



LM-79-19 Test Report

For

RAB Lighting INC.

(Brand Name:RAB)

408 W 14th St, New York, NY 10014, USA

**Model name(s):
ALR-36RBN**

Report Type: Testing and Report According to IES LM-79-2019
Type of Luminaire: LED luminaire
Report Date: 2024-11-27
Ningbo TengLi Testing Co., Ltd
Prepared By: 2nd floor, Block B, Ningbo Testing and Certification Base,
No. 66 Qingyi Road, Ningbo National Hi-Tech Zone,
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Test & Report By:

Engineer: Holly Wang

Review By:

Manager: Garman Mo

Note: 1. The results contained in this report pertain only to the tested samples
2. This report does not imply product certification, approval, or endorsement by A2LA, or any agency of the Federal Government.



1.1 Product Information:	
Model Number	ALR-36RBN
Remark	N/A
Representative (Tested) Model	ALR-36RBN(mode:2700K) ALR-36RBN(mode:3000K) ALR-36RBN(mode:3500K) ALR-36RBN(mode:4000K) ALR-36RBN(mode:5000K)
Model Difference	N/A
SKU (if available)	-
Type of Luminaire (for integral lamps, list base type and lamp type)	LED luminaire
LED Manufacturer	Lumileds Holding B.V.
LED Model	L128-xx90RC35xxxxx
Dimming	Continuous
Integral Controls	N/A
Sample Number	STD241047NB-H1
Date of Receipt	Nov.18,2024
Luminaire Aperture (for downlights)	-- in.
Luminaire Length	-- mm
Luminaires Width	-- mm
Number of Units (modular products)	N/A s

1.2 Rated Values:	
Rated Voltage / Frequency	120Vac, 60Hz
Nominal Power	30W
Rated Initial Lamp Lumen	--
Declared CCT	2700K,3000K,3500K,4000K,5000K (Color Tunable)



1.3 Test Specifications:

Test item	<ol style="list-style-type: none"> 1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	<ol style="list-style-type: none"> 1. IES LM-79-2019 Optical and Electrical Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems

1.4 Test Methods

1) Photometric and Light Distribution Measurement – Goniophotometer Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at $25^{\circ}\text{C} \pm 1.2^{\circ}\text{C}$, measured at a point not more than 1.5 m from the sample and at the same height as the sample. The humidity should be maintained between 10% and 65%. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals.

2) Chromaticity Measurement – Sphere-Spectroradiometer Method:

Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25^{\circ}\text{C} \pm 1.2^{\circ}\text{C}$. The humidity should be maintained between 10% and 65%. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.

3) Electrical Measurements:

Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at $25^{\circ}\text{C} \pm 1.2^{\circ}\text{C}$. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.



2.1 Electrical, Photometric and Chromaticity Measurements

Test date	2024-11-22	Test Ambient:	25 ± 1 ° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	ALR-36RBN(mode:2700K)	Total Operating Time(min)	75

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD241047 NB-H1	120.0	60.01	0.2733	30.25	0.9222	41.75

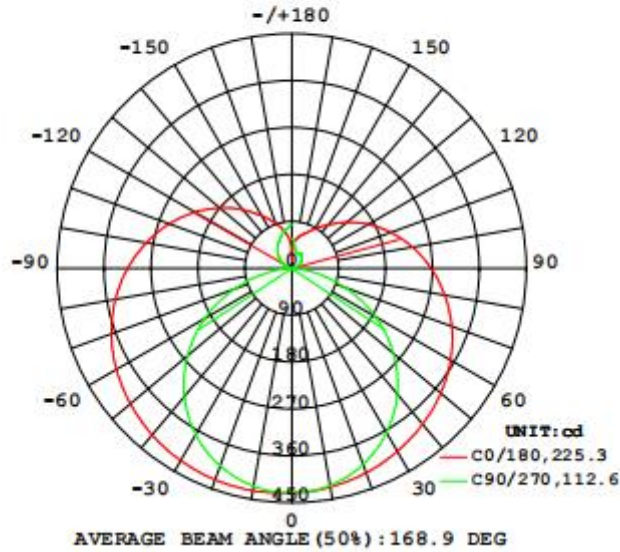
Photometric Measurement – Goniophotometer Method(Test Distance: 26.00m):

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	2548.1
Luminous Efficacy (lm/W)	84.23
Beam Angle (°)	168.9
Center Beam Candle Power (cd)	431



Zonal Lumen Tabulation

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	346.3	13.6%
0-40	583.1	22.9%
0-60	1,126.2	44.2%
60-90	711.8	27.9%
70-100	624.1	24.5%
90-120	448.2	17.6%
0-90	1,838.0	72.1%
90-180	709.8	27.9%
0-180	2,547.8	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	40.9	1.6%	90-100	177.6	7%
10-20	119.1	4.7%	100-110	149.3	5.9%
20-30	186.3	7.3%	110-120	121.2	4.8%
30-40	236.8	9.3%	120-130	94.6	3.7%
40-50	267.1	10.5%	130-140	69.8	2.7%
50-60	276.0	10.8%	140-150	48.0	1.9%
60-70	265.3	10.4%	150-160	29.8	1.2%
70-80	239.6	9.4%	160-170	15.1	0.6%
80-90	206.9	8.1%	170-180	4.3	0.2%

Photometric Data

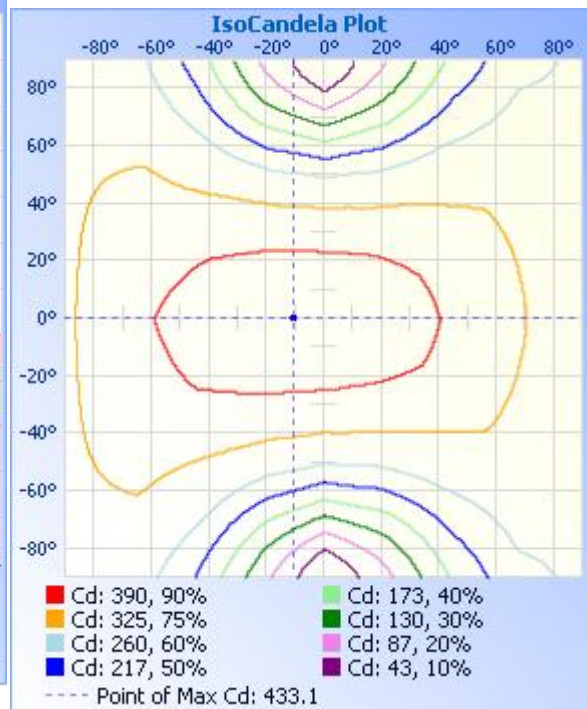
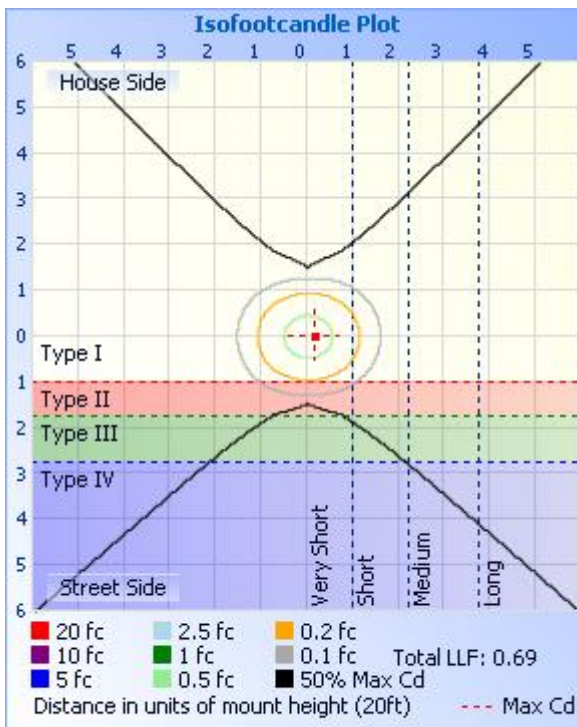
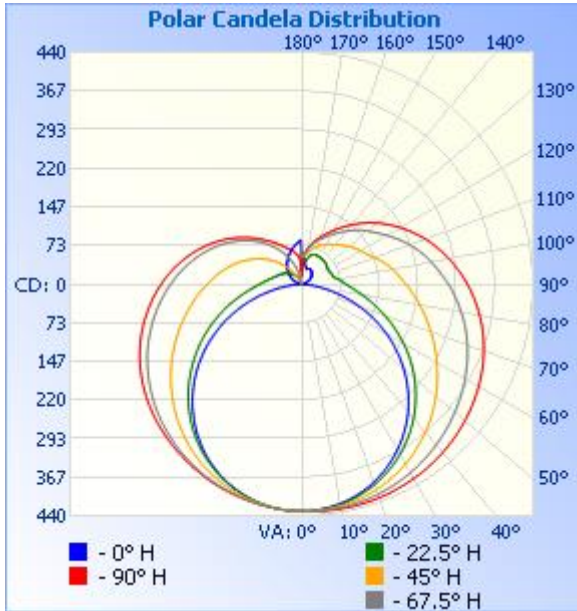




Table--1

UNIT: cd

y (DEG) \ C (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	431	431	431	431	431	431	431	431	431	431	431	431	431	431	431	431			
5	429	429	429	429	429	429	431	431	432	432	431	430	430	429	429	429			
10	426	426	425	423	423	425	428	430	433	432	429	426	425	424	425	426			
15	422	421	419	415	413	416	423	428	433	431	425	419	416	416	419	422			
20	417	415	410	403	400	405	415	424	432	428	419	409	403	404	411	417			
25	412	408	399	388	384	391	406	419	429	425	411	396	388	390	400	410			
30	405	400	387	370	364	373	394	413	426	420	401	380	369	373	388	403			
35	398	391	373	351	341	354	381	406	422	414	389	361	347	353	374	394			
40	390	382	358	328	315	331	366	398	417	407	376	340	321	330	358	384			
45	382	371	342	304	286	307	350	389	411	399	361	317	293	305	340	374			
50	373	360	325	278	255	280	333	380	405	390	345	292	262	278	322	363			
55	363	348	307	251	221	252	315	370	397	380	329	266	228	250	303	350			
60	352	336	289	223	185	223	297	359	389	369	313	239	193	222	285	337			
65	340	322	271	196	147	194	279	348	379	358	297	212	156	193	266	324			
70	326	308	253	170	109	166	261	335	369	346	280	186	118	165	247	310			
75	312	293	235	145	72.0	140	245	322	357	334	264	161	80.5	139	229	295			
80	298	277	217	123	38.0	117	228	308	344	320	248	139	44.9	115	211	279			
85	283	263	200	105	11.9	98.3	213	294	330	305	232	121	16.1	95.0	195	264			
90	267	248	186	90.4	1.61	84.3	198	279	315	290	217	105	1.52	79.7	180	249			
95	251	232	172	79.5	1.65	75.5	185	264	300	275	202	94.3	1.82	68.8	165	234			
100	235	217	158	70.5	3.53	66.2	173	249	284	259	189	84.1	3.89	59.9	152	219			
105	218	201	145	63.2	6.73	61.1	161	235	267	243	175	74.9	7.22	53.2	138	204			
110	202	186	133	57.5	10.4	59.8	148	218	250	228	161	72.2	11.4	48.3	124	189			
115	185	171	122	54.0	14.4	58.0	136	202	233	211	149	70.1	16.4	44.1	110	174			
120	169	155	111	53.4	18.2	57.5	128	186	216	196	139	67.7	21.7	40.0	96.0	159			
125	153	141	101	53.4	22.0	58.7	121	171	198	180	130	66.7	27.0	35.8	82.0	143			
130	138	127	93.1	53.1	25.0	60.1	112	158	181	164	121	66.8	32.3	31.7	68.0	128			
135	123	113	86.5	52.2	27.5	61.2	105	145	164	149	112	67.6	37.5	27.6	54.1	113			
140	109	102	80.7	51.2	29.6	61.7	98.1	131	147	135	104	68.7	42.7	23.4	40.1	98.2			
145	97.8	92.0	75.4	50.2	31.7	61.9	92.2	119	131	122	99.2	69.8	48.0	19.3	26.1	83.1			
150	87.4	82.9	70.7	48.0	33.0	61.7	86.6	107	117	111	94.4	70.8	53.2	15.2	12.1	68.0			
155	78.4	75.1	64.8	44.4	32.5	61.2	80.9	97.1	104	101	89.6	71.9	58.5	11.0	0.00	52.9			
160	70.9	68.6	54.7	40.4	30.4	59.1	74.5	87.4	92.2	90.3	84.9	73.0	63.7	6.89	0.00	37.8			
165	65.1	61.1	39.3	37.0	31.6	54.4	66.6	77.6	80.8	80.1	80.1	74.1	69.0	2.75	0.00	22.7			
170	57.9	43.5	33.3	39.1	38.3	44.9	60.1	66.0	68.5	69.8	75.3	75.1	74.2	0.00	0.00	7.62			
175	50.3	26.5	43.8	47.4	49.7	49.4	52.4	56.0	54.3	59.6	70.5	76.2	79.4	0.00	0.00	0.00			
180	22.5	46.7	53.2	56.1	57.2	56.6	53.8	49.8	22.5	49.3	65.7	77.3	84.7	0.00	0.00	0.00			



2.2 Electrical, Photometric and Chromaticity Measurements

Test date	2024-11-22	Test Ambient:	25 ± 1 ° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	ALR-36RBN(mode:2700K)	Total Operating Time(min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD241047 NB-H1	120.0	60.01	0.2739	30.31	0.9223	41.73

Chromaticity Measurement - Sphere-Spectroradiometer

Method(Self-absorption:1.0833)(4π geometry):

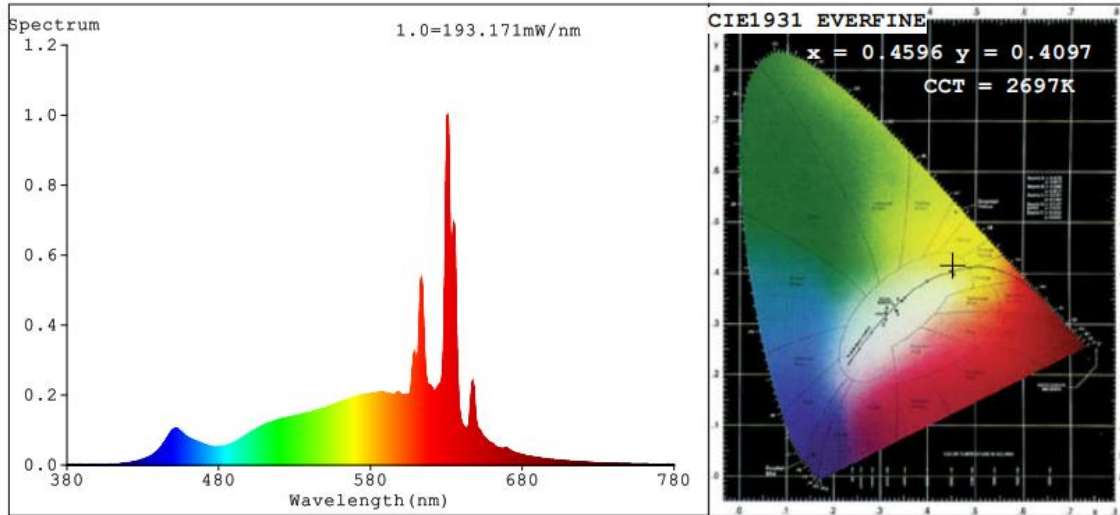
Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	2697
Duv	-0.0003
Chromaticity (x, y)	x=0.4596 y=0.4097
Chromaticity (u', v')	u'=0.2627 v'=0.5269
Color Rendering Index (CRI)	96.2
R9	73
Rg	101
Rf	92
Rcs,h1	-5

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	2597
Luminous Efficacy (lm/W)	85.68



Spectral Power Distribution & Chromaticity Diagram



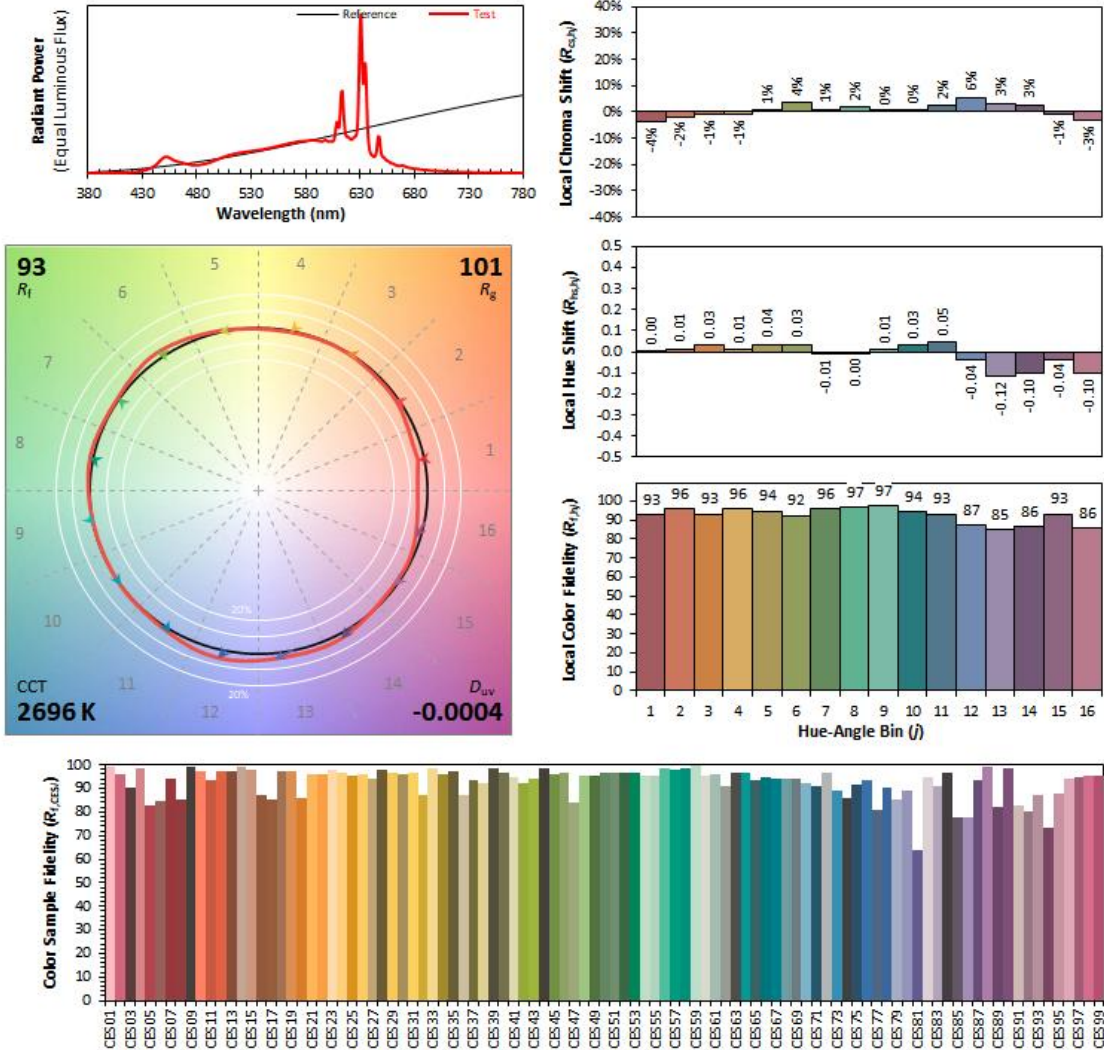
R1 =99	R2 =99	R3 =96	R4 =98	R5 =98	R6 =96	R7 =94		
R8 =89	R9 =73	R10=94	R11=97	R12=89	R13=99	R14=96	R15=95	



TM30

ANSI/IES TM-30-18 Color Rendition Report

Source: L128-xx90RC35xxxxx Manufacturer: RAB Lighting INC.
 Date: 2024-11-22 Model: ALR-36RBN (mode:2700K)



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.4596	CIE 13.3-1995 (CRI)
y	0.4096	
u'	0.2628	
v'	0.5269	
		R_a 96
		R_g 73

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.



2.3 Electrical, Photometric and Chromaticity Measurements

Test date	2024-11-22	Test Ambient:	25 ± 1 ° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	ALR-36RBN(mode:3000K)	Total Operating Time(min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD241047 NB-H1	120.0	60.01	0.2740	30.32	0.9222	41.75

Chromaticity Measurement - Sphere-Spectroradiometer

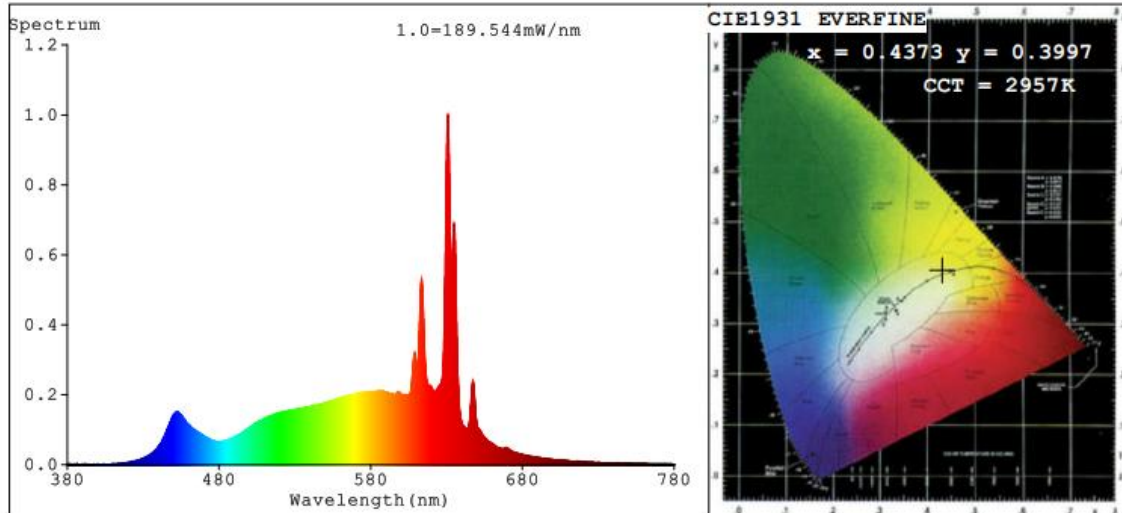
Method(Self-absorption:1.0831)(4π geometry):

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	2957
Duv	-0.0018
Chromaticity (x, y)	x=0.4373 y=0.3997
Chromaticity (u', v')	u'=0.2527 v'=0.5197
Color Rendering Index (CRI)	96.8
R9	83
Rg	102
Rf	93
Rcs,h1	-3

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	2680
Luminous Efficacy (lm/W)	88.39

Spectral Power Distribution & Chromaticity Diagram



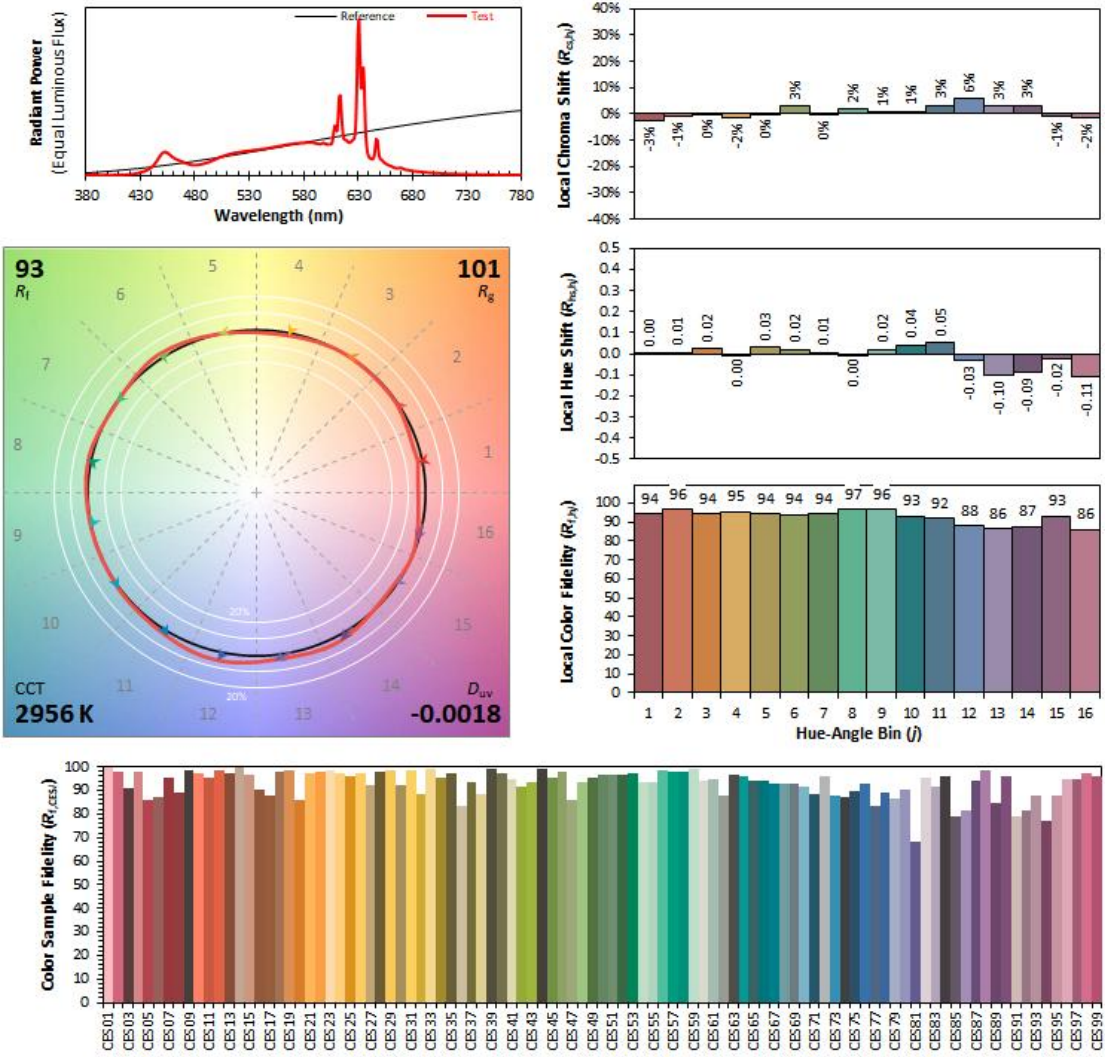
R1 =98	R2 =99	R3 =96	R4 =98	R5 =99	R6 =95	R7 =95		
R8 =93	R9 =83	R10=97	R11=95	R12=86	R13=99	R14=96	R15=98	



TM30

ANSI/IES TM-30-18 Color Rendition Report

Source: L128-xx90RC35xxxxx Manufacturer: RAB Lighting INC.
 Date: 2024-11-22 Model: ALR-36RBN (mode:3000K)



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.4374	CIE 13.3-1995 (CRI) R_a 97 R_g 84
y	0.3996	
u'	0.2528	
v'	0.5197	

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.



2.4 Electrical, Photometric and Chromaticity Measurements

Test date	2024-11-22	Test Ambient:	25 ± 1 ° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	ALR-36RBN(mode:3500K)	Total Operating Time(min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD241047 NB-H1	120.0	60.01	0.2763	30.45	0.9185	41.86

Chromaticity Measurement - Sphere-Spectroradiometer

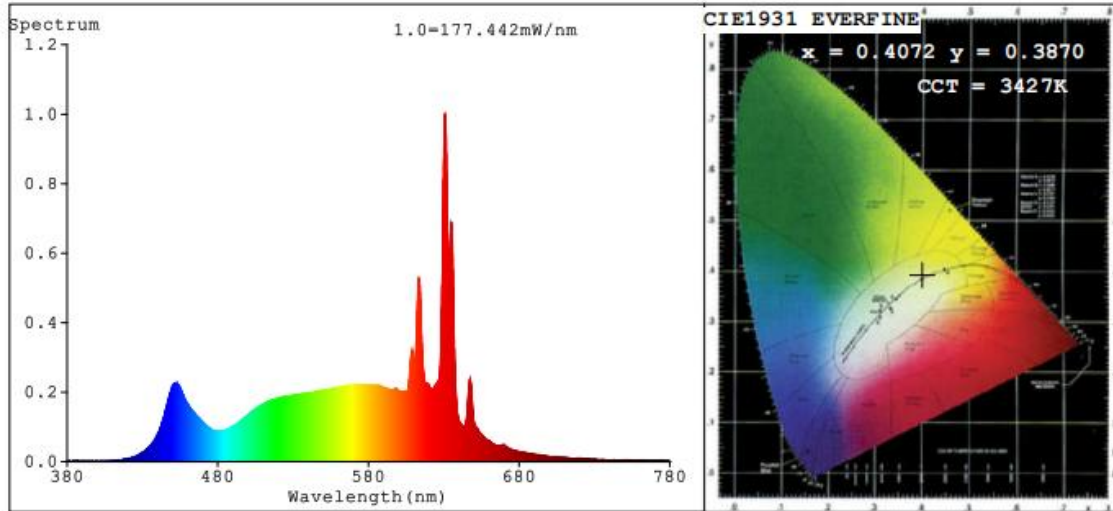
Method(Self-absorption:1.0834)(4π geometry):

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3427
Duv	-0.0021
Chromaticity (x, y)	x=0.4072 y=0.3870
Chromaticity (u', v')	u'=0.2385 v'=0.5100
Color Rendering Index (CRI)	97.2
R9	94
Rg	102
Rf	93
Rcs,h1	-2

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	2764
Luminous Efficacy (lm/W)	90.77

Spectral Power Distribution & Chromaticity Diagram



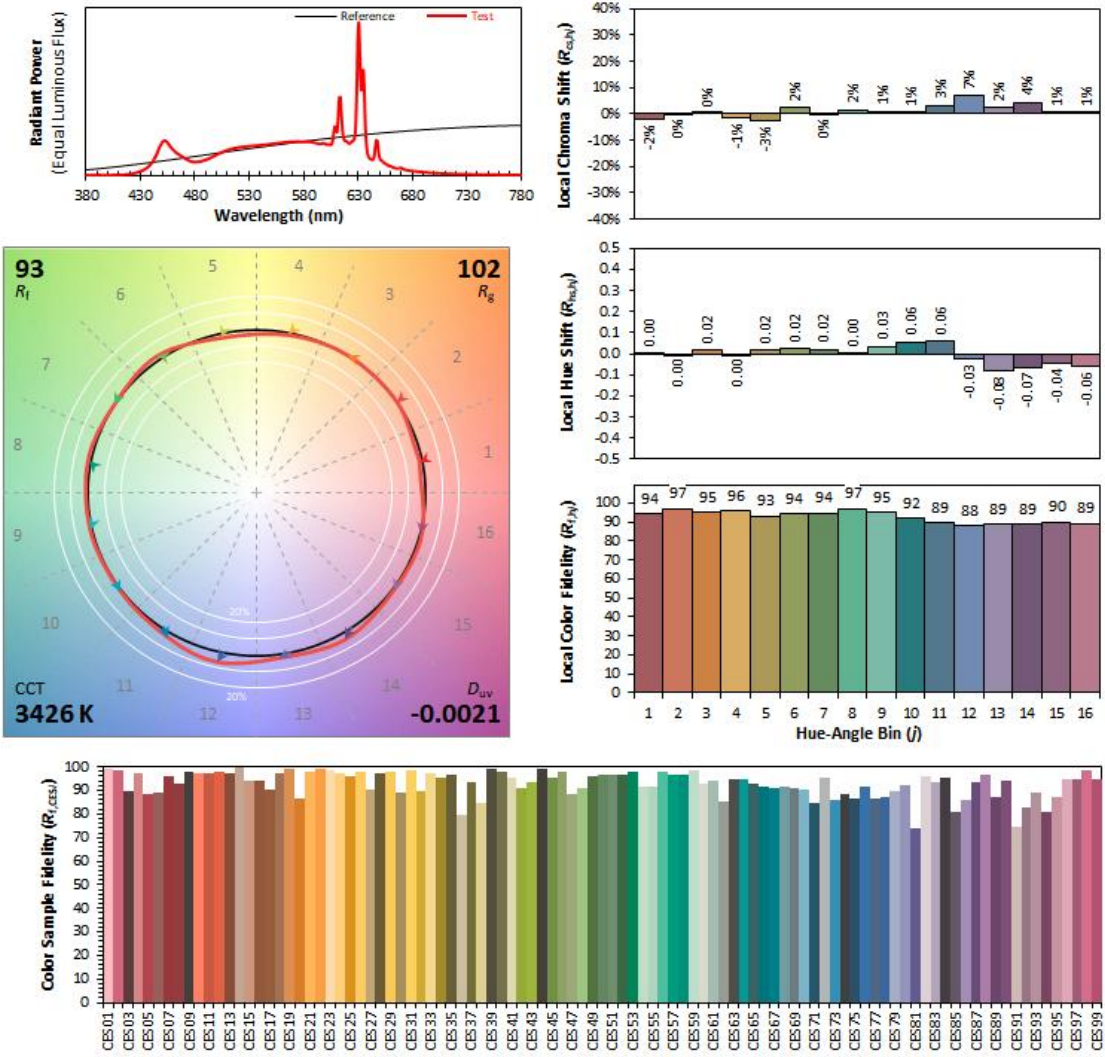
R1 =97	R2 =99	R3 =95	R4 =97	R5 =98	R6 =95	R7 =98		
R8 =98	R9 =94	R10=97	R11=94	R12=82	R13=98	R14=96	R15=98	



TM30

ANSI/IES TM-30-18 Color Rendition Report

Source: L128-xx90RC35xxxxx Manufacturer: RAB Lighting INC.
 Date: 2024-11-22 Model: ALR-36RBN (mode: 3500K)



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.4072	CIE 13.3-1995 (CRI)
y	0.3869	
u'	0.2386	
v'	0.5099	
		R_a 97
		R_g 94

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.



2.5 Electrical, Photometric and Chromaticity Measurements

Test date	2024-11-22	Test Ambient:	25 ± 1 ° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	ALR-36RBN(mode:4000K)	Total Operating Time(min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD241047 NB-H1	120.0	60.01	0.2735	30.29	0.9228	41.69

Chromaticity Measurement - Sphere-Spectroradiometer

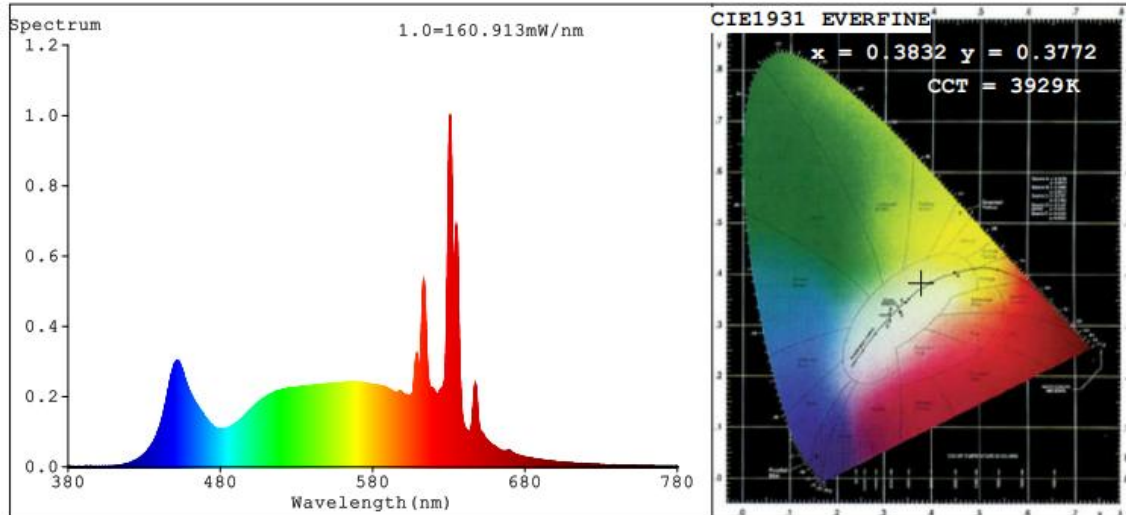
Method(Self-absorption:1.0834)(4π geometry):

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3929
Duv	-0.0006
Chromaticity (x, y)	x=0.3832 y=0.3772
Chromaticity (u', v')	u'=0.2267 v'=0.5022
Color Rendering Index (CRI)	97.6
R9	97
Rg	102
Rf	94
Rcs,h1	-2

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	2771
Luminous Efficacy (lm/W)	91.48

Spectral Power Distribution & Chromaticity Diagram



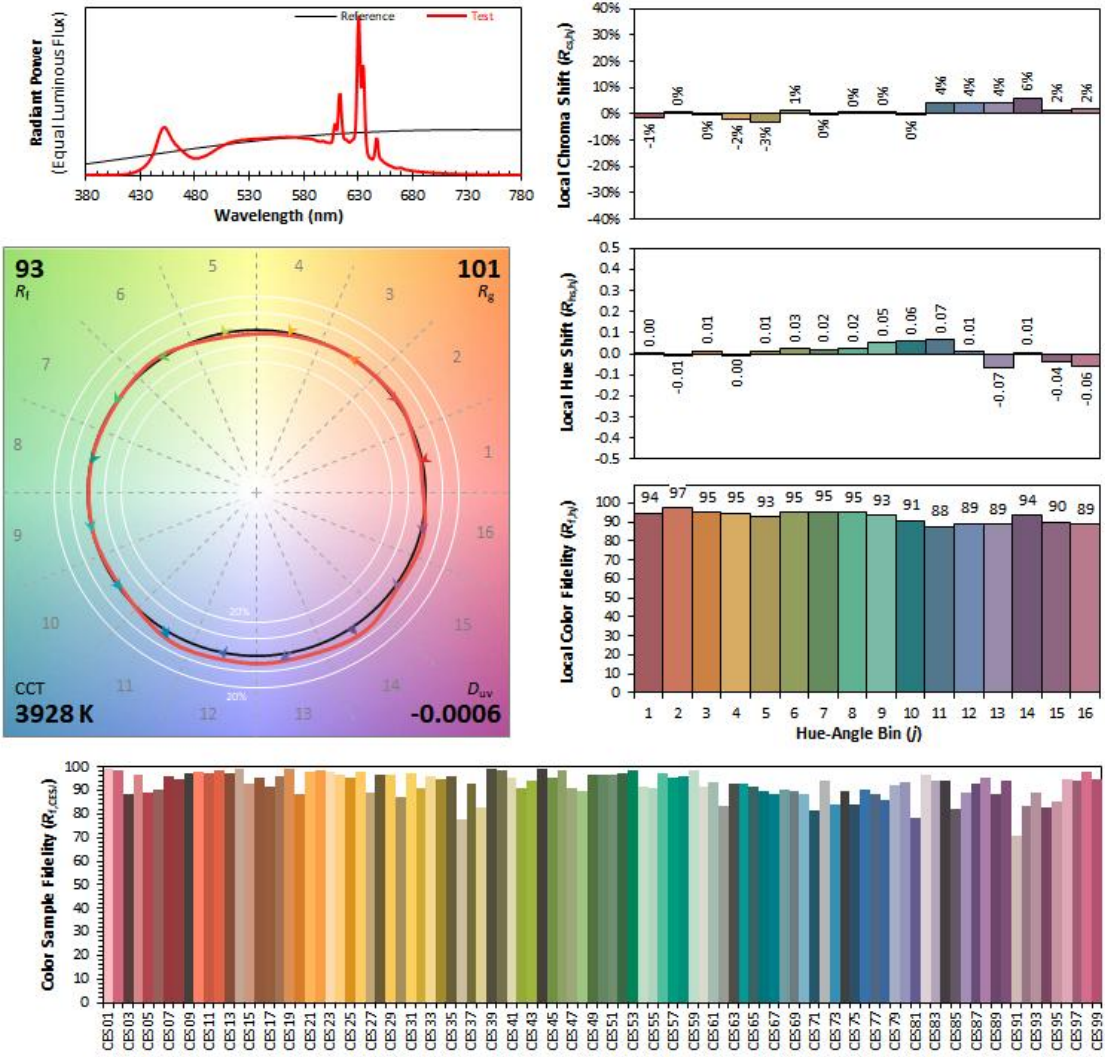
R1 =98	R2 =99	R3 =93	R4 =97	R5 =99	R6 =96	R7 =99		
R8 =99	R9 =97	R10=94	R11=94	R12=77	R13=99	R14=95	R15=98	



TM30

ANSI/IES TM-30-18 Color Rendition Report

Source: L128-xx90RC35xxxxx Manufacturer: RAB Lighting INC.
 Date: 2024-11-22 Model: ALR-36RBN (mode: 4000K)



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3832	CIE 13.3-1995 (CRI)
y	0.3771	
u'	0.2268	
v'	0.5021	
		R_a 98
		R_g 97

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.



2.6 Electrical, Photometric and Chromaticity Measurements

Test date	2024-11-22	Test Ambient:	25 ± 1 ° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	ALR-36RBN(mode:5000K)	Total Operating Time(min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD241047 NB-H1	120.0	60.01	0.2738	30.24	0.9204	41.89

Chromaticity Measurement - Sphere-Spectroradiometer

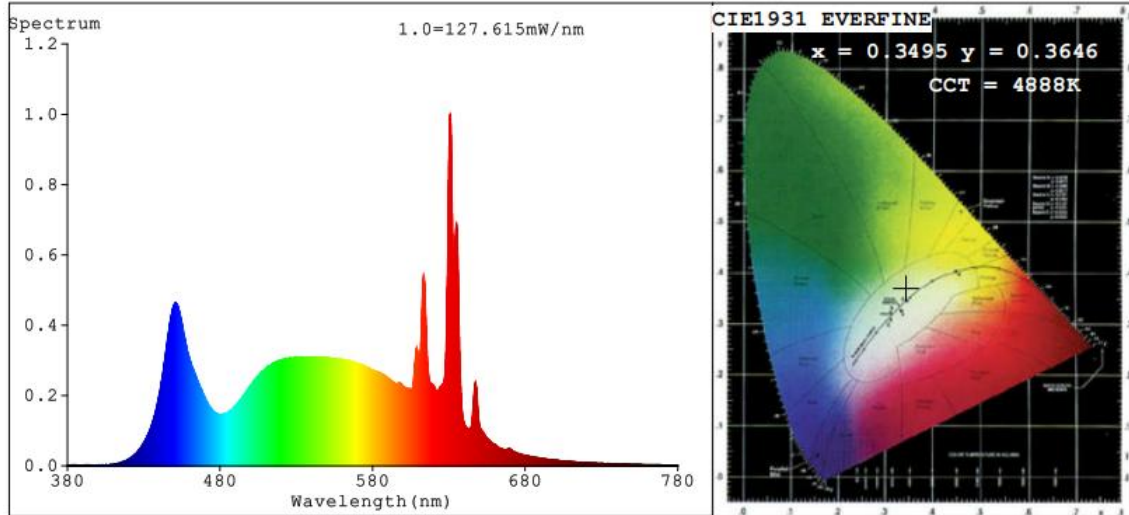
Method(Self-absorption:1.0835)(4π geometry):

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	4888
Duv	0.0047
Chromaticity (x, y)	x=0.3495 y=0.3646
Chromaticity (u', v')	u'=0.2094 v'=0.4915
Color Rendering Index (CRI)	95.1
R9	88
Rg	101
Rf	93
Rcs,h1	-3

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	2679
Luminous Efficacy (lm/W)	88.59

Spectral Power Distribution & Chromaticity Diagram



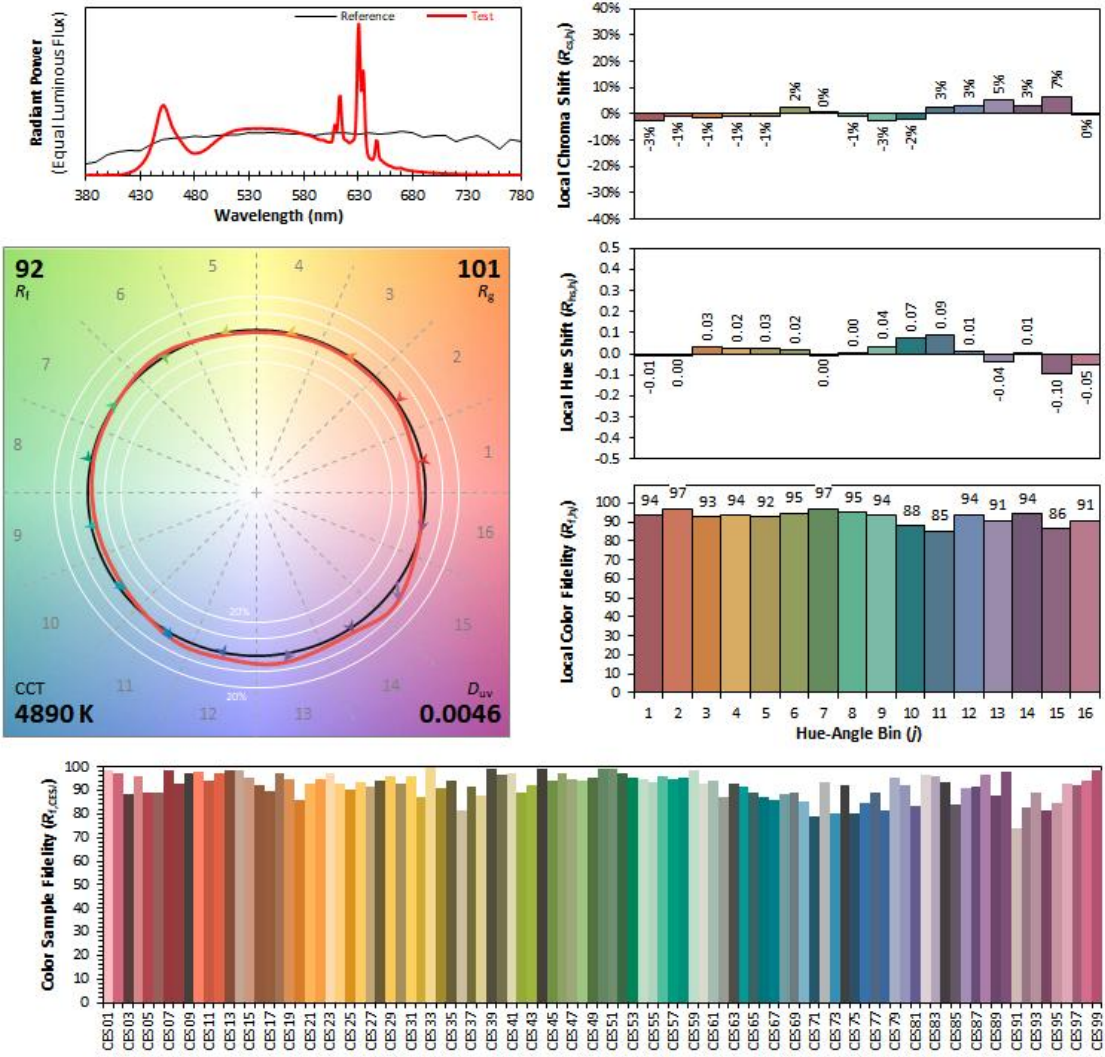
R1 =96	R2 =95	R3 =91	R4 =96	R5 =94	R6 =92	R7 =99	
R8 =97	R9 =88	R10=85	R11=94	R12=67	R13=95	R14=94	R15=95



TM30

ANSI/IES TM-30-18 Color Rendition Report

Source: L128-xx90RC35xxxxx Manufacturer: RAB Lighting INC.
 Date: 2024-11-22 Model: ALR-36RBN (mode:5000K)



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3494	CIE 13.3-1995 (CRI)
y	0.3644	
u'	0.2094	
v'	0.4914	
		R_a 95
		R_g 89

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.



3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-702	2 meter Integrating Sphere	Verified by D204 standard lamp	
ST-R-701	Spectral analysis system HAAS-1200	Verified by D204 standard lamp	
ST-R-703	Standard Lamp D204	2023-12-26	2024-12-25
ST-R-704	Power Meter for Integrating Sphere	2023-12-26	2024-12-25
ST-R-707	Temperature Probe for Integrating Sphere	2023-12-26	2024-12-25
ST-R-714	Goniophotometer system	Verified by D908S standard lamp	
ST-R-710	Standard Lamp D908S	2023-12-26	2024-12-25
ST-R-711	Power Meter for Goniophotometer	2023-12-26	2024-12-25
ST-R-709	Hygrothermograph for Goniophotometer	2023-12-26	2024-12-25
Uncertainty(K=2): Photometric Measurement (Sphere):3.40% Chromaticity Measurement(Sphere):44.8K Photometric Measurement(Goniophotometer):3.64%			

4. Product Photo



******* END OF REPORT *******