

## Report of Test

LLIA001928-001

Indoor Distribution Photometry Test Report

Catalog Number: PL14-40WPCTS-D - 20W/4000K setting  
Recessed mounted, formed white painted steel housing/reflector,  
white painted aluminum frame, diffuse white plastic enclosure.  
84 white LEDs on three white circuit boards with optic below each LED  
One Fosen FS-TMG042-V01 LED driver, set for 20W and 4000K



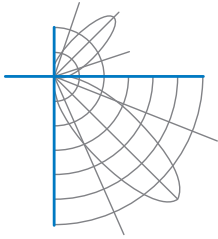
Prepared For:  
Topaz Lighting, A Southwire Company  
925 Waverly Avenue  
Holtsville, NY 11742, USA

Performance Summary			
Input Voltage	120.0 Vac	Luminous Flux	2567.0 Lumens
Input Current	0.1516 A	Total Efficacy	141.8 Lm/W
Input Power	18.10 W	Downward Flux	2567.0 Lumens
Frequency	60.00 Hz	Downward Flux	100.0 % of Total
Power Factor	0.995		
Current THD	7.1 %		

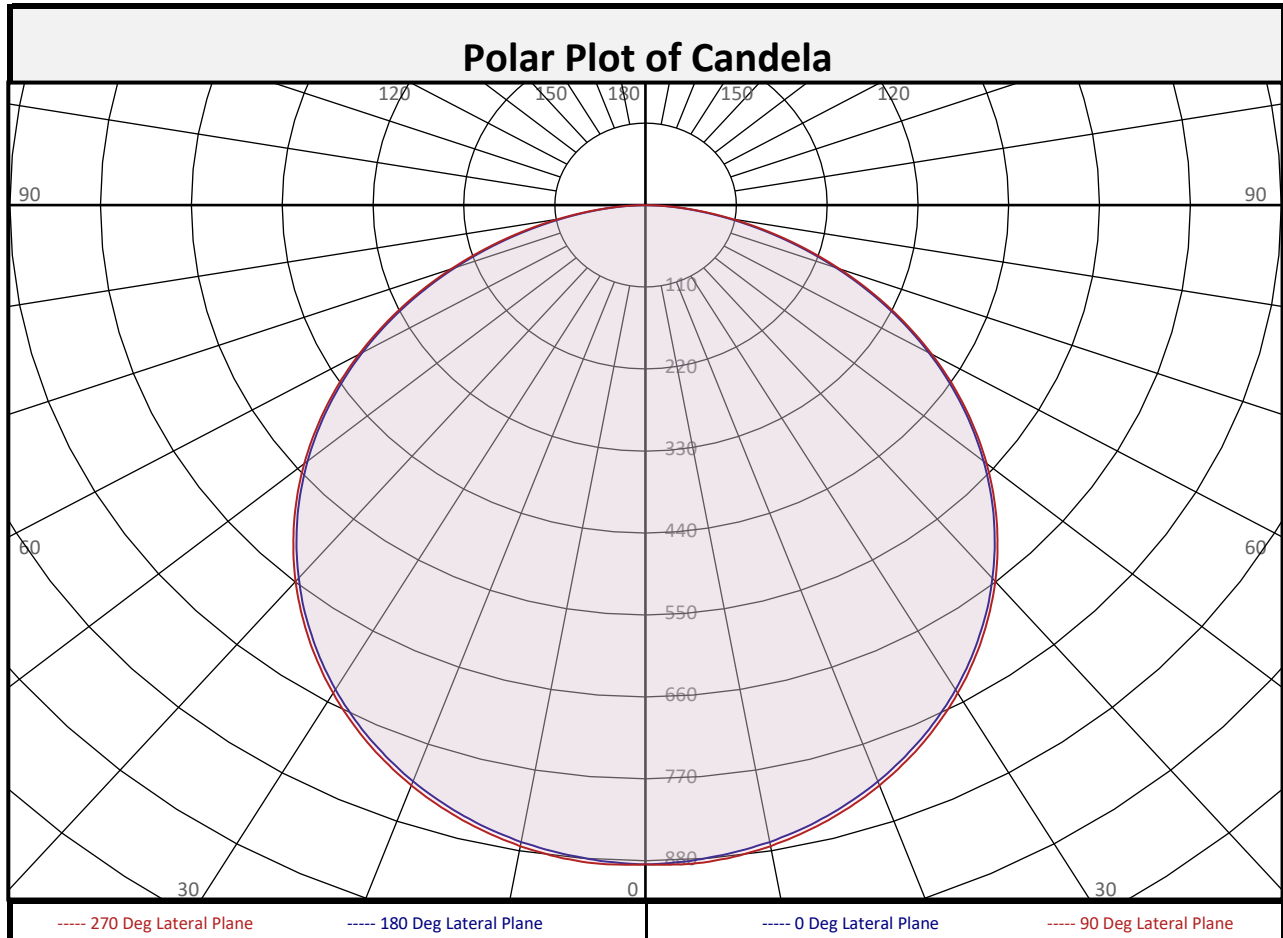
This test report was issued by LightLab International Allentown, LLC without alterations or erasures.

Test date: 11/07/2022  
Report date: 11/08/2022

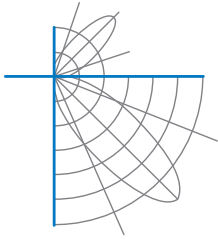
Signed: \_\_\_\_\_



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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	83.8	3.3%		90-100	0.0	0.0%		0-20	324.0	12.6%	
10-20	240.2	9.4%		100-110	0.0	0.0%		0-30	689.4	26.9%	
20-30	365.3	14.2%		110-120	0.0	0.0%		0-40	1132	44.1%	
30-40	442.7	17.2%		120-130	0.0	0.0%		0-60	2014	78.4%	
40-50	462.0	18.0%		130-140	0.0	0.0%		0-80	2517	98.1%	
50-60	419.5	16.3%		140-150	0.0	0.0%		10-90	2483	96.7%	
60-70	320.2	12.5%		150-160	0.0	0.0%		20-50	1270	49.5%	
70-80	183.3	7.1%		160-170	0.0	0.0%		40-90	1435	55.9%	
80-90	49.9	1.9%		170-180	0.0	0.0%		60-90	553.4	21.6%	
0-90	2567	100.0%		90-180	0.0	0.0%		0-180	2567	100.0%	



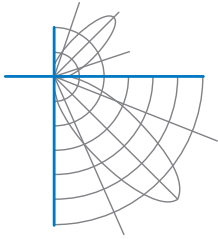
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Luminous Intensity (Candela) Table

		Lateral (C-Plane) Angles								
		0	22.5	45	67.5	90	112.5	135	157.5	180
Vertical (Gamma) Angles - Data was acquired in 0.5° increments shown.	0	885	885	885	885	885	885	885	885	885
	2.5	883	883	883	885	886	885	883	883	883
	5	879	879	880	883	885	883	880	879	879
	7.5	874	874	876	878	880	878	876	874	874
	10	868	868	869	872	874	872	869	868	868
	12.5	859	860	860	863	865	863	860	860	859
	15	849	849	850	853	855	853	850	849	849
	17.5	837	837	838	841	843	841	838	837	837
	20	823	823	825	827	829	827	825	823	823
	22.5	808	808	809	812	813	812	809	808	808
	25	790	791	792	795	796	795	792	791	790
	27.5	771	772	773	776	777	776	773	772	771
	30	751	752	753	755	756	755	753	752	751
	32.5	729	730	731	733	734	733	731	730	729
	35	705	706	707	710	711	710	707	706	705
	37.5	681	681	683	685	686	685	683	681	681
	40	654	654	656	658	660	658	656	654	654
	42.5	626	627	628	630	632	630	628	627	626
	45	597	597	599	601	602	601	599	597	597
	47.5	566	567	569	570	572	570	569	567	566
50	535	535	537	539	540	539	537	535	535	
52.5	502	502	504	506	507	506	504	502	502	
55	467	468	470	471	472	471	470	468	467	
57.5	432	433	435	436	437	436	435	433	432	
60	396	397	398	400	401	400	398	397	396	
62.5	359	360	361	363	364	363	361	360	359	
65	321	322	324	325	326	325	324	322	321	
67.5	283	284	286	287	288	287	286	284	283	
70	245	246	248	250	250	250	248	246	245	
72.5	207	208	210	212	212	212	210	208	207	
75	170	171	173	175	175	175	173	171	170	
77.5	134	135	137	139	140	139	137	135	134	
80	100	102	104	105	106	105	104	102	100	
82.5	69	70	72	74	74	74	72	70	69	
85	41	42	44	45	45	45	44	42	41	
87.5	17	17	18	19	19	19	18	17	17	
90	0	0	0	0	0	0	0	0	0	

16 lateral half-planes of data were acquired, 22.5 degree increments shown.



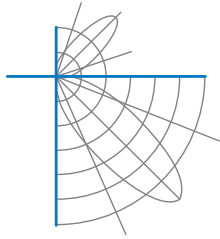
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Luminous Intensity (Candela) Table

		Lateral (C-Plane) Angles								
		0	22.5	45	67.5	90	112.5	135	157.5	180
Vertical (Gamma) Angles - Data was acquired in 0.5° increments, 2.5° increments shown.	90	0	0	0	0	0	0	0	0	0
	92.5	0	0	0	0	0	0	0	0	0
	95	0	0	0	0	0	0	0	0	0
	97.5	0	0	0	0	0	0	0	0	0
	100	0	0	0	0	0	0	0	0	0
	102.5	0	0	0	0	0	0	0	0	0
	105	0	0	0	0	0	0	0	0	0
	107.5	0	0	0	0	0	0	0	0	0
	110	0	0	0	0	0	0	0	0	0
	112.5	0	0	0	0	0	0	0	0	0
	115	0	0	0	0	0	0	0	0	0
	117.5	0	0	0	0	0	0	0	0	0
	120	0	0	0	0	0	0	0	0	0
	122.5	0	0	0	0	0	0	0	0	0
	125	0	0	0	0	0	0	0	0	0
	127.5	0	0	0	0	0	0	0	0	0
	130	0	0	0	0	0	0	0	0	0
	132.5	0	0	0	0	0	0	0	0	0
	135	0	0	0	0	0	0	0	0	0
	137.5	0	0	0	0	0	0	0	0	0
	140	0	0	0	0	0	0	0	0	0
	142.5	0	0	0	0	0	0	0	0	0
	145	0	0	0	0	0	0	0	0	0
	147.5	0	0	0	0	0	0	0	0	0
	150	0	0	0	0	0	0	0	0	0
	152.5	0	0	0	0	0	0	0	0	0
	155	0	0	0	0	0	0	0	0	0
	157.5	0	0	0	0	0	0	0	0	0
	160	0	0	0	0	0	0	0	0	0
	162.5	0	0	0	0	0	0	0	0	0
	165	0	0	0	0	0	0	0	0	0
	167.5	0	0	0	0	0	0	0	0	0
	170	0	0	0	0	0	0	0	0	0
	172.5	0	0	0	0	0	0	0	0	0
	175	0	0	0	0	0	0	0	0	0
	177.5	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	

16 lateral half-planes of data were acquired, 22.5 degree increments shown.



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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	119	119	119	119		116	116	116	116		111	111	111		106	106	106		102	102	102	100
1	109	104	99	96		106	101	98	94		97	94	91		93	91	88		90	88	86	83
2	99	90	83	78		96	88	82	77		85	79	75		82	77	73		78	75	71	69
3	90	79	71	64		87	78	70	64		75	68	63		72	66	61		69	64	60	58
4	82	70	61	54		80	69	60	54		66	59	53		64	58	52		62	56	52	50
5	75	62	53	47		73	61	53	46		59	52	46		57	51	45		55	50	45	43
6	70	56	47	41		68	55	47	40		53	46	40		52	45	40		50	44	39	37
7	65	51	42	36		63	50	42	36		49	41	35		47	40	35		46	40	35	33
8	60	46	38	32		59	46	38	32		44	37	32		43	36	31		42	36	31	29
9	56	43	34	29		55	42	34	29		41	34	28		40	33	28		39	33	28	26
10	53	39	31	26		51	39	31	26		38	31	26		37	30	26		36	30	26	24

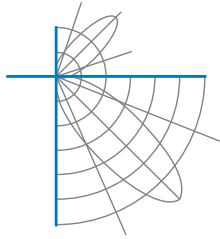
For absolute test reports, RUs are expressed as a percentage of total lumen output. For relative test reports, CUs are expressed as a percentage of total lamp output. Calculations were based on published IES procedures, and are based on the zonal cavity method. Basic assumptions: 1) Room surfaces are 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	24.6	7.57	7.62	
8.0	13.8	10.09	10.16	
10.0	8.8	12.62	12.70	
12.0	6.1	15.14	15.24	
14.0	4.5	17.66	17.77	
16.0	3.5	20.19	20.31	

Spacing Criterion	
0 deg:	1.3
90 deg:	1.3
180 deg:	1.3
270 deg:	1.3

Average Luminance (cd/m <sup>2</sup> )			
	0 deg Plane	45 deg Plane	90 deg Plane
0	2998	2998	2998
45	2859	2869	2885
55	2761	2774	2790
65	2577	2597	2616
75	2224	2265	2297
85	1603	1695	1744

Beam and Field Angle	
0-180 Degree Plane	
Beam Angle:	113.5°
Field Angle:	161.9°
90-270 Degree Plane	
Beam Angle:	114.2°
Field Angle:	162.7°



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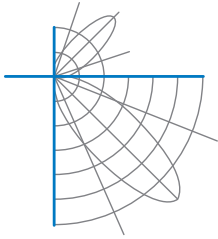
#### UGR Table - Corrected

##### 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

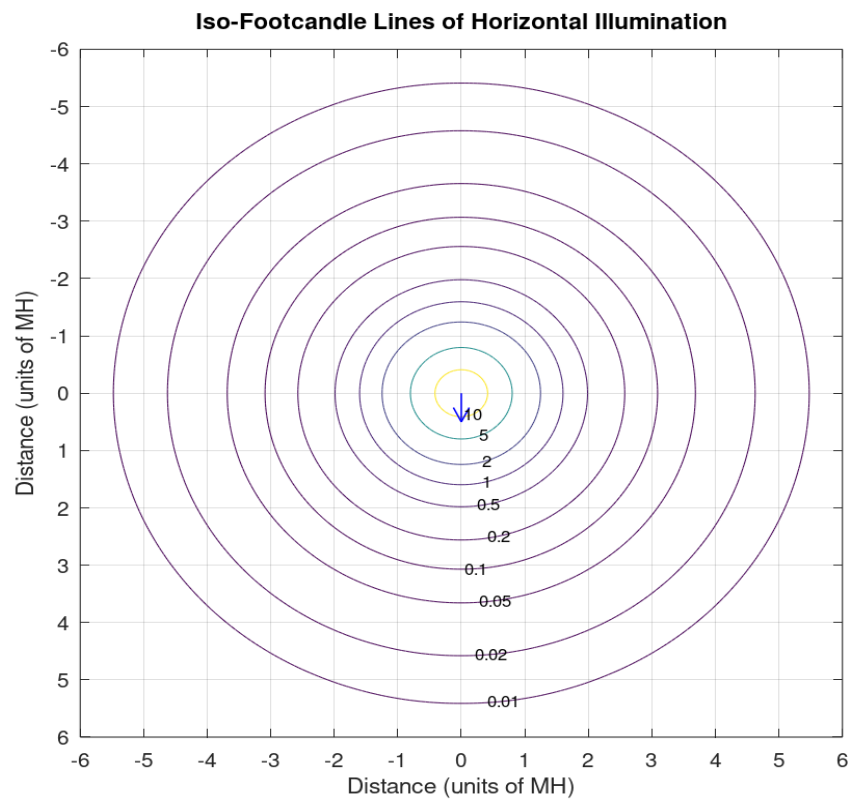
Room Size		UGR Viewed Crosswise					UGR Viewed Endwise				
X=2H	Y=2H	15.7	17.4	16.1	17.7	18.0	15.8	17.4	16.2	17.8	18.1
	3H	17.6	19.0	17.9	19.4	19.7	17.6	19.1	18.0	19.4	19.8
	4H	18.2	19.6	18.6	20.0	20.3	18.3	19.7	18.7	20.1	20.4
	6H	18.7	20.0	19.1	20.3	20.7	18.8	20.1	19.2	20.5	20.9
	8H	18.8	20.1	19.3	20.5	20.9	19.0	20.2	19.4	20.6	21.0
	12H	18.9	20.1	19.4	20.5	20.9	19.1	20.3	19.5	20.7	21.1
4H	2H	16.4	17.8	16.8	18.1	18.5	16.4	17.8	16.8	18.2	18.6
	3H	18.4	19.6	18.8	20.0	20.4	18.5	19.7	18.9	20.1	20.5
	4H	19.2	20.3	19.6	20.7	21.1	19.3	20.4	19.7	20.8	21.2
	6H	19.8	20.7	20.3	21.2	21.6	19.9	20.9	20.4	21.3	21.8
	8H	20.0	20.9	20.5	21.3	21.8	20.1	21.0	20.6	21.4	21.9
	12H	20.1	20.9	20.6	21.4	21.9	20.3	21.1	20.8	21.5	22.0
8H	4H	19.5	20.4	20.0	20.8	21.3	19.6	20.5	20.1	20.9	21.4
	6H	20.2	21.0	20.7	21.5	21.9	20.4	21.1	20.8	21.6	22.0
	8H	20.5	21.1	21.0	21.7	22.1	20.6	21.3	21.1	21.8	22.3
	12H	20.7	21.3	21.2	21.8	22.3	20.9	21.4	21.4	21.9	22.5
12H	4H	19.6	20.3	20.0	20.8	21.3	19.6	20.4	20.1	20.9	21.4
	6H	20.3	21.0	20.8	21.4	22.0	20.4	21.1	20.9	21.5	22.1
	8H	20.6	21.2	21.1	21.7	22.2	20.7	21.3	21.2	21.8	22.4

Maximum UGR = 22.5

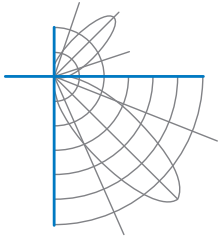


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### Iso-Illuminance Plot



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.



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Test Distance                    9.5 m  
Ambient Temperature        24.8 °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-41-20 and LM-46-20.

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.