Standards Council of Canada
Accredited Laboratory
Scope of Accreditation 75

Conseil canadien des normes
Laboratoire accrédité
Portée d'accréditation 75

TM

Test Report: 4W36013, Issue 2

Applicant: Mitel Networks Corporation
350 Legget Drive
Kanata Ontario

Equipment Under Test: (EUT) Verizon One Phone

FCC ID:

In Accordance With: **FCC Part 15.247, Subpart C**
FHSS System and Digitally Modulated Radiators
5725-5850MHz

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

Authorized By: Sim Jagpal, General Manager

Date: 17 January 2005

Total Number of Pages: 31

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 Part 15, Subpart C. Radiated tests were conducted is accordance with ANSI C63.4-2001. Radiated emissions are 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: 17 January 2005
Glen Westwell, Wireless Specialist

Summary Of Test Data

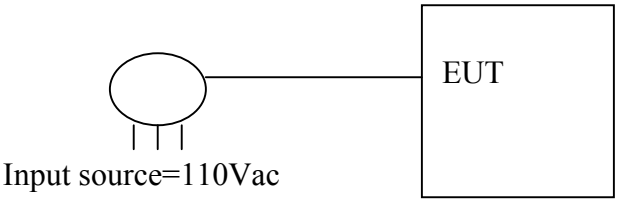
Name Of Test	Para. No.	Result
Powerline Conducted Emissions	15.207(a)	Complies
20 dB Bandwidth	15.247(a)(1)(ii)	Complies
Number of Hopping Channels	15.247(a)(1)(ii)	Complies
Occupancy Time	15.247(a)(1)(ii)	Complies
Minimum Channel Separation	15.247(a)(1)	Complies
Peak Output Power	15.247(b)(1)	Complies
Spurious Emissions	15.247(d)	Complies

Test Conditions:

Indoor Temperature: 23°C
Humidity: 42%

Outdoor Temperature: -7°C
Humidity: 30%

Test Set Up Diagram



Input source=110Vac

Section 2. General Equipment Specification

Manufacturer:	Verizon for Mitel
Model No.:	A90-VZ1015-06, Verizon One
Serial No.:	000471
Date Received In Laboratory:	17 Dec 2004
Band of Operation:	5725-5850MHz
Operating Frequency of EUT:	5725.809323-5848.888935MHz
Peak Output Power (measured):	14.6dBm
Modulation:	EDCT FHSS
Antenna Gain:	3dBi

Section 3. Powerline Conducted Emissions

Para. No.: 15.207(a)

Test Performed By: Glen Westwell	**Date of Test: 11 Jan. 2005**

Test Results: Complies.

General

These tests were conducted using measurement procedures of ANSI C63.4-2001. The equipment was tested for conducted emissions from 0.15MHz to 30MHz using a 50 microhenry line impedance stabilization network (L.I.S.N.) as described in ANSI C63.4-2001. Peripheral equipment was also operated through a 50 microhenry L.I.S.N.

Limits For Conducted Disturbance At The Mains Ports: Paragraph No. 15.107 for Class B

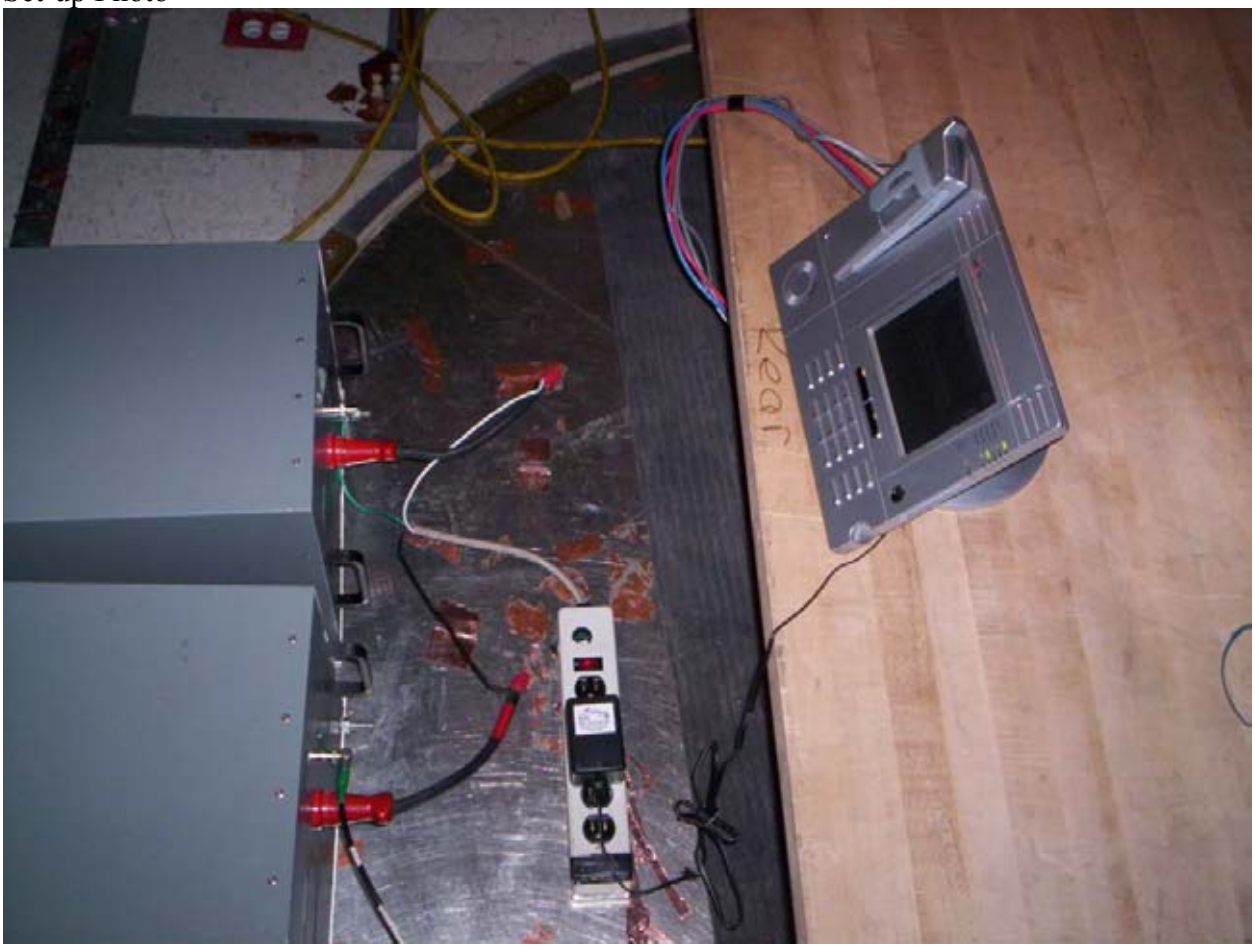
Frequency Range MHz	Limits dB(μV)	
	Quasi-Peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.5 to 5	56	46
5 to 30	60	50

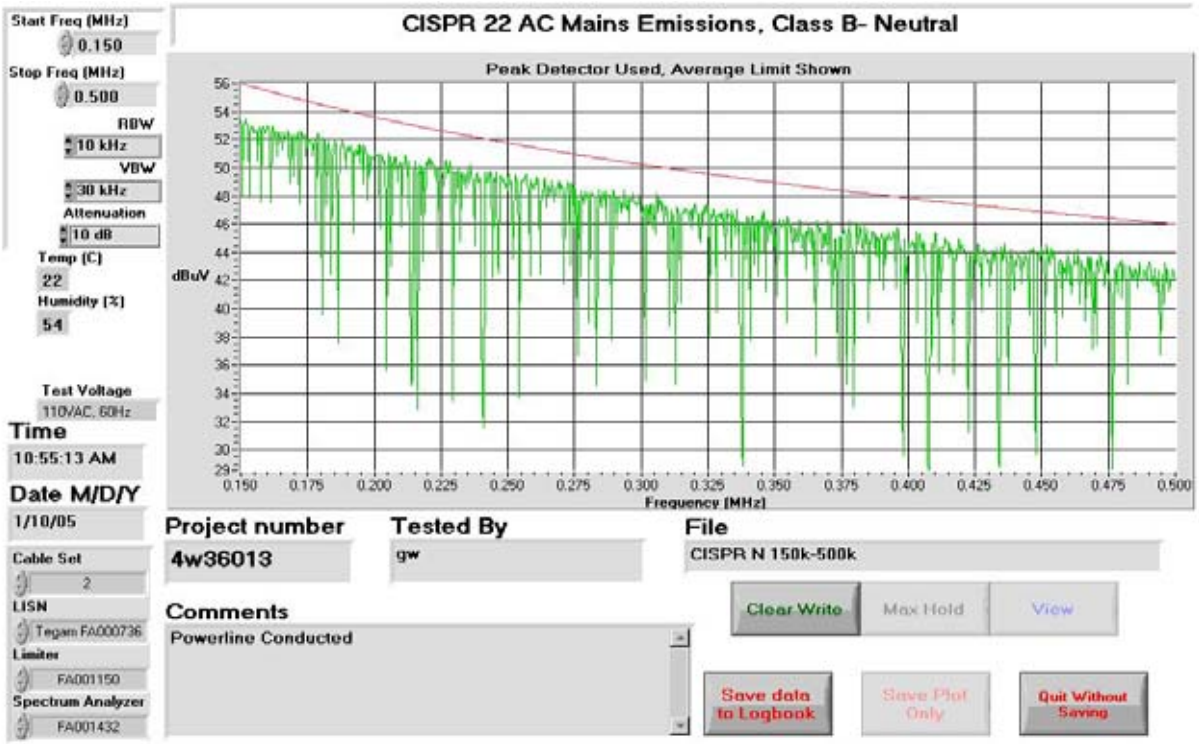
Notes

1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50MHz.

Measurement Data: See attached graph(s).

Set-up Photo

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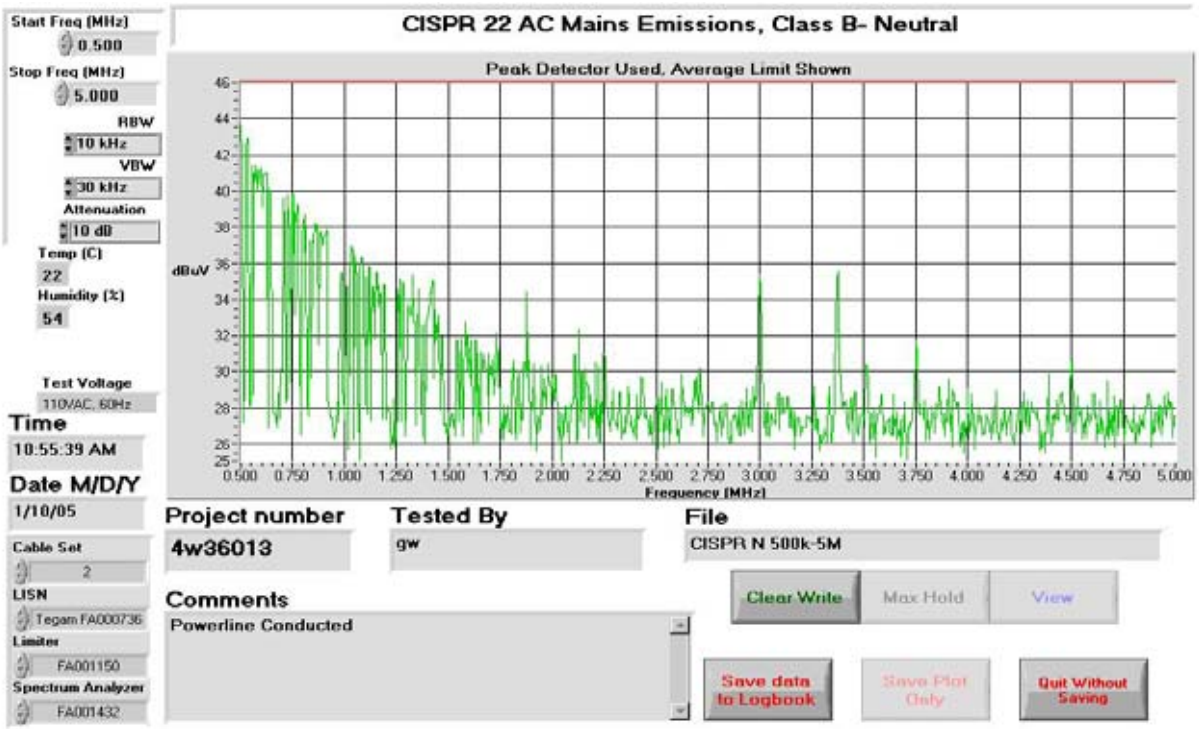
0.150
Stop Freq (MHz)
0.500
RBW
10 kHz
VBW
30 kHz
Attenuation
10 dB
Temp (C)
22
Humidity (%)
54
Test Voltage
110VAC, 60Hz
Time
10:55:13 AM
Date M/D/Y
1/10/05
Cable Set
2
LISN
Tegam FA000736
Limiter
FA001150
Spectrum Analyzer
FA001432
CISPR 22 AC Mains Emissions, Class B- Neutral
Peak Detector Used, Average Limit Shown
dBuV
Frequency (MHz)
Project number
4w36013
Tested By
gw
File
CISPR N 150k-500k
Comments
Powerline Conducted
Clear Write
Max Hold
View
Save data to Logbook
Save Plot Only
Quit Without Saving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Stop Freq (MHz)
5.000
RBW
10 kHz
VBW
30 kHz
Attenuation
10 dB
Temp (C)
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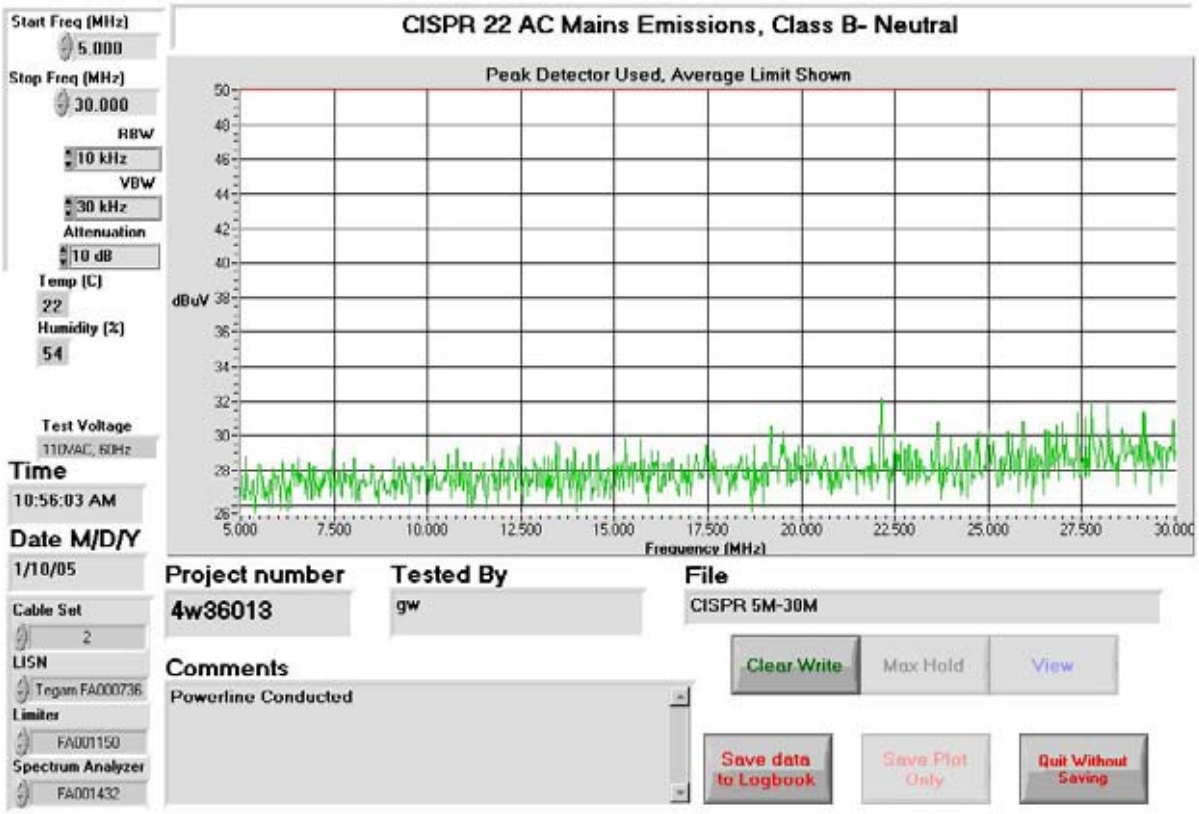
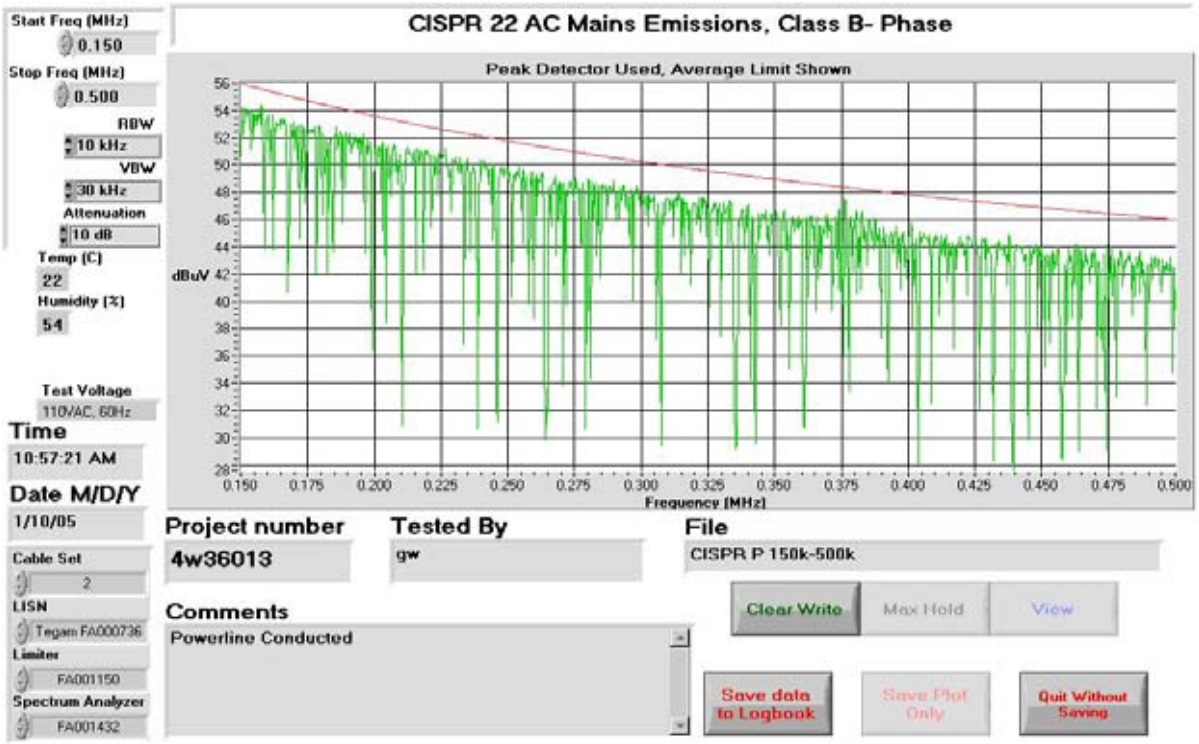
Humidity (%)
54
Test Voltage
110VAC, 60Hz
Time
10:55:39 AM
Date M/D/Y
1/10/05
Cable Set
2
LISN
Tegam FA000736
Limiter
FA001150
Spectrum Analyzer
FA001432
CISPR 22 AC Mains Emissions, Class B- Neutral
Peak Detector Used, Average Limit Shown
dBuV
Frequency (MHz)
Project number
4w36013
Tested By
gw
File
CISPR N 500k-5M
Comments
Powerline Conducted
Clear Write
Max Hold
View
Save data to Logbook
Save Plot Only
Quit Without Saving


CISPR 22 AC Mains Emissions, Class B- Neutral
Peak Detector Used, Average Limit Shown
Start Freq (MHz)
5.000
Stop Freq (MHz)
30.000
RBW
10 kHz
VBW
30 kHz
Attenuation
10 dB
Temp (C)
22
Humidity (%)
54
Test Voltage
110VAC, 60Hz
Time
10:56:03 AM
Date M/D/Y
1/10/05
Cable Set
2
LISN
Tegam FA000736
Limits
FA001150
Spectrum Analyzer
FA001432
dBuV
50
48
46
44
42
40
38
36
34
32
30
28
26
5.000
7.500
10.000
12.500
15.000
17.500
20.000
22.500
25.000
27.500
30.000
Frequency (MHz)
Project number
4w36013
Tested By
gw
File
CISPR 5M-30M
Comments
Powerline Conducted
Clear Write
Max Hold
View
Save data to Logbook
Save Plot Only
Quit Without Saving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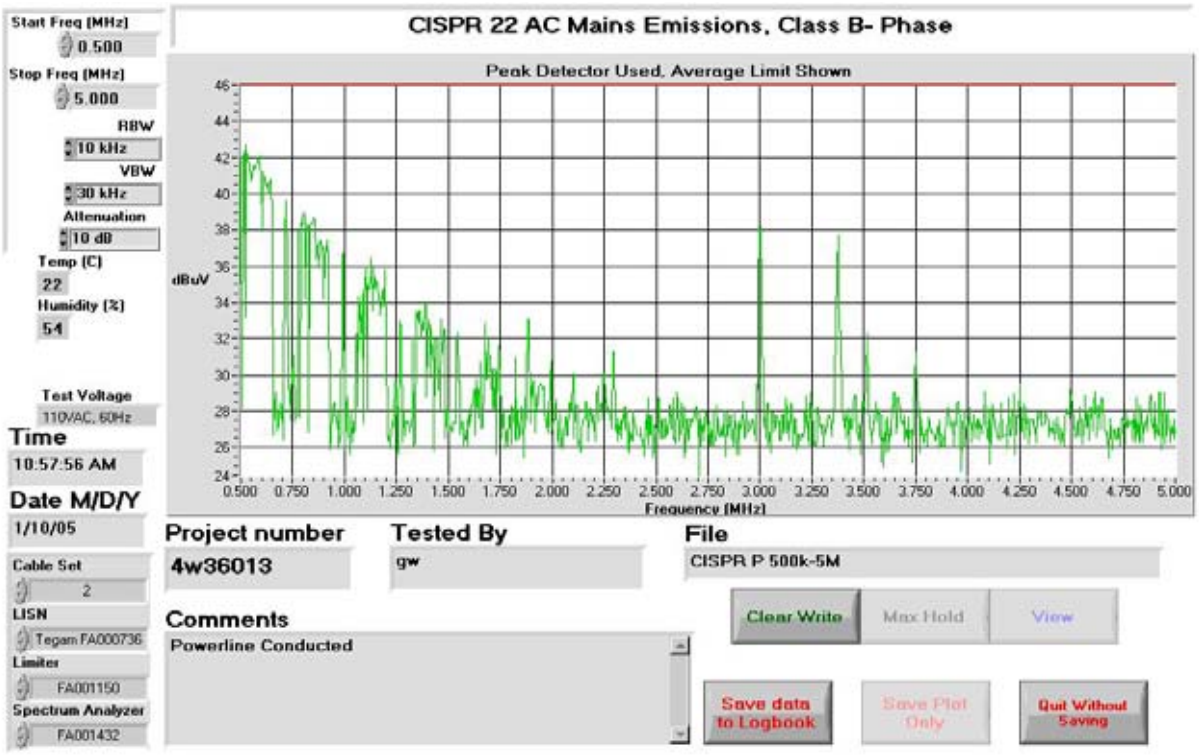
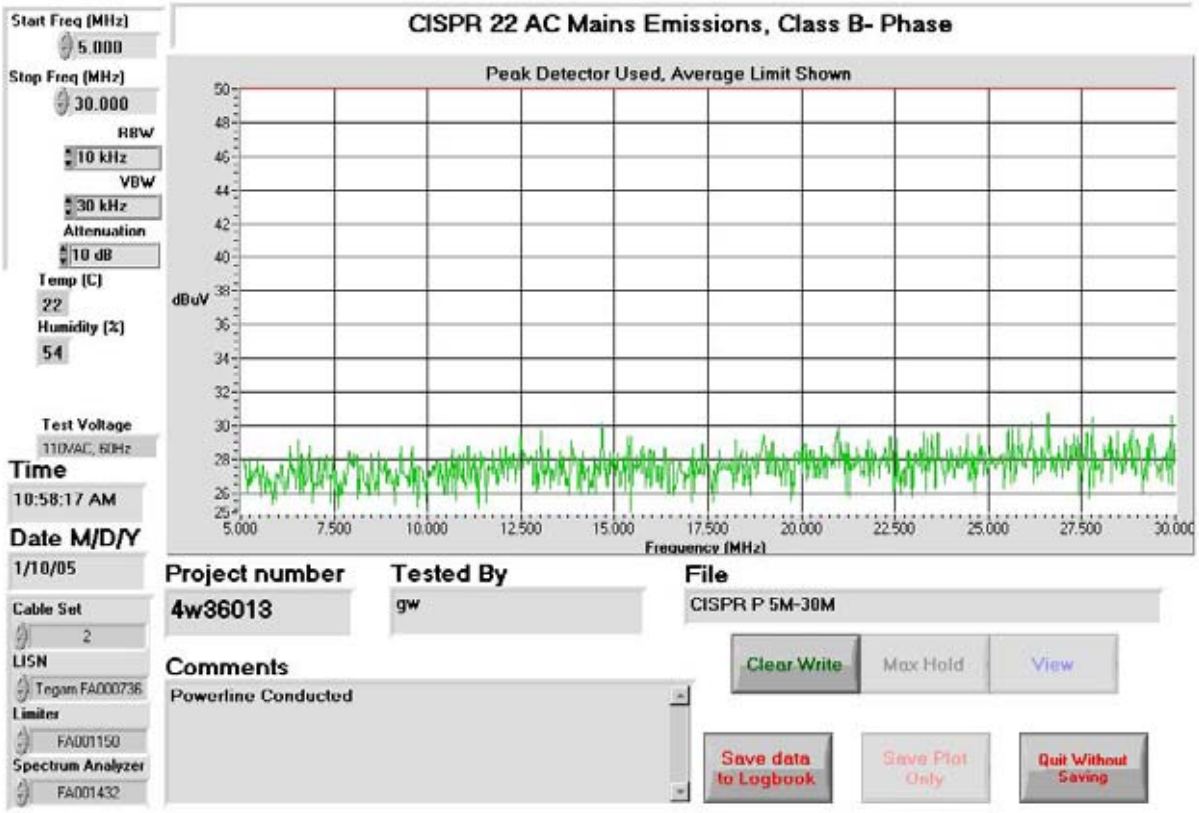
Peak Detector Used, Average Limit Shown
Start Freq (MHz)
0.150
Stop Freq (MHz)
0.500
RBW
10 kHz
VBW
30 kHz
Attenuation
10 dB
Temp (C)
22
Humidity (%)
54
Test Voltage
110VAC, 60Hz
Time
10:57:21 AM
Date M/D/Y
1/10/05
Cable Set
2
LISN
Tegam FA000736
Limits
FA001150
Spectrum Analyzer
FA001432
dBuV
Frequency (MHz)
Project number
4w36013
Tested By
gw
File
CISPR P 150k-500k
Comments
Powerline Conducted
Clear Write
Max Hold
View
Save data to Logbook
Save Plot Only
Quit Without Saving


CISPR 22 AC Mains Emissions, Class B- Phase
Peak Detector Used, Average Limit Shown
Start Freq (MHz)
0.500
Stop Freq (MHz)
5.000
RBW
10 kHz
VBW
30 kHz
Attenuation
10 dB
Temp (C)
22
Humidity (%)
54
Test Voltage
110VAC, 60Hz
Time
10:57:56 AM
Date M/D/Y
1/10/05
Cable Set
2
LISN
Tegam FA000736
Limits
FA001150
Spectrum Analyzer
FA001432
dBuV
Frequency (MHz)
Project number
4w36013
Tested By
gw
File
CISPR P 500k-5M
Comments
Powerline Conducted
Clear Write
Max Hold
View
Save data to Logbook
Save Plot Only
Quit Without Saving


CISPR 22 AC Mains Emissions, Class B- Phase
Peak Detector Used, Average Limit Shown
Start Freq (MHz)
5.000
Stop Freq (MHz)
30.000
RBW
10 kHz
VBW
30 kHz
Attenuation
10 dB
Temp (C)
22
Humidity (%)
54
Test Voltage
110VAC, 60Hz
Time
10:58:17 AM
Date M/D/Y
1/10/05
Cable Set
2
LISN
Tegam FA000736
Limits
FA001150
Spectrum Analyzer
FA001432
dBuV
Frequency (MHz)
Project number
4w36013
Tested By
gw
File
CISPR P 5M-30M
Comments
Powerline Conducted
Clear Write
Max Hold
View
Save data to Logbook
Save Plot Only
Quit Without Saving

Section 4. 20 dB Bandwidth

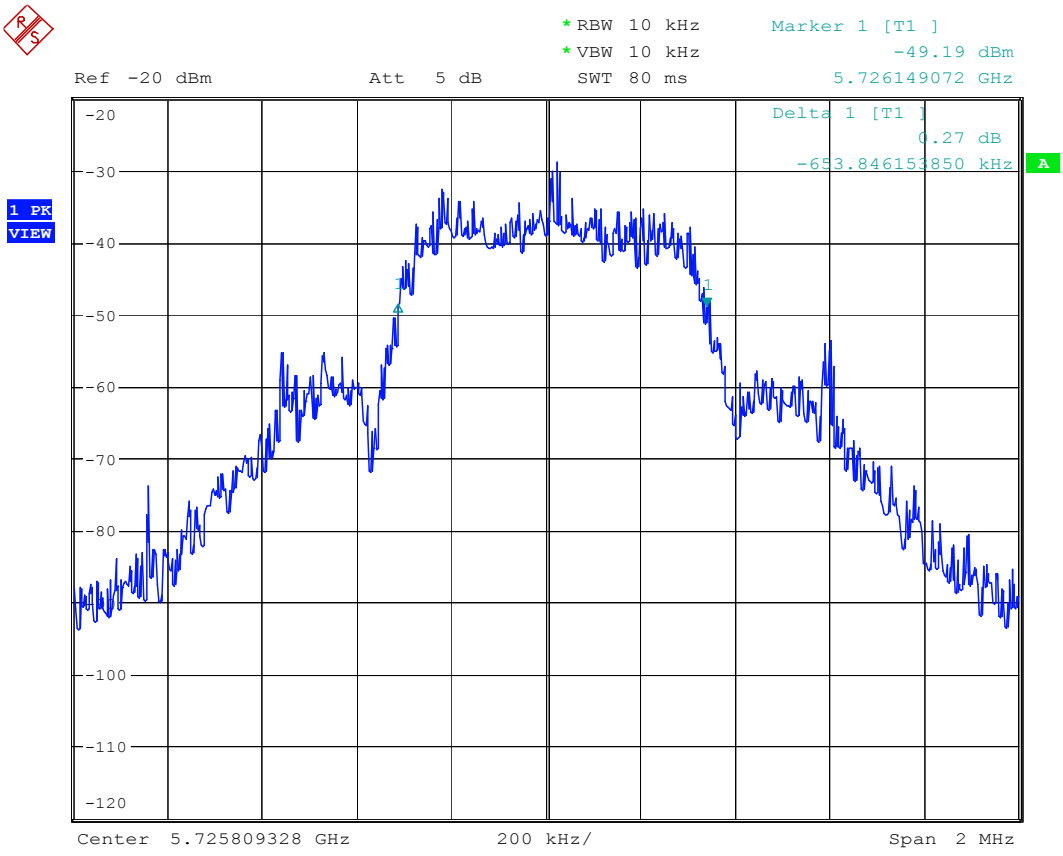
Para. No.: 15.247(a) (1)(ii)

Test Performed By: Glen Westwell	**Date of Test: 7 Jan 2005**

Limit: </= 1MHz

Measurement Data: Complies, see attached plot

OBW = 653.8kHz



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Section 5. Occupancy Time

Para. No.: 15.247(a)(1)(ii)

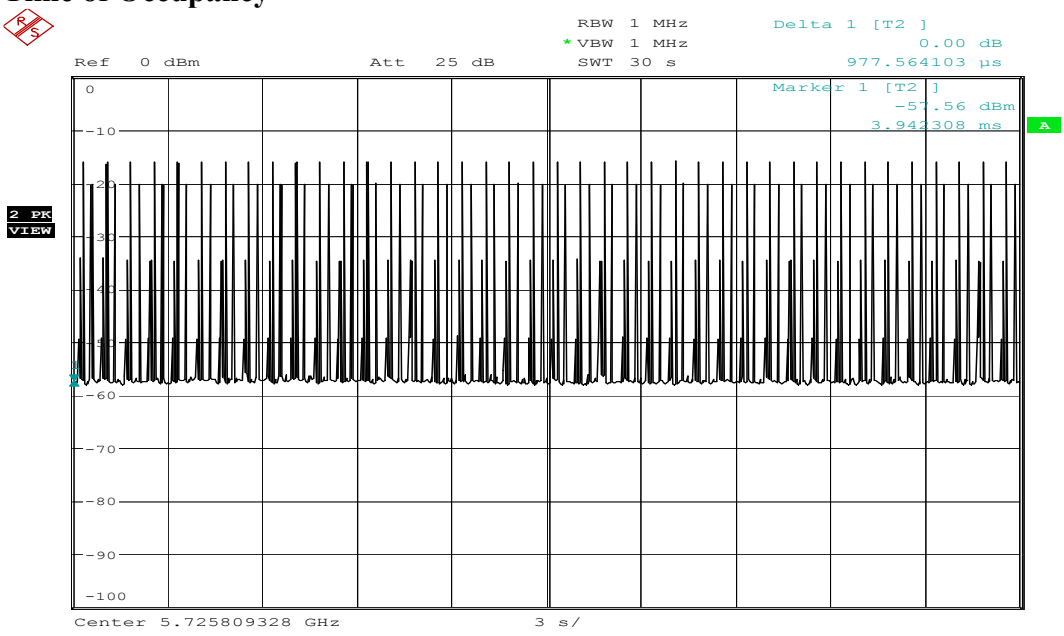
Test Performed By: Glen Westwell	**Date of Test: 7 Jan. 2005**

Limit: **0.4s/30s period**

Measurement Data: Complies. See attached plots.

Time of Occupancy = 0.04s/30s

Time of Occupancy



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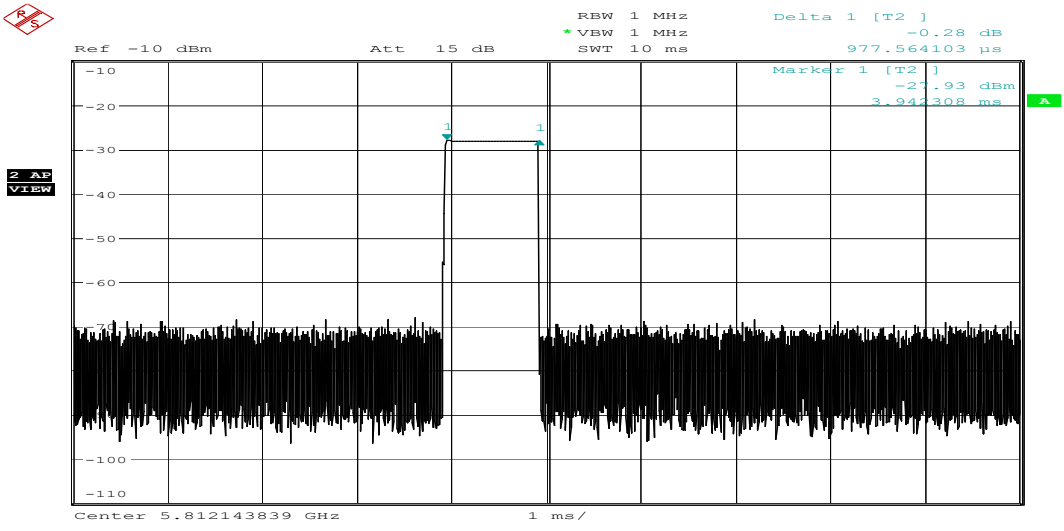

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Time of Occupancy = 40 x 977.6uS/30s = 0.04s/30s period.

Section 6. Number of Hopping Channels

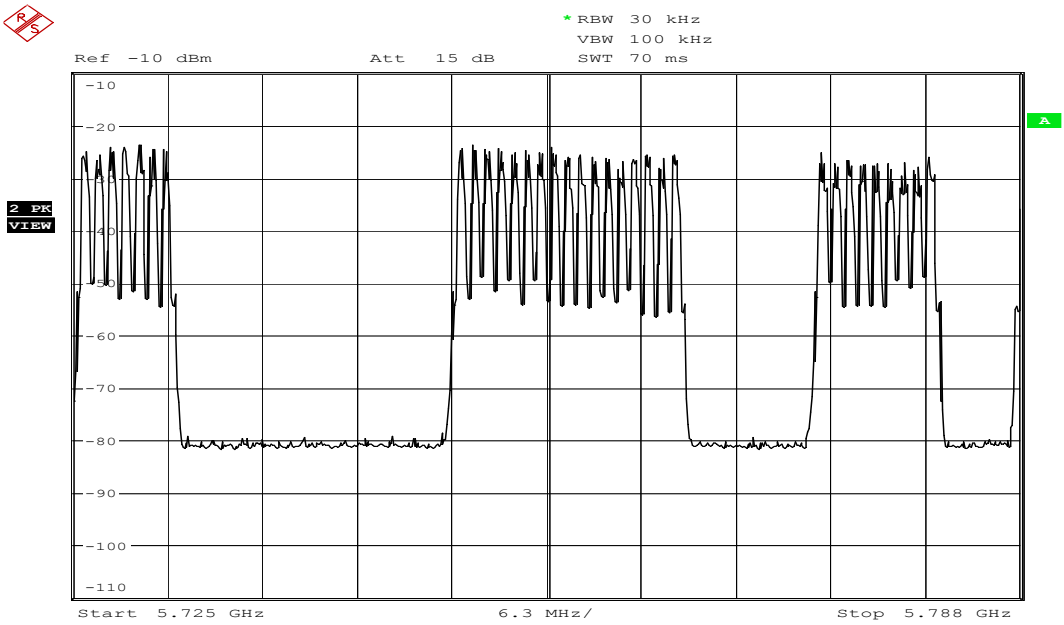
Para. No.: 15.247(a)(1)(ii)

Test Performed By: Glen Westwell	**Date of Test: 6 Jan. 2004**

Limit: Frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies.

Measurement Data: Complies, See Plot(s)

Number of Hopping Channels: 75



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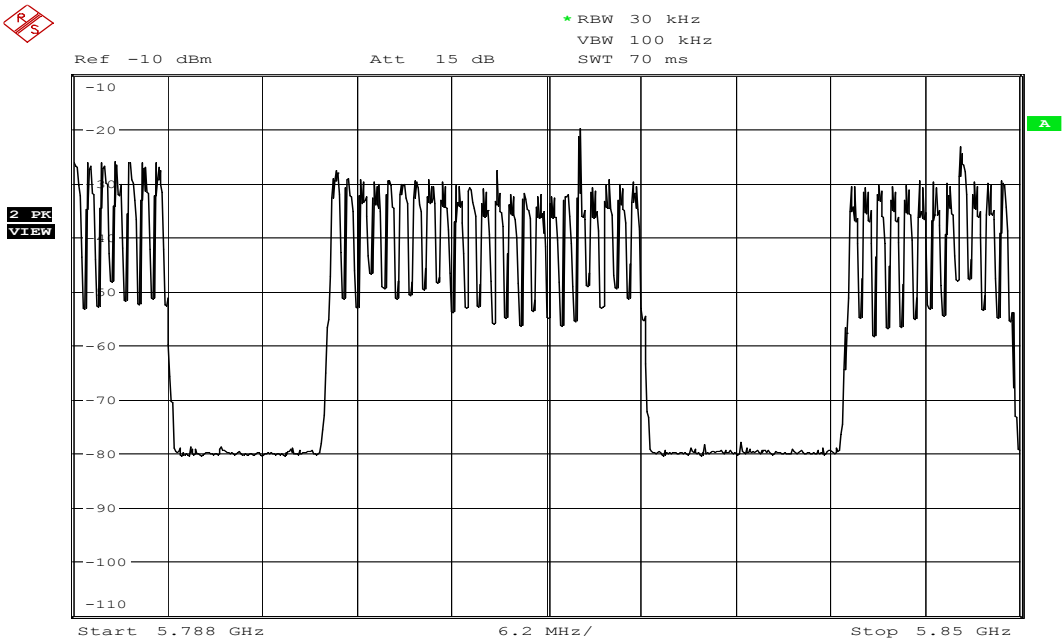

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Section 7. Minimum Channel Separation

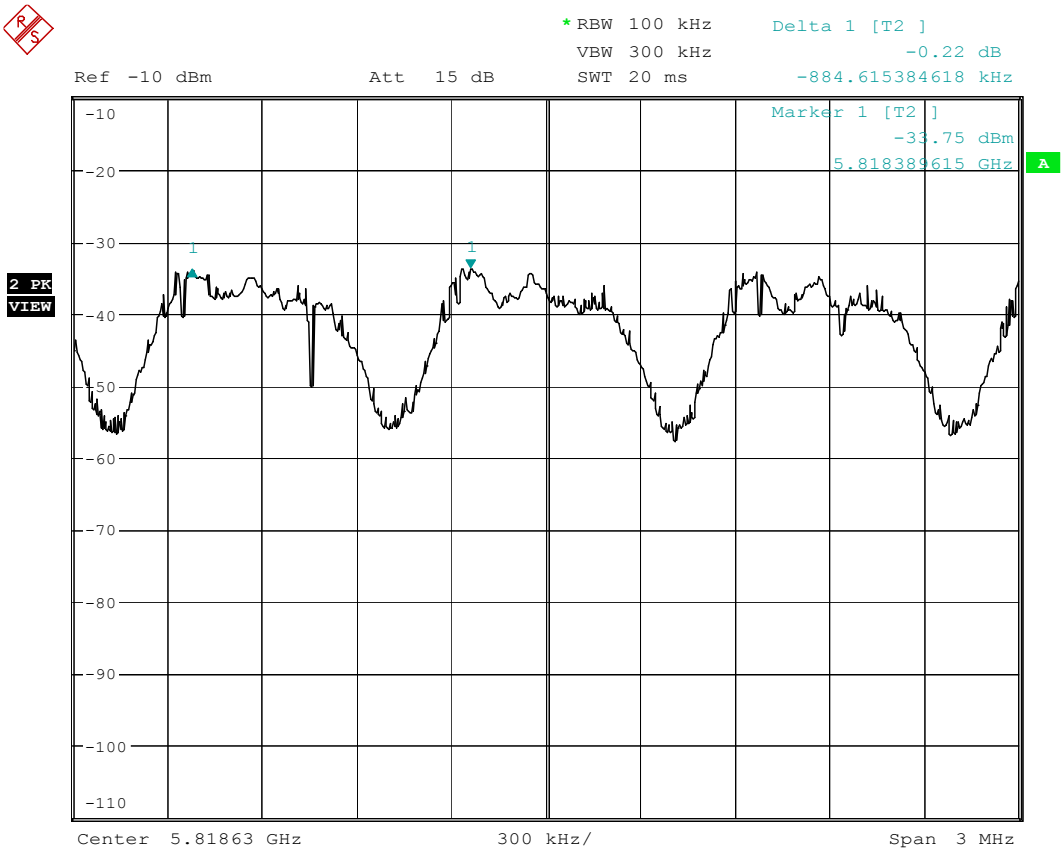
Para. No.: 15.247(a)(1)

Test Performed By: Glen Westwell	**Date of Test: 6 Jan. 2004**

Limit: **>20dB bandwidth**

Measurement Data: Complies, See Plot.

20dB Bandwidth = 653.8kHz
Channel Separation = 884.6kHz



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Section 8. Peak Output Power

Para. No.: 15.247 (b)(1)

Test Performed By: Glen Westwell	**Date of Test: 7 Jan. 2005**

Limit: 1W

Measurement Data: See Tabulated Data.

$P=E^2R^2/30G$

Directional Gain of Antenna: 3 dBi or 2 Numeric.
Field Strength: 112.8dBμV/m @ 3m or 0.436516 V/m @ 3m.
Peak Power Output: 0.029 watts (14.6dBm).

Peak Radiated Power, Base Station

Test Date: 18 Dec. 2004										
Engineer's Name: Glen Westwell										
Temperature (C°): 21						Humidity %: 35				
Measurement Distance = 3m										
Freq. (MHz)	Ant.	Pol. V/H	RCVD Signal (dBµV)	Ant. Factor (dB)	Amp. Gain (-dB)	Passband filter / Cable Loss (dB)	Duty Cycle Corr. (-dB)	Level (dBuV)	EUT Antenna Gain (dBi)	Peak Output Power (W)
Low Band Ch.1										
5725.6	Hrn 1	V/H	74.7	34.3	N/A	2.6		111.6	3	0.022
Mid Band Ch.41										
5788.9	Hrn 1	V/H	74.6	34.3	N/A	2.6		111.5	3	0.021
Mid Band Ch.81										
5848.6	Hrn 1	V/H	75.9	34.3	N/A	2.6		112.8	3	0.029
Note 1: Antenna Legend: Hrn = Horn Antenna, Note 2: Detector Legend: Q-Peak = 120 kHz RBW, Average = 1.0 MHz 3:										
Notes:	Measurement Receiver = R&S FSU, RBW/VBW = 1MHz									
	Both polarizations were maximized, worst case results presented.									

Measurement Set up Photo

Section 9. Spurious Emissions

Para. No.: 15.247(d)

Test Performed By: Glen Westwell	**Date of Test: 18 Dec. 2004**

Limit: 15.247(d), 15.209(a), 15.205(c)

Measurement Data: Complies, see attached plots and tables

Duty Cycle Correction: 20log (9.8mS/100mS) = -20.2dB

Spurious Harmonic Emissions Test Data: Base Station, Peak

Test Date: 18 Dec. 2004	
Engineer's Name: Glen Westwell	
Temperature (C°): 21	Humidity %: 35

Freq. (MHz)	Ant.	Pol. V/H	RCVD Signal (dBµV)	Ant. Factor (dB)	Amp. Gain (-dB)	Passband filter / Cable Loss (dB)	Duty Cycle Corr. (-dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)
Low Band Ch.1										
11451.3	Hrn 1	V/H	65.3	39.0	41.6	6.0		68.7	74	5.3
17177.0	Hrn 1	V/H	78.2	41.0	40.2	7.0		86.0	91.6	5.6
22902.6	Hrn 5	V/H	63.9	45.5	43.7	7.6		73.3	74	0.7
Mid Band Ch.41										
11577.9	Hrn 1	V/H	62.8	39.0	41.6	6.0		66.2	74	7.8
17366.9	Hrn 1	V/H	76.4	41.0	40.2	7.0		84.2	91.5	7.3
23155.8	Hrn 5	V/H	66.3	45.5	43.7	7.6		75.7	91.5	15.8
Mid Band Ch.81										
11697.2	Hrn 1	V/H	61.1	39.0	41.6	6.0		64.5	74	9.5
17546.2	Hrn 1	V/H	75.0	41.0	40.2	7.0		82.8	92.8	10.0
23394.4	Hrn 5	V/H	62.3	45.5	43.7	7.6		71.7	92.8	21.1

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
Note 3: The EUT was searched up to 10th harmonic of the fundamental

Notes:	Measurement Receiver = R&S FSU, RBW/VBW =1000kHz

Spurious Harmonic Emissions Test Data: Base Station, Average

Test Date: 18 Dec. 2004										
Engineer's Name: Glen Westwell										
Temperature (C°): 21						Humidity %: 35				
Freq. (MHz)	Ant.	Pol. V/H	RCVD Signal (dBµV)	Ant. Factor (dB)	Amp. Gain (-dB)	Passband filter / Cable Loss (dB)	Duty Cycle Corr. (-dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)
Low Band Ch.1										
11451.3	Hrn 1	V/H	65.3	39.0	41.6	6.0	-20	48.7	54	5.3
22902.6	Hrn 5	V/H	63.9	45.5	43.7	7.6	-20	53.3	54	0.7
Mid Band Ch.41										
11577.9	Hrn 1	V/H	62.8	39.0	41.6	6.0	-20	46.2	54	7.8
Mid Band Ch.81										
11697.2	Hrn 1	V/H	61.1	39.0	41.6	6.0	-20	44.5	54	9.5
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 Note 3: The EUT was searched up to 10th harmonic of the fundamental										
Notes:	Measurement Receiver = R&S FSU, RBW/VBW = 1MHz									

Spurious Emissions Test Data: Base Station, Peak

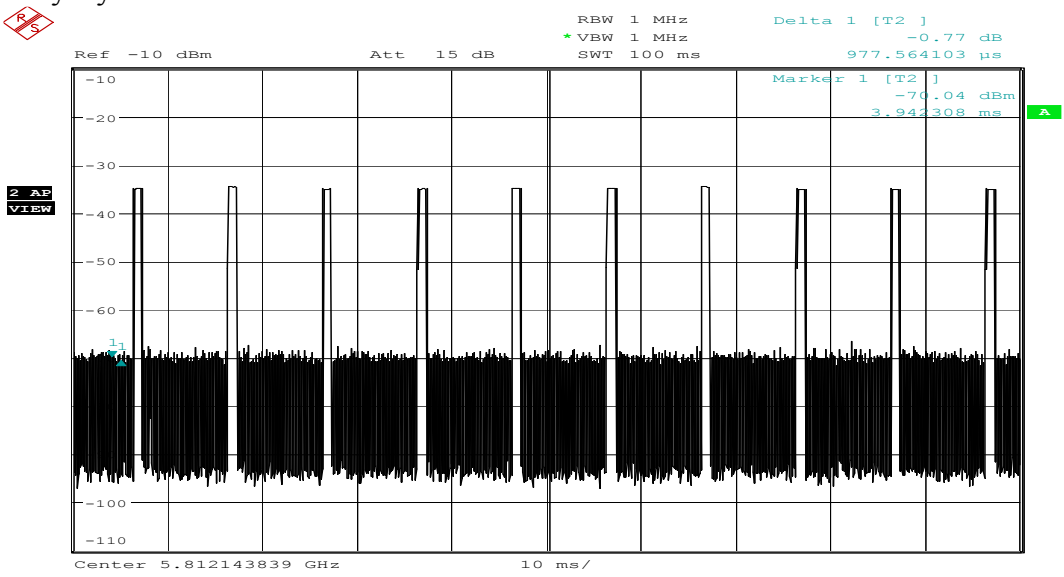
Test Date: 11 Jan 2005	
Engineer's Name: Glen Westwell	
Temperature (C°): -7	Humidity %: 35

Freq. (MHz)	Ant.	Pol. V/H	RCVD Signal (dBµV)	Ant. Factor (dB)	Amp. Gain (-dB)	Passband filter / Cable Loss (dB)	Duty Cycle Corr. (-dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)
250.0000	BC1	V	26.1	16.8		2.0		44.9	46.0	1.1
250.0000	BC1	H	27.9	16.0		2.0		45.9	46.0	0.1
117.4000	BC1	V	29.0	11.8		1.4		42.2	43.5	1.4
117.4000	BC1	H	29.5	11.5		1.4		42.4	43.5	1.2
109.0000	BC1	V	26.0	11.0		1.3		38.3	43.5	5.2
109.0000	BC1	H	27.5	10.3		1.3		39.1	43.5	4.4
1000.0000	Horn 1	V	17.0	26.0		2.9		46.0	54.0	8.0
1000.0000	Horn 1	H	15.0	26.0		2.9		43.9	54.0	10.1

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
Note 3: The EUT was searched up to 10th harmonic of the fundamental

Notes:	Measurement Receiver = R&S FSU, RBW/VBW =1000kHz
	R&S ESVS30, RBW/VBW =120kHz

Duty Cycle Plots



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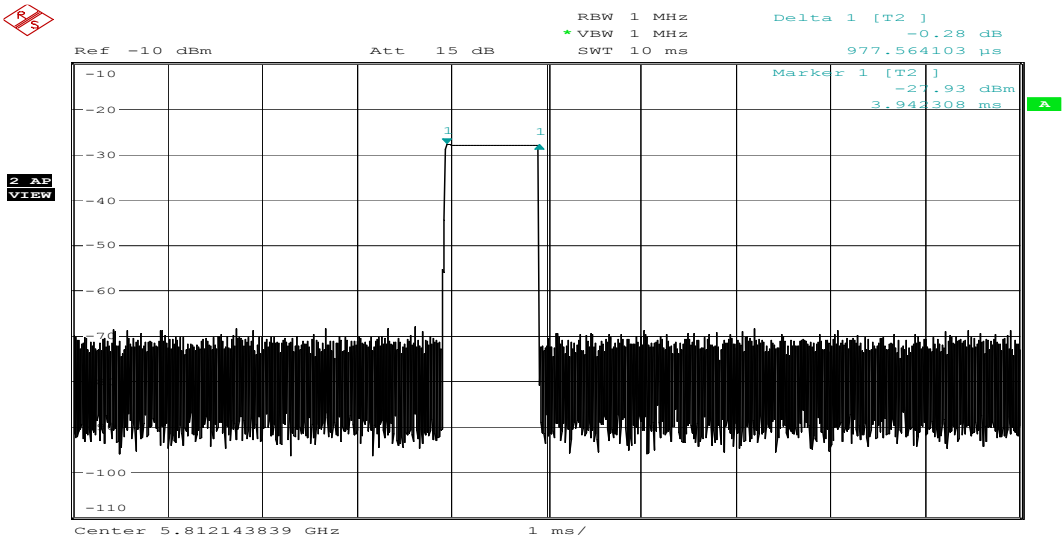

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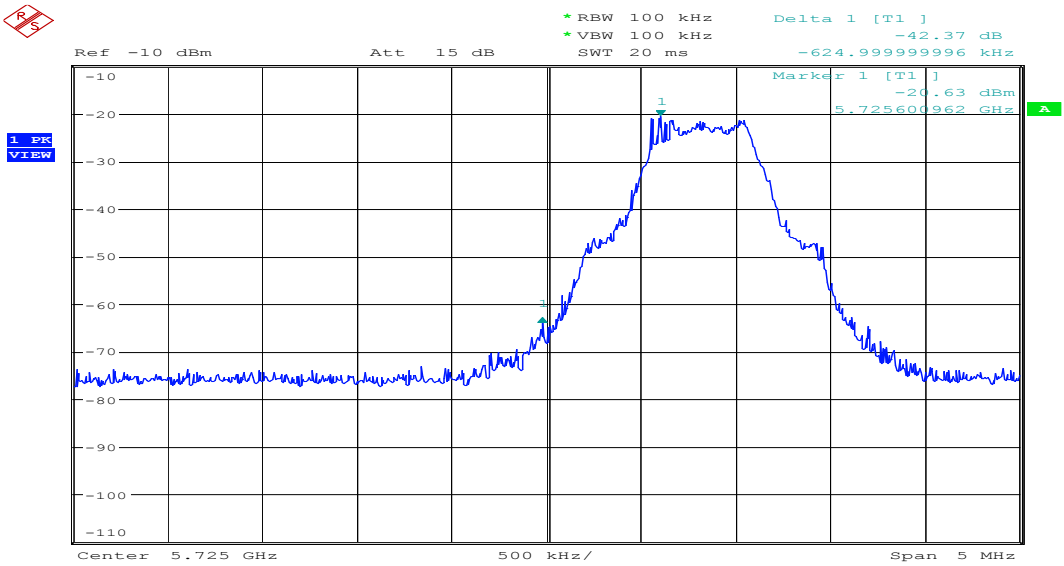
Duty Cycle Correction Calculation
20log (9.8mS/100mS) = -20.2dB

Set-up Photo

20dBc Bandedge



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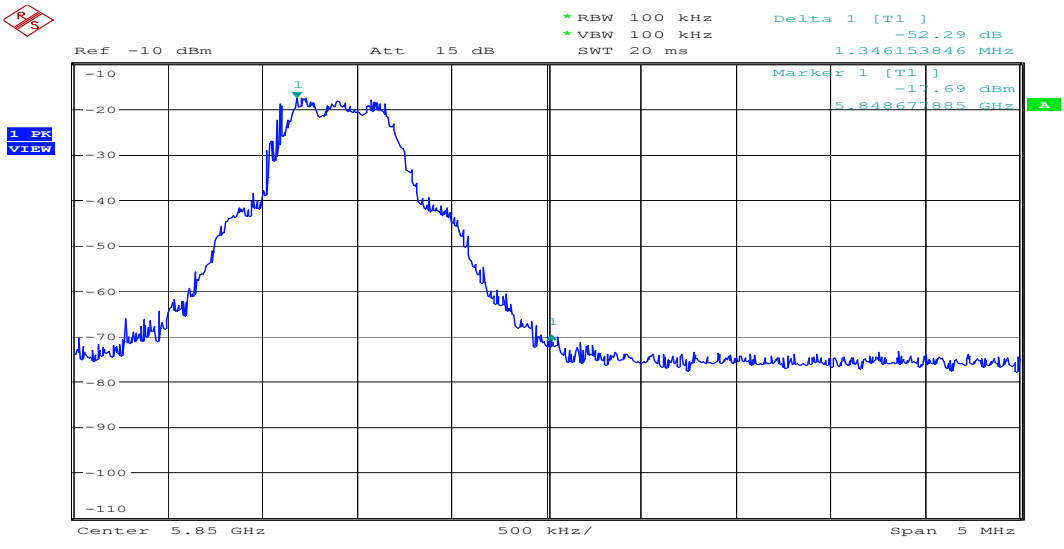

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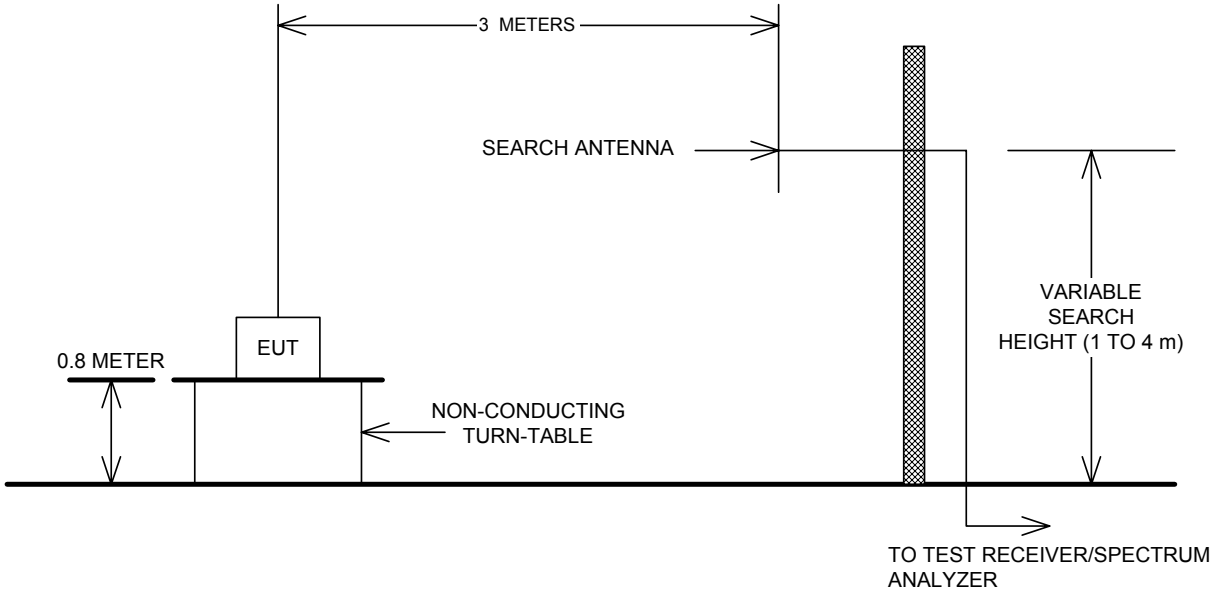
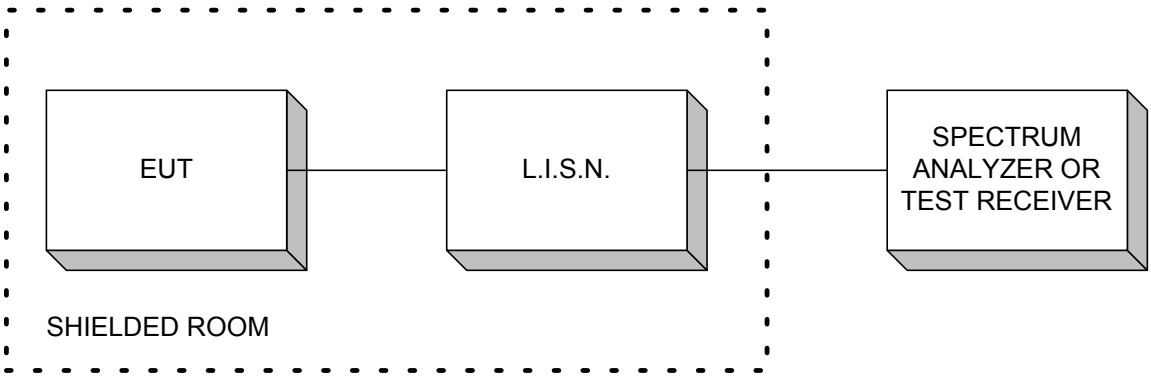
Section 10. Block Diagrams

Test Site For Radiated Emissions



Conducted Emissions



Section 11. Test Equipment List

Equipment List - Radiated Emissions

CAL Cycle	Equipment	Manufacturer	Model No.	Asset/Serial No.	Last Cal.	Next Cal.
1 Year	Spectrum Analyzer	Rhode & Schwarz	FSU46	FA001877	26 May 04	26 May 05
1 Year	Signal Generator	Rohde & Schwarz	SMR40	FA001879	28 May 04	28 May 05
1 Year	Receiver	Rohde & Schwarz	ESVS-30	FA001437	July 26/04	July 26/05
1 Year	Horn Antenna	EMCO #5	3116	FA001847	19 Jan 04	19 Jan 05
1 Year	Horn Antenna #1	EMCO	3115	FA000649	Dec. 18/03	Dec. 18/04
1 Year	Biconical (1) Antenna	EMCO	3109	FA000805	April 23/04	April 23/05
COU	9.6 – 18 GHz Passband Filter	Dorado	62-SMA	----------	COU	COU
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
1 Year	LISN	FCC	FCC-LISN-50-100-1-02	FA001775	April 29/04	April 29/05
1 Year	LISN	FCC	FCC-LISN-50-100-1-02	FA001777	April 29/04	April 29/05
1 Year	Spectrum Analyzer	Hewlett-Packard	8566B	FA001432	May 25/04	May 25/05
1 Year	Spectrum Analyzer Display	Hewlett-Packard	85662A	FA001432	May 25/04	May 25/05
NCR	Biconlog	EMCO	3146	FA000815	NCR	NCR

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