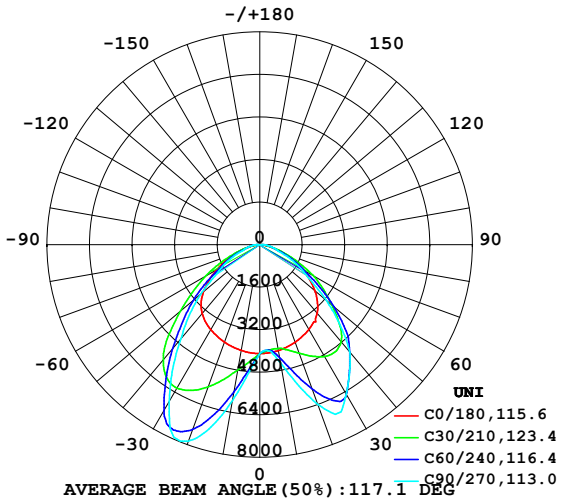
LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:230.0V I:0.5238A P:117.9W PF:0.9785 Freq:49.99Hz Lamp Flux:15756.6x1 lm		
NAME: LHB19-120-5080-L00114	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:	Shielding Angle:

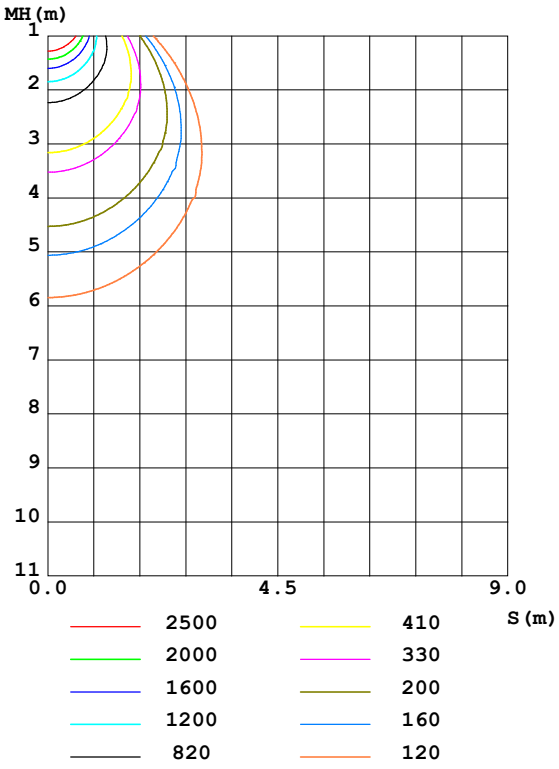
DATA OF LAMP		PHOTOMETRIC DATA		Eff: 133.67 lm/W	
MODEL	SMD283	Imax(cd)	7970	S/MH(C0/180)	1.35
NOMINAL POWER(W)	120	LOR(%)	100.0	S/MH(C90/270)	1.54
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	15757	η UP,DN(C0-180)	0.0,48.5
NOMINAL FLUX(lm)	15756.6	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.0,51.5
LAMPS INSIDE	1	η 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%):117.1 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:2020-08-13

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	4046	4123	4510	4126	4043	5238	5957	5242	0- 10	420.4	420.4	2.67,2.67
20	3905	5096	6391	5114	3901	6687	7868	6679	10- 20	1489	1910	12.1,12.1
30	3693	6001	6502	6068	3693	7151	6818	7087	20- 30	2748	4658	29.6,29.6
40	3362	5181	5275	5278	3379	5553	4604	5444	30- 40	3375	8033	51,51
50	2710	3947	3273	4015	2770	3672	2893	3594	40- 50	3177	11210	71.1,71.1
60	1828	2237	1770	2294	1858	2066	1594	2009	50- 60	2348	13558	86,86
70	936.3	1055	764.1	1089	937.5	970.2	708.9	936.6	60- 70	1401	14959	94.9,94.9
80	229.5	370.4	393.3	382.3	223.2	345.7	358.1	334.0	70- 80	621.4	15580	98.9,98.9
90	8.297	24.13	22.42	24.97	7.234	9.894	7.330	11.22	80- 90	176.1	15757	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): 9692.7 lm

%lum = 61.5%
%lamp = 61.5%

Conical surface Flux(120deg): 13558 lm

%lum = 86.0%
%lamp = 86.0%

H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-13

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:

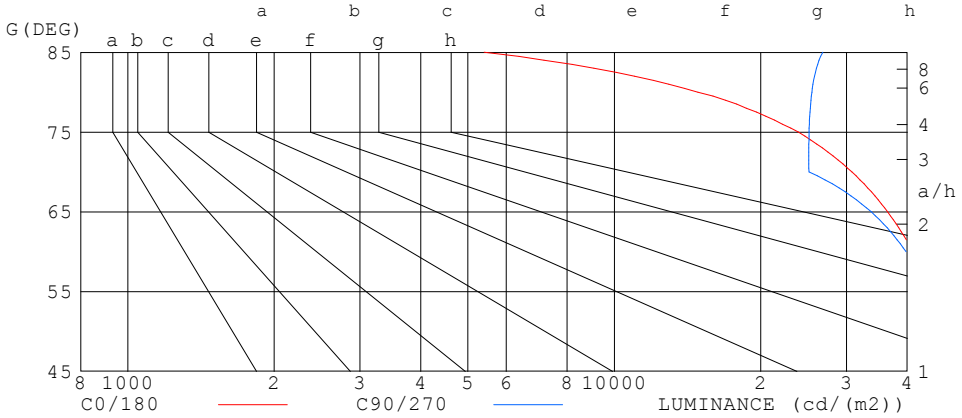
Checker: LI

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	5399	26818
80	14865	25469
75	23874	25144
70	30787	25124
65	36445	33712
60	41119	39803
55	44725	45532
50	47417	57269
45	48849	67978

H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-13

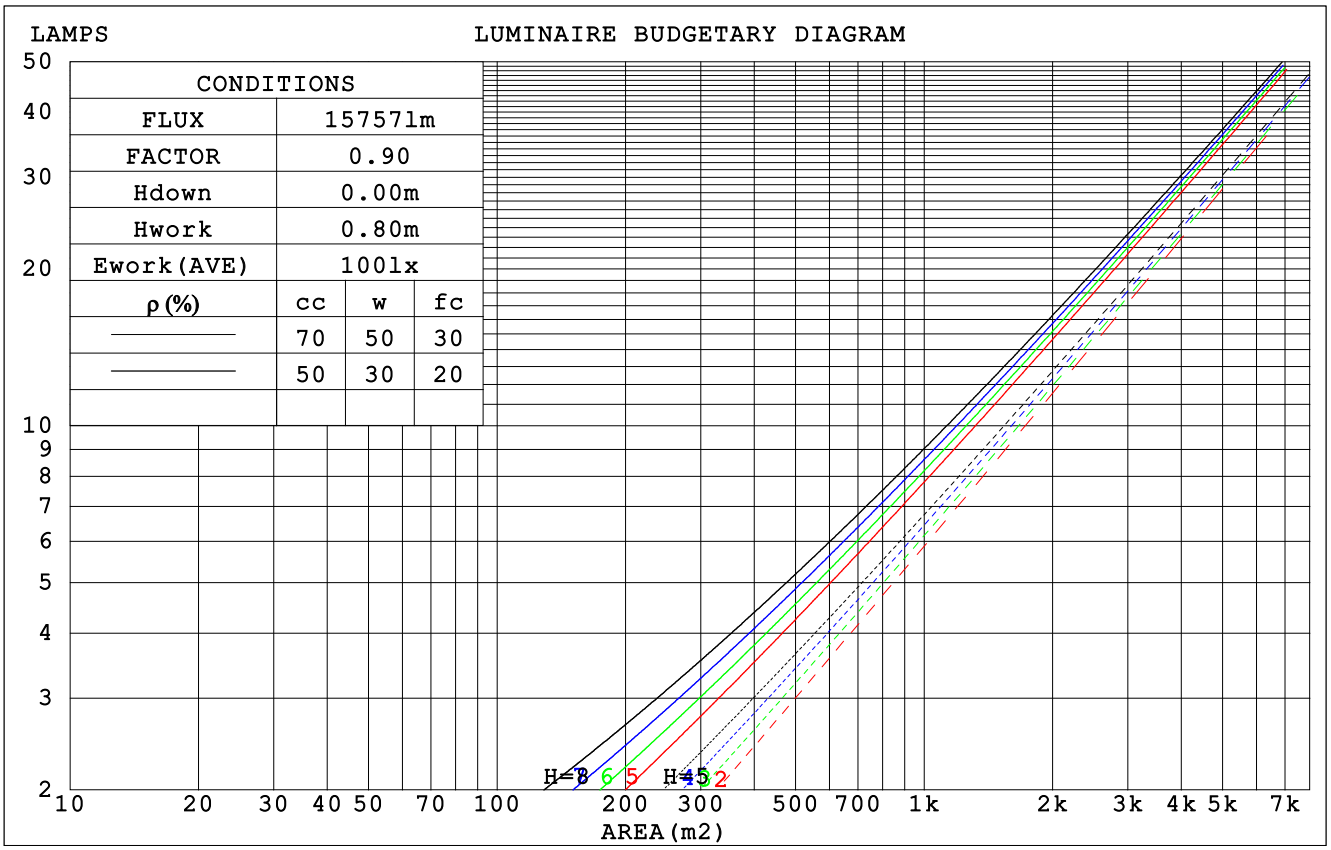
V(B) Range:-90 - 90DEG
V(B) Interval: 2.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.426
Humidity:65.0%
Test Distance:9.350m [K=1.0000]
Remarks:

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	.98	1.03	.00	.97	.99	.96	.94	.95	.93	.91	.92	.90	.88	.86
2.0	.93	.87	.82	.91	.85	.81	.88	.83	.79	.85	.80	.77	.82	.78	.75	.73
3.0	.82	.75	.69	.81	.74	.68	.78	.72	.67	.75	.70	.66	.73	.68	.65	.63
4.0	.73	.65	.59	.72	.64	.58	.70	.63	.58	.67	.61	.57	.65	.60	.56	.54
5.0	.66	.57	.51	.65	.57	.51	.63	.55	.50	.61	.54	.49	.59	.53	.49	.47
6.0	.59	.51	.44	.58	.50	.44	.57	.49	.44	.55	.48	.43	.53	.48	.43	.41
7.0	.54	.45	.39	.53	.45	.39	.51	.44	.39	.50	.43	.39	.49	.43	.38	.36
8.0	.49	.41	.35	.48	.40	.35	.47	.40	.35	.46	.39	.34	.45	.39	.34	.32
9.0	.45	.37	.31	.44	.37	.31	.43	.36	.31	.42	.36	.31	.41	.35	.31	.29
10.0	.41	.33	.28	.41	.33	.28	.40	.33	.28	.39	.32	.28	.38	.32	.28	.26



H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-13

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	.278	.158	.050	.271	.154	.049	.258	.148	.047	.246	.142	.045	.235	.136	.044	
2.0	.266	.146	.045	.260	.143	.044	.249	.138	.043	.238	.134	.042	.228	.129	.041	
3.0	.250	.133	.040	.245	.131	.040	.235	.127	.039	.226	.124	.038	.217	.120	.037	
4.0	.234	.122	.036	.229	.120	.035	.220	.117	.035	.212	.114	.034	.204	.111	.034	
5.0	.219	.112	.032	.215	.110	.032	.207	.108	.032	.199	.105	.031	.192	.103	.031	
6.0	.205	.103	.029	.201	.102	.029	.194	.099	.029	.187	.097	.029	.181	.095	.028	
7.0	.192	.095	.027	.189	.094	.027	.182	.092	.027	.176	.090	.026	.171	.089	.026	
8.0	.180	.088	.025	.177	.087	.025	.172	.086	.024	.166	.084	.024	.161	.083	.024	
9.0	.170	.082	.023	.167	.081	.023	.162	.080	.023	.157	.079	.023	.153	.078	.022	
10.0	.160	.077	.021	.158	.076	.021	.153	.075	.021	.149	.074	.021	.145	.073	.021	

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	.137	.152	.134	.118	.104	.092	.081	.060	.053	.047	.019	.017	.015	
2.0	.169	.132	.101	.145	.114	.087	.099	.079	.061	.057	.046	.036	.018	.015	.012	
3.0	.161	.114	.077	.138	.098	.067	.095	.068	.047	.055	.040	.028	.018	.013	.009	
4.0	.153	.101	.061	.131	.087	.053	.090	.061	.037	.052	.036	.022	.017	.012	.007	
5.0	.146	.090	.049	.125	.078	.043	.086	.054	.030	.050	.032	.018	.016	.010	.006	
6.0	.139	.082	.040	.120	.071	.035	.083	.050	.025	.048	.029	.015	.015	.010	.005	
7.0	.133	.075	.034	.114	.065	.030	.079	.045	.021	.046	.027	.013	.015	.009	.004	
8.0	.127	.069	.029	.109	.060	.026	.075	.042	.018	.044	.025	.011	.014	.008	.004	
9.0	.121	.064	.026	.104	.056	.022	.072	.039	.016	.042	.023	.009	.014	.008	.003	
10.0	.116	.060	.023	.100	.052	.020	.069	.037	.014	.040	.022	.008	.013	.007	.003	

H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-13

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	25.2	26.7	25.6	27.1	27.4	24.6	26.2	25.0	26.5	26.8
	3H	26.3	27.7	26.7	28.0	28.4	25.7	27.0	26.0	27.4	27.7
	4H	26.6	27.9	27.0	28.2	28.6	26.0	27.3	26.4	27.7	28.1
	6H	26.7	27.9	27.1	28.3	28.7	26.4	27.6	26.8	28.0	28.4
	8H	26.7	27.9	27.2	28.3	28.7	26.6	27.7	27.0	28.1	28.5
	12H	26.7	27.8	27.1	28.2	28.6	26.7	27.8	27.1	28.2	28.6
4H	2H	25.7	27.0	26.1	27.4	27.8	25.3	26.6	25.7	27.0	27.3
	3H	27.1	28.1	27.5	28.5	28.9	26.5	27.6	26.9	28.0	28.4
	4H	27.5	28.4	27.9	28.8	29.3	27.0	27.9	27.4	28.4	28.8
	6H	27.7	28.5	28.1	28.9	29.4	27.5	28.3	27.9	28.7	29.2
	8H	27.7	28.5	28.1	28.9	29.4	27.7	28.5	28.1	28.9	29.4
	12H	27.7	28.4	28.1	28.8	29.3	27.8	28.5	28.3	29.0	29.5
8H	4H	27.6	28.4	28.1	28.8	29.3	27.2	28.0	27.7	28.4	28.9
	6H	27.9	28.5	28.4	29.0	29.5	27.8	28.5	28.3	29.0	29.4
	8H	27.9	28.5	28.4	29.0	29.5	28.1	28.7	28.6	29.2	29.7
	12H	27.9	28.5	28.5	29.0	29.5	28.4	28.9	28.9	29.4	30.0
12H	4H	27.6	28.3	28.1	28.8	29.3	27.2	27.9	27.7	28.4	28.9
	6H	27.9	28.5	28.4	29.0	29.5	27.9	28.4	28.4	28.9	29.4
	8H	28.0	28.5	28.5	29.0	29.6	28.2	28.7	28.7	29.2	29.8
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:2020-08-13

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	61	50	43	60	50	43	59	49	43	37
0.80	71	60	53	70	60	53	69	59	53	46
1.00	80	70	63	79	69	63	76	70	62	55
1.25	87	77	71	85	77	70	83	75	70	63
1.50	92	83	76	90	82	76	87	80	75	68
2.00	98	90	85	96	89	84	93	87	82	75
2.50	101	94	89	99	93	88	96	90	86	78
3.00	104	98	93	102	97	92	98	94	90	82
4.00	108	103	99	106	101	97	101	98	95	86
5.00	110	106	102	108	104	100	103	100	97	88
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004				Suspended					SHRNOM = 1.25	

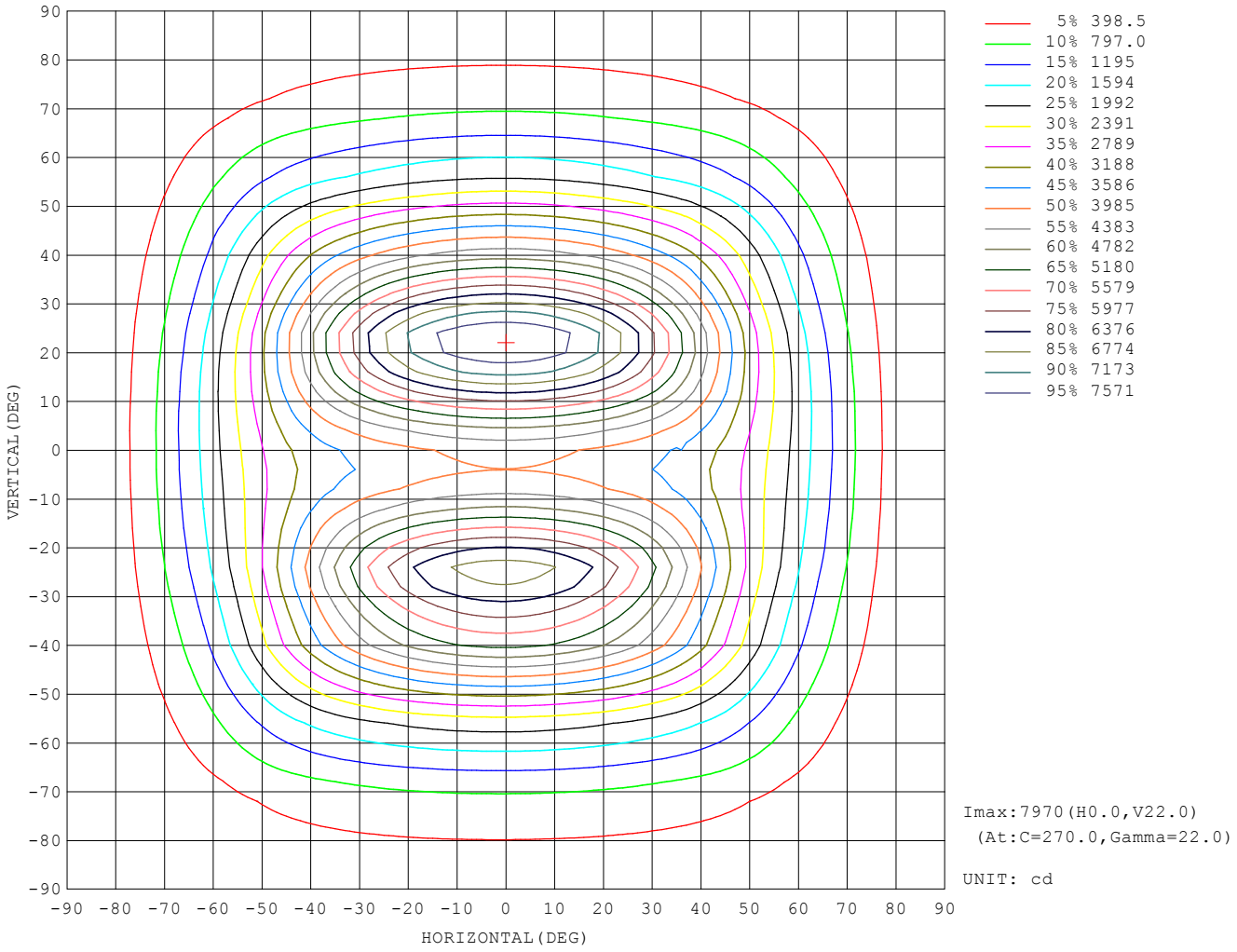
H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-13

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



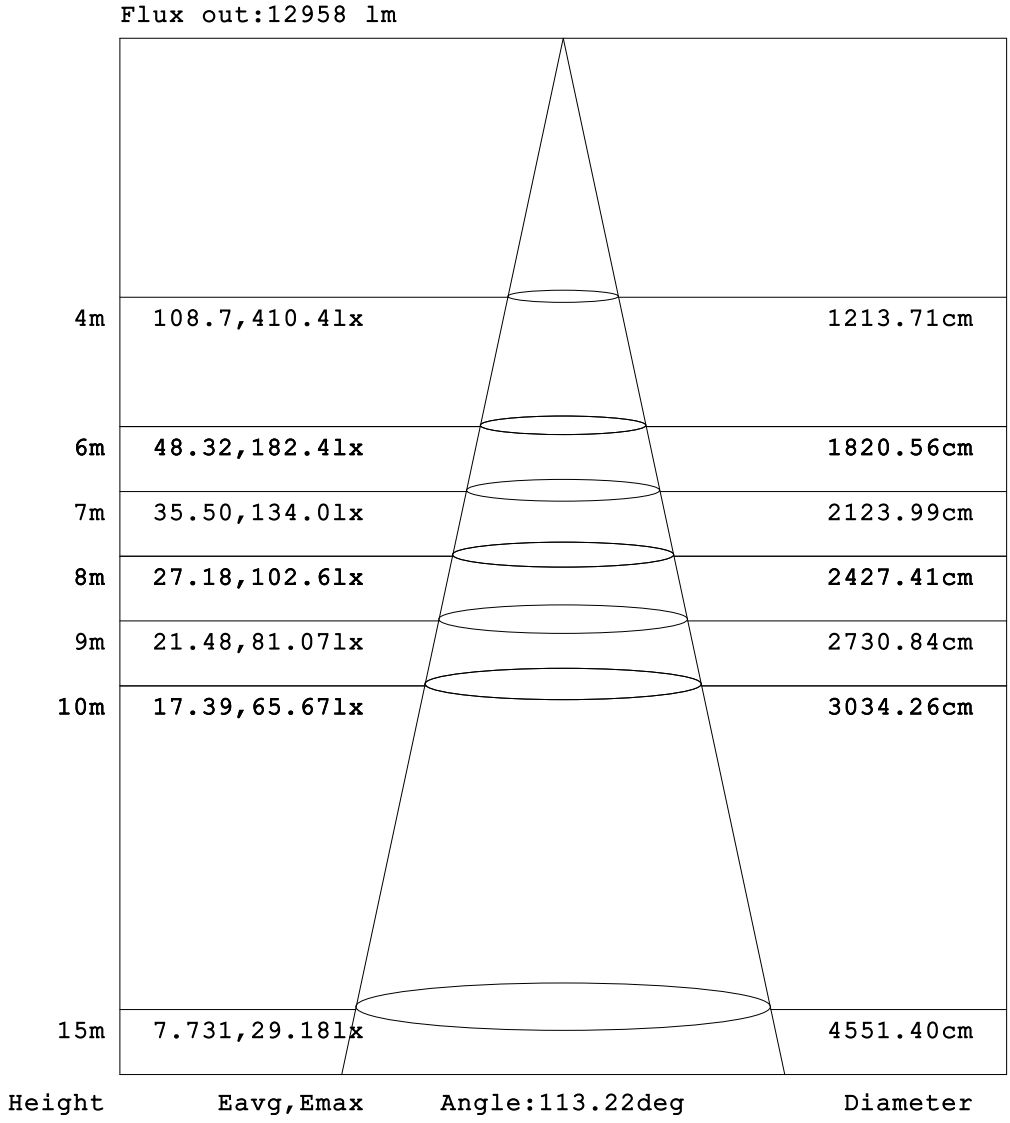
H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-13

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.

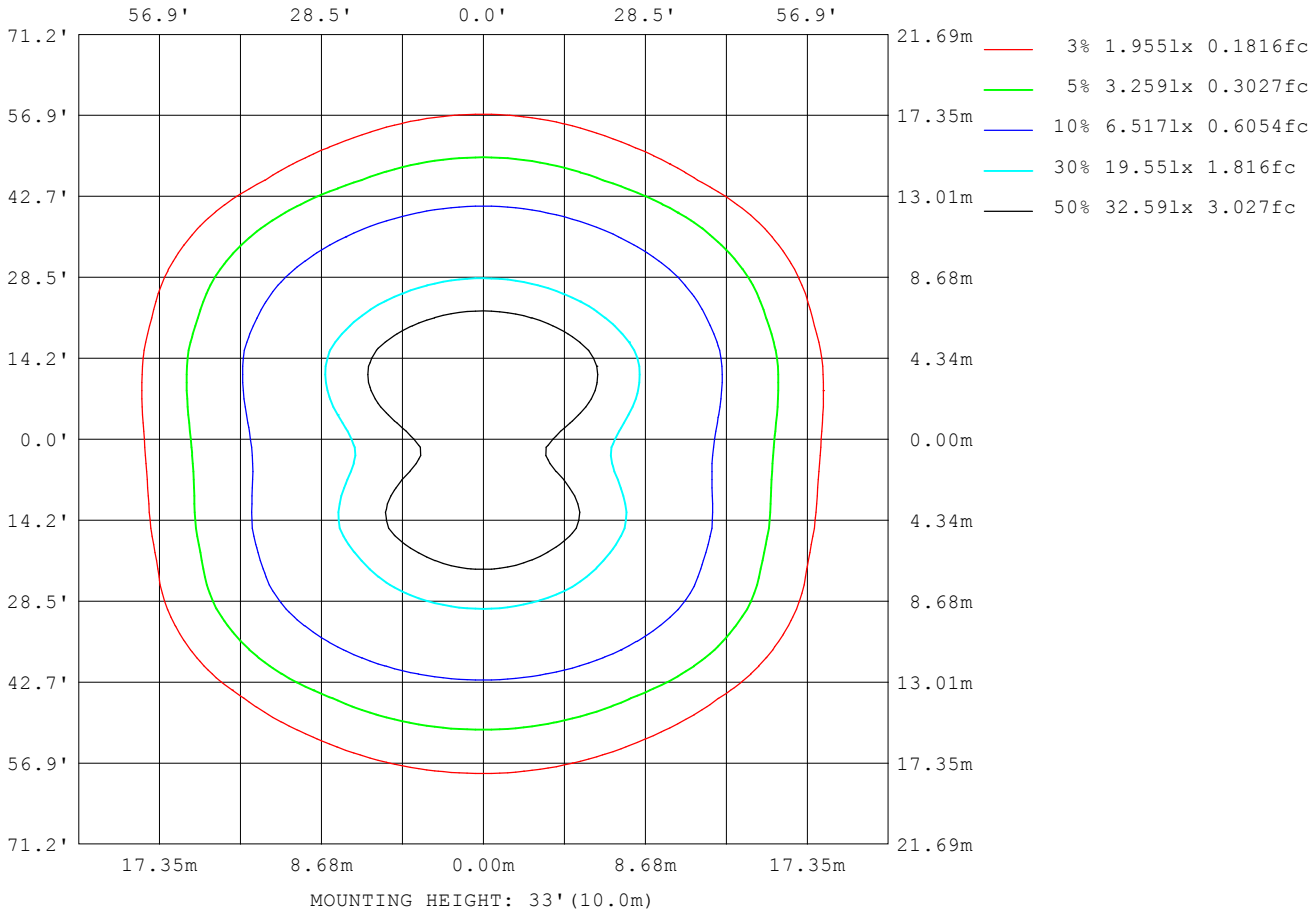
H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-13

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



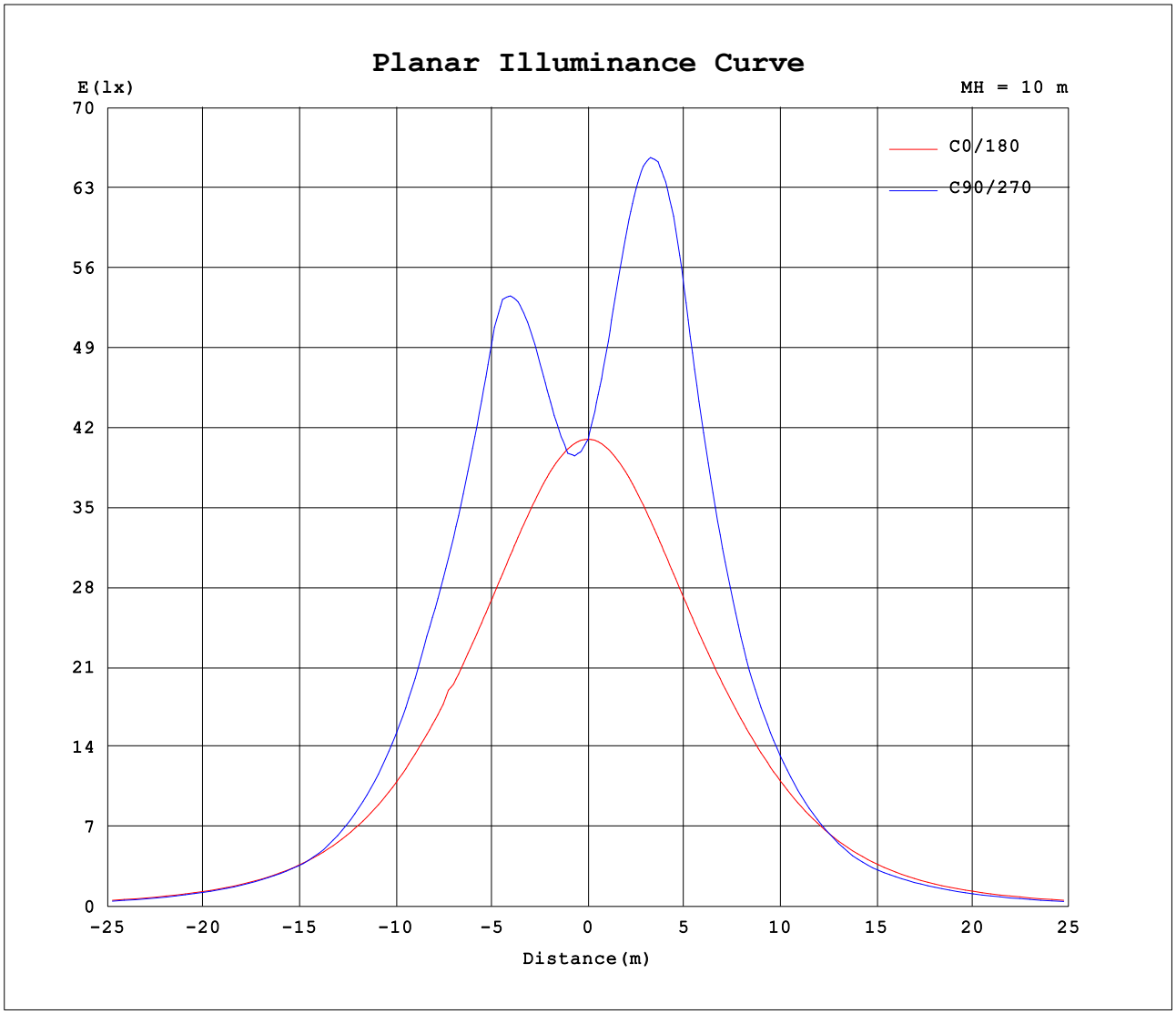
H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-13

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:2020-08-13

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: