

REPORT

25800 COMMERCENTRE DRIVE, LAKE FOREST, CA 92630

Project No. G104428502

Original Issue Date: August 27, 2020

Revision Date: September 1, 2020

REPORT NO. 104428502LAX-001

TEST OF ONE LED UNDERCABINET/TASK LUMINAIRE

MODEL NO. FC7-M-35K-DO-4'
FOCUS 7- SERIES (EX. ALX7)
" DOWN OPTICS "

LED MODEL NO. OSRAM
DRIVER MODEL NO. OSRAM OTI50

RENDERED TO

PRIMUS LIGHTING INC
3570 LEXINGTON AVE
EL MONTE, CA 91731

Revision Note: September 1, 2020: This report was revised to update the model number information.

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.

TEST: Electrical and Photometric tests as required to the IESNA test standard.

AUTHORIZATION: The testing performed was authorized by signed quote number Qu-01099826-1.

STANDARDS USED: The following American National Standards or Illuminating Engineering Society of North America Test Guides were used in part or totally to test each specimen:

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

ANSI NEMA ANSLG C78.377: 2015: Specifications of the Chromaticity of Solid State Lighting Products

DESCRIPTION OF SAMPLE: The client submitted one production sample of model number FC7-M-35K-DO-4' FOCUS 7- SERIES (EX. ALX7) " DOWN OPTICS ". The sample was received by Intertek on August 26, 2020, in undamaged condition and one sample was tested as received. The sample designation was LAN2008261110-001.

DATES OF TESTS: August 26, 2020 through August 27, 2020.

SUMMARY

Model No.:	FC7-M-35K-DO-4' FOCUS 7- SERIES (EX. ALX7) " DOWN OPTICS "
Description:	LED Undercabinet/Task Luminaire

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	2975	2949
Total Power (W)	29.94	29.86
Luminaire Efficacy (LPW)	99.37	98.76

Criteria	Result
Power Factor at 120Vac	0.967
Power Factor at 277Vac	0.922
Current ATHD % at 120Vac	14.64
Current ATHD % at 277Vac	15.93
Correlated Color Temperature (CCT - K)	3861
Color Rendering Index (CRI - Ra)	83.1
Color Rendering Index (CRI - R9)	11.2
DUV	0.002
Chromaticity Coordinate (x)	0.388
Chromaticity Coordinate (y)	0.385
Chromaticity Coordinate (u')	0.227
Chromaticity Coordinate (v')	0.506

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date	Date Used
Goniophotometer	6440T	000943	VBU	VBU	08/27/20
AC Source	CW1251P	000944	VBU	VBU	08/27/20
Power Analyzer	WT210	000945	10/02/19	10/02/20	08/27/20
Tape Measure	33-428	001491	VBU	VBU	08/27/20
Magnetic Level	581-9	001610	10/11/19	10/11/20	08/27/20
Temp. & RH Meter	Testo 622	001912	04/22/20	04/22/21	08/27/20
Thermometer	DPi8-C24	001782	10/15/19	10/15/20	08/27/20
3m Sphere	CSTM-LMS-3M-3020	000830	VBU	VBU	08/26/20
Spectrometer	CDS-3020-T	000834	VBU	VBU	08/26/20
Power Supply (AC 3P / DC)	CSW5550-208-LAN	001339	VBU	VBU	08/26/20
Power Meter	WT330	001319	07/13/20	07/13/21	08/26/20
Temp. & RH Meter	Testo 622	001910	04/15/20	04/15/21	08/26/20
DC Power Supply	LPS-100-0833	000832	04/22/20	04/22/21	08/26/20
Network TC Reader	iSD-TC	000824	02/08/20	02/08/21	08/26/20

TEST METHODS

Seasoning in Sample Orientation – LED Products

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

Photometric and Electrical Measurements – Integrating Sphere Method

A Labsphere Model CDS-3020 High Sensitivity Multi Channel Spectrometer and Two Meter or Three Meter Sphere was used to measure correlated color temperature, chromaticity coordinates, and the color rendering index for each SSL unit.

Ambient temperature was measured at a position inside the sphere. Each SSL unit was operated on the client provided driver at the rated input voltage in its designated orientation. Each SSL unit was allowed to stabilize for at least thirty minutes before measurements were made. Electrical measurements including voltage, current, and power were measured using the Xitron or Yokogawa Power Analyzer.

The calibration of the sphere photometer-spectroradiometer system is traceable to the National Institute of Standards and Technology.

Photometric and Electrical Measurements – Distribution Method

A LSI Type C High Speed Model 6440 Mirror Goniometer was used to measure the intensity (candelas) at each angle of distribution for each sample.

Ambient temperature was measured equal to the height of the sample mounted on the Goniometer equipment. Each sample was operated at input rated voltage in its designated orientation. Each sample was allowed to stabilize for at least thirty minutes before measurements were made. Electrical measurements including voltage, current, and power were measured using the Xitron or Yokogawa Power Analyzer.

Some graphics were created with Photometrics Plus software.

RESULTS OF TEST

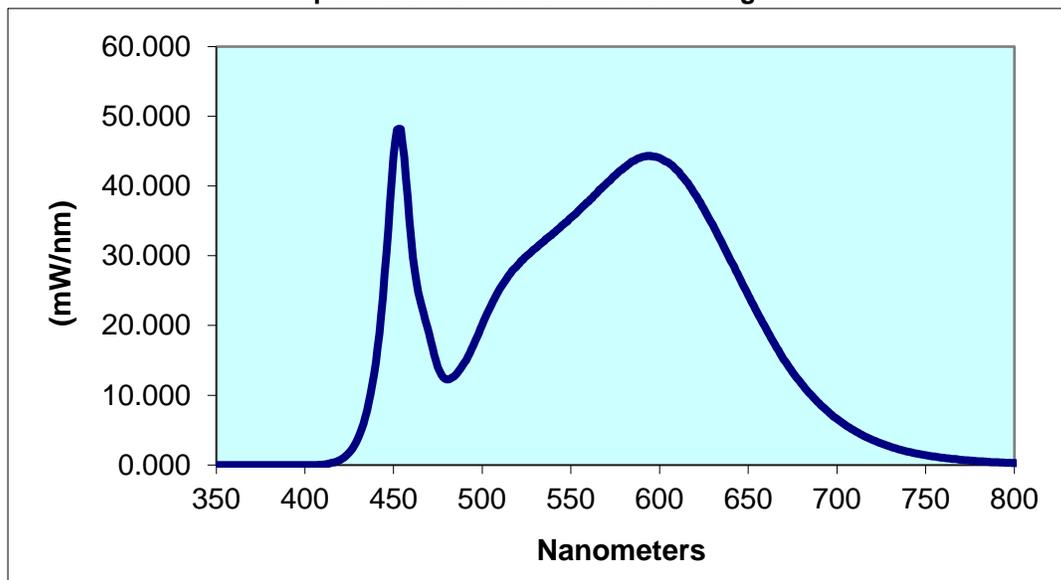
Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) - Integrating Sphere Method

Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
LAN2008261110-001	Up	120.0	258.0	29.94	0.967	14.64	2975	99.37
		277.0	118.2	30.20	0.922	15.93		
Correlated Color Temperature (K)	CRI -Ra	CRI -R9	DUV	CIE 31' Chromaticity Coordinate (x)	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')	CIE 76' Chromaticity Coordinate (v')	
3861	83.1	11.2	0.002	0.388	0.385	0.227	0.506	

Spectral Distribution over Visible Wavelengths

nm	mW/nm								
350	0.000	440	14.71	530	31.07	620	38.82	710	4.902
355	0.000	445	27.30	535	32.12	625	36.72	715	4.201
360	0.000	450	44.17	540	33.20	630	34.43	720	3.614
365	0.000	455	46.19	545	34.33	635	31.93	725	3.110
370	0.000	460	32.24	550	35.44	640	29.38	730	2.627
375	0.000	465	23.64	555	36.62	645	26.88	735	2.246
380	0.000	470	18.81	560	37.77	650	24.34	740	1.910
385	0.000	475	14.03	565	39.11	655	21.90	745	1.633
390	0.000	480	12.27	570	40.35	660	19.56	750	1.401
395	0.000	485	12.92	575	41.51	665	17.28	755	1.211
400	0.000	490	14.68	580	42.63	670	15.15	760	1.028
405	0.000	495	17.15	585	43.56	675	13.31	765	0.864
410	0.021	500	20.12	590	44.14	680	11.67	770	0.742
415	0.287	505	22.89	595	44.32	685	10.16	775	0.629
420	0.738	510	25.26	600	43.99	690	8.847	780	0.532
425	1.785	515	27.18	605	43.36	695	7.642		
430	3.850	520	28.62	610	42.24	700	6.600		
435	7.764	525	29.95	615	40.68	705	5.678		

Spectral Data Over Visible Wavelengths



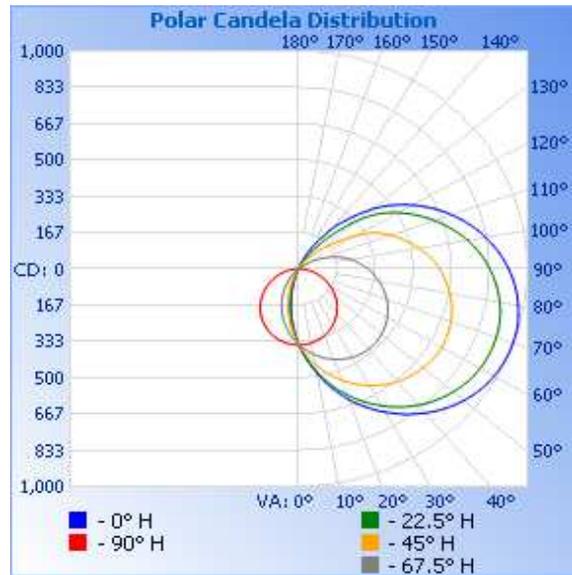
RESULTS OF TEST (cont'd)

Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Distribution Method

Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Absolute Luminous Flux (Lumens)	Lumen Efficacy (LPW)
LAN2008261110-001	Up	120.0	257.8	29.86	0.965	2949	98.76

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	347	347	347	347	347
5	420	418	398	375	348
10	494	486	450	401	344
15	568	553	498	423	337
20	638	616	542	442	326
25	701	673	582	457	314
30	760	726	618	469	298
35	816	775	649	476	280
40	864	816	675	479	260
45	906	852	694	478	237
50	941	880	709	472	213
55	968	902	719	462	187
60	986	916	722	447	160
65	996	921	718	430	134
70	997	920	708	410	106
75	992	911	694	387	80
80	975	893	672	361	54
85	951	868	646	333	27
90	918	836	617	303	0
95	878	797	581	272	0
100	832	751	538	238	0
105	778	698	491	203	0
110	718	641	442	161	0
115	654	580	391	118	0
120	586	515	321	75	0
125	512	446	232	44	0
130	432	359	162	25	0
135	343	253	109	15	0
140	264	165	67	0	0
145	177	97	41	0	0
150	111	51	22	0	0
155	52	21	11	0	0
160	20	0	0	0	0

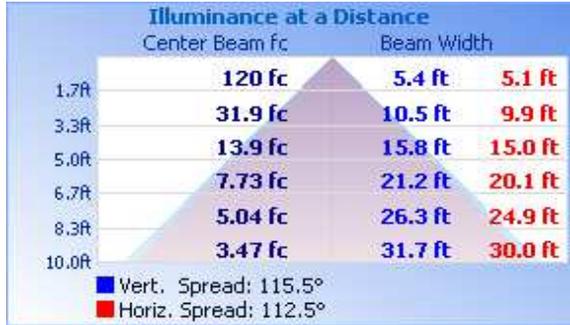


RESULTS OF TEST (cont'd)

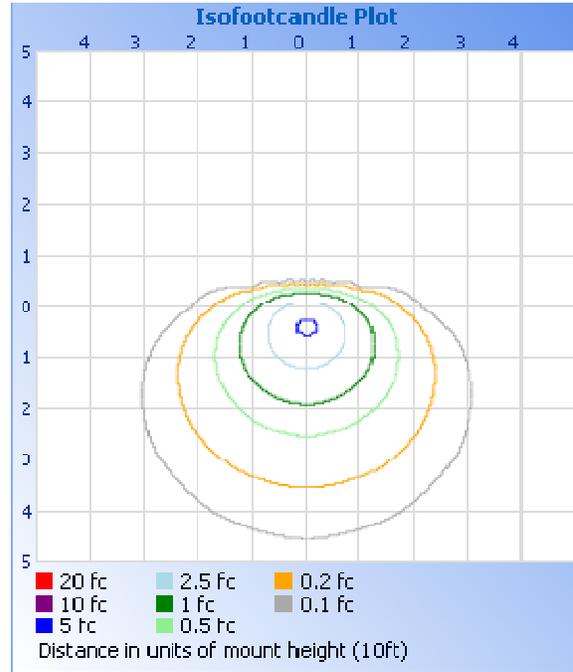
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	284.9	9.7
0-40	498.0	16.9
0-60	1073	36.4
60-90	993.4	33.7
0-90	2067	70.1
90-180	882.4	29.9
0-180	2949	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	33.0	1.1
10-20	96.5	3.3
20-30	155.4	5.3
30-40	213.1	7.2
40-50	266.5	9.0
50-60	308.9	10.5
60-70	334.6	11.3
70-80	338.7	11.5
80-90	320.1	10.9
90-100	284.5	9.6
100-110	235.3	8.0
110-120	175.4	5.9
120-130	110.3	3.7
130-140	54.3	1.8
140-150	18.8	0.6
150-160	3.8	0.1
160-170	0.1	0.0

PICTURES (not to scale)



CONCLUSION

The results tabulated in this report are representative of the actual test samples submitted for this report only. The data is provided to the client for further evaluation. Compliance to the referenced specification requirements was not determined in this report.

In Charge Of Tests:

Kellen Murakami
Technician
Lighting Division

Attachment: None

Report Reviewed By:

Vladimir Kozak
Engineering Supervisor
Lighting Division