LM-79-08 Test Report

For

CEA GROUP INTERNATIONAL CO.,LTD

(Brand Name: CEA/EAEC)

Sanjiali Industrial Zone Zhucheng Road Panshi North baixiang Yueqing Zhejiang China

Architectural Flood and Spot Luminaires and Industrial buildings

Model name(s): CSFL-10X

Remark:The letter 'X' in the model name stand for different mounting arm. It could be blank, stand for large u-shaped iron. It could be "A", stand for rocker arm.

Representative (Tested) Model: CSFL-10(2700K)
CSFL-10(5700K)

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

Test & Report By:

Peeta Cao

Engineer: Peeta Cao

Date:Mar.10,2016

Review By:

Tommy Liang

Manager: Tommy Liang

Note: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

NVLAP LAB CODE 201011-0

Model name	CCT(K)	Total Luminous (lm)	Power (W)	Luminous Efficacy (lm/W)
CSFL-10(2700K)	2700K	909.30	10.39	87.52
CSFL-10(3000K)	3000K	918.3[*1]	10.38[*2]	88.47[*3]
CSFL-10(3500K)	3500K	927.3[*1]	10.38[*2]	89.33[*3]
CSFL-10(4000K)	4000K	936.3[*1]	10.38[*2]	90.20[*3]
CSFL-10(4500K)	4500K	945.2[*1]	10.38[*2]	91.06[*3]
CSFL-10(5000K)	5000K	954.2[*1]	10.38[*2]	91.93[*3]
CSFL-10(5700K)	5700K	963.2	10.37	92.88

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

918.3= (963.2-909.30) /6+909.30

927.3=(963.2-909.30) /6+918.3

936.3=(963.2-909.30) /6+927.3

945.2=(963.2-909.30) /6+936.3

954.2=(963.2-909.30) /6+945.2

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

9.826=(9.890+9.761)/2

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

93.46=918.3/9.826

94.37=927.3/9.826

95.29=936.3/9.826

96.20=945.2/9.826

97.12=954.2/9.826

U.S. Department of Energy

Lighting Facts™ Uniform LM-79 Reporting Template

Laboratory Information:

Name of Test Laboratory	Standard-Tech Co., Ltd.
Date of Test Report	Mar.10,2016
Test Report No.	STD1602034NB-D
Laboratory Contact Name	Tommy Liang

Product Information:

Organization Name	CEA GROUP INTERNATIONAL CO.,LTD	
Brand Name	CEA/EAEC	
Model Number	CSFL-10(2700K)	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Architectural Flood and Spot Luminaires and Industrial buildings	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Electrical Measurements:	**Integrating Sphere Output**	**Goniophotometer Output**	
Input Wattage	--	10.39	W
Input Current	--	0.0907	A
Input Voltage (ac)	--	120.0	V
Power Factor	--	0.9542	
Off-State Power	--	0	W
Photometric Characteristics			
Total Initial Lumen Output	--	909.30	lm
Initial Lumen Efficacy	--	87.52	lm/w
Correlated color temperature / CCT	2795		K
Color rendering index / CRI	80.0		
R9 Value	0		
Duv	-0.0020		
Luminous Intensity Distribution			
Center beam candlepower (if applicable)	-----	367	cd
Beam angle (if applicable)		104.8	°
Zonal lumens in the 0 °-60 °zone		90	%
Zonal lumens in the 60 °-90 °zone		10	%
Zonal lumens in the 90 °-120 °zone		0	%
Zonal lumens in the 120 °-180 °zone		0	%

NVLAP LAB CODE 201011-0

U.S. Department of Energy

Lighting Facts™ Uniform LM-79 Reporting Template

Laboratory Information:

Name of Test Laboratory	Standard-Tech Co., Ltd.
Date of Test Report	Mar.10,2016
Test Report No.	STD1602034NB-D
Laboratory Contact Name	Tommy Liang

Product Information:

Organization Name	CEA GROUP INTERNATIONAL CO.,LTD	
Brand Name	CEA/EAEC	
Model Number	CSFL-10(5700K)	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Architectural Flood and Spot Luminaires and Industrial buildings	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Electrical Measurements:	**Integrating Sphere Output**	**Goniophotometer Output**	
Input Wattage	10.37	--	W
Input Current	0.0903	--	A
Input Voltage (ac)	120.0	--	V
Power Factor	0.9574	--	
Off-State Power	0	--	W

Photometric Characteristics

Total Initial Lumen Output	963.2	--	lm
Initial Lumen Efficacy	92.88	--	lm/w
Correlated color temperature / CCT	5504	--	K
Color rendering index / CRI	85.2	--	
R9 Value	14	--	
Duv	0.0024	--	
Luminous Intensity Distribution			
Center beam candlepower (if applicable)	-----		cd
Beam angle (if applicable)			°
Zonal lumens in the 0 °-60 °zone			%
Zonal lumens in the 60 °-90 °zone			%
Zonal lumens in the 90 °-120 °zone			%
Zonal lumens in the 120 °-180 °zone			%

Test Specifications:	
Date of Receipt	:Dec.17,2015
Date of Test	:Dect.19,2015
Test item	: Total Luminous Flux, Luminous Distribution Intensity, Luminous Efficacy, Correlated Color Temperature, Color Rendering Index, Chromaticity Coordinate, Electrical parameters
Reference Standard	IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources CIE 15-2004 Technical Report Colorimetry IESNA LM-16-93 Practical Guide to Colorimetry of Light Source IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

Test Methods

1. Photometric and Electrical measurements – Light Distribution 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 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.

2. Photometric and Electrical Measurements – Integrating Sphere Method:

Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25 ºC ±1 ºC. 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 Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at least 5 nm intervals over the range of 380 to 780 nm.

1. Product Information:

Brand Name	CEA /EAEC
Model Number	CSFL-10X
Luminaire Type	Architectural Flood and Spot Luminaires and Industrial buildings
Rated Voltage / Frequency	100~ 277Vac, 50/60Hz
Nominal Power	10W
Rated Initial Lamp Lumen	--
Declared CCT	2700K,3000K,3500K,4000K,4500K,5000K,5700K
LED Manufacturer	Chuang Te LED
LED Model	CT-5730
Sample Receipt Date	Dec.17,2015
Sample Number	STD1602034NB-D1(2700K),D2(5700K)
Photo	
CSFL-10	
	
CSFL-10A	
	

2.1 Electrical, Photometric and Chromaticity Measurements *(Refer to Work Instruction QD25)*	**IES LM-79 2008**

Test date	2015-12-19	**Test Ambient:**	25.2 ℃
Test Orientation	As intended	**Stabilization Time (min)**	90
Model Number	CSFL-10(2700K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD160203	120.0	60	0.0907	10.39	0.9542	10.26
4NB-D1	277.0	60	0.0414	10.45	0.9017	13.30

Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	80.0
R9	0
CCT (K)	2795
Chromaticity (x, y)	x=0.4490 =0.4027
Chromaticity (u', v')	u'=0.2590 '=0.5227
Duv	-0.0020

Special Color Rendering Indices			
R1	79	R9	0
R2	93	R10	85
R3	91	R11	75
R4	76	R12	75
R5	80	R13	83
R6	92	R14	96
R7	77	R15	71
R8	51	--	--

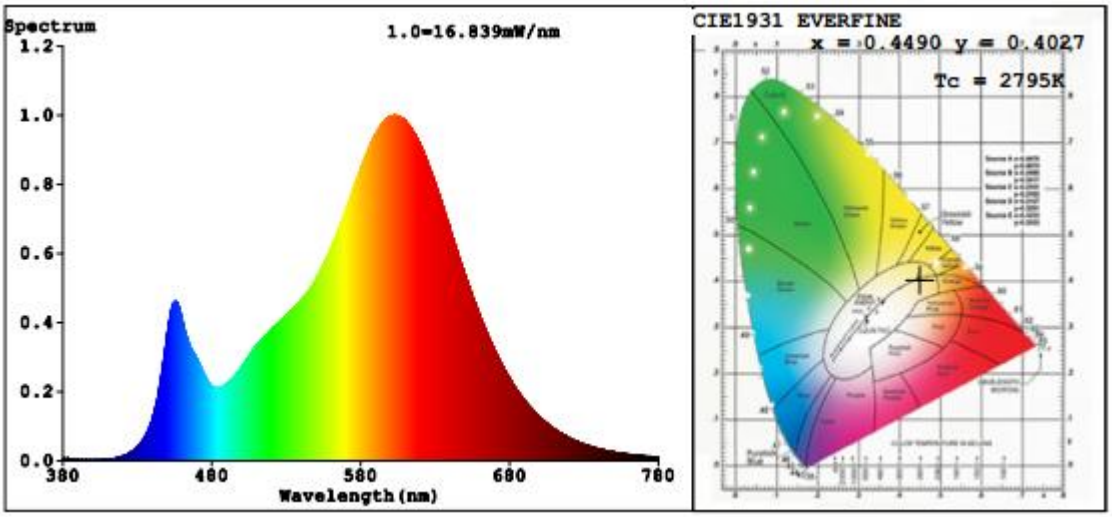
Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	909.30
Luminous Efficacy (lm/W)	87.52
Beam Angle °	104.8
Center Beam Candle Power (cd)	367

Goniophotometer Method:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	921.70
Luminous Efficacy (lm/W)	88.20

Spectral Power Distribution & Chromaticity Diagram

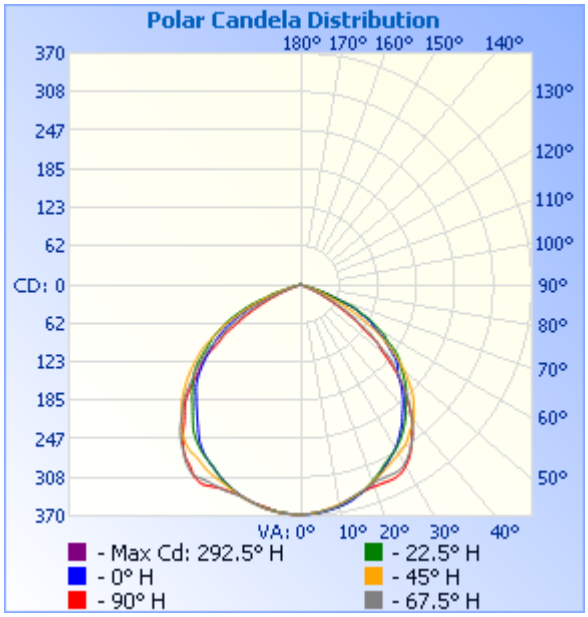


Zonal Lumen Tabulation

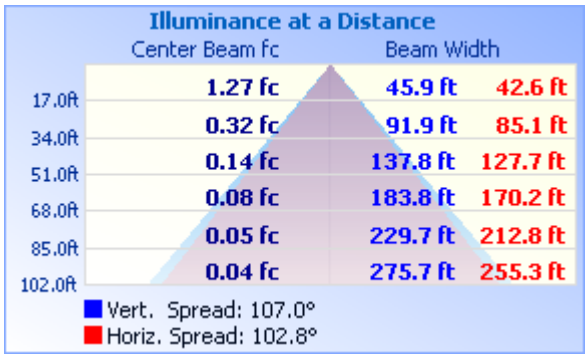
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	286.9	31.6%
0-40	476.0	52.4%
0-60	818.3	90%
60-90	90.9	10%
70-100	12.7	1.4%
90-120	0.0	0%
0-90	909.2	100%
90-180	0.0	0%
0-180	909.2	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	34.7	3.8%	90-100	0.0	0%
10-20	99.0	10.9%	100-110	0	0%
20-30	153.3	16.9%	110-120	0	0%
30-40	189.1	20.8%	120-130	0.0	0%
40-50	190.2	20.9%	130-140	0.0	0%
50-60	152.1	16.7%	140-150	0.0	0%
60-70	78.2	8.6%	150-160	0.0	0%
70-80	11.9	1.3%	160-170	0.0	0%
80-90	0.7	0.1%	170-180	0.0	0%

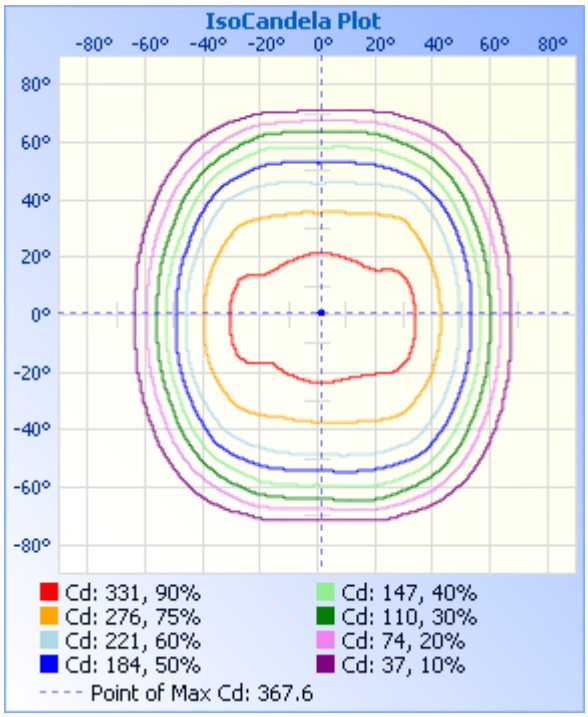
Photometric Data



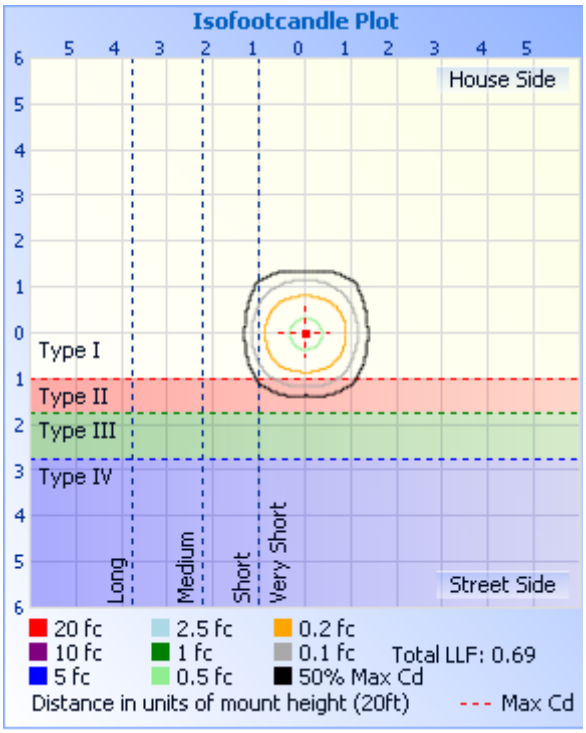
Illuminance Plots



ISOCANDELA DIAGRAM



ISOLUX DIAGRAM



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Candela Table - Type C

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	367	367	367	367	367	367	367	367	367	367	367	367	367	367	367	367	367
1	367	367	367	367	367	367	367	367	367	367	367	**368**	367	**368**	**368**	367	367
2	367	367	367	366	366	366	366	367	367	367	367	**368**	367	**368**	**368**	**368**	367
3	367	367	366	366	366	366	366	366	366	367	367	367	367	367	367	367	367
4	366	366	365	365	365	366	366	366	366	366	366	367	367	367	367	367	366
5	366	365	364	364	364	365	365	365	365	366	366	367	366	366	366	366	366
6	365	364	363	363	364	364	364	364	365	365	365	366	365	365	365	365	365
7	364	362	361	362	362	363	362	363	364	364	364	365	363	363	364	364	364
8	363	361	360	361	361	361	361	362	363	363	364	363	362	362	362	363	363
9	362	360	358	360	359	359	359	361	362	361	362	362	360	360	360	362	362
10	360	359	357	358	358	357	357	359	361	360	361	361	359	359	358	360	360
11	359	357	355	355	356	355	355	357	359	359	360	359	358	358	357	358	359
12	357	355	354	353	354	353	353	355	357	357	358	358	357	357	356	356	357
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25	320	317	324	336	344	341	326	323	325	325	335	348	354	342	326	321	320
26	317	314	321	337	344	341	324	320	322	322	334	348	356	341	323	318	317
27	313	311	319	337	343	341	322	316	320	320	332	348	355	341	321	315	313
28	310	309	317	336	341	340	320	313	317	317	329	349	353	341	320	311	310

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42	245	252	271	261	258	269	272	250	249	259	284	284	277	280	283	256	245
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89	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
103	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
104	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
106	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
108	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
109	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
116	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
117	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
119	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
121	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
124	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
128	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
129	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
131	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
132	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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142	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
143	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
144	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
146	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
149	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
153	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
161	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
162	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
164	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
166	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
167	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
168	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
171	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
173	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
174	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
176	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
177	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
178	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
179	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

2.2 Electrical, Photometric and Chromaticity Measurements *(Refer to Work Instruction QD25)*	**IES LM-79 2008**

Test date	2015-12-19	**Test Ambient:**	25.2 ℃
Test Orientation	As intended	**Stabilization Time (min)**	90
Model Number	CSFL-10(5700K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD160203	120.0	60	0.0903	10.37	0.9574	10.39
4NB-D2	277.0	60	0.0421	10.51	0.9015	13.24

Sphere-Spectroradiometer Method:

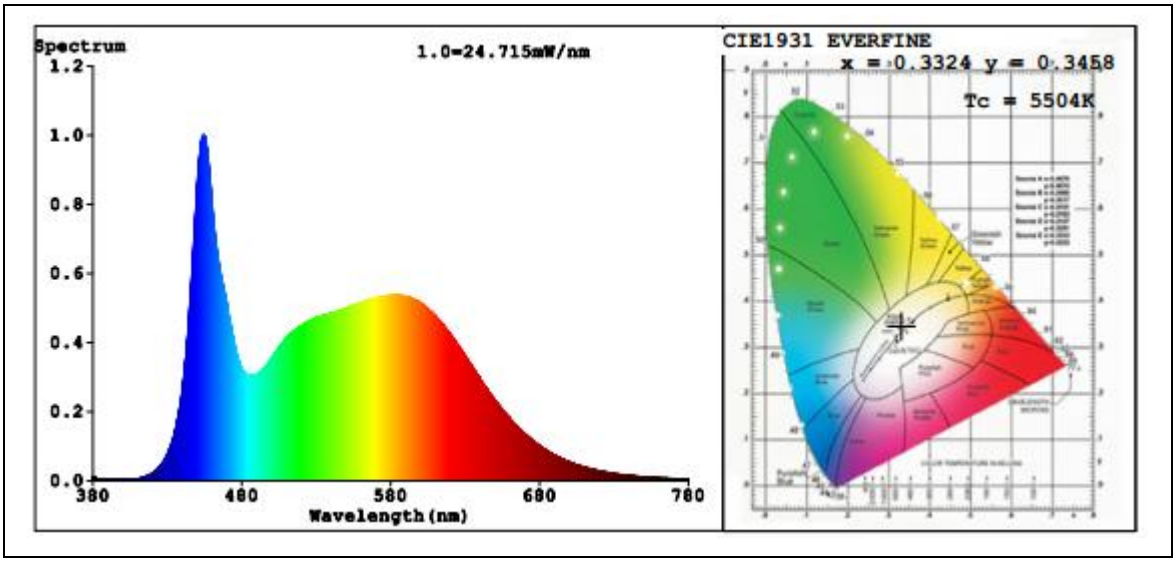
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	85.2
R9	14
CCT (K)	5504
Chromaticity (x, y)	x=0.3324 y=0.3458
Chromaticity (u', v')	u'=0.2050 v'=0.4799
Duv	0.0024
Total Initial Lumen Output(lm)	963.2
Initial Lumen Efficacy(lm/w)	92.88

Special Color Rendering Indices			
R1	84	R9	14
R2	93	R10	83
R3	95	R11	82
R4	82	R12	63
R5	84	R13	88
R6	89	R14	98
R7	86	R15	79
R8	68	--	--

Sphere-Spectroradiometer Method for 277V:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Initial Lumen Output(lm)	979.0
Initial Lumen Efficacy(lm/w)	93.15

Spectral Power Distribution & Chromaticity Diagram



3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-336	2 meter Integrating Sphere	2015-07-01	2016-06-30
ST-R-331	Spectral analysis system HAAS-2000	2015-07-01	2016-06-30
D204	Standard Lamp	2015-07-01	2016-06-30
PF2010	Power Meter for Integrating Sphere	2015-07-01	2016-06-30
EE-09	Goniophotometer system	2015-07-01	2016-06-30
D908S	Standard Lamp	2015-07-01	2016-06-30
PF210	Power Meter for Goniophotometer	2015-07-01	2016-06-30
ST-R-181A	Temperature Tester	2015-07-01	2016-06-30
Uncertainty: Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

****** END OF DATASHEET PACKAGE ******