LightLab INTERNATIONAL ALLENTOWN LLC

NVLAP TESTING ilac-MRA

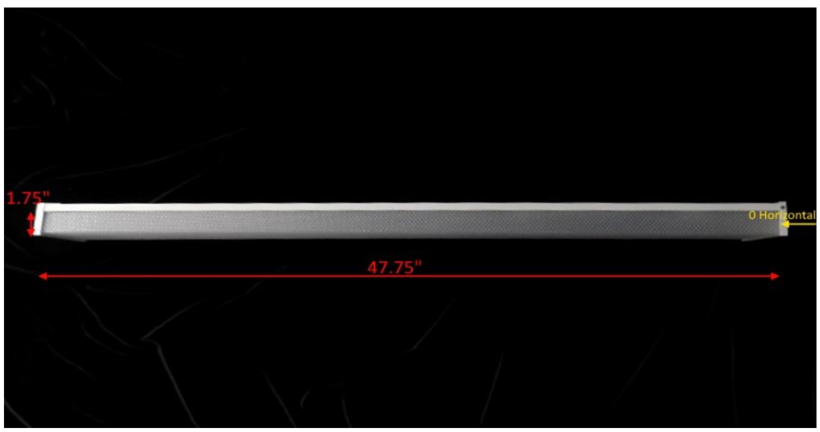
Lab Code: 201079-0

Report of Test

LLIA001448-001

Indoor Distribution Photometry Test Report

Catalog Number: LWRAPU4/40W/CTS/D-36 - 4000K Setting
Surface or pendant mounted, formed steel housing, clear prismatic plastic lens.
240 white LEDs, two PL20091A LED boards with 120 LEDs each
One WeledPower WP-HHA-041U040100 LED driver



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

Performance Summary			
Input Voltage	120.0 V	Luminous Flux	5215.3 Lumens
Input Current	0.3072 A	Total Efficacy	142.8 Lm/W
Input Power	36.51 W	Downward Flux	4713.9 Lumens
Frequency	60.00 Hz	Downward Flux	90.4 % of Total
Power Factor	0.991		
Current THD	10.9 %		

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

Test date: 04/26/2020
Report date: 04/27/2021

Signed: Michael L. Grather

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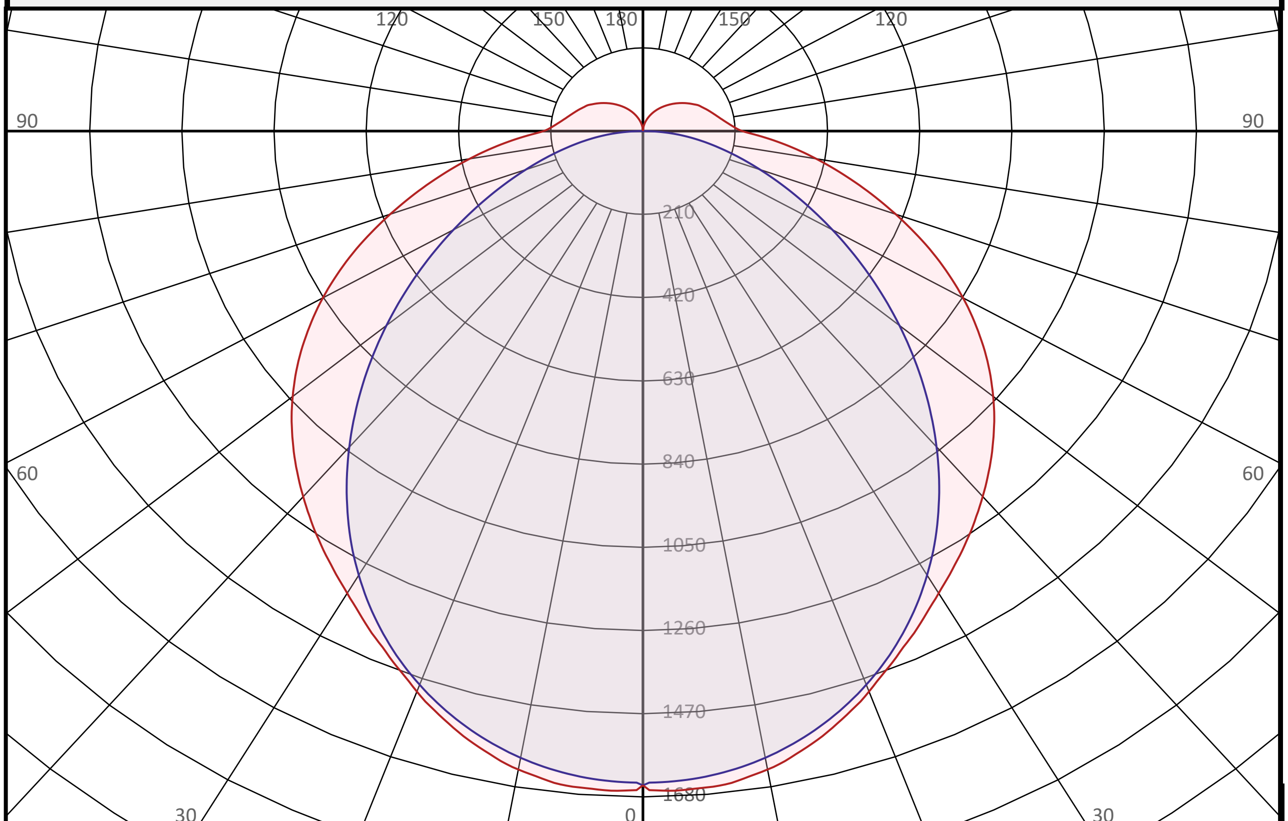
Polar Plot of Candela



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	156.5	3.0%		90-100	139.6	2.7%		0-20	599.0	11.5%
10-20	442.4	8.5%		100-110	112.9	2.2%		0-30	1250	24.0%
20-30	651.0	12.5%		110-120	90.2	1.7%		0-40	2013	38.6%
30-40	762.9	14.6%		120-130	67.4	1.3%		0-60	3501	67.1%
40-50	779.2	14.9%		130-140	45.7	0.9%		0-80	4477	85.8%
50-60	708.9	13.6%		140-150	27.4	0.5%		10-90	4557	87.4%
60-70	572.2	11.0%		150-160	13.4	0.3%		20-50	2193	42.0%
70-80	403.9	7.7%		160-170	4.4	0.1%		40-90	2701	51.8%
80-90	236.8	4.5%		170-180	0.5	0.0%		60-90	1213	23.3%
0-90	4714	90.4%		90-180	501.5	9.6%		0-180	5215	100.0%

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Luminous Intensity (Candela) Table

	Lateral (C-Plane) Angles									
Vertical (Gamma) Angles		0	22.5	45	67.5	90	112.5	135	157.5	180
	0	1651	1651	1651	1651	1651	1651	1651	1651	1651
	2.5	1642	1645	1650	1658	1666	1658	1650	1645	1642
	5	1635	1641	1645	1654	1662	1654	1645	1641	1635
	7.5	1623	1631	1637	1647	1653	1647	1637	1631	1623
	10	1605	1614	1622	1628	1636	1628	1622	1614	1605
	12.5	1583	1593	1599	1605	1610	1605	1599	1593	1583
	15	1555	1569	1573	1575	1580	1575	1573	1569	1555
	17.5	1523	1538	1539	1540	1544	1540	1539	1538	1523
	20	1487	1501	1502	1502	1505	1502	1502	1501	1487
	22.5	1445	1460	1458	1458	1464	1458	1458	1460	1445
	25	1400	1415	1413	1415	1424	1415	1413	1415	1400
	27.5	1349	1365	1362	1374	1385	1374	1362	1365	1349
	30	1294	1310	1311	1332	1347	1332	1311	1310	1294
	32.5	1236	1254	1260	1291	1312	1291	1260	1254	1236
	35	1173	1193	1208	1252	1277	1252	1208	1193	1173
	37.5	1108	1130	1156	1213	1241	1213	1156	1130	1108
	40	1040	1065	1104	1172	1204	1172	1104	1065	1040
	42.5	971	1001	1052	1130	1166	1130	1052	1001	971
	45	902	935	1001	1088	1126	1088	1001	935	902
	47.5	832	870	950	1044	1085	1044	950	870	832
	50	762	806	898	1000	1041	1000	898	806	762
	52.5	693	744	847	953	995	953	847	744	693
	55	626	683	795	904	946	904	795	683	626
	57.5	561	625	744	854	895	854	744	625	561
	60	498	569	693	803	842	803	693	569	498
	62.5	439	515	642	750	786	750	642	515	439
	65	383	463	593	696	729	696	593	463	383
	67.5	331	415	544	642	670	642	544	415	331
	70	284	370	496	587	612	587	496	370	284
	72.5	240	328	449	533	555	533	449	328	240
	75	200	289	404	482	501	482	404	289	200
	77.5	163	251	361	432	449	432	361	251	163
	80	129	215	320	384	399	384	320	215	129
	82.5	96	180	280	338	352	338	280	180	96
	85	64	146	240	294	307	294	240	146	64
	87.5	31	112	201	253	263	253	201	112	31
	90	0	82	167	216	225	216	167	82	0

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Australasia & S.E. Asia LightLab International, 50 Redcliffe Gardens Drive, Clontarf, Queensland, 4019, Australia — Ph : +61 7 3283 7862, Fx : +61 7 3283 8751, www.lightlabint.com

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	Lateral (C-Plane) Angles									
Vertical (Gamma) Angles		0	22.5	45	67.5	90	112.5	135	157.5	180
	90	0	82	167	216	225	216	167	82	0
	92.5	0	77	155	200	209	200	155	77	0
	95	0	74	147	189	197	189	147	74	0
	97.5	0	70	140	179	188	179	140	70	0
	100	0	67	134	171	180	171	134	67	0
	102.5	0	65	128	164	173	164	128	65	0
	105	0	62	123	158	167	158	123	62	0
	107.5	0	59	118	152	161	152	118	59	0
	110	0	57	113	146	156	146	113	57	0
	112.5	0	54	108	141	151	141	108	54	0
	115	0	52	103	135	146	135	103	52	0
	117.5	0	49	98	130	141	130	98	49	0
	120	0	47	93	125	134	125	93	47	0
	122.5	0	45	89	118	128	118	89	45	0
	125	0	43	84	112	122	112	84	43	0
	127.5	0	41	79	106	116	106	79	41	0
	130	0	38	75	100	109	100	75	38	0
	132.5	0	35	70	94	103	94	70	35	0
	135	0	33	66	88	97	88	66	33	0
	137.5	0	30	61	82	91	82	61	30	0
	140	0	28	57	77	84	77	57	28	0
	142.5	0	26	53	71	78	71	53	26	0
	145	0	23	48	65	72	65	48	23	0
	147.5	0	21	44	60	66	60	44	21	0
	150	0	18	40	55	60	55	40	18	0
	152.5	0	16	36	49	55	49	36	16	0
	155	0	14	32	44	49	44	32	14	0
	157.5	0	12	28	39	43	39	28	12	0
	160	0	10	24	34	37	34	24	10	0
	162.5	0	8	20	29	32	29	20	8	0
	165	0	7	16	24	26	24	16	7	0
	167.5	0	5	12	19	21	19	12	5	0
	170	0	4	9	14	16	14	9	4	0
	172.5	0	3	6	10	11	10	6	3	0
	175	0	0	3	5	6	5	3	0	0
	177.5	0	0	0	0	0	0	0	0	0
	180	0	0	0	0	0	0	0	0	0

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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	117	117	117	117	113	113	113	113	106	106	106	99	99	99	93	93	93	90
1	105	100	95	91	102	97	93	89	91	87	84	85	82	80	80	78	76	73
2	95	87	79	73	92	84	77	72	79	73	69	74	70	66	70	66	63	60
3	87	76	67	61	83	74	66	60	69	63	57	65	60	55	61	57	53	50
4	79	67	58	51	76	65	57	50	61	54	49	58	52	47	55	50	45	43
5	73	60	51	44	70	58	50	43	55	48	42	52	46	41	49	44	39	37
6	67	54	45	38	65	53	44	38	50	42	37	47	41	36	45	39	35	32
7	63	49	40	34	60	48	39	34	45	38	33	43	37	32	41	35	31	29
8	58	45	36	30	56	44	35	30	41	34	29	39	33	28	38	32	28	26
9	54	41	33	27	52	40	32	27	38	31	26	36	30	26	35	29	25	23
10	51	38	30	25	49	37	29	24	35	29	24	34	28	23	32	27	23	21

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	Ground-level distance to half-of-nadir illuminance (ft) 90-270 deg
6.0	45.9	7.03	7.32
8.0	25.8	9.38	9.77
10.0	16.5	11.72	12.21
12.0	11.5	14.07	14.65
14.0	8.4	16.41	17.09
16.0	6.4	18.76	19.53

Average Luminance (cd/m^2)

	0 deg Plane	45 deg Plane	90 deg Plane
0	10717	10717	10717
45	8282	7368	7660
55	7088	6651	7142
65	5885	5950	6394
75	5006	5267	5444
85	4792	4674	4567

Spacing Criterion

0 degree plane:	1.2
90 degree plane:	1.2
180 degree plane:	1.2
270 degree plane:	1.2

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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	16.0	17.5	16.5	18.0	18.5	19.2	20.6	19.7	21.1	21.7
	3H	17.4	18.7	17.9	19.2	19.8	21.5	22.8	22.0	23.3	23.9
	4H	17.8	19.0	18.3	19.6	20.2	22.5	23.7	23.0	24.3	24.9
	6H	18.1	19.3	18.7	19.8	20.4	23.5	24.7	24.1	25.2	25.8
	8H	18.2	19.3	18.8	19.9	20.5	24.0	25.1	24.6	25.7	26.3
	12H	18.2	19.3	18.8	19.9	20.5	24.5	25.6	25.1	26.1	26.8
4H	2H	17.1	18.3	17.6	18.9	19.5	19.5	20.8	20.1	21.3	21.9
	3H	18.7	19.7	19.2	20.3	20.9	22.1	23.1	22.6	23.7	24.3
	4H	19.2	20.2	19.8	20.8	21.5	23.3	24.2	23.8	24.8	25.5
	6H	19.7	20.5	20.3	21.1	21.8	24.5	25.3	25.1	25.9	26.6
	8H	19.8	20.6	20.4	21.2	21.9	25.0	25.8	25.7	26.5	27.1
	12H	19.9	20.6	20.5	21.3	21.9	25.7	26.4	26.3	27.0	27.7
8H	4H	20.0	20.8	20.6	21.4	22.1	23.4	24.2	24.1	24.9	25.5
	6H	20.7	21.3	21.3	22.0	22.7	24.8	25.5	25.5	26.1	26.8
	8H	20.9	21.5	21.5	22.2	22.9	25.5	26.1	26.2	26.8	27.5
	12H	21.1	21.6	21.7	22.2	23.0	26.3	26.8	27.0	27.5	28.3
12H	4H	20.2	20.9	20.8	21.6	22.3	23.4	24.2	24.1	24.8	25.5
	6H	21.0	21.6	21.6	22.2	22.9	24.9	25.5	25.5	26.1	26.8
	8H	21.3	21.8	21.9	22.5	23.2	25.6	26.2	26.3	26.8	27.6

Maximum UGR = 28.3

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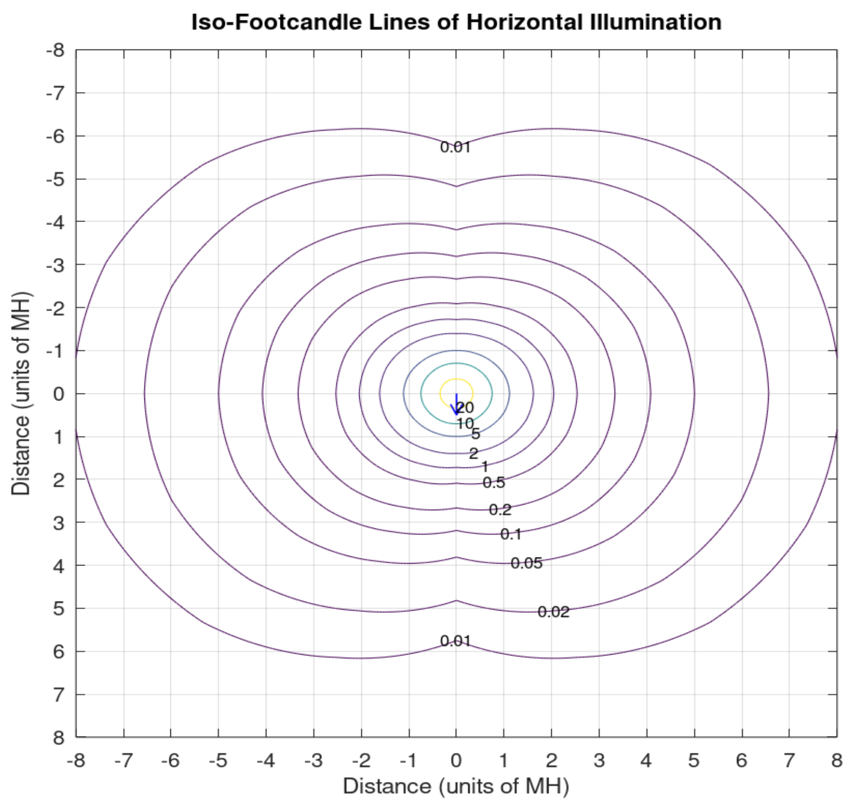
Iso-Illuminance Plot



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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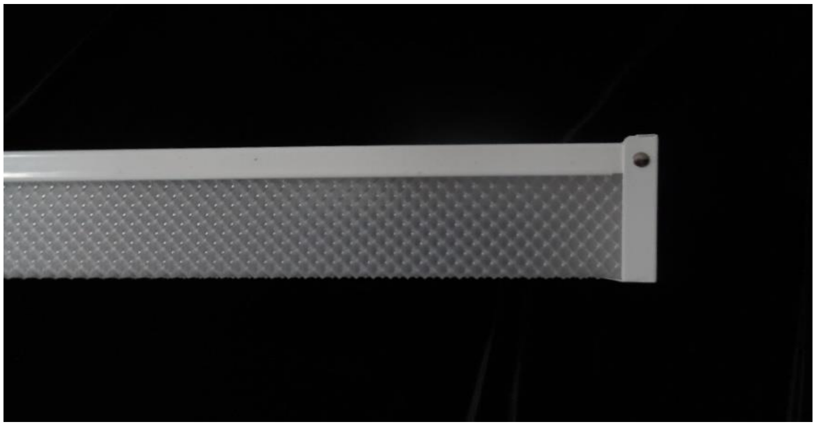
Additional Pictures of Test Subject



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Test Distance	9.5 m
Ambient Temperature	25.2 °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.