



Nemko

Test Report: 2W06489

Applicant: Daniels Electronics Ltd.
43 Erie Street
Victoria, B.C., V8V 1P8

Equipment Under Test: AM 25W Power Amplifier (AMP-3A130-25)
118-138MHz

In Accordance With: FCC Part 87

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

Authorized By: 
Kevin Carr, EMC Specialist

Date: 18 December 2002

Total Number of Pages: 21

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EQUIPMENT: AMP-3A130-25

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 87.

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: 17 December 2002

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This report applies only to the items tested.

EQUIPMENT: AMP-3A130-25

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 a 25W AM amplifier used for VHF Aviation support. This amplifier is used in the transmit path for a single channel only, and is driven by an FCC & Industry Canada approved exciter, FCC ID. H4JVT-3A130-S-FSH and Ind. Can. # 142411117. This amplifier is connected via coaxial connection and operated in an equipment rack.
- (2) This amplifier does not translate the RF input, therefore frequency stability is not applicable.

Indoor Temperature: 22 °C
 Humidity: 17 %

Outdoor Temperature: -3 °C
 Humidity: 20 %

EQUIPMENT: AMP-3A130-25

Section 2. General Equipment Specification

Manufacturer: Daniels Electronics Ltd.

Model No.: AMP-3A130-25

Serial No.: S/N 10002

Date Received In Laboratory: 20 Nov, 2002

Nemko Identification No.: #1

Supply Input Voltage: 24-32Vdc

Frequency Range: 118-138MHz

RF Output (Rated): 25W

Amplifier Gain (Rated): 10dB

Emission Designator (modulation): A3E

EQUIPMENT: AMP-3A130-25

Section 3. RF Power Output**Para. No.: 2.1046**

Test Performed By: Glen Westwell	Date of Test: 5 Dec. 2002
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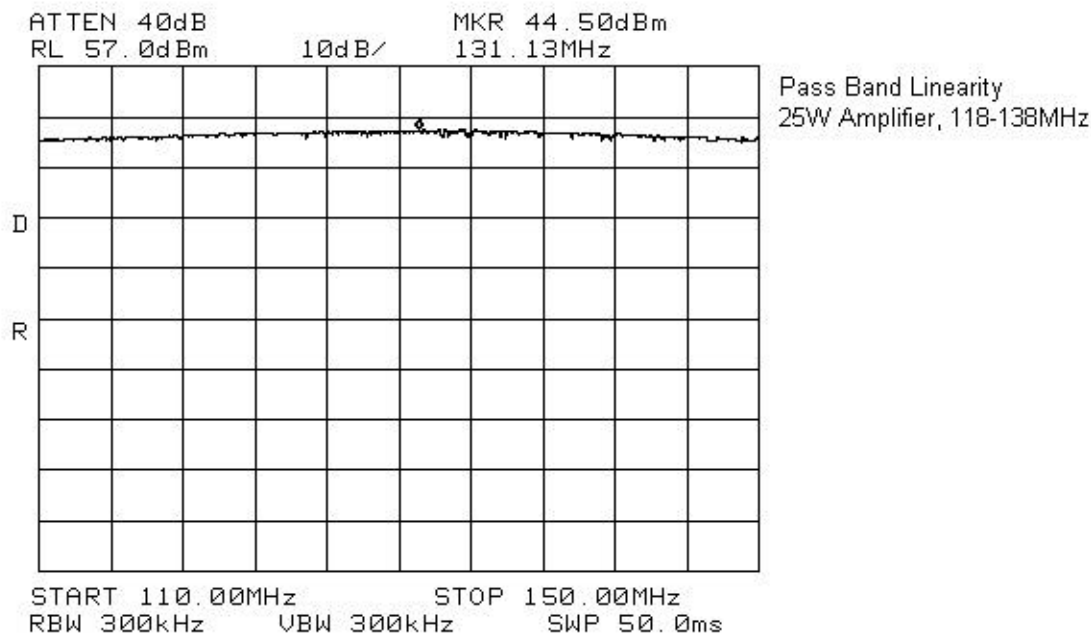
Minimum Standard: Para. No.: 87.131, 50W**Test Results:** Complies.

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

Measurement Data: Rated Power = 25W (44dBm)

Frequency (MHz)	Rated Power (dBm)	Measured Power (dBm)
118	44	43.5
128	44	44.7
138	44	44

EQUIPMENT: AMP-3A130-25



EQUIPMENT: AMP-3A130-25

Section 4. Occupied Bandwidth

Para. No.: 2.1049

Test Performed By: Glen Westwell	Date of Test: 6 Dec. 2002
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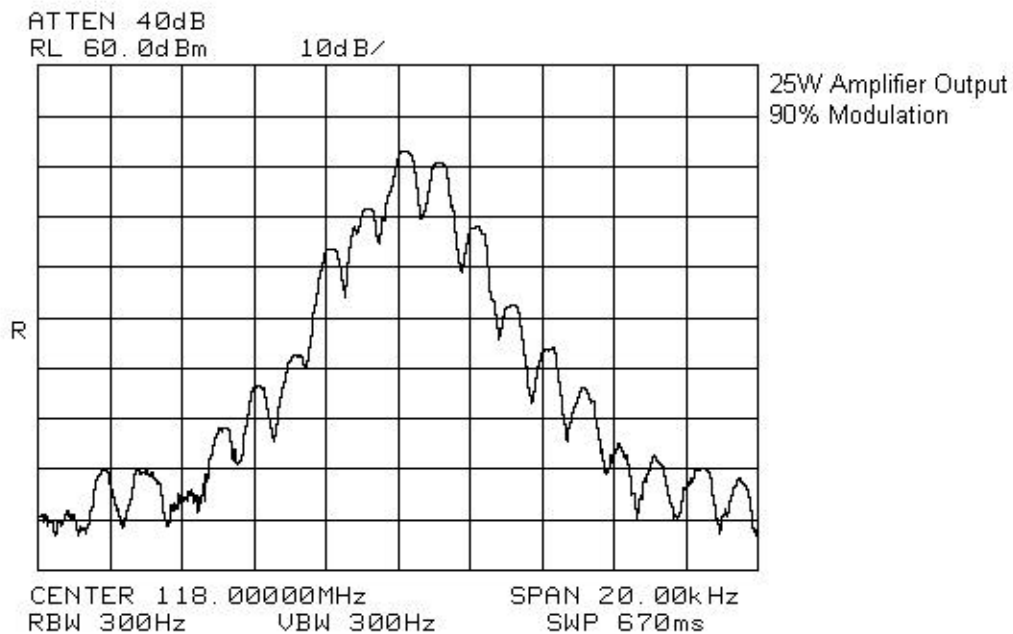
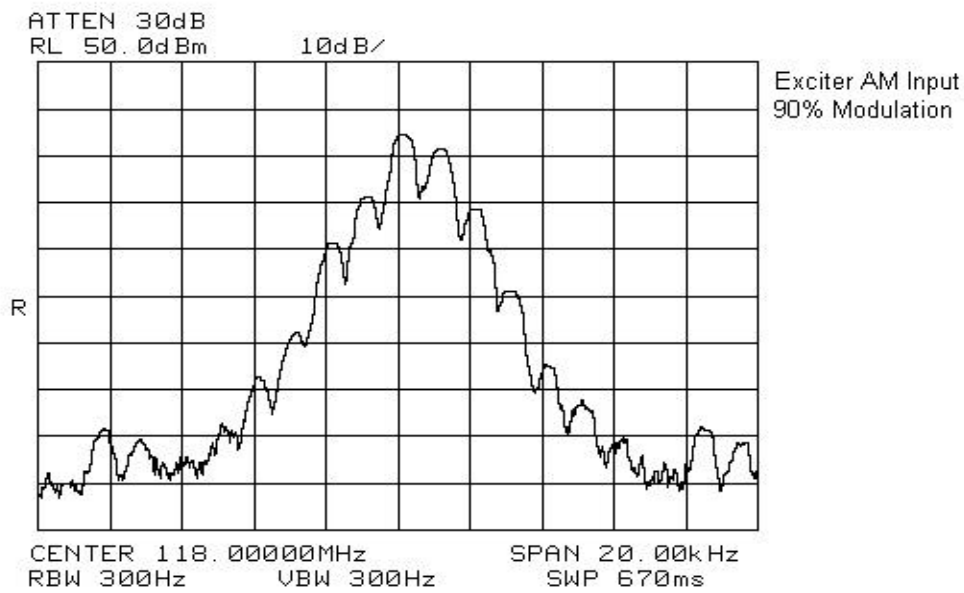
Minimum Standard: Para. No.: 87.139.

Test Results: Complies.

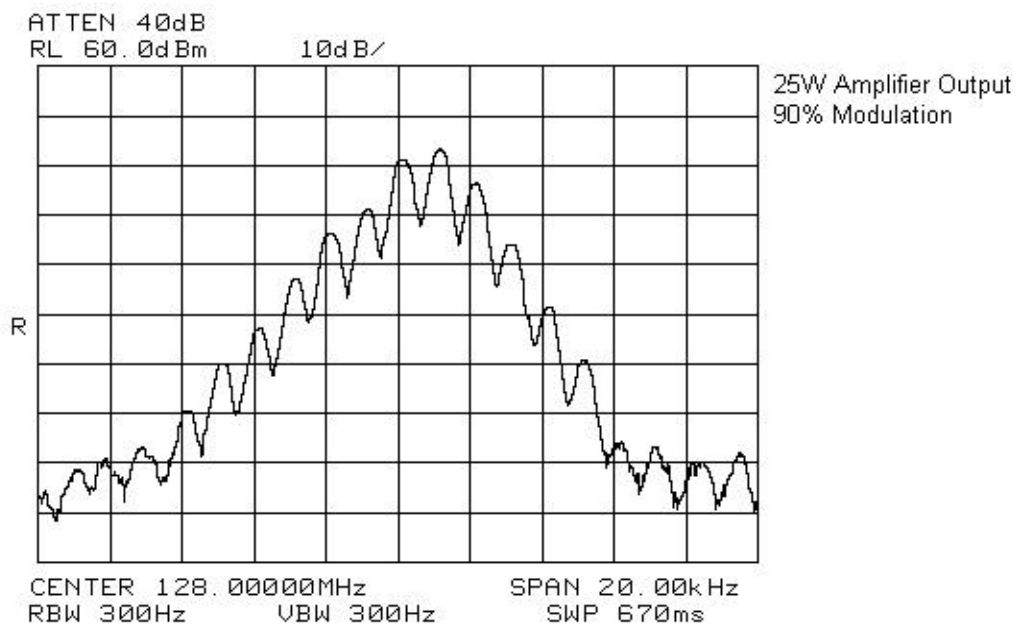
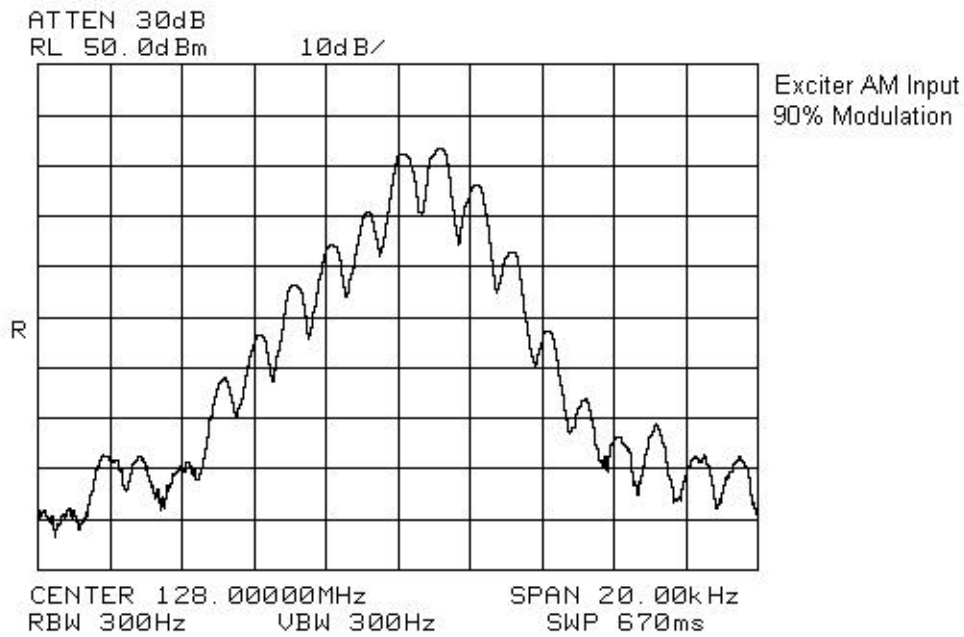
The occupied bandwidth was measured by comparison of input to the output signal. This was done in order to determine if there was any degradation to the output signal due to the amplification through the repeater.

Test Data: See attached graph(s).

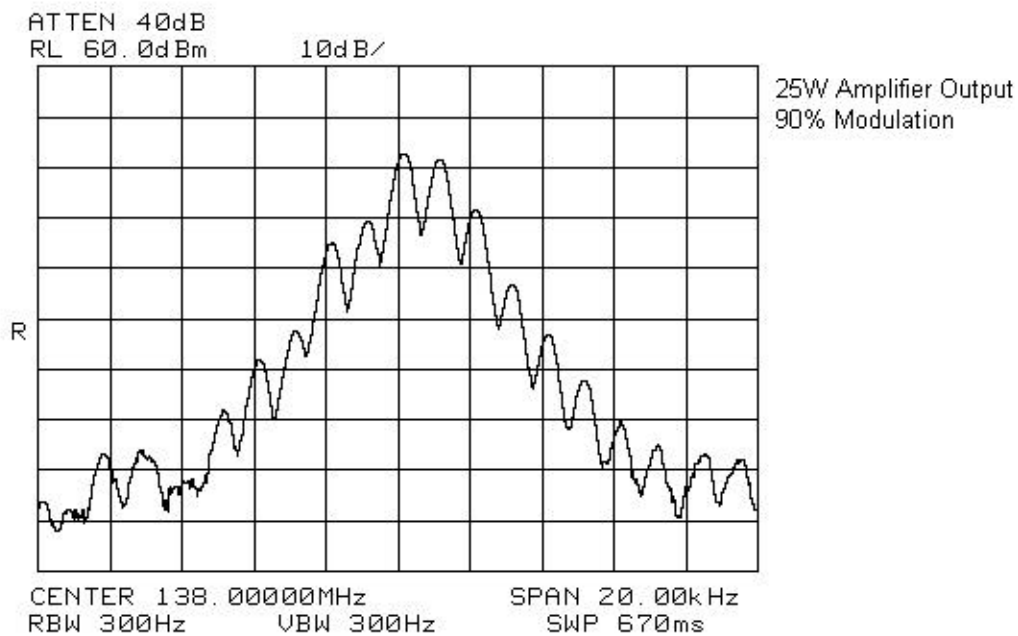
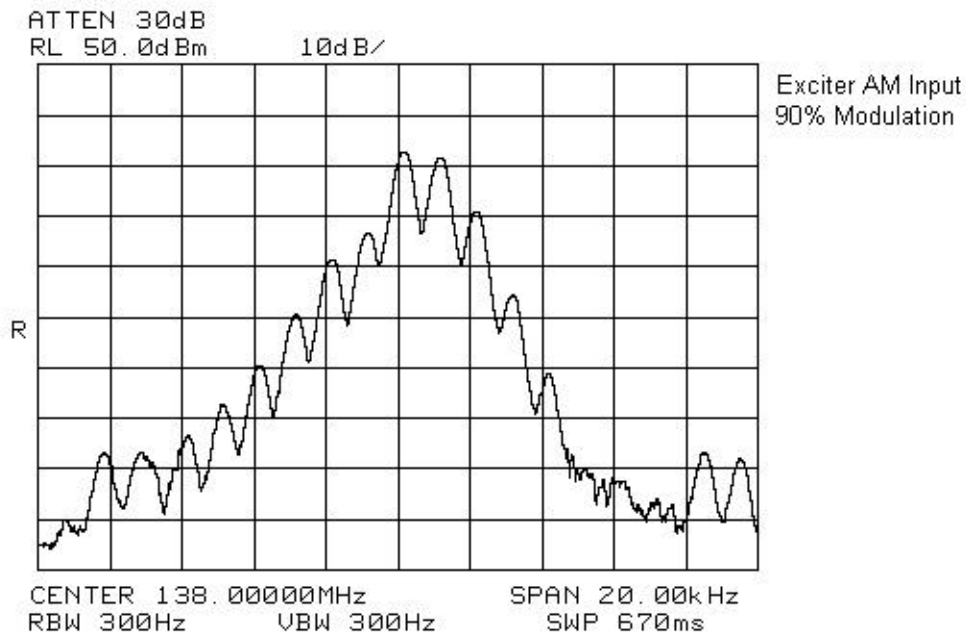
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EQUIPMENT: AMP-3A130-25

Section 5. Spurious Emissions at Antenna Terminals

Para. No.: 2.1051

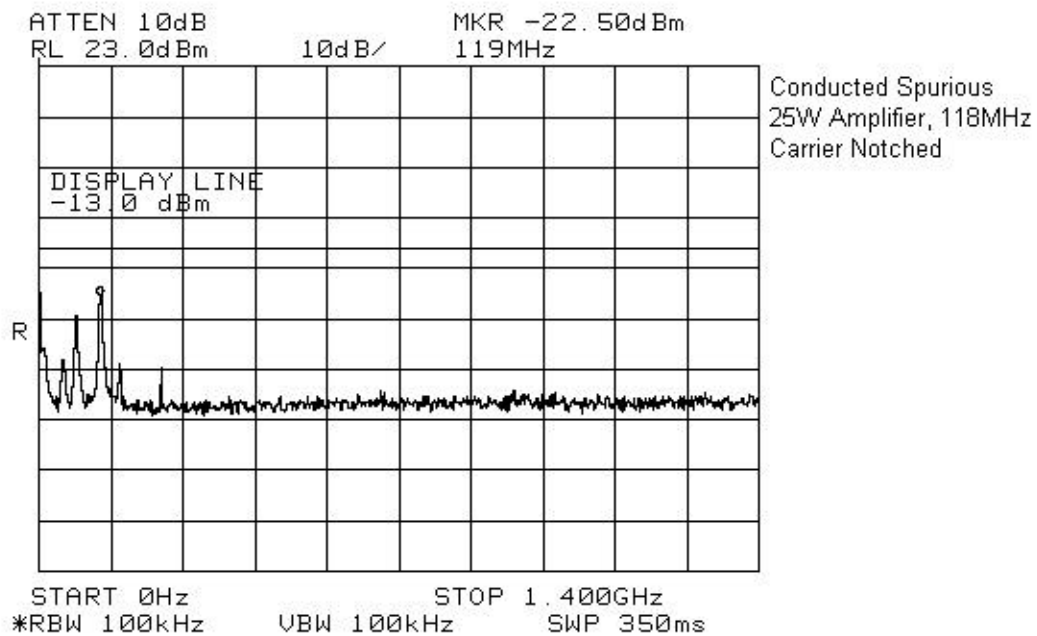
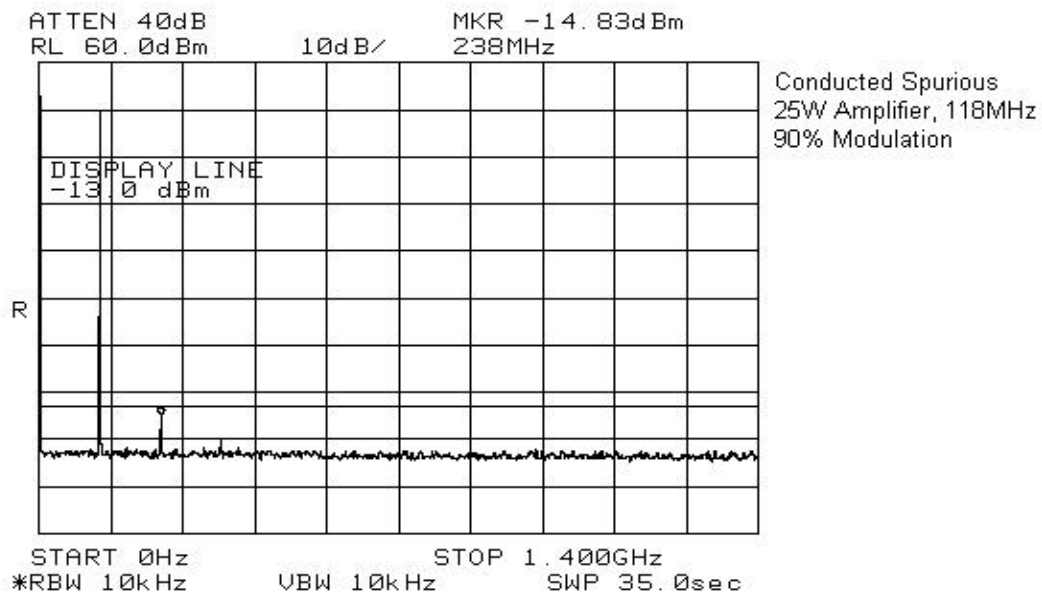
Test Performed By: Glen Westwell	Date of Test: 6 Dec. 2002
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Minimum Standard: Para. No.: 87.139.

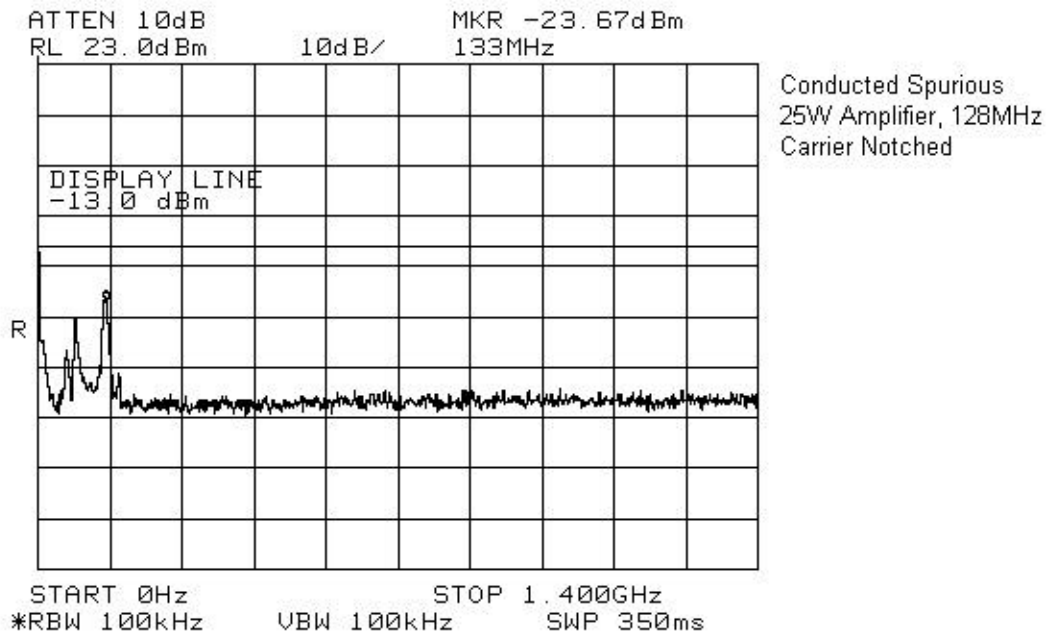
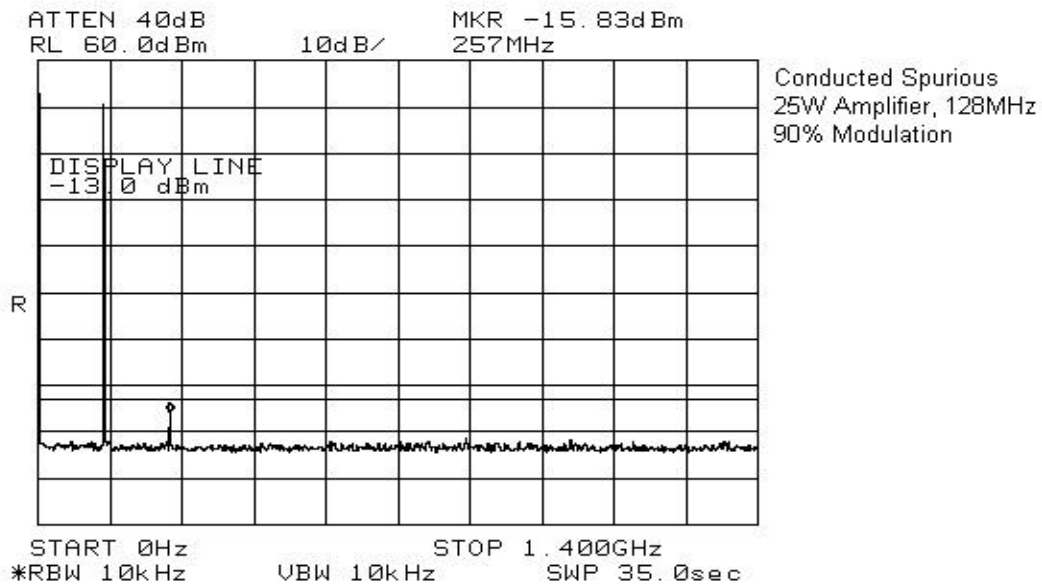
Test Results: Complies.

Measurement Data: See attached graphs (worst case).

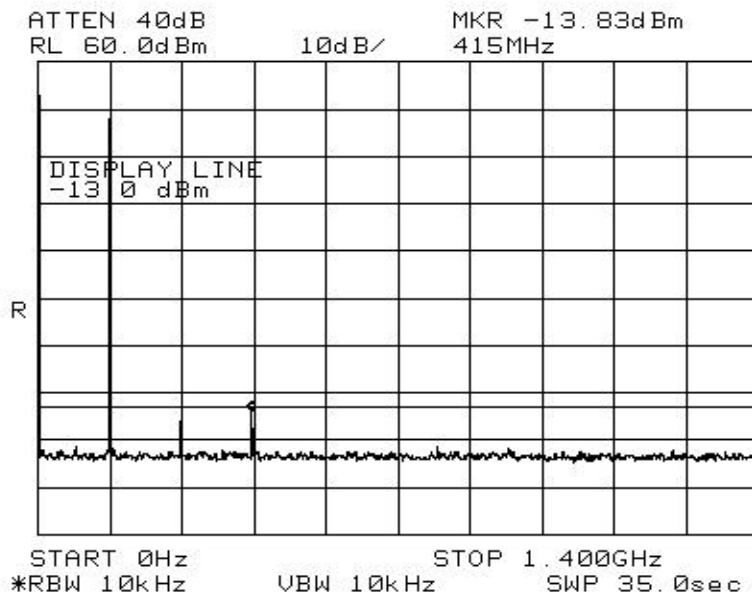
EQUIPMENT: AMP-3A130-25



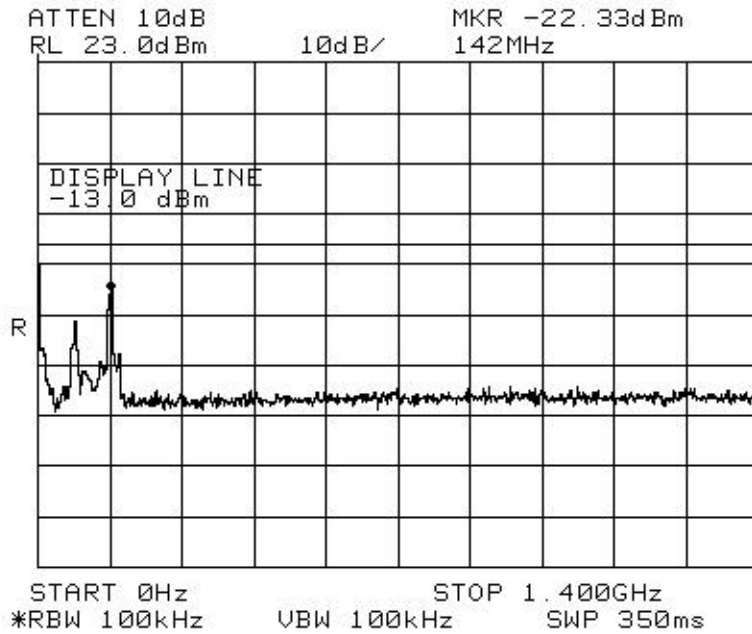
EQUIPMENT: AMP-3A130-25



EQUIPMENT: AMP-3A130-25



Conducted Spurious
25W Amplifier, 138MHz
90% Modulation



Conducted Spurious
25W Amplifier, 138MHz
Carrier Notched

EQUIPMENT: AMP-3A130-25

Section 6. Field Strength of Spurious

Para. No.: 2.1053

Test Performed By: Glen Westwell	Date of Test: 11 Dec. 2002
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Minimum Standard: Para. No.: 87.139.

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: AMP-3A130-25

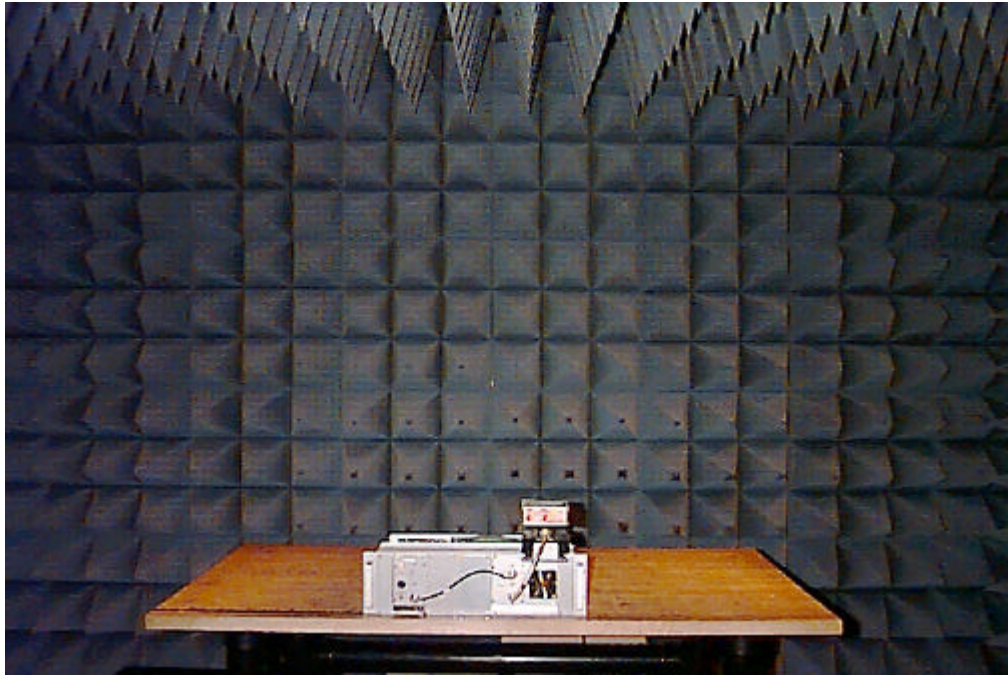
Test Data - Field Strength of Spurious Emissions

Test Distance (meters) : 3		Range: A Tower		Receiver: 8564E		RBW(kHz): 3		Detector: Peak	
Freq. (MHz)	Ant. *	Pol. (V/H)	RCV Signal F.S. (dBµV)	Signal Substitution Conversion Factor (dB)	Amp. Gain (dB)***	Cable Loss (dB)	Absolute Radiated Spurious (dBm)	Limit (dBm)	Margin (dB)
256.0	BC1	V	26.2	-81.0		2.1	-52.7	-13.0	39.7
256.0	BC1	H	30.7	-83.1		2.1	-50.3	-13.0	37.3
384.0	LP1	V	25.3	-81.7		2.5	-53.8	-13.0	40.8
384.0	LP1	H	28.2	-86.2		2.5	-55.4	-13.0	42.4
768.0	LP1	V	22.0	-74.6		3.7	-48.9	-13.0	35.9
768.0	LP1	H	23.2	-77.0		3.7	-50.1	-13.0	37.1
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									

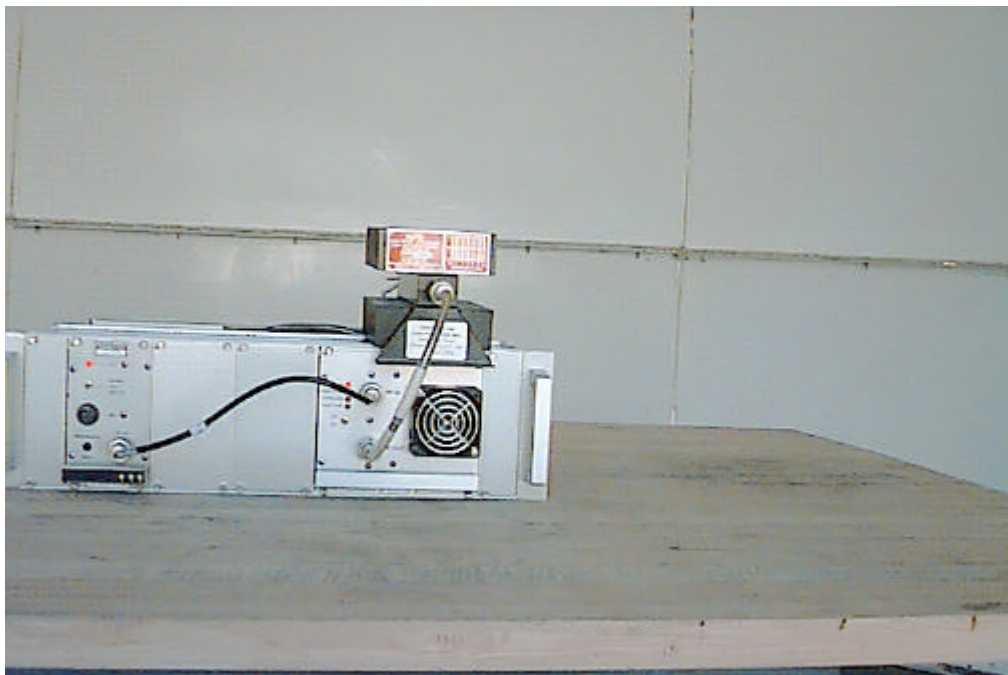
All spurious and harmonic emissions to the 10th harmonic were searched.

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



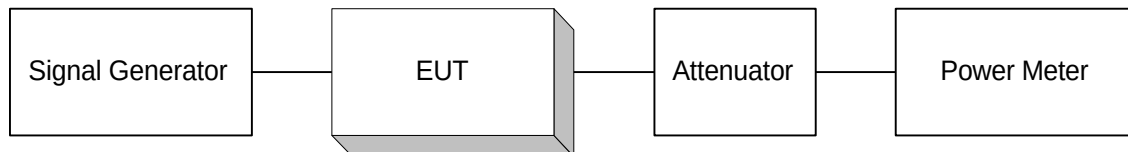
OATS Set-Up



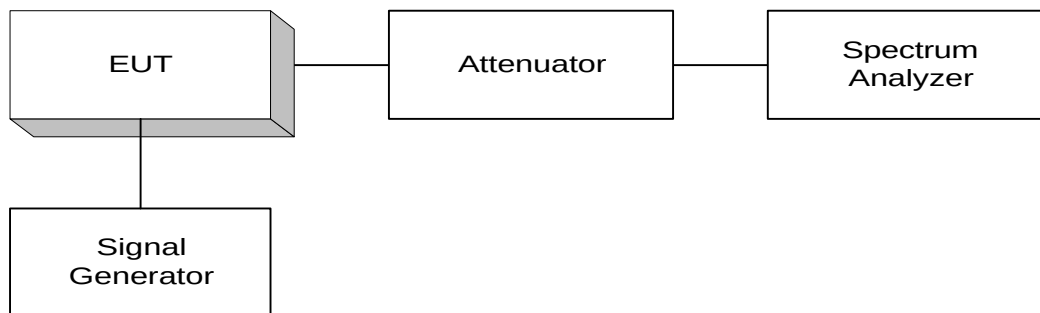
EQUIPMENT: AMP-3A130-25

Section 7. Block Diagrams

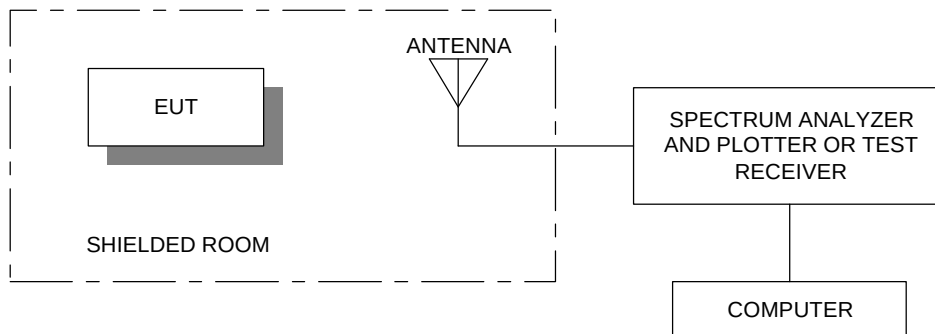
Para. No. 1046 - R.F. Power Output



Para. No. 2.1049 - Occupied Bandwidth

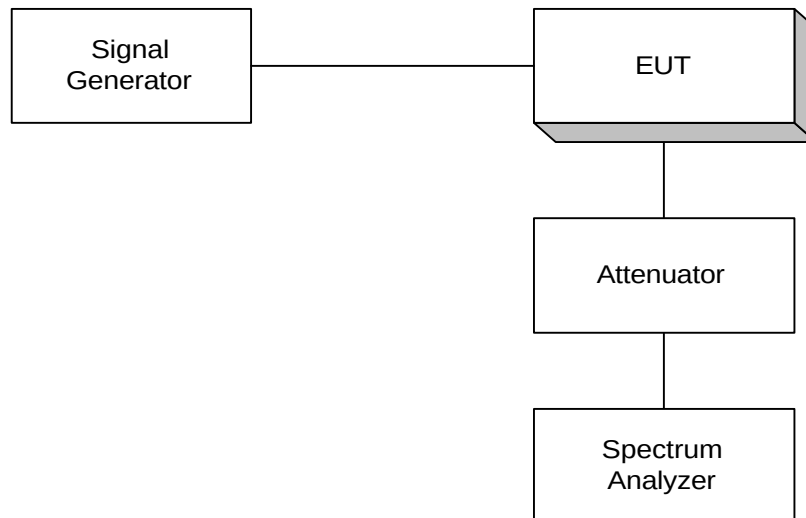


Pre-Scan for Spurious emissions



EQUIPMENT: AMP-3A130-25

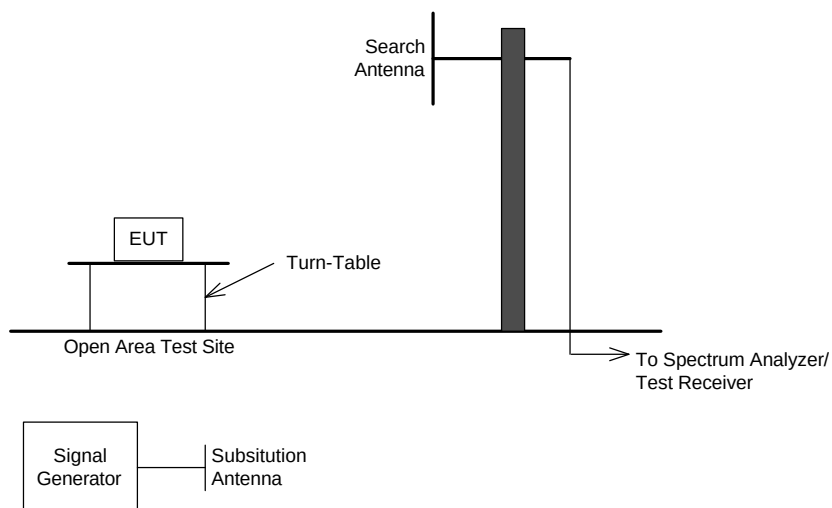
Para. No. 2.1051 - Spurious Emissions at Antenna Terminals



Para. No. 2.1053 - Field Strength of Spurious Radiation

TIA/EIA 603

Effective Radiated Power
Spurious Emissions



EQUIPMENT: AMP-3A130-25

Section 8. Test Equipment List

CAL CYCLE	EQUIPMENT	MANUFACTURER	MODEL	SERIAL	LAST CAL.	NEXT CAL.
1 Year	Spectrum Analyzer	Hewlett Packard	8564E	FA001367	6 Mar. 02	6 Mar. 03
1 Year	Spectrum Analyzer-1	Hewlett Packard	8566B	2311A02238	27 Nov 2002	27 Nov 2003
1 Year	Spectrum Analyzer Display-1	Hewlett Packard	8566B	2314A04759	27 Nov 2002	27 Nov 2003
1 Year	Power Meter	Hewlett Packard	E4418B	FA001413	14 Feb. 02	14 Feb. 03
1 Year	Horn Antenna	EMCO #1	3115	3132	Dec. 19/01	Dec. 19/02
NCR	Power Supply	Tektronix	PS280	FA001528	COU	COU
1 year	Radio Analyzer	R&S	CMTA 54	FA001317	23 Oct. 02	23 Oct. 03
1 year	Receiver	R&S	ESVP	FA000871	15 Nov. 02	15 Nov. 03
1 year	Log Periodic Antenna	EMCO	LPA-25	FA000477	23 Aug. 02	23 Aug. 03
1 Year	Biconical Antenna	EMCO	3109	FA000805	23 Aug. 02	23 Aug. 03

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