

# **RF Exposure Measurement and Test Report**

For

Shenzhen Concox Information Techology Co., Ltd

4/F, Building C, Gaoxinqi Industrial Park, Liuxian 1st Road, No.67 Xin'an

Street Bao'an District, Shenzhen, China

Test Standard:	EN 62311:2008			
Product Description:	GPS VEHICLE TRACKER			
Tested Model:	<u>X3</u>			
Report No.:	STR18038161E-3			
Tested Date:	2018-03-15 to 2018-04-09			
Issued Date:	2018-04-09			
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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen SEM.Test Technology Co., Ltd.



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### **1. GENERAL INFORMATION**

### **1.1 Product Description for Equipment Under Test (EUT)**

### **Client Information**

Manufacturer:	Shenzhen Concox Information Techology Co., Ltd
Address of manufacturer:	4/F, Building C, Gaoxinqi Industrial Park, Liuxian 1st
	Road, No.67 Xin'an Street Bao'an District,
	Shenzhen, China

General Description of EUT	
Product Name:	GPS VEHICLE TRACKER
Trade Name:	1
Model No.:	X3
Adding Model(s):	GT810
Rated Voltage:	DC Port: DC12V/24V; Battery: DC 3.7V
Battery Capacity:	450mAh
Power Adaptor Model:	1
Software Version:	NT37_10_A1D_D23_R0_V02_WM_20180322_1004
Hardware Version:	NT37_MB_V1.2

Note: The test data is gathered from a production sample, provided by the manufacturer.

Technical Characteristics of EUT			
2G			
Support Networks:	GSM, GPRS		
Support Bands:	GSM900, DCS1800		
Frequency Range:	GSM900: Tx: 880-915MHz, Rx: 925-960MHz		
	DCS1800: Tx: 1710-1785MHz, Rx: 1805-1880MHz		
RF Output Power:	GSM900: 32.80dBm, GSM1800: 29.3dBm		
Modulation Type:	GMSK		
Type of Antenna:	Integral Antenna		
Antenna Gain:	GSM900: -0.5dBi, DCS1800:0dBi		
GPRS Class:	Class 12		
GPS	_		
Frequency Range:	1575.42MHz		

### **1.2 Compliance Standards**

The tests were performed according to following standards:

**EN 62311:2008** Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz – 300 GHz), and EN 62479:2010, Assessment of the compliance of low power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields (10 MHz to 300 GHz).

*Maintenance of compliance* is the responsibility of the manufacturer. Any modification of the product maybe which result in lowering the emission/immunity should be checked to ensure compliance has been maintained

### **1.3 Test Methodology**

All measurements contained in this report were conducted with EN 62311,

The equipment under test (EUT) was configured to measure its highest possible emission level. For more detail refer to the Operating Instructions.

### **1.4 Test Facility**

#### FCC – Registration No.: 125990

Shenzhen SEM Test Technology Co., Ltd. Laboratory has been recognized to perform compliance testing on equipment subject to the Commissions Declaration Of Conformity (DOC). The Designation Number is CN5010, and Test Firm Registration Number is 125990.

#### Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Shenzhen SEM. Test Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.



### 2. RF EXPOSURE REFERENCE LEVELS

### 2.1 Standard Applicable

This International Standard applies to electronic and electrical equipment for which no dedicated product- or product family standard regarding human exposure to electromagnetic fields applies. The frequency range covered is 0 Hz to 300 GHz.

The object of this generic standard is to provide assessment methods and criteria to evaluate such equipment against basic restrictions or reference levels on exposure of the general public related to electric, magnetic and electromagnetic fields and induced and contact current.

#### Normative reference

EN 62311:2008, Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz).

Council Recommendation 1999/519/EC of 12 July 1999 on the limitation of exposure of the general public to the electromagnetic fields (0Hz to 300GHz) (Official Journal L 197 of 30 July 1999).

### 2.2 Reference Levels Limit

According to the EN 62311:2008, the criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified 1999/519/EC.

(OMHZ to SOOGHZ, Imperturbed rms values)				
Frequency	E-field strength	H-field strength	B-field	Equivalent plane wave power density
range	(V/m)	$(\wedge/m)$	(nT)	$S_{Eq}(W/m^2)$
0-1Hz	—	$3.2X10^{4}$	$4X10^4$	
1-8Hz	10000	$3.2X10^4/f^2$	$4X10^{4}/f^{2}$	
8-25Hz	10000	4000/f	5000/f	_
0.025-0.8kHz	250/f	4/f	5/f	_
0.8-3kHz	250/f	5	6.25	_
3-150kHz	87	5	6.25	_
0.15-1MHz	87	0.73/f	0.92/f	_
1-10MHz	$87/f^{1/2}$	0.73/f	0.92/f	—
10-400MHz	28	0.073	0.092	2
400-2000MHz	1,375 f <sup>1/2</sup>	$0.0037 \ f^{1/2}$	$0.0046 f^{1/2}$	f/200
2-300GHz	61	0.16	0.20	10

## Reference levels of electric, magnetic, and electromagnetic fields

#### Note:

1. f as indicated in the frequency range column

2. For frequencies between 100 kHz and 10 GHz,  $S_{Eq}$ ,  $E^2$ ,  $H^2$ , and  $B^2$  are to be averaged over any sixty-minute period.

3. For frequencies exceeding 10GHz,  $S_{Eq}$ ,  $E^2$ ,  $H^2$ , and  $B^2$  are to be averaged over any  $68/f^{1.05}$ -minute period (f in GHz).



4. No E-field value is provided for frequencies<1 Hz, which are effectively static electric fields. For most people the annoying perception of surface electric charges will not occur at field strengths less than 25 kV/m, Spark discharges causing stress or annoyance should be avoided.

### **2.3 Evaluation Methods**

The antenna of the product, under normal use condition is at least 20 cm away from the body of the user. Warning statement to the user to keeping at least 20 cm separation distance and the prohibition of operating to a person has been printed on the user's manual. So, this product under normal use is located on electromagnetic far field between the human body.

Far Field Calculation Formula

$$\mathbf{E} = \mathbf{\eta}_0 \mathbf{H} = \frac{\sqrt{30PG(\theta, \phi)}}{r}$$

G=antenna gain relative to an isotropic antenna  $\theta$ ,Ø=elevation and azimuth angles to point of investigation r=distance from observation point to the antenna  $\eta$ 0=Characteristic impedance of free space

### 2.4 Evaluation Results

Test Conditions:	EIRP (dBm)	E-field Strength (V/m)	E-field Strength Limit (V/m)	Result Pass/Fail
GSM900	32.80	37.80	41.19	Pass
GSM1800	29.30	25.27	57.48	Pass

Since the maximum E-field strength of this device based on 20cm separation distance cannot exceed the E-field strength of reference levels limit. It is deemed to full fit the requirement of RF exposure basic restriction specified in EC Council Recommendation (1999/519/EC).

### **EXHIBIT 1 - PRODUCT LABELING**

Please refer to "ANNEX\_EUT Label & Photos".

### **EXHIBIT 2 - EUT PHOTOGRAPHS**

Please refer to "ANNEX\_EUT Label & Photos".

\*\*\*\*\* END OF REPORT \*\*\*\*\*