

PRIMUS LIGHTING INC.

TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

LN2-SQL-M-3500K-4'

PRODUCT DESCRIPTION

LN "LINEA" SERIES-SQL LENS- MEDIUM LUMENS-3500K-4'

PROJECT NUMBER

G104712003

REPORT NUMBER

104712003LAX-001

ISSUE DATE

July 6, 2021

REVISED DATE

None

TEST DATES

April 27, 2021 through April 29, 2021.

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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104712003LAX-001

MODEL NUMBER(s)

LN2-SQL-M-3500K-4'

PRODUCT DESCRIPTION

LN "LINEA" SERIES-SQL LENS- MEDIUM LUMENS-3500K-4'

REPORT RENDERED TO:

PRIMUS LIGHTING INC.
3570 LEXINGTON AVE
EL MONTE, CA 91731

STATEMENT OF LIMITATION

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-01181034-3.

TEST STANDARDS

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

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

In Charge of Report:

Reviewer:



Nicolas Manders
Engineer
Lighting Division



Vladimir Kozak
Engineering Supervisor
Lighting Division

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SAMPLE INFORMATION

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ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	LAN1804271051-001	LN2-SQL-M-3500K-4'	LN "LINEA" SERIES-SQL LENS-MEDIUM LUMENS-3500K-4'	prototype	4/27/18
2	LAN1804271051-002	--	2" WIDE LINEAR LED SQUARE LENS	prototype	4/27/18

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	LN2-SQL-M-3500K-4'	1,2

SAMPLE PHOTOS - TESTED CONFIGURATIONS



SUMMARY

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PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	LN2-SQL-M-3500K-4'
Product Description:	LN "LINEA" SERIES-SQL LENS- MEDIUM LUMENS-3500K-4'
LED Model No.:	Osram
Driver Model No.:	Osram Oti 50/120-277/14A DIM L
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	3596.0	3749.9
Input Power (W) @ 120 (Vac)	35.88	35.87
Lumen Efficacy (lm/W)	100.2	104.5
Input Power Factor (I) @ 120 (Vac)	0.998	0.997

Criteria	Results
Input ATHD (%) @ 120 (Vac)	5.94
Correlated Color Temperature (K)	3429
Color Rendering Index - Ra (I)	81.7
Color Rendering Index - R9 (I)	11.4
Duv (I)	0.0007
Chromaticity Coordinate (x)	0.409
Chromaticity Coordinate (y)	0.392
Chromaticity Coordinate (u')	0.238
Chromaticity Coordinate (v')	0.512
Input Power (W) @ 277 (Vac)	36.66
Input Power Factor (I) @ 277 (Vac)	0.960
Input ATHD (%) @ 277 (Vac)	14.83

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. 104712003LAX-001

Test Configuration	Tested Model No.	Pass/Fail/NA
1	LN2-SQL-M-3500K-4'	NA

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

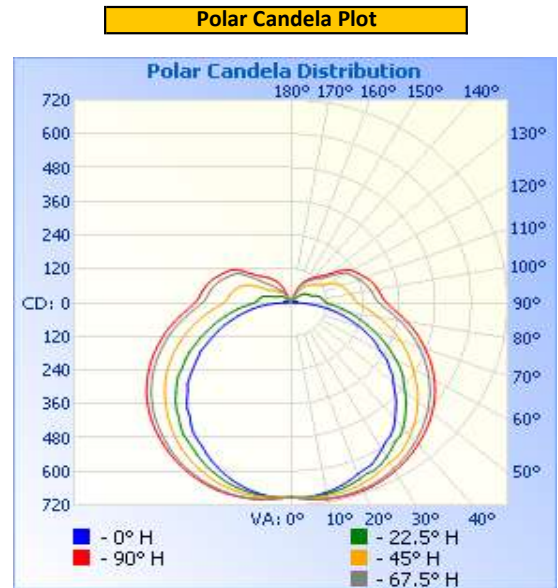
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Up	120.01	299.7	35.88	0.998

Light Output (lm)	Lumen Efficacy (lm/W)
3596.0	100.2

INTENSITY SUMMARY - CANDELA

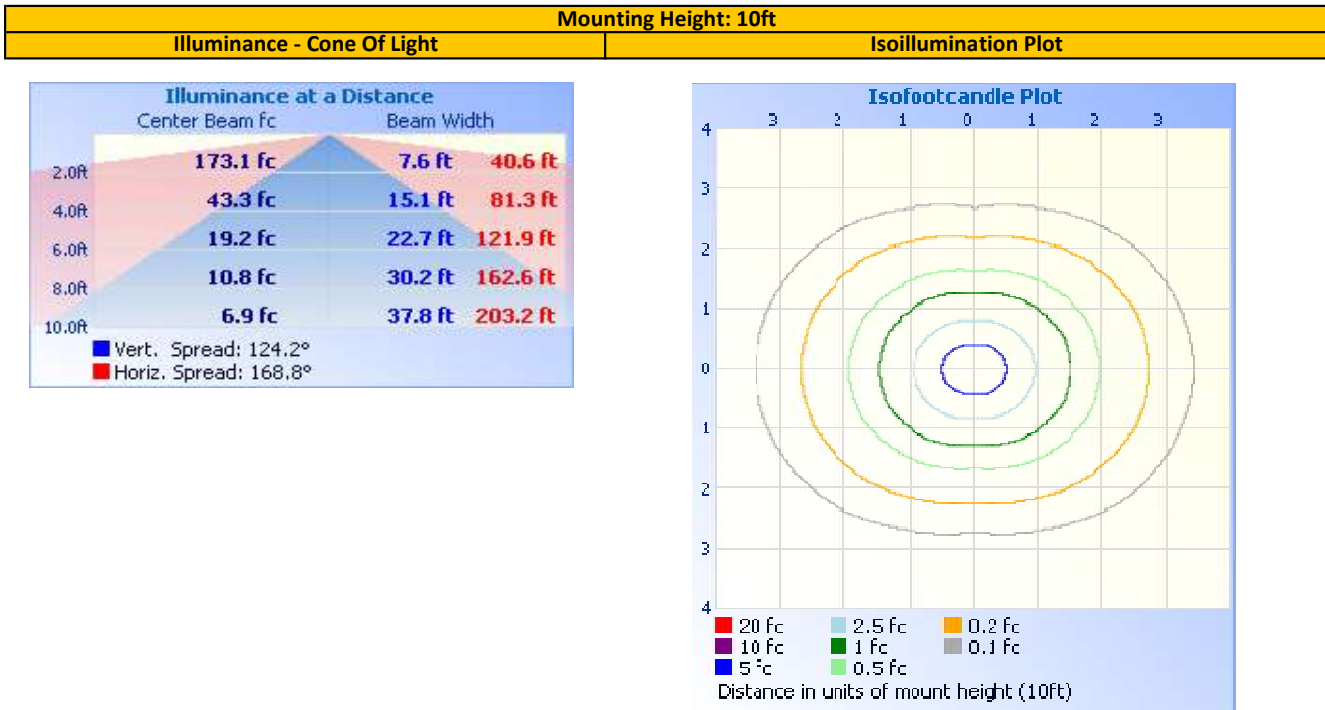
Angle	0	22.5	45	67.5	90
0	692	692	692	692	692
5	694	694	695	701	701
10	685	691	698	707	709
15	670	682	695	708	711
20	649	668	687	704	710
25	636	657	673	696	703
30	604	635	656	682	692
35	578	605	644	666	677
40	539	581	617	645	658
45	496	540	586	621	637
50	445	497	551	595	613
55	400	456	510	564	584
60	344	403	469	530	551
65	298	349	429	492	515
70	239	294	385	452	475
75	182	242	341	410	435
80	127	196	297	368	393
85	73	153	254	325	351
90	9	117	221	294	319
95	21	110	209	278	302
100	18	101	201	269	292
105	16	90	189	257	280
110	15	73	179	241	264
115	13	66	164	227	247
120	12	60	127	211	231
125	11	54	111	170	197
130	10	42	99	137	152
135	9	21	89	120	132
140	8	9	77	105	115
145	7	8	63	90	100
150	7	7	32	73	82
155	6	6	6	42	56
160	6	6	5	5	12
165	5	5	5	4	3
170	5	0	5	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					
Zone	Lumens	Luminaire	Zone	Lumens	Total
0-30	572.6	15.9%	0-10	66.5	1.9%
0-40	968.9	26.9%	10-20	196.2	5.5%
0-60	1,865.9	51.9%	20-30	309.9	8.6%
60-90	1,020.2	28.4%	30-40	396.3	11.0%
70-100	812.3	22.6%	40-50	445.2	12.4%
90-120	527.4	14.7%	50-60	451.8	12.6%
0-90	2,886.2	80.3%	60-70	414.9	11.5%
90-180	709.8	19.7%	70-80	345.2	9.6%
0-180	3,596.0	100.0%	80-90	260.1	7.2%
			90-100	207.0	5.8%
			100-110	179.9	5.0%
			110-120	140.4	3.9%
			120-130	91.6	2.5%
			130-140	51.6	1.4%
			140-150	28.6	0.8%
			150-160	9.3	0.3%
			160-170	1.3	0.0%
			170-180	0.1	0.0%

INTEGRATING SPHERE TESTING

REPORT NO. 104712003LAX-001

Test Configuration	Tested Model No.	Pass/Fail/NA
1	LN2-SQL-M-3500K-4'	NA

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

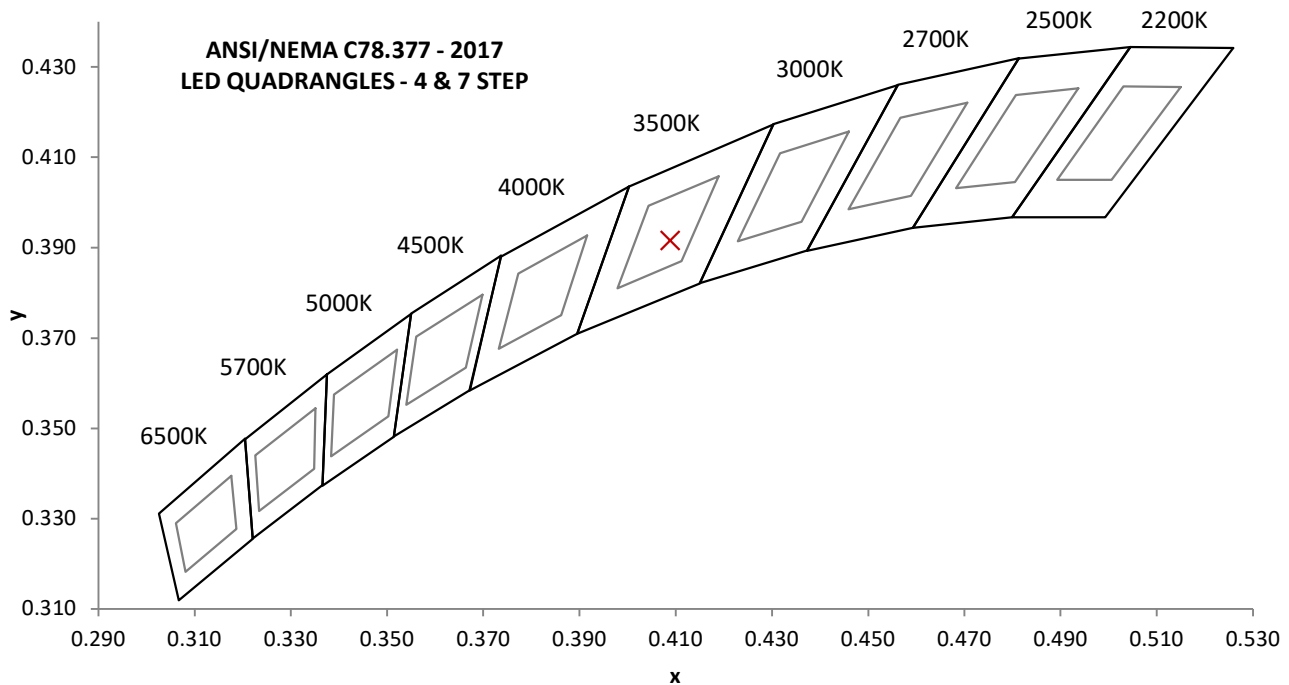
Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()	Input ATHD (%)
120.00	299.7	35.87	0.997	5.94
277.00	137.80	36.66	0.960	14.83

Measured at 120(Vac)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra ()	CRI - R9 ()
3749.9	104.5	3429	81.7	11.4

Duv ()	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
0.0007	0.409	0.392	0.238	0.512

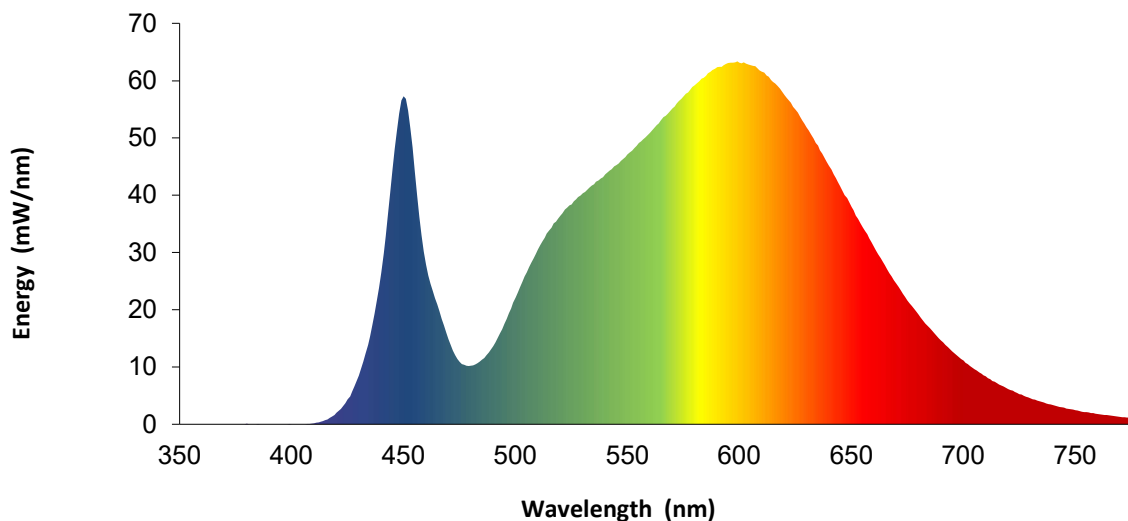


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.0		460	27.9		570	55.2		680	19.1
355	0.0		465	20.9		575	57.3		685	16.8
360	0.0		470	14.9		580	59.2		690	14.6
365	0.0		475	10.9		585	60.8		695	12.8
370	0.0		480	10.2		590	62.4		700	11.1
375	0.0		485	11.3		595	63.1		705	9.6
380	0.1		490	13.7		600	63.1		710	8.3
385	0.1		495	17.6		605	62.7		715	7.2
390	0.0		500	22.2		610	61.6		720	6.2
395	0.0		505	26.6		615	59.8		725	5.3
400	0.0		510	30.6		620	57.5		730	4.5
405	0.0		515	33.9		625	55.0		735	3.9
410	0.2		520	36.5		630	51.9		740	3.3
415	0.7		525	38.4		635	48.6		745	2.9
420	2.0		530	40.3		640	45.2		750	2.4
425	4.4		535	41.9		645	41.6		755	2.1
430	8.5		540	43.6		650	38.0		760	1.8
435	15.3		545	45.3		655	34.4		765	1.5
440	26.4		550	47.1		660	31.1		770	1.3
445	44.4		555	49.1		665	27.8		775	1.1
450	57.3		560	51.0		670	24.5		780	1.0
455	44.1		565	53.1		675	21.7		---	---

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

SEE ANNEX A FOR TM-30 REPORT

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REVISION HISTORY

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ANNEX A - TM-30 (Not covered by NVLAP)

REPORT NO. 104712003LAX-001

Test Configuration	Tested Model No.	Pass/Fail/NA
1	LN2-SQL-M-3500K-4'	NA

TM-30 REPORT

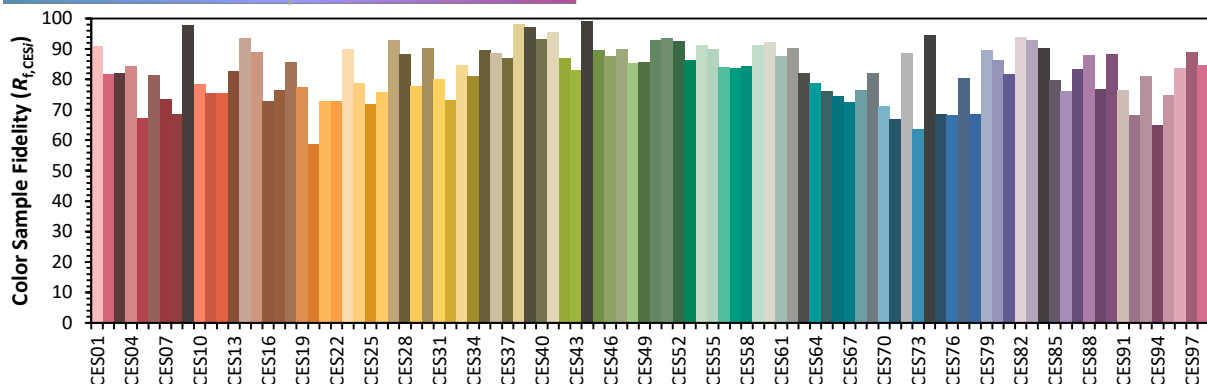
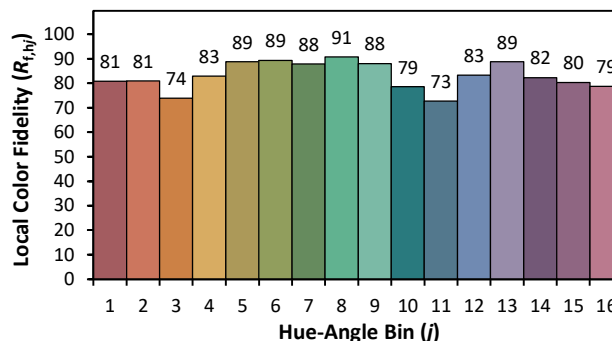
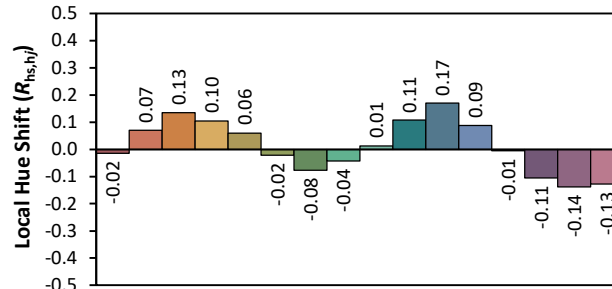
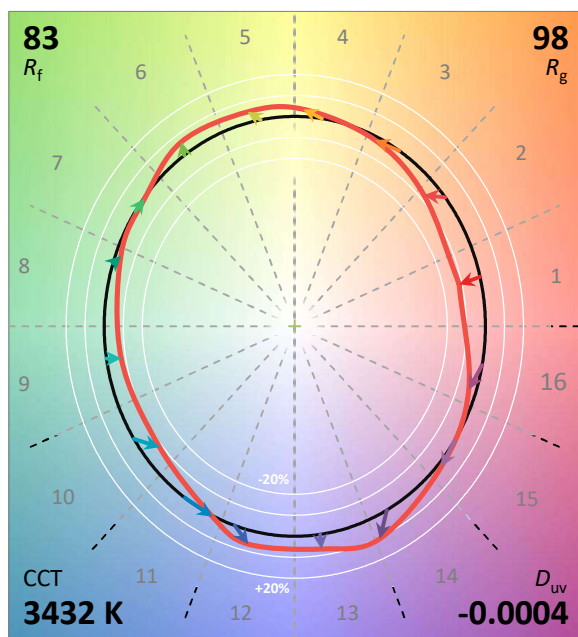
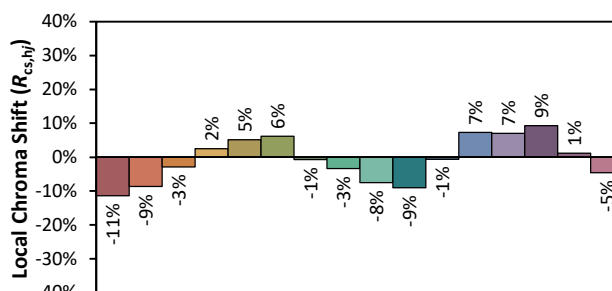
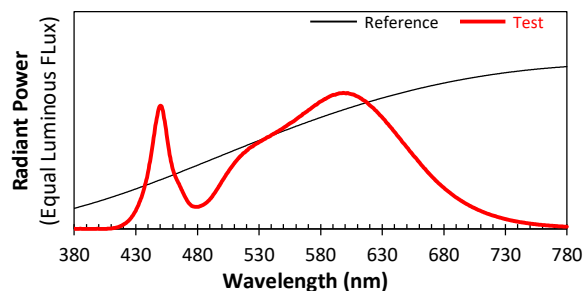
ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Date: 7/6/2021

Manufacturer: PRIMUS LIGHTING INC.

Model: LN2-SQL-M-3500K-4'



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

x 0.4088
y 0.3916
u' 0.2376
v' 0.5122

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