

VISUAL COMFORT AND COMPANY TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

ENCY2RS-L129304D-UNV-WW

PROJECT NUMBER

G104659241

REPORT NUMBER

104659241CRT-006

ISSUE DATE

8/19/2021

REVISED DATE

None

TEST DATES

8/17/21 through 8/19/21

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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PAGES

12

REPORT NUMBER

104659241CRT-006

MODEL NUMBER(s)

ENCY2RS-L129304D-UNV-WW

REPORT RENDERED TO:

VISUAL COMFORT AND COMPANY

7400 LINDER AVE

SKOKIE, IL 60077

USA

STATEMENT OF LIMITATION

NVLAP Lab Code 100402-0. 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-01166088-0.

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

In Charge of Testing:

Reviewer:



Gerald Gray
Associate Engineer
Lighting Division



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SAMPLE INFORMATION

REPORT NO. 104659241CRT-006

ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	CRT2108101057-001-2	PTB15W-0300-42	Driver	Production	8/10/2021
2	CRT2108101057-001-5	BXRE-30-G1000-C-83	LED	Production	8/10/2021
3	CRT2108101057-001-10	40°	Optic	Production	8/10/2021

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	ENCY2RS-L129304D-UNV-WW	1,2,3

SAMPLE PHOTOS - TESTED CONFIGURATIONS



SUMMARY

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PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	ENCY2RS-L129304D-UNV-WW
Product Description:	2 Inch Cylinder Downlight, 80 CRI, 3000K 40° optic
LED Model No.:	BXRE-30-G1000-C-83
Driver Model No.:	PTB15W-0300-42
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	947.7	989.4
Input Power (W) @ 120 (Vac)	11.05	11.06
Lumen Efficacy (lm/W)	85.8	89.5
Input Power Factor (I) @ 120 (Vac)	0.988	0.986

Criteria	Results
Input ATHD (%) @ 120 (Vac)	11.86
Correlated Color Temperature (K)	3026
Color Rendering Index - Ra (I)	92.7
Color Rendering Index - R9 (I)	78.3
Duv (I)	0.0013
Chromaticity Coordinate (x)	0.433
Chromaticity Coordinate (y)	0.400
Chromaticity Coordinate (u')	0.250
Chromaticity Coordinate (v')	0.519

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. 104659241CRT-006

Test Configuration	Tested Model No.	Pass/Fail/NA
1	ENCY2RS-L129304D-UNV-WW	NA

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

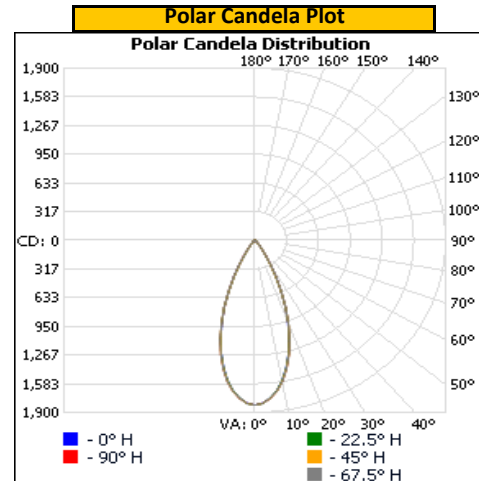
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Up	120.06	93.1	11.05	0.988

Light Output (lm)	Lumen Efficacy (lm/W)
947.7	85.8

INTENSITY SUMMARY - CANDELA

Angle	0	22.5	45	67.5	90
0	1818	1818	1818	1818	1818
5	1747	1745	1750	1749	1751
10	1570	1570	1578	1584	1578
15	1295	1298	1306	1311	1306
20	960	969	973	974	970
25	620	612	615	622	614
30	324	310	314	325	322
35	137	134	136	138	140
40	67	64	65	68	68
45	37	36	37	37	38
50	22	21	22	22	22
55	14	13	14	14	14
60	11	11	11	11	11
65	8	8	8	8	8
70	5	5	5	5	5
75	2	2	2	2	2
80	0	0	0	0	0
85	0	0	0	0	0
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



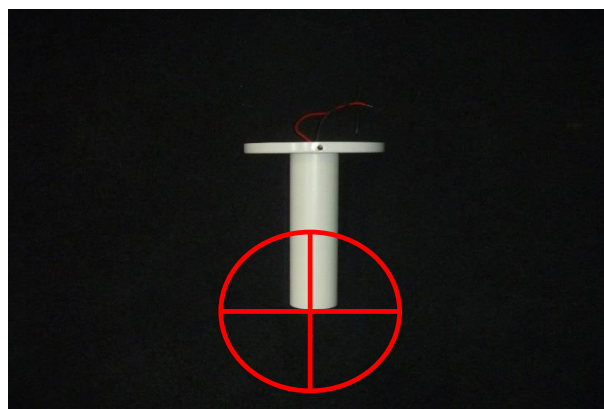
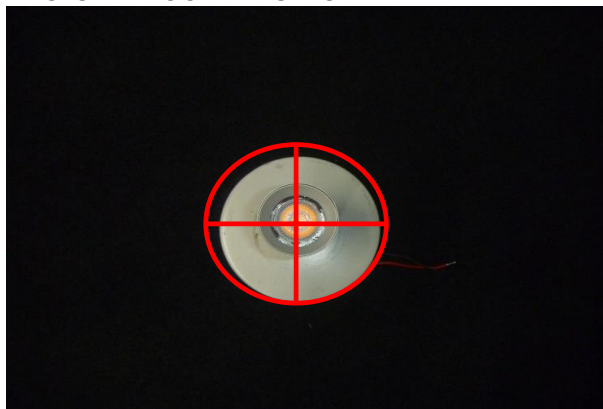
REPORT NO. 104659241CR1-006

ORIENTATION AND ALIGNMENT OF EUT

Luminous Opening		
Length (ft)	Width (ft)	Height (ft)
0.14	0.14	0.00
0°-180° H	90°-270° H	0°-180° V

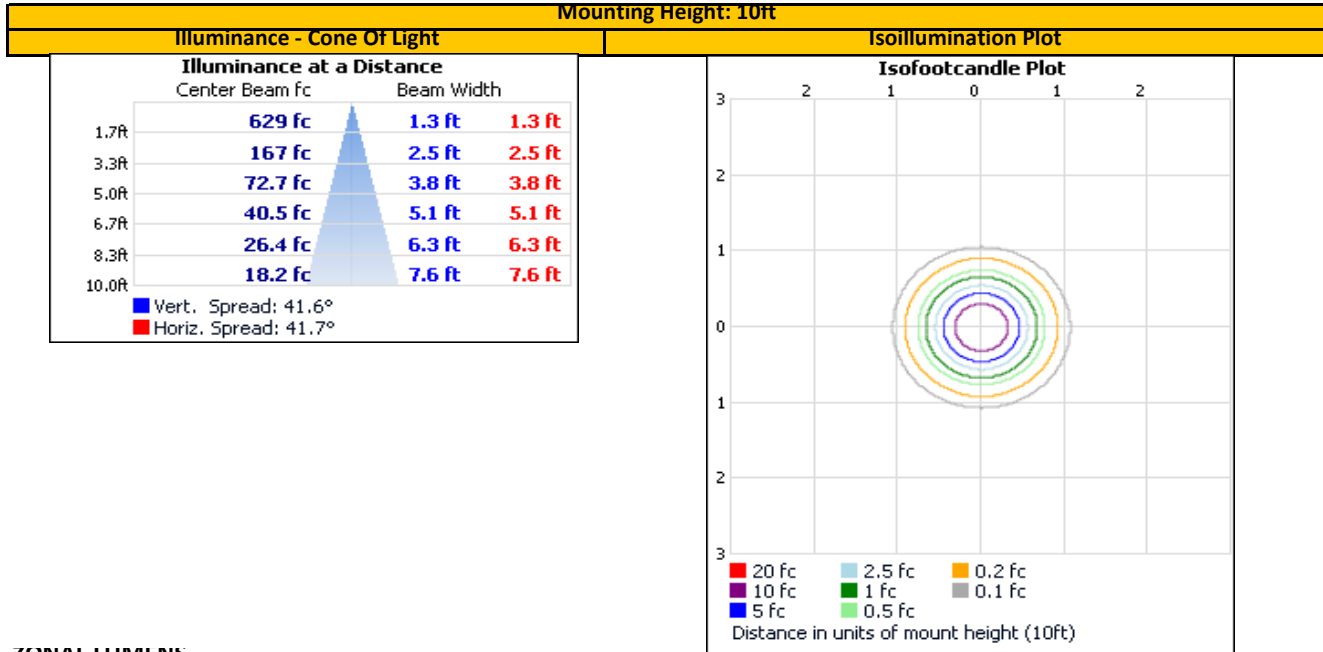
Test Distance (ft)
29.6

PHOTOMETRIC CENTER OF EUT



REPORT NO. 104659241CR1-006

ILLUMINANCE SUMMARY



ZONAL LUMENS

Zonal Lumen Summary					
Zone	Lumens	Luminaire	Zone	Lumens	Total
0-30	798.8	84.3%	0-10	161.2	17.0%
0-40	894.4	94.4%	10-20	356.4	37.6%
0-60	937.6	98.9%	20-30	281.1	29.7%
60-90	10.1	1.1%	30-40	95.7	10.1%
70-100	2.4	0.2%	40-50	30.1	3.2%
90-120	0.0	0.0%	50-60	13.1	1.4%
0-90	947.7	100.0%	60-70	7.7	0.8%
90-180	0.0	0.0%	70-80	2.4	0.2%
0-180	947.7	100.0%	80-90	0.0	0.0%
			90-100	0.0	0.0%
			100-110	0.0	0.0%
			110-120	0.0	0.0%
			120-130	0.0	0.0%
			130-140	0.0	0.0%
			140-150	0.0	0.0%
			150-160	0.0	0.0%
			160-170	0.0	0.0%
			170-180	0.0	0.0%

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UNIFIED GLARE RATING (UGR) SUMMARY

Reflectances					
Ceiling Cavity	70	70	50	50	30
Walls	50	30	50	30	30
Floor Cavity	20	20	20	20	20

Room Size	
X=2H	Y=2H
	3H
	4H
	6H
	8H
	12H

UGR Viewed Crosswise				
12.6	13.6	13.0	13.9	14.2
13.7	14.6	14.1	14.9	15.3
13.9	14.7	14.3	15.0	15.4
13.8	14.5	14.2	14.9	15.3
13.8	14.4	14.2	14.8	15.2
13.7	14.3	14.1	14.7	15.1

4H	2H
	3H
	4H
	6H
	8H
	12H

13.0	13.8	13.4	14.2	14.6
14.2	14.9	14.6	15.3	15.7
14.4	15.0	14.8	15.4	15.8
14.3	14.8	14.8	15.3	15.7
14.2	14.7	14.7	15.1	15.6
14.2	14.6	14.7	15.1	15.5

8H	4H
	6H
	8H
	12H

14.3	14.8	14.8	15.2	15.7
14.2	14.6	14.8	15.1	15.6
14.2	14.5	14.7	15.0	15.5
14.1	14.4	14.6	14.9	15.5

12H	4H
	6H
	8H

14.3	14.7	14.8	15.1	15.6
14.2	14.5	14.7	15.0	15.5
14.1	14.4	14.6	14.9	15.5

Room Size	
X=2H	Y=2H
	3H
	4H
	6H
	8H
	12H

UGR Viewed Endwise				
12.8	13.8	13.2	14.1	14.4
13.9	14.7	14.3	15.1	15.4
14.0	14.8	14.4	15.2	15.6
14.0	14.7	14.4	15.0	15.4
13.9	14.6	14.3	15.0	15.4
13.8	14.5	14.3	14.9	15.3

4H	2H
	3H
	4H
	6H
	8H
	12H

13.2	14.0	13.6	14.3	14.7
14.3	15.0	14.8	15.4	15.8
14.5	15.1	15.0	15.5	15.9
14.4	14.9	14.9	15.4	15.8
14.4	14.8	14.8	15.3	15.7
14.3	14.7	14.8	15.2	15.7

8H	4H
	6H
	8H
	12H

14.4	14.9	14.9	15.3	15.8
14.4	14.7	14.9	15.2	15.7
14.3	14.6	14.8	15.1	15.6
14.2	14.5	14.7	15.0	15.6

12H	4H
	6H
	8H

14.4	14.8	14.9	15.3	15.7
14.3	14.6	14.8	15.1	15.6
14.2	14.5	14.8	15.0	15.6

Maximum UGR	
15.9	

INTEGRATING SPHERE TESTING

REPORT NO. 104659241CRT-006

Test Configuration	Tested Model No.	Pass/Fail/NA
1	ENCY2RS-L129304D-UNV-WW	NA

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

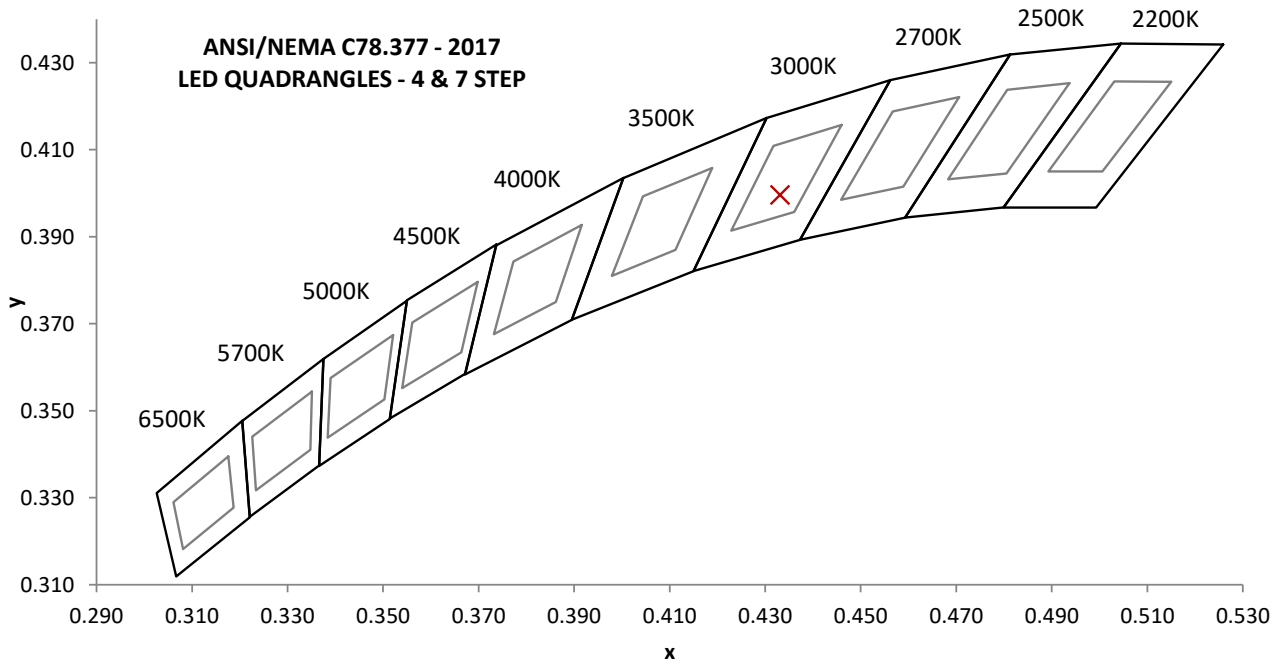
Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()	Input ATHD (%)
120.03	93.4	11.06	0.986	11.86

Measured at 120.03(Vac)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra ()	CRI - R9 ()
989.4	89.5	3026	92.7	78.3

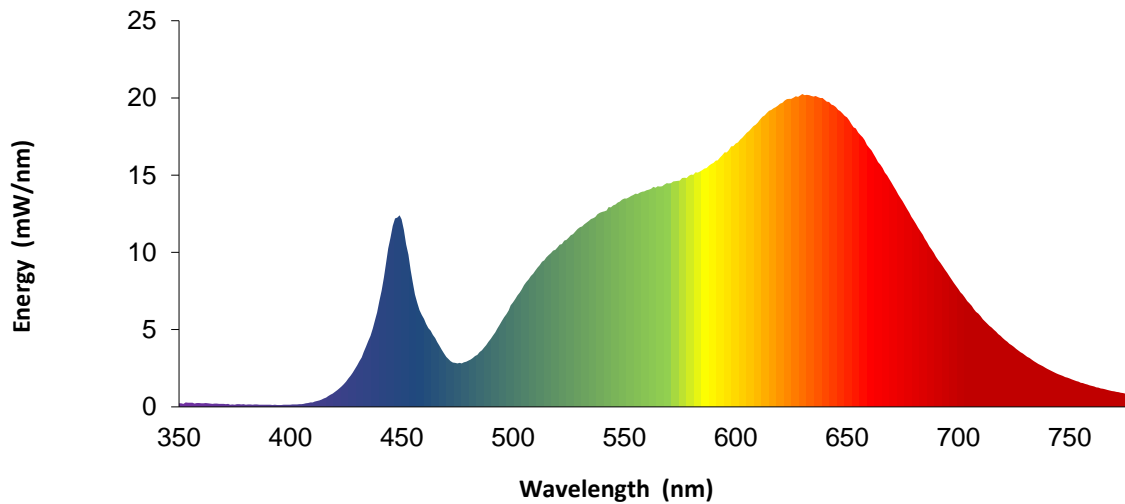
Duv ()	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
0.0013	0.433	0.400	0.250	0.519



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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.2		460	5.7		570	14.5		680	12.1
355	0.3		465	4.5		575	14.7		685	10.9
360	0.2		470	3.2		580	15.0		690	9.7
365	0.2		475	2.8		585	15.3		695	8.7
370	0.2		480	3.0		590	15.8		700	7.6
375	0.1		485	3.6		595	16.5		705	6.7
380	0.1		490	4.4		600	17.0		710	5.9
385	0.2		495	5.6		605	17.8		715	5.1
390	0.1		500	6.8		610	18.4		720	4.4
395	0.1		505	7.9		615	19.2		725	3.9
400	0.1		510	8.8		620	19.6		730	3.3
405	0.2		515	9.7		625	19.9		735	2.9
410	0.3		520	10.3		630	20.3		740	2.5
415	0.5		525	11.0		635	20.1		745	2.1
420	1.0		530	11.6		640	19.9		750	1.8
425	1.6		535	12.2		645	19.4		755	1.6
430	2.7		540	12.6		650	18.7		760	1.4
435	4.3		545	13.1		655	17.8		765	1.2
440	6.8		550	13.5		660	16.8		770	1.0
445	10.9		555	13.8		665	15.7		775	0.9
450	12.1		560	14.0		670	14.5		780	0.7
455	8.1		565	14.3		675	13.3		---	---



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

SEE ANNEX A FOR TM-30 REPORT

EQUIPMENT LIST

REPORT NO. 104659241CRT-006

#	Equipment	Model No	Control No.	Last Cal	Cal Due
1	Elgar AC Power Supply	CW1251	---	VBU	VBU
2	Sorenson DC Power Supply	XFR 150-8	---	VBU	VBU
3	Traceable Hygrothermometer	4800	L206	2/12/2021	2/12/2022
4	Yokogawa Power Analyzer	WT1600	E474	6/15/2021	6/15/2022
5	Fluke Thermometer	53 II	D587	2/5/2021	2/5/2022
6	3M Integrating Sphere Spectrometer System	CDS 1100	O235	7/26/2021	10/26/2021
7	Fisher Scientific Stopwatch	14-649-9	N1132	3/26/2021	3/26/2022
8	LSI High Speed Mirror Goniophotometer	6440	---	8/16/2021	11/16/2021
9	Elgar AC Power Supply	CW1251	---	VBU	VBU
10	Yokogawa Power Analyzer	WT210	E464	5/11/2021	5/11/2022
11	Traceable Hygrothermometer	4800	L204	2/21/2021	2/21/2022
12	Sorenson DC Power Supply	XG 150-10	---	VBU	VBU
13	Omega Thermometer	DPI8-C24	M263	3/23/2021	3/23/2022
14	Bosch Distance Laser	Pro GLM 20	L211	3/3/2021	3/3/2022
15	M-D Building Products Digital Level	Smart Tool	L112	5/26/2021	5/26/2022

REVISION HISTORY

#	Revision Date	Updated By	Reviewed By	Description of Change
---	None	---	---	---
---	---	---	---	---
---	---	---	---	---

ANNEX A - TM-30 CALCULATIONS

REPORT NO. 104659241CRT-006

Test Configuration	Tested Model No.	Pass/Fail/NA
1	ENCY2RS-L129304D-UNV-WW	NA

TM-30 REPORT

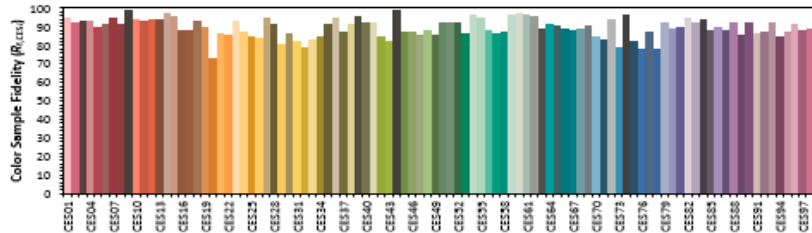
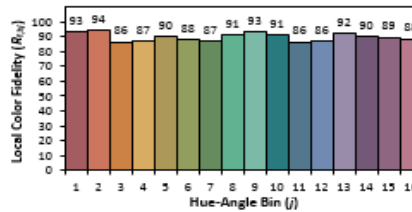
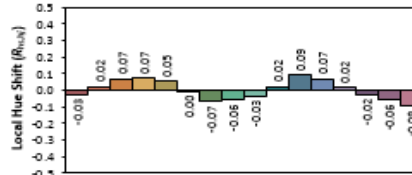
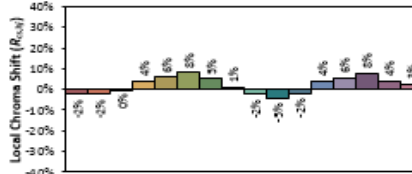
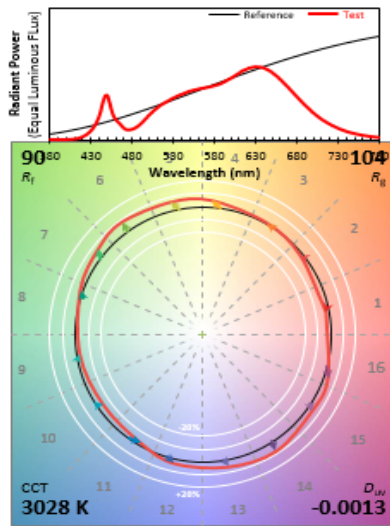
ANSI/IES TM-30-18 Color Rendition Report

Source: 104659241CRT-006

Manufacturer: VISUAL COMFORT AND COMPANY

Date: 8/19/2021

Model: ENCY2RS-L129304D-UNV-WW



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

x 0.4331
 y 0.3996
 u' 0.2500
 v' 0.5191

Colors are for visual orientation purposes only. Created with the IES TM-30-18 Calculator Version 2.00.