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

Report Number: 116129-1TRFEMC

Products Marketing Name: Ultra and Game Interface

Test Specification:

- FCC 47 CFR Part 15, Subpart B – Verification (USA)
- ICES-003 Issue 4 February 2004 (Canada)
- EN 55022: 2006 (European Union)

Reviewed by:

Signature
Daniel Hynes, Senior EMC Specialist

January 14, 2009

Date

Tested by: Ilya Fershtater, EMC Specialist
David Duchesne, Senior EMC Specialist

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Declaratory Statements

Products Marketing Name: Ultra and Game Interface

Model #: Ultra – 950003
Model #: Game Interface – 950017



Trademark:

Serial #: None

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

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

Product Background details

- | | |
|---|--|
| <input checked="" type="checkbox"/> New Product | <input type="checkbox"/> Engineering Changes |
| <input type="checkbox"/> Configuration Change | <input type="checkbox"/> Product Audit |
| <input type="checkbox"/> Other | |

Test Specification:

FCC 47 CFR Part 15, Subpart B – Verification (USA)
ICES-003 Issue 4 February 2004 (Canada)
EN 55022: 2006 (European Union)

Test Location:

1500 Peter Robinson Road, West Carleton, Ontario, Canada, K0A 1L0
and
303 River Road, R.R. 5, Ottawa, Ontario, Canada, K1V 1H2

Limits of Responsibility:

The results included in this test report apply only to the equipment listed within this report as being the Equipment Under Test (EUT). Equipment listed as support equipment is not considered to be part of the EUT. In some instances, the EUT may consist of multiple devices, and will be so indicated in the report.



Statement of Compliance

EN 55022: 2006; Class A		TEST RESULT
		PASS/FAIL/NA
Radiated Disturbance		PASS
Conducted Disturbance at Mains Port		PASS
Conducted Common mode (asymmetric mode) Disturbance at Telecommunication Ports		N/A
<ul style="list-style-type: none"> - Test Method Used: CISPR 22 - System Power: 230VAC/50Hz - All tests were performed using measurement apparatus defined in CISPR 16-1. 		
FCC 47 CFR Part 15, Subpart B for Digital Devices; Class A		TEST RESULT
		PASS/FAIL/NA
Radiated Disturbance		PASS
Conducted Disturbance at Mains Port		PASS
<ul style="list-style-type: none"> - Test Method Used: ANSI C63.4-2003 - System Power: 120VAC/60Hz; Conducted: 120VAC/60Hz - 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 C63.4-2003. Peripheral equipment was also operated through a 50 microhenry L.I.S.N. 		
ICES-003 Issue 4 February 2004; Class A		TEST RESULT
		PASS/FAIL/NA
Radiated Disturbance		PASS
Conducted Disturbance at Mains Port		PASS
<ul style="list-style-type: none"> - Test Method Used: CISPR 22 - System Power: Radiated: 120VAC/60Hz; Conducted: 120VAC/60Hz - All tests were performed using measurement apparatus defined in CISPR 16-1. 		

Measurement Uncertainty

Measurement	Test Specification	U _{lab}
Conducted disturbance	9kHz – 150kHz	4.0dB
	150kHz – 30MHz	3.6dB
Radiated disturbance	30MHz – 200MHz <i>Horizontal polarization</i>	4.7dB
	200MHz – 1000MHz <i>Horizontal polarization</i>	4.7dB
	30MHz – 200MHz <i>Vertical polarization</i>	4.9dB
	200MHz – 1000MHz <i>Vertical polarization</i>	4.9dB

Accuracy of Measurement

Measurement uncertainty was calculated using the methods described in CISPR 16-4 Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC measurements and Nemko Canada Inc. procedure EMC/MUC/001 Uncertainty in EMC Measurements.

Lab Environmental 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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Engineering Considerations

Product Modification Required for Compliance

None

Justification

None

Deviations from Standard Test Procedure

None

Test Report Revision History

Revision #	Details of changes made to test report
-	Original Report Issued
N/A	N/A



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Report No: 116129-1TRFEMC

General Information Regarding the Equipment Under Test (EUT)

Date Received In Laboratory: October 28, 2008

Nemko Identification Number: Items # 1 and 2

Description & Theory of Operation:

Connects existing "Non Communicable" Gaming Terminals together within a computer networked system.

EUT Clock and Operational Frequencies:

12MHz, 24MHz

Exercise/Monitoring method:

Ultra communicates between the Printer (Host) via RS485 and the Game Interface (To Gaming Terminal) via RS232, approx: 15 seconds

Software Version:

Fun-Co Firmware



Equipment Configuration

Equipment Configuration List

Item	Description	Identification: (MN#, SN#, PN#, Rev.)
(A)	Ultra (EUT)	MN# 950003
(B)	Spill Proof Printer	SN# 1001663
(C)	ITE Power Supply	MN# GT-21126-6024, SN# RoHS00768524/06, PN# 100600-0023-00-ROHS
(D)	Control Box	Part# 102812-0000R
(E)	Game Interface (EUT)	MN# 950017
(F)	GlobTek ITE Power Supply	MN# GT-21089-1512-W2, P/N #WR91E1250LCP-Y
(G)	Bar Code Slot Reader	MN# BR302B, SN# 109CYD00680
(H)	IBM ThinkPad T23 Lap Top Computer	Nemko Asset # FA001934

Ultra EUT Ports

Item	Description	Qty
i.	RS-485 (2 – Parallel)	2
ii.	Terminal Interface	6
iii.	DC Power	1
iv.	RS-232	1
v.	USB (Maintenance Port, not used during normal operation)	1
vi.	PS-2 Keyboard/Mouse (Maintenance Port, not used during normal operation)	1

Game Interface EUT Ports

Item	Description	Qty
vii.	Bar Coded Reader	1
viii.	Bill Acceptor	1
ix.	Coin Validator	1
x.	Coin Hopper	1
xi.	GP I/O	1
xii.	ULTRA Interface	1

None

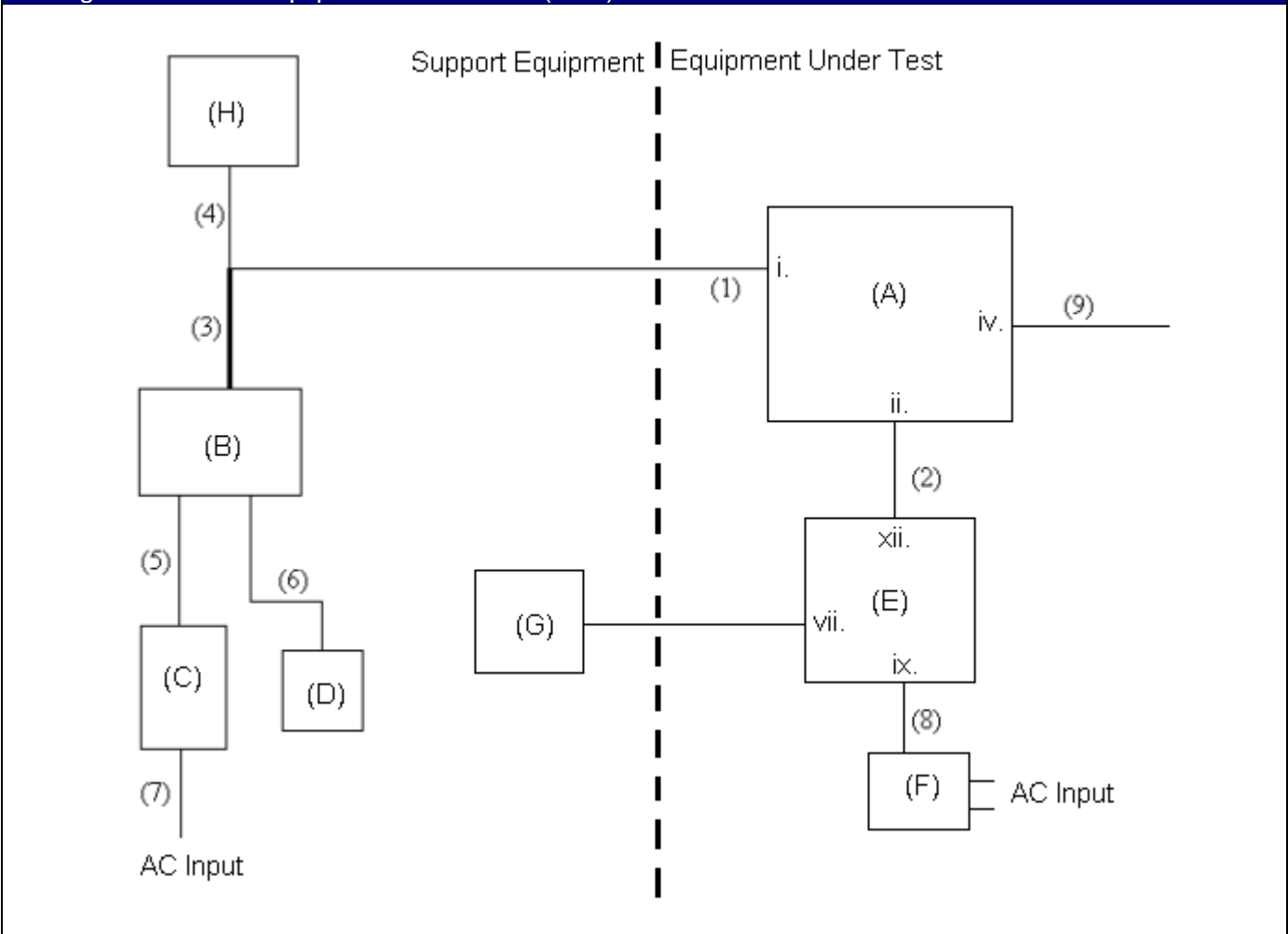
- The Ultra and Game Interface was powered via the coin validator port of the Game Interface with an external supply.
- The DC input power port of the Ultra is no utilized for this configuration.
- The bar coded reader, bill acceptor, coin hopper, and GP I/O port of the Game Interface support connection less than 1m.

Equipment Configuration, continued

Inter-Connection Cables

Item	Description	Length (m)
(1)	6 Conductor, RJ11 to RJ11, Unshielded Flat Communication Cable (PN# 102799-0100R-02)	10
(2)	8 Conductor, RJ45 to RJ45, Unshielded Flat Communication Cable	5
(3)	DB15 to DB9/RJ11 Communication Cable (PN# 210004-0001R-01)	0.5
(4)	DB9 (RS-232) Serial Communication Cable	3
(5)	2 Conductor DC Power Cable (Testing Purposes Only – via Coin Port)	2
(6)	6 Conductor, RJ11 Unshielded Flat Communication Cable	0.25
(7)	3 Conductor AC Mains North American Power Cable	2
(8)	2 Conductor DC Power Cable	2
(9)	DB9 Serial Communication Cable	2

Configuration of the Equipment Under Test (EUT)





Radiated Disturbance

Test Date: December 23, 2008

Engineer's Name: David Duchesne

Configuration: Table Top

Enclosure Investigation Data

Result: Refer to spectral plots and tables of this section.

Facility: 3m Semi Anechoic Chamber **Measuring Distance:** = 3m **Antenna Height:** 1-4m

Preview measurements:

30MHz to 1GHz

Receiver settings:

- Peak Detector, Max Hold
- 120kHz RBW

1GHz to 40GHz

Spectrum analyzer settings:

- Peak Detector, Max Hold
- 1MHz RBW/3MHz VBW

Final measurement:

30MHz to 1GHz

Receiver settings:

- Q-Peak Detector
- 120kHz RBW

1GHz to 40GHz

Receiver settings:

- Average Detector
- 1MHz RBW

- The spectral plot is a combined vertical and horizontal scan.
- Spectral plots have been corrected with transducer factors for antennas, cable loss, amplifiers, and attenuators.
- Limits have been adjusted to reflect 3m measurements.
- The preview measurement was generated with receiver in continuous scan mode while the EUT was rotated and antenna adjusted for maximized radiated emission. Emissions detected within 6dB of limit were re-measured with a quasi peak or average detector for a final measurement.

Notes

None

Deviations

Refer to Engineering Considerations.

Test Result

Final Test Result: Pass

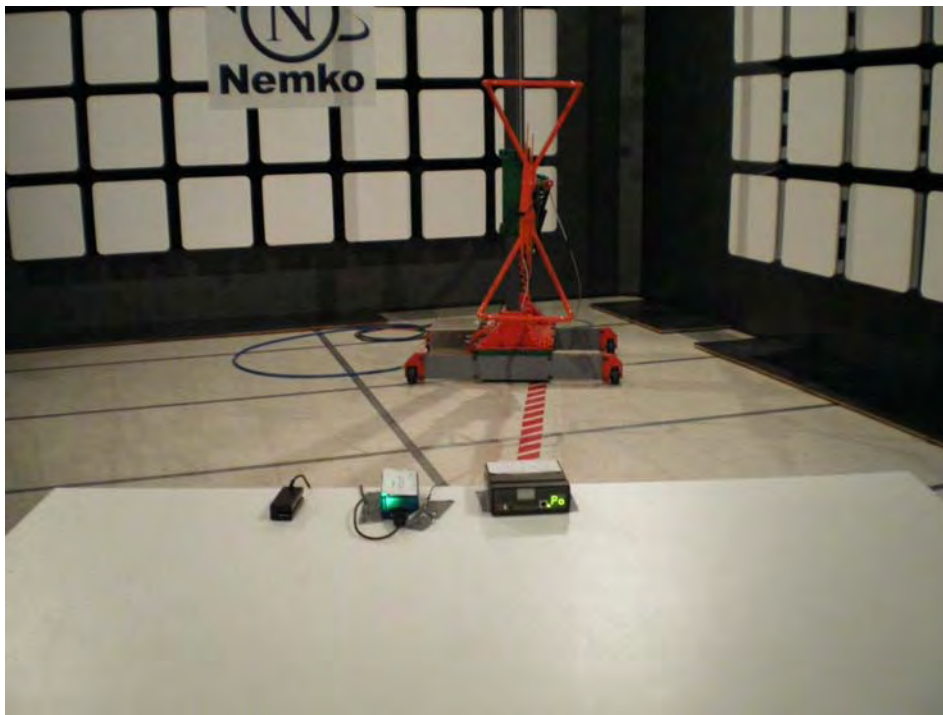
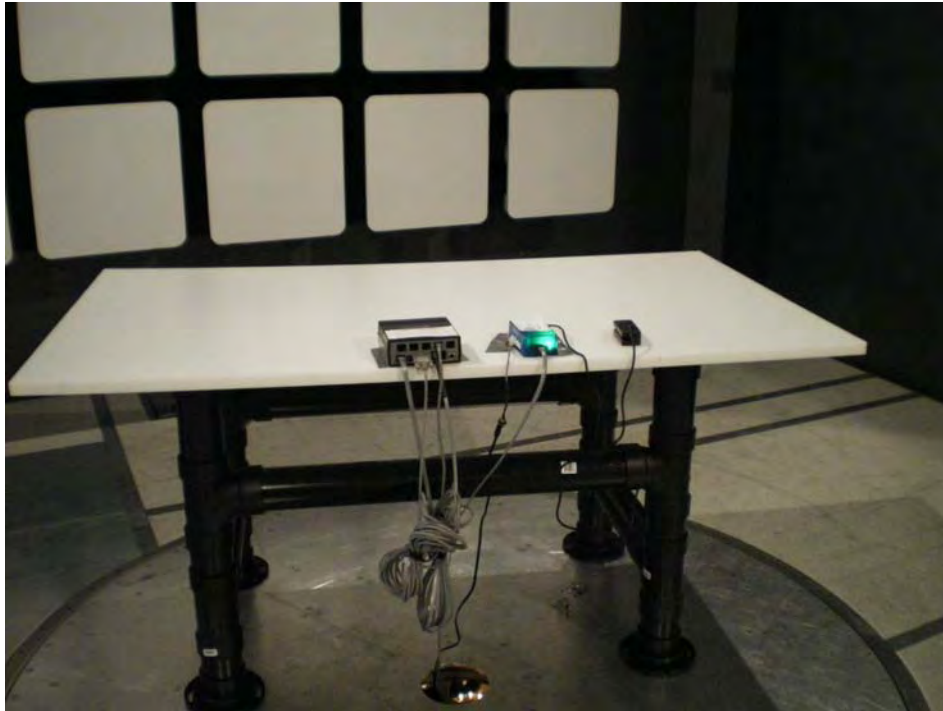
Test Equipment Used

Equipment	Manufacturer	Model No.	Asset/Serial No.	Next Cal.
Electro-Magnetic Interference Test Chamber	TDK	SAC-3	FA002047	May 06/09
Bilog	Sunol	JB3	FA002108	Jan. 21/09
Receiver/Spectrum Analyzer	Rohde & Schwarz	ESU 40	FA002071	Nov. 25/09
50 Coax cable	HUBER + SUHNER	None	FA002022	July 07/09
50 Coax cable	HUBER + SUHNER	None	FA002074	July 07/09

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

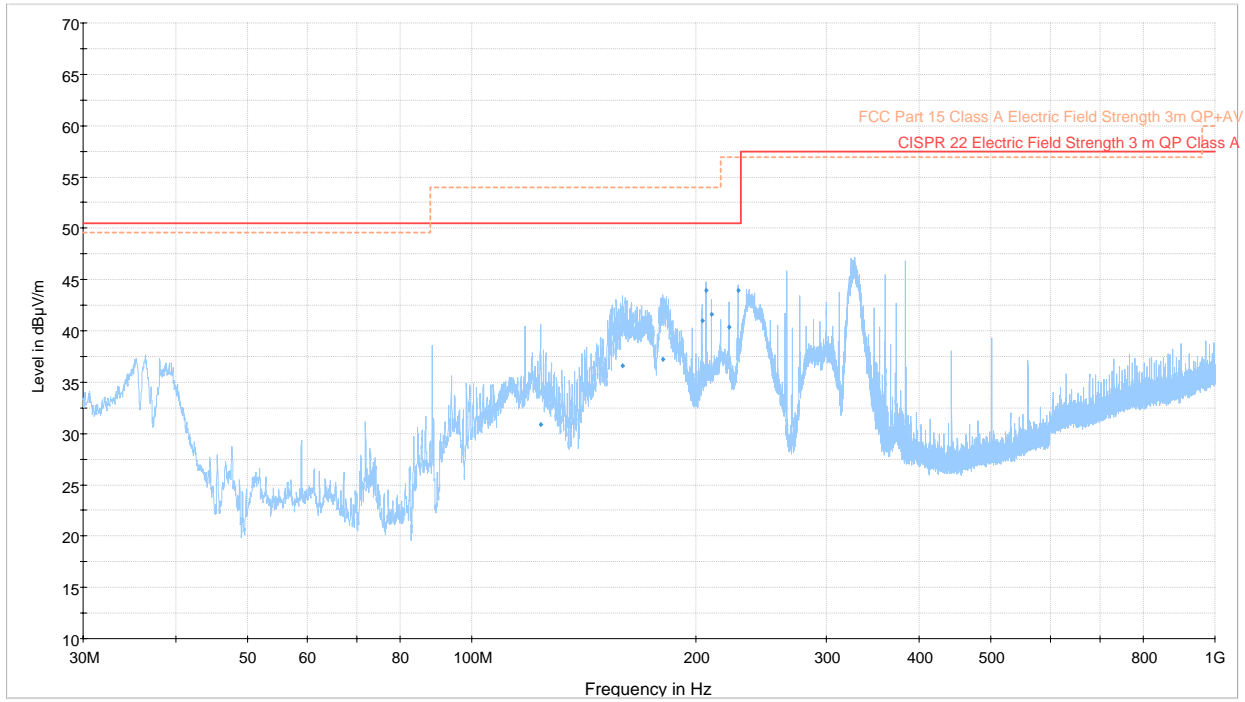
Radiated Disturbance, continued

Setup Photos



Radiated Disturbance, continued

Spectral Plots





Conducted Disturbance at Mains Port

Test Date: November 12, 2008

Engineer's Name: Ilya Fershtater

Configuration: Table Top

Port Investigation Data

Port under test: AC Mains

Results: Refer to spectral plots and tables of this section.

Test Location: 1500 Peter Robinson Road, West Carleton, Ontario, Canada, K0A 1L0

Facility: 3m Chamber

Preview measurements:

0.15MHz to 30MHz

Receiver settings:

- Peak Detector, Max Hold and Average
- 9kHz RBW

Final measurement:

0.15MHz to 30MHz

Receiver settings:

- Q-Peak Detector and Average
- 9kHz RBW

- Spectral plots have been corrected for transducer factors; cable loss, LISN, and attenuator.
- Emissions detected within 6dB of limit were re-measured with a quasi peak or average detector for a final measurement.

Notes

The AC input side of the external supply connected to the coin validator port was assessed.

Deviations

Refer to Engineering Considerations.

Test Result

Final Test Result: Pass

Test Equipment Used

Equipment	Manufacturer	Model No.	Asset/Serial No.	Next Cal.
LISN	Tegam	95300-50	FA000736	Jan. 14/09
LISN	Tegam	95300-50	FA000737	Jan. 14/09
Receiver/Spectrum Analyzer	Rohde & Schwarz	ESU40	FA002071	Nov. 14/08
Transient Limiter	Hewlett-Packard	1194 7A	FA001150	Aug. 18/09
Power Source	California Instruments	1001WP	FA000995	Feb. 13/09

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

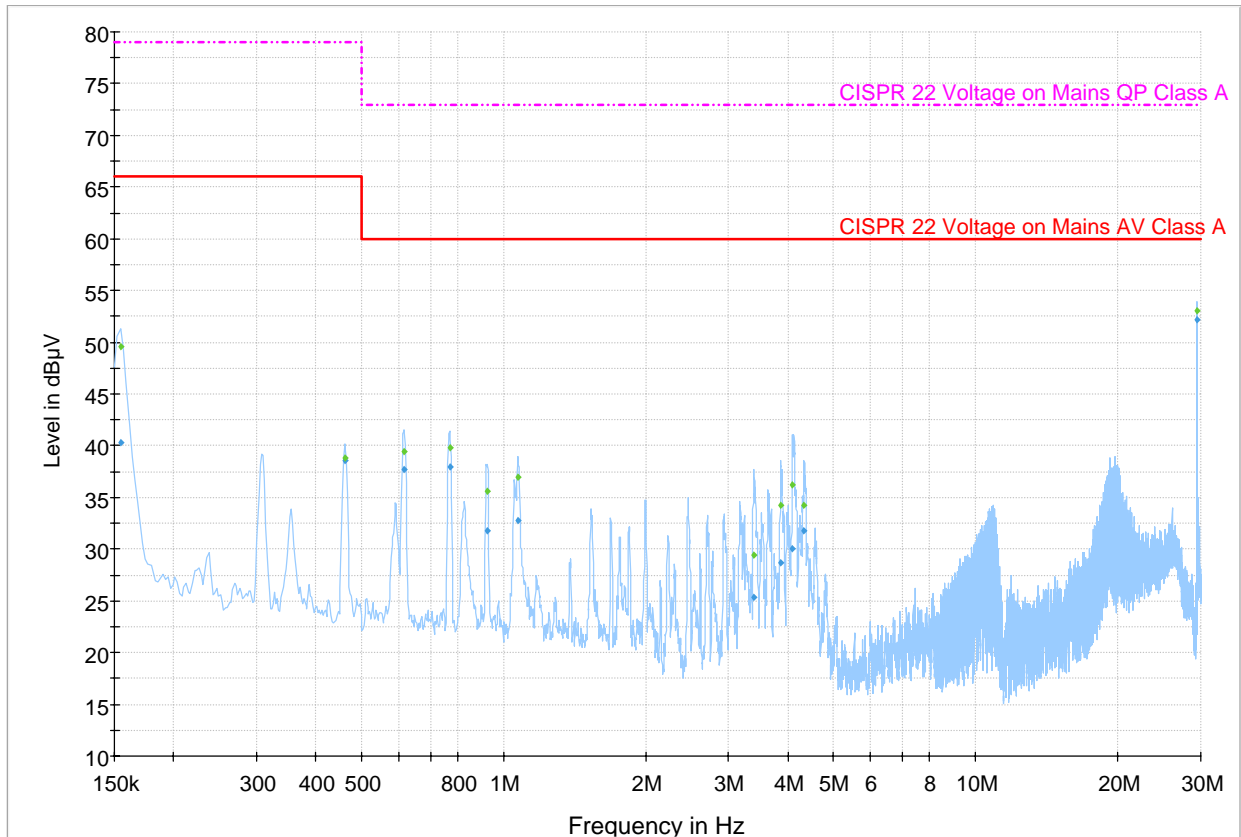
Conducted Disturbance at Mains, continued

Setup Photos



Conducted Disturbance at Mains, continued

Spectral Plots

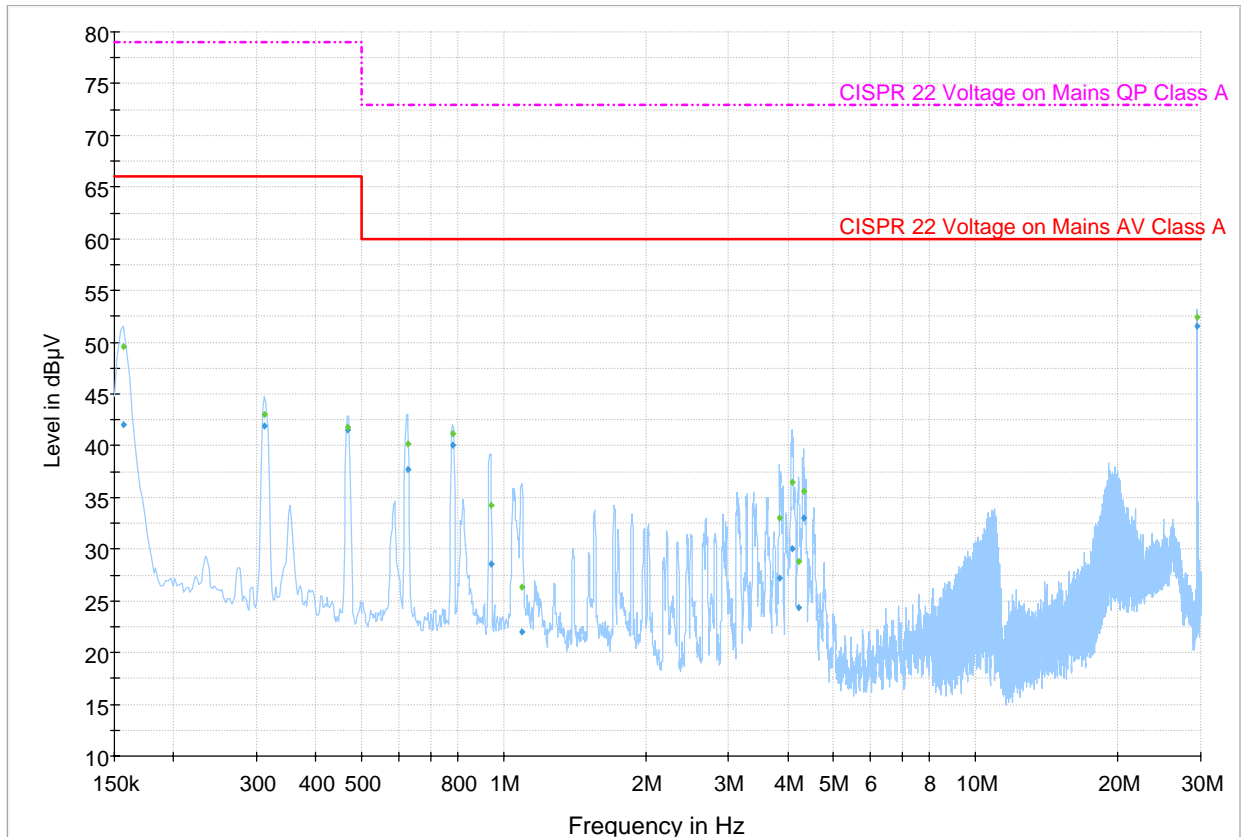


8R116129 Nanoptix. 230VAC, 50Hz - Phase

- CISPR 22 Voltage on Mains AV Class A.LimitLine
- - - CISPR 22 Voltage on Mains QP Class A.LimitLine
- Peak Detector Scan
- ◆ Final Average Measurement
- ◆ Final Quasi-Peak Measurement

Conducted Disturbance at Mains, continued

Spectral Plots, continued

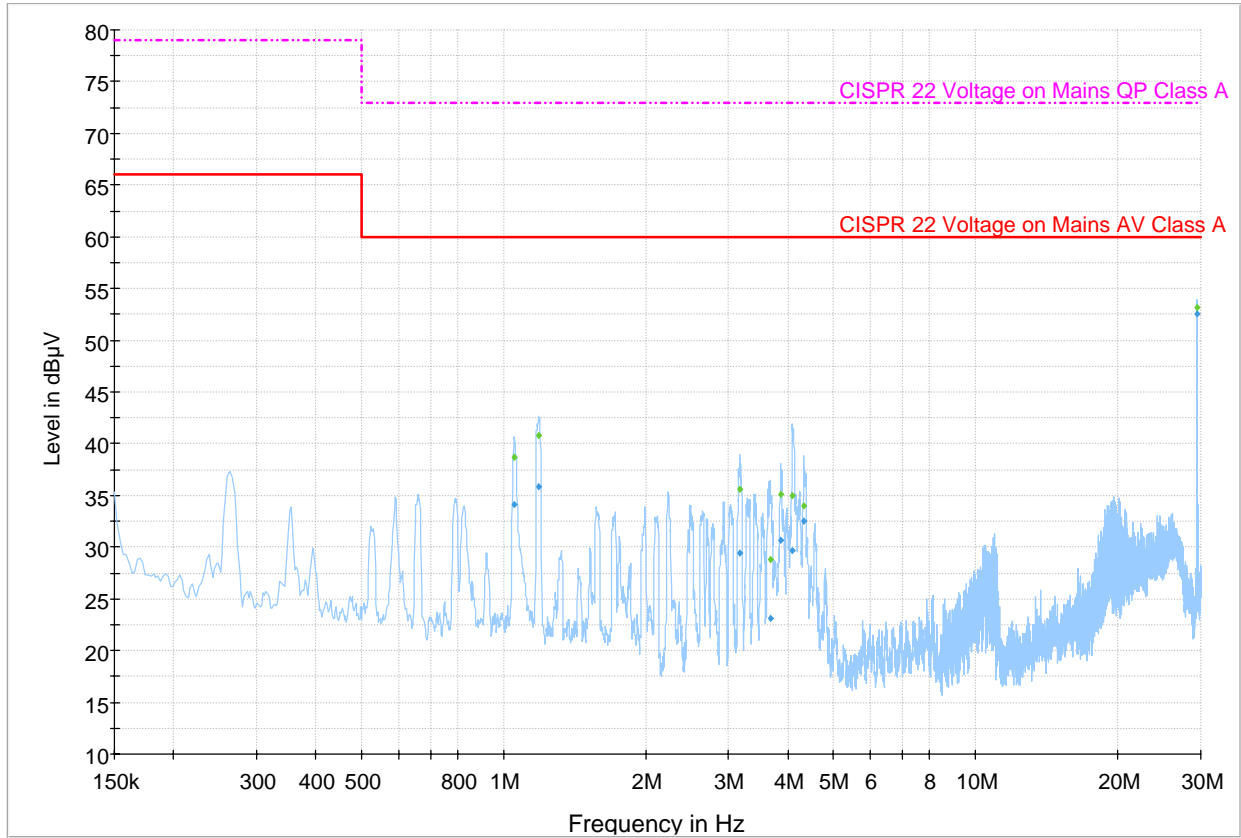


8R116129 Nanoptix. 230VAC, 50Hz - Neutral

- CISPR 22 Voltage on Mains AV Class A.LimitLine
- - - CISPR 22 Voltage on Mains QP Class A.LimitLine
- Peak Detector Scan
- ◆ Final Average Measurement
- ◆ Final Quasi-Peak Measurement

Conducted Disturbance at Mains, continued

Spectral Plots, continued

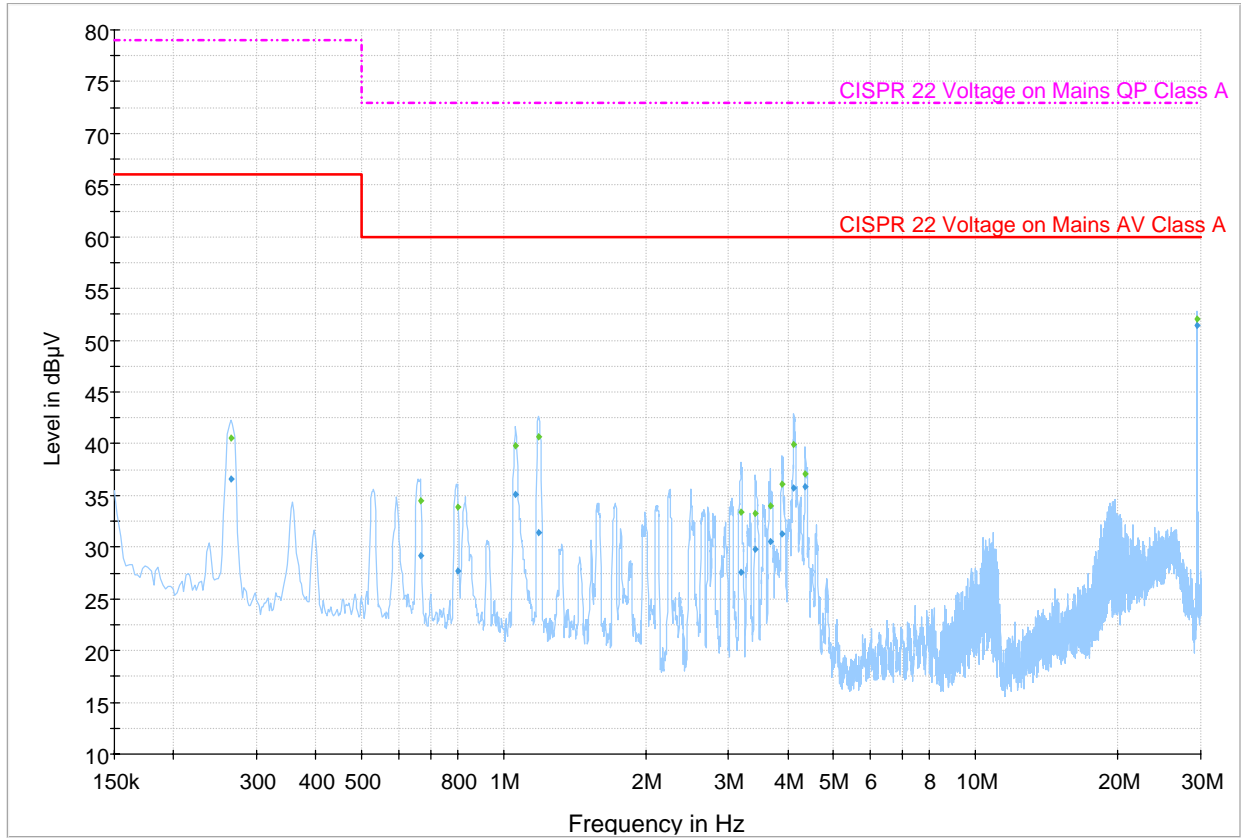


8R116129 Nanoptix. 120VAC, 60Hz - Phase

- CISPR 22 Voltage on Mains AV Class A.LimitLine
- - - CISPR 22 Voltage on Mains QP Class A.LimitLine
- Peak Detector Scan
- ◆ Final Average Measurement
- ◆ Final Quasi-Peak Measurement

Conducted Disturbance at Mains, continued

Spectral Plots, continued



8R116129 Nanoptix. 120VAC, 60Hz - Neutral

- CISPR 22 Voltage on Mains AV Class A.LimitLine
- - - CISPR 22 Voltage on Mains QP Class A.LimitLine
- Peak Detector Scan
- ◆ Final Average Measurement
- ◆ Final Quasi-Peak Measurement