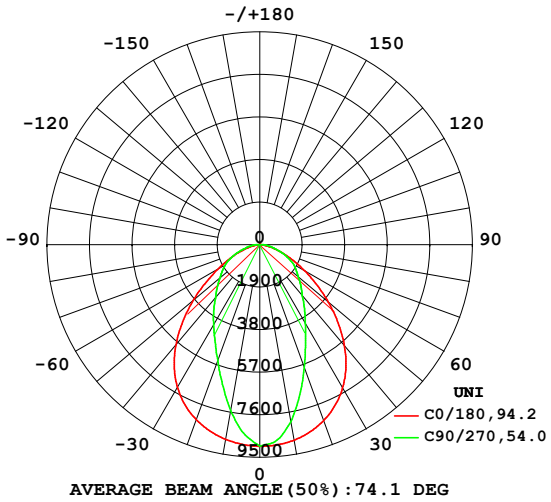
LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:230.0V I:0.5235A P:117.8W PF:0.9785 Freq:49.99Hz Lamp Flux:15137.6x1 lm		
NAME: LHB19-120-5080-L00112	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:	Shielding Angle:

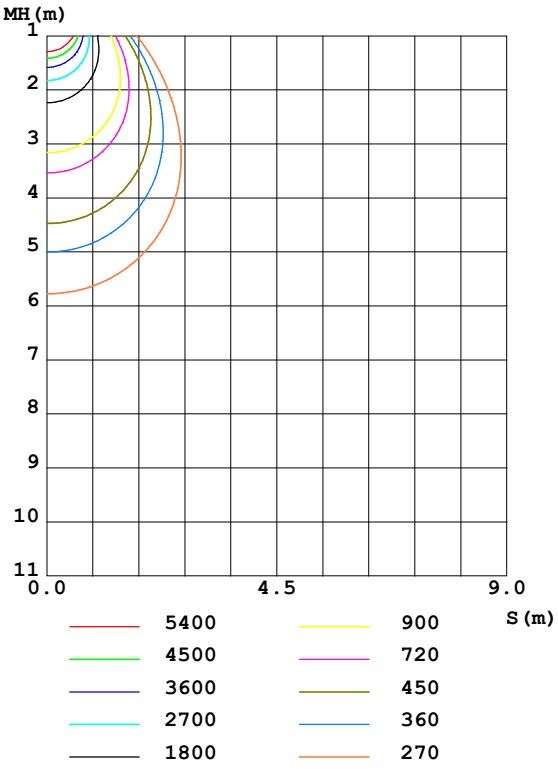
DATA OF LAMP		PHOTOMETRIC DATA Eff: 128.49 lm/W			
MODEL	SMD283	Imax(cd)	9004	S/MH(C0/180)	1.22
NOMINAL POWER(W)	120	LOR(%)	100.0	S/MH(C90/270)	0.74
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	15138	η UP,DN(C0-180)	0.0,50.5
NOMINAL FLUX(lm)	15137.6	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.0,49.5
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	0.75
TEST VOLTAGE(V)	230	η down(%)	100.0	CIBSE SHR MAX	0.95

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



AVERAGE BEAM ANGLE(50%):74.1 DEG

C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-14

V(B) Range:-90 - 90DEG
V(B) Interval: 2.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.426
Humidity:65.0%
Test Distance:9.350m [K=1.0000]
Remarks:

Checker: LI

Assessor:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	8864	8415	8032	8421	8826	8001	7526	8025	0- 10	819.0	819.0	5.41,5.41
20	8358	6782	5812	6825	8314	6335	5494	6342	10- 20	2113	2932	19.4,19.4
30	7400	4898	4075	4951	7358	4721	4126	4695	20- 30	2753	5685	37.6,37.6
40	5885	3353	2955	3405	5822	3407	3070	3365	30- 40	2832	8517	56.3,56.3
50	4001	2285	2248	2286	3883	2343	2316	2355	40- 50	2496	11013	72.8,72.8
60	2286	1523	1738	1558	2122	1593	1778	1575	50- 60	1954	12966	85.7,85.7
70	1034	885.5	1032	927.8	945.8	938.9	1063	920.3	60- 70	1330	14297	94.4,94.4
80	257.7	303.2	461.4	315.4	201.7	309.2	472.6	318.1	70- 80	661.5	14958	98.8,98.8
90	7.766	14.75	24.55	26.02	7.667	8.813	7.330	9.040	80- 90	179.6	15138	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		

Conical surface Flux(90deg): 9824.3 lm

%lum = 64.9%
%lamp = 64.9%

Conical surface Flux(120deg): 12966 lm

%lum = 85.7%
%lamp = 85.7%

H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-14

V(B) Range:-90 - 90DEG
V(B) Interval: 2.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.426
Humidity:65.0%
Test Distance:9.350m [K=1.0000]
Remarks:

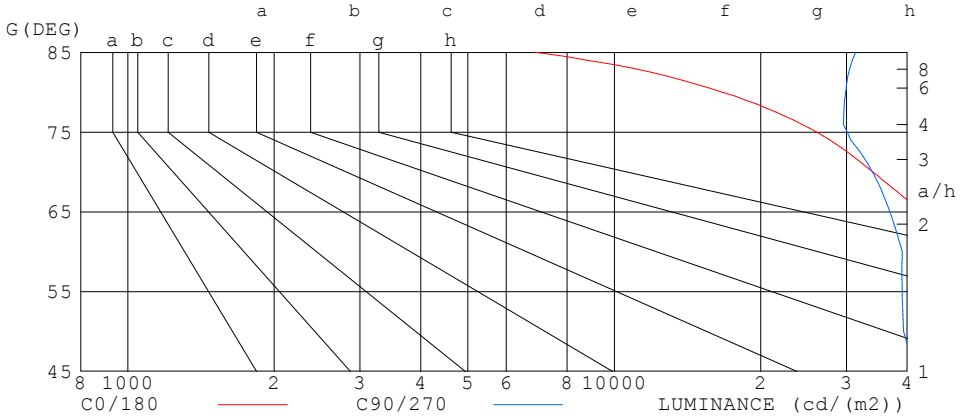
Checker: LI

Assessor:

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	6876	31351
80	16687	29883
75	26052	30115
70	34013	33935
65	42406	36849
60	51420	39080
55	60666	39065
50	69995	39322
45	78849	41372

H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-14

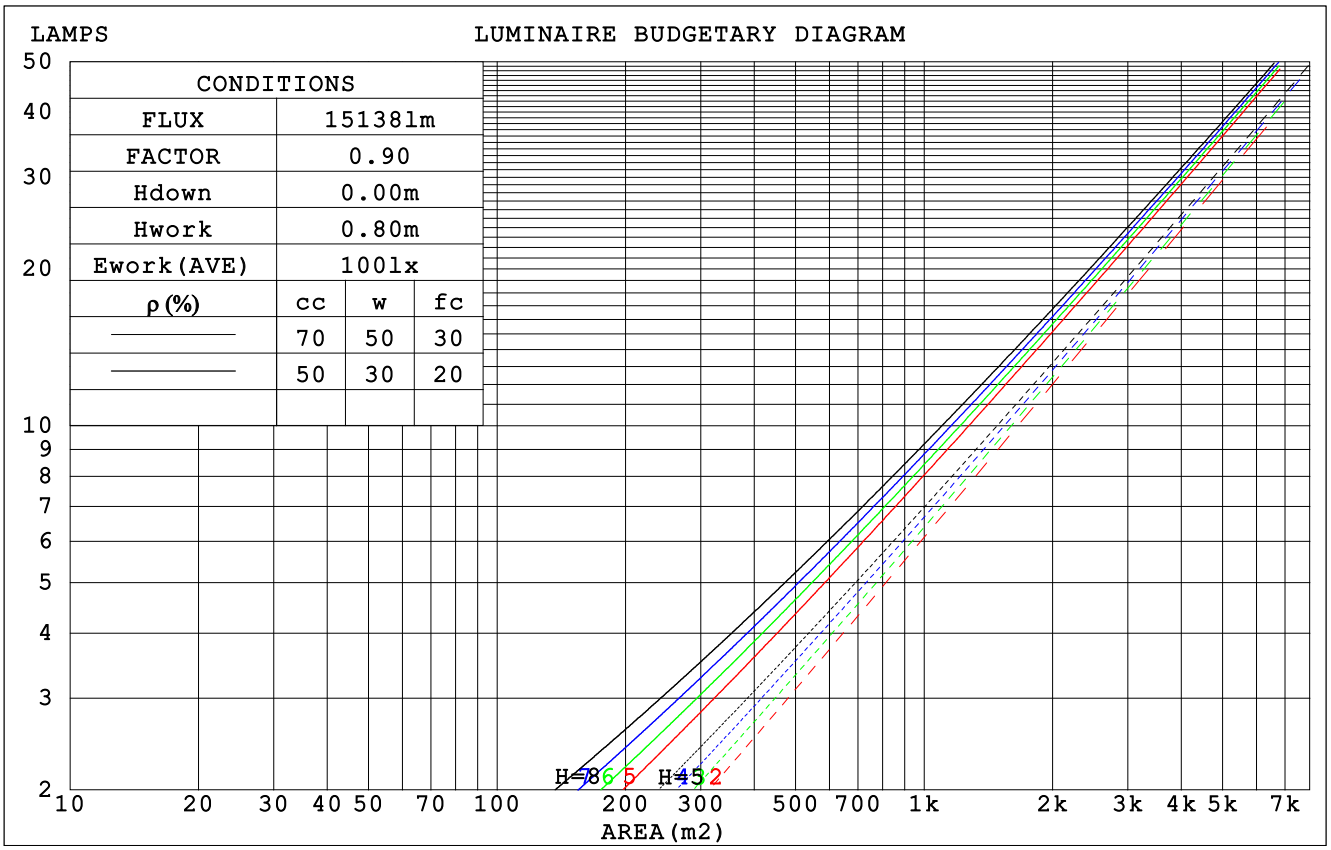
V(B) Range:-90 - 90DEG
V(B) Interval: 2.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.426
Humidity:65.0%
Test Distance:9.350m [K=1.0000]
Remarks:

Checker: LI

Assessor:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

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	1.06	1.02	.99	1.04	1.00	.97	.00	.97	.94	.96	.93	.91	.92	.90	.89	.87
2.0	.94	.88	.83	.92	.87	.82	.89	.84	.80	.86	.82	.78	.83	.79	.77	.75
3.0	.84	.77	.71	.83	.76	.70	.80	.74	.69	.77	.72	.68	.74	.70	.67	.65
4.0	.76	.68	.62	.74	.67	.61	.72	.65	.60	.70	.64	.60	.68	.63	.59	.57
5.0	.68	.60	.54	.67	.60	.54	.65	.59	.53	.63	.57	.53	.62	.56	.52	.50
6.0	.62	.54	.48	.61	.54	.48	.60	.53	.48	.58	.52	.47	.57	.51	.47	.45
7.0	.57	.49	.43	.56	.49	.43	.55	.48	.43	.54	.47	.43	.52	.47	.42	.41
8.0	.53	.45	.39	.52	.44	.39	.51	.44	.39	.50	.43	.39	.48	.43	.39	.37
9.0	.49	.41	.36	.48	.41	.36	.47	.40	.36	.46	.40	.36	.45	.39	.35	.34
10.0	.45	.38	.33	.45	.38	.33	.44	.37	.33	.43	.37	.33	.42	.37	.33	.31



H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-14

V(B) Range:-90 - 90DEG
V(B) Interval: 2.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.426
Humidity:65.0%
Test Distance:9.350m [K=1.0000]
Remarks:

Checker: LI

Assessor:

WEC AND CCEC

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	.270	.153	.049	.263	.150	.048	.250	.143	.046	.238	.137	.044	.227	.131	.042	
2.0	.257	.141	.043	.251	.138	.043	.239	.133	.041	.229	.128	.040	.219	.124	.039	
3.0	.240	.128	.038	.235	.126	.038	.225	.122	.037	.215	.118	.036	.207	.115	.035	
4.0	.224	.116	.034	.219	.115	.034	.210	.111	.033	.202	.108	.033	.194	.106	.032	
5.0	.208	.106	.031	.204	.105	.031	.196	.102	.030	.189	.100	.030	.182	.097	.029	
6.0	.195	.098	.028	.191	.096	.028	.184	.094	.027	.178	.092	.027	.172	.090	.027	
7.0	.182	.090	.026	.179	.089	.025	.173	.087	.025	.167	.086	.025	.162	.084	.025	
8.0	.171	.084	.024	.168	.083	.023	.163	.081	.023	.158	.080	.023	.153	.078	.023	
9.0	.161	.078	.022	.159	.077	.022	.154	.076	.022	.149	.075	.021	.145	.073	.021	
10.0	.152	.073	.020	.150	.072	.020	.146	.071	.020	.141	.070	.020	.137	.069	.020	

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	.178	.156	.138	.152	.134	.118	.104	.092	.082	.060	.053	.048	.019	.017	.015	
2.0	.168	.132	.102	.144	.114	.088	.098	.079	.062	.057	.046	.036	.018	.015	.012	
3.0	.159	.114	.079	.136	.098	.068	.093	.068	.048	.054	.040	.028	.017	.013	.009	
4.0	.151	.100	.062	.129	.087	.054	.089	.060	.038	.051	.035	.022	.017	.012	.007	
5.0	.143	.090	.050	.123	.078	.044	.085	.054	.031	.049	.032	.018	.016	.010	.006	
6.0	.136	.081	.042	.117	.070	.036	.081	.049	.026	.047	.029	.015	.015	.009	.005	
7.0	.129	.074	.035	.111	.064	.031	.077	.045	.022	.045	.027	.013	.014	.009	.004	
8.0	.123	.068	.031	.106	.059	.027	.073	.042	.019	.043	.024	.011	.014	.008	.004	
9.0	.117	.063	.027	.101	.055	.023	.070	.039	.017	.041	.023	.010	.013	.007	.003	
10.0	.112	.059	.024	.096	.051	.021	.067	.036	.015	.039	.021	.009	.013	.007	.003	

H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-14

V(B) Range:-90 - 90DEG
V(B) Interval: 2.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.426
Humidity:65.0%
Test Distance:9.350m [K=1.0000]
Remarks:

Checker: LI

Assessor:

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 = 2H	y = 2H	25.1	26.6	25.5	26.9	27.2	23.9	25.4	24.3	25.7	26.0
	3H	26.4	27.7	26.8	28.0	28.4	25.7	27.0	26.1	27.4	27.7
	4H	26.7	28.0	27.1	28.3	28.7	26.3	27.5	26.7	27.9	28.3
	6H	26.8	28.0	27.2	28.4	28.7	26.8	28.0	27.2	28.3	28.7
	8H	26.8	27.9	27.3	28.3	28.7	27.0	28.1	27.4	28.5	28.9
	12H	26.8	27.9	27.2	28.2	28.7	27.2	28.2	27.6	28.6	29.0
4H	2H	25.4	26.6	25.8	27.0	27.4	24.4	25.6	24.8	26.0	26.4
	3H	26.8	27.9	27.2	28.3	28.7	26.4	27.4	26.8	27.8	28.2
	4H	27.3	28.2	27.7	28.6	29.1	27.1	28.0	27.5	28.5	28.9
	6H	27.5	28.3	27.9	28.7	29.2	27.8	28.6	28.2	29.0	29.5
	8H	27.5	28.2	27.9	28.7	29.2	28.0	28.8	28.5	29.2	29.7
	12H	27.5	28.2	28.0	28.6	29.1	28.3	28.9	28.7	29.4	29.9
8H	4H	27.4	28.2	27.9	28.6	29.1	27.3	28.0	27.8	28.5	29.0
	6H	27.7	28.3	28.2	28.8	29.3	28.0	28.7	28.5	29.2	29.6
	8H	27.7	28.3	28.2	28.8	29.3	28.4	29.0	28.9	29.5	30.0
	12H	27.8	28.3	28.3	28.7	29.3	28.8	29.3	29.3	29.7	30.3
12H	4H	27.4	28.1	27.9	28.6	29.1	27.3	28.0	27.8	28.4	28.9
	6H	27.7	28.3	28.2	28.7	29.3	28.1	28.6	28.6	29.1	29.6
	8H	27.8	28.3	28.3	28.8	29.4	28.5	29.0	29.0	29.5	30.0
CIE190: 2010											

CIE190: 2010
Area: 0.08892 m2

H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-14

V(B) Range:-90 - 90DEG
V(B) Interval: 2.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.426
Humidity:65.0%
Test Distance:9.350m [K=1.0000]
Remarks:

Checker: LI

Assessor:

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	64	54	48	64	54	48	63	53	48	42
0.80	74	64	57	73	63	57	72	63	57	51
1.00	82	72	66	81	72	66	79	73	65	59
1.25	88	79	73	87	79	73	85	77	72	65
1.50	93	84	78	91	83	78	88	82	77	70
2.00	99	91	86	97	90	85	94	88	84	76
2.50	102	95	90	100	94	89	96	91	87	80
3.00	105	99	94	103	98	93	99	95	91	83
4.00	108	103	99	106	102	98	102	98	95	87
5.00	110	106	103	108	104	101	104	101	98	89
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004				Suspended					SHRNOM = 1.25	

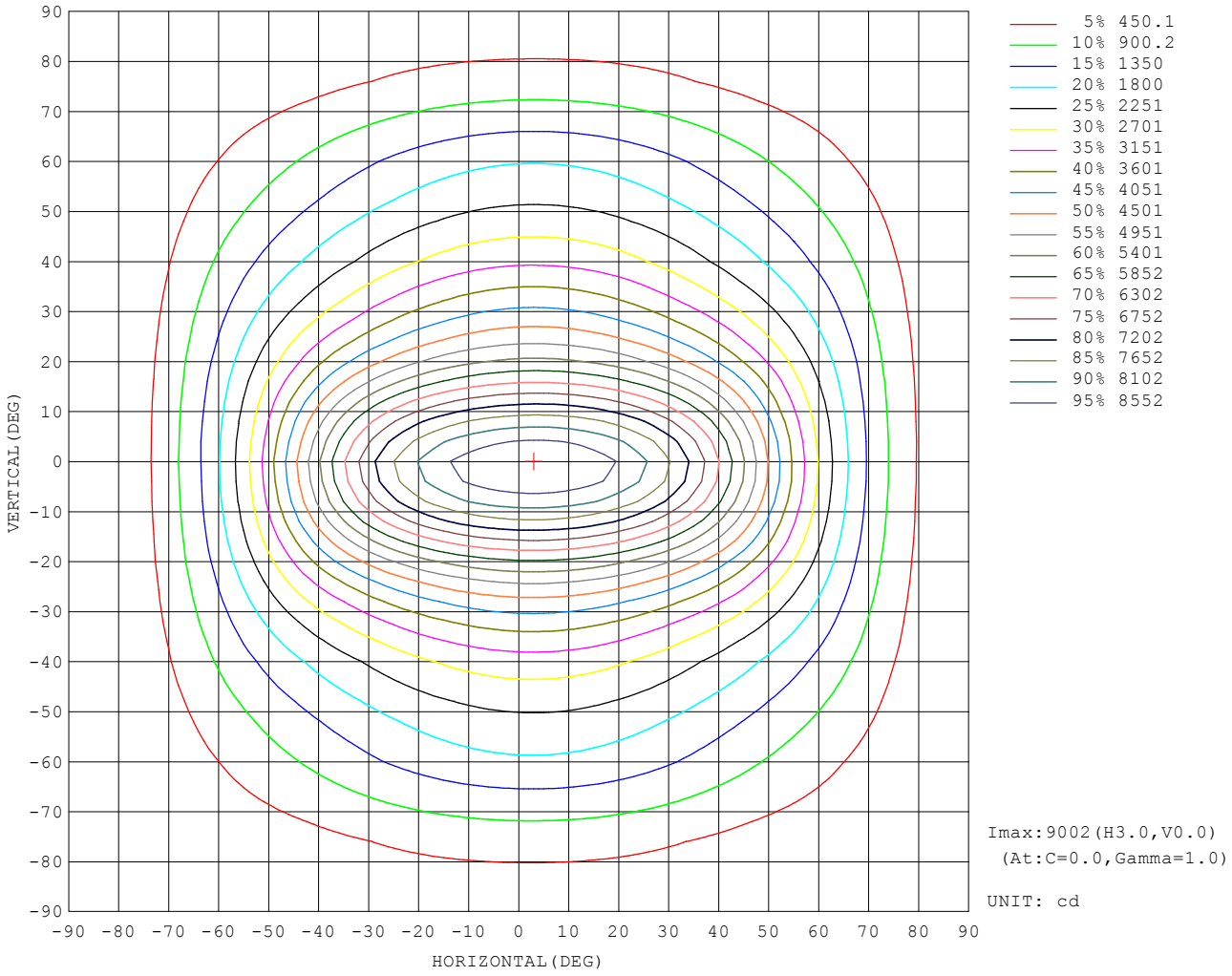
H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-14

V(B) Range:-90 - 90DEG
V(B) Interval: 2.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.426
Humidity:65.0%
Test Distance:9.350m [K=1.0000]
Remarks:

Checker: LI

Assessor:

ISOCANDELA DIAGRAM



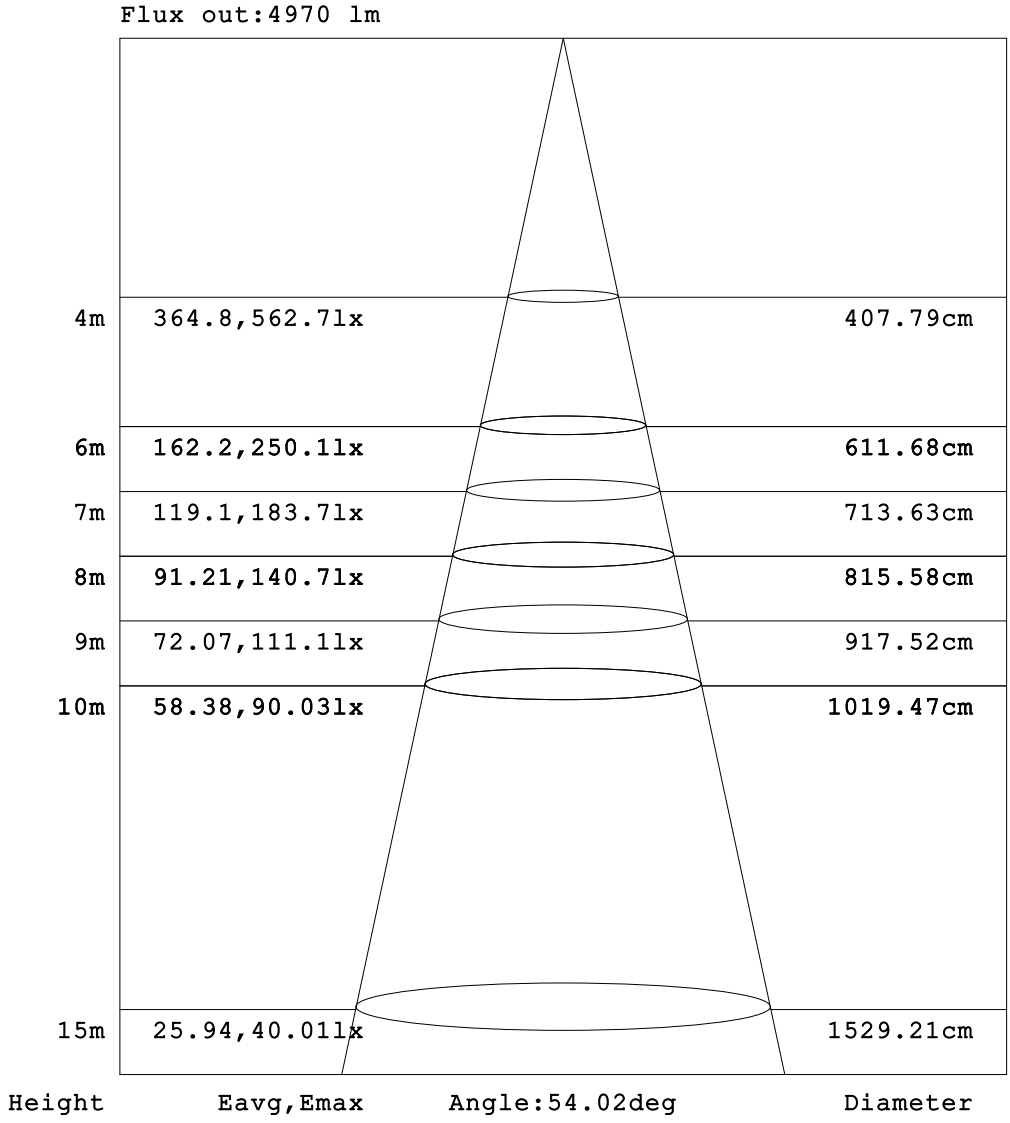
H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-14

V(B) Range:-90 - 90DEG
V(B) Interval: 2.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.426
Humidity:65.0%
Test Distance:9.350m [K=1.0000]
Remarks:

Checker: LI

Assessor:

AAI Figure



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

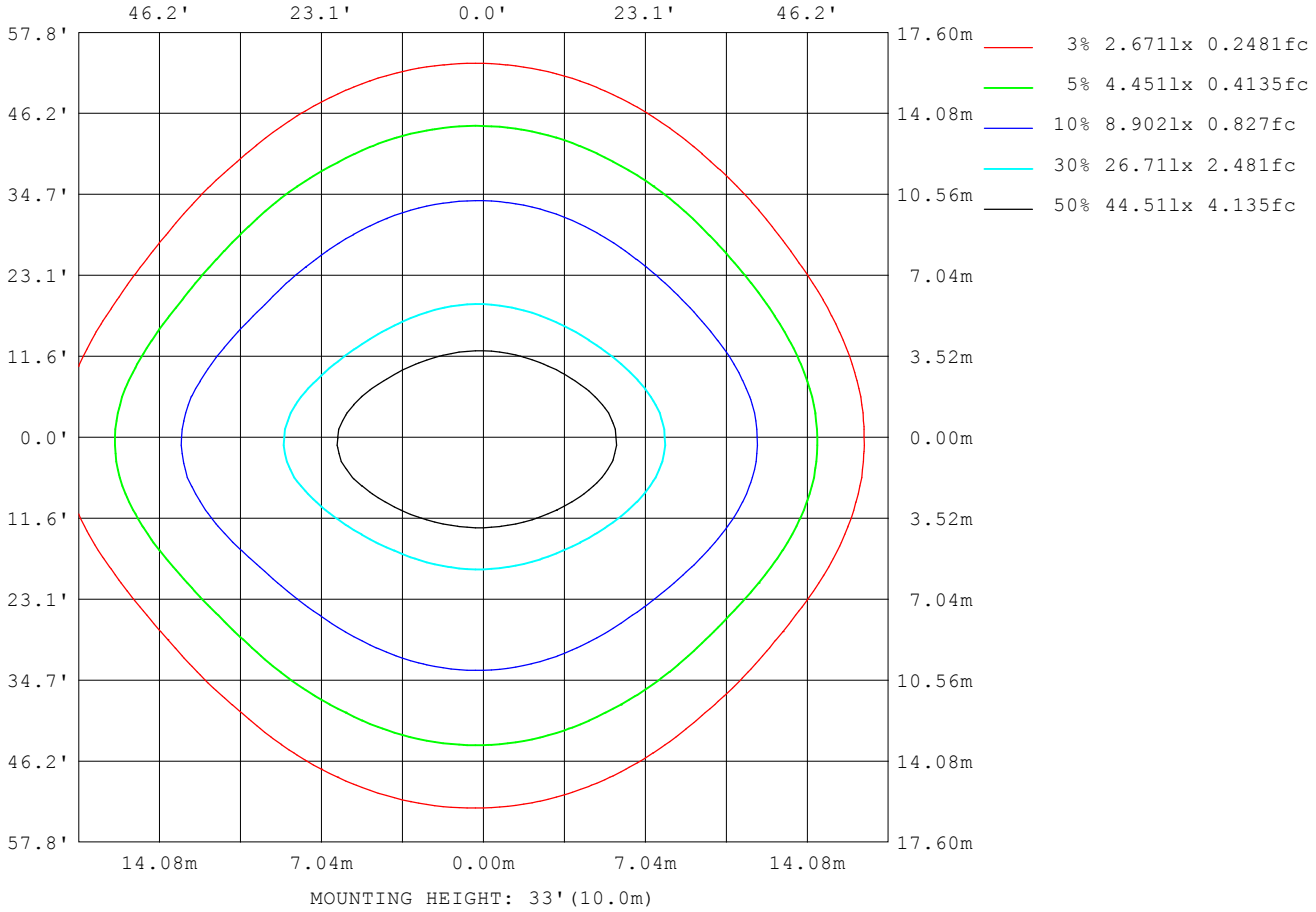
H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-14

V(B) Range:-90 - 90DEG
V(B) Interval: 2.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.426
Humidity:65.0%
Test Distance:9.350m [K=1.0000]
Remarks:

Checker: LI

Assessor:

ISOLUX DIAGRAM



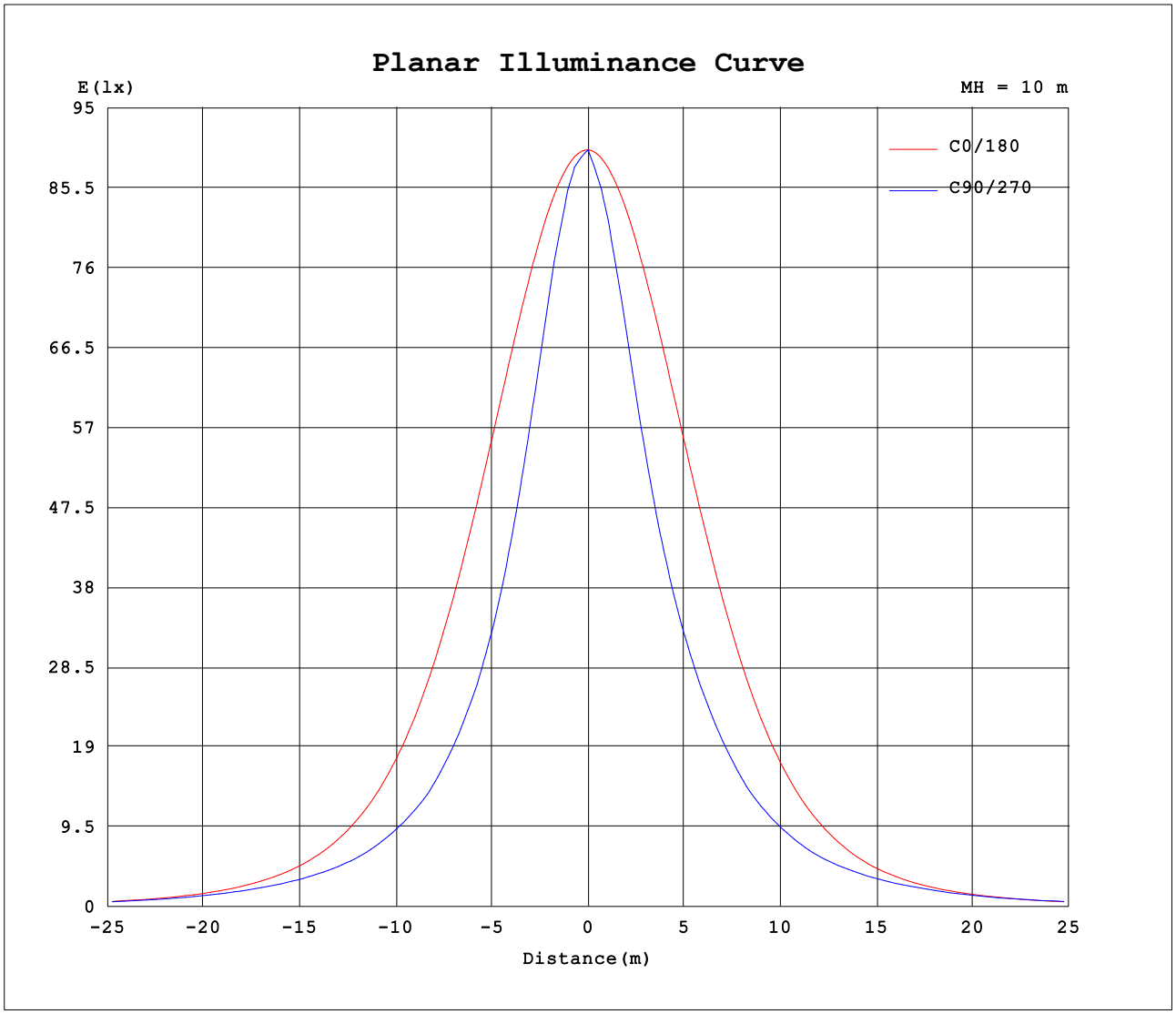
H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-14

V(B) Range:-90 - 90DEG
V(B) Interval: 2.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.426
Humidity:65.0%
Test Distance:9.350m [K=1.0000]
Remarks:

Checker: LI

Assessor:

Planar Illuminance Curve



H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-14

V(B) Range:-90 - 90DEG
V(B) Interval: 2.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.426
Humidity:65.0%
Test Distance:9.350m [K=1.0000]
Remarks:

Checker: LI

Assessor: