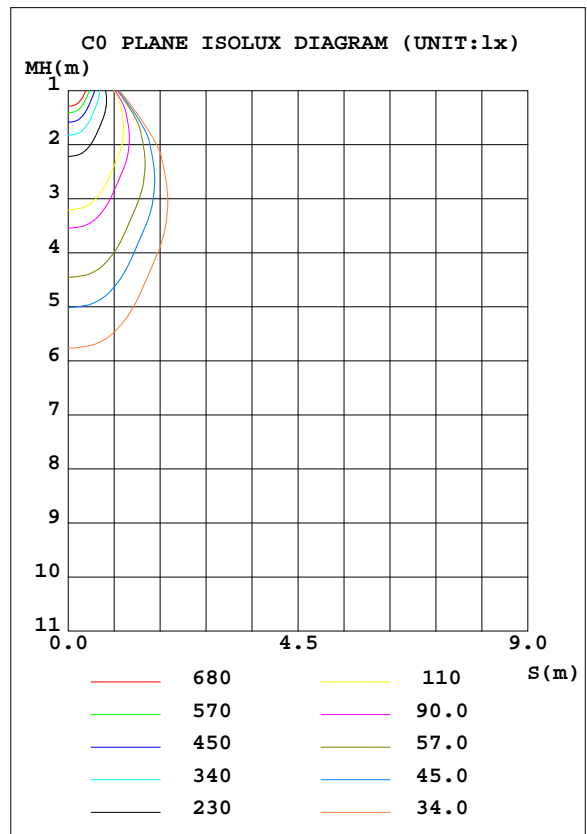
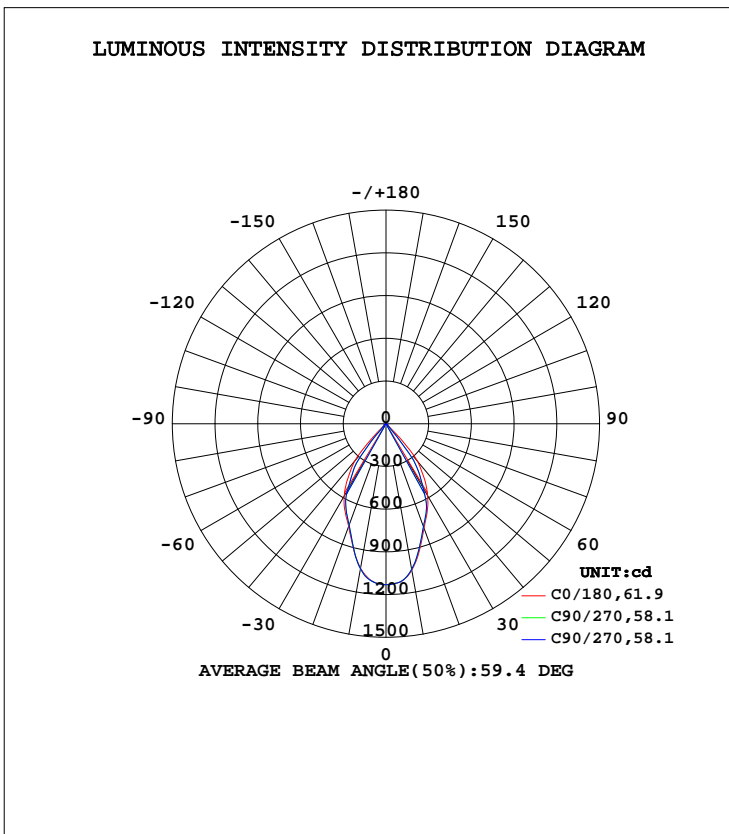


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:230.26V I:0.0562A P:12.353W PF:0.9554 Freq:49.99Hz UTHDi:0.00% ITHDi:0.00% KDisp:0 Lamp Flux:1026.54x1 lm		
NAME: LED-DL13WCOB-CC-W 4000K	TYPE: 13W	WEIGHT:
SPEC.: 4000K	DIM.:	SERIAL No.: #1
MFR.:	SUR.: 0.0026	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 83.10 lm/W			
MODEL: LED-DL13WCOB-CC-W 4000K		I <sub>max</sub> (cd)	1131	S/MH(C0/180)	0.84
NOMINAL POWER(W)	13	LOR(%)	100.0	S/MH(C90/270)	0.82
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	1026.5	η UP, DN(C0-180)	0.0,49.9
NOMINAL FLUX(lm)	1026.54	CIE CLASS	DIRECT	η UP, DN(C180-360)	0.0,50.1
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	1.00
TEST VOLTAGE(V)	230	η down(%)	100.0	CIBSE SHR MAX	1.00



C Range: 0 - 360DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:  
 Test Date:2022-02-28

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.00.446  
 Humidity:65.0%  
 Test Distance:8.690m [K=1.0000]  
 Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C90	C180	C270					γ	Φ zone	Φ total	%lum, lamp
10	1044	1038	1031	1034					0- 10	103.9	103.9	10.1,10.1
20	781.0	770.6	768.3	758.4					10- 20	251.6	355.4	34.6,34.6
30	584.7	525.1	588.0	541.8					20- 30	308.0	663.4	64.6,64.6
40	348.5	122.8	345.6	162.8					30- 40	260.7	924.2	90,90
50	21.48	19.25	21.44	19.89					40- 50	64.87	989.0	96.3,96.3
60	15.54	13.82	15.93	14.47					50- 60	15.32	1004	97.8,97.8
70	12.06	9.328	12.33	9.843					60- 70	13.50	1018	99.2,99.2
80	4.540	1.885	4.757	2.009					70- 80	7.464	1025	99.9,99.9
90	0.0731	0.0792	0.0670	0.1040					80- 90	1.229	1027	100,100
100									90-100			
110									100-110			
120									110-120			
130									120-130			
140									130-140			
150									140-150			
160									150-160			
170									160-170			
180									170-180			
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Conical surface Flux(90deg): 976.15 lm

%lum = 95.1%  
 %lamp = 95.1%

Conical surface Flux(120deg): 1004.3 lm

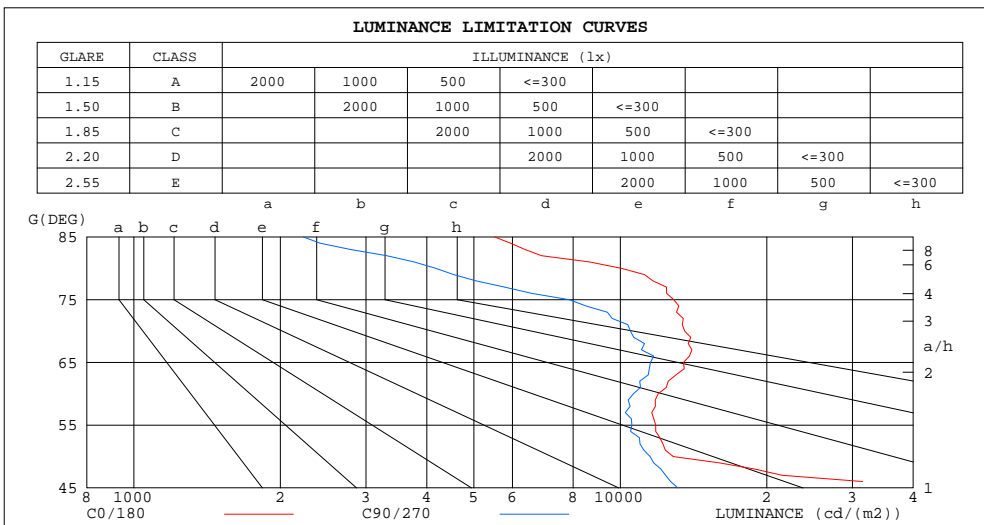
%lum = 97.8%  
 %lamp = 97.8%

C Range: 0 - 360DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:  
 Test Date:2022-02-28

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.00.446  
 Humidity:65.0%  
 Test Distance:8.690m [K=1.0000]  
 Remarks:

**LUMINANCE LIMITATION CURVES**

Test:U:230.26V I:0.0562A P:12.353W PF:0.9554 Freq:49.99Hz UTHDi:0.00% ITHDi:0.00% KDisp:0 Lamp Flux:1026.54x1 lm		
NAME: LED-DL13WCOB-CC-W 4000K	TYPE: 13W	WEIGHT:
SPEC.: 4000K	DIM.:	SERIAL No.: #1
MFR.:	SUR.: 0.0026	Shielding Angle:



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	5518	2231
80	10057	4175
75	12880	7860
70	13564	10488
65	13479	11536
60	11956	10630
55	11824	10561
50	12856	11518
45	57340	13142

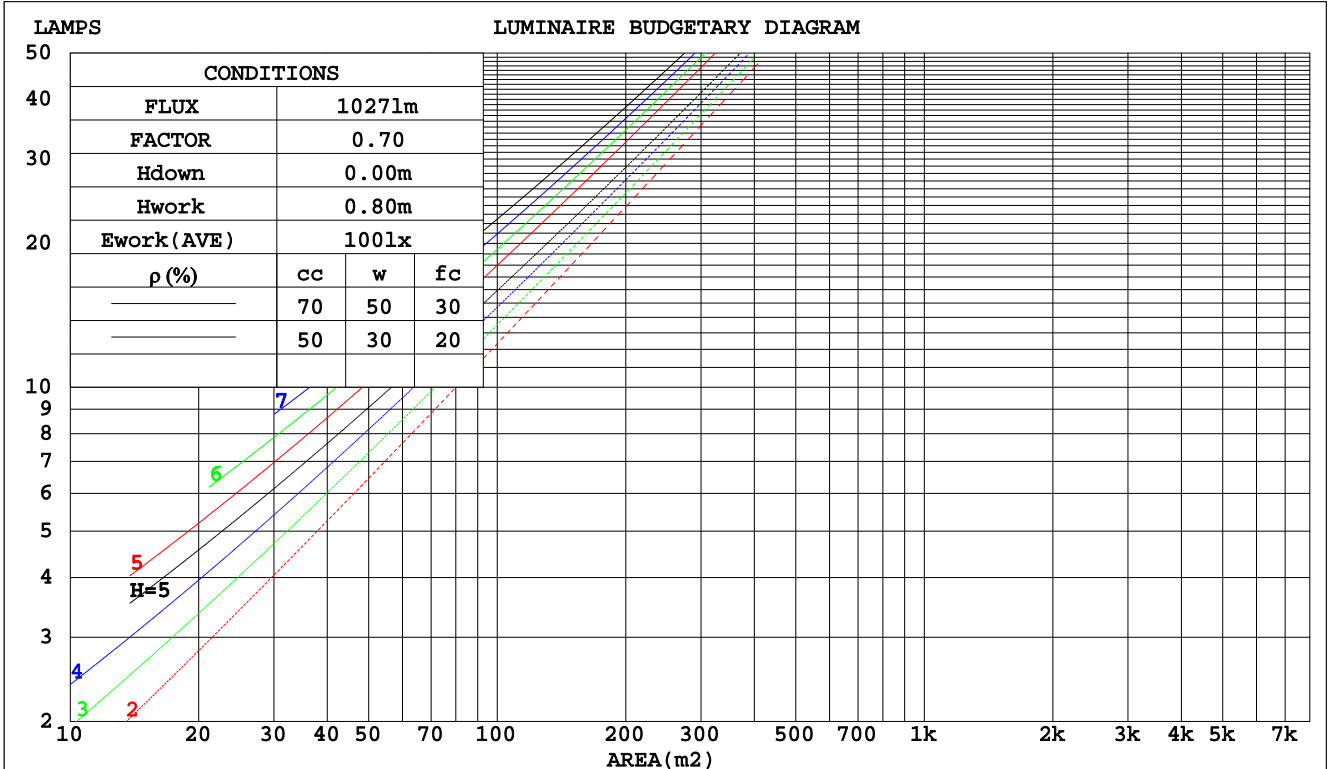
C Range: 0 - 360DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:  
 Test Date:2022-02-28

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.00.446  
 Humidity:65.0%  
 Test Distance:8.690m [K=1.0000]  
 Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:230.26V I:0.0562A P:12.353W PF:0.9554 Freq:49.99Hz UTHDi:0.00% ITHDi:0.00% KDisp:0 Lamp Flux:1026.54x1 lm		
NAME: LED-DL13WCOB-CC-W 4000K	TYPE: 13W	WEIGHT:
SPEC.: 4000K	DIM.:	SERIAL No.: #1
MFR.:	SUR.: 0.0026	Shielding Angle:

pcc	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pw																
pfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio															
	Coefficients of Utilization(CU)															
0.0	1.19	1.19	1.19	1.16	1.16	1.16	1.11	1.11	1.11	1.06	1.06	1.06	1.02	1.02	1.02	1.00
1.0	1.10	1.08	1.05	1.08	1.06	1.04	1.04	1.02	1.00	1.00	.99	.97	.97	.96	.95	.93
2.0	1.02	.98	.94	1.00	.96	.93	.97	.94	.91	.94	.91	.89	.91	.89	.87	.86
3.0	.95	.89	.85	.93	.88	.85	.91	.86	.83	.88	.85	.82	.86	.83	.81	.79
4.0	.88	.82	.78	.87	.81	.77	.85	.80	.76	.83	.79	.75	.81	.77	.75	.73
5.0	.82	.76	.71	.81	.75	.71	.79	.74	.70	.78	.73	.70	.76	.72	.69	.68
6.0	.77	.71	.66	.76	.70	.66	.74	.69	.65	.73	.68	.65	.72	.68	.64	.63
7.0	.72	.66	.61	.71	.65	.61	.70	.65	.61	.69	.64	.60	.68	.63	.60	.59
8.0	.68	.61	.57	.67	.61	.57	.66	.60	.57	.65	.60	.56	.64	.59	.56	.55
9.0	.64	.57	.53	.63	.57	.53	.62	.57	.53	.61	.56	.53	.60	.56	.53	.51
10.0	.60	.54	.50	.60	.54	.50	.59	.53	.50	.58	.53	.50	.57	.53	.49	.48



C Range: 0 - 360DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators:  
 Test Date: 2022-02-28

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.00.446  
 Humidity: 65.0%  
 Test Distance: 8.690m [K=1.0000]  
 Remarks:

WEC AND CCEC

Test:U:230.26V I:0.0562A P:12.353W PF:0.9554 Freq:49.99Hz UTHDi:0.00% ITHDi:0.00% KDisp:0 Lamp Flux:1026.54x1 lm		
NAME: LED-DL13WCOB-CC-W 4000K	TYPE: 13W	WEIGHT:
SPEC.: 4000K	DIM.:	SERIAL No.: #1
MFR.:	SUR.: 0.0026	Shielding Angle:

ρcc	80%			70%			50%			30%			10%			0
ρw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients(WEC)									
0.0																
1.0	.189	.107	.034	.182	.104	.033	.169	.097	.031	.158	.091	.029	.147	.085	.027	
2.0	.181	.099	.030	.175	.097	.030	.165	.092	.028	.155	.087	.027	.146	.082	.026	
3.0	.172	.092	.027	.167	.090	.027	.158	.086	.026	.150	.082	.025	.142	.078	.024	
4.0	.164	.085	.025	.159	.083	.025	.151	.080	.024	.144	.077	.023	.137	.075	.023	
5.0	.156	.079	.023	.152	.078	.023	.145	.076	.022	.139	.073	.022	.133	.071	.021	
6.0	.148	.074	.021	.145	.073	.021	.139	.071	.021	.133	.069	.020	.128	.067	.020	
7.0	.141	.070	.020	.139	.069	.020	.133	.067	.019	.128	.066	.019	.123	.064	.019	
8.0	.135	.066	.019	.133	.065	.018	.128	.064	.018	.123	.062	.018	.119	.061	.018	
9.0	.129	.063	.017	.127	.062	.017	.123	.061	.017	.119	.059	.017	.115	.058	.017	
10.0	.124	.059	.016	.122	.059	.016	.118	.058	.016	.114	.057	.016	.111	.056	.016	

ρcc	80%			70%			50%			30%			10%			0
ρw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients(CCEC)									
0.0	.190	.190	.190	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
1.0	.172	.157	.144	.147	.135	.124	.101	.093	.086	.058	.054	.050	.019	.017	.016	
2.0	.157	.132	.111	.135	.114	.096	.092	.079	.067	.053	.046	.039	.017	.015	.013	
3.0	.146	.114	.088	.125	.098	.076	.086	.068	.054	.050	.040	.032	.016	.013	.010	
4.0	.136	.099	.071	.117	.086	.062	.080	.060	.043	.046	.035	.026	.015	.011	.008	
5.0	.127	.088	.058	.109	.076	.051	.075	.053	.036	.044	.031	.021	.014	.010	.007	
6.0	.120	.078	.049	.103	.068	.042	.071	.048	.030	.041	.028	.018	.013	.009	.006	
7.0	.114	.071	.041	.098	.062	.036	.068	.043	.025	.039	.025	.015	.013	.008	.005	
8.0	.108	.065	.035	.093	.056	.031	.064	.039	.022	.037	.023	.013	.012	.008	.004	
9.0	.103	.060	.030	.089	.052	.027	.062	.036	.019	.036	.022	.011	.012	.007	.004	
10.0	.098	.055	.027	.085	.048	.023	.059	.034	.017	.034	.020	.010	.011	.007	.003	

C Range: 0 - 360DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:  
 Test Date:2022-02-28

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.00.446  
 Humidity:65.0%  
 Test Distance:8.690m [K=1.0000]  
 Remarks:

UGR(Unified Glare Rating) Table

Test:U:230.26V I:0.0562A P:12.353W PF:0.9554 Freq:49.99Hz UTHDi:0.00% ITHDi:0.00% KDisp:0 Lamp Flux:1026.54x1 lm		
NAME: LED-DL13WCOB-CC-W 4000K	TYPE: 13W	WEIGHT:
SPEC.: 4000K	DIM.:	SERIAL No.: #1
MFR.:	SUR.: 0.0026	Shielding Angle:

ceiling/cavity	0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
walls	0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions	Viewed crosswise					Viewed endwise				
x = 2H y = 2H	23.4	24.4	23.7	24.6	24.8	21.8	22.8	22.0	23.0	23.1
3H	23.4	24.4	23.7	24.6	24.8	21.8	22.8	22.1	23.0	23.2
4H	23.5	24.3	23.7	24.6	24.8	21.8	22.7	22.1	22.9	23.2
6H	23.5	24.3	23.8	24.5	24.8	21.8	22.6	22.1	22.8	23.1
8H	23.4	24.2	23.7	24.5	24.7	21.7	22.5	22.0	22.8	23.0
12H	23.4	24.1	23.7	24.4	24.7	21.7	22.4	22.0	22.7	23.0
4H 2H	23.2	24.1	23.5	24.3	24.6	21.6	22.5	21.9	22.7	23.0
3H	23.3	24.1	23.6	24.3	24.6	21.8	22.5	22.1	22.8	23.1
4H	23.4	24.1	23.7	24.4	24.7	21.8	22.5	22.2	22.8	23.1
6H	23.4	24.0	23.8	24.3	24.7	21.8	22.4	22.1	22.7	23.0
8H	23.4	23.9	23.8	24.3	24.7	21.7	22.3	22.1	22.6	23.0
12H	23.4	23.9	23.8	24.2	24.6	21.7	22.2	22.1	22.6	23.0
8H 4H	23.3	23.8	23.7	24.2	24.6	21.8	22.3	22.1	22.7	23.0
6H	23.3	23.8	23.8	24.2	24.6	21.7	22.2	22.2	22.6	23.0
8H	23.3	23.7	23.8	24.2	24.6	21.7	22.1	22.2	22.5	23.0
12H	23.3	23.6	23.8	24.1	24.6	21.7	22.0	22.1	22.5	22.9
12H 4H	23.2	23.8	23.7	24.1	24.5	21.7	22.2	22.1	22.6	23.0
6H	23.3	23.7	23.8	24.1	24.6	21.7	22.1	22.2	22.5	23.0
8H	23.3	23.6	23.8	24.1	24.5	21.7	22.0	22.1	22.5	22.9
Variations with the observer position at spacings(CIE Pub.117):										
S = 1.0H	+ 2.9 / - 5.6					+ 3.1 / - 5.2				
1.5H	+ 5.3 / - 5.7					+ 5.6 / - 5.0				
2.0H	+ 5.4 / - 1.0					+ 0.8 / - 0.5				

CIE Pub.117, 1027 lm Total Lamp Luminous Flux Correct (8log(F/F0) = 0.1)  
Area: 0.0026 m2

C Range: 0 - 360DEG  
C Interval: 90.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:  
Test Date:2022-02-28

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.00.446  
Humidity:65.0%  
Test Distance:8.690m [K=1.0000]  
Remarks:

**UTILIZATION FACTORS TABLE**

Test:U:230.26V I:0.0562A P:12.353W PF:0.9554 Freq:49.99Hz UTHDi:0.00% ITHDi:0.00% KDisp:0 Lamp Flux:1026.54x1 lm		
NAME: LED-DL13WCOB-CC-W 4000K	TYPE: 13W	WEIGHT:
SPEC.: 4000K	DIM.:	SERIAL No.: #1
MFR.:	SUR.: 0.0026	Shielding Angle:

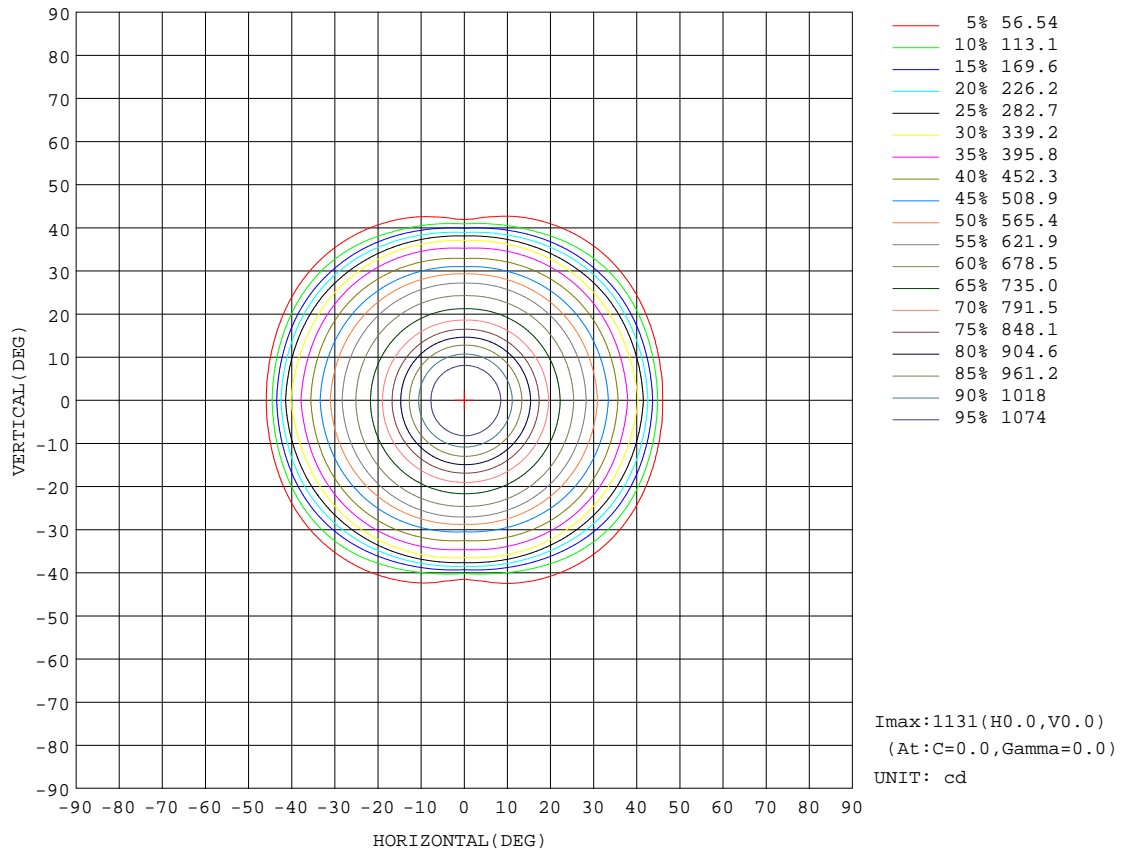
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) k(RI) x RCR = 5									
k = 0.60	85	79	75	85	79	75	84	78	75	71
0.80	93	87	83	92	86	83	91	86	82	78
1.00	98	92	88	97	91	88	95	91	87	83
1.25	102	96	93	101	96	92	99	95	92	87
1.50	105	100	96	104	99	96	101	98	95	90
2.00	108	103	100	106	102	99	104	100	98	92
2.50	110	106	102	108	104	101	105	102	100	94
3.00	111	108	105	109	106	104	106	103	101	95
4.00	113	110	108	111	109	107	108	106	104	97
5.00	115	112	110	113	110	109	109	107	106	98
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended				SHRNOM = 1.25			

C Range: 0 - 360DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:  
 Test Date:2022-02-28

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.00.446  
 Humidity:65.0%  
 Test Distance:8.690m [K=1.0000]  
 Remarks:

**ISOCANDELA DIAGRAM**

Test:U:230.26V I:0.0562A P:12.353W PF:0.9554 Freq:49.99Hz UTHDi:0.00% ITHDi:0.00% KDisp:0 Lamp Flux:1026.54x1 lm		
NAME: LED-DL13WCOB-CC-W 4000K	TYPE: 13W	WEIGHT:
SPEC.: 4000K	DIM.:	SERIAL No.: #1
MFR.:	SUR.: 0.0026	Shielding Angle:



C Range: 0 - 360DEG  
C Interval: 90.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:  
Test Date:2022-02-28

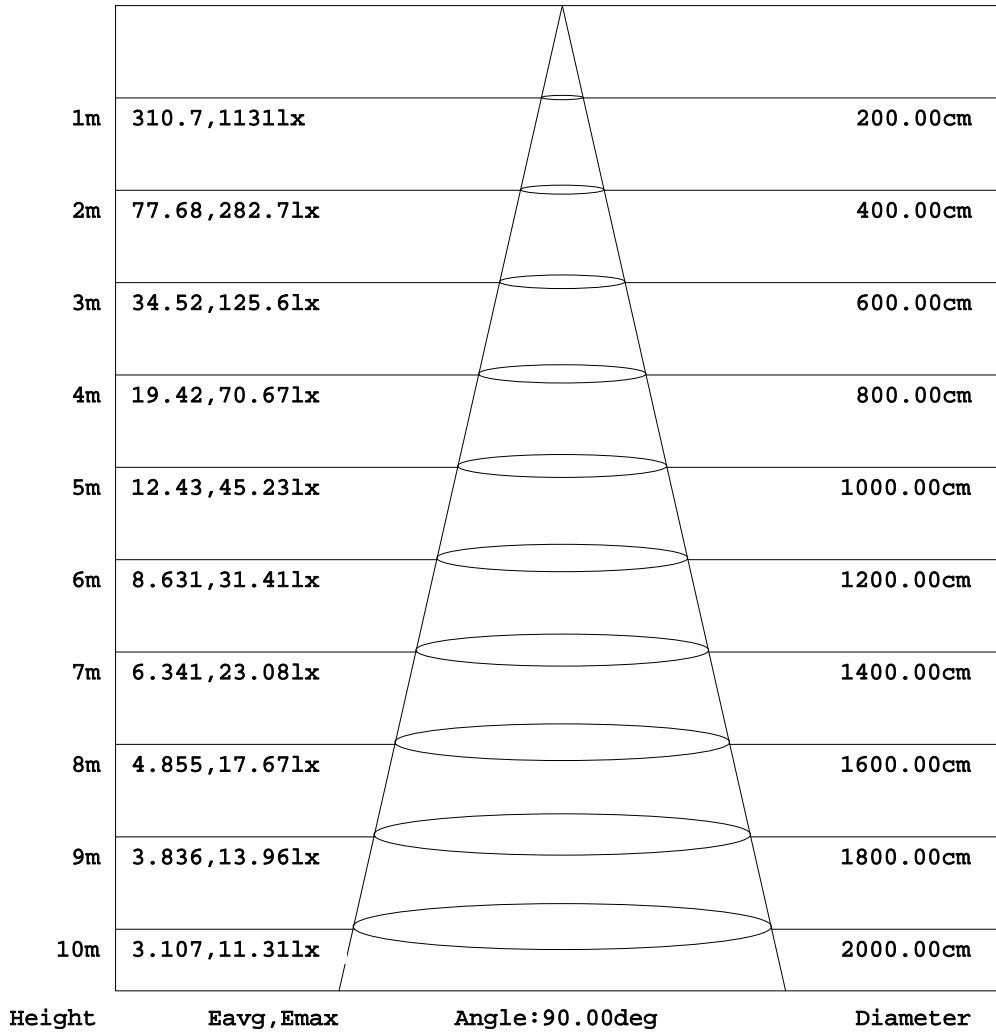
γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.00.446  
Humidity:65.0%  
Test Distance:8.690m [K=1.0000]  
Remarks:



**AAI Figure**

Test:U:230.26V I:0.0562A P:12.353W PF:0.9554 Freq:49.99Hz UTHDi:0.00% ITHDi:0.00% KDisp:0 Lamp Flux:1026.54x1 lm		
NAME: LED-DL13WCOB-CC-W 4000K	TYPE: 13W	WEIGHT:
SPEC.: 4000K	DIM.:	SERIAL No.: #1
MFR.:	SUR.: 0.0026	Shielding Angle:

Flux out:976.2 lm



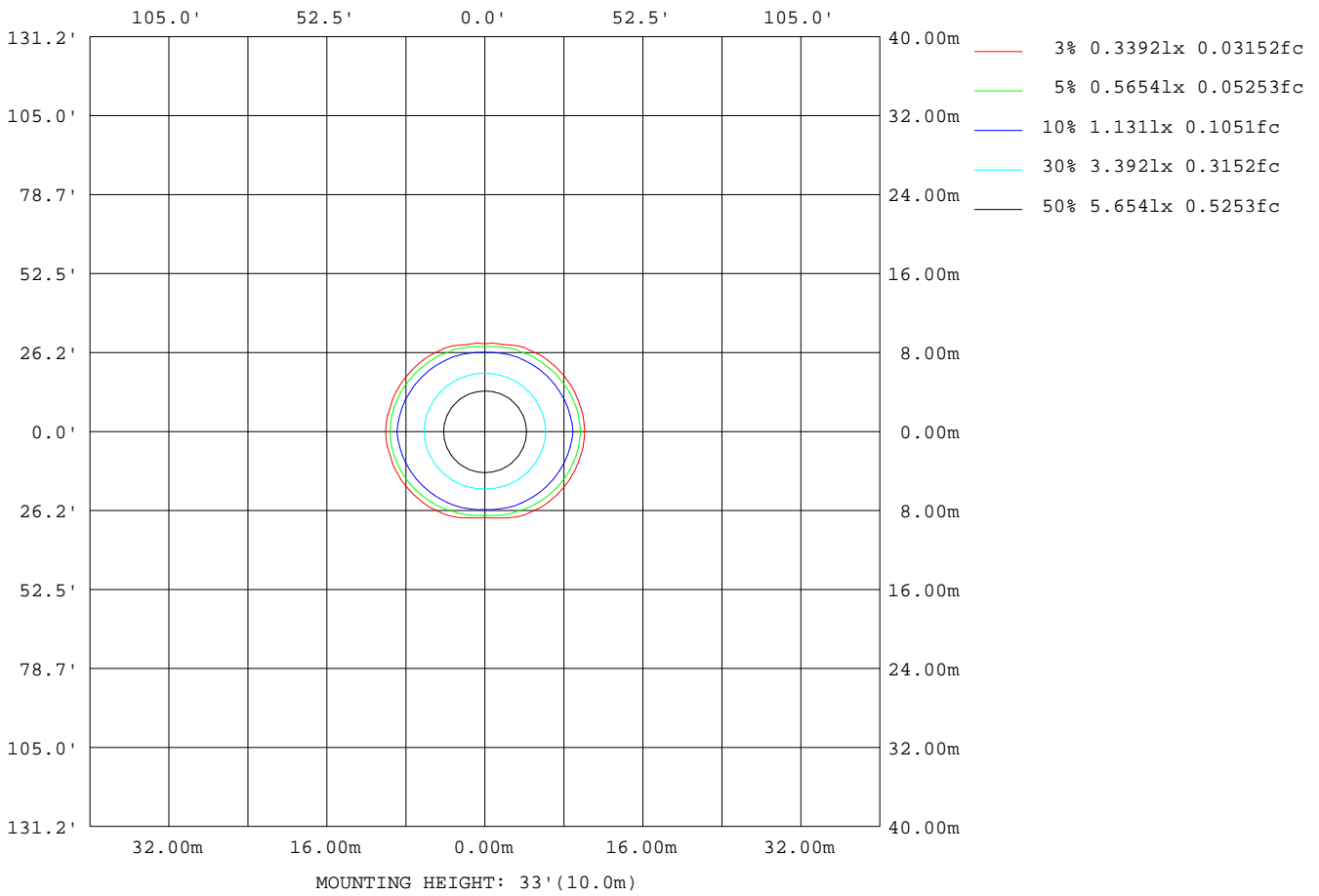
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:  
 Test Date:2022-02-28

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.00.446  
 Humidity:65.0%  
 Test Distance:8.690m [K=1.0000]  
 Remarks:

**ISOLUX DIAGRAM**

Test:U:230.26V I:0.0562A P:12.353W PF:0.9554 Freq:49.99Hz UTHDi:0.00% ITHDi:0.00% KDisp:0 Lamp Flux:1026.54x1 lm		
NAME: LED-DL13WCOB-CC-W 4000K	TYPE: 13W	WEIGHT:
SPEC.: 4000K	DIM.:	SERIAL No.: #1
MFR.:	SUR.: 0.0026	Shielding Angle:



C Range: 0 - 360DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators:  
 Test Date: 2022-02-28

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.00.446  
 Humidity: 65.0%  
 Test Distance: 8.690m [K=1.0000]  
 Remarks:

LED Avg.L Report

Test:U:230.26V I:0.0562A P:12.353W PF:0.9554 Freq:49.99Hz UTHDi:0.00% ITHDi:0.00% KDisp:0 Lamp Flux:1026.54x1 lm		
NAME: LED-DL13WCOB-CC-W 4000K	TYPE: 13W	WEIGHT:
SPEC.: 4000K	DIM.:	SERIAL No.: #1
MFR.:	SUR.: 0.0026	Shielding Angle:

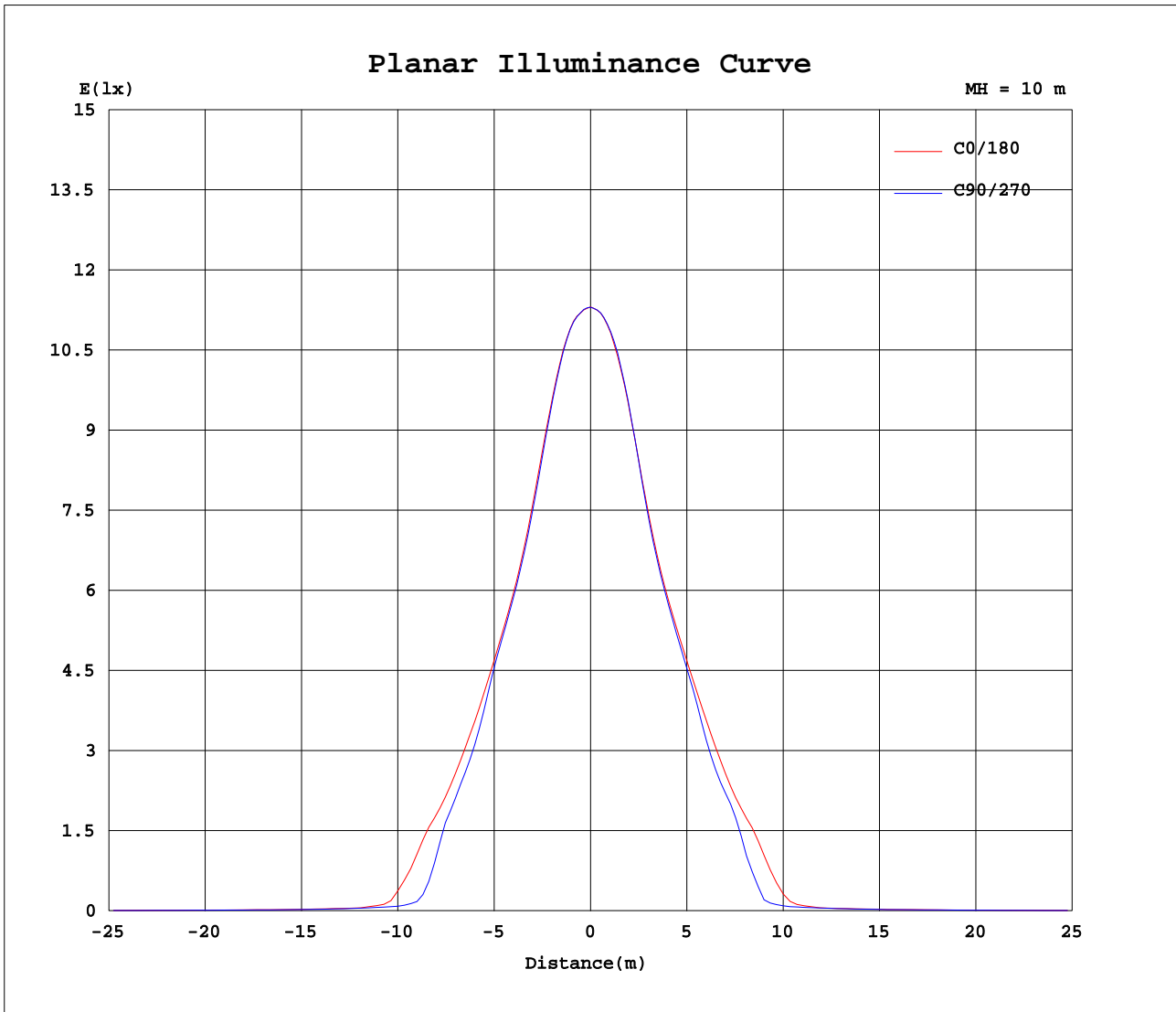
AvgL	cd/m2
L_0~180(65)av	13589
L_0~180(75)av	13146
L_0~180(85)av	5191
L_90~270(65)av	11832
L_90~270(75)av	8175
L_90~270(85)av	2785
L_45(65)av	12498
L_45(75)av	10056
L_45(85)av	3667

Standard: GB/T 29293-2012

C Range: 0 - 360DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:  
 Test Date:2022-02-28

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.00.446  
 Humidity:65.0%  
 Test Distance:8.690m [K=1.0000]  
 Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators:  
 Test Date: 2022-02-28

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.00.446  
 Humidity: 65.0%  
 Test Distance: 8.690m [K=1.0000]  
 Remarks:

