

LM-79-08 Test Report

For

ETI Solid State Lighting (Zhuhai) Ltd.

No. 1, Zhongzhu Road South, Science & Technology Innovation Coast, High Tech District, Zhuhai City,
Guangdong Prov., China 519085

Inseparable SSL Luminaire

Model Name(s):

565681##

Representative (Tested) Model:

56568111

Model Difference: ## can be 11-60 identical to Color Tunable, tunable 3000K, 4000K and 5000K.

Prepare by :

Engineer: Derek Lai

Date: 2019-07-12

Review by:

Technical Lead: Vincent Yuan

Issue Date: 2019-07-

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.

Product Information:

Client Name:	ETI Solid State Lighting (Zhuhai) Ltd.
Brand Name:	ETI, Commercial Electric, Hampton Bay
Model Number:	565681##(##=11-60)
Product Type:	Inseparable SSL Luminaire
Rating Input:	120Vac, 60Hz, 12W
Declared CCT:	3000K/4000K/5000K
Declared Light Output:	800 lm
LED Manufacturer:	Samsung
LED Model:	SPMWH6229AXXXXXXXXXX
LED Quantity:	24 pcs for Night Light 64 pcs for Main Light

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:	2019-06-27
Quantity of Receipt Samples:	1 pcs
Sample Number:	190627003-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_ntc@163.com

Report Information:

Issued Date of Test Report:	2019-07-
Revised Date of Test Report:	N/A
Test Report No.:	NTCLR19070060
Remark (If applicable):	N/A

Test Specification:	
Date of Test	2019-07-12
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

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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$, 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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. 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>

Integrating Sphere Test Results (Test for 3000K):

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
24.6	41.4	Face Down	90	10

Electrical Data:

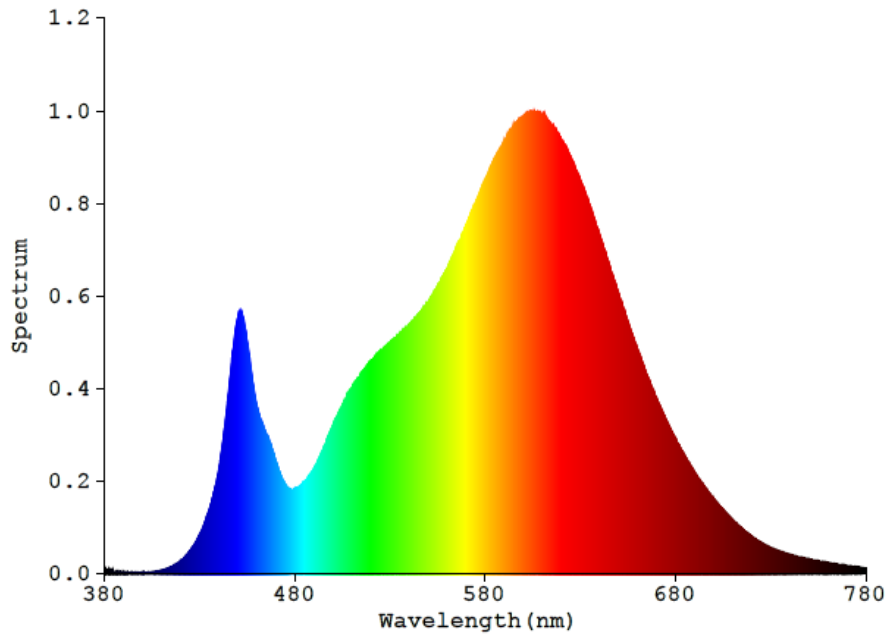
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	0.1030	11.42	0.9233

Color Data:

Parameter	Result
CCT(K)	2977
Ra	84.2
R9	14
Chromaticity, x	0.4358
Chromaticity, y	0.3990
Chromaticity, u'	0.2520
Chromaticity, v'	0.5192
Duv	-0.00190

Special Color Rendering			
R1	83	R9	14
R2	92	R10	83
R3	96	R11	83
R4	83	R12	76
R5	84	R13	86
R6	91	R14	99
R7	83	R15	76
R8	62	-	-

Spectrum Diagram:



Integrating Sphere Test Results (Test for 5000K):

Test Condition:

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

Electrical Data:

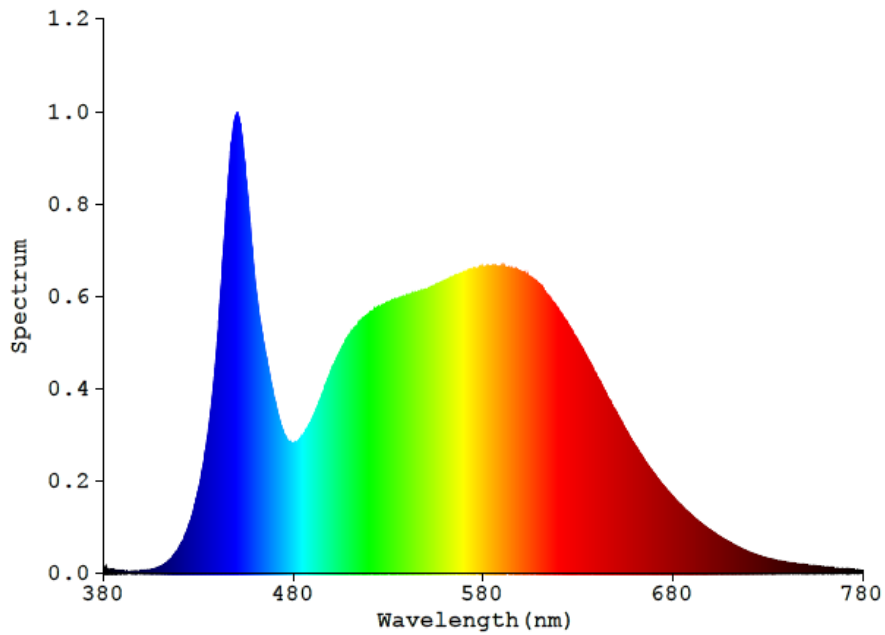
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	0.1031	11.42	0.9233

Color Data:

Parameter	Result
CCT(K)	4908
Ra	85.8
R9	22
Chromaticity, x	0.3482
Chromaticity, y	0.3578
Chromaticity, u'	0.2111
Chromaticity, v'	0.4881
Duv	0.00187

Special Color Rendering			
R1	84	R9	22
R2	90	R10	76
R3	94	R11	85
R4	86	R12	63
R5	84	R13	86
R6	86	R14	97
R7	90	R15	79
R8	72	-	-

Spectrum Diagram:



Goniophotometer Test Results (Test for 3000K):

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
25.3	40.4	Face Down	90	25

Electrical Data:

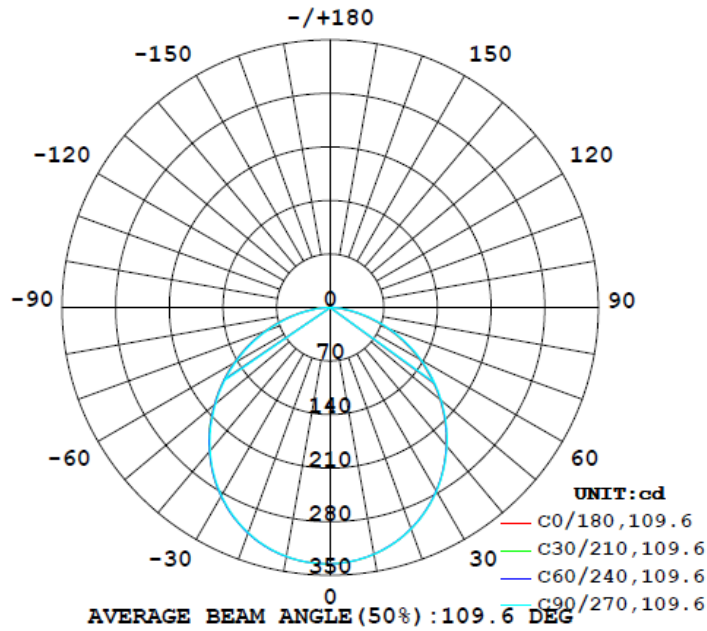
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	0.1030	11.42	0.9233

Goniophotometer Data:

Parameter	Results
Total Luminous (lm)	928.4
Luminous Efficacy (lm/w)	81.30
Zonal Lumens Distribution (0-60°)	79.6%
Beam Angle (°)	109.6

Luminous Intensity Distribution Diagram:

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM

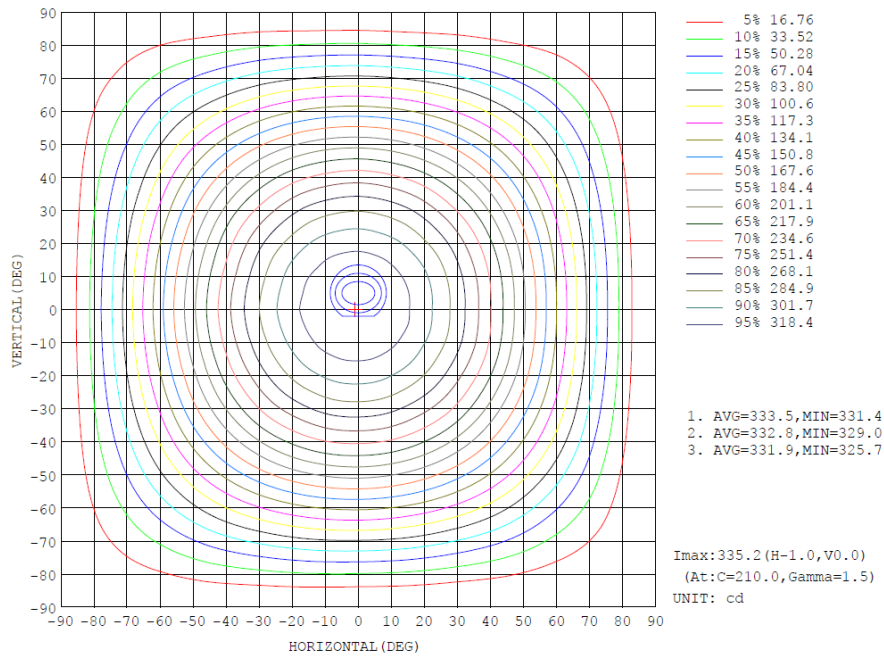


Zonal Flux Diagram:

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	φ zone	φ total	%lum,lamp
10	327.6	327.4	327.6	328.9	330.4	330.4	330.1	329.2	0- 10	31.69	31.69	3.41,3.41
20	307.9	308.0	308.1	310.7	313.5	313.4	313.1	311.0	10- 20	90.67	122.4	13.2,13.2
30	276.7	277.1	277.3	280.6	284.8	284.2	283.9	280.7	20- 30	136.9	259.2	27.9,27.9
40	235.4	236.5	236.8	240.7	245.5	244.8	244.0	240.2	30- 40	163.7	422.9	45.6,45.6
50	186.9	187.8	189.3	192.6	197.6	197.1	195.4	192.0	40- 50	167.5	590.4	63.6,63.6
60	133.8	135.2	137.0	140.7	145.5	144.5	142.5	138.8	50- 60	148.7	739.1	79.6,79.6
70	78.67	81.05	82.80	86.83	91.27	89.32	87.34	83.23	60- 70	111.3	850.4	91.6,91.6
80	28.37	30.76	32.84	36.25	39.54	37.23	35.76	32.17	70- 80	62.11	912.5	98.3,98.3
90	0	0	0	0.0006	1.148	0.1311	0	0	80- 90	15.62	928.1	100,100
100	0	0	0	0	0	0	0	0	90-100	0.0033	928.1	100,100
110	0	0	0	0	0	0.0099	0.0027	0	100-110	0.0006	928.1	100,100
120	0	0	0	0	0.0172	0.0148	0.0199	0.0135	110-120	0.0037	928.1	100,100
130	0.0214	0.0130	0.0122	0.0149	0.0591	0.0603	0.0666	0.0529	120-130	0.0171	928.1	100,100
140	0.0470	0.0447	0.0460	0.0445	0.1001	0.1159	0.1097	0.1024	130-140	0.0446	928.2	100,100
150	0.0593	0.0623	0.0593	0.0614	0.1403	0.1590	0.1577	0.1524	140-150	0.0572	928.2	100,100
160	0.0911	0.0843	0.0686	0.0879	0.1870	0.2012	0.1799	0.1847	150-160	0.0563	928.3	100,100
170	0.1107	0.1163	0.0997	0.1025	0.1852	0.1992	0.1773	0.1755	160-170	0.0403	928.3	100,100
180	0.1551	0.1588	0.1465	0.1406	0.1554	0.1588	0.1461	0.1406	170-180	0.0139	928.4	100,100
DEG	LUMINOUS INTENSITY:cd Less than 35% Percent = 13.7 %									UNIT:lm		

Isocandela Diagram:



Goniophotometer Test Results (Test for 5000K):

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
25.3	40.4	Face Down	90	25

Electrical Data:

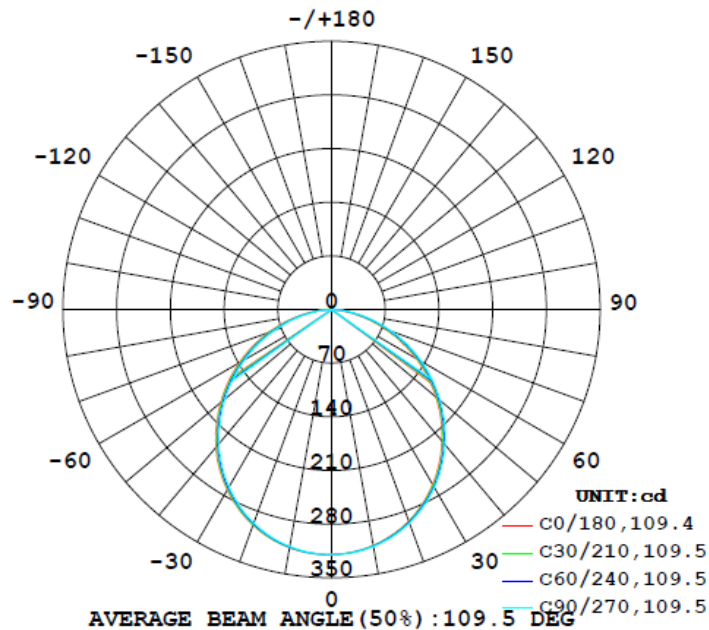
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	0.1031	11.42	0.9233

Goniophotometer Data:

Parameter	Results
Total Luminous (lm)	884.2
Luminous Efficacy (lm/w)	77.43
Zonal Lumens Distribution (0-60°)	79.6%
Beam Angle (°)	109.5

Luminous Intensity Distribution Diagram:

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	312.5	313.2	313.9	314.8	315.4	314.8	313.8	312.9	0- 10	30.24	30.24	3.42,3.42
20	293.7	295.2	296.7	298.4	299.3	297.9	296.3	294.2	10- 20	86.51	116.7	13.2,13.2
30	263.5	265.8	268.2	270.5	271.8	269.7	267.1	264.2	20- 30	130.5	247.3	28,28
40	224.1	227.3	230.2	233.3	234.2	231.5	228.3	224.5	30- 40	156.0	403.2	45.6,45.6
50	177.7	181.0	185.1	187.8	188.4	185.7	181.1	178.0	40- 50	159.4	562.7	63.6,63.6
60	127.0	131.0	135.6	138.5	138.9	135.3	130.5	127.2	50- 60	141.5	704.2	79.6,79.6
70	74.37	79.16	83.64	87.11	87.23	82.64	78.26	74.51	60- 70	105.8	810.0	91.6,91.6
80	26.65	30.93	35.17	38.28	37.94	33.66	30.02	26.88	70- 80	59.04	869.1	98.3,98.3
90	0	0	0.0228	1.310	1.202	0.0109	0	0	80- 90	14.92	884.0	100,100
100	0	0	0	0	0	0	0	0	90-100	0.0110	884.0	100,100
110	0	0	0	0	0	0	0.0073	0	100-110	0.0003	884.0	100,100
120	0	0	0	0	0.0109	0.0098	0.0166	0.0106	110-120	0.0024	884.0	100,100
130	0.0138	0.0067	0.0046	0.0067	0.0514	0.0540	0.0608	0.0484	120-130	0.0138	884.0	100,100
140	0.0384	0.0378	0.0378	0.0359	0.0898	0.1066	0.1028	0.0955	130-140	0.0388	884.1	100,100
150	0.0506	0.0554	0.0521	0.0538	0.1294	0.1467	0.1469	0.1403	140-150	0.0516	884.1	100,100
160	0.0811	0.0763	0.0600	0.0780	0.1735	0.1866	0.1678	0.1719	150-160	0.0515	884.2	100,100
170	0.0999	0.1061	0.0902	0.0926	0.1714	0.1850	0.1648	0.1626	160-170	0.0371	884.2	100,100
180	0.1426	0.1465	0.1350	0.1284	0.1430	0.1468	0.1349	0.1284	170-180	0.0128	884.2	100,100
DEG	LUMINOUS INTENSITY:cd Less than 35% Percent = 13.7 %									UNIT:lm		

Isocandela Diagram:

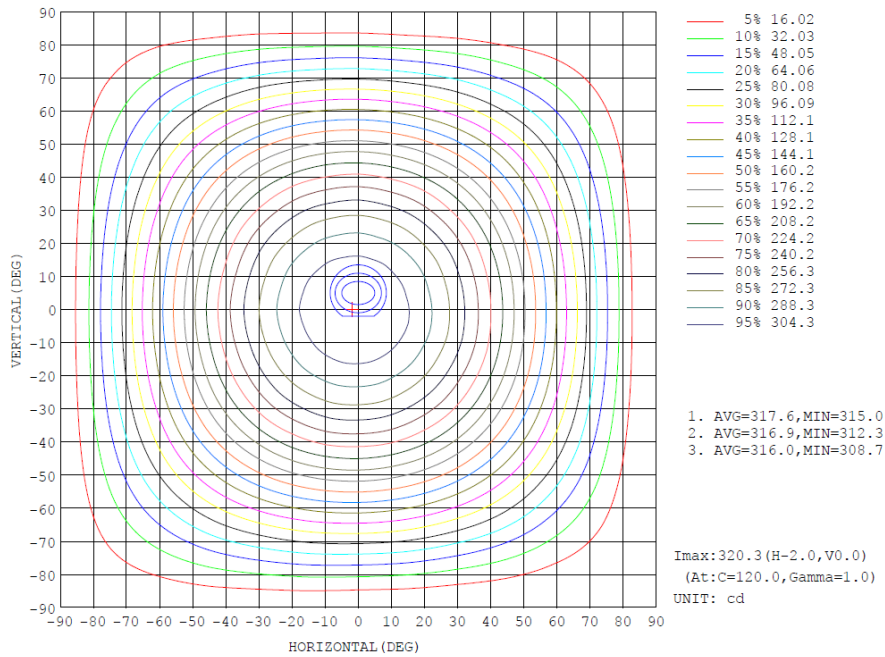
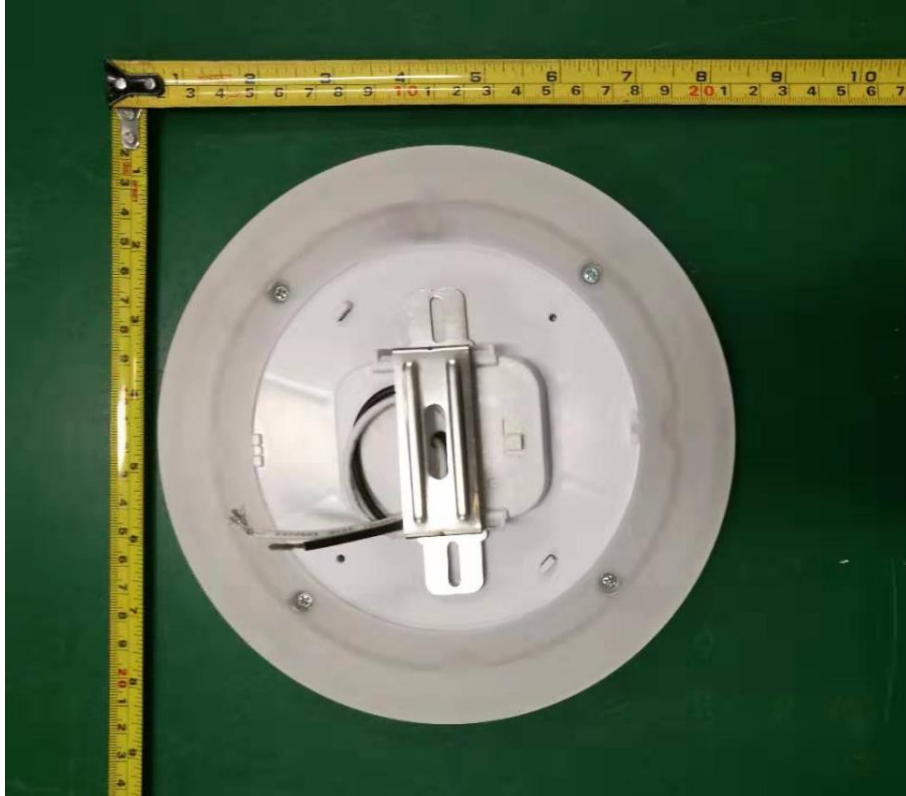


Photo of Sample:





Pre

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*****

NTC