

# PHOENIX PRODUCTS LLC

## TEST REPORT

### SCOPE OF WORK

LED Performance Testing

### MODEL NUMBER

CF-375-VS-120-277-CW

### PROJECT NUMBER

G104357589

### REPORT NUMBER

104357589CHI-018

### ISSUE DATE

1/22/2021

### REVISED DATE

2/19/2021

### TEST DATES

01/21/2021 through 02/03/2021.

### DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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**REPORT NUMBER**

104357589CHI-018

**MODEL NUMBER(s)**

CF-375-VS-120-277-CW

**REPORT RENDERED TO:**

PHOENIX PRODUCTS LLC  
8711 W PORT AVE.  
MILWAUKEE, WI, 53224  
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-01080058-1.

**TEST STANDARDS**

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

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

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

In Charge of Testing:

Reviewer:

*Signature on File*

*Signature on File*

Ian Smith  
Engineer  
Lighting Division

Jeff Davis  
NA Technical Lead  
Lighting Division

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**SAMPLE INFORMATION**

**REPORT NO. 104357589CHI-018**

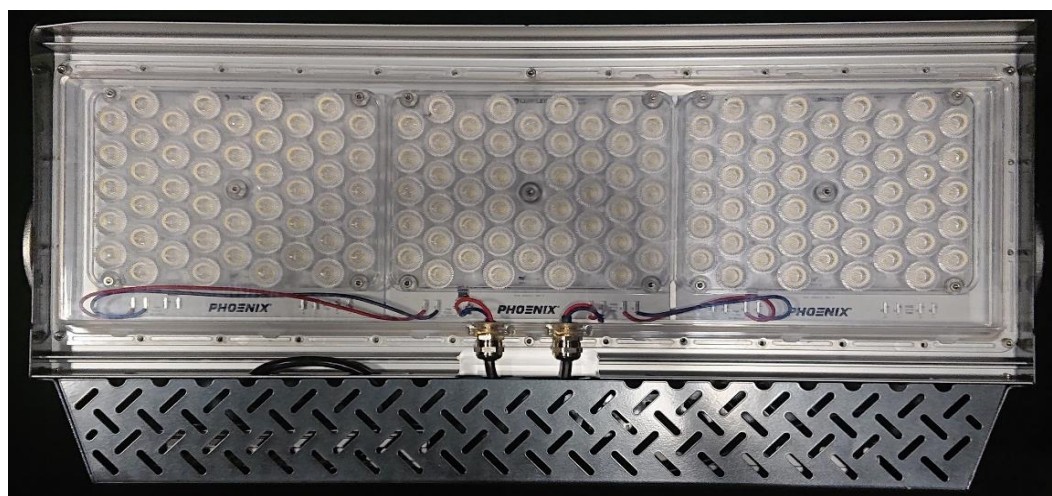
**ITEMS RECEIVED**

Item No.	Control No.	Model No.	Description	Type	Received
1	AH01112021101748	CF-375-VS-120-277-CW	Command Flood 375	Production	1/12/2021

**TESTED SAMPLE CONFIGURATIONS**

Config No.	Tested Model No.	Item Nos. Utilized
1	CF-375-VS-120-277-CW	1

**SAMPLE PHOTOS - TESTED CONFIGURATIONS**



## SUMMARY

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### PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	CF-375-VS-120-277-CW
Product Description:	Command Flood 375
LED Model No.:	Lumileds 5050
Driver Model No.:	Inventronics / EUM-240S350DT & EUM-150S210DT
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	49463.3	50096.4
Input Power (W) @ 120 (Vac)	355.10	354.50
Lumen Efficacy (lm/W)	139.3	141.3
Input Power Factor ( ) @ 120 (Vac)	0.999	0.999

Criteria	Results
Input ATHD (%) @ 120 (Vac)	2.63
Correlated Color Temperature (K)	5020
Color Rendering Index - Ra ( )	73.9
Color Rendering Index - R9 ( )	-24.3
Duv ( )	0.0038
Chromaticity Coordinate (x)	0.345
Chromaticity Coordinate (y)	0.359
Chromaticity Coordinate (u')	0.209
Chromaticity Coordinate (v')	0.488
Input Power (W) @ (Vac)	344.84
Input Power Factor ( ) @ (Vac)	0.959
Input ATHD (%) @ (Vac)	8.92

### 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.

**TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING**

**REPORT NO. 104357589CHI-018**

Test Configuration	Tested Model No.	Pass/Fail/NA
1	CF-375-VS-120-277-CW	NA

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

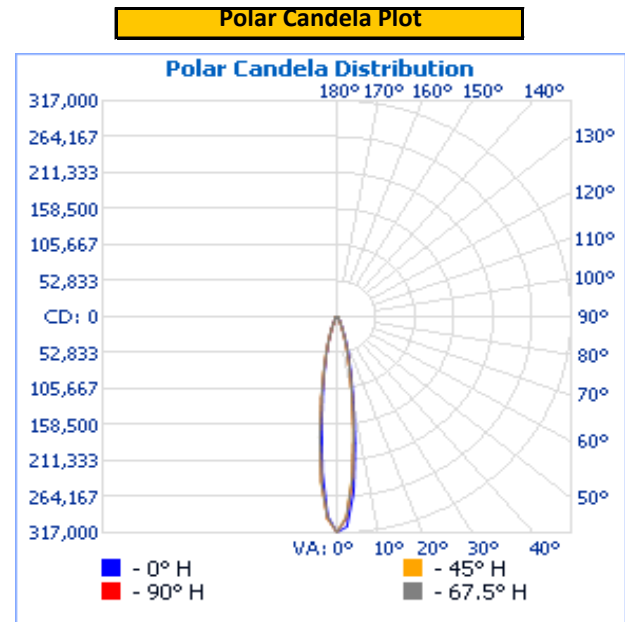
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor (I)
Up	120.0	2963.2	355.10	0.999

Light Output (lm)	Lumen Efficacy (lm/W)
49463.3	139.3

**INTENSITY SUMMARY - CANDELA**

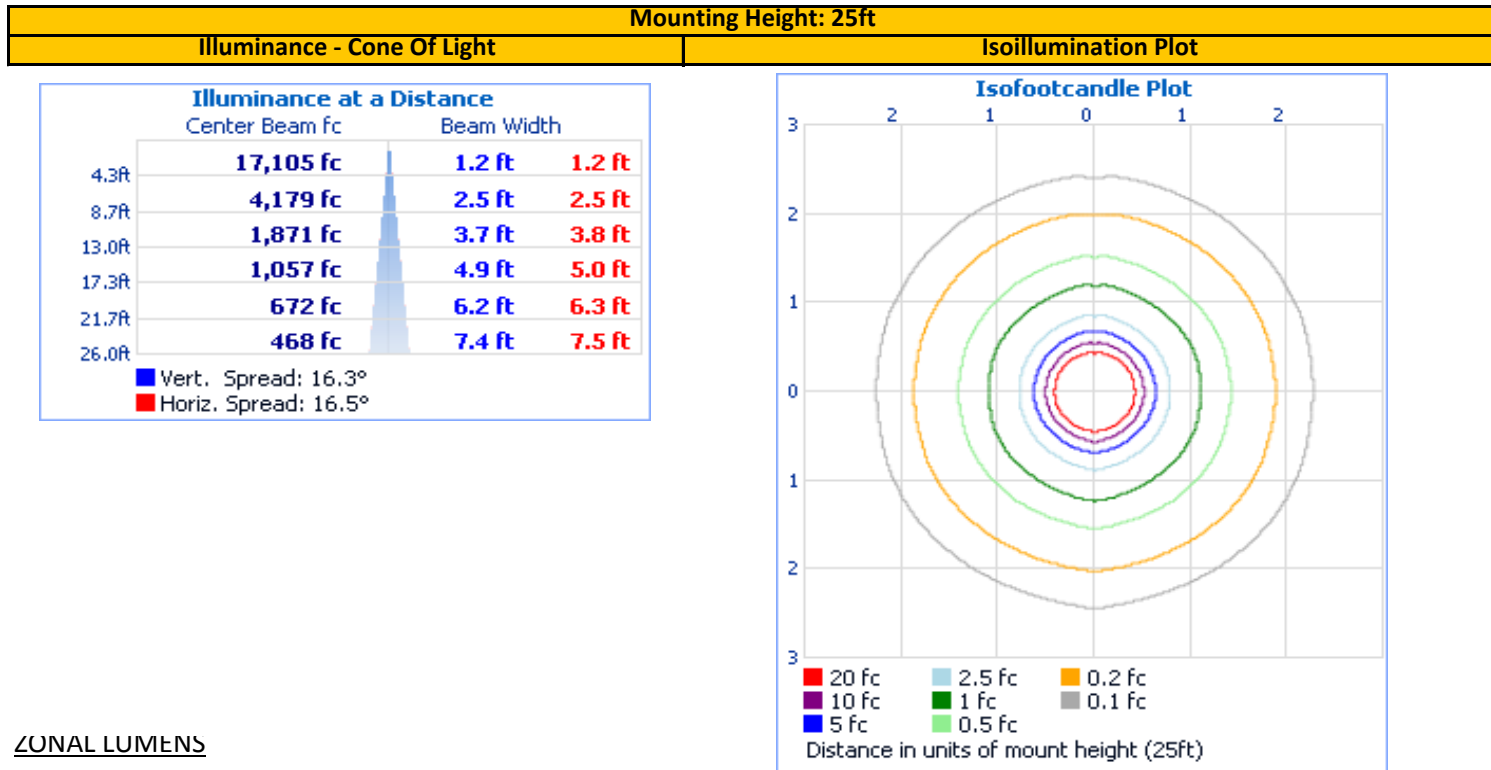
Angle	0	22.5	45	67.5	90
0	316280	316280	316280	316280	316280
5	258253	233884	235889	237724	241232
10	127699	113427	115696	118593	119940
15	62260	54901	54298	54739	55397
20	31115	26168	25277	24923	24891
25	14579	12274	11575	11158	11090
30	8951	7395	6777	6590	6590
35	5315	4367	4081	3905	3857
40	3922	3307	3144	2946	2896
45	3140	2636	2530	2416	2307
50	2550	2179	2047	1989	1897
55	2095	1818	1723	1645	1616
60	1732	1489	1444	1361	1322
65	1340	1184	1141	1080	1022
70	972	851	828	779	723
75	636	550	527	509	463
80	325	270	263	267	232
85	99	76	79	84	70
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



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ILLUMINANCE SUMMARY



ZONAL LUMENS

Zonal Lumen Summary										
<div></div>	Zone	Lumens	Luminaire	<div></div>	Zone	Lumens	Total	Zone	Lumens	Total
	0-30	41,166.5	83.2%		0-10	18611.3	37.6%	90-100	0.0	0.0%
	0-40	44,049.0	89.1%		10-20	16327.8	33.0%	100-110	0.0	0.0%
	0-60	47,632.6	96.3%		20-30	6227.4	12.6%	110-120	0.0	0.0%
	60-90	1,830.6	3.7%		30-40	2882.5	5.8%	120-130	0.0	0.0%
	70-100	696.4	1.4%		40-50	2004.7	4.1%	130-140	0.0	0.0%
	90-120	0.0	0.0%		50-60	1579.0	3.2%	140-150	0.0	0.0%
	0-90	49,463.3	100.0%		60-70	1134.2	2.3%	150-160	0.0	0.0%
	90-180	0.0	0.0%		70-80	577.6	1.2%	160-170	0.0	0.0%
	0-180	49,463.3	100.0%		80-90	118.8	0.2%	170-180	0.0	0.0%

LUM. CLASSIFICATION SYSTEM (LCS)

CS Zone	Lumens	% Lamp	% Lum
FL (0-30)	20345.0	N.A.	40.8
FM (30-60)	3206.4	N.A.	6.4
FH (60-80)	842.9	N.A.	1.7
FVH (80-90)	56.0	N.A.	0.1
BL (0-30)	21275.6	N.A.	42.6
BM (30-60)	3266.2	N.A.	6.5
BH (60-80)	869.4	N.A.	1.7
BVH (80-90)	62.9	N.A.	0.1
UL (90-100)	0.0	N.A.	0.0
UH (100-180)	0.0	N.A.	0.0
Total	49924.4	N.A.	100.0
<b>BUG Rating</b>	<b>B5-U0-G1</b>		

IES Classification: Type VS  
Longitudinal Classification: Very Short

**INTEGRATING SPHERE TESTING**

**REPORT NO. 104357589CHI-018**

Test Configuration	Tested Model No.	Pass/Fail/NA
1	CF-375-VS-120-277-CW	NA

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

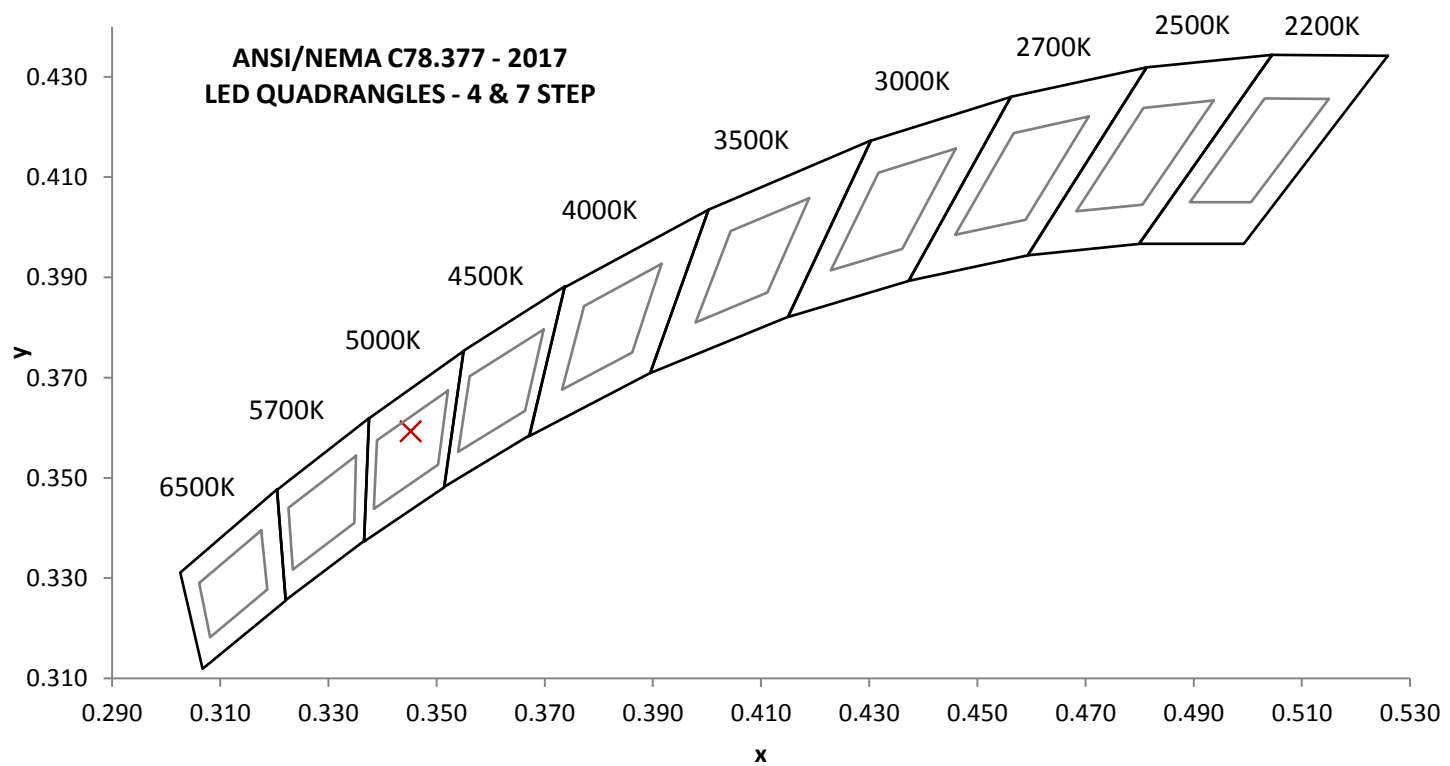
Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor (l)	Input ATHD (%)
120.00	2957.2	354.50	0.999	2.63
277.00	1298.0	344.84	0.959	8.92

**Measured at 120(Vac)**

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra (l)	CRI - R9 (l)
50096.4	141.3	5020	73.9	-24.3

Duv (l)	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
0.0038	0.345	0.359	0.209	0.488



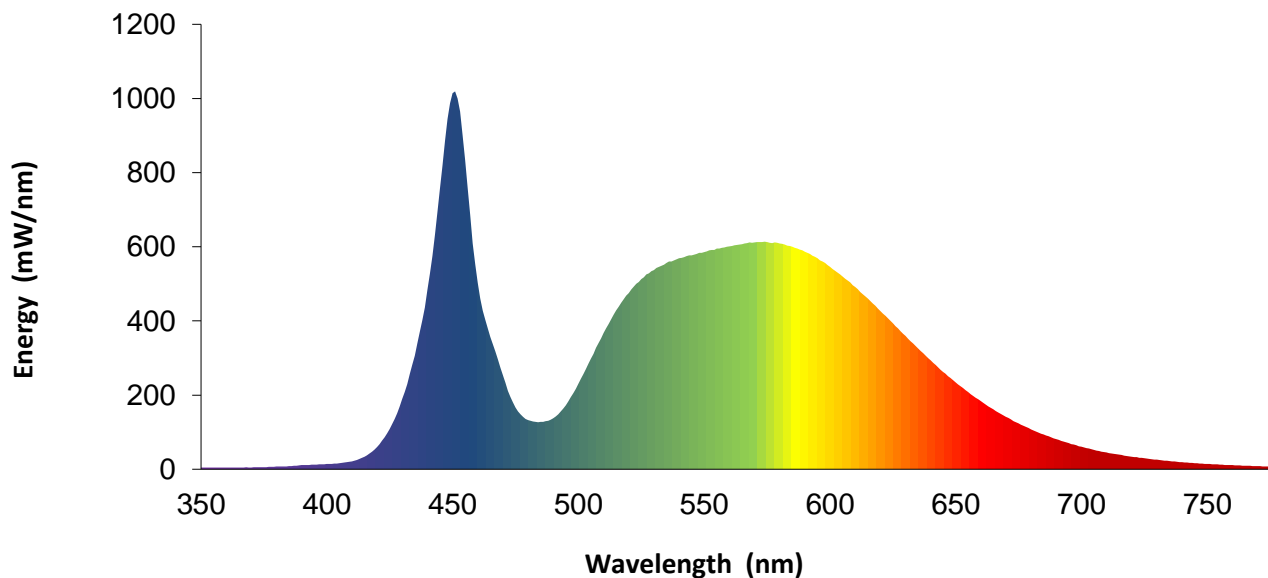


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**SPECTRAL DISTRIBUTION OVER WAVELENGTHS**

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	4.3		460	503.6		570	611.3		680	107.8
355	4.7		465	356.7		575	613.0		685	93.6
360	4.7		470	253.8		580	609.3		690	81.4
365	4.5		475	166.9		585	600.4		695	70.4
370	5.1		480	132.8		590	586.3		700	60.7
375	5.9		485	127.4		595	569.0		705	52.2
380	7.1		490	137.7		600	545.4		710	45.2
385	8.5		495	172.5		605	519.9		715	39.3
390	11.0		500	231.0		610	491.2		720	33.9
395	12.3		505	298.2		615	460.0		725	29.5
400	14.2		510	367.0		620	426.8		730	25.5
405	16.1		515	428.3		625	393.3		735	22.2
410	21.5		520	475.3		630	359.4		740	19.0
415	34.0		525	512.6		635	325.7		745	16.4
420	59.7		530	537.0		640	293.9		750	14.4
425	108.7		535	556.5		645	262.7		755	12.6
430	189.8		540	569.1		650	234.2		760	11.0
435	306.4		545	576.8		655	208.1		765	9.6
440	484.1		550	586.1		660	183.6		770	8.3
445	756.8		555	595.2		665	161.4		775	7.3
450	1014.5		560	601.2		670	141.1		780	6.4
455	833.6		565	607.1		675	124.1		---	---

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



**EQUIPMENT LIST**

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#	Equipment	Model No	Control No.	Last Cal	Cal Due
1	Yokogawa Power Meter	WT210	146919	7/1/2020	7/1/2021
2	Omega Thermometer	DPI8-C24	146920	10/1/2020	10/1/2021
3	LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU
4	Newport Thermohygrometer	iServer	146958	9/30/2020	9/30/2021
5	Pacific AC Power Supply	118-ACX	CHI0153	VBU	VBU
6	Newport Humidity Recorder	iServer	146961	9/3/2020	9/3/2021
7	Labsphere Spectroradiometer	CDS2600	CHI0539	VBU	VBU
8	3 Meter Sphere	SPR600	CHI0088	VBU	VBU
9	Elgar AC Power Supply	CW1251	146112	VBU	VBU
10	Sorenson DC Power Supply	XFR150-8	146846	VBU	VBU
11	Yokogawa Power Meter	WT1600	146769	4/6/2020	4/6/2021
12	Extech K Temperature Meter	421502	CHI0476	10/1/2020	10/1/2021

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
---	2/19/2021	<i>IS</i> Ian Smith	Jeff Davis <i>JD</i>	Color Test performed & added to report.
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Test Configuration	Tested Model No.	Pass/Fail/NA
1	CF-375-VS-120-277-CW	NA

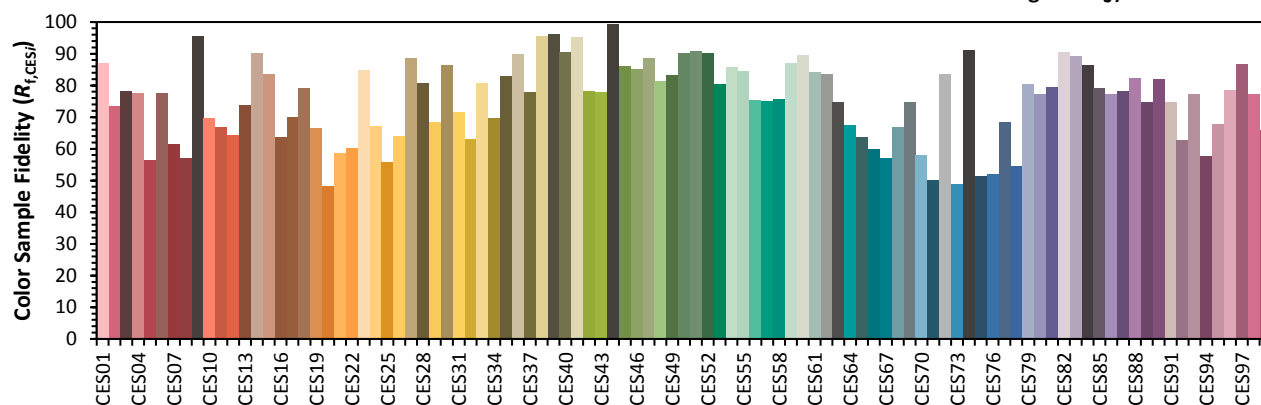
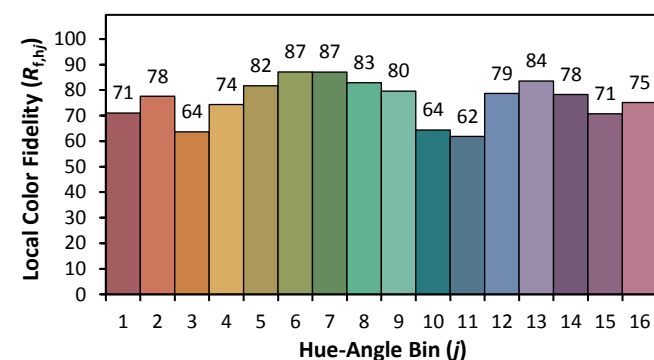
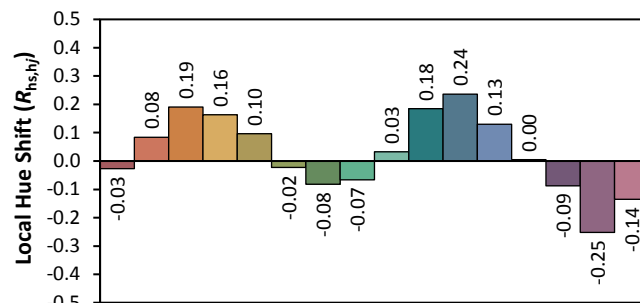
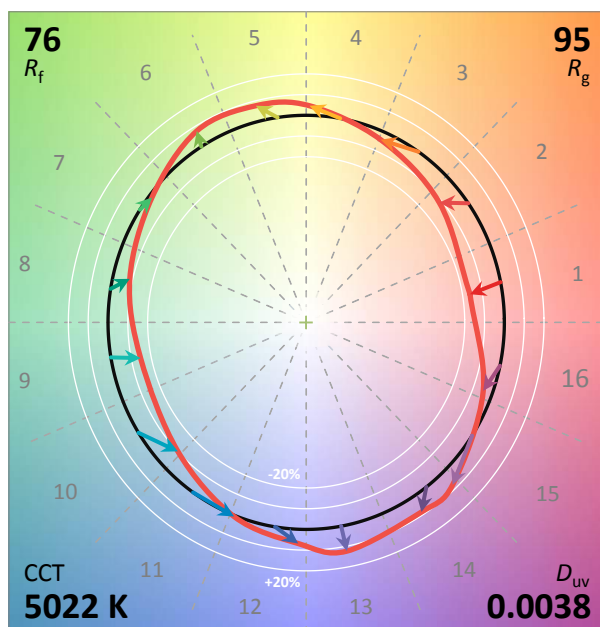
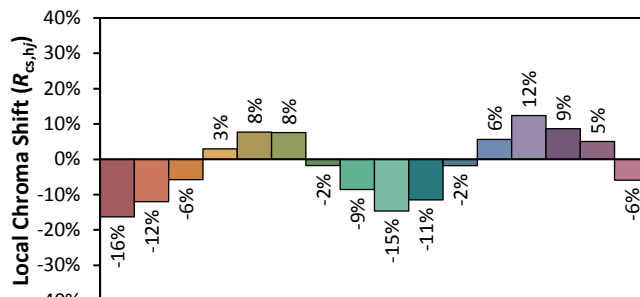
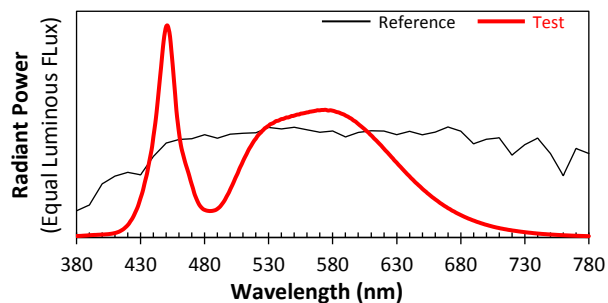
## ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: Phoenix Products LLC

Date: 2/3/2021

Model: CF-375-VS-120-277-CW



**Notes:** This is a recommended method for displaying ANSI/IES TM-30-18 information.

 $x$  0.3452 $y$  0.3592 $u'$  0.2086 $v'$  0.4884