

KTL Test Report: 0R03189

Applicant: Nortel Networks
21 Richardson Side Road
Kanata, Ontario
K2K 2C1

**Equipment Under Test:
(E.U.T.)** CTR 28-08M, NTVG16CB
S/W Ver. 1.2

In Accordance With: FCC Part 101, Subpart C

Tested By: KTL Ottawa Inc.
3325 River Road, R.R. 5
Ottawa, Ontario K1V 1H2

Authorized By:



R. Grant, Wireless Group Manager

Date: October 18, 2000

Total Number of Pages: 54

Authorized Copy: CD

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EQUIPMENT: CTR 28-08M, NTVG16CB, S/W Ver. 1.2

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 101, Subpart C.

☒
☐

New Submission
Class II Permissive Change

☒
☐

Production Unit
Pre-Production Unit

T	N	B
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Equipment Code

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: 100351-0

TESTED BY:

A handwritten signature in blue ink, which appears to read "Glen Westwell", is shown above the printed name.

Glen Westwell, Technologist

DATE: October 18, 2000

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This report applies only to the items tested.

EQUIPMENT: CTR 28-08M, NTVG16CB, S/W Ver. 1.2

Summary Of Test Data

Name Of Test	Para. No.	Result
RF Power Output	101.113	Complies
Occupied Bandwidth	101.111	Complies
Spurious Emissions at Antenna Terminals	101.111	Complies
Field Strength of Spurious Emissions	101.111	Complies
* Frequency Stability	101.107	Complies

Footnotes For N/A's:**Test Conditions:**

Indoor Temperature: 23 °C
 Humidity: 45 %

Outdoor Temperature: 22 °C
 Humidity: 43 %

.

EQUIPMENT: CTR 28-08M, NTVG16CB, S/W Ver. 1.2

Section 2. General Equipment Specification

Manufacturer:	Nortel Networks
Model No.:	CTR 28-08M, NTVG16CB S/W Ver. 1.2
Serial No.:	NNTM532GPHMF
Date Received In Laboratory:	October 13, 2000
KTL Identification No.:	Item #1
Supply Voltage Input:	-48 Vdc
Frequency Range:	27.8524-27.9976 GHz
Tunable Bands:	1
Necessary Bandwidth:	4.224 Msps OCC. BW = 4.43 MHz 2.048 Msps OCC. BW = 2.18 MHz
Types of Modulation:	4, 16 & 64 QAM, FDMA
Data Rate(s):	4.224Msps & 2.048 Msps
Internal/External Data Source:	External
Emission Designator:	4M43D9W 2M18D9W 8M86D9W 4M36D9W
Output Impedance:	50Ω
RF Power Output (rated):	12 to 18 dBm
Channel Spacing(s):	5.5 MHz & 3.3 MHz
Operator Selection of Operating Frequency:	None
Power Output Adjustment Capability:	Attenuation Adjust 31 – 0 dB

EQUIPMENT: CTR 28-08M, NTVG16CB, S/W Ver. 1.2

Section 3. RF Power Output**Para. No.: 1.1046**

Test Performed By: Glen Westwell	Date of Test: October 15, 2000
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Minimum Standard: 101.113

Test Results: Complies. The RF power output is within 1dB of the manufacturer's rating.

Measurement Data:

Rated (dBm)	Measured (dBm)
18.0	18.6
16.0	16.4
15.0	15.8
14.0	14.5
12.0	12.4

EQUIPMENT: CTR 28-08M, NTVG16CB, S/W Ver. 1.2

Section 4. Occupied Bandwidth

Para. No.: 2.1049

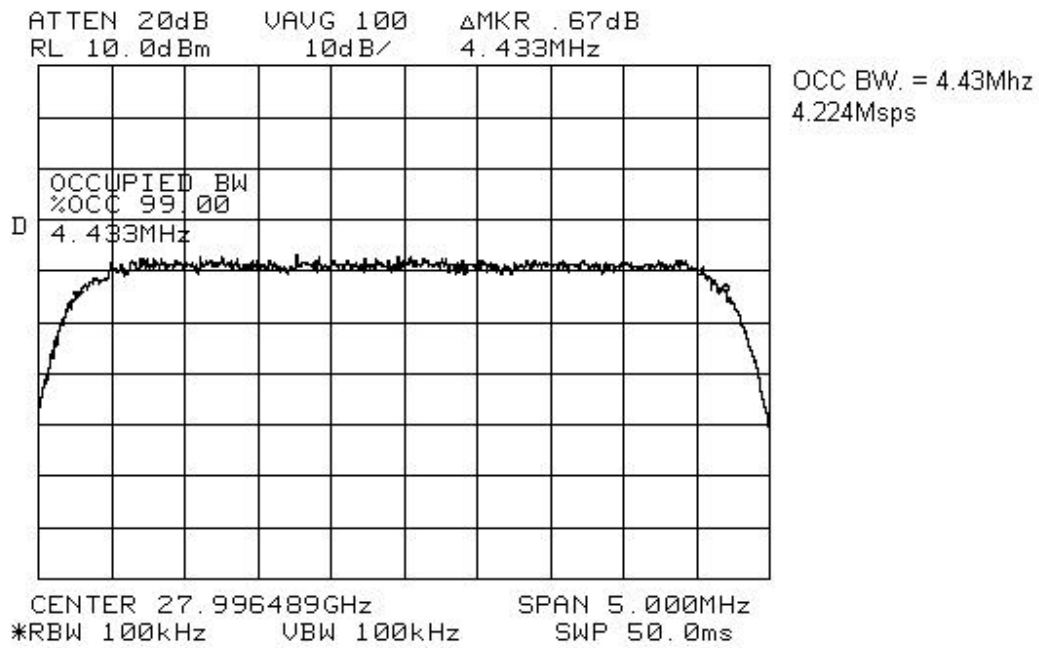
Test Performed By: Glen Westwell	Date of Test: August 24, 2000
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Minimum Standard: 101.111 (a)(2)(ii)

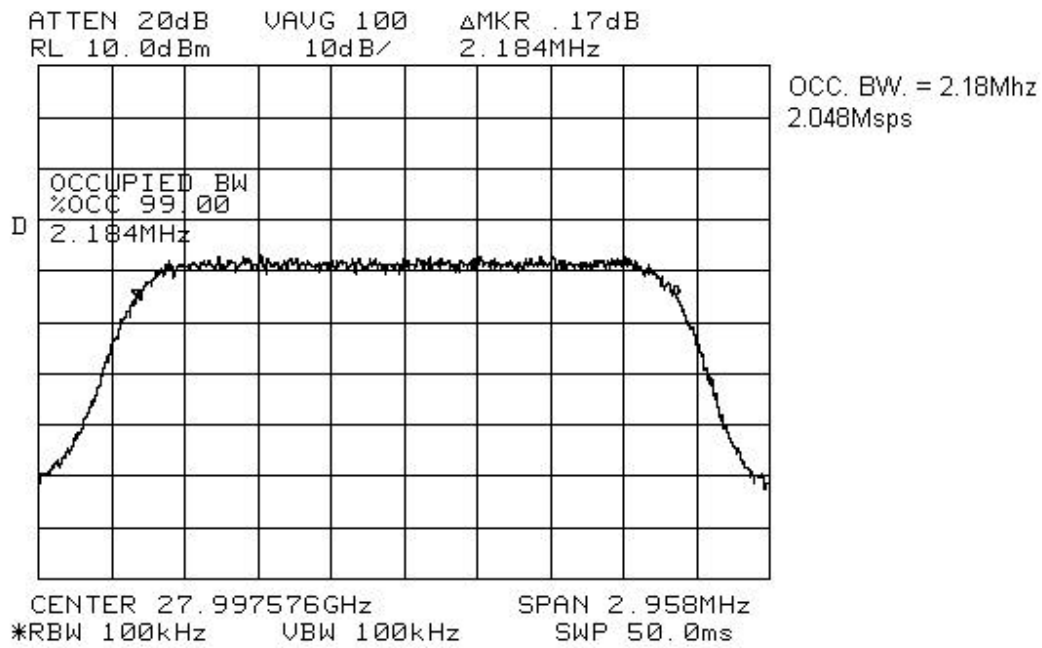
Test Results: Complies

Test Data: See attached graph(s).

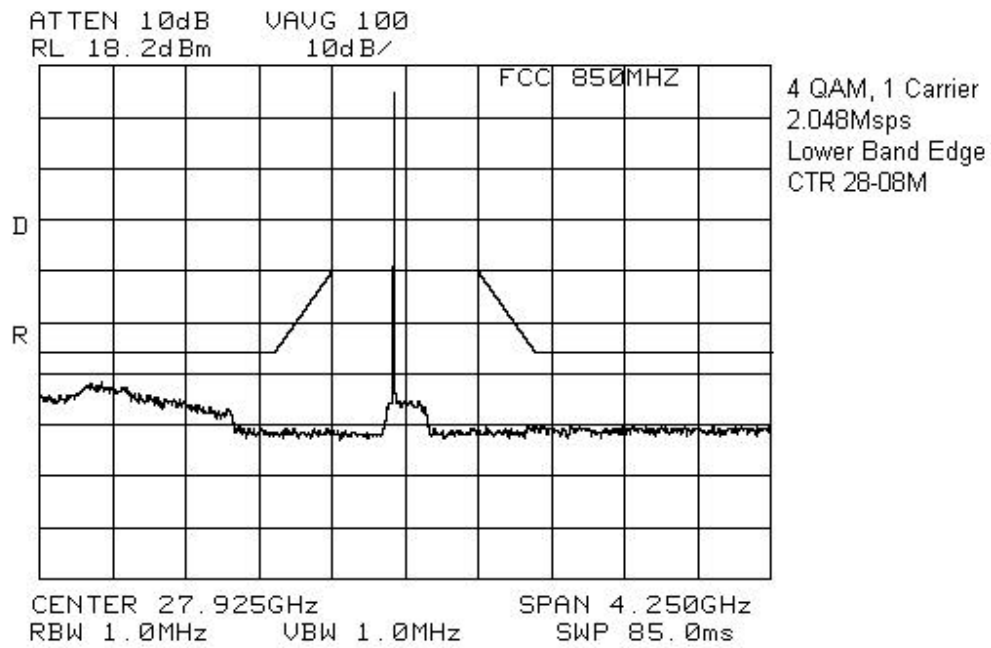
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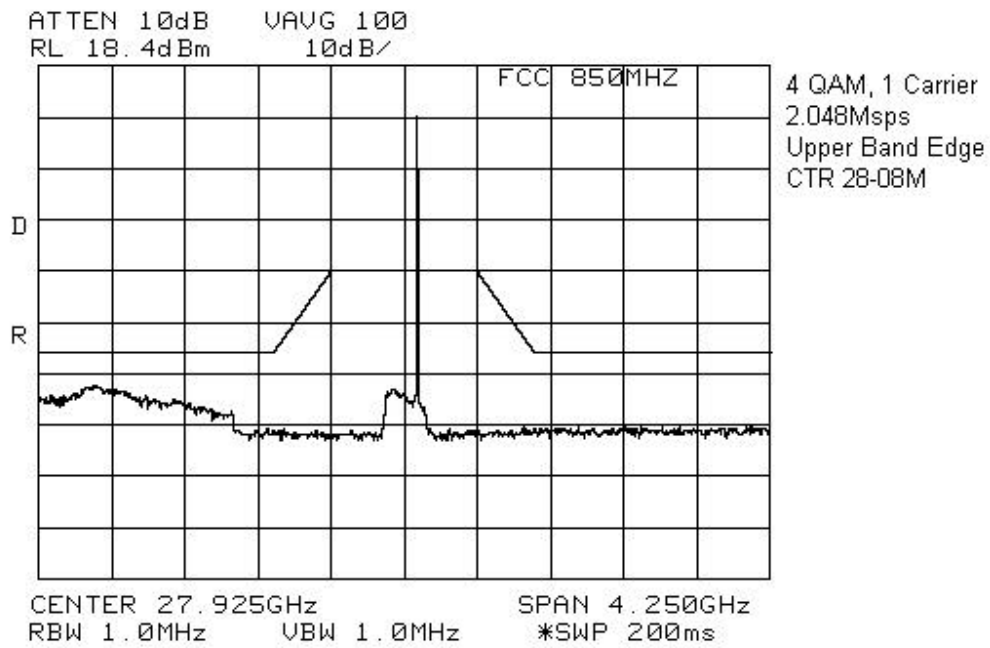
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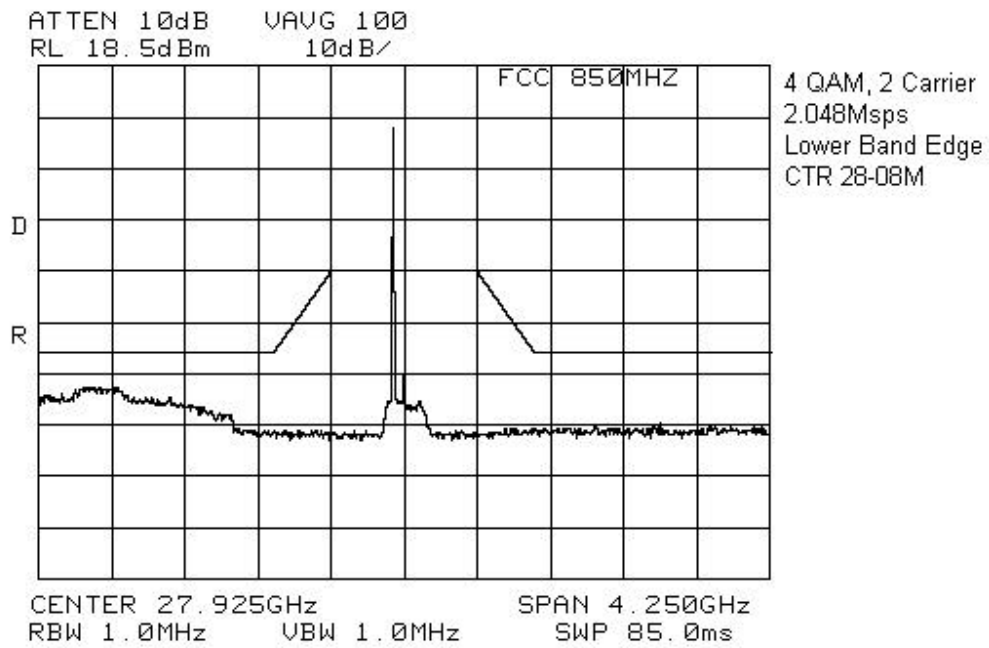
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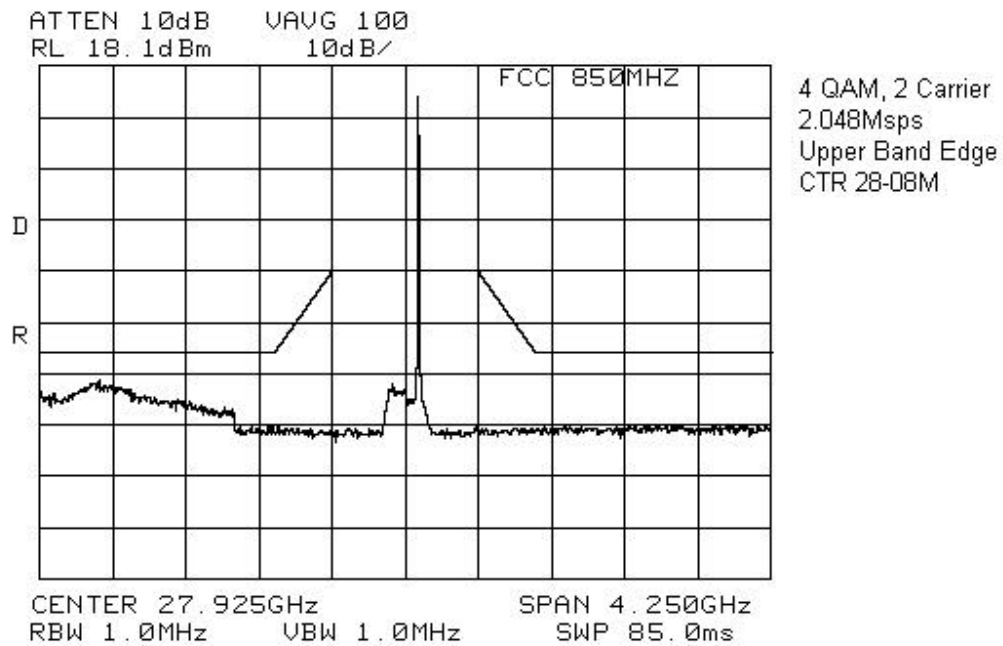
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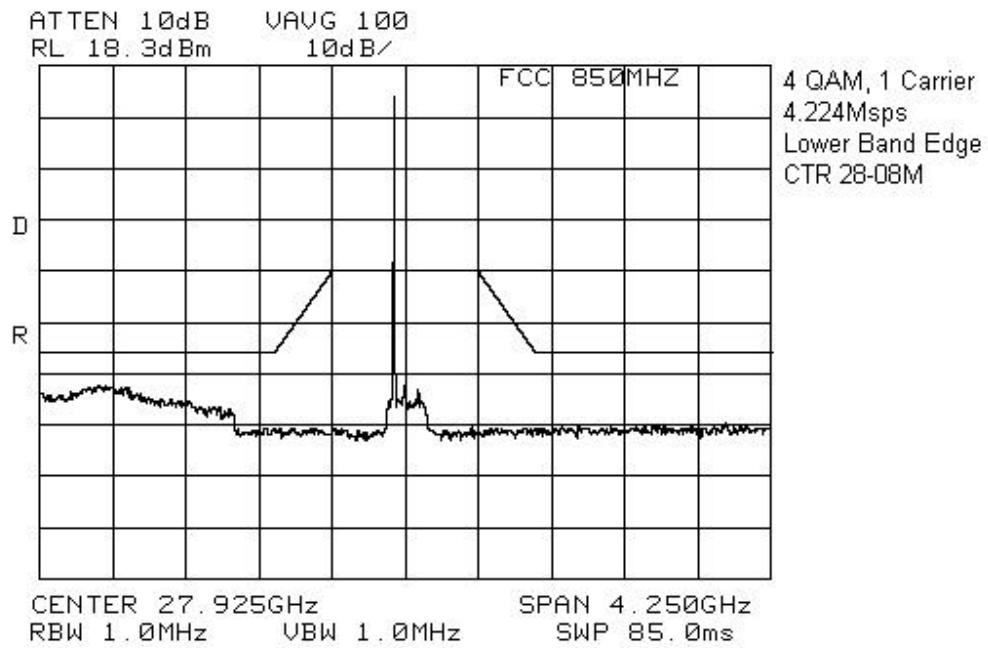
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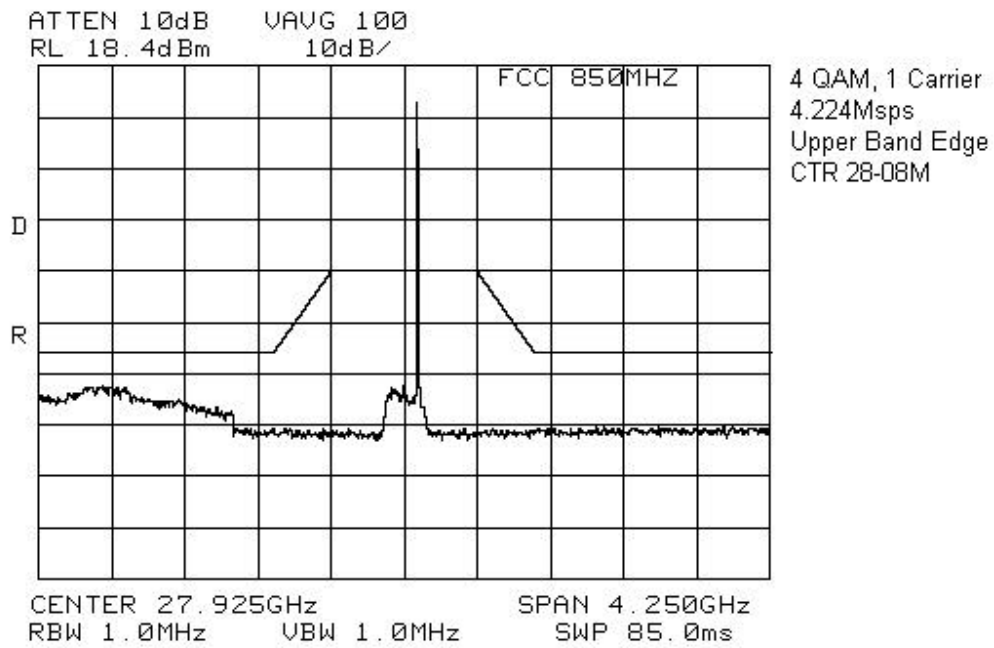
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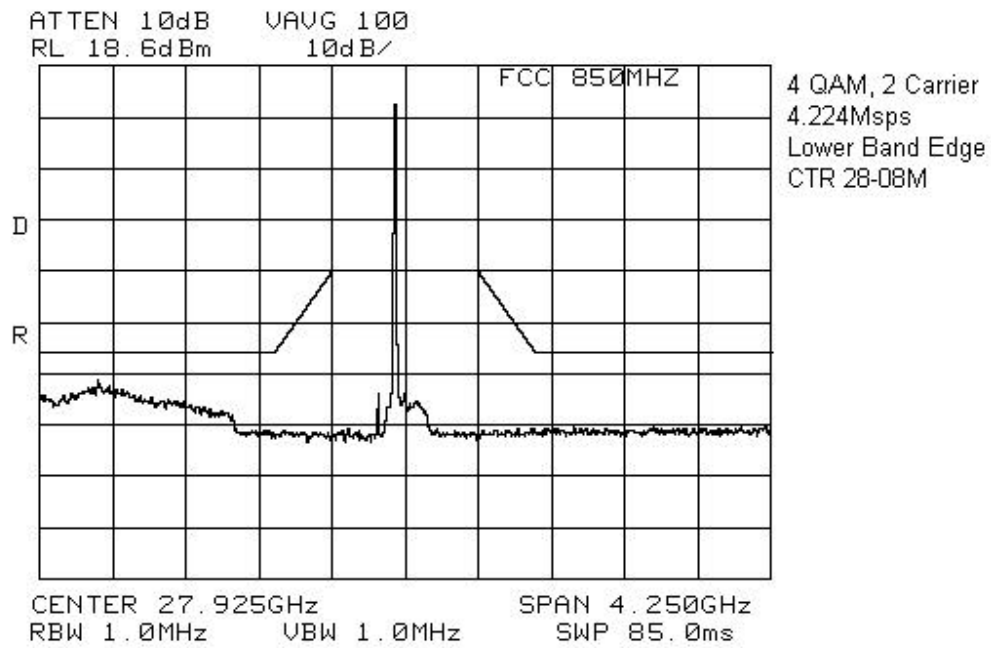
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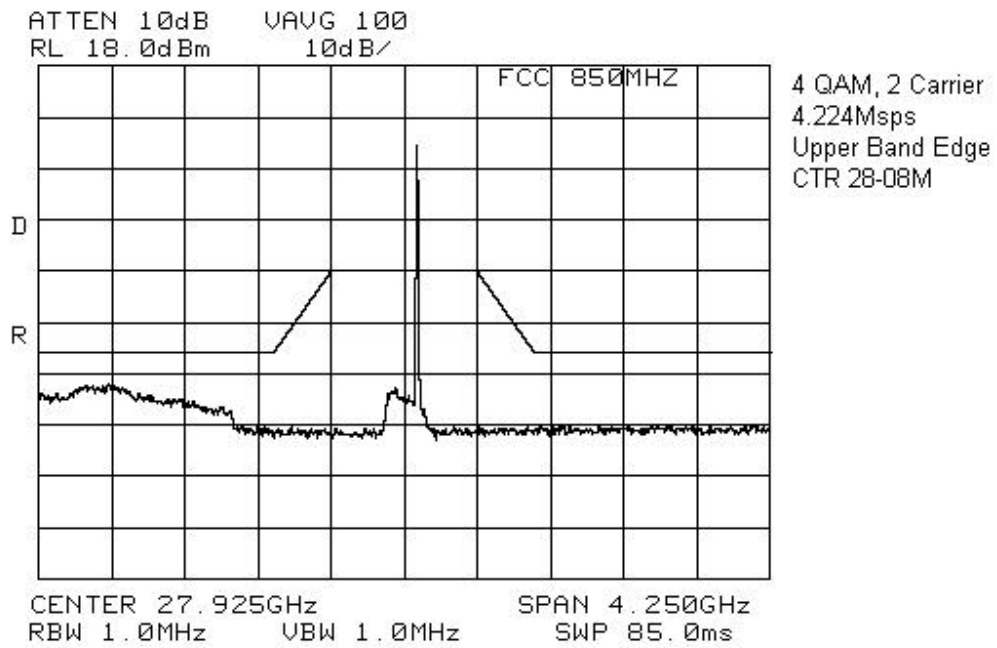
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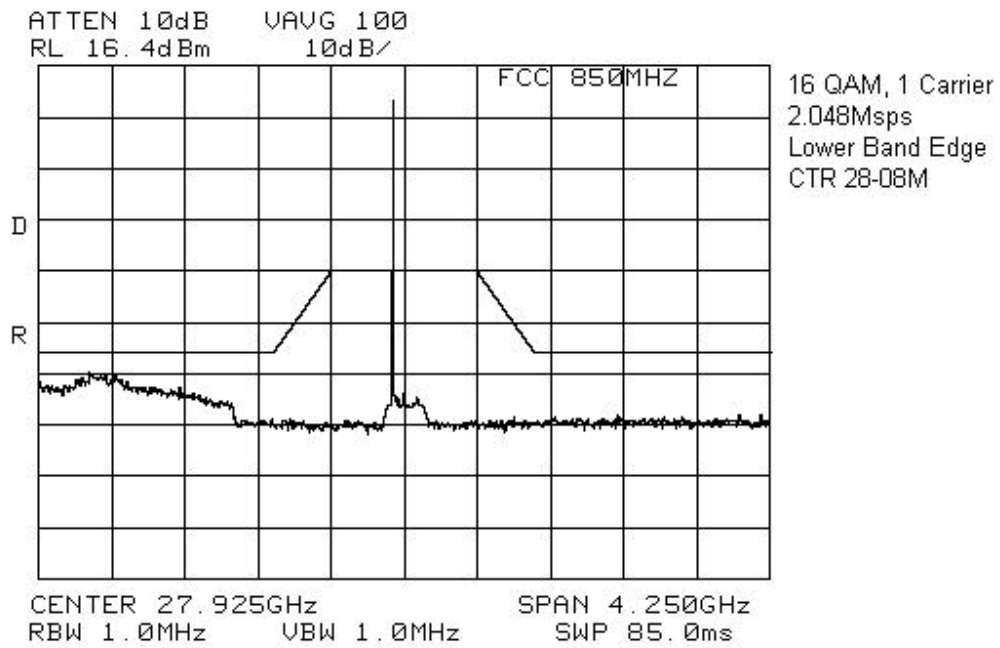
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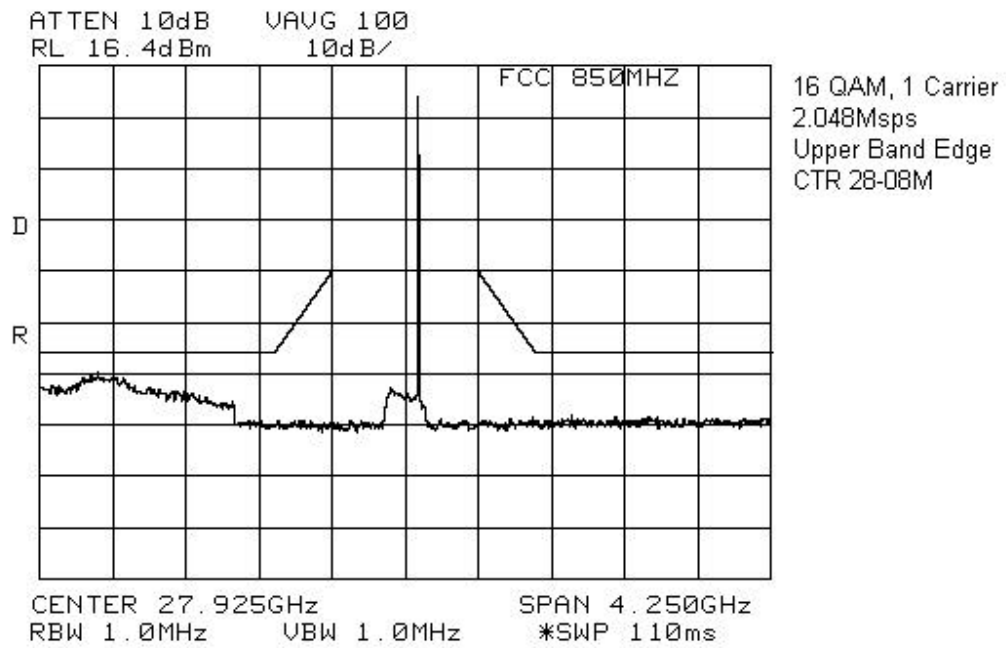
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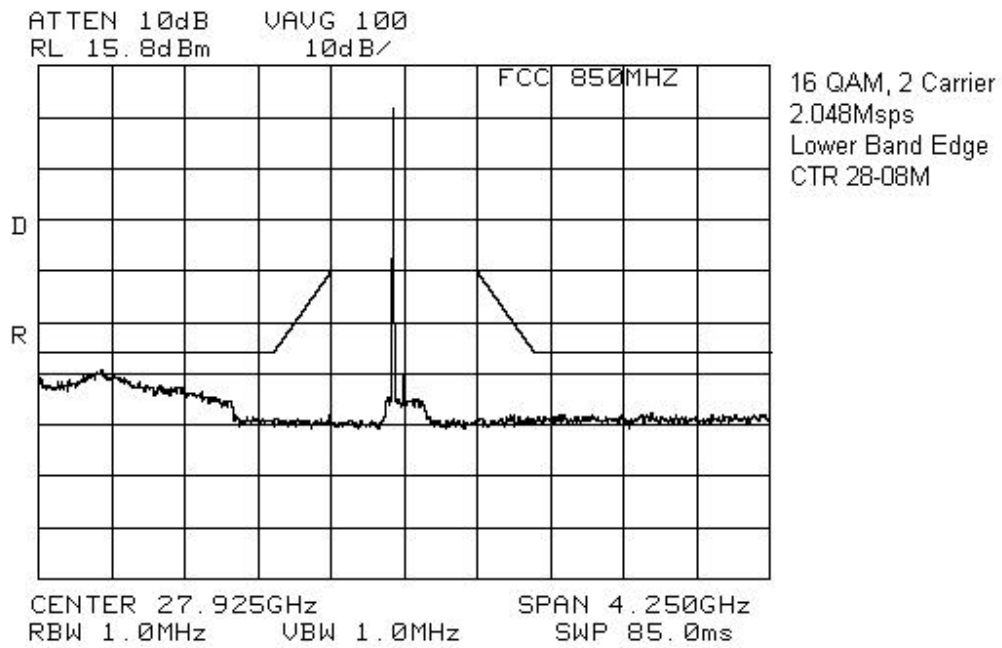
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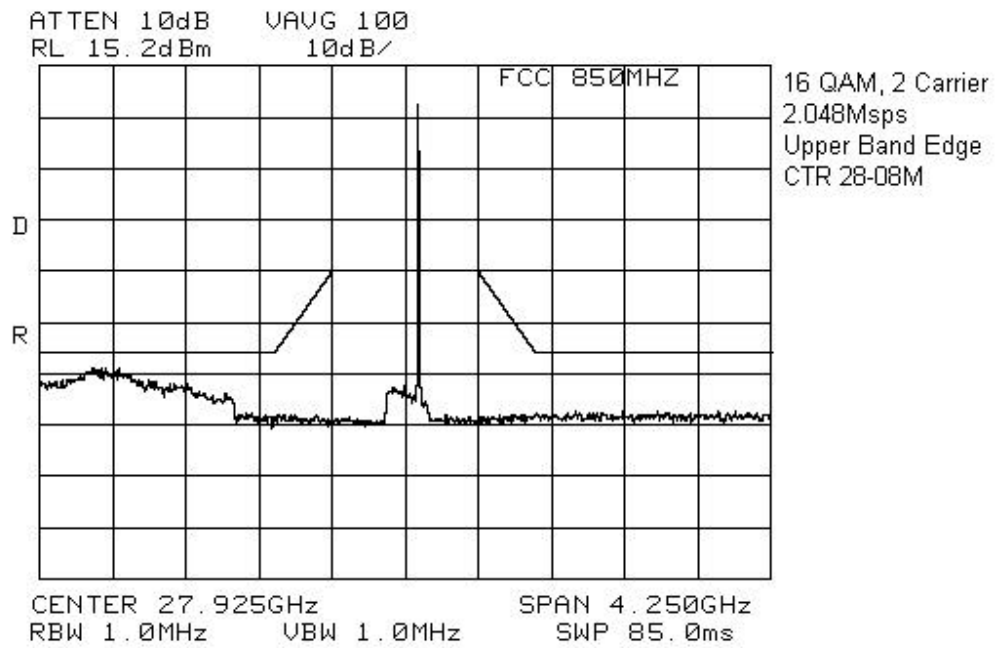
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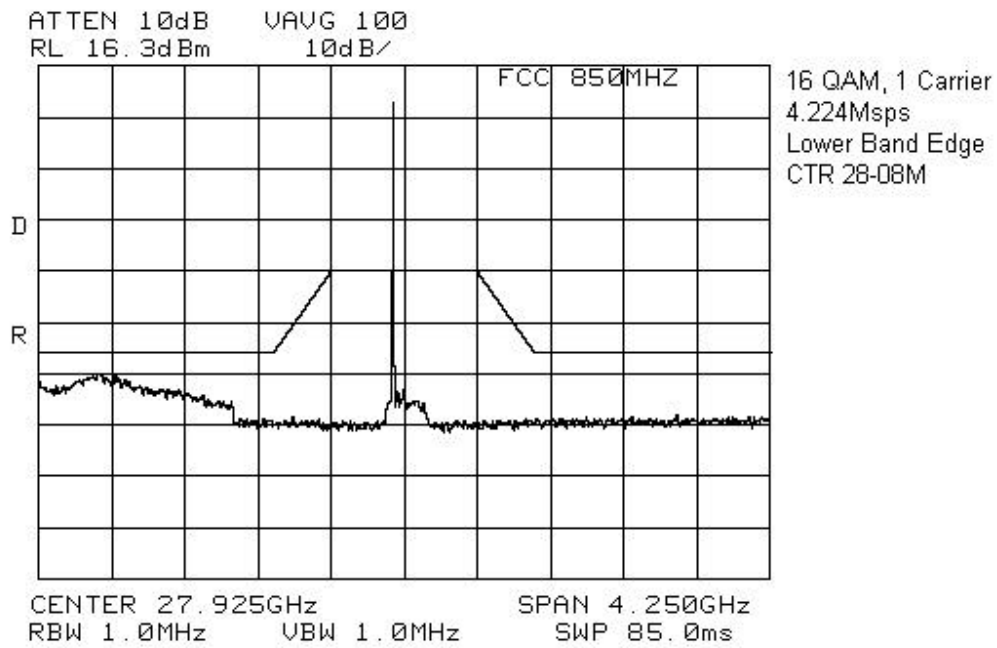
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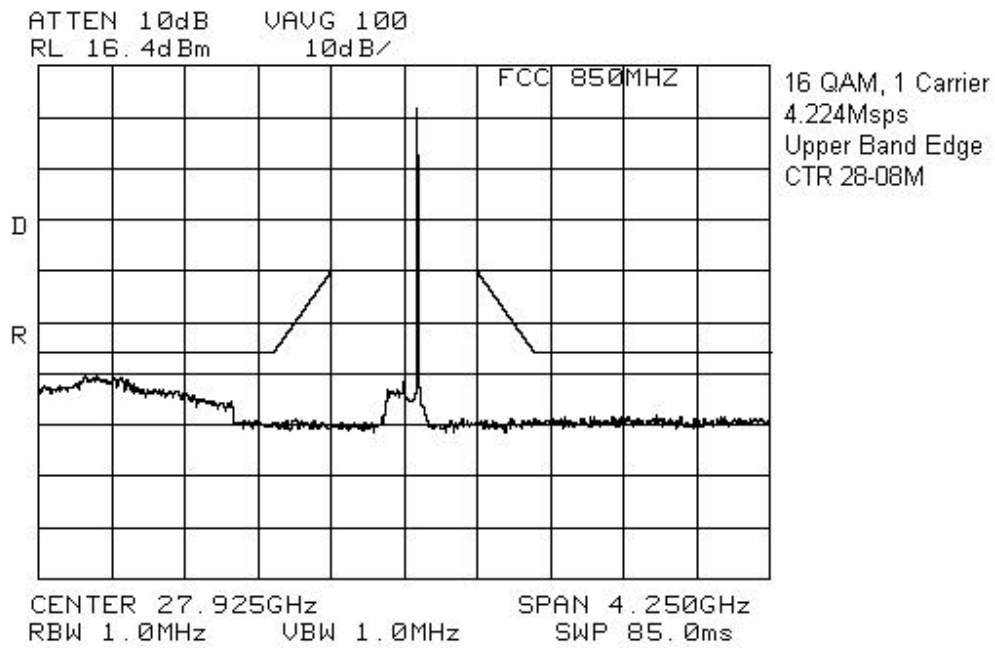
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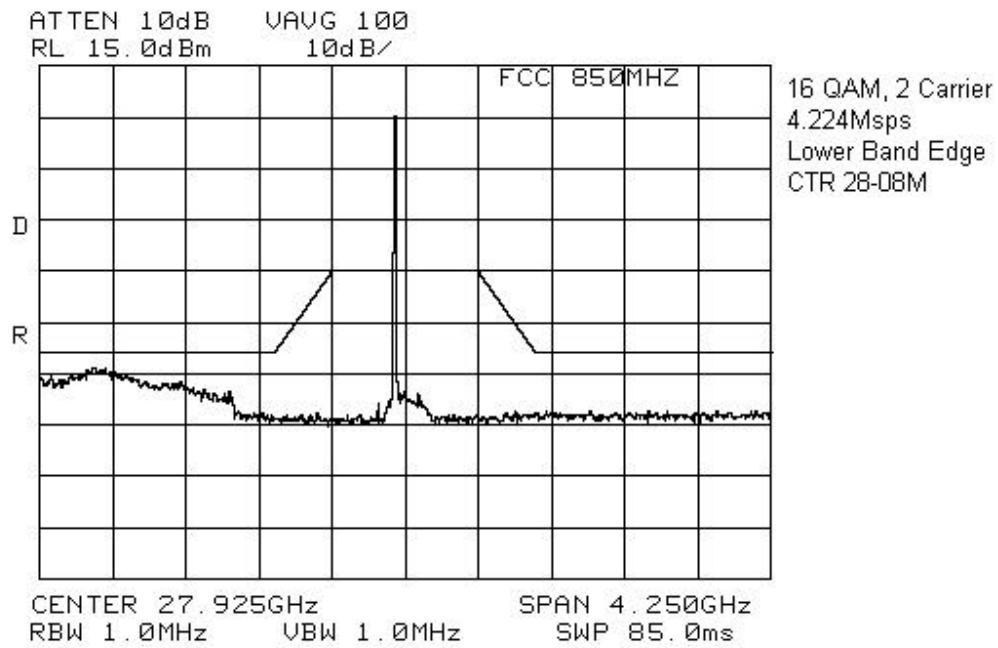
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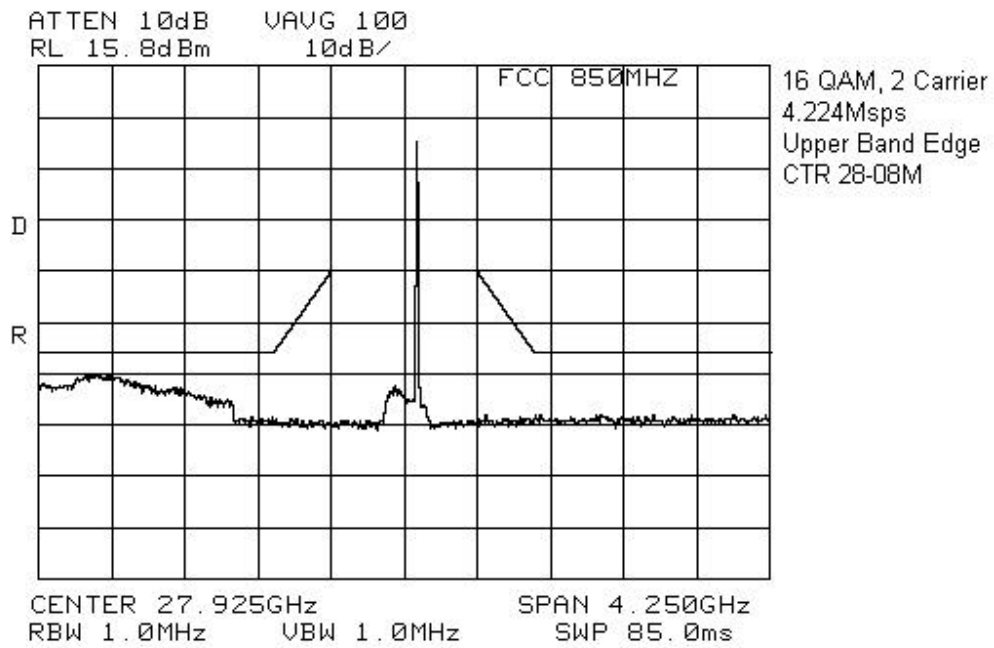
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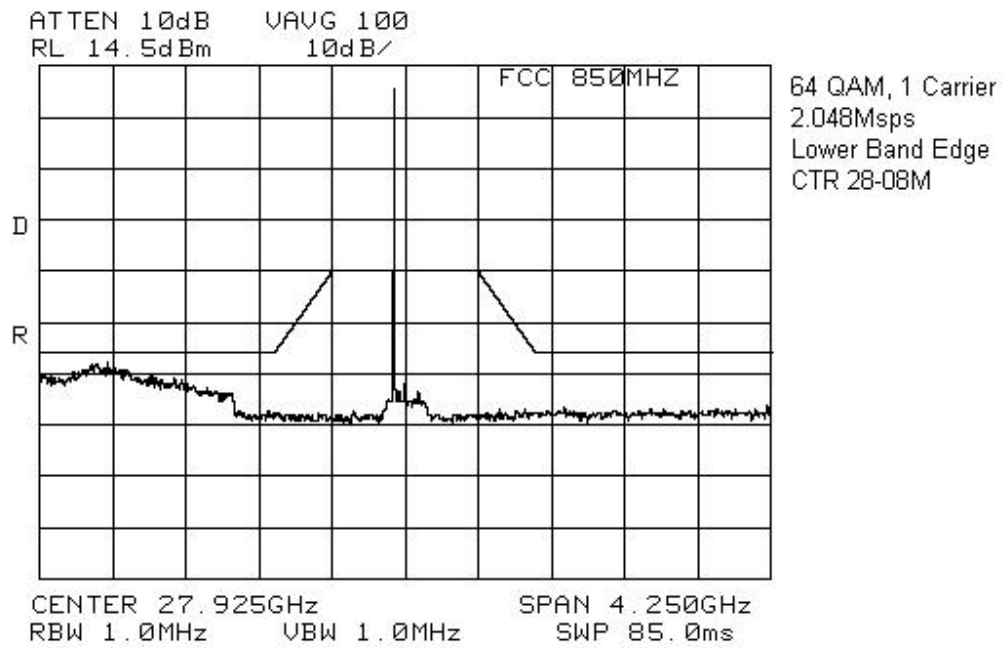
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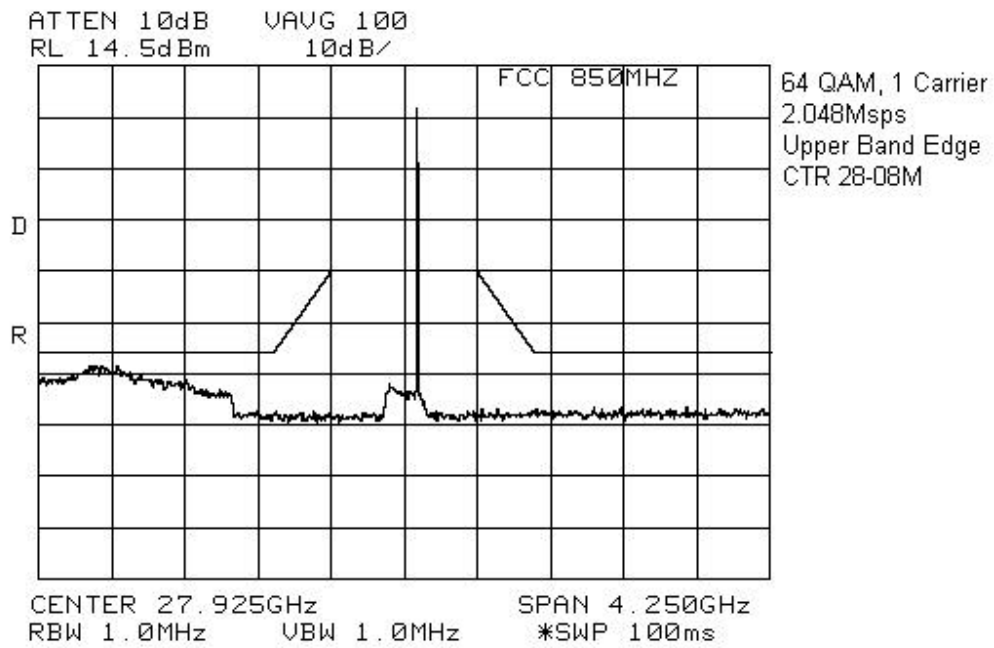
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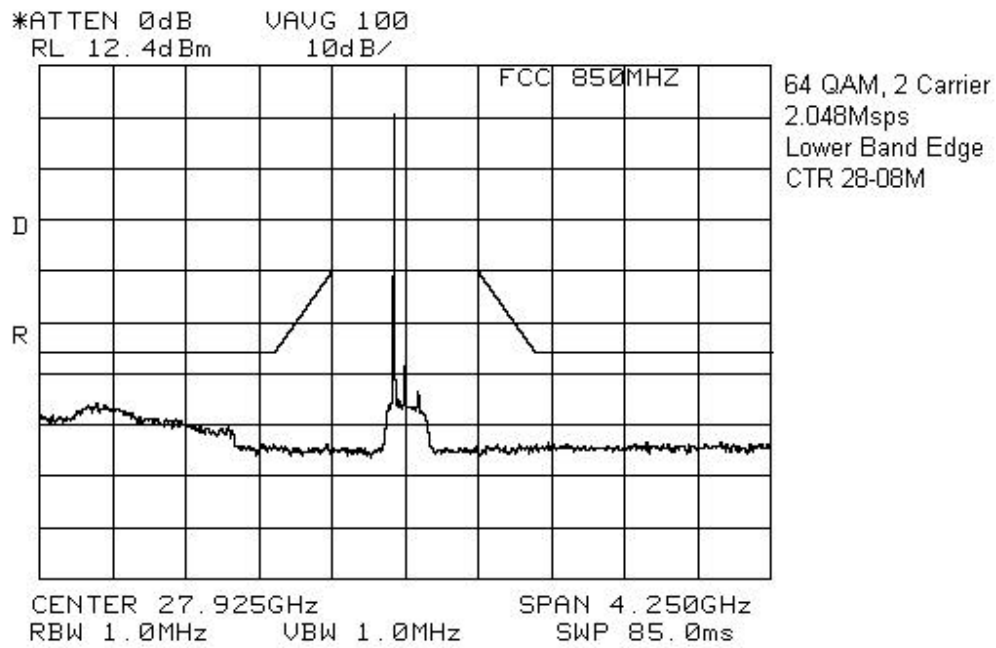
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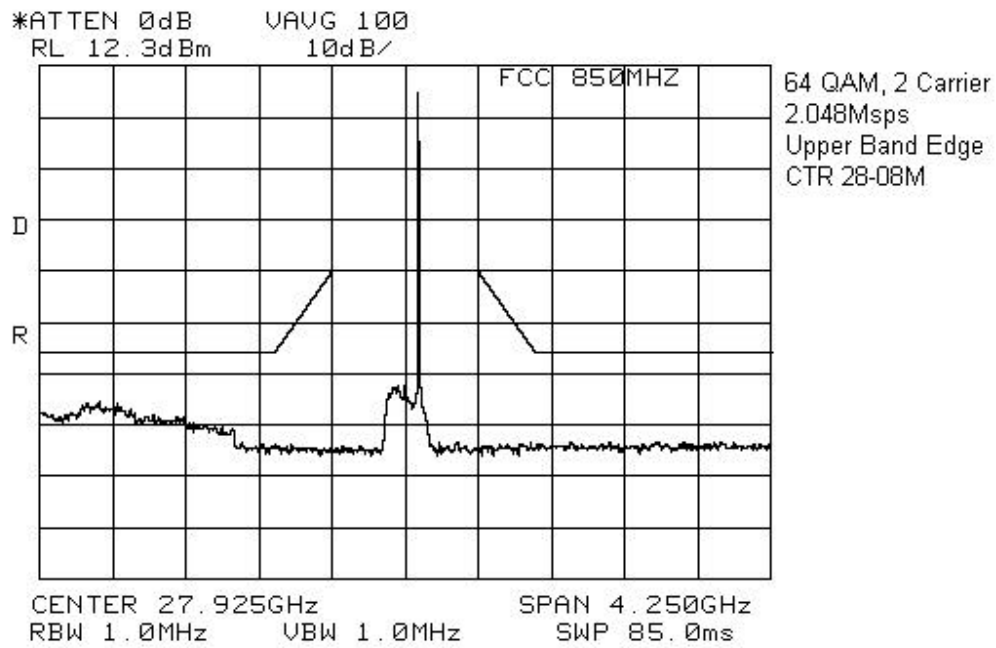
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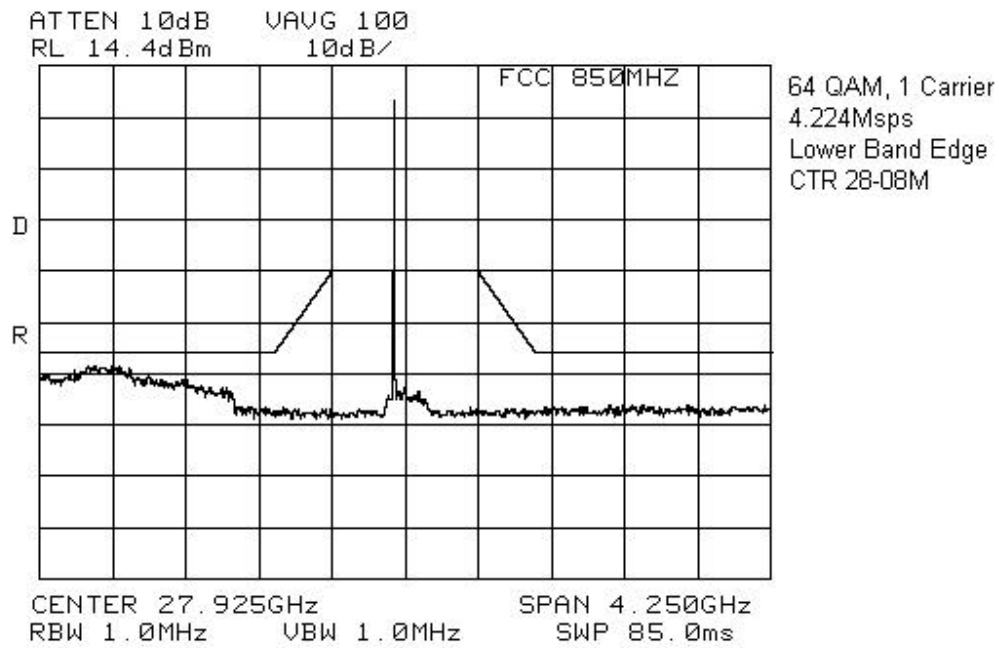
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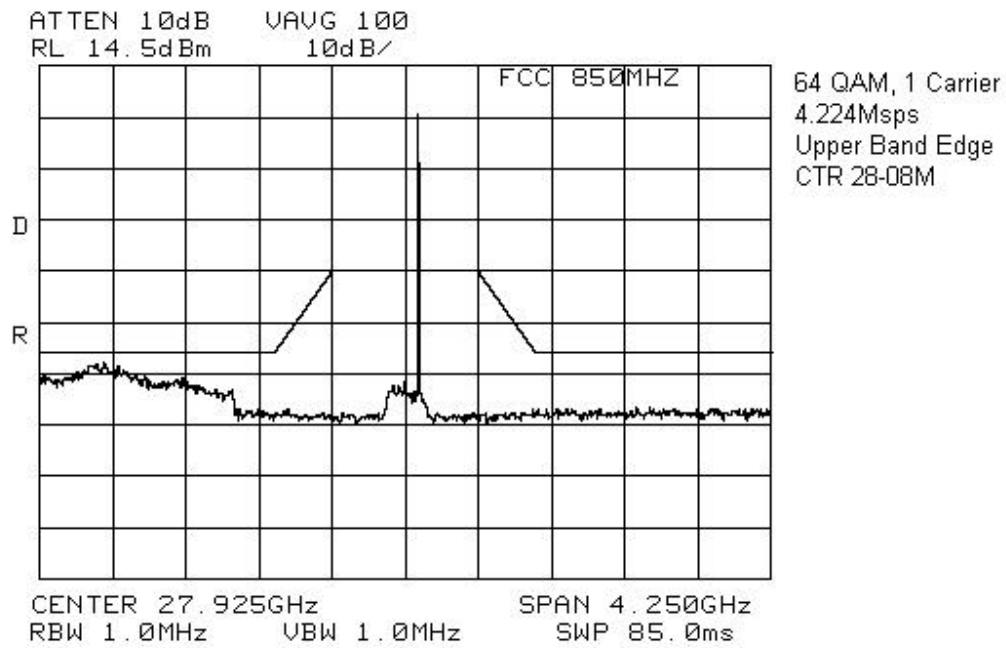
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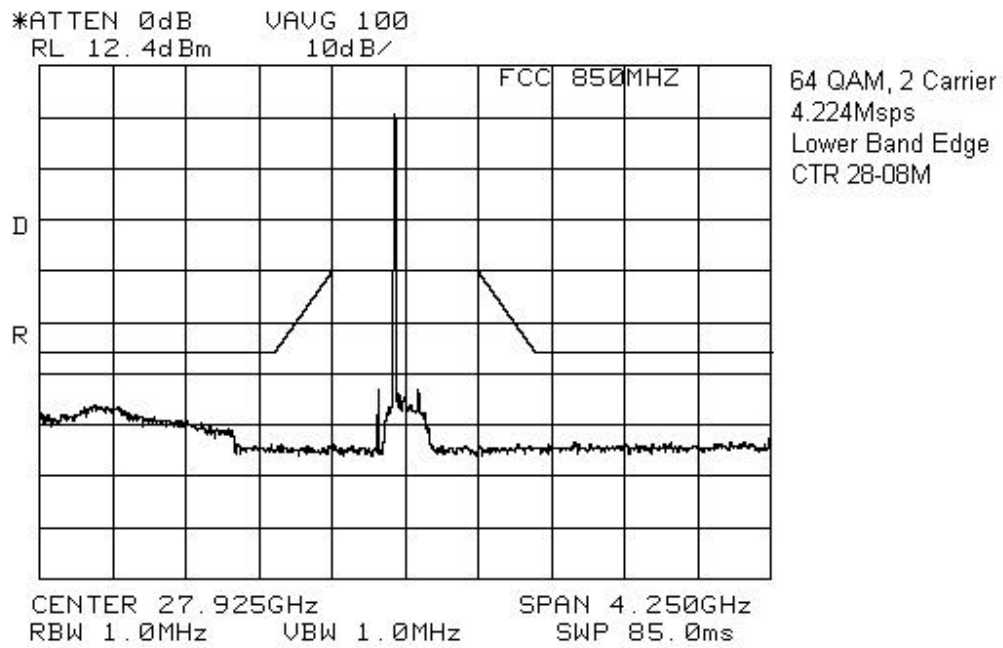
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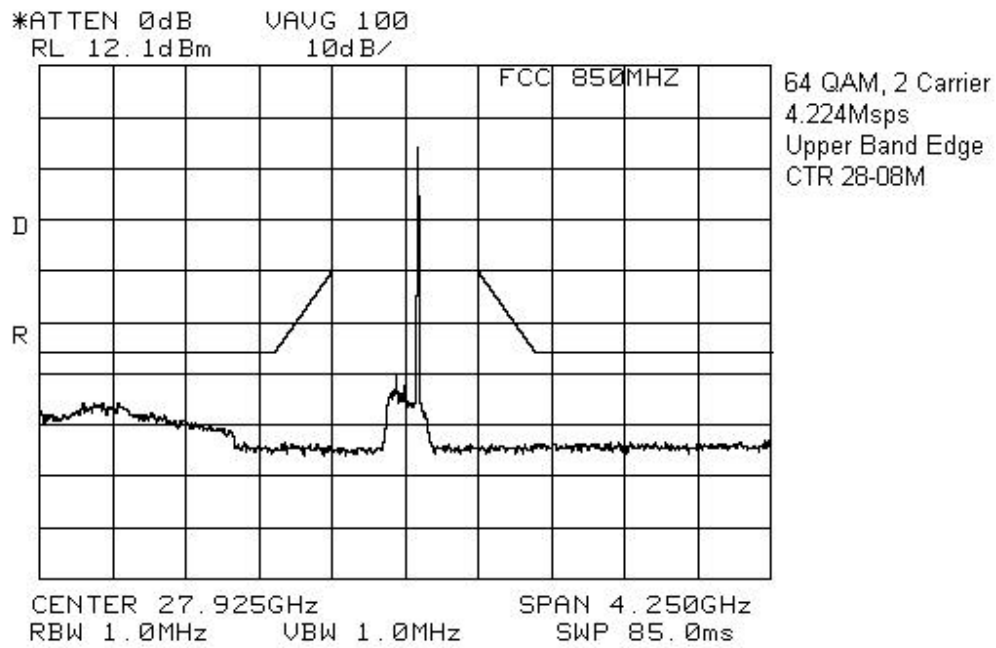
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EQUIPMENT: CTR 28-08M, NTVG16CB, S/W Ver. 1.2



EQUIPMENT: CTR 28-08M, NTVG16CB, S/W Ver. 1.2



EQUIPMENT: CTR 28-08M, NTVG16CB, S/W Ver. 1.2

Section 5. Spurious Emissions at Antenna Terminals

Para. No.: 2.1051

Test Performed By: Glen Westwell	Date of Test: August 22, 2000
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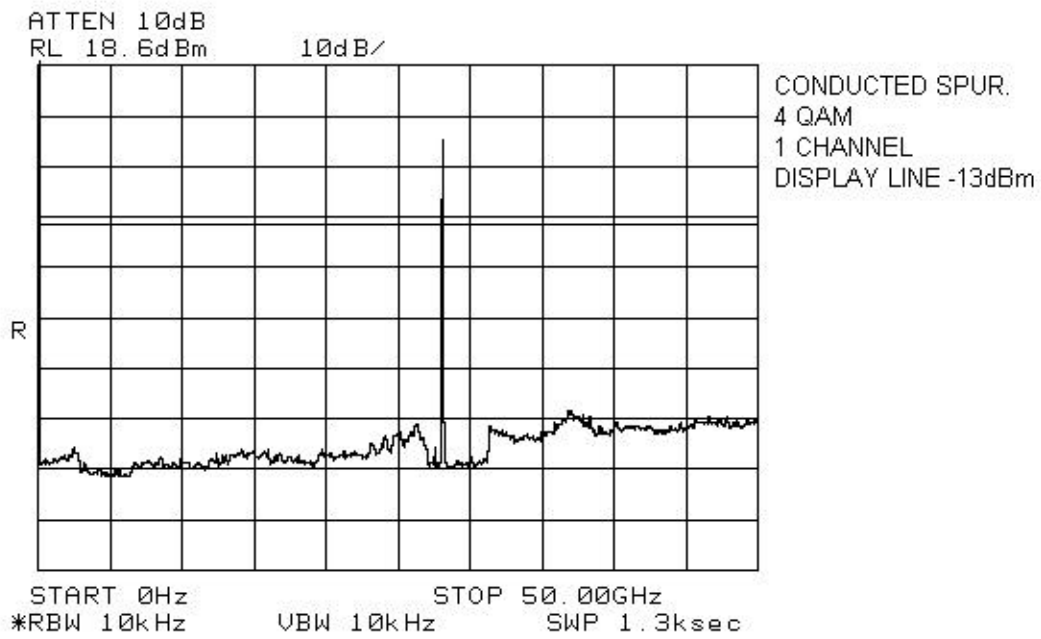
Minimum Standard: 101.111 (a)(2)(iii), -13 dBm

Test Results: Complies

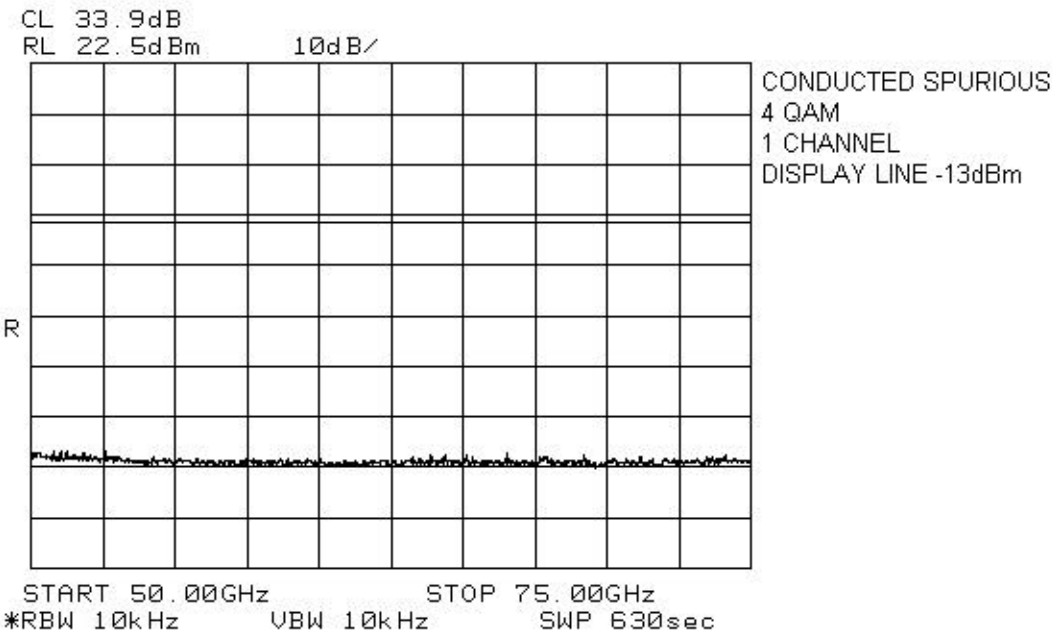
No emissions were detected within 20 dB of the specification limit.

Test Data: See attached graph(s).

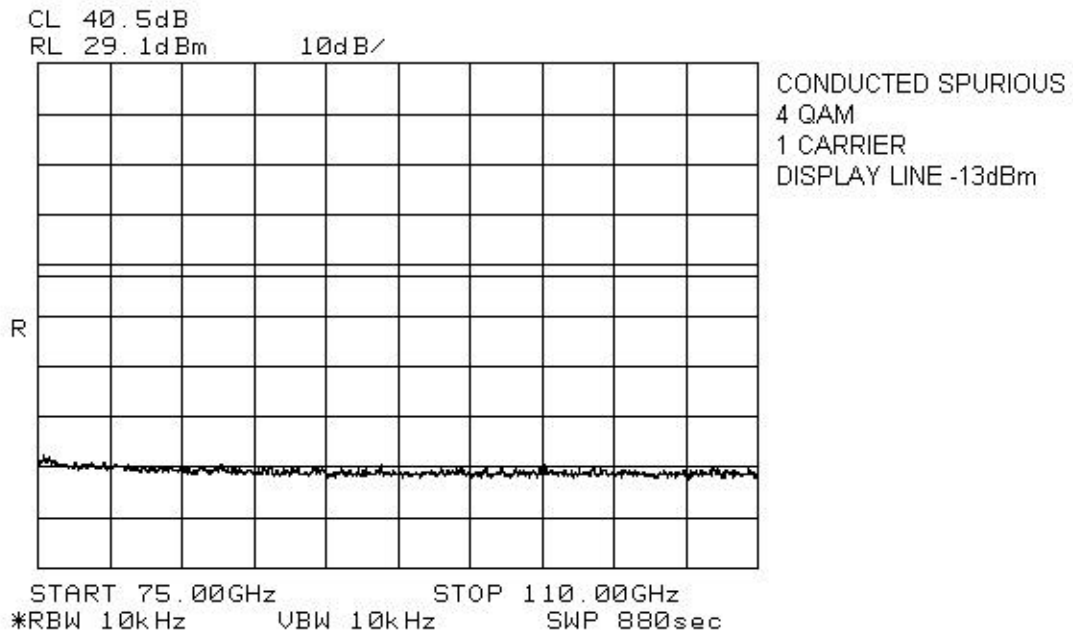
EQUIPMENT: CTR 28-08M, NTVG16CB, S/W Ver. 1.2



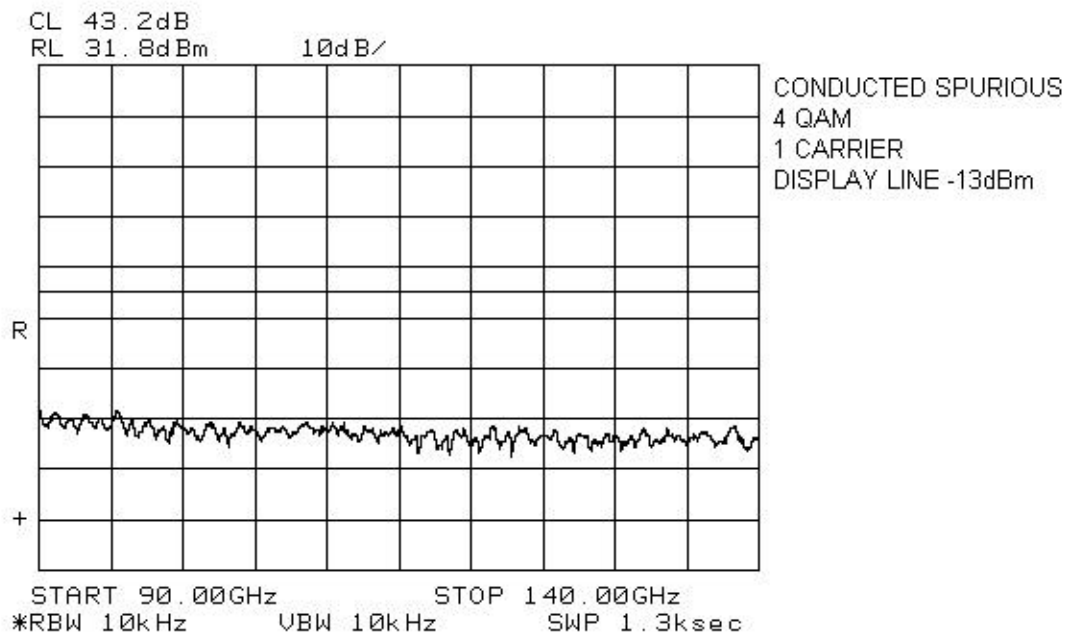
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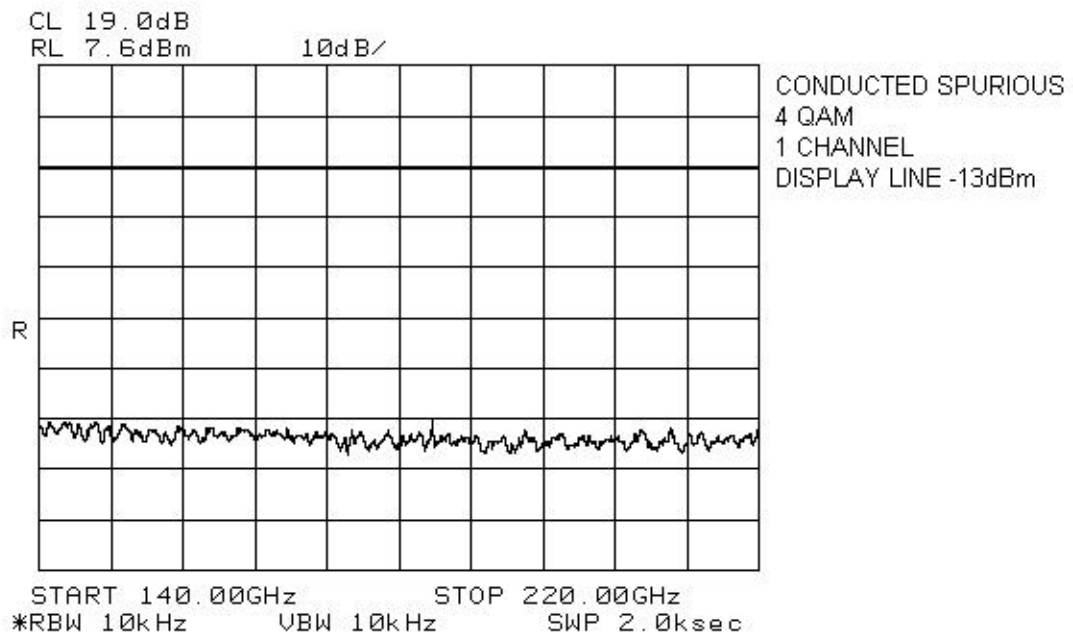
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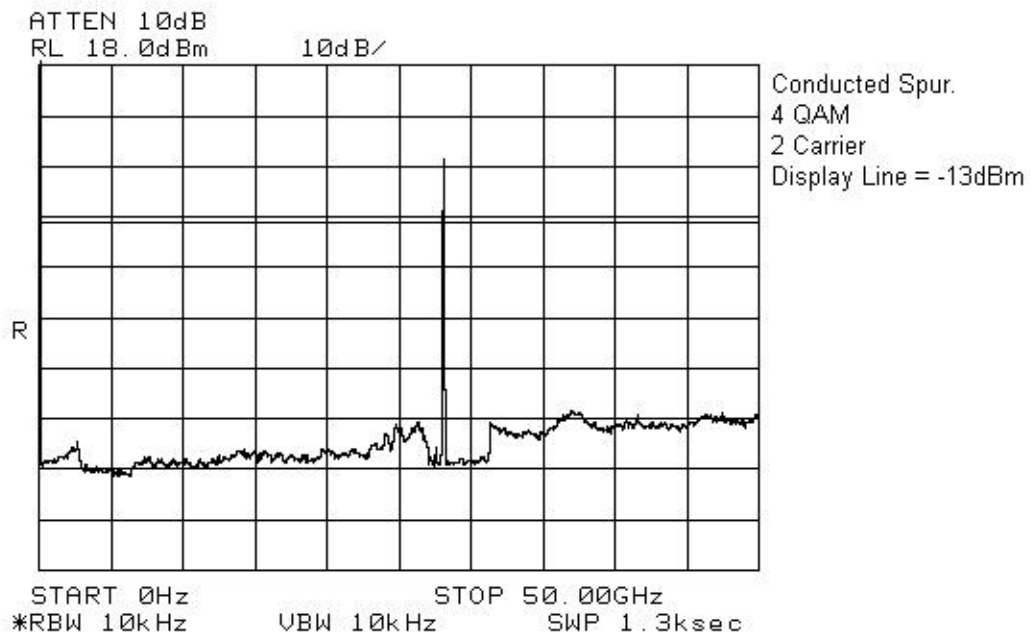
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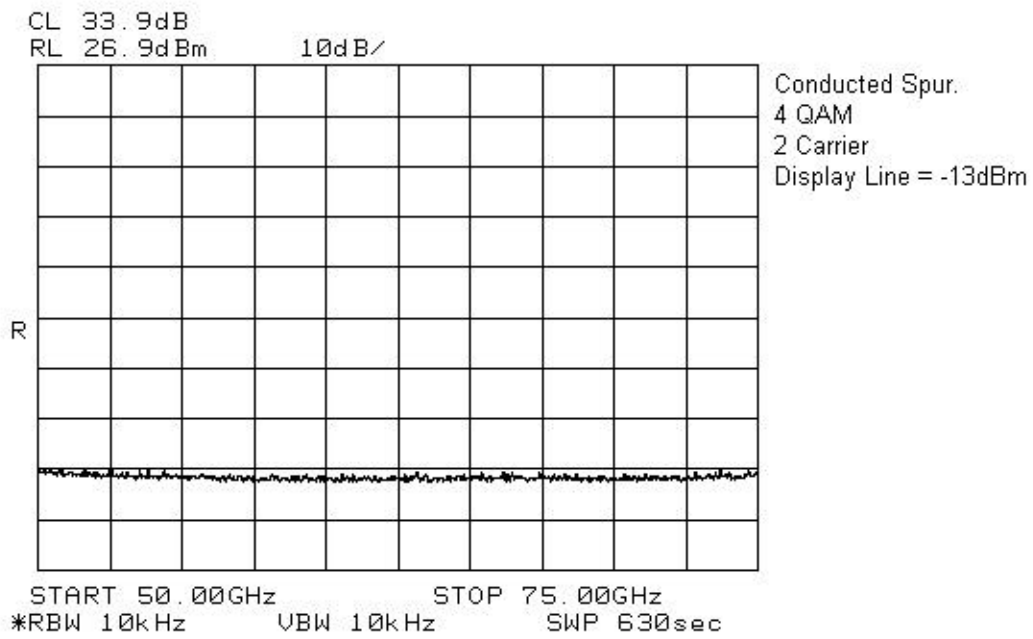
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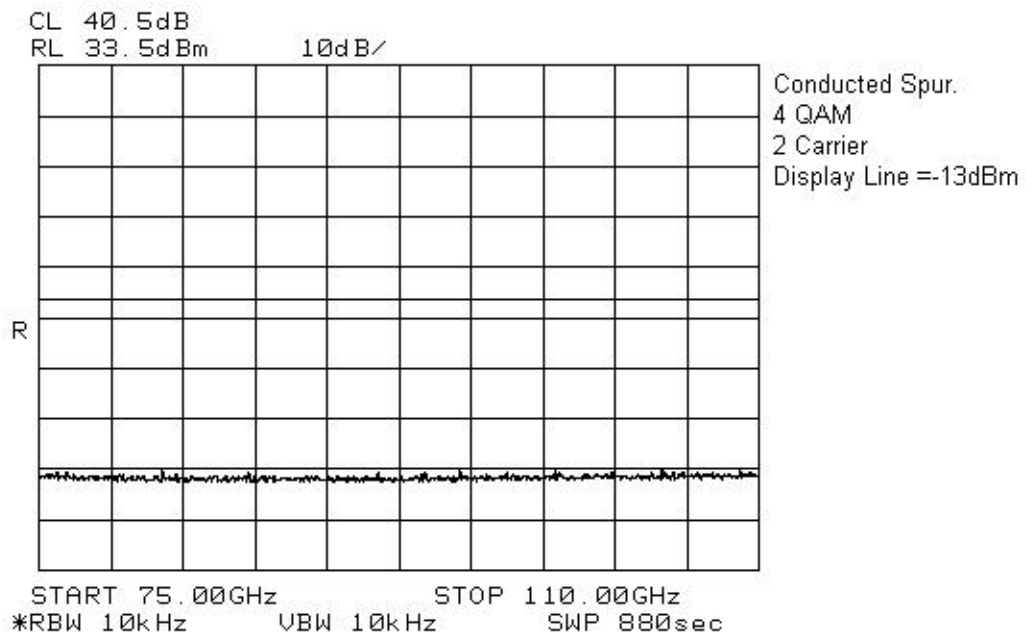
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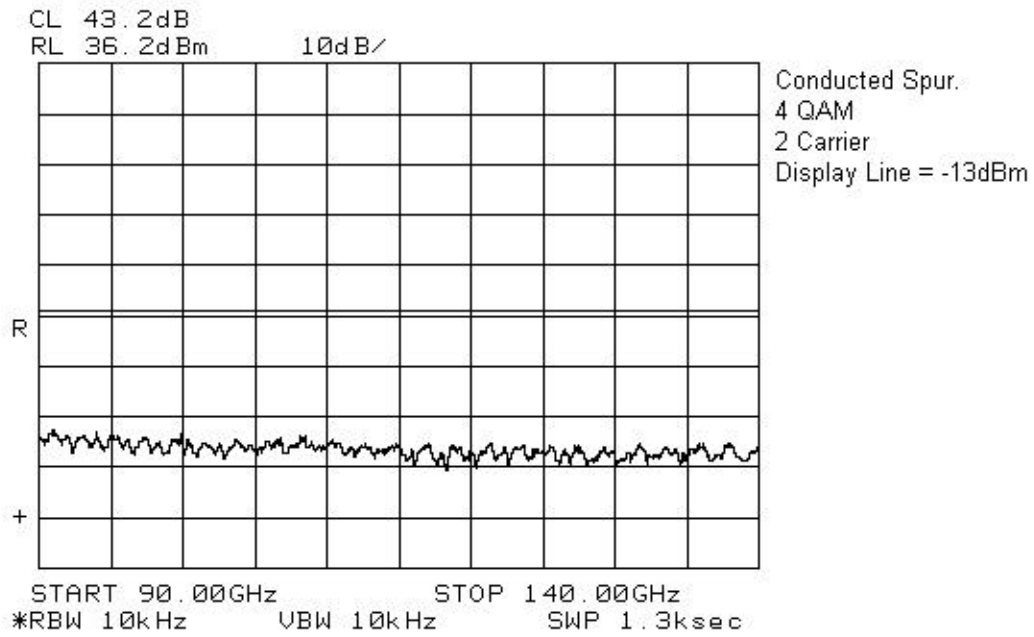
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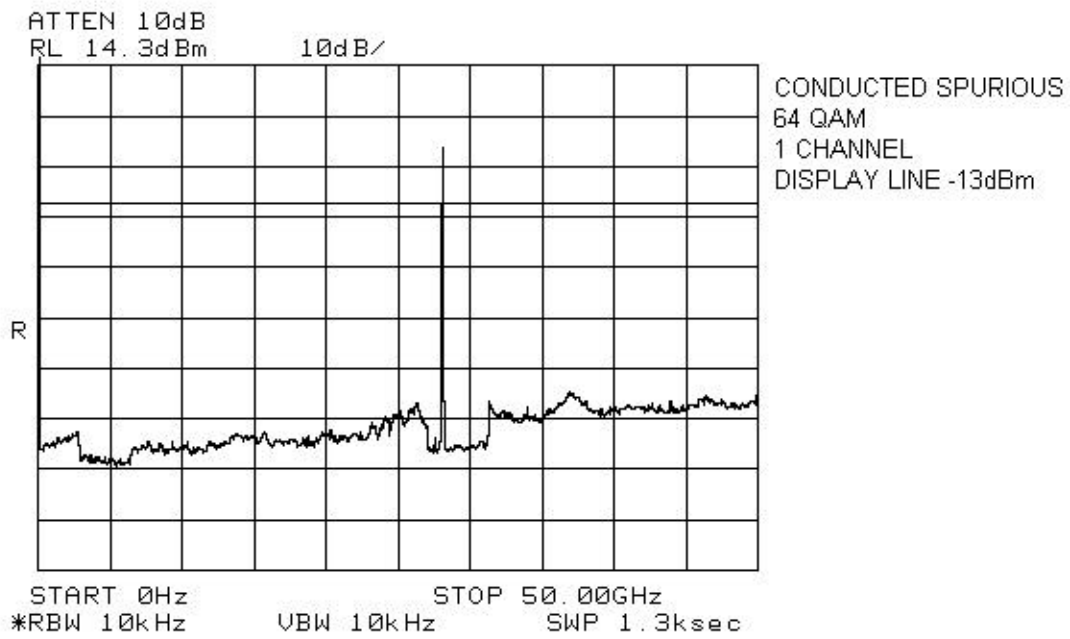
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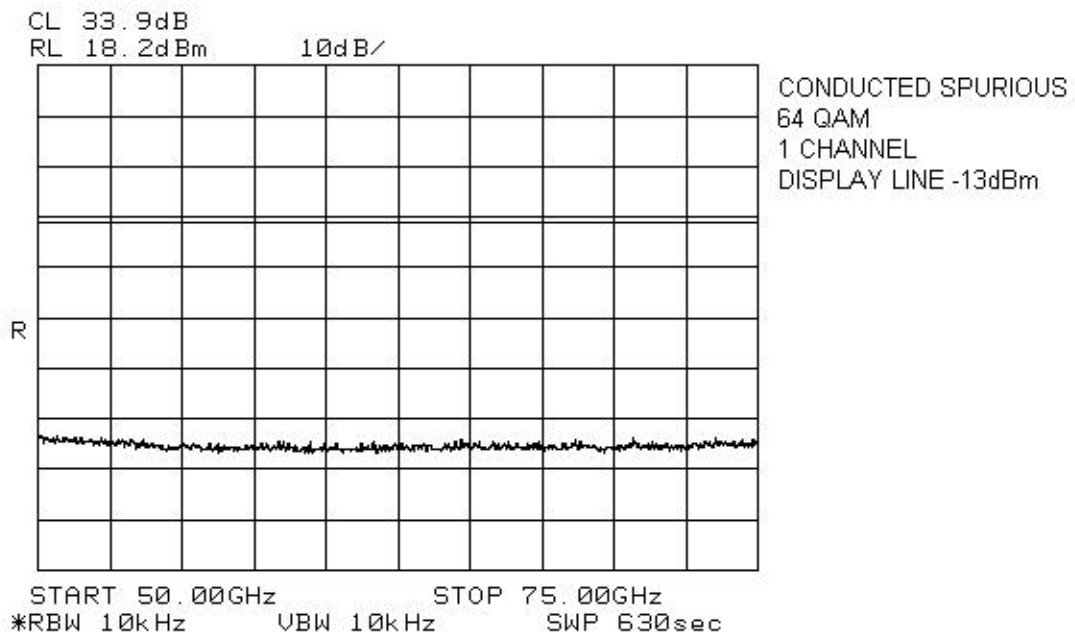
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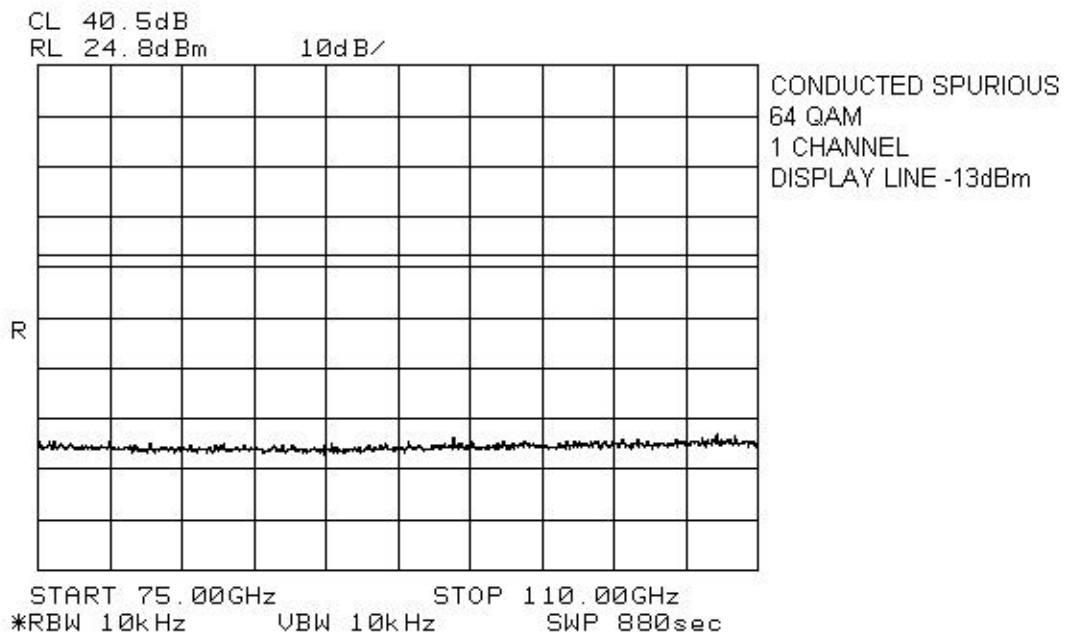
EQUIPMENT: CTR 28-08M, NTVG16CB, S/W Ver. 1.2



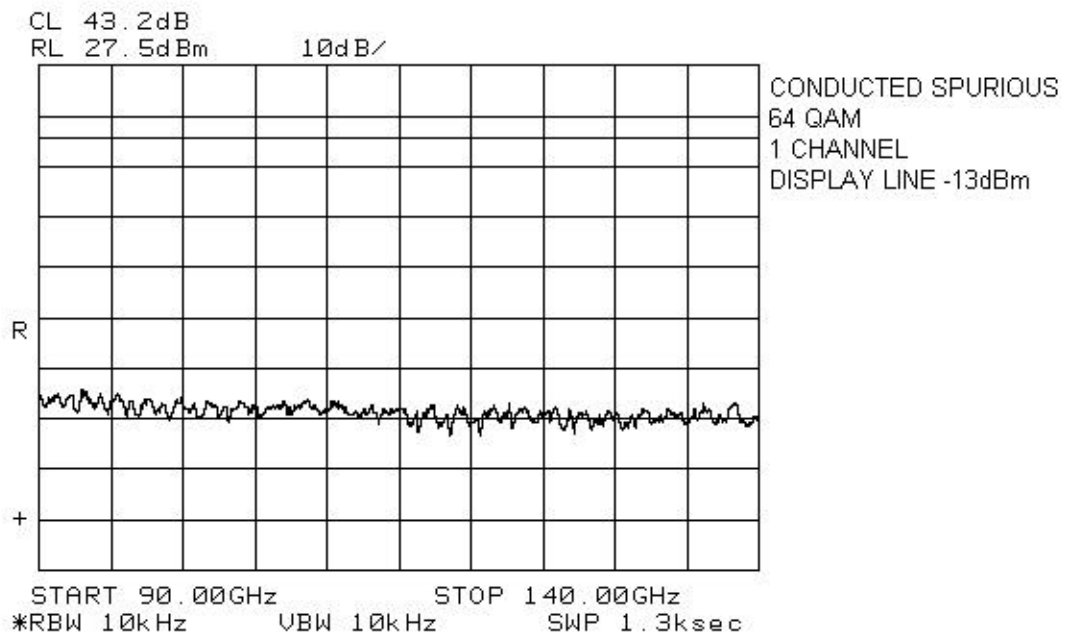
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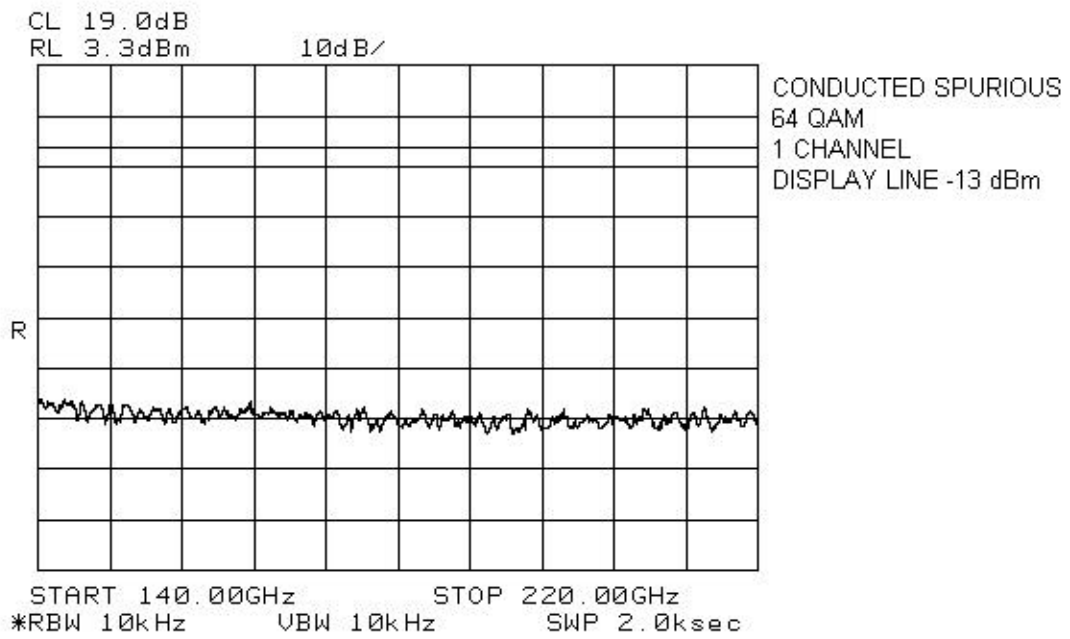
EQUIPMENT: CTR 28-08M, NTVG16CB, S/W Ver. 1.2



EQUIPMENT: CTR 28-08M, NTVG16CB, S/W Ver. 1.2



EQUIPMENT: CTR 28-08M, NTVG16CB, S/W Ver. 1.2



Section 6. Field Strength of Spurious Emissions

Para. No.: 2.1053

Test Performed By: Glen Westwell	Date of Test: August 21, 2000
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Minimum Standard: 101.111 (a)(2)(iii), -13 dBm
84.4 dBµV/m @ 3m < 1 GHz
82.2 dBµV/m @ 3m > 1 GHz

Test Results: Complies
No emissions were detected within 20 dB of the specification limit.

Test Data: The spectrum was searched from 400 MHz to 140 GHz.
No emissions were detected.

Section 7. Frequency Stability

Para. No.: 2.1055

Test Performed By: Glen Westwell	Date of Test: August 21, 2000
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Minimum Standard: 101.107 (a), 0.001% (279 kHz)**Test Results:** Complies

The maximum frequency drift is 12 kHz.
This is 0.0000429%

Test Data: Standard Test Voltage: STV -48 VDC
Standard Test Frequency: 27925 MHz

Test Condition	Frequency (MHz)	Frequency Drift (kHz)
STV	27 924.993	7
115% STV	27 924.993	7
85% STV	27 924.994	6
-30 °C	27 925.001	1
-20 °C	27 925.001	1
-10 °C	27 925.001	1
0 °C	27 924.999	1
+10 °C	27 924.997	3
+30 °C	27 924.994	6
+40 °C	27 924.994	6
+50 °C	27 924.988	12

EQUIPMENT: CTR 28-08M, NTVG16CB, S/W Ver. 1.2

Section 8. Test Equipment List

CAL CYCLE	EQUIPMENT	MANUFACTURER	MODEL	SERIAL	LAST CAL.	NEXT CAL.
1 Year	Spectrum Analyzer	Hewlett Packard	8565E	FA000981	June 16/00	June 16/01
1 Year	Climate Chamber	Thermotron	SM-16C	15649-S	COU	COU
1 Year	Horn Antenna	EMCO #2	3115	4336	Nov. 11/99	Nov. 11/00
3 Year	Waveguide Attenuator	Millitech	FXA-28-S20TG0	FA001295	Oct. 13/98	Oct. 13/01
1 Year	Power Meter	Hewlett Packard	E4418B	FA001413	Nov. 8/99	Dec. 7/00
3 Year	Harmonic Mixer	Hewlett Packard	50-75 GHz	FA001027	Mar. 9/00	Mar. 9/03
3 Year	Harmonic Mixer	Hewlett Packard	75-110 GHz	FA001302	Oct. 13/00	Oct. 13/01
3 Year	Diplexer	Olsen-OML	DPL.20(HP)	—	Mar. 15/00	Mar. 15/03
3 Year	Mixer Antenna 90-140 GHz	Olsen-OML	M05HWA(HP)	—	Mar. 15/00	Mar. 15/03
3 Year	Mixer Antenna 140-220 GHz	Olsen-OML	M05HWA(HP)	—	Mar. 15/00	Mar. 15/03

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

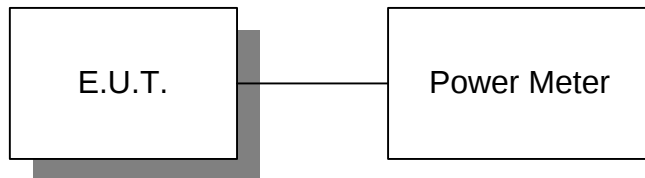
EQUIPMENT: CTR 28-08M, NTVG16CB, S/W Ver. 1.2

Annex A

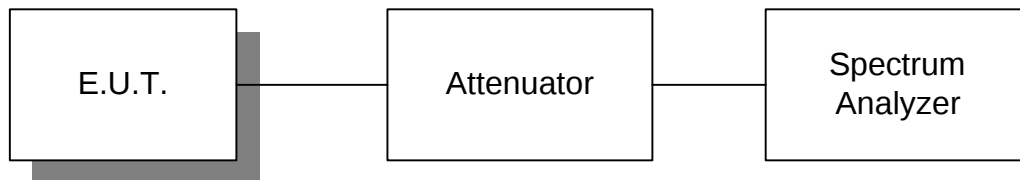
Test Diagrams

EQUIPMENT: CTR 28-08M, NTVG16CB, S/W Ver. 1.2

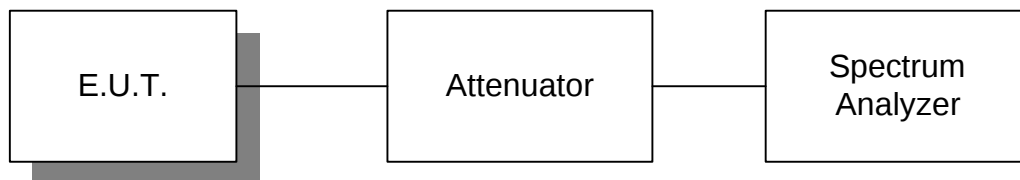
Para. No. 2.1046 - R.F. Power Output



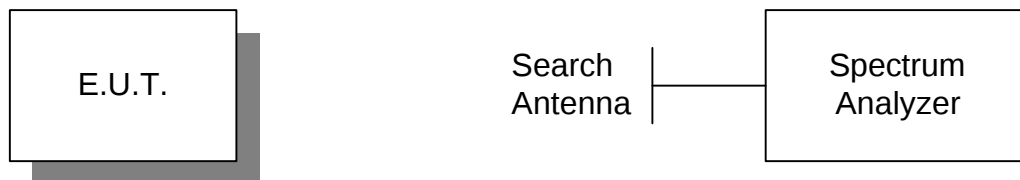
Para. No. 2.1049 - Occupied Bandwidth



Para. No. 2.1051 - Spurious Emissions at Antenna Terminals



Para. No. 2.1053 - Field Strength of Spurious Radiation



EQUIPMENT: CTR 28-08M, NTVG16CB, S/W Ver. 1.2

Para. No. 2.1055 - Frequency Stability

