



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-48RB

Report Type: Testing and Report According to IES LM-79-2019

Type of Luminaire: LED luminaire

Report Date: 2024-08-30

Test & Report By:

Ferrum Li

Engineer: Ferrum Li

Review By:

Garman Mo

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-48RB	
Remark	N/A	
Representative (Tested) Model	ALR-48RB(mode: 2700K) ALR-48RB(mode: 3000K) ALR-48RB(mode: 3500K) ALR-48RB(mode: 4000K) ALR-48RB(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	
Sample Number	STD240728NB-K1	
Date of Receipt	2024-08-14	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaire 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 C78.377-2015 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
Reference Work Instruction	QD25

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	2024-08-16	Test Ambient:	25 ± 1° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	ALR-48RB(mode: 2700K)	Total Operating Time (min)	75

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD240728 NB-K1	120.1	60	0.3356	37.14	0.9219	41.05

Photometric Measurement – Goniophotometer Method(Test Distance:26.000m):

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	2856.0
Luminous Efficacy (lm/W)	76.90
Beam Angle (°)	167.3
Center Beam Candle Power (cd)	486

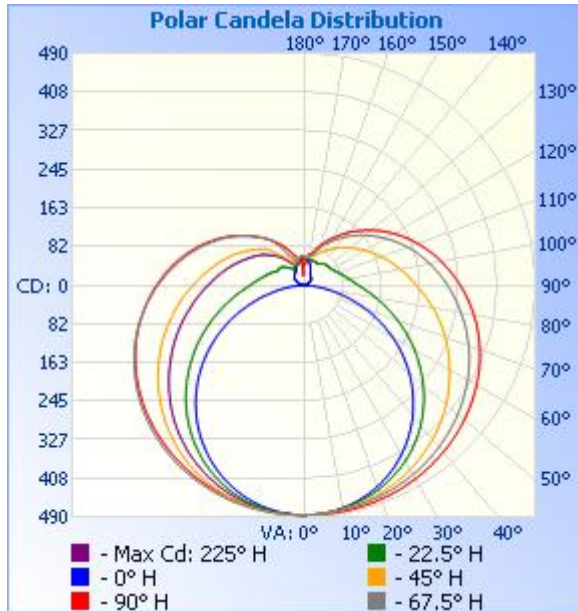


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	391.5	13.7%
0-40	660.3	23.1%
0-60	1,277.7	44.7%
60-90	804.1	28.2%
70-100	700.6	24.5%
90-120	496.7	17.4%
0-90	2,081.8	72.9%
90-180	774.2	27.1%
0-180	2,856.1	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	46.2	1.6%	90-100	197.6	6.9%
10-20	134.4	4.7%	100-110	165.6	5.8%
20-30	210.9	7.4%	110-120	133.4	4.7%
30-40	268.8	9.4%	120-130	103.2	3.6%
40-50	303.6	10.6%	130-140	74.4	2.6%
50-60	313.8	11.0%	140-150	48.9	1.7%
60-70	301.1	10.5%	150-160	29.6	1%
70-80	270.8	9.5%	160-170	16.1	0.6%
80-90	232.2	8.1%	170-180	5.4	0.2%

Photometric Data



Illuminance at a Distance

Center Beam fc	Beam Width
30.4 fc	12.2 ft
7.6 fc	24.4 ft
3.4 fc	36.6 ft
1.9 fc	48.8 ft
1.2 fc	61.0 ft
0.8 fc	73.2 ft
0.6 fc	85.4 ft
0.5 fc	97.6 ft

■ Beam Spread: 113.5°

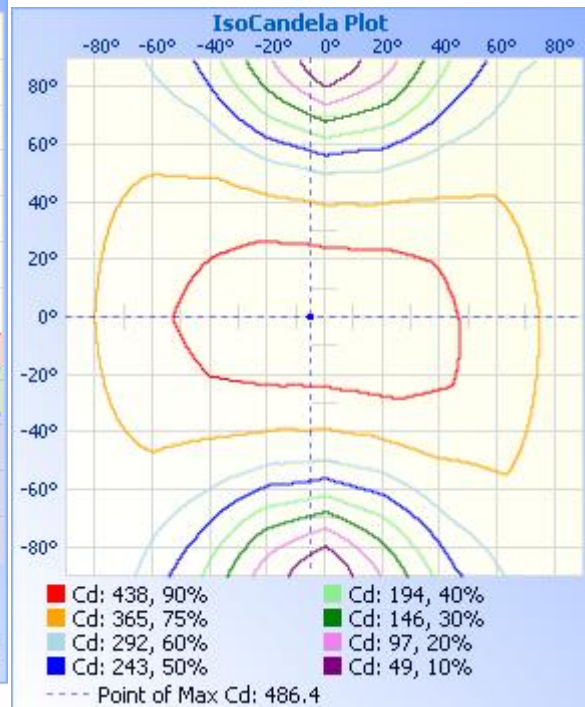
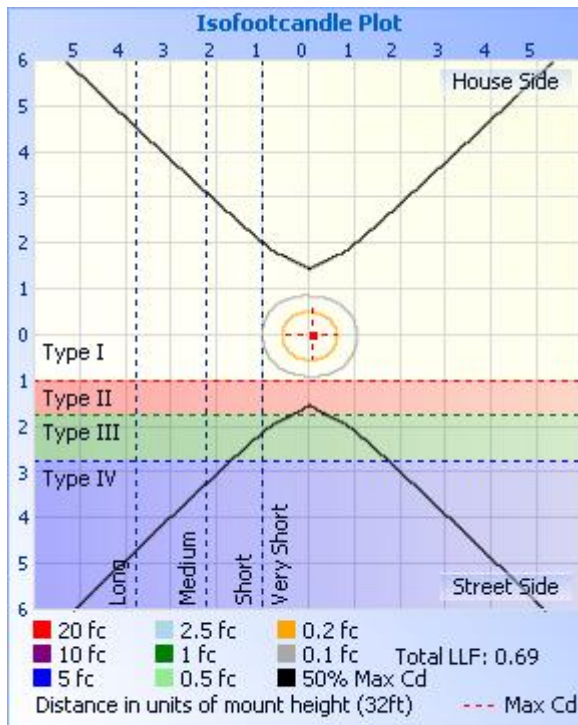




Table--1 UNIT: °C

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	486	486	486	486	486	486	486	486	486	486	486	486	486	486	486	486			
5	485	486	485	484	484	484	485	484	486	486	485	484	484	484	486	486			
10	483	483	482	479	478	479	481	482	485	484	481	478	477	480	484	485			
15	480	480	476	469	468	472	476	478	484	481	475	468	466	472	480	483			
20	476	475	467	456	454	461	469	474	481	476	466	455	451	461	474	480			
25	471	469	456	440	436	447	461	469	478	470	455	438	432	445	466	475			
30	465	461	443	420	414	430	450	463	473	463	441	418	410	427	456	470			
35	458	452	428	397	388	409	438	455	467	455	426	394	384	405	443	463			
40	449	442	410	372	359	386	425	446	460	446	408	368	354	380	429	455			
45	440	430	391	343	327	359	410	437	453	435	389	340	322	353	413	446			
50	430	418	370	312	293	331	394	426	444	423	368	309	287	323	395	436			
55	419	404	349	280	255	301	376	414	434	410	347	277	249	293	375	424			
60	406	389	326	248	216	270	357	401	423	396	325	244	209	263	355	410			
65	393	373	304	214	175	240	338	387	411	381	303	210	167	232	335	396			
70	379	357	282	182	132	209	319	372	397	366	282	177	125	203	315	380			
75	363	339	261	151	90.4	182	299	356	382	349	261	146	83.2	176	294	364			
80	346	321	240	123	51.0	156	278	338	366	331	241	120	45.2	151	273	346			
85	329	303	221	100	19.7	134	258	322	349	314	222	98.1	15.8	130	254	327			
90	311	285	202	83.2	4.05	116	239	304	332	296	205	81.6	2.63	113	234	309			
95	293	266	186	71.9	2.55	103	222	287	313	279	190	70.7	2.55	101	216	290			
100	275	247	172	63.1	3.51	93.0	205	270	295	263	175	63.5	4.85	90.2	200	271			
105	256	230	158	57.2	7.17	84.9	190	252	276	244	162	57.5	8.51	81.6	185	252			
110	237	212	144	52.3	9.32	77.9	175	234	257	226	149	52.7	11.5	74.5	171	234			
115	219	195	132	50.0	12.5	72.3	161	216	238	208	137	50.8	14.7	67.7	157	215			
120	200	177	121	49.4	15.7	68.1	148	198	219	191	126	51.4	18.3	62.9	143	197			
125	181	160	111	48.8	18.9	66.1	135	181	200	173	116	52.0	22.4	61.9	130	179			
130	163	144	99.4	47.8	20.9	64.5	123	164	180	157	107	52.1	25.6	59.9	118	161			
135	146	129	89.0	43.9	21.6	62.9	112	148	162	141	96.9	51.2	27.2	53.8	106	144			
140	130	115	77.3	39.7	23.7	59.3	101	133	145	126	88.9	51.4	29.1	47.5	85.0	129			
145	115	100	65.5	35.9	25.2	55.6	91.2	117	127	113	81.5	52.2	31.5	43.5	73.2	112			
150	99.8	80.3	54.9	35.2	28.0	54.4	82.7	103	112	101	77.0	54.6	34.3	40.3	62.4	88.7			
155	85.2	66.7	49.7	41.1	34.8	55.3	73.1	90.0	97.1	90.0	71.2	57.0	37.4	44.5	53.5	68.4			
160	72.7	53.7	46.0	46.5	41.7	55.1	65.8	75.3	83.2	79.0	64.7	57.1	44.7	45.8	50.1	57.2			
165	62.3	43.5	46.6	49.6	48.4	55.4	63.2	64.3	70.7	68.1	59.1	56.6	51.7	50.4	56.4	50.3			
170	57.3	42.6	52.0	53.6	54.7	58.2	61.4	60.1	65.3	62.0	56.1	56.4	56.5	56.3	59.3	57.9			
175	45.2	50.7	55.4	56.7	58.1	59.9	62.4	59.7	46.1	45.2	56.6	57.9	59.4	59.7	61.7	61.5			
180	8.22	59.1	57.4	59.0	60.0	61.9	62.7	59.4	27.6	28.1	56.1	56.6	59.5	61.0	63.9	63.4			

2.2 Electrical, Photometric and Chromaticity Measurements

Test date	2024-08-16	Test Ambient:	25 ± 1° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	ALR-48RB(mode: 2700K)	Total Operating Time (min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD240728 NB-K1	120.0	60	0.3378	37.33	0.9209	41.11

Chromaticity Measurement - Sphere-Spectroradiometer

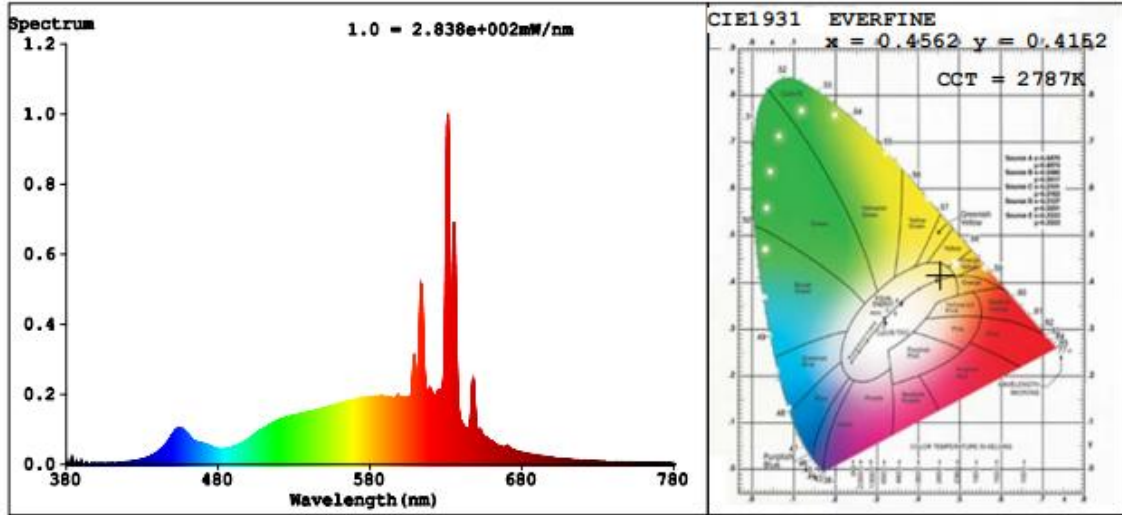
Method(Self-absorption:1.1760) (4π geometry):

Parameter	Result	Parameter	Result
Test Voltage (V)	120	Color Rendering Index (CRI)	94.2
Frequency (Hz)	60	R9	68
CCT (K)	2787	Rg	100
Duv	0.0020	Rf	92
Chromaticity (x, y)	x=0.4562 y=0.4152	Rcs,h1(%)	-5
Chromaticity (u', v')	u'=0.2581 v'=0.5285		

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	2875
Luminous Efficacy (lm/W)	77.02

Spectral Power Distribution & Chromaticity Diagram



Special Color Rendering Indices

R1 =96	R2 =96	R3 =93	R4 =96	R5 =94	R6 =96	R7 =95		
R8 =88	R9 =68	R10=87	R11=97	R12=78	R13=96	R14=94	R15=92	

TM30

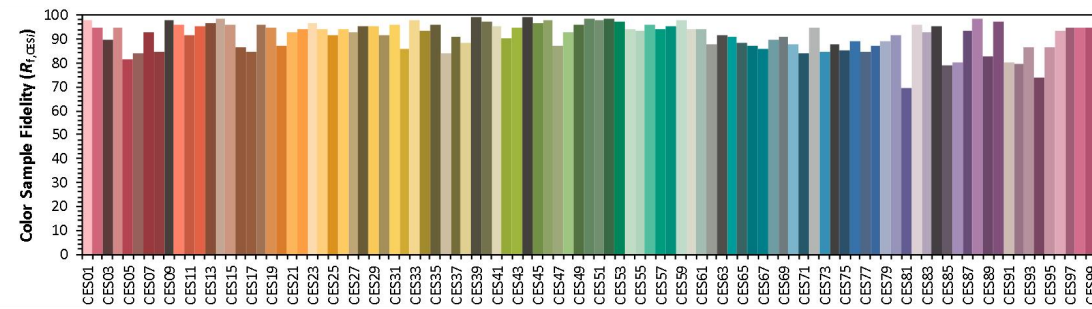
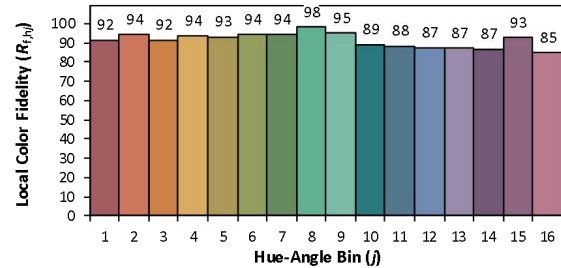
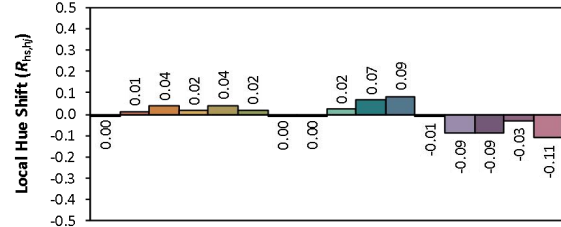
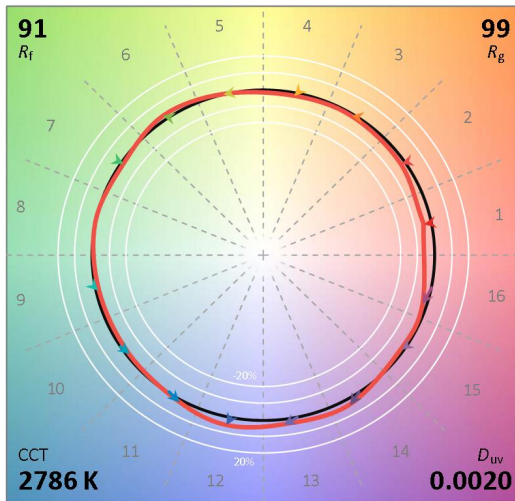
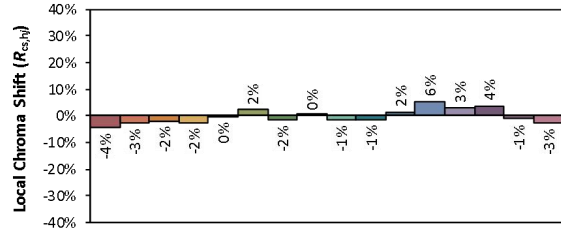
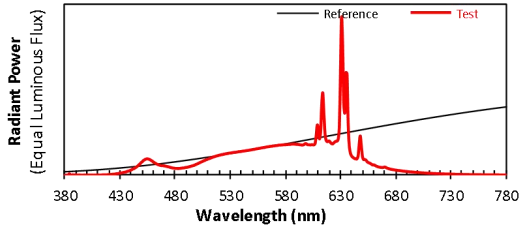
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-xx90RC35xxxxx

Manufacturer: RAB Lighting INC.

Date: 2024-08-16

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



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

x 0.4563
 y 0.4151
 u' 0.2582
 v' 0.5285

CIE 13.3-1995
(CRI)

R_a 94
 R_g 68

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.0

2.3 Electrical, Photometric and Chromaticity Measurements

Test date	2024-08-16	Test Ambient:	25 ± 1° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	ALR-48RB(mode: 3000K)	Total Operating Time (min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD240728 NB-K1	120.0	60	0.3361	37.19	0.9220	41.04

Chromaticity Measurement - Sphere-Spectroradiometer

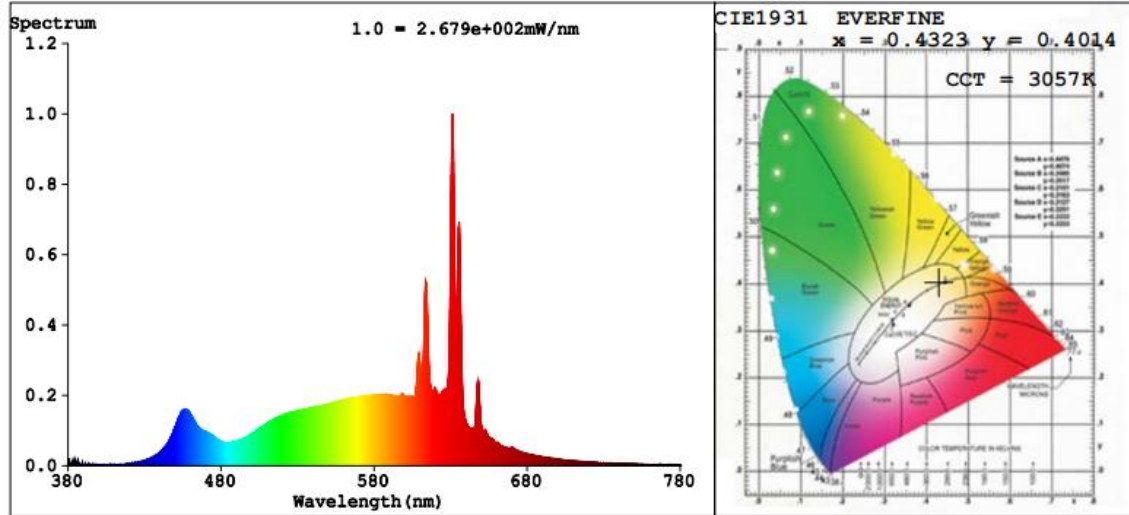
Method(Self-absorption:1.1764) (4π geometry):

Parameter	Result	Parameter	Result
Test Voltage (V)	120	Color Rendering Index (CRI)	96.2
Frequency (Hz)	60	R9	77
CCT (K)	3057	Rg	100
Duv	-0.0004	Rf	92
Chromaticity (x, y)	x=0.4323 y=0.4014	Rcs,h1(%)	-4
Chromaticity (u', v')	u'=0.2488 v'=0.5196		

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	2925
Luminous Efficacy (lm/W)	78.65

Spectral Power Distribution & Chromaticity Diagram



Special Color Rendering Indices

R1 =99	R2 =99	R3 =96	R4 =98	R5 =97	R6 =96	R7 =95		
R8 =91	R9 =77	R10=93	R11=98	R12=79	R13=99	R14=96	R15=96	

TM30

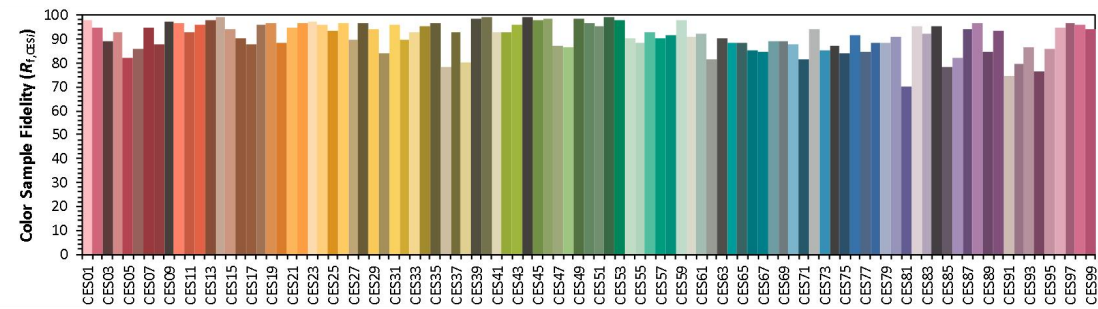
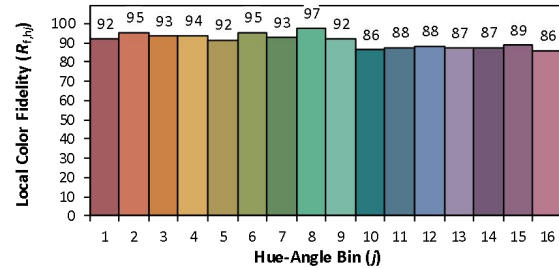
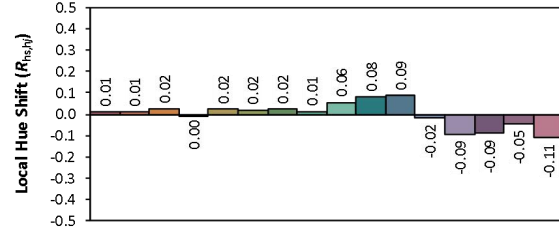
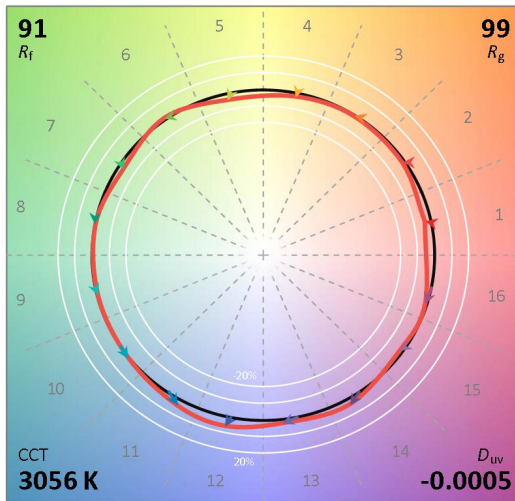
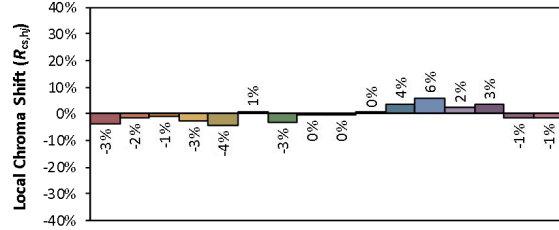
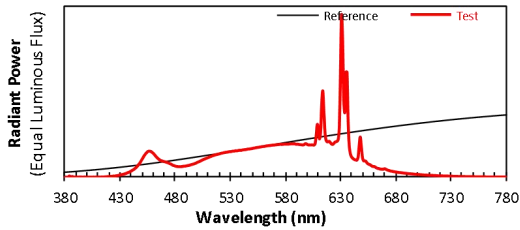
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-xx90RC35xxxxx

Manufacturer: RAB Lighting INC.

Date: 2024-08-16

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



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

x 0.4323
 y 0.4013
 u' 0.2488
 v' 0.5196

CIE 13.3-1995
(CRI)

R_a 96
 R_g 78

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.0

2.4 Electrical, Photometric and Chromaticity Measurements

Test date	2024-08-16	Test Ambient:	25 ± 1° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	ALR-48RB(mode: 3500K)	Total Operating Time (min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD240728 NB-K1	120.0	60	0.3335	36.86	0.9210	41.09

Chromaticity Measurement - Sphere-Spectroradiometer

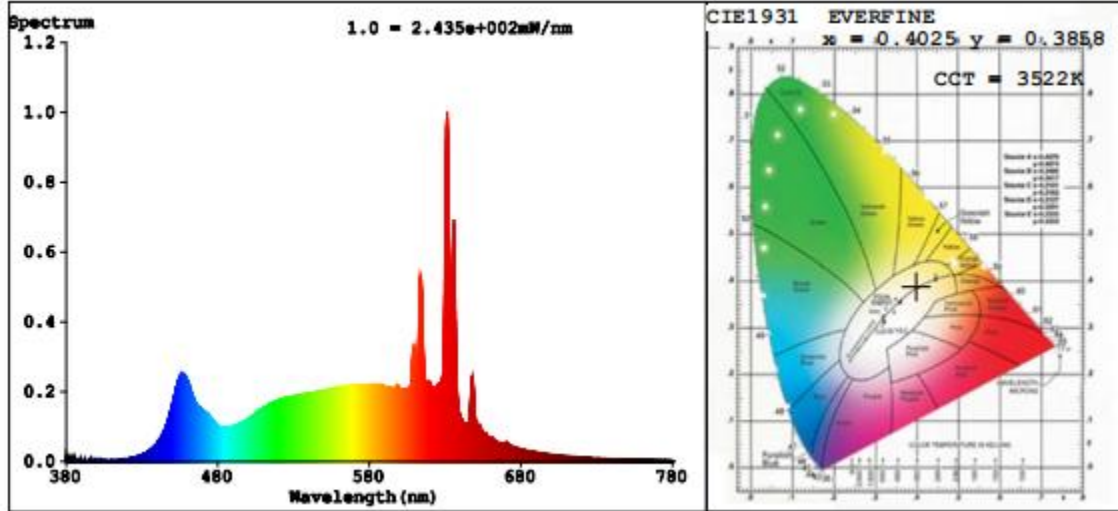
Method(Self-absorption:1.1763) (4π geometry):

Parameter	Result	Parameter	Result
Test Voltage (V)	120	Color Rendering Index (CRI)	96.6
Frequency (Hz)	60	R9	86
CCT (K)	3522	Rg	100
Duv	-0.0015	Rf	91
Chromaticity (x, y)	x=0.4025 y=0.3858	Rcs,h1(%)	-3
Chromaticity (u', v')	u'=0.2359 v'=0.5088		

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	2991
Luminous Efficacy (lm/W)	81.14

Spectral Power Distribution & Chromaticity Diagram



Special Color Rendering Indices

R1 =98	R2 =99	R3 =97	R4 =97	R5 =97	R6 =95	R7 =95	
R8 =93	R9 =86	R10=97	R11=98	R12=76	R13=99	R14=97	R15=97

TM30

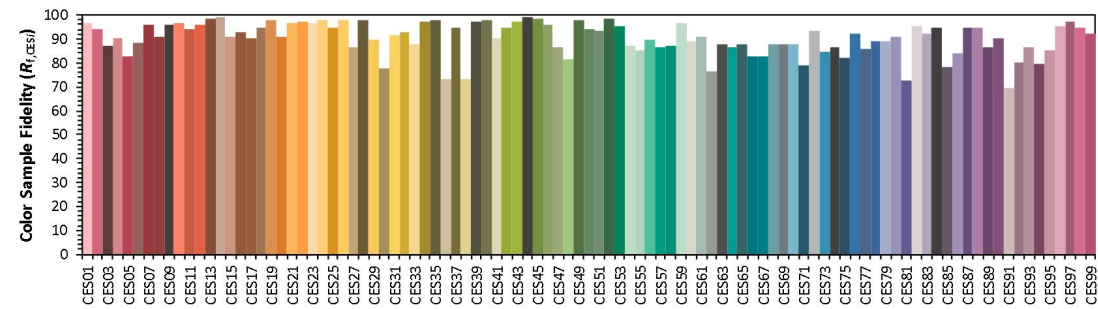
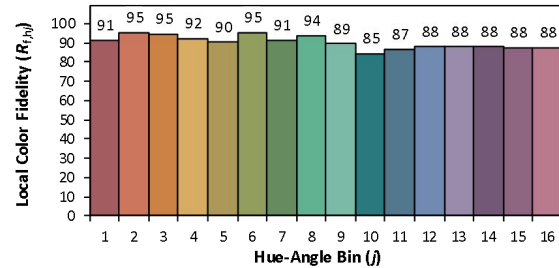
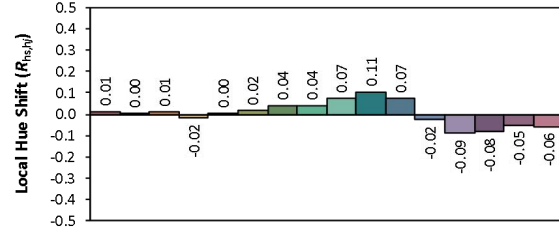
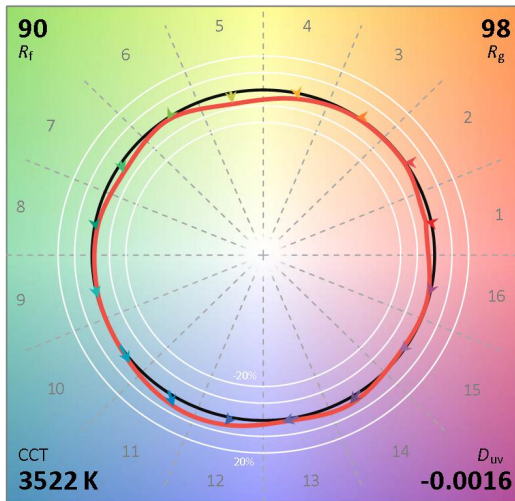
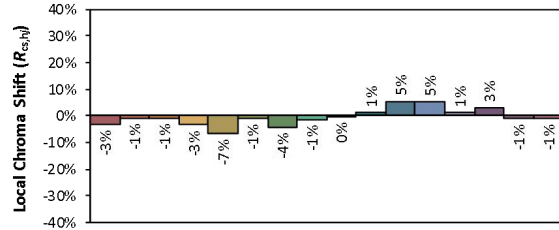
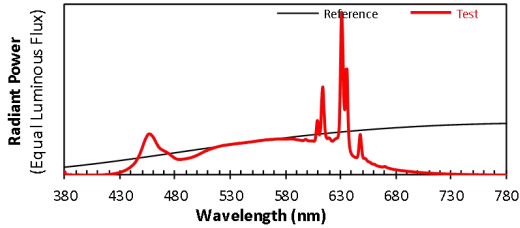
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-xx90RC35xxxxx

Manufacturer: RAB Lighting INC.

Date: 2024-08-16

Model: ALR-48RB(mode: 3500K)



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

x 0.4025
 y 0.3857
 u' 0.2359
 v' 0.5087

CIE 13.3-1995
(CRI)

R_a 97
 R_g 86

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.0

2.5 Electrical, Photometric and Chromaticity Measurements

Test date	2024-08-16	Test Ambient:	25 ± 1° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	ALR-48RB(mode: 4000K)	Total Operating Time (min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD240728 NB-K1	120.0	60	0.3317	36.71	0.9223	41.01

Chromaticity Measurement - Sphere-Spectroradiometer

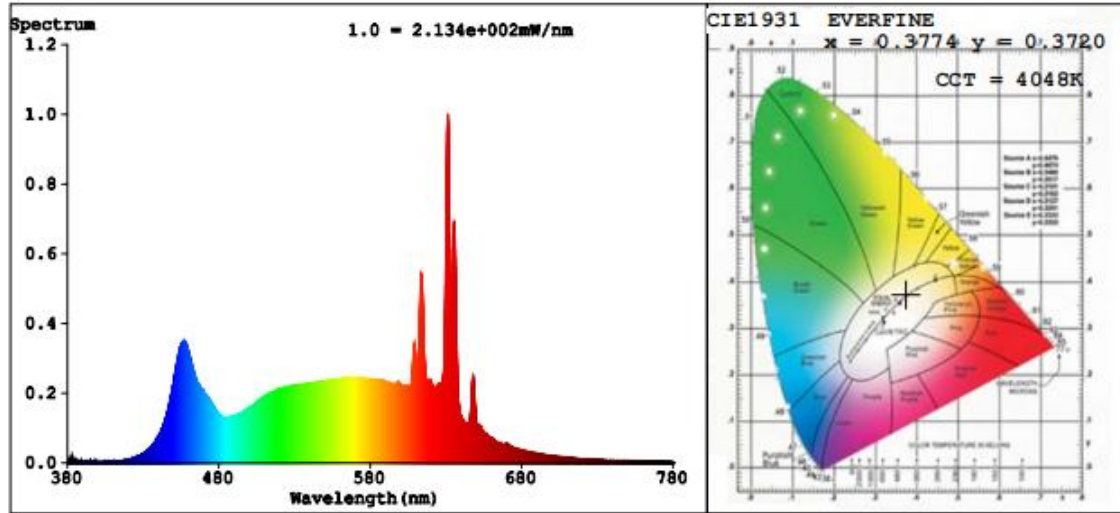
Method(Self-absorption:1.1763) (4π geometry):

Parameter	Result	Parameter	Result
Test Voltage (V)	120	Color Rendering Index (CRI)	96.2
Frequency (Hz)	60	R9	90
CCT (K)	4048	Rg	99
Duv	-0.0013	Rf	91
Chromaticity (x, y)	x=0.3774 y=0.3720	Rcs,h1(%)	-3
Chromaticity (u', v')	u'=0.2250 v'=0.4990		

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	2958
Luminous Efficacy (lm/W)	80.58

Spectral Power Distribution & Chromaticity Diagram



Special Color Rendering Indices

R1 =98	R2 =99	R3 =98	R4 =96	R5 =96	R6 =95	R7 =94	
R8 =94	R9 =90	R10=99	R11=98	R12=72	R13=98	R14=97	R15=96

TM30

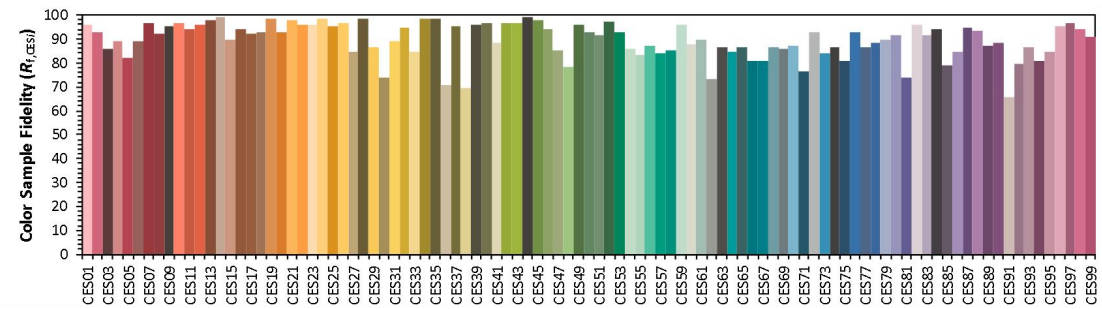
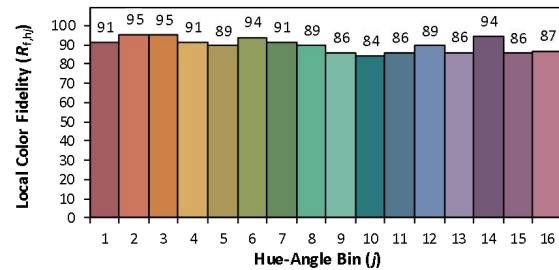
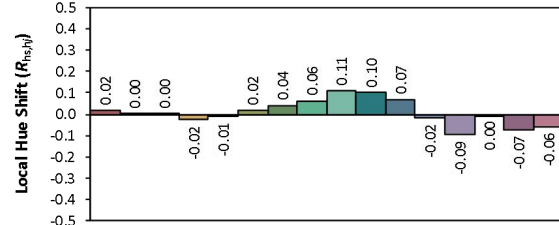
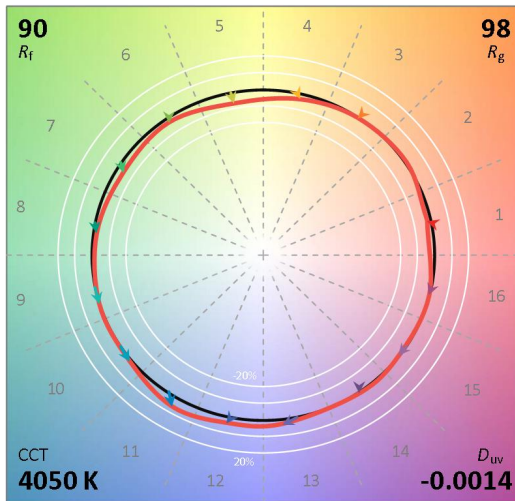
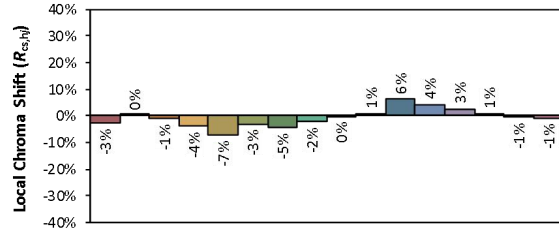
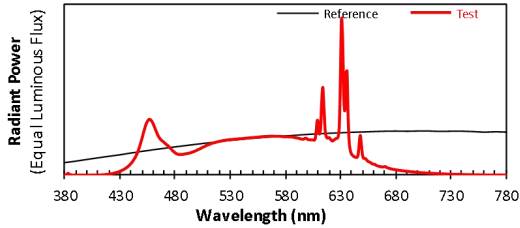
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-xx90RC35xxxxx

Manufacturer: RAB Lighting INC.

Date: 2024-08-16

Model: ALR-48RB(mode: 4000K)



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

x 0.3774
 y 0.3719
 u' 0.2250
 v' 0.4990

CIE 13.3-1995
(CRI)

R_a 96
 R_g 91

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.0

2.6 Electrical, Photometric and Chromaticity Measurements

Test date	2024-08-16	Test Ambient:	25 ± 1° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	ALR-48RB(mode: 5000K)	Total Operating Time (min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD240728 NB-K1	120.0	60	0.3344	37.02	0.9226	40.98

Chromaticity Measurement - Sphere-Spectroradiometer

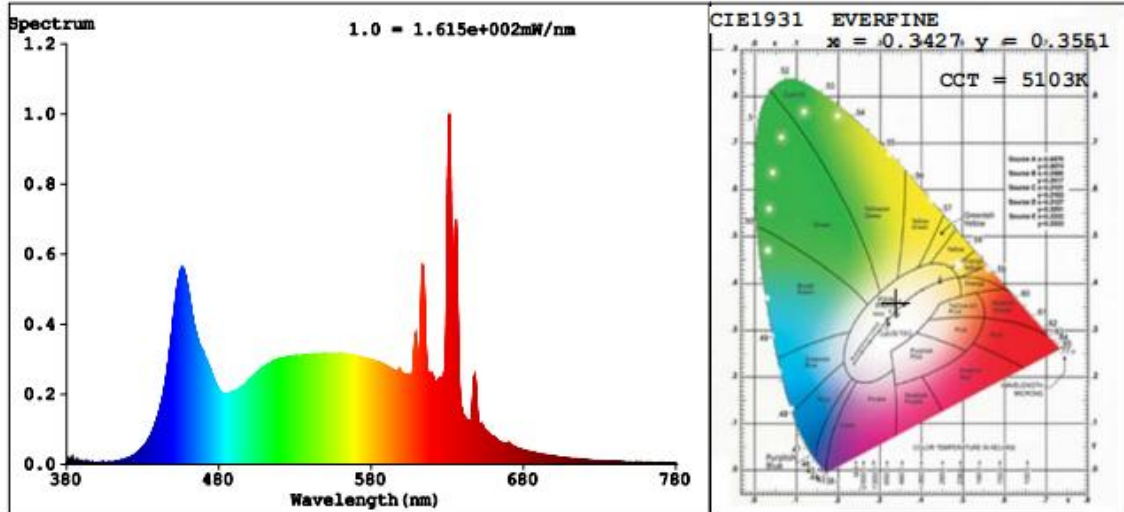
Method(Self-absorption:1.1762) (4π geometry):

Parameter	Result	Parameter	Result
Test Voltage (V)	120	Color Rendering Index (CRI)	95.1
Frequency (Hz)	60	R9	82
CCT (K)	5103	Rg	98
Duv	0.0027	Rf	91
Chromaticity (x, y)	x=0.3427 y=0.3551	Rcs,h1(%)	-4
Chromaticity (u', v')	u'=0.2084 v'=0.4860		

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	2877
Luminous Efficacy (lm/W)	77.71

Spectral Power Distribution & Chromaticity Diagram



Special Color Rendering Indices

R1 =97	R2 =99	R3 =97	R4 =94	R5 =94	R6 =95	R7 =94	
R8 =91	R9 =80	R10=94	R11=95	R12=71	R13=98	R14=98	R15=95

TM30

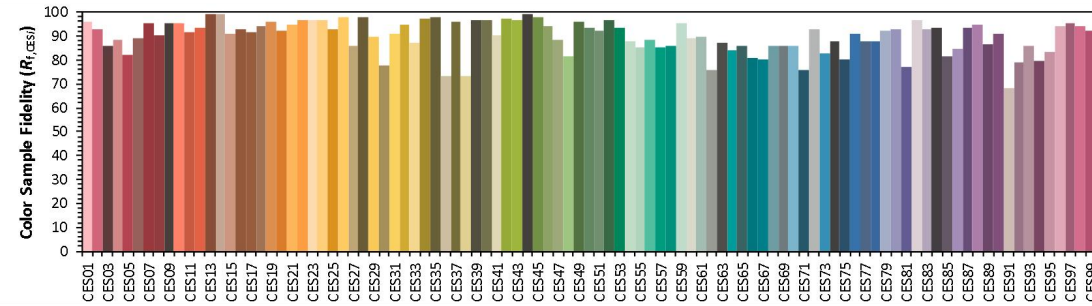
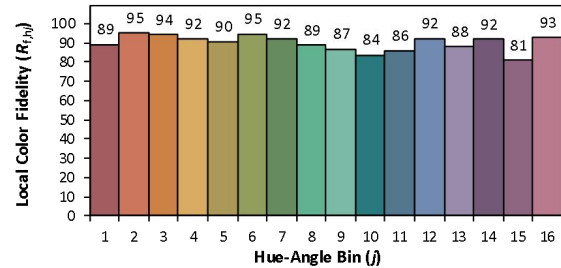
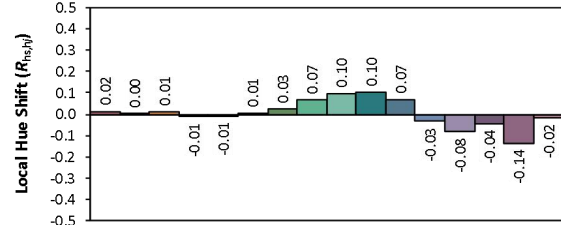
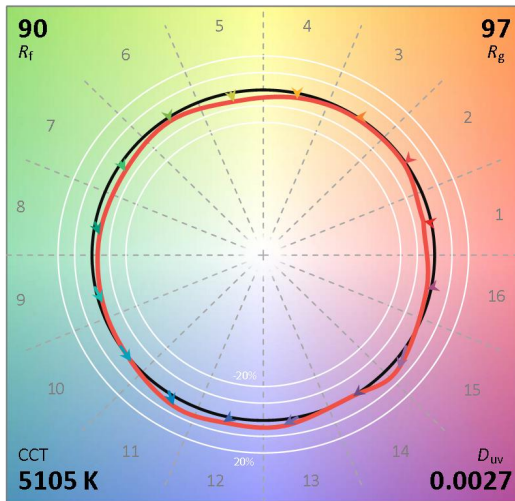
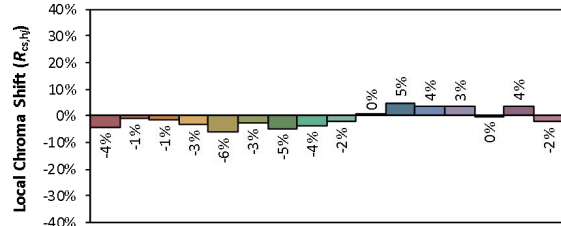
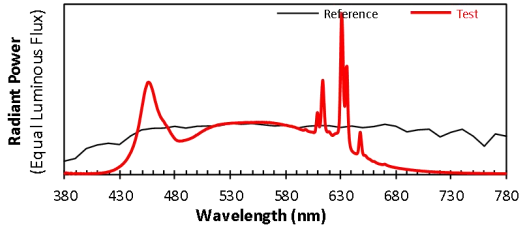
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-xx90RC35xxxxx

Manufacturer: RAB Lighting INC.

Date: 2024-08-16

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



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

x 0.3426
 y 0.3550
 u' 0.2085
 v' 0.4859

CIE 13.3-1995
(CRI)

R_a 95
 R_g 80

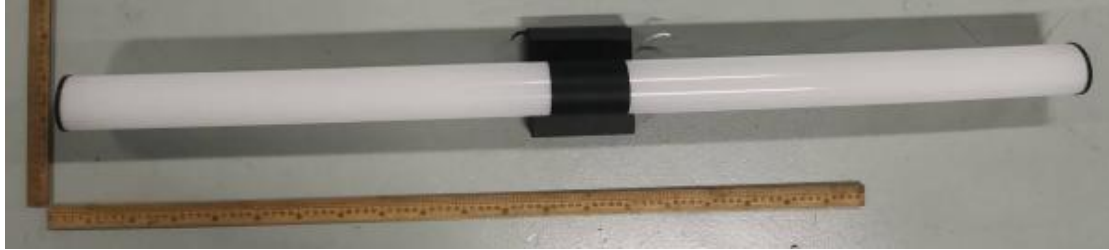
Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.0



3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-S-451	2 meter Integrating Sphere	Verified by D204 standard lamp	
ST-R-S-455	Spectral analysis system HAAS-1200	Verified by D204 standard lamp	
ST-R-S-452	Standard Lamp D204	2023-06-26	2026-06-25
ST-R-S-453	Power Meter for Integrating Sphere	2024-05-29	2025-05-28
ST-R-S-467	Hygrothermograph	2024-06-06	2025-06-05
ST-R-355	Goniophotometer system	Verified by D908S standard lamp	
ST-R-359	Standard Lamp D908S	2022-07-19	2025-07-18
ST-R-357	AC Power Source	2024-01-29	2025-01-28
ST-R-S-422	Power Meter for Goniophotometer	2024-05-29	2025-05-28
ST-R-S-354	hygrothermograph for Goniophotometer	2024-05-29	2025-05-28
Uncertainty: Photometric Measurement (Sphere):2.94%, k=2 Chromaticity Measurement(Sphere):52.28K, k=2 Photometric Measurement(Goniophotometer): 2.94%, k=2			

4. Product Photo



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