

LM-79-08 Test Report

For

Green Logic LED Electrical Supply Inc.**(Brand Name: GLLUSA)**ShenFuBao Industry Park,Bonded area,Futian District,
Shenzhen, 518057, China**Integrated Retrofit Kits for 2x4 Luminaires**

Model name(s): 33-TR2-24-740-8XX-D-X-B

Remark: where the first XX represent for CCT, it can be 35 for 3500K, 40 for 4000K,
45 for 4500K, 50 for 5000K;the second X may be N stands for without Sensor, or S
stands for with Sensor;Representative (Tested) Model: 33-TR2-24-740-835-D-X-B
33-TR2-24-740-850-D-X-B

Model Different: All construction and rating are the same, except CCT

Test & Report By:

Bill Luo

Engineer: Bill Luo

Date: Sep.30,2017

Review By:

Tommy Liang

Manager: Tommy Liang

Note: 1.The results contained in this report pertain only to the tested samples.

2.This report does not imply product certification, approval, or endorsement by NVLAP, NIST,
or any agency of the Federal Government.**Laboratory: Standard-Tech Co. Ltd Testing Center****NVLAP CODE: 201011-0**

Report Format Number STD/QR4909-A/2

Address: Standard-Tech Building, No.6 Guanhong Road,Guangzhou Science City, Guangzhou 510663, China

Tel: 8620-3229 0320

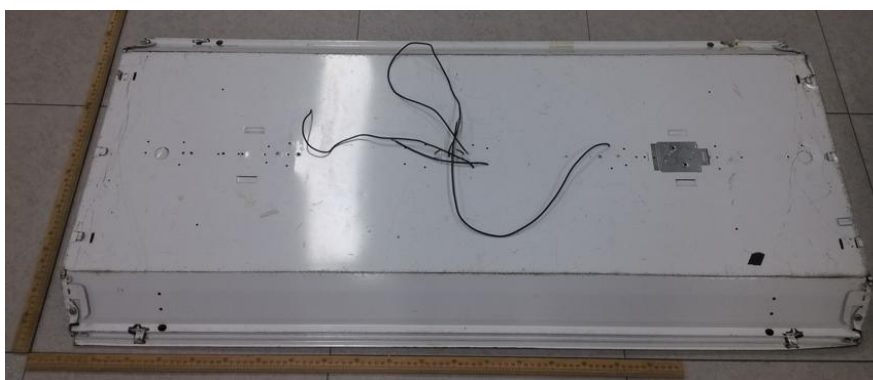
Fax: 8620-32290422

<http://www.standard-tech.com>

1.1 Product Information:

Organization Name	Green Logic LED Electrical Supply Inc.	
Brand Name	GLLUSA	
Model Number	33-TR2-24-740-8XX-D-X-B	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Integrated Retrofit Kits for 2x4 Luminaires	
Rated Voltage / Frequency	120-277Vac, 60Hz	
Nominal Power	40W	
Rated Initial Lamp Lumen	--	
Declared CCT	3500K,4000K,4500K,5000K	
Sample Number	GZE1709086-D1(3500K), A2(5000K)	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Photo



1.2 Test Specifications:

Date of Receipt	Sep.30,2017
Date of Test	Sep.30,2017
Test item	<ol style="list-style-type: none"> 1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	<ol style="list-style-type: none"> 1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

1.3 Test Methods

<p>1) Photometric and Light Distribution Measurement – Goniophotometer Method: Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25° C ± 1° C, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals.</p>
<p>2) Chromaticity Measurement – Sphere-Spectroradiometer Method: Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25° C ± 1° C. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.</p>
<p>3) Electrical Measurements: Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at 25° C ± 1° C. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.</p>

2.1 Electrical, Photometric and Chromaticity Measurements
(Refer to Work Instruction QD25)

Test date	2017-09-30	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	33-TR2-24-740-835-D-X-B		

Electrical Measurement in Lithonia Lithonia 2GT8 lensed 2x4:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE170908	120.0	60	0.3390	40.45	0.9942	7.18
6-D1	277.0	60	0.1498	39.58	0.9536	14.06
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

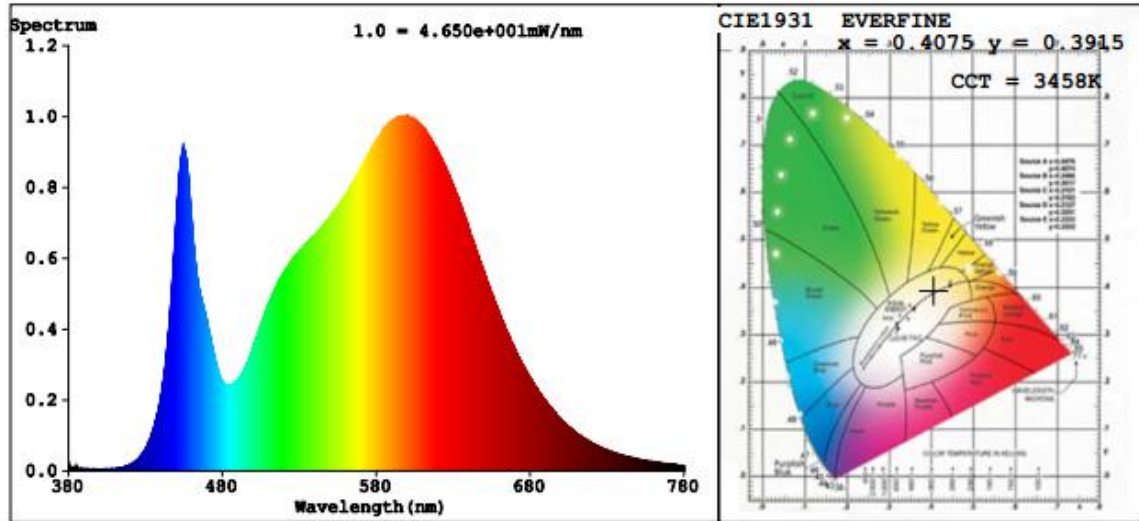
Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia 2GT8 lensed 2x4:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	82	R9	10
Frequency (Hz)	60	R2	91	R10	78
CCT (K)	3458	R3	96	R11	78
Duv	-0.0001	R4	80	R12	61
Chromaticity (x, y)	x=0.4075 y=0.3915	R5	81	R13	84
Chromaticity (u', v')	u'=0.2368 v'=0.5119	R6	87	R14	98
Color Rendering Index (CRI)	82.9	R7	84	R15	75
R9	10	R8	62	--	--

Photometric Measurement – Goniophotometer Method in Lithonia 2GT8 lensed 2x4:

Parameter	Result		DLC V4.2 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60	--	
Total Luminous (lm)	5086.6	5004.1	>=3000(-10%)	
Luminous Efficacy (lm/W)	125.75	126.43	Standard: >=	Premium: >=
Most Worst Luminous/Highest Watts	123.71		100(-3%)	125(-3%)
Zonal lumens in the 0-60° zone (%)	77.9	--	>= 75(-3)	
SC: 0-180° (if applicable)	1.24	--	1.0-2.0(±0.1)	
SC: 90-270° (if applicable)	1.21	--	1.0-2.0(±0.1)	
Beam Angle (°)	106.8	--	--	
Center Beam Candle Power (cd)	1849	--	--	

Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1,413.2	27.8%
0-40	2,289.4	45%
0-60	3,959.7	77.9%
60-90	1,125.8	22.1%
70-100	516.3	10.2%
90-120	0.5	0%
0-90	5,085.5	100%
90-180	0.6	0%
0-180	5,086.1	100%

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	%Total
0-10	174.6	3.4%	90-100	0.3	0%
10-20	496.6	9.8%	100-110	0.1	0%
20-30	742.0	14.6%	110-120	0.1	0%
30-40	876.2	17.2%	120-130	0.0	0%
40-50	886.2	17.4%	130-140	0.0	0%
50-60	784.2	15.4%	140-150	0.0	0%
60-70	609.8	12.0%	150-160	0.0	0%
70-80	405.7	8.0%	160-170	0.0	0%
80-90	110.3	2.2%	170-180	0.0	0%

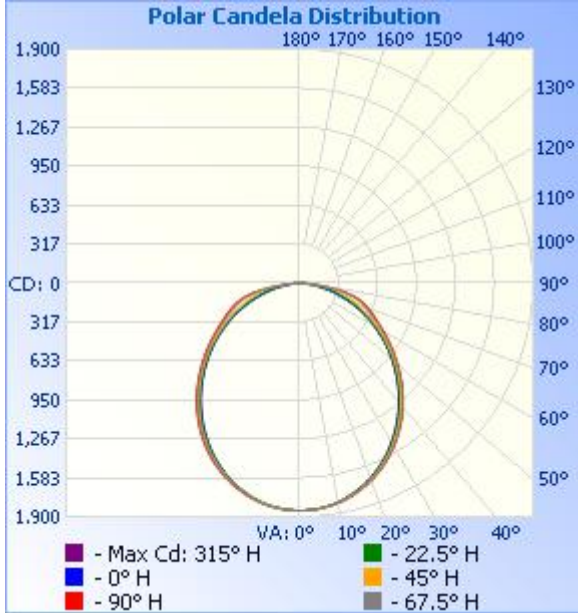
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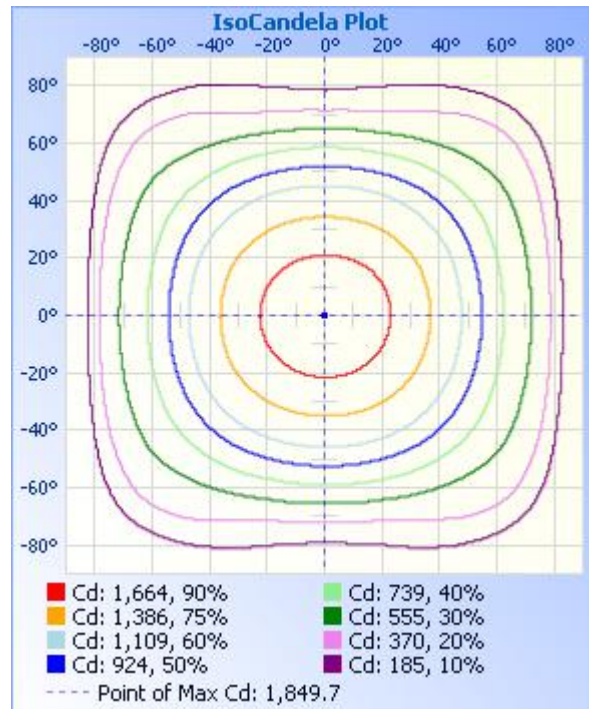
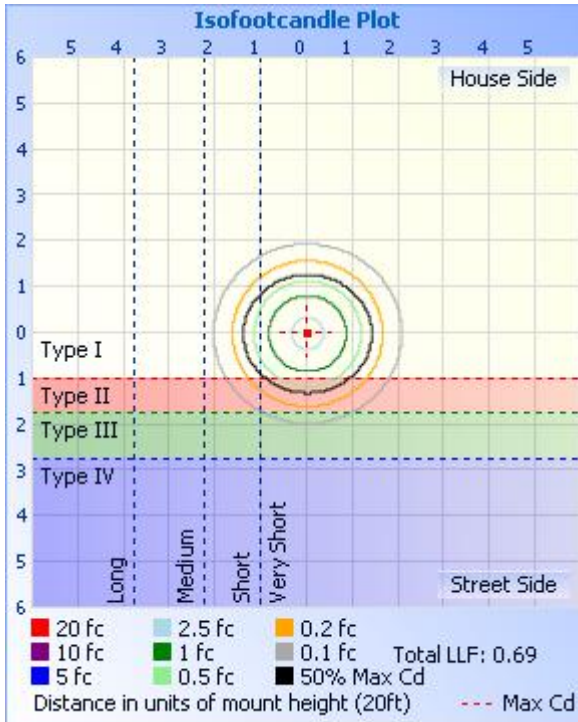
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	6.40 fc	43.8 ft	47.8 ft
34.0ft	1.60 fc	87.6 ft	95.7 ft
51.0ft	0.71 fc	131.4 ft	143.5 ft
68.0ft	0.40 fc	175.2 ft	191.3 ft
85.0ft	0.26 fc	219.1 ft	239.1 ft
102.0ft	0.18 fc	262.9 ft	287.0 ft

■ Vert. Spread: 104.4°
■ Horiz. Spread: 109.2°



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Table--1

UNIT: cd

C (DEG) \ γ (DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338
0	1849	1849	1849	1849	1849	1849	1849	1849	1849	1849	1849	1849	1849	1849	1849	1849
5	1840	1839	1841	1839	1838	1839	1840	1840	1840	1839	1836	1838	1838	1837	1838	1839
10	1813	1814	1815	1809	1807	1808	1810	1812	1813	1809	1807	1804	1806	1805	1808	1811
15	1768	1769	1767	1758	1754	1757	1763	1768	1769	1763	1759	1753	1754	1755	1759	1764
20	1705	1705	1701	1688	1685	1688	1696	1704	1707	1699	1692	1683	1683	1684	1692	1700
25	1625	1626	1619	1602	1597	1602	1613	1625	1628	1620	1609	1597	1594	1598	1608	1618
30	1531	1530	1520	1501	1494	1502	1514	1530	1534	1525	1512	1494	1491	1498	1510	1523
35	1423	1421	1408	1386	1379	1388	1404	1422	1426	1417	1400	1381	1375	1383	1399	1413
40	1303	1301	1285	1262	1255	1265	1281	1303	1307	1297	1277	1257	1250	1259	1276	1293
45	1174	1172	1153	1132	1124	1133	1151	1175	1179	1169	1146	1124	1119	1128	1145	1163
50	1042	1038	1016	996	988	995	1016	1041	1046	1034	1010	986	981	991	1009	1029
55	912	903	877	855	850	856	877	907	916	901	871	845	841	849	870	895
60	787	775	741	713	708	714	741	779	792	774	736	703	699	708	734	769
65	678	657	613	573	566	573	612	661	682	658	607	563	555	566	605	652
70	589	562	495	437	424	437	494	567	594	564	489	428	413	428	486	558
75	483	465	399	311	286	311	398	470	493	469	395	302	274	302	388	460
80	299	306	288	204	157	200	294	318	317	312	285	195	147	192	281	305
85	81.8	90.6	102	101	55.4	104	113	98.5	91.1	90.0	96.8	92.1	48.6	94.5	97.9	88.2
90	0.41	0.31	0.47	0.43	0.26	0.59	0.82	0.52	0.30	0.36	0.15	0.00	0.46	10.9	0.10	0.10
95	0.00	0.36	0.00	0.26	0.21	0.11	0.20	0.15	0.00	0.00	0.00	0.00	0.77	0.26	0.00	0.00
100	0.00	0.00	0.00	0.26	0.28	0.05	0.00	0.00	0.00	0.00	0.00	0.00	1.17	0.29	0.00	0.00
105	0.00	0.00	0.00	0.36	0.36	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.66	0.20	0.00	0.00
110	0.00	0.00	0.00	0.43	0.31	0.31	0.20	0.00	0.00	0.00	0.00	0.00	0.36	0.00	0.00	0.00
115	0.00	0.00	0.05	0.11	0.22	0.05	0.31	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0.00	0.00	0.15	0.00	0.00	0.00	0.41	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125	0.00	0.00	0.15	0.00	0.00	0.00	0.39	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0.00	0.00	0.15	0.00	0.00	0.00	0.26	0.09	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	0.20	0.10	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	0.10	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	0.00	0.00	0.05	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	0.00	0.05	0.26	0.05	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	0.00	0.05	0.31	0.31	0.10	0.00
160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.31	0.30	0.31	0.00
165	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.33	0.36	0.36	0.00
170	0.00	0.00	0.00	0.17	0.32	0.36	0.00	0.00	0.00	0.00	0.00	0.05	0.34	0.40	0.40	0.00
175	0.00	0.00	0.00	0.23	0.42	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.26	0.31	0.00
180	0.00	0.00	0.00	0.25	0.41	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.36	0.31	0.00

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2.2 Electrical, Photometric and Chromaticity Measurements
(Refer to Work Instruction QD25)

Test date	2017-09-30	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	33-TR2-24-740-850-D-X-B		

Electrical Measurement in Lithonia 2GT8 lensed 2x4:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE170908	120.0	60	0.3363	40.11	0.9939	7.27
6-D2	277.0	60	0.1494	39.49	0.9541	14.62
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

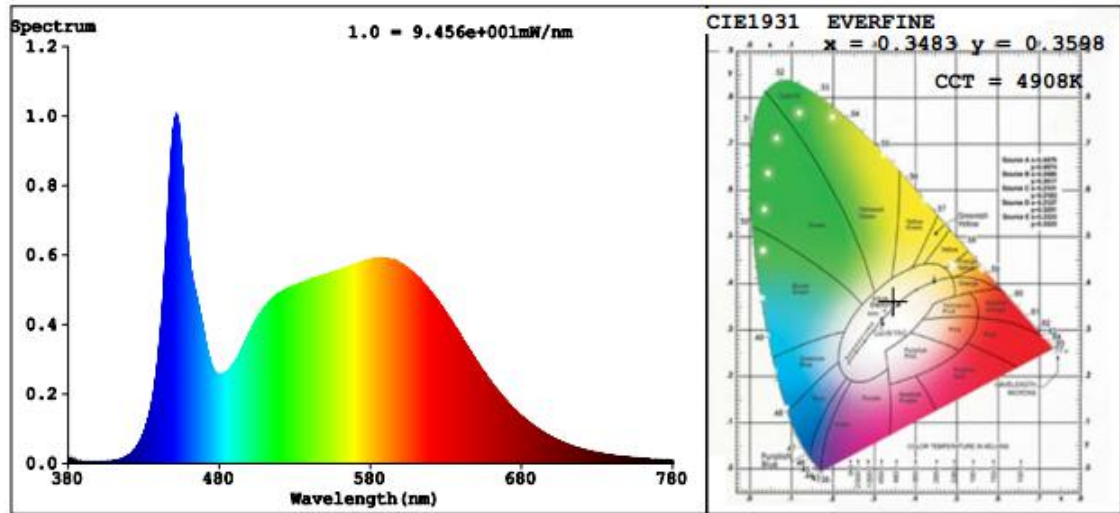
Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia 2GT8 lensed 2x4:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	83	R9	17
Frequency (Hz)	60	R2	91	R10	77
CCT (K)	4908	R3	95	R11	83
Duv	0.0028	R4	83	R12	58
Chromaticity (x, y)	x=0.3483 y=0.3598	R5	83	R13	86
Chromaticity (u', v')	u'=0.2104 v'=0.4891	R6	86	R14	98
Color Rendering Index (CRI)	84.9	R7	89	R15	78
R9	17	R8	70	--	--

Photometric Measurement – Sphere-Spectroradiometer Method in Lithonia 2GT8 lensed 2x4:

Parameter	Result		DLC V4.2 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60	--	
Total Luminous (lm)	5115	5082	>=3000(-10%)	
Luminous Efficacy (lm/W)	127.52	128.69	Standard: >=	Premium: >=
Most Worst Luminous/Highest Watts	126.70		100(-3%)	125(-3%)

Spectral Power Distribution & Chromaticity Diagram



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2.3 Performance Assessment:

Model name	CCT(K)	Total Luminous (lm)	Power (W)	Luminous Efficacy (lm/W)
33-TR2-24-740-835-D-X-B	3500K	5086.6	40.45	125.75
33-TR2-24-740-840-D-X-B	4000K	5096* ¹	40.28* ²	126.51* ³
33-TR2-24-740-845-D-X-B	4500K	5105* ¹	40.28* ²	126.74* ³
33-TR2-24-740-850-D-X-B	5000K	5115	40.11	127.52

*1: This value is calculated and the calculation formula is as below:

$$5096=(5115-5086.6)/3+5086.6$$

$$5105=(5115-5086.6)/3+5096$$

*2: This value is calculated and the calculation formula is as below:

$$40.28=(40.45+40.11)/2$$

*3: This value is calculated and the calculation formula is as below:

$$126.51=5096/40.28$$

$$126.74=5105/40.28$$

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-331	2 meter Integrating Sphere	2017-07-01	2018-06-30
ST-R-327	Spectral analysis system HAAS-2000	2017-07-01	2018-06-30
D204	Standard Lamp	2017-07-12	2018-07-11
PF2010	Power Meter for Integrating Sphere	2017-07-01	2018-06-30
GO-R5000	Goniophotometer system	2017-07-01	2018-06-30
D908S	Standard Lamp	2017-07-12	2018-07-11
PF210	Power Meter for Goniophotometer	2017-07-07	2018-07-06

Expand Uncertainty:
Photometric Measurement (Sphere):2.04%, k=2
Chromaticity Measurement(Sphere):28.8K, k=2
Photometric Measurement(Goniophotometer):2.36%, k=2

******* END OF REPORT *******

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