

IESNA LM79: 2008 Photometric Test Report

Photometric Testing and Evaluation in Accordance with LM 79-2008

Report Prepared For

Francisco Garza

Product Manager

MaxLite

Description of Sample: LED Roadway QM4AU7T440 Quadramax 4 Module Type IV optics. 18"x13.5"

The Sample (s) was (were) tested in accordance with the following applied standards/regulations:

IESNA LM79: 2008 Approved for Electrical and Photometric Measurements of Solid-State Lighting Products.

ANSI NEMA ANSLG C78.377: 2008 Specification of the Chromaticity of Solid State Lighting Products.

ANSI C82.77:2002 Harmonic Emissions Limits – Related Power Quality Requirement for Light Equipment.

CITL Test Number: CITL0001259

Sample Arrival Date: 09/22/2015

Date of Test: 10/07/2015

Report Issue Date: 10/15/2015

Report Prepared By:



Franklin Navarro
Lab Technician

Report Approved By:



Juan Xiang
Lab Manager

Sample Number: 1190

Manufacturer: MaxLite

Notes: Tested in intended orientation



Equipment Used:

Description	Model #	Serial #	Calibration Date	Calibration Due Date
Goniophotometer	GO-R5000	G116930CS1341112	09/03/2015	03/03/2016
EVERFINE AC POWER SUPPLY	DPS1060	G1174227A8341115	-	-
YOKOGAWA POWER ANALYZER	WT310	C2Q522012V	11/17/14	11/17/15
DC POWER SUPPLY	WY12010	G115909TM5341117	-	-
EVERFINE AC POWER SUPPLY	DSP1005	G119890CJ7341122	-	-
DC POWER SUPPLY	WY305	G115986TA8341112	-	-
INTERGRATING SPHERE	2 METER	CITL 0018	06/22/15	12/22/15
YOKOGAWA POWER ANALYZER	WT310	C2QJ22011V	11/17/14	11/17/15
FLUKE DIGITAL THERMOMETER	51II	29390172WS	04/09/15	04/09/16
TEMPERATURE AND HUMIDITY LOGGER	MX1101	10689441	03/20/15	03/20/16
TEMPERATURE AND HUMIDITY LOGGER	UX100-023	10683270	03/20/15	03/20/16

LM-79 Test Summary:

Manufacture:	MaxLite
Fixture Model Number:	QM4AU7T440
Driver Model Number:	OT180W/UNV/800C/2DIMLT2/P6 OPTOTRONIC BY OSRAM
Lamp Model Number:	Luxeon TX

Electrical Measurement:

Input Voltage:	120VAC	277VAC
Input Current:	0.911 A	0.409 A
Input Frequency:	60 HZ	60 Hz
Input Power:	107.6 W	107.06W
Power Factor:	0.9954	0.9464
Total Harmonic Distortion:	3.6 ATHD	10.0 ATHD

Lumen Output:

Lumens:	11,299Lm	Lm
Efficacy:	104.64Lm/W	Lm/W
Color Rendering Index *(CRI)	Ra: 73.5 R ₉ : 0	Ra: R ₉ :
Correlated Color Temperature (K):	3894	
Chromaticity Coordinate x:	0.3838	
Chromaticity Coordinate y:	0.3749	
Ambient Temperature (°C):	25°C	
Stabilization Time (Hours):	45 Mins	
Total Operation Time (Hours):	1 Hrs	
u/u':	0.2281	
V':	0.5013	
Duv:	1.86e-03	
Spacing Criteria (0-180)	3.78	
Spacing Criteria (90-270)	2.14	
Zonal Lumens in the 0°-60° Zone	6,681.3lm – 59.1%	
Zonal Lumens in the 60°-90° Zone	4,608.6lm – 40.8%	
Zonal Lumens in the 0°-90° Zone	11,290.0lm – 99.9%	
Zonal Lumens in the 90°-120° Zone	4.6lm – 0.0%	
Zonal Lumens in the 90°-180° Zone	8.4lm – 0.1%	
Bug (Back, Up, Glare) Rating	B2-U1-G2	

Test Methods:

Photometric Measurements – Goniophotometer:

An Everfine Type C Rotating Mirror Goniophotometer was used to measure candelas (intensity) at each angle of distribution as defined by IESNA for the appropriate fixture type.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 60 minutes and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measure using the listed equipment.

Spectral Measurements – Integrating Sphere

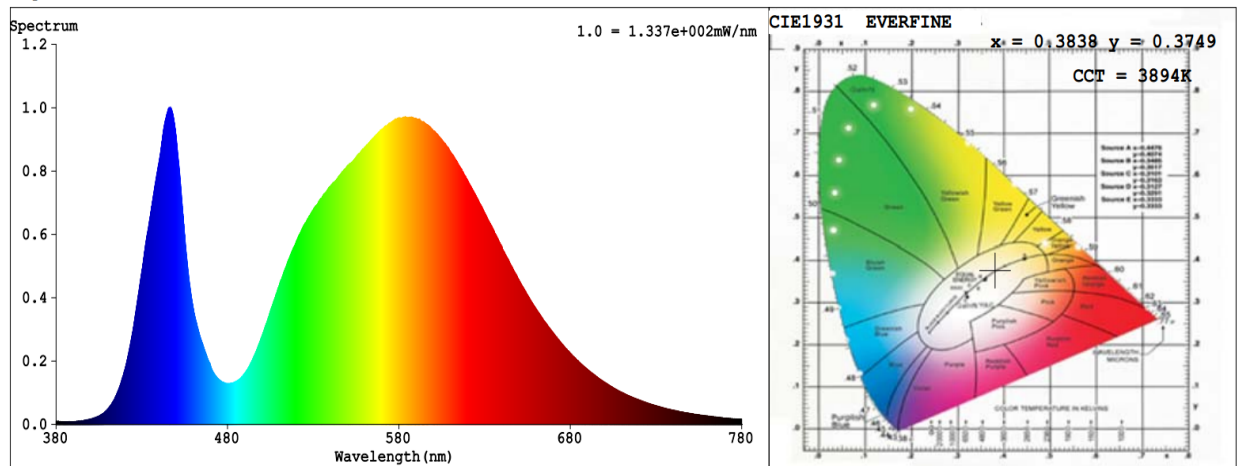
A sensing Spectrometer HASS-2000, in conjunction with Everfine 2 meter integrating sphere was used to measure chromaticity coordinates, correlated color temperature (CCT) and the color rendering index (CRI) for each sample. Test Geometry Configuration 4 π .

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30 min and longer if necessary for the sample to achieve stabilization

Electrical measurements are measured using the listed equipment.

STREETLIGHT PHOTOMETRIC TEST REPORT:

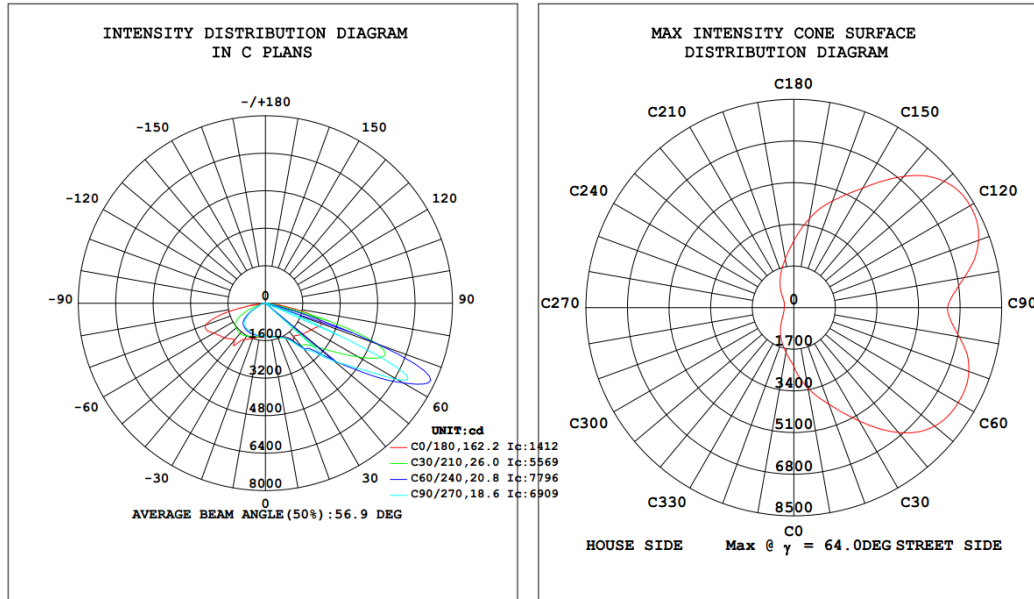
Spectrum



Spectral Distribution

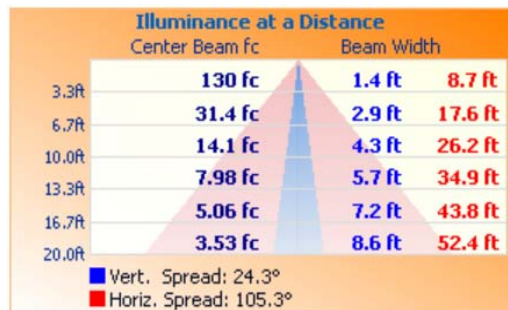
CIE1931 Chromaticity Diagram

STREETLIGHT PHOTOMETRIC TEST REPORT:



ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	Φ lum, lamp
10	1433	1454	1458	1481	1460	1435	1414	1411	0- 10	136.4	136.4	1.21, 1.21
20	1519	1526	1547	1609	1599	1470	1391	1439	10- 20	419.2	555.7	4.92, 4.92
30	1680	1700	1718	1867	1793	1507	1372	1459	20- 30	728.3	1284	11.4, 11.4
40	1862	2447	2538	2827	2056	1503	1327	1436	30- 40	1138	2422	21.4, 21.4
50	2049	3361	3854	3821	2295	1397	1160	1355	40- 50	1686	4108	36.4, 36.4
60	2270	6020	6508	6677	2551	969.3	634.3	964.4	50- 60	2574	6682	59.1, 59.1
70	2558	7175	696.5	6709	2705	309.0	241.3	325.2	60- 70	3236	9918	87.8, 87.8
80	999.9	413.0	228.8	325.8	857.4	155.1	178.2	148.9	70- 80	1256	11174	98.9, 98.9
90	0.0405	0.7872	1.641	0.8574	0.6773	0.0030	0	0	80- 90	116.4	11290	99.9, 99.9
100	0.1354	0	0	0	1.695	2.870	0	2.149	90-100	0.3295	11291	99.9, 99.9
110	1.488	0	0	0	2.235	5.500	3.643	5.379	100-110	1.729	11292	99.9, 99.9
120	2.100	0.0009	0	0	2.032	6.194	5.203	6.129	110-120	2.547	11295	100, 100
130	1.696	0.2683	0	0.3711	0.9450	3.028	3.689	3.841	120-130	1.992	11297	100, 100
140	1.373	0.4513	0	0.4035	0.7395	1.409	1.344	1.819	130-140	0.8886	11298	100, 100
150	0.8611	0.5435	0	0.4035	0.6615	1.156	0.8528	1.276	140-150	0.4557	11298	100, 100
160	0.5504	0.6487	0	0.4035	0.5836	0.9171	0.8108	0.8477	150-160	0.2782	11299	100, 100
170	0.7447	1.047	0.2689	0.4035	0.6281	0.9355	0.7688	0.7045	160-170	0.1619	11299	100, 100
180	0.8127	1.073	0.3361	0.3363	0.7450	1.073	0.7394	0.6726	170-180	0.0660	11299	100, 100
DEG	LUMINOUS INTENSITY: cd									UNIT: lm		

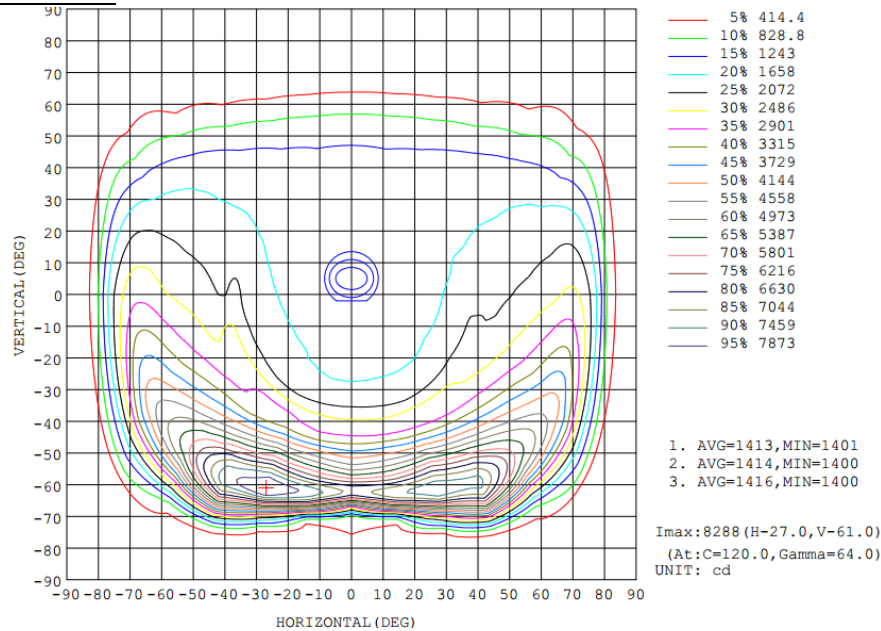
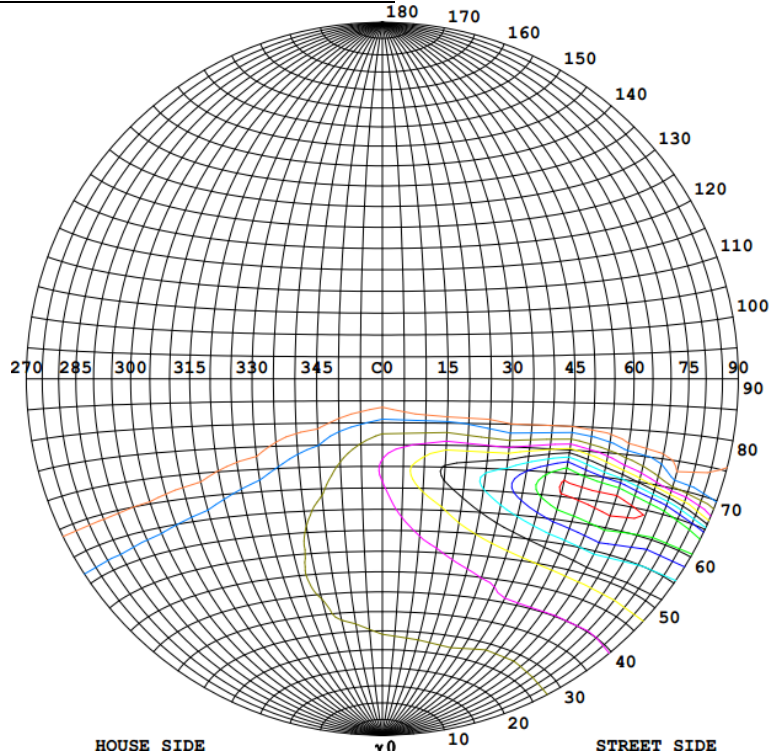


Zonal Lumen Summary

Zone	Lumens	% Luminaire
0-30	1,284.1	11.4%
0-40	2,422.0	21.4%
0-60	6,681.3	59.1%
60-90	4,608.6	40.8%
70-100	1,373.1	12.2%
90-120	4.6	0%
0-90	11,290.0	99.9%
90-180	8.4	0.1%
0-180	11,298.4	100%

Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	136.4	1.2%	90-100	0.3	0%
10-20	419.3	3.7%	100-110	1.7	0%
20-30	728.4	6.4%	110-120	2.6	0%
30-40	1,138.0	10.1%	120-130	2.0	0%
40-50	1,685.7	14.9%	130-140	0.9	0%
50-60	2,573.6	22.8%	140-150	0.4	0%
60-70	3,235.8	28.6%	150-160	0.3	0%
70-80	1,256.4	11.1%	160-170	0.2	0%
80-90	116.4	1.0%	170-180	0.1	0%

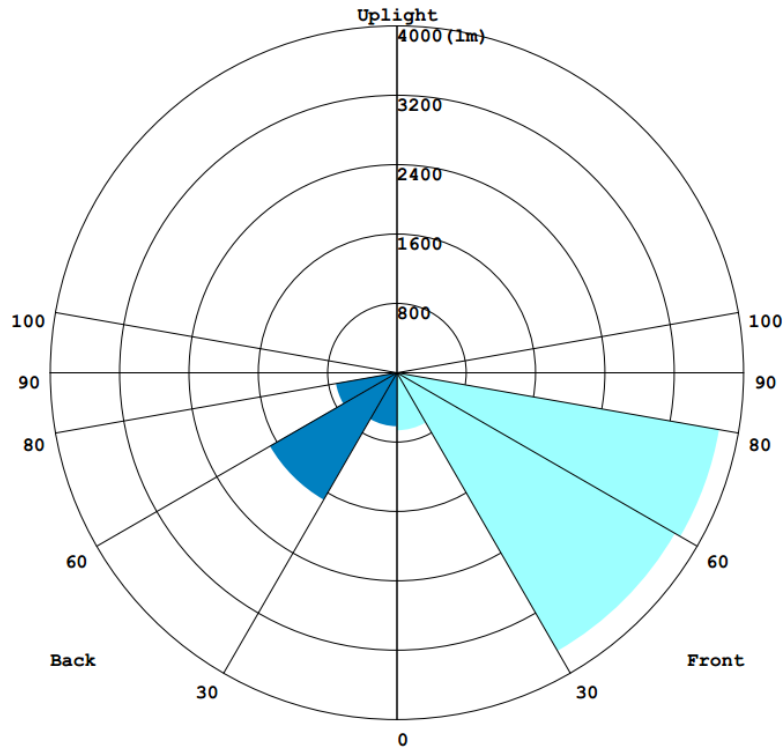
ISOCANDELA DIAGRAM:

STREETLIGHT ISOCANDELA DIAGRAM:

Classification:

IES: Type III - Short
 CIE: Broad - Intermediate
 IES: Cut-off
 CIE: Semi-cut-off
 Max. At 80: 88.49cd/klm
 Max. At 90: 0.5419cd/klm
 Max. 80-90: 88.49cd/klm

ISOCANDELA DIAGRAM	
UNIT	cd
Imax=100%	8319
90%	7487
80%	6655
70%	5823
60%	4991
50%	4160
40%	3328
30%	2496
20%	1664
10%	832
5%	416

LCS REPORT:

LUMINAIRE CLASSIFICATION SYSTEM(LCS) GRAPH



End of Report