



8165 E Kaiser Blvd. Anaheim, CA 92808
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Report No: L011504903

Date: 1/22/2015



NVLAP LAB CODE 200927-0

Report No: L011504903

Report Prepared For: Tempo
 1961 McGaw Ave, Irvine, CA 92614

Model Number: C4R00-06-1006-24ST35S-NA

Test: Electrical and Photometric tests

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. Catalog number is C4R00-06-1006-24ST35S-NA. Received in working and undamaged condition. No modifications were necessary.
 LED luminaire description: C4R, 2.4W/FT, LB01, 3500K, Nichia, 757

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 1/16/15

Date of Tests: 1/19/15 - 1/19/15

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-S1	11/10/15
Xitron Power Analysis System	2503AH	MT-EL01	10/20/15
BK Precision DC Power Supply	1747	PSDC-04	01/08/16
Fluke Digital Thermometer	52k/J	MT-TP02-GC	01/05/16
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

*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.

Test Summary

Manufacturer:	Tempo
Model Number:	C4R00-06-1006-24ST35S-NA
Driver Model Number:	N/A
Total Lumens:	195.96
Input Voltage (VDC):	12.00
Input Current (Amp):	0.21
Input Power (W):	2.48
Input Power Factor:	1.00
Current ATHD @ 12V(%):	N/A
Current ATHD @ 24V(%):	N/A
Efficacy:	79
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:40
Total Operating Time (Hours):	1:30
Off State Power(W):	0.00



FIG.1 LUMINAIRE

*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.

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°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°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°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°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 : Wilson Khounlavong

Test Report Released by:



Jeff Ahn
Engineering Manager

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 : L011504903.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST] L011504903
 [TESTLAB] LIGHT LABORATORY, INC.
 [ISSUEDATE] 1/22/2015
 [MANUFAC] TEMPO
 [LUMCAT] C4R00-06-1006-24ST35S-NA
 [LUMINAIRE] 6"L X 1-1/2"W X 1-1/4"H. LED LUMINAIRE
 [MORE] C4R, 2.4W/FT, LB01, 3500K,NICHIA, 757
 [BALLASTCAT] N/A
 [BALLAST] N/A
 [LAMPPOSITION] 0,0
 [LAMPCAT] N/A
 [OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
 [MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
 [POWER SUPPLY] 12VDC CONSTANT VOLTAGE SOURCE
 [INPUT] 12VDC, 2.48W
 [TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	196
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	79
Total Luminaire Watts	2.48
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.26
Spacing Criterion (90-270)	1.26
Spacing Criterion (Diagonal)	1.40
Basic Luminous Shape	Rectangular w/Sides
Luminous Length (0-180)	0.42 ft
Luminous Width (90-270)	0.04 ft
Luminous Height	0.02 ft

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L011504903.IES

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	37977	29418	27139
55	35340	25280	23758
65	31059	20720	17739
75	24717	12977	11210
85	17834	6511	4594

CANDELA TABULATION

	<u>0</u>	<u>5</u>	<u>10</u>	<u>15</u>	<u>20</u>	<u>25</u>	<u>30</u>	<u>35</u>	<u>40</u>	<u>45</u>
0	66.62	66.62	66.62	66.62	66.62	66.62	66.62	66.62	66.62	66.62
5	65.87	66.18	66.38	65.93	66.11	66.58	66.29	66.22	66.63	66.63
10	64.89	65.20	65.34	64.95	65.11	65.58	65.25	65.20	65.61	65.58
15	63.33	63.65	63.79	63.35	63.47	63.91	63.59	63.59	64.05	64.04
20	61.41	61.77	61.83	61.25	61.33	61.65	61.40	61.40	61.76	61.88
25	59.10	59.46	59.51	58.91	58.87	59.15	58.70	58.62	59.05	59.16
30	56.22	56.57	56.69	56.18	56.18	56.37	56.04	56.03	56.48	56.59
35	52.69	53.12	53.24	52.67	52.68	53.03	52.80	52.82	53.21	53.17
40	48.77	49.08	49.15	48.67	48.62	49.00	48.98	48.98	49.32	49.34
45	43.95	44.29	44.42	44.09	44.26	44.54	44.60	44.66	44.98	45.08
50	38.97	39.19	39.43	39.14	39.36	39.66	39.59	39.78	40.06	40.39
55	33.82	33.99	33.99	33.81	34.04	34.39	34.46	34.66	34.97	35.18
60	28.26	28.38	28.41	28.35	28.62	29.08	29.31	29.48	29.89	30.20
65	22.60	22.68	22.70	22.78	23.09	23.50	23.80	24.25	24.76	25.04
70	16.61	16.58	16.58	16.73	17.13	17.57	17.90	18.24	18.37	18.20
75	11.77	11.72	11.80	12.00	12.33	12.67	12.78	12.78	12.74	12.83
80	7.45	7.44	7.57	7.79	7.98	8.07	8.08	8.17	8.25	8.30
85	3.75	3.90	4.23	4.55	4.72	4.84	4.95	5.00	4.95	4.81
90	1.36	1.54	1.94	2.28	2.53	2.75	2.85	2.87	2.76	2.59
95	0.89	0.84	0.91	1.13	1.33	1.50	1.60	1.65	1.64	1.53
100	0.63	0.61	0.59	0.59	0.70	0.84	0.95	1.02	1.05	1.02
105	0.48	0.47	0.45	0.45	0.44	0.44	0.52	0.61	0.70	0.73
110	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.45	0.50	0.55
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.46	0.47
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Vert. Horizontal Angles
 Angles

	<u>50</u>	<u>55</u>	<u>60</u>	<u>65</u>	<u>70</u>	<u>75</u>	<u>80</u>	<u>85</u>	<u>90</u>
0	66.62	66.62	66.62	66.62	66.62	66.62	66.62	66.62	66.62
5	66.40	66.68	66.78	66.71	66.64	66.58	66.54	66.57	66.59
10	65.43	65.66	65.77	65.71	65.68	65.59	65.49	65.52	65.52
15	63.87	64.08	64.17	64.13	64.08	63.99	63.93	63.89	63.93
20	61.77	61.99	62.15	62.12	62.14	62.05	61.99	61.98	61.95
25	59.13	59.51	59.73	59.69	59.70	59.55	59.42	59.39	59.38
30	56.52	56.59	56.76	56.76	56.73	56.59	56.37	56.32	56.29
35	52.92	53.11	53.32	53.27	53.30	53.22	53.10	53.09	53.03
40	49.25	49.40	49.64	49.69	49.62	49.38	49.26	49.27	49.25
45	45.13	45.18	45.27	45.29	45.29	45.18	45.07	45.03	44.97
50	40.47	40.36	40.46	40.58	40.73	40.72	40.58	40.59	40.62
55	35.27	35.56	35.90	36.09	36.41	36.43	36.43	36.49	36.49
60	30.53	30.81	31.21	31.46	31.53	31.63	31.70	31.69	31.63

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CANDELA TABULATION - (Cont.)

65	25.12	25.26	25.25	25.10	24.92	24.60	24.30	24.24	24.27
70	18.12	18.13	17.98	17.85	17.74	17.73	17.72	17.73	17.79
75	12.93	12.93	12.79	12.79	12.88	12.93	12.98	12.97	12.99
80	8.22	8.12	8.09	8.14	8.13	8.05	8.02	8.02	8.03
85	4.62	4.52	4.46	4.38	4.32	4.26	4.22	4.20	4.20
90	2.46	2.34	2.24	2.15	2.09	2.06	2.03	2.00	1.98
95	1.40	1.31	1.22	1.17	1.13	1.09	1.07	1.07	1.06
100	0.97	0.93	0.90	0.88	0.86	0.84	0.84	0.82	0.82
105	0.75	0.75	0.75	0.74	0.73	0.73	0.72	0.72	0.72
110	0.59	0.61	0.64	0.64	0.64	0.65	0.65	0.65	0.65
115	0.49	0.52	0.54	0.55	0.57	0.58	0.58	0.58	0.58
120	0.00	0.50	0.50	0.50	0.52	0.52	0.53	0.54	0.53
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

IES INDOOR REPORT
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ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	24.33	N.A.	12.40
0-30	51.67	N.A.	26.40
0-40	84.86	N.A.	43.30
0-60	150.87	N.A.	77.00
0-80	188.08	N.A.	96.00
0-90	193.33	N.A.	98.70
10-90	187.02	N.A.	95.40
20-40	60.52	N.A.	30.90
20-50	95.08	N.A.	48.50
40-70	89.79	N.A.	45.80
60-80	37.21	N.A.	19.00
70-80	13.43	N.A.	6.90
80-90	5.25	N.A.	2.70
90-110	2.24	N.A.	1.10
90-120	2.58	N.A.	1.30
90-130	2.63	N.A.	1.30
90-150	2.63	N.A.	1.30
90-180	2.63	N.A.	1.30
110-180	0.39	N.A.	0.20
0-180	195.96	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	6.31
10-20	18.02
20-30	27.34
30-40	33.18
40-50	34.56
50-60	31.45
60-70	23.78
70-80	13.43
80-90	5.25
90-100	1.54
100-110	0.70
110-120	0.34
120-130	0.05
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

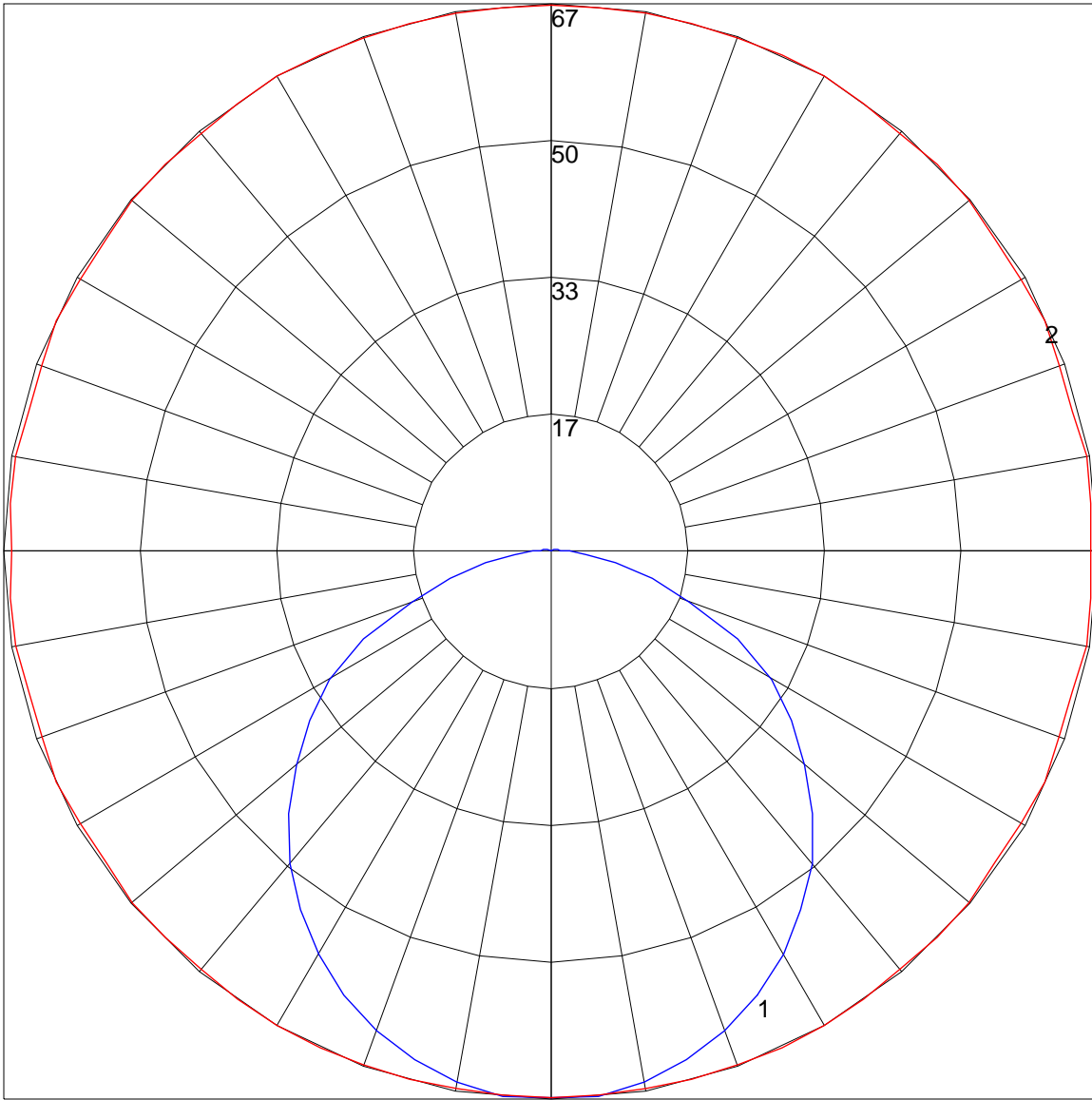
IES INDOOR REPORT
PHOTOMETRIC FILENAME : L011504903.IES

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

Effective Floor Cavity Reflectance 0.20

RC RW	80				70				50			30			10			0
	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	110	110	110	105	105	105	101	101	101	99
1	108	103	99	95	105	101	97	93	96	93	90	92	89	87	88	86	84	82
2	98	90	83	77	95	88	81	76	84	79	74	80	76	72	77	73	70	68
3	89	79	70	64	87	77	69	63	74	67	62	71	65	61	68	63	59	57
4	82	70	61	54	79	68	60	53	65	58	53	63	57	52	61	55	51	49
5	75	62	53	46	73	61	52	46	59	51	45	56	50	45	54	49	44	42
6	69	56	47	40	67	55	46	40	53	45	40	51	44	39	49	43	39	37
7	64	51	42	36	62	50	41	35	48	41	35	46	40	35	45	39	34	32
8	60	46	38	32	58	45	37	32	44	37	31	43	36	31	41	35	31	29
9	56	42	34	28	54	42	34	28	40	33	28	39	33	28	38	32	28	26
10	52	39	31	26	51	38	31	26	37	30	26	36	30	25	35	29	25	23

POLAR GRAPH



Maximum Candela = 66.78 Located At Horizontal Angle = 60, Vertical Angle = 5
1 - Vertical Plane Through Horizontal Angles (60 - 240) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (5) (Through Max. Cd.)