



LED Power Driver Tester (LS2090)

Brochure

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Leader in Lighting & Electrical Test Instruments

Rev. 7/18/2023

Introduction



LS2090 LED Power Driver Test Instrument is the comprehensive test instrument for LED drive power which is according to GB/T 24825-2009 and IEC 62384:2006. It can measure the following parameters: Input Characteristics Test (AC&DC), Output Characteristics Test (AC&DC), Input Start Characteristics Test (DC)

The LS2090 usually works with [LISUN LSP-500VARC pure sine AC Power Source](#), [LISUN M9822 DC Electronic Load to test LED Driver](#). The software can be run Win7, Win8 and Win10.

● Function

1. Input Characteristics Test (AC)

- To measure the input voltage, current, power, power factor, power grid frequency, total harmonic and the harmonic component of 0 ~ 50 times, wave ratio, initial phase angle, peak phase angle, the phase Angle.

- The fundamental frequency scope of the current and voltage : 45Hz~65Hz; Narrowband range: 45 Hz ~ 5 kHz; Broadband range: 45 Hz ~ 1 MHz.

- Voltage range: 3 ~ 300 V (CF = 1.67); Current range: 5mA ~ 2.7A (CF = 3); Power range: 0.015 ~ 800 W; Power factor range: 0.000 ~ + 1.000

2. Input Characteristics Test (DC)

- Measuring voltage, current, power.

- Voltage range: 3~500V; Current range: 5mA~8A; Power range: 0.015~4000W

3. Output Characteristics Test (AC)

- Measuring lamp voltage, lamp current, and lamp power.

- Lamp voltage range: 3~300V(CF=3); Lamp current range: 5mA~2.7A(CF=3);

Lamp power range: 0.015~800W

4. Output Characteristics Test (DC)

- Measuring output lamp voltage, lamp current, lamp power, ripple wave current.

- Voltage range: 3~500V; Current range: 5mA~8A; Power range: 0.015~4KW;

Ripple wave current range: 5mA~2.5A

5. Output Start Characteristics Test (DC)

- Change curve and data of the measuring lamp voltage and lamp current within 0~2 seconds.

- Lamp voltage range: 3~500V;

- Lamp current range: 5mA~8A

● Specification

AC:

Items	Basic error	Measurement condition
Voltage	$\pm (0.1\% \text{read} + 0.1\% \text{range} + 1 \text{bit})$	Input waveforms: sine wave; Input frequency: 45Hz ~ 65Hz;
Current		
Power		
Power Factor	$\pm (0.002 + 0.001/\text{read} + 1 \text{bit})$	
Frequency	$\pm 0.1\% \text{read}$	
Harmonic Wave (Valuable)	$\pm (0.1\% \text{range} + 5\% \text{read})$	
Lamp Voltage	$\pm (0.1\% \text{read} + 0.1\% \text{range} + 1 \text{bit})$	
Lamp Current		
Lamp Power		

DC:

Item	Basic error	Measurement condition
Voltage	$\pm (0.1\% \text{read} + 0.1\% \text{range} + 1 \text{bit})$	DC signal
Current		
Power		
Lamp Voltage	$\pm (0.1\% \text{read} + 0.1\% \text{range} + 1 \text{bit})$	DC signal
Lamp Current		
Lamp Power		
Ripple Current	$\pm 2.5\% \text{range}$	20 ~ 70KHz

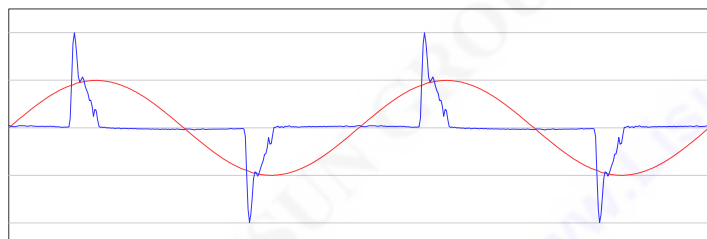
- The Next Pages are the Test Report from LS2090

Input Electrical Characteristic Test Report

 Report ID: 20230602
 Catalog: Indoor
 Description: ID-120

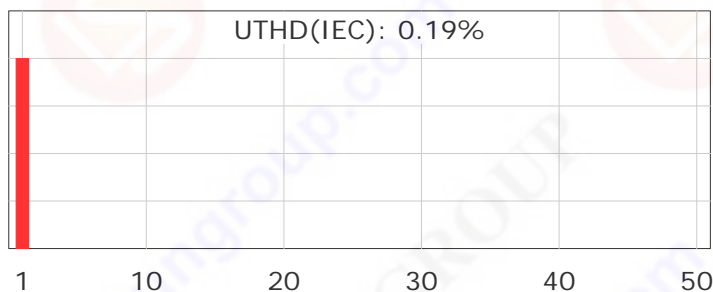
 Manufacturer: Philips Lighting B.V.
 Number: 011507
 Comments:

Voltage & Current Waveform

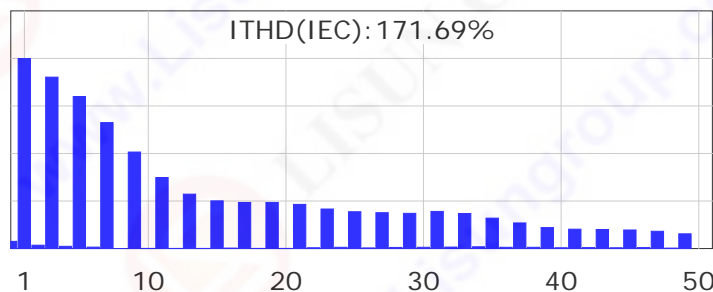


Urms: 219.43 V	Irms: 0.1192A
UCF: 1.417	ICF: 4.863
Voltage Freq: 49.998Hz	Power Factor: 0.4651
Active Power: 12.17W	Displacement Factor: 0.9202
Phase Angle: 23.05°	Peak Phase: 67.5°
Start Phase: 61.9°	End Phase: 92.8°

Voltage Spectrum



Current Spectrum



Order	Voltage Harmonic		Current Harmonic		Order	Voltage Harmonic		Current Harmonic	
	Absolute[V]	Relative[%]	Absolute[A]	Relative[%]		Absolute[V]	Relative[%]	Absolute[A]	Relative[%]
0	0.08	0.04	0.0023	3.88	1	219.44	100.00	0.0598	100.00
2	0.01	0.01	0.0011	1.87	3	0.03	0.02	0.0540	90.18
4	0.04	0.02	0.0008	1.30	5	0.07	0.03	0.0479	80.01
6	0.02	0.01	0.0005	0.85	7	0.12	0.06	0.0397	66.31
8	0.01	0.00	0.0001	0.16	9	0.12	0.05	0.0304	50.82
10	0.01	0.00	0.0001	0.17	11	0.12	0.05	0.0225	37.51
12	0.01	0.00	0.0001	0.20	13	0.01	0.00	0.0172	28.70
14	0.01	0.01	0.0002	0.25	15	0.06	0.03	0.0151	25.19
16	0.01	0.01	0.0002	0.41	17	0.07	0.03	0.0146	24.33
18	0.01	0.00	0.0001	0.17	19	0.07	0.03	0.0146	24.31
20	0.01	0.01	0.0001	0.19	21	0.06	0.03	0.0140	23.35
22	0.02	0.01	0.0003	0.58	23	0.10	0.04	0.0125	20.88
24	0.02	0.01	0.0005	0.77	25	0.09	0.04	0.0116	19.43
26	0.03	0.01	0.0003	0.46	27	0.04	0.02	0.0114	18.98
28	0.02	0.01	0.0004	0.71	29	0.11	0.05	0.0112	18.66
30	0.00	0.00	0.0005	0.76	31	0.08	0.04	0.0117	19.60
32	0.01	0.01	0.0005	0.85	33	0.06	0.03	0.0111	18.55
34	0.00	0.00	0.0006	1.05	35	0.11	0.05	0.0097	16.14
36	0.01	0.01	0.0005	0.82	37	0.06	0.03	0.0081	13.60
38	0.01	0.00	0.0005	0.79	39	0.07	0.03	0.0067	11.19
40	0.01	0.00	0.0003	0.52	41	0.09	0.04	0.0062	10.32
42	0.01	0.00	0.0004	0.66	43	0.06	0.03	0.0061	10.16
44	0.01	0.00	0.0003	0.58	45	0.07	0.03	0.0059	9.86
46	0.01	0.00	0.0004	0.66	47	0.04	0.02	0.0055	9.21
48	0.01	0.01	0.0002	0.35	49	0.06	0.03	0.0047	7.87
50	0.01	0.01	0.0002	0.39					

 Test Lab: LISUN
 Operator: Michael Aslami

 Test Equipment: Lisun LS2090
 Test Time: 2023-06-02 17:36:06

Output Characteristic Test Report

Report ID: 20230602
 Catalog: Indoor
 Description: ID-120

Manufacturer: Philips Lighting B.V.
 Number: 011507
 Comments:

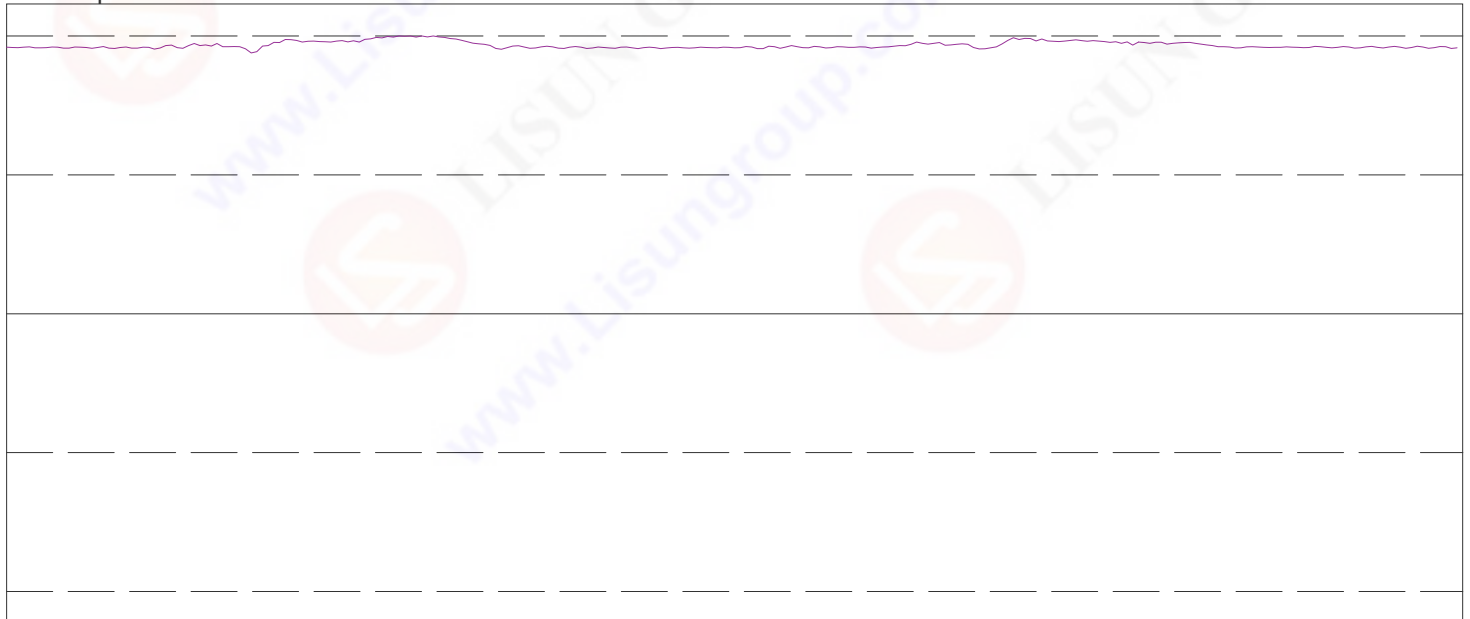
1. Output Electric Parameters

Lamp Voltage(rms) (V)	36.33	Lamp Current(rms) (Hz)	0.2929
Lamp Current(Ave) (A)	0.2956	Power (W)	10.64
Ripple Current (A)	0.056A	Energy Efficiency	0.876

2. Lamp Voltage Waveform



3. Lamp Current Waveform

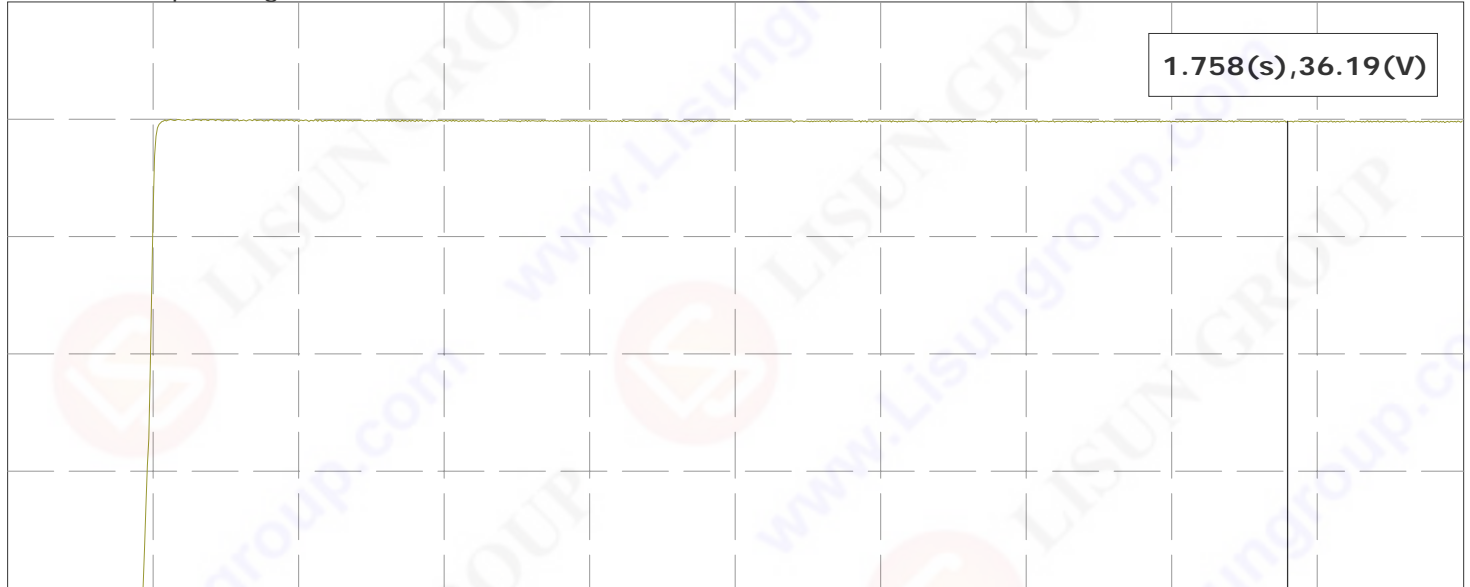


Start Characteristic Test Report

 Report ID: 20230602
 Catalog: Indoor
 Description: ID-120

 Manufacturer: Philips Lighting B.V.
 Number: 011507
 Comments:

1. Start Lamp Voltage Curve



Lamp Voltage(rms)
 Sensitivity: 9.10 V/Div
 Peak Voltage: 36.34 V

Time
 Sensitivity: 200 ms/Div
 Time to peak: 0.224 s

2. Start Lamp Current Curve



Lamp Current(rms)
 Sensitivity: 0.0766 A/Div
 Peak Current: 0.3051 A
 Average Current: 0.2589 A
 Current peak to average: 1.178

Time
 Sensitivity: 200 ms/Div
 Time to peak: 1.758 s
 Start Time: 0.208 s

 Test Lab: LISUN
 Operator: Michael Aslami

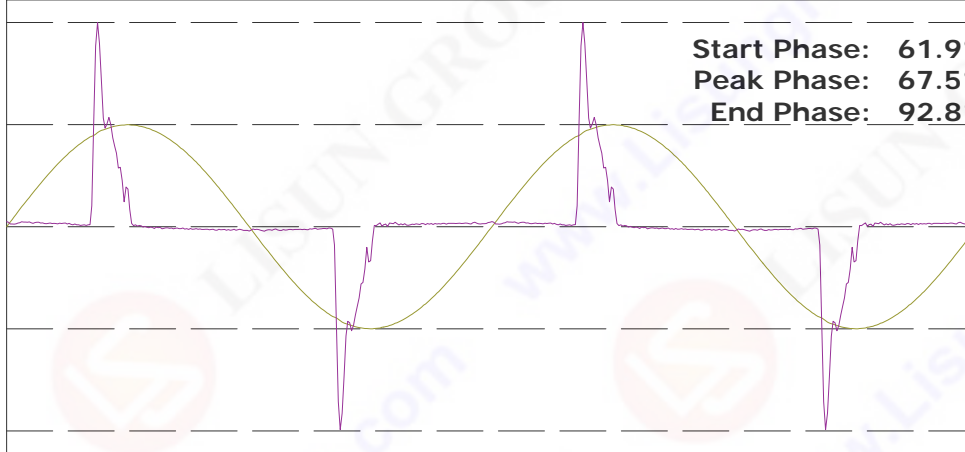
 Test Equipment: Lisun LS2090
 Test Time: 2023-06-02 17:36:06

Input & Output Characteristic Test Report

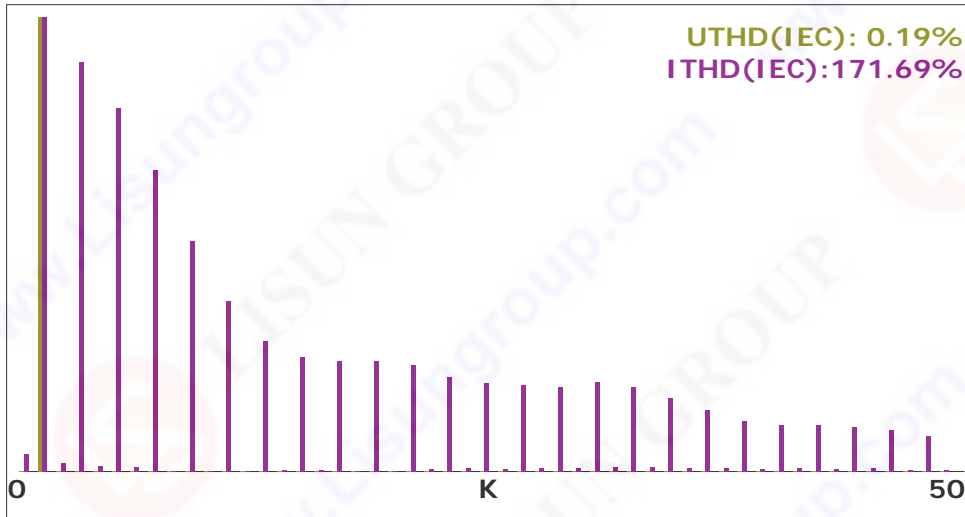
 Report ID: 20230602
 Catalog: Indoor
 Description: ID-120

 Manufacturer: Philips Lighting B.V.
 Number: 011507
 Comments:

1. Input Characteristic



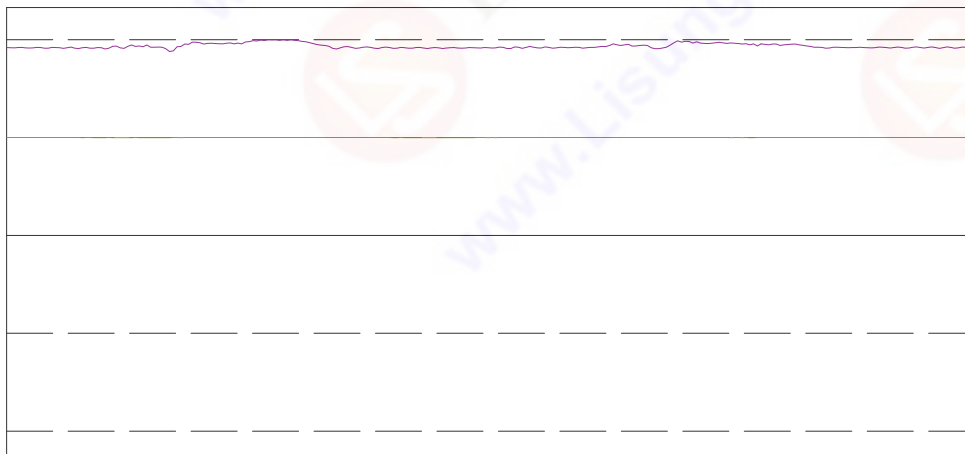
Voltage: 219.431(V)
UCF: 1.417
UTHD(IEC): 0.19%
Current: 0.119(A)
ICF: 4.863
ITHD(IEC): 171.69%
Active Power: 12.2(W)
Power Factor: 0.4651
Displacement Factor: 0.9202
Phase Angle: 23.05°
Frequency: 50.00(Hz)



Voltage Harmonic
3rd: 0.02%
5th: 0.03%
7th: 0.06%
9th: 0.05%

Current Harmonic
3rd: 90.18%
5th: 80.01%
7th: 66.31%
9th: 50.82%

2. Output Characteristic



Lamp Voltage(rms): 36.33V
Lamp Current(rms): 0.2929A
Lamp Current(Ave): 0.2956A
Power: 10.64W
Ripple Current: 0.056A
Energy Efficiency: 0.876