



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 30, 2017

REPORT NO. 103088115CRT-050

TEST OF ONE FLOOD FIXTURE WITH 36 LEDS, 4000K, 60DEG DIFFUSER.
SAMPLE #5

MODEL NO. EW REACHELITE POWERCORE, 100W, 4000K, 60 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, 4000K, 60 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 8, 2017 through June 14, 2017.

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.



SUMMARY:

MODEL NO. eW ReachElite Powercore, 100W, 4000K, 60 Degree Beam Diffuser, All LEDs On
DESCRIPTION: Flood Fixture with 36 LEDs, 4000K, 60deg Diffuser.
Sample #5

Criteria	Integrating Sphere	Goniophotometer
Light Output (Lumens)	5080.4	5000.7
Total Power (W)	97.90	97.22
Lumen Efficacy (Lm/W)	51.9	51.4
Power Factor ()	0.988	0.989
Current ATHD (%)	12.69	
Correlated Color Temp. (CCT-K)	3948	
Color Rendering Index (CRI - Ra)	80.7	
CRI - R9	5.6	
DUV ()	0.004	
Chromaticity Coordinate (x)	0.385	
Chromaticity Coordinate (y)	0.388	
Chromaticity Coordinate (u')	0.224	
Chromaticity Coordinate (v')	0.507	

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	---	VBV	VBV
Sorenson DC Power Supply	XG 150-10	---	VBV	VBV
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	---	VBV	VBV
Sorenson DC Power Supply	XFR 150-8	---	VBV	VBV
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 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)
CRT1705221531-002	Base Up	120.09	818.7	97.22	0.989	5000.7	51.4

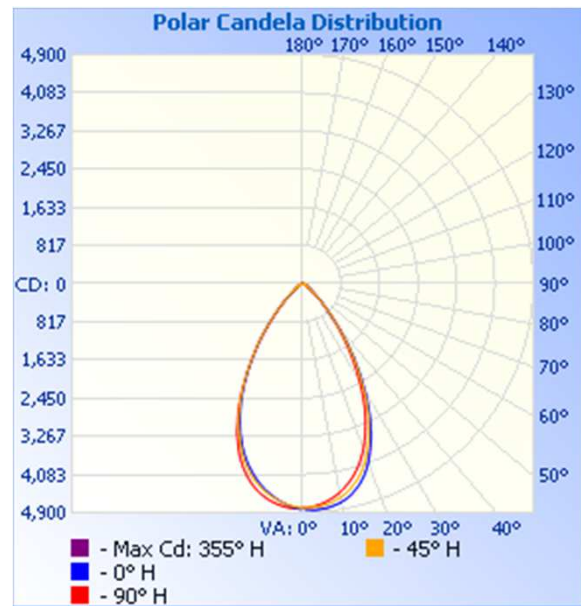
Maximum Cd: 4,858.4 at Horizontal: 355°, Vertical: 3.5°

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

Intensity (Candlepower) Summary at 25°C - Candelas

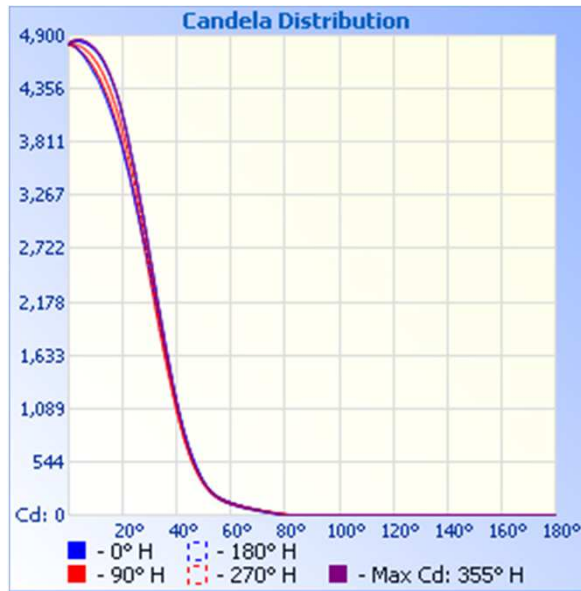
Angle	0	30	45	65	90
0	4800	4800	4800	4800	4800
5	4833	4782	4765	4746	4722
10	4742	4672	4637	4590	4537
15	4502	4424	4375	4304	4221
20	4068	3997	3943	3865	3766
25	3418	3366	3333	3251	3145
30	2641	2619	2586	2516	2421
35	1852	1839	1805	1751	1684
40	1136	1139	1119	1086	1053
45	631	628	619	603	588
50	333	337	332	322	315
55	190	192	189	181	177
60	126	125	123	117	114
65	84	85	83	78	76
70	53	55	53	50	49
75	26	30	28	26	26
80	2	8	7	6	7
85	0	0	0	0	0
90	0	0	0	0	0

Polar Candela Plot

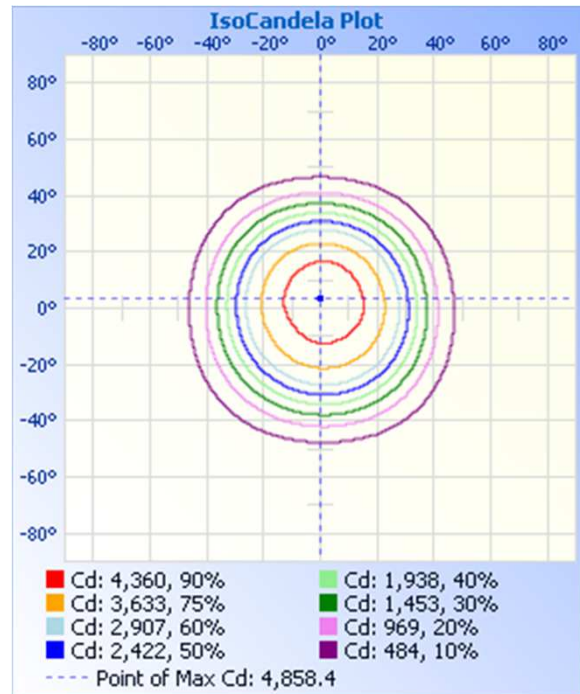


RESULTS:

Cartesian Candela Distribution Plot



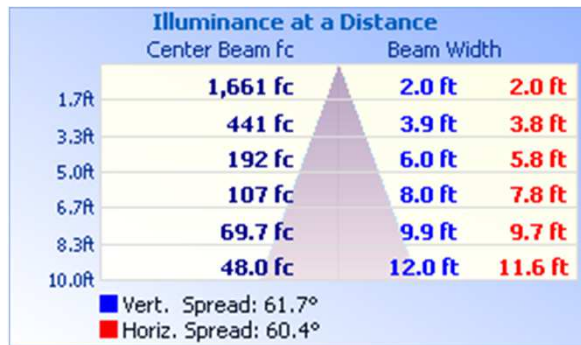
Isocandela Plot



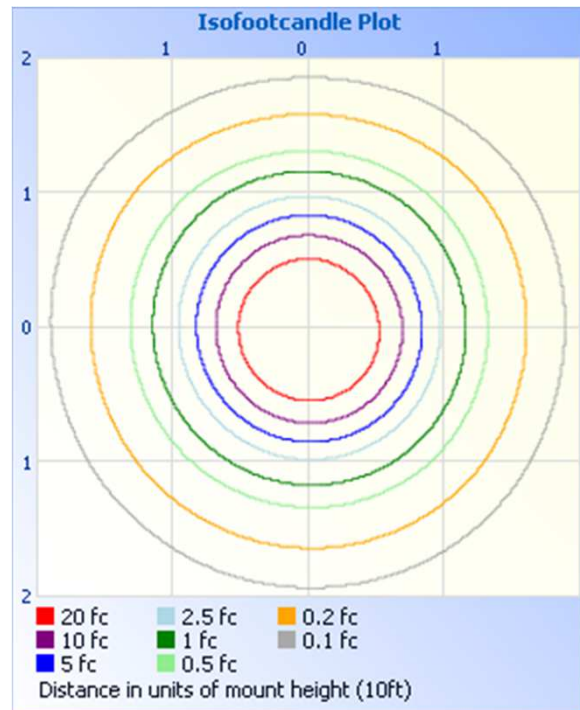
Isoillumination Plots

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	15718	15414	14652
55	5818	5815	5425
65	3488	3446	3184
75	1735	1939	1762
85	0	0	0

RESULTS:

Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	3120.1	62.4
0-40	4219.0	84.4
0-60	4888.4	97.8
0-90	5000.7	100.0
60-90	112.3	2.2
70-100	30.8	0.6
90-120	0.0	0.0
90-180	0.0	0.0
0-180	5000.7	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	447.7	9.0
10-20	1200.1	24.0
20-30	1472.2	29.4
30-40	1098.9	22.0
40-50	494.4	9.9
50-60	174.9	3.5
60-70	81.5	1.6
70-80	29.9	0.6
80-90	1.0	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	10	50	30	20	10	50	30	20	10	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	1.02	1.02	1.02	1.00
1	1.13	1.10	1.07	1.05	1.10	1.08	1.05	.93	1.04	1.02	1.00	1.00	.98	.97	.97	.95	.94	.92	.92	.92	.92
2	1.07	1.01	.97	.93	1.04	1.00	.96	.85	.96	.93	.90	.93	.91	.88	.91	.88	.86	.85	.85	.85	.85
3	1.01	.94	.88	.84	.99	.92	.87	.79	.90	.85	.82	.87	.84	.81	.85	.82	.79	.78	.78	.78	.78
4	.95	.87	.81	.76	.93	.86	.80	.73	.83	.79	.75	.81	.77	.74	.79	.76	.73	.71	.71	.71	.71
5	.90	.81	.74	.70	.88	.80	.74	.67	.78	.73	.69	.76	.72	.68	.75	.71	.67	.66	.66	.66	.66
6	.85	.75	.69	.64	.83	.74	.68	.62	.73	.67	.63	.71	.67	.63	.70	.66	.62	.61	.61	.61	.61
7	.80	.70	.64	.59	.79	.70	.63	.58	.68	.63	.59	.67	.62	.58	.66	.61	.58	.57	.57	.57	.57
8	.76	.66	.59	.55	.75	.65	.59	.54	.64	.59	.55	.63	.58	.54	.62	.57	.54	.53	.53	.53	.53
9	.72	.62	.55	.51	.71	.61	.55	.50	.60	.55	.51	.59	.54	.51	.58	.54	.51	.49	.49	.49	.49
10	.69	.58	.52	.48	.67	.58	.52	.47	.57	.51	.48	.56	.51	.48	.55	.51	.47	.46	.46	.46	.46

Flood Summary

Flood Summary

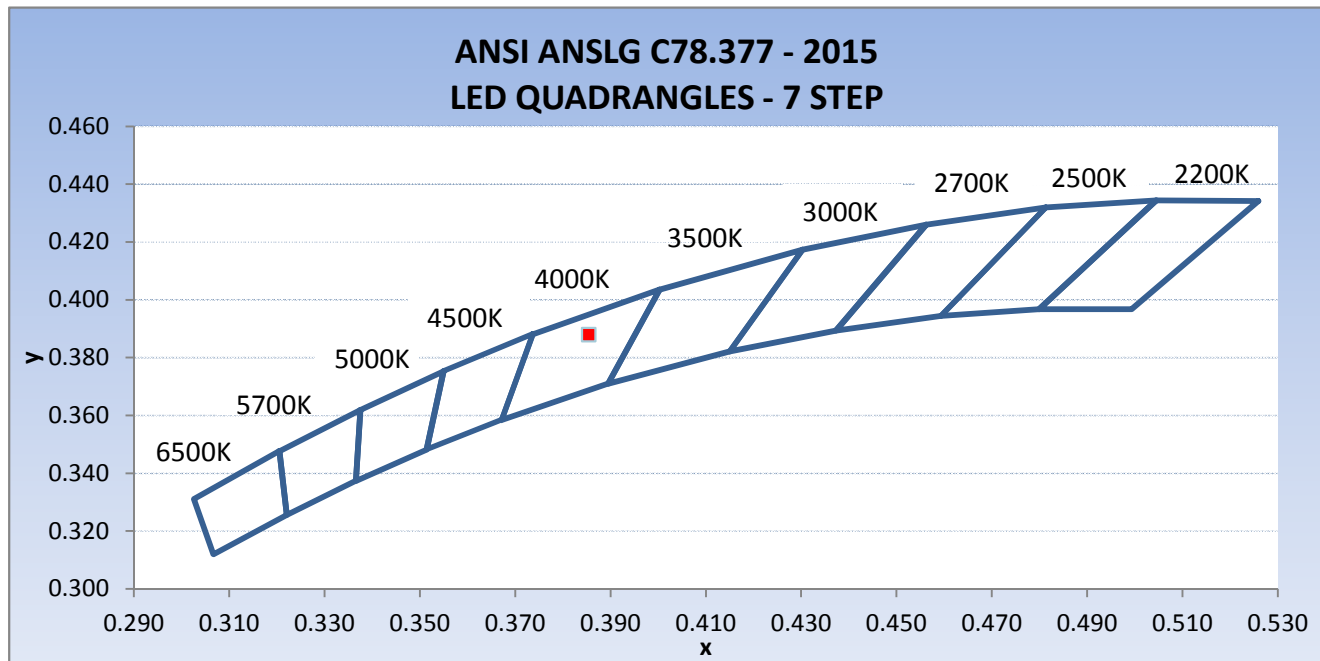
	Efficiency	Lumens	Horizontal Spread	Vertical Spread
Field (10%):	92.3%	4,617.2	93.2	94.5
Beam (50%):	63.6%	3,178.3	60.4	61.7
Total:	100%	5,000.9		

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 ()
5080.4	51.9	3948		80.7	5.6	0.004
CIE 31' Chromaticity Coordinate (x)	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')		CIE 76' Chromaticity Coordinate (v')		
0.385	0.388	0.224		0.507		

ANSI C78.377 SSL Chromaticity (2015 Version)

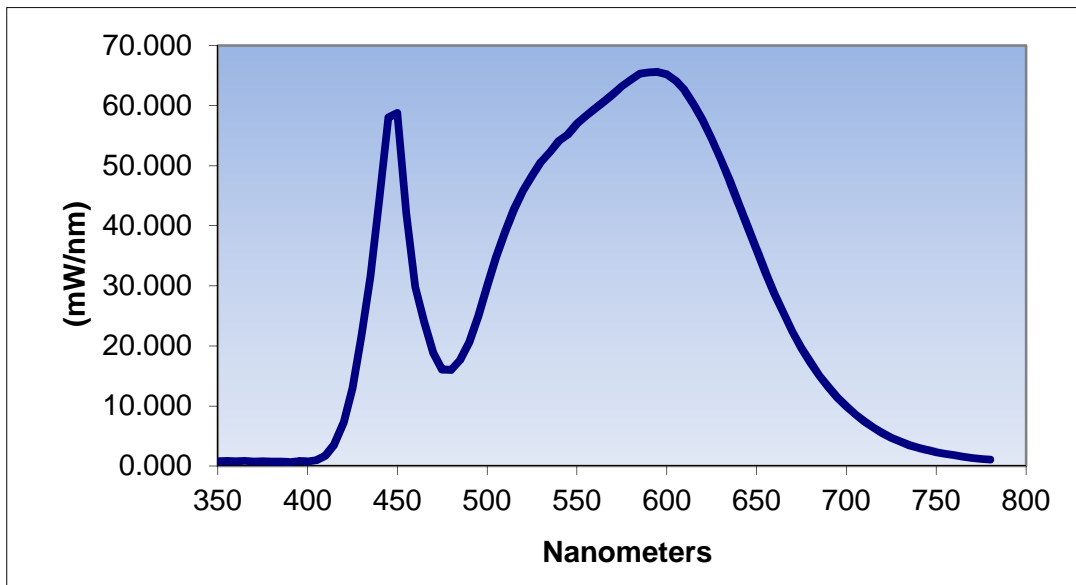


RESULTS

Spectral Distribution Over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.752	460	29.802	570	61.915	680	17.267
355	0.816	465	23.994	575	63.276	685	15.038
360	0.783	470	18.868	580	64.308	690	13.152
365	0.851	475	16.046	585	65.340	695	11.407
370	0.780	480	16.004	590	65.534	700	9.927
375	0.738	485	17.664	595	65.612	705	8.614
380	0.708	490	20.638	600	65.243	710	7.399
385	0.695	495	24.921	605	64.157	715	6.404
390	0.630	500	29.992	610	62.575	720	5.474
395	0.791	505	34.846	615	60.272	725	4.712
400	0.769	510	38.993	620	57.614	730	4.052
405	0.993	515	42.769	625	54.500	735	3.470
410	1.738	520	45.846	630	51.044	740	3.042
415	3.578	525	48.356	635	47.465	745	2.658
420	7.142	530	50.626	640	43.591	750	2.289
425	12.949	535	52.285	645	39.798	755	2.032
430	21.687	540	54.148	650	35.990	760	1.802
435	31.577	545	55.232	655	32.130	765	1.570
440	44.504	550	56.953	660	28.668	770	1.347
445	58.015	555	58.234	665	25.482	775	1.208
450	58.785	560	59.512	670	22.337	780	1.072
455	42.112	565	60.681	675	19.595		

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:

A handwritten signature in black ink, reading "Ryan Siddon".

Ryan Siddon
Project Engineer
Lighting Division

Report Reviewed By:

A handwritten signature in black ink, reading "Melanie Brittain".

Melanie Brittain
Associate Engineer
Lighting Division

Attachments:

Gonio IES File - eW ReachElite Powercore, 100W, 4000K, 60 Degree Beam Diffuser, All LEDs On
Sphere Raw CSV File - eW ReachElite Powercore, 100W, 4000K, 60 Degree Beam Diffuser, All LEDs On