

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

High Bay

Model Name(s):

502411##

Representative (Tested) Model:

50241161

Model Difference: ##-61-70, identifies 5000K

Prepare by:

Derek Lai

Engineer: Derek Lai

Date: 2019-08-20

Review by:

Vincent Yuan

Technical Lead: Vincent Yuan

Issue Date: 2019-08-23

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.

Product Information:

Client Name:	ETI Solid State Lighting (Zhuhai) Ltd
Brand Name:	ETI
Model Number:	502411##(##=61-70)
Product Type:	High Bay Luminaires for Commercial and Industrial Buildings
Rating Input:	120-277Vac, 50/60Hz, 180W
Declared CCT:	5000 K
Declared Light Output:	24000 lm
LED Manufacturer:	Samsung
LED Model:	SPMWH1228FD5WARMXX
LED Quantity:	732 pcs
Driver Manufacturer:	ECU ELECTRONICS INDUSTRIAL CO., LTD
Driver Model:	YX-180-1000mA

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:	2019-07-23
Quantity of Receipt Samples:	1 pcs
Sample Number:	190723003-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:	2019-08-23
Revised Date of Test Report:	N/A
Test Report No.:	NTCLR19080080
Remark (If applicable):	N/A

Test Specification:	
Date of Test	2019-08-19
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:
<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 °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° 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 °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.</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)
25.3	41.0	Face Down	90	10

Electrical Data:

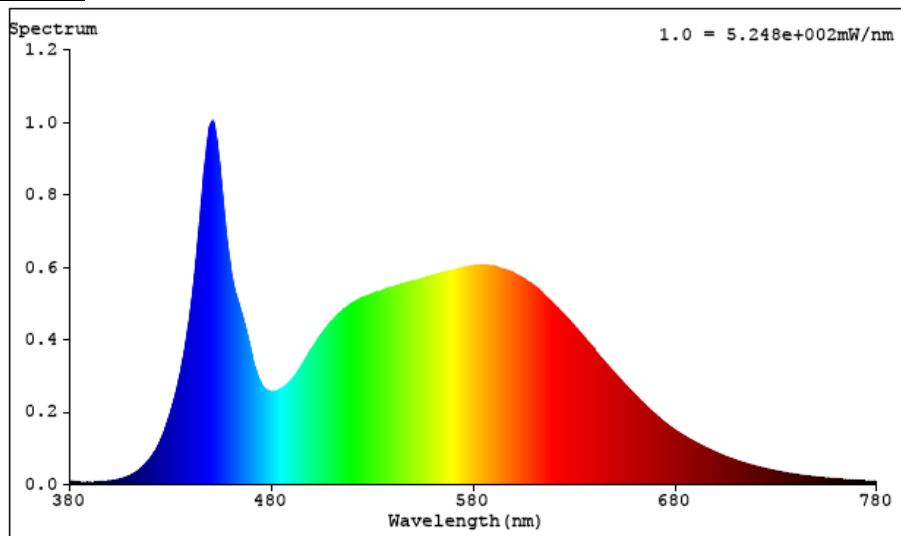
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	1.510	180.6	0.9964

Color Data:

Parameter	Result
CCT(K)	5087
Ra	85.0
R9	20
Chromaticity, x	0.3427
Chromaticity, y	0.3494
Chromaticity, u'	0.2107
Chromaticity, v'	0.4832
Duv	-0.000161

Special Color Rendering			
R1	84	R9	20
R2	89	R10	74
R3	92	R11	85
R4	86	R12	67
R5	85	R13	85
R6	85	R14	96
R7	88	R15	80
R8	71	-	-

Spectrum Diagram:



Goniophotometer Test Results:

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
25.3	41.0	Face Down	90	25

Electrical Data:

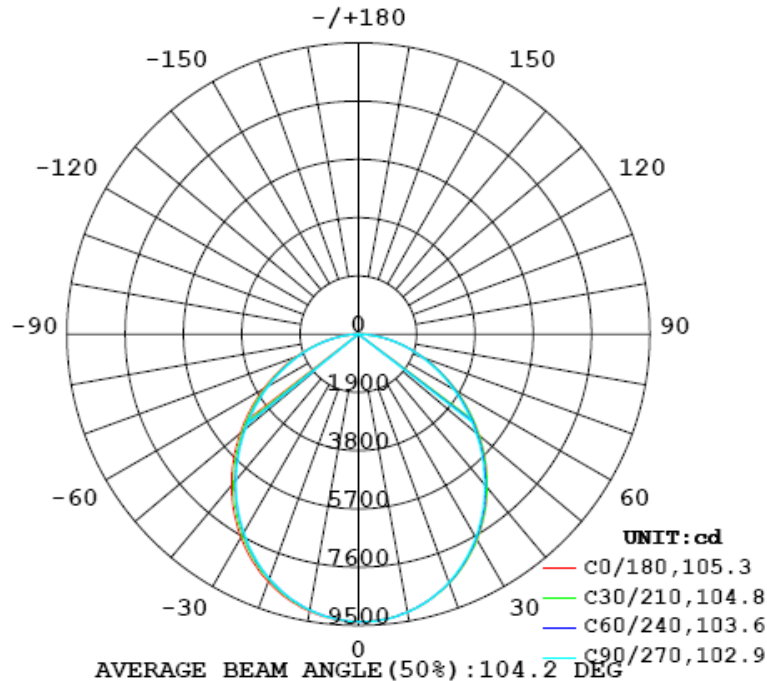
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	1.510	180.6	0.9964

Goniophotometer Data:

Parameter	Results
Total Luminous (lm)	24660.0
Luminous Efficacy (lm/w)	136.54
Zonal Lumens Distribution (20-50°)	50.9%
Beam Angle (°)	104.2

Luminous Intensity Distribution Diagram:

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



Zonal Flux Diagram:

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	zone	total	%lum, lamp
10	9198	9215	9203	9198	9176	9138	9132	9148	0- 10	885.5	885.5	3.59,3.59
20	8640	8637	8613	8599	8588	8504	8488	8545	10- 20	2516	3401	13.8,13.8
30	7734	7720	7651	7652	7661	7522	7471	7571	20- 30	3747	7149	29,29
40	6523	6509	6398	6420	6437	6272	6208	6335	30- 40	4396	11545	46.8,46.8
50	5143	5114	4995	5012	5035	4876	4808	4946	40- 50	4397	15942	64.6,64.6
60	3679	3675	3569	3573	3570	3441	3388	3513	50- 60	3817	19759	80.1,80.1
70	2256	2286	2214	2197	2161	2071	2065	2143	60- 70	2821	22580	91.6,91.6
80	977.0	1047	996.3	964.0	885.5	851.9	865.7	923.4	70- 80	1628	24209	98.2,98.2
90	51.82	0.5830	0.6195	0.5739	1.492	23.03	1.500	1.723	80- 90	428.7	24638	99.9,99.9
100	1.099	1.011	1.039	1.126	2.437	2.567	2.439	2.492	90-100	2.084	24640	99.9,99.9
110	1.989	1.324	1.509	1.572	2.816	2.780	2.973	2.811	100-110	2.140	24642	99.9,99.9
120	2.319	1.926	2.089	2.322	3.224	3.096	3.150	3.061	110-120	2.414	24644	99.9,99.9
130	3.212	4.275	2.980	4.818	4.382	5.208	4.476	4.889	120-130	3.013	24647	99.9,99.9
140	3.949	4.776	5.718	5.101	5.304	6.471	6.632	6.109	130-140	3.755	24651	100,100
150	4.450	4.787	5.475	5.062	6.261	7.317	7.683	7.168	140-150	3.600	24655	100,100
160	5.267	5.167	4.297	5.622	7.349	8.010	7.523	7.917	150-160	2.859	24657	100,100
170	6.066	5.868	5.519	6.008	7.418	7.985	7.786	7.616	160-170	1.871	24659	100,100
180	6.865	6.861	6.647	6.653	6.887	6.892	6.688	6.667	170-180	0.6406	24660	100,100
DEG	LUMINOUS INTENSITY:cd Less than 3% Percent = 14.0 %									UNIT:lm		

Isocandela Diagram:

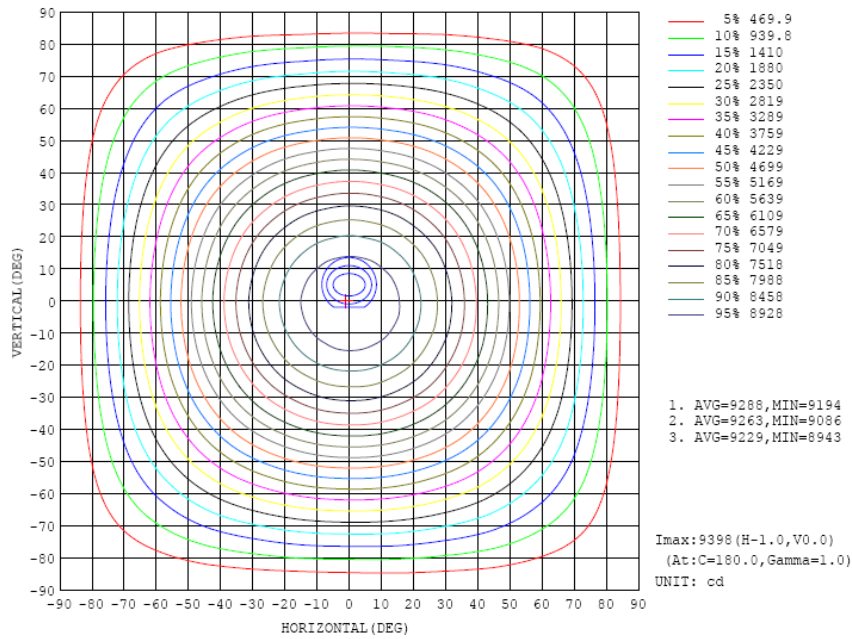
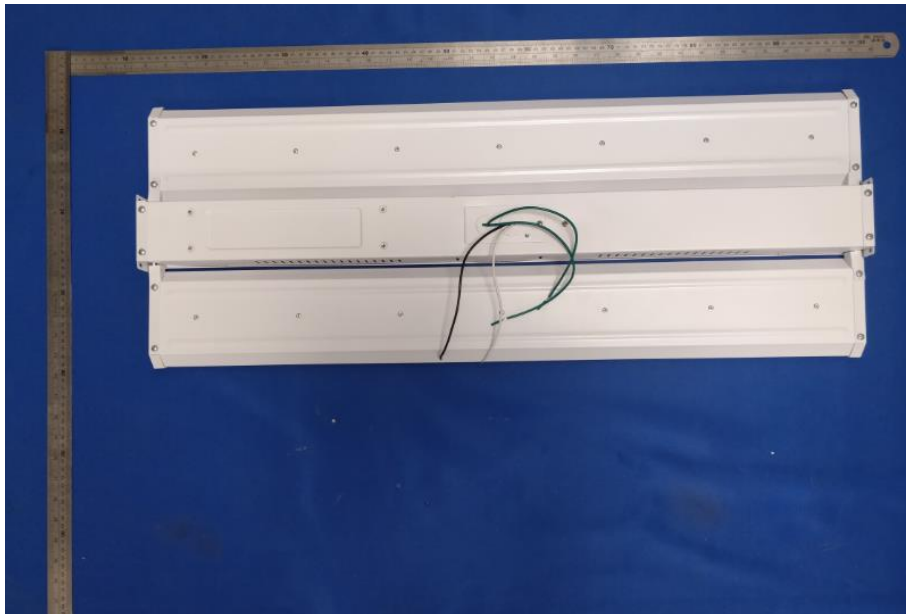
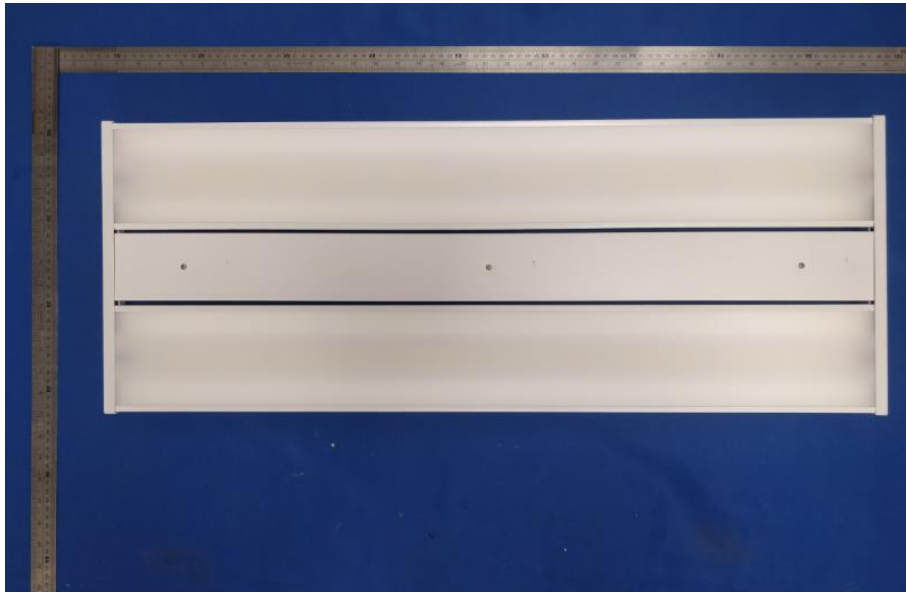


Photo of Sample:



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*****