

**Nemko Test Report No.:** 4L0008RUS1

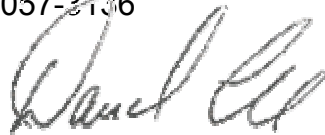
**Applicant:** Enfora Inc.  
661 E. 18<sup>th</sup> St.  
Plano, Texas 75074

**Equipment Under Test:** Small Portfolio Quad Band Radio  
GSM0108 Radio Module

**In Accordance With:** FCC Part 22, Subpart H  
800 MHz Cellular Subscriber Units

**Tested By:** Nemko Dallas Inc.  
802 N. Kealy  
Lewisville, TX  
75057-3136

**Authorized By:**



David Light, Production Manager

**Date:** 1/23/04

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*EQUIPMENT:GSM3208*

**Section 1. Summary of Test Results**

**Manufacturer:** Enfora Inc.

**Model No.:** GSM3208

**Serial No.:** None

**General:** All measurements are traceable to national standards.

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 22, Subpart H.

- |                                     |                            |                                     |                     |
|-------------------------------------|----------------------------|-------------------------------------|---------------------|
| <input checked="" type="checkbox"/> | New Submission             | <input type="checkbox"/>            | Production Unit     |
| <input type="checkbox"/>            | Class II Permissive Change | <input checked="" type="checkbox"/> | Pre-Production Unit |

This test report relates only to the item(s) tested.

The following deviations from, additions to, or exclusions from the test specifications have been made. None  
See " Summary of Test Data".

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*EQUIPMENT:GSM3208*

**Summary Of Test Data**

NAME OF TEST	PARA. NO.	RESULT
RF Power Output	2.1046	N/A
Audio Frequency Response	2.1047	N/A
Audio Low Pass Filter Response	2.1047	N/A
Modulation Limiting	2.1047	N/A
Occupied Bandwidth (Voice & SAT)	2.1049	N/A
Occupies Bandwidth (WB Data & SAT)	2.1049	N/A
Occupied Bandwidth (ST)	2.1049	N/A
Occupied Bandwidth (SAT)	2.1049	N/A
Occupied Bandwidth (SAT)	2.1049	N/A
Spurious Emissions at Antenna Terminals	2.1051	N/A
Field Strength of Spurious Emissions	2.1053	Complies
Frequency Stability	2.1055	N/A

Footnotes:

*EQUIPMENT:GSM3208*

**Section 2. General Equipment Specification**

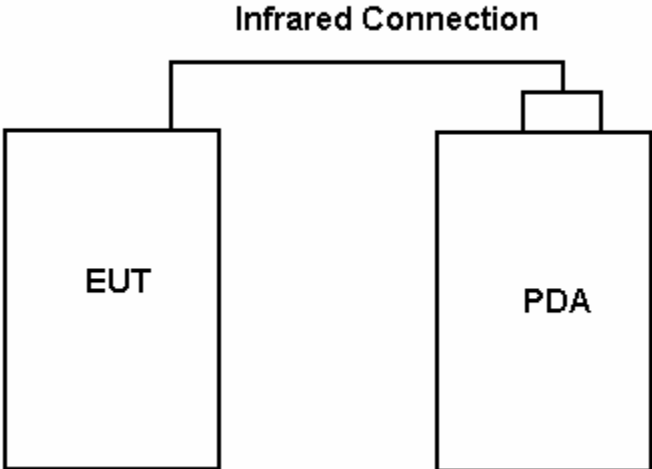
<b>Frequency Range:</b>	824.2 to 848.8 MHz
<b>Tunable Bands:</b>	824.2 to 848.8 MHz
<b>Necessary Bandwidth:</b>	270 kHz
<b>Emission Designator:</b>	270K0GXW
<b>Output Impedance:</b>	50 ohms
<b>Duty Cycle:</b>	Continuous
<b>Channel Spacing:</b>	200 kHz
<b>Operator Selection of Frequency:</b>	Software Controlled
<b>Power Output Adjustment Capability:</b>	Software Controlled

*EQUIPMENT:GSM3208*

**Operational Description**

This is a wireless modem for a PDA that communicates via infrared connection.

**System Diagram**



*EQUIPMENT:GSM3208*

**Section 3. Field Strength of Spurious**

NAME OF TEST: Field Strength of Spurious	PARA. NO.: 2.1053
TESTED BY: Art Ruvalcaba	DATE: 1/19/04

Test Results:                      Complies.

Measurement Data:    See attached table.

EQUIPMENT:GSM3208

Test Data - Radiated Emissions



Nemko Dallas, Inc.

Dallas Headquarters:  
 802 N. Kealy  
 Lewisville, TX 75057  
 Tel: (972) 436-9600  
 Fax: (972) 436-2667

**EIRP Substitution Method**

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Job No.: 4L0008R Date: 1/19/04 Complete  X   
 Preliminary \_\_\_\_\_

Specification Pt22: Temperature(°C):23  
 Tested By: Art Ruvalcaba Relative Humidity(%) 40  
 E.U.T.: Small Portfolio quad band radio with GSM0108 radio module (GSM3208)  
 Configuration: transmitting middle band 836.6 MHz, tested on end (worstcase)  
 Sample No: 1  
 Location: AC3 RBW: 1 MHz Measurement  
 Detector Type: Peak VBW: 1 MHz Distance: 3 m

**Test Equipment Used**

Antenna: 1304 Directional Coupler: \_\_\_\_\_  
 Pre-Amp: 1016 Cable #1: 1484  
 Filter: \_\_\_\_\_ Cable #2: 1485  
 Receiver: 1464 Cable #3: \_\_\_\_\_  
 Attenuator #1: \_\_\_\_\_ Cable #4: \_\_\_\_\_  
 Attenuator #2: \_\_\_\_\_ Mixer: \_\_\_\_\_  
 Additional equipment used: \_\_\_\_\_  
 Measurement Uncertainty: +/-3.6 dB

Frequency (MHz)	Meter Reading (dBm)	Correction Factor (dB)	Pre-Amp Gain (dB)	Substitution Antenna Gain (dBi)	Limit (dBm)	EIRP (dBm)	EIRP (mW)	Polarity	Comments
1673.2	-63.3	31.0	0	9.4	-13	-22.9	0.0051	V	
2509.8	-54.3	35.5	33	10.1	-13	-41.7	0.0001	V	
3346.4	-48.0	39.8	32.7	10.1	-13	-30.8	0.0008	V	
4183	-57.2	45.3	33	10.3	-13	-34.5	0.0004	V	
5019.6	-53.2	41.3	32.7	10.3	-13	-34.2	0.0004	V	
5856.2	-51.5	39.8	31.9	11.4	-13	-32.2	0.0006	V	
6692.8	-56.3	41.3	31.6	11.5	-13	-35.1	0.0003	V	
7529.4	-60.5	41.8	32.5	11.3	-13	-39.9	0.0001	V	
8366	-63.3	42.8	33.6	11.2	-13	-42.9	0.0001	V	
1673.2	-66.0	33.0	0	9.4	-13	-23.6	0.0044	H	
2509.8	-52.8	35.5	33	10.1	-13	-40.2	0.0001	H	
3346.4	-47.2	36.3	32.7	10.1	-13	-33.4	0.0005	H	
4183	-59.5	34.8	33	10.3	-13	-47.4	0.0000	H	
5019.6	-53.8	38.3	32.7	10.3	-13	-37.9	0.0002	H	
5856.2	-52.7	37.8	31.9	11.4	-13	-35.3	0.0003	H	
6692.8	-56.2	39.2	31.6	11.5	-13	-37.1	0.0002	H	
7529.4	-57.0	41.5	32.5	11.3	-13	-36.7	0.0002	H	
8366	-59.5	42.5	33.6	11.2	-13	-39.4	0.0001	H	

Notes: Scanned spectrum to the 10th harmonic.



*EQUIPMENT:GSM3208*

**Photographs of Test Setup**

On End Position (AS TESTED WORST CASE)



*EQUIPMENT:GSM3208*

On Edge Position



*EQUIPMENT:GSM3208*

Flat Position



*EQUIPMENT:GSM3208*

**Section 4. Test Equipment List**

<b>Asset #</b>	<b>Manufacturer</b>	<b>Model #</b>	<b>S/N</b>	<b>Cal Date</b>	<b>Cal Due</b>
1464	Hewlett Packard Spectrum Analyzer	8563E	3551A04428	2/11/03	2/11/04
1016	Hewlett Packard Pre Amp	8449A	2749A00159	8/23/03	8/23/04
1033	EMCO Horn Antenna	3115	8812-3035	9/22/03	9/22/04
1482	K&L Filter	N/A	2	N/A	N/A
1481	K&L Filter	N/A	4	N/A	N/A

**Nemko USA, Dallas Facility**

FCC PART 22, SUBPART H  
800 MHz CELLULAR SUBSCRIBER UNITS  
TEST REPORT NO.: 4L0008RUS1

*EQUIPMENT:GSM3208*

## **ANNEX A - TEST DETAILS**

*EQUIPMENT:GSM3208*

NAME OF TEST: Field Strength of Spurious Radiation	PARA. NO.: 2.1053
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Minimum Standard:

22.917 Emission limitations for cellular equipment. - The rules in this section govern the spectral characteristics of emissions in the Cellular Radiotelephone Service.

(a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

**Test Method:** TIA/EIA-603-1992, Section 2.2.12

The antenna substitution method was used to determine the equivalent radiated power at spurious frequencies. The spurious emissions were measured at a distance of 3 meters. The EUT was then replaced with a reference substitution antenna with a known gain referenced to a dipole. This antenna was fed with a signal at the spurious frequency. The level of the signal was adjusted to repeat the previously measured level. The resulting erp is the signal level fed to the reference antenna corrected for gain referenced to a dipole.

The spectrum is searched to 10 GHz.

**Nemko USA, Dallas Facility**

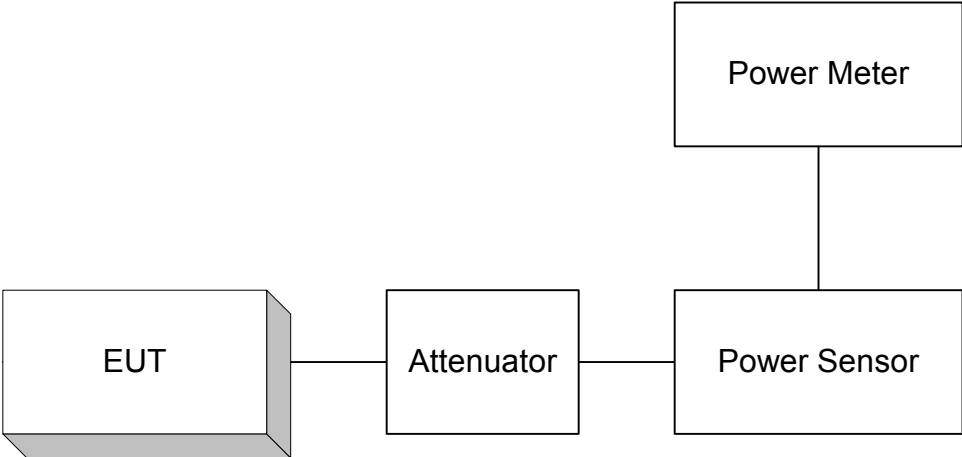
FCC PART 22, SUBPART H  
800 MHz CELLULAR SUBSCRIBER UNITS  
TEST REPORT NO.: 4L0008RUS1

*EQUIPMENT:GSM3208*

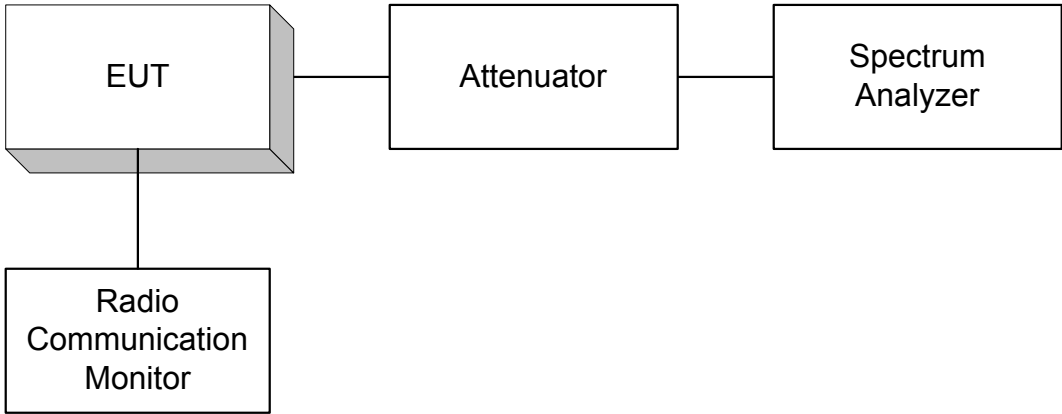
## **ANNEX B - TEST DIAGRAMS**

EQUIPMENT:GSM3208

Para. No. 2.1046 - R.F. Power Output



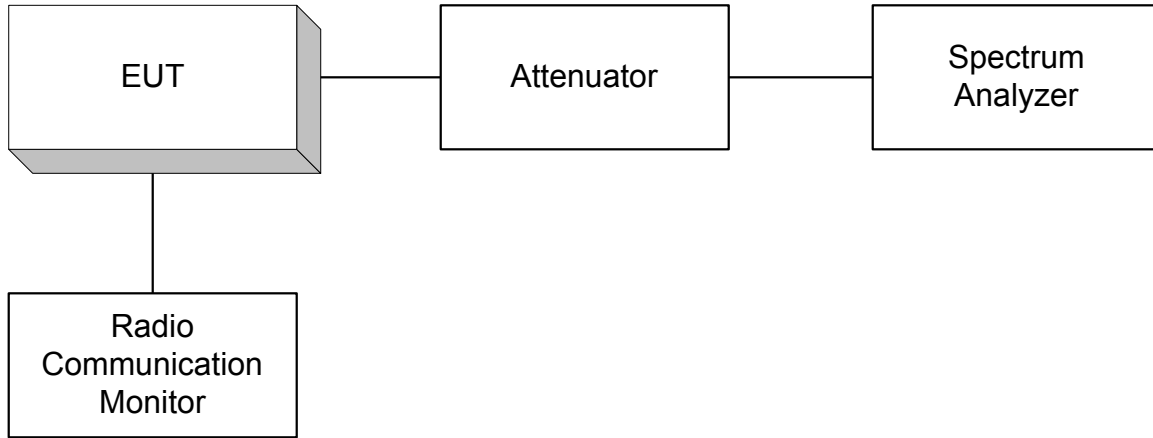
Para. No. 2.1049 - Occupied Bandwidth



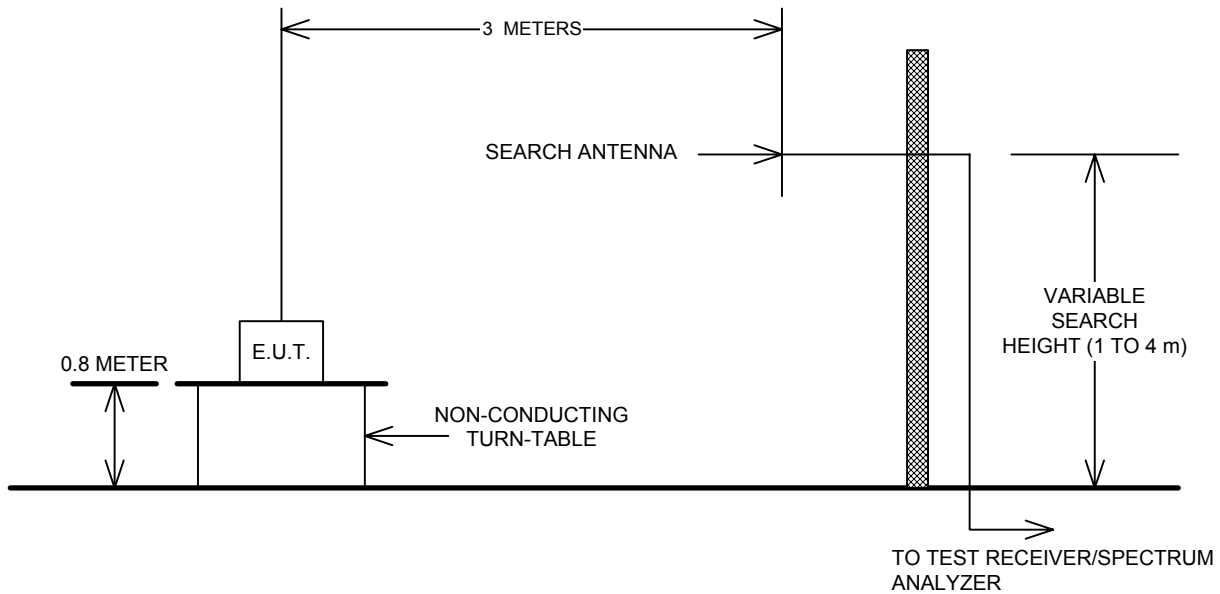


EQUIPMENT:GSM3208

**Para. No. 2.1051 Spurious Emissions at Antenna Terminals**

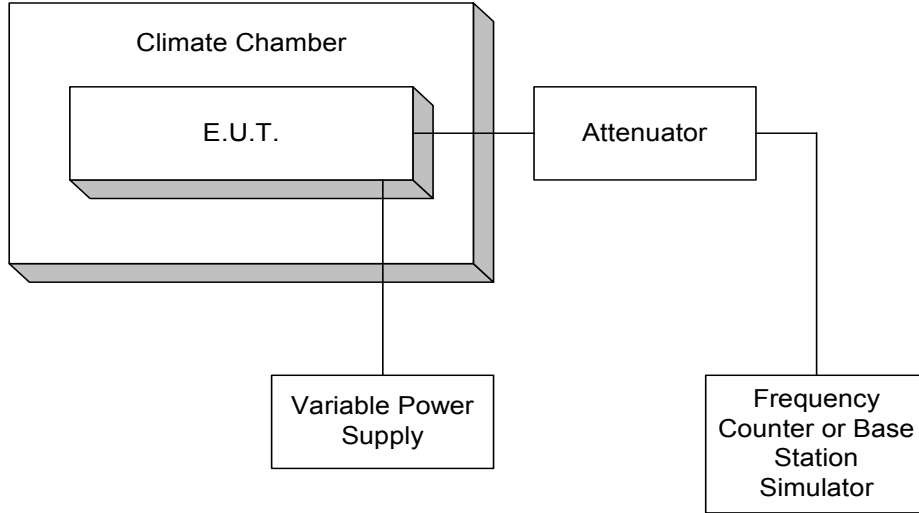


**Para. No. 2.1053 - Field Strength of Spurious Radiation**



*EQUIPMENT:GSM3208*

**Para. No. 2.1055 - Frequency Stability**



**Para. No. 2.1045 – Audio Frequency Response, Audio Low Pass Filter Response And Modulation Limiting**

