



# TEST REPORT FROM RFI GLOBAL SERVICES LTD

Test of: GSM 2374-01

FCC ID: MIVGSM2374

IC Certification Number: 4160A-GSM2374

To: FCC Part 22: 2010 Subpart H, Part 24: 2010 Subpart E,  
RSS 132 Issue 2 September 2005 and RSS-133 Issue 5 February 2009

**Test Report Serial No:**  
RFI-RPT-RP78477JD08A V2.0

**Version 2.0 supersedes all previous versions**

<b>This Test Report Is Issued Under The Authority Of Chris Guy, Head of Global Approvals:</b> <div style="text-align: right; margin-top: 10px;">  </div>	
<b>Checked By:</b>	A. Henriques
<b>Signature:</b>	
<b>Date of Issue:</b>	26 January 2011

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**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>	47CFR24
<b>Specification Title:</b>	Code of Federal Regulations Volume 47 (Telecommunications) 2010: Part 24 Subpart E (Personal Communication Services)
<b>Specification Reference:</b>	RSS-GEN Issue 2 June 2007
<b>Specification Title:</b>	General Requirements and Information for the Certification of Radiocommunication Equipment
<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>Specification Reference:</b>	SRSP-510 Issue 5 Feb 2009
<b>Specification Title:</b>	Technical Requirements for Personal Communications Services (PCS) in the Bands 1850-1915 MHz and 1930-1995 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>	16 December 2010 to 23 December 2010

**2.2. Summary of Test Results**

FCC Reference (47CFR)	IC Reference	Measurement	Result
<b>Part 22 &amp; RSS-132</b>			
Part 22.913(a)	RSS-132 4.4 SRSP-503 5.1.3	Transmitter Output Power (ERP)	
<b>Part 24 &amp; RSS-133</b>			
Part 24.232	RSS-133 6.4 SRSP-510 5.1.2	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>	Enfora
<b>Model Name or Number:</b>	GSM 2374-01
<b>IMEI:</b>	001036000210693
<b>Hardware Version Number:</b>	A
<b>Software Version Number:</b>	1.1.4
<b>FCC ID:</b>	MIVGSM2374
<b>IC Certification Number:</b>	4160A-GSM2374

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

The equipment under test was a quad band GSM/GPRS modem with GPS mobile tracking capabilities.

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

No modifications were applied to the EUT during testing.

**3.4. Additional Information Related to Testing**

<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	12.0 V	
<b>Technology Tested:</b>	GSM850		
<b>Maximum Output Power (ERP):</b>	GSM	33.7 dBm	
	GPRS	34.1 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
<b>Technology Tested:</b>	PCS1900		
<b>Maximum Output Power (EIRP):</b>	GSM	29.1 dBm	
	GPRS	28.0 dBm	
<b>Transmit Frequency Range:</b>	1850 to 1910 MHz		
<b>Transmit Channels Tested:</b>	<b>Channel ID</b>	<b>Channel Number</b>	<b>Channel Frequency (MHz)</b>
	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.
- Tests of 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):

- Power was provided by a bench power supply.
- 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****FCC Part 22 & RSS-132****5.2.1. Transmitter Output Power (ERP)****Test Summary:**

<b>Test Engineer:</b>	Nick Steele	<b>Test Date:</b>	16 & 23 December 2010
<b>Test Sample IMEI:</b>	001036000210693		

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

**Environmental Conditions:**

<b>Temperature (°C):</b>	23
<b>Relative Humidity (%):</b>	21

**Results: GSM Circuit Switched**

Channel	Frequency (MHz)	Antenna Polarity	ERP (dBm)	ERP Limit (dBm)	Margin (dB)	Result
Bottom	824.2	Vertical	33.2	38.45	5.25	Complied
Middle	836.6	Vertical	33.7	38.45	4.75	Complied
Top	848.8	Vertical	32.9	38.45	5.55	Complied

**Results: GPRS**

Channel	Frequency (MHz)	Antenna Polarity	ERP (dBm)	ERP Limit (dBm)	Margin (dB)	Result
Bottom	824.2	Vertical	32.5	38.45	5.95	Complied
Middle	836.6	Vertical	33.7	38.45	4.75	Complied
Top	848.8	Vertical	34.1	38.45	4.35	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)

**FCC Part 24 & RSS-133****5.2.2. Transmitter Output Power (EIRP)****Test Summary:**

<b>Test Engineer:</b>	Nick Steele	<b>Test Date:</b>	16 & 23 December 2010
<b>Test Sample IMEI:</b>	001036000210693		

<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>	23
<b>Relative Humidity (%):</b>	21

**Results: GSM Circuit Switched**

Channel	Frequency (MHz)	Antenna Polarity	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	Vertical	26.4	33.0	6.6	Complied
Middle	1879.8	Vertical	28.2	33.0	4.8	Complied
Top	1909.8	Vertical	29.1	33.0	3.9	Complied

**Results: GPRS**

Channel	Frequency (MHz)	Antenna Polarity	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	Vertical	25.5	33.0	7.5	Complied
Middle	1879.8	Vertical	27.4	33.0	5.6	Complied
Top	1909.8	Vertical	28.0	33.0	5.0	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".

<b>Measurement Type</b>	<b>Range</b>	<b>Confidence Level (%)</b>	<b>Calculated Uncertainty</b>
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**

<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>
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