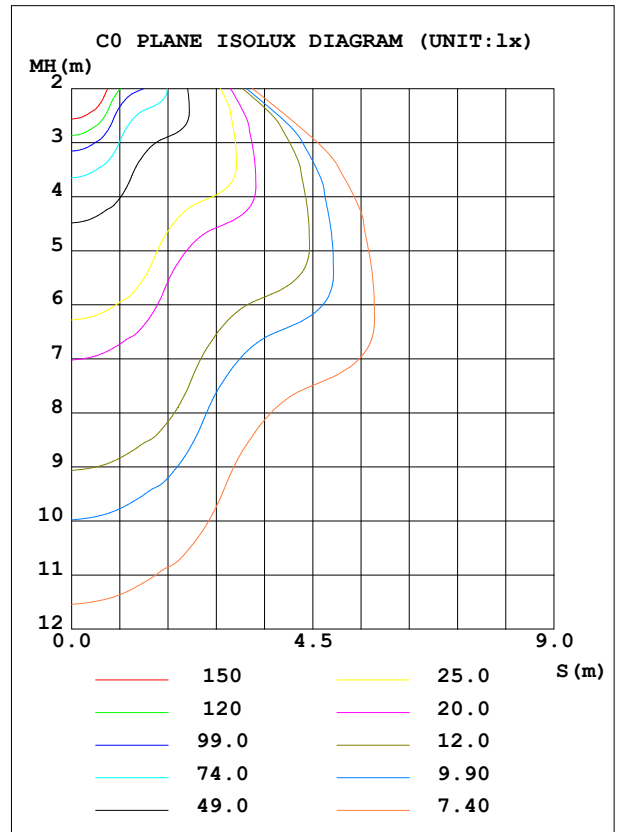
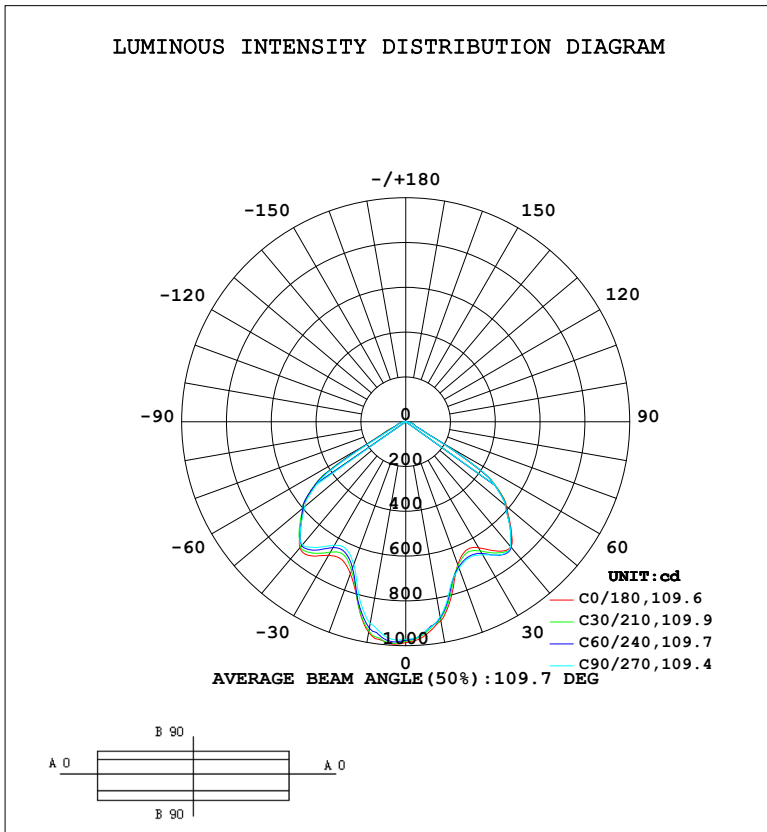


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:220.16V I:0.1551A P:19.332W PF:0.5661 Freq:50.00Hz Lamp Flux:2078.49x1 lm		
NAME: HYO-240R-20W 3000K	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:	

DATA OF LAMP		PHOTOMETRIC DATA Eff: 107.51 lm/W			
MODEL		Imax (cd)	994.5	S/MH (C0/180)	0.97
NOMINAL POWER (W)		LOR (%)	100.0	S/MH (C90/270)	0.89
RATED VOLTAGE (V)	--	TOTAL FLUX (lm)	2078.5	$\eta$ UP, DN (C0-180)	0.0, 50.1
NOMINAL FLUX (lm)	2078.49	CIE CLASS	DIRECT	$\eta$ UP, DN (C180-360)	0.0, 49.9
LAMPS INSIDE	1	$\eta$ up (%)	0.0	CIBSE SHR NOM	1.25
TEST VOLTAGE (V)	--	$\eta$ down (%)	100.0	CIBSE SHR MAX	1.30



C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: 10.0deg/s  
 Temperature: 25.3°C  
 Operators: DAMIN  
 Test Date: 2023-08-15

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
 Humidity: 65.0%  
 Test Distance: 9.000m [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	903.6	892.9	883.5	908.5	954.1	942.1	914.5	890.3	0- 10	89.99	89.99	4.33,4.33
20	678.9	688.3	696.2	704.8	723.0	702.7	678.2	670.9	10- 20	222.7	312.7	15,15
30	649.5	673.1	686.5	683.5	688.0	661.9	637.4	627.3	20- 30	304.7	617.3	29.7,29.7
40	729.9	732.3	728.5	734.0	734.8	732.5	717.8	716.5	30- 40	443.0	1060	51,51
50	584.8	587.3	580.0	559.6	597.2	596.9	588.0	574.7	40- 50	508.2	1569	75.5,75.5
60	176.5	175.6	177.2	204.0	206.5	200.7	153.5	177.3	50- 60	399.1	1968	94.7,94.7
70	41.10	39.13	38.07	39.84	42.13	42.45	40.90	42.29	60- 70	73.61	2041	98.2,98.2
80	19.88	16.98	13.62	16.60	20.84	17.46	13.78	16.58	70- 80	30.82	2072	99.7,99.7
90	0.5637	0.5502	0.4875	0.5184	0.5319	0.5241	0.4548	0.5290	80- 90	6.384	2078	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		

Conical surface Flux(90deg): 1317.9 lm

%lum = 63.4%

%lamp = 63.4%

Conical surface Flux(120deg): 1967.7 lm

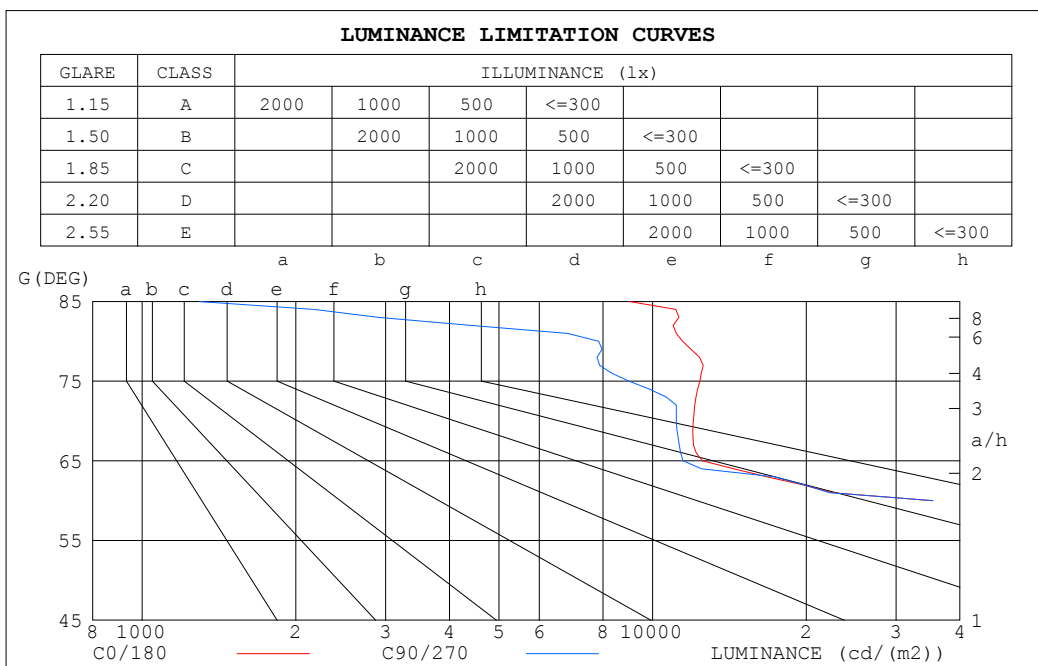
%lum = 94.7%

%lamp = 94.7%

C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: 10.0deg/s  
 Temperature:25.3°C  
 Operators:DAMIN  
 Test Date:2023-08-15

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
 Humidity:65.0%  
 Test Distance:9.000m [K=1.0000]  
 Remarks:

LUMINANCE LIMITATION CURVES



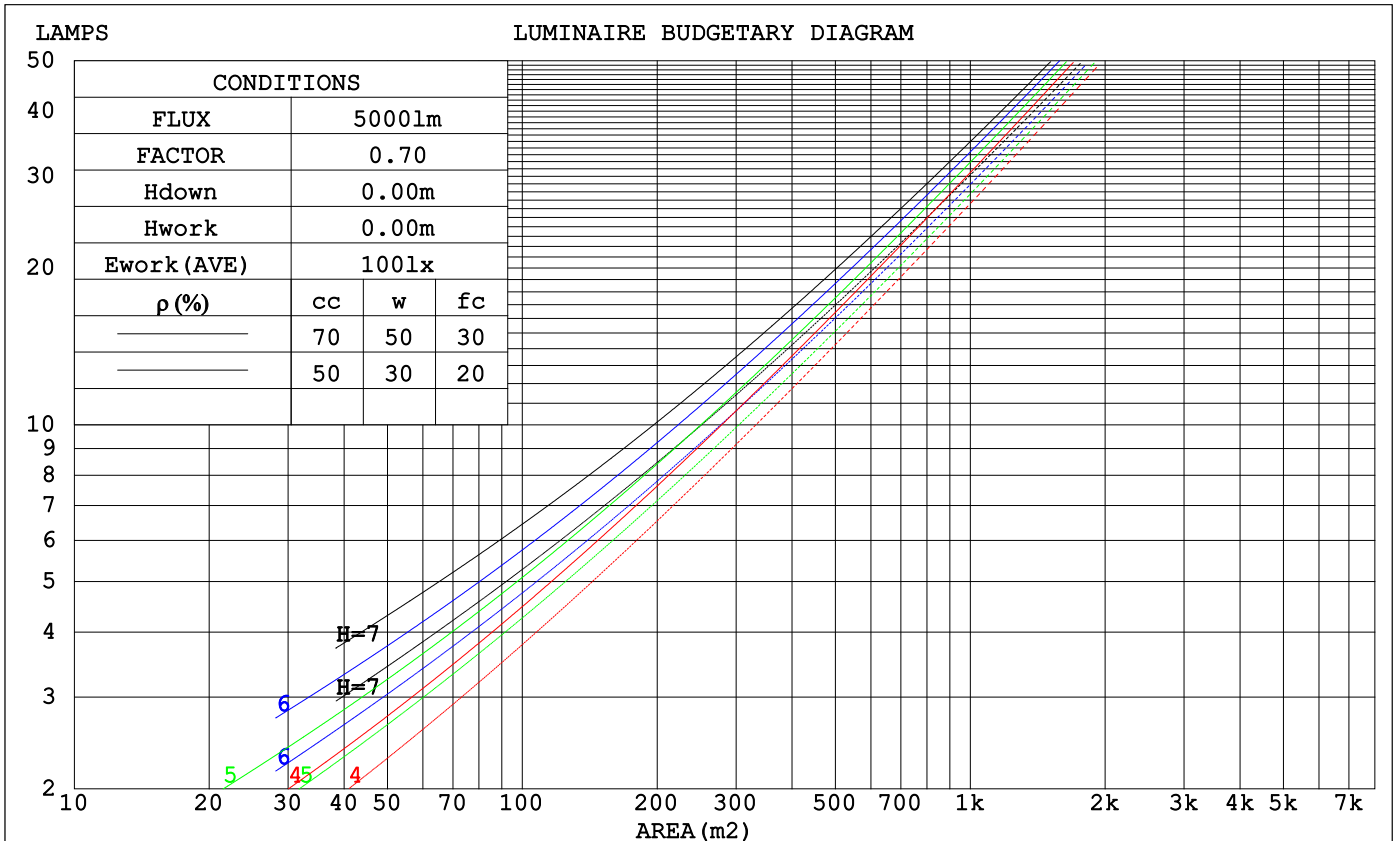
LUMINANCE cd/(m2)		
G (DEG)	C0/180	C90/270
85	9020	1294
80	11449	7845
75	12376	8989
70	12016	11132
65	12532	11473
60	35299	35434
55	83891	82901
50	90973	90234
45	93760	93068

C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: 10.0deg/s  
 Temperature: 25.3°C  
 Operators: DAMIN  
 Test Date: 2023-08-15

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
 Humidity: 65.0%  
 Test Distance: 9.000m [K=1.0000]  
 Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

$\rho_{cc}$	80%			70%			50%			30%			10%			0
$\rho_w$	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
$\rho_{fc}$	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	1.00
1.0	1.07	1.04	1.00	1.05	1.02	.99	1.01	.98	.96	.97	.95	.93	.93	.92	.90	.88
2.0	.95	.90	.85	.94	.88	.84	.90	.86	.82	.87	.83	.80	.84	.81	.78	.76
3.0	.85	.78	.72	.83	.77	.71	.81	.75	.70	.78	.73	.69	.75	.71	.68	.66
4.0	.76	.68	.62	.75	.67	.62	.72	.66	.61	.70	.64	.60	.68	.63	.59	.57
5.0	.68	.60	.54	.67	.59	.54	.65	.58	.53	.63	.57	.52	.61	.56	.52	.50
6.0	.61	.53	.47	.61	.53	.47	.59	.52	.47	.57	.51	.46	.56	.50	.46	.44
7.0	.56	.47	.42	.55	.47	.42	.53	.46	.41	.52	.46	.41	.51	.45	.41	.39
8.0	.51	.43	.37	.50	.42	.37	.49	.42	.37	.48	.41	.37	.46	.41	.36	.35
9.0	.47	.39	.33	.46	.38	.33	.45	.38	.33	.44	.37	.33	.43	.37	.33	.31
10.0	.43	.35	.30	.42	.35	.30	.41	.35	.30	.40	.34	.30	.40	.34	.30	.28



C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: 10.0deg/s  
 Temperature:25.3°C  
 Operators:DAMIN  
 Test Date:2023-08-15

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
 Humidity:65.0%  
 Test Distance:9.000m [K=1.0000]  
 Remarks:

WEC AND CCEC

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	.249	.141	.045	.242	.138	.044	.229	.131	.042	.217	.125	.040	.206	.119	.039	
2.0	.245	.134	.041	.239	.131	.040	.227	.126	.039	.217	.122	.038	.207	.117	.037	
3.0	.234	.125	.037	.229	.123	.037	.219	.119	.036	.210	.115	.035	.201	.111	.035	
4.0	.222	.115	.034	.217	.114	.034	.209	.111	.033	.200	.108	.032	.193	.105	.032	
5.0	.210	.107	.031	.206	.106	.031	.198	.103	.030	.190	.100	.030	.184	.098	.029	
6.0	.198	.099	.028	.194	.098	.028	.187	.096	.028	.180	.094	.028	.174	.092	.027	
7.0	.186	.092	.026	.183	.091	.026	.177	.089	.026	.171	.088	.025	.165	.086	.025	
8.0	.176	.086	.024	.173	.085	.024	.167	.084	.024	.162	.082	.024	.157	.081	.023	
9.0	.166	.080	.022	.163	.080	.022	.158	.078	.022	.154	.077	.022	.149	.076	.022	
10.0	.157	.075	.021	.155	.075	.021	.150	.074	.021	.146	.072	.021	.142	.071	.020	

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	.190	.190	.190	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
1.0	.176	.157	.139	.151	.134	.120	.103	.093	.083	.059	.054	.048	.019	.017	.016	
2.0	.166	.132	.104	.142	.114	.090	.097	.079	.063	.056	.046	.037	.018	.015	.012	
3.0	.158	.114	.079	.135	.098	.069	.093	.068	.048	.054	.040	.028	.017	.013	.009	
4.0	.150	.100	.062	.129	.087	.054	.089	.060	.038	.051	.035	.023	.016	.012	.007	
5.0	.143	.090	.050	.123	.078	.044	.085	.054	.031	.049	.032	.018	.016	.010	.006	
6.0	.137	.081	.041	.118	.070	.036	.081	.049	.026	.047	.029	.015	.015	.009	.005	
7.0	.131	.074	.035	.112	.064	.030	.078	.045	.022	.045	.027	.013	.015	.009	.004	
8.0	.125	.069	.030	.107	.060	.026	.074	.042	.019	.043	.025	.011	.014	.008	.004	
9.0	.119	.064	.026	.103	.055	.023	.071	.039	.016	.041	.023	.010	.013	.008	.003	
10.0	.114	.059	.023	.098	.052	.020	.068	.036	.014	.040	.021	.009	.013	.007	.003	

C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: 10.0deg/s  
 Temperature:25.3°C  
 Operators:DAMIN  
 Test Date:2023-08-15

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
 Humidity:65.0%  
 Test Distance:9.000m [K=1.0000]  
 Remarks:

UGR(Unified Glare Rating) Table

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	27.6	29.0	27.9	29.2	29.4	27.6	29.0	27.9	29.2	29.4
3H	27.5	28.8	27.8	29.0	29.2	27.5	28.8	27.8	29.0	29.2
4H	27.5	28.7	27.8	28.9	29.2	27.4	28.6	27.7	28.9	29.1
6H	27.4	28.6	27.8	28.8	29.1	27.4	28.5	27.7	28.8	29.0
8H	27.4	28.5	27.7	28.8	29.0	27.3	28.4	27.7	28.7	29.0
12H	27.4	28.4	27.7	28.7	29.0	27.3	28.3	27.6	28.6	28.9
4H 2H	27.6	28.8	27.9	29.0	29.3	27.6	28.8	27.9	29.0	29.3
3H	27.5	28.5	27.9	28.8	29.1	27.5	28.5	27.8	28.8	29.1
4H	27.5	28.4	27.9	28.8	29.1	27.5	28.4	27.8	28.7	29.0
6H	27.5	28.3	27.9	28.7	29.0	27.4	28.2	27.8	28.6	28.9
8H	27.5	28.3	27.9	28.6	29.0	27.4	28.1	27.8	28.5	28.9
12H	27.5	28.2	27.9	28.6	29.0	27.3	28.0	27.8	28.4	28.8
8H 4H	27.4	28.2	27.8	28.5	28.9	27.4	28.1	27.8	28.5	28.9
6H	27.5	28.1	27.9	28.5	28.9	27.4	28.0	27.8	28.4	28.8
8H	27.5	28.0	27.9	28.4	28.9	27.3	27.9	27.8	28.3	28.7
12H	27.5	28.0	28.0	28.4	28.9	27.3	27.8	27.8	28.2	28.7
12H 4H	27.4	28.1	27.8	28.5	28.9	27.3	28.0	27.8	28.4	28.8
6H	27.4	28.0	27.9	28.4	28.8	27.3	27.9	27.8	28.3	28.7
8H	27.5	27.9	27.9	28.4	28.8	27.3	27.8	27.8	28.2	28.7
Variations with the observer position at spacings(CIE Pub.117):										
S = 1.0H	+ 0.2 / - 0.4					+ 0.3 / - 0.4				
1.5H	+ 1.2 / - 2.0					+ 1.2 / - 1.9				
2.0H	+ 2.2 / - 6.8					+ 2.2 / - 7.5				

CIE Pub.117, 2078 lm Total Lamp Luminous Flux Corrected (8log(F/F0) = 2.5)  
 Area: 0.01 m2

C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: 10.0deg/s  
 Temperature:25.3°C  
 Operators:DAMIN  
 Test Date:2023-08-15

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
 Humidity:65.0%  
 Test Distance:9.000m [K=1.0000]  
 Remarks:

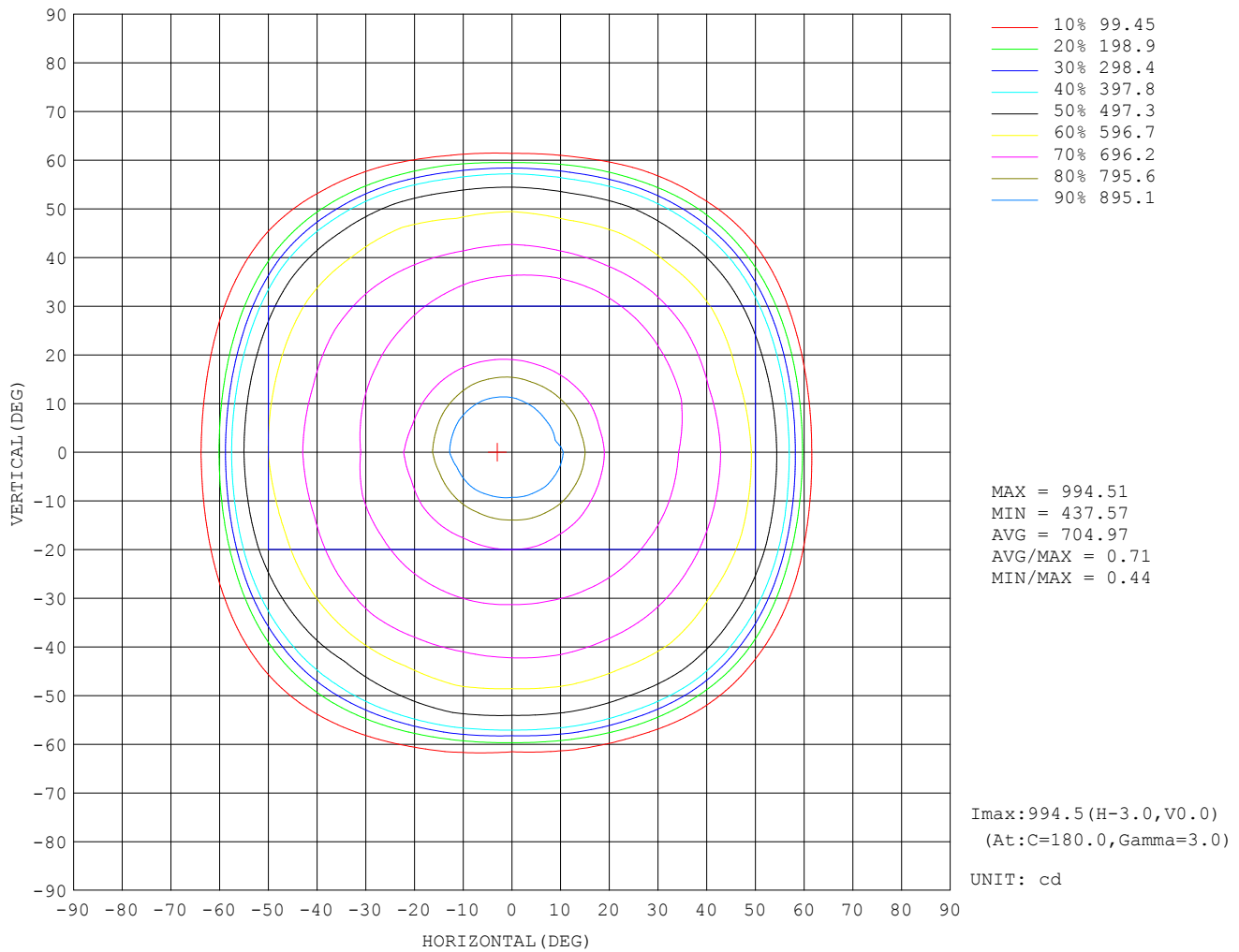
**UTILIZATION FACTORS TABLE**

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	59	48	41	59	48	41	58	47	41	35
0.80	71	60	53	70	60	53	68	59	53	46
1.00	81	71	65	80	71	64	78	72	64	57
1.25	89	79	73	87	79	73	85	77	72	66
1.50	93	85	79	92	84	79	89	82	77	71
2.00	100	93	87	98	92	87	95	89	85	78
2.50	103	96	91	101	95	90	97	92	89	81
3.00	106	100	95	104	98	94	100	96	92	84
4.00	109	104	100	106	102	99	102	99	96	88
5.00	110	106	103	108	104	101	104	101	98	89
ROOM INDEX	UF (total)									Direct
According to DIN EN 13032-2 2004			Suspended				SHRNOM = 1.25			

C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: 10.0deg/s  
 Temperature: 25.3°C  
 Operators: DAMIN  
 Test Date: 2023-08-15

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
 Humidity: 65.0%  
 Test Distance: 9.000m [K=1.0000]  
 Remarks:

ISOCANDELA DIAGRAM

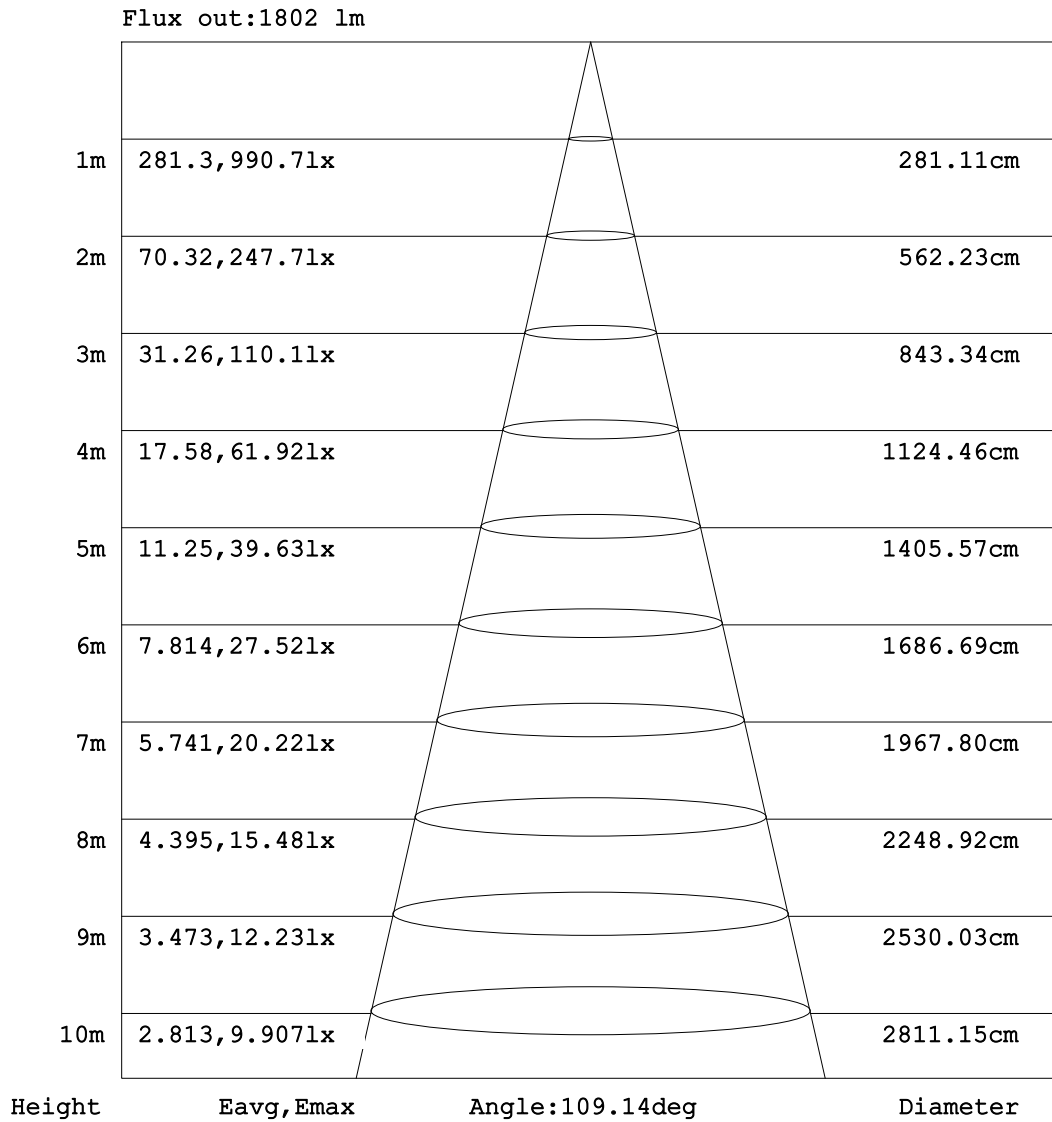


C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: 10.0deg/s  
 Temperature:25.3°C  
 Operators:DAMIN  
 Test Date:2023-08-15

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
 Humidity:65.0%  
 Test Distance:9.000m [K=1.0000]  
 Remarks:



**AAI Figure**

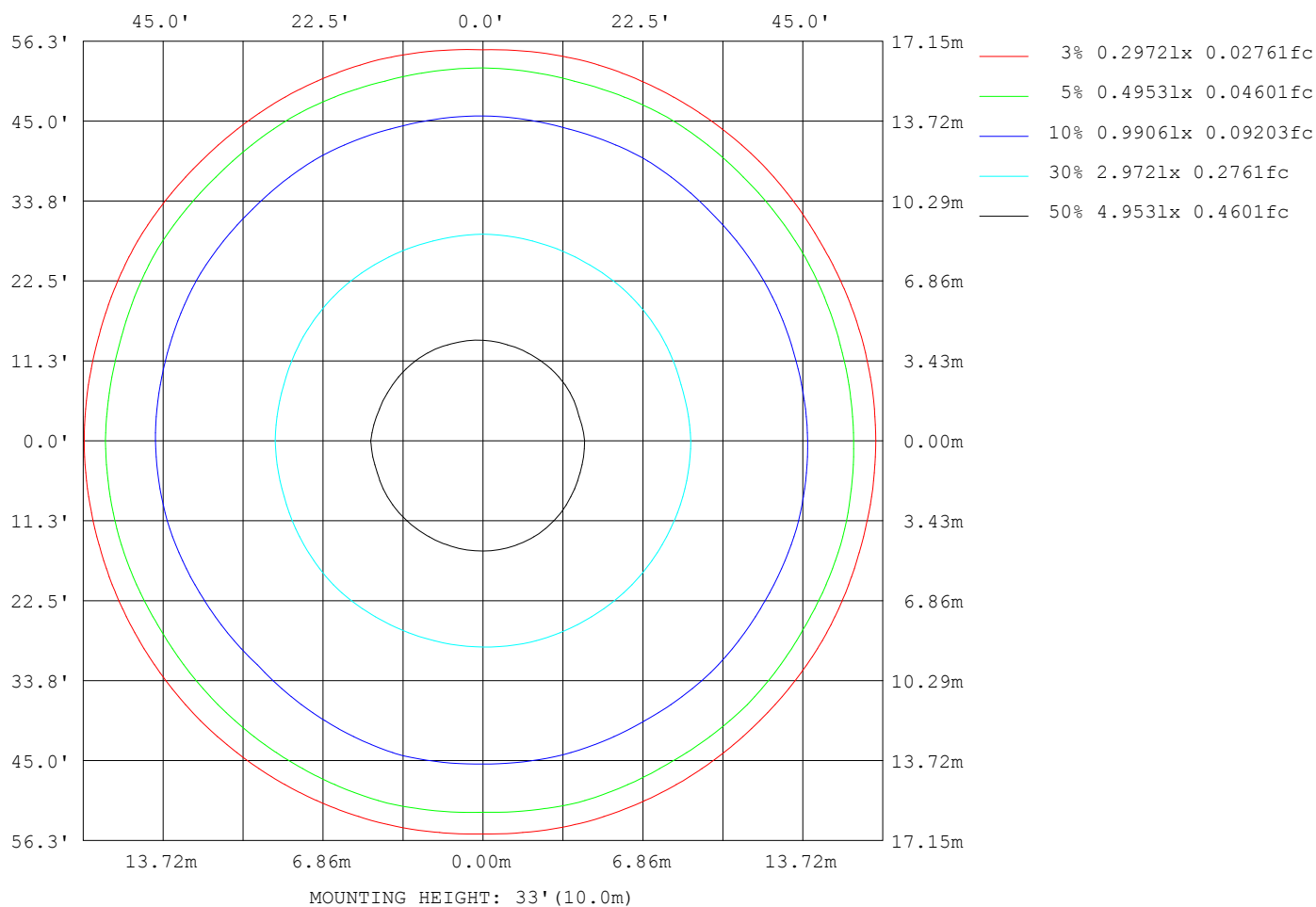


**Note:**The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: 10.0deg/s  
 Temperature:25.3°C  
 Operators:DAMIN  
 Test Date:2023-08-15

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
 Humidity:65.0%  
 Test Distance:9.000m [K=1.0000]  
 Remarks:

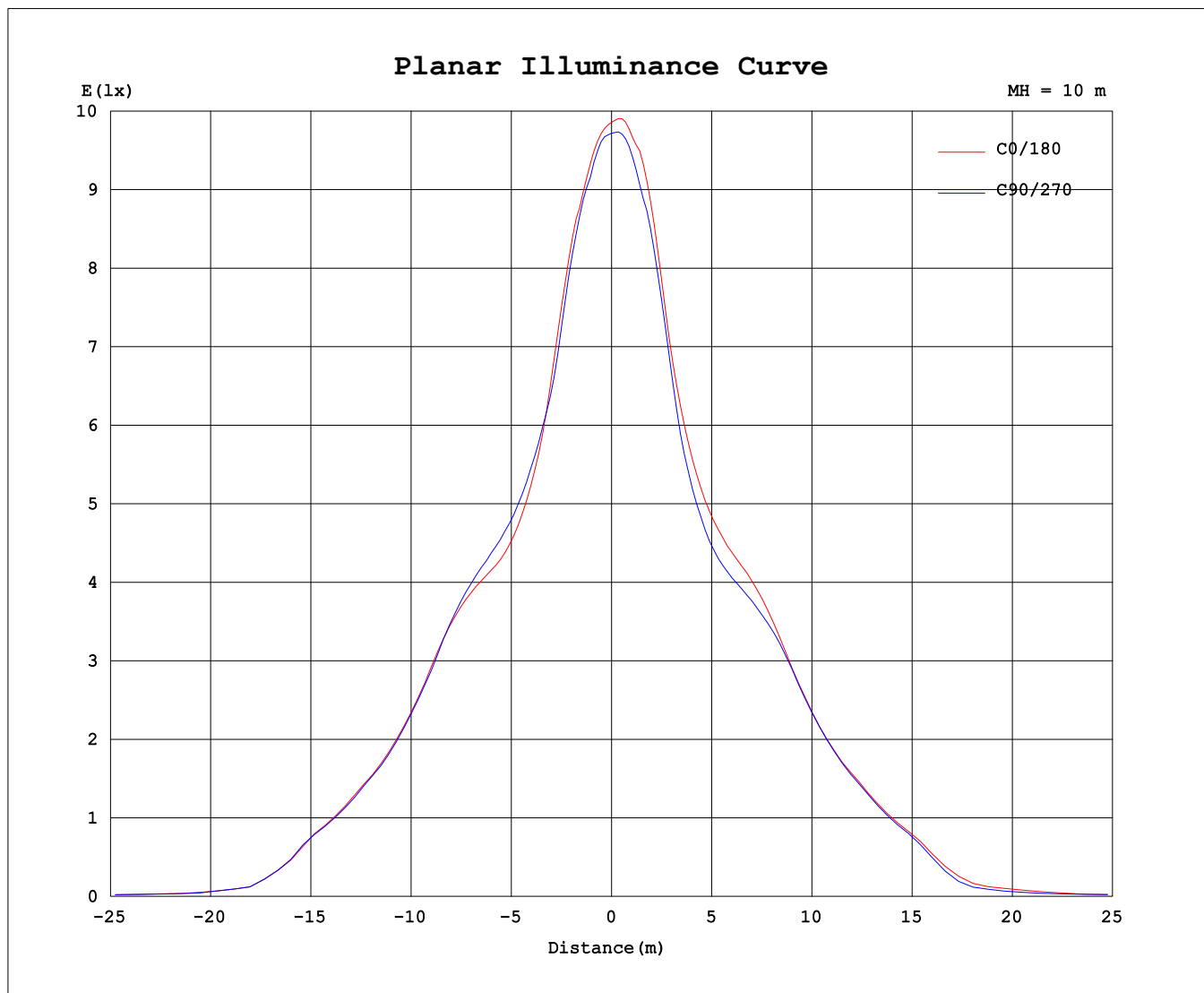
**ISOLUX DIAGRAM**



C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: 10.0deg/s  
 Temperature:25.3°C  
 Operators:DAMIN  
 Test Date:2023-08-15

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
 Humidity:65.0%  
 Test Distance:9.000m [K=1.0000]  
 Remarks:

### Planar Illuminance Curve



C Range: 0 - 360DEG  
C Interval: 15.0DEG  
Test Speed: 10.0deg/s  
Temperature:25.3°C  
Operators:DAMIN  
Test Date:2023-08-15

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
Humidity:65.0%  
Test Distance:9.000m [K=1.0000]  
Remarks:



