

TEST REPORT FROM RFI GLOBAL SERVICES LTD

Partial Test of: Spider AT-G - GSM5108

To: FCC Part 15: 2008 Subpart B Clause 15.109
Radiated Emissions

Test Report Serial No:
RFI/RPT3/RP74121JD13A

Supersedes Test Report Serial No:
RFI/RPT2/RP74121JD13A

This Test Report Is Issued Under The Authority
Of Brian Watson, Operations Director:



Checked By:	Tony Henriques
	
Date of Issue:	27 January 2009

This report is issued in Adobe Acrobat portable document format (PDF). It is only a valid copy of the report if it is being viewed in PDF format with the following security options not allowed: Changing the document, Selecting text and graphics, Adding or changing notes and form fields.

This report may not be reproduced other than in full, except with the prior written approval of RFI Global Services Ltd. The results in this report apply only to the sample(s) tested.

This page has been left intentionally blank.

Table of Contents

1. Customer Information	4
2. Summary of Testing	5
3. Equipment Under Test (EUT)	6
4. Operation and Monitoring of the EUT during Testing	8
5. Measurements, Examinations and Derived Results	9
6. Measurement Uncertainty	15
Appendix 1. Test Equipment Used.....	16

1. Customer Information

Company Name:	Enfora Inc
Address:	251 Renner Parkway Richardson TEXAS 75080

2. Summary of Testing

2.1. General Information

Specification Reference:	FCC Part 15: 2008 Subpart B Clause 15.109
Specification Title:	Code of Federal Regulations, Part 15 (47CFR15) Radio Frequency Devices: Digital Devices.
Comments:	A description of the test facility used for this test is on file with, and has been accepted by, the Federal Communications Commission as required by Section 2.948 of Federal Rules.
Site Registration No:	209735 (FCC)
Location of Testing:	RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH.
Test Dates:	30 October 2008

2.2. Summary of Test Results

FCC Ref:	Mode	Measurement	Result
15.109	GSM 850	Receive / Idle Mode Radiated Emissions	✓
15.109	GSM 1900	Idle Mode Radiated Emissions	✓

Key to Results

✓ = Complied

⚠ = Complied, within uncertainty

⚠ = Did not comply, within uncertainty

✗ = Did not comply

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, nor from the requirements defined in the basic standards called up within it.

3. Equipment Under Test (EUT)

3.1. Identification of Equipment Under Test (EUT)

Brand Name:	Enfora
Model Number:	Spider AT-G – GSM5108
IMEI Number:	011525000003452
Hardware Version Number:	A
Software Version Number:	1.1.1
FCC ID Number:	MIVGSM5108

3.2. Description of EUT

The equipment under test was a GSM/GPRS/GPS Asset Tracker.

3.3. Modifications Incorporated in the EUT

During the course of testing the EUT was not modified.

3.4. Additional Information Related to Testing

Power Supply:	Internal battery supply of: 3.9V		
Type of Unit:	Transceiver		
Modulation Type:	GMSK (GSM)		
Data Rate:	200 kbps		
Receiver Frequency Range: (GSM850)	824 MHz to 849 MHz		
Receive Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	128	824.2
	Middle	189	836.6
	Top	251	848.8
Receive Frequency Range: (GSM1900)	1930 MHz to 1990 MHz		
Receive Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	512	1930.2
	Middle	660	1959.8
	Top	810	1989.8

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):

- GSM 850 Receive / Idle mode
- GSM 1900 Idle mode

4.2. Configuration and Peripherals

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

- Standalone synchronised to a GSM test set.
- The GPS module was powered on and permanently searching for a valid GPS signal.

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. Receive / Idle Mode Radiated Emissions: GSM 850

5.2.1. Electric Field Strength Measurements (Frequency Range: 30 to 1000 MHz)

Environmental Conditions:

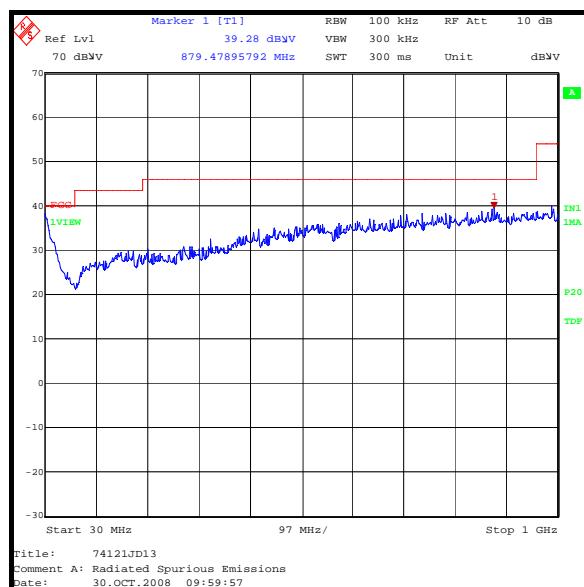
Temperature Variation (°C):	21
Relative Humidity Variation (%):	29

Results:

Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Note(s)	Result
941.683	Vertical	40.4	46.0	5.6	-	Complied

Note(s):

1. No spurious emissions were detected above the noise floor of the measuring receiver; therefore, the highest peak noise floor reading of the measuring receiver was recorded as shown in the table above.



5.2.2. Electric Field Strength Measurements (Frequency Range: 1 to 8 GHz)

Environmental Conditions:

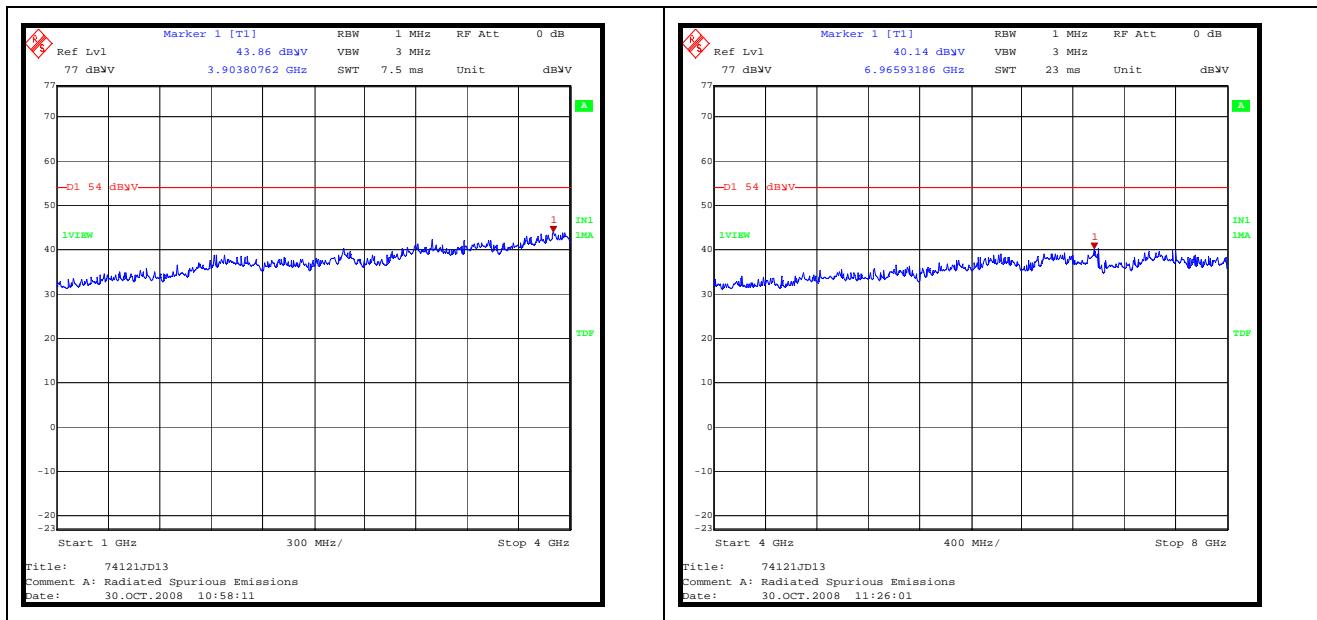
Temperature Variation (°C):	21
Relative Humidity Variation (%):	29

Results: Highest Peak Level

Frequency (GHz)	Antenna Polarity	Detector Level (dB μ V)	Transducer Factor (dB)	Peak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
3.903808	V	33.6	10.3	43.9	54.0	10.1	Complied

Note(s):

1. No spurious emissions were detected above the noise floor of the measuring receive, therefore, the highest peak noise floor reading of the measuring receiver was recorded as shown in the table above. The peak level was compared to the average limit as opposed to being compared to the peak limit because this is the more onerous limit.



5.3. Idle Mode Radiated Emissions: GSM 1900

5.3.1. Electric Field Strength Measurements (Frequency Range: 30 to 1000 MHz)

Environmental Conditions:

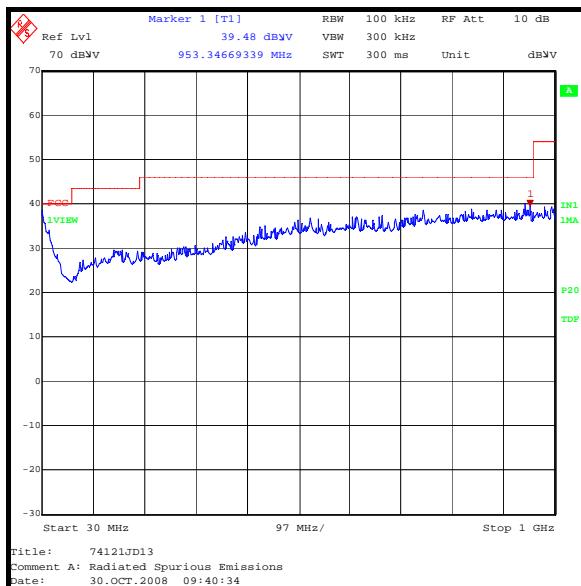
Temperature Variation (°C):	21
Relative Humidity Variation (%):	29

Results:

Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Note(s)	Result
953.347	Vertical	39.4	46.0	6.4	-	Complied

Note(s):

1. No spurious emissions were detected above the noise floor of the measuring receiver; therefore, the highest peak noise floor reading of the measuring receiver was recorded as shown in the table above.



5.3.2. Electric Field Strength Measurements (Frequency Range: 1 to 12.75 GHz)**Environmental Conditions:**

Temperature Variation (°C):	21
Relative Humidity Variation (%):	29

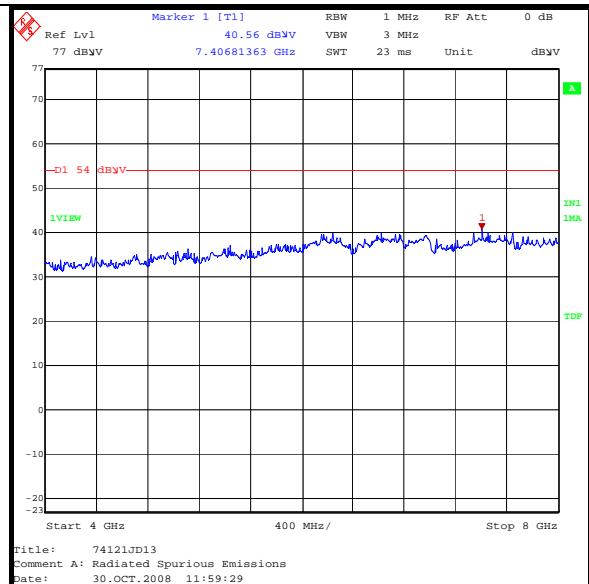
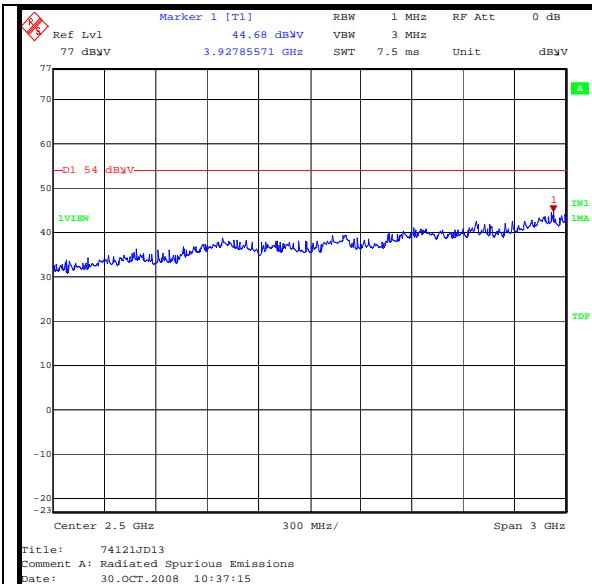
Results: Highest Peak Level

Frequency (GHz)	Antenna Polarity	Detector level (dB μ V)	Antenna factor (dB)	Peak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
3.927856	Vertical	34.5	10.2	44.7	54.0	9.3	Complied

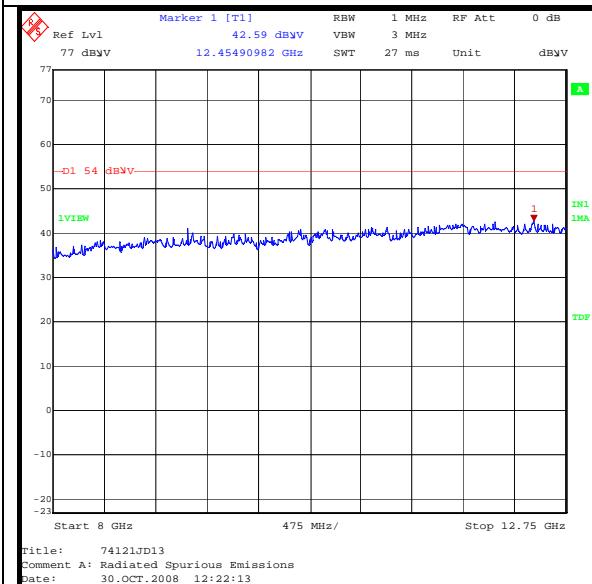
Note(s):

1. *No spurious emissions were detected above the noise floor of the measuring receiver, therefore, the highest peak noise floor reading of the measuring receiver was recorded as shown in the table above. The peak level was compared to the average limit as opposed to being compared to the peak limit because this is the more onerous limit.*

Electric Field Strength Measurements (Frequency Range: 1 to 12.75 GHz) - Continued



1 GHz to 4 GHz



8 GHz to 12.75 GHz

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
Radiated Emissions Electric Field Strength	30 MHz to 12.75 GHz	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 Last Calibrated	Cal. Interval (Months)
A1299	Antenna	Schaffner	CBL6143	5094	28 Jul 2008	12
A1818	Antenna	EMCO	3115	00075692	25 Oct 2008	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	26 Aug 2008	12
M1124	Spectrum Analyser	Rohde & Schwarz	ESIB26	100046K	19 Feb 2008	12

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