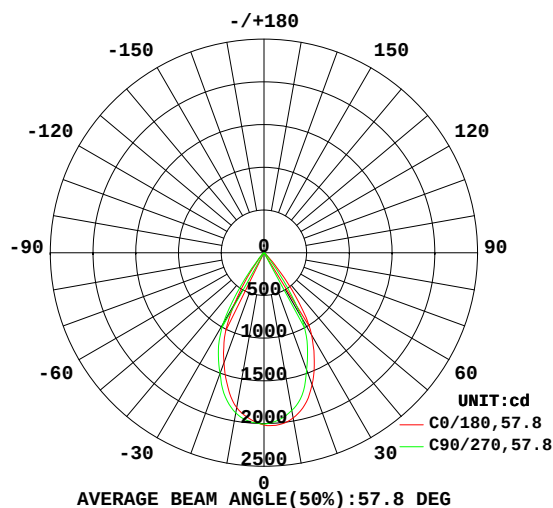


LUMINAIRE PHOTOMETRIC TEST REPORT

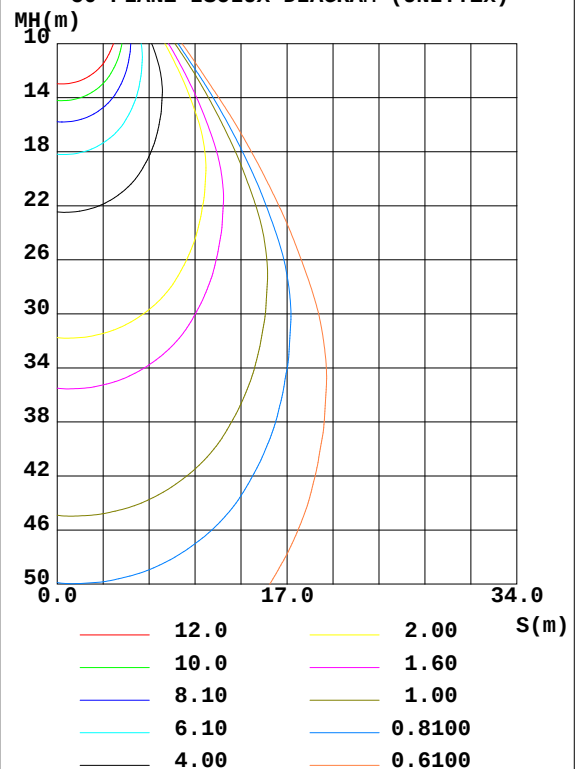
Test:U:220.64V I:0.0929A P:18.647W PF:0.9095 Freq:50.01Hz Lamp Flux:1614.46x1 lm		
NAME: DD1810M-BKTC2010C02	TYPE:	WEIGHT:
SPEC.: black RA90 3000K+5700K	DIM.:	SERIAL No.:
MFR.:	SUR.: 88mm	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA				Eff: 86.58 lm/W
MODEL	TB15111204 5700K	I _{max} (cd)	2025	S/MH(C0/180)	0.79	
NOMINAL POWER(W)	20	LOR(%)	100.0	S/MH(C90/270)	0.87	
RATED VOLTAGE(V)	220-240	TOTAL FLUX(lm)	1614.5	η UP, DN(C0-180)	0.0, 50.3	
NOMINAL FLUX(lm)	1614.46	CIE CLASS	DIRECT	η UP, DN(C180-360)	0.0, 49.7	
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	0.75	
TEST VOLTAGE(V)	220	η down(%)	100.0	CIBSE SHR MAX	0.90	

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature: 25DEG
Operators:
Test Date: 2023-12-25

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System: EVERFINE G0-2000B_V1 SYSTEM V2.00.428
Humidity: 65.0%
Test Distance: 7.450m [K=1.0000]
Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

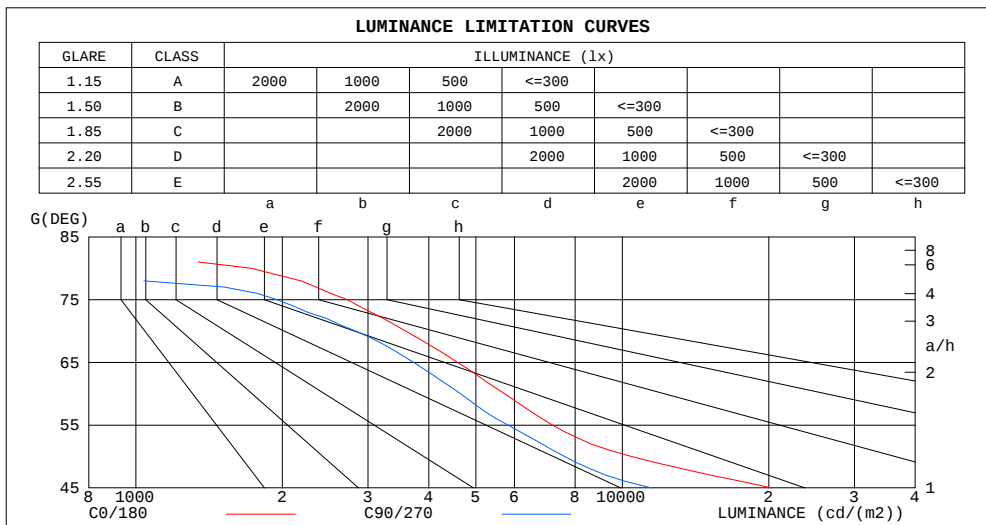
γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	1964	1927	1875	1833	1841	1861	1905	1950	0- 10	186.0	186.0	11.5, 11.5
20	1646	1590	1462	1363	1370	1417	1505	1607	10- 20	481.3	667.3	41.3, 41.3
30	1119	1042	884.4	733.4	697.6	765.6	960.8	1090	20- 30	558.1	1225	75.9, 75.9
40	308.5	207.1	114.0	86.73	81.94	90.85	126.5	266.3	30- 40	302.5	1528	94.6, 94.6
50	40.79	35.27	29.72	26.22	25.26	26.20	30.36	38.14	40- 50	53.55	1581	98, 98
60	17.41	16.30	14.12	12.40	11.86	12.53	14.51	16.79	50- 60	19.24	1601	99.1, 99.1
70	7.451	7.269	5.875	5.027	4.773	5.183	6.284	7.640	60- 70	9.836	1610	99.8, 99.8
80	1.819	2.174	0.5169	0.8022	0.5825	0.8298	0.6030	2.184	70- 80	3.743	1614	100, 100
90	0.0502	0.0618	0.0618	0.0733	0.0116	0.0116	0	0	80- 90	0.2566	1614	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		

C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature: 25DEG
 Operators:
 Test Date: 2023-12-25

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE G0-2000B_V1 SYSTEM V2.00.428
 Humidity: 65.0%
 Test Distance: 7.450m [K=1.0000]
 Remarks:

LUMINANCE LIMITATION CURVES

Test:U:220.64V I:0.0929A P:18.647W PF:0.9095 Freq:50.01Hz Lamp Flux:1614.46x1 lm		
NAME: DD1810M-BKTC2010C02	TYPE:	WEIGHT:
SPEC.: black RA90 3000K+5700K	DIM.:	SERIAL No.:
MFR.:	SUR.: 88mm	Shielding Angle:



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	73	73
80	1723	490
75	2720	1946
70	3583	2825
65	4579	3721
60	5726	4644
55	7184	5821
50	10438	7605
45	20310	11479

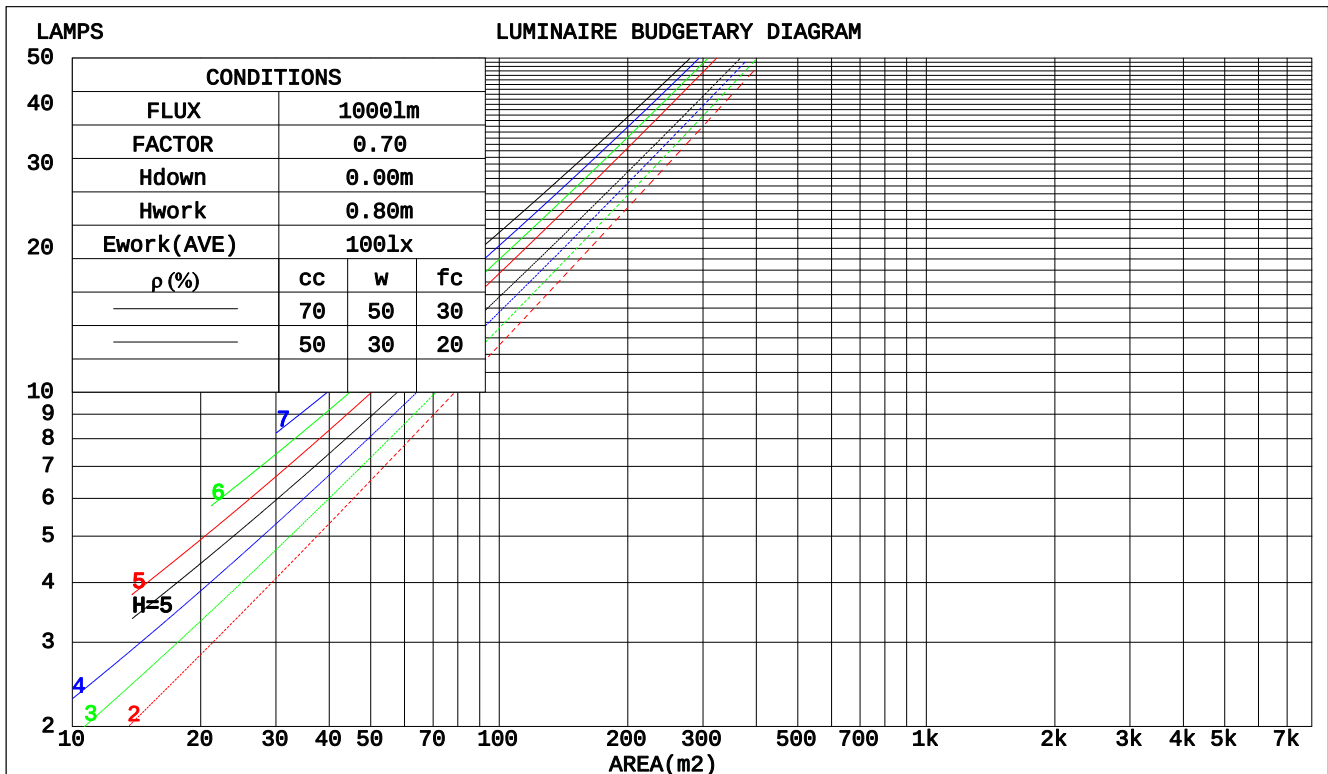
C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature: 25DEG
Operators:
Test Date: 2023-12-25

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System: EVERFINE G0-2000B_V1 SYSTEM V2.00.428
Humidity: 65.0%
Test Distance: 7.450m [K=1.0000]
Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:220.64V I:0.0929A P:18.647W PF:0.9095 Freq:50.01Hz Lamp Flux:1614.46x1 lm		
NAME: DD1810M-BKTC2010C02	TYPE:	WEIGHT:
SPEC.: black RA90 3000K+5700K	DIM.:	SERIAL No.:
MFR.:	SUR.: 88mm	Shielding Angle:

ρ_{CC}	80%			70%			50%			30%			10%			0
ρ_W	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρ_{fc}	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	1.11	1.08	1.06	1.09	1.07	1.05	1.05	1.03	1.01	1.01	.00	.98	.98	.97	.96	.94
2.0	1.03	.00	.96	1.02	.98	.95	.99	.96	.93	.96	.93	.91	.93	.91	.89	.88
3.0	.97	.92	.88	.95	.91	.87	.93	.89	.86	.90	.87	.85	.88	.85	.83	.82
4.0	.91	.85	.81	.90	.85	.81	.87	.83	.80	.85	.82	.79	.84	.80	.78	.76
5.0	.85	.79	.75	.84	.79	.75	.82	.78	.74	.81	.77	.74	.79	.76	.73	.72
6.0	.80	.74	.70	.79	.74	.70	.78	.73	.69	.76	.72	.69	.75	.71	.69	.67
7.0	.76	.70	.66	.75	.69	.65	.74	.69	.65	.72	.68	.65	.71	.67	.64	.63
8.0	.71	.66	.62	.71	.65	.61	.70	.65	.61	.69	.64	.61	.68	.64	.61	.59
9.0	.68	.62	.58	.67	.62	.58	.66	.61	.58	.65	.61	.58	.64	.60	.57	.56
10.0	.64	.58	.55	.64	.58	.55	.63	.58	.55	.62	.58	.54	.61	.57	.54	.53



C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature: 25DEG
Operators:
Test Date: 2023-12-25

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System: EVERFINE G0-2000B_V1 SYSTEM V2.00.428
Humidity: 65.0%
Test Distance: 7.450m [K=1.0000]
Remarks:

WEC AND CCEC

Test:U:220.64V I:0.0929A P:18.647W PF:0.9095 Freq:50.01Hz Lamp Flux:1614.46x1 lm					
NAME: DD1810M-BKTC2010C02			TYPE:		WEIGHT:
SPEC.: black RA90 3000K+5700K			DIM.:		SERIAL No.:
MFR.:			SUR.: 88mm		Shielding Angle:

ρ_{cc}	80%			70%			50%			30%			10%			0	
ρ_w	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0	
ρ_{fc}	20%			20%			20%			20%			20%			0	
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients(WEC)										
0.0																	
1.0	.175	.099	.031	.168	.096	.030	.155	.089	.028	.144	.083	.027	.133	.077	.025		
2.0	.167	.091	.028	.161	.089	.027	.151	.084	.026	.141	.079	.025	.132	.075	.024		
3.0	.159	.085	.025	.154	.082	.025	.145	.079	.024	.137	.075	.023	.129	.071	.022		
4.0	.151	.079	.023	.147	.077	.023	.139	.074	.022	.132	.071	.021	.125	.068	.021		
5.0	.144	.073	.021	.140	.072	.021	.134	.070	.020	.127	.067	.020	.122	.065	.020		
6.0	.137	.069	.020	.134	.068	.020	.128	.066	.019	.123	.064	.019	.118	.062	.018		
7.0	.131	.065	.018	.129	.064	.018	.123	.062	.018	.118	.061	.018	.114	.059	.017		
8.0	.126	.061	.017	.123	.061	.017	.119	.059	.017	.114	.058	.017	.110	.057	.016		
9.0	.121	.058	.016	.118	.058	.016	.114	.056	.016	.110	.055	.016	.107	.054	.016		
10.0	.116	.056	.015	.114	.055	.015	.110	.054	.015	.107	.053	.015	.103	.052	.015		

ρ _{cc}	80%			70%			50%			30%			10%			0
ρ _w	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρ _{fc}	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	.171	.157	.145	.146	.135	.125	.100	.093	.086	.058	.054	.050	.018	.017	.016	
2.0	.156	.133	.113	.133	.114	.098	.091	.079	.068	.053	.046	.040	.017	.015	.013	
3.0	.143	.114	.090	.123	.098	.078	.084	.068	.055	.049	.040	.032	.016	.013	.011	
4.0	.133	.099	.073	.114	.085	.063	.078	.059	.045	.045	.035	.026	.015	.011	.009	
5.0	.124	.087	.060	.106	.075	.052	.073	.053	.037	.042	.031	.022	.014	.010	.007	
6.0	.116	.078	.050	.100	.067	.044	.069	.047	.031	.040	.028	.018	.013	.009	.006	
7.0	.110	.070	.042	.095	.061	.037	.065	.043	.026	.038	.025	.016	.012	.008	.005	
8.0	.104	.064	.036	.090	.056	.032	.062	.039	.022	.036	.023	.013	.012	.008	.004	
9.0	.099	.059	.031	.085	.051	.027	.059	.036	.020	.034	.021	.012	.011	.007	.004	
10.0	.095	.054	.028	.082	.047	.024	.057	.033	.017	.033	.020	.010	.011	.006	.003	

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25DEG
Operators:
Test Date:2023-12-25

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System:EVERFINE G0-2000B_V1 SYSTEM V2.00.428
Humidity:65.0%
Test Distance:7.450m [K=1.0000]
Remarks:

UGR(Unified Glare Rating) Table

Test:U:220.64V I:0.0929A P:18.647W PF:0.9095 Freq:50.01Hz Lamp Flux:1614.46x1 lm											
NAME: DD1810M-BKTC2010C02					TYPE:			WEIGHT:			
SPEC.: black RA90 3000K+5700K					DIM.:			SERIAL No.:			
MFR.:					SUR.: 88mm			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		19.6	20.5	19.8	20.7	20.8	17.6	18.5	17.8	18.7	18.8
	3H	19.4	20.3	19.7	20.5	20.7	17.5	18.3	17.7	18.5	18.7
	4H	19.4	20.2	19.7	20.4	20.6	17.4	18.2	17.7	18.4	18.6
	6H	19.3	20.1	19.6	20.3	20.5	17.3	18.1	17.6	18.3	18.6
	8H	19.3	20.0	19.6	20.2	20.5	17.3	18.0	17.6	18.3	18.5
	12H	19.2	19.9	19.5	20.2	20.4	17.2	17.9	17.5	18.2	18.5
4H	2H	19.3	20.1	19.6	20.4	20.6	17.4	18.2	17.7	18.4	18.6
	3H	19.2	19.9	19.5	20.2	20.5	17.3	18.0	17.6	18.2	18.5
	4H	19.2	19.8	19.5	20.1	20.4	17.2	17.9	17.6	18.1	18.5
	6H	19.1	19.6	19.5	20.0	20.3	17.1	17.7	17.5	18.0	18.4
	8H	19.0	19.5	19.4	19.9	20.3	17.1	17.6	17.5	18.0	18.3
	12H	19.0	19.5	19.4	19.8	20.2	17.0	17.5	17.4	17.9	18.3
8H	4H	19.0	19.5	19.4	19.9	20.3	17.1	17.6	17.5	18.0	18.3
	6H	18.9	19.4	19.4	19.8	20.2	17.0	17.4	17.4	17.8	18.2
	8H	18.9	19.3	19.3	19.7	20.1	17.0	17.3	17.4	17.8	18.2
	12H	18.8	19.2	19.3	19.6	20.1	16.9	17.2	17.4	17.7	18.1
12H	4H	19.0	19.4	19.4	19.8	20.2	17.1	17.5	17.5	17.9	18.3
	6H	18.9	19.3	19.3	19.7	20.1	17.0	17.3	17.4	17.8	18.2
	8H	18.8	19.2	19.3	19.6	20.1	16.9	17.2	17.4	17.7	18.1
Variations with the observer position at spacings(CIE Pub.117):											
S = 1.0H	+ 4.0 / - 8.3					+ 2.7 / - 5.3					
1.5H	+ 6.5 / - 7.3					+ 4.8 / - 4.4					
2.0H	+ 4.4 / - 2.2					+ 2.5 / - 1.7					

CIE Pub.117, 1614 lm Total Lamp Luminous Flux Correct ($8\log(F/F_0) = 1.7$)
Area: 0.00608 m²

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25DEG
Operators:
Test Date:2023-12-25

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System:EVERFINE G0-2000B_V1 SYSTEM V2.00.428
Humidity:65.0%
Test Distance:7.450m [K=1.0000]
Remarks:

UTILIZATION FACTORS TABLE

Test:U:220.64V I:0.0929A P:18.647W PF:0.9095 Freq:50.01Hz Lamp Flux:1614.46x1 lm		
NAME: DD1810M-BKTC2010C02	TYPE:	WEIGHT:
SPEC.: black RA90 3000K+5700K	DIM.:	SERIAL No.:
MFR.:	SUR.: 88mm	Shielding Angle:

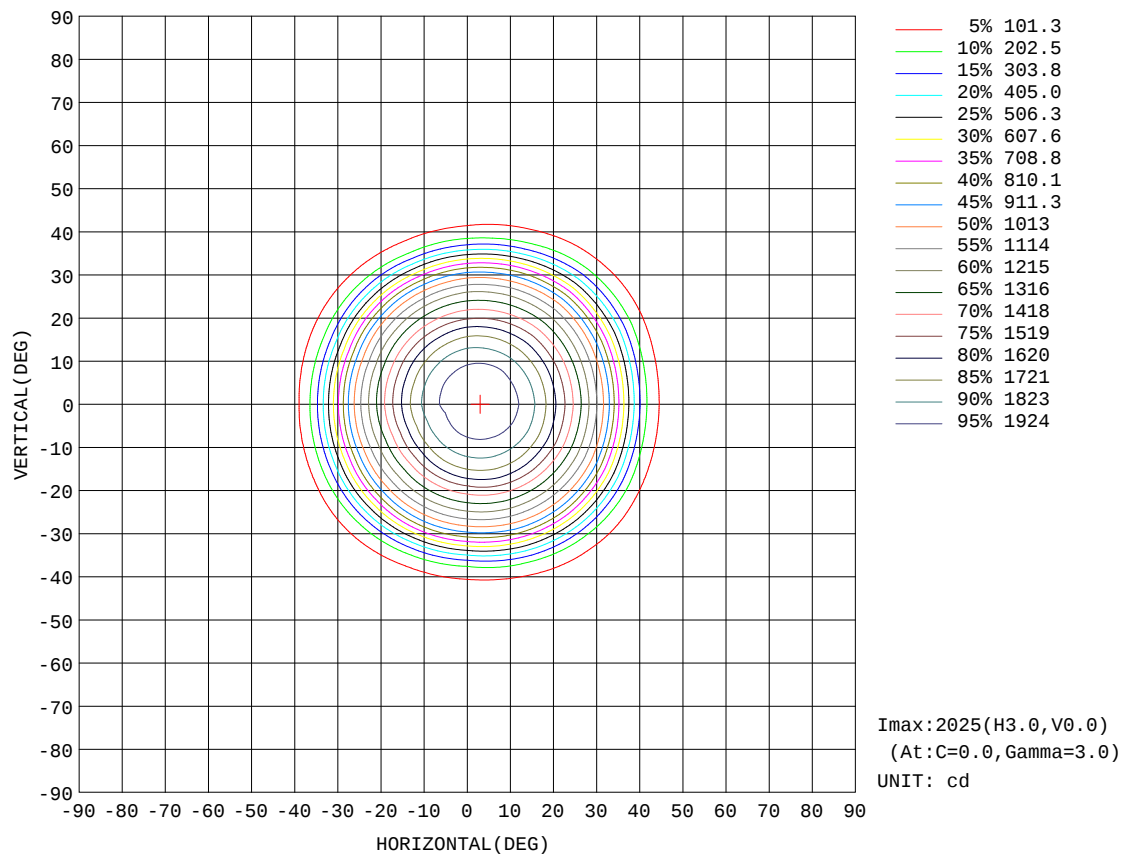
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	88	82	78	88	82	78	87	81	78	75
0.80	96	90	86	95	89	86	94	89	86	82
1.00	100	94	91	99	94	91	97	94	90	86
1.25	104	99	95	103	98	95	101	97	94	90
1.50	106	102	98	105	101	98	103	99	97	93
2.00	109	105	102	107	104	101	105	102	99	94
2.50	110	107	104	109	106	103	106	103	101	95
3.00	112	109	106	110	107	105	107	105	103	96
4.00	114	111	109	112	110	108	108	107	105	98
5.00	115	113	111	113	111	110	109	108	107	99
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended					SHRNOM = 1.25		

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25DEG
Operators:
Test Date:2023-12-25

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System:EVERFINE G0-2000B_V1 SYSTEM V2.00.428
Humidity:65.0%
Test Distance:7.450m [K=1.0000]
Remarks:

ISOCANDELA DIAGRAM

Test:U:220.64V I:0.0929A P:18.647W PF:0.9095 Freq:50.01Hz Lamp Flux:1614.46x1 lm		
NAME: DD1810M-BKTC2010C02	TYPE:	WEIGHT:
SPEC.: black RA90 3000K+5700K	DIM.:	SERIAL No.:
MFR.:	SUR.: 88mm	Shielding Angle:

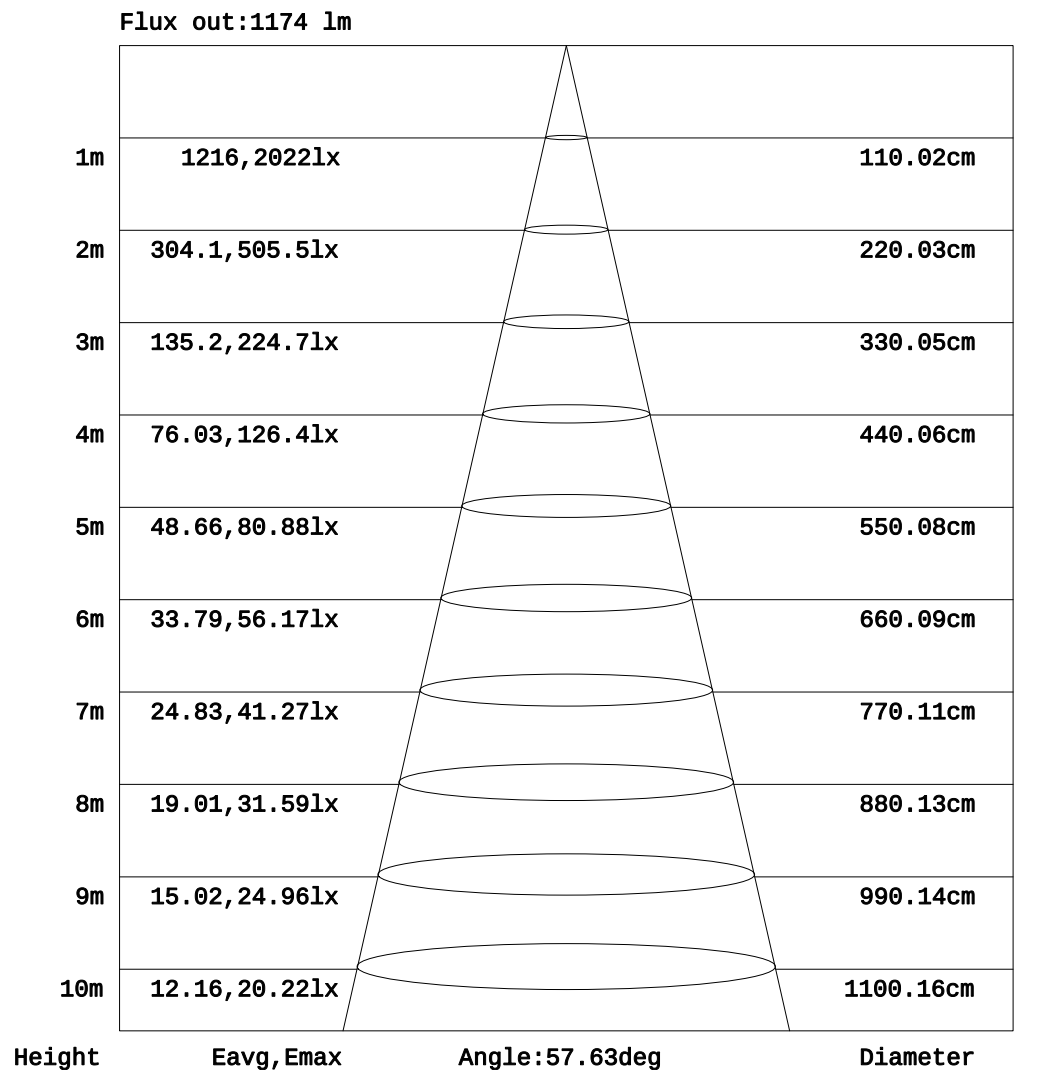


C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25DEG
Operators:
Test Date:2023-12-25

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE G0-2000B_V1 SYSTEM V2.00.428
Humidity:65.0%
Test Distance:7.450m [K=1.0000]
Remarks:

AAI Figure

Test:U:220.64V I:0.0929A P:18.647W PF:0.9095 Freq:50.01Hz Lamp Flux:1614.46x1 lm		
NAME: DD1810M-BKTC2010C02	TYPE:	WEIGHT:
SPEC.: black RA90 3000K+5700K	DIM.:	SERIAL No.:
MFR.:	SUR.: 88mm	Shielding Angle:



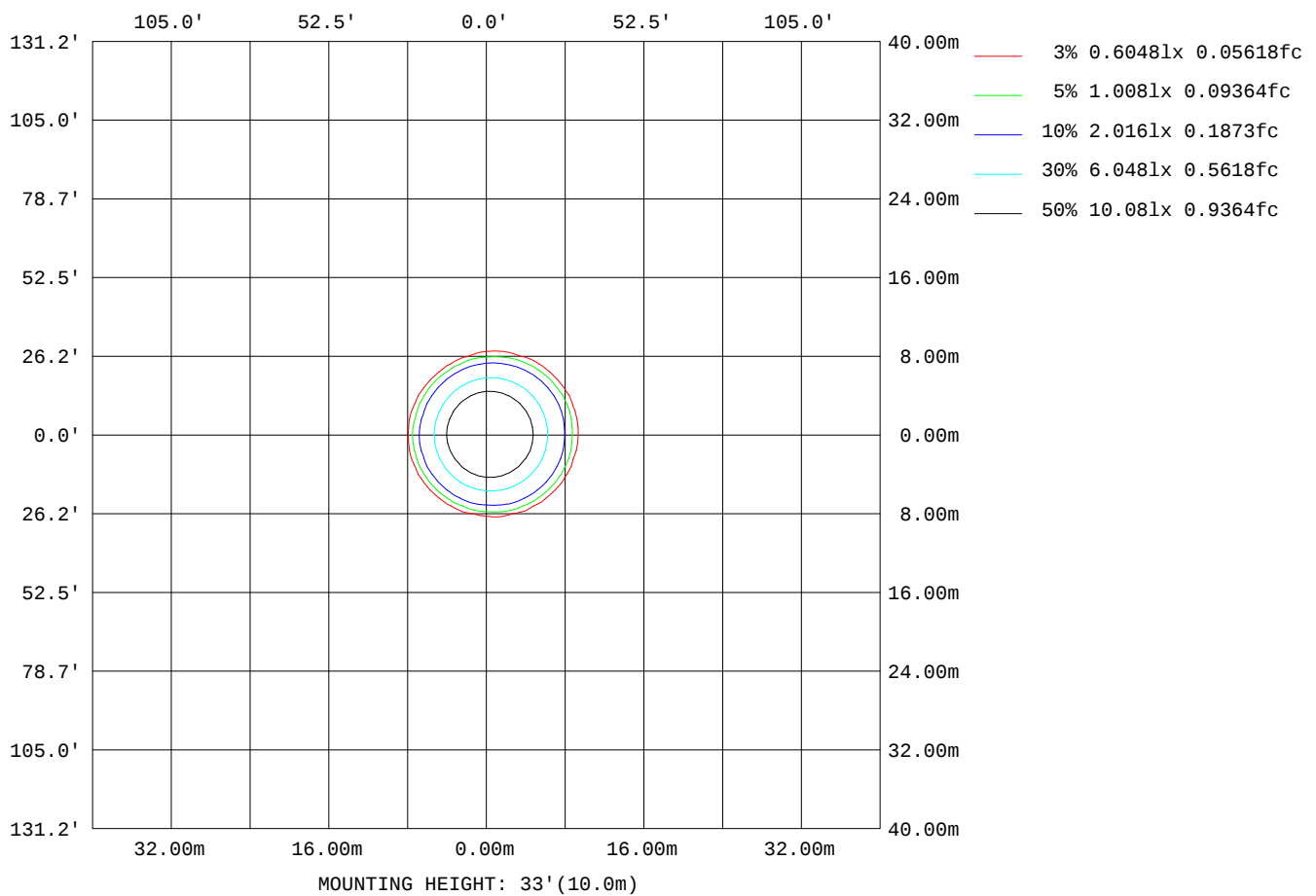
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25DEG
Operators:
Test Date:2023-12-25

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE G0-2000B_V1 SYSTEM V2.00.428
Humidity:65.0%
Test Distance:7.450m [K=1.0000]
Remarks:

ISOLUX DIAGRAM

Test:U:220.64V I:0.0929A P:18.647W PF:0.9095 Freq:50.01Hz Lamp Flux:1614.46x1 lm		
NAME: DD1810M-BKTC2010C02	TYPE:	WEIGHT:
SPEC.: black RA90 3000K+5700K	DIM.:	SERIAL No.:
MFR.:	SUR.: 88mm	Shielding Angle:



C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature: 25DEG
Operators:
Test Date: 2023-12-25

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System: EVERFINE G0-2000B_V1 SYSTEM V2.00.428
Humidity: 65.0%
Test Distance: 7.450m [K=1.0000]
Remarks:

LED Avg.L Report

Test:U:220.64V I:0.0929A P:18.647W PF:0.9095 Freq:50.01Hz Lamp Flux:1614.46x1 lm		
NAME: DD1810M-BKTC2010C02	TYPE:	WEIGHT:
SPEC.: black RA90 3000K+5700K	DIM.:	SERIAL No.:
MFR.:	SUR.: 88mm	Shielding Angle:

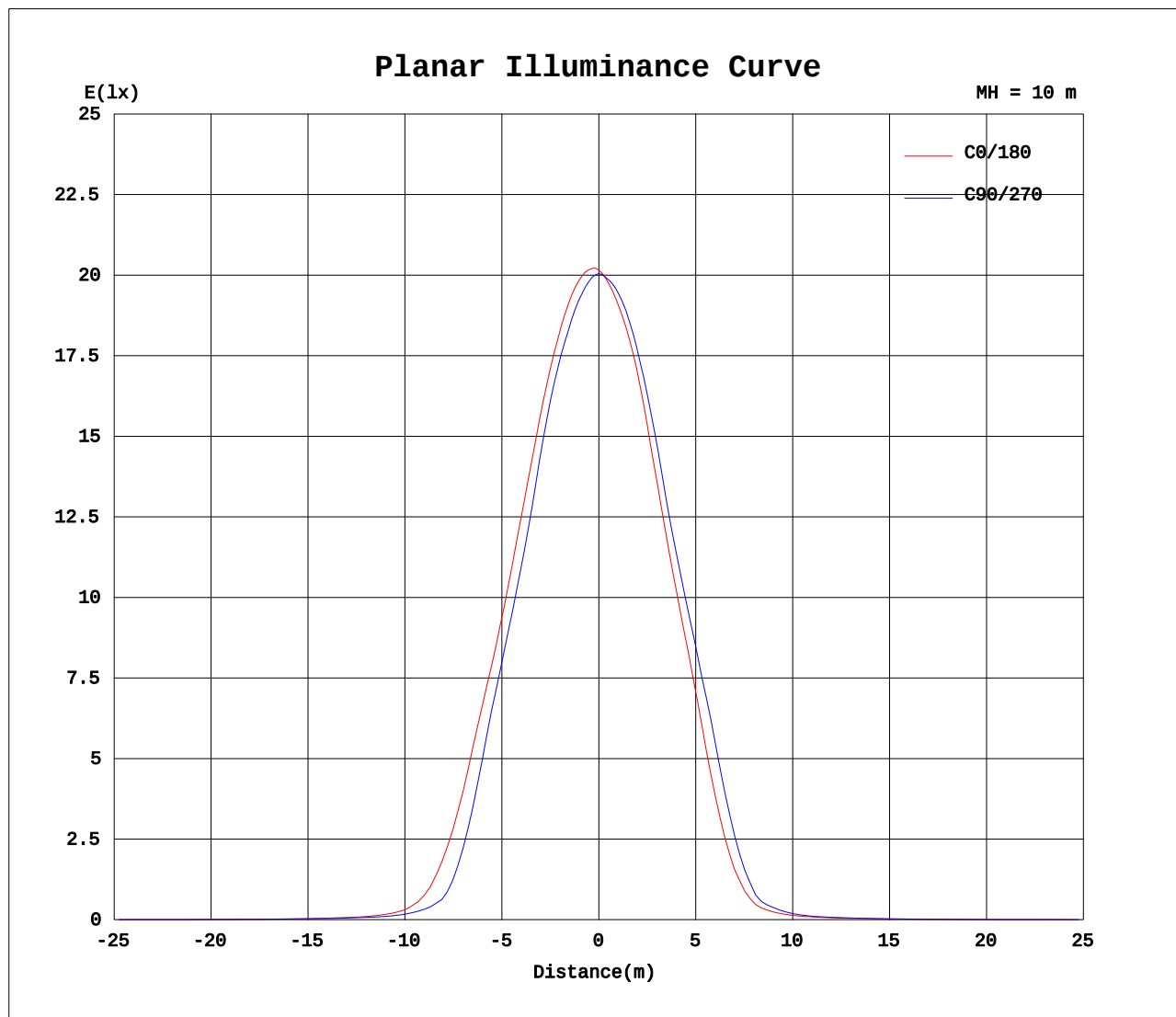
AvgL	cd/m2
L_0~180(65)av	3801
L_0~180(75)av	2151
L_0~180(85)av	47
L_90~270(65)av	3778
L_90~270(75)av	2002
L_90~270(85)av	36
L_45(65)av	3809
L_45(75)av	2350
L_45(85)av	50

Standard: GB/T 29293-2012

C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature:25DEG
 Operators:
 Test Date:2023-12-25

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE G0-2000B_V1 SYSTEM V2.00.428
 Humidity:65.0%
 Test Distance:7.450m [K=1.0000]
 Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature: 25DEG
Operators:
Test Date: 2023-12-25

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System: EVERFINE G0-2000B_V1 SYSTEM V2.00.428
Humidity: 65.0%
Test Distance: 7.450m [K=1.0000]
Remarks:

```

Range: 0 - 90DEG
Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.00.428
Humidity:65.0%
Test Distance:7.450m [K=1.0000]
Remarks:

```