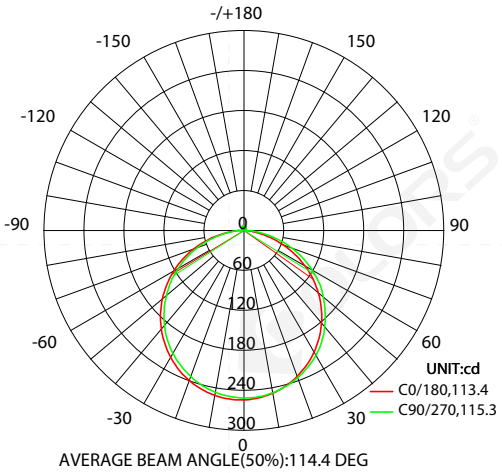
LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:24.00V I:0.7392A P:17.74W PF:1.000 Freq:0Hz Lamp Flux:764.379x1 lm		
NAME: HCP-36616164	TYPE:	WEIGHT:
SPEC.:HCP-36616164	DIM.: 1000*16*16mm	SERIAL No.:
MFR.: HAVIT COMMERCIAL	SUR.:1000*16mm	Shielding Angle:

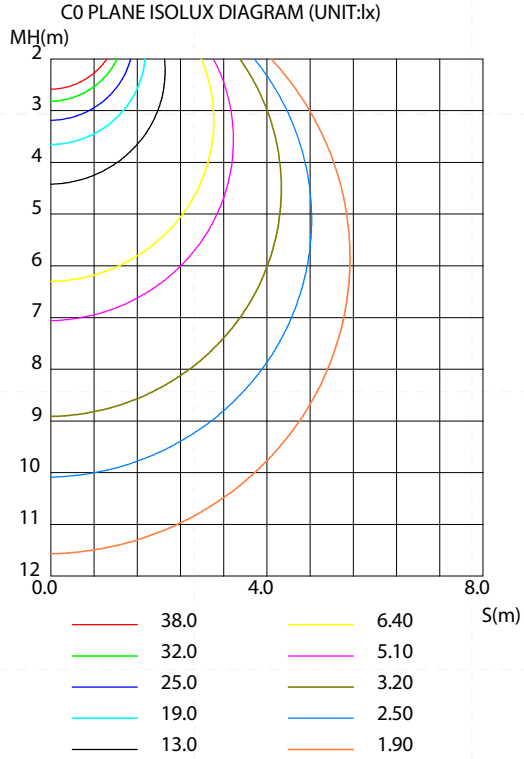
DATA OF LAMP		PHOTOMETRIC DATA		Eff: 43.08 lm/W	
MODEL	HCP-36616164	max(cd)	254.4	S/MH(C0/180)	1.24
NOMINAL POWER(W)	18	LOR(%)	100.0	S/MH(C90/270)	1.26
RATED VOLTAGE(V)	24	TOTAL FLUX(lm)	764.38	UP,DN(C0-180)	1.8,47.8
NOMINAL FLUX(lm)	764.379	CIE CLASS	DIRECT	UP,DN(C180-360)	1.7,48.6
LAMPS INSIDE	1	up(%)	3.6	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	24	down(%)	96.4	CIBSE SHR MAX	1.35

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



AVERAGE BEAM ANGLE(50%):114.4 DEG

C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



C Range: 0 - 360DEG
C Interval: 45.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:JYH
Test Date:2023-07-13

Range: 0 - 180DEG
Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.362
Humidity:65.0%
Test Distance:10.375m [K=1.0000]
Remarks:

E:\ ! " # \20230906\IES\HCP-36616164\HCP-36616164-9LWM24CSW025CC01$0 % & \HCP-36616164\HCP-36616164.GOS

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

	C0	C45	C90	C135	C180	C225	C270	C315		zone	tota l	%lum,lamp
10	247.9	248.0	247.5	247.1	251.4	248.4	246.6	245.0	0- 10	23.86	23.8 6	3.12,3.12
20	233.2	234.6	235.3	235.3	239.7	235.8	233.4	231.1	10- 20	68.39	92.2 5	12.1,12.1
30	210.7	213.6	216.2	215.7	220.0	215.4	213.4	209.8	20- 30	103.9	196. 2	25.7,25.7
40	181.2	185.3	188.8	188.9	193.1	188.3	185.8	181.6	30- 40	125.9	322. 1	42.1,42.1
50	145.9	151.0	155.7	156.1	160.0	154.9	152.0	147.8	40- 50	131.4	453. 5	59.3,59.3
60	105.7	111.4	117.8	117.8	121.8	116.8	114.4	109.2	50- 60	120.0	573.5	75,75
70	61.99	68.31	75.56	75.85	79.45	75.11	73.66	66.92	60- 70	92.45	666. 0	87.1,87.1
80	20.71	27.42	32.62	34.48	36.32	34.25	32.37	26.97	70- 80	53.71	719. 7	94.2,94.2
90	2.057	5.857	5.491	7.450	5.714	7.366	6.435	5.542	80- 90	17.38	737. 0	96.4,96.4
100	2.075	3.723	2.955	3.831	1.518	3.629	1.752	3.311	90-100	4.226	741.3	97,97
110	2.932	3.922	2.751	3.886	2.327	3.525	2.585	3.615	100-110	3.105	744. 4	97.4,97.4
120	3.837	4.012	3.615	4.306	3.178	3.921	3.473	4.119	110-120	3.484	747. 9	97.8,97.8
130	4.677	4.558	4.490	4.401	4.072	4.221	4.408	4.226	120-130	3.657	751. 5	98.3,98.3
140	5.516	5.404	5.313	5.242	5.014	5.264	5.290	5.366	130-140	3.737	755. 3	98.8,98.8
150	6.205	6.141	5.996	5.961	5.883	5.948	6.068	5.924	140-150	3.545	758. 8	99.3,99.3
160	6.871	6.747	6.595	6.585	6.675	6.614	6.686	6.565	150-160	2.932	761. 7	99.7,99.7
170	7.369	7.232	7.033	7.076	7.304	7.094	7.118	6.992	160-170	1.955	763. 7	99.9,99.9
180	7.591	7.478	7.280	7.298	7.657	7.406	7.358	7.274	170-180	0.6937	764.4	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

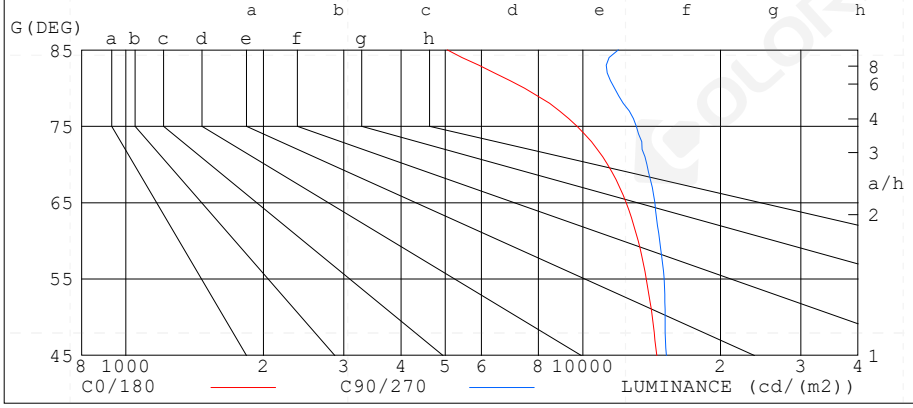
C Range: 0 - 360DEG
C Interval: 45.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:JYH
Test Date:2023-07-13

Range: 0 - 180DEG
Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.362
Humidity:65.0%
Test Distance:10.375m [K=1.0000]
Remarks:

LUMINANCE LIMITATION CURVES

LUMINANCE LIMITATION CURVES

GLARE	CLASS	ILLUMINANCE (lx)							
1.15	A	2000	1000	500	<=300				
1.50	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.20	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	5045	11957
80	7453	11740
75	9724	13086
70	11329	13807
65	12441	14370
60	13212	14728
55	13767	15072
50	14187	15140
45	14517	15228

C Range: 0 - 360DEG
C Interval: 45.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:JYH
Test Date:2023-07-13

Range: 0 - 180DEG
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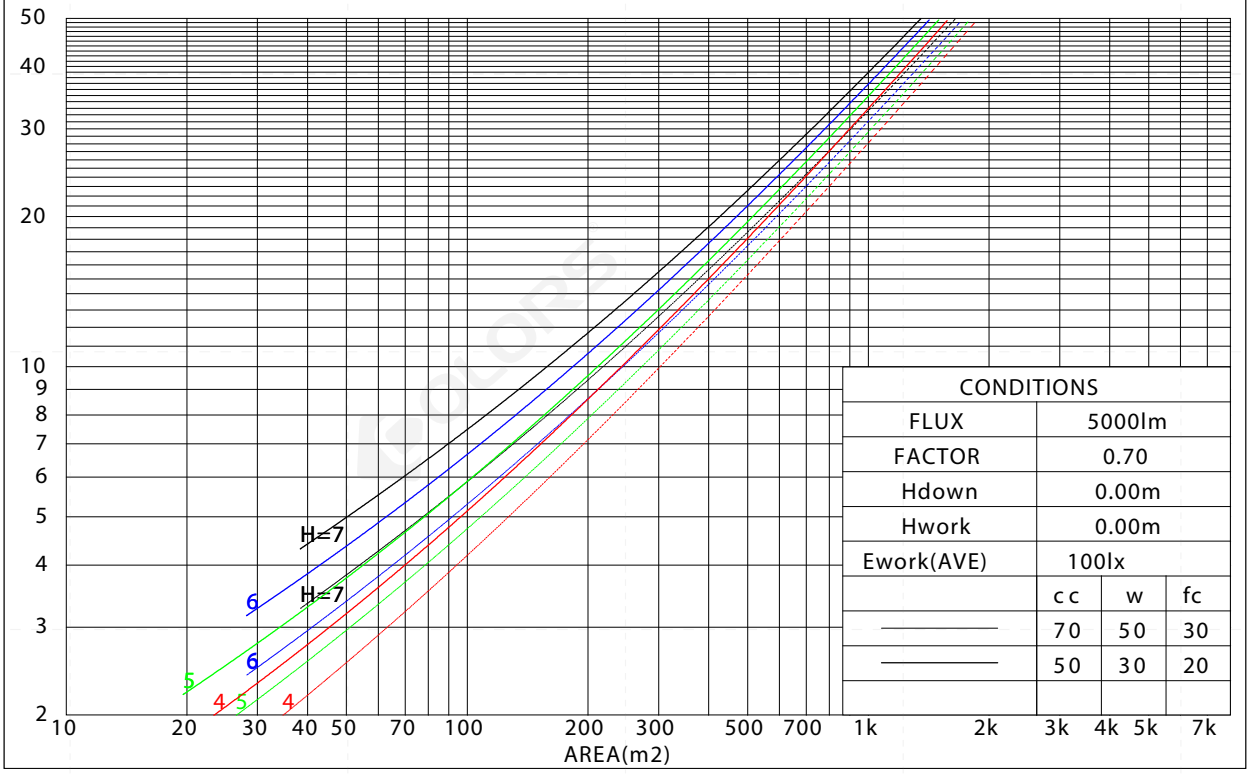
E:\ ! " # \20230906\IES\HCP-36616164\HCP-36616164-9LWM24CSW025CC01$0 % & \HCP-36616164\HCP-36616164.GOS

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

cc	80%			70%			50%			30%			10%			0
w	50 %	30 %	10%	50 %	30 %	10%	50 %	30 %	10%	50 %	30 %	10%	50 %	30 %	10%	0
fc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio			Coefficients of Utilization(CU)												
0.0	1.18	1.18	1.18	1.15	1.15	1.15	1.09	1.09	1.09	1.04	1.04	1.04	.99	.99	.99	.96
1.0	1.03	.98	.94	1.00	.96	.93	.95	.92	.89	.91	.88	.86	.87	.84	.82	.80
2.0	.89	.82	.77	.87	.81	.75	.83	.78	.73	.79	.75	.71	.76	.72	.69	.66
3.0	.78	.70	.63	.76	.69	.63	.73	.66	.61	.70	.64	.60	.67	.62	.58	.56
4.0	.69	.60	.54	.68	.59	.53	.65	.58	.52	.62	.56	.51	.59	.54	.50	.47
5.0	.62	.53	.46	.60	.52	.46	.58	.50	.45	.56	.49	.44	.53	.48	.43	.41
6.0	.56	.47	.40	.54	.46	.40	.52	.45	.39	.50	.44	.38	.48	.42	.38	.36
7.0	.50	.41	.35	.49	.41	.35	.47	.40	.35	.46	.39	.34	.44	.38	.34	.31
8.0	.46	.37	.31	.45	.37	.31	.43	.36	.31	.42	.35	.30	.40	.34	.30	.28
9.0	.42	.34	.28	.41	.33	.28	.40	.33	.28	.39	.32	.27	.37	.31	.27	.25
10.0	.39	.31	.26	.38	.31	.25	.37	.30	.25	.36	.29	.25	.35	.29	.25	.23

LAMPS

LUMINAIRE BUDGETARY DIAGRAM



C Range: 0 - 360DEG
C Interval: 45.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:JYH
Test Date:2023-07-13

Range: 0 - 180DEG
Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.362
Humidity:65.0%
Test Distance:10.375m [K=1.0000]
Remarks:

E:\ ! " # \20230906\IES\HCP-36616164\HCP-36616164-9LWM24CSW025CC01$0 % & \HCP-36616164\HCP-36616164.GOS

WEC AND CCEC

cc	80%			70%			50%			30%			10%			0
w	50 %	30 %	10%	50 %	30 %	10%	50 %	30 %	10%	50 %	30 %	10%	50 %	30 %	10%	0
fc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coeffcients(WEC)									
0.0																
1.0	.315	.179	.057	.307	.175	.056	.291	.167	.053	.277	.160	.051	.264	.153	.049	
2.0	.294	.161	.049	.287	.158	.049	.273	.152	.047	.261	.146	.046	.249	.141	.044	
3.0	.271	.144	.043	.265	.142	.043	.253	.137	.042	.242	.132	.041	.231	.128	.040	
4.0	.250	.130	.038	.244	.128	.038	.233	.124	.037	.223	.120	.036	.214	.116	.035	
5.0	.231	.118	.034	.226	.116	.034	.216	.112	.033	.207	.109	.032	.199	.106	.032	
6.0	.214	.107	.031	.209	.106	.030	.201	.103	.030	.192	.100	.029	.185	.097	.029	
7.0	.199	.098	.028	.195	.097	.028	.187	.095	.027	.180	.092	.027	.173	.090	.026	
8.0	.186	.091	.026	.182	.090	.025	.175	.087	.025	.168	.085	.025	.162	.083	.024	
9.0	.174	.084	.023	.171	.083	.023	.164	.081	.023	.158	.079	.023	.152	.077	.022	
10.0	.163	.078	.022	.160	.077	.022	.155	.076	.021	.149	.074	.021	.144	.072	.021	

cc	80%			70%			50%			30%			10%			0
w	50 %	30 %	10%	50 %	30 %	10%	50 %	30 %	10%	50 %	30 %	10%	50 %	30 %	10%	0
fc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients(CCEC)									
0.0	.218	.218	.218	.186	.186	.186	.127	.127	.127	.073	.073	.073	.023	.023	.023	
1.0	.208	.184	.161	.178	.158	.139	.122	.108	.096	.070	.063	.056	.022	.020	.018	
2.0	.200	.160	.125	.171	.137	.108	.118	.095	.076	.068	.055	.044	.022	.018	.014	
3.0	.193	.142	.102	.165	.123	.088	.113	.085	.062	.065	.050	.037	.021	.016	.012	
4.0	.185	.129	.086	.159	.111	.075	.109	.078	.053	.063	.045	.031	.020	.015	.010	
5.0	.178	.119	.075	.153	.103	.065	.105	.072	.046	.061	.042	.027	.020	.014	.009	
6.0	.170	.110	.067	.146	.096	.059	.101	.067	.041	.059	.039	.025	.019	.013	.008	
7.0	.164	.103	.061	.141	.090	.053	.097	.063	.038	.056	.037	.023	.018	.012	.007	
8.0	.157	.098	.057	.135	.085	.050	.094	.060	.035	.054	.035	.021	.018	.012	.007	
9.0	.151	.093	.053	.130	.081	.047	.090	.057	.033	.053	.033	.020	.017	.011	.007	
10.0	.145	.089	.051	.125	.077	.044	.087	.054	.031	.051	.032	.019	.016	.011	.006	

C Range: 0 - 360DEG
C Interval: 45.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:JYH
Test Date:2023-07-13

Range: 0 - 180DEG
Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.362
Humidity:65.0%
Test Distance:10.375m [K=1.0000]
Remarks:

E:\ ! " # \20230906\IES\HCP-36616164\HCP-36616164-9LWM24CSW025CC01$0 % & \HCP-36616164\HCP-36616164.GOS

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 = 2	H y = 2H	22.6	24.1	22.9	24.4	24.7	23.0	24.5	23.3	24.7	25.0
	3H	24.0	25.4	24.4	25.7	26.0	24.6	26.0	24.9	26.3	26.6
	4H	24.5	25.8	24.8	26.1	26.4	25.2	26.5	25.6	26.9	27.2
	6H	24.7	26.0	25.1	26.3	26.7	25.7	26.9	26.1	27.3	27.6
	8H	24.8	26.0	25.2	26.3	26.7	25.9	27.0	26.3	27.4	27.8
	12H	24.8	25.9	25.2	26.3	26.7	26.0	27.1	26.4	27.5	27.8
4 H	2H	23.3	24.6	23.6	24.9	25.2	23.5	24.8	23.9	25.2	25.5
	3H	24.8	25.9	25.2	26.3	26.7	25.3	26.4	25.7	26.8	27.2
	4H	25.4	26.4	25.8	26.8	27.2	26.1	27.1	26.5	27.5	27.9
	6H	25.8	26.7	26.2	27.1	27.6	26.7	27.6	27.1	28.0	28.4
	8H	25.9	26.7	26.3	27.1	27.6	26.9	27.7	27.3	28.2	28.6
	12H	25.9	26.7	26.4	27.1	27.6	27.0	27.8	27.5	28.3	28.8
8 H	4H	25.7	26.5	26.1	27.0	27.4	26.3	27.1	26.7	27.6	28.0
	6H	26.2	26.9	26.7	27.4	27.9	27.0	27.7	27.5	28.2	28.7
	8H	26.3	27.0	26.8	27.4	28.0	27.3	27.9	27.8	28.4	28.9
	12H	26.4	27.0	27.0	27.5	28.0	27.5	28.1	28.1	28.6	29.2
12 H	4H	25.7	26.5	26.2	26.9	27.4	26.3	27.1	26.7	27.5	28.0
	6H	26.2	26.9	26.8	27.4	27.9	27.0	27.7	27.5	28.1	28.7
	8H	26.4	27.0	27.0	27.5	28.0	27.4	27.9	27.9	28.4	29.0
Variations with the observer position at spacings:											
S = 1.0H		+ 0.2 / - 0.2					+ 0.1 / - 0.2				
1.5H		+ 0.2 / - 0.4					+ 0.2 / - 0.3				
2.0H		+ 0.2 / - 0.3					+ 0.2 / - 0.3				

CIE Pub.117, 764.4 lm Total Lamp Luminous Flux Correct (8log(F/F0) = -0.9)

C Range: 0 - 360DEG
C Interval: 45.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:JYH
Test Date:2023-07-13

Range: 0 - 180DEG
Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.362
Humidity:65.0%
Test Distance:10.375m [K=1.0000]
Remarks:

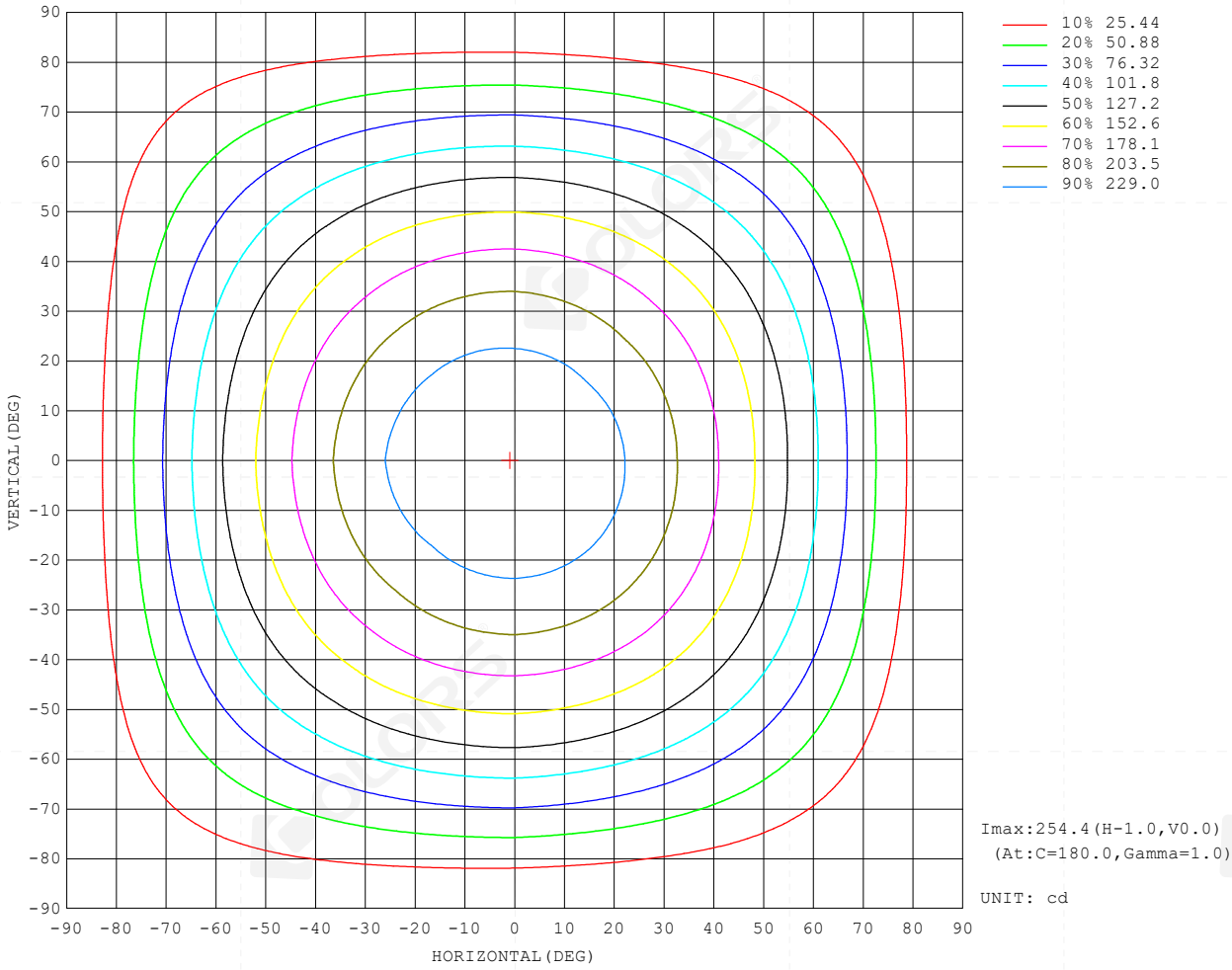
UTILIZATION FACTORS TABLE

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) x RCR = 5									
k = 0.60	56	44	37	55	44	37	54	43	37	30
0.80	66	54	47	65	54	47	63	53	46	39
1.00	74	63	56	73	62	55	70	63	54	47
1.25	81	71	63	80	70	63	77	68	62	54
1.50	86	76	69	85	75	69	81	73	67	59
2.00	93	85	78	91	83	77	87	81	75	67
2.50	97	89	83	95	88	82	91	85	80	71
3.00	101	94	88	98	92	87	94	88	84	75
4.00	105	99	94	102	97	92	97	93	89	79
5.00	107	102	98	105	100	96	99	96	93	82
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004				Suspended					SHRNOM = 1.25	

C Range: 0 - 360DEG
C Interval: 45.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:JYH
Test Date:2023-07-13

Range: 0 - 180DEG
Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.362
Humidity:65.0%
Test Distance:10.375m [K=1.0000]
Remarks:

ISOCANDELA DIAGRAM

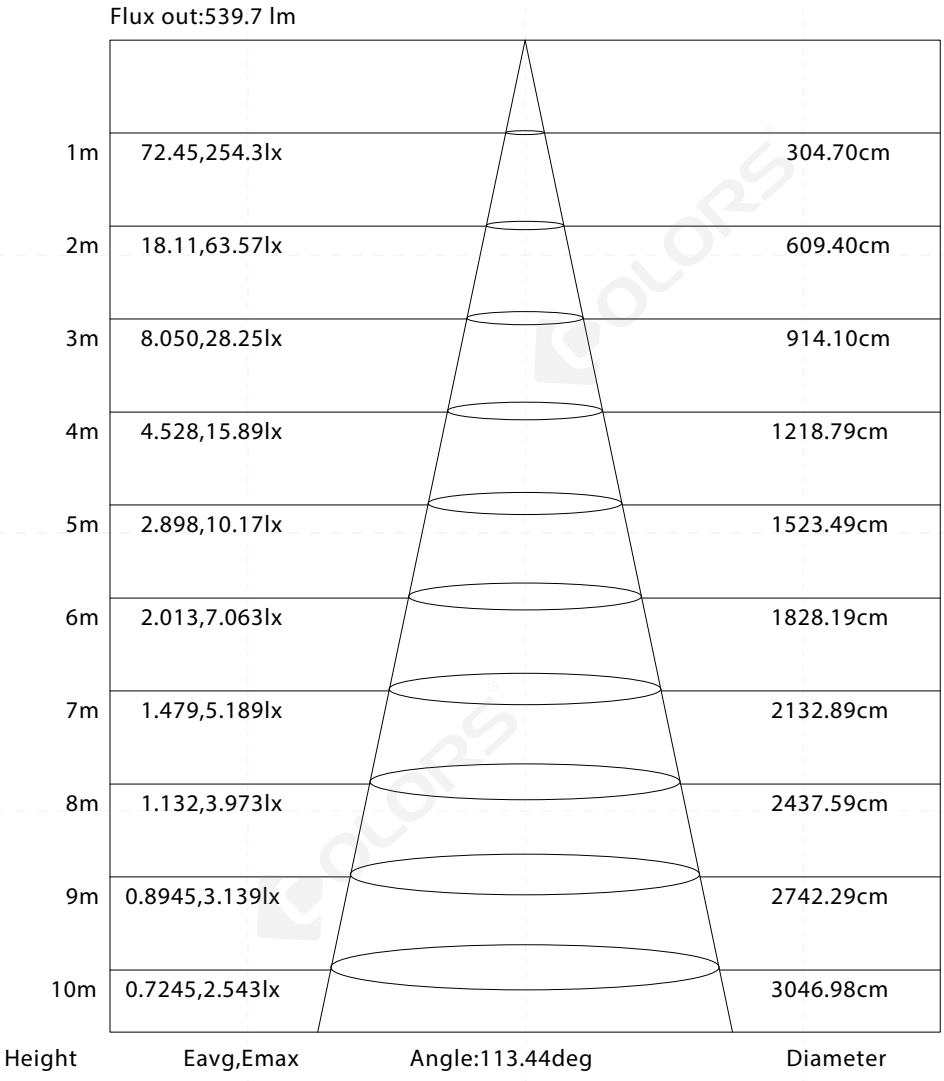


C Range: 0 - 360DEG
C Interval: 45.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:JYH
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Range: 0 - 180DEG
Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.362
Humidity:65.0%
Test Distance:10.375m [K=1.0000]
Remarks:

E:\ ! " # \20230906\IES\HCP-36616164\HCP-36616164-9LWM24CSW025CC01$0 % & \HCP-36616164\HCP-36616164.GOS

AAI Figure

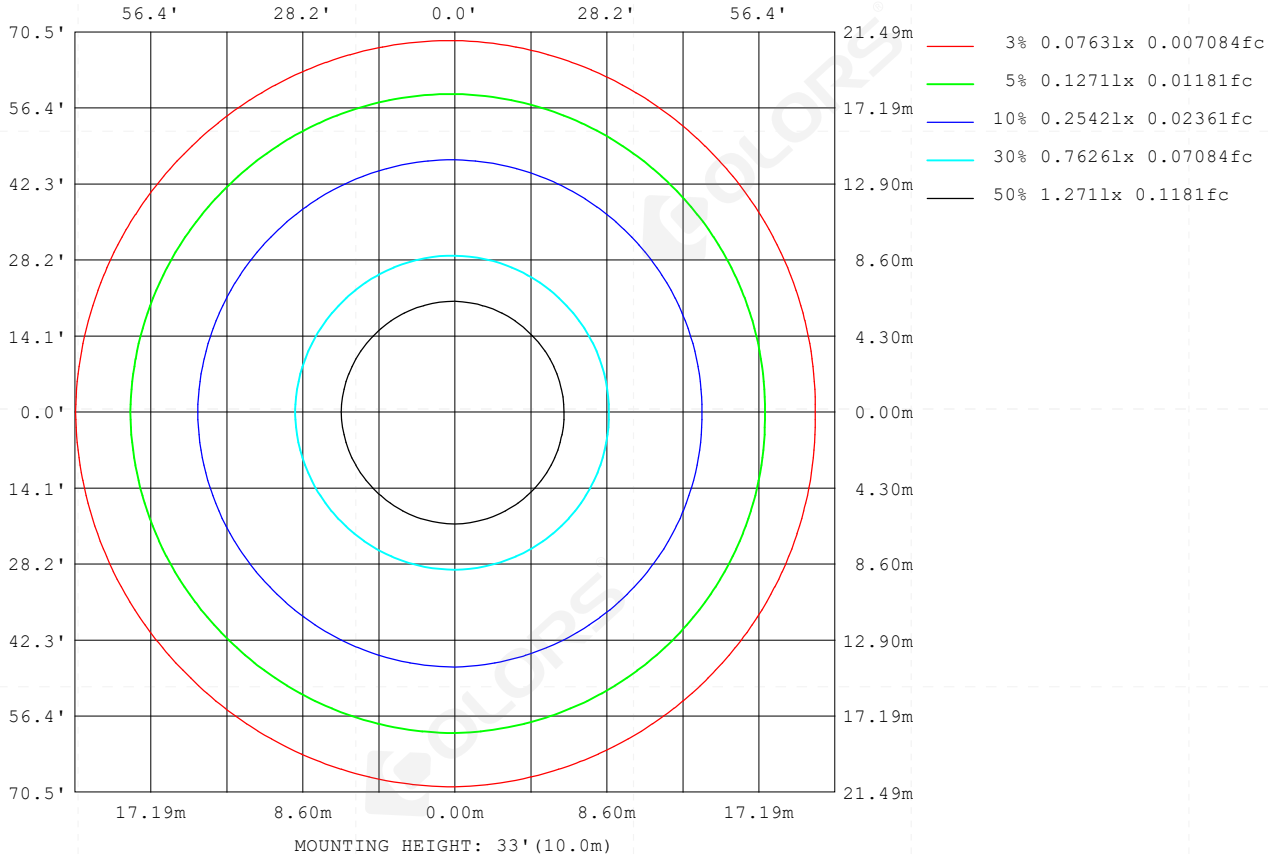


Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
C Interval: 45.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:JYH
Test Date:2023-07-13

Range: 0 - 180DEG
Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.362
Humidity:65.0%
Test Distance:10.375m [K=1.0000]
Remarks:

ISOLUX DIAGRAM



C Range: 0 - 360DEG
C Interval: 45.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:JYH
Test Date:2023-07-13

Range: 0 - 180DEG
Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.362
Humidity:65.0%
Test Distance:10.375m [K=1.0000]
Remarks:

E:\ ! " # \20230906\IES\HCP-36616164\HCP-36616164-9LWM24CSW025CC01$0 % & \HCP-36616164\HCP-36616164.GOS

LED Avg.L Report

Test:U:24.00V I:0.7392A P:17.74W PF:1.000 Freq:0Hz Lamp Flux:764.379x1 lm		
NAME: HCP-36616164	TYPE:	WEIGHT:
SPEC.:HCP-36616164	DIM.: 1000*16*16mm	SERIAL No.:
MFR.: HAVIT COMMERCIAL	SUR.:1000*16mm	Shielding Angle:

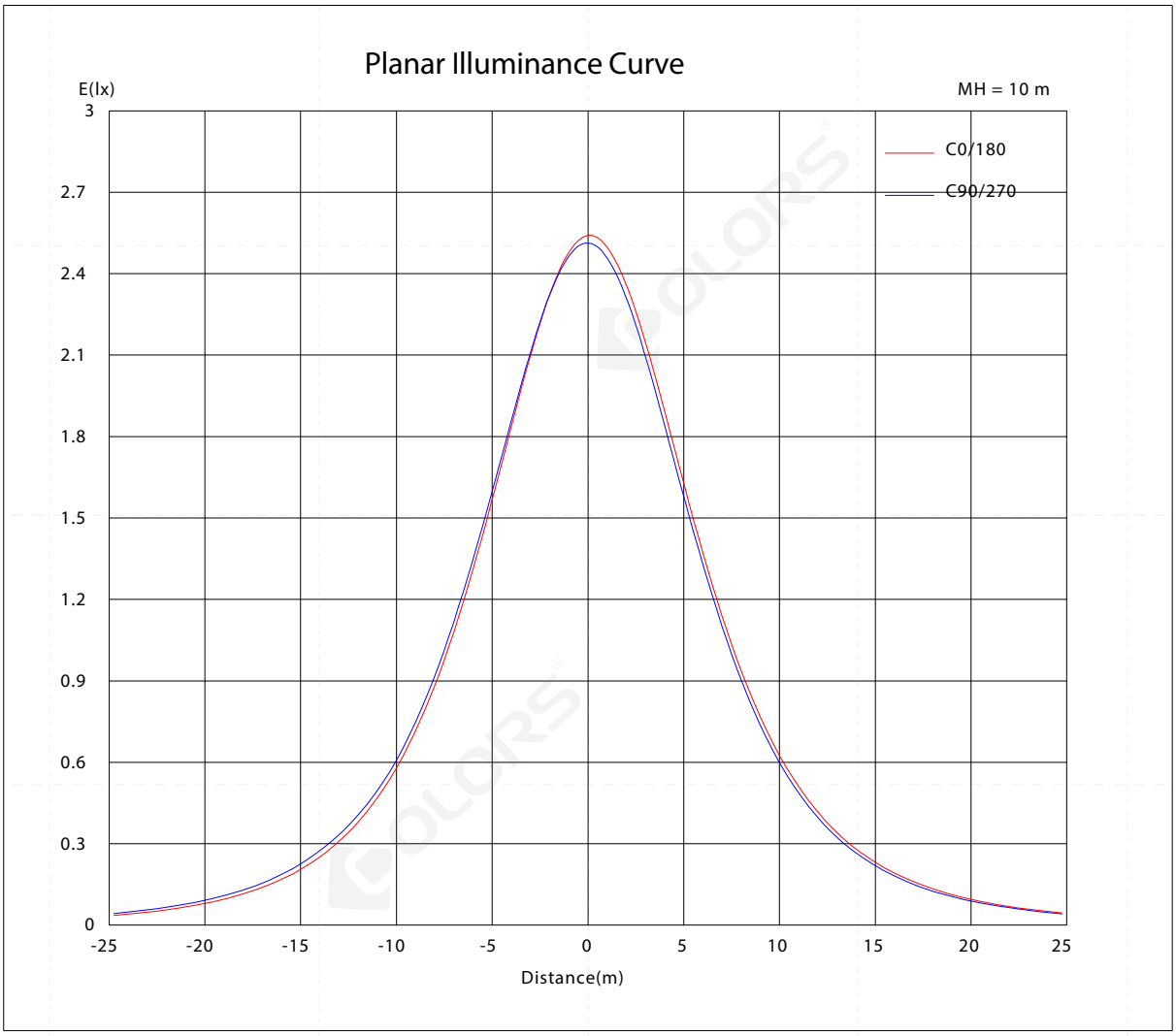
AvgL	cd/m2
L_0~180(65)av	13693
L_0~180(75)av	11811
L_0~180(85)av	8959
L_90~270(65)av	14153
L_90~270(75)av	12874
L_90~270(85)av	11888
L_45(65)av	13747
L_45(75)av	12158
L_45(85)av	10802

Standard: GB/T 29293-2012

C Range: 0 - 360DEG
C Interval: 45.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:JYH
Test Date:2023-07-13

Range: 0 - 180DEG
Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.362
Humidity:65.0%
Test Distance:10.375m [K=1.0000]
Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG
C Interval: 45.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:JYH
Test Date:2023-07-13

Range: 0 - 180DEG
Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.362
Humidity:65.0%
Test Distance:10.375m [K=1.0000]
Remarks:

E:\ ! " # \20230906\IES\HCP-36616164\HCP-36616164-9LWM24CSW025CC01$0 % & \HCP-36616164\HCP-36616164.GOS

LUMINOUS DISTRIBUTION INTENSITY DATA

Table--1 UNIT: cd

C(DEG) / (DEG)	0	45	90	135	180	225	270	315											
0	254	253	251	250	254	253	251	250											
5	252	251	251	250	254	252	250	249											
10	248	248	247	247	251	248	247	245											
15	242	242	242	242	247	243	241	239											
20	233	235	235	235	240	236	233	231											
25	223	225	227	227	231	226	224	221											
30	211	214	216	216	220	215	213	210											
35	197	200	204	203	207	203	201	196											
40	181	185	189	189	193	188	186	182											
45	164	169	172	173	177	172	170	165											
50	146	151	156	156	160	155	152	148											
55	126	132	138	138	141	137	134	129											
60	106	111	118	118	122	117	114	109											
65	84.1	90.1	97.2	97.1	101	96.3	94.2	88.3											
70	62.0	68.3	75.6	75.9	79.4	75.1	73.7	66.9											
75	40.3	46.9	54.2	54.5	57.6	54.0	52.4	46.0											
80	20.7	27.4	32.6	34.5	36.3	34.2	32.4	27.0											
85	7.04	12.5	16.7	17.7	17.9	17.7	16.5	12.3											
90	2.06	5.86	5.49	7.45	5.71	7.37	6.43	5.54											
95	1.71	4.39	4.42	4.57	1.37	4.40	4.12	4.19											
100	2.07	3.72	2.95	3.83	1.52	3.63	1.75	3.31											
105	2.50	3.72	2.30	3.74	1.90	3.39	2.16	3.50											
110	2.93	3.92	2.75	3.89	2.33	3.52	2.58	3.62											
115	3.38	4.10	3.18	4.11	2.75	3.72	3.02	3.87											
120	3.84	4.01	3.62	4.31	3.18	3.92	3.47	4.12											
125	4.30	4.53	4.09	4.52	3.62	3.75	3.92	4.03											
130	4.68	4.56	4.49	4.40	4.07	4.22	4.41	4.23											
135	5.15	5.00	4.92	4.82	4.55	4.67	4.86	4.71											
140	5.52	5.40	5.31	5.24	5.01	5.26	5.29	5.37											
145	5.85	5.79	5.64	5.61	5.46	5.58	5.70	5.63											
150	6.21	6.14	6.00	5.96	5.88	5.95	6.07	5.92											
155	6.58	6.47	6.30	6.29	6.30	6.30	6.40	6.26											
160	6.87	6.75	6.60	6.58	6.67	6.61	6.69	6.56											
165	7.15	7.02	6.82	6.85	7.02	6.88	6.93	6.78											
170	7.37	7.23	7.03	7.08	7.30	7.09	7.12	6.99											
175	7.50	7.39	7.18	7.25	7.53	7.28	7.28	7.17											
180	7.59	7.48	7.28	7.30	7.66	7.41	7.36	7.27											

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