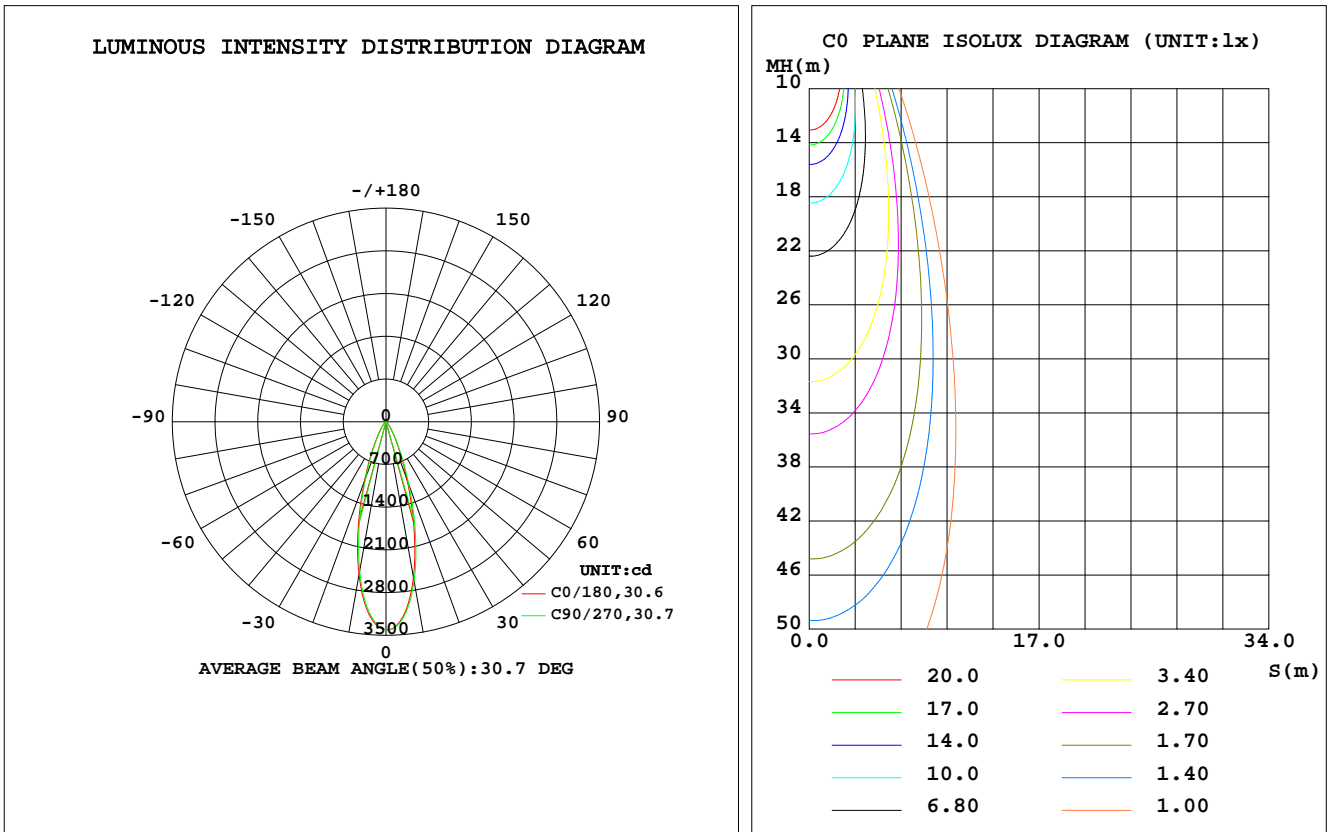


## LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:220.12V I:0.4377A P:49.695W PF:0.5158 Freq:50.01Hz Lamp Flux:1194.36x1 lm		
NAME: Triplepar	TYPE:LED	WEIGHT:N/A
SPEC.:N/A	DIM.:	SERIAL No.:N/A
MFR.: Astera LED Technology GmbH	SUR.:	Shielding Angle:N/A

DATA OF LAMP		PHOTOMETRIC DATA Eff: 24.03 lm/W			
MODEL	AX5 (flood)	Imax(cd)	3411	S/MH(C0/180)	0.51
NOMINAL POWER(W)	45	LOR(%)	100.0	S/MH(C90/270)	0.49
RATED VOLTAGE(V)	90-264	TOTAL FLUX(lm)	1194.4	$\eta$ UP,DN(C0-180)	0.1,50.8
NOMINAL FLUX(lm)	1194.36	CIE CLASS	DIRECT	$\eta$ UP,DN(C180-360)	0.1,49.0
LAMPS INSIDE	1	$\eta$ up(%)	0.2	CIBSE SHR NOM	0.50
TEST VOLTAGE(V)	220	$\eta$ down(%)	99.8	CIBSE SHR MAX	0.50



C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:24.5DEG  
 Operators:William  
 Test Date:2019-12-09

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.366  
 Humidity:56.4%  
 Test Distance:26.000m [K=1.3890]  
 Remarks:

## ZONAL FLUX DIAGRAM

### ZONAL FLUX DIAGRAM:

$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315	$\gamma$	$\Phi$ zone	$\Phi$ total	%lum, lamp
10	2593	2633	2652	2583	2551	2507	2491	2549	0- 10	284.2	284.2	23.8,23.8
20	1013	1048	1104	1061	1029	1002	965.4	1008	10- 20	478.8	763.0	63.9,63.9
30	272.0	280.9	294.2	293.8	289.9	284.8	264.3	271.9	20- 30	258.9	1022	85.6,85.6
40	78.82	79.53	81.26	84.82	84.64	81.44	75.89	77.94	30- 40	97.63	1120	93.7,93.7
50	29.11	29.28	29.33	29.68	29.68	29.33	28.70	29.96	40- 50	37.50	1157	96.9,96.9
60	15.92	16.01	15.38	15.77	15.60	15.17	14.98	15.65	50- 60	19.11	1176	98.5,98.5
70	8.157	8.217	7.553	7.933	7.751	7.322	6.859	7.598	60- 70	11.19	1187	99.4,99.4
80	1.988	1.762	1.545	1.622	1.306	0.7332	0.1459	0.9491	70- 80	4.519	1192	99.8,99.8
90	0	0	0	0	0	0	0	0	80- 90	0.2228	1192	99.8,99.8
100	0	0	0	0	0	0	0	0	90-100	0	1192	99.8,99.8
110	0	0	0	0	0	0	0	0	100-110	0	1192	99.8,99.8
120	0	0	0	0	0	0	0	0	110-120	0	1192	99.8,99.8
130	0	0	0	0	0	0	0	0	120-130	0	1192	99.8,99.8
140	0	0	0	0	0	0	0.0009	0	130-140	0.0000	1192	99.8,99.8
150	0.7298	0.4378	0.5076	0.6503	0.8820	0.9535	0.8781	0.8799	140-150	0.1277	1192	99.8,99.8
160	2.490	2.342	2.336	2.418	2.936	3.010	2.934	2.858	150-160	0.7549	1193	99.9,99.9
170	3.955	4.033	4.168	4.026	4.397	4.621	4.391	4.472	160-170	0.9717	1194	100,100
180	5.056	4.987	4.975	4.909	4.983	5.060	5.048	4.984	170-180	0.4504	1194	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Conical surface Flux(90deg): 1142.2 lm

%lum = 95.6%

%lamp = 95.6%

Conical surface Flux(120deg): 1176.1 lm

%lum = 98.5%

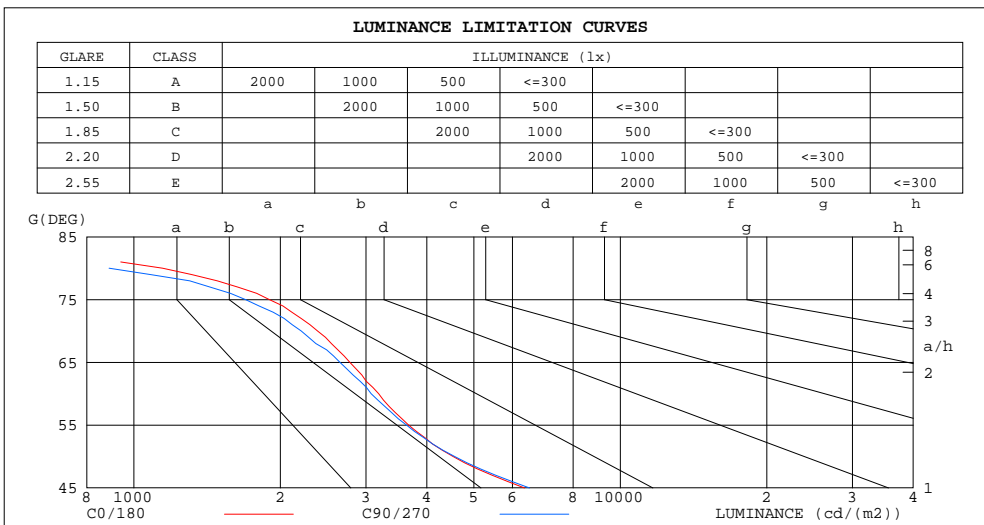
%lamp = 98.5%

C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature:24.5DEG  
Operators:William  
Test Date:2019-12-09

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.366  
Humidity:56.4%  
Test Distance:26.000m [K=1.3890]  
Remarks:

## LUMINANCE LIMITATION CURVES

Test:U:220.12V I:0.4377A P:49.695W PF:0.5158 Freq:50.01Hz Lamp Flux:1194.36x1 lm		
NAME: Triplepar	TYPE:LED	WEIGHT:N/A
SPEC.:N/A	DIM.:	SERIAL No.:N/A
MFR.: Astera LED Technology GmbH	SUR.:	Shielding Angle:N/A



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	0	0
80	1145	889
75	1899	1696
70	2385	2208
65	2780	2652
60	3184	3075
55	3670	3635
50	4529	4562
45	6351	6505

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:24.5DEG  
 Operators:William  
 Test Date:2019-12-09

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.366  
 Humidity:56.4%  
 Test Distance:26.000m [K=1.3890]  
 Remarks:

## WEC AND CCEC

Test:U:220.12V I:0.4377A P:49.695W PF:0.5158 Freq:50.01Hz Lamp Flux:1194.36x1 lm								
NAME: Triplepar				TYPE:LED			WEIGHT:N/A	
SPEC.:N/A				DIM.:			SERIAL No.:N/A	
MFR.: Astera LED Technology GmbH				SUR.:			Shielding Angle:N/A	

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	.158	.090	.029	.152	.086	.027	.139	.080	.025	.127	.073	.024	.117	.068	.022		
2.0	.149	.082	.025	.144	.079	.024	.133	.074	.023	.123	.069	.022	.114	.065	.020		
3.0	.140	.075	.022	.136	.073	.022	.127	.069	.021	.118	.065	.020	.111	.061	.019		
4.0	.132	.069	.020	.128	.067	.020	.121	.064	.019	.114	.061	.018	.107	.058	.018		
5.0	.125	.064	.018	.121	.062	.018	.115	.060	.018	.109	.057	.017	.103	.055	.017		
6.0	.118	.059	.017	.115	.058	.017	.110	.056	.016	.104	.054	.016	.100	.052	.016		
7.0	.113	.056	.016	.110	.055	.016	.105	.053	.015	.100	.051	.015	.096	.050	.015		
8.0	.107	.052	.015	.105	.052	.015	.101	.050	.014	.097	.049	.014	.093	.048	.014		
9.0	.103	.050	.014	.101	.049	.014	.097	.048	.014	.093	.047	.013	.089	.045	.013		
10.0	.098	.047	.013	.096	.047	.013	.093	.046	.013	.090	.045	.013	.086	.044	.012		

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	.192	.192	.192	.164	.164	.164	.112	.112	.112	.064	.064	.064	.021	.021	.021		
1.0	.171	.159	.148	.147	.136	.127	.100	.094	.088	.058	.054	.051	.018	.017	.017		
2.0	.155	.134	.117	.133	.115	.101	.091	.080	.070	.052	.046	.041	.017	.015	.013		
3.0	.141	.115	.094	.121	.099	.082	.083	.069	.057	.048	.040	.034	.015	.013	.011		
4.0	.130	.100	.077	.111	.086	.067	.076	.060	.047	.044	.035	.028	.014	.011	.009		
5.0	.120	.088	.064	.103	.076	.056	.071	.053	.040	.041	.031	.023	.013	.010	.008		
6.0	.112	.078	.054	.096	.068	.047	.066	.047	.033	.038	.028	.020	.012	.009	.007		
7.0	.104	.070	.046	.090	.061	.041	.062	.043	.029	.036	.025	.017	.012	.008	.006		
8.0	.098	.064	.040	.085	.055	.035	.058	.039	.025	.034	.023	.015	.011	.008	.005		
9.0	.093	.058	.035	.080	.051	.031	.055	.036	.022	.032	.021	.013	.010	.007	.004		
10.0	.088	.054	.031	.076	.047	.027	.053	.033	.019	.031	.019	.011	.010	.006	.004		

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:24.5DEG  
 Operators:William  
 Test Date:2019-12-09

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.366  
 Humidity:56.4%  
 Test Distance:26.000m [K=1.3890]  
 Remarks:

## UGR(Unified Glare Rating) Table

Test:U:220.12V I:0.4377A P:49.695W PF:0.5158 Freq:50.01Hz Lamp Flux:1194.36x1 lm										
NAME: Triplepar					TYPE:LED			WEIGHT:N/A		
SPEC.:N/A					DIM.:			SERIAL No.:N/A		
MFR.: Astera LED Technology GmbH					SUR.:			Shielding Angle:N/A		
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	12.2	13.0	12.4	13.1	13.3	12.4	13.1	12.6	13.3	13.5
3H	12.6	13.3	12.8	13.5	13.7	12.7	13.4	12.9	13.6	13.8
4H	12.7	13.4	13.0	13.6	13.8	12.7	13.4	13.0	13.7	13.9
6H	12.7	13.4	13.0	13.6	13.9	12.7	13.4	13.0	13.6	13.9
8H	12.7	13.3	13.0	13.6	13.8	12.7	13.3	13.0	13.6	13.8
12H	12.7	13.3	13.0	13.5	13.8	12.7	13.3	13.0	13.5	13.8
4H 2H	12.3	13.0	12.6	13.2	13.4	12.4	13.1	12.7	13.3	13.6
3H	12.8	13.4	13.1	13.7	14.0	12.9	13.5	13.2	13.7	14.0
4H	13.0	13.6	13.3	13.9	14.2	13.0	13.5	13.3	13.8	14.2
6H	13.1	13.5	13.4	13.9	14.2	13.0	13.5	13.4	13.8	14.2
8H	13.0	13.5	13.4	13.8	14.2	13.0	13.4	13.4	13.8	14.1
12H	13.0	13.4	13.4	13.8	14.2	12.9	13.3	13.3	13.7	14.1
8H 4H	13.0	13.4	13.4	13.8	14.2	13.0	13.4	13.4	13.8	14.2
6H	13.1	13.4	13.5	13.8	14.2	13.0	13.4	13.4	13.8	14.2
8H	13.0	13.4	13.5	13.8	14.2	13.0	13.3	13.4	13.7	14.2
12H	13.0	13.3	13.4	13.7	14.2	12.9	13.2	13.4	13.6	14.1
12H 4H	12.9	13.4	13.4	13.7	14.1	12.9	13.4	13.3	13.7	14.1
6H	13.0	13.3	13.5	13.8	14.2	13.0	13.3	13.4	13.7	14.2
8H	13.0	13.3	13.5	13.7	14.2	12.9	13.2	13.4	13.7	14.1
Variations with the observer position at spacings:										
S = 1.0H	+ 1.4 / - 1.7					+ 1.6 / - 1.9				
1.5H	+ 2.6 / - 1.3					+ 2.8 / - 1.5				
2.0H	+ 1.7 / - 0.9					+ 1.9 / - 1.0				

CIE Pub.117, 1194 lm Total Lamp Luminous Flux Corrected ( $8\log(F/F_0) = 0.6$ )

C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature:24.5DEG  
Operators:William  
Test Date:2019-12-09

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.366  
Humidity:56.4%  
Test Distance:26.000m [K=1.3890]  
Remarks:

## UTILIZATION FACTORS TABLE

Test:U:220.12V I:0.4377A P:49.695W PF:0.5158 Freq:50.01Hz Lamp Flux:1194.36x1 lm		
NAME: Triplepar	TYPE:LED	WEIGHT:N/A
SPEC.:N/A	DIM.:	SERIAL No.:N/A
MFR.: Astera LED Technology GmbH	SUR.:	Shielding Angle:N/A

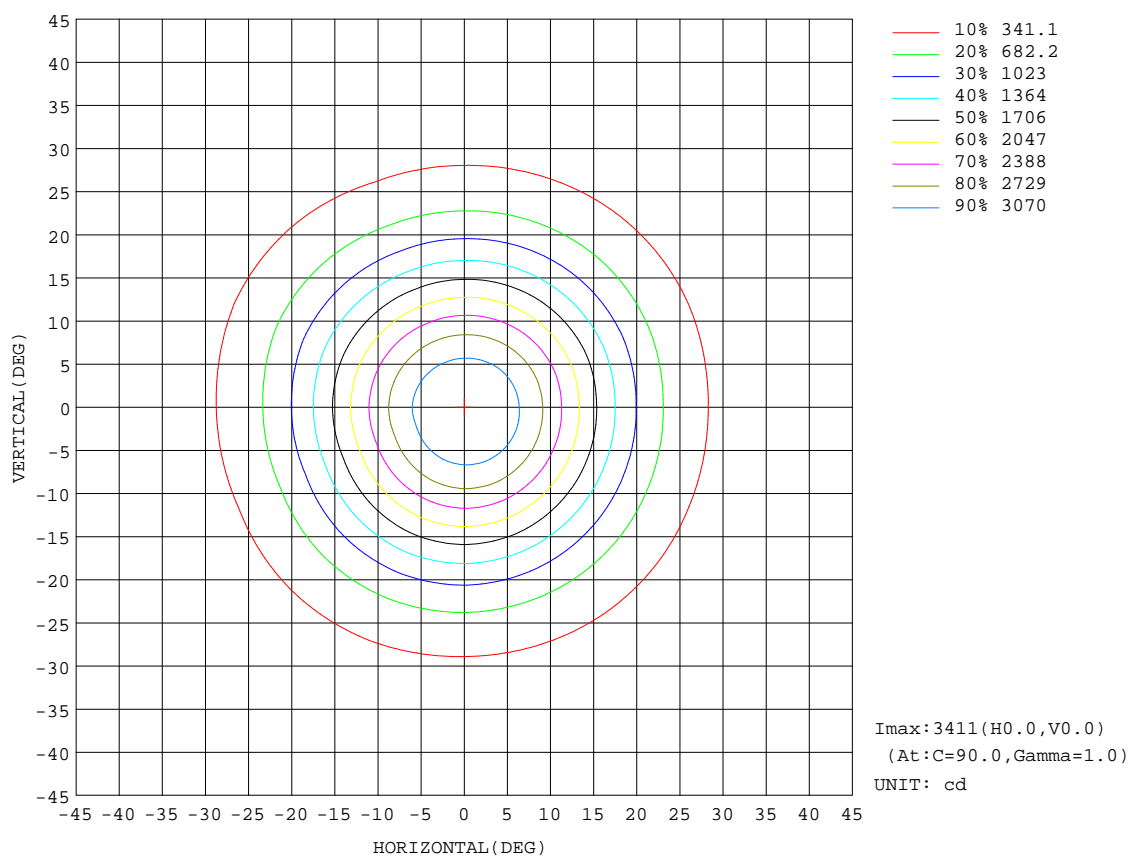
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	88	81	78	87	81	78	86	81	77	74
0.80	95	89	86	94	89	85	93	88	85	81
1.00	99	94	90	98	93	90	97	93	89	85
1.25	103	98	95	102	98	94	100	96	93	89
1.50	106	101	98	105	100	97	102	99	96	92
2.00	109	104	101	107	103	100	104	101	99	94
2.50	110	106	103	109	105	103	105	103	101	95
3.00	112	108	106	110	107	105	107	104	102	96
4.00	114	111	109	112	109	107	108	106	105	98
5.00	115	113	111	113	111	109	109	108	106	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:24.5DEG  
 Operators:William  
 Test Date:2019-12-09

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.366  
 Humidity:56.4%  
 Test Distance:26.000m [K=1.3890]  
 Remarks:

## ISOCANDELA DIAGRAM

Test:U:220.12V I:0.4377A P:49.695W PF:0.5158 Freq:50.01Hz Lamp Flux:1194.36x1 lm		
NAME: Triplepar	TYPE:LED	WEIGHT:N/A
SPEC.:N/A	DIM.:	SERIAL No.:N/A
MFR.: Astera LED Technology GmbH	SUR.:	Shielding Angle:N/A

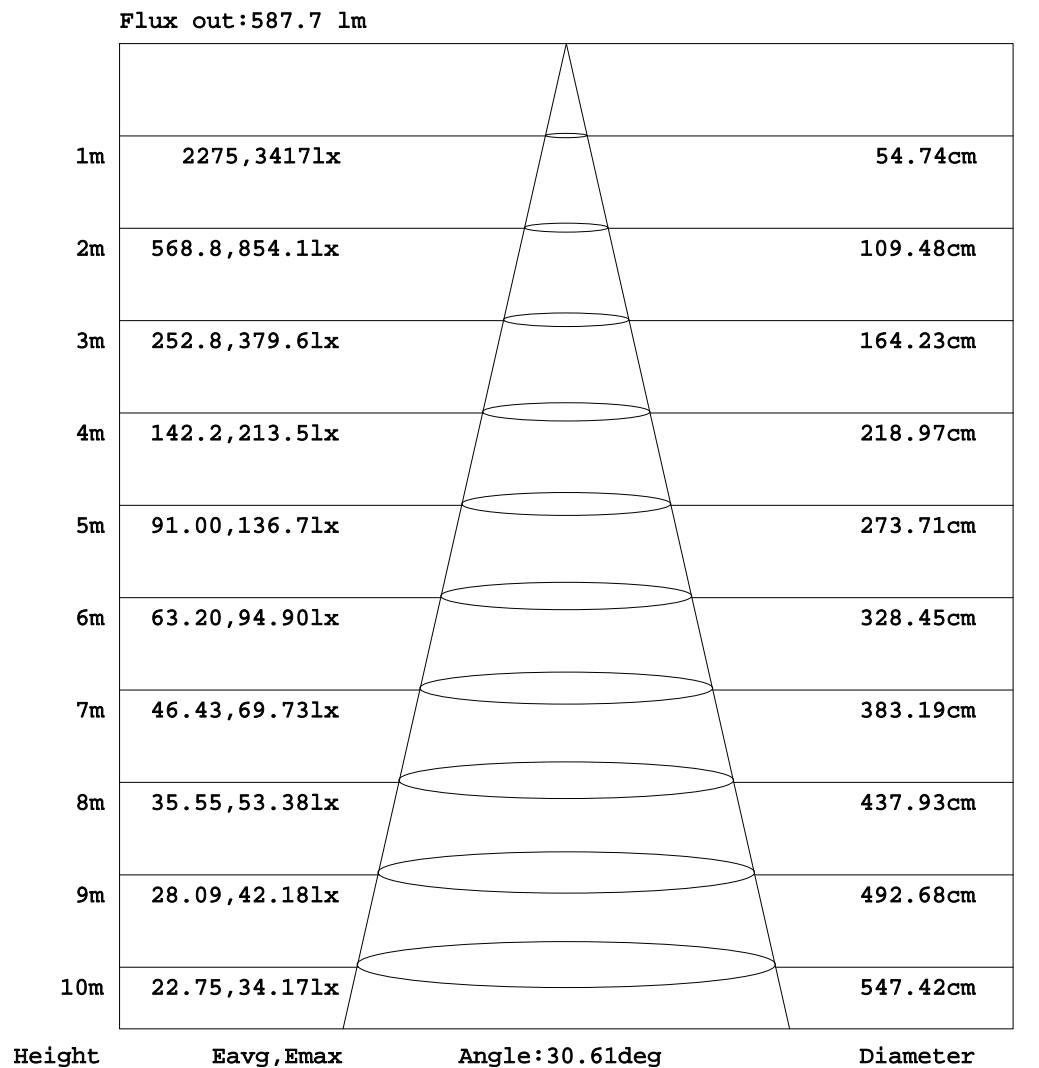


C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature: 24.5DEG  
Operators: William  
Test Date: 2019-12-09

γ Range: 0 - 180DEG  
γ Interval: 1.0DEG  
Test System: EVERFINE GO-R5000\_V2 SYSTEM V2.0.366  
Humidity: 56.4%  
Test Distance: 26.000m [K=1.3890]  
Remarks:

## AAI Figure

Test:U:220.12V I:0.4377A P:49.695W PF:0.5158 Freq:50.01Hz Lamp Flux:1194.36x1 lm		
NAME: Triplepar	TYPE:LED	WEIGHT:N/A
SPEC.:N/A	DIM.:	SERIAL No.:N/A
MFR.: Astera LED Technology GmbH	SUR.:	Shielding Angle:N/A



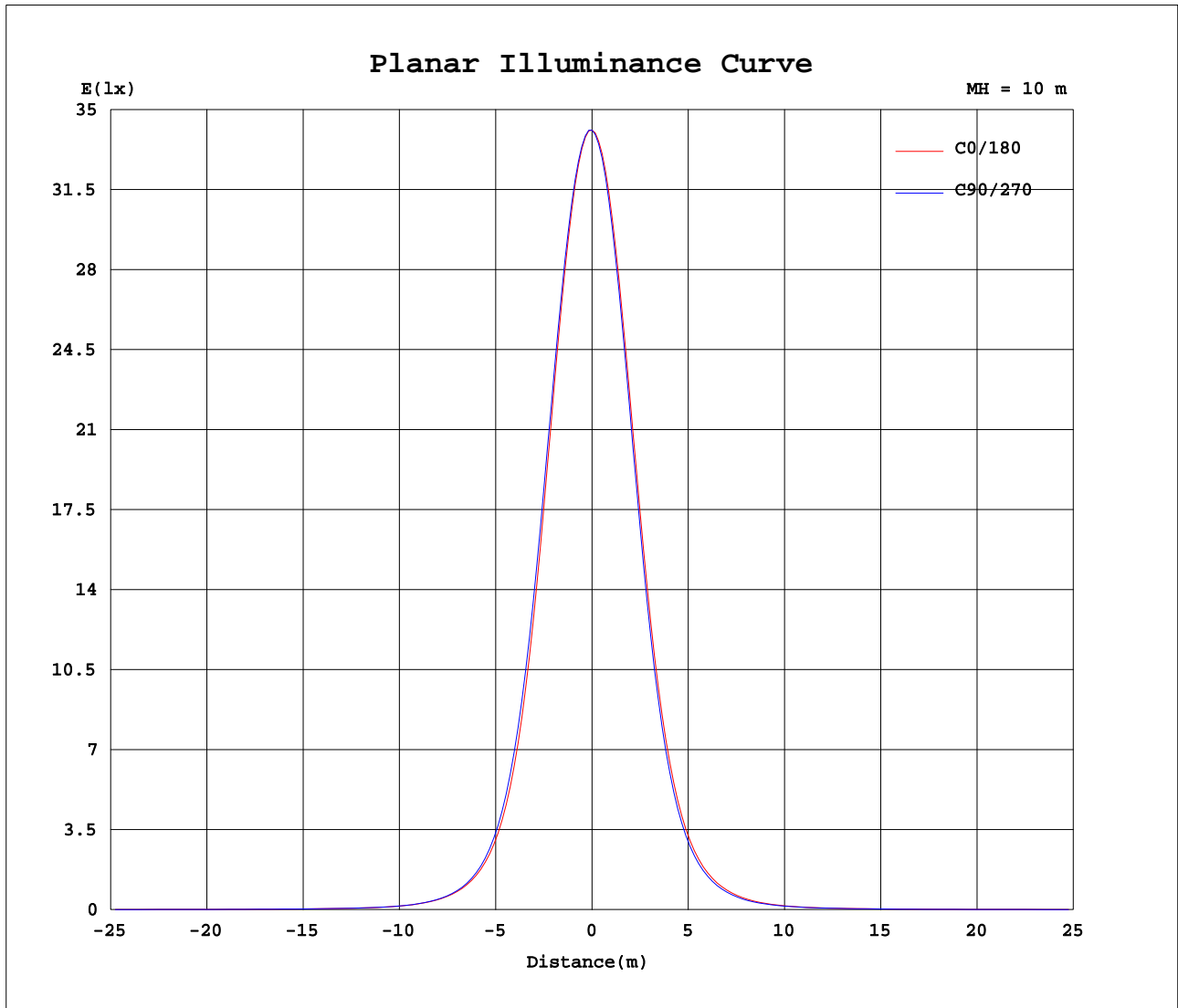
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:24.5DEG  
 Operators:William  
 Test Date:2019-12-09

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.366  
 Humidity:56.4%  
 Test Distance:26.000m [K=1.3890]  
 Remarks:



## Planar Illuminance Curve



C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature: 24.5DEG  
Operators: William  
Test Date: 2019-12-09

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
Test System: EVERFINE GO-R5000\_V2 SYSTEM V2.0.366  
Humidity: 56.4%  
Test Distance: 26.000m [K=1.3890]  
Remarks:

## LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:220.12V I:0.4377A P:49.695W PF:0.5158 Freq:50.01Hz Lamp Flux:1194.36x1 lm																		
NAME: Triplepar									TYPE:LED					WEIGHT:N/A				
SPEC.:N/A									DIM.:					SERIAL No.:N/A				
MFR.: Astera LED Technology GmbH									SUR.:					Shielding Angle:N/A				

Table--1

UNIT: cd

C(DEG) γ (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	3411	3411	3411	3411	3411	3411	3411	3411	3411	3411	3411	3411	3411	3411	3411	3411			
5	3207	3216	3231	3233	3230	3215	3191	3174	3174	3154	3145	3136	3140	3154	3173	3197			
10	2593	2609	2633	2648	2652	2628	2583	2548	2551	2528	2507	2485	2491	2514	2549	2588			
15	1763	1779	1808	1840	1856	1838	1790	1738	1750	1739	1703	1671	1676	1702	1736	1772			
20	1013	1025	1048	1079	1104	1096	1061	1017	1029	1042	1002	963	965	986	1008	1030			
25	527	533	548	564	581	582	566	539	552	572	540	504	509	519	530	539			
30	272	272	281	289	294	301	294	280	290	301	285	260	264	268	272	278			
35	144	143	147	151	152	159	155	149	156	159	151	137	140	141	143	148			
40	78.8	77.8	79.5	81.3	81.3	87.0	84.8	81.3	84.6	84.2	81.4	74.5	75.9	77.1	77.9	81.2			
45	44.9	44.6	45.2	45.7	46.0	48.5	47.5	45.8	47.7	47.4	46.5	44.1	44.5	45.5	46.2	47.3			
50	29.1	29.1	29.3	29.2	29.3	30.1	29.7	29.3	29.7	29.7	29.3	28.4	28.7	29.4	30.0	29.9			
55	21.0	21.1	21.2	20.9	20.9	21.1	21.0	21.1	21.1	21.0	20.8	20.2	20.4	20.9	21.3	21.0			
60	15.9	16.0	16.0	15.6	15.4	15.6	15.8	15.9	15.6	15.5	15.2	14.8	15.0	14.3	15.7	15.4			
65	11.7	11.9	11.9	11.4	11.2	11.4	11.6	11.9	11.4	11.2	11.0	10.8	10.8	8.85	11.3	11.2			
70	8.16	8.22	8.22	7.69	7.55	7.63	7.93	8.26	7.75	7.52	7.32	7.01	6.86	6.22	7.60	7.49			
75	4.91	4.91	4.78	4.48	4.39	4.41	4.69	4.93	4.47	4.24	3.96	3.21	2.99	2.84	4.17	4.25			
80	1.99	1.84	1.76	1.70	1.54	1.54	1.62	1.85	1.31	1.32	0.73	0.22	0.15	0.22	0.95	1.39			
85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
145	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.29	0.29	0.29	0.22	0.29	0.29	0.22			
150	0.73	0.66	0.44	0.51	0.51	0.44	0.65	0.51	0.88	0.96	0.95	1.03	0.88	1.03	0.88	0.96			
155	1.61	1.60	1.32	1.39	1.31	1.39	1.46	1.32	1.98	1.98	1.91	1.98	1.90	1.83	1.61	1.99			
160	2.49	2.49	2.34	2.27	2.34	2.34	2.42	2.35	2.94	2.93	3.01	3.01	2.93	2.86	2.86	2.87			
165	3.37	3.37	3.29	3.36	3.29	3.22	3.44	3.38	3.81	3.81	3.89	3.88	3.81	3.74	3.81	3.75			
170	3.96	4.17	4.03	4.17	4.17	4.02	4.03	3.97	4.40	4.47	4.62	4.54	4.39	4.25	4.47	4.34			
175	4.91	4.97	4.91	5.05	5.04	4.91	4.84	4.85	4.87	4.91	5.06	4.95	5.12	5.05	4.91	4.93			
180	5.06	5.05	4.99	5.05	4.97	4.76	4.91	4.93	4.98	5.05	5.06	4.98	5.05	4.98	4.98	4.93			

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:24.5DEG  
 Operators:William  
 Test Date:2019-12-09

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.366  
 Humidity:56.4%  
 Test Distance:26.000m [K=1.3890]  
 Remarks: