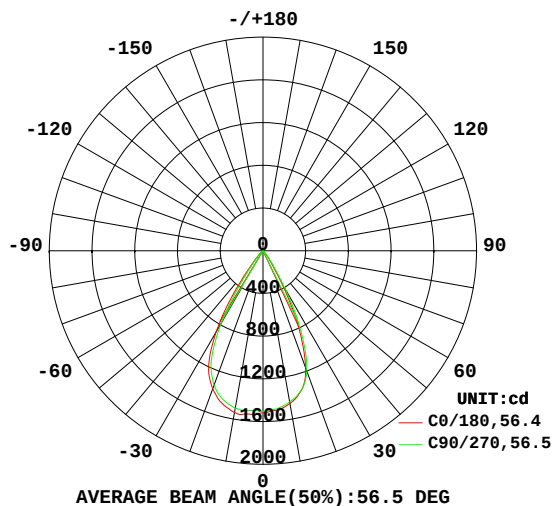


LUMINAIRE PHOTOMETRIC TEST REPORT

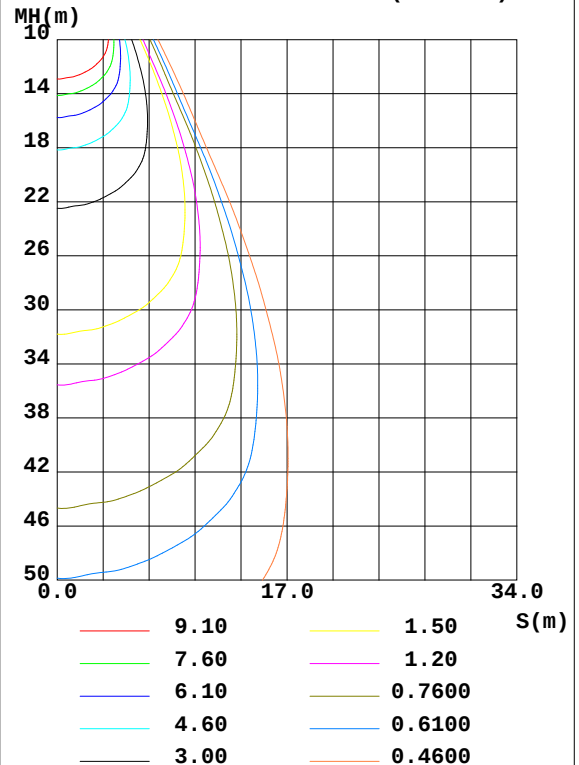
Test:U:231.93V I:0.0702A P:15.828W PF:0.9715 Freq:49.99Hz Lamp Flux:1191.74x1 lm		
NAME: TH19-BKTC15C021P	TYPE:	WEIGHT:
SPEC.: black RA90 3000K+5700K	DIM.:	SERIAL No.:
MFR.:	SUR.: 55mm	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 75.29 lm/W			
MODEL	TBG-1510E 5700K	I _{max} (cd)	1567	S/MH(C0/180)	0.91
NOMINAL POWER(W)	15	LOR(%)	100.0	S/MH(C90/270)	0.88
RATED VOLTAGE(V)	220-240	TOTAL FLUX(lm)	1191.7	η UP, DN(C0-180)	0.0,45.0
NOMINAL FLUX(lm)	1191.74	CIE CLASS	DIRECT	η UP, DN(C180-360)	0.0,55.0
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	0.75
TEST VOLTAGE(V)	220	η down(%)	100.0	CIBSE SHR MAX	0.80

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: 2025-07-15

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System: EVERFINE G0-2000B_V1 SYSTEM V2.00.428
Humidity: 65.0%
Test Distance: 7.880m [K=1.0000]
Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

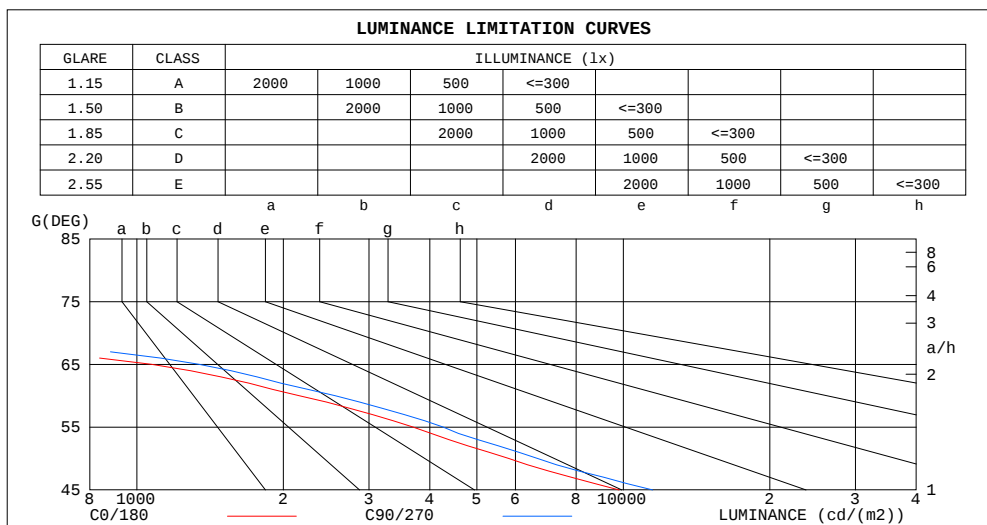
γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	1451	1438	1437	1465	1537	1543	1497	1459	0- 10	142.7	142.7	12,12
20	1169	1126	1201	1286	1376	1392	1341	1245	10- 20	392.4	535.1	44.9,44.9
30	352.1	323.0	429.3	669.4	878.0	911.3	782.9	508.9	20- 30	441.4	976.6	81.9,81.9
40	42.87	39.71	57.33	103.3	150.8	161.1	115.8	64.73	30- 40	176.6	1153	96.8,96.8
50	8.888	8.543	10.19	14.43	19.58	21.59	16.56	11.13	40- 50	29.13	1182	99.2,99.2
60	2.563	2.443	3.041	4.467	6.070	6.561	5.189	3.380	50- 60	7.160	1189	99.8,99.8
70	0.0378	0.0190	0.1675	0.7928	1.453	1.632	1.090	0.3371	60- 70	2.154	1192	100,100
80	0	0	0	0	0	0	0	0	70- 80	0.1719	1192	100,100
90	0	0	0	0	0	0	0	0	80- 90	0	1192	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:2025-07-15

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System:EVERFINE G0-2000B_V1 SYSTEM V2.00.428
Humidity:65.0%
Test Distance:7.880m [K=1.0000]
Remarks:

LUMINANCE LIMITATION CURVES

Test:U:231.93V I:0.0702A P:15.828W PF:0.9715 Freq:49.99Hz Lamp Flux:1191.74x1 lm		
NAME: TH19-BKTC15C021P	TYPE:	WEIGHT:
SPEC.: black RA90 3000K+5700K	DIM.:	SERIAL No.:
MFR.:	SUR.: 55mm	Shielding Angle:



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	0	0
80	0	0
75	0	0
70	46	206
65	1072	1341
60	2154	2556
55	3696	4262
50	5810	6658
45	9800	11485

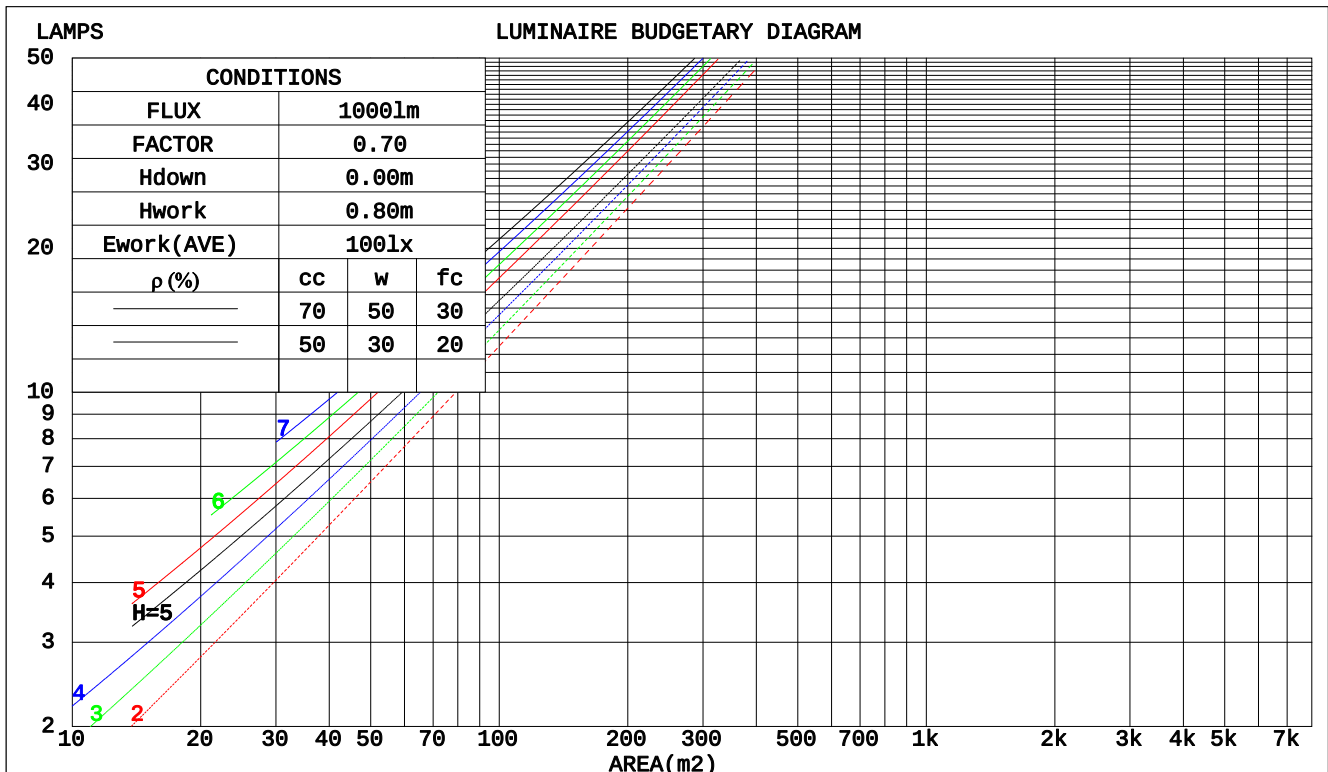
C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature: 25DEG
Operators:
Test Date: 2025-07-15

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System: EVERFINE G0-2000B_V1 SYSTEM V2.00.428
Humidity: 65.0%
Test Distance: 7.880m [K=1.0000]
Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:231.93V I:0.0702A P:15.828W PF:0.9715 Freq:49.99Hz Lamp Flux:1191.74x1 lm		
NAME: TH19-BKTC15C021P	TYPE:	WEIGHT:
SPEC.: black RA90 3000K+5700K	DIM.:	SERIAL No.:
MFR.:	SUR.: 55mm	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	1.09	1.07	1.09	1.07	1.05	1.05	1.03	1.02	1.01	1.00	.99	.98	.97	.96	.94
2.0	1.04	1.00	.97	1.02	.99	.96	.99	.97	.94	.96	.94	.92	.94	.92	.90	.89
3.0	.98	.93	.89	.96	.92	.89	.94	.90	.87	.91	.88	.86	.89	.87	.85	.83
4.0	.92	.87	.83	.91	.86	.82	.89	.85	.81	.87	.83	.81	.85	.82	.80	.78
5.0	.87	.81	.77	.86	.81	.77	.84	.80	.76	.82	.79	.76	.81	.78	.75	.74
6.0	.82	.76	.72	.81	.76	.72	.80	.75	.72	.78	.74	.71	.77	.73	.71	.69
7.0	.77	.72	.68	.77	.72	.68	.76	.71	.67	.74	.70	.67	.73	.70	.67	.65
8.0	.73	.68	.64	.73	.68	.64	.72	.67	.64	.71	.66	.63	.70	.66	.63	.62
9.0	.70	.64	.60	.69	.64	.60	.68	.63	.60	.67	.63	.60	.67	.63	.60	.58
10.0	.66	.61	.57	.66	.61	.57	.65	.60	.57	.64	.60	.57	.64	.60	.57	.55



C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature: 25DEG
 Operators:
 Test Date: 2025-07-15

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE G0-2000B_V1 SYSTEM V2.00.428
 Humidity: 65.0%
 Test Distance: 7.880m [K=1.0000]
 Remarks:

WEC AND CCEC

Test:U:231.93V I:0.0702A P:15.828W PF:0.9715 Freq:49.99Hz Lamp Flux:1191.74x1 lm					
NAME: TH19-BKTC15C021P			TYPE:		WEIGHT:
SPEC.: black RA90 3000K+5700K			DIM.:		SERIAL No.:
MFR.:			SUR.: 55mm		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	.168	.095	.030	.161	.092	.029	.148	.085	.027	.137	.079	.025	.126	.073	.024	
2.0	.160	.088	.027	.154	.085	.026	.144	.080	.025	.134	.075	.024	.125	.071	.022	
3.0	.152	.081	.024	.147	.079	.024	.138	.075	.023	.130	.071	.022	.122	.068	.021	
4.0	.145	.075	.022	.140	.074	.022	.133	.070	.021	.126	.068	.020	.119	.065	.020	
5.0	.138	.070	.020	.134	.069	.020	.128	.066	.020	.122	.064	.019	.116	.062	.019	
6.0	.132	.066	.019	.129	.065	.019	.123	.063	.018	.117	.061	.018	.112	.059	.018	
7.0	.126	.062	.018	.123	.062	.018	.118	.060	.017	.113	.058	.017	.109	.057	.017	
8.0	.121	.059	.017	.119	.058	.017	.114	.057	.016	.110	.056	.016	.106	.054	.016	
9.0	.116	.056	.016	.114	.056	.016	.110	.054	.015	.106	.053	.015	.102	.052	.015	
10.0	.112	.054	.015	.110	.053	.015	.106	.052	.015	.103	.051	.014	.099	.050	.014	

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	.170	.157	.146	.146	.135	.125	.100	.093	.087	.057	.054	.050	.018	.017	.016	
2.0	.155	.133	.114	.132	.114	.099	.091	.079	.069	.052	.046	.040	.017	.015	.013	
3.0	.142	.113	.091	.121	.098	.079	.083	.068	.055	.048	.040	.033	.015	.013	.011	
4.0	.131	.099	.074	.112	.085	.064	.077	.059	.045	.045	.035	.027	.014	.011	.009	
5.0	.122	.087	.061	.105	.075	.053	.072	.053	.037	.042	.031	.022	.013	.010	.007	
6.0	.115	.077	.051	.098	.067	.044	.068	.047	.031	.039	.028	.019	.013	.009	.006	
7.0	.108	.070	.043	.093	.061	.038	.064	.042	.027	.037	.025	.016	.012	.008	.005	
8.0	.102	.064	.037	.088	.055	.032	.061	.039	.023	.035	.023	.014	.011	.007	.005	
9.0	.097	.058	.032	.084	.051	.028	.058	.036	.020	.034	.021	.012	.011	.007	.004	
10.0	.093	.054	.028	.080	.047	.024	.055	.033	.017	.032	.019	.010	.010	.006	.003	

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25DEG
Operators:
Test Date:2025-07-15

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System:EVERFINE G0-2000B_V1 SYSTEM V2.00.428
Humidity:65.0%
Test Distance:7.880m [K=1.0000]
Remarks:

UGR(Unified Glare Rating) Table

Test:U:231.93V I:0.0702A P:15.828W PF:0.9715 Freq:49.99Hz Lamp Flux:1191.74x1 lm											
NAME: TH19-BKTC15C021P					TYPE:			WEIGHT:			
SPEC.: black RA90 3000K+5700K					DIM.:			SERIAL No.:			
MFR.:					SUR.: 55mm			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		13.3	14.2	13.6	14.4	14.5	14.6	15.4	14.8	15.6	15.8
	3H	13.2	14.0	13.4	14.2	14.4	14.4	15.2	14.6	15.4	15.6
	4H	13.1	13.9	13.4	14.1	14.3	14.3	15.1	14.6	15.3	15.5
	6H	13.0	13.7	13.3	14.0	14.2	14.2	14.9	14.5	15.2	15.4
	8H	12.9	13.6	13.3	13.9	14.2	14.2	14.9	14.5	15.1	15.4
	12H	12.9	13.6	13.2	13.8	14.1	14.1	14.8	14.4	15.1	15.3
4H	2H	13.1	13.9	13.4	14.1	14.3	14.3	15.1	14.6	15.3	15.5
	3H	12.9	13.6	13.2	13.8	14.1	14.1	14.8	14.5	15.1	15.3
	4H	12.8	13.4	13.2	13.7	14.0	14.0	14.6	14.4	14.9	15.2
	6H	12.7	13.3	13.1	13.6	13.9	13.9	14.5	14.3	14.8	15.2
	8H	12.7	13.2	13.1	13.5	13.9	13.9	14.4	14.3	14.7	15.1
	12H	12.6	13.1	13.0	13.4	13.8	13.8	14.3	14.3	14.7	15.1
8H	4H	12.7	13.2	13.1	13.5	13.9	13.9	14.4	14.3	14.7	15.1
	6H	12.6	13.0	13.0	13.4	13.8	13.8	14.2	14.2	14.6	15.0
	8H	12.5	12.9	13.0	13.3	13.7	13.7	14.1	14.2	14.5	14.9
	12H	12.5	12.8	12.9	13.2	13.7	13.7	14.0	14.1	14.4	14.9
12H	4H	12.6	13.1	13.0	13.4	13.8	13.8	14.3	14.3	14.7	15.1
	6H	12.5	12.9	13.0	13.3	13.7	13.7	14.1	14.2	14.5	14.9
	8H	12.5	12.8	12.9	13.2	13.7	13.7	14.0	14.1	14.4	14.9
Variations with the observer position at spacings(CIE Pub.117):											
S = 1.0H	+ 4.2 / - 9.8					+ 4.7 / -10.4					
1.5H	+ 6.5 / - 7.1					+ 7.1 / - 8.1					
2.0H	+ 5.0 / - 6.5					+ 5.4 / - 6.7					

CIE Pub.117, 1192 lm Total Lamp Luminous Flux Correct (8log(F/F0) = 0.6)
Area: 0.00238 m2

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25DEG
Operators:
Test Date:2025-07-15

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE G0-2000B_V1 SYSTEM V2.00.428
Humidity:65.0%
Test Distance:7.880m [K=1.0000]
Remarks:

UTILIZATION FACTORS TABLE

Test:U:231.93V I:0.0702A P:15.828W PF:0.9715 Freq:49.99Hz Lamp Flux:1191.74x1 lm		
NAME: TH19-BKTC15C021P	TYPE:	WEIGHT:
SPEC.: black RA90 3000K+5700K	DIM.:	SERIAL No.:
MFR.:	SUR.: 55mm	Shielding Angle:

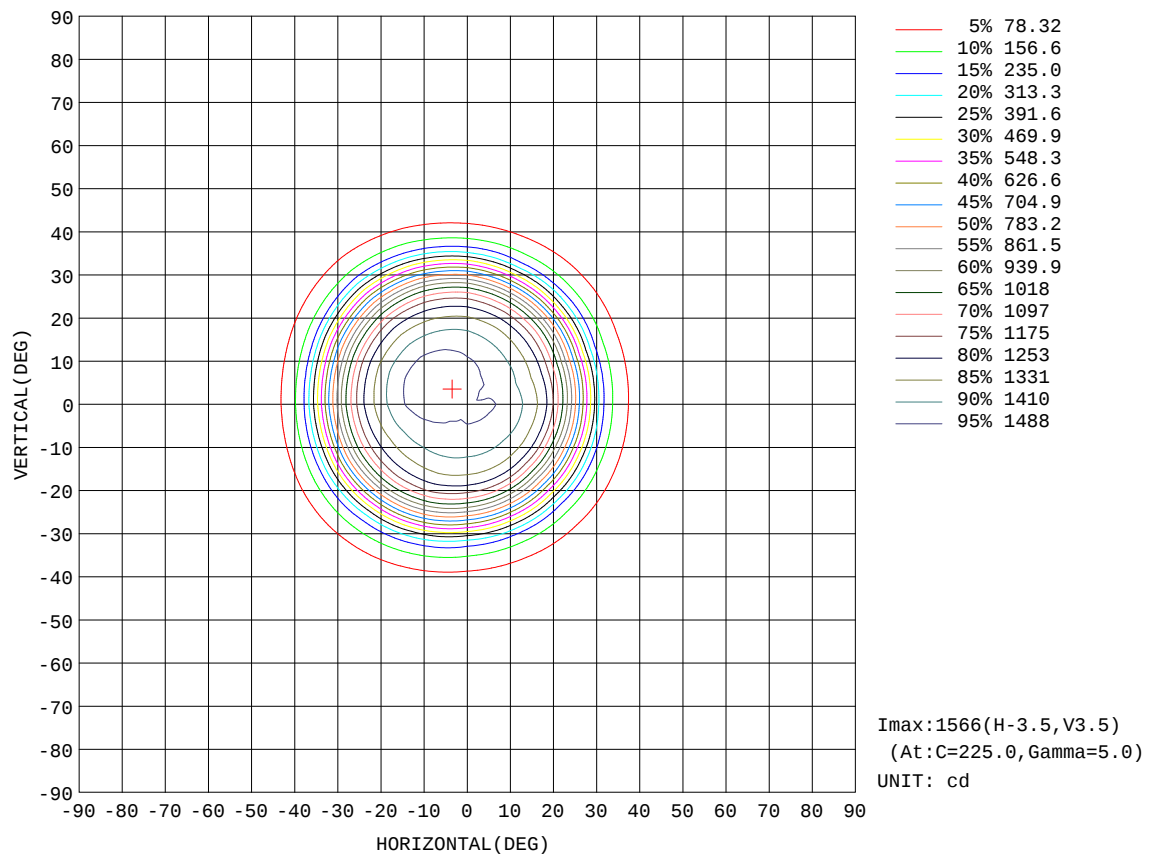
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	90	84	80	89	83	80	88	83	80	76
0.80	97	91	88	96	91	88	95	90	87	84
1.00	101	96	92	100	95	92	98	95	91	88
1.25	104	100	96	103	99	96	102	98	95	91
1.50	107	103	100	106	102	99	104	100	98	94
2.00	109	106	103	108	104	102	105	103	100	95
2.50	111	107	105	109	106	104	106	104	102	96
3.00	112	109	107	111	108	106	107	105	103	97
4.00	114	112	110	112	110	108	109	107	106	99
5.00	115	113	112	113	112	110	109	108	107	100
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:2025-07-15

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE G0-2000B_V1 SYSTEM V2.00.428
Humidity:65.0%
Test Distance:7.880m [K=1.0000]
Remarks:

ISOCANDELA DIAGRAM

Test:U:231.93V I:0.0702A P:15.828W PF:0.9715 Freq:49.99Hz Lamp Flux:1191.74x1 lm		
NAME: TH19-BKTC15C021P	TYPE:	WEIGHT:
SPEC.: black RA90 3000K+5700K	DIM.:	SERIAL No.:
MFR.:	SUR.: 55mm	Shielding Angle:

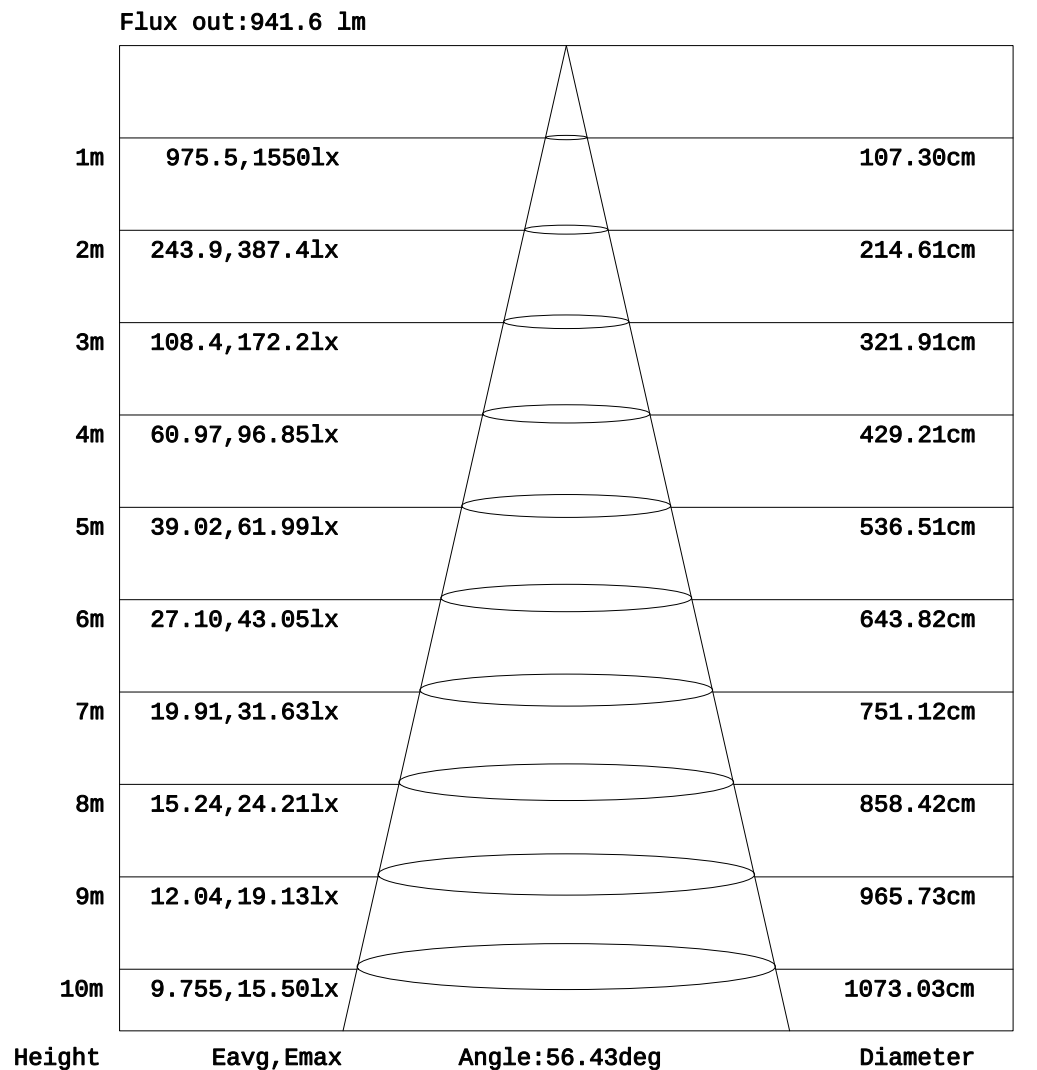


C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25DEG
Operators:
Test Date:2025-07-15

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE G0-2000B_V1 SYSTEM V2.00.428
Humidity:65.0%
Test Distance:7.880m [K=1.0000]
Remarks:

AAI Figure

Test:U:231.93V I:0.0702A P:15.828W PF:0.9715 Freq:49.99Hz Lamp Flux:1191.74x1 lm		
NAME: TH19-BKTC15C021P	TYPE:	WEIGHT:
SPEC.: black RA90 3000K+5700K	DIM.:	SERIAL No.:
MFR.:	SUR.: 55mm	Shielding Angle:



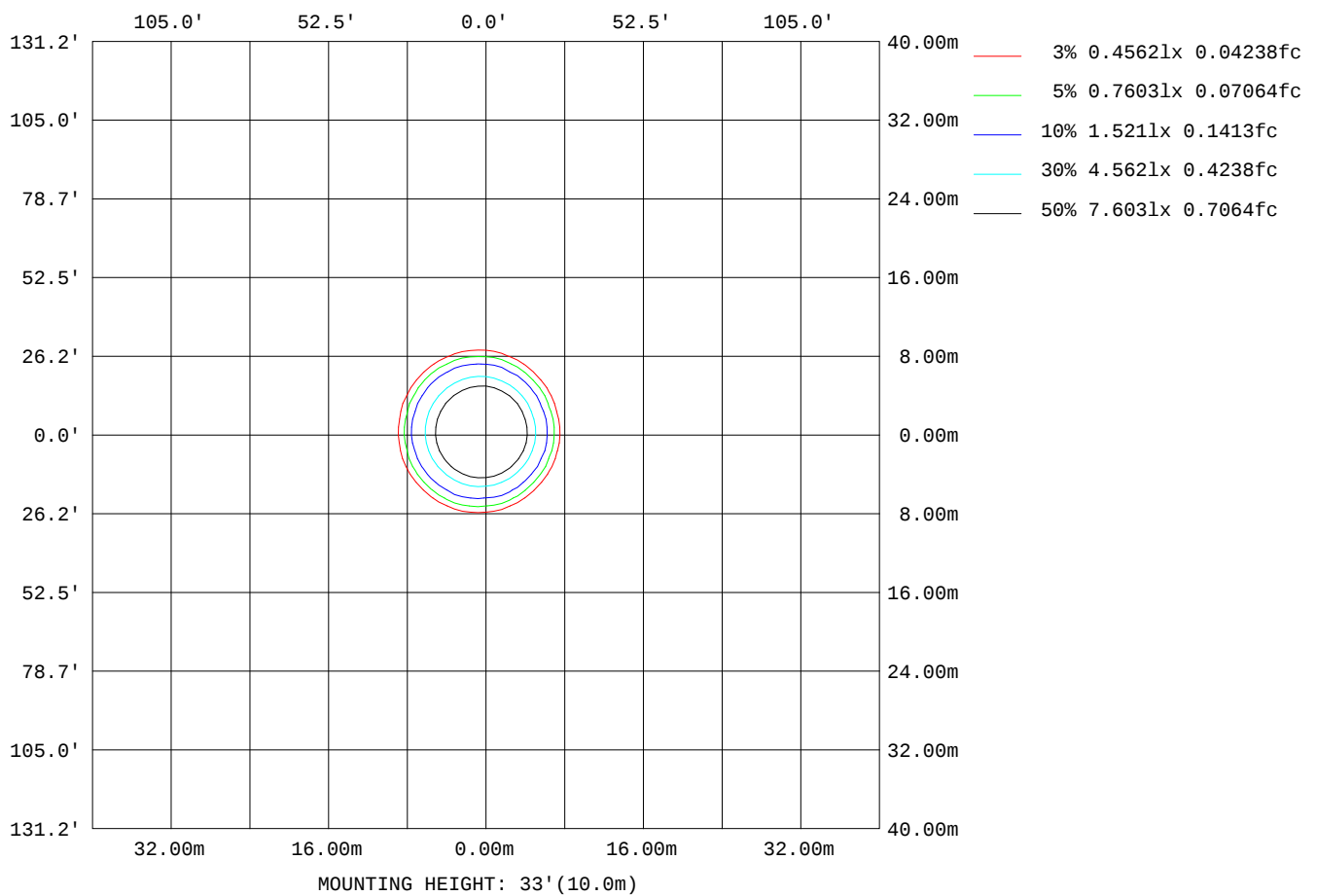
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25DEG
Operators:
Test Date:2025-07-15

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE G0-2000B_V1 SYSTEM V2.00.428
Humidity:65.0%
Test Distance:7.880m [K=1.0000]
Remarks:

ISOLUX DIAGRAM

Test:U:231.93V I:0.0702A P:15.828W PF:0.9715 Freq:49.99Hz Lamp Flux:1191.74x1 lm		
NAME: TH19-BKTC15C021P	TYPE:	WEIGHT:
SPEC.: black RA90 3000K+5700K	DIM.:	SERIAL No.:
MFR.:	SUR.: 55mm	Shielding Angle:



C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature: 25DEG
Operators:
Test Date: 2025-07-15

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System: EVERFINE G0-2000B_V1 SYSTEM V2.00.428
Humidity: 65.0%
Test Distance: 7.880m [K=1.0000]
Remarks:

LED Avg.L Report

Test:U:231.93V I:0.0702A P:15.828W PF:0.9715 Freq:49.99Hz Lamp Flux:1191.74x1 lm		
NAME: TH19-BKTC15C021P	TYPE:	WEIGHT:
SPEC.: black RA90 3000K+5700K	DIM.:	SERIAL No.:
MFR.:	SUR.: 55mm	Shielding Angle:

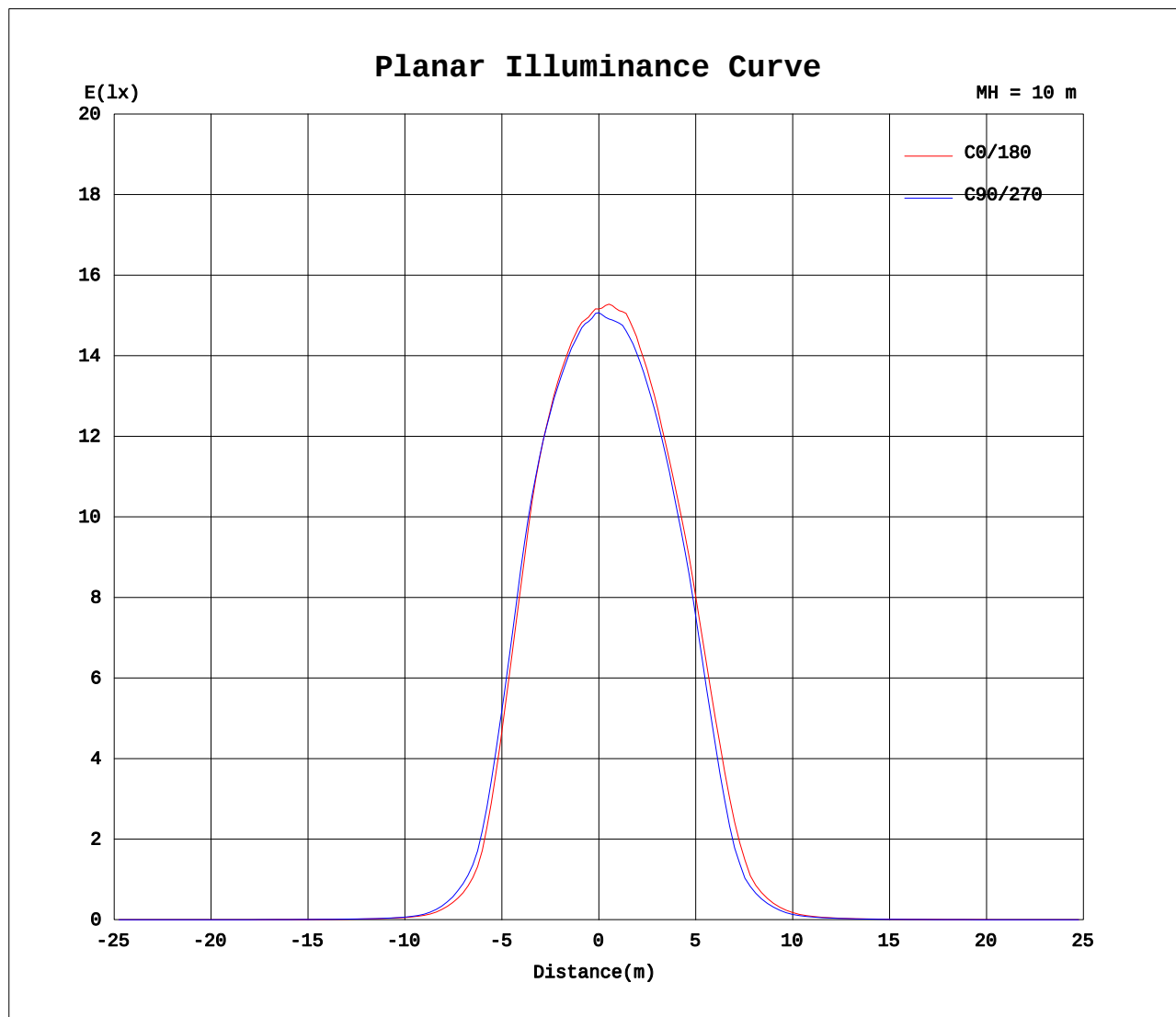
AvgL	cd/m2
L_0~180(65)av	2132
L_0~180(75)av	96
L_0~180(85)av	0
L_90~270(65)av	1966
L_90~270(75)av	0
L_90~270(85)av	0
L_45(65)av	2044
L_45(75)av	94
L_45(85)av	0

Standard: GB/T 29293-2012

C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature:25DEG
 Operators:
 Test Date:2025-07-15

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE G0-2000B_V1 SYSTEM V2.00.428
 Humidity:65.0%
 Test Distance:7.880m [K=1.0000]
 Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature: 25DEG
Operators:
Test Date: 2025-07-15

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System: EVERFINE G0-2000B_V1 SYSTEM V2.00.428
Humidity: 65.0%
Test Distance: 7.880m [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:7.880m [K=1.0000]
Remarks:

```