RF Exposure Evaluation Declaration

Product Name : GPS Locator

Model No. : GV75W

FCC ID: YQD-GV75W

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

Date of Receipt : 11/14/2016

Issued Date : 12/05/2016

Report No. : UL12620161114FCC019-4

Report Version : V1.0

RF Exposure Evaluation Declaration

Issued Date : 12/05/2016
Report No. : UL12620161114FCC019-04

Product Name :	GPS Locator
Applicant :	Queclink Wireless Solutions Co.,Ltd
Address :	Room 501, Building 9, No 99, TianZhou Road, Shanghai, China
Manufacturer :	Queclink Wireless Solutions Co.,Ltd.
Address :	Room 501, Building 9, No 99, TianZhou Road, Shanghai, China
Model No. :	GV75W
EUT Voltage	Extreme Low:8V, Nominal:12/24V, Extreme High:32V
Brand Name :	Queclink
Applicable Standard :	FCC's Rules (47 C.F.R. §1.1310 and 2.1091)
	Industry Canada RSS-102, Issue 5
Test Result :	Complied
Performed Location :	Unilab (Shanghai) Co.,Ltd.
	FCC 2.948 register number is 714465
	IC register number is 11025A-1
	No.1350, Lianxi Road, Pudong New District, Shangha, China
	TEL:+86-21-5027-5125/FAX:+86-21-5027-5126-876

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Approved By : Eva Wang

(Supervisor: Eva Wang)

1. EUT Description

Product Name:	GPS Locator
Model Name:	GV75W
Hardware Version:	V1.02
Software Version:	A01V09
RF Exposure Environment:	Uncontrolled
GSM/ EDGE	
Support Band:	GSM850/PCS1900
GPRS Class:	12
Tx Frequency Range:	GSM 850: 824.2MHz to 848.8MHz PCS 1900: 1850.2MHz to 1909.8MHz
Rx Frequency Range:	GSM 850: 869.2MHz to 893.8MHz PCS 1900: 1930.2MHz to 1989.8MHz
Type of modulation:	GSM/GPRS for GMSK EDGE for 8PSK
Antenna Type:	Internal Antenna
Antenna Peak Gain:	GSM 850:-1.8/PCS 1900: 3.1dBi
WCDMA	
Support Band:	WCDMA Band Ⅱ
Tx Frequency Range:	WCDMA Band Ⅱ: 1850MHz ~1910MHz
Rx Frequency Range:	WCDMA Band Ⅱ: 1930MHz ~1990MHz
Type of modulation:	WCDMA(UMTS): QPSK
Antenna Type:	Connector
Antenna Peak Gain:	WCDMA Band Ⅱ: 3.5dBi
Support Band:	WCDMA Band V
Tx Frequency Range:	WCDMA Band V: 824MHz ~849MHz
Rx Frequency Range:	WCDMA Band V: 869MHz ~894MHz
Type of modulation:	WCDMA(UMTS): QPSK
Antenna Type:	Connector
Antenna Peak Gain:	WCDMA Band V: -1.8dBi

2. RF Exposure Evaluation

2.1 Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range(MHz)	Electric Filed Strength (V/m)	Magnetic Filed Strength (A/m)	Power Density (mW/cm2)	Average Time (Minutes)
(A)Limits for Occupation/Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B)Limits for General Occupation/UnControlled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

Friis Formula

Friis transmission formula: Pd = (Pout*G)/(4*Pi*R2)

Where

Pd = power density in mW/cm2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

Pd id the limit of MPE, 1 mW/cm2 . If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

2.2.Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 22℃and 45％ RH.

2.3.Test Result of RF Exposure Evaluation

This device is evaluated by mobile device with general population/uncontrolled exposure condition
For this device, the calculation is using the most conservative values, and the results are as follows:

Test Mode	Antenna Gain (dBi)	Maximum Output Power (dBm)	Averaged Power (dBm)	Average EIRP Power (dBm)	Average EIRP Power (mW)	Calculated RF Exposure at d = 20cm (mW/cm2)	MPE Limit (mW/cm2)
GSM 850	-1.8	33.5	24.5	22.7	185	0.04	0.55
GPRS 850 1 TX slot	-1.8	33.0	24.0	22.2	165	0.03	0.55
GPRS 850 2 TX slot	-1.8	32.0	26.0	24.2	262	0.05	0.55
GPRS 850 3 TX slot	-1.8	31.0	26.7	24.9	312	0.06	0.55
GPRS 850 4 TX slot	-1.8	30.0	27.0	25.2	330	0.07	0.55
PCS 1900	3.1	30.5	21.5	24.6	286	0.06	1.00
GPRS PCS 1 TX slot	3.1	30.0	21.0	24.1	255	0.05	1.00
GPRS PCS 2 TX slot	3.1	29.0	23.0	26.1	405	0.08	1.00
GPRS PCS 3 TX slot	3.1	28.0	23.7	26.8	483	0.10	1.00
GPRS PCS 4 TX slot	3.1	27.0	24.0	27.1	512	0.10	1.00

The averaged power calculated method are shown as below:
1 Tx Slot: Averaged power=Maximum Output power + (10lg(1/8))dB, Duty cycle =12.5%
2 Tx Slot: Averaged power=Maximum Output power + (10lg(2/8))dB, Duty cycle =25.0%
3 Tx Slot: Averaged power=Maximum Output power + (10lg(3/8))dB, Duty cycle =37.5%
4 Tx Slot: Averaged power=Maximum Output power + (10lg(4/8))dB, Duty cycle =50.0%
Average EIRP Power=Average Power + Antenna Gain
Calculated RF Exposure = Average EIRP Power / ($4*Pi*d^2$)

Test Mode	Antenna Gain (dBi)	Maximum Output Power (dBm)	Maximum EIRP Power (dBm)	Maximum EIRP Power (mW)	Calculated RF Exposure at d = 20cm (mW/cm2)	MPE Limit (mW/cm2)
WCDMA 850	-1.8	24	22.2	166.0	0.03	0.55
WCDMA 1900	3.5	24	27.5	562.3	0.11	1.00

Test Mode	Antenna Gain (dBi)	Maximum Output Power (dBm)	Averaged Power (dBm)	Average EIRP Power (dBm)	Average EIRP Power (mW)	Calculated RF Exposure at d = 20cm (mW/cm2)	MPE Limit (mW/cm2)
GSM 850	-1.8	33.5	23.7	21.9	156	0.03	0.55
GPRS 850 1 TX slot	-1.8	33.0	23.5	21.7	149	0.03	0.55
GPRS 850 2 TX slot	-1.8	32.0	25.2	23.4	218	0.04	0.55
GPRS 850 3 TX slot	-1.8	31.0	26.1	24.3	270	0.05	0.55
GPRS 850 4 TX slot	-1.8	30.0	25.6	23.8	238	0.05	0.55
PCS 1900	3.1	30.5	20.8	23.9	248	0.05	1.00
GPRS PCS 1 TX slot	3.1	30.0	20.4	23.5	223	0.04	1.00
GPRS PCS 2 TX slot	3.1	29.0	23.4	26.5	451	0.09	1.00
GPRS PCS 3 TX slot	3.1	28.0	23.6	26.7	469	0.09	1.00
GPRS PCS 4 TX slot	3.1	27.0	23.5	26.6	454	0.09	1.00

The averaged power calculated method are shown as below:
1 Tx Slot: Averaged power=Maximum Output power + (10lg(1/8))dB, Duty cycle =12.5%
2 Tx Slot: Averaged power=Maximum Output power + (10lg(2/8))dB, Duty cycle =25.0%
3 Tx Slot: Averaged power=Maximum Output power + (10lg(3/8))dB, Duty cycle =37.5%
4 Tx Slot: Averaged power=Maximum Output power + (10lg(4/8))dB, Duty cycle =50.0%
Average EIRP Power=Average Power + Antenna Gain
Calculated RF Exposure = Average EIRP Power / ($4*Pi*d^2$)

Test Mode	Antenna Gain (dBi)	Maximum Output Power (dBm)	Maximum EIRP Power (dBm)	Maximum EIRP Power (mW)	Calculated RF Exposure at d = 20cm (mW/cm2)	MPE Limit (mW/cm2)
WACDMA 850 HSDPA Subtest-1	-1.8	23.57	21.8	150.3	0.03	0.55
WACDMA 850 HSDPA Subtest-2	-1.8	23.50	21.7	147.9	0.03	0.55
WACDMA 850 HSDPA Subtest-3	-1.8	23.35	21.6	142.9	0.03	0.55
WACDMA 850 HSDPA Subtest-4	-1.8	23.27	21.5	140.3	0.03	0.55
WCDMA 1900 HSDPA Subtest-1	3.5	23.57	27.1	509.3	0.10	1.00
WCDMA 1900 HSDPA Subtest-2	3.5	23.48	27.0	498.9	0.10	1.00
WCDMA 1900 HSDPA Subtest-3	3.5	23.33	26.8	481.9	0.10	1.00
WCDMA 1900 HSDPA Subtest-4	3.5	23.27	26.8	475.3	0.09	1.00

This device can pass RF exposure limit.