

# TEST REPORT FROM RFI GLOBAL SERVICES LTD

Test of: Smart One 0.6418

FCC ID: NC3XT06418

To: FCC Part 22.913 (a) & Part 24.232

**Test Report Serial No:**  
RFI-RPT-RP80091JD03A

This Test Report Is Issued Under The Authority  
Of Chris Guy, Head of Global Approvals:



<b>Checked By:</b>	A. Henriques
<b>Signature:</b>	
<b>Date of Issue:</b>	16 December 2010

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**Table of Contents**

<b>1. Customer Information .....</b>	<b>4</b>
<b>2. Summary of Testing .....</b>	<b>5</b>
2.1. General Information	5
2.2. Summary of Test Results	5
2.3. Methods and Procedures	5
2.4. Deviations from the Test Specification	5
<b>3. Equipment Under Test (EUT) .....</b>	<b>6</b>
3.1. Identification of Equipment Under Test (EUT)	6
3.2. Description of EUT	6
3.3. Modifications Incorporated in the EUT	6
3.4. Additional Information Related to Testing	7
3.5. Support Equipment	7
<b>4. Operation and Monitoring of the EUT during Testing .....</b>	<b>8</b>
4.1. Operating Modes	8
4.2. Configuration and Peripherals	8
<b>5. Measurements, Examinations and Derived Results .....</b>	<b>9</b>
5.1. General Comments	9
5.2. Test Results - Part 22	10
5.2.1. Transmitter Output Power (ERP)	10
5.3. Test Results - Part 24	11
5.3.1. Transmitter Output Power (EIRP)	11
<b>6. Measurement Uncertainty .....</b>	<b>12</b>
<b>Appendix 1. Test Equipment Used.....</b>	<b>13</b>

## **1. Customer Information**

<b>Company Name:</b>	Pro Tech Monitoring inc
<b>Address:</b>	2549 Success Dr Odessa, FL 33556 United States

## 2. Summary of Testing

### 2.1. General Information

<b>Specification Reference:</b>	47CFR22
<b>Specification Title:</b>	Code of Federal Regulations Volume 47 (Telecommunications) 2010: Part 22 Subpart H (Public Mobile Services) - Section 22.913(a)
<b>Specification Reference:</b>	47CFR24
<b>Specification Title:</b>	Code of Federal Regulations Volume 47 (Telecommunications) 2010: Part 24 Subpart E (Personal Communication Services) - Section 24.232
<b>Site Registration:</b>	209735
<b>Location of Testing:</b>	RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH
<b>Test Dates:</b>	07 December 2010

### 2.2. Summary of Test Results

FCC Reference (47CFR)	Measurement	Result
<b>Part 22</b>		
Part 22.913(a)	Transmitter Output Power (ERP)	
<b>Part 24</b>		
Part 24.232	Transmitter Output Power (EIRP)	
<b>Key to Results</b>		
 = Complied	 = Did not comply	

### 2.3. Methods and Procedures

<b>Reference:</b>	ANSI/TIA-603-C-2004
<b>Title:</b>	Land Mobile Communications Equipment, Measurements and performance Standards

### 2.4. Deviations from the Test Specification

For the measurements contained within this test report, there were no deviations from, additions to, or exclusions from the test specification identified above.

### **3. Equipment Under Test (EUT)**

#### **3.1. Identification of Equipment Under Test (EUT)**

<b>Brand Name:</b>	Smart One
<b>Model Name or Number:</b>	0.6418
<b>IMEI:</b>	01152600038419.907
<b>Hardware Version Number:</b>	0.6
<b>Software Version Number:</b>	5.0.2.4
<b>FCC ID:</b>	NC3XT06418

#### **3.2. Description of EUT**

The equipment under test was a GPS Tracking Equipment for Department of Corrections.

#### **3.3. Modifications Incorporated in the EUT**

No modifications were applied to the EUT during testing.

### **3.4. Additional Information Related to Testing**

Type of Radio Device:	Transceiver		
Mode:	GSM/GPRS		
Modulation Type:	GMSK		
Channel Spacing:	200 kHz		
Power Supply Requirement(s):	Nominal	3.6 V	
Technology Tested:	GSM850		
Maximum Output Power (ERP):	GSM	26.3 dBm	
	GPRS	26.3 dBm	
Transmit Frequency Range:	824 to 849 MHz		
Transmit Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	128	824.2
	Middle	190	836.6
	Top	251	848.8
Technology Tested:	PCS1900		
Maximum Output Power (EIRP):	GSM	16.5 dBm	
	GPRS	16.5 dBm	
Transmit Frequency Range:	1850 to 1910 MHz		
Transmit Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	512	1850.2
	Middle	660	1879.8
	Top	810	1909.8

### **3.5. Support Equipment**

No support equipment was used to exercise the EUT during testing:

## **4. Operation and Monitoring of the EUT during Testing**

### **4.1. Operating Modes**

The EUT was tested in the following operating mode(s):

- Constantly transmitting at full power on bottom, middle and top channels as required.
- ERP/EIRP were performed with the EUT in GSM single timeslot circuit switched and GPRS Multislot Class 10 with the unit transmitting on two timeslots in the uplink.

### **4.2. Configuration and Peripherals**

The EUT was tested in the following configuration(s):

- Connected to a GSM/GPRS system simulator, operating in transceiver mode.

## **5. Measurements, Examinations and Derived Results**

### **5.1. General Comments**

Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%. Please refer to *Section 6. Measurement Uncertainty* for details.

## **5.2. Test Results - Part 22**

### **5.2.1. Transmitter Output Power (ERP)**

#### **Test Summary:**

Test Engineer:	Andrew Edwards	Test Date:	07 December 2010
Test Sample IMEI:	01152600038419907		

FCC Part:	22.913(a)
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.17.2

#### **Environmental Conditions:**

Temperature (°C):	24
Relative Humidity (%):	21

#### **Results: GSM Circuit Switched - Peak ERP**

Channel	Frequency (MHz)	Antenna Polarity	ERP (dBm)	ERP Limit (dBm)	Margin (dB)	Result
Bottom	824.2	Horizontal	23.9	38.45	14.55	Complied
Middle	836.6	Horizontal	25.2	38.45	13.25	Complied
Top	848.8	Horizontal	26.3	38.45	12.15	Complied

#### **Results: GSM Circuit Switched - Average ERP**

Channel	Frequency (MHz)	Antenna Polarity	ERP (dBm)	ERP Limit (dBm)	Margin (dB)	Result
Bottom	824.2	Horizontal	23.7	38.45	14.75	Complied
Middle	836.6	Horizontal	25.0	38.45	13.45	Complied
Top	848.8	Horizontal	26.1	38.45	12.35	Complied

#### **Results: GPRS-Peak ERP**

Channel	Frequency (MHz)	Antenna Polarity	ERP (dBm)	ERP Limit (dBm)	Margin (dB)	Result
Bottom	824.2	Horizontal	23.7	38.45	14.75	Complied
Middle	836.6	Horizontal	25.3	38.45	13.15	Complied
Top	848.8	Horizontal	26.3	38.45	12.15	Complied

#### **Results: GPRS Average ERP**

Channel	Frequency (MHz)	Antenna Polarity	ERP (dBm)	ERP Limit (dBm)	Margin (dB)	Result
Bottom	824.2	Horizontal	23.5	38.45	14.95	Complied
Middle	836.6	Horizontal	25.1	38.45	13.35	Complied
Top	848.8	Horizontal	26.1	38.45	12.35	Complied

### **5.3. Test Results - Part 24**

#### **5.3.1. Transmitter Output Power (EIRP)**

##### **Test Summary:**

<b>Test Engineer:</b>	Andrew Edwards	<b>Test Date:</b>	07 December 2010
<b>Test Sample IMEI:</b>	01152600038419907		

<b>FCC Part:</b>	24.232
<b>Test Method Used:</b>	As detailed in ANSI TIA-603-C-2004 Section 2.2.17.2

##### **Environmental Conditions:**

<b>Temperature (°C):</b>	25
<b>Relative Humidity (%):</b>	20

#### **Results: GSM Circuit Switched - Peak EIRP**

Channel	Frequency (MHz)	Antenna Polarity	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	Horizontal	16.5	33.0	16.5	Complied
Middle	1879.8	Horizontal	15.2	33.0	17.8	Complied
Top	1909.8	Horizontal	16.5	33.0	16.5	Complied

#### **Results: GSM Circuit Switched - Average EIRP**

Channel	Frequency (MHz)	Antenna Polarity	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	Horizontal	16.3	33.0	16.7	Complied
Middle	1879.8	Horizontal	15.0	33.0	18.0	Complied
Top	1909.8	Horizontal	16.3	33.0	16.7	Complied

#### **Results: GPRS - Peak EIRP**

Channel	Frequency (MHz)	Antenna Polarity	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	Horizontal	16.5	33.0	16.5	Complied
Middle	1879.8	Horizontal	15.2	33.0	17.8	Complied
Top	1909.8	Horizontal	16.5	33.0	16.5	Complied

#### **Results: GPRS - Average EIRP**

Channel	Frequency (MHz)	Antenna Polarity	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	Horizontal	16.3	33.0	16.7	Complied
Middle	1879.8	Horizontal	15.0	33.0	18.0	Complied
Top	1909.8	Horizontal	16.3	33.0	16.7	Complied

## **6. Measurement Uncertainty**

No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

The uncertainty of the result may need to be taken into account when interpreting the measurement results.

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor such that a confidence level of approximately 95% is maintained. For the purposes of this document "approximately" is interpreted as meaning "effectively" or "for most practical purposes".

Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
Effective Radiated Power (ERP)	824 to 849 MHz	95%	±2.94 dB
Effective Isotropic Radiated Power (EIRP)	1850 to 1910 MHz	95%	±2.94 dB

The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty the published guidance of the appropriate accreditation body is followed.

## Appendix 1. Test Equipment Used

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
A1393	Attenuator	Huber + Suhner	757456	6820.17.B	06 Jul 2011	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	06 Jun 2011	12
A1818	Antenna	EMCO	3115	00075692	05 Sep 2011	12
A288	Antenna	Chase	CBL6111A	1589	05 Sep 2011	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	05 Sep 2011	12
L1005	Comms Test Set	Rohde & Schwarz	CMU200	116284	29 Jan 2011	12
M1124	Test Receiver	Rohde & Schwarz	ESI26	100046K	22 Apr 2011	12

**NB** In accordance with UKAS requirements all the measurement equipment is on a calibration schedule.