



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-48SB

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-48SB	
Remark	N/A	
Representative (Tested) Model	ALR-48SB(mode: 2700K) ALR-48SB(mode: 3000K) ALR-48SB(mode: 3500K) ALR-48SB(mode: 4000K) ALR-48SB(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-L1	
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-48SB(mode: 2700K)	Total Operating Time (min)	75

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD240728 NB-L1	120.1	60	0.3354	37.11	0.9215	41.24

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

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	2862.9
Luminous Efficacy (lm/W)	77.15
Beam Angle (°)	187.6
Center Beam Candle Power (cd)	419

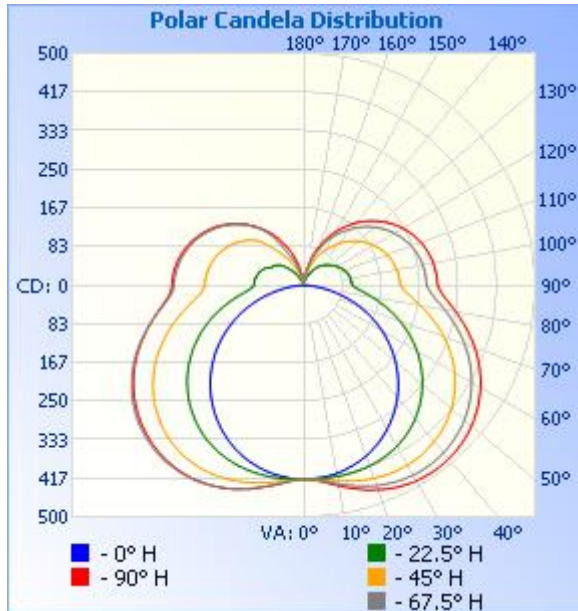


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	364.7	12.7%
0-40	632.2	22.1%
0-60	1,269.3	44.3%
60-90	782.7	27.3%
70-100	663.2	23.2%
90-120	518.4	18.1%
0-90	2,052.0	71.7%
90-180	810.9	28.3%
0-180	2,862.9	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	40.4	1.4%	90-100	189.7	6.6%
10-20	122.7	4.3%	100-110	176.4	6.2%
20-30	201.6	7.0%	110-120	152.3	5.3%
30-40	267.5	9.3%	120-130	121.0	4.2%
40-50	311.1	10.9%	130-140	86.1	3%
50-60	326.0	11.4%	140-150	52.1	1.8%
60-70	309.3	10.8%	150-160	24.9	0.9%
70-80	263.9	9.2%	160-170	7.6	0.3%
80-90	209.5	7.3%	170-180	0.8	0%

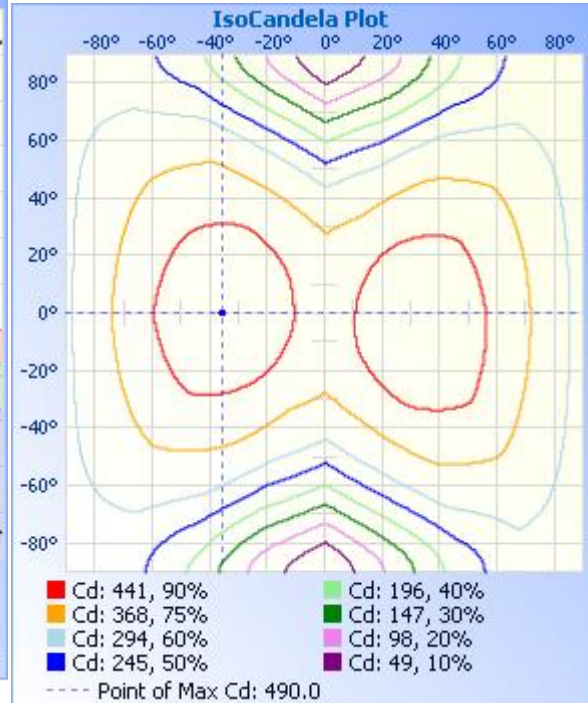
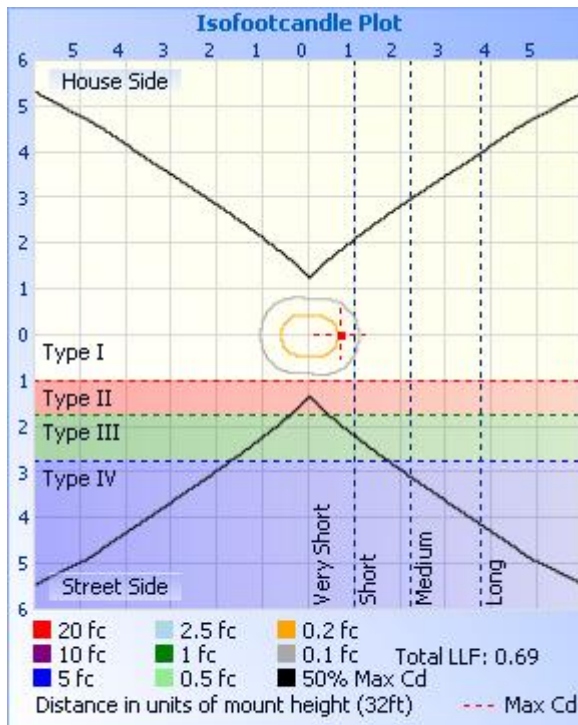
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width
4.0ft	26.2 fc	21.8 ft
8.0ft	6.5 fc	43.6 ft
12.0ft	2.9 fc	65.4 ft
16.0ft	1.6 fc	87.2 ft
20.0ft	1.0 fc	109.0 ft
24.0ft	0.7 fc	130.8 ft
28.0ft	0.5 fc	152.6 ft
32.0ft	0.4 fc	174.4 ft

■ Beam Spread: 139.7°





Certificate #4703.03

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Dongguan, Guangdong, People's Republic of China
Tel: (+86)0769-82699983

Table--1

UNIT: cd

C (DEG) y (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	419	419	419	419	419	419	419	419	419	419	419	419	419	419	419	419			
5	426	425	422	419	417	419	422	423	425	424	421	418	417	419	423	426			
10	441	437	428	417	412	419	429	436	440	435	427	416	411	419	432	439			
15	455	450	434	413	404	418	437	449	456	448	432	412	402	418	440	454			
20	467	460	439	407	392	415	443	460	470	459	437	405	390	414	448	467			
25	476	468	441	398	378	410	448	468	481	468	438	396	375	408	452	476			
30	481	471	440	386	360	402	448	473	487	473	437	384	357	398	453	482			
35	482	471	434	372	339	390	446	474	490	474	432	369	336	386	450	484			
40	478	467	425	354	315	375	440	471	488	471	422	351	311	370	443	482			
45	471	459	413	334	289	357	430	464	483	464	409	331	285	351	432	475			
50	459	446	396	310	260	335	416	453	473	452	393	307	256	329	416	465			
55	444	430	375	284	228	310	399	438	459	436	373	281	224	304	397	449			
60	425	409	350	255	195	283	377	419	441	417	348	252	191	276	373	429			
65	402	385	323	224	159	252	351	396	419	393	321	220	155	246	347	406			
70	376	358	292	191	123	219	322	370	394	366	292	187	118	213	317	378			
75	347	327	260	156	85.0	185	290	340	365	336	260	152	80.7	179	284	347			
80	318	297	228	122	48.7	151	257	310	335	305	227	119	45.0	147	252	317			
85	294	272	201	93.6	18.8	122	227	282	307	276	199	90.3	15.9	119	225	291			
90	285	261	189	80.0	3.59	105	209	266	290	260	184	75.9	2.63	108	214	281			
95	282	258	187	78.5	2.52	103	207	264	288	259	183	74.7	2.16	106	211	278			
100	278	253	184	76.5	2.25	102	204	261	284	255	180	73.2	2.34	104	208	273			
105	271	247	179	73.7	2.25	98.3	199	255	278	250	176	70.1	2.43	100	203	267			
110	262	238	173	68.5	2.25	93.7	192	247	269	242	169	66.2	2.43	95.3	196	258			
115	251	227	165	63.6	2.25	87.9	183	237	259	231	162	61.8	2.52	87.9	187	247			
120	238	214	155	59.0	2.25	81.4	173	225	246	219	152	57.1	2.52	78.6	177	234			
125	223	199	143	53.9	2.34	74.6	161	211	231	204	142	52.7	2.25	74.4	164	220			
130	206	183	128	49.4	2.07	67.4	148	195	214	188	130	48.4	1.53	66.5	151	203			
135	187	165	111	41.9	1.89	60.7	133	177	196	170	116	44.0	1.26	55.4	133	184			
140	166	146	95.0	34.5	1.71	53.2	117	158	175	152	102	39.5	1.26	43.2	105	163			
145	144	125	75.9	27.2	1.71	44.5	99.6	138	153	133	87.7	34.8	1.26	32.8	81.9	139			
150	121	98.1	58.4	19.1	1.62	32.5	82.6	117	129	115	78.5	31.6	1.71	19.5	62.6	104			
155	95.9	74.5	46.1	16.4	1.62	24.7	66.6	93.9	104	95.0	67.2	28.4	2.97	12.0	44.8	70.6			
160	72.0	51.9	34.1	13.2	1.62	18.2	47.7	70.2	79.5	74.4	54.0	24.4	4.85	5.36	25.4	49.5			
165	47.7	31.0	20.3	9.51	1.62	12.3	28.6	44.1	53.5	51.0	33.4	18.5	5.04	2.63	15.7	28.3			
170	22.2	14.1	12.5	6.54	1.62	7.37	15.8	22.7	25.5	25.2	18.0	10.9	3.96	1.90	8.25	15.2			
175	7.21	5.87	5.42	3.86	1.62	3.81	6.18	8.37	8.95	8.85	6.25	4.13	2.70	1.63	3.74	6.05			
180	0.19	0.85	1.73	2.43	1.62	2.45	1.61	1.23	1.10	0.87	1.47	1.88	2.61	1.63	2.53	2.28			

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

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD240728 NB-L1	120.0	60	0.3381	37.34	0.9203	41.31

Chromaticity Measurement - Sphere-Spectroradiometer

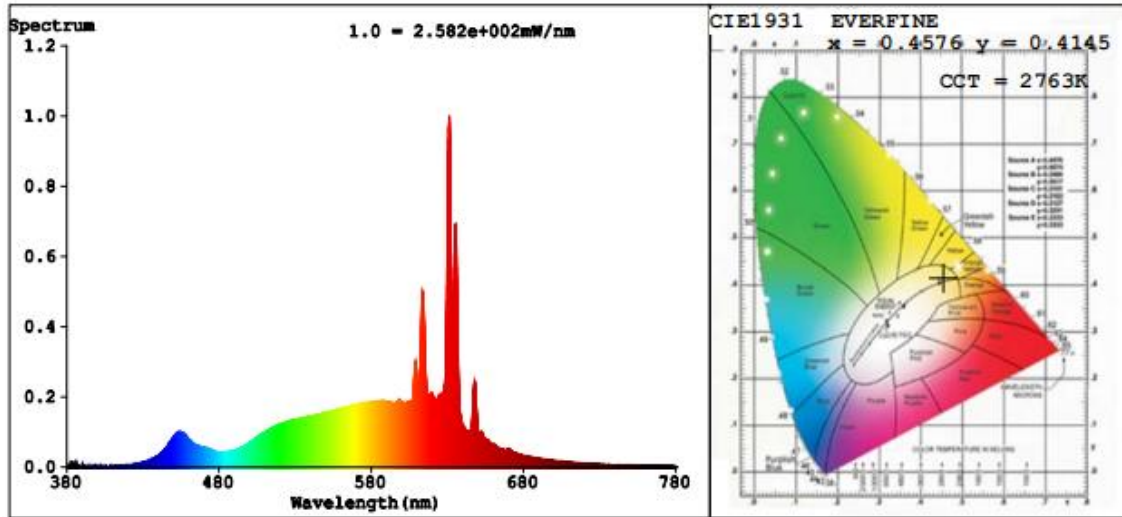
Method(Self-absorption:1.2003) (4π geometry):

Parameter	Result	Parameter	Result
Test Voltage (V)	120	Color Rendering Index (CRI)	94.8
Frequency (Hz)	60	R9	71
CCT (K)	2763	Rg	100
Duv	0.0016	Rf	92
Chromaticity (x, y)	x=0.4576 y=0.4145	Rcs,h1(%)	-5
Chromaticity (u', v')	u'=0.2593 v'=0.5285		

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	2891
Luminous Efficacy (lm/W)	77.42

Spectral Power Distribution & Chromaticity Diagram



Special Color Rendering Indices

R1 =97	R2 =96	R3 =93	R4 =97	R5 =95	R6 =96	R7 =95	
R8 =89	R9 =71	R10=87	R11=97	R12=79	R13=96	R14=94	R15=93

TM30

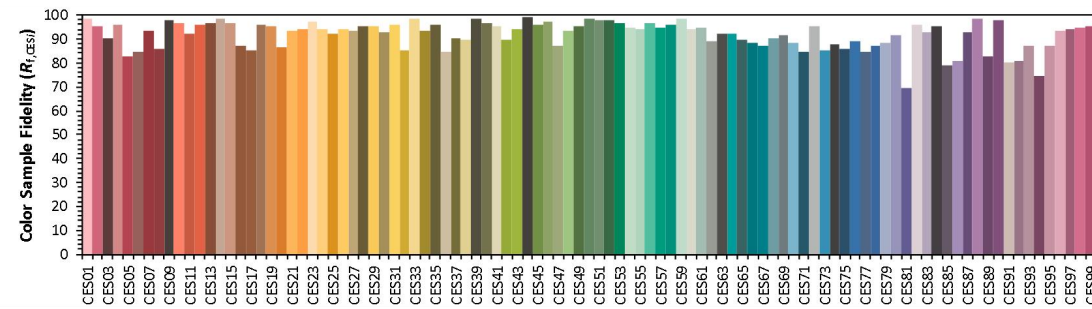
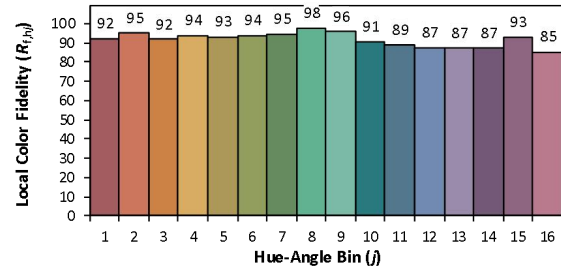
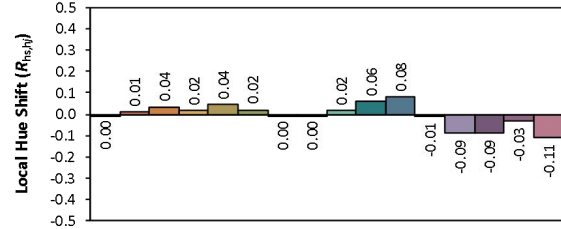
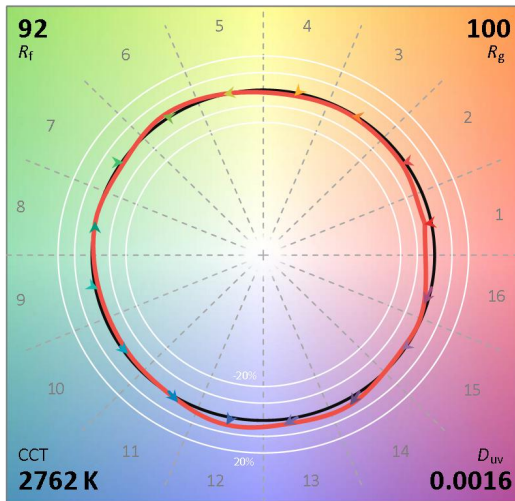
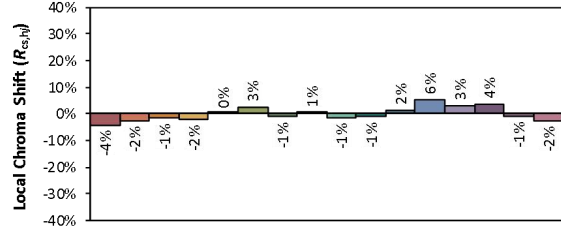
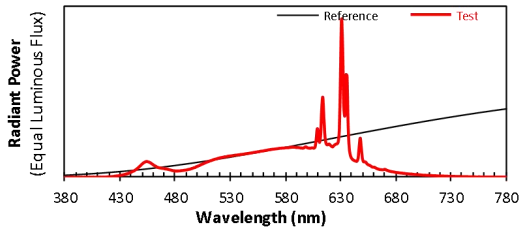
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-xx90RC35xxxxx

Manufacturer: RAB Lighting INC.

Date: 2024-08-16

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



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

x 0.4576
 y 0.4144
 u' 0.2593
 v' 0.5285

CIE 13.3-1995
(CRI)

R_a 95
 R_g 71

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

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD240728 NB-L1	120.0	60	0.3357	37.13	0.9217	41.22

Chromaticity Measurement - Sphere-Spectroradiometer

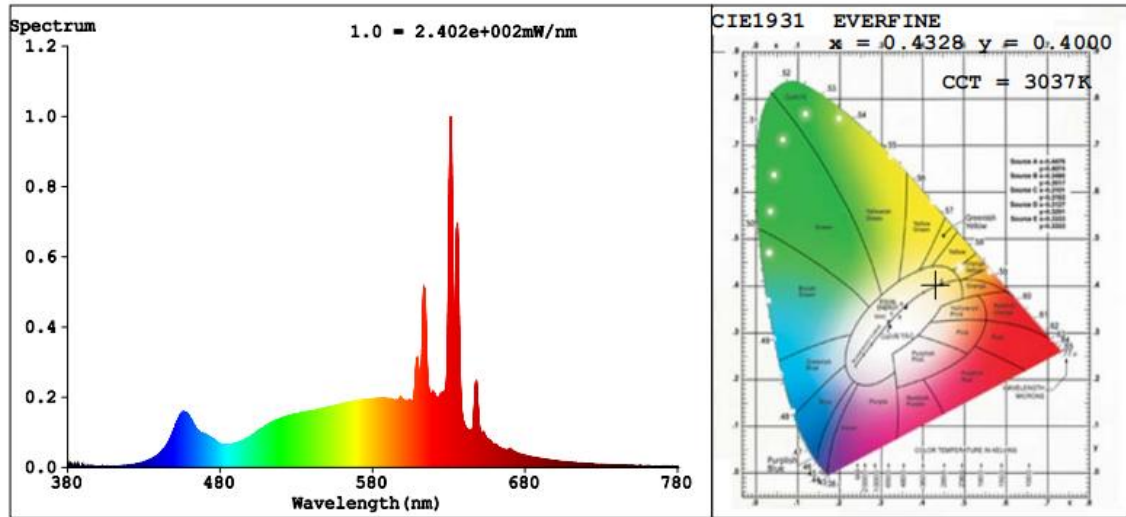
Method(Self-absorption:1.2007) (4π geometry):

Parameter	Result	Parameter	Result
Test Voltage (V)	120	Color Rendering Index (CRI)	96.7
Frequency (Hz)	60	R9	81
CCT (K)	3037	Rg	101
Duv	-0.0011	Rf	92
Chromaticity (x, y)	x=0.4328 y=0.4000	Rcs,h1(%)	-4
Chromaticity (u', v')	u'=0.2497 v'=0.5191		

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	2920
Luminous Efficacy (lm/W)	78.64

Spectral Power Distribution & Chromaticity Diagram



Special Color Rendering Indices

R1 =99	R2 =99	R3 =96	R4 =98	R5 =98	R6 =96	R7 =95	
R8 =92	R9 =81	R10=94	R11=98	R12=80	R13=100	R14=96	R15=97

TM30

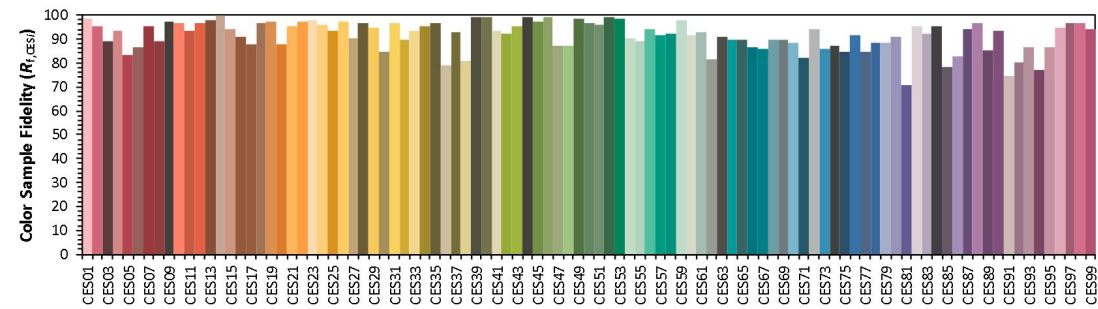
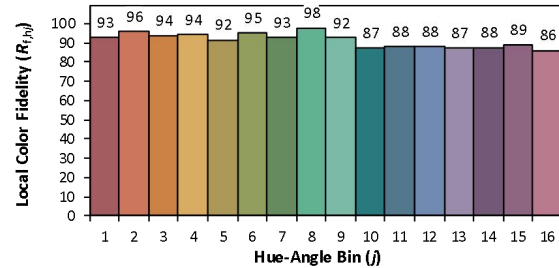
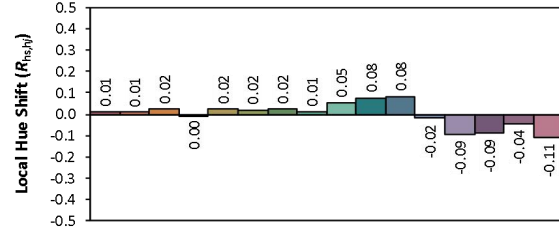
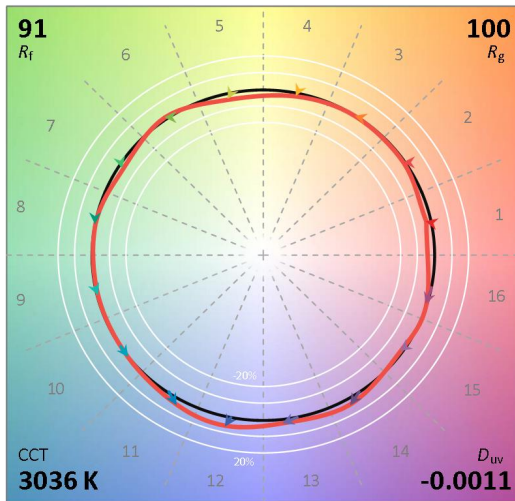
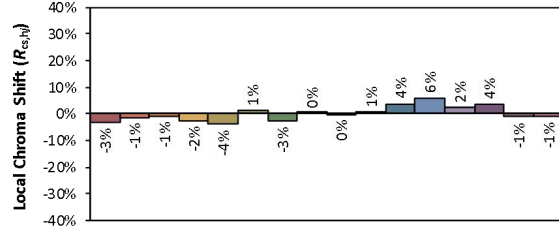
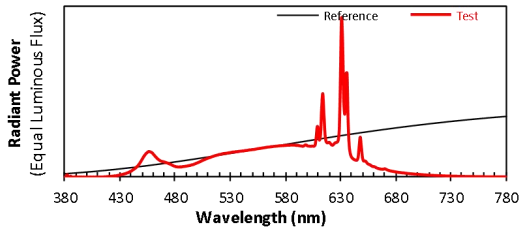
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-xx90RC35xxxxx

Manufacturer: RAB Lighting INC.

Date: 2024-08-16

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



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

x 0.4328
 y 0.3999
 u' 0.2497
 v' 0.5191

CIE 13.3-1995
(CRI)

R_a 97
 R_g 81

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

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD240728 NB-L1	120.0	60	0.3326	36.75	0.9208	41.28

Chromaticity Measurement - Sphere-Spectroradiometer

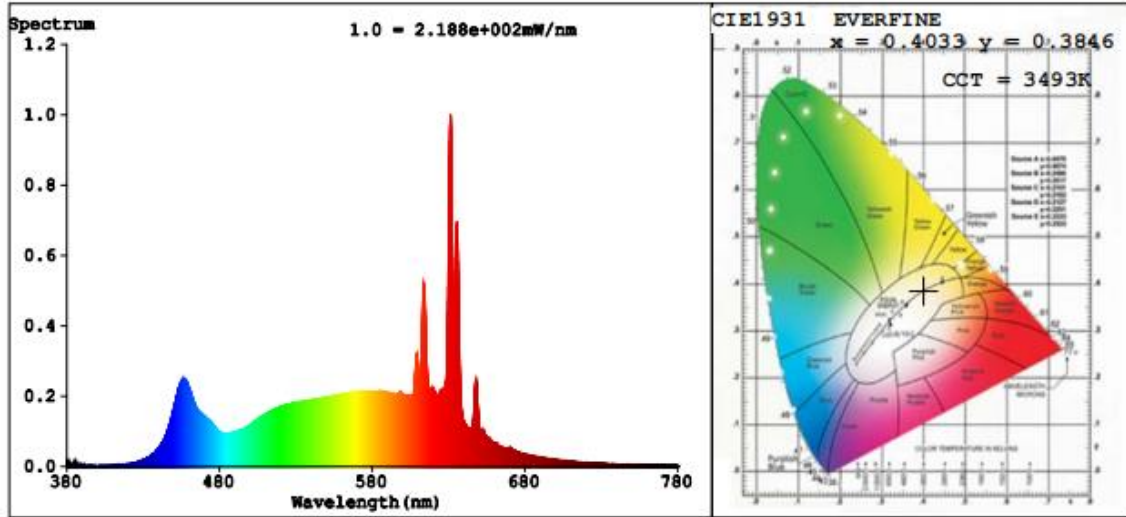
Method(Self-absorption:1.2005) (4π geometry):

Parameter	Result	Parameter	Result
Test Voltage (V)	120	Color Rendering Index (CRI)	96.7
Frequency (Hz)	60	R9	89
CCT (K)	3493	Rg	101
Duv	-0.0023	Rf	92
Chromaticity (x, y)	x=0.4033 y=0.3846	Rcs,h1(%)	-3
Chromaticity (u', v')	u'=0.2370 v'=0.5084		

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	2986
Luminous Efficacy (lm/W)	81.25

Spectral Power Distribution & Chromaticity Diagram



Special Color Rendering Indices

R1 =98	R2 =99	R3 =97	R4 =98	R5 =97	R6 =95	R7 =95	
R8 =95	R9 =89	R10=98	R11=98	R12=76	R13=98	R14=97	R15=98

TM30

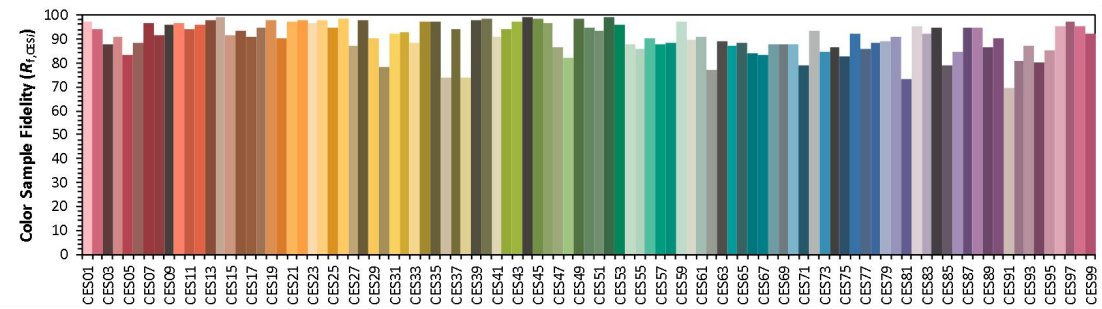
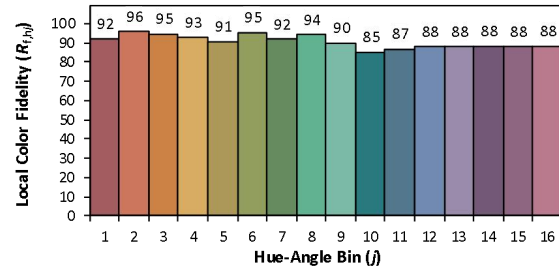
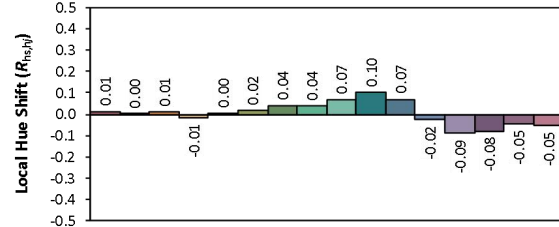
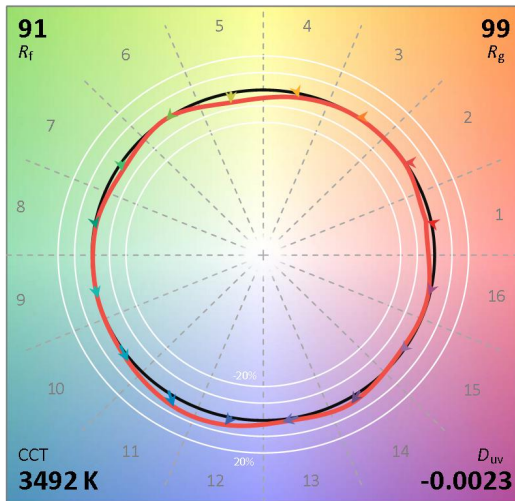
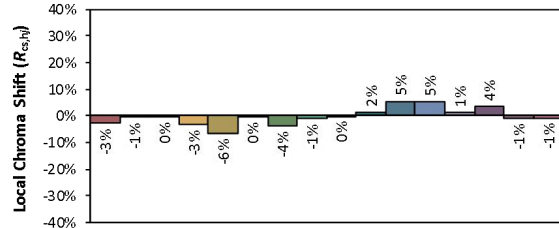
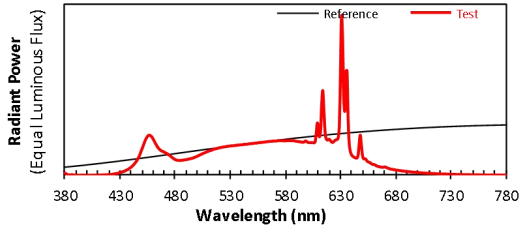
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-xx90RC35xxxxx

Manufacturer: RAB Lighting INC.

Date: 2024-08-16

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



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

x 0.4033
 y 0.3844
 u' 0.2370
 v' 0.5083

CIE 13.3-1995
(CRI)

R_a 97
 R_g 89

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

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD240728 NB-L1	120.0	60	0.3299	36.49	0.9218	41.21

Chromaticity Measurement - Sphere-Spectroradiometer

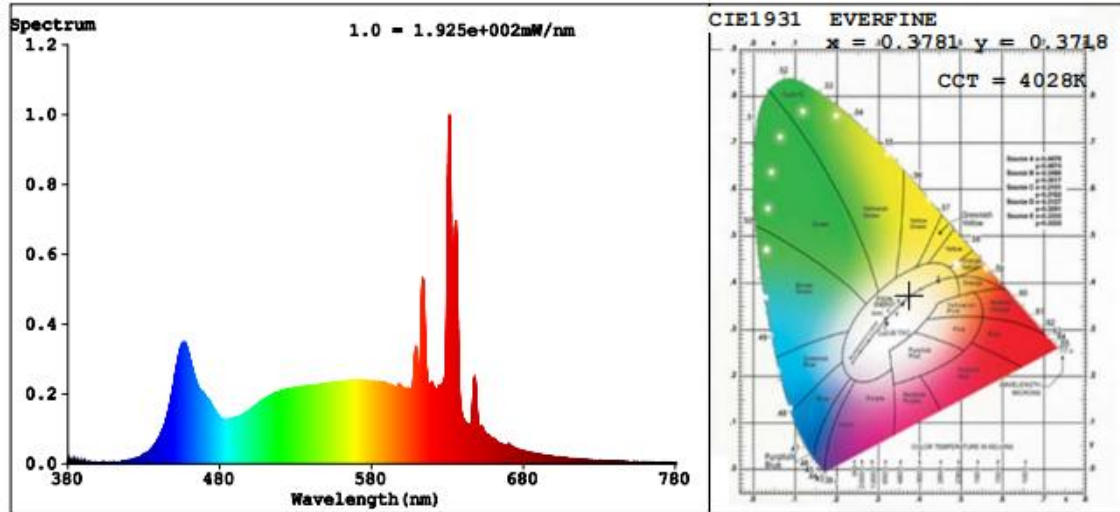
Method(Self-absorption:1.2008) (4π geometry):

Parameter	Result	Parameter	Result
Test Voltage (V)	120	Color Rendering Index (CRI)	96.3
Frequency (Hz)	60	R9	92
CCT (K)	4028	Rg	100
Duv	-0.0017	Rf	91
Chromaticity (x, y)	x=0.3781 y=0.3718	Rcs,h1(%)	-3
Chromaticity (u', v')	u'=0.2255 v'=0.4990		

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	2985
Luminous Efficacy (lm/W)	81.80

Spectral Power Distribution & Chromaticity Diagram



Special Color Rendering Indices

R1 =98	R2 =99	R3 =98	R4 =97	R5 =96	R6 =95	R7 =95	
R8 =95	R9 =92	R10=99	R11=99	R12=72	R13=98	R14=97	R15=96

TM30

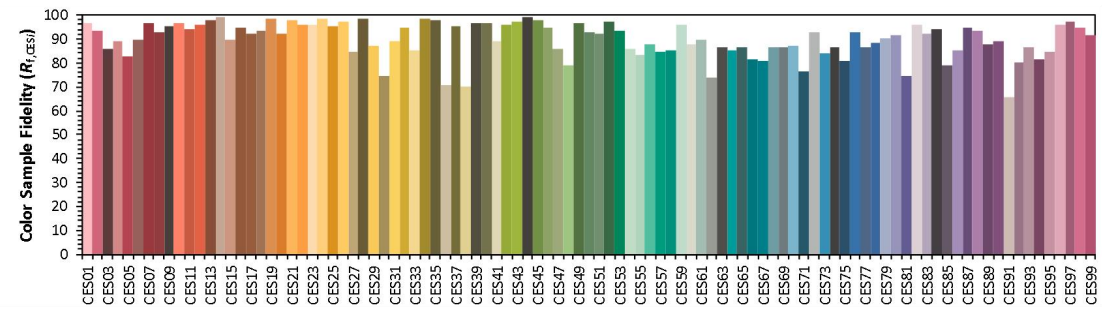
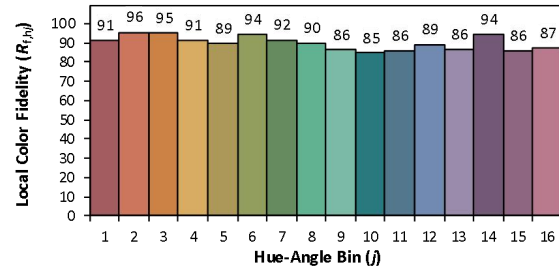
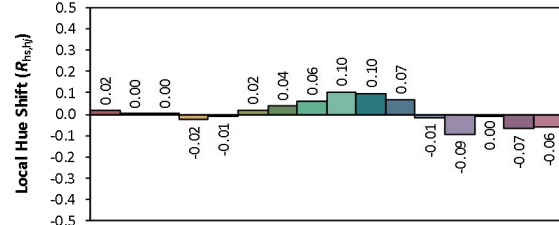
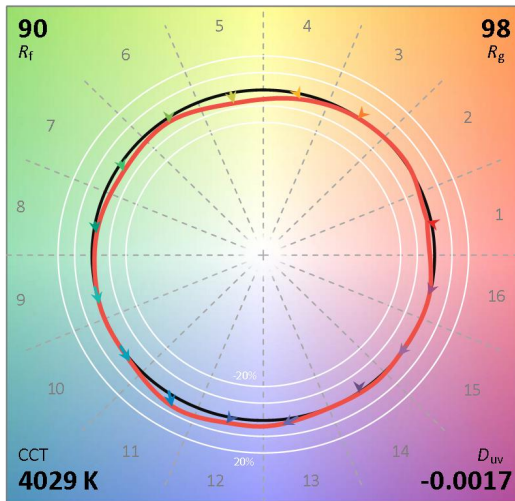
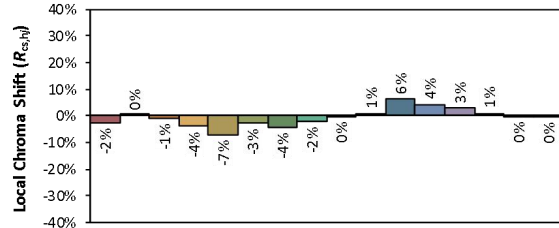
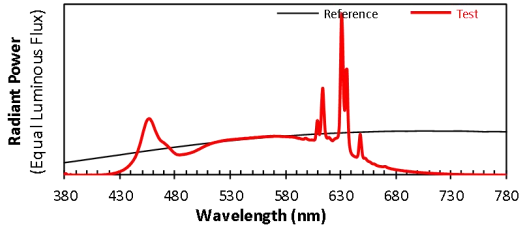
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-xx90RC35xxxxx

Manufacturer: RAB Lighting INC.

Date: 2024-08-16

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



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

x 0.3780
 y 0.3716
 u' 0.2256
 v' 0.4990

CIE 13.3-1995 (CRI)

R_a 96
 R_g 92

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

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD240728 NB-L1	120.0	60	0.3340	36.96	0.9222	41.19

Chromaticity Measurement - Sphere-Spectroradiometer

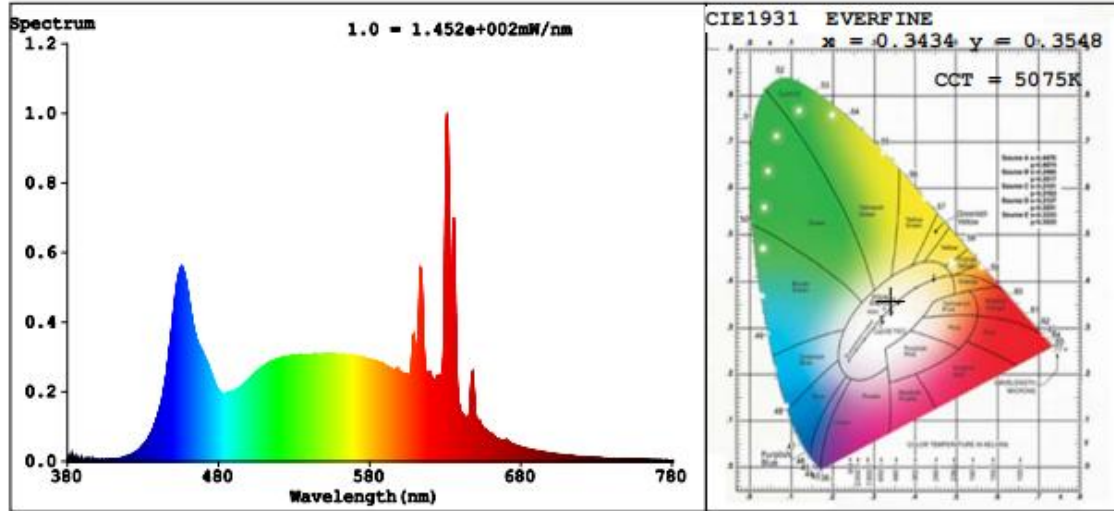
Method(Self-absorption:1.2001) (4π geometry):

Parameter	Result	Parameter	Result
Test Voltage (V)	120	Color Rendering Index (CRI)	95.4
Frequency (Hz)	60	R9	82
CCT (K)	5075	Rg	99
Duv	0.0023	Rf	91
Chromaticity (x, y)	x=0.3434 y=0.3548	Rcs,h1(%)	-4
Chromaticity (u', v')	u'=0.2091 v'=0.4859		

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	2893
Luminous Efficacy (lm/W)	78.27

Spectral Power Distribution & Chromaticity Diagram



Special Color Rendering Indices

R1 =97	R2 =99	R3 =97	R4 =94	R5 =95	R6 =95	R7 =94	
R8 =92	R9 =82	R10=95	R11=96	R12=71	R13=98	R14=98	R15=95

TM30

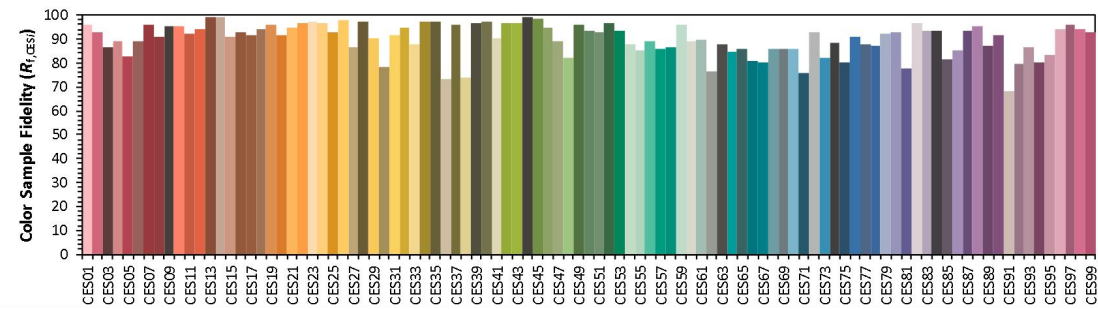
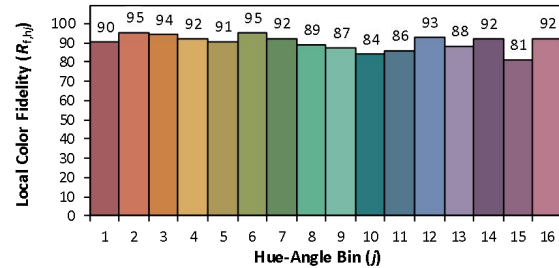
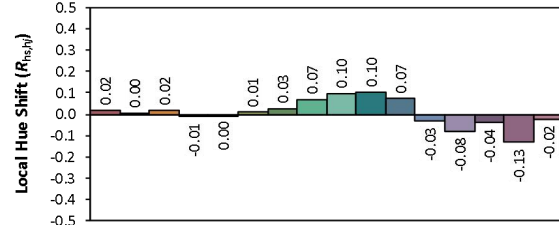
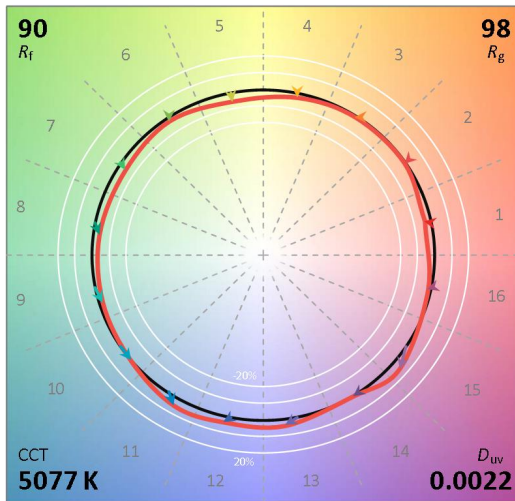
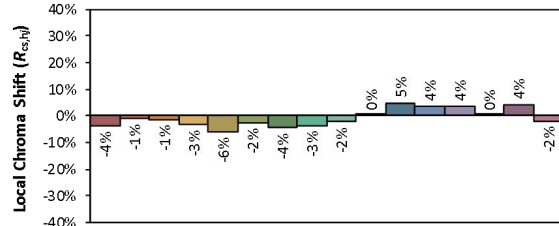
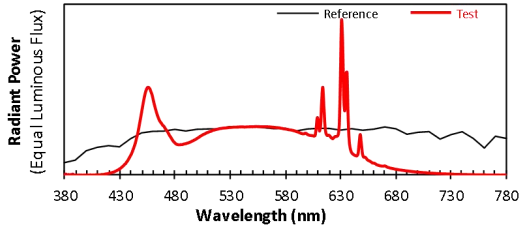
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-xx90RC35xxxxx

Manufacturer: RAB Lighting INC.

Date: 2024-08-16

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



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

x 0.3433
 y 0.3546
 u' 0.2091
 v' 0.4859

CIE 13.3-1995
(CRI)

R_a 95
 R_g 82

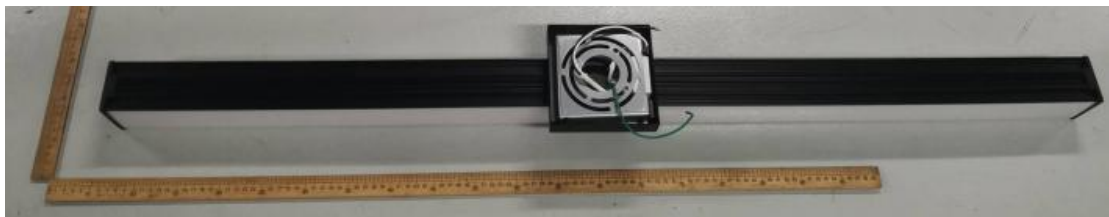
Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.0



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 *******