



Nemko

Test Report: 2W06522.1

Applicant: Communications Components
89 Leuning Street
South Hackensack, NJ 07606
U.S.A.

Equipment Under Test: PCS BAND, GSM Amplifier

FCC ID: NT3DAB-DAC-1819

In Accordance With: **FCC Part 24, Subpart E**

Tested By: Nemko Canada Inc.
303 River Road, R.R. 5
Ottawa, Ontario K1V 1H2

Authorized By: 
Kevin Carr, EMC Specialist

Date: 27 November 2002

Total Number of Pages: 24

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EQUIPMENT: PCS BAND, GSM Amplifier

Section 1. Summary of Test Results

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.

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: _____
Glen Westwell, Wireless Technologist

DATE: 25 November 2002

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This report applies only to the items tested.

EQUIPMENT: PCS BAND, GSM Amplifier

Summary Of Test Data

Name Of Test	Para. No.	Result
RF Power Output	2.1046	Complies
Occupied Bandwidth	2.1049	Complies
Spurious Emissions at Antenna Terminals	2.1051	Complies
Field Strength of Spurious Emissions	2.1053	Complies
Frequency Stability	2.1055	N/A

Notes:

(1) This application is for the 80W PCS, GSM inline amplifier. This amplifier is used in the transmit path for a single channel only, and is connected via coaxial connection and operated in an equipment rack at the base station transmitter.

(2) This amplifier does not translate the RF input, therefore frequency stability is not applicable.

(3) The power levels at the first and last channel of each frequency block must be reduced to achieve compliance. See attached plots in section 5.

Indoor Temperature: 22 °C
 Humidity: 48 %

Outdoor Temperature: 7 °C
 Humidity: 52 %

EQUIPMENT: PCS BAND, GSM Amplifier

Section 2. General Equipment Specification

Manufacturer: Communications Components

Model No.: DAB-1819
DAC-1819

Serial No.: S/N C003929

Date Received In Laboratory: 18 Oct, 2002

Nemko Identification No.: #1

Supply Input Voltage: 120 VAC

Frequency Range: Downlink:
BLK A: 1930-1945MHz
BLK D: 1945-1950MHz
BLK B: 1950-1965MHz
BLK E: 1965-1970MHz
BLK F: 1970-1975MHz
BLK C: 1975-1990MHz

RF Output (Rated): 80W

Amplifier Gain (Rated): 8dB

Emission Designator(modulation): GXW

EQUIPMENT: PCS BAND, GSM Amplifier

Section 3. RF Power Output

Para. No.: 2.1046

Test Performed By: Glen Westwell	Date of Test: 6 Nov 2002
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Minimum Standard: Para. No.: 24.232.

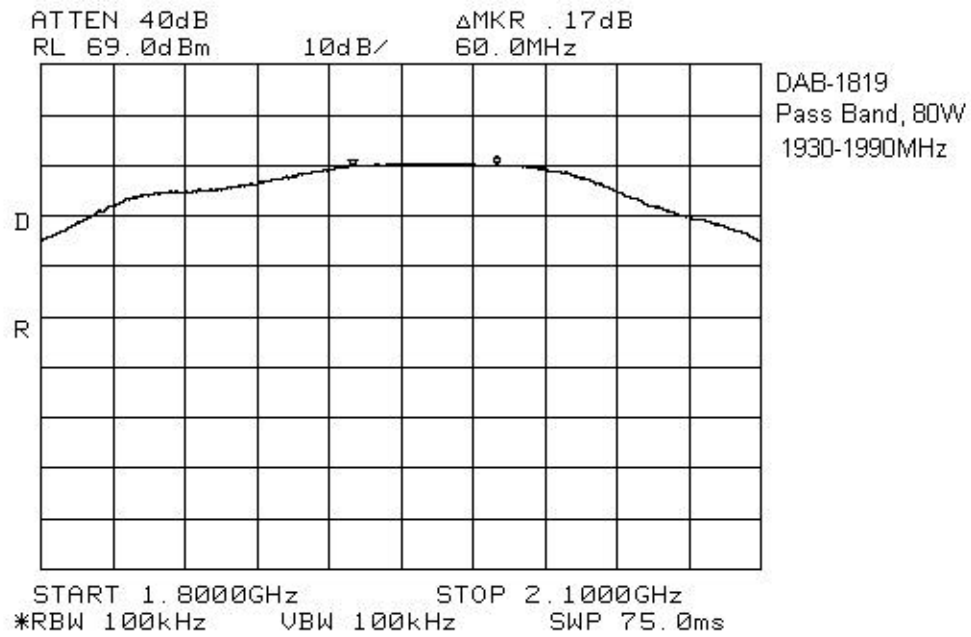
Test Results: Complies.

The maximum RF output power is within ± 1 dB of the manufacturer's rating.

This is a base station downlink single channel amplifier only.
This result was obtained with an input power of 41.2dBm.

Rated Output Power: 49dBm
Measured Output Power: 48.9dBm

EQUIPMENT: PCS BAND, GSM Amplifier



EQUIPMENT: PCS BAND, GSM Amplifier

Section 4. Occupied Bandwidth

Para. No.: 2.1049

Test Performed By: Glen Westwell	Date of Test: 6 Nov 2002
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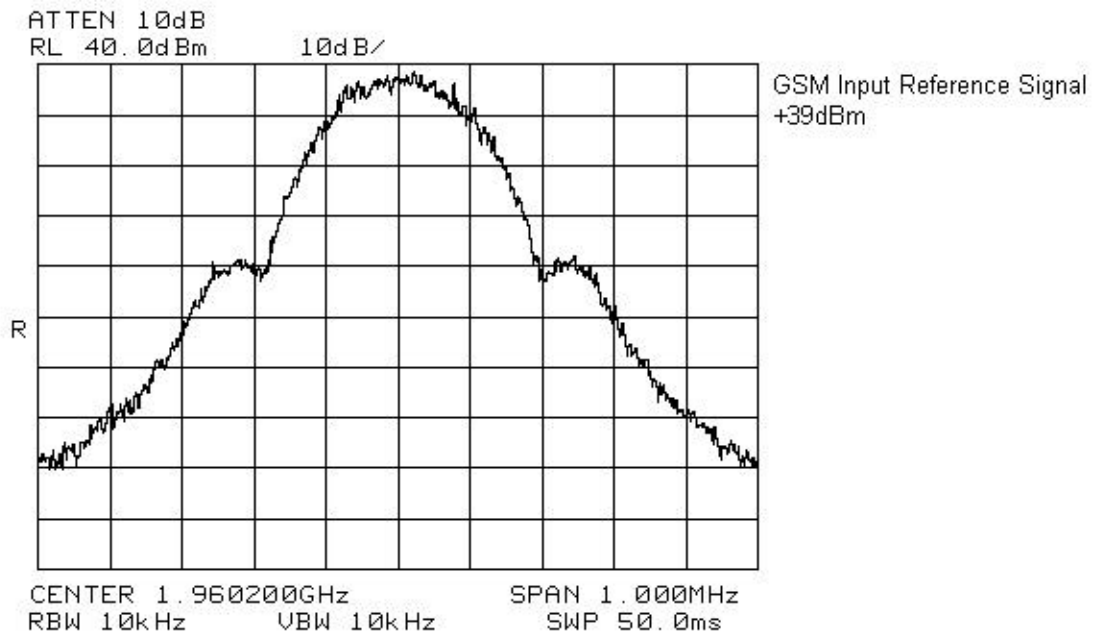
Minimum Standard: Para. No.: 24.238.

Test Results: Complies.

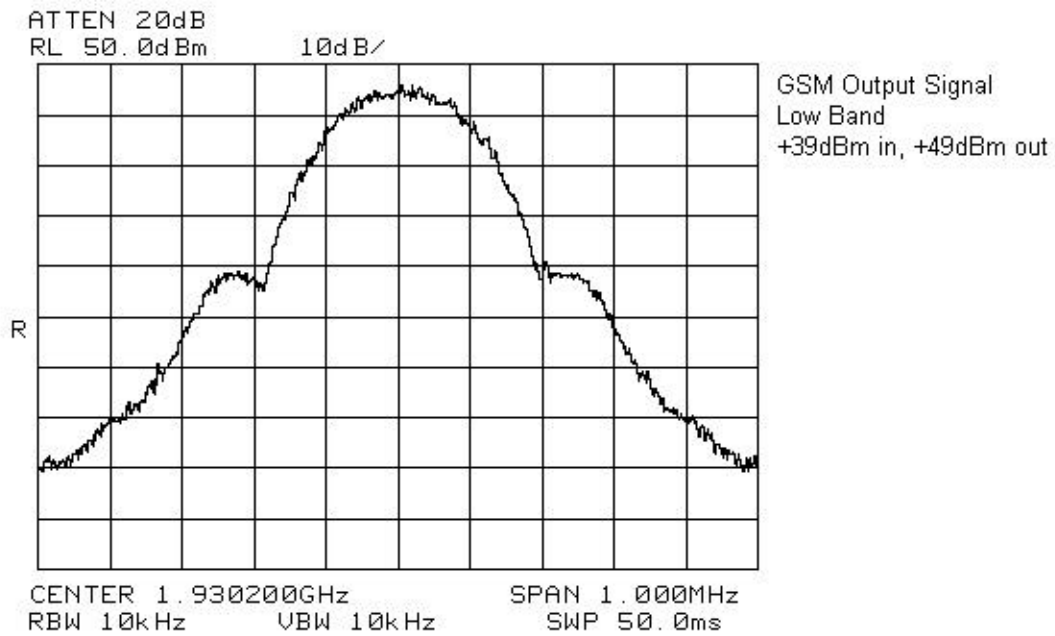
The occupied bandwidth was measured by comparison of input to the output signal. This was done in order to determine if there was any degradation to the output signal due to the amplification through the repeater.

Test Data: See attached graph(s).

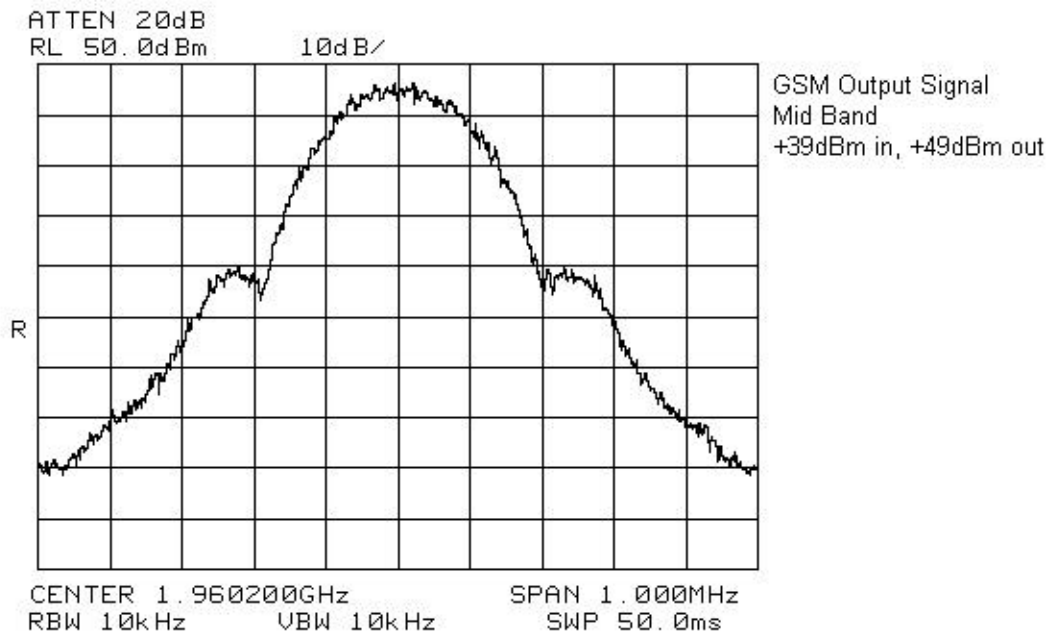
EQUIPMENT: PCS BAND, GSM Amplifier



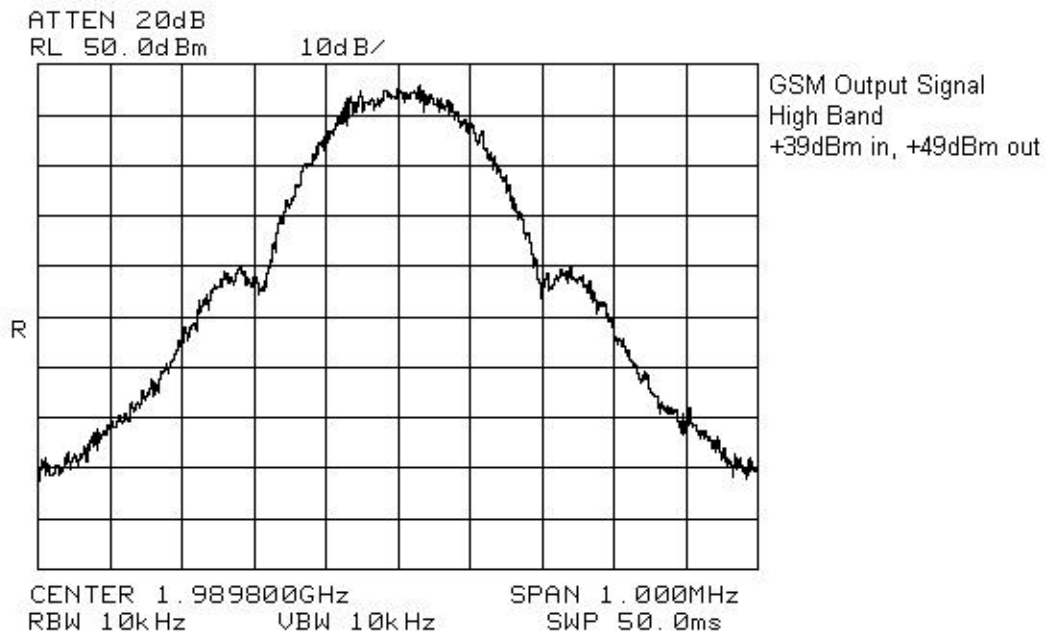
EQUIPMENT: PCS BAND, GSM Amplifier



EQUIPMENT: PCS BAND, GSM Amplifier



EQUIPMENT: PCS BAND, GSM Amplifier



EQUIPMENT: PCS BAND, GSM Amplifier

Section 5. Spurious Emissions at Antenna Terminals

Para. No.: 2.1051

Test Performed By: Glen Westwell	Date of Test: 9 Nov 2002
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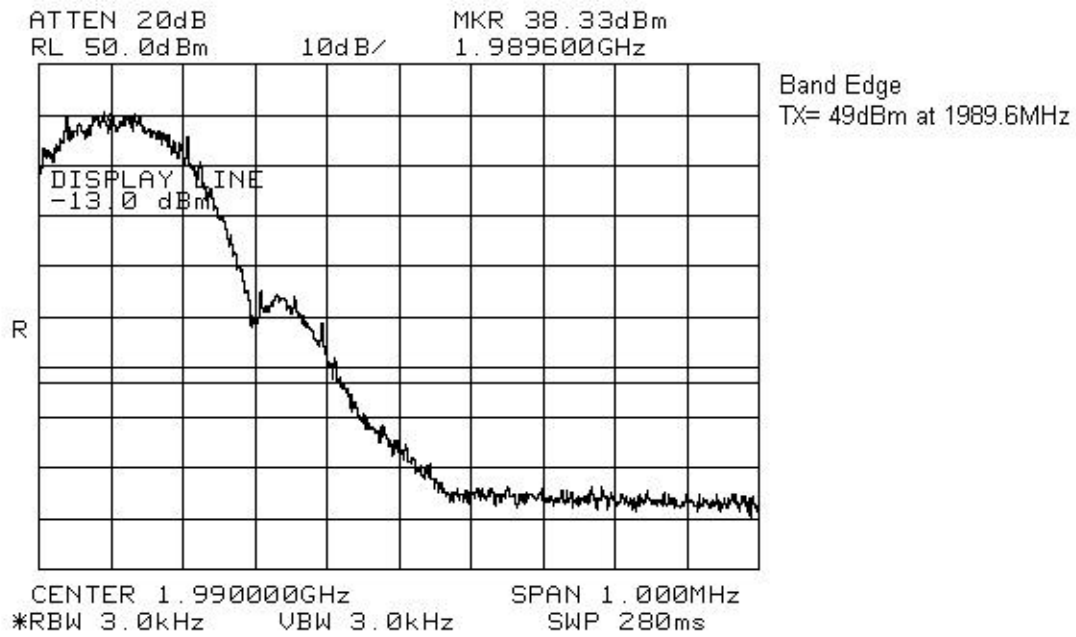
Minimum Standard: Para. No.: 24.238.

Test Results: Complies.

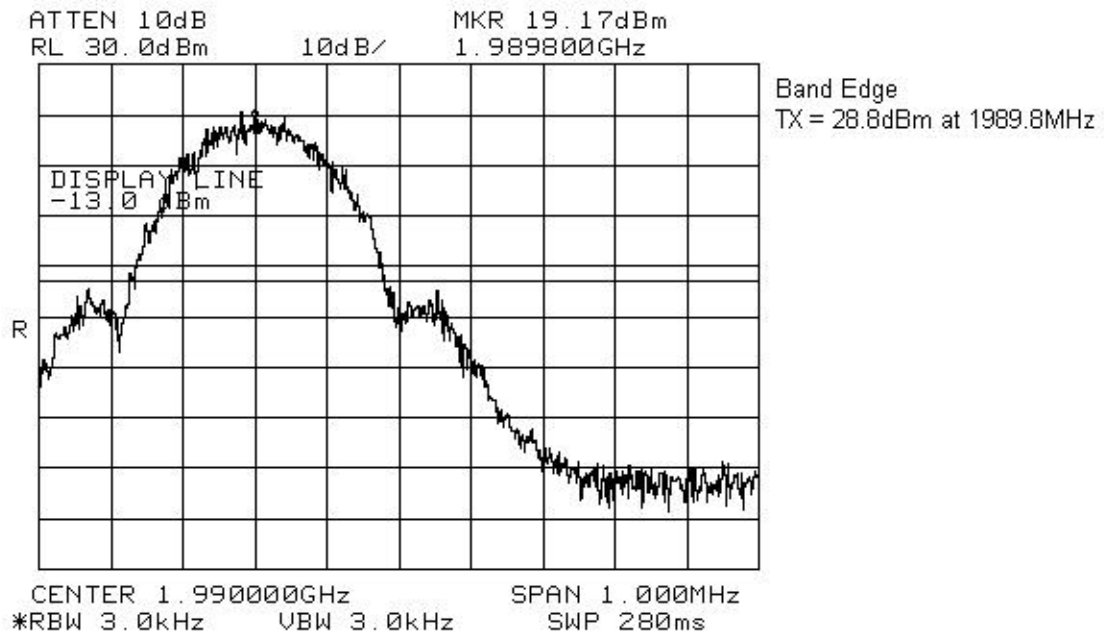
Note: The power levels at the first and last channel of each frequency block must be reduced to achieve compliance. See attached plots.

Measurement Data: See attached graphs and table (worst case).

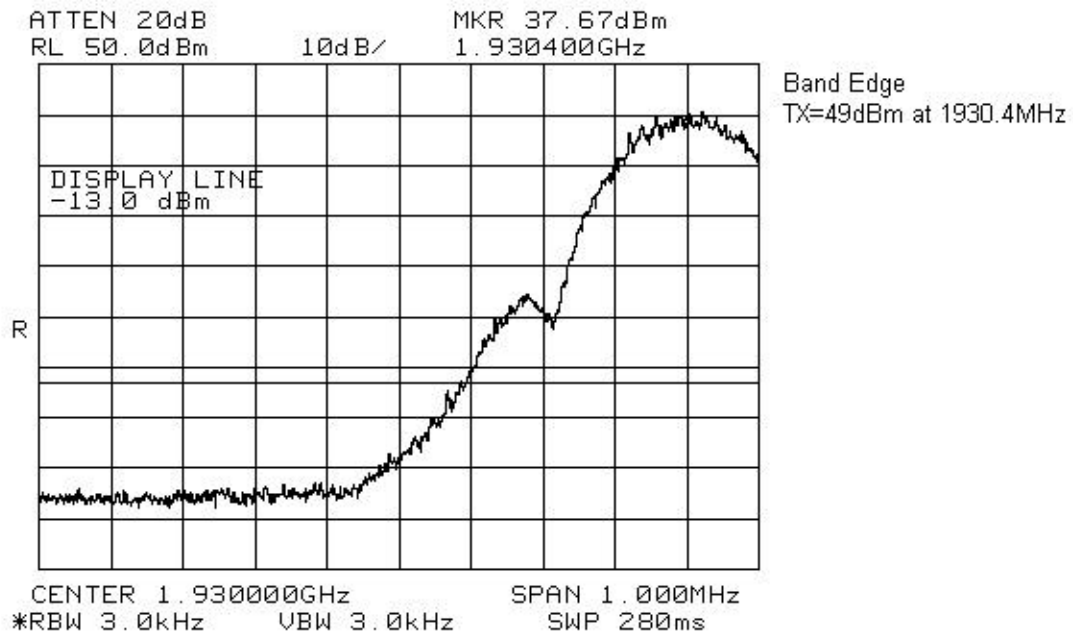
EQUIPMENT: PCS BAND, GSM Amplifier



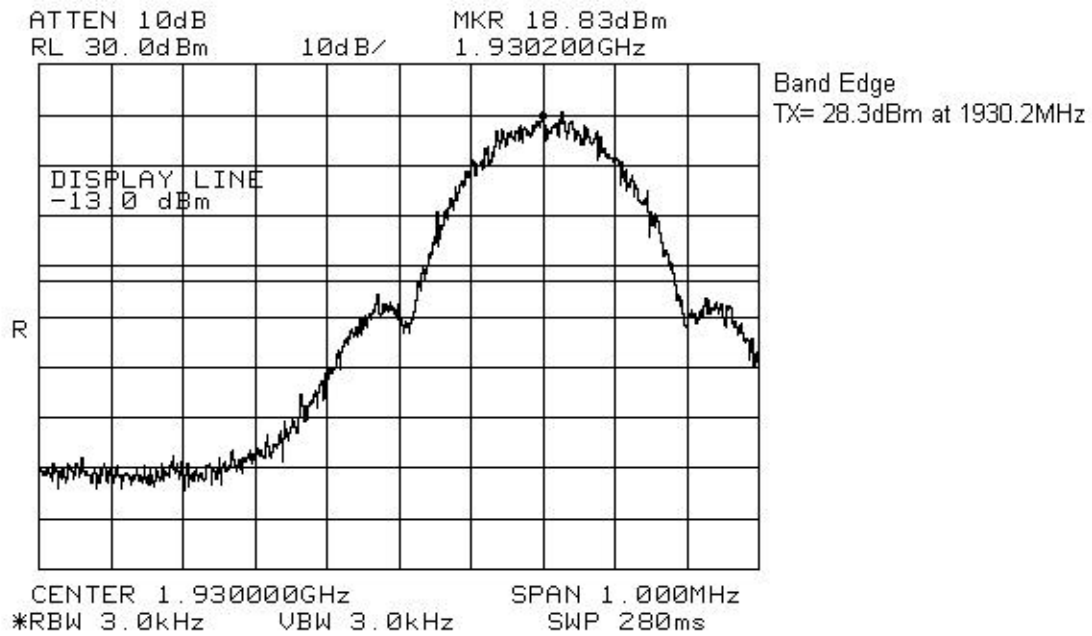
EQUIPMENT: PCS BAND, GSM Amplifier



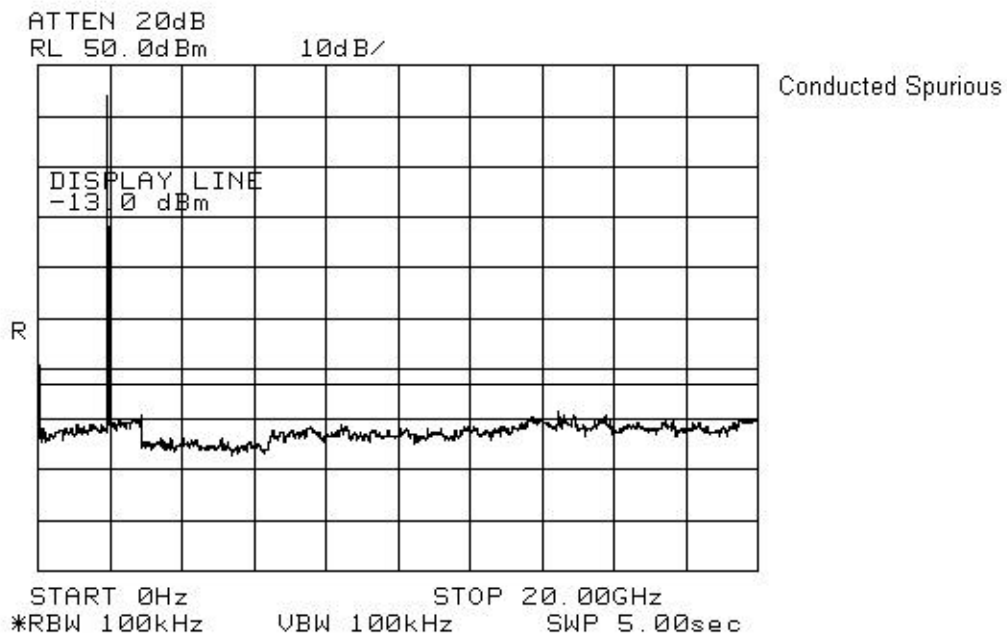
EQUIPMENT: PCS BAND, GSM Amplifier



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EQUIPMENT: PCS BAND, GSM Amplifier

Section 6. Field Strength of Spurious

Para. No.: 2.1053

Test Performed By: Glen Westwell	Date of Test: 9 Nov 2002
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Minimum Standard: Para. No.: 24.238.

Test Results: Complies.

Measurement Data: See attached graphs and table (worst case).

Radiated Spurious Emissions were evaluated using the signal substitution method as per ANSI/TIA/EIA-603.

EQUIPMENT: PCS BAND, GSM Amplifier

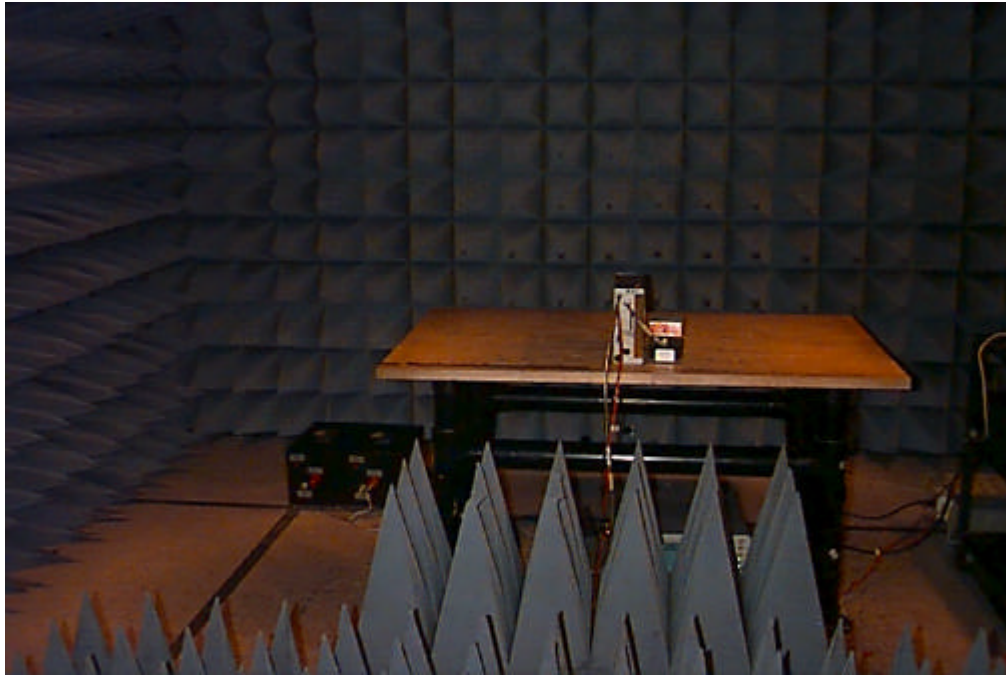
Test Data - Field Strength of Spurious Emissions

Test Distance (meters) : 3		Range: A Tower		Receiver: 8565E		RBW(kHz): 1000		Detector: Peak	
Freq. (MHz)	Ant. *	Pol. (V/H)	RCVD Signal (dBμV)	Signal Substitution Conversion Factor (dB)**	Amp. Gain (dB)***	Dist. Corr. (dB)	Field Strength (dBm)	Limit (dBm)	Margin (dB)
3860.4	SSV	V	89.0	-116.5			-27.5	-13.0	14.5
3860.4	SSH	H	94.3	-117.0			-22.7	-13.0	9.7
5790.6	SSV	V	95.5	-110.2			-14.7	-13.0	1.7
5790.6	SSH	H	93.2	-107.6			-14.4	-13.0	1.4
7720.8	SSV	V	71.3	-103.0			-31.7	-13.0	18.7
7720.8	SSH	H	70.2	-103.2			-33.0	-13.0	20.0
Notes: B/C = Biconical, B/L = Biconilog, L/P = Log-Periodic, H = Horn, D/P = Dipole * Re-measured using dipole antenna. ** Includes cable loss when amplifier is not used. *** Includes cable loss. () Denotes failing emission level. N.D. = Not Detected									

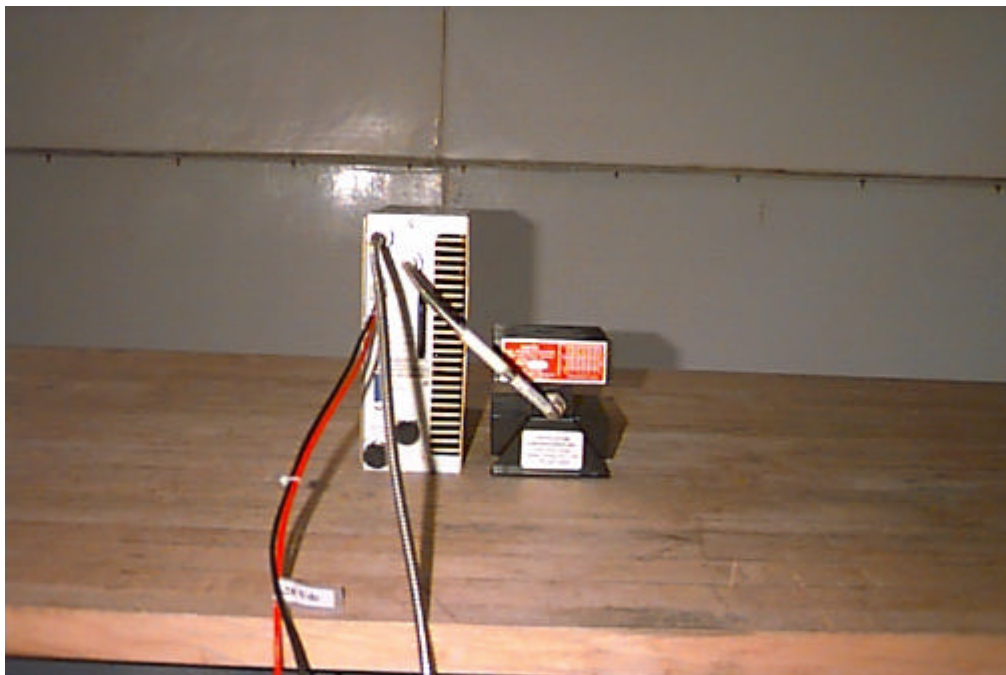
All spurious and harmonic emissions to the 10th harmonic were searched. Only those within 20dB of the limit were reported.

EQUIPMENT: PCS BAND, GSM Amplifier

**Radiated Emissions Set-Up Photo
Pre-Scan**



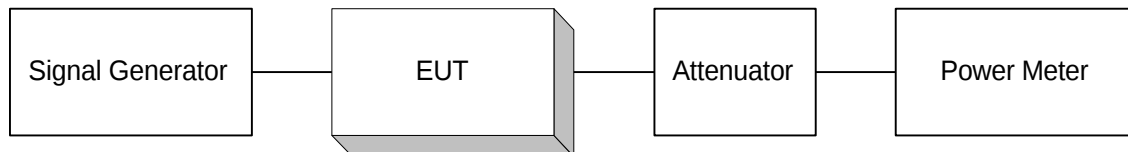
OATS Set-Up



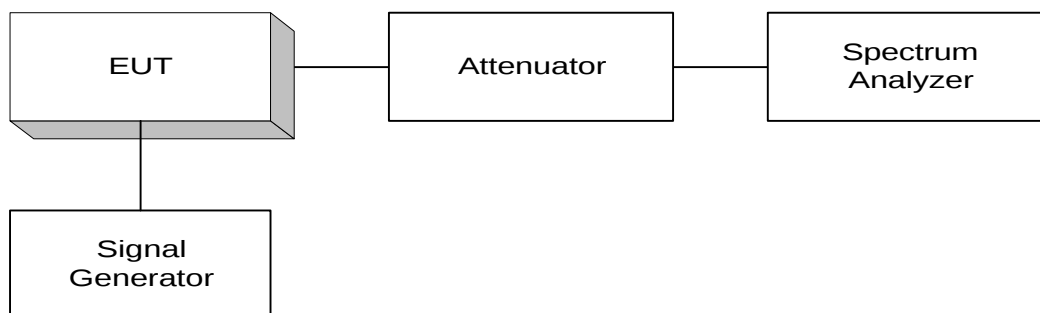
EQUIPMENT: PCS BAND, GSM Amplifier

Section 8. Block Diagrams

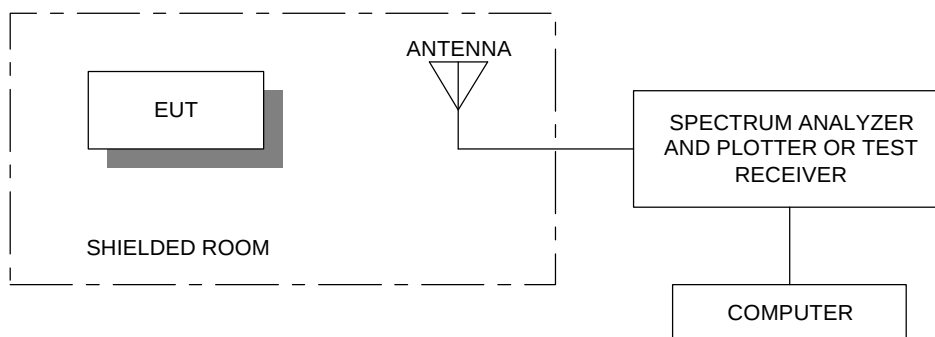
Para. No. 1046 - R.F. Power Output



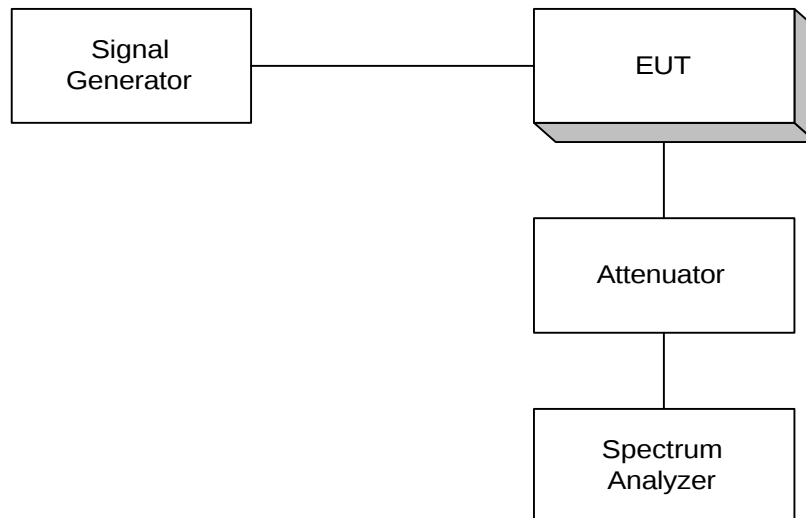
Para. No. 2.1049 - Occupied Bandwidth



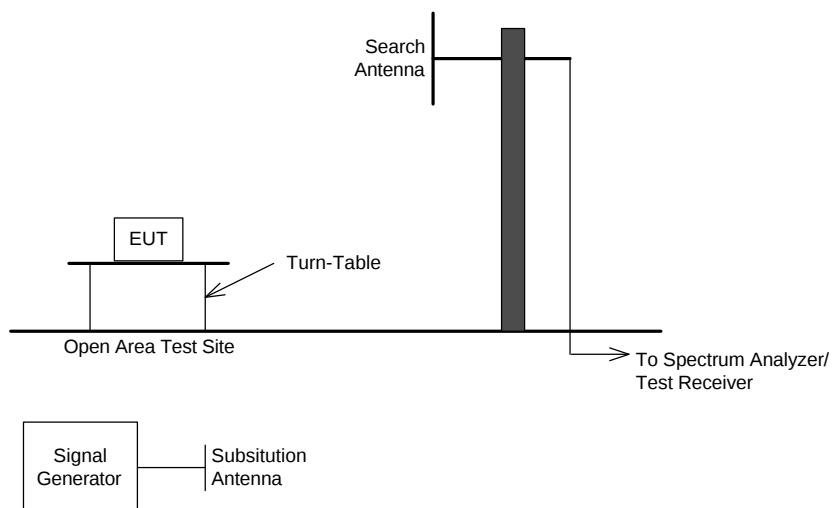
Pre-Scan for Spurious emissions



Para. No. 2.1051 - Spurious Emissions at Antenna Terminals

**TIA/EIA 603**

Effective Radiated Power Spurious Emissions



EQUIPMENT: PCS BAND, GSM Amplifier

Section 9. Test Equipment List

CAL CYCLE	EQUIPMENT	MANUFACTURER	MODEL	SERIAL	LAST CAL.	NEXT CAL.
1 Year	Spectrum Analyzer	Hewlett Packard	8565E	FA000981	15 Jul 02	15 Jul 03
1 Year	Spectrum Analyzer-1	Hewlett Packard	8566B	2311A02238	27 Nov 2001	27 Nov 2002
1 Year	Spectrum Analyzer Display-1	Hewlett Packard	8566B	2314A04759	27 Nov 2001	27 Nov 2002
1 Year	Quasi-peak adapter-1	Hewlett-Packard	85650A	2043A00302	27 Nov 2001	27 Nov 2002
1 Year	Horn Antenna	EMCO #2	3115	4336	Dec. 1/01	Dec. 1/02
1 Year	RF AMP	JCA	2-4 GHz	FA001496	COU	COU
1 Year	RF AMP	JCA	4-8 GHz	FA001497	COU	COU
1 Year	RF AMP	DBS Microwave	5-18GHz	FA001409	COU	COU
COU	High Pass Filter	K&L	11SH10-4000	FA001340	COU	COU
3 Year	RF Generator	Rohde & Schwarz	SIMIQ03	DE22004	Sept. 10/00	Sept. 18/03
3 Year	RF Generator	Rohde & Schwarz	SIMIQ03E	DE24154	Sept. 10/02	Sept. 10/05

NA: Not Applicable
NCR: No Cal Required
COU: CAL On Use