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-039

TEST OF ONE FLOOD FIXTURE WITH 36 LEDS, 3000K, 10DEG DIFFUSER.
SAMPLE #4

MODEL NO. EW REACHELITE POWERCORE, 100W, 3000K, 10 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, 10 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.

SUMMARY:

MODEL NO. eW ReachElite Powercore, 100W, 3000K, 10 Degree Beam Diffuser, All LEDs On
DESCRIPTION: Flood Fixture with 36 LEDs, 3000K, 10deg Diffuser. Sample #4

Criteria	Integrating Sphere	Goniophotometer
Light Output (Lumens)	4809.8	4659.7
Total Power (W)	96.40	95.80
Lumen Efficacy (Lm/W)	49.9	48.6
Power Factor ( )	0.987	0.988
Current ATHD (%)	13.22	
Correlated Color Temp. (CCT-K)	3026	
Color Rendering Index (CRI - Ra)	81.6	
CRI - R9	6.4	
DUV ( )	0.002	
Chromaticity Coordinate (x)	0.438	
Chromaticity Coordinate (y)	0.409	
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

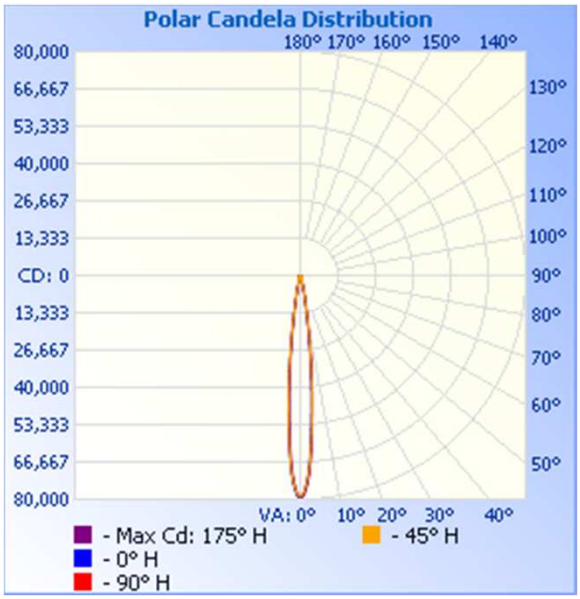
Intertek Control No.	Base Orientation	Input Voltage (VAC)	Input Current (mA)	Input Power (W)	Input Power Factor ( )	Light Output (Lumens)	Lumen Efficacy (lm/W)
CRT1706201113-001	Base Up	120.04	807.6	95.80	0.988	4659.7	48.6

Maximum Cd: 79,289.6 at Horizontal: 175°, Vertical: 0.5° Luminous Opening: (L: 18.5", W: 4.75")

Intensity (Candlepower) Summary at 25°C - Candelas

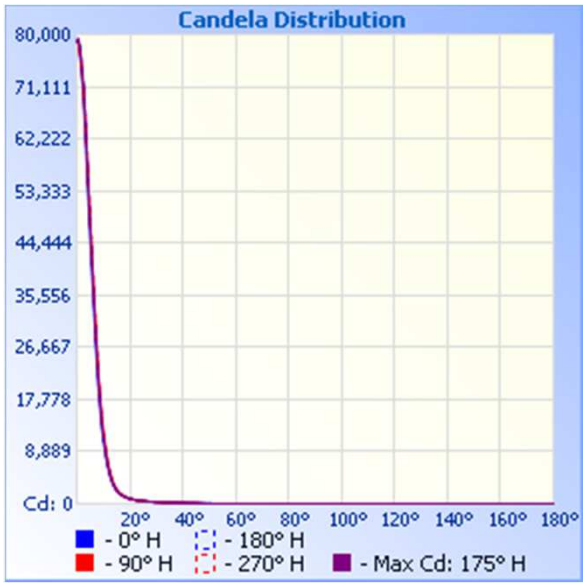
Angle	0	30	45	65	90
0	78802	78802	78802	78802	78802
5	45433	46317	47070	48003	48451
10	10836	11481	11901	12426	12587
15	2246	2362	2434	2510	2541
20	882	893	899	906	926
25	511	503	473	467	500
30	347	326	307	292	308
35	261	217	197	192	214
40	191	162	146	128	141
45	129	120	107	81	99
50	92	74	70	55	62
55	55	52	48	32	43
60	28	25	20	10	14
65	0	0	2	0	3
70	0	0	0	0	0
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

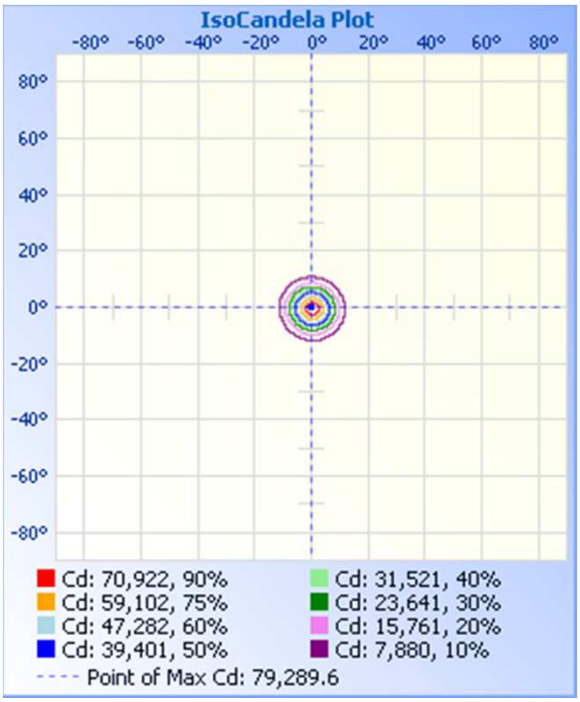


RESULTS:

Cartesian Candela Distribution Plot



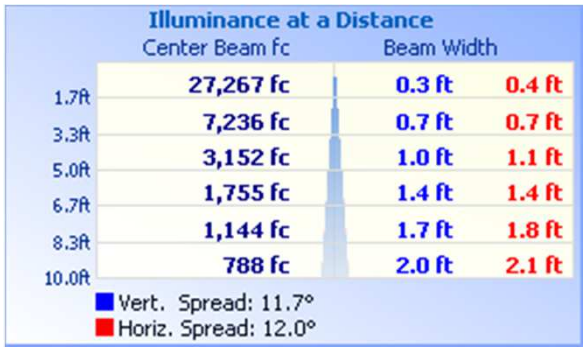
Isocandela Plot



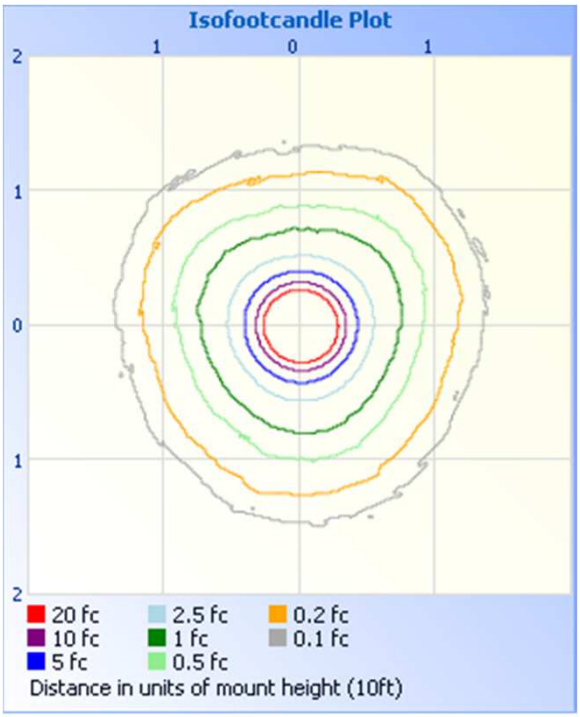
Isoillumination Plots

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	3223	2670	2463
55	1701	1477	1320
65	0	79	113
75	0	0	0
85	0	0	0

RESULTS:

Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	4387.6	94.2
0-40	4527.5	97.2
0-60	4654.5	99.9
0-90	4659.7	100.0
60-90	5.2	0.1
70-100	0.0	0.0
90-120	0.0	0.0
90-180	0.0	0.0
0-180	4659.7	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	3272.5	70.2
10-20	879.1	18.9
20-30	235.9	5.1
30-40	139.9	3.0
40-50	86.6	1.9
50-60	40.4	0.9
60-70	5.2	0.1
70-80	0.0	0.0
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	50	30	20	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	1.02	1.02	1.02	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	1.01	1.00	1.00	.98
2	1.13	1.10	1.07	1.05	1.11	1.08	1.06	.97	1.05	1.03	1.02	1.02	1.01	1.00	1.00	.99	.98	.96
3	1.10	1.06	1.03	1.01	1.09	1.05	1.02	.95	1.03	1.01	.99	1.01	.99	.97	.98	.97	.96	.95
4	1.08	1.03	1.00	.98	1.06	1.02	1.00	.94	1.01	.98	.96	.99	.97	.95	.97	.96	.94	.93
5	1.06	1.01	.98	.95	1.04	1.00	.97	.92	.99	.96	.94	.97	.95	.93	.96	.94	.93	.92
6	1.04	.99	.96	.93	1.03	.98	.95	.91	.97	.94	.92	.96	.94	.92	.95	.93	.91	.91
7	1.02	.97	.94	.92	1.01	.97	.94	.90	.95	.93	.91	.95	.92	.91	.94	.92	.90	.89
8	1.00	.95	.92	.90	1.00	.95	.92	.89	.94	.92	.90	.93	.91	.89	.93	.91	.89	.88
9	.99	.94	.91	.89	.98	.94	.91	.88	.93	.90	.88	.92	.90	.88	.92	.90	.88	.87
10	.98	.93	.90	.88	.97	.92	.89	.87	.92	.89	.87	.91	.89	.87	.91	.89	.87	.86

Flood Summary

Flood Summary

	Efficiency	Lumens	Horizontal Spread	Vertical Spread
Field (10%):	76.5%	3,564.1	23.2	22.7
Beam (50%):	36.1%	1,681.7	12	11.7
Total:	101.3%	4,719.2		

RESULTS:

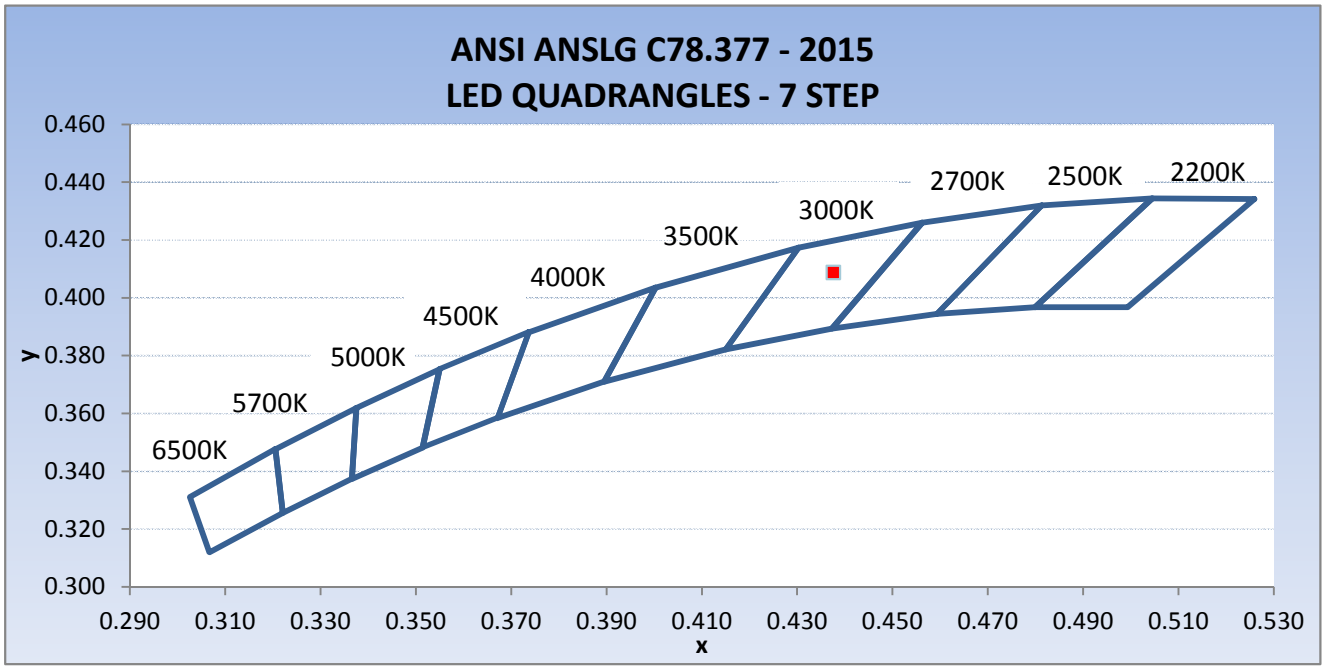
Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Integrating Sphere Method

Intertek Control No.	Base Orientation	Input Voltage (VAC)	Input Current (mA)	Input Power (W)	Input Power Factor ( )	Current ATHD (%)
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 ( )
4809.8	49.9	3026	81.6	6.4	0.002

CIE 31' Chromaticity Coordinate (x)	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')	CIE 76' Chromaticity Coordinate (v')
0.438	0.409	0.249	0.523

ANSI C78.377 SSL Chromaticity (2015 Version)

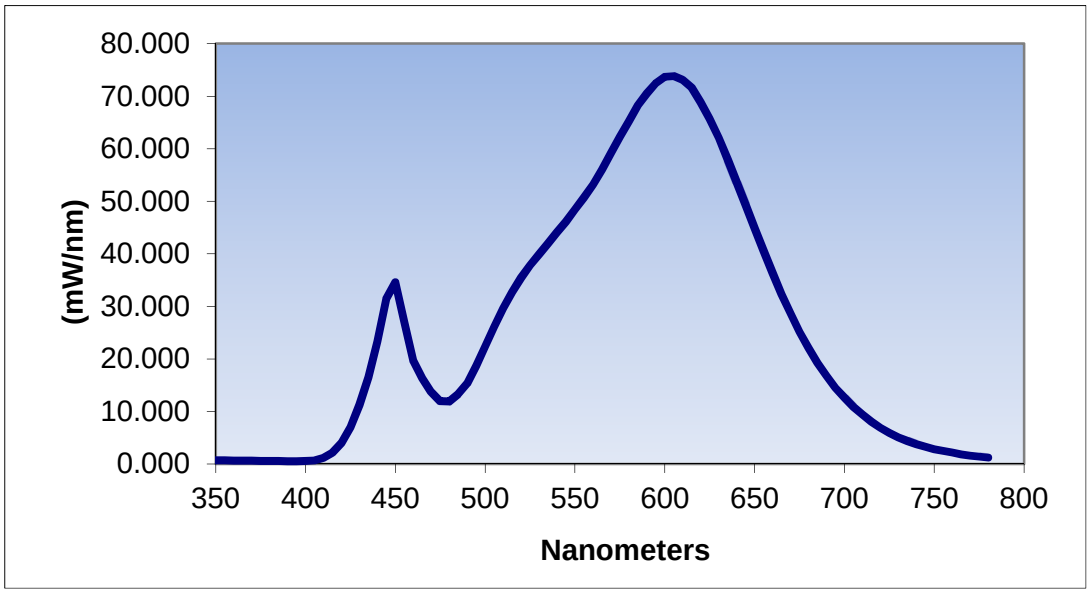


RESULTS

Spectral Distribution Over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.664	460	19.698	570	59.170	680	22.121
355	0.669	465	16.338	575	62.306	685	19.225
360	0.643	470	13.713	580	65.212	690	16.790
365	0.637	475	11.948	585	68.240	695	14.519
370	0.598	480	11.893	590	70.515	700	12.593
375	0.576	485	13.258	595	72.458	705	10.873
380	0.533	490	15.354	600	73.716	710	9.366
385	0.553	495	18.676	605	73.840	715	8.074
390	0.510	500	22.399	610	73.084	720	6.922
395	0.486	505	26.145	615	71.643	725	5.922
400	0.543	510	29.610	620	68.815	730	5.067
405	0.703	515	32.711	625	65.725	735	4.415
410	1.150	520	35.445	630	62.041	740	3.789
415	2.158	525	37.838	635	57.899	745	3.287
420	4.010	530	39.908	640	53.620	750	2.828
425	7.034	535	41.958	645	49.288	755	2.484
430	11.306	540	44.077	650	44.804	760	2.178
435	16.497	545	46.110	655	40.543	765	1.852
440	23.328	550	48.409	660	36.347	770	1.620
445	31.481	555	50.672	665	32.367	775	1.393
450	34.578	560	53.187	670	28.678	780	1.206
455	27.061	565	56.020	675	25.179		

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

Ryan Siddon
Project Engineer
Lighting Division

Report Reviewed By:

Melanie Brittain

Melanie Brittain
Associate Engineer
Lighting Division

Attachments:
Gonio IES File - eW ReachElite Powercore, 100W, 3000K, 10 Degree Beam Diffuser, All LEDs On
Sphere Raw CSV File - eW ReachElite Powercore, 100W, 3000K, 10 Degree Beam Diffuser, All LEDs On