



FOR THE SCOPE OF
ACCREDITATION UNDER NVLAP LAB
CODE 100402-0.

REPORT

3933 US ROUTE 11, CORTLAND, NEW YORK 13045

Project No. G103088115

Date: June 20, 2017

REPORT NO. 103088115CRT-046

TEST OF ONE FLOOD FIXTURE WITH 36 LEDS, 4000K, 5DEG DIFFUSER.
SAMPLE #5

MODEL NO. EW REACHELITE POWERCORE, 100W, 4000K, 5 DEGREE BEAM DIFFUSER, ALL LEDS ON

RENDERED TO:

PHILIPS COLOR KINETICS
3 BURLINGTON WOODS DRIVE
BURLINGTON, MA 01803

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

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.

AUTHORIZATION The testing performed was authorized by signed quote number Qu-00783021.

STANDARDS USED:

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

Note: Gonio testing was conducted on a Type A Goniometer and not tested to LM-79 requirements.

DESCRIPTION OF SAMPLE: The client submitted one production sample of model number eW ReachElite Powercore, 100W, 4000K, 5 Degree Beam Diffuser, All LEDs On. The sample was received by Intertek on May 22, 2017 in undamaged condition and one sample was tested as received. The sample designation was CRT1705221531-002.

DATE OF TESTS: June 7, 2017 through June 14, 2017.

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SUMMARY:

MODEL NO. eW ReachElite Powercore, 100W, 4000K, 5 Degree Beam Diffuser, All LEDs On
DESCRIPTION: Flood Fixture with 36 LEDs, 4000K, 5deg Diffuser.
Sample #5

Criteria	Integrating Sphere	Goniophotometer
Light Output (Lumens)	5463.3	5477.1
Total Power (W)	97.90	97.85
Lumen Efficacy (Lm/W)	55.8	56.0
Power Factor ()	0.988	0.989
Current ATHD (%)	12.69	
Correlated Color Temp. (CCT-K)	3923	
Color Rendering Index (CRI - Ra)	80.6	
CRI - R9	5.3	
DUV ()	0.004	
Chromaticity Coordinate (x)	0.387	
Chromaticity Coordinate (y)	0.389	
Chromaticity Coordinate (u')	0.224	
Chromaticity Coordinate (v')	0.508	

EQUIPMENT LIST

Equipment Used	Model No.	Control No.	Last Cal.	Cal. Due
Goniometer	O109	snt 10	10/3/2017	10/3/2018
25M Photometer	sms 10	O115	10/24/2017	10/24/2018
Hygro-Thermometer	445715	T1555	5/16/2017	5/16/2018
Level	No 98	L142	7/20/2016	7/20/2017
Power Analyzer	WT230	U094	4/25/2017	4/25/2018
Elgar AC Power Supply	CW1251	---	VBU	VBU
Sorenson DC Power Supply	XFR 150-8	---	VBU	VBU
Yokogawa Power Analyzer	WT1600	E474	5/4/2017	5/4/2018
Fluke Thermometer	53 II	D587	12/29/2016	12/29/2017
Fluke Multimeter	87V	D590	4/28/2017	4/28/2018
3M Integrating Sphere Spectrometer System	CDS 1100	---	6/2/2017	7/2/2017
Fisher Scientific Stopwatch	130471471	N1404	12/29/2016	12/19/2017
Secondary Spectral Intensity Standard Source	BS5186	RF5186	1/28/2017	1/28/2018
Secondary Luminous Flux Standard Source	BS3616	--	1/28/2017	1/28/2018
Secondary Luminous Flux Standard Source	BS4116	--	1/28/2017	1/28/2018
Secondary Luminous Flux Standard Source	6836	--	1/28/2017	1/28/2018



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 1100 CCD Array Spectroradiometer and two meter or ten foot 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. Stabilization procedures to LM-79 were followed. Electrical measurements including voltage, current, and power were measured using a 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 Type A Goniometer was used to measure the intensity (candelas) at each angle of distribution for the SSL sample.

Ambient temperature was measured equal to the height of the sample mounted on the goniometer equipment. The SSL sample was operated on the client provided driver at rated input volts in its designated orientation. The SSL sample was allowed to stabilize for at least thirty minutes before measurements were made. Stabilization procedures to LM-79 were followed, but this Type A method is not approved per LM-79. Electrical measurements including voltage, current, and power were measured using a power analyzer.



RESULTS:

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

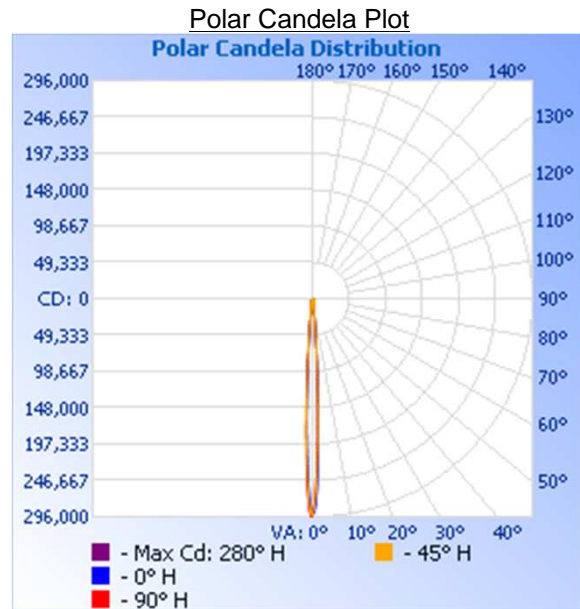
Intertek Control No.	Base Orientation	Input Voltage (VAC)	Input Current (mA)	Input Power (W)	Input Power Factor ()	Light Output (Lumens)	Lumen Efficacy (lm/W)
CRT1705221531-002	Base Up	120.20	823.6	97.85	0.989	5477.1	56.0

Maximum Cd: 295,180.0 at Horizontal: 280°, Vertical: 0.3°

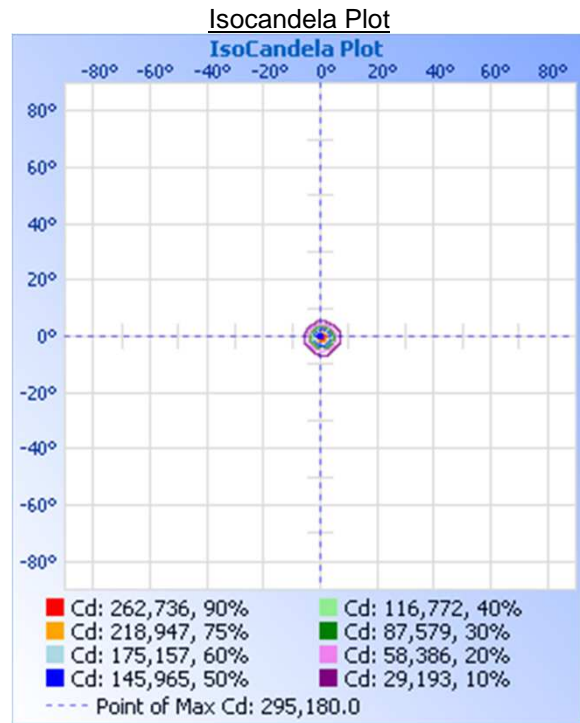
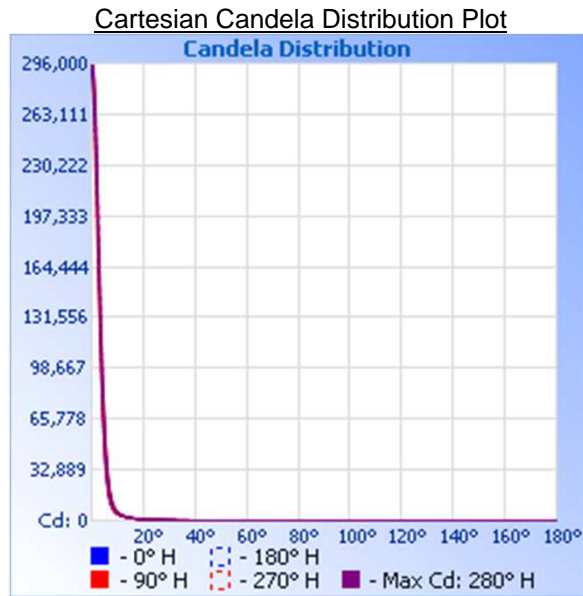
Luminous Opening: (L: 18.5", W: 4.75")

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	30	45	65	90
0	291929	291929	291929	291929	291929
5	41068	40591	41628	42635	42712
10	4308	4232	4214	4243	4321
15	1733	1698	1669	1647	1672
20	863	865	855	832	831
25	549	563	565	530	519
30	387	412	421	373	352
35	281	306	313	266	252
40	215	267	258	201	195
45	167	196	200	163	156
50	129	144	151	129	122
55	103	110	114	100	95
60	74	75	78	73	69
65	49	49	48	49	48
70	31	31	30	30	29
75	18	18	17	16	15
80	9	9	8	7	6
85	3	3	3	2	0
90	0	0	0	0	0



RESULTS:



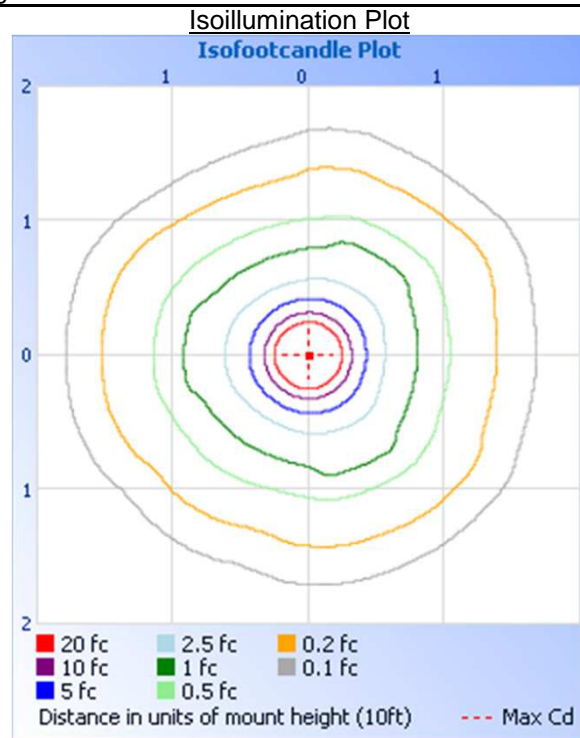
Isoillumination Plots

Mounting Height: 10ft

Illuminance - Cone of Light
Illuminance at a Distance

	Center Beam fc	Beam Width
1.7ft	101,014 fc	0.2 ft 0.2 ft
3.3ft	26,807 fc	0.3 ft 0.3 ft
5.0ft	11,677 fc	0.5 ft 0.5 ft
6.7ft	6,503 fc	0.7 ft 0.7 ft
8.3ft	4,238 fc	0.9 ft 0.9 ft
10.0ft	2,919 fc	1.0 ft 1.0 ft

Legend:
 - Vert. Spread: 5.9° (Blue)
 - Horiz. Spread: 6.0° (Red)



Luminance Data (cd/sq.m)

Angles In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	4161	4988	3901
55	3161	3514	2909
65	2060	2018	1996
75	1224	1129	1019
85	595	522	69



RESULTS:

Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	4985.0	91.0
0-40	5170.1	94.4
0-60	5404.6	98.7
0-90	5477.1	100.0
60-90	72.5	1.3
70-100	22.0	0.4
90-120	0.0	0.0
90-180	0.0	0.0
0-180	5477.1	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	4175.0	76.2
10-20	546.7	10.0
20-30	263.3	4.8
30-40	185.1	3.4
40-50	138.8	2.5
50-60	95.7	1.7
60-70	50.5	0.9
70-80	18.7	0.3
80-90	3.2	0.1

Coefficients of Utilization

Coefficients Of Utilization - Zonal Cavity Method

Effective Floor Cavity Reflectance: 20%

RCC %:	80				70				50				30				10				0			
RW %:	70	50	30	0	70	50	30	0	50	30	20	0	50	30	20	0	50	30	20	0	50	30	20	0
RCR: 0	1.19	1.19	1.19	1.19	1.16	1.16	1.16	1.00	1.11	1.11	1.11	1.06	1.06	1.06	1.06	1.02	1.02	1.02	1.02	1.00	1.00	1.00	1.00	1.00
1	1.16	1.14	1.12	1.11	1.13	1.12	1.10	.98	1.08	1.07	1.06	1.04	1.04	1.03	1.02	1.01	1.01	1.00	1.00	.98	.98	.98	.98	.98
2	1.13	1.09	1.07	1.05	1.11	1.08	1.05	.96	1.05	1.03	1.01	1.02	1.02	1.00	.99	.99	.99	.98	.97	.96	.96	.96	.96	.96
3	1.10	1.06	1.03	1.00	1.08	1.05	1.02	.95	1.02	1.00	.98	1.00	.98	.97	.97	.98	.96	.96	.95	.94	.94	.94	.94	.94
4	1.07	1.03	1.00	.97	1.06	1.02	.99	.93	1.00	.98	.96	.98	.96	.95	.95	.97	.95	.95	.94	.92	.92	.92	.92	.92
5	1.05	1.00	.97	.95	1.04	1.00	.97	.92	.98	.96	.94	.97	.95	.93	.93	.95	.94	.94	.92	.91	.91	.91	.91	.91
6	1.03	.98	.95	.93	1.02	.98	.95	.91	.97	.94	.92	.95	.93	.91	.91	.94	.92	.92	.91	.90	.90	.90	.90	.90
7	1.02	.97	.93	.91	1.01	.96	.93	.90	.95	.92	.91	.94	.92	.90	.90	.93	.91	.91	.90	.89	.89	.89	.89	.89
8	1.00	.95	.92	.90	.99	.95	.92	.89	.94	.91	.89	.93	.91	.89	.89	.92	.90	.89	.89	.88	.88	.88	.88	.88
9	.99	.94	.91	.89	.98	.93	.91	.88	.93	.90	.88	.92	.90	.88	.88	.92	.89	.88	.88	.87	.87	.87	.87	.87
10	.98	.93	.90	.88	.97	.92	.90	.87	.92	.89	.88	.91	.89	.87	.87	.91	.89	.87	.87	.86	.86	.86	.86	.86

Flood Summary

Flood Summary

	Efficiency	Lumens	Horizontal Spread	Vertical Spread
Field (10%):	63.6%	3,481.3	12.8	12.5
Beam (50%):	29.5%	1,617.6	6	5.9
Total:	101.9%	5,580.2		



RESULTS:

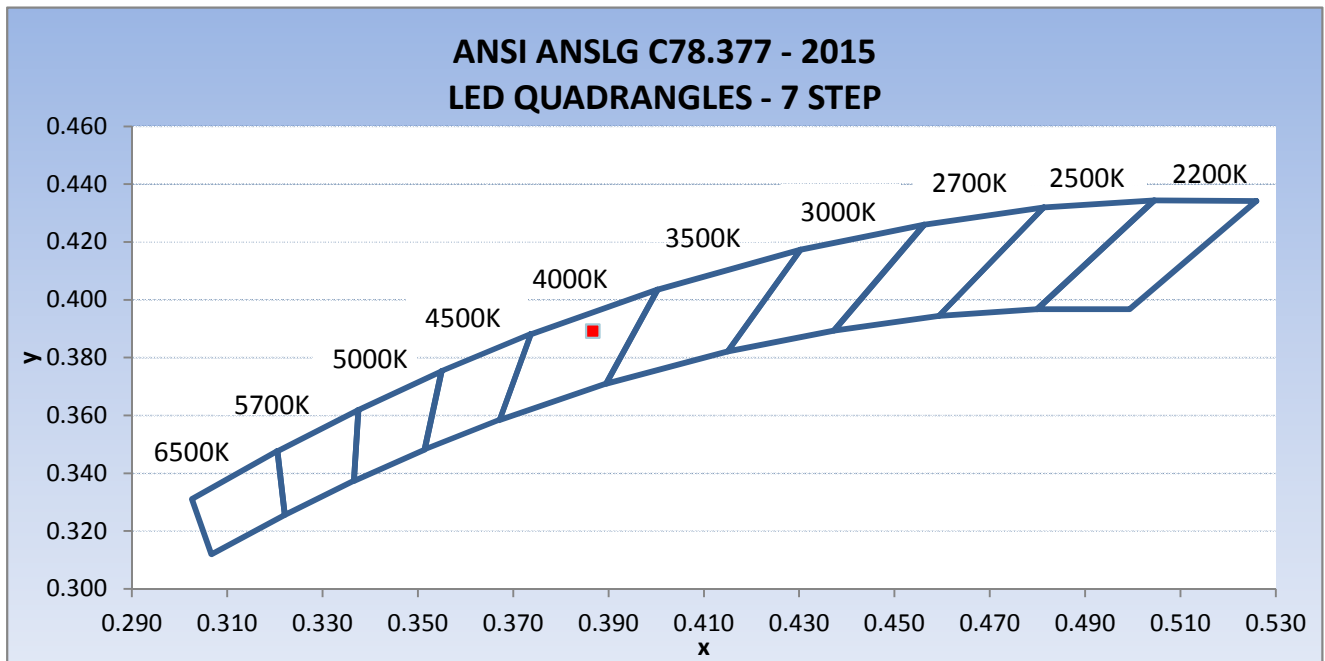
Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Integrating Sphere Method

Intertek Control No.	Base Orientation	Input Voltage (VAC)	Input Current (mA)	Input Power (W)	Input Power Factor ()	Current ATHD (%)
CRT1705221531-002	Base Up	120.04	825.3	97.90	0.988	12.69

Light Output (Lumens)	Lumen Efficacy (lm/W)	Correlated Color Temperature - CCT (K)	CRI -Ra	CRI -R9	DUV ()
5463.3	55.8	3923	80.6	5.3	0.004

CIE 31' Chromaticity Coordinate (x)	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')	CIE 76' Chromaticity Coordinate (v')
0.387	0.389	0.224	0.508

ANSI C78.377 SSL Chromaticity (2015 Version)

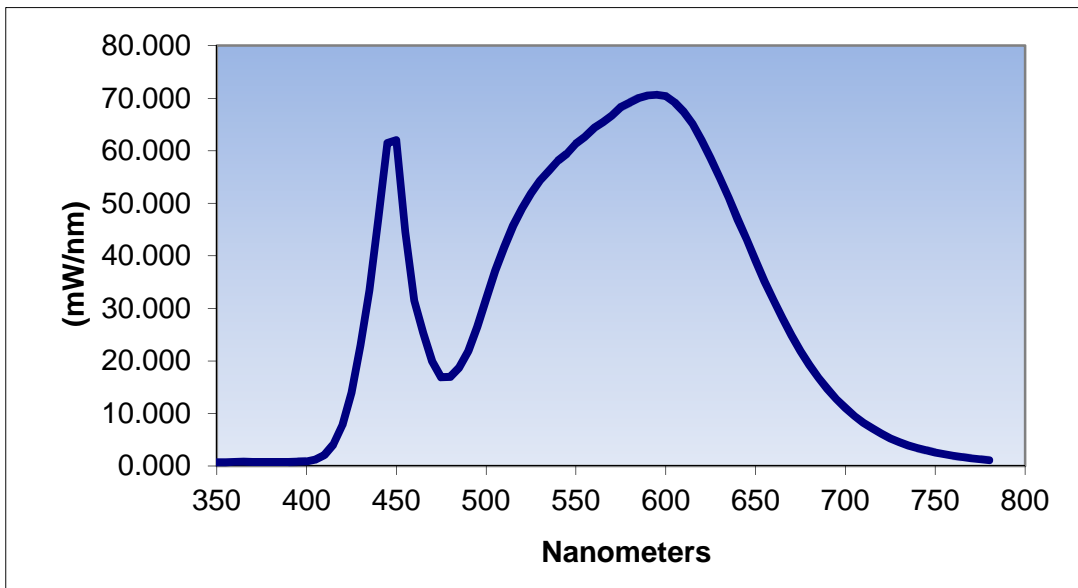


RESULTS

Spectral Distribution Over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.712	460	31.506	570	66.664	680	19.245
355	0.675	465	25.343	575	68.318	685	16.809
360	0.810	470	19.949	580	69.177	690	14.681
365	0.777	475	16.895	585	70.044	695	12.708
370	0.730	480	16.947	590	70.508	700	11.021
375	0.747	485	18.716	595	70.619	705	9.516
380	0.725	490	21.852	600	70.381	710	8.223
385	0.733	495	26.521	605	69.184	715	7.116
390	0.734	500	31.845	610	67.406	720	6.136
395	0.807	505	37.146	615	65.091	725	5.273
400	0.850	510	41.575	620	61.974	730	4.508
405	1.254	515	45.712	625	58.560	735	3.930
410	2.055	520	49.057	630	54.827	740	3.421
415	4.094	525	51.877	635	51.065	745	2.967
420	7.867	530	54.346	640	46.905	750	2.573
425	13.942	535	56.178	645	43.133	755	2.255
430	22.956	540	58.106	650	39.089	760	1.956
435	33.452	545	59.459	655	35.167	765	1.700
440	47.119	550	61.318	660	31.563	770	1.476
445	61.481	555	62.634	665	28.088	775	1.297
450	61.984	560	64.315	670	24.836	780	1.128
455	44.557	565	65.414	675	21.852		

Spectral Data Over Visible Wavelengths



PRODUCT PICTURE:



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:



Ryan Siddon
Project Engineer
Lighting Division

Report Reviewed By:



Melanie Brittain
Associate Engineer
Lighting Division

Attachments:

Gonio IES File - eW ReachElite Powercore, 100W, 4000K, 5 Degree Beam Diffuser, All LEDs On
Sphere Raw CSV File - eW ReachElite Powercore, 100W, 4000K, 5 Degree Beam Diffuser, All LEDs On