

KTL Test Report: 0R02873

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

**Equipment Under Test:
(E.U.T.)** BTR 28-08M
NTVG14CB
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: Sept 5,00

Total Number of Pages: 36

Authorized Copy: CD

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EQUIPMENT: BTR 28-08M, NTVG14CB, 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: Glen Westwell, Technologist

DATE: Sept 4,00

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This report applies only to the items tested.

EQUIPMENT: BTR 28-08M, NTVG14CB, S/W Ver. 1.2

Summary Of Test Data

Name Of Test	Para. No.	Result
RF Power Output	101.113	Complies
Audio Frequency Response	—	Not Applicable
Audio Low-Pass Filter Response	—	Not Applicable
Modulation Limiting	—	Not Applicable
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: This equipment does not have any provision for conventional analogue voice processing circuits.

* Equipment authorized to be operated in the 38000 to 40000 MHz band is exempt from the frequency tolerance requirement.

Test Conditions:

Indoor Temperature: 24 °C
 Humidity: 46 %

Outdoor Temperature: 25 °C
 Humidity: 44 %

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EQUIPMENT: BTR 28-08M, NTVG14CB, S/W Ver. 1.2

Section 2. General Equipment Specification

Manufacturer: Nortel Networks

Model No.: BTR 28-08M, NTVG14CB
S/W Ver. 1.2

Serial No.: NNTM532GPH4X

Date Received In Laboratory: August 14, 2000

KTL Identification No.: Item #1

Supply Voltage Input: -48 Vdc

Frequency Range: 27.505 – 27.645 GHz

Tunable Bands: 1

Necessary Bandwidth: (1 Carrier) OCC. BW = 7.83 MHz
(4 Carrier) OCC. BW = 31.32 MHz

Types of Modulation: 4, 16 & 64 QAM @ 7.456 Msps FDMA

Data Rate(s): 7.456 Msps

Internal/External Data Source: External

Emission Designator: 7M83D9W
15M7D9W
23M5D9W
31M3D9W

Output Impedance: 50Ω

RF Power Output (rated): 14.5 to 22 dBm

Channel Spacing(s): 10 MHz

Operator Selection of Operating Frequency: None

Power Output Adjustment Capability: Attenuation Adjust 31 – 0 dB

EQUIPMENT: BTR 28-08M, NTVG14CB, S/W Ver. 1.2

Section 3. RF Power Output

Para. No.: 1.1046

Test Performed By: Glen Westwell	Date of Test: August 24, 2000
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Minimum Standard: 101.113 (a), 55 dBW

Test Results: Complies

Measurement Data:

Rated (dBm)	Measured (dBm)
22.0	22.1
22.0	22.0
20.0	20.1
20.0	20.1
18.0	17.9
18.0	18.0
20.5	20.4
20.5	20.8
17.5	17.5
17.5	17.8
14.5	14.8
14.5	15.3

EQUIPMENT: BTR 28-08M, NTVG14CB, S/W Ver. 1.2

Section 4. Occupied Bandwidth

Para. No.: 2.1049

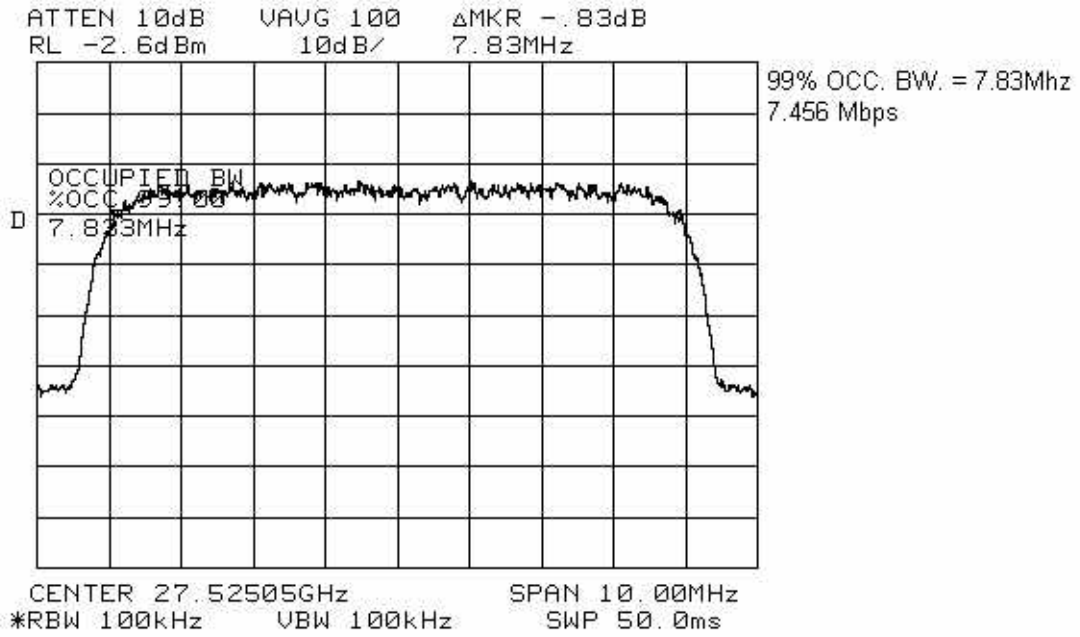
Test Performed By: Glen Westwell	Date of Test: August 25, 2000
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Minimum Standard: 101.111 (a)(2)(ii)

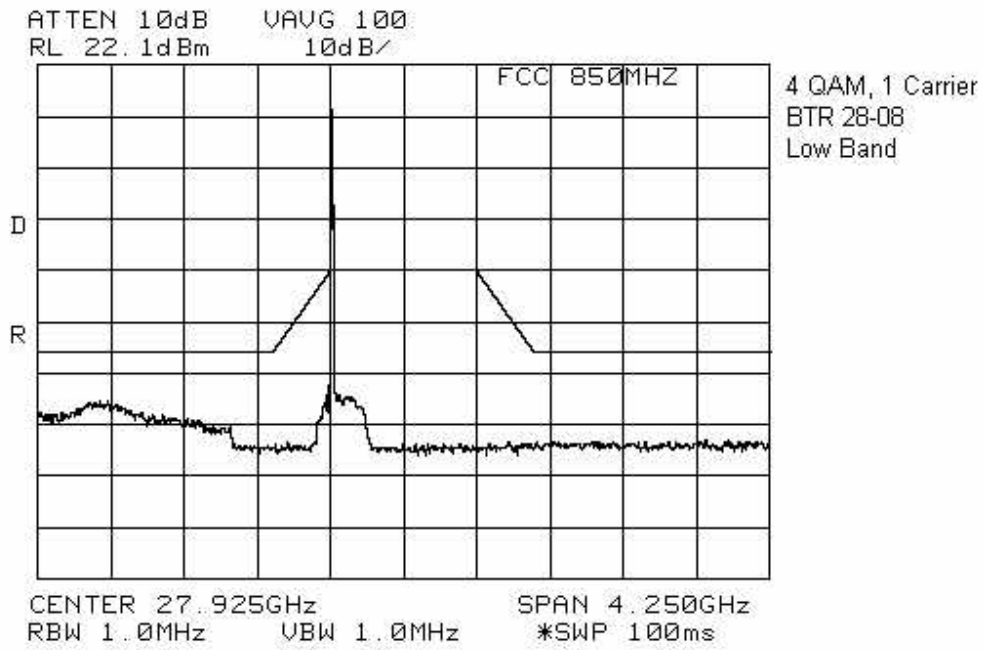
Test Results: Complies

Test Data: See attached graph(s).

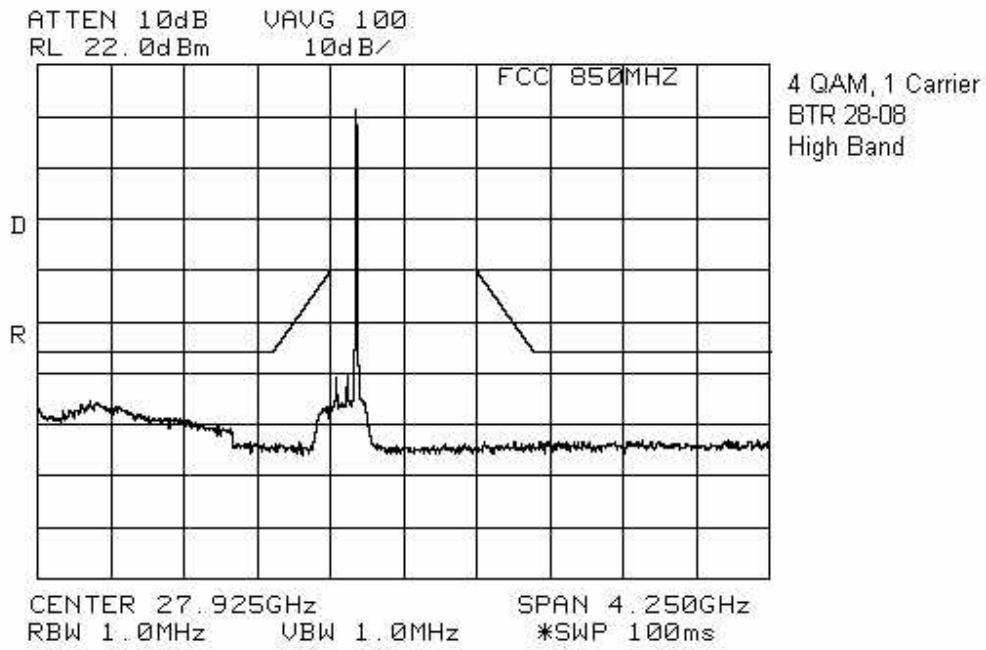
EQUIPMENT: BTR 28-08M, NTVG14CB, S/W Ver. 1.2



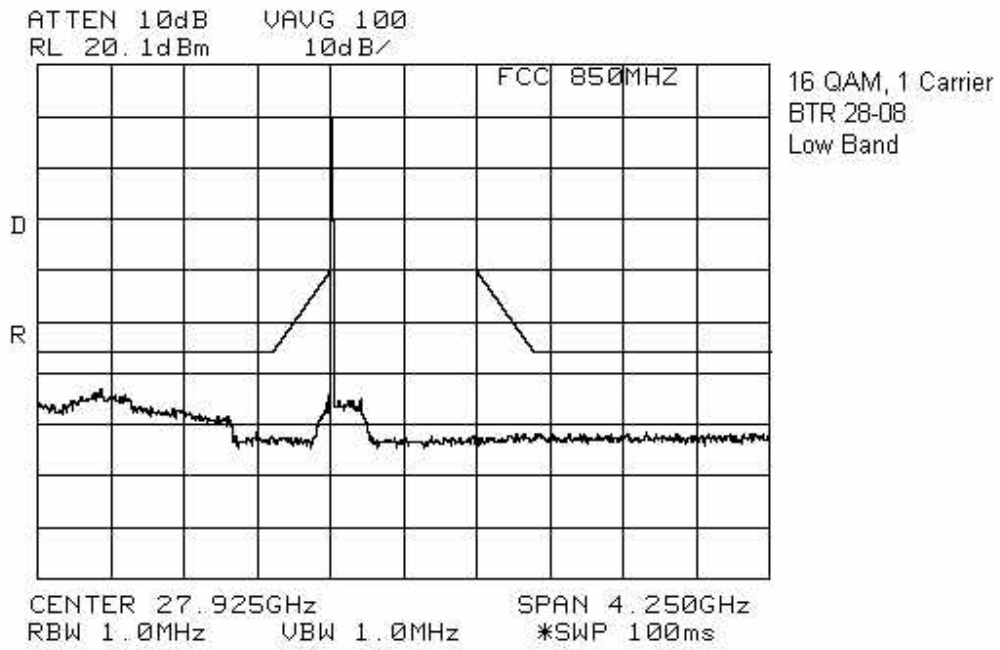
EQUIPMENT: BTR 28-08M, NTVG14CB, S/W Ver. 1.2



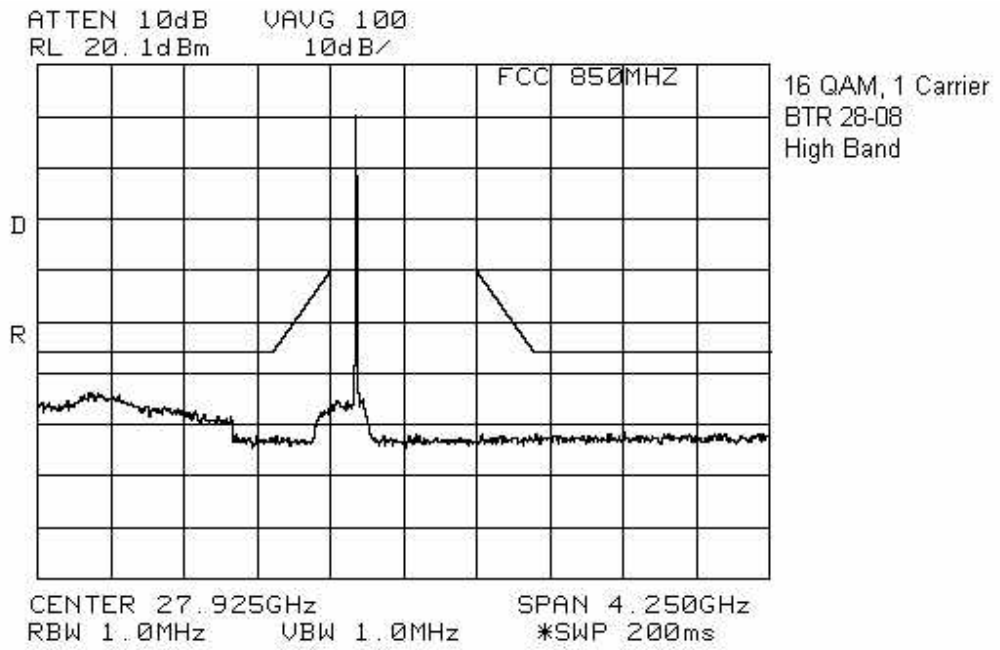
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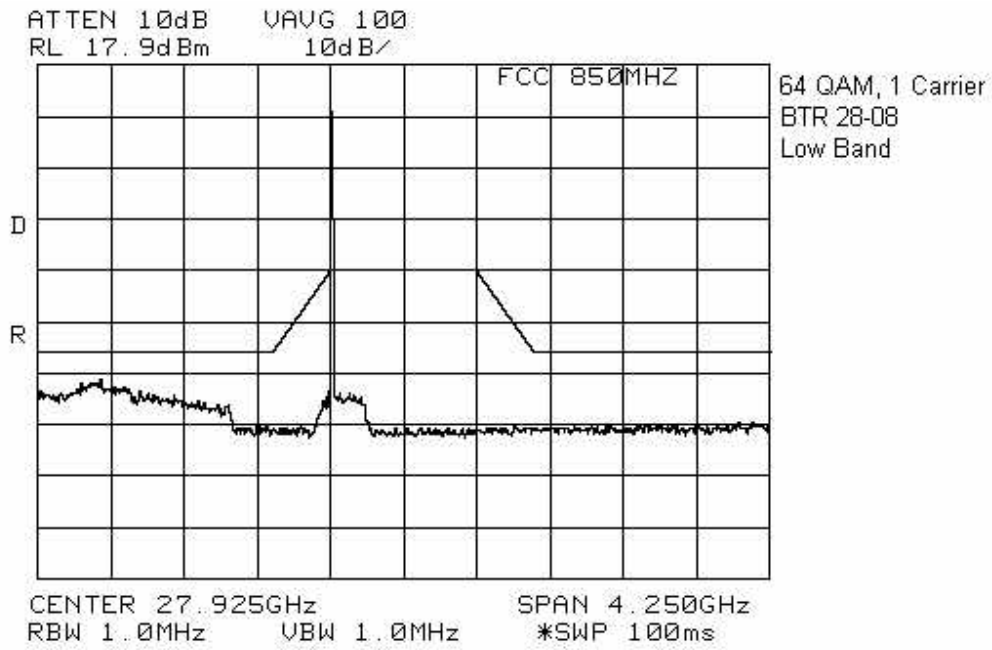
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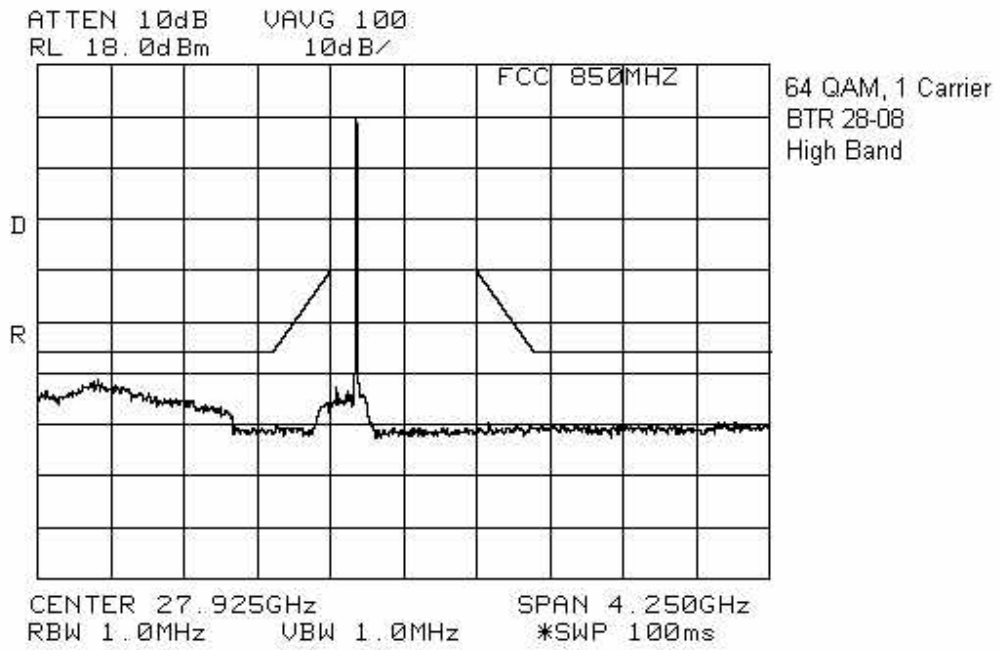
EQUIPMENT: BTR 28-08M, NTVG14CB, S/W Ver. 1.2



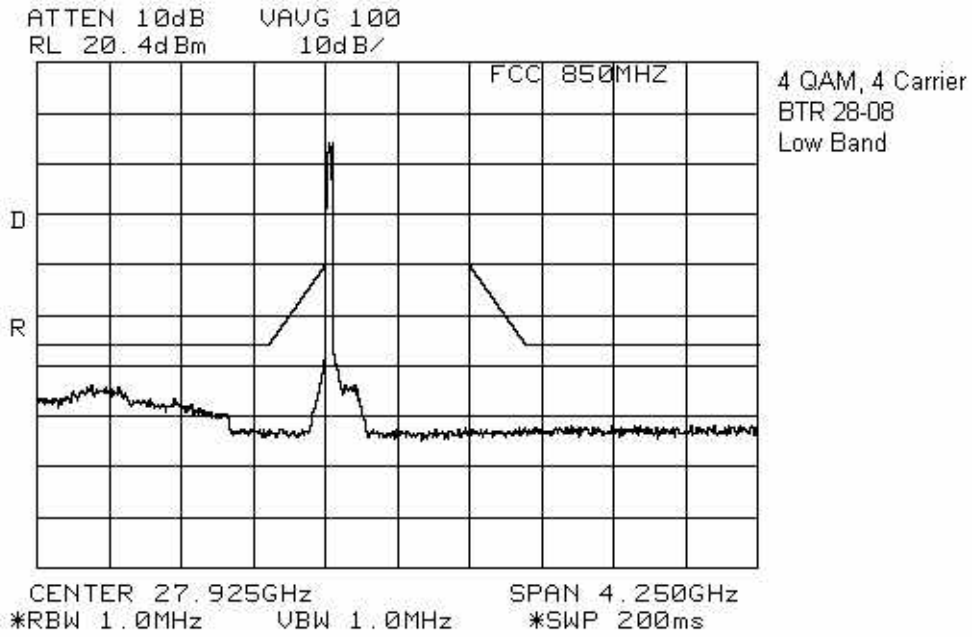
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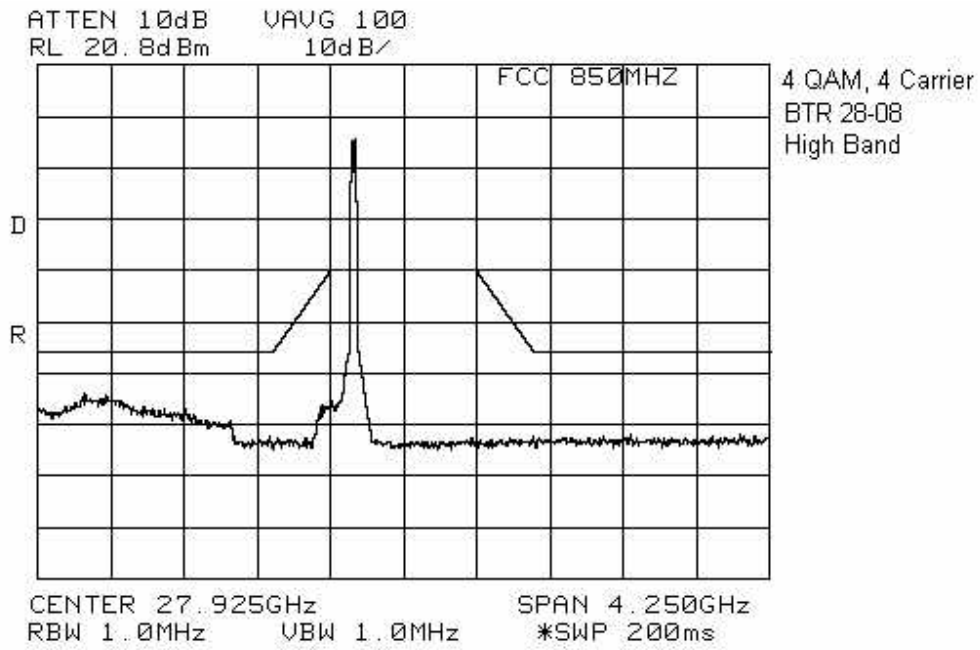
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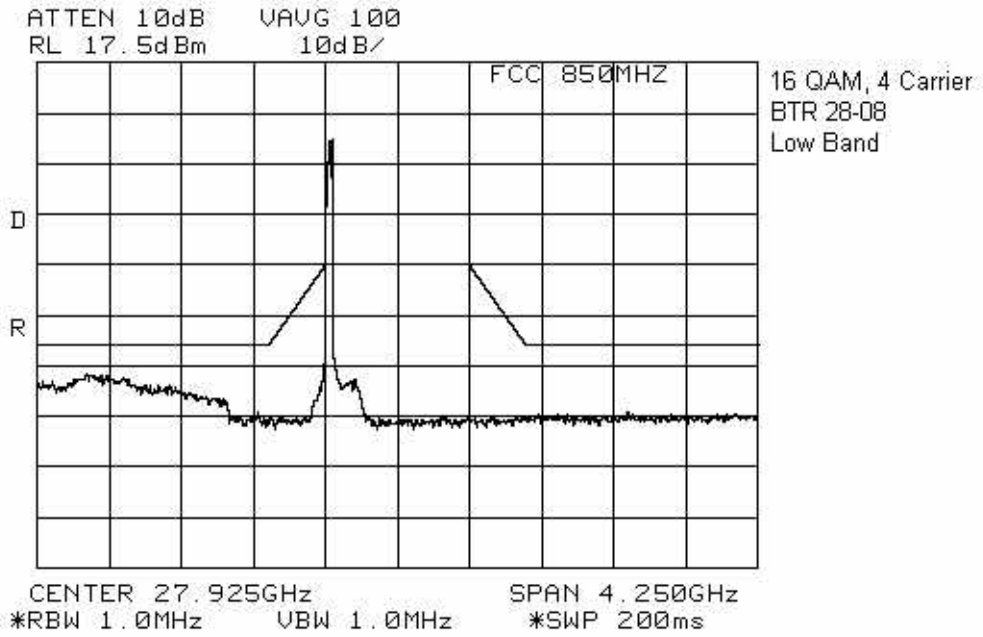
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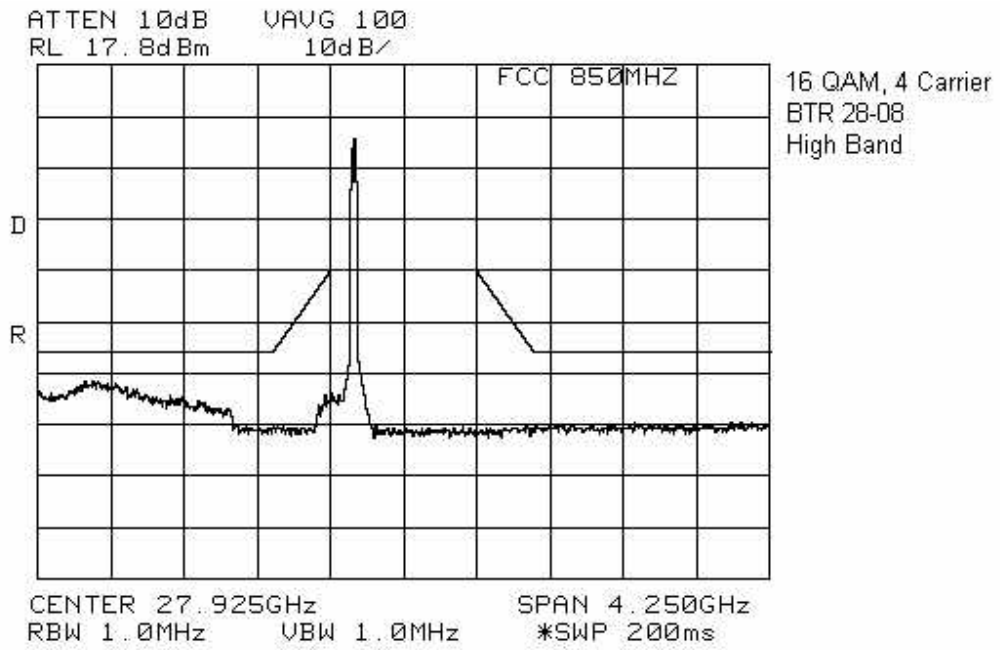
EQUIPMENT: BTR 28-08M, NTVG14CB, S/W Ver. 1.2



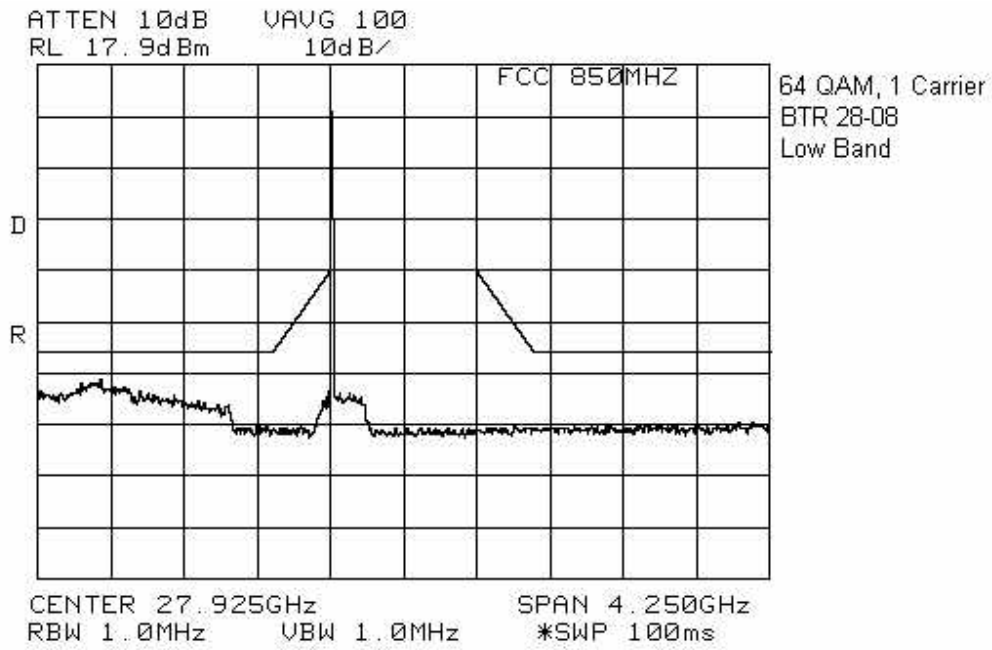
EQUIPMENT: BTR 28-08M, NTVG14CB, S/W Ver. 1.2



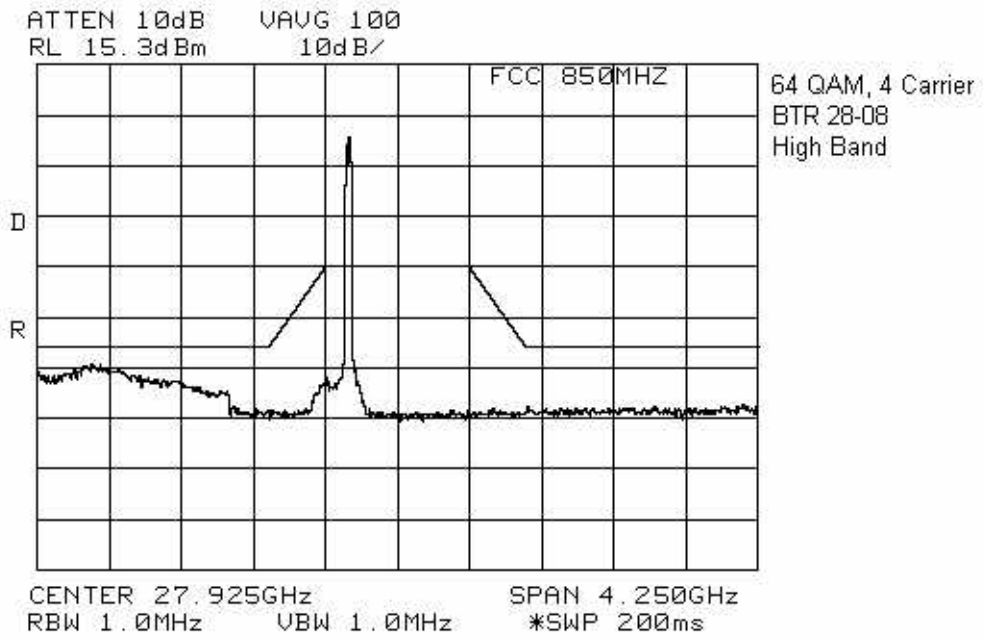
EQUIPMENT: BTR 28-08M, NTVG14CB, S/W Ver. 1.2



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EQUIPMENT: BTR 28-08M, NTVG14CB, 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 23, 2000
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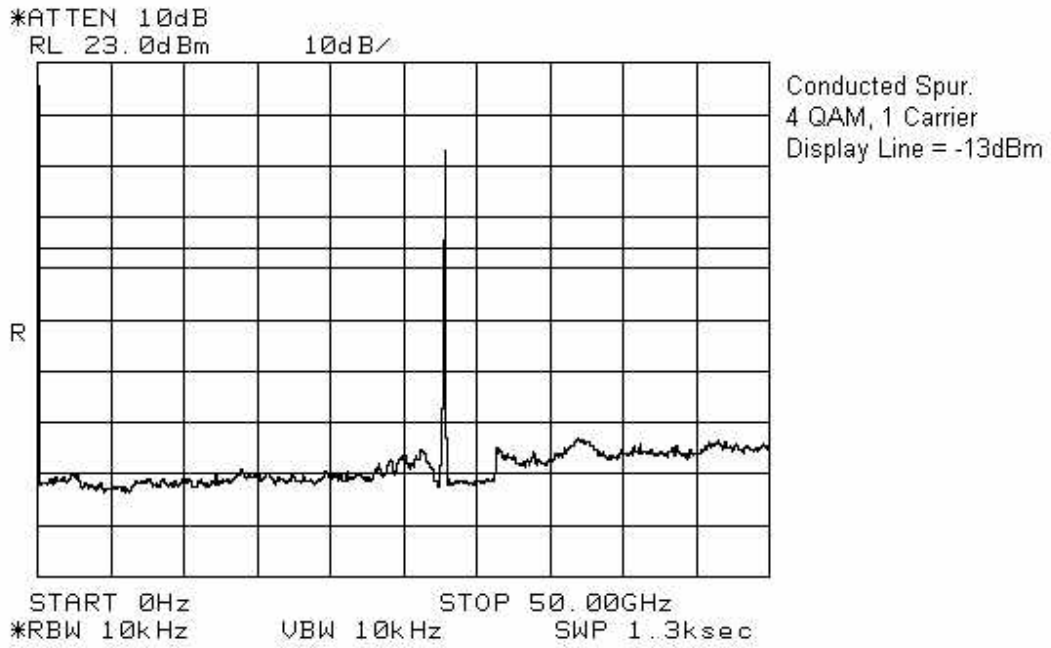
Minimum Standard: 101.111 (a)(2)(iii), -13 dBm

Test Results: Complies

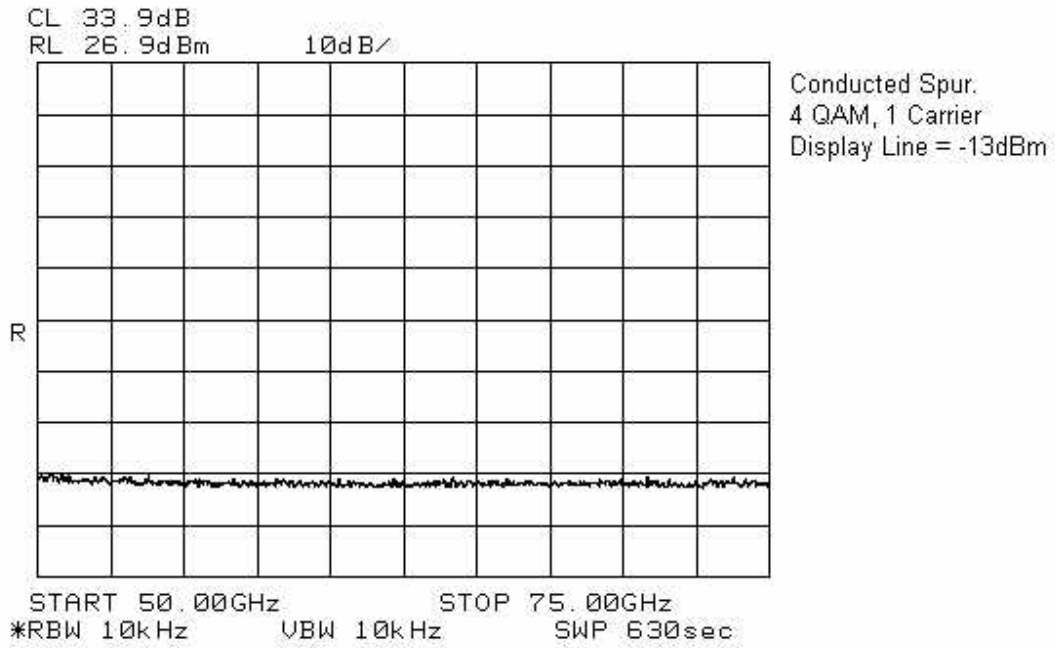
No emissions were detected within 20 dB of the specification limit.

Test Data: See attached graph(s).

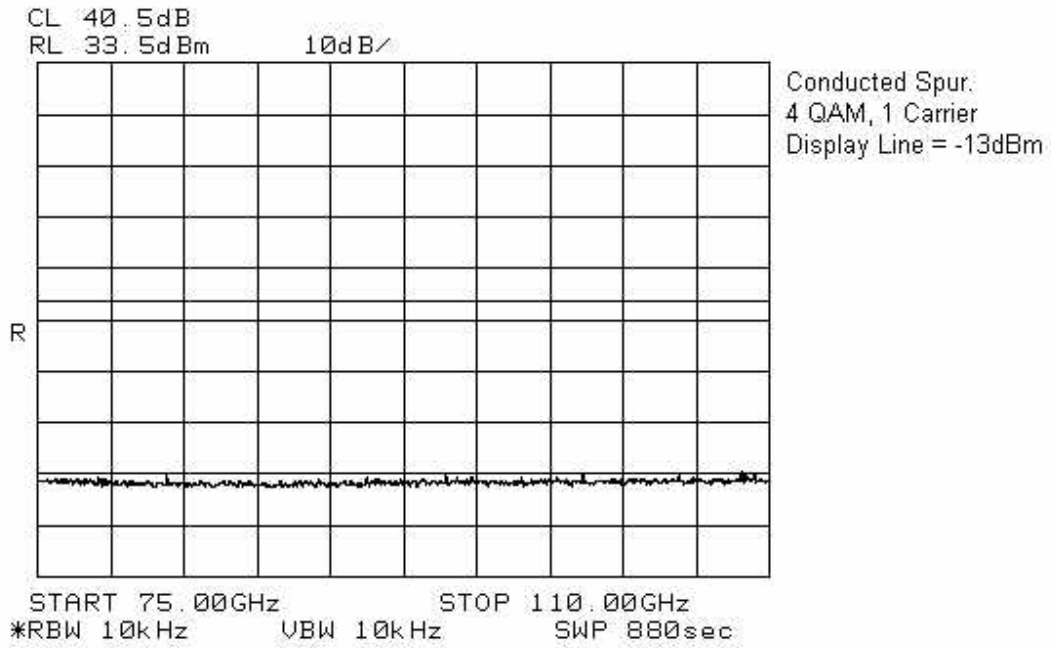
EQUIPMENT: BTR 28-08M, NTVG14CB, S/W Ver. 1.2



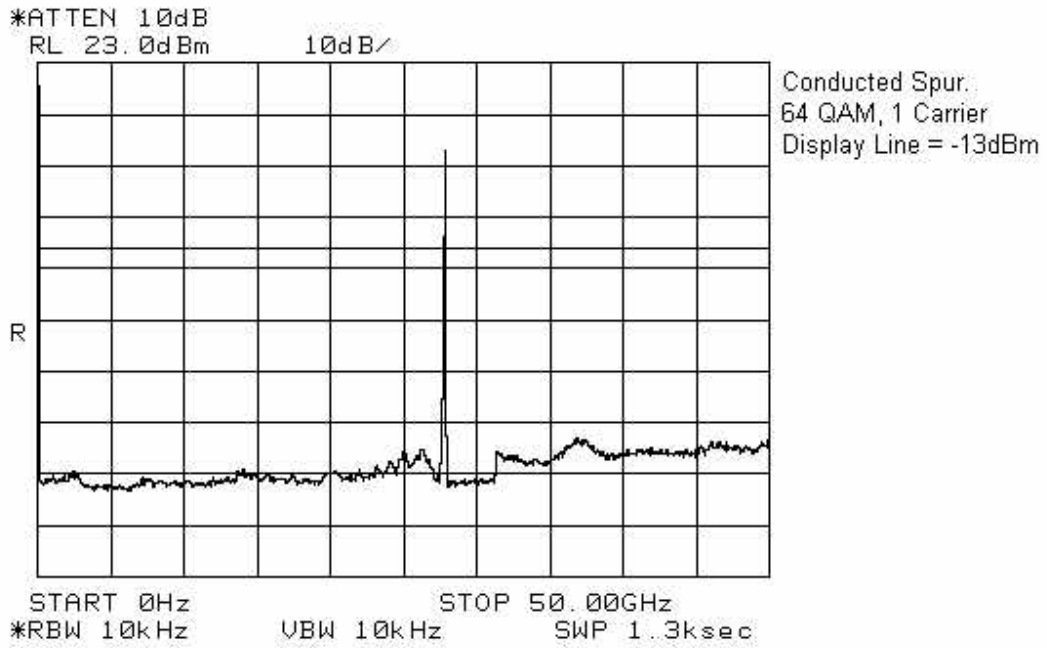
EQUIPMENT: BTR 28-08M, NTVG14CB, S/W Ver. 1.2



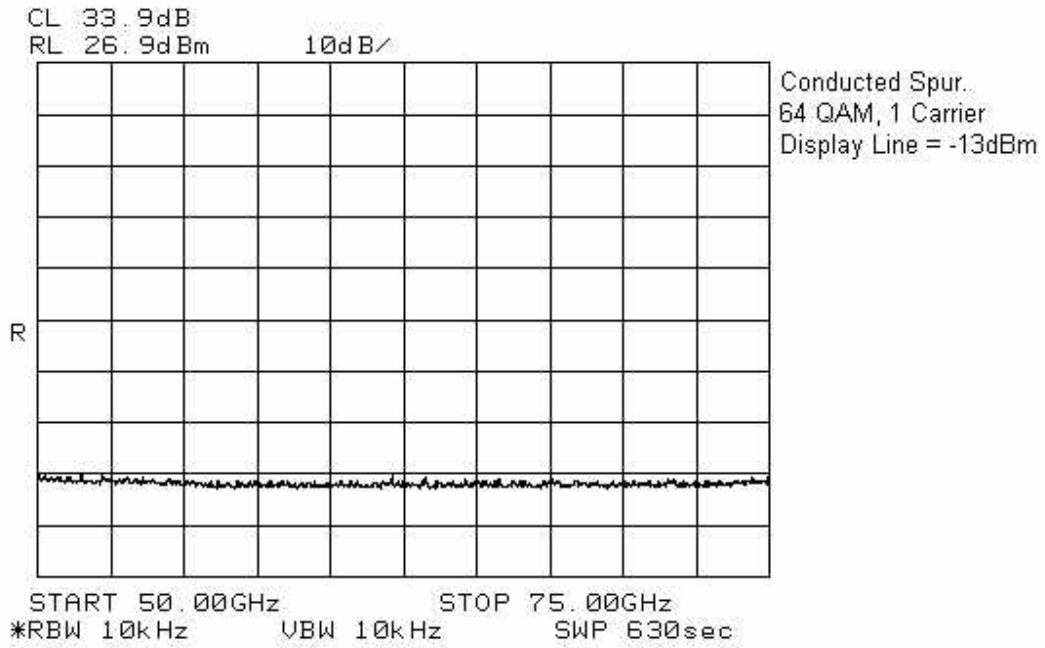
EQUIPMENT: BTR 28-08M, NTVG14CB, S/W Ver. 1.2



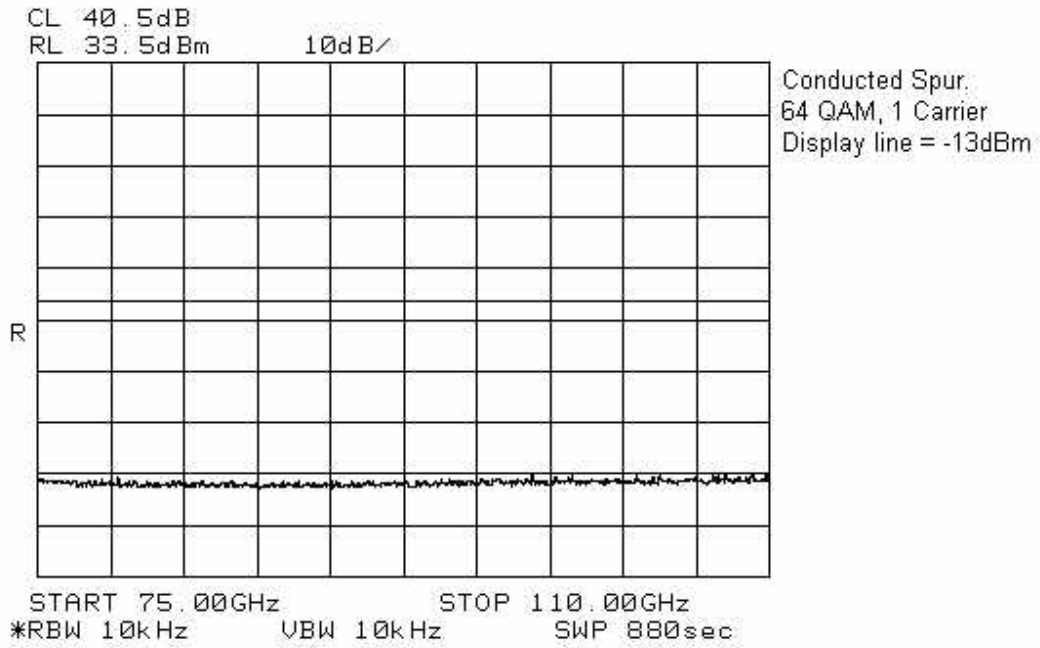
EQUIPMENT: BTR 28-08M, NTVG14CB, S/W Ver. 1.2



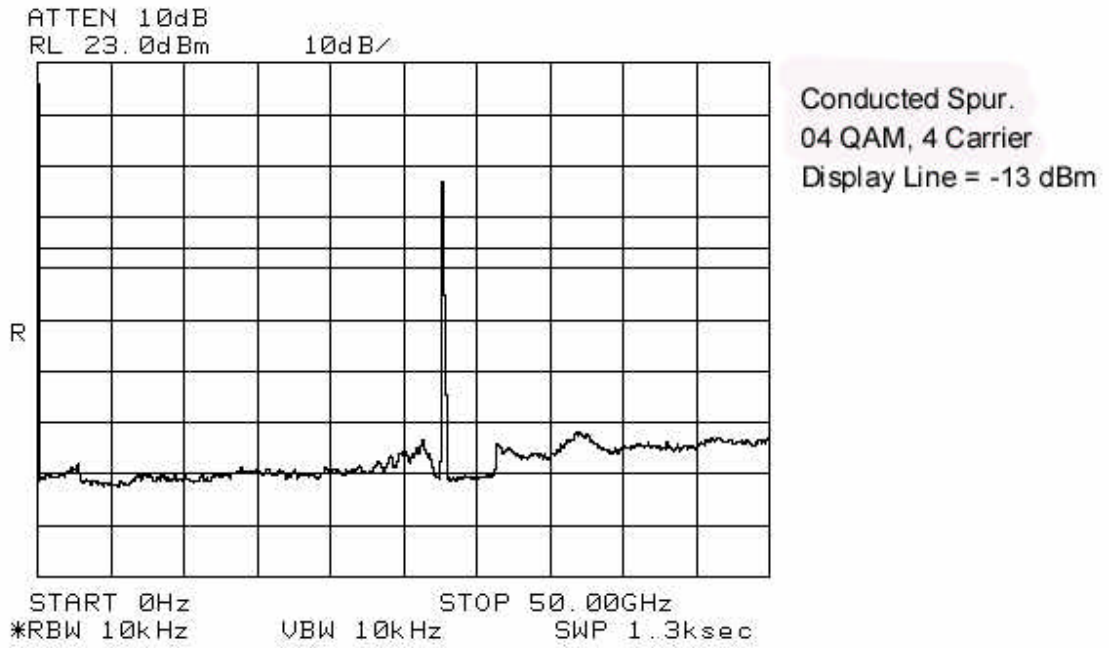
EQUIPMENT: BTR 28-08M, NTVG14CB, S/W Ver. 1.2



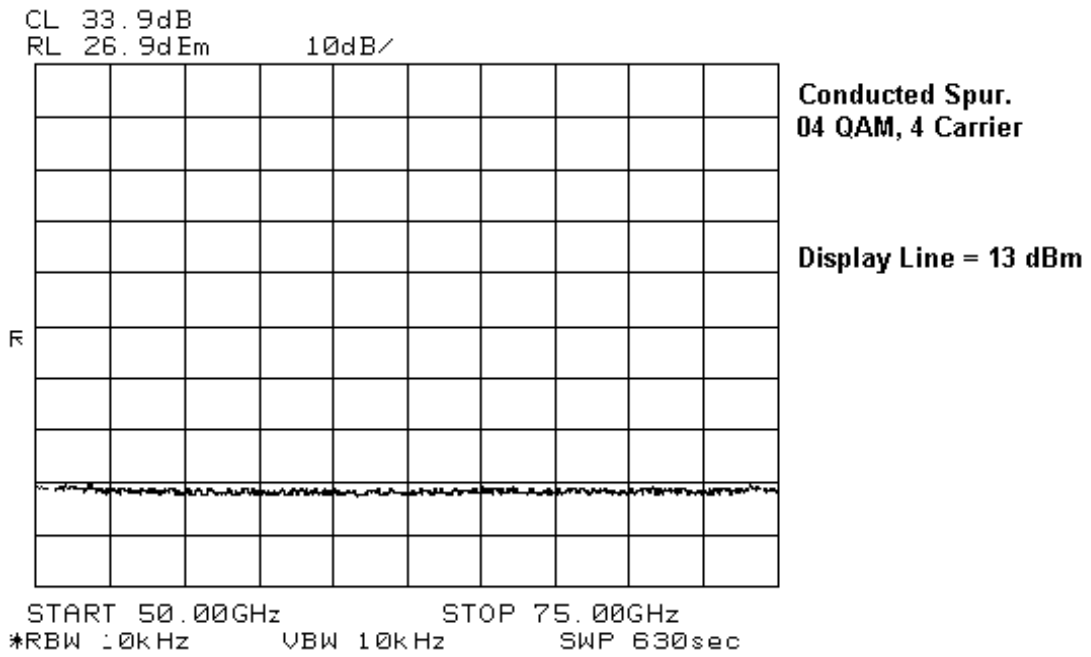
EQUIPMENT: BTR 28-08M, NTVG14CB, S/W Ver. 1.2



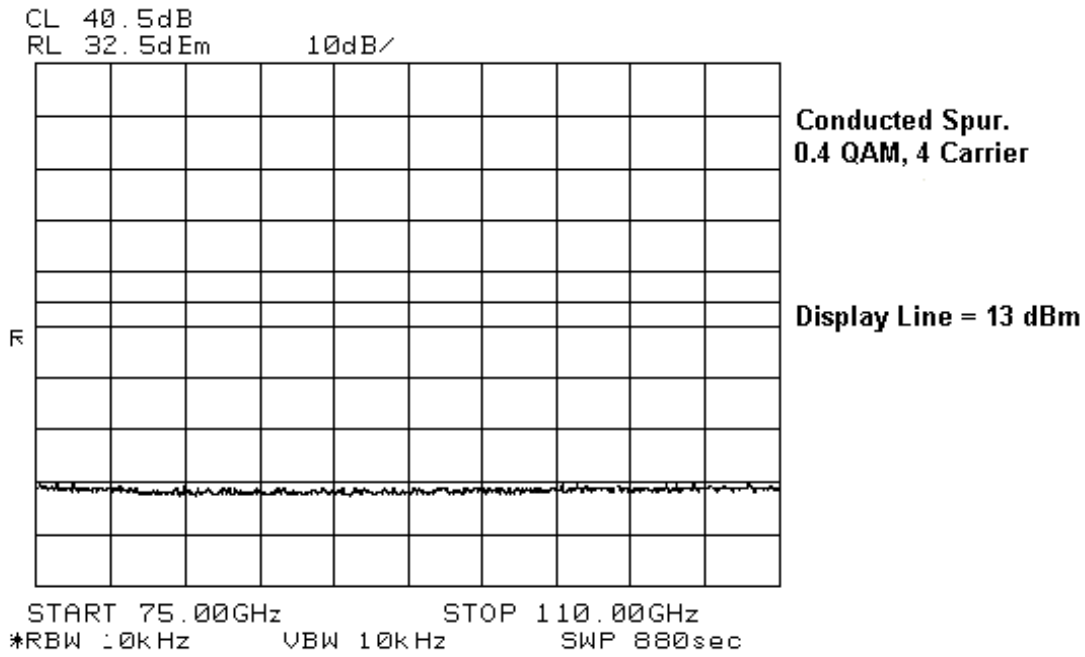
EQUIPMENT: BTR 28-08M, NTVG14CB, S/W Ver. 1.2



EQUIPMENT: BTR 28-08M, NTVG14CB, S/W Ver. 1.2



EQUIPMENT: BTR 28-08M, NTVG14CB, 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 22, 2000
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Minimum Standard: 101.111 (a)(2)(iii), -13 dBm

84.4 dB μ V/m @ 3m < 1 GHz

82.2 dB μ V/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 22, 2000
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Minimum Standard: 101.107, 0.001% (276 kHz)

Test Results: Complies

The maximum frequency drift is 15 kHz.
This is 0.0000543%

Test Data: Standard Test Voltage: STV -48 VDC
Standard Test Frequency: 27575 MHz

Test Condition	Frequency (MHz)	Frequency Drift (kHz)
STV	27 574.987	13
115% STV	27 574.988	12
85% STV	27 574.988	12
-30 °C	27 574.994	6
-20 °C	27 574.993	7
-10 °C	27 574.993	7
0 °C	27 574.994	6
+10 °C	27 574.994	6
+30 °C	27 574.993	7
+40 °C	27 574.988	12
+50 °C	27 574.985	15

EQUIPMENT: BTR 28-08M, NTVG14CB, S/W Ver. 1.2

Section 8. Test Equipment List

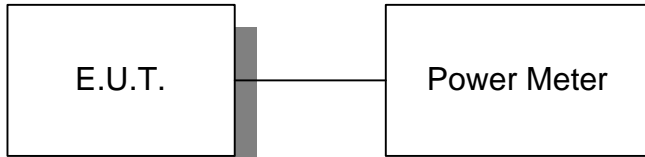
CAL CYCLE	EQUIPMENT	MANUFACTURER	MODEL	SERIAL	LAST CAL.	NEXT CAL.
1 Year	Spectrum Analyzer	Hewlett Packard	8565E	FA000981	June 16/00	June 16/01
1 Year	Climate Chamber	Thermotron	SM-16C	15649-S	COU	COU
1 Year	Horn Antenna	EMCO #2	3115	4336	Nov. 11/99	Nov. 11/00
3 Year	Waveguide Attenuator	Millitech	FXA-28-S20TG0	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

Annex A
Test Diagrams

EQUIPMENT: BTR 28-08M, NTVG14CB, S/W Ver. 1.2

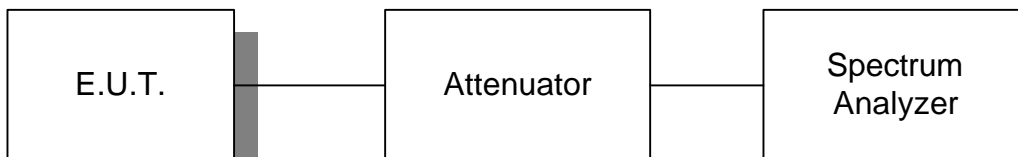
Para. No. 2.1046 - R.F. Power Output



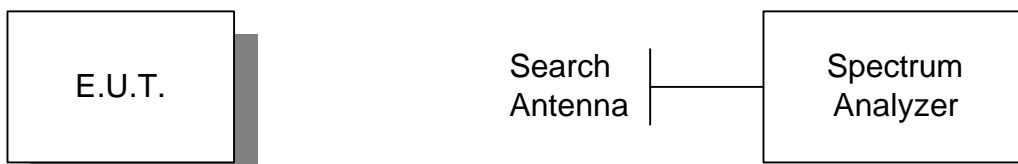
Para. No. 2.1049 - Occupied Bandwidth



Para. No. 2.1051 - Spurious Emissions at Antenna Terminals

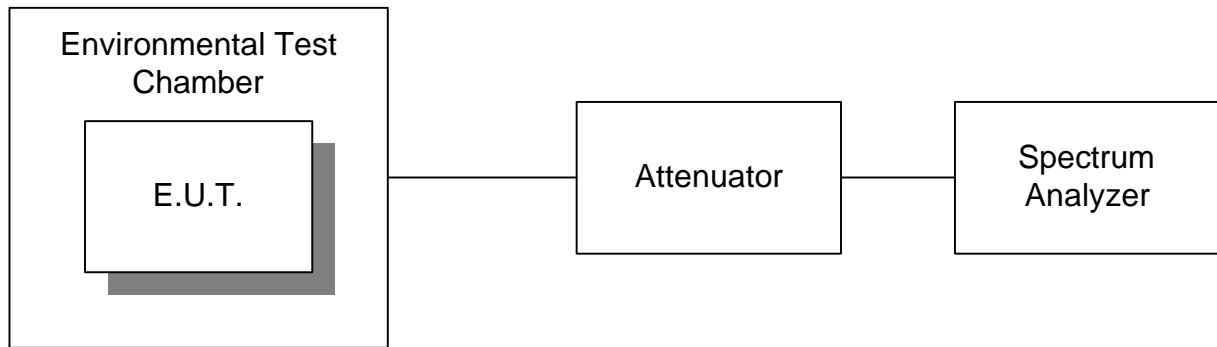


Para. No. 2.1053 - Field Strength of Spurious Radiation



EQUIPMENT: BTR 28-08M, NTVG14CB, S/W Ver. 1.2

Para. No. 2.1055 - Frequency Stability





NTVG KCB,
28-08 M

ATTENTION: This device is not to be used in the presence of flammable or explosive vapors or gases.

020113
28-08 M 1
1974

FOR THE
REPAIR
OF THE
TUNING
CIRCUIT
ONLY
DO NOT
REPAIR
HERE

-48 VDC
IF IN



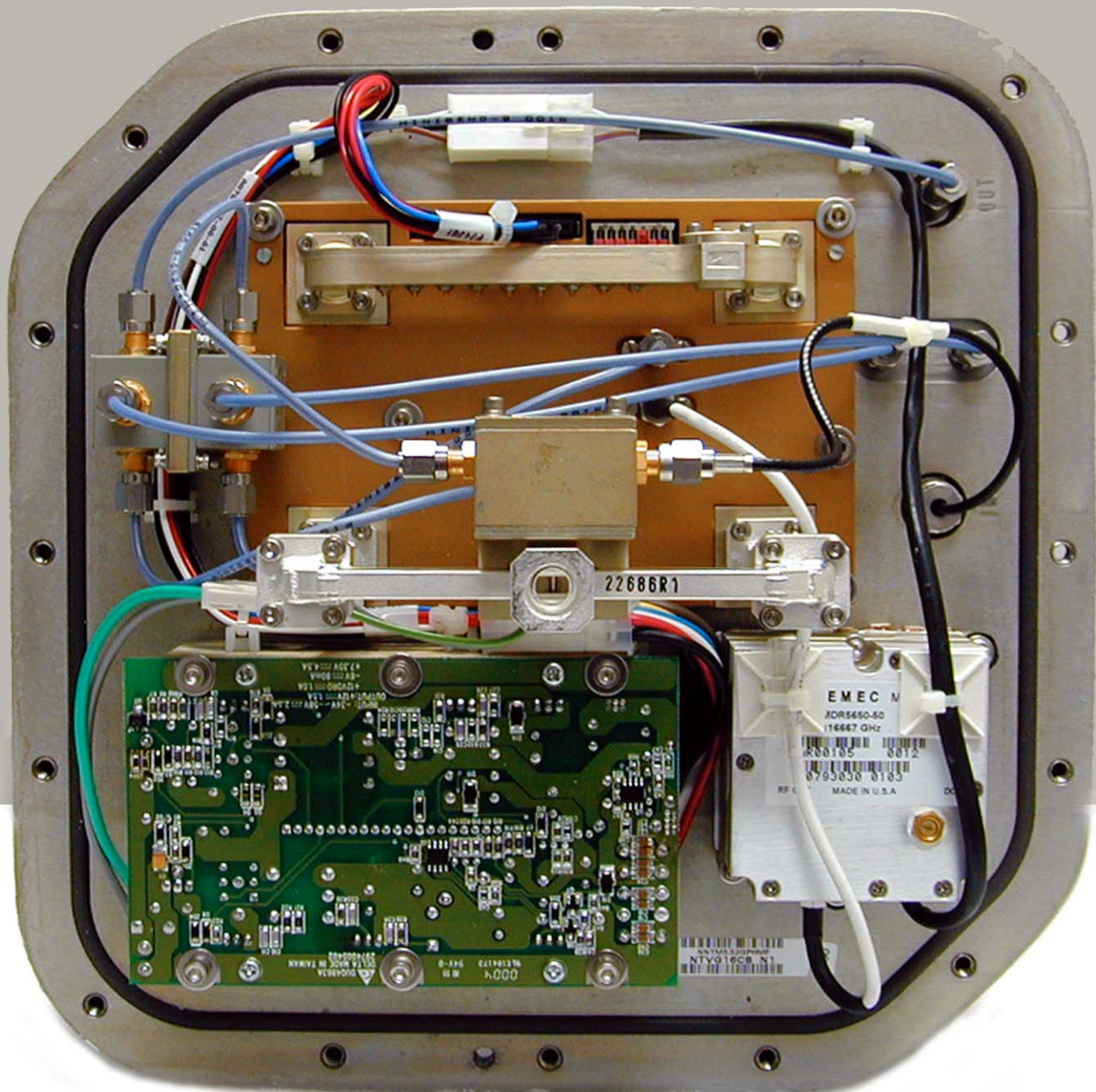
Tx IF
TP1

Rx IF
TP2



IF OUT





22686R1

EMEC M

ADR5650-50

116667 GHz

430105 0012
0793030 0103

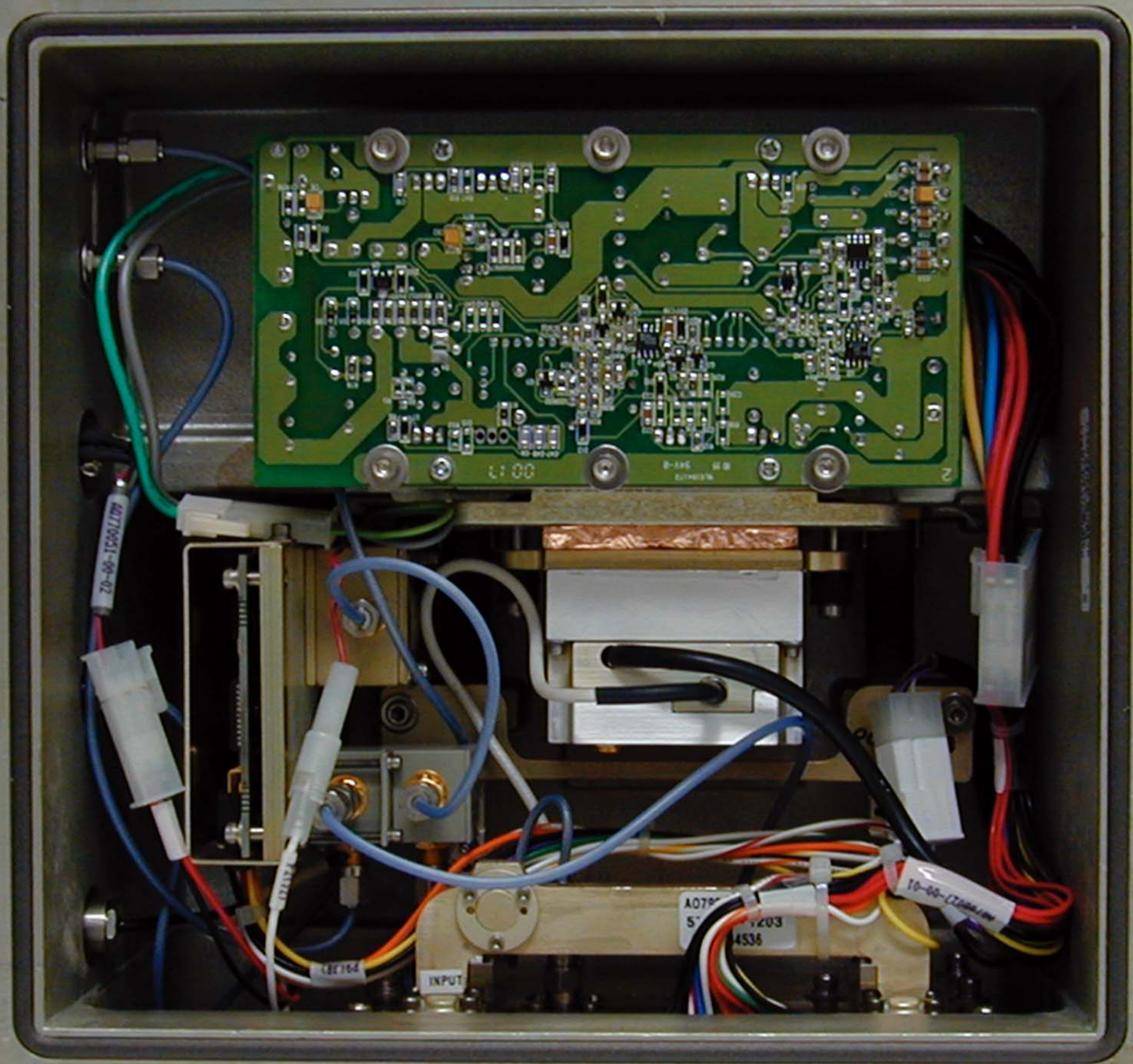
RF C MADE IN U.S.A.

NTV016CB X1

VS9 --- ADC CP
V100 --- AB-
V11 --- 0000219
V11 --- ADL10100
V12 --- ABS --- ABE --- 10100

0004
0-116 E41181316
11 000

000000100
NTV016CB X1
VS900000



A077951-00-02

CBF164

INPUT

A079...
5...

1203
4536

10-00-L2...

0017
D-116 11 B
6/19/03



2800

00000000
ITEM No. 1
06 / 06 / 2000



IF IN
-48 VDC

IF OUT

MONITOR

TX/IF IN
TP1
RX/IF OUT
TP2





