



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-48RBN

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,
Ningbo, Zhejiang

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-48RBN	
Remark	N/A	
Representative (Tested) Model	ALR-48RBN(mode:2700K) ALR-48RBN(mode:3000K) ALR-48RBN(mode:3500K) ALR-48RBN(mode:4000K) ALR-48RBN(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-F1	
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	38W
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-48RBN(mode:2700K)	Total Operating Time(min)	75

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD241047 NB-F1	120.0	60.01	0.3410	37.87	0.9254	40.60

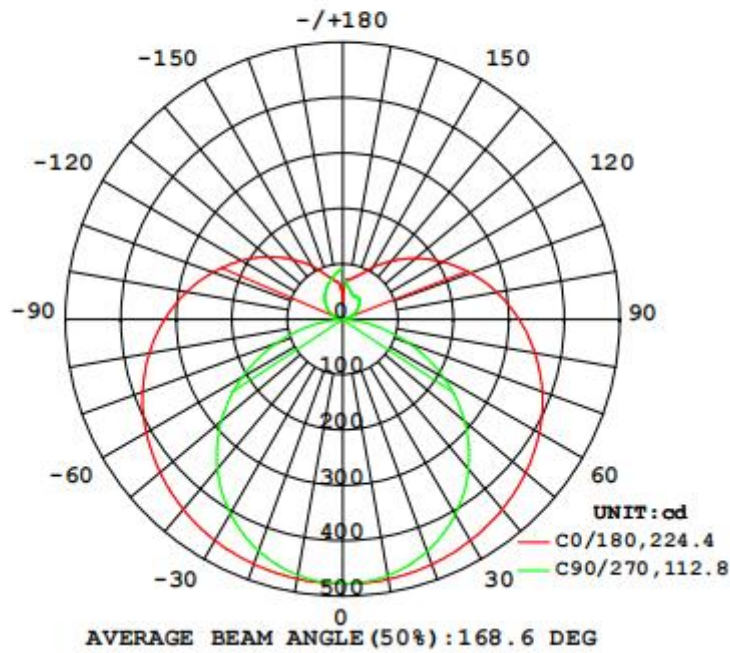
Photometric Measurement – Goniophotometer Method(Test Distance: 26.00m):

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	2878.5
Luminous Efficacy (lm/W)	76.01
Beam Angle (°)	168.6
Center Beam Candle Power (cd)	478



Zonal Lumen Tabulation

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	385.7	13.4%
0-40	651.6	22.6%
0-60	1,265.3	44%
60-90	807.1	28%
70-100	706.8	24.6%
90-120	507.2	17.6%
0-90	2,072.3	72%
90-180	805.7	28%
0-180	2,878.0	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	45.4	1.6%	90-100	200.7	7%
10-20	132.3	4.6%	100-110	168.9	5.9%
20-30	208.0	7.2%	110-120	137.6	4.8%
30-40	265.9	9.2%	120-130	107.3	3.7%
40-50	301.3	10.5%	130-140	79.2	2.8%
50-60	312.4	10.9%	140-150	54.6	1.9%
60-70	301.0	10.5%	150-160	33.7	1.2%
70-80	271.8	9.4%	160-170	18.0	0.6%
80-90	234.3	8.1%	170-180	5.6	0.2%

Photometric Data

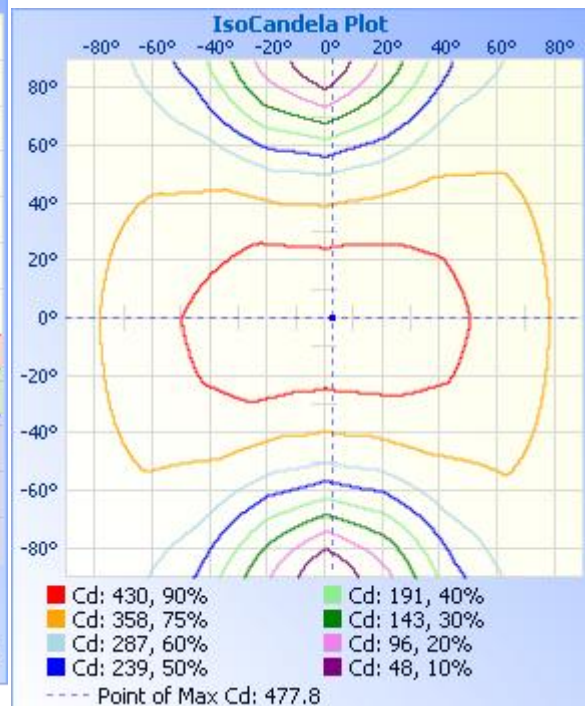
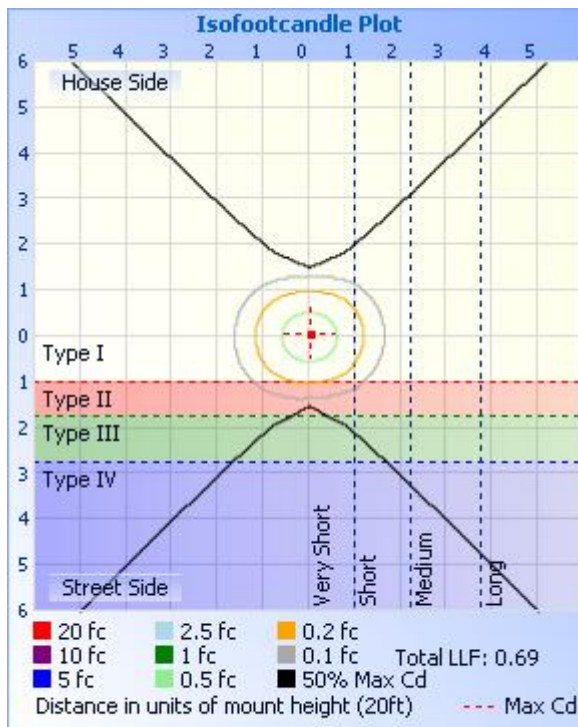
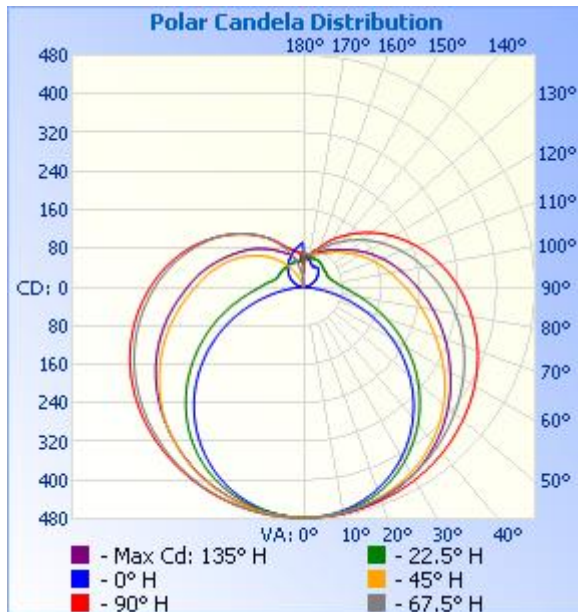




Table--1

UNIT: cd

C (DEG) γ (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	477	477	477	477	477	477	477	477	477	477	477	477	477	477	477	477			
5	477	477	476	475	476	477	477	476	477	477	478	476	475	475	476	477			
10	476	475	473	470	470	473	474	474	476	476	476	472	469	470	473	476			
15	474	472	467	463	460	465	470	470	473	473	472	464	459	462	468	473			
20	471	468	460	452	446	453	463	464	470	470	467	452	445	452	462	470			
25	466	462	452	439	428	437	454	458	466	465	460	437	427	437	453	465			
30	461	456	442	422	407	418	444	450	461	460	450	418	405	420	443	459			
35	455	448	430	402	382	395	431	441	455	452	439	397	380	399	431	452			
40	448	440	417	379	353	369	416	431	448	444	424	373	352	374	418	443			
45	440	430	403	353	322	341	398	420	439	434	409	347	321	346	402	434			
50	431	420	388	326	287	310	379	408	430	424	391	318	286	316	384	424			
55	421	408	372	297	250	279	358	395	420	412	371	289	249	284	365	413			
60	409	396	354	267	211	245	335	382	409	400	352	259	210	251	345	401			
65	397	382	336	237	169	212	312	368	397	386	332	229	169	219	325	387			
70	383	367	317	208	127	178	289	353	384	371	312	200	127	187	304	373			
75	368	351	298	180	85.5	148	268	337	370	356	292	173	85.7	156	283	358			
80	352	334	278	155	47.4	121	248	320	354	339	273	149	47.2	130	263	342			
85	335	317	259	134	17.4	98.6	229	303	338	321	254	128	16.7	107	243	325			
90	318	300	241	117	4.54	82.6	211	286	321	303	236	111	2.50	90.5	225	309			
95	300	282	224	105	3.13	72.3	195	267	304	285	219	98.9	2.58	79.5	209	292			
100	282	265	208	93.2	6.51	64.9	181	251	286	266	203	89.0	5.55	68.6	193	275			
105	264	247	191	83.7	11.1	59.8	168	234	268	248	188	81.5	10.2	61.2	177	258			
110	245	229	176	78.3	16.5	56.2	155	217	249	230	173	75.8	16.2	58.6	161	241			
115	226	211	161	74.1	22.3	54.6	143	200	230	211	159	71.4	22.3	56.7	145	224			
120	208	193	148	70.1	28.0	55.1	132	184	212	194	145	68.4	28.5	56.5	130	207			
125	189	176	136	68.7	33.5	55.3	121	168	194	176	132	67.0	34.3	56.2	114	190			
130	171	160	124	66.3	38.7	55.5	111	152	176	159	120	65.7	39.9	56.0	98.1	173			
135	154	144	112	66.0	43.2	56.8	103	137	158	143	110	65.5	45.2	55.8	82.3	156			
140	138	129	101	64.4	47.2	58.9	95.1	124	141	129	101	66.2	50.5	55.6	66.5	139			
145	123	115	91.4	64.2	48.7	60.8	87.0	111	126	116	93.7	67.6	55.9	55.3	50.7	122			
150	108	101	82.9	59.6	48.2	62.3	80.6	98.8	111	104	86.5	68.8	61.2	55.1	34.9	104			
155	94.3	88.8	76.0	56.7	47.1	63.0	75.7	87.6	97.0	92.3	79.7	70.0	66.5	54.9	19.1	87.5			
160	84.8	80.6	68.8	59.6	48.7	62.8	71.9	80.6	84.2	81.2	74.5	71.2	71.8	54.6	3.30	70.5			
165	78.6	75.3	57.5	58.1	54.2	62.2	69.9	73.6	76.9	74.5	69.9	72.5	77.1	54.4	0.00	53.4			
170	73.1	64.8	52.6	58.6	59.6	60.7	68.9	69.0	69.5	67.3	65.3	73.7	82.5	54.2	0.00	36.4			
175	70.4	48.3	61.6	64.2	67.7	67.4	68.8	69.4	60.2	65.3	60.7	74.9	87.8	54.0	0.00	19.4			
180	36.5	63.7	68.9	70.9	74.1	74.7	73.2	68.5	38.0	63.6	56.1	76.1	93.1	53.7	0.00	2.41			



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-48RBN(mode:2700K)	Total Operating Time(min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD241047 NB-F1	120.0	60.01	0.3433	37.91	0.9203	40.72

Chromaticity Measurement - Sphere-Spectroradiometer

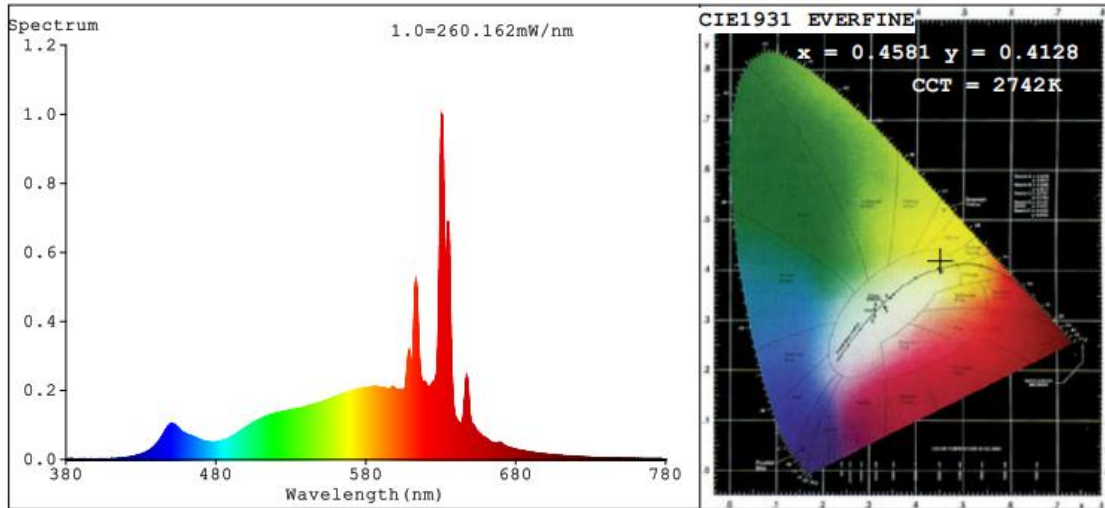
Method(Self-absorption:1.1012)(4π geometry):

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	2742
Duv	0.0010
Chromaticity (x, y)	x=0.4581 y=0.4128
Chromaticity (u', v')	u'=0.2604 v'=0.5279
Color Rendering Index (CRI)	95.8
R9	71
Rg	100
Rf	93
Rcs,h1	-5

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	2885
Luminous Efficacy (lm/W)	76.10

Spectral Power Distribution & Chromaticity Diagram



R1 =98	R2 =98	R3 =96	R4 =98	R5 =97	R6 =97	R7 =94		
R8 =88	R9 =71	R10=92	R11=98	R12=87	R13=97	R14=96	R15=93	

TM30

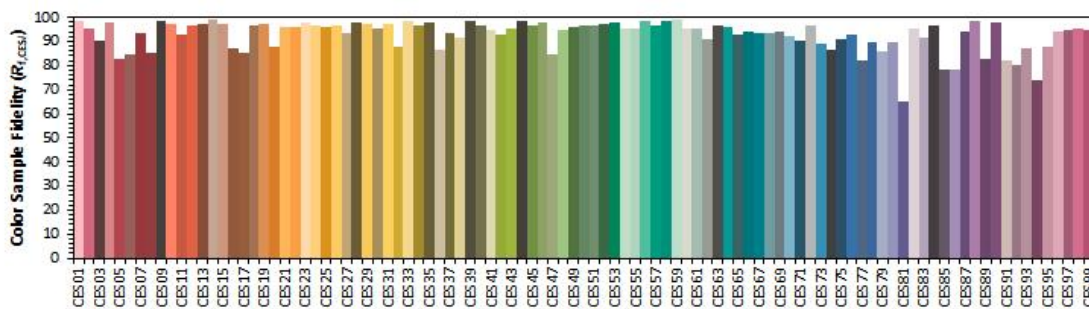
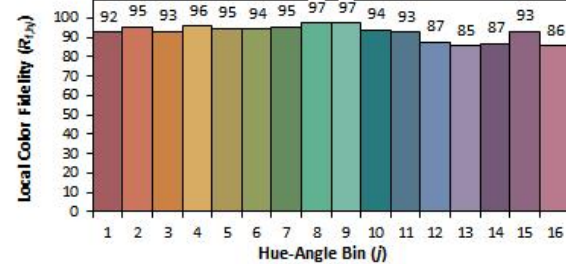
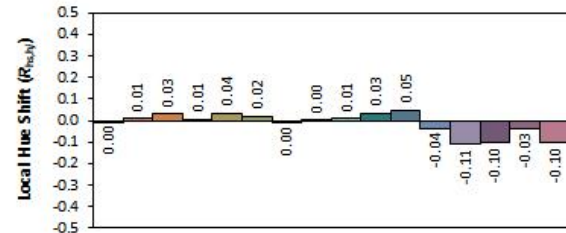
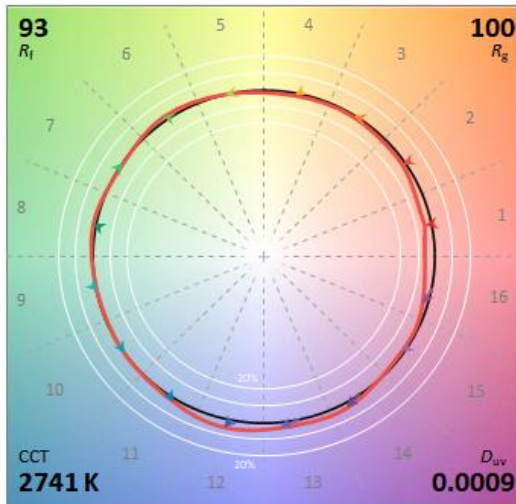
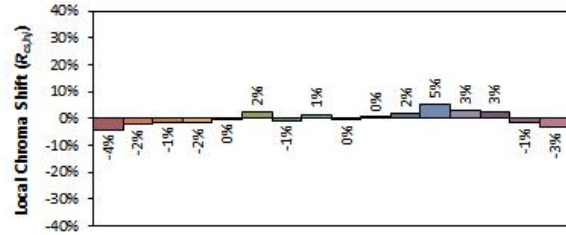
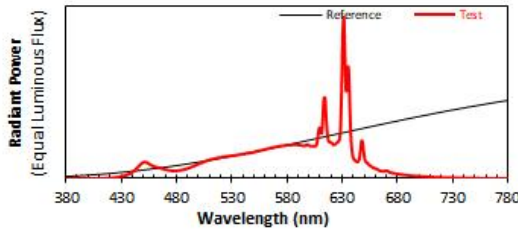
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-xx90RC35xxxxx

Manufacturer: RAB Lighting INC.

Date: 2024-11-22

Model: ALR-48RBN (mode:2700K)



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

x 0.4581
 y 0.4127
 u' 0.2605
 v' 0.5279

CIE 13.3-1995
(CRI)
 R_a 96
 R_g 71

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-48RBN(mode:3000K)	Total Operating Time(min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD241047 NB-F1	120.0	60.01	0.3425	37.84	0.9208	40.69

Chromaticity Measurement - Sphere-Spectroradiometer

Method(Self-absorption:1.1013)(4π geometry):

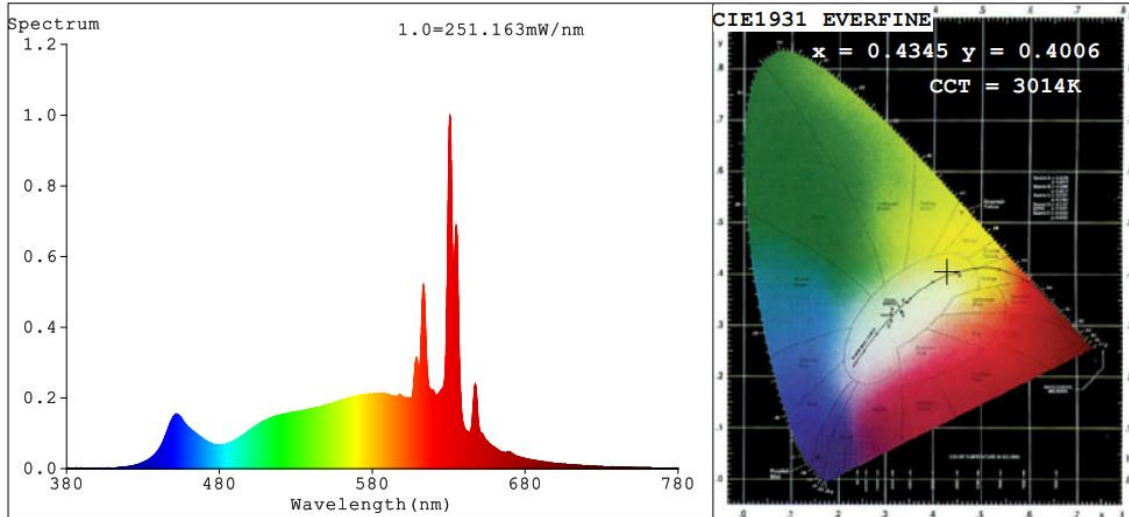
Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3014
Duv	-0.0010
Chromaticity (x, y)	x=0.4345 y=0.4006
Chromaticity (u', v')	u'=0.2505 v'=0.5197
Color Rendering Index (CRI)	97.0
R9	82
Rg	102
Rf	93
Rcs,h1	-3

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	2943
Luminous Efficacy (lm/W)	77.77



Spectral Power Distribution & Chromaticity Diagram



R1 =99	R2 =99	R3 =96	R4 =98	R5 =99	R6 =96	R7 =95		
R8 =93	R9 =82	R10=96	R11=96	R12=85	R13=100	R14=96	R15=97	

TM30

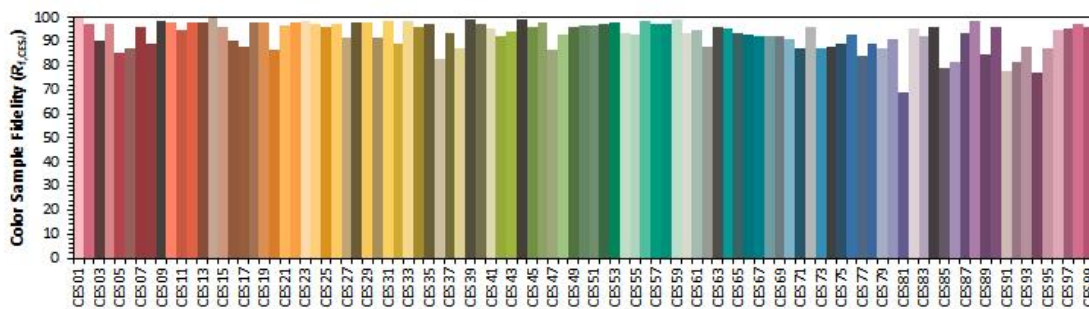
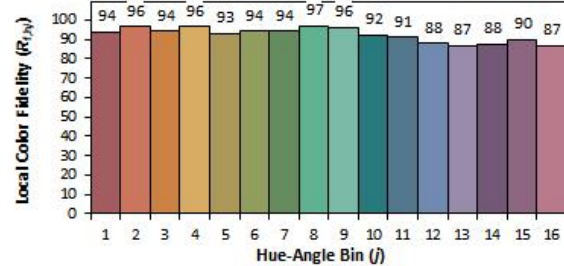
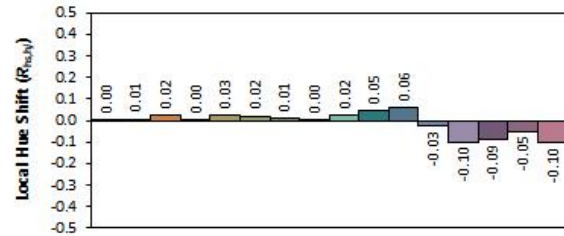
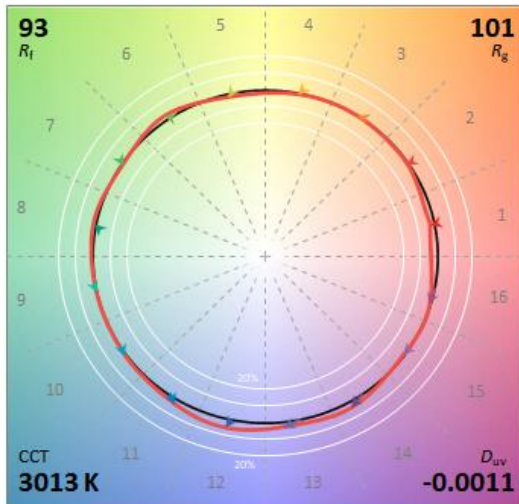
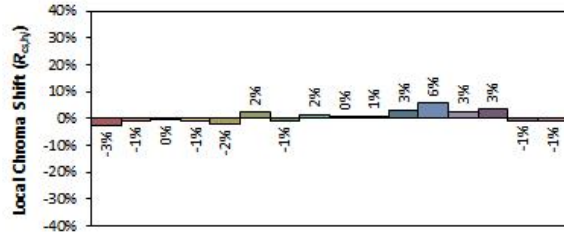
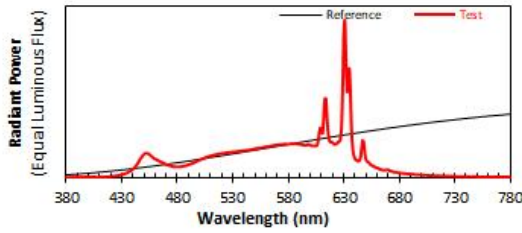
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-xx90RC35xxxxx

Manufacturer: RAB Lighting INC.

Date: 2024-11-22

Model: ALR-48RBN (mode:3000K)



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

x 0.4345
 y 0.4005
 u' 0.2505
 v' 0.5196

CIE 13.3-1995
(CRI)
 R_a 97
 R_g 82

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-48RBN(mode:3500K)	Total Operating Time(min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD241047 NB-F1	120.0	60.01	0.3431	37.87	0.9197	40.75

Chromaticity Measurement - Sphere-Spectroradiometer

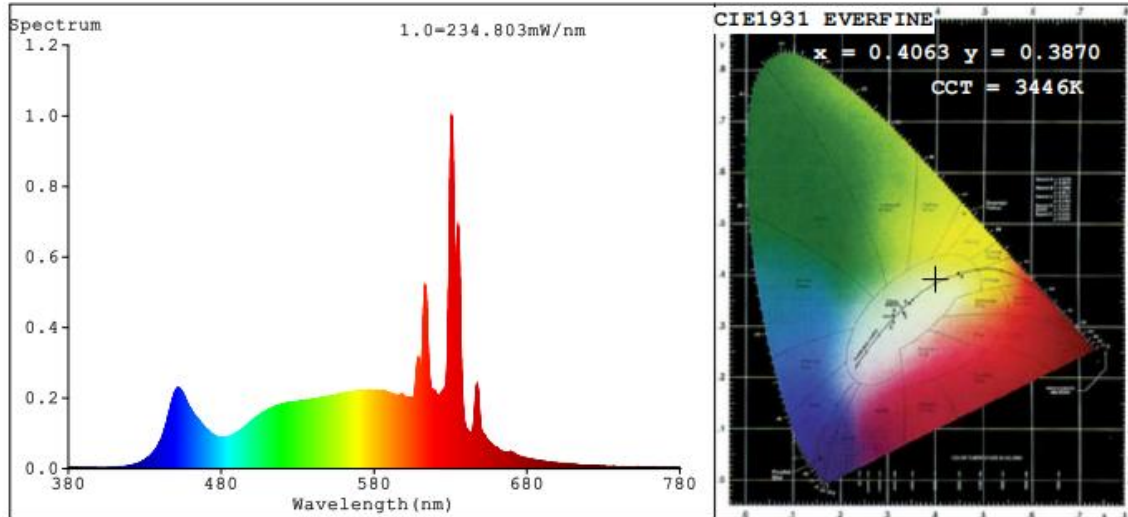
Method(Self-absorption:1.1010)(4π geometry):

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3446
Duv	-0.0019
Chromaticity (x, y)	x=0.4063 y=0.3870
Chromaticity (u', v')	u'=0.2379 v'=0.5098
Color Rendering Index (CRI)	97.3
R9	93
Rg	102
Rf	93
Rcs,h1	-2

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	2986
Luminous Efficacy (lm/W)	78.85

Spectral Power Distribution & Chromaticity Diagram



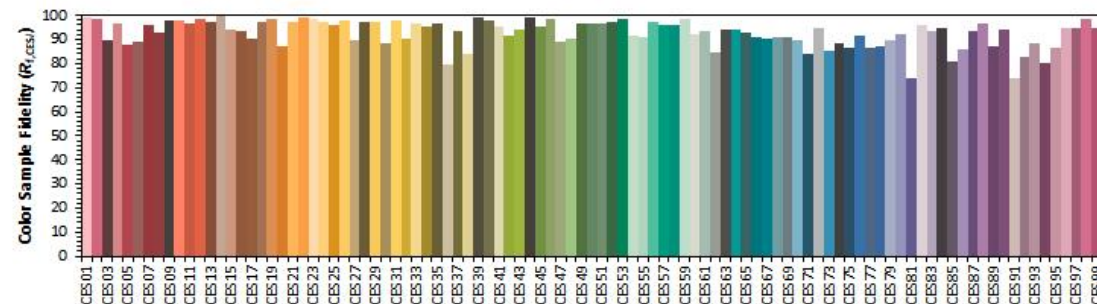
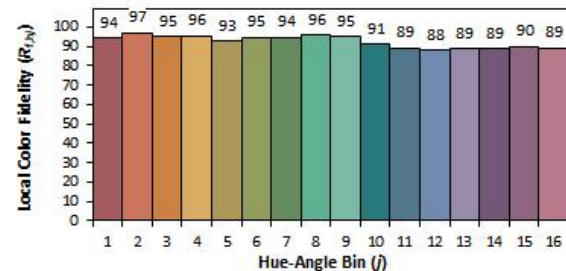
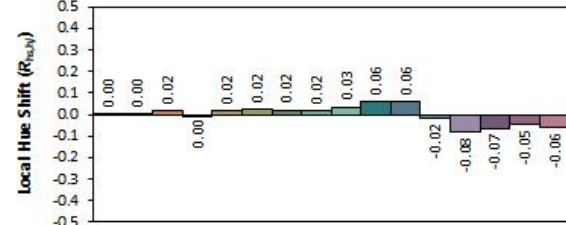
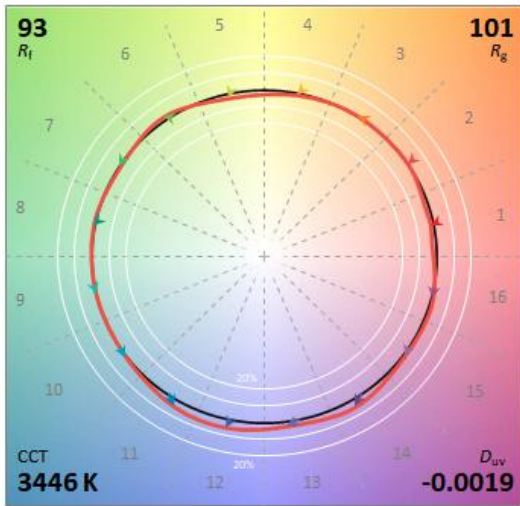
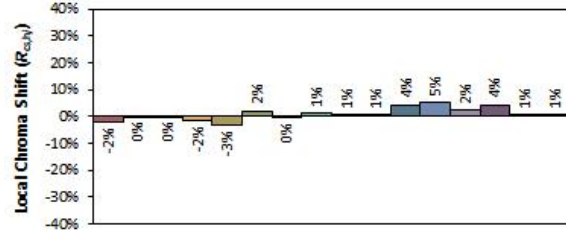
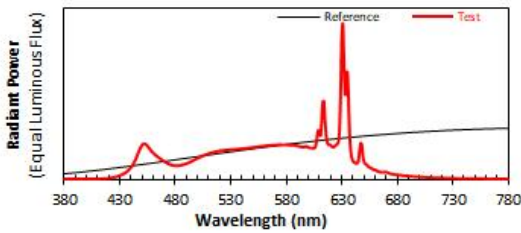
R1 =97	R2 =99	R3 =95	R4 =97	R5 =99	R6 =96	R7 =98		
R8 =98	R9 =93	R10=97	R11=94	R12=81	R13=98	R14=96	R15=98	



TM30

ANSI/IES TM-30-18 Color Rendition Report

Source: L128-xx90RC35xxxxx Manufacturer: RAB Lighting INC.
 Date: 2024-11-22 Model: ALR-48RBN (mode: 3500K)



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

x	0.4063
y	0.3869
u'	0.2380
v'	0.5098

CIE 13.3-1995 (CRI)	
R_a	97
R_g	93

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-48RBN(mode:4000K)	Total Operating Time(min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD241047 NB-F1	120.0	60.01	0.3405	37.70	0.9227	40.66

Chromaticity Measurement - Sphere-Spectroradiometer

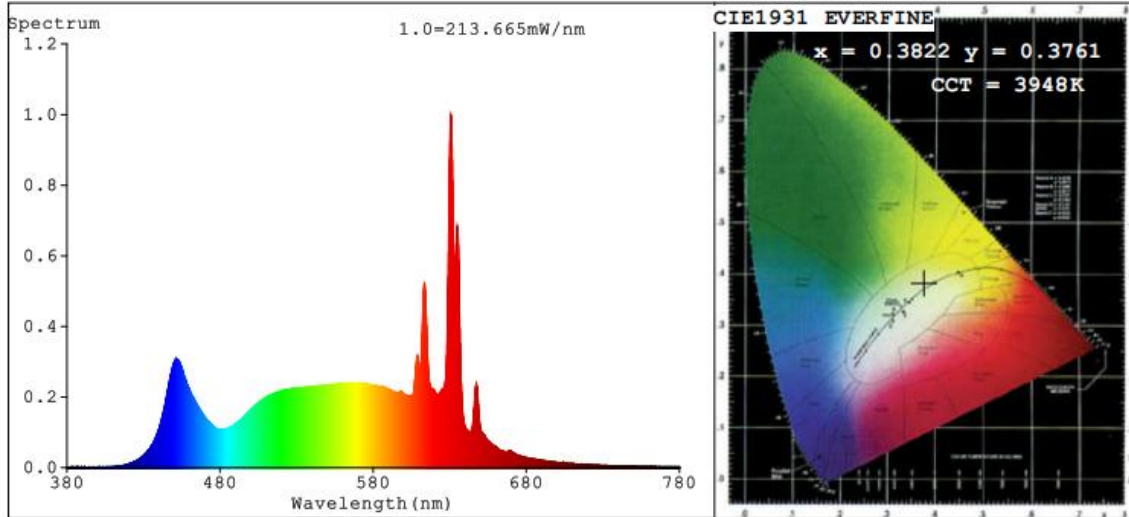
Method(Self-absorption:1.1015)(4π geometry):

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3948
Duv	-0.0008
Chromaticity (x, y)	x=0.3822 y=0.3761
Chromaticity (u', v')	u'=0.2265 v'=0.5016
Color Rendering Index (CRI)	97.6
R9	97
Rg	102
Rf	93
Rcs,h1	-2

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	2990
Luminous Efficacy (lm/W)	79.31

Spectral Power Distribution & Chromaticity Diagram



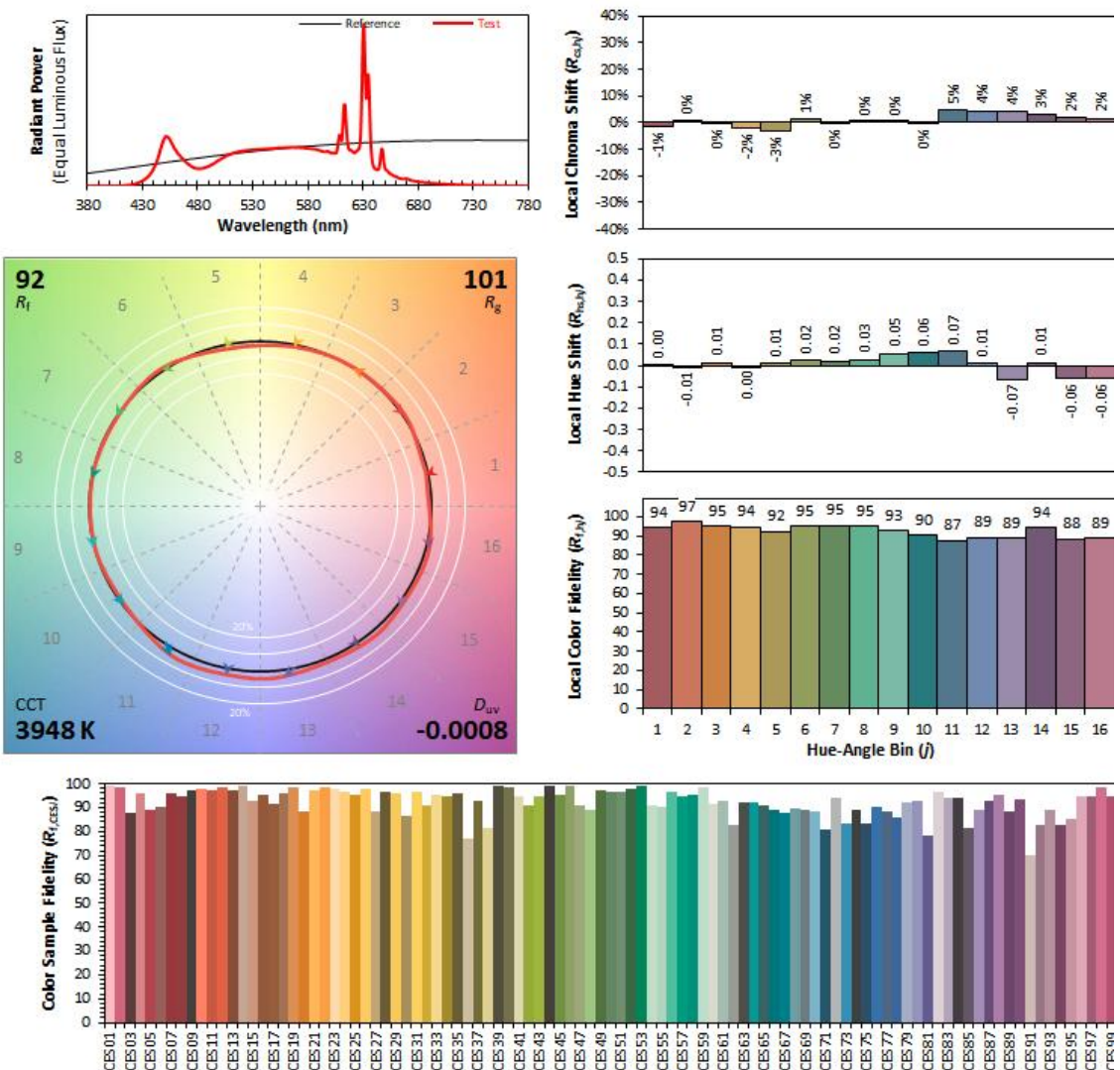
R1 =98	R2 =99	R3 =94	R4 =98	R5 =99	R6 =96	R7 =99
R8 =99	R9 =97	R10=95	R11=95	R12=77	R13=99	R14=95 R15=98



TM30

ANSI/IES TM-30-18 Color Rendition Report

Source: L128-xx90RC35xxxxx Manufacturer: RAB Lighting INC.
 Date: 2024-11-22 Model: ALR-48RBN (mode: 4000K)



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

x	0.3821	CIE 13.3-1995 (CRI) R_a 98 R_g 97
y	0.3760	
u'	0.2265	
v'	0.5015	

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-48RBN(mode:5000K)	Total Operating Time(min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD241047 NB-F1	120.0	60.01	0.3420	37.78	0.9205	40.70

Chromaticity Measurement - Sphere-Spectroradiometer

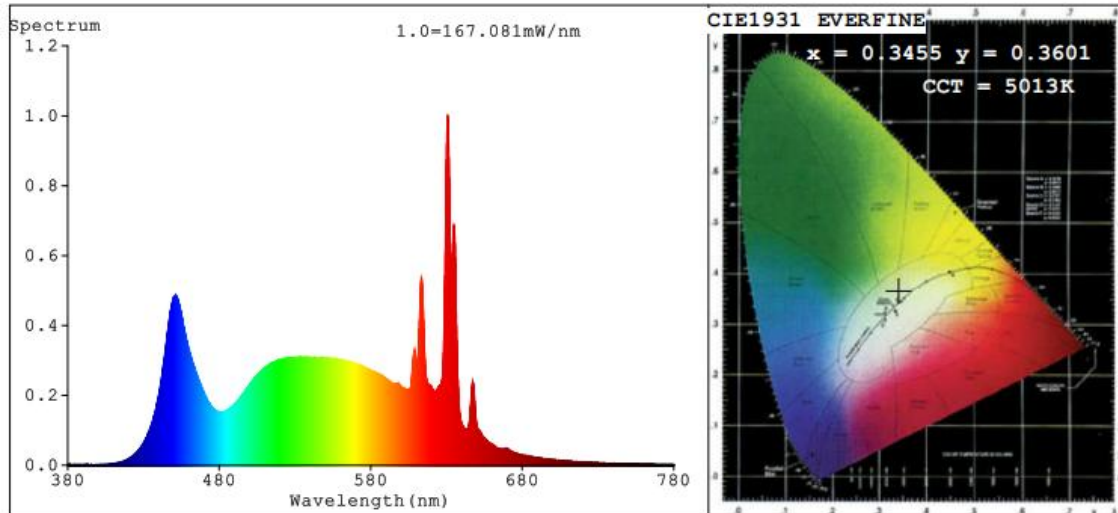
Method(Self-absorption:1.1014)(4π geometry):

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	5013
Duv	0.0040
Chromaticity (x, y)	x=0.3455 y=0.3601
Chromaticity (u', v')	u'=0.2084 v'=0.4888
Color Rendering Index (CRI)	95.4
R9	89
Rg	101
Rf	93
Rcs,h1	-3

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	2881
Luminous Efficacy (lm/W)	76.26

Spectral Power Distribution & Chromaticity Diagram



R1 =97	R2 =95	R3 =91	R4 =96	R5 =96	R6 =93	R7 =97	
R8 =97	R9 =89	R10=86	R11=94	R12=73	R13=96	R14=94	R15=97

TM30

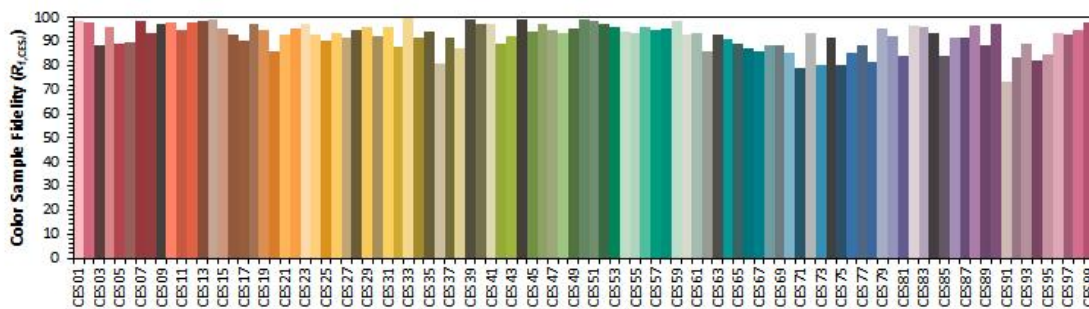
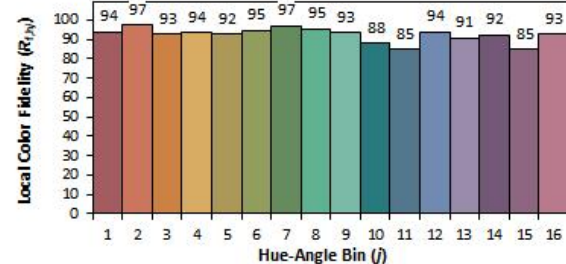
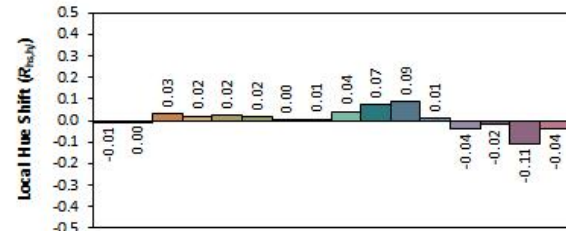
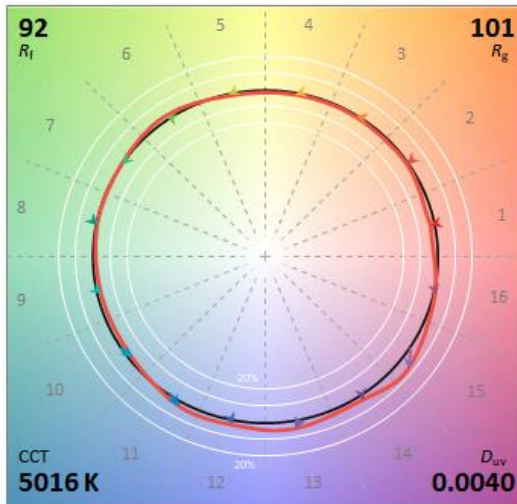
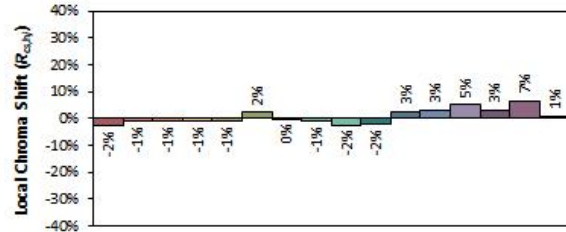
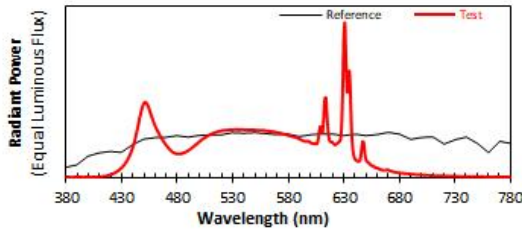
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-xx90RC35xxxxx

Manufacturer: RAB Lighting INC.

Date: 2024-11-22

Model: ALR-48RBN (mode:5000K)



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

x 0.3454
y 0.3599
u' 0.2085
v' 0.4887

CIE 13.3-1995
(CRI)
R_a 95
R_g 90

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 *****