American Testing & Assessment LABORATORIES
8812-B Frey Road, Houston, TX. P: 832-360-1966, F: 713-943-2818

NVLAP TESTING
NVLAP Lab Code 201019-0

LM-79 Photometric Test Report

Fixture Model Number: **RW5**

Report Prepared For: **ikan international**
11500 S. SAM HOUSTON PKWY, HOUSTON, TX

Test: Electrical and Photometric tests as required by the IESNA test standards

Description of Sample (Test results are applicable only to the following configuration): IKAN RAYDEN DAYLIGHT HALF FOOT X 1 FOOT LED LIGHT FIXTURE.

The sample(s) was (were) tested in accordance with the following applied standards/regulations:

- IESNA LM79: 2008 Approved for Electrical and Photometric Measurements of Solid-State Lighting Products
- ANSI NEMA ANSLG C78.377: 2008 Specification of the Chromaticity of Solid State Lighting Products
- ATAL Goniophotometer Test Procedure
- ATAL Sphere Test Procedure

ATAL Test Number: **ATAL019070**

Sample Arrival Date: **6/15/2017**

Date of Tests: **6/20/2017**

Test Report Prepared by:	Test Report Approved By:
Adrianne lattimore	Jim Rice
Adrianne Lattimore, Technician	**Jim Rice, Lab Manager**

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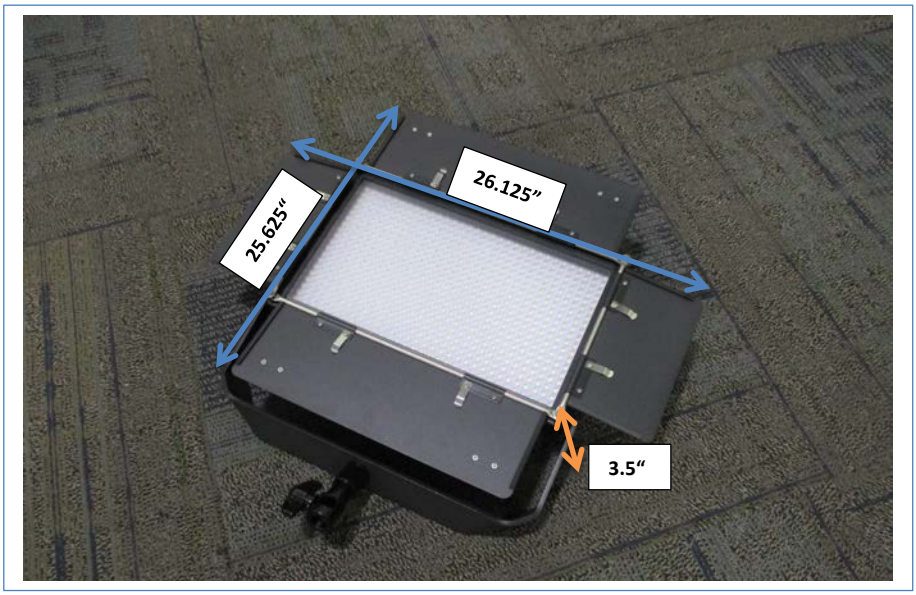
ATAL Test Number: ATAL019070



Sphere Equipment Used

Description	Model #	Serial #	Calibration Date	Calibration due date
Integrating 76 inch Sphere	LMS760	1230110011	4/26/2017	10/26/2017
Voltech Power Analyzer	PM1000+	100008202596	9/14/2016	9/14/2017
Onset Thermometer	U14-002	10408869	9/21/2016	9/21/2017
Agilent DC Power Supply	E3634A	MY53240055	9/14/2016	9/14/2017

Goniophotometer Equipment Used

Description	Model #	Serial #	Calibration Date	Calibration due date
ITL Type C Gonio System	ITL GCC1	C114-0512	1/6/2017	7/6/2017
Yokogawa Digital Power Meter	WT210	91MB22428	9/13/2016	9/13/2017
Agilent DC Power Supply	N5770A	US13A0157J	9/14/2016	9/14/2017
Onset Data Logger	U14-002	10408835	9/20/2016	9/20/2017

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ATAL Test Number: ATAL019070

LM-79 Test Summary

Manufacturer:	**ikan international**
Model Number:	**RW5**
Driver Model Number:	**DC POWER SUPPLY**
Lamp :	**5600K 0.06 WATT LEDS**
Pre-Burn Time (hours):	**24**

Electrical Measurement

Input Voltage:	15.03 **VDC**	Continuous Voltage Monitoring ☑
Input Current:	2.346 **A**	
Input Power:	35.27 **W**	

Light Output:

Lumens:	2506 **Lm**
Efficacy:	71.0 **Lm/W**
Color Rendering Index (CRI):	**R_a:** 94.70 **R_9:** 86.64
Correlated Color Temperature (K):	6100
Chromaticity Coordinate x:	0.3215
Chromaticity Coordinate y:	0.3145
Ambient Temperature (°C):	25.6
Stabilization Time (Mins):	30
Total Operating Time (Hours):	24
u/u':	1
v:	0.3078
v':	0.4617
Duv:	-0.0090

ATAL Test Number: ATAL019070

Test Methods

Photometric Measurements – Goniophotometer

An ITL Type C Rotating Mirror Goniophotometer was used to measure candelas (intensity) at each angle of distribution as defined by IESNA for the appropriate fixture type.

Ambient temperature is set to 25°C ±1° and is measured from the center of the fixture, within 1 meter from the outside of the fixture. Temperature is maintained at 25°C ±1° throughout the testing process and the sample is stabilized for at least 30 minutes and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Spectral Measurements – Integrating Sphere

A sensing Spectrometer CDS-2100, in conjunction with Labsphere 2 meter integrating sphere was used to measure chromaticity coordinates, correlated color temperature (CCT) and the color rendering index (CRI) for each sample.

Ambient temperature is set to 25°C ±1° and is measured from the center of the fixture, within 1 meter from the outside of the fixture. Temperature is maintained at 25°C ±1° throughout the testing process and the sample is stabilized for at least 30 minutes and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

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REPORT NUMBER: ATAL019070 PAGE: 1 OF 8
ISSUE DATE: 06/20/17
PREPARED FOR: ikan international
CATALOG NUMBER: RW5
LUMINAIRE: IKAN RAYDEN DAYLIGHT .5X1 LED LIGHT FIXTURE.
LAMP CAT. NO.: 5600K 0.06 WATT LEDS
LAMP: 5600K LED MODULE
BALLAST CAT. NO.: DC POWER SUPPLY 114
BALLAST: (1) AGILENT DC POWER SUPPLY

(SEE PAGE 2 FOR MORE INFORMATION)

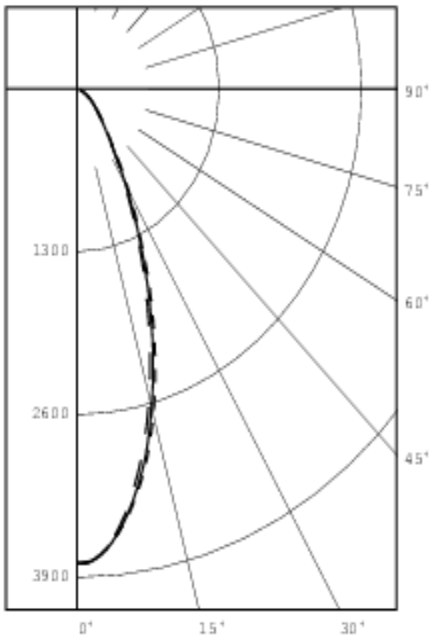
CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0	FLUX
0	3787	3787	3787	3787	3787	
5	3635	3634	3637	3626	3620	333
15	2693	2670	2632	2577	2543	723
25	1430	1425	1383	1341	1316	635
35	592	588	565	554	550	369
45	287	279	272	269	268	216
55	151	157	153	154	142	137
65	60	73	68	70	54	68
75	19	22	20	20	16	22
85	1	2	2	2	2	3
90	0	0	0	0	0	
95	0	0	0	0	0	0
105	0	0	0	0	0	0
115	0	0	0	0	0	0
125	0	0	0	0	0	0
135	0	0	0	0	0	0
145	0	0	0	0	0	0
155	0	0	0	0	0	0
165	0	0	0	0	0	0
175	0	0	0	0	0	0
180	0	0	0	0	0	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	1690	67.5
0- 40	2059	82.2
0- 60	2412	96.3
0- 90	2506	100.0
90-120	0	0.0
90-130	0	0.0
90-150	0	0.0
90-180	0	0.0
0-180	2506	100.0

EFFICACY = 71.0 Lm/W
CIE TYPE - DIRECT



Checked .....
Approved .....

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PREPARED FOR: XTRALIGHT MANUFACTURING

ADDITIONAL INFORMATION

INPUT WATTS: 35.27, AMPS: 2.346, VDC: 15.03, TEMP: 25.6 C, HRS OPERATED PRIOR TO TESTING: 24; STABILITY: 30 MIN
MOUNTING: POLE MOUNTED
TEST ABSOLUTE PHOTOMETRY IS BASED ON CALIBRATION FACTORS CREATED USING A 1000 WATT, NIST TRACEABLE, OMNIDIRECTIONAL LAB LUMEN STANDARD IN THE GONIOPHOTOMETER WITH A TEST DISTANCE OF 28 FEET
DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.

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PLANE	: 0-DEG	90-DEG
BEAM ANGLE (50%)	: 42.5 X	39.9 DEGREES
FIELD ANGLE (10%)	: 81.4 X	79.4 DEGREES

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PLANE	: 0-DEG	90-DEG
SPACING CRITERIA	: 0.7	0.6

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CANDELA DISTRIBUTION
LATERAL ANGLE

	0.0	22.5	45.0	67.5	90.0
0.0	3787	3787	3787	3787	3787
1.0	3781	3785	3787	3792	3793
2.0	3767	3768	3773	3774	3772
3.0	3736	3736	3742	3739	3734
4.0	3689	3691	3696	3689	3683
5.0	3635	3634	3637	3626	3620
6.0	3573	3567	3567	3551	3544
7.0	3499	3491	3489	3466	3457
8.0	3424	3408	3404	3374	3370
9.0	3335	3320	3311	3276	3256
10.0	3244	3224	3212	3170	3147
12.5	2988	2964	2945	2886	2861
15.0	2693	2670	2632	2577	2543
17.5	2386	2355	2313	2253	2216
20.0	2053	2032	1987	1920	1892
22.5	1743	1722	1673	1621	1597
25.0	1430	1425	1383	1341	1316
27.5	1175	1159	1120	1087	1069
30.0	949	930	896	873	858
32.5	760	740	712	696	686
35.0	592	588	565	554	550
37.5	481	472	459	451	447
40.0	396	388	378	373	370
42.5	337	325	318	314	312
45.0	287	279	272	269	268
47.5	246	241	236	234	233
50.0	211	210	206	205	201
52.5	181	182	178	178	171
55.0	151	157	153	154	142
57.5	123	133	128	131	115
60.0	98	112	106	109	91
62.5	77	91	86	88	70
65.0	60	73	68	70	54
67.5	46	57	52	54	41
70.0	35	43	39	40	31
72.5	26	32	29	29	23
75.0	19	22	20	20	16
77.5	13	15	14	13	11
80.0	8	9	8	8	7
82.5	4	5	4	4	4
85.0	1	2	2	2	2
87.5	0	1	1	1	1
90.0	0	0	0	0	0
92.5	0	0	0	0	0
95.0	0	0	0	0	0
97.5	0	0	0	0	0
100.0	0	0	0	0	0
102.5	0	0	0	0	0
105.0	0	0	0	0	0
107.5	0	0	0	0	0
110.0	0	0	0	0	0
112.5	0	0	0	0	0
115.0	0	0	0	0	0
117.5	0	0	0	0	0
120.0	0	0	0	0	0
122.5	0	0	0	0	0
125.0	0	0	0	0	0
127.5	0	0	0	0	0
130.0	0	0	0	0	0
132.5	0	0	0	0	0
135.0	0	0	0	0	0
137.5	0	0	0	0	0
140.0	0	0	0	0	0
142.5	0	0	0	0	0
145.0	0	0	0	0	0

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CANDELA DISTRIBUTION
LATERAL ANGLE

	0.0	22.5	45.0	67.5	90.0
147.5	0	0	0	0	0
150.0	0	0	0	0	0
152.5	0	0	0	0	0
155.0	0	0	0	0	0
157.5	0	0	0	0	0
160.0	0	0	0	0	0
162.5	0	0	0	0	0
165.0	0	0	0	0	0
167.5	0	0	0	0	0
170.0	0	0	0	0	0
172.5	0	0	0	0	0
175.0	0	0	0	0	0
177.5	0	0	0	0	0
180.0	0	0	0	0	0

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5-DEGREE ZONAL	LUMEN SUMMARY
0- 5	89
5- 10	244
10- 15	345
15- 20	378
20- 25	350
25- 30	285
30- 35	213
35- 40	156
40- 45	120
45- 50	96
50- 55	78
55- 60	59
60- 65	41
65- 70	26
70- 75	15
75- 80	7
80- 85	3
85- 90	0
90- 95	0
95-100	0
100-105	0
105-110	0
110-115	0
115-120	0
120-125	0
125-130	0
130-135	0
135-140	0
140-145	0
145-150	0
150-155	0
155-160	0
160-165	0
165-170	0
170-175	0
175-180	0

10-DEGREE ZONAL	LUMEN SUMMARY
0- 10	333
0- 20	1055
0- 30	1690
0- 40	2059
0- 50	2275
0- 60	2412
0- 70	2480
0- 80	2503
0- 90	2506
0-100	2506
0-110	2506
0-120	2506
0-130	2506
0-140	2506
0-150	2506
0-160	2506
0-170	2506
0-180	2506

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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE 0.20

RC	80	70	50	30	10	0
RW	70 50 30 10	70 50 30 10	50 30 10	50 30 10	50 30 10	0
0	119119119119	116116116116	111111111	106106106	102102102	100
1	113110107105	110108105103	104102100	100 98 97	97 95 94	92
2	107102 97 94	105100 96 93	97 93 90	94 91 89	91 89 87	85
3	101 94 89 85	99 93 88 84	90 86 83	88 84 81	85 82 80	78
4	96 88 82 77	94 86 81 77	84 80 76	82 78 75	80 77 74	73
5	91 82 76 71	89 81 75 71	79 74 70	77 73 70	76 72 69	67
6	86 77 71 66	85 76 70 66	74 69 65	73 68 65	72 68 64	63
7	82 72 66 62	81 72 66 62	70 65 61	69 64 61	68 64 61	59
8	78 68 62 58	77 68 62 58	67 61 57	65 61 57	65 60 57	56
9	74 65 59 54	73 64 58 54	63 58 54	62 57 54	61 57 54	52
10	71 61 55 51	70 61 55 51	60 55 51	59 54 51	59 54 51	50

ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

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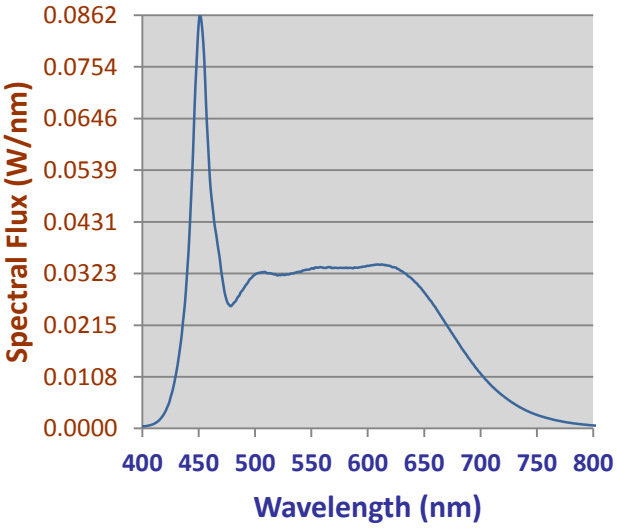
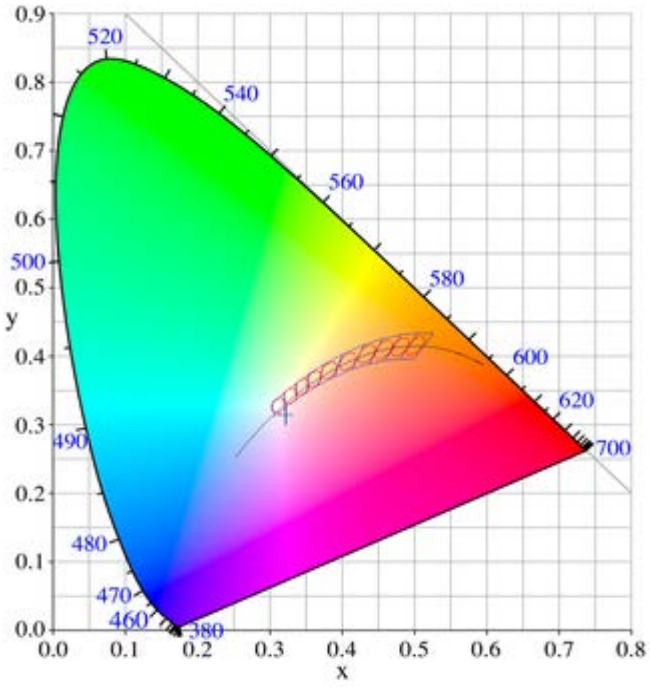
Relative Spectral Power Distribution





CCT		CRI		x		y		Duv		u'		v'	
6100.0		94.703		0.3215		0.3145		-0.0090		0.2097		0.4617	
R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
92.2	94.6	96.7	95.4	93.4	91	97.8	96.6	86.6	92.2	92.2	77.9	92.5	97.7