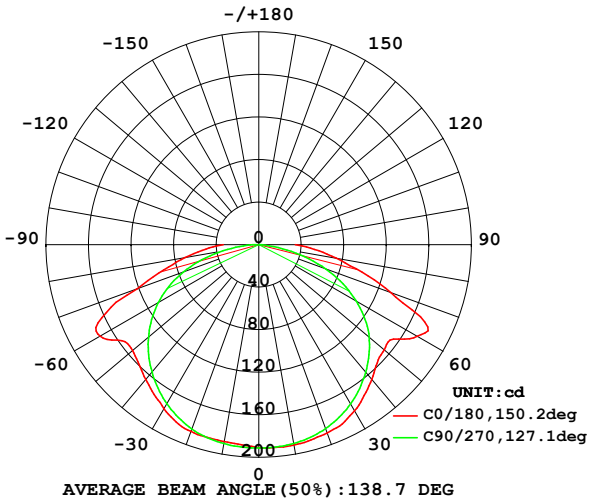
LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:24.00V I:0.3940A P:9.450W PF:1.000 Lamp Flux:742.301x1 lm		
NAME: HCP-3965964	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:1
MFR.: HAVIT COMMERCIAL	SUR.:0.008	PROTECTION ANGLE:

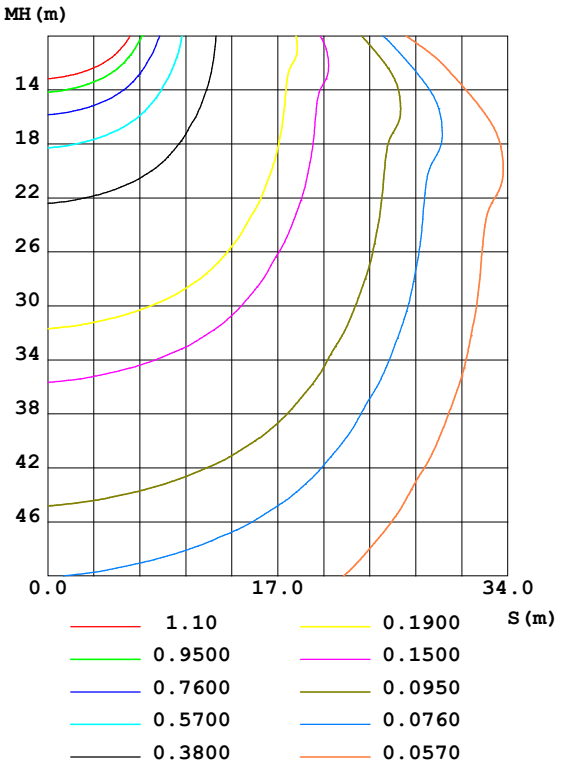
DATA OF LAMP		PHOTOMETRIC DATA		Eff: 78.55 lm/W	
MODEL	4000K	Imax(cd)	191.6	S/MH(C0/180)	1.39
NOMINAL POWER(W)	9.6	LOR(%)	100.0	S/MH(C90/270)	1.34
RATED VOLTAGE(V)	24	TOTAL FLUX(lm)	742.30	η UP,DN(C0-180)	0.0,50.2
NOMINAL FLUX(lm)	742.301	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.0,49.8
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	1.50
TEST VOLTAGE(V)	24	η down(%)	100.0	CIBSE SHR MAX	1.55

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



AVERAGE BEAM ANGLE(50%):138.7 DEG

C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



C Range: 0 - 360DEG
C Interval: 90.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:QUAN
Test Date:2022-12-29

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.270
Humidity:65.0%
Test Distance:8.140m [K=1.0000]
Remarks: 1

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C90	C180	C270					γ	Φ zone	Φ total	%lum,lamp
10	187.9	189.9	191.2	189.8					0- 10	18.16	18.16	2.45,2.45
20	186.8	184.4	188.3	184.0					10- 20	53.27	71.43	9.62,9.62
30	178.5	172.8	180.3	172.9					20- 30	83.94	155.4	20.9,20.9
40	165.3	156.2	165.5	156.5					30- 40	105.8	261.2	35.2,35.2
50	154.9	135.4	154.0	135.5					40- 50	118.0	379.2	51.1,51.1
60	172.1	109.1	172.2	105.7					50- 60	126.3	505.5	68.1,68.1
70	121.6	75.38	132.5	67.07					60- 70	124.3	629.8	84.9,84.9
80	70.24	34.26	74.15	22.89					70- 80	78.02	707.9	95.4,95.4
90	33.38	2.044	34.33	0.4217					80- 90	34.43	742.3	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		

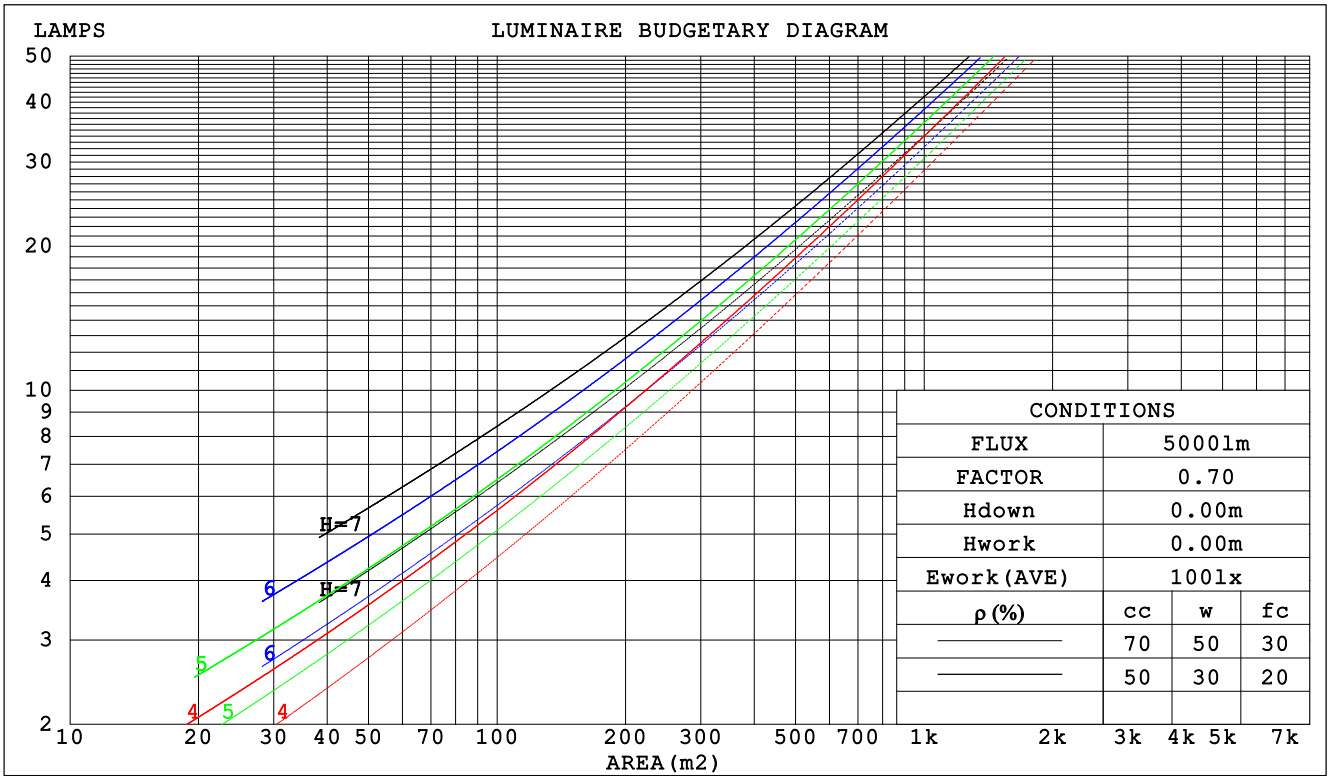
C Range: 0 - 360DEG
C Interval: 90.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:QUAN
Test Date:2022-12-29

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.270
Humidity:65.0%
Test Distance:8.140m [K=1.0000]
Remarks: 1

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:24.00V I:0.3940A P:9.450W PF:1.000 Lamp Flux:742.301x1 lm		
NAME: HCP-3965964	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:1
MFR.: HAVIT COMMERCIAL	SUR.:0.008	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			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	1.01	.96	.91	.98	.94	.89	.94	.90	.87	.90	.87	.84	.86	.84	.81	.79
2.0	.86	.78	.71	.84	.77	.70	.80	.74	.69	.77	.72	.67	.74	.69	.66	.63
3.0	.74	.65	.58	.73	.64	.57	.69	.62	.56	.67	.60	.55	.64	.58	.54	.52
4.0	.65	.55	.48	.63	.54	.47	.61	.53	.47	.58	.51	.46	.56	.50	.45	.43
5.0	.57	.48	.40	.56	.47	.40	.54	.46	.39	.52	.45	.39	.50	.44	.39	.36
6.0	.51	.42	.35	.50	.41	.34	.48	.40	.34	.47	.39	.34	.45	.38	.33	.31
7.0	.46	.37	.30	.45	.36	.30	.44	.36	.30	.42	.35	.30	.41	.34	.29	.27
8.0	.42	.33	.27	.41	.33	.27	.40	.32	.26	.39	.31	.26	.37	.31	.26	.24
9.0	.38	.30	.24	.38	.29	.24	.37	.29	.24	.35	.28	.23	.34	.28	.23	.21
10.0	.35	.27	.21	.35	.27	.21	.34	.26	.21	.33	.26	.21	.32	.26	.21	.19



C Range: 0 - 360DEG
C Interval: 90.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:QUAN
Test Date:2022-12-29

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.270
Humidity:65.0%
Test Distance:8.140m [K=1.0000]
Remarks: 1

WEC AND CCEC

Test:U:24.00V I:0.3940A P:9.450W PF:1.000 Lamp Flux:742.301x1 lm		
NAME: HCP-3965964	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:1
MFR.: HAVIT COMMERCIAL	SUR.:0.008	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 Coeffcients(WEC)									
0.0																
1.0	.370	.211	.067	.363	.207	.066	.349	.201	.064	.337	.194	.062	.326	.189	.061	
2.0	.335	.184	.056	.329	.181	.056	.317	.176	.055	.306	.171	.054	.295	.167	.053	
3.0	.303	.161	.048	.298	.159	.048	.287	.155	.047	.277	.152	.047	.268	.148	.046	
4.0	.275	.143	.042	.270	.141	.042	.261	.138	.041	.252	.135	.041	.243	.132	.040	
5.0	.251	.128	.037	.247	.127	.037	.238	.124	.037	.230	.121	.036	.223	.119	.036	
6.0	.230	.116	.033	.226	.114	.033	.219	.112	.033	.212	.110	.032	.205	.108	.032	
7.0	.213	.105	.030	.209	.104	.030	.202	.102	.029	.196	.101	.029	.190	.099	.029	
8.0	.197	.096	.027	.194	.096	.027	.188	.094	.027	.182	.092	.027	.177	.091	.026	
9.0	.184	.089	.025	.181	.088	.025	.175	.087	.025	.170	.085	.024	.166	.084	.024	
10.0	.172	.082	.023	.169	.082	.023	.164	.081	.023	.160	.079	.023	.156	.078	.022	

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	.190	.190	.190	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
1.0	.184	.156	.130	.158	.134	.112	.108	.092	.077	.062	.053	.045	.020	.017	.015	
2.0	.178	.132	.093	.153	.113	.080	.105	.078	.056	.060	.046	.033	.019	.015	.011	
3.0	.171	.115	.070	.147	.099	.060	.101	.069	.042	.058	.040	.025	.019	.013	.008	
4.0	.163	.102	.054	.140	.088	.047	.096	.061	.033	.056	.036	.020	.018	.012	.006	
5.0	.156	.091	.044	.134	.079	.038	.092	.055	.027	.053	.032	.016	.017	.011	.005	
6.0	.148	.083	.037	.127	.072	.032	.088	.050	.023	.051	.030	.013	.016	.010	.004	
7.0	.141	.076	.031	.121	.066	.027	.084	.046	.019	.049	.027	.012	.016	.009	.004	
8.0	.134	.071	.027	.115	.061	.024	.080	.043	.017	.046	.025	.010	.015	.008	.003	
9.0	.127	.066	.024	.110	.057	.021	.076	.040	.015	.044	.024	.009	.014	.008	.003	
10.0	.121	.061	.022	.104	.053	.019	.072	.037	.013	.042	.022	.008	.014	.007	.003	

C Range: 0 - 360DEG
C Interval: 90.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:QUAN
Test Date:2022-12-29

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.270
Humidity:65.0%
Test Distance:8.140m [K=1.0000]
Remarks: 1

Uncorrected UGR Table

Test:U:24.00V I:0.3940A P:9.450W PF:1.000 Lamp Flux:742.301x1 lm		
NAME: HCP-3965964	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:1
MFR.: HAVIT COMMERCIAL	SUR.:0.008	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	26.1	27.8	26.4	28.0	28.2	24.6	26.2	24.8	26.4	26.7
3H	28.6	30.1	28.9	30.4	30.6	26.5	28.0	26.8	28.2	28.5
4H	29.5	31.0	29.8	31.2	31.5	27.2	28.7	27.5	28.9	29.2
6H	30.4	31.8	30.7	32.0	32.3	27.7	29.1	28.1	29.4	29.7
8H	30.8	32.1	31.1	32.4	32.7	27.9	29.3	28.3	29.6	29.9
12H	31.2	32.5	31.6	32.8	33.1	28.0	29.3	28.4	29.6	29.9
4H 2H	26.8	28.3	27.1	28.6	28.8	25.7	27.2	26.0	27.5	27.7
3H	29.4	30.7	29.7	31.0	31.3	27.7	29.0	28.1	29.3	29.6
4H	30.4	31.6	30.8	31.9	32.3	28.6	29.8	28.9	30.1	30.4
6H	31.4	32.5	31.8	32.9	33.2	29.2	30.3	29.6	30.7	31.0
8H	32.0	33.0	32.4	33.3	33.7	29.5	30.5	29.9	30.8	31.2
12H	32.5	33.4	32.9	33.8	34.2	29.6	30.5	30.0	30.9	31.3
8H 4H	30.7	31.7	31.1	32.1	32.4	29.1	30.1	29.5	30.5	30.9
6H	31.9	32.8	32.4	33.2	33.6	30.0	30.8	30.4	31.2	31.7
8H	32.6	33.3	33.0	33.8	34.2	30.3	31.1	30.8	31.5	32.0
12H	33.3	34.0	33.8	34.4	34.9	30.6	31.3	31.1	31.7	32.2
12H 4H	30.7	31.6	31.1	32.0	32.4	29.2	30.1	29.6	30.5	30.9
6H	32.0	32.8	32.5	33.2	33.6	30.2	30.9	30.6	31.4	31.8
8H	32.7	33.4	33.2	33.8	34.3	30.6	31.3	31.1	31.7	32.2

Variations with the observer position at spacings:		
S = 1.0H	+ 0.1 / - 0.1	+ 0.1 / - 0.2
1.5H	+ 0.1 / - 0.1	+ 0.2 / - 0.3
2.0H	+ 0.4 / - 0.4	+ 0.3 / - 0.5

CIE Pub.117 Corrected 742.3 lm Total Lamp Luminous Flux.(8log(F/F0) = -1.0)

C Range: 0 - 360DEG
C Interval: 90.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:QUAN
Test Date:2022-12-29

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.270
Humidity:65.0%
Test Distance:8.140m [K=1.0000]
Remarks: 1

UTILIZATION FACTORS TABLE

Test:U:24.00V I:0.3940A P:9.450W PF:1.000 Lamp Flux:742.301x1 lm		
NAME: HCP-3965964	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:1
MFR.: HAVIT COMMERCIAL	SUR.:0.008	PROTECTION ANGLE:

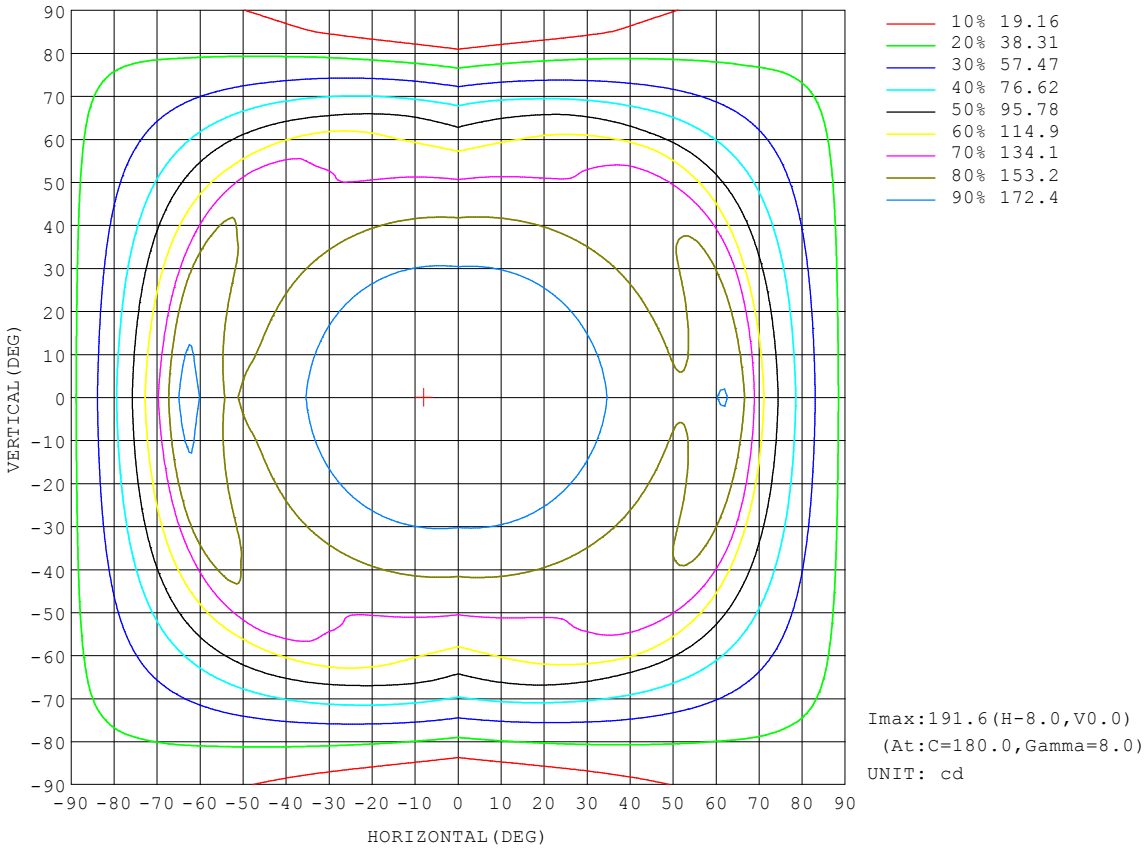
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) k(RI) x RCR = 5									
k = 0.60	53	40	33	52	40	32	51	39	32	25
0.80	62	49	41	61	49	41	59	48	41	33
1.00	70	58	50	69	57	49	67	59	49	41
1.25	78	66	57	76	65	57	73	63	56	48
1.50	83	72	63	81	71	63	78	69	62	53
2.00	90	80	73	88	79	72	85	77	71	62
2.50	95	86	79	93	84	78	89	82	76	67
3.00	99	91	84	96	89	83	92	86	81	72
4.00	103	97	91	101	95	90	96	91	87	78
5.00	106	101	96	104	99	94	99	95	91	81
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:QUAN
Test Date:2022-12-29

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.270
Humidity:65.0%
Test Distance:8.140m [K=1.0000]
Remarks: 1

ISOCANDELA DIAGRAM

Test:U:24.00V I:0.3940A P:9.450W PF:1.000 Lamp Flux:742.301x1 lm		
NAME: HCP-3965964	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:1
MFR.: HAVIT COMMERCIAL	SUR.:0.008	PROTECTION ANGLE:

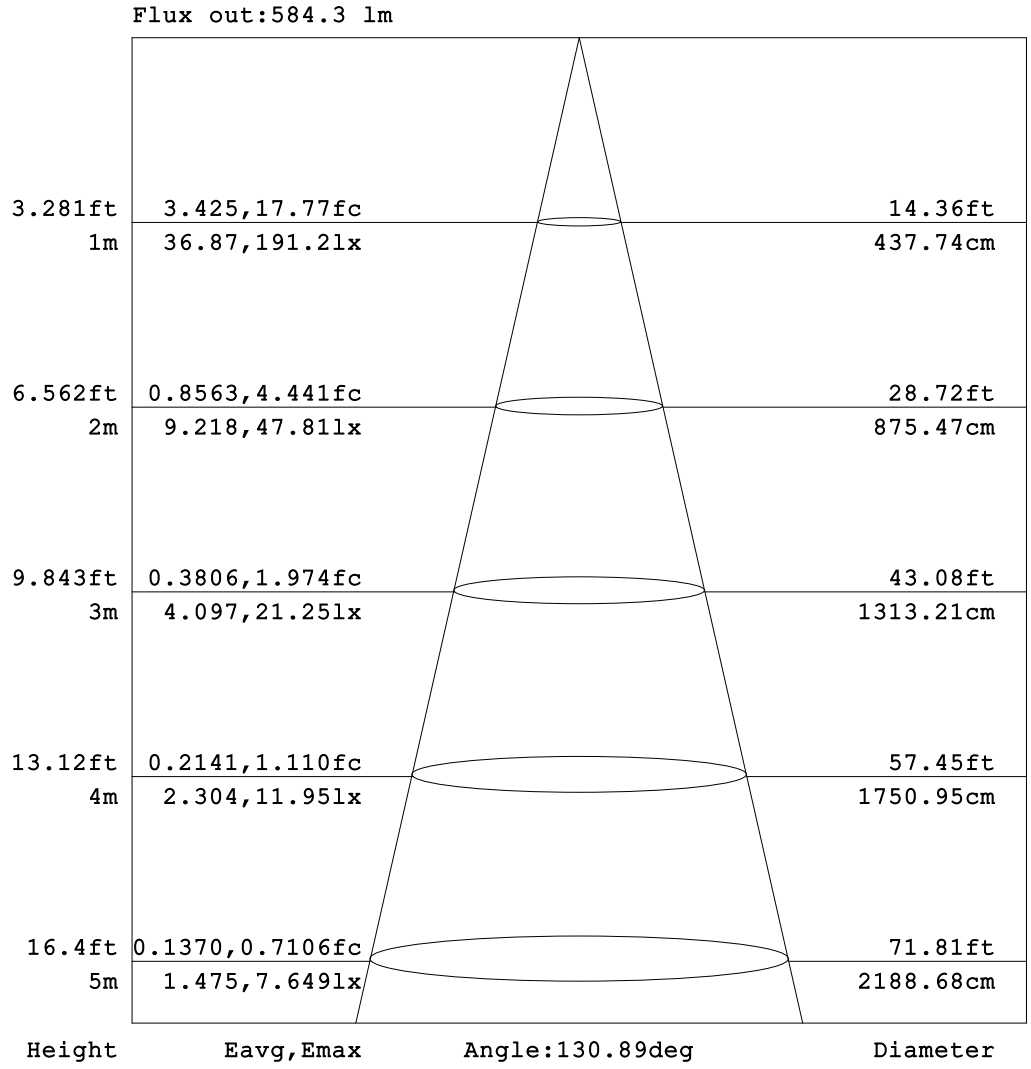


C Range: 0 - 360DEG
C Interval: 90.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:QUAN
Test Date:2022-12-29

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.270
Humidity:65.0%
Test Distance:8.140m [K=1.0000]
Remarks: 1

AAI Figure

Test:U:24.00V I:0.3940A P:9.450W PF:1.000 Lamp Flux:742.301x1 lm		
NAME: HCP-3965964	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:1
MFR.: HAVIT COMMERCIAL	SUR.:0.008	PROTECTION ANGLE:



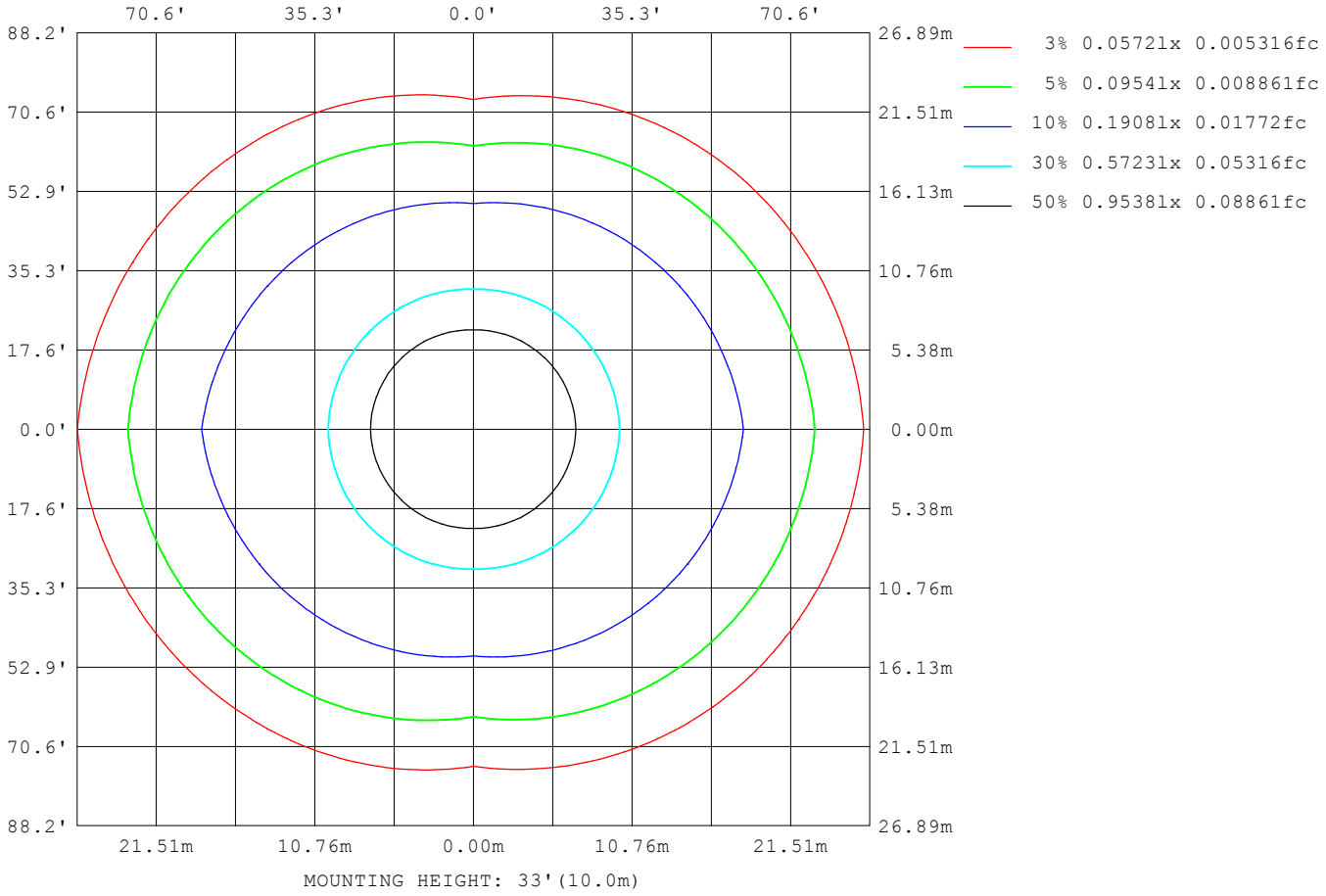
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
C Interval: 90.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:QUAN
Test Date:2022-12-29

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.270
Humidity:65.0%
Test Distance:8.140m [K=1.0000]
Remarks: 1

ISOLUX DIAGRAM

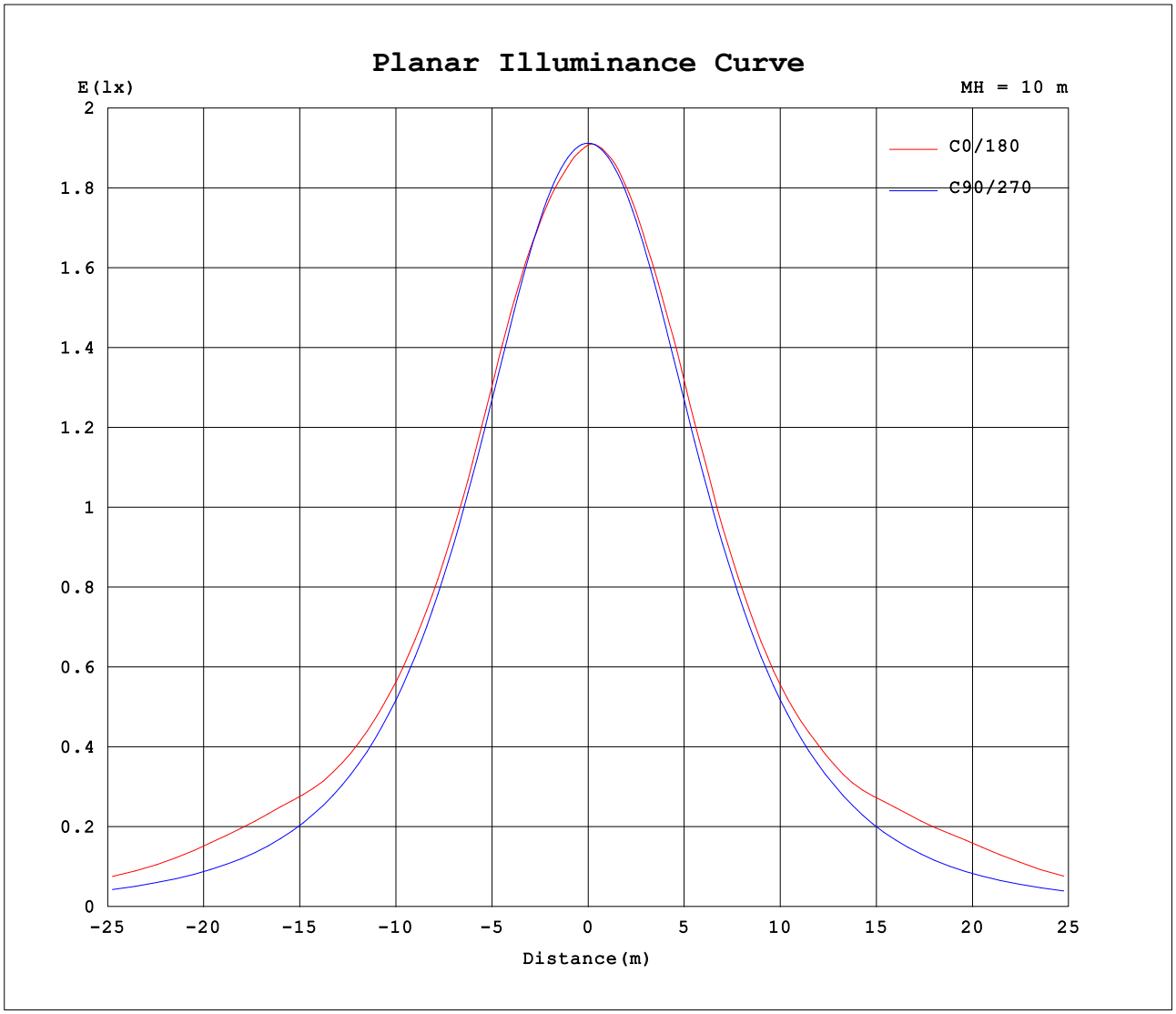
Test:U:24.00V I:0.3940A P:9.450W PF:1.000 Lamp Flux:742.301x1 lm		
NAME: HCP-3965964	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:1
MFR.: HAVIT COMMERCIAL	SUR.:0.008	PROTECTION ANGLE:



C Range: 0 - 360DEG
C Interval: 90.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:QUAN
Test Date:2022-12-29

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.270
Humidity:65.0%
Test Distance:8.140m [K=1.0000]
Remarks: 1

Planar Illuminance Curve



C Range: 0 - 360DEG
C Interval: 90.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:QUAN
Test Date:2022-12-29

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.270
Humidity:65.0%
Test Distance:8.140m [K=1.0000]
Remarks: 1

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:24.00V I:0.3940A P:9.450W PF:1.000 Lamp Flux:742.301x1 lm		
NAME: HCP-3965964	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:1
MFR.: HAVIT COMMERCIAL	SUR.:0.008	PROTECTION ANGLE:

Table--1 UNIT: cd

γ (DEG) \ C(DEG)	0	90	180	270
0	191	191	191	191
5	189	191	191	191
10	188	190	191	190
15	188	188	190	188
20	187	184	188	184
25	184	179	186	179
30	178	173	180	173
35	172	165	173	165
40	165	156	166	157
45	159	147	157	147
50	155	135	154	136
55	157	123	155	122
60	172	109	172	106
65	163	93.3	172	87.4
70	122	75.4	132	67.1
75	92.7	55.4	101	45.1
80	70.2	34.3	74.1	22.9
85	50.0	14.6	52.8	3.25
90	33.4	2.04	34.3	0.42

C Range: 0 - 360DEG
C Interval: 90.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:QUAN
Test Date:2022-12-29

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.270
Humidity:65.0%
Test Distance:8.140m [K=1.0000]
Remarks: 1