LM-79-08 Test Report

For

RAB LIGHTING INC

(Brand Name: N/A)

170 Ludlow Ave,PO BOX 970,Northvale, NJ 07647-2305 USA

Model name(s): DLS0146(SUMO-R-19/D10)

Report Type:	Testing and Report According to IES LM-79-2008
Type of Luminaire:	Downlights
Report Date:	2022-07-28

Prepared By:

Test & Report By:

Engineer: Sun Fangfang

Review By:

Manager: Huang Qichong

1.1 Rated Values:	
Rated Voltage / Frequency	120V-277Vac, 60 Hz
Nominal Power	30.0 W
Rated Initial Lamp Lumen	2250 lm
Declared CCT	2700K/3000K/3500K/4000K/5000K

1.2 Test Specifications:

Test item	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	1. IES LM-79-2008 Electrical and Photometric 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

1.3 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°C ±1°C, measured at a point not more than 1 m from the sample and at the same height as the sample. 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 25ºC ±1ºC. 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 25ºC ±1ºC. 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.

2.1.1 Electrical, Photometric and Chromaticity Measurements

Test date	2022-07-28	Test Ambient:	25.3 ºC
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLS0146(SUMO-R-19/D10)	2700K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202207210031	120.0	60	0.247	29.50	0.996

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	2806
Duv	0.0007
Chromaticity (x, y)	x=0.4526 y=0.4107
Chromaticity (u', v')	u'=0.2578 v'=0.5263
Color Rendering Index (CRI)	92.9
R9	57

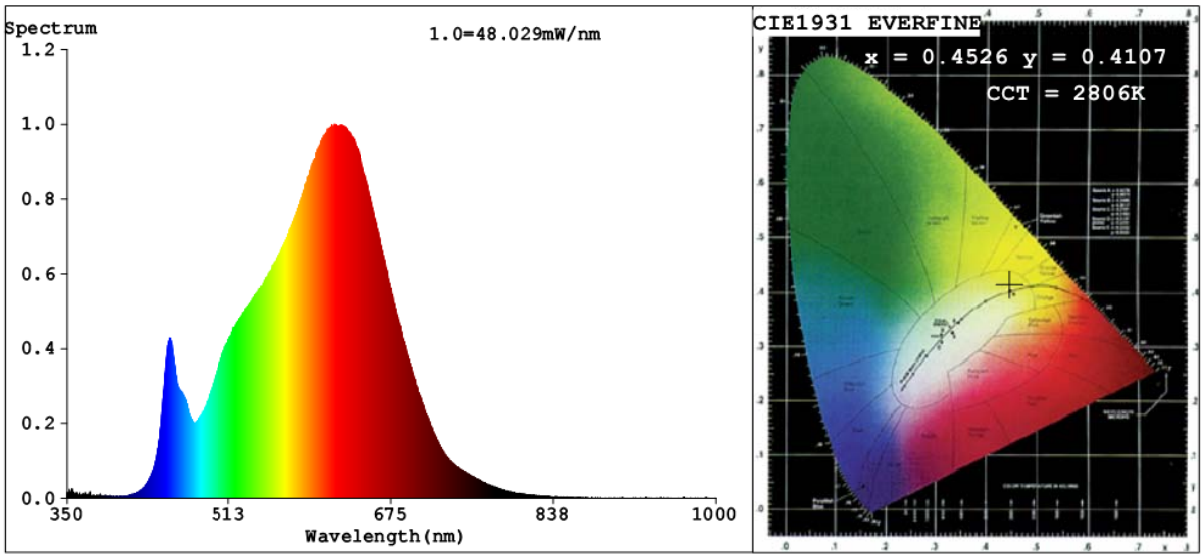
Special Color Rendering Indices			
R1	93	R9	57
R2	97	R10	92
R3	99	R11	95
R4	93	R12	82
R5	93	R13	94
R6	97	R14	99
R7	91	R15	88
R8	80	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2281.2
Luminous Efficacy (lm/W)	77.33
Beam Angle (°)	114.3
Center Beam Candle Power (cd)	781.9

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	2260
Luminous Efficacy (lm/W)	76.68

Spectral Power Distribution & Chromaticity Diagram



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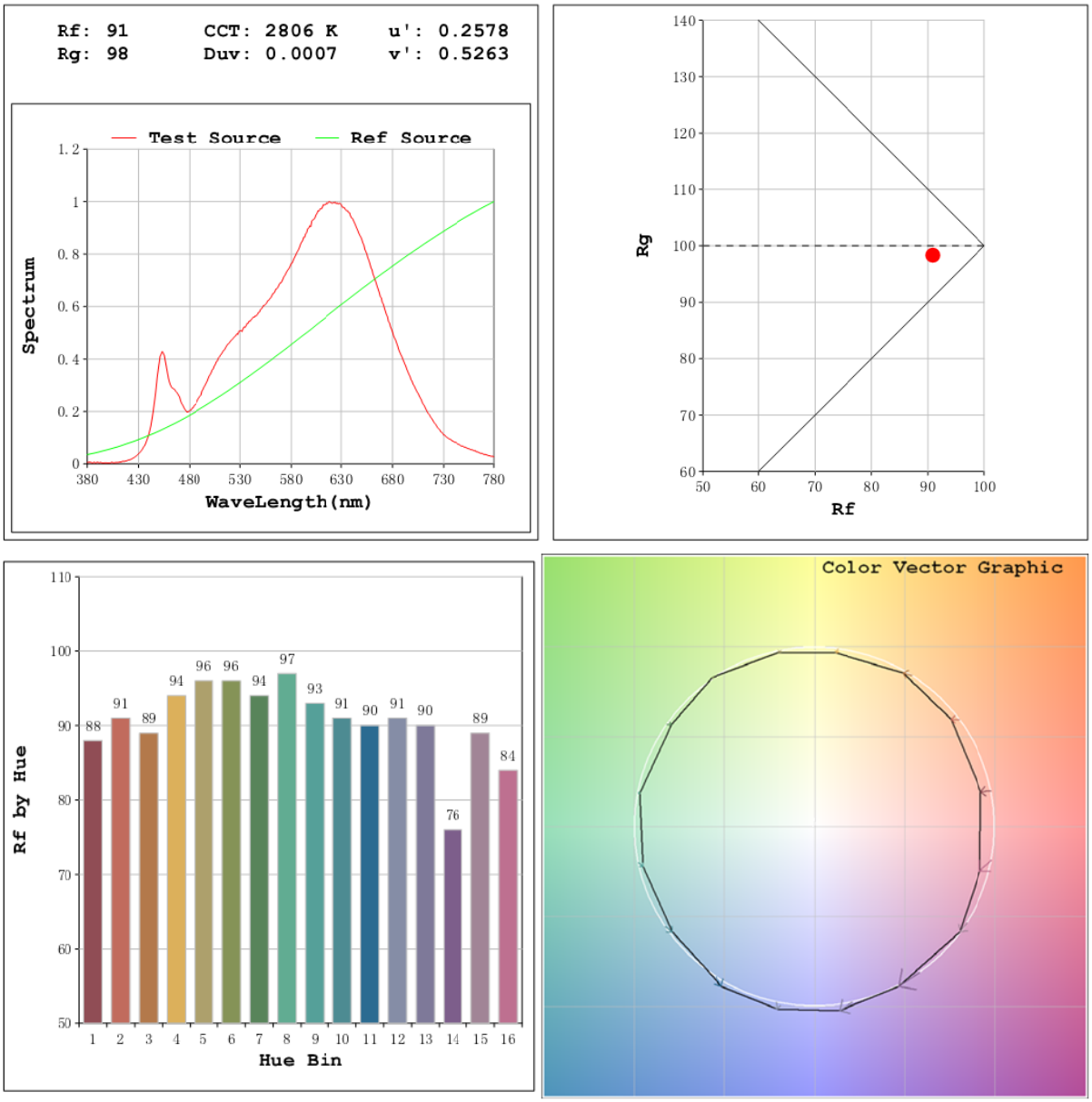
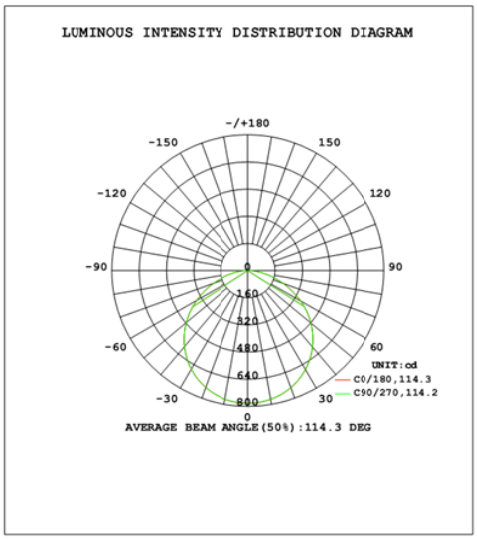


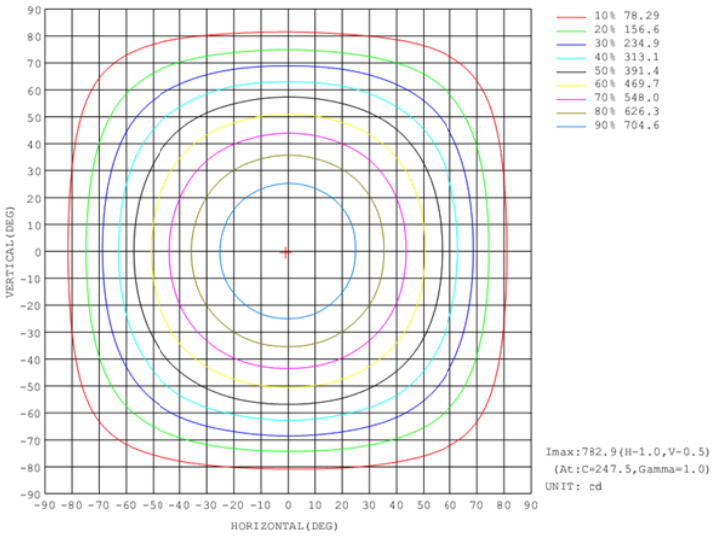
Zonal Lumen Tabulation

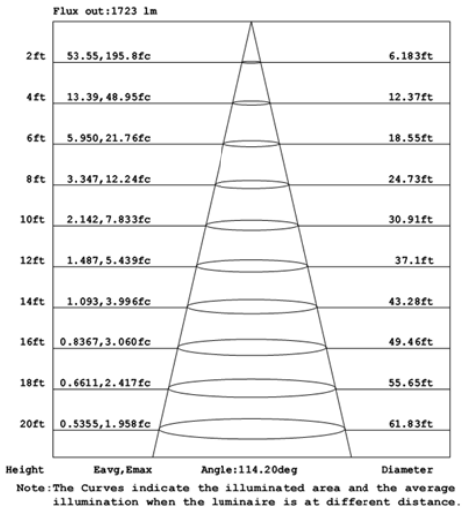
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	612.2	26.8%
0-40	1007.1	44.1%
0-60	1792.4	78.6%
60-90	488.8	21.4%
70-100	206.7	9.1%
90-120	0.0	0.0%
0-90	2281.2	100.0%
90-180	0.0	0.0%
0-180	2281.2	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	74.1	3.2%	90-100	0.0	0.0%
10-20	213.0	9.3%	100-110	0.0	0.0%
20-30	325.1	14.3%	110-120	0.0	0.0%
30-40	394.9	17.3%	120-130	0.0	0.0%
40-50	412.0	18.1%	130-140	0.0	0.0%
50-60	373.2	16.4%	140-150	0.0	0.0%
60-70	282.1	12.4%	150-160	0.0	0.0%
70-80	161.1	7.1%	160-170	0.0	0.0%
80-90	45.6	2.0%	170-180	0.0	0.0%

Photometric Data







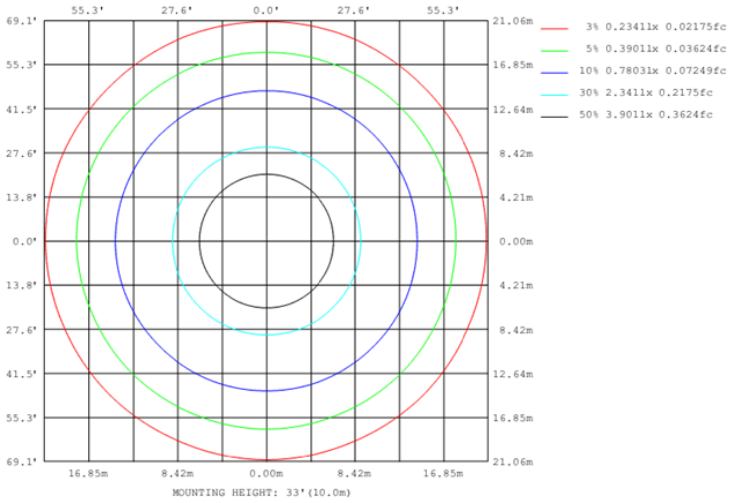


Table--1 UNIT: cd

γ (DEG) \ C (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	782	782	782	782	782	782	782	782	782	782	782	782	782	782	782	782			
5	779	779	779	779	778	779	779	779	779	778	779	779	779	779	779	779			
10	769	770	769	770	769	770	769	769	770	769	770	770	770	770	770	770			
15	754	755	754	755	754	755	754	754	755	754	755	754	755	755	755	754			
20	733	733	732	733	732	733	732	733	734	733	734	733	733	733	734	733			
25	705	706	705	706	704	705	704	705	707	705	706	705	706	705	706	706			
30	671	671	670	672	670	671	670	671	673	672	672	671	672	672	673	672			
35	630	631	630	631	630	631	630	631	633	632	633	631	632	632	633	632			
40	584	585	584	585	583	585	584	585	588	586	587	586	587	586	588	586			
45	533	534	532	534	532	534	532	534	537	535	536	535	536	535	537	535			
50	476	478	476	478	475	477	476	478	481	479	481	479	480	480	481	479			
55	416	417	415	417	414	416	415	417	421	419	421	419	420	419	421	418			
60	351	351	351	350	350	350	351	350	357	356	358	355	357	355	357	354			
65	284	282	284	281	283	280	284	282	286	290	287	289	286	289	286	288			
70	217	216	218	215	215	213	216	215	220	223	221	222	219	221	219	220			
75	149	151	150	150	147	147	147	150	155	155	157	154	154	153	153	151			
80	89.6	91.6	89.8	90.3	87.5	87.4	86.3	89.9	94.6	94.8	96.4	94.4	94.3	92.0	92.4	91.1			
85	38.2	39.3	37.8	38.6	36.8	36.7	35.8	38.5	42.4	42.4	43.8	42.4	42.4	40.4	40.5	39.6			
90	1.02	1.02	1.02	1.01	1.00	1.00	1.02	1.01	1.12	1.31	1.49	1.66	1.58	1.86	1.41	1.23			

2.1.2 Electrical, Photometric and Chromaticity Measurements

Test date	2022-07-28	Test Ambient:	25.3 ºC
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLS0146(SUMO-R-19/D10)	3000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202207210031	120.0	60	0.247	29.60	0.996

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3108
Duv	-0.0018
Chromaticity (x, y)	x=0.4270 y=0.3960
Chromaticity (u', v')	u'=0.2476 v'=0.5167
Color Rendering Index (CRI)	94.2
R9	65

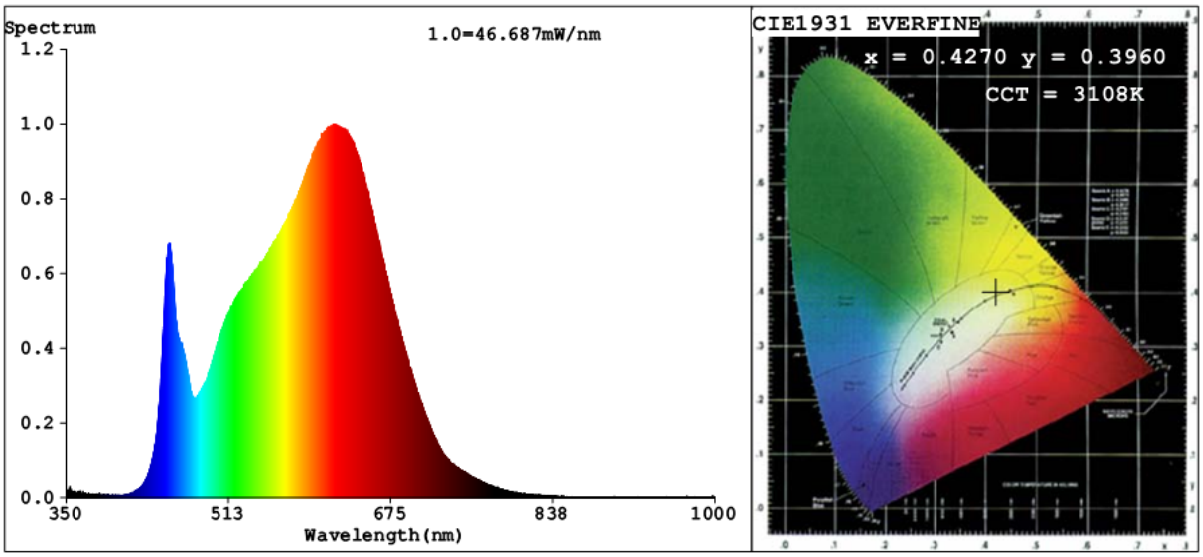
Special Color Rendering Indices			
R1	95	R9	65
R2	98	R10	95
R3	98	R11	95
R4	94	R12	81
R5	95	R13	96
R6	96	R14	99
R7	92	R15	92
R8	84	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2373.7
Luminous Efficacy (lm/W)	80.19
Beam Angle (°)	114.2
Center Beam Candle Power (cd)	813.8

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	2348
Luminous Efficacy (lm/W)	79.39

Spectral Power Distribution & Chromaticity Diagram



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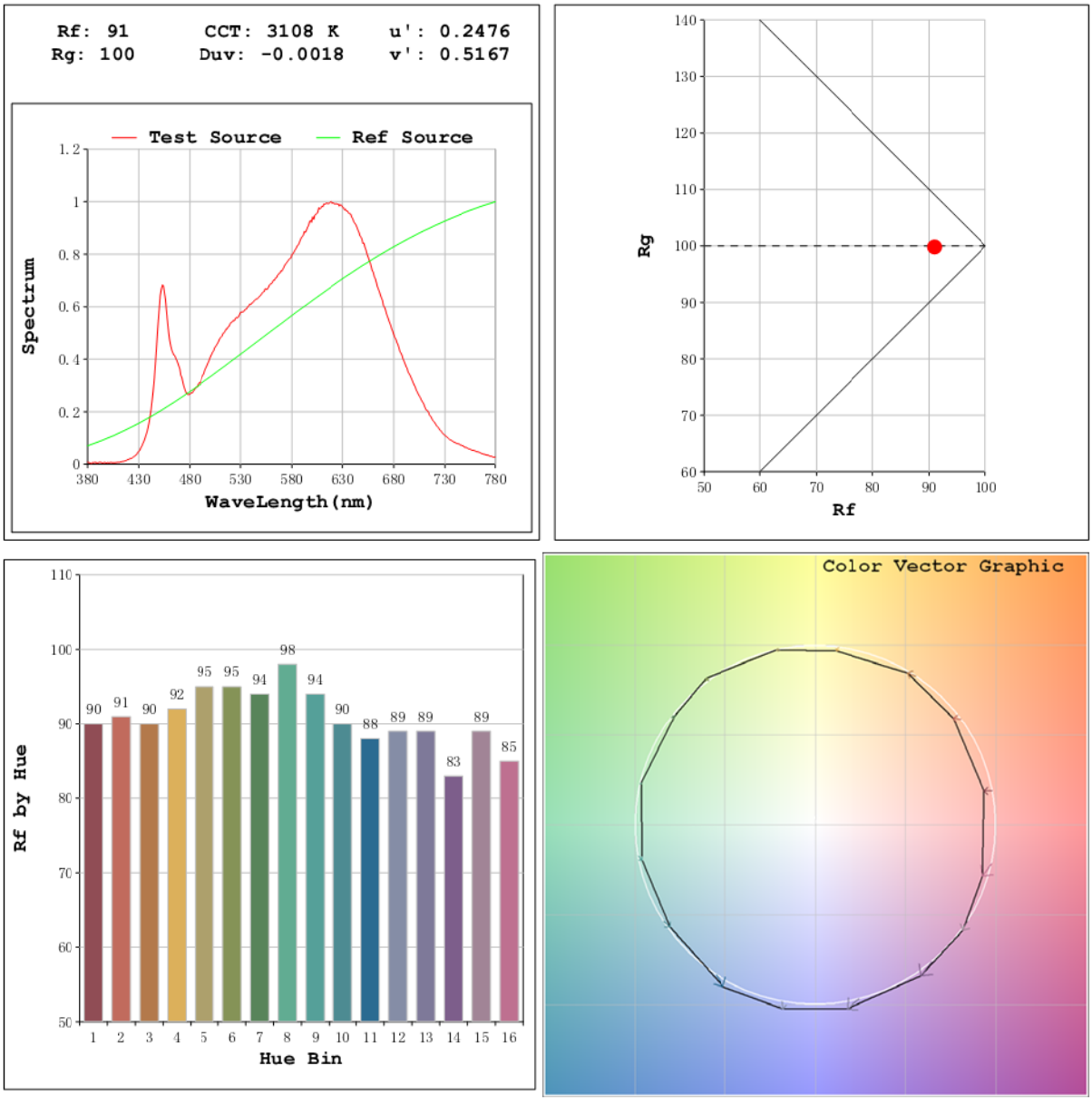
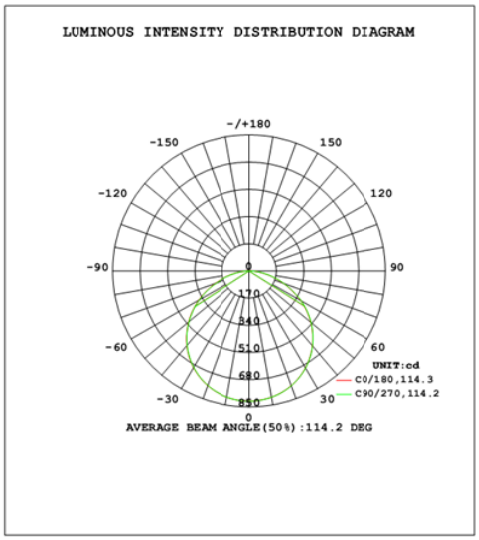


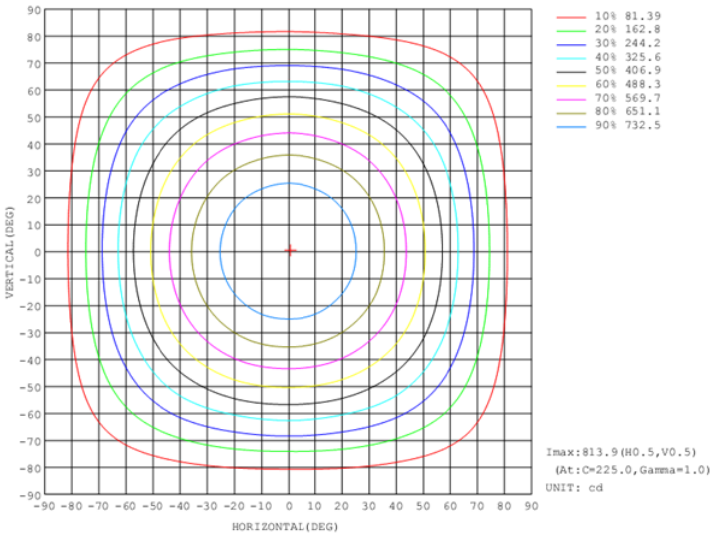
Zonal Lumen Tabulation

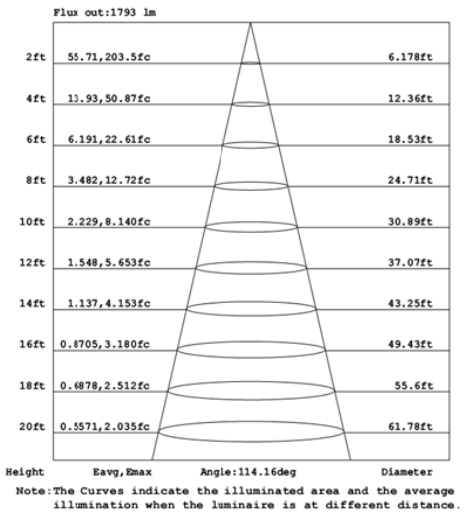
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	637.0	26.8%
0-40	1047.9	44.1%
0-60	1864.8	78.6%
60-90	508.8	21.4%
70-100	215.1	9.1%
90-120	0.0	0.0%
0-90	2373.7	100.0%
90-180	0.0	0.0%
0-180	2373.7	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	77.1	3.2%	90-100	0.0	0.0%
10-20	221.7	9.3%	100-110	0.0	0.0%
20-30	338.3	14.3%	110-120	0.0	0.0%
30-40	410.9	17.3%	120-130	0.0	0.0%
40-50	428.6	18.1%	130-140	0.0	0.0%
50-60	388.3	16.4%	140-150	0.0	0.0%
60-70	293.7	12.4%	150-160	0.0	0.0%
70-80	167.7	7.1%	160-170	0.0	0.0%
80-90	47.5	2.0%	170-180	0.0	0.0%

Photometric Data







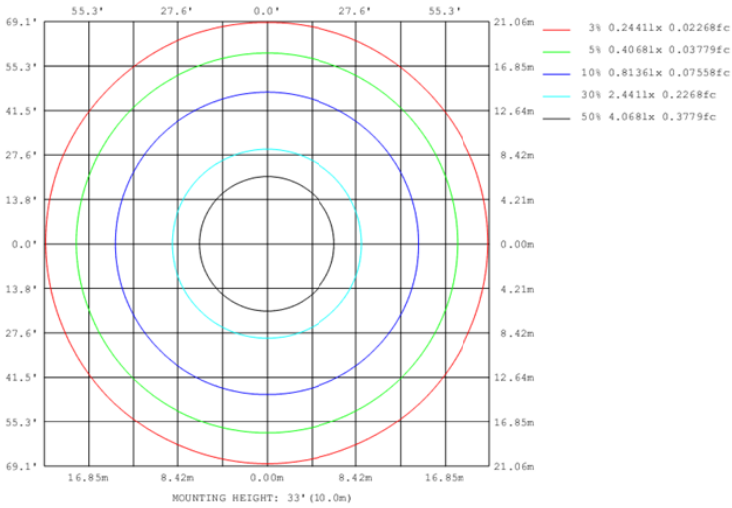


Table--1 UNIT: cd

γ (DEG) \ C (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	814	814	814	814	814	814	814	814	814	814	814	814	814	814	814	814			
5	811	811	810	810	811	810	810	811	810	810	811	810	811	810	811	810			
10	801	801	801	801	801	801	801	801	801	801	801	801	802	801	801	801			
15	785	785	785	785	784	785	785	785	785	785	786	785	786	785	785	785			
20	763	763	762	762	762	762	762	763	763	763	764	763	764	763	763	763			
25	733	734	733	734	732	733	733	734	735	734	735	734	736	734	735	734			
30	698	699	698	698	696	698	697	699	700	699	700	699	700	699	700	699			
35	656	657	655	656	654	656	656	657	658	658	659	657	659	657	658	657			
40	608	609	607	608	606	608	608	610	611	610	612	610	612	610	611	610			
45	555	556	553	554	552	554	554	556	557	557	559	557	560	557	558	556			
50	496	497	494	495	493	496	496	497	499	499	501	500	502	499	500	498			
55	433	434	431	431	429	432	432	434	437	436	439	437	439	436	437	435			
60	366	367	364	365	362	365	365	368	370	370	373	371	374	370	371	369			
65	297	293	295	290	292	290	295	293	297	302	300	303	300	301	297	299			
70	227	224	225	221	222	221	224	224	228	232	232	233	231	231	227	229			
75	156	157	154	154	151	152	152	156	160	162	164	163	163	159	159	158			
80	93.9	95.0	92.3	91.8	88.7	90.1	90.1	93.6	97.6	98.9	102	100	100	96.4	95.9	95.0			
85	40.4	40.7	38.4	38.4	36.4	37.5	37.4	40.0	43.4	44.3	46.5	45.7	46.1	42.6	42.0	41.3			
90	1.06	1.07	1.07	1.07	1.04	1.05	1.05	1.05	1.08	1.61	2.59	3.46	3.91	2.52	1.45	1.30			

2.1.3 Electrical, Photometric and Chromaticity Measurements

Test date	2022-07-28	Test Ambient:	25.3 ºC
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLS0146(SUMO-R-19/D10)	3500K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202207210031	120.0	60	0.243	29.00	0.996

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3660
Duv	-0.0032
Chromaticity (x, y)	x=0.3938 y=0.3777
Chromaticity (u', v')	u'=0.2335v'=0.5040
Color Rendering Index (CRI)	94.9
R9	73

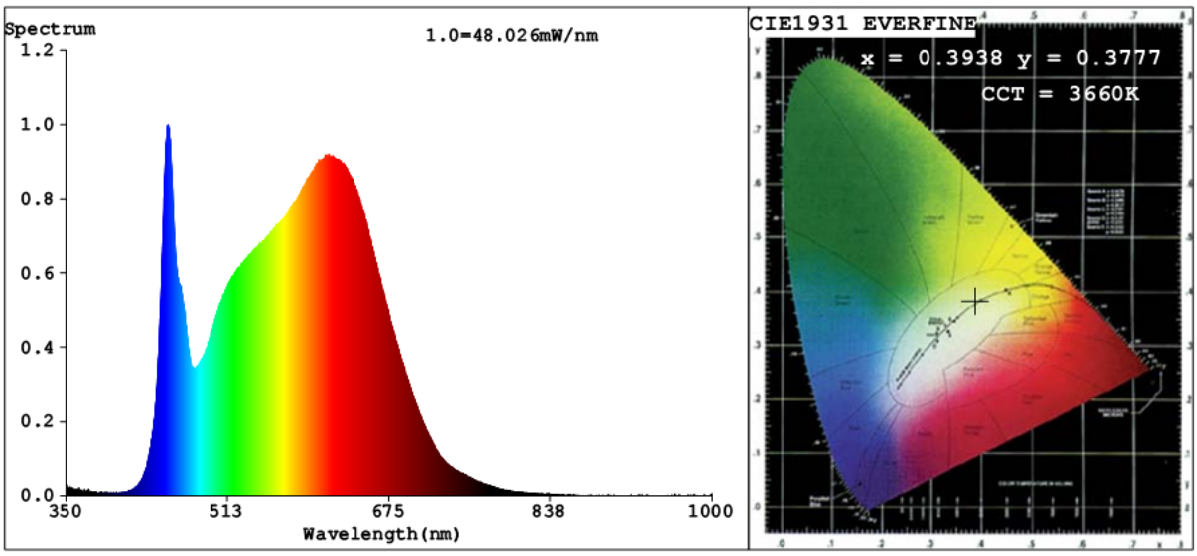
Special Color Rendering Indices			
R1	96	R9	73
R2	99	R10	96
R3	98	R11	95
R4	95	R12	76
R5	95	R13	98
R6	95	R14	99
R7	93	R15	94
R8	88	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2489.2
Luminous Efficacy (lm/W)	85.83
Beam Angle (°)	114.2
Center Beam Candle Power (cd)	853.6

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	2468
Luminous Efficacy (lm/W)	84.90

Spectral Power Distribution & Chromaticity Diagram



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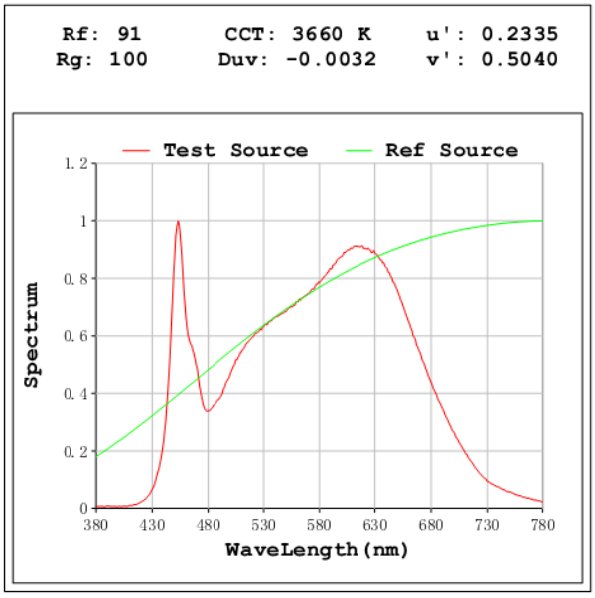
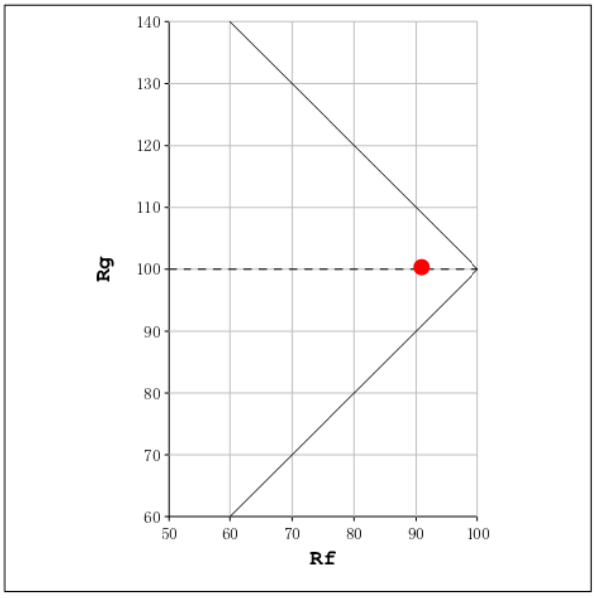
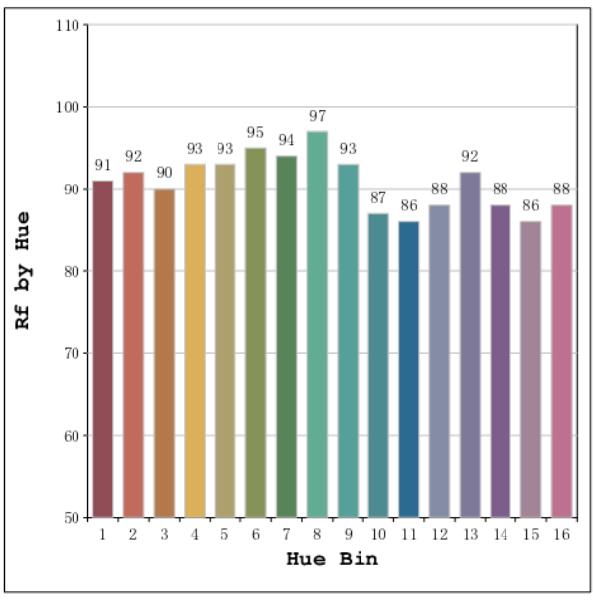
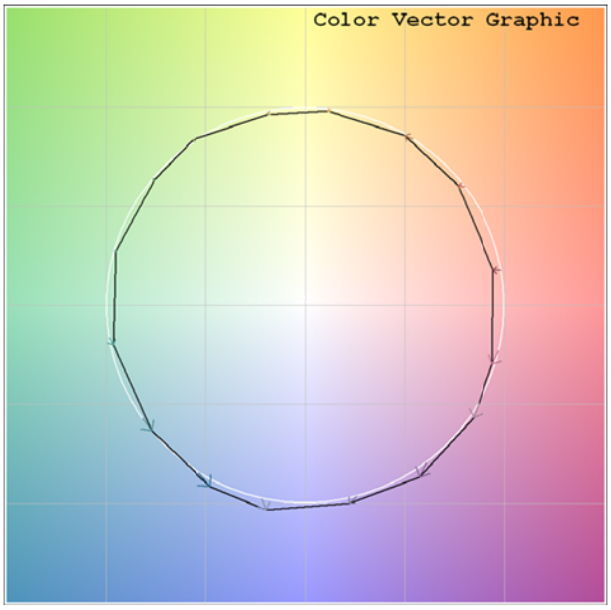






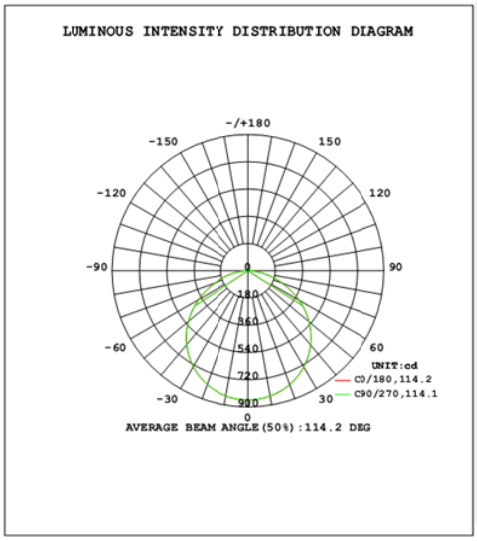


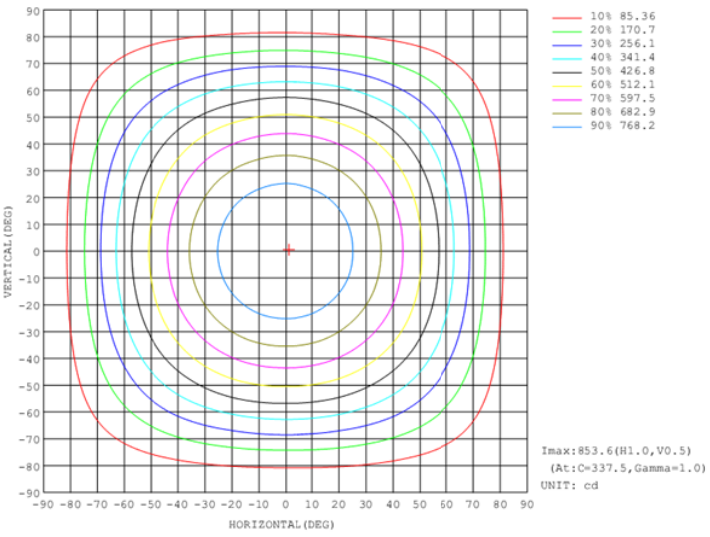
Zonal Lumen Tabulation

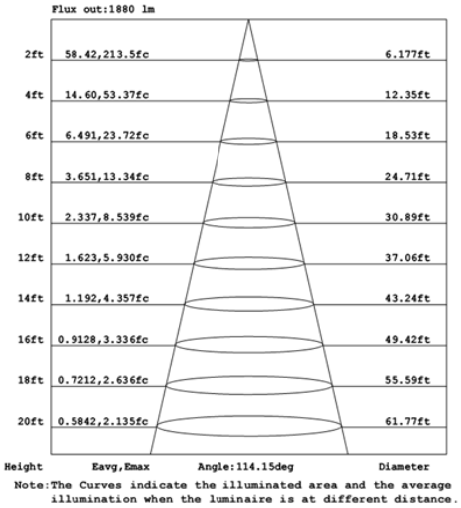
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	668.0	26.8%
0-40	1098.9	44.1%
0-60	1955.3	78.6%
60-90	533.9	21.4%
70-100	225.5	9.1%
90-120	0.0	0.0%
0-90	2489.2	100.0%
90-180	0.0	0.0%
0-180	2489.2	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	80.8	3.2%	90-100	0.0	0.0%
10-20	232.5	9.3%	100-110	0.0	0.0%
20-30	354.8	14.3%	110-120	0.0	0.0%
30-40	430.8	17.3%	120-130	0.0	0.0%
40-50	449.4	18.1%	130-140	0.0	0.0%
50-60	407.1	16.4%	140-150	0.0	0.0%
60-70	308.4	12.4%	150-160	0.0	0.0%
70-80	175.9	7.1%	160-170	0.0	0.0%
80-90	49.7	2.0%	170-180	0.0	0.0%

Photometric Data







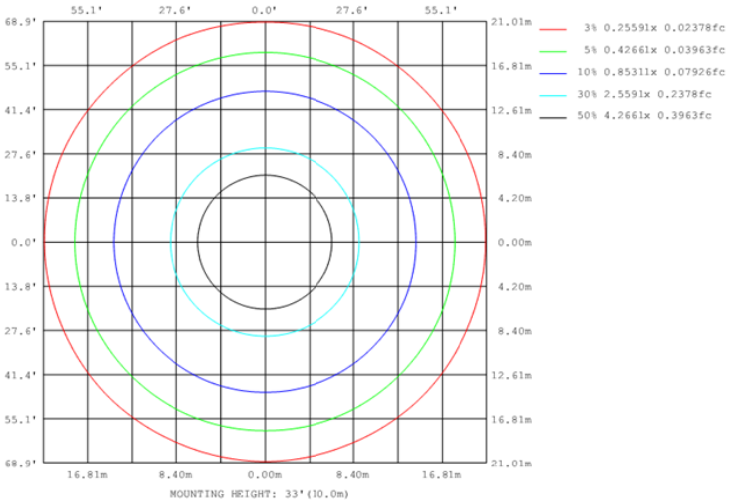


Table--1

UNIT: cd

γ (DEG) \ C (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	853	853	853	853	853	853	853	853	853	853	853	853	853	853	853	853			
5	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850			
10	840	840	840	841	840	840	840	840	841	840	840	840	840	840	840	840			
15	823	824	823	824	823	823	823	824	824	823	824	823	823	823	823	823			
20	800	801	800	801	800	800	800	800	801	800	800	800	799	799	799	800			
25	769	770	769	771	769	770	769	770	771	770	770	769	770	769	770	770			
30	732	733	732	733	732	733	732	733	734	732	733	732	733	732	732	733			
35	688	690	688	689	687	688	688	689	690	689	690	688	690	688	689	689			
40	638	640	638	639	637	638	638	639	640	639	640	639	640	639	639	639			
45	582	583	581	583	580	582	582	583	584	583	585	583	584	583	583	583			
50	520	522	520	521	518	521	520	522	524	522	524	522	524	522	522	522			
55	454	456	453	454	452	454	454	456	458	457	459	457	458	457	457	455			
60	384	386	383	384	382	384	384	386	388	387	390	388	389	387	388	386			
65	311	308	311	306	309	305	310	308	311	316	313	316	312	315	310	313			
70	238	236	237	234	234	232	236	235	239	243	241	243	240	241	238	240			
75	164	166	163	163	160	161	161	164	168	168	171	169	169	166	166	165			
80	98.6	100	98.0	98.0	94.8	95.1	94.8	98.3	102	103	105	103	103	100	99.9	99.2			
85	42.3	43.2	41.3	41.6	39.5	39.9	39.5	42.0	45.4	45.9	47.5	46.4	46.7	44.0	43.5	43.1			
90	1.12	1.12	1.12	1.11	1.09	1.10	1.10	1.10	1.13	1.40	1.79	2.25	2.38	2.18	1.38	1.31			

2.1.4 Electrical, Photometric and Chromaticity Measurements

Test date	2022-07-28	Test Ambient:	25.3 ºC
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLS0146(SUMO-R-19/D10)	4000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202207210031	120.0	60	0.244	29.20	0.996

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	4181
Duv	-0.0025
Chromaticity (x, y)	x=0.3713 y=0.3656
Chromaticity (u', v')	u'=0.2235 v'=0.4952
Color Rendering Index (CRI)	94.7
R9	74

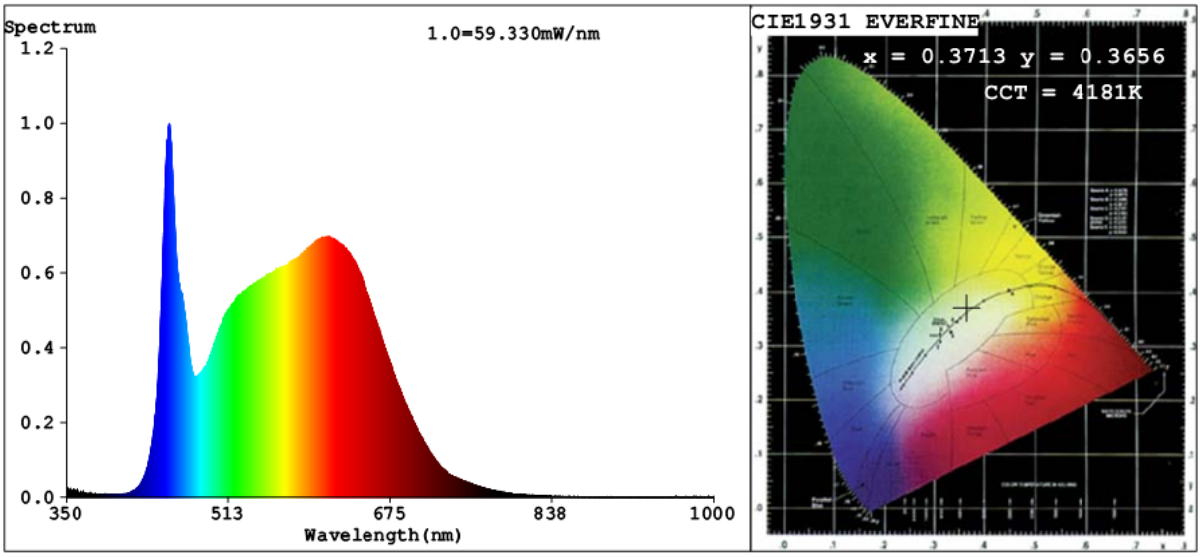
Special Color Rendering Indices			
R1	96	R9	74
R2	98	R10	95
R3	98	R11	95
R4	94	R12	71
R5	94	R13	98
R6	94	R14	99
R7	94	R15	94
R8	89	--	--

Photometric Measurement – Goniophotometer Method:

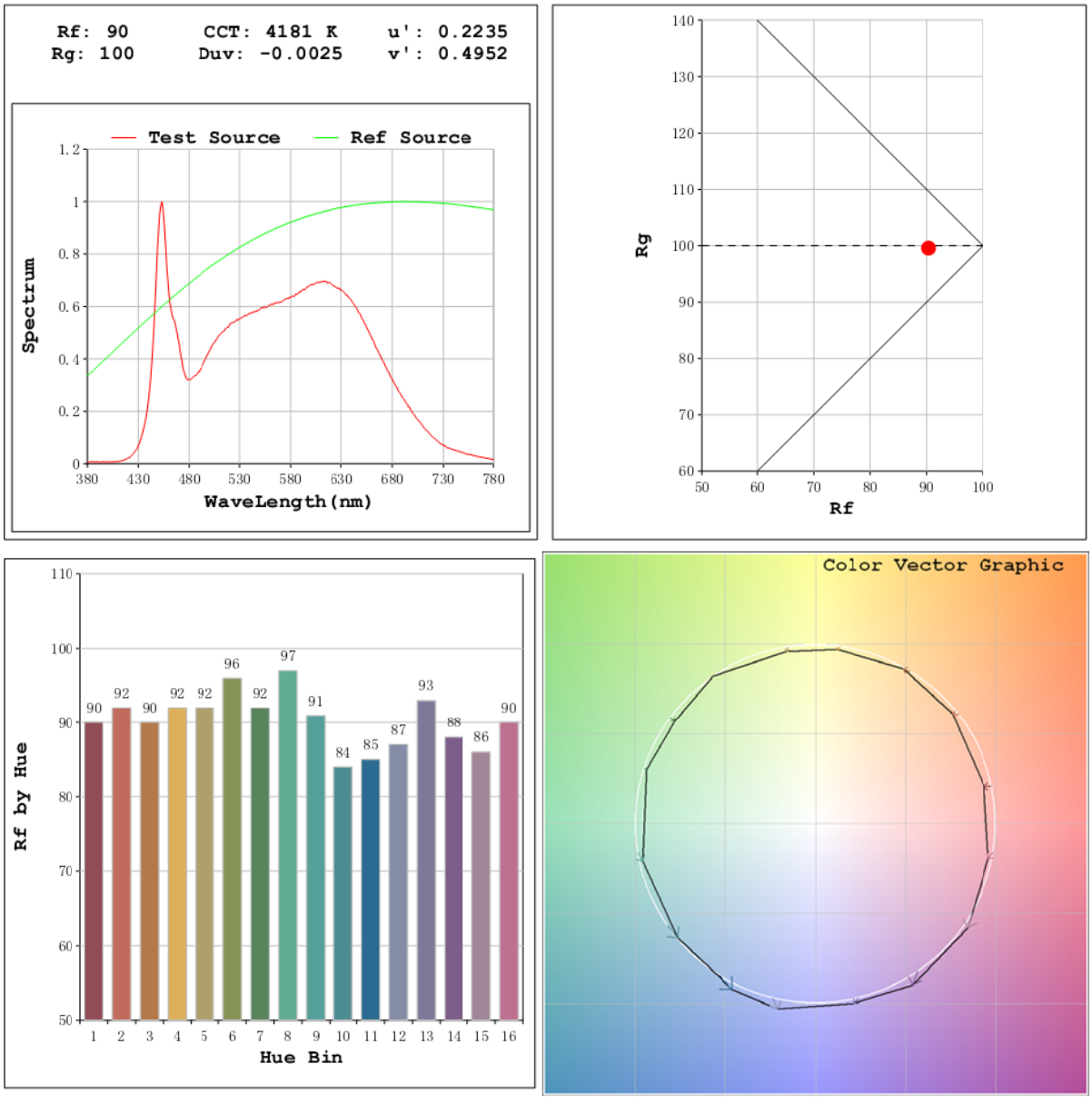
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2542.7
Luminous Efficacy (lm/W)	87.08
Beam Angle (°)	114.2
Center Beam Candle Power (cd)	872.0

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	2521
Luminous Efficacy (lm/W)	86.29

Spectral Power Distribution & Chromaticity Diagram



TM30

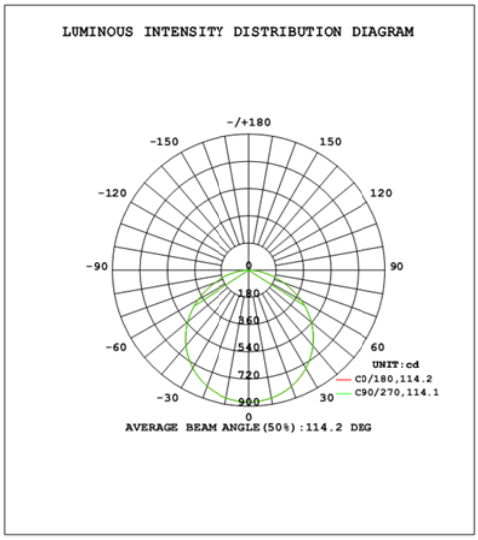


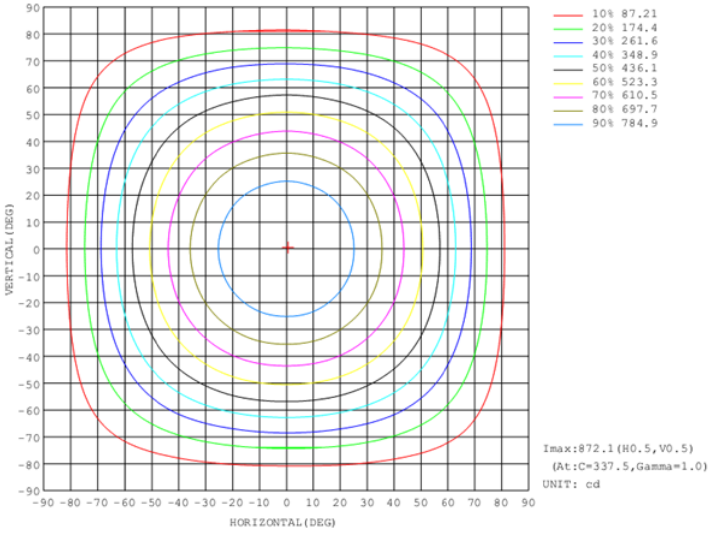
Zonal Lumen Tabulation

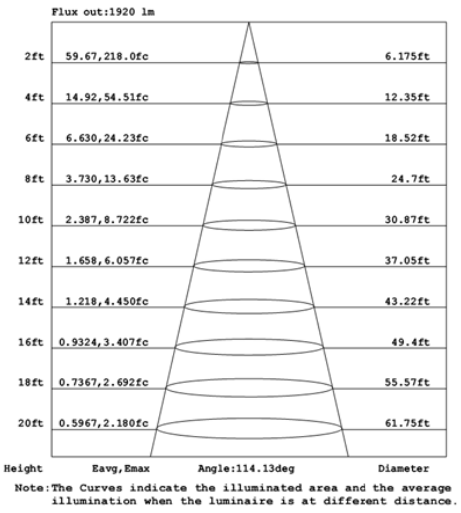
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	682.5	26.8%
0-40	1122.6	44.1%
0-60	1997.3	78.6%
60-90	545.3	21.4%
70-100	230.4	9.1%
90-120	0.0	0.0%
0-90	2542.7	100.0%
90-180	0.0	0.0%
0-180	2542.7	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	82.6	3.2%	90-100	0.0	0.0%
10-20	237.5	9.3%	100-110	0.0	0.0%
20-30	362.4	14.3%	110-120	0.0	0.0%
30-40	440.1	17.3%	120-130	0.0	0.0%
40-50	459.0	18.1%	130-140	0.0	0.0%
50-60	415.8	16.4%	140-150	0.0	0.0%
60-70	315.0	12.4%	150-160	0.0	0.0%
70-80	179.7	7.1%	160-170	0.0	0.0%
80-90	50.7	2.0%	170-180	0.0	0.0%

Photometric Data







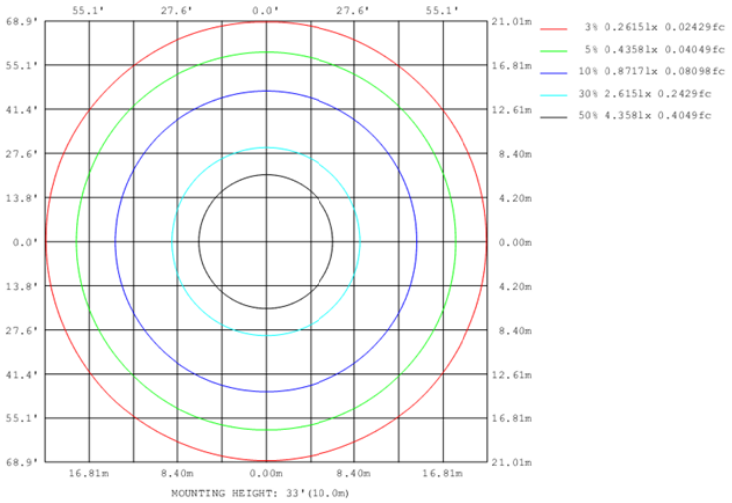


Table--1

UNIT: cd

γ (DEG) \ C (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	872	872	872	872	872	872	872	872	872	872	872	872	872	872	872	872			
5	869	869	868	869	869	869	868	869	869	868	869	868	868	868	868	869			
10	858	859	858	859	858	859	858	858	859	858	858	858	858	858	858	858			
15	841	842	841	842	841	841	841	842	842	841	841	840	841	841	841	841			
20	817	818	817	818	817	818	817	817	818	817	817	816	817	816	817	817			
25	786	787	786	787	786	787	786	787	787	786	787	785	786	785	786	786			
30	748	749	748	749	748	749	748	749	750	748	749	747	749	747	749	748			
35	703	705	703	704	703	704	703	704	705	704	704	702	704	703	704	703			
40	651	653	651	653	651	653	651	653	654	653	653	652	653	652	653	652			
45	594	596	594	595	593	595	594	596	597	596	597	595	596	595	596	595			
50	531	533	531	533	530	532	531	533	535	533	535	533	534	533	534	533			
55	464	466	463	465	462	465	464	466	468	466	468	466	468	466	467	465			
60	392	394	392	393	390	393	392	394	397	396	398	395	397	395	396	394			
65	318	315	318	313	316	313	317	314	318	322	319	322	318	321	317	320			
70	243	241	243	240	240	238	241	240	244	248	246	247	244	246	243	245			
75	167	169	167	167	164	165	164	167	172	173	174	173	172	169	170	168			
80	101	103	100	101	97.1	97.8	96.7	100	104	105	107	105	105	102	102	101			
85	43.2	44.3	42.2	42.8	40.7	41.2	40.3	42.8	46.4	46.6	48.3	47.1	47.4	44.5	44.7	44.1			
90	1.14	1.16	1.14	1.13	1.11	1.12	1.12	1.12	1.19	1.38	1.68	2.03	2.09	1.91	1.42	1.36			

2.1.5 Electrical, Photometric and Chromaticity Measurements

Test date	2022-07-28	Test Ambient:	25.3 ºC
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	DLS0146(SUMO-R-19/D10)	5000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202207210031	120.0	60	0.246	29.40	0.996

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	5254
Duv	0.0012
Chromaticity (x, y)	x=0.3384 y=0.3484
Chromaticity (u', v')	u'=0.2081 v'=0.4821
Color Rendering Index (CRI)	92.7
R9	64

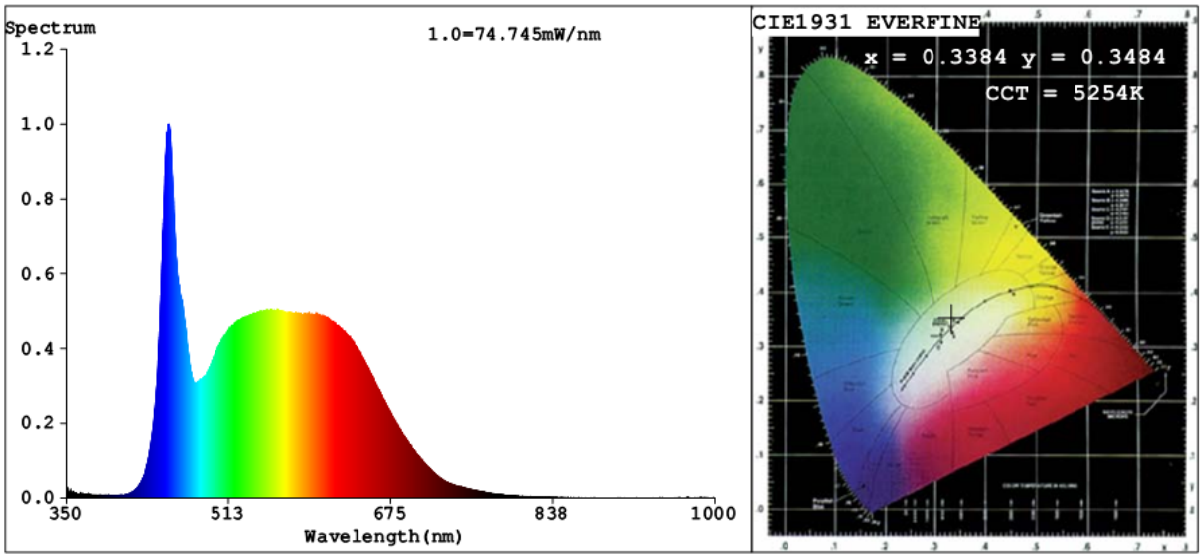
Special Color Rendering Indices			
R1	93	R9	64
R2	96	R10	89
R3	96	R11	93
R4	92	R12	70
R5	92	R13	94
R6	92	R14	98
R7	94	R15	91
R8	86	--	--

Photometric Measurement – Goniophotometer Method:

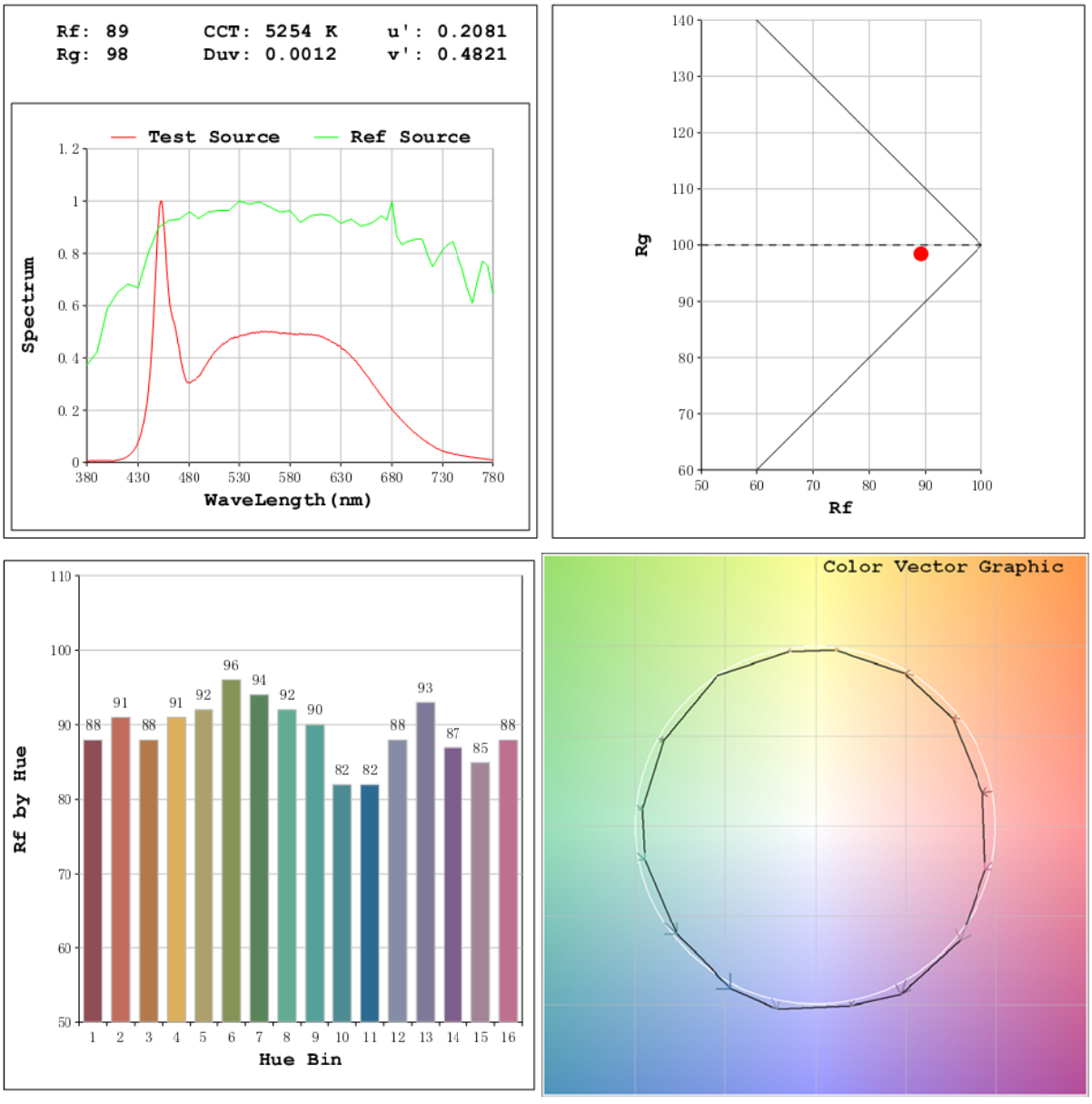
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2570.1
Luminous Efficacy (lm/W)	87.42
Beam Angle (°)	114.1
Center Beam Candle Power (cd)	881.8

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	2553
Luminous Efficacy (lm/W)	86.75

Spectral Power Distribution & Chromaticity Diagram



TM30

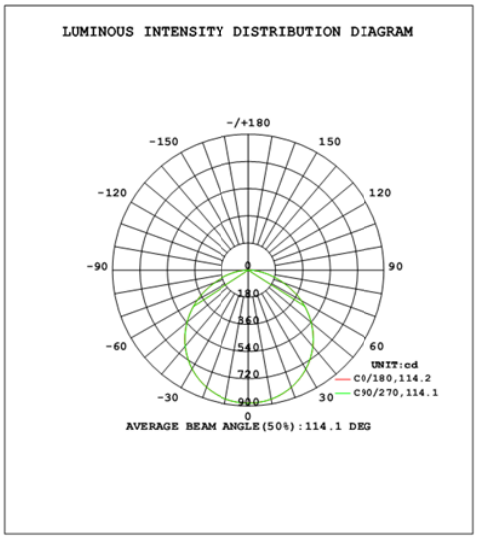


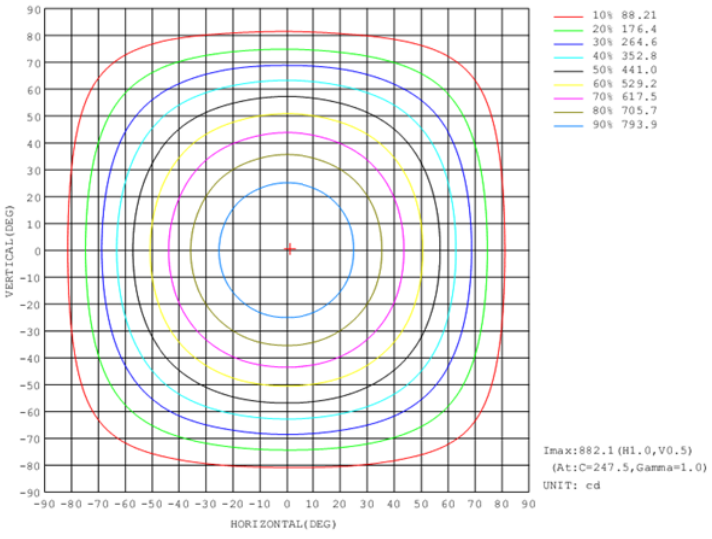
Zonal Lumen Tabulation

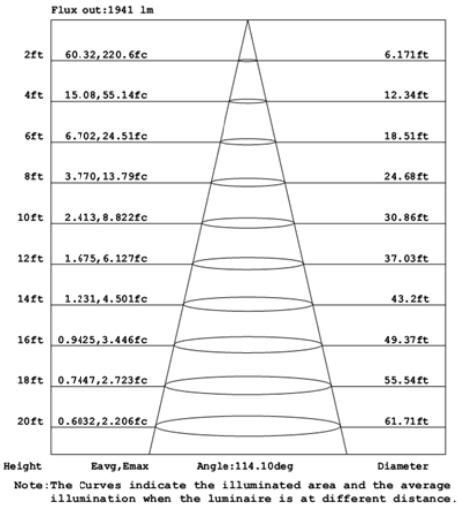
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	690.0	26.8%
0-40	1134.8	44.2%
0-60	2018.9	78.6%
60-90	551.2	21.4%
70-100	232.8	9.1%
90-120	0.0	0.0%
0-90	2570.1	100.0%
90-180	0.0	0.0%
0-180	2570.1	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	83.5	3.2%	90-100	0.0	0.0%
10-20	240.1	9.3%	100-110	0.0	0.0%
20-30	366.4	14.3%	110-120	0.0	0.0%
30-40	444.8	17.3%	120-130	0.0	0.0%
40-50	463.9	18.0%	130-140	0.0	0.0%
50-60	420.2	16.3%	140-150	0.0	0.0%
60-70	318.5	12.4%	150-160	0.0	0.0%
70-80	181.6	7.1%	160-170	0.0	0.0%
80-90	51.2	2.0%	170-180	0.0	0.0%

Photometric Data







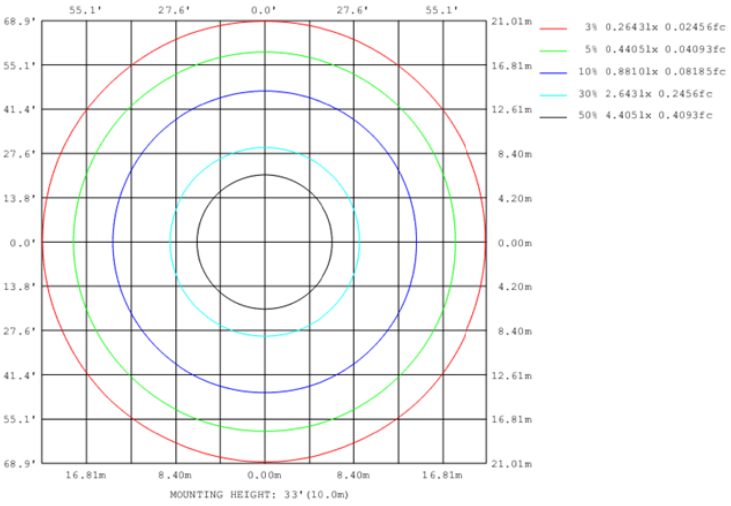
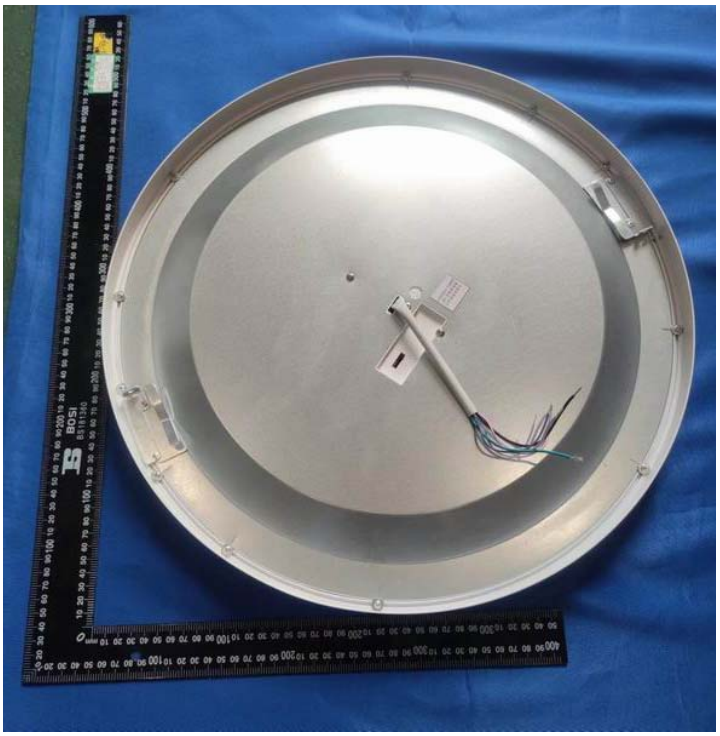


Table--1 UNIT: cd

γ (DEG) \ C (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	882	882	882	882	882	882	882	882	882	882	882	882	882	882	882	882			
5	878	878	878	879	878	878	878	878	878	878	878	878	878	878	878	878			
10	868	868	868	868	867	868	868	868	868	867	868	868	868	868	868	868			
15	850	851	851	851	850	851	850	851	851	850	851	850	850	850	851	850			
20	825	826	826	827	826	826	826	826	827	826	827	826	826	826	827	826			
25	794	795	794	795	794	795	795	795	796	795	795	794	795	794	795	795			
30	756	756	756	757	756	757	756	757	758	756	757	756	757	756	757	756			
35	710	711	710	711	710	711	710	712	713	711	712	710	712	711	712	711			
40	658	660	658	660	658	659	659	660	661	659	661	659	660	659	660	659			
45	600	602	600	602	599	601	601	602	604	602	604	602	603	602	603	602			
50	536	539	536	538	536	538	537	539	540	539	540	539	540	539	540	538			
55	468	470	468	469	467	470	469	471	473	471	473	471	473	471	472	470			
60	396	398	396	397	394	397	396	398	401	399	402	399	401	399	401	398			
65	321	318	321	317	319	316	321	318	321	325	322	325	321	325	321	323			
70	245	244	246	242	243	241	244	243	246	250	248	250	247	249	246	248			
75	169	171	169	169	166	167	166	169	173	175	176	175	174	171	172	170			
80	102	104	102	102	98.5	98.9	98.0	101	106	106	108	106	106	103	103	102			
85	43.6	45.0	42.8	43.5	41.3	41.7	40.8	43.3	46.9	46.9	48.5	47.1	47.5	44.9	44.9	44.5			
90	1.15	1.15	1.15	1.14	1.12	1.13	1.14	1.13	1.19	1.33	1.50	1.83	1.80	1.81	1.33	1.33			

Sample No.	Wattage and CCT setting	Test Voltage(V)	Flux(lm)	P(W)	Luminous Efficacy lm/W
DLS0146(SUMO-R-19/D10)	2700K setting	120.0	2281.2	29.50	77.33
		277.0	2260	29.48	76.68
	3000K setting	120.0	2373.7	29.60	80.19
		277.0	2348	29.58	79.39
	3500K setting	120.0	2489.2	29.00	85.83
		277.0	2468	29.07	84.90
	4000K setting	120.0	2542.7	29.20	87.08
		277.0	2521	29.21	86.29
	5000K setting	120.0	2570.1	29.40	87.42
		277.0	1997	23.92	83.48

3. Product Photo



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