Test Report:	3W06559
Applicant:	Electra Enterprises 390 Edgeley Blvd., Unit 21 Concord, Ont L4K 3Z6
Equipment Under Test: (EUT)	T-2490, Audio Video Transmitter
In Accordance With:	**FCC Part 90**
Tested By:	Nemko Canada Inc. 303 River Road, R.R. 5 Ottawa, Ontario K1V 1H2
Authorized By:	Russell Grant, Senior Technical Assessor
Date:	11 July 2003
Total Number of Pages:	20

Table of Contents

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 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.
See " Summary of Test Data".

TESTED BY: _____ DATE: 11 July 2003
Kevin Carr, EMC Specialist

Summary Of Test Data

Name Of Test	Para. No.	Result
RF Power Output	2.1046	Complied
Audio Frequency Response	2.1047	N/A(1)
Audio Low-Pass Filter Response	2.1047	N/A
Modulation Limiting	2.1047	N/A
Occupied Bandwidth	2.1049	Complied
Spurious Emissions at Antenna Terminals	2.1051	Complied
Field Strength of Spurious Emissions	2.1053	Complied
Frequency Stability	2.1055	Complied
Transient Frequency Behavior	——	N/A(2)

Footnotes For N/A's:

N/A(1) The equipment is designed for the transmission of base band audio and video signals from a camera.

N/A(2) The equipment is not designed for operation in the VHF/UHF bands.

Indoor Temperature: 22°C
Humidity: 18%

Outdoor Temperature: 17°C
Humidity: 48%

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Section 2. General Equipment Specification

General Equipment Information

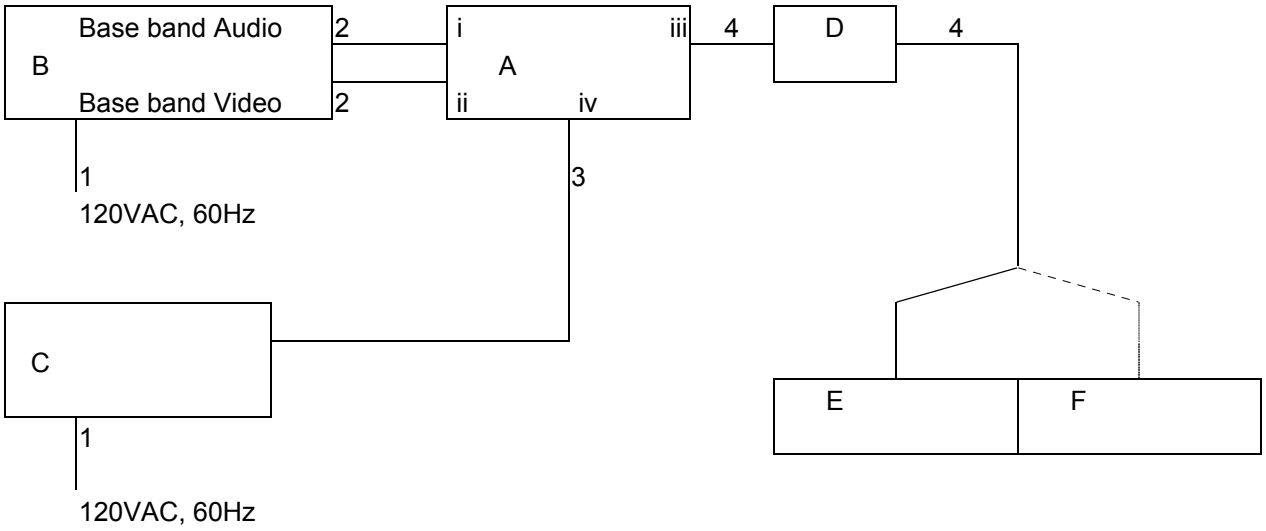
Manufacturer:	Electra Enterprises
Model No.:	T-2490
Serial No.:	None
Date Received In Laboratory:	26 Feb. 2003
Nemko Identification No.:	3
EUT Frequency Range:	2450 – 2483.5MHz
Test Frequency:	Fixed, 2472.7MHz
Modulation:	FM
Emissions Designator:	13M3F3W
User Frequency Adjustment:	None
Rated Output Power:	0.355 W (25.5dBm)

Section 3. Equipment Configuration:

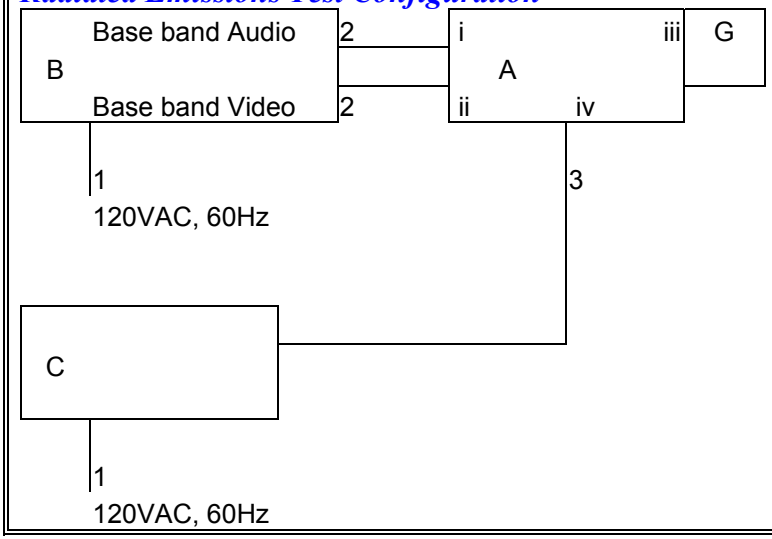
Equipment Configuration List:			
Item	Description		
(A)	EUT-T2490		
(B)	Sony VCR		
(C)	DC Power Supply		
(D)	Attenuation, 40.5 dB		
(E)	Spectrum Analyzer		
(F)	Power meter and Sensor		
(G)	Di-Pole antenna		
EUT Ports:			
Item	Description		
i.	Audio Input		
ii.	Video Input		
iii.	Output		
iv.	DC input		
Inter-Connection Cables:			
Item	Description	Shielded	Length (m)
(1)	Std North American Power cord	No	3.0
(2)	RCA cables	Yes	3.0
(3)	2 conductor, AWG 22, Solid	No	3.0
(4)	Sucoflex 101PEA	Yes	0.5

Configuration of the Equipment Under Test (EUT)

Bench Test



Radiated Emissions Test Configuration



Section 4. RF Power Output

Para. No.: 2.1046

Test Performed By: Kevin Carr	**Date of Test: 6 May 2003**

Minimum Standard: 90.205 (n), 5 Watts

Test Results: Complied.

Measurement Data: The EUT's output power was 25.5 dBm (0.355 Watts) as measured with a power meter.

Section 5. Occupied Bandwidth

Para. No.: 2.1049

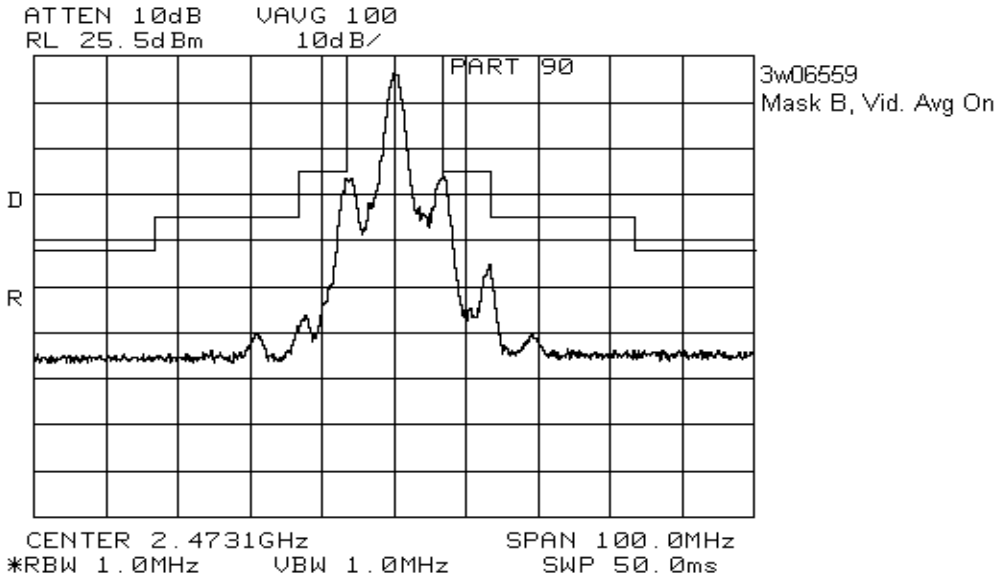
Test Performed By: Kevin Carr	**Date of Test: 17 April 2003**

Minimum Standard: 90.210(L), Emission mask B

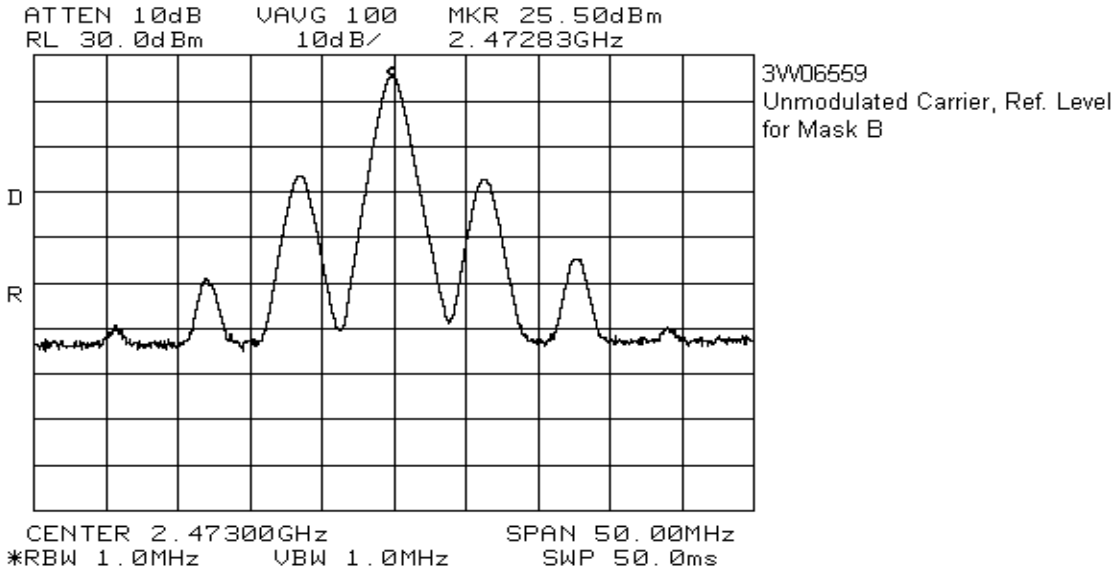
Test Results: Complied.

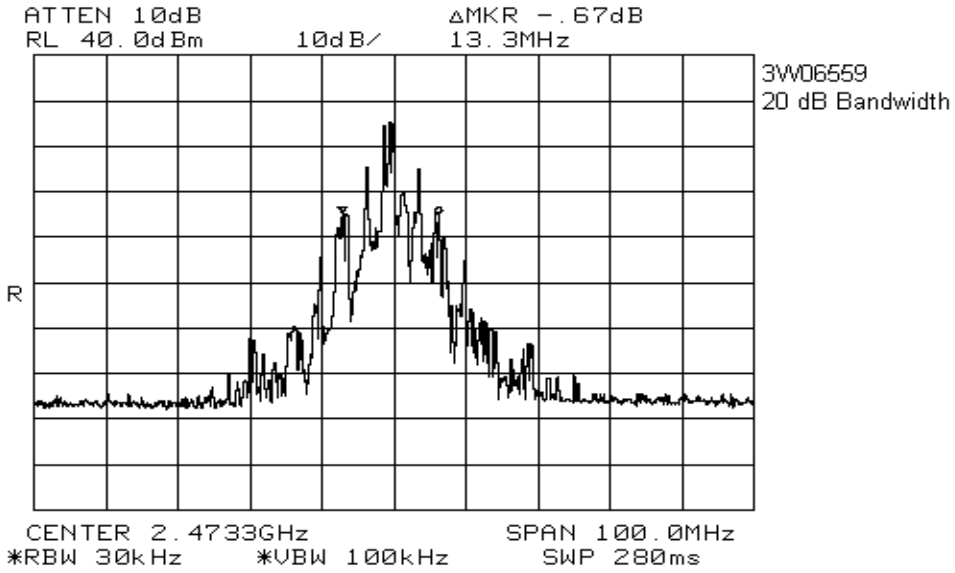
Measurement Data: See Plots.

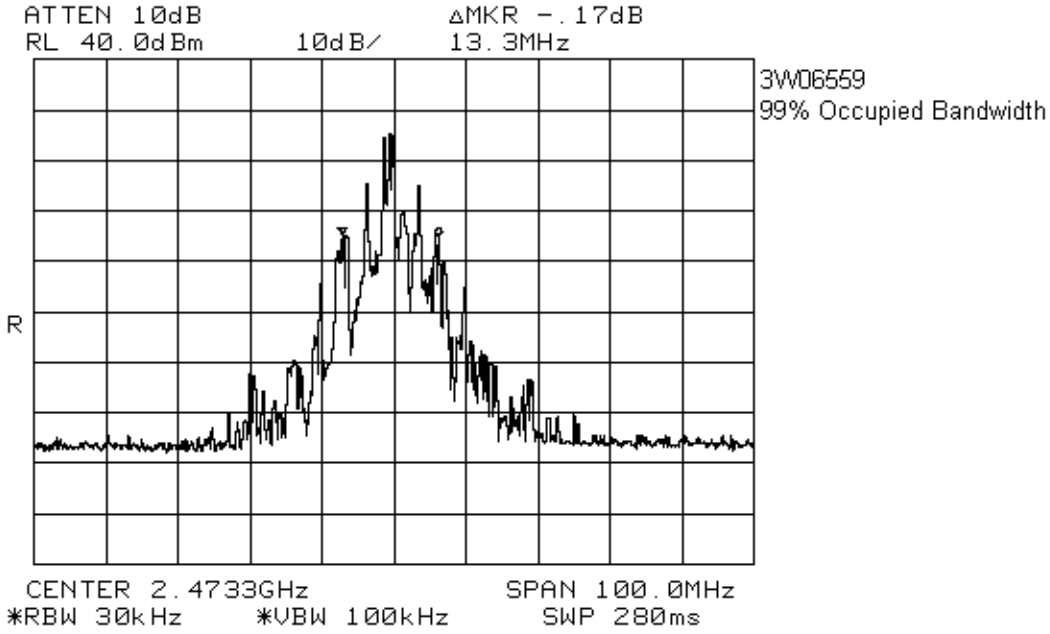
As per 90.210, L, Mask B



Un-Modulated Carrier, Ref. level for Mask B




ATTEN 10dB
RL 40.0dBm
10dB/
ΔMKR -.67dB
13.3MHz
3W06559
20 dB Bandwidth
R
CENTER 2.4733GHz
SPAN 100.0MHz
*RBW 30kHz
*VBW 100kHz
SWP 280ms


ATTEN 10dB
RL 40.0dBm
10dB/
ΔMKR -.17dB
13.3MHz
3W06559
99% Occupied Bandwidth
R
CENTER 2.4733GHz
SPAN 100.0MHz
*RBW 30kHz
*VBW 100kHz
SWP 280ms

Section 6. Spurious Emissions at Antenna Terminals

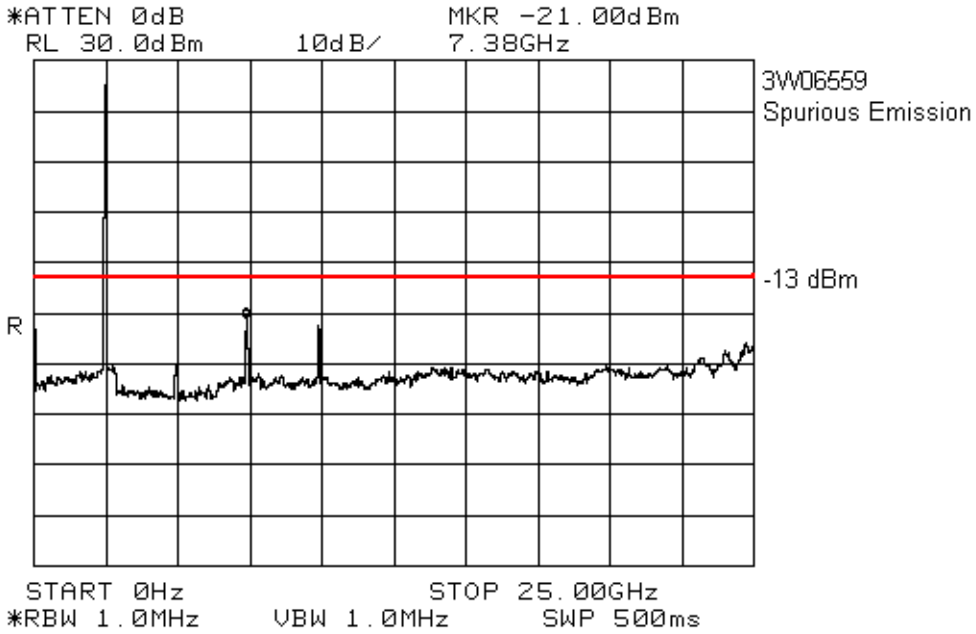
Para. No.: 2.1051

Test Performed By: Kevin Carr	**Date of Test: 7 May 2003**

Minimum Standard: 90.210(L), -13 dBm

Test Results: Complied.

Measurement Data: See Plots.



Section 7. Field Strength of Spurious Emissions

Para. No.: 2.1053

Test Performed By: Kevin Carr	**Date of Test: 6 May 2003**

Minimum Standard: 90.210(L), -13 dBm

Test Results: Complied.

Measurement Data: See Charts.

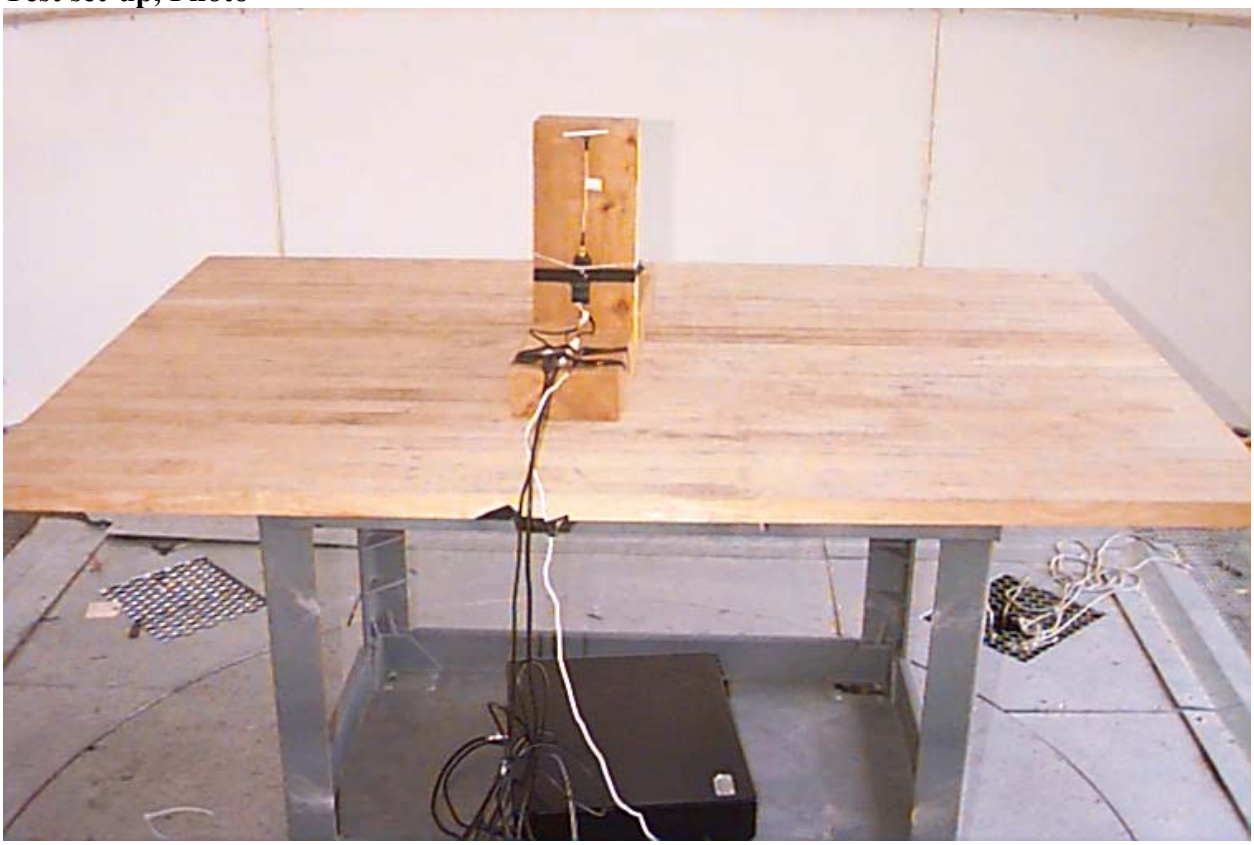
Radiated Disturbance Test Data:

Test Date: 5 May 2003										
Engineer's Name: Kevin Carr										
Temperature (C°): 17						Humidity %: 48				
Tested as per (Table Top/Floor Standing): Table Top										
Test Distance (meters): 3						Range: 1				
Freq. (MHz)	Ant.	Pol. V/H	RCVD Signal (dBμV)	Sig. Sub. Factor (dB)	Cable Loss (dB)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Amp.
4944.5000	Horn1	V	87.3	-120.1	9.1	-23.7	-13.0	10.7	Peak	4-8 GHz
4943.5000	Horn1	H	81.5	-119.5	9.1	-28.9	-13.0	15.9	Peak	4-8 GHz
7416.7000	Horn1	V	79.7	-115.9	11.2	-24.9	-13.0	11.9	Peak	4-8 GHz
7416.5000	Horn1	H	75.4	-116.1	11.2	-29.4	-13.0	16.4	Peak	4-8 GHz
Note 1: Antenna Legend: BC = Biconical, BL = Bilog, LP = Log-Periodic, Horn = Horn, ED = EMCO Dipole Note 2: Detector Legend: Q-Peak = 120 kHz RBW, Average = 1.0 MHz RBW										
Notes:	RBW/VBW = 1MHz Emissions were searched up to the 10th harmonic of the fundamental, all emissions within 20dB have been recorded									

Radiated Disturbance Test Data:

Test Date: 6 May 2003										
Engineer's Name: Kevin Carr										
Temperature (C°): 22						Humidity %: 53				
Tested as per (Table Top/Floor Standing): Table Top										
Test Distance (meters): 1						Range: 1				
Freq. (MHz)	Ant.	Pol. V/H	RCVD Signal (dBuV)	Sig .Sub. Value (dBm)	Ant. Gain (dBi)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Amp.
9891	Hrn 1	V	48.3	-30.2	10.5	-19.7	-13	-6.7	Peak	None
9891	Hrn 1	H	44.8	-33.8	10.3	-23.5	-13	-10.5	Peak	None
Note 1: Antenna Legend: BC = Biconical, BL = Bilog, LP = Log-Periodic, Horn = Horn, ED = EMCO Dipole Note 2: Detector Legend: Q-Peak = 120 kHz RBW, Average = 1.0 MHz RBW										
Notes:	RBW/VBW = 1MHz Emissions were searched up to the 10th harmonic of the fundamental, all emissions within 20dB have been recorded									

Test set-up, Photo



Section 8. Frequency Stability

Para. No.: 2.1055

Test Performed By: Kevin Carr	**Date of Test: 25 April 2003**

Minimum Standard: 90.213, Frequency stability to be specified in the station authorization.

Test Results: Complied.

Measurement Data: The EUT remained within the Band of 2450-24583.5MHz, over the customer's specified Temperature range of 0-40 Deg. Celsius.

Ref. frequency @ 20 Deg. C: 2472.683380MHz

Temperature Deg. C	**Measured Frequency(MHz)**	**Frequency Drift (Hz)**	**Frequency Drift (ppm)**
-30	2472.666522	25257	10.2
-20	2472.683380	8399	3.4
-10	2472.693955	-2176	-0.9
0	2472.693911	-2132	-0.9
10	2472.690317	1462	0.6
30	2472.691387	392	0.2
40	2472.685820	5959	2.4
50	2472.684158	7621	3.1
Voltage Variations Reference: 9VDC@20 Deg. C	**Measured Frequency(MHz)**	**Frequency Drift (Hz)**	**Frequency Drift (ppm)**
+15%	2472.692933	-1154	-0.5
-15%	2472.692561	-782	-0.3

Section 9. Test Equipment List

Equipment List – Prescan for Radiated Emissions (Shielded Chamber)

CAL Cycle	Equipment	Manufacturer	Model No.	Asset/Serial No.	Last Cal.	Next Cal.
1 Year	Spectrum Analyzer	Hewlett-Packard	8565E	FA000981	July. 15/02	July. 15/03
NCR	Bilog	Schaffner	CBL6112B	FA001504	NCR	NCR
1 Year	Horn Antenna #2	EMCO	3115	FA000825	Dec. 09/02	Dec. 09/03
1 Year	Horn Antenna #1	EMCO	3115	FA000649	Dec. 23/02	Dec. 23/03
3 Year	Horn 18 – 26.5 GHz	Electro-Metrics	SH-50/60-1	FA000479	July. 07/00	July. 07/03
NCR	0.1 – 1300 MHz Amplifier	Hewlett Packard	8447D	FA001748	NCR	NCR
1 Year	1.0 – 2.0 GHz Amplifier	JCA	12-400	FA001498	June. 04/02	June. 04/03
1 Year	2.0 – 4.0 GHz Amplifier	JCA	24-600	FA001496	June. 04/02	June. 04/03
1 Year	4.0 – 8.0 GHz Amplifier	JCA	48-600	FA001497	June. 04/02	June. 04/03
COU	5.0 – 18.0 GHz Amplifier	NARDA	DWT-186N23U40	FA001409	COU	COU
COU	18.0 – 26.0 GHz Amplifier	NARDA	BBS-1826N612	FA001550	COU	COU
COU	DC Power Supply	Xantrex	LXQ 20-3	0308	COU	COU
NCR	VCR	Sony	SLV-400	FA000939	NCR	NCR

Note: N/A = Not Applicable, NCR = No Cal Required, COU = CAL On Use, OUT = Out For CAL/Repair

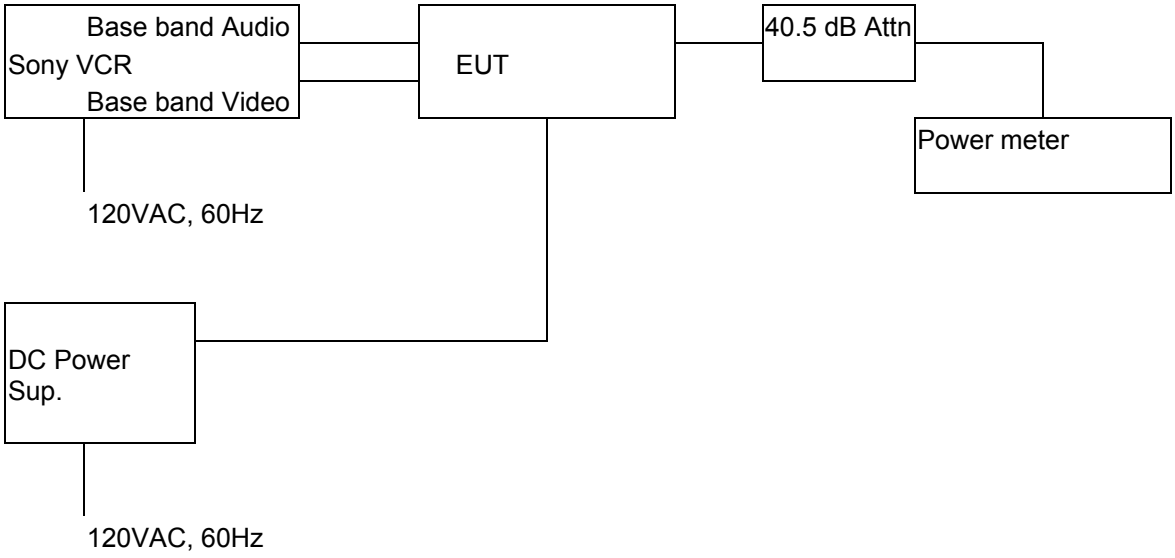
Equipment List - Radiated Emissions

CAL Cycle	Equipment	Manufacturer	Model No.	Asset/Serial No.	Last Cal.	Next Cal.
1 Year	Spectrum Analyzer	Hewlett-Packard	8565E	FA000981	July. 15/02	July. 15/03
1 Year	Horn Antenna #2	EMCO	3115	FA000825	Dec. 09/02	Dec. 09/03
1 Year	Horn Antenna #1	EMCO	3115	FA000649	Dec. 23/02	Dec. 23/03
3 Year	Horn 18 – 26.5 GHz	Electro-Metrics	SH-50/60-1	FA000479	July. 07/00	July. 07/03
COU	DC Power Supply	Xantrex	LXQ 20-3	0308	COU	COU
NCR	VCR	Sony	SLV-400	FA000939	NCR	NCR
3 yr	RF Gen.	HP	8673B	FA001134	Jan. 27/01	Jan. 27/04
1 Year	Pwr Meter	HP	E4418B	FA001678	Apr. 01/03	01 Apr. 04
1 Year	Pwr Head	HP	8487A	FA001741	Mar. 28/03	Mar. 28/04
COU	3.9 GHz HP Filter	K&L Micro wave	11SH10-4000/T12000-0/0	FA001340	COU	COU
1 Year	1.0 – 2.0 GHz Amplifier	JCA	12-400	FA001498	June. 04/02	June. 04/03
1 Year	2.0 – 4.0 GHz Amplifier	JCA	24-600	FA001496	June. 04/02	June. 04/03
1 Year	4.0 – 8.0 GHz Amplifier	JCA	48-600	FA001497	June. 04/02	June. 04/03
COU	5.0 – 18.0 GHz Amplifier	NARDA	DWT-186N23U40	FA001409	COU	COU
COU	18.0 – 26.0 GHz Amplifier	NARDA	BBS-1826N612	FA001550	COU	COU

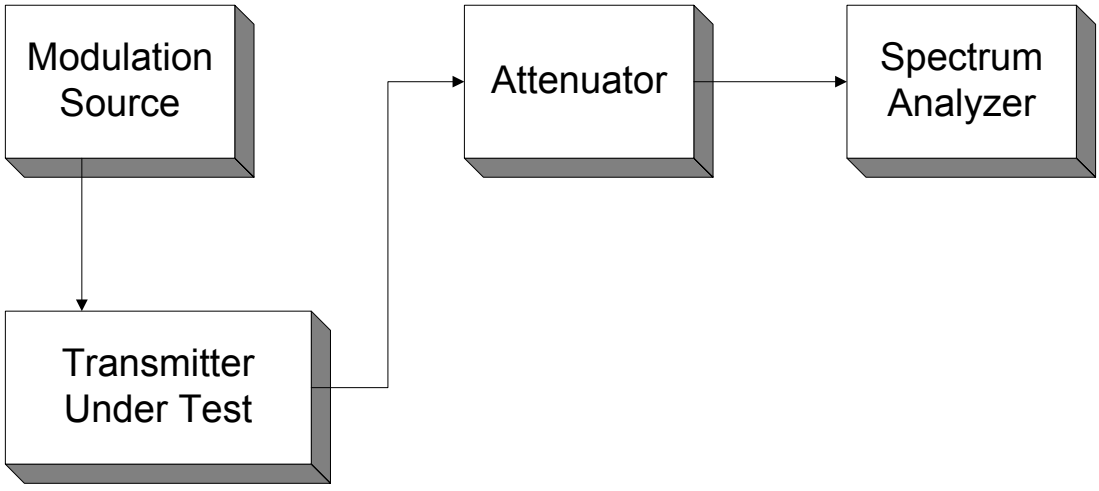
Note: N/A = Not Applicable, NCR = No Cal Required, COU = CAL On Use, OUT = Out For CAL/Repair

Section 10. Test Diagrams

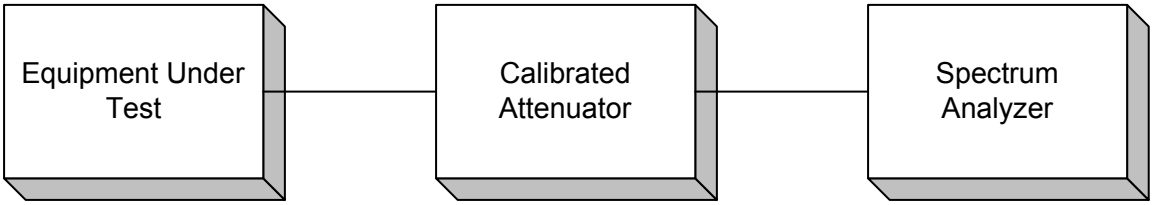
Para. No. 2.1046 - R.F. Power Output



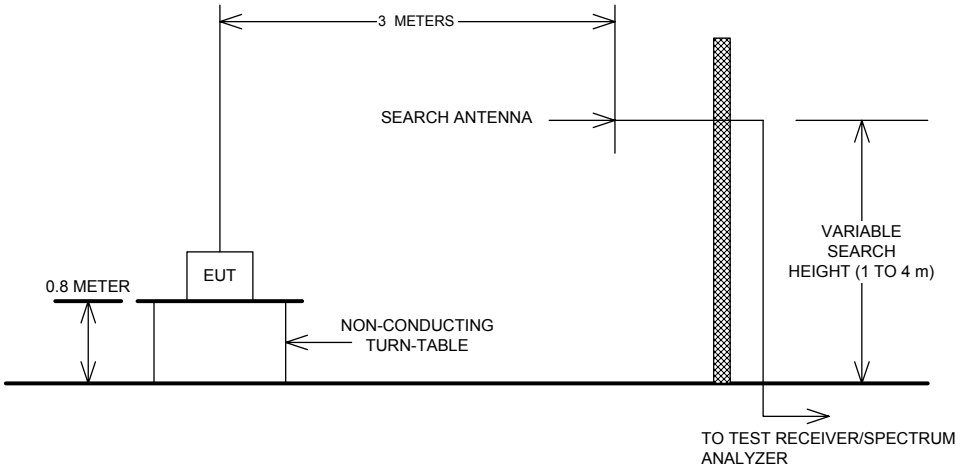
Para. No. 2.1049 - Occupied Bandwidth



Para. No. 2.1051 - Spurious Emissions at Antenna Terminals



Para. No. 2.1053 - Field Strength of Spurious Radiation



Para. No. 2.1055 - Frequency Stability