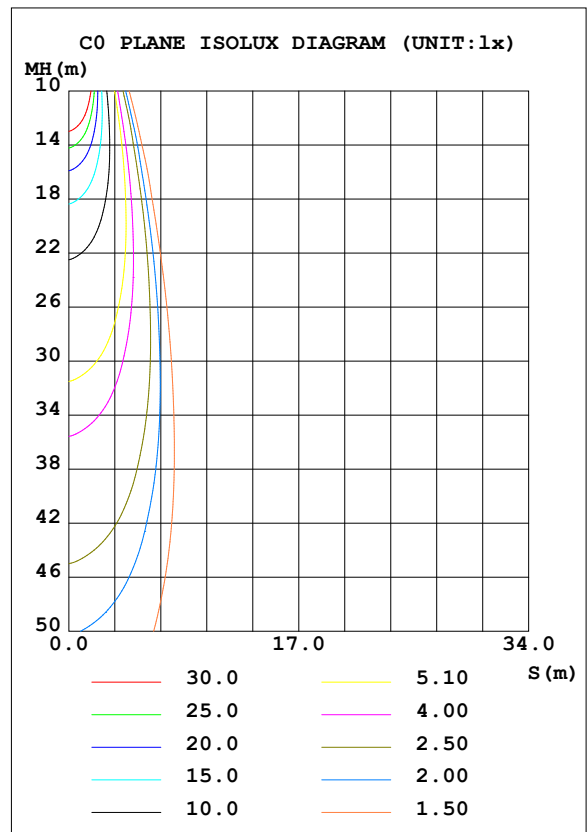
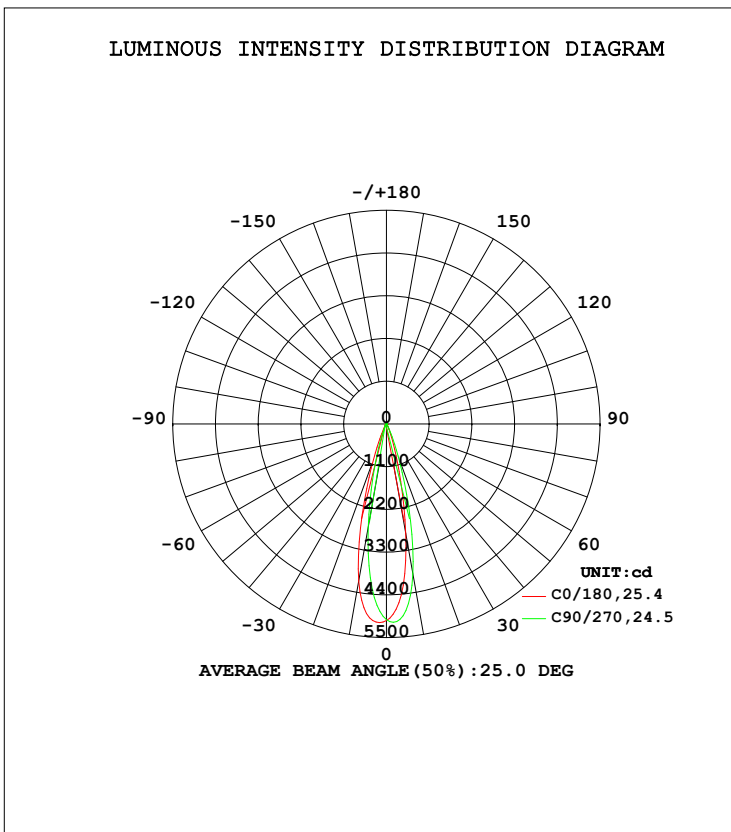


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:232.44V I:0.1208A P:14.688W PF:0.5230 Freq:50.00Hz Lamp Flux:1077.48x1 lm		
NAME: 29012LED	TYPE:	WEIGHT:
SPEC.:P-29012LED-15W3024-CI40031R90-HEK700	DIM.:	SERIAL No.:
MFR.: CETTIGA	SUR.:	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 73.36 lm/W			
MODEL	CLU701 1002	I _{max} (cd)	5116	S/MH (C0/180)	0.46
NOMINAL POWER (W)	15W	LOR (%)	100.0	S/MH (C90/270)	0.36
RATED VOLTAGE (V)		TOTAL FLUX (lm)	1077.5	η UP, DN (C0-180)	0.2, 49.2
NOMINAL FLUX (lm)	1077.48	CIE CLASS	DIRECT	η UP, DN (C180-360)	0.1, 50.4
LAMPS INSIDE	1	η up (%)	0.3	CIBSE SHR NOM	0.00
TEST VOLTAGE (V)	220.2	η down (%)	99.7	CIBSE SHR MAX	1.00



C Range: 0 - 360DEG
 C Interval: 90.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: Xie Bi
 Test Date: 2023-11-15

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.286
 Humidity: 65.0%
 Test Distance: 6.810m [K=1.0000]
 Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C90	C180	C270				γ	Φ zone	Φ total	%lum, lamp
10	2870	3917	4107	2700				0- 10	403.8	403.8	37.5,37.5
20	465.4	881.5	981.0	453.7				10- 20	489.4	893.2	82.9,82.9
30	71.19	106.7	122.8	70.49				20- 30	125.7	1019	94.6,94.6
40	25.56	31.04	33.15	26.69				30- 40	31.39	1050	97.5,97.5
50	14.64	12.85	18.13	11.39				40- 50	16.36	1067	99,99
60	3.173	0.5230	3.989	0.4314				50- 60	6.637	1073	99.6,99.6
70	0.0751	0.0191	0.0936	0.0296				60- 70	0.5268	1074	99.7,99.7
80	0	0	0	0.0070				70- 80	0.0104	1074	99.7,99.7
90	0	0	0	0				80- 90	0.0005	1074	99.7,99.7
100	0	0	0	0				90-100	0	1074	99.7,99.7
110	0	0.0157	0.0000	0				100-110	0.0019	1074	99.7,99.7
120	0.1552	0.0784	0.1116	0.0593				110-120	0.0643	1074	99.7,99.7
130	0.1342	0.0994	0.1145	0.0854				120-130	0.0892	1074	99.7,99.7
140	0.5228	0.2985	0.1728	0.2301				130-140	0.1330	1074	99.7,99.7
150	2.337	1.388	0.6352	1.082				140-150	0.4332	1075	99.7,99.7
160	4.973	4.222	2.481	3.418				150-160	1.137	1076	99.8,99.8
170	5.513	5.744	4.393	4.706				160-170	1.286	1077	100,100
180	5.092	5.245	5.108	5.237				170-180	0.4874	1077	100,100
DEG	LUMINOUS INTENSITY:cd								UNIT:lm		

Conical surface Flux(90deg): 1059.5 lm

%lum = 98.3%
 %lamp = 98.3%

Conical surface Flux(120deg): 1073.3 lm

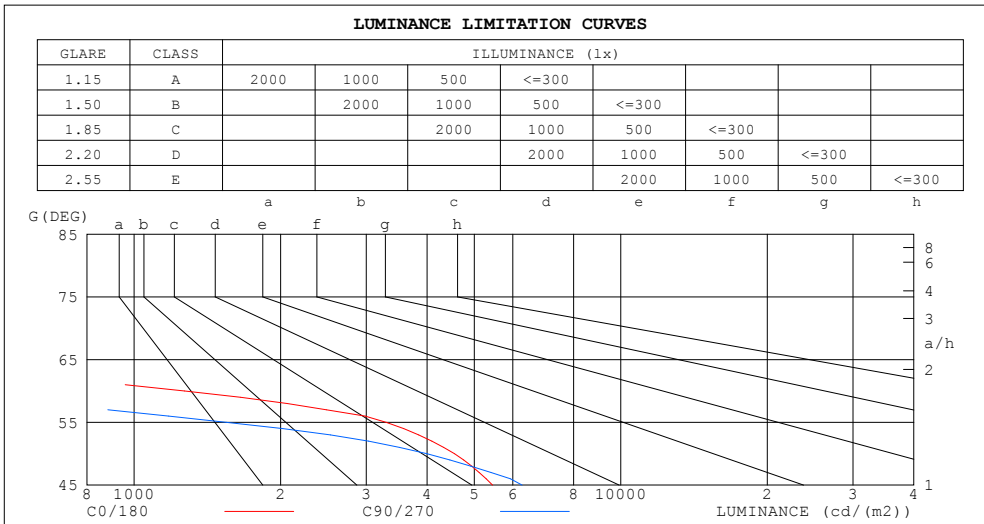
%lum = 99.6%
 %lamp = 99.6%

C Range: 0 - 360DEG
 C Interval: 90.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:Xie Bi
 Test Date:2023-11-15

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.286
 Humidity:65.0%
 Test Distance:6.810m [K=1.0000]
 Remarks:

LUMINANCE LIMITATION CURVES

Test:U:232.44V I:0.1208A P:14.688W PF:0.5230 Freq:50.00Hz Lamp Flux:1077.48x1 lm		
NAME: 29012LED	TYPE:	WEIGHT:
SPEC.:P-29012LED-15W3024-CI40031R90-HEK700	DIM.:	SERIAL No.:
MFR.: CETTIGA	SUR.:	Shielding Angle:



LUMINANCE cd/(m2)		
G (DEG)	C0/180	C90/270
85	0	0
80	0	0
75	0	3
70	44	11
65	186	58
60	1269	209
55	3297	1547
50	4555	3998
45	5453	6270

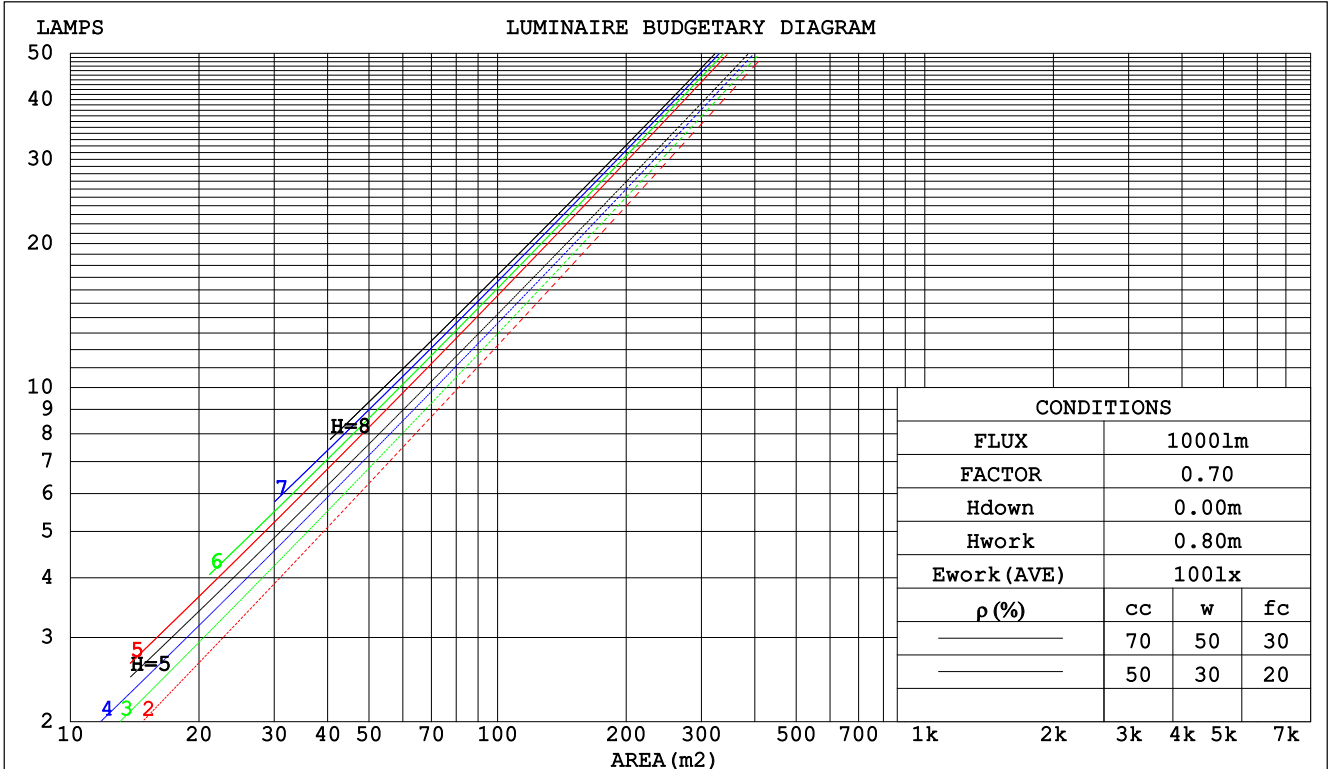
C Range: 0 - 360DEG
 C Interval: 90.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:Xie Bi
 Test Date:2023-11-15

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.286
 Humidity:65.0%
 Test Distance:6.810m [K=1.0000]
 Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:232.44V I:0.1208A P:14.688W PF:0.5230 Freq:50.00Hz Lamp Flux:1077.48x1 lm		
NAME: 29012LED	TYPE:	WEIGHT:
SPEC.:P-29012LED-15W3024-CI40031R90-HEK700	DIM.:	SERIAL No.:
MFR.: CETTIGA	SUR.:	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						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	1.13	1.11	1.09	1.11	1.09	1.08	1.07	1.05	1.04	1.03	1.02	1.01	.00	.99	.98	.96
2.0	1.08	1.05	1.02	1.06	1.03	1.01	1.03	1.01	.99	.00	.98	.97	.97	.96	.95	.93
3.0	1.03	.00	.97	1.02	.99	.96	.99	.97	.95	.97	.95	.93	.95	.93	.92	.90
4.0	.99	.95	.93	.98	.95	.92	.96	.93	.91	.94	.92	.90	.93	.91	.89	.88
5.0	.96	.92	.89	.95	.91	.88	.93	.90	.88	.92	.89	.87	.90	.88	.86	.85
6.0	.93	.89	.86	.92	.88	.85	.91	.87	.85	.89	.86	.84	.88	.86	.84	.83
7.0	.90	.86	.83	.89	.85	.83	.88	.85	.82	.87	.84	.82	.86	.83	.81	.80
8.0	.87	.83	.80	.87	.83	.80	.86	.82	.80	.85	.82	.80	.84	.81	.79	.78
9.0	.85	.81	.78	.84	.81	.78	.84	.80	.78	.83	.80	.78	.82	.79	.77	.76
10.0	.83	.79	.76	.82	.78	.76	.81	.78	.76	.81	.78	.76	.80	.77	.75	.75



C Range: 0 - 360DEG
 C Interval: 90.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:Xie Bi
 Test Date:2023-11-15

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.286
 Humidity:65.0%
 Test Distance:6.810m [K=1.0000]
 Remarks:

WEC AND CCEC

Test:U:232.44V I:0.1208A P:14.688W PF:0.5230 Freq:50.00Hz Lamp Flux:1077.48x1 lm		
NAME: 29012LED	TYPE:	WEIGHT:
SPEC.:P-29012LED-15W3024-CI40031R90-HEK700	DIM.:	SERIAL No.:
MFR.: CETTIGA	SUR.:	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	.135	.077	.024	.128	.073	.023	.116	.066	.021	.104	.060	.019	.093	.054	.017	
2.0	.125	.068	.021	.119	.066	.020	.109	.061	.019	.099	.056	.017	.091	.051	.016	
3.0	.116	.062	.019	.112	.060	.018	.103	.056	.017	.095	.052	.016	.088	.049	.015	
4.0	.109	.057	.017	.105	.055	.016	.098	.052	.015	.091	.049	.015	.085	.046	.014	
5.0	.102	.052	.015	.099	.051	.015	.093	.048	.014	.087	.046	.014	.082	.044	.013	
6.0	.097	.049	.014	.094	.047	.014	.089	.045	.013	.084	.043	.013	.079	.042	.012	
7.0	.092	.045	.013	.089	.045	.013	.085	.043	.012	.080	.041	.012	.076	.040	.012	
8.0	.087	.043	.012	.085	.042	.012	.081	.041	.012	.077	.039	.011	.074	.038	.011	
9.0	.083	.040	.011	.082	.040	.011	.078	.039	.011	.075	.037	.011	.071	.036	.010	
10.0	.080	.038	.011	.078	.038	.011	.075	.037	.010	.072	.036	.010	.069	.035	.010	

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	.193	.193	.193	.165	.165	.165	.113	.113	.113	.065	.065	.065	.021	.021	.021	
1.0	.171	.160	.151	.146	.138	.130	.100	.095	.090	.058	.055	.052	.018	.018	.017	
2.0	.153	.135	.121	.131	.116	.104	.090	.081	.073	.052	.047	.043	.017	.015	.014	
3.0	.137	.116	.099	.118	.100	.086	.081	.069	.060	.047	.041	.035	.015	.013	.012	
4.0	.125	.100	.082	.107	.087	.071	.074	.061	.050	.043	.035	.030	.014	.012	.010	
5.0	.114	.088	.069	.098	.076	.060	.068	.053	.042	.039	.031	.025	.013	.010	.008	
6.0	.105	.078	.059	.091	.068	.051	.062	.047	.036	.036	.028	.021	.012	.009	.007	
7.0	.098	.070	.050	.084	.061	.044	.058	.042	.031	.034	.025	.019	.011	.008	.006	
8.0	.091	.063	.044	.078	.055	.038	.054	.038	.027	.032	.023	.016	.010	.007	.005	
9.0	.085	.057	.039	.074	.050	.034	.051	.035	.024	.030	.021	.014	.010	.007	.005	
10.0	.080	.053	.034	.069	.046	.030	.048	.032	.021	.028	.019	.013	.009	.006	.004	

C Range: 0 - 360DEG
 C Interval: 90.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:Xie Bi
 Test Date:2023-11-15

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.286
 Humidity:65.0%
 Test Distance:6.810m [K=1.0000]
 Remarks:

UGR(Unified Glare Rating) Table

Test:U:232.44V I:0.1208A P:14.688W PF:0.5230 Freq:50.00Hz Lamp Flux:1077.48x1 lm										
NAME: 29012LED					TYPE:			WEIGHT:		
SPEC.:P-29012LED-15W3024-CI40031R90-HEK700					DIM.:			SERIAL No.:		
MFR.: CETTIGA					SUR.:			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	7.1	7.7	7.3	7.9	8.0	7.3	7.9	7.5	8.1	8.2
3H	7.0	7.5	7.2	7.7	7.9	7.2	7.7	7.4	7.9	8.1
4H	6.9	7.4	7.1	7.7	7.9	7.1	7.6	7.3	7.8	8.1
6H	6.8	7.3	7.1	7.6	7.8	7.0	7.5	7.3	7.8	8.0
8H	6.7	7.3	7.0	7.5	7.8	6.9	7.5	7.2	7.7	8.0
12H	6.7	7.2	7.0	7.5	7.7	6.9	7.4	7.2	7.7	7.9
4H 2H	6.9	7.5	7.2	7.7	7.9	7.1	7.7	7.4	7.9	8.1
3H	6.8	7.3	7.1	7.5	7.8	7.0	7.5	7.3	7.7	8.0
4H	6.7	7.1	7.0	7.4	7.7	6.9	7.3	7.2	7.6	7.9
6H	6.6	7.0	6.9	7.3	7.6	6.8	7.2	7.1	7.5	7.8
8H	6.5	6.9	6.9	7.2	7.6	6.7	7.1	7.1	7.4	7.8
12H	6.4	6.8	6.9	7.2	7.6	6.7	7.0	7.1	7.4	7.8
8H 4H	6.5	6.9	6.9	7.2	7.6	6.7	7.1	7.1	7.4	7.8
6H	6.4	6.7	6.8	7.1	7.5	6.6	6.9	7.0	7.3	7.7
8H	6.3	6.6	6.8	7.0	7.5	6.5	6.8	7.0	7.2	7.7
12H	6.3	6.5	6.7	6.9	7.4	6.5	6.7	6.9	7.2	7.6
12H 4H	6.4	6.8	6.9	7.2	7.6	6.7	7.0	7.1	7.4	7.8
6H	6.3	6.6	6.8	7.0	7.5	6.5	6.8	7.0	7.2	7.7
8H	6.3	6.5	6.7	6.9	7.4	6.5	6.7	6.9	7.2	7.6
Variations with the observer position at spacings:										
S = 1.0H	+ 1.9 / - 3.7					+ 2.7 / - 9.6				
1.5H	+ 1.3 / - 2.4					+ 2.7 / - 4.4				
2.0H	+ 3.8 / -14.4					+ 5.2 / -17.8				

CIE Pub.117, 1077 lm Total Lamp Luminous Flux Correct (8log(F/F0) = 0.3)
 Area: 0.005 m2

C Range: 0 - 360DEG
 C Interval: 90.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:Xie Bi
 Test Date:2023-11-15

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.286
 Humidity:65.0%
 Test Distance:6.810m [K=1.0000]
 Remarks:

UTILIZATION FACTORS TABLE

Test:U:232.44V I:0.1208A P:14.688W PF:0.5230 Freq:50.00Hz Lamp Flux:1077.48x1 lm		
NAME: 29012LED	TYPE:	WEIGHT:
SPEC.:P-29012LED-15W3024-CI40031R90-HEK700	DIM.:	SERIAL No.:
MFR.: CETTIGA	SUR.:	Shielding Angle:

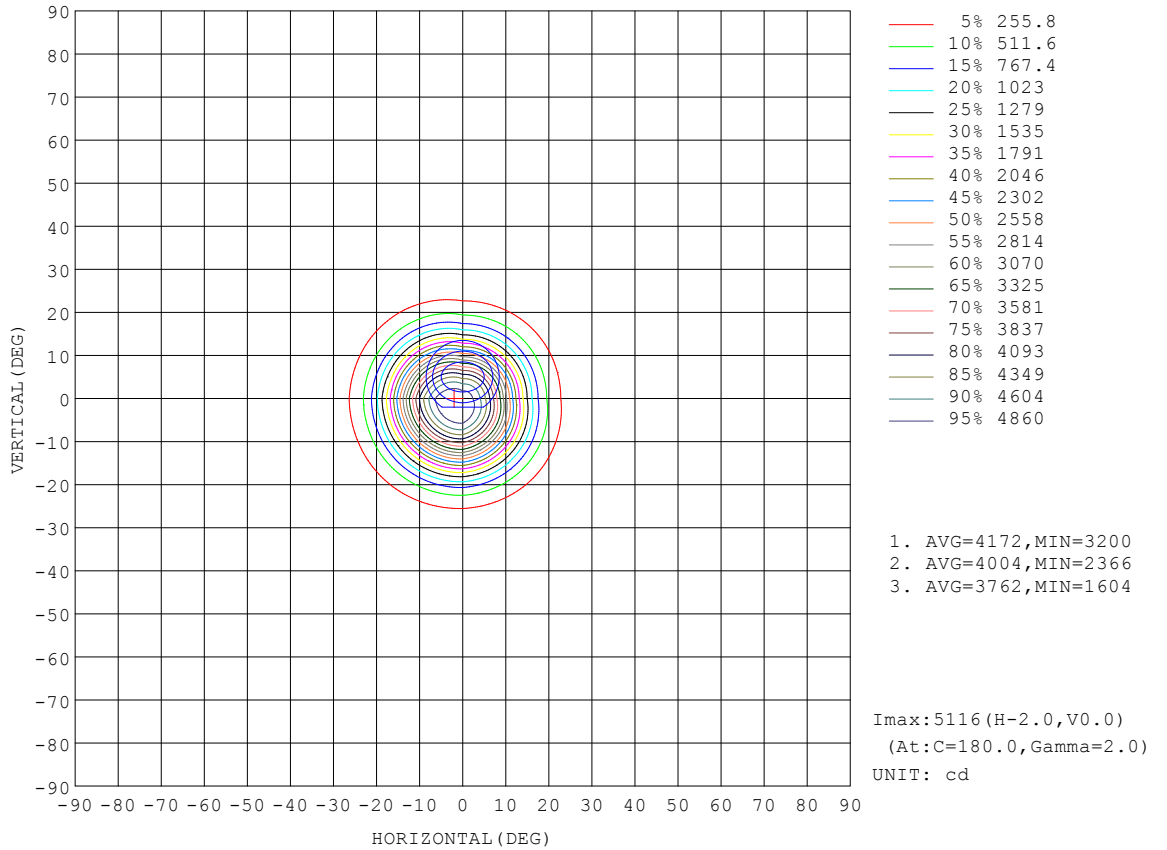
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS (PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	90	84	81	89	84	80	89	84	80	77
0.80	97	92	88	96	91	88	95	91	88	84
1.00	101	96	93	100	95	92	99	95	92	88
1.25	105	100	97	104	99	96	102	98	96	92
1.50	107	103	100	106	102	99	104	101	98	94
2.00	109	106	103	108	105	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	98
5.00	115	113	112	113	112	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: 90.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:Xie Bi
 Test Date:2023-11-15

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.286
 Humidity:65.0%
 Test Distance:6.810m [K=1.0000]
 Remarks:

ISOCANDELA DIAGRAM

Test:U:232.44V I:0.1208A P:14.688W PF:0.5230 Freq:50.00Hz Lamp Flux:1077.48x1 lm		
NAME: 29012LED	TYPE:	WEIGHT:
SPEC.:P-29012LED-15W3024-CI40031R90-HEK700	DIM.:	SERIAL No.:
MFR.: CETTIGA	SUR.:	Shielding Angle:

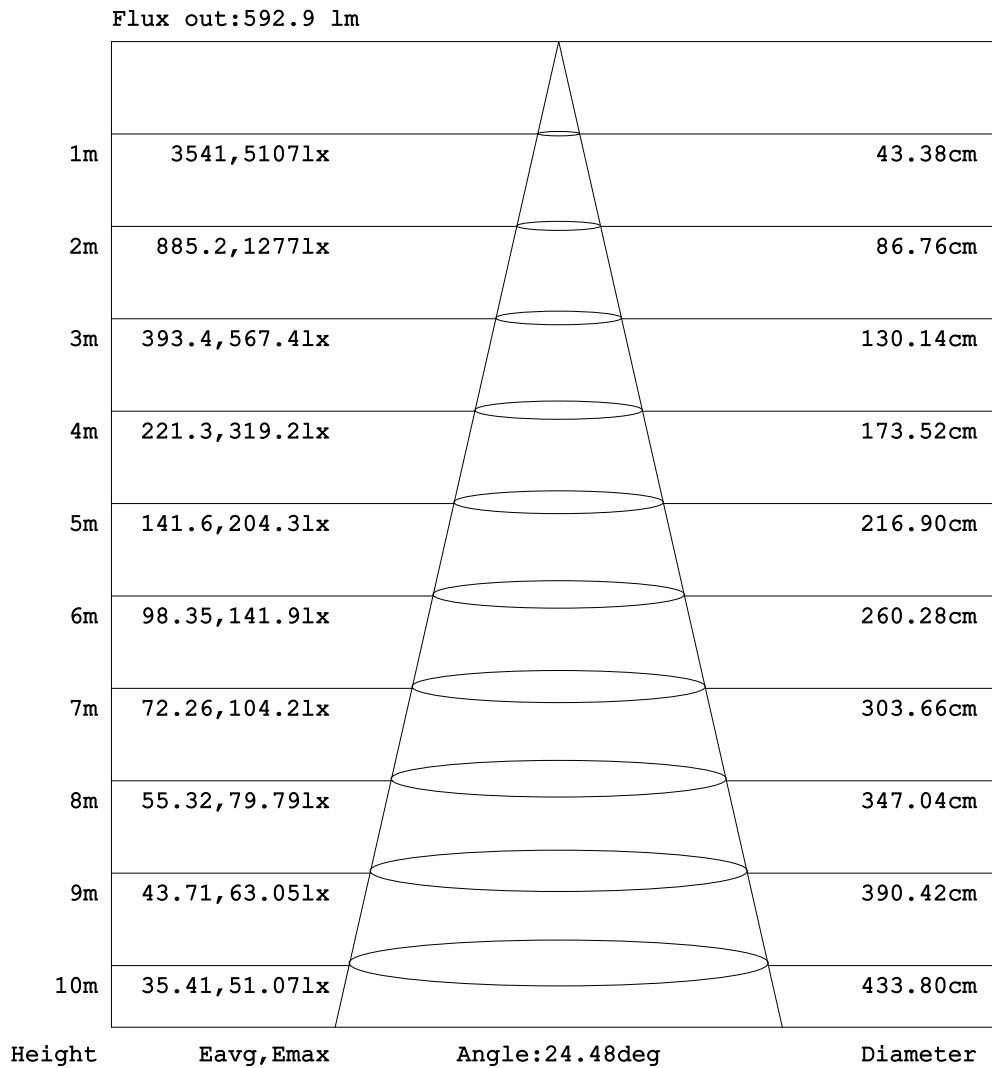


C Range: 0 - 360DEG
 C Interval: 90.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:Xie Bi
 Test Date:2023-11-15

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.286
 Humidity:65.0%
 Test Distance:6.810m [K=1.0000]
 Remarks:

AAI Figure

Test:U:232.44V I:0.1208A P:14.688W PF:0.5230 Freq:50.00Hz Lamp Flux:1077.48x1 lm		
NAME: 29012LED	TYPE:	WEIGHT:
SPEC.:P-29012LED-15W3024-CI40031R90-HEK700	DIM.:	SERIAL No.:
MFR.: CETTIGA	SUR.:	Shielding Angle:



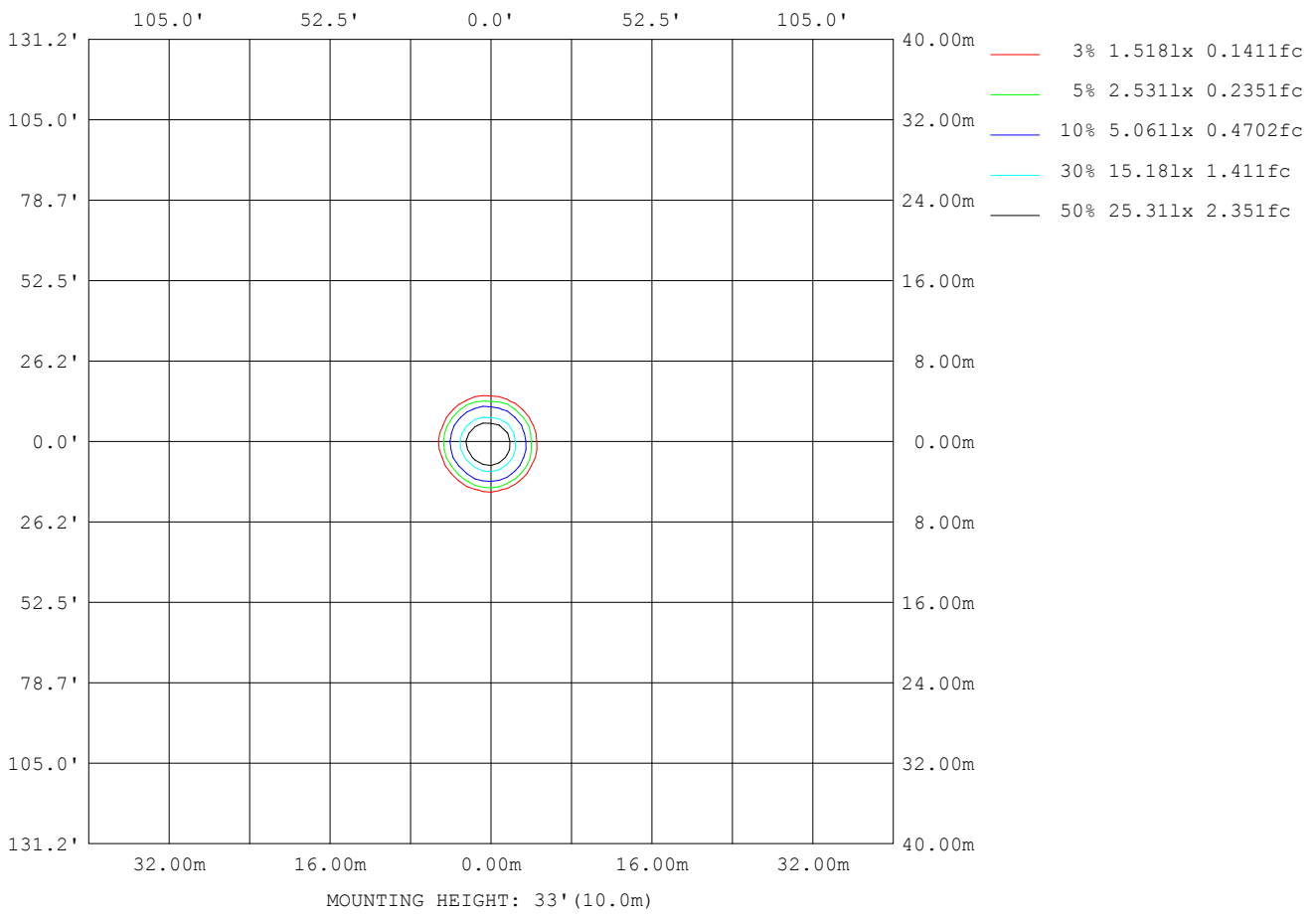
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
 C Interval: 90.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: Xie Bi
 Test Date: 2023-11-15

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.286
 Humidity: 65.0%
 Test Distance: 6.810m [K=1.0000]
 Remarks:

ISOLUX DIAGRAM

Test:U:232.44V I:0.1208A P:14.688W PF:0.5230 Freq:50.00Hz Lamp Flux:1077.48x1 lm		
NAME: 29012LED	TYPE:	WEIGHT:
SPEC.:P-29012LED-15W3024-CI40031R90-HEK700	DIM.:	SERIAL No.:
MFR.: CETTIGA	SUR.:	Shielding Angle:



C Range: 0 - 360DEG
 C Interval: 90.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:Xie Bi
 Test Date:2023-11-15

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.286
 Humidity:65.0%
 Test Distance:6.810m [K=1.0000]
 Remarks:

LED Avg.L Report

Test:U:232.44V I:0.1208A P:14.688W PF:0.5230 Freq:50.00Hz Lamp Flux:1077.48x1 lm		
NAME: 29012LED	TYPE:	WEIGHT:
SPEC.:P-29012LED-15W3024-CI40031R90-HEK700	DIM.:	SERIAL No.:
MFR.: CETTIGA	SUR.:	Shielding Angle:

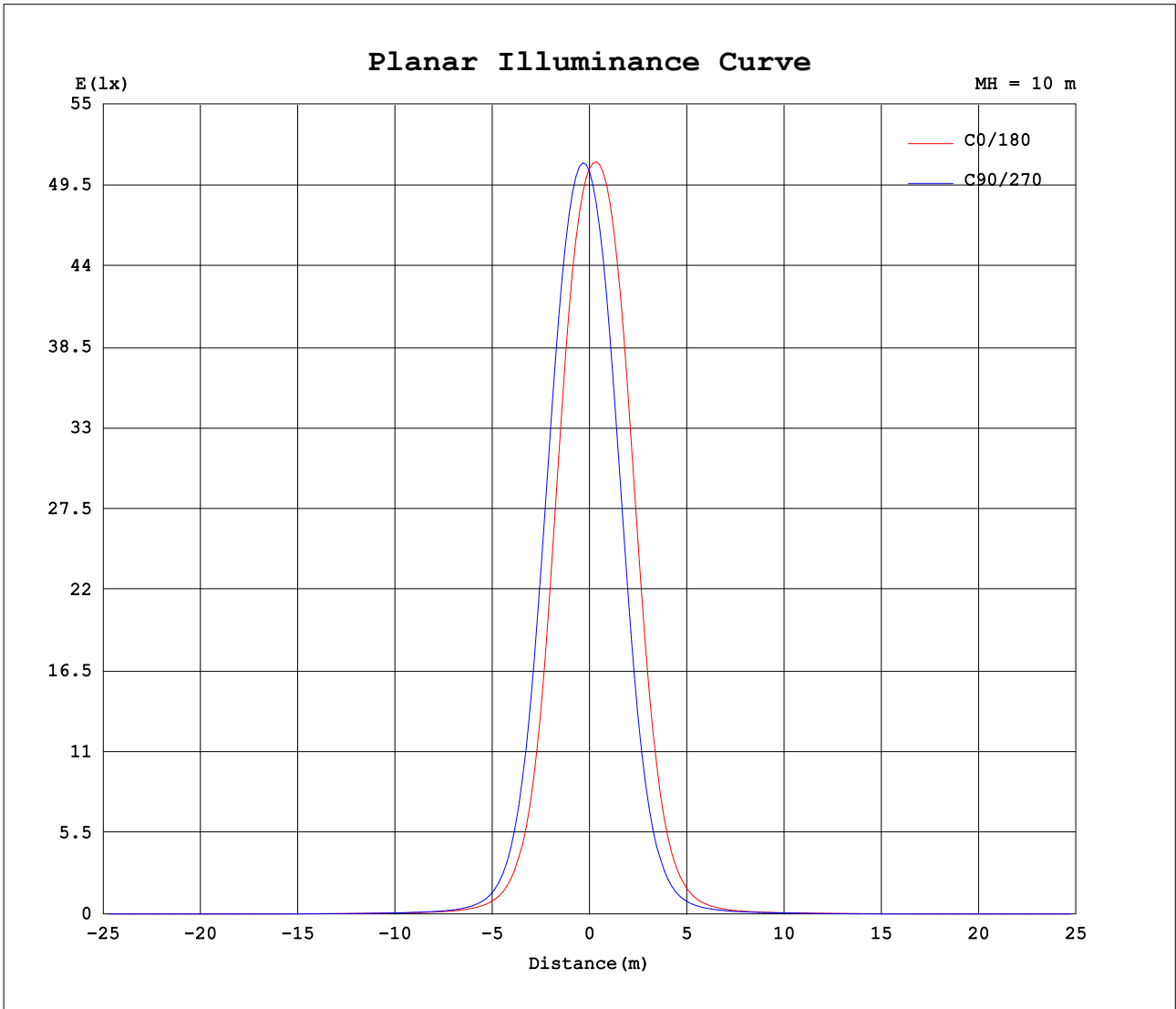
AvgL	cd/m2
L_0~180 (65) av	190
L_0~180 (75) av	0
L_0~180 (85) av	0
L_90~270 (65) av	51
L_90~270 (75) av	7
L_90~270 (85) av	0
L_45 (65) av	103
L_45 (75) av	5
L_45 (85) av	0

Standard: GB/T 29293-2012

C Range: 0 - 360DEG
 C Interval: 90.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:Xie Bi
 Test Date:2023-11-15

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.286
 Humidity:65.0%
 Test Distance:6.810m [K=1.0000]
 Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG
 C Interval: 90.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: Xie Bi
 Test Date: 2023-11-15

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.286
 Humidity: 65.0%
 Test Distance: 6.810m [K=1.0000]
 Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:232.44V I:0.1208A P:14.688W PF:0.5230 Freq:50.00Hz Lamp Flux:1077.48x1 lm		
NAME: 29012LED	TYPE:	WEIGHT:
SPEC.:P-29012LED-15W3024-CI40031R90-HEK700	DIM.:	SERIAL No.:
MFR.: CETTIGA	SUR.:	Shielding Angle:

Table--1

UNIT: cd

C (DEG) \ γ (DEG)	0	90	180	270																
0	5061	5038	5061	5038																
5	4416	4956	5009	4251																
10	2870	3917	4107	2700																
15	1270	2231	2406	1221																
20	465	881	981	454																
25	162	287	339	158																
30	71.2	107	123	70.5																
35	38.2	50.6	56.9	39.5																
40	25.6	31.0	33.2	26.7																
45	19.3	22.2	23.5	20.1																
50	14.6	12.8	18.1	11.4																
55	9.45	4.44	11.5	3.20																
60	3.17	0.52	3.99	0.43																
65	0.39	0.12	0.41	0.09																
70	0.08	0.02	0.09	0.03																
75	0.00	0.00	0.00	0.02																
80	0.00	0.00	0.00	0.01																
85	0.00	0.00	0.00	0.00																
90	0.00	0.00	0.00	0.00																
95	0.00	0.00	0.00	0.00																
100	0.00	0.00	0.00	0.00																
105	0.00	0.00	0.00	0.00																
110	0.00	0.02	0.00	0.00																
115	0.18	0.10	0.13	0.08																
120	0.16	0.08	0.11	0.06																
125	0.13	0.07	0.12	0.07																
130	0.13	0.10	0.11	0.09																
135	0.23	0.16	0.12	0.13																
140	0.52	0.30	0.17	0.23																
145	1.16	0.66	0.27	0.46																
150	2.34	1.39	0.64	1.08																
155	3.76	2.74	1.39	2.20																
160	4.97	4.22	2.48	3.42																
165	5.57	5.29	3.59	4.30																
170	5.51	5.74	4.39	4.71																
175	5.21	5.51	4.84	4.82																
180	5.09	5.25	5.11	5.24																

C Range: 0 - 360DEG
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 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.286
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 Remarks: