

# Extremtrac Technology Co., Ltd

## GPS Vehicle/Asset Tracker

**Main Model: MC500**

**Serial Model: N/A**

**April 15, 2013**




**Report No.: 13020239-FCC-H1**

**(This report supersedes NONE)**



**Modifications made to the product : None**

**This Test Report is Issued Under the Authority of:**

		
<b>William Long</b> Compliance Engineer	<b>Alex Liu</b> Technical Manager	

**This test report may be reproduced in full only.  
Test result presented in this test report is applicable to the representative sample only.**

**RF Exposure Evaluation Report**

**To: FCC 2.1091: 2012**

**SIEMIC, INC.**  
Accessing global markets



## Laboratory Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.



In addition to testing and certification, SIEMIC provides initial design reviews and compliance management through out a project. Our extensive experience with China, Asia Pacific, North America, European, and international compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

### Accreditations for Conformity Assessment

Country/Region	Accreditation Body	Scope
USA	FCC, A2LA	EMC , RF/Wireless , Telecom
Canada	IC, A2LA, NIST	EMC, RF/Wireless , Telecom
Taiwan	BSMI , NCC , NIST	EMC, RF, Telecom , Safety
Hong Kong	OFTA , NIST	RF/Wireless ,Telecom
Australia	NATA, NIST	EMC, RF, Telecom , Safety
Korea	KCC/RRA, NIST	EMI, EMS, RF , Telecom, Safety
Japan	VCCI, JATE, TELEC, RFT	EMI, RF/Wireless, Telecom
Mexico	NOM, COFETEL, Caniety	Safety, EMC , RF/Wireless, Telecom
Europe	A2LA, NIST	EMC, RF, Telecom , Safety

### Accreditations for Product Certifications

Country/Region	Accreditation Body	Scope
USA	FCC TCB, NIST	EMC , RF , Telecom
Canada	IC FCB , NIST	EMC , RF , Telecom
Singapore	iDA, NIST	EMC , RF , Telecom
EU	NB	EMC & R&TTE Directive
Japan	MIC, (RCB 208)	RF , Telecom
Hong Kong	OFTA (US002)	RF , Telecom

This page has been left blank intentionally.

**CONTENTS**

**1. EXECUTIVE SUMMARY & EUT INFORMATION.....5**

**2. TECHNICAL DETAILS .....6**

**3. MAXIMUM PERMISSIBLE EXPOSURE (MPE) .....7**

**FCC §2.1091 - MAXIMUM PERMISSIBLE EXPOSURE (MPE).....7**

## 1. EXECUTIVE SUMMARY & EUT INFORMATION

The purpose of this test programme was to demonstrate compliance of the Extremtrac Technology Co., Ltd, GPS Vehicle/Asset Tracker and model: MC500 against the current Stipulated Standards. The GPS Vehicle/Asset Tracker has demonstrated compliance with the FCC 2.1091: 2012.

### EUT Information

<b>EUT Description</b>	: GPS Vehicle/Asset Tracker
<b>Main Model</b>	: MC500
<b>Serial Model</b>	: N/A
<b>Antenna Gain</b>	: GSM850: 2 dBi PCS1900: 2 dBi GPS: 2 dBi
<b>Input Power</b>	: 9V - 36V(DC)
<b>Maximum Conducted Peak Power to Antenna</b>	: GSM850: 32.78 dBm PCS1900: 29.19dBm
<b>Maximum Radiated ERP/EIRP</b>	: GSM850: 30.05 dBm / ERP PCS1900: 27.26 dBm / EIRP
<b>Classification Per Stipulated Test Standard</b>	: FCC 2.1091: 2012

## 2. TECHNICAL DETAILS

<b>Purpose</b>	<b>Compliance testing of GPS Vehicle/Asset Tracker with stipulated standard</b>
<b>Applicant / Client</b>	<b>Extremtrac Technology Co., Ltd 4F, The Second Building, MinZhi The Third Industrial Zone, Bao'an District, P.O.518131, Shenzhen China</b>
<b>Manufacturer</b>	<b>Extremtrac Technology Co., Ltd 4F, The Second Building, MinZhi The Third Industrial Zone, Bao'an District, P.O.518131, Shenzhen China</b>
<b>Laboratory performing the tests</b>	<b>SIEMIC Nanjing (China) Laboratories NO.2-1, Longcang Dadao, Yuhua Economic Development Zone, Nanjing, China Tel: +86(25)86730128/86730129 Fax: +86(25)86730127 Email: info@siemic.com</b>
<b>Test report reference number</b>	<b>13020239-FCC-H1</b>
<b>Date EUT received</b>	<b>April 01, 2013</b>
<b>Standard applied</b>	<b>FCC 2.1091: 2012</b>
<b>Dates of test</b>	<b>April 08, 2013</b>
<b>No of Units</b>	<b>#1</b>
<b>Equipment Category</b>	<b>PCT</b>
<b>Trade Name</b>	<b>N/A</b>
<b>RF Operating Frequency (ies)</b>	<b>GSM850 TX : 824.2 ~ 848.8 MHz; RX : 869.2 ~ 893.8 MHz PCS1900 TX : 1850.2 ~ 1909.8 MHz; RX : 1930.2 ~ 1989.8 MHz GPS: 1575.42MHz(Rx)</b>
<b>Number of Channels</b>	<b>299CH (PCS1900) and 124CH (GSM850)</b>
<b>Modulation</b>	<b>GSM/GPRS: GMSK</b>
<b>FCC ID</b>	<b>SRZET800MC500</b>

### **3. MAXIMUM PERMISSIBLE EXPOSURE (MPE)**

#### **FCC §2.1091 - MAXIMUM PERMISSIBLE EXPOSURE (MPE)**

##### **Applicable Standard**

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for General Population/Uncontrolled Exposure

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minutes)
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz

\* = Plane-wave equivalent power density

Test Data

Predication of MPE limit at a given distance

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

Where: S = power density (in appropriate units, e.g. mW/cm<sup>2</sup>)

P = power input to the antenna (in appropriate units, e.g., mW).

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

**1> The maximum power density at a distance of 0.2 m for GSM 850 MHz is shown as below:**

Antenna Gain (dBi)	Antenna Gain (numeric)	Max Tune up power (dBm)	Average Output Power (mW)	Duty factor	The maximum sourced based time-averaged transmit power(mW)	Calculated RF Exposure (mW/m <sup>2</sup> )	Limit (mW/m <sup>2</sup> )
2.0	1.585	35.000	3162.278	1/8	395.285	0.125	0.549

**2> The maximum power density at a distance of 0.2 m for GPRS850 CLASS8 MHz is shown as below:**

Antenna Gain (dBi)	Antenna Gain (numeric)	Max Tune up power (dBm)	Average Output Power (mW)	Duty factor	The maximum sourced based time-averaged transmit power(mW)	Calculated RF Exposure (mW/m <sup>2</sup> )	Limit (mW/m <sup>2</sup> )
2.0	1.585	35.000	3162.278	1/8	395.285	0.125	0.549

**3> The maximum power density at a distance of 0.2 m for GPRS850 CLASS10 MHz (multi-class 10) is shown as below:**

Antenna Gain (dBi)	Antenna Gain (numeric)	Max Tune up power (dBm)	Average Output Power (mW)	Duty factor	The maximum sourced based time-averaged transmit power(mW)	Calculated RF Exposure (mW/m <sup>2</sup> )	Limit (mW/m <sup>2</sup> )
2.0	1.585	32.000	1584.893	1/4	396.223	0.125	0.549

**4> The maximum power density at a distance of 0.2 m for GPRS850 CLASS12 MHz (multi-class 12) is shown as below:**

Antenna Gain (dBi)	Antenna Gain (numeric)	Max Tune up power (dBm)	Average Output Power (mW)	Duty factor	The maximum sourced based time-averaged transmit power(mW)	Calculated RF Exposure (mW/m <sup>2</sup> )	Limit (mW/m <sup>2</sup> )
2.0	1.585	30.000	1000.000	1/2	500.000	0.158	0.549



5> The maximum power density at a distance of 0.2 m for GSM1900 MHz (multi-class 10) is shown as below:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max Tune up power (dBm)	Average Output Power (mW)	Duty factor	The maximum sourced based time-averaged transmit power(mW)	Calculated RF Exposure (mW/m <sup>2</sup> )	Limit (mW/m <sup>2</sup> )
2.0	1.585	32.000	1584.893	1/8	198.112	0.062	1

6> The maximum power density at a distance of 0.2 m for GPRS1900 MHz (multi-class 8) is shown as below:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max Tune up power (dBm)	Average Output Power (mW)	Duty factor	The maximum sourced based time-averaged transmit power(mW)	Calculated RF Exposure (mW/m <sup>2</sup> )	Limit (mW/m <sup>2</sup> )
2.0	1.585	32.000	1584.893	1/8	198.112	0.062	1

7> The maximum power density at a distance of 0.2 m for GPRS1900 MHz (multi-class 10) is shown as below:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max Tune up power (dBm)	Average Output Power (mW)	Duty factor	The maximum sourced based time-averaged transmit power(mW)	Calculated RF Exposure (mW/m <sup>2</sup> )	Limit (mW/m <sup>2</sup> )
2.0	1.585	30.000	1000.000	1/4	250.000	0.079	1

8> The maximum power density at a distance of 0.2 m for GPRS1900 MHz (multi-class 12) is shown as below:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max Tune up power (dBm)	Average Output Power (mW)	Duty factor	The maximum sourced based time-averaged transmit power(mW)	Calculated RF Exposure (mW/m <sup>2</sup> )	Limit (mW/m <sup>2</sup> )
2.0	1.585	28.000	630.957	1/2	315.479	0.099	1

Result: Pass