




Nemko Test Report No.: 4L0664RUS1

Applicant: Communication Components, Inc.
89 Leuning Street
Second Floor
Hackensack, NJ 07606

Equipment Under Test: DAC-1819-125

In Accordance With: **FCC Part 24, Subpart E**
Broadband PCS Amplifiers

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

Authorized By: 
Tom Tidwell, Frontline Group Manager

Date: 11/11/04

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EQUIPMENT: DAC-1819-125

Section 1. Summary of Test Results

Manufacturer: Communication Components

Model No.: DAC-1819-125

Serial No.: G006267

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.

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

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Summary Of Test Data

| NAME OF TEST | PARA. NO. | SPEC. | RESULT |
|---|------------------|---------------------|---------------|
| RF Power Output | 24.232 | 100W | Complies |
| Occupied Bandwidth | 24.238 | Input/Output | 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 | | NA |

Measurement uncertainty for each test configuration is expressed to 95% probability.

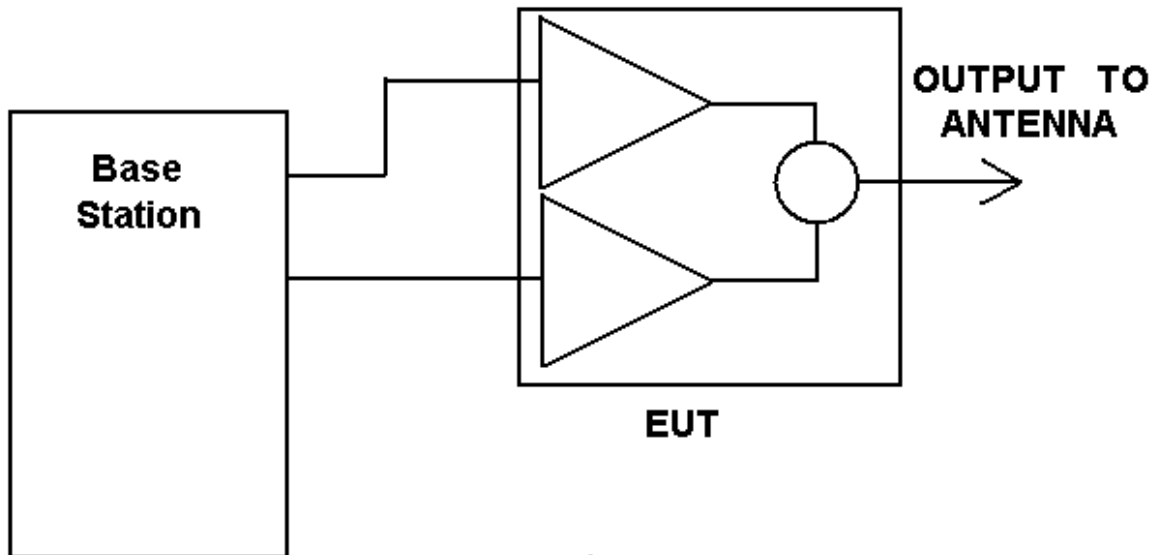
Section 2. General Equipment Specification

| | | | |
|---|---|-------------------------------------|-------------------------------------|
| Supply Voltage Input: | 28 Vdc | | |
| Frequency Bands: Downlink: | <input checked="" type="checkbox"/> | Block A: | 1930 – 1945 MHz |
| | <input checked="" type="checkbox"/> | Block D | 1945 – 1950 MHz |
| | <input checked="" type="checkbox"/> | Block B: | 1950 – 1965 MHz |
| | <input checked="" type="checkbox"/> | Block E | 1965 – 1970 MHz |
| | <input checked="" type="checkbox"/> | Block F : | 1970 – 1975 MHz |
| | <input checked="" type="checkbox"/> | Block C | 1975 – 1990 MHz |
| Frequency Bands: Uplink: | <input type="checkbox"/> | Block A | 1850 – 1865 MHz |
| | <input type="checkbox"/> | Block B: | 1865 – 1870 MHz |
| | <input type="checkbox"/> | Block C | 1870 – 1885 MHz |
| | <input type="checkbox"/> | Block D | 1885 – 1890 MHz |
| | <input type="checkbox"/> | Block E: | 1890 – 1895 MHz |
| | <input type="checkbox"/> | Block F : | 1895 – 1910 MHz |
| Type of Modulation and Designator: | CDMA (F9W) | GSM (GXW) | EDGE (G7W) |
| | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Output Impedance: | 50 ohms | | |
| RF Output (Rated): Uplink | Per channel: | NA | W |
| | Total: | NA | W |
| RF Output (Rated): Downlink | Per channel: | 62.5 | W |
| | Total: | 125 | W |
| | Power output needs to be lowered to 33.2 dBm at 1930.2 and 1989.8 MHz (Bandedges) to achieve compliance when using GSM or EDGE modulation. | | |
| Frequency Translation: | F1-F1 | F1-F2 | N/A |
| | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Band Selection: | Software | Duplexer | Fullband |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Description of EUT

The device is a base station amplifier operating in the PCS band utilizing GSM and GSM EDGE technology. Each input outputs 62.5 Watts single carrier only and input into a combiner prior to output. The device is rated at 125 Watts combined power.

System Diagram



Section 3. RF Power Output

| | |
|-------------------------------|-------------------|
| NAME OF TEST: RF Power Output | PARA. NO.: 2.1046 |
| TESTED BY: David Light | DATE: 10/26/04 |

Test Results: Complies.

Measurement Data:

| | Modulation Type | Per Channel Output Power (dBm) | Composite Output Power (dBm) |
|----------|-----------------|--------------------------------|------------------------------|
| Uplink | GSM | NA | NA |
| Downlink | GSM | 48 | 52 |
| Uplink | GSM EDGE | NA | NA |
| Downlink | GSM EDGE | 48 | 52 |

Note – The device was tested at 125 Watts max power to compensate for any insertion loss prior to antenna input. The rf output power at the antenna port after losses will never be more than that required to produce 100 W eirp.

Reduced Power measurements at Band Edges

| | Modulation Type | Single Channel Output Power (1930.2MHz) | Single Channel Output Power (1989.8MHz) |
|----------|-----------------|---|---|
| Downlink | EDGE | 36.1 dBm | 36.0 dBm |
| Downlink | GSM | 33.2 dBm | 33.6 dBm |

Equipment Used: 1036-1064-1055-1626

Measurement Uncertainty: +/- 1.7 dB

Temperature: 22 °C

Relative Humidity: 40%

EQUIPMENT: DAC-1819-125

Section 4. Occupied Bandwidth

| | |
|----------------------------------|-------------------|
| NAME OF TEST: Occupied Bandwidth | PARA. NO.: 2.1049 |
| TESTED BY: David Light | DATE:10/26/04 |

Test Results: Complies.

Test Data: See attached plot(s).

EQUIPMENT: DAC-1819-125

Test Data – Occupied Bandwidth



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 Fax: (972) 436-2667

| Data Plot | | Occupied Bandwidth | | Complete <u>X</u> | | | | | | | | | | | | | | | | | | | |
|---|------------------|----------------------------------|--------|-----------------------|-------|---------|--------------|-----|-------|--------|-------|--------|---------|-----|-------|--|--|--|------------------|-----|--------|------|-----|
| Page <u>1</u> of <u>4</u> | | Date: <u>10/26/2004</u> | | Preliminary: _____ | | | | | | | | | | | | | | | | | | | |
| Job No.: <u>4L0664R</u> | | Temperature(°C): <u>25</u> | | | | | | | | | | | | | | | | | | | | | |
| Specification: <u>PT 24</u> | | Relative Humidity(%): <u>45</u> | | | | | | | | | | | | | | | | | | | | | |
| Tested By: <u>David Light</u> | | | | | | | | | | | | | | | | | | | | | | | |
| E.U.T.: <u>DAC-1819-125</u> | | | | | | | | | | | | | | | | | | | | | | | |
| Configuration: <u>TX FULL POWER</u> | | | | | | | | | | | | | | | | | | | | | | | |
| Sample Number: <u>1</u> | | | | | | | | | | | | | | | | | | | | | | | |
| Location: <u>Lab 1</u> | | RBW: <u>3 kHz</u> | | Measurement | | | | | | | | | | | | | | | | | | | |
| Detector Type: <u>Peak</u> | | VBW: <u>3 kHz</u> | | Distance: <u>NA</u> m | | | | | | | | | | | | | | | | | | | |
| Test Equipment Used | | | | | | | | | | | | | | | | | | | | | | | |
| Antenna: _____ | | Directional Coupler: <u>1055</u> | | | | | | | | | | | | | | | | | | | | | |
| Pre-Amp: _____ | | Cable #1: <u>1626</u> | | | | | | | | | | | | | | | | | | | | | |
| Filter: _____ | | Cable #2: _____ | | | | | | | | | | | | | | | | | | | | | |
| Receiver: <u>1036</u> | | Cable #3: _____ | | | | | | | | | | | | | | | | | | | | | |
| Attenuator #1: <u>1064</u> | | Cable #4: _____ | | | | | | | | | | | | | | | | | | | | | |
| Attenuator #2: _____ | | Mixer: _____ | | | | | | | | | | | | | | | | | | | | | |
| Additional equipment used: _____ | | | | | | | | | | | | | | | | | | | | | | | |
| Measurement Uncertainty: <u>+/-1.7 dB</u> | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr> <td>Ref Lvl</td> <td>Delta 1 [T1]</td> <td>RBW</td> <td>3 kHz</td> <td>RF Att</td> <td>40 dB</td> </tr> <tr> <td>55 dBm</td> <td>0.18 dB</td> <td>VBW</td> <td>3 kHz</td> <td></td> <td></td> </tr> <tr> <td></td> <td>290.58116232 kHz</td> <td>SWT</td> <td>280 ms</td> <td>Unit</td> <td>dBm</td> </tr> </table> | | | | | | Ref Lvl | Delta 1 [T1] | RBW | 3 kHz | RF Att | 40 dB | 55 dBm | 0.18 dB | VBW | 3 kHz | | | | 290.58116232 kHz | SWT | 280 ms | Unit | dBm |
| Ref Lvl | Delta 1 [T1] | RBW | 3 kHz | RF Att | 40 dB | | | | | | | | | | | | | | | | | | |
| 55 dBm | 0.18 dB | VBW | 3 kHz | | | | | | | | | | | | | | | | | | | | |
| | 290.58116232 kHz | SWT | 280 ms | Unit | dBm | | | | | | | | | | | | | | | | | | |
| <p>41.1 dB Offset</p> <p>19.26 dBm</p> <p>1.95985070 GHz</p> <p>0.18 dB</p> <p>290.58116232 kHz</p> <p>Center 1.96 GHz 100 kHz Span 1 MHz</p> | | | | | | | | | | | | | | | | | | | | | | | |
| Date: 26.OCT.2004 15:22:32 | | | | | | | | | | | | | | | | | | | | | | | |
| Notes: <u>OUTPUT, GSM EDGE, 62.5 watts</u> | | | | | | | | | | | | | | | | | | | | | | | |

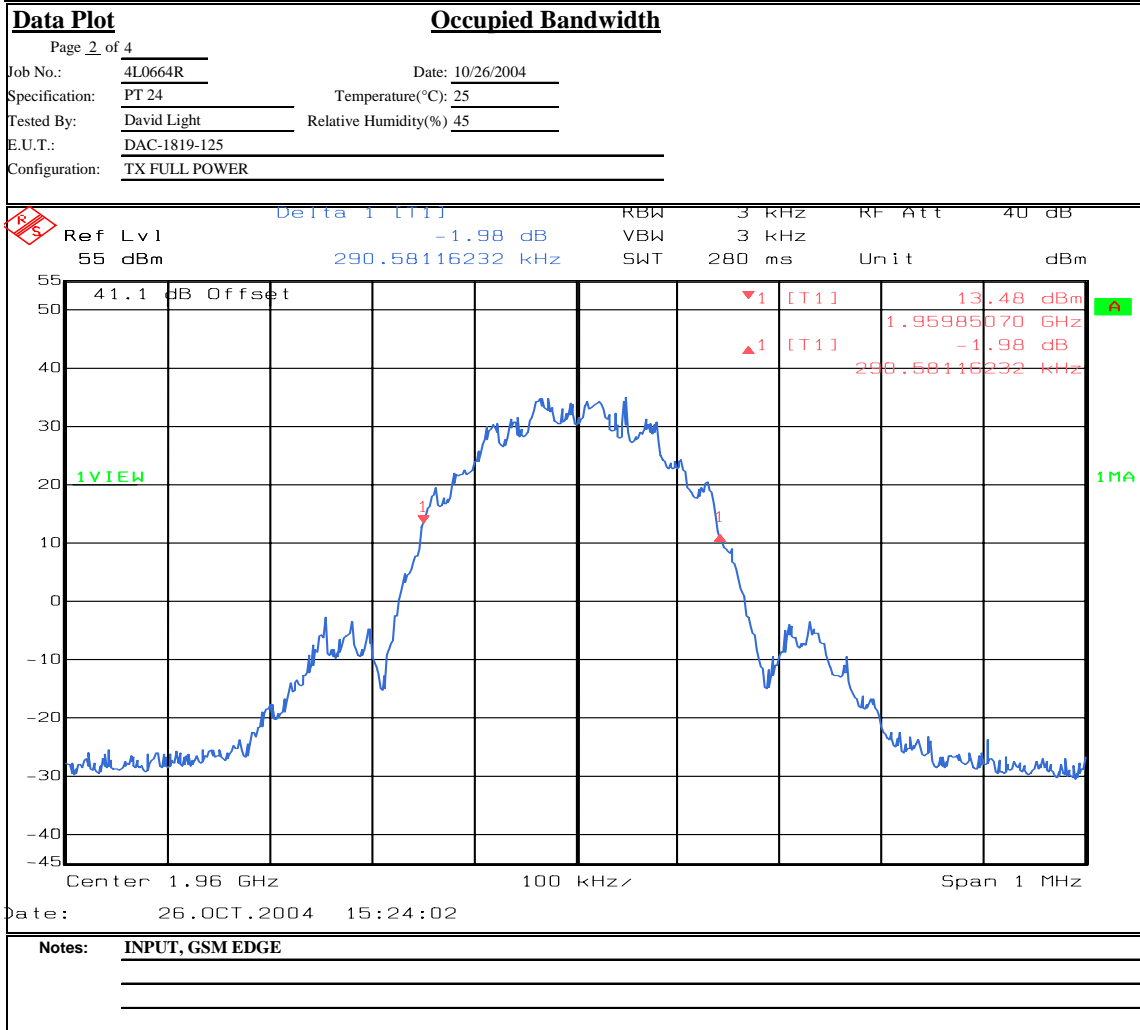
EQUIPMENT: DAC-1819-125

Test Data – Occupied Bandwidth



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EQUIPMENT: DAC-1819-125

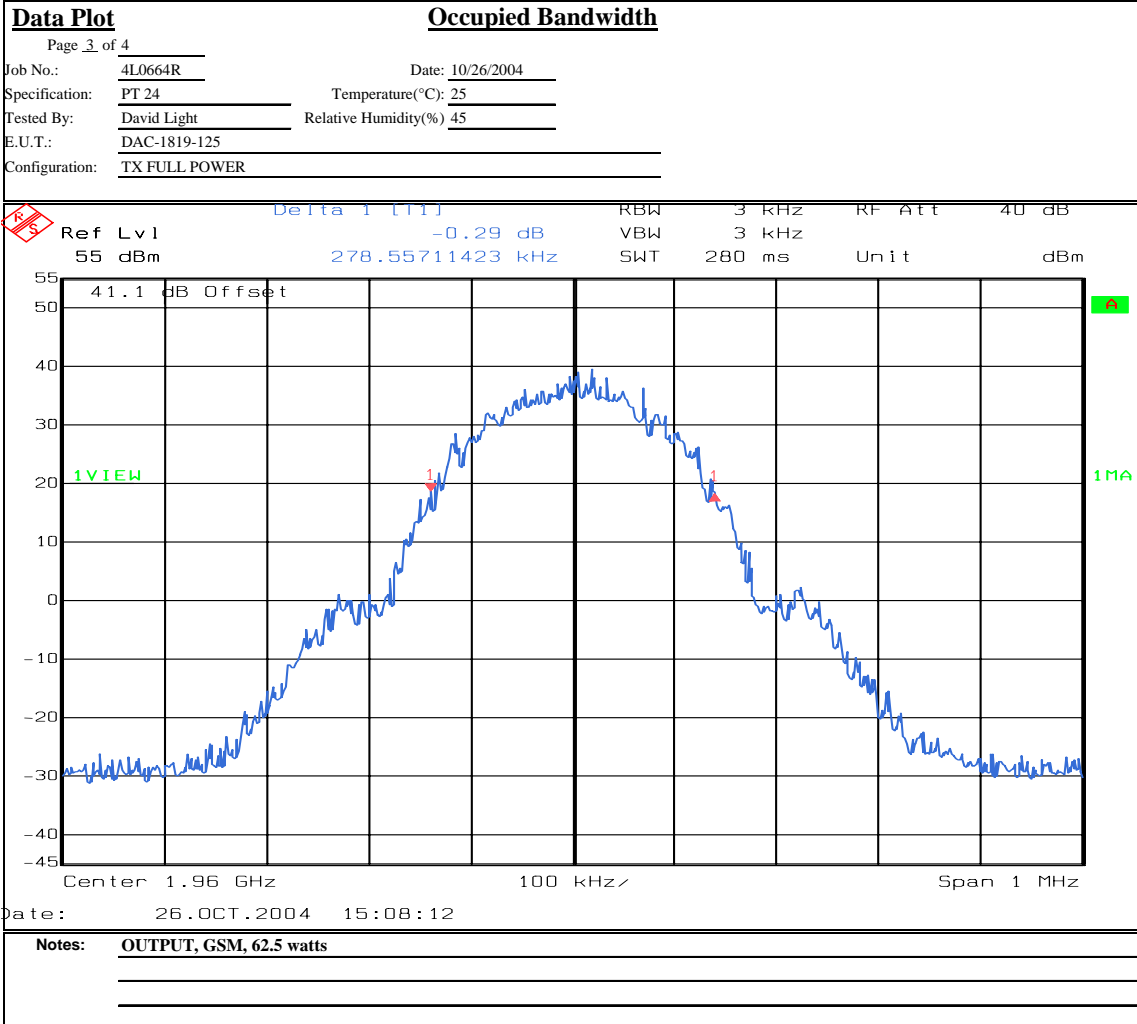
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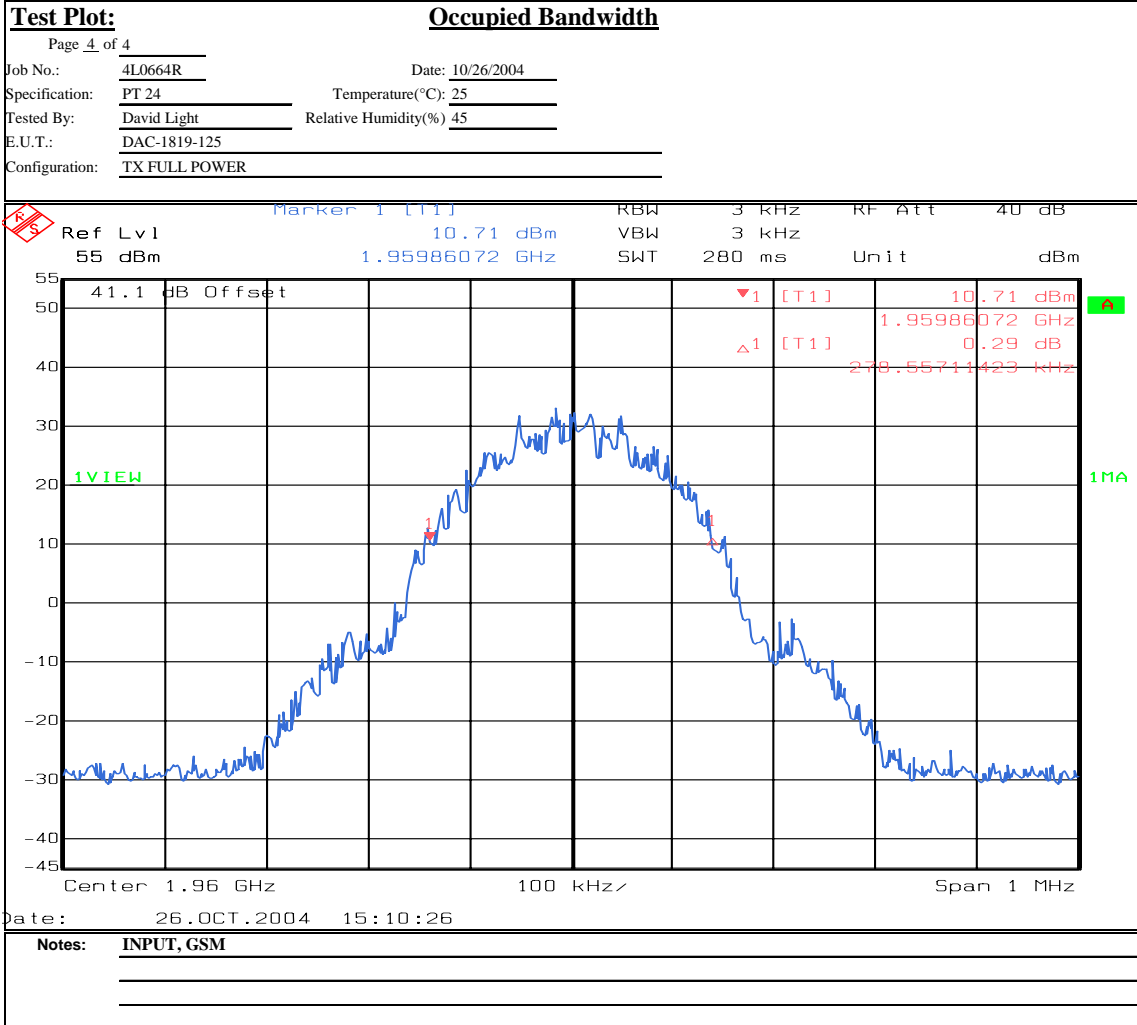
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Test Data – Occupied Bandwidth



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Section 5. Spurious Emissions at Antenna Terminals

| | |
|--|-------------------|
| NAME OF TEST: Spurious Emissions @ Antenna Terminals | PARA. NO.: 2.1051 |
| TESTED BY: David Light | DATE: 10/26/04 |

Test Results: Complies.

Test Data: See attached plot(s).

The spectrum was searched from 30 MHz to 20 GHz. Worst-case emissions were reported.

EQUIPMENT: DAC-1819-125

Test Data – Spurious Emissions at Antenna Terminals



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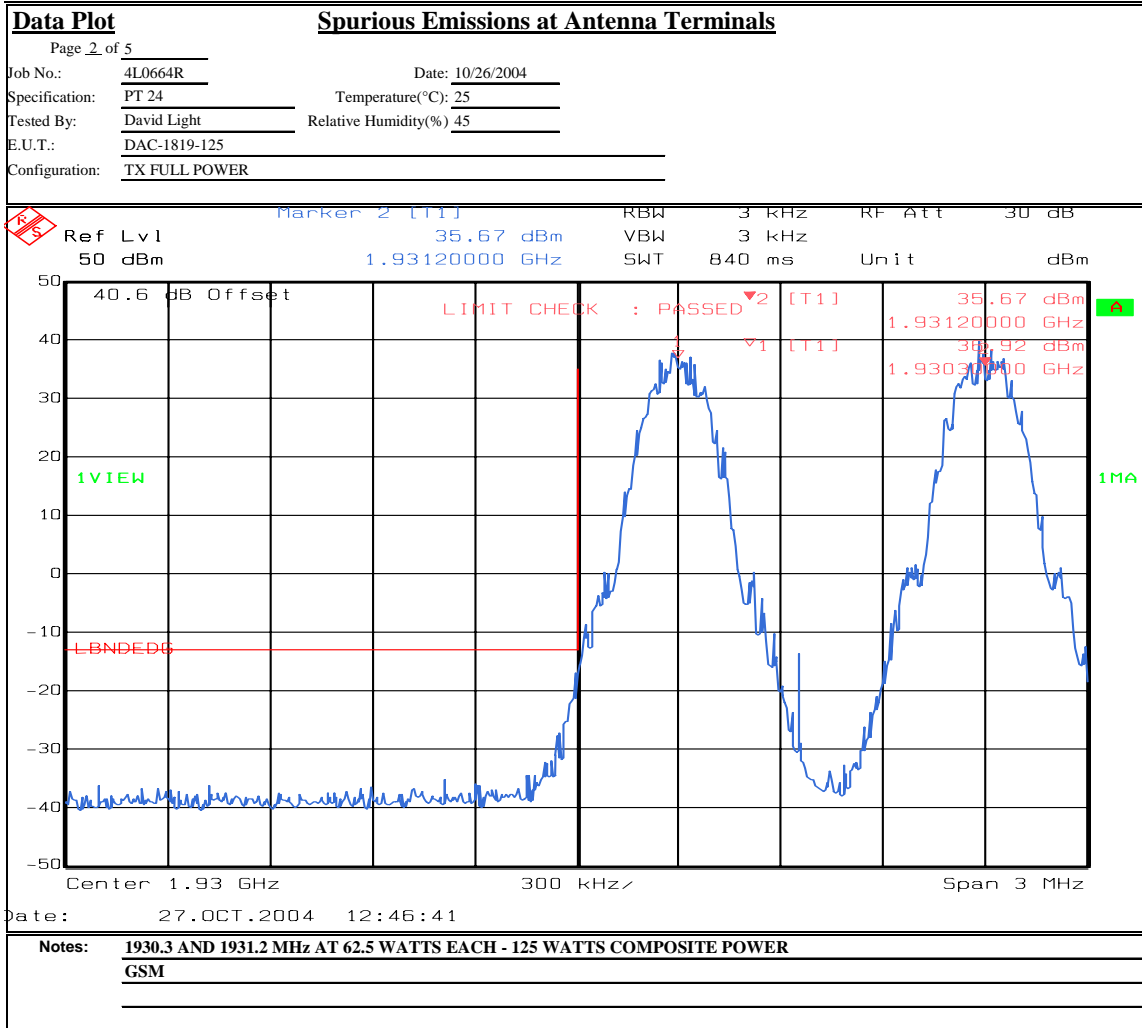
| Data Plot | | Spurious Emissions at Antenna Terminals | | | | | | | | | | | | | | | | | | | |
|--|---------------------------|---|--------|---------|-----------|-----|-------|--------|-------|--------|---------------|-----|-------|--|--|--|--|-----|--------|------|-----|
| Page 1 of 5 | | Complete <u>X</u> | | | | | | | | | | | | | | | | | | | |
| Job No.: 4L0664R | Date: 10/26/2004 | Preliminary: _____ | | | | | | | | | | | | | | | | | | | |
| Specification: PT 24 | Temperature(°C): 25 | | | | | | | | | | | | | | | | | | | | |
| Tested By: David Light | Relative Humidity(%): 45 | | | | | | | | | | | | | | | | | | | | |
| E.U.T.: DAC-1819-125 | | | | | | | | | | | | | | | | | | | | | |
| Configuration: TX FULL POWER | | | | | | | | | | | | | | | | | | | | | |
| Sample Number: 1 | | | | | | | | | | | | | | | | | | | | | |
| Location: Lab 1 | RBW: 3 kHz | Measurement | | | | | | | | | | | | | | | | | | | |
| Detector Type: Peak | VBW: 3 kHz | Distance: NA m | | | | | | | | | | | | | | | | | | | |
| Test Equipment Used | | | | | | | | | | | | | | | | | | | | | |
| Antenna: _____ | Directional Coupler: 1055 | | | | | | | | | | | | | | | | | | | | |
| Pre-Amp: _____ | Cable #1: 1626 | | | | | | | | | | | | | | | | | | | | |
| Filter: _____ | Cable #2: _____ | | | | | | | | | | | | | | | | | | | | |
| Receiver: 1036 | Cable #3: _____ | | | | | | | | | | | | | | | | | | | | |
| Attenuator #1: 1064 | Cable #4: _____ | | | | | | | | | | | | | | | | | | | | |
| Attenuator #2: _____ | Mixer: _____ | | | | | | | | | | | | | | | | | | | | |
| Additional equipment used: _____ | | | | | | | | | | | | | | | | | | | | | |
| Measurement Uncertainty: +/-1.7 dB | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr> <td>Ref Lvl</td> <td>22.99 dBm</td> <td>RBW</td> <td>3 kHz</td> <td>RF Att</td> <td>30 dB</td> </tr> <tr> <td>50 dBm</td> <td>1.9302000 GHz</td> <td>VBW</td> <td>3 kHz</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>SWT</td> <td>280 ms</td> <td>Unit</td> <td>dBm</td> </tr> </table> | | | | Ref Lvl | 22.99 dBm | RBW | 3 kHz | RF Att | 30 dB | 50 dBm | 1.9302000 GHz | VBW | 3 kHz | | | | | SWT | 280 ms | Unit | dBm |
| Ref Lvl | 22.99 dBm | RBW | 3 kHz | RF Att | 30 dB | | | | | | | | | | | | | | | | |
| 50 dBm | 1.9302000 GHz | VBW | 3 kHz | | | | | | | | | | | | | | | | | | |
| | | SWT | 280 ms | Unit | dBm | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| Date: 27.OCT.2004 12:44:13 Notes: GSM 1930.2 MHz @ 33.2 dBm OUTPUT | | | | | | | | | | | | | | | | | | | | | |

Test Data – Spurious Emissions at Antenna Terminals



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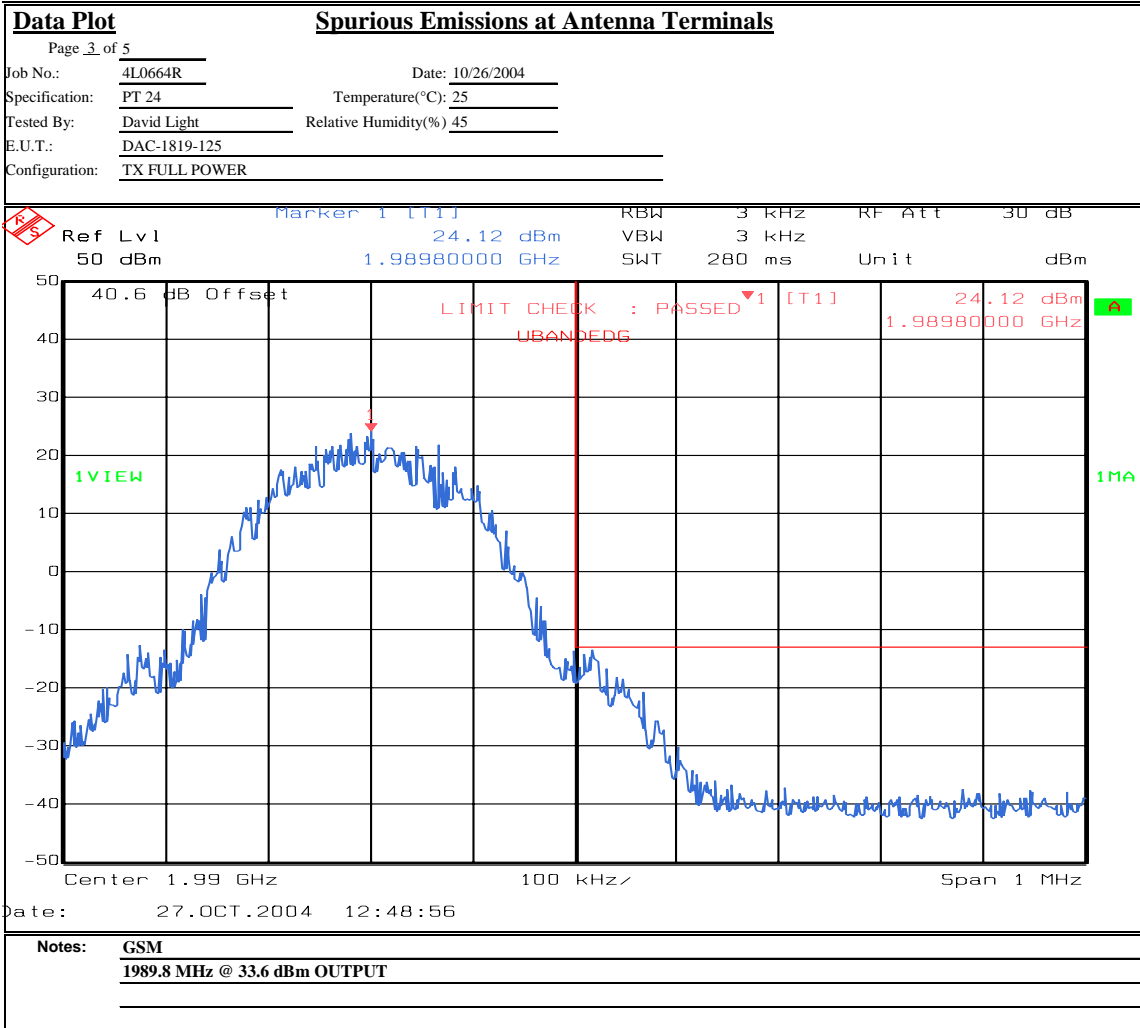
EQUIPMENT: DAC-1819-125

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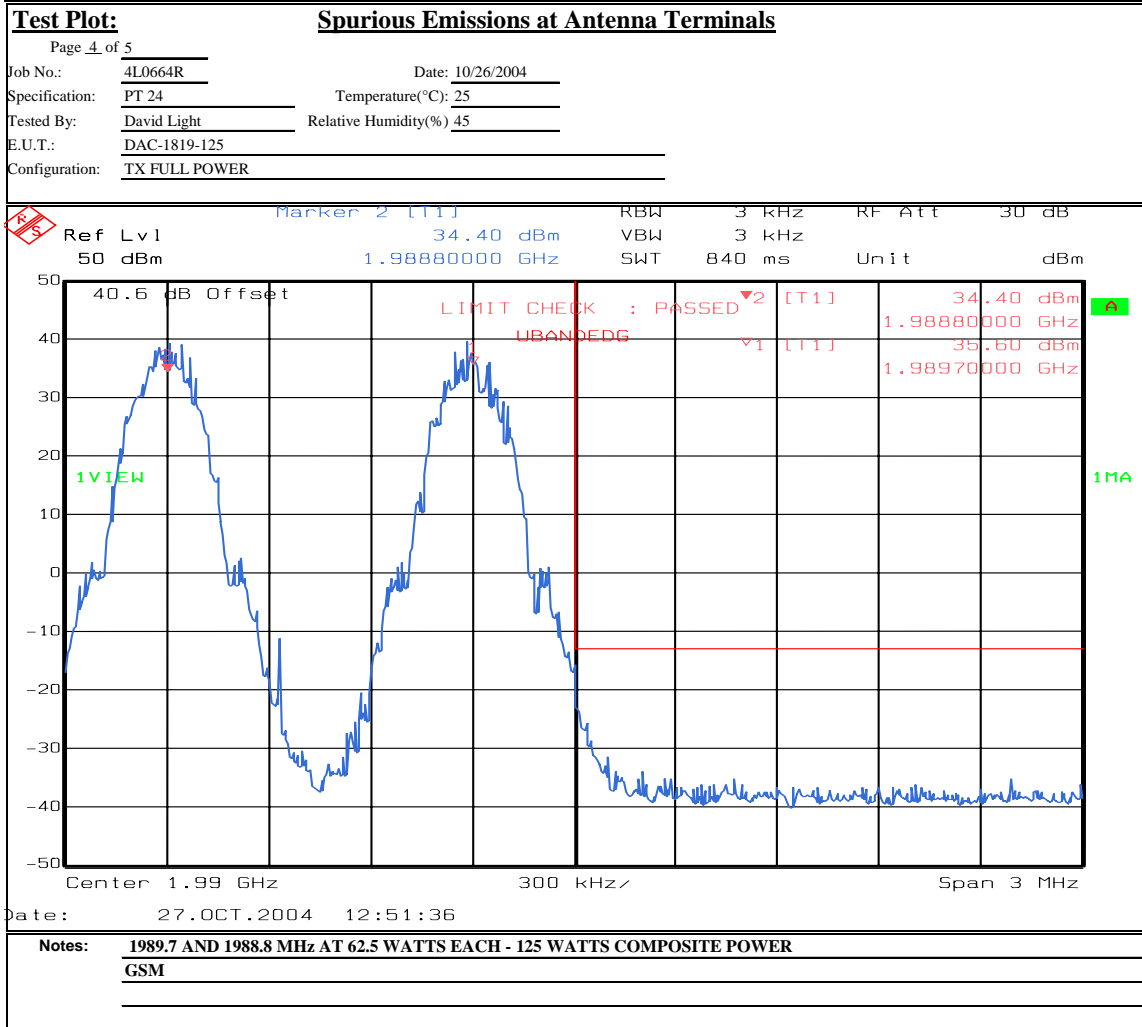
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EQUIPMENT: **DAC-1819-125**

Test Data – Spurious Emissions at Antenna Terminals



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| Test Plot: | | Spurious Emissions at Antenna Terminals | | | | | |
|----------------------------------|---------------|---|-----|------------|--------|-------|-----|
| Page 5 of 5 | | | | | | | |
| Job No.: | 4L0664R | Date: | | 11/5/2004 | | | |
| Specification: | PT 24 | Temperature(°C): | | 22 | | | |
| Tested By: | David Light | Relative Humidity(%): | | 40 | | | |
| E.U.T.: | DAC-1819-125 | | | | | | |
| Configuration: | TX FULL POWER | | | | | | |
| RS | Ref Lvl | Marker 1 [T1] | RBW | 300 kHz | RF Att | 30 dB | |
| | 50 dBm | -15.78 dBm | VBW | 300 kHz | | | |
| | | 966.95390782 MHz | SWT | 27 ms | Unit | | dBm |
| | | | | | | | |
| Start 30 MHz | | 97 MHz | | Stop 1 GHz | | | |
| Date: 05.NOV.2004 10:26:50 | | | | | | | |
| Notes: TX 62.5 WATTS AT 1960 MHz | | | | | | | |
| GSM | | | | | | | |

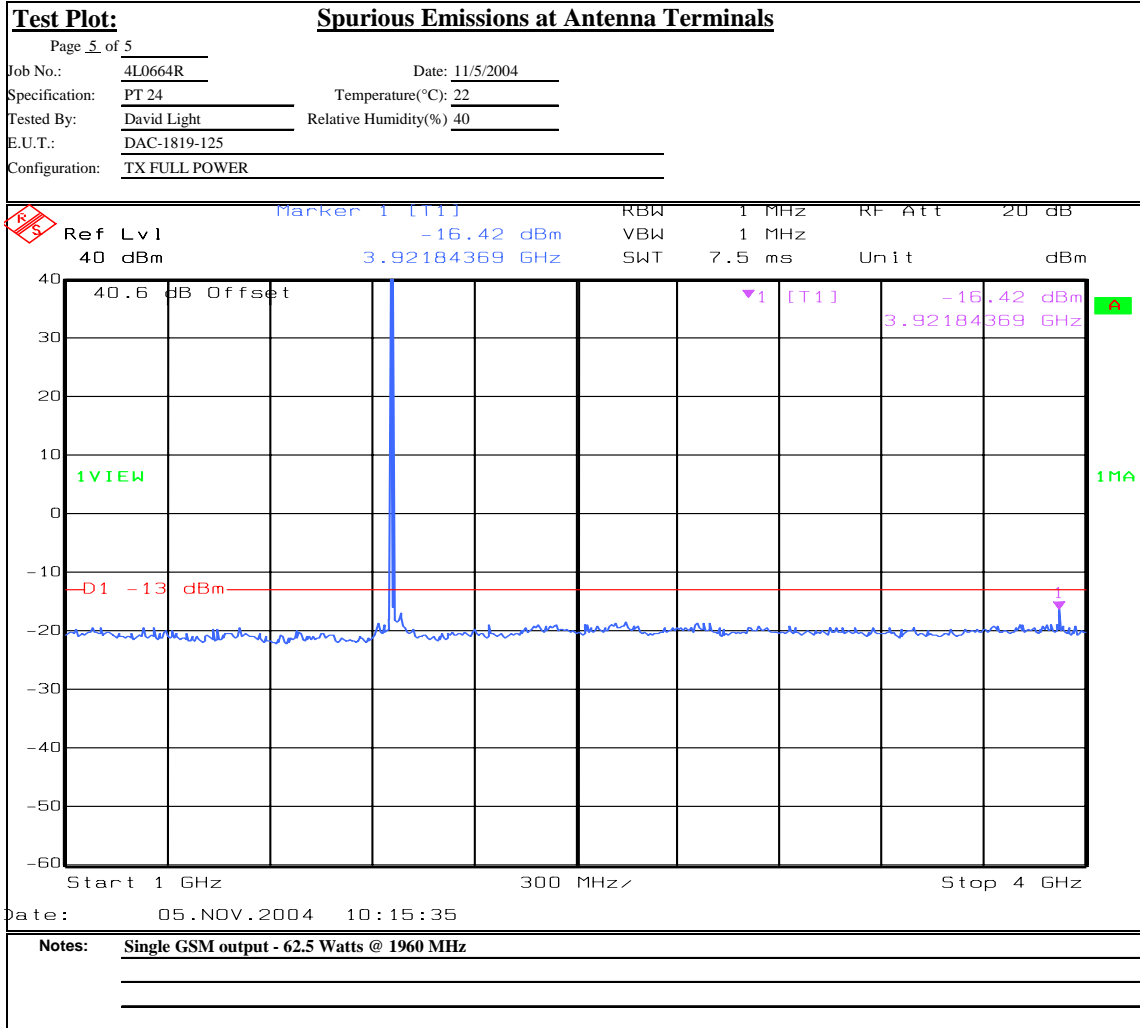
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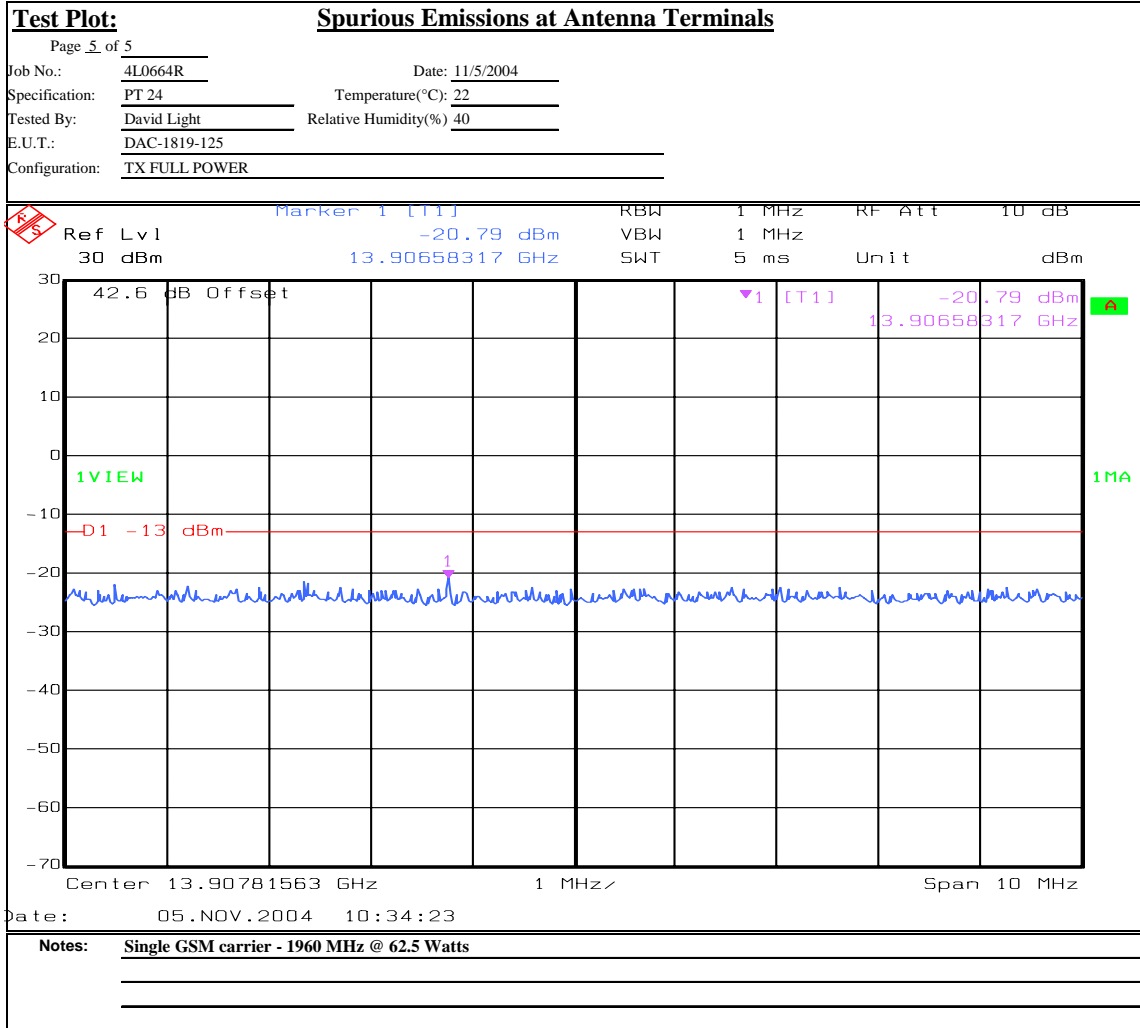


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| Data Plot | | Spurious Emissions at Antenna Terminals | | | | | | | | | | | | | | | | | | | |
|--|---------------------------|---|-------|---------|-----------|-----|-------|--------|-------|--------|----------------|-----|-------|--|--|--|--|-----|-----|------|-----|
| Page 1 of 5 | | Complete <u>X</u> | | | | | | | | | | | | | | | | | | | |
| Job No.: 4L0664R | Date: 10/26/2004 | Preliminary: _____ | | | | | | | | | | | | | | | | | | | |
| Specification: PT 24 | Temperature(°C): 25 | | | | | | | | | | | | | | | | | | | | |
| Tested By: David Light | Relative Humidity(%): 45 | | | | | | | | | | | | | | | | | | | | |
| E.U.T.: DAC-1819-125 | | | | | | | | | | | | | | | | | | | | | |
| Configuration: TX FULL POWER | | | | | | | | | | | | | | | | | | | | | |
| Sample Number: 1 | | | | | | | | | | | | | | | | | | | | | |
| Location: Lab 1 | RBW: 3 kHz | Measurement | | | | | | | | | | | | | | | | | | | |
| Detector Type: Peak | VBW: 3 kHz | Distance: <u>NA</u> m | | | | | | | | | | | | | | | | | | | |
| Test Equipment Used | | | | | | | | | | | | | | | | | | | | | |
| Antenna: _____ | Directional Coupler: 1055 | | | | | | | | | | | | | | | | | | | | |
| Pre-Amp: _____ | Cable #1: 1626 | | | | | | | | | | | | | | | | | | | | |
| Filter: _____ | Cable #2: _____ | | | | | | | | | | | | | | | | | | | | |
| Receiver: 1036 | Cable #3: _____ | | | | | | | | | | | | | | | | | | | | |
| Attenuator #1: 1064 | Cable #4: _____ | | | | | | | | | | | | | | | | | | | | |
| Attenuator #2: _____ | Mixer: _____ | | | | | | | | | | | | | | | | | | | | |
| Additional equipment used: _____ | | | | | | | | | | | | | | | | | | | | | |
| Measurement Uncertainty: +/-1.7 dB | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr> <td>Ref Lvl</td> <td>21.95 dBm</td> <td>RBW</td> <td>3 kHz</td> <td>RF Att</td> <td>40 dB</td> </tr> <tr> <td>55 dBm</td> <td>1.93019900 GHz</td> <td>VBW</td> <td>3 kHz</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>SWT</td> <td>5 s</td> <td>Unit</td> <td>dBm</td> </tr> </table> | | | | Ref Lvl | 21.95 dBm | RBW | 3 kHz | RF Att | 40 dB | 55 dBm | 1.93019900 GHz | VBW | 3 kHz | | | | | SWT | 5 s | Unit | dBm |
| Ref Lvl | 21.95 dBm | RBW | 3 kHz | RF Att | 40 dB | | | | | | | | | | | | | | | | |
| 55 dBm | 1.93019900 GHz | VBW | 3 kHz | | | | | | | | | | | | | | | | | | |
| | | SWT | 5 s | Unit | dBm | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| Date: 27.OCT.2004 08:44:52 | | | | | | | | | | | | | | | | | | | | | |
| Notes: EDGE 1930.2 MHz @ 36.1 dBm OUTPUT | | | | | | | | | | | | | | | | | | | | | |

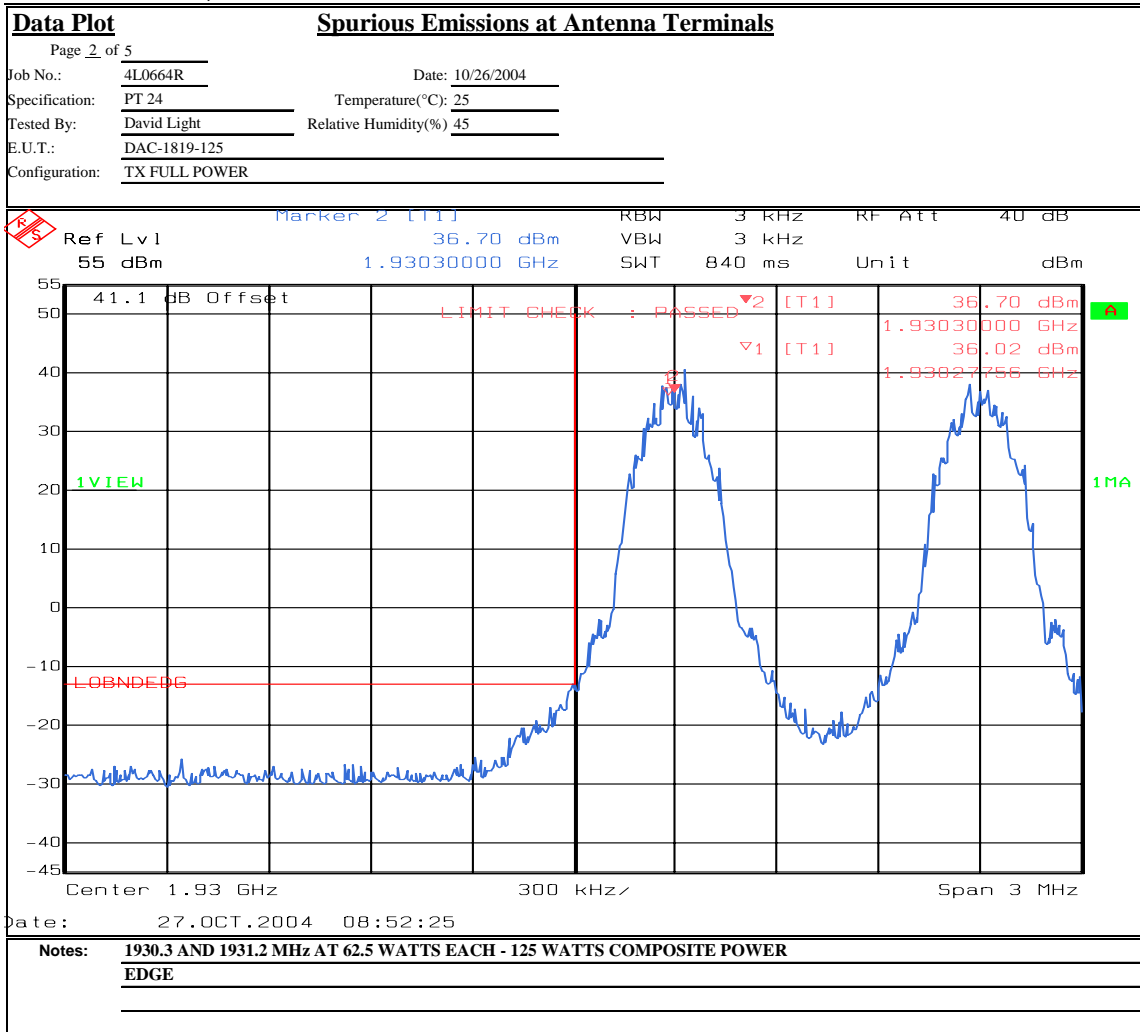
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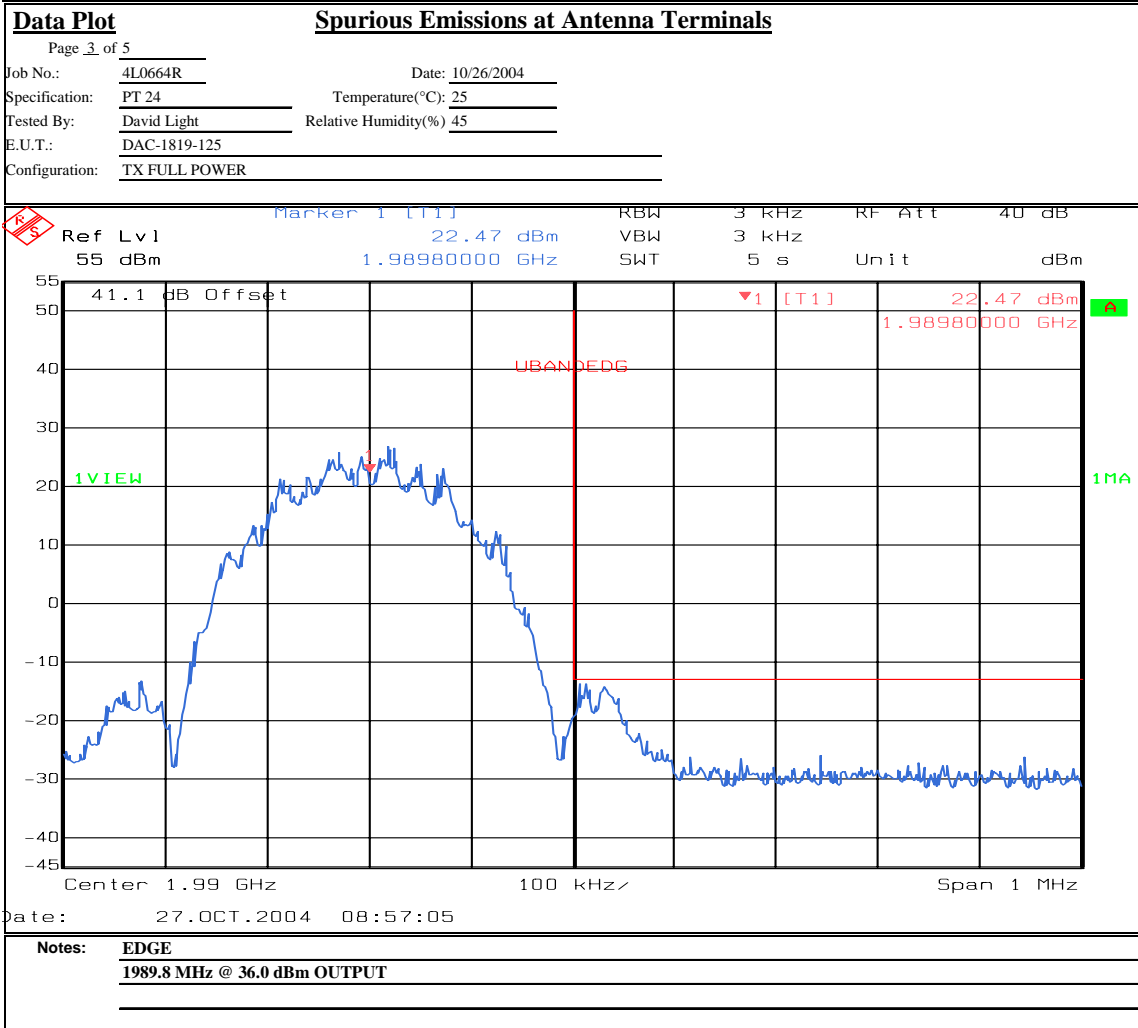


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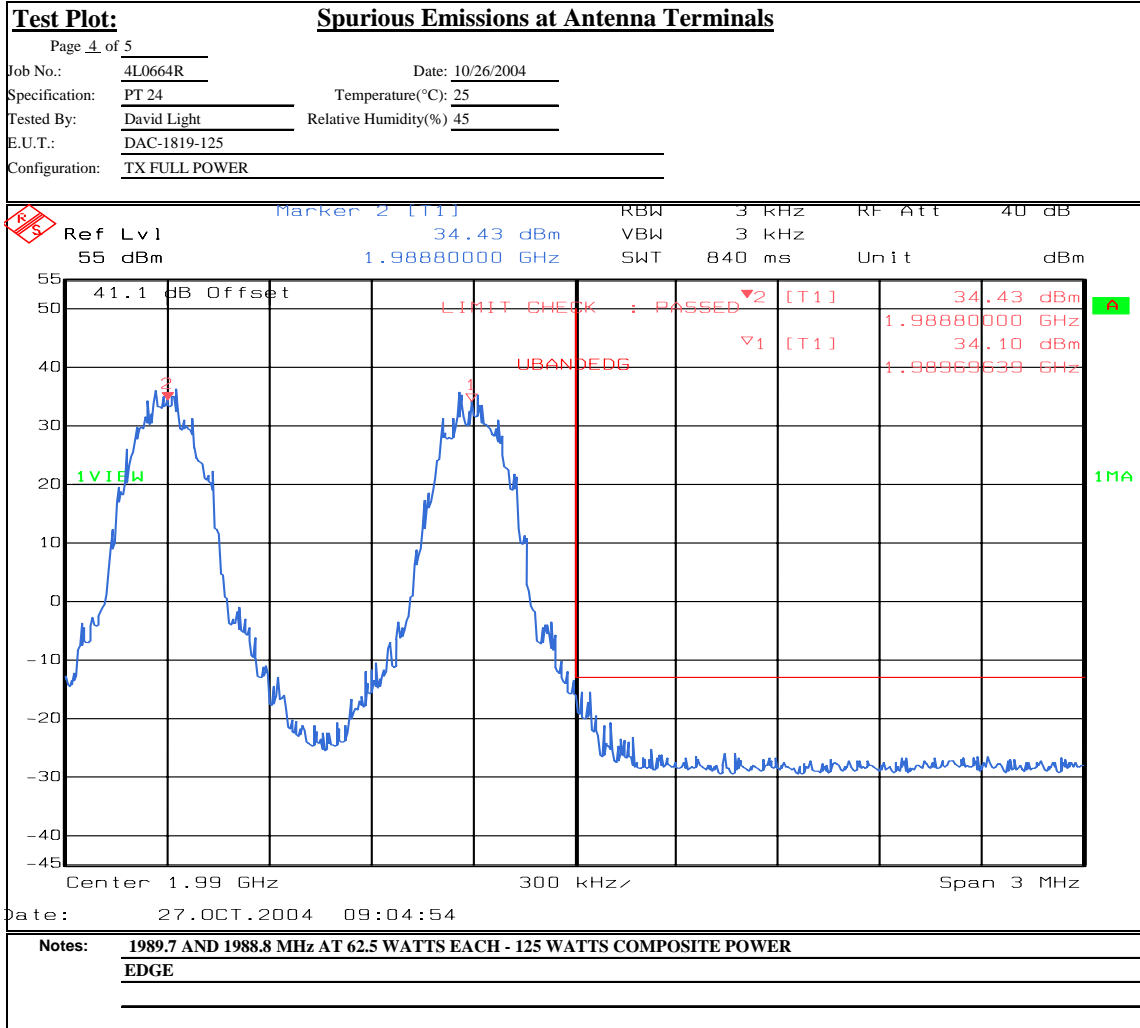
EQUIPMENT: DAC-1819-125

Test Data – Spurious Emissions at Antenna Terminals



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

Nemko Dallas, Inc.



EQUIPMENT: DAC-1819-125

Test Data – Spurious Emissions at Antenna Terminals



Dallas Headquarters:
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Lewisville, TX 75057
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Nemko Dallas, Inc.

Test Plot: Spurious Emissions at Antenna Terminals

Page 5 of 5

Job No.: 4L0664R Date: 11/5/2004
 Specification: PT 24 Temperature(°C): 22
 Tested By: David Light Relative Humidity(%) 40
 E.U.T.: DAC-1819-125
 Configuration: TX FULL POWER

| | | | | | | | |
|---------|--------|---------------|----------------|-----|---------|--------|-------|
| Ref Lvl | 40 dBm | Marker 1 [T1] | -25.11 dBm | RBW | 300 kHz | RF Att | 20 dB |
| | | | 1.00000000 GHz | VBW | 300 kHz | Unit | dBm |
| | | | | SWT | 27 ms | | |

Start 30 MHz 97 MHz Stop 1 GHz

Date: 05.NOV.2004 10:25:06

Notes: TX 62.5 WATTS AT 1960 MHz
EDGE

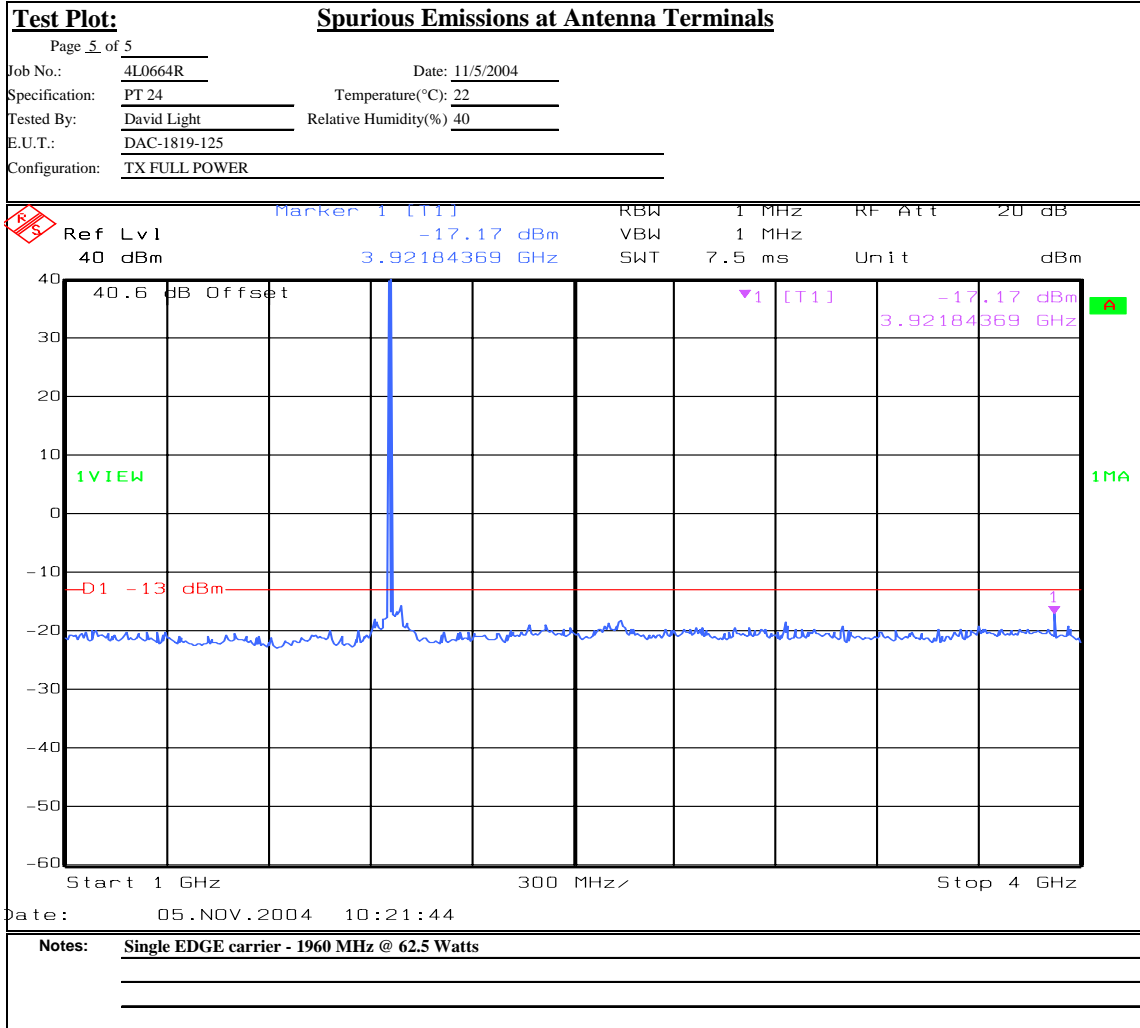
EQUIPMENT: DAC-1819-125

Test Data – Spurious Emissions at Antenna Terminals



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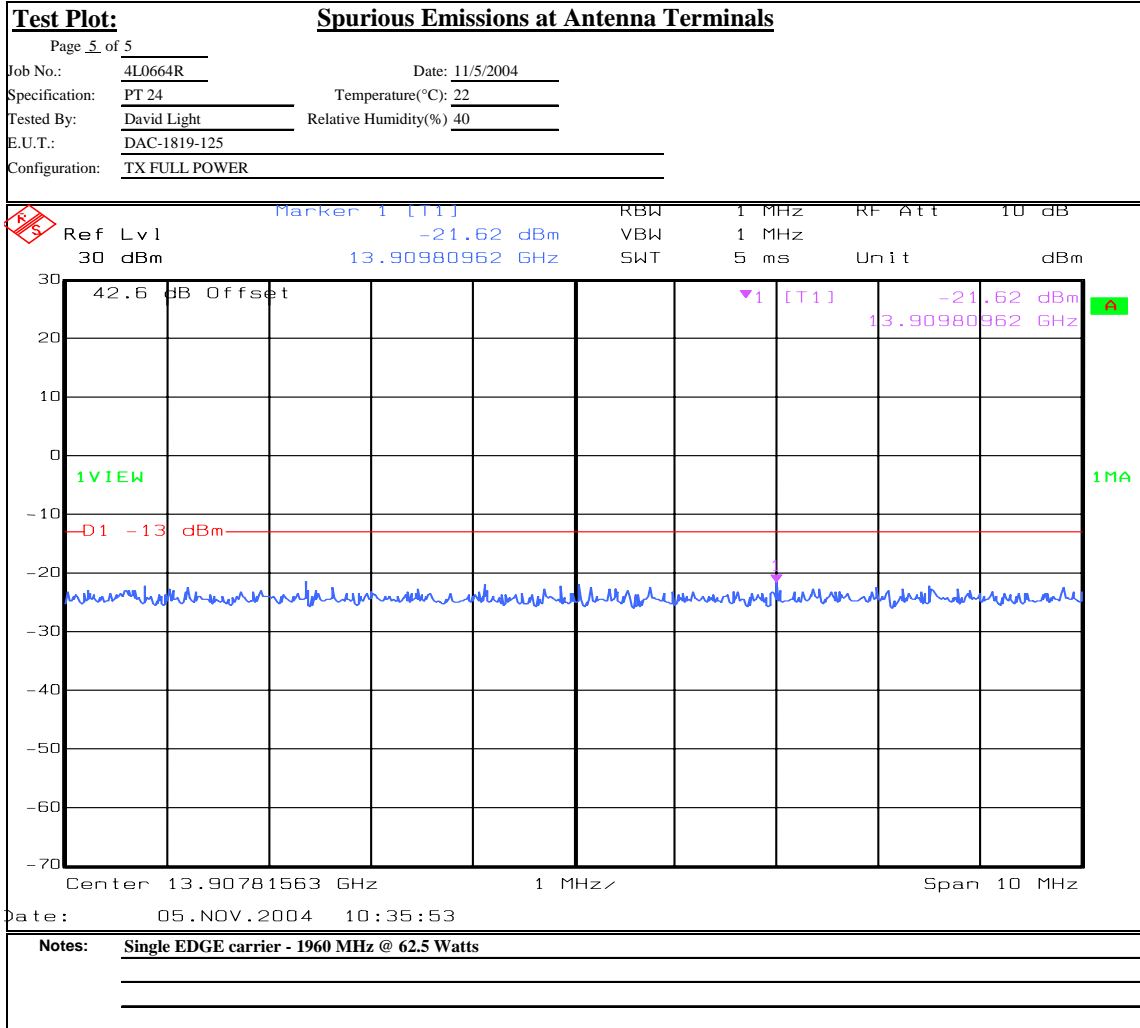


Test Data – Spurious Emissions at Antenna Terminals



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Nemko Dallas, Inc.



Section 6. Field Strength of Spurious

| | |
|--|-------------------|
| NAME OF TEST: Field Strength of Spurious Emissions | PARA. NO.: 2.1051 |
| TESTED BY: David Light | DATE: 10/27/04 |

Test Results: Complies.

Test Data: See attached table.

EQUIPMENT: DAC-1819-125

Test Data - Radiated Spurious Emissions

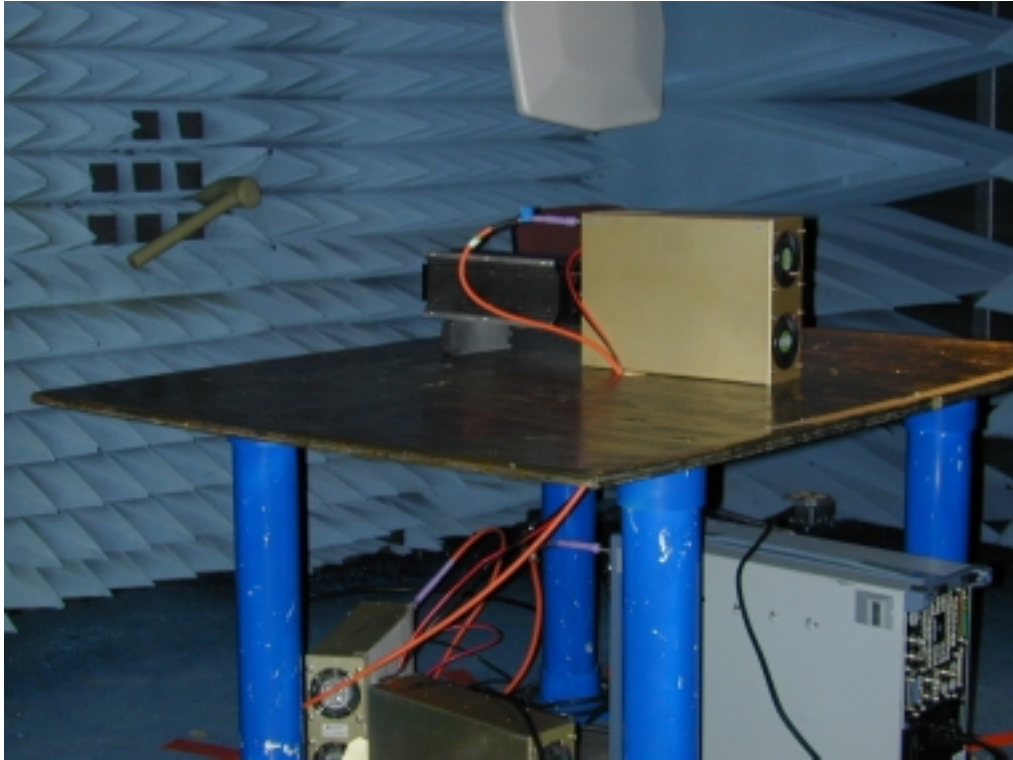


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 802 N. Kealy
 Lewisville, TX 75057
 Tel: (972) 436-9600
 Fax: (972) 436-2667

| Field Strength of Spurious Emissions | | | | | | | | | | | |
|---|------------------------------|------------------------|--|-------------------|---------------------------------|---------------|------------|-----------|----------|--------------|--|
| Page 1 of 1 | | | | | | | | | Complete | <u> X </u> | |
| Job No.: | 4L0664R | Date: | | 10/27/04 | | Preliminary | | | | | |
| Specification: | PT24 | Temperature(°C): | | 22 | | | | | | | |
| Tested By: | Tom Tidwell | Relative Humidity(%) | | 45 | | | | | | | |
| E.U.T.: | DAC-1819-125 | | | | | | | | | | |
| Configuration: | TX FULL POWER AT BAND CENTER | | | | | | | | | | |
| Sample No.: | 1 | | | | | | | | | | |
| Location: | AC 3 | 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: | | 1485 | | | | | | | |
| Filter: | 1482 | Cable #2: | | 1484 | | | | | | | |
| Receiver: | 1036 | 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) | Limit (dBm) | EIRP (dBm) | EIRP (mW) | Polarity | Comments | |
| 3920 | -32.9 | 40.4 | | 33 | 10.1 | -13 | -15.4 | 0.03 | V | | |
| 5880 | -35.7 | 38.5 | | 31.9 | 11.2 | -13 | -17.9 | 0.02 | V | | |
| 7840 | -38.7 | 40.4 | | 32.9 | 11.6 | -13 | -19.6 | 0.01 | V | | |
| 13720 | -58.2 | 47.6 | | 32.8 | 12.6 | -13 | -30.8 | 0.00 | V | | |
| 3920 | -36.0 | 34.3 | | 33 | 8.0 | -13 | -26.7 | 0.00 | H | | |
| 5880 | -31.7 | 36.0 | | 31.9 | 9.1 | -13 | -18.5 | 0.01 | H | | |
| 7840 | -36.8 | 39.8 | | 32.9 | 9.4 | -13 | -20.5 | 0.01 | H | | |
| 9800 | -50.0 | 42.6 | | 34.5 | 10.5 | -13 | -31.4 | 0.00 | H | | |
| 13720 | -59.0 | 50.8 | | 32.8 | 10.4 | -13 | -30.6 | 0.00 | H | | |
| Notes: | | | | | | | | | | | |

The spectrum was searched from 30 MHz to 20 GHz. All detected emissions were reported.

Photographs of Test Setup



EQUIPMENT: DAC-1819-125

Section 7. Test Equipment List

| Nemko ID | Description | Manufacturer Model Number | Serial Number | Calibration Date | Calibration Due |
|----------|--------------------------|------------------------------|---------------|------------------|-----------------|
| 1484 | Cable 2.0-18.0 Ghz | Storm PR90-010-072 | N/A | 08/26/04 | 08/26/05 |
| 1485 | Cable 2.0-18.0 Ghz | Storm PR90-010-216 | N/A | 08/02/04 | 08/02/05 |
| 1464 | Spectrum analyzer | Hewlett Packard 8563E | 3551A04428 | 07/30/04 | 07/31/06 |
| 1016 | Pre-Amp | HEWLETT PACKARD 8449A | 2749A00159 | 10/27/03 | 10/26/04 |
| 1304 | HORN ANTENNA | ELECTRO METRICS RGA-60 | 6151 | 09/22/03 | 09/22/05 |
| 1482 | Band Pass Filter | K & L 11SH10-4000/T12000-0/0 | 2 | Cal B4 Use | N/A |
| 1036 | SPECTRUM ANALYZER | ROHDE & SCHWARZ FSEK30 | 830844/006 | 03/22/04 | 03/23/06 |
| 1064 | ATTENUATOR | NARDA 776B-20 | NONE | CBU | N/A |
| 1055 | DUAL DIRECTIONAL COUPLER | NARDA 3022 | 73393 | CBU | N/A |
| 1054 | DUAL DIRECTIONAL COUPLER | NARDA 3020A | 34366 | CBU | N/A |
| 1058 | DUAL DIRECTIONAL COUPLER | HEWLETT PACKARD 11692D | 1212A03366 | CBU | N/A |
| 759 | ANTENNA, LOG PERIODIC | A.H. SYSTEMS SAS-200/510 | 556 | 07/23/04 | 07/23/05 |
| 791 | PREAMP, 25dB | ICC LNA25 | 398 | 10/27/03 | 10/27/04 |
| 1195 | ANTENNA,BICONICAL | A.H. SYSTEMS SAS-200/542 | 235 | 07/09/04 | 07/09/05 |
| 1983 | CABLE | KTL Site A OATS | N/A | 03/11/04 | 03/11/05 |
| 1626 | CABLE, 5 ft | MEGAPHASE 10311 1GVT4 | N/A | CBU | N/A |

ANNEX A - TEST DETAILS

EQUIPMENT: DAC-1819-125

| | |
|--------------------------------------|--------------------------|
| NAME OF TEST: RF Power Output | PARA. NO.: 2.1046 |
|--------------------------------------|--------------------------|

Minimum Standard: Para. No.24.232. Base stations are limited to 1640 watts peak E.I.R.P. with an antenna height up to 300 meters HAAT. In no case may the peak output power of a base station transmitter exceed 100 watts.

Method Of Measurement:

Detachable Antenna:

The peak power at antenna terminals is measured using an in-line peak power meter. Power output is measured with the maximum rated input level.

EQUIPMENT: DAC-1819-125

NAME OF TEST: Occupied Bandwidth

PARA. NO.: 2.1047

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

Spectrum analyzer settings:

RBW: 30 kHz

VBW: \geq RBW

Span: 5 MHz

Sweep: Auto

Mask: Set markers to -26 dB from peak of CW.

GSM

RBW: 3 kHz

VBW: \geq RBW

Span: 2 MHz

Sweep: Auto

Mask: Set markers to -26 dB from peak of CW.

NADC

RBW: 1 kHz

VBW: \geq RBW

Span: 1 MHz

Sweep: Auto

Mask: Set markers to -26 dB from peak of CW.

| | |
|---|--------------------------|
| NAME OF TEST: Spurious Emission at Antenna Terminals | PARA. NO.: 2.1051 |
|---|--------------------------|

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

RBW: 1 MHz (> 1 MHz from Band Edge)
RBW: 30 kHz (< 1MHz from Band Edge)
VBW: \geq RBW
Sweep: Auto
Video Avg: 6 Sweeps

GSM

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

NADC

RBW: 1 MHz (> 1 MHz from Band Edge)
RBW: 3 kHz (< 1 MHz from Band Edge)
VBW: \geq 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: DAC-1819-125

| | |
|---|--------------------------|
| 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.

Test Method:

The antenna substitution method was used. This method is described in EIA/TIA 603B.

| | |
|--|--------------------------|
| 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:

Frequency Stability With Voltage Variation

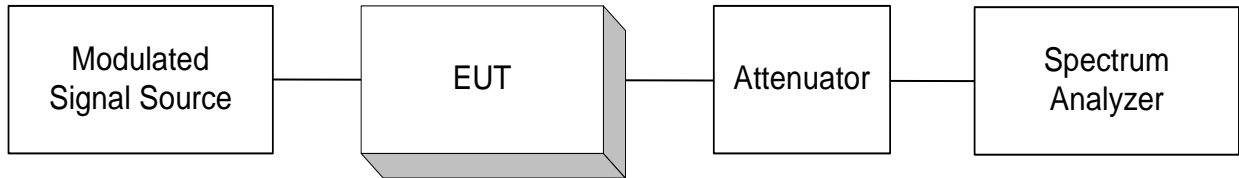
The E.U.T. is placed in an environmental chamber and allowed to stabilize at +20 degrees Celsius for at least 15 minutes. The frequency counter and signal generator are phase locked with the same 10 MHz reference frequency by connecting the 10 MHz ref. out of the counter to the 10 MHz ref, in of the signal generator. 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

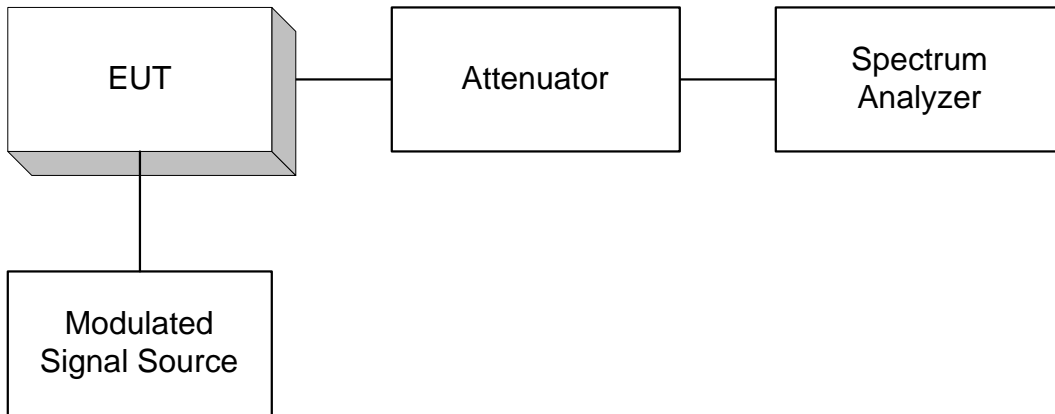
The input voltage to the E.U.T. is set to S.T.V. and the temperature of the environmental chamber is varied in 10 degree steps from -30 degrees C to +50 degrees C. The E.U.T. is allowed to stabilize at each temperature and the frequency is measured in 30 second intervals for a period of 5 minutes.

ANNEX B - TEST DIAGRAMS

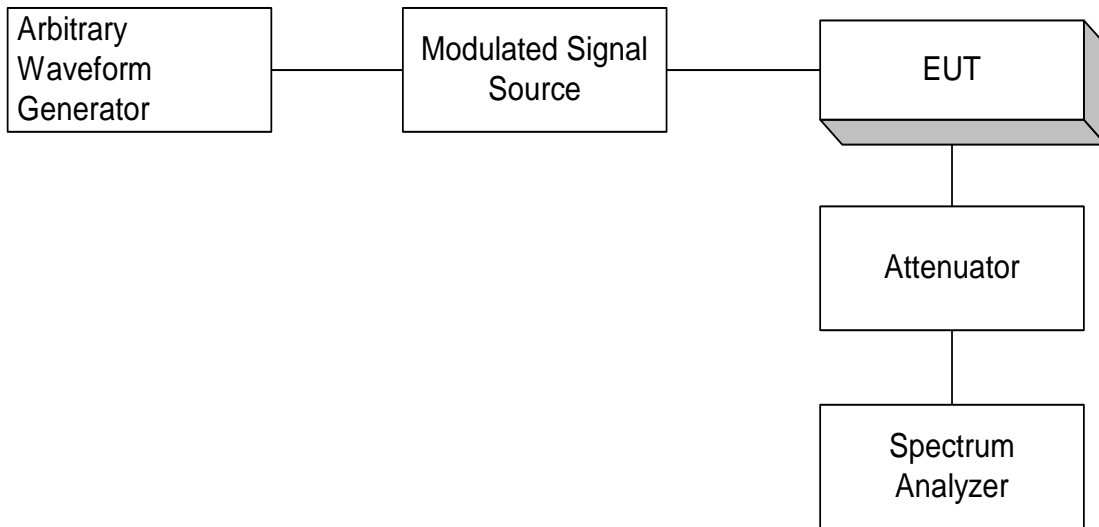
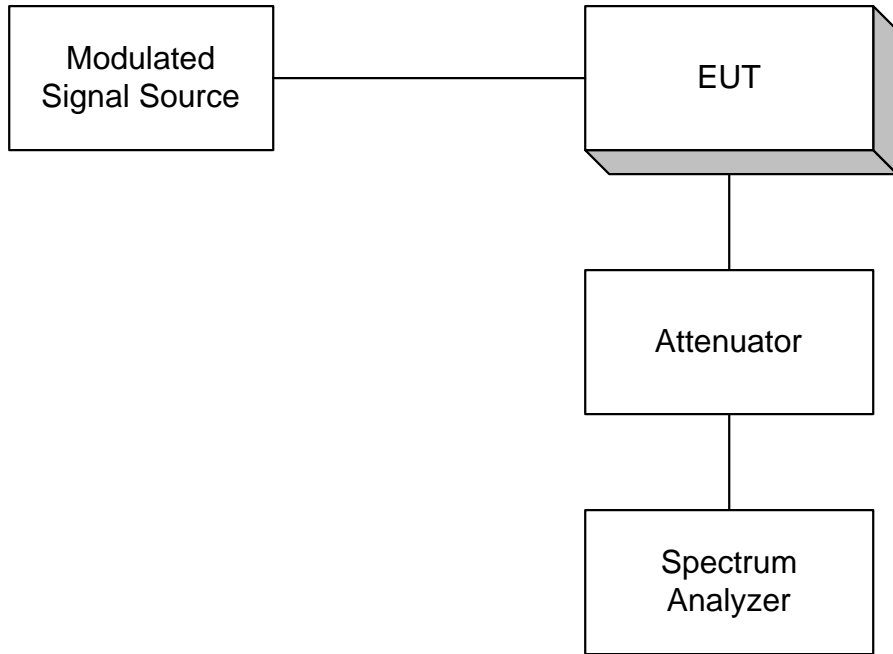
Para. No. 2.985 - R.F. Power Output



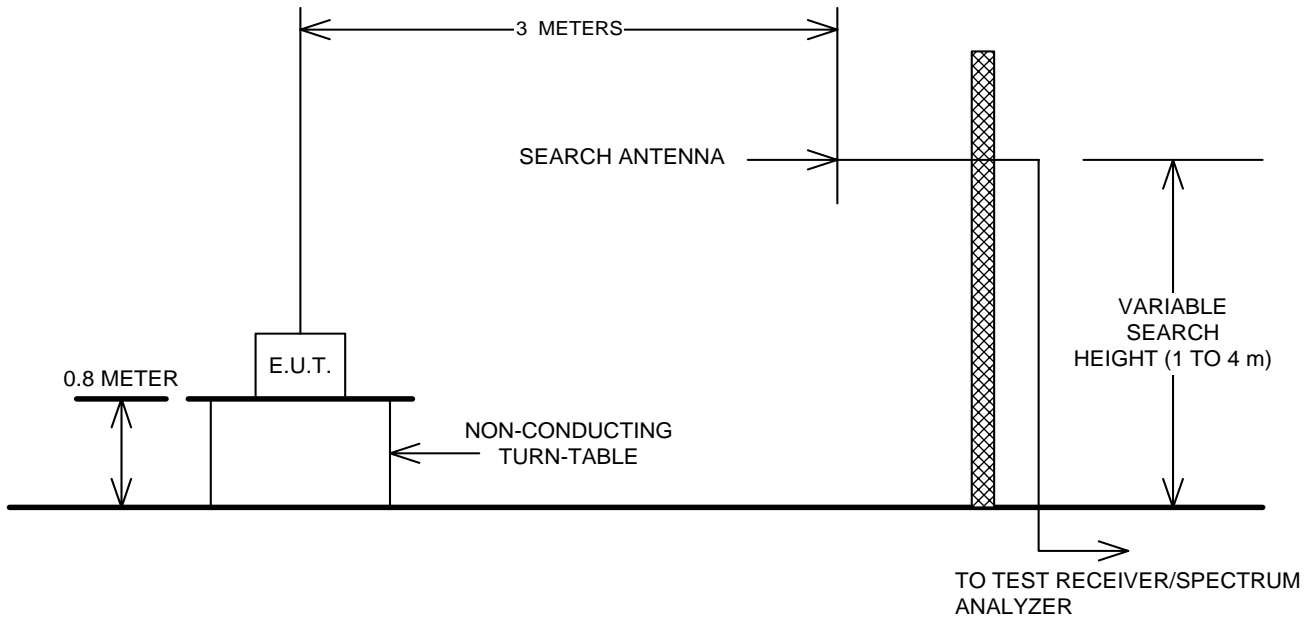
Para. No. 2.989 - Occupied Bandwidth



Para. No. 2.991 Spurious Emissions at Antenna Terminals



Para. No. 2.993 - Field Strength of Spurious Radiation



Para. No. 2.995 - Frequency Stability

