



**Test Report:** 5R46150


**Applicant:** Nanoptix Inc.  
699 Champlain Street  
Dieppe, New Brunswick  
Canada  
E1A 1P6

**Equipment Under Test:** Spill Proof Cuts

**Model Number:** SPC

**In Accordance With:** **EN 55022: 1998 + amendment A1: 2000 + amendment A2: 2003**  
Information technology equipment —  
Radio disturbance characteristics —  
Limits and methods of measurement

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



**Authorized By:** David Duchesne, EMC Specialist

**Date:** 30 June 2005

**Total Number of Pages:** 16

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## Measurement Uncertainty

Accuracy of Measurement		
<p>Measurement uncertainty was calculated using the methods described in CISPR 16-4 <i>Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC measurements</i> and Nemko Canada Inc. procedure EMC/MUC/001 <i>Uncertainty in EMC Measurements</i>.</p>		
Test Specific Measurement Uncertainty		
Measurement	Test Specification	U <sub>lab</sub>
Conducted disturbance	9kHz – 150kHz	4.0dB
	150kHz – 30MHz	3.6dB
Radiated disturbance	30MHz – 200MHz Horizontal polarization	4.7dB
	200MHz – 1000MHz Horizontal polarization	4.7dB
	30MHz – 200MHz Vertical polarization	4.9dB
	200MHz – 1000MHz Vertical polarization	4.9dB

## Lab Environmental Conditions

Lab Conditions
Ambient Temperature: 15°C to 35°C, Relative Humidity: 30% to 60%, Atmospheric Pressure: 86kPa (860mbar) to 106kPa (1 060mbar)

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**Declaration**

Product Name: Spill Proof Cuts


Model No: SPC

Trademark: 


Serial No: SPC000011


Name of Applicant: Nanoptix Inc.

Name of Manufacturer: Nanoptix Inc.

 Nemko Canada Inc., Ottawa, Ontario Canada	<b>TEST RESULT</b>	
	<b>PASS</b>	<b>FAIL</b>
<b>In the configuration tested, the EUT complied with the requirements of: EN 55022: 1998 + amendment A1: 2000 + amendment A2: 2003, Class A</b>	X	


*Note: See Summary of Test Results and Engineering Considerations for full details.*

Tested by:  \_\_\_\_\_ 30 June 2005  
Signature Date  
Daniel Hynes, EMC Specialist

Reviewed by:  \_\_\_\_\_ 30 June 2005  
Signature Date  
David Duchesne, EMC Specialist

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The tests included in this report are within the scope of this accreditation.



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## Summary of Test Results

### General

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with EN 55022: 1998 + amendment A1: 2000 + amendment A2: 2003

All tests were performed using measurement apparatus defined in CISPR 16-1. Radiated Emissions were performed on an open area test site within the NSA conforming to the requirements of CISPR16-1.

#### Limits for conducted disturbance at the mains ports of class A ITE

Frequency Range MHz	Limits dB(μV)		Result (Pass/Fail)
	Quasi-Peak	Average	
0.15 to 0.50	79	66	Pass
0.50 to 30	73	60	

#### Notes

- The lower limit shall apply at the transition frequency.

#### Limits for conducted disturbance at the mains ports of class B ITE

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

#### Notes

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

#### Limits for radiated disturbance of class A ITE at a measuring distance of 10m


Frequency Range MHz	Quasi-Peak Limits dB(μV/m)	Result (Pass/Fail)
30 to 230	40	Pass
230 to 1000	47	

#### Limits for radiated disturbance of class B ITE at a measuring distance of 10m

Frequency Range MHz	Quasi-Peak Limits dB(μV/m)	Result (Pass/Fail)
30 to 230	30	N/A
230 to 1000	37	

#### Notes

- The lower limit shall apply at the transition frequency.
- Additional provisions may be required for cases where interference occurs.

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Summary of Test Results, continued

Limits of conducted common mode (asymmetric mode) disturbance at telecommunication ports in the frequency range 0.15 MHz to 30 MHz for class A equipment

Frequency range MHz	Voltage Limits dB(μV)		Current Limits dB(μA)		Result (Pass/Fail)
	Quasi- Peak	Average	Quasi- Peak	Average	
0.15 to 0.50	97 to 87	84 to 74	53 to 43	40 to 30	N/A
0.50 to 30	87	74	43	30	

- Notes
- The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50MHz.
  - The current and voltage disturbance limits are derived for use with an impedance stabilization network (ISN) which presents a common mode (asymmetric mode) impedance of 150Ω to the telecommunication port under test (conversion factor is  $20 \log_{10} 150/1 = 44\text{dB}$ )

Limits of conducted common mode (asymmetric mode) disturbance at telecommunication ports in the frequency range 0.15 MHz to 30 MHz for class B equipment

Frequency Range MHz	Voltage Limits dB(μV)		Current Limits dB(μA)		Result (Pass/ Fail)
	Quasi- Peak	Average	Quasi- Peak	Average	
0.15 to 0.50	84 to 74	74 to 64	40 to 30	30 to 20	N/A
0.50 to 30	74	64	30	20	

- Notes
- The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50MHz.
  - The current and voltage disturbance limits are derived for use with an impedance stabilization network (ISN) which presents a common mode (asymmetric mode) impedance of 150Ω to the telecommunication port under test (conversion factor is  $20 \log_{10} 150/1 = 44\text{dB}$ )
  - Class B – Provisionally, a relaxation of 10dB over the frequency range of 6 to 30MHz is allowed for high-speed services having significant spectral density in this band. However, this relaxation is restricted to the common mode disturbance converted by the cable from the wanted signal. The provision relaxation of 10dB will be reviewed no later than three years after the date of withdrawal based on the results and interference cases seen in this period. Wherever possible it is recommended to comply with the limits without the provisional relaxation.

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## Engineering Considerations

<b>Product Modification</b>	
To achieve compliance the following change(s) were made during compliance testing: None	
<b>Justification</b>	
None	
<b>Deviations</b>	
The following deviations from, additions to, or exclusions from the test specification have been made: None	
<b>Test Report Revision History</b>	
<b>Issue #</b>	<b>Details of changes made to test report</b>
-	Original Report Issued
N/A	N/A


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## General Information Regarding the Equipment Under Test (EUT)

Date Received In Laboratory:	June 1, 2005
Nemko Identification Number:	Refer to Nemko Canada receiving report.
EUT Mains Input Voltage and Frequency	
Voltage: 100-240VAC Frequency: 50-60Hz	
Description & Theory of Operation	
The EUT is a thermal printer with cutter for point of sale applications.	
EUT Clock and Operational Frequencies	
0.052MHz, 0.1MHz, 6.25MHz, 12MHz, 48MHz, 96MHz, 192MHz	
Exercise/Monitoring method	
The EUT was tested while printing a ticket continuously every 3 seconds.	
Software Version	
Firmware version: 0.25B	





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## Radiated Disturbance


Test Date: June 2, 2005 & June 27, 2005											
Engineer's Name: Daniel Hynes											
Tested as per: Table Top											
Mains Input Voltage: 230VAC						Mains Input Frequency: 50Hz					
Enclosure Investigation Data											
Test Distance (meters): 10						Dome: Almonte					
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)	Detector	Amp.
288.0010	BL	V	27.1	13.6	N/A	2.2	42.9	47.0	4.1	Q-Peak	N/A
65.7590	BL	V	22.5	6.8	N/A	1.0	30.2	40.0	9.8	Q-Peak	N/A
192.0006	BL	V	16.5	10.2	N/A	1.7	28.4	40.0	11.6	Q-Peak	N/A
96.0002	BL	V	17.3	9.7	N/A	1.2	28.2	40.0	11.8	Q-Peak	N/A
480.0016	BL	H	12.7	17.3	N/A	2.8	32.8	47.0	14.2	Q-Peak	N/A
287.5282	BL	V	15.1	13.6	N/A	2.2	30.9	47.0	16.1	Q-Peak	N/A
208.0006	BL	V	11.2	10.7	N/A	1.7	23.6	40.0	16.4	Q-Peak	N/A
384.0013	BL	V	12.5	15.5	N/A	2.4	30.4	47.0	16.6	Q-Peak	N/A
400.0014	BL	V	9.9	16.4	N/A	2.6	28.9	47.0	18.1	Q-Peak	N/A
288.4743	BL	V	12.7	13.6	N/A	2.2	28.5	47.0	18.5	Q-Peak	N/A
Legend: Antenna Legend: BC = Biconical, BL = Bilog, LP = Log-Periodic, Horn = Horn, ED = EMCO Dipole Detector Legend: Q-Peak = 120kHz RBW, Average = 1.0MHz RBW											
Notes											
None											
Deviations											
Refer to Engineering Considerations.											
Test Result											
<b>Final Test Result: Pass</b>											

Radiated Disturbance Test Equipment Used						
CAL Cycle	Equipment	Manufacturer	Model No.	Asset/Serial No.	Last Cal.	Next Cal.
1 Year	Receiver	Rohde & Schwarz	ESVS-30	FA001445	July 07/04	July 07/05
1 Year	Bilog	Schaffner	CBL6112B	FA001503	July 09/04	July 09/05
Note: N/A = Not Applicable, NCR = No Cal Required, COU = CAL On Use						

Radiated Disturbance, continued

Radiated Disturbance Setup Photos



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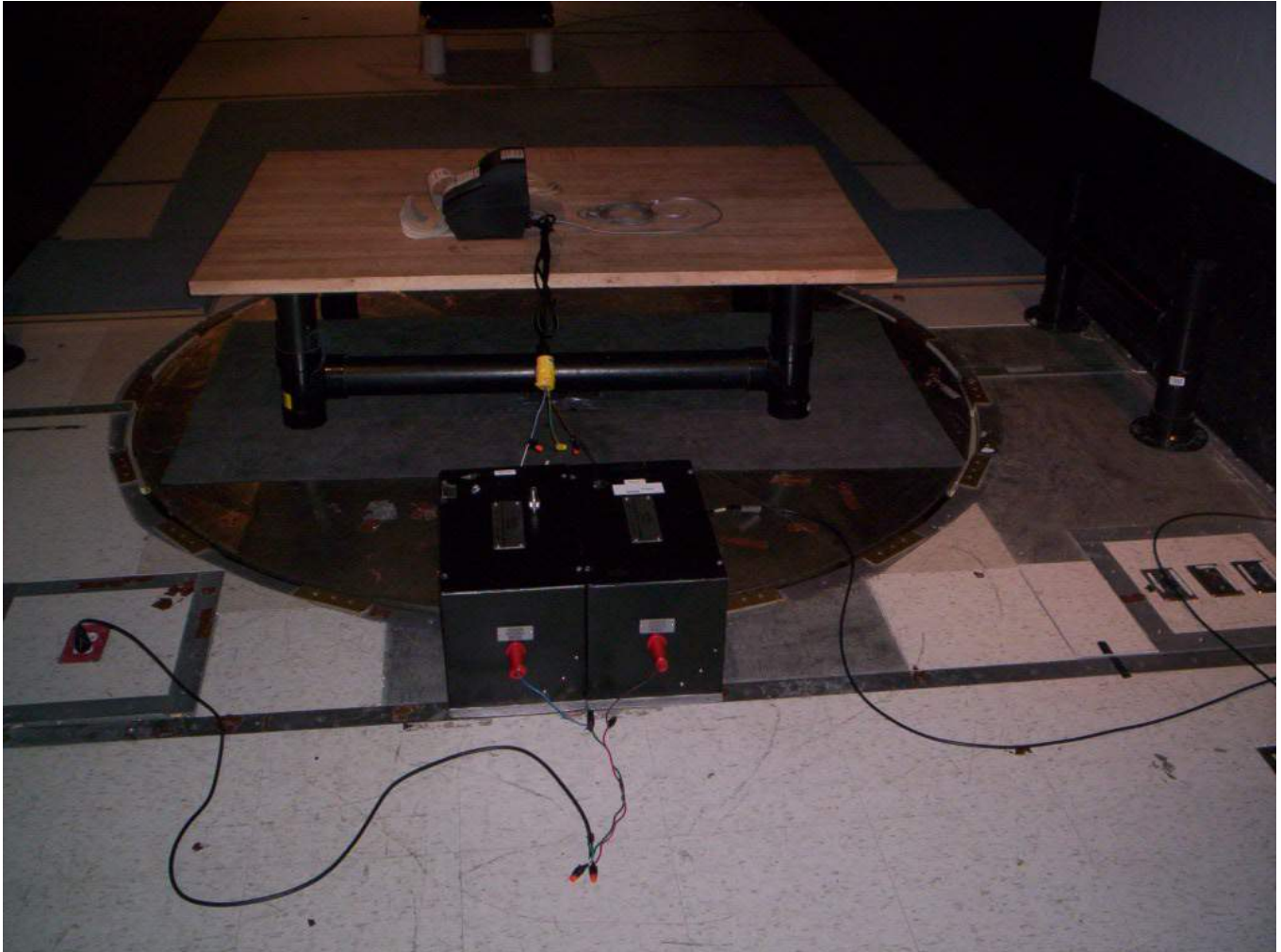
## Conducted Disturbance at Mains Port

Test Date: June 2, 2005	
Engineer's Name: Daniel Hynes	
Tested as per: Table Top	
Mains Input Voltage: 230VAC	Mains Input Frequency: 50Hz
Spectrum plots for each frequency band can be found at the back of this section. *All plots were generated with a peak detector.	
<b>Port Investigation Data</b>	
Port under test: Ac mains input	
Results: Refer to Plots of this section.	
Notes	
None	
Deviations	
Refer to Engineering Considerations.	
Test Result	
<b>Final Test Result: Pass</b>	

Conducted Disturbance at Mains Test Equipment Used						
CAL Cycle	Equipment	Manufacturer	Model No.	Asset/Serial No.	Last Cal.	Next Cal.
1 Year	LISN	Tegam	95300-50	FA000736	Feb 09/ 05	Feb 09/ 06
1 Year	LISN	Tegam	95300-50	FA000737	Feb 09/ 05	Feb 09/ 06
1 Year	Spectrum Analyzer	Hewlett-Packard	8566B	FA001432	May 18/05	May 18/06
1 Year	Spectrum Analyzer Display	Hewlett-Packard	85662A	FA001432	May 18/05	May 18/06
1 Year	Transient Limiter	Hewlett-Packard	1194 7A	FA001150	May 25/05	May 25/06
1 Year	Receiver	Rohde & Schwarz	ESHS 10	FA001929	April 20/05	April 20/06
Note: N/A = Not Applicable, NCR = No Cal Required, COU = CAL On Use						

Conducted Disturbance at Mains, continued

Conducted Disturbance at Mains Setup Photos







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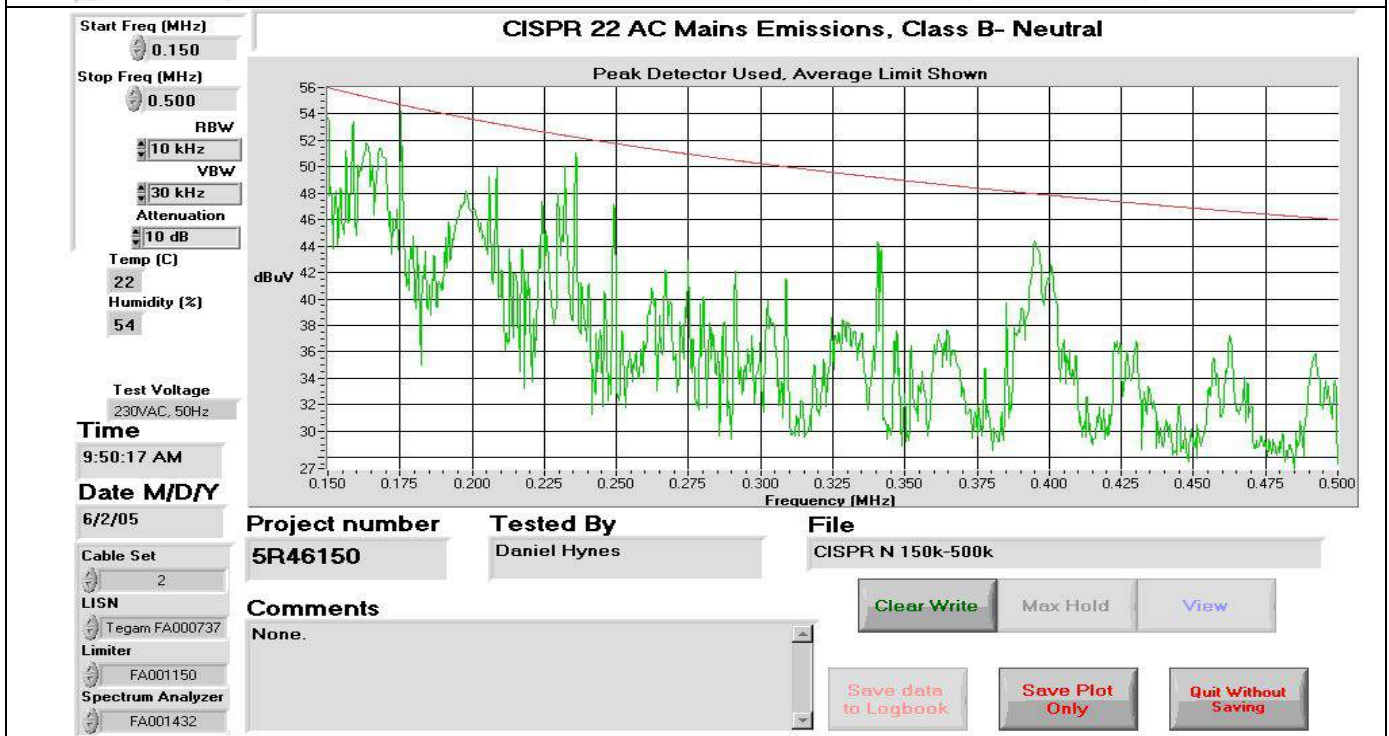
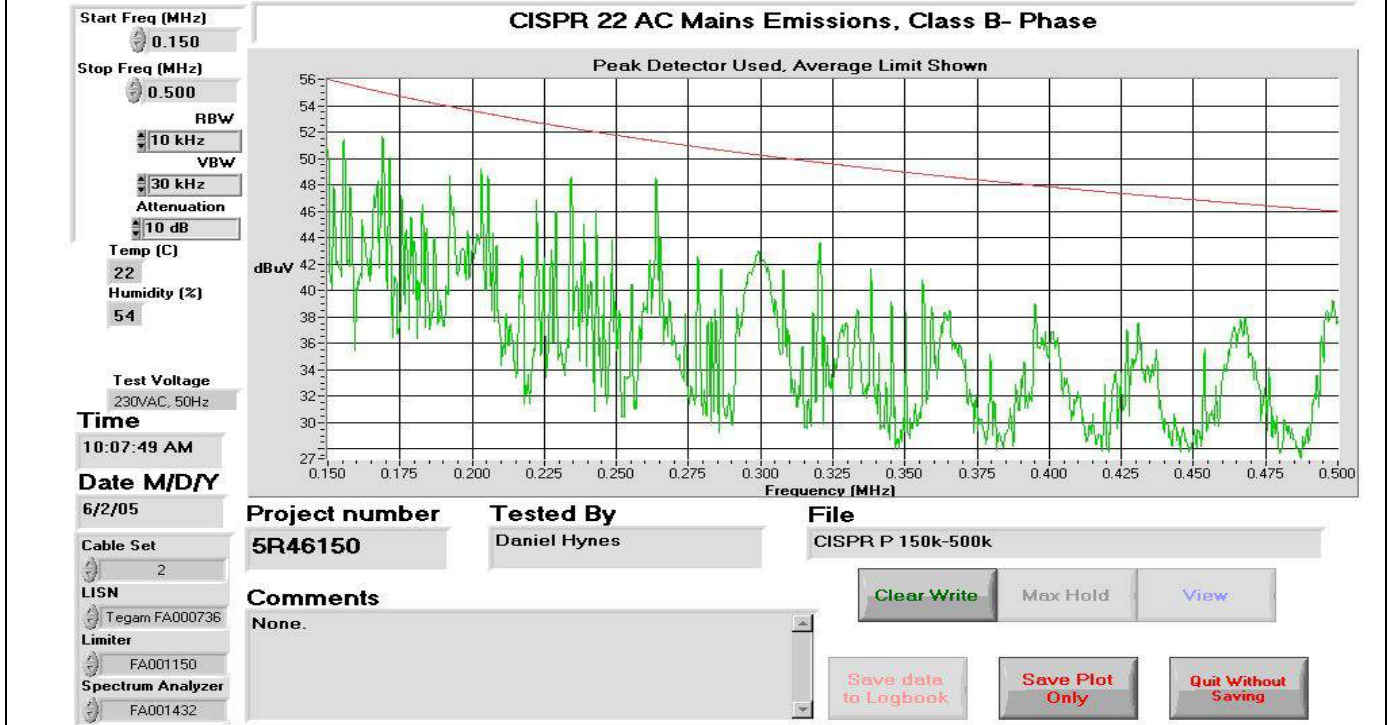
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Conducted Disturbance at Mains, continued

Conducted Disturbance at Mains Plots





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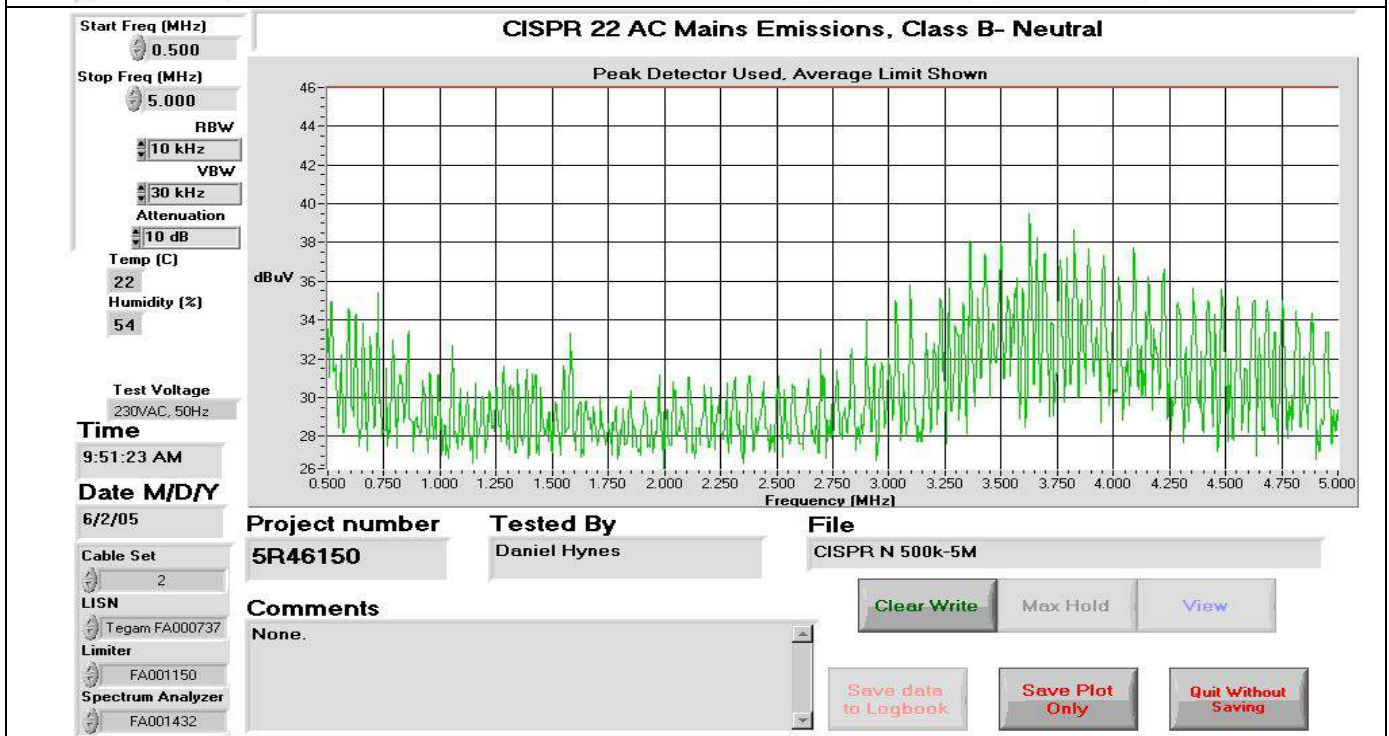
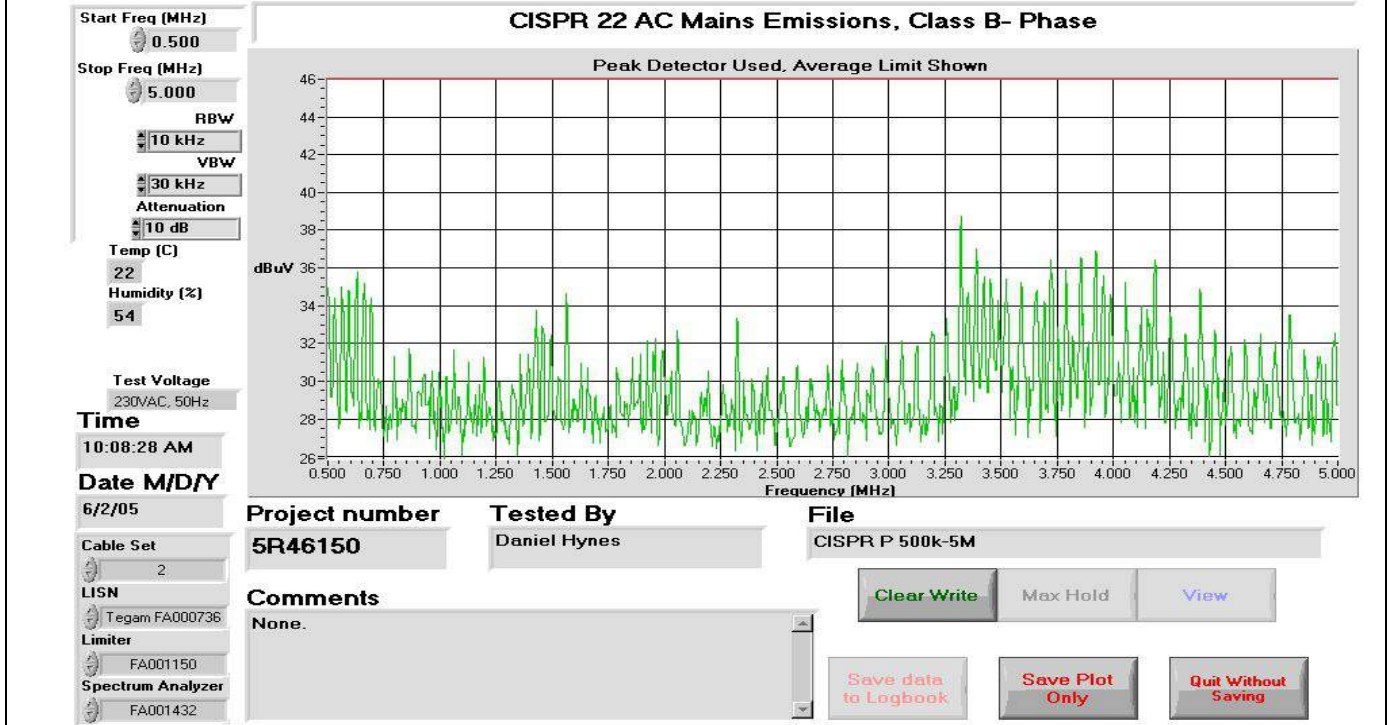
Reference Standard: EN 55022: 1998 + A1: 2000 + A2: 2003

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Conducted Disturbance at Mains, continued

Conducted Disturbance at Mains Plots, continued





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Conducted Disturbance at Mains, continued

Conducted Disturbance at Mains Plots, continued

