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): CRLEDFA-8R-22S-9CCT-UNV-WS/E

Report Type:	Testing and Report According to IES LM-79-2008
Type of Luminaire:	Downlights
Report Date:	2023-02-14

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	11.0 W /16.0 W/22.0 W
Rated Initial Lamp Lumen	1000 lm/1500 lm/2000 lm
Declared CCT	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	2023-02-14	Test Ambient:	25.3 ºC
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	CRLEDFA-8R-22S-9CCT-UNV-WS/E	3000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202302140004	120.0	60	0.181	21.60	0.997

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3047
Duv	-0.0025
Chromaticity (x, y)	x=0.4301 y=0.3956
Chromaticity (u', v')	u'=0.2498 v'=0.5170
Color Rendering Index (CRI)	94.1
R9	64

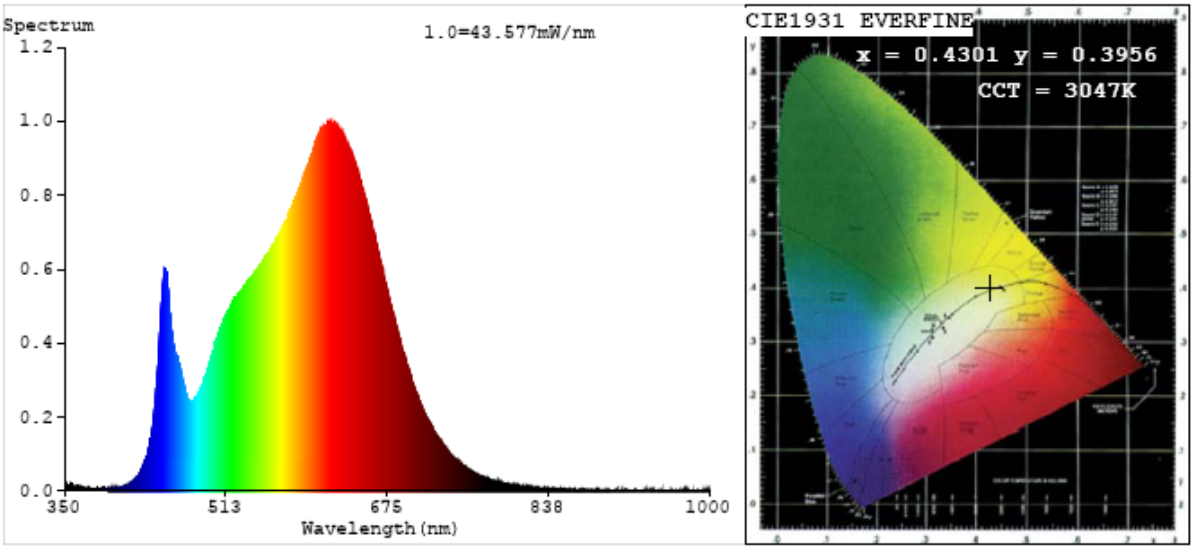
Special Color Rendering Indices			
R1	95	R9	64
R2	98	R10	95
R3	98	R11	96
R4	94	R12	84
R5	95	R13	96
R6	96	R14	99
R7	92	R15	91
R8	83	--	--

Photometric Measurement – Goniophotometer Method:

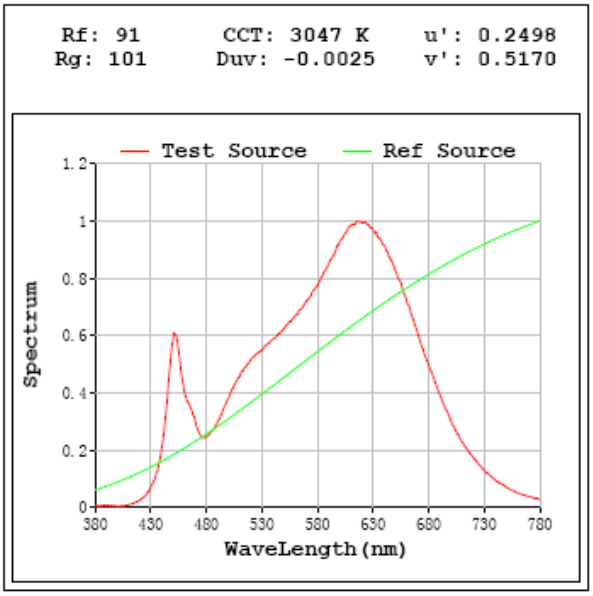
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2154.8
Luminous Efficacy (lm/W)	99.76
Beam Angle (°)	88.1
Center Beam Candle Power (cd)	1147

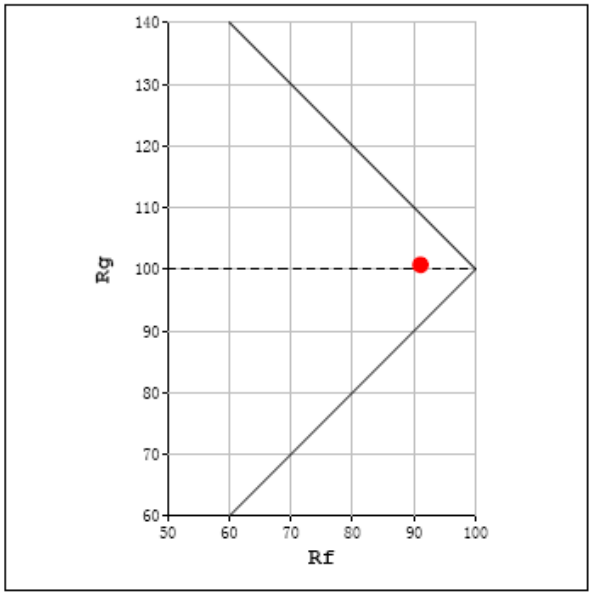
Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	2141.0
Luminous Efficacy (lm/W)	98.78

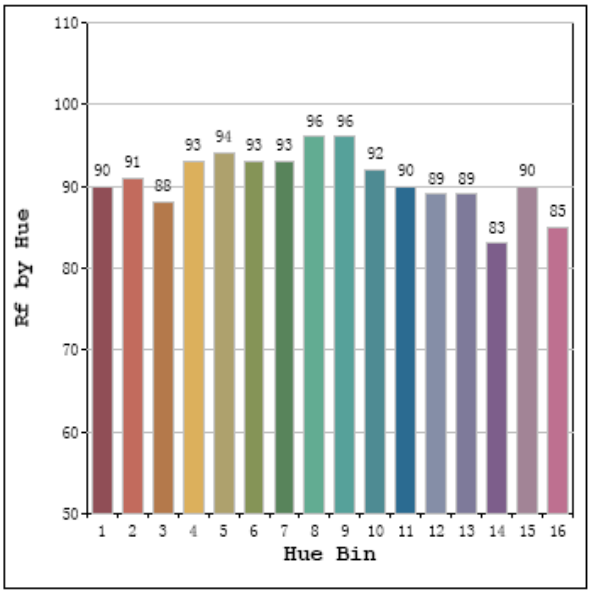
Spectral Power Distribution & Chromaticity Diagram

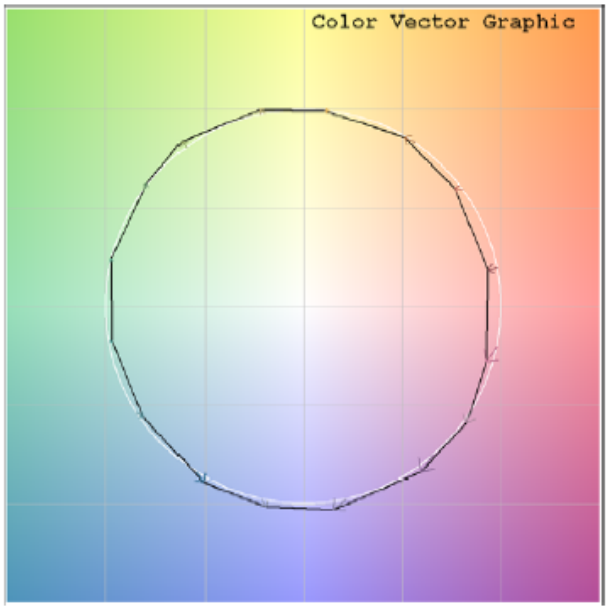


TM30







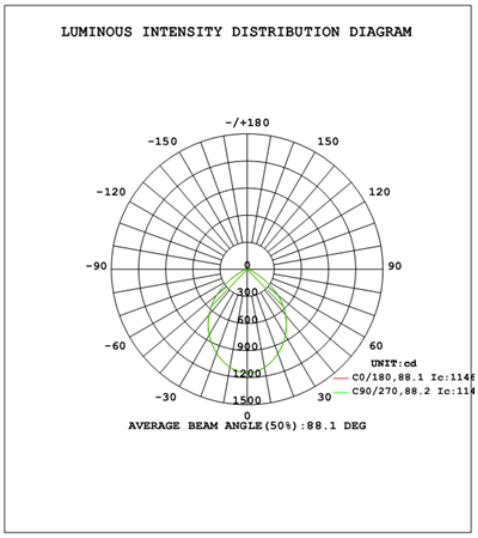


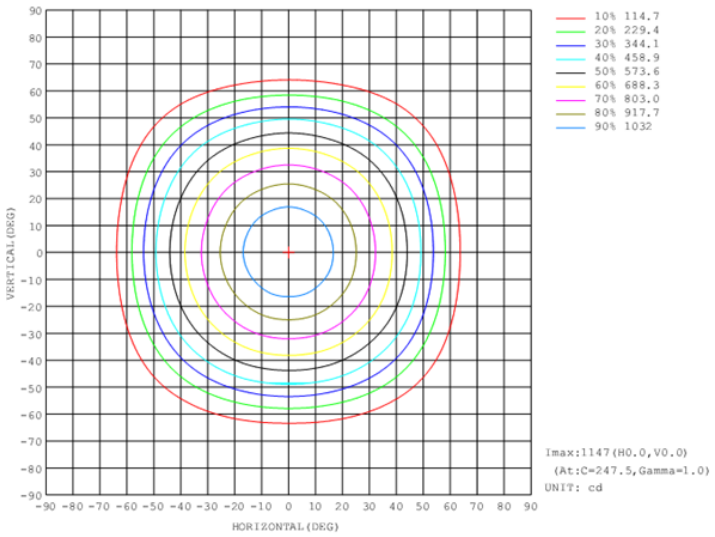
Zonal Lumen Tabulation

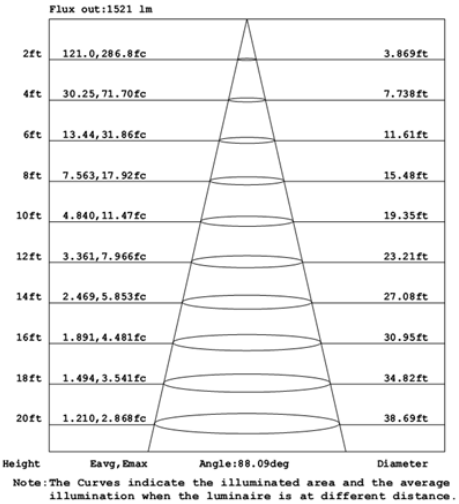
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	826.4	38.3%
0-40	1296.5	60.2%
0-60	1998.1	92.7%
60-90	156.8	7.3%
70-100	51.4	2.4%
90-120	0.0	0.0%
0-90	2154.8	100.0%
90-180	0.0	0.0%
0-180	2154.8	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	107.2	5.0%	90-100	0.0	0.0%
10-20	295.9	13.7%	100-110	0.0	0.0%
20-30	423.3	19.6%	110-120	0.0	0.0%
30-40	470.2	21.8%	120-130	0.0	0.0%
40-50	424.7	19.7%	130-140	0.0	0.0%
50-60	276.9	12.8%	140-150	0.0	0.0%
60-70	105.3	4.9%	150-160	0.0	0.0%
70-80	40.3	1.9%	160-170	0.0	0.0%
80-90	11.1	0.5%	170-180	0.0	0.0%

Photometric Data







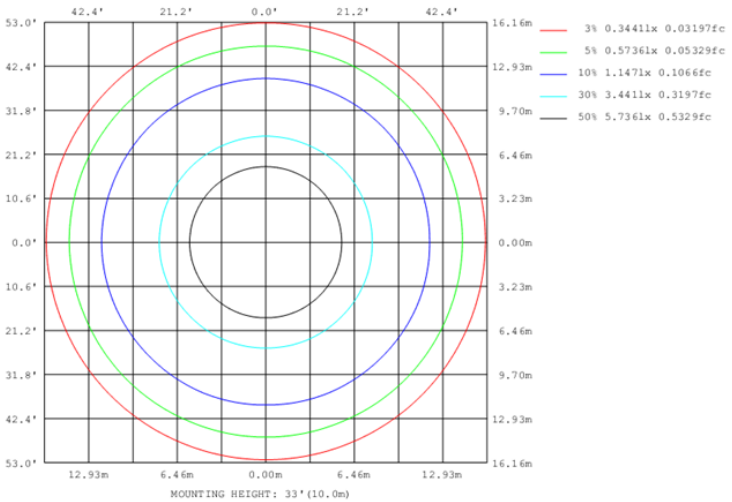


Table--1 UNIT: cd

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	1146	1146	1146	1146	1146	1146	1146	1146	1146	1146	1146	1146	1146	1146	1146	1146			
5	1134	1134	1134	1135	1134	1134	1133	1134	1135	1135	1136	1135	1136	1134	1135	1135			
10	1099	1101	1100	1100	1099	1100	1099	1101	1102	1101	1103	1102	1104	1102	1103	1101			
15	1050	1052	1049	1051	1049	1051	1049	1051	1053	1052	1054	1053	1054	1052	1053	1052			
20	989	990	988	991	989	990	988	990	992	991	993	992	994	992	993	991			
25	918	920	918	920	918	919	917	920	923	921	924	923	924	922	923	921			
30	840	842	839	841	839	840	838	839	843	841	844	843	846	844	845	842			
35	753	754	751	753	750	751	749	751	754	753	756	755	758	756	758	756			
40	657	659	654	657	653	655	651	655	658	656	660	659	662	660	662	660			
45	552	553	549	551	548	550	546	550	554	552	556	555	559	557	559	556			
50	438	439	434	437	433	436	432	436	440	439	444	442	447	444	447	443			
55	310	306	306	304	305	303	305	304	309	312	312	316	316	318	315	316			
60	185	183	181	180	180	180	180	180	185	187	189	191	192	192	191	190			
65	97.9	98.3	96.1	96.8	95.0	96.2	94.7	96.4	98.9	98.3	101	100	102	101	102	100			
70	59.4	59.8	58.6	58.9	57.7	58.2	57.3	58.0	59.1	58.8	60.2	60.1	61.2	60.7	61.5	60.7			
75	36.5	36.7	36.0	36.2	35.7	36.0	35.6	36.1	36.7	36.6	37.3	37.1	37.7	37.3	37.7	37.2			
80	22.3	22.5	22.0	22.1	21.7	21.9	21.6	22.0	22.5	22.4	23.0	22.8	23.3	23.0	23.3	22.9			
85	9.58	9.70	9.30	9.41	9.04	9.23	8.98	9.32	9.75	9.64	10.1	9.97	10.3	10.1	10.3	10.0			
90	0.38	0.38	0.38	0.38	0.40	0.39	0.39	0.39	0.37	0.38	0.36	0.38	0.37	0.38	0.35	0.36			

2.1.2 Electrical, Photometric and Chromaticity Measurements

Test date	2023-02-14	Test Ambient:	25.3 ºC
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	CRLEDFA-8R-22S-9CCT-UNV-WS/E	3500K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202302140004	120.0	60	0.179	21.40	0.997

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3573
Duv	-0.0034
Chromaticity (x, y)	x=0.3980 y=0.3795
Chromaticity (u', v')	u'=0.2356 v'=0.5054
Color Rendering Index (CRI)	95.4
R9	78

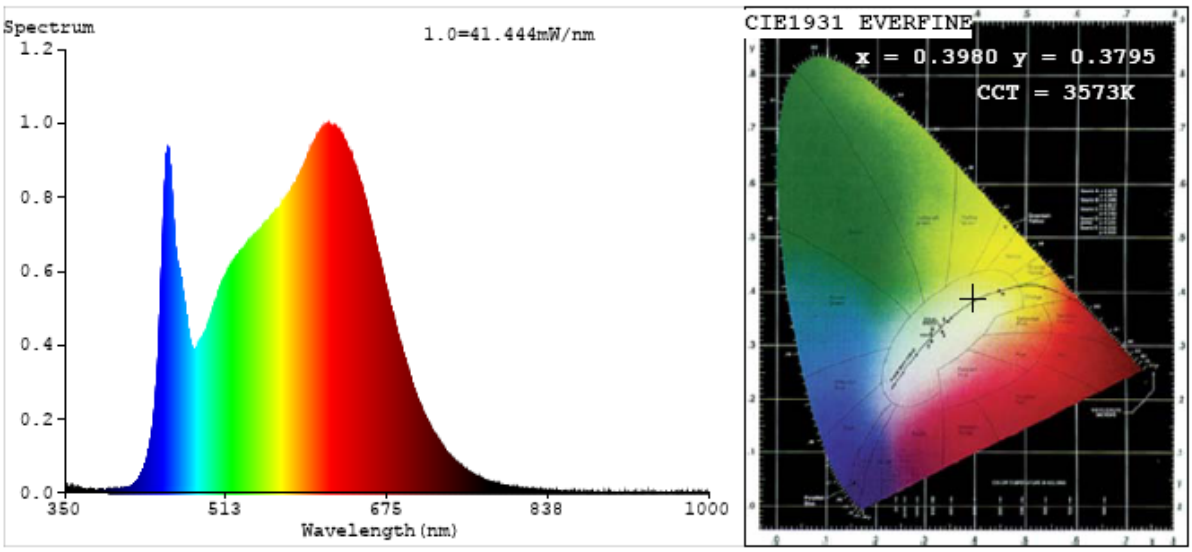
Special Color Rendering Indices			
R1	98	R9	78
R2	99	R10	99
R3	98	R11	97
R4	96	R12	78
R5	97	R13	99
R6	95	R14	100
R7	93	R15	96
R8	89	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2260.7
Luminous Efficacy (lm/W)	105.64
Beam Angle (°)	88.2
Center Beam Candle Power (cd)	1201

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	2246.0
Luminous Efficacy (lm/W)	104.66

Spectral Power Distribution & Chromaticity Diagram



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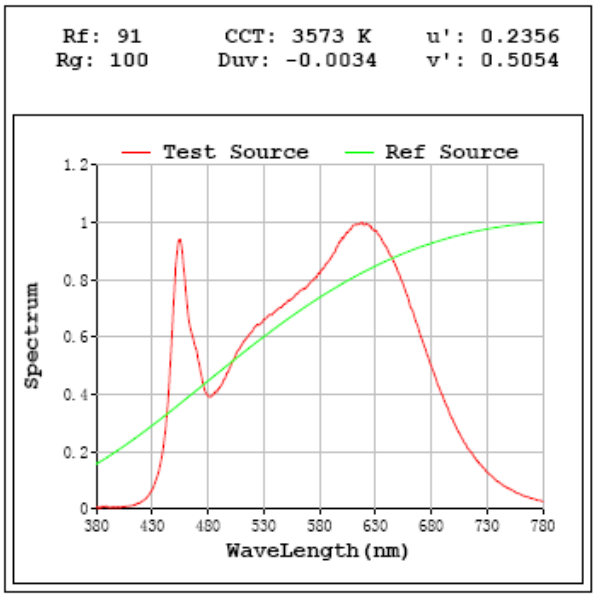
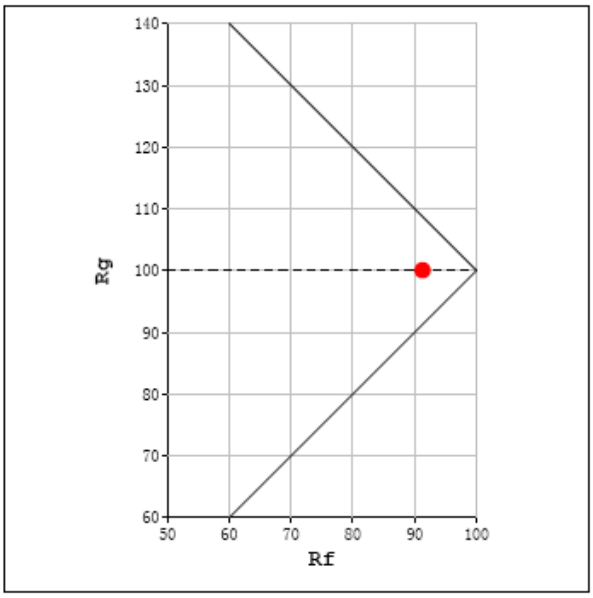
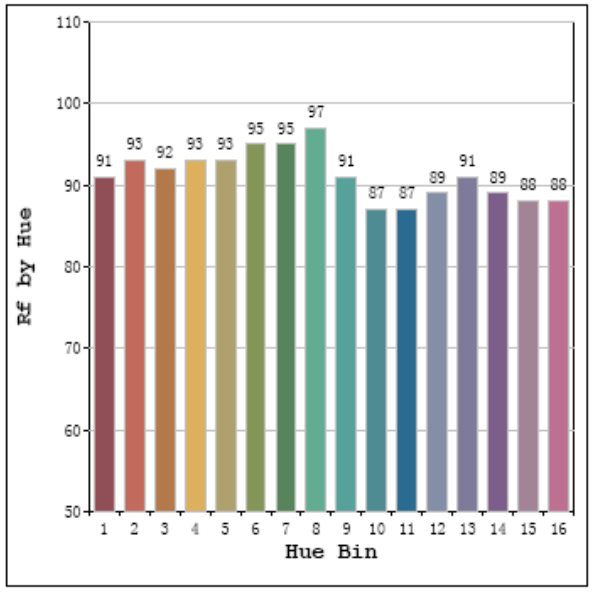
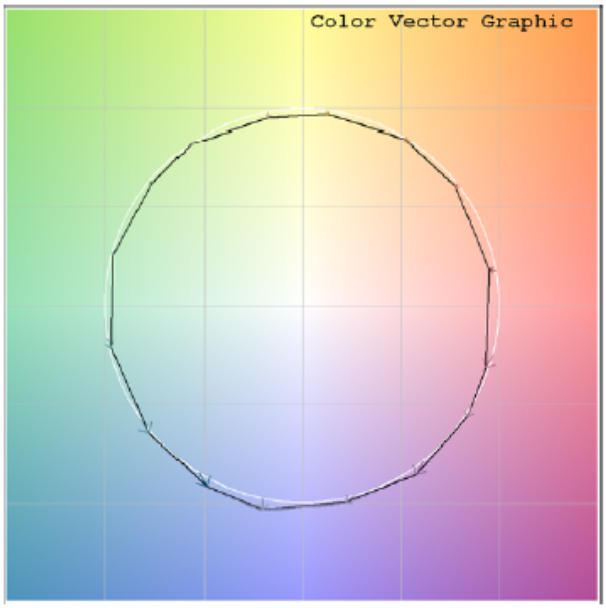






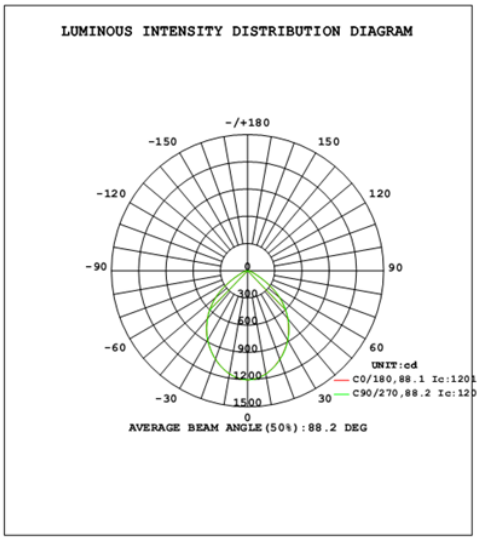


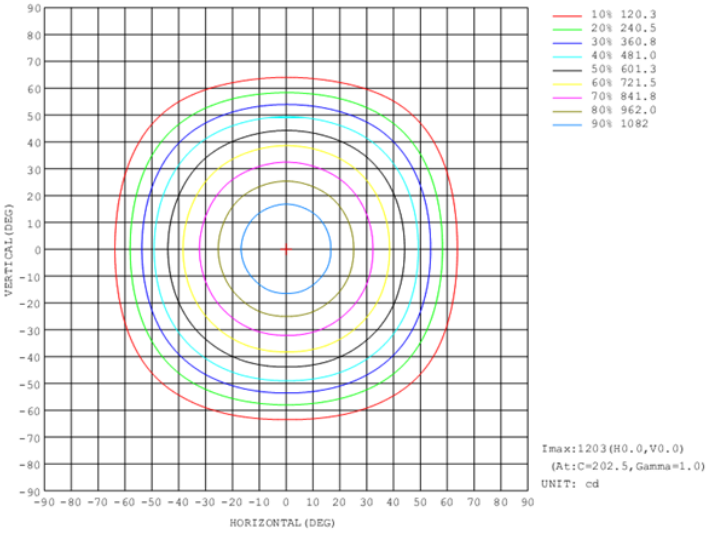
Zonal Lumen Tabulation

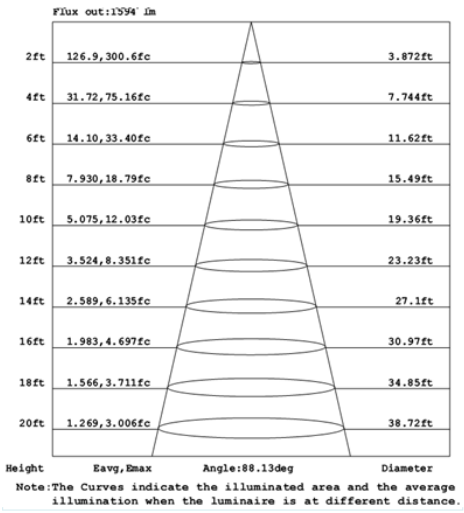
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	866.3	38.3%
0-40	1359.4	60.1%
0-60	2095.9	92.7%
60-90	164.7	7.3%
70-100	54.0	2.4%
90-120	0.0	0.0%
0-90	2260.7	100.0%
90-180	0.0	0.0%
0-180	2260.7	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	112.4	5.0%	90-100	0.0	0.0%
10-20	310.1	13.7%	100-110	0.0	0.0%
20-30	443.8	19.6%	110-120	0.0	0.0%
30-40	493.1	21.8%	120-130	0.0	0.0%
40-50	445.6	19.7%	130-140	0.0	0.0%
50-60	290.9	12.9%	140-150	0.0	0.0%
60-70	110.8	4.9%	150-160	0.0	0.0%
70-80	42.3	1.9%	160-170	0.0	0.0%
80-90	11.6	0.5%	170-180	0.0	0.0%

Photometric Data







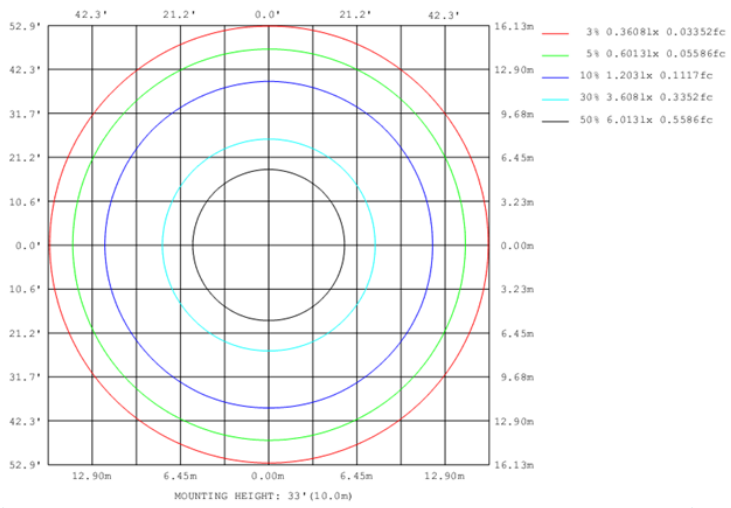


Table--1 UNIT: cd

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	1201	1201	1201	1201	1201	1201	1201	1201	1201	1201	1201	1201	1201	1201	1201	1201			
5	1189	1190	1189	1189	1189	1188	1188	1189	1189	1189	1189	1189	1190	1189	1190	1190			
10	1152	1155	1153	1154	1153	1153	1153	1153	1155	1154	1155	1155	1156	1154	1156	1155			
15	1100	1104	1101	1103	1101	1101	1100	1101	1102	1102	1103	1102	1104	1102	1105	1103			
20	1038	1040	1038	1040	1037	1038	1036	1037	1039	1038	1040	1039	1041	1039	1041	1039			
25	963	967	964	966	963	965	962	964	965	964	967	966	968	966	968	966			
30	882	885	882	884	881	882	879	880	882	880	884	882	885	884	887	884			
35	790	794	790	792	788	789	785	787	790	788	791	790	793	792	795	793			
40	690	693	689	691	686	688	684	686	687	686	690	688	693	691	695	693			
45	580	583	579	581	577	578	574	576	579	577	581	580	584	583	587	584			
50	461	464	459	462	457	459	454	457	460	458	463	461	466	464	468	465			
55	327	325	325	322	323	320	321	319	322	326	325	329	329	332	334	332			
60	196	194	193	192	191	190	190	189	193	195	196	198	199	200	200	200			
65	103	104	102	103	101	102	100.0	101	103	103	105	104	107	106	107	106			
70	62.5	63.1	61.9	62.2	60.9	61.3	60.3	61.0	61.9	61.6	62.8	62.7	63.9	63.5	64.4	63.7			
75	38.3	38.6	38.0	38.1	37.6	37.9	37.5	37.9	38.4	38.3	39.0	38.8	39.4	39.1	39.5	39.0			
80	23.4	23.6	23.1	23.3	22.8	23.0	22.7	23.1	23.6	23.5	24.0	23.9	24.4	24.0	24.4	24.0			
85	10.0	10.2	9.75	9.88	9.48	9.71	9.46	9.78	10.2	10.1	10.6	10.4	10.8	10.6	10.8	10.5			
90	0.41	0.40	0.41	0.39	0.41	0.40	0.41	0.41	0.37	0.38	0.37	0.39	0.38	0.39	0.38	0.37			

2.1.3 Electrical, Photometric and Chromaticity Measurements

Test date	2023-02-14	Test Ambient:	25.3 ºC
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	CRLEDFA-8R-22S-9CCT-UNV-WS/E	4000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202302140004	120.0	60	0.177	21.20	0.997

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	4109
Duv	-0.0018
Chromaticity (x, y)	x=0.3746 y=0.3692
Chromaticity (u', v')	u'=0.2242 v'=0.4973
Color Rendering Index (CRI)	95.4
R9	82

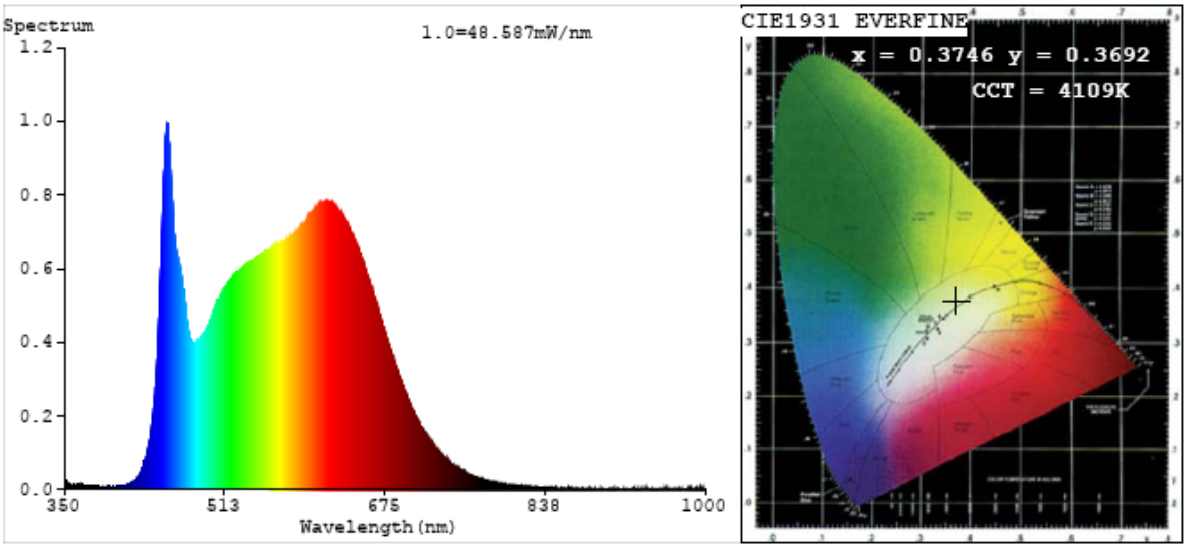
Special Color Rendering Indices			
R1	98	R9	82
R2	99	R10	99
R3	98	R11	96
R4	94	R12	73
R5	95	R13	99
R6	95	R14	100
R7	93	R15	96
R8	91	--	--

Photometric Measurement – Goniophotometer Method:

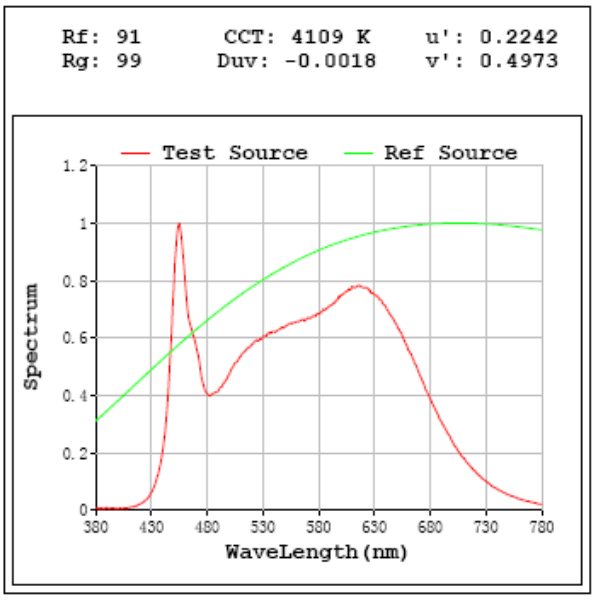
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2277.5
Luminous Efficacy (lm/W)	107.43
Beam Angle (°)	88.2
Center Beam Candle Power (cd)	1210

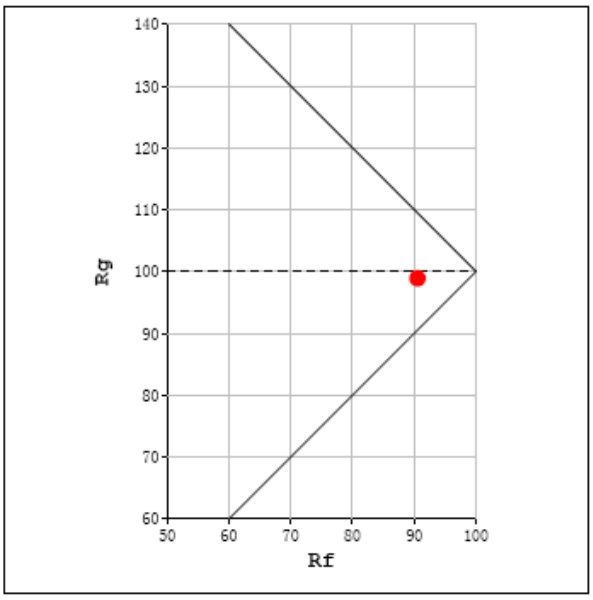
Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	2274.0
Luminous Efficacy (lm/W)	106.79

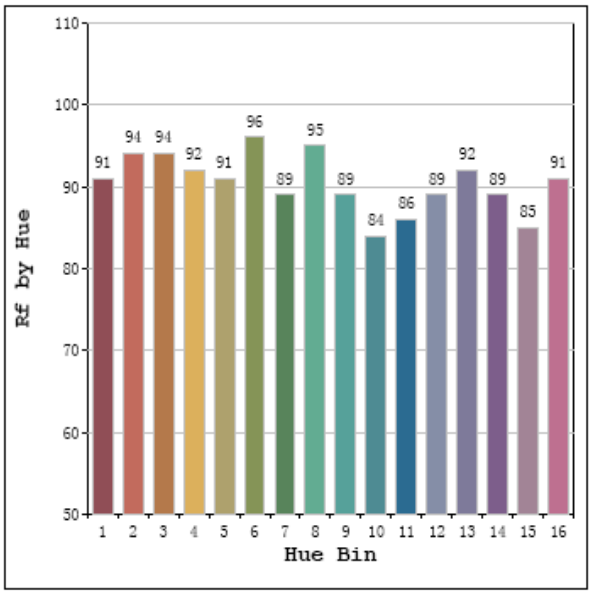
Spectral Power Distribution & Chromaticity Diagram

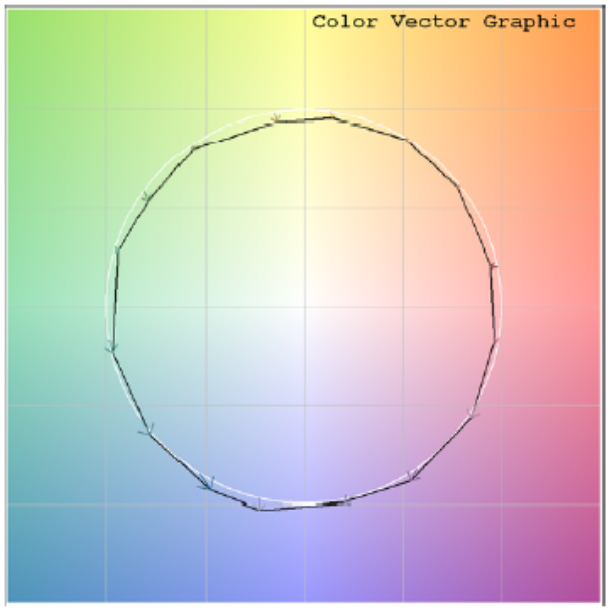


TM30







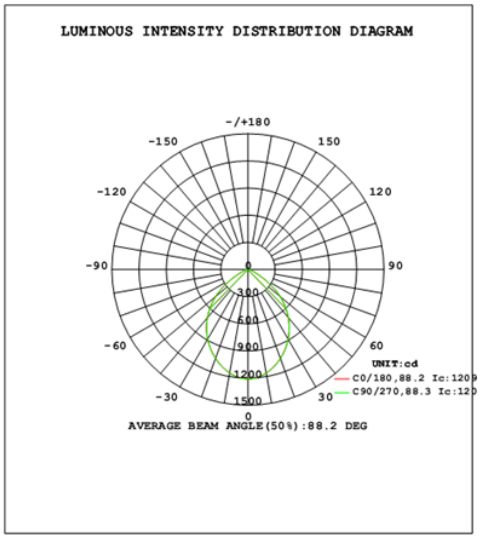


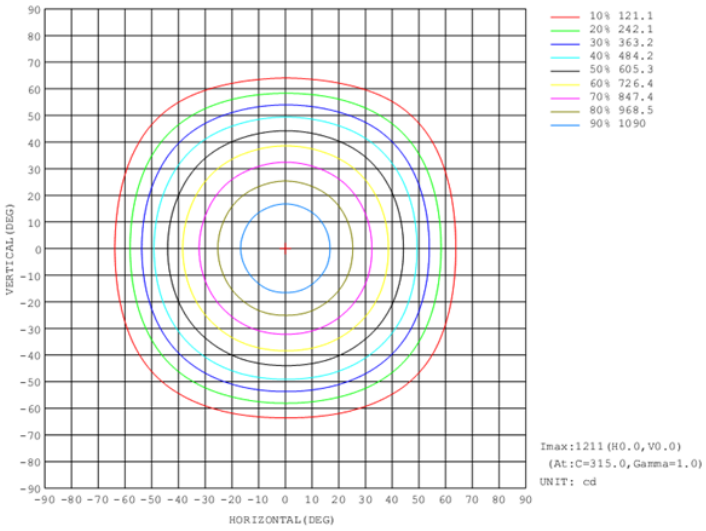
Zonal Lumen Tabulation

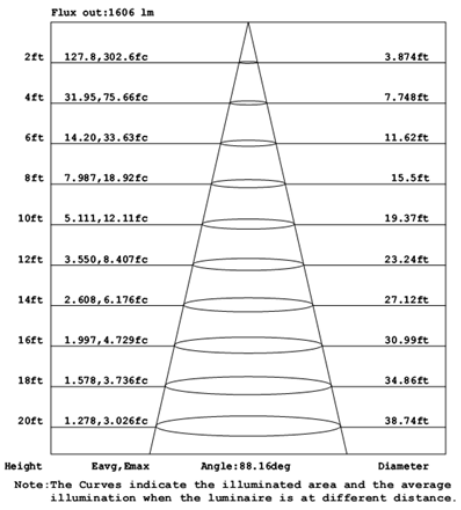
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	872.3	38.3%
0-40	1369.0	60.1%
0-60	2111.4	92.7%
60-90	166.2	7.3%
70-100	54.4	2.4%
90-120	0.0	0.0%
0-90	2277.5	100.0%
90-180	0.0	0.0%
0-180	2277.5	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	113.1	5.0%	90-100	0.0	0.0%
10-20	312.3	13.7%	100-110	0.0	0.0%
20-30	446.9	19.6%	110-120	0.0	0.0%
30-40	496.7	21.8%	120-130	0.0	0.0%
40-50	449.0	19.7%	130-140	0.0	0.0%
50-60	293.4	12.9%	140-150	0.0	0.0%
60-70	111.8	4.9%	150-160	0.0	0.0%
70-80	42.7	1.9%	160-170	0.0	0.0%
80-90	11.7	0.5%	170-180	0.0	0.0%

Photometric Data







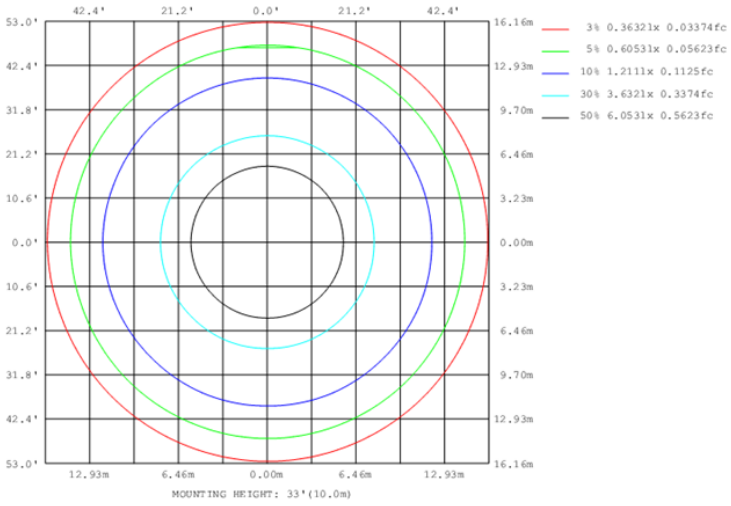


Table--1

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	1209	1209	1209	1209	1209	1209	1209	1209	1209	1209	1209	1209	1209	1209	1209	1209			
5	1196	1197	1197	1198	1197	1197	1196	1196	1197	1196	1197	1198	1198	1198	1199	1197			
10	1161	1162	1161	1163	1161	1162	1161	1161	1162	1160	1163	1163	1163	1162	1165	1163			
15	1109	1111	1110	1112	1109	1110	1108	1108	1110	1108	1110	1110	1111	1111	1113	1110			
20	1045	1047	1046	1048	1045	1046	1044	1044	1046	1044	1046	1045	1048	1046	1048	1047			
25	971	973	972	974	971	973	970	969	972	970	972	971	974	973	975	973			
30	889	891	890	891	888	889	885	886	888	885	889	887	891	890	893	890			
35	797	800	797	799	794	796	792	792	794	791	795	794	798	797	801	799			
40	696	699	695	697	693	694	690	690	692	689	693	692	697	696	700	698			
45	587	588	585	587	583	584	579	580	582	580	584	583	587	587	591	589			
50	466	469	465	468	462	464	459	460	463	460	464	463	468	467	472	469			
55	331	328	329	327	327	324	324	321	324	326	326	330	332	334	336	336			
60	198	197	197	195	195	193	192	191	194	195	197	198	200	201	202	202			
65	105	106	104	105	102	103	101	102	104	103	105	105	107	106	108	107			
70	63.1	63.8	62.6	63.0	61.6	62.0	60.9	61.4	62.4	61.9	63.2	63.0	64.2	63.9	64.9	64.2			
75	38.7	38.9	38.3	38.5	38.0	38.2	37.8	38.1	38.7	38.5	39.2	39.0	39.6	39.3	39.8	39.3			
80	23.6	23.8	23.3	23.5	23.0	23.3	22.9	23.3	23.8	23.6	24.2	24.0	24.5	24.2	24.6	24.2			
85	10.1	10.3	9.81	9.96	9.58	9.78	9.54	9.86	10.3	10.2	10.6	10.5	10.9	10.7	10.9	10.6			
90	0.41	0.39	0.40	0.40	0.41	0.41	0.41	0.41	0.38	0.39	0.38	0.41	0.38	0.39	0.37	0.39			

2.1.4 Electrical, Photometric and Chromaticity Measurements

Test date	2023-02-14	Test Ambient:	25.3 ºC
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	CRLEDFA-8R-22S-9CCT-UNV-WS/E	5000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202302140004	120.0	60	0.180	21.50	0.997

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	5030
Duv	0.0032
Chromaticity (x, y)	x=0.3448 y=0.3577
Chromaticity (u', v')	u'=0.2089 v'=0.4876
Color Rendering Index (CRI)	94.4
R9	74

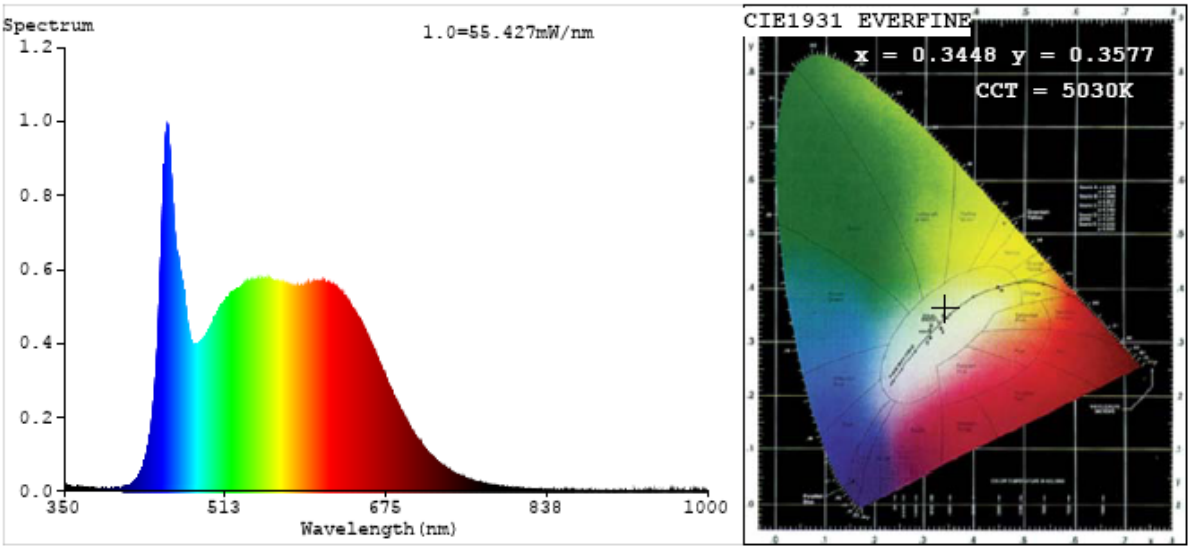
Special Color Rendering Indices			
R1	95	R9	74
R2	99	R10	95
R3	98	R11	94
R4	92	R12	72
R5	94	R13	97
R6	95	R14	100
R7	93	R15	93
R8	88	--	--

Photometric Measurement – Goniophotometer Method:

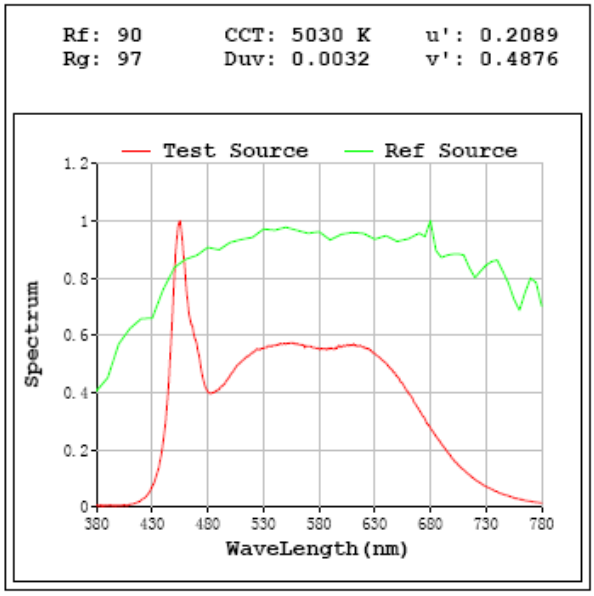
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2183.1
Luminous Efficacy (lm/W)	101.54
Beam Angle (°)	88.3
Center Beam Candle Power (cd)	1158

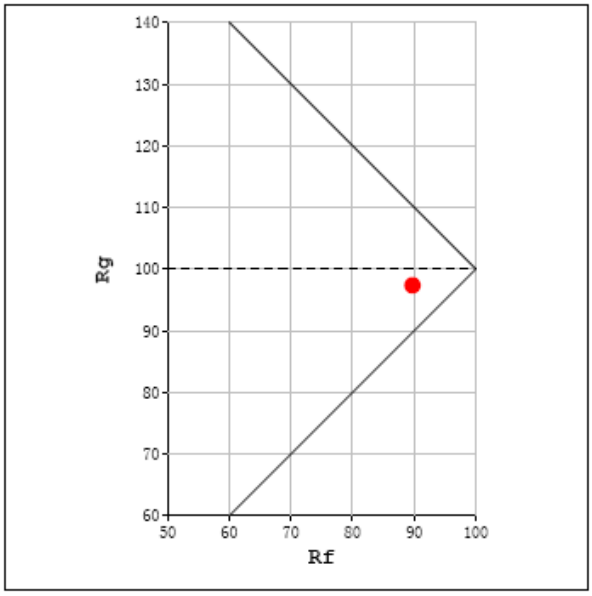
Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	2180.0
Luminous Efficacy (lm/W)	101.35

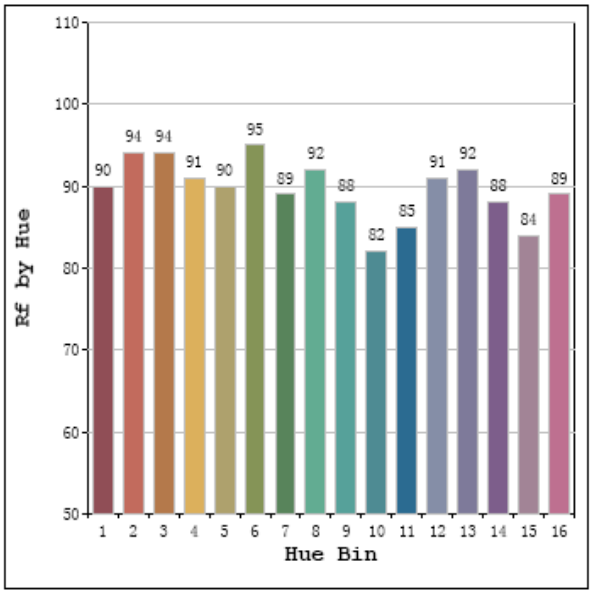
Spectral Power Distribution & Chromaticity Diagram

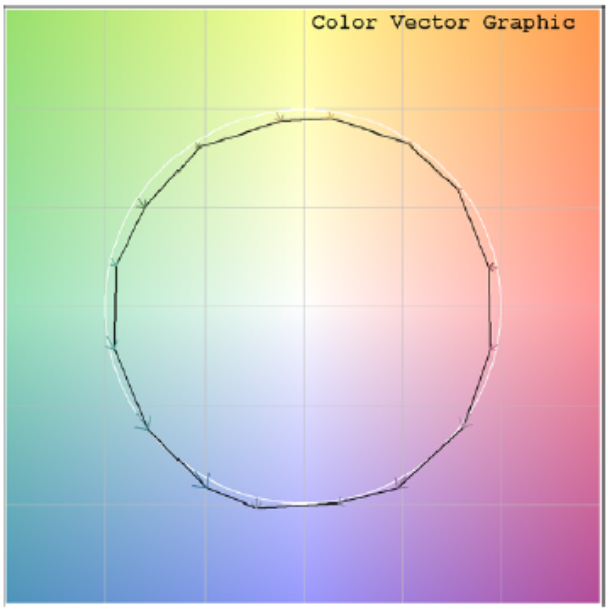


TM30







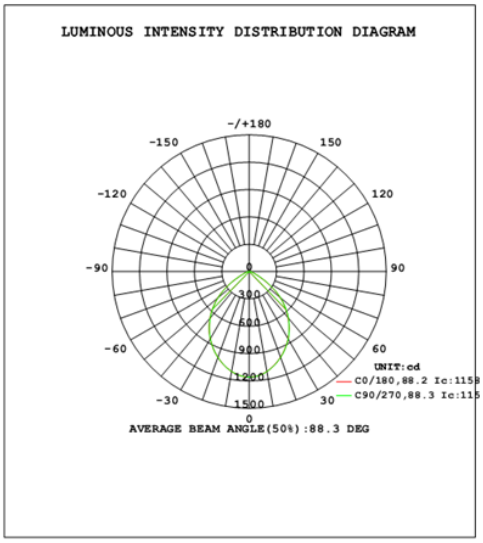


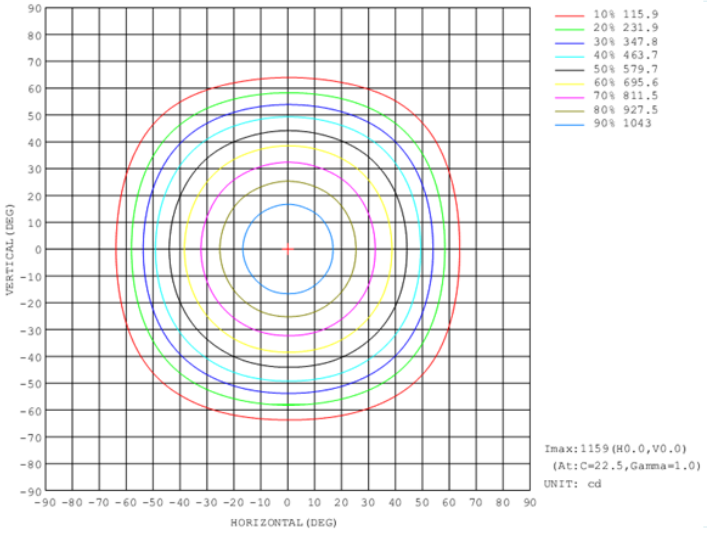
Zonal Lumen Tabulation

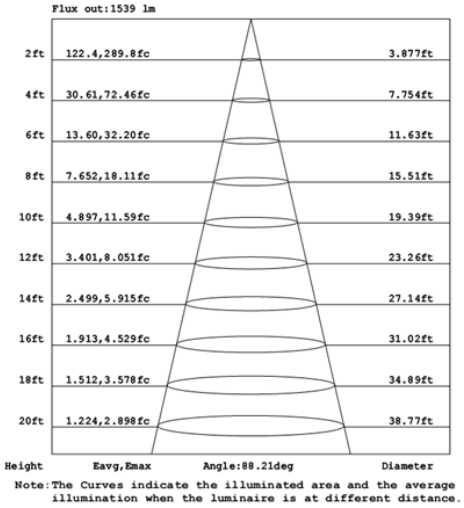
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	835.6	38.3%
0-40	1311.5	60.1%
0-60	2023.6	92.7%
60-90	159.5	7.3%
70-100	52.1	2.4%
90-120	0.0	0.0%
0-90	2183.1	100.0%
90-180	0.0	0.0%
0-180	2183.1	100.0%

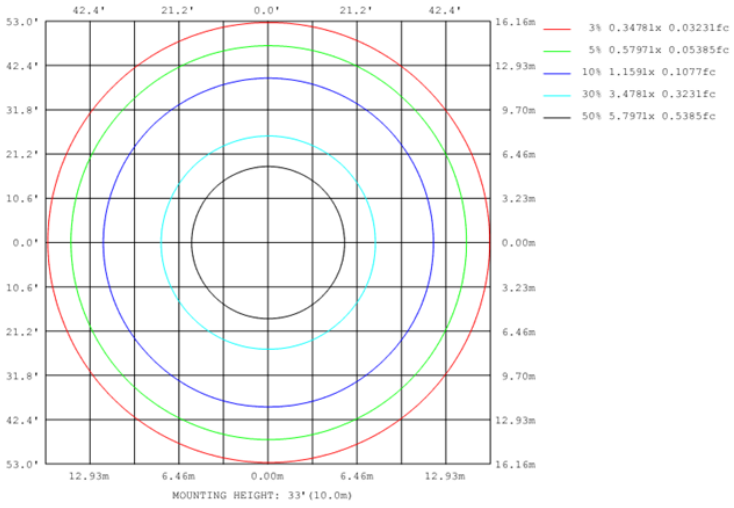
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	108.3	5.0%	90-100	0.0	0.0%
10-20	299.1	13.7%	100-110	0.0	0.0%
20-30	428.2	19.6%	110-120	0.0	0.0%
30-40	476.0	21.8%	120-130	0.0	0.0%
40-50	430.5	19.7%	130-140	0.0	0.0%
50-60	281.6	12.9%	140-150	0.0	0.0%
60-70	107.4	4.9%	150-160	0.0	0.0%
70-80	40.9	1.9%	160-170	0.0	0.0%
80-90	11.2	0.5%	170-180	0.0	0.0%

Photometric Data









\

Table--1 UNIT: cd

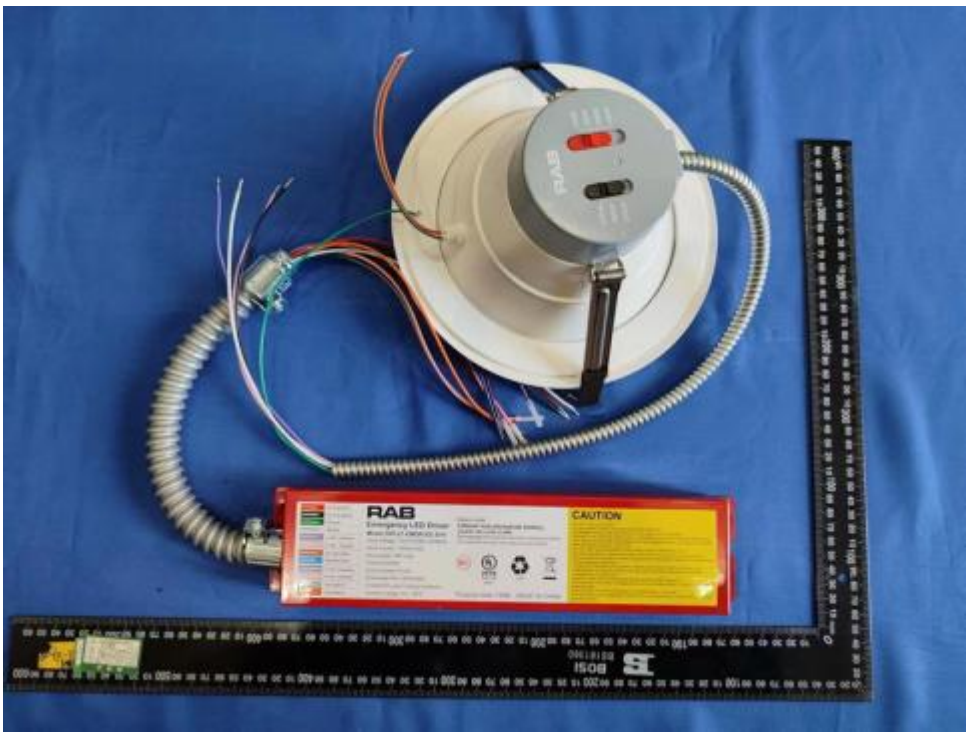
γ (DEG) \ C (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	1158	1158	1158	1158	1158	1158	1158	1158	1158	1158	1158	1158	1158	1158	1158	1158			
5	1146	1147	1147	1147	1146	1147	1145	1145	1146	1146	1147	1146	1147	1147	1147	1146			
10	1113	1115	1113	1114	1113	1113	1111	1111	1113	1111	1113	1112	1113	1113	1114	1114			
15	1064	1065	1064	1065	1063	1064	1060	1061	1062	1062	1063	1061	1064	1063	1065	1064			
20	1002	1005	1004	1004	1002	1003	999	999	1001	1000	1001	999	1003	1002	1004	1003			
25	932	934	933	934	931	932	928	928	930	928	930	929	932	932	934	933			
30	853	856	854	855	852	852	847	848	850	847	850	848	853	852	855	854			
35	765	769	766	767	763	764	758	759	761	758	760	759	763	763	767	767			
40	668	672	669	670	666	667	660	661	662	659	663	661	666	666	671	670			
45	563	567	563	565	560	562	555	555	557	553	557	556	561	561	566	565			
50	448	452	448	451	446	447	440	441	442	439	443	441	447	447	452	451			
55	320	318	319	316	316	313	312	307	309	311	310	314	314	319	319	323			
60	192	191	191	190	189	187	185	183	186	186	187	189	190	192	193	194			
65	101	102	101	101	99.1	99.4	97.2	98.1	100	98.3	100	99.5	102	102	104	103			
70	60.7	61.5	60.4	60.7	59.4	59.7	58.4	59.0	59.7	59.2	60.3	60.1	61.4	61.0	62.1	61.5			
75	37.1	37.4	36.8	37.1	36.5	36.7	36.2	36.5	37.1	36.8	37.5	37.3	37.9	37.6	38.0	37.6			
80	22.7	22.9	22.4	22.5	22.1	22.3	22.0	22.3	22.8	22.6	23.2	23.0	23.4	23.2	23.5	23.1			
85	9.71	9.82	9.43	9.54	9.20	9.39	9.13	9.45	9.90	9.79	10.2	10.1	10.4	10.2	10.5	10.1			
90	0.38	0.38	0.38	0.38	0.39	0.40	0.41	0.41	0.36	0.37	0.36	0.38	0.37	0.37	0.35	0.37			

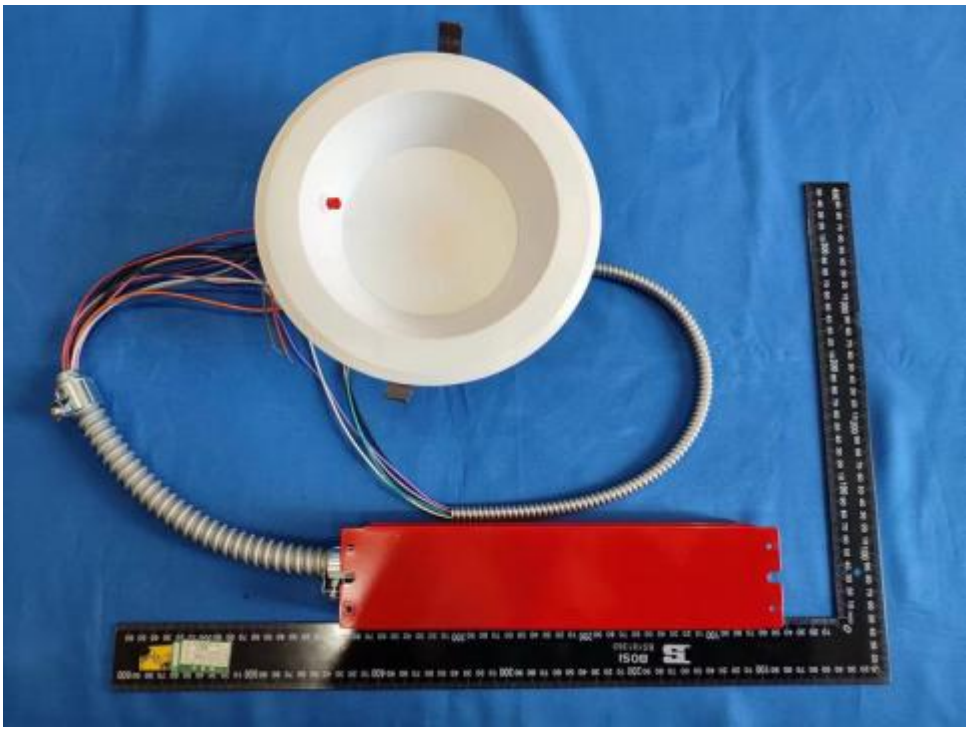
Sample No.	Wattage and CCT setting	Test Voltage(V)	Flux(lm)	P(W)	Luminous Efficacy lm/W
CRLEDFA-8R-22S-9CCT-UNV-WS/E	11W-3000K setting	120.0	1122.0	10.32	108.77
		277.0	1147.0	11.00	104.34
	11W-3500K setting	120.0	1155.0	10.30	112.14
		277.0	1177.0	10.95	107.50
	11W-4000K setting	120.0	1162.0	10.25	113.40
		277.0	1185.0	10.91	108.67
	11W-5000K setting	120.0	1146.0	10.31	111.19
		277.0	1167.0	10.95	106.54

Sample No.	Wattage and CCT setting	Test Voltage(V)	Flux(lm)	P(W)	Luminous Efficacy lm/W
CRLEDFA-8R-22S-9CCT-UNV-WS/E	16W-3000K setting	120.0	1590.0	15.08	105.44
		277.0	1592.0	15.49	102.80
	16W-3500K setting	120.0	1645.0	14.95	109.97
		277.0	1650.0	15.40	107.15
	16W-4000K setting	120.0	1654.0	14.84	111.48
		277.0	1657.0	15.28	108.46
	16W-5000K setting	120.0	1600.0	14.91	107.33
		277.0	1613.0	15.39	104.78

Sample No.	Wattage and CCT setting	Test Voltage(V)	Flux(lm)	P(W)	Luminous Efficacy lm/W
CRLEDFA-8R-22S-9CCT-UNV-WS/E	22W-3000K setting	120.0	2151.0	21.55	99.79
		277.0	2141.0	21.68	98.78
	22W-3500K setting	120.0	2260.0	21.36	105.80
		277.0	2246.0	21.46	104.66
	22W-4000K setting	120.0	2279.0	21.16	107.73
		277.0	2274.0	21.30	106.79
	22W-5000K setting	120.0	2194.0	21.43	102.39
		277.0	2180.0	21.51	101.35

3. Product Photo





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