LM-79-08 Test Report

For

LIGHT EFFICIENT DESIGN

188 S. Northwest Highway Cary, IL 60013, USA

Direct Linear Ambient Luminaires

Model Name(s):
RP-LBI-G1-4F-10W-XXK-WC-[Blank, OCN]-[BAA, Blank]

Representative (Tested) Model:
RP-LBI-G1-4F-10W-XXK-WC

Model Difference:

1. **WC represents power adjustable and color tunable, wattage can adjust 10W, 15W and 25W, color tunable 2700K, 3000K and 3500K.**
2. **[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.**
3. **[BAA, Blank] is for business purpose.**
4. **All construction is the same, except the function.**

Prepare by：

Review by:

Engineer: Derek Lai
Date: 2019-11-19

Technical Lead: Vincent Yuan
Issue Date: 2019-11-
Revised Date: N/A

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

2. This report shall not be reproduced, no limited part or full, without approval of Dongguan New Testing Centre Co., Ltd

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

Laboratory: Dongguan New Testing Centre Co., Ltd
Address: 3F, No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China
Tel: 86-769-89874553
Website: http://www.ntc-cert.com

Product Information:

Client Name:	LIGHT EFFICIENT DESIGN
Brand Name:	REMPHOS OR LIGHT EFFICIENT DESIGN
Model Number:	RP-LBI-G1-4F-10W-XXK-WC
Product Type:	Direct Linear Ambient Luminaires
Rating Input:	100-277Vac, 50/60Hz, 10W
Declared CCT:	2700K/000K/3500K
Declared Light Output:	1200 lm
LED Manufacturer:	Hongli Zhihui Group Co., Ltd.
LED Model:	HL-AS-PU2835DW-S1-08-PCT-HR3
LED Quantity:	112 pcs

Test Information:

Standard Lamp:	Total Spectral Radiant Flux Standard Lamp, trace to NIST. 1. D908S for Gonio 2. D215S for Integrating Sphere
Date of Receipt Samples:	2019-11-06
Quantity of Receipt Samples:	1 pcs
Sample Number:	191106003-S1

Laboratory Information:

Test Laboratory:	Dongguan New Testing Centre Co., Ltd
Laboratory Address:	3F, No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China
Laboratory Contact Name:	Neil Zhong
Laboratory Contact E-mail:	Neil_ntc@163.com

Report Information:

Issued Date of Test Report:	2019-11-
Revised Date of Test Report:	N/A
Test Report No.:	NTCLR19110164
Remark *(If applicable)*:	N/A

Laboratory: Dongguan New Testing Centre Co., Ltd
Address: 3F, No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China
Tel: 86-769-89874553
Website: http://www.ntc-cert.com

Test Specification:	
Date of Test	2019-11-08
Test Item	1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. THD and PF
Reference Standard	IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products ANSI C78.377-2017 Specifications for the Chromaticity of Solid State Lighting Products CIE 13.3-1995 Method of Measuring and Specifying Color Rendering Properties of Light Sources CIE 15-2004 Technical Report Colorimetry

Test Methods:

1. Photometric and Electrical Measurements – Light Distribution Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25 °C ± 1°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 required Voltage and Frequency. It was stabilized before measurement was made. Luminous Flux, Luminaire Efficacy and Zonal Lumen were calculated from the software taken at 1° vertical intervals and 15° horizonal intervals.

2. Photometric and Electrical Measurements – Integrating Sphere Method:

Photometric parameters were measured using an integrating sphere, as spectroradiometer and software. The ambient temperature condition inside the sphere was measured at 25 °C± 1°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 require Voltage and Frequency. It was stabilized before measurement was made. Chromaticity Coordinates, Correlated Color Temperature and Color Rendering Index were calculated from the spectral radiant flux measurements taken at least 1 nm intervals over the rage of 380 to 780 nm.

3. THD and PF Measurements:

The sample was tested according to the ANSI C82.77-2002, the sample was operated at requirement Voltage and Frequency, and was stabilized before measurement. The Total Harmonic Distortion was calculated from the Digital Power Meter.

Laboratory: Dongguan New Testing Centre Co., Ltd
Address: 3F, No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China
Tel: 86-769-89874553
Website: http://www.ntc-cert.com

Integrating Sphere Test Results:

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
25.5	42.3	Face Down	90	10

Electrical Data:

Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	0.08150	9.688	0.9911
277.0	60	0.04420	9.976	0.8145

Output Data:

Light Output (lm)	Efficacy (lm/W)
1296.9	133.87
1299.0	130.21

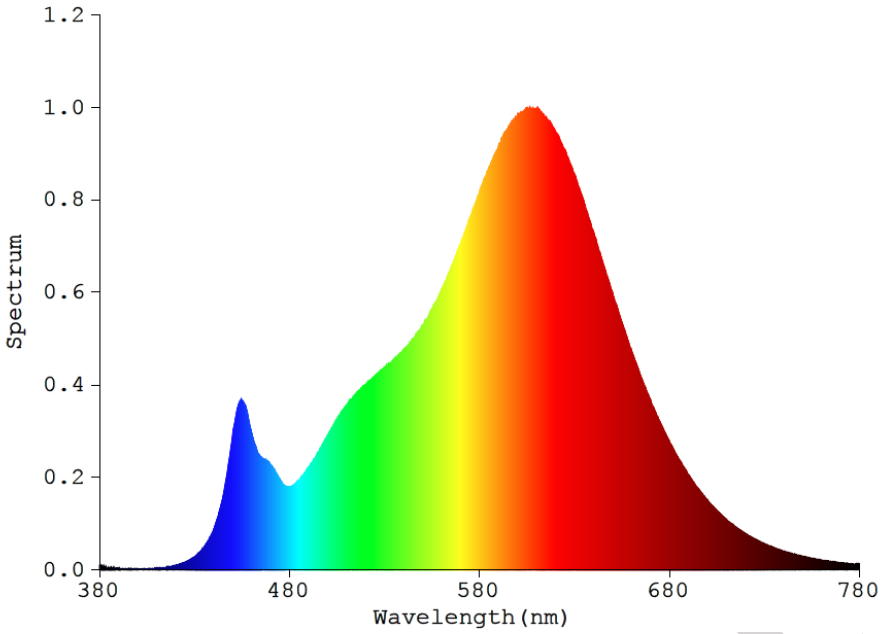
Color Data:

Parameter	Result at 120V	Result at 277V
CCT(K)	2711	2707
Ra	83.0	83.1
R9	8	8
Chromaticity, x	0.4617	0.4619
Chromaticity, y	0.4153	0.4153
Chromaticity, u'	0.2616	0.2617
Chromaticity, v'	0.5294	0.5294
Duv	0.00157	0.00154

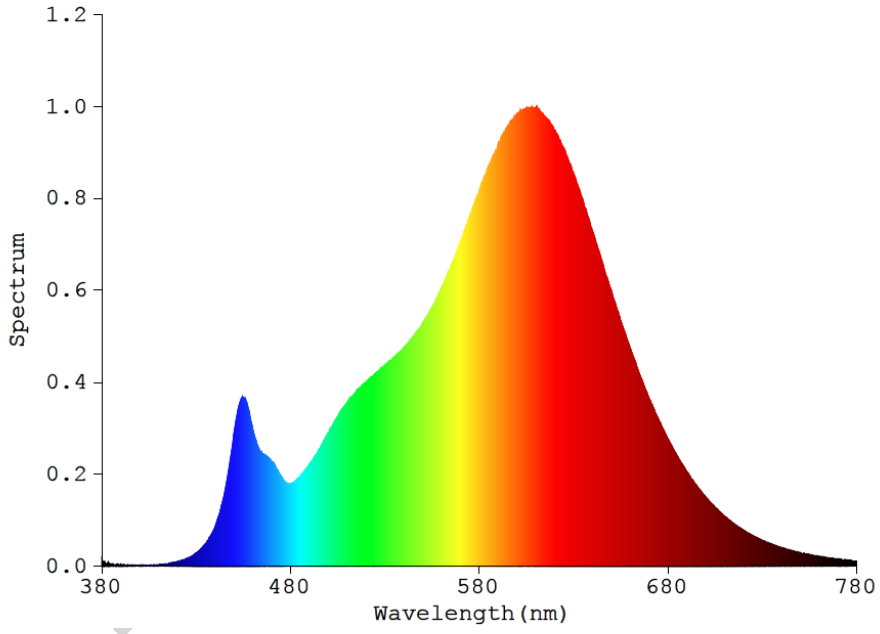
Special Color Rendering					
	Result at 120V	Result at 277V		Result at 120V	Result at 277V
R1	82	82	R9	8	8
R2	93	93	R10	86	86
R3	93	93	R11	81	81
R4	81	81	R12	77	77
R5	83	83	R13	85	85
R6	94	94	R14	97	97
R7	81	81	R15	73	73
R8	57	57	-	-	-

Laboratory: Dongguan New Testing Centre Co., Ltd
Address: 3F, No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China
Tel: 86-769-89874553
Website: http://www.ntc-cert.com

Spectrum Diagram (Result at 120V):



Spectrum Diagram (Result at 277V):



Laboratory: Dongguan New Testing Centre Co., Ltd
Address: 3F, No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China
Tel: 86-769-89874553
Website: http://www.ntc-cert.com

Goniophotometer Test Results:

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
25.5	42.3	Face Down	90	25

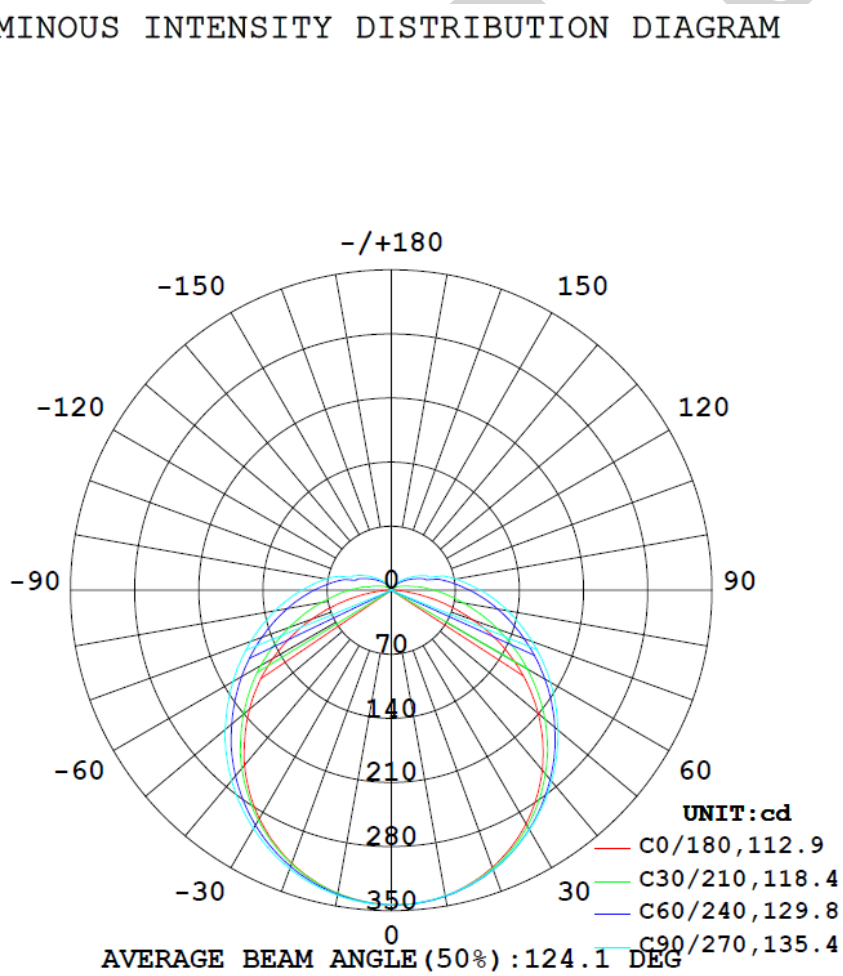
Electrical Data:

Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	0.08150	9.688	0.9911
277.0	60	0.04420	9.976	0.8145

Goniophotometer Data:

Parameter	Results at 120V	Results at 277V
Total Luminous (lm)	1296.9	1299.0
Total Luminous per foot (lm/ft)	324.23	324.75
Luminous Efficacy (lm/w)	133.87	130.21
Zonal Lumens Distribution (0-60°)	62.5%	
Beam Angle (°)	124.1	

Luminous Intensity Distribution Diagram (Result at 120V):



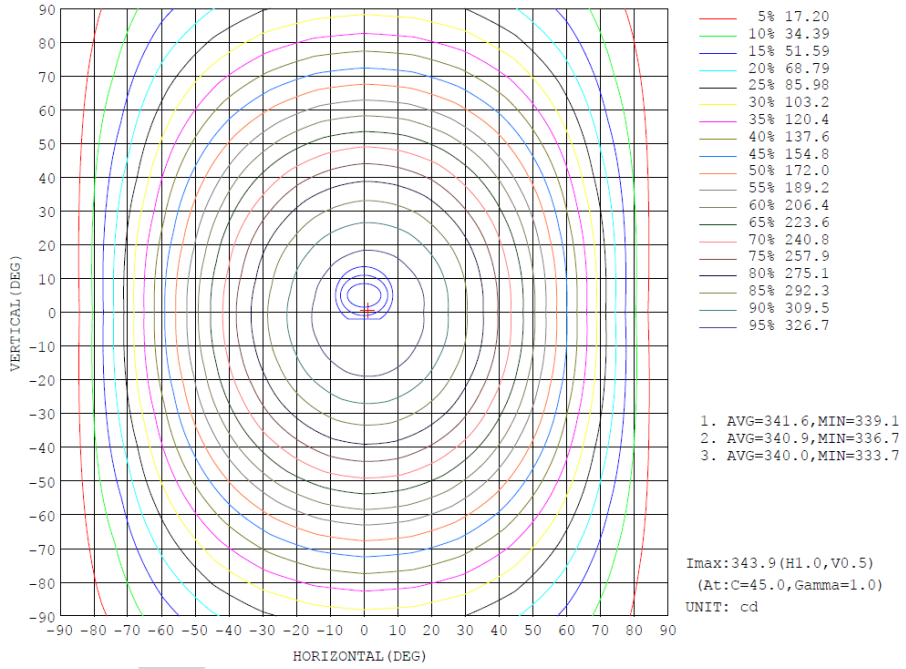
Laboratory: Dongguan New Testing Centre Co., Ltd
Address: 3F, No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China
Tel: 86-769-89874553
Website: http://www.ntc-cert.com

Zonal Flux Diagram (Result at 120V):

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	338.8	339.4	338.8	337.1	336.2	336.6	338.3	338.9	0- 10	32.52	32.52	2.51,2.51
20	322.1	324.6	324.7	320.2	317.3	319.3	323.7	323.6	10- 20	93.52	126.0	9.72,9.72
30	294.3	299.8	301.8	293.8	288.0	292.8	300.7	298.5	20- 30	143.0	269.1	20.7,20.7
40	256.2	266.5	272.0	259.6	249.3	258.8	271.2	265.1	30- 40	175.4	444.5	34.3,34.3
50	209.4	226.3	237.4	219.1	202.1	219.5	236.8	225.6	40- 50	187.5	631.9	48.7,48.7
60	155.0	183.6	200.5	177.0	149.4	177.7	199.7	182.9	50- 60	179.3	811.2	62.5,62.5
70	95.41	141.0	163.7	135.2	92.56	136.6	163.2	140.3	60- 70	154.5	965.7	74.5,74.5
80	36.69	102.3	129.0	97.49	36.62	98.78	128.8	101.2	70- 80	119.0	1085	83.6,83.6
90	3.280	70.18	97.53	66.45	2.606	68.10	98.06	68.95	80- 90	82.34	1167	90,90
100	2.392	46.03	71.40	43.41	1.805	44.95	72.03	44.65	90-100	54.47	1222	94.2,94.2
110	0.4077	27.01	42.94	25.98	1.546	27.23	45.31	26.36	100-110	33.22	1255	96.7,96.7
120	0.0541	16.99	31.27	16.23	1.243	16.98	31.79	15.24	110-120	20.06	1275	98.3,98.3
130	0.0870	10.25	19.89	10.01	0.9775	10.48	20.45	9.438	120-130	11.69	1287	99.2,99.2
140	0.1185	6.033	11.68	6.020	0.7503	6.091	11.83	5.406	130-140	6.191	1293	99.7,99.7
150	0.1462	3.410	6.446	3.454	0.5688	3.443	6.179	3.081	140-150	2.859	1296	99.9,99.9
160	0.1777	1.403	3.082	1.419	0.4215	1.596	2.968	1.358	150-160	1.096	1297	100,100
170	0.2089	0.2130	0.2142	0.2084	0.3013	0.2990	0.3050	0.3042	160-170	0.2280	1297	100,100
180	0.2566	0.2580	0.2559	0.2639	0.2578	0.2594	0.2559	0.2625	170-180	0.0244	1297	100,100
DEG	LUMINOUS INTENSITY:cd Less than 35% Percent = 21.3 %									UNIT:lm		

Isocandela Diagram (Result at 120V):



Laboratory: Dongguan New Testing Centre Co., Ltd
Address: 3F, No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China
Tel: 86-769-89874553
Website: http://www.ntc-cert.com

Luminous Distribution Intensity Data (Result at 120V):

Table--1 UNIT: cd

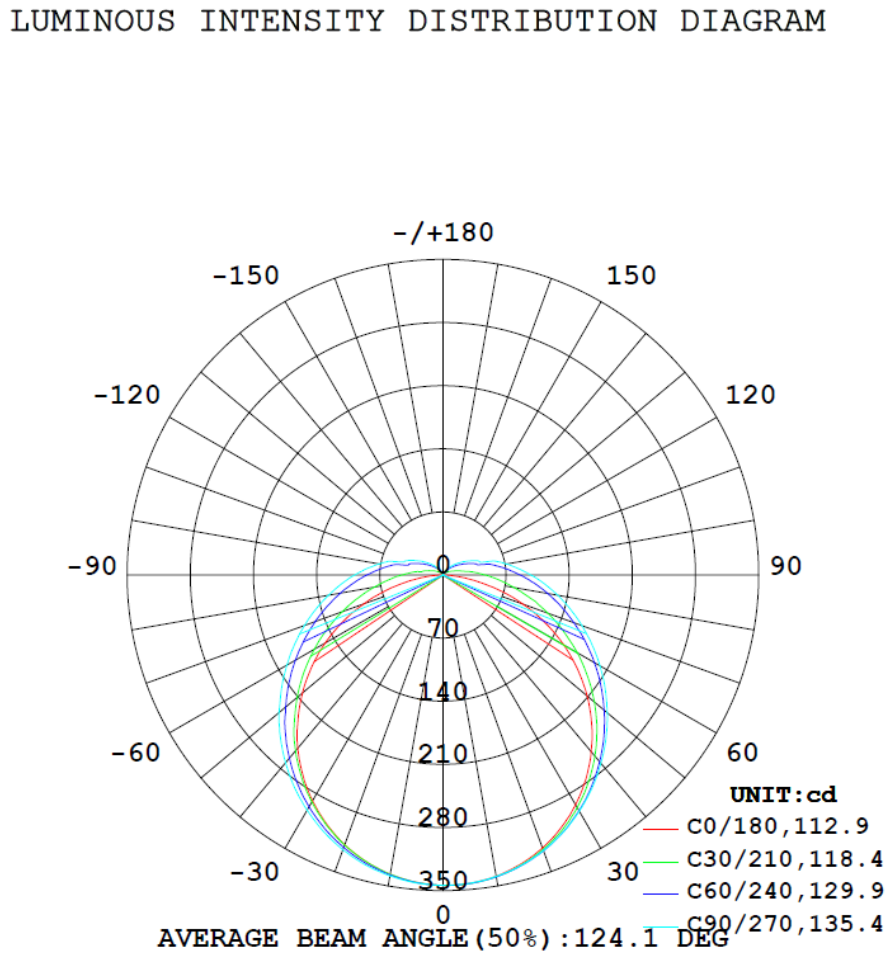
γ (DEG) \ C (DEG)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
0	343	343	343	343	343	343	343	343	343	343	343	343	343	343	343	343	343	343	343
5	343	343	343	343	343	343	342	342	342	342	341	341	341	341	341	341	342	342	342
10	339	339	339	339	339	339	339	338	338	337	336	336	336	336	336	337	337	338	338
15	332	333	333	333	333	333	333	332	331	330	329	328	328	328	328	329	330	331	332
20	322	323	324	325	325	325	325	324	322	320	318	317	317	317	318	319	321	322	324
25	310	311	312	313	314	315	314	313	310	308	305	304	304	303	305	307	310	311	313
30	294	296	297	300	301	302	302	300	297	294	290	288	288	287	290	293	296	299	301
35	276	279	281	284	286	288	288	286	282	278	273	270	270	269	273	277	281	284	287
40	256	259	262	267	270	272	272	270	265	260	253	250	249	249	254	259	265	268	271
45	234	237	241	247	252	255	255	253	247	241	233	227	226	227	233	240	247	251	255
50	209	213	219	226	233	237	237	234	228	219	211	203	202	204	211	220	227	234	237
55	183	188	195	205	214	218	219	215	208	198	187	179	176	179	188	199	208	215	218
60	155	161	171	184	194	199	201	197	189	177	164	153	149	153	165	178	189	197	200
65	126	134	147	162	174	180	182	178	169	156	140	126	121	127	141	157	169	178	181
70	95.4	106	124	141	154	162	164	159	150	135	117	99.3	92.6	101	119	137	150	160	163
75	65.1	79.4	101	121	136	144	146	142	132	116	94.8	73.6	63.8	74.7	97.1	117	132	142	146
80	36.7	55.2	80.2	102	118	126	129	125	114	97.5	74.9	50.3	36.6	52.0	77.5	98.8	115	125	129
85	13.4	35.4	62.3	85.3	101	110	113	109	97.7	81.0	57.7	31.2	14.1	33.4	60.4	82.5	99.2	109	113
90	3.28	21.8	47.4	70.2	85.9	95.1	97.5	93.8	83.0	66.4	43.5	18.4	2.61	20.4	46.3	68.1	84.5	94.2	98.1
95	2.94	13.3	35.7	57.1	72.3	81.4	83.9	80.3	69.8	53.9	32.5	10.7	1.91	12.0	35.1	55.7	71.5	80.9	84.5
100	2.39	8.43	24.3	46.0	60.3	69.0	71.4	68.0	58.2	43.4	21.6	6.83	1.81	8.21	23.3	45.0	59.8	68.6	72.0
105	1.25	5.59	18.6	33.2	45.8	57.2	59.9	56.5	43.6	31.1	16.9	5.00	1.69	6.01	18.9	33.0	43.1	55.0	59.3
110	0.41	3.88	13.9	27.0	37.4	42.2	42.9	41.2	36.1	26.0	12.7	3.98	1.55	4.48	14.5	27.2	37.5	43.3	45.3
115	0.06	2.78	10.7	21.5	30.5	36.3	38.1	35.9	29.7	20.5	10.2	3.32	1.39	3.73	11.3	21.7	30.7	36.5	38.6
120	0.05	2.15	8.29	17.0	24.5	29.6	31.3	29.2	23.7	16.2	8.02	2.85	1.24	3.12	8.86	17.0	24.8	29.9	31.8
125	0.07	1.77	6.42	13.2	19.4	23.8	25.1	23.5	18.9	12.8	6.40	2.47	1.10	2.65	6.76	13.2	19.9	24.0	25.6
130	0.09	1.49	5.02	10.3	15.1	19.0	19.9	18.8	14.8	10.0	5.13	2.14	0.98	2.28	5.36	10.5	15.7	18.9	20.5
135	0.10	1.09	3.94	7.90	11.6	14.8	15.4	14.6	11.5	7.80	4.12	1.54	0.86	1.94	4.31	7.59	12.2	14.6	15.9
140	0.12	0.25	3.11	6.03	9.01	11.2	11.7	11.1	8.97	6.02	3.30	0.72	0.75	1.13	3.40	6.09	8.69	11.0	11.8
145	0.13	0.17	2.46	4.56	6.72	8.35	8.90	8.29	6.73	4.59	2.62	0.54	0.65	0.63	2.71	4.64	6.64	7.95	8.53
150	0.15	0.16	1.85	3.41	4.91	6.07	6.45	6.03	4.94	3.45	1.97	0.44	0.57	0.54	2.08	3.44	4.90	5.84	6.18
155	0.16	0.17	0.66	2.51	3.51	4.28	4.54	4.27	3.53	2.54	0.83	0.36	0.49	0.47	1.18	2.54	3.49	4.14	4.37
160	0.18	0.18	0.19	1.40	2.42	2.92	3.08	2.92	2.39	1.42	0.25	0.28	0.42	0.40	0.36	1.60	2.37	2.83	2.97
165	0.19	0.19	0.19	0.21	0.69	1.52	1.75	1.57	0.75	0.20	0.19	0.20	0.33	0.32	0.31	0.31	1.01	1.65	1.77
170	0.21	0.21	0.21	0.21	0.22	0.21	0.21	0.20	0.20	0.21	0.21	0.21	0.30	0.30	0.30	0.30	0.30	0.31	0.31
175	0.23	0.23	0.23	0.24	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.29	0.29	0.29	0.29	0.28	0.28	0.28
180	0.26	0.26	0.26	0.26	0.26	0.25	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26

Table--2 UNIT: cd

γ (DEG) \ C (DEG)	285	300	315	330	345
0	343	343	343	343	343
5	342	343	343	343	343
10	338	339	339	339	339
15	332	333	333	333	332
20	324	324	324	323	323
25	313	313	312	312	310
30	301	300	298	297	295
35	286	286	283	280	278
40	271	269	265	262	258
45	254	251	246	241	236
50	236	232	226	218	213
55	217	212	205	195	187
60	199	193	183	171	160
65	180	173	161	146	133
70	161	153	140	123	105
75	143	135	120	99.9	77.5
80	126	117	101	79.1	53.0
85	110	101	84.0	61.0	33.0
90	94.8	85.7	68.9	46.2	19.5
95	81.2	72.1	56.0	34.6	11.5
100	68.8	60.2	44.7	24.0	7.03
105	54.7	43.9	33.1	18.0	4.10
110	43.6	37.3	26.4	12.4	2.51
115	36.4	30.5	20.5	8.51	2.14
120	29.8	24.5	15.2	7.30	1.78
125	23.8	19.4	11.7	5.67	1.43
130	18.7	14.6	9.44	4.36	1.23
135	14.0	11.3	7.26	3.47	0.76
140	10.7	8.56	5.41	2.79	0.24
145	7.80	6.21	4.12	2.22	0.25
150	5.68	4.58	3.08	1.68	0.27
155	4.03	3.27	2.25	0.62	0.29
160	2.75	2.25	1.36	0.31	0.31
165	1.53	0.80	0.32	0.31	0.31
170	0.31	0.31	0.30	0.30	0.30
175	0.29	0.29	0.29	0.28	0.29
180	0.26	0.26	0.26	0.26	0.26

Laboratory: Dongguan New Testing Centre Co., Ltd
Address: 3F, No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China
Tel: 86-769-89874553
Website: http://www.ntc-cert.com

Luminous Intensity Distribution Diagram (Result at 277V):



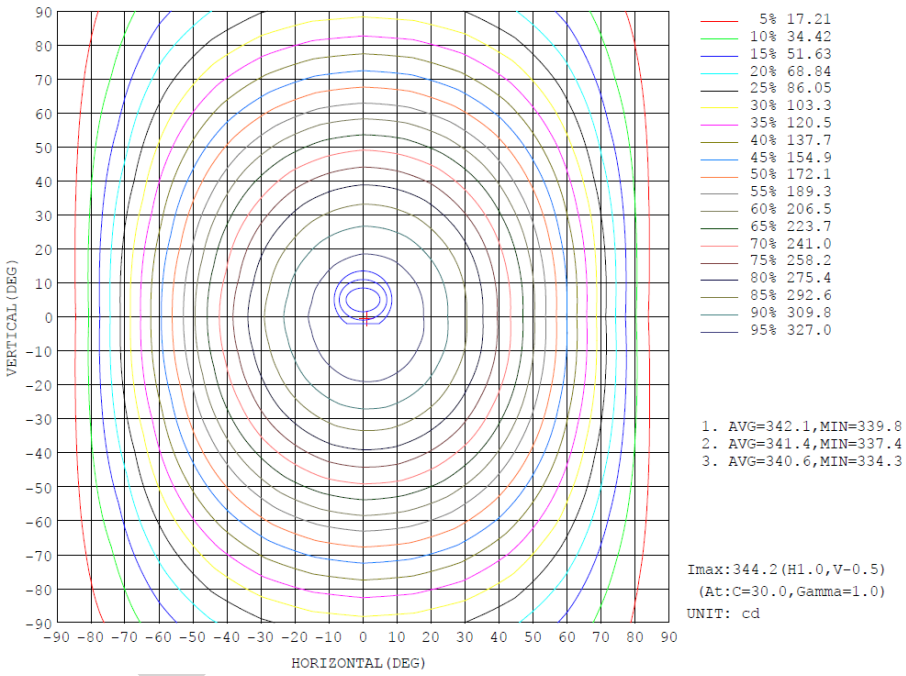
Laboratory: Dongguan New Testing Centre Co., Ltd
Address: 3F, No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China
Tel: 86-769-89874553
Website: http://www.ntc-cert.com

Zonal Flux Diagram (Result at 277V):

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	339.0	339.9	339.3	337.7	337.0	337.1	338.8	339.4	0- 10	32.58	32.58	2.51,2.51
20	322.2	325.0	325.2	320.8	318.4	319.9	324.2	324.1	10- 20	93.68	126.3	9.72,9.72
30	294.0	300.1	302.2	294.4	289.2	293.3	301.2	298.9	20- 30	143.3	269.5	20.7,20.7
40	255.6	266.8	272.4	260.1	250.7	259.3	271.6	265.5	30- 40	175.7	445.2	34.3,34.3
50	208.6	226.4	237.7	219.6	203.4	219.9	237.2	225.9	40- 50	187.8	632.9	48.7,48.7
60	154.1	183.7	200.8	177.3	150.8	178.0	200.0	183.2	50- 60	179.6	812.5	62.6,62.6
70	94.42	141.2	163.9	135.5	93.72	136.9	163.5	140.5	60- 70	154.7	967.3	74.5,74.5
80	35.85	102.4	129.2	97.68	37.68	99.21	129.0	101.3	70- 80	119.2	1086	83.6,83.6
90	3.245	70.22	97.66	66.58	2.748	68.25	98.25	69.00	80- 90	82.47	1169	90,90
100	2.358	46.07	71.48	43.50	1.817	45.02	72.15	44.73	90-100	54.55	1223	94.2,94.2
110	0.3908	27.02	43.00	26.04	1.557	27.28	45.37	26.40	100-110	33.27	1257	96.7,96.7
120	0.0558	16.99	31.31	16.26	1.252	17.01	31.85	15.27	110-120	20.09	1277	98.3,98.3
130	0.0876	10.26	19.91	10.03	0.9858	10.50	20.50	9.455	120-130	11.71	1289	99.2,99.2
140	0.1197	6.039	11.69	6.034	0.7567	6.100	11.86	5.418	130-140	6.202	1295	99.7,99.7
150	0.1470	3.416	6.453	3.462	0.5726	3.450	6.193	3.089	140-150	2.863	1298	99.9,99.9
160	0.1799	1.405	3.085	1.418	0.4245	1.595	2.975	1.364	150-160	1.098	1299	100,100
170	0.2093	0.2146	0.2150	0.2076	0.3015	0.2988	0.3046	0.3046	160-170	0.2284	1299	100,100
180	0.2588	0.2570	0.2552	0.2638	0.2591	0.2602	0.2559	0.2628	170-180	0.0244	1299	100,100
DEG	LUMINOUS INTENSITY:cd Less than 35% Percent = 21.2 %									UNIT:lm		

Isocandela Diagram (Result at 277V):



Laboratory: Dongguan New Testing Centre Co., Ltd
Address: 3F, No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China
Tel: 86-769-89874553
Website: http://www.ntc-cert.com

Luminous Distribution Intensity Data (Result at 277V):

Table--1 UNIT: cd

γ (DEG) \ C (DEG)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
0	344	344	344	344	344	344	344	344	344	344	344	344	344	344	344	344	344	344	344
5	343	343	343	343	343	343	343	343	342	342	342	342	342	342	342	342	342	342	343
10	339	340	340	340	340	340	339	339	338	338	337	337	337	336	337	337	338	338	339
15	332	333	333	334	334	334	333	333	332	330	329	329	329	328	329	330	331	332	333
20	322	324	324	325	325	326	325	324	322	321	319	318	318	317	319	320	322	323	324
25	309	311	312	314	315	315	315	314	311	309	306	304	305	304	306	308	310	312	314
30	294	296	298	300	302	303	302	301	298	294	291	289	289	288	291	293	297	299	301
35	276	279	281	284	287	289	288	286	282	278	273	270	271	270	273	277	282	285	287
40	256	259	262	267	270	273	272	270	265	260	254	250	251	250	254	259	265	269	272
45	233	237	241	248	252	256	256	253	247	241	233	227	228	228	233	240	247	252	255
50	209	213	219	226	233	238	238	235	228	220	211	204	203	204	211	220	228	234	237
55	182	188	196	205	214	218	219	216	209	199	188	179	178	180	188	199	208	216	218
60	154	161	172	184	194	199	201	197	189	177	164	153	151	154	165	178	189	197	200
65	125	134	147	162	174	180	182	178	170	156	141	126	123	127	142	157	170	178	182
70	94.4	106	124	141	154	162	164	160	150	135	117	99.5	93.7	100	119	137	151	160	163
75	64.1	79.3	101	121	136	144	146	142	132	116	94.9	73.6	65.0	75.0	97.3	117	133	142	146
80	35.9	55.1	80.2	102	118	127	129	125	115	97.7	75.1	50.3	37.7	52.2	77.7	99.2	115	126	129
85	12.8	35.4	62.3	85.3	101	110	113	109	97.9	81.2	57.8	31.2	14.9	33.6	60.6	82.7	99.4	110	113
90	3.25	21.8	47.5	70.2	85.9	95.3	97.7	93.9	83.2	66.6	43.6	18.4	2.75	20.5	46.4	68.2	84.7	94.5	98.3
95	2.92	13.3	35.7	57.1	72.4	81.5	84.0	80.4	70.1	54.0	32.6	10.7	1.92	12.1	35.2	55.7	71.6	81.0	84.6
100	2.36	8.41	24.3	46.1	60.4	69.1	71.5	68.1	58.4	43.5	21.6	6.84	1.82	8.24	23.4	45.0	59.9	68.8	72.2
105	1.22	5.58	18.6	33.2	45.8	57.3	60.0	56.5	43.8	31.2	16.9	5.01	1.70	6.03	18.9	33.0	43.2	55.2	59.4
110	0.39	3.87	14.0	27.0	37.4	42.3	43.0	41.3	36.2	26.0	12.7	3.99	1.56	4.49	14.5	27.3	37.6	43.4	45.4
115	0.06	2.78	10.7	21.5	30.6	36.4	38.1	35.9	29.8	20.6	10.2	3.33	1.40	3.74	11.3	21.7	30.8	36.5	38.7
120	0.06	2.15	8.30	17.0	24.5	29.7	31.3	29.2	23.7	16.3	8.04	2.86	1.25	3.13	8.88	17.0	24.8	29.9	31.9
125	0.07	1.77	6.43	13.2	19.4	23.8	25.1	23.5	18.9	12.8	6.42	2.48	1.11	2.66	6.78	13.2	20.0	24.0	25.7
130	0.09	1.49	5.02	10.3	15.1	19.1	19.9	18.8	14.9	10.0	5.15	2.14	0.99	2.29	5.38	10.5	15.7	19.0	20.5
135	0.10	1.08	3.95	7.91	11.6	14.8	15.5	14.6	11.5	7.82	4.13	1.54	0.87	1.95	4.32	7.61	12.2	14.7	15.9
140	0.12	0.25	3.11	6.04	9.01	11.2	11.7	11.1	8.99	6.03	3.31	0.72	0.76	1.13	3.41	6.10	8.71	11.0	11.9
145	0.14	0.17	2.46	4.57	6.73	8.37	8.91	8.30	6.76	4.60	2.63	0.54	0.66	0.63	2.72	4.65	6.65	7.97	8.54
150	0.15	0.16	1.86	3.42	4.91	6.07	6.45	6.04	4.96	3.46	1.98	0.44	0.57	0.54	2.09	3.45	4.91	5.85	6.19
155	0.16	0.17	0.67	2.52	3.52	4.28	4.54	4.27	3.54	2.55	0.83	0.36	0.50	0.48	1.19	2.54	3.50	4.15	4.38
160	0.18	0.19	0.19	1.40	2.42	2.92	3.08	2.93	2.40	1.42	0.25	0.28	0.42	0.40	0.37	1.60	2.38	2.83	2.98
165	0.19	0.19	0.20	0.21	0.69	1.53	1.75	1.56	0.77	0.20	0.19	0.20	0.34	0.32	0.31	0.31	1.01	1.66	1.78
170	0.21	0.21	0.21	0.21	0.22	0.21	0.21	0.20	0.20	0.21	0.21	0.21	0.30	0.31	0.30	0.30	0.30	0.31	0.30
175	0.23	0.23	0.23	0.24	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.29	0.29	0.29	0.29	0.28	0.28	0.28
180	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26

Table--2 UNIT: cd

γ (DEG) \ C (DEG)	285	300	315	330	345
0	344	344	344	344	344
5	343	343	343	343	343
10	339	339	339	340	340
15	333	333	333	333	333
20	324	325	324	324	323
25	314	314	313	312	311
30	301	301	299	298	296
35	287	286	283	281	278
40	271	269	265	262	259
45	254	252	246	242	237
50	236	232	226	218	213
55	218	213	205	195	187
60	199	193	183	171	161
65	180	173	162	147	133
70	161	154	140	123	107
75	144	135	120	100	77.8
80	127	117	101	79.3	53.1
85	110	101	84.1	61.2	33.1
90	95.0	85.7	69.0	46.3	19.5
95	81.4	72.2	56.1	34.6	11.5
100	69.0	60.2	44.7	24.0	7.08
105	54.9	43.9	33.1	18.0	4.11
110	43.7	37.3	26.4	12.4	2.53
115	36.5	30.5	20.5	8.53	2.15
120	29.8	24.5	15.3	7.32	1.79
125	23.9	19.4	11.7	5.68	1.44
130	18.7	14.6	9.45	4.37	1.23
135	14.0	11.3	7.27	3.48	0.77
140	10.7	8.57	5.42	2.80	0.24
145	7.83	6.22	4.13	2.23	0.25
150	5.70	4.59	3.09	1.68	0.27
155	4.05	3.27	2.26	0.63	0.29
160	2.77	2.25	1.36	0.31	0.31
165	1.54	0.79	0.32	0.31	0.31
170	0.31	0.31	0.30	0.30	0.30
175	0.29	0.29	0.29	0.28	0.29
180	0.26	0.26	0.26	0.26	0.26

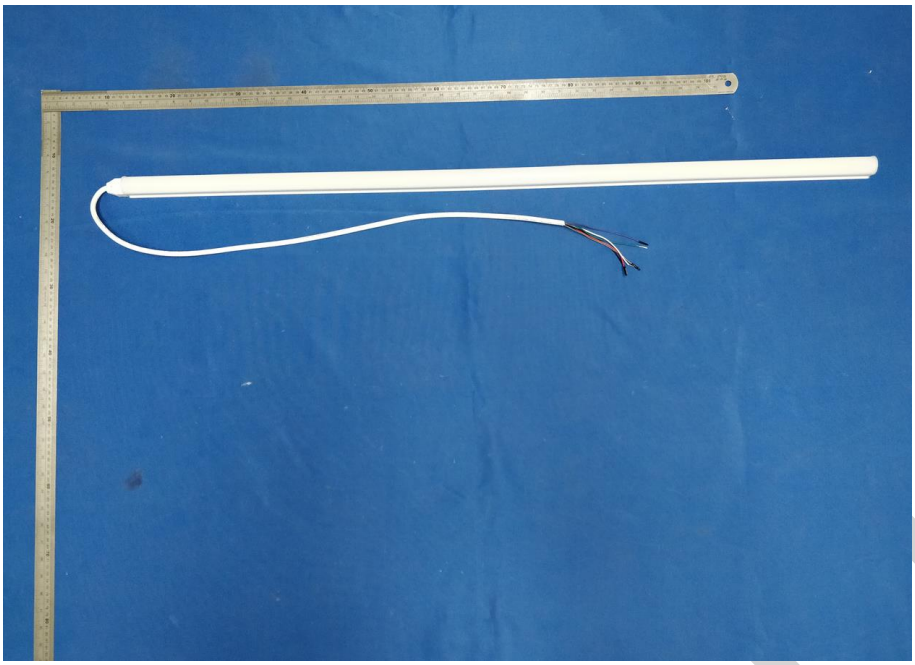
THD and PF Measurement Test Results (Test for 2700K):

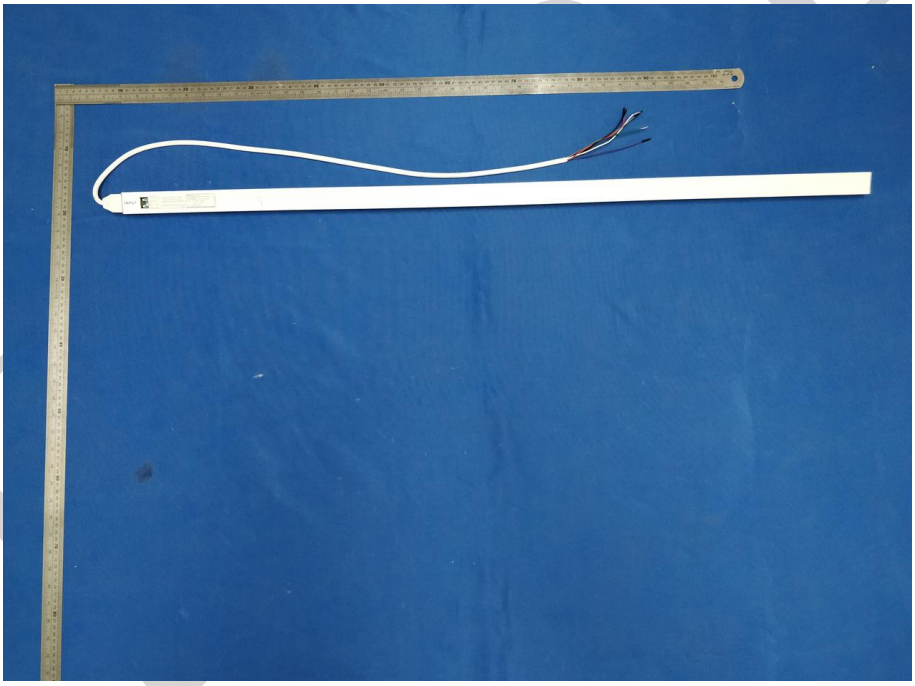
Electrical Measurement:

Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor	iTHD(%)
277.0	60	0.04420	9.976	0.8145	19.67

Laboratory: Dongguan New Testing Centre Co., Ltd
Address: 3F, No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China
Tel: 86-769-89874553
Website: http://www.ntc-cert.com

Photo of Sample:





Laboratory: Dongguan New Testing Centre Co., Ltd
Address: 3F, No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China
Tel: 86-769-89874553
Website: http://www.ntc-cert.com

Equipment List:

Equipment ID	Equipment Name	Last Cal.	Due Cal.
NTC-F01-001	Goniophotometer System	2018-11-16	2019-11-15
NTC-F01-006	2.0 meter Integrating Sphere	2018-11-16	2019-11-15
NTC-F01-012	Standard Lamp	2018-11-13	2019-11-12
NTC-F01-013	Standard Lamp	2018-11-13	2019-11-12
NTC-F01-031	Digital Power Meter	2019-08-22	2020-08-21
NTC-F01-019	Temperature & Humidity Meter	2018-11-12	2019-11-11

************End of Report************

Laboratory: Dongguan New Testing Centre Co., Ltd
Address: 3F, No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China
Tel: 86-769-89874553
Website: http://www.ntc-cert.com