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): DLS0145(SUMO-R-15/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	26.0 W
Rated Initial Lamp Lumen	1950 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	DLS0145(SUMO-R-15/D10)	2700K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202207210030	120.0	60	0.215	25.70	0.996

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	2725
Duv	0.0005
Chromaticity (x, y)	x=0.4587 y=0.4118
Chromaticity (u', v')	u'=0.2612 v'=0.5276
Color Rendering Index (CRI)	93.6
R9	61

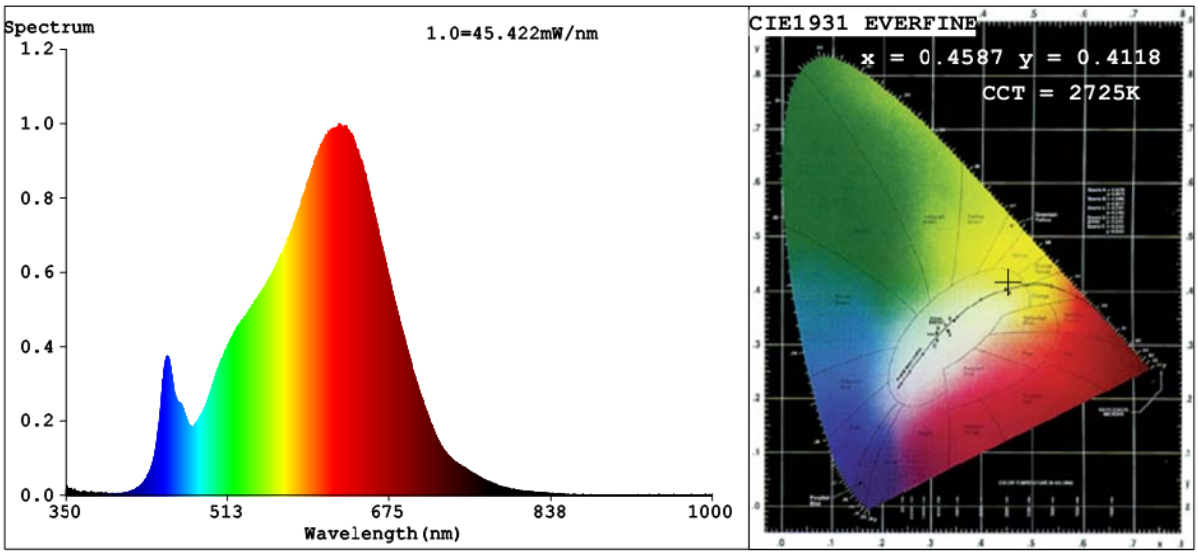
Special Color Rendering Indices			
R1	94	R9	61
R2	97	R10	93
R3	99	R11	96
R4	94	R12	85
R5	94	R13	95
R6	97	R14	99
R7	92	R15	89
R8	82	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2090.0
Luminous Efficacy (lm/W)	81.32
Beam Angle (°)	114.0
Center Beam Candle Power (cd)	718.3

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	2098
Luminous Efficacy (lm/W)	80.84

Spectral Power Distribution & Chromaticity Diagram



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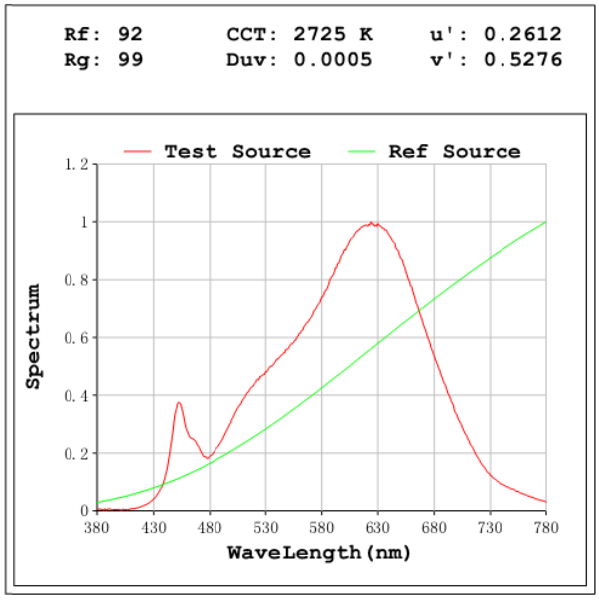
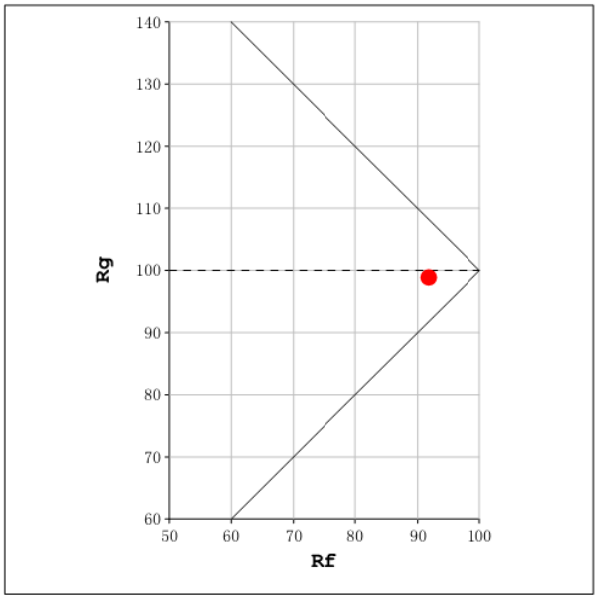
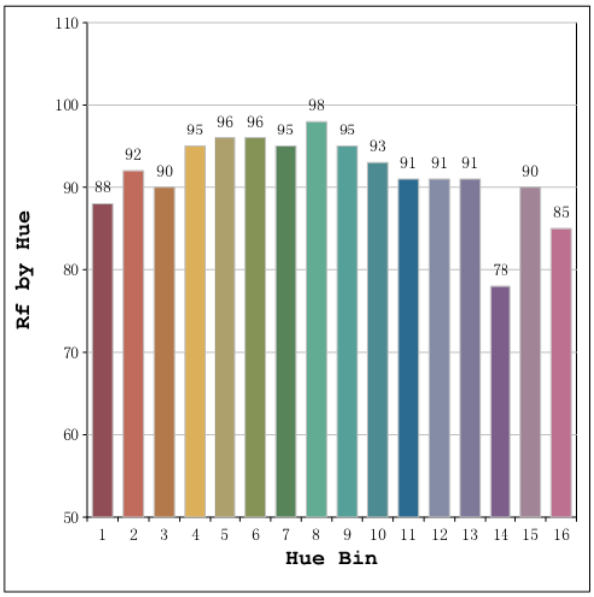
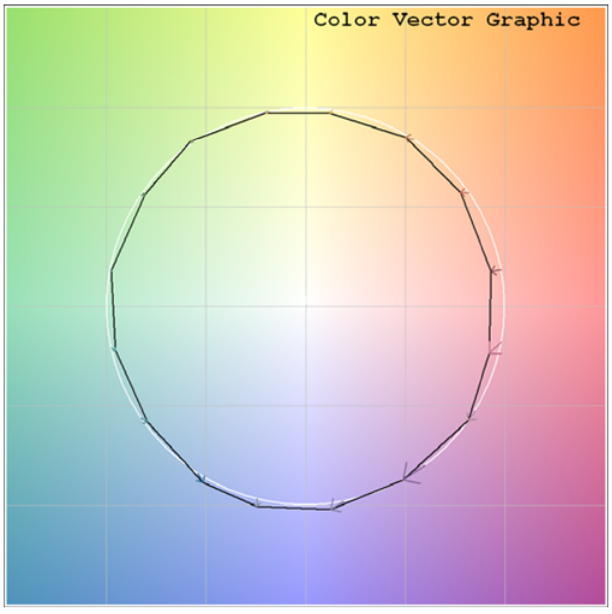






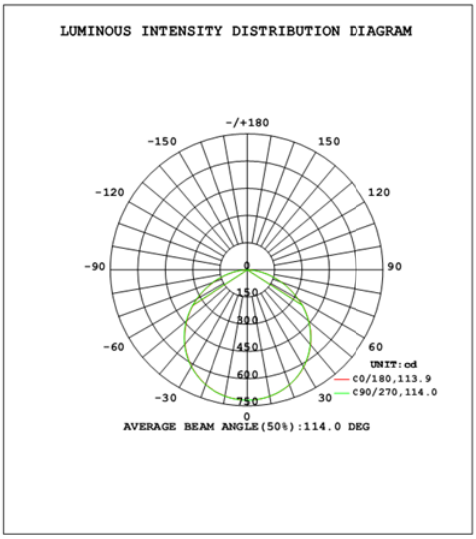


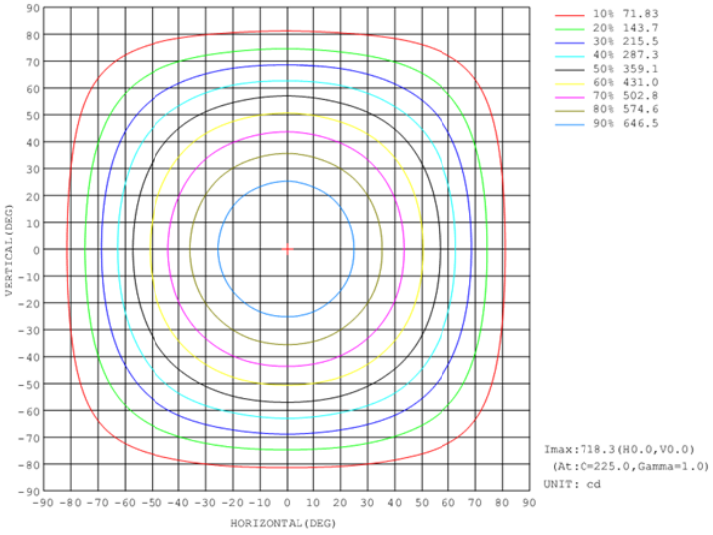
Zonal Lumen Tabulation

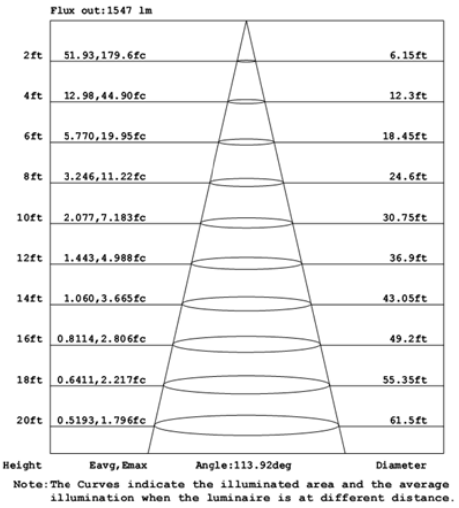
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	562.2	26.9%
0-40	924.5	44.2%
0-60	1642.8	78.6%
60-90	447.1	21.4%
70-100	189.5	9.1%
90-120	0.0	0.0%
0-90	2090.0	100.0%
90-180	0.0	0.0%
0-180	2090.0	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	68.0	3.3%	90-100	0.0	0.0%
10-20	195.7	9.4%	100-110	0.0	0.0%
20-30	298.5	14.3%	110-120	0.0	0.0%
30-40	362.3	17.3%	120-130	0.0	0.0%
40-50	377.4	18.1%	130-140	0.0	0.0%
50-60	341.0	16.3%	140-150	0.0	0.0%
60-70	257.7	12.3%	150-160	0.0	0.0%
70-80	147.7	7.1%	160-170	0.0	0.0%
80-90	41.8	2.0%	170-180	0.0	0.0%

Photometric Data







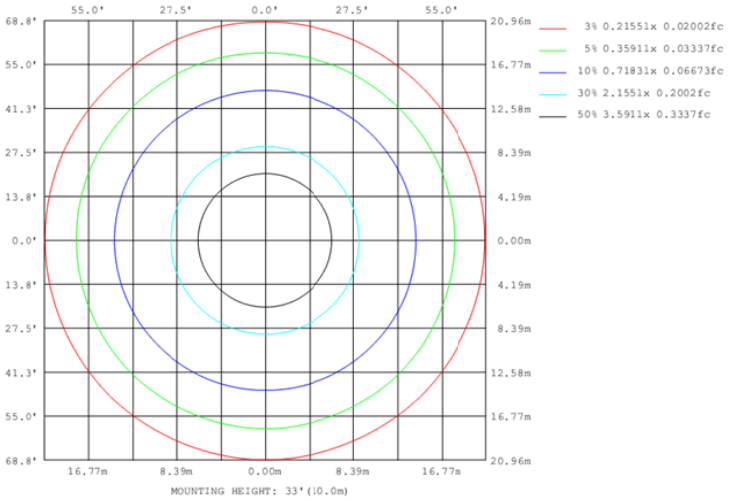


Table--1 UNIT: cd

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	718	718	718	718	718	718	718	718	718	718	718	718	718	718	718	718			
5	715	715	715	715	715	715	715	715	716	715	716	715	716	715	715	715			
10	706	707	706	707	707	707	707	707	708	707	708	707	708	707	707	707			
15	692	693	693	693	693	694	693	693	694	694	694	693	694	693	693	692			
20	672	673	672	673	673	674	673	674	674	674	674	673	674	673	673	673			
25	646	647	647	648	648	648	647	648	649	648	649	648	648	647	647	647			
30	614	616	616	617	616	617	616	617	618	617	618	616	617	615	616	615			
35	577	579	578	580	579	580	579	580	581	580	581	579	580	578	579	578			
40	534	536	536	538	537	538	536	538	539	537	538	536	537	535	536	535			
45	487	489	489	491	490	491	489	491	492	490	491	489	490	488	489	488			
50	435	437	437	439	438	440	438	439	440	438	439	437	438	436	437	436			
55	379	382	381	384	382	384	382	383	385	382	383	381	382	380	381	380			
60	320	318	323	320	324	320	323	320	321	324	320	323	318	321	317	321			
65	259	258	262	260	263	260	263	260	261	263	260	262	258	260	258	261			
70	198	198	201	200	202	200	201	199	200	201	199	200	198	199	197	199			
75	136	139	139	141	140	141	139	140	141	139	140	138	139	137	138	137			
80	82.0	84.3	83.8	86.3	85.3	86.3	84.2	85.3	86.1	84.1	84.6	83.0	83.8	82.1	83.2	82.7			
85	34.9	36.5	36.0	38.0	37.5	38.1	36.4	37.3	38.2	36.3	36.3	35.3	36.1	34.8	35.5	35.3			
90	0.92	0.94	0.96	0.98	1.12	1.18	1.16	0.97	1.05	0.94	0.90	0.91	0.88	0.91	0.90	0.93			

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	DLS0145(SUMO-R-15/D10)	3000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202207210030	120.0	60	0.216	25.80	0.996

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3070
Duv	-0.0018
Chromaticity (x, y)	x=0.4295 y=0.3969
Chromaticity (u', v')	u'=0.2488 v'=0.5174
Color Rendering Index (CRI)	95.6
R9	73

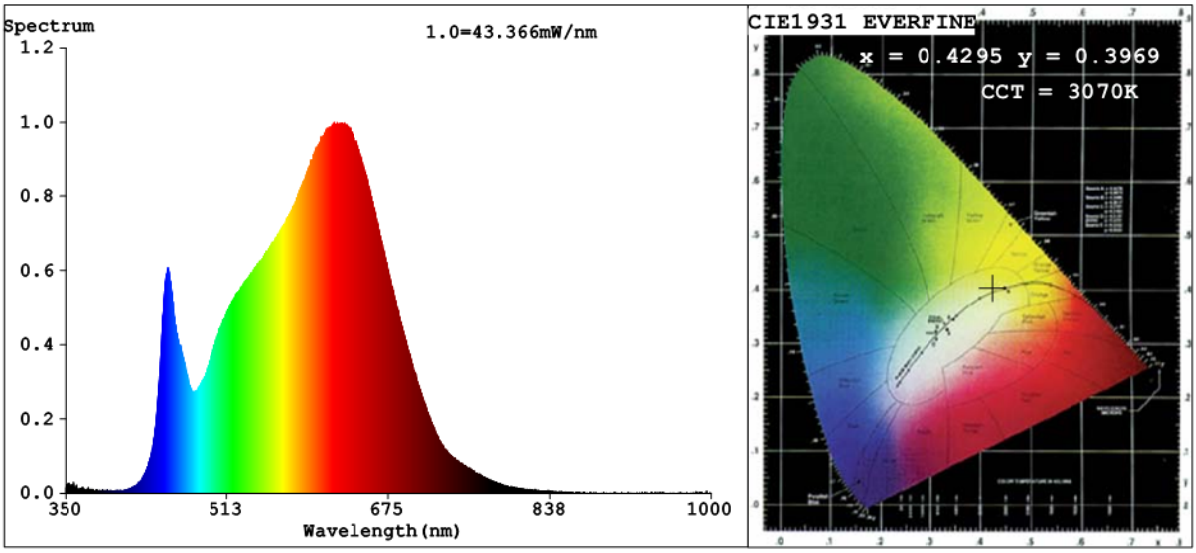
Special Color Rendering Indices			
R1	97	R9	73
R2	99	R10	97
R3	99	R11	97
R4	96	R12	83
R5	96	R13	98
R6	97	R14	99
R7	93	R15	94
R8	88	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2173.5
Luminous Efficacy (lm/W)	84.24
Beam Angle (°)	113.9
Center Beam Candle Power (cd)	747.2

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	2175
Luminous Efficacy (lm/W)	83.71

Spectral Power Distribution & Chromaticity Diagram



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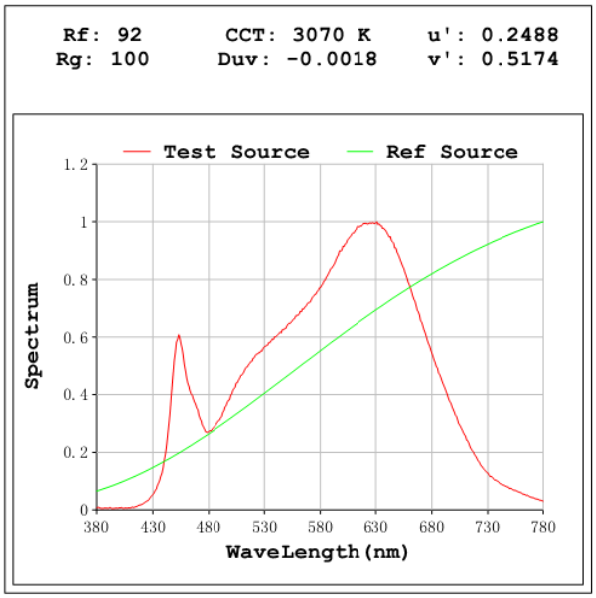
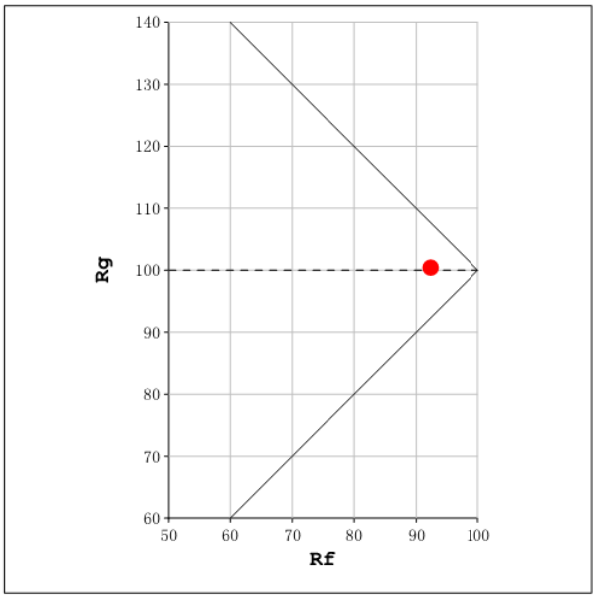
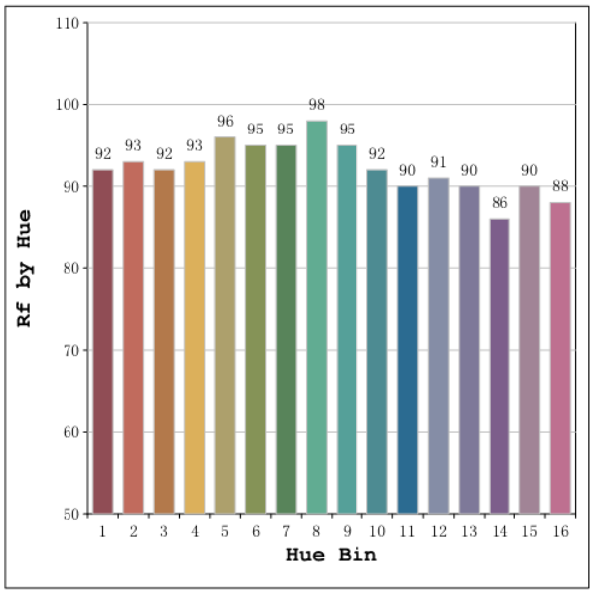
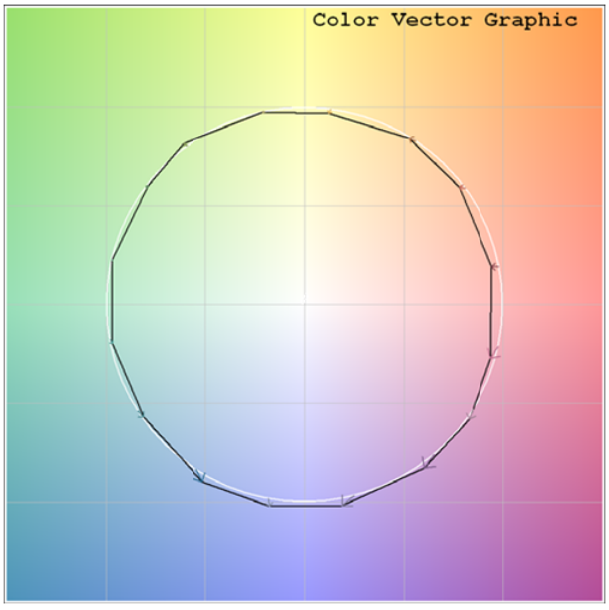






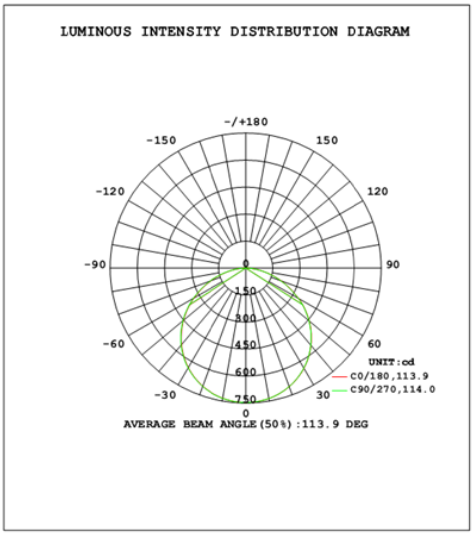


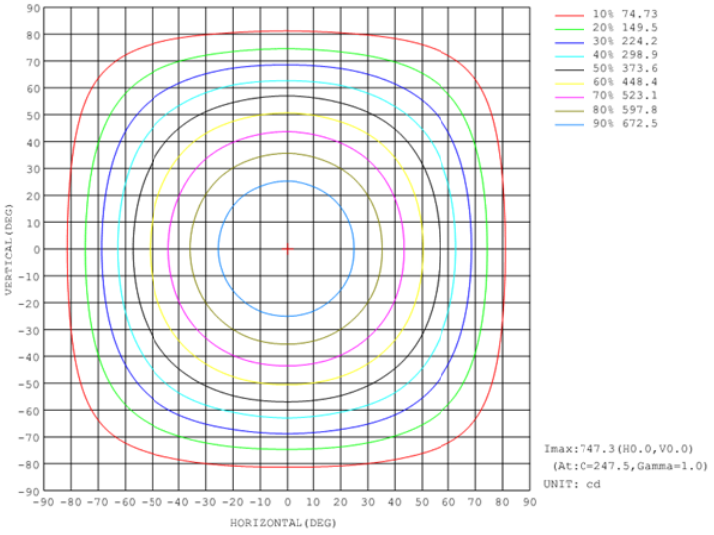
Zonal Lumen Tabulation

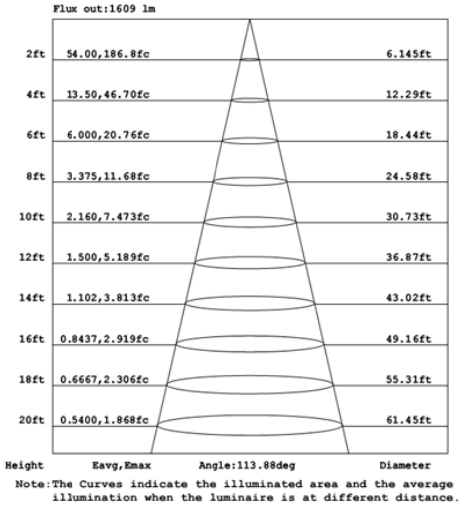
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	584.7	26.9%
0-40	961.4	44.2%
0-60	1708.5	78.6%
60-90	465.0	21.4%
70-100	197.1	9.1%
90-120	0.0	0.0%
0-90	2173.5	100.0%
90-180	0.0	0.0%
0-180	2173.5	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	70.8	3.3%	90-100	0.0	0.0%
10-20	203.5	9.4%	100-110	0.0	0.0%
20-30	310.4	14.3%	110-120	0.0	0.0%
30-40	376.7	17.3%	120-130	0.0	0.0%
40-50	392.3	18.0%	130-140	0.0	0.0%
50-60	354.8	16.3%	140-150	0.0	0.0%
60-70	268.0	12.3%	150-160	0.0	0.0%
70-80	153.6	7.1%	160-170	0.0	0.0%
80-90	43.5	2.0%	170-180	0.0	0.0%

Photometric Data







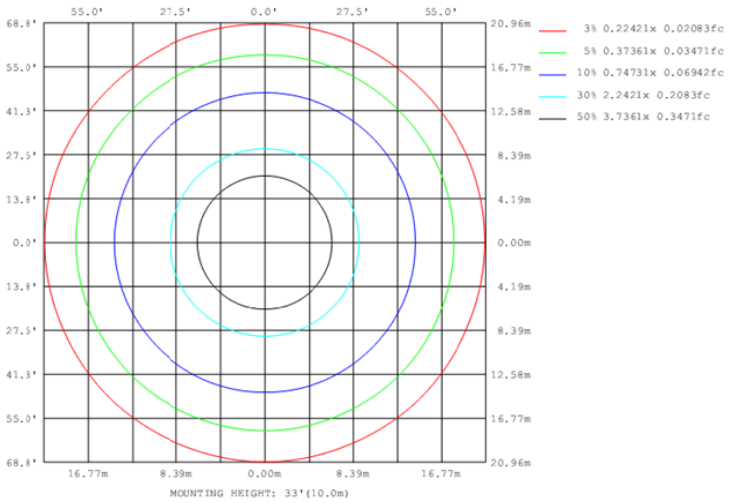


Table--1

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	747	747	747	747	747	747	747	747	747	747	747	747	747	747	747	747			
5	743	744	744	744	744	745	744	744	744	744	744	744	744	744	744	744			
10	734	735	735	735	735	736	735	736	736	735	736	736	736	735	736	735			
15	719	720	720	721	720	721	721	721	722	721	721	721	721	721	721	720			
20	698	700	699	700	700	701	700	701	701	701	701	701	701	700	700	700			
25	672	673	672	674	673	674	673	674	675	674	675	674	674	673	674	673			
30	638	640	640	641	640	642	641	642	643	642	643	641	641	640	641	640			
35	599	602	601	603	602	603	602	603	604	603	604	603	603	601	602	601			
40	555	557	557	559	558	559	558	559	560	559	560	558	559	557	558	557			
45	506	508	508	510	509	510	509	510	511	510	511	509	509	507	508	507			
50	452	454	454	456	455	457	455	456	457	456	457	455	455	453	455	453			
55	394	396	396	399	397	399	397	398	400	398	399	397	398	395	397	395			
60	333	333	335	336	336	336	336	335	336	337	335	336	334	334	333	334			
65	270	268	272	270	273	270	273	270	271	273	270	272	269	271	268	271			
70	206	206	209	208	210	208	209	207	208	210	207	208	206	207	205	207			
75	142	144	144	147	145	147	145	146	147	145	145	144	144	142	144	143			
80	85.2	87.6	87.1	89.6	88.5	89.5	87.6	88.6	89.4	87.5	88.0	86.5	87.2	85.4	86.6	86.0			
85	36.3	37.9	37.4	39.5	38.9	39.5	37.8	38.7	39.5	37.7	37.8	36.8	37.5	36.2	36.9	36.7			
90	0.97	0.98	1.01	1.04	1.18	1.24	1.24	1.07	1.11	0.98	0.93	0.94	0.91	0.95	0.94	0.95			

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	DLS0145(SUMO-R-15/D10)	3500K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202207210030	120.0	60	0.212	25.40	0.996

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3638
Duv	-0.0025
Chromaticity (x, y)	x=0.3956 y=0.3802
Chromaticity (u', v')	u'=0.2337 v'=0.5053
Color Rendering Index (CRI)	96.8
R9	85

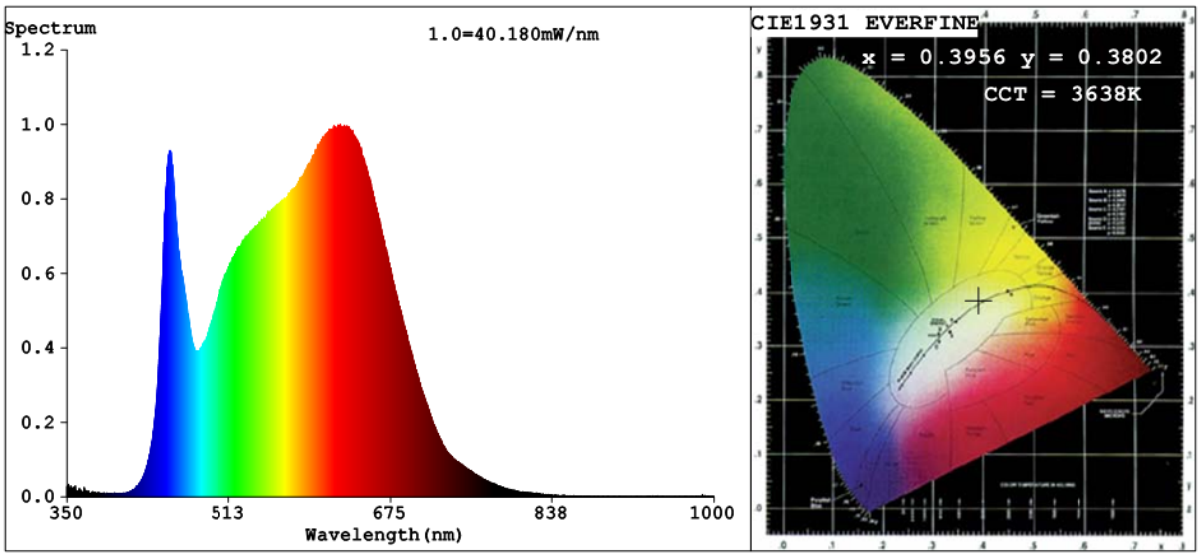
Special Color Rendering Indices			
R1	98	R9	85
R2	99	R10	98
R3	98	R11	98
R4	97	R12	78
R5	97	R13	99
R6	96	R14	99
R7	95	R15	97
R8	93	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2254.5
Luminous Efficacy (lm/W)	88.76
Beam Angle (°)	113.9
Center Beam Candle Power (cd)	775.0

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	2265
Luminous Efficacy (lm/W)	88.50

Spectral Power Distribution & Chromaticity Diagram



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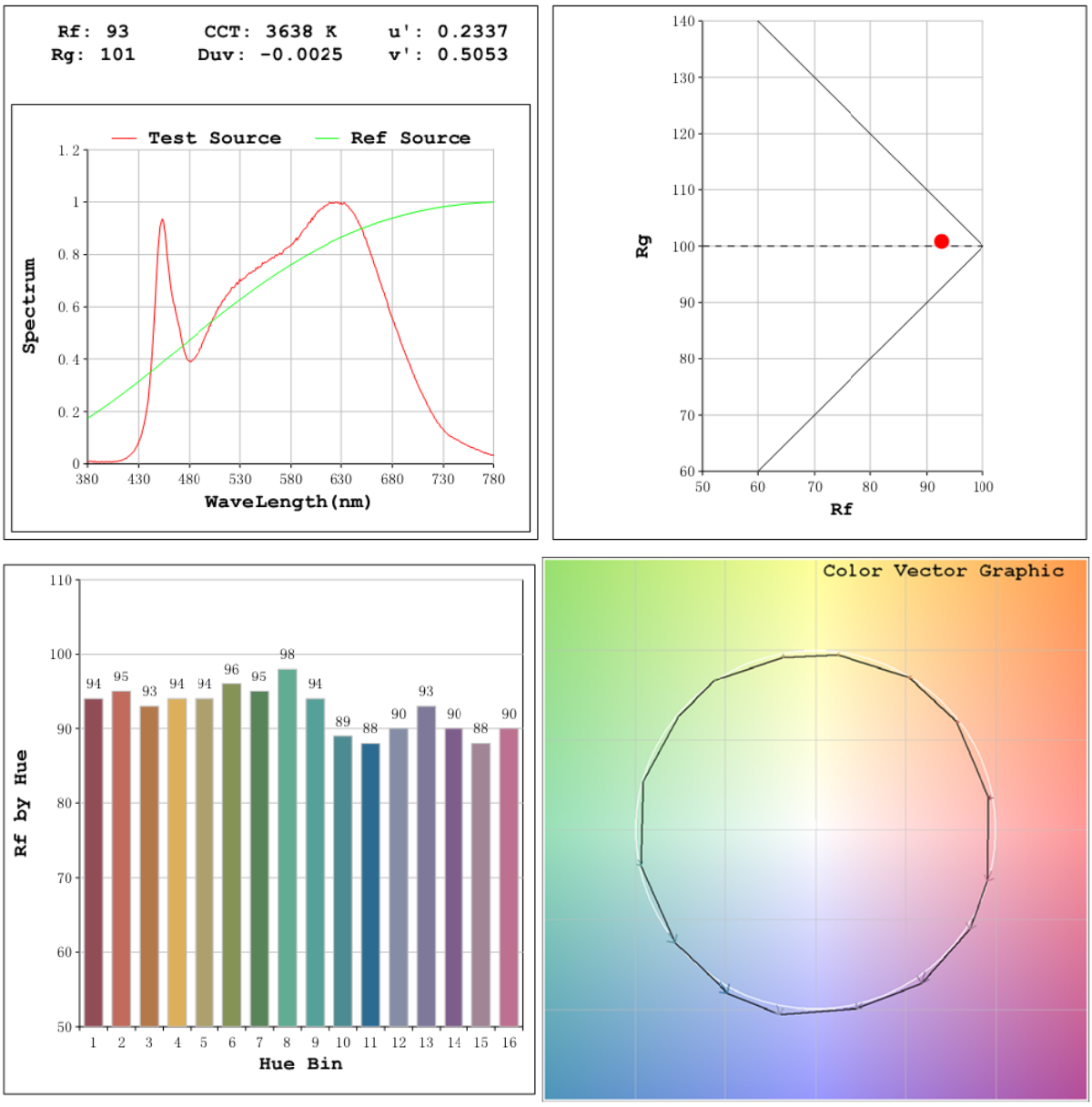
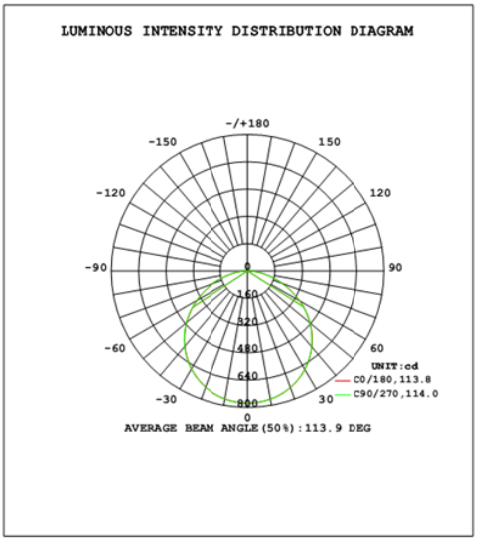


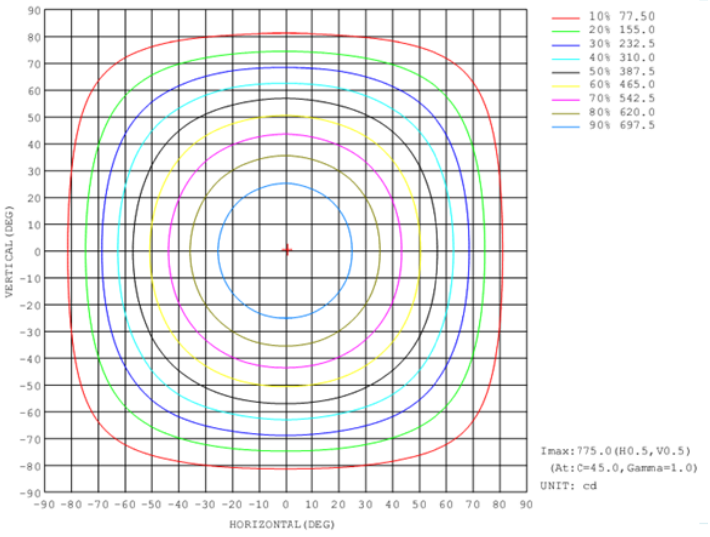
Zonal Lumen Tabulation

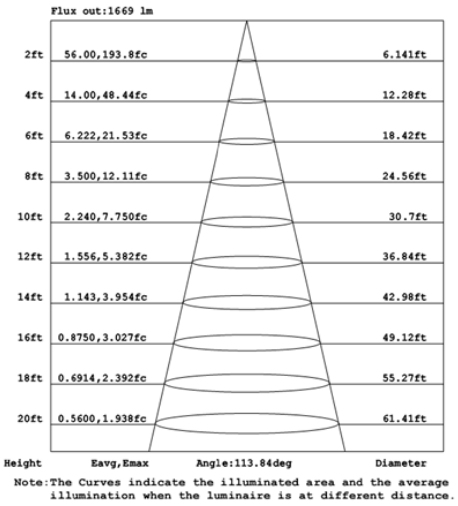
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	606.4	26.9%
0-40	997.1	44.2%
0-60	1771.9	78.6%
60-90	482.6	21.4%
70-100	204.5	9.1%
90-120	0.0	0.0%
0-90	2254.5	100.0%
90-180	0.0	0.0%
0-180	2254.5	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	73.4	3.3%	90-100	0.0	0.0%
10-20	211.1	9.4%	100-110	0.0	0.0%
20-30	322.0	14.3%	110-120	0.0	0.0%
30-40	390.7	17.3%	120-130	0.0	0.0%
40-50	406.8	18.0%	130-140	0.0	0.0%
50-60	367.9	16.3%	140-150	0.0	0.0%
60-70	278.1	12.3%	150-160	0.0	0.0%
70-80	159.5	7.1%	160-170	0.0	0.0%
80-90	45.1	2.0%	170-180	0.0	0.0%

Photometric Data







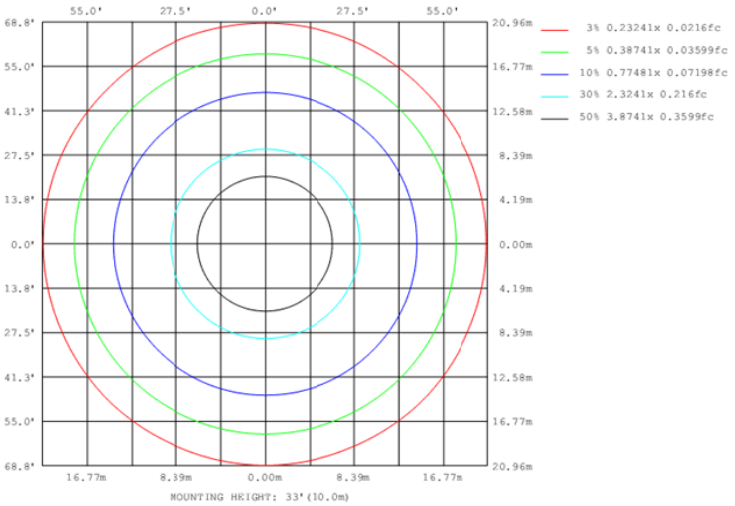


Table--1

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	775	775	775	775	775	775	775	775	775	775	775	775	775	775	775	775			
5	771	772	772	772	772	772	772	772	772	772	772	772	772	772	772	772			
10	762	763	762	763	763	763	763	763	763	763	764	763	763	762	763	762			
15	746	747	747	747	747	747	747	748	749	748	749	748	748	747	748	747			
20	725	726	725	726	726	726	726	727	727	727	728	727	727	726	726	725			
25	696	698	698	699	698	699	698	699	700	700	700	699	699	698	699	698			
30	663	664	663	665	664	665	664	665	667	666	666	665	665	664	665	664			
35	622	624	623	625	624	625	624	626	627	626	626	625	626	624	624	623			
40	576	578	578	579	578	580	578	580	581	580	581	579	580	577	578	577			
45	525	527	526	528	527	529	527	529	530	529	530	528	528	526	527	526			
50	469	471	470	473	472	473	472	473	475	473	474	472	472	470	471	470			
55	408	411	411	413	412	413	412	413	414	412	414	412	412	410	411	410			
60	345	348	348	350	349	350	349	350	351	349	351	348	349	346	348	346			
65	280	278	283	280	284	280	283	280	281	284	280	282	279	281	278	281			
70	214	213	216	216	218	216	217	215	216	217	215	216	213	214	213	215			
75	147	150	149	152	151	152	150	151	152	150	151	149	150	147	149	148			
80	88.4	90.8	90.4	92.9	91.9	92.9	90.8	91.9	92.7	90.8	91.3	89.7	90.4	88.7	89.7	89.2			
85	37.7	39.3	38.8	40.9	40.5	41.0	39.3	40.2	41.0	39.2	39.2	38.2	39.0	37.6	38.3	38.1			
90	1.00	1.02	1.05	1.09	1.24	1.33	1.31	1.13	1.18	1.04	0.98	0.97	0.95	0.98	0.96	0.99			

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	DLS0145(SUMO-R-15/D10)	4000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202207210030	120.0	60	0.215	25.70	0.996

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	4193
Duv	-0.0010
Chromaticity (x, y)	x=0.3717 y=0.3689
Chromaticity (u', v')	u'=0.2224 v'=0.4968
Color Rendering Index (CRI)	96.6
R9	88

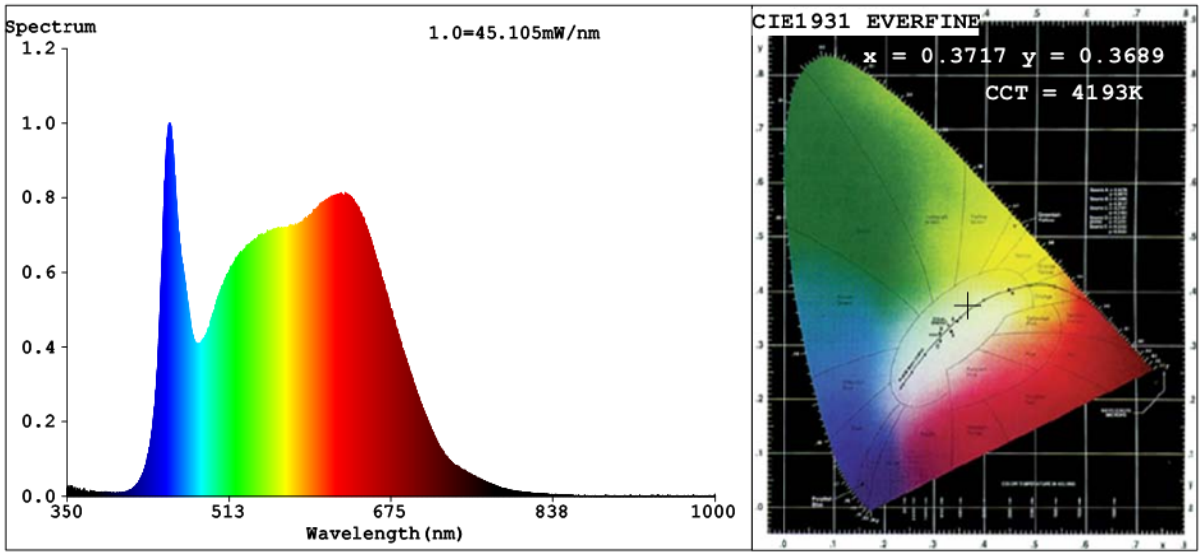
Special Color Rendering Indices			
R1	98	R9	88
R2	99	R10	96
R3	97	R11	97
R4	96	R12	74
R5	96	R13	99
R6	95	R14	98
R7	96	R15	96
R8	94	--	--

Photometric Measurement – Goniophotometer Method:

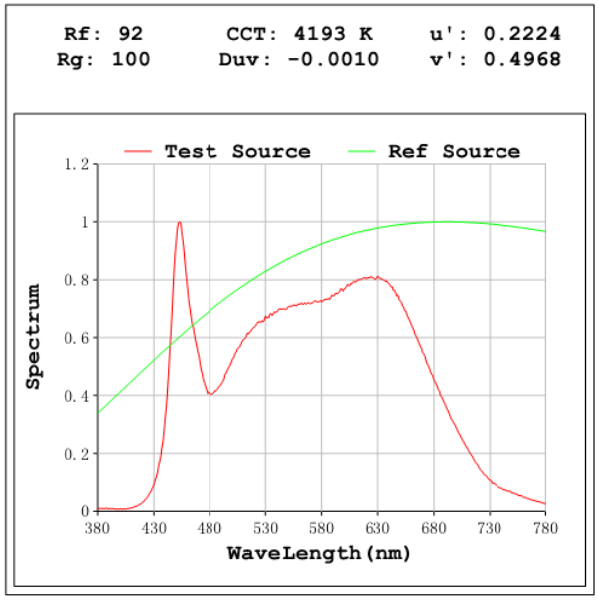
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2278.6
Luminous Efficacy (lm/W)	88.66
Beam Angle (°)	113.9
Center Beam Candle Power (cd)	783.4

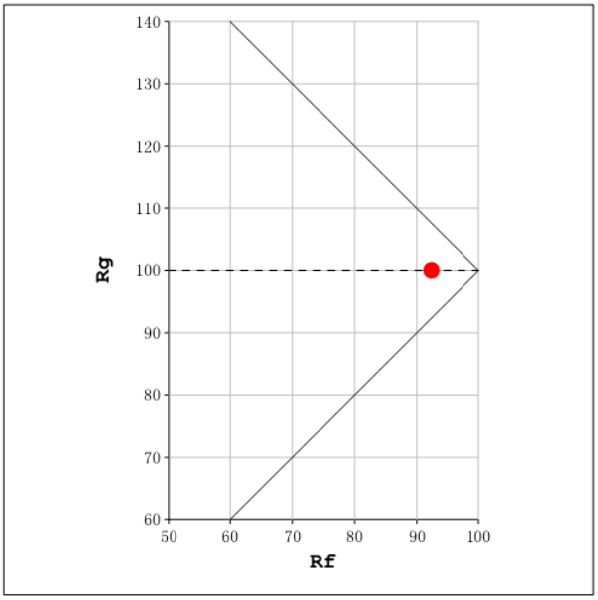
Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	2290
Luminous Efficacy (lm/W)	88.31

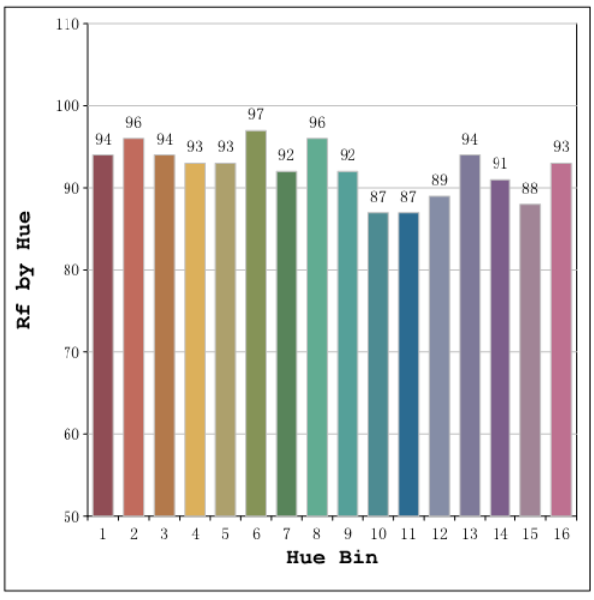
Spectral Power Distribution & Chromaticity Diagram

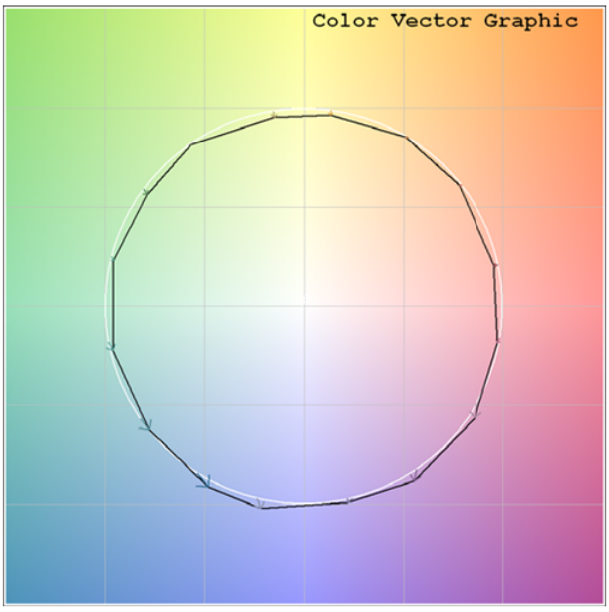


TM30







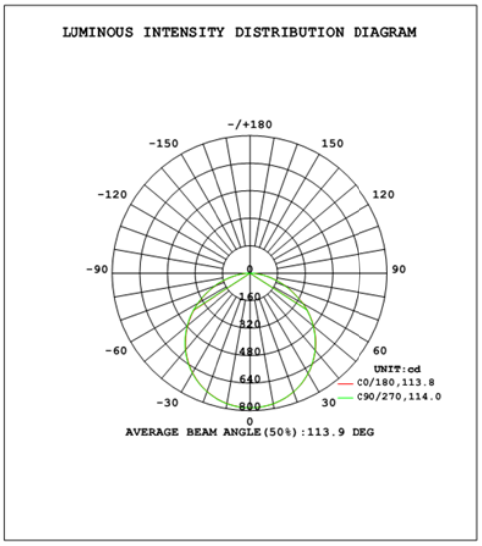


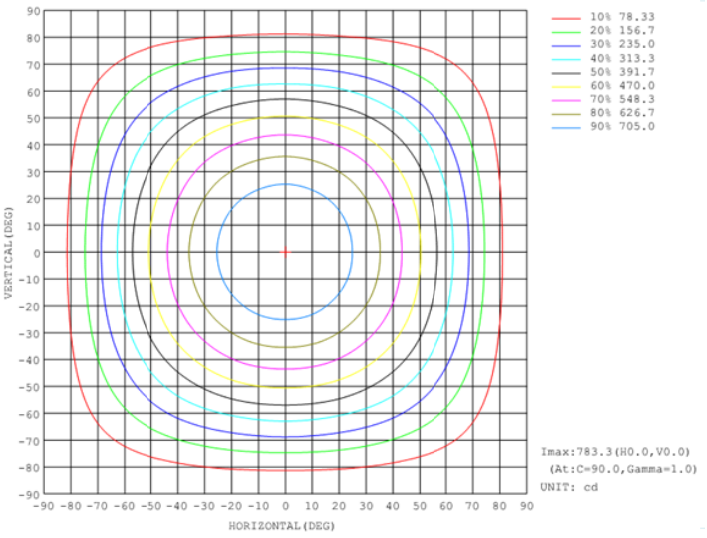
Zonal Lumen Tabulation

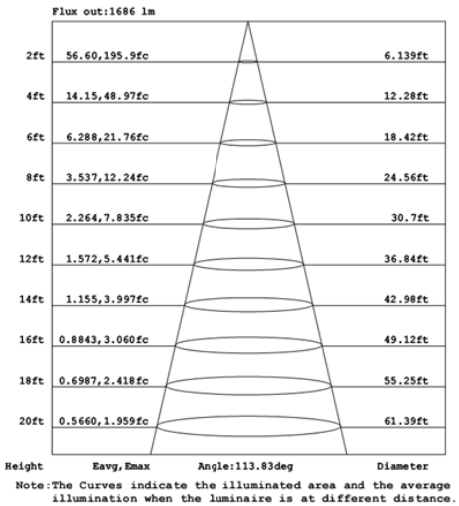
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	613.0	26.9%
0-40	1007.8	44.2%
0-60	1790.7	78.6%
60-90	487.9	21.4%
70-100	206.7	9.1%
90-120	0.0	0.0%
0-90	2278.6	100.0%
90-180	0.0	0.0%
0-180	2278.6	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	74.2	3.3%	90-100	0.0	0.0%
10-20	213.4	9.4%	100-110	0.0	0.0%
20-30	325.4	14.3%	110-120	0.0	0.0%
30-40	394.8	17.3%	120-130	0.0	0.0%
40-50	411.1	18.0%	130-140	0.0	0.0%
50-60	371.8	16.3%	140-150	0.0	0.0%
60-70	281.2	12.3%	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







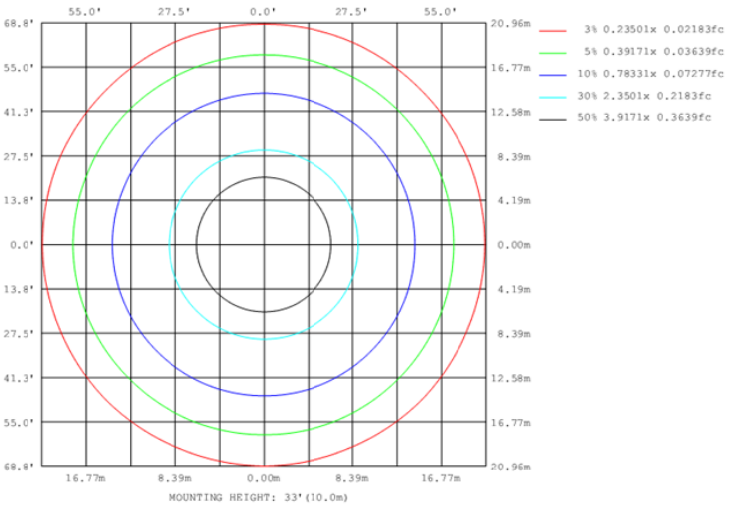


Table--1

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	783	783	783	783	783	783	783	783	783	783	783	783	783	783	783	783			
5	780	780	780	780	780	780	780	781	781	781	780	780	781	780	780	780			
10	770	770	770	771	771	771	771	772	772	771	772	771	772	771	771	771			
15	755	755	755	756	756	756	755	756	757	757	757	756	756	755	756	755			
20	733	733	733	734	734	734	734	735	736	735	735	734	735	734	734	733			
25	704	705	705	706	706	707	706	707	708	707	707	706	707	705	706	705			
30	669	671	670	672	671	672	672	673	674	673	673	672	673	670	671	671			
35	629	630	630	632	631	632	631	632	633	632	633	631	632	630	631	630			
40	582	584	583	586	585	586	585	586	587	586	586	585	586	583	584	583			
45	530	532	532	534	533	535	533	534	536	534	535	533	534	531	533	532			
50	473	476	475	478	477	478	476	478	480	477	478	477	477	475	476	475			
55	413	415	415	418	417	418	416	418	419	417	418	416	417	414	415	414			
60	349	352	351	354	353	354	352	354	355	353	354	352	353	350	352	350			
65	283	281	285	283	287	283	286	283	284	287	283	285	282	284	281	284			
70	216	215	219	218	220	218	219	217	218	219	217	218	216	216	215	217			
75	148	151	151	154	153	154	152	153	154	152	152	150	151	149	150	150			
80	89.3	91.7	91.3	93.9	93.0	93.9	91.9	92.9	93.8	91.6	92.2	90.6	91.3	89.6	90.7	90.2			
85	38.1	39.7	39.2	41.4	40.9	41.4	39.8	40.7	41.5	39.6	39.6	38.5	39.3	38.0	38.7	38.6			
90	1.02	1.03	1.06	1.12	1.25	1.34	1.33	1.15	1.20	1.06	0.98	0.98	0.96	0.98	0.98	1.01			

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	DLS0145(SUMO-R-15/D10)	5000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202207210030	120.0	60	0.215	25.80	0.996

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	5010
Duv	0.0026
Chromaticity (x, y)	x=0.3453 y=0.3569
Chromaticity (u', v')	u'=0.2095 v'=0.4873
Color Rendering Index (CRI)	95.1
R9	82

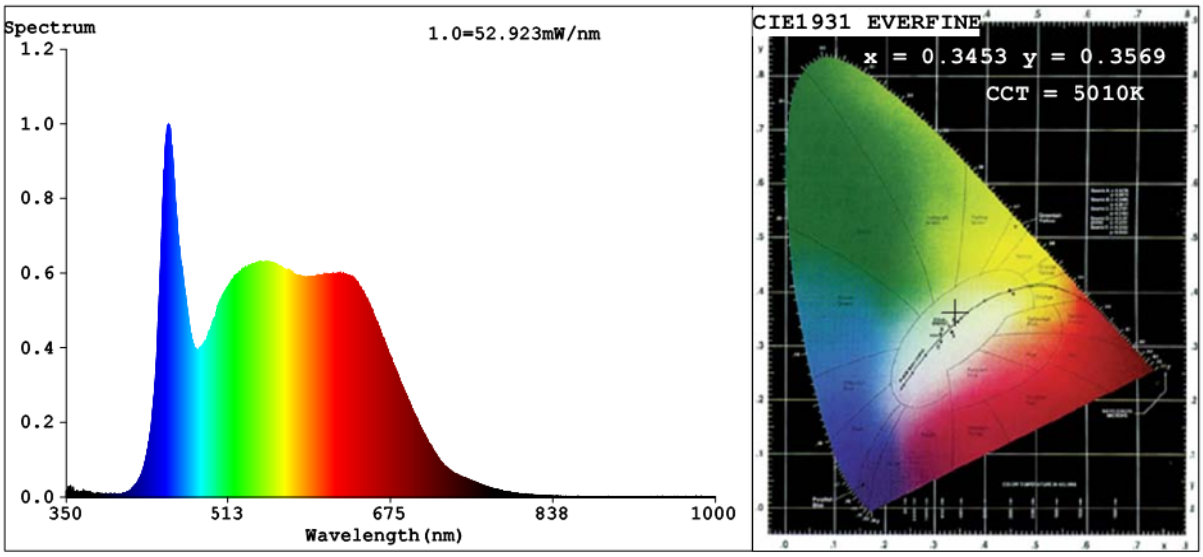
Special Color Rendering Indices			
R1	95	R9	82
R2	97	R10	91
R3	96	R11	95
R4	95	R12	74
R5	95	R13	96
R6	94	R14	98
R7	97	R15	95
R8	93	--	--

Photometric Measurement – Goniophotometer Method:

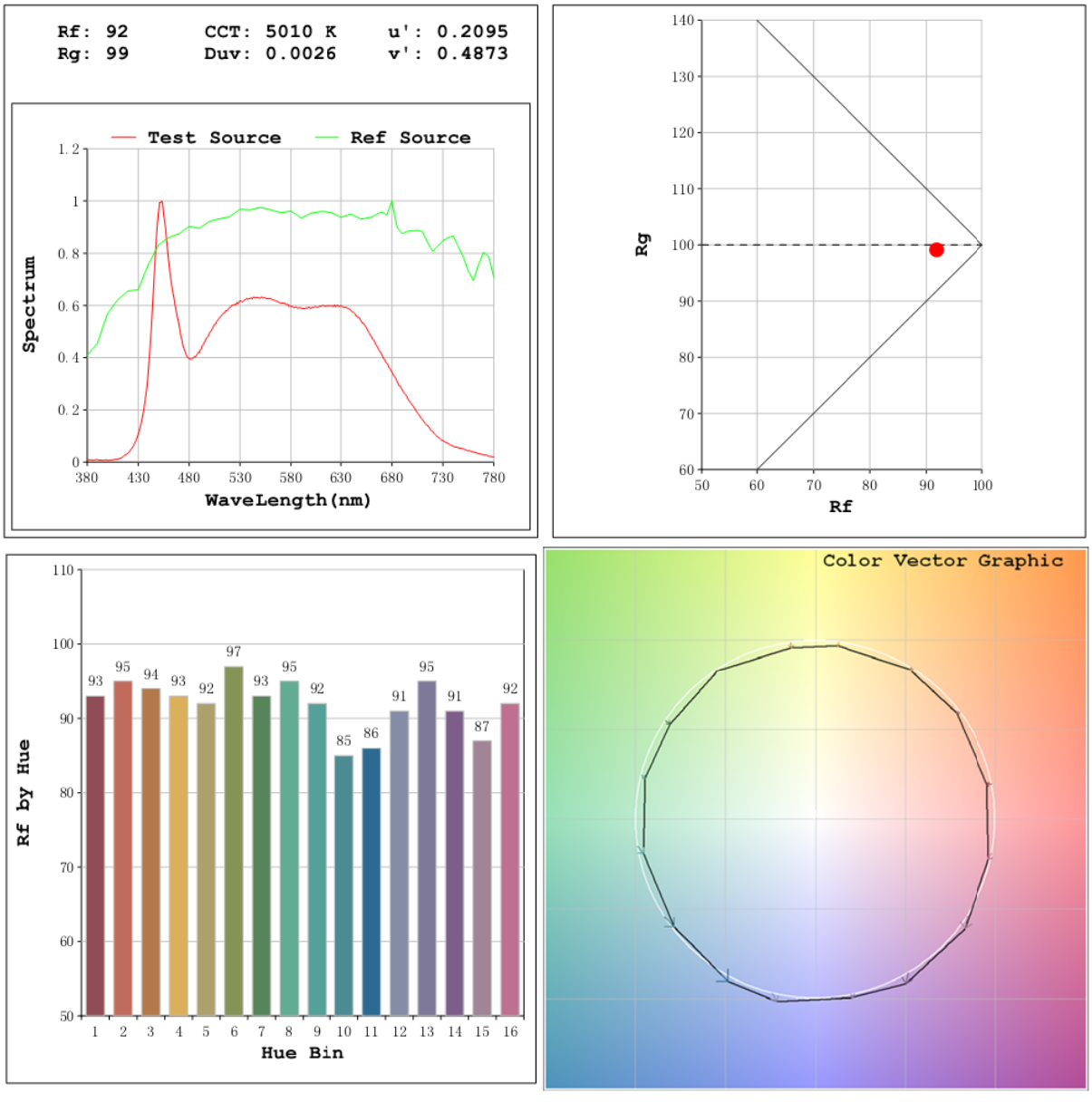
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2270.3
Luminous Efficacy (lm/W)	88.00
Beam Angle (°)	113.9
Center Beam Candle Power (cd)	781.0

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	2289
Luminous Efficacy (lm/W)	88.15

Spectral Power Distribution & Chromaticity Diagram



TM30

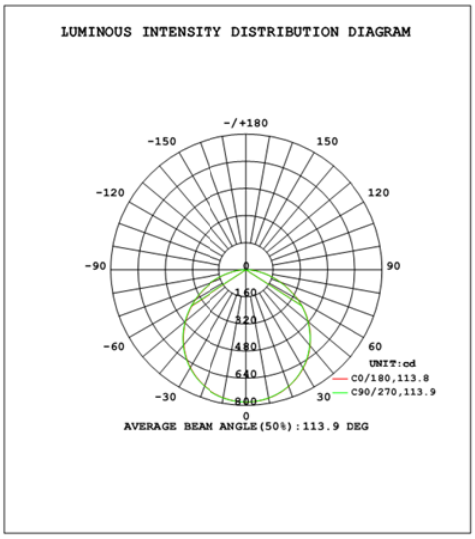


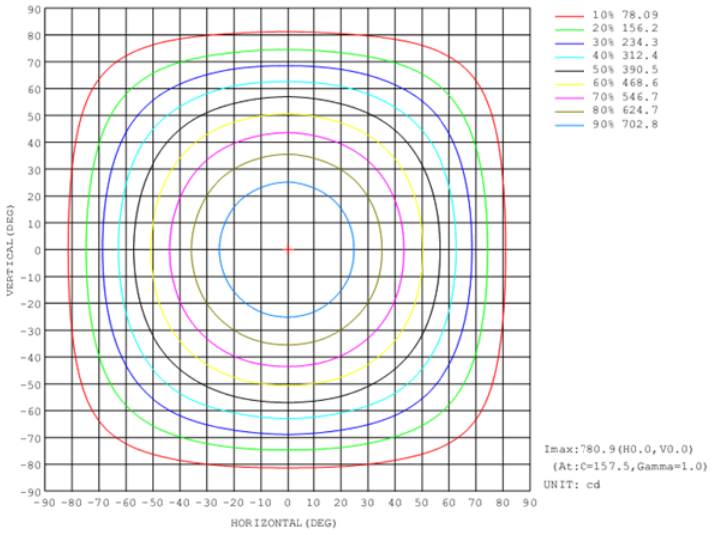
Zonal Lumen Tabulation

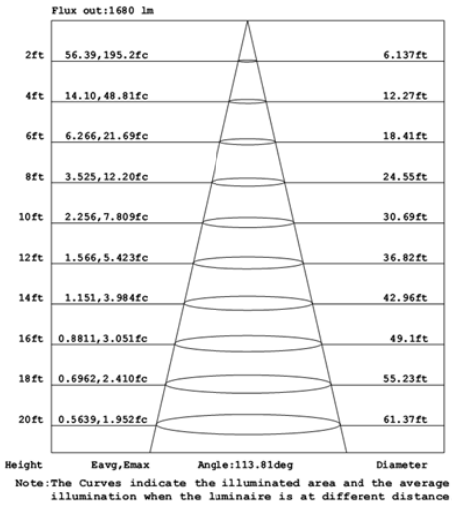
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	610.8	26.9%
0-40	1004.2	44.2%
0-60	1784.2	78.6%
60-90	486.0	21.4%
70-100	206.0	9.1%
90-120	0.0	0.0%
0-90	2270.3	100.0%
90-180	0.0	0.0%
0-180	2270.3	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	73.9	3.3%	90-100	0.0	0.0%
10-20	212.6	9.4%	100-110	0.0	0.0%
20-30	324.3	14.3%	110-120	0.0	0.0%
30-40	393.4	17.3%	120-130	0.0	0.0%
40-50	409.6	18.0%	130-140	0.0	0.0%
50-60	370.5	16.3%	140-150	0.0	0.0%
60-70	280.1	12.3%	150-160	0.0	0.0%
70-80	160.5	7.1%	160-170	0.0	0.0%
80-90	45.4	2.0%	170-180	0.0	0.0%

Photometric Data







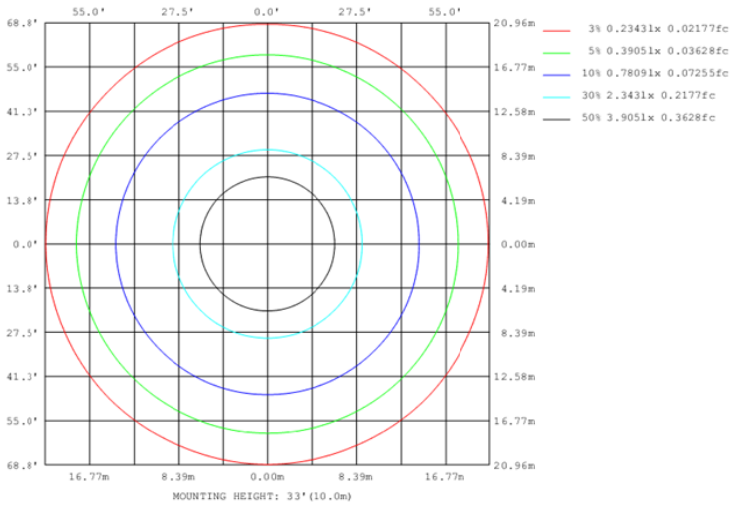
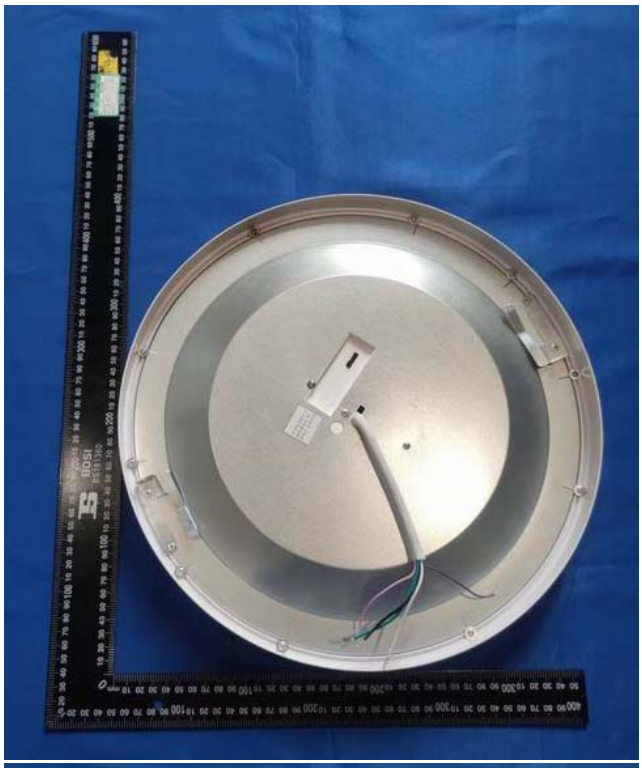


Table--1 UNIT: cd

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	781	781	781	781	781	781	781	781	781	781	781	781	781	781	781	781			
5	777	778	777	778	778	778	778	778	778	778	778	778	777	777	778	777			
10	768	768	768	769	768	769	769	769	769	769	769	769	769	768	768	768			
15	751	753	752	754	753	754	753	754	754	754	754	753	753	752	753	752			
20	729	731	731	732	731	732	732	733	733	732	732	731	731	730	731	731			
25	701	703	702	704	703	704	704	705	705	705	705	703	704	702	703	703			
30	666	669	668	670	669	671	670	671	671	670	670	669	669	668	669	668			
35	626	628	627	630	629	630	629	630	631	630	630	629	629	627	628	627			
40	579	582	581	584	583	585	583	584	585	584	584	583	583	581	582	581			
45	528	530	530	533	532	533	532	533	534	532	533	531	531	529	530	529			
50	471	475	474	477	475	477	475	477	478	476	477	474	475	472	474	473			
55	411	414	414	417	415	417	415	416	417	415	416	414	415	412	414	412			
60	347	351	350	353	352	354	351	353	354	352	353	350	351	348	351	349			
65	281	280	284	283	286	283	286	282	283	286	282	284	280	282	280	283			
70	215	215	218	217	219	217	219	216	218	219	216	217	215	216	214	216			
75	148	151	150	153	152	153	151	152	153	151	152	150	151	148	150	149			
80	88.9	91.4	90.9	93.7	92.7	93.7	91.5	92.7	93.5	91.4	92.1	90.2	91.0	89.1	90.3	89.7			
85	37.9	39.6	39.0	41.3	40.8	41.4	39.6	40.6	41.5	39.5	39.5	38.4	39.2	37.8	38.6	38.3			
90	1.02	1.03	1.06	1.12	1.22	1.31	1.29	1.13	1.22	1.07	0.98	0.99	0.96	0.99	0.97	1.00			

Sample No.	Wattage and CCT setting	Test Voltage(V)	Flux(lm)	P(W)	Luminous Efficacy lm/W
DLS0145(SUMO-R-15/D10)	2700K setting	120.0	2090	25.70	81.32
		277.0	2098	25.95	80.84
	3000K setting	120.0	2173.5	25.80	84.24
		277.0	2175	25.98	83.71
	3500K setting	120.0	2254.5	25.40	88.76
		277.0	2265	25.60	88.50
	4000K setting	120.0	2278.6	25.70	88.66
		277.0	2290	25.93	88.31
	5000K setting	120.0	2270.7	25.80	88.00
		277.0	2289	25.96	88.15

3. Product Photo



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