



# TEST REPORT FROM RFI GLOBAL SERVICES LTD

Test of: GSM 5218

FCC ID: MIVGSM5218

IC Certification Number: 4160A-GSM5218

To: FCC Part 22.913 and RSS 132 Issue 2 Section 4.4

**Test Report Serial No:**  
RFI-RPT-RP79187JD01A V2.0

**Version 2.0 Supersedes All Previous Versions**

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

**Checked By:**

Richelieu Quoi

**Signature:**

**Date of Issue:**

14 March 2011

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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
Summary of Test Results	5
2.2. Methods and Procedures	6
2.3. Deviations from the Test Specification	6
<b>3. Equipment Under Test (EUT) .....</b>	<b>7</b>
3.1. Identification of Equipment Under Test (EUT)	7
3.2. Description of EUT	7
3.3. Modifications Incorporated in the EUT	7
3.4. Additional Information Related to Testing	7
3.5. Support Equipment	8
<b>4. Operation and Monitoring of the EUT during Testing .....</b>	<b>9</b>
4.1. Operating Modes	9
4.2. Configuration and Peripherals	9
<b>5. Measurements, Examinations and Derived Results .....</b>	<b>10</b>
5.1. General Comments	10
5.2. Test Results	11
5.2.1. Transmitter Output Power (ERP)	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>	Enfora Inc
<b>Address:</b>	251 Renner Parkway Richardson Texas 75080 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)
<b>Specification Reference:</b>	RSS-132 Issue 2 Sep 2005
<b>Specification Title:</b>	Cellular Telephones Employing New Technologies Operating in the Bands 824-849 MHz and 869-894 MHz
<b>Specification Reference:</b>	SRSP-503 Issue 7 Sep 2008
<b>Specification Title:</b>	Technical Requirements for Cellular Radiotelephone Systems Operating in the Bands 824 – 849 MHz and 869 – 894 MHz
<b>Site Registration:</b>	FCC: 209735; Industry Canada: 3245B-2
<b>Location of Testing:</b>	RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH
<b>Test Dates:</b>	11 March 2011

### **Summary of Test Results**

<b>FCC Reference (47CFR)</b>	<b>IC Reference</b>	<b>Measurement</b>	<b>Result</b>
Part 22.913(a)	RSS-132 4.4 SRSP-503 5.1.3	Transmitter Output Power (ERP)	
<b>Key to Results</b>			
 = Complied  = Did not comply			

*Note 1: The measurement was performed to support SAR tests.*

**2.2. Methods and Procedures**

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

**2.3. 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>	Enfora
<b>Model Name or Number:</b>	GSM 5218
<b>IMEI:</b>	012586000000079
<b>Hardware Version Number:</b>	A
<b>Software Version Number:</b>	1.1.4
<b>FCC ID:</b>	MIVGSM5218
<b>IC Certification Number:</b>	4160A-GSM5218

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

The equipment under test was a GSM/GPRS/GPS asset tracker

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

No modifications were applied to the EUT during testing.

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

<b>Technology Tested:</b>	GSM850		
<b>Type of Radio Device:</b>	Transceiver		
<b>Mode:</b>	GSM/GPRS		
<b>Modulation Type:</b>	GMSK		
<b>Channel Spacing:</b>	200 kHz		
<b>Power Supply Requirement(s):</b>	Nominal	4.7 V	
<b>Maximum Output Power (ERP):</b>	GSM	30.05 dBm	
	GPRS	30.05 dBm	
<b>Transmit Frequency Range:</b>	824 to 849 MHz		
<b>Transmit Channels Tested:</b>	<b>Channel ID</b>	<b>Channel Number</b>	<b>Channel Frequency (MHz)</b>
	Bottom	128	824.2
	Middle	190	836.6
	Top	251	848.8

**3.5. Support Equipment**

The following support equipment was used to exercise the EUT during testing:

<b>Description:</b>	Laptop
<b>Brand Name:</b>	Dell
<b>Model Name or Number:</b>	D610
<b>Serial Number:</b>	PC353NT



## **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.
- EIRP were performed with the EUT in GSM single timeslot circuit switched and GPRS Multislot Class 8 with the unit transmitting on one timeslot 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

### 5.2.1. Transmitter Output Power (ERP)

#### Test Summary:

Test Engineer:	Naseer Mirza	Test Date:	11 March 2011
Test Sample IMEI:	012586000000079		

FCC Part:	22.913(a)
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.1 referencing FCC CFR Part 2.1046(a)

#### Environmental Conditions:

Temperature (°C):	23.0
Relative Humidity (%):	40.0

#### Results: GSM Circuit Switched (Duty Factor 12.5%)

Channel	Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dB)	ERP (dBm)	ERP Limit (dBm)	Margin (dB)	Result
Bottom	824.2	32.6	-2.65	29.95	38.45	8.5	Complied
Middle	836.6	32.7	-2.65	30.05	38.45	8.4	Complied
Top	848.8	32.6	-2.65	29.95	38.45	8.5	Complied

#### Results: GPRS Packet Switched (Duty Factor 12.5% Class 8)

Channel	Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dB)	ERP (dBm)	ERP Limit (dBm)	Margin (dB)	Result
Bottom	824.2	32.6	-2.65	29.95	38.45	8.5	Complied
Middle	836.6	32.7	-2.65	30.05	38.45	8.4	Complied
Top	848.8	32.6	-2.65	29.95	38.45	8.5	Complied

#### Note(s):

1. SRSP-503 states the limit as an EIRP value of 11.5 Watts (40.6 dBm) which equates to an ERP limit of 7 Watts (38.45 dBm)
2. The declared antenna gain is stated as nominal -0.5 dBi which equates to -2.65 dBd. This was calculated using the specified dBi to dBd conversion ( $\text{dBd} = \text{dBi} - 2.15$ ) as the limit is stated as an ERP value.
3. The declared antenna gain in dBd was added to the conducted output power in order to calculate the final ERP figure.

## **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".

<b>Measurement Type</b>	<b>Range</b>	<b>Confidence Level (%)</b>	<b>Calculated Uncertainty</b>
Conducted Output Power	824 to 849 MHz	95%	±0.27 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**

<b>RFI No.</b>	<b>Instrument</b>	<b>Manufacturer</b>	<b>Type No.</b>	<b>Serial No.</b>	<b>Date Calibration Due</b>	<b>Cal. Interval (Months)</b>
L1021	Comms Test Set	Rohde & Schwarz	CMU200	111379	11 Jan 2011	12
M265	Power Sensor	Rohde & Schwarz	NRV-Z1	893350/017	26 May 2011	12
M263	Power Meter	Rohde & Schwarz	NRVD	826558/004	27 May 2011	12

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