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): WFR6B/RGB

Report Type:	Testing and Report According to IES LM-79-2008
Type of Luminaire:	Downlights
Report Date:	2024-01-10

Prepared By:

Test & Report By:

Engineer: Sun Fangfang

Review By:

Manager: Huang Qichong

1.1 Rated Values:	
Rated Voltage / Frequency	120Vac, 60 Hz
Nominal Power	13.0 W
Rated Initial Lamp Lumen	850 lm
Declared CCT	2700K/3000K/3500K/4000K/5000K/6500K

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	2024-01-08	**Test Ambient:**	25.1 ºC
Test Orientation	As intended	**Stabilization Time (min)**	90
Model Number	WFR6B/RGB	2700K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202401030036	120.0	60	0.114	12.70	0.927

Chromaticity Measurement - Sphere-Spectroradiometer Method:

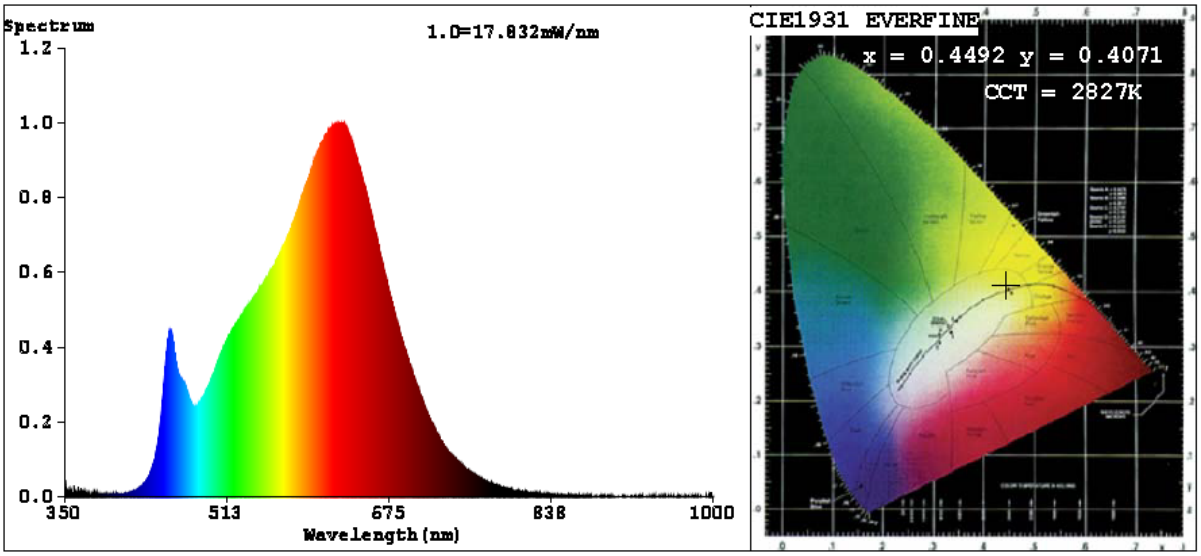
Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	2827
Duv	-0.0003
Chromaticity (x, y)	x=0.4492 y=0.4071
Chromaticity (u', v')	u'=0.2572 v'=0.5244
Color Rendering Index (CRI)	93.9
R9	63

Special Color Rendering Indices			
R1	95	R9	63
R2	99	R10	96
R3	98	R11	96
R4	94	R12	84
R5	95	R13	96
R6	97	R14	100
R7	91	R15	90
R8	82	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	886.4
Luminous Efficacy (lm/W)	69.80
Beam Angle (°)	113.9
Center Beam Candle Power (cd)	309.0

Spectral Power Distribution & Chromaticity Diagram



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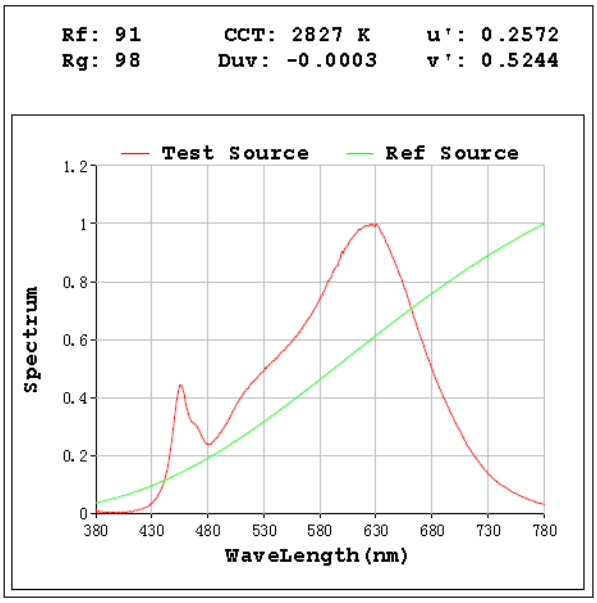
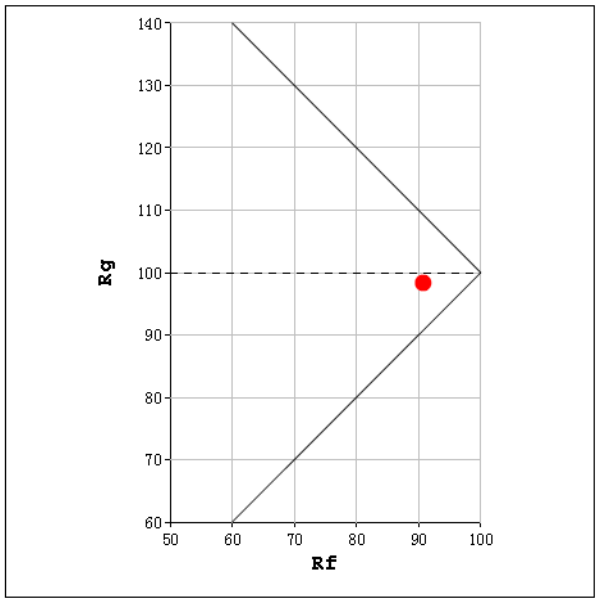
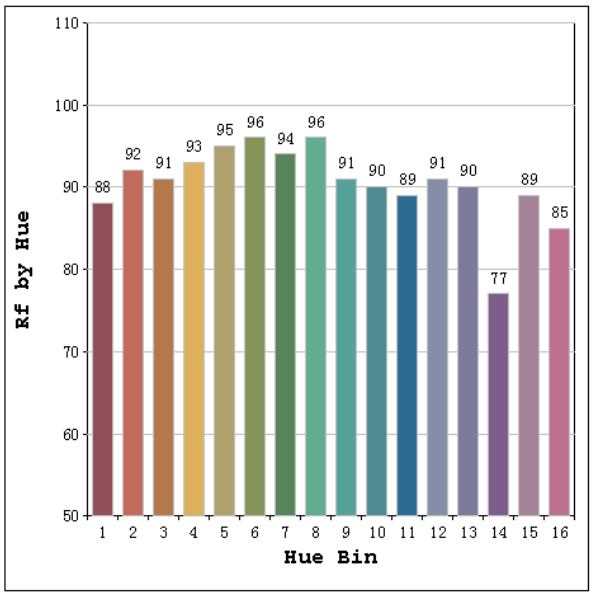
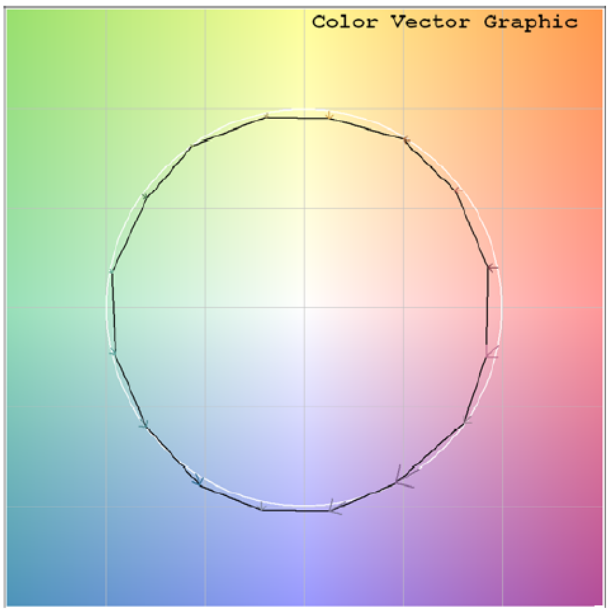






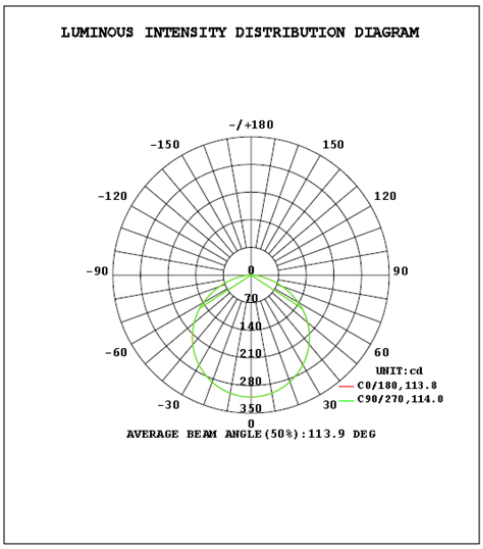


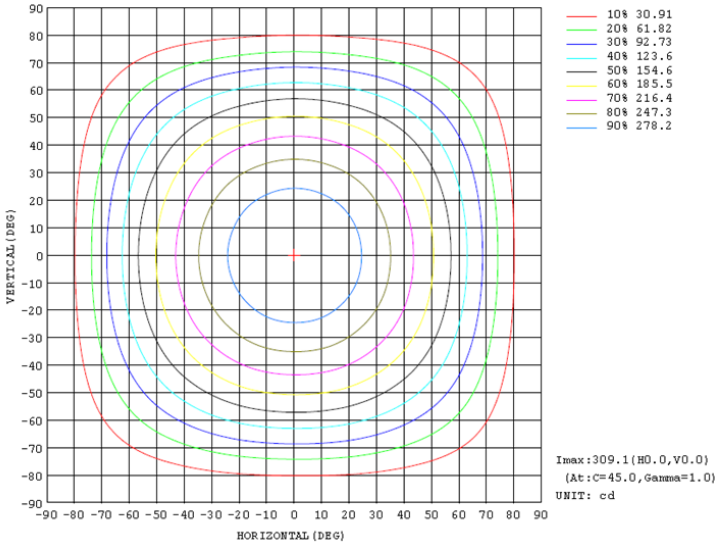
Zonal Lumen Tabulation

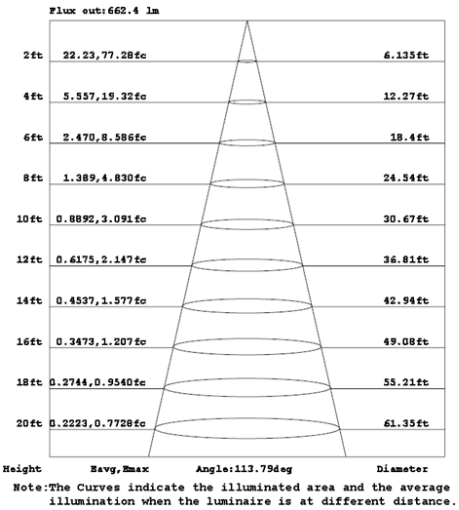
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	240.6	27.1%
0-40	395.2	44.6%
0-60	703.5	79.4%
60-90	182.9	20.6%
70-100	72.5	8.2%
90-120	0.0	0.0%
0-90	886.4	100.0%
90-180	0.0	0.0%
0-180	886.4	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	29.2	3.3%	90-100	0.0	0.0%
10-20	83.9	9.5%	100-110	0.0	0.0%
20-30	127.5	14.4%	110-120	0.0	0.0%
30-40	154.6	17.4%	120-130	0.0	0.0%
40-50	161.6	18.2%	130-140	0.0	0.0%
50-60	146.7	16.5%	140-150	0.0	0.0%
60-70	110.4	12.5%	150-160	0.0	0.0%
70-80	59.9	6.8%	160-170	0.0	0.0%
80-90	12.6	1.4%	170-180	0.0	0.0%

Photometric Data







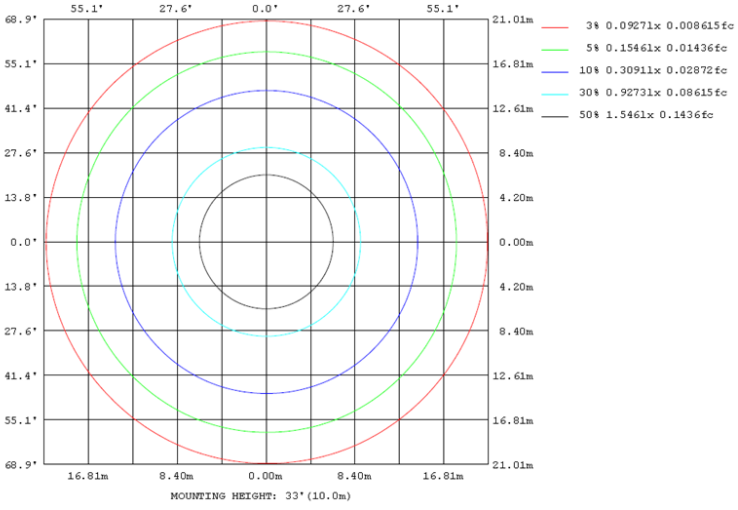


Table--1 UNIT: cd

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	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309
5	308	308	308	308	308	308	308	307	308	307	307	307	308	308	308	308
10	304	304	304	304	304	304	303	303	303	303	303	303	304	304	304	304
15	297	298	298	298	297	297	297	297	297	296	297	297	297	297	298	297
20	288	289	289	289	288	288	288	288	288	287	288	287	288	288	289	288
25	277	278	277	278	277	277	276	276	276	276	276	276	276	277	277	277
30	263	264	264	264	263	263	262	262	262	262	262	262	263	263	264	263
35	248	248	248	249	248	248	246	246	246	246	246	246	247	247	248	248
40	230	231	230	231	230	230	229	228	228	228	228	228	229	229	230	230
45	210	211	211	211	210	210	209	208	208	208	208	208	209	209	210	210
50	189	190	190	190	189	189	187	187	187	186	187	187	188	188	189	189
55	165	166	166	166	165	165	163	163	163	162	163	163	164	164	165	165
60	140	141	140	141	140	140	138	137	137	136	137	137	138	138	140	140
65	113	114	114	114	113	113	111	110	110	109	110	110	111	111	113	113
70	84.8	86.2	85.7	86.4	85.1	84.9	82.9	82.4	82.4	81.4	82.3	82.1	83.5	83.7	85.1	85.1
75	57.4	58.6	58.2	58.8	57.7	57.4	55.5	55.0	55.0	54.0	54.9	54.8	56.2	56.2	57.6	57.5
80	31.6	32.7	32.1	33.0	31.9	31.6	29.9	29.7	29.7	28.8	29.7	29.6	30.7	30.6	31.8	31.8
85	10.1	10.9	10.7	11.0	10.3	10.1	9.00	8.73	8.81	8.23	8.63	8.41	9.16	9.21	10.1	10.1
90	0.53	0.57	0.60	0.54	0.47	0.38	0.38	0.37	0.36	0.35	0.36	0.36	0.34	0.36	0.37	0.50

2.1.2 Electrical, Photometric and Chromaticity Measurements

Test date	2024-01-08	**Test Ambient:**	25.1 ºC
Test Orientation	As intended	**Stabilization Time (min)**	90
Model Number	WFR6B/RGB	3000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202401030036	120.0	60	0.114	12.70	0.927

Chromaticity Measurement - Sphere-Spectroradiometer Method:

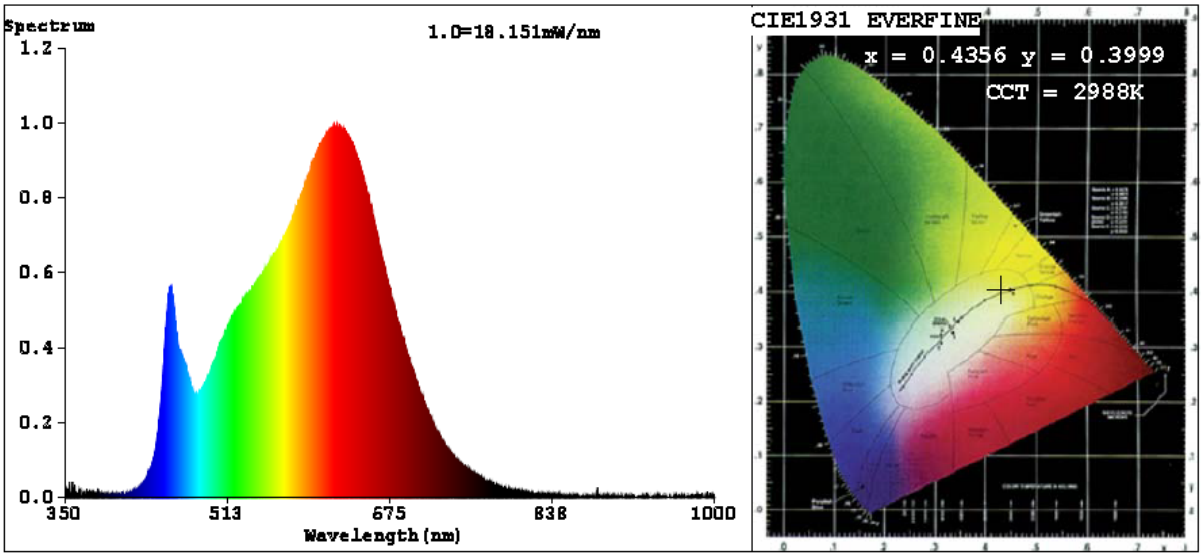
Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	2988
Duv	-0.0015
Chromaticity (x, y)	x=0.4356 y=0.3999
Chromaticity (u', v')	u'=0.2515 v'=0.5195
Color Rendering Index (CRI)	94.3
R9	67

Special Color Rendering Indices			
R1	96	R9	67
R2	99	R10	98
R3	98	R11	96
R4	94	R12	82
R5	96	R13	97
R6	96	R14	100
R7	91	R15	92
R8	84	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	895.1
Luminous Efficacy (lm/W)	70.48
Beam Angle (°)	113.9
Center Beam Candle Power (cd)	312.0

Spectral Power Distribution & Chromaticity Diagram



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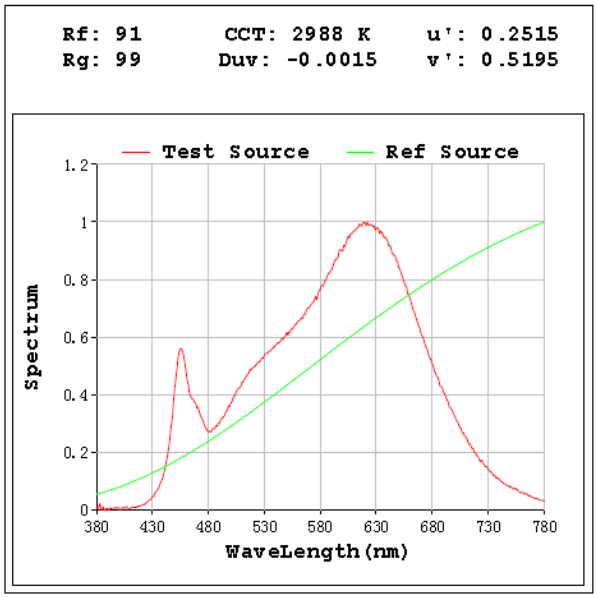
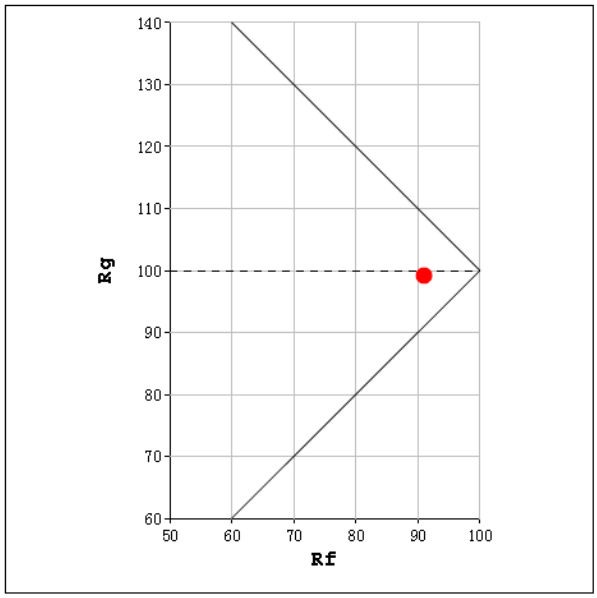
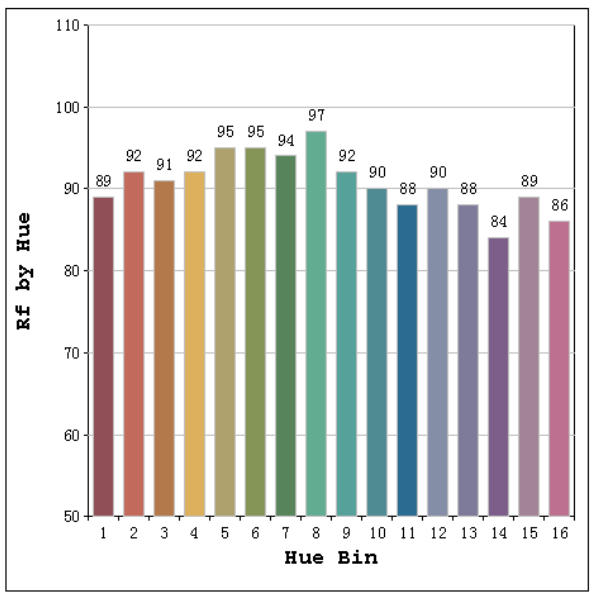
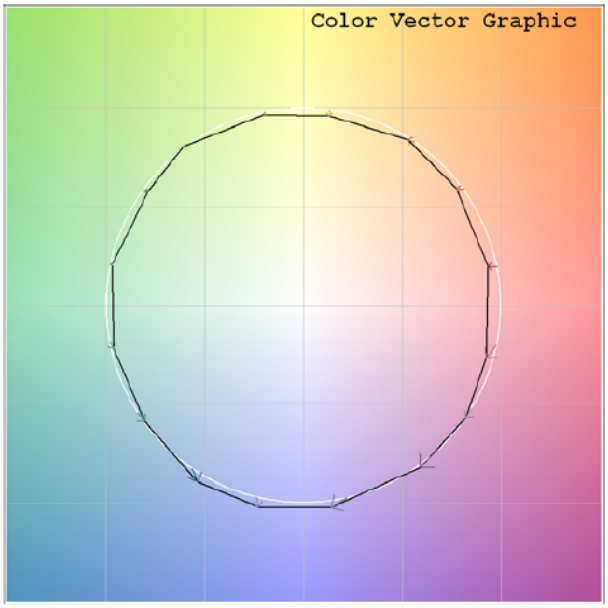






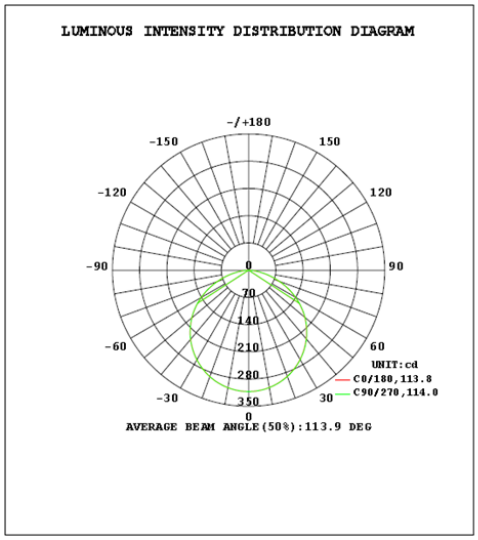


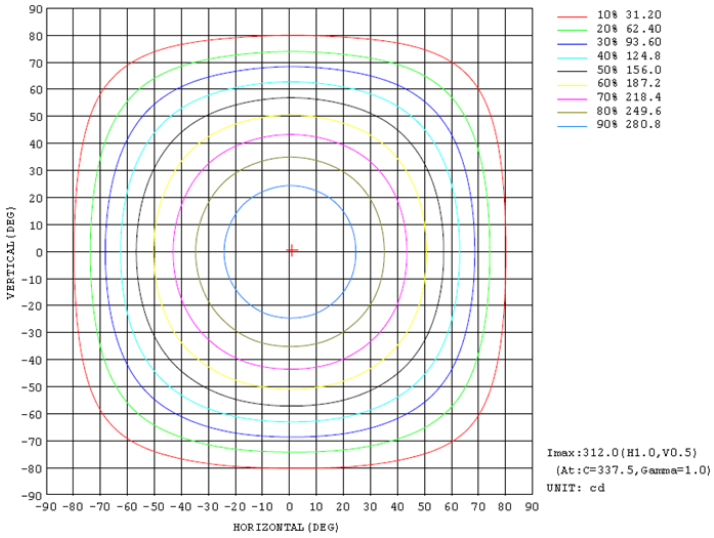
Zonal Lumen Tabulation

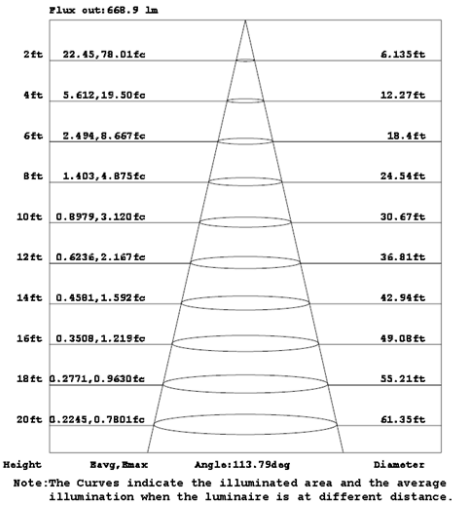
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	243.0	27.1%
0-40	399.1	44.6%
0-60	710.4	79.4%
60-90	184.7	20.6%
70-100	73.2	8.2%
90-120	0.0	0.0%
0-90	895.1	100.0%
90-180	0.0	0.0%
0-180	895.1	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	29.5	3.3%	90-100	0.0	0.0%
10-20	84.7	9.5%	100-110	0.0	0.0%
20-30	128.8	14.4%	110-120	0.0	0.0%
30-40	156.1	17.4%	120-130	0.0	0.0%
40-50	163.2	18.2%	130-140	0.0	0.0%
50-60	148.1	16.5%	140-150	0.0	0.0%
60-70	111.5	12.5%	150-160	0.0	0.0%
70-80	60.5	6.8%	160-170	0.0	0.0%
80-90	12.7	1.4%	170-180	0.0	0.0%

Photometric Data







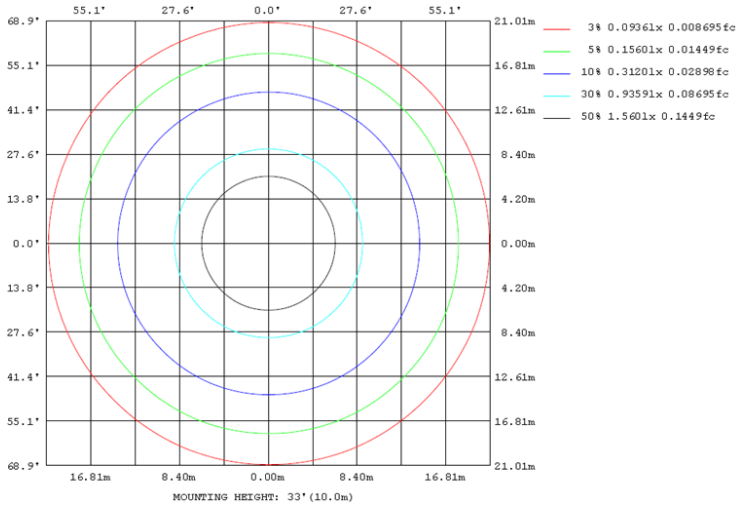


Table--1 UNIT: cd

C(DEG) / γ (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	312	312	312	312	312	312	312	312	312	312	312	312	312	312	312	312			
5	311	311	311	311	311	311	311	311	310	310	310	310	311	311	311	311			
10	307	307	307	307	307	307	306	306	306	306	306	306	307	307	307	307			
15	300	301	301	301	300	300	300	300	300	299	300	300	300	300	300	300			
20	291	292	292	292	291	291	291	290	290	290	290	290	291	291	291	291			
25	280	280	280	280	280	280	279	279	279	278	279	279	279	279	280	280			
30	266	267	266	267	266	266	265	265	265	264	265	265	265	265	266	266			
35	250	251	251	251	250	250	249	249	249	248	249	248	249	249	250	250			
40	232	233	233	233	232	232	231	230	230	230	230	230	231	231	232	232			
45	212	213	213	213	212	212	211	210	210	210	210	210	211	211	212	212			
50	191	192	191	192	191	191	189	189	189	188	188	188	190	189	191	191			
55	167	168	168	168	167	167	165	165	165	163	164	164	165	165	167	167			
60	141	142	142	142	141	141	139	139	139	138	138	138	140	140	141	141			
65	114	115	115	115	114	114	112	111	111	110	111	111	112	112	114	114			
70	85.8	87.1	86.6	87.3	85.9	85.8	83.7	83.3	83.2	82.1	83.1	82.9	84.4	84.4	85.9	85.9			
75	57.9	59.2	58.8	59.5	58.3	57.9	56.0	55.6	55.5	54.5	55.5	55.3	56.7	56.7	58.2	58.0			
80	31.9	33.1	32.7	33.4	32.1	32.0	30.3	30.0	30.0	29.1	29.9	29.8	31.0	30.9	32.1	32.0			
85	10.2	11.1	10.8	11.1	10.4	10.3	9.08	8.86	8.90	8.29	8.73	8.47	9.26	9.25	10.2	10.2			
90	0.53	0.57	0.59	0.55	0.47	0.38	0.37	0.37	0.36	0.36	0.36	0.36	0.34	0.36	0.38	0.50			

2.1.3 Electrical, Photometric and Chromaticity Measurements

Test date	2024-01-08	**Test Ambient:**	25.1 ºC
Test Orientation	As intended	**Stabilization Time (min)**	90
Model Number	WFR6B/RGB	3500K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202401030036	120.0	60	0.114	12.70	0.927

Chromaticity Measurement - Sphere-Spectroradiometer Method:

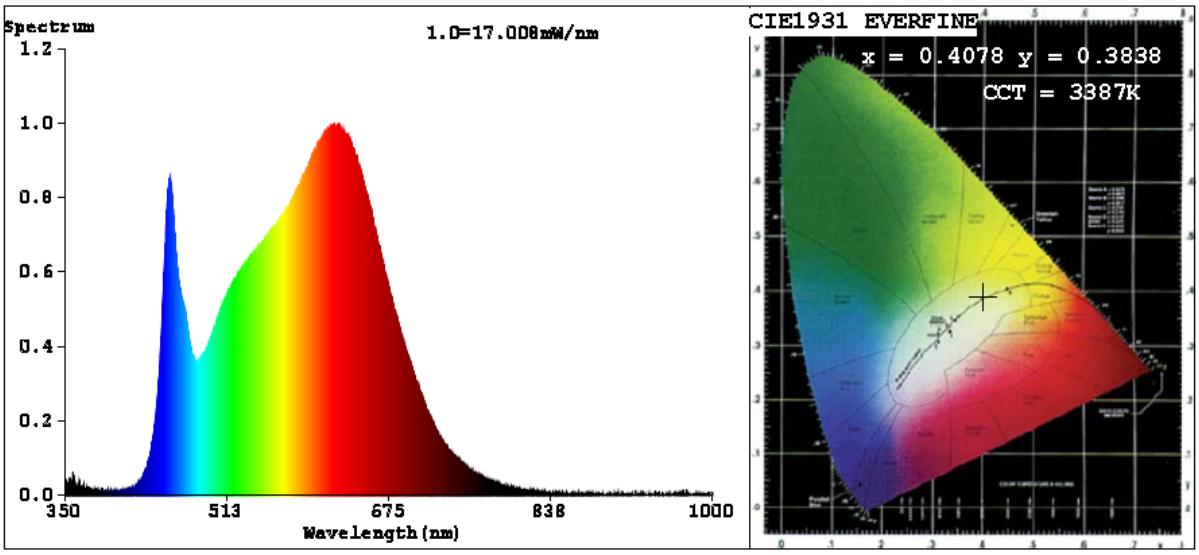
Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3387
Duv	-0.0036
Chromaticity (x, y)	x=0.4078 y=0.3838
Chromaticity (u', v')	u'=0.2402 v'=0.5087
Color Rendering Index (CRI)	95.3
R9	78

Special Color Rendering Indices			
R1	98	R9	78
R2	98	R10	99
R3	98	R11	97
R4	95	R12	79
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)	908.3
Luminous Efficacy (lm/W)	71.52
Beam Angle (°)	113.9
Center Beam Candle Power (cd)	316.6

Spectral Power Distribution & Chromaticity Diagram



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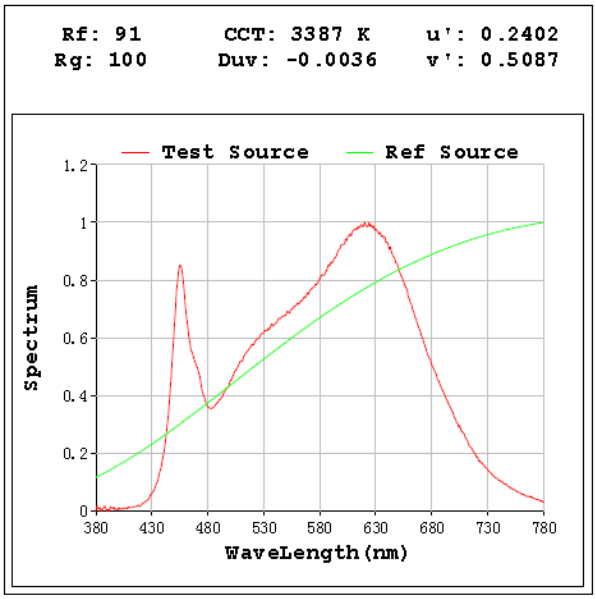
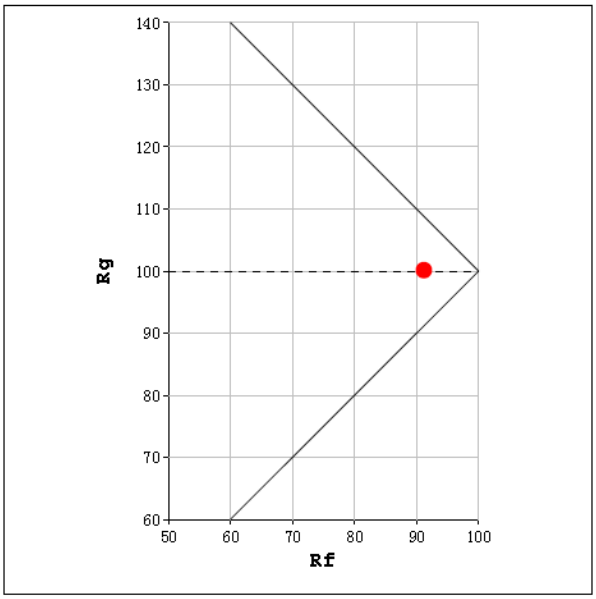
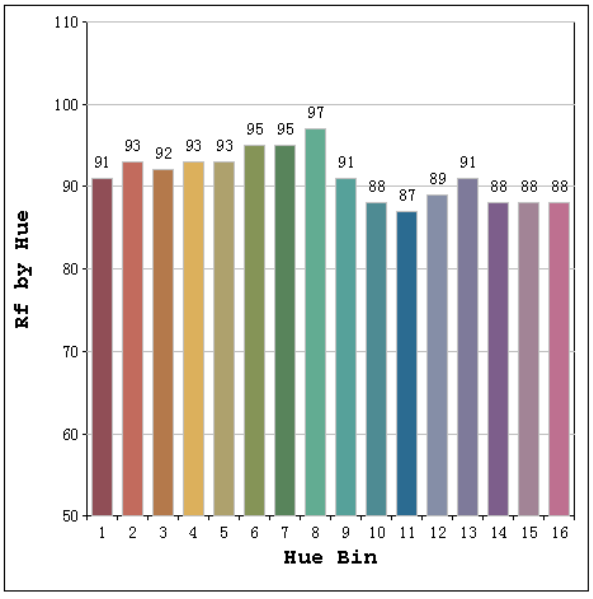
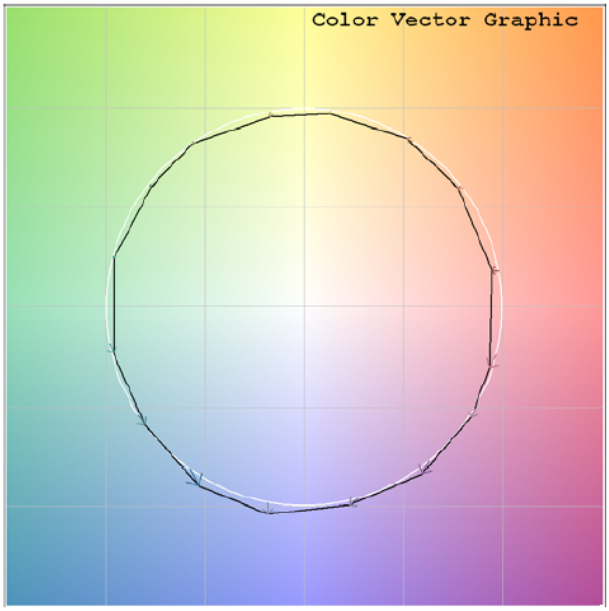






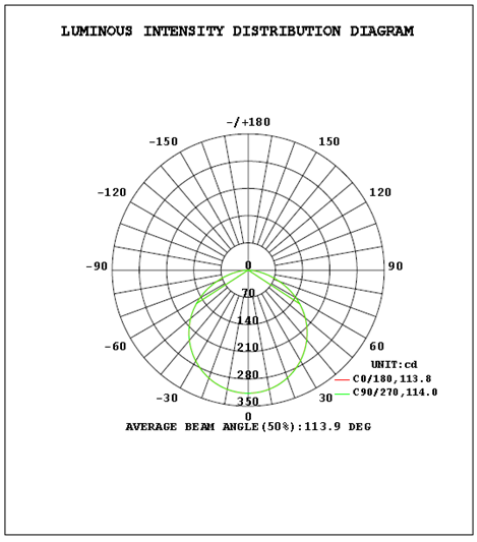


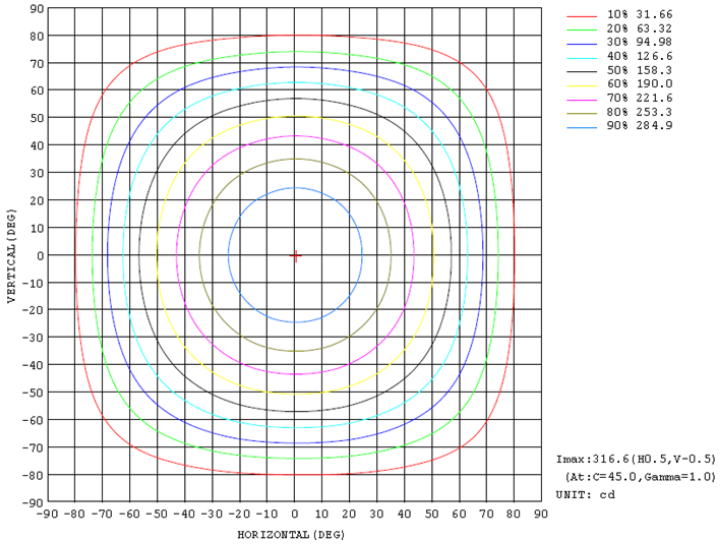
Zonal Lumen Tabulation

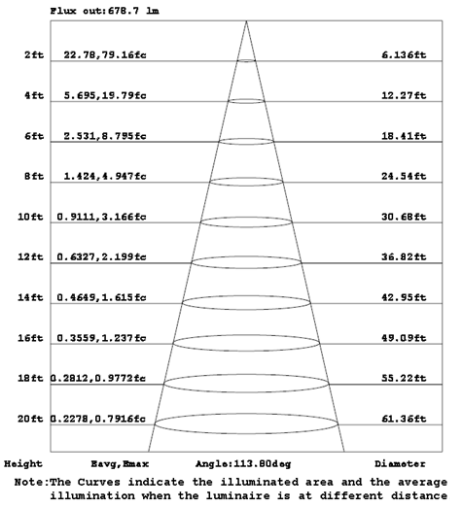
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	246.6	27.1%
0-40	405.0	44.6%
0-60	720.8	79.4%
60-90	187.5	20.6%
70-100	74.3	8.2%
90-120	0.0	0.0%
0-90	908.3	100.0%
90-180	0.0	0.0%
0-180	908.3	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	30.0	3.3%	90-100	0.0	0.0%
10-20	85.9	9.5%	100-110	0.0	0.0%
20-30	130.7	14.4%	110-120	0.0	0.0%
30-40	158.4	17.4%	120-130	0.0	0.0%
40-50	165.6	18.2%	130-140	0.0	0.0%
50-60	150.3	16.5%	140-150	0.0	0.0%
60-70	113.2	12.5%	150-160	0.0	0.0%
70-80	61.4	6.8%	160-170	0.0	0.0%
80-90	12.9	1.4%	170-180	0.0	0.0%

Photometric Data







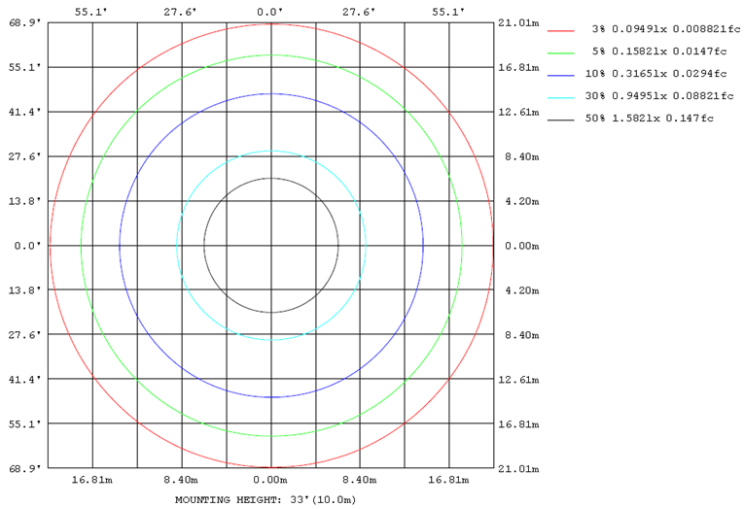


Table--1 UNIT: cd

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	317	317	317	317	317	317	317	317	317	317	317	317	317	317	317	317			
5	315	315	315	315	315	315	315	315	315	315	315	315	315	315	315	315			
10	311	312	311	312	311	311	311	311	311	311	311	311	311	311	311	311			
15	305	305	305	305	305	305	304	304	304	304	304	304	304	304	305	305			
20	296	296	296	296	296	295	295	295	295	294	295	295	295	295	296	296			
25	284	284	284	285	284	284	283	283	283	282	283	283	283	283	284	284			
30	270	271	270	271	270	270	269	269	269	268	269	268	269	269	270	270			
35	254	255	254	255	254	254	252	252	252	252	252	252	253	253	254	254			
40	236	236	236	237	236	235	234	234	234	233	234	234	235	235	236	236			
45	215	216	216	217	216	215	214	213	213	213	213	213	214	214	215	215			
50	193	195	194	195	194	193	192	191	191	191	191	191	192	192	194	194			
55	169	170	170	171	169	169	167	167	167	166	167	167	168	168	169	169			
60	143	144	144	144	143	143	141	141	141	140	140	140	142	142	143	143			
65	116	117	116	117	116	115	113	113	113	112	113	113	114	114	116	116			
70	86.9	88.4	87.9	88.5	87.2	87.0	84.9	84.4	84.5	83.4	84.3	84.2	85.7	85.7	87.2	87.3			
75	58.8	60.1	59.7	60.3	59.1	58.7	56.8	56.3	56.3	55.4	56.3	56.2	57.6	57.6	59.0	59.0			
80	32.4	33.6	33.2	33.8	32.7	32.4	30.7	30.3	30.4	29.6	30.4	30.3	31.5	31.4	32.6	32.6			
85	10.4	11.2	10.9	11.3	10.5	10.4	9.18	8.93	9.03	8.42	8.87	8.63	9.41	9.43	10.4	10.4			
90	0.54	0.58	0.61	0.55	0.48	0.38	0.38	0.37	0.37	0.37	0.37	0.36	0.37	0.36	0.38	0.51			

2.1.4 Electrical, Photometric and Chromaticity Measurements

Test date	2024-01-08	Test Ambient:	25.1 ºC
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	WFR6B/RGB	4000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202401030036	120.0	60	0.114	12.70	0.927

Chromaticity Measurement - Sphere-Spectroradiometer Method:

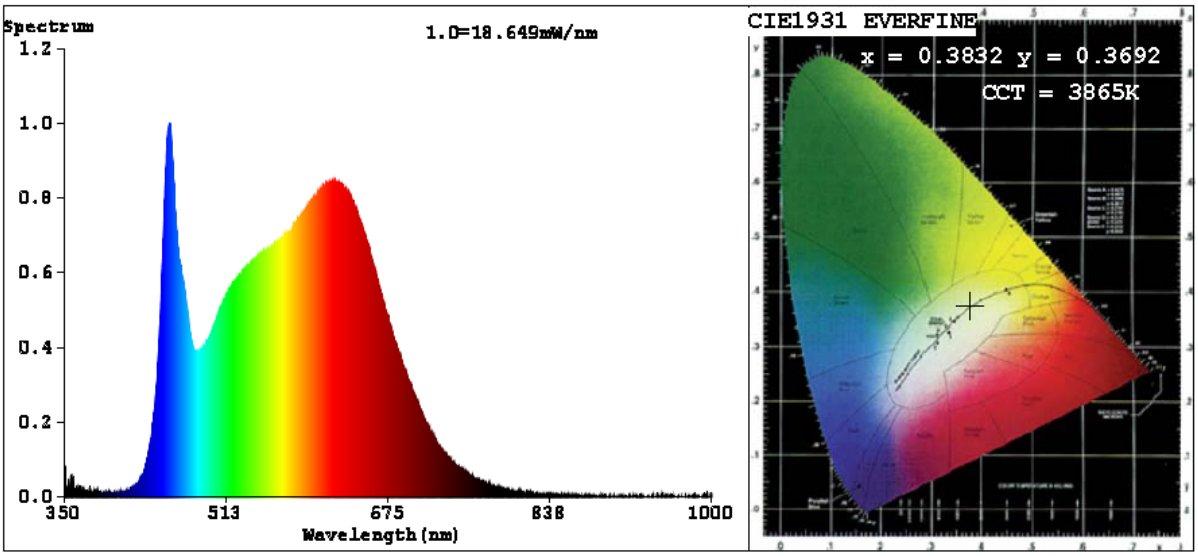
Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3865
Duv	-0.0044
Chromaticity (x, y)	x=0.3832 y=0.3692
Chromaticity (u', v')	u'=0.2300 v'=0.4986
Color Rendering Index (CRI)	95.5
R9	86

Special Color Rendering Indices			
R1	98	R9	86
R2	98	R10	98
R3	98	R11	97
R4	95	R12	75
R5	96	R13	98
R6	94	R14	100
R7	93	R15	97
R8	92	--	--

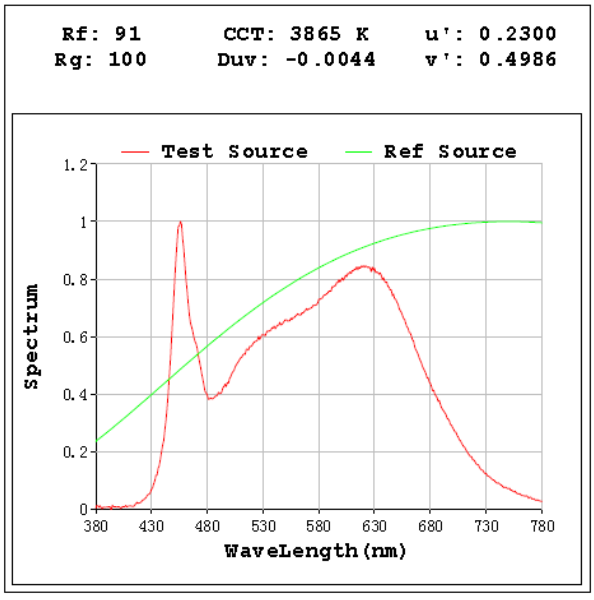
Photometric Measurement – Goniophotometer Method:

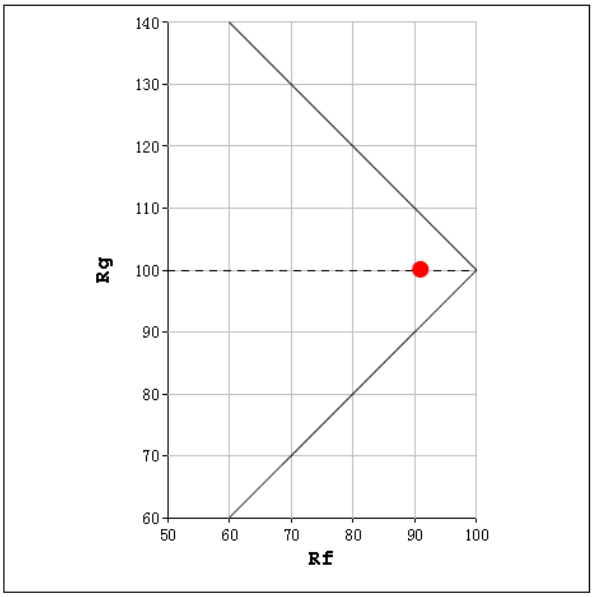
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	919.4
Luminous Efficacy (lm/W)	72.40
Beam Angle (°)	113.9
Center Beam Candle Power (cd)	320.1

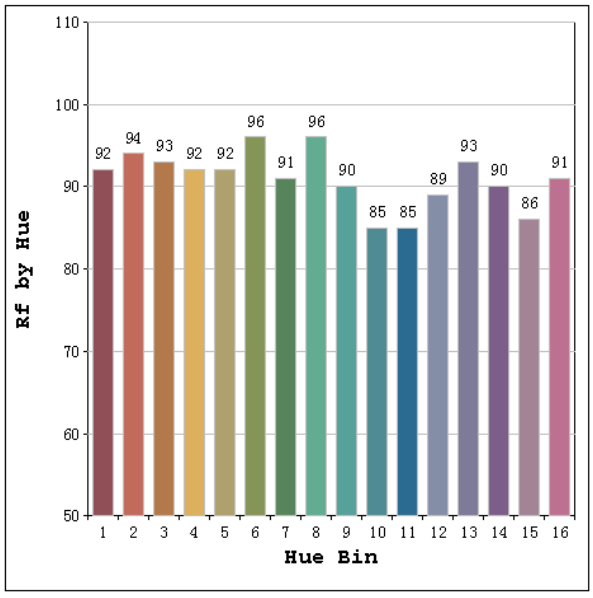
Spectral Power Distribution & Chromaticity Diagram

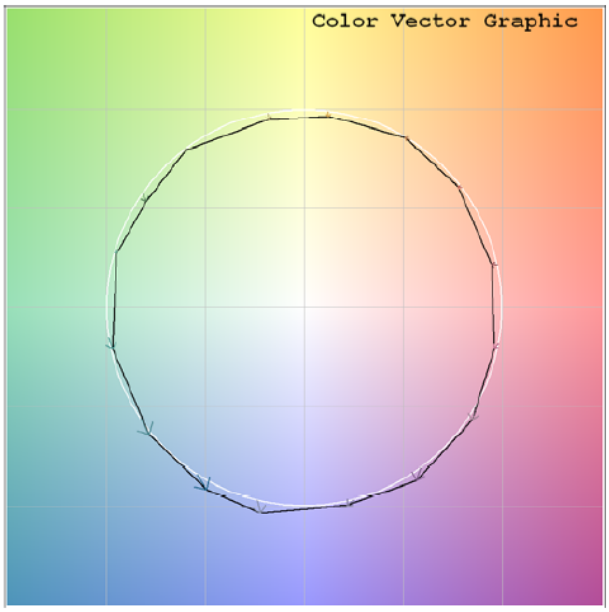


TM30







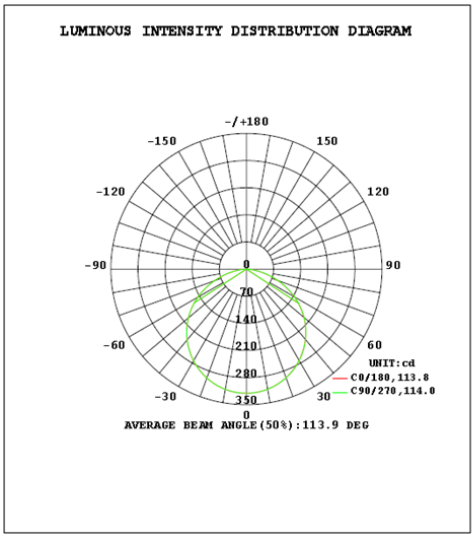


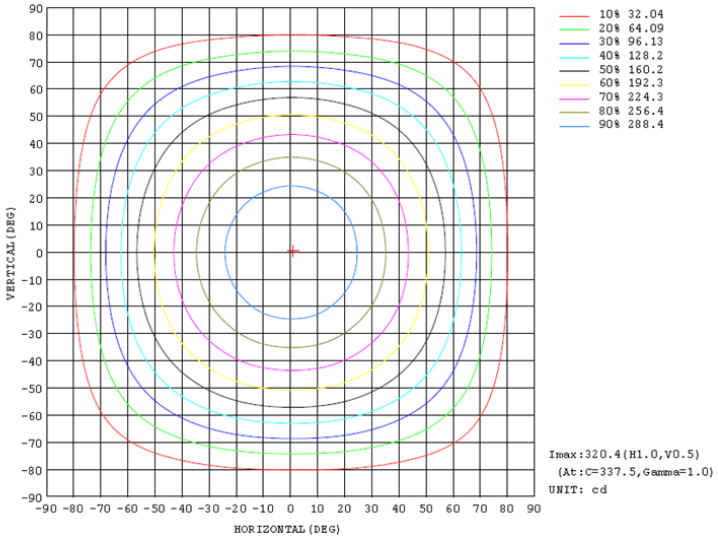
Zonal Lumen Tabulation

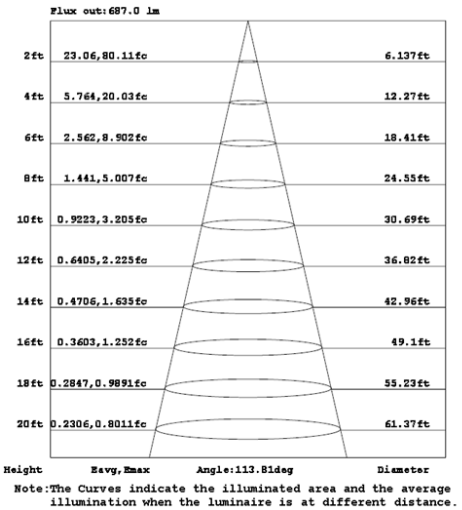
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	249.6	27.1%
0-40	409.9	44.6%
0-60	729.7	79.4%
60-90	189.8	20.6%
70-100	75.2	8.2%
90-120	0.0	0.0%
0-90	919.4	100.0%
90-180	0.0	0.0%
0-180	919.4	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	30.3	3.3%	90-100	0.0	0.0%
10-20	87.0	9.5%	100-110	0.0	0.0%
20-30	132.3	14.4%	110-120	0.0	0.0%
30-40	160.3	17.4%	120-130	0.0	0.0%
40-50	167.6	18.2%	130-140	0.0	0.0%
50-60	152.2	16.5%	140-150	0.0	0.0%
60-70	114.6	12.5%	150-160	0.0	0.0%
70-80	62.2	6.8%	160-170	0.0	0.0%
80-90	13.1	1.4%	170-180	0.0	0.0%

Photometric Data







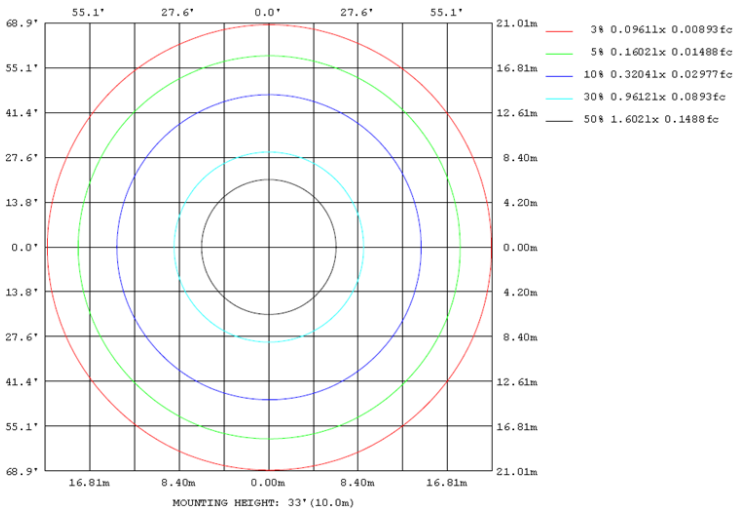


Table--1 UNIT: cd

C (DEG) / γ (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	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320			
5	319	319	319	319	319	319	319	319	319	319	319	319	319	319	319	319			
10	315	315	315	315	315	315	315	315	315	314	315	315	315	315	315	315			
15	308	309	309	309	308	308	308	308	308	307	308	308	308	308	308	309			
20	299	300	299	300	299	299	298	298	298	298	298	298	299	299	299	299			
25	287	288	288	288	287	287	286	286	286	286	286	286	287	287	287	288			
30	273	274	274	274	273	273	272	272	272	271	272	272	273	273	273	273			
35	257	258	257	258	257	257	255	255	255	255	255	255	256	256	257	257			
40	238	239	239	240	239	238	237	237	237	236	237	236	237	238	238	239			
45	218	219	219	219	218	218	216	216	216	215	216	216	217	217	218	218			
50	196	197	197	197	196	196	194	194	194	193	194	193	195	195	196	196			
55	171	173	172	173	171	171	169	169	169	168	169	169	170	170	171	171			
60	145	146	146	146	145	145	143	142	142	141	142	142	143	143	145	145			
65	117	118	118	118	117	117	115	114	114	113	114	114	115	115	117	117			
70	88.1	89.5	89.0	89.7	88.2	88.1	86.0	85.5	85.5	84.4	85.3	85.1	86.7	86.7	88.3	88.2			
75	59.6	60.9	60.5	61.1	59.7	59.5	57.5	57.0	57.0	56.0	57.0	56.9	58.3	58.3	59.7	59.7			
80	32.8	34.0	33.4	34.3	33.1	32.8	30.9	30.8	30.7	29.8	30.8	30.6	31.9	31.8	33.0	33.0			
85	10.5	11.4	11.1	11.4	10.6	10.5	9.29	9.05	9.11	8.47	8.96	8.69	9.55	9.54	10.5	10.5			
90	0.55	0.59	0.61	0.55	0.48	0.38	0.38	0.37	0.37	0.37	0.37	0.37	0.37	0.38	0.39	0.52			

2.1.5 Electrical, Photometric and Chromaticity Measurements

Test date	2024-01-08	**Test Ambient:**	25.1 ºC
Test Orientation	As intended	**Stabilization Time (min)**	90
Model Number	WFR6B/RGB	5000K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202401030036	120.0	60	0.114	12.60	0.927

Chromaticity Measurement - Sphere-Spectroradiometer Method:

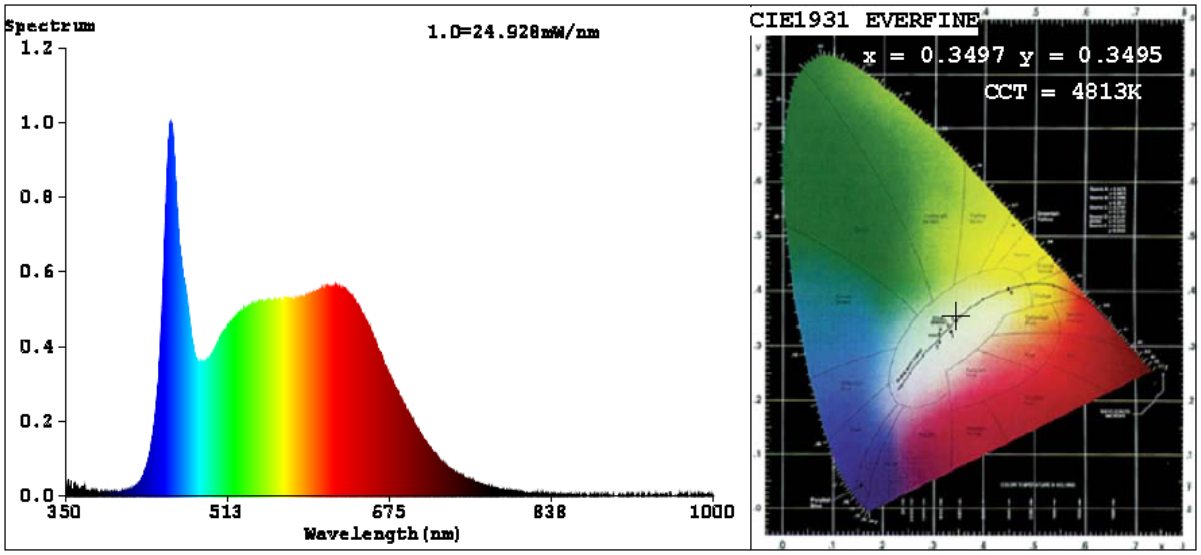
Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	4813
Duv	-0.0029
Chromaticity (x, y)	x=0.3497 y=0.3495
Chromaticity (u', v')	u'=0.2154 v'=0.4843
Color Rendering Index (CRI)	95.0
R9	92

Special Color Rendering Indices			
R1	97	R9	92
R2	98	R10	98
R3	98	R11	95
R4	93	R12	68
R5	94	R13	98
R6	94	R14	100
R7	93	R15	95
R8	93	--	--

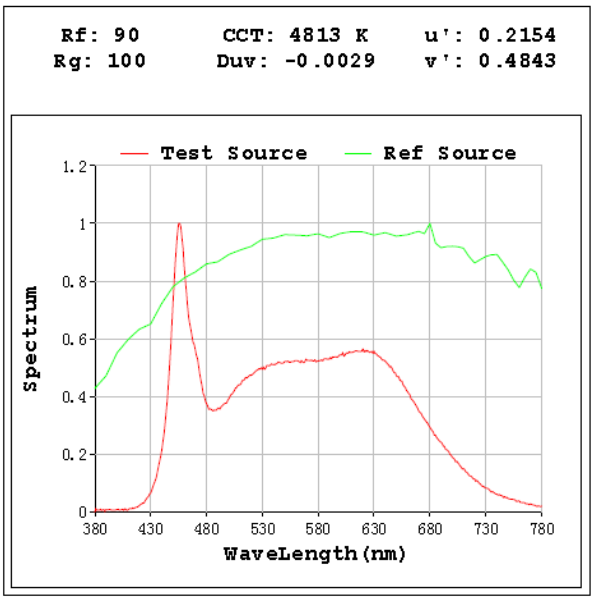
Photometric Measurement – Goniophotometer Method:

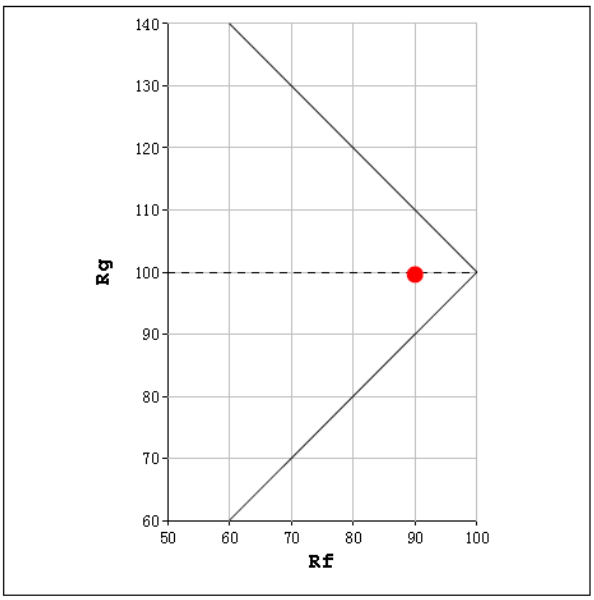
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	935.9
Luminous Efficacy (lm/W)	74.28
Beam Angle (°)	113.9
Center Beam Candle Power (cd)	326.1

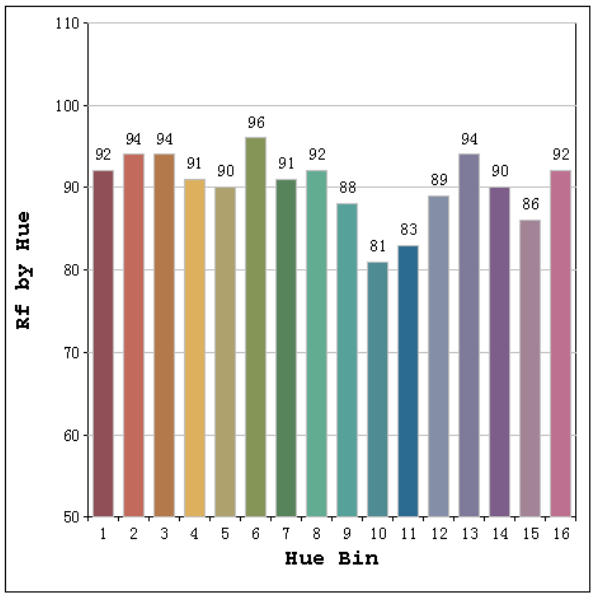
Spectral Power Distribution & Chromaticity Diagram

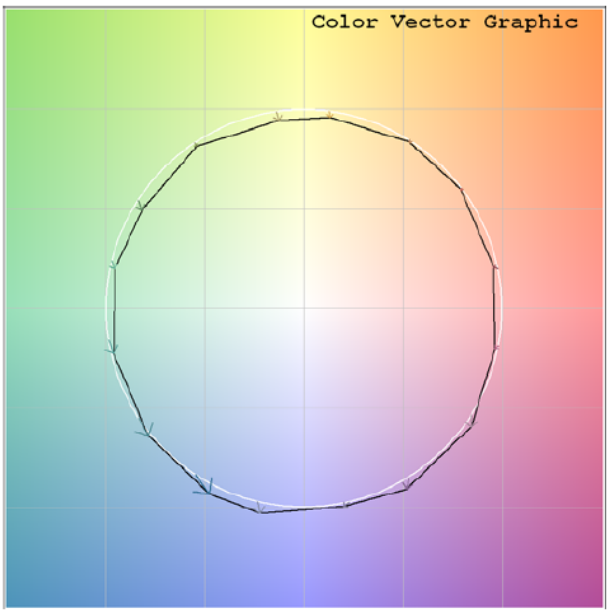


TM30







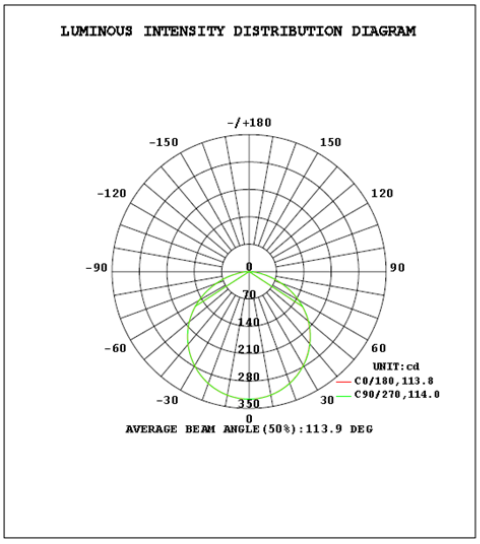


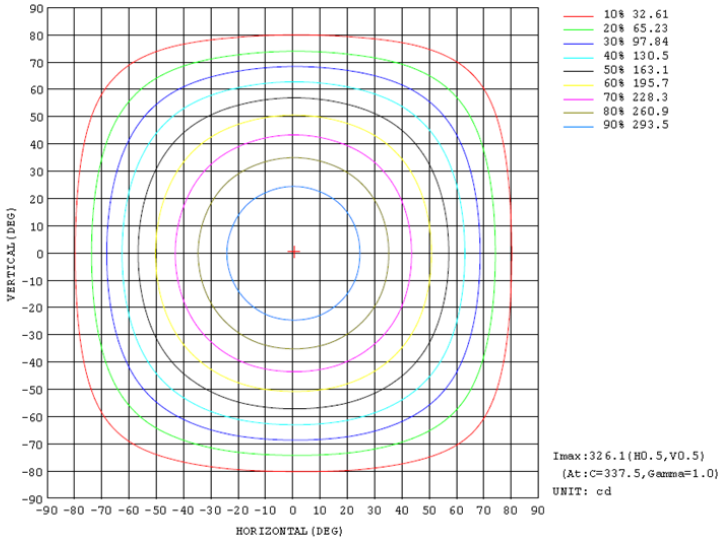
Zonal Lumen Tabulation

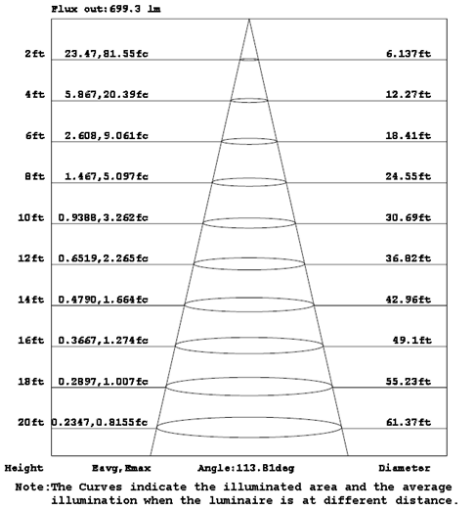
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	254.0	27.1%
0-40	417.2	44.6%
0-60	742.7	79.4%
60-90	193.2	20.6%
70-100	76.6	8.2%
90-120	0.0	0.0%
0-90	935.9	100.0%
90-180	0.0	0.0%
0-180	935.9	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	30.9	3.3%	90-100	0.0	0.0%
10-20	88.5	9.5%	100-110	0.0	0.0%
20-30	134.6	14.4%	110-120	0.0	0.0%
30-40	163.2	17.4%	120-130	0.0	0.0%
40-50	170.6	18.2%	130-140	0.0	0.0%
50-60	154.9	16.5%	140-150	0.0	0.0%
60-70	116.6	12.5%	150-160	0.0	0.0%
70-80	63.3	6.8%	160-170	0.0	0.0%
80-90	13.3	1.4%	170-180	0.0	0.0%

Photometric Data







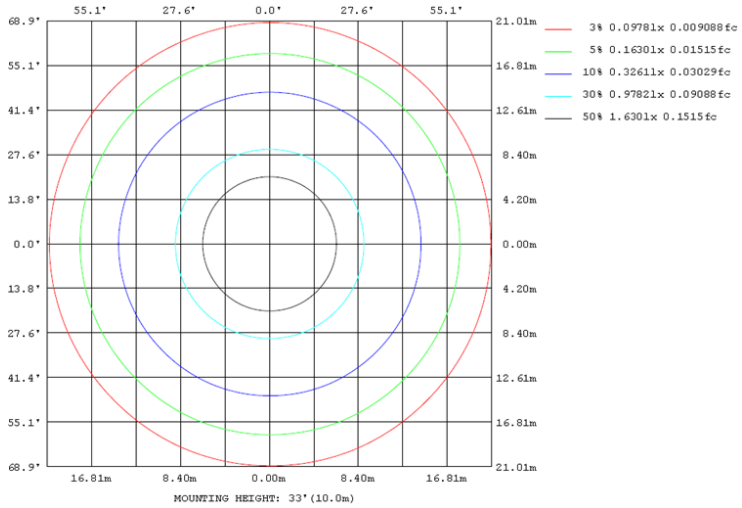


Table--1 UNIT: cd

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	326	326	326	326	326	326	326	326	326	326	326	326	326	326	326	326			
5	325	325	325	325	325	325	325	325	325	324	325	325	325	325	325	325			
10	321	321	321	321	321	321	320	320	320	320	320	320	320	321	321	321			
15	314	314	314	314	314	314	313	313	313	313	313	313	314	314	314	314			
20	305	305	305	305	304	304	304	303	304	303	304	303	304	304	305	305			
25	293	293	293	293	293	292	291	291	291	291	291	291	292	292	293	293			
30	278	279	279	279	278	278	277	277	277	276	277	277	277	277	278	278			
35	261	262	262	262	262	261	260	260	260	259	260	260	261	261	262	262			
40	243	244	243	244	243	243	241	241	241	240	241	241	242	242	243	243			
45	222	223	223	223	222	222	220	220	220	219	220	220	221	221	222	222			
50	199	201	200	201	200	199	198	197	197	196	197	197	198	198	199	200			
55	174	176	175	176	175	174	172	172	172	171	172	172	173	173	174	175			
60	147	149	148	149	147	147	145	145	145	144	145	144	146	146	148	148			
65	119	120	120	120	119	119	117	116	116	115	116	116	117	118	119	119			
70	89.7	91.1	90.6	91.2	89.9	89.6	87.5	86.9	86.9	85.9	86.8	86.7	88.2	88.4	89.9	90.0			
75	60.7	62.0	61.6	62.1	60.8	60.4	58.5	58.0	58.0	57.0	57.9	58.0	59.3	59.5	60.9	60.9			
80	33.5	34.6	34.3	34.8	33.5	33.3	31.5	31.2	31.2	30.4	31.3	31.3	32.5	32.4	33.6	33.7			
85	10.7	11.6	11.3	11.6	10.8	10.7	9.46	9.16	9.23	8.62	9.10	8.89	9.74	9.80	10.7	10.8			
90	0.55	0.59	0.63	0.57	0.48	0.39	0.38	0.40	0.37	0.37	0.37	0.38	0.37	0.37	0.39	0.52			

2.1.6 Electrical, Photometric and Chromaticity Measurements

Test date	2024-01-08	**Test Ambient:**	25.1 ºC
Test Orientation	As intended	**Stabilization Time (min)**	90
Model Number	WFR6B/RGB	6500K	

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
202401030036	120.0	60	0.113	12.60	0.926

Chromaticity Measurement - Sphere-Spectroradiometer Method:

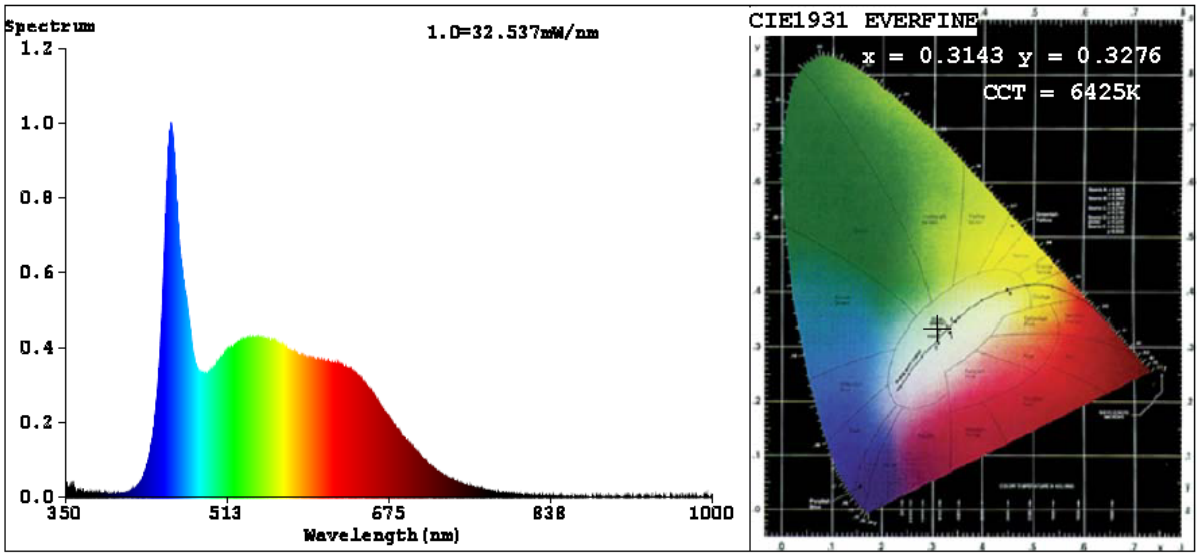
Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	6425
Duv	0.0017
Chromaticity (x, y)	x=0.3143 y=0.3276
Chromaticity (u', v')	u'=0.1995 v'=0.4679
Color Rendering Index (CRI)	94.1
R9	89

Special Color Rendering Indices			
R1	96	R9	89
R2	99	R10	99
R3	98	R11	92
R4	90	R12	67
R5	93	R13	99
R6	94	R14	100
R7	92	R15	94
R8	91	--	--

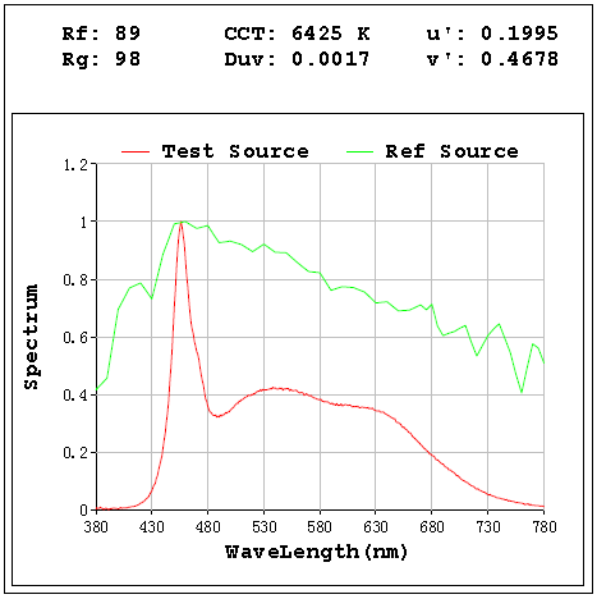
Photometric Measurement – Goniophotometer Method:

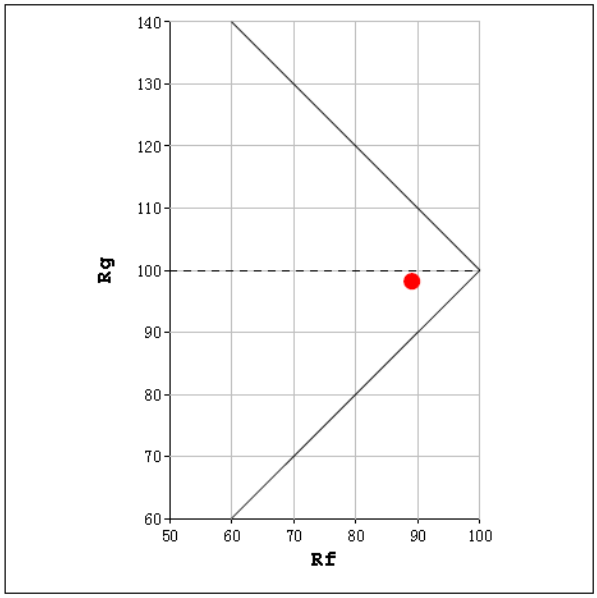
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	945.8
Luminous Efficacy (lm/W)	75.06
Beam Angle (°)	113.9
Center Beam Candle Power (cd)	329.5

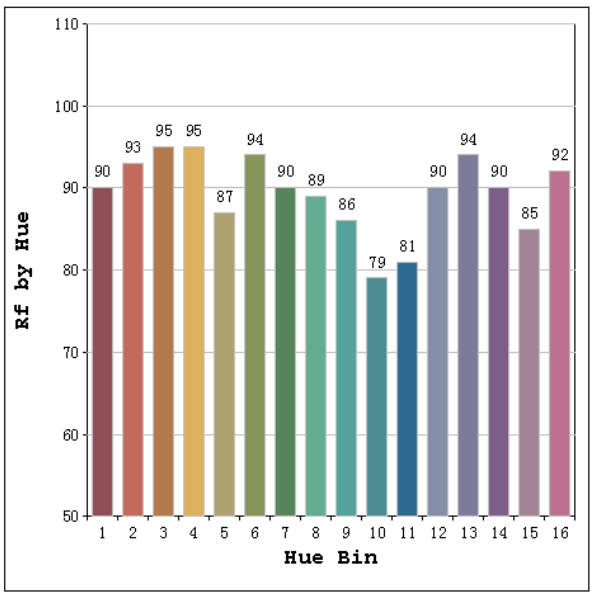
Spectral Power Distribution & Chromaticity Diagram

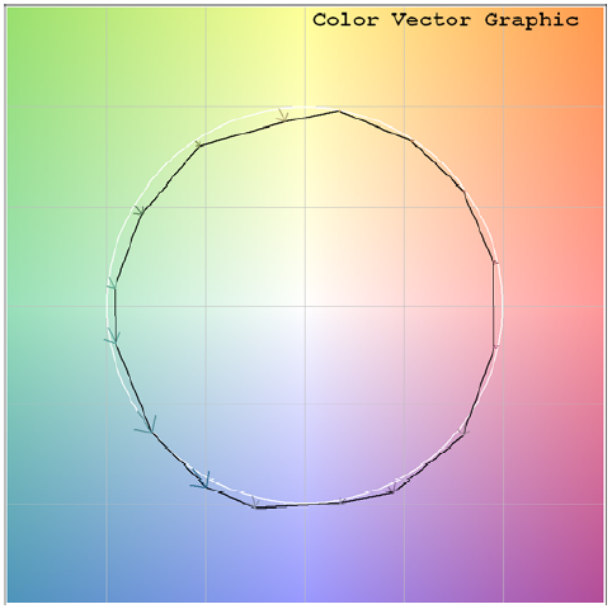


TM30







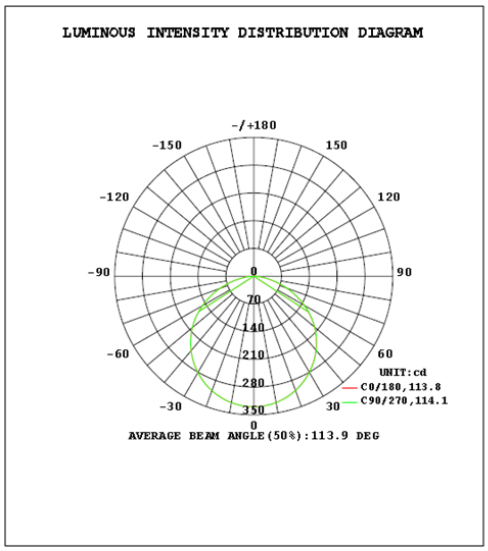


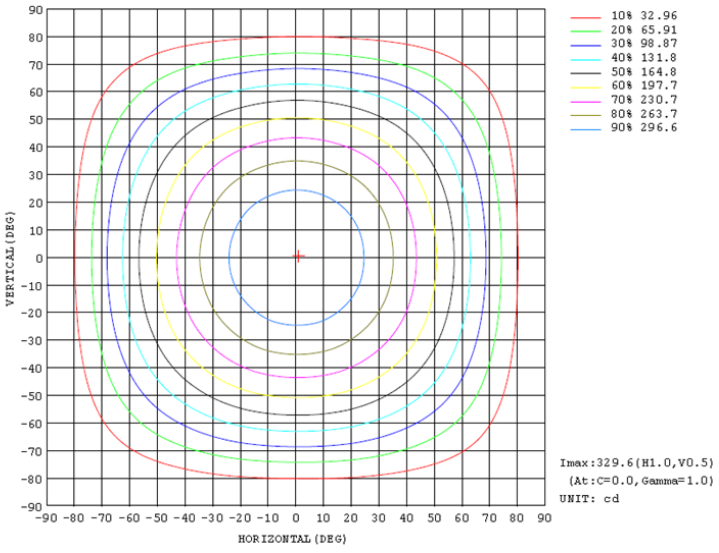
Zonal Lumen Tabulation

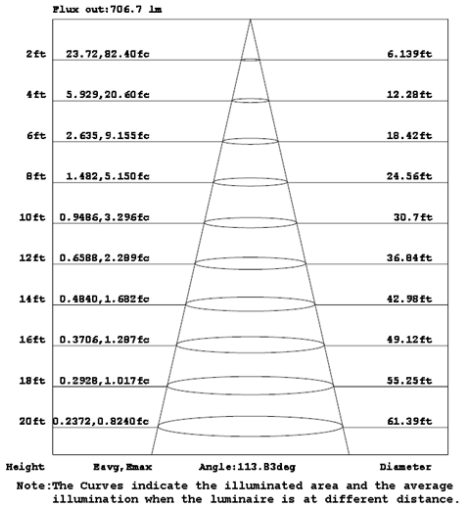
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	256.7	27.1%
0-40	421.6	44.6%
0-60	750.5	79.4%
60-90	195.3	20.6%
70-100	77.4	8.2%
90-120	0.0	0.0%
0-90	945.8	100.0%
90-180	0.0	0.0%
0-180	945.8	100.0%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	31.2	3.3%	90-100	0.0	0.0%
10-20	89.5	9.5%	100-110	0.0	0.0%
20-30	136.0	14.4%	110-120	0.0	0.0%
30-40	164.9	17.4%	120-130	0.0	0.0%
40-50	172.4	18.2%	130-140	0.0	0.0%
50-60	156.5	16.6%	140-150	0.0	0.0%
60-70	117.9	12.5%	150-160	0.0	0.0%
70-80	64.0	6.8%	160-170	0.0	0.0%
80-90	13.4	1.4%	170-180	0.0	0.0%

Photometric Data







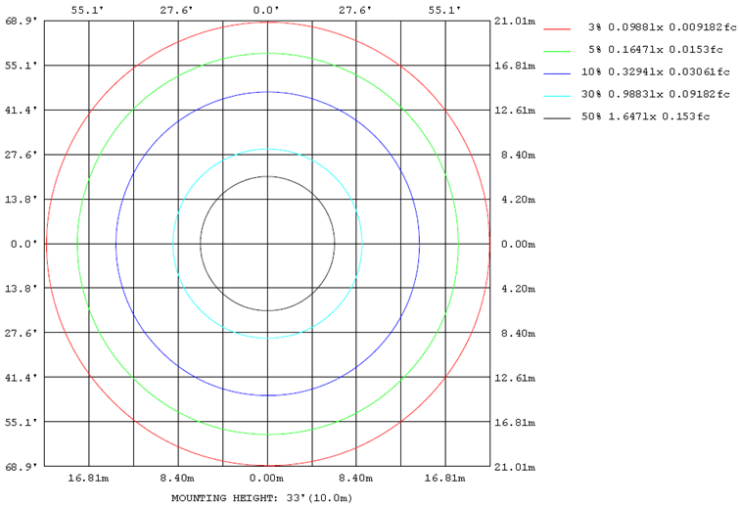
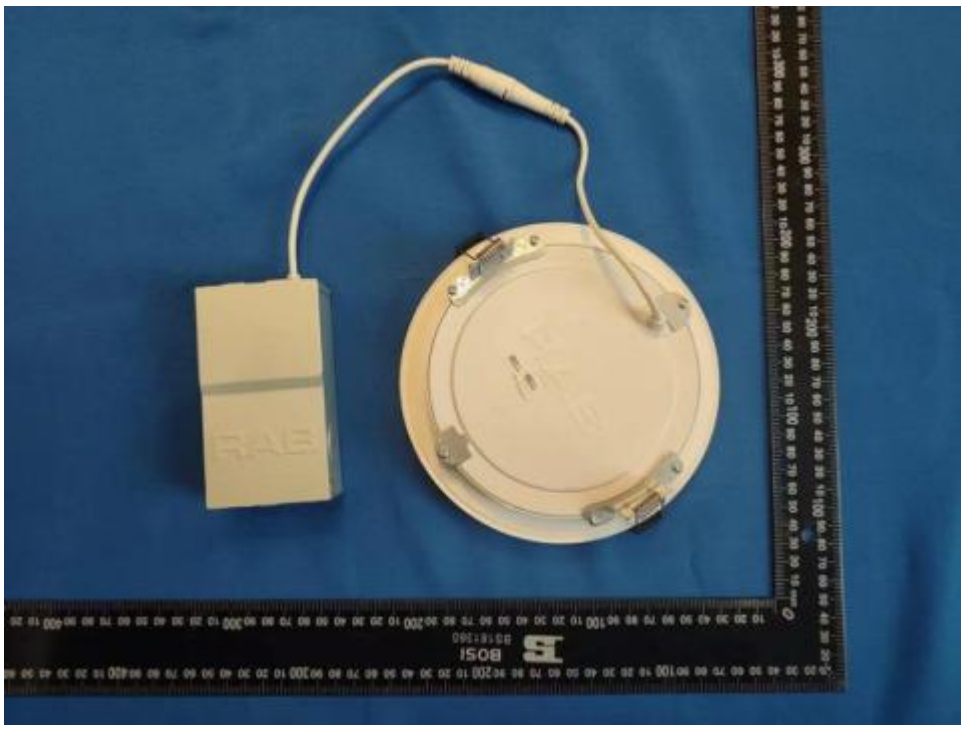


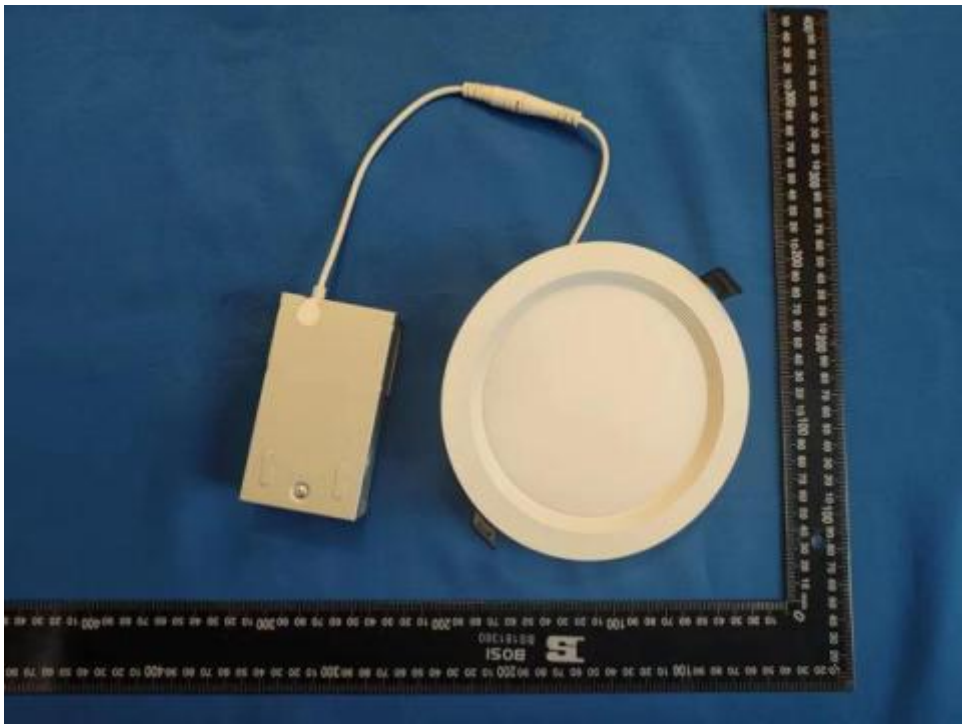
Table--1 UNIT: cd

C (DEG) / γ (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	330	330	330	330	330	330	330	330	330	330	330	330	330	330	330	330			
5	328	328	328	328	328	328	328	328	328	328	328	328	328	328	328	328			
10	324	324	324	324	324	324	324	324	324	323	324	323	324	324	324	324			
15	317	318	317	318	317	317	316	316	316	316	316	316	317	317	317	317			
20	308	308	308	308	308	308	307	307	307	306	307	307	307	307	308	308			
25	296	296	296	296	296	295	294	294	294	294	294	294	295	295	296	296			
30	281	282	281	282	281	281	280	280	280	279	280	279	280	280	281	281			
35	264	265	265	265	264	264	263	262	263	262	263	262	263	263	264	264			
40	245	246	246	246	245	245	244	243	243	243	243	243	244	244	245	245			
45	224	225	225	226	224	224	223	222	222	221	222	222	223	223	224	224			
50	201	203	202	203	202	201	200	199	199	198	199	199	200	200	202	202			
55	176	178	177	178	176	176	174	174	174	173	174	173	175	175	176	176			
60	149	150	150	150	149	149	147	146	146	145	146	146	148	148	149	149			
65	120	122	121	122	120	120	118	117	118	116	117	117	119	119	120	121			
70	90.8	92.2	91.6	92.2	90.8	90.5	88.3	87.8	87.8	86.7	87.8	87.6	89.2	89.3	90.9	90.9			
75	61.5	62.7	62.3	62.9	61.5	61.1	59.0	58.6	58.5	57.5	58.5	58.5	60.0	60.0	61.5	61.5			
80	34.0	35.1	34.8	35.3	33.7	33.6	31.9	31.5	31.5	30.6	31.6	31.5	32.8	32.8	34.1	34.1			
85	10.9	11.8	11.5	11.8	10.9	10.8	9.55	9.25	9.28	8.63	9.16	8.94	9.85	9.87	10.9	11.0			
90	0.55	0.60	0.63	0.57	0.48	0.39	0.38	0.39	0.38	0.38	0.38	0.37	0.38	0.38	0.40	0.54			

Sample No.	Wattage and CCT setting	Test Voltage(V)	Flux(lm)	P(W)	Luminous Efficacy lm/W
WFR6B/RGB	2700K setting	120.0	886.4	12.70	69.80
	3000K setting	120.0	895.1	12.70	70.48
	3500K setting	120.0	908.3	12.70	71.52
	4000K setting	120.0	919.4	12.70	72.40
	5000K setting	120.0	935.9	12.60	74.28
	6500K setting	120.0	945.8	12.60	75.06

3. Product Photo





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