

Nemko Test Report: 3L0477RUS2Rev3

Applicant: Enfora Inc.
661 E/ 18th Street
Plano, Texas 75074

**Equipment Under Test:
(E.U.T.)** Aspen – GSM/GPRS Wireless Modem
GSM0108

In Accordance With: **FCC Parts 24, Subpart E**
Broadband PCS Subscriber Station

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

Authorized By:



Tom Tidwell, Frontline Manager

Date: 17May04

Total Number of Pages: 39

EQUIPMENT: GSM0108

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EQUIPMENT: GSM0108

Section 1. Summary of Test Results

Manufacturer: Enfora Inc.

Model No.: GSM0108

Serial No.: 28

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 24, Subpart E.

- New Submission
- Production Unit
- Class II Permissive Change
- 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.
See " Summary of Test Data".

TESTED BY: Eldon Berry DATE: 26 Aug., 2003

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This report applies only to the items tested.

EQUIPMENT: GSM0108

Summary Of Test Data

| NAME OF TEST | PARA. NO. | SPEC. | RESULT |
|---|-----------|---------------------|----------|
| RF Power Output | 24.232 | 2W eirp | Complies |
| Occupied Bandwidth (TDMA) | 24.238 | Not Specified | Complies |
| Spurious Emissions at Antenna Terminals | 24.238(a) | -13 dBm | Complies |
| Field Strength of Spurious Emissions | 24.238(a) | -13 dBm E.I.R.P. | Complies |
| Frequency Stability | 24.235 | +/- 0.05 ppm | Complies |

Footnotes:

EQUIPMENT: GSM0108

Section 2. General Equipment Specification

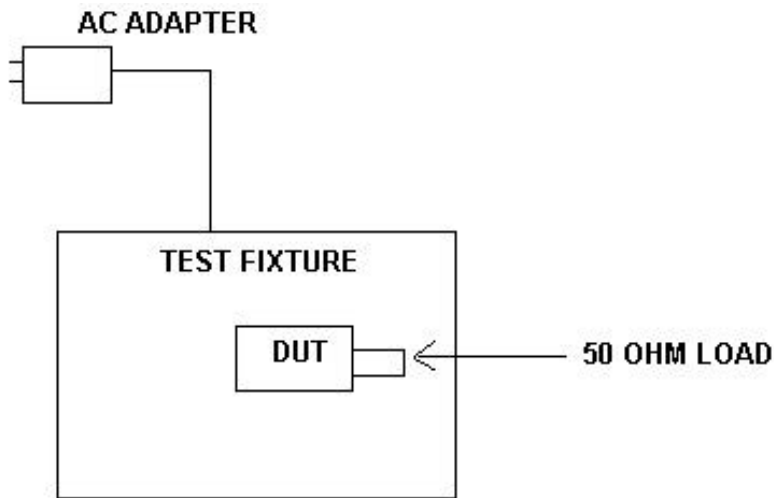
| | |
|---|--|
| Supply Voltage Input: | 3.3 - 5 Vdc |
| Frequency Bands: | <input checked="" type="checkbox"/> Block A 1850 – 1865 MHz <input checked="" type="checkbox"/> Block D 1865 – 1870 MHz <input checked="" type="checkbox"/> Block B 1870 – 1885 MHz <input checked="" type="checkbox"/> Block E 1885 – 1890 MHz <input checked="" type="checkbox"/> Block F : 1890 – 1895 MHz <input checked="" type="checkbox"/> Block C 1895 – 1910 MHz |
| Type of Modulation and Designator: | GPRS 270KG7W <input checked="" type="checkbox"/> |
| Output Impedance: | 50 ohms |
| RF Output (Rated): | 1 watt conducted, 2 watts eirp |

EQUIPMENT: GSM0108

System Description

This device is a wireless GSM/GPRS wireless modem that operates in the PCS band and in the 800 MHz "AMPS" band.

System Diagram



EQUIPMENT: GSM0108

Section 3. RF Power Output

| | |
|-------------------------------|----------------------|
| NAME OF TEST: RF Power Output | PARA. NO.: 24.232(b) |
| TESTED BY: Eldon Berry | DATE: 22Aug03 |

Test Results: Complies.

Measurement Data:

RF Power Output (Conducted)

Job No.: 3L0477R Date: 8/22/03
 Specification: CFR 47, Part 24 Temperature(°C): 21
 Tested By: Eldon Berry Humidity(%): 50
 E.U.T.: GSM0108
 Configuration: EUT on test fixture.
 Detector: Average

Test Equipment Used:

Power Meter: E4418B Directional Coupler: _____
 Power Sensor: E9304A Cable #1: 1083
 Load: _____ Cable #2: _____
 Spectrum Analyzer: NA Cable #3: _____
 Attenuator #1: 1604 Cable #4: _____
 Attenuator #2: _____ Cable #5: _____
 Attenuator #3: _____ Cable #6: _____
 Attenuator #4: _____ Power Splitter: _____

Measurement Uncertainty: +/- .7 dB

| Frequency MHz | Channel | Modulation Type | Output Power (dBm) | Output Power (mW) |
|---------------|---------|-----------------|--------------------|-------------------|
| 1850.2 | 512 | GPRS | 29.8 | 954.99 |
| 1880.2 | 662 | GPRS | 29.7 | 933.25 |
| 1909.8 | 810 | GPRS | 28.8 | 758.58 |

Power meter set for 12.5 % duty cycle.
 Cable and attenuator verified with generator # 1053

Typical antenna gain is 3.3 dBi. Thus the maximum eirp from above would be 29.8 dBm + 3.3 dBi = 33.1 dBm (2 watts).

EQUIPMENT: GSM0108



Nemko Dallas, Inc.

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EIRP Substitution Method

Page 1 of 1

Complete X

Job No.: 3L0477 Date: 3/26/04 Preliminary _____
 Specification: Part 24, EIRP Temperature(°C): 20
 Tested By: David Light Relative Humidity(%) 37
 E.U.T.: GSM 0108
 Configuration: Transmit at full rf power
 Sample No: 1
 Location: AC 1 RBW: 3 MHz Measurement
 Detector Type: Peak VBW: 3 MHz Distance: 3 m

Test Equipment Used

Antenna: 759 Directional Coupler: _____
 Pre-Amp: _____ Cable #1: _____
 Filter: _____ Cable #2: _____
 Receiver: 1036 Cable #3: _____
 Attenuator #1: _____ Cable #4: _____
 Attenuator #2: _____ Mixer: _____
 Additional equipment used: _____
 Measurement Uncertainty: +/-1.6 dB

| Frequency (MHz) | Meter Reading (dBm) | Correction Factor (dB) | | Pre-Amp Gain (dB) | Substitution Antenna Gain (dBi) | | EIRP (dBm) | EIRP (mW) | Polarity | Comments |
|--------------------|---------------------------|------------------------------|--|-------------------------|---------------------------------------|--|---------------|--------------|----------|----------|
| 1850 | -8.5 | 22.5 | | 0 | 9.4 | | 31.9 | 1549 | V | |
| 1880.2 | -8.6 | 22.4 | | 0 | 9.4 | | 31.8 | 1514 | V | |
| 1909.8 | -9.7 | 21.3 | | 0 | 9.4 | | 30.7 | 1175 | V | |

Notes: Measurements were made with the receive antenna Vert. And Hor. And with the EUT in 3 orthogonal axis. The data above represents the orientation of maximum transmitted rf energy.

EQUIPMENT: GSM0108

Section 4. Occupied Bandwidth

| | |
|----------------------------------|-------------------|
| NAME OF TEST: Occupied Bandwidth | PARA. NO.: 24.238 |
| TESTED BY: Eldon Berry | DATE: 22Aug03 |

Test Results: Complies.

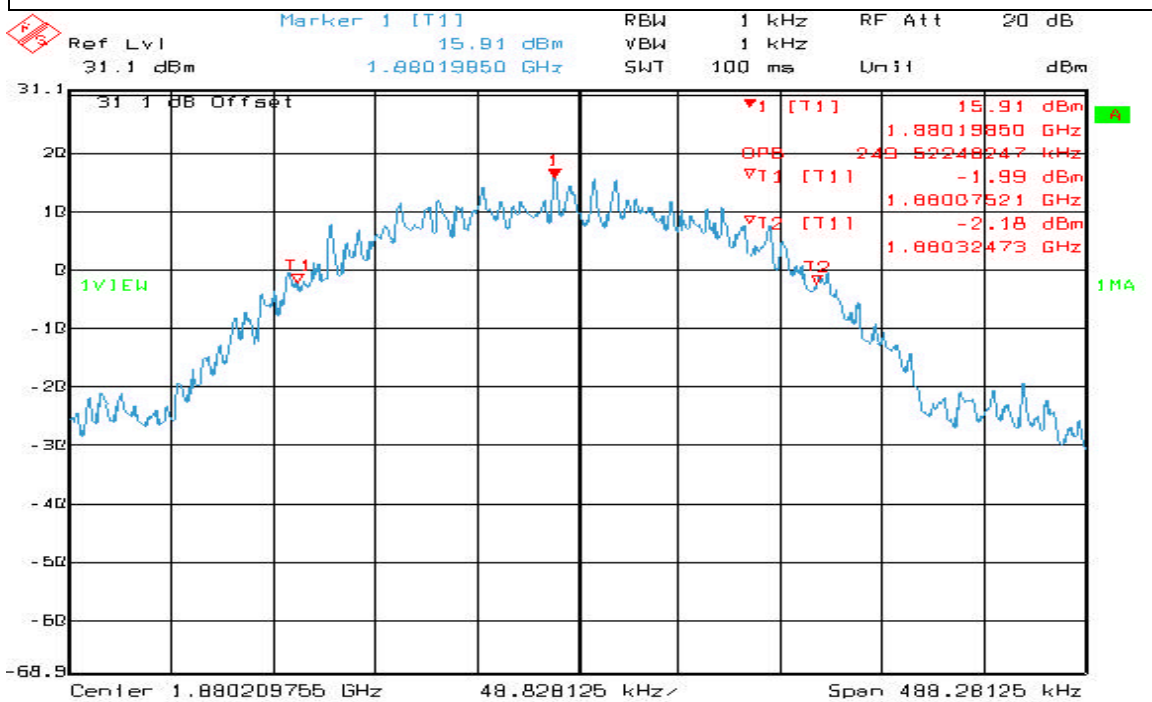
Test Data: See attached plots.

EQUIPMENT: GSM0108

Test Plot – Occupied Bandwidth

Nemko Dallas, Inc.

| Data Plot | | 99% Occupied Bandwidth | |
|-------------------------------------|----------------------------|------------------------|----------------------|
| Page 1 of 1 | | | |
| Job No.: 3L0477R | Date: 8/22/03 | Complete: <u>X</u> | Preliminary: _____ |
| Specification: | Temperature(°C): 22 | | |
| Tested By: Eldon Berry | Relative Humidity(%): 50 | | |
| E.U.T.: GSM0108 | _____ | | |
| Configuration: EUT on test fixture. | _____ | | |
| Sample Number: 1 | _____ | | |
| Location: Lab 1 | RBW: Refer to plots | Measurement | Distance: N/A _____m |
| Detector Type: Peak | VBW: Refer to plots | | |
| Test Equipment Used | | | |
| Antenna: _____ | Directional Coupler: _____ | | |
| Pre-Amp: _____ | Cable #1: 1083 | | |
| Filter: _____ | Cable #2: _____ | | |
| Receiver: 1036 | Cable #3: _____ | | |
| Attenuator #1: 1604 | Cable #4: _____ | | |
| Attenuator #2: _____ | Mixer: _____ | | |
| Additional equipment used: _____ | | | |
| Measurement Uncertainty: +/-1.7 dB | | | |



Date: 30 SEP. 2003 10:14:26

Notes: Channel 662

EQUIPMENT: GSM0108

Section 5. Spurious Emissions at Antenna Terminals

| | |
|--|-------------------|
| NAME OF TEST: Spurious Emissions @ Antenna Terminals | PARA. NO.: 24.238 |
| TESTED BY: Eldon Berry | DATE: 22Aug03 |

Test Results: Complies.

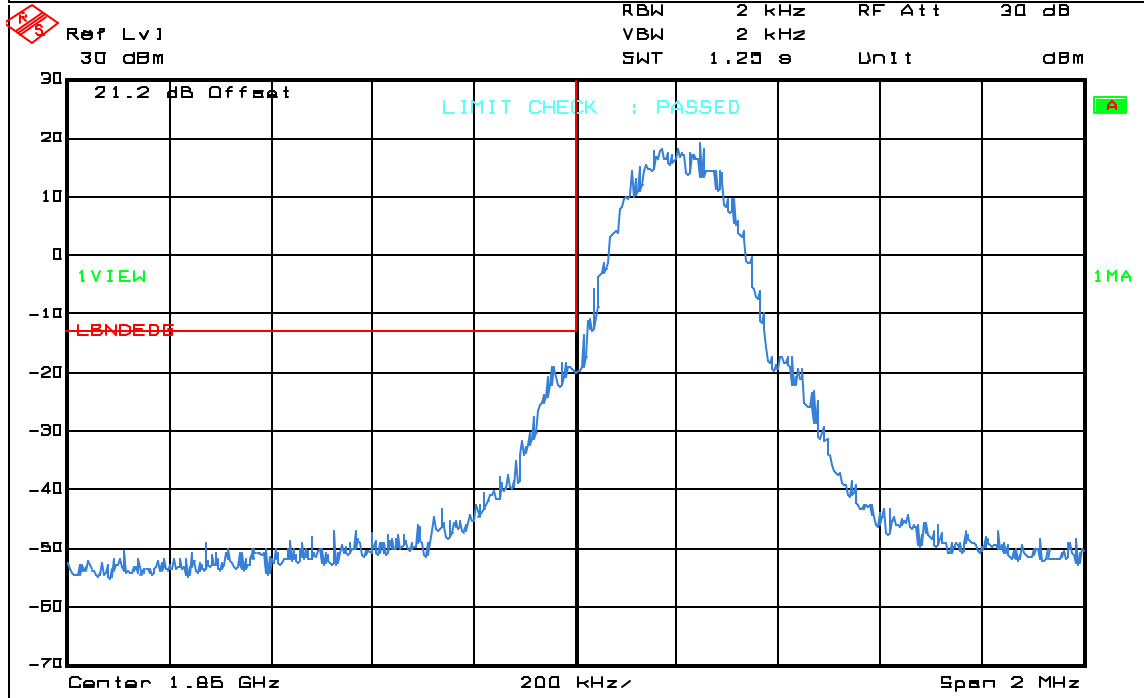
Test Data: See attached plots.

EQUIPMENT: GSM0108

Test Plots – Spurious Emissions at Antenna Terminals

Nemko Dallas, Inc.

| Data Plot | | Spurious Emissions at Antenna Terminals | |
|----------------------------|-----------------------|---|----------------|
| Page 1 of 3 | | Complete <u> x </u> | |
| Job No.: | 3L0477R | Date: | 8/22/03 |
| Specification: | CFR 47, Part 2 and 24 | Temperature(°C): | 22 |
| Tested By: | Eldon Berry | Relative Humidity(%) | 50 |
| E.U.T.: | GSM0108 | | |
| Configuration: | EUT on test fixture. | | |
| Sample Number: | S01 | RBW: | Refer to plots |
| Location: | Lab 1 | VBW: | Refer to plots |
| Detector Type: | Peak | Measurement Distance: | na m |
| Test Equipment Used | | | |
| Antenna: | | Directional Coupler: | |
| Pre-Amp: | | Cable #1: | 1083 |
| Filter: | | Cable #2: | |
| Receiver: | 1036 | Cable #3: | |
| Attenuator #1: | 1604 | Cable #4: | |
| Attenuator #2: | | Mixer: | |
| Additional equipment used: | | | |
| Measurement Uncertainty: | ±1.7 dB | | |

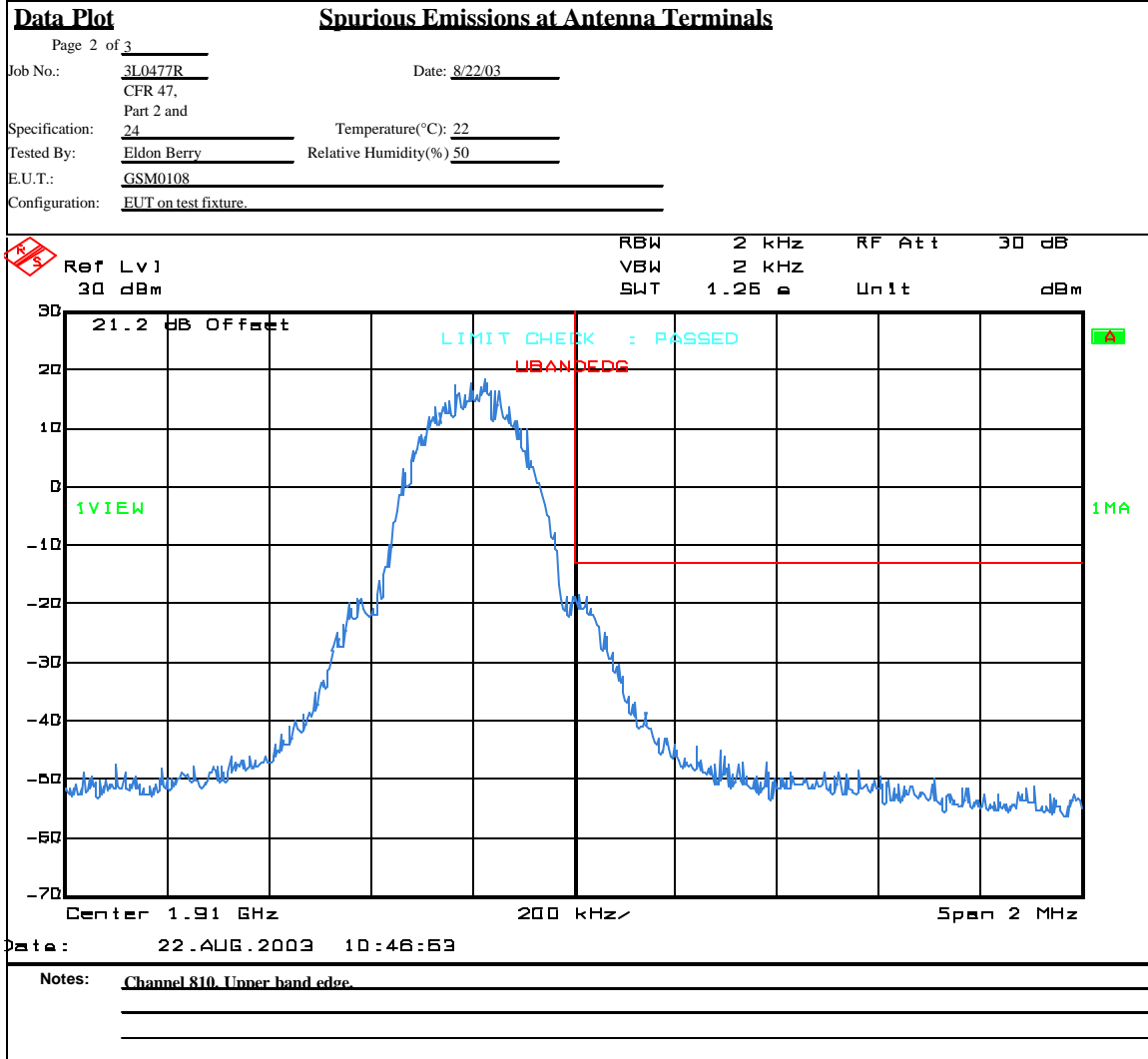


Date: 22 AUG 2003 10:41:19

Notes: Channel 512, Lower band edge.

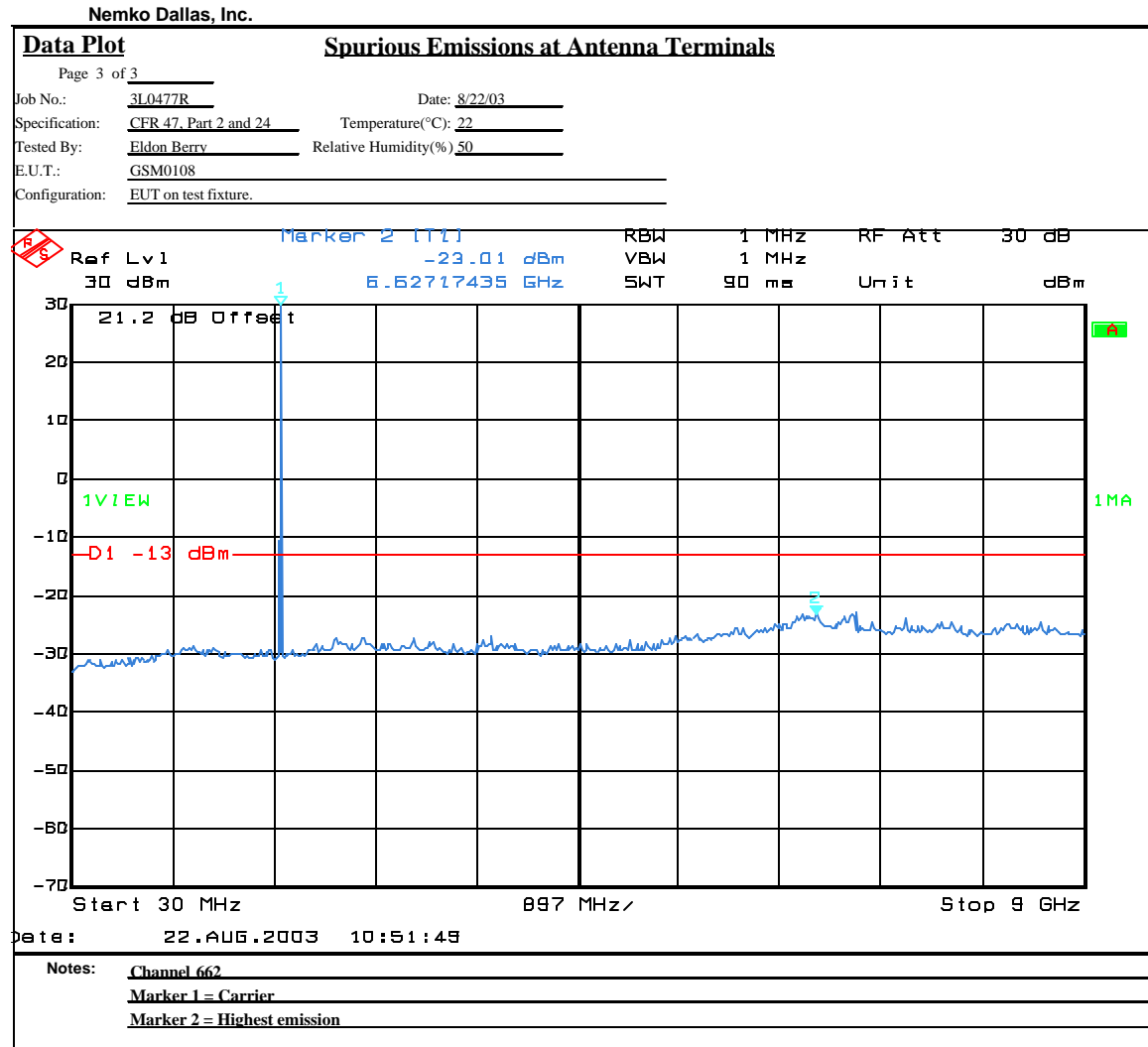
EQUIPMENT: GSM0108

Test Plots – Spurious Emissions at Antenna Terminals



EQUIPMENT: GSM0108

Test Plots – Spurious Emissions at Antenna Terminals



EQUIPMENT: GSM0108

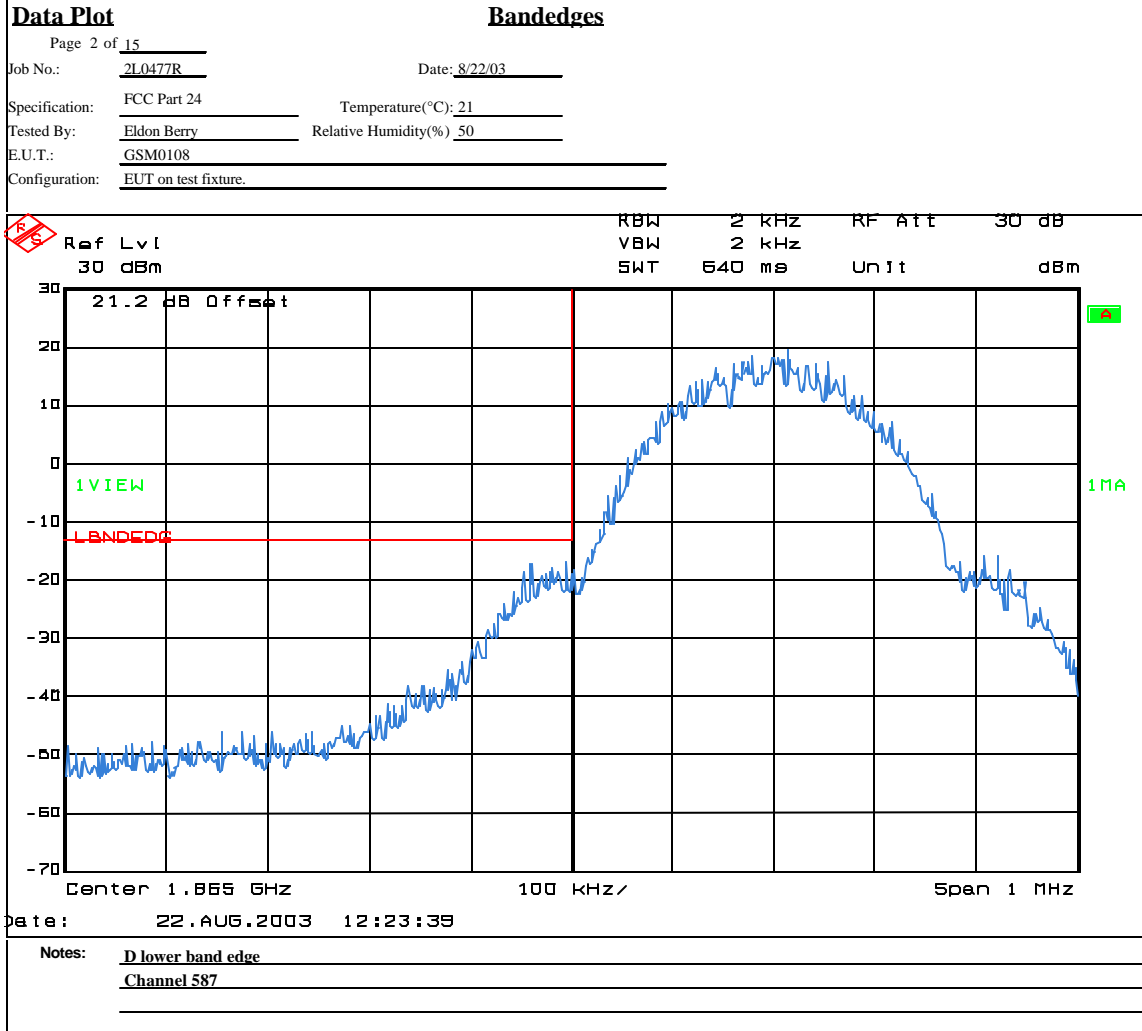
Test Plots – Spurious Emissions at Antenna Terminals

Nemko USA, Inc.

| Data Plot | | Bandedges | | | | | | | | | | | | | |
|---|----------------------------|---------------------|-------|-----|-------|--------|-------|-----|-------|------|-----|-----|--------|--|--|
| Page 1 of 15 | | Complete <u> X </u> | | | | | | | | | | | | | |
| Job No.: 2L0477R | Date: 8/22/03 | Preliminary: _____ | | | | | | | | | | | | | |
| Specification: FCC Part 24 | Temperature(°C): 21 | | | | | | | | | | | | | | |
| Tested By: Eldon Berry | Relative Humidity(%): 50 | | | | | | | | | | | | | | |
| E.U.T.: GSM0108 | _____ | | | | | | | | | | | | | | |
| Configuration: EUT on test fixture. | _____ | | | | | | | | | | | | | | |
| Sample Number: S01 | _____ | | | | | | | | | | | | | | |
| Location: Lab 1 | RBW: Refer to plots | _____ | | | | | | | | | | | | | |
| Detector Type: Peak | VBW: Refer to plots | _____ | | | | | | | | | | | | | |
| Test Equipment Used | | | | | | | | | | | | | | | |
| Antenna: _____ | Directional Coupler: _____ | | | | | | | | | | | | | | |
| Pre-Amp: _____ | Cable #1: 1083 | | | | | | | | | | | | | | |
| Filter: _____ | Cable #2: _____ | | | | | | | | | | | | | | |
| Receiver: 1036 | Cable #3: 0 | | | | | | | | | | | | | | |
| Attenuator #1: 1604 | Cable #4: _____ | | | | | | | | | | | | | | |
| Attenuator #2: _____ | Mixer: _____ | | | | | | | | | | | | | | |
| Additional equipment used: _____ | | | | | | | | | | | | | | | |
| Measurement Uncertainty: +/-1.7 dB | | | | | | | | | | | | | | | |
| <table border="1"> <tr> <td>RBW</td> <td>2 kHz</td> <td>RF Att</td> <td>30 dB</td> </tr> <tr> <td>VBW</td> <td>2 kHz</td> <td>Unit</td> <td>dBm</td> </tr> <tr> <td>SWT</td> <td>640 ms</td> <td></td> <td></td> </tr> </table> | | | | RBW | 2 kHz | RF Att | 30 dB | VBW | 2 kHz | Unit | dBm | SWT | 640 ms | | |
| RBW | 2 kHz | RF Att | 30 dB | | | | | | | | | | | | |
| VBW | 2 kHz | Unit | dBm | | | | | | | | | | | | |
| SWT | 640 ms | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| Data: 22.AUG.2003 12:22:13 | | | | | | | | | | | | | | | |
| Notes: <u> A upper band edge </u> <u> Channel 585 </u> | | | | | | | | | | | | | | | |

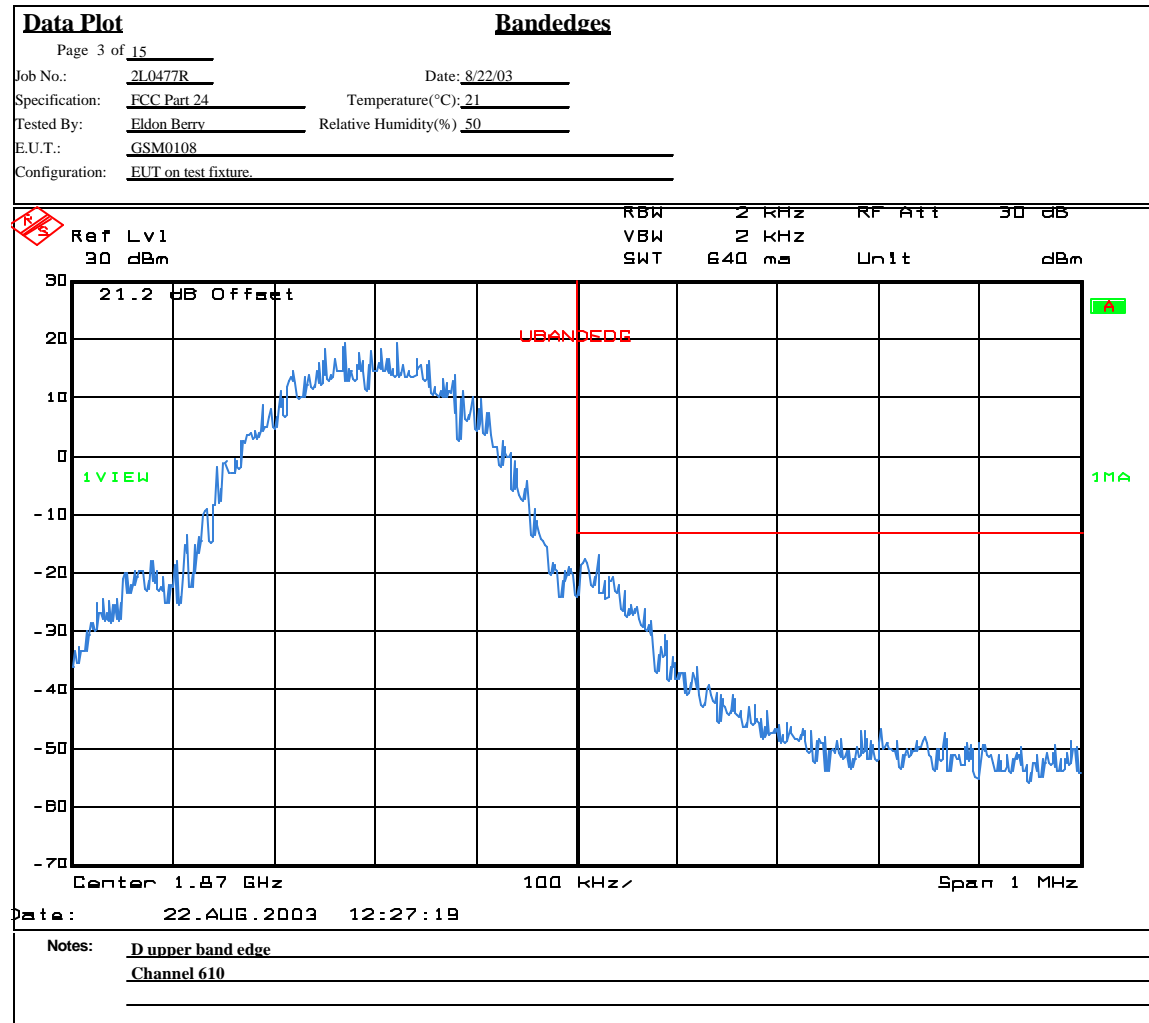
EQUIPMENT: GSM0108

Test Plots – Spurious Emissions at Antenna Terminals



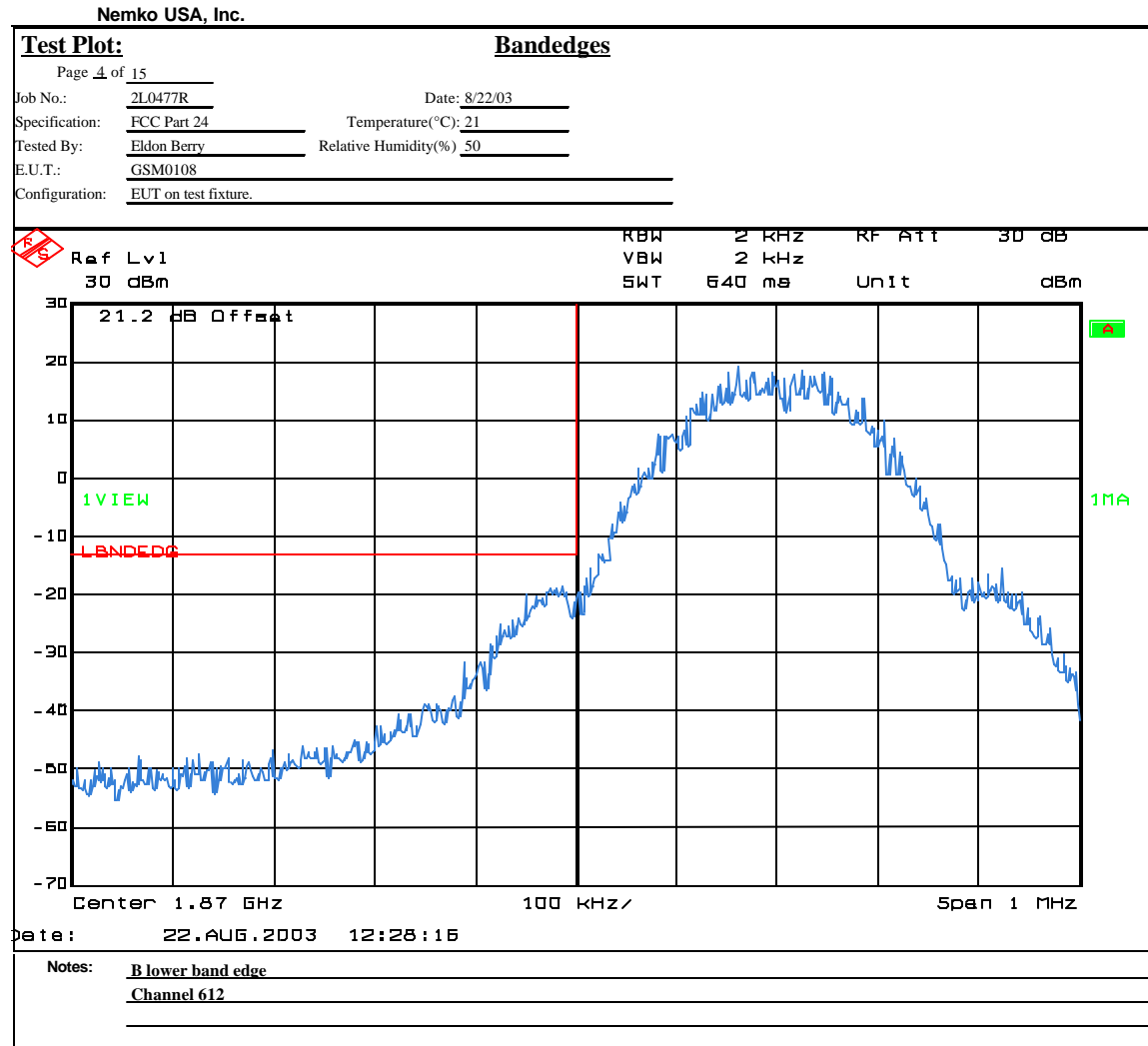
EQUIPMENT: GSM0108

Test Plots – Spurious Emissions at Antenna Terminals



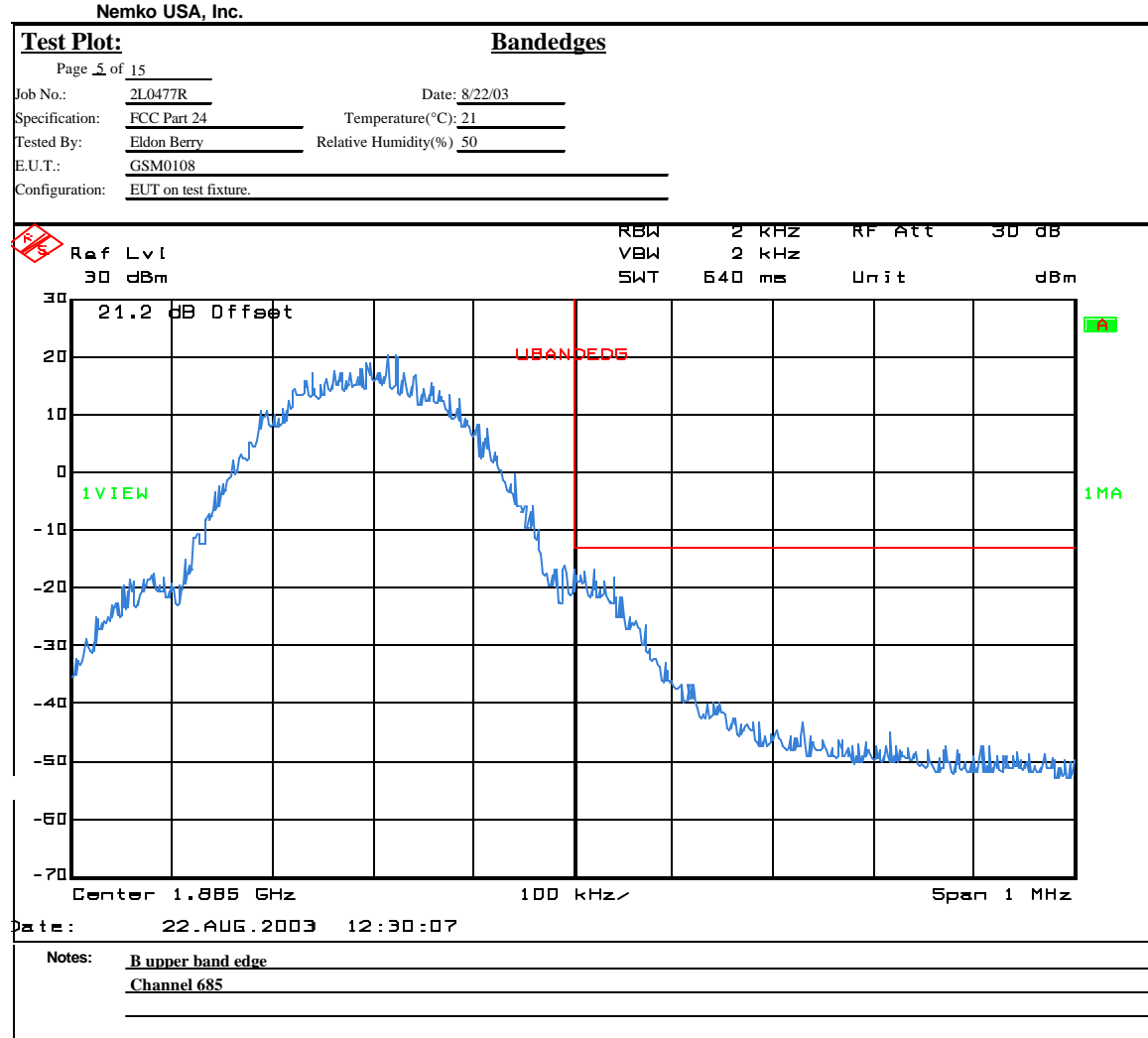
EQUIPMENT: GSM0108

Test Plots – Spurious Emissions at Antenna Terminals



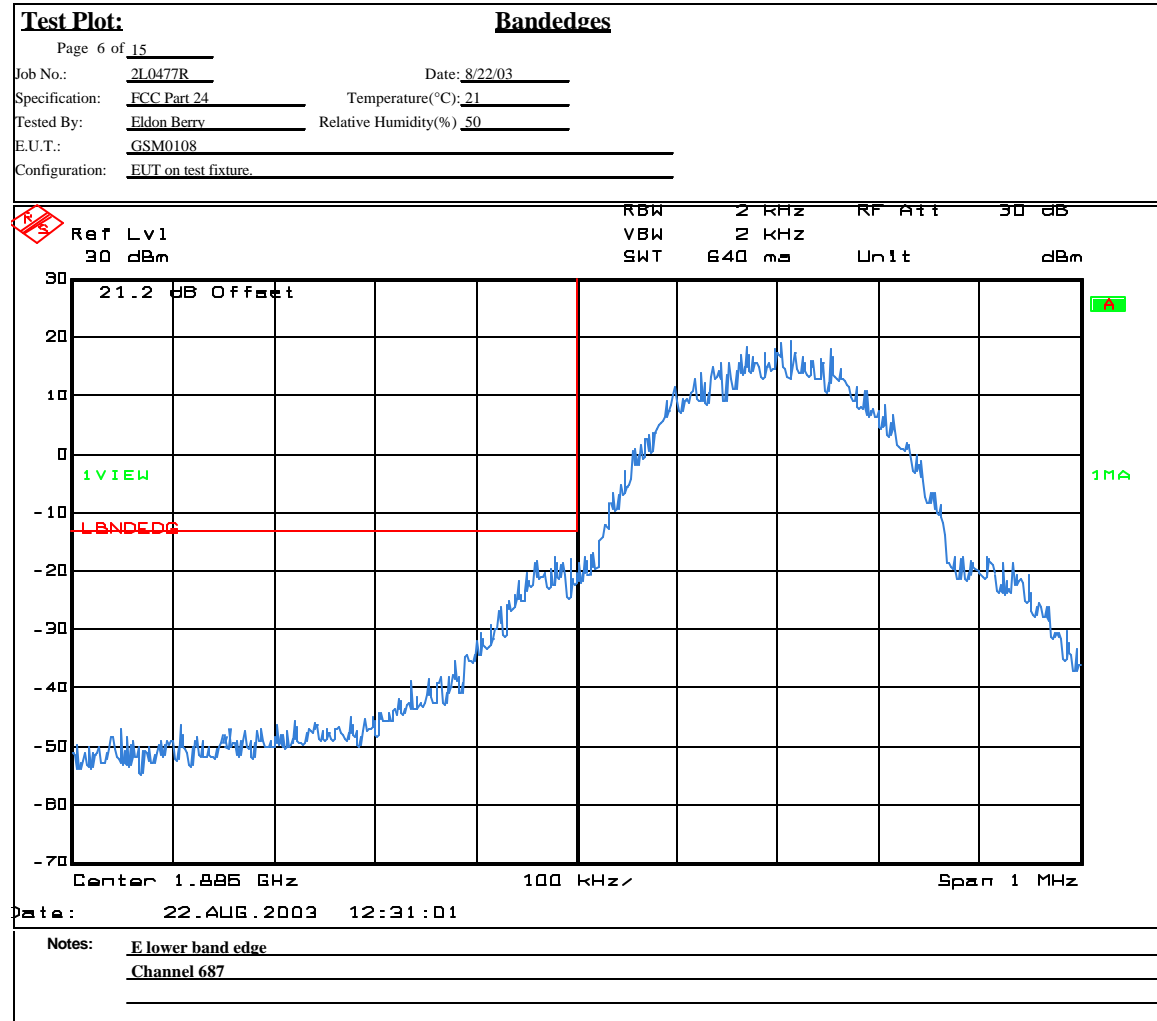
EQUIPMENT: GSM0108

Test Plots – Spurious Emissions at Antenna Terminals



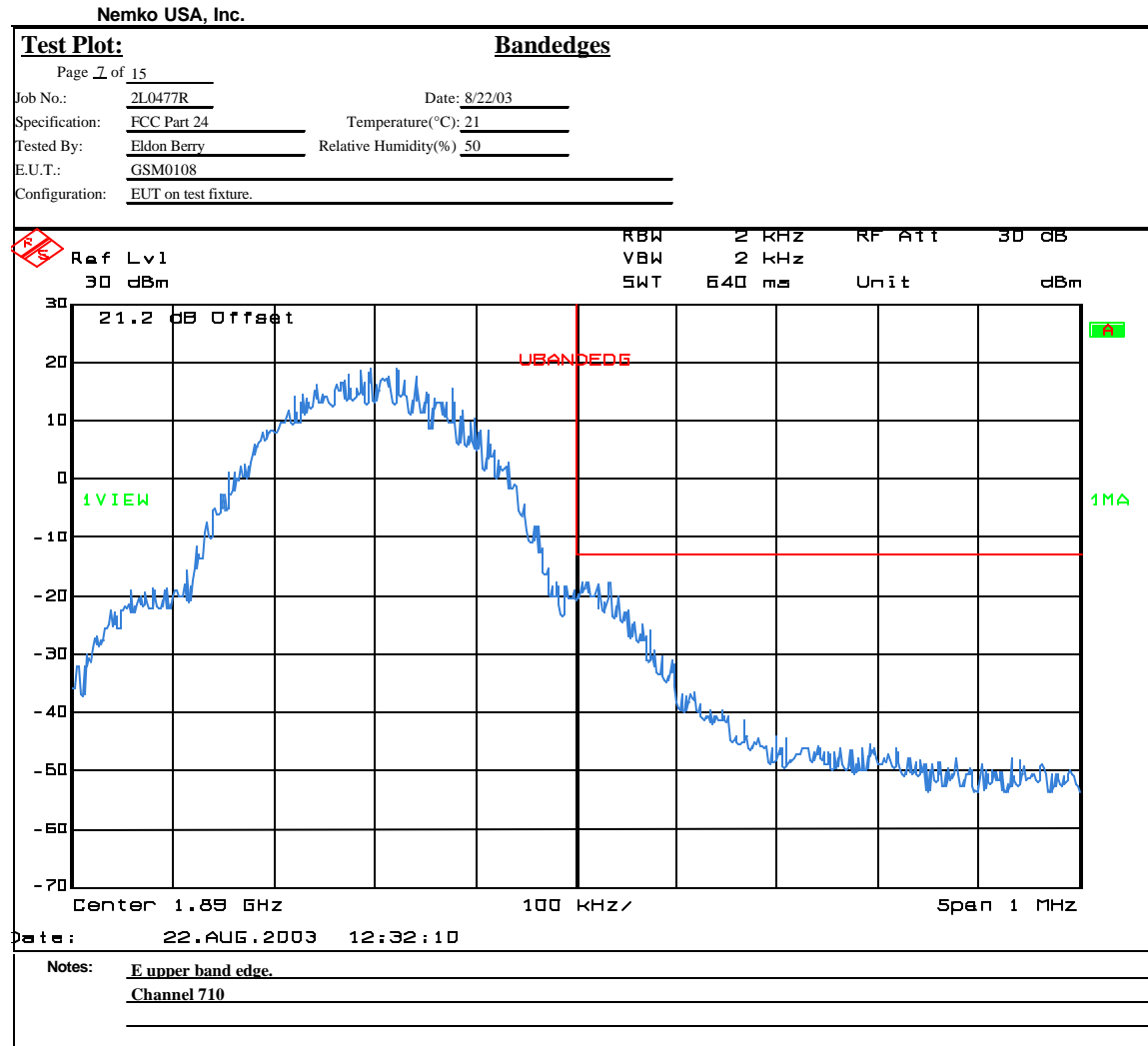
EQUIPMENT: GSM0108

Test Plots – Spurious Emissions at Antenna Terminals



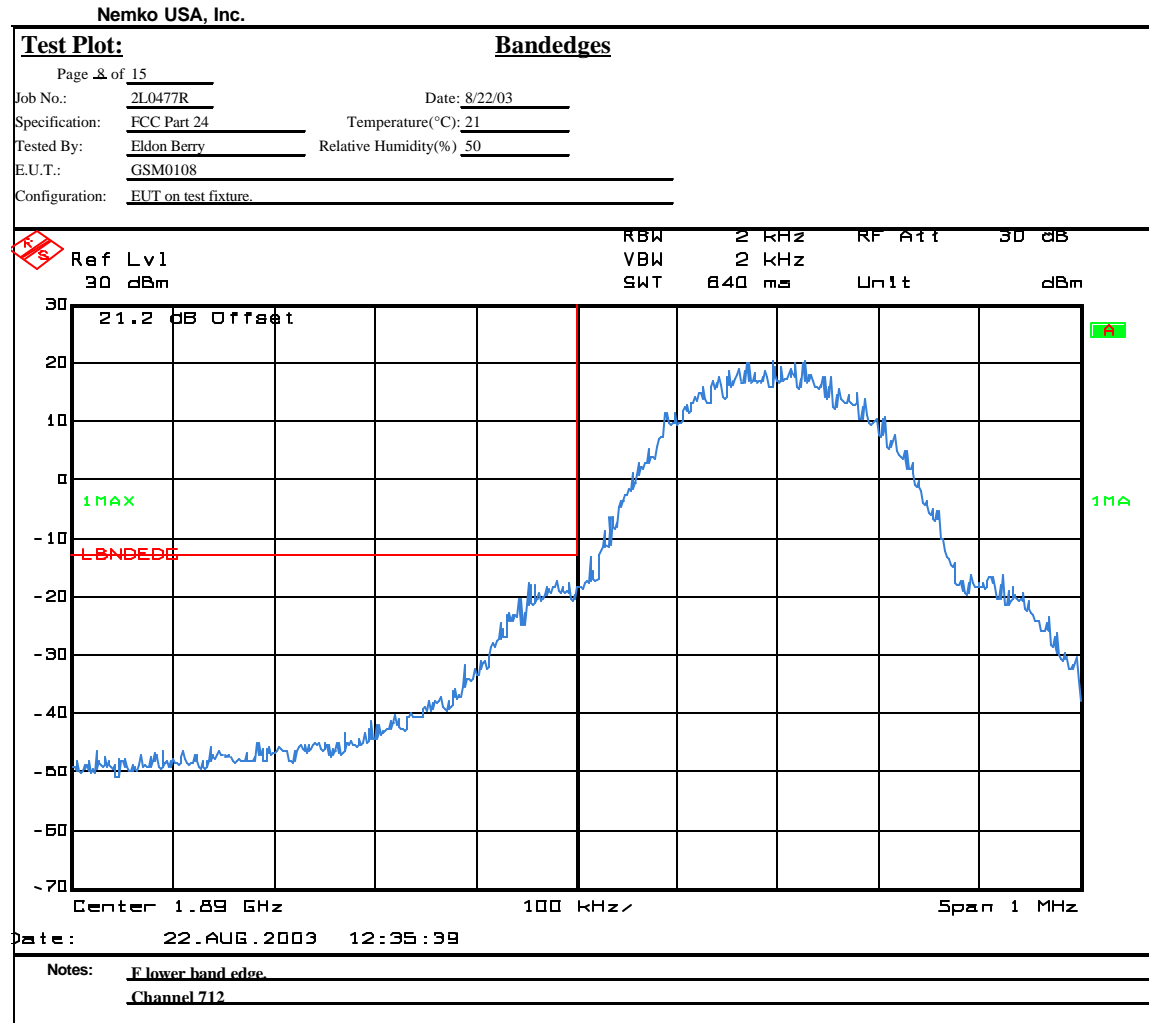
EQUIPMENT: GSM0108

Test Plots – Spurious Emissions at Antenna Terminals



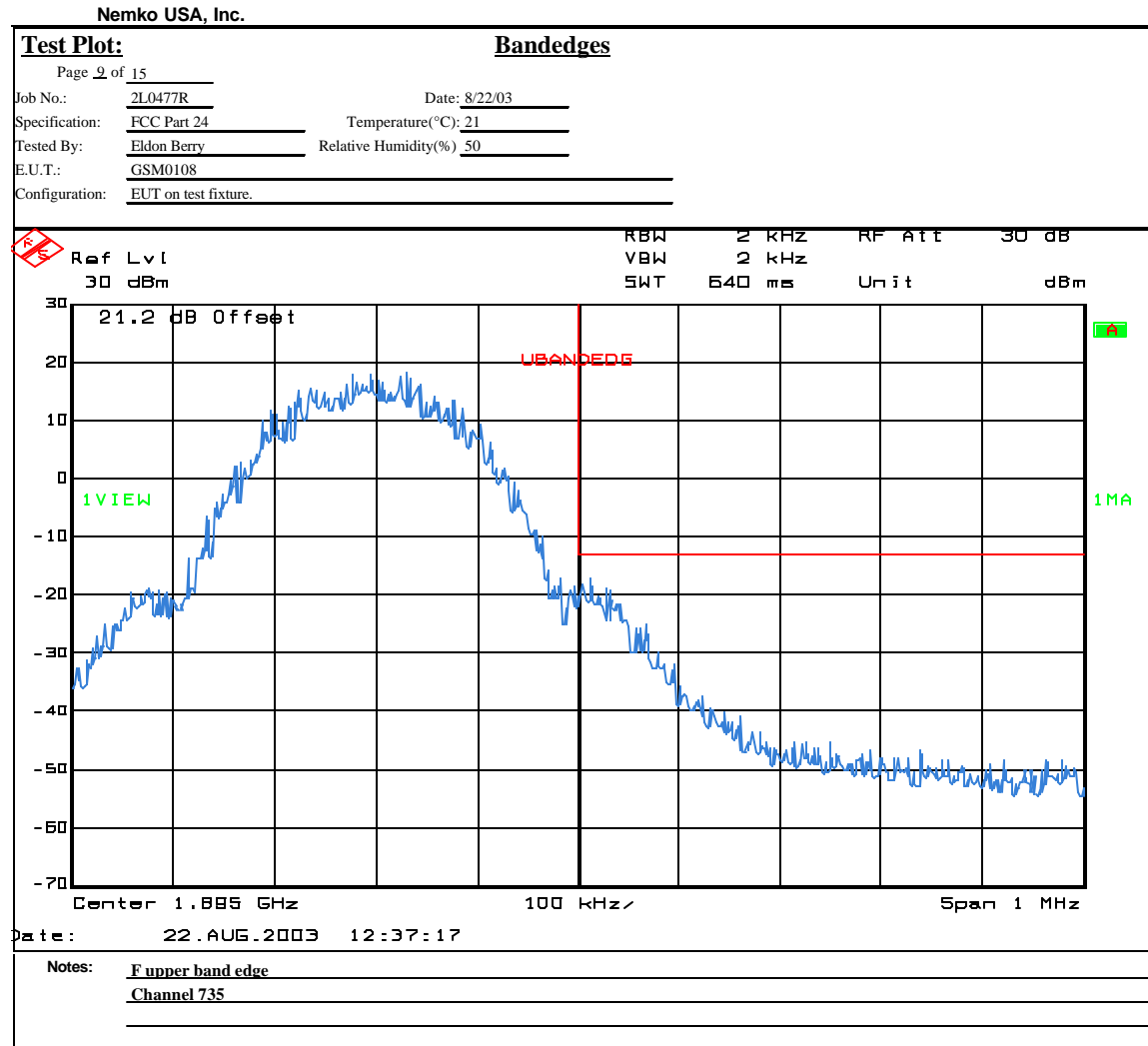
EQUIPMENT: GSM0108

Test Plots – Spurious Emissions at Antenna Terminals



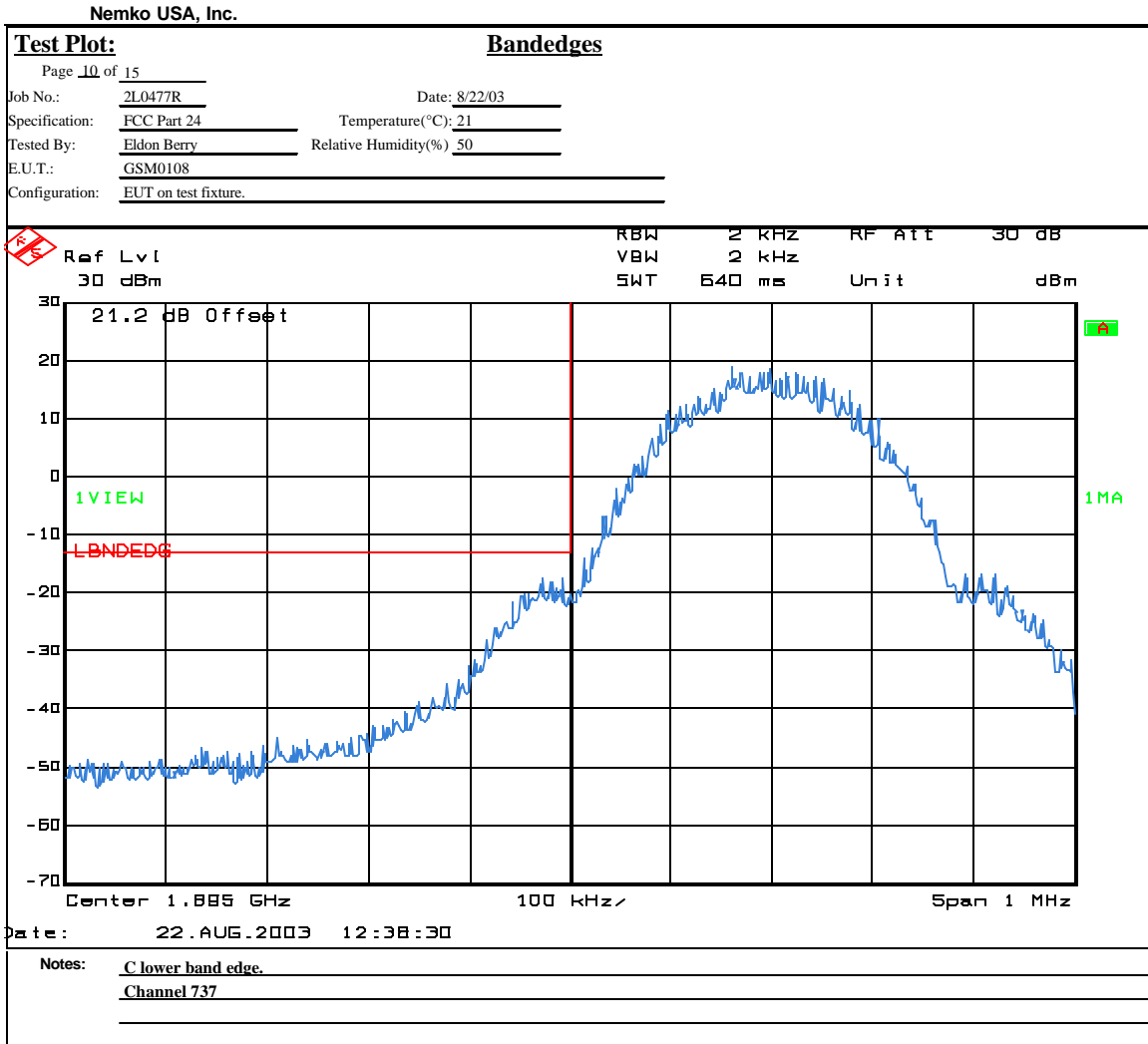
EQUIPMENT: GSM0108

Test Plots – Spurious Emissions at Antenna Terminals



EQUIPMENT: GSM0108

Test Plots – Spurious Emissions at Antenna Terminals



EQUIPMENT: GSM0108

Section 6. Field Strength of Spurious

| | |
|--|-------------------|
| NAME OF TEST: Field Strength of Spurious | PARA. NO.: 24.238 |
| TESTED BY: Eldon Berry | DATE: 22Aug03 |

Test Results: Complies.

Test Data: See attached table.

EQUIPMENT: GSM0108

Test Data - Radiated Emissions

Nemko Dallas, Inc.

EIRP Substitution Method

Page 1 of 1

Complete X

Preliminary _____

Job No.: 3L0477R Date: 8/22/03
 Specification: PT 24 Temperature(°C): 22
 Tested By: Eldon Berry Relative Humidity(%) 50
 E.U.T.: GSM0108
 Configuration: EUT on test fixture.
 Sample No: 1
 Location: AC 3 RBW: 1 MHz
 Detector Type: Peak VBW: 1 MHz

Measurement Distance: 3 m

Test Equipment Used

Antenna: 1304 Directional Coupler: _____
 Pre-Amp: 1016 Cable #1: 1484
 Filter: 1482 Cable #2: 1485
 Receiver: 1464 Cable #3: _____
 Attenuator #1: _____ Cable #4: _____
 Attenuator #2: _____ Mixer: _____
 Additional equipment used: _____
 Measurement Uncertainty: +/-1.7 dB

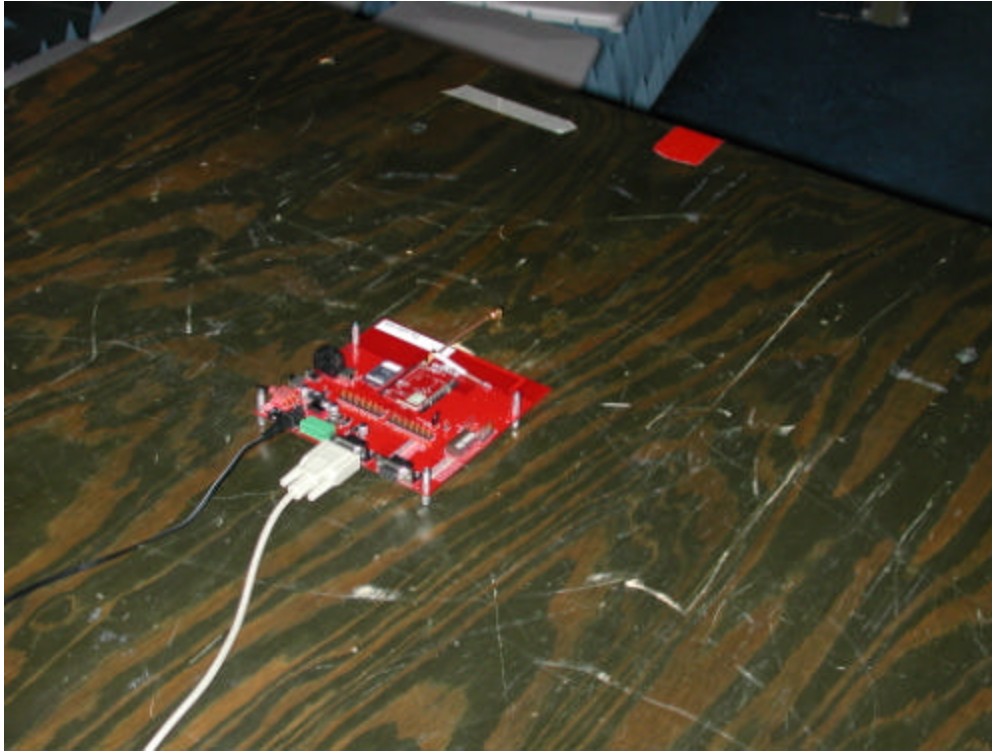
| Frequency (MHz) | Meter Reading (dBm) | Correction Factor (dB) | Pre-Amp Gain (dB) | Substitution Antenna Gain (dBi) | EIRP (dBm) | EIRP (mW) | Polarity | Comments |
|-----------------|---------------------|------------------------|-------------------|---------------------------------|------------|-----------|----------|-------------|
| 3760.4 | -71.3 | 43.3 | 0 | 10.7 | -17.3 | 0.0188 | V | Channel 662 |
| 5640.6 | -61.0 | 39.8 | 28.5 | 11.4 | -38.3 | 0.0001 | V | |
| 7520.8 | -62.5 | 41.8 | 34.1 | 11.3 | -43.5 | 0.0000 | V | |
| 9401 | -54.5 | 41.3 | 33.4 | 11.7 | -34.9 | 0.0003 | V | |
| 11281.2 | -43.2 | 43.7 | 34.6 | 12.5 | -21.6 | 0.0069 | V | |
| 13161.4 | -60.0 | 45.8 | 34.5 | 11.9 | -36.8 | 0.0002 | V | |
| 15041.6 | -63.0 | 45.2 | 32 | 12.8 | -37.0 | 0.0002 | V | |
| 16921.8 | -63.0 | 46.0 | 33.3 | 14.5 | -35.8 | 0.0003 | V | |
| 3760.4 | -75.0 | 35.5 | 0 | 10.7 | -28.8 | 0.0013 | H | |
| 5640.6 | -63.8 | 37.8 | 28.5 | 11.4 | -43.1 | 0.0000 | H | |
| 7520.8 | -62.7 | 41.5 | 34.1 | 11.3 | -44.0 | 0.0000 | H | |
| 9401 | -57.7 | 42.3 | 33.4 | 11.7 | -37.1 | 0.0002 | H | |
| 13161.4 | -63.0 | 47.8 | 30.3 | 11.9 | -33.6 | 0.0004 | H | |

Notes: Searched spectrum to the 10th harmonic of carrier

NOTE: The correction factor in the above table references the pre-calibrated path loss at that frequency and is the difference between the received signal level and the input to the substitution antenna. The same antennas, cables and test range are used for calibration and for measurement.

EQUIPMENT: GSM0108

Photographs of Test Setup



EQUIPMENT: GSM0108

Section 7. Frequency Stability

| | |
|-----------------------------------|-------------------|
| NAME OF TEST: Frequency Stability | PARA. NO.: 24.235 |
|-----------------------------------|-------------------|

Test Results: Complies.

Equipment Used: Wavetek 3600D, Voltmeter # 1558, Thermometer # 619
 Environmental Chamber # 283

Temperature: 23 °C

Relative Humidity: 36 %

Measurement Data:

Band of Operation PCS
 Mode GPRS
 Channel 662
 Standard Test Frequency: 1880.264638 MHz
 Standard Test Voltage: 3.8 Vdc

Test Equipment: 283-1464-425-1031

| Temperature | Voltage (Vdc) | Frequency (MHz) | Change (Hz) | Change (PPM) |
|-------------|---------------|-----------------|-------------|--------------|
| 50 | 3.8 | 1880.264820 | 182 | 0.10 |
| 40 | 3.8 | 1880.264517 | -121 | -0.06 |
| 30 | 3.8 | 1880.264551 | -87 | -0.05 |
| 20 | 3.8 | 1880.264638 | 0 | 0.00 |
| 10 | 3.8 | 1880.264762 | 124 | 0.07 |
| 0 | 3.8 | 1880.264805 | 167 | 0.09 |
| -10 | 3.8 | 1880.264798 | 160 | 0.09 |
| -20 | 3.8 | 1880.264710 | 72 | 0.04 |
| -30 | 3.8 | 1880.264717 | 79 | 0.04 |
| | | | | |
| 20 | 4.8 | 1880.264630 | -8 | 0.00 |
| 20 | 3.3 | 1880.264748 | 110 | 0.06 |

EQUIPMENT: GSM0108

Section 8. Test Equipment List

| Nemko | Description | Manufacturer Model | Serial | Calibration Date | Calibration Due |
|-------|---|-----------------------------------|-------------|------------------|-----------------|
| 1083 | Cable 2m | Astrolab 32027-2-29094-72TC | N/A | CBU | N/A |
| | Power meter | E4418B | GB39401848 | 12/11/02 | 12/11/04 |
| | Power sensor | E9304A | MY41494308 | 9/9/02 | 9/9/03 |
| 1604 | ATTENUATOR | NARDA 776B-20 | NONE | N/A | N/A |
| 1036 | SPECTRUM ANALYZER | ROHDE & FSEK30 | 830844/006 | 12/18/01 | 12/19/03 |
| 1304 | HORN ANTENNA | ELECTRO METRICS RGA-60 | 6151 | 07/30/01 | 07/31/03 |
| 1016 | Pre-Amp | HEWLETT PACKARD 8449A | 2749A00159 | 07/24/03 | 07/24/04 |
| 1482 | Band Pass | K & L 11SH10-4000/T12000-0/0 | 2 | Cal B4 | N/A |
| 1464 | Spectrum | Hewlett 8563E | 3551A04428 | 02/11/03 | 02/11/05 |
| 1484 | Cable 2.0-18.0 Ghz | Storm PR90-010-072 | N/A | 07/24/03 | 07/23/04 |
| 1485 | Cable 2.0-18.0 Ghz | Storm PR90-010-216 | N/A | 07/24/03 | 07/23/04 |
| 283 | Environmental Chamber with controller # | ENVIROTRONIC SH27 & 2030-22844 | 129010083 | 04/22/03 | 04/21/04 |
| 425 | DIGITAL MULTIMETER | FLUKE 45-01 | 5930073 | 10/03/02 | 10/03/03 |
| 1031 | D C power | Hewlett 6002A | 2930A-12218 | Not | N/A |

ANNEX A - TEST METHODOLOGIES

EQUIPMENT: GSM0108

NAME OF TEST: RF Power Output

PARA. NO.: 2.1046

Minimum Standard: Para. No.24.232. Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

Method Of Measurement: CDMA Per ANSI/J-STD-008
TDMA Per ANSI/J-STD-010
PCS 1900 Per ANSI/J-STD-007

Detachable Antenna:

The peak power at antenna terminals is measured using an in-line peak power meter or a spectrum analyzer.

Integral Antenna:

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.

EQUIPMENT: GSM0108

| | |
|---|--------------------------|
| NAME OF TEST: Occupied Bandwidth | PARA. NO.: 2.1049 |
|---|--------------------------|

Minimum Standard: Para. No. 24.238(b). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB.

Method Of Measurement:

CDMA Per ANSI/J-STD-008

Spectrum analyzer settings:
RBW: 30 kHz
VBW: ? RBW
Span: 5 MHz
Sweep: Auto

GSM Per ANSI/J-STD-007

RBW: 3 kHz
VBW: ? RBW
Span: 2 MHz
Sweep: Auto

NADC Per IS-136

RBW: 1 kHz
VBW: ? RBW
Span: 1 MHz
Sweep: Auto

EQUIPMENT: GSM0108

| | |
|---|--------------------------|
| NAME OF TEST: Spurious Emission at Antenna Terminals | PARA. NO.: 2.1053 |
|---|--------------------------|

Minimum Standard: Para. No.24.238(a). On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power by at least $43 + 10 \log (P)$ dB.

Method Of Measurement:

Spectrum analyzer settings:

CDMA Per ANSI/J-STD-008

RBW: 1 MHz (> 1 MHz from Band Edge)
 RBW: 20 kHz (< 1MHz from Band Edge)
 VBW: ? RBW
 Sweep: Auto
 Video Avg: 6 Sweeps

GSM Per ANSI/J-STD-007

RBW: 1 MHz (> 1 MHz from Band Edge)
 RBW: 3 kHz (< 1 MHz from Band Edge)
 VBW: ? RBW
 Sweep: Auto
 Video Avg: Disabled

NADC Per IS-136

RBW: 1 MHz (> 1 MHz from Band Edge)
 RBW: 1 kHz (< 1 MHz from Band Edge)
 VBW: ? RBW
 Sweep: Auto
 Video Avg: Disabled

To demonstrate compliance at band edges the frequency of the input signal is set to the lowest and highest assigned channel and the center frequency of the spectrum analyzer is set to the upper and lower edges of the appropriate frequency block.

EQUIPMENT: GSM0108

| | |
|---|--------------------------|
| NAME OF TEST: Field Strength of Spurious Radiation | PARA. NO.: 2.1053 |
|---|--------------------------|

Minimum Standard: Para. No.24.238(a). On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power by at least $43 + 10 \log (P)$ dB.

Calculation Of Field Strength Limit

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.

EQUIPMENT: GSM0108

NAME OF TEST: Frequency Stability**PARA. NO.: 2.1055**

Minimum Standard: Para. No. 24.235. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Method Of Measurement: CDMA Per ANSI/J-STD-008
TDMA Per ANSI/J-STD-007
NADC Per IS-136

Frequency Stability With Voltage Variation

The E.U.T. is placed in an environmental chamber and allowed to stabilize at +20 degrees Celsius for at least 15 minutes. With the voltage input to the E.U.T. set to 85% S.T.V., the frequency is measured in 30 second intervals for a period of 5 minutes. This procedure is repeated at 100% S.T.V. and 115% S.T.V.

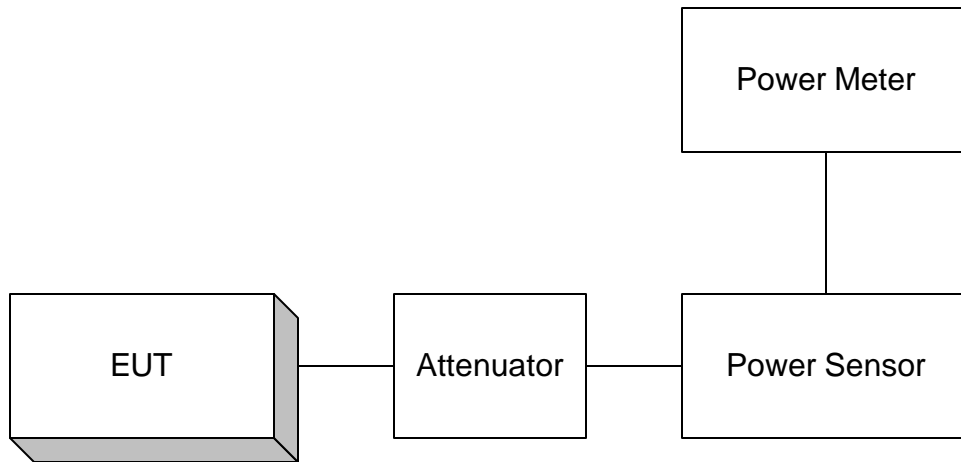
Frequency Stability With Temperature Variation

The input voltage to the E.U.T. is set to S.T.V. and the temperature of the environmental chamber is varied in 10 degree steps from -30 degrees C to +50 degrees C. The E.U.T. is allowed to stabilize at each temperature and the frequency is measured in 30 second intervals for a period of 5 minutes.

ANNEX B - TEST DIAGRAMS

EQUIPMENT: GSM0108

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

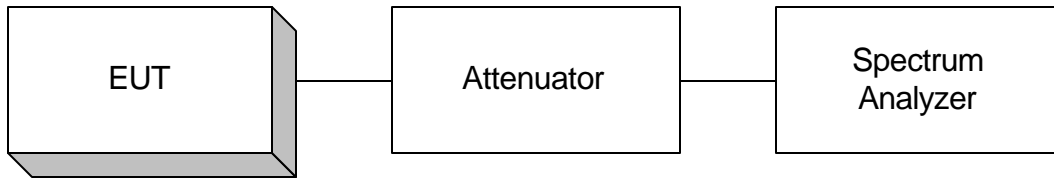


Para. No. 2.1049 - Occupied Bandwidth

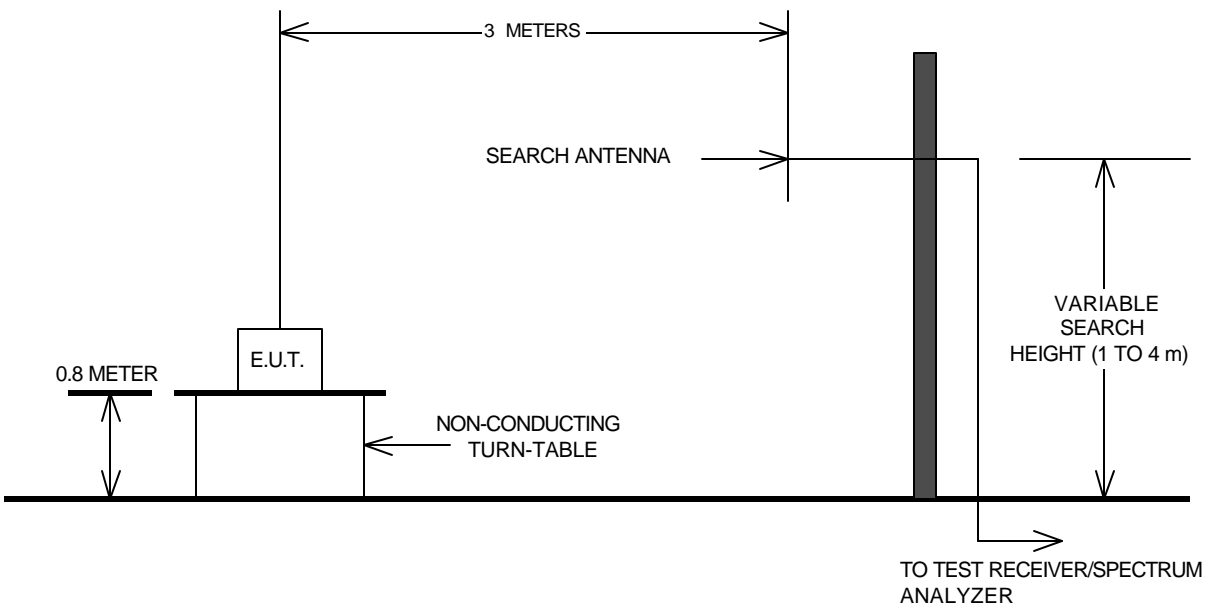


EQUIPMENT: GSM0108

Para. No. 2.1053 Spurious Emissions at Antenna Terminals



Para. No. 2.1053- Field Strength of Spurious Radiation



EQUIPMENT: GSM0108

Para. No. 2.1055 - Frequency Stability

