

LM-79-08 Test Report

For

GREEN CREATIVE LTD

ROOM 3603, Level 36, Tower 1, Enterprise Square Five, 38 Wang Chiu Road, Kowloon Bay, KL, Hong Kong,
China

Self-Ballasted LED Lamp

Model Name(s):

100HID/850/277V/EX39/R

Representative (Tested) Model:

100HID/850/277V/EX39/R

Model Difference: N/A

Prepare by:



Engineer: Alan Wang

Date: 2020-04-16

Review by:



Technical Lead: Vincent Yuan

Issue Date: 2020-04-24

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.

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: 86-769-22212079

Website: <http://www.ntc-cert.com>

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Client Information:

Applicant Name:	GREEN CREATIVE LTD
Brand Name:	GREEN CREATIVE

Product Information:

Model Number:	100HID/850/277V/EX39/R
Product Type:	Self-Ballasted LED Lamp
Rating Input:	120-277Vac, 50/60Hz, 100W
Declared CCT:	5000K
Declared Light Output:	14000 lm
LED Manufacturer:	LG Innotek
LED Model:	LEMWS28R80HSZBLN
LED Quantity:	308 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:	2020-04-06
Quantity of Receipt Samples:	1 pc
Sample Number:	2004060013-S1

Laboratory Information:

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

Report Information:

Issued Date of Test Report:	2020-04-24
Revised Date of Test Report:	N/A
Test Report No.:	NTCLR20040018
Remark (If applicable):	N/A

Test Specification:	
Date of Test	2020-04-15
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. Fidelity Index 8. Gamut Index 9. Local Chroma Shift 10. 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 ANSI IES TM-30-18 IES Method for Evaluating Light Source Color Rendition ANSI C78.77-10-2014 Harmonic Emission Limits – Related Power Quality Requirements IES TM-15-11 Luminaire Classification System for Outdoor Luminaires Addendum A for IES TM-15-11 Backlight, Uplight, and Glare (BUG) Ratings

Test Methods:
<p>1. Photometric and Electrical Measurements – Light Distribution Method:</p> <p>Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at $25\text{ }^{\circ}\text{C} \pm 1^{\circ}\text{C}$, 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 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° horizontal intervals.</p>
<p>2. Photometric and Electrical Measurements – Integrating Sphere Method:</p> <p>Photometric parameters were measured using an integrating sphere, as spectroradiometer and software. The ambient temperature condition inside the sphere was measured at $25\text{ }^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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 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.</p>
<p>3. THD and PF Measurements:</p> <p>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.</p>

Integrating Sphere Test Results:

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
24.5	55.5	Face Down	90	10

Electrical Data:

Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	0.8443	101.4	0.9971
277.0	60	0.3810	100.3	0.9475

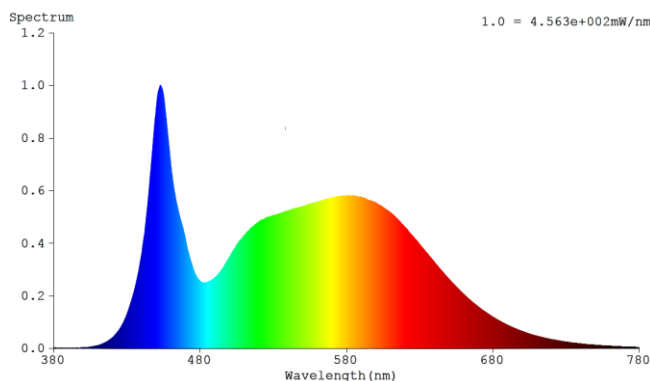
Color Data:

Voltage (V)	CCT (K)	R _a	R _f	R _g	R _{cs, h1}	Chromaticity, (x, y)	Chromaticity, (u', v')	Duv
120.0	5200	83.7	84	95	-13%	(0.3399, 0.3510)	(0.2081, 0.4836)	0.00183
277.0	5122	83.2	84	95	-13%	(0.3422, 0.3545)	(0.2083, 0.4857)	0.00265

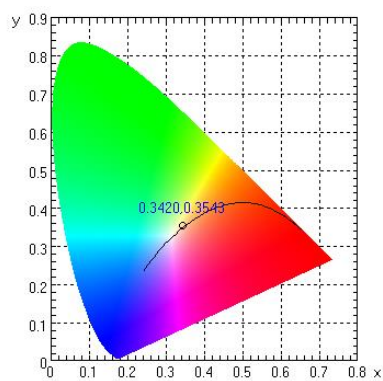
Specify Color Rendering:

Voltage (V)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
120.0	82	89	93	83	83	85	87	68	10	74	82	62	84	97	77

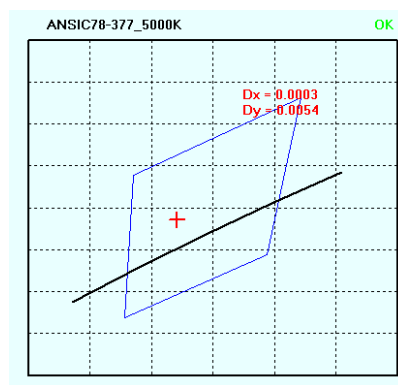
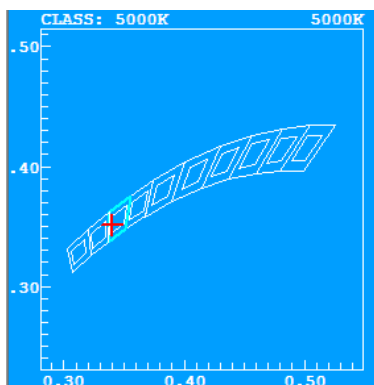
Spectral Power Distribution (120V)



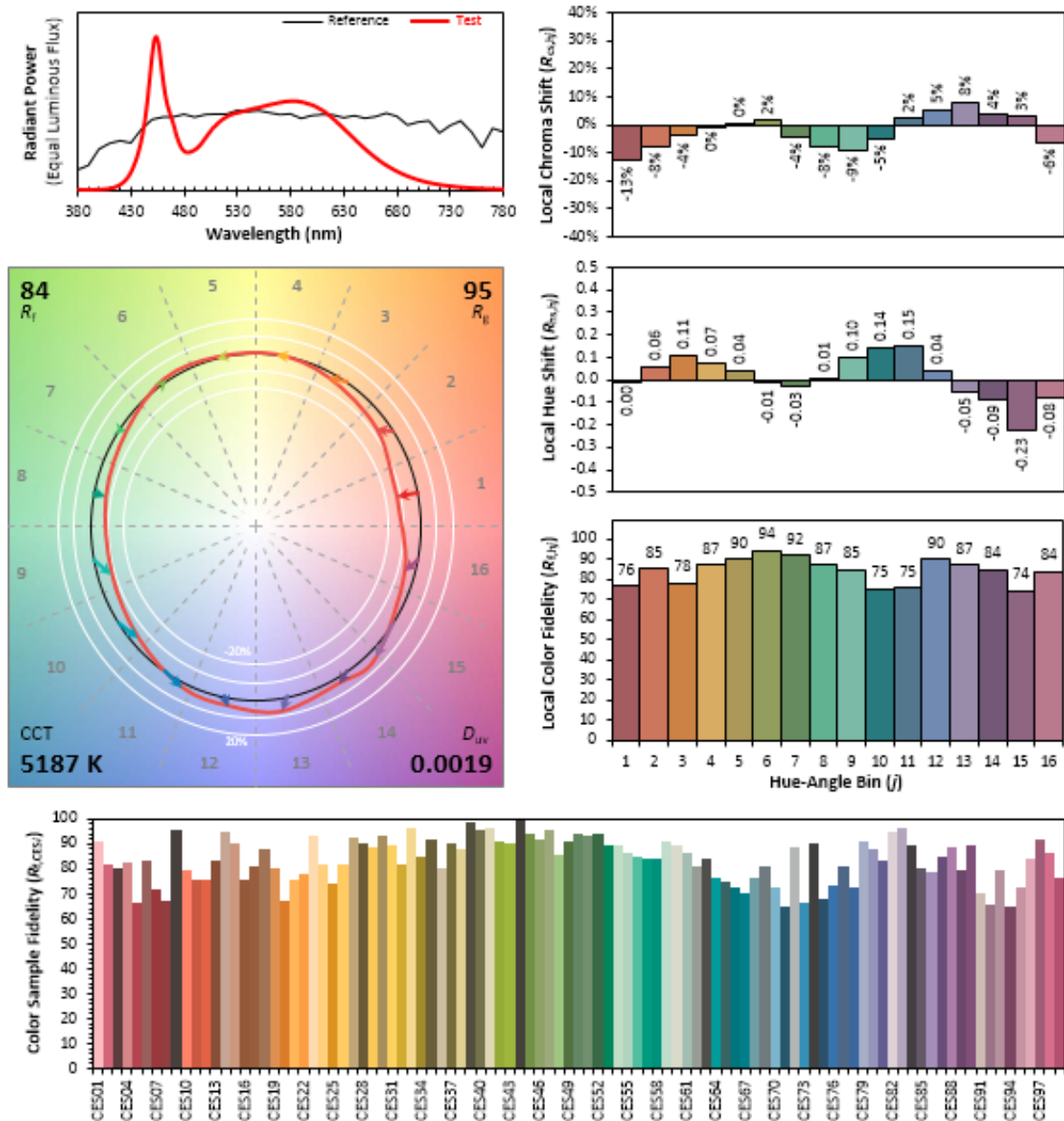
Chromaticity Diagram (120V)



Nominal CCT Quandrangle (120V)



IES TM-30-18 Color Rendition Result (120V):



Spectrum Data (120V):

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	0.0041	447	0.7360	514	0.4536	581	0.5800	648	0.2761	715	0.0408
381	0.0036	448	0.8041	515	0.4593	582	0.5811	649	0.2703	716	0.0397
382	0.0031	449	0.8702	516	0.4638	583	0.5785	650	0.2643	717	0.0385
383	0.0028	450	0.9240	517	0.4693	584	0.5795	651	0.2577	718	0.0373
384	0.0027	451	0.9736	518	0.4726	585	0.5798	652	0.2519	719	0.0361
385	0.0023	452	0.9918	519	0.4772	586	0.5788	653	0.2462	720	0.0350
386	0.0025	453	0.9990	520	0.4807	587	0.5774	654	0.2402	721	0.0339
387	0.0027	454	0.9826	521	0.4845	588	0.5749	655	0.2343	722	0.0331
388	0.0024	455	0.9578	522	0.4888	589	0.5758	656	0.2295	723	0.0319
389	0.0022	456	0.9084	523	0.4901	590	0.5740	657	0.2233	724	0.0309
390	0.0025	457	0.8534	524	0.4927	591	0.5717	658	0.2175	725	0.0300
391	0.0027	458	0.7951	525	0.4961	592	0.5706	659	0.2122	726	0.0291
392	0.0027	459	0.7397	526	0.4990	593	0.5688	660	0.2068	727	0.0283
393	0.0027	460	0.6854	527	0.4999	594	0.5651	661	0.2015	728	0.0273
394	0.0028	461	0.6391	528	0.5016	595	0.5627	662	0.1962	729	0.0265
395	0.0030	462	0.6005	529	0.5027	596	0.5620	663	0.1907	730	0.0256
396	0.0033	463	0.5695	530	0.5059	597	0.5595	664	0.1860	731	0.0249
397	0.0031	464	0.5414	531	0.5066	598	0.5573	665	0.1814	732	0.0240
398	0.0034	465	0.5181	532	0.5072	599	0.5555	666	0.1765	733	0.0234
399	0.0038	466	0.4951	533	0.5112	600	0.5540	667	0.1718	734	0.0227
400	0.0040	467	0.4743	534	0.5114	601	0.5502	668	0.1677	735	0.0219
401	0.0044	468	0.4545	535	0.5140	602	0.5458	669	0.1628	736	0.0213
402	0.0049	469	0.4328	536	0.5153	603	0.5437	670	0.1585	737	0.0206
403	0.0052	470	0.4098	537	0.5180	604	0.5405	671	0.1546	738	0.0200
404	0.0058	471	0.3802	538	0.5202	605	0.5358	672	0.1502	739	0.0194
405	0.0063	472	0.3569	539	0.5217	606	0.5317	673	0.1460	740	0.0188
406	0.0070	473	0.3362	540	0.5220	607	0.5281	674	0.1423	741	0.0182
407	0.0079	474	0.3176	541	0.5250	608	0.5249	675	0.1384	742	0.0176
408	0.0090	475	0.2997	542	0.5264	609	0.5204	676	0.1344	743	0.0171
409	0.0103	476	0.2838	543	0.5289	610	0.5160	677	0.1306	744	0.0165
410	0.0114	477	0.2723	544	0.5301	611	0.5114	678	0.1268	745	0.0159
411	0.0130	478	0.2628	545	0.5318	612	0.5080	679	0.1236	746	0.0155
412	0.0148	479	0.2563	546	0.5342	613	0.5016	680	0.1196	747	0.0151
413	0.0168	480	0.2511	547	0.5342	614	0.4959	681	0.1165	748	0.0146
414	0.0192	481	0.2470	548	0.5361	615	0.4906	682	0.1132	749	0.0140
415	0.0218	482	0.2463	549	0.5373	616	0.4852	683	0.1101	750	0.0137
416	0.0246	483	0.2454	550	0.5385	617	0.4789	684	0.1066	751	0.0134
417	0.0279	484	0.2470	551	0.5408	618	0.4725	685	0.1036	752	0.0129
418	0.0314	485	0.2488	552	0.5430	619	0.4666	686	0.1004	753	0.0124
419	0.0358	486	0.2516	553	0.5443	620	0.4603	687	0.0976	754	0.0121
420	0.0402	487	0.2541	554	0.5467	621	0.4554	688	0.0949	755	0.0117
421	0.0453	488	0.2575	555	0.5487	622	0.4483	689	0.0920	756	0.0114
422	0.0512	489	0.2618	556	0.5485	623	0.4402	690	0.0893	757	0.0110
423	0.0575	490	0.2674	557	0.5522	624	0.4353	691	0.0866	758	0.0108
424	0.0648	491	0.2709	558	0.5540	625	0.4285	692	0.0840	759	0.0104
425	0.0714	492	0.2775	559	0.5546	626	0.4227	693	0.0814	760	0.0100
426	0.0808	493	0.2851	560	0.5562	627	0.4152	694	0.0790	761	0.0097
427	0.0905	494	0.2920	561	0.5586	628	0.4097	695	0.0767	762	0.0094
428	0.1020	495	0.3003	562	0.5593	629	0.4029	696	0.0742	763	0.0092
429	0.1140	496	0.3087	563	0.5610	630	0.3954	697	0.0719	764	0.0090
430	0.1274	497	0.3185	564	0.5631	631	0.3888	698	0.0698	765	0.0087
431	0.1434	498	0.3283	565	0.5637	632	0.3821	699	0.0676	766	0.0083
432	0.1606	499	0.3375	566	0.5662	633	0.3756	700	0.0657	767	0.0082
433	0.1778	500	0.3463	567	0.5671	634	0.3690	701	0.0634	768	0.0079
434	0.1972	501	0.3565	568	0.5692	635	0.3631	702	0.0617	769	0.0075
435	0.2178	502	0.3674	569	0.5702	636	0.3554	703	0.0596	770	0.0074
436	0.2403	503	0.3749	570	0.5720	637	0.3488	704	0.0576	771	0.0073
437	0.2676	504	0.3823	571	0.5719	638	0.3422	705	0.0560	772	0.0069
438	0.2933	505	0.3942	572	0.5741	639	0.3360	706	0.0543	773	0.0068
439	0.3273	506	0.4016	573	0.5760	640	0.3289	707	0.0526	774	0.0066
440	0.3581	507	0.4099	574	0.5756	641	0.3212	708	0.0509	775	0.0064
441	0.4006	508	0.4146	575	0.5772	642	0.3152	709	0.0492	776	0.0062
442	0.4372	509	0.4220	576	0.5778	643	0.3084	710	0.0479	777	0.0060
443	0.4898	510	0.4299	577	0.5778	644	0.3022	711	0.0463	778	0.0058
444	0.5448	511	0.4350	578	0.5791	645	0.2953	712	0.0448	779	0.0059
445	0.6029	512	0.4430	579	0.5795	646	0.2895	713	0.0435	780	0.0059
446	0.6718	513	0.4475	580	0.5796	647	0.2825	714	0.0421		N/A

Goniophotometer Test Results:

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
24.5	55.5	Face Down	90	25

Electrical Data:

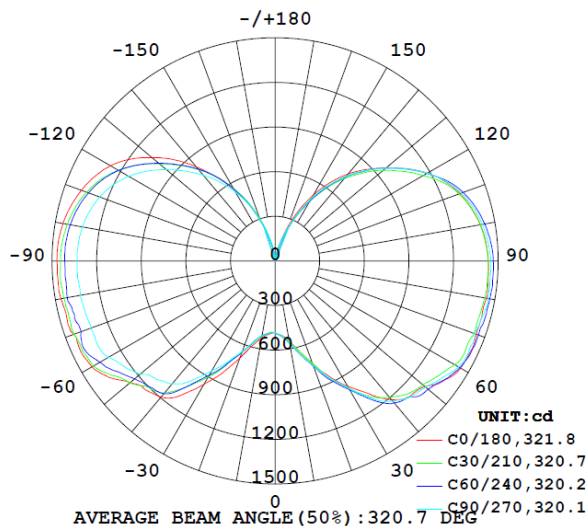
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	0.8443	101.4	0.9971

Goniophotometer Data:

Parameter	Results
Total Luminous (lm)	14440.4
Luminous Efficacy (lm/w)	142.41
Zonal Lumens Distribution (0-60°)	23.9%
Zonal Lumens Distribution (60-90°)	30.9%
Zonal Lumens Distribution (0-90°)	54.7%
Zonal Lumens Distribution (90-120°)	29.4%
Zonal Lumens Distribution (90-180°)	45.3%
Zonal Lumens Distribution (0-180°)	100.0%
Zonal Lumens Distribution (120-180°)	15.9%
Beam Angle (°)	320.7

Luminous Intensity Distribution Diagram:

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM

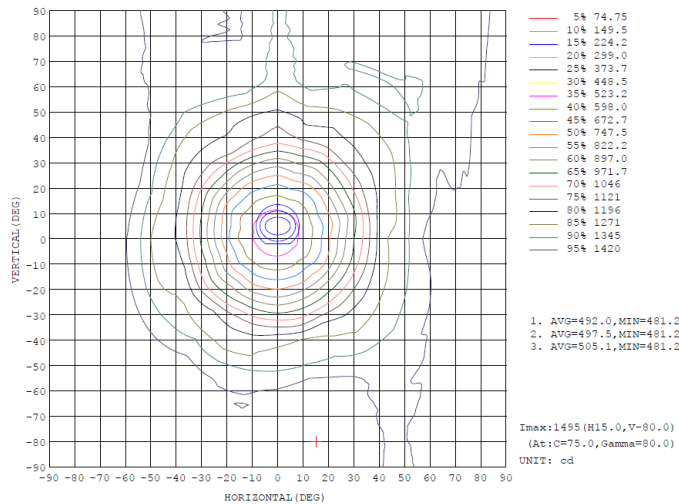


Zonal Flux Diagram:

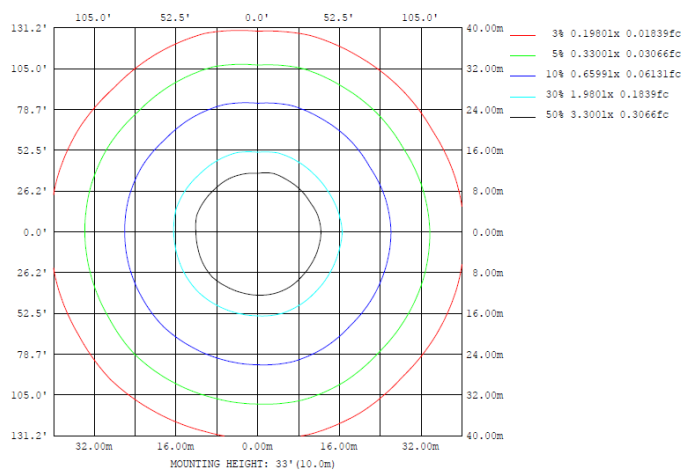
ZONAL FLUX DIAGRAM:

Y	C0	C45	C90	C135	C180	C225	C270	C315	Y	zone	total	lum, lamp
10	545.9	565.2	562.2	549.7	525.1	515.3	510.8	524.2	0- 10	48.75	48.75	0.34,0.34
20	738.4	760.8	749.4	746.6	693.1	666.1	647.7	667.3	10- 20	176.5	225.3	1.56,1.56
30	972.7	1003	990.4	981.1	956.7	907.0	853.8	905.4	20- 30	385.3	610.6	4.23,4.23
40	1219	1210	1230	1225	1194	1147	1078	1146	30- 40	675.8	1286	8.91,8.91
50	1314	1303	1320	1350	1272	1239	1181	1213	40- 50	956.7	2243	15.5,15.5
60	1440	1400	1425	1440	1424	1354	1294	1317	50- 60	1203	3446	23.9,23.9
70	1440	1408	1428	1458	1440	1380	1319	1342	60- 70	1399	4945	33.4,33.4
80	1443	1414	1455	1475	1463	1390	1330	1369	70- 80	1500	6345	43.9,43.9
90	1433	1408	1449	1471	1468	1390	1331	1369	80- 90	1556	7902	54.7,54.7
100	1401	1371	1415	1439	1449	1374	1316	1349	90-100	1544	9445	65.4,65.4
110	1323	1289	1334	1356	1388	1314	1256	1285	100-110	1445	10891	75.4,75.4
120	1181	1132	1181	1199	1280	1194	1138	1156	110-120	1255	12145	84.1,84.1
130	972.1	943.9	969.8	982.6	1082	1002	955.4	961.9	120-130	979.6	13125	90.9,90.9
140	764.9	717.2	743.8	749.2	826.8	790.9	753.7	751.7	130-140	680.4	13805	95.4,95.4
150	510.4	456.5	483.7	488.9	557.6	555.2	535.9	516.9	140-150	407.0	14212	98.4,98.4
160	234.5	195.4	206.8	235.6	289.5	295.0	280.5	257.6	150-160	180.6	14393	99.7,99.7
170	52.57	36.34	38.53	47.76	78.90	86.02	80.98	66.42	160-170	44.39	14437	100,100
180	0.9405	0.9447	0.9907	0.9486	0.9400	0.9459	0.9909	0.9492	170-180	3.039	14440	100,100
DEG	LUMINOUS INTENSITY:cd Less than 35% Percent = 83.0 %									UNIT:lm		

Isocandela Diagram:



Isolux Diagram:



Luminous Distribution Intensity Data:

Table--1

UNIT: cd

C (DEG)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
Y (DEG)	0	484	484	484	484	484	484	484	484	484	484	484	484	484	484	484	484	484	484
5	503	505	507	508	510	509	509	507	506	504	501	498	495	495	490	489	486	488	487
10	546	549	552	565	563	565	562	558	552	550	540	536	525	527	514	515	510	512	511
15	630	627	630	654	652	650	649	647	635	638	612	618	598	598	571	570	565	567	567
20	738	728	730	761	754	761	749	751	740	747	717	728	693	694	654	666	653	659	648
25	855	859	872	885	886	881	868	875	867	876	841	856	825	805	769	778	761	759	746
30	973	973	988	1003	999	992	990	995	1003	981	959	978	957	939	901	907	886	878	854
35	1087	1101	1113	1118	1141	1118	1126	1124	1135	1135	1093	1111	1101	1076	1032	1034	1030	1011	982
40	1219	1210	1196	1210	1246	1261	1230	1208	1210	1225	1215	1220	1194	1185	1161	1147	1165	1122	1078
45	1284	1272	1264	1263	1290	1320	1289	1261	1251	1262	1279	1254	1229	1252	1202	1199	1198	1174	1127
50	1314	1306	1297	1303	1343	1343	1320	1304	1305	1350	1315	1275	1272	1320	1275	1239	1234	1212	1181
55	1394	1368	1343	1362	1392	1409	1370	1376	1381	1408	1387	1357	1365	1393	1342	1307	1297	1296	1240
60	1440	1397	1395	1400	1436	1466	1425	1413	1419	1440	1425	1420	1424	1454	1411	1354	1361	1367	1294
65	1447	1430	1413	1407	1454	1478	1437	1425	1427	1458	1433	1444	1442	1460	1430	1376	1414	1399	1322
70	1440	1434	1425	1408	1455	1480	1429	1431	1432	1458	1434	1437	1440	1448	1440	1380	1389	1402	1319
75	1440	1445	1422	1405	1463	1483	1443	1432	1444	1471	1434	1446	1452	1460	1438	1381	1397	1421	1324
80	1443	1456	1431	1414	1465	1498	1455	1442	1452	1475	1436	1463	1463	1457	1443	1390	1420	1426	1330
85	1439	1459	1432	1411	1468	1494	1452	1442	1454	1474	1427	1461	1466	1462	1450	1391	1415	1430	1334
90	1433	1457	1432	1408	1467	1492	1449	1441	1455	1471	1418	1464	1468	1459	1443	1390	1415	1426	1331
95	1423	1447	1420	1395	1455	1478	1437	1430	1445	1460	1401	1459	1465	1452	1438	1387	1414	1422	1329
100	1401	1423	1399	1371	1431	1454	1415	1409	1423	1439	1377	1441	1449	1433	1419	1374	1399	1406	1316
105	1368	1388	1366	1336	1396	1417	1382	1377	1390	1404	1345	1414	1423	1403	1391	1350	1374	1381	1292
110	1323	1340	1317	1289	1347	1366	1334	1331	1339	1356	1303	1374	1388	1361	1350	1314	1337	1343	1256
115	1262	1274	1247	1228	1275	1299	1266	1267	1275	1289	1247	1315	1341	1306	1295	1263	1286	1287	1205
120	1181	1184	1150	1132	1178	1208	1181	1183	1192	1199	1174	1235	1280	1231	1220	1194	1217	1217	1138
125	1082	1079	1051	1039	1079	1100	1079	1080	1083	1095	1079	1137	1193	1138	1126	1106	1126	1129	1053
130	972	969	948	944	972	980	970	970	971	983	976	1027	1082	1028	1017	1002	1023	1017	955
135	871	851	837	836	856	856	859	861	858	870	875	917	963	920	908	898	915	899	854
140	765	734	722	717	739	729	744	746	745	749	771	803	827	814	802	791	807	782	754
145	642	613	595	598	606	604	617	611	622	619	655	676	687	698	690	678	692	666	647
150	510	484	459	457	467	473	484	469	493	489	528	530	558	574	565	555	558	548	536
155	372	349	324	313	332	338	332	329	358	355	385	384	422	436	438	426	426	419	419
160	235	230	204	195	202	209	207	210	243	236	263	244	289	291	304	295	281	286	281
165	121	125	104	94.0	97.0	103	106	108	124	123	146	137	172	166	179	183	175	179	170
170	52.6	50.4	39.8	36.3	36.1	37.3	38.5	39.2	43.7	47.8	55.2	61.0	78.9	70.3	83.1	86.0	84.7	83.4	81.0
175	14.7	12.7	9.42	7.19	7.47	8.00	8.85	10.7	12.9	13.3	18.0	19.7	23.9	24.8	28.2	28.1	29.0	29.1	28.5
180	0.96	0.95	0.95	0.94	0.94	0.98	0.99	0.96	0.95	0.95	0.95	0.95	0.96	0.95	0.95	0.95	0.94	0.98	0.99

Table--2

UNIT: cd

C (DEG)	285	300	315	330	345														
Y (DEG)	0	484	484	484	484														
5	490	491	495	497	500														
10	515	516	524	530	539														
15	577	574	582	603	610														
20	670	654	667	702	698														
25	780	760	785	807	814														
30	889	874	905	925	924														
35	1003	981	1018	1048	1056														
40	1123	1111	1146	1146	1188														
45	1189	1181	1192	1201	1226														
50	1238	1203	1213	1217	1288														
55	1296	1273	1267	1282	1345														
60	1352	1317	1317	1324	1380														
65	1371	1348	1362	1344	1411														
70	1369	1343	1342	1340	1399														
75	1371	1353	1352	1342	1402														
80	1385	1366	1369	1353	1406														
85	1387	1367	1368	1360	1408														
90	1385	1363	1369	1357	1402														
95	1380	1360	1365	1352	1392														
100	1367	1343	1349	1337	1371														
105	1344	1318	1323	1313	1341														
110	1307	1276	1285	1273	1299														
115	1257	1222	1231	1221	1241														
120	1188	1152	1156	1152	1162														
125	1101	1060	1064	1063	1064														
130	1004	954	962	957	958														
135	900	851	856	849	854														
140	799	753	752	743	752														
145	688	648	641	628	639														
150	567	535	517	507	519														
155	430	404	390	377	392														
160	286	272	258	251	261														
165	168	166	151	140	142														
170	76.5	77.8	66.4	62.1	62.8														
175	26.6	24.5	23.0	20.2	18.0														
180	0.96	0.95	0.95	0.95	0.95														

THD and PF Measurement Test Results:

Electrical Measurement:

Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor	iTHD(%)
120.0	60	0.8443	101.4	0.9971	4.41
277.0	60	0.3810	100.3	0.9475	13.64

Photo of Sample:



Equipment List:

Equipment ID	Equipment Name	Last Cal.	Due Cal.
NTC-F01-001	Goniophotometer System	2019-11-13	2020-11-12
NTC-F01-006	2.0 meter Integrating Sphere	2019-11-13	2020-11-12
NTC-F01-012	Standard Lamp	2019-11-13	2020-11-12
NTC-F01-013	Standard Lamp	2019-11-13	2020-11-12
NTC-F01-031	Digital Power Meter	2019-08-22	2020-08-21
NTC-F01-019	Temperature & Humidity Meter	2019-11-15	2020-11-14

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