

**KTL Test Report:**

0R03222  
Issue 2.0

**Applicant:**

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

**Equipment Under Test:  
(E.U.T.)**

BTR 24-01M, NTVG11BA 66  
NNTM532H45HD

Also Covers BTR 24-01MO, NTVG11BC

**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 Manager

**Date:**

January 24, 2001

**Total Number of Pages:**

43

**Authorized Copy:**

Soft Copy

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**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: January 24, 2001

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This report applies only to the items tested.

*EQUIPMENT: BTR 24-01M*

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**Summary Of Test Data**

<b>Name Of Test</b>	<b>Para. No.</b>	<b>Result</b>
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: 24 °C  
   Humidity: 42 %

**Outdoor**                      Temperature: N/A  
   Humidity: N/A

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**Section 2. General Equipment Specification**

**Manufacturer:** Nortel Networks

**Model No.:** BTR 24-01M, SW Version 1.2  
NTVG11BA 66

**Serial No.:** NNTM532H45HD

**Date Received In Laboratory:** October 23, 2000

**KTL Identification No.:** Item #2

**Transmitter**

**Supply Voltage Input:** -48 Vdc

**Frequency Range:** Tx 24.255 GHz to 24.445 GHz

**Tunable Bands:** Item #1

**Types of Modulation:** 4, 16, 64 QAM @ 7.488 Msps FDMA

**Data Rate(s):** 7.488 Msps

**Internal/External Data Source:** External

**Emission Designator:** 7M83D9W  
37M8D9W

**Output Impedance:** 50Ω

**RF Power Output (rated):** 14.75 dBm to 22.24 dBm

**Channel Spacing(s):** 10 MHz

**Operator Selection of Operating Frequency:** None

**Power Output Adjustment Capability:** 0-31 dBm Attenuation

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**Equipment Under Test**

- |   |   |
|---|---|
| (1) BTR 24-01M<br>NTVG11BA 66<br>NNTM532H45HD               | (6) SMM 5010C x QTY 04<br>NTVH06AA – NNTM5337THA2<br>NTVH06AB19 – NNTM5353P C9P<br>NTVH06AB03 – NNTM5334XA7R<br>NTVH06AB03 – NNTM532NV8B7 |
| (2) RPE 9000 (Telemetry Box)<br>NTVH24AA 25<br>NNTM532GD728 | (7) CIM5000C<br>NTVH25AA 15<br>NNTM5324MWH9   |
| (3) RSM 9016<br>NTVH13BA 62<br>NNTM532G9F7H                 | (8) AWM5010B<br>NTVH04AA AD<br>NNTM535L30ML   |
| (4) RSM 9116<br>NTVH20BA 16<br>NNTM53219QEJ                 | (9) SDM5002C<br>NTV07AB27<br>NNTM83004BRE   |
| (5) PSM5148 x QTY 05<br>NTVH10AC 03                         |   |

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**Section 3. RF Power Output**

**Para. No.: 1.1046**

<b>Test Performed By:</b> Glen Westwell	<b>Date of Test:</b> November 3, 2000
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**Minimum Standard:** 101.113 (a)

**Test Results:** Complies.

The RF output power is within 1 dBm of the rated power.

**Measurement Data:**

	<b>Rated (dBm)</b>	<b>Measured (dBm)</b>
<b>1 Carrier</b>	22.24	22.2
	20.24	20.5
	18.24	18.4
<b>4 Carriers</b>	20.74	20.8
	17.74	18.7
	14.74	15.2

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## **Section 4. Occupied Bandwidth**

**Para. No.: 2.1049**

<b>Test Performed By:</b> Glen Westwell	<b>Date of Test:</b> November 7, 2000
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**Minimum Standard:** 101.111 (a)(2)(ii)

**Test Results:** Complies.

**Test Data:** See attached graph(s).

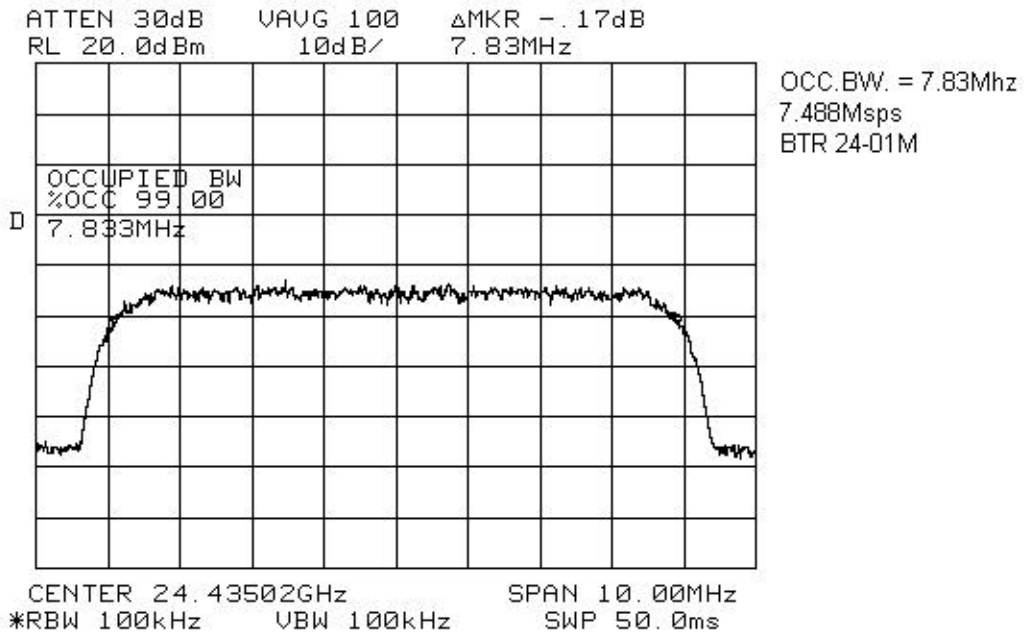
**Note:** In plots where the RBW has been reduced to 100 kHz, the limit has been decreased by another 10 dB.



EQUIPMENT: BTR 24-01M

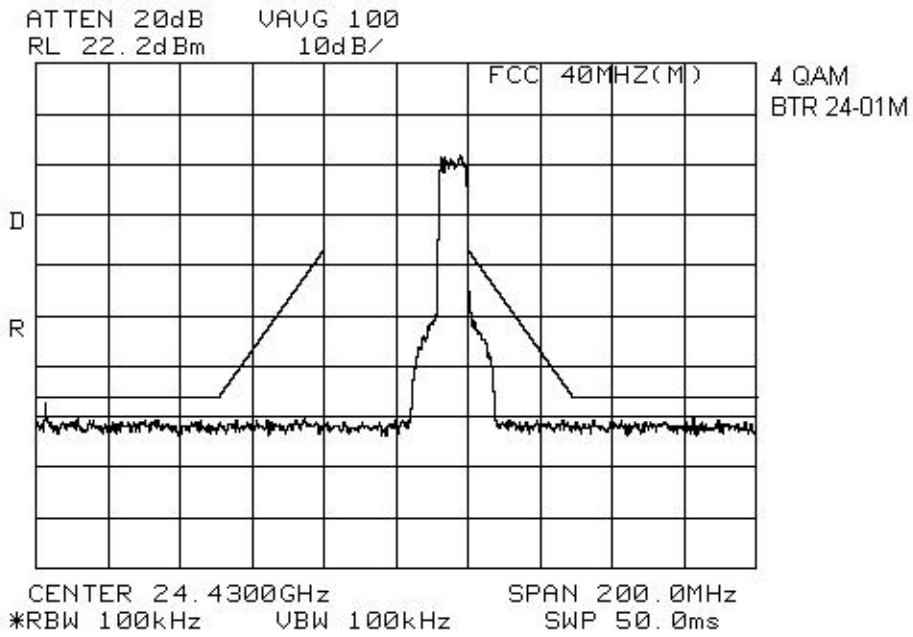
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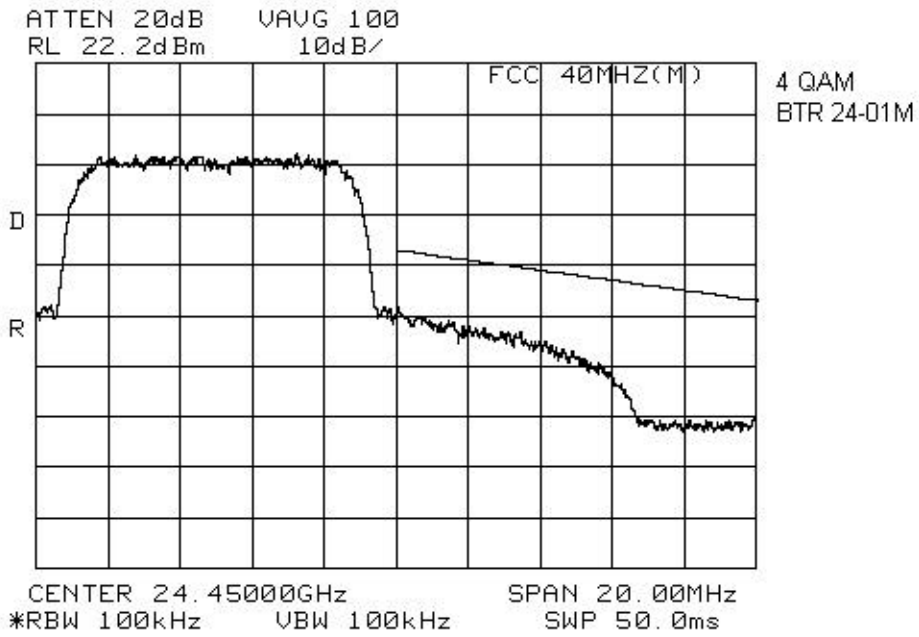
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EQUIPMENT: BTR 24-01M  
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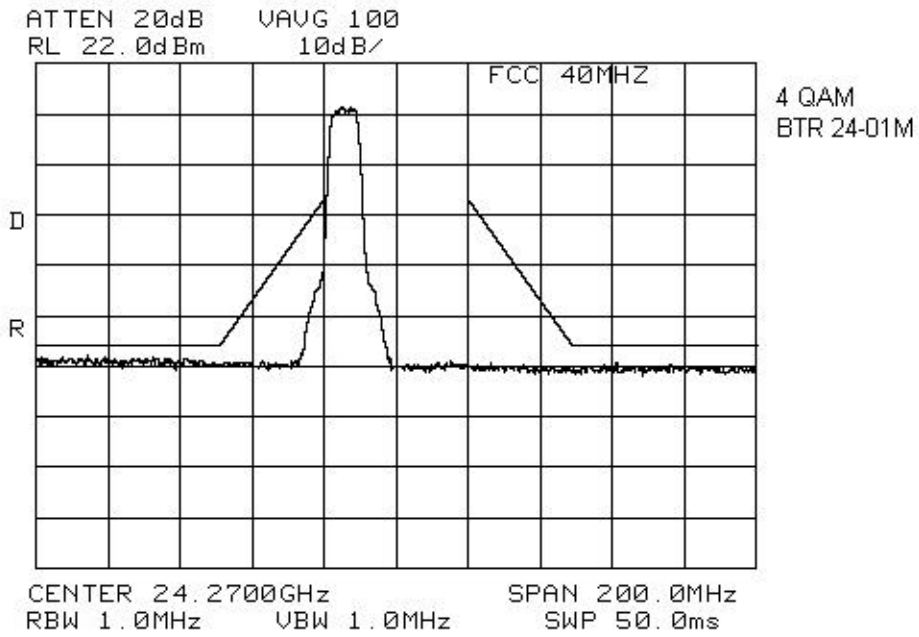
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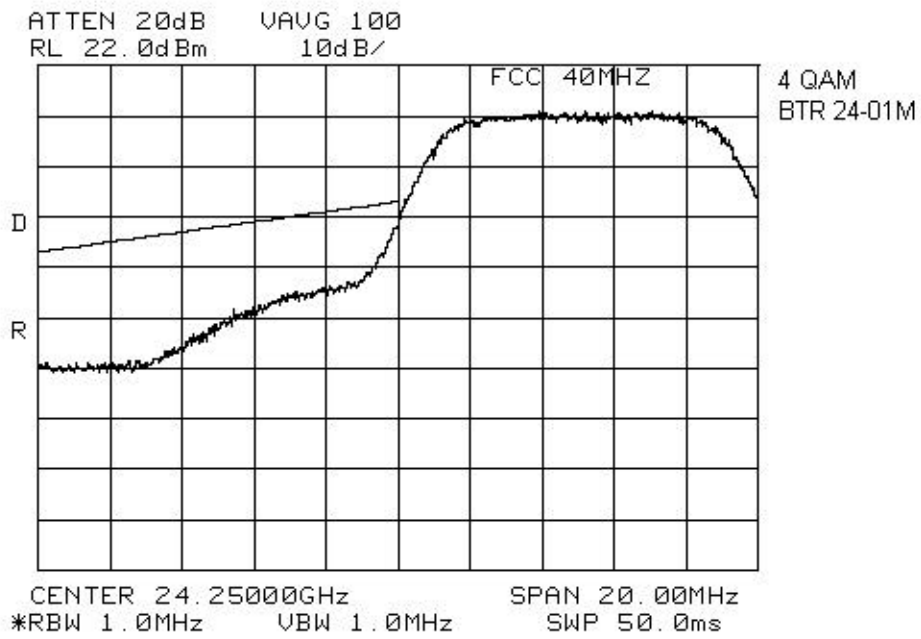
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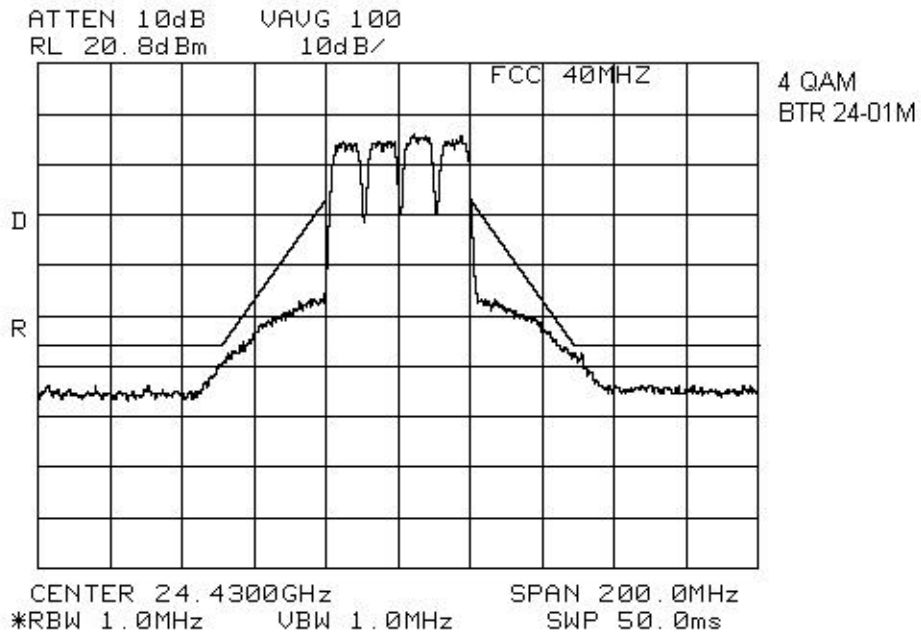
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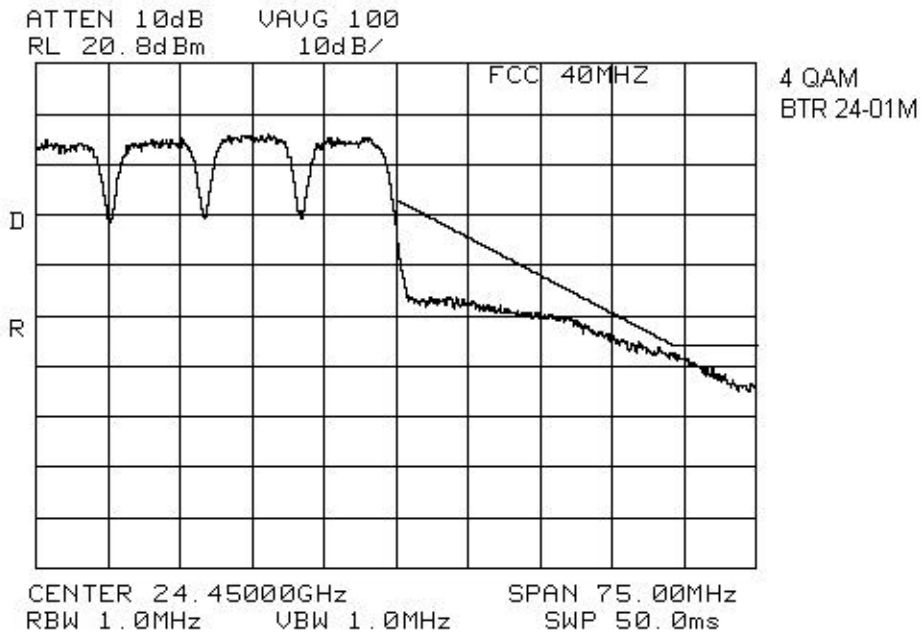
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EQUIPMENT: BTR 24-01M  
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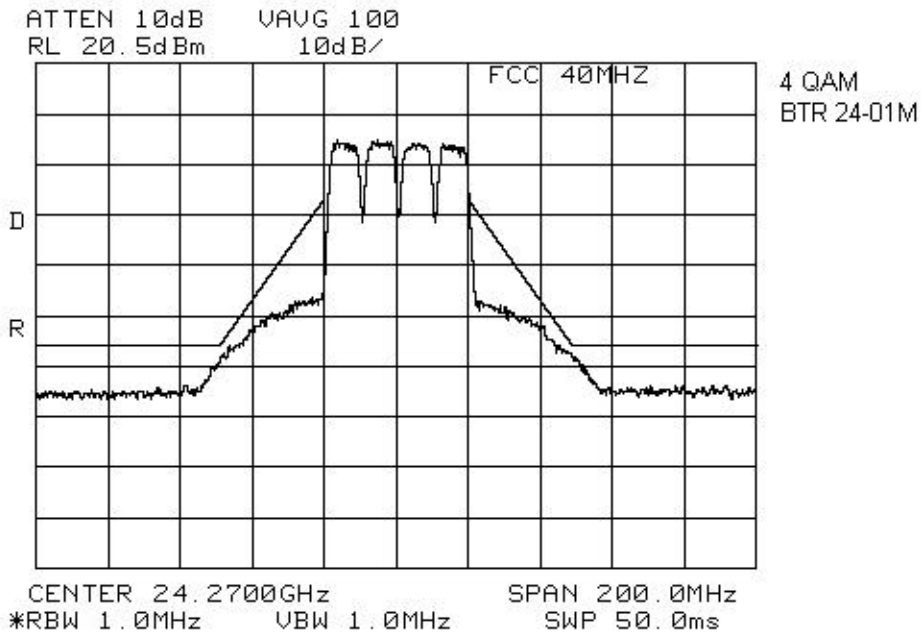
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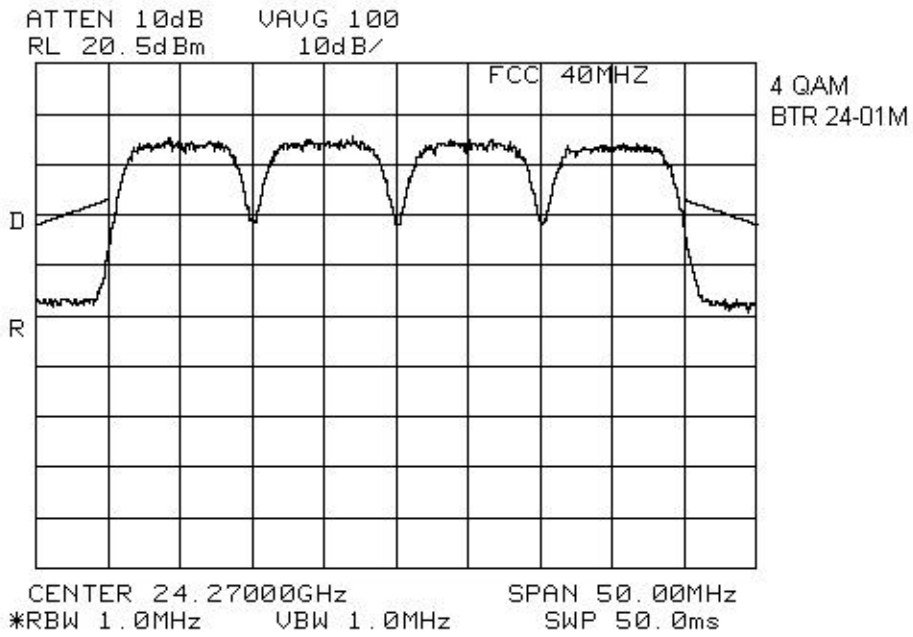




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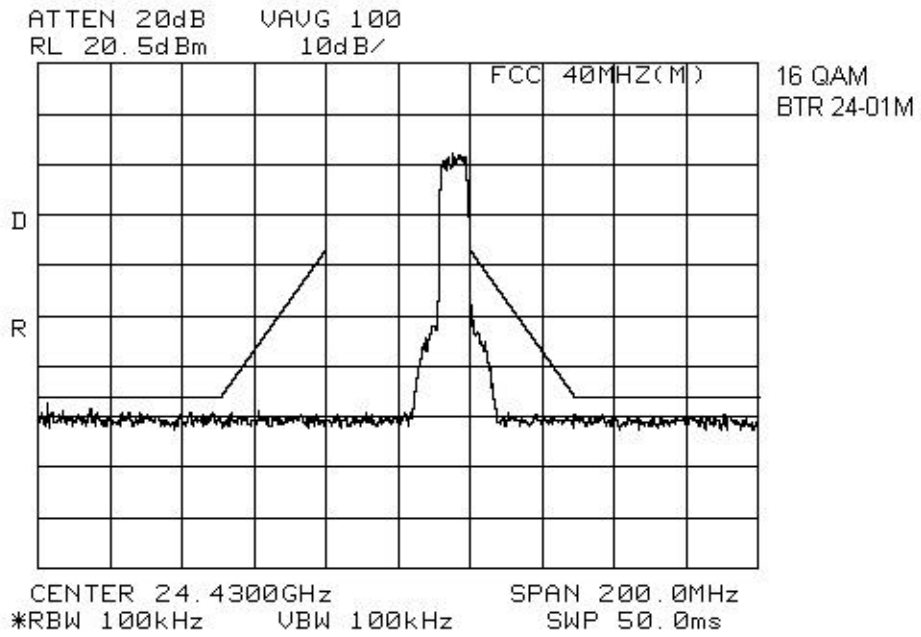
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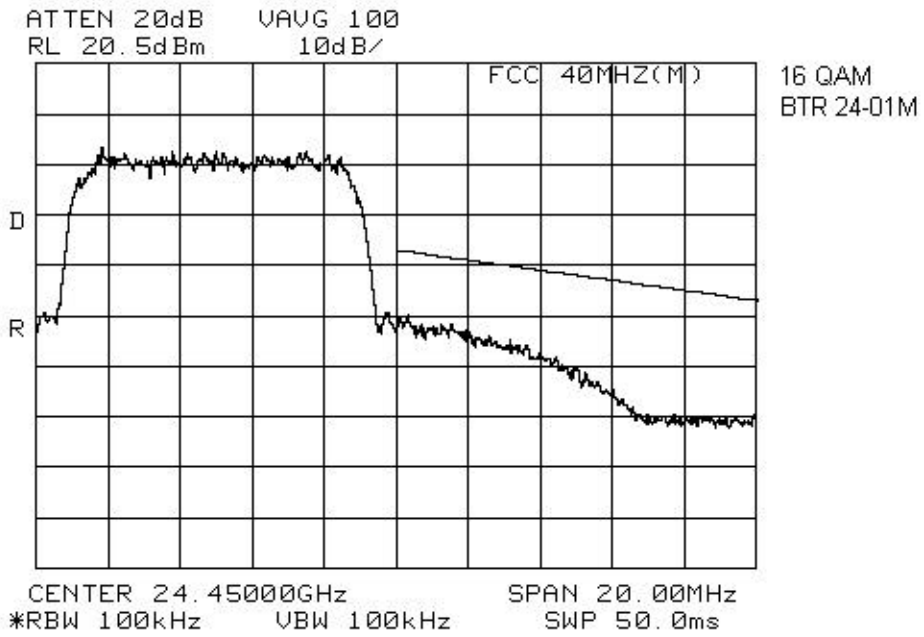
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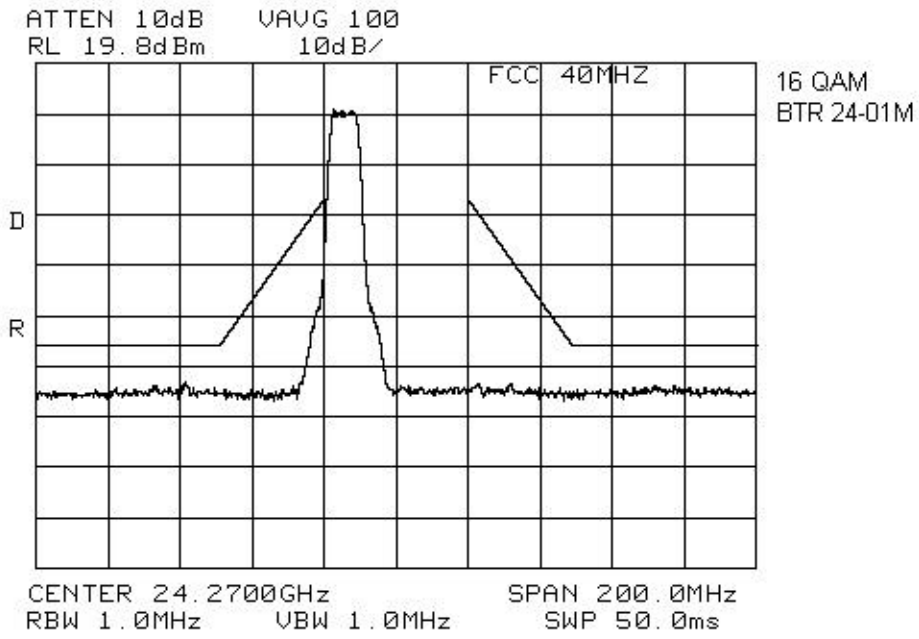
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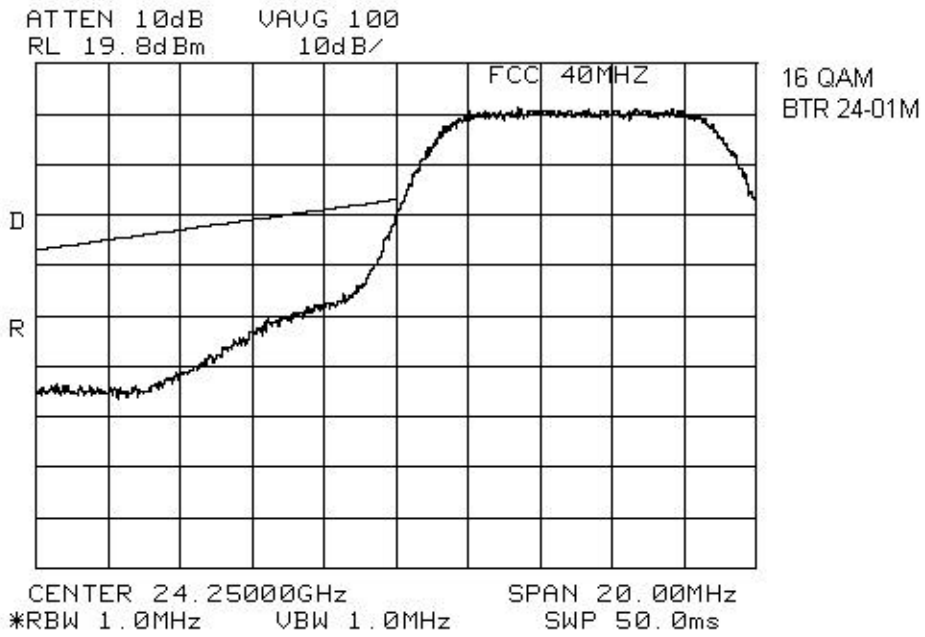
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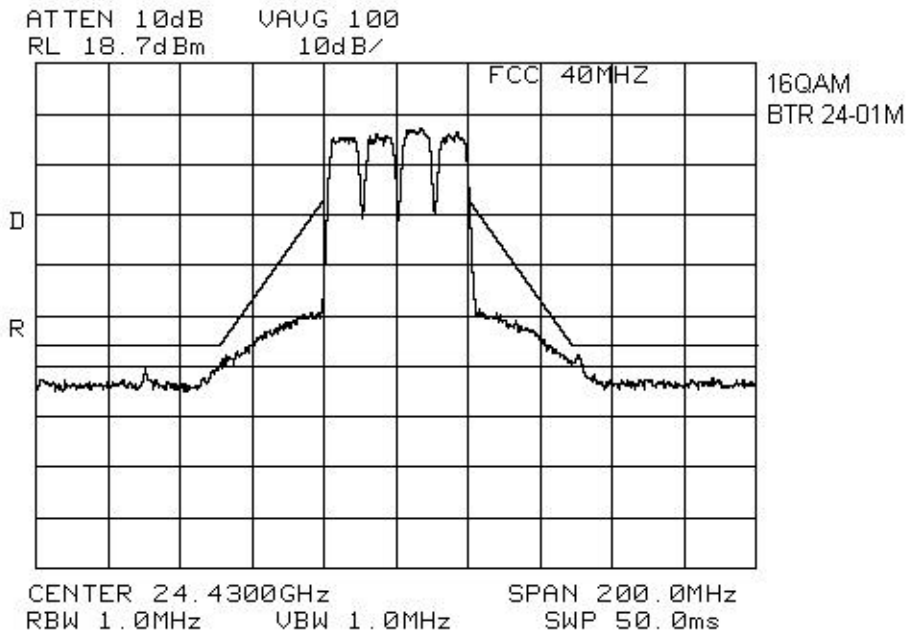
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ISSUE: 2.0

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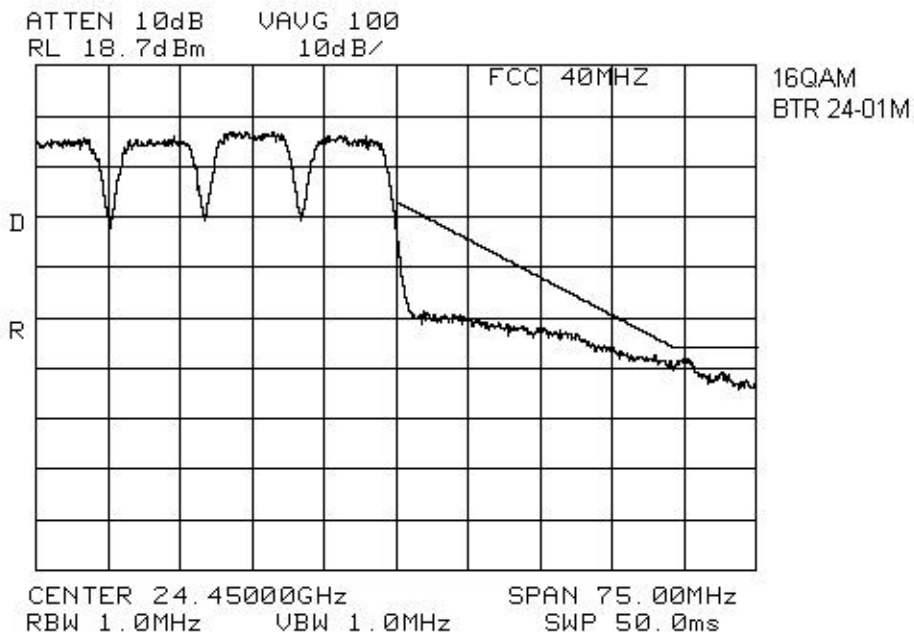
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ISSUE: 2.0

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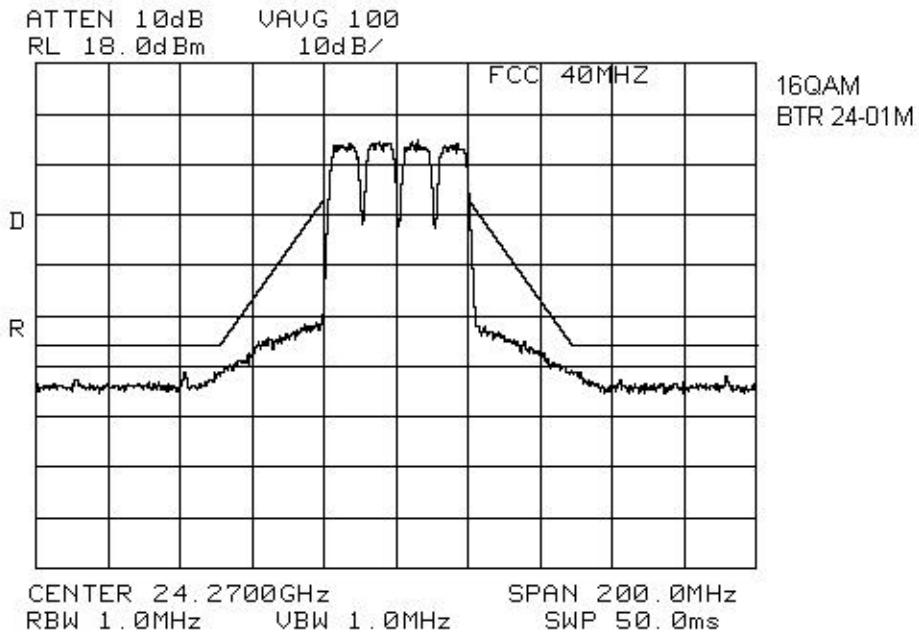
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EQUIPMENT: BTR 24-01M  
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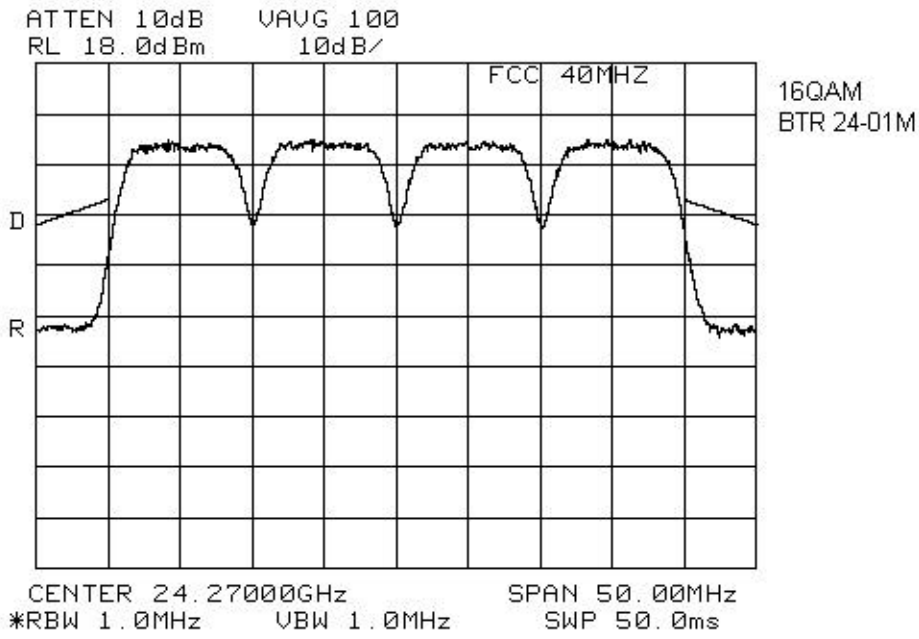
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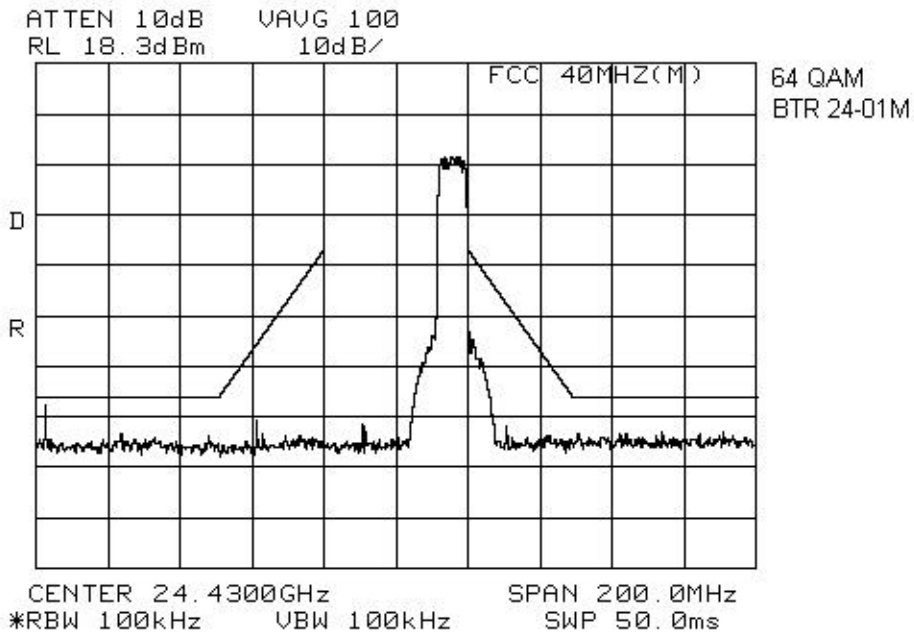
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ISSUE: 2.0

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EQUIPMENT: BTR 24-01M  
ISSUE: 2.0

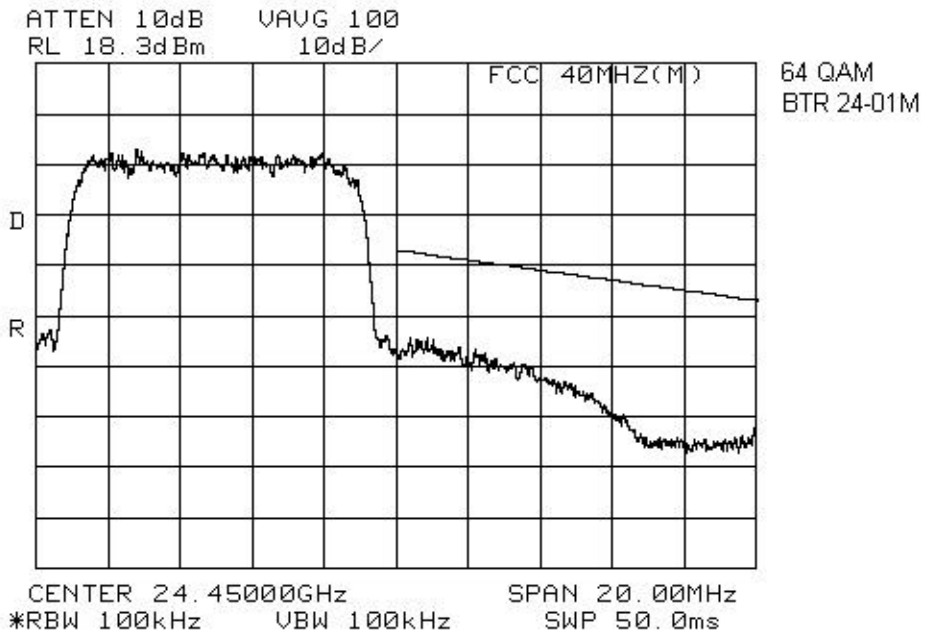
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EQUIPMENT: BTR 24-01M

ISSUE: 2.0

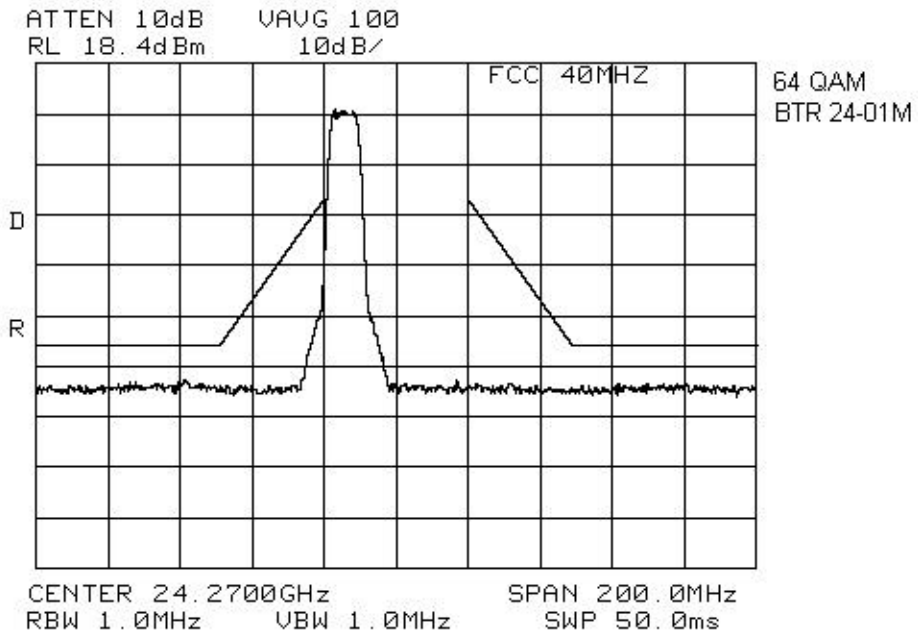
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EQUIPMENT: BTR 24-01M

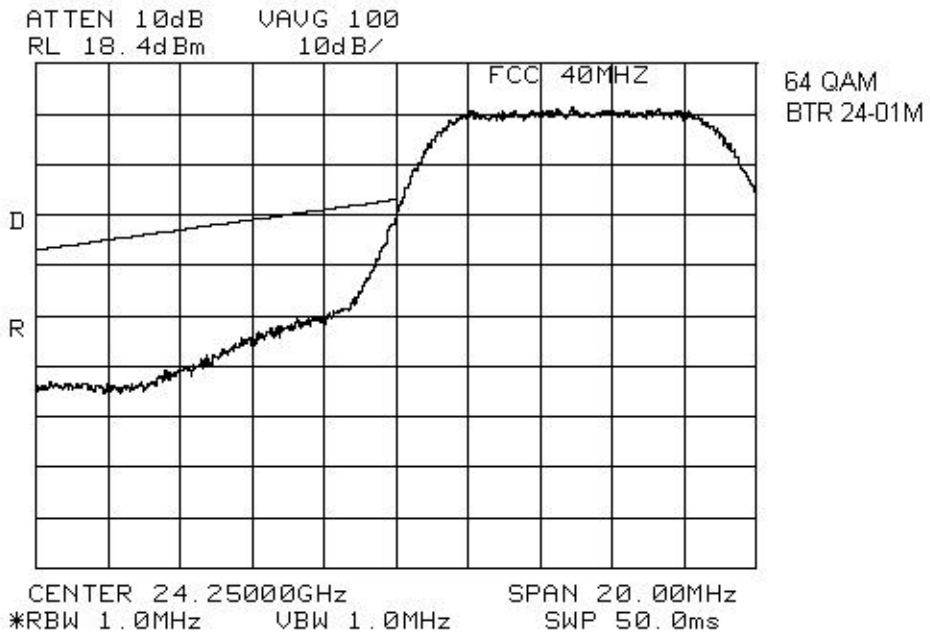
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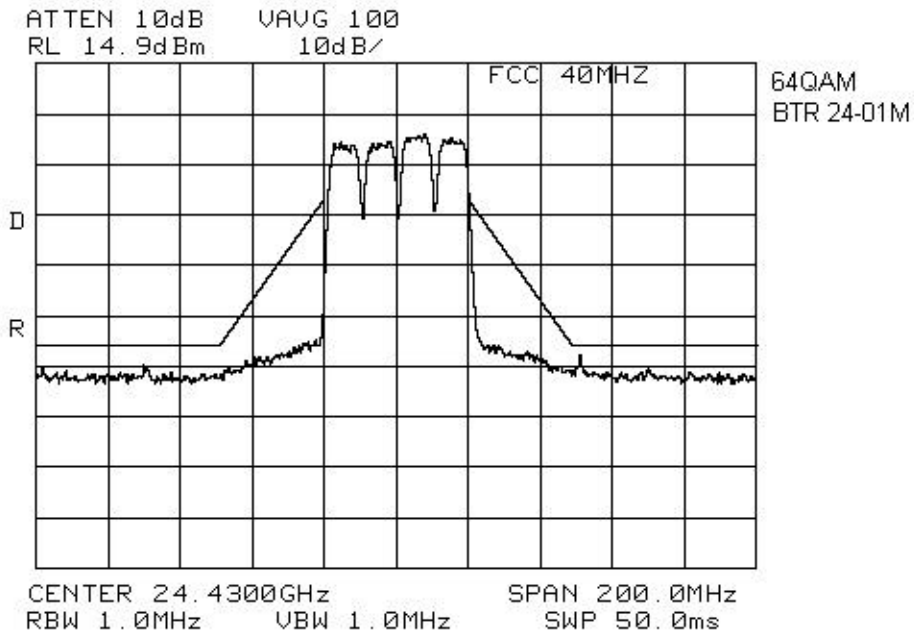
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ISSUE: 2.0

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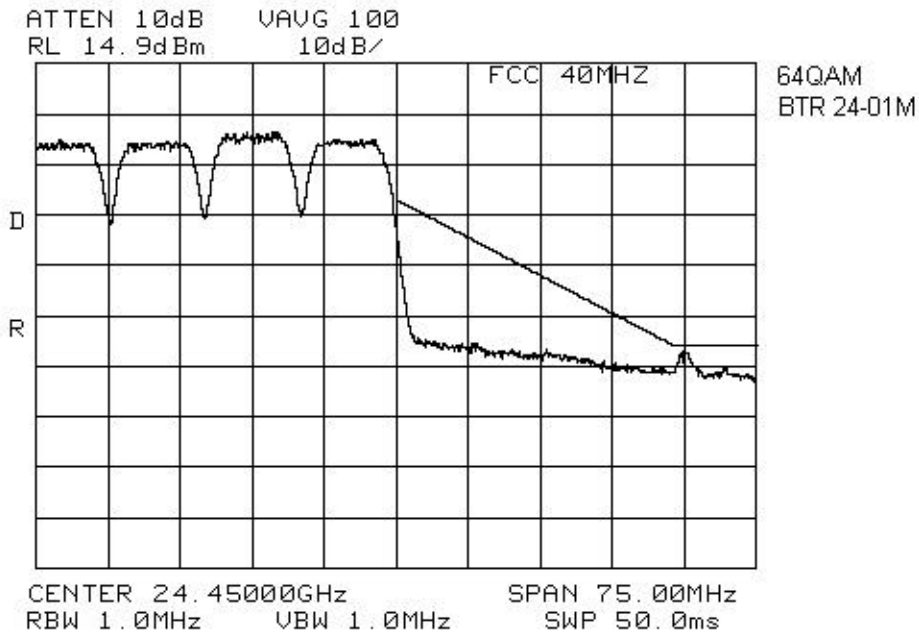
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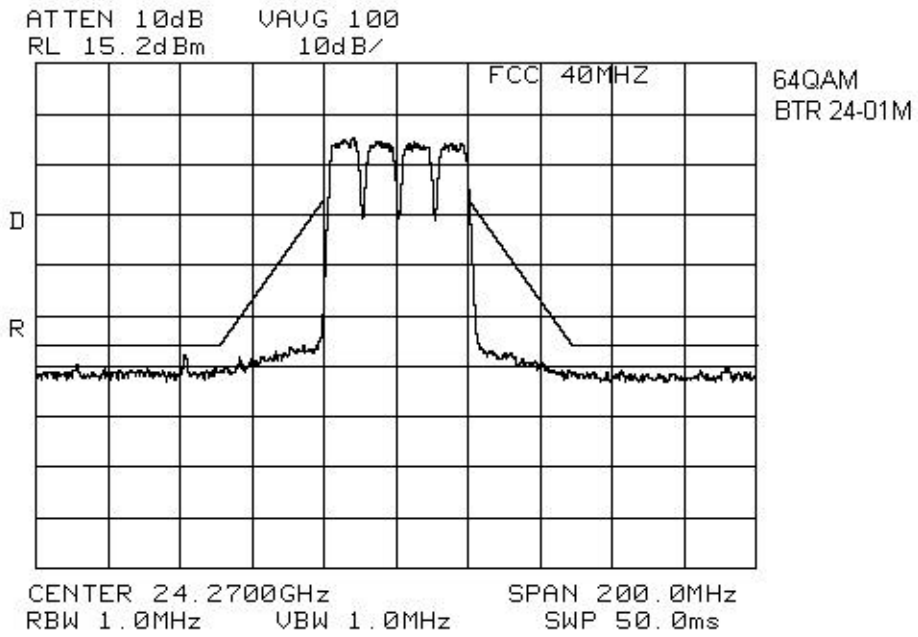
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EQUIPMENT: BTR 24-01M  
ISSUE: 2.0

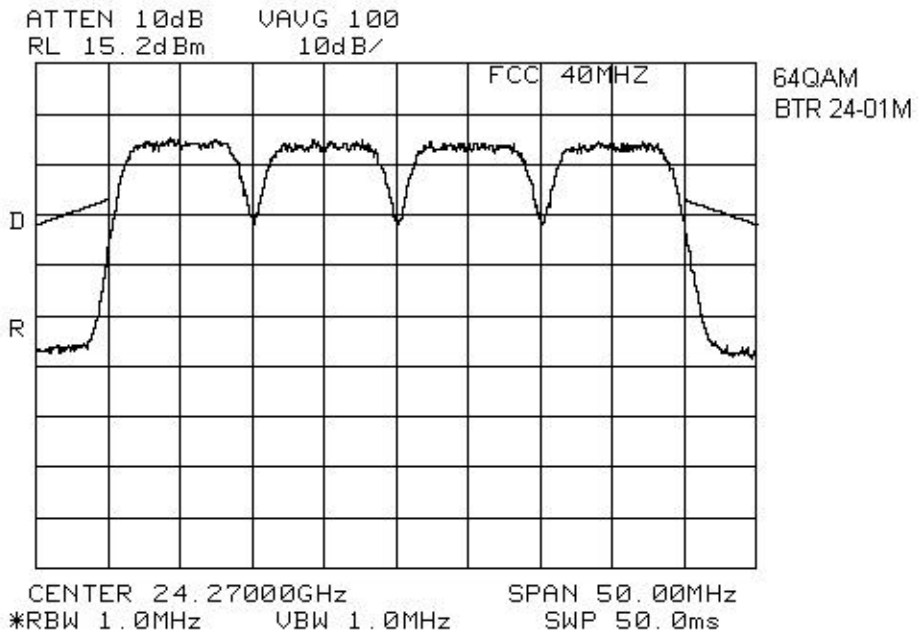
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*ISSUE: 2.0*

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**Section 5. Spurious Emissions at Antenna Terminals**

**Para. No.: 2.1051**

<b>Test Performed By:</b> Glen Westwell	<b>Date of Test:</b> November 6, 2000
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**Minimum Standard:** 101.111 (a)(2)(iii), -13 dBm

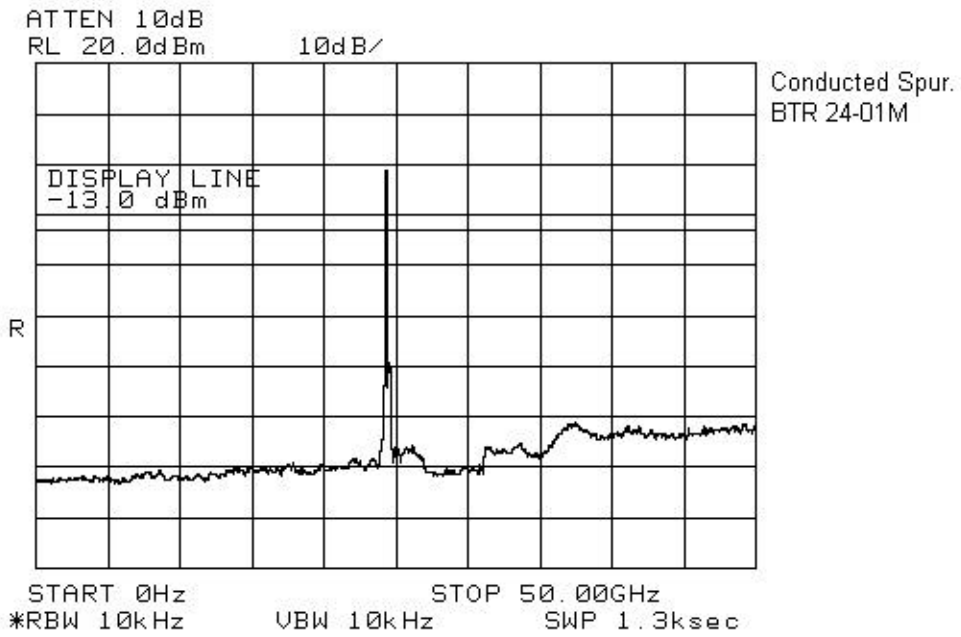
**Test Results:** Complies.

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

**Test Data:** See attached graph(s).

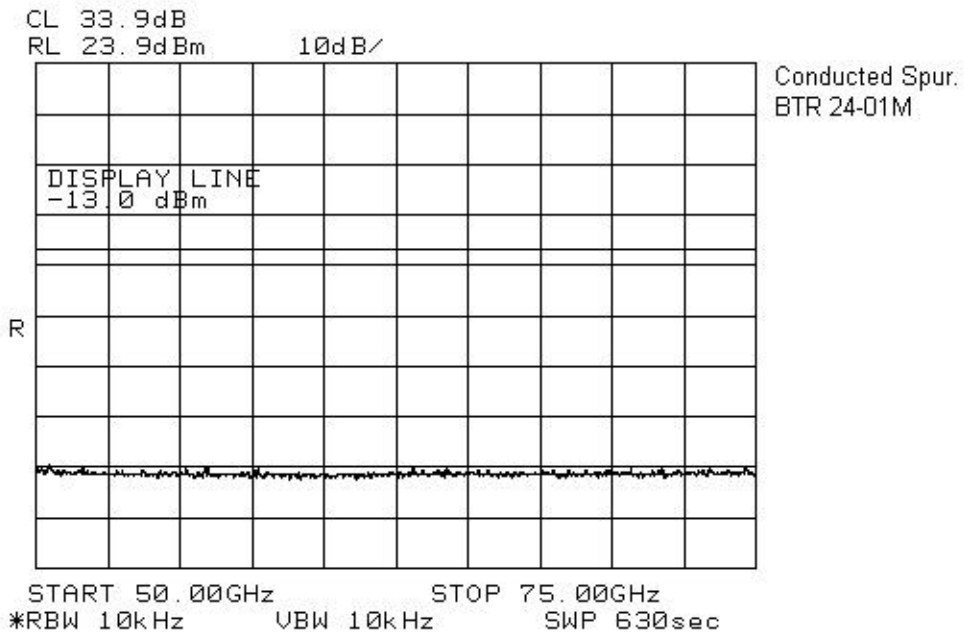
EQUIPMENT: BTR 24-01M  
ISSUE: 2.0

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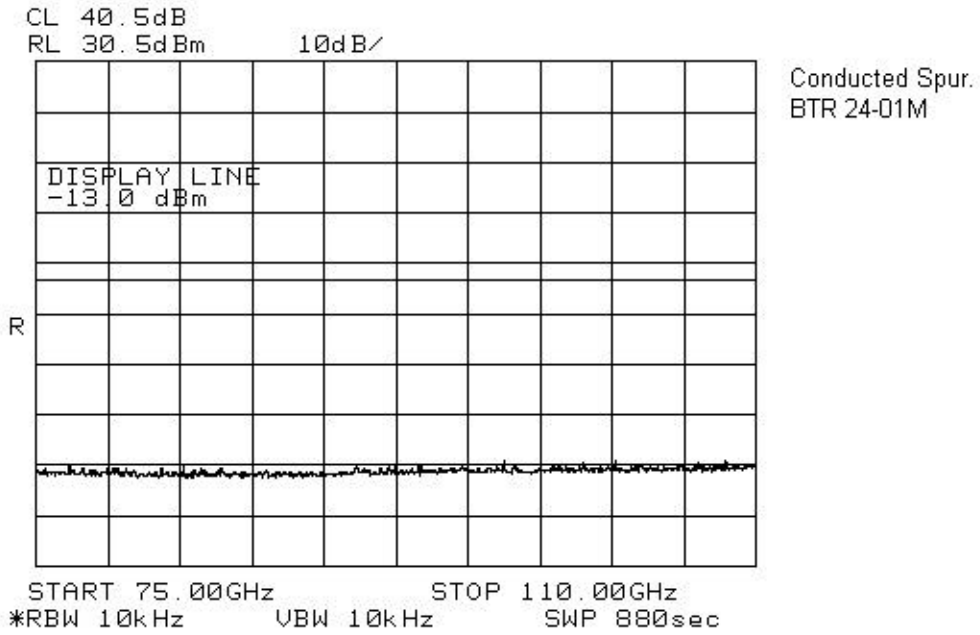
EQUIPMENT: BTR 24-01M  
ISSUE: 2.0

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EQUIPMENT: BTR 24-01M  
ISSUE: 2.0

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*EQUIPMENT: BTR 24-01M*

*ISSUE: 2.0*

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**Section 6. Field Strength of Spurious Emissions**

**Para. No.: 2.1053**

<b>Test Performed By:</b> Glen Westwell	<b>Date of Test:</b> November 2, 2000
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**Minimum Standard:** 101.111(a)(2)(iii), -13 dBm  
84.4 dB $\mu$ V/m @ 3m < 1 GHz  
82.2 dB $\mu$ 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.

*EQUIPMENT: BTR 24-01M*  
*ISSUE: 2.0*

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**Section 7. Frequency Stability**

**Para. No.: 2.1055**

<b>Test Performed By:</b> Glen Westwell	<b>Date of Test:</b> November 1, 2000
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**Minimum Standard:** ± 0.03 %, 7306 kHz

**Test Results:** Complies

The maximum frequency drift is 4,000 Hz.  
This is 0.0000164%

**Measurement Data:** Standard Test Voltage: STV -48 VDC  
Standard Test Voltage: 24355.000 MHz

<b>Test Condition</b>	<b>Frequency (kHz)</b>	<b>Frequency Drift (kHz)</b>
STV	24 355 001	1
115% STV	24 355 002	2
85% STV	24 355 002	2
-30°C	24 355 996	4
-20°C	24 355 997	3
-10°C	24 355 997	3
0°C	24 355 999	1
+10°C	24 355 000	0
+30°C	24 355 002	2
+40°C	24 355 002	2
+50°C	24 355 003	3

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**Section 8. Test Equipment List**

<b>CAL CYCLE</b>	<b>EQUIPMENT</b>	<b>MANUFACTURER</b>	<b>MODEL</b>	<b>SERIAL</b>	<b>LAST CAL.</b>	<b>NEXT CAL.</b>
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
2 Year	RF Power Meter	Hewlett Packard	E4418B	FA001413	Nov. 8/99	Dec. 7/00
1 Year	Horn Antenna	EMCO #2	3115	4336	Nov. 11/99	Nov. 11/00
1 Year	Log Periodic Antenna 1	EMCO	LPA-25	1141	Aug. 4/99	Aug. 4/00
3 Year	Standard Gain Horn	Electro-Metrics	SH-50/60-1	FA000479	July 7/00	July 7/01
3 Year	Standard Gain Horn	Electro-Metrics	SH-50/60-2	FA000485	July 7/00	July 7/01
3 year	Harmonic Mixer	H.P.	50-75Ghz	FA001027	Mar. 9/00	Mar. 9/03
3 year	Harmonic Mixer	H.P.	75-110Ghz	FA001302	Oct. 13/98	Oct. 13/01
3 year	Diplexer	Olsen - OML	DPL.26 (H.P)		Mar. 15/00	Mar 15/03
3 year	Mixer/Antenna 40-60Ghz	Olsen – OML	M19HWA (H.P.)		Mar. 15/00	Mar. 15/03
3 year	Mixer /Antenna 60-90Ghz	Olsen – OML	M12HWA (H.P.)		Mar. 15/00	Mar. 15/03
3 year	Mixer / Antenna 90-140Ghz	Olsen – OML	M08HWA (H.P.)		Mar. 15/00	Mar. 15/03

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



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## **Annex A**

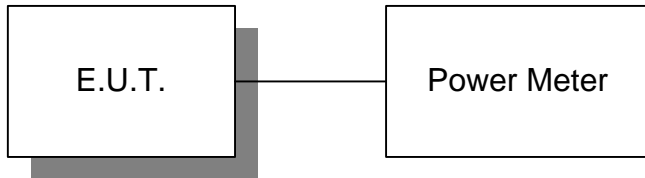
### **Test Diagrams**

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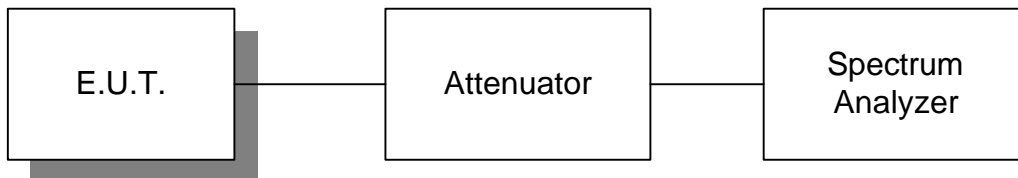
**Para. No. 2.1046 - R.F. Power Output**



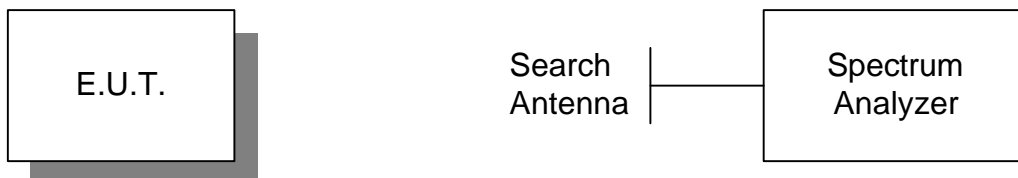
**Para. No. 2.1049 - Occupied Bandwidth**



**Para. No. 2.1051 - Spurious Emissions at Antenna Terminals**



**Para. No. 2.1053 - Field Strength of Spurious Radiation**



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**Para. No. 2.1055 - Frequency Stability**

