



# Nemko

**Test Report:** 3W07463


**Applicant:** Daniels Electronics Ltd.  
43 Eire Street  
Victoria, BC  
V8V-1P8

**Equipment Under Test:  
(EUT)** VT-3H045-SXA300  
Transmitter

**FCC ID:** H4JVT-3H040-S-HSO

**In Accordance With:** **FCC Part 22,90**

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



**Authorized By:** Kevin Carr, EMC Specialist.

**Date:** 17 September 2003

**Total Number of Pages:** 24

## **Table of Contents**

<b>Section 1.</b>	<b>Summary of Test Results .....</b>	<b>3</b>
<b>Section 2.</b>	<b>General Equipment Specification.....</b>	<b>5</b>
<b>Section 3.</b>	<b>RF Power Output.....</b>	<b>7</b>
<b>Section 4.</b>	<b>Audio Frequency Response.....</b>	<b>8</b>
<b>Section 5.</b>	<b>Modulation Limiting.....</b>	<b>10</b>
<b>Section 6.</b>	<b>Occupied Bandwidth .....</b>	<b>12</b>
<b>Section 7.</b>	<b>Spurious Emissions at Antenna Terminals .....</b>	<b>14</b>
<b>Section 8.</b>	<b>Field Strength of Spurious Emissions .....</b>	<b>18</b>
<b>Section 9.</b>	<b>Frequency Stability.....</b>	<b>20</b>
<b>Section 10.</b>	<b>Test Equipment List .....</b>	<b>21</b>
<b>Section 11.</b>	<b>Test Diagrams .....</b>	<b>22</b>

EQUIPMENT: VT-3H045-SXA300 Transmitter

---

## 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 22, 90.

New Submission

Production Unit

Class II Permissive Change

Pre-Production Unit

T	N	B
---	---	---

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. NONE  
See " Summary of Test Data".



TESTED BY: \_\_\_\_\_ DATE: 12 September 2003  
Glen Westwell, Wireless Technologist

Nemko Canada Inc. authorizes the above named company to reproduce this report provided it is reproduced in its entirety and for use by the company's employees only.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Nemko Canada Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

This report applies only to the items tested.

EQUIPMENT: VT-3H045-SXA300 Transmitter

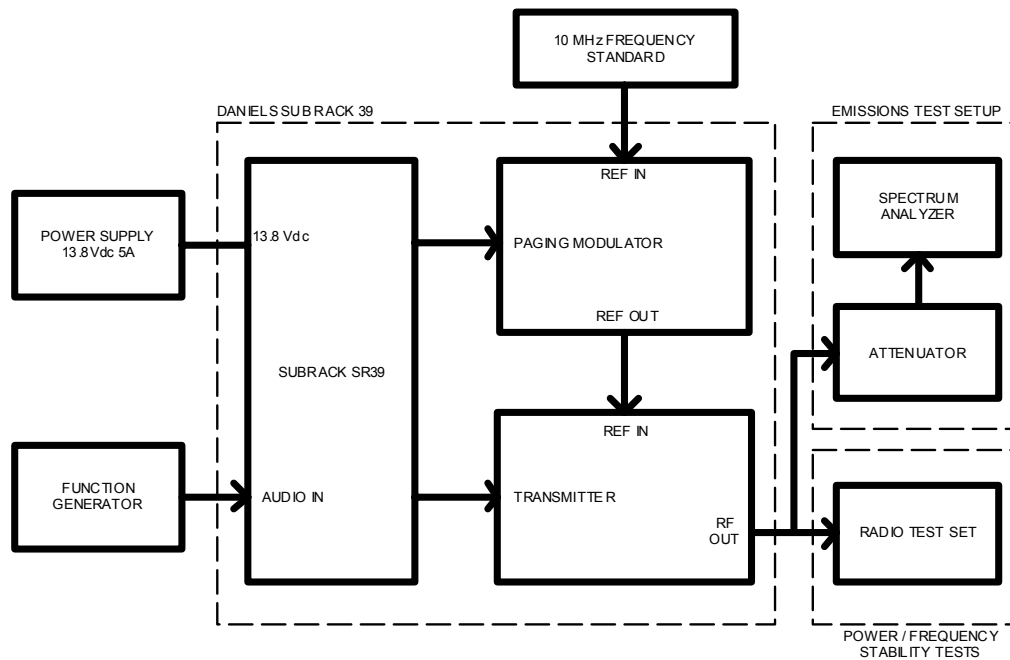
**Summary Of Test Data**

Name Of Test	Para. No.	Result
RF Power Output	2.1046	Complies
Audio Frequency Response	2.1047	Complies
Modulation Limiting	2.1047	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	Complies

**Indoor**                      Temperature: 25°C  
    Humidity: 37 %

**Outdoor**                     Temperature: 20°C  
    Humidity: 43 %

Test Arrangement Diagram :



*EQUIPMENT: VT-3H045-SXA300 Transmitter*

---

**Section 2.        General Equipment Specification**

**Manufacturer:** Daniels Electronics Ltd.

**Model No.:** VT-3H045-SXA300

**Serial No.:** 10369,10370,10371

**Date Received In Laboratory:** Aug. 26, 2003

**Nemko Identification No.:** 1

**Primary Power:** 13.8Vdc

**Modulation:** FM

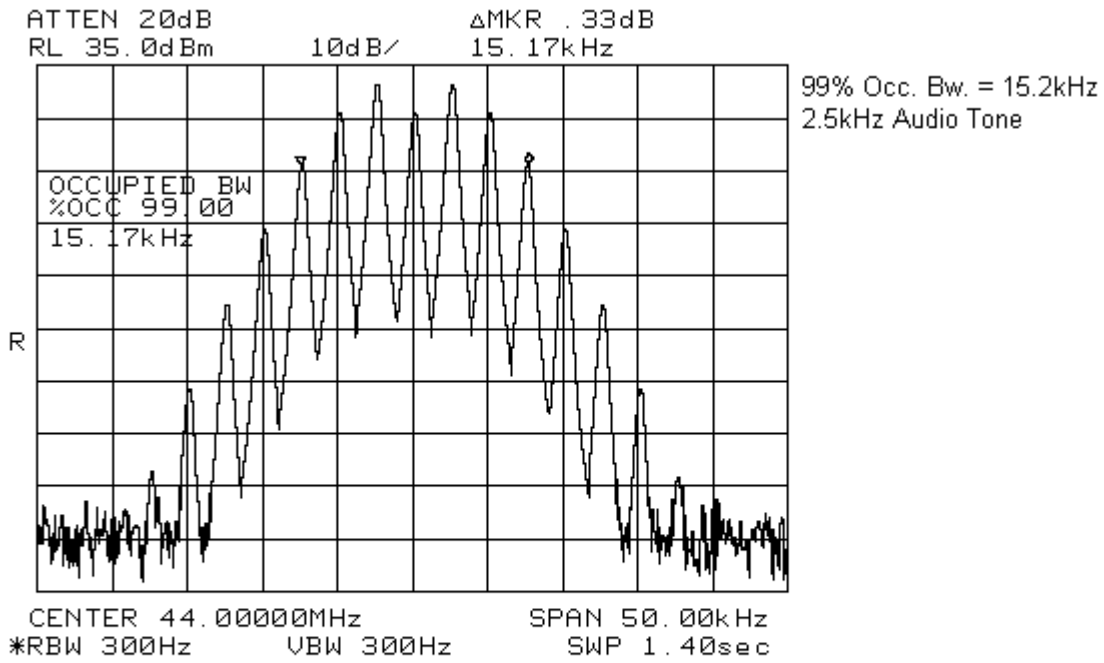
**Emission Designator:** 16K0F3E

**Power Output:** 3.0W, (34.8dBm)

**Channel Spacing:** 25 kHz

**Frequency Range:** 29-50MHz

EQUIPMENT: VT-3H045-SXA300 Transmitter



*EQUIPMENT: VT-3H045-SXA300 Transmitter*

---

**Section 3. RF Power Output**

Para. No.: 2.1046

<b>Test Performed By: Glen Westwell</b>	<b>Date of Test: 8 Sept. 2003</b>
---	-----------------------------------

**Minimum Standard:** 90.205, 22.535

**Test Results:** Complies

**Measurement Data:**

<b>Conducted Power</b>	<b>Rated (dBm)</b>	<b>Measured (dBm)</b>	<b>Delta (dB)</b>
High Band	34.8	35.1	0.3
Mid Band	34.8	35.0	0.2
Low Band	34.8	35.0	0.2

*EQUIPMENT: VT-3H045-SXA300 Transmitter*

---

**Section 4. Audio Frequency Response**

**Para. No.: 2.1047**

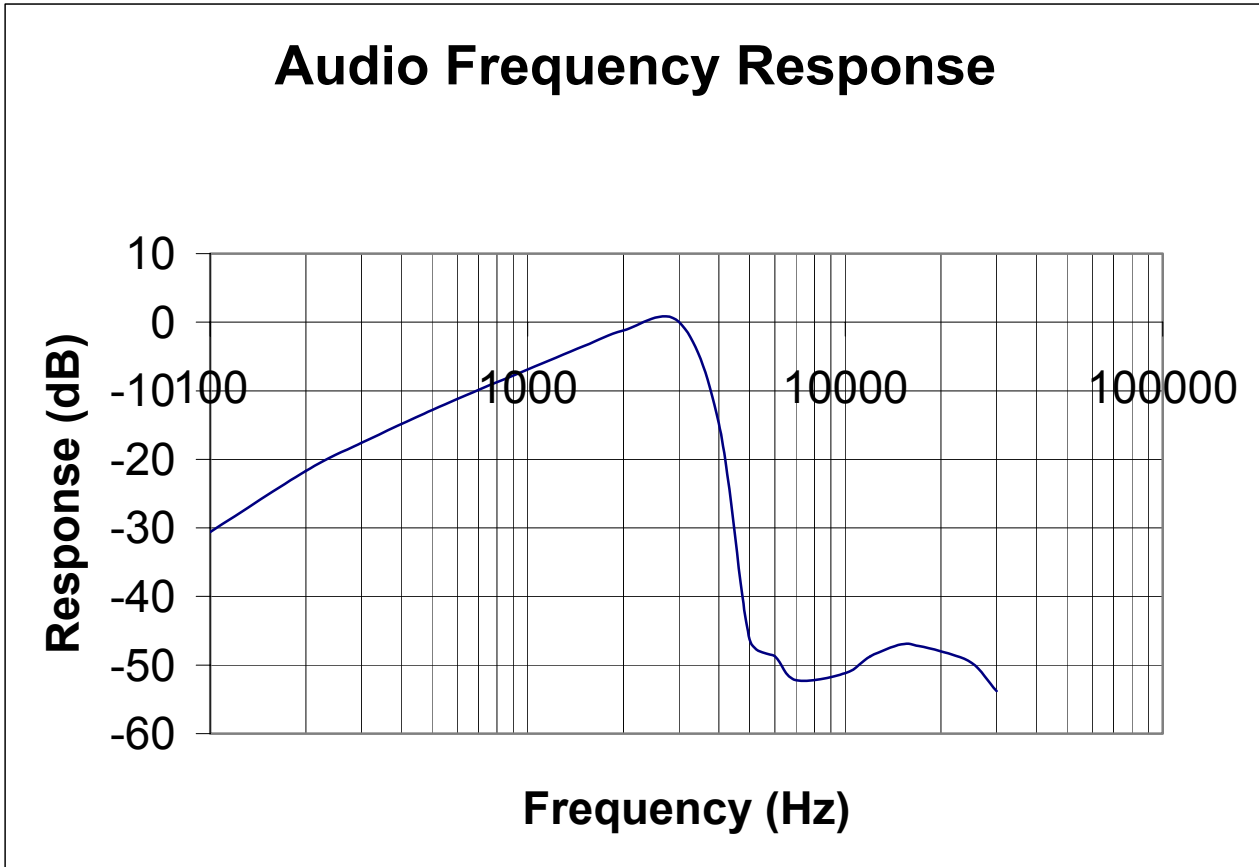
<b>Test Performed By: Glen Westwell</b>	<b>Date of Test: 5 Sept., 2003</b>
---	------------------------------------

**Minimum Standard:** N/A

**Test Results:** Complies

**Measurement Data:** See attached graph.





*EQUIPMENT: VT-3H045-SXA300 Transmitter*

---

**Section 5. Modulation Limiting**

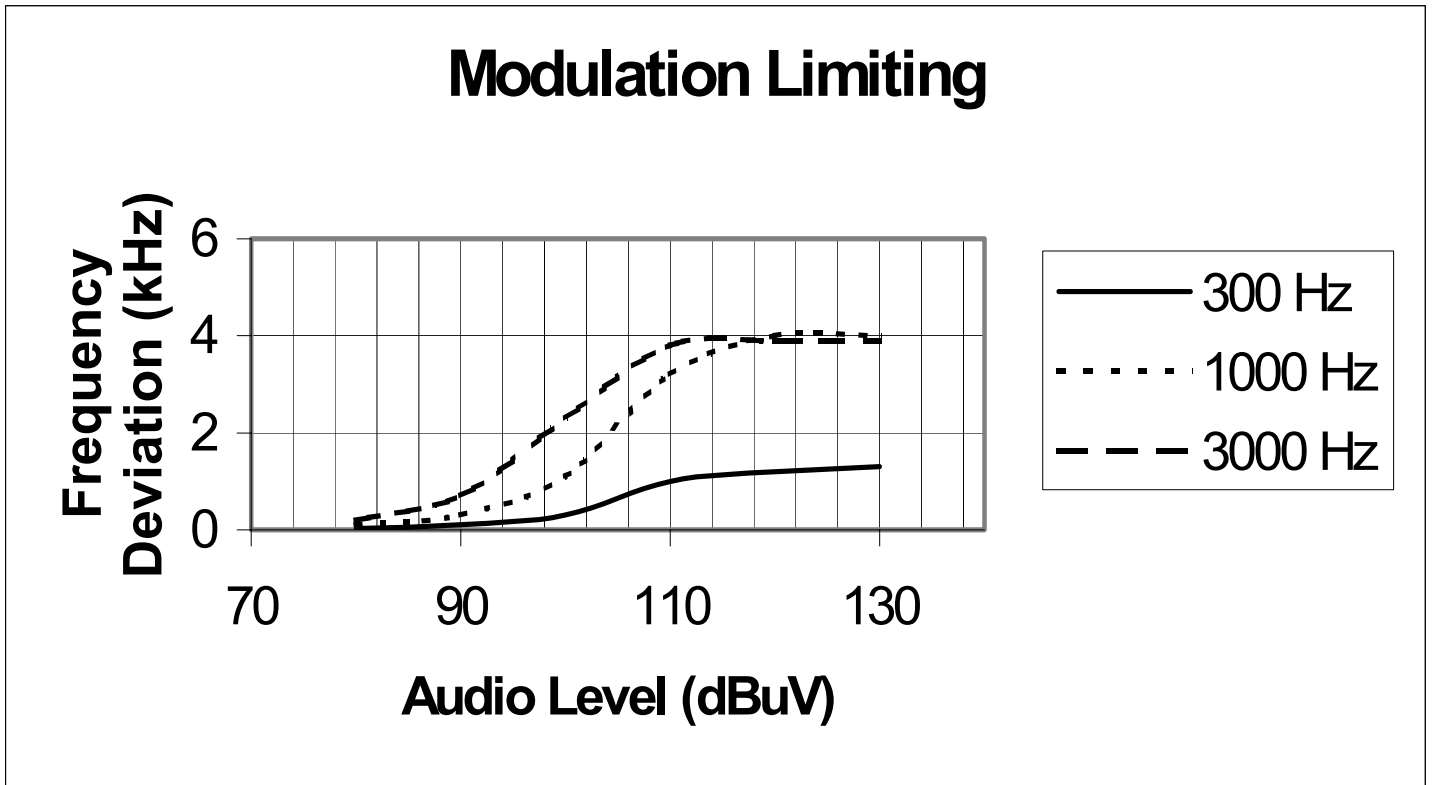
Para. No.: 2.1047

<b>Test Performed By: Glen Westwell</b>	<b>Date of Test: 5 Sept., 2003</b>
---	------------------------------------

**Minimum Standard:** N/A

**Test Results:** Complies

**Measurement Data:** See attached graph.



*EQUIPMENT: VT-3H045-SXA300 Transmitter*

---

**Section 6. Occupied Bandwidth**

**Para. No.: 2.1049**

<b>Test Performed By: Glen Westwell</b>	<b>Date of Test: 5 Sept., 2003</b>
---	------------------------------------

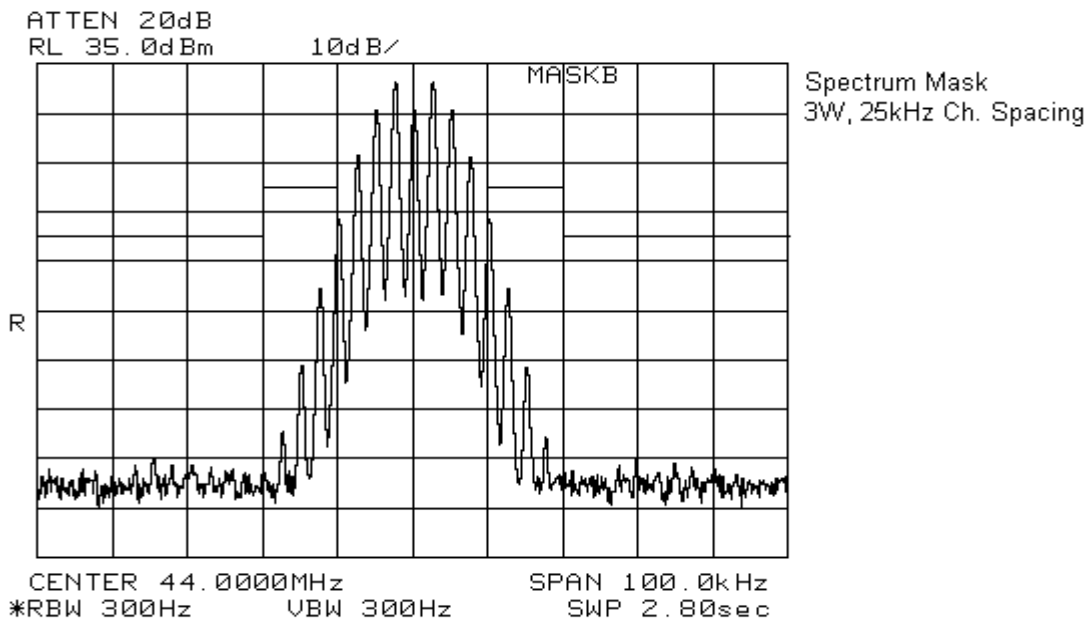
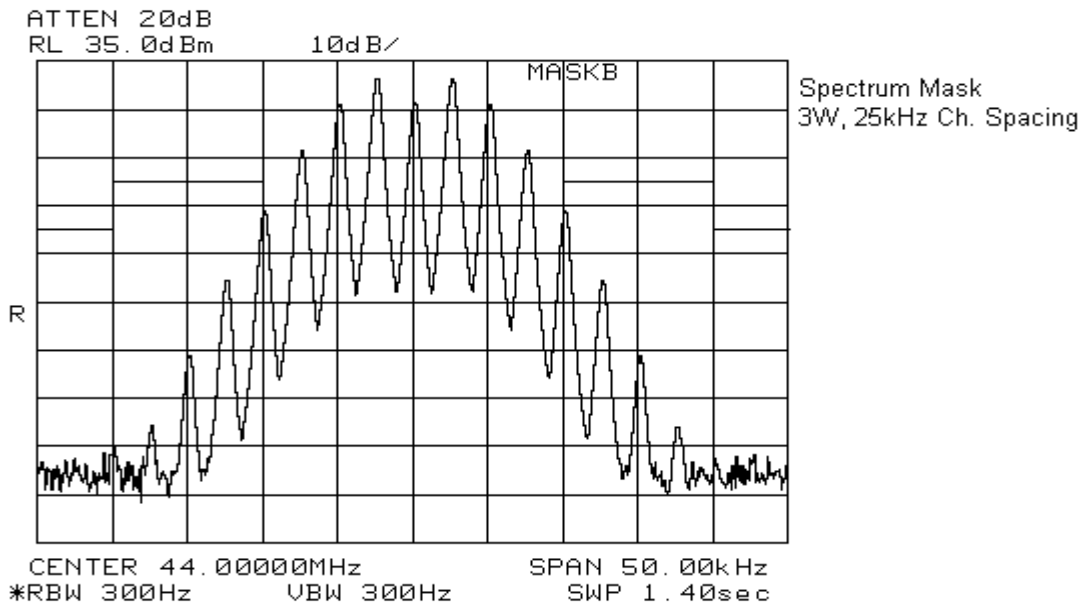
**Minimum Standard:** Mask B

**Test Results:** Complies

**Measurement Data:** See attached graphs.

EQUIPMENT: VT-3H045-SXA300 Transmitter

---



*EQUIPMENT: VT-3H045-SXA300 Transmitter*

---

**Section 7. Spurious Emissions at Antenna Terminals**

**Para. No.: 2.1051**

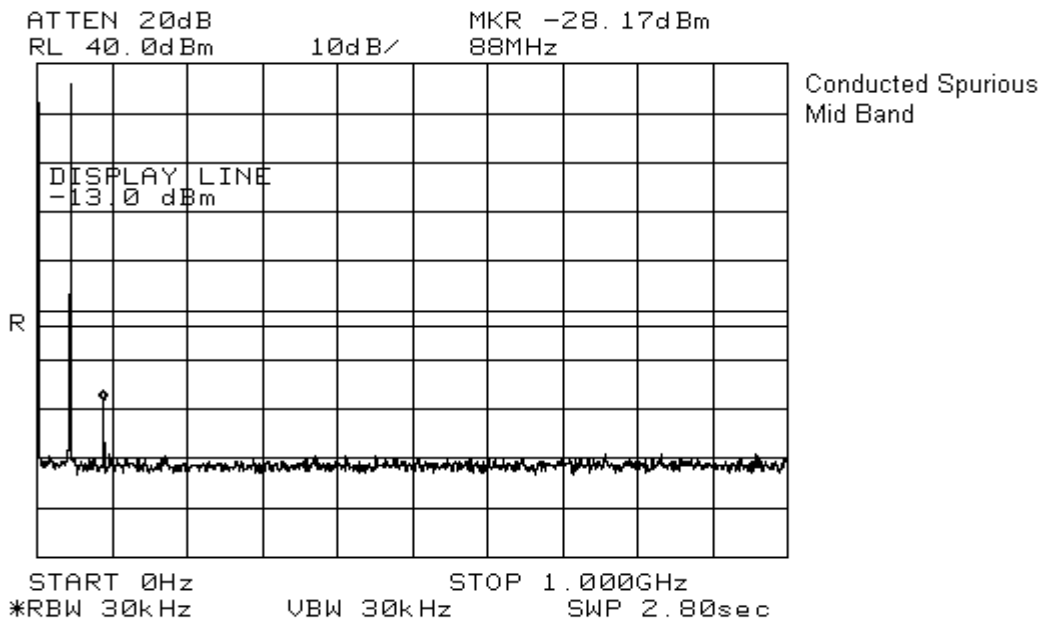
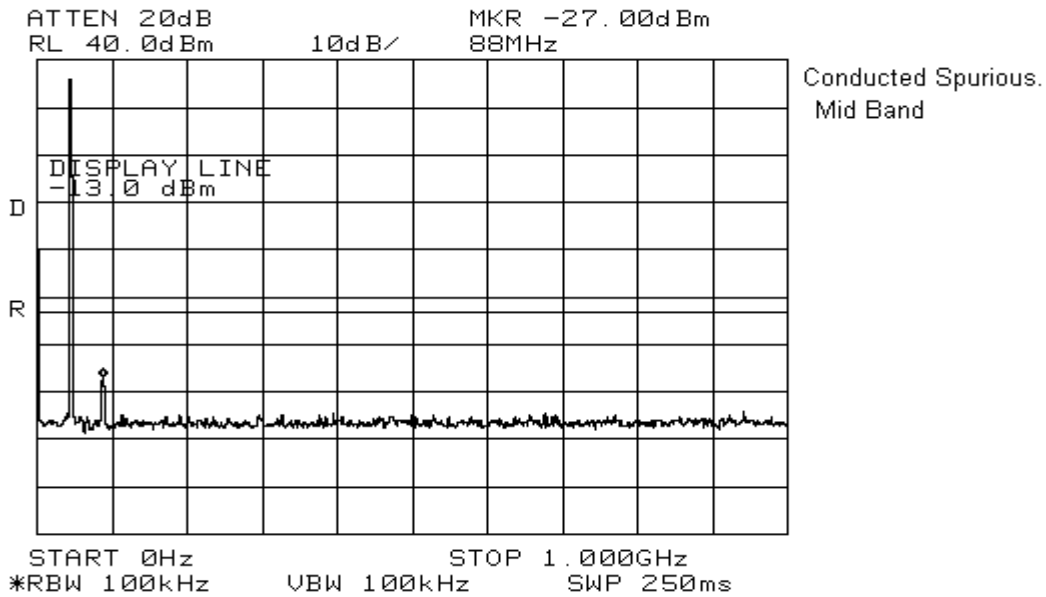
<b>Test Performed By: Glen Westwell</b>	<b>Date of Test: 5 Sept., 2003</b>
---	------------------------------------

**Minimum Standard:** -13 dBm

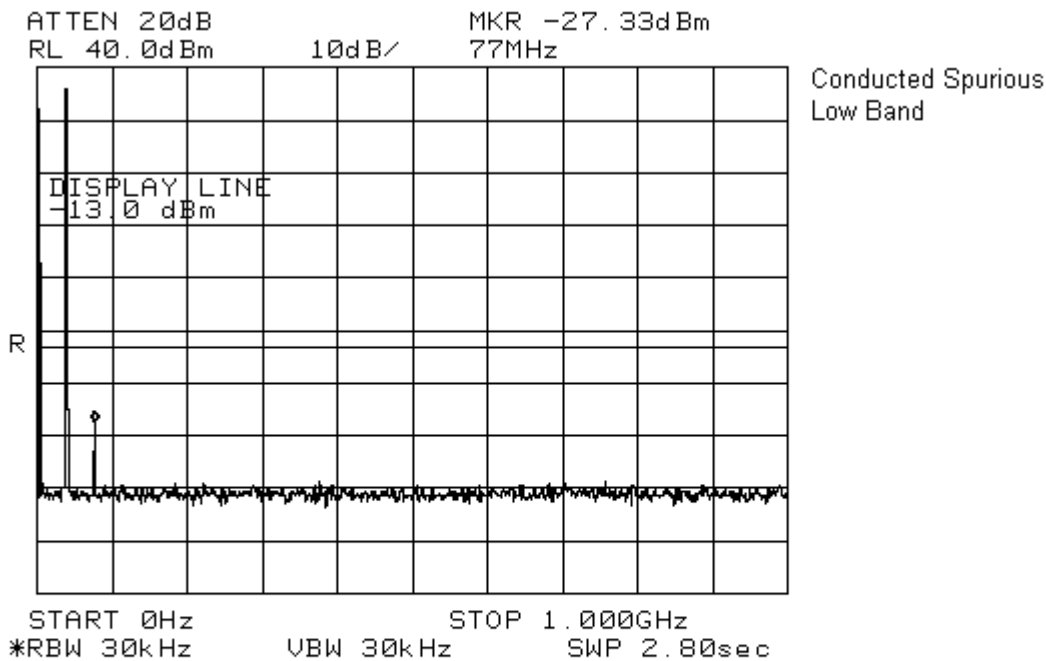
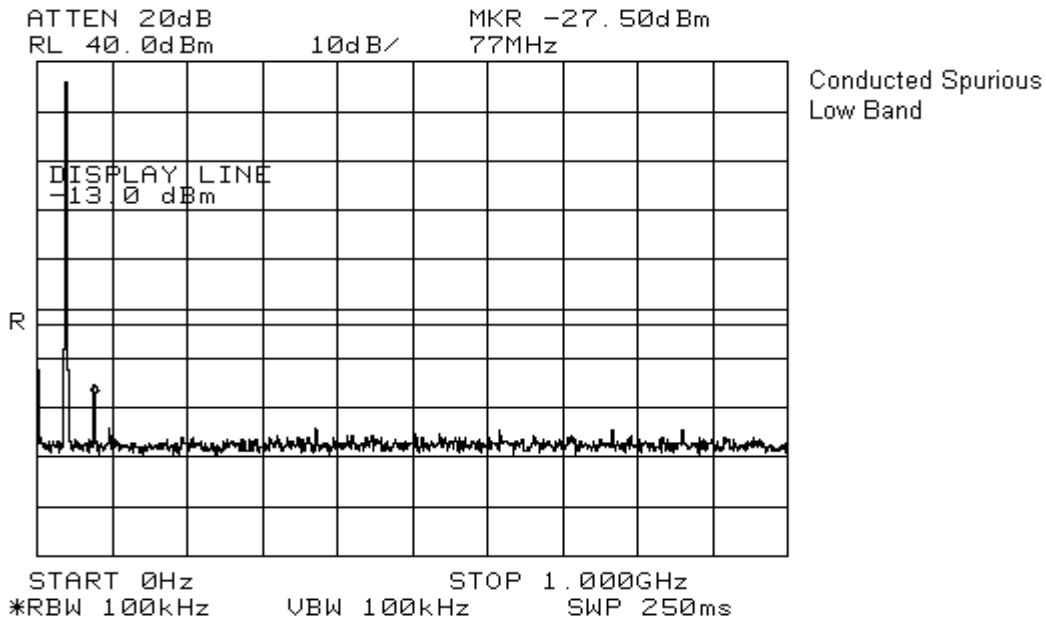
**Test Results:** Complies

**Measurement Data:** See attached graph.

EQUIPMENT: VT-3H045-SXA300 Transmitter



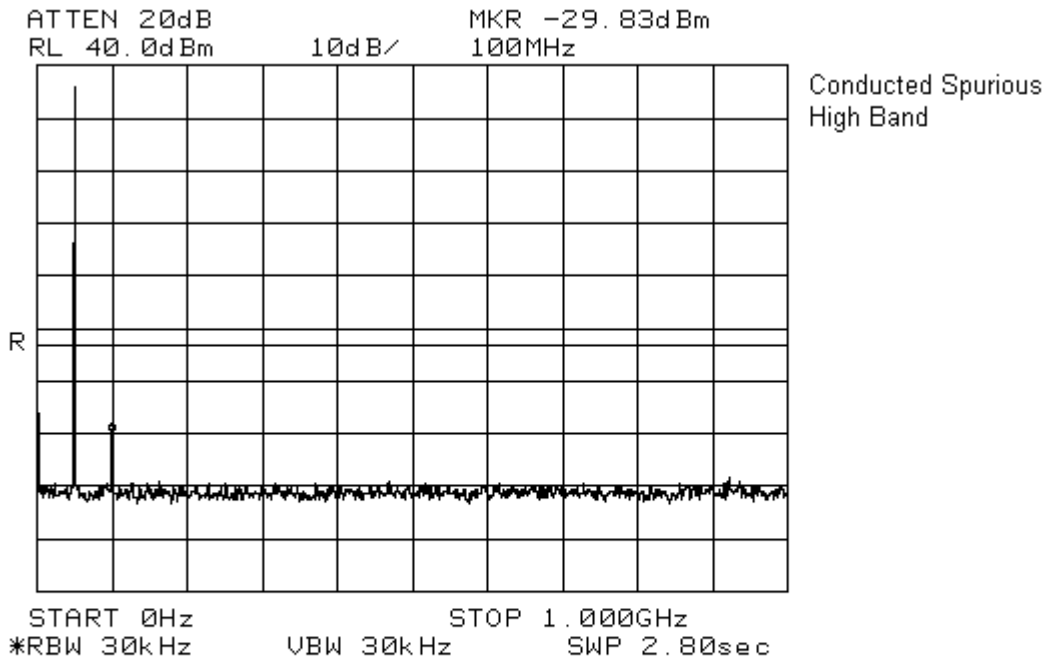
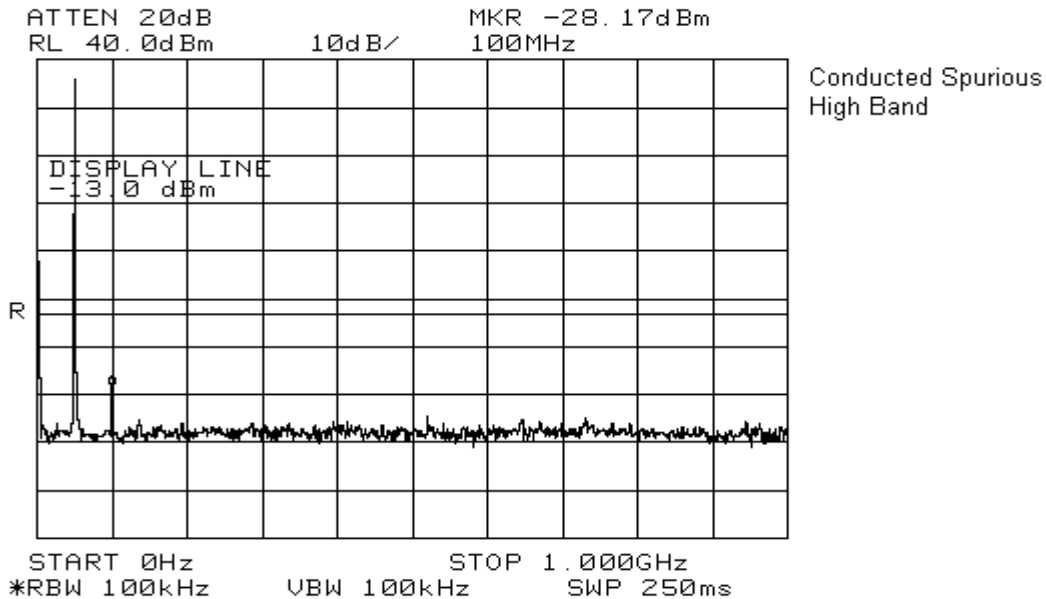
EQUIPMENT: VT-3H045-SXA300 Transmitter





EQUIPMENT: VT-3H045-SXA300 Transmitter

---



*EQUIPMENT: VT-3H045-SXA300 Transmitter*

---

**Section 8. Field Strength of Spurious Emissions**

**Para. No.: 2.1053**

<b>Test Performed By: Glen Westwell</b>	<b>Date of Test: 9 Sept., 2003</b>
---	------------------------------------

**Minimum Standard:** -13 dBm

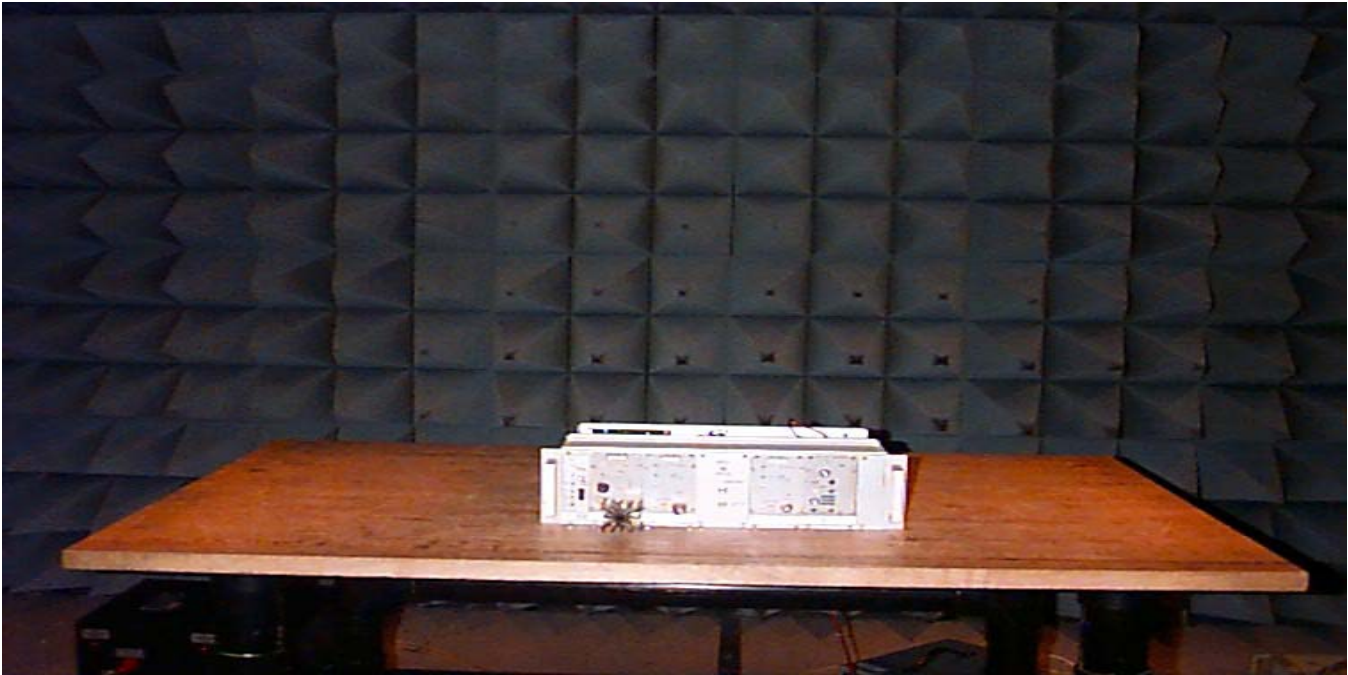
**Test Results:** Complies

**Measurement Data:** No Emissions were detected.  
Emissions were searched up to the 10<sup>th</sup> harmonic.

*EQUIPMENT: VT-3H045-SXA300 Transmitter*

---

**Pre-Scan Photo**



**OATS Radiated Emissions Photo**



EQUIPMENT: VT-3H045-SXA300 Transmitter

**Section 9. Frequency Stability**

Para. No.: 2.1055

<b>Test Performed By: Glen Westwell</b>	<b>Date of Test: 8 Sept., 2003</b>
---	------------------------------------

**Minimum Standard:** 20ppm/0.002% (880Hz)

**Test Results:** Complies.

The maximum frequency drift is 2Hz.  
This is 0.045ppm/0.0000045%.

**Measurement Data:** Standard Test Voltage: STV: 13.8Vdc  
Standard Test Freq: 44 000.000KHz

Test Condition	Frequency (kHz)	Frequency Drift (Hz)
STV	44 000 .000	0
115% STV	44 000 .000	0
85% STV	44 000 .000	0
-30 °C	44 000 .001	1.0
-20 °C	44 000 .000	0
-10 °C	44 000 .002	2.0
0 °C	44 000 .002	2.0
+10 °C	44 000 .002	2.0
+30 °C	44 000 .000	0
+40 °C	44 000 .000	0
+50 °C	44 000 .000	0

EQUIPMENT: VT-3H045-SXA300 Transmitter

---

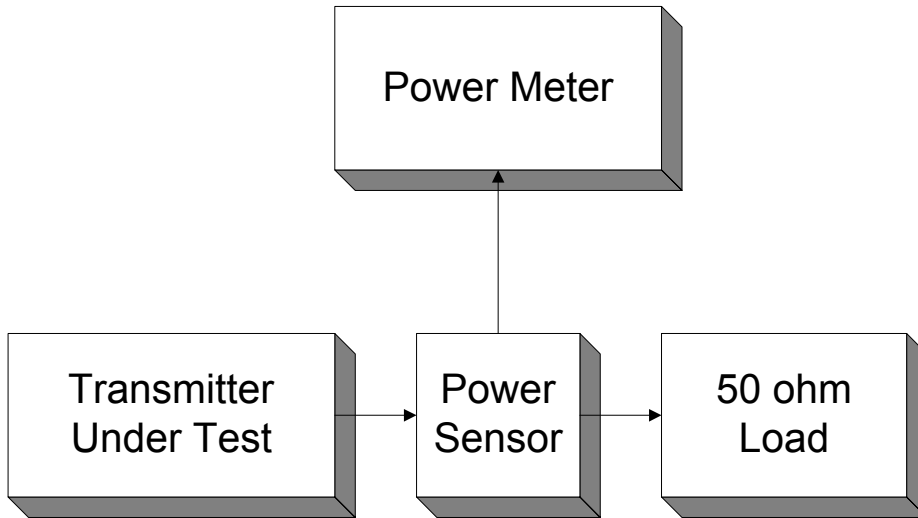
**Section 10. Test Equipment List**

**RADIO TEST EQUIPMENT LIST**

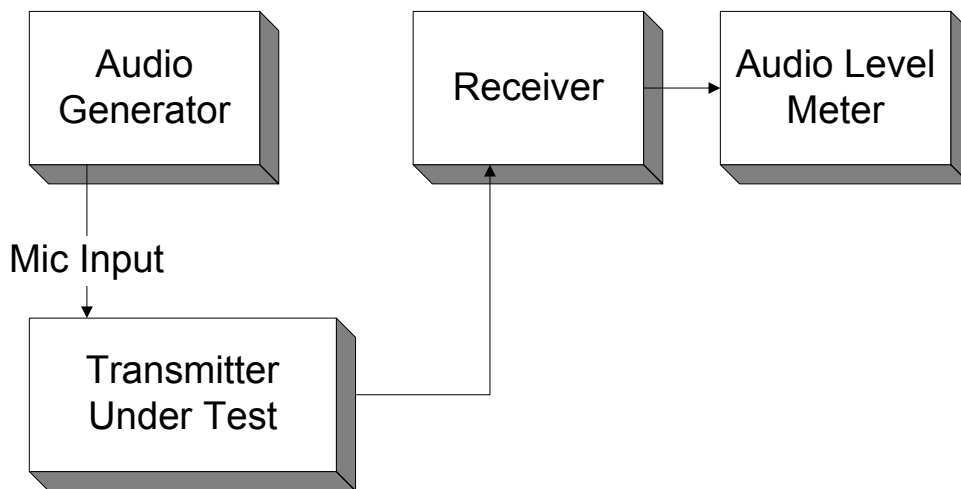
<b>CAL CYCLE</b>	<b>EQUIPMENT</b>	<b>MANUFACTURER</b>	<b>MODEL</b>	<b>SERIAL</b>	<b>Last Cal.</b>	<b>Next Cal.</b>
1 Year	Spectrum Analyzer	Hewlett Packard	8564E	FA01367	13 May 03	13 May 04
1 Year	Radio Communications	Rohde & Schwarz	CMTA 54	840343/013	23 Oct 02	23 Oct 03
1 Year	Climate Chamber	Thermotron	SM-16C	15649-S	16 Jan 03	16 Jan 04
1 Year	Selective Level Meter	Anritsu	ML422C	FA001552	21 Oct 2002	21 Oct 2003
1 Year	Attenuator	Winschel	47-10-34	FA001740	COU	COU
1 Year	Attenuator	Narda	769-20	FA001394	COU	COU
1 Year	Power Meter	Hewlett Packard	E4418B	FA001678	01 Apr 03	01 Apr 04
1 Year	Power Sensor	Hewlett Packard	8487A	FA001741	28 Mar 03	28 Mar 04
1 Year	Receiver	Rohde & Schwarz	ESVP	FA000871	Nov. 15/02	Nov. 15/03
1 Year	Biconical (1) Antenna	EMCO	3109	FA000805	April. 15/03	April. 15/04
1Year	Frequency Counter	Hewlett Packard	HP5350A	2444A00135	2 Apr. 03	2 Apr 04
1 Year	Log Periodic Antenna #2	EMCO	3148	FA001355	May. 09/03	May. 09/04

## Section 11. Test Diagrams

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



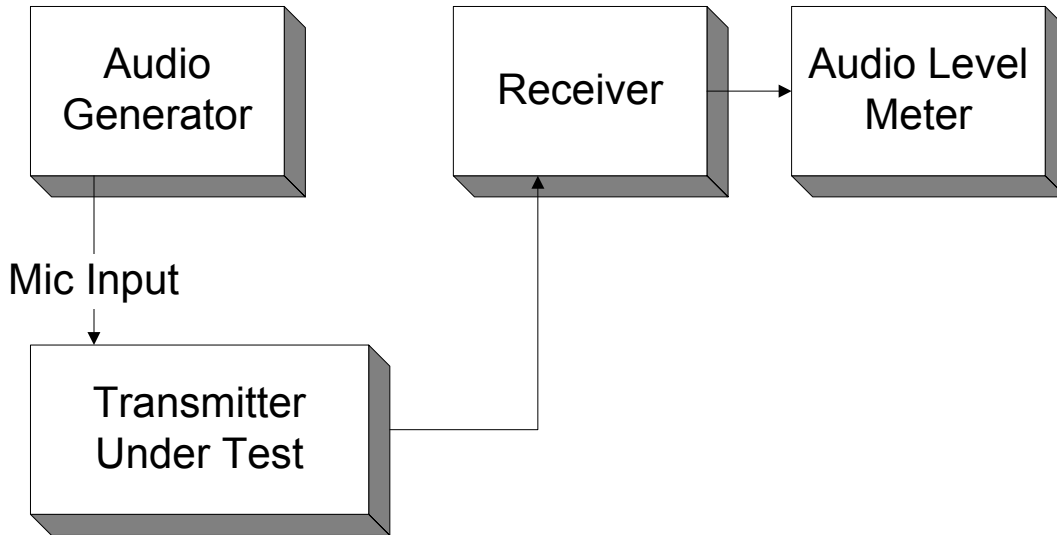
### Para. No. 2.2.1047 - Audio Frequency Response



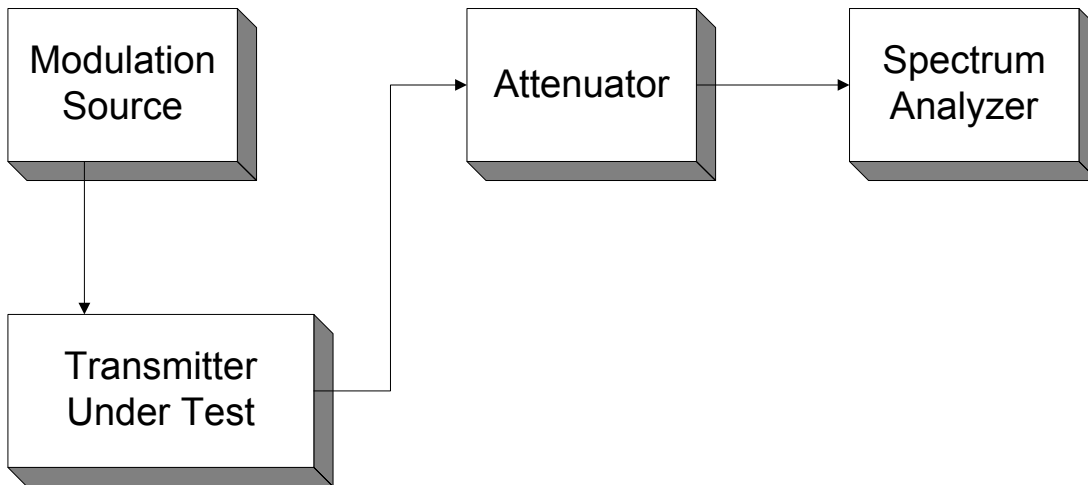
EQUIPMENT: VT-3H045-SXA300 Transmitter

---

**Para. No. 2.1047 - Modulation Limiting**



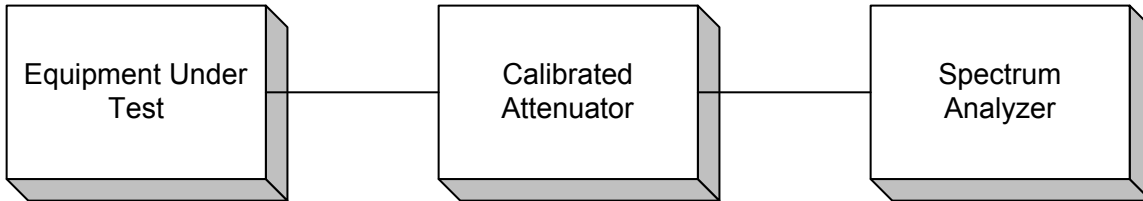
**Para. No. 2.1049 - Occupied Bandwidth**



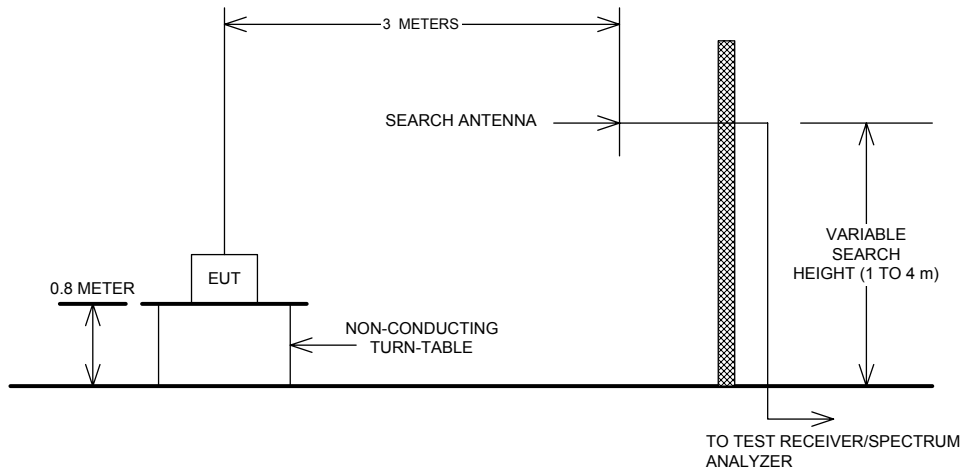
EQUIPMENT: VT-3H045-SXA300 Transmitter

---

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



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



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

