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: **RB5**

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 BI-COLOR HALF FOOT X ONE 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: **ATAL019075**

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, Deputy	**Jim Rice, Lab Manager**

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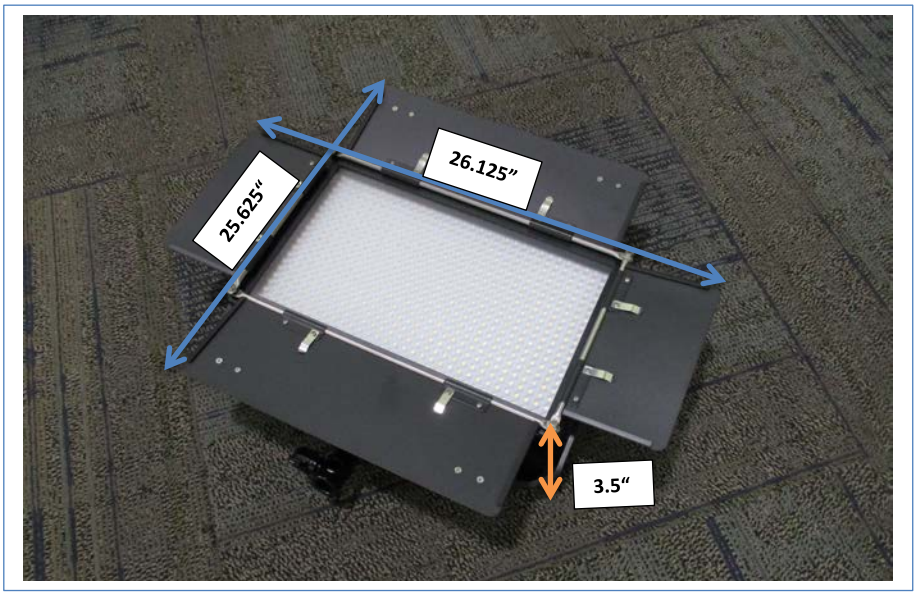
ATAL Test Number: ATAL019075



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: ATAL019075

LM-79 Test Summary

Manufacturer:	**ikan international**
Model Number:	**RB5**
Driver Model Number:	**DC POWER SUPPLY**
Lamp :	**3200K 0.06 WATT LEDS**
Pre-Burn Time (hours):	**24**

Electrical Measurement

Input Voltage:	15.06 **VDC**	Continuous Voltage Monitoring ☑
Input Current:	1.170 **A**	
Input Power:	17.62 **W**	

Light Output:

Lumens:	1218 **Lm**
Efficacy:	69.2 **Lm/W**
Color Rendering Index (CRI):	**R_a:** 96.92 **R_9:** 98.38
Correlated Color Temperature (K):	3167
Chromaticity Coordinate x:	0.4189
Chromaticity Coordinate y:	0.3850
Ambient Temperature (°C):	25.6
Stabilization Time (Mins):	30
Total Operating Time (Hours):	24
u/u':	1
v:	0.3406
v':	0.5109
Duv:	-0.0052

ATAL Test Number: ATAL019075

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: ATAL019075 PAGE: 1 OF 8
ISSUE DATE: 06/20/17
PREPARED FOR: ikan international
CATALOG NUMBER: RB5
LUMINAIRE: IKAN RAYDEN BI-COLOR .5X1 LED LIGHT FIXTURE.
LAMP CAT. NO.: 3200-5600K 0.06 WATT LEDS
LAMP: 3200K LED MODULE
BALLAST CAT. NO.: DC POWER SUPPLY 114
BALLAST: (1) AGILENT DC POWER SUPPLY

(SEE PAGE 2 FOR MORE INFORMATION)

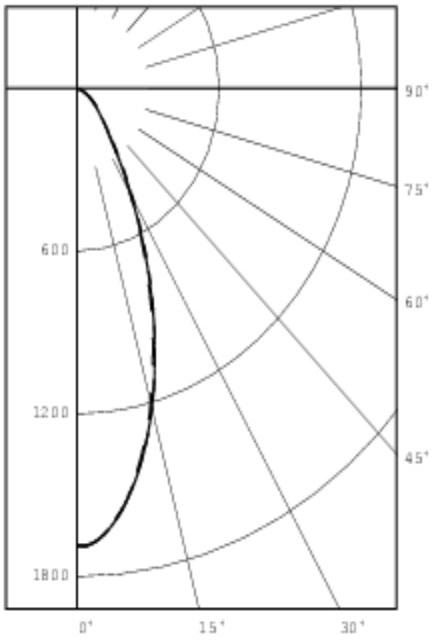
CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0	FLUX
0	1686	1686	1686	1686	1686	
5	1622	1623	1624	1623	1623	149
15	1219	1224	1220	1207	1199	335
25	696	700	684	672	667	314
35	305	302	289	288	288	189
45	143	139	137	136	136	109
55	78	81	78	80	74	71
65	32	39	36	38	29	36
75	10	13	11	12	9	13
85	1	1	1	1	1	2
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	798	65.5
0- 40	987	81.1
0- 60	1167	95.8
0- 90	1218	100.0
90-120	0	0.0
90-130	0	0.0
90-150	0	0.0
90-180	0	0.0
0-180	1218	100.0

EFFICACY = 69.2 Lm/W
CIE TYPE - DIRECT



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

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NVLAP TESTING NVLAP Lab Code 201019-0

ISSUE DATE: 06/20/17
PREPARED FOR: XTRALIGHT MANUFACTURING

ADDITIONAL INFORMATION

INPUT WATTS: 17.62, AMPS: 1.170, VDC: 15.06, 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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NVLAP TESTING NVLAP Lab Code 201019-0

PLANE	: 0-DEG	90-DEG
BEAM ANGLE (50%)	: 44.2 X	43.1 DEGREES
FIELD ANGLE (10%)	: 84.7 X	83.4 DEGREES

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

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CANDELA DISTRIBUTION
LATERAL ANGLE

	0.0	22.5	45.0	67.5	90.0
0.0	1686	1686	1686	1686	1686
1.0	1689	1686	1686	1688	1688
2.0	1681	1679	1680	1681	1682
3.0	1668	1665	1667	1667	1668
4.0	1647	1646	1648	1647	1647
5.0	1622	1623	1624	1623	1623
6.0	1592	1595	1596	1593	1593
7.0	1560	1563	1564	1561	1565
8.0	1524	1528	1529	1525	1528
9.0	1488	1492	1492	1486	1489
10.0	1449	1452	1452	1445	1442
12.5	1342	1345	1341	1332	1327
15.0	1219	1224	1220	1207	1199
17.5	1091	1095	1089	1072	1061
20.0	956	960	952	934	929
22.5	824	829	817	801	793
25.0	696	700	684	672	667
27.5	577	580	562	555	552
30.0	473	472	454	450	449
32.5	382	379	363	361	360
35.0	305	302	289	288	288
37.5	244	241	233	232	232
40.0	200	195	191	190	190
42.5	167	163	160	159	159
45.0	143	139	137	136	136
47.5	124	122	119	119	118
50.0	107	106	104	104	103
52.5	92	93	91	92	88
55.0	78	81	78	80	74
57.5	64	69	67	68	61
60.0	52	59	56	57	48
62.5	41	49	45	47	38
65.0	32	39	36	38	29
67.5	25	31	28	29	22
70.0	19	24	21	22	17
72.5	14	18	16	16	13
75.0	10	13	11	12	9
77.5	7	9	8	8	6
80.0	5	6	5	5	4
82.5	3	3	3	3	2
85.0	1	1	1	1	1
87.5	0	0	0	0	0
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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PREPARED FOR: XTRALIGHT MANUFACTURING

5-DEGREE ZONAL LUMEN SUMMARY

0- 5	40
5- 10	110
10- 15	158
15- 20	178
20- 25	170
25- 30	143
30- 35	109
35- 40	80
40- 45	60
45- 50	49
50- 55	40
55- 60	31
60- 65	22
65- 70	14
70- 75	8
75- 80	4
80- 85	2
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	149
0- 20	485
0- 30	798
0- 40	987
0- 50	1096
0- 60	1167
0- 70	1203
0- 80	1216
0- 90	1218
0-100	1218
0-110	1218
0-120	1218
0-130	1218
0-140	1218
0-150	1218
0-160	1218
0-170	1218
0-180	1218

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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	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	113	110	107	105	110	108	105	103	104	102	100	100	98	97	96	95	94	92
2	107	101	97	93	104	99	95	92	96	93	90	93	90	88	90	88	86	84
3	101	94	88	84	99	92	87	83	89	85	82	87	83	80	85	82	79	78
4	95	87	81	76	93	86	80	76	84	79	75	81	77	74	80	76	73	72
5	90	81	75	70	88	80	74	70	78	73	69	77	72	69	75	71	68	66
6	85	76	69	65	84	75	69	65	73	68	64	72	67	64	71	67	63	62
7	81	71	65	60	80	71	65	60	69	64	60	68	63	60	67	63	59	58
8	77	67	61	57	76	67	61	56	65	60	56	64	59	56	63	59	56	54
9	73	63	57	53	72	63	57	53	62	57	53	61	56	53	60	56	52	51
10	70	60	54	50	69	60	54	50	59	54	50	58	53	50	57	53	50	48

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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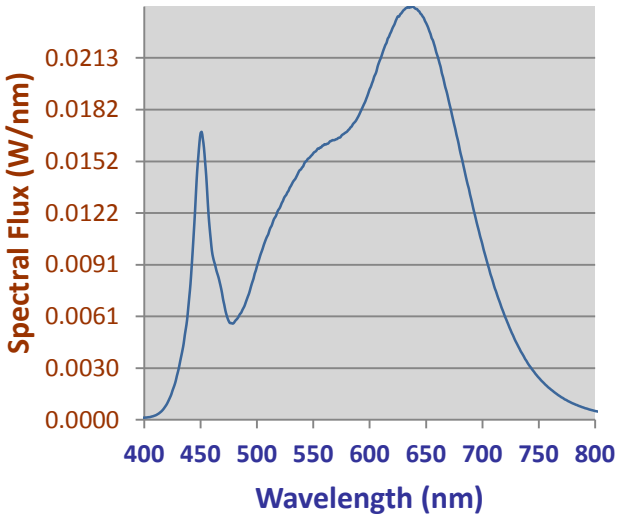
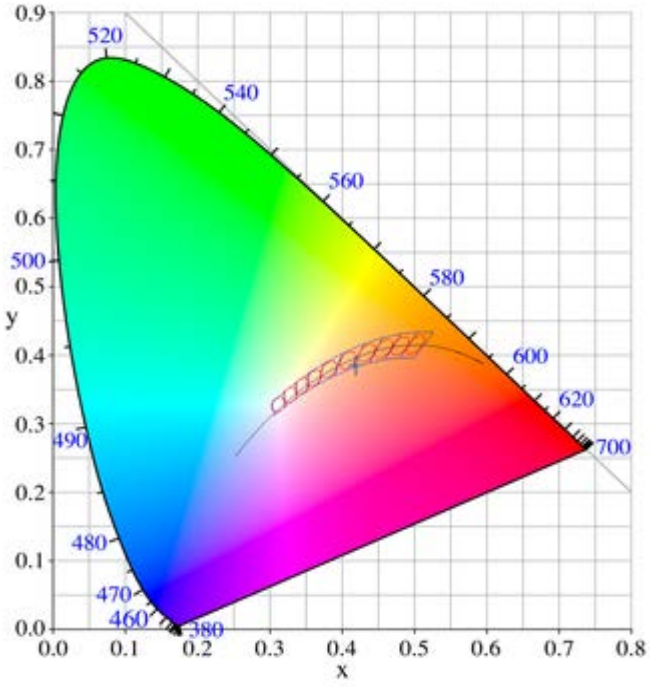
Relative Spectral Power Distribution





CCT		CRI		x		y		Duv		u'		v'	
3167.0		96.916		0.4189		0.3850		-0.0052		0.2471		0.5109	
R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
98.2	98.5	93.6	95.2	99.1	96.3	96.7	97.9	98.4	95.5	93.9	85.9	98.4	95.3