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 Wall Luminaire

Model name(s):

533021## 533022##

Representative (Tested) Model:

53302161

Model Difference: ## =61-70 intends CCT is 5000K.

Prepare By:

Engineer: Leo Liu

Date: 2018-07-31

Review By:

Technical Lead: Vincent Yuan

Date: 2018-07-31

Note: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Product Information:

Client Name:	ELEC-TECH INTERNATIONAL CO LTD
Brand Name:	Defiant
Model Number:	533021##, 533022## (## =61-70)
Product type:	Inseparable SSL Luminaire
Rating Input:	AC120V for 533021##/AC120-277V for 533022##, 60Hz, 80W
Declared CCT:	5000K
Declared Light output:	9000lm
LED Manufacturer:	Samsung
LED Model:	SPMWHX1229A
LED Quantity:	210 pcs
Forward current of LED	100mA
Date of Receipt Samples:	2017-06-30
Quantity of Receipt	1
Sample Number:	170630001-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:	2018-07-31
Revised Date of Test Report:	N/A
Test Report No.:	NTCR18070138
Remark (*If applicable*)	Since model 533022## is the same construction with model 533021##, except rating Input Voltage, all test is conducted for model 533021##, and all test result is from test report NTCR17070040.

Test Specifications:	
Date of Test	2017-08-16
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 C78.377-2008 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° 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 120 Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1° vertical intervals and 22.5° Vertical intervals.

2. Photometric and Electrical Measurements – Integrating Sphere Method:

Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25º C ± 1º 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 120 Volts AC, 60Hz. 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 5 nm intervals over the range of 380 to 780 nm.

Integrating Sphere Test Results

Test Condition:

Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time
24.6 °C	36 %	Face Down	90 min	25 min

Electrical Data:

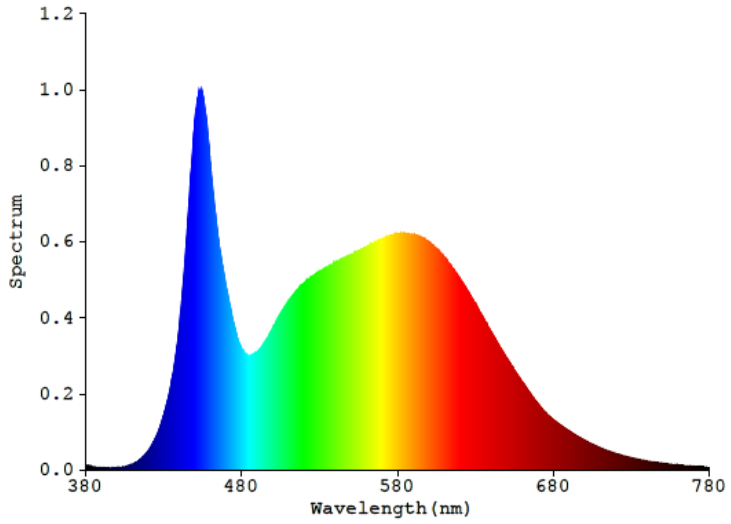
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.6667	79.74	0.9962

Color Data:

Parameter	Result
CCT (K)	5169
Color Rendering Index (CRI)	85.2
R9	17
Chromaticity, x	0.3405
Chromaticity, y	0.3474
Chromaticity u′	0.2099
Chromaticity v′	0.4819
Duv	-0.00026

Special Color Rendering			
R1	84	R9	17
R2	92	R10	79
R3	94	R11	83
R4	84	R12	65
R5	85	R13	87
R6	87	R14	97
R7	87	R15	80
R8	69	-	-

Spectrum Diagram:



Goniophotometer Test Results:

Test Condition:

Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time
24.5 °C	37 %	Face Down	90 min	25 min

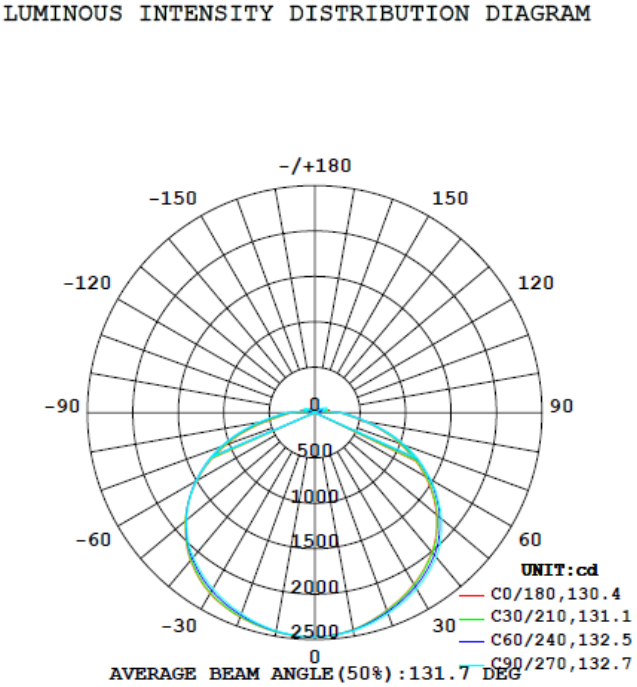
Electrical Data:

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.1	60	0.6668	79.73	0.9962

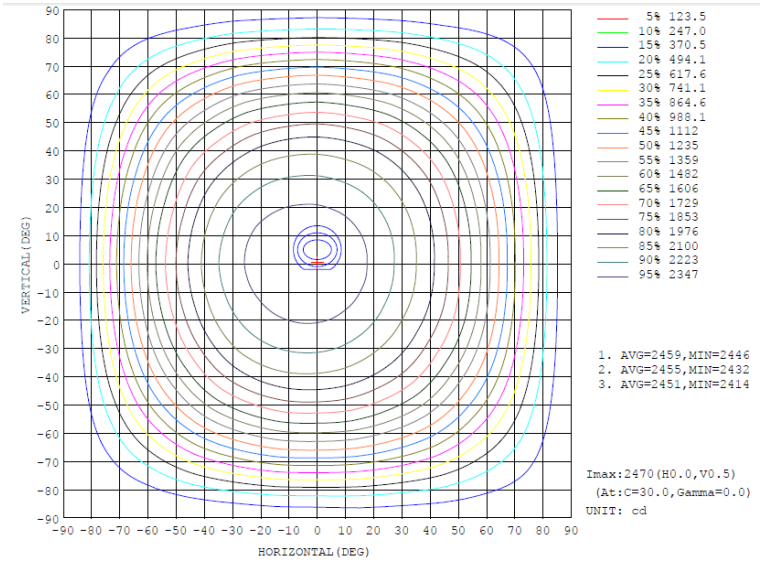
Goniophotometer Data:

Parameter	Result
Total Luminous (lm)	9244.1
Total Luminous per foot (lm/ft)	N/A
Luminous Efficacy (lm/w)	115.94
Zonal Lumens Distribution (0-90°)	96.0%
Beam Angle (°)	131.7
Center Beam Candle Power (cd)	2470

Luminous Intensity Distribution Diagram:



Isocandela Diagram:



Zonal Flux Diagram:

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	2426	2431	2439	2446	2451	2447	2440	2433	0- 10	234.3	234.3	2.53,2.53
20	2317	2330	2356	2378	2396	2382	2356	2335	10- 20	679.3	913.6	9.88,9.88
30	2183	2201	2243	2273	2300	2277	2239	2212	20- 30	1064	1977	21.4,21.4
40	2006	2030	2078	2112	2124	2105	2078	2048	30- 40	1355	3333	36.1,36.1
50	1749	1785	1820	1849	1856	1844	1840	1804	40- 50	1510	4843	52.4,52.4
60	1406	1452	1473	1491	1495	1499	1505	1472	50- 60	1480	6323	68.4,68.4
70	994.0	1041	1053	1055	1043	1070	1094	1060	60- 70	1256	7580	82,82
80	548.1	582.7	579.5	560.1	531.5	576.7	623.0	596.2	70- 80	857.7	8437	91.3,91.3
90	275.2	278.1	257.0	252.2	255.5	265.2	279.4	273.7	80- 90	436.4	8874	96,96
100	162.8	40.35	94.16	38.81	158.3	35.19	95.99	42.10	90-100	152.3	9026	97.6,97.6
110	85.23	68.52	141.3	65.98	86.95	65.70	117.2	66.46	100-110	93.05	9119	98.6,98.6
120	27.83	49.68	101.5	48.93	28.73	46.30	82.14	42.58	110-120	71.18	9190	99.4,99.4
130	5.638	36.42	50.50	34.42	5.108	34.08	27.32	33.00	120-130	36.29	9227	99.8,99.8
140	2.681	14.23	15.17	12.62	1.177	13.16	7.322	12.96	130-140	14.32	9241	100,100
150	0.5221	0.7548	0.8759	0.7862	0.7481	0.7466	0.7324	0.7589	140-150	2.632	9244	100,100
160	0.4667	0.6043	0.5912	0.6247	0.6827	0.5902	0.6336	0.6080	150-160	0.3100	9244	100,100
170	0.4711	0.5173	0.3724	0.4382	0.3076	0.4730	0.5753	0.5524	160-170	0.1529	9244	100,100
180	0.3065	0.3449	0.2315	0.2789	0.3031	0.3421	0.2300	0.2772	170-180	0.0383	9244	100,100
DEG	LUMINOUS INTENSITY:cd Less than 35% Percent = 15.2 %									UNIT:lm		

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	2469	2470	2470	2470	2470	2470	2470	2470	2470	2470	2470	2470	2469	2470	2470	2470	2470	2470	2470
5	2457	2458	2458	2459	2460	2460	2461	2462	2463	2464	2464	2464	2465	2465	2465	2464	2463	2462	2462
10	2426	2428	2429	2431	2433	2436	2439	2442	2445	2446	2448	2449	2451	2450	2450	2447	2445	2442	2440
15	2377	2380	2381	2386	2390	2397	2403	2407	2411	2417	2421	2424	2427	2426	2425	2418	2414	2407	2404
20	2317	2320	2322	2330	2337	2347	2356	2364	2370	2378	2384	2391	2396	2394	2391	2382	2373	2363	2356
25	2253	2255	2259	2269	2279	2292	2303	2313	2322	2330	2339	2348	2355	2355	2349	2336	2325	2310	2301
30	2183	2185	2189	2201	2214	2229	2243	2253	2264	2273	2281	2290	2300	2297	2292	2277	2264	2249	2239
35	2101	2104	2107	2121	2136	2153	2166	2179	2189	2198	2205	2211	2222	2216	2212	2198	2187	2174	2164
40	2006	2011	2014	2030	2047	2065	2078	2093	2103	2112	2112	2115	2124	2119	2115	2105	2096	2085	2078
45	1889	1896	1900	1918	1933	1952	1964	1979	1987	1993	1989	1990	2001	1994	1996	1988	1985	1978	1974
50	1749	1762	1761	1785	1795	1817	1820	1837	1842	1849	1841	1843	1856	1846	1855	1844	1848	1838	1840
55	1588	1601	1602	1629	1637	1656	1655	1673	1673	1680	1667	1674	1688	1677	1691	1681	1690	1679	1684
60	1406	1420	1423	1452	1460	1475	1473	1489	1486	1491	1475	1481	1495	1485	1503	1499	1511	1500	1505
65	1208	1222	1228	1257	1264	1278	1274	1289	1285	1285	1267	1268	1281	1272	1293	1295	1311	1303	1307
70	994	1009	1013	1041	1046	1058	1053	1066	1058	1055	1033	1031	1043	1034	1061	1070	1092	1088	1094
75	772	786	788	809	811	821	814	823	811	804	782	777	789	780	810	825	851	851	861
80	548	565	566	583	581	588	580	585	571	560	535	525	531	525	556	577	606	612	623
85	373	385	387	400	405	410	401	399	382	367	348	342	348	346	368	386	413	421	430
90	275	281	278	278	270	266	257	255	251	252	248	251	256	254	262	265	274	274	279
95	83.3	43.5	83.5	118	138	149	147	143	129	103	72.7	39.1	55.1	80.0	74.6	128	155	161	165
100	163	120	140	40.4	55.5	87.3	94.2	87.4	54.8	38.8	133	113	158	114	119	35.2	63.1	89.8	96.0
105	122	84.6	107	85.8	70.0	89.7	95.1	89.8	71.7	82.2	101	80.9	122	82.8	107	77.8	56.5	71.0	77.0
110	85.2	55.3	73.7	68.5	94.2	139	141	137	94.6	66.0	70.7	53.3	87.0	54.9	74.1	65.7	83.7	115	117
115	53.2	32.8	48.2	55.0	98.2	130	132	128	97.0	53.8	45.9	31.6	54.4	32.4	48.0	51.9	86.9	112	116
120	27.8	17.6	31.1	49.7	84.0	103	102	99.9	81.8	48.9	29.1	16.8	28.7	16.9	30.4	46.3	71.9	81.0	82.1
125	10.5	9.83	23.1	47.4	66.5	76.1	74.2	73.7	63.9	45.6	22.3	9.25	8.49	9.79	22.2	44.3	55.4	55.1	51.8
130	5.64	8.58	22.2	36.4	47.9	52.1	50.5	50.1	45.4	34.4	21.0	8.48	5.11	8.55	21.2	34.1	39.4	33.8	27.3
135	4.75	1.91	15.9	25.0	30.8	31.8	30.5	30.5	28.8	23.1	14.8	2.46	5.17	2.69	15.1	23.2	25.3	18.2	13.6
140	2.68	2.83	9.44	14.2	16.3	15.9	15.2	14.0	10.4	12.6	8.55	0.31	1.18	0.30	8.75	13.2	14.2	9.66	7.32
145	0.83	1.99	3.72	5.41	5.29	5.16	5.10	4.72	4.64	4.77	3.42	1.79	0.78	1.77	3.58	5.00	5.16	3.59	2.50
150	0.52	0.53	0.59	0.75	0.93	0.77	0.88	0.81	0.89	0.79	0.71	0.76	0.75	0.75	0.71	0.75	0.74	0.70	0.73
155	0.49	0.58	0.60	0.68	0.74	0.76	0.79	0.72	0.70	0.78	0.66	0.73	0.69	0.68	0.71	0.67	0.66	0.66	0.70
160	0.47	0.53	0.58	0.60	0.65	0.68	0.59	0.59	0.54	0.62	0.73	0.69	0.68	0.67	0.65	0.59	0.47	0.59	0.63
165	0.48	0.57	0.62	0.56	0.54	0.49	0.40	0.45	0.49	0.40	0.57	0.62	0.62	0.58	0.49	0.36	0.45	0.53	0.55
170	0.47	0.53	0.54	0.52	0.49	0.43	0.37	0.38	0.41	0.44	0.39	0.31	0.31	0.32	0.41	0.47	0.49	0.54	0.58
175	0.32	0.30	0.30	0.33	0.35	0.36	0.26	0.27	0.22	0.30	0.34	0.33	0.37	0.40	0.40	0.43	0.44	0.44	0.45
180	0.31	0.34	0.35	0.34	0.32	0.26	0.23	0.22	0.24	0.28	0.28	0.30	0.30	0.33	0.35	0.34	0.32	0.26	0.23

Table--2 UNIT: cd

γ (DEG) \ C (DEG)	285	300	315	330	345														
0	2470	2470	2470	2470	2470														
5	2460	2460	2459	2458	2458														
10	2436	2435	2433	2431	2430														
15	2398	2394	2389	2386	2382														
20	2347	2342	2335	2329	2323														
25	2291	2284	2275	2268	2261														
30	2228	2221	2212	2202	2192														
35	2153	2147	2136	2124	2112														
40	2066	2060	2048	2035	2020														
45	1962	1957	1943	1927	1906														
50	1826	1824	1804	1793	1766														
55	1668	1669	1648	1635	1607														
60	1491	1492	1472	1457	1428														
65	1294	1295	1274	1259	1231														
70	1082	1083	1060	1044	1017														
75	852	851	829	816	793														
80	618	615	596	585	565														
85	425	420	401	391	380														
90	274	277	274	276	277														
95	158	148	116	60.9	76.5														
100	87.0	57.4	42.1	137	120														
105	70.8	58.2	82.7	110	85.4														
110	112	78.0	66.5	76.2	56.2														
115	111	80.0	50.6	49.4	33.2														
120	82.4	69.1	42.6	30.2	16.8														
125	56.3	54.6	41.7	20.6	8.87														
130	34.3	39.3	33.0	19.5	7.03														
135	17.4	25.7	22.7	14.5	1.78														
140	8.64	14.5	13.0	8.46	2.59														
145	3.12	5.24	5.05	3.41	1.47														
150	0.77	0.86	0.76	0.57	0.49														
155	0.70	0.74	0.66	0.55	0.45														
160	0.66	0.65	0.61	0.56	0.44														
165	0.60	0.63	0.62	0.58	0.56														
170	0.58	0.57	0.55	0.57	0.51														
175	0.48	0.49	0.43	0.36	0.34														
180	0.22	0.24	0.28	0.29	0.30														

Photo of Sample:

Equipment List:

Equipment ID	Equipment Name	Last Cal.	Due Cal.
NTC-F01-001	Goniophotometer System	2016-12-03	2017-12-02
NTC-F01-006	2.0 meter Integrating Sphere	2016-12-03	2017-12-02
NTC-F01-013	Standard Lamp	2016-12-27	2017-12-26
NTC-F01-031	Digital Power Meter	2016-12-05	2017-12-04
NTC-F01-019	Temperature & Humidity Meter	2016-11-28	2017-11-27

*******END OF DATASHEET*******

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