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-G1-2F-12W-XXK-WC-[Blank, OCN]-[BAA, Blank]

Representative (Tested) Model:
RP-LBI-G1-2F-12W-XXK-WC

Model Difference:

1. **WC represents power adjustable and color tunable, wattage can adjust 6W, 9W and 12W, 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.
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3. This report does not imply product certification, approval, or endorsement by NVLAP, or any agency of the Federal Government.

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Tel: 86-769-89874553
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Product Information:

Client Name:	LIGHT EFFICIENT DESIGN
Brand Name:	REMPHOS OR LIGHT EFFICIENT DESIGN
Model Number:	RP-LBI-G1-2F-12W-XXK-WC
Product Type:	Direct Linear Ambient Luminaires
Rating Input:	100-277Vac, 50/60Hz, 12W
Declared CCT:	2700K/3000K/3500K
Declared Light Output:	1400 lm
LED Manufacturer:	Hongli Zhihui Group Co., Ltd.
LED Model:	HL-AS-PU2835DW-S1-08-PCT-HR3
LED Quantity:	64 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:	191106001-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.:	NTCLR19110102
Remark *(If applicable)*:	1. Product tested IS test with all wattage for all CCT, tested Gonio test and PF&iTHD test with the default maximum wattage for 2700K. 2. Tested PF&iTHD test with the default maximum wattage for 2700K.

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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.

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Integrating Sphere Test Results:

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
25.1	41.0	Face Down	90	10

Electrical Data:

CCT (K)	Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
2700	120.0	60	0.09980	11.91	0.9947
	277.0	60	0.04580	12.20	0.9621
3000	120.0	60	0.09850	11.75	0.9946
	277.0	60	0.04510	12.03	0.9618
3500	120.0	60	0.1002	11.96	0.9947
	277.0	60	0.04590	12.23	0.9624

Color Data:

Voltage (V)	CCT (K)	CRI	R9	x	y	u'	v'	Duv
120.0	2745	82.3	5	0.4598	0.4163	0.2599	0.5295	0.00211
277.0	2744	82.3	5	0.4598	0.4163	0.2599	0.5295	0.00210
120.0	3092	83.7	11	0.4292	0.3988	0.2478	0.5181	-0.00101
277.0	3092	83.7	11	0.4291	0.3988	0.2478	0.5181	-0.00101
120.0	3539	83.6	10	0.4012	0.3842	0.2357	0.5079	-0.00196
277.0	3544	83.6	10	0.4009	0.3841	0.2356	0.5078	-0.00197

Output Data:

CCT (K)	Voltage (V)	Light output (lm)	Efficacy (lm/W)
2700	120.0	1485.2	124.70
	277.0	1483.8	121.62
3000	120.0	1612.8	137.26
	277.0	1610.6	133.88
3500	120.0	1585.8	132.59
	277.0	1584.6	129.57

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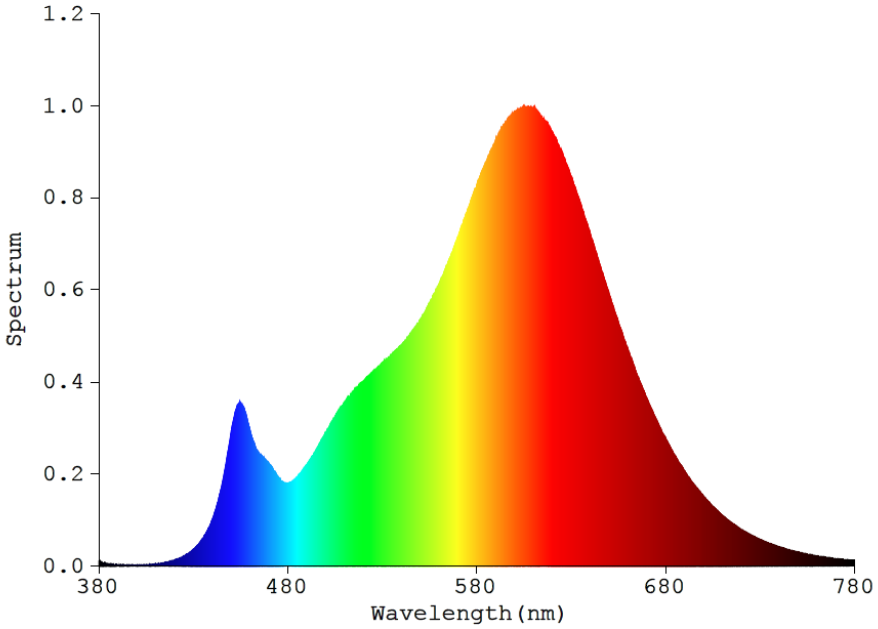
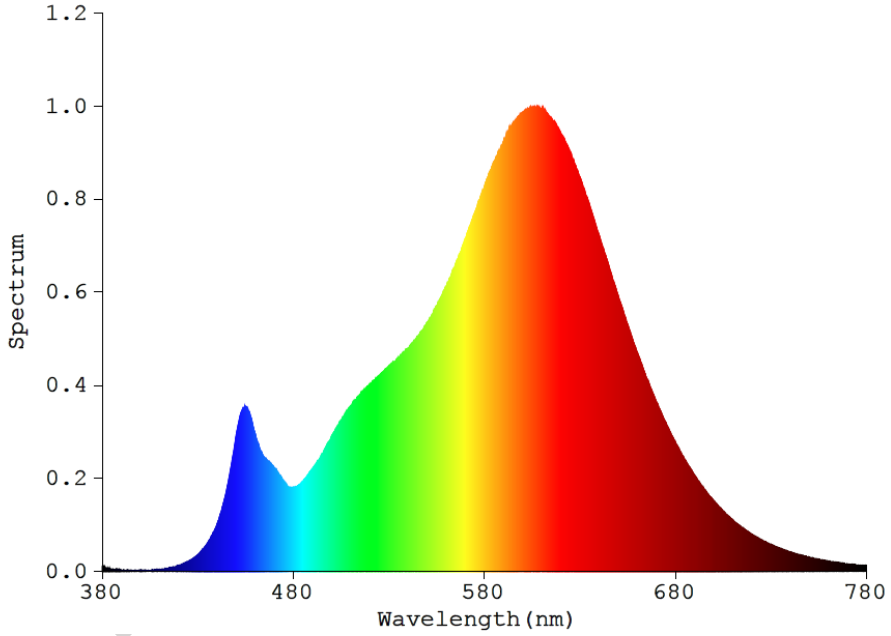
Spectrum Diagram (2700K for 120V):



Spectrum Diagram (2700K for 277V):



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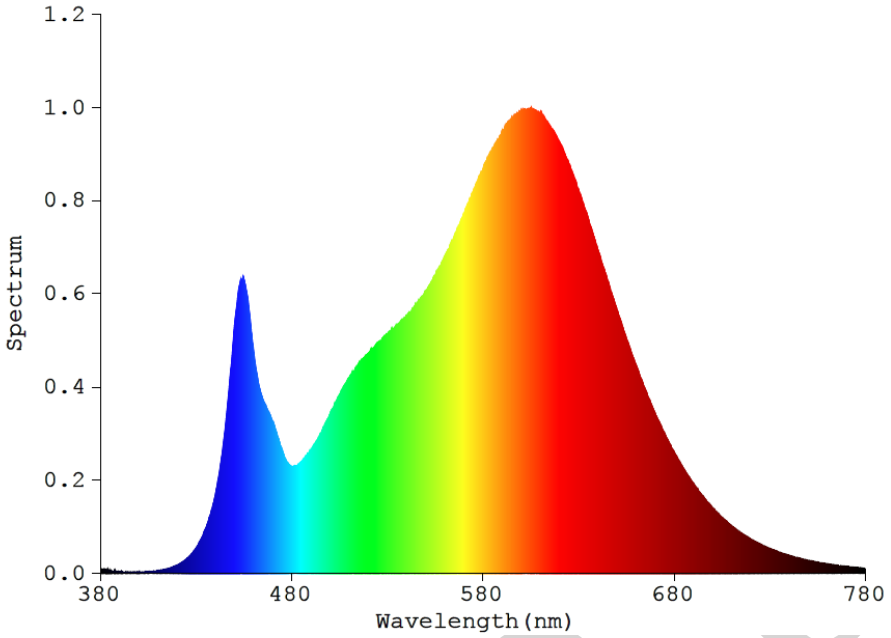
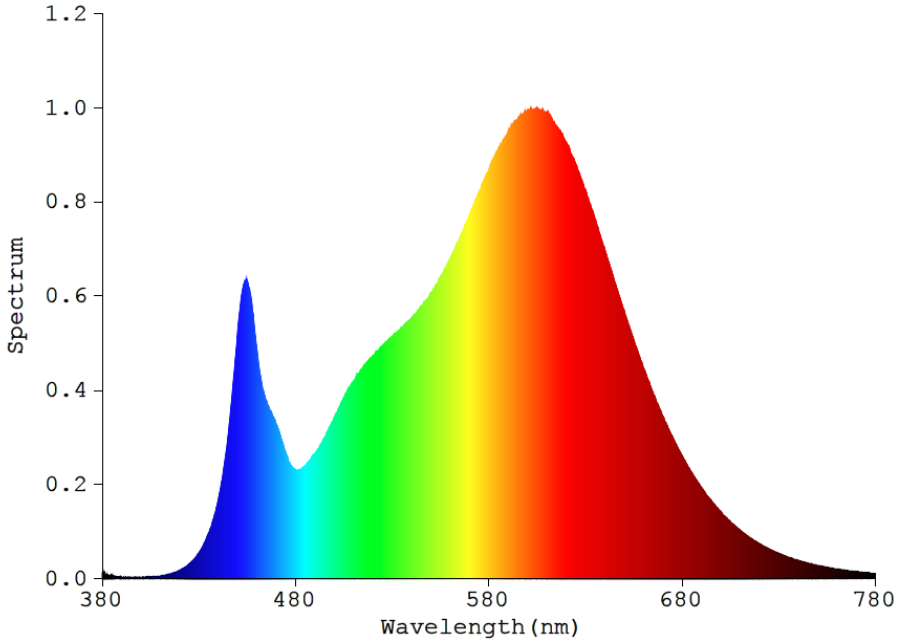
Spectrum Diagram (3000K for 120V):



Spectrum Diagram (3000K for 277V):



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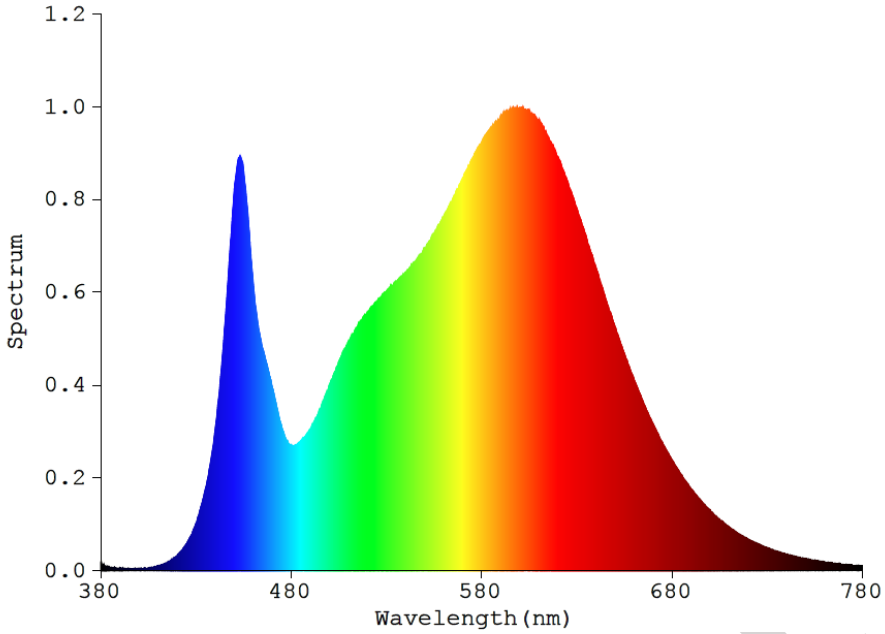
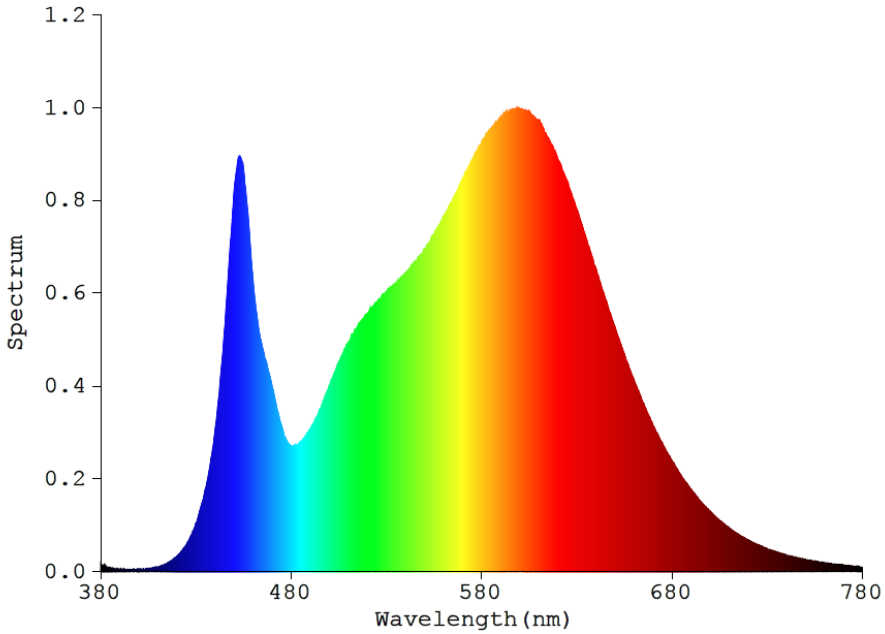
Spectrum Diagram (3500K for 120V):



Spectrum Diagram (3500K for 277V):



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Goniophotometer Test Results:

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
24.8	41.4	Face Down	90	25

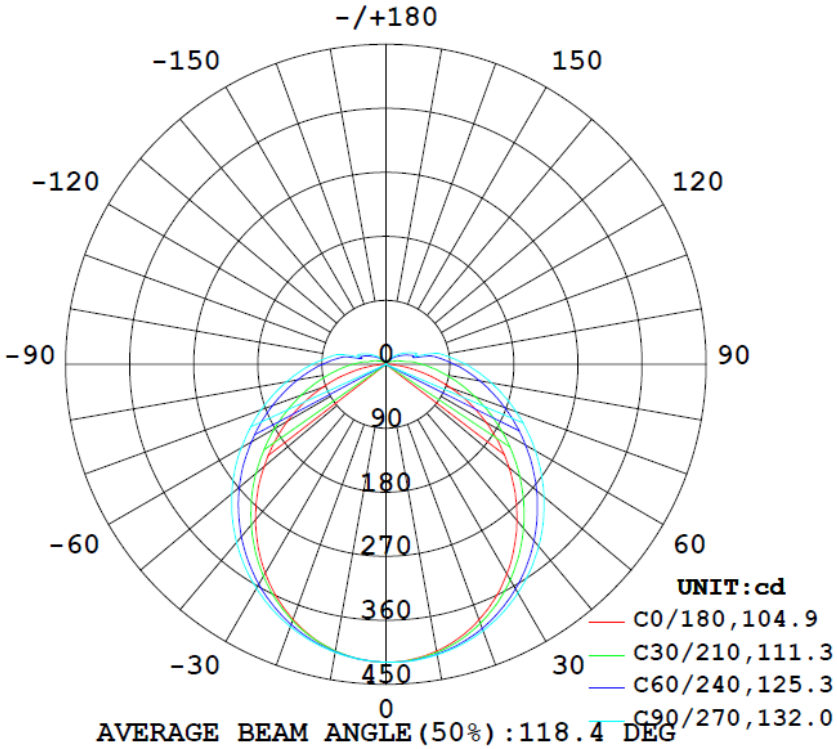
Electrical Data:

Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	0.09980	11.91	0.9947
277.0	60	0.04580	12.20	0.9621

Goniophotometer Data:

Parameter	Results at 120V	Results at 277V
Total Luminous (lm)	1485.2	1483.8
Total Luminous per foot (lm/ft)	742.60	741.90
Luminous Efficacy (lm/w)	124.70	121.62
Zonal Lumens Distribution (0-60°)	64.4%	
Beam Angle (°)	118.4	

Luminous Intensity Distribution Diagram (Result at 120V):

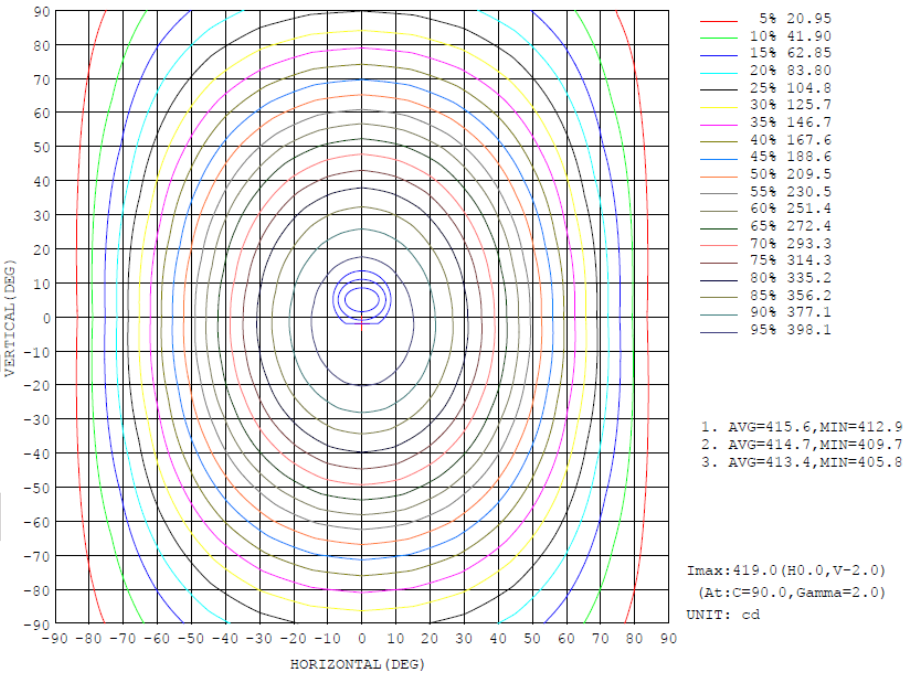


Zonal Flux Diagram (Result at 120V):

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	409.5	412.7	414.7	412.3	409.2	409.5	411.1	409.8	0- 10	39.61	39.61	2.67,2.67
20	382.3	391.9	398.7	391.1	381.7	386.1	392.6	386.5	10- 20	113.4	153.0	10.3,10.3
30	340.2	357.8	371.1	356.5	339.1	350.2	363.9	350.7	20- 30	171.8	324.7	21.9,21.9
40	286.7	313.3	334.0	311.4	285.2	304.8	326.6	305.2	30- 40	207.8	532.5	35.9,35.9
50	226.0	262.3	290.0	260.1	223.5	253.6	282.9	253.8	40- 50	218.5	751.0	50.6,50.6
60	162.1	208.4	242.3	206.1	159.6	200.5	234.7	200.5	50- 60	205.2	956.3	64.4,64.4
70	97.41	157.7	194.6	155.4	95.40	150.4	186.6	149.9	60- 70	173.4	1130	76.1,76.1
80	37.88	113.2	150.6	111.1	36.51	106.4	142.0	105.5	70- 80	131.5	1261	84.9,84.9
90	4.999	77.26	112.3	75.58	4.100	71.08	103.9	69.93	80- 90	90.07	1351	91,91
100	3.958	46.34	80.93	43.79	3.500	37.74	73.91	37.69	90-100	58.94	1410	94.9,94.9
110	1.314	27.29	45.73	28.25	3.122	25.98	41.14	23.56	100-110	31.96	1442	97.1,97.1
120	0.1114	17.49	32.71	18.14	2.690	16.31	29.09	14.57	110-120	20.03	1462	98.4,98.4
130	0.1361	10.73	21.22	11.54	2.258	10.04	18.97	7.094	120-130	11.93	1474	99.2,99.2
140	0.1729	6.448	12.68	7.195	1.843	6.597	11.45	5.081	130-140	6.486	1481	99.7,99.7
150	0.2068	3.657	7.062	4.236	1.444	3.998	5.923	3.121	140-150	3.101	1484	99.9,99.9
160	0.2442	1.733	3.348	2.326	1.055	1.818	3.061	1.116	150-160	1.255	1485	100,100
170	0.2694	0.2722	0.2727	0.3232	0.6048	0.4551	0.3863	0.4019	160-170	0.2822	1485	100,100
180	0.3210	0.3182	0.3118	0.3180	0.3214	0.3199	0.3132	0.3212	170-180	0.0324	1485	100,100
DEG	LUMINOUS INTENSITY:cd Less than 35% Percent = 20.0 %									UNIT:lm		

Isocandela Diagram (Result at 120V):



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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	419	419	419	419	419	419	419	419	419	419	419	419	419	419	419	419	419	419	419
5	416	417	417	418	418	418	418	418	418	417	417	417	416	416	416	416	416	416	416
10	410	411	411	413	414	415	415	414	413	412	411	410	409	409	409	410	410	411	411
15	398	400	401	404	406	408	408	408	406	403	401	399	398	397	398	399	401	402	403
20	382	385	388	392	395	398	399	398	395	391	386	383	382	381	384	386	389	391	393
25	363	366	370	376	381	385	386	385	380	375	369	364	362	362	365	369	375	378	379
30	340	344	350	358	364	370	371	369	364	356	348	342	339	339	344	350	357	362	364
35	314	319	326	337	345	352	354	351	344	335	324	317	313	314	320	328	338	343	346
40	287	292	301	313	324	332	334	331	323	311	299	290	285	286	294	305	316	323	327
45	257	264	274	288	301	310	313	310	299	286	271	261	255	257	267	280	293	302	305
50	226	233	246	262	277	287	290	287	275	260	243	230	224	227	239	254	269	279	283
55	194	202	217	235	252	263	266	263	250	233	214	199	192	196	209	227	244	255	259
60	162	171	188	208	226	239	242	238	225	206	185	168	160	165	181	201	218	231	235
65	130	140	160	183	202	214	218	213	200	180	157	137	127	134	153	175	194	206	210
70	97.4	110	134	158	178	190	195	190	176	155	131	107	95.4	105	127	150	170	183	187
75	66.2	82.3	109	135	155	168	172	167	154	132	105	78.9	64.6	76.8	102	127	147	160	164
80	37.9	57.4	86.1	113	134	146	151	146	133	111	83.3	54.2	36.5	52.8	80.8	106	126	138	142
85	15.6	37.4	67.1	94.1	114	126	131	126	113	92.2	64.5	34.5	14.7	33.9	62.4	87.3	107	119	122
90	5.00	23.5	51.4	77.3	96.4	108	112	108	95.3	75.6	49.2	21.5	4.10	21.0	47.3	71.1	89.6	101	104
95	4.56	15.3	39.0	63.0	80.9	92.2	95.5	91.8	80.0	61.5	37.2	13.5	3.63	13.4	35.7	57.4	74.6	84.6	88.0
100	3.96	10.0	25.7	46.3	67.4	77.9	80.9	77.5	66.6	43.8	25.1	8.96	3.50	9.11	24.0	37.7	61.4	70.8	73.9
105	2.80	7.14	19.5	33.3	39.2	45.6	49.4	44.5	38.3	34.0	20.1	7.00	3.32	7.11	19.3	31.4	35.6	39.0	42.6
110	1.31	5.01	14.6	27.3	37.5	43.8	45.7	44.1	38.1	28.2	15.5	5.78	3.12	5.88	15.0	26.0	34.4	39.5	41.1
115	0.37	3.47	11.1	22.0	31.3	37.4	39.2	37.4	31.6	22.5	12.1	4.91	2.91	5.00	11.8	20.6	28.4	33.5	35.2
120	0.11	2.55	8.63	17.5	25.5	31.0	32.7	31.1	25.9	18.1	10.1	4.34	2.69	4.41	9.56	16.3	23.1	27.6	29.1
125	0.12	1.99	6.65	13.8	20.4	25.1	26.6	25.2	20.9	14.5	8.23	3.86	2.47	3.88	7.75	13.0	18.9	22.3	23.5
130	0.14	1.63	5.20	10.7	16.0	20.2	21.2	20.3	16.7	11.5	6.79	3.44	2.26	3.48	6.41	10.0	15.1	17.7	19.0
135	0.16	1.36	4.08	8.35	12.4	15.8	16.6	15.9	13.1	9.15	5.56	2.95	2.05	2.79	5.35	8.02	12.0	13.9	14.9
140	0.17	0.69	3.24	6.45	9.70	12.1	12.7	12.2	10.4	7.20	4.55	2.05	1.84	1.83	4.45	6.60	8.84	10.3	11.5
145	0.19	0.29	2.62	4.90	7.28	9.07	9.70	9.17	7.94	5.58	3.69	1.48	1.64	1.59	3.62	5.12	6.80	7.50	7.76
150	0.21	0.26	1.98	3.66	5.34	6.61	7.06	6.68	5.89	4.24	2.95	1.25	1.44	1.38	2.90	4.00	5.26	5.68	5.92
155	0.23	0.25	1.14	2.63	3.81	4.67	4.98	4.71	4.17	3.20	1.92	1.04	1.25	1.20	1.47	3.11	3.94	4.27	4.42
160	0.24	0.26	0.30	1.73	2.53	3.15	3.35	3.17	2.81	2.33	0.78	0.85	1.05	1.01	0.93	1.82	2.74	2.93	3.06
165	0.25	0.27	0.27	0.29	1.17	1.85	1.98	1.91	1.28	0.49	0.59	0.66	0.85	0.82	0.75	0.62	0.70	1.32	1.50
170	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.32	0.40	0.45	0.60	0.58	0.53	0.46	0.39	0.39	0.39
175	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.30	0.37	0.38	0.37	0.37	0.36	0.36	0.36
180	0.32	0.32	0.32	0.32	0.32	0.31	0.31	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.31	0.31

Table--2 UNIT: cd

γ (DEG) \ C (DEG)	285	300	315	330	345
0	419	419	419	419	419
5	416	416	416	416	416
10	411	411	410	410	409
15	403	402	400	399	398
20	392	390	387	384	382
25	378	375	370	366	363
30	362	357	351	345	341
35	343	338	329	321	316
40	323	316	305	295	288
45	302	293	280	268	259
50	279	269	254	240	229
55	255	244	227	210	198
60	230	218	201	181	167
65	206	193	175	153	136
70	182	169	150	127	105
75	159	147	127	102	77.3
80	138	125	105	79.9	52.6
85	118	106	86.3	61.2	33.1
90	100.0	88.7	69.9	46.1	20.1
95	84.0	73.7	56.2	34.4	12.7
100	70.3	60.5	37.7	22.4	8.53
105	39.7	36.8	29.0	16.8	4.64
110	38.8	33.2	23.6	12.5	3.46
115	33.1	27.5	18.7	9.32	1.90
120	27.2	22.2	14.6	4.24	1.87
125	21.9	17.9	11.0	5.02	1.61
130	17.3	14.1	7.09	4.08	1.26
135	13.5	9.78	6.76	3.39	0.66
140	9.81	7.53	5.08	2.77	0.37
145	7.13	5.96	4.01	2.24	0.37
150	5.67	4.46	3.12	1.55	0.38
155	4.02	3.30	2.32	0.47	0.40
160	2.85	2.29	1.12	0.44	0.42
165	1.21	0.50	0.43	0.42	0.42
170	0.39	0.39	0.40	0.39	0.40
175	0.36	0.36	0.36	0.36	0.37
180	0.32	0.32	0.32	0.32	0.32

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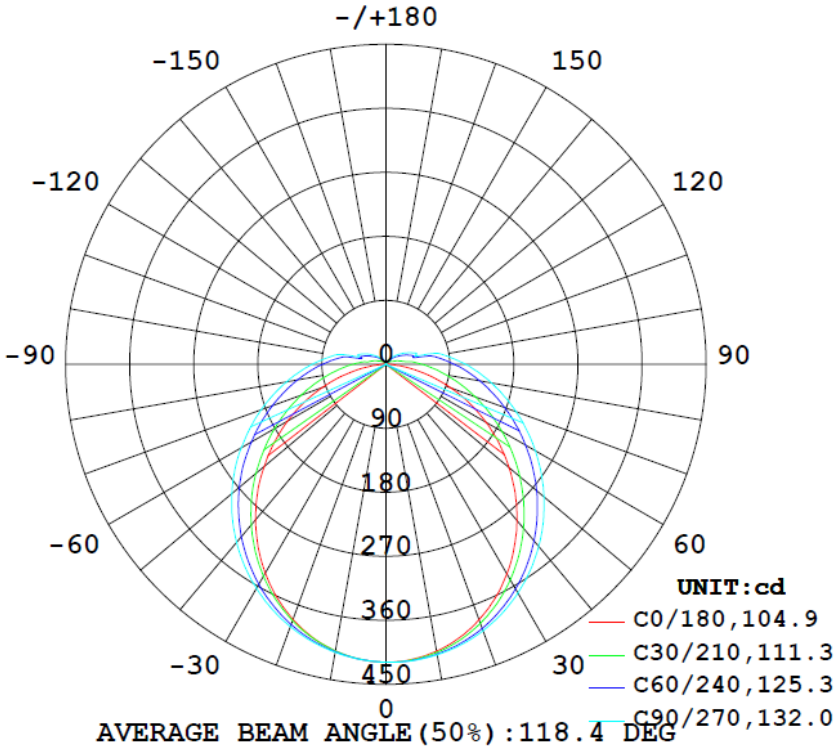
Luminous Intensity Distribution Diagram (Result at 277V):



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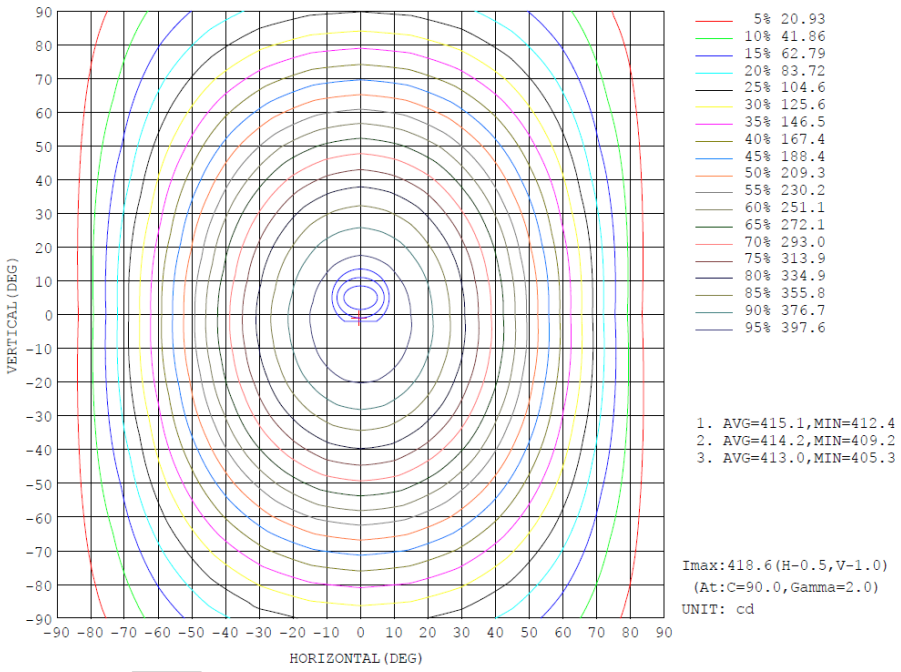
Zonal Flux Diagram (Result at 277V):

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	408.7	412.3	414.3	411.9	409.1	409.1	410.7	409.4	0- 10	39.57	39.57	2.67,2.67
20	381.4	391.7	398.3	390.7	381.9	385.7	392.1	386.1	10- 20	113.3	152.8	10.3,10.3
30	338.9	357.6	370.9	356.2	339.6	349.8	363.5	350.3	20- 30	171.6	324.4	21.9,21.9
40	285.4	313.2	333.8	311.1	285.8	304.4	326.4	304.8	30- 40	207.6	532.0	35.9,35.9
50	224.8	262.2	289.7	260.0	224.4	253.3	282.6	253.5	40- 50	218.3	750.3	50.6,50.6
60	160.8	208.4	242.0	205.9	160.6	200.4	234.5	200.3	50- 60	205.0	955.3	64.4,64.4
70	96.25	157.7	194.6	155.3	96.30	150.2	186.4	149.7	60- 70	173.2	1129	76.1,76.1
80	36.89	113.2	150.4	111.1	37.42	105.8	141.9	105.4	70- 80	131.3	1260	84.9,84.9
90	4.966	77.33	112.2	75.52	4.244	70.97	103.8	69.79	80- 90	90.00	1350	91,91
100	3.938	46.44	80.91	43.75	3.494	37.49	73.81	37.55	90-100	58.89	1409	94.9,94.9
110	1.249	27.30	45.71	28.22	3.120	25.94	41.10	23.53	100-110	31.93	1441	97.1,97.1
120	0.1100	17.51	32.70	18.14	2.688	16.29	29.06	14.56	110-120	20.01	1461	98.4,98.4
130	0.1365	10.74	21.22	11.54	2.257	10.45	18.96	7.273	120-130	11.92	1473	99.2,99.2
140	0.1729	6.452	12.68	7.189	1.845	6.583	11.41	5.080	130-140	6.481	1479	99.7,99.7
150	0.2074	3.659	7.066	4.236	1.447	3.991	5.920	3.119	140-150	3.099	1482	99.9,99.9
160	0.2436	1.737	3.352	2.325	1.058	1.813	3.055	1.109	150-160	1.254	1484	100,100
170	0.2690	0.2716	0.2722	0.3244	0.6136	0.4544	0.3857	0.4017	160-170	0.2820	1484	100,100
180	0.3217	0.3180	0.3122	0.3178	0.3221	0.3201	0.3126	0.3210	170-180	0.0324	1484	100,100
DEG	LUMINOUS INTENSITY:cd Less than 35% Percent = 20.0 %									UNIT:lm		

Isocandela Diagram (Result at 277V):



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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	418	418	418	418	418	418	418	418	418	418	418	418	418	418	418	418	418	418	418
5	416	416	417	417	418	418	418	418	418	417	417	416	416	416	416	416	416	416	416
10	409	410	411	412	413	414	414	414	413	412	410	409	409	408	409	409	410	410	411
15	397	399	401	404	406	408	408	407	405	403	400	398	398	397	398	399	401	402	403
20	381	384	387	392	395	398	398	397	394	391	386	383	382	381	383	386	389	391	392
25	362	366	370	376	381	385	386	384	380	375	368	364	363	361	365	369	374	377	379
30	339	344	350	358	364	370	371	369	363	356	348	342	340	339	344	350	357	361	363
35	313	319	326	336	345	352	353	351	344	335	324	317	314	313	320	328	337	343	346
40	285	292	301	313	324	332	334	331	322	311	298	289	286	286	294	304	316	323	326
45	256	263	274	288	301	310	312	309	299	286	271	260	256	256	267	279	293	301	305
50	225	233	246	262	276	287	290	286	275	260	243	229	224	226	238	253	269	278	283
55	193	202	217	235	251	263	266	262	250	233	214	198	193	195	209	227	244	254	259
60	161	171	188	208	226	239	242	238	225	206	185	167	161	165	180	200	218	230	235
65	129	140	160	183	202	214	218	213	200	180	157	137	128	134	153	175	194	206	210
70	96.2	110	134	158	178	190	195	189	176	155	130	107	96.3	104	126	150	170	182	186
75	65.1	82.2	109	135	155	168	172	167	153	132	106	78.9	65.5	76.7	102	127	147	159	164
80	36.9	57.4	86.2	113	134	146	150	146	132	111	83.3	54.2	37.4	52.8	80.6	106	126	138	142
85	15.0	37.4	67.2	94.1	114	127	131	126	113	92.1	64.5	34.5	15.3	33.9	62.2	87.2	107	118	122
90	4.97	23.4	51.4	77.3	96.4	108	112	108	95.2	75.5	49.1	21.4	4.24	20.9	47.2	71.0	89.4	100	104
95	4.56	15.3	39.1	63.0	81.0	92.3	95.4	91.7	79.9	61.5	37.2	13.5	3.62	13.4	35.6	57.3	74.4	84.4	87.9
100	3.94	10.0	25.7	46.4	67.4	77.9	80.9	77.4	66.5	43.7	25.1	8.94	3.49	9.09	24.0	37.5	61.3	70.6	73.8
105	2.75	7.14	19.6	33.3	39.2	45.8	49.5	44.3	38.3	34.0	20.0	6.98	3.31	7.09	19.3	31.3	35.5	38.8	42.6
110	1.25	5.01	14.6	27.3	37.5	43.9	45.7	44.0	38.0	28.2	15.5	5.77	3.12	5.86	14.9	25.9	34.3	39.4	41.1
115	0.35	3.47	11.1	22.0	31.3	37.4	39.2	37.4	31.6	22.5	12.1	4.90	2.91	4.98	11.8	20.6	28.4	33.4	35.1
120	0.11	2.55	8.64	17.5	25.5	31.0	32.7	31.0	25.8	18.1	10.1	4.33	2.69	4.39	9.54	16.3	23.1	27.6	29.1
125	0.12	1.98	6.67	13.8	20.4	25.2	26.6	25.2	20.9	14.5	8.22	3.85	2.47	3.87	7.72	13.0	18.8	22.3	23.5
130	0.14	1.62	5.20	10.7	16.0	20.2	21.2	20.3	16.6	11.5	6.78	3.43	2.26	3.47	6.39	10.5	15.1	17.7	19.0
135	0.16	1.36	4.09	8.36	12.4	15.8	16.6	15.9	13.1	9.14	5.55	2.95	2.05	2.78	5.33	8.01	11.9	13.8	14.9
140	0.17	0.69	3.25	6.45	9.70	12.1	12.7	12.2	10.3	7.19	4.54	2.05	1.84	1.83	4.43	6.58	8.83	10.3	11.4
145	0.19	0.29	2.63	4.90	7.28	9.09	9.70	9.15	7.93	5.57	3.69	1.48	1.64	1.58	3.61	5.11	6.78	7.48	7.76
150	0.21	0.26	1.98	3.66	5.35	6.62	7.07	6.67	5.88	4.24	2.95	1.25	1.45	1.38	2.89	3.99	5.25	5.67	5.92
155	0.23	0.25	1.15	2.64	3.82	4.68	4.98	4.69	4.16	3.20	1.92	1.04	1.25	1.19	1.45	3.10	3.93	4.25	4.42
160	0.24	0.26	0.30	1.74	2.53	3.16	3.35	3.16	2.81	2.33	0.78	0.85	1.06	1.01	0.92	1.81	2.74	2.91	3.06
165	0.25	0.27	0.28	0.29	1.18	1.86	1.97	1.91	1.28	0.49	0.59	0.66	0.85	0.82	0.74	0.62	0.69	1.30	1.49
170	0.27	0.27	0.27	0.27	0.28	0.27	0.27	0.27	0.27	0.32	0.40	0.45	0.61	0.58	0.53	0.45	0.39	0.39	0.39
175	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.30	0.38	0.37	0.37	0.37	0.36	0.36	0.36
180	0.32	0.32	0.32	0.32	0.32	0.31	0.31	0.31	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.31	0.31

Table--2 UNIT: cd

γ (DEG) \ C (DEG)	285	300	315	330	345
0	418	418	418	418	418
5	416	416	416	416	416
10	410	410	409	409	409
15	402	401	399	398	398
20	391	389	386	384	382
25	377	375	370	366	363
30	361	357	350	345	340
35	343	337	329	321	315
40	323	316	305	295	288
45	301	293	280	268	259
50	278	269	254	239	229
55	254	244	227	210	198
60	230	218	200	181	167
65	206	193	174	153	136
70	182	169	150	127	105
75	159	146	127	102	77.1
80	138	125	105	79.9	52.5
85	118	106	86.2	61.2	33.1
90	100.0	88.6	69.8	46.0	20.1
95	84.0	73.6	56.1	34.4	12.7
100	70.3	60.5	37.5	22.4	8.53
105	39.8	36.8	28.9	16.8	4.50
110	38.8	33.2	23.5	12.5	3.47
115	33.1	27.5	18.7	9.31	1.87
120	27.2	22.2	14.6	4.32	1.91
125	21.9	17.9	10.7	5.06	1.61
130	17.3	14.0	7.27	4.08	1.26
135	13.5	9.73	6.74	3.39	0.65
140	9.81	7.55	5.08	2.77	0.37
145	7.14	5.95	4.00	2.24	0.37
150	5.68	4.46	3.12	1.55	0.38
155	4.02	3.30	2.32	0.47	0.40
160	2.85	2.29	1.11	0.44	0.42
165	1.22	0.50	0.43	0.42	0.42
170	0.39	0.39	0.40	0.39	0.40
175	0.36	0.36	0.36	0.37	0.37
180	0.32	0.32	0.32	0.32	0.32

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	0.04580	12.20	0.9621	11.62

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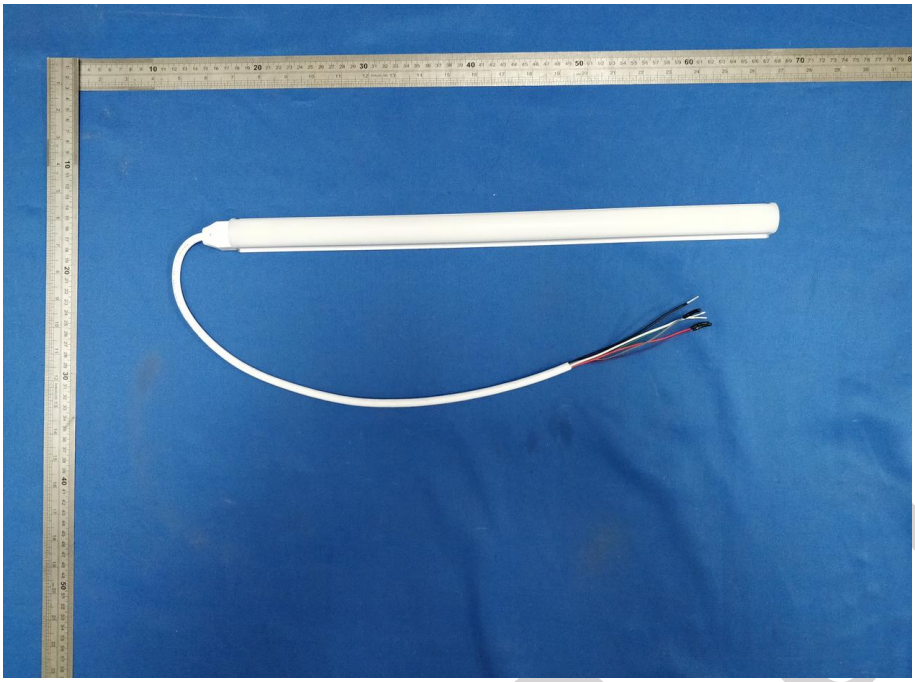
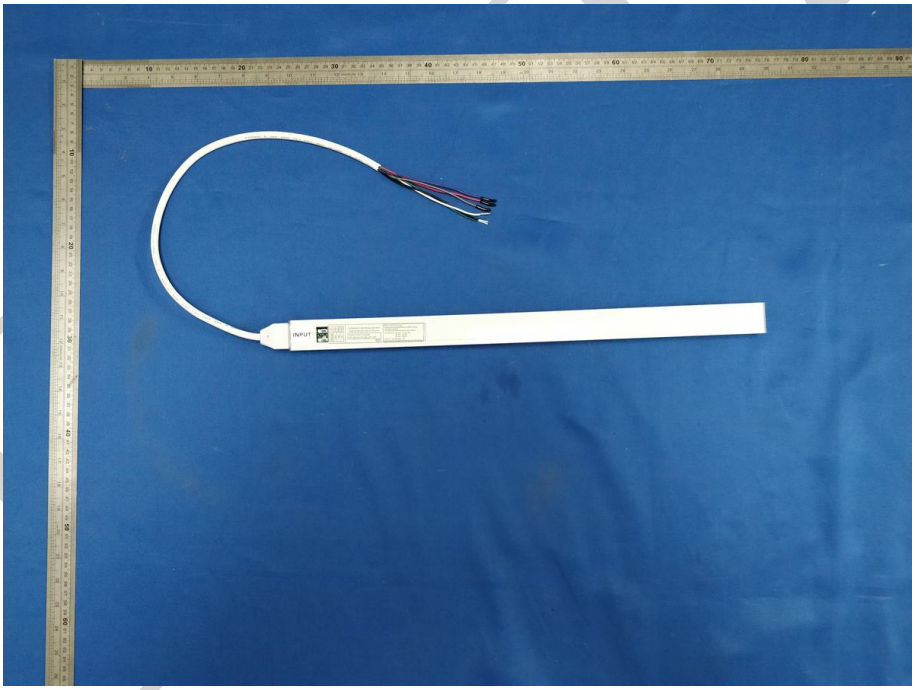
Photo of Sample:





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Annex (Results at 120V):

ANSI CCT Quadrangle (omit any outside product range)/Worst-Case Value	Voltage (V)	Actual CCT (K)	Power Consumption (W)	Lumen Output (lm)	Efficacy (lm/W)	Input Control Signal Applied
2700K	120.0	2745	11.91	1485.2	124.70	Set Switch 0% to 2700K
	277.0	2744	12.20	1483.8	121.62	Set Switch 0% to 2700K
3000K	120.0	3092	11.75	1612.8	137.26	Set Switch 50% to 3000K
	277.0	3092	12.03	1610.6	133.88	Set Switch 50% to 3000K
3500K	120.0	3539	11.96	1585.8	132.59	Set Switch 100% to 3500K
	277.0	3544	12.23	1584.6	129.57	Set Switch 100% to 3500K
Lowest Efficacy	120.0	124.70 lm/W (@2700K)				
	277.0	121.62 lm/W (@2700K)				
Maximum Power	120.0	11.96 W				
	277.0	12.23W				

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************

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