Test Report:	3W07700
Applicant:	Instantel Inc. 309 Legget Drive Kanata Ont. K2K 3A3
Equipment Under Test: (EUT)	XMARK Mobile Area Receiver
In Accordance With:	**FCC Part 15, Subpart B, 15.109, 15.107**
Tested By:	Nemko Canada Inc. 303 River Road, R.R. 5 Ottawa, Ontario K1V 1H2
Authorized By:	Glen Westwell, Wireless Technologist
Date:	11 December 2003
Total Number of Pages:	16

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 15, Subpart B. Measurement procedure ANSI C63.4-1992 was used for all tests. Radiated Emissions were measured 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. NONE
See " Summary of Test Data".

TESTED BY: _____ DATE: 11 December 2003
Kevin Carr, EMC/EMI/Wireless Specialist

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This report applies only to the items tested.

Summary Of Test Data

Name Of Test	Para. No.	Results
Radiated Emissions	15.109	Complies
Powerline Conducted Emissions	15.107	Complies

Test Conditions:

Indoor Temperature: 24°C
Humidity: 10%

Outdoor Temperature: 2°C
Humidity: 10%

Section 2. General Equipment Specification

Manufacturer:	Instantell Inc.
Model No.:	806A2901
Serial No.:	N/A
Date Received In Laboratory:	10 Dec. 2003
Frequency of Operation:	217MHz
Local Osc. Frequency"	262MHz
Nemko Identification No.:	1

Section 3. Radiated Emissions

Para. No.: 15.109(a)

Test Performed By: Kevin Carr	**Date of Test:** 10 Dec. 2003

Minimum Standard:

Frequency(MHz)	Field Strength (dBµV/m @ 3m)
30 - 88	40.0
88 - 216	43.5
216 - 960	46.0
Above 960	54.0

Test Results: Complies

Measurement Data: Harmonics from the Local Oscillator were searched to the 10th Harmonic of the Highest freq. used in the device. Digital emissions were searched to the 5th Harmonic of the highest frequency used in the device. See attached table.

Radiated Disturbance Test Data:

Test Date: 10 Dec. 2003	
Engineer's Name: Kevin Carr	
Temperature (C°): 4	Humidity %: 10
Tested as per: Table Top	
Test Distance (meters): 3	Range: A
Emissions within 20 dB of the limit have been recorded.	

Freq. (MHz)	Ant.	Pol. V/H	RCVD Signal (dBµV)	Ant. Factor (dB)	Amp. Gain (dB)	Cable Loss (dB)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Amp
30.0000	BC1	V	17.4	11.5	N/A	0.7	29.6	40.0	10.4	Q-Peak	None
30.0000	BC1	H	7.9	13.0	N/A	0.7	21.6	40.0	18.4	Q-Peak	None
262.0000	BC1	V	20.4	16.9	N/A	2.1	39.4	46.4	7.1	Q-Peak	None
262.0000	BC1	H	20.5	16.5	N/A	2.1	39.1	46.4	7.4	Q-Peak	None
255.0000	BC1	V	8.4	16.8	N/A	2.1	27.3	46.4	19.2	Q-Peak	None
255.0000	BC1	H	8.0	16.2	N/A	2.1	26.2	46.4	20.2	Q-Peak	None
77.2580	BC1	V	16.3	8.1	N/A	1.0	25.4	40.0	14.6	Q-Peak	None
77.2580	BC1	H	20.2	7.3	N/A	1.0	28.5	40.0	11.5	Q-Peak	None
75.0000	BC1	V	20.0	8.1	N/A	1.0	29.1	40.0	10.9	Q-Peak	None
75.0000	BC1	H	19.1	7.3	N/A	1.0	27.4	40.0	12.6	Q-Peak	None
35.9900	BC1	V	14.2	10.9	N/A	0.8	25.8	40.0	14.2	Q-Peak	None
35.9900	BC1	H	6.7	12.3	N/A	0.8	19.7	40.0	20.3	Q-Peak	None
524.0000	LP1	V	9.0	18.2	N/A	2.9	30.1	46.4	16.3	Q-Peak	None
524.0000	LP1	H	9.6	18.7	N/A	2.9	31.2	46.4	15.2	Q-Peak	None
786.0000	LP1	V	10.6	20.9	N/A	3.7	35.2	46.4	11.2	Q-Peak	None
786.0000	LP1	H	12.4	22.1	N/A	3.7	38.2	46.4	8.2	Q-Peak	None
1048.0000	Horn1	V	48.2	26.1	46.1	3.0	31.2	54.0	22.8	Peak	1-2GHz
1048.0000	Horn1	H	50.0	26.0	46.1	3.0	32.9	54.0	21.1	Peak	1-2GHz
1310.0000	Horn1	V	52.5	26.4	46.5	3.3	35.6	54.0	18.4	Peak	1-2GHz
1310.0000	Horn1	H	39.5	26.4	46.5	3.3	22.6	54.0	31.4	Peak	1-2GHz
1834.2000	Horn1	V	47.3	28.3	46.6	3.9	32.9	54.0	21.1	Peak	1-2GHz
1834.0000	Horn1	H	49.0	28.1	46.6	3.9	34.4	54.0	19.6	Peak	1-2GHz
2096.0000	Horn1	V	60.7	29.1	55.0	4.5	39.3	54.0	14.7	Peak	2-4GHz
2096.0000	Horn1	H	60.0	29.0	55.0	4.5	38.5	54.0	15.5	Peak	2-4GHz

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:	

Set-up Photo's

Section 4. Powerline Conducted Emissions

Para. No.: 15.107

Test Performed By: Kevin Carr	**Date of Test:** 10 Dec. 2003

Minimum Standard: 15.107

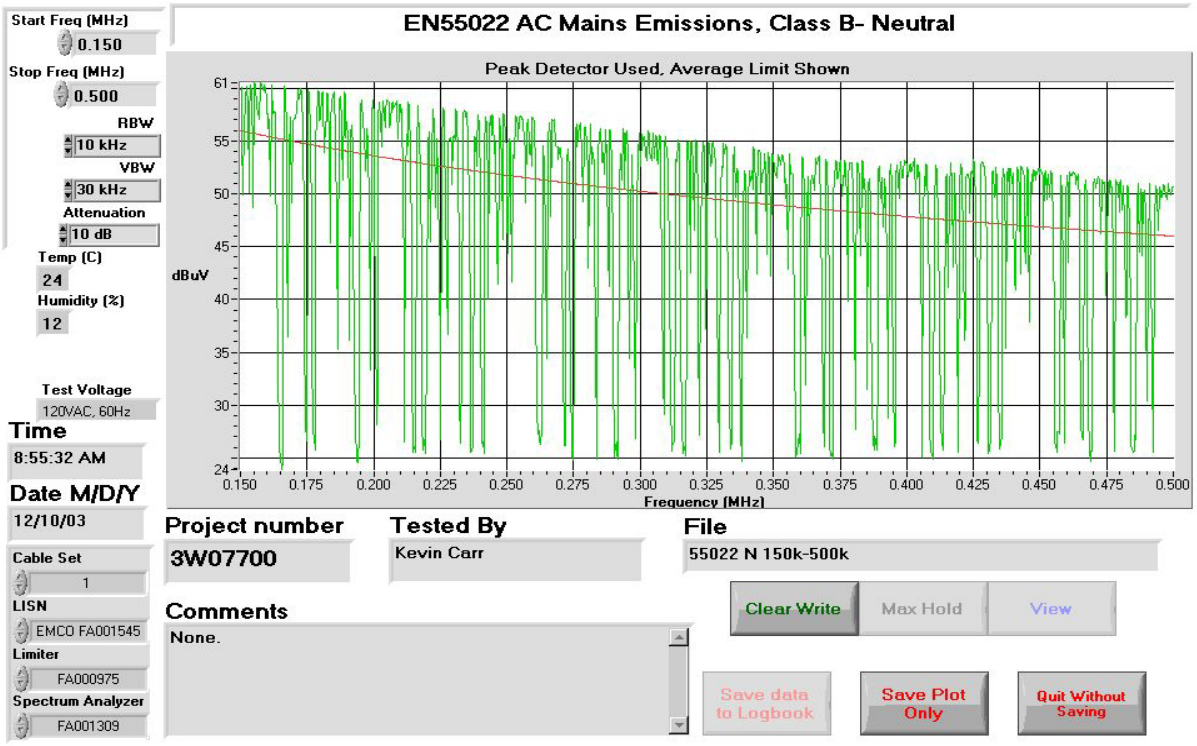
Limits For Conducted Disturbance At The Mains Ports Of Class B: Paragraph No. 15.107

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

Note:
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.

Test Results: Complies, Class B

Measurement Data: See attached graphs/Chart.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Stop Freq (MHz)
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RBW
10 kHz
VBW
30 kHz
Attenuation
10 dB
Temp (C)
24
Humidity (%)
12
Test Voltage
120VAC, 60Hz
Time
8:55:32 AM
Date M/D/Y
12/10/03
Cable Set
1
LISN
EMCO FA001545
Limiter
FA000975
Spectrum Analyzer
FA001309
EN55022 AC Mains Emissions, Class B- Neutral
Peak Detector Used, Average Limit Shown
dBuV
Frequency (MHz)
Project number
3W07700
Tested By
Kevin Carr
File
55022 N 150k-500k
Comments
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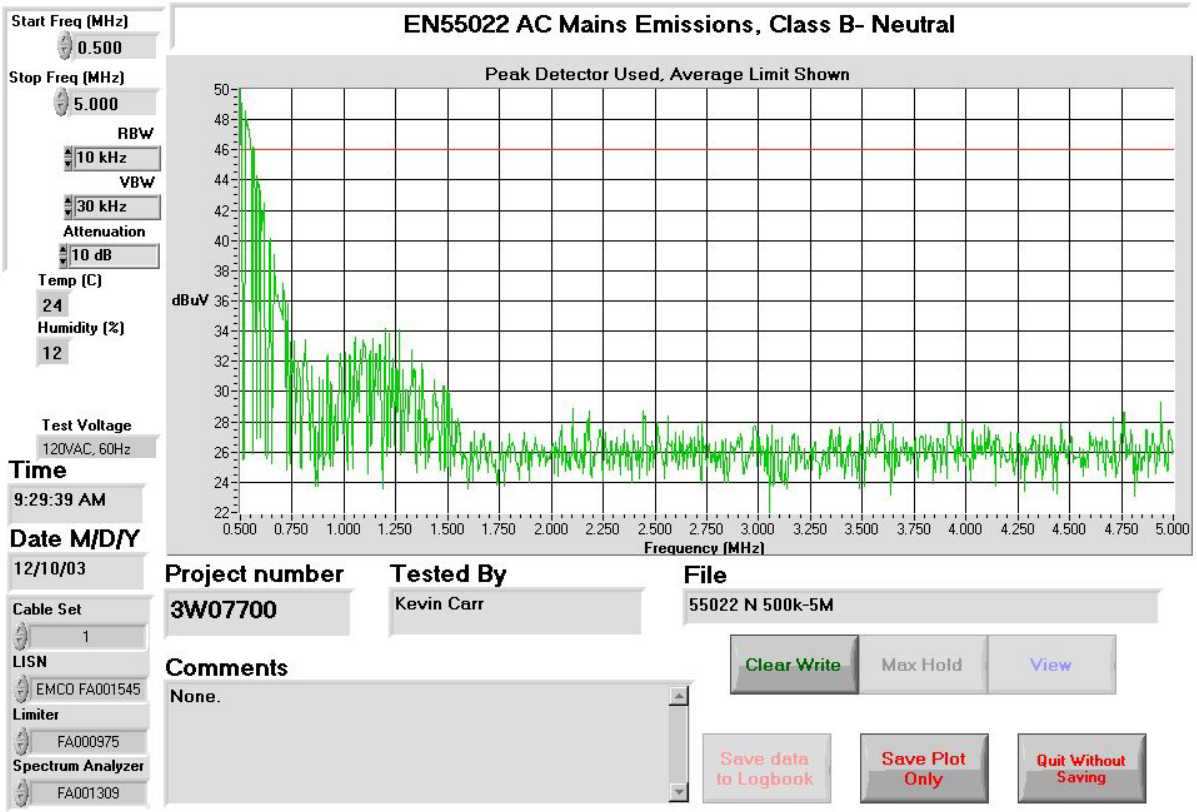
Clear Write
Max Hold
View
Save data to Logbook
Save Plot Only
Quit Without Saving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Stop Freq (MHz)
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RBW
10 kHz
VBW
30 kHz
Attenuation
10 dB
Temp (C)
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Humidity (%)
12
Test Voltage
120VAC, 60Hz
Time
9:29:39 AM
Date M/D/Y
12/10/03
Cable Set
1
LISN
EMCO FA001545
Limiter
FA000975
Spectrum Analyzer
FA001309
EN55022 AC Mains Emissions, Class B- Neutral
Peak Detector Used, Average Limit Shown
dBuV
Frequency (MHz)
Project number
3W07700
Tested By
Kevin Carr
File
55022 N 500k-5M
Comments
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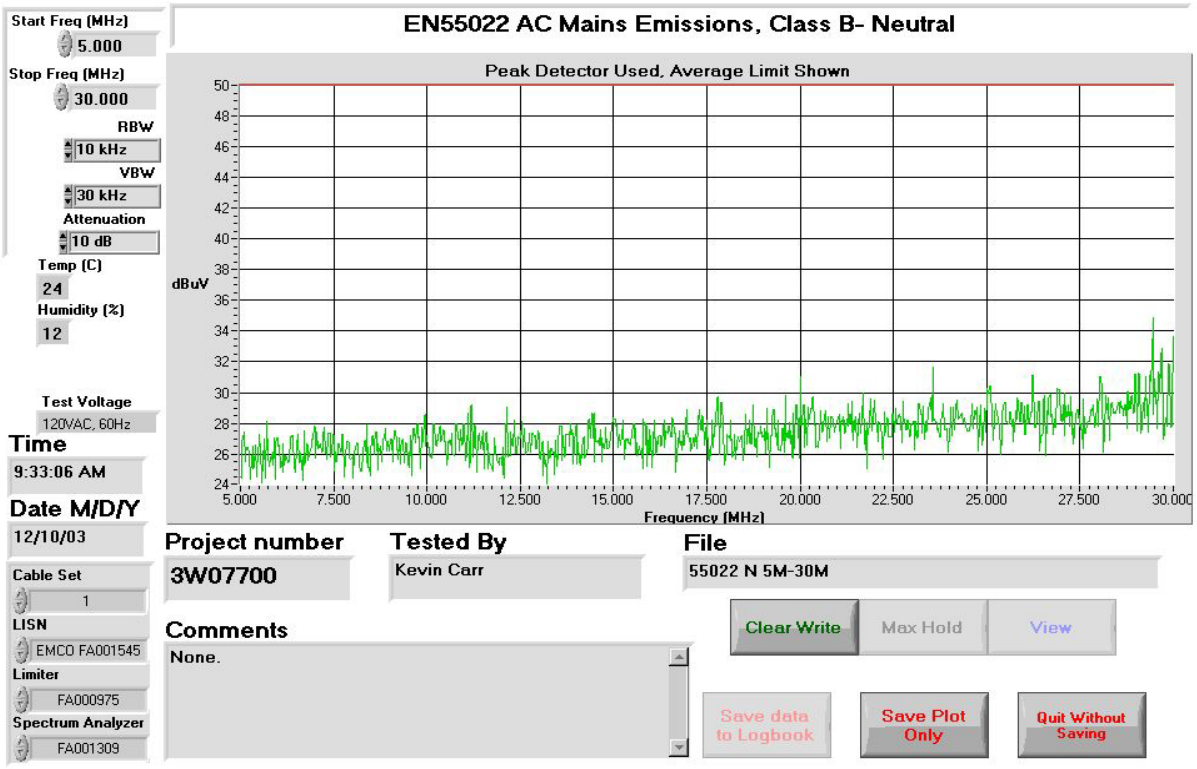
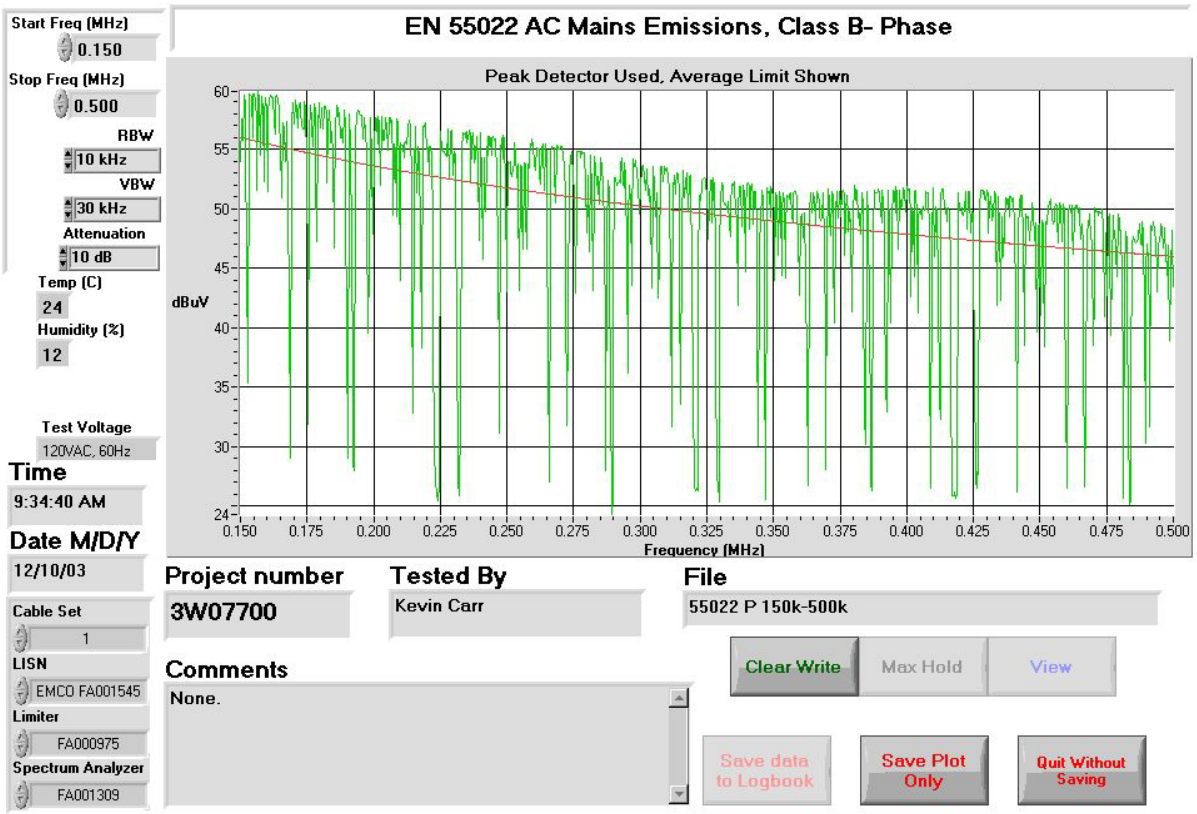
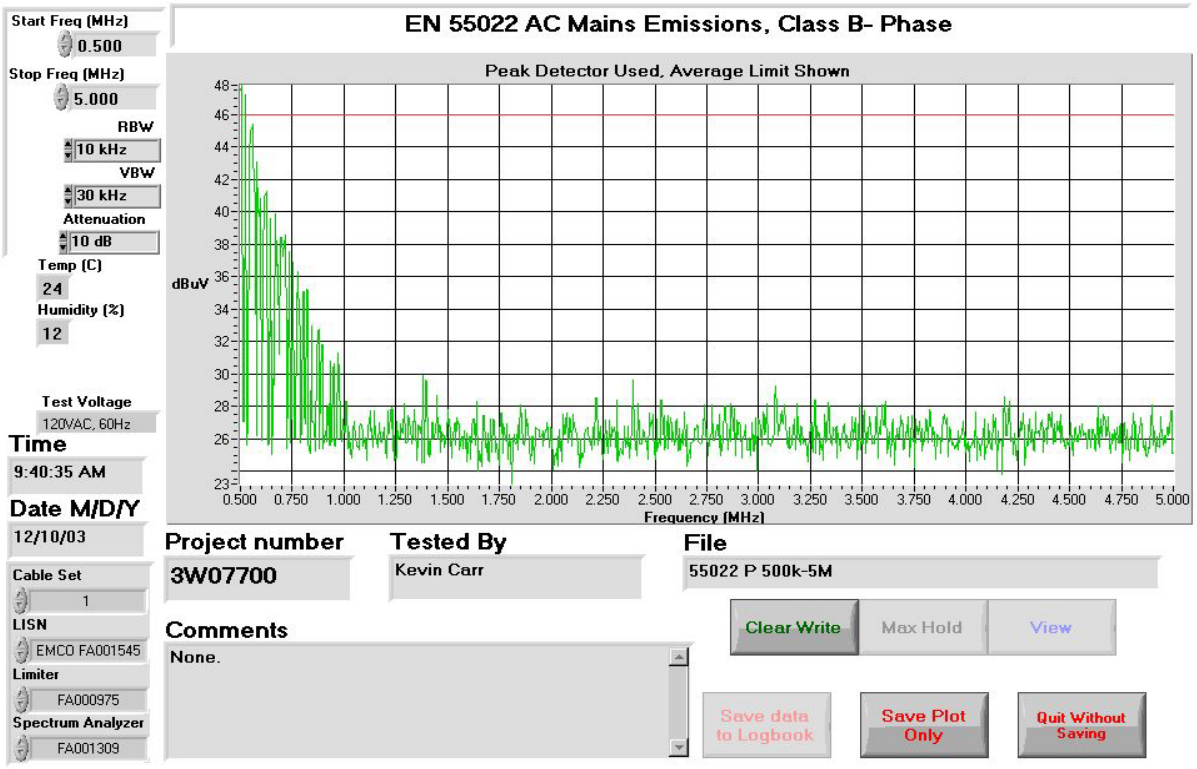
Clear Write
Max Hold
View
Save data to Logbook
Save Plot Only
Quit Without Saving


EN55022 AC Mains Emissions, Class B- Neutral
Peak Detector Used, Average Limit Shown
dBuV
Frequency (MHz)
Start Freq (MHz) 5.000
Stop Freq (MHz) 30.000
RBW 10 kHz
VBW 30 kHz
Attenuation 10 dB
Temp (C) 24
Humidity (%) 12
Test Voltage 120VAC, 60Hz
Time 9:33:06 AM
Date M/D/Y 12/10/03
Cable Set 1
LISN EMCO FA001545
Limiter FA000975
Spectrum Analyzer FA001309
Project number 3W07700
Tested By Kevin Carr
File 55022 N 5M-30M
Comments None.
Clear Write
Max Hold
View
Save data to Logbook
Save Plot Only
Quit Without Saving


EN 55022 AC Mains Emissions, Class B- Phase
Peak Detector Used, Average Limit Shown
dBuV
Frequency (MHz)
Start Freq (MHz) 0.150
Stop Freq (MHz) 0.500
RBW 10 kHz
VBW 30 kHz
Attenuation 10 dB
Temp (C) 24
Humidity (%) 12
Test Voltage 120VAC, 60Hz
Time 9:34:40 AM
Date M/D/Y 12/10/03
Cable Set 1
LISN EMCO FA001545
Limiter FA000975
Spectrum Analyzer FA001309
Project number 3W07700
Tested By Kevin Carr
File 55022 P 150k-500k
Comments None.
Clear Write
Max Hold
View
Save data to Logbook
Save Plot Only
Quit Without Saving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0.500
Stop Freq (MHz)
5.000
RBW
10 kHz
VBW
30 kHz
Attenuation
10 dB
Temp (C)
24
Humidity (%)
12
Test Voltage
120VAC, 60Hz
Time
9:40:35 AM
Date M/D/Y
12/10/03
Cable Set
1
LISN
EMCO FA001545
Limiter
FA000975
Spectrum Analyzer
FA001309
EN 55022 AC Mains Emissions, Class B- Phase
Peak Detector Used, Average Limit Shown
dBuV
Frequency (MHz)
Project number
3W07700
Tested By
Kevin Carr
File
55022 P 500k-5M
Comments
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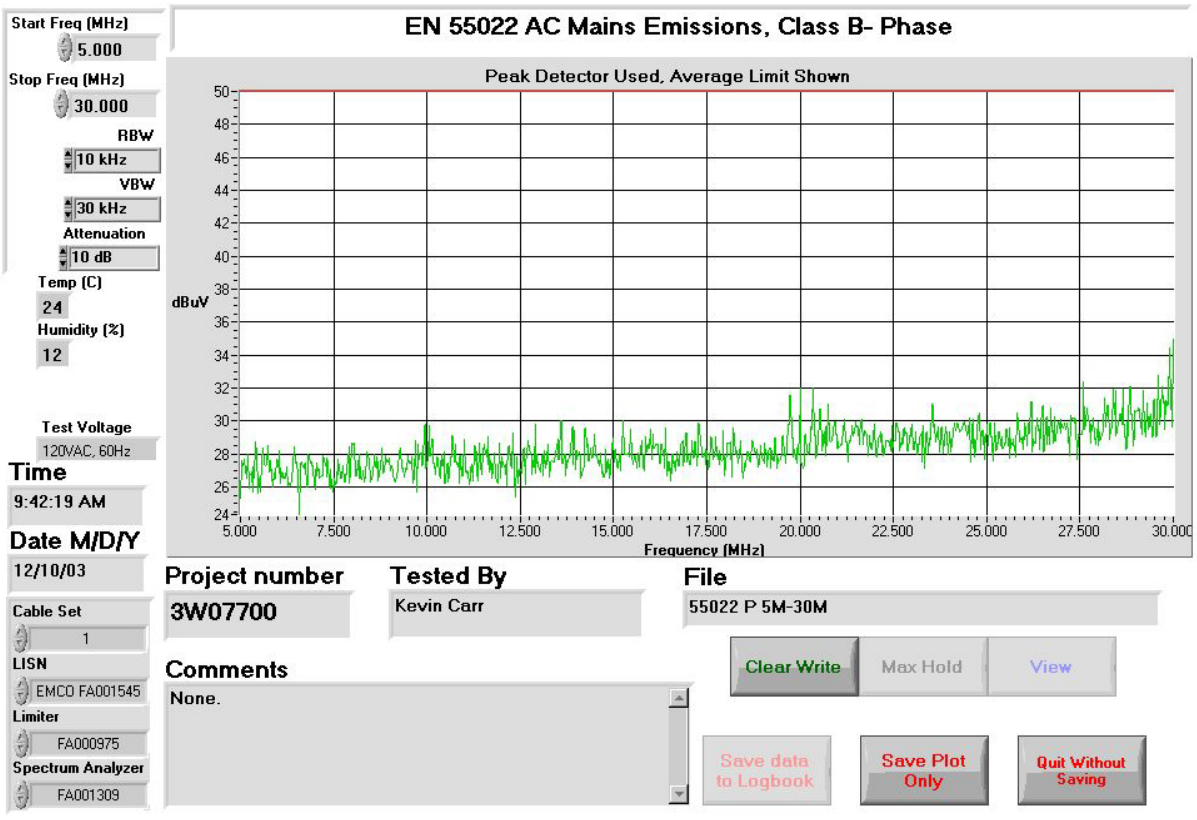
Clear Write
Max Hold
View
Save data to Logbook
Save Plot Only
Quit Without Saving


Start Freq (MHz)
5.000
Stop Freq (MHz)
30.000
RBW
10 kHz
VBW
30 kHz
Attenuation
10 dB
Temp (C)
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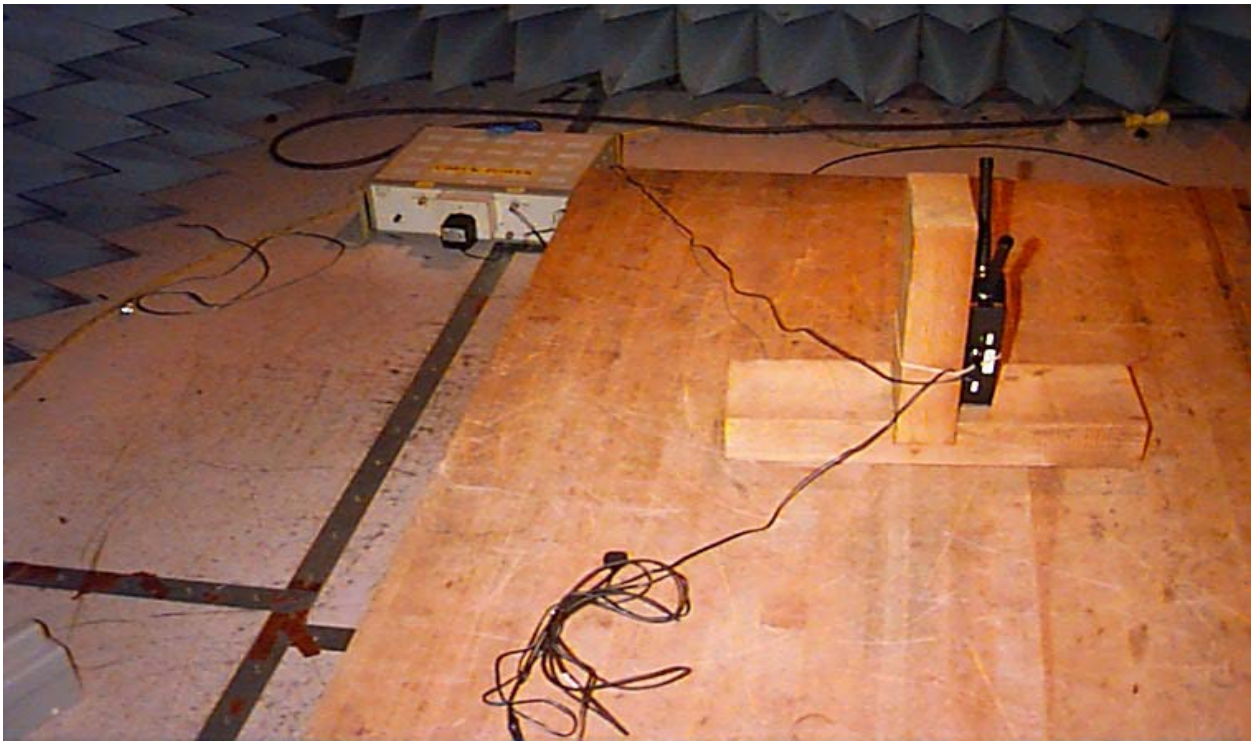
Humidity (%)
12
Test Voltage
120VAC, 60Hz
Time
9:42:19 AM
Date M/D/Y
12/10/03
Cable Set
1
LISN
EMCO FA001545
Limiter
FA000975
Spectrum Analyzer
FA001309
EN 55022 AC Mains Emissions, Class B- Phase
Peak Detector Used, Average Limit Shown
dBuV
Frequency (MHz)
Project number
3W07700
Tested By
Kevin Carr
File
55022 P 5M-30M
Comments
None.
Clear Write
Max Hold
View
Save data to Logbook
Save Plot Only
Quit Without Saving

Conducted Disturbance at Mains Port Test Data

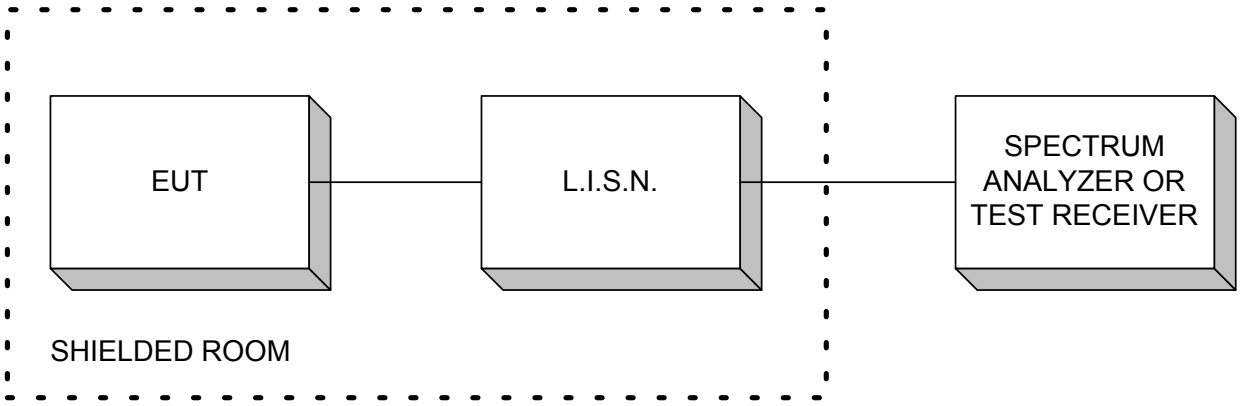
Port under test: AC Power Port					Test Voltage: 120VAC, 60Hz			
Conductor	Frequency (MHz)	Detector	Level (dBµV)	LISN Loss (dB)	Cable Loss (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)
Phase	0.1500	Quasi-Peak	50	0.1	0	50.1	66.0	15.9
		Average	1.3	0.1	0	1.4	56.0	54.6
	0.2000	Quasi-Peak	48.3	0.1	0.2	48.6	63.6	15.0
		Average	22.3	0.1	0.2	22.6	53.6	31.0
	0.2500	Quasi-Peak	46.1	0.1	0.2	46.4	61.8	15.4
		Average	0.5	0.1	0.2	0.8	51.8	51.0
	0.4000	Quasi-Peak	43.1	0.1	0.2	43.4	57.9	14.5
		Average	18.9	0.1	0.2	19.2	47.9	28.7
	0.4500	Quasi-Peak	41.1	0.1	0	41.2	56.9	15.7
		Average	0.5	0.1	0	0.6	46.9	46.3
	0.5000	Quasi-Peak	38.8	0.1	0.2	39.1	56.0	16.9
		Average	-0.1	0.1	0.2	0.2	46.0	45.8
Neutral	0.1500	Quasi-Peak	49.8	0.1	0	49.9	66.0	16.1
		Average	1.2	0.1	0	1.3	56.0	54.7
	0.2000	Quasi-Peak	48.5	0.1	0.2	48.8	63.6	14.8
		Average	22.3	0.1	0.2	22.6	53.6	31.0
	0.2500	Quasi-Peak	46.5	0.1	0.2	46.8	61.8	15.0
		Average	1.5	0.1	0.2	1.8	51.8	50.0
	0.4000	Quasi-Peak	43.9	0.1	0.2	44.2	57.9	13.7
		Average	18.9	0.1	0.2	19.2	47.9	28.7
	0.4500	Quasi-Peak	42.9	0.1	0	43	56.9	13.9
		Average	0.6	0.1	0	0.7	46.9	46.2
	0.5000	Quasi-Peak	41	0.1	0.2	41.3	56.0	14.7
		Average	0.3	0.1	0.2	0.6	46.0	45.4

Set-up Photo's

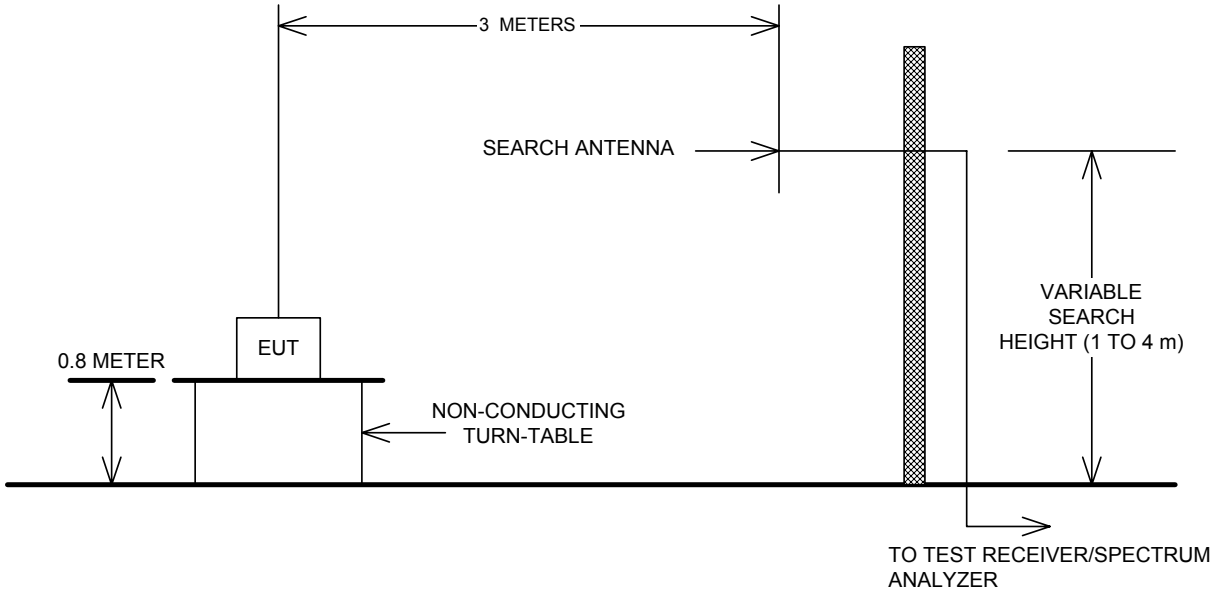


Section 5. Block Diagrams

Conducted Emissions



Outdoor Test Site For Radiated Emissions



Section 6. Test Equipment List

Equipment List – Conducted Emissions

CAL Cycle	Equipment	Manufacturer	Model No.	Asset/Serial No.	Last Cal.	Next Cal.
1 Year	LISN	EMCO	4825/2	FA001545	Oct. 30/03	Oct. 30/04
1 Year	Receiver	Rohde & Schwarz	ESH3	FA000208	April. 17/03	April. 17/04
1 Year	Spectrum Analyzer	Hewlett-Packard	8566B	FA001309	June. 05/03	June. 05/04
1 Year	Spectrum Analyzer Display	Hewlett-Packard	85662A	FA001309	June. 05/03	June. 05/04
1 Year	Transient Limiter	Hewlett-Packard	1194 7A	FA001855	May. 06/03	May. 06/04

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	Receiver	Rohde & Schwarz	ESVS-30	FA001437	July. 24/03	July. 24/04
1 Year	Spectrum Analyzer	Hewlett-Packard	8565E	FA000981	July. 03/03	July. 03/04
1 Year	Biconical (1) Antenna	EMCO	3109	FA000805	April. 15/03	April. 15/04
1 Year	Horn Antenna #1	EMCO	3115	FA000649	Dec. 23/02	Dec. 23/03
COU	Horn 18 – 26.5 GHz	Electro-Metrics	SH-50/60-1	FA000479	COU	COU
1 Year	Log Periodic Antenna #1	EMCO	LPA-25	FA000477	Sept. 02/03	Sept. 02/04
1 Year	1.0 – 2.0 GHz Amplifier	JCA	12-400	FA001498	June. 18/03	June. 18/04
1 Year	2.0 – 4.0 GHz Amplifier	JCA	24-600	FA001496	June. 18/03	June. 18/04

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