



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 Linear Ambient Light

Model Name(s): 565131##

Representative (Tested) Model: 56513141

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

Prepare by:

Engineer: Derek Lai

Perele Lai

Date: 2018-08-15

Review by:

Technical Lead: Vincent Yuan

Issue Date: 2018-09-07 Revised Date: N/A

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The results contained in this report pertain only to the tested samples.

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





Product Information:

Client Name:	ELEC-TECH INTERNATIONAL CO LTD
Brand Name:	ETI
Model Number:	565131## (##=41-50)
Product Type:	Indoor, Inseparable SSL Luminaire
Rating Input:	120-277Vac, 50/60Hz, 40W
Declared CCT:	4000K
Declared Light Output:	3600lm
LED Manufacturer:	Samsung
LED Model:	SPMWH1228FD5WARGMC
LED Quantity:	150pcs

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:	2018-07-31	
Quantity of Receipt Samples:	3 pcs	
Sample Number:	S18073104-S1~S3	

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:	2018-09-07
Revised Date of Test Report:	N/A
Test Report No.:	NTCR18080017
Remark (If applicable):	N/A





Test Specification:			
Date of Test	2018-08-02		
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)
24.4	40.4	Face Down	90	10

Electrical Data:

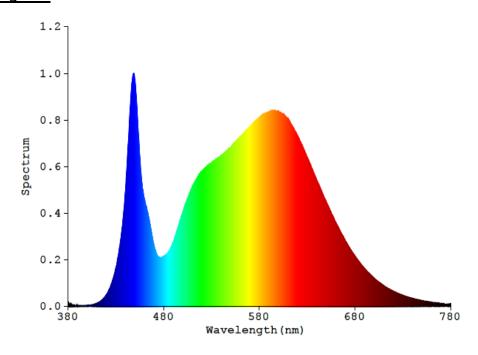
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120	60	0.3292	39.05	0.9894

Color Data:

Parameter	Result
CCT(K)	3999
Color Rendering Index (CRI)	82.9
R9	11
Chromaticity, x	0.3811
Chromaticity, y	0.3790
Chromaticity, u'	0.2246
Chromaticity, v'	0.5027
Duv	0.00085

Special Color Rendering			
R1	81	R9	11
R2	88	R10	71
R3	93	R11	83
R4	83	R12	63
R5	81	R13	83
R6	83	R14	96
R7	87	R15	75
R8	66	-	-

Spectrum Diagram:







Goniophotemeter Test Results:

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
24.3	40.4	Face Down	90	25

Electrical Data:

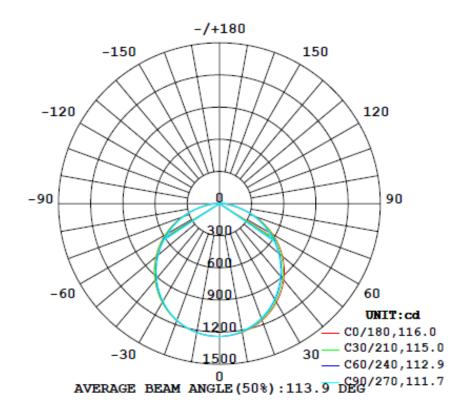
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120	60	0.3291	39.04	0.9894

Goniophotometer Data:

Parameter	Results
Total Luminous (lm)	3640.01
Total Luminous per foot (lm/ft)	N/A
Luminous Efficacy (lm/w)	93.25
Zonal Lumens Distribution (0-90°)	99.3%
Beam Angle (°)	113.9

Luminous Intensity Distribution Diagram:

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM





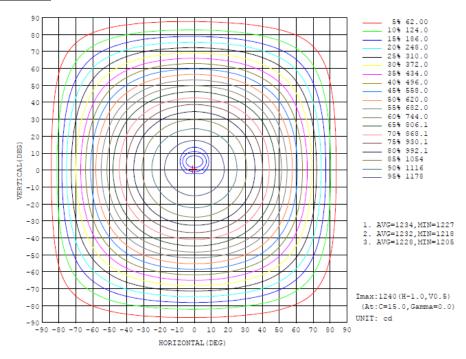


Zonal Flux Diagram:

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	Y	• zone	♠ total	%lum,lamp
10	1220	1215	1211	1213	1220	1221	1222	1221	0- 10	117.3	117.3	3.22,3.22
20	1160	1148	1138	1146	1161	1161	1158	1161	10- 20	336.1	453.4	12.5,12.5
30	1064	1044	1026	1042	1065	1060	1051	1060	20- 30	510.3	963.7	26.5,26.5
40	932.1	906.0	882.6	905.5	934.9	923.2	909.2	922.7	30- 40	617.3	1581	43.4,43.4
50	768.1	740.5	715.1	741.6	773.9	758.1	740.1	755.6	40- 50	643.9	2225	61.1,61.1
60	574.6	552.5	530.3	554.7	584.1	569.2	551.8	563.8	50- 60	587.0	2812	77.3,77.3
70	356.0	346.9	336.4	352.3	370.4	363.6	353.7	355.0	60- 70	453.4	3265	89.7,89.7
80	131.2	146.0	155.5	152.3	147.3	160.6	166.3	150.6	70- 80	264.5	3530	97,97
90	0.1032	22.84	36.42	25.64	3.395	27.60	41.17	22.00	80- 90	82.93	3613	99.3,99.3
100	0.5741	1.125	1.045	0.8347	0.5302	0.9277	1.005	1.502	90-100	7.802	3621	99.5,99.5
110	2.992	2.636	2.394	2.217	2.807	2.842	2.707	3.021	100-110	1.907	3622	99.5,99.5
120	2.822	4.216	3.002	3.457	3.208	4.160	3.555	4.391	110-120	3.091	3626	99.6,99.6
130	3.229	5.609	4.477	4.781	3.893	5.430	5.041	5.861	120-130	3.667	3629	99.7,99.7
140	3.274	6.119	5.826	5.561	3.341	5.036	5.461	5.747	130-140	3.936	3633	99.8,99.8
150	3.014	2.996	6.248	2.766	3.619	2.130	5.986	3.154	140-150	3.043	3636	99.9,99.9
160	2.972	6.776	2.168	7.290	2.423	8.364	2.939	8.637	150-160	2.049	3638	100,100
170	2.490	4.757	5.001	4.372	2.848	4.579	4.936	4.713	160-170	1.417	3640	100,100
180	1.745	1.795	0.8729	1.788	1.743	1.796	0.8755	1.786	170-180	0.3543	3640	100,100
DEG		LUMINOUS INTENSITY:cd Less than 35% Percent = 14.0 %								UNI		

Isocandela Diagram:



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Luminous Distribution Intensity Data:

Table1																UNI	T: ed		
C(DEG)																			
y (DEG)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
0	1240	1240	1240	1240	1239	1239	1239	1239	1239	1239	1238	1238	1240	1240	1240	1240	1239	1239	1239
5	1234	1235	1233	1233	1231	1231	1231	1230	1230	1231	1231	1233	1235	1235	1237	1236	1236	1236	123
10	1220	1219	1216	1215	1212	1211	1211	1210	1211	1213	1214	1217	1220	1220	1222	1221	1222	1221	1222
15	1195	1193	1189	1186	1182	1180	1179	1180	1181	1185	1187	1191	1196	1196	1198	1196	1196	1195	119
20	1160	1159	1153	1148	1142	1140	1138	1139	1142	1146	1150	1156	1161	1162	1163	1161	1160	1157	115
25	1117	1114	1106	1101	1093	1089	1086	1088	1091	1099	1104	1112	1118	1118	1119	1115	1113	1109	111
30	1064	1061	1052	1044	1034	1029	1026	1028	1033	1042	1049	1059	1065	1065	1065	1060	1056	1052	105
35	1002	998	988	979	967	961	958	961	967	978	986	997	1004	1003	1003	995	991	985	984
40	932	928	916	906	894	887	883	886	893	906	915	927	935	933	932	923	918	910	909
45	854	850	838	826	813	805	801	805	813	827	837	850	858	856	855	844	837	829	828
50	768	765	752	741	727	719	715	719	728	742	752	765	774	771	769	758	751	741	740
55	675	672	659	649	635	629	625	629	637	651	661	674	683	679	677	666	659	649	648
60	575	572	561	552	540	534	530	534	542	555	564	577	584	582	580	569	563	553	552
65	468	467	458	451	441	437	434	437	444	455	462	473	480	477	477	468	463	455	453
70	356	357	350	347	340	339	336	340	344	352	356	365	370	368	370	364	361	355	354
75	241	244	241	243	241	243	242	244	245	249	249	254	258	257	261	259	260	257	256
80	131	135	139	146	150	154	155	156	155	152	147	146	147	149	156	161	166	166	166
85	39.8	46.3	55.9	68.4	77.4	82.9	85.6	84.2	81.5	73.7	64.1	54.8	52.6	56.5	69.3	80.9	88.5	91.7	92.
90	0.10	4.51	11.8	22.8	29.0	34.8	36.4	35.6	31.3	25.6	14.2	6.57	3.40	9.09	19.5	27.6	36.2	40.0	41.
95	0.05	0.06	0.41	2.92	7.24	11.3	12.1	11.6	7.81	3.67	0.22	0.06	0.21	0.28	0.97	4.69	10.8	13.2	14.
100	0.57	0.44	0.77	1.12	1.04	0.99	1.05	0.99	1.00	0.83	0.58	0.33	0.53	0.46	0.78	0.94	1.05	1.06	1.0
105	2.24	1.88	1.59	1.93	1.88	1.82	1.78	1.70	1.64	1.68	1.24	1.28	1.80	1.73	2.04	2.09	2.01	1.87	1.8
110	2.99	2.68	2.44	2.64	2.77	2.55	2.39	2.33	2.44	2.22	1.76	2.05	2.81	2.55	2.56	2.84	2.86	2.64	2.7
115	3.27	3.10	3.29	3.18	3.19	3.26	3.14	2.97	2.55	2.69	2.53	2.79	3.28	2.84	3.31	3.27	3.25	3.36	3.6
120	2.82	3.22	4.07	4.22	3.71	3.33	3.00	2.88	3.04	3.46	3.36	3.06	3.21	3.80	3.93	4.16	3.63	3.51	3.5
125	3.46	3.19	4.88	4.93	4.45	3.98	3.76	3.66	3.78	4.20	3.94	2.66	3.56	2.95	4.74	4.94	4.42	4.33	4.3
130	3.23	5.22	4.95	5.61	5.22	4.73	4.48	4.40	4.52	4.78	4.13	4.31	3.89	3.70	4.76	5.43	5.05	4.60	5.0
135	3.44	5.80	4.45	6.08	5.80	5.52	5.26	5.15	5.17	5.27	4.14	5.39	3.20	5.47	4.41	5.56	5.54	5.69	5.6
140	3.27	5.46	2.54	6.12	6.25	6.02	5.83	5.74	5.74	5.56	2.71	4.64	3.34	5.28	2.56	5.04	5.64	5.76	5.4
145	2.41	4.54	3.07	4.31	6.28	6.33	6.23	6.10	5.91	5.00	2.50	4.32	2.84	4.43	2.69	3.35	4.68	6.49	6.4
150	3.01	5.39	7.28	3.00	4.66	6.32	6.25	6.20	5.27	2.77	5.66	4.74	3.62	4.76	5.22	2.13	3.75	5.56	5.9
155	3.09	5.70	6.38	3.41	2.63	3.42	4.03	3.46	2.96	3.34	5.21	5.25	2.79	5.32	6.58	3.81	2.18	2.88	3.0
160	2.97	5.26	5.47	6.78	3.76	2.86	2.17	2.89	3.75	7.29	4.68	4.28	2.42	4.94	5.04	8.36	4.37	3.73	2.9
165	2.41	3.88	5.64	4.88	5.15	7.68	6.30	6.13	6.68	4.91	4.44	3.46	2.69	3.33	4.53	5.21	8.20	6.80	7.4
170	2.49	2.25	3.49	4.76	5.00	4.41	5.00	4.77	4.74	-	4.67	3.14	2.85	3.05	4.61	4.58	4.85	5.19	4.9
175	2.97	2.78	3.45	3.48	3.25	3.55	4.08	3.80	3.58	3.67	3.47	3.15	2.62	2.19	2.91	3.61	3.43	4.17	5.0
180	1.74	1 76	1.78	1 70	1 70	1.78	0.07	1.76	1.77	1 70	1 77	1.80	1.74	1.76	1.78	1.80	1.79	1.79	0.8

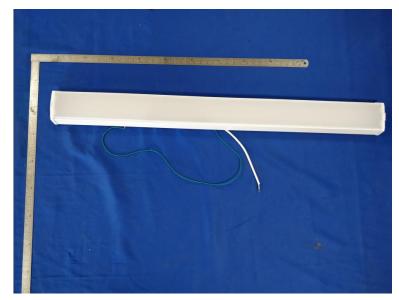
Table2											UNI	T: cd	
C (DEG)													
y (DEG)	285	300											
0	1239	1239	1239	1238	1238								
5	1236	1236	1235	1235	1234								
10	1221	1222	1221	1221	1219								
15	1195	1196	1196	1197	1195								
20	1158	1159	1161	1162	1161								
25	1110	1113	1115	1118	1118								
30	1052	1056	1060	1065	1065								
35	985	990	996	1003	1003								
40	910	916	923	931	932								
45	828	835	842	852	854								
50	740	748	756	766	768								
55	648	655	662	673	675								
60	552	558	564	574	576								
65	452	457	461	469	469								
70	352	354	355	360	357								
75	253	253	249	250	245								
80	163	158	151	145	135								
85	89.5	81.5	71.8	59.5	45.7								
90	37.7	31.5	22.0	12.8	5.86								
95	12.0	8.51	0.91	0.30	0.22								
100	1.09	1.24	1.50	1.16	0.57								
105	2.08	2.16	2.48	1.97	2.02								
110	2.90	3.03	3.02	2.60	2.63								
115	3.49	3.35	3.42	3.25	3.25								
120	3.52	3.88	4.39	3.88	3.39								
125	4.41	4.77	5.11	4.38	3.26								
130	5.17	5.53	5.86	4.54	6.03								
135	6.01	6.11	5.73	3.69	6.25								
140	6.33	6.52	5.75	1.75	5.52								
145	6.03	6.20	4.12	3.30	4.41								
150	6.02	3.92	3.15	7.59	5.54								
155	2.97	2.44	3.74	6.98	6.39								
160	3.12	4.11	8.64	5.76	5.28								
165	8.70	5.11	5.22	5.64	3.99								
170	4.75	5.30	4.71	3.93	2.36								
175	4.02	3.19	3.33	2.85	2.77								\vdash
180	1.76	1.77	1.79	1.77	1.80								\vdash

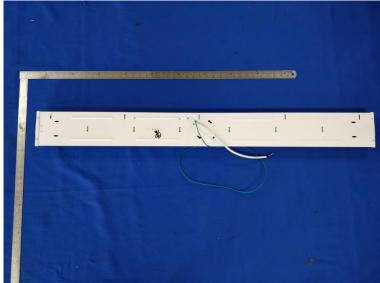
Website: http://www.ntc-cert.com





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