



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 29, 2017

REPORT NO. 103088115CRT-040

TEST OF ONE FLOOD FIXTURE WITH 36 LEDS, 3000K, 20DEG DIFFUSER.  
SAMPLE #4

MODEL NO. EW REACHELITE POWERCORE, 100W, 3000K, 20 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

DESCRIPTION OF SAMPLE: The client submitted one production sample of model number eW ReachElite Powercore, 100W, 3000K, 20 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 CRT1706201113-001.

DATE OF TESTS: June 23, 2017 through June 26, 2017.

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SUMMARY:

MODEL NO. eW ReachElite Powercore, 100W, 3000K, 20 Degree Beam Diffuser, All LEDs On
DESCRIPTION: Flood Fixture with 36 LEDs, 3000K, 20deg Diffuser.
Sample #4

Criteria	Integrating Sphere	Goniophotometer
Light Output (Lumens)	4583.3	4469.4
Total Power (W)	96.40	95.69
Lumen Efficacy (Lm/W)	47.5	46.7
Power Factor ( )	0.987	0.988
Current ATHD (%)	13.22	
Correlated Color Temp. (CCT-K)	3020	
Color Rendering Index (CRI - Ra)	81.9	
CRI - R9	7.6	
DUV ( )	0.002	
Chromaticity Coordinate (x)	0.438	
Chromaticity Coordinate (y)	0.408	
Chromaticity Coordinate (u')	0.249	
Chromaticity Coordinate (v')	0.523	

EQUIPMENT LIST

Equipment Used	Model No.	Control No.	Last Cal.	Cal. Due
LSI High Speed Mirror Goniometer	6440	---	6/2/2017	7/2/2017
Elgar AC Power Supply	CW1251	---	VBU	VBU
Sorenson DC Power Supply	XG 150-10	---	VBU	VBU
Yokogawa Power Analyzer	WT210	E464	5/2/2017	5/2/2018
Omega Thermometer	DPI8-C24	M263	5/2/2017	5/2/2018
M-D Building Products Digital Level	Smart Tool	L112	4/4/2017	4/4/2018
NIST Luminous Intensity Standard Source	NBS10322	N1427	1/9/2017	1/9/2019
NIST Luminous Intensity Standard Source	NBS10332	N1435	1/9/2017	1/9/2019
NIST Luminous Intensity Standard Source	NBS10265	N1437	1/9/2017	1/9/2019
NIST Luminous Flux Standard Source	NBS10428	N1424	1/11/2017	1/11/2019
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	---	6/19/2017	7/19/2017
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 LSI Type C High Speed Model 6440 Mirror 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. 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)
CRT1706201113-001	Base Up	120.04	806.7	95.69	0.988	4469.4	46.7

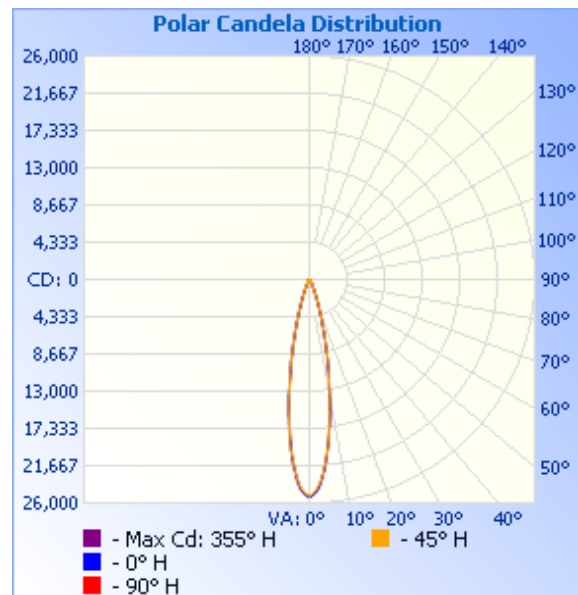
Maximum Cd: 25,240.8 at Horizontal: 355°, Vertical: 0.5°

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

**Intensity (Candlepower) Summary at 25°C - Candelas**

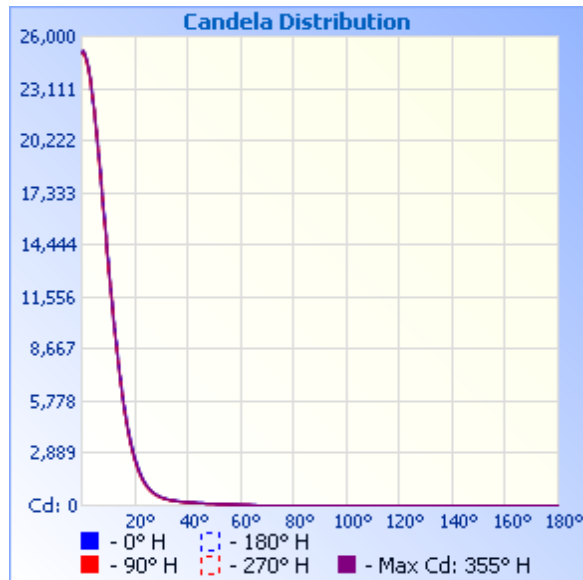
Angle	0	30	45	65	90
0	25087	25087	25087	25087	25087
5	21410	21388	21414	21241	21232
10	13455	13321	13425	13468	13015
15	6445	6486	6507	6495	6498
20	2580	2620	2631	2647	2655
25	1000	1022	1023	1022	1032
30	470	471	464	459	465
35	284	275	262	254	262
40	201	190	175	166	173
45	150	139	126	116	122
50	110	102	92	83	88
55	80	73	65	58	62
60	54	51	44	38	41
65	32	31	26	22	24
70	13	14	10	8	10
75	0	0	0	0	0
80	0	0	0	0	0
85	0	0	0	0	0
90	0	0	0	0	0

**Polar Candela Plot**

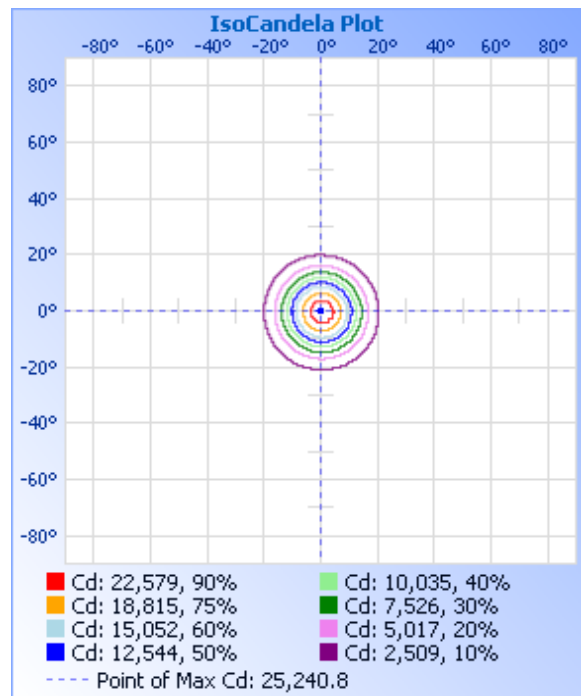


**RESULTS:**

Cartesian Candela Distribution Plot



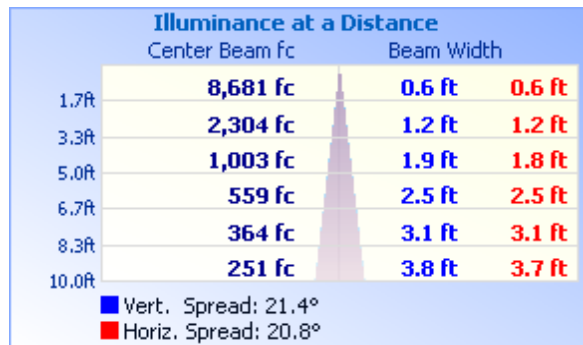
Isocandela Plot



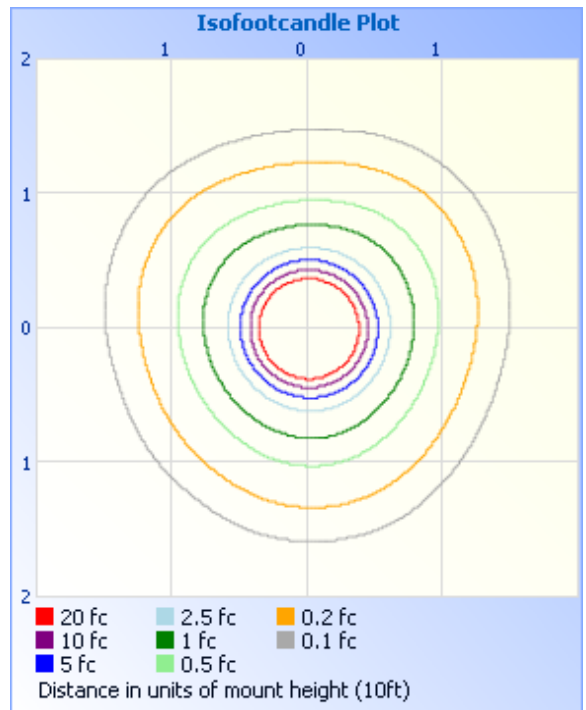
Isoillumination Plots

Mounting Height: 10ft

Illuminance - Cone of Light



Isoillumination Plot



Luminance Data (cd/sq.m)

Angles In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	3731	3131	3051
55	2469	2002	1904
65	1313	1071	1013
75	0	0	0
85	0	0	0



**RESULTS:**

Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	4100.2	91.7
0-40	4274.4	95.6
0-60	4439.2	99.3
0-90	4469.4	100.0
60-90	30.1	0.7
70-100	2.6	0.1
90-120	0.0	0.0
90-180	0.0	0.0
0-180	4469.4	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	1772.3	39.7
10-20	1813.9	40.6
20-30	514.0	11.5
30-40	174.2	3.9
40-50	102.8	2.3
50-60	62.0	1.4
60-70	27.5	0.6
70-80	2.6	0.1
80-90	0.0	0.0

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	
RCR: 0	1.19	1.19	1.19	1.19	1.16	1.16	1.16	1.00	1.11	1.11	1.11	1.11	1.06	1.06	1.06	1.06	1.02	1.02	1.02	1.00	
1	1.15	1.13	1.11	1.09	1.13	1.11	1.09	.97	1.07	1.05	1.04	1.04	1.03	1.02	1.01	1.01	1.00	.99	.98	.96	
2	1.11	1.07	1.04	1.02	1.09	1.06	1.03	.94	1.03	1.00	.99	.99	1.00	.98	.96	.96	.97	.96	.95	.93	
3	1.07	1.03	.99	.96	1.06	1.01	.98	.91	.99	.96	.94	.94	.97	.94	.93	.93	.95	.93	.91	.90	
4	1.04	.99	.95	.92	1.03	.98	.94	.88	.96	.93	.90	.90	.94	.91	.89	.89	.92	.90	.88	.87	
5	1.01	.95	.91	.88	1.00	.94	.90	.85	.93	.89	.87	.87	.91	.88	.86	.86	.90	.87	.85	.84	
6	.98	.92	.88	.85	.97	.91	.87	.83	.90	.86	.84	.84	.89	.86	.83	.83	.88	.85	.83	.82	
7	.95	.89	.85	.82	.94	.88	.85	.80	.87	.84	.81	.81	.86	.83	.81	.81	.85	.83	.81	.80	
8	.93	.86	.82	.79	.92	.86	.82	.78	.85	.82	.79	.79	.84	.81	.79	.79	.83	.81	.78	.77	
9	.91	.84	.80	.77	.90	.84	.80	.76	.83	.79	.77	.77	.82	.79	.77	.77	.81	.79	.76	.76	
10	.88	.82	.78	.75	.88	.81	.78	.75	.81	.77	.75	.75	.80	.77	.75	.75	.80	.77	.75	.74	

Flood Summary

**Flood Summary**

	Efficiency	Lumens	Horizontal Spread	Vertical Spread
Field (10%):	80.6%	3,601.7	40.3	40.6
Beam (50%):	40.4%	1,805.0	20.8	21.4
<b>Total:</b>	<b>100.2%</b>	<b>4,478.8</b>		



**RESULTS:**

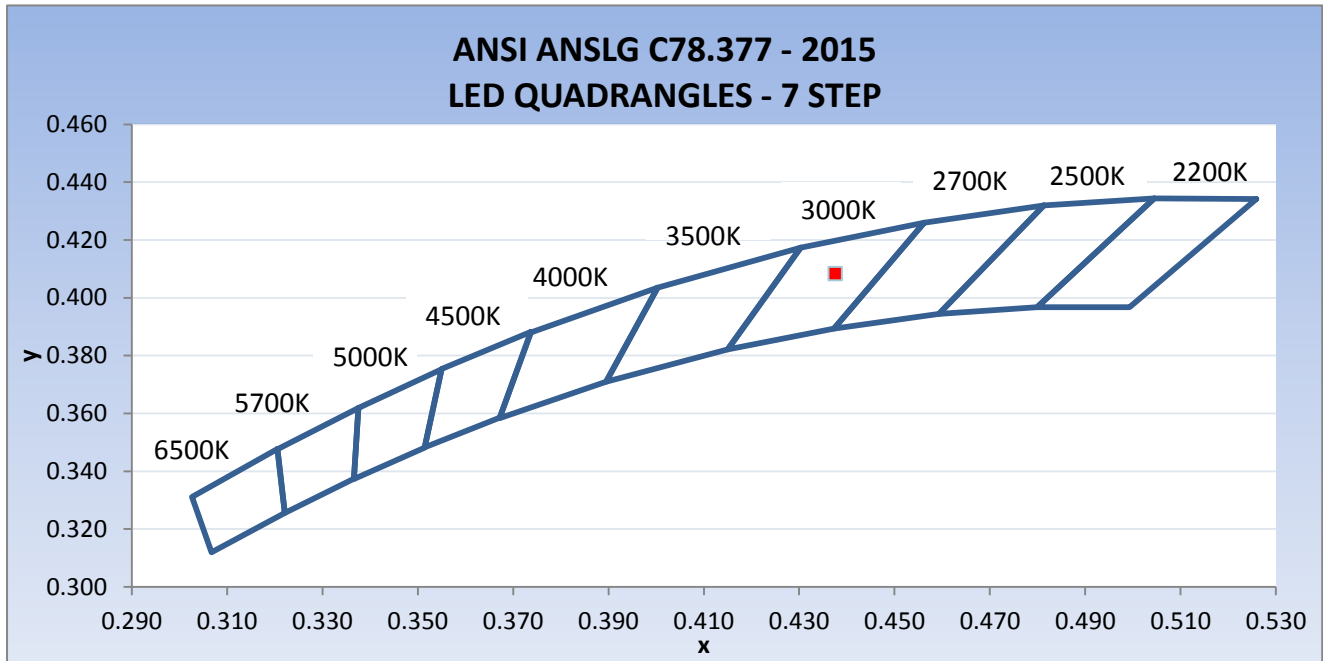
**Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Integrating Sphere Method**

Intertek Control No.	Base Orientation	Input Voltage (VAC)	Input Current (mA)	Input Power (W)	Input Power Factor ( )	Current ATHD (%)
CRT1706201113-001	Base Up	120.01	813.7	96.40	0.987	13.22

Light Output (Lumens)	Lumen Efficacy (lm/W)	Correlated Color Temperature - CCT (K)	CRI -Ra	CRI -R9	DUV ( )
4583.3	47.5	3020	81.9	7.6	0.002

CIE 31' Chromaticity Coordinate (x)	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')	CIE 76' Chromaticity Coordinate (v')
0.438	0.408	0.249	0.523

**ANSI C78.377 SSL Chromaticity (2015 Version)**

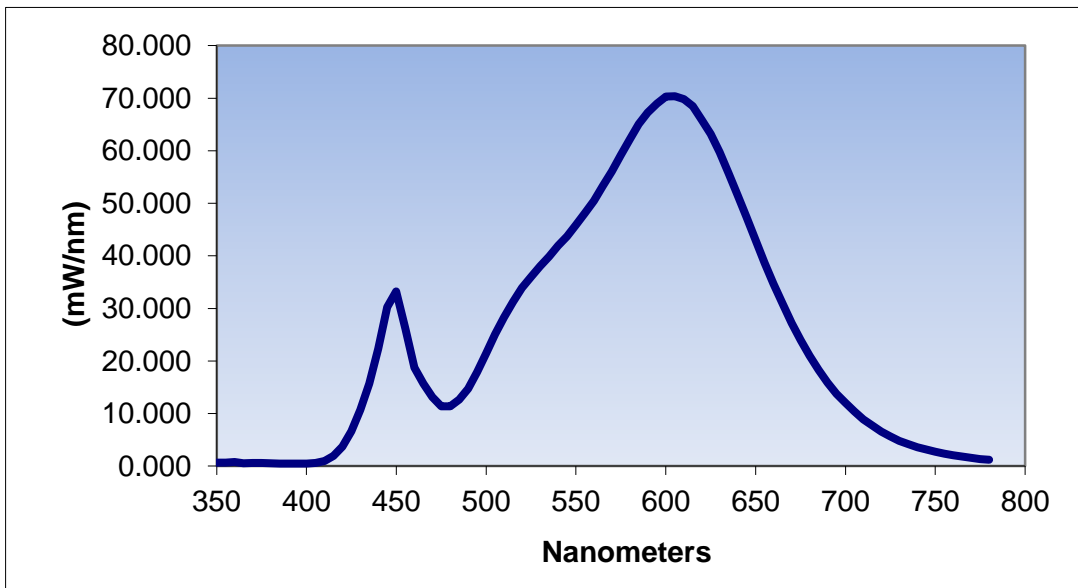


**RESULTS**

**Spectral Distribution Over Visible Wavelengths**

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.676	460	18.765	570	56.091	680	20.974
355	0.646	465	15.702	575	59.137	685	18.298
360	0.746	470	13.163	580	62.170	690	15.882
365	0.545	475	11.395	585	65.046	695	13.765
370	0.582	480	11.394	590	67.276	700	12.015
375	0.568	485	12.674	595	68.985	705	10.371
380	0.553	490	14.691	600	70.320	710	8.886
385	0.470	495	17.859	605	70.397	715	7.716
390	0.461	500	21.410	610	69.816	720	6.576
395	0.463	505	25.056	615	68.476	725	5.640
400	0.484	510	28.289	620	65.838	730	4.813
405	0.586	515	31.232	625	63.166	735	4.179
410	0.974	520	33.896	630	59.694	740	3.587
415	1.958	525	36.017	635	55.711	745	3.135
420	3.724	530	38.045	640	51.534	750	2.699
425	6.626	535	39.859	645	47.363	755	2.356
430	10.720	540	41.965	650	43.028	760	2.077
435	15.691	545	43.730	655	38.706	765	1.786
440	22.344	550	45.904	660	34.694	770	1.551
445	30.260	555	48.147	665	30.825	775	1.343
450	33.211	560	50.451	670	27.217	780	1.201
455	26.080	565	53.311	675	23.945		

**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:

Jeffrey Davis  
Engineering Supervisor  
Lighting Division

Attachments:

Gonio IES File - eW ReachElite Powercore, 100W, 3000K, 20 Degree Beam Diffuser, All LEDs On  
Sphere Raw CSV File - eW ReachElite Powercore, 100W, 3000K, 20 Degree Beam Diffuser, All LEDs On