

LM-79-08 Test Report

For

LIGHT EFFICIENT DESIGN**(Brand Name: REMPHOS OR LIGHT EFFICIENT DESIGN)**

188 S. Northwest Highway Cary, IL 60013, USA

Direct Linear Ambient Luminaires

Model name(s):

RP-LBI-G1-4F-25W-XXK-[WC,W,C]-[Blank,OCN]-[BAA,Blank]

Remark: [WC,W,C] represents product function, WC represents power adjustable and color turnable, W represents power adjustable, C represents color turnable. [Blank,OCN] represent sensor option, OCN represents occupancy sensor and N can be a number 1 to 4 for sensor number, Blank represents without sensor. [BAA,Blank] where Blank represent NON-BAA, BAA represents BAA Section 1605 Compliant.

Representative (Tested) Model:

RP-LBI-G1-4F-25W-XXK-WC(0%,3500K)

Model Difference: All construction and rating are the same, except product function and sensor option.

Test & Report By:

Xeon Ren

Engineer: Xeon Ren

Date: Nov.20,2018

Review By:

John Li

Manager: John Li

Note: 1. The results contained in this report pertain only to the tested samples.

2. This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Laboratory: Standard-Tech Co., Ltd. Testing Center
NVLAP CODE: 201011-0

Report Format Number STD/QR4909-A/2



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1.1 Product Information:

Organization Name	LIGHT EFFICIENT DESIGN	
Brand Name	REMPHOS OR LIGHT EFFICIENT DESIGN	
Model Number	RP-LBI-G1-4F-25W-XXK-[WC,W,C]-[Blank,OCN] -[BAA,Blank]	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Direct Linear Ambient Luminaires	
Rated Voltage / Frequency	100-277 Vac, 50/60 Hz	
Nominal Power	25W	
Rated Initial Lamp Lumen	--	
Declared CCT	3500K,4000K, 5000K	
LED Manufacturer	Hongli Zhihui Group Co., Ltd.	
LED Model	PU2835DW-S1-08-PCT-HR3	
Sample Number	JDE181007-K1	
Lamp Length	--	mm
Lamp Width	--	mm
Number of Units (modular products)	N/A	s
Photo		
		
		

1.2 Test Specifications:

Date of Receipt	Oct.25,2018
Date of Test	Oct.25,2018
Test item	<ol style="list-style-type: none"> 1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	<ol style="list-style-type: none"> 1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

1.3 Test Methods

1) Photometric and Light Distribution Measurement – Goniophotometer Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals.

2) Chromaticity Measurement – Sphere-Spectroradiometer Method:

Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.

3) Electrical Measurements:

Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.

2.1 Electrical, Photometric and Chromaticity Measurements
(Refer to Work Instruction QD25)

Test date	2018-10-25	Test Ambient:	25.0 °C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	RP-LBI-G1-4F-25W-XXK-WC (0%,3500K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JDE181007-K1	120.0	60	0.2153	25.68	0.9938	6.21
	277.0	60	0.1011	25.69	0.9174	15.31
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Photometric Measurement –Goniophotometer Method:

Parameter	Result		DLC V4.4 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	3521.4	3503.4	>=375 lm/ft(-10%)	
Luminous Efficacy (lm/W)	137.13	136.37	Standard: >= 105(-3%)	Premium: >= 130(-3%)
Most Worst Luminous/Highest Watts	136.37			
Zonal lumens in the 0-60 °zone (%)	62.5	--	>= 40%(-3%)	
Beam Angle (°)	120.7	--	--	
Center Beam Candle Power (cd)	959	--	--	

Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	744.0	21.1%
0-40	1,221.3	34.7%
0-60	2,200.8	62.5%
60-90	936.3	26.6%
70-100	677.0	19.2%
90-120	307.7	8.7%
0-90	3,137.1	89.1%
90-180	383.9	10.9%
0-180	3,521.0	100%

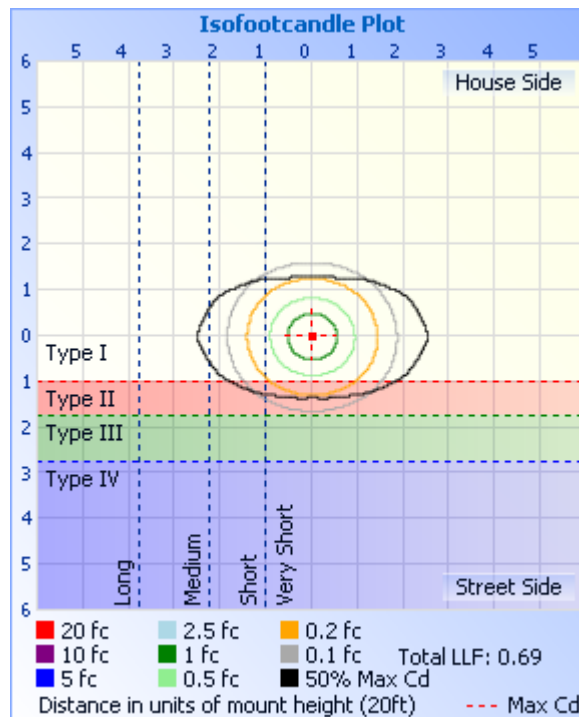
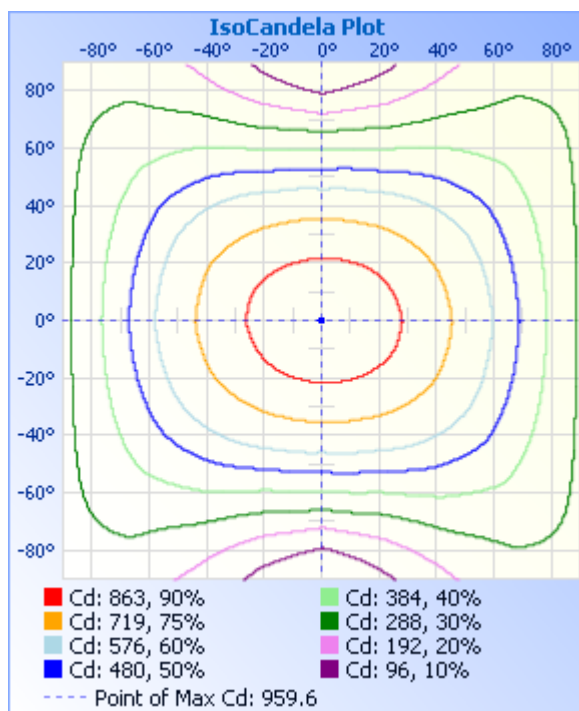
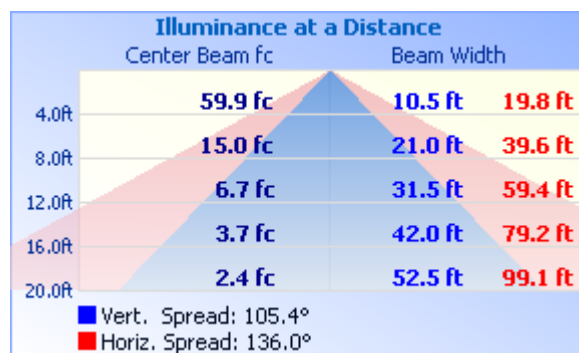
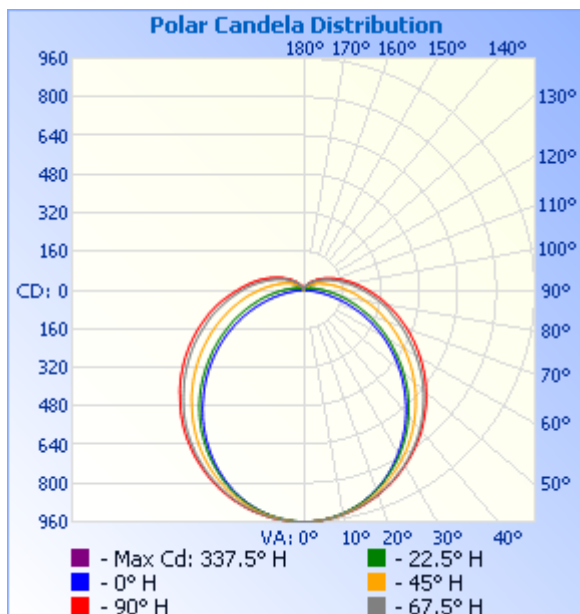
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	90.7	2.6%	90-100	147.1	4.2%
10-20	259.7	7.4%	100-110	98.0	2.8%
20-30	393.6	11.2%	110-120	62.6	1.8%
30-40	477.2	13.6%	120-130	37.9	1.1%
40-50	503.6	14.3%	130-140	21.4	0.6%
50-60	476.0	13.5%	140-150	10.8	0.3%
60-70	406.4	11.5%	150-160	4.5	0.1%
70-80	312.3	8.9%	160-170	1.3	0%
80-90	217.6	6.2%	170-180	0.3	0%

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Photometric Data


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Table--1

UNIT: cd

C (DEG) y (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	
0	959	959	959	959	959	959	959	959	959	959	959	959	959	959	959	959	
5	956	957	955	956	955	954	956	955	955	952	954	953	954	953	955	957	
10	947	947	945	941	940	939	943	943	944	941	939	937	937	938	941	946	
15	932	930	925	917	914	915	921	925	927	920	916	909	911	913	920	929	
20	909	906	896	884	879	881	891	901	904	895	885	874	874	879	891	904	
25	881	874	860	842	835	840	854	871	874	862	846	832	828	836	855	874	
30	847	834	818	792	783	791	813	836	840	824	801	781	775	787	814	838	
35	809	793	768	737	724	737	765	796	802	783	751	725	716	732	766	798	
40	767	747	714	676	661	677	713	751	760	738	697	665	652	672	713	753	
45	720	698	656	611	593	612	658	701	713	686	640	599	584	608	657	704	
50	670	647	597	544	523	544	600	649	664	633	582	530	514	539	600	650	
55	621	592	537	477	450	473	542	594	612	578	524	461	441	470	541	598	
60	569	538	480	408	377	405	481	537	559	522	466	393	367	402	482	545	
65	516	486	423	339	302	338	423	482	506	469	407	326	293	335	424	492	
70	465	433	365	274	227	274	367	430	453	418	351	261	219	272	369	438	
75	414	383	310	212	154	215	314	377	402	370	298	203	147	213	315	390	
80	366	337	261	159	86.7	162	261	333	354	324	249	151	80.3	162	267	339	
85	317	293	218	114	32.2	118	221	287	309	282	208	108	28.6	117	224	294	
90	275	253	179	78.5	5.97	83.5	181	246	267	241	171	74.1	5.41	83.3	185	254	
95	238	216	148	55.2	5.04	59.8	148	209	230	206	142	52.8	5.35	60.7	152	218	
100	206	185	119	40.3	4.63	44.0	121	177	196	174	115	38.2	5.51	44.3	124	183	
105	175	153	98.1	29.8	4.11	32.7	97.8	148	167	148	93.5	28.5	5.46	33.6	102	154	
110	148	128	79.5	22.9	3.49	25.0	79.7	123	141	122	75.8	22.2	5.35	26.3	83.3	129	
115	123	106	63.7	18.2	2.76	19.8	64.9	102	118	102	61.2	18.0	5.30	21.4	67.6	107	
120	102	87.1	51.2	15.0	2.29	16.3	52.3	83.3	97.1	83.8	49.6	15.4	5.09	18.2	54.9	87.5	
125	82.7	70.9	41.1	12.8	2.13	13.8	41.9	67.9	79.3	68.1	40.0	13.2	4.99	15.7	44.1	71.2	
130	66.5	57.0	32.9	11.0	2.13	11.7	33.6	54.6	63.8	55.1	32.2	11.7	4.89	13.5	35.4	57.4	
135	52.6	45.0	26.3	9.26	2.13	10.2	27.0	43.5	50.7	43.9	26.1	10.5	4.89	11.3	28.5	45.4	
140	40.9	35.2	21.0	6.53	2.23	8.91	21.7	34.1	39.5	34.6	21.3	9.36	4.73	8.17	22.3	35.2	
145	31.4	27.1	16.2	5.38	2.55	6.31	17.3	26.6	30.3	27.4	17.5	7.81	4.68	6.09	16.5	27.0	
150	23.7	20.7	12.2	3.98	2.50	3.25	13.5	20.3	22.8	21.6	14.6	5.64	3.79	3.96	11.1	19.3	
155	17.6	14.9	7.55	2.79	2.50	2.66	10.7	15.2	16.9	16.6	12.3	4.34	3.43	3.75	6.86	12.7	
160	12.4	9.19	5.70	2.74	2.60	2.66	5.31	11.0	11.9	12.0	9.86	3.05	3.33	3.91	3.91	6.26	
165	6.91	5.43	3.04	2.74	3.28	2.97	2.85	4.75	5.84	6.03	3.91	3.16	3.33	4.17	3.85	4.10	
170	2.49	2.68	2.77	2.89	3.74	3.28	2.85	2.68	2.58	2.58	2.61	3.00	3.33	4.27	3.85	3.21	
175	2.53	2.63	2.77	3.26	4.16	3.49	3.06	2.68	2.53	2.58	2.61	2.79	3.33	4.27	3.75	3.11	
180	2.53	2.63	2.77	3.31	4.21	3.59	3.11	2.68	2.64	2.58	2.61	2.74	3.33	4.22	3.64	3.11	

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-331	2 meter Integrating Sphere	2018-07-02	2019-06-01
ST-R-327	Spectral analysis system HAAS-2000	2018-07-02	2019-07-01
ST-R-332	Standard Lamp	2018-07-04	2019-07-03
ST-R-333	Power Meter for Integrating Sphere	2018-06-28	2019-06-27
ST-R-355	Goniophotometer system	2018-07-01	2019-06-30
ST-R-359	Standard Lamp	2018-07-04	2019-07-03
ST-R-358	Power Meter for Goniophotometer	2018-06-28	2019-06-27
Expand Uncertainty: Photometric Measurement (Sphere):2.04%, k=2 Chromaticity Measurement(Sphere):28.8K, k=2 Photometric Measurement(Goniophotometer):2.36%, k=2			

******* END OF REPORT *******