



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

## REPORT

3933 US ROUTE 11 CORTLAND, NEW YORK 13045

Project No. G100557536

Date: July 31, 2012

REPORT NO. 101235726CRT-009

TEST OF ONE POLYOPTIK™ 40° 3500K LED MODULE

LED MODULE MODEL NO. H1977.030  
DRIVER MODEL NO. LMPS-350 1006.69

RENDERED TO

HEICO LIGHTING™  
400 du PARC  
ST-EUSTACHE, QUEBEC  
CANADA, J7R 0A1

TEST: 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 500436155.

STANDARDS USED: The following American National Standards or Illuminating Engineering Society of North America Test Guides were used in part or totally to test each specimen:

IESNA LM-79: 2008 Approved Method for Electrical and Photometric Measurements of Solid-State Lighting Products

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

DESCRIPTION OF SAMPLE: The client submitted 27 production samples of model number H1977.030. The samples were received by Intertek on June 24, 2013, in undamaged condition, and one sample was tested as received. The sample designation was CRT1306241043-002AC.

DATES OF TESTS: July 26, 2013 through July 30, 2013.

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SUMMARY

Model No.:	H1977.030
Description:	POLYOPTIK™ 40° 3500K
Test Note:	Testing performed on one LED module with 26 additional modules connected to the power supply for proper loading per client request.

Criteria	Result
Module Lumen Output	106.3 Lumens
Output Power per Module (W)*	1.41
Module Efficacy (Lm/W)	75.39
Full Kit Input Power Factor	0.979
Full Kit Input Current ATHD	9.38%
Correlated Color Temperature (CCT)	3472K
Color Rendering Index (CRI) – Ra	81.7
Color Rendering Index (CRI) - R9	10.5
Duv	0.000
Chromaticity Coordinate (x)	0.408
Chromaticity Coordinate (y)	0.393
Chromaticity Coordinate (u')	0.236
Chromaticity Coordinate (v')	0.513

\*TEST NOTE: Output Power per Module was calculated by dividing total Output Power by number of modules in full kit.

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Calibration Date	Calibration Due Date
Leeds & Northup Standard Resistor	Manganin	Y089	02/07/13	02/07/14
Data Precision Digital Voltmeter	3600	V124	02/07/13	02/07/14
Fluke Multimeter	45	M133	02/07/13	02/07/14
Kikusui DC Power Supply	35-10L	E160	N/A	N/A
Sorenson DC Power Supply	DLM150-20E	N/A	N/A	N/A
NIST Spectral Flux Standard Source	RF1024	N/A	9/18/2010	100 hrs of use
ITS 2 Meter Integ. Sphere	---	N308	VBV	VBV
Labsphere Diode Array	CDS 600	W/N308	07/01/13	08/01/13
Xitron Power Analyzer	2503AH	E235	05/10/13	06/10/14
Fluke Temp Meter	52	T801	09/07/12	09/07/13
Extech Hygro-Thermometer	445703	T1366	11/8/12	11/08/13
Elgar AC power supply	CW1251	---	---	---
LSI High Speed Mirror Goniometer	6440	---	07/24/13	08/24/13
Elgar Power Supply	CW1251	---	VBV	VBV
Yokogawa Power Analyzer	WT210	E464	04/17/13	04/17/14
Extech Hygro Thermometer	445703	T1359	11/08/12	11/08/13
Fisher Scientific	---	N1132	04/22/13	04/22/14
M-D Building Products	Smart Tool	L112	02/13/13	02/13/14
Yokogawa Power Analyzer	WT1600	E462	07/17/13	07/17/14

## TEST METHODS

### Seasoning in Sample Orientation – LED Products

No seasoning was performed in accordance with IESNA LM-79.

### 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 each sample.

Ambient temperature was measured equal to the height of the sample mounted on the Goniometer equipment. Each sample was operated at input rated voltage in its designated orientation. Each sample was allowed to stabilize for at least thirty minutes before measurements were made. Electrical measurements including voltage, current, and power were measured using the Xitron or Yokogawa Power Analyzer.

Some graphics were created with Photometrics Plus software.

### 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. Electrical measurements including voltage, current, and power were measured using the Xitron or Yokogawa Power Analyzer.

The calibration of the sphere photometer-spectroradiometer system is traceable to the National Institute of Standards and Technology.

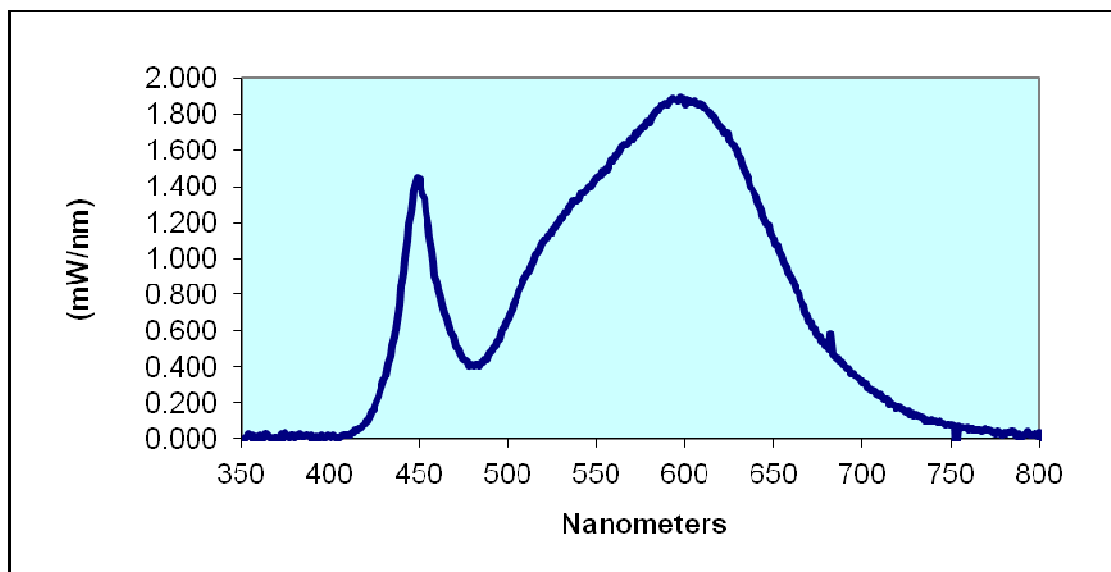


**RESULTS OF TESTS**

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
H1977.030							
350	0.000	460	0.866	570	1.659	680	0.508
355	0.011	465	0.683	575	1.716	685	0.451
360	0.018	470	0.538	580	1.755	690	0.410
365	0.014	475	0.443	585	1.819	695	0.362
370	0.000	480	0.412	590	1.848	700	0.312
375	0.022	485	0.421	595	1.876	705	0.269
380	0.004	490	0.474	600	1.847	710	0.245
385	0.010	495	0.554	605	1.869	715	0.191
390	0.000	500	0.672	610	1.838	720	0.175
395	0.022	505	0.789	615	1.797	725	0.148
400	0.008	510	0.905	620	1.731	730	0.138
405	0.008	515	0.998	625	1.665	735	0.106
410	0.019	520	1.090	630	1.572	740	0.099
415	0.049	525	1.160	635	1.449	745	0.087
420	0.102	530	1.231	640	1.342	750	0.074
425	0.182	535	1.280	645	1.208	755	0.057
430	0.322	540	1.332	650	1.105	760	0.045
435	0.514	545	1.395	655	0.995	765	0.000
440	0.841	550	1.445	660	0.889	770	0.050
445	1.255	555	1.495	665	0.771	775	0.029
450	1.442	560	1.565	670	0.653	780	0.032
455	1.179	565	1.620	675	0.570		

**HEICO LIGHTING**  
**Sample No. CRT1306241043-002AC**  
**Model No. H1977.030**  
**Spectral Data Over Visible Wavelengths**





RESULTS OF TESTS (cont'd)

Electrical Measurements at 25°C – Integrating Sphere Method - Full Kit

Intertek Sample No.	Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)
H1977.030						
CRT1306241043-002AC	UP	120.0	358.4	42.09	0.979	9.38

Intertek Sample No.	Driver Output Voltage (Vrms)	Driver Output Current (Amps)	Driver Output Power (Watts)
CRT1306241043-002AC	9.85	4.11	37.94

Photometric and Electrical Measurements at 25°C – Integrating Sphere Method - Individual Module

Intertek Sample No.	Output Power (Watts)*	Absolute Luminous Flux (Lumens)	Lumen Efficacy (Lumens Per Watt)
CRT1306241043-002AC	1.41	106.3	75.39

\*TEST NOTE: Output Power per Module was calculated by dividing total Output Power by number of modules in full kit.

Intertek Sample No.	Correlated Color Temperature (K)	CRI -Ra	CRI -R9	DUV	CIE 31' Chromaticity Coordinate (x)	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')	CIE 76' Chromaticity Coordinate (v')
CRT1306241043-002AC	3472	81.7	10.5	0.000	0.408	0.393	0.236	0.513



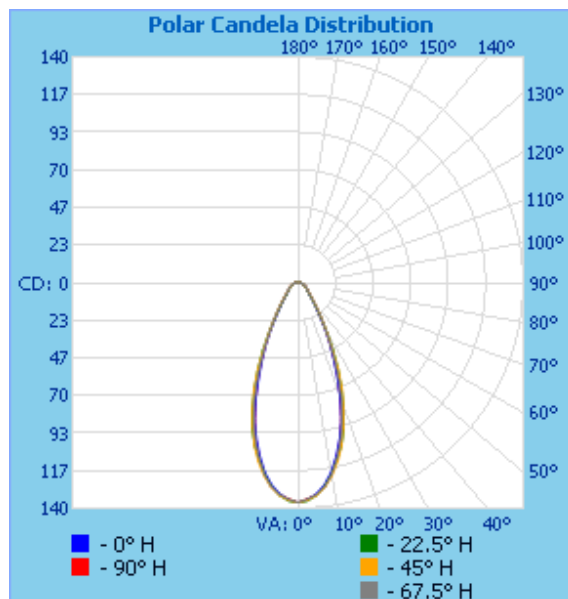
RESULTS OF TESTS (cont'd)

Photometric and Electrical Measurements – Distribution Method

Intertek Sample No.	Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (Watts)	Input Power Factor
H1977.030					
CRT1306241043-002AC	UP	120.0	330.8	38.85	0.978

Intensity (Candlepower) Summary at 25°C - Candelas

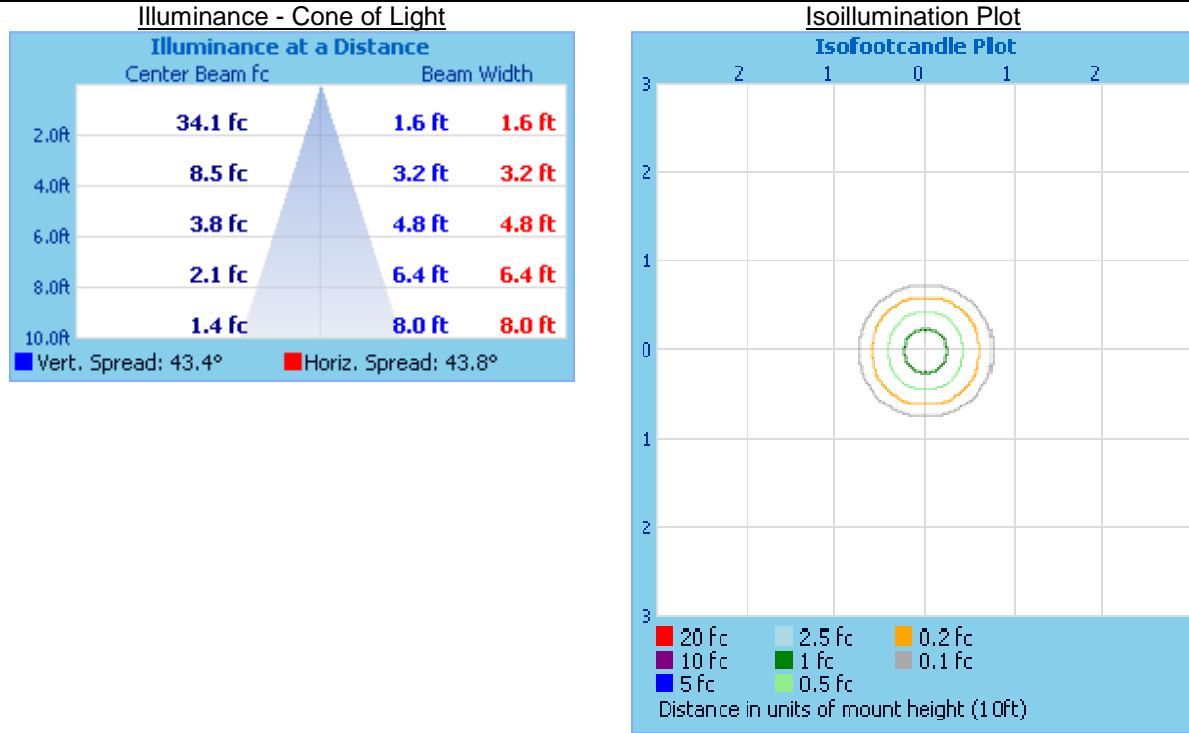
Angle	0	22.5	45	67.5	90
H1977.030					
0	136	136	136	136	136
5	131	132	132	132	132
10	119	120	122	120	120
15	100	104	105	102	101
20	77	83	83	80	77
25	53	59	59	55	54
30	34	37	36	36	35
35	21	22	23	23	23
40	14	14	15	15	15
45	10	10	11	11	11
50	8	8	9	8	8
55	7	7	7	7	7
60	6	6	6	6	6
65	5	5	5	5	5
70	4	4	4	4	4
75	3	3	3	3	3
80	2	3	2	2	2
85	1	2	2	2	2
90	1	1	1	1	1
95	1	1	1	1	1
100	0	0	0	0	0



## RESULTS OF TESTS (cont'd)

### Illumination Plots

Model No.: H1977.030  
 Mounting Height: 10 ft.



### Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
H1977.030		
0-30	66.3	62.1
0-40	80.9	75.8
0-60	95.5	89.5
60-90	10.1	9.5
0-90	105.6	99.0
90-180	1.1	1.0
0-180	106.7	100.0

Picture (not to scale)



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.

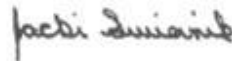
In Charge Of Tests:



Vladimir Kozak  
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Attachment: None

Report Reviewed By:



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