



EMISSION TEST REPORT

Test Report No. : E05OR-057

Applicant : Win4NET Co., Ltd.
Address : KOLON Digital Tower 1301, 222-7, Kuro-Dong, Kuro-Gu, Seoul, 152-848, Korea

Manufacturer : Win4NET Co., Ltd.
Address : KOLON Digital Tower 1301, 222-7, Kuro-Dong, Kuro-Gu, Seoul, 152-848, Korea

Type of Equipment : Video Server

Model Name : NetSafe-VS3001(W)

Serial number : N/A

Total page of Report : 23 pages (including this page)

Date of Incoming : September 23, 2005

Date of Issuing : October 20, 2005

SUMMARY

The equipment complies with the standard; EN 55 022: 1994 +A1: 1995 +A2: 1997 + A1: 2000 + A2: 2003 (Class A), EN 61 000-3-2: 2000 and EN 61 000-3-3: 1995 + A1: 2001.

This test report contains only the results of a single test of the sample supplied for the examination. It is not a general valid assessment of the features of the respective products of the mass-production.

Prepared by: _____

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1. APPLICANT AND MANUFACTURER INFORMATION

- Applicant : Win4NET Co., Ltd.
- Address : KOLON Digital Tower 1301, 222-7, Kuro-Dong, Kuro-Gu, Seoul, 152-848, Korea
- Manufacturer : Win4NET Co., Ltd.
- Address : KOLON Digital Tower 1301, 222-7, Kuro-Dong, Kuro-Gu, Seoul, 152-848, Korea
- Name of contact : Mr. Sung-Dae, Kim / Research Engineer
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- Fax No. : +82-2-2103-5602

2. TEST SUMMARY

2.1 Test standards and results

STANDARDS		RESULTS
EN 55 022: 1994 +A1: 1995 +A2: 1997 + A1: 2000 + A2: 2003	Radiated electromagnetic field	Met Class A / PASS
	Mains terminal disturbance voltage	Met Class A / PASS
EN 61 000-3-2: 2000	Harmonics on AC Mains	Met
EN 61 000-3-3: 1995 + A1: 2001	Voltage Fluctuations on AC Mains	Met

Note: The margin to the limit is within the uncertainty interval of the measured value.

2.2 Additions, deviations, exclusions from standards

No additions, deviations or exclusions have been made from standard.

2.3 Purpose of the test

To determine whether the equipment under test fulfills the EMC-emission requirements of the standards stated in section 2.1.



3. EUT (Equipment Under Test)

3.1 Identification of EUT

- . Equipment : Video Server
- . Model Name : NetSafe-VS3001(W)
- . Brand Name : N/A
- . Serial number : N/A
- . Electrical Rating : Input: AC 100-240V, 47-63Hz, 0.4A, Output: DC 5V, 2.4A
- . Manufacturer : Win4NET Co., Ltd.

3.2 Additional information about the EUT

The Win4NET Co., Ltd., Model NetSafe-VS3001(W) (referred to as the EUT in this report) is a Video Server. Product specification described herein was obtained from product data sheet or user's manual.

CHASSIS TYPE	Metal
LIST OF EACH OSC. OR CRY. FREQ.(FREQ.>=1MHz)	CPU Board: 32.768 KHz, 24 MHz, 25 MHz, 33.333 MHz MPEG Board : 2.048 MHz, 24.576 MHz, 28.75 MHz
NUMBER OF LAYERS	4 Layers : MPEG Board 6 Layers : CPU Board
EXTERNAL CONNECTOR	DC Inlet, RJ45, RS485, DI/DO, Sensor, Video In/Out, Audio In/Out, Remote, USB

3.3 Peripheral equipment

Defined as equipment needed for correct operation of the EUT, but not considered as tested:

Model	Manufacturer	Description	Connected to
NetSafe-VS3001(W)	Win4NET Co., Ltd.	Video Server (EUT)	-
PM-K5	IKEGAMI	CCTV Monitor	EUT
WSD-7425D	N/A	PTZ Camera	EUT
ESB880SW	SDT	Corded HUB	EUT
WL-525	3COM	Corded-Cordless HUB	Corded HUB
N/A	N/A	Speaker	EUT
PP05LC	DELL Computer Corp.	Notebook PC	EUT
PA-1650-05DK	LITEON Technology Corp.	Adapter	Notebook PC
UP-DP10	Sony	Printer	EUT
DSA-0151D-05	DeeVan Enterprise Co., Ltd.	Adapter (for EUT)	EUT

3.4 Mode of operation during the test

-. After connecting the camera to the Video Server (EUT), the captured images were continuously displayed on the screen of the Notebook PC and CCTV monitors. Notebook PC was connected to the EUT in order to the ping test via the LAN port from remote location. And other terminals of the EUT are connected to proper peripherals and cables.

3.5 Alternative type(s)/model(s); also covered by this test report.

-. None

4. EUT MODIFICATIONS

-. None



5. MAINS TERMINAL CONTINUOUS DISTURBANCE VOLTAGE

5.1 Operating environment

Temperature : 23 °C
 Relative humidity : 42 %

5.2 Test set-up

The EUT was placed on a wooden table, 0.8 meters height above the floor. The power was fed to the EUT through a 50 ohm/ 50 uH Artificial Mains Network (AMN). The ground plane was electrically bonded to the reference ground system and all power lines were filtered from ambient measurements were made with all measuring equipment and the EUT bonded to a ground plane.

The test set-up photos are included in appendix IV.

5.3 Measurement uncertainty

Conducted emission, quasi-peak detection : ± 2.9 dB
 Conducted emission, average detection : ± 2.9 dB

Measurement uncertainty is calculated in accordance with WECC 19-1990. The measurement uncertainty is given with a confidence of 95% with the coverage factor, k=2.

5.4 Test equipment used

Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ - ESHS10	Rohde & Schwarz	EMI Test Receiver	834467/007	May 19, 2005
■ - NSLK 8126	Schwarzbeck	AMN	8126-404	July 18, 2005
■ - 3825/2	EMCO	AMN	9109-1869	July 18, 2005

All test equipment used is calibrated on a regular basis.

5.5 Test data

- . Test Date : September 23, 2005
- . Resolution bandwidth : 9 kHz
- . Frequency range : 0.15MHz ~ 30MHz

Frequency (MHz)	Line	Peak (dBuV)		Margin (dB)
		Emission level	Q.P Limits	
0.21	H	53.44	79.00	-25.56
0.66	H	47.39	73.00	-25.61
0.67	N	48.16	73.00	-24.84
1.07	N	47.30	73.00	-25.70
1.11	H	47.31	73.00	-25.69
5.18	H	47.00	73.00	-26.00
Frequency (MHz)	Line	Average (dBuV)		Margin (dB)
		Emission level	Limits	
-				
-				

Tabulated test data for Mains Terminal Continuous Disturbance Voltage

Remark : "H": Hot Line, "N": Neutral line

Average mode was not measured, because peak values were under the Average limit.

See Appendix I for an overview sweep performed with peak detector.



Tested by: Dong-Yub, Lee / Test Engineer

6. RADIATED ELECTROMAGNETIC FIELD

6.1 Operating environment

Temperature : 23 °C
Relative humidity : 47 %

6.2 Test set-up

The radiated emissions measurements were on the ten-meter, open-field test site. The EUT was placed on a non-conductive turntable approximately 0.8 meters above the ground plane.

The frequency spectrum from 30MHz to 1000MHz was scanned and maximum emission levels at each frequency recorded. The system was rotated 360°, and the antenna was varied in height between 1.0 and 4.0 meters in order to determine the maximum emission levels. This procedure was performed for both horizontal and vertical polarization of the receiving antenna.

The test set-up photos are included in appendix V.

6.3 Measurement uncertainty

Radiated emission electric field intensity, 30 MHz ~ 200 MHz : ± 4.4 dB

Radiated emission electric field intensity, 200 MHz ~ 1000 MHz : ± 3.9 dB

Measurement uncertainty is calculated in accordance with WECC 19-1990. The measurement uncertainty is given with a confidence of 95% with the coverage factor, k=2.

6.4 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ -	ESVS10	Rohde & Schwarz	EMI Test Receiver	827864/005	Dec 14, 2004
■ -	8574B	HP	Quasi-Peak Adapter	2811A01432	Apr 13, 2005
■ -	85680B	HP	Spectrum Analyzer	3001A04955	Apr 13, 2005
■ -	85685A	HP	RF Preselector	3107A01268	Apr 13, 2005
□ -	VULB9163	Schwarzbeck	TRILOG Broadband Antenna	VULB9163-202	June 14, 2004
■ -	VHA9103	Schwarzbeck	Biconical Antenna	91031852	Jan 31, 2005
■ -	9108-A(494)	Schwarzbeck	Log Periodic Antenna	62281001	Feb. 02, 2005

All test equipment used is calibrated on a regular basis.



6.5 Test data

- Test Date : October 18, 2005
- Resolution bandwidth : 120 kHz
- Frequency range : 30MHz ~ 1000MHz
- Measurement distance : 10m

Frequency (MHz)	Reading (dBuV)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBuV/m)	Limits (dBuV/m)	Margin (dB)	
71.97	18.90	P	H	5.76	1.54	26.20	40.00	-13.80
119.96	21.20	Q.P	H	12.95	2.00	36.15	40.00	-3.85
344.70	14.50	P	H	14.28	4.16	32.94	47.00	-14.06
431.40	12.20	P	H	16.28	4.46	32.94	47.00	-14.06
444.30	11.50	P	H	16.62	4.49	32.61	47.00	-14.39
574.50	9.70	P	H	18.56	5.30	33.56	47.00	-13.44
688.80	17.32	Q.P	H	20.26	6.24	43.82	47.00	-3.18
748.80	11.40	P	H	21.25	6.89	39.54	47.00	-7.46
804.00	11.40	P	V	20.55	7.19	39.14	47.00	-7.86
898.80	8.90	P	V	22.93	7.10	38.93	47.00	-8.07
920.00	14.70	Q.P	V	22.79	7.54	45.03	47.00	-1.97

Tabulated test data for Radiated Electromagnetic Field

Remark: "H": Horizontal, "V": Vertical, "P": Peak Detector mode, "Q.P": Quasi-Peak Detector mode

In Case any frequency has margin less than measurement uncertainty, it may be exceeded restriction limits by the environment condition.

Tested by: Dong-Yub, Lee / Test Engineer



7. HARMONICS ON AC MAINS

7.1 Operating environment

Temperature : 20 °C
 Relative humidity : 39 %

7.2 Test set-up

Harmonics of the fundamental current were measured up to 2 kHz using a universal power analyzer. The measurements were carried out under steady conditions and using average.

Before making measurements, it is necessary for the EUT to decide which class the EUT fulfills into; A, B, C or D.

The test set-up photo is included in appendix VI.

7.3 Measurement uncertainty

The uncertainty of our equipments for harmonic measurement is $\pm 0.2\%$.

Measurement uncertainty is calculated in accordance with WECC 19-1990. The measurement uncertainty is given with a confidence of 95% with the coverage factor, $k=2$.

7.4 Test equipment used

Model Number	Manufacturer	Description	Serial Number	Last Cal.
□ - IEC 555	Voltech	Reference Impedance Network	IB13/9886	N/A
■ - PM3000A	Voltech	Universal Power Analyzer	AH14/0503	July 18, 2005
■ - 134310	Pacific Power	Magnetics Module	0283	N/A
■ - 360AMXT/UPC-32	Pacific Power	AC Power Source	0222	N/A

All test equipment used is calibrated on a regular basis.

7.5 Test data

- Test Date : October 17, 2005
 - Class : A
 - Test Result : Pass
 - Remarks : The input power of the EUT is lower than 75 W.
 According to the cause 7 in EN61000-3-2: 2000, no limit applies for the EUT.
 See Appendix II for Harmonics on AC Mains test data.

Tested by: Dong-Yub, Lee / Test Engineer

8. VOLTAGE FLUCTUATIONS ON AC MAINS

8.1 Operating environment

Temperature : 20 °C
Relative humidity : 39 %

8.2 Test set-up

The voltage changes at the supply terminals were measured across the complex reference impedance $Z = 0.4 + j0.25\text{ohm}$. The short-term flicker values are measured during a time interval of 10 minutes. D_c = relative voltage change between two steady states and D_{\max} = maximum single voltage change, are measured over the reference impedance.

The test set-up photo is included in appendix VI.

8.3 Measurement uncertainty

The uncertainty of our equipment for flicker measurement is $\pm 5\%$.

Measurement uncertainty is calculated in accordance with WECC 19-1990. The measurement uncertainty is given with a confidence of 95% with the coverage factor, $k=2$.

8.4 Test equipment used

Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ - IEC 555	Voltech	Reference Impedance Network	IB13/9886	N/A
■ - PM3000A	Voltech	Universal Power Analyzer	AH14/0503	July 18, 2005
■ - 134310	Pacific Power	Magnetics Module	0283	N/A
■ - 360AMXT/UPC-32	Pacific Power	AC Power Source	0222	N/A

All test equipment used is calibrated on a regular basis.

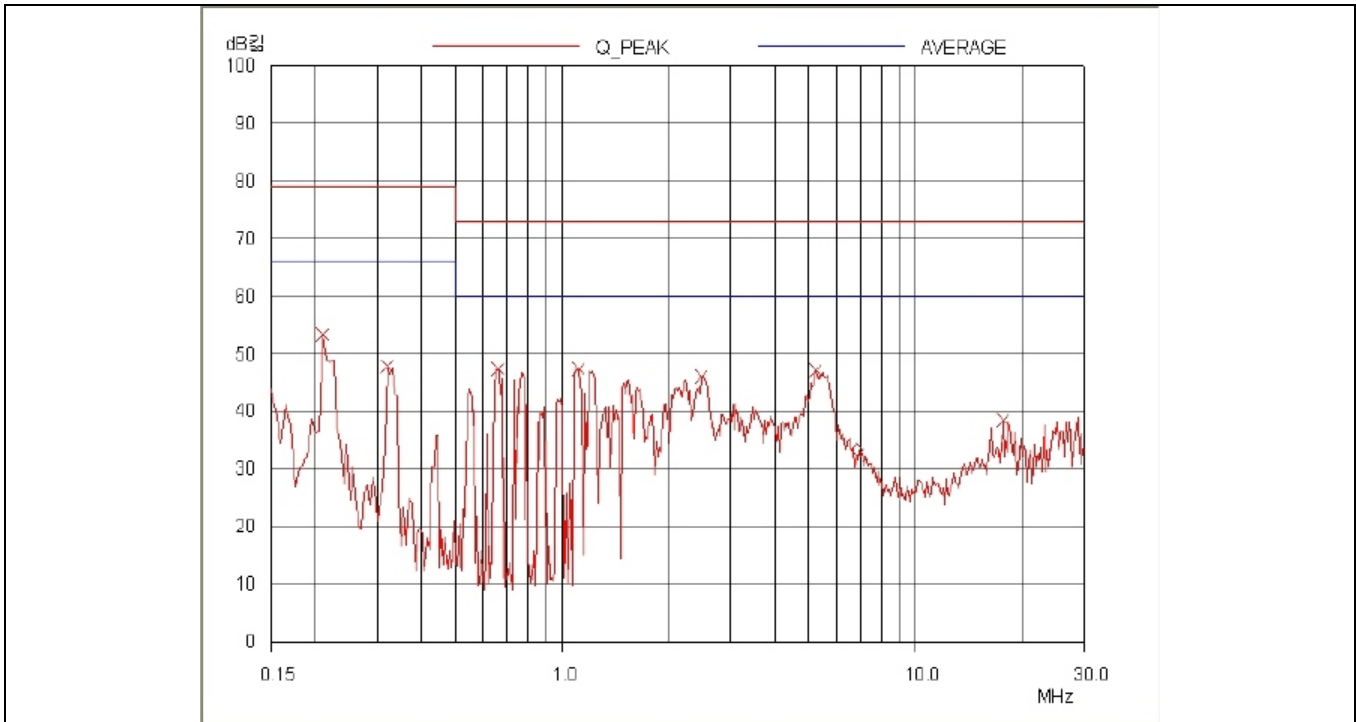
8.5 Test data

-. Test Date : October 17, 2005
-. Test Result : Pass
-. Remark : "See Appendix III for Voltage Fluctuations on AC mains test data."

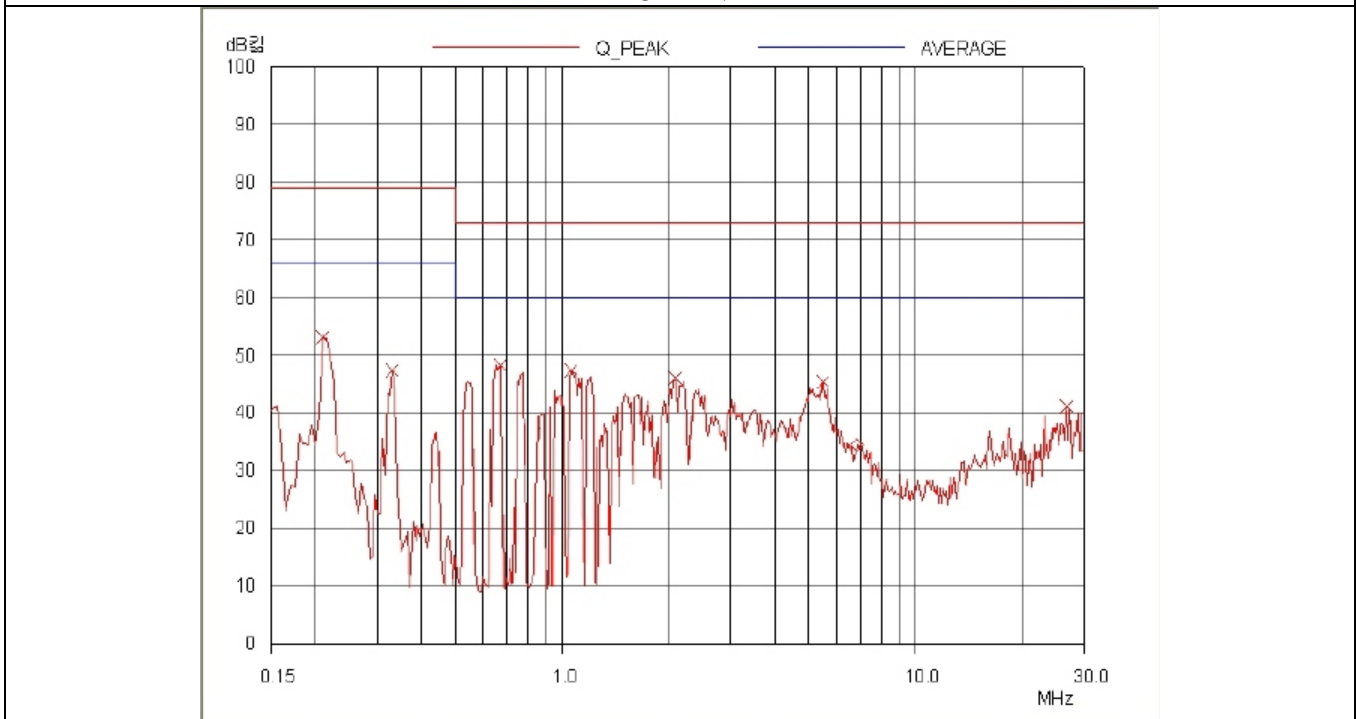


Tested by: Dong-Yub, Lee / Test Engineer

APPENDIX I - Mains Terminal Continuous Disturbance Voltage Test Data



HOT LINE



NEUTRAL LINE

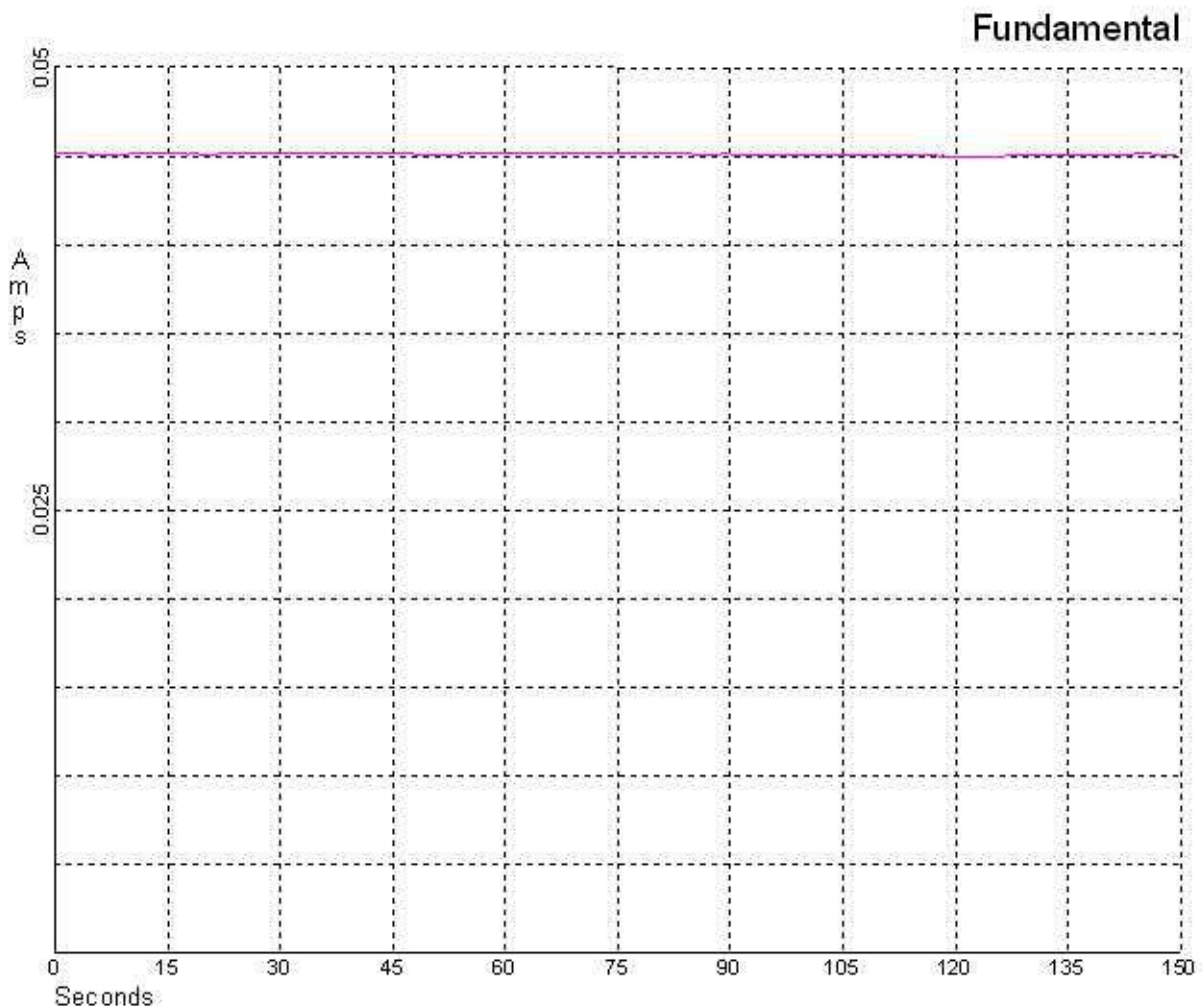


APPENDIX II - Harmonics on AC Mains Test Data

Product: NetSafe-VS3001(W)		2005 Oct 18 5:50pm
Serial no:		Page 1 of 1
Description:		
Test Date:		2005 Oct 17 2:14am
Result Name:		NetSafe-VS3001(W)
Type of Test: EN61000:2001 Harmonics		
Limits: Class A		
Power Analyzer: Voltech PM3000A v1.71 s/n 2200		
AC Source: Mains / Manual Source		
Overall Result:	Notes:	
PASS		
Test Parameter Details	User Entered	Measured
Operating Frequency:	50	50.0029
Operating Voltage:	230	230.4000
Specified Power:	0.0000	9.2886
Fundamental Current:	0.0000	0.0452
Power Factor:	0.0000	0.4072
Average Input Current:		0.0156
Maximum POHC:		0.0062
POHC Limit:		0.0779
Maximum THC:		0.0142
Minimum Power:	75	
Class Multiplier:	1.0000	
Test Duration:	00:02:30	



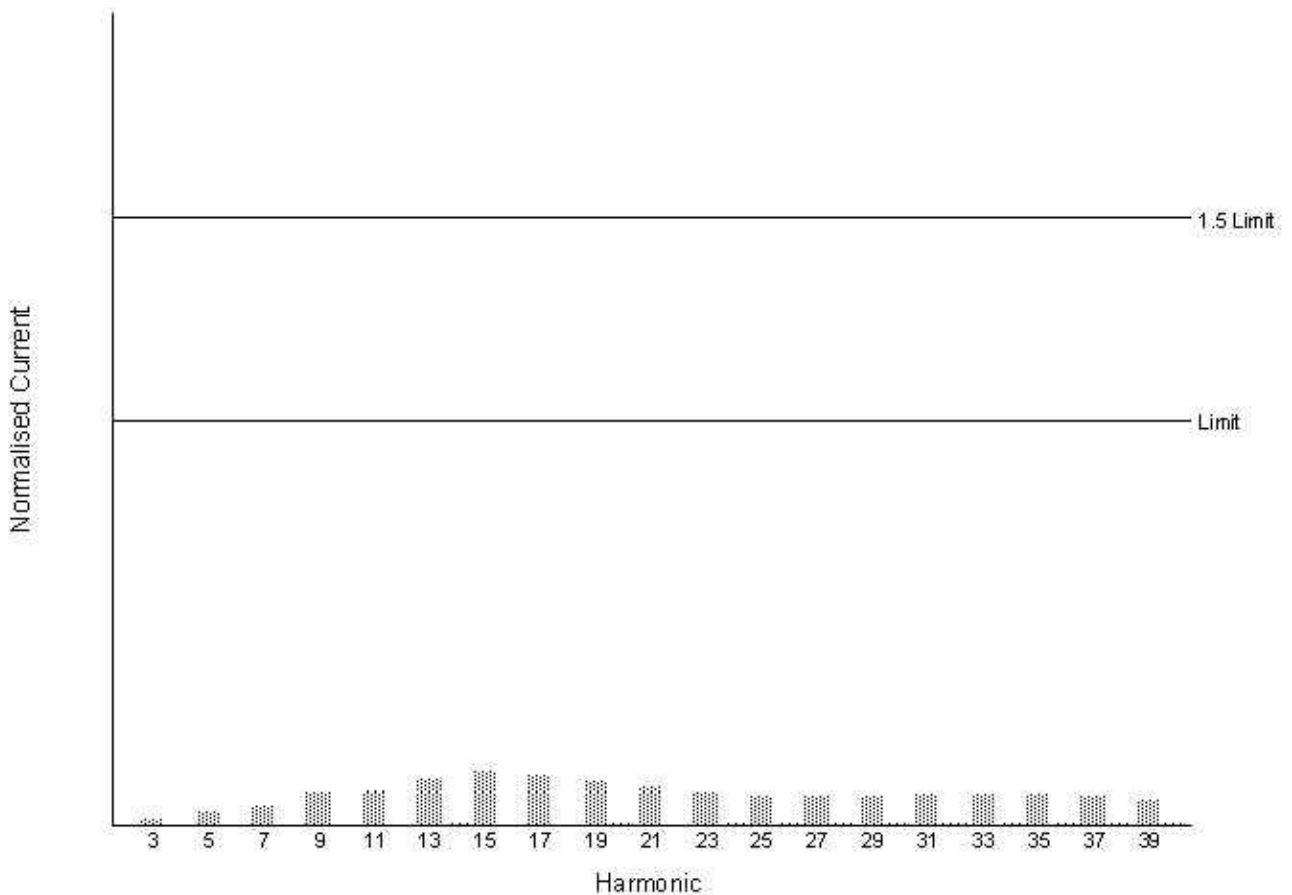
Product:	NetSafe-VS3001(W)	2005 Oct 18 5:51pm
Serial no:		Page 1 of 1
Description:		
Result Name:	NetSafe-VS3001(W)	
Voltech IEC1000-3 Windows Software 3.01.03		Test Date: 2005 Oct 17 2:14 am
Type of Test:	Fluctuating Harmonics Test - Single Harmonic Plot (2001)	
Power Analyzer:	Voltech PM3000A v1.71 s/n 2200	
AC Source:	Mains / Manual Source	
Overall Result:		
	PASS	





Product:	NetSafe-VS3001 (W)	2005 Oct 18 5:52pm
Serial no:		Page 1 of 1
Description:		
Result Name:	NetSafe-VS3001 (W)	
Voltech IEC1000-3 Windows Software 3.01.03		Test Date: 2005 Oct 17 2:14am
Type of Test:	Fluctuating Harmonics Test - Normalised Worst Case Bar Chart (2001)	
Power Analyzer:	Voltech PM3000A v1.71 s/n 2200	
AC Source:	Mains / Manual Source	
Overall Result:	PASS	

Class	Class A
Class Multiplier	1





Product: NetSafe-VS3001(W)	2005 Oct 18 5:52pm
Serial no:	Page 1 of 1
Description:	
Result Name: NetSafe-VS3001(W)	
Voltech IEC1000-3 Windows Software 3.01.03	Test Date: 2005 Oct 17 2:14 am
Type of Test: Fluctuating Harmonics Test - Source Qualification (2001)	
Power Analyzer: Voltech PM3000A v1.71 s/n 2200	
AC Source: Mains / Manual Source	
Overall Result:	
PASS	

	Nominal	Measured	Deviation	Allowed Deviation	Result
Supply Voltage	230.00V	230.40V	0.40V	4.60V	Pass
Supply Frequency	50.00Hz	50.00Hz	0.00Hz	0.25Hz	Pass

Harmonic	Reading	Limit	Result	Harmonic	Reading	Limit	Result
2	0.01%	0.20%	Pass	3	0.01%	0.90%	Pass
4	0.01%	0.20%	Pass	5	0.01%	0.40%	Pass
6	0.01%	0.20%	Pass	7	0.01%	0.30%	Pass
8	0.01%	0.20%	Pass	9	0.01%	0.20%	Pass
10	0.01%	0.20%	Pass	11	0.01%	0.10%	Pass
12	0.01%	0.10%	Pass	13	0.01%	0.10%	Pass
14	0.01%	0.10%	Pass	15	0.01%	0.10%	Pass
16	0.01%	0.10%	Pass	17	0.01%	0.10%	Pass
18	0.02%	0.10%	Pass	19	0.01%	0.10%	Pass
20	0.01%	0.10%	Pass	21	0.01%	0.10%	Pass
22	0.01%	0.10%	Pass	23	0.01%	0.10%	Pass
24	0.01%	0.10%	Pass	25	0.01%	0.10%	Pass
26	0.01%	0.10%	Pass	27	0.01%	0.10%	Pass
28	0.01%	0.10%	Pass	29	0.01%	0.10%	Pass
30	0.01%	0.10%	Pass	31	0.01%	0.10%	Pass
32	0.01%	0.10%	Pass	33	0.01%	0.10%	Pass
34	0.01%	0.10%	Pass	35	0.01%	0.10%	Pass
36	0.01%	0.10%	Pass	37	0.01%	0.10%	Pass
38	0.01%	0.10%	Pass	39	0.01%	0.10%	Pass
40	0.01%	0.10%	Pass				



Product: NetSafe-VS3001(W)	2005 Oct 18 5:53pm
Serial no:	Page 1 of 1
Description:	
Result Name: NetSafe-VS3001(W)	
Voltech IEC1000-3 Windows Software 3.01.03	Test Date: 2005 Oct 17 2:14am
Type of Test: Fluctuating Harmonics Test - Worst Case Table (2001)	
Power Analyzer: Voltech PM3000A v1.71 s/n 2200	
AC Source: Mains / Manual Source	
Overall Result:	
PASS	

Class	Class A
Class Multiplier	1

Harm	Limit 1	Limit 2	Average Reading	<L1 <L2	Max Reading	<L2	Pass/FAIL	Harm	Limit 1	Limit 2	Average Reading	<L1 <L2	Max Reading	<L2	Pass/FAIL
2	1.08A	1.62A	0.16mA	✓ ✓	0.30mA	✓	N/A	3	2.30A	3.45A	39.42mA	✓ ✓	39.47mA	✓	Pass
4	430.00mA	645.00mA	0.23mA	✓ ✓	0.35mA	✓	N/A	5	1.14A	1.71A	37.66mA	✓ ✓	37.61mA	✓	Pass
6	300.00mA	450.00mA	0.23mA	✓ ✓	0.35mA	✓	N/A	7	770.00mA	1.15A	34.98mA	✓ ✓	35.02mA	✓	Pass
8	230.00mA	345.00mA	0.26mA	✓ ✓	0.38mA	✓	N/A	9	400.00mA	600.00mA	31.70mA	✓ ✓	31.76mA	✓	Pass
10	184.00mA	276.00mA	0.29mA	✓ ✓	0.41mA	✓	N/A	11	330.00mA	495.00mA	28.05mA	✓ ✓	28.13mA	✓	Pass
12	153.33mA	153.33mA	0.26mA	✓ ✓	0.37mA	✓	N/A	13	210.00mA	315.00mA	24.14mA	✓ ✓	24.24mA	✓	Pass
14	131.43mA	131.43mA	0.30mA	✓ ✓	0.41mA	✓	N/A	15	150.00mA	225.00mA	20.15mA	✓ ✓	20.28mA	✓	Pass
16	115.00mA	115.00mA	0.24mA	✓ ✓	0.35mA	✓	N/A	17	132.35mA	198.53mA	16.31mA	✓ ✓	16.45mA	✓	Pass
18	102.22mA	102.22mA	0.21mA	✓ ✓	0.31mA	✓	N/A	19	118.42mA	177.63mA	12.75mA	✓ ✓	12.91mA	✓	Pass
20	92.00mA	92.00mA	0.20mA	✓ ✓	0.29mA	✓	N/A	21	107.14mA	107.14mA	9.86mA	✓ ✓	10.00mA	✓	Pass
22	83.64mA	83.64mA	0.15mA	✓ ✓	0.23mA	✓	N/A	23	97.83mA	97.83mA	7.69mA	✓ ✓	7.82mA	✓	Pass
24	76.67mA	76.67mA	0.17mA	✓ ✓	0.25mA	✓	N/A	25	90.00mA	90.00mA	6.44mA	✓ ✓	6.55mA	✓	Pass
26	70.77mA	70.77mA	0.14mA	✓ ✓	0.22mA	✓	N/A	27	83.33mA	83.33mA	5.91mA	✓ ✓	5.99mA	✓	Pass
28	65.71mA	65.71mA	0.13mA	✓ ✓	0.20mA	✓	N/A	29	77.59mA	77.59mA	5.69mA	✓ ✓	5.76mA	✓	Pass
30	61.33mA	61.33mA	0.17mA	✓ ✓	0.24mA	✓	N/A	31	72.58mA	72.58mA	5.58mA	✓ ✓	5.64mA	✓	Pass
32	57.50mA	57.50mA	0.13mA	✓ ✓	0.21mA	✓	N/A	33	68.18mA	68.18mA	5.27mA	✓ ✓	5.33mA	✓	Pass
34	54.12mA	54.12mA	0.16mA	✓ ✓	0.23mA	✓	N/A	35	64.29mA	64.29mA	4.79mA	✓ ✓	4.85mA	✓	N/A
36	51.11mA	51.11mA	0.14mA	✓ ✓	0.21mA	✓	N/A	37	60.81mA	60.81mA	4.16mA	✓ ✓	4.24mA	✓	N/A
38	48.42mA	48.42mA	0.12mA	✓ ✓	0.19mA	✓	N/A	39	57.69mA	57.69mA	3.42mA	✓ ✓	3.49mA	✓	N/A
40	46.00mA	46.00mA	0.14mA	✓ ✓	0.20mA	✓	N/A								

<L1 : Reading is below limit 1.

<L2 : Reading is below limit 2.

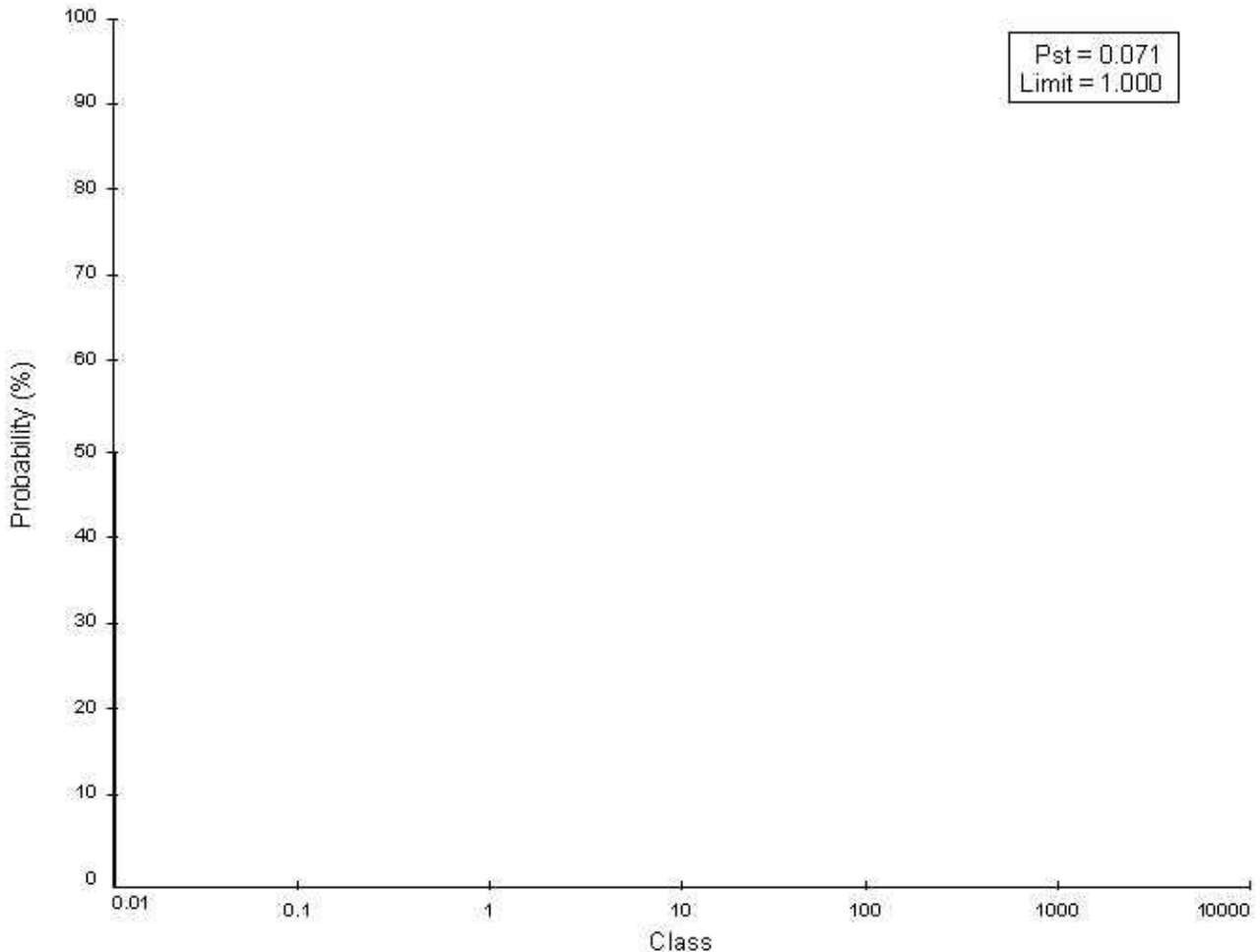
N/A : Harmonic current below 0.6% of rated current or 5mA, whichever is greater, are disregarded.



APPENDIX III - Voltage Fluctuations on AC Mains Test Data

Product: NetSafe-VS3001(W)	2005 Oct 18 5:54pm
Serial no:	Page 1 of 1
Description:	
Result Name: NetSafe-VS3001(W)	
Voltech IEC1000-3 Windows Software 3.01.03	Test Date: 2005 Oct 17 2:18am
Type of Test: Flickermeter Test - Pst Curve	
Power Analyzer: Voltech PM3000A v1.71 s/n 2200	
AC Source: Mains / Manual Source	
Overall Result: PASS	Notes: Measurement method - Voltage

Pst Curve 1





Product:	NetSafe-VS3001(W)	2005 Oct 18 5:54pm
Serial no:		Page 1 of 1
Description:		
Result Name:	NetSafe-VS3001(W)	
Voltech IEC1000-3 Windows Software 3.01.03		Test Date: 2005 Oct 17 2:18am
Type of Test:	Flickermeter Test - Table	
Power Analyzer:	Voltech PM3000A v1.71 s/n 2200	
AC Source:	Mains / Manual Source	
Overall Result:	Notes:	
PASS	Measurement method - Voltage	

	Pst	dc (%)	dmax (%)	d(t) > 3%(ms)
Limit	1.000	3.300	4.000	500
Reading 1	0.071	0.024	0.046	0

APPENDIX IV - TEST SET-UP PHOTOS: (Mains Terminal Continuous Disturbance Voltage)



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APPENDIX V - TEST SET-UP PHOTOS: (Radiated Electromagnetic Field)



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APPENDIX VI - TEST SET-UP PHOTO: (Harmonics & Voltage Fluctuations on AC Mains)

