

<b>TEST REPORT</b> <b>IES LM-79-08</b> <b>Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products.</b>	
Intertek Report No.....	ULR-TC622821000001229F
Date of Report issue.....	21-Oct-2021
Total number of pages.....	12
Testing Laboratory.....	Intertek India Private Limited
Address.....	E-26, Block B1, Mohan Co-Operative Industrial Area, Mathura Road, New Delhi -110044, India
Customer / Applicant's name.....	R. STAHL Private Ltd.
Address.....	Plot No. 5, Malrosapuram Main Road   Sengundram Ind. Area   Singaperumal Koil Kancheepuram Dist   Tamilnadu   PIN 603 204   India
Discipline.....	Photometry
Product Group.....	Light Sources (Electric Lamp)
<b>Test specification:</b>	
Standard.....	IES LM-79-08
Non-standard test method.....	N/A
Test Report Form No.....	LFT-APAC-IN-OP-10p Version: 17 <sup>th</sup> Jun 2020
Test item description.....	LED pendant light 65W (wide voltage version),5700K, With reflector
Trade Mark.....	STAHL
Manufacturer.....	R. STAHL Private Ltd.
Model/Type reference.....	6057,6457-65W (Wide voltage version)
Ratings.....	230V AC, 50Hz, 65W, 0.31A
Tested by (Name + Signature + Function).....	VIJAY KUMAR (Engineer)
Reviewed by (Name + Signature + Function).....	HARI OM (Technical Leader - Lighting)
<b>An independent organization testing for safety, performance, and certification.</b>	
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<p><b>General product information:</b> The LED Light is provided with Supply cord for supply connection.</p> <p><b>LED Binning details: L2C5-57801211F1900</b></p> <p><b>LED Details*:</b> Make: ----, Model: ----, No. of LEDs: ----</p> <p><b>LED Controlgear/Driver Details*:</b> Make: ----, Model: ---, No. of LED Drivers: ---</p> <p>COB provided with Lenses/ Glass.....: Yes /No.</p> <p><b>Note:</b> *As declared by the Customer / Applicant.</p>
<p><b>Testing:</b> Date of receipt of test item.....: 29-Sep-2021 Condition of Sample Received.....: Physically Good Sample Identification no(s).....: D26210929-002, D26210929-005 Sample Serial no(s).....: Not provided Date (s) of performance of tests.....: 06-Oct-2021</p>
<p><b>Laboratory conditions:</b> Ambient Temperature.....: 25 ± 4°C Relative humidity.....: Less than 70 %</p>
<p><b>General remarks (if any):</b> The test results reported in this report relate only to the sample tested. This report shall not be reproduced, except in full, without the written approval of report issuing testing laboratory.</p>
<p><b>Remarks:</b> The results tabulated in this report are representative of the actual test sample(s) submitted for this report only. The data is provided to the customer for further evaluation. Compliance to the referenced specification requirements is not determined in this report.</p>

SUMMARY OF TEST RESULTS		
Sr. No.	Tests performed (name of test and test clause)	Verdict
1.	Electrical and Photometric measurements (Clause 8, 9, 10 and 11)	To be evaluated by customer
2.	Colorimetric measurements (Clause 12)	To be evaluated by customer

EQUIPMENTS USED				
Sr. No.	Equipment ID	Equipment name	Last calibration date	Next calibration date
1	ETL-LED-0094	High Speed Type-C Goniophotometer	Verified before use	Verified before use
2	ETL-LED-0095	Luminous Intensity Standard Lamp	05-Oct-2015	After 50Hrs. burning time
3	ETL-LED-0096	Luminous Intensity Standard Lamp	05-Oct-2015	After 50Hrs. burning time
4	ETL-LED-0097	Luminous Intensity Standard Lamp	05-Oct-2015	After 50Hrs. burning time
5	ETL-LED-0100	Digital Power Meter	12-Mar-2021	11-Mar-2022
6	ETL-LED-0105	Integrating Sphere	Verified before use	Verified before use
7	ETL-LED-0106	Spectral Flux Calibrated Standard Lamp	11-Nov-2015	After 50Hrs. burning time
8	ETL-LED-0111	Digital Power Meter	10-Jun-2021	09-Jun-2022
9	ETL-LED-0291	Humidity-cum Temperature Meter	19-Aug-2021	18-Aug-2022



Total Quality. Assured.

### Test No.01 Electrical and Photometric measurements - Distribution Method

#### TEST METHOD:

A LSI Type C High Speed Model 6440 Mirror Goniometer was used to measure the intensity (candelas) at each angle of distribution for each sample. Photometric distance was more than five times of the largest dimension of the test sample i.e. 8.63meter.

Ambient temperature was measured equal to the height of the sample mounted on the Goniometer equipment. The ambient temperature was maintained at  $25\pm 1^{\circ}\text{C}$  during testing.

Sample was operated at input rated voltage in its designated orientation as specified by Manufacturer.

Electrical measurements including voltage, current, and power were measured using the power meter.

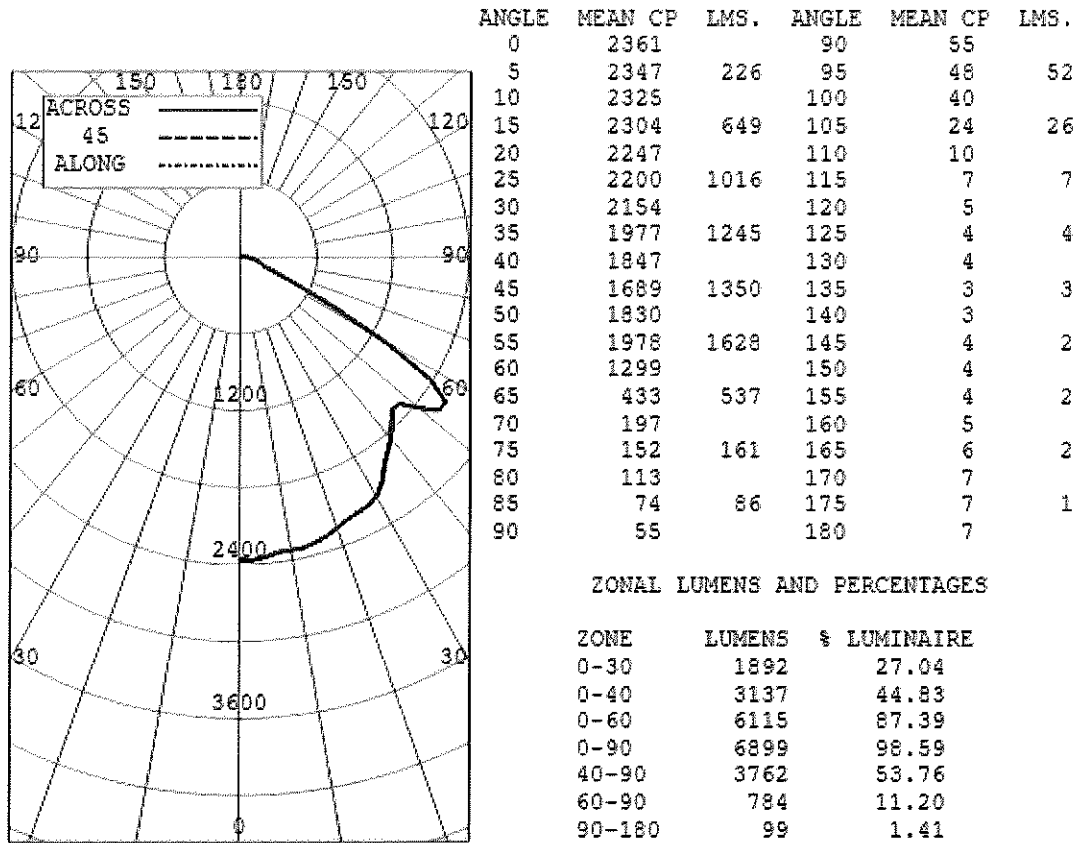
Each sample was allowed to stabilize for at least thirty minutes before measurements were made. The condition of the sample tested was new. Stabilization time before testing was 60 minutes.

#### TEST RESULTS

Input Voltage (Vac)	Input Frequency (Hz)	Current (A)	Power (W)	Power Factor
230.18	50.0	0.308	68.47	0.966

Total Luminous Flux (lm)	Luminous Efficacy (lm/W)
6997.0	102.2

## INTENSITY(CANDLEPOWER) SUMMARY:



### ZONAL LUMENS AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	1892	27.04
0-40	3137	44.83
0-60	6115	87.39
0-90	6899	98.59
40-90	3762	53.76
60-90	784	11.20
90-180	99	1.41
0-180	6997	100.00

\*\*\* THIS IS AN ABSOLUTE TEST \*\*\*

### LUMINANCE SUMMARY CD./SQ.M.

ANGLE	MEAN CD/SQ M	
45	549043	
55	792654	
65	235396	
75	135413	S/MH: 1.3
85	196502	SC: 1.3

TESTED IN ACCORDANCE WITH IES PROCEDURES.



Total Quality. Assured.

**INTENSITY (CANDLEPOWER) DATA:**

ANGLE	INTENSITY (CANDLEPOWER)	LUMENS
0	2361	
5	2347	226
10	2325	
15	2304	649
20	2247	
25	2200	1016
30	2154	
35	1977	1245
40	1847	
45	1689	1350
50	1830	
55	1978	1628
60	1299	
65	433	537
70	197	
75	152	161
80	113	
85	74	86
90	55	
95	48	52
100	40	
105	24	26
110	10	
115	7	7
120	5	
125	4	4
130	4	
135	3	3
140	3	
145	4	2
150	4	
155	4	2
160	5	
165	6	2
170	7	
175	7	1
180	7	



Total Quality. Assured.

**AVERAGE LUMINANCE DATA:**

CD./SQ.M (FOOTLAMBERTS)		
ANGLE	LUMINANCE	
0	540693	( 157809)
30	569623	( 166253)
40	552082	( 161133)
45	549043	( 160246)
50	652168	( 190345)
55	792654	( 231347)
60	595188	( 173714)
65	235396	( 68703)
70	132101	( 38555)
75	135413	( 39522)
80	149092	( 43514)
85	196502	( 57352)



Total Quality. Assured.

COEFFICIENTS OF UTILIZATION:

ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE = .20

CC WALL	90				80				70				50				30				10				0
	70	50	30	10	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0			
RCR	0	1.221	.221	.221	.22	1.191	.191	.191	.19	1.161	.161	.161	.16	1.101	.101	.10	1.051	.051	.05	1.011	.011	.01	0.99		
	1	1.131	.081	.041	.01	1.101	.061	.020	.99	1.071	.041	.000	.97	0.990	.970	.94	0.950	.930	.91	0.910	.900	.88	0.86		
	2	1.040	.970	.910	.85	1.020	.950	.890	.84	0.990	.930	.880	.83	0.890	.850	.81	0.860	.820	.79	0.830	.800	.77	0.75		
	3	0.960	.860	.780	.72	0.940	.840	.770	.72	0.910	.830	.760	.71	0.800	.740	.70	0.770	.720	.68	0.750	.710	.67	0.65		
	4	0.890	.770	.690	.63	0.860	.760	.680	.62	0.840	.740	.670	.61	0.720	.660	.61	0.690	.640	.60	0.670	.630	.59	0.57		
	5	0.820	.690	.600	.54	0.800	.680	.590	.53	0.770	.670	.590	.53	0.640	.570	.52	0.620	.560	.52	0.600	.550	.51	0.49		
	6	0.750	.610	.520	.46	0.730	.600	.520	.46	0.710	.590	.510	.45	0.570	.500	.45	0.560	.490	.45	0.540	.480	.44	0.42		
	7	0.680	.540	.450	.40	0.660	.530	.450	.39	0.650	.520	.440	.39	0.510	.430	.38	0.490	.430	.38	0.480	.420	.37	0.36		
	8	0.630	.490	.400	.34	0.610	.480	.400	.34	0.600	.470	.390	.34	0.460	.390	.34	0.450	.380	.33	0.430	.370	.33	0.31		
	9	0.580	.440	.360	.30	0.570	.440	.350	.30	0.550	.430	.350	.30	0.410	.340	.29	0.400	.340	.29	0.390	.330	.29	0.27		
	10	0.540	.400	.310	.26	0.530	.400	.310	.26	0.510	.390	.310	.26	0.380	.310	.26	0.370	.300	.26	0.360	.300	.25	0.24		

THE ABOVE COEFFICIENTS HAVE BEEN CALCULATED BASED ON LUMINAIRE LUMENS BECAUSE IN AN ABSOLUTE TEST THE BARE LAMP LUMENS ARE UNKNOWN. LIGHTING DESIGN CALCULATIONS MADE USING THESE COEFFICIENTS SHOULD THEREFORE USE THE LUMINAIRE LUMENS IN THE CALCULATION FORMULA

LABORATORY RESULTS MAY NOT BE REPRESENTATIVE OF FIELD PERFORMANCE. BALLAST AND FIELD FACTORS HAVE NOT BEEN APPLIED.

TEST DISTANCE EXCEEDS FIVE TIMES THE GREATEST LUMINOUS OPENING OF LUMINAIRE.



Test No.02 Colorimetric Measurements - Integrating Sphere Method

**TEST METHOD:**

A Labsphere Three Meter Integrating Sphere was used to measure correlated color temperature, chromaticity coordinates and the color rendering index for each sample.  $4\pi$  geometry was used.

Orientation (burning position) of product during testing was its normal burning position as specified by manufacturer.

Ambient temperature was measured at a position inside the sphere and was maintained at  $25\pm 1$  °C during testing.

Sample was allowed to stabilize for at least thirty minutes before measurements were made. The Stabilization time for the sample was 73 minutes. The condition of the sample tested was new.

Electrical measurements including voltage, current, and power were measure using the Power Meter.

The calibration of the sphere spectroradiometer system is traceable to the National Institute of Standards and Technology.

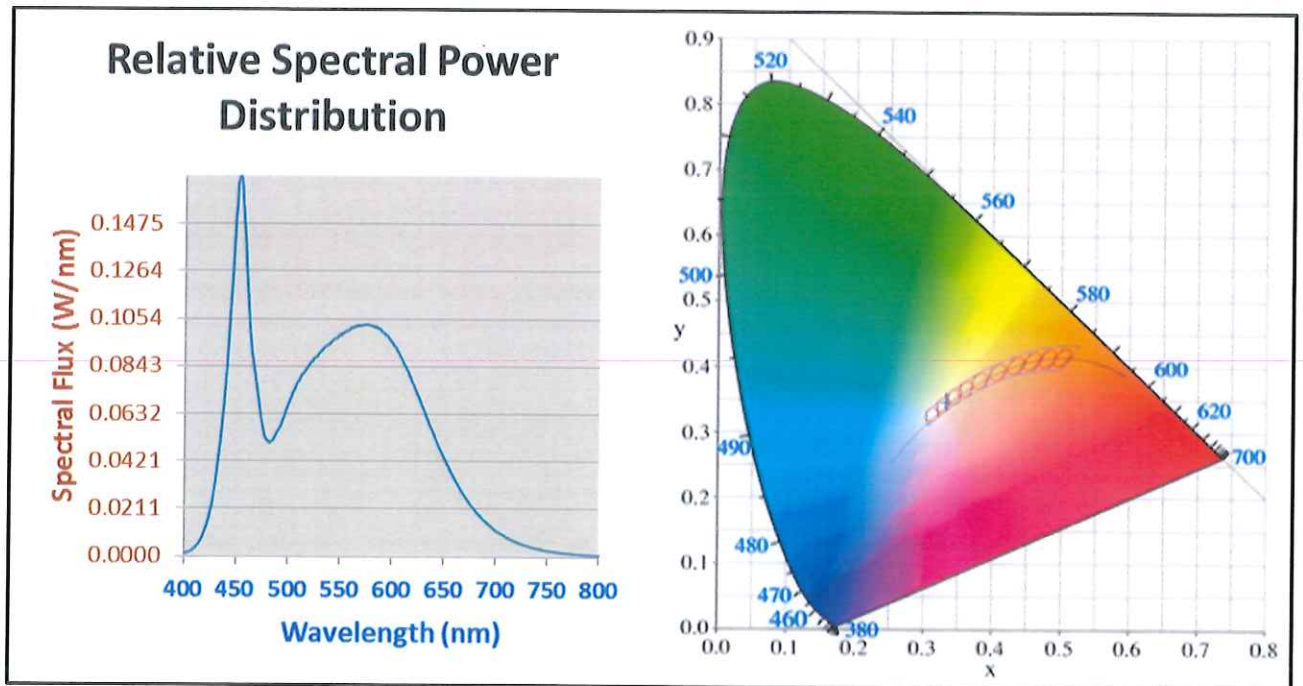
**TEST RESULTS**

**Spectral Distribution**

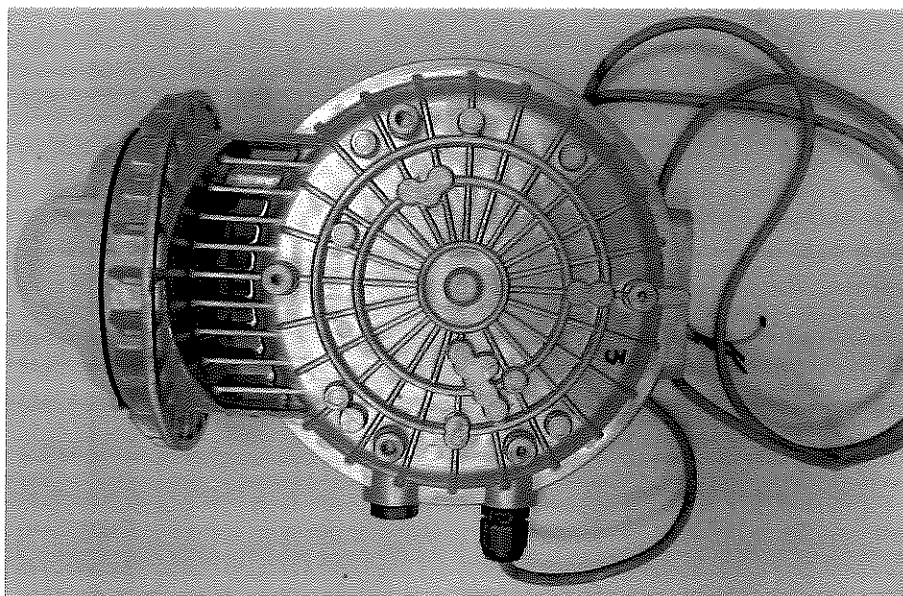
Dominant Wavelength nm	Radiant Flux	Purity	Peak Wavelength nm
550	20.773	3.946	453

CCT		CRI		x		y		Duv		u'		v'	
5513.0		82.8		0.3322		0.3474		0.0034		0.2043		0.4807	
R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
80.6	88.6	93.1	81.5	81.4	83.5	87.0	66.9	4.21	72.2	80.2	62.5	82.8	96.5

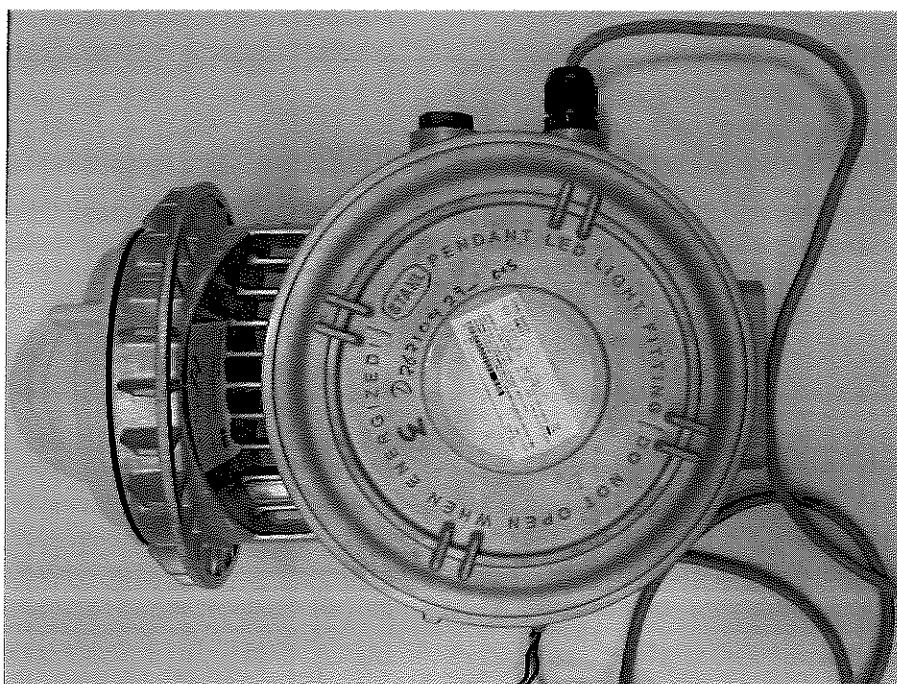
**Spectral Data over Visible Wavelengths**



**SAMPLE PHOTOGRAPHS:**



**Front View**



**Rear View**



**Side View**

**\*\*\*\*\*End of report\*\*\*\*\***