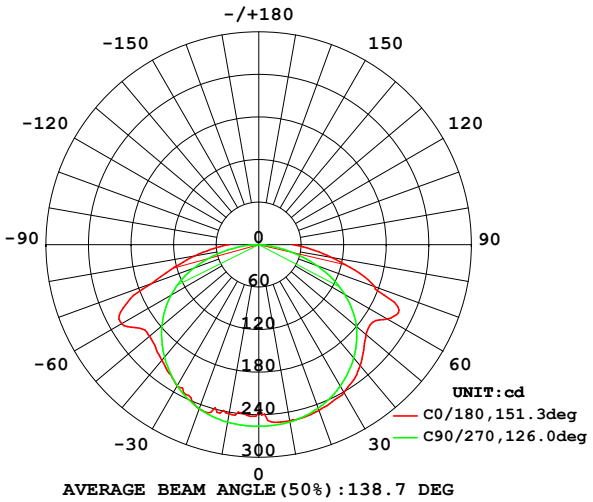
LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:24.00V I:0.6020A P:14.46W PF:1.000 Lamp Flux:974.26x1 lm		
NAME: HCP-3965145	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:1
MFR.: HAVIT COMMERCIAL	SUR.:0.008	PROTECTION ANGLE:

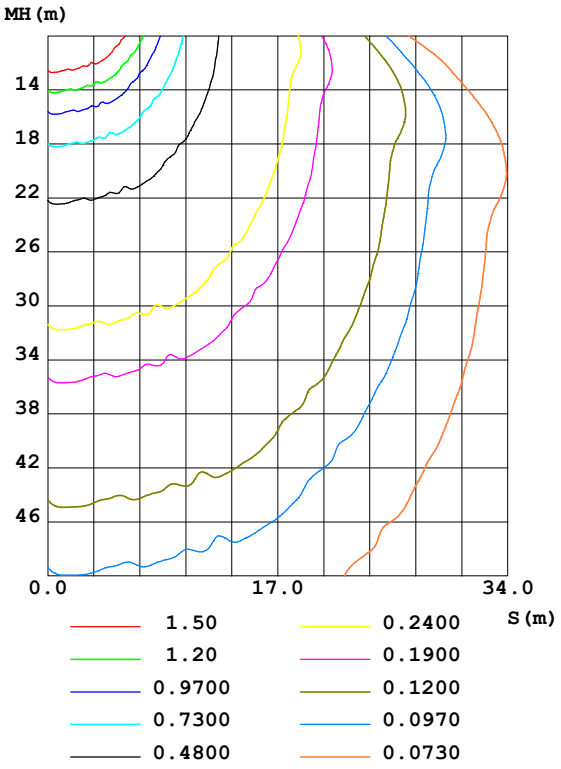
DATA OF LAMP		PHOTOMETRIC DATA		Eff: 67.38 lm/W	
MODEL	5000K	Imax(cd)	256.1	S/MH(C0/180)	1.44
NOMINAL POWER(W)	14.4	LOR(%)	100.0	S/MH(C90/270)	1.33
RATED VOLTAGE(V)	24	TOTAL FLUX(lm)	974.26	η UP,DN(C0-180)	0.0,50.0
NOMINAL FLUX(lm)	974.26	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.0,50.0
LAMPS INSIDE	1	η up(%)	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:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C90	C180	C270					γ	Φ zone	Φ total	%lum,lamp
10	242.1	254.3	252.2	253.8					0- 10	23.92	23.92	2.45,2.45
20	246.4	246.1	248.9	245.3					10- 20	70.53	94.45	9.69,9.69
30	230.4	229.9	240.9	230.3					20- 30	110.7	205.2	21.1,21.1
40	213.2	206.8	222.5	208.3					30- 40	139.9	345.0	35.4,35.4
50	201.3	178.5	197.8	180.1					40- 50	155.4	500.4	51.4,51.4
60	223.2	143.1	209.9	139.7					50- 60	163.3	663.7	68.1,68.1
70	160.6	98.06	174.5	87.93					60- 70	160.6	824.3	84.6,84.6
80	91.76	44.15	104.1	29.73					70- 80	104.1	928.4	95.3,95.3
90	42.24	2.813	48.20	0.6943					80- 90	45.91	974.3	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		

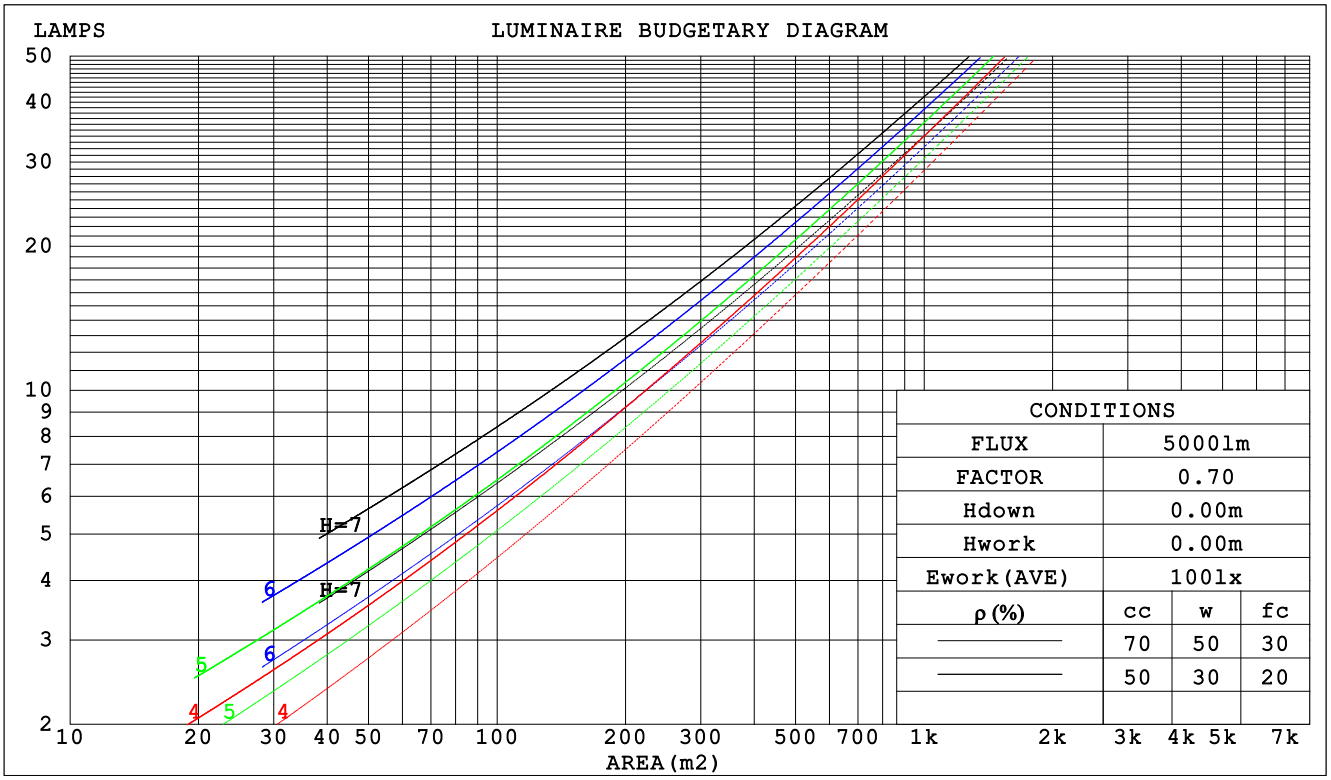
C Range: 0 - 360DEG
C Interval: 90.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:QUAN
Test Date:2022-12-29

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:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:24.00V I:0.6020A P:14.46W PF:1.000 Lamp Flux:974.26x1 lm		
NAME: HCP-3965145	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	.00
1.0	1.01	.96	.91	.98	.94	.89	.94	.90	.86	.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	.59	.54	.52
4.0	.65	.55	.48	.64	.54	.47	.61	.53	.47	.58	.52	.46	.56	.50	.45	.43
5.0	.57	.48	.40	.56	.47	.40	.54	.46	.40	.52	.45	.39	.50	.44	.39	.36
6.0	.51	.42	.35	.50	.41	.34	.48	.40	.34	.47	.39	.34	.45	.39	.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	.36	.29	.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:

WEC AND CCEC

Test:U:24.00V I:0.6020A P:14.46W PF:1.000 Lamp Flux:974.26x1 lm		
NAME: HCP-3965145	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	.371	.211	.067	.364	.207	.066	.350	.201	.064	.338	.195	.063	.326	.189	.061	
2.0	.335	.184	.056	.329	.181	.056	.317	.176	.055	.306	.172	.054	.295	.167	.053	
3.0	.303	.161	.048	.297	.159	.048	.287	.155	.047	.277	.152	.047	.267	.148	.046	
4.0	.275	.143	.042	.270	.141	.042	.260	.138	.041	.251	.135	.041	.243	.132	.040	
5.0	.251	.128	.037	.246	.126	.037	.238	.124	.036	.230	.121	.036	.223	.119	.036	
6.0	.230	.115	.033	.226	.114	.033	.219	.112	.033	.212	.110	.032	.205	.108	.032	
7.0	.212	.105	.030	.209	.104	.030	.202	.102	.029	.196	.100	.029	.190	.099	.029	
8.0	.197	.096	.027	.194	.095	.027	.188	.094	.027	.182	.092	.027	.177	.091	.026	
9.0	.184	.089	.025	.181	.088	.025	.175	.087	.025	.170	.085	.024	.165	.084	.024	
10.0	.172	.082	.023	.169	.082	.023	.164	.080	.023	.160	.079	.023	.155	.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	.185	.156	.130	.158	.134	.111	.108	.092	.077	.062	.053	.045	.020	.017	.014	
2.0	.178	.132	.093	.153	.113	.080	.105	.078	.056	.060	.046	.033	.019	.015	.011	
3.0	.171	.115	.070	.146	.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	.155	.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	.109	.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:

Uncorrected UGR Table

Test:U:24.00V I:0.6020A P:14.46W PF:1.000 Lamp Flux:974.26x1 lm		
NAME: HCP-3965145	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	27.0	28.6	27.3	28.8	29.1	25.5	27.2	25.8	27.4	27.6
3H	29.5	31.0	29.8	31.3	31.5	27.4	28.9	27.7	29.2	29.4
4H	30.4	31.9	30.7	32.2	32.4	28.1	29.6	28.4	29.8	30.1
6H	31.3	32.7	31.6	33.0	33.2	28.6	30.0	29.0	30.3	30.6
8H	31.7	33.0	32.0	33.3	33.6	28.8	30.2	29.2	30.5	30.8
12H	32.1	33.4	32.5	33.7	34.0	28.9	30.2	29.3	30.5	30.8
4H 2H	27.7	29.2	28.0	29.4	29.7	26.6	28.1	27.0	28.4	28.6
3H	30.3	31.6	30.6	31.9	32.2	28.6	29.9	29.0	30.2	30.5
4H	31.3	32.5	31.7	32.9	33.2	29.5	30.7	29.8	31.0	31.3
6H	32.4	33.4	32.8	33.8	34.2	30.1	31.2	30.5	31.6	31.9
8H	32.9	33.9	33.3	34.3	34.6	30.3	31.4	30.8	31.7	32.1
12H	33.4	34.3	33.8	34.7	35.1	30.5	31.4	30.9	31.8	32.2
8H 4H	31.6	32.6	32.0	33.0	33.4	30.0	31.0	30.4	31.4	31.8
6H	32.8	33.7	33.3	34.1	34.5	30.9	31.7	31.3	32.1	32.6
8H	33.5	34.2	33.9	34.7	35.1	31.2	32.0	31.7	32.4	32.9
12H	34.2	34.9	34.7	35.3	35.8	31.5	32.2	32.0	32.6	33.1
12H 4H	31.6	32.6	32.1	32.9	33.4	30.1	31.0	30.5	31.4	31.8
6H	32.9	33.7	33.4	34.1	34.6	31.1	31.8	31.5	32.3	32.7
8H	33.6	34.3	34.1	34.7	35.2	31.5	32.2	32.0	32.6	33.1
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	+ 0.3 / - 0.4					+ 0.3 / - 0.5				

CIE Pub.117 Corrected 974.3 lm Total Lamp Luminous Flux.(8log(F/F0) = -0.1)

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:

UTILIZATION FACTORS TABLE

Test:U:24.00V I:0.6020A P:14.46W PF:1.000 Lamp Flux:974.26x1 lm		
NAME: HCP-3965145	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:1
MFR.: HAVIT COMMERCIAL	SUR.:0.008	PROTECTION ANGLE:

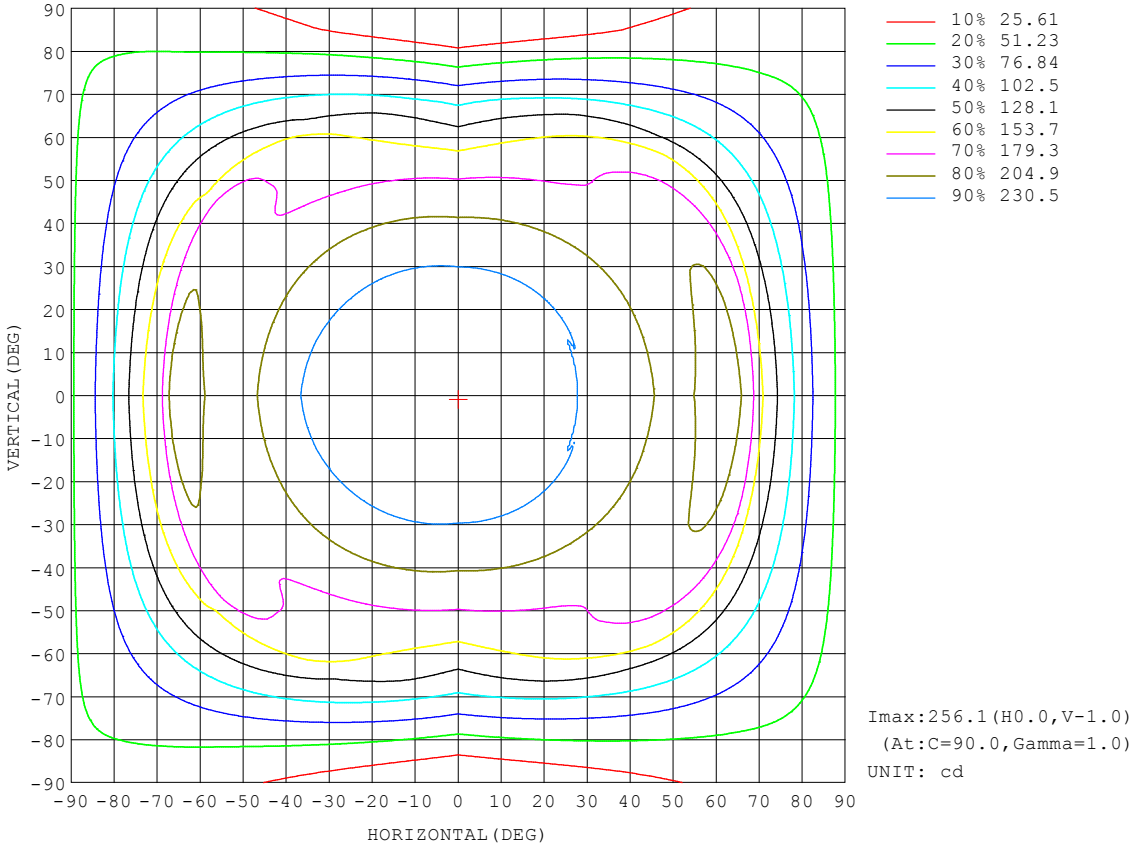
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) k(RI) x RCR = 5									
k = 0.60	53	40	33	52	40	33	51	39	32	26
0.80	62	50	41	61	49	41	59	48	41	33
1.00	70	58	50	69	57	50	67	59	49	41
1.25	78	66	58	76	65	57	73	63	56	48
1.50	83	72	64	81	71	63	78	69	62	54
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:

ISOCANDELA DIAGRAM

Test:U:24.00V I:0.6020A P:14.46W PF:1.000 Lamp Flux:974.26x1 lm		
NAME: HCP-3965145	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:1
MFR.: HAVIT COMMERCIAL	SUR.:0.008	PROTECTION ANGLE:

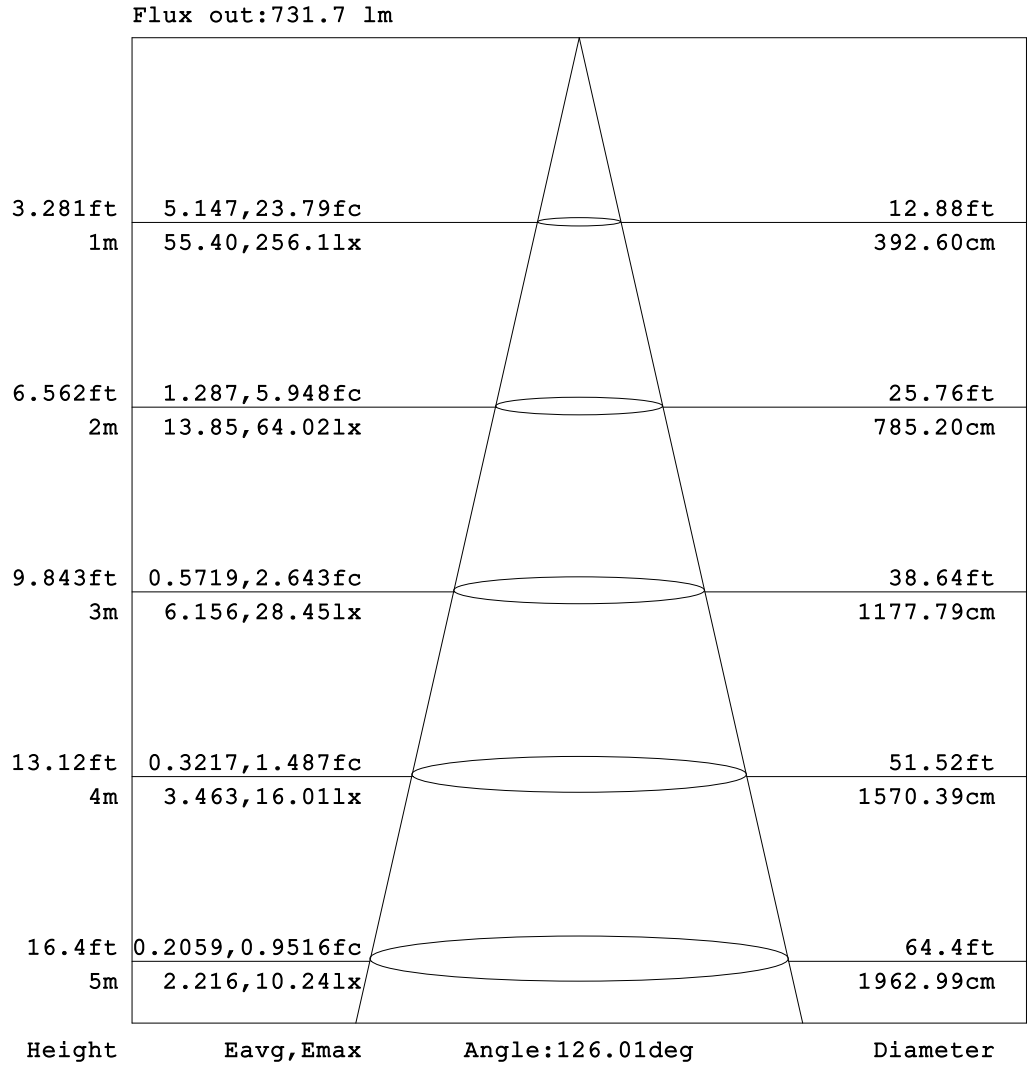


C Range: 0 - 360DEG
C Interval: 90.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:QUAN
Test Date:2022-12-29

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:

AAI Figure

Test:U:24.00V I:0.6020A P:14.46W PF:1.000 Lamp Flux:974.26x1 lm		
NAME: HCP-3965145	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:1
MFR.: HAVIT COMMERCIAL	SUR.:0.008	PROTECTION ANGLE:



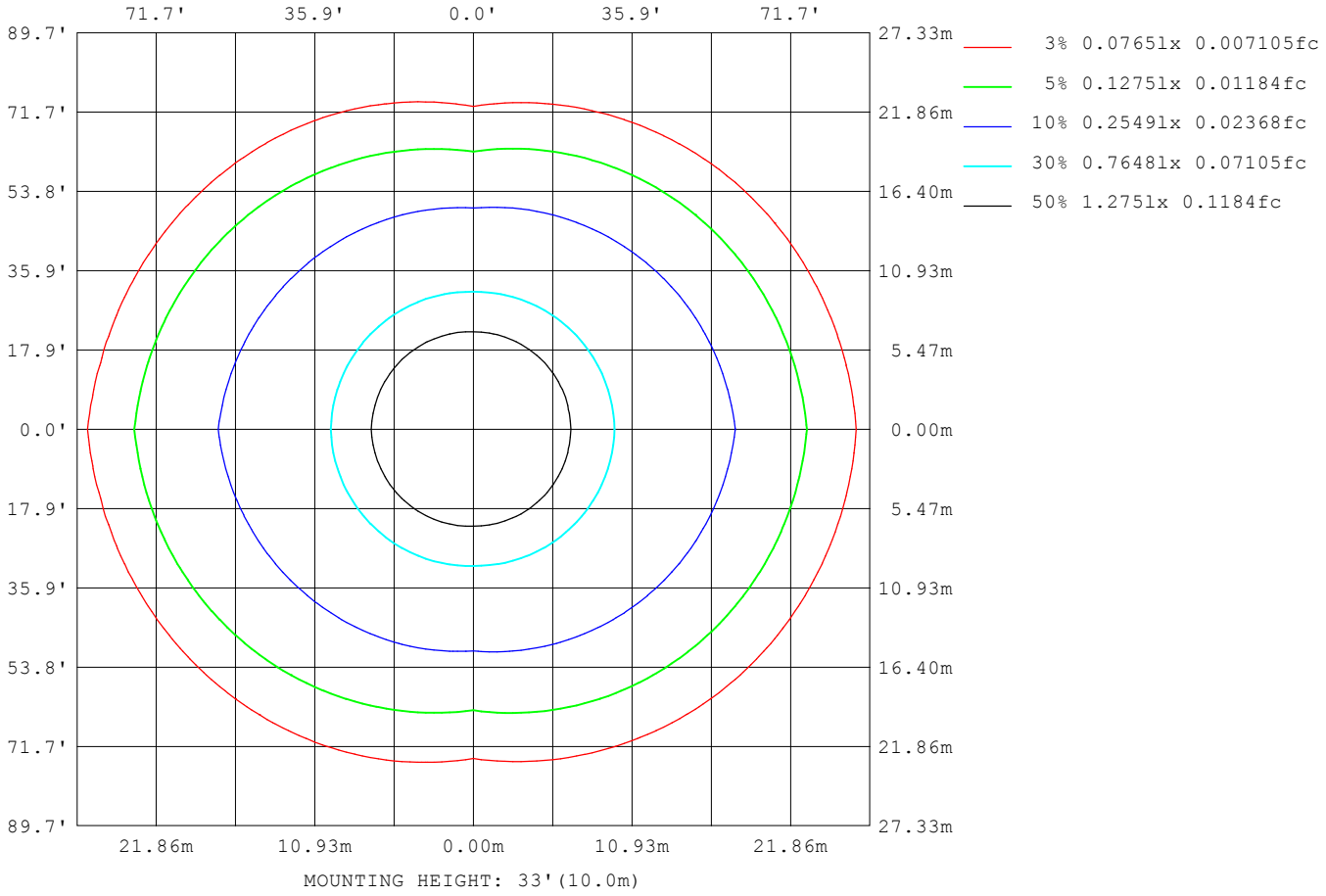
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

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:

ISOLUX DIAGRAM

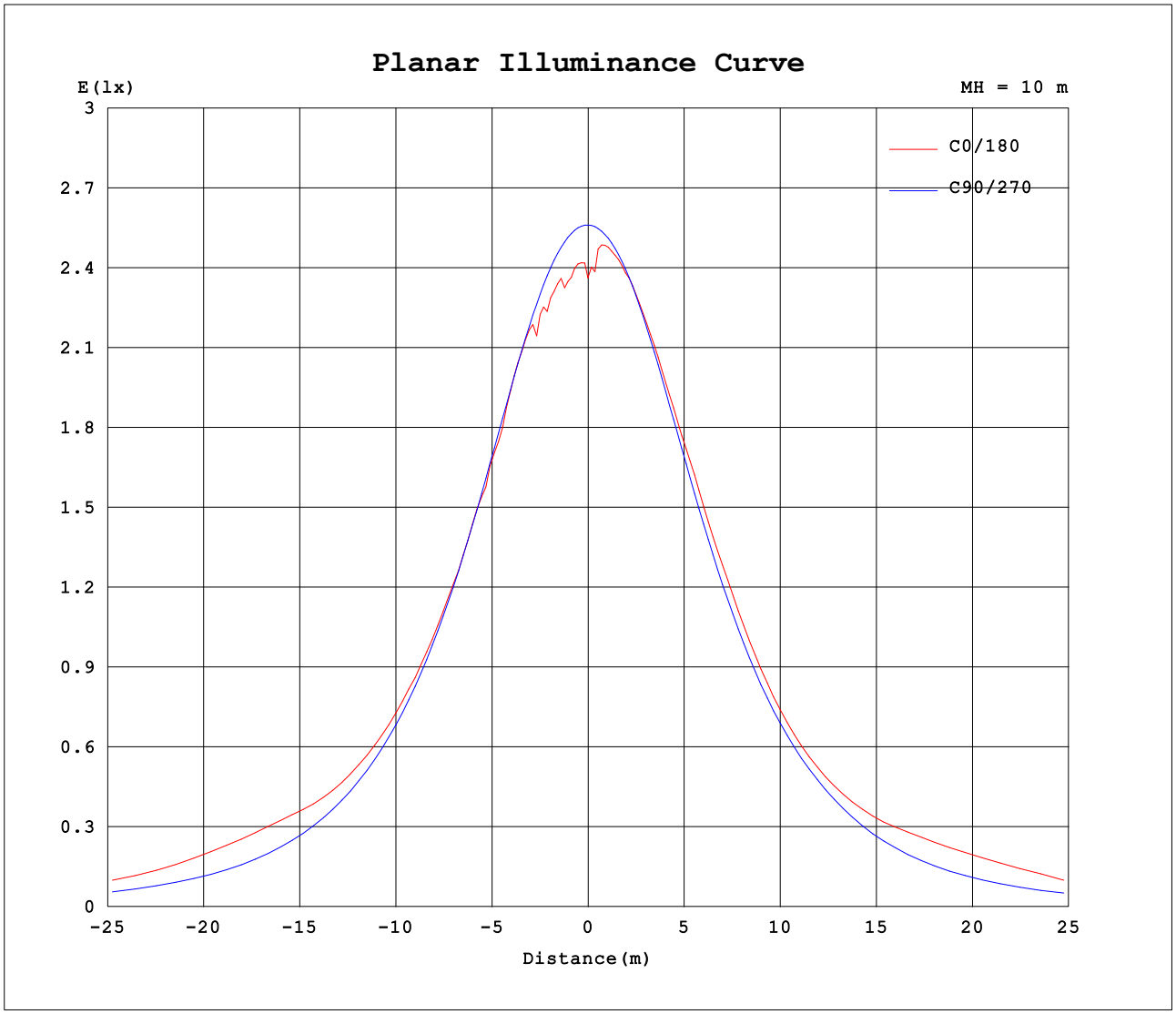
Test:U:24.00V I:0.6020A P:14.46W PF:1.000 Lamp Flux:974.26x1 lm		
NAME: HCP-3965145	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:1
MFR.: HAVIT COMMERCIAL	SUR.:0.008	PROTECTION ANGLE:



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:

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:

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:24.00V I:0.6020A P:14.46W PF:1.000 Lamp Flux:974.26x1 lm		
NAME: HCP-3965145	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	236	256	236	256
5	239	256	251	255
10	242	254	252	254
15	238	251	251	250
20	246	246	249	245
25	235	239	245	239
30	230	230	241	230
35	221	219	233	220
40	213	207	223	208
45	206	193	209	195
50	201	179	198	180
55	205	162	194	161
60	223	143	210	140
65	211	122	218	115
70	161	98.1	174	87.9
75	123	71.7	141	58.8
80	91.8	44.2	104	29.7
85	63.7	19.0	73.4	4.15
90	42.2	2.81	48.2	0.69

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
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Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.270
Humidity:65.0%
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