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

NVLAP TESTING
NVLAP LAB CODE 200927-0

Report No: L032113402 **Issue Date: 4/20/2021**

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

Model Number: 9012 - 60 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 - 60 deg
Driver Model Number:	L.T.F. DIMMABLE LED DRIER DA10W250C2040-3001

Photometric & Electrical Test Results	
Total Lumens:	1717.80
Efficacy:	75.97
Input Voltage (VAC/60Hz):	120.02
Input Current (Amp):	0.1891
Input Power (W):	22.61
Input Power Factor:	0.9962
Current ATHD (%):	6.4%

Test Condition	
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:55
Total Operating Time (Hours):	2:15

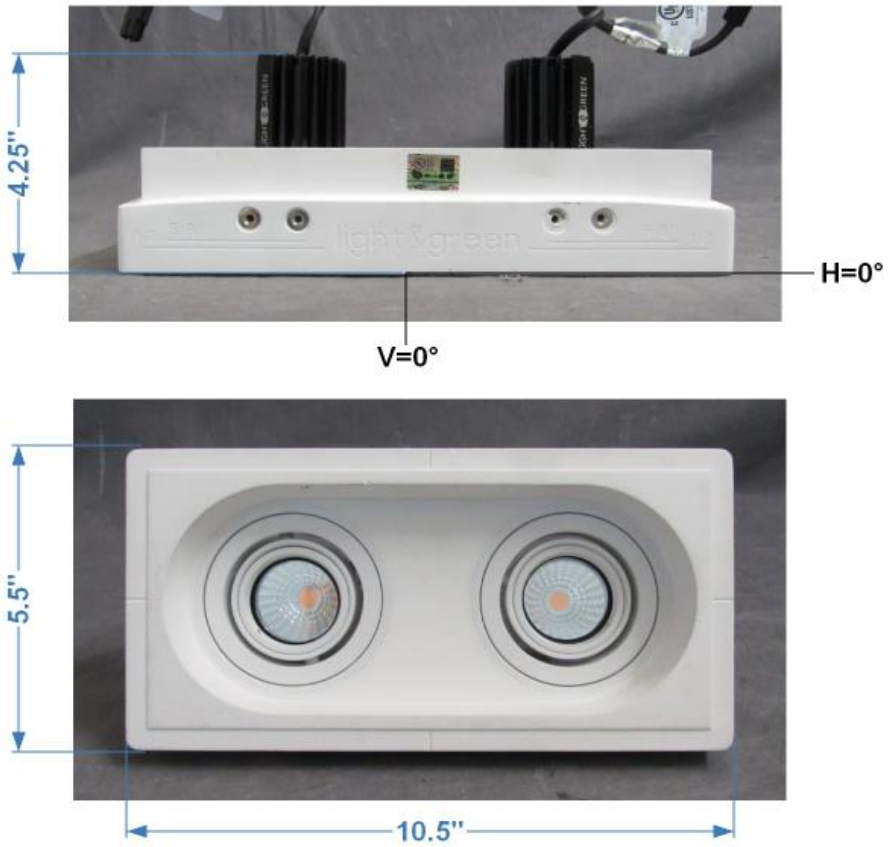

FIG. 1 LUMINAIRE

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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 : L032113402.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L032113402
[TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)
[ISSUEDATE] 4/20/2021
[MANUFAC] Light and Green
[LUMCAT] 9012 - 60 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] 120.02VAC, 22.61W
[TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	1718
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	76
Total Luminaire Watts	22.61
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	0.92
Spacing Criterion (90-270)	0.94
Spacing Criterion (Diagonal)	0.96
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	8418	9094	9279
55	3485	3560	3106
65	2570	2262	1645
75	2686	1511	1511
85	2991	2991	2991

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L032113402.IES

CANDELA TABULATION

	0	5	10	15	20	25	30	35	40	45
0.0	1702	1702	1702	1702	1702	1702	1702	1702	1702	1702
1.0	1667	1668	1671	1675	1679	1684	1688	1691	1696	1699
3.0	1650	1651	1654	1659	1663	1668	1672	1676	1681	1684
5.0	1636	1637	1640	1645	1649	1653	1658	1661	1666	1670
7.0	1616	1616	1619	1624	1628	1633	1637	1641	1646	1649
9.0	1589	1588	1592	1597	1602	1607	1610	1614	1619	1622
11.0	1553	1552	1556	1560	1565	1571	1575	1579	1584	1587
13.0	1511	1511	1515	1519	1524	1529	1534	1537	1543	1546
15.0	1468	1469	1473	1478	1483	1486	1492	1496	1501	1504
17.0	1416	1416	1419	1423	1427	1433	1438	1441	1445	1449
19.5	1335	1335	1339	1344	1349	1355	1358	1361	1367	1369
22.5	1220	1219	1222	1227	1231	1235	1239	1243	1246	1250
25.5	1096	1095	1099	1103	1107	1110	1113	1115	1120	1124
29.0	948	949	951	955	957	961	964	967	972	974
33.0	774	774	776	779	780	782	784	785	788	790
37.5	511	512	513	517	519	520	523	524	527	530
42.5	198	198	199	201	203	205	207	210	213	216
47.5	76	76	77	77	78	78	79	79	80	80
55.0	46	46	46	47	47	47	47	47	47	47
65.0	25	25	25	25	26	26	26	25	24	22
75.0	16	16	16	16	16	14	12	10	9	9
85.0	6	6	6	6	6	6	6	6	6	6
90.0	0	0	0	0	0	0	0	0	0	0

Vert. Angles **Horizontal Angles**

	50	55	60	65	70	75	80	85	90
0.0	1702	1702	1702	1702	1702	1702	1702	1702	1702
1.0	1703	1708	1712	1717	1720	1724	1726	1727	1728
3.0	1688	1693	1697	1702	1705	1708	1710	1711	1711
5.0	1674	1679	1683	1688	1692	1695	1698	1699	1699
7.0	1653	1658	1663	1667	1671	1674	1677	1678	1679
9.0	1627	1631	1635	1639	1643	1646	1648	1650	1650
11.0	1590	1594	1599	1603	1606	1609	1610	1612	1613
13.0	1550	1553	1558	1561	1563	1566	1568	1569	1569
15.0	1507	1510	1515	1518	1520	1522	1523	1524	1525
17.0	1452	1456	1460	1462	1465	1466	1467	1468	1469
19.5	1372	1376	1379	1381	1382	1382	1384	1385	1385
22.5	1253	1256	1259	1260	1260	1262	1263	1263	1262
25.5	1127	1130	1131	1132	1132	1132	1132	1133	1133
29.0	977	979	980	981	981	981	981	981	981
33.0	792	793	792	791	789	789	789	788	788
37.5	530	530	531	531	531	532	532	533	533
42.5	217	219	221	222	223	224	224	224	224
47.5	81	82	83	83	83	81	79	78	78
55.0	47	46	45	44	43	42	42	41	41
65.0	21	19	18	17	16	16	16	16	16
75.0	9	9	9	9	9	9	9	9	9
85.0	6	6	6	6	6	6	6	6	6
90.0	0	0	0	0	0	0	0	0	0

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 : L032113402.IES

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	551.11	N.A.	32.10
0-30	1046.83	N.A.	60.90
0-40	1431.73	N.A.	83.30
0-60	1658.54	N.A.	96.60
0-80	1706.85	N.A.	99.40
0-90	1717.8	N.A.	100.00
10-90	1589.63	N.A.	92.50
20-40	880.63	N.A.	51.30
20-50	1067.45	N.A.	62.10
40-70	258.37	N.A.	15.00
60-80	48.32	N.A.	2.80
70-80	16.75	N.A.	1.00
80-90	10.95	N.A.	0.60
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	1717.8	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	128.18
10-20	422.93
20-30	495.72
30-40	384.91
40-50	186.83
50-60	39.98
60-70	31.56
70-80	16.75
80-90	10.95
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

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

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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	109	107	104	110	107	105	102	103	101	99	99	98	96	96	95	93	92
2	106	101	96	92	104	99	95	91	96	92	89	93	90	87	90	88	86	84
3	100	93	87	83	98	92	86	82	89	84	81	86	83	80	84	81	78	77
4	94	86	80	75	93	85	79	75	83	78	74	81	76	73	79	75	72	70
5	89	80	73	69	87	79	73	68	77	72	68	75	71	67	74	70	66	65
6	84	74	68	63	83	74	67	63	72	66	62	70	66	62	69	65	61	60
7	80	69	63	58	78	69	62	58	67	62	58	66	61	57	65	60	57	55
8	75	65	58	54	74	64	58	54	63	58	54	62	57	53	61	56	53	52
9	71	61	54	50	70	60	54	50	59	54	50	58	53	50	58	53	49	48
10	68	57	51	47	67	57	51	47	56	50	47	55	50	46	54	50	46	45

IES INDOOR REPORT
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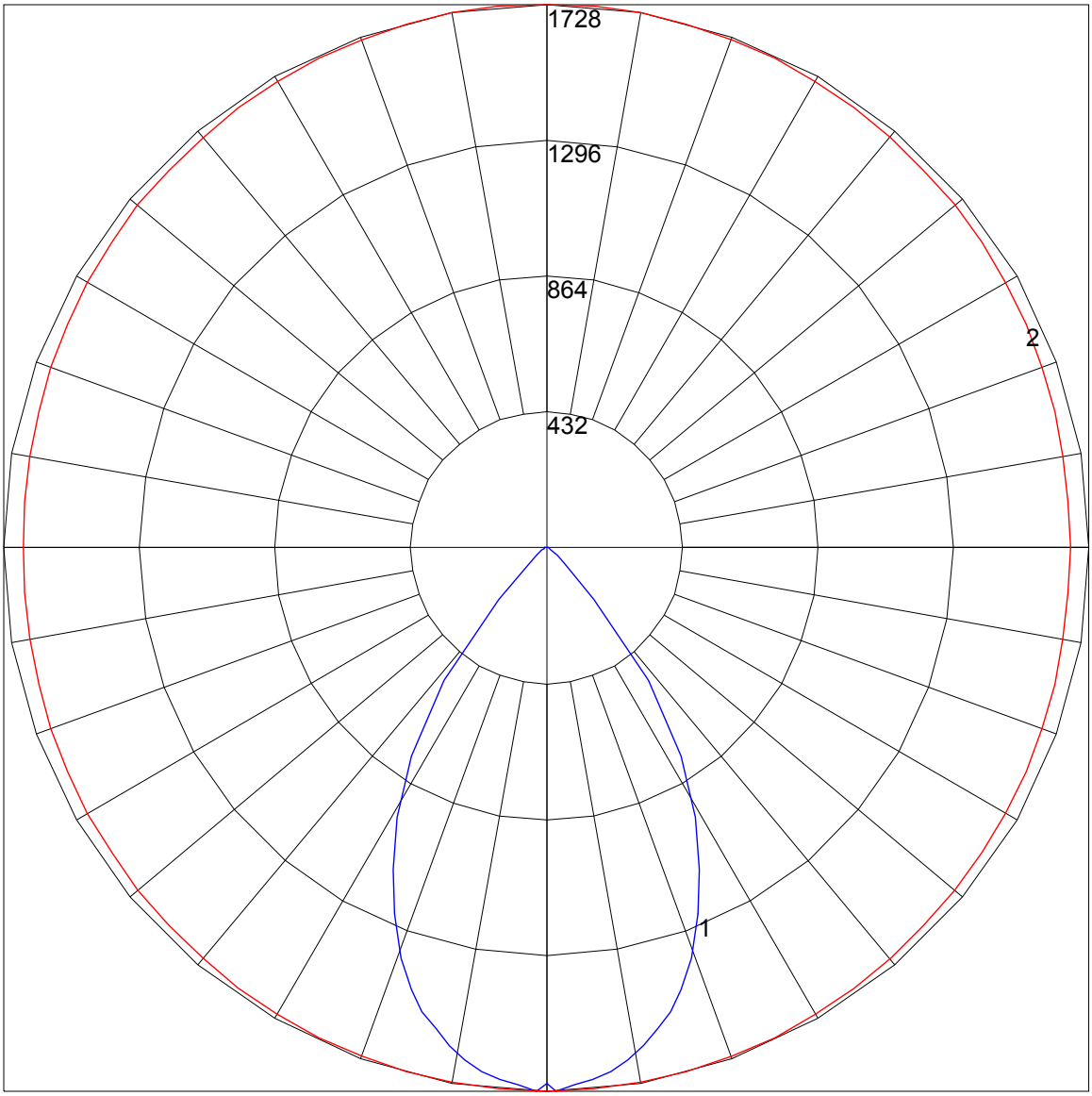
UGR TABLE - CORRECTED

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	10.4	11.5	10.7	11.8	12.1	9.3	10.4	9.7	10.8	11.1
	3H	11.7	12.7	12.1	13.0	13.4	10.0	11.0	10.4	11.3	11.7
	4H	12.3	13.3	12.7	13.6	14.0	10.3	11.2	10.7	11.6	12.0
	6H	12.9	13.8	13.3	14.1	14.5	10.7	11.6	11.2	11.9	12.3
	8H	13.2	13.9	13.6	14.3	14.7	11.0	11.8	11.4	12.2	12.6
	12H	13.4	14.1	13.8	14.5	14.9	11.3	12.1	11.7	12.4	12.9
4H	2H	10.6	11.5	11.0	11.8	12.2	9.7	10.6	10.1	10.9	11.3
	3H	12.1	12.9	12.5	13.3	13.7	10.5	11.3	11.0	11.7	12.1
	4H	12.9	13.6	13.4	14.0	14.5	11.0	11.6	11.4	12.0	12.5
	6H	13.7	14.3	14.2	14.7	15.2	11.5	12.1	12.0	12.6	13.0
	8H	14.0	14.6	14.5	15.0	15.5	11.9	12.4	12.4	12.9	13.3
	12H	14.3	14.8	14.8	15.3	15.7	12.3	12.8	12.8	13.3	13.8
8H	4H	13.0	13.5	13.4	13.9	14.4	11.2	11.7	11.6	12.2	12.6
	6H	13.9	14.3	14.4	14.8	15.3	11.9	12.4	12.4	12.9	13.3
	8H	14.3	14.7	14.9	15.3	15.7	12.4	12.8	12.9	13.3	13.8
	12H	14.8	15.1	15.3	15.6	16.2	13.1	13.4	13.6	13.9	14.5
12H	4H	12.9	13.4	13.4	13.9	14.4	11.2	11.7	11.7	12.2	12.6
	6H	13.9	14.3	14.4	14.8	15.3	12.0	12.4	12.6	12.9	13.4
	8H	14.4	14.8	15.0	15.3	15.8	12.6	13.0	13.1	13.4	14.0

Maximum UGR = 16.2

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L032113402.IES

POLAR GRAPH



Maximum Candela = 1728 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.)