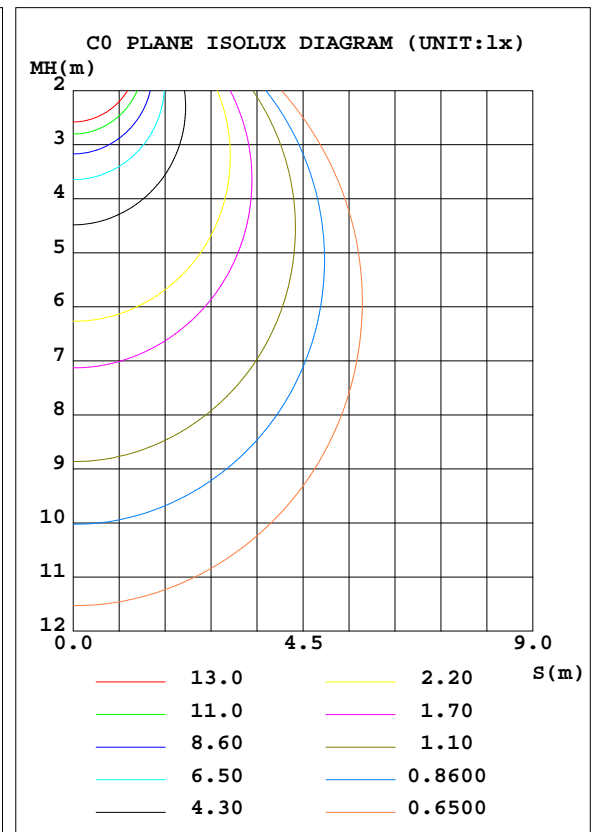
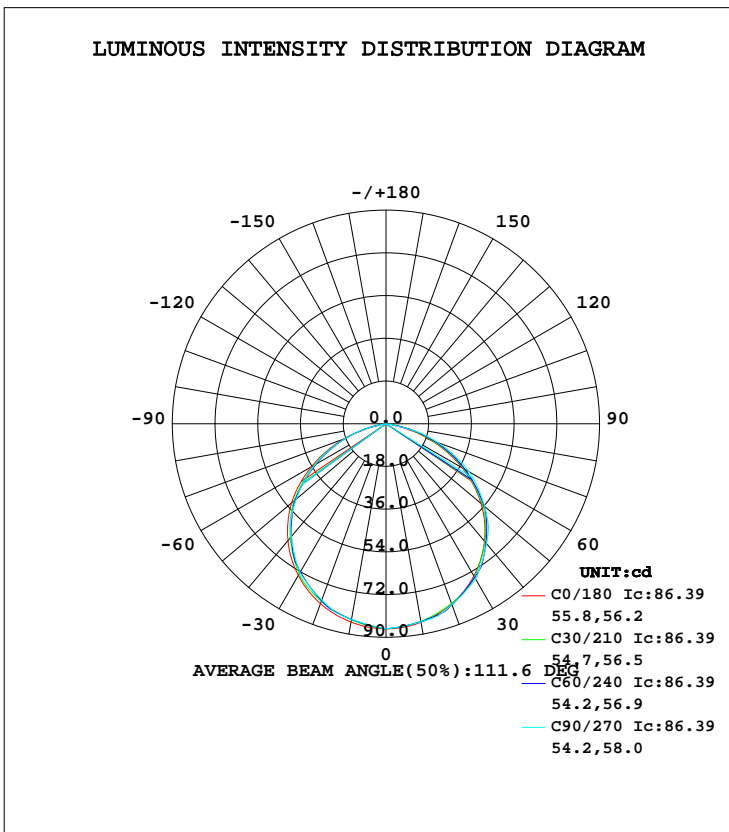


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:11.91V I:0.2851A P:2.142W PF:0.6308 Lamp Flux:180x1 lm		
NAME: 489162-3000K QUATTRO	TYPE:489162-3000K QUATTRO	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:	PROTECTION ANGLE:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 109.64 lm/W			
MODEL	489162-3000K QUATTRO	Imax(cd)	86.39	S/MH(C0/180)	1.27
NOMINAL POWER(W)	2	LOR(%)	130.5	S/MH(C90/270)	1.24
RATED VOLTAGE(V)	12	TOTAL FLUX(lm)	234.82	η UP, DN(C0-180)	0.0,67.3
NOMINAL FLUX(lm)	180	CIE CLASS	DIRECT	η UP, DN(C180-360)	0.0,63.2
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	12	η down(%)	130.5	CIBSE SHR MAX	1.35



C Range: 0 - 360DEG
 C Interval: 5.0DEG
 Test Speed: HIGH
 Temperature:20DEG
 Operators:Y
 Test Date:2026-05-12

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.291
 Humidity:65.0%
 Test Distance:8.750m [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
5	86.07	85.66	85.58	85.62	86.04	85.24	85.04	85.27	0- 5	2.053	2.053	0.87,1.14
10	84.95	84.57	84.77	84.51	84.85	83.74	83.68	83.78	5- 10	6.072	8.125	3.46,4.51
15	83.20	83.10	83.96	83.03	83.08	81.92	82.33	81.96	10- 15	9.904	18.03	7.68,10
20	80.79	81.35	81.15	81.32	80.68	79.92	79.06	79.84	15- 20	13.43	31.46	13.4,17.5
25	77.78	78.06	78.34	78.00	77.62	76.32	75.79	76.26	20- 25	16.50	47.97	20.4,26.6
30	74.07	74.33	75.53	74.21	73.85	72.17	72.52	72.18	25- 30	19.07	67.03	28.5,37.2
35	69.67	70.32	70.74	70.14	69.43	67.77	67.26	67.86	30- 35	21.02	88.05	37.5,48.9
40	64.55	65.83	65.95	65.56	64.27	62.91	62.00	63.04	35- 40	22.20	110.2	47,61.2
45	58.78	59.51	61.16	59.48	58.44	56.38	56.74	56.46	40- 45	22.63	132.9	56.6,73.8
50	52.31	53.04	54.26	53.17	51.92	49.70	49.35	49.69	45- 50	22.24	155.1	66.1,86.2
55	44.98	46.33	47.36	46.69	44.43	42.81	41.95	42.75	50- 55	20.89	176.0	75,97.8
60	37.06	38.08	40.45	38.48	36.27	34.37	34.55	34.38	55- 60	18.71	194.7	82.9,108
65	28.61	29.98	31.90	30.51	27.88	26.11	26.31	26.20	60- 65	15.79	210.5	89.6,117
70	19.82	21.86	23.34	22.42	19.11	18.08	18.06	18.23	65- 70	12.19	222.7	94.8,124
75	10.03	13.72	14.78	13.66	9.099	10.42	9.815	10.44	70- 75	8.118	230.8	98.3,128
80	2.765	5.424	0	5.001	2.295	3.285	0	3.230	75- 80	3.617	234.4	99.8,130
85	0.0168	0	0	0	0	0	0	0	80- 85	0.3813	234.8	100,130
90	0	0	0	0	0	0	0	0	85- 90	0.0016	234.8	100,130
95									90- 95			
100									95-100			
105									100-105			
110									105-110			
115									110-115			
120									115-120			
125									120-125			
130									125-130			
135									130-135			
140									135-140			
145									140-145			
150									145-150			
155									150-155			
160									155-160			
165									160-165			
170									165-170			
175									170-175			
180									175-180			
DEG	LUMINOUS INTENSITY:cd								UNIT:lm			

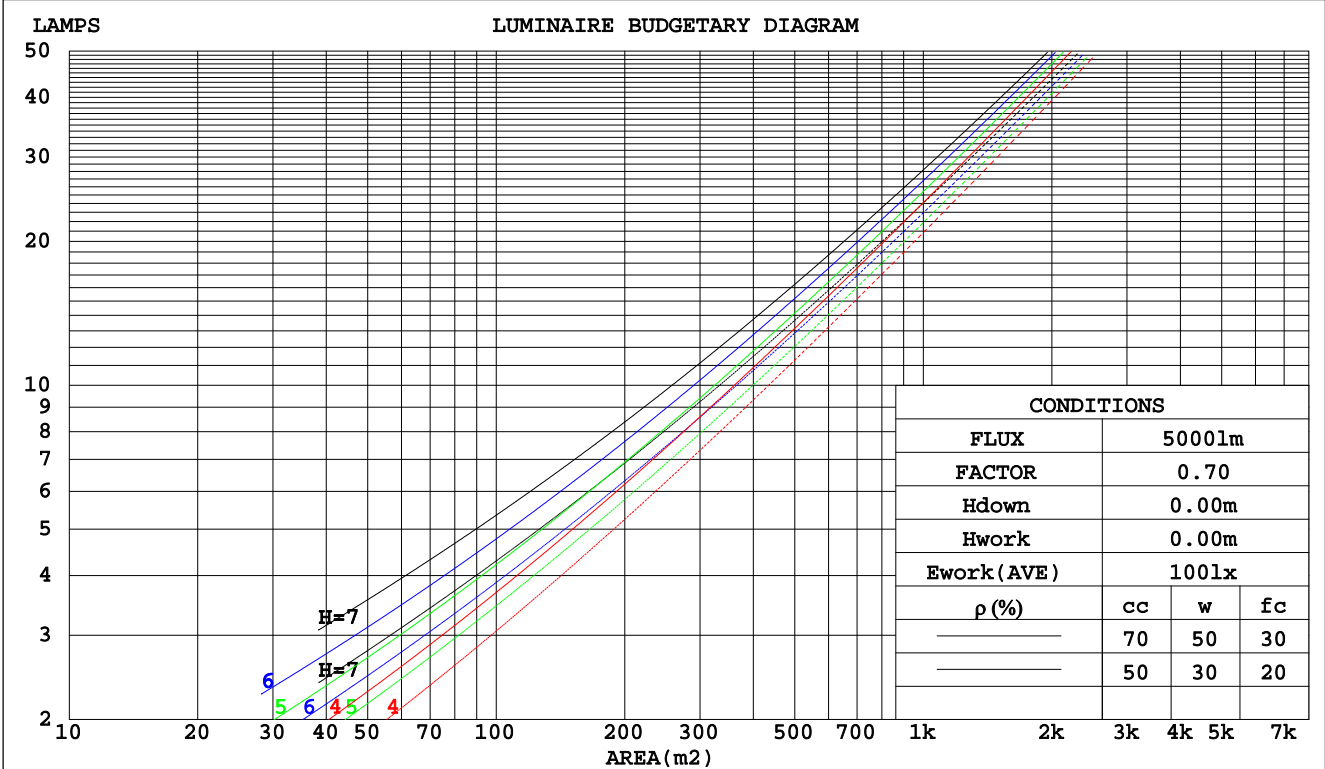
C Range: 0 - 360DEG
C Interval: 5.0DEG
Test Speed: HIGH
Temperature:20DEG
Operators:Y
Test Date:2026-05-12

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.291
Humidity:65.0%
Test Distance:8.750m [K=1.0000]
Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:11.91V I:0.2851A P:2.142W PF:0.6308 Lamp Flux:180x1 lm		
NAME: 489162-3000K QUATTRO	TYPE:489162-3000K QUATTRO	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:	PROTECTION ANGLE:

pcc	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pw																
pfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio															
	Coefficients of Utilization(CU)															
0.0	1.55	1.55	1.55	1.52	1.52	1.52	1.45	1.45	1.45	1.39	1.39	1.39	1.33	1.33	1.33	1.30
1.0	1.37	1.32	1.28	1.35	1.30	1.26	1.29	1.25	1.22	1.24	1.21	1.18	1.19	1.17	1.15	1.12
2.0	1.20	1.12	1.05	1.18	1.10	1.04	1.13	1.07	1.01	1.09	1.04	.99	1.05	1.01	.97	.94
3.0	1.06	.96	.88	1.04	.94	.87	1.00	.92	.85	.97	.90	.84	.93	.87	.82	.80
4.0	.94	.83	.74	.92	.82	.74	.89	.80	.73	.86	.78	.72	.83	.76	.71	.68
5.0	.84	.73	.64	.83	.72	.64	.80	.70	.63	.77	.69	.62	.75	.68	.62	.59
6.0	.76	.64	.56	.74	.64	.56	.72	.62	.55	.70	.61	.55	.68	.60	.54	.52
7.0	.69	.57	.49	.67	.57	.49	.65	.56	.49	.64	.55	.48	.62	.54	.48	.46
8.0	.63	.52	.44	.62	.51	.44	.60	.50	.44	.58	.50	.43	.57	.49	.43	.41
9.0	.57	.47	.40	.57	.46	.39	.55	.46	.39	.54	.45	.39	.52	.45	.39	.36
10.0	.53	.43	.36	.52	.42	.36	.51	.42	.36	.50	.41	.35	.49	.41	.35	.33



C Range: 0 - 360DEG
C Interval: 5.0DEG
Test Speed: HIGH
Temperature:20DEG
Operators:Y
Test Date:2026-05-12

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.291
Humidity:65.0%
Test Distance:8.750m [K=1.0000]
Remarks:

WEC AND CCEC

Test:U:11.91V I:0.2851A P:2.142W PF:0.6308 Lamp Flux:180x1 lm		
NAME: 489162-3000K QUATTRO	TYPE:489162-3000K QUATTRO	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:	PROTECTION 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	.367	.209	.066	.358	.204	.065	.341	.195	.062	.325	.187	.060	.310	.180	.058	
2.0	.357	.196	.060	.349	.192	.059	.334	.186	.058	.320	.180	.056	.307	.174	.055	
3.0	.336	.179	.054	.329	.176	.053	.316	.171	.052	.304	.166	.051	.292	.162	.050	
4.0	.314	.163	.048	.307	.161	.048	.296	.157	.047	.285	.153	.046	.274	.149	.045	
5.0	.292	.149	.043	.287	.147	.043	.276	.144	.042	.266	.141	.042	.257	.137	.041	
6.0	.272	.137	.039	.267	.135	.039	.258	.132	.038	.249	.130	.038	.241	.127	.038	
7.0	.254	.126	.036	.250	.125	.036	.242	.122	.035	.234	.120	.035	.227	.118	.035	
8.0	.238	.116	.033	.234	.115	.033	.227	.113	.032	.220	.111	.032	.213	.109	.032	
9.0	.224	.108	.030	.220	.107	.030	.214	.106	.030	.207	.104	.030	.201	.102	.030	
10.0	.211	.101	.028	.208	.100	.028	.202	.099	.028	.196	.097	.028	.190	.096	.027	

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	.248	.248	.248	.212	.212	.212	.145	.145	.145	.083	.083	.083	.027	.027	.027	
1.0	.233	.204	.178	.199	.175	.153	.136	.120	.106	.078	.070	.062	.025	.022	.020	
2.0	.222	.172	.131	.190	.148	.113	.130	.103	.079	.075	.060	.046	.024	.019	.015	
3.0	.212	.149	.099	.181	.129	.086	.124	.089	.060	.072	.052	.036	.023	.017	.012	
4.0	.202	.131	.078	.173	.114	.068	.119	.079	.048	.069	.046	.028	.022	.015	.009	
5.0	.192	.118	.063	.165	.102	.055	.114	.071	.039	.066	.042	.023	.021	.014	.008	
6.0	.183	.107	.052	.158	.093	.045	.109	.065	.032	.063	.038	.019	.020	.012	.006	
7.0	.175	.098	.044	.150	.085	.038	.104	.059	.027	.060	.035	.016	.020	.011	.005	
8.0	.167	.090	.038	.143	.078	.033	.099	.055	.023	.058	.032	.014	.019	.011	.005	
9.0	.159	.084	.033	.137	.073	.029	.095	.051	.021	.055	.030	.012	.018	.010	.004	
10.0	.152	.078	.030	.131	.068	.026	.091	.048	.018	.053	.028	.011	.017	.009	.004	

C Range: 0 - 360DEG
C Interval: 5.0DEG
Test Speed: HIGH
Temperature:20DEG
Operators:Y
Test Date:2026-05-12

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.291
Humidity:65.0%
Test Distance:8.750m [K=1.0000]
Remarks:

UGR(Unified Glare Rating) Table

Test:U:11.91V I:0.2851A P:2.142W PF:0.6308 Lamp Flux:180x1 lm										
NAME: 489162-3000K QUATTRO					TYPE:489162-3000K QUATTRO			WEIGHT:		
SPEC.:					DIM.:			SERIAL No.:		
MFR.:					SUR.:			PROTECTION 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	9.8	11.3	10.0	11.5	11.7	10.1	11.5	10.3	11.7	11.9
3H	11.0	12.4	11.3	12.6	12.8	11.4	12.8	11.7	13.0	13.3
4H	11.3	12.6	11.6	12.8	13.1	11.9	13.2	12.2	13.4	13.7
6H	11.3	12.5	11.6	12.8	13.1	11.9	13.1	12.2	13.4	13.7
8H	11.3	12.4	11.6	12.7	13.0	11.9	13.0	12.2	13.3	13.6
12H	11.2	12.3	11.6	12.6	12.9	11.8	12.9	12.2	13.2	13.5
4H 2H	10.4	11.7	10.7	11.9	12.2	10.6	11.9	10.9	12.1	12.4
3H	11.7	12.9	12.1	13.2	13.5	12.1	13.3	12.5	13.5	13.8
4H	12.1	13.2	12.5	13.5	13.8	12.7	13.7	13.0	14.0	14.3
6H	12.2	13.1	12.6	13.4	13.8	12.7	13.6	13.1	14.0	14.3
8H	12.1	13.0	12.6	13.4	13.7	12.7	13.5	13.1	13.9	14.3
12H	12.1	12.9	12.5	13.3	13.7	12.6	13.4	13.1	13.8	14.2
8H 4H	12.3	13.2	12.7	13.5	13.9	12.8	13.6	13.2	14.0	14.4
6H	12.4	13.1	12.9	13.5	14.0	12.9	13.6	13.3	14.0	14.4
8H	12.4	13.0	12.9	13.4	13.9	12.9	13.5	13.3	13.9	14.3
12H	12.4	12.9	12.9	13.3	13.8	12.8	13.3	13.3	13.8	14.3
12H 4H	12.3	13.1	12.7	13.4	13.8	12.8	13.5	13.2	13.9	14.3
6H	12.4	13.0	12.9	13.4	13.9	12.9	13.5	13.3	13.9	14.4
8H	12.4	12.9	12.9	13.4	13.8	12.8	13.4	13.3	13.8	14.3
Variations with the observer position at spacings:										
S = 1.0H	+ 0.2 / - 0.3					+ 0.2 / - 0.3				
1.5H	+ 0.2 / - 0.4					+ 0.2 / - 0.3				
2.0H	+ 0.3 / - 0.4					+ 0.3 / - 0.4				

CIE Pub.117 Corrected 180.0 lm Total Lamp Luminous Flux. (8log(F/F0) = -6.0)

C Range: 0 - 360DEG
C Interval: 5.0DEG
Test Speed: HIGH
Temperature:20DEG
Operators:Y
Test Date:2026-05-12

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.291
Humidity:65.0%
Test Distance:8.750m [K=1.0000]
Remarks:

UTILIZATION FACTORS TABLE

Test:U:11.91V I:0.2851A P:2.142W PF:0.6308 Lamp Flux:180x1 lm		
NAME: 489162-3000K QUATTRO	TYPE:489162-3000K QUATTRO	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:	PROTECTION ANGLE:

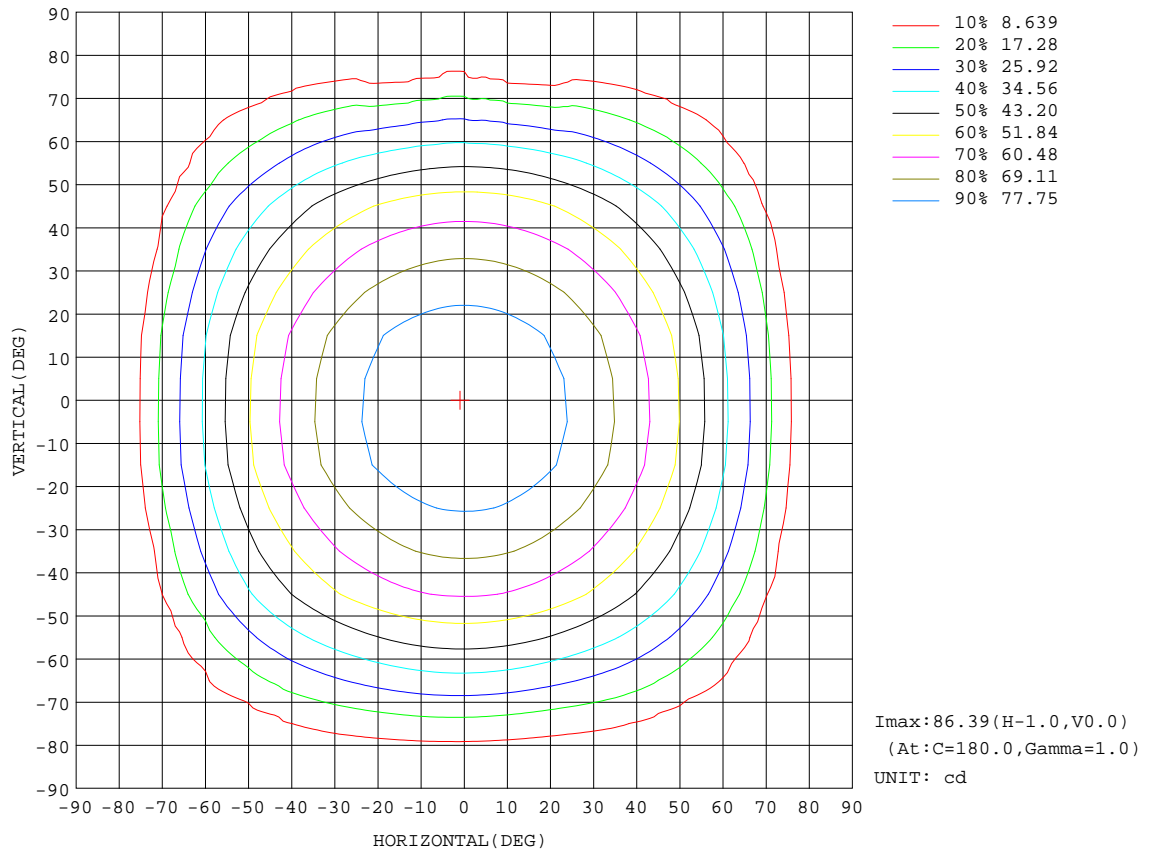
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	76	62	53	75	61	52	74	61	52	44
0.80	90	75	66	89	75	66	86	74	65	56
1.00	101	87	78	100	86	78	97	88	77	68
1.25	111	98	89	109	97	88	105	95	87	78
1.50	117	105	96	115	104	96	111	101	94	85
2.00	126	116	108	124	114	107	119	111	105	95
2.50	131	122	114	128	120	113	123	116	111	100
3.00	135	127	120	132	125	119	127	121	116	105
4.00	140	133	128	137	131	126	132	127	123	111
5.00	143	137	133	140	135	131	134	130	127	115
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended				SHRNOM = 1.25			

C Range: 0 - 360DEG
 C Interval: 5.0DEG
 Test Speed: HIGH
 Temperature:20DEG
 Operators:Y
 Test Date:2026-05-12

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.291
 Humidity:65.0%
 Test Distance:8.750m [K=1.0000]
 Remarks:

ISOCANDELA DIAGRAM

Test:U:11.91V I:0.2851A P:2.142W PF:0.6308 Lamp Flux:180x1 lm		
NAME: 489162-3000K QUATTRO	TYPE:489162-3000K QUATTRO	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:	PROTECTION ANGLE:

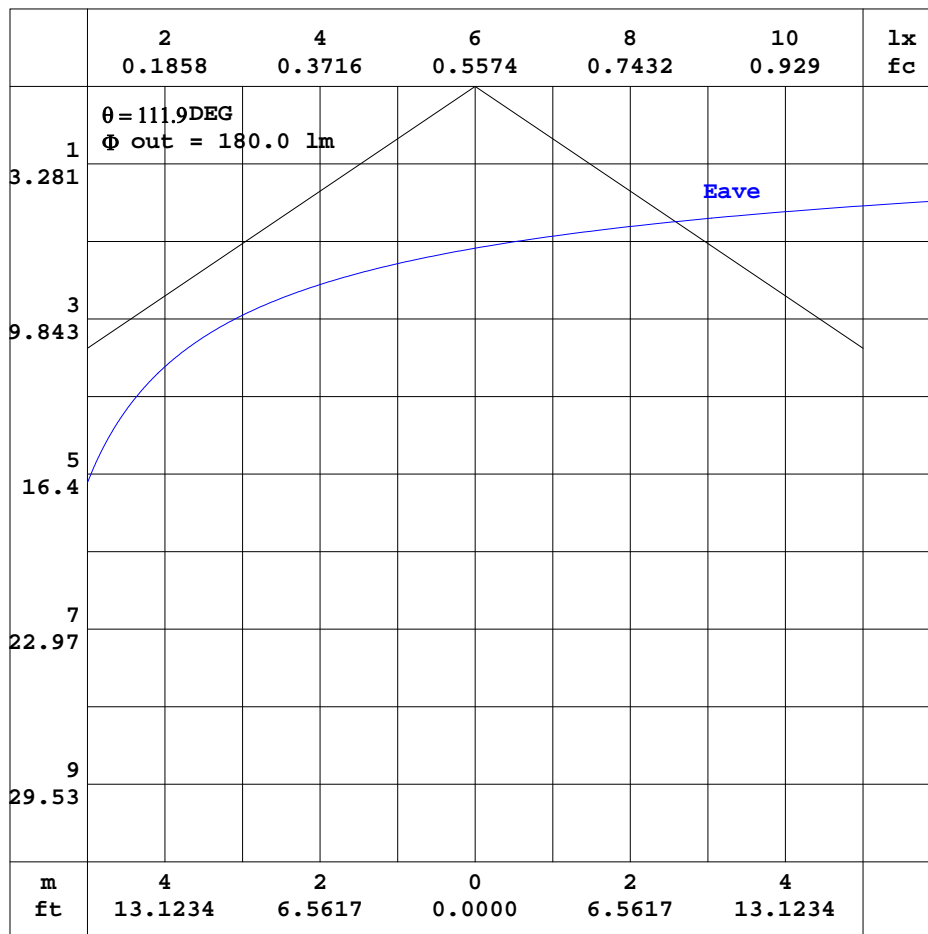


C Range: 0 - 360DEG
 C Interval: 5.0DEG
 Test Speed: HIGH
 Temperature: 20DEG
 Operators: Y
 Test Date: 2026-05-12

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.291
 Humidity: 65.0%
 Test Distance: 8.750m [K=1.0000]
 Remarks:

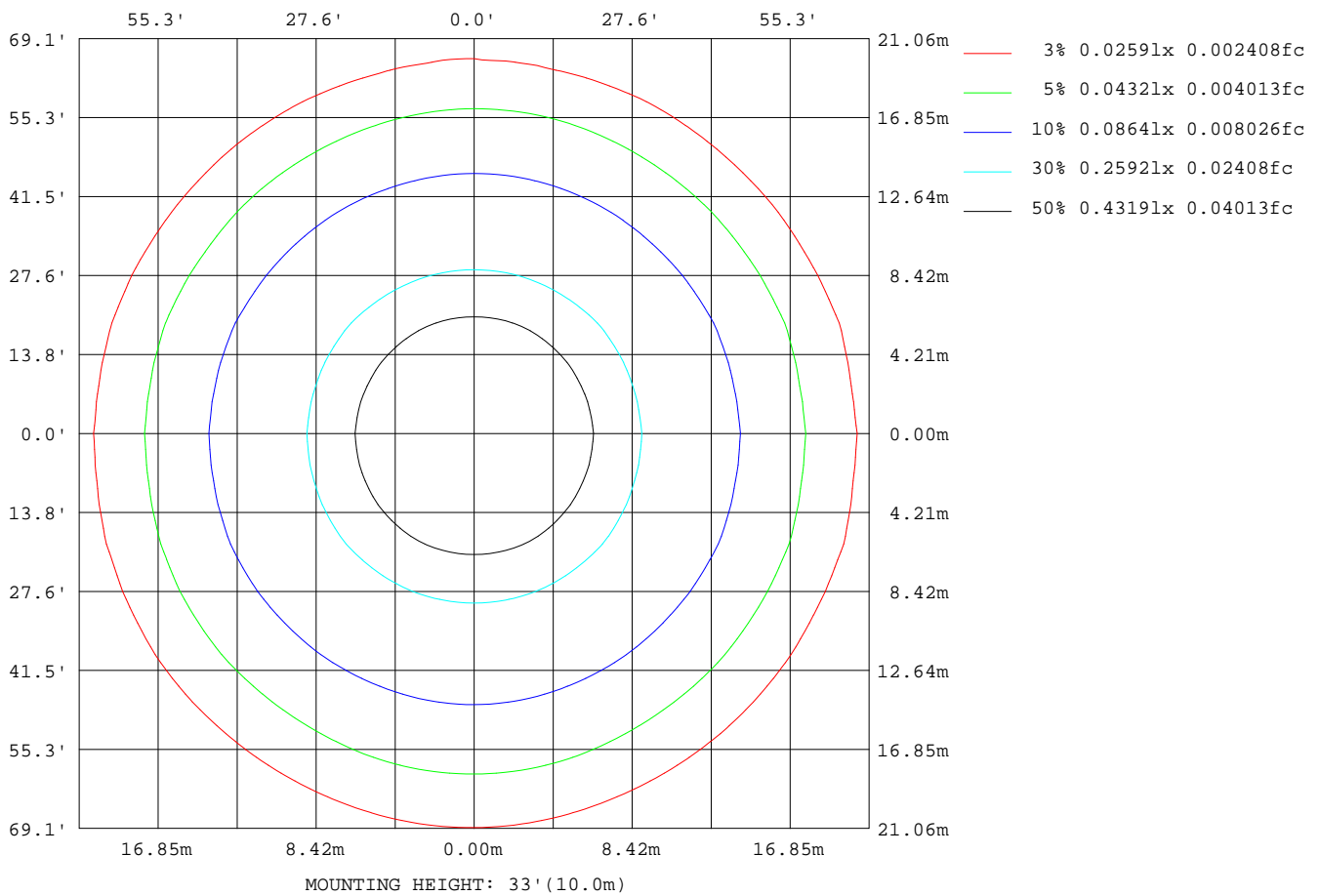
AAI CURVES

Test:U:11.91V I:0.2851A P:2.142W PF:0.6308 Lamp Flux:180x1 lm		
NAME: 489162-3000K QUATTRO	TYPE:489162-3000K QUATTRO	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:	PROTECTION ANGLE:



ISOLUX DIAGRAM

Test:U:11.91V I:0.2851A P:2.142W PF:0.6308 Lamp Flux:180x1 lm		
NAME: 489162-3000K QUATTRO	TYPE:489162-3000K QUATTRO	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:	PROTECTION ANGLE:



C Range: 0 - 360DEG
 C Interval: 5.0DEG
 Test Speed: HIGH
 Temperature:20DEG
 Operators:Y
 Test Date:2026-05-12

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.291
 Humidity:65.0%
 Test Distance:8.750m [K=1.0000]
 Remarks:

LED Avg.L Report

Test:U:11.91V I:0.2851A P:2.142W PF:0.6308 Lamp Flux:180x1 lm		
NAME: 489162-3000K QUATTRO	TYPE:489162-3000K QUATTRO	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:	PROTECTION ANGLE:

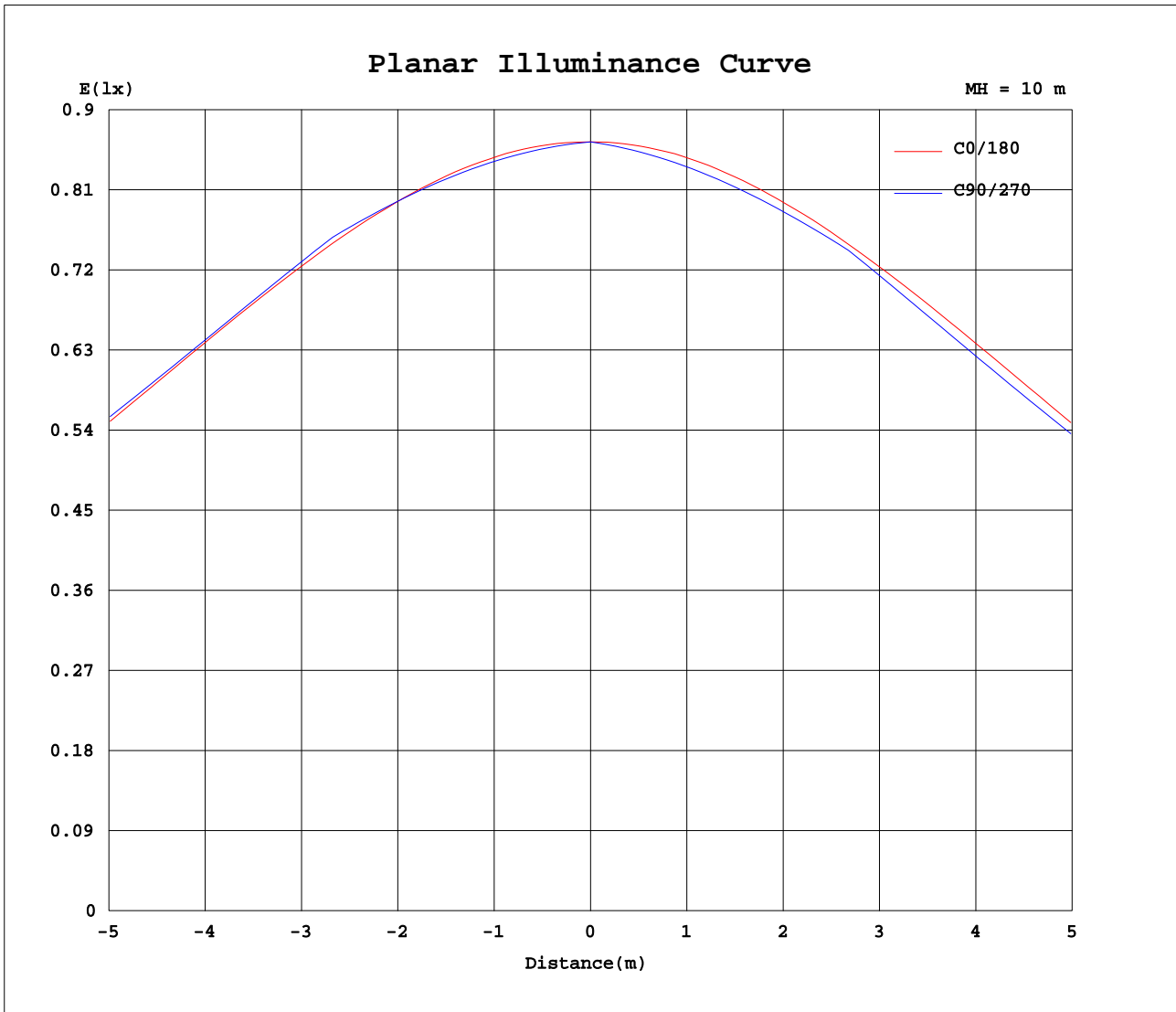
AvgL	cd/m2
L_0~180(65)av	334
L_0~180(75)av	185
L_0~180(85)av	0
L_90~270(65)av	344
L_90~270(75)av	238
L_90~270(85)av	0
L_45(65)av	334
L_45(75)av	233
L_45(85)av	0

Standard: GB/T 29293-2012

C Range: 0 - 360DEG
C Interval: 5.0DEG
Test Speed: HIGH
Temperature:20DEG
Operators:Y
Test Date:2026-05-12

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.291
Humidity:65.0%
Test Distance:8.750m [K=1.0000]
Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG
 C Interval: 5.0DEG
 Test Speed: HIGH
 Temperature: 20DEG
 Operators: Y
 Test Date: 2026-05-12

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.291
 Humidity: 65.0%
 Test Distance: 8.750m [K=1.0000]
 Remarks:

