LM-79-08 Test Report

For

ELEC-TECH INTERNATIONAL CO LTD

No.1 Jinfeng Road, Tangjiawan Town, Xiangzhou District, Zhuhai City, Guangdong Province, P.R. China 519085

LED High Bay Light

Model name(s):
502288##

Representative (Tested) Model:
50228861

Model Difference: ##=61-70 intends CCT is 5000K.

Prepare By:

Engineer: Leo Liu
Date: 2018-05-09

Review By:

Technical Lead: Vincent Yuan
Date: 2018-05-10

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

Product Information:

Client Name:	ELEC-TECH INTERNATIONAL CO LTD
Brand Name:	ETI
Model Number:	502288## (##=61-70)
Product type:	High Bay Luminaires for Commercial and Industrial Buildings
Rating Input:	AC120-277V, 50/ 60Hz, 270W
Declared CCT:	5000K
Declared Light output:	38000 lm
LED Manufacturer:	Samsung
LED Model:	SPMWHX228FD5XXXXXX
LED Quantity:	1280 pcs
Forward current of LED Chip:	160mA
Driver Manufacturer:	INVENTRONICS
Driver Model:	EUC-320S280DT
Date of Receipt Samples:	2018-04-20
Quantity of Receipt Samples:	2
Sample Number:	180420003-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:	2018-05-10
Revised Date of Test Report:	N/A
Test Report No.:	NTCR18050031
Remark (*If applicable*)	The product can be field-adjustable, the default wattage is 270W.

Test Specifications:	
Date of Test	2018-04-20
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 C78.377-2008 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 120 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° Vertical intervals.

2. Photometric and Electrical Measurements – Integrating Sphere Method:

Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25º C ± 1º 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 Volts AC, 60Hz. 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 5 nm intervals over the range 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 rated voltage and was stabilized before measurement. The total harmonic distortion were calculated from the digital power meter.

Integrating Sphere Test Results (Test with Min. wattage)

Test Condition:

Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time
25.1	40	Face Down	90	25

Electrical Data:

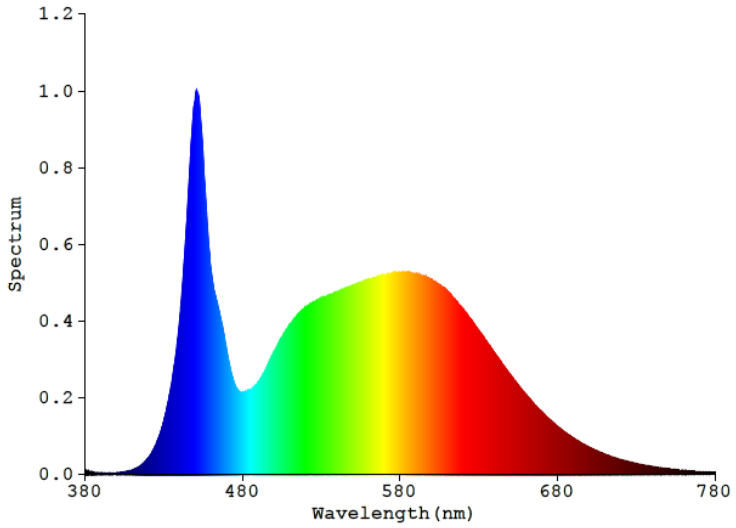
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	1.805	215.6	0.9948

Color Data:

Parameter	Result
CCT (K)	5191
Color Rendering Index (CRI)	84.7
R9	19
Chromaticity, x	0.3398
Chromaticity, y	0.3454
Chromaticity u′	0.2102
Chromaticity v′	0.4808
Duv	-0.00095

Special Color Rendering			
R1	84	R9	19
R2	89	R10	73
R3	91	R11	85
R4	85	R12	64
R5	85	R13	85
R6	84	R14	95
R7	88	R15	80
R8	71	-	-

Spectrum Diagram:



Goniophotometer Test Results (Test with Min. Wattage):

Test Condition:

Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time
25.1	43	Face Down	90	25

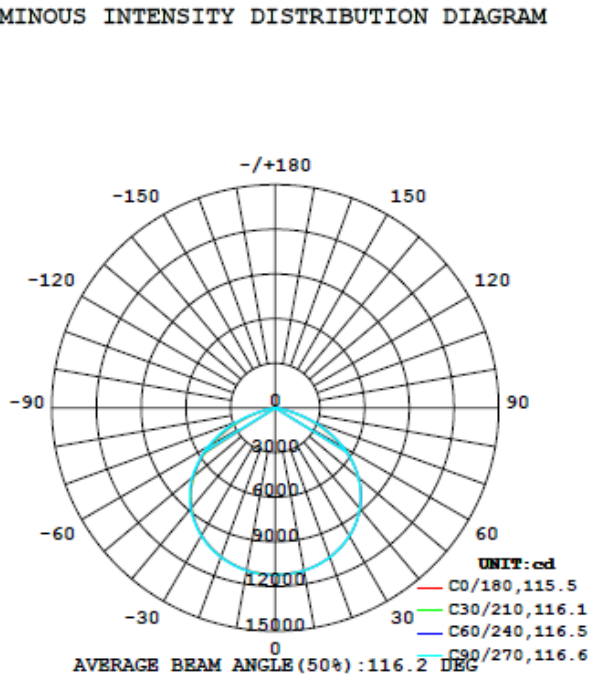
Electrical Data:

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	1.805	215.6	0.9948

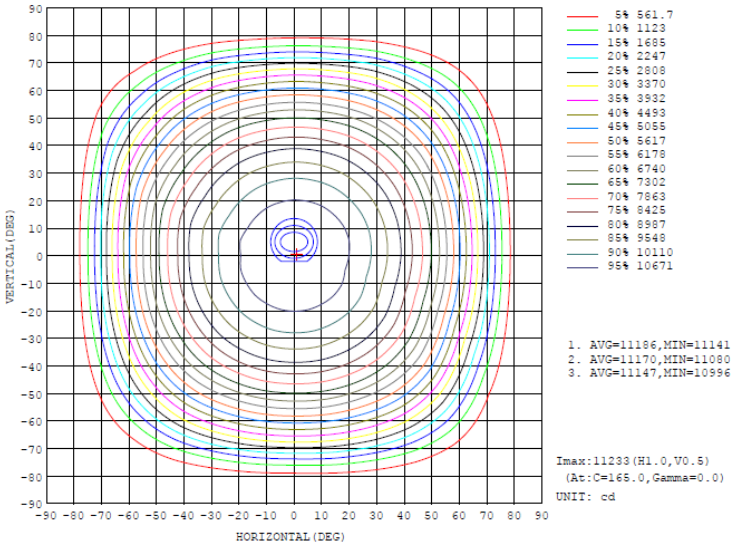
Goniophotometer Data:

Parameter	Result
Total Luminous (lm)	32078.8
Total Luminous per foot (lm/ft)	N/A
Luminous Efficacy (lm/w)	148.76
Zonal Lumens Distribution (20-50°)	52.7%
Beam Angle (°)	116.2

Luminous Intensity Distribution Diagram:



Isocandela Diagram:



Zonal Flux Diagram:

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	1108	1110	1110	1110	1107	1109	1111	1112	0- 10	1065	1065	8.32,8.32
20	1067	1069	1068	1067	1063	1065	1069	1071	10- 20	3087	4152	12.9,12.9
30	993.3	995.6	993.0	991.4	987.5	989.3	994.1	996.9	20- 30	4772	8924	27.8,27.8
40	882.4	885.9	882.0	879.1	873.5	876.9	884.2	887.1	30- 40	5895	14819	46.2,46.2
50	726.8	732.3	727.8	720.7	712.1	716.9	730.5	735.3	40- 50	6240	21059	65.6,65.6
60	513.5	528.5	522.6	513.9	497.4	511.3	525.9	530.8	50- 60	5594	26653	83.1,83.1
70	249.5	276.2	271.5	258.4	230.7	253.8	276.5	274.8	60- 70	3883	30536	95.2,95.2
80	33.21	45.03	40.38	36.19	25.67	32.63	42.33	41.27	70- 80	1437	31973	99.7,99.7
90	0.0183	0.0070	0.0210	0.0165	0.0271	0.0276	0.0101	0.0221	80- 90	93.78	32067	100,100
100	0.0488	0.0810	0.1121	0.0914	0.0523	0.0767	0.1201	0.0707	90-100	0.4274	32068	100,100
110	0.1204	0.1499	0.1800	0.1571	0.1250	0.1171	0.1579	0.1150	100-110	1.196	32069	100,100
120	0.1443	0.2135	0.2217	0.2120	0.1460	0.1779	0.2038	0.1629	110-120	1.664	32070	100,100
130	0.1709	0.2655	0.2974	0.2684	0.1678	0.2104	0.2457	0.1982	120-130	1.837	32072	100,100
140	0.1358	0.3373	0.3497	0.3253	0.1932	0.3082	0.2933	0.2855	130-140	2.025	32074	100,100
150	0.2406	0.3149	0.3793	0.3058	0.2050	0.3279	0.3481	0.2986	140-150	1.844	32076	100,100
160	0.2373	0.3108	0.3139	0.3604	0.2781	0.3476	0.3168	0.3490	150-160	1.537	32078	100,100
170	0.1567	0.3110	0.2834	0.3119	0.2205	0.2589	0.2550	0.3057	160-170	0.9082	32079	100,100
180	0.2595	0.2091	0.2476	0.2153	0.2593	0.2094	0.2478	0.2156	170-180	0.2200	32079	100,100
DEG	LUMINOUS INTENSITY:×10cd Less than 35% Percent = 10.7 %									UNIT:lm		

Address: 3F, No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China
Tel: 86-755-2344 3526
Website: http://www.ntc-cert.com

Luminous Distribution Intensity Data:

Table--1 UNIT: ×10cd

γ (DEG) \ C (DEG)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
0	1119	1120	1121	1121	1122	1122	1123	1123	1123	1123	1123	1123	1119	1120	1121	1121	1122	1122	1123
5	1116	1116	1117	1118	1118	1119	1119	1119	1119	1120	1120	1120	1116	1118	1118	1118	1119	1119	1120
10	1108	1106	1109	1110	1110	1110	1110	1110	1110	1110	1110	1110	1107	1110	1108	1109	1110	1110	1111
15	1091	1088	1093	1093	1093	1093	1093	1093	1093	1093	1092	1093	1089	1093	1090	1090	1092	1092	1094
20	1067	1062	1068	1069	1068	1068	1068	1068	1067	1067	1067	1067	1063	1069	1065	1065	1067	1067	1069
25	1034	1029	1036	1036	1036	1036	1035	1035	1033	1034	1033	1033	1030	1037	1031	1032	1033	1034	1036
30	993	986	995	996	994	995	993	993	991	991	990	991	988	996	989	989	991	992	994
35	943	935	945	945	944	944	942	942	940	940	939	940	936	946	938	938	940	941	944
40	883	873	885	886	884	884	882	882	880	879	876	876	874	886	875	877	880	881	884
45	812	800	814	815	813	813	810	810	807	806	804	804	801	816	804	804	808	809	813
50	727	712	729	732	731	731	728	727	723	721	715	714	712	729	715	717	724	727	731
55	628	613	634	634	631	632	628	627	622	622	619	618	613	635	620	620	624	627	632
60	513	495	523	529	527	527	523	521	515	514	506	500	497	520	506	511	517	520	526
65	384	365	397	409	408	408	404	402	397	393	378	370	365	391	377	388	399	401	407
70	249	231	264	276	279	278	271	270	265	258	243	235	231	255	242	254	270	272	277
75	123	108	132	141	143	144	137	137	130	125	113	110	109	127	114	120	133	136	142
80	33.2	29.5	39.6	45.0	44.9	45.2	40.4	41.1	38.0	36.2	29.8	29.6	25.7	36.3	31.8	32.6	39.4	39.0	42.3
85	2.51	2.43	5.12	4.92	5.96	4.29	4.74	4.69	4.17	3.81	2.29	2.37	2.30	2.81	2.94	2.45	4.21	4.20	4.66
90	0.02	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.03	0.01	0.02	0.01
95	0.02	0.02	0.03	0.03	0.03	0.03	0.04	0.04	0.03	0.04	0.05	0.02	0.03	0.03	0.04	0.04	0.04	0.04	0.05
100	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.10	0.09	0.09	0.08	0.06	0.05	0.05	0.06	0.08	0.10	0.11	0.12
105	0.09	0.10	0.11	0.12	0.13	0.13	0.15	0.14	0.13	0.12	0.12	0.10	0.09	0.09	0.09	0.10	0.12	0.14	0.14
110	0.12	0.15	0.15	0.15	0.16	0.17	0.18	0.17	0.16	0.16	0.15	0.14	0.13	0.12	0.11	0.12	0.14	0.17	0.16
115	0.15	0.18	0.18	0.18	0.19	0.20	0.20	0.20	0.19	0.19	0.18	0.16	0.16	0.14	0.14	0.15	0.17	0.17	0.18
120	0.14	0.17	0.20	0.21	0.22	0.23	0.22	0.23	0.22	0.21	0.21	0.17	0.15	0.14	0.13	0.18	0.21	0.19	0.20
125	0.16	0.18	0.21	0.26	0.26	0.26	0.25	0.25	0.25	0.26	0.20	0.19	0.15	0.10	0.15	0.21	0.22	0.21	0.22
130	0.17	0.22	0.26	0.27	0.30	0.29	0.30	0.28	0.29	0.27	0.27	0.21	0.17	0.17	0.21	0.21	0.24	0.26	0.25
135	0.17	0.25	0.27	0.30	0.30	0.32	0.33	0.32	0.30	0.29	0.28	0.26	0.19	0.23	0.25	0.25	0.28	0.29	0.29
140	0.14	0.27	0.22	0.34	0.31	0.32	0.35	0.33	0.32	0.33	0.25	0.28	0.19	0.29	0.22	0.31	0.30	0.28	0.29
145	0.11	0.26	0.28	0.36	0.33	0.34	0.34	0.34	0.34	0.35	0.26	0.26	0.17	0.29	0.26	0.34	0.34	0.31	0.29
150	0.24	0.34	0.34	0.31	0.35	0.33	0.38	0.36	0.38	0.31	0.34	0.27	0.20	0.31	0.32	0.33	0.37	0.37	0.35
155	0.26	0.36	0.36	0.33	0.28	0.30	0.39	0.40	0.35	0.36	0.34	0.31	0.16	0.34	0.36	0.35	0.38	0.36	0.35
160	0.24	0.30	0.30	0.31	0.32	0.30	0.31	0.35	0.36	0.36	0.33	0.32	0.28	0.32	0.37	0.35	0.35	0.36	0.32
165	0.21	0.28	0.30	0.30	0.34	0.37	0.32	0.38	0.36	0.35	0.36	0.35	0.32	0.37	0.38	0.35	0.31	0.35	0.28
170	0.16	0.23	0.28	0.31	0.32	0.29	0.28	0.31	0.32	0.31	0.30	0.24	0.22	0.28	0.26	0.26	0.29	0.31	0.26
175	0.13	0.16	0.23	0.22	0.21	0.21	0.23	0.26	0.25	0.23	0.22	0.21	0.18	0.16	0.17	0.22	0.23	0.21	0.18
180	0.26	0.26	0.22	0.21	0.20	0.23	0.25	0.22	0.22	0.22	0.24	0.24	0.26	0.23	0.22	0.21	0.20	0.23	0.25

Table--2 UNIT: ×10cd

γ (DEG) \ C (DEG)	285	300	315	330	345
0	1123	1123	1123	1123	1123
5	1120	1120	1120	1120	1120
10	1112	1112	1112	1113	1113
15	1094	1095	1095	1096	1096
20	1069	1070	1071	1072	1071
25	1036	1038	1038	1039	1039
30	995	996	997	998	998
35	944	946	947	949	948
40	885	887	887	889	888
45	814	817	816	818	817
50	732	735	735	736	733
55	633	636	636	639	635
60	528	531	531	528	521
65	408	412	410	402	391
70	278	284	275	267	256
75	142	146	138	136	128
80	42.4	46.4	41.3	40.6	35.6
85	4.86	4.39	5.30	3.35	2.58
90	0.02	0.02	0.02	0.02	0.02
95	0.04	0.03	0.04	0.04	0.03
100	0.10	0.09	0.07	0.06	0.05
105	0.14	0.12	0.10	0.09	0.09
110	0.16	0.13	0.12	0.11	0.13
115	0.18	0.17	0.13	0.13	0.16
120	0.19	0.19	0.16	0.15	0.16
125	0.21	0.21	0.20	0.14	0.12
130	0.25	0.23	0.20	0.18	0.15
135	0.29	0.26	0.24	0.23	0.21
140	0.28	0.28	0.29	0.20	0.27
145	0.29	0.29	0.31	0.26	0.25
150	0.34	0.38	0.30	0.31	0.31
155	0.30	0.28	0.32	0.39	0.37
160	0.30	0.32	0.35	0.38	0.34
165	0.35	0.32	0.32	0.33	0.32
170	0.27	0.30	0.31	0.27	0.18
175	0.17	0.18	0.20	0.18	0.15
180	0.22	0.21	0.22	0.24	0.24

Integrating Sphere Test Results (Test with Max. wattage)

Test Condition:

Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time
25.1	40	Face Down	90	25

Electrical Data:

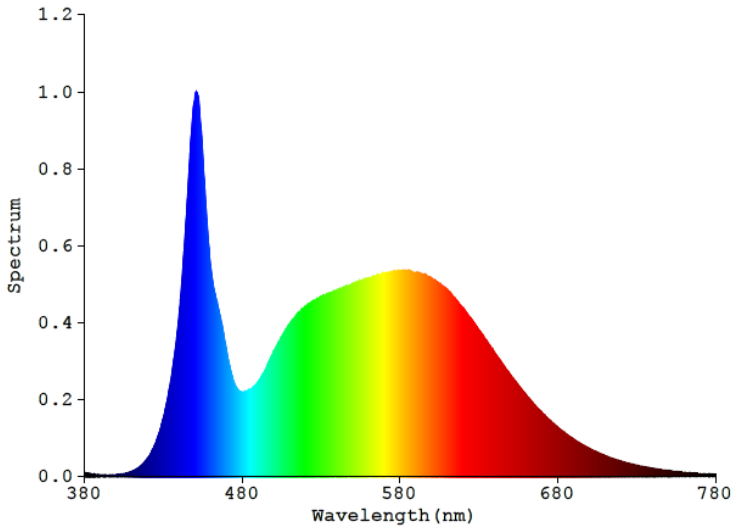
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	2.287	273.7	0.9965

Color Data:

Parameter	Result
CCT (K)	5220
Color Rendering Index (CRI)	84.8
R9	20
Chromaticity, x	0.3391
Chromaticity, y	0.3443
Chromaticity u′	0.2102
Chromaticity v′	0.4802
Duv	-0.00122

Special Color Rendering			
R1	84	R9	20
R2	89	R10	73
R3	91	R11	85
R4	85	R12	64
R5	85	R13	85
R6	84	R14	95
R7	88	R15	80
R8	72	-	-

Spectrum Diagram:



Goniophotemeter Test Results (Test with Max. Wattage):

Test Condition:

Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time
25.1	43	Face Down	90	25

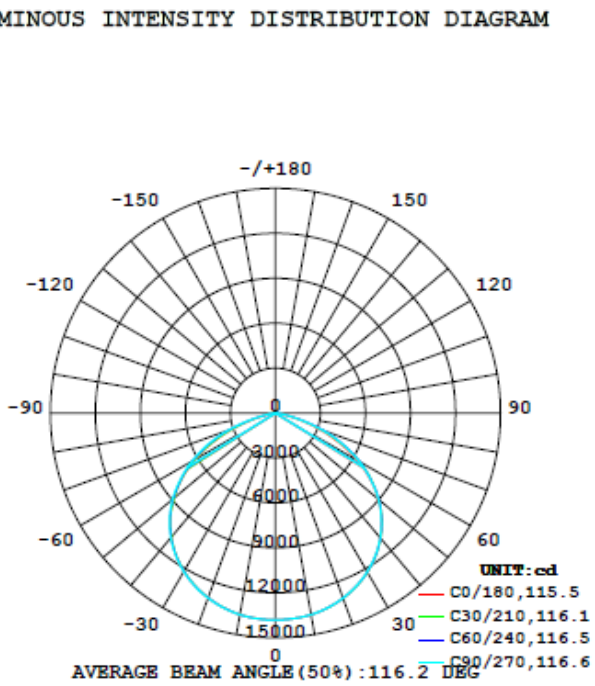
Electrical Data:

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	2.287	273.7	0.9965

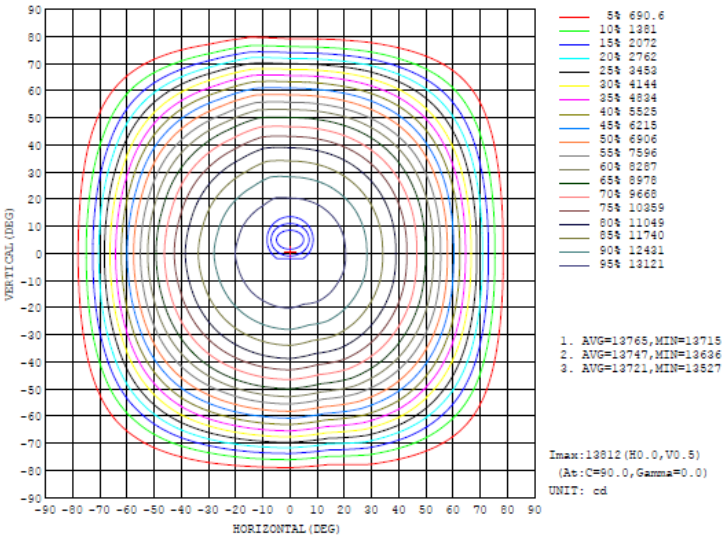
Goniophotometer Data:

Parameter	Result
Total Luminous (lm)	39480.2
Total Luminous per foot (lm/ft)	N/A
Luminous Efficacy (lm/w)	144.24
Zonal Lumens Distribution (20-50°)	52.7%
Beam Angle (°)	100.4

Luminous Intensity Distribution Diagram:



Isocandela Diagram:



Zonal Flux Diagram:

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	1366	1367	1366	1365	1366	1365	1367	1367	0- 10	1311	1311	3.32,3.32
20	1315	1316	1314	1312	1314	1312	1315	1316	10- 20	3800	5111	12.9,12.9
30	1224	1226	1222	1219	1221	1219	1222	1226	20- 30	5873	10984	27.8,27.8
40	1087	1091	1086	1081	1081	1080	1087	1091	30- 40	7256	18239	46.2,46.2
50	892.4	902.0	896.1	885.8	882.0	883.5	898.1	903.9	40- 50	7680	25920	65.7,65.7
60	627.8	650.7	644.0	631.3	619.3	629.8	646.0	652.8	50- 60	6885	32805	83.1,83.1
70	300.6	340.0	335.0	316.5	289.8	312.5	329.2	338.5	60- 70	4778	37582	95.2,95.2
80	38.30	55.40	50.22	44.32	36.90	40.48	51.50	50.99	70- 80	1768	39350	99.7,99.7
90	0.0309	0.0111	0.0206	0.0228	0.0355	0.0365	0.0150	0.0270	80- 90	115.8	39466	100,100
100	0.0647	0.1021	0.1405	0.1148	0.0660	0.0972	0.1513	0.0890	90-100	0.6039	39466	100,100
110	0.1529	0.1868	0.2239	0.1959	0.1586	0.1469	0.1972	0.1437	100-110	1.499	39468	100,100
120	0.1823	0.2656	0.2752	0.2634	0.1874	0.2218	0.2544	0.2035	110-120	2.076	39470	100,100
130	0.2144	0.3297	0.3484	0.3325	0.2077	0.2566	0.3054	0.2455	120-130	2.283	39472	100,100
140	0.1675	0.4182	0.4330	0.4026	0.2415	0.3832	0.3625	0.3536	130-140	2.515	39475	100,100
150	0.3027	0.3903	0.4692	0.3789	0.2384	0.4062	0.4324	0.3698	140-150	2.285	39477	100,100
160	0.2929	0.3857	0.3891	0.4454	0.3414	0.4301	0.3934	0.4303	150-160	1.904	39479	100,100
170	0.1952	0.3855	0.3523	0.3853	0.2723	0.3221	0.3167	0.3781	160-170	1.128	39480	100,100
180	0.3175	0.2609	0.3092	0.2657	0.3175	0.2610	0.3091	0.2659	170-180	0.2734	39480	100,100
DEG	LUMINOUS INTENSITY:*10cd Less than 35% Percent = 10.6 %									UNIT:lm		

Luminous Distribution Intensity Data:

Table--1 UNIT: ×10cd

γ (DEG) \ C (DEG)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
0	1381	1381	1381	1381	1381	1381	1381	1381	1381	1381	1381	1380	1381	1381	1381	1381	1381	1381	1381
5	1377	1377	1377	1377	1377	1375	1377	1377	1377	1376	1376	1376	1377	1377	1377	1377	1377	1379	1378
10	1366	1367	1367	1367	1366	1363	1366	1366	1365	1365	1364	1364	1366	1365	1366	1365	1366	1370	1367
15	1346	1347	1347	1347	1346	1340	1345	1344	1344	1343	1343	1342	1344	1342	1343	1343	1344	1349	1345
20	1315	1317	1316	1316	1315	1307	1314	1313	1312	1312	1311	1311	1314	1311	1312	1312	1313	1320	1315
25	1275	1278	1276	1276	1275	1265	1273	1272	1271	1271	1270	1269	1273	1269	1270	1271	1272	1281	1274
30	1224	1228	1226	1226	1224	1212	1222	1221	1220	1219	1217	1217	1221	1217	1218	1219	1220	1232	1222
35	1161	1166	1164	1164	1162	1148	1160	1159	1157	1156	1154	1154	1158	1153	1155	1156	1158	1172	1160
40	1087	1093	1091	1091	1089	1072	1086	1084	1082	1081	1077	1077	1081	1075	1079	1080	1083	1100	1087
45	998	1004	1003	1003	1001	981	998	996	993	991	989	988	992	986	990	991	994	1015	999
50	892	901	899	902	901	878	896	894	890	886	880	878	883	876	881	884	891	916	898
55	770	783	782	780	777	752	774	772	766	764	762	759	762	755	764	764	768	796	776
60	628	642	644	651	649	618	644	640	635	631	623	614	619	610	623	630	636	669	646
65	467	483	490	504	503	472	498	494	490	483	466	454	456	448	464	478	490	524	500
70	301	317	326	340	344	307	335	332	327	317	300	288	290	282	298	313	331	368	339
75	147	160	163	174	177	147	170	168	161	153	139	135	139	130	140	148	164	199	174
80	38.3	48.2	49.0	55.4	58.3	39.3	50.2	50.3	47.3	44.3	37.2	36.1	36.9	29.0	37.3	40.5	48.0	68.1	51.5
85	4.55	3.84	5.65	6.08	7.11	3.95	5.96	3.94	5.19	3.25	2.87	2.68	2.89	2.56	2.88	4.52	3.50	8.02	3.75
90	0.03	0.01	0.41	0.01	0.40	0.02	0.02	0.02	0.03	0.02	0.04	0.02	0.04	0.03	0.03	0.04	0.02	0.57	0.02
95	0.03	0.03	0.04	0.04	0.03	0.05	0.05	0.05	0.04	0.05	0.07	0.03	0.04	0.04	0.05	0.05	0.05	0.04	0.06
100	0.06	0.07	0.09	0.10	0.11	0.14	0.14	0.13	0.12	0.11	0.11	0.08	0.07	0.08	0.08	0.10	0.12	0.13	0.15
105	0.11	0.12	0.14	0.14	0.16	0.18	0.19	0.18	0.16	0.15	0.15	0.13	0.11	0.11	0.11	0.13	0.15	0.17	0.18
110	0.15	0.17	0.18	0.19	0.20	0.21	0.22	0.21	0.20	0.20	0.19	0.17	0.16	0.15	0.14	0.15	0.17	0.20	0.20
115	0.19	0.22	0.23	0.23	0.23	0.26	0.25	0.25	0.23	0.23	0.22	0.21	0.19	0.18	0.17	0.19	0.21	0.21	0.22
120	0.18	0.22	0.25	0.27	0.27	0.30	0.28	0.28	0.28	0.26	0.26	0.22	0.19	0.17	0.17	0.22	0.26	0.23	0.25
125	0.20	0.21	0.26	0.32	0.32	0.33	0.31	0.31	0.31	0.32	0.24	0.23	0.18	0.14	0.18	0.27	0.27	0.26	0.27
130	0.21	0.27	0.32	0.33	0.37	0.36	0.37	0.35	0.37	0.33	0.33	0.27	0.21	0.20	0.26	0.26	0.29	0.31	0.31
135	0.21	0.31	0.34	0.37	0.37	0.40	0.41	0.39	0.38	0.36	0.35	0.32	0.23	0.28	0.31	0.32	0.34	0.35	0.36
140	0.17	0.33	0.28	0.42	0.39	0.39	0.43	0.41	0.39	0.40	0.31	0.34	0.24	0.35	0.28	0.38	0.37	0.35	0.36
145	0.15	0.30	0.35	0.44	0.41	0.43	0.42	0.43	0.42	0.44	0.32	0.32	0.21	0.36	0.33	0.42	0.42	0.38	0.36
150	0.30	0.42	0.42	0.39	0.43	0.41	0.47	0.45	0.47	0.38	0.42	0.33	0.24	0.40	0.40	0.41	0.45	0.44	0.43
155	0.33	0.45	0.45	0.41	0.35	0.36	0.48	0.49	0.44	0.45	0.42	0.39	0.20	0.40	0.44	0.43	0.47	0.44	0.44
160	0.29	0.40	0.37	0.39	0.40	0.42	0.39	0.44	0.44	0.45	0.41	0.39	0.34	0.39	0.45	0.43	0.43	0.47	0.39
165	0.27	0.35	0.37	0.37	0.42	0.46	0.40	0.47	0.45	0.43	0.44	0.43	0.38	0.48	0.47	0.44	0.40	0.43	0.35
170	0.20	0.30	0.35	0.39	0.40	0.35	0.35	0.38	0.40	0.39	0.37	0.30	0.27	0.32	0.33	0.32	0.35	0.40	0.32
175	0.16	0.23	0.28	0.27	0.27	0.25	0.29	0.32	0.31	0.29	0.27	0.26	0.23	0.19	0.21	0.27	0.28	0.28	0.23
180	0.32	0.31	0.27	0.26	0.25	0.28	0.31	0.27	0.27	0.27	0.29	0.30	0.32	0.31	0.27	0.26	0.25	0.28	0.31

Table--2 UNIT: ×10cd

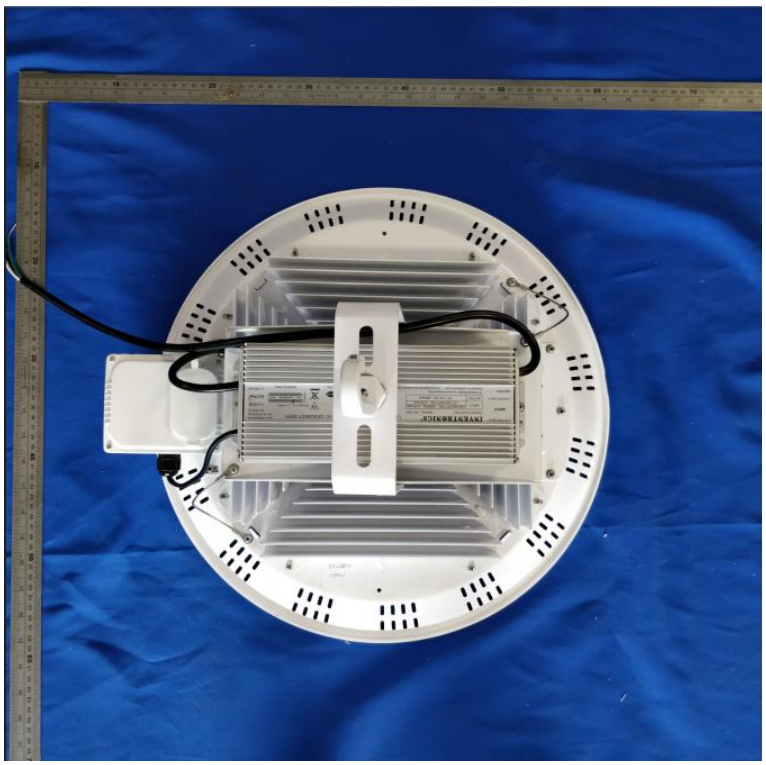
γ (DEG) \ C (DEG)	285	300	315	330	345
0	1381	1381	1381	1381	1380
5	1378	1378	1377	1377	1376
10	1367	1368	1367	1368	1367
15	1346	1346	1347	1347	1346
20	1315	1316	1316	1317	1316
25	1275	1276	1276	1277	1277
30	1224	1225	1226	1227	1226
35	1162	1163	1164	1165	1165
40	1089	1090	1091	1092	1091
45	1002	1004	1004	1005	1004
50	900	903	904	904	900
55	778	782	782	784	780
60	649	652	653	648	641
65	502	505	504	493	480
70	342	347	338	327	315
75	174	179	170	166	157
80	55.4	56.4	51.0	49.1	44.1
85	6.04	5.28	5.52	4.04	5.22
90	0.03	0.02	0.03	0.03	0.38
95	0.05	0.04	0.05	0.05	0.04
100	0.13	0.12	0.09	0.08	0.07
105	0.17	0.15	0.12	0.11	0.11
110	0.19	0.17	0.14	0.14	0.16
115	0.22	0.21	0.17	0.16	0.19
120	0.24	0.24	0.20	0.18	0.20
125	0.27	0.26	0.24	0.17	0.15
130	0.31	0.29	0.25	0.23	0.19
135	0.35	0.33	0.29	0.28	0.26
140	0.35	0.34	0.35	0.25	0.34
145	0.36	0.36	0.38	0.33	0.31
150	0.42	0.47	0.37	0.39	0.38
155	0.37	0.35	0.40	0.49	0.46
160	0.37	0.40	0.43	0.46	0.42
165	0.43	0.40	0.39	0.42	0.39
170	0.33	0.37	0.38	0.33	0.23
175	0.21	0.22	0.25	0.22	0.19
180	0.27	0.27	0.27	0.29	0.30

THD and PF Measurement Test Result:

Electrical Measurement:

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	iTHD
277.0	60	0.8472	212.2	0.9042	20.22
277.0	60	1.049	269.2	0.9257	17.18

Photo of Sample:



Equipment List:

Equipment ID	Equipment Name	Last Cal.	Due Cal.
NTC-F01-001	Goniophotometer System	2017-11-18	2018-11-17
NTC-F01-006	2.0 meter Integrating Sphere	2017-11-18	2018-11-17
NTC-F01-013	Standard Lamp	2017-11-18	2018-11-17
NTC-F01-031	Digital Power Meter	2017-11-18	2018-11-17
NTC-F01-019	Temperature & Humidity Meter	2017-11-23	2018-11-22

*******END OF DATASHEET*******

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