



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 STRIP LIGHT

Model Name(s): 545991##

Representative (Tested) Model: 54599141

Model Difference: ##=41-50 identifies 4000K.

Prepare by:

Engineer: Derek Lai

Perele Lai

Date: 2018-11-15

Review by:

Technical Lead: Vincent Yuan

Issue Date: 2018-11-16

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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.

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





Product Information:

Client Name:	ELEC-TECH INTERNATIONAL CO LTD
Brand Name:	Commercial Electric, ETI
Model Number:	545991##(##=41-50)
Product Type:	Indoor, Inseparable SSL Luminaire
Rating Input:	120Vac, 60Hz, 90W
Declared CCT:	4000K
Declared Light Output:	9000lm
LED Manufacturer:	Samsung
LED Model:	SPMWHX228MD5XXW0XX
LED Quantity:	528 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:	2018-11-14	
Quantity of Receipt Samples:	4 pcs	
Sample Number:	S181114002-S1~S4	

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:	2018-11-16
Revised Date of Test Report:	N/A
Test Report No.:	NTCR18110111
Remark (If applicable):	N/A





Report	No:	NTCR1811	0111
	Rep	ort Version:	V1.2

Test Specification:			
Date of Test	2018-11-14		
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:

1. Photometric and Electrical Measurements – Light Distribution Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at $25 \, ^{\circ}\text{C} \pm 1 \, ^{\circ}\text{C}$, 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° 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 $25\,^{\circ}\text{C}\pm 1\,^{\circ}\text{C}$. 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.





Integrating Sphere Test Results:

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
24.2	40.8	Face Down	90	10

Electrical Data:

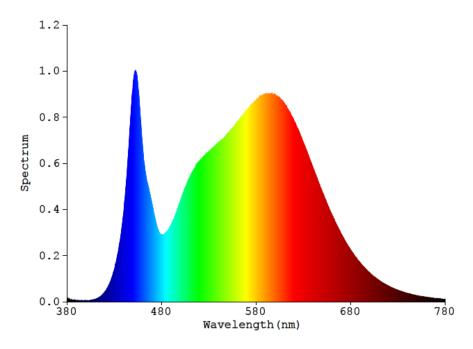
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	0.7595	89.98	0.9872

Color Data:

Parameter	Result
CCT(K)	4035
Color Rendering Index (CRI)	83.9
R9	13
Chromaticity, x	0.3794
Chromaticity, y	0.3775
Chromaticity, u'	0.2241
Chromaticity, v'	0.5018
Duv	0.00068

Special Color Rendering				
R1	82	R9	13	
R2	90	R10	76	
R3	95	R11	81	
R4	82	R12	63	
R5	82	R13	84	
R6	86	R14	98	
R 7	87	R15	76	
R8	66	-	-	

Spectrum Diagram:







Goniophotemeter Test Results:

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
24.2	40.8	Face Down	90	25

Electrical Data:

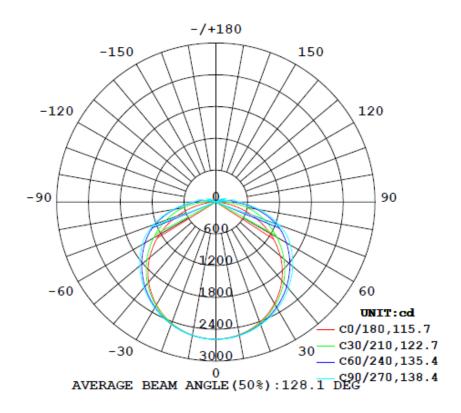
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	0.7595	89.98	0.9872

Goniophotometer Data:

Parameter	Results
Total Luminous (lm)	9283.1
Total Luminous per foot (lm/ft)	N/A
Luminous Efficacy (lm/w)	103.17
Zonal Lumens Distribution (0-90°)	96.2%
Beam Angle (°)	128.1

Luminous Intensity Distribution Diagram:

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM





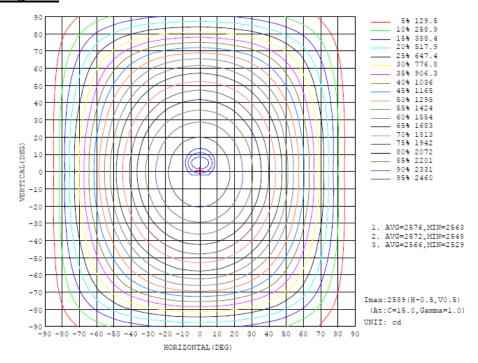


Zonal Flux Diagram:

ZONAL FLUX DIAGRAM:

Y	CO	C45	C90	C135	C180	C225	C270	C315	γ	• zone	◆ total	*lum,lam
10	2543	2552	2558	2556	2553	2552	2555	2548	0- 10	245.4	245.4	2.64,2.64
20	2417	2443	2467	2453	2436	2445	2460	2436	10- 20	708.2	953.6	10.3,10.3
30	2212	2268	2320	2284	2241	2273	2310	2259	20- 30	1091	2045	22,22
40	1934	2034	2124	2055	1970	2042	2111	2024	30- 40	1353	2398	36.6,36.6
50	1586	1753	1889	1778	1631	1765	1874	1743	40- 50	1467	4864	52.4,52.4
60	1176	1443	1622	1471	1229	1459	1604	1435	50- 60	1427	6291	67.8,67.8
70	718.8	1116	1273	1145	777.4	1132	1250	1104	60- 70	1241	7533	81.1,81.1
80	263.3	705.6	836.6	736.8	315.9	722.2	819.7	688.2	70- 80	909.4	8442	90.9,90.9
90	4.372	290.1	426.5	308.3	12.20	302.5	418.8	285.6	80- 90	486.9	8929	96.2,96.2
100	2.430	36.34	157.9	34.29	2.444	51.27	170.5	10.17	90-100	202.0	9131	98.4,98.4
110	1.969	83.60	190.2	91.66	1.870	83.12	180.3	74.98	100-110	63.07	9194	99,99
120	1.080	29.55	108.4	33.84	1.147	26.04	100.4	21.29	110-120	61.97	9256	99.7,99.7
130	1.844	1.646	36.70	1.748	1.980	2.021	28.65	1.890	120-130	21.45	9277	99.9,99.9
140	1.854	1.475	1.746	1.517	2.073	2.018	2.235	1.956	130-140	2.775	9280	100,100
150	1.750	1.561	1.455	1.649	2.228	2.353	2.204	2.340	140-150	1.181	9281	100,100
160	1.826	1.576	1.601	1.604	2.405	2.416	2.426	2.362	150-160	0.9134	9282	100,100
170	1.983	1.857	1.529	1.790	2.375	2.408	2.179	2.279	160-170	0.5744	9283	100,100
180	2.194	2.176	2.139	2.113	2.200	2.187	2.156	2.127	170-180	0.1971	9282	100,100
DEG	LUMINOUS INTENSITY:cd Less than 35% Percent = 17.6 %									UNI	T:lm	

Isocandela Diagram:







Luminous Distribution Intensity Data:

Table1																UNI	T: cd		
C (DEG)																			
y (DEG)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
0	2589	2589	2589	2589	2589	2589	2589	2589	2589	2589	2589	2589	2589	2589	2589	2589	2589	2589	2589
5	2576	2579	2578	2580	2580	2581	2582	2582	2582	2582	2581	2580	2581	2579	2580	2580	2580	2580	258
10	2543	2548	2548	2552	2554	2558	2558	2559	2558	2556	2554	2553	2553	2550	2552	2552	2554	2554	255
15	2490	2497	2499	2506	2511	2518	2520	2520	2517	2514	2506	2506	2505	2501	2506	2508	2512	2513	251
20	2417	2426	2431	2443	2453	2464	2467	2466	2460	2453	2442	2438	2436	2433	2440	2445	2454	2457	246
25	2324	2336	2345	2364	2379	2396	2400	2399	2388	2376	2359	2351	2348	2345	2356	2367	2381	2387	239
30	2212	2227	2241	2268	2292	2314	2320	2318	2302	2284	2259	2245	2241	2239	2256	2273	2294	2304	231
35	2082	2100	2120	2158	2190	2219	2228	2223	2202	2176	2141	2121	2115	2115	2138	2164	2193	2208	221
40	1934	1955	1985	2034	2077	2113	2124	2118	2090	2055	2008	1979	1970	1973	2005	2042	2080	2102	211
45	1769	1794	1836	1899	1953	1997	2011	2003	1967	1921	1861	1822	1809	1815	1859	1908	1958	1986	199
50	1586	1618	1674	1753	1822	1874	1889	1880	1836	1778	1702	1648	1631	1643	1701	1765	1827	1861	187
55	1388	1428	1503	1602	1681	1741	1758	1747	1698	1627	1532	1462	1437	1456	1533	1616	1688	1727	174
60	1176	1228	1326	1443	1535	1601	1622	1608	1552	1471	1357	1264	1229	1259	1358	1459	1541	1588	160
65	951	1019	1147	1281	1384	1449	1466	1457	1402	1309	1180	1058	1008	1053	1182	1297	1391	1431	144
70	719	809	965	1116	1204	1260	1273	1268	1224	1145	998	849	777	846	1000	1132	1211	1240	125
75	484	607	787	922	996	1046	1058	1055	1016	952	820	647	543	643	822	937	1004	1029	103
80	263	414	587	706	775	825	837	833	796	737	622	454	316	450	623	722	786	811	82
85	84.0	234	374	486	556	609	621	616	576	516	409	272	123	266	408	503	569	596	60
90	4.37	78.6	200	290	363	411	426	416	374	308	210	98.9	12.2	94.1	210	303	370	407	41
95	2.17	25.1	73.0	235	307	351	367	354	313	245	85.5	35.8	2.08	31.4	147	241	309	348	36
100	2.43	8.61	56.4	36.3	82.0	100	158	97.4	10.1	34.3	60.2	11.0	2.44	10.1	55.2	51.3	85.2	170	17
105	2.37	2.61	43.5	106	111	10.8	4.30	18.1	169	118	49.5	3.01	2.37	2.70	43.9	107	46.9	2.52	9.4
110	1.97	1.90	23.2	83.6	139	176	190	179	144	91.7	27.9	1.47	1.87	1.79	24.6	83.1	135	169	18
115	1.04	0.98	5.68	56.8	104	137	148	139	108	61.8	9.24	1.00	1.10	1.19	6.15	53.1	99.8	129	14
120	1.08	0.99	1.33	29.5	69.7	98.9	108	100	73.0	33.8	1.80	1.03	1.15	1.18	1.70	26.0	64.3	90.8	10
125	1.28	1.32	1.79	4.94	37.5	63.0	71.3	64.2	40.3	8.00	1.83	1.61	1.67	1.86	2.01	3.63	33.1	54.0	62.
130	1.84	1.81	1.79	1.65	9.18	29.8	36.7	31.0	11.6	1.75	1.69	1.65	1.98	2.00	2.01	2.02	5.76	21.5	28.
135	1.90	1.78	1.72	1.52	1.74	2.30	6.29	2.80	1.80	1.63	1.63	1.63	2.05	2.05	2.01	2.11	2.14	1.98	2.3
140	1.85	1.75	1.71	1.47	1.59	1.72	1.75	1.74	1.68	1.52	1.60	1.59	2.07	2.05	2.09	2.02	2.22	2.28	2.2
145	1.79	1.67	1.58	1.57	1.50	1.61	1.59	1.61	1.55	1.60	1.57	1.51	2.13	2.07	2.14	2.21	2.09	2.25	2.2
150	1.75	1.63	1.47	1.56	1.53	1.45	1.46	1.47	1.62	1.65	1.42	1.50	2.23	2.10	2.15	2.35	2.33	2.27	2.2
155	1.65	1.71	1.67	1.57	1.58	1.64	1.60	1.63	1.64	1.58	1.57	1.61	2.18	2.23	2.30	2.45	2.48	2.48	2.4
160	1.83	1.82	1.67	1.58	1.57	1.65	1.60	1.70	1.66	1.60	1.58	1.73	2.41	2.41	2.29	2.42	2.48	2.52	2.4
165	1.86	1.87	1.77	1.63	1.55	1.54	1.50	1.60	1.67	1.63	1.71	1.79	2.37	2.37	2.38	2.37	2.42	2.34	2.3
170	1.98	1.99	1.94	1.86	1.62	1.58	1.53	1.58	1.71	1.79	1.83	1.90	2.38	2.40	2.41	2.41	2.36	2.22	2.1
175	2.07	2.12	2.11	2.05	1.87	1.77	1.73	1.78	1.86	1.89	1.93	1.97	2.30	2.32	2.35	2.33	2.32	2.22	2.1
180	2.19	2.22	2.19	2 18	2 10	2 13	2 14	2 07	2.05	2 11	2 10	2 10	2 20	2 22	2 20	2 10	2.11	2.15	2.1

Table2											UNI	T: cd	
C (DEG)													
y (DEG)	285	300	315	330	345								
0	2589	2589	2589	2589	2589								
5	2579	2579	2578	2578	2577								
10	2553	2551	2548	2547	2544								
15	2511	2507	2501	2497	2492								
20	2455	2448	2436	2429	2420								
25	2384	2373	2355	2342	2329								
30	2300	2284	2259	2238	2219								
35	2203	2182	2148	2120	2092								
40	2096	2068	2024	1984	1947								
45	1980	1944	1888	1835	1787								
50	1854	1813	1743	1675	1611								
55	1720	1673	1593	1505	1421								
60	1580	1526	1435	1329	1222								
65	1422	1373	1273	1152	1015								
70	1230	1190	1104	970	806								
75	1018	981	905	791	606								
80	799	762	688	586	414								
85	585	545	467	370	229								
90	402	357	286	190	76.8								
95	345	302	229	54.6	20.0								
100	118	1.71	10.2	54.5	6.64								
105	59.9	151	98.6	40.4	2.94								
110	165	130	75.0	18.7	2.24								
115	126	95.4	48.3	3.32	1.27								
120	88.8	60.9	21.3	1.60	1.30								
125	52.4	29.7	2.10	2.10	1.62								
130		3.76											
135	1.96	2.10	1.92	2.17	2.20								
140	2.17	2.12	1.96	2.21	2.18								
145	2.12	2.06	2.23	2.25	2.16								
150	2.22	2.28	2.34	2.09	2.25								
155	2.44	2.42	2.38	2.33	2.32								
160	2.47	2.41	2.36	2.33	2.43								
165	2.33	2.27	2.27	2.35	2.41								
170	2.20	2.19	2.28	2.33	2.32								
175	2.18	2.10	2.25	2.29	2.33								
180	2.08	2.06	2.13	2.12	2.19								

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





Photo of Sample:









Equipment List:

quipment 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-F01-012	Standard Lamp	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
NTC-F01-023	3.0 meter Integrating Sphere	2018-02-03	2019-02-02