Electronic Ballast Tester
(WT5000)

Brochure

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Leader in Lighting & Electrical Test Instruments

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Introduction

WT5000 Integrated Tester for electronic ballast display parameters and curve via super-large LCD screen without computer. It takes all the technical characteristics and parameters, expanding analysis for envelope wave and testing for single wave of hi-frequency are newly added function. Fully meet the input, output performance measurement requirement for electronic ballast according to IEC60929, IEC60969, IEC61000-3-2, GB/T15144-93, GB/T17263-1998, and other standards.

WT5000 uses the advanced 12 digital A/D converter with ultra-high speed, sampling speed reaches as high as 10MHz. It offers a better tool for technician to research the ballast's mechanism and to undertake the reliability analysis by testing single wave with high frequency.

WT5000 uses the super-large LCD screen to display the parameters and curve; it is convenient and suitable for technology development, spot testing and business communication. WT5000 can print data and communicate with PC, displaying all the dates and curves in PC

● Technical Parameters

1. Characteristics

(1) Super-large color LCD screen for displaying parameters and curve, convenient for comparison, analysis and business communication;
(2) Frequency response for testing input current up to 1MHz, suitable for precise testing of various kind of electronic ballast;
(3) Symmetry analysis for envelope wave's crest factor of lamp current;
(4) Sampling at ultra-high speed, dynamic analysis single frequency curve, highest sampling frequency is up to 10MHz.
(5) Portable with built-in chip micro-processor, particular suitable for development and spot production;
(6) Parameters, waves and curves can be printed;
(7) Communicating with PC via RS-232, special software provided and both Chinese version and English version are available. Run in Windows 98, Windows 2000 and Window XP with nice interface and easy to operate
(8) Expanding analysis for envelope wave.

1. Function:

2.1 Testing input parameters

a. Measuring voltage, current, power, power factor, power net frequency, total harmonic and 0-39 harmonic;
b. Range of basic wave frequency of voltage and current: 45Hz – 65Hz;
Range of narrow band: 45Hz – 5 kHz
Range of broad band: 45Hz – 1MHz
c. Voltage range: 10 – 300V (virtual value)
Range of current: NR: 0.010~1.500A (virtual value);WR: 0.010-4.500A (virtual value)
Range of power: NR: 0~450.0W;WR: 0- 999.9W
Power factor range: 0.000 – 1.000

2.2 Testing stable output parameters

a. Measuring lamp voltage, lamp current, lamp power, filament current, input cathodic current, crest factor, frequency;
b. Range of lamp voltage: 10 – 300V; Range of lamp power: NR:0.5~200.0W WR:0.5~400.0W
c. Range of lamp current, filament current, cathodic current: NR: 0.010-0.750A, WR: 0.010-1.500A

2.3 Testing output parameters during start-up

a. Test preheats time and lamp voltage, current, filament current, changing curve and data of imported cathodic current within 0 to 5s.

b. Range of lamp voltage: 10.0~800.0V
c. Range of lamp current, filament current and imported cathodic current:
NR: 0.010-0.750A, WR: 0.010-1.500A

2.4 Testing preheating energy

a. testing the filament voltage and filament current TRMS, preheat energy curves after the electronic ballast start-up 0~5second,and also calculate the start-up time and according to the filament parameters(the value of the Q,P,F)depicted the preheat energy, and compare to the actual preheat energy, qualified to judge whether or not
b. range of filament voltage: 2-30V
c. range of filament current: 10mA-1.5A
d. range of filament power: 0.1-40W
e. Range of the preheat energy: according to the filament power and the testing time.

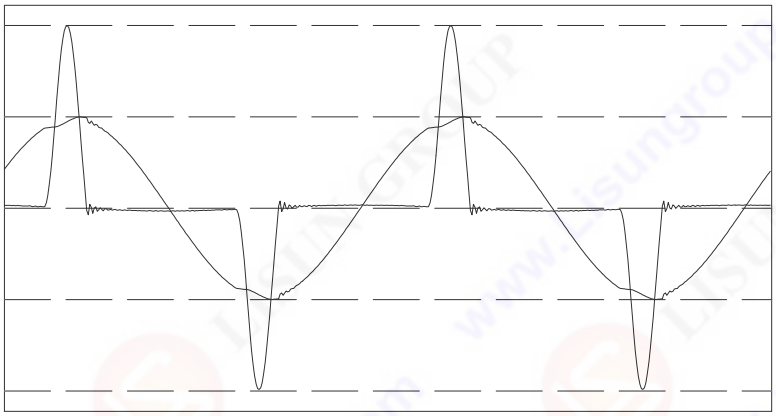
2. Specifications

Items	Test error	Testing condition
voltage	±(0.1%reading+0.1%range +1digit)	Input wave: sine wave; Input frequency: 45~65Hz; No DC component;
current		
power		
Power factor	±(0.002+0.001/reading+1digit)	
frequency	±0.1%reading	
harmonic(rms)	±(0.1%range＋5%reading)	
lamp voltage	±(1 %reading+1%range+2digit)	Input wave: sine wave; Input frequency: 45~65KHz; No DC component;
lamp current		
Import cathodic current		
Filament current		
Lamp power	±2.5%range	
frequency	±0.5%read	

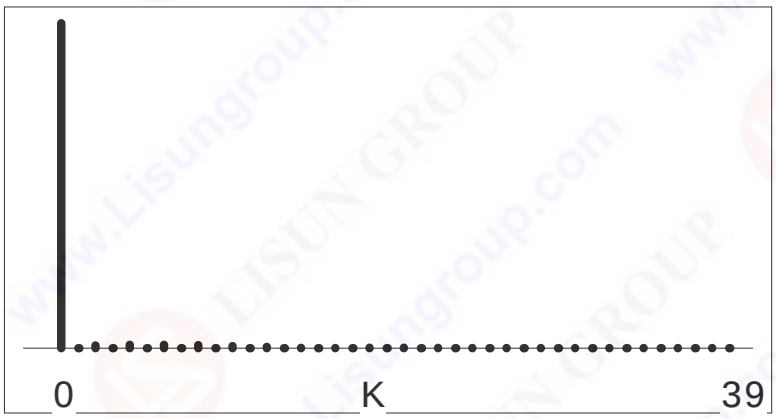
- **The Next Pages are the Test Report from WT5000**

Input Characteristics Test Report [Narrow Band]

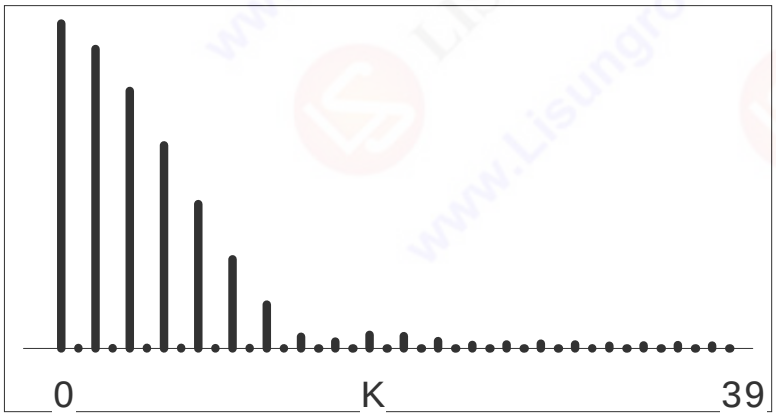
Voltage	Current	Power	Power Factor	Frequency
220.2(V)	0.696(A)	83.4(W)	0.543	50.00(Hz)



Voltage
Sensitivity: 319.33 V/Div
Peak: 319.3 V
Current
Sensitivity: 1.144 A
Peak: 2.288 A
Start Phase: 64.7°
Peak Phase: 84.4°
End Phase: 102.7°



Voltage Spectrum
THD(IEC): 2.2%
H3: 0.9%
H5: 1.0%
H7: 1.1%
H9: 0.9%



Current Spectrum
THD(IEC): 147.2%
H3: 92.2%
H5: 79.3%
H7: 62.6%
H9: 44.5%

Type:Electronic Ballast Number:10
Manufacturer:Philips Lighting Co., Ltd
Temperature:25°C Humidity:65%
Test Instrument: Lisun WT5000 Electronic Ballast Analysis System
Operator: Jacky 2010-03-04 Inspector:Herry 2010-03-04

Input Characteristics Test Report [Narrow Band] (Cont.)

Voltage: 220.2(V)
VCF: 1.45
Vthd(IEC): 2.2%

Voltage Spectrum

k	Rel.	Abs.(V)
0	0.0%	0.1
1	100.0%	220.1
2	0.0%	0.0
3	0.9%	1.9
4	0.0%	0.0
5	1.0%	2.3
6	0.0%	0.0
7	1.1%	2.3
8	0.0%	0.0
9	0.9%	2.1
10	0.0%	0.0
11	0.7%	1.5
12	0.0%	0.0
13	0.4%	0.9
14	0.0%	0.0
15	0.1%	0.2
16	0.0%	0.0
17	0.1%	0.2
18	0.0%	0.0
19	0.2%	0.4
20	0.0%	0.0
21	0.2%	0.4
22	0.0%	0.0
23	0.1%	0.3
24	0.0%	0.0
25	0.0%	0.1
26	0.0%	0.0
27	0.1%	0.2
28	0.0%	0.0
29	0.1%	0.2
30	0.0%	0.0
31	0.1%	0.2
32	0.0%	0.0
33	0.1%	0.1
34	0.0%	0.0
35	0.1%	0.1
36	0.0%	0.0
37	0.1%	0.2
38	0.0%	0.0
39	0.1%	0.1

Current: 0.696(A)
ACF: 3.29
Athd(IEC): 147.2%

Current Spectrum

k	Rel.	Abs.(A)
0	0.0%	0.005
1	0.2%	0.391
2	0.0%	0.001
3	0.2%	0.360
4	0.0%	0.001
5	0.1%	0.310
6	0.0%	0.001
7	0.1%	0.245
8	0.0%	0.001
9	0.1%	0.174
10	0.0%	0.001
11	0.0%	0.107
12	0.0%	0.001
13	0.0%	0.053
14	0.0%	0.000
15	0.0%	0.014
16	0.0%	0.000
17	0.0%	0.008
18	0.0%	0.000
19	0.0%	0.016
20	0.0%	0.000
21	0.0%	0.015
22	0.0%	0.000
23	0.0%	0.009
24	0.0%	0.000
25	0.0%	0.004
26	0.0%	0.000
27	0.0%	0.005
28	0.0%	0.000
29	0.0%	0.006
30	0.0%	0.000
31	0.0%	0.005
32	0.0%	0.000
33	0.0%	0.003
34	0.0%	0.000
35	0.0%	0.004
36	0.0%	0.000
37	0.0%	0.004
38	0.0%	0.000
39	0.0%	0.003

Type:Electronic Ballast Number:10
Manufacturer:Philips Lighting Co., Ltd
Temperature:25°C Humidity:65%
Test Instrument: Lisun WT5000 Electronic Ballast Analysis System
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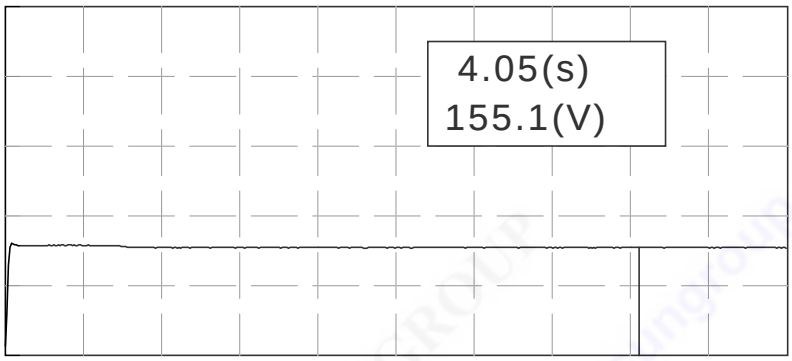
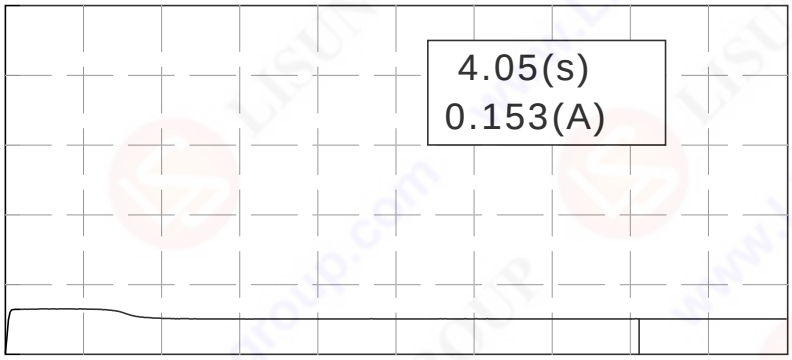
Start characteristics



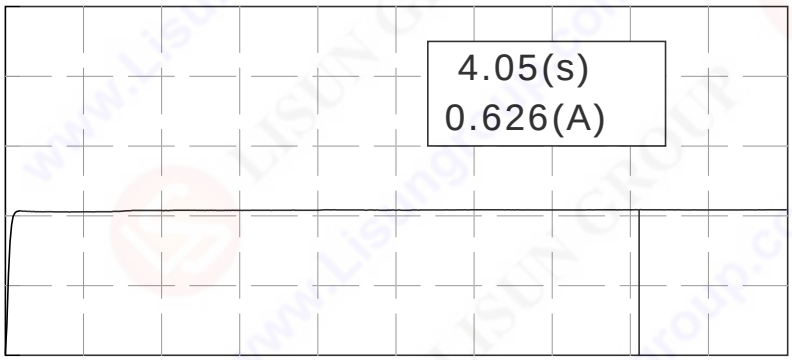
Lamp Voltage(rms)
Sensitivity: 100.00 V/Div
Peak Voltage: 161.2 V

Time
Sensitivity: 500 ms/Div
Time to peak: 0.04 s



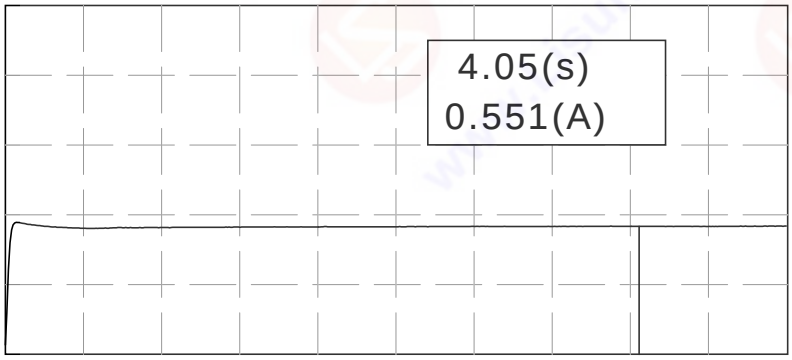
Filament Current (rms)
Sensitivity: 0.300 A/Div
Peak Current: 0.196 A

Time
Sensitivity: 500 ms/Div
Time to peak: 0.51 s



Lamp Current(rms)
Sensitivity: 0.300 A/Div
Peak Current: 0.628 A

Time
Sensitivity: 500 ms/Div
Time to peak: 4.06 s
Preheat time: 0.04s



Cathod Current(rms)
Sensitivity: 0.300 A/Div
Peak Current: 0.568A

Time
Sensitivity: 500 ms/Div
Time to peak: 0.07 s

Type:Electronic Ballast Number:10
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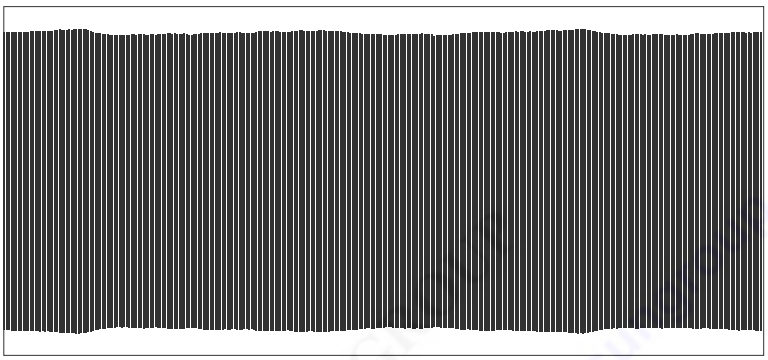
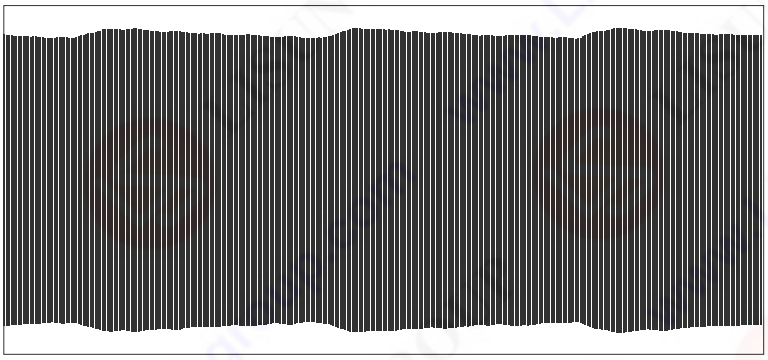
Operator: Jacky 2010-03-04 Inspector:Herry 2010-03-04

Output



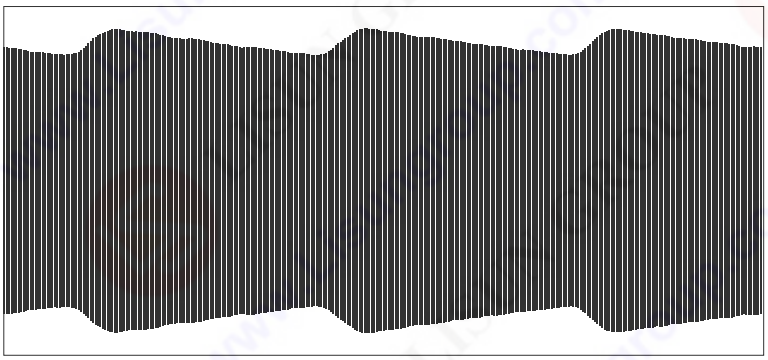
Lamp Voltage

RMS: 130.5(V)
Peak: 209.4(V)
CF: 1.60



Filament Current

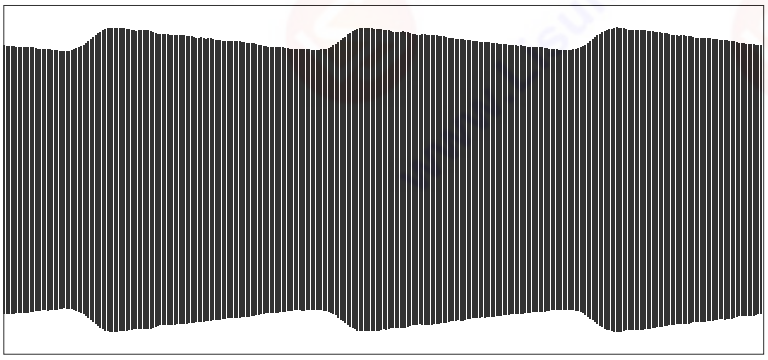
RMS: 0.138(A)
Peak: 0.298(A)
CF: 2.16



Lamp Current

RMS: 0.669(A)
Peak: 0.989(A)
CF: Positive:1.48
Negative: -3.43 DHC: 132.25%

Power: 87.4 (W)
Freq.: 36.87(kHz)



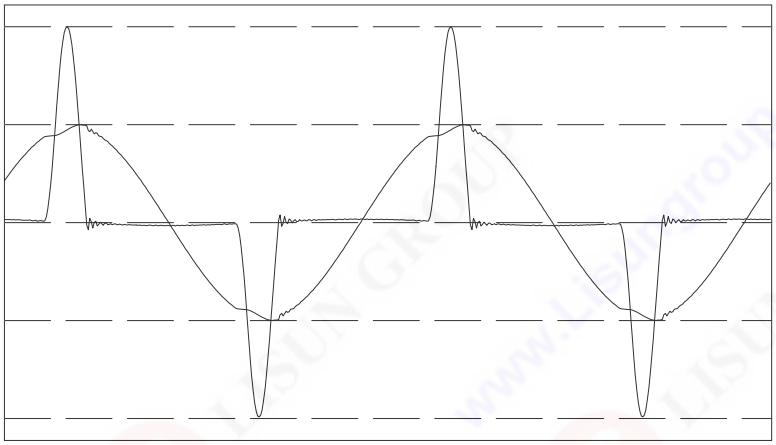
Cathod Current

RMS: 0.593(A)
Peak: 0.844(A)
CF: 1.42

Type:Electronic Ballast Number:10
Manufacturer:Philips Lighting Co., Ltd
Temperature:25°C Humidity:65%
Test Instrument: Lisun WT5000 Electronic Ballast Analysis System
Operator: Jacky 2010-03-04 Inspector:Herry 2010-03-04

Input & Output Characteristics Test Report

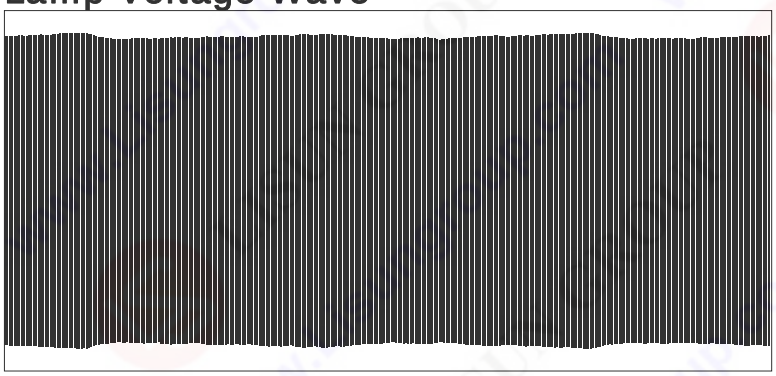
Input Characteristics Test Report [Narrow Band]



Voltage: 220.2(V)
VCF: 1.45
Vthd(IEC): 2.2%
Current: 0.696(A)
ACF: 3.29
Athd(IEC): 147.2%
Power: 83.4(W)
Power Factor: 0.543
Frequency: 50.00(Hz)

Output characteristics

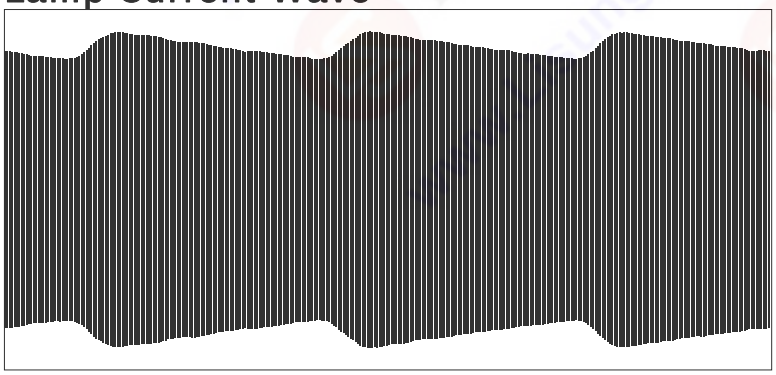
Lamp Voltage Wave



Lamp Voltage: 130.5(V)
Filament Current: 0.138(A)
Cathod Current: 0.593(A)
Lamp Current: 0.669(A)
Lamp CurrentCF: 1.48

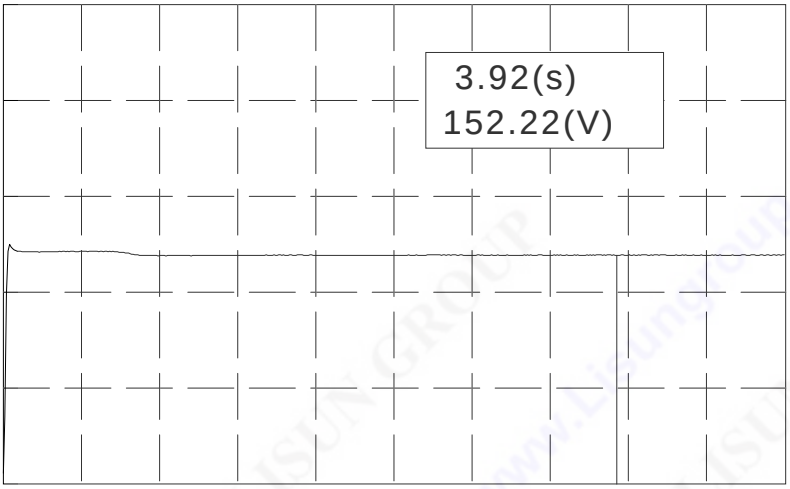
Power: 87.4 (W)
Freq.: 36.87(kHz)

Lamp Current Wave



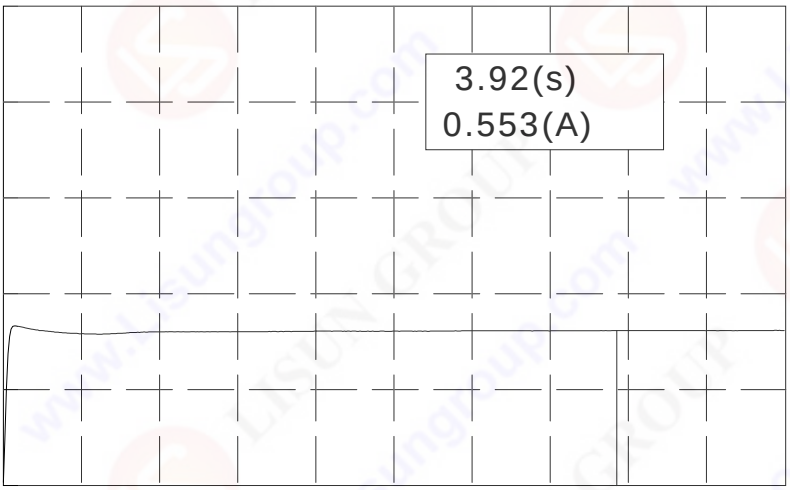
Type:Electronic Ballast Number:10
Manufacturer:Philips Lighting Co., Ltd
Temperature:25°C Humidity:65%
Test Instrument: Lisun WT5000 Electronic Ballast Analysis System
Operator: Jacky 2010-03-04 Inspector:Herry 2010-03-04

Preheat Energy



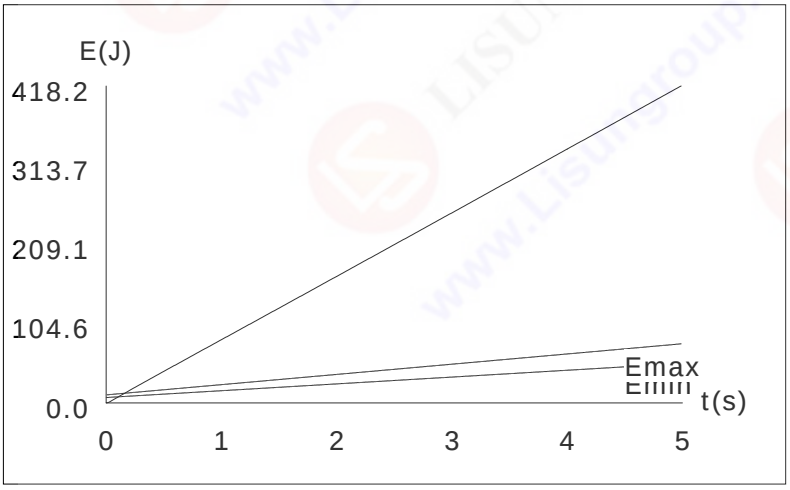
Filament Voltage (rms)
Sensitivity: 63.82 V/Div
Peak Voltage: 159.5 V

Time
Sensitivity: 500 ms/Div
Time to peak: 0.04 s



Filament Current (rms)
Sensitivity: 0.342 A/Div
Peak Current: 0.569 A

Time
Sensitivity: 500 ms/Div
Time to peak: 0.07 s



Preheat Parameter
Pre-start Time: 0.00 s
Preheat Energy: 0.00 J

Emin = Q+P*t
(Q=7.00J, P=9.00W)
Emax = F*Emin (F=1.500)

Type:Electronic Ballast Number:10
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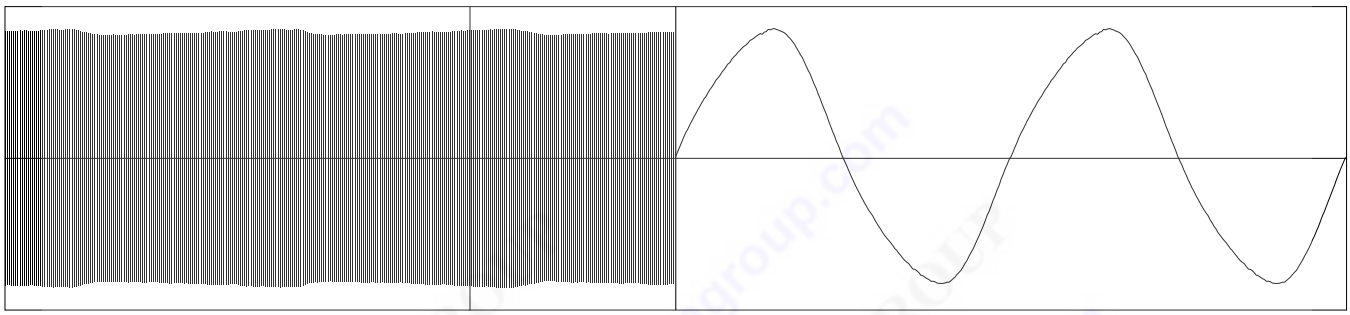
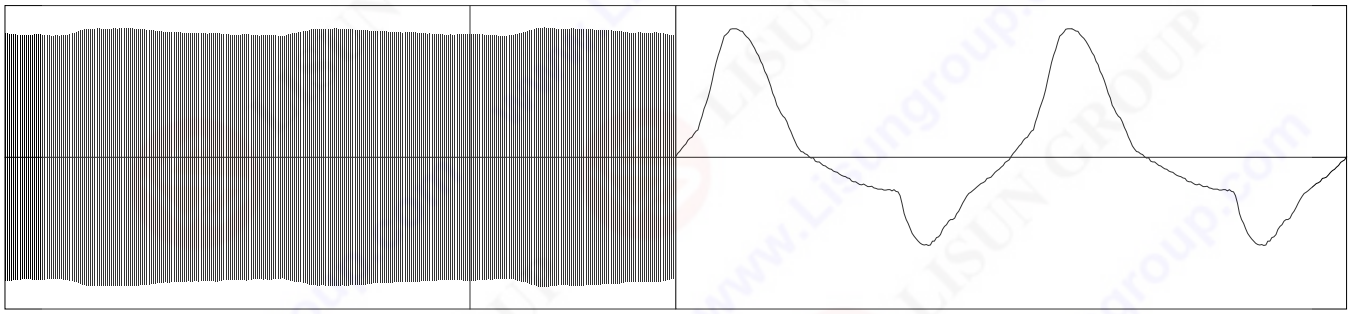
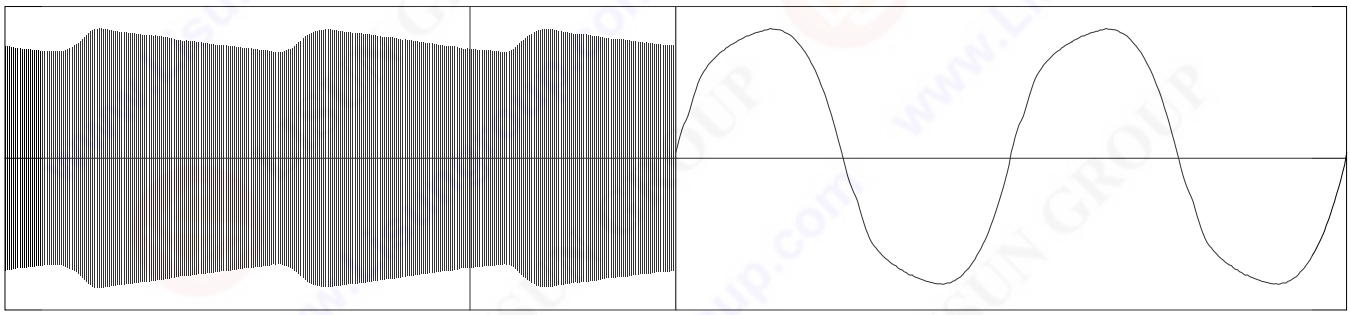
Hight Frequency Analysis Report



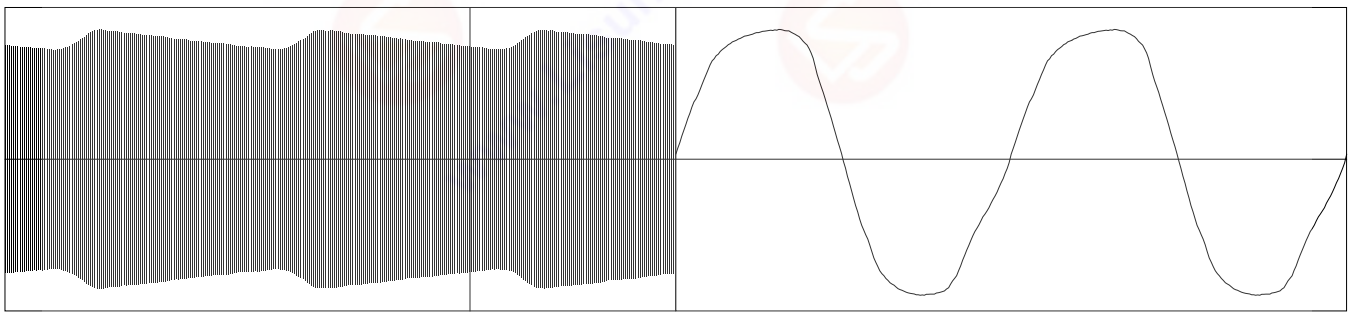
Lamp Voltage: RMS: 148.4(V) Peak: 217.5(V) CF: 1.47



Filament Current: RMS: 0.145(A) Peak: 0.312(A) CF: 2.15



Lamp Current: RMS: 0.554(A) Peak: 0.732(A) CF: 1.32



Cathod Current: RMS: 0.495(A) Peak: 0.636(A) CF: 1.286

Type:Electronic Ballast Number:10
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Temperature:25°C Humidity:65%
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Operator: Jacky 2010-03-04 Inspector:Herry 2010-03-04