

1.1 Product Information:

Organization Name		
Brand Name	N/A	
Model Number	FMLS-R11-MCT5-DT LDPRO-R11-MCT5-DT	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Luminaires	
Rated Voltage / Frequency	120Vac, 50/60 Hz	
Nominal Power	25W	
Rated Initial Lamp Lumen	--	
Declared CCT	2700K, 3000K, 3500K,4000K,5000K(Color tunable)	
LED Manufacturer	Hongli Zhihui Group Co.,Ltd. Guangzhou Branch	
LED Model	HL-AS-2835H466W-3C-S1-08L-PCT-HR5	
Sample Number	UTC2311003E-F1	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s
Photo		
		

1.2 Test Specifications:

Date of Receipt	2023-11-11
Date of Test	2023-11-13
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-79-2019 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	BL-QP-033

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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, 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. Goniophotometer far field detector $f1'=1.42\%$, Test distance: 14.14m

2) Chromaticity Measurement – Sphere-Spectroradiometer Method:

Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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.

Self-absorption:

FMLS-R11-MCT5-DT:1.040

3) Electrical Measurements:

Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.

2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2023-11-13	Test Ambient:	25.1 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	FMLS-R11-MCT5-DT(Setting at 2700K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
UTC231100 3E-F1	120.0	60	0.220	24.95	0.943

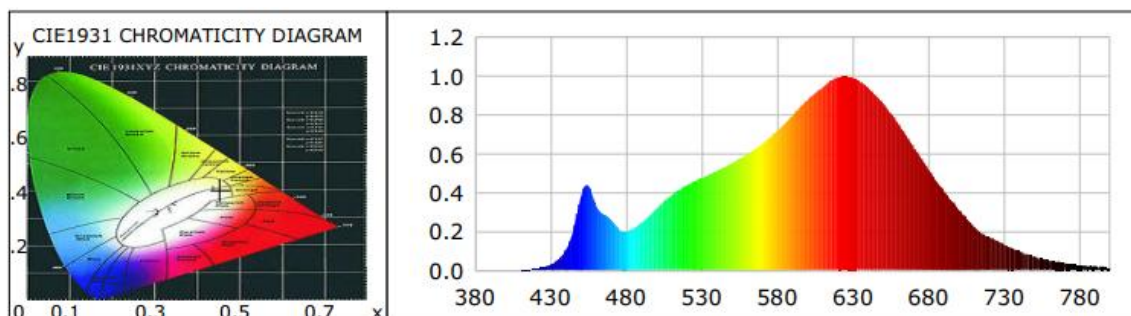
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	96	R9	66
Frequency (Hz)	60	R2	99	R10	96
CCT (K)	2849	R3	99	R11	97
Duv	-0.00118	R4	95	R12	85
Chromaticity (x, y)	x=0.4539 y=0.4061	R5	95	R13	97
Chromaticity (u', v')	u(u')=0.2607 v'=0.5247	R6	96	R14	99
Color Rendering Index (CRI)	94.4	R7	97	R15	91
R9	66	R8	91	--	--
Rf	92	--	--	--	--
Rg	99	--	--	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1766.5
Luminous Efficacy (lm/W)	70.80
Beam Angle (°)	111.5
Center Beam Candle Power (cd)	619

Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0000	0.0014	535	0.4578	19.2839	690	0.6322	26.6310
385	0.0008	0.0344	540	0.4750	20.0114	695	0.5731	24.1412
390	0.0007	0.0280	545	0.4921	20.7298	700	0.5149	21.6897
395	0.0005	0.0231	550	0.5120	21.5667	705	0.4596	19.3630
400	0.0007	0.0276	555	0.5311	22.3724	710	0.4093	17.2403
405	0.0010	0.0414	560	0.5525	23.2742	715	0.3575	15.0621
410	0.0014	0.0580	565	0.5733	24.1494	720	0.3110	13.1025
415	0.0035	0.1462	570	0.5968	25.1406	725	0.2683	11.3004
420	0.0080	0.3375	575	0.6213	26.1743	730	0.2241	9.4402
425	0.0152	0.6412	580	0.6498	27.3731	735	0.1906	8.0281
430	0.0285	1.1999	585	0.6815	28.7094	740	0.1717	7.2336
435	0.0534	2.2476	590	0.7167	30.1925	745	0.1532	6.4528
440	0.1019	4.2921	595	0.7546	31.7878	750	0.1326	5.5872
445	0.2019	8.5053	600	0.7966	33.5588	755	0.1123	4.7301
450	0.3720	15.6700	605	0.8397	35.3743	760	0.0990	4.1714
455	0.4365	18.3868	610	0.8797	37.0591	765	0.0855	3.6035
460	0.3381	14.2450	615	0.9138	38.4953	770	0.0707	2.9785
465	0.2886	12.1557	620	0.9437	39.7533	775	0.0610	2.5710
470	0.2600	10.9532	625	0.9767	41.1428	780	0.0522	2.2001
475	0.2135	8.9933	630	0.9945	41.8942	785	0.0426	1.7928
480	0.1998	8.4178	635	0.9991	42.0884	790	0.0391	1.6451
485	0.2173	9.1547	640	0.9896	41.6897	795	0.0310	1.3064
490	0.2433	10.2473	645	0.9716	40.9294	800	0.0263	1.1067
495	0.2783	11.7232	650	0.9427	39.7121			
500	0.3166	13.3371	655	0.9033	38.0532			
505	0.3541	14.9166	660	0.8576	36.1274			
510	0.3862	16.2672	665	0.8081	34.0436			
515	0.4134	17.4157	670	0.7544	31.7801			
520	0.4361	18.3727	675	0.6951	29.2807			
525	0.4578	19.2839	680	0.6322	26.6310			
530	0.4750	20.0114	685	0.5731	24.1412			

Zonal Lumen Tabulation

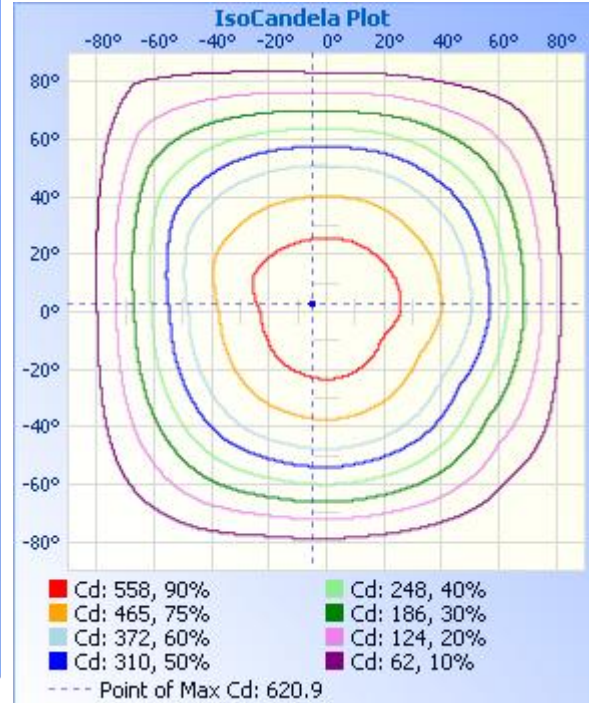
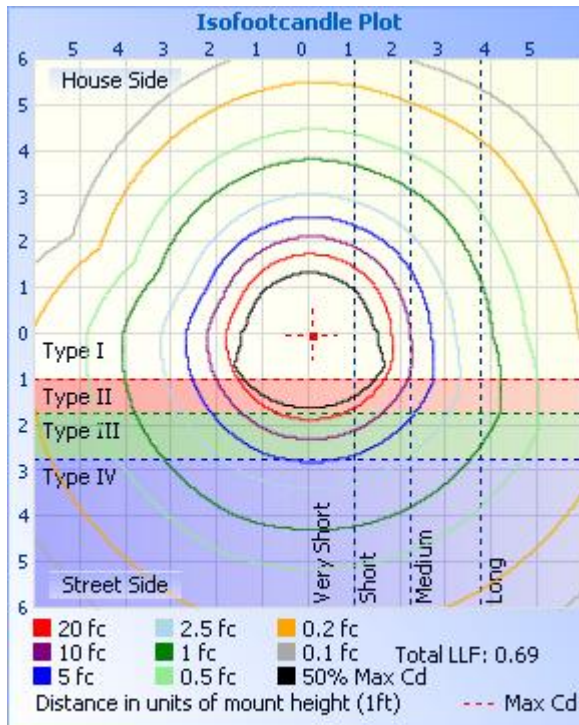
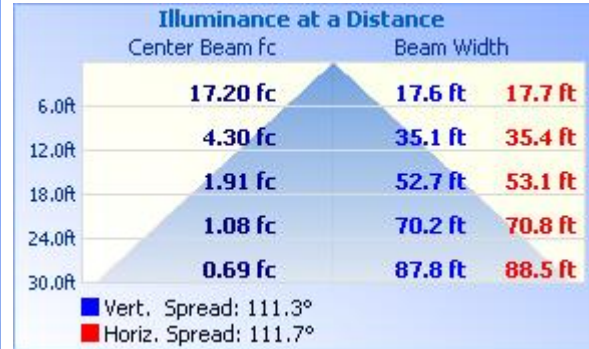
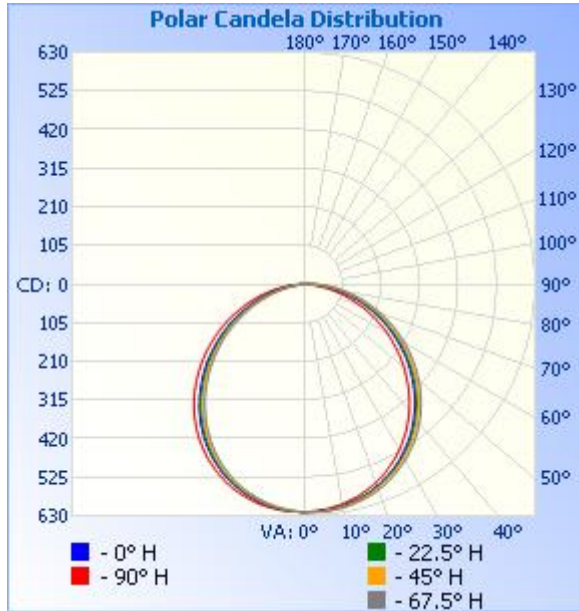
Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0-30	483.1	27.3%	27.4%
0-40	791.5	44.8%	44.8%
0-60	1,391.9	78.8%	78.8%
60-90	373.5	21.1%	21.1%
70-100	160.9	9.1%	9.1%
90-120	1.0	0.1%	0.1%
0-90	1,765.3	99.9%	99.9%
90-180	1.0	0.1%	0.1%
0-180	1,766.4	100%	100%

Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	58.6	3.3%	90-100	1.0	0.1%
10-20	168.4	9.5%	100-110	0	0%
20-30	256.0	14.5%	110-120	0	0%
30-40	308.4	17.5%	120-130	0	0%
40-50	317.4	18.0%	130-140	0	0%
50-60	283.0	16.0%	140-150	0	0%
60-70	213.6	12.1%	150-160	0	0%
70-80	123.5	7.0%	160-170	0	0%
80-90	36.3	2.1%	170-180	0	0%

Photometric Data



Candela Table - Type C

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619
1	619	619	619	620	619	619	619	619	619	619	619	618	619	619	620	619	619
2	619	620	619	621	618	618	619	618	619	618	618	618	619	619	619	620	619
3	619	620	620	621	617	618	618	618	618	617	617	617	619	620	619	620	619
4	619	619	620	621	616	616	616	616	617	616	615	615	618	619	618	619	619
5	618	619	620	621	615	615	616	615	616	615	614	613	618	618	618	618	618
6	617	618	619	621	614	614	614	614	614	614	612	611	617	618	617	618	617
7	616	617	619	620	613	612	613	612	613	612	611	609	616	617	616	616	616
8	614	616	617	619	610	610	611	611	611	610	609	607	615	616	615	615	614
9	613	615	616	618	609	608	609	608	609	608	606	604	614	614	613	614	613
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11	610	612	613	616	604	603	605	603	605	603	601	598	610	612	610	611	610
12	607	610	611	614	601	600	601	601	602	600	598	596	608	610	608	609	607
13	605	608	609	613	599	597	599	598	599	597	595	592	605	608	605	607	605
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15	601	602	605	609	593	592	592	592	593	591	588	585	600	602	600	601	601
16	598	600	602	606	590	588	590	589	590	588	585	581	597	600	597	599	598
17	595	596	600	604	587	584	586	584	586	584	580	577	594	597	595	596	595
18	592	594	597	601	582	580	582	581	582	579	576	572	591	594	591	593	592
19	588	590	593	598	578	576	578	577	579	576	572	568	588	590	588	589	588
20	584	587	590	595	574	572	574	572	574	571	567	562	584	586	583	586	584
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22	576	579	583	589	566	562	565	562	565	561	557	552	575	578	576	578	576
23	572	576	579	585	561	558	560	557	560	556	552	546	571	574	572	574	572
24	567	570	575	581	556	552	555	552	554	551	546	540	566	570	567	570	567
25	563	566	571	576	549	547	549	547	549	545	540	534	561	565	563	565	563
26	558	561	566	572	544	541	544	542	543	539	534	527	557	560	558	560	558
27	553	557	561	567	539	536	538	536	537	533	527	521	551	555	552	554	553
28	548	552	556	563	533	530	532	529	531	526	520	515	545	550	547	550	548
29	542	546	552	558	527	523	526	522	525	520	514	508	540	544	542	544	542

Laboratory: UTEST TECHNICAL LABORATORY CO.LTD A2LA Certificate# 4810.01

Unit 401, No. 309 Xinxin Seven Road, Zengcheng District,
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Report Format Number BL-FM-SA-012

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90	12	18	24	30	0	0	0	0	0	0	0	0	0	4	5	12	12
91	3	11	16	22	0	0	0	0	0	0	0	0	0	0	0	5	3
92	0	3	10	14	0	0	0	0	0	0	0	0	0	0	0	0	0
93	0	0	3	7	0	0	0	0	0	0	0	0	0	0	0	0	0

94	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
103	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
104	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
106	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
108	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
109	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
116	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
117	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
119	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
121	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
124	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
128	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
129	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
131	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
132	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
134	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
136	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
138	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
139	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
142	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
143	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
144	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
146	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
149	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
153	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
161	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
162	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
164	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
166	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
167	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
168	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
171	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
173	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
174	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
176	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
177	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
178	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
179	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2023-11-13	Test Ambient:	25.1 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	FMLS-R11-MCT5-DT(Setting at 3000K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
UTC231100 3E-F1	120.0	60	0.221	24.98	0.942

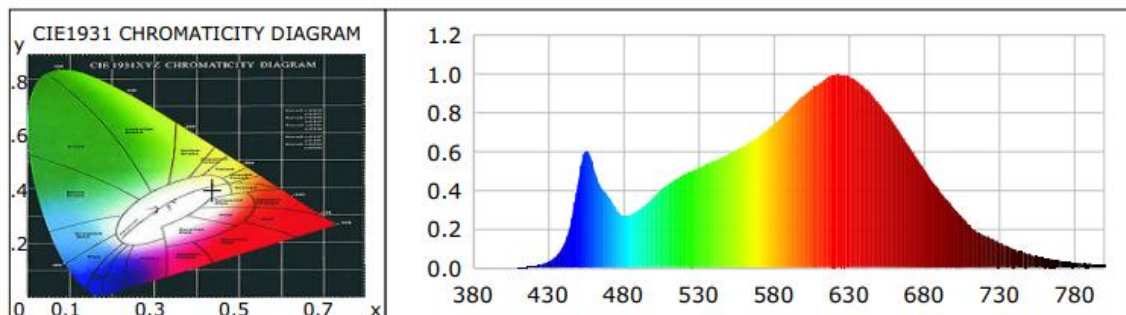
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	98	R9	72
Frequency (Hz)	60	R2	99	R10	98
CCT (K)	2961	R3	97	R11	97
Duv	-0.00336	R4	96	R12	82
Chromaticity (x, y)	x=0.4348 y=0.3950	R5	97	R13	99
Chromaticity (u', v')	u(u')=0.2531 v'=0.5174	R6	94	R14	99
Color Rendering Index (CRI)	94.6	R7	91	R15	94
R9	72	R8	86	--	--
Rf	91	--	--	--	--
Rg	99	--	--	--	--

Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1844.3
Luminous Efficacy (lm/W)	73.83

Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0001	0.0059	535	0.4996	20.6949	690	0.6237	25.8334
385	0.0006	0.0251	540	0.5162	21.3815	695	0.5629	23.3141
390	0.0006	0.0244	545	0.5320	22.0351	700	0.5073	21.0131
395	0.0008	0.0339	550	0.5500	22.7826	705	0.4499	18.6373
400	0.0012	0.0483	555	0.5673	23.4963	710	0.3982	16.4942
405	0.0015	0.0621	560	0.5864	24.2911	715	0.3512	14.5488
410	0.0016	0.0647	565	0.6070	25.1411	720	0.3044	12.6105
415	0.0037	0.1528	570	0.6279	26.0092	725	0.2602	10.7779
420	0.0081	0.3351	575	0.6509	26.9622	730	0.2205	9.1318
425	0.0154	0.6394	580	0.6767	28.0302	735	0.1839	7.6188
430	0.0298	1.2354	585	0.7055	29.2212	740	0.1670	6.9158
435	0.0574	2.3761	590	0.7393	30.6223	745	0.1501	6.2172
440	0.1120	4.6381	595	0.7745	32.0800	750	0.1299	5.3823
445	0.2269	9.3986	600	0.8121	33.6374	755	0.1091	4.5184
450	0.4410	18.2675	605	0.8513	35.2627	760	0.0957	3.9652
455	0.6014	24.9102	610	0.8915	36.9277	765	0.0831	3.4434
460	0.5258	21.7774	615	0.9211	38.1543	770	0.0707	2.9297
465	0.4189	17.3530	620	0.9495	39.3280	775	0.0601	2.4904
470	0.3699	15.3214	625	0.9822	40.6828	780	0.0495	2.0517
475	0.3066	12.6998	630	0.9951	41.2169	785	0.0417	1.7269
480	0.2676	11.0843	635	0.9981	41.3420	790	0.0392	1.6258
485	0.2741	11.3539	640	0.9883	40.9372	795	0.0300	1.2426
490	0.2975	12.3208	645	0.9650	39.9728	800	0.0237	0.9804
495	0.3273	13.5573	650	0.9328	38.6384			
500	0.3638	15.0690	655	0.8930	36.9897			
505	0.3995	16.5490	660	0.8489	35.1602			
510	0.4317	17.8822	665	0.7959	32.9653			
515	0.4573	18.9414	670	0.7406	30.6748			
520	0.4791	19.8433	675	0.6797	28.1557			
525	0.4996	20.6949	680	0.6237	25.8334			
530	0.5162	21.3815	685	0.5629	23.3141			

2.3 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2023-11-13	Test Ambient:	25.1 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	FMLS-R11-MCT5-DT(Setting at 3500K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
UTC231100 3E-F1	120.0	60	0.221	25.07	0.944

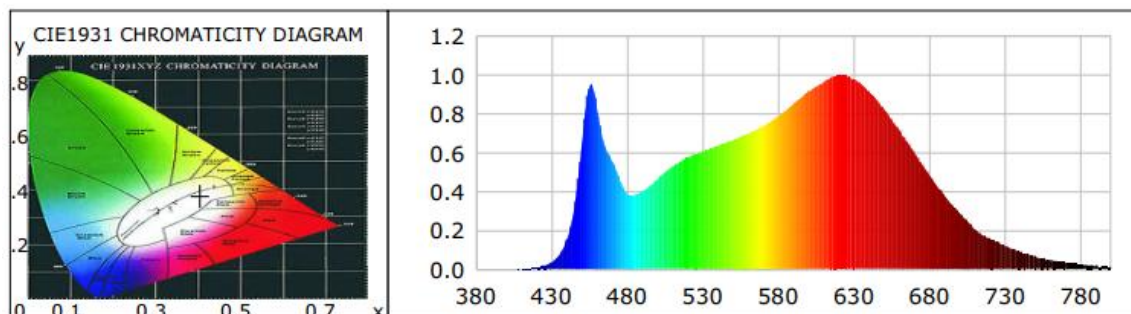
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	98	R9	82
Frequency (Hz)	60	R2	96	R10	94
CCT (K)	3427	R3	96	R11	98
Duv	-0.00508	R4	96	R12	77
Chromaticity (x, y)	x=0.4040 y=0.3787	R5	96	R13	98
Chromaticity (u', v')	u(u')=0.2399 v'=0.5060	R6	92	R14	99
Color Rendering Index (CRI)	94.2	R7	91	R15	97
R9	82	R8	89	--	--
Rf	90	--	--	--	--
Rg	98	--	--	--	--

Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1923.4
Luminous Efficacy (lm/W)	76.72

Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0003	0.0121	535	0.5930	23.8172	690	0.5972	23.9854
385	0.0006	0.0243	540	0.6062	24.3469	695	0.5385	21.6260
390	0.0007	0.0280	545	0.6201	24.9049	700	0.4825	19.3773
395	0.0005	0.0215	550	0.6353	25.5140	705	0.4275	17.1709
400	0.0009	0.0374	555	0.6503	26.1157	710	0.3793	15.2338
405	0.0010	0.0407	560	0.6651	26.7101	715	0.3314	13.3089
410	0.0011	0.0457	565	0.6827	27.4161	720	0.2883	11.5768
415	0.0033	0.1336	570	0.6984	28.0479	725	0.2471	9.9247
420	0.0082	0.3296	575	0.7163	28.7660	730	0.2067	8.2994
425	0.0172	0.6893	580	0.7375	29.6169	735	0.1750	7.0302
430	0.0351	1.4098	585	0.7594	30.4972	740	0.1585	6.3667
435	0.0719	2.8871	590	0.7896	31.7102	745	0.1409	5.6569
440	0.1477	5.9301	595	0.8179	32.8470	750	0.1196	4.8045
445	0.3051	12.2523	600	0.8498	34.1297	755	0.1046	4.2016
450	0.6292	25.2684	605	0.8857	35.5726	760	0.0896	3.6002
455	0.9355	37.5710	610	0.9168	36.8200	765	0.0783	3.1429
460	0.8381	33.6609	615	0.9396	37.7362	770	0.0666	2.6742
465	0.6411	25.7457	620	0.9659	38.7906	775	0.0568	2.2803
470	0.5608	22.5217	625	0.9883	39.6921	780	0.0487	1.9563
475	0.4655	18.6970	630	0.9980	40.0805	785	0.0384	1.5409
480	0.3874	15.5573	635	0.9977	40.0705	790	0.0345	1.3873
485	0.3830	15.3831	640	0.9790	39.3176	795	0.0287	1.1517
490	0.4025	16.1664	645	0.9537	38.3022	800	0.0237	0.9538
495	0.4271	17.1541	650	0.9176	36.8538			
500	0.4640	18.6335	655	0.8733	35.0740			
505	0.4992	20.0496	660	0.8277	33.2400			
510	0.5295	21.2669	665	0.7705	30.9429			
515	0.5536	22.2332	670	0.7173	28.8072			
520	0.5743	23.0656	675	0.6579	26.4223			
525	0.5930	23.8172	680	0.5972	23.9854			
530	0.6062	24.3469	685	0.5385	21.6260			

2.4 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2023-11-13	Test Ambient:	25.1 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	FMLS-R11-MCT5-DT(Setting at 4000K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
UTC231100 3E-F1	120.0	60	0.223	25.23	0.942

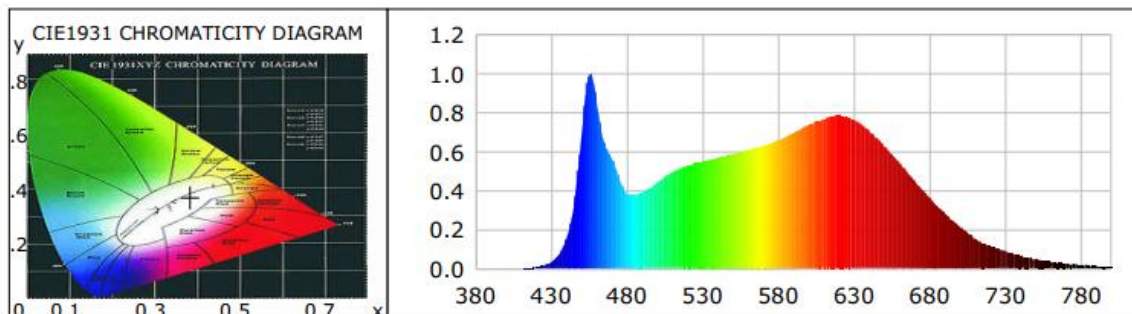
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	97	R9	85
Frequency (Hz)	60	R2	96	R10	94
CCT (K)	3913	R3	96	R11	97
Duv	-0.00458	R4	94	R12	73
Chromaticity (x, y)	x=0.3810 y=0.3675	R5	95	R13	97
Chromaticity (u', v')	u(u')=0.2293 v'=0.4975	R6	92	R14	99
Color Rendering Index (CRI)	94.0	R7	91	R15	97
R9	85	R8	90	--	--
Rf	89	--	--	--	--
Rg	97	--	--	--	--

Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1967.4
Luminous Efficacy (lm/W)	77.98

Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0004	0.0178	535	0.5407	26.2001	690	0.4501	21.8131
385	0.0005	0.0239	540	0.5484	26.5756	695	0.4049	19.6235
390	0.0004	0.0215	545	0.5575	27.0154	700	0.3620	17.5411
395	0.0004	0.0192	550	0.5696	27.6019	705	0.3208	15.5438
400	0.0013	0.0615	555	0.5781	28.0124	710	0.2837	13.7497
405	0.0008	0.0369	560	0.5868	28.4362	715	0.2463	11.9354
410	0.0006	0.0293	565	0.5968	28.9206	720	0.2121	10.2759
415	0.0033	0.1618	570	0.6071	29.4196	725	0.1824	8.8389
420	0.0071	0.3462	575	0.6167	29.8851	730	0.1528	7.4037
425	0.0152	0.7351	580	0.6289	30.4769	735	0.1265	6.1321
430	0.0333	1.6138	585	0.6435	31.1855	740	0.1167	5.6574
435	0.0714	3.4588	590	0.6600	31.9828	745	0.1031	4.9939
440	0.1511	7.3225	595	0.6772	32.8168	750	0.0891	4.3170
445	0.3204	15.5251	600	0.6978	33.8167	755	0.0758	3.6728
450	0.6725	32.5866	605	0.7175	34.7710	760	0.0655	3.1721
455	0.9906	48.0015	610	0.7388	35.8035	765	0.0578	2.8012
460	0.8598	41.6638	615	0.7534	36.5086	770	0.0471	2.2826
465	0.6457	31.2923	620	0.7662	37.1273	775	0.0410	1.9849
470	0.5661	27.4315	625	0.7839	37.9854	780	0.0360	1.7454
475	0.4630	22.4389	630	0.7854	38.0591	785	0.0273	1.3251
480	0.3842	18.6203	635	0.7793	37.7650	790	0.0268	1.2986
485	0.3771	18.2746	640	0.7618	36.9139	795	0.0214	1.0355
490	0.3913	18.9641	645	0.7393	35.8267	800	0.0165	0.7982
495	0.4126	19.9921	650	0.7067	34.2461			
500	0.4426	21.4489	655	0.6705	32.4928			
505	0.4707	22.8101	660	0.6303	30.5418			
510	0.4955	24.0127	665	0.5869	28.4422			
515	0.5130	24.8602	670	0.5434	26.3343			
520	0.5281	25.5911	675	0.4962	24.0474			
525	0.5407	26.2001	680	0.4501	21.8131			
530	0.5484	26.5756	685	0.4049	19.6235			

2.5 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2023-11-13	Test Ambient:	25.1 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	FMLS-R11-MCT5-DT(Setting at 5000K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
UTC231100 3E-F1	120.0	60	0.221	25.05	0.943

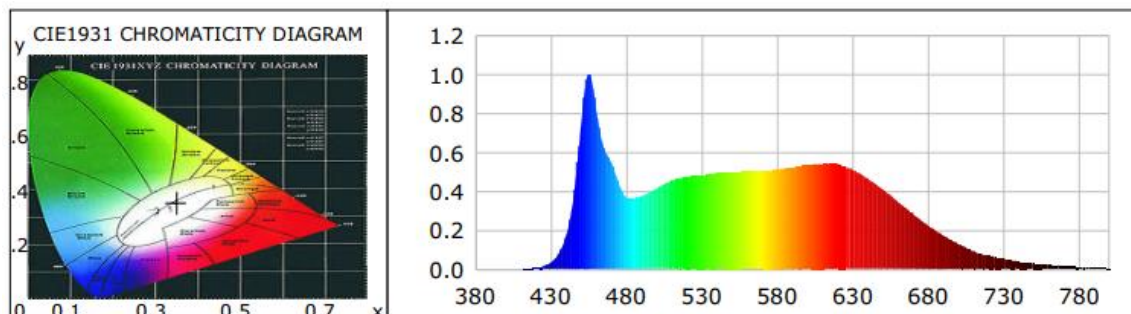
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	96	R9	79
Frequency (Hz)	60	R2	98	R10	98
CCT (K)	4909	R3	96	R11	94
Duv	-0.00050	R4	90	R12	67
Chromaticity (x, y)	x=0.3476 y=0.3526	R5	93	R13	99
Chromaticity (u', v')	u(u')=0.2127 v'=0.4855	R6	95	R14	99
Color Rendering Index (CRI)	93.3	R7	90	R15	93
R9	79	R8	88	--	--
Rf	87	--	--	--	--
Rg	95	--	--	--	--

Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1969.2
Luminous Efficacy (lm/W)	78.61

Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0000	0.0018	535	0.4793	28.2588	690	0.2833	16.7015
385	0.0006	0.0343	540	0.4849	28.5907	695	0.2532	14.9261
390	0.0007	0.0419	545	0.4883	28.7896	700	0.2243	13.2272
395	0.0004	0.0261	550	0.4927	29.0482	705	0.1979	11.6668
400	0.0008	0.0443	555	0.4956	29.2208	710	0.1736	10.2372
405	0.0011	0.0627	560	0.4994	29.4440	715	0.1500	8.8419
410	0.0008	0.0499	565	0.5002	29.4884	720	0.1289	7.5997
415	0.0029	0.1693	570	0.5029	29.6483	725	0.1095	6.4552
420	0.0071	0.4159	575	0.5029	29.6527	730	0.0910	5.3677
425	0.0155	0.9122	580	0.5043	29.7332	735	0.0781	4.6044
430	0.0341	2.0082	585	0.5076	29.9273	740	0.0683	4.0272
435	0.0767	4.5232	590	0.5112	30.1382	745	0.0606	3.5757
440	0.1653	9.7472	595	0.5164	30.4466	750	0.0543	3.1994
445	0.3561	20.9970	600	0.5217	30.7572	755	0.0441	2.5991
450	0.7271	42.8686	605	0.5294	31.2126	760	0.0397	2.3406
455	1.0000	58.9583	610	0.5354	31.5634	765	0.0334	1.9666
460	0.8332	49.1261	615	0.5380	31.7166	770	0.0277	1.6336
465	0.6287	37.0667	620	0.5399	31.8341	775	0.0254	1.4960
470	0.5495	32.3999	625	0.5425	31.9874	780	0.0206	1.2126
475	0.4430	26.1173	630	0.5394	31.8025	785	0.0165	0.9742
480	0.3696	21.7909	635	0.5302	31.2577	790	0.0151	0.8887
485	0.3638	21.4508	640	0.5129	30.2391	795	0.0127	0.7459
490	0.3755	22.1413	645	0.4924	29.0330	800	0.0081	0.4751
495	0.3919	23.1028	650	0.4668	27.5216			
500	0.4155	24.4973	655	0.4394	25.9042			
505	0.4362	25.7177	660	0.4094	24.1397			
510	0.4546	26.8011	665	0.3775	22.2551			
515	0.4648	27.4047	670	0.3474	20.4841			
520	0.4738	27.9361	675	0.3143	18.5297			
525	0.4793	28.2588	680	0.2833	16.7015			
530	0.4849	28.5907	685	0.2532	14.9261			

3. Test Equipment

Equipment Name	Model No.	Serial No.	Calibration Date
Goniophotometric System	GPM-3000	DYHXF120001	2023-01-17
AC Power Source	CHP-500C	DYBD010159	2023-01-18
Total Luminous Flux Standard Lamp	24V/150W	DYJYR040040	2023-02-01
Digital Power Meter	WT500	DYDWQ20010	2023-01-18
Integral Sphere (2M)	2M	DYJCE120067	2023-01-17
Digital Power Meter	WT500	DYDWQ200006	2023-01-18
Optical Color and Electrical Measurement System	CMS-3000S	DYJCE120067	2023-01-17
Expand Uncertainty: Photometric Measurement (Sphere): 2.08%, k=2 Chromaticity Measurement(Sphere):25.6K, k=2 Photometric Measurement(Goniophotometer):2.645%, k=2			

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