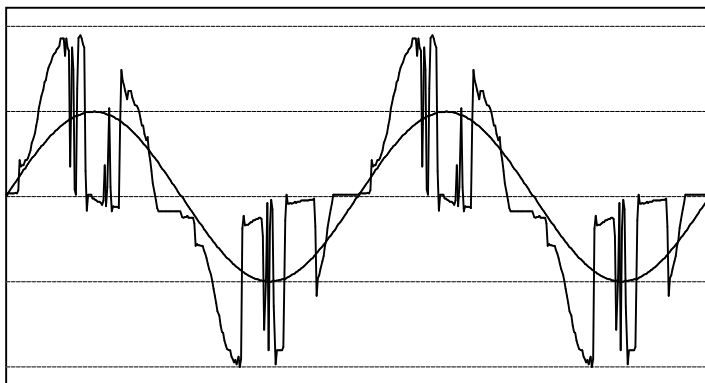


## Electronic Ballast Test Report

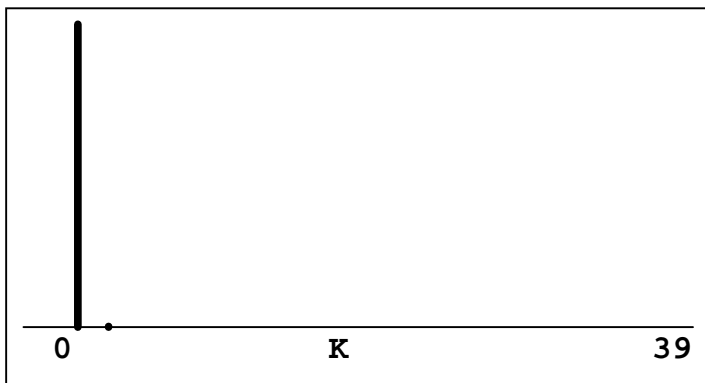
## Input Characteristics[Narrow Band](I)

Vrms	Arms	Power	PF	Freq.
224.4(V)	0.069(A)	10.97(W)	0.712	49.99(Hz)



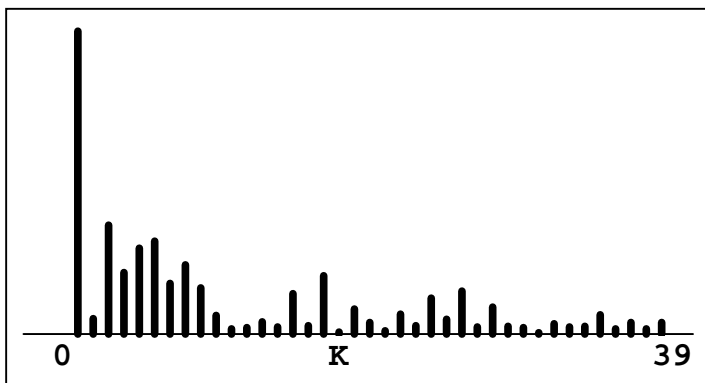
Voltage  
Sensitivity : 317.61 V/Div  
Peak Voltage: 317.6 V

Current  
Sensitivity: 0.075 A/Div  
Peak Current: 0.143 A  
Start Phase: 11.3 ~  
Peak Phase: 75.9 ~  
End Phase: 83.0 ~



Voltage Spec.

Vthd:	0.3%(IEC)
Vh3 :	0.2%
Vh5 :	0.1%
Vh7 :	0.0%
Vh9 :	0.0%



Current Spec.

Athd:	76.7%(IEC)
Ah3 :	36.0%
Ah5 :	28.4%
Ah7 :	16.8%
Ah9 :	15.4%

Test Instrument: Everfine HB-5A System

Manufacturer: Everfine

Type: M8165\_2D\_55W\_220\_MIN

Temperature: 25deg

Operator: YAGI 2009-11-23

Number: 1

Humidity: 75%

Inspector: 2009-11-23

## Electronic Ballast Test Report

## Input Characteristics[Narrow Band](II)

Vrms:224.4(V)  
 VCF :1.42  
 Vthd: 0.3%(IEC)

Arms:0.069(A)  
 Acf : 2.08  
 Athd: 76.7%(IEC)

## Voltage Spectrum

K	relat.	Vrmsk
0	0.0%	0.0
1	100.0%	224.4
2	0.0%	0.1
3	0.2%	0.5
4	0.0%	0.0
5	0.1%	0.2
6	0.0%	0.1
7	0.0%	0.1
8	0.0%	0.0
9	0.0%	0.1
10	0.0%	0.0
11	0.0%	0.0
12	0.0%	0.0
13	0.0%	0.0
14	0.0%	0.0
15	0.0%	0.0
16	0.0%	0.0
17	0.0%	0.1
18	0.0%	0.0
19	0.0%	0.1
20	0.0%	0.0
21	0.0%	0.0
22	0.0%	0.0
23	0.0%	0.0
24	0.0%	0.1
25	0.0%	0.0
26	0.0%	0.1
27	0.0%	0.0
28	0.0%	0.1
29	0.0%	0.0
30	0.0%	0.0
31	0.0%	0.0
32	0.0%	0.0
33	0.0%	0.0
34	0.0%	0.0
35	0.0%	0.0
36	0.0%	0.0
37	0.0%	0.0
38	0.0%	0.0
39	0.0%	0.1

## Current Spectrum

K	relat.	Armsk	mA/W
0	0.0%	0.000	0.00
1	100.0%	0.054	4.96
2	5.2%	0.003	0.26
3	36.0%	0.020	1.78
4	20.5%	0.011	1.01
5	28.4%	0.015	1.41
6	30.7%	0.017	1.52
7	16.8%	0.009	0.83
8	22.9%	0.012	1.14
9	15.4%	0.008	0.77
10	6.3%	0.003	0.31
11	1.9%	0.001	0.09
12	2.3%	0.001	0.11
13	4.2%	0.002	0.21
14	2.5%	0.001	0.12
15	13.4%	0.007	0.66
16	2.9%	0.002	0.15
17	19.3%	0.010	0.96
18	0.8%	0.000	0.04
19	8.4%	0.005	0.42
20	4.0%	0.002	0.20
21	1.1%	0.001	0.05
22	6.6%	0.004	0.33
23	2.8%	0.002	0.14
24	11.9%	0.006	0.59
25	5.0%	0.003	0.25
26	14.3%	0.008	0.71
27	2.3%	0.001	0.12
28	8.9%	0.005	0.44
29	2.7%	0.001	0.14
30	2.3%	0.001	0.11
31	0.6%	0.000	0.03
32	3.4%	0.002	0.17
33	2.5%	0.001	0.12
34	2.6%	0.001	0.13
35	6.4%	0.003	0.32
36	1.8%	0.001	0.09
37	3.9%	0.002	0.19
38	1.9%	0.001	0.09
39	4.0%	0.002	0.20

Test Instrument:Everfine HB-5A System

Manufacturer:Everfine

Type:M8165\_2D\_55W\_220\_MIN

Temperature:25deg

Operator: YAGI 2009-11-23

Number:1

Humidity:75%

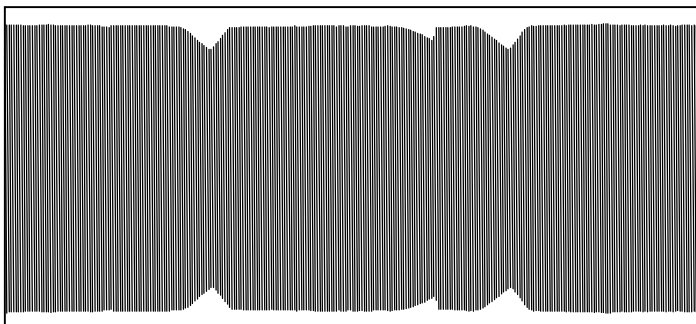
Inspector: 2009-11-23

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Electronic Ballast Test Report

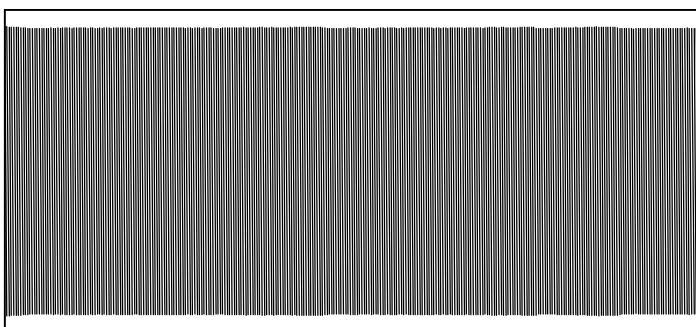
---

## Steady State Characterictics



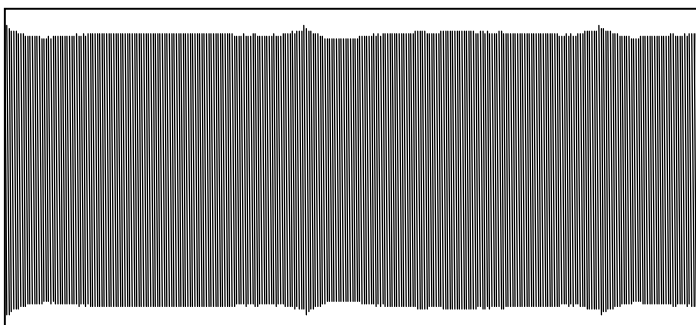
## Lamp Voltage

Vlrms : 170.3(V)  
Vlp : 293.1(V)  
Vlcf : 1.72  
Vlhfrms: 175.0(V)  
Vlcfhf : 1.67



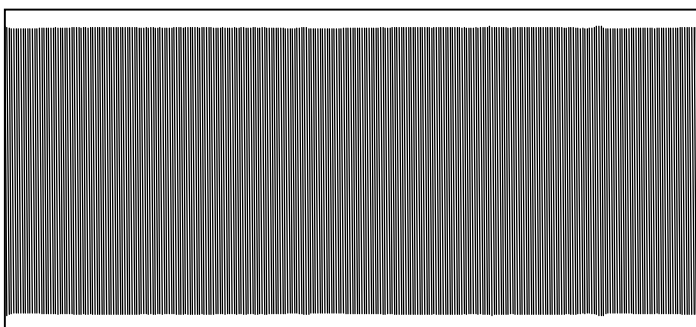
## Filament Current

Afrms : 0.303(A)  
Afp : 0.460(A)  
Afcf : 1.52  
Afrmshf: 0.305(A)  
Afcfhf : 1.51



## Lamp Current

Alrms : 0.020(A)  
Alp : 0.039(A)  
Alcf : 1.96  
Aldhc : 1.92 %  
Alrmshf: 0.021(A)  
Alcfhf : 1.85  
Pout : 3.2 (W)



## Cathode Current

Akrms : 0.319(A)  
Akp : 0.484(A)  
Akcf : 1.52  
Akrmshf: 0.322(A)  
Akcfhf : 1.50  
Freq : 100.52(kHz)

---

Test Instrument: Everfine HB-5A System

Manufacturer: Everfine

Type: M8165\_2D\_55W\_220\_MIN

Temperature: 25deg

Operator: YAGI 2009-11-23

Number: 1

Humidity: 75%

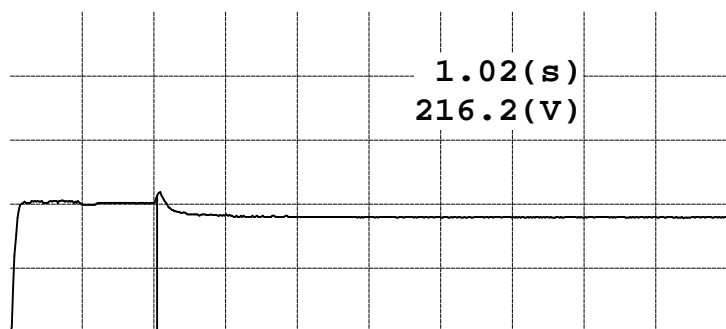
Inspector: 2009-11-23

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Electronic Ballast Test Report

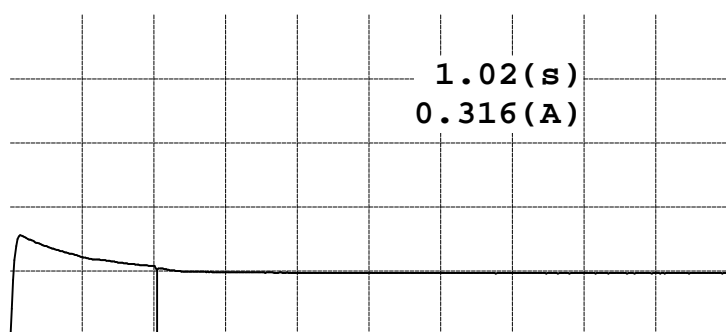
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## Start Characteristics



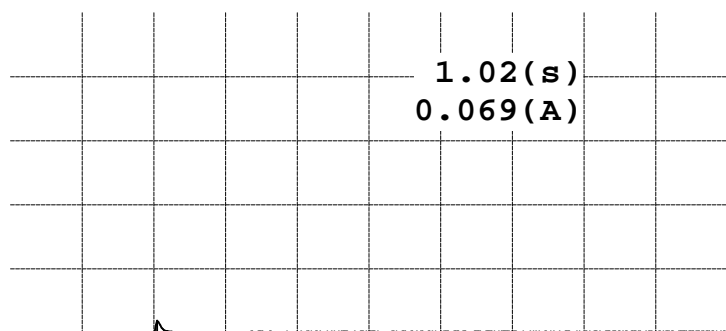
Lamp Voltage(rms)  
Sensitivity: 100.00 V/Div  
Peak Volt : 221.7 V

Time  
Sensitivity: 500 ms/Div  
Time to Vp : 1.04 s



Filament Current(rms)  
Sensitivity : 0.300 A/Div  
Peak Current: 0.477 A

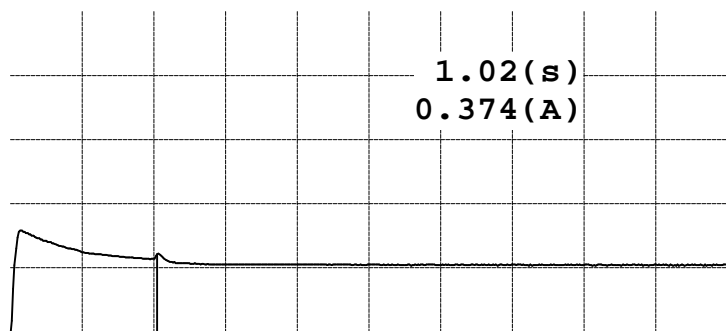
Time  
Sensitivity: 500 ms/Div  
Time To Ap : 0.07 s



Lamp Current(rms)  
Sensitivity : 0.300 A/Div  
Peak Current: 0.069 A

Time  
Sensitivity: 500 ms/Div  
Time to Ap : 1.02 s

Preheat time: 0.000 s



Cathode Current(rms)  
Sensitivity : 0.300 A/Div  
Peak Current: 0.484 A

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

---

Test Instrument: Everfine HB-5A System

Manufacturer: Everfine

Type: M8165\_2D\_55W\_220\_MIN

Temperature: 25deg

Operator: YAGI 2009-11-23

Number: 1

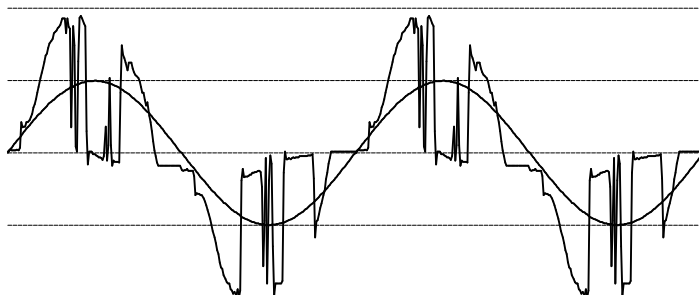
Humidity: 75%

Inspector: 2009-11-23

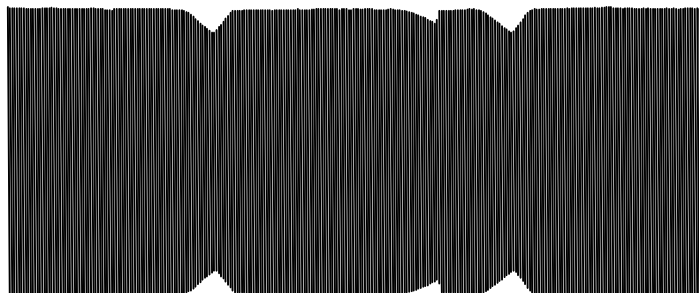
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**Electronic Ballast Test Report**

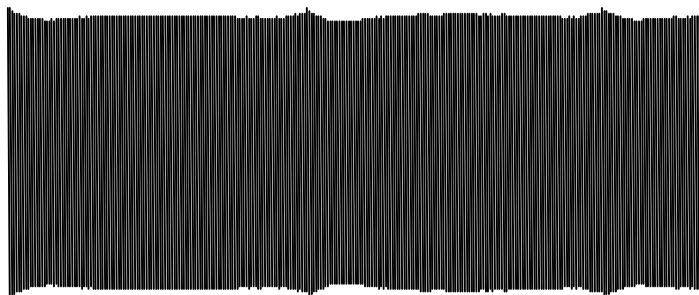
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**Input & Output Characteristics Test Report**  
**I. Input Characteristics**

Vrms : 224.4(V)  
Vp : 317.6(V)  
Vthd : 0.3%(IEC)  
Arms : 0.069(A)  
Ap : 0.143(A)  
Athd : 76.7%(IEC)  
Power: 10.97(W)  
PF : 0.712  
Freq : 49.99(Hz)

**II. Output Characteristics****Lamp Voltage Wave**

Vlrms: 170.3(V)  
Alrms: 0.020(A)  
Afrms: 0.303(A)  
Akrms: 0.319(A)  
Pout : 3.2 (W)

**Lamp Current Wave**

Freq : 100.520(kHz)  
Alcf : 1.96

---

Test Instrument: Everfine HB-5A System

Manufacturer: Everfine

Type: M8165\_2D\_55W\_220\_MIN

Temperature: 25deg

Operator: YAGI 2009-11-23

Number: 1

Humidity: 75%

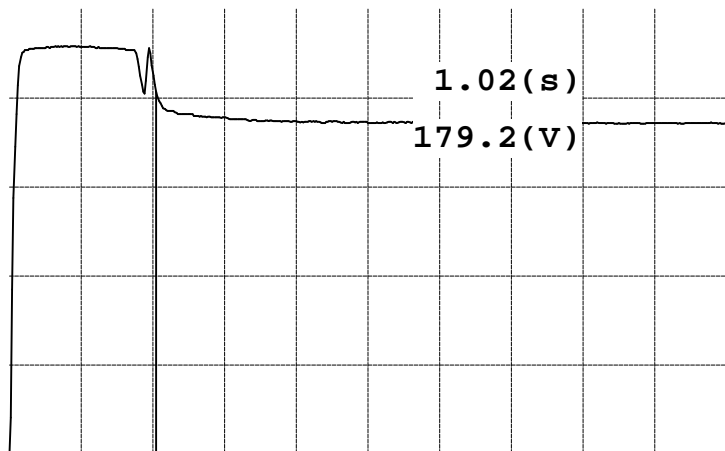
Inspector: 2009-11-23

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Electronic Ballast Test Report

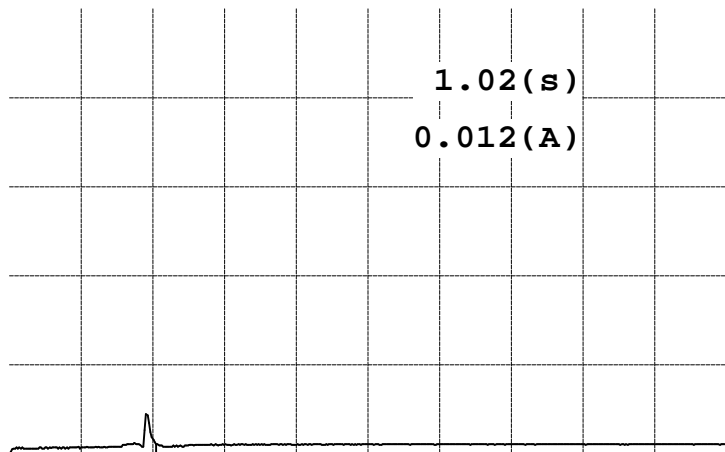
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## Preheat Energy



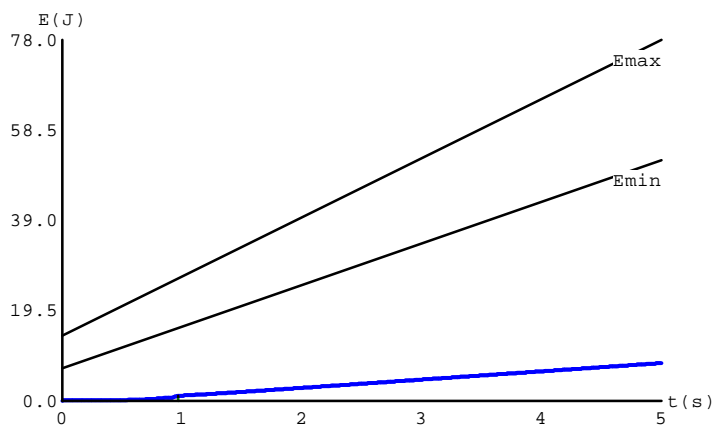
Filament Voltage(rms)  
Sensitivity: 44.00 V/Div  
Peak Volt : 201.8 V

Time  
Sensitivity: 500 ms/Div  
Time to Vp : 0.32 s



Filament Current(rms)  
Sensitivity : 0.100 A/Div  
Peak Current: 0.045 A

Time  
Sensitivity: 500 ms/Div  
Time To Ap : 0.95 s



## Preheat Parameter

Pre-start : 0.97 s  
Preheat Energy : 0.95 J

$E_{min} = Q + P \cdot t$  ( $Q = 7.00 \text{ J}$ ,  $P = 9.00 \text{ W}$ )  
 $E_{max} = F \cdot E_{min}$  ( $F = 1.500$ )

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Test Instrument: Everfine HB-5A System

Manufacturer: Everfine

Type: M8165\_2D\_55W\_220\_MIN

Temperature: 25deg

Operator: YAGI 2009-11-23

Number: 1

Humidity: 75%

Inspector: 2009-11-23