



Report of Test LLI-21208-16

LED Roadway Lighting - Roadway luminaire. Product ID: "NXT-12S-5-X-3LM-3-XX-4-XX-X-XX-0424"

Grey cast aluminum housing with clear flat glass lens.

12 LEDs in one square array with clear plastic sheet of individual lenses.

One Philips Xitanium LED driver. Model: 929000708803 set to 350ma.

Operating at 120v AC and 60 Hz.

With black plastic back light shield.



Performance Summary

Total Light Output	1134 lm	Min Power Factor	0.76 @ 277 V
Luminaire Power	14.7 W	Max THD(i)*	17.0 % @ 277 V
Luminous Efficacy	77.1 lm/W	0-90° Zonal Flux %	100.0 %
CCT	3110 K	80-90° Zonal Flux %	0.6 %
CIE(x,y) 1931	(0.426, 0.396)	BUG Rating*	B0-U0-G0
CRI	74	Street Classification*	Type III Short

This report contains data that are not covered by the NVLAP accreditation. Data marked with * are not covered.

Prepared for : LED Roadway Lighting Ltd, 84 Chain Lake Drive, Halifax. NS Canada

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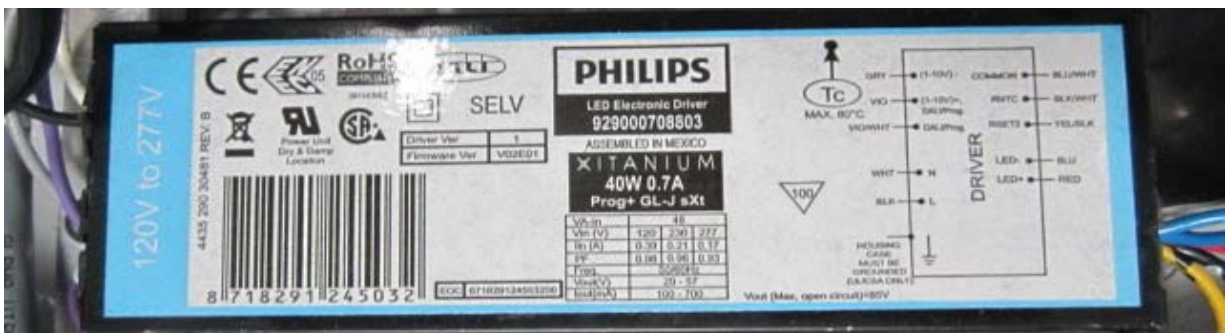
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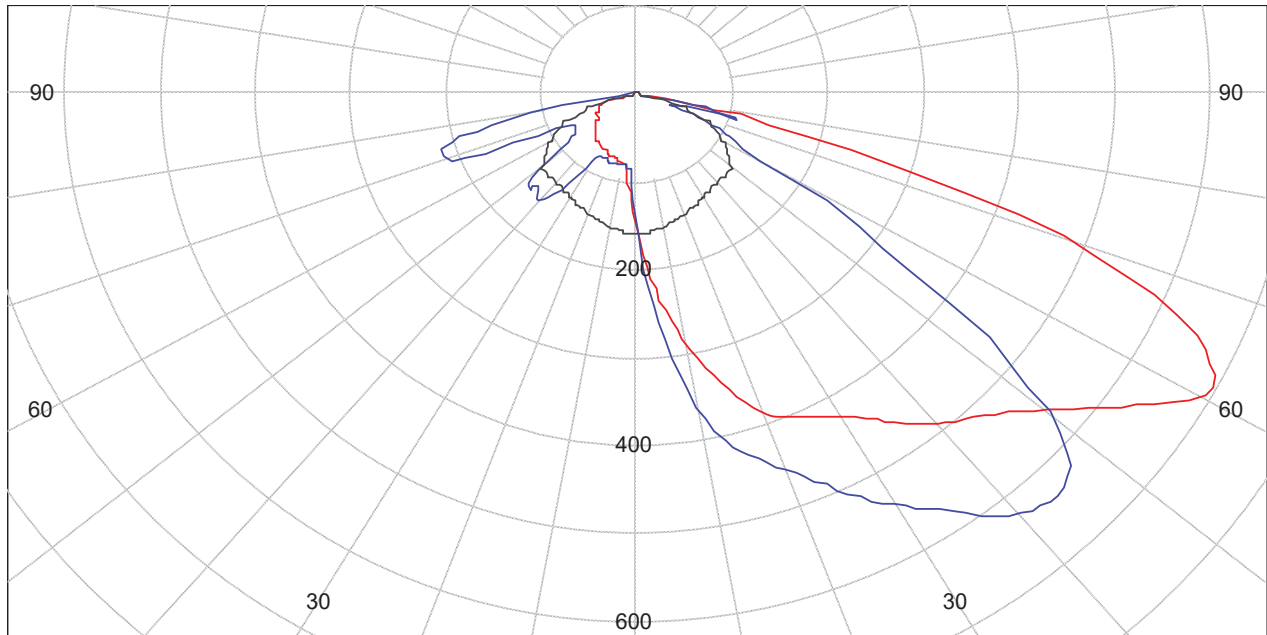
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Polar Light Distribution Curves



House side / L270

L90 / 270 - Black, Plane of maximum - Red, L0 / 180 - Blue (cd)

Street side / L90

Percentage Outputs

	Upward	Downward	Total
Street Side	0.0 %	82.7 %	82.7 %
House Side	0.0 %	17.3 %	17.3 %
	0.0 %	100.0 %	100.0 %

Report data based on absolute values as measured.

Signed:

Ryder Tunney
Ryder Tunney
Authorized Signatory

Date of test
Date of report

23-Aug-2021
26-Aug-2021

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RT



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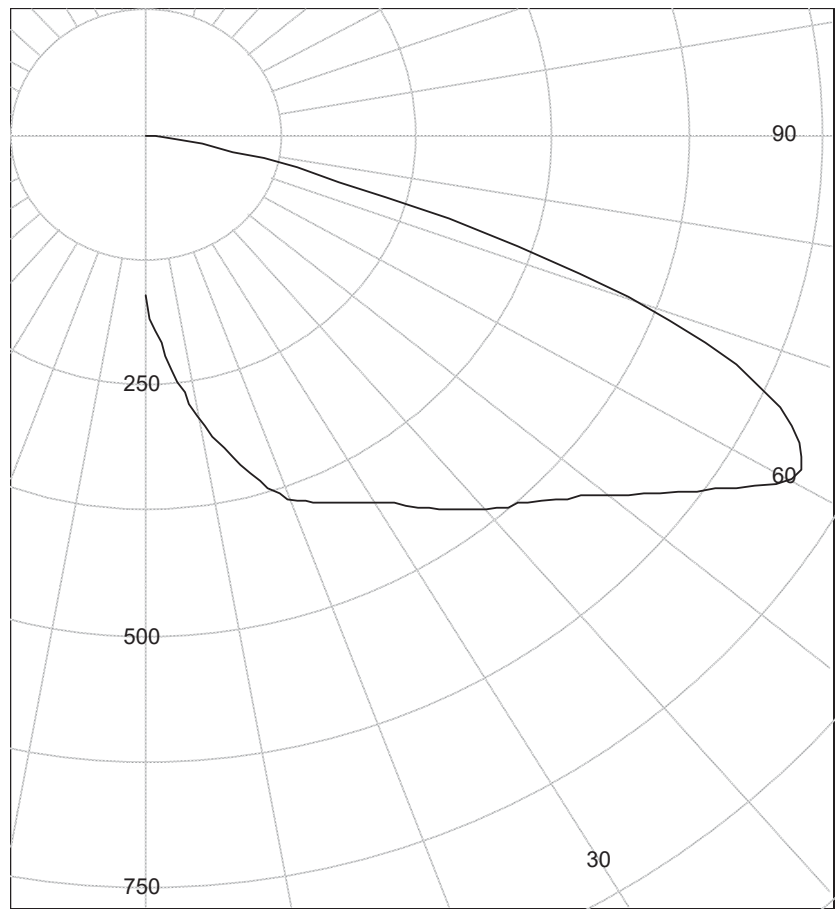
Operating at 120v AC and 60 Hz.

With black plastic back light shield.

Intensity in principal plane
(based on overall max intensity)

Vertical Angle (°)	Intensity (cd)
0.0	159.3
10.0	284.0
20.0	384.8
30.0	425.3
35.0	454.8
40.0	488.3
45.0	515.7
47.5	535.5
50.0	559.7
52.5	587.7
55.0	618.7
57.5	654.3
60.0	686.4
62.5	680.0
65.0	646.1
67.5	573.0
70.0	474.3
72.5	328.6
75.0	184.7
77.5	96.4
80.0	29.2
82.5	6.6
85.0	1.4
87.5	0.4
90.0	0.0
92.5	0.0
95.0	0.0
97.5	0.0
100.0	0.0
102.5	0.0
105.0	0.0
120.0	0.0
135.0	0.0
150.0	0.0
165.0	0.0
180.0	0.0

Principal Vertical Plane



House side max intensity

213.8 cd @ (180.0°, 72.0°)

Street side max intensity

689.6 cd @ (50.0°, 61.0°)

Coordinates expressed in the C Type coordinate system

Data for the two symmetric halves of the luminaire has been averaged.



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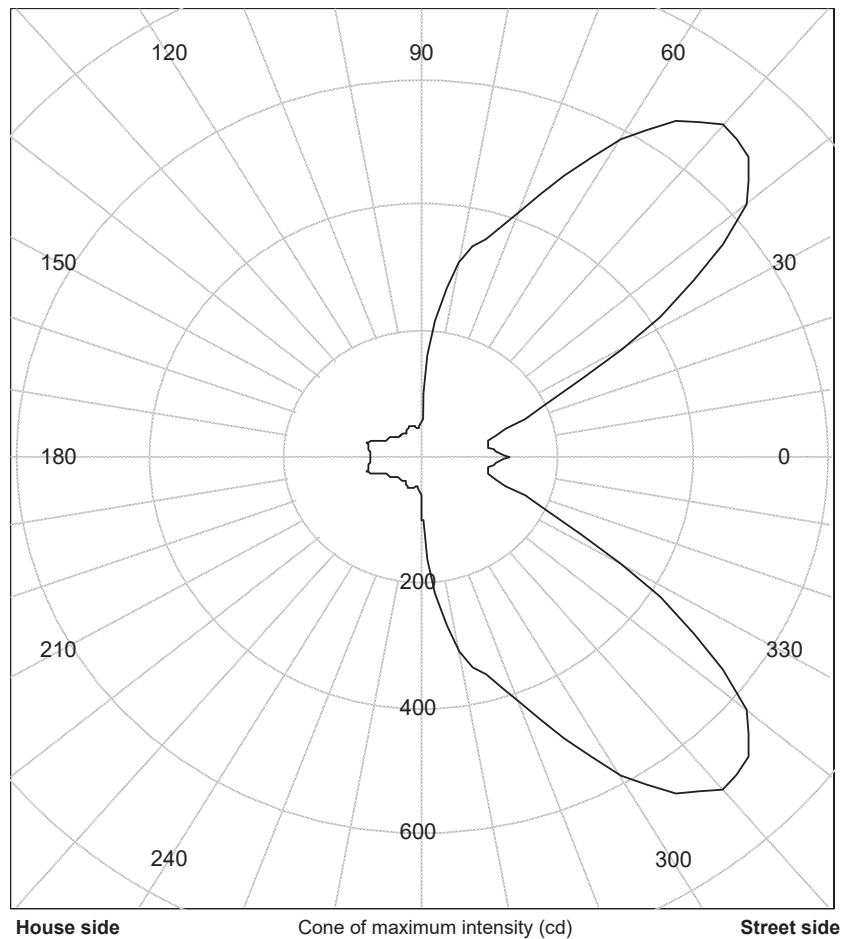
Operating at 120v AC and 60 Hz.

With black plastic back light shield.

Intensity in principal cone
(based on overall max intensity)

Lateral Plane (°)	(V61.0) (cd)
0	127.9
15	97.7
30	336.1
40	624.7
45	678.5
50	689.6
55	653.3
60	584.6
65	494.7
70	413.0
75	360.0
80	315.5
85	218.5
90	100.1
95	49.4
100	48.8
105	52.4
110	54.4
115	50.3
120	47.0
125	46.7
130	47.7
135	46.9
140	48.1
150	56.8
165	83.0
180	74.2

Principal Conical Surface



House side max intensity

213.8 cd @ (180.0°, 72.0°)

Street side max intensity

689.6 cd @ (50.0°, 61.0°)

Coordinates expressed in the C Type coordinate system

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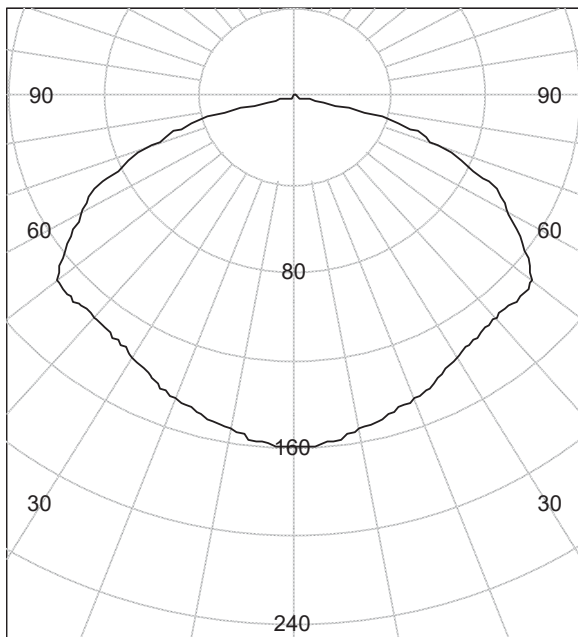
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Polar curve through L90 / L270

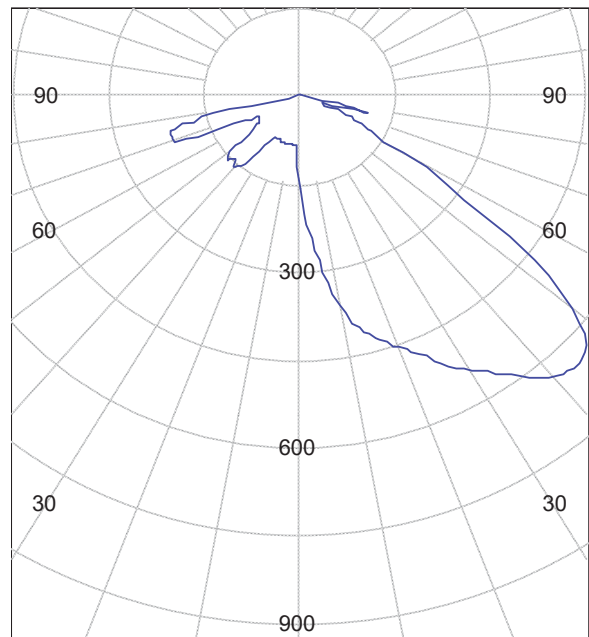


(L90)

(cd)

(L270)

Polar curve through L0 / L180



House side (L180)

(cd)

Street side (L0)



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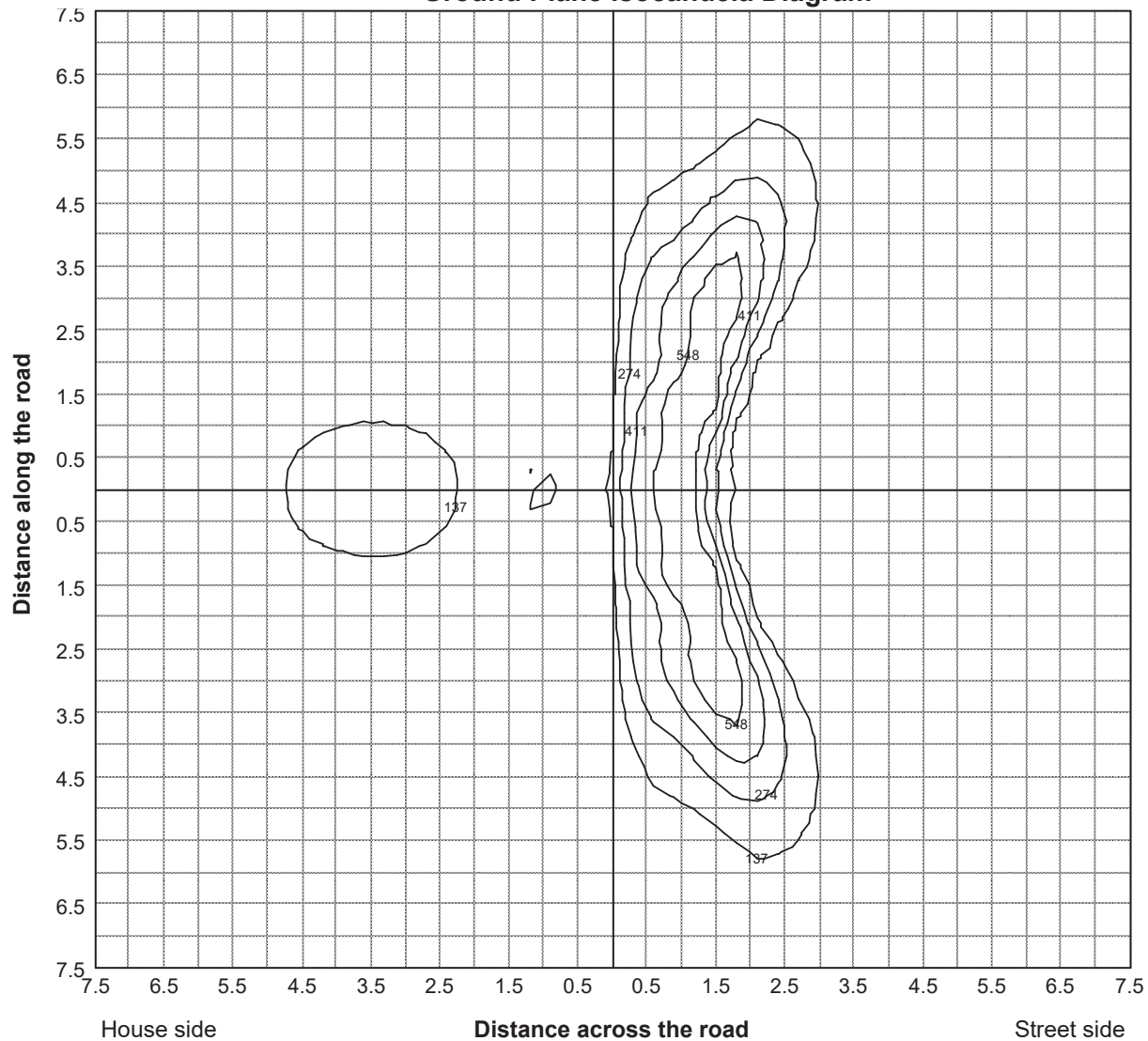
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Ground Plane Isocandela Diagram



The isocandela contour units are expressed as cd

Upstream and downstream sides have been averaged.



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Intensity data (cd)									
Vertical	L-Plane								
	L0	L15	L30	L40	L45	L50	L55	L60	L65
0.0	159	159	159	159	159	159	159	159	159
10.0	360	352	332	311	298	284	270	255	239
20.0	455	445	427	409	399	385	364	338	310
30.0	539	531	501	464	444	425	406	389	370
35.0	578	573	542	504	480	455	433	416	396
40.0	624	618	580	534	511	488	457	430	409
45.0	633	627	602	568	543	516	486	453	425
47.5	615	611	611	583	564	536	505	472	441
50.0	563	581	611	598	585	560	530	494	458
52.5	480	513	602	612	608	588	559	520	477
55.0	348	431	577	624	630	619	593	554	496
57.5	257	275	520	630	652	654	634	582	501
60.0	150	145	400	631	672	686	653	588	498
62.5	112	62	214	584	676	680	646	577	490
65.0	95	46	81	426	590	646	626	570	493
67.5	69	38	45	210	427	573	618	579	514
70.0	41	33	43	80	235	474	598	618	565
72.5	43	24	40	54	108	329	540	636	618
75.0	110	15	38	45	67	185	409	586	608
77.5	78	10	31	56	56	96	231	386	486
80.0	36	6	7	24	34	29	81	159	215
82.5	2	2	3	6	6	7	8	14	31
85.0	1	1	1	1	1	1	1	2	2
87.5	0	0	0	0	0	0	0	0	0
90.0	0	0	0	0	0	0	0	0	0
92.5	0	0	0	0	0	0	0	0	0
95.0	0	0	0	0	0	0	0	0	0
97.5	0	0	0	0	0	0	0	0	0
100.0	0	0	0	0	0	0	0	0	0
102.5	0	0	0	0	0	0	0	0	0
105.0	0	0	0	0	0	0	0	0	0
120.0	0	0	0	0	0	0	0	0	0
135.0	0	0	0	0	0	0	0	0	0
150.0	0	0	0	0	0	0	0	0	0
165.0	0	0	0	0	0	0	0	0	0
180.0	0	0	0	0	0	0	0	0	0



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Intensity data (cd)									
Vertical	L-Plane								
	L70	L75	L80	L85	L90	L95	L100	L105	L110
0.0	159	159	159	159	159	159	159	159	159
10.0	223	206	189	172	154	137	121	107	95
20.0	280	249	215	181	146	114	88	77	75
30.0	336	289	240	189	137	91	71	69	69
35.0	363	312	254	194	133	82	68	67	67
40.0	382	336	272	203	131	75	65	64	64
45.0	401	366	297	218	131	70	62	61	60
47.5	411	382	312	226	131	69	60	58	58
50.0	425	398	328	234	129	67	58	56	56
52.5	440	404	332	233	123	63	56	54	55
55.0	442	396	329	228	116	59	53	53	54
57.5	430	380	321	222	109	55	51	52	53
60.0	417	365	315	218	102	51	49	52	54
62.5	410	358	321	221	95	47	48	53	55
65.0	418	368	339	226	86	45	47	54	56
67.5	446	387	352	227	73	41	44	51	54
70.0	483	402	355	228	60	37	38	44	48
72.5	507	403	348	216	52	31	31	33	37
75.0	483	344	278	179	38	24	23	24	28
77.5	378	241	180	118	20	15	14	18	23
80.0	196	104	68	46	8	8	9	11	11
82.5	29	12	9	16	4	3	4	4	4
85.0	2	1	1	1	1	1	1	1	1
87.5	0	0	0	0	0	0	0	0	0
90.0	0	0	0	0	0	0	0	0	0
92.5	0	0	0	0	0	0	0	0	0
95.0	0	0	0	0	0	0	0	0	0
97.5	0	0	0	0	0	0	0	0	0
100.0	0	0	0	0	0	0	0	0	0
102.5	0	0	0	0	0	0	0	0	0
105.0	0	0	0	0	0	0	0	0	0
120.0	0	0	0	0	0	0	0	0	0
135.0	0	0	0	0	0	0	0	0	0
150.0	0	0	0	0	0	0	0	0	0
165.0	0	0	0	0	0	0	0	0	0
180.0	0	0	0	0	0	0	0	0	0



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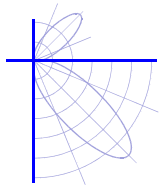
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Intensity data (cd)									
Vertical	L-Plane								
	L115	L120	L125	L130	L135	L140	L150	L165	L180
0.0	159	159	159	159	159	159	159	159	159
10.0	86	82	81	80	80	80	81	82	82
20.0	74	75	75	75	76	77	78	81	82
30.0	69	69	70	70	71	72	73	77	81
35.0	67	68	68	69	70	70	76	108	124
40.0	65	65	65	67	69	75	101	143	159
45.0	61	61	60	62	67	77	97	133	152
47.5	59	59	58	59	63	69	89	144	154
50.0	56	57	56	56	59	64	88	145	134
52.5	54	54	54	53	55	60	89	124	98
55.0	52	51	51	51	52	56	85	102	80
57.5	50	48	48	49	50	53	71	93	78
60.0	50	47	47	48	48	49	60	87	75
62.5	52	48	46	47	45	46	53	77	80
65.0	55	49	46	44	42	44	49	81	115
67.5	55	51	52	42	39	43	49	117	184
70.0	50	48	55	42	36	41	60	155	212
72.5	42	38	41	37	32	37	69	160	214
75.0	32	28	28	26	24	30	63	144	192
77.5	20	19	17	16	17	22	50	118	149
80.0	10	9	9	10	12	16	34	71	79
82.5	3	3	3	4	6	8	11	11	1
85.0	1	1	1	1	1	1	1	0	0
87.5	0	0	0	0	0	0	0	0	0
90.0	0	0	0	0	0	0	0	0	0
92.5	0	0	0	0	0	0	0	0	0
95.0	0	0	0	0	0	0	0	0	0
97.5	0	0	0	0	0	0	0	0	0
100.0	0	0	0	0	0	0	0	0	0
102.5	0	0	0	0	0	0	0	0	0
105.0	0	0	0	0	0	0	0	0	0
120.0	0	0	0	0	0	0	0	0	0
135.0	0	0	0	0	0	0	0	0	0
150.0	0	0	0	0	0	0	0	0	0
165.0	0	0	0	0	0	0	0	0	0
180.0	0	0	0	0	0	0	0	0	0



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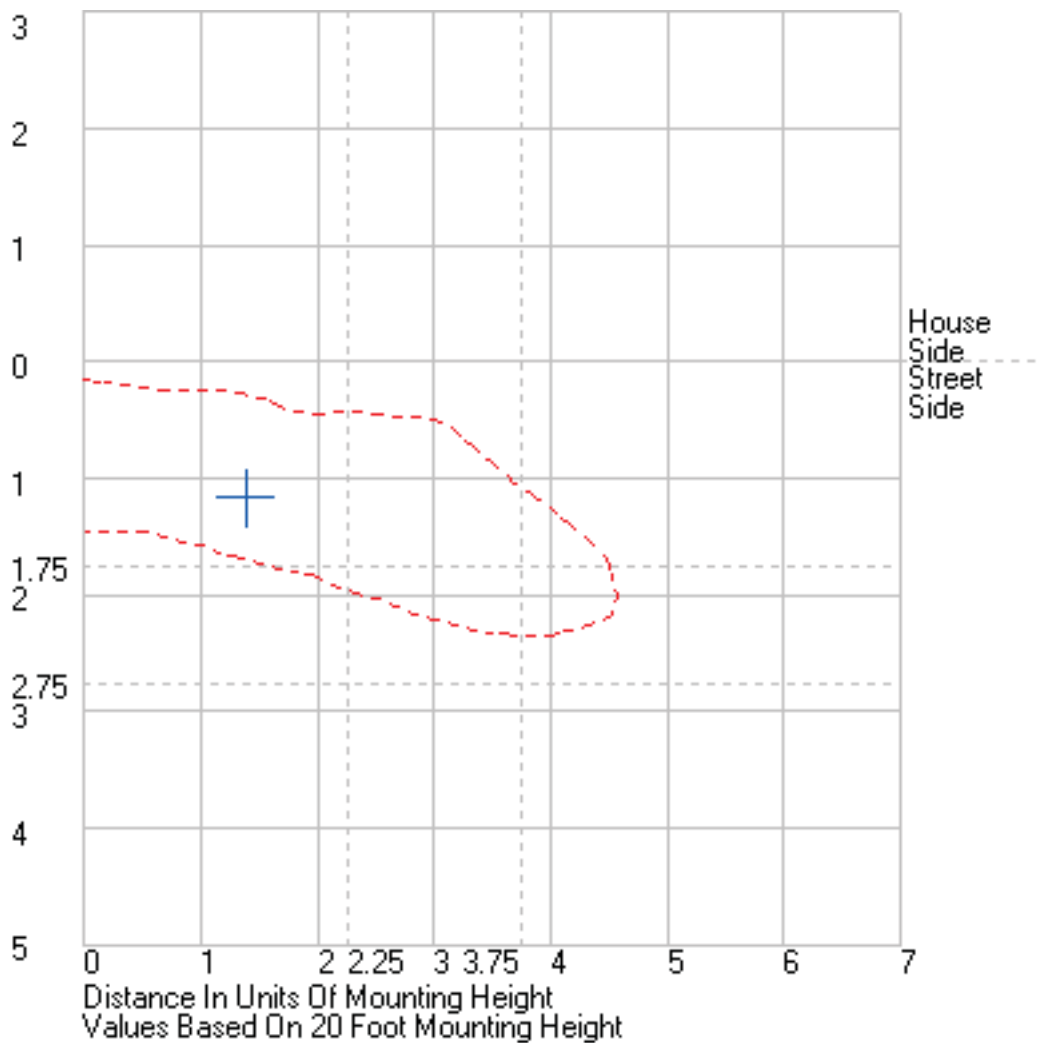
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LM-79-08 Performance Data

Spectral	CIE 1931 (x, y) ⁽¹⁾	(0.426, 0.396)
	CIE 1976 (u', v') ⁽¹⁾	(0.247, 0.516)
	Correlated Color Temperature (CCT) ⁽¹⁾	3110 K
	Spatial Δ (u', v') Uniformity ⁽²⁾	0.0168
	Color Rendering Index (Ra) ⁽¹⁾	73.9
	Special CRI 9 (R ₉) ^{(1),(3)}	-21.4
	Distance from Planckian Locus (Duv) ^{(1),(3)}	-1.88E-03
	Scotopic/Photopic Ratio ^{(1),(3)}	1.25

Electrical	Voltage	120.0 V	(Setpoint 1)
	Frequency	60.0 Hz	
	Current	0.127 A	
	Power	14.7 W	
	Power Factor	0.96	
	Current THD	9.5 %	
	Voltage	277.0 V	(Setpoint 2)
	Frequency	60.0 Hz	
	Current	0.072 A	
	Power	15.2 W	
	Power Factor	0.76	
	Current THD	17 %	

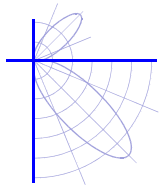
Performance data in accordance with IESNA LM-79-08. Spectral calculations are for a CIE 2° observer

Photometric and spectral values were measured at Setpoint 1

(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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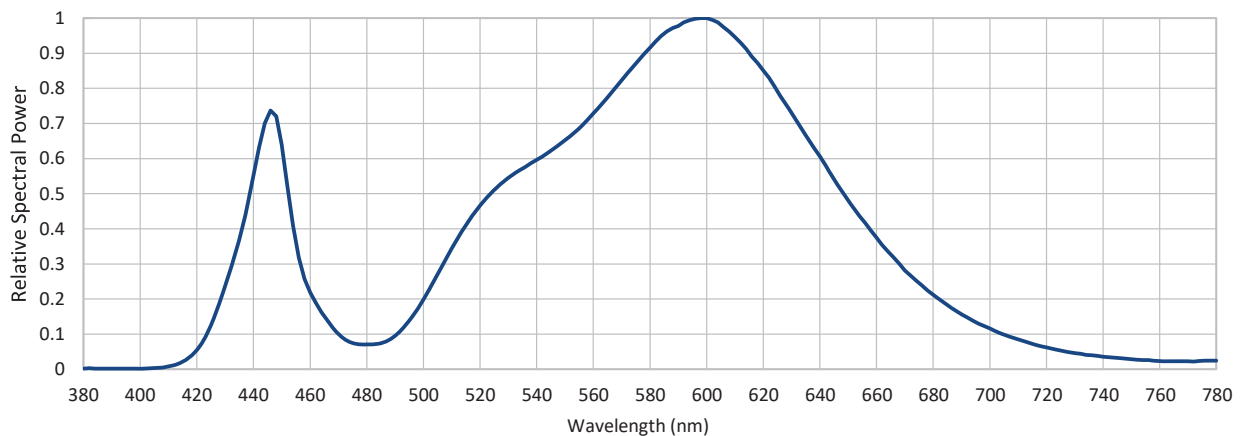
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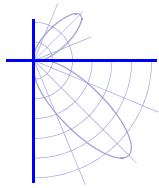
LM-79-08 Performance Data

Relative spectral power distribution

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

λ (nm)	Relative Power	λ (nm)	Relative Power	λ (nm)	Relative Power	λ (nm)	Relative Power	λ (nm)	Relative Power
380	0.002	460	0.218	540	0.596	620	0.851	700	0.116
385	0.002	465	0.151	545	0.622	625	0.792	705	0.099
390	0.002	470	0.100	550	0.652	630	0.730	710	0.085
395	0.002	475	0.076	555	0.687	635	0.666	715	0.073
400	0.002	480	0.071	560	0.728	640	0.607	720	0.062
405	0.003	485	0.075	565	0.774	645	0.541	725	0.053
410	0.008	490	0.096	570	0.823	650	0.481	730	0.046
415	0.022	495	0.138	575	0.870	655	0.426	735	0.040
420	0.055	500	0.199	580	0.916	660	0.375	740	0.036
425	0.127	505	0.270	585	0.956	665	0.327	745	0.032
430	0.236	510	0.343	590	0.978	670	0.282	750	0.029
435	0.372	515	0.411	595	0.996	675	0.246	755	0.026
440	0.551	520	0.466	600	1.000	680	0.212	760	0.023
445	0.719	525	0.511	605	0.981	685	0.183	765	0.023
450	0.640	530	0.545	610	0.946	690	0.157	770	0.023
455	0.363	535	0.572	615	0.902	695	0.135	775	0.025
								780	0.025





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LM-79-08 Performance Data

Spatial measurements

Vert. angle (°)	CIE 1976 (u',v') coordinates	
	Horiz. 0.0° plane	Horiz. ° plane
0.0	(0.248, 0.520)	(0.248, 0.516)
10.0	(0.249, 0.521)	(0.246, 0.507)
20.0	(0.249, 0.522)	(0.246, 0.504)
30.0	(0.249, 0.524)	(0.246, 0.506)
40.0	(0.249, 0.525)	(0.246, 0.511)
50.0	(0.250, 0.526)	(0.248, 0.522)
60.0	(0.250, 0.528)	(0.250, 0.533)
70.0	I <= 10% peak	I <= 10% peak
80.0	I <= 10% peak	I <= 10% peak
-	-	-

Spatial measurements

Vert. angle (°)	CIE 1976 (u',v') coordinates	
	Horiz. 0.0° plane	Horiz. ° plane
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

Test procedure

All measurements were performed in an environmentally controlled laboratory employing suitable baffling to minimize stray light. The sample was mounted in its normal operating orientation on a rotating mirror goniophotometer and operated from a stabilized supply. The photometric output was monitored and measurements were performed once stability was achieved.

The goniophotometer was used to measure the spatial distribution of both luminous intensity and, in conjunction with a spectroradiometer, spectral irradiance. The distribution locus comprises points in two or more planes (as indicated in the table above) at no more than 10° vertical intervals. The CIE (x,y) coordinates and other derived metrics (CIE (u', v'), CCT and CRI) are calculated from the weighted sum (weighted for intensity and represented solid angle) of the measured spectral irradiances.

Sample Orientation

Horizontal

Stabilization & total operation time 0.75 / 3.25 hours

Equipment and uncertainties

LightLab International R80A C-gamma rotating mirror goniophotometer with a test distance of 8 m.

Luminous Intensity	± 4 %	Temperature	± 1 °C
Luminous Flux	± 4 %	Luminous Efficacy	± 4.5 %
Horiz., Vert. Angles	± 0.25°		

PhotoResearch PR-670 spectroradiometer (grating with 380 - 780 nm range, 2 nm / pixel, 5 nm bandwidth, incandescent/halogen calibration source). Measured at a distance from the sample deemed >5 times the maximum observed luminous opening dimension.

CIE (x, y) coordinates	± 0.003	CCT	± 100 K
CIE (u', v') coordinates	± 0.002	CRI (Ra)	± 2
Spatial Δ (u', v') uniformity	± 0.001	Scotopic / Photopic Ratio *	± 0.02
Rel. Spectral Irradiance *	± 2 %	R9 *	± 2
Duv *	± 5E-04		

Yokogawa WT210 power meter connected in circuit to the sample electrical supply

Voltage	± 0.5 %	Frequency *	± 0.1 Hz
Current	± 0.5 %	Power	± 0.5 %
Current THD	± 3 %	Power Factor	± 0.02

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

Calculator / report version 1.0.10 / 5.9 (14th Dec 2017)

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Test Report No. LLI-21208-16

LED Roadway Lighting - Roadway luminaire. Product ID: "NXT-12S-5-X-3LM-3-XX-4-XX-X-XX-0424"

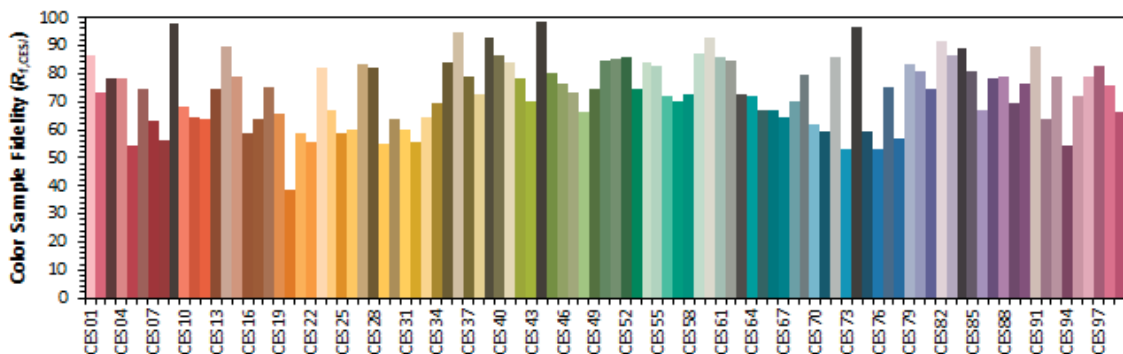
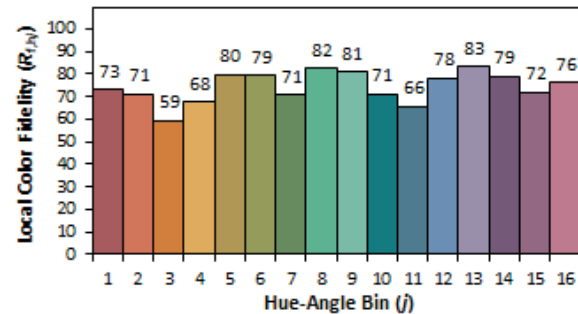
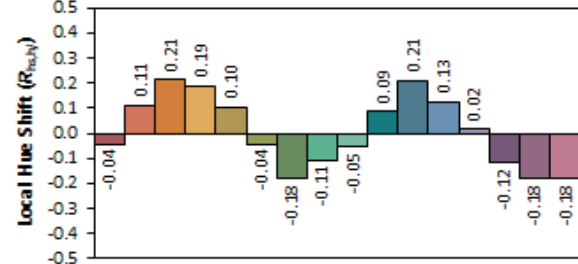
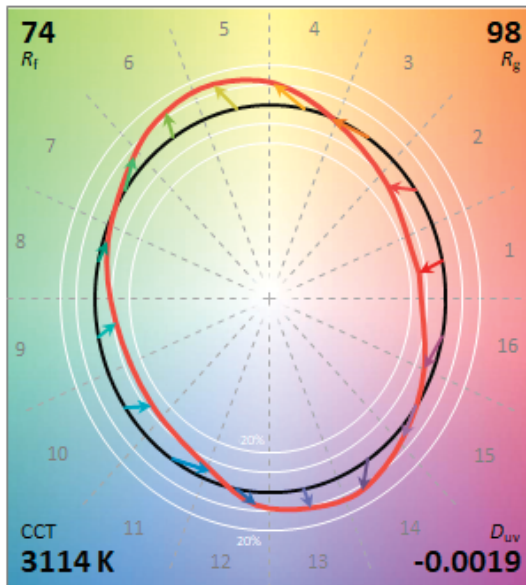
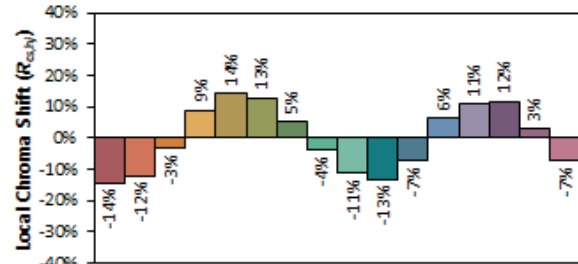
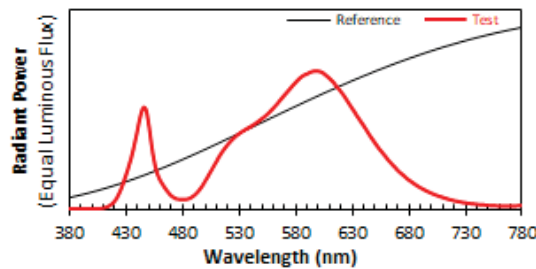
Grey cast aluminum housing with clear flat glass lens.

12 LEDs in one square array with clear plastic sheet of individual lenses.

One Philips Xitanium LED driver. Model: 929000708803 set to 350ma.

Operating at 120v AC and 60 Hz.

With black plastic back light shield.





Test Report No. LLI-21208-16

LED Roadway Lighting - Roadway luminaire. Product ID: "NXT-12S-5-X-3LM-3-XX-4-XX-X-XX-0424"

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12 LEDs in one square array with clear plastic sheet of individual lenses.

One Philips Xitanium LED driver. Model: 929000708803 set to 350ma.

Operating at 120v AC and 60 Hz.

With black plastic back light shield.

Test Distance 8.0 m
Test Temperature 25.3 °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 IESNA Type C coordinate system (L, V) as defined in IESNA publication LM-75.

Customer supplied information is identified in this report by enclosing it in double quotes

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.