Test Report:	3W06768 Issue II
Applicant:	DragonWave Inc.
Equipment Under Test: (EUT)	24GHz AirPair, P-P Radio Unit
FCC ID:	QB8-DWR24-000001
In Accordance With:	**FCC Part 15, Subpart C, 15.249**
Tested By:	Nemko Canada Inc. 303 River Road, R.R. 5 Ottawa, Ontario K1V 1H2
Authorized By:	Russell Grant, Senior Approvals Eng.
Date:	11 April 2003
Total Number of Pages:	21

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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 15.249. All tests were conducted using measurement procedure ANSI C63.4-2000. Radiated Emissions were made on an open area test site. A description of the test facility is on file with the FCC.

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 April 2003
Glen Westwell, Wireless Technologist

Summary Of Test Data

Name Of Test	Para. No.	Result
Conducted Emissions	15.207	Complies
Radiated Emissions	15.249	Complies
Frequency Tolerance	15.249(b)(3)	Complies

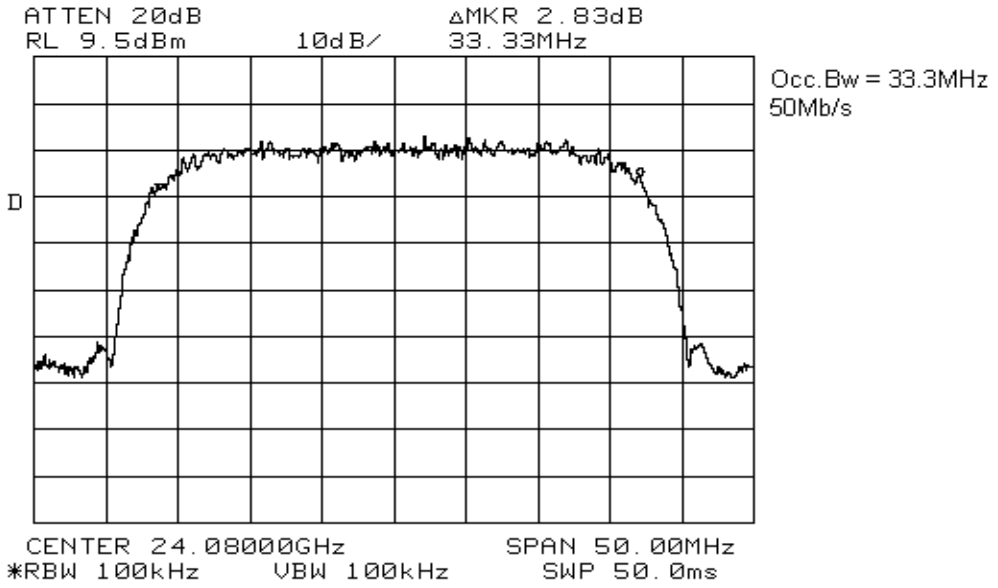
Test Conditions:

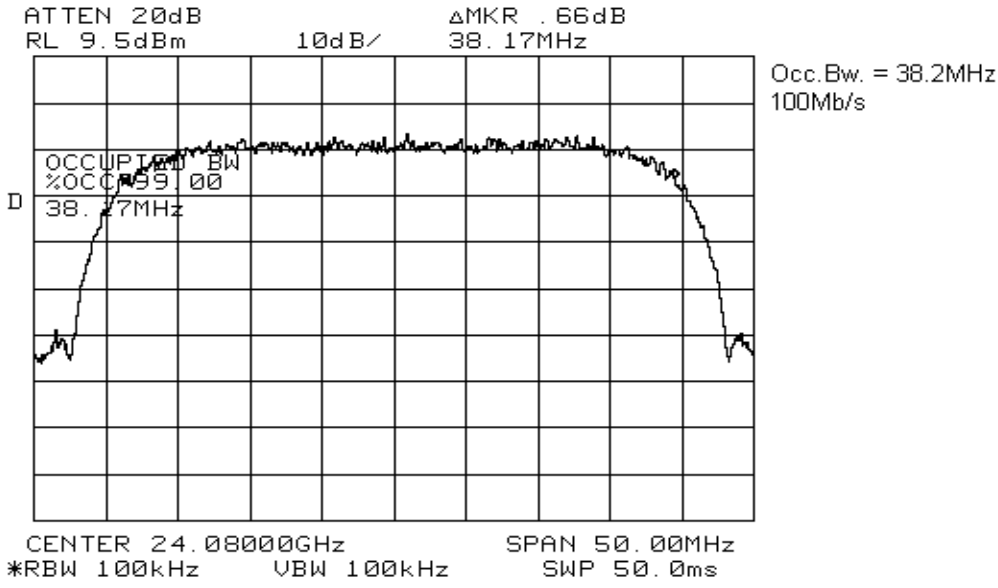
Indoor Temperature: 22°C
Humidity: 50%

Outdoor Temperature: 0°C
Humidity: 53%

Section 2. General Equipment Specification

Manufacturer:	DragonWave Inc.
Model No.:	24GHz AirPair
Serial No.:	AP100 Modem #1033 AP CP Radio - None
Date Received In Laboratory:	11 March 2003
Nemko Identification No.:	#4 & #6
Transmit Frequency:	24.05-24.25GHz
Antenna Gain:	36dBi, 41.5dBi & 44.5dBi
Modulation:	16 QAM @ 100Mb/s QPSK @ 50Mb/s
Emission Designator:	38M2G1D
Maximum Data Rate:	100Mb/S


ATTEN 20dB
RL 9.5dBm
10dB/
ΔMKR 2.83dB
33.33MHz
Occ.Bw = 33.3MHz
50Mb/s
D
CENTER 24.08000GHz
SPAN 50.00MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms


ATTEN 20dB
RL 9.5dBm
10dB/
ΔMKR .66dB
38.17MHz
Occ.Bw. = 38.2MHz
100Mb/s
OCCUPIED BW
%OCC 99.00
38.17MHz
D
CENTER 24.08000GHz
SPAN 50.00MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms

Section 3. Powerline Conducted Emissions

Para. No.: 15.207

Test Performed By: Glen Westwell	**Date of Test: 10 Mar 2003**

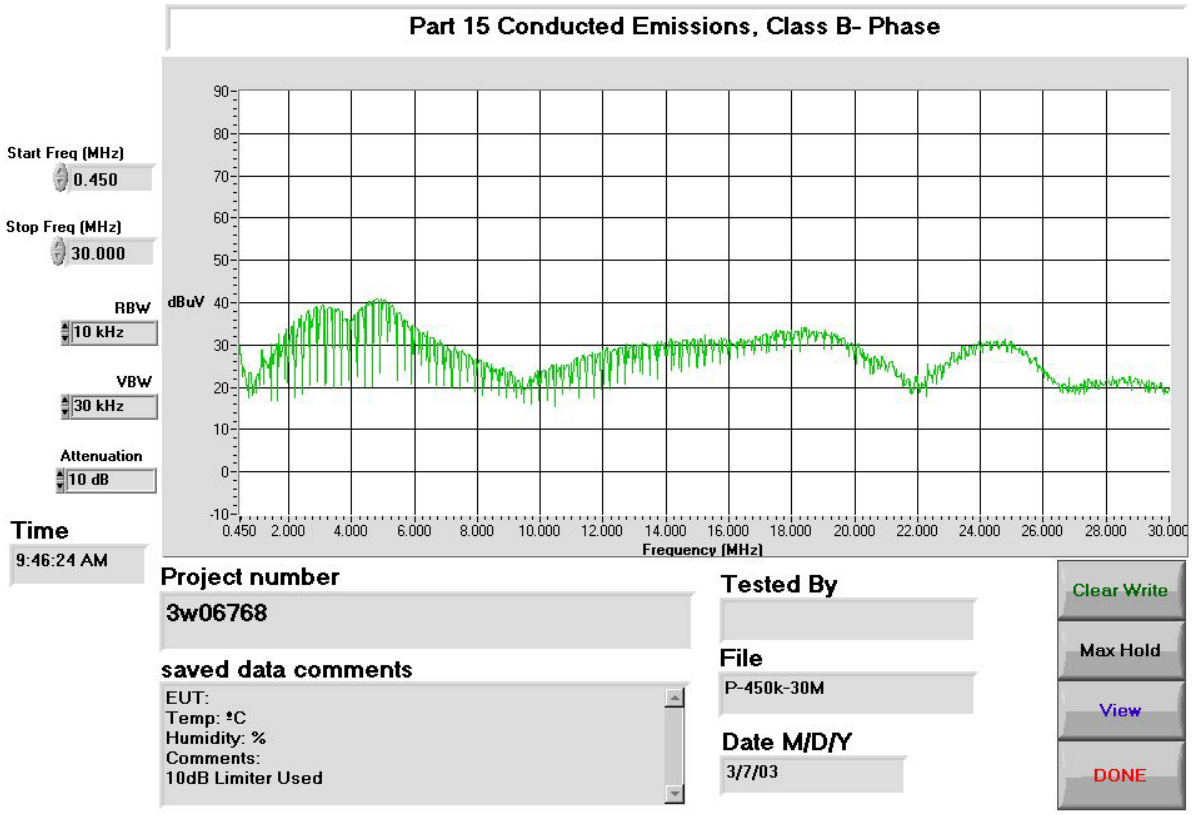
Minimum Standard:

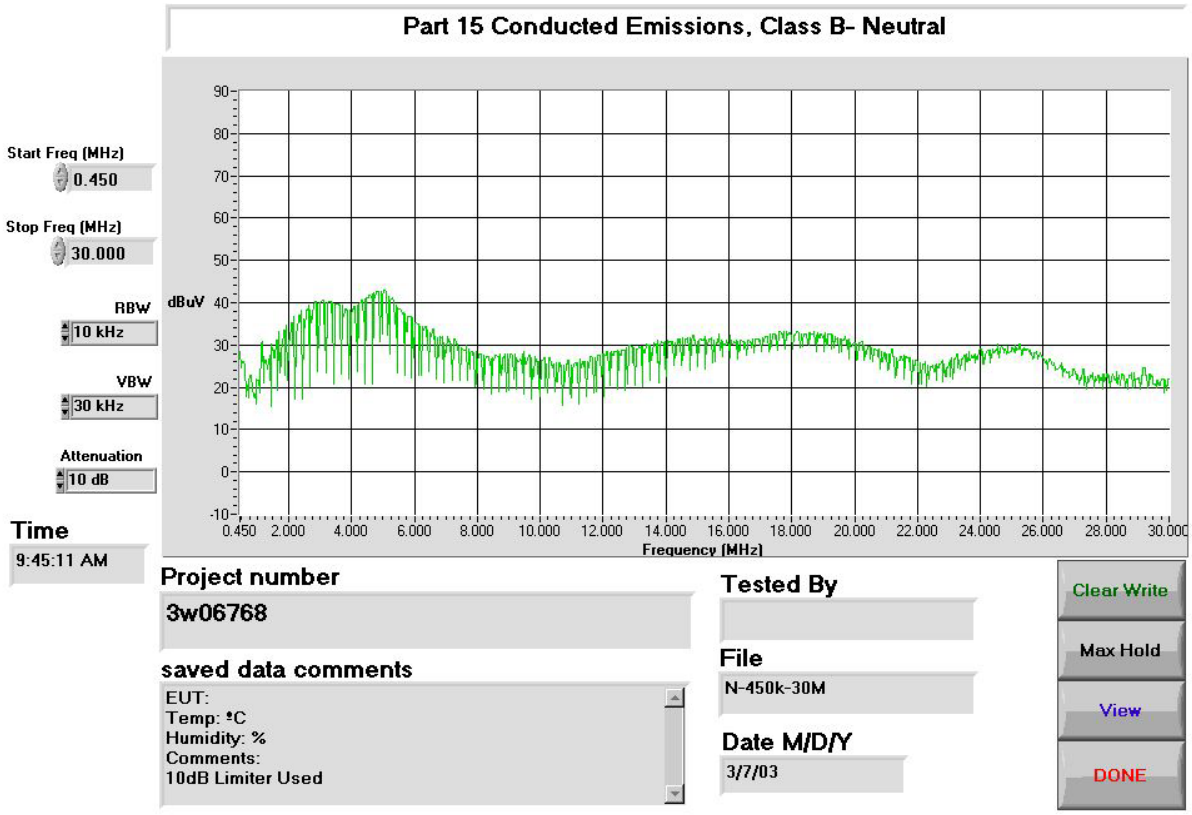
Frequency (MHz)	**Maximum Powerline Conducted RF Voltage (μV)**	**(dBμV)**
0.45 - 30.0	250	48

Note: The LISN used was a 50ohm/50uH LISN

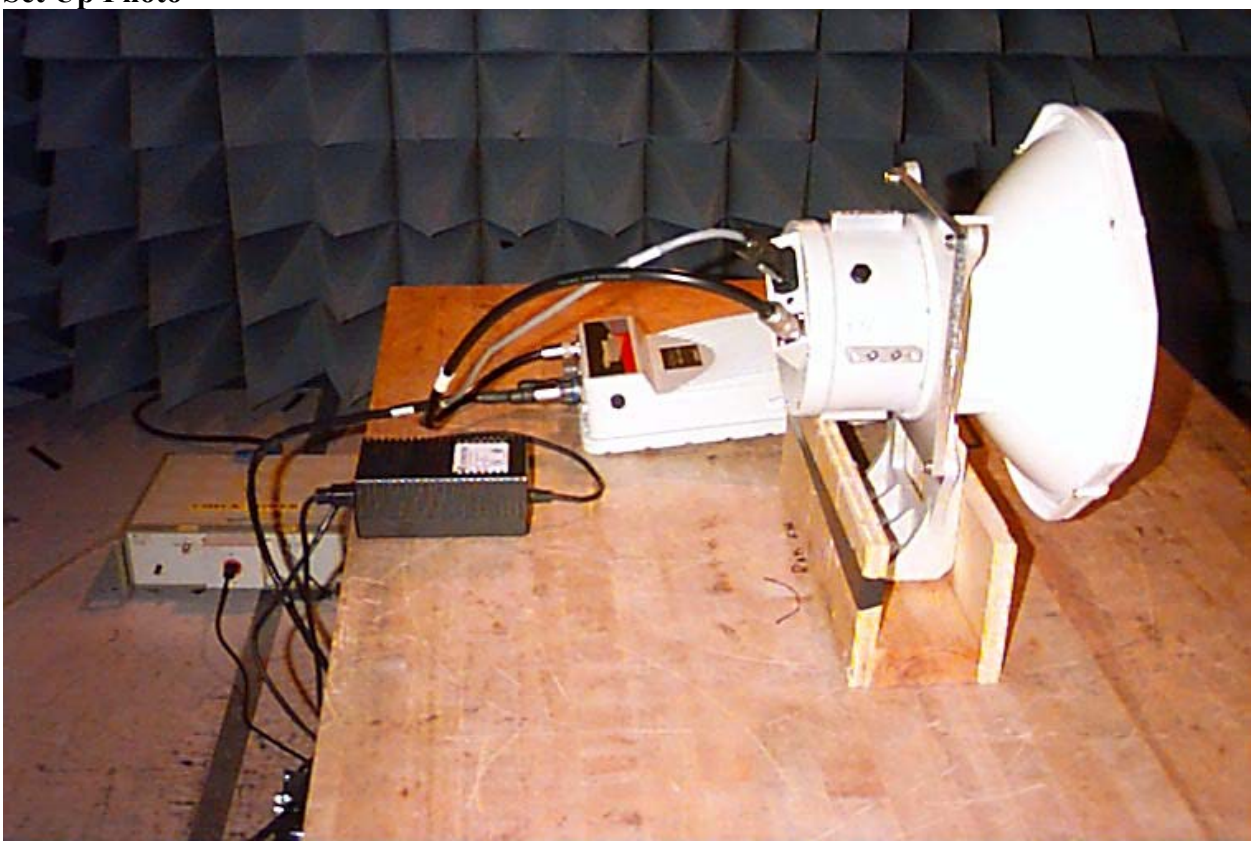
Test Results: Complies

Measurement Data: See attached graphs.


Part 15 Conducted Emissions, Class B- Phase
Start Freq (MHz)
0.450
Stop Freq (MHz)
30.000
RBW
10 kHz
VBW
30 kHz
Attenuation
10 dB
Time
9:46:24 AM
dBuV
90
80
70
60
50
40
30
20
10
0
-10
0.450
2.000
4.000
6.000
8.000
10.000
12.000
14.000
16.000
18.000
20.000
22.000
24.000
26.000
28.000
30.000
Frequency (MHz)
Project number
3w06768
Tested By
saved data comments
EUT:
Temp: °C
Humidity: %
Comments:
10dB Limiter Used
File
P-450k-30M
Date M/D/Y
3/7/03
Clear Write
Max Hold
View
DONE


Part 15 Conducted Emissions, Class B- Neutral
Start Freq (MHz)
0.450
Stop Freq (MHz)
30.000
RBW
10 kHz
VBW
30 kHz
Attenuation
10 dB
Time
9:45:11 AM
dBuV
90
80
70
60
50
40
30
20
10
0
-10
0.450
2.000
4.000
6.000
8.000
10.000
12.000
14.000
16.000
18.000
20.000
22.000
24.000
26.000
28.000
30.000
Frequency (MHz)
Project number
3w06768
saved data comments
EUT:
Temp: °C
Humidity: %
Comments:
10dB Limiter Used
Tested By
File
N-450k-30M
Date M/D/Y
3/7/03
Clear Write
Max Hold
View
DONE

Set Up Photo



Section 4. Radiated Emissions

Para. No.: 15.249

Test Performed By: Glen Westwell	**Date of Test: 11 April 2003**

Minimum Standard:

Fundamental (GHz)	Field Strength (mV/m)	Field Strength (dBµV)	Harmonic (mV/m)	Harmonic (dBµV)
24.05-24.25	2500	128	0.5	54

Test Results: Complies.

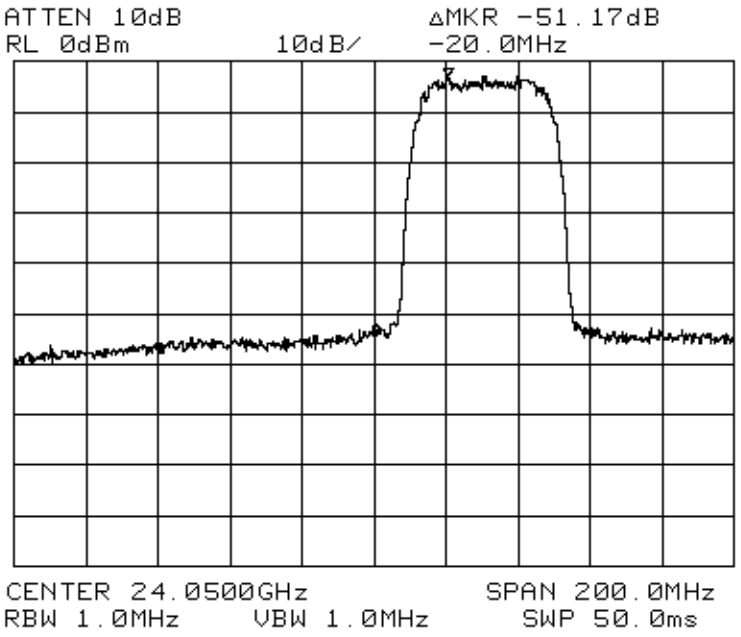
Measurement Data: See attached tabulated data.

- All spurious and harmonic emissions were searched from 30MHz to 100GHz.
- All emissions were searched on the horizontal and verticle axis. Worst case emissions have been presented.
- Fundimental emissions were measured at 10m and extrapolated to 3m due to the focus of the high gain antenna.
- Spurious and harmonic emissions were searched at 3m, 1m and 0.5 m. None were detected within 20dB of the limits.
- Maximized emissions were verified with the input power varied at +/-15%.
- Where available, the emissions have been searched on 3 orthogonal axis.

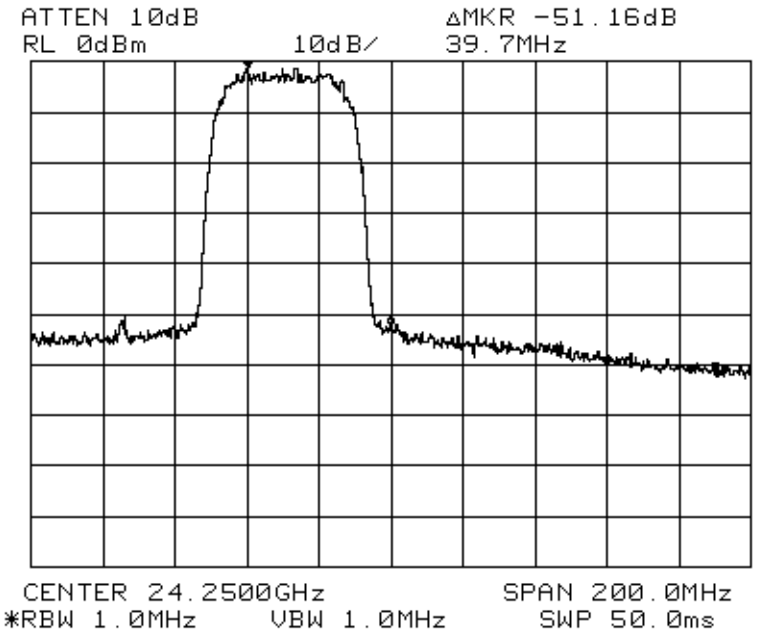
Test Data - Radiated Emissions

Test Distance (meters) : 10		Range: C		Receiver: HP 8565E		RBW(kHz): 1000		Detector: Ave/Peak.	
Freq. (MHz)	Ant. *	Pol. (V/H)	RCVD Signal (dBµV/m)	Ant. Factor (dB)**	Amp. Gain (dB)***	Dist. Corr. (dB)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
Small Antenna – 36dBi, Peak Field Strength									
24080.00	Horn	H	70.7	45.7		10.5	126.9	128.0	1.1
24150.00	Horn	H	70.0	45.7		10.5	126.2	128.0	1.8
24220.00	Horn	H	71.0	45.7		10.5	127.2	128.0	0.8
Large Antenna – 41.5dBi, Peak Field Strength									
24080.00	Horn	H	69.5	45.7		10.5	125.7	128.0	2.3
24150.00	Horn	H	70.5	45.7		10.5	126.7	128.0	1.3
24220.00	Horn	H	70.6	45.7		10.5	126.8	128.0	1.2
Large Antenna – 44.5dBi, Peak Field Strength									
24080.00	Horn	H	70.0	45.7		10.5	126.2	128.0	1.8
24150.00	Horn	H	69.0	45.7		10.5	125.2	128.0	2.8
24220.00	Horn	H	70.0	45.7		10.5	126.2	128.0	1.8

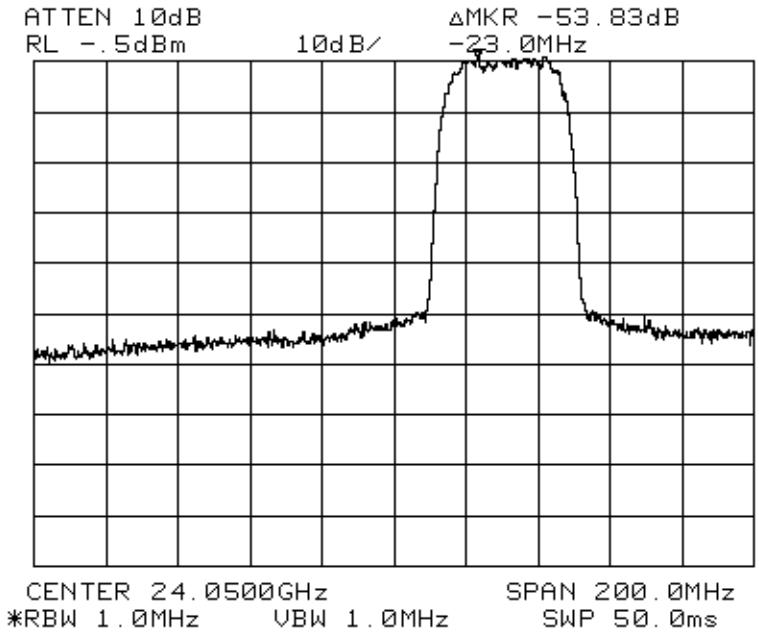
Notes:
B/C = Biconical, B/L = Biconilog, L/P = Log-Periodic, H = Horn, D/P = Dipole
* Re-measured using dipole antenna.
** Includes cable loss when amplifier is not used.
*** Includes cable loss.
( ) Denotes failing emission level.
N.D. = Not Detected



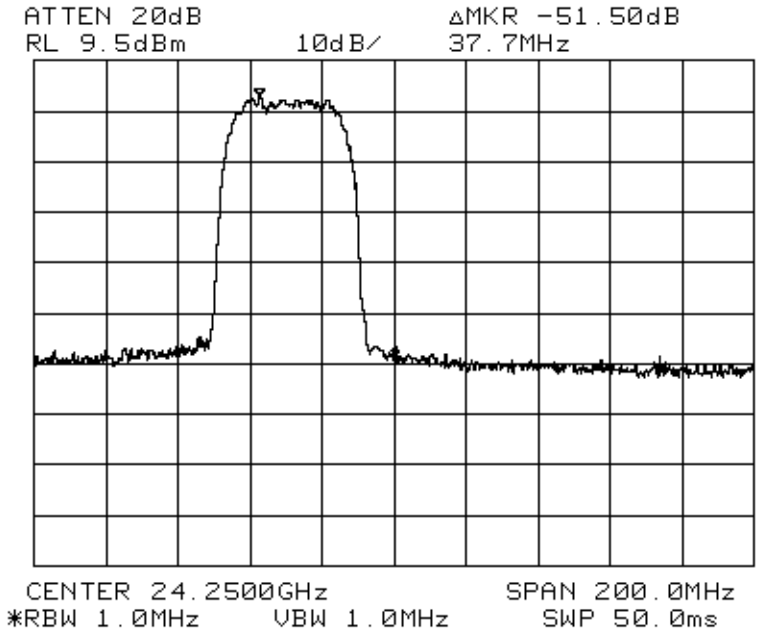
Lower Band Edge
100Mb/s



Upper Band Edge
100Mb/s

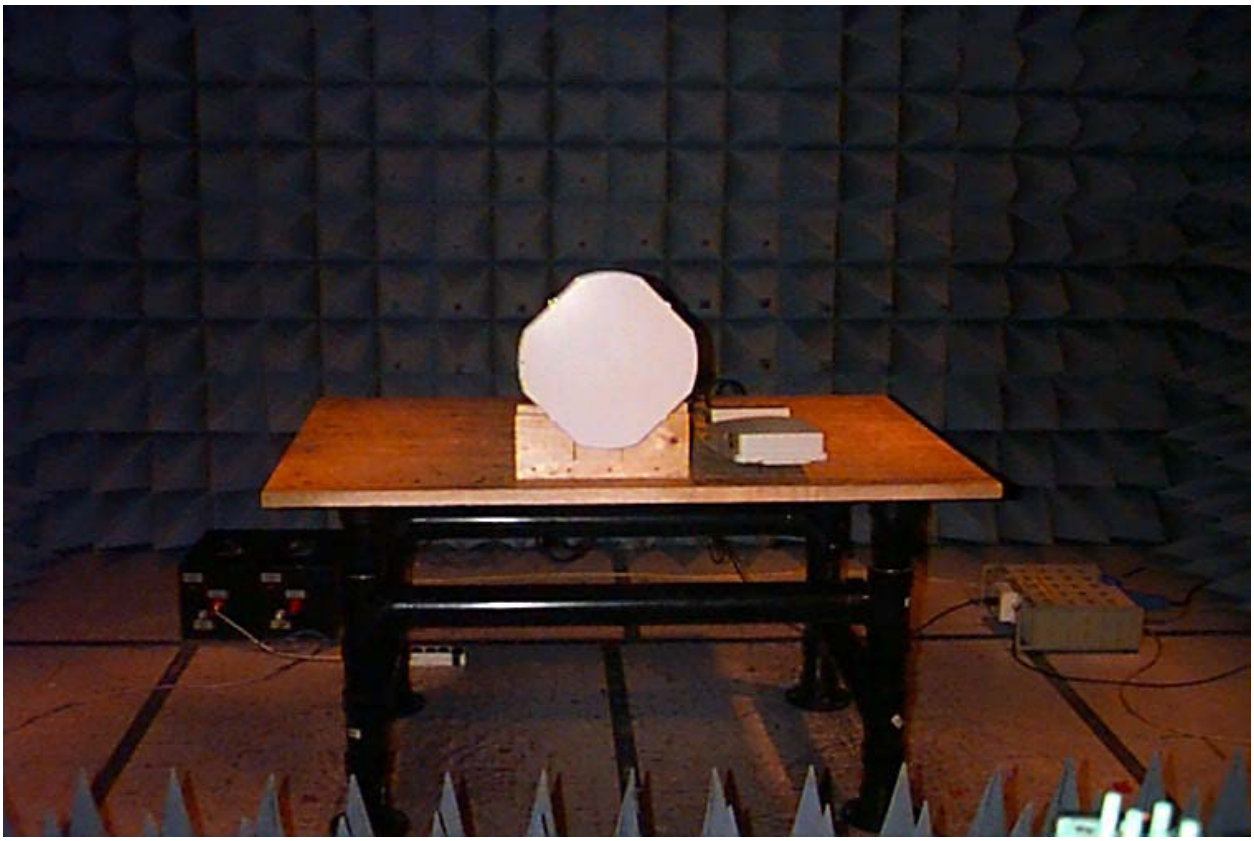


Lower Band Edge
50Mb/s

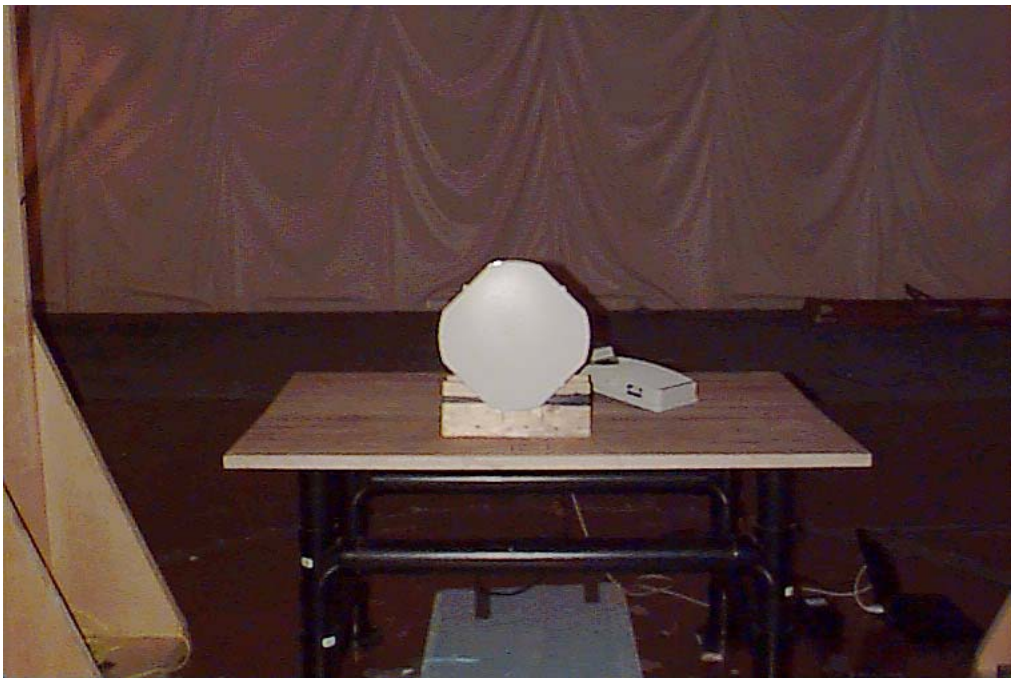


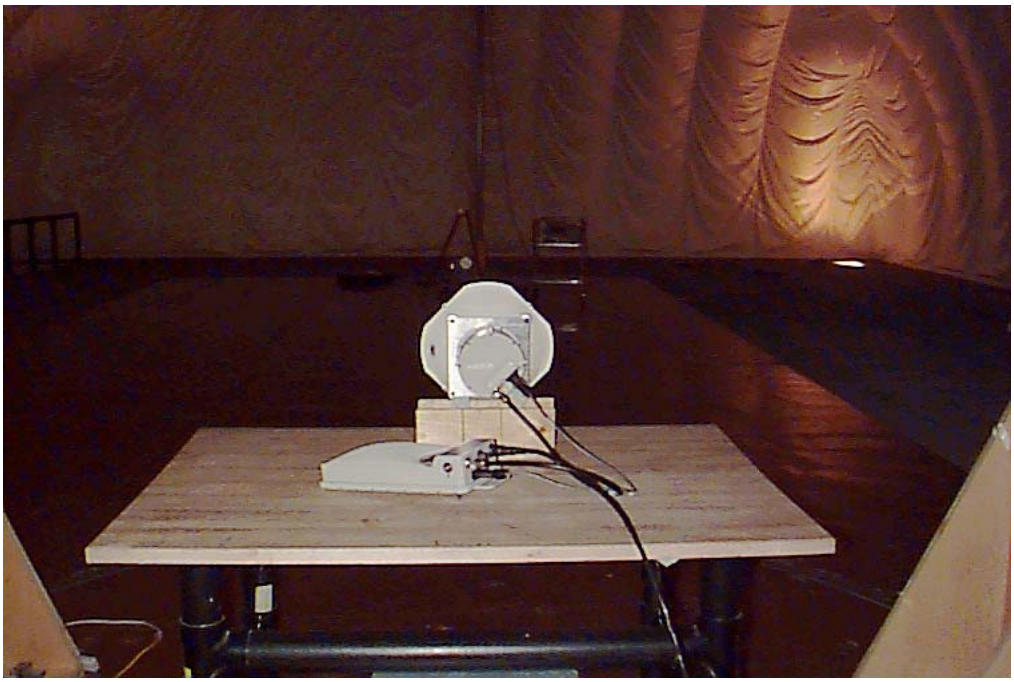
Upper Band Edge
50Mb/s

Radiated Pre-Scan Photo

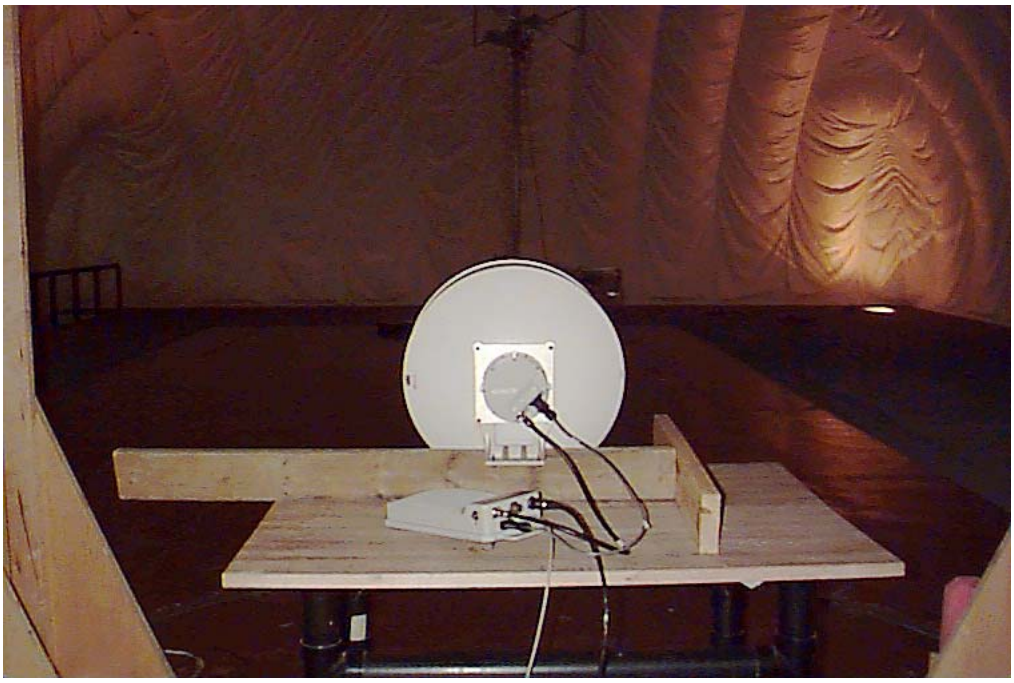


Radiated Photo's
Small Antenna, 36dBi

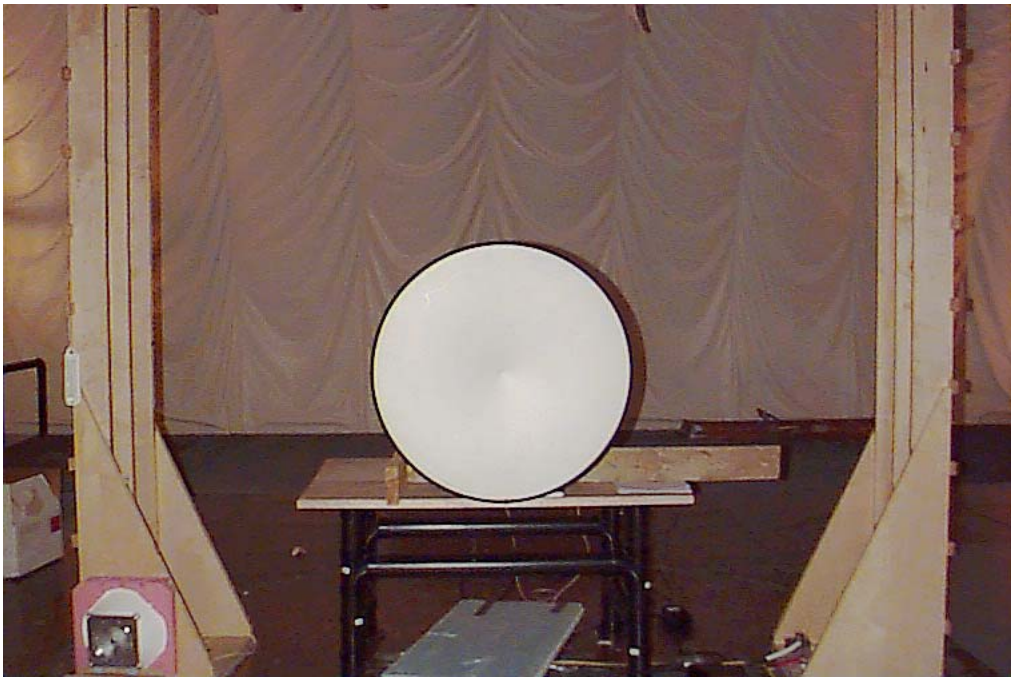


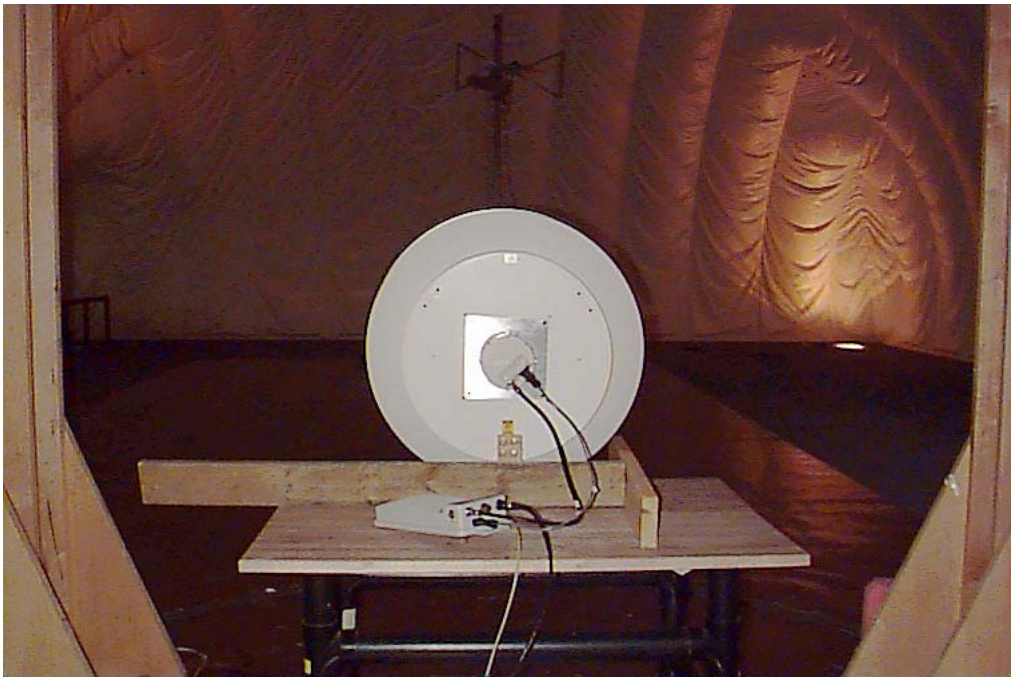


Large Antenna, 41.5dBi



Large Antenna, 44.5dBi





Section 5. Frequency Stability

Para. No.: 15.249(a)(2)

Test Performed By: Glen Westwell	**Date of Test: 14 Mar 2003**

Minimum Standard: 0.001% (240KHz)

Test Results: Complies.

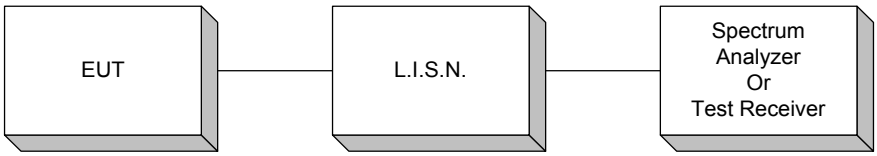
The maximum frequency drift is 77 kHz.
This is 0.0003 %.

Measurement Data: Standard Test Voltage (STV): 120Vac
Standard Test Freq.(STF): 24 150.000MHz

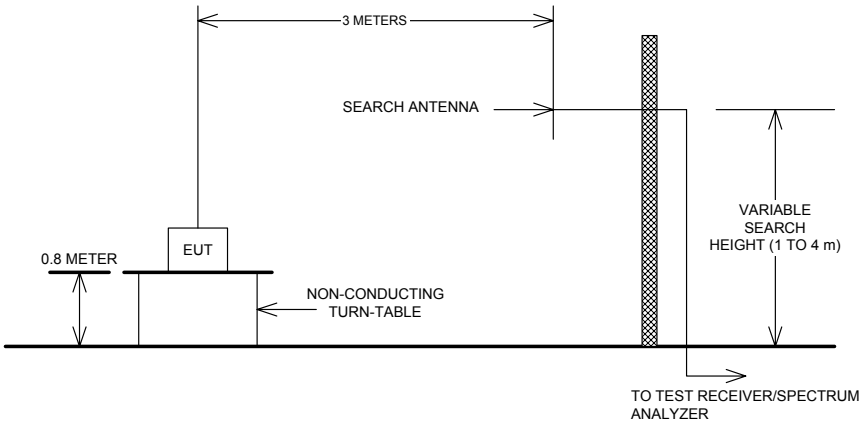
Test Condition	Frequency (MHz)	Frequency Drift (kHz)
STV	24 149. 999	1
115% STV	24 149. 998	2
85% STV	24 149. 999	1
-30 °C	24 149. 923	77
-20 °C	24 149. 937	66
-10 °C	24 149. 933	67
0 °C	24 150. 028	28
+10 °C	24 149. 971	29
+30 °C	24 149. 960	40
+40 °C	24 149. 954	46
+50 °C	24 149. 987	13

Section 6. Block Diagrams

Conducted Emissions

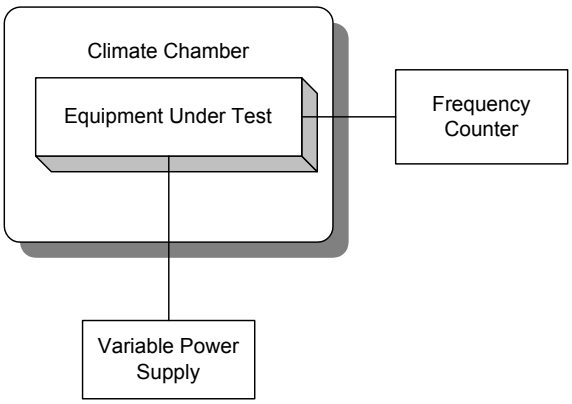


Test Site For Radiated Emissions



The spectrum was search up to the 10^{th} harmonic of the fundamental frequency of operation.

Para. No. 7.0 - Frequency Stability



Section 7. Test Equipment List

RADIO TEST EQUIPMENT LIST

CAL CYCLE	EQUIPMENT	MANUFACTURER	MODEL	SERIAL	Last Cal.	Next Cal.
1 Year	Spectrum Analyzer	Hewlett Packard	8565E	FA000981	15 July 02	15 July 03
1 Year	LISN	EMCO	4825/2	FA001545	Oct. 25/02	Oct. 25/03
1 Year	Climate Chamber	Thermotron	SM-16C	15649-S	16 Jan 03	16 Jan 04
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
NCR	Bilog	Schaffner	CBL6112B	FA001504	NCR	NCR
3 Year	Horn 18 – 26.5 GHz	Electro-Metrics	SH-50/60-1	FA000479	July. 07/00	July. 07/03
3 Year	Horn 26 .5 – 40 GHz	Electro-Metrics	SH-50/60-2	FA000485	July. 07/00	July. 07/03
1 Year	Horn Antenna	EMCO #2	3115	4336	9 Dec 02	9 Dec 03
1 Year	Horn Antenna	EMCO #1	3115	3132	23 Dec 02	23 Dec 03
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
1 Year	Power Meter	Hewlett Packard	E4418B	FA001413	Feb. 16/02	May 16/03
1 Year	Power Sensor	Hewlett Packard	8487A	FA001419	Feb. 27/02	May 27/03