FOR THE SCOPE OF
ACCREDITATION UNDER A2LA
TO ISO/IEC 17025:2005.

REPORT

25800 COMMERCENTRE DRIVE, LAKE FOREST, CA 92630

Project No. G101607677 Date: April 29, 2014

REPORT NO. 101607677LAX-006

TEST OF ONE DYNAMIC WHITE LED PAR WW

MODEL NO. OPTI TRI WHITE II

RENDERED TO

ELATION PROFESSIONAL
6122 S. EASTERN AVENUE
COMMERCE, CA, 90040

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 A2LA, NIST, or any agency of the federal government.

AUTHORIZATION: The testing performed was authorized by signed quote number 500519256.

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: Electrical and Photometric Measurements of Solid State Lighting

DESCRIPTION OF SAMPLE: The client submitted one prototype sample of model number Opti Tri White II. The sample was received by Intertek on April 25, 2014, in undamaged condition and one sample was tested as received. The sample designation was LAN1404250928-001.

DATES OF TESTS: April 28, 2014 through April 29, 2014.

SUMMARY

Model No.:	Opti Tri White II
Description:	Dynamic White LED PAR WW

	Result	
Criteria	Sphere	Goniometer
Total Lumen Output (Lumens)	2494	2497
Total Power (W)	67.89	66.78
Luminaire Efficacy (LPW)	36.74	37.39

Criteria	Result
Power Factor	0.976
Current ATHD %	15.13
Correlated Color Temperature (CCT - K)	3230
Color Rendering Index (CRI - Ra)	82.0
Color Rendering Index (CRI - R9)	5.4
DUV	0.000
Chromaticity Coordinate (x)	0.421
Chromaticity Coordinate (y)	0.398
Chromaticity Coordinate (u')	0.243
Chromaticity Coordinate (v')	0.517

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date
LabSphere Power Supply	LPS-100-0833	000832	05/23/13	05/23/14
LapSphere 3M Integrating Sphere	CA-11821-LRT	000830	VBU	VBU
LabSphere Spectrometer	CDS-3020	000834	VBU	VBU
California Instruments Power Supply	CSW5550	001338	N/A	N/A
Yokogawa Power Meter	WT333	001319	05/10/13	05/10/14
Extech Instruments Stop Watch	N/A	001380	09/05/13	09/05/14
Omega Environmental Monitor	N/A	000886	09/10/13	09/10/14
LSI High Speed Mirror Goniometer	6440T	000943	VBU	VBU
Elgar Power Supply	CW1251	000944	VBU	VBU
Yokogawa Power Analyzer	WT210	000945	11/14/13	11/14/14
Omega Environmental Monitor	iBTHX-W	000886	09/09/13	09/09/14
Tape Measure	33-428	000684	12/09/13	12/09/14
Stopwatch	365510	001380	11/05/13	11/05/14

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 CDS 3020 Spectrometer and Three Meter 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 Yokogawa Power Analyzer.

The calibration of the sphere spectrometer 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 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 Yokogawa Power Analyzer.

Some graphics were created with Photometrics Plus software.

RESULTS OF TEST

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

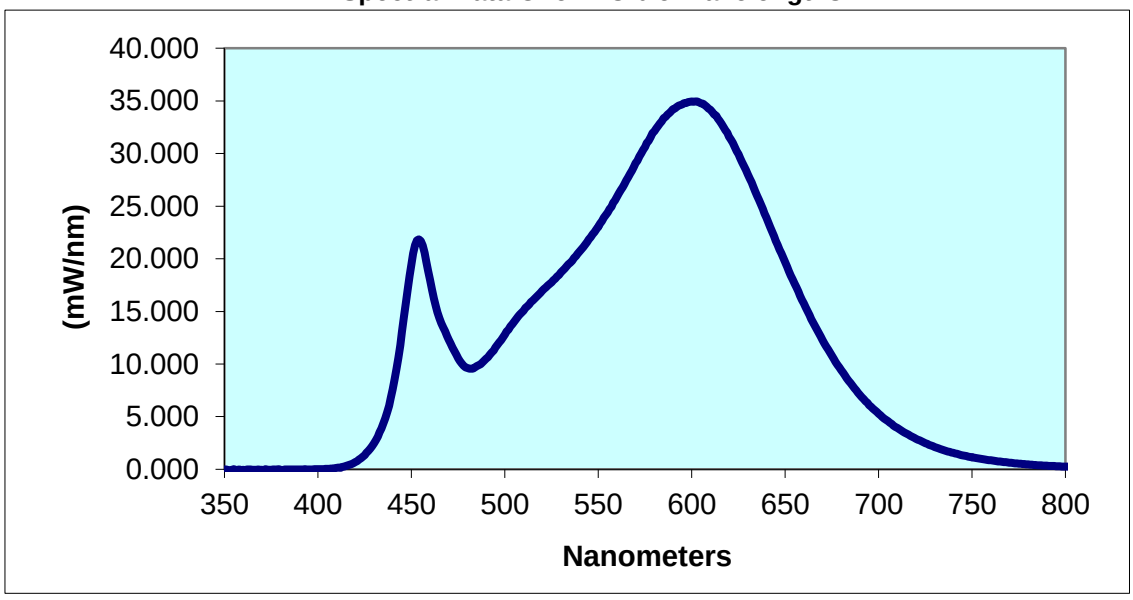
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
LAN1404250928-001	UP	120.7	579.3	67.89	0.976	15.13	2494	36.74

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')
3230	82.0	5.4	0.000	0.421	0.398	0.243	0.517

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	-0.029	440	7.594	530	18.720	620	31.610	710	3.924
355	0.018	445	13.040	535	19.620	625	29.930	715	3.377
360	-0.051	450	19.540	540	20.700	630	28.020	720	2.910
365	-0.056	455	21.680	545	21.840	635	25.990	725	2.481
370	-0.063	460	17.990	550	23.060	640	23.910	730	2.117
375	-0.056	465	14.350	555	24.410	645	21.710	735	1.812
380	-0.047	470	12.330	560	25.890	650	19.650	740	1.547
385	-0.027	475	10.520	565	27.450	655	17.640	745	1.323
390	-0.028	480	9.617	570	29.070	660	15.750	750	1.141
395	-0.016	485	9.795	575	30.630	665	13.940	755	0.978
400	0.011	490	10.500	580	32.120	670	12.290	760	0.851
405	0.032	495	11.580	585	33.360	675	10.770	765	0.730
410	0.124	500	12.810	590	34.210	680	9.401	770	0.615
415	0.319	505	14.030	595	34.670	685	8.184	775	0.528
420	0.681	510	15.080	600	34.950	690	7.060	780	0.454
425	1.347	515	16.040	605	34.780	695	6.099		
430	2.461	520	16.950	610	34.150	700	5.264		
435	4.342	525	17.770	615	33.090	705	4.557		

Spectral Data Over Visible Wavelengths



RESULTS OF TEST (cont'd)

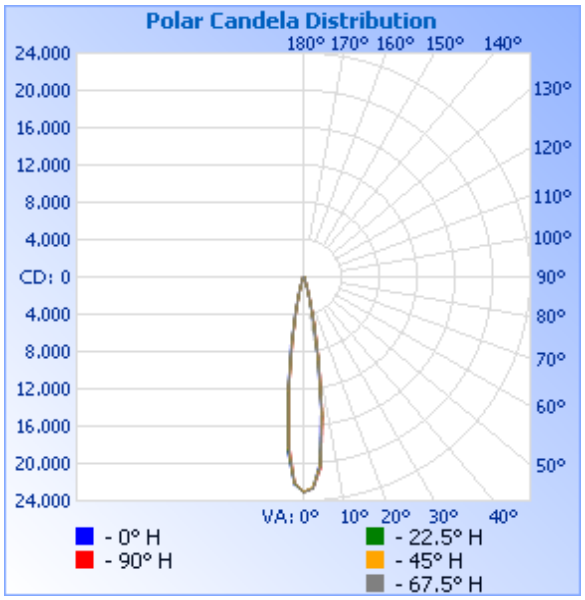
Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Distribution Method

Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Absolute Luminous Flux (Lumens)	Lumen Efficacy (Lumens Per Watt)
LAN1404250928-001	UP	120.0	570.4	66.78	0.976	2497	37.39

Intensity (Candlepower) Summary at 25°C - Candelas

Maximum Candela Value 23083

Angle	0	22.5	45	67.5	90
0	23023	23027	23007	23083	23037
5	20036	20214	20259	20420	20546
10	8635	8866	8938	9150	9273
15	2463	2529	2626	2685	2776
20	701	693	695	742	787
25	330	319	325	337	357
30	211	198	197	205	213
35	122	132	119	118	130
40	74	74	70	76	74
45	41	45	38	49	44
50	24	38	35	37	44
55	22	24	17	11	29
60	19	15	17	9	16
65	10	22	1	12	7
70	12	3	0	6	6
75	3	0	16	5	1
80	0	2	0	2	0
85	0	17	2	0	8
90	12	8	5	6	0

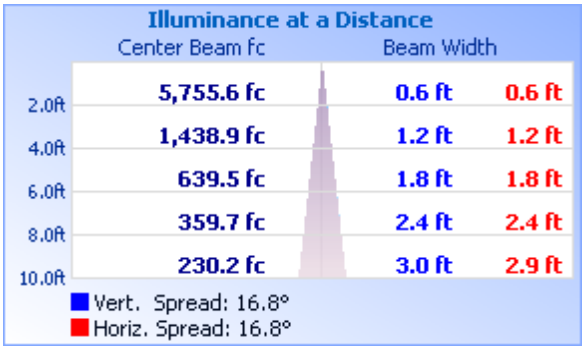


RESULTS OF TEST (cont'd)

Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



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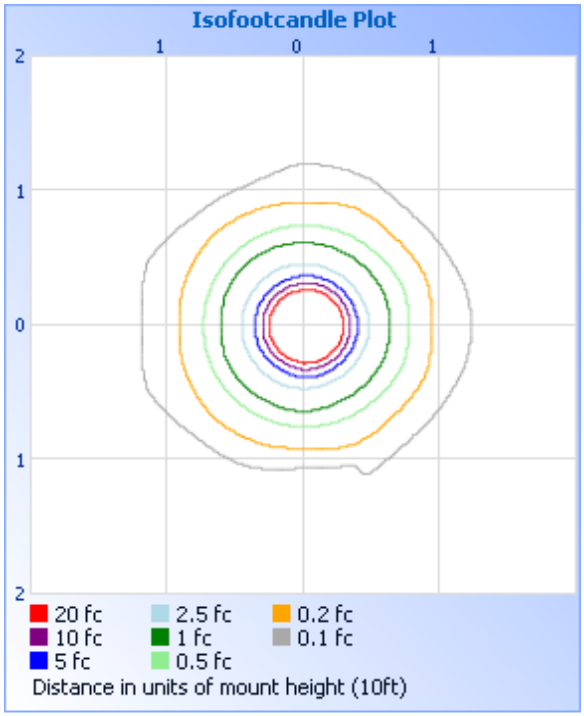

Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	2348	94.0
0-40	2425	97.1
0-60	2482	99.4
60-90	14.6	0.6
0-90	2496	100.0
90-180	0.5	0.0
0-180	2497	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	1429	57.2
10-20	756.4	30.3
20-30	162.6	6.5
30-40	77.0	3.1
40-50	36.6	1.5
50-60	19.9	0.8
60-70	8.2	0.3
70-80	4.2	0.2
80-90	2.2	0.1
90-100	0.5	0.0

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:

Erik Linares
Technician
Lighting Division

Report Reviewed By:

Kenda Branch
Engineer
Lighting Division

Attachment: None