

# PUREEDGE LIGHTING LLC

## TEST REPORT

### SCOPE OF WORK

LED Performance Testing

### MODEL NUMBER

CFDW-7W-\*\*\*-23-\*\*K-\*\*

### PROJECT NUMBER

G104797632

### REPORT NUMBER

104797632CHI-038

### ISSUE DATE

7/21/2022

### REVISED DATE

None

### TEST DATES

2022-06-28 through 2022-07-21.

### DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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**REPORT NUMBER**

104797632CHI-038

**MODEL NUMBER(s)**

CFDW-7W-\*\*\*-23-\*\*K-\*\*

**REPORT RENDERED TO:**

PUREEDGE LIGHTING LLC  
1718 W. FULLERTON AVE  
CHICAGO, IL 60614  
USA

**STATEMENT OF LIMITATION**

NVLAP Lab Code 600186-0. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

**AUTHORIZATION**

The testing performed was authorized by signed quote number Qu-01199885-2.

**TEST STANDARDS**

IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting

ANSI/IES LM-79-19 Optical and Electrical Measurements of Solid-State Lighting Products

ANSI NEMA ANSLG C78.377: 2017: Specifications for the Chromaticity of Solid State Lighting (SSL) Products

ANSI/UL 1598-2018: Standard for Safety - Luminaires

IES TM-30-18: IES Method for Evaluating Light Source Color Rendition

In Charge of Testing:



Maximilian Carvajal  
Engineer  
Lighting Division

Reviewer:



Jeff Davis  
N.A. Technical Lead  
Lighting Division

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**SAMPLE INFORMATION**

**REPORT NO. 104797632CHI-038**

ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	AH05192022111730	CFDW-7W-***-23-**K- **	LINEAR LOW VOLTAGE	Production	5/19/2022

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	CFDW-7W-***-23-**K-**	1

SAMPLE PHOTOS - TESTED CONFIGURATIONS



**SUMMARY**

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PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	CFDW-7W-***-23-**K-**
Product Description:	LINEAR LOW VOLTAGE
LED Model No.:	Lumileds 2835
Driver Model No.:	Magnitude Lighting / CVD96R24DC
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	1774.5	1839.4
Input Power (W) @ 120 (Vac)	23.81	23.81
Lumen Efficacy (lm/W)	74.5	77.3
Input Power Factor (I) @ 120 (Vac)	0.976	0.982

Criteria	Results
Input ATHD (%) @ 120 (Vac)	5.64
Correlated Color Temperature (K)	3433
Color Rendering Index - Ra (I)	90.7
Color Rendering Index - R9 (I)	59.2
Duv (I)	0.0009
Chromaticity Coordinate (x)	0.410
Chromaticity Coordinate (y)	0.395
Chromaticity Coordinate (u')	0.237
Chromaticity Coordinate (v')	0.514
Max LED Source Temperature (°C)	55.6
Max Driver Case Temperature (°C)	39.1
Input Power (W) @ 277 (Vac)	24.19
Input Power Factor (I) @ 277 (Vac)	0.638
Input ATHD (%) @ 277 (Vac)	16.64

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TEST METHODS

**SEASONING IN SAMPLE ORIENTATION - LED PRODUCTS**

No seasoning was performed in accordance with IESNA LM-79.

**INTEGRATING SPHERE TESTING**

A spectroradiometer and integrating sphere were used to measure the spectral distribution for each EUT resulting in photometric and colorimetric data. Electrical measurements of the unit were measured using a power analyzer. Each EUT was operated at the rated input voltage of the system in its designated orientation. The ambient temperature was measured at a position inside the sphere and stabilization procedures to LM-79 were followed.

**TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING**

A Type C Mirror Goniophotometer system was used to measure the luminous intensity (candela) at each angle of distribution for the EUT. Electrical measurements of the unit were measured using a power analyzer. Each EUT was operated at the rated input voltage of the system in its designated orientation. The ambient temperature was measured at a position near the EUT at equal height and stabilization procedures to LM-79 were followed.

**INSITU TEMPERATURE MEASUREMENT TESTING**

Thermal measurements were taken on the EUT using a thermocouple and temperature meter. The EUT was allowed to reach thermal equilibrium for three and a half to seven and a half hours before measurements were taken. Temperatures were measured at the TMPps or Ts point as indicated by the included diagram in accordance with manufacturers declared thermal test point location, or at a thermal test point location found with a thermal camera when no diagram from the manufacturer is given. The maximum temperature was recorded for the sample. A simulated ceiling or other enclosure may be used in accordance to UL 1598, UL 153, or UL 1993 as applicable.

**TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING**

**REPORT NO. 104797632CHI-038**

Test Configuration	Tested Model No.	Pass/Fail/NA
1	CFDW-7W-***-23-**K-**	NA

**PHOTOMETRIC AND ELECTRICAL MEASUREMENTS (25°C +/- 1°C)**

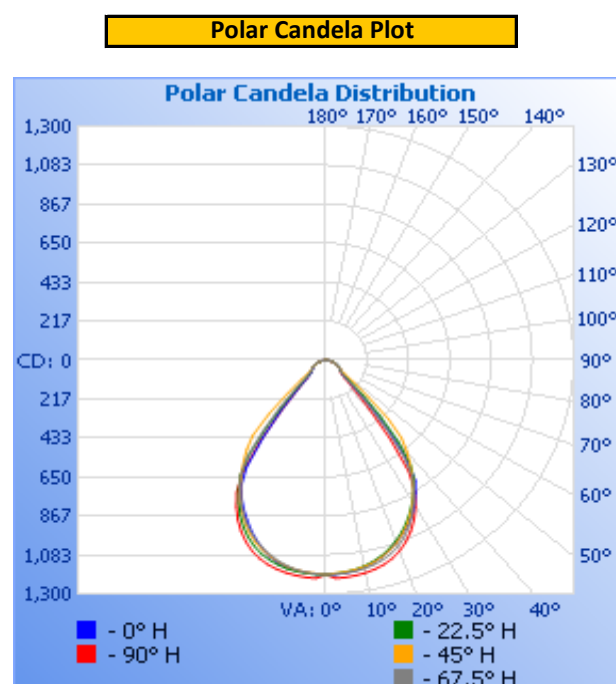
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ( )
Up	120.04	203.1	23.81	0.976

Light Output (lm)	Lumen Efficacy (lm/W)
1774.5	74.5

**INTENSITY SUMMARY - CANDELA**

Angle	0	22.5	45	67.5	90
0	1193.7	1193.7	1193.7	1193.7	1193.7
5	1187.5	1182.8	1181.8	1188.5	1212.0
10	1167.5	1162.3	1165.6	1175.9	1200.9
15	1132.7	1126.3	1132.6	1150.1	1176.2
20	1079.3	1070.6	1081.5	1102.6	1129.7
25	1013.2	997.9	1007.1	1026.2	1051.9
30	928.1	908.0	911.2	920.3	940.0
35	816.0	800.5	790.2	788.5	759.3
40	512.4	585.0	659.7	487.2	355.4
45	191.8	272.4	463.7	192.0	140.2
50	106.8	114.1	187.6	106.8	103.2
55	91.7	91.8	96.9	90.6	90.1
60	79.9	80.6	79.9	78.0	77.0
65	67.9	67.8	65.5	64.2	62.8
70	54.0	53.7	50.6	49.3	48.0
75	40.2	39.0	35.2	34.0	32.9
80	25.5	23.3	20.0	18.6	17.9
85	11.0	8.6	6.0	4.7	4.1
90	0	0	0	0	0
95	0	0	0	0	0
100	0	0	0	0	0
105	0	0	0	0	0
110	0	0	0	0	0
115	0	0	0	0	0
120	0	0	0	0	0
125	0	0	0	0	0
130	0	0	0	0	0
135	0	0	0	0	0
140	0	0	0	0	0
145	0	0	0	0	0
150	0	0	0	0	0
155	0	0	0	0	0
160	0	0	0	0	0
165	0	0	0	0	0
170	0	0	0	0	0
175	0	0	0	0	0
180	0	0	0	0	0

Entire luminous intensity matrix found in .IES file



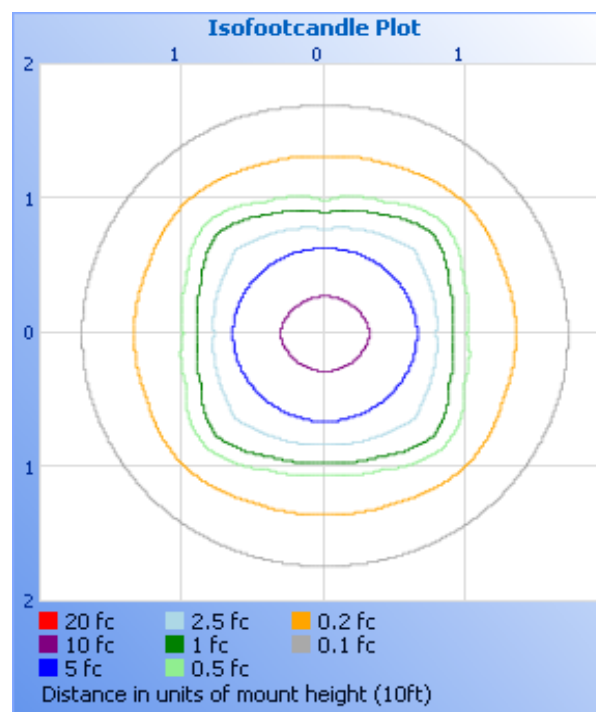
REPORT NO. 104797632CHI-038

# ILLUMINANCE SUMMARY

Mounting Height: 10ft	
Illuminance - Cone Of Light	Isoillumination Plot

Illuminance at a Distance			
	Center Beam fc	Beam Width	
1.7ft	413 fc	2.6 ft	2.6 ft
3.3ft	110 fc	5.1 ft	5.0 ft
5.0ft	47.7 fc	7.8 ft	7.5 ft
6.7ft	26.6 fc	10.4 ft	10.1 ft
8.3ft	17.3 fc	12.9 ft	12.5 ft
10.0ft	11.9 fc	15.5 ft	15.0 ft

■ Vert. Spread: 75.6°  
■ Horiz. Spread: 73.8°



# ZONAL LUMENS

Zonal Lumen Summary					
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Zone	Lumens	Luminaire
0-30	897.3	50.6%
0-40	1,365.9	77.0%
0-60	1,664.5	93.8%
60-90	109.9	6.2%
70-100	45.9	2.6%
90-120	0.0	0.0%
0-90	1,774.5	100.0%
90-180	0.0	0.0%
0-180	1,774.5	100.0%

Zone	Lumens	Total	Zone	Lumens	Total
0-10	112.9	6.4%	90-100	0.0	0.0%
10-20	320.7	18.1%	100-110	0.0	0.0%
20-30	463.6	26.1%	110-120	0.0	0.0%
30-40	468.6	26.4%	120-130	0.0	0.0%
40-50	214.0	12.1%	130-140	0.0	0.0%
50-60	84.7	4.8%	140-150	0.0	0.0%
60-70	64.1	3.6%	150-160	0.0	0.0%
70-80	37.4	2.1%	160-170	0.0	0.0%
80-90	8.4	0.5%	170-180	0.0	0.0%



# INTEGRATING SPHERE TESTING

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Test Configuration	Tested Model No.	Pass/Fail/NA
1	CFDW-7W-***-23-**K-**	NA

## PHOTOMETRIC, COLORIMETRIC, AND ELECTRICAL MEASUREMENTS (25°C +/- 1°C)

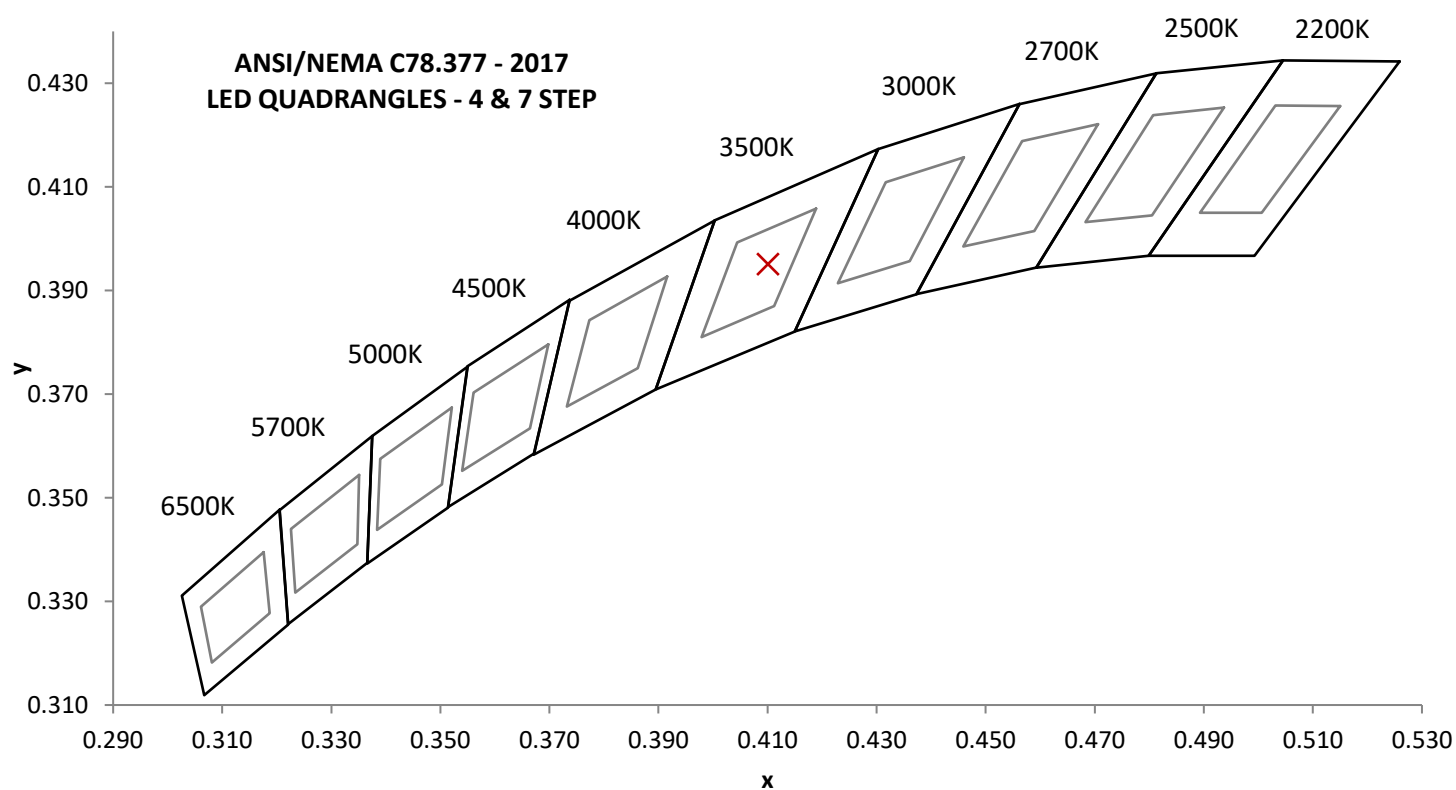
Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ( )	Input ATHD (%)
120.01	202.1	23.81	0.982	5.64
277.04	136.8	24.19	0.638	16.64

## Measured at 120.01(Vac)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra ( )	CRI - R9 ( )
1839.4	77.3	3433	90.7	59.2

Duv ( )	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
0.0009	0.410	0.395	0.237	0.514



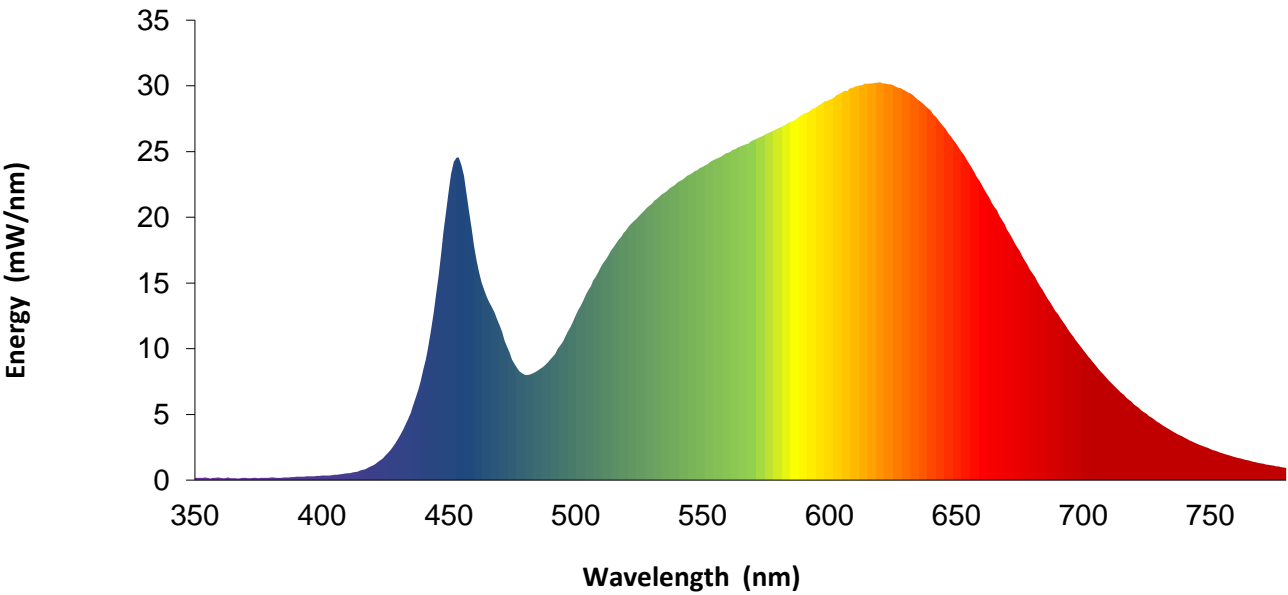


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.2		460	17.9		570	25.9		680	15.7
355	0.2		465	13.9		575	26.3		685	14.1
360	0.2		470	11.8		580	26.8		690	12.6
365	0.1		475	9.2		585	27.3		695	11.2
370	0.2		480	8.0		590	27.9		700	9.9
375	0.2		485	8.3		595	28.4		705	8.7
380	0.2		490	9.2		600	28.9		710	7.6
385	0.2		495	10.5		605	29.5		715	6.6
390	0.2		500	12.5		610	30.0		720	5.8
395	0.3		505	14.4		615	30.1		725	5.0
400	0.3		510	16.2		620	30.3		730	4.3
405	0.4		515	17.7		625	30.1		735	3.7
410	0.5		520	19.0		630	29.6		740	3.2
415	0.7		525	20.1		635	28.9		745	2.8
420	1.1		530	21.0		640	28.1		750	2.4
425	1.9		535	21.9		645	26.9		755	2.0
430	3.1		540	22.6		650	25.6		760	1.8
435	5.1		545	23.3		655	24.1		765	1.5
440	8.4		550	23.8		660	22.5		770	1.3
445	14.0		555	24.4		665	20.8		775	1.1
450	22.1		560	24.9		670	19.1		780	0.9
455	24.0		565	25.4		675	17.4		---	---

Without correction of sample absorption.



Portrayed color in graphic is estimated by wavelength (nm) and may not be exact - it is a visual representation only

**INSITU TEMPERATURE MEASUREMENT TESTING**

**REPORT NO. 104797632CHI-038**

Test Configuration	Tested Model No.	Pass/Fail/NA
1	CFDW-7W-***-23-***K-**	NA

**LED MEASUREMENTS AND RATINGS**

Mounting Type	Input Voltage (Vac)
Ceiling Surface	120.00

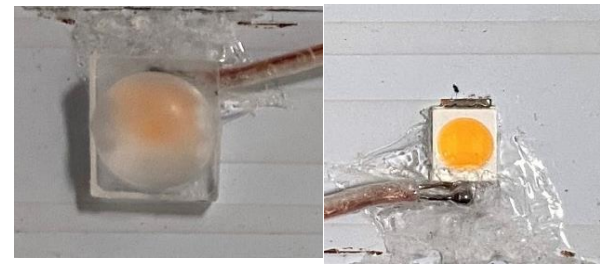
LED Model No.	Lumileds 2835
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Max Junction Temp - Tj (°C)	Max Thermal Resistance - Rth (°C/W)	Max Forward Voltage - Vf (V)
125.0	21.0	3.2

Measured LED Current (mA)	Measured LED Temp - Ts (°C)	Max LED Temp - Ts Max (°C)
239.2	55.6	108.9

Max LED Temp = Max Junction Temp – (LED Wattage x Thermal Resistance)

**ISTMT Photo - Ts**



**ISTMT Photo - Ts Location**



**LED SOURCE MANUFACTURER'S SUPPORTING DOCUMENTATION**

LED Junction Temperature<sup>(1)</sup> (DC & Pulse)

115°C for L128-xxxxEA3500001  
125°C for L128-xxxxCx35000x1  
125°C for L128-xxxxNA35000x1  
125°C for L128-xxxxHA35000x1

Table 3. Electrical and thermal characteristics for LUXEON 2835 Architectural at specified test current, T<sub>j</sub>=25°C.

PART NUMBER	FORWARD VOLTAGE <sup>(1)</sup> (V <sub>f</sub> )			TYPICAL TEMPERATURE COEFFICIENT OF FORWARD VOLTAGE <sup>(2)</sup> (mV/°C)	TYPICAL THERMAL RESISTANCE—JUNCTION TO SOLDER PAD (°C/W)
	MINIMUM	TYPICAL	MAXIMUM		
L128-xxxxEC3500001	8.4	8.9	9.9	-3.0 to -6.0	15
L128-xxxxEC35000B1	8.7	9.3	9.9	-3.0 to -6.0	15
L128-xxxxEB3500001	5.8	6.1	6.6	-2.0 to -4.0	20
L128-xxxxEA3500001	2.7	2.9	3.1	-1.0 to -2.0	39
L128-xxxxCB3500001	5.8	6.0	6.6	-2.0 to -4.0	11
L128-xxxxCA35000x1	2.9	3.0	3.2	-1.0 to -2.0	21
L128-xxxxNA35000x1	2.68	2.75	2.88	-1.0 to -2.0	14
L128-xxxxHA35000B1	2.66	2.71	2.76	-1.0 to -2.0	10

Notes for Table 3:

REPORT NO. 104797632CHI-038

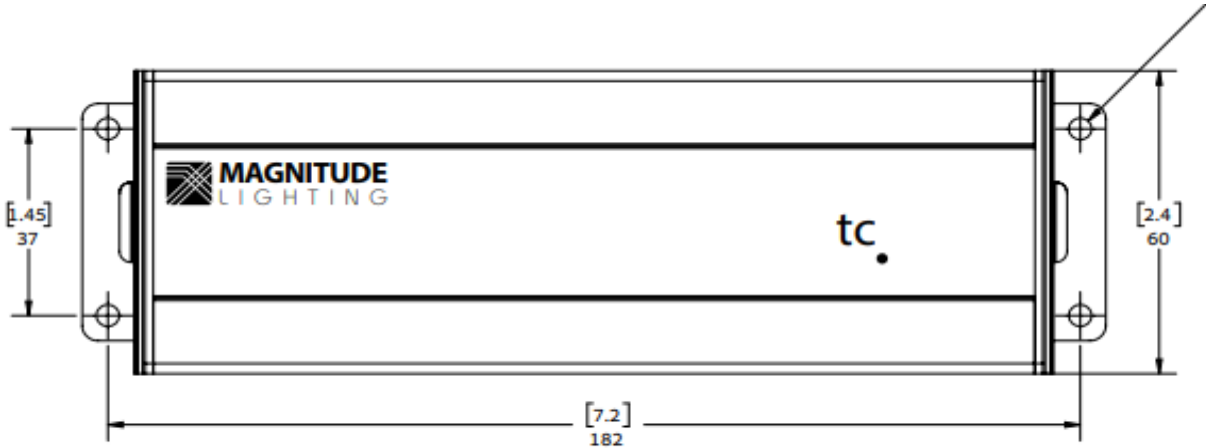
DRIVER MEASUREMENTS AND RATINGS

Measured Case Temp - Td (°C)	Max Case Temp (°C)
39.1	65.0

ISTMT Photo - Td



DRIVER MANUFACTURER'S SUPPORTING DOCUMENTATION



Environmental Specification

Env. Protection Rating	IP65
Operating Ambient temperature	-25°C - +40°C
Max Case Temp. (Tcase)	65°C for a 5 year warranty
Storage temperature	-40°C - +85°C
Expected life time	50K Hours ( > 65°C ) Tc
Audible Noise	> 24db Class A

**EQUIPMENT LIST**

**REPORT NO. 104797632CHI-038**

#	Equipment	Model No	Control No.	Last Cal	Cal Due
1	Yokogawa Power Meter	WT310E	CHI0664	3/30/2022	3/30/2023
2	Omega Thermometer	DPI8-C24	146920	10/4/2021	10/4/2022
3	LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU
4	Newport Thermohygrometer	iServer	CHI0452	2/3/2022	2/3/2023
5	Chroma Power Supply	61604	CHI0371	VBU	VBU
8	Newport Humidity Recorder	iServer	146961	9/21/2021	9/21/2022
9	Labsphere Spectroradiometer	CDS2600	CHI0539	VBU	VBU
10	3 Meter Sphere	SPR600	CHI0088	VBU	VBU
11	Elgar AC Power Supply	CW1251	146112	VBU	VBU
12	Sorenson DC Power Supply	XFR150-8	146846	VBU	VBU
13	Yokogawa Power Meter	WT1600	146767	4/4/2022	4/4/2023
17	Omega thermometer	USB TC08	EQAH002615	4/5/2022	4/5/2023
26	Xitron Power Analyzer	XT-2640	CHI0611	7/6/2022	7/6/2023
27	Yokogawa Power Analyzer	WT210	146761	7/1/2022	7/1/2023
28	Agilent Datalogger	34970A	146441	10/1/2021	10/1/2022
29	Staco Variac	3PN2210B	146360	VBU	VBU
30	Extech Thermohygrometer	SD700	146965	10/14/2021	10/14/2022

Note: Standard sources listed above are traceable to NIST: National Institute of Standards and Technology

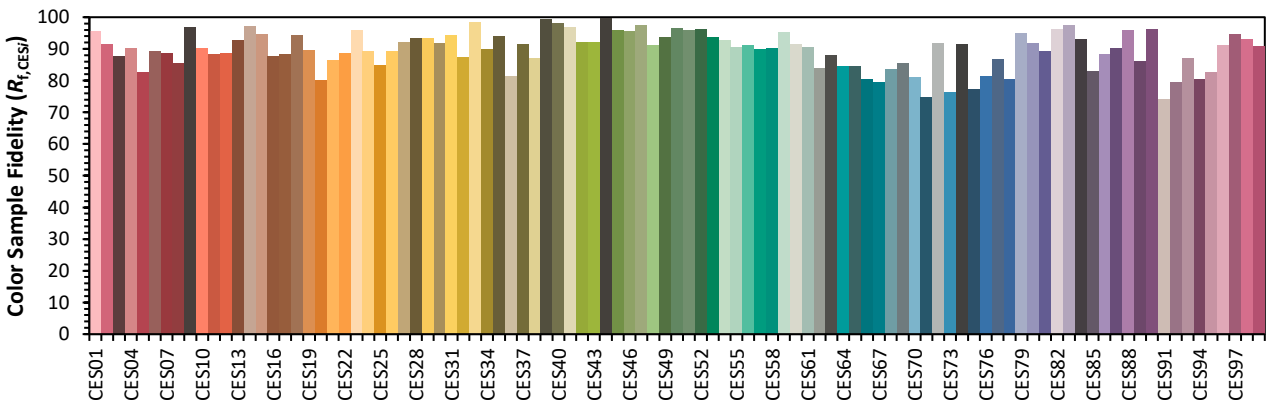
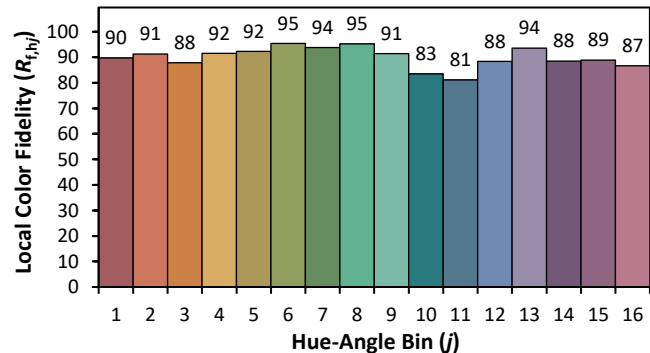
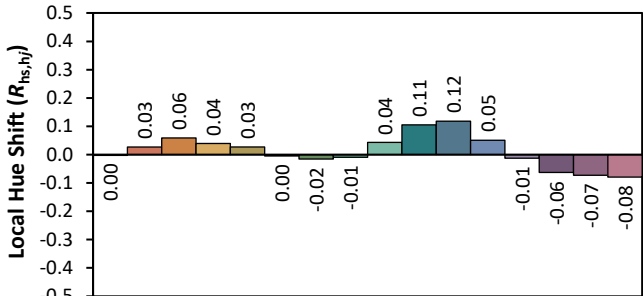
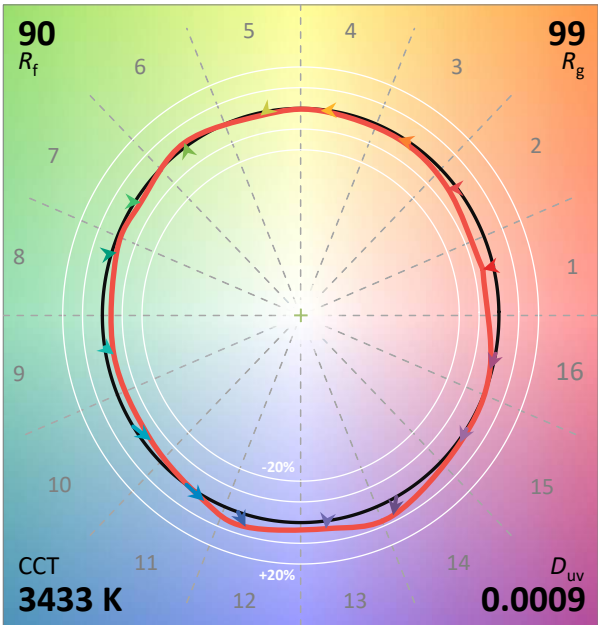
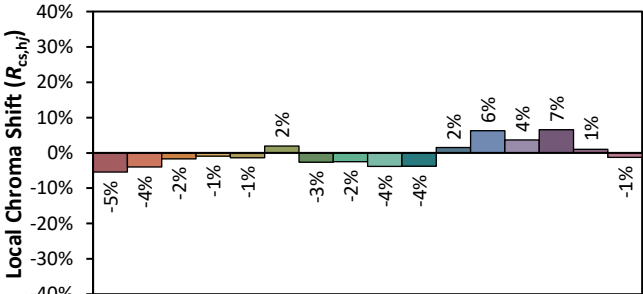
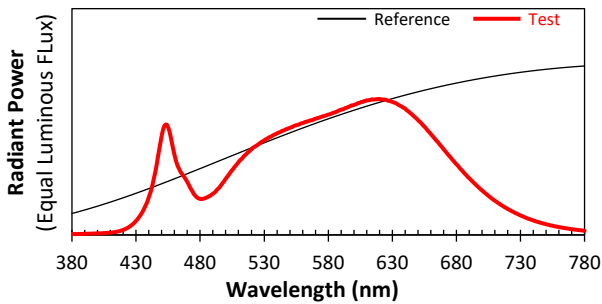
**REVISION HISTORY**

#	Revision Date	Updated By	Reviewed By	Description of Change
---	None	---	---	---
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Test Configuration	Tested Model No.	Pass/Fail/NA
1	CFDW-7W-***-23-**K-**	NA

ANSI/IES TM-30-18 Color Rendition Report

Source:	User SPD	Manufacturer:	PureEdge Lighting LLC
Date:	6/28/2022	Model:	CFDW-7W-***-23-**K-**



Notes:	This is a recommended method for displaying ANSI/IES TM-30-18 information.	$x$	0.4101
		$y$	0.3950
		$u'$	0.2370
		$v'$	0.5138