IES TEST REPORT

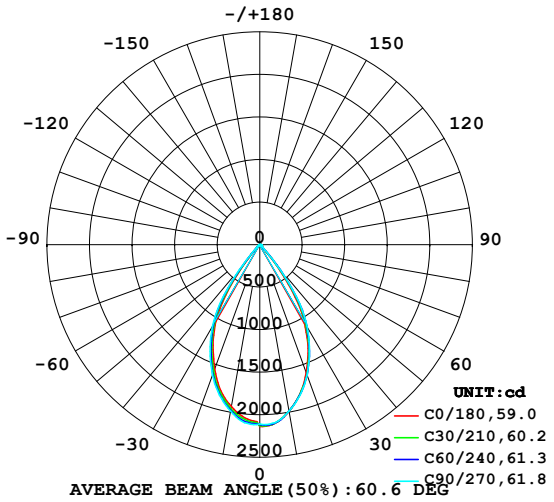
Photometric Filename: HCP-81X22118.IES

LUMINAIRE PHOTOMETRIC TEST REPORT

NAME: HCP-81X22118	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: HAVIT COMMERCIAL	SUR.:0.078	Shielding Angle:

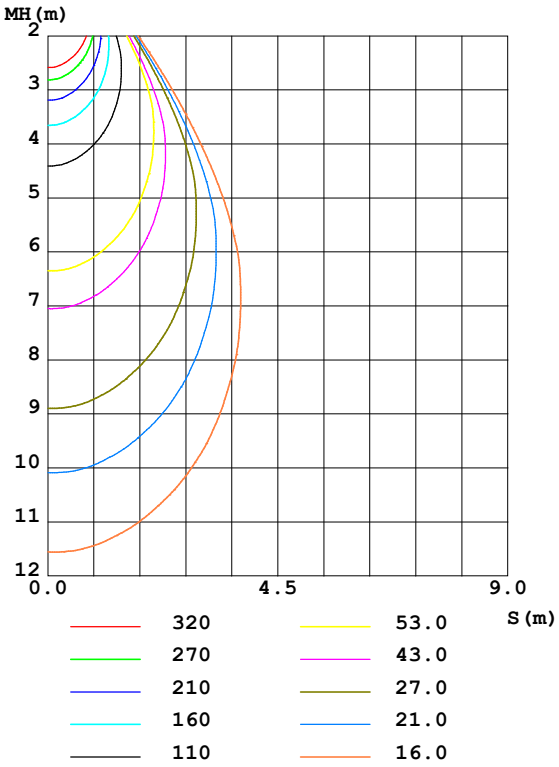
DATA OF LAMP		PHOTOMETRIC DATA Eff: 105.20 lm/W			
MODEL	18W Tri-color	Imax(cd)	2138	S/MH(C0/180)	0.89
NOMINAL POWER(W)	18	LOR(%)	100.0	S/MH(C90/270)	0.92
RATED VOLTAGE(V)	240	TOTAL FLUX(lm)	1865.6	η UP,DN(C0-180)	0.0,50.1
NOMINAL FLUX(lm)	1865.64	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.0,49.9
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	0.75
TEST VOLTAGE(V)	240	η down(%)	100.0	CIBSE SHR MAX	0.95

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



AVERAGE BEAM ANGLE(50%):60.6 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:

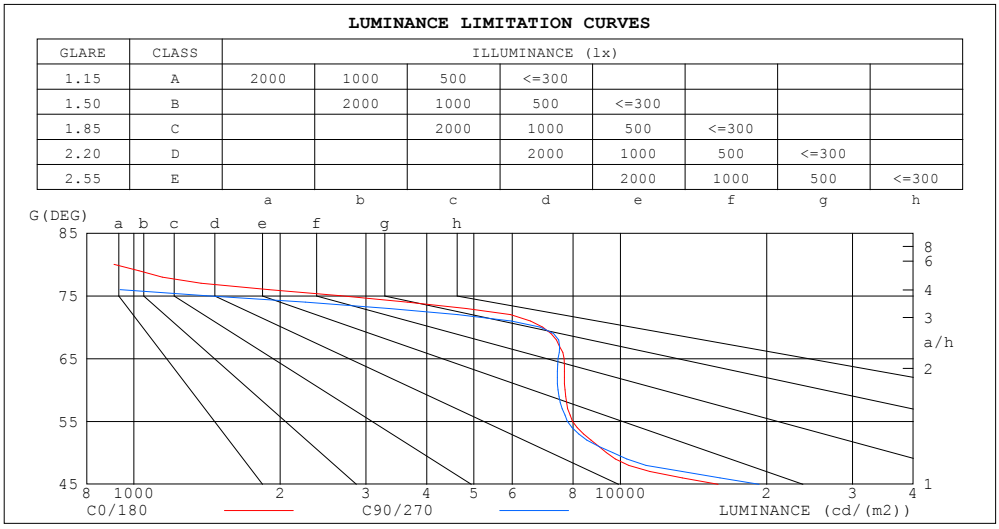
γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	1990	1987	1987	1969	1931	1969	1987	1987	0- 10	195.7	195.7	10.5,10.5
20	1602	1634	1629	1611	1554	1611	1629	1634	10- 20	507.8	703.5	37.7,37.7
30	1049	1102	1114	1088	1031	1088	1114	1102	20- 30	621.2	1325	71,71
40	242.0	308.6	309.4	277.6	209.1	277.6	309.4	308.6	30- 40	432.8	1757	94.2,94.2
50	28.75	28.57	29.62	30.21	29.49	30.21	29.62	28.57	40- 50	68.86	1826	97.9,97.9
60	18.38	18.57	17.78	17.66	17.36	17.66	17.78	18.57	50- 60	19.89	1846	99,99
70	11.31	11.82	11.18	11.14	10.66	11.14	11.18	11.82	60- 70	14.83	1861	99.8,99.8
80	0.7557	0.6210	0.4074	0.5053	0.5824	0.5053	0.4074	0.6210	70- 80	4.435	1865	100,100
90	0	0	0	0	0	0	0	0	80- 90	0.1519	1866	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-81X22118	**TYPE:**	**WEIGHT:**
SPEC.:	**DIM.:**	**SERIAL No.:**
MFR.: HAVIT COMMERCIAL	**SUR.:0.078**	**Shielding Angle:**



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	233	141
80	911	491
75	2663	1410
70	6921	6843
65	7666	7453
60	7697	7447
55	7970	7787
50	9365	9650
45	15886	19295

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-81X22118	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: HAVIT COMMERCIAL	SUR.:0.078	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	.179	.102	.032	.172	.098	.031	.159	.091	.029	.148	.085	.027	.137	.079	.026	
2.0	.171	.094	.029	.166	.091	.028	.155	.086	.027	.145	.082	.026	.136	.077	.024	
3.0	.163	.087	.026	.159	.085	.026	.149	.081	.025	.141	.077	.024	.133	.074	.023	
4.0	.156	.081	.024	.151	.079	.023	.144	.076	.023	.136	.073	.022	.130	.070	.021	
5.0	.148	.076	.022	.145	.074	.022	.138	.072	.021	.132	.069	.021	.126	.067	.020	
6.0	.142	.071	.020	.139	.070	.020	.133	.068	.020	.127	.066	.019	.122	.064	.019	
7.0	.135	.067	.019	.133	.066	.019	.127	.064	.019	.122	.063	.018	.118	.061	.018	
8.0	.130	.063	.018	.127	.063	.018	.122	.061	.017	.118	.060	.017	.114	.058	.017	
9.0	.124	.060	.017	.122	.060	.017	.118	.058	.017	.114	.057	.016	.110	.056	.016	
10.0	.119	.057	.016	.117	.057	.016	.113	.056	.016	.110	.055	.016	.106	.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	.125	.100	.093	.086	.058	.054	.050	.018	.017	.016	
2.0	.156	.132	.113	.134	.114	.097	.092	.079	.068	.053	.046	.040	.017	.015	.013	
3.0	.144	.114	.089	.123	.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	.125	.087	.059	.108	.076	.052	.074	.053	.036	.043	.031	.022	.014	.010	.007	
6.0	.118	.078	.049	.101	.068	.043	.070	.047	.030	.041	.028	.018	.013	.009	.006	
7.0	.112	.071	.042	.096	.061	.036	.066	.043	.026	.039	.025	.015	.012	.008	.005	
8.0	.106	.064	.036	.091	.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	.096	.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-81X22118	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: HAVIT COMMERCIAL	SUR.:0.078	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	19.3	20.3	19.5	20.4	20.6	19.8	20.8	20.0	20.9	21.1
	3H	19.2	20.1	19.5	20.3	20.5	19.7	20.6	20.0	20.8	21.0
	4H	19.2	20.0	19.4	20.2	20.4	19.6	20.5	19.9	20.7	20.9
	6H	19.1	19.9	19.4	20.1	20.3	19.6	20.3	19.9	20.6	20.8
	8H	19.0	19.8	19.3	20.0	20.3	19.5	20.3	19.8	20.5	20.8
	12H	19.0	19.7	19.3	20.0	20.2	19.5	20.2	19.8	20.4	20.7
4H	2H	19.1	19.9	19.4	20.1	20.4	19.6	20.4	19.9	20.6	20.9
	3H	19.1	19.8	19.4	20.0	20.3	19.5	20.2	19.9	20.5	20.8
	4H	19.0	19.6	19.3	19.9	20.2	19.4	20.1	19.8	20.4	20.7
	6H	18.9	19.5	19.3	19.8	20.1	19.4	19.9	19.7	20.3	20.6
	8H	18.8	19.4	19.2	19.7	20.1	19.3	19.8	19.7	20.2	20.5
	12H	18.8	19.3	19.2	19.7	20.0	19.3	19.7	19.7	20.1	20.5
8H	4H	18.9	19.4	19.3	19.7	20.1	19.3	19.8	19.7	20.2	20.6
	6H	18.8	19.2	19.2	19.6	20.0	19.2	19.6	19.6	20.0	20.5
	8H	18.7	19.1	19.2	19.5	19.9	19.2	19.5	19.6	20.0	20.4
	12H	18.7	19.0	19.1	19.4	19.9	19.1	19.4	19.6	19.9	20.3
12H	4H	18.8	19.3	19.2	19.7	20.1	19.3	19.7	19.7	20.1	20.5
	6H	18.7	19.1	19.2	19.5	19.9	19.2	19.5	19.6	20.0	20.4
	8H	18.7	19.0	19.1	19.4	19.9	19.1	19.4	19.6	19.9	20.3

Variations with the observer position at spacings:		
S = 1.0H	+ 3.3 / - 7.4	+ 3.6 / - 8.4
1.5H	+ 5.9 / - 6.8	+ 6.3 / - 7.9
2.0H	+ 2.4 / - 0.8	+ 3.5 / - 1.2

CIE Pub.117, 1866 lm Total Lamp Luminous Flux Correct (8log(F/F0) = 2.2)

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-81X22118	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: HAVIT COMMERCIAL	SUR.:0.078	Shielding Angle:

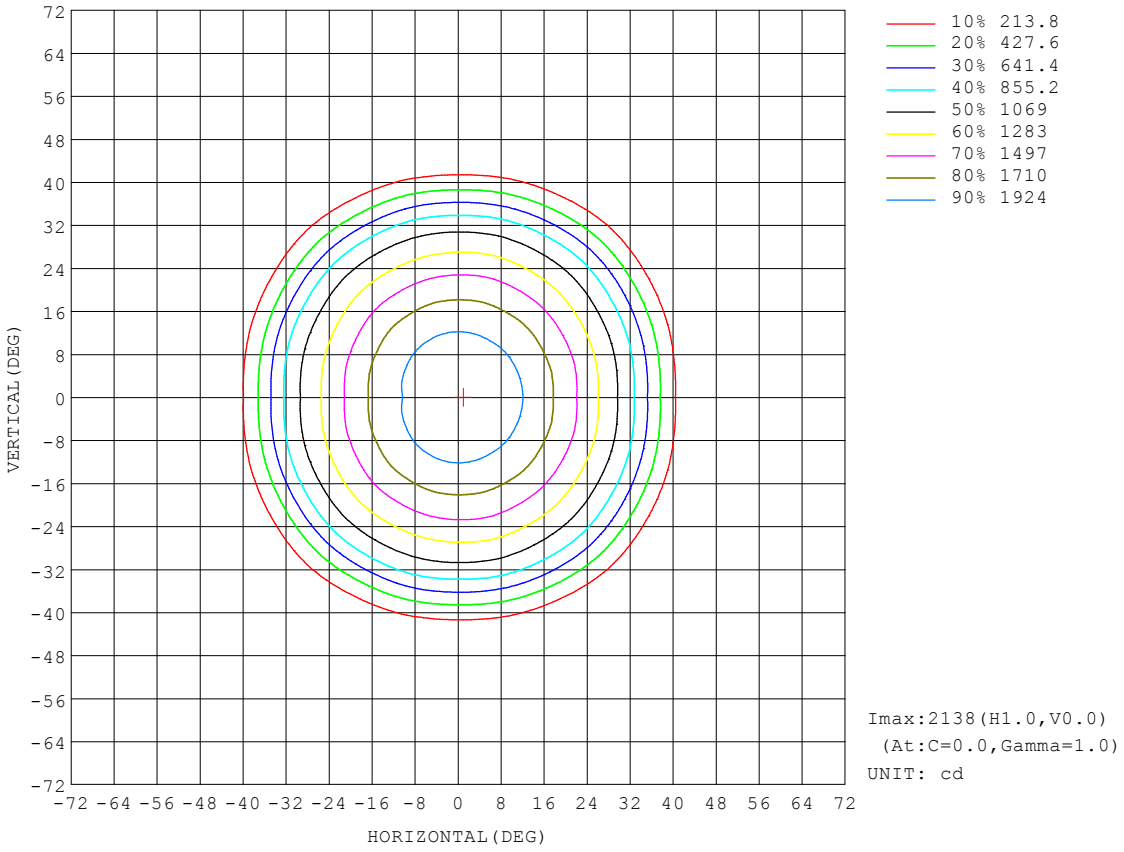
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) k(RI) x RCR = 5									
k = 0.60	88	82	78	87	82	78	87	81	78	74
0.80	95	90	86	95	89	86	93	89	85	82
1.00	100	94	91	99	94	90	97	93	90	86
1.25	104	98	95	102	98	95	101	97	94	90
1.50	106	102	98	105	101	98	103	99	97	92
2.00	109	105	102	107	104	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	105	103	96
4.00	114	111	109	112	110	108	108	106	105	98
5.00	115	113	111	113	111	110	109	108	107	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-81X22118	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: HAVIT COMMERCIAL	SUR.:0.078	Shielding Angle:

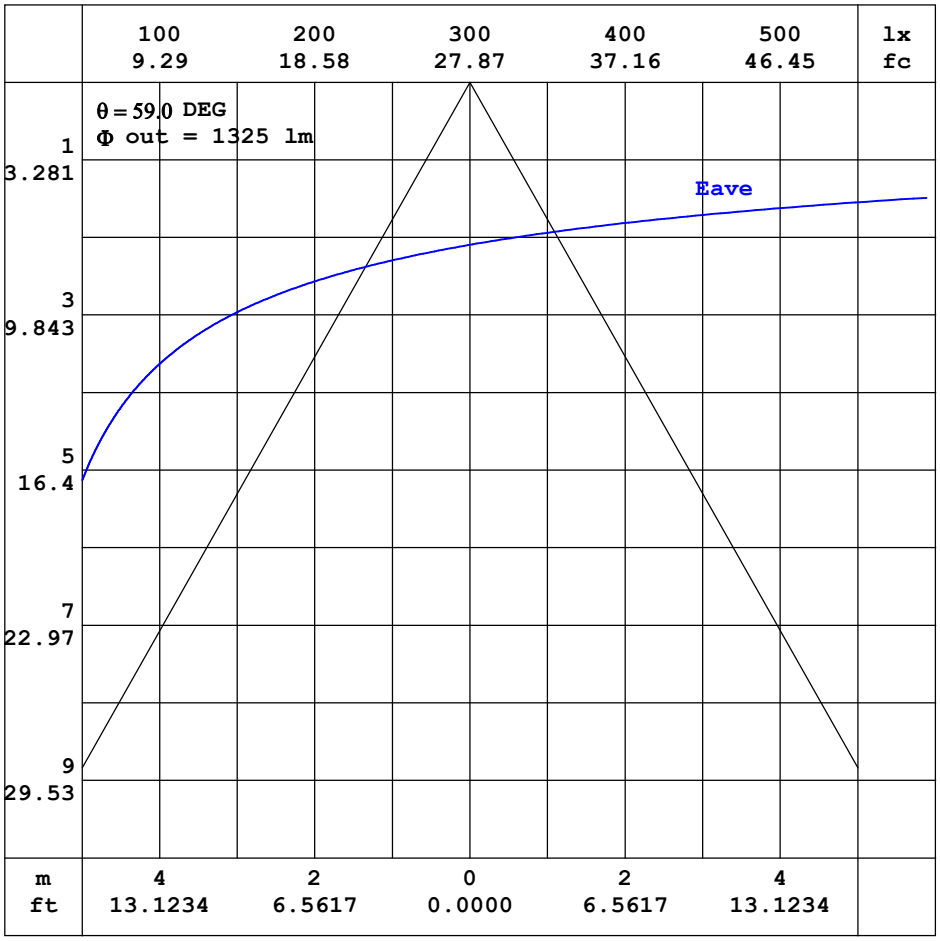


C Range: 0 - 180DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2020-05-28

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-81X22118	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: HAVIT COMMERCIAL	SUR.:0.078	Shielding Angle:

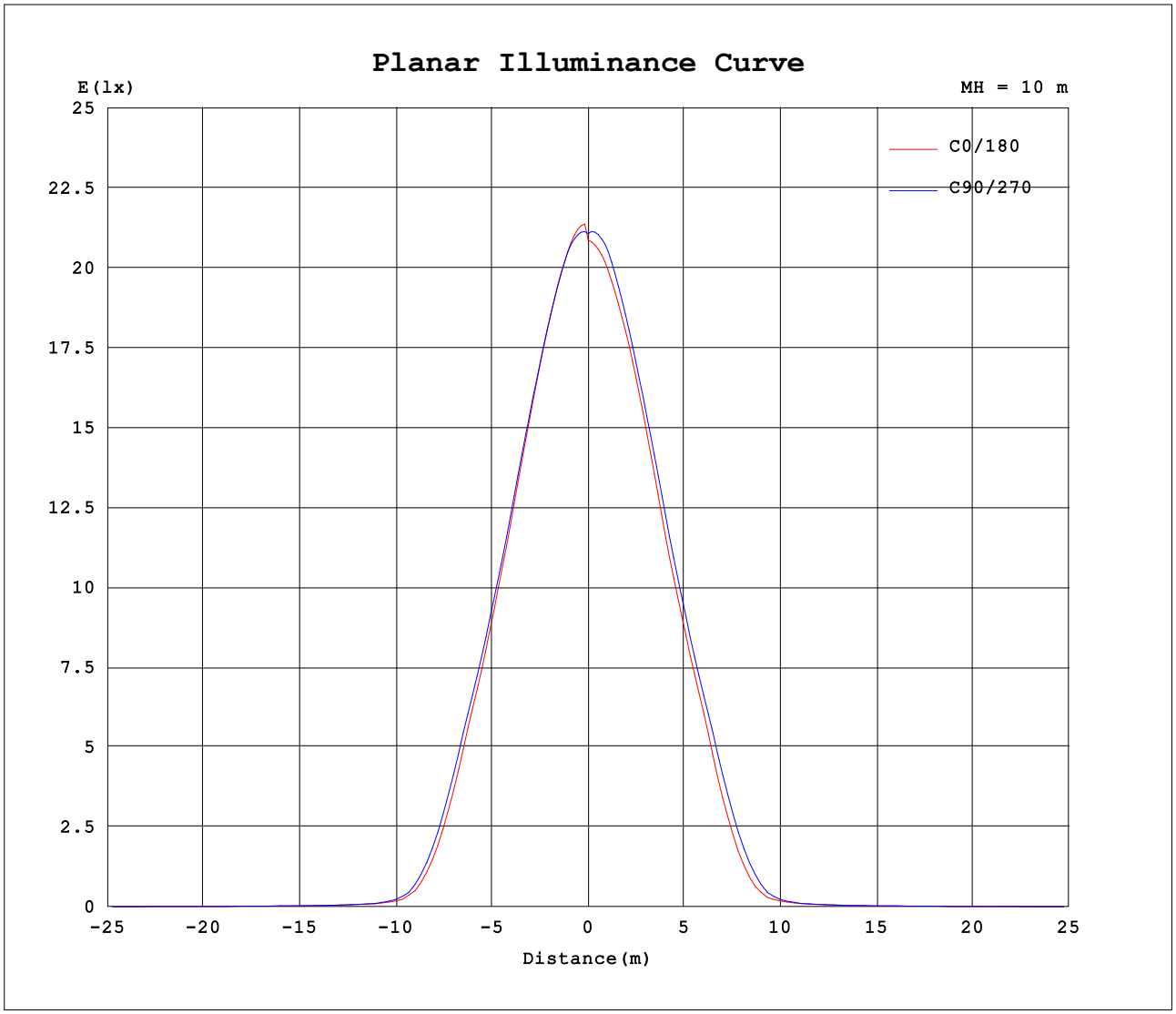


Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

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-81X22118	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: HAVIT COMMERCIAL	SUR.:0.078	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	2136	2128	2129	2117	2116	2110	2108	2101	2100	2095	2092	2086	2086	2086	2092	2095	2100	2101	2108
5	2106	2104	2105	2104	2105	2103	2099	2094	2083	2075	2061	2051	2043	2051	2061	2075	2083	2094	2099
10	1990	1987	1986	1987	1986	1989	1987	1986	1977	1969	1959	1948	1931	1948	1959	1969	1977	1986	1987
15	1822	1824	1823	1832	1827	1831	1830	1831	1822	1815	1800	1792	1777	1792	1800	1815	1822	1831	1830
20	1602	1621	1625	1634	1630	1633	1629	1626	1617	1611	1587	1576	1554	1576	1587	1611	1617	1626	1629
25	1345	1365	1367	1381	1381	1395	1385	1377	1364	1360	1336	1327	1303	1327	1336	1360	1364	1377	1385
30	1049	1072	1080	1102	1106	1120	1114	1109	1094	1088	1064	1056	1031	1056	1064	1088	1094	1109	1114
35	662	703	718	750	752	772	755	759	728	714	676	662	623	662	676	714	728	759	755
40	242	271	286	309	314	323	309	311	290	278	247	240	209	240	247	278	290	311	309
45	53.6	55.8	56.2	59.7	60.9	64.9	65.2	65.7	63.2	62.2	58.5	56.6	52.8	56.6	58.5	62.2	63.2	65.7	65.2
50	28.7	28.3	28.0	28.6	29.1	29.7	29.6	29.7	29.4	30.2	30.3	30.1	29.5	30.1	30.3	30.2	29.4	29.7	29.6
55	21.8	21.9	21.7	21.8	21.8	21.7	21.3	21.2	21.0	21.5	21.4	21.3	21.4	21.3	21.4	21.5	21.0	21.2	21.3
60	18.4	18.5	18.4	18.6	18.3	18.2	17.8	17.7	17.4	17.7	17.5	17.5	17.4	17.5	17.5	17.7	17.4	17.7	17.8
65	15.5	15.6	15.5	15.7	15.6	15.4	15.0	14.8	14.6	14.8	14.7	14.6	14.2	14.6	14.7	14.8	14.6	14.8	15.0
70	11.3	11.8	11.6	11.8	11.6	11.8	11.2	11.3	10.9	11.1	11.1	11.0	10.7	11.0	11.1	11.1	10.9	11.3	11.2
75	3.29	3.75	3.81	3.35	2.32	2.00	1.74	1.89	2.11	2.95	3.46	3.57	3.37	3.57	3.46	2.95	2.11	1.89	1.74
80	0.76	0.76	0.68	0.62	0.51	0.45	0.41	0.41	0.45	0.51	0.53	0.62	0.58	0.62	0.53	0.51	0.45	0.41	0.41
85	0.10	0.12	0.12	0.10	0.07	0.04	0.06	0.04	0.07	0.04	0.08	0.04	0.08	0.04	0.08	0.04	0.07	0.04	0.06
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-81X22118	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: HAVIT COMMERCIAL	SUR.:0.078	Shielding Angle:

Table--2 UNIT: cd

γ (DEG) \ C(DEG)	285	300	315	330	345
0	2110	2116	2117	2129	2128
5	2103	2105	2104	2105	2104
10	1989	1986	1987	1986	1987
15	1831	1827	1832	1823	1824
20	1633	1630	1634	1625	1621
25	1395	1381	1381	1367	1365
30	1120	1106	1102	1080	1072
35	772	752	750	718	703
40	323	314	309	286	271
45	64.9	60.9	59.7	56.2	55.8
50	29.7	29.1	28.6	28.0	28.3
55	21.7	21.8	21.8	21.7	21.9
60	18.2	18.3	18.6	18.4	18.5
65	15.4	15.6	15.7	15.5	15.6
70	11.8	11.6	11.8	11.6	11.8
75	2.00	2.32	3.35	3.81	3.75
80	0.45	0.51	0.62	0.68	0.76
85	0.04	0.07	0.10	0.12	0.12
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: