

**PHOTOMETRIC TESTING & EVALUATION TO IES LM-79-19**

Sample Tested

**JR4-50-GVSM-GY-\*\*-AC**

Prepared for:

**Nemalux Inc.**1018 72 Ave NE  
Calgary, Alberta, Canada T2E 8V9**Technical Report Number**

80213137-5

June 17, 2024

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## Program Description

Photometric and electrical testing of a JR4-50-GVSM-GY-\*\*-AC Type C LED Luminaire to IES LM-79-19.

## Executive Summary

Sample Tested = JR4-50-GVSM-GY-\*\*-AC

Sample Number = 44003157

Driver = Sosen SS-35VA-L50BHL

LED Module = CREE XHP35.2

<b>Luminous Efficacy (Lumens/Watt)</b>	<b>Luminous Flux (Lumens)</b>	<b>Input Power (Watts)</b>	<b>Power Factor</b>	<b>ATHD (%)</b>
<b>95.89</b>	<b>3653.45</b>	<b>38.10</b>	<b>0.9891</b>	<b>7.82</b>

<b>Spacing Criterion (0-180°)</b>	<b>Spacing Criterion (90-270°)</b>	<b>Stabilization Time (Light &amp; Power)</b>
<b>2.02</b>	<b>2.0</b>	<b>30</b>

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### Test Sample Pictures

The following sample was submitted for evaluation:



**Nemalux Inc. : JR4-50-GVSM-GY-\*\*-AC**

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**Test Result**

The following results were measured after stabilization of the sample in the Integrating Sphere (unless otherwise stated). Stability shall be achieved when the variation (Maximum to minimum) of at least three readings of the light output and electrical power consumption, taken at a maximum of 10 minute intervals over a period of 20 minutes and divided by the last of these measurements chronologically, is less than 0.5%.

Key Photometric Results	Sample Reference
	JR4-50-GVSM-GY-**-AC
	Goniophotometer
Luminous Efficacy (Lumens/Watt)	96.00
Total Luminous Flux (Lumens)	3653.45
Stabilization Time (Light and Power)	30 minutes
Total Run Time (Goniophotometer)	45 minutes
Spacing Criteria (0°-180°)/(90°-270°)	2.02 / 2

Electrical Input Results:	Sample Reference
	JR4-50-GVSM-GY-**-AC
Input Power (Watts)	38.1
Input Voltage (Volts AC)	120.00
Input Current (Amps)	0.32
Input Frequency (Hertz)	60.0
Power Factor	0.9891
Total Harmonic Distortion (THD A)%	7.82

Additional Information	Sample Reference
	JR4-50-GVSM-GY-**-AC
Ambient Temperature	25.5
Date Tested	6/14/2024

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## Photometric Test Results

Characteristics		Luminance Data (cd/sq.m)			
Total Lumens:	3653.45	Angle In Degrees	Average		
Input Wattage (W):	38.1		0°	45°	90°
Efficacy(lm/W):	95.89	45	47988	49308	47262
Spacing Criterion (0-180°):	2.02	55	68355	77631	67378
Spacing Criterion (90-270°):	2	65	87138	131425	85371
Spacing Criterion (Diagonal):	2.56	75	46888	133630	45986
Luminous Length (0-180°):	0.48 ft	85	3749	6426	2678
Luminous Width (90-270°):	0.48 ft				
Luminous Height:	0.00 ft				

Zonal Lumen Summary												
Zone	Lumens	%Fixt		Zone	Lumens	%Fixt		Zone	Lumens		Zone	Lumens
0-20°	195.08	5.3		60-80°	1413.13	38.7		0-10°	48.73		90-100°	0.00
0-30°	449.86	12.3		70-80°	485.33	13.3		10-20°	146.35		100-110°	0.00
0-40°	833.99	22.8		80-90°	25.61	0.7		20-30°	254.77		110-120°	0.00
0-60°	2214.72	60.6		90-110°	0.00	0.0		30-40°	384.13		120-130°	0.00
0-80°	3627.85	99.3		90-120°	0.00	0.0		40-50°	574.20		130-140°	0.00
0-90°	3653.45	100.0		90-130°	0.00	0.0		50-60°	806.54		140-150°	0.00
10-90°	3604.72	98.7		90-150°	0.00	0.0		60-70°	927.80		150-160°	0.00
20-40°	638.90	17.5		90-180°	0.00	0.0		70-80°	485.33		160-170°	0.00
20-50°	1213.10	33.2		110-180°	0.00	0.0		80-90°	25.61		170-180°	0.00
40-70°	2308.53	63.2		0-180°	3653.45	100.0		0-90°	3653.45		90-180°	0.00

Coefficients of Utilization																		
Effective Floor Cavity Reflectance 0.20																		
RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	106	101	95	91	103	98	93	89	94	90	86	90	87	84	86	84	81	79
2	94	84	75	68	91	82	74	67	78	71	66	74	69	64	71	67	63	60
3	83	70	60	52	81	69	59	52	65	57	51	63	56	50	60	54	49	46
4	75	60	50	41	72	59	49	41	56	47	40	53	46	40	51	45	39	37
5	67	52	41	34	65	51	41	33	49	40	33	46	39	32	44	38	32	30
6	61	46	35	28	59	45	35	28	43	34	27	41	33	27	39	32	27	24
7	56	41	31	23	54	40	30	23	38	29	23	36	29	23	35	28	23	20
8	52	36	27	20	50	36	26	20	34	26	20	33	25	20	32	25	19	17
9	48	33	24	18	47	32	23	17	31	23	17	30	22	17	29	22	17	15
10	45	30	21	15	43	30	21	15	28	21	15	27	20	15	27	20	15	13

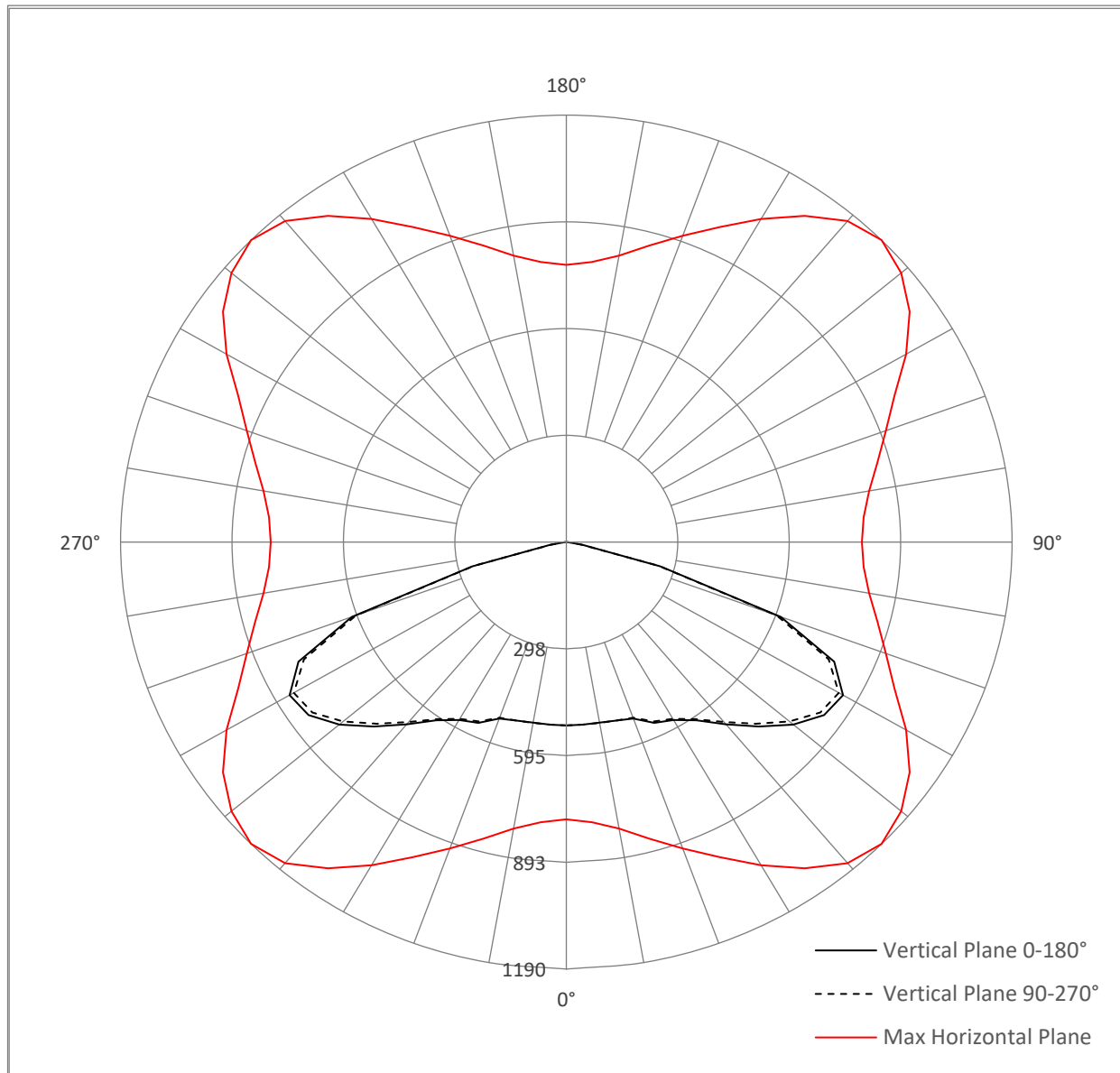
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UGR Table												
		Reflectances						Reflectances				
Ceiling Cavity		70	70	50	50	30		70	70	50	50	30
Walls		50	30	50	30	30		50	30	50	30	30
Floor Cavity		20	20	20	20	20		20	20	20	20	20
Room Size		UGR Viewed Crosswise						UGR Viewed Endwise				
X=2H	Y=2H	28.5	30.4	31.1	30.4	31.1	28.5	30.4	28.9	30.8	31.1	
	3H	31.2	32.9	33.6	32.9	33.5	31.1	32.9	31.5	33.2	33.5	
	4H	31.6	33.3	34.0	33.2	33.9	31.5	33.2	31.9	33.5	33.9	
	6H	31.6	33.2	33.9	33.1	33.8	31.5	33.1	31.9	33.4	33.8	
	8H	31.6	33.1	33.9	33.0	33.8	31.5	33.0	31.9	33.4	33.8	
	12H	31.6	33.0	33.8	32.9	33.7	31.5	32.9	31.9	33.3	33.7	
4H	2H	30.4	32.1	32.8	32.0	32.8	30.4	32.0	30.8	32.4	32.8	
	3H	33.1	34.6	35.4	34.5	35.3	33.1	34.5	33.5	0.0	35.3	
	4H	33.7	35.0	35.8	34.8	35.7	33.5	34.8	34.0	35.2	35.7	
	6H	33.7	34.9	35.7	34.7	35.6	33.6	34.7	34.0	35.2	35.6	
	8H	33.7	34.8	35.7	34.6	35.5	33.6	34.6	34.0	35.1	35.5	
	12H	33.7	34.7	35.6	34.5	35.5	33.6	34.5	34.0	35.0	35.5	
8H	4H	34.3	35.4	36.3	35.3	36.2	34.2	35.3	34.7	35.7	36.2	
	6H	34.5	35.3	36.3	35.2	36.1	34.3	35.2	34.8	35.6	36.1	
	8H	34.5	35.2	36.2	35.0	36.0	34.3	35.0	34.8	35.5	36.0	
	12H	34.5	35.2	36.2	35.0	36.0	34.3	35.0	34.8	35.4	36.0	
12H	4H	34.3	35.3	36.2	35.2	36.1	34.2	35.2	34.7	35.7	36.1	
	6H	34.5	35.3	36.3	35.1	36.1	34.3	35.1	34.8	35.6	36.1	
	8H	34.5	35.2	36.2	35.0	36.0	34.3	35.0	34.8	35.5	36.0	

Maximum UGR = 36.3

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**Polar Graph**



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## Candela Tabulation

		Vertical Angle																																					
Horizontal Angle		0.0	2.5	5.0	7.5	10.0	12.5	15.0	17.5	20.0	22.5	25.0	27.5	30.0	32.5	35.0	37.5	40.0	42.5	45.0	47.5	50.0	52.5	55.0	57.5	60.0	62.5	65.0	67.5	70.0	72.5	75.0	77.5	80.0	82.5	85.0	87.5	90.0	
	0	511	511	511	511	511	512	515	518	523	542	556	563	573	585	606	632	663	695	727	759	791	819	840	851	853	828	789	726	609	466	260	124	43	21	7	3	0	
	5	511	511	511	511	512	513	515	522	532	541	550	559	572	587	607	634	665	697	730	763	795	822	843	856	857	837	797	731	623	465	273	124	48	20	7	2	0	
	10	511	511	510	510	511	512	515	518	524	540	551	561	574	587	608	634	665	699	732	768	801	832	857	872	877	859	821	757	651	501	300	139	54	21	7	2	0	
	15	511	511	511	511	511	512	515	521	531	538	548	561	573	587	607	634	667	702	738	777	814	848	877	899	907	895	860	799	700	547	340	164	65	23	7	2	0	
	20	511	512	511	511	512	513	515	520	530	540	551	563	574	589	610	638	670	706	745	785	825	863	898	926	943	937	908	851	756	609	406	207	78	28	8	2	0	
	25	511	514	513	513	513	514	516	519	528	540	553	564	573	588	609	636	670	706	748	790	833	875	916	954	978	991	967	915	839	685	498	259	118	27	11	2	0	
	30	511	513	512	512	512	513	515	521	528	541	552	562	574	587	608	636	669	709	751	795	842	889	939	987	1031	1051	1047	1011	919	793	587	360	140	55	9	3	0	
	35	511	511	510	510	511	512	514	518	531	543	552	562	572	586	606	634	670	709	753	799	848	899	953	1012	1065	1108	1119	1086	1007	862	677	438	211	54	13	3	0	
	40	511	510	510	510	510	511	513	516	527	539	552	562	571	585	605	631	668	707	751	797	845	899	957	1022	1088	1146	1167	1137	1057	907	725	488	251	51	17	3	0	
	45	511	510	510	509	509	511	513	516	526	540	553	562	571	584	603	630	665	704	747	792	839	893	954	1023	1095	1160	1190	1160	1069	923	741	494	231	57	12	2	0	
	50	511	510	510	510	510	511	513	517	529	542	549	561	569	583	601	628	663	702	744	789	836	889	948	1015	1085	1142	1168	1134	1045	899	697	424	195	47	10	2	0	
	55	511	510	509	509	509	511	513	519	529	538	548	559	570	584	603	630	664	702	744	788	835	885	941	1002	1059	1101	1110	1077	993	845	629	353	142	35	6	2	0	
	60	511	509	509	508	509	510	513	516	521	535	549	558	569	583	603	631	662	701	741	784	830	877	929	979	1025	1043	1040	1003	910	773	520	284	83	30	5	2	0	
	65	511	511	510	510	510	511	513	516	520	529	545	557	568	582	603	629	660	697	737	778	820	865	910	952	982	987	969	923	832	671	445	216	62	20	6	2	0	
	70	511	510	510	510	510	511	513	516	522	532	546	558	568	583	604	630	662	697	735	774	815	856	895	926	941	938	909	854	763	591	371	168	57	17	6	2	0	
	75	511	510	510	509	510	511	514	516	523	532	547	559	569	584	603	628	660	693	729	765	802	838	871	896	901	891	856	793	699	518	318	138	54	15	6	2	0	
	80	511	511	510	510	511	512	514	517	523	535	551	559	569	583	603	628	657	689	723	756	789	821	848	865	868	850	811	749	644	487	285	121	45	16	6	2	0	
	85	511	512	511	511	511	513	515	517	523	533	548	559	568	583	601	626	655	686	718	750	782	811	834	849	844	827	784	715	619	440	256	104	44	15	6	2	0	
90	511	512	511	511	512	513	515	518	521	538	552	559	569	582	602	627	655	685	716	748	778	807	828	839	840	814	773	709	598	460	255	115	41	18	5	2	0		

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**Photometric Testing Information**

The sample was evaluated for photometric and electrical characteristics using a goniophotometer, located in purpose-built, temperature and humidity-controlled, draft free environments

Luminaire Stabilization.

The results were measured after stabilization of the sample in the Goniophotometer (unless otherwise stated). Stability shall be achieved when the variation (Maximum to minimum) of at least three readings of the light output and electrical power consumption, taken at a maximum of 10-minute intervals over a period of 20 minutes and divided by the last of these measurements chronologically, is less than 0.5%.

The goniophotometer Mayer Engineering Type C is calibrated using a frosted tungsten filament FDS/DZE lamp with the following specifications:

The goniophotometer Mayer Engineering Type C is calibrated using a frosted tungsten filament FDS/DZE lamp with the following specifications:

Manufacturer: GE  
Part Number: DZE  
Bulb Number: 106-A  
Voltage: 16.93 Volts DC reference  
Calibration Current: 4.863 Amperes  
Luminous Intensity: 168.8 Candelas  
Calibration Date: 4/25/12 (NIST traceable)

Manufacturer: GE  
Part Number: DZE  
Bulb Number: 106-B  
Voltage: 16.45 Volts DC reference  
Calibration Current: 4.79 Amperes  
Luminous Intensity: 145.3 Candelas  
Calibration Date: 4/25/12(NIST traceable)

Manufacturer: GE  
Part Number: DZE  
Bulb Number: 106-C  
Voltage: 16.57 Volts DC reference  
Calibration Current: 4.829 Amperes  
Luminous Intensity: 157.0 Candelas  
Calibration Date: 4/25/12 (NIST traceable)

A Yokogawa WT310 Power Analyzer was used to measure all electrical characteristics of the sample.

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**Equipment List: Goniophotometer Type C (Mirror 2)**

Description	Manufacturer and Model Number	CSA Instrument Reference Number	Calibration Due Date
Optometer	Gigahertz Optik P9801	OPT400	N/A
Programmable DC Power Supply	Chroma Instruments 62012P-80-60	DCP300	N/A
Regulated Power Supply	Chroma Instruments 61602	AC301	N/A
Power Analyzer	Yokogawa WT310-E	POA400	9/25/2024

\* All equipment is calibrated to ISO / IEC 17025-2017 guidelines.

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