



RF Exposure Evaluation Report

APPLICANT : Locus Solutions
EQUIPMENT : 2G Tracker
BRAND NAME : LOCUS TRAXX
MODEL NAME : SmartTraxx go 1.1
MARKETING NAME : GO
FCC ID : AMH101006
STANDARD : 47 CFR Part 2.1091

We, SPORTON INTERNATIONAL (SHENZHEN) INC., would like to declare that the device has been evaluated in accordance with 47 CFR Part 2.1091, and pass the limit. Without written approval of SPORTON INTERNATIONAL (SHENZHEN) INC., the test report shall not be reproduced except in full.

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**Revision History**

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA5N1801	Rev. 01	Initial issue of report	Jan. 05, 2016

**1. Administration Data****1.1. Testing Laboratory**

Testing Laboratory	
Test Site	SPORTON International (SHENZHEN) Inc.
Test Site Location	1F & 2F, Building A, Morning Business Center, No. 4003 ShiGu Rd., Xili Town, Nanshan District, Shenzhen, Guangdong, P. R. China TEL: 86-755-8637-9589 FAX: 86-755-8637-9595

Applicant	
Company Name	Locus Solutions
Address	14924 Corporate Rd S, Jupiter, FL 33478, USA

Manufacturer	
Company Name	Shenzhen Zhenhua Communication Equipment Co. Ltd
Address	Zhenhua Industrial Park, No.44, Tiezai Rd., Xixiang Town, BaoAn, Shenzhen, Guang Dong, China

2. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	2G Tracker
Brand Name	LOCUS TRAXX
Model Name	SmartTraxx go 1.1
Marketing Name	GO
FCC ID	AMH101006
IMEI Code	352477070000199
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz
Mode	• GPRS
Antenna Type	Helical Antenna
HW Version	TK108_61_V10
SW Version	M6100_1.9.8
EUT Stage	Identical Prototype

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. There are two different types of EUT. They are the same including circuit design, PCB board, structure and all components except for battery different.

3. Maximum RF average output power among production units

Band GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GPRS (GMSK, 1 Tx slot)	32.87	32.75	32.63	33.00	23.87	23.75	23.63	24.00
GPRS (GMSK, 2 Tx slots)	31.81	31.70	31.59	32.00	25.81	25.70	25.59	26.00
GPRS (GMSK, 3 Tx slots)	30.06	29.94	29.84	31.00	25.80	25.68	25.58	26.74
GPRS (GMSK, 4 Tx slots)	29.42	29.29	29.16	30.00	26.42	26.29	26.16	27.00
Band GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GPRS (GMSK, 1 Tx slot)	29.45	29.40	29.62	30.00	20.45	20.40	20.62	21.00
GPRS (GMSK, 2 Tx slots)	28.51	28.44	28.75	30.00	22.51	22.44	22.75	24.00
GPRS (GMSK, 3 Tx slots)	26.64	26.67	26.94	28.00	22.38	22.41	22.68	23.74
GPRS (GMSK, 4 Tx slots)	25.76	25.79	26.03	27.00	22.76	22.79	23.03	24.00

Remark: The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.

The calculated method are shown as below:

Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB

Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB

Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB

Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB

4. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

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

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna



5. Radio Frequency Radiation Exposure Evaluation

5.1. Standalone Power Density Calculation

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum ERP/EIRP (W)	Maximum output power Limit (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)
GPRS 850 (1 Tx slot)	824.2	-1.0	33.0	32.00	1.58	199.53	0.040	0.549
GPRS 850 (2 Tx slots)	824.2	-1.0	32.0	31.00	1.26	316.23	0.063	0.549
GPRS 850 (3 Tx slots)	824.2	-1.0	31.0	30.00	1.00	374.97	0.075	0.549
GPRS 850 (4 Tx slots)	824.2	-1.0	30.0	29.00	0.79	398.11	0.079	0.549
GPRS 1900 (1 Tx slot)	1850.2	-1.0	30.0	29.00	0.79	100.00	0.020	1.000
GPRS 1900 (2 Tx slots)	1850.2	-1.0	30.0	29.00	0.79	199.53	0.040	1.000
GPRS 1900 (3 Tx slots)	1850.2	-1.0	28.0	27.00	0.50	187.93	0.037	1.000
GPRS 1900 (4 Tx slots)	1850.2	-1.0	27.0	26.00	0.40	199.53	0.040	1.000

Note: For conservativeness, the lowest uplink frequency of each band is used to determine the MPE limit of that band

Conclusion:

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.