

Nemko Test Report No.:

1L0581RUS1

Applicant:

Communications Components
89 Leuning Street
South Hackensack, NJ 07606
Tel: 201-342-3338
Fax: 201-342-3339
Email: sales@cciproducts.com

Equipment Under Test:

GSM Amplifier
DAB1819

In Accordance With:

FCC Part 24, Subpart E
Broadband PCS Repeaters

Tested By:

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

Authorized By:


Tom Tidwell, RF Group Manager

Date:

11/1/01

Total Number of Pages:

37

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EQUIPMENT: DAB 1819

PROJECT NO.: 1L0581RUS1

Section 1. Summary of Test Results

Manufacturer: Communications Components

Model No.: DAB1819

Serial No.: 160

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".



NVLAP LAB CODE: 100426-0

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Summary Of Test Data

| NAME OF TEST | PARA. NO. | SPECIFIED LIMIT | RESULT |
|---|------------------|------------------------|---------------|
| RF Power Output | 24.232 | 100W | Complies |
| Occupied Bandwidth (GSM) | 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 |

Footnotes:

(1) Modulation characteristics were not tested since the E.U.T. processes but does not produce a modulated waveform.

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

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Section 2. General Equipment Specification

| | | |
|------------------------------|--|--|
| Supply Voltage Input: | 28 Vdc 10A | |
| 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: | Not Applicable. The equipment is directly connected to the BTS via coaxial cable. |
| | CDMA (G7W) | GSM (GXW) |
| | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | | NADC (DXW) |
| | | <input type="checkbox"/> |
| Output Impedance: | 50 ohms | |
| Max Input: | 5 dBm | |
| | Highest Channel: | 5.01 W |
| | Per channel: | 55 W |
| | Lowest Channel: | 5.01 W |
| | The power output must be lowered on the first and last channels of each frequency block. | |
| | F1-F1 | F1-F2 |
| | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | | N/A |
| | | <input type="checkbox"/> |
| | Software | Duplexer |
| | <input type="checkbox"/> | <input type="checkbox"/> |
| | | Fullband |
| | | <input checked="" type="checkbox"/> |

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Description of Modifications For Class II Permissive Change

Not Applicable

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Modifications Made During Testing

Not Applicable

EQUIPMENT: DAB 1819

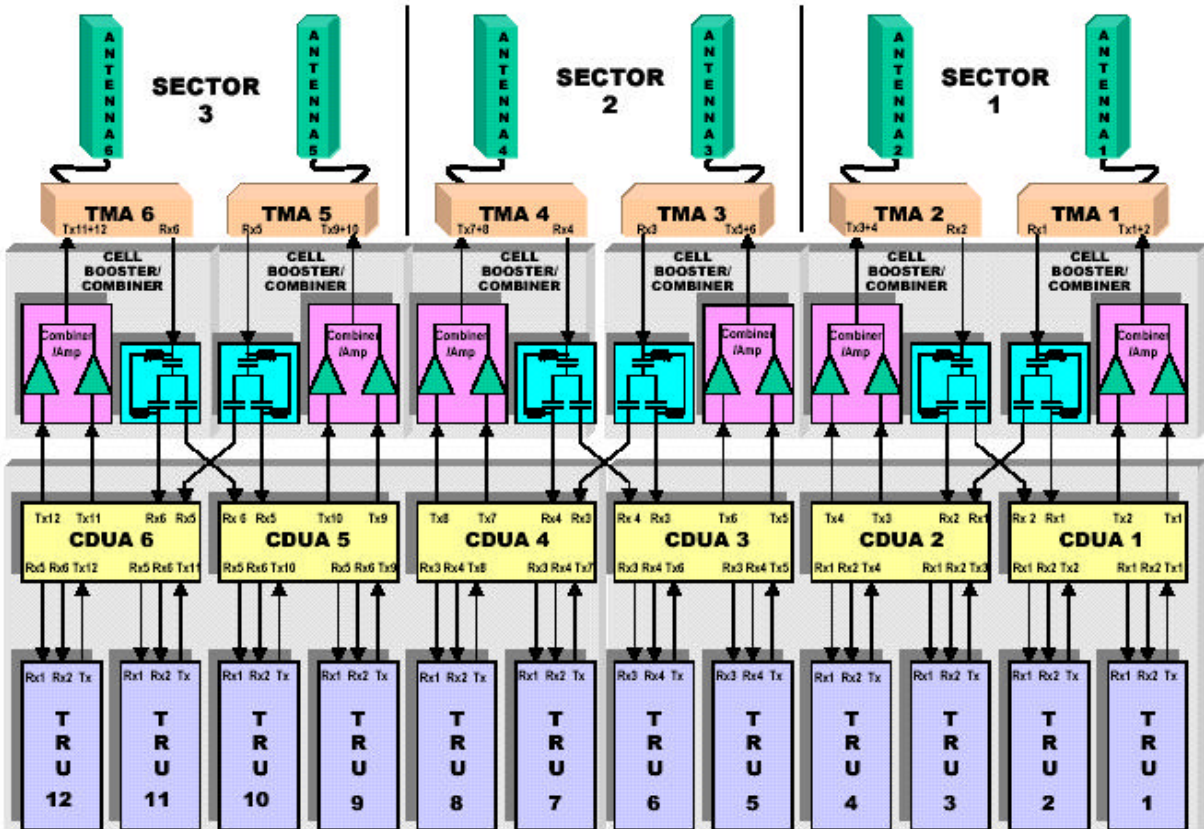
PROJECT NO.: 1L0581RUS1

Description of Operation

The PCS Cell Booster was specifically designed to integrate with compact GSM base stations without any need for retrofitting the original equipment. The system consists of a 5U 19" rack mount tray that can accommodate up to five individual modules. The modules include a Dual Amplifier-Booster Module, a Dual Amplifier-Combiner Module, a Triple Duplexer Module, and a Power Supply Unit (PSU). The Cell Booster system can be configured with any combination of the above modules in order to achieve the desired performance results.

The Dual Amplifier-Booster Module (DAB) consists of two linear power amplifiers with intermodulation level control circuitry, each capable of generating a 55 Watt GSM signal.

System Diagram



EQUIPMENT: DAB 1819

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Section 3. RF Power Output

| | |
|-------------------------------|------------------------|
| NAME OF TEST: RF Power Output | PARA. NO.: 2.1046 |
| TESTED BY: Lance Walker | DATE: October 22, 2001 |

Test Results: Complies.

| Channel | Per Channel Output Power (dBm) | Composite Output Power (dBm) | Composite Output Power (W) |
|-------------------|--------------------------------|------------------------------|----------------------------|
| High (1989.8 MHz) | 37 | 37 | 5.01 |
| Mid (1960 MHz) | 47 | 47.4 | 55 |
| Low (1930.2 MHz) | 37 | 37 | 5.01 |

It is necessary to lower rf power to 5 watts on the first and last channels of each frequency block in order to satisfy spurious emission limits on the band edges. For the purposes of this testing the first and last channels are considered to be centered at 200 kHz above the block edge and 200 kHz below the upper block edge respectively.

| Block | Channel Center Frequency(MHz) | Maximum rf Input (dBm) | Maximum rf Output (Watts) |
|-------|-------------------------------|------------------------|---------------------------|
| A | 1930.2 | -5.4 | 5 |
| A | 1930.4 - 1944.6 | +5.0 | 55 |
| A | 1944.8 | -5.4 | 5 |
| D | 1945.2 | -5.4 | 5 |
| D | 1945.4 - 1949.6 | +5.0 | 55 |
| D | 1949.8 | -5.4 | 5 |
| B | 1950.2 | -5.4 | 5 |
| B | 1950.4 - 1964.6 | +5.0 | 55 |
| B | 1964.8 | -5.4 | 5 |
| E | 1965.2 | -5.4 | 5 |
| E | 1965.4 - 1969.6 | +5.0 | 55 |
| E | 1969.8 | -5.4 | 5 |
| F | 1970.2 | -5.4 | 5 |
| F | 1970.4 - 1974.6 | +5.0 | 55 |
| F | 1974.8 | -5.4 | 5 |
| C | 1975.2 | -5.4 | 5 |
| C | 1975.4 - 1989.6 | +5.0 | 55 |
| C | 1989.8 | -5.4 | 5 |

Equipment Used: 1036, 1082, 1628, 1604, and 1055

Measurement Uncertainty: +/- 0.6 dB

Temperature: 22 °C

Relative Humidity: 50 %

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Section 4. Occupied Bandwidth

| | |
|----------------------------------|------------------------|
| NAME OF TEST: Occupied Bandwidth | PARA. NO.: 2.1049 |
| TESTED BY: Lance Walker | DATE: October 23, 2001 |

Test Results: Complies.

Test Data: See attached plot(s).

Measurement Uncertainty: +/- 1.7 dB

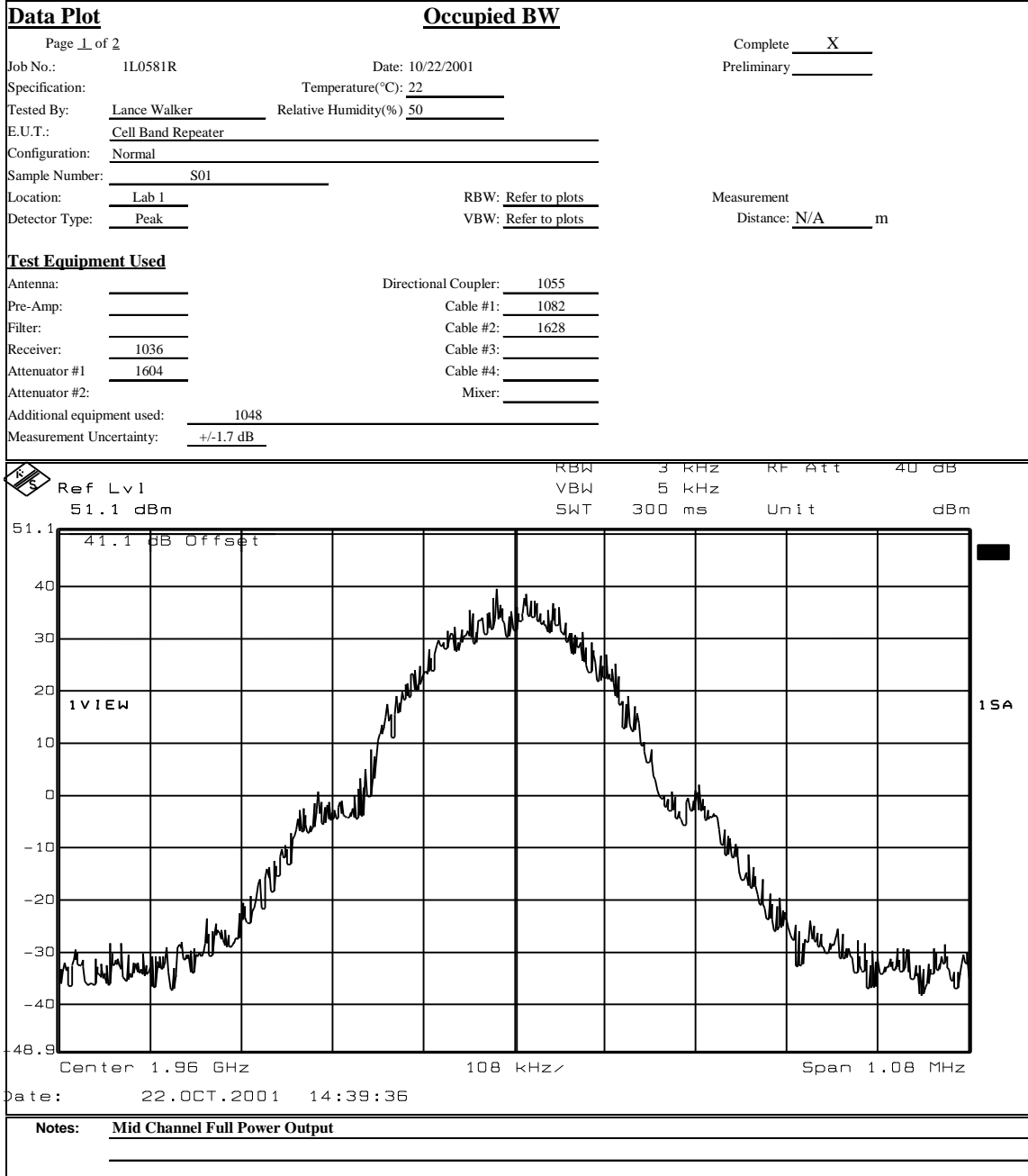
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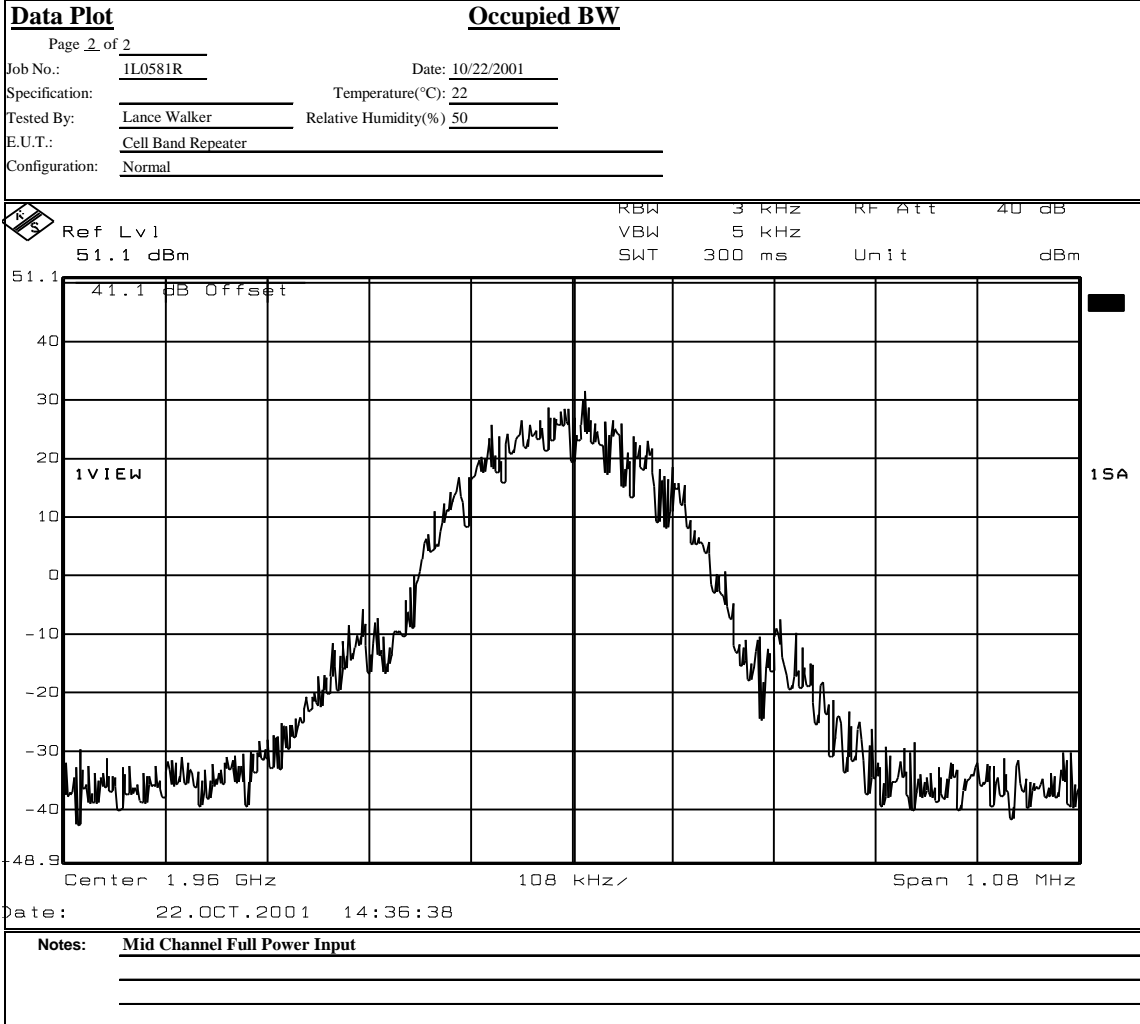
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| Data Plot | Bandedges | | | | | | | | | | | | |
|--|------------------------------------|--------|-------|--------|-------|-----|--------|------|-----|-----|--------|--|--|
| Page <u>1</u> of <u>4</u> | Complete <u>X</u> | | | | | | | | | | | | |
| Job No.: 1L0581R | Date: 10/21/2001 | | | | | | | | | | | | |
| Specification: Part 24 Subpart E | Temperature(°C): <u>22</u> | | | | | | | | | | | | |
| Tested By: <u>Lance Walker</u> | Relative Humidity(%) <u>50</u> | | | | | | | | | | | | |
| E.U.T.: <u>Repeater</u> | | | | | | | | | | | | | |
| Configuration: <u>Normal</u> | | | | | | | | | | | | | |
| Sample Number: <u>S01</u> | | | | | | | | | | | | | |
| Location: <u>Lab 1</u> | RBW: <u>Refer to plots</u> | | | | | | | | | | | | |
| Detector Type: <u>Peak</u> | VBW: <u>Refer to plots</u> | | | | | | | | | | | | |
| | Measurement Distance: <u>N/A</u> m | | | | | | | | | | | | |
| Test Equipment Used | | | | | | | | | | | | | |
| Antenna: _____ | Directional Coupler: <u>1055</u> | | | | | | | | | | | | |
| Pre-Amp: _____ | Cable #1: <u>1082</u> | | | | | | | | | | | | |
| Filter: _____ | Cable #2: <u>1628</u> | | | | | | | | | | | | |
| Receiver: <u>1464</u> | Cable #3: _____ | | | | | | | | | | | | |
| Attenuator #1: <u>1604</u> | Cable #4: _____ | | | | | | | | | | | | |
| Attenuator #2: _____ | Mixer: _____ | | | | | | | | | | | | |
| Additional equipment used: _____ | | | | | | | | | | | | | |
| Measurement Uncertainty: <u>+/- 1.7 dB</u> | | | | | | | | | | | | | |
| <table border="0" style="width:100%; font-size: small;"> <tr> <td>RBW</td> <td>2 kHz</td> <td>RF Att</td> <td>10 dB</td> </tr> <tr> <td>VBW</td> <td>20 kHz</td> <td>Unit</td> <td>dBm</td> </tr> <tr> <td>SWT</td> <td>500 ms</td> <td></td> <td></td> </tr> </table> | | RBW | 2 kHz | RF Att | 10 dB | VBW | 20 kHz | Unit | dBm | SWT | 500 ms | | |
| RBW | 2 kHz | RF Att | 10 dB | | | | | | | | | | |
| VBW | 20 kHz | Unit | dBm | | | | | | | | | | |
| SWT | 500 ms | | | | | | | | | | | | |
| <div style="display: flex; justify-content: space-between; font-size: x-small;"> Ref Lvl 30 dBm 41.1 dB Offset </div> <div style="display: flex; justify-content: space-between; font-size: x-small; margin-top: 10px;"> Center 1.99 GHz 80 kHz Span 800 kHz </div> | | | | | | | | | | | | | |
| <p>Date: 23.OCT.2001 9:48:25</p> <p>Notes: <u>Had to lower output to 5.01 W in order to get signal humps under limit</u></p> | | | | | | | | | | | | | |

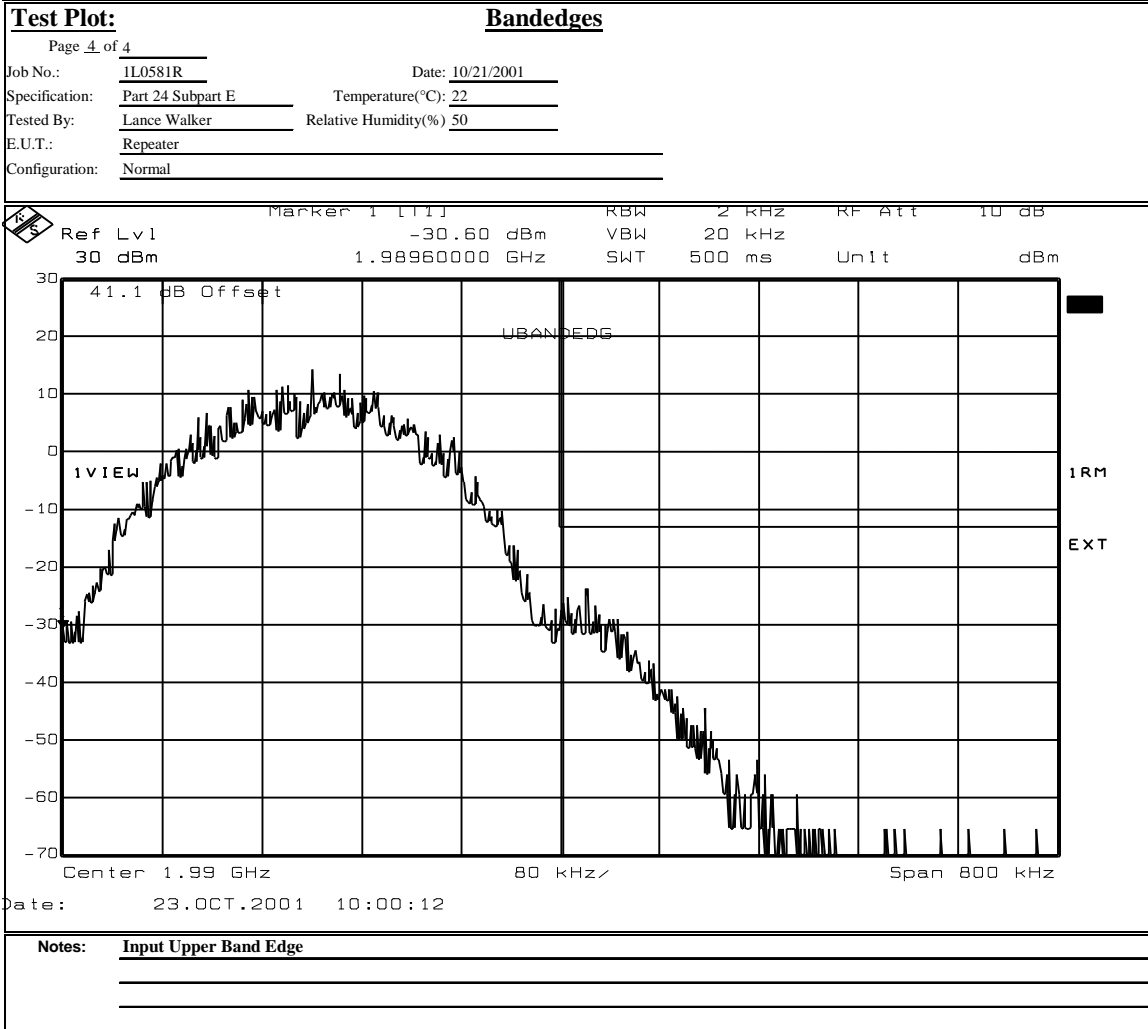
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PROJECT NO.: 1L0581RUS1



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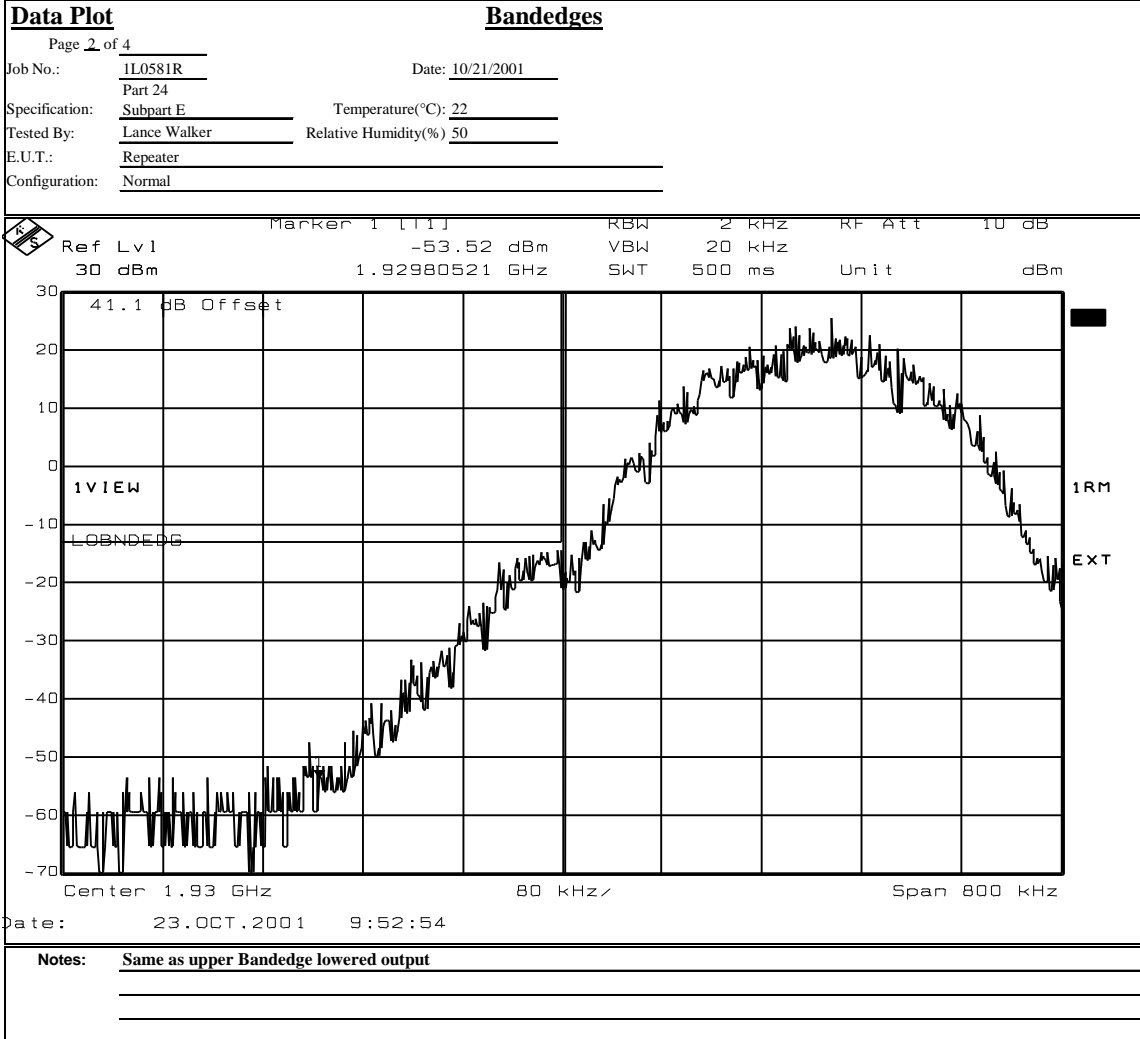
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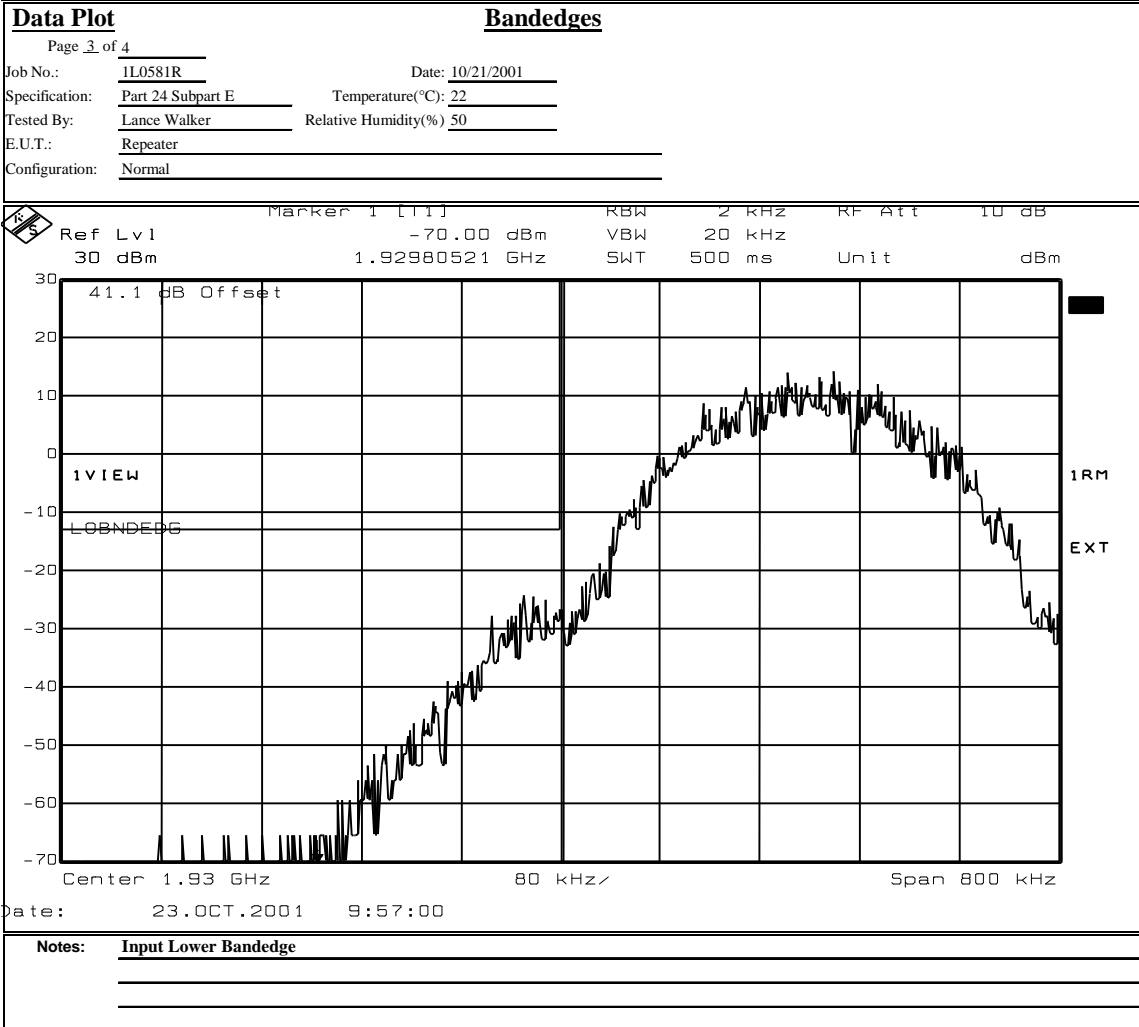
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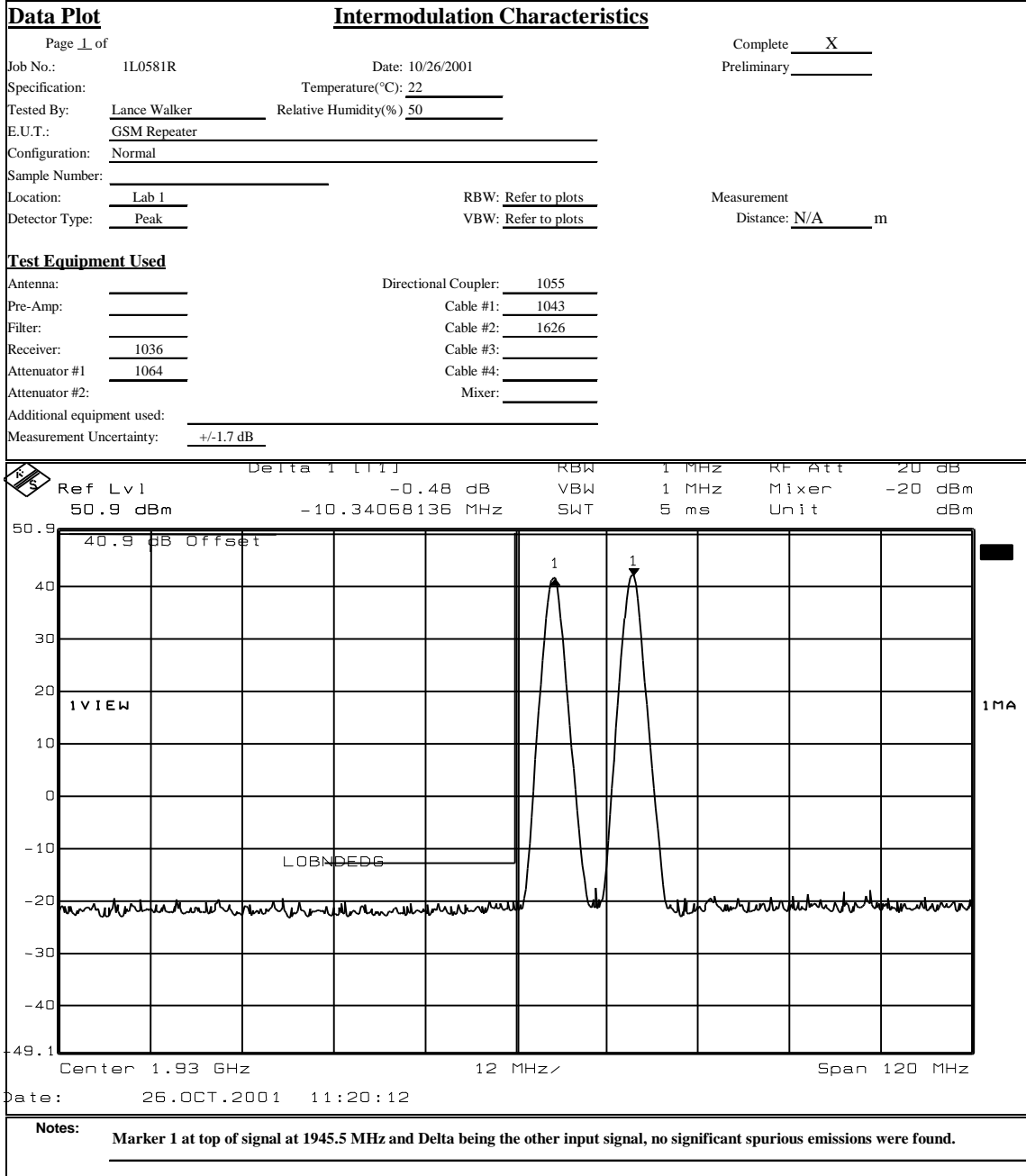
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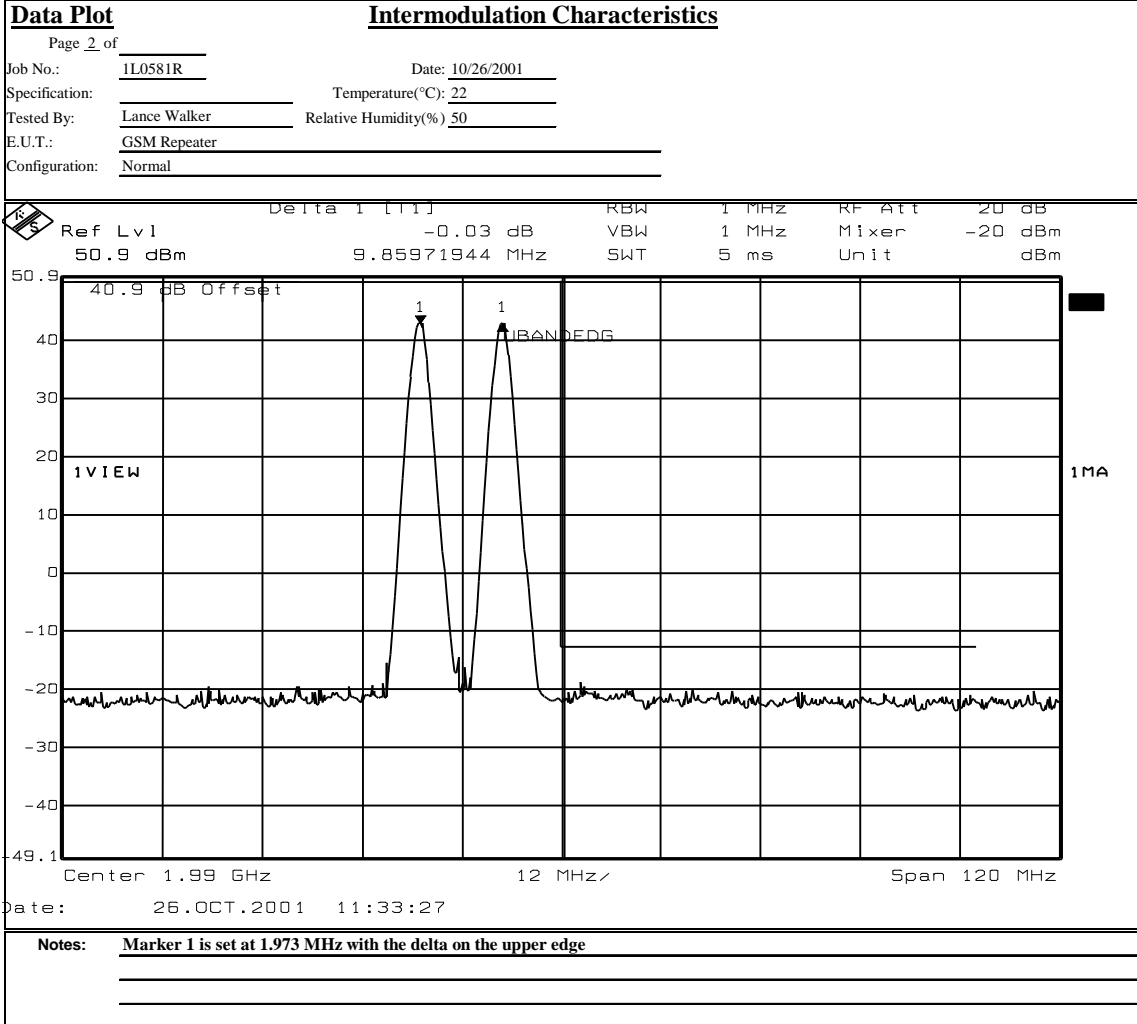
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PROJECT NO.: 1L0581RUS1

Section 5. Spurious Emissions at Antenna Terminals

| | |
|--|------------------------|
| NAME OF TEST: Spurious Emissions @ Antenna Terminals | PARA. NO.: 2.1051 |
| TESTED BY: Lance Walker | DATE: October 22, 2001 |

Test Results: Complies.

Test Data: See attached plot(s).

Measurement Uncertainty: +/- 1.6 dB

EQUIPMENT: DAB 1819

PROJECT NO.: 1L0581RUS1



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| Data Plot | | Antenna Port Spurious Emissions | | | | | | | | | | | | | | | | |
|--|---------------------------|---------------------------------|-------------------|---------------|-----|---------|--------|-------|---------|------------|-----|---------|--|----------|------------------|-----|--------|----------|
| Page 1 of 4 | Job No.: 110581r | Date: 10/22/2001 | Complete <u>X</u> | | | | | | | | | | | | | | | |
| Specification: FCC Part 24 | Temperature(°C): 22 | Preliminary _____ | | | | | | | | | | | | | | | | |
| Tested By: David Light | Relative Humidity(%) 50 | | | | | | | | | | | | | | | | | |
| E.U.T.: Repeater | | | | | | | | | | | | | | | | | | |
| Configuration: Normal | | | | | | | | | | | | | | | | | | |
| Sample Number: 1 | | | | | | | | | | | | | | | | | | |
| Location: Lab 1 | RBW: Refer to plots | Measurement | | | | | | | | | | | | | | | | |
| Detector Type: Peak | VBW: Refer to plots | Distance: N/A m | | | | | | | | | | | | | | | | |
| Test Equipment Used | | | | | | | | | | | | | | | | | | |
| Antenna: _____ | Directional Coupler: 1055 | | | | | | | | | | | | | | | | | |
| Pre-Amp: _____ | Cable #1: 1082 | | | | | | | | | | | | | | | | | |
| Filter: _____ | Cable #2: 1628 | | | | | | | | | | | | | | | | | |
| Receiver: 1036 | Cable #3: _____ | | | | | | | | | | | | | | | | | |
| Attenuator #1: 1604 | Cable #4: _____ | | | | | | | | | | | | | | | | | |
| Attenuator #2: _____ | Mixer: _____ | | | | | | | | | | | | | | | | | |
| Additional equipment used: 1059 | | | | | | | | | | | | | | | | | | |
| Measurement Uncertainty: +/-1.7 dB | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr> <td>Marker 1 [11]</td> <td>RBW</td> <td>100 kHz</td> <td>RF Att</td> <td>30 dB</td> </tr> <tr> <td>Ref Lvl</td> <td>-17.90 dBm</td> <td>VBW</td> <td>100 kHz</td> <td></td> </tr> <tr> <td>41.1 dBm</td> <td>817.27454910 MHz</td> <td>SWT</td> <td>245 ms</td> <td>Unit dBm</td> </tr> </table> | | | | Marker 1 [11] | RBW | 100 kHz | RF Att | 30 dB | Ref Lvl | -17.90 dBm | VBW | 100 kHz | | 41.1 dBm | 817.27454910 MHz | SWT | 245 ms | Unit dBm |
| Marker 1 [11] | RBW | 100 kHz | RF Att | 30 dB | | | | | | | | | | | | | | |
| Ref Lvl | -17.90 dBm | VBW | 100 kHz | | | | | | | | | | | | | | | |
| 41.1 dBm | 817.27454910 MHz | SWT | 245 ms | Unit dBm | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| Start 30 MHz 97 MHz/ Stop 1 GHz | | | | | | | | | | | | | | | | | | |
| Date: 22.OCT.2001 15:18:05 | | | | | | | | | | | | | | | | | | |
| Notes: MID CHANNEL 30 - 1 GHz | | | | | | | | | | | | | | | | | | |

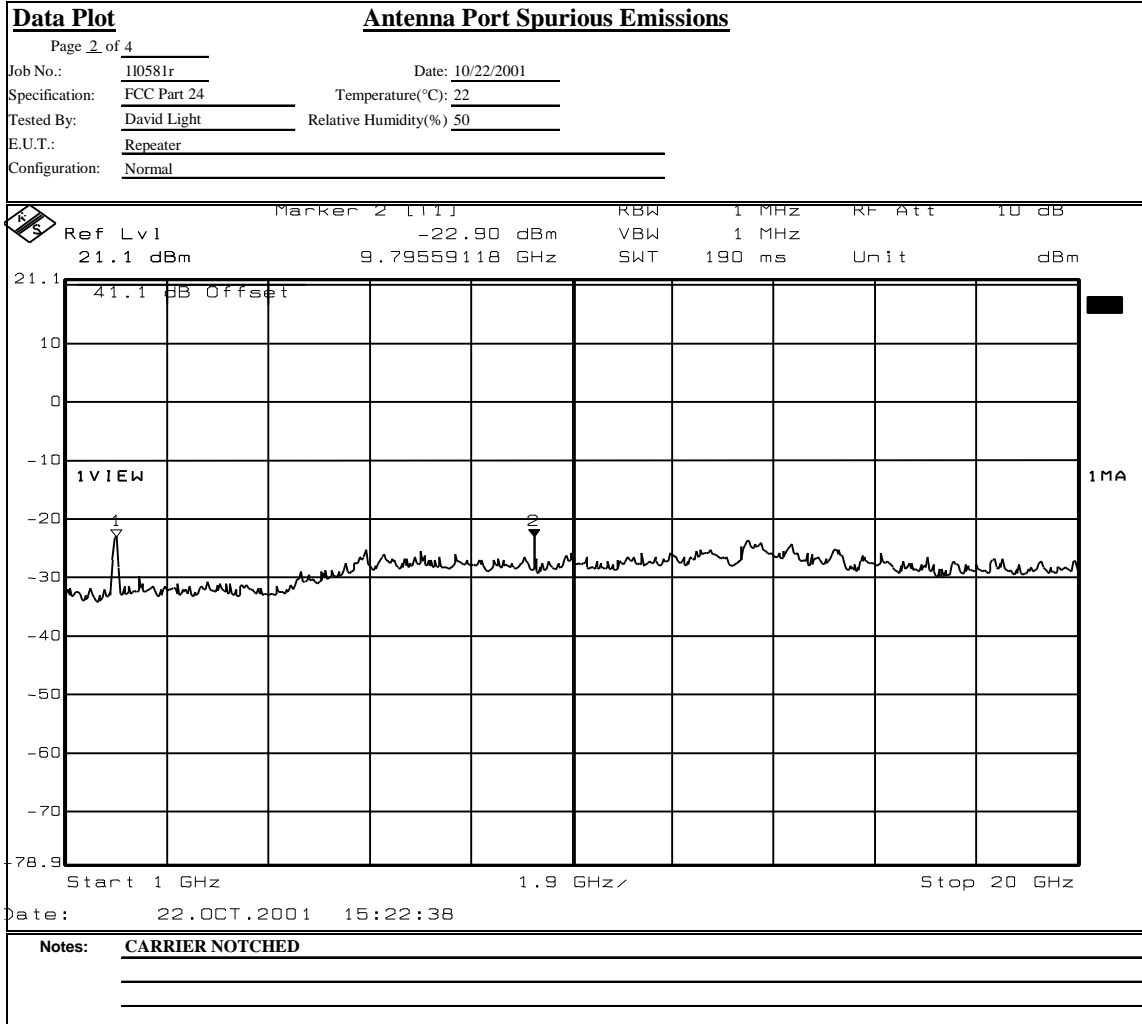
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EQUIPMENT: DAB 1819

PROJECT NO.: 1L0581RUS1

Section 6. Field Strength of Spurious

| | |
|--|-------------------|
| NAME OF TEST: Field Strength of Spurious Emissions | PARA. NO.: 2.1051 |
| TESTED BY: Lance Walker | DATE: 10/22/01 |

Test Results: Complies.

Test Data: See attached table.

Measurement Uncertainty: +/- 3.6 dB

EQUIPMENT: DAB 1819

PROJECT NO.: 1L0581RUS1

Test Data - Radiated Emissions



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Field Strength of Spurious Emissions

Page 1 of 1

Job No.: 1L0581R Date: 10/22/2001 Complete X
Preliminary _____

Specification: Part 24 Subpart R Temperature(°C): 22
Tested By: Lance Walker Relative Humidity(%): 50

E.U.T.: Repeater
Configuration: Normal
Sample No: S01
Location: AC 3 RBW: 1 MHz Measurement
Detector Type: Peak VBW: 1 MHz Distance: 3 m

Test Equipment Used

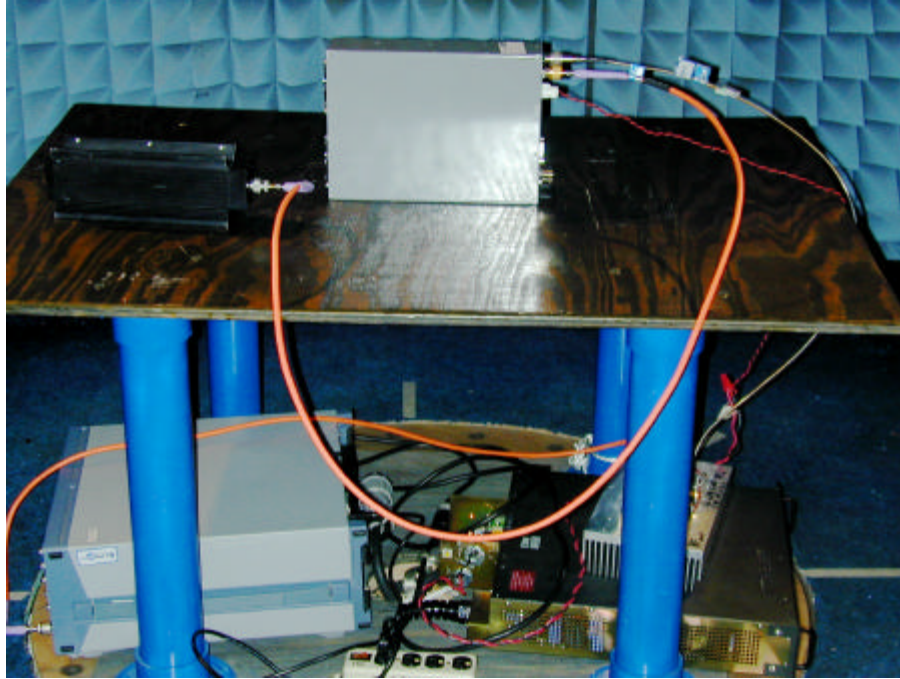
Antenna: 993 Directional Coupler: _____
Pre-Amp: 1016 Cable #1: 1484
Filter: _____ Cable #2: 1485
Receiver: 1464 Cable #3: 1043
Attenuator #1: _____ Cable #4: _____
Attenuator #2: _____ Mixer: _____

Additional equipment used: _____
Measurement Uncertainty: +/-1.7 dB

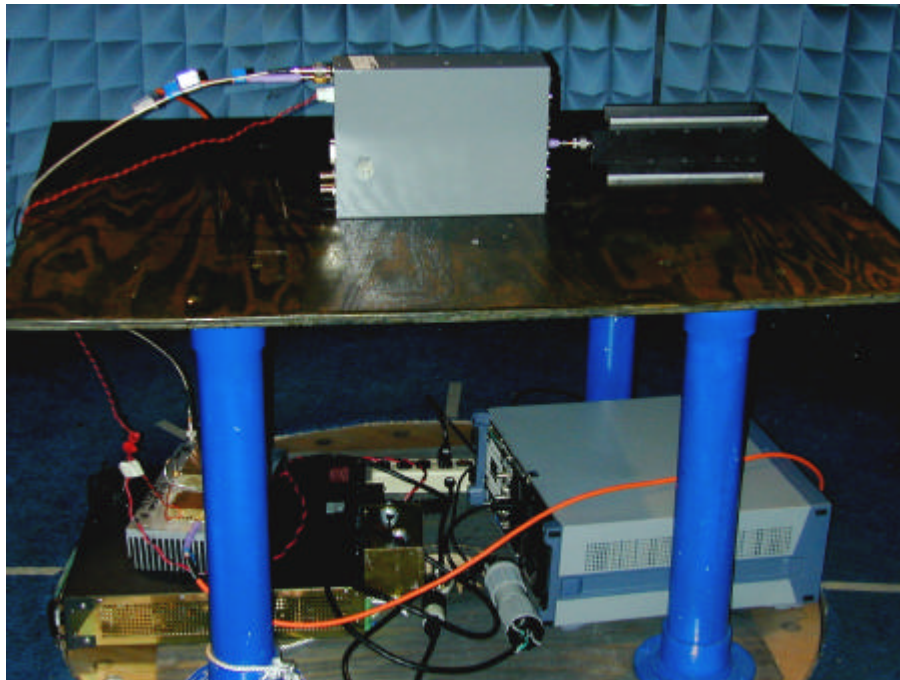
| Frequency (MHz) | Meter Reading (dBm) | Correction Factor (dB) | Pre-Amp Gain (dB) | Substitution Antenna Gain (dBd) | Limit (dBm) | ERP (dBm) | ERP (mW) | Polarity | Comments |
|-----------------|---------------------|------------------------|-------------------|---------------------------------|-------------|-----------|----------|----------|----------------------|
| 3920 | -35.7 | 34.3 | 33.3 | 8.0 | -13 | -26.7 | 0.002153 | H | -31.7 without filter |
| 5880 | -37.8 | 36.0 | 32.7 | 9.1 | -13 | -25.4 | 0.002858 | H | |
| 7840 | -40.3 | 39.8 | 33.3 | 9.4 | -13 | -24.4 | 0.003648 | H | |
| 9800 | -46.5 | 42.6 | 36 | 10.5 | -13 | -29.4 | 0.001153 | H | |
| 11760 | -59.0 | 46.0 | 35.5 | 11.0 | -13 | -37.5 | 0.000179 | H | |
| 13720 | -57.3 | 50.8 | 33.3 | 10.4 | -13 | -29.4 | 0.001161 | H | |
| 15680 | -67.5 | 44.0 | 33.2 | 13.6 | -13 | -43.1 | 0.000049 | H | |
| 17640 | -69.0 | 53.6 | 34 | 8.7 | -13 | -40.7 | 0.000085 | H | Noise Floor |
| 3920 | -33.5 | 40.4 | 33.3 | 8.0 | -13 | -18.4 | 0.014388 | V | |
| 5880 | -37.2 | 38.5 | 32.7 | 9.1 | -13 | -22.3 | 0.005834 | V | |
| 7840 | -41.3 | 40.4 | 33.3 | 9.4 | -13 | -24.7 | 0.003357 | V | |
| 9800 | -45.4 | 40.4 | 36 | 10.5 | -13 | -30.5 | 0.000899 | V | |
| 11760 | -57.7 | 49.3 | 35.5 | 11.0 | -13 | -32.9 | 0.000516 | V | |
| 13720 | -59.5 | 47.6 | 33.3 | 10.4 | -13 | -34.8 | 0.000334 | V | |
| 15680 | -67.5 | 43.2 | 33.2 | 13.6 | -13 | -43.9 | 0.000041 | V | |
| 17640 | -69.0 | 51.0 | 34 | 8.7 | -13 | -43.3 | 0.000047 | V | Noise Floor |

Photographs of Test Setup

FRONT VIEW



REAR VIEW



EQUIPMENT: DAB 1819

PROJECT NO.: 1L0581RUS1

Section 7. Frequency Stability

| | |
|-----------------------------------|-------------------|
| NAME OF TEST: Frequency Stability | PARA. NO.: 2.1055 |
| TESTED BY: | DATE: |

Test Results:

Complete.

Measurement Data:

See attached table.

Not Applicable

Standard Test Frequency:

MHz

Standard Test Voltage:

Equipment Used:

Measurement Uncertainty: +/- 1.6 dB

Lab Temperature: °C

Relative Humidity: %

EQUIPMENT: DAB 1819

PROJECT NO.: 1L0581RUS1

Section 8. Test Equipment List

| Nemko ID | Description | Manufacturer Model Number | Serial Number | Calibration Date |
|----------|--------------------------|------------------------------------|---------------|---------------------|
| 1036 | SPECTRUM ANALYZER | ROHDE & SCHWARZ FSEK30 | 830844/006 | 09/17/01 |
| 1604 | ATTENUATOR | NARDA 776B-20 | NONE | 09/13/01 |
| 1059 | TUNABLE NOTCH FILTER | K&L 3TNF-1000/2000-N/N | 144 | CBU |
| 1464 | Spectrum analyzer | Hewlett Packard 8563E | 3551A04428 | 01/02/01 |
| 1016 | Pre-Amp | HEWLETT PACKARD 8449A | 2749A00159 | 05/30/01 |
| 993 | Horn antenna | A.H. Systems SAS-200/571 | XXX | 07/16/99 |
| 1064 | ATTENUATOR | NARDA 776B-20 | NONE | 09/13/01 |
| 1055 | DUAL DIRECTIONAL COUPLER | NARDA 3022 | 73393 | Cal Not Req |
| 1082 | CABLE 2m | Astrolab 32027-2-29094-72TC | N/A | 06/01/01 |
| 1628 | CABLE, 6 ft | MEGAPHASE TM26 S1S5 72 | N/A | CBU |
| 1484 | Cable 2.0-18.0 Ghz | Storm PR90-010-072 | N/A | 06/01/01 |
| 1485 | Cable 2.0-18.0 Ghz | Storm PR90-010-216 | N/A | 06/01/01 |
| 1043 | Flexible cable 1m | Astrolab Inc. 32027-2-29094K-1M | 0 | 01/29/01 |
| 1626 | CABLE, 5 ft | MEGAPHASE 10311 1GVT4 | N/A | CBU |

EQUIPMENT: DAB 1819

PROJECT NO.: 1L0581RUS1

ANNEX A - TEST DETAILS

EQUIPMENT: DAB 1819

PROJECT NO.: 1L0581RUS1

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.

Integral Antenna:

If the antenna is not detachable from the circuit then the Peak Power Output is derived from the peak radiated field strength of the fundamental emission by using the plane wave relation $GP/4\pi R^2 = E^2/120\pi$ and proceeding as follows:

$$P = \frac{E^2 R^2}{30G} = \frac{E^2 3^2}{30G}$$

where,

P = the equivalent isotropic radiated power in watts

E = the maximum measured field strength in V/m

R = the measurement range (3 meters)

G = the numeric gain of the transmit antenna in relation to an isotropic radiator

EQUIPMENT: DAB 1819

PROJECT NO.: 1L0581RUS1

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.

EQUIPMENT: DAB 1819

PROJECT NO.: 1L0581RUS1

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: ≥ 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: ≥ RBW
Sweep: Auto
Video Avg: Disabled

NADC

RBW: 1 MHz (> 1 MHz from Band Edge)
RBW: 3 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: DAB 1819

PROJECT NO.: 1L0581RUS1

| | |
|---|--------------------------|
| 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: 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: DAB 1819

PROJECT NO.: 1L0581RUS1

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

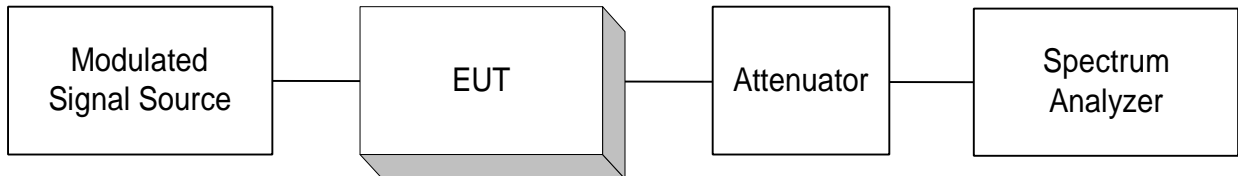
The E.U.T. is placed in an environmental chamber and allowed to stabilize at +20 degrees Celsius for at least 15 minutes. The frequency counter and signal generator are phase locked with the same 10 MHz reference frequency by connecting the 10 MHz ref. out of the counter to the 10 MHz ref, in of the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

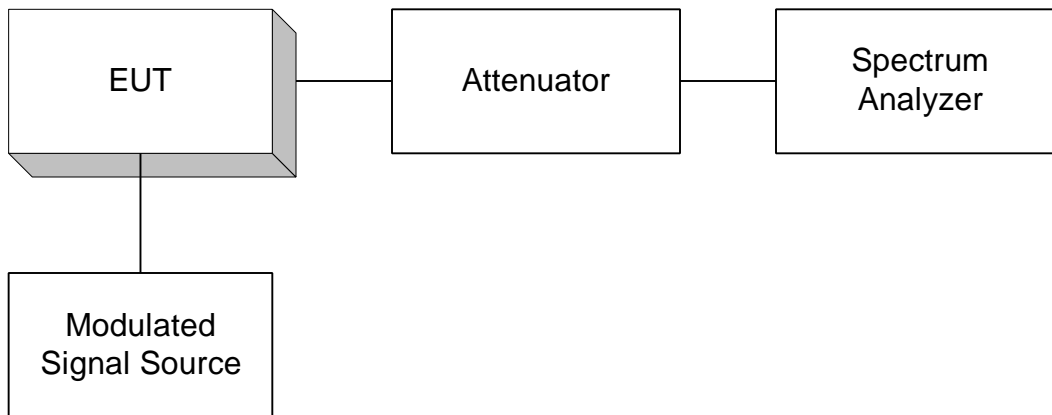
The input voltage to the E.U.T. is set to S.T.V. and the temperature of the environmental chamber is varied in 10 degree steps from -30 degrees C to +50 degrees C. The E.U.T. is allowed to stabilize at each temperature and the frequency is measured in 30 second intervals for a period of 5 minutes.

ANNEX B - TEST DIAGRAMS

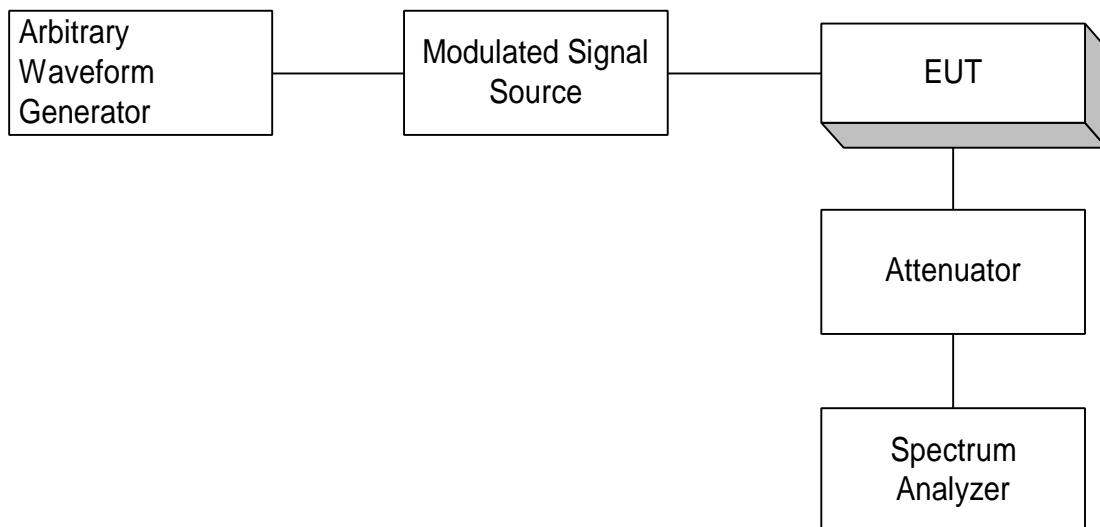
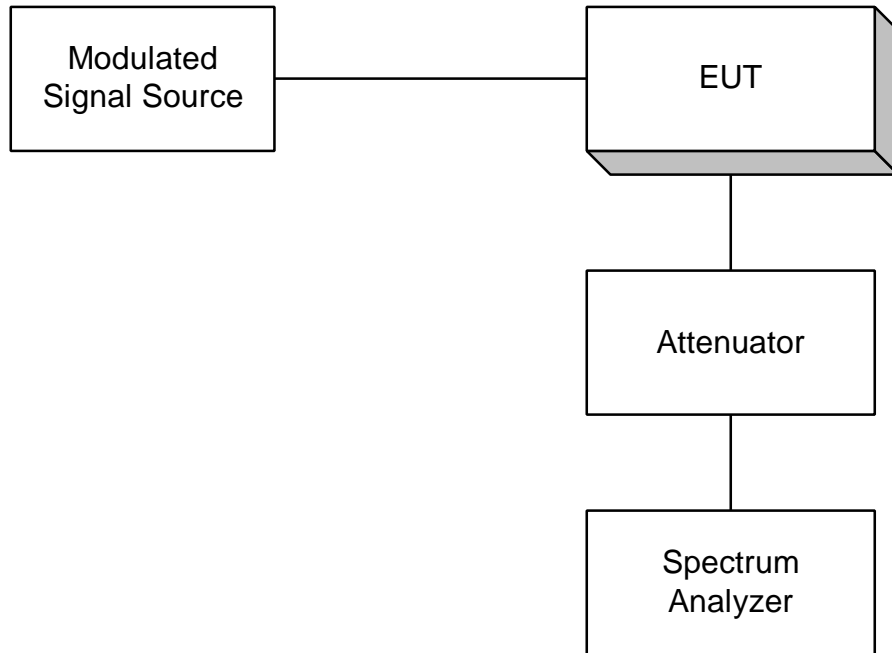
Para. No. 2.985 - R.F. Power Output



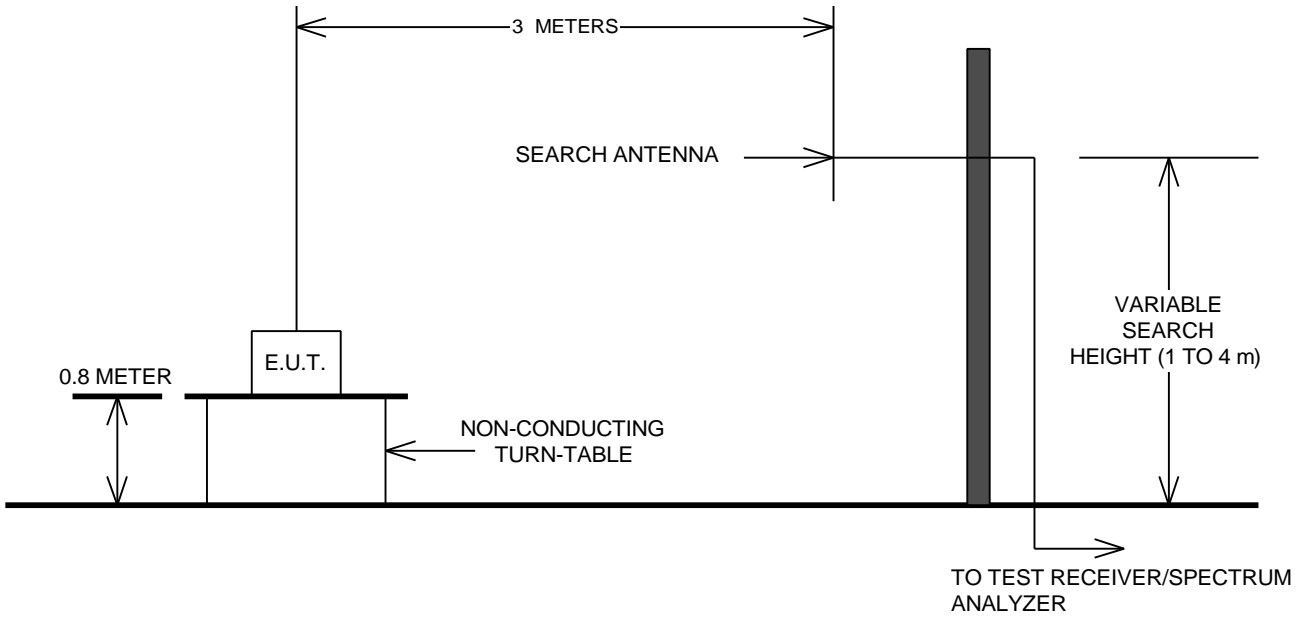
Para. No. 2.989 - Occupied Bandwidth



Para. No. 2.991 Spurious Emissions at Antenna Terminals



Para. No. 2.993 - Field Strength of Spurious Radiation



Para. No. 2.995 - Frequency Stability

