IES TEST REPORT

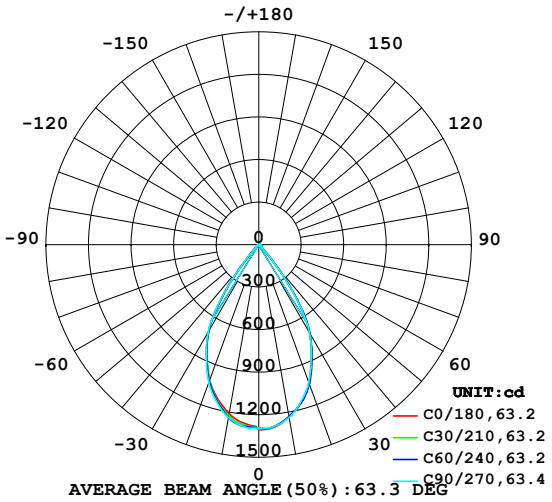
Photometric Filename: HCP-81X22112.IES

LUMINAIRE PHOTOMETRIC TEST REPORT

NAME: HCP-81X22112	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: HAVIT COMMERCIAL	SUR.:0.061	Shielding Angle:

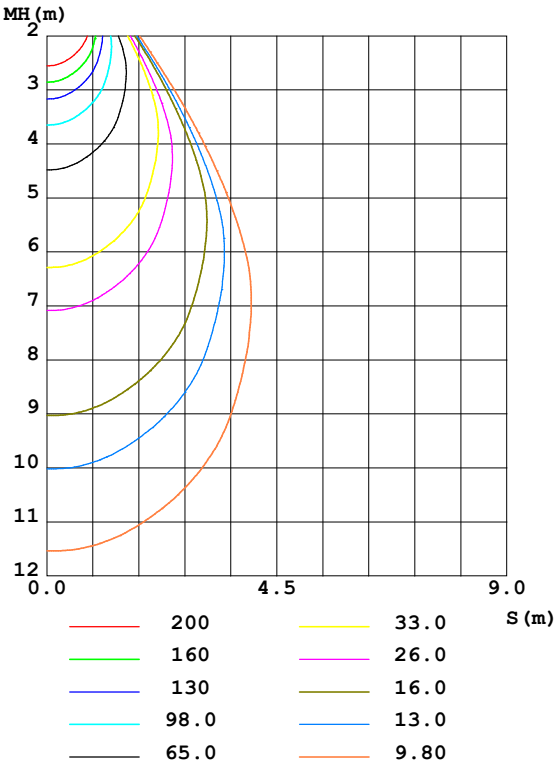
DATA OF LAMP		PHOTOMETRIC DATA Eff: 102.18 lm/W			
MODEL	12W Tri-color	Imax(cd)	1305	S/MH(C0/180)	0.93
NOMINAL POWER(W)	12	LOR(%)	100.0	S/MH(C90/270)	0.94
RATED VOLTAGE(V)	240	TOTAL FLUX(lm)	1201.7	η UP,DN(C0-180)	0.0,50.1
NOMINAL FLUX(lm)	1201.65	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.0,49.9
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	1.00
TEST VOLTAGE(V)	240	η down(%)	100.0	CIBSE SHR MAX	1.00

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



AVERAGE BEAM ANGLE(50%):63.3 DEG

C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



C Range: 0 - 180DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2020-05-28

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.366
Humidity:65.0%
Test Distance:8.120m [K=1.0000]
Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

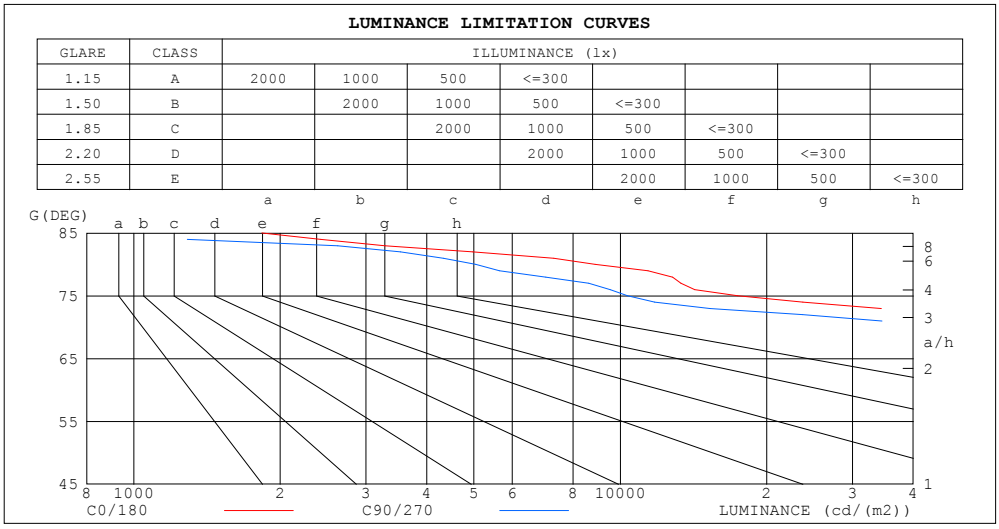
γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	1235	1232	1238	1233	1209	1233	1238	1232	0- 10	120.8	120.8	10.1,10.1
20	1046	1047	1035	1028	1016	1028	1035	1047	10- 20	320.7	441.5	36.7,36.7
30	724.8	724.9	716.3	713.4	705.7	713.4	716.3	724.9	20- 30	402.2	843.7	70.2,70.2
40	181.4	186.5	178.7	178.5	156.4	178.5	178.7	186.5	30- 40	282.0	1126	93.7,93.7
50	22.75	24.87	23.80	22.48	21.02	22.48	23.80	24.87	40- 50	48.59	1174	97.7,97.7
60	13.37	13.31	12.89	13.62	13.67	13.62	12.89	13.31	50- 60	14.86	1189	99,99
70	7.293	6.722	4.877	6.311	6.502	6.311	4.877	6.722	60- 70	10.48	1200	99.8,99.8
80	0.4504	0.3393	0.2557	0.2663	0.3644	0.2663	0.2557	0.3393	70- 80	1.929	1202	100,100
90	0	0	0	0	0	0	0	0	80- 90	0.0820	1202	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 - 180DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2020-05-28

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.366
Humidity:65.0%
Test Distance:8.120m [K=1.0000]
Remarks:

LUMINANCE LIMITATION CURVES

NAME: HCP-81X22112	**TYPE:**	**WEIGHT:**
SPEC.:	**DIM.:**	**SERIAL No.:**
MFR.: HAVIT COMMERCIAL	**SUR.:0.061**	**Shielding Angle:**



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	1835	19
80	8880	5042
75	17426	10354
70	72998	48818
65	88699	86600
60	91556	88240
55	95247	92742
50	121146	126763
45	228345	250170

C Range: 0 - 180DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2020-05-28

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.366
Humidity:65.0%
Test Distance:8.120m [K=1.0000]
Remarks:

WEC AND CCEC

NAME: HCP-81X22112	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: HAVIT COMMERCIAL	SUR.:0.061	Shielding 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	.180	.102	.032	.173	.099	.031	.160	.092	.029	.149	.086	.028	.138	.080	.026	
2.0	.173	.095	.029	.167	.092	.028	.156	.087	.027	.146	.082	.026	.137	.078	.025	
3.0	.165	.088	.026	.160	.086	.026	.151	.082	.025	.142	.078	.024	.135	.074	.023	
4.0	.157	.082	.024	.153	.080	.024	.145	.077	.023	.138	.074	.022	.131	.071	.022	
5.0	.150	.076	.022	.146	.075	.022	.139	.072	.021	.133	.070	.021	.127	.068	.020	
6.0	.143	.072	.021	.140	.071	.020	.134	.069	.020	.128	.067	.020	.123	.065	.019	
7.0	.137	.068	.019	.134	.067	.019	.128	.065	.019	.123	.063	.018	.119	.062	.018	
8.0	.131	.064	.018	.128	.063	.018	.124	.062	.018	.119	.060	.017	.115	.059	.017	
9.0	.125	.061	.017	.123	.060	.017	.119	.059	.017	.115	.058	.016	.111	.056	.016	
10.0	.120	.058	.016	.118	.057	.016	.114	.056	.016	.111	.055	.016	.107	.054	.015	

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	.171	.157	.145	.147	.135	.124	.100	.093	.086	.058	.054	.050	.018	.017	.016	
2.0	.156	.132	.112	.134	.114	.097	.092	.079	.068	.053	.046	.040	.017	.015	.013	
3.0	.144	.114	.089	.124	.098	.077	.085	.068	.054	.049	.040	.032	.016	.013	.010	
4.0	.134	.099	.072	.115	.085	.063	.079	.060	.044	.046	.035	.026	.015	.011	.009	
5.0	.126	.087	.059	.108	.076	.051	.074	.053	.036	.043	.031	.022	.014	.010	.007	
6.0	.118	.078	.049	.102	.068	.043	.070	.047	.030	.041	.028	.018	.013	.009	.006	
7.0	.112	.071	.042	.096	.061	.036	.067	.043	.026	.039	.025	.015	.012	.008	.005	
8.0	.106	.064	.036	.092	.056	.031	.063	.039	.022	.037	.023	.013	.012	.008	.004	
9.0	.101	.059	.031	.087	.051	.027	.060	.036	.019	.035	.021	.011	.011	.007	.004	
10.0	.097	.055	.027	.083	.048	.024	.058	.034	.017	.034	.020	.010	.011	.007	.003	

C Range: 0 - 180DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2020-05-28

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.366
Humidity:65.0%
Test Distance:8.120m [K=1.0000]
Remarks:

UGR(Unified Glare Rating) Table

NAME: HCP-81X22112	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: HAVIT COMMERCIAL	SUR.:0.061	Shielding 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	29.5	30.5	29.7	30.6	30.8	29.4	30.4	29.6	30.5	30.7
	3H	29.4	30.3	29.7	30.5	30.7	29.3	30.2	29.6	30.4	30.6
	4H	29.3	30.2	29.6	30.4	30.6	29.2	30.1	29.5	30.3	30.5
	6H	29.2	30.0	29.5	30.3	30.5	29.1	29.9	29.4	30.1	30.4
	8H	29.2	29.9	29.5	30.2	30.5	29.1	29.8	29.4	30.1	30.3
	12H	29.1	29.9	29.5	30.1	30.4	29.0	29.8	29.4	30.0	30.3
4H	2H	29.3	30.1	29.6	30.3	30.6	29.2	30.0	29.5	30.2	30.5
	3H	29.2	29.9	29.5	30.2	30.5	29.1	29.8	29.4	30.1	30.4
	4H	29.1	29.8	29.5	30.1	30.4	29.0	29.7	29.4	30.0	30.3
	6H	29.0	29.6	29.4	29.9	30.3	28.9	29.5	29.3	29.8	30.2
	8H	29.0	29.5	29.4	29.9	30.2	28.9	29.4	29.3	29.7	30.1
	12H	28.9	29.4	29.4	29.8	30.2	28.8	29.3	29.2	29.7	30.1
8H	4H	29.0	29.5	29.4	29.9	30.2	28.9	29.4	29.3	29.8	30.1
	6H	28.9	29.3	29.3	29.7	30.1	28.8	29.2	29.2	29.6	30.0
	8H	28.8	29.2	29.3	29.6	30.1	28.7	29.1	29.2	29.5	30.0
	12H	28.8	29.1	29.3	29.6	30.0	28.7	29.0	29.1	29.4	29.9
12H	4H	28.9	29.4	29.4	29.8	30.2	28.8	29.3	29.2	29.7	30.1
	6H	28.8	29.2	29.3	29.6	30.1	28.7	29.1	29.2	29.5	30.0
	8H	28.8	29.1	29.3	29.6	30.0	28.7	29.0	29.1	29.4	29.9

Variations with the observer position at spacings:		
S = 1.0H	+ 3.7 / - 7.7	+ 3.6 / - 8.1
1.5H	+ 6.2 / - 7.1	+ 6.2 / - 7.7
2.0H	+ 3.3 / - 1.6	+ 3.9 / - 2.3

CIE Pub.117, 1202 lm Total Lamp Luminous Flux Correct (8log(F/F0) = 0.6)

C Range: 0 - 180DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2020-05-28

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.366
Humidity:65.0%
Test Distance:8.120m [K=1.0000]
Remarks:

UTILIZATION FACTORS TABLE

NAME: HCP-81X22112	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: HAVIT COMMERCIAL	SUR.:0.061	Shielding Angle:

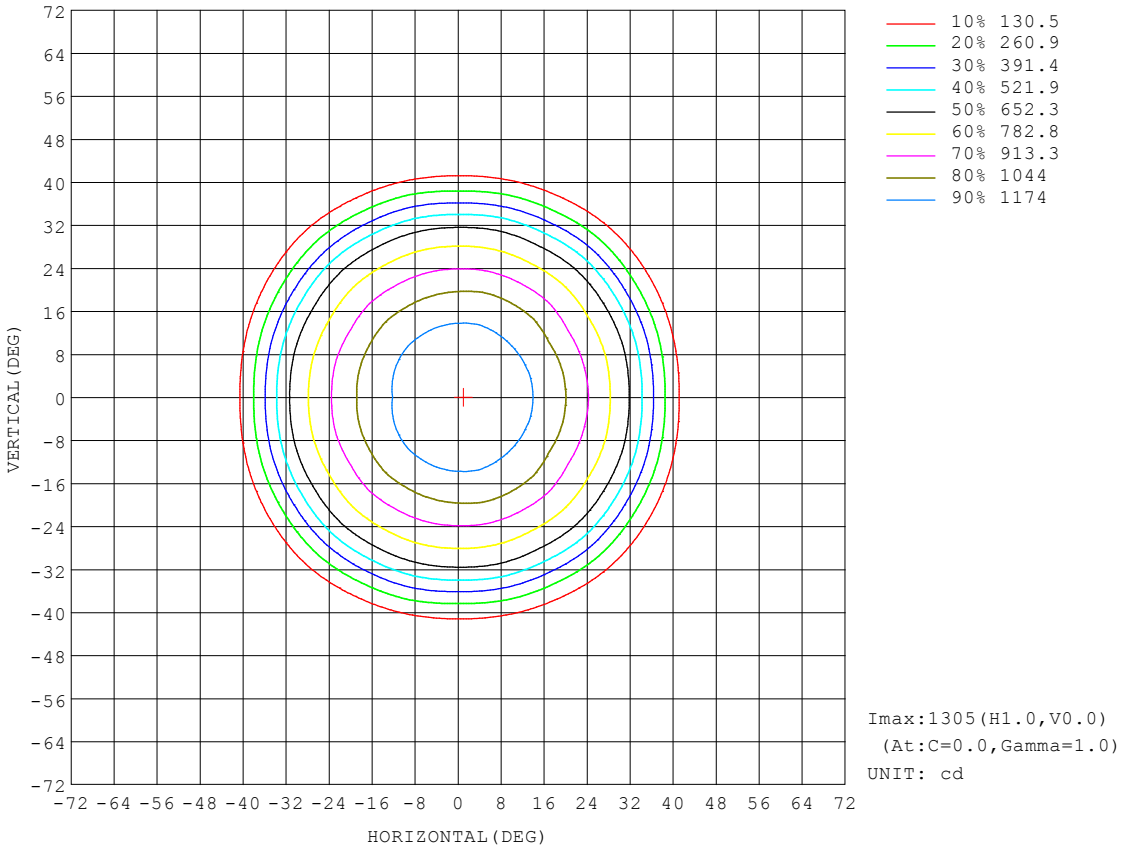
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) k(RI) x RCR = 5									
k = 0.60	88	81	78	87	81	77	86	81	77	74
0.80	95	89	86	94	89	85	93	88	85	81
1.00	99	94	90	99	93	90	97	93	89	86
1.25	103	98	95	102	98	94	100	96	94	89
1.50	106	101	98	105	101	98	103	99	96	92
2.00	109	105	101	107	103	101	105	102	99	94
2.50	110	107	104	109	105	103	106	103	101	95
3.00	112	109	106	110	107	105	107	104	103	96
4.00	114	111	109	112	110	108	108	106	105	98
5.00	115	113	111	113	111	110	109	108	106	99
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004				Suspended					SHRNOM = 1.25	

C Range: 0 - 180DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2020-05-28

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.366
Humidity:65.0%
Test Distance:8.120m [K=1.0000]
Remarks:

ISOCANDELA DIAGRAM

NAME: HCP-81X22112	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: HAVIT COMMERCIAL	SUR.:0.061	Shielding Angle:

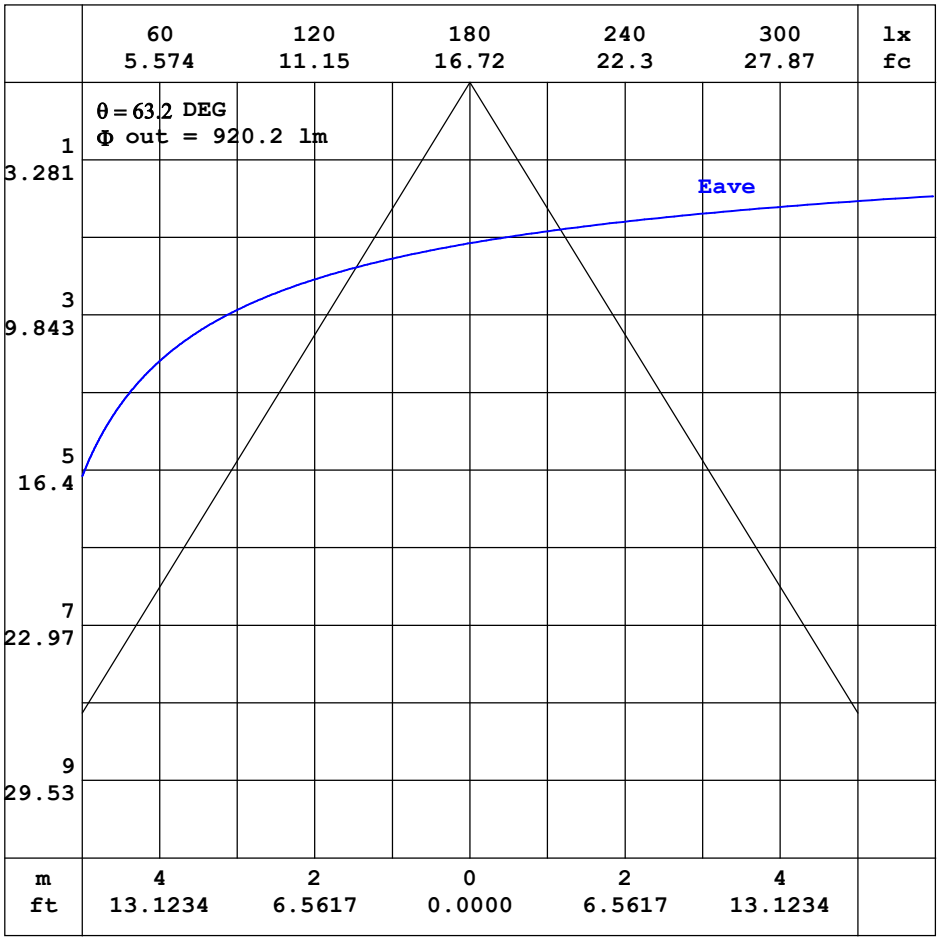


C Range: 0 - 180DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2020-05-28

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.366
Humidity:65.0%
Test Distance:8.120m [K=1.0000]
Remarks:

AAI CURVES

NAME: HCP-81X22112	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: HAVIT COMMERCIAL	SUR.:0.061	Shielding Angle:

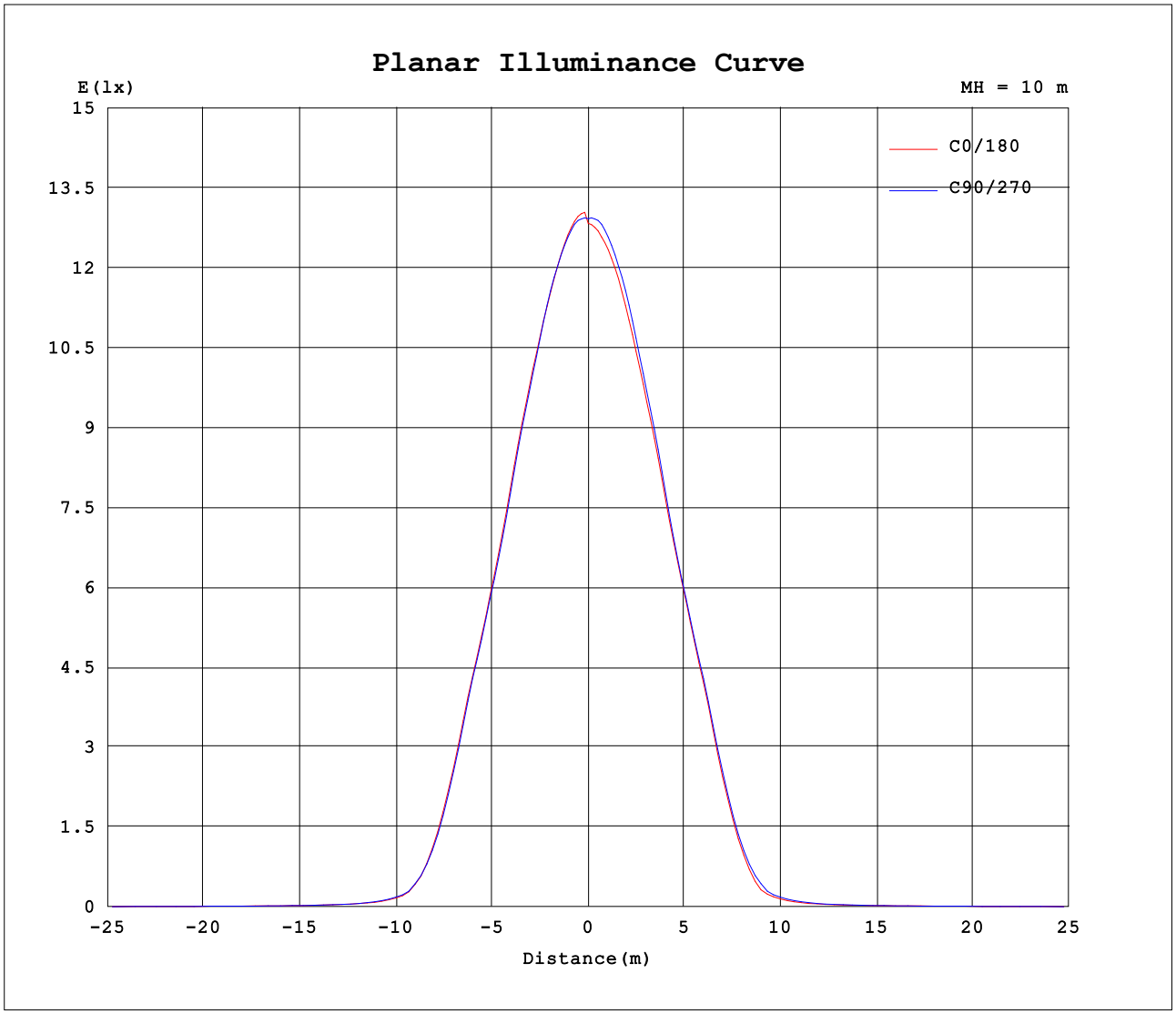


Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 180DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2020-05-28

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.366
Humidity:65.0%
Test Distance:8.120m [K=1.0000]
Remarks:

Planar Illuminance Curve



C Range: 0 - 180DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2020-05-28

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.366
Humidity:65.0%
Test Distance:8.120m [K=1.0000]
Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

NAME: HCP-81X22112	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: HAVIT COMMERCIAL	SUR.:0.061	Shielding Angle:

Table--1 UNIT: cd

γ (DEG) \ C(DEG)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
0	1304	1300	1300	1295	1295	1294	1293	1289	1289	1287	1286	1284	1284	1284	1286	1287	1289	1289	1293
5	1291	1288	1288	1288	1285	1285	1286	1285	1284	1278	1273	1267	1262	1267	1273	1278	1284	1285	1286
10	1235	1234	1232	1232	1230	1238	1238	1238	1235	1233	1226	1218	1209	1218	1226	1233	1235	1238	1238
15	1155	1155	1153	1153	1155	1157	1149	1143	1142	1141	1136	1131	1125	1131	1136	1141	1142	1143	1149
20	1046	1044	1035	1047	1045	1045	1035	1030	1025	1028	1018	1018	1016	1018	1018	1028	1025	1030	1035
25	890	886	876	890	883	885	878	878	874	877	868	873	871	873	868	877	874	878	878
30	725	730	722	725	718	724	716	719	711	713	706	711	706	711	706	713	711	719	716
35	476	486	477	484	468	474	463	469	455	460	448	455	445	455	448	460	455	469	463
40	181	188	182	186	181	186	179	184	178	178	168	169	156	169	168	178	178	184	179
45	47.2	49.9	49.4	51.7	51.1	53.4	51.7	51.4	49.2	48.7	45.6	44.8	42.3	44.8	45.6	48.7	49.2	51.4	51.7
50	22.7	24.1	24.2	24.9	24.4	24.8	23.8	23.3	22.7	22.5	21.9	21.4	21.0	21.4	21.9	22.5	22.7	23.3	23.8
55	16.0	16.1	16.2	16.1	15.8	15.9	15.5	15.9	15.8	16.0	15.9	15.8	15.6	15.8	15.9	16.0	15.8	15.9	15.5
60	13.4	13.5	13.4	13.3	13.0	13.0	12.9	13.2	13.3	13.6	13.7	13.7	13.7	13.7	13.7	13.6	13.3	13.2	12.9
65	10.9	11.1	11.0	11.0	10.7	10.8	10.7	10.8	10.9	11.2	11.3	11.3	11.2	11.3	11.3	11.2	10.9	10.8	10.7
70	7.29	7.42	7.21	6.72	5.68	5.29	4.88	5.15	5.29	6.31	6.71	6.81	6.50	6.81	6.71	6.31	5.29	5.15	4.88
75	1.32	1.59	1.47	1.20	0.90	0.85	0.78	0.78	0.80	0.95	1.05	1.00	0.90	1.00	1.05	0.95	0.80	0.78	0.78
80	0.45	0.50	0.48	0.34	0.29	0.24	0.26	0.23	0.27	0.27	0.36	0.36	0.36	0.36	0.36	0.27	0.27	0.23	0.26
85	0.05	0.05	0.05	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.03	0.00	0.02	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	0.00	0.00	0.00

C Range: 0 - 180DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2020-05-28

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.366
Humidity:65.0%
Test Distance:8.120m [K=1.0000]
Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

NAME: HCP-81X22112	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: HAVIT COMMERCIAL	SUR.:0.061	Shielding Angle:

Table--2 UNIT: cd

γ (DEG) \ C(DEG)	285	300	315	330	345														
0	1294	1295	1295	1300	1300														
5	1285	1285	1288	1288	1288														
10	1238	1230	1232	1232	1234														
15	1157	1155	1153	1153	1155														
20	1045	1045	1047	1035	1044														
25	885	883	890	876	886														
30	724	718	725	722	730														
35	474	468	484	477	486														
40	186	181	186	182	188														
45	53.4	51.1	51.7	49.4	49.9														
50	24.8	24.4	24.9	24.2	24.1														
55	15.9	15.8	16.1	16.2	16.1														
60	13.0	13.0	13.3	13.4	13.5														
65	10.8	10.7	11.0	11.0	11.1														
70	5.29	5.68	6.72	7.21	7.42														
75	0.85	0.90	1.20	1.47	1.59														
80	0.24	0.29	0.34	0.48	0.50														
85	0.00	0.02	0.00	0.05	0.05														
90	0.00	0.00	0.00	0.00	0.00														

C Range: 0 - 180DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2020-05-28

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.366
Humidity:65.0%
Test Distance:8.120m [K=1.0000]
Remarks: