LIGHT LABORATORY INC.
8165 E Kaiser Blvd. Anaheim, CA 92808
www.lightlaboratory.com

NVLAP TESTING
NVLAP LAB CODE 200927-0

Report No: L032113401 **Issue Date: 4/20/2021**

Report Prepared For: Light and Green
2340 E Olympic Blvd. Unit E, Los Angeles, CA 90021

Model Number: 9012 - 24 deg

Test: Photometric/Electrical Test

Standards Used: Appropriate part or all test guidelines were used for test performed:

IESNA LM79: 2008 Approved Methods for Electrical and Photometric Measurements of Solid-State Lighting Products

ANSI NEMA ANSLG C78.377: 2008 Specification of the Chromaticity of Solid State Lighting Products

ANSI C82.77:2002: Harmonic Emission Limits-Related Quality Requirements for Lighting Equipment

Description of Sample: Client submitted the sample. Received in working and undamaged condition. No modifications were necessary.

Special Test Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 4/15/21

Date of Tests: 4/16/21 - 4/20/21

Seasoning of Sample: No seasoning was performed in accordance with IESNA LM-79.

Equipment List

Equipment Used	Model No	Stock No	Calibration Due Date
Chroma Programmable AC Source	61604	PS-AC02	--
Yokogawa Digital Power Meter	WT210	MT-EL06-S4	4/7/23
HP Power Supply	6032A	PS-DC05-S2	--
Fluke Digital Thermometer	52K/J	MT-TP05	3/17/23
LLI Type C Goniophotometer System	RMG-C-MKII	CD-LL04-GC	--
LLI 2M Sphere	2MR97	CD-SN03-S2	--
LLI Spectroradiometer	SPR-3000	MT-SC01-S2	Before Use

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General Information	
Manufacturer:	Light and Green
Model Number:	9012 - 24 deg
Driver Model Number:	L.T.F. DIMMABLE LED DRIER DA10W250C2040-3001

Photometric & Electrical Test Results	
Total Lumens:	1835.52
Efficacy:	81.25
Input Voltage (VAC/60Hz):	120.04
Input Current (Amp):	0.1891
Input Power (W):	22.59
Input Power Factor:	0.9955
Current ATHD (%):	6.9%

Test Condition	
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:30
Total Operating Time (Hours):	1:15

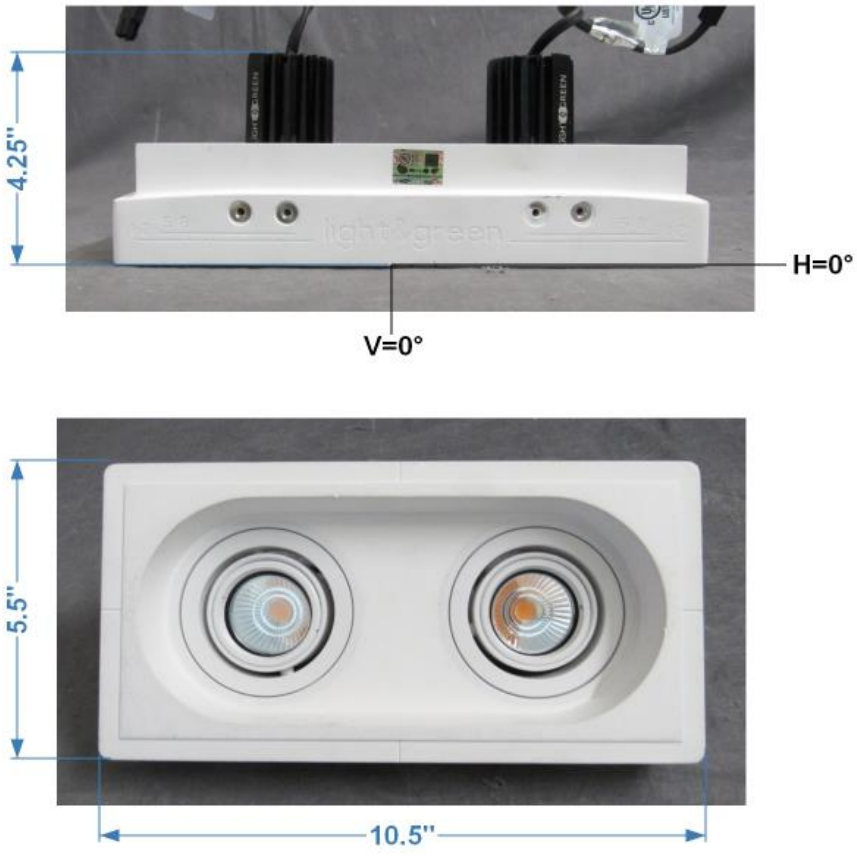

FIG. 1 LUMINAIRE

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Test Methods

Photometric Measurements - Goniophotometer

A Custom Light Laboratory Type C Rotating Mirror Goniophotometer was used to measure candelas(intensity) at each angle of distribution as defined by IESNA for the appropriate fixture type.

Ambient temperature is set to 25^{o}C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25^{o}C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Spectral Measurements - Integrating Sphere

A Sensing Spectroradiometer SPR-3000, in conjunction with Light Laboratory 2 meter integrating sphere was used to measure chromaticity coordinates, correlated color temperature(CCT) and the color rendering index(CRI) for each sample.

Ambient temperature is set to 25^{o}C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25^{o}C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Disclaimers:

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

Report Prepared by : Keyur Patel

Test Report Reviewed by:

Steve Kang
Quality Assurance

**Attached are photometric data reports. Total number of pages: 10*

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Photometric Test Report

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L032113401.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L032113401
[TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)
[ISSUEDATE] 4/20/2021
[MANUFAC] Light and Green
[LUMCAT] 9012 - 24 deg
[LUMINAIRE] LED LUMINAIRE
[BALLASTCAT] L.T.F. DIMMABLE LED DRIER DA10W250C2040-3001
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
[INPUT] 120.04VAC, 22.59W
[TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	1836
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	81
Total Luminaire Watts	22.59
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	0.40
Spacing Criterion (90-270)	0.40
Spacing Criterion (Diagonal)	0.46
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	0.75 ft
Luminous Width (90-270)	0.33 ft
Luminous Height	0.00 ft

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	8664	8541	8418
55	3106	3182	2954
65	2159	2159	1851
75	2518	1511	1511
85	2991	2991	2991

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L032113401.IES

CANDELA TABULATION

	0	5	10	15	20	25	30	35	40	45
0	4697	4697	4697	4697	4697	4697	4697	4697	4697	4697
1	4589	4589	4596	4608	4619	4629	4643	4655	4665	4674
2	4504	4509	4515	4526	4536	4545	4562	4573	4584	4590
3	4397	4399	4408	4416	4426	4437	4450	4461	4472	4480
4	4231	4232	4238	4247	4255	4265	4276	4287	4297	4305
5	4019	4020	4027	4036	4044	4053	4064	4074	4086	4094
6	3802	3802	3808	3815	3821	3832	3840	3849	3859	3867
7	3555	3557	3561	3569	3577	3586	3595	3604	3612	3618
8	3291	3290	3293	3302	3309	3318	3328	3334	3343	3347
9	2933	2934	2938	2945	2951	2958	2963	2969	2977	2981
10	2734	2734	2739	2745	2751	2759	2764	2769	2777	2781
12	2214	2215	2220	2227	2233	2240	2247	2251	2259	2263
14	1834	1837	1839	1843	1849	1853	1859	1862	1868	1871
16	1544	1546	1550	1554	1557	1560	1563	1566	1573	1576
18	1318	1318	1321	1323	1326	1329	1332	1334	1340	1342
20	1144	1145	1146	1148	1152	1155	1157	1158	1162	1164
22	1012	1013	1015	1019	1021	1024	1025	1026	1030	1032
24	914	916	918	921	924	927	928	928	932	935
26	845	846	848	851	854	856	857	858	861	864
28	791	791	794	796	799	801	801	803	807	810
30	747	748	751	753	754	757	758	759	763	766
35	600	601	603	605	608	610	611	612	616	620
40	362	362	361	362	364	364	366	366	368	369
45	141	141	141	141	141	140	140	140	139	139
50	73	73	73	73	73	73	73	73	74	74
55	41	41	41	41	41	42	42	42	42	42
60	29	29	29	29	29	29	30	30	30	29
65	21	21	22	22	22	22	22	22	22	21
70	16	16	16	17	17	17	16	15	15	13
75	15	15	15	15	15	14	12	11	10	9
80	12	12	12	10	8	8	7	7	7	7
85	6	6	6	6	6	6	6	6	6	6
90	0	0	0	0	0	0	0	0	0	0

Vert. Angles	**Horizontal Angles**								
	50	**55**	**60**	**65**	**70**	**75**	**80**	**85**	**90**
0	4697	4697	4697	4697	4697	4697	4697	4697	4697
1	4685	4696	4709	4722	4733	4741	4749	4752	4754
2	4603	4616	4627	4643	4653	4661	4670	4675	4681
3	4488	4503	4516	4527	4539	4550	4557	4562	4564
4	4313	4327	4340	4351	4362	4372	4378	4385	4387
5	4101	4114	4128	4138	4149	4157	4162	4165	4166
6	3876	3888	3901	3910	3921	3928	3933	3938	3940
7	3625	3635	3646	3655	3664	3673	3679	3684	3686
8	3352	3359	3366	3375	3383	3388	3396	3401	3401
9	2985	2993	3000	3007	3014	3018	3022	3028	3030
10	2785	2792	2799	2805	2812	2815	2819	2824	2824
12	2265	2270	2274	2278	2281	2285	2288	2290	2291
14	1874	1880	1884	1887	1890	1892	1895	1896	1897
16	1576	1583	1584	1587	1589	1591	1596	1598	1596
18	1342	1346	1347	1350	1352	1353	1356	1357	1356
20	1167	1169	1170	1172	1172	1173	1174	1174	1176
22	1034	1037	1037	1039	1040	1039	1040	1039	1040

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L032113401.IES

CANDELA TABULATION - (Cont.)

24	938	940	940	941	942	942	941	941	940
26	866	868	869	869	869	869	869	869	869
28	813	814	815	815	815	814	815	815	815
30	768	770	771	771	771	771	771	772	772
35	622	625	624	625	626	627	627	627	627
40	368	369	367	367	366	365	366	365	366
45	139	138	138	138	138	138	138	138	137
50	74	74	74	74	74	73	73	72	72
55	42	42	41	40	40	39	39	39	39
60	29	28	28	28	27	27	27	27	27
65	21	20	20	19	19	18	18	18	18
70	13	12	11	11	10	9	9	9	9
75	8	8	8	8	8	8	8	8	9
80	7	7	7	7	7	7	7	7	7
85	6	6	6	6	6	6	6	6	6
90	0	0	0	0	0	0	0	0	0

IES INDOOR REPORT
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ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	834.27	N.A.	45.50
0-30	1254.06	N.A.	68.30
0-40	1621.13	N.A.	88.30
0-60	1798.4	N.A.	98.00
0-80	1830.08	N.A.	99.70
0-90	1835.52	N.A.	100.00
10-90	1488.84	N.A.	81.10
20-40	786.86	N.A.	42.90
20-50	923.26	N.A.	50.30
40-70	197.71	N.A.	10.80
60-80	31.68	N.A.	1.70
70-80	11.24	N.A.	0.60
80-90	5.44	N.A.	0.30
90-110	0.00	N.A.	0.00
90-120	0.00	N.A.	0.00
90-130	0.00	N.A.	0.00
90-150	0.00	N.A.	0.00
90-180	0.00	N.A.	0.00
110-180	0.00	N.A.	0.00
0-180	1835.52	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	346.68
10-20	487.59
20-30	419.79
30-40	367.07
40-50	136.40
50-60	40.87
60-70	20.44
70-80	11.24
80-90	5.44
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L032113401.IES

COEFFICIENTS OF 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
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	113	111	108	106	111	108	106	104	104	103	101	101	99	98	97	96	95	93
2	108	103	99	95	106	101	98	94	98	95	92	95	93	90	92	90	88	87
3	102	96	91	87	101	95	90	86	92	88	85	90	86	84	87	85	82	81
4	97	90	85	80	96	89	84	80	87	82	79	85	81	78	83	80	77	76
5	93	85	79	75	91	84	78	74	82	77	74	80	76	73	79	75	72	71
6	88	80	74	70	87	79	74	70	78	73	69	76	72	69	75	71	68	67
7	84	75	70	66	83	75	69	65	74	69	65	72	68	65	71	67	64	63
8	81	72	66	62	80	71	65	62	70	65	61	69	64	61	68	64	61	60
9	77	68	62	58	76	67	62	58	67	62	58	66	61	58	65	61	58	56
10	74	65	59	56	73	64	59	55	64	59	55	63	58	55	62	58	55	54

IES INDOOR REPORT
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UGR TABLE - CORRECTED

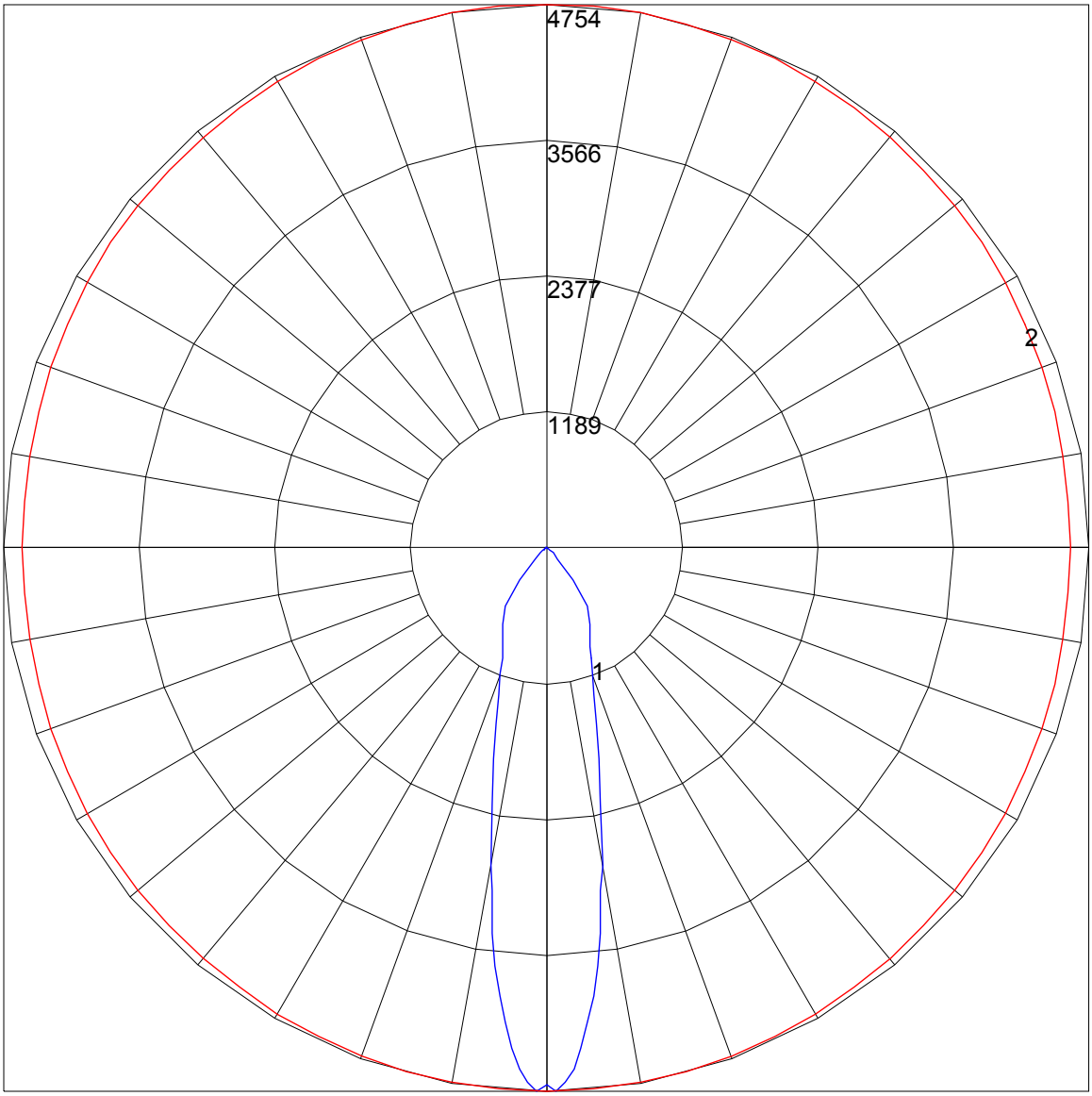
Reflectances											
Ceiling Cavity		70	70	50	50	30	70	70	50	50	30
Walls		50	30	50	30	30	50	30	50	30	30
Floor Cavity		20	20	20	20	20	20	20	20	20	20
Room Size		UGR Viewed Crosswise					UGR Viewed Endwise				
X=2H	Y=2H	9.0	10.1	9.4	10.4	10.7	8.7	9.7	9.0	10.0	10.3
	3H	10.3	11.2	10.6	11.5	11.9	9.2	10.1	9.6	10.5	10.8
	4H	11.0	11.9	11.4	12.2	12.6	9.5	10.3	9.9	10.7	11.1
	6H	11.9	12.7	12.3	13.1	13.5	9.9	10.7	10.3	11.1	11.5
	8H	12.3	13.0	12.7	13.4	13.8	10.2	10.9	10.6	11.3	11.7
	12H	12.5	13.2	13.0	13.6	14.0	10.6	11.3	11.0	11.6	12.1
4H	2H	9.3	10.1	9.7	10.5	10.9	9.0	9.9	9.4	10.2	10.6
	3H	10.8	11.5	11.2	11.9	12.3	9.7	10.4	10.1	10.8	11.2
	4H	11.7	12.4	12.2	12.8	13.2	10.1	10.7	10.5	11.1	11.6
	6H	12.7	13.3	13.2	13.7	14.2	10.7	11.2	11.1	11.7	12.1
	8H	13.2	13.7	13.7	14.1	14.6	11.1	11.6	11.5	12.0	12.5
	12H	13.5	14.0	14.0	14.5	14.9	11.6	12.0	12.1	12.5	13.0
8H	4H	11.8	12.3	12.3	12.8	13.2	10.3	10.8	10.8	11.3	11.7
	6H	12.9	13.3	13.4	13.8	14.3	11.1	11.5	11.6	12.0	12.5
	8H	13.4	13.8	14.0	14.3	14.8	11.6	12.0	12.2	12.5	13.0
	12H	14.0	14.3	14.5	14.8	15.4	12.4	12.7	12.9	13.2	13.8
12H	4H	11.8	12.2	12.3	12.7	13.2	10.3	10.8	10.8	11.3	11.7
	6H	12.9	13.3	13.5	13.8	14.3	11.2	11.6	11.7	12.0	12.6
	8H	13.5	13.9	14.1	14.4	14.9	11.8	12.2	12.3	12.6	13.2

Maximum UGR = 15.4

Calculations based on published IES Methods and recommendations, values rounded for display purposes.
Results derived from content of manufacturers photometric file.

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L032113401.IES

POLAR GRAPH



Maximum Candela = 4754 Located At Horizontal Angle = 90, Vertical Angle = 1
1 - Vertical Plane Through Horizontal Angles (90 - 270) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (1) (Through Max. Cd.)