LM-79-08 Test Report

For

P.Q.L., Inc.

2285 Ward Avenue / Simi Valley, CA 93065

WALL MOUNT

Model Name(s):

8335X-25W-30K
83356
83357
8335X-25W-35K
8335X-25W-50K

Representative (Tested) Model:
8335X-25W-50K

Model Difference: All is the same construction, except CCT.

Prepare by:

Derek Lai

Engineer: Derek Lai
Date: 2018-12-13

Review by:

Vincent Yuan

Technical Lead: Vincent Yuan
Issue Date: 2018-12-31
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: 86-769-89874553
Website: http://www.ntc-cert.com

Product Information:

Client Name:	P.Q.L., Inc.
Brand Name:	Superior Life®
Model Number:	8335X-25W-50K
Product Type:	Outdoor Non-Cutoff and Semi-Cutoff Wall-Mounted Area Luminaires
Rating Input:	120-277Vac, 50/60Hz, 25W
Declared CCT:	5000K
Declared Light Output:	2600lm
LED Manufacturer:	LUMILEDS
LED Model:	LUXEON 3030 2D
LED Quantity:	24 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:	2018-12-07
Quantity of Receipt Samples:	1 pcs
Sample Number:	181207010-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:	2018-12-31
Revised Date of Test Report:	N/A
Test Report No.:	NTCR18120036
Remark *(If applicable)*:	N/A

Test Specification:	
Date of Test	2018-12-10
Test Item	1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate
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 C78.77-10-2014 Harmonic Emission Limits – Related Power Quality Requirements

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.

Integrating Sphere Test Results:

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
24.6	40.5	Face Down	90	10

Electrical Data:

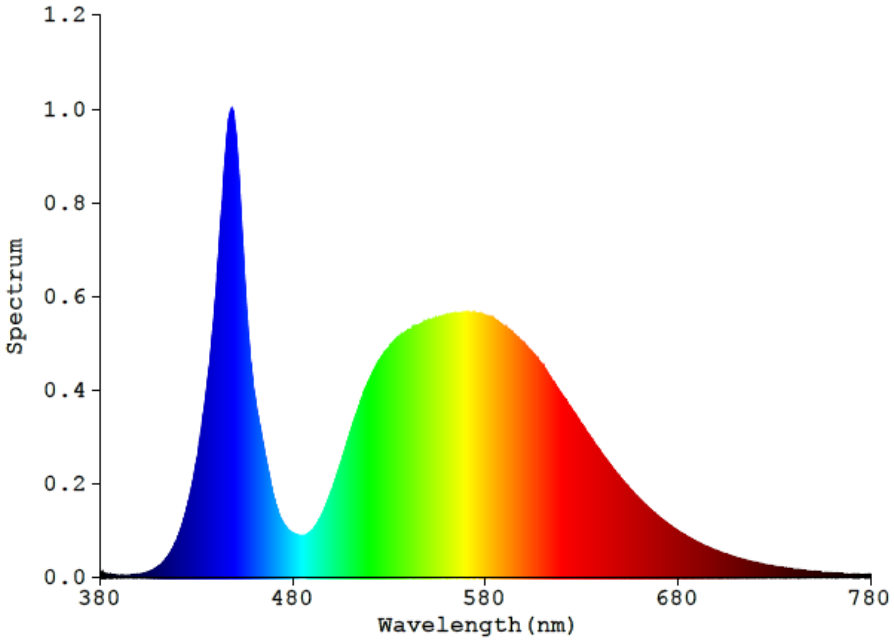
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	0.2091	24.86	0.9911

Color Data:

Parameter	Result
CCT(K)	5080
Color Rendering Index (CRI)	72.2
R9	-24
Chromaticity, x	0.3430
Chromaticity, y	0.3508
Chromaticity, u'	0.2103
Chromaticity, v'	0.4840
Duv	0.00046

Special Color Rendering			
R1	71	R9	-24
R2	76	R10	43
R3	79	R11	71
R4	74	R12	43
R5	71	R13	71
R6	67	R14	88
R7	80	R15	66
R8	59	-	-

Spectrum Diagram:



Goniophotometer Test Results:

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
24.6	40.5	Face Down	90	25

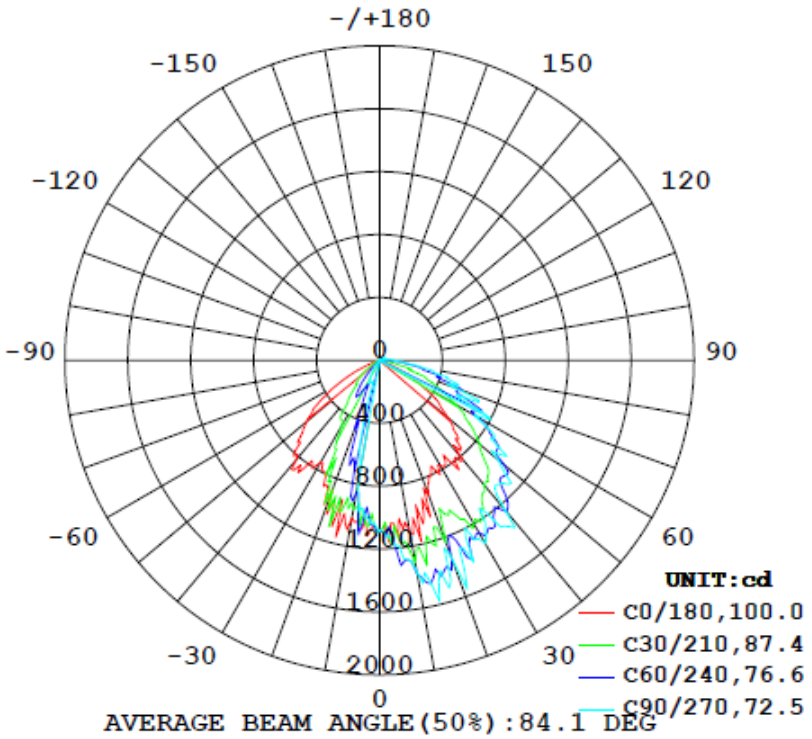
Electrical Data:

Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	0.2091	24.86	0.9911

Goniophotometer Data:

Parameter	Results
Total Luminous (lm)	2623.4
Luminous Efficacy (lm/w)	105.53
Zonal Lumens (0-90°) (lm)	2571.6
Zonal Luminous Efficacy (0-90°) (lm/w)	103.44
Zonal Lumens Distribution (80-90°)	2.1%
Beam Angle (°)	84.1

Luminous Intensity Distribution Diagram:

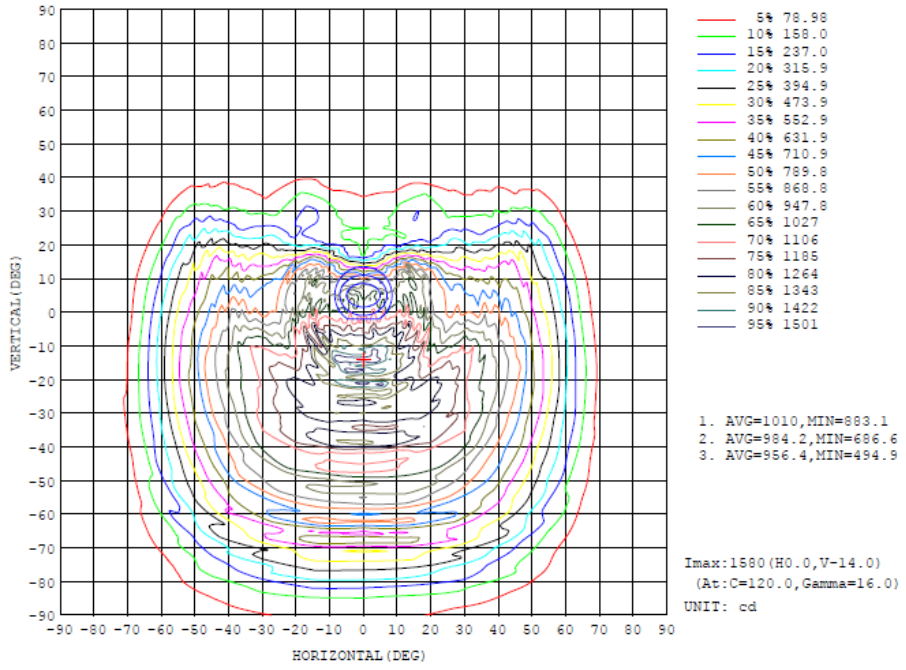


Zonal Flux Diagram:

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	1107	1348	1363	1293	1017	866.7	786.8	904.5	0- 10	103.6	103.6	3.95,3.95
20	914.6	1297	1324	1351	876.7	771.2	140.7	759.3	10- 20	292.1	395.6	15.1,15.1
30	770.4	1279	1345	1308	748.4	233.5	107.3	216.2	20- 30	380.4	776.0	29.6,29.6
40	815.9	1204	1236	1161	826.6	122.6	29.62	116.0	30- 40	467.7	1244	47.4,47.4
50	564.9	954.0	986.0	972.5	604.4	35.30	8.134	34.82	40- 50	472.0	1716	65.4,65.4
60	290.8	675.6	696.6	703.4	313.7	13.72	4.124	13.89	50- 60	391.9	2108	80.2,80.2
70	35.70	378.7	500.7	384.8	50.58	6.749	2.075	5.780	60- 70	263.7	2371	90.4,90.4
80	13.46	163.5	288.0	193.9	17.00	4.438	1.167	3.682	70- 80	145.6	2517	95.9,95.9
90	8.305	50.29	93.81	58.57	9.491	3.482	1.409	3.170	80- 90	54.65	2572	98,98
100	4.023	20.84	25.82	21.95	4.546	1.333	0.7779	1.428	90-100	18.96	2591	98.7,98.7
110	4.714	12.28	35.33	15.57	4.971	0.7730	0.5970	0.8342	100-110	10.14	2601	99.1,99.1
120	2.760	7.815	38.67	7.136	3.163	1.113	0.0910	1.029	110-120	8.465	2609	99.5,99.5
130	1.093	10.32	27.26	10.82	1.356	1.125	0.3154	0.9043	120-130	6.404	2616	99.7,99.7
140	1.080	9.451	18.09	9.655	1.157	0.5255	0.2425	0.4593	130-140	4.445	2620	99.9,99.9
150	0.7713	4.524	11.97	6.126	0.6888	0.1089	0.1854	0.0146	140-150	2.452	2622	100,100
160	0.0001	2.572	1.147	2.633	0	0.0249	0.1344	0.0001	150-160	0.8795	2623	100,100
170	0	0.0277	0.3552	0.2895	0	0	0.0012	0	160-170	0.1114	2623	100,100
180	0	0	0	0	0	0	0	0	170-180	0.0020	2623	100,100
DEG	LUMINOUS INTENSITY:cd Less than 35% Percent = 6.7 %									UNIT:lm		

Isocandela Diagram:



Luminous Distribution Intensity Data:

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	1084	1087	1085	1085	1085	1084	1085	1084	1083	1085	1083	1082	1084	1087	1085	1085	1085	1084	1085
5	1042	1041	1054	1195	1201	1152	1185	1204	1127	1125	1147	1052	1015	934	1044	1112	938	1050	992
10	1107	1124	1308	1348	1378	1339	1363	1300	1351	1293	1219	1152	1017	979	964	867	853	805	787
15	1075	1136	1156	1250	1375	1577	1457	1565	1528	1357	1294	1284	917	960	1001	862	640	454	343
20	915	1150	1231	1297	1337	1289	1324	1322	1425	1351	1125	1095	877	936	875	771	465	210	141
25	773	872	1051	1140	1397	1313	1418	1327	1297	1228	1090	914	813	847	805	390	165	159	159
30	770	1031	1201	1279	1265	1305	1345	1325	1312	1308	1192	1062	748	709	493	233	249	149	107
35	794	1052	1154	1256	1285	1150	1181	1198	1254	1215	1120	1107	833	636	432	191	243	111	69.2
40	816	942	1032	1204	1257	1300	1236	1333	1245	1161	1062	981	827	585	287	123	146	41.8	29.6
45	712	868	979	1108	1080	1117	1103	1107	1085	1102	982	905	738	581	216	70.6	52.1	23.2	12.8
50	565	734	840	954	1036	1013	986	966	1049	972	861	769	604	432	152	35.3	20.5	9.87	8.13
55	448	582	694	797	907	946	863	922	899	862	691	619	477	361	89.3	18.5	11.5	7.45	5.70
60	291	429	557	676	709	727	697	741	723	703	585	462	314	187	44.6	13.7	7.37	4.61	4.12
65	136	278	407	559	659	622	553	620	675	567	427	303	166	50.2	24.9	9.73	4.51	2.68	2.57
70	35.7	146	305	379	557	566	501	570	566	385	340	173	50.6	17.8	21.0	6.75	2.67	2.02	2.07
75	19.0	50.7	186	264	402	447	436	445	442	277	218	69.1	24.0	12.4	19.0	5.20	2.02	1.46	1.48
80	13.5	28.3	66.1	164	259	293	288	310	259	194	96.5	35.9	17.0	10.4	15.4	4.44	1.62	1.16	1.17
85	9.74	23.0	42.3	75.4	116	126	157	153	136	96.8	50.5	26.7	11.3	7.60	14.2	3.81	1.59	1.26	1.31
90	8.30	17.8	32.9	50.3	66.7	82.8	93.8	92.7	76.1	58.6	37.0	21.0	9.49	6.08	7.53	3.48	1.70	1.43	1.41
95	2.86	4.86	8.66	25.3	45.7	64.2	64.9	71.2	47.4	27.0	13.4	5.75	4.46	3.03	3.18	2.10	0.87	0.74	1.00
100	4.02	2.29	19.9	20.8	11.7	22.6	25.8	23.3	12.3	21.9	21.4	3.13	4.55	1.41	2.92	1.33	0.71	0.69	0.78
105	5.52	2.93	19.4	19.2	5.50	40.7	42.2	40.7	7.77	23.6	21.7	3.49	5.49	2.42	2.38	1.36	0.60	0.69	0.83
110	4.71	2.48	14.1	12.3	11.4	32.5	35.3	32.2	8.97	15.6	17.5	2.96	4.97	2.33	2.59	0.77	0.45	0.50	0.60
115	3.82	1.73	9.60	8.09	22.3	32.5	42.6	32.5	18.8	8.54	11.5	2.14	4.09	2.13	2.09	1.06	0.15	0.31	0.38
120	2.76	1.05	5.74	7.81	22.4	30.6	38.7	30.6	23.3	7.14	6.29	1.25	3.16	1.80	1.75	1.11	0.24	0.09	0.09
125	1.36	0.42	4.60	10.5	19.0	27.6	32.4	27.7	21.6	8.87	4.83	0.49	1.73	1.40	1.57	1.03	0.31	0.18	0.27
130	1.09	2.12	4.48	10.3	17.0	24.3	27.3	24.2	17.4	10.8	4.21	2.36	1.36	0.74	1.48	1.13	0.27	0.15	0.32
135	1.20	2.60	4.89	9.49	14.3	20.7	22.9	20.6	14.7	10.6	4.62	2.40	1.30	0.36	1.27	0.78	0.22	0.14	0.22
140	1.08	2.01	5.17	9.45	13.6	17.2	18.1	17.9	14.3	9.65	4.17	1.59	1.16	0.86	0.96	0.54	0.14	0.16	0.24
145	0.28	1.48	0.21	6.59	10.5	14.3	15.6	14.0	10.7	7.53	0.24	1.80	0.35	1.09	0.62	0.31	0.06	0.14	0.22
150	0.77	1.56	2.25	4.52	7.60	10.6	12.0	11.6	9.40	6.13	2.81	1.96	0.69	1.02	0.22	0.11	0.08	0.10	0.19
155	0.24	1.14	2.17	0.08	5.37	7.66	8.64	8.13	6.15	0.00	1.04	1.32	0.34	0.37	0.02	0.05	0.08	0.08	0.14
160	0.00	0.83	1.53	2.57	0.37	0.15	1.15	0.33	0.28	2.63	0.67	0.00	0.00	0.00	0.01	0.02	0.06	0.07	0.13
165	0.00	0.54	0.89	0.72	0.07	1.61	2.12	2.02	1.74	1.37	0.84	0.48	0.00	0.11	0.04	0.00	0.00	0.02	0.02
170	0.00	0.00	0.03	0.03	0.00	0.20	0.36	0.42	0.43	0.39	0.28	0.09	0.00	0.01	0.00	0.00	0.00	0.00	0.00
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table--2 UNIT: cd

γ (DEG) \ C (DEG)	285	300	315	330	345
0	1084	1083	1085	1083	1082
5	1032	1024	1068	981	1009
10	884	959	904	990	1016
15	408	763	862	1003	1059
20	206	428	759	932	878
25	157	151	416	724	784
30	147	228	216	451	709
35	102	218	181	374	608
40	38.2	132	116	246	581
45	21.4	42.3	71.1	187	541
50	10.3	17.3	34.8	119	436
55	7.38	10.8	16.6	70.8	340
60	4.56	6.91	13.9	38.2	167
65	2.66	4.03	8.72	30.4	40.2
70	2.02	2.35	5.78	22.9	16.2
75	1.50	1.78	4.32	17.3	10.7
80	1.24	1.44	3.68	18.5	8.89
85	1.33	1.44	3.28	15.3	7.22
90	1.45	1.59	3.17	8.11	5.91
95	0.71	0.74	1.81	1.90	2.34
100	0.69	0.66	1.44	2.41	0.42
105	0.72	0.56	1.07	2.65	1.34
110	0.51	0.39	0.83	2.46	1.23
115	0.31	0.12	1.12	2.06	1.11
120	0.12	0.23	1.03	1.59	1.00
125	0.23	0.30	0.91	1.44	0.85
130	0.16	0.24	0.90	1.34	0.41
135	0.13	0.20	0.64	1.18	1.04
140	0.11	0.14	0.46	0.87	1.43
145	0.07	0.06	0.25	0.55	0.55
150	0.05	0.06	0.01	0.11	1.10
155	0.08	0.05	0.02	0.04	0.37
160	0.08	0.02	0.00	0.03	0.19
165	0.00	0.00	0.00	0.00	0.10
170	0.00	0.00	0.00	0.00	0.00
175	0.00	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00

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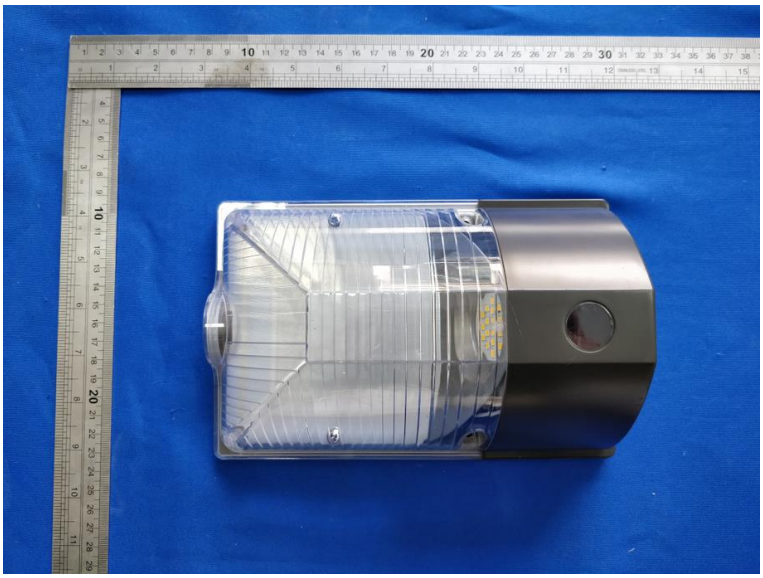
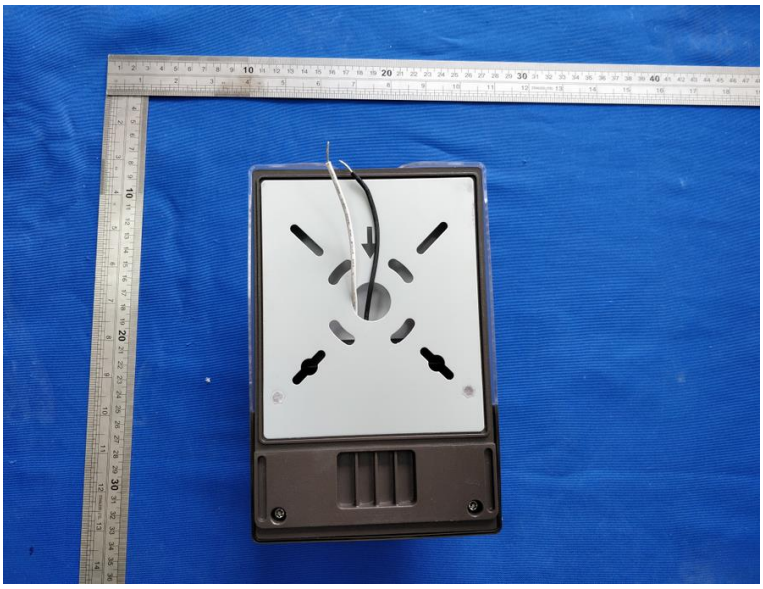
Photo of Sample:





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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	2018-08-29	2019-08-28
NTC-F01-019	Temperature & Humidity Meter	2018-11-12	2019-11-11

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

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