



Nemko Test Report: 3W07093

Applicant: WaveCom Electronics Inc.
250 Cardinal Place
Saskatoon, Saskatchewan
S7L 6H7

**Equipment Under Test:
(E.U.T.)** TR2126SE

FCC ID: 0PPTR2126SE

In Accordance With: **FCC PART 21, Subpart K**
Multipoint Distribution Service

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

Authorized By: 
Russell Grant, Senior Technical Assessor

Date: 23 May 2003

Total Number of Pages: 22

EQUIPMENT: TR2126SE
FCC ID: 0PPTR2126SE

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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 21, Subpart K.

☒ New Submission

☒ Production Unit

☐ Class II Permissive Change

☐ Pre-Production Unit

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: _____ DATE: 22 May 2003
Glen Westwell, Wireless Technologist

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This report applies only to the items tested.

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Summary Of Test Data

Name Of Test	Para. No.	Result
RF Power Output	2.1046	Complies
Occupied Bandwidth	2.1049	Complies
Spurious Emissions @ Antenna Terminals	2.1051	Complies
Field Strength of Spurious Radiation	2.1053	Complies
Frequency Stability	2.1055	Complies

Footnotes For N/A's:

Test Conditions:

Indoor Temperature: 22°C
 Humidity: 40%

Outdoor Temperature: 10°C
 Humidity: 42%

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Section 2. General Equipment Specification

Manufacturer:	WaveCom Electronics Inc.
Model No.:	TR2126SE
Serial No.:	#3936
Date Received In Laboratory:	28 April 2003
Nemko Identification No.:	Item #1
Power Input:	120 VAC Wall Plug Power Supply
Frequency Range:	2150 – 2162 MHz
Type(s) of Modulation:	QPSK & 16 QAM at: 2560, 1280, 640, 320 & 160ksym/s
Emission Designator:	3M2G1W 3M2D1W
RF Power Output Rated:	0.316W (25dBm)

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Section 3. RF Power Output

Para. No.: 2.1046

Test Performed By: Glen Westwell	Date of Test: 12 May 2003
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Minimum Standard: Para. No.21.107

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

Rated Power: 25.0dBm (0.316W)

Measurement Data

Measured Power at antenna port (dBm)		
kSym/s	16 QAM	QPSK
2560	25.4	25.2
1280	25.6	25.4
640	25.7	25.3
320	25.6	25.3
160	25.5	25.3

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Section 4. Occupied Bandwidth

Para. No.: 2.1049

Test Performed By: Glen Westwell	Date of Test: 12 May 2003
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Minimum Standard: Para. No. 21.908 (d).

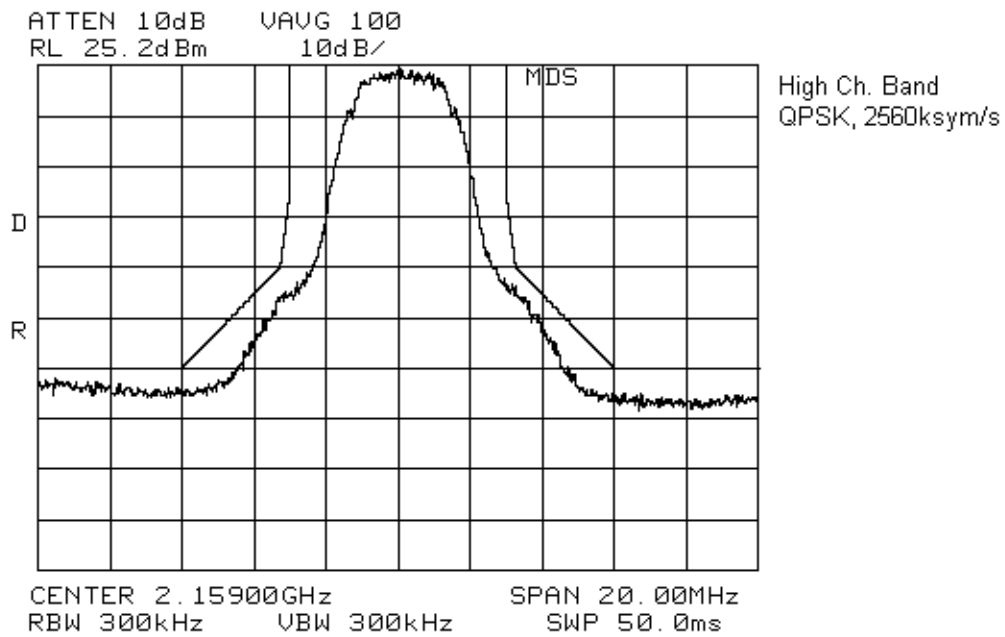
Test Results: Complies.

Test Data: See attached graph(s).

Note: Measured in accordance with 21.908(d) for relative power measurements.
RBW1=RBW2=300kHz
Compliance was determined at maximum and minimum symbol rates using QPSK & 16QAM modulations at band edges.

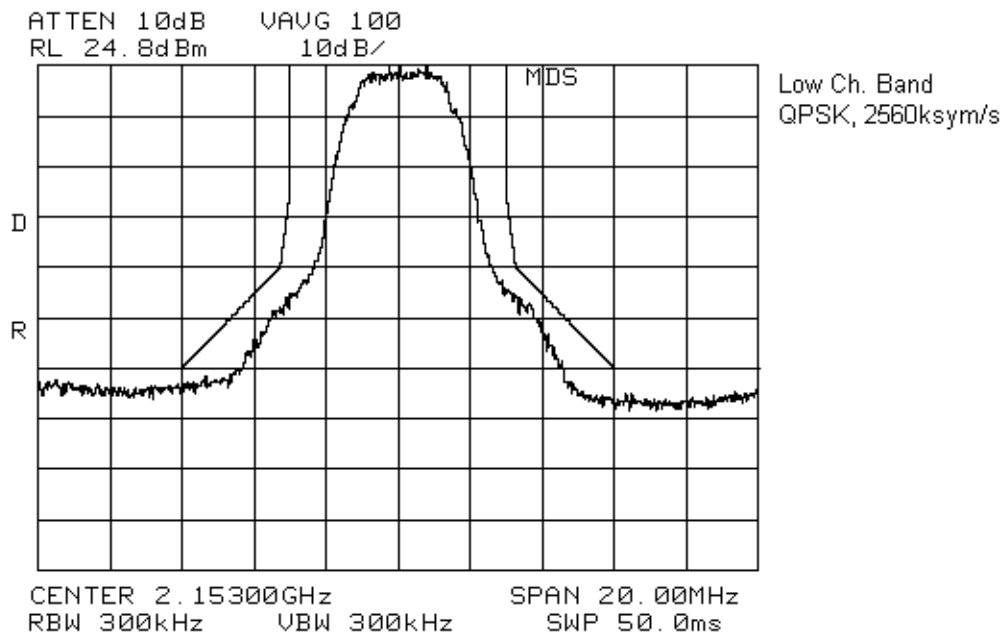
EQUIPMENT: TR2126SE

FCC ID: 0PPTR2126SE



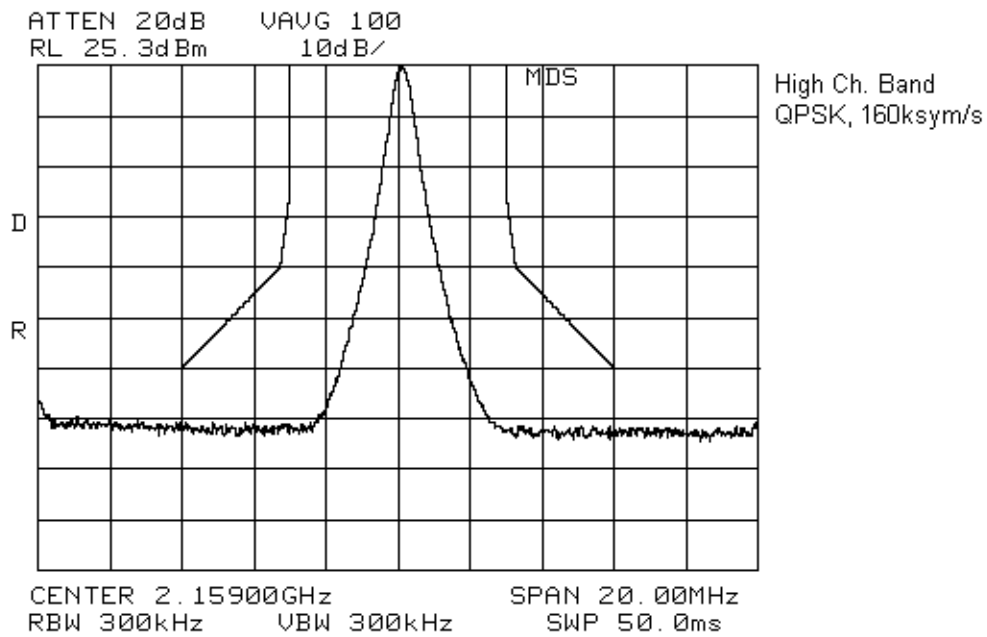
EQUIPMENT: TR2126SE

FCC ID: 0PPTR2126SE



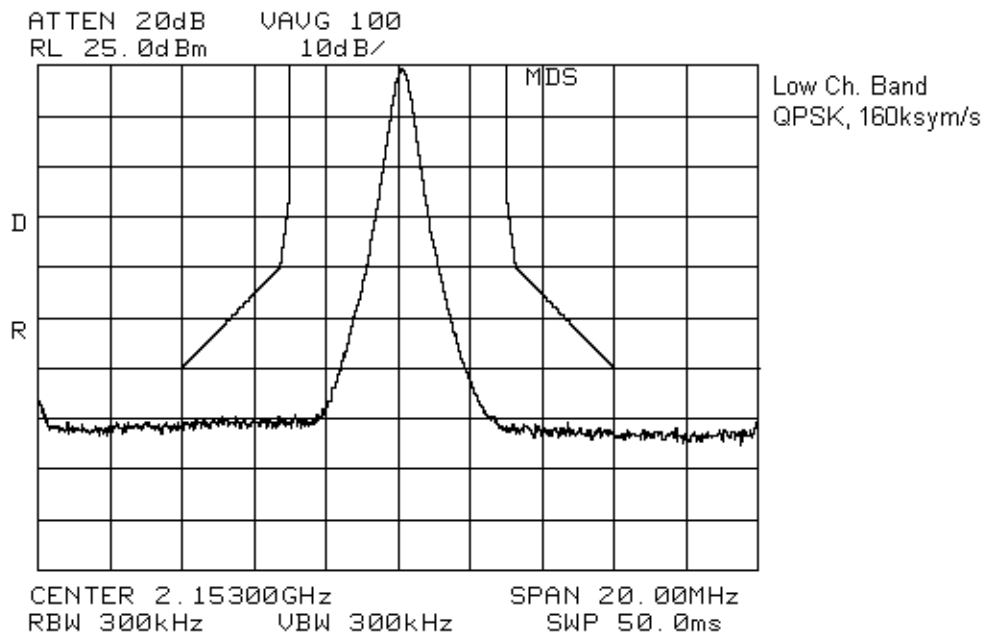
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FCC ID: 0PPTR2126SE



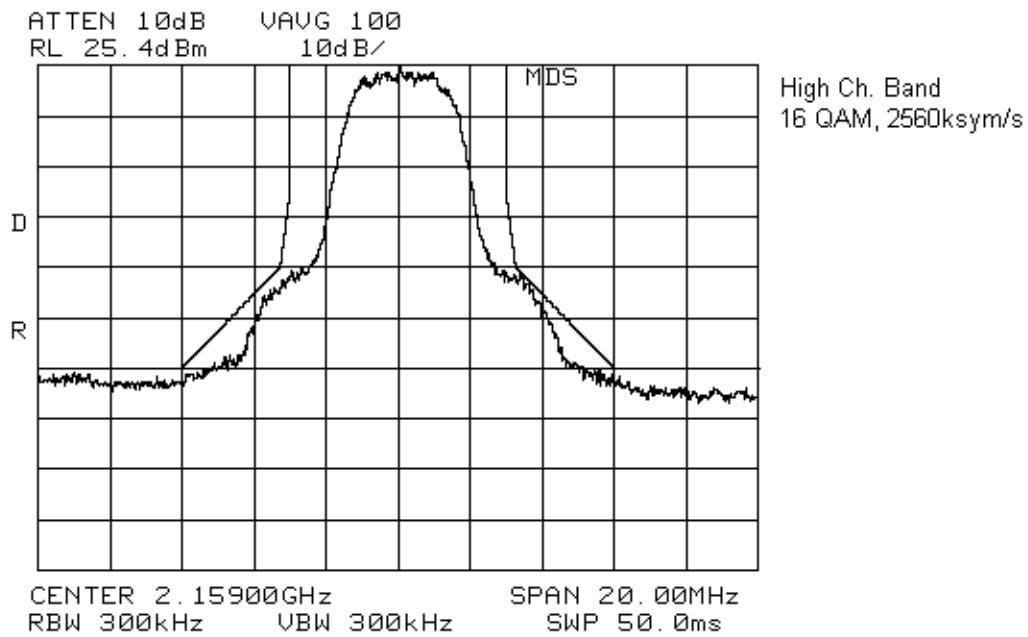
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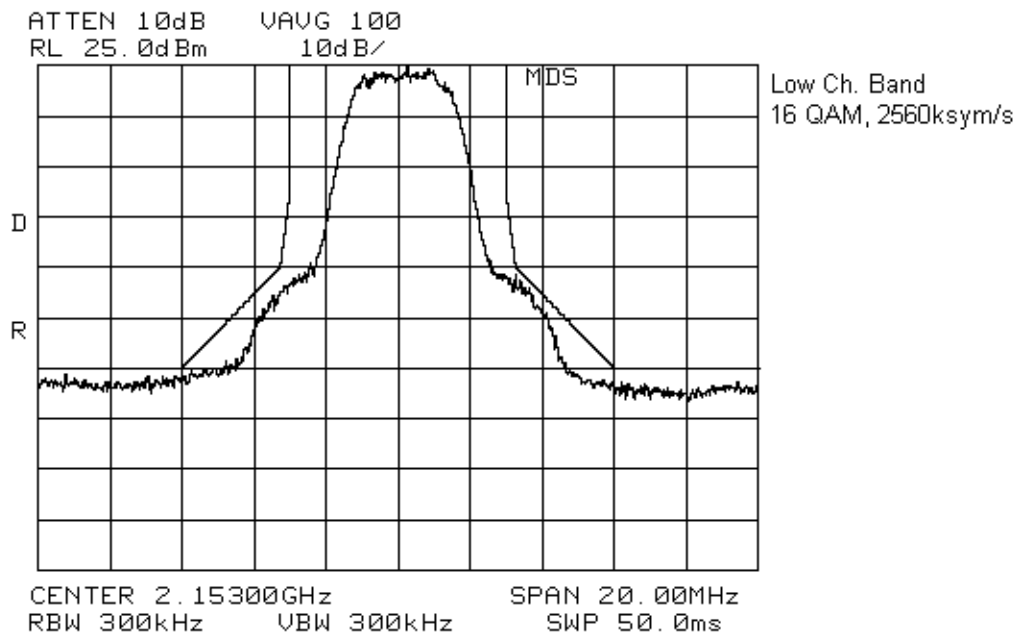
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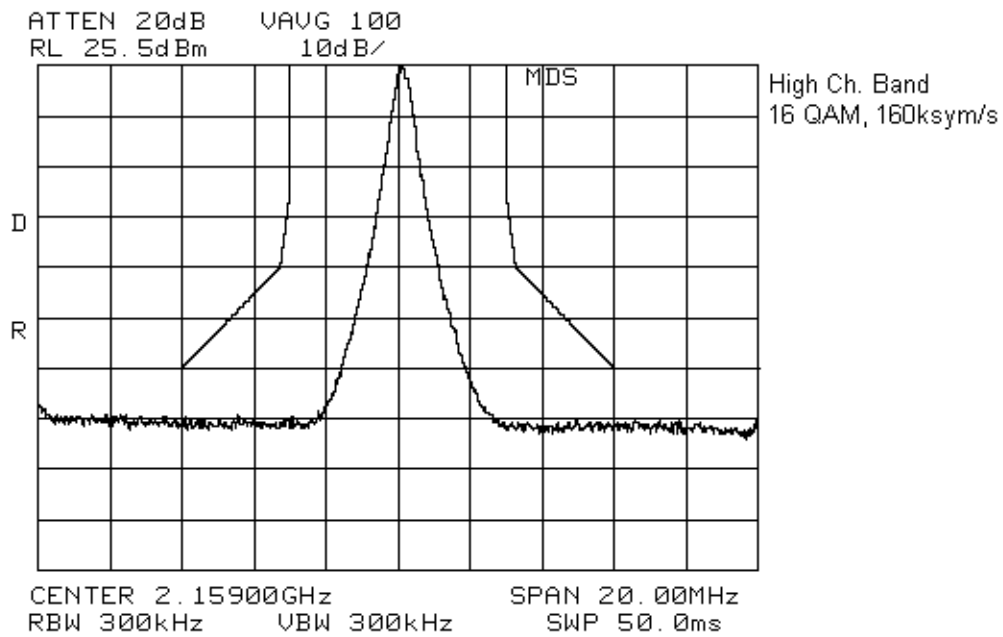
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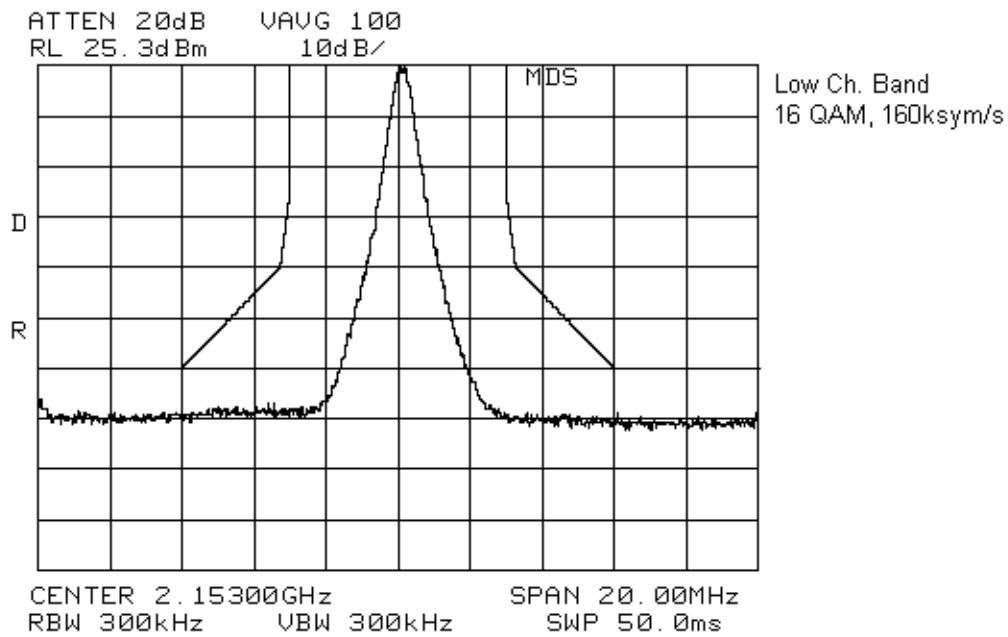
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Section 5. Spurious Emissions at Antenna Terminals

Para. No.: 2.1051

Test Performed By: Glen Westwell	Date of Test: 13 May 2003
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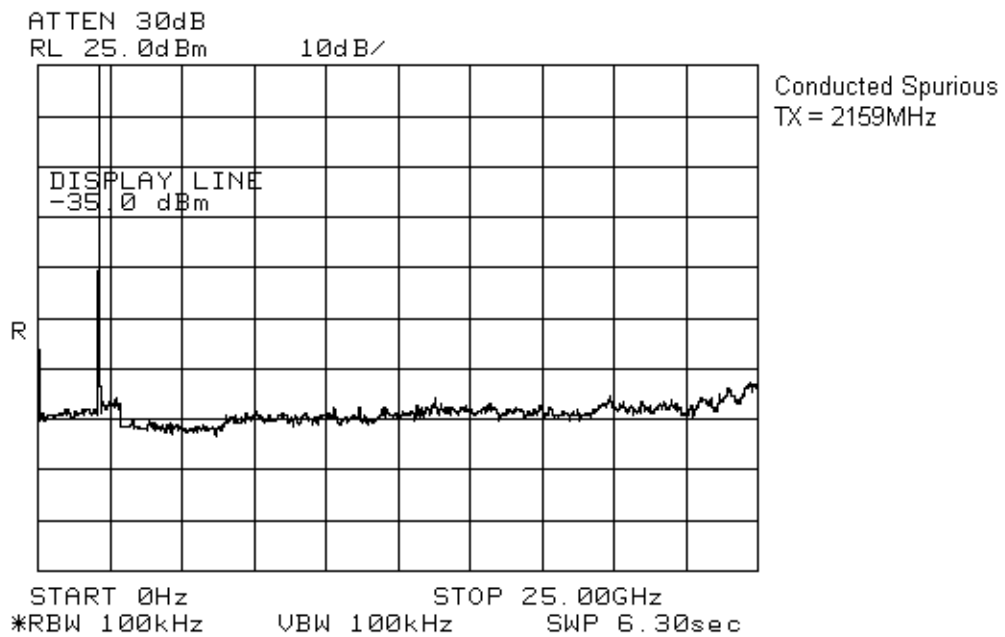
Minimum Standard: Para. No. 21.908(d) 60 dB.

Test Results: Complies.
 No emissions detected.

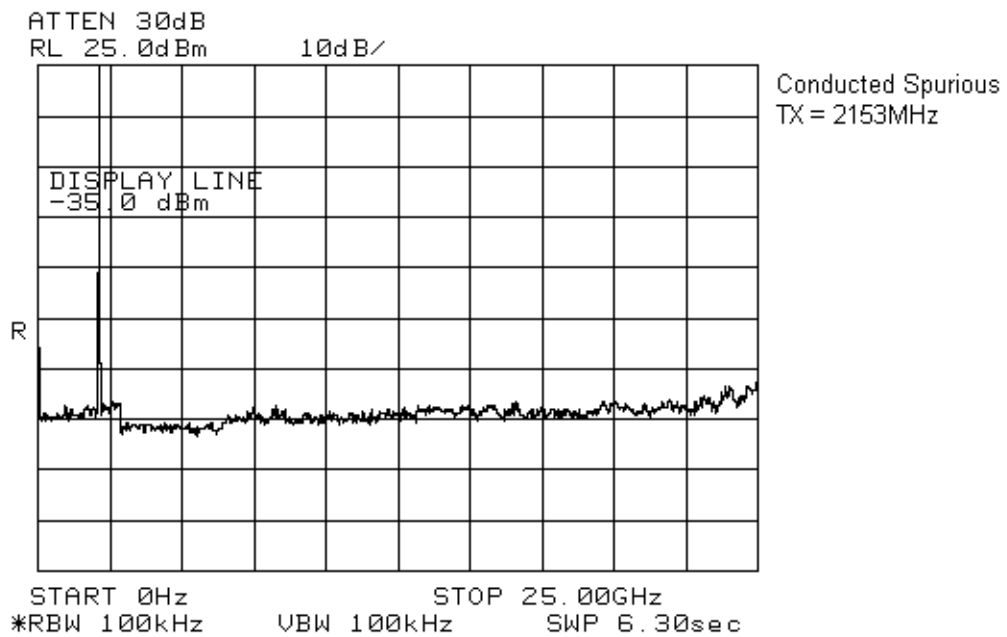
Test Data: See attached graph(s).

Note: Measured in accordance with 21.908 (d) for relative power
 measurements. RBW 1 = RBW2 = 100 kHz.

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Section 6. Field Strength of Spurious

Para. No.: 2.1053

Test Performed By: Glen Westwell	Date of Test: 13 May 2003
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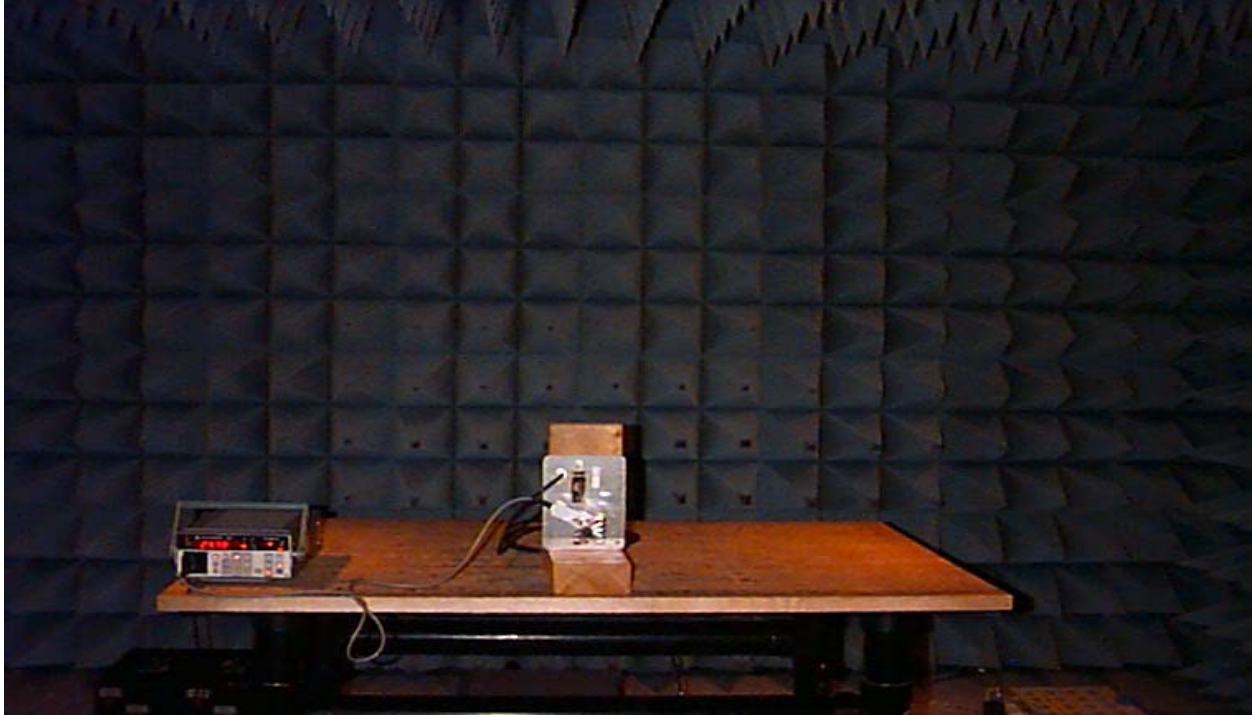
Minimum Standard: Para. No. 21.908(d)

Test Results: Complies.

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

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Radiated Emissions Set-Up



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Section 7. Frequency Stability

Para. No.: 2.1055

Test Performed By: Glen Westwell	Date of Test: 15 May 2003
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Minimum Standard: Para. No. 21.101(a), 0.001% (21.6kHz)

Test Results: Complies.

The maximum frequency drift is 6000 Hz.
This is 0.0003%.

Measurement Data: Standard Test Frequency: 2159MHz
Standard Test Voltage: 120 VAC

Test Condition	Frequency Drift (kHz)
20°C STV	0
20°C 115%STV	0
20°C 85% STV	0
-30°C STV	6.0
-20°C STV	1.0
-10°C STV	3.0
0°C STV	1.0
+10°C STV	1.0
+30°C STV	0
+40°C STV	0
+50°C STV	1.0

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Section 8. Test Equipment List

CAL CYCLE	EQUIPMENT	MANUFACTURER	MODEL	SERIAL	LAST CAL.	NEXT CAL.
1 Year	Spectrum Analyzer	Hewlett Packard	8565E	FA000981	15 Jul 02	15 Jul 03
1 Year	Climate Chamber	Thermotron	SM-16C	15649-S	COU	COU
1 Year	Signal Generator	Rhode & Schwarz	SM1Q03E	FA001269	06 Dec 02	06 Dec 03
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	RF Millivoltmeter	Rohde & Schwarz	URV5	FA001570	10 Apr 03	10 Apr 04
1 Year	Insertion Unit	Rohde & Schwarz	URV5-Z4	FA000905	10 Apr 03	10 Apr 04
1 Year	Horn Antenna	EMCO #2	3115	FA000825	09 Dec 02	09 Dec 03
Extended	Spectrum Analyzer	Hewlett-Packard	8566B	FA001309	Nov. 27/01	May. 27/03
Extended	Spectrum Analyzer Display	Hewlett-Packard	85662A	FA001309	Nov. 27/01	May. 27/03
1 Year	RF AMP	Narda	5 - 18GHz	FA001409	COU	COU
1 Year	RF AMP	JCA	4-8 GHz	FA001497	COU	COU
1 Year	Frequency Counter	Hewlett Packard	HP5350A	FA000086	11 Jan 02	11 Jan 03

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

Nemko Canada Inc.

FCC PART 21, SUBPART K
MULTIPOINT DISTRIBUTION SERVICE
PROJECT NO.: 3W07093

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Annex A
Test Diagrams

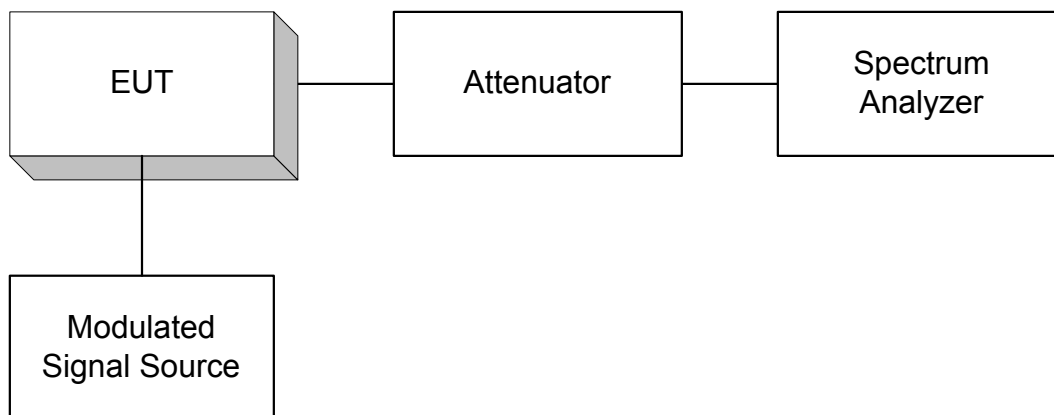
EQUIPMENT: TR2126SE

FCC ID: 0PPTR2126SE

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



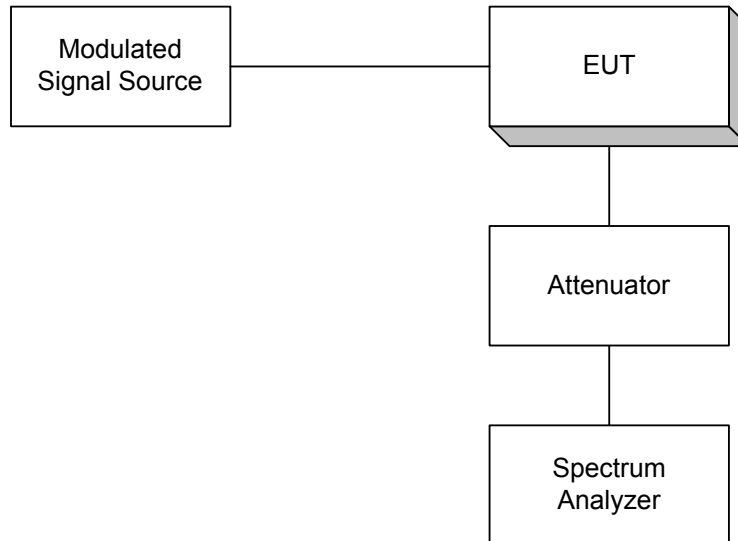
Para. No. 2.1049 - Occupied Bandwidth



EQUIPMENT: TR2126SE

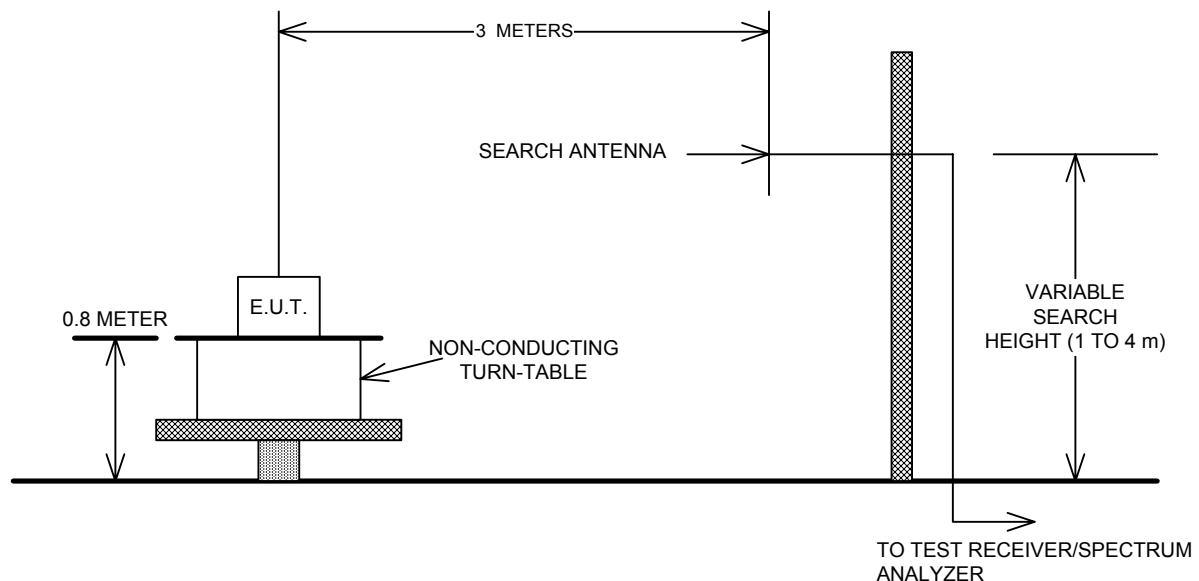
FCC ID: 0PPTR2126SE

Para. No. 2.1051 - Spurious Emissions at Antenna Terminals



Para. No. 2.1053 - Field Strength of Radiation

TIA/EIA-603, Signal Substitution



EQUIPMENT: TR2126SE

FCC ID: 0PPTR2126SE

Para. No. 2.1055 - Frequency Stability

