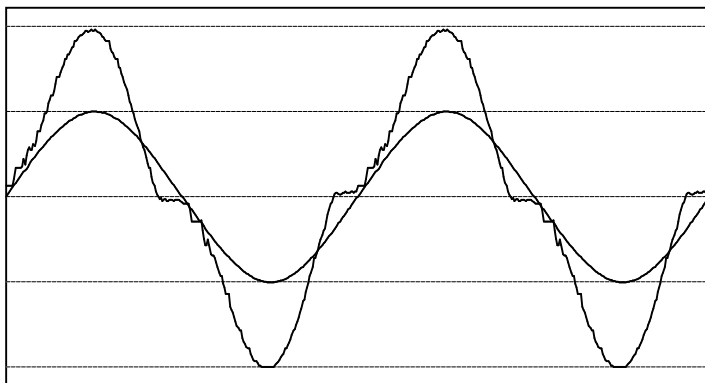


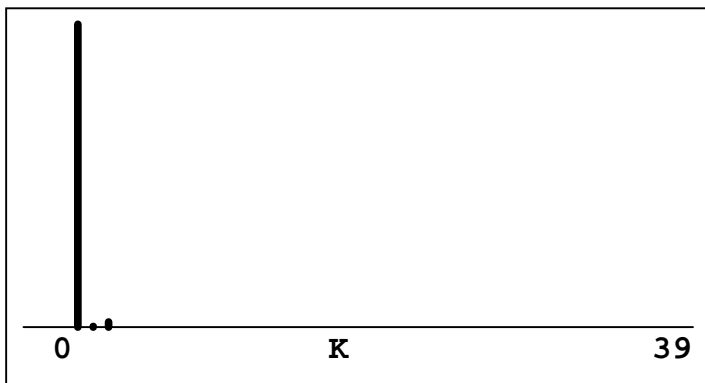
## Electronic Ballast Test Report

## Input Characteristics[Narrow Band](I)

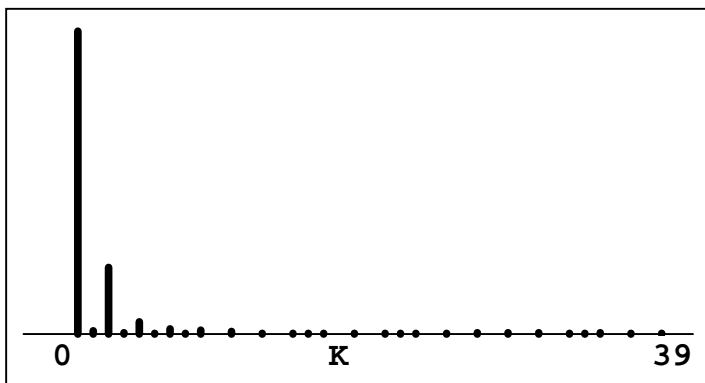
| Vrms     | Arms     | Power   | PF    | Freq.     |
|----------|----------|---------|-------|-----------|
| 112.0(V) | 0.088(A) | 9.54(W) | 0.971 | 59.98(Hz) |



Voltage  
Sensitivity :160.22 V/Div  
Peak Voltage:160.2 V  
Current  
Sensitivity: 0.072 A/Div  
Peak Current:0.142 A  
Start Phase: 0.0 ~  
Peak Phase: 87.2 ~  
End Phase: 154.7~



Voltage Spec.  
Vthd: 1.9%(IEC)  
Vh3 : 1.8%  
Vh5 : 0.1%  
Vh7 : 0.1%  
Vh9 : 0.0%



Current Spec.  
Athd: 22.7%(IEC)  
Ah3 : 22.1%  
Ah5 : 4.1%  
Ah7 : 1.8%  
Ah9 : 1.4%

Test Instrument:Everfine HB-5A System

Manufacturer:Everfine

Type:M8165\_2D\_55W\_110\_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:112.0(V)  
 VCF :1.43  
 Vthd: 1.9%(IEC)

Arms:0.088(A)  
 Acf : 1.61  
 Athd: 22.7%(IEC)

## Voltage Spectrum

| K  | relat. | Vrmsk |
|----|--------|-------|
| 0  | 0.0%   | 0.0   |
| 1  | 100.0% | 112.0 |
| 2  | 0.4%   | 0.4   |
| 3  | 1.8%   | 2.0   |
| 4  | 0.1%   | 0.1   |
| 5  | 0.1%   | 0.1   |
| 6  | 0.0%   | 0.0   |
| 7  | 0.1%   | 0.1   |
| 8  | 0.0%   | 0.0   |
| 9  | 0.0%   | 0.1   |
| 10 | 0.0%   | 0.0   |
| 11 | 0.1%   | 0.1   |
| 12 | 0.0%   | 0.0   |
| 13 | 0.0%   | 0.0   |
| 14 | 0.0%   | 0.0   |
| 15 | 0.0%   | 0.1   |
| 16 | 0.0%   | 0.0   |
| 17 | 0.0%   | 0.0   |
| 18 | 0.0%   | 0.0   |
| 19 | 0.0%   | 0.0   |
| 20 | 0.0%   | 0.0   |
| 21 | 0.1%   | 0.1   |
| 22 | 0.0%   | 0.0   |
| 23 | 0.1%   | 0.1   |
| 24 | 0.0%   | 0.0   |
| 25 | 0.1%   | 0.1   |
| 26 | 0.0%   | 0.0   |
| 27 | 0.0%   | 0.0   |
| 28 | 0.0%   | 0.0   |
| 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%   | 0.0   |

## Current Spectrum

| K  | relat. | Armsk | mA/W |
|----|--------|-------|------|
| 0  | 0.0%   | 0.000 | 0.00 |
| 1  | 100.0% | 0.086 | 8.97 |
| 2  | 1.2%   | 0.001 | 0.11 |
| 3  | 22.1%  | 0.019 | 1.98 |
| 4  | 0.6%   | 0.001 | 0.05 |
| 5  | 4.1%   | 0.004 | 0.37 |
| 6  | 0.3%   | 0.000 | 0.02 |
| 7  | 1.8%   | 0.002 | 0.16 |
| 8  | 0.2%   | 0.000 | 0.02 |
| 9  | 1.4%   | 0.001 | 0.12 |
| 10 | 0.2%   | 0.000 | 0.01 |
| 11 | 0.8%   | 0.001 | 0.08 |
| 12 | 0.2%   | 0.000 | 0.02 |
| 13 | 0.4%   | 0.000 | 0.03 |
| 14 | 0.1%   | 0.000 | 0.00 |
| 15 | 0.4%   | 0.000 | 0.04 |
| 16 | 0.3%   | 0.000 | 0.03 |
| 17 | 0.4%   | 0.000 | 0.04 |
| 18 | 0.1%   | 0.000 | 0.01 |
| 19 | 0.4%   | 0.000 | 0.03 |
| 20 | 0.1%   | 0.000 | 0.01 |
| 21 | 0.4%   | 0.000 | 0.04 |
| 22 | 0.2%   | 0.000 | 0.02 |
| 23 | 0.3%   | 0.000 | 0.03 |
| 24 | 0.1%   | 0.000 | 0.01 |
| 25 | 0.3%   | 0.000 | 0.02 |
| 26 | 0.2%   | 0.000 | 0.02 |
| 27 | 0.5%   | 0.000 | 0.05 |
| 28 | 0.1%   | 0.000 | 0.01 |
| 29 | 0.5%   | 0.000 | 0.04 |
| 30 | 0.1%   | 0.000 | 0.01 |
| 31 | 0.5%   | 0.000 | 0.05 |
| 32 | 0.1%   | 0.000 | 0.01 |
| 33 | 0.4%   | 0.000 | 0.03 |
| 34 | 0.2%   | 0.000 | 0.02 |
| 35 | 0.5%   | 0.000 | 0.04 |
| 36 | 0.1%   | 0.000 | 0.01 |
| 37 | 0.4%   | 0.000 | 0.04 |
| 38 | 0.1%   | 0.000 | 0.01 |
| 39 | 0.2%   | 0.000 | 0.02 |

Test Instrument:Everfine HB-5A System

Manufacturer:Everfine

Type:M8165\_2D\_55W\_110\_MIN

Temperature:25deg

Operator: YAGI 2009-11-23

Number:1

Humidity:75%

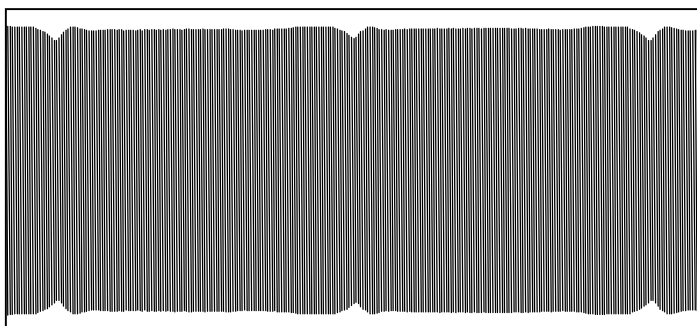
Inspector: 2009-11-23

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Electronic Ballast Test Report

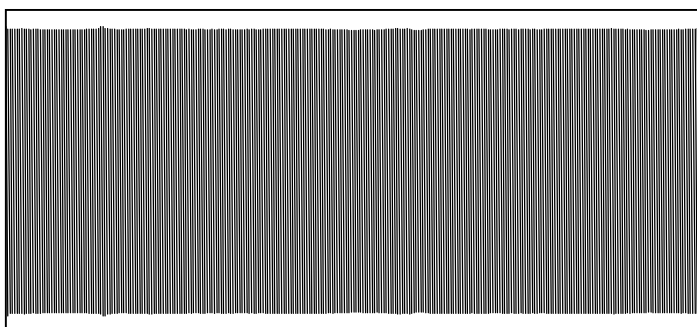
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## Steady State Characterictics



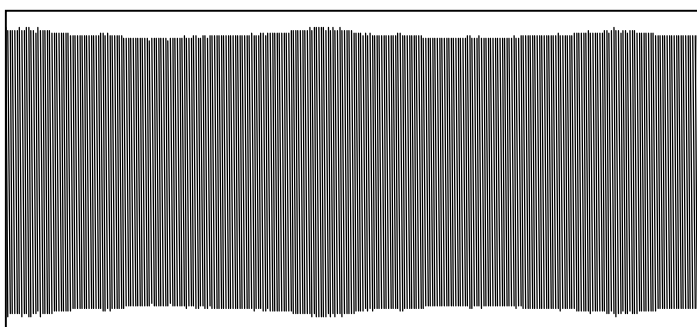
## Lamp Voltage

Vlrms : 135.8(V)  
Vlp : 237.4(V)  
Vlcf : 1.75  
Vlhfrms: 139.0(V)  
Vlcfhf : 1.71



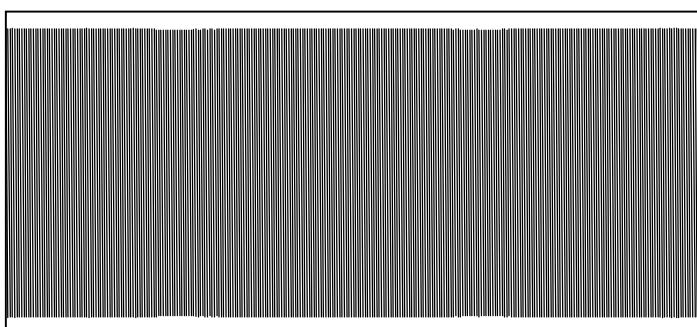
## Filament Current

Afrms : 0.281(A)  
Afp : 0.429(A)  
Afcf : 1.53  
Afrmshf: 0.285(A)  
Afcfhf : 1.50



## Lamp Current

Alrms : 0.019(A)  
Alp : 0.038(A)  
Alcf : 2.01  
Aldhc : 1.96 %  
Alrmshf: 0.020(A)  
Alcfhf : 1.92  
Pout : 2.6 (W)



## Cathode Current

Akrms : 0.297(A)  
Akp : 0.440(A)  
Akcf : 1.48  
Akrmshf: 0.298(A)  
Akcfhf : 1.47  
Freq : 106.15(kHz)

---

Test Instrument: Everfine HB-5A System

Manufacturer: Everfine

Type: M8165\_2D\_55W\_110\_MIN

Temperature: 25deg

Operator: YAGI 2009-11-23

Number: 1

Humidity: 75%

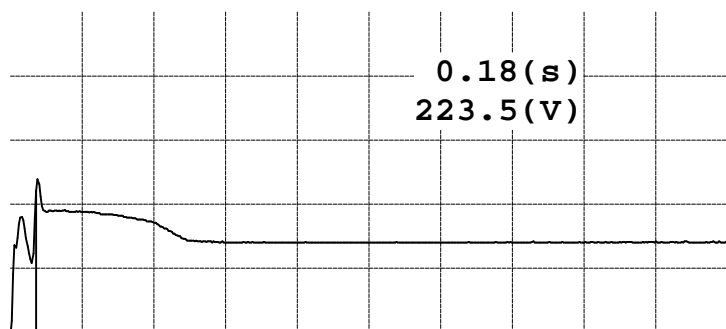
Inspector: 2009-11-23

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Electronic Ballast Test Report

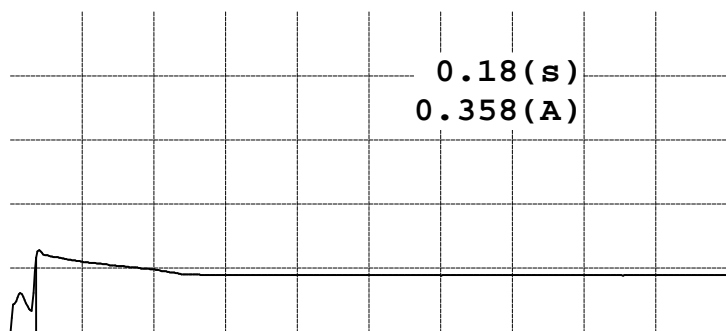
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## Start Characteristics



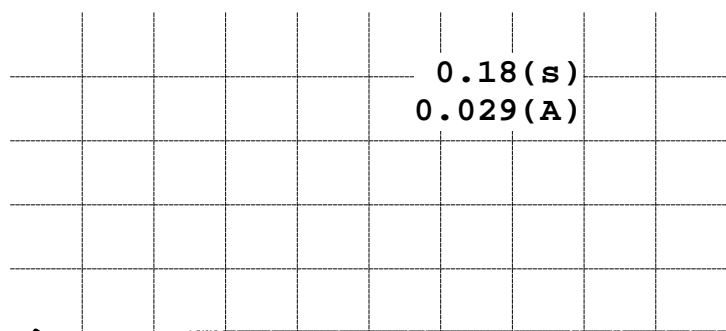
Lamp Voltage(rms)  
Sensitivity: 100.00 V/Div  
Peak Volt : 241.8 V

Time  
Sensitivity: 500 ms/Div  
Time to Vp : 0.19 s



Filament Current(rms)  
Sensitivity : 0.300 A/Div  
Peak Current: 0.395 A

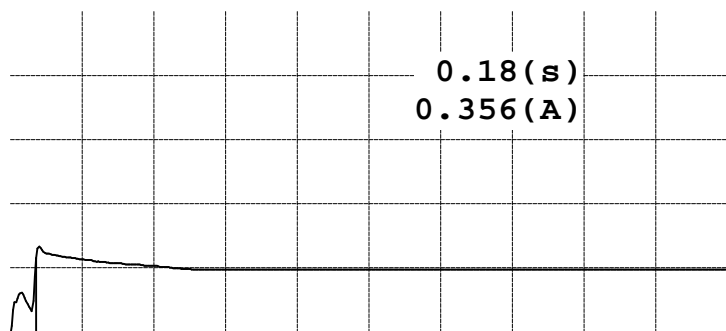
Time  
Sensitivity: 500 ms/Div  
Time To Ap : 0.20 s



Lamp Current(rms)  
Sensitivity : 0.300 A/Div  
Peak Current: 0.029 A

Time  
Sensitivity: 500 ms/Div  
Time to Ap : 0.18 s

Preheat time: 0.010 s



Cathode Current(rms)  
Sensitivity : 0.300 A/Div  
Peak Current: 0.411 A

Time  
Sensitivity: 500 ms/Div  
Time to Ap : 0.20 s

---

Test Instrument:Everfine HB-5A System

Manufacturer:Everfine

Type:M8165\_2D\_55W\_110\_MIN

Temperature:25deg

Operator: YAGI 2009-11-23

Number:1

Humidity:75%

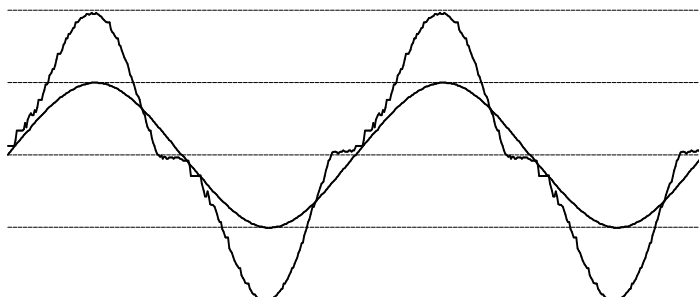
Inspector:

2009-11-23

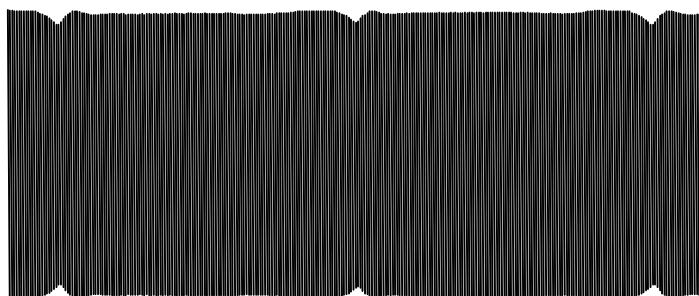
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**Electronic Ballast Test Report**

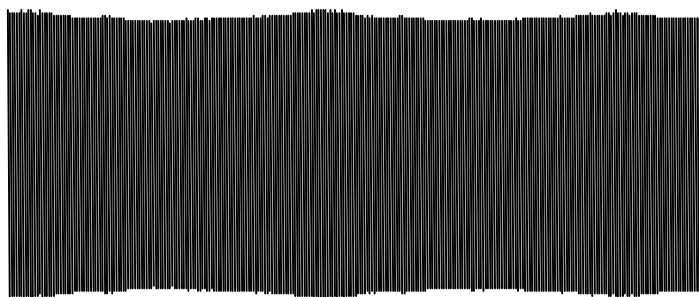
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**Input & Output Characteristics Test Report**  
**I. Input Characteristics**

Vrms : 112.0(V)  
Vp : 160.2(V)  
Vthd : 1.9%(IEC)  
Arms : 0.088(A)  
Ap : 0.142(A)  
Athd : 22.7%(IEC)  
Power: 9.54(W)  
PF : 0.971  
Freq : 59.98(Hz)

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

Vlrms: 135.8(V)  
Alrms: 0.019(A)  
Afrms: 0.281(A)  
Akrms: 0.297(A)  
Pout : 2.6 (W)

**Lamp Current Wave**

Freq : 106.150(kHz)  
Alcf : 2.01

---

Test Instrument: Everfine HB-5A System

Manufacturer: Everfine

Type: M8165\_2D\_55W\_110\_MIN

Temperature: 25deg

Operator: YAGI 2009-11-23

Number: 1

Humidity: 75%

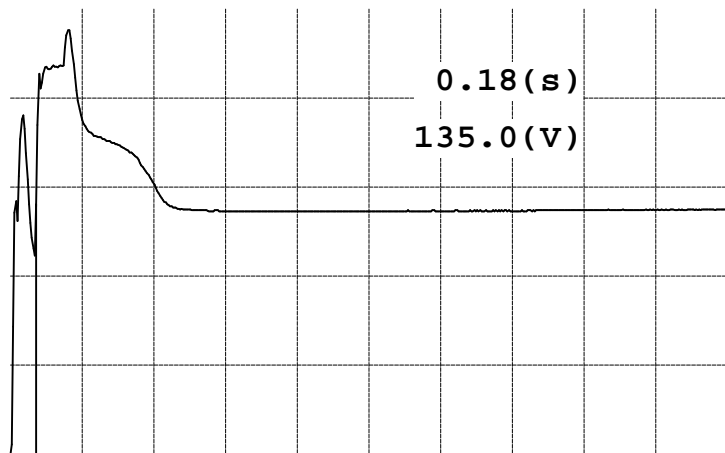
Inspector: 2009-11-23

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Electronic Ballast Test Report

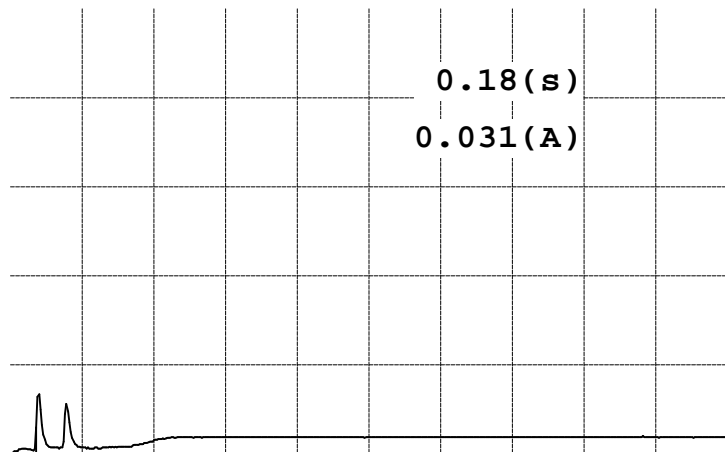
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## Preheat Energy



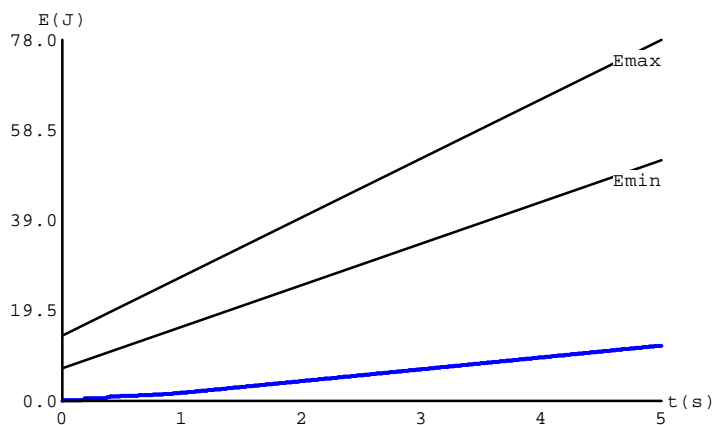
Filament Voltage(rms)  
Sensitivity: 48.00 V/Div  
Peak Volt : 228.9 V

Time  
Sensitivity: 500 ms/Div  
Time to Vp : 0.40 s



Filament Current(rms)  
Sensitivity : 0.100 A/Div  
Peak Current: 0.068 A

Time  
Sensitivity: 500 ms/Div  
Time To Ap : 0.20 s



## Preheat Parameter

Pre-start : 0.21 s  
Preheat Energy : 0.42 J

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

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Test Instrument: Everfine HB-5A System

Manufacturer: Everfine

Type: M8165\_2D\_55W\_110\_MIN

Temperature: 25deg

Operator: YAGI 2009-11-23

Number: 1

Humidity: 75%

Inspector: 2009-11-23