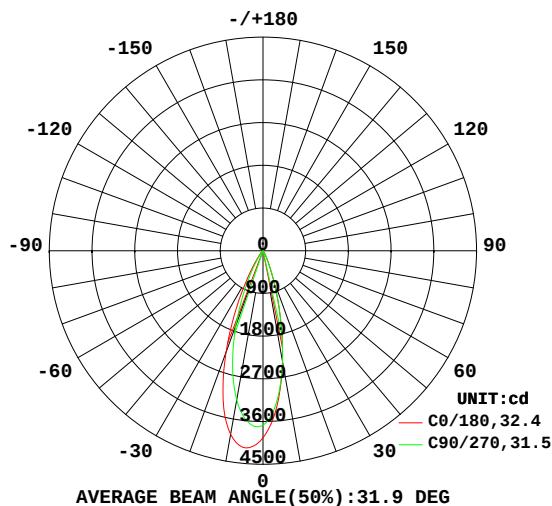


LUMINAIRE PHOTOMETRIC TEST REPORT

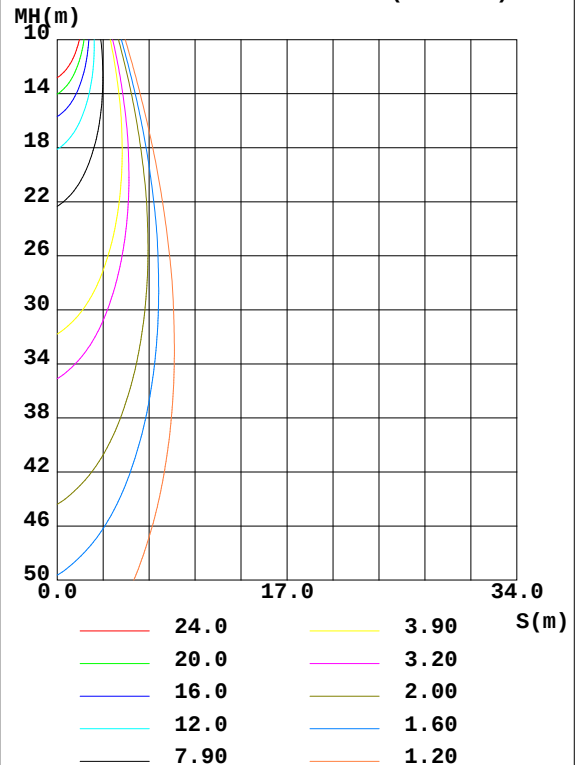
Test:U:230.01V I:0.2346A P:25.042W PF:0.4640 Freq:49.99Hz Lamp Flux:1285.08x1 lm		
NAME: THD16-BK2X12W24V	TYPE:	WEIGHT:
SPEC.: black RA90 3000K+6000K	DIM.:	SERIAL No.:
MFR.:	SUR.: 38mm	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 51.32 lm/W			
MODEL	4000K	I _{max} (cd)	4171	S/MH(C0/180)	0.66
NOMINAL POWER(W)	24	LOR(%)	100.0	S/MH(C90/270)	0.61
RATED VOLTAGE(V)	220-240	TOTAL FLUX(lm)	1285.1	η UP, DN(C0-180)	0.0, 35.0
NOMINAL FLUX(lm)	1285.08	CIE CLASS	DIRECT	η UP, DN(C180-360)	0.0, 65.0
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	0.50
TEST VOLTAGE(V)	220	η down(%)	100.0	CIBSE SHR MAX	0.50

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:2024-04-27

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:

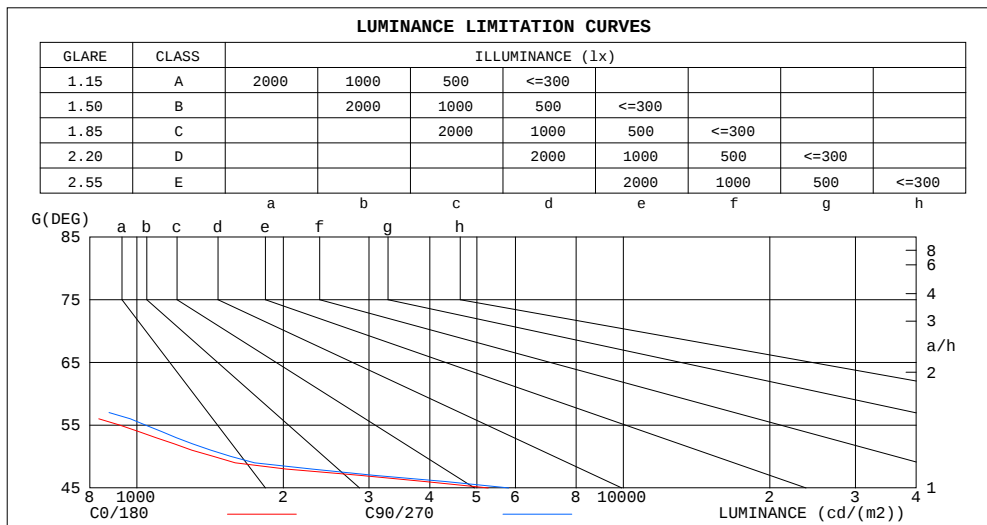
γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	2369	2308	2371	2546	3929	3955	3190	2448	0- 10	311.1	311.1	24.2, 24.2
20	633.4	556.5	651.0	872.5	2282	2652	1671	872.6	10- 20	553.4	864.5	67.3, 67.3
30	98.85	99.48	117.3	151.1	608.2	759.4	407.5	142.3	20- 30	308.3	1173	91.3, 91.3
40	25.12	23.10	27.93	38.53	108.2	130.0	73.06	36.41	30- 40	84.31	1257	97.8, 97.8
50	2.088	2.006	2.266	5.276	27.11	34.00	20.78	6.456	40- 50	22.87	1280	99.6, 99.6
60	0.4148	0.2909	0.5615	1.059	2.028	2.324	1.704	0.9906	50- 60	4.437	1284	99.9, 99.9
70	0.0734	0.0772	0.0850	0.1199	0.2537	0.4843	0.1962	0.0656	60- 70	0.5676	1285	100, 100
80	0.0193	0.0155	0.0271	0.0425	0.0077	0.0421	0.0154	0	70- 80	0.0721	1285	100, 100
90	0.0077	0.0232	0.0193	0.0154	0	0	0	0	80- 90	0.0130	1285	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: 2024-04-27

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:230.01V I:0.2346A P:25.042W PF:0.4640 Freq:49.99Hz Lamp Flux:1285.08x1 lm		
NAME: THD16-BK2X12W24V	TYPE:	WEIGHT:
SPEC.: black RA90 3000K+6000K	DIM.:	SERIAL No.:
MFR.:	SUR.: 38mm	Shielding Angle:



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	39	98
80	49	69
75	73	86
70	95	110
65	134	154
60	367	497
55	921	1041
50	1437	1560
45	5275	5813

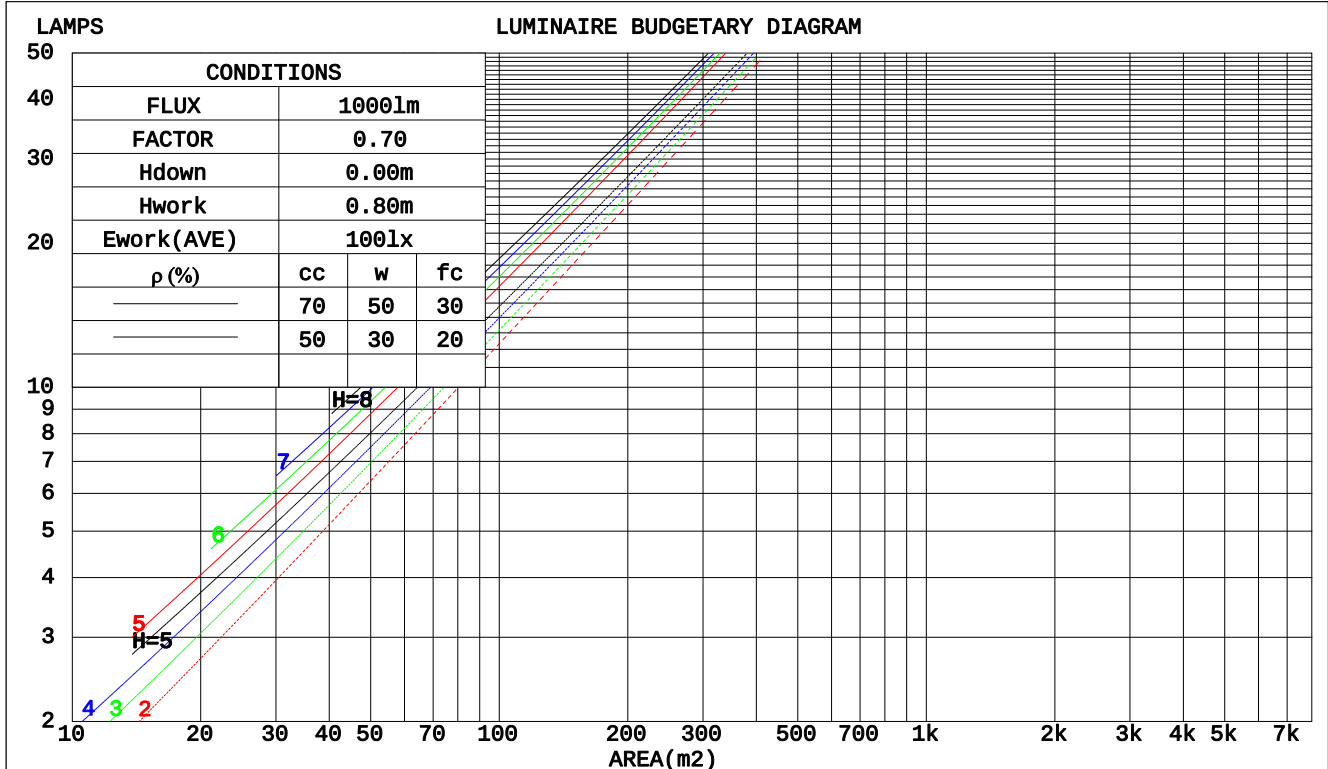
C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature: 25DEG
Operators:
Test Date: 2024-04-27

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:230.01V I:0.2346A P:25.042W PF:0.4640 Freq:49.99Hz Lamp Flux:1285.08x1 lm		
NAME: THD16-BK2X12W24V	TYPE:	WEIGHT:
SPEC.: black RA90 3000K+6000K	DIM.:	SERIAL No.:
MFR.:	SUR.: 38mm	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	.00
1.0	1.12	1.10	1.08	1.10	1.08	1.07	1.06	1.05	1.03	1.02	1.01	1.00	.99	.98	.97	.96
2.0	1.06	1.03	1.00	1.05	1.02	.99	1.01	.99	.97	.99	.97	.95	.96	.94	.93	.92
3.0	1.01	.97	.94	.90	.96	.93	.97	.94	.92	.95	.92	.90	.93	.91	.89	.88
4.0	.96	.92	.89	.95	.91	.88	.93	.90	.87	.91	.88	.86	.90	.87	.85	.84
5.0	.92	.87	.84	.91	.87	.84	.89	.86	.83	.88	.85	.82	.87	.84	.82	.80
6.0	.88	.83	.80	.87	.83	.80	.86	.82	.79	.85	.81	.79	.84	.81	.78	.77
7.0	.85	.80	.77	.84	.80	.76	.83	.79	.76	.82	.78	.76	.81	.78	.75	.74
8.0	.81	.77	.73	.81	.76	.73	.80	.76	.73	.79	.75	.73	.78	.75	.72	.71
9.0	.78	.74	.71	.78	.73	.70	.77	.73	.70	.76	.73	.70	.75	.72	.70	.69
10.0	.75	.71	.68	.75	.71	.68	.74	.70	.68	.74	.70	.67	.73	.70	.67	.66



C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature: 25DEG
Operators:
Test Date: 2024-04-27

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:230.01V I:0.2346A P:25.042W PF:0.4640 Freq:49.99Hz Lamp Flux:1285.08x1 lm					
NAME: THD16-BK2X12W24V			TYPE:		WEIGHT:
SPEC.: black RA90 3000K+6000K			DIM.:		SERIAL No.:
MFR.:			SUR.: 38mm		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	.149	.085	.027	.142	.081	.026	.130	.074	.024	.118	.068	.022	.108	.062	.020	
2.0	.139	.076	.023	.134	.074	.023	.124	.069	.021	.114	.064	.020	.105	.060	.019	
3.0	.131	.070	.021	.126	.068	.020	.118	.064	.019	.110	.060	.018	.102	.057	.018	
4.0	.124	.064	.019	.120	.063	.019	.113	.060	.018	.106	.057	.017	.099	.054	.016	
5.0	.117	.060	.017	.114	.059	.017	.108	.056	.017	.102	.054	.016	.096	.051	.015	
6.0	.112	.056	.016	.109	.055	.016	.103	.053	.015	.098	.051	.015	.093	.049	.015	
7.0	.107	.053	.015	.104	.052	.015	.099	.050	.014	.095	.049	.014	.090	.047	.014	
8.0	.102	.050	.014	.100	.049	.014	.095	.048	.014	.091	.046	.013	.088	.045	.013	
9.0	.098	.047	.013	.096	.047	.013	.092	.045	.013	.088	.044	.013	.085	.043	.012	
10.0	.094	.045	.012	.092	.044	.012	.089	.043	.012	.085	.042	.012	.082	.041	.012	

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	.169	.158	.147	.145	.135	.127	.099	.093	.088	.057	.054	.051	.018	.017	.016	
2.0	.152	.133	.116	.130	.114	.101	.089	.079	.070	.051	.046	.041	.016	.015	.013	
3.0	.138	.113	.094	.118	.098	.081	.081	.068	.057	.047	.040	.034	.015	.013	.011	
4.0	.126	.098	.077	.108	.085	.067	.074	.059	.047	.043	.035	.028	.014	.011	.009	
5.0	.116	.086	.064	.100	.074	.056	.069	.052	.039	.040	.031	.023	.013	.010	.008	
6.0	.108	.076	.054	.093	.066	.047	.064	.046	.033	.037	.027	.020	.012	.009	.007	
7.0	.101	.068	.046	.087	.059	.040	.060	.042	.028	.035	.024	.017	.011	.008	.006	
8.0	.094	.062	.039	.081	.054	.034	.056	.038	.024	.033	.022	.015	.011	.007	.005	
9.0	.089	.056	.034	.077	.049	.030	.053	.034	.021	.031	.020	.013	.010	.007	.004	
10.0	.084	.052	.030	.073	.045	.026	.050	.032	.019	.029	.019	.011	.010	.006	.004	

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25DEG
Operators:
Test Date:2024-04-27

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:230.01V I:0.2346A P:25.042W PF:0.4640 Freq:49.99Hz Lamp Flux:1285.08x1 lm		
NAME: THD16-BK2X12W24V	TYPE:	WEIGHT:
SPEC.: black RA90 3000K+6000K	DIM.:	SERIAL No.:
MFR.:	SUR.: 38mm	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	6.7	7.5	6.9	7.6	7.8	7.5	8.2	7.7	8.4	8.5
3H	6.6	7.3	6.8	7.5	7.6	7.3	8.0	7.6	8.2	8.4
4H	6.5	7.2	6.8	7.4	7.6	7.2	7.9	7.5	8.1	8.3
6H	6.4	7.0	6.7	7.3	7.5	7.2	7.8	7.4	8.0	8.2
8H	6.4	7.0	6.7	7.2	7.5	7.1	7.7	7.4	8.0	8.2
12H	6.3	6.9	6.6	7.2	7.4	7.1	7.6	7.4	7.9	8.2
4H 2H	6.5	7.2	6.8	7.4	7.6	7.2	7.9	7.5	8.1	8.3
3H	6.3	6.9	6.6	7.2	7.4	7.1	7.6	7.4	7.9	8.2
4H	6.2	6.8	6.6	7.0	7.3	7.0	7.5	7.3	7.8	8.1
6H	6.1	6.6	6.5	6.9	7.3	6.9	7.3	7.2	7.7	8.0
8H	6.1	6.5	6.5	6.9	7.2	6.8	7.2	7.2	7.6	8.0
12H	6.0	6.4	6.4	6.8	7.2	6.8	7.2	7.2	7.5	7.9
8H 4H	6.1	6.5	6.5	6.9	7.2	6.8	7.2	7.2	7.6	8.0
6H	6.0	6.3	6.4	6.7	7.1	6.7	7.1	7.1	7.5	7.9
8H	5.9	6.2	6.4	6.6	7.1	6.7	7.0	7.1	7.4	7.8
12H	5.9	6.1	6.3	6.6	7.0	6.6	6.9	7.1	7.3	7.8
12H 4H	6.0	6.4	6.4	6.8	7.2	6.8	7.2	7.2	7.5	7.9
6H	5.9	6.2	6.4	6.6	7.1	6.7	7.0	7.1	7.4	7.8
8H	5.9	6.1	6.3	6.6	7.0	6.6	6.9	7.1	7.3	7.8
Variations with the observer position at spacings(CIE Pub.117):										
S = 1.0H	+ 3.6 / -15.7					+ 3.8 / -15.4				
1.5H	+ 6.1 / -12.3					+ 6.4 / -12.5				
2.0H	+ 8.3 / -15.6					+ 8.3 / -15.6				

CIE Pub.117, 1285 lm Total Lamp Luminous Flux Correct (8log(F/F0) = 0.9)
Area: 0.00226 m2

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25DEG
Operators:
Test Date:2024-04-27

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:230.01V I:0.2346A P:25.042W PF:0.4640 Freq:49.99Hz Lamp Flux:1285.08x1 lm		
NAME: THD16-BK2X12W24V	TYPE:	WEIGHT:
SPEC.: black RA90 3000K+6000K	DIM.:	SERIAL No.:
MFR.:	SUR.: 38mm	Shielding Angle:

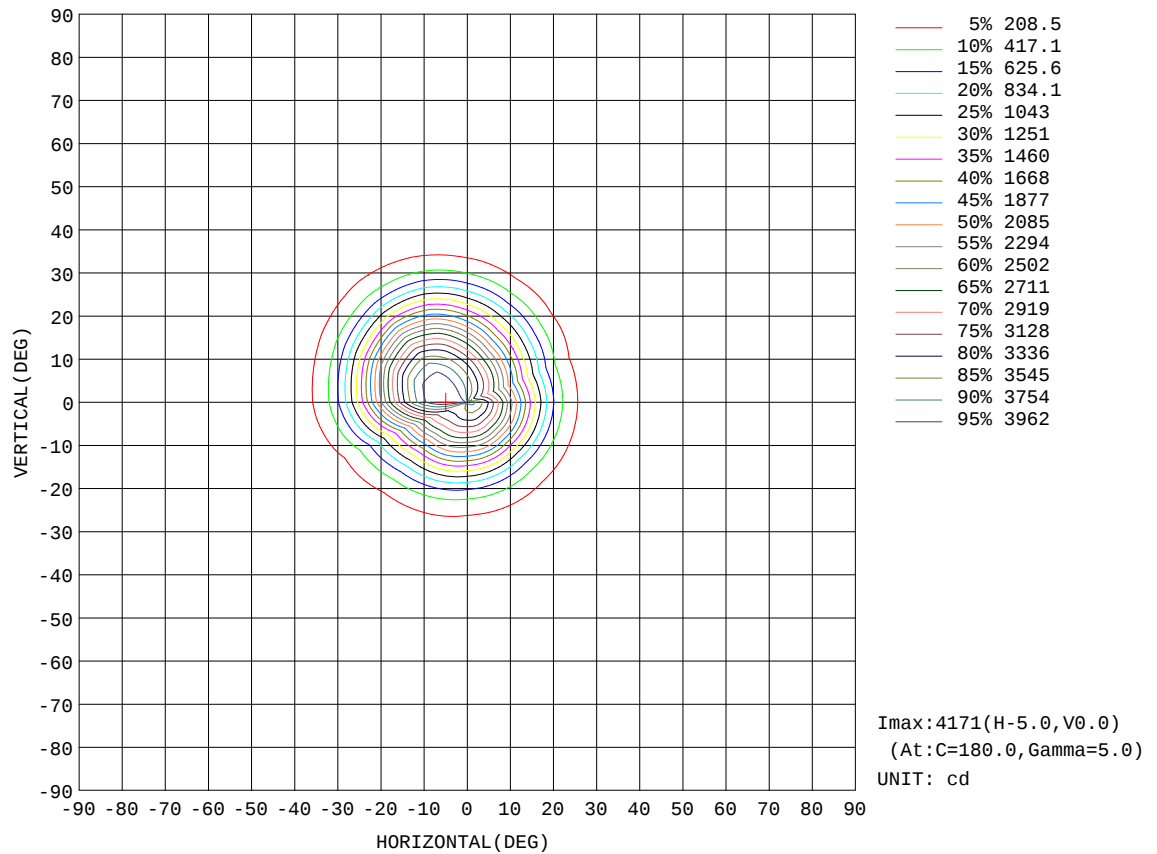
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	90	84	81	90	84	81	89	84	81	77
0.80	97	92	89	97	92	88	96	91	88	85
1.00	101	96	93	100	96	93	99	95	92	88
1.25	105	100	97	104	100	97	102	98	96	92
1.50	107	103	100	106	102	100	104	101	98	94
2.00	110	106	103	108	105	102	106	103	101	96
2.50	111	108	105	110	106	104	107	104	102	96
3.00	113	109	107	111	108	106	107	105	104	97
4.00	114	112	110	112	110	108	109	107	106	99
5.00	116	114	112	113	112	110	110	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: 2024-04-27

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:230.01V I:0.2346A P:25.042W PF:0.4640 Freq:49.99Hz Lamp Flux:1285.08x1 lm		
NAME: THD16-BK2X12W24V	TYPE:	WEIGHT:
SPEC.: black RA90 3000K+6000K	DIM.:	SERIAL No.:
MFR.:	SUR.: 38mm	Shielding Angle:

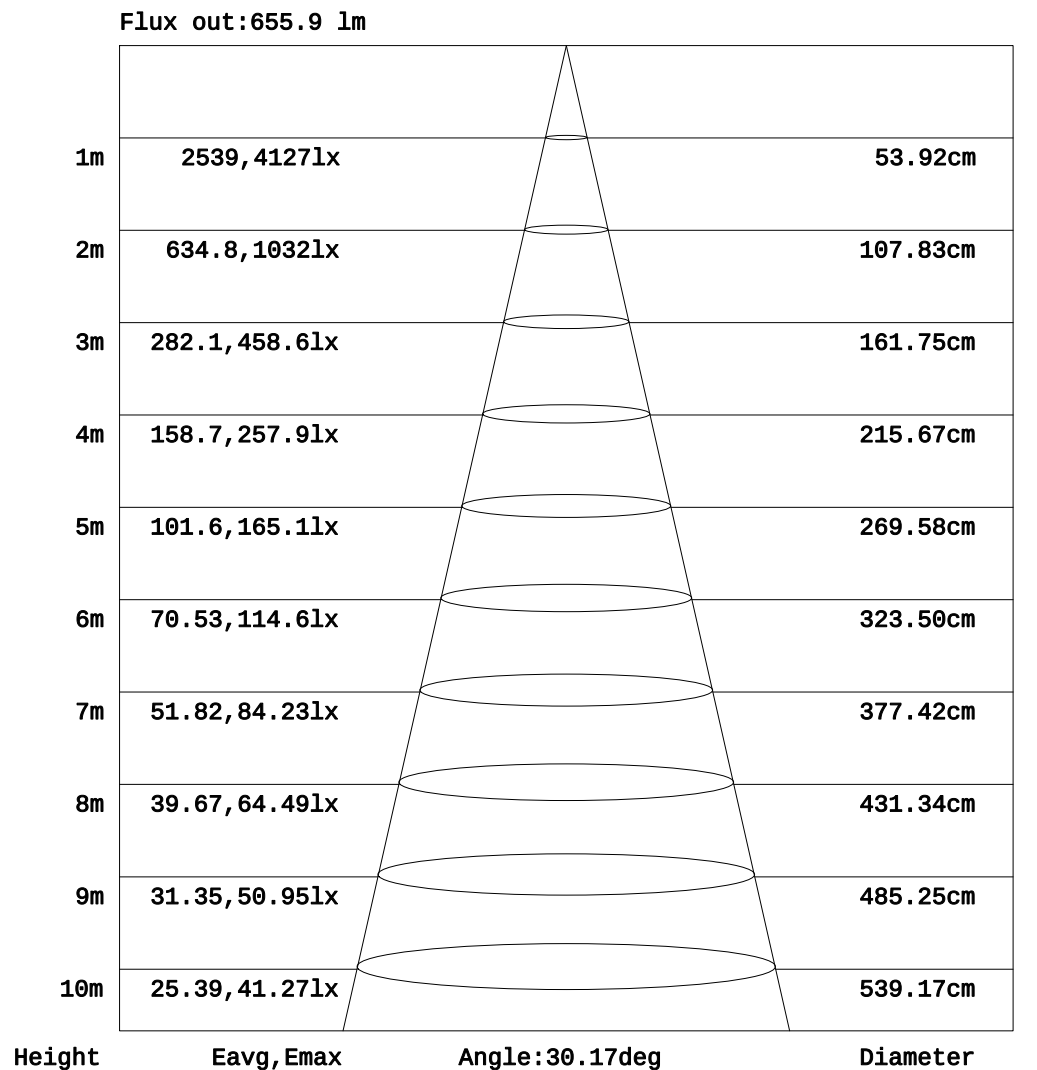


C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature: 25DEG
Operators:
Test Date: 2024-04-27

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:230.01V I:0.2346A P:25.042W PF:0.4640 Freq:49.99Hz Lamp Flux:1285.08x1 lm		
NAME: THD16-BK2X12W24V	TYPE:	WEIGHT:
SPEC.: black RA90 3000K+6000K	DIM.:	SERIAL No.:
MFR.:	SUR.: 38mm	Shielding Angle:



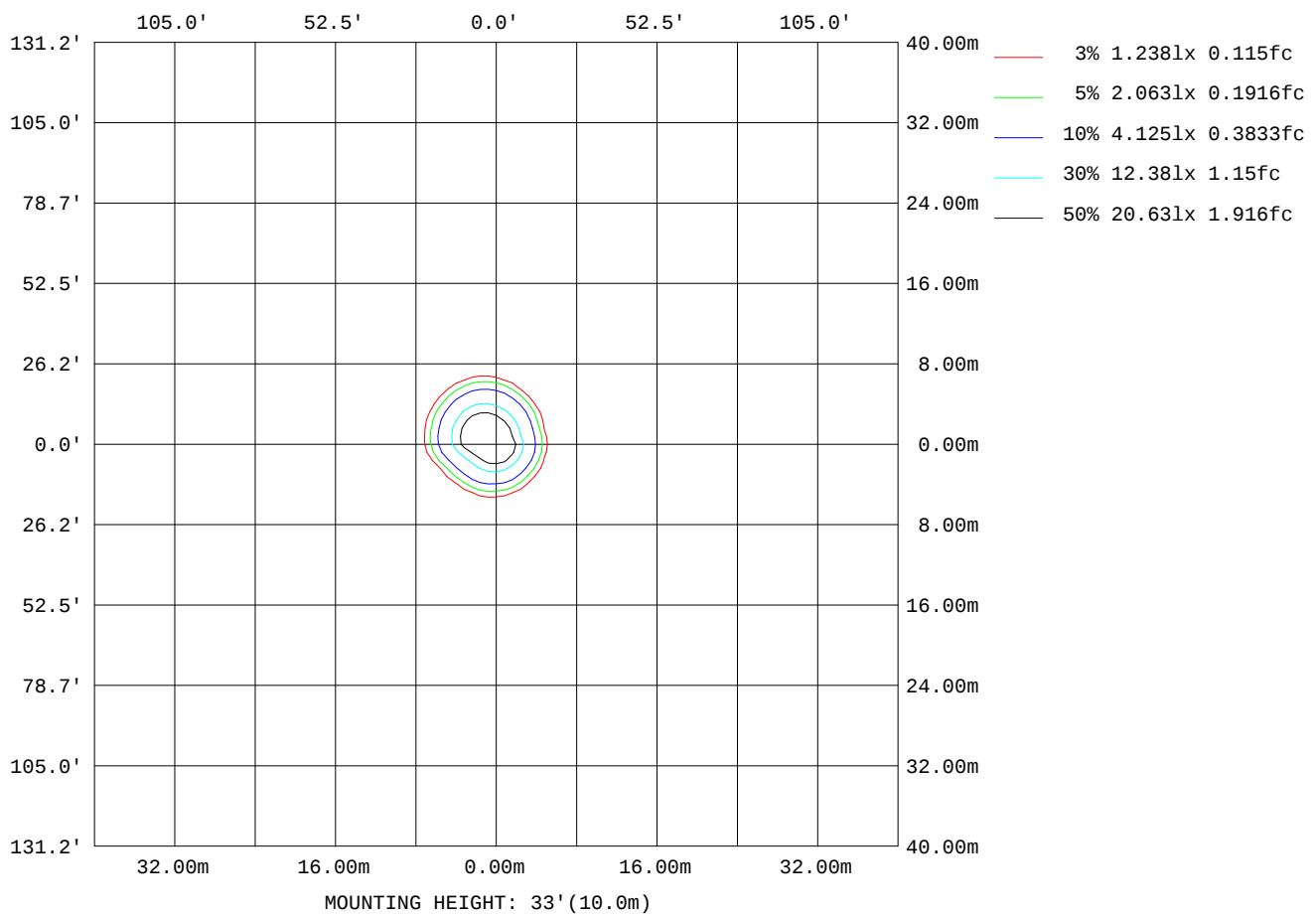
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25DEG
Operators:
Test Date:2024-04-27

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:230.01V I:0.2346A P:25.042W PF:0.4640 Freq:49.99Hz Lamp Flux:1285.08x1 lm		
NAME: THD16-BK2X12W24V	TYPE:	WEIGHT:
SPEC.: black RA90 3000K+6000K	DIM.:	SERIAL No.:
MFR.:	SUR.: 38mm	Shielding Angle:



C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25DEG
Operators:
Test Date:2024-04-27

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:230.01V I:0.2346A P:25.042W PF:0.4640 Freq:49.99Hz Lamp Flux:1285.08x1 lm		
NAME: THD16-BK2X12W24V	TYPE:	WEIGHT:
SPEC.: black RA90 3000K+6000K	DIM.:	SERIAL No.:
MFR.:	SUR.: 38mm	Shielding Angle:

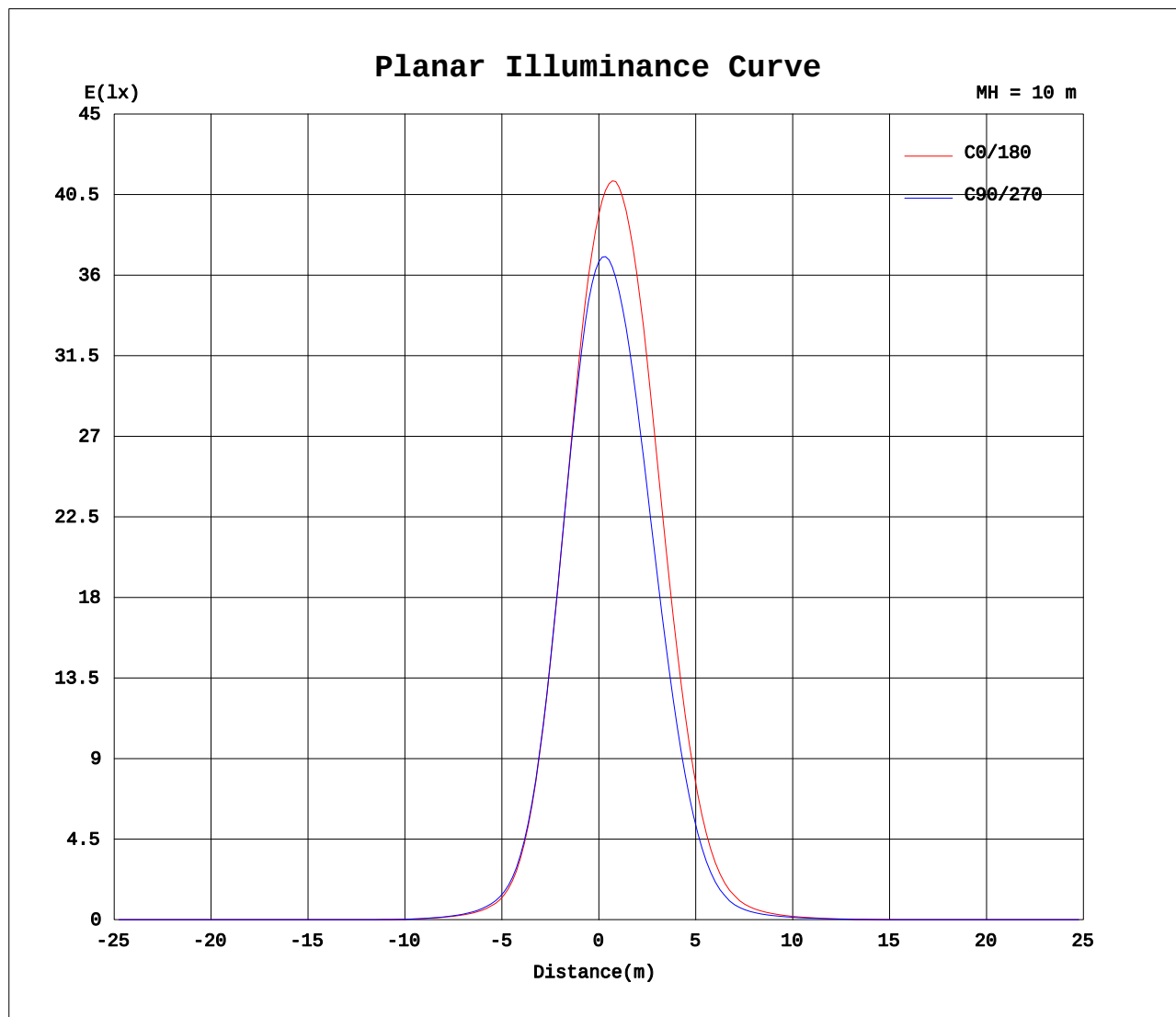
AvgL	cd/m2
L_0~180(65)av	676
L_0~180(75)av	89
L_0~180(85)av	20
L_90~270(65)av	539
L_90~270(75)av	96
L_90~270(85)av	49
L_45(65)av	519
L_45(75)av	104
L_45(85)av	39

Standard: GB/T 29293-2012

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25DEG
Operators:
Test Date:2024-04-27

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: 2024-04-27

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:

```