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Report No: L051603204

Date: 5/18/2016



NVLAP LAB CODE 200927-0

**Report No:** L051603204

**Report Prepared For:** Colt LED

**Model Number:** Bicolor GEN2-30W

**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 Bicolor GEN2-30W . Received in working and undamaged condition. No modifications were necessary.

**Testing Condition:** Fixture is tested with no special conditions.

**Sample Arrival Date:** 5/16/16

**Date of Tests:** 5/17/16 - 5/18/16

**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	11/18/16
Xitron Power Analyzer	2503AH	MT-EL01	11/30/16
ITECH DC Power Supply	IT6122	PSDC-03-S1	11/17/16
Fluke Digital Thermometer	52k/J	MT-TP02-GC	11/24/16
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**

<b>Manufacturer:</b>	Colt LED
<b>Model Number:</b>	Bicolor GEN2-30W
<b>Driver Model Number:</b>	N/A
<b>Total Lumens:</b>	1958.86
<b>Input Voltage (VAC/60Hz):</b>	120.00
<b>Input Current (Amp):</b>	0.25
<b>Input Power (W):</b>	29.75
<b>Input Power Factor:</b>	0.97
<b>Current ATHD @ 120V(%):</b>	18%
<b>Current ATHD @ 277V(%):</b>	N/A
<b>Efficacy:</b>	66
<b>Color Rendering Index (CRI):</b>	95
<b>Correlated Color Temperature (K):</b>	2955
<b>Chromaticity Coordinate x:</b>	0.4403
<b>Chromaticity Coordinate y:</b>	0.4055
<b>Ambient Temperature (°C):</b>	25.0
<b>Stabilization Time (Hours):</b>	0:50
<b>Total Operating Time (Hours):</b>	1:20
<b>Off State Power(W):</b>	0.00

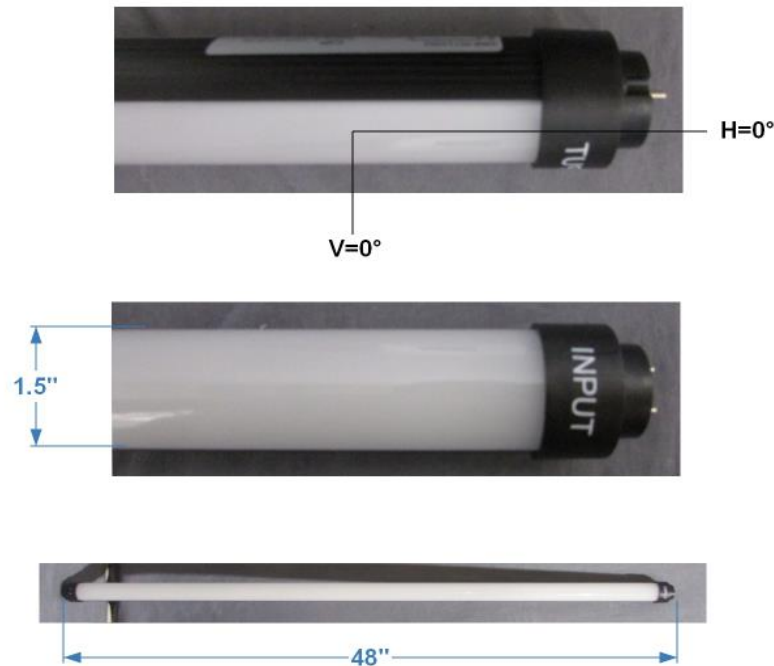
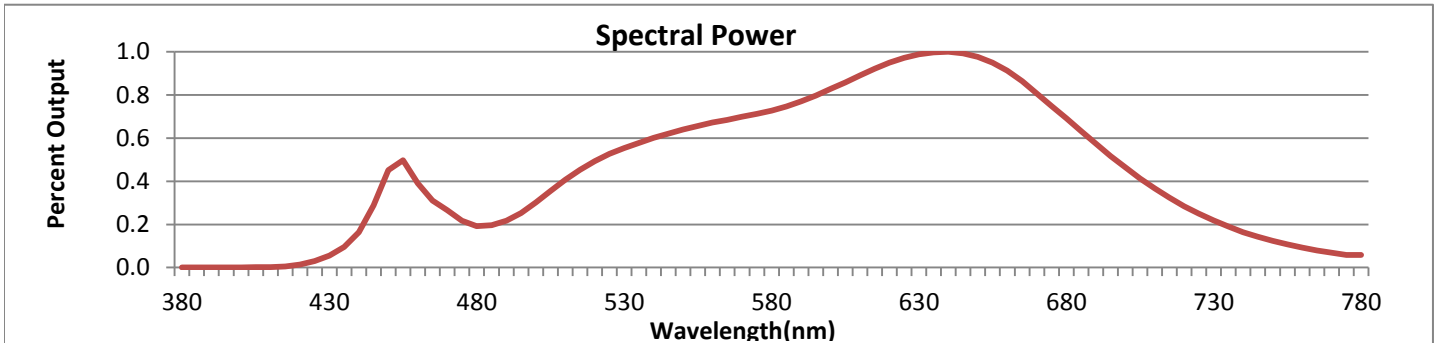


FIG. 1 LUMINAIRE

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



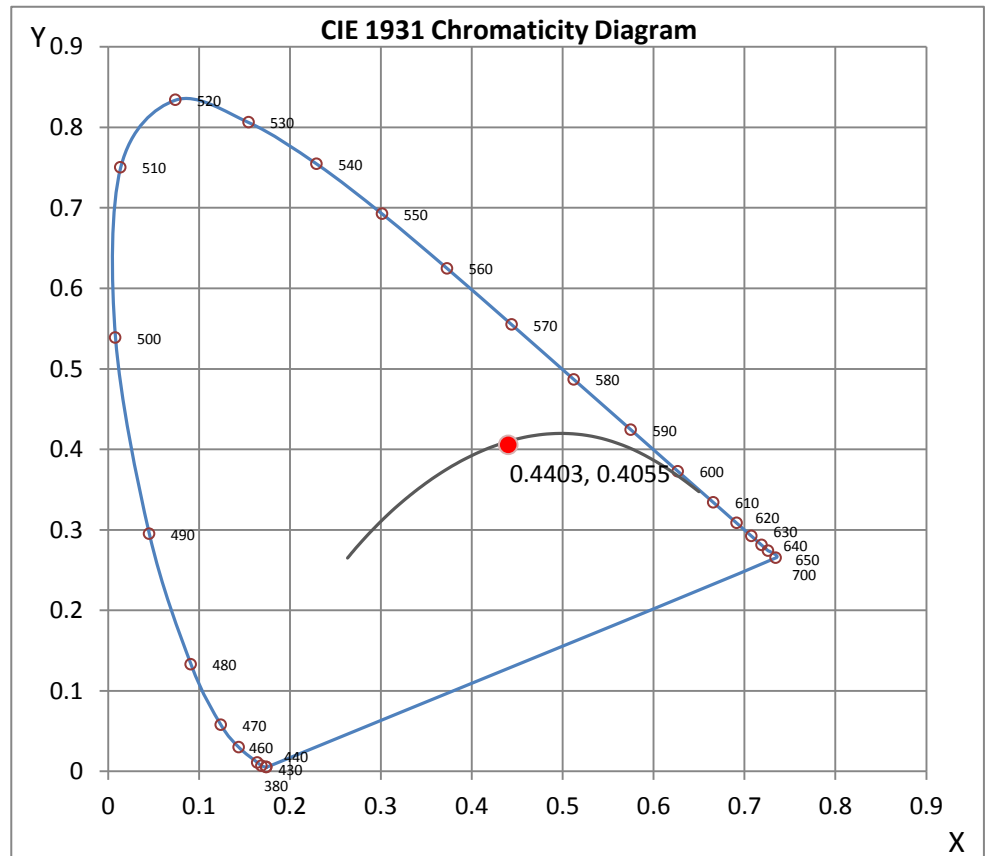
Wavelength	W/m <sup>2</sup> nm	440	0.1640	510	0.4069	580	0.7270	650	0.9776	720	0.2847
380	0.0009	450	0.4519	520	0.4929	590	0.7700	660	0.9130	730	0.2180
390	0.0008	460	0.3901	530	0.5545	600	0.8280	670	0.8060	740	0.1643
400	0.0010	470	0.2660	540	0.6009	610	0.8912	680	0.6922	750	0.1239
410	0.0022	480	0.1916	550	0.6397	620	0.9506	690	0.5749	760	0.0924
420	0.0142	490	0.2170	560	0.6724	630	0.9889	700	0.4643	770	0.0688
430	0.0548	500	0.3017	570	0.6989	640	1.0000	710	0.3669	780	0.0590

**CRI & CCT**

x	0.4403
y	0.4055
u'	0.2521
v'	0.5224
CRI	95.20
CCT	2955
Duv	0.00012

**R Values**

R1	96.58
R2	96.03
R3	92.84
R4	96.16
R5	94.83
R6	93.36
R7	97.66
R8	94.47
R9	85.25
R10	88.41
R11	95.34
R12	76.41
R13	96.36
R14	94.92



\*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 : Keyur Patel

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: 9*



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# Photometric Test Report

**IES INDOOR REPORT**  
**PHOTOMETRIC FILENAME : L051603204.IES**

## DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002  
 [TEST] L051603204  
 [TESTLAB] LIGHT LABORATORY, INC.  
 [ISSUEDATE] 5/18/2016  
 [MANUFAC] COLT LED  
 [LUMCAT] Bicolor GEN2-30W  
 [LUMINAIRE] LED 4 FOOT LAMP - TUNGSTEN  
 [BALLASTCAT] 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.  
 [INPUT] 120VAC, 29.75W  
 [TEST PROCEDURE] IESNA:LM-79-08

## CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	1959
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	66
Total Luminaire Watts	29.75
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.22
Spacing Criterion (90-270)	1.30
Spacing Criterion (Diagonal)	1.38
Basic Luminous Shape	Rectangular w/Sides
Luminous Length (0-180)	3.71 ft
Luminous Width (90-270)	0.13 ft
Luminous Height	0.04 ft

## LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	10624	9476	9640
55	10025	8865	9211
65	8995	8305	8982
75	7198	8024	9034
85	3344	8483	9775

**IES INDOOR REPORT**  
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**CANDELA TABULATION**

	<u>0.0</u>	<u>22.5</u>	<u>45.0</u>	<u>67.5</u>	<u>90.0</u>
<b>0</b>	549.06	549.06	549.06	549.06	549.06
<b>5</b>	545.45	545.79	546.29	546.88	547.97
<b>10</b>	536.81	537.32	538.70	540.13	541.59
<b>15</b>	522.38	523.14	526.03	528.93	530.60
<b>20</b>	502.33	504.38	508.83	513.24	516.59
<b>25</b>	477.66	481.02	487.39	494.40	498.47
<b>30</b>	449.64	452.36	461.51	471.83	476.57
<b>35</b>	416.33	421.28	433.28	447.08	452.74
<b>40</b>	380.84	386.88	402.15	418.89	427.49
<b>45</b>	340.56	349.46	368.17	389.94	399.80
<b>50</b>	304.90	311.99	332.97	357.68	370.43
<b>55</b>	261.86	272.85	301.38	329.45	341.07
<b>60</b>	218.65	232.83	267.40	299.24	312.12
<b>65</b>	174.44	192.73	233.42	268.78	282.59
<b>70</b>	130.30	154.26	200.91	239.12	253.47
<b>75</b>	86.92	119.81	171.41	210.72	225.28
<b>80</b>	45.73	88.85	143.77	183.66	198.52
<b>85</b>	14.68	61.84	118.51	158.58	172.59
<b>90</b>	0.50	41.83	96.57	135.84	149.85
<b>95</b>	0.00	27.77	77.69	114.32	128.04
<b>100</b>	0.00	18.00	61.33	96.28	107.65
<b>105</b>	0.00	11.79	47.87	78.87	90.03
<b>110</b>	0.00	8.01	36.75	63.85	73.92
<b>115</b>	0.00	5.75	27.77	50.43	59.49
<b>120</b>	0.00	4.36	20.60	39.43	46.57
<b>125</b>	0.00	3.73	15.19	29.95	35.74
<b>130</b>	0.00	3.40	10.99	22.11	26.93
<b>135</b>	0.00	3.15	8.14	15.94	19.38
<b>140</b>	0.00	2.94	6.17	11.41	13.68
<b>145</b>	0.00	2.77	4.87	8.14	9.48
<b>150</b>	0.00	2.73	4.03	6.13	6.96
<b>155</b>	0.00	2.64	3.48	4.74	5.29
<b>160</b>	0.00	0.00	3.15	3.78	4.11
<b>165</b>	0.00	0.00	2.94	3.19	3.36
<b>170</b>	0.00	0.00	2.81	2.85	2.94
<b>175</b>	0.00	0.00	0.00	2.81	2.85
<b>180</b>	0.00	0.00	0.00	0.00	0.00

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**ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-20	200.40	N.A.	10.20
0-30	425.15	N.A.	21.70
0-40	696.79	N.A.	35.60
0-60	1251.71	N.A.	63.90
0-80	1655.18	N.A.	84.50
0-90	1774.67	N.A.	90.60
10-90	1722.75	N.A.	87.90
20-40	496.38	N.A.	25.30
20-50	781.77	N.A.	39.90
40-70	783.99	N.A.	40.00
60-80	403.47	N.A.	20.60
70-80	174.41	N.A.	8.90
80-90	119.49	N.A.	6.10
90-110	127.34	N.A.	6.50
90-120	155.99	N.A.	8.00
90-130	171.26	N.A.	8.70
90-150	181.98	N.A.	9.30
90-180	184.20	N.A.	9.40
110-180	56.85	N.A.	2.90
0-180	1958.86	N.A.	100.00

Total Luminaire Efficiency = N.A.%

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	51.92
10-20	148.48
20-30	224.75
30-40	271.64
40-50	285.38
50-60	269.54
60-70	229.06
70-80	174.41
80-90	119.49
90-100	78.21
100-110	49.13
110-120	28.65
120-130	15.27
130-140	7.36
140-150	3.36
150-160	1.53
160-170	0.57
170-180	0.11

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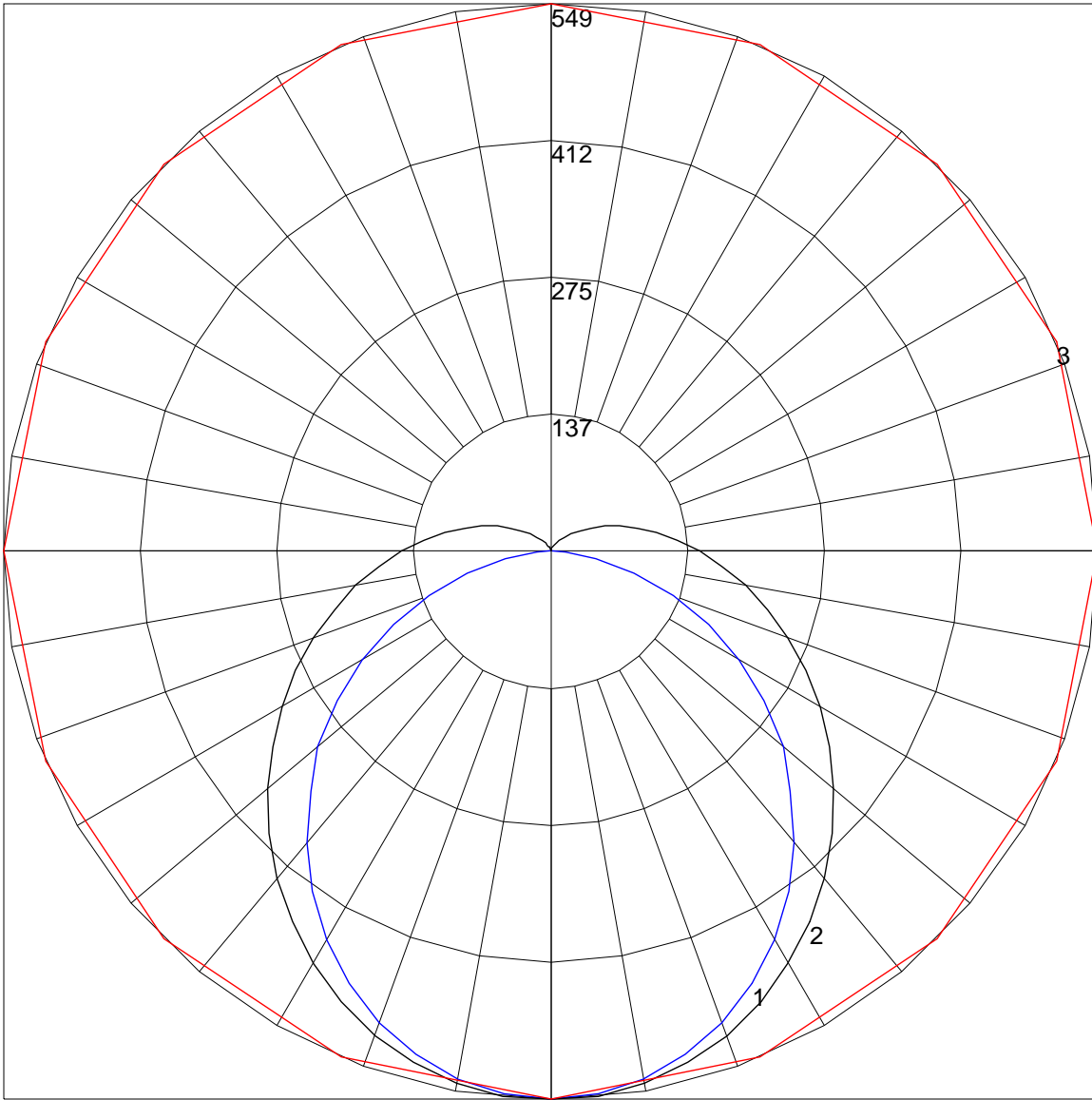
**COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD**

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	117	117	117	117	113	113	113	113	106	106	106	99	99	99	93	93	93	91
1	104	99	94	89	101	96	91	87	89	86	82	84	81	78	79	76	74	71
2	94	85	77	71	91	82	75	69	77	71	66	72	68	63	68	64	61	58
3	85	74	65	58	82	72	64	57	67	61	55	63	58	53	60	55	51	48
4	78	65	56	49	75	63	55	48	60	52	46	56	50	45	53	48	43	41
5	72	58	49	42	69	56	48	41	53	46	40	50	44	39	47	42	37	35
6	66	52	43	36	63	51	42	36	48	40	35	45	39	34	43	37	33	30
7	61	47	38	32	59	46	38	31	44	36	31	41	35	30	39	33	29	27
8	57	43	34	28	55	42	34	28	40	32	27	38	31	27	36	30	26	24
9	53	39	31	25	51	38	31	25	37	29	24	35	28	24	33	27	23	21
10	50	36	28	23	48	35	28	23	34	27	22	32	26	22	31	25	21	19



POLAR GRAPH



Maximum Candela = 549.06 Located At Horizontal Angle = 0, Vertical Angle = 0  
# 1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)  
# 2 - Vertical Plane Through Horizontal Angles (90 - 270)  
# 3 - Horizontal Cone Through Vertical Angle (0) (Through Max. Cd.)