

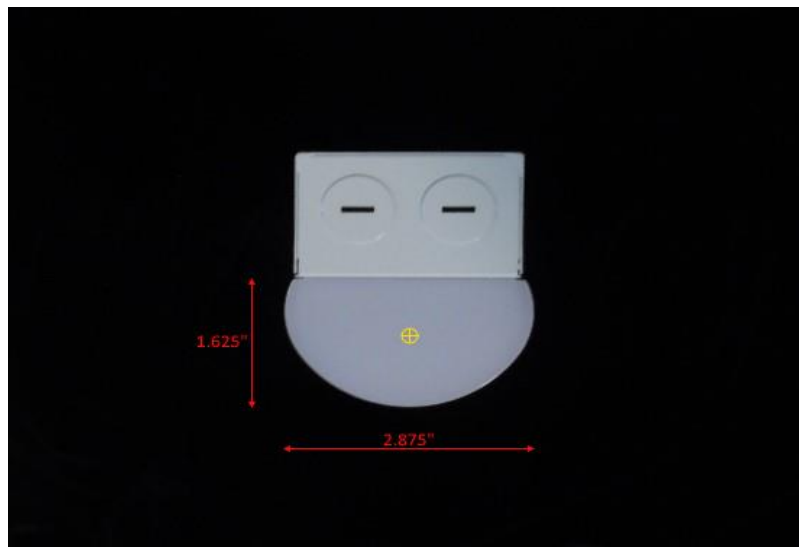


## Report of Test

**LLIA001298-001**

Indoor Distribution Photometry Test Report

Catalog Number: F-L4/40W/CTS/D-87 - 3500K Setting  
Surface mounted, formed steel housing, formed white enamel  
aluminum reflector, translucent white plastic enclosure.  
504 white LEDs, one L3134(1196x29.5x1.0mm 14C18Bx2 504 LED) LED board  
One FS-TMG013B0880TW LED driver



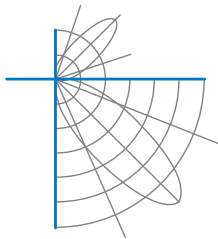
Prepared For:  
Topaz Lighting Corp  
925 Waverly Avenue  
Holtsville, NY 11742, USA

Performance Summary			
Input Voltage	120.0 V	Luminous Flux	5479.7 Lumens
Input Current	0.3272 A	Total Efficacy	140.5 Lm/W
Input Power	38.99 W	Downward Flux	4578.0 Lumens
Frequency	60.00 Hz	Downward Flux	83.5 % of Total
Power Factor	0.992		
Current THD	6.1 %		

This test report was issued by LightLab International Allentown, LLC without alterations or erasures.

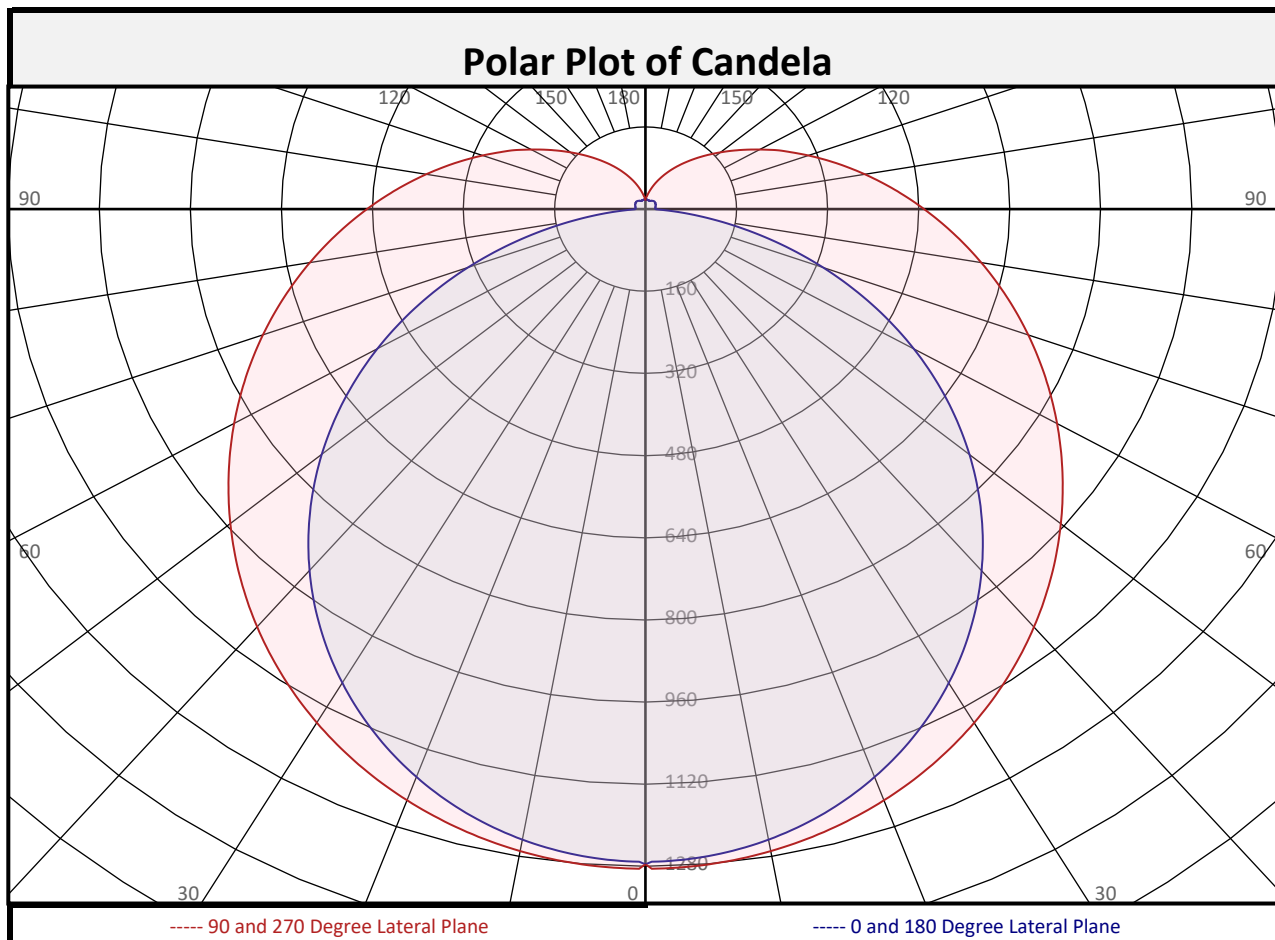
Test date: 08/03/2020  
Report date: 08/05/2020

Signed: \_\_\_\_\_

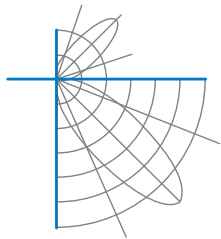


## Report of Test

### LLIA001298-001



Zonal Flux Summary										
Zone (Deg Vert)	Flux (Lumens)	Percent of Total		Zone (Deg Vert)	Flux (Lumens)	Percent of Total		Zone (Deg Vert)	Flux (Lumens)	Percent of Total
0-10	121.0	2.2%		90-100	284.9	5.2%		0-20	469.1	8.6%
10-20	348.1	6.4%		100-110	211.4	3.9%		0-30	1004	18.3%
20-30	534.5	9.8%		110-120	152.9	2.8%		0-40	1663	30.3%
30-40	659.9	12.0%		120-130	106.6	1.9%		0-60	3074	56.1%
40-50	713.9	13.0%		130-140	70.4	1.3%		0-80	4197	76.6%
50-60	696.7	12.7%		140-150	42.5	0.8%		10-90	4457	81.3%
60-70	619.5	11.3%		150-160	22.0	0.4%		20-50	1908	34.8%
70-80	503.7	9.2%		160-170	8.9	0.2%		40-90	2915	53.2%
80-90	380.8	6.9%		170-180	2.0	0.0%		60-90	1504	27.4%
0-90	4578	83.5%		90-180	901.6	16.5%		0-180	5480	100.0%

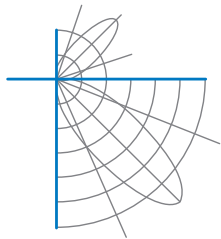


## Report of Test

### LLIA001298-001

Luminous Intensity (Candela) Table

		Lateral (C-Plane) Angles								
		0	22.5	45	67.5	90	112.5	135	157.5	180
Vertical (Gamma) Angles	0	1276	1276	1276	1276	1276	1276	1276	1276	1276
	2.5	1269	1270	1273	1279	1284	1279	1273	1270	1269
	5	1265	1266	1270	1276	1281	1276	1270	1266	1265
	7.5	1257	1259	1264	1271	1276	1271	1264	1259	1257
	10	1247	1249	1255	1264	1270	1264	1255	1249	1247
	12.5	1234	1236	1244	1255	1261	1255	1244	1236	1234
	15	1218	1221	1231	1244	1251	1244	1231	1221	1218
	17.5	1199	1204	1216	1231	1239	1231	1216	1204	1199
	20	1177	1183	1199	1217	1225	1217	1199	1183	1177
	22.5	1153	1160	1179	1201	1210	1201	1179	1160	1153
	25	1126	1135	1158	1183	1194	1183	1158	1135	1126
	27.5	1097	1108	1134	1163	1175	1163	1134	1108	1097
	30	1066	1078	1109	1142	1155	1142	1109	1078	1066
	32.5	1032	1046	1082	1119	1134	1119	1082	1046	1032
	35	996	1013	1054	1095	1111	1095	1054	1013	996
	37.5	959	978	1024	1070	1087	1070	1024	978	959
	40	919	941	992	1043	1062	1043	992	941	919
	42.5	877	902	960	1016	1036	1016	960	902	877
	45	834	863	927	987	1009	987	927	863	834
	47.5	789	822	892	958	981	958	892	822	789
50	743	780	857	928	953	928	857	780	743	
52.5	695	736	821	897	924	897	821	736	695	
55	646	692	785	866	895	866	785	692	646	
57.5	596	648	749	835	865	835	749	648	596	
60	545	603	712	803	835	803	712	603	545	
62.5	492	557	676	772	805	772	676	557	492	
65	439	512	640	741	776	741	640	512	439	
67.5	386	467	605	710	746	710	605	467	386	
70	332	424	570	679	716	679	570	424	332	
72.5	279	381	536	648	686	648	536	381	279	
75	226	340	503	618	657	618	503	340	226	
77.5	176	302	471	588	628	588	471	302	176	
80	129	267	441	559	599	559	441	267	129	
82.5	86	235	411	531	571	531	411	235	86	
85	51	206	383	503	543	503	383	206	51	
87.5	27	180	356	476	516	476	356	180	27	
90	18	158	331	450	490	450	331	158	18	

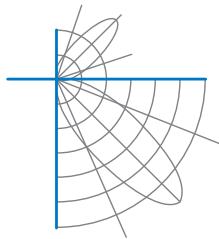


## Report of Test

### LLIA001298-001

Luminous Intensity (Candela) Table

		Lateral (C-Plane) Angles								
		0	22.5	45	67.5	90	112.5	135	157.5	180
Vertical (Gamma) Angles	90	18	158	331	450	490	450	331	158	18
	92.5	18	140	308	425	464	425	308	140	18
	95	18	125	287	401	439	401	287	125	18
	97.5	18	112	266	377	415	377	266	112	18
	100	18	102	247	355	392	355	247	102	18
	102.5	18	93	230	333	369	333	230	93	18
	105	18	87	214	313	347	313	214	87	18
	107.5	19	81	199	293	326	293	199	81	19
	110	19	77	185	274	306	274	185	77	19
	112.5	20	73	172	256	286	256	172	73	20
	115	20	70	161	239	268	239	161	70	20
	117.5	20	67	150	223	250	223	150	67	20
	120	21	64	140	208	233	208	140	64	21
	122.5	21	62	132	193	216	193	132	62	21
	125	21	60	123	179	201	179	123	60	21
	127.5	21	57	115	166	186	166	115	57	21
	130	22	55	108	154	173	154	108	55	22
	132.5	22	52	101	143	160	143	101	52	22
	135	22	50	94	132	147	132	94	50	22
	137.5	21	48	88	122	136	122	88	48	21
	140	21	45	82	113	125	113	82	45	21
	142.5	20	42	76	104	115	104	76	42	20
	145	20	39	71	95	105	95	71	39	20
	147.5	19	37	66	87	96	87	66	37	19
150	19	34	60	79	87	79	60	34	19	
152.5	18	31	55	72	79	72	55	31	18	
155	18	29	49	65	71	65	49	29	18	
157.5	18	27	44	58	63	58	44	27	18	
160	18	25	38	52	56	52	38	25	18	
162.5	18	23	33	46	50	46	33	23	18	
165	18	21	29	41	43	41	29	21	18	
167.5	18	21	25	35	38	35	25	21	18	
170	19	19	22	31	33	31	22	19	19	
172.5	19	17	20	27	28	27	20	17	19	
175	19	17	17	21	25	21	17	17	19	
177.5	19	18	15	15	20	15	15	18	19	
180	17	17	17	17	17	17	17	17	17	



## Report of Test

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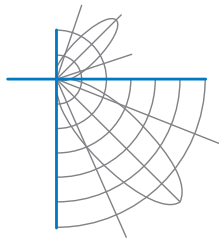
Coefficients of Utilization/Room Utilization - Zonal Cavity Method																						
Effective Floor Cavity Reflectance 0.20																						
RC	80					70					50				30				10			0
RW	70	50	30	10		70	50	30	10		50	30	10		50	30	10		50	30	10	0
RCR																						
0	115	115	115	115		111	111	111	111		102	102	102		94	94	94		87	87	87	84
1	102	96	91	86		98	92	88	83		85	81	78		78	75	72		72	70	67	64
2	92	83	75	68		88	79	72	66		73	67	62		67	62	58		62	58	55	51
3	83	72	63	56		79	69	61	54		64	57	51		59	53	48		54	49	45	42
4	76	63	54	47		72	61	52	45		56	49	43		52	46	41		48	43	38	35
5	70	56	47	40		66	54	45	39		50	42	37		46	40	35		43	37	33	30
6	64	50	41	34		61	48	40	33		45	37	32		42	35	30		39	33	29	26
7	59	45	36	30		57	44	35	29		41	33	28		38	31	27		35	30	25	23
8	55	41	32	27		53	40	32	26		37	30	25		35	28	24		32	27	23	20
9	51	38	29	24		49	36	29	23		34	27	22		32	26	21		30	24	20	18
10	48	35	27	21		46	34	26	21		31	25	20		29	23	19		28	22	18	16

For absolute test reports, RUs are expressed as a percentage of total lumen output. For relative test reports, CUs are expressed as a percentage of total lamp output. Calculations were based on published IES procedures, and are based on the zonal cavity method. Basic assumptions: 1) Room surfaces are lambertian reflectors. 2) Incident flux on each surface is uniformly distributed. 3) The room is spectrally neutral. When luminaires are not evenly distributed throughout the room, or do not exhibit lateral symmetry, CU values may differ from actual performance.

Circle of Light Plot				
Height(ft)	Illuminance at Nadir (fc)	Ground-level distance to half-of-nadir illuminance (ft)		
		0-180 deg	90-270 deg	
6.0	35.4	7.46	8.10	
8.0	19.9	9.94	10.80	
10.0	12.8	12.43	13.50	
12.0	8.9	14.91	16.20	
14.0	6.5	17.40	18.90	
16.0	5.0	19.88	21.60	

Average Luminance (cd/m <sup>2</sup> )			
	0 deg Plane	45 deg Plane	90 deg Plane
0	14333	14333	14333
45	12813	10340	10241
55	12071	9580	9694
65	10882	8910	9319
75	8721	8459	9168
85	4748	8448	9387

Spacing Criterion	
0 degree plane:	1.2
90 degree plane:	1.3
180 degree plane:	1.2
270 degree plane:	1.3



## Report of Test

### LLIA001298-001

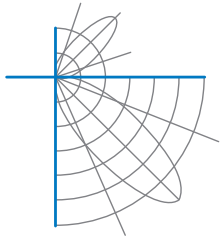
#### UGR TABLE - CORRECTED

Reflectances

Ceiling Cavity	70	70	50	50	30	70	70	50	50	30
Walls	50	30	50	30	30	50	30	50	30	30
Floor Cavity	20	20	20	20	20	20	20	20	20	20

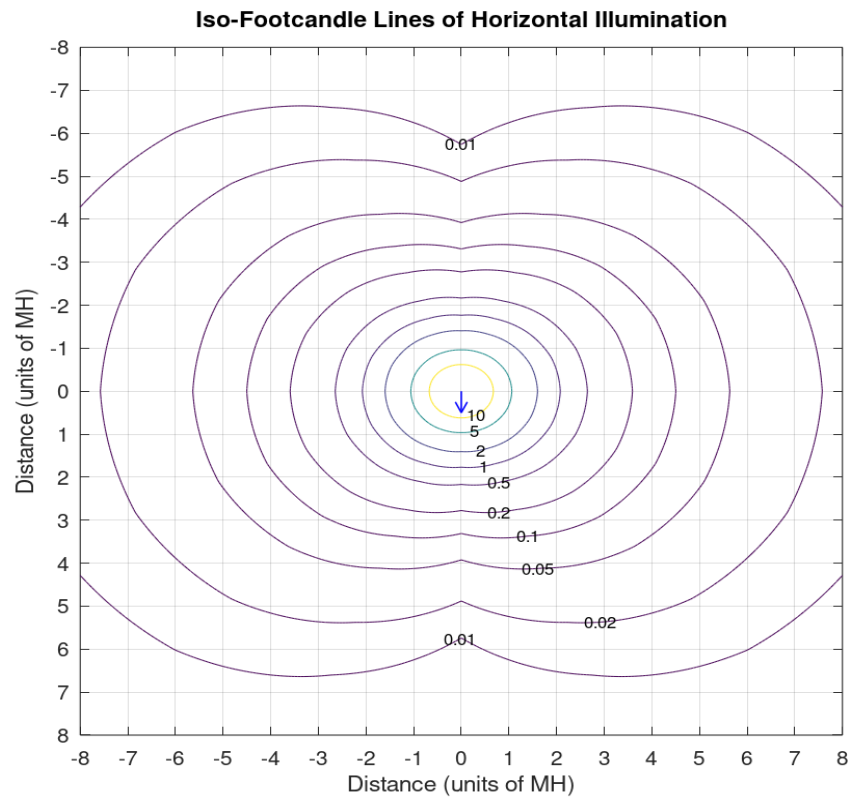
Room Size		UGR Viewed Crosswise					UGR Viewed Endwise				
X=2H	Y=2H	17.2	18.6	17.7	19.2	19.8	20.2	21.6	20.8	22.2	22.9
	3H	18.6	19.9	19.2	20.5	21.3	23.1	24.4	23.7	25.0	25.7
	4H	19.1	20.3	19.7	21.0	21.7	24.5	25.7	25.1	26.4	27.1
	6H	19.4	20.5	20.0	21.2	21.9	26.1	27.2	26.7	27.8	28.6
	8H	19.5	20.5	20.1	21.2	22.0	26.9	28.0	27.5	28.6	29.4
	12H	19.5	20.5	20.1	21.2	22.0	27.8	28.8	28.4	29.5	30.3
4H	2H	18.3	19.5	18.9	20.1	20.8	20.6	21.8	21.2	22.5	23.2
	3H	20.0	21.1	20.7	21.7	22.5	23.7	24.7	24.3	25.4	26.1
	4H	20.6	21.6	21.3	22.3	23.1	25.3	26.3	25.9	26.9	27.7
	6H	21.1	21.9	21.7	22.6	23.4	27.0	27.9	27.7	28.6	29.4
	8H	21.2	22.0	21.9	22.7	23.5	28.0	28.8	28.6	29.5	30.3
	12H	21.2	22.0	21.9	22.7	23.5	29.0	29.7	29.7	30.5	31.3
8H	4H	21.6	22.4	22.3	23.1	23.9	25.5	26.3	26.2	27.0	27.8
	6H	22.3	23.0	23.0	23.7	24.5	27.4	28.1	28.1	28.8	29.6
	8H	22.5	23.1	23.2	23.9	24.7	28.5	29.1	29.2	29.8	30.7
	12H	22.7	23.2	23.4	24.0	24.8	29.7	30.3	30.4	31.0	31.9
12H	4H	21.9	22.7	22.6	23.4	24.2	25.5	26.2	26.2	27.0	27.8
	6H	22.8	23.4	23.5	24.1	24.9	27.5	28.1	28.2	28.8	29.7
	8H	23.1	23.7	23.8	24.4	25.3	28.6	29.1	29.3	29.9	30.7

Maximum UGR = 31.9

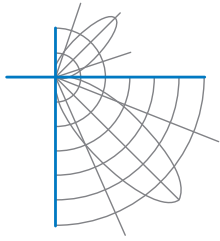


## Report of Test LLIA001298-001

### Iso-Illuminance Plot



The isofootcandle values shown in the plot above are based on a mounting height of  $h = 8.0$  feet. Grid values show multiples of mounting height. The isoilluminance contour lines are expressed in units of footcandles. The values expressed are based on the direct light from a single unit without the contribution of room reflections.

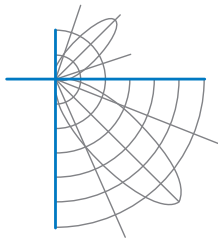


Report of Test  
LLIA001298-001

**Additional Pictures of Test Subject**







## Report of Test

### LLIA001298-001

Test Distance                    9.5 m  
Ambient Temperature        25.3 °C

#### Notes

The laboratory has not participated in the selection of samples to be tested. All testing is performed on the understanding that the significance of the report is limited to the extent that the test sample is representative of production units.

Tested in accordance with the applicable sections of IES LM-79-19. Format of reports and angular increments based on IES LM-41-14 and LM-46-04.

The luminous intensity values, and other derived quantities, contained in this report are based on the absolute data, as measured.

Prorating the performance of the sample for the use of other component combinations (such as lamp / LED / Ballast / driver), or for use in different environmental conditions than that tested, may produce erroneous results.

This report is free of erasures and corrections.

Photometric intensity values are reported using the CIE C-Gamma coordinate system as defined in CIE publication number 121.

This report may contain data that are not covered by the NVLAP accreditation. Quantities marked with ‡ are not covered.

This report must not be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the Federal Government.