



LM-79-19 Test Report

For

RAB Lighting INC.

(Brand Name:RAB)

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

**Model name(s):
ENCT-36BN**

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,
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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	ENCT-36BN	
Remark	N/A	
Representative (Tested) Model	ENCT-36BN(mode:2700K) ENCT-36BN(mode:3000K) ENCT-36BN(mode:3500K) ENCT-36BN(mode:4000K) ENCT-36BN(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-G1	
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	ENCT-36BN(mode:2700K)	Total Operating Time(min)	75

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD241047 NB-G1	120.0	60.01	0.3443	37.48	0.9071	46.41

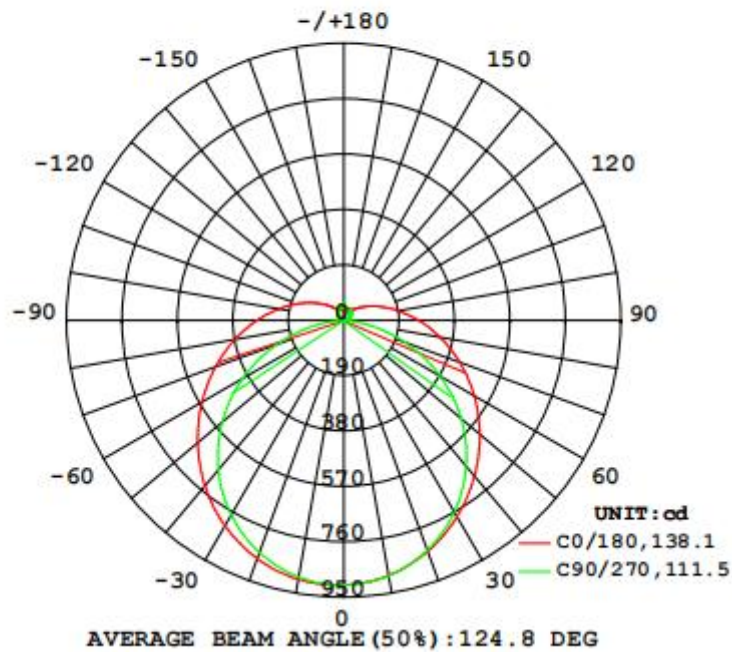
Photometric Measurement – Goniophotometer Method(Test Distance: 26.00m):

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	3513.4
Luminous Efficacy (lm/W)	93.73
Beam Angle (°)	124.8
Center Beam Candle Power (cd)	908



Zonal Lumen Tabulation

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	710.0	20.2%
0-40	1,171.1	33.3%
0-60	2,133.7	60.7%
60-90	935.6	26.6%
70-100	679.4	19.3%
90-120	318.0	9.1%
0-90	3,069.3	87.4%
90-180	443.9	12.6%
0-180	3,513.2	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	86.0	2.4%	90-100	148.8	4.2%
10-20	247.0	7.0%	100-110	101.5	2.9%
20-30	377.0	10.7%	110-120	67.7	1.9%
30-40	461.2	13.1%	120-130	44.0	1.3%
40-50	492.1	14.0%	130-140	30.1	0.9%
50-60	470.5	13.4%	140-150	21.9	0.6%
60-70	405.0	11.5%	150-160	16.1	0.5%
70-80	312.5	8.9%	160-170	10.2	0.3%
80-90	218.1	6.2%	170-180	3.5	0.1%

Photometric Data

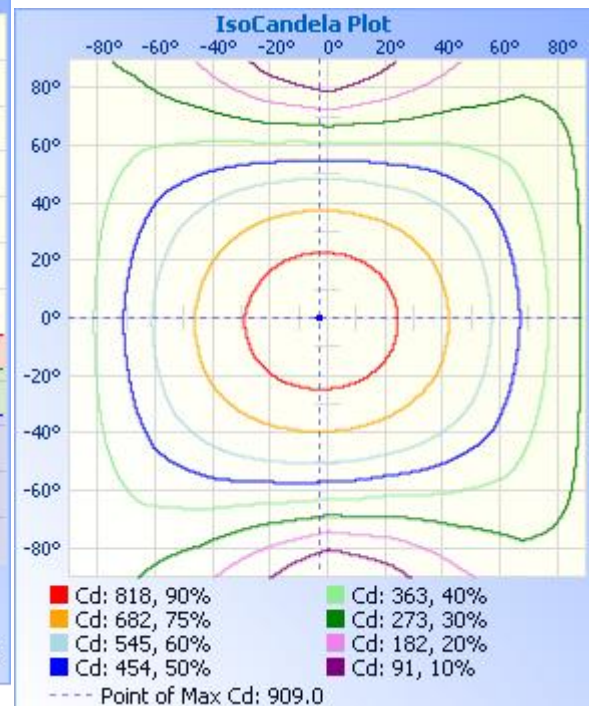
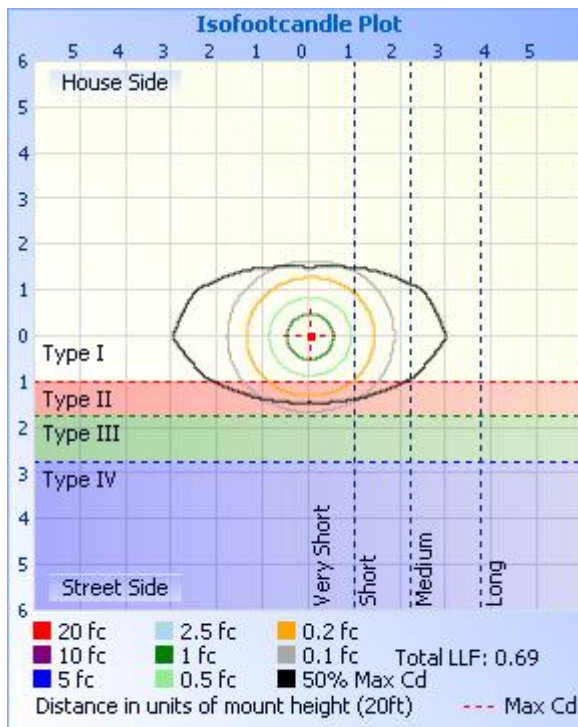
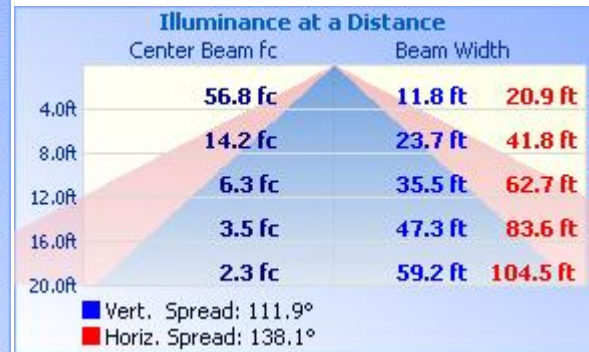
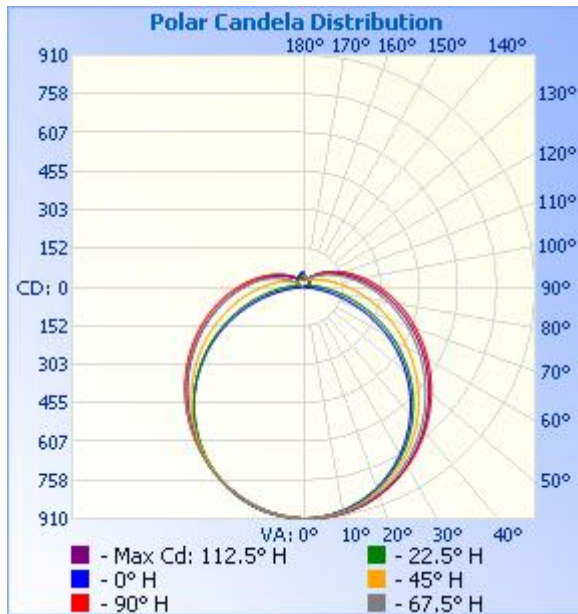




Table--1

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	908	908	908	908	908	908	908	908	908	908	908	908	908	908	908	908			
5	902	902	902	902	903	904	906	907	908	908	907	906	905	904	903	902			
10	888	888	888	888	890	892	896	899	902	902	899	896	894	892	890	889			
15	868	868	868	866	868	872	878	883	889	888	884	878	874	872	870	870			
20	843	842	840	837	839	844	853	862	870	867	861	853	848	844	844	845			
25	812	810	806	801	802	809	822	833	845	842	832	821	813	809	810	814			
30	777	773	766	758	759	768	784	800	814	810	798	782	772	768	771	779			
35	739	733	721	710	709	720	741	761	780	774	757	736	724	721	727	740			
40	698	690	673	656	653	667	692	719	741	733	711	685	669	667	678	696			
45	654	644	622	598	592	609	640	673	699	689	661	629	609	608	626	650			
50	609	597	568	535	526	545	584	626	654	643	609	568	544	545	570	602			
55	563	548	513	471	455	479	527	577	608	595	554	505	474	479	514	553			
60	516	499	458	405	380	409	468	527	562	547	499	438	401	411	456	503			
65	469	451	403	338	303	338	411	478	515	498	444	372	324	341	399	454			
70	423	404	350	274	224	269	355	429	468	450	390	306	245	272	344	406			
75	378	358	300	214	147	203	303	382	423	404	339	244	167	207	292	359			
80	335	315	254	161	77.2	145	254	338	379	359	291	187	93.7	149	244	314			
85	295	275	212	117	23.8	98.5	211	296	337	316	247	139	33.7	101	200	273			
90	257	237	176	83.4	2.13	65.0	175	257	297	277	207	101	3.15	65.2	163	235			
95	222	203	145	59.8	1.72	44.1	143	222	261	241	173	74.0	1.28	42.6	132	200			
100	191	173	119	44.3	4.87	31.9	118	191	227	208	144	55.0	3.76	30.0	106	167			
105	162	147	97.7	35.0	8.85	25.7	96.7	163	197	178	120	42.8	7.58	23.6	85.8	133			
110	138	124	80.8	29.7	13.3	22.9	80.4	139	169	152	99.6	35.2	11.9	21.1	70.0	99.5			
115	116	104	67.3	27.1	17.7	21.9	67.2	117	144	129	83.0	30.6	16.2	20.7	56.8	65.9			
120	97.2	86.9	56.9	26.0	21.9	22.2	57.1	98.8	121	108	69.5	28.0	20.4	22.3	43.5	32.2			
125	81.3	72.9	49.1	26.8	26.0	24.3	49.2	83.0	102	90.9	58.8	27.1	24.4	24.6	30.3	0.00			
130	68.2	61.6	43.2	28.9	29.7	26.9	43.2	69.9	85.1	76.1	50.6	28.1	28.2	26.8	17.0	0.00			
135	57.5	52.5	39.1	31.5	33.1	29.7	38.8	59.1	70.8	63.9	44.4	30.1	31.7	29.1	3.75	0.00			
140	49.2	45.6	37.8	33.7	36.4	32.4	36.7	50.5	59.1	54.3	40.1	32.4	35.0	31.3	0.00	0.00			
145	43.4	41.7	37.9	36.0	39.3	35.1	36.6	43.9	49.9	46.9	38.7	34.9	38.3	33.5	0.00	0.00			
150	41.5	40.4	38.6	37.8	40.1	37.3	37.4	40.9	43.4	42.3	38.9	37.3	41.6	35.7	0.00	0.00			
155	41.2	40.5	40.0	35.8	38.9	38.1	39.0	40.0	40.9	40.6	39.2	39.8	44.9	37.9	0.00	0.00			
160	41.9	41.6	40.6	33.7	36.7	38.6	40.7	40.3	39.9	40.1	39.4	42.3	48.2	40.1	0.00	0.00			
165	43.4	42.2	38.3	35.4	37.2	40.6	41.1	41.6	40.9	40.7	39.7	44.7	51.5	42.3	0.00	0.00			
170	45.1	38.6	34.5	39.0	39.5	42.5	41.3	41.8	42.5	42.2	39.9	47.2	54.8	44.6	0.00	0.00			
175	33.5	37.8	39.3	41.5	41.3	41.8	42.0	39.6	34.6	43.7	40.2	49.7	58.1	46.8	0.00	0.00			
180	37.6	36.0	41.8	43.1	43.3	42.8	41.9	38.4	37.8	45.2	40.4	52.1	61.4	49.0	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	ENCT-36BN(mode:2700K)	Total Operating Time(min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD241047 NB-G1	120.0	60.01	0.3460	37.52	0.9036	46.53

Chromaticity Measurement - Sphere-Spectroradiometer

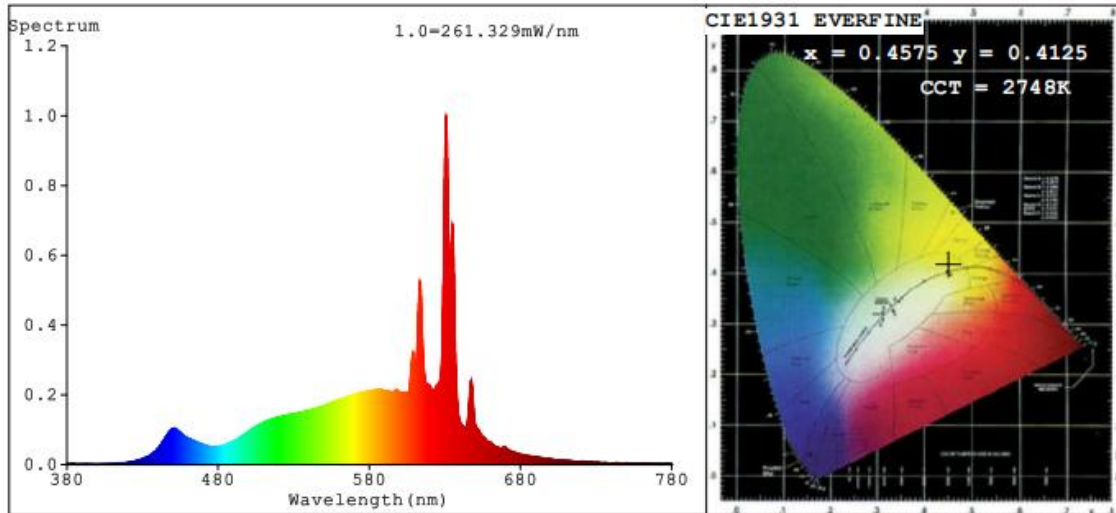
Method(Self-absorption:1.0837)(4π geometry):

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	2748
Duv	0.0009
Chromaticity (x, y)	x=0.4575 y=0.4125
Chromaticity (u', v')	u'=0.2601 v'=0.5277
Color Rendering Index (CRI)	95.7
R9	70
Rg	100
Rf	92
Rcs,h1	-5

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	3532
Luminous Efficacy (lm/W)	94.14

Spectral Power Distribution & Chromaticity Diagram



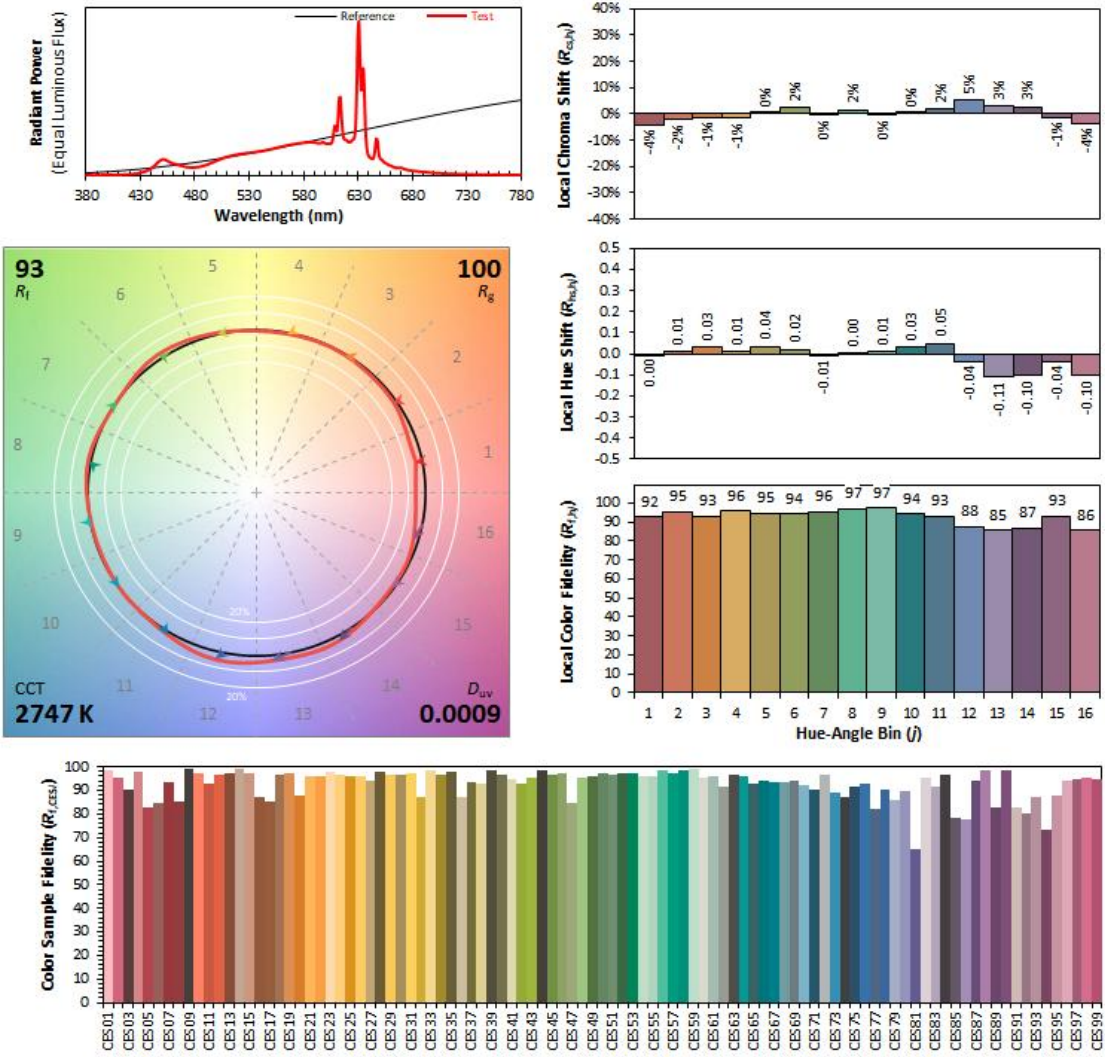
R1 =98	R2 =98	R3 =96	R4 =98	R5 =97	R6 =97	R7 =94	
R8 =88	R9 =70	R10=92	R11=97	R12=87	R13=97	R14=96	R15=93



TM30

ANSI/IES TM-30-18 Color Rendition Report

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



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

x	0.4576	CIE 13.3-1995 (CRI)
y	0.4124	
u'	0.2602	
v'	0.5277	
		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	ENCT-36BN(mode:3000K)	Total Operating Time(min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD241047 NB-G1	120.0	60.01	0.3452	37.45	0.9041	46.49

Chromaticity Measurement - Sphere-Spectroradiometer

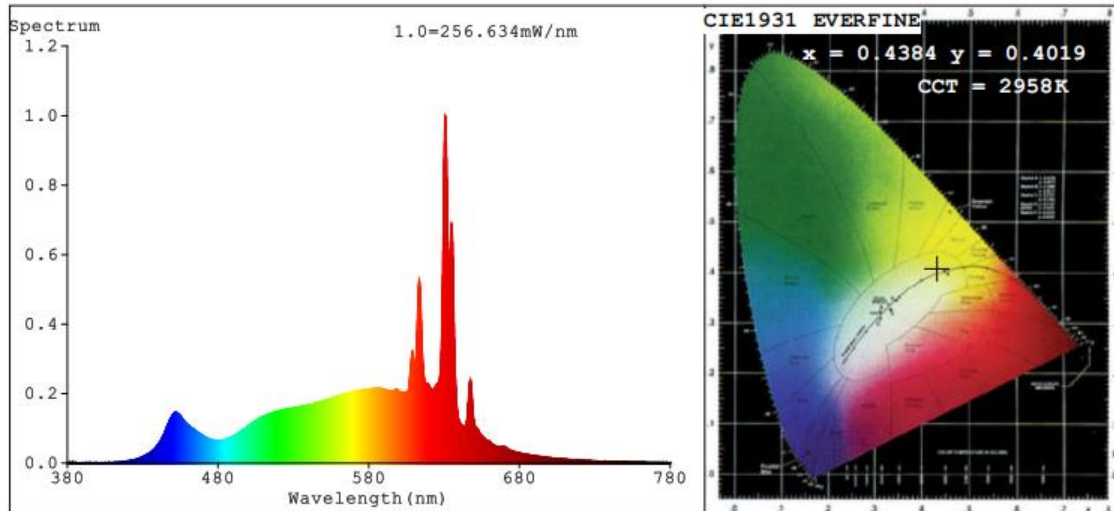
Method(Self-absorption:1.0839)(4π geometry):

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	2958
Duv	-0.0011
Chromaticity (x, y)	x=0.4384 y=0.4019
Chromaticity (u', v')	u'=0.2525 v'=0.5208
Color Rendering Index (CRI)	96.9
R9	80
Rg	102
Rf	93
Rcs,h1	-4

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	3604
Luminous Efficacy (lm/W)	96.23

Spectral Power Distribution & Chromaticity Diagram



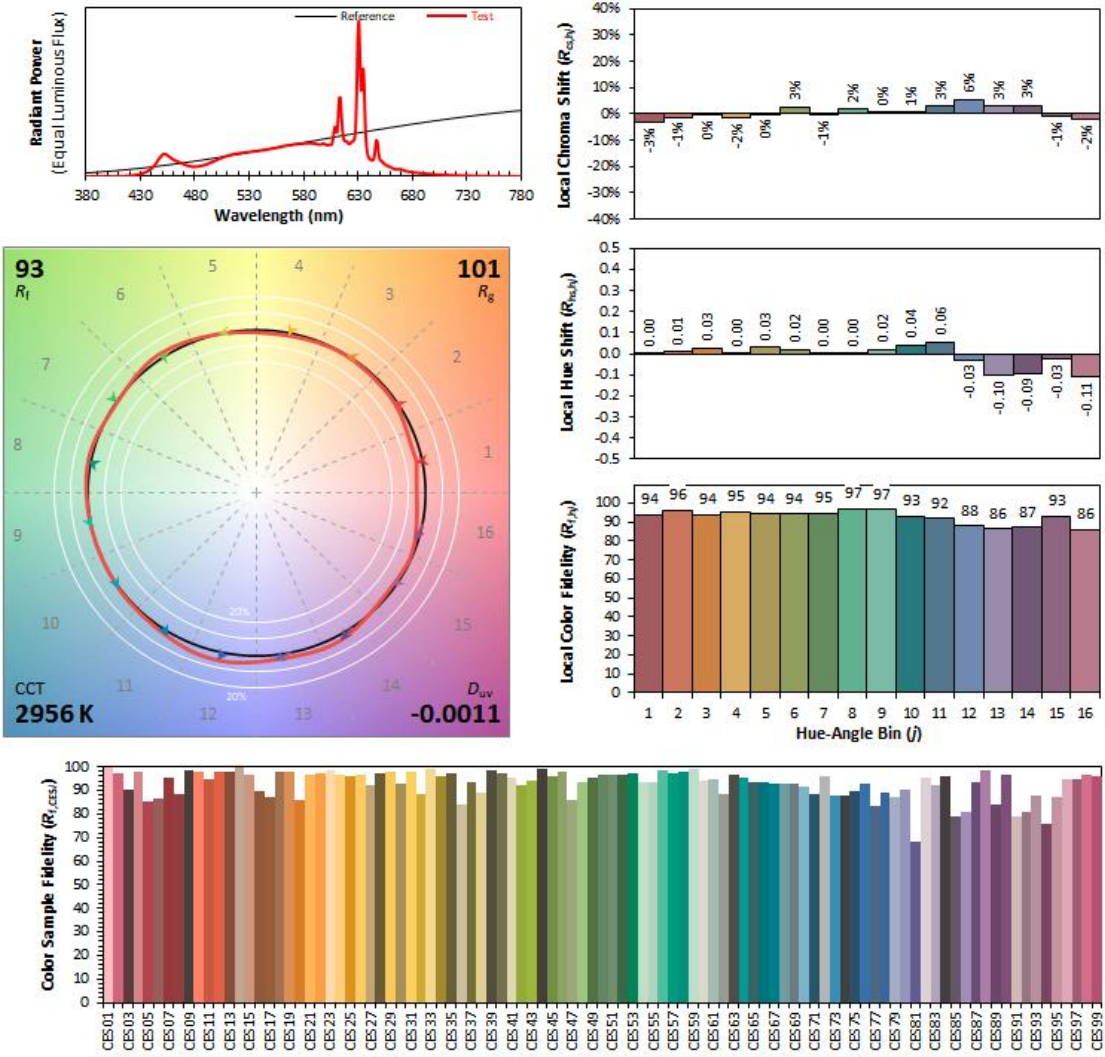
R1 =99	R2 =99	R3 =96	R4 =98	R5 =99	R6 =96	R7 =95		
R8 =92	R9 =80	R10=96	R11=96	R12=86	R13=100	R14=96	R15=97	



TM30

ANSI/IES TM-30-18 Color Rendition Report

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



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

x	0.4384	CIE 13.3-1995 (CRI)	
y	0.4018		
u'	0.2525		
v'	0.5207		
		R_a	97
		R_g	80

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	ENCT-36BN(mode:3500K)	Total Operating Time(min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD241047 NB-G1	120.0	60.01	0.3414	37.22	0.9086	46.32

Chromaticity Measurement - Sphere-Spectroradiometer

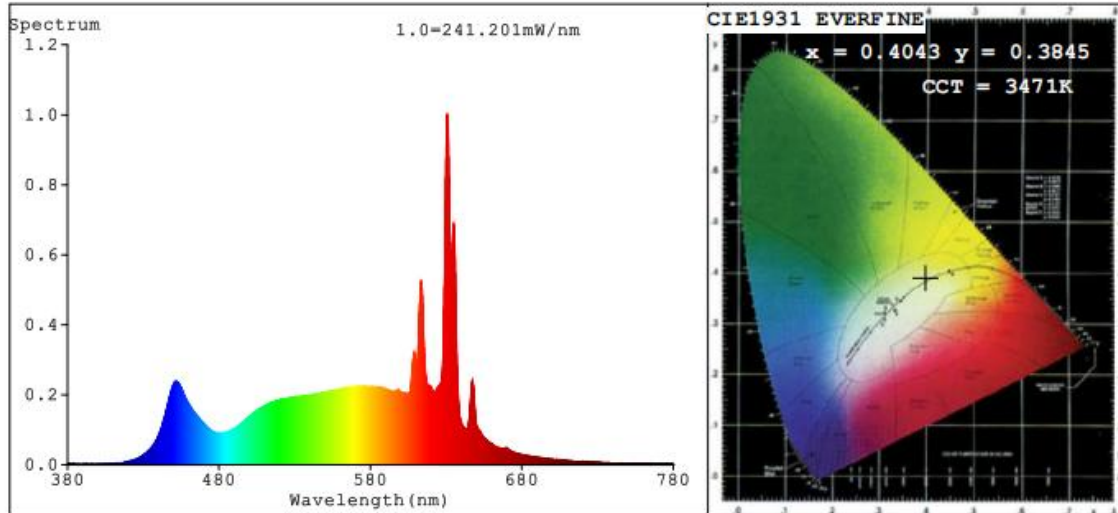
Method(Self-absorption:1.0836)(4π geometry):

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3471
Duv	-0.0025
Chromaticity (x, y)	x=0.4043 y=0.3845
Chromaticity (u', v')	u'=0.2376 v'=0.5085
Color Rendering Index (CRI)	97.1
R9	93
Rg	103
Rf	93
Rcs,h1	-2

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	3720
Luminous Efficacy (lm/W)	99.95

Spectral Power Distribution & Chromaticity Diagram



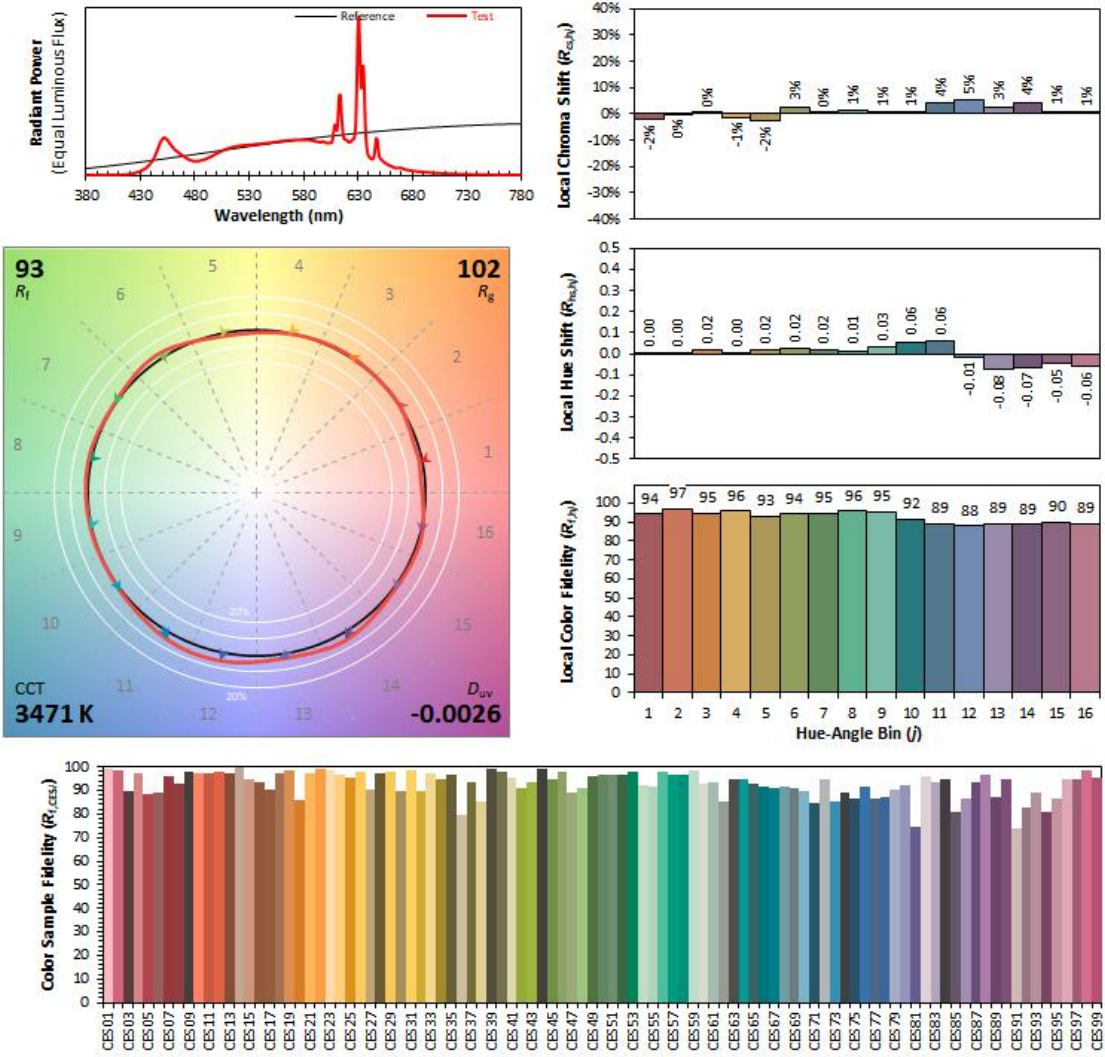
R1 =97	R2 =99	R3 =95	R4 =97	R5 =98	R6 =95	R7 =98		
R8 =98	R9 =93	R10=97	R11=94	R12=82	R13=98	R14=96	R15=98	



TM30

ANSI/IES TM-30-18 Color Rendition Report

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



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

x	0.4042	CIE 13.3-1995 (CRI) R_a 97 R_g 94
y	0.3844	
u'	0.2377	
v'	0.5084	

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	ENCT-36BN(mode:4000K)	Total Operating Time(min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD241047 NB-G1	120.0	60.01	0.3409	37.19	0.9091	46.29

Chromaticity Measurement - Sphere-Spectroradiometer

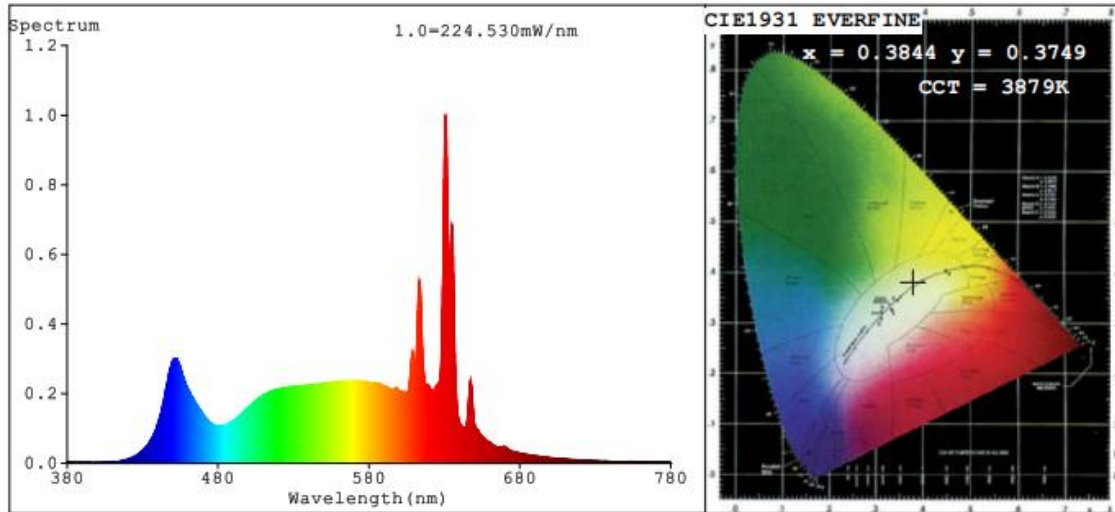
Method(Self-absorption:1.0836)(4π geometry):

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3879
Duv	-0.0020
Chromaticity (x, y)	x=0.3844 y=0.3749
Chromaticity (u', v')	u'=0.2285 v'=0.5013
Color Rendering Index (CRI)	97.3
R9	97
Rg	103
Rf	93
Rcs,h1	-2

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	3726
Luminous Efficacy (lm/W)	100.19

Spectral Power Distribution & Chromaticity Diagram



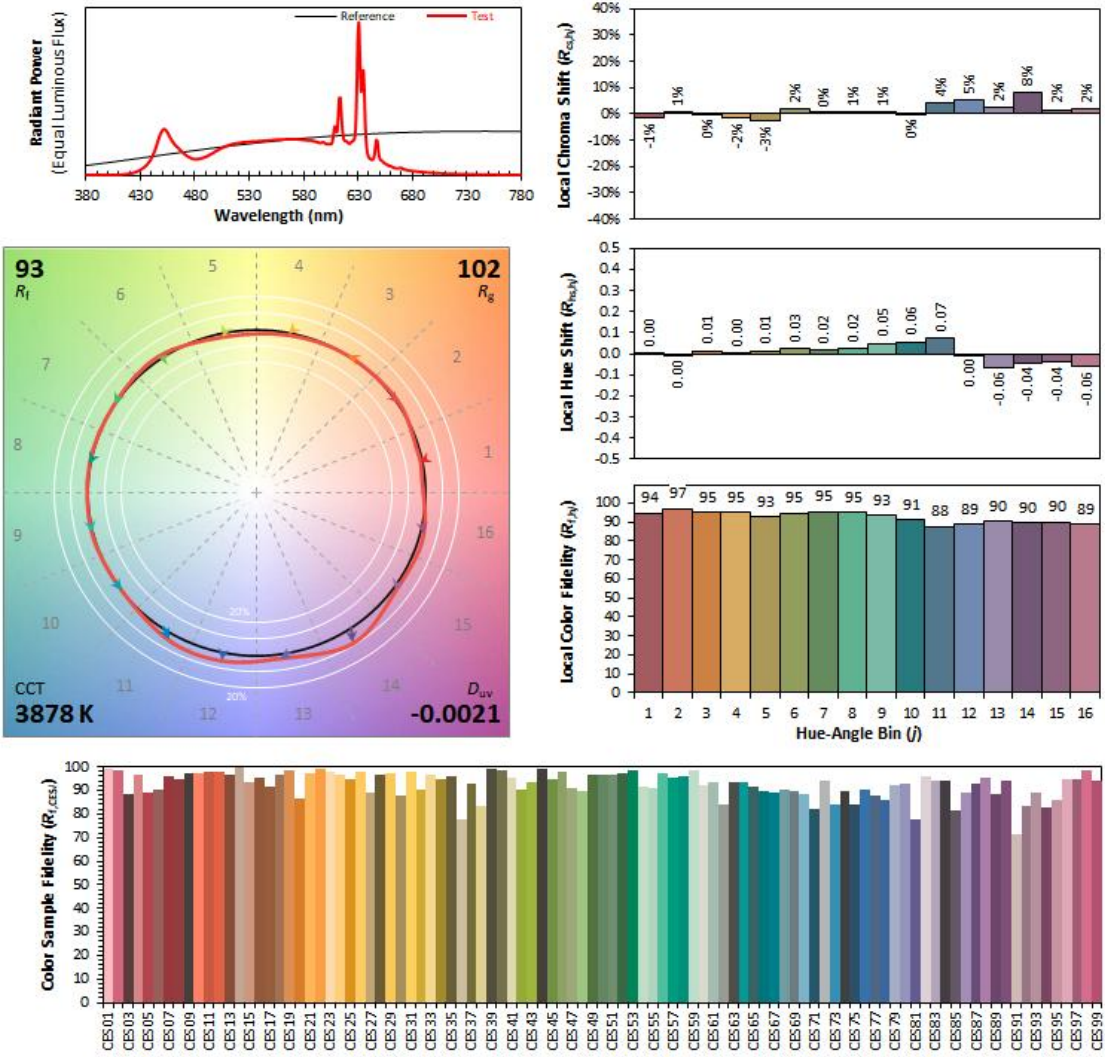
R1 =97	R2 =99	R3 =94	R4 =97	R5 =98	R6 =96	R7 =99		
R8 =99	R9 =97	R10=96	R11=94	R12=78	R13=98	R14=95	R15=97	



TM30

ANSI/IES TM-30-18 Color Rendition Report

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



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

x	0.3844	CIE 13.3-1995 (CRI)
y	0.3747	
u'	0.2285	
v'	0.5013	
		R_a 97
		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	ENCT-36BN(mode:5000K)	Total Operating Time(min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD241047 NB-G1	120.0	60.01	0.3458	37.47	0.9030	46.55

Chromaticity Measurement - Sphere-Spectroradiometer

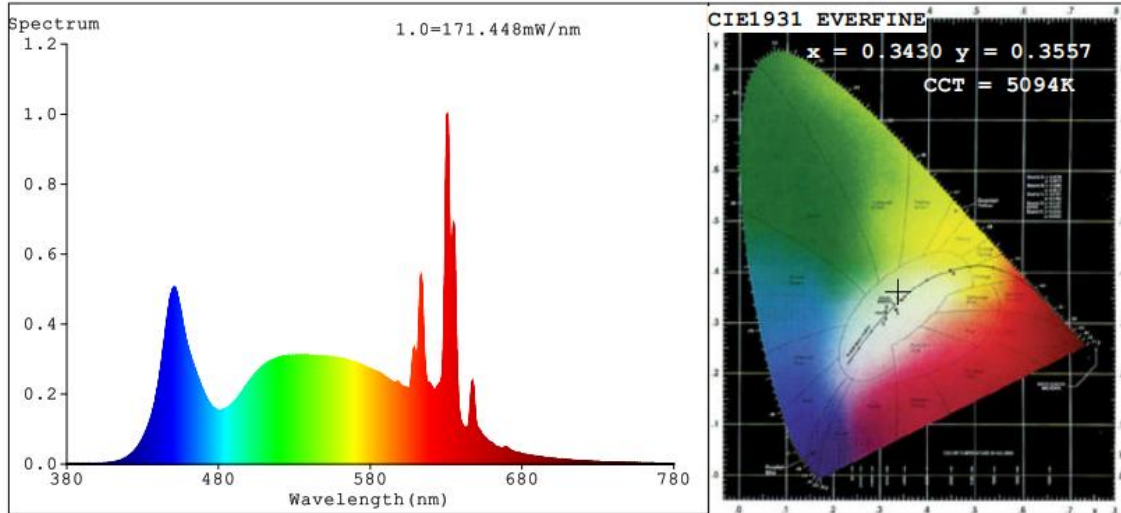
Method(Self-absorption:1.0834)(4π geometry):

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	5094
Duv	0.0029
Chromaticity (x, y)	x=0.3430 y=0.3557
Chromaticity (u', v')	u'=0.2084 v'=0.4863
Color Rendering Index (CRI)	95.6
R9	92
Rg	102
Rf	93
Rcs,h1	-2

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	3567
Luminous Efficacy (lm/W)	95.20

Spectral Power Distribution & Chromaticity Diagram



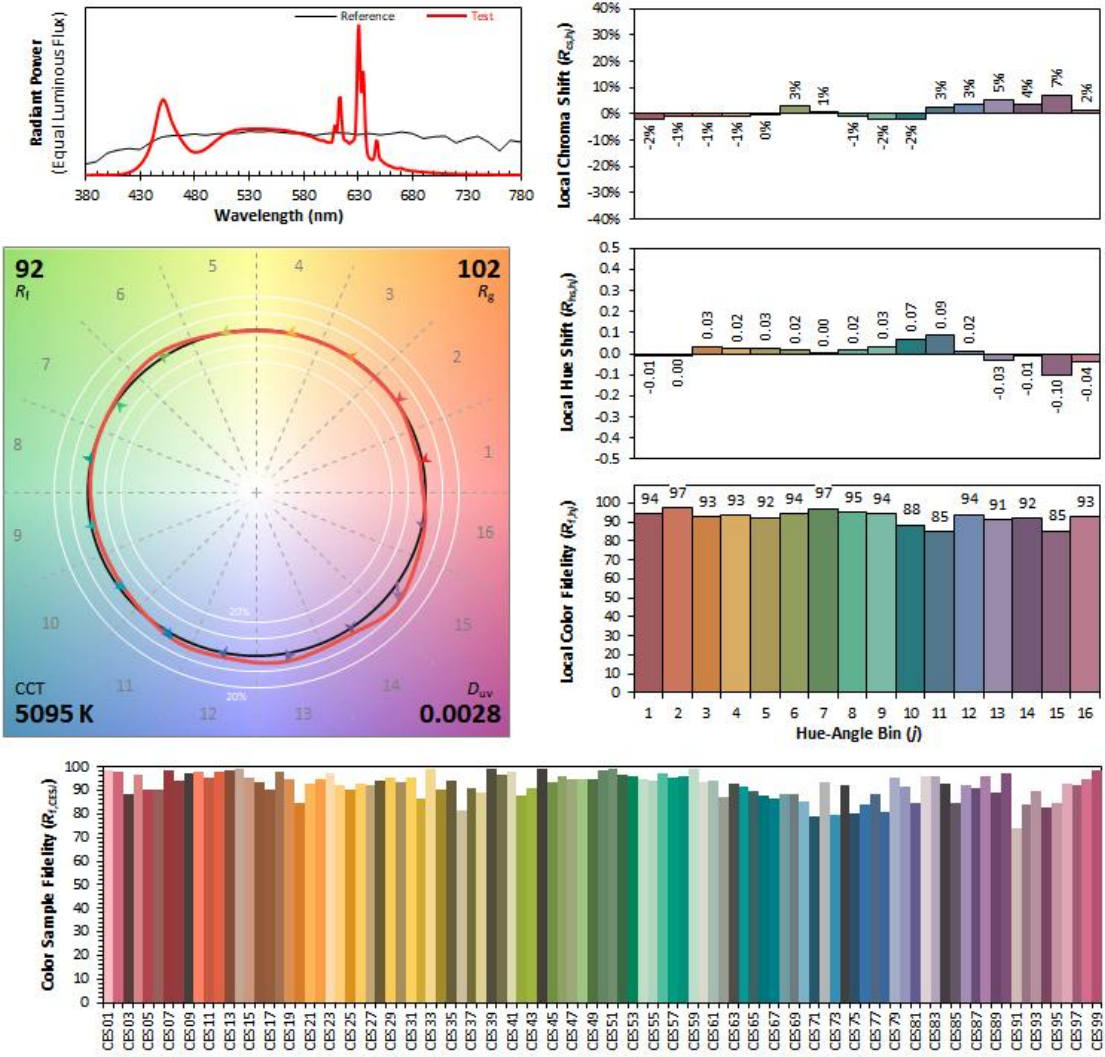
R1 =98	R2 =95	R3 =90	R4 =96	R5 =97	R6 =93	R7 =97		
R8 =98	R9 =92	R10=87	R11=94	R12=74	R13=97	R14=94	R15=98	



TM30

ANSI/IES TM-30-18 Color Rendition Report

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



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

x	0.3429	CIE 13.3-1995 (CRI) R_a 96 R_g 93
y	0.3555	
u'	0.2085	
v'	0.4862	

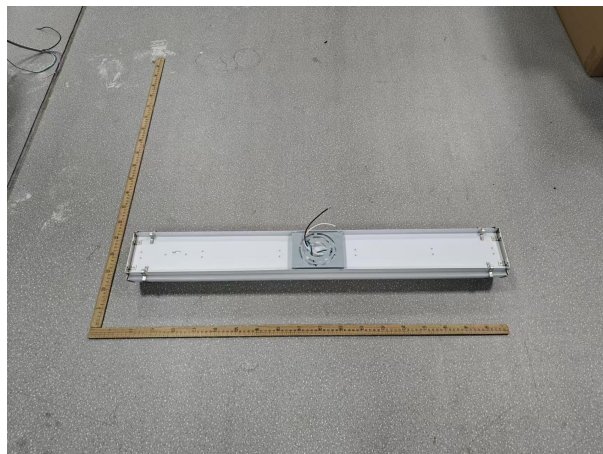
Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.



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 *****