

Report of Test LLI-18230-6

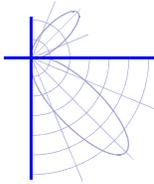
Optolum - Linear strip luminaire. Product ID: FL-CS-H--409USD-A059220
Extruded aluminum housing with linear clear plastic dome lens.
329 LEDs mounted in single row.
No driver.
Operating at 24v DC.



Performance Summary

Total Light Output	4028 lm
Luminaire Power	36.0 W
Luminous Efficacy	111.9 lm/W
CCT	3970 K
CIE(x,y) 1931	(0.381, 0.376)
CRI	94

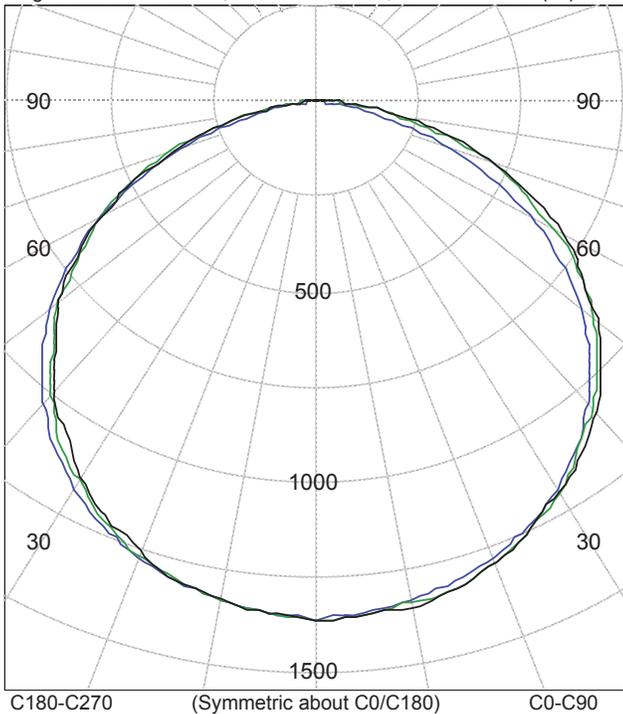
PREPARED FOR : Optolum, Tempe, AZ 85281



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Legend: C0/C180-Black, C45/C225-Green, C90/C270-Blue (cd)



INTENSITY SUMMARY (cd)

Gamma	C-Plane					Flux (lm)
	C0	C22.5	C45	C67.5	C90	
0.0	1362	1362	1362	1362	1362	
5.0	1354	1353	1356	1360	1350	129
10.0	1350	1345	1339	1339	1332	
15.0	1324	1319	1325	1307	1306	370
20.0	1285	1282	1285	1284	1272	
25.0	1235	1237	1239	1244	1229	565
30.0	1184	1175	1188	1188	1174	
35.0	1126	1128	1114	1119	1107	689
40.0	1061	1057	1047	1041	1027	
45.0	983	985	967	952	937	724
50.0	895	895	880	848	840	
55.0	785	780	782	738	726	661
60.0	689	691	671	636	601	
65.0	572	573	555	517	467	502
70.0	448	440	438	391	326	
75.0	322	320	306	259	193	276
80.0	203	203	186	155	88	
85.0	94	92	84	66	26	77
90.0	31	32	29	23	0	

ZONAL FLUX AND PERCENTAGES

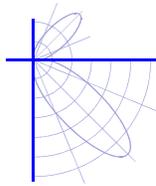
Zone	Flux (lm)	% Lamp	% Luminaire
0-30	1064	N / A	26.4
0-40	1753	N / A	43.5
0-60	3137	N / A	77.9
0-90	3993	N / A	99.1
40-90	2240	N / A	55.6
60-90	855	N / A	21.2
90-180	36	N / A	0.9
0-180	4028	N / A	100.0

Total Light Output = 4,028 lm

Signed:

Ryder Tunney
Ryder Tunney
Authorized Signatory

Date of test 21-Aug-2018
Date of report 21-Aug-2018

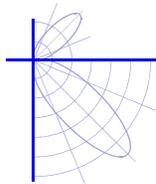


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Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
0.0	1362	1362	1362	1362	1362
2.5	1361	1358	1362	1365	1354
5.0	1354	1353	1356	1360	1350
7.5	1353	1345	1345	1351	1342
10.0	1350	1345	1339	1339	1332
12.5	1340	1337	1334	1325	1320
15.0	1324	1319	1325	1307	1306
17.5	1306	1302	1306	1294	1290
20.0	1285	1282	1285	1284	1272
22.5	1267	1262	1263	1265	1252
25.0	1235	1237	1239	1244	1229
27.5	1203	1206	1213	1219	1203
30.0	1184	1175	1188	1188	1174
32.5	1158	1153	1151	1154	1142
35.0	1126	1128	1114	1119	1107
37.5	1093	1092	1077	1081	1069
40.0	1061	1057	1047	1041	1027
42.5	1027	1023	1012	995	983
45.0	983	985	967	952	937
47.5	941	938	923	904	890
50.0	895	895	880	848	840
52.5	832	845	836	792	786
55.0	785	780	782	738	726
57.5	746	734	732	690	665
60.0	689	691	671	636	601
62.5	631	634	603	577	535
65.0	572	573	555	517	467
67.5	506	508	500	455	397
70.0	448	440	438	391	326
72.5	392	386	372	324	258
75.0	322	320	306	259	193
77.5	263	257	251	212	135
80.0	203	203	186	155	88
82.5	138	140	134	107	52
85.0	94	92	84	66	26
87.5	62	63	57	37	8
90.0	31	32	29	23	0

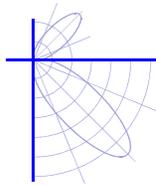


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Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
90.0	31	32	29	23	0
92.5	19	21	19	17	0
95.0	16	17	16	14	0
97.5	15	16	14	13	0
100.0	15	15	13	11	0
102.5	14	13	11	10	0
105.0	13	12	10	8	0
107.5	11	10	9	7	0
110.0	10	10	8	6	0
112.5	9	9	7	5	0
115.0	8	8	6	4	0
117.5	8	7	6	3	0
120.0	7	6	5	0	0
122.5	6	6	5	0	0
125.0	6	5	4	0	0
127.5	5	5	4	0	0
130.0	5	5	4	0	0
132.5	4	4	3	0	0
135.0	4	4	3	0	0
137.5	4	4	2	0	0
140.0	4	3	0	0	0
142.5	4	3	0	0	0
145.0	3	3	0	0	0
147.5	0	0	0	0	0
150.0	0	0	0	0	0
152.5	0	0	0	0	0
155.0	0	0	0	0	0
157.5	0	0	0	0	0
160.0	0	0	0	0	0
162.5	0	0	0	0	0
165.0	0	0	0	0	0
167.5	0	0	0	0	0
170.0	0	0	0	0	0
172.5	0	0	0	0	0
175.0	0	0	0	0	0
177.5	0	0	0	0	0
180.0	0	0	0	0	0

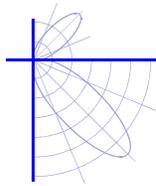


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Intensity data (cd)

Gamma	C-Plane				
	C90	C112.5	C135	C157.5	C180
0.0	1362	1362	1362	1362	1362
2.5	1354	1363	1360	1356	1358
5.0	1350	1357	1350	1345	1348
7.5	1342	1347	1342	1341	1342
10.0	1332	1333	1332	1329	1329
12.5	1320	1319	1317	1311	1315
15.0	1306	1307	1299	1300	1304
17.5	1290	1291	1282	1283	1284
20.0	1272	1270	1267	1259	1254
22.5	1252	1249	1246	1226	1228
25.0	1229	1223	1219	1204	1204
27.5	1203	1196	1184	1176	1176
30.0	1174	1165	1151	1140	1142
32.5	1142	1134	1125	1109	1103
35.0	1107	1103	1088	1063	1058
37.5	1069	1065	1041	1018	1031
40.0	1027	1022	1003	990	990
42.5	983	978	951	945	941
45.0	937	926	900	893	891
47.5	890	879	865	844	850
50.0	840	831	814	800	813
52.5	786	773	752	764	770
55.0	726	713	697	717	706
57.5	665	655	647	654	658
60.0	601	588	606	605	599
62.5	535	526	547	542	543
65.0	467	460	492	492	487
67.5	397	392	432	423	404
70.0	326	335	373	348	352
72.5	258	291	303	300	297
75.0	193	237	237	241	235
77.5	135	183	192	176	164
80.0	88	131	133	123	123
82.5	52	87	87	88	81
85.0	26	51	56	51	46
87.5	8	30	31	29	26
90.0	0	21	23	22	20

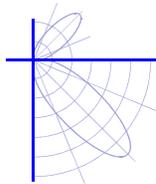


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Intensity data (cd)

Gamma	C-Plane				
	C90	C112.5	C135	C157.5	C180
90.0	0	21	23	22	20
92.5	0	18	21	22	20
95.0	0	17	20	21	20
97.5	0	14	18	20	20
100.0	0	11	17	19	19
102.5	0	8	14	17	18
105.0	0	5	12	15	16
107.5	0	4	10	13	14
110.0	0	0	7	11	12
112.5	0	0	5	9	10
115.0	0	0	4	6	8
117.5	0	0	4	5	6
120.0	0	0	3	4	4
122.5	0	0	3	3	4
125.0	0	0	0	3	3
127.5	0	0	0	3	3
130.0	0	0	0	3	3
132.5	0	0	0	0	3
135.0	0	0	0	0	2
137.5	0	0	0	0	0
140.0	0	0	0	0	0
142.5	0	0	0	0	0
145.0	0	0	0	0	0
147.5	0	0	0	0	0
150.0	0	0	0	0	0
152.5	0	0	0	0	0
155.0	0	0	0	0	0
157.5	0	0	0	0	0
160.0	0	0	0	0	0
162.5	0	0	0	0	0
165.0	0	0	0	0	0
167.5	0	0	0	0	0
170.0	0	0	0	0	0
172.5	0	0	0	0	0
175.0	0	0	0	0	0
177.5	0	0	0	0	0
180.0	0	0	0	0	0



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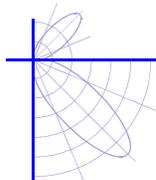
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LM-79 Performance Data

Spectral	CIE 1931 (x, y) ⁽¹⁾	(0.381, 0.376)
	CIE 1976 (u', v') ⁽¹⁾	(0.226, 0.501)
	Correlated Color Temperature (CCT) ⁽¹⁾	3970 K
	Spatial Δ (u', v') Uniformity ⁽²⁾	2.74E-03
	Color Rendering Index (Ra) ⁽¹⁾	94.1
	Special CRI 9 (R ₉) ^{(1),(3)}	73.8
	Distance from Planckian Locus (Duv) ^{(1),(3)}	-6.92E-04
	Scotopic/Photopic Ratio ^{(1),(3)}	1.76
Electrical	Voltage	24.00 V
	Current	1.501 A
	Power	36.0 W

Performance data in accordance with IESNA LM-79-08. Spectral calculations are for a CIE 2° observer

- (1) Value is computed from the weighted average of the spatial measurements
- (2) Value is the maximum deviation of the spatial u' and v' measurements from the weighted average
- (3) Quantity is in addition to the scope of IESNA LM-79-08



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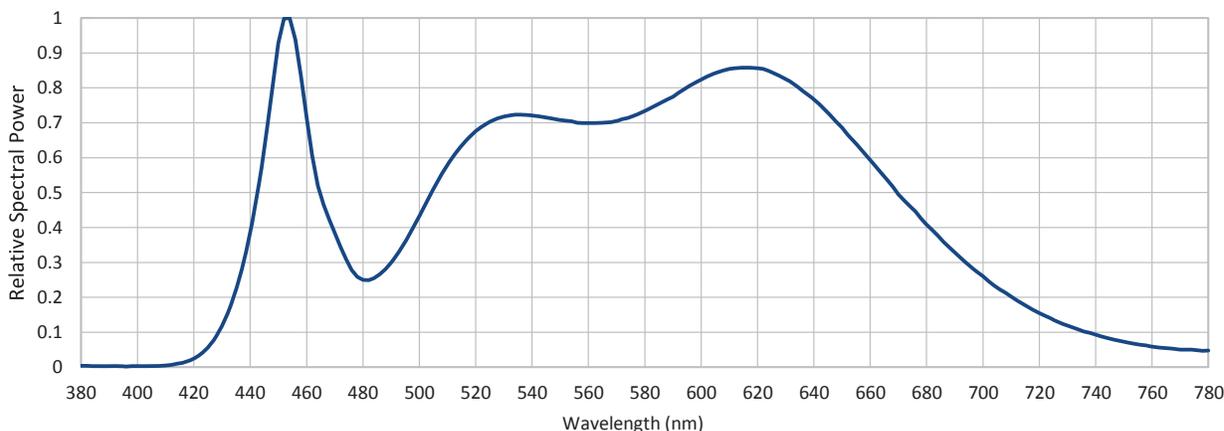
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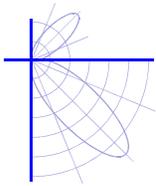
LM-79 Performance Data

Relative spectral power distribution

(Relative to peak = 1, weighted average of spatial measurements)

λ (nm)	Relative Power								
380	0.004	460	0.713	540	0.721	620	0.856	700	0.260
385	0.003	465	0.493	545	0.715	625	0.845	705	0.229
390	0.003	470	0.384	550	0.708	630	0.826	710	0.202
395	0.003	475	0.294	555	0.702	635	0.798	715	0.177
400	0.003	480	0.250	560	0.699	640	0.767	720	0.155
405	0.003	485	0.260	565	0.700	645	0.728	725	0.136
410	0.005	490	0.300	570	0.705	650	0.686	730	0.119
415	0.011	495	0.359	575	0.717	655	0.639	735	0.105
420	0.025	500	0.434	580	0.734	660	0.594	740	0.093
425	0.058	505	0.511	585	0.754	665	0.546	745	0.082
430	0.118	510	0.579	590	0.775	670	0.495	750	0.073
435	0.224	515	0.635	595	0.801	675	0.454	755	0.066
440	0.386	520	0.676	600	0.824	680	0.409	760	0.059
445	0.628	525	0.703	605	0.842	685	0.368	765	0.055
450	0.928	530	0.718	610	0.854	690	0.329	770	0.050
455	0.969	535	0.723	615	0.858	695	0.292	775	0.049
								780	0.048

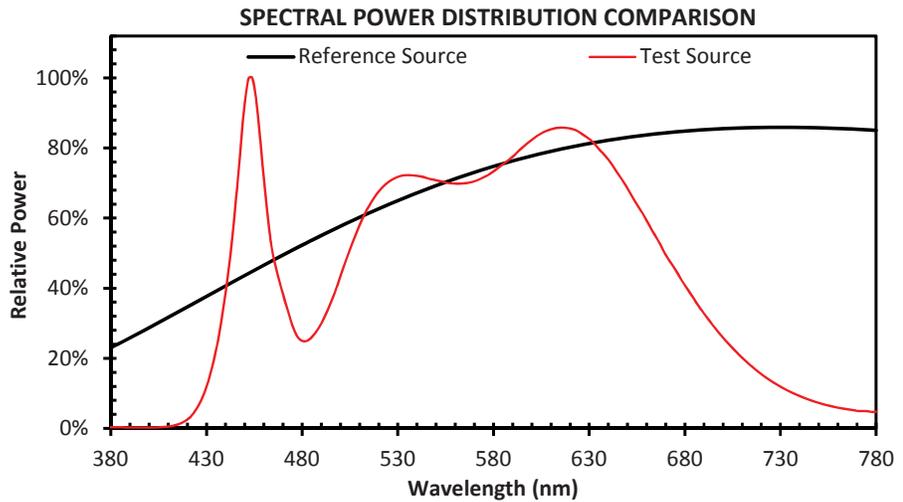




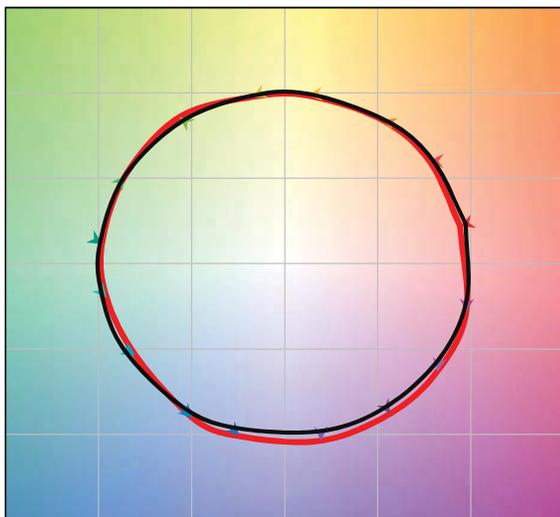
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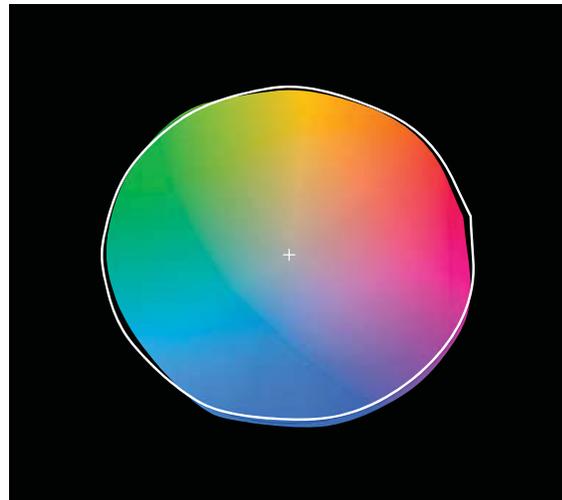
R_f	90
R_g	101

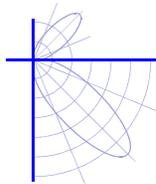


COLOR VECTOR GRAPHIC



COLOR DISTORTION GRAPHIC





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Test Distance 8.0 m
Test Temperature 25.4 °C

Notes The laboratory has not participated in the selection of samples to be tested. All testing is performed on the understanding that the significance of the report is limited to the extent that the test sample is representative of production units.

Tested in accordance with the applicable sections of publications: IES LM-79-08 (Sec. 12), IES LM-16-93, IES LM-58-13, CIE 13.3:1995, CIE 15:2004, ANSI C78.377:2015, ANSI C82.77-10:2014.

The luminous intensity values, and other derived quantities, contained in this report are based on the absolute data, as measured.

Prorating the performance of the sample for the use of other component combinations (such as lamp / LED / Ballast / driver), or for use in different environmental conditions than that tested, may produce erroneous results.

This report is free of erasures and corrections.

Photometric intensity values are reported using the CIE Gamma coordinate system as defined in CIE publication number 121.

This report may contain data that are not covered by the NVLAP accreditation. Quantities marked with * are not covered.

This report must not be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the Federal Government.