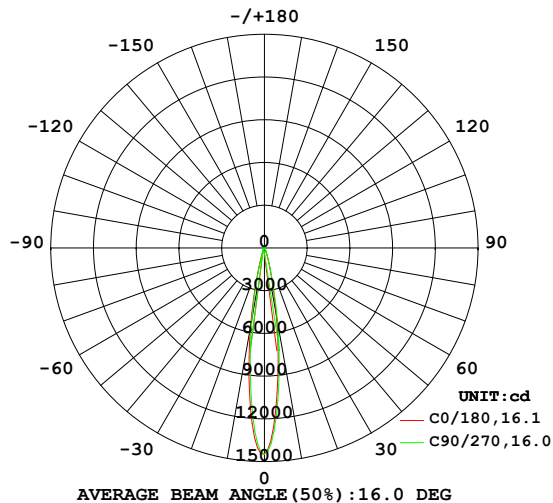


LUMINAIRE PHOTOMETRIC TEST REPORT

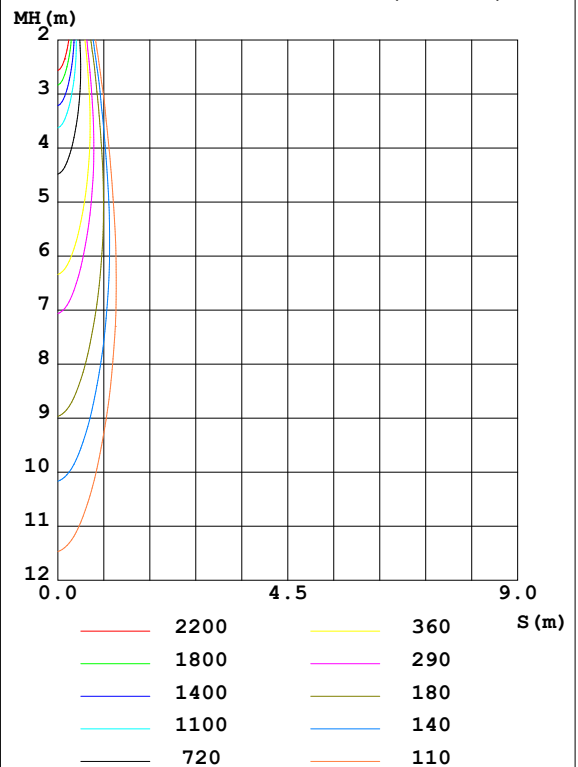
Test:U:220.89V I:0.0992A P:20.848W PF:0.9512 Freq:59.98Hz Lamp Flux:1967x1 lm					
NAME: 3709LED		TYPE:		WEIGHT:	
SPEC.:P-3709LED-20W3015-CI50037R90-LDK700		DIM.:		SERIAL No.:	
MFR.: CETTIGA		SUR.:0.0007		Shielding Angle:	

DATA OF LAMP		PHOTOMETRIC DATA				Eff: 75.31 lm/W
MODEL	CLU711	I _{max} (cd)	14480	S/MH (C0/180)	0.29	
NOMINAL POWER (W)	20	LOR (%)	79.8	S/MH (C90/270)	0.27	
RATED VOLTAGE (V)	220.0	TOTAL FLUX (lm)	1570.1	η UP, DN (C0-180)	0.0, 40.4	
NOMINAL FLUX (lm)	1967	CIE CLASS	DIRECT	η UP, DN (C180-360)	0.0, 39.4	
LAMPS INSIDE	1	η up (%)	0.0	CIBSE SHR NOM	0.00	
TEST VOLTAGE (V)	220.2	η down (%)	79.8	CIBSE SHR MAX	1.00	

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



C Range: 0 - 360DEG
C Interval: 45.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:XIE BI
Test Date:2018-09-10

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.362
Humidity:65.0%
Test Distance:6.800m [K=1.0000]
Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

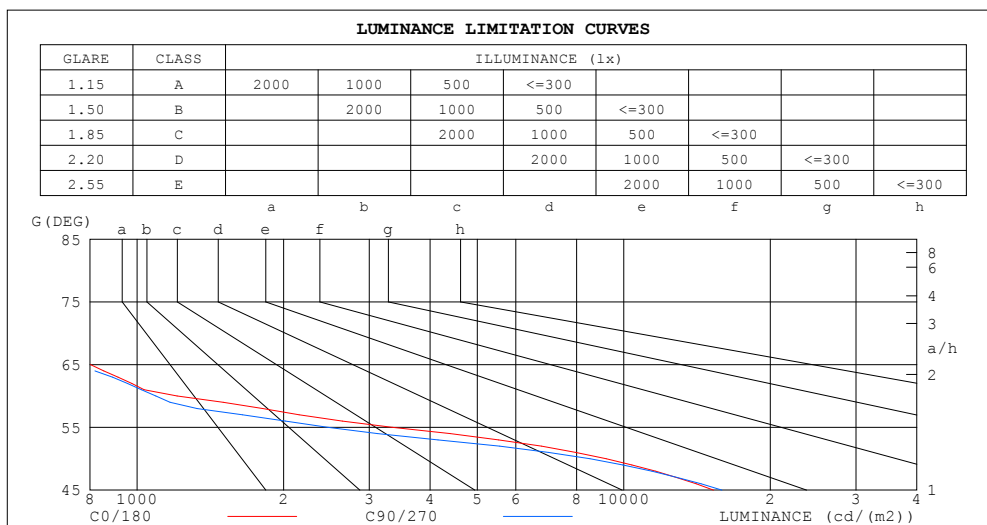
γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	482.9	519.5	528.2	565.0	563.2	522.4	506.1	478.8	0- 10	840.8	840.8	53.6, 42.7
20	55.49	61.44	63.02	65.10	61.84	55.90	54.76	53.27	10- 20	528.1	1369	87.2, 69.6
30	11.74	12.74	13.41	13.25	12.27	11.27	11.24	11.14	20- 30	124.8	1494	95.1, 75.9
40	4.477	4.875	4.937	4.880	4.599	4.343	4.218	4.270	30- 40	46.19	1540	98.1, 78.3
50	1.656	1.836	1.534	1.932	1.822	1.618	1.305	1.551	40- 50	23.36	1563	99.6, 79.5
60	0.1692	0.1818	0.1530	0.1918	0.1834	0.1561	0.1320	0.1526	50- 60	5.961	1569	99.9, 79.8
70	0.0455	0.0323	0.0160	0.0177	0.0250	0.0195	0.0103	0.0160	60- 70	0.8714	1570	100, 79.8
80	0	0	0	0	0	0	0	0	70- 80	0.0501	1570	100, 79.8
90	0	0	0	0	0	0	0	0	80- 90	0	1570	100, 79.8
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:×10cd									UNIT:lm		

C Range: 0 - 360DEG
C Interval: 45.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:XIE BI
Test Date:2018-09-10

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.362
Humidity:65.0%
Test Distance:6.800m [K=1.0000]
Remarks:

LUMINANCE LIMITATION CURVES

Test:U:220.89V I:0.0992A P:20.848W PF:0.9512 Freq:59.98Hz Lamp Flux:1967x1 lm		
NAME: 3709LED	TYPE:	WEIGHT:
SPEC.:P-3709LED-20W3015-CI50037R90-LDK700	DIM.:	SERIAL No.:
MFR.: CETTIGA	SUR.:0.0007	Shielding Angle:



LUMINANCE cd/(m2)		
G (DEG)	C0/180	C90/270
85	0	0
80	0	0
75	66	54
70	475	167
65	802	759
60	1209	1093
55	3347	2468
50	9201	8521
45	15281	15906

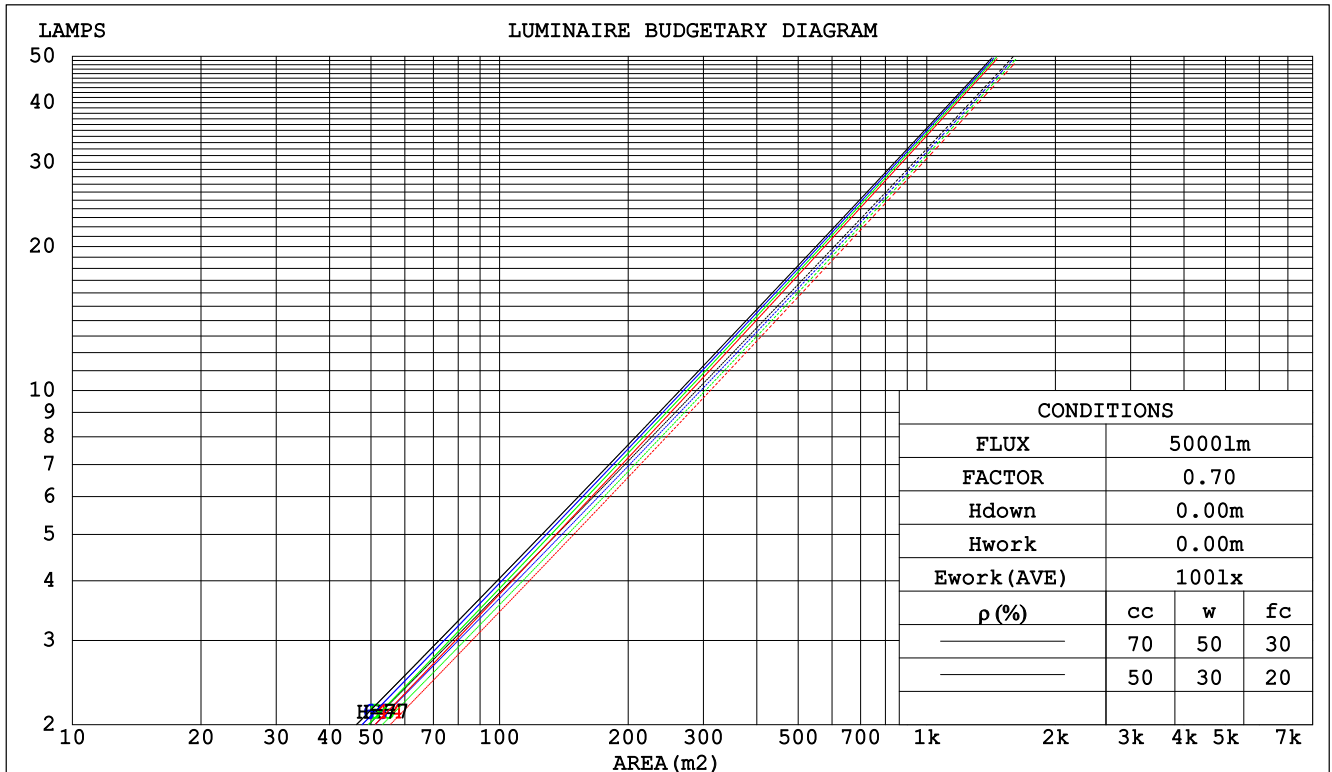
C Range: 0 - 360DEG
C Interval: 45.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:XIE BI
Test Date:2018-09-10

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.362
Humidity:65.0%
Test Distance:6.800m [K=1.0000]
Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:220.89V I:0.0992A P:20.848W PF:0.9512 Freq:59.98Hz Lamp Flux:1967x1 lm		
NAME: 3709LED	TYPE:	WEIGHT:
SPEC.:P-3709LED-20W3015-CI50037R90-LDK700	DIM.:	SERIAL No.:
MFR.: CETTIGA	SUR.:0.0007	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	.95	.95	.95	.93	.93	.93	.89	.89	.89	.85	.85	.85	.81	.81	.81	.80
1.0	.91	.89	.88	.89	.88	.87	.86	.85	.84	.83	.82	.82	.80	.80	.79	.78
2.0	.87	.85	.83	.86	.84	.82	.83	.82	.80	.81	.80	.79	.79	.78	.77	.76
3.0	.84	.81	.79	.83	.81	.79	.81	.79	.77	.79	.78	.76	.77	.76	.75	.74
4.0	.81	.78	.76	.80	.78	.76	.79	.77	.75	.77	.76	.74	.76	.75	.73	.73
5.0	.79	.76	.74	.78	.76	.74	.77	.75	.73	.76	.74	.72	.75	.73	.72	.71
6.0	.77	.74	.72	.76	.74	.72	.75	.73	.71	.74	.72	.71	.73	.72	.70	.69
7.0	.75	.72	.70	.74	.72	.70	.74	.71	.69	.73	.71	.69	.72	.70	.69	.68
8.0	.73	.70	.68	.73	.70	.68	.72	.70	.68	.71	.69	.68	.71	.69	.68	.67
9.0	.72	.69	.67	.71	.69	.67	.71	.68	.67	.70	.68	.67	.70	.68	.66	.66
10.0	.70	.68	.66	.70	.67	.66	.69	.67	.65	.69	.67	.65	.69	.67	.65	.65



C Range: 0 - 360DEG
C Interval: 45.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:XIE BI
Test Date:2018-09-10

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.362
Humidity:65.0%
Test Distance:6.800m [K=1.0000]
Remarks:

WEC AND CCEC

Test:U:220.89V I:0.0992A P:20.848W PF:0.9512 Freq:59.98Hz Lamp Flux:1967x1 lm					
NAME: 3709LED			TYPE:		WEIGHT:
SPEC.:P-3709LED-20W3015-CI50037R90-LDK700			DIM.:		SERIAL No.:
MFR.: CETTIGA			SUR.:0.0007		Shielding Angle:

pcc	80%			70%			50%			30%			10%			0	
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0	
pfc	20%			20%			20%			20%			20%			0	
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients(WEC)										
0.0																	
1.0	.099	.056	.018	.094	.054	.017	.084	.048	.015	.075	.043	.014	.067	.039	.012		
2.0	.091	.050	.015	.087	.048	.015	.079	.044	.014	.071	.040	.013	.064	.036	.011		
3.0	.084	.045	.013	.081	.043	.013	.074	.040	.012	.068	.037	.011	.062	.034	.011		
4.0	.078	.041	.012	.075	.039	.012	.070	.037	.011	.064	.035	.010	.060	.032	.010		
5.0	.073	.037	.011	.071	.036	.011	.066	.034	.010	.061	.032	.010	.057	.031	.009		
6.0	.069	.034	.010	.066	.034	.010	.062	.032	.009	.059	.030	.009	.055	.029	.009		
7.0	.065	.032	.009	.063	.031	.009	.059	.030	.009	.056	.029	.008	.053	.028	.008		
8.0	.061	.030	.008	.060	.029	.008	.057	.028	.008	.054	.027	.008	.051	.026	.008		
9.0	.058	.028	.008	.057	.028	.008	.054	.027	.008	.052	.026	.007	.049	.025	.007		
10.0	.056	.027	.007	.054	.026	.007	.052	.025	.007	.050	.025	.007	.048	.024	.007		

pcc	80%			70%			50%			30%			10%			0
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients (CCEC)									
0.0	.152	.152	.152	.130	.130	.130	.089	.089	.089	.051	.051	.051	.016	.016	.016	
1.0	.134	.126	.119	.114	.108	.102	.078	.074	.071	.045	.043	.041	.014	.014	.013	
2.0	.119	.106	.095	.102	.091	.082	.070	.063	.058	.040	.037	.034	.013	.012	.011	
3.0	.106	.090	.078	.091	.078	.068	.062	.054	.047	.036	.032	.028	.012	.010	.009	
4.0	.095	.078	.065	.082	.067	.056	.056	.047	.039	.033	.027	.023	.010	.009	.008	
5.0	.087	.068	.054	.074	.059	.047	.051	.041	.033	.030	.024	.020	.010	.008	.007	
6.0	.079	.060	.046	.068	.052	.040	.047	.036	.028	.027	.021	.017	.009	.007	.006	
7.0	.073	.053	.039	.062	.046	.034	.043	.032	.024	.025	.019	.014	.008	.006	.005	
8.0	.067	.047	.034	.058	.041	.030	.040	.029	.021	.023	.017	.013	.008	.006	.004	
9.0	.062	.043	.030	.054	.037	.026	.037	.026	.018	.022	.015	.011	.007	.005	.004	
10.0	.058	.039	.026	.050	.034	.023	.035	.024	.016	.020	.014	.010	.007	.005	.003	

C Range: 0 - 360DEG
C Interval: 45.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:XIE BI
Test Date:2018-09-10

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.362
Humidity:65.0%
Test Distance:6.800m [K=1.0000]
Remarks:

UGR(Unified Glare Rating) Table

Test:U:220.89V I:0.0992A P:20.848W PF:0.9512 Freq:59.98Hz Lamp Flux:1967x1 lm											
NAME: 3709LED						TYPE:			WEIGHT:		
SPEC.:P-3709LED-20W3015-CI50037R90-LDK700						DIM.:			SERIAL No.:		
MFR.: CETTIGA						SUR.:0.0007			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		8.3	8.9	8.5	9.0	9.2	8.6	9.1	8.8	9.3	9.4
	3H	8.2	8.7	8.4	8.9	9.1	8.4	9.0	8.7	9.1	9.3
	4H	8.1	8.6	8.4	8.8	9.1	8.4	8.9	8.6	9.1	9.3
	6H	8.1	8.5	8.3	8.8	9.0	8.3	8.7	8.5	9.0	9.2
	8H	8.0	8.5	8.3	8.7	9.0	8.2	8.7	8.5	8.9	9.2
	12H	8.0	8.4	8.3	8.7	8.9	8.2	8.6	8.5	8.9	9.1
4H	2H	8.2	8.7	8.4	8.9	9.1	8.4	8.9	8.6	9.1	9.3
	3H	8.0	8.4	8.3	8.7	9.0	8.2	8.7	8.5	8.9	9.2
	4H	7.9	8.3	8.2	8.6	8.9	8.1	8.5	8.4	8.8	9.1
	6H	7.8	8.2	8.2	8.5	8.8	8.0	8.4	8.4	8.7	9.0
	8H	7.7	8.1	8.1	8.4	8.8	8.0	8.3	8.3	8.6	9.0
	12H	7.7	8.0	8.1	8.4	8.8	7.9	8.2	8.3	8.6	9.0
8H	4H	7.7	8.1	8.1	8.4	8.8	8.0	8.3	8.3	8.6	9.0
	6H	7.6	7.9	8.0	8.3	8.7	7.8	8.1	8.3	8.5	8.9
	8H	7.6	7.8	8.0	8.2	8.7	7.8	8.0	8.2	8.4	8.9
	12H	7.5	7.7	8.0	8.2	8.6	7.7	7.9	8.2	8.4	8.8
12H	4H	7.7	8.0	8.1	8.4	8.8	7.9	8.2	8.3	8.6	9.0
	6H	7.6	7.8	8.0	8.2	8.7	7.8	8.0	8.2	8.4	8.9
	8H	7.5	7.7	8.0	8.2	8.6	7.7	7.9	8.2	8.4	8.8
Variations with the observer position at spacings:											
S = 1.0H	+ 2.5 / -10.4					+ 2.5 / -12.3					
1.5H	+ 2.8 / - 7.7					+ 3.3 / - 8.3					
2.0H	+ 5.6 / -11.6					+ 5.9 / -11.6					

CIE Pub.117, 1967 lm Total Lamp Luminous Flux Correct ($8\log(F/F_0) = 2.4$)
Area: 0.0028 m²

C Range: 0 - 360DEG
C Interval: 45.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:XIE BI
Test Date:2018-09-10

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.362
Humidity:65.0%
Test Distance:6.800m [K=1.0000]
Remarks:

UTILIZATION FACTORS TABLE

Test:U:220.89V I:0.0992A P:20.848W PF:0.9512 Freq:59.98Hz Lamp Flux:1967x1 lm		
NAME: 3709LED	TYPE:	WEIGHT:
SPEC.:P-3709LED-20W3015-CI50037R90-LDK700	DIM.:	SERIAL No.:
MFR.: CETTIGA	SUR.:0.0007	Shielding Angle:

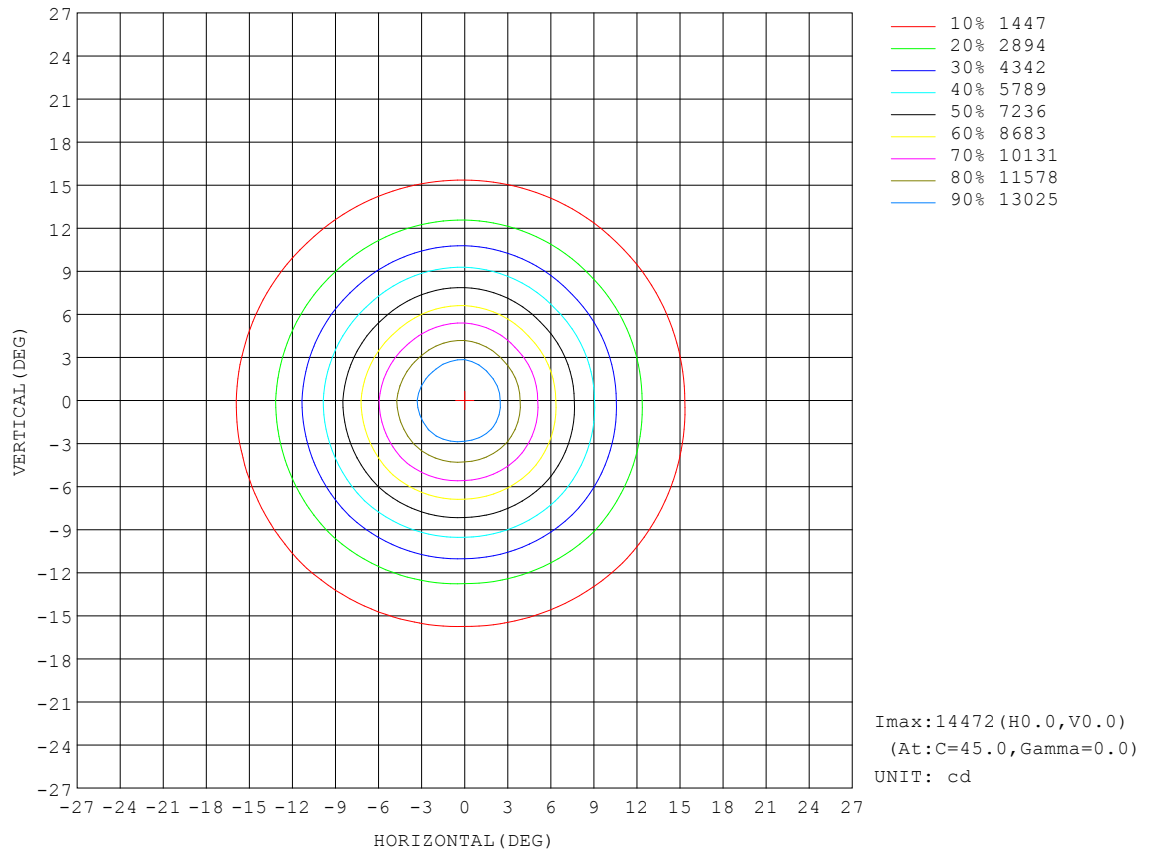
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS (PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	72	67	65	72	67	65	71	67	65	62
0.80	78	74	71	77	73	71	76	73	70	68
1.00	81	77	74	80	76	74	79	76	74	71
1.25	84	80	78	83	80	77	81	79	77	73
1.50	86	82	80	85	82	80	83	81	79	75
2.00	88	84	82	86	84	82	84	82	80	76
2.50	89	86	84	87	85	83	85	83	82	77
3.00	90	87	85	88	86	84	86	84	83	78
4.00	91	89	88	90	88	87	87	86	84	79
5.00	92	91	89	91	89	88	87	86	86	80
ROOM INDEX	UF (total)									Direct
According to DIN EN 13032-2 2004			Suspended					SHRNOM = 1.25		

C Range: 0 - 360DEG
C Interval: 45.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:XIE BI
Test Date:2018-09-10

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.362
Humidity:65.0%
Test Distance:6.800m [K=1.0000]
Remarks:

ISOCANDELA DIAGRAM

Test:U:220.89V I:0.0992A P:20.848W PF:0.9512 Freq:59.98Hz Lamp Flux:1967x1 lm		
NAME: 3709LED	TYPE:	WEIGHT:
SPEC.:P-3709LED-20W3015-CI50037R90-LDK700	DIM.:	SERIAL No.:
MFR.: CETTIGA	SUR.:0.0007	Shielding Angle:

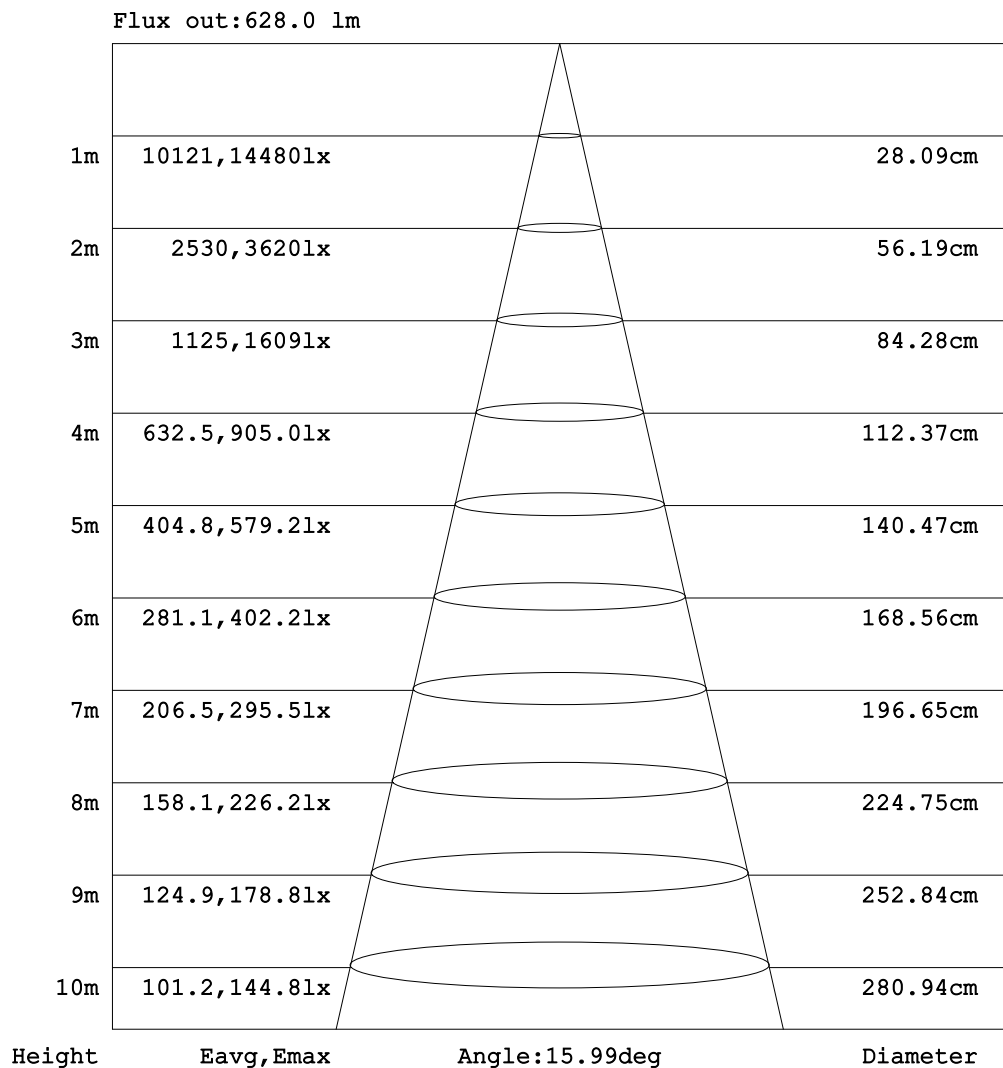


C Range: 0 - 360DEG
C Interval: 45.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:XIE BI
Test Date:2018-09-10

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.362
Humidity:65.0%
Test Distance:6.800m [K=1.0000]
Remarks:

AAI Figure

Test:U:220.89V I:0.0992A P:20.848W PF:0.9512 Freq:59.98Hz Lamp Flux:1967x1 lm		
NAME: 3709LED	TYPE:	WEIGHT:
SPEC.:P-3709LED-20W3015-CI50037R90-LDK700	DIM.:	SERIAL No.:
MFR.: CETTIGA	SUR.:0.0007	Shielding Angle:



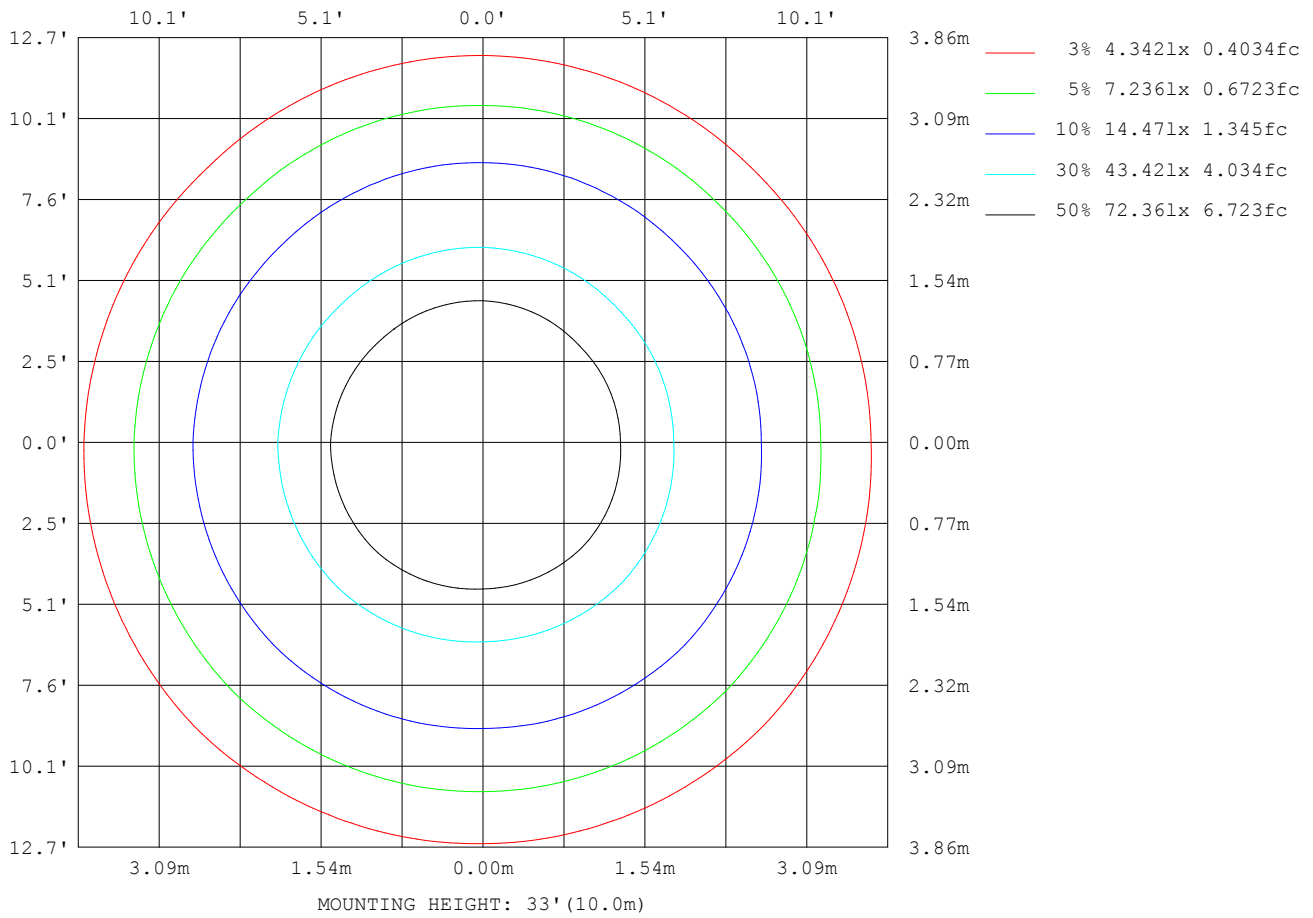
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
C Interval: 45.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: XIE BI
Test Date: 2018-09-10

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.362
Humidity: 65.0%
Test Distance: 6.800m [K=1.0000]
Remarks:

ISOLUX DIAGRAM

Test:U:220.89V I:0.0992A P:20.848W PF:0.9512 Freq:59.98Hz Lamp Flux:1967x1 lm		
NAME: 3709LED	TYPE:	WEIGHT:
SPEC.:P-3709LED-20W3015-CI50037R90-LDK700	DIM.:	SERIAL No.:
MFR.: CETTIGA	SUR.:0.0007	Shielding Angle:



C Range: 0 - 360DEG
 C Interval: 45.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:XIE BI
 Test Date:2018-09-10

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.362
 Humidity:65.0%
 Test Distance:6.800m [K=1.0000]
 Remarks:

LED Avg.L Report

Test:U:220.89V I:0.0992A P:20.848W PF:0.9512 Freq:59.98Hz Lamp Flux:1967x1 lm		
NAME: 3709LED	TYPE:	WEIGHT:
SPEC.:P-3709LED-20W3015-CI50037R90-LDK700	DIM.:	SERIAL No.:
MFR.: CETTIGA	SUR.:0.0007	Shielding Angle:

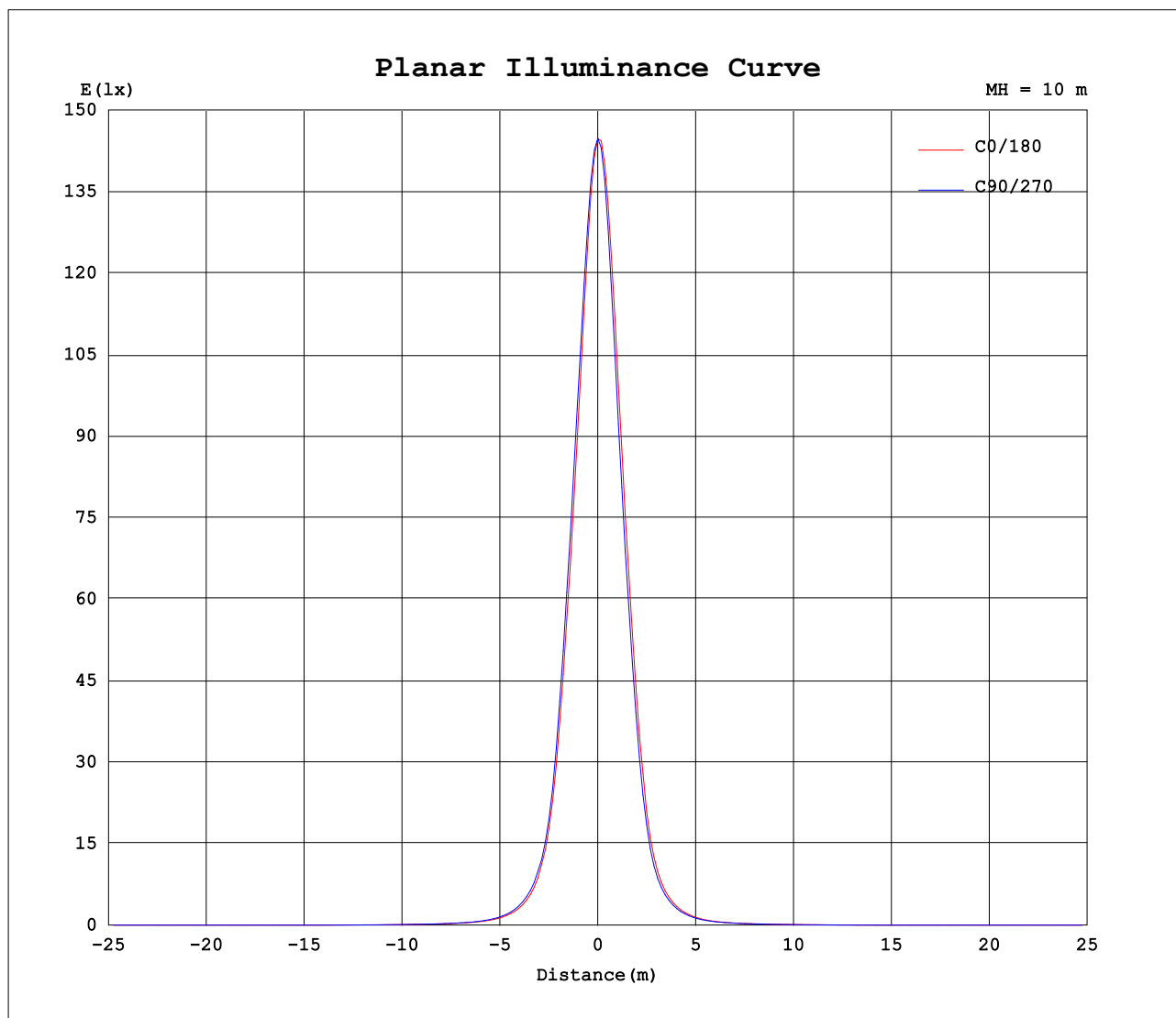
AvgL	cd/m2
L_0~180 (65) av	721
L_0~180 (75) av	68
L_0~180 (85) av	0
L_90~270 (65) av	688
L_90~270 (75) av	27
L_90~270 (85) av	0
L_45 (65) av	773
L_45 (75) av	27
L_45 (85) av	0

Standard: GB/T 29293-2012

C Range: 0 - 360DEG
 C Interval: 45.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:XIE BI
 Test Date:2018-09-10

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.362
 Humidity:65.0%
 Test Distance:6.800m [K=1.0000]
 Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG
C Interval: 45.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: XIE BI
Test Date: 2018-09-10

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.362
Humidity: 65.0%
Test Distance: 6.800m [K=1.0000]
Remarks:

```

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.362
Humidity:65.0%
Test Distance:6.800m [K=1.0000]
Remarks:

```