

RF Exposure Evaluation Declaration

Product Name: GPS Tracker

Model No.: ES610

FCC ID: YR8ES610

Applicant : eSky Wireless Inc.

Address : 22-303,328 Xinghu Street,Suzhou,China

Date of Receipt : 26-11-2014

Issued Date : 05-01-2015

Report No. : UL05420141126FCC027-1

Report Version : V1.0

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

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Applicant : eSky Wireless Inc.
Address : 22-303,328 Xinghu Street, Suzhou, China
Manufacturer : eSky Wireless Inc.
Address : 22-303,328 Xinghu Street, Suzhou, China
EUT Voltage : MIN: 6.0V, NOR:12V, MAX: 42V
Brand Name : eSky
Applicable Standard : FCC OET Bulletin 65 Supplement C (Edition 01-01)
Test Result : Complied
Performed Location : Unilab (Shanghai) Co.,Ltd.
FCC 2.948 register number is 714465
No.1350, Lianxi Road, Pudong New District, Shangha, China
TEL:+86-21-5027-5125/FAX:+86-21-5027-7862

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1. EUT Description

Product Name:	GPS Tracker
Model Name:	ES610
Hardware Version:	ES110-MB-H103
Software Version:	LLB0003.1.4
RF Exposure Environment:	Uncontrolled
GSM/GPRS	
Support Band:	GSM850/ PCS 1900
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:	GMSK
Antenna Type:	Internal
Antenna Peak Gain:	GSM 850: 2dBi PCS 1900: 2dBi

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 Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	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: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

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

P_d is 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: 18°C 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)	Average Power (dBm)	Average EIRP (mW)	Calculated RF Exposure at d = 20cm (mW/cm ²)	MPE Limit (mW/cm ²)
GSM 850	2	32.81	23.81	381.1	0.076	0.55
PCS 1900	2	30.30	21.30	213.8	0.043	1.00
The averaged power calculated method are shown as below: Averaged power=Maximum burst averaged power(1 Tx Slot)-9dB Duty cycle =12.5% Average EIRP Power=Average Power+Antenna Gain						

Test Mode	ERP (dBm)	EIRP (dBm)	Peak EIRP (mW)	Average EIRP (mW)	Calculated RF Exposure at d = 20cm (mW/cm ²)	MPE Limit (mW/cm ²)
GSM 850	31.57	33.72	2355.0	296.5	0.059	0.55
GPRS 850	31.97	34.12	2582.3	325.1	0.064	0.55
PCS 1900	-----	28.88	772.7	97.3	0.019	1.00
GPRS 1900	-----	28.95	785.2	98.9	0.020	1.00
The frame-averaged power calculated method are shown as below: Average EIRP=Peak EIRP-9dB Duty cycle =12.5%						

This device can pass RF exposure limit.