

## LM-79-08 Test Report

For

### Builders Pack

(Brand Name: Builders Pack)

No.701, BuildingA, Shenfubao Industry Park, Futina District, Shenzhen PRC 518017

## 2x2 Luminaires for Ambient Lighting of Interior Commercial Spaces

Model name(s): 33-TR-22-730-8ZZ-D-[N;S]-CT

Remark: The first X may be D or N, "D"=Dimming "N"=Not Dimming; the second X may be N or P, "N"=Not Sensor "P"=Sensor; "ZZ" represented for CCT could be adjusted to 3500K, 4000K, 5000K. "C" is any alphabetic or numeric code which is for marketing purpose only.

Representative (Tested) Model:

33-TR-22-730-8ZZ-D-[N;S]-CT(Mode: 3500K)

Model Different: All construction and rating are the same, except CCT

Test & Report By:

*Bill Luo*

Engineer: Bill Luo

Date: Apr.04,2018

Review By:

*Univ Xie*

Manager: Univ Xie

Note: 1.The results contained in this report pertain only to the tested samples.

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

**Laboratory: Standard-Tech Co., Ltd. Testing Center**

**NVLAP CODE: 201011-0**

Report Format Number STD/QR4909-A/2

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**1.1 Product Information:**

Organization Name	Builders Pack	
Brand Name	Builders Pack	
Model Number	33-TR-22-730-8ZZ-D-[N;S]-CT	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	2x2 Luminaires for Ambient Lighting of Interior Commercial Spaces	
Rated Voltage / Frequency	120-277Vac, 50/60Hz	
Nominal Power	30W	
Rated Initial Lamp Lumen	--	
Declared CCT	3500K,4000K,5000K	
LED Manufacturer	N/A	
LED Model	N/A	
Sample Number	GZE1802028-H-B1	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

**Photo**


**1.2 Test Specifications:**

Date of Receipt	Apr.01,2018
Date of Test	Apr.02,2018
Test item	1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Electrical Parameters
Reference Standard	1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

**1.3 Test Methods****1) Photometric and Light Distribution Measurement – Goniophotometer 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 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at  $1^{\circ}$  vertical intervals and  $22.5^{\circ}$  horizontal intervals.

**2) Electrical Measurements:**

Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ . The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.

**2.1 Electrical, Photometric and Chromaticity Measurements***(Refer to Work Instruction QD25)*

<b>Test date</b>	2018-04-02	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	33-TR-22-730-8ZZ-D-[N;S]-CT (Mode: 3500K)		

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE180202	120.0	60	0.2430	28.92	0.9919	7.79
8-H-B1	277.0	60	0.1172	29.02	0.8939	13.83
<b>DLC Pass Criteria</b>					>= 0.9(-3%)	<= 20(+5)

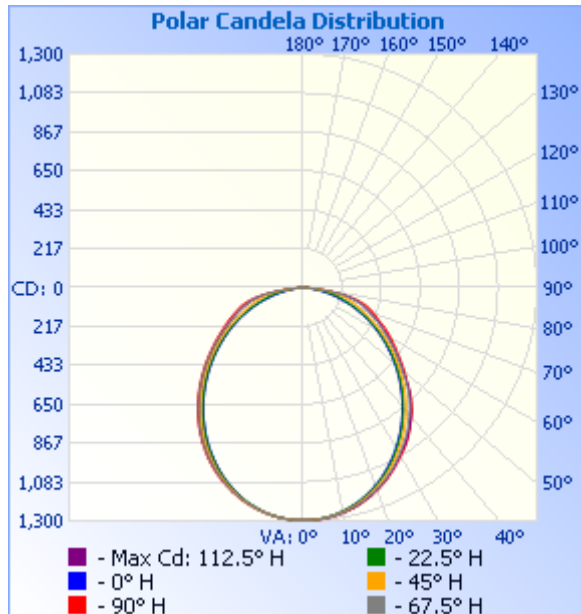
**Photometric Measurement – Goniophotometer Method:**

Parameter	Result		DLC V4.3 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	3524.3	3526.9	>=2000(-10%)	
Luminous Efficacy (lm/W)	121.86	121.53	Standard: >= 100(-3%)	Premium: >= 125(-3%)
Most Worst Luminous/Highest Watts	121.44			
Zonal lumens in the 0-60 °zone (%)	78.1	--	>= 75(-3)	
SC: 0-180 °(if applicable)	1.25	--	1.0-2.0(±0.1)	
SC: 90-270 °(if applicable)	1.20	--	1.0-2.0(±0.1)	
Beam Angle ( °)	105.5	--	--	
Center Beam Candle Power (cd)	1297	--	--	

**Zonal Lumen Tabulation**

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	988.6	28.1%
0-40	1,599.2	45.4%
0-60	2,752.8	78.1%
60-90	763.8	21.7%
70-100	348.7	9.9%
90-120	3.1	0.1%
0-90	3,516.6	99.8%
90-180	7.4	0.2%
0-180	3,523.9	100%

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	%Total
0-10	122.4	3.5%	90-100	1.0	0%
10-20	347.8	9.9%	100-110	1.0	0%
20-30	518.4	14.7%	110-120	1.1	0%
30-40	610.6	17.3%	120-130	1.3	0%
40-50	614.7	17.4%	130-140	1.1	0%
50-60	538.8	15.3%	140-150	0.8	0%
60-70	416.1	11.8%	150-160	0.6	0%
70-80	273.6	7.8%	160-170	0.4	0%
80-90	74.1	2.1%	170-180	0.1	0%

**Photometric Data**


**Illuminance at a Distance**

Center Beam fc	Beam Width	
3.33M	10.8 fc	8.26 M 9.33 M
6.67M	2.71 fc	16.51 M 18.65 M
10.00M	1.20 fc	24.77 M 27.98 M
13.33M	0.68 fc	33.02 M 37.29 M
16.67M	0.43 fc	41.28 M 46.62 M
20.00M	0.30 fc	49.54 M 55.95 M

Vert. Spread: 102.2°  
Horiz. Spread: 108.9°

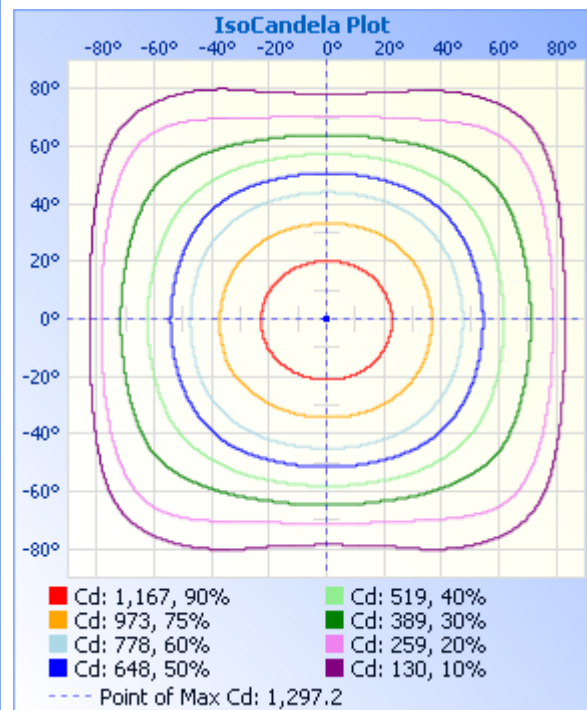
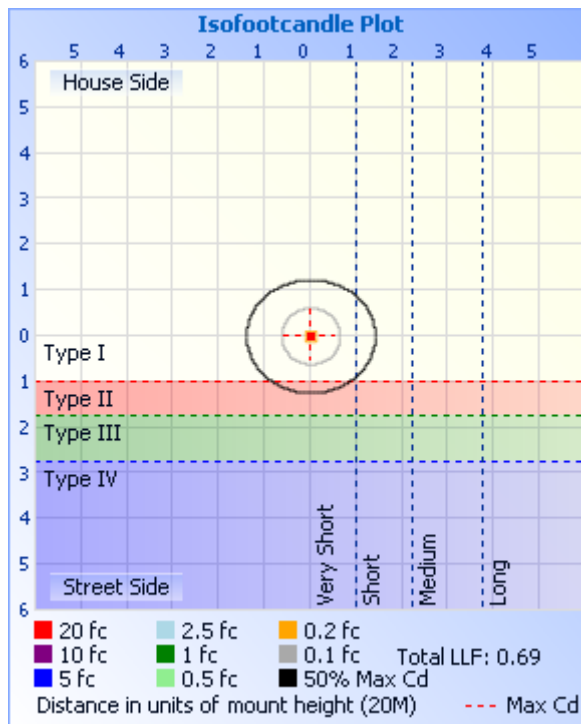


Table--1

UNIT: cd

C (DEG) Y (DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338	
0	1297	1297	1297	1297	1297	1297	1297	1297	1297	1297	1297	1297	1297	1297	1297	1297	
5	1291	1289	1290	1289	1289	1288	1290	1291	1292	1293	1290	1290	1289	1290	1290	1289	
10	1270	1267	1267	1265	1264	1265	1269	1271	1273	1273	1270	1267	1267	1267	1269	1269	
15	1239	1234	1232	1227	1226	1227	1234	1239	1244	1243	1236	1230	1230	1229	1235	1236	
20	1195	1188	1183	1175	1172	1176	1185	1195	1201	1200	1188	1179	1176	1178	1186	1192	
25	1140	1131	1123	1111	1108	1112	1126	1139	1147	1143	1129	1116	1112	1115	1126	1135	
30	1072	1062	1052	1038	1032	1038	1055	1073	1084	1076	1058	1042	1037	1042	1054	1067	
35	996	985	972	955	949	955	975	1000	1017	1011	979	960	953	959	975	990	
40	911	899	884	866	859	866	888	918	936	931	895	871	863	870	887	905	
45	820	806	790	772	765	772	795	829	844	838	806	777	769	775	794	814	
50	725	711	694	676	669	676	699	724	737	726	711	678	670	677	697	719	
55	632	617	597	578	571	578	604	629	644	631	610	578	570	577	599	623	
60	543	526	501	479	473	481	506	538	562	545	508	479	471	478	503	533	
65	468	445	411	382	375	385	417	462	486	467	417	382	372	381	412	451	
70	401	375	328	290	279	292	336	389	416	392	337	288	275	287	329	382	
75	333	308	257	204	186	206	265	323	347	324	265	202	180	199	258	315	
80	216	208	184	128	102	130	195	223	227	218	187	126	96.6	123	184	216	
85	65.7	66.5	65.5	54.5	36.5	58.4	74.3	72.8	70.7	67.3	64.2	51.0	32.1	51.0	65.9	67.8	
90	1.87	1.91	1.69	1.25	0.95	1.06	1.39	1.66	1.01	0.94	0.78	0.42	0.47	0.63	1.00	1.53	
95	1.38	1.32	1.10	0.73	0.52	0.58	0.90	1.01	0.85	0.74	0.57	0.36	0.42	0.68	1.00	1.11	
100	1.06	1.21	1.04	0.73	0.52	0.63	0.90	0.85	0.90	0.79	0.63	0.42	0.58	0.84	1.00	1.17	
105	1.06	1.16	0.94	0.83	0.78	0.84	0.84	0.85	1.01	0.84	0.68	0.63	0.73	1.10	1.16	1.38	
110	1.17	1.31	1.10	0.99	0.99	0.99	0.84	0.90	1.12	0.9992	0.68	0.68	1.10	1.15	1.16	1.43	
115	1.54	1.53	1.36	1.15	1.20	0.94	1.05	1.17	1.17	0.95	0.84	0.68	1.31	0.94	1.16	1.48	
120	1.54	1.63	1.67	1.09	1.25	1.20	1.21	1.27	1.17	0.89	0.78	1.10	1.36	1.42	1.16	1.48	
125	1.59	1.68	1.62	1.72	1.93	1.57	1.21	1.38	1.22	0.89	0.73	1.15	1.93	1.73	1.16	1.38	
130	1.75	1.74	1.67	1.82	2.04	1.62	1.26	1.38	1.22	0.89	0.68	1.15	1.93	1.73	1.00	1.38	
135	1.75	1.68	1.57	1.98	2.29	1.62	1.26	1.38	1.22	0.95	0.73	1.15	1.83	1.68	0.95	1.38	
140	1.75	1.63	1.04	1.93	2.20	1.68	0.85	1.38	1.33	1.06	0.63	1.15	1.57	1.68	0.90	1.38	
145	1.80	1.53	0.68	1.62	1.78	1.68	0.68	1.38	1.27	1.21	0.78	1.15	1.63	1.73	0.90	1.38	
150	1.65	1.42	0.78	1.51	1.78	1.47	0.58	1.33	1.27	1.21	0.94	1.19	1.83	1.73	0.90	1.11	
155	1.54	1.37	0.84	1.41	1.78	1.41	0.69	1.33	1.27	1.21	0.99	0.99	1.07	1.73	1.11	1.06	
160	1.22	1.16	0.84	1.41	1.78	1.47	0.84	1.33	1.33	1.21	1.15	0.99	1.46	1.73	1.32	1.06	
165	1.22	1.16	0.84	1.41	1.72	1.31	0.84	1.17	1.33	1.37	1.20	0.99	1.36	1.73	1.48	1.11	
170	1.38	1.16	0.89	1.30	1.72	1.31	0.90	1.17	1.33	1.42	1.20	0.99	1.57	1.94	1.63	1.11	
175	1.49	1.16	0.99	1.46	1.72	1.36	1.00	1.17	1.27	1.32	1.15	0.99	1.57	1.73	1.53	1.06	
180	1.28	1.16	0.99	1.56	1.72	1.36	1.05	1.17	1.27	1.37	1.15	0.99	1.46	1.73	1.37	1.06	

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**3. Test Equipment**

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
EE-09	Goniophotometer system	2017-07-01	2018-06-30
D908S	Standard Lamp	2017-07-01	2018-06-30
PF210	Power Meter for Goniophotometer	2017-07-01	2018-06-30
ST-R-181A	Temperature Tester	2017-07-01	2018-06-30
Uncertainty: Photometric Measurement(Goniophotometer):1.62%			

**\*\*\*\*\* END OF REPORT \*\*\*\*\***