum capability of the mobile device. In one GPRS service the network always assigned 1 slot at first and will adjust the slot number according to the data amount within the maximum capability. As the tracker deal with the service one by one and each service may send about 100Bytes data, in most case there will be only one slot up and one slot down working. Only when the user requests the location info frequently one by one, the network may assign more slots to transmit data. The worst case is that 2 slots are used to transmit large quantity data.

(6) As GL300 device, the maximum length of each GTTRI message is about 130bits.

On short TCP connecting mode, the total length of each message is 492+130=622Bytes;
On long TCP connecting mode, the total length of each message is 104+130=234B, and the length of each heartbeat packet is 65+104+69+104=342B;

On UDP connecting mode, the length of each message is 28+130=158B.

The worst condition is sending one TCP short connecting message every minute. For one TX burst can send 114bit useful message, so when sending 622Byte message, the total burst needed is:

$$\frac{622Byte*8}{114bit}=43.6$$

Considered some other redundant information, less than 50 bursts are needed per minute.

So the Power Factor=10log((4*0.577ms)/(60000ms/50))=-27.16dB

6.3 Determine

EUT mode	Frequency (MHz)	CH	Max. Average Output Power (mW)	Minimum. Separation Distance (mm)	SAR Test Exclusion Thresholds	Limit (for 1-g)
GSM 850	824.20	128	3.05	5	0.554	3
	836.60	190	3.05	5	0.558	3
	848.80	251	3.05	5	0.562	3
EUT mode	**Frequency (MHz)**	**CH**	**Max. Average Output Power (mW)**	**Minimum Separation Distance (mm)**	**SAR Test Exclusion Thresholds**	**Limit (for 1-g)**
PCS 1900	1850.20	512	1.53	5	0.416	3
	1880.00	661	1.53	5	0.420	3
	1908.80	810	1.53	5	0.423	3

Note: SAR Test Exclusion Thresholds=[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] [√f(GHz)]

e.g. the Max. SAR Test Exclusion Thresholds=(3.05/5)*(√ 0.8488)=0.562<3.

So the SAR test is exclusion .

7 EUT Constructional Details

Refer to the < GL300_External Photos > & < GL300_Internal Photos >.

The end of report