



SGSO

Address: LIT by CARDI

Client:

LumCAT: 0017440227 KAI 20W 3000K 2400lm

Luminaire:

Report No:

Voltage(V): 230.0000

Test No: KYZ-A250930027-01-002

Current(A): 0.0900

LampCAT: LED

Power (W): 20.0000

Lamp flux(lm)

PF: 0.9668

Number of Lamps: 1

Ballast type:

Length(mm): -192

Width(mm): -192

Phm Type: C

Height(mm): 0

Photometric Results

Lumens(lm): 2400.00

Lumens(lm)/Power(W): 120.00

Central intensity(cd): 1164.827

Maximum intensity(cd): 1185.542

Angle of maximum intensity: $C=22.5$ $\gamma=5.0$

Beam Angle(50%Imax): [C0/180]Total=85.9

[C90/270]Total=85.7

Field angle(10%Imax): [C0/180]Total=142.6

[C90/270]Total=143.3

Maximum s/h(1/2): C0_180=1.15 C90_270=1.17

Maximum s/h(1/4): C0_180=1.18 C90_270=1.20

Up flux rate of LUM(%): 0.36%

Down flux rate of LUM(%): 99.64%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 86.708%

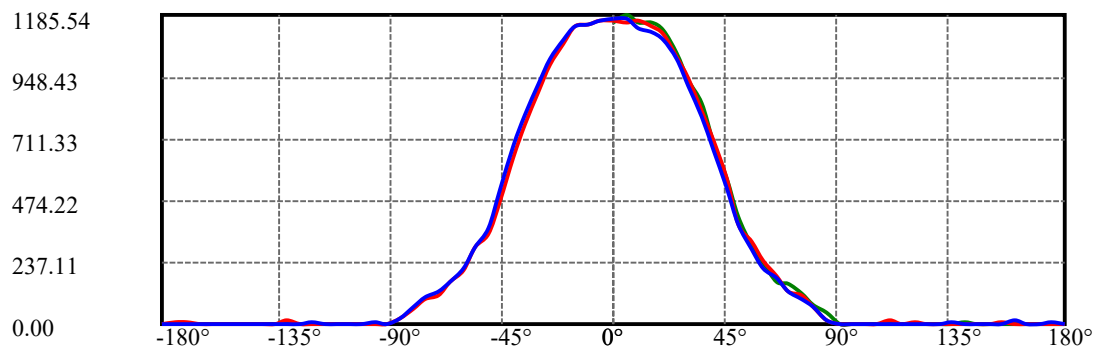
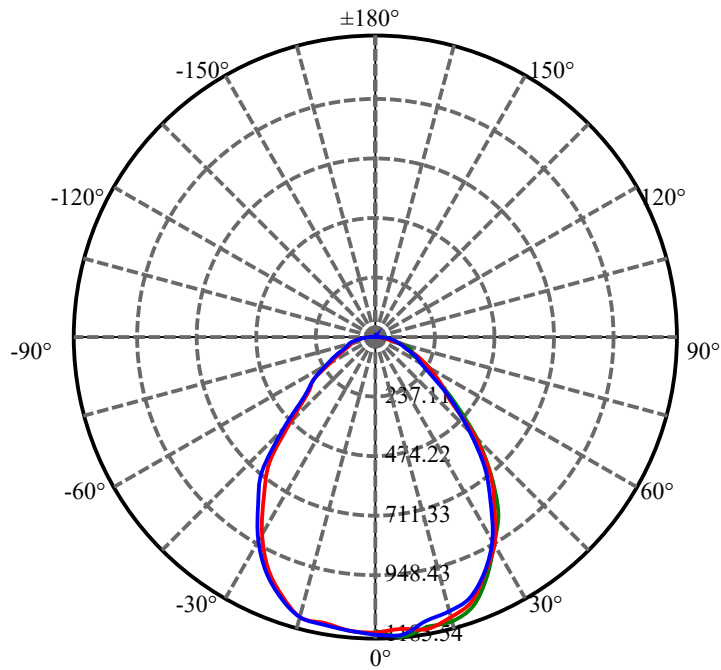
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	1264.222	0.000	0	.000%	.000%
5.0	1262.086	27.793	27.793	1.158%	1.158%
10.0	1252.062	82.766	110.559	3.449%	4.607%
15.0	1231.814	135.591	246.149	5.650%	10.256%
20.0	1188.125	183.531	429.68	7.647%	17.903%
25.0	1102.030	221.038	650.718	9.210%	27.113%
30.0	993.651	244.058	894.777	10.169%	37.282%
35.0	865.802	251.979	1146.756	10.499%	47.782%
40.0	734.486	245.702	1392.458	10.238%	58.019%
45.0	578.725	223.759	1616.217	9.323%	67.342%
50.0	439.119	189.267	1805.484	7.886%	75.229%
55.0	329.559	153.806	1959.29	6.409%	81.637%
60.0	242.559	121.696	2080.987	5.071%	86.708%
65.0	189.475	96.652	2177.638	4.027%	90.735%
70.0	141.064	77.019	2254.658	3.209%	93.944%
75.0	109.384	60.242	2314.9	2.510%	96.454%
80.0	71.499	44.539	2359.439	1.856%	98.310%
85.0	27.333	24.713	2384.152	1.030%	99.340%
90.0	0.804	7.090	2391.242	.295%	99.635%
95.0	0.603	0.355	2391.597	.015%	99.650%
100.0	1.407	0.503	2392.099	.021%	99.671%
105.0	1.055	0.606	2392.706	.025%	99.696%
110.0	2.136	0.767	2393.473	.032%	99.728%
115.0	0.930	0.714	2394.187	.030%	99.758%
120.0	1.407	0.523	2394.71	.022%	99.780%
125.0	1.080	0.529	2395.239	.022%	99.802%
130.0	2.362	0.689	2395.928	.029%	99.830%
135.0	2.035	0.818	2396.745	.034%	99.865%
140.0	2.965	0.852	2397.597	.035%	99.900%
145.0	2.236	0.798	2398.396	.033%	99.933%
150.0	0.427	0.361	2398.756	.015%	99.948%
155.0	2.110	0.296	2399.052	.012%	99.961%
160.0	2.387	0.434	2399.486	.018%	99.979%
165.0	1.080	0.263	2399.749	.011%	99.990%
170.0	0.678	0.096	2399.845	.004%	99.994%
175.0	2.688	0.111	2399.956	.005%	99.998%
180.0	1.055	0.041	2399.997	.002%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Fixt
0-30	894.78	37.28%
0-40	1392.46	58.02%
0-60	2080.99	86.71%
0-90	2391.24	99.64%
0-120	2394.71	99.78%
0-180	2400.00	100.00%
60-90	431.95	18.00%
90-120	10.56	0.44%
90-130	11.78	0.49%
90-150	14.60	0.61%
90-180	15.80	0.66%
0-53.72	1920.00	80.00%

ZONAL LUMEN SUMMARY

0-10	110.56
10-20	319.12
20-30	465.10
30-40	497.68
40-50	413.03
50-60	275.50
60-70	173.67
70-80	104.78
80-90	31.80
90-100	0.86
100-110	1.37
110-120	1.24
120-130	1.22
130-140	1.67
140-150	1.16
150-160	0.73
160-170	0.36
170-180	0.11



C22.5(Max):

C0/C180:

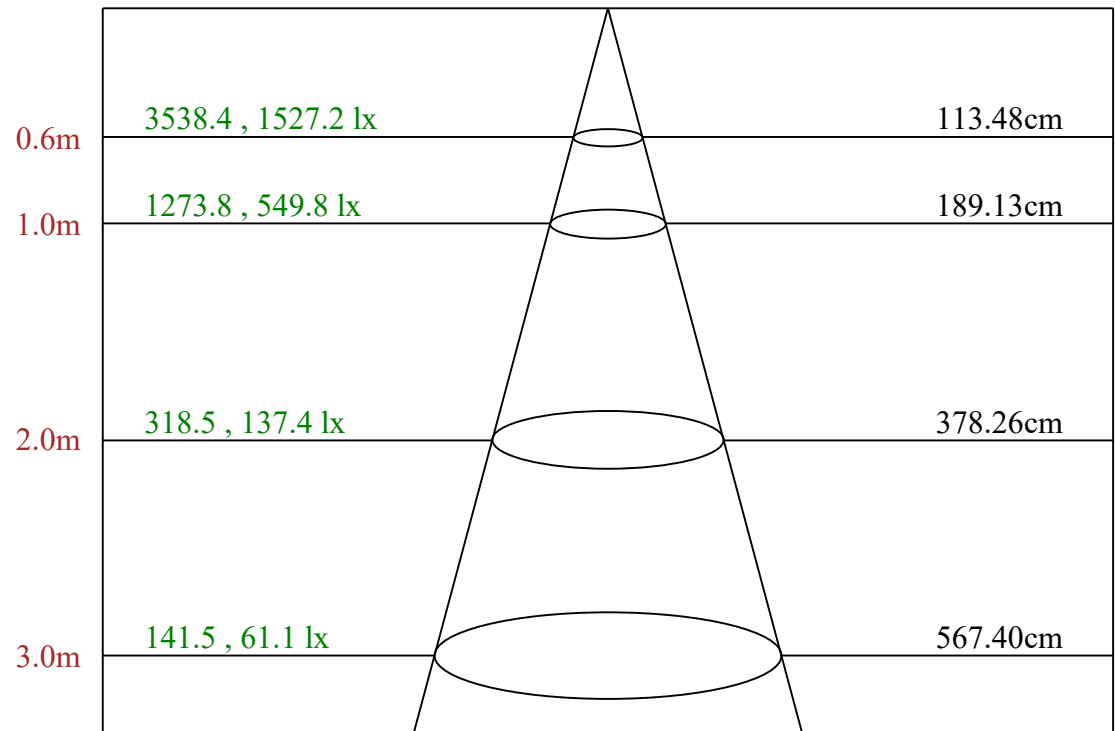
C90/C270:

Field angle(10%Imax):C0/180Left:69.5 Right:73.1

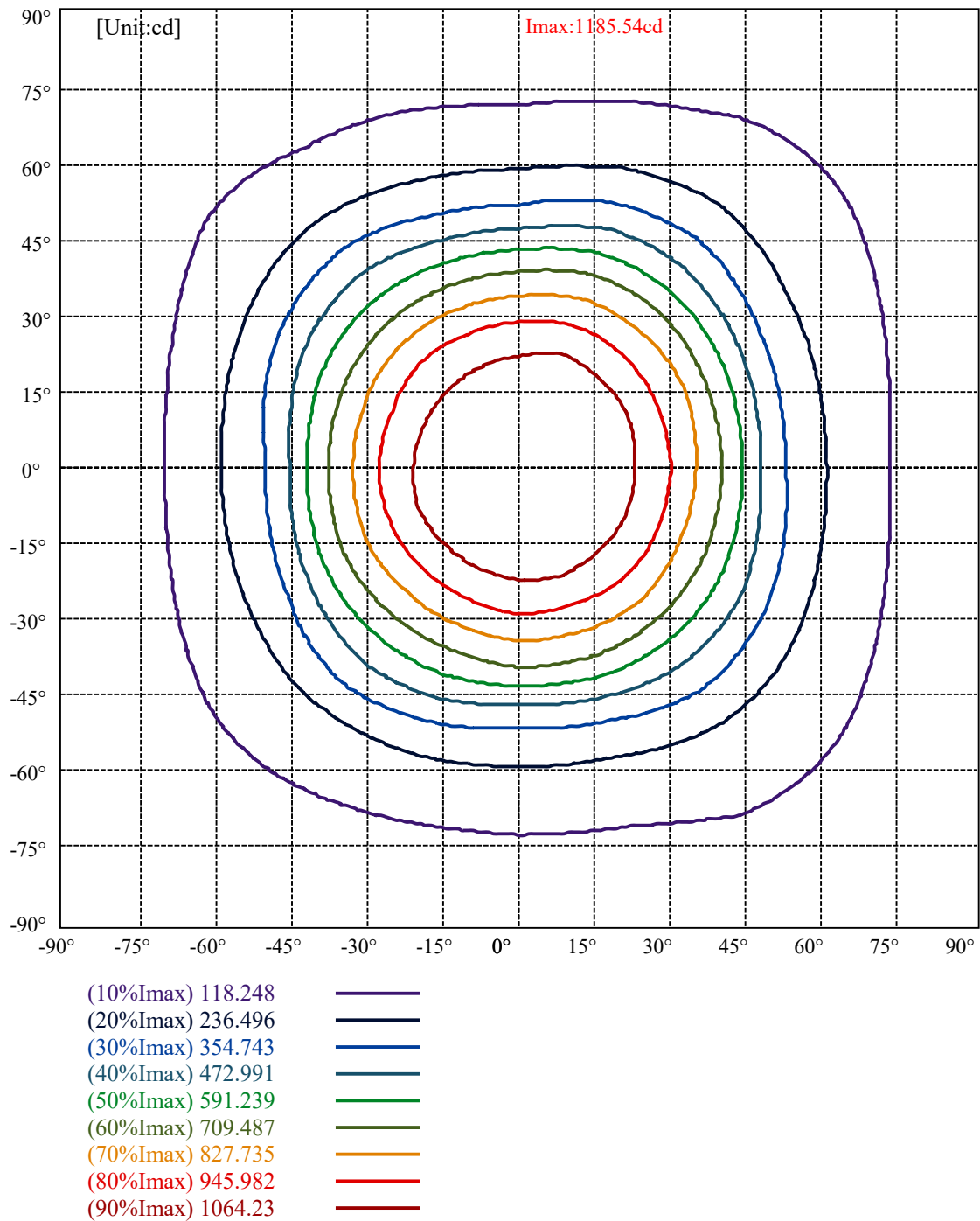
:C90/270Left:77.1 Right:66.2

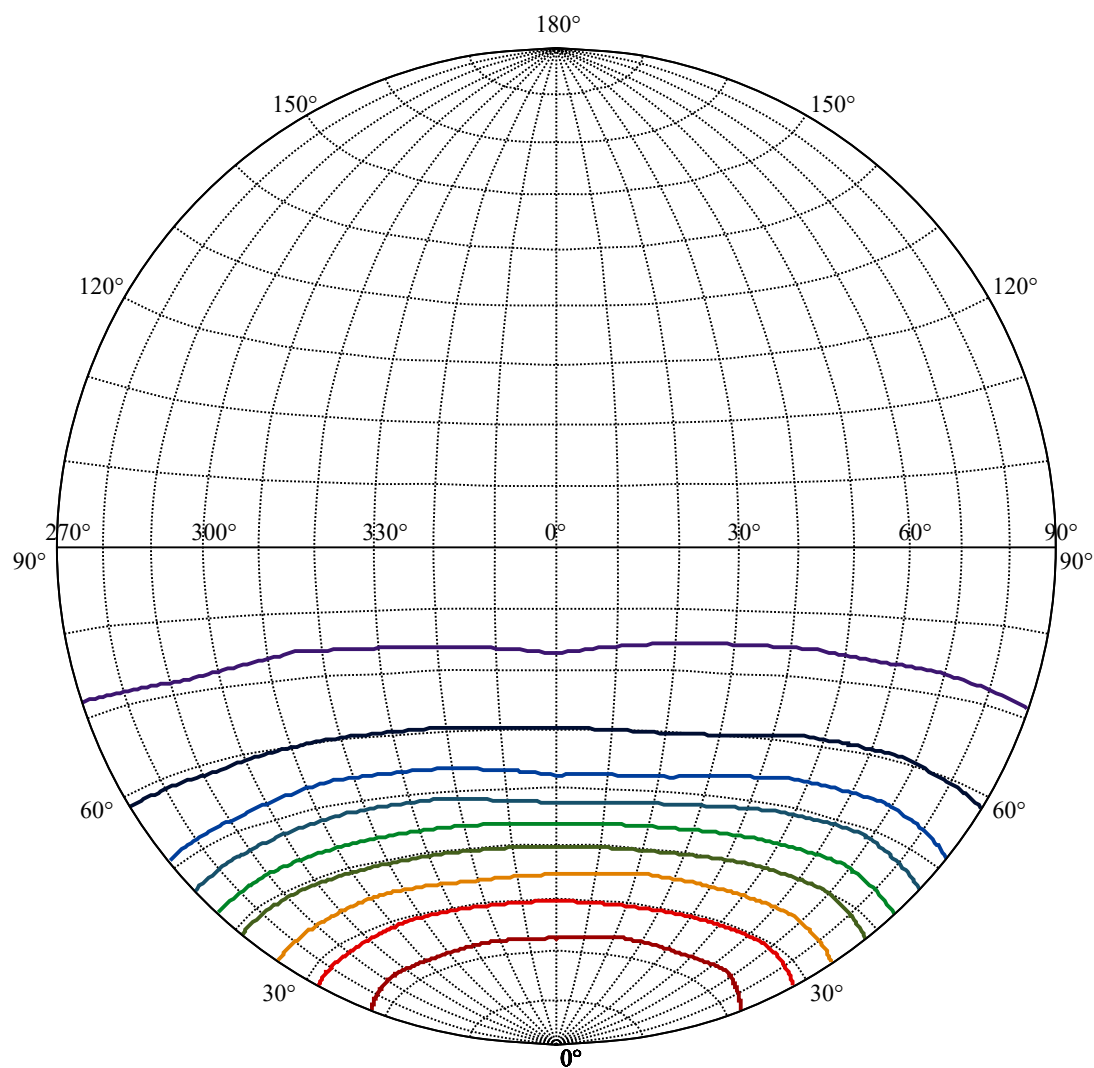
Beam Angle(50%Imax):C0/180Left:41.7 Right:44.2

:C90/270Left:47.9 Right:37.8



Max , Ave Beam angle of C22.5 plane 86.80





House

[Unit:cd]

Road

Imax:1185.54

(10%Imax) 109.0583

(20%Imax) 218.1166

(30%Imax) 327.1739

(40%Imax) 436.2322

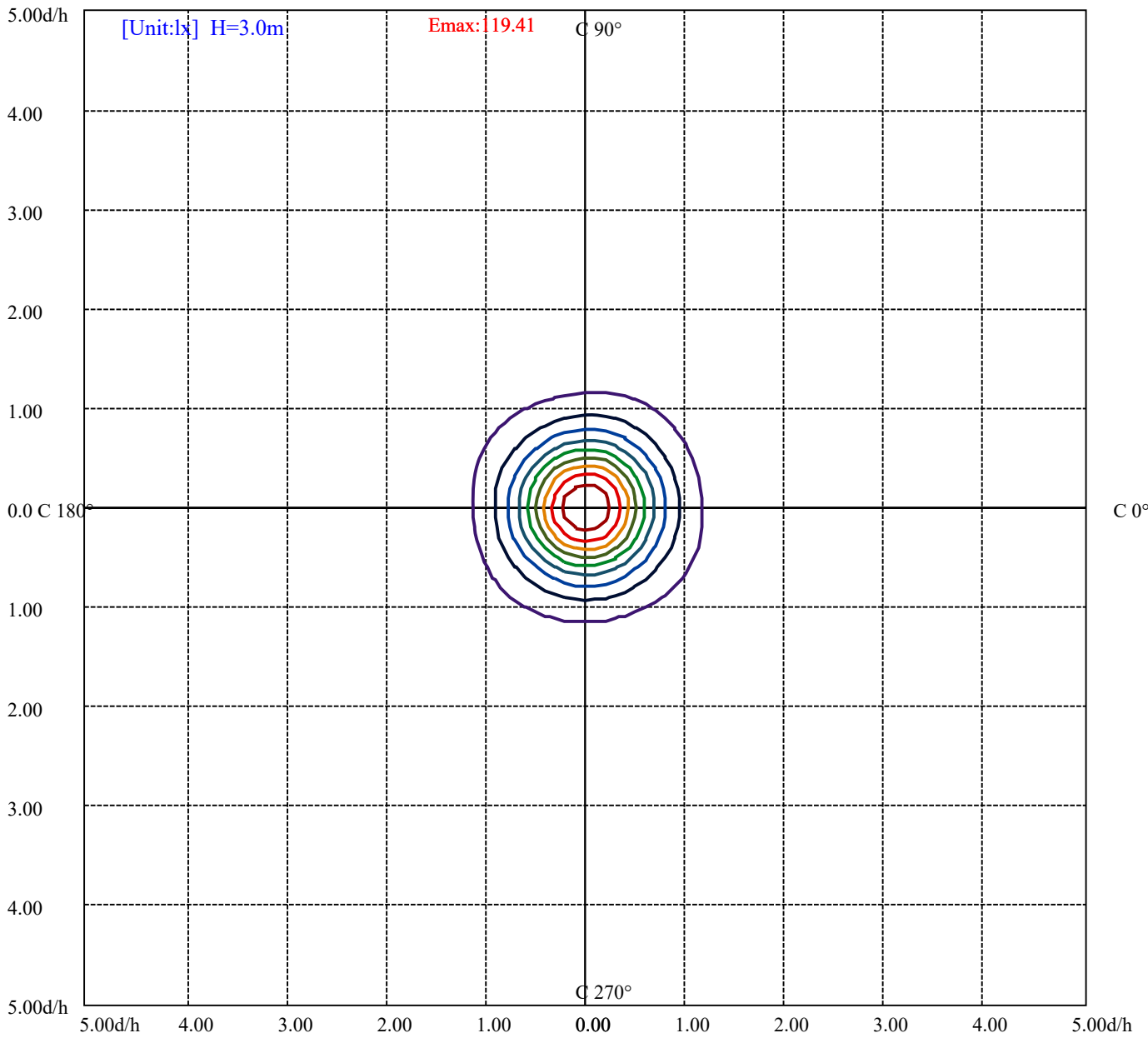
(50%Imax) 545.2905

(60%Imax) 654.3488

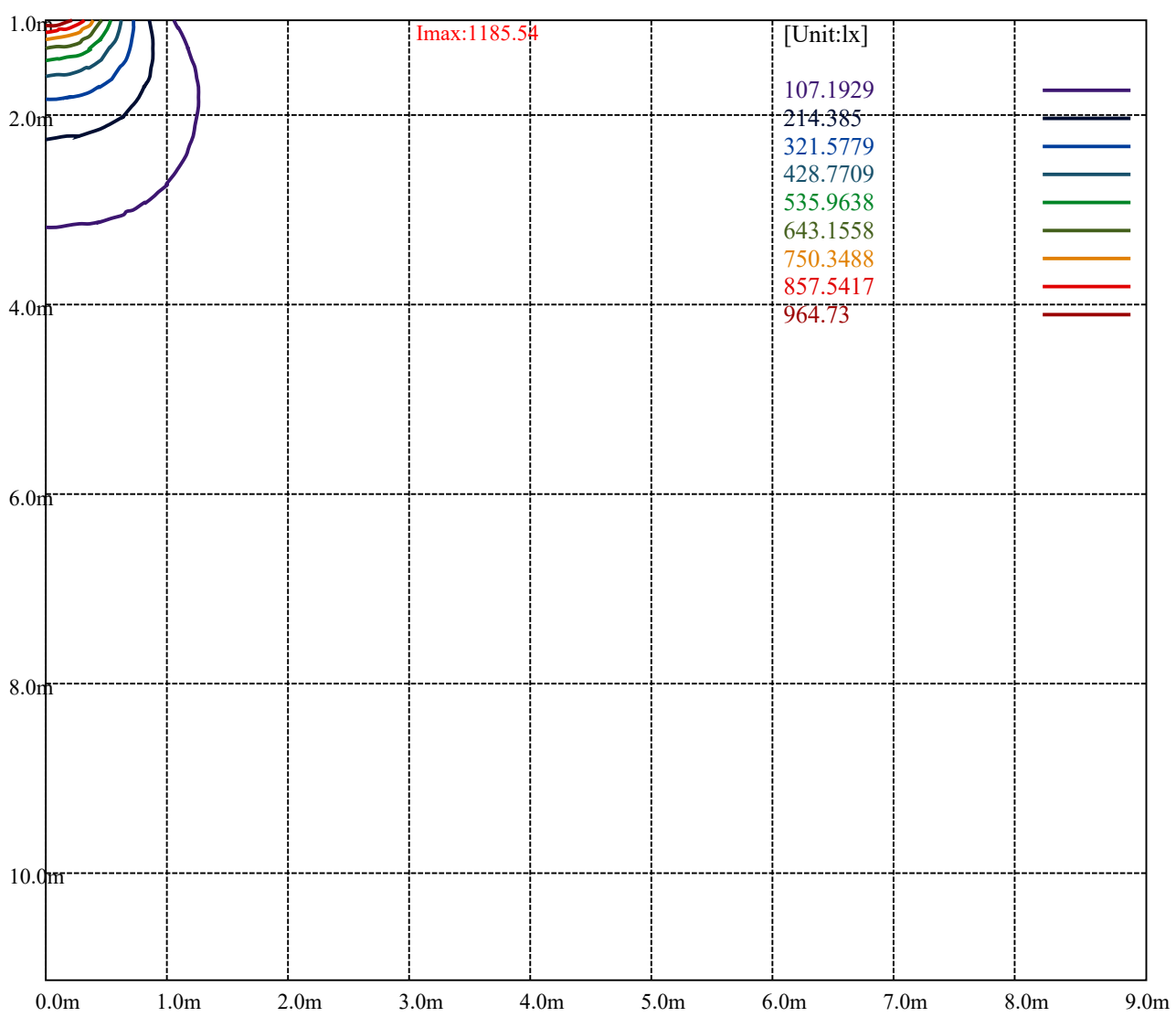
(70%Imax) 763.407

(80%Imax) 872.4644

(90%Imax) 981.5245



(10%Emax)	11.94049	—
(20%Emax)	23.88108	—
(30%Emax)	35.82158	—
(40%Emax)	47.76217	—
(50%Emax)	59.70266	—
(60%Emax)	71.64325	—
(70%Emax)	83.58374	—
(80%Emax)	95.52434	—
(90%Emax)	107.4652	—



Luminance Table

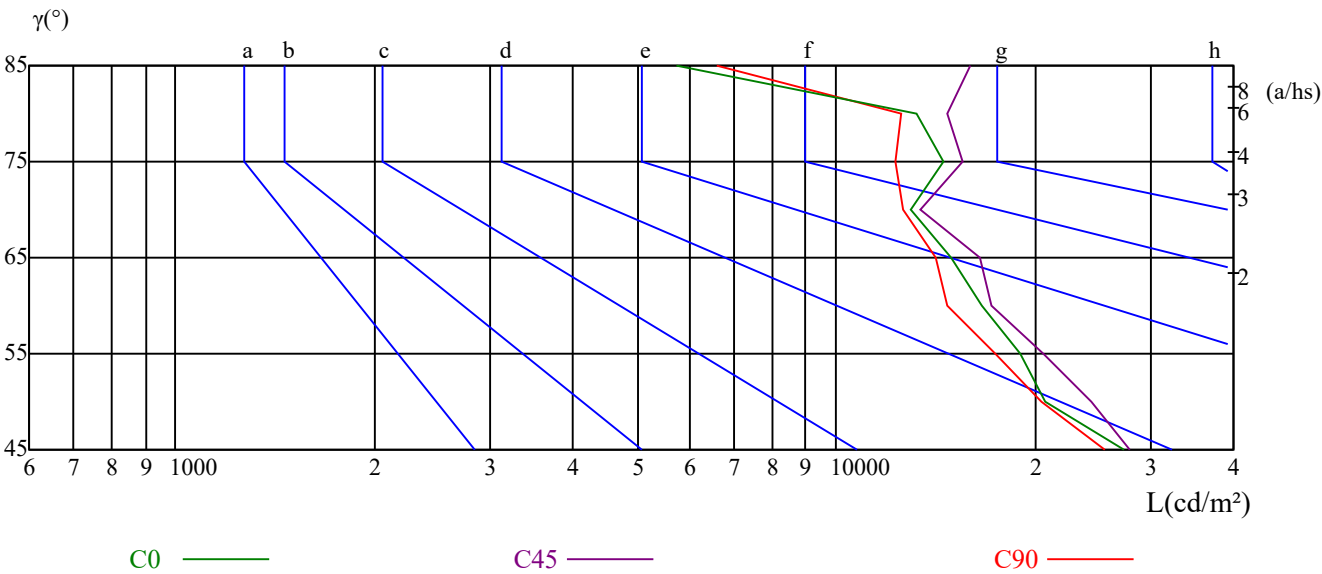
γ	45	50	55	60	65	70	75	80	85
C0	27301	20770	19067	16660	14904	12999	14513	13243	5717
C45	27933	24308	20671	17171	16506	13410	15599	14715	15978
C90	25584	20472	17396	14718	14148	12626	12341	12581	6596

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
14057	13725	14768	13599	12982	13760	7916	7329	11544

Glare Table

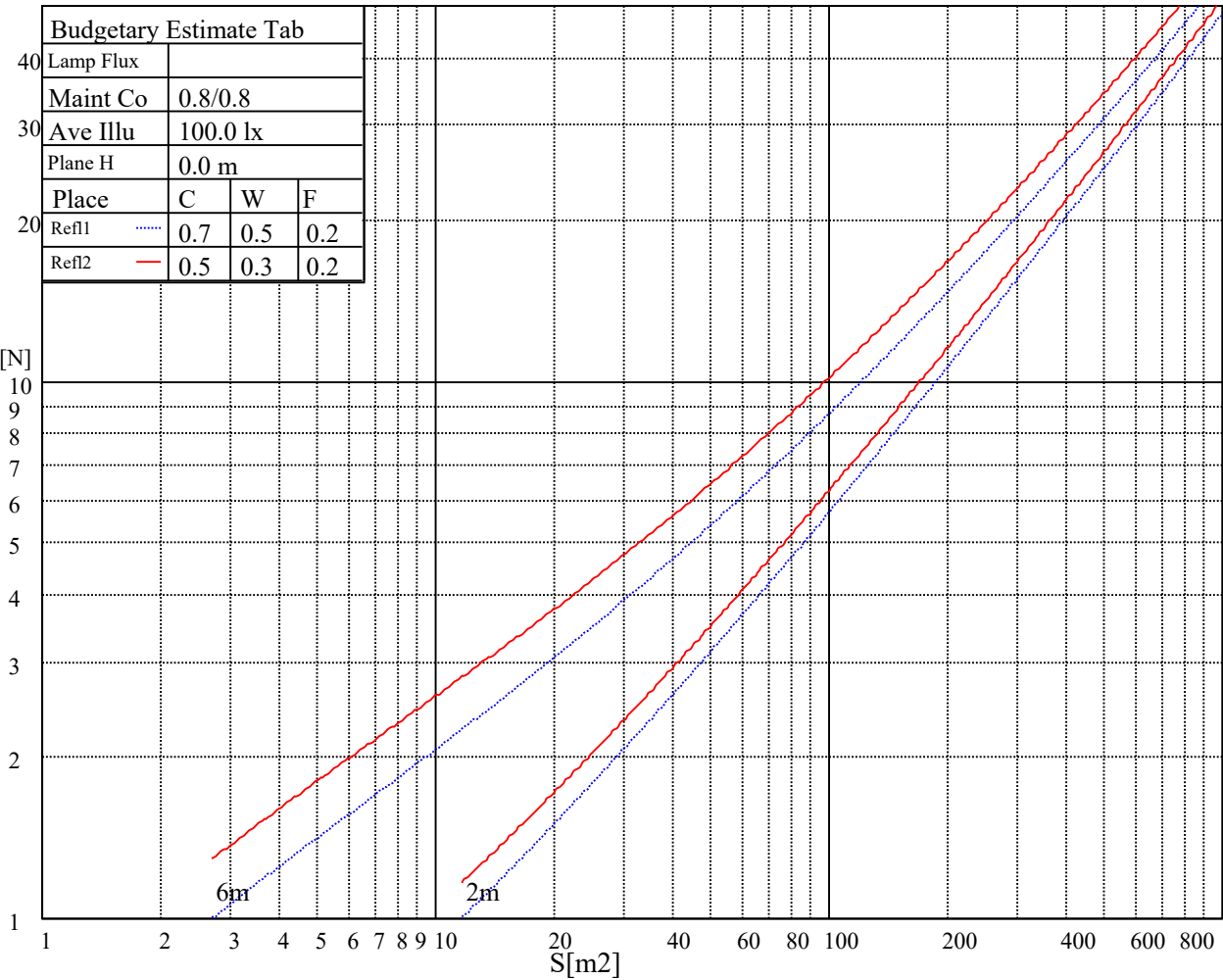
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

Luminance Limiting Curve

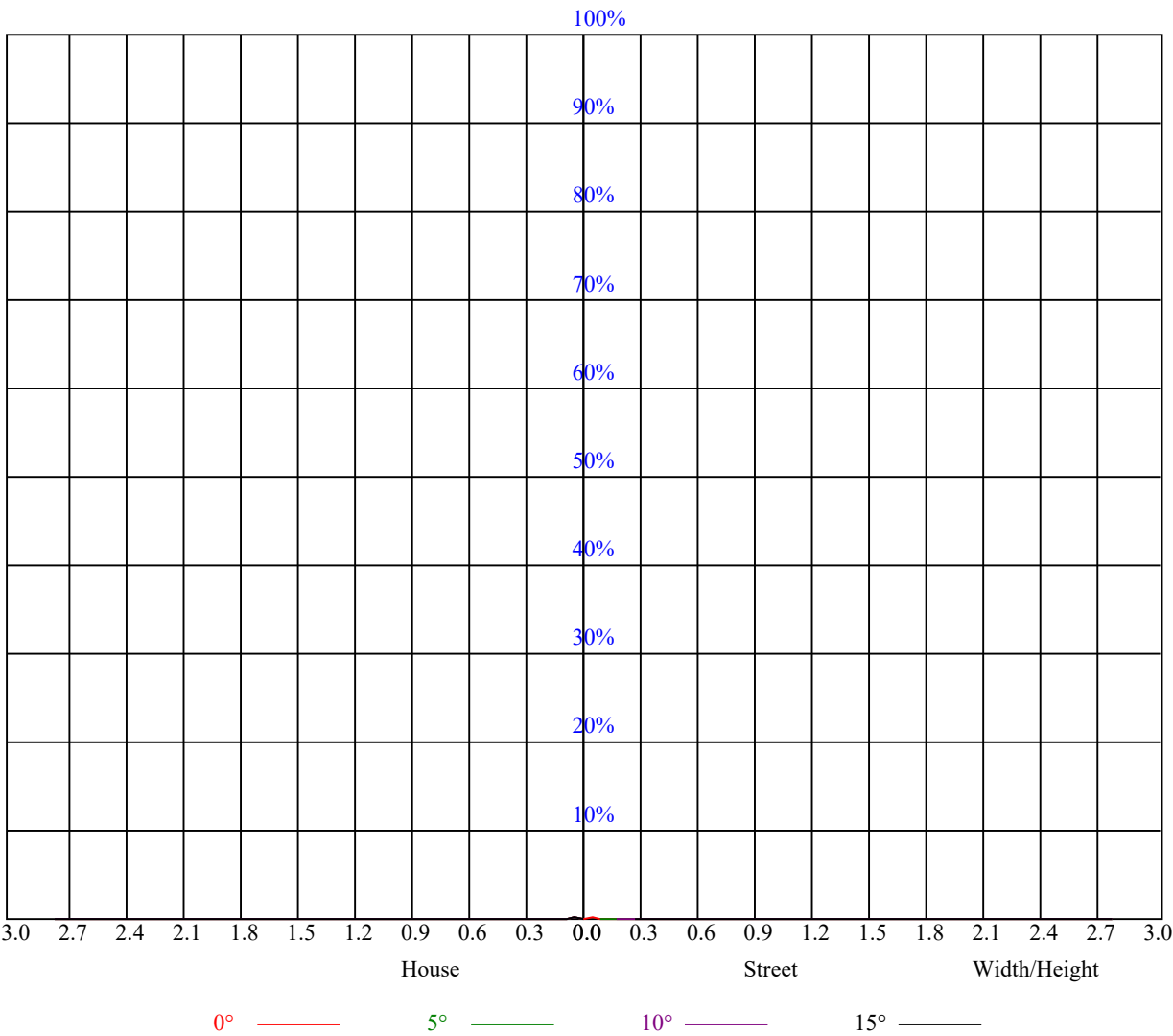


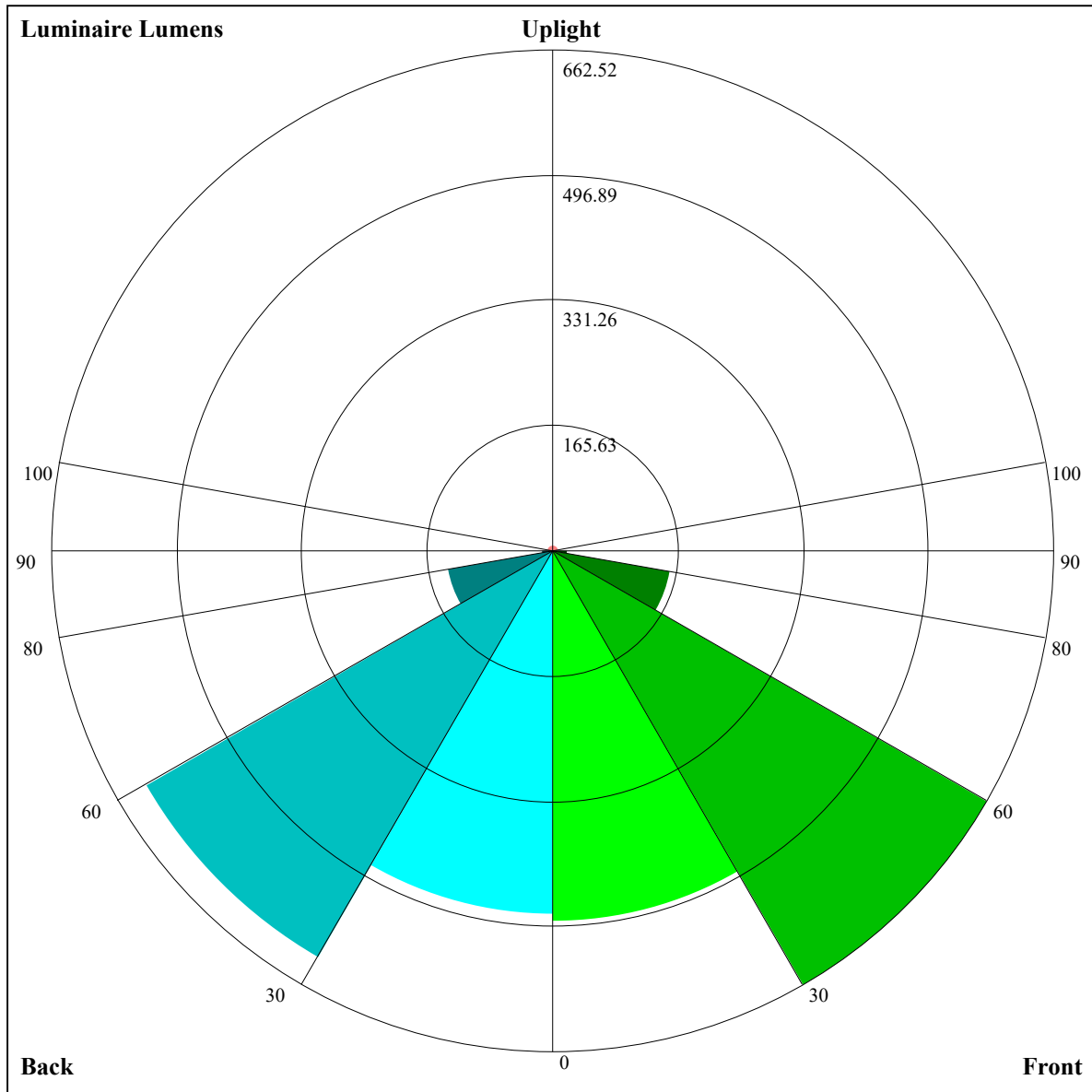
Illumination assessment according UGR											
Rf of Ceiling		70	70	50	50	30	70	70	50	50	30
Rf of Wall		50	30	50	30	30	50	30	50	30	30
Rf of Floor		20	20	20	20	20	20	20	20	20	20
Room dimensions		Viewed crosswise					Viewed endwise				
X	Y										
2H	2H	18.04	19.49	18.40	19.82	20.14	18.15	19.60	18.51	19.92	20.25
	3H	19.09	20.40	19.48	20.74	21.09	19.14	20.45	19.53	20.79	21.15
	4H	19.64	20.87	20.04	21.23	21.60	19.57	20.79	19.97	21.15	21.52
	6H	20.11	21.24	20.52	21.62	22.02	20.00	21.13	20.41	21.51	21.91
	8H	20.22	21.31	20.64	21.69	22.10	20.12	21.21	20.54	21.60	22.01
	12H	20.24	21.28	20.66	21.68	22.09	20.15	21.19	20.57	21.59	22.01
4H	2H	18.51	19.74	18.91	20.10	20.47	18.60	19.83	19.00	20.19	20.56
	3H	19.79	20.83	20.22	21.22	21.64	19.80	20.83	20.22	21.23	21.65
	4H	20.56	21.47	21.00	21.90	22.35	20.44	21.35	20.88	21.77	22.22
	6H	21.13	21.94	21.60	22.39	22.84	21.03	21.84	21.50	22.29	22.74
	8H	21.32	22.08	21.80	22.53	23.00	21.25	22.01	21.73	22.46	22.93
	12H	21.41	22.11	21.89	22.56	23.07	21.35	22.05	21.84	22.50	23.02
8H	4H	20.83	21.58	21.31	22.04	22.51	20.72	21.48	21.20	21.93	22.40
	6H	21.54	22.17	22.04	22.65	23.16	21.51	22.15	22.01	22.62	23.13
	8H	21.89	22.44	22.41	22.95	23.45	21.91	22.46	22.43	22.98	23.48
	12H	22.07	22.53	22.60	23.05	23.57	22.11	22.58	22.64	23.09	23.61
12H	4H	20.87	21.57	21.35	22.02	22.53	20.75	21.45	21.24	21.90	22.42
	6H	21.67	22.23	22.20	22.74	23.24	21.64	22.19	22.16	22.71	23.21
	8H	22.03	22.49	22.56	23.01	23.53	22.05	22.52	22.59	23.03	23.55
Variation with the observer position at spacings:											
S = 1.0H		0.3/-0.7					0.4/-0.6				
S = 1.5H		0.7/-1.2					0.6/-1.0				
S = 2.0H		1.3/-1.3					1.3/-1.2				
Standard tables:		BK4					BK4				
Uncorrected UGR		7.6					7.6				

UGR calculation is based on CIE Publ. 117 ,S/H = 0.25



RHOC	80			70			50			30			10			0
RHOW	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR	COEFFICIENTS OF UTILIZATION RHOF=20 CU															
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	1.06	1.02	0.99	1.04	1.00	0.97	0.99	0.97	0.94	0.96	0.93	0.91	0.92	0.90	0.88	0.86
2	0.94	0.88	0.83	0.92	0.87	0.82	0.89	0.84	0.80	0.86	0.82	0.79	0.83	0.80	0.77	0.75
3	0.84	0.77	0.71	0.83	0.76	0.71	0.80	0.74	0.70	0.77	0.72	0.68	0.75	0.71	0.67	0.65
4	0.76	0.68	0.62	0.75	0.67	0.62	0.72	0.66	0.61	0.70	0.64	0.60	0.68	0.63	0.59	0.57
5	0.69	0.61	0.55	0.68	0.60	0.54	0.66	0.59	0.54	0.64	0.58	0.53	0.62	0.57	0.53	0.51
6	0.63	0.55	0.49	0.62	0.54	0.48	0.60	0.53	0.48	0.58	0.52	0.48	0.57	0.51	0.47	0.45
7	0.57	0.49	0.44	0.57	0.49	0.44	0.55	0.48	0.43	0.54	0.48	0.43	0.52	0.47	0.43	0.41
8	0.53	0.45	0.40	0.52	0.45	0.39	0.51	0.44	0.39	0.50	0.43	0.39	0.48	0.43	0.39	0.37
9	0.49	0.41	0.36	0.48	0.41	0.36	0.47	0.40	0.36	0.46	0.40	0.36	0.45	0.39	0.35	0.34
10	0.45	0.38	0.33	0.45	0.38	0.33	0.44	0.37	0.33	0.43	0.37	0.33	0.42	0.36	0.32	0.31





Luminaire Lumens:

FL=491.15,FM=662.52,FH=158.71,FVH=19.44

BL=480.06,BM=621.2,BH=142.46,BVH=14.54

UL=0.93,UH=8.58

BUG Rating:B1-U1-G1

Intensity data(cd)

C/γ(°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0
0.0	1164.83	1154.10	1162.24	1142.63	1112.67	1023.15	943.26	820.82	705.41
22.5	1158.17	1185.54	1158.17	1153.36	1123.40	1041.65	936.60	843.38	700.60
45.0	1167.79	1165.57	1171.86	1148.55	1109.71	1038.69	936.97	830.43	713.17
67.5	1153.73	1165.94	1165.57	1142.26	1112.30	1048.68	939.93	828.95	712.06
90.0	1168.90	1174.07	1135.23	1120.44	1092.33	1016.87	915.14	793.44	668.05
112.5	1172.23	1166.68	1145.96	1121.18	1078.27	1003.55	902.57	780.13	652.14
135.0	1171.12	1154.47	1144.85	1120.81	1067.17	1005.40	897.76	769.40	644.74
157.5	1150.40	1134.87	1152.62	1118.22	1069.02	979.88	892.58	762.74	651.77
180.0	1164.83	1162.61	1145.96	1140.78	1073.83	996.89	889.62	763.11	642.15
202.5	1158.17	1155.95	1150.77	1119.70	1087.15	986.16	896.28	772.73	653.99
225.0	1167.79	1148.55	1146.33	1116.00	1074.20	987.64	876.30	767.18	640.67
247.5	1153.73	1155.58	1143.74	1123.77	1086.78	993.19	895.54	773.47	655.10
270.0	1168.90	1162.24	1151.14	1138.56	1092.70	1019.46	918.47	802.69	688.02
292.5	1172.23	1177.03	1145.22	1141.15	1101.57	1032.77	913.29	808.24	692.83
315.0	1171.12	1157.06	1161.87	1137.82	1103.05	1020.93	937.71	821.93	691.72
337.5	1150.40	1162.61	1153.73	1151.88	1109.71	1031.29	938.45	809.35	702.08
360.0	1164.83	1154.10	1162.24	1142.63	1112.67	1023.15	943.26	820.82	705.41
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	558.92	386.55	316.64	241.18	182.36	128.73	108.75	66.58	14.43
22.5	562.62	412.44	301.84	233.04	161.65	153.88	115.78	70.28	41.06
45.0	571.87	452.39	343.27	248.58	201.97	132.80	116.89	73.98	40.32
67.5	572.61	453.50	334.02	245.62	189.39	140.56	104.68	85.45	39.95
90.0	523.78	381.00	288.90	213.06	173.11	125.03	92.48	63.25	16.65
112.5	512.69	380.63	292.22	211.95	160.91	128.73	91.37	60.66	24.04
135.0	524.89	423.17	298.14	221.94	160.91	117.63	95.07	63.62	15.54
157.5	513.43	405.42	293.33	219.72	175.70	125.77	98.76	69.17	17.39
180.0	467.93	343.27	294.07	208.63	161.65	111.34	95.07	61.40	25.52
202.5	492.71	358.81	278.54	196.05	153.14	120.96	87.30	46.98	24.41
225.0	518.61	417.62	286.31	199.01	166.46	120.22	85.45	61.77	14.80
247.5	531.55	400.24	283.72	216.76	180.88	123.92	93.96	52.16	9.62
270.0	512.32	369.53	292.22	215.28	162.76	128.36	102.09	63.25	20.34
292.5	536.73	393.58	286.68	217.87	163.50	128.36	98.39	63.99	17.02
315.0	554.86	437.97	331.80	239.70	193.46	135.38	115.04	66.95	45.87
337.5	565.58	449.43	330.69	243.03	201.97	155.36	109.49	83.23	35.51
360.0	558.92	386.55	316.64	241.18	182.36	128.73	108.75	66.58	14.43
C/γ(°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	0.00	0.00	0.00	0.00	12.21	0.00	4.44	0.00	0.00
22.5	0.00	0.00	0.00	0.00	2.96	0.00	0.00	0.00	0.00
45.0	4.81	2.22	0.00	0.00	2.96	0.00	0.00	1.85	5.18
67.5	0.00	0.00	14.43	0.00	0.00	0.00	1.48	2.96	0.00
90.0	0.00	0.00	0.00	0.00	1.85	0.00	0.00	0.00	0.00
112.5	0.00	0.00	0.00	0.00	7.40	0.00	0.00	0.00	0.00
135.0	7.03	0.00	0.00	0.00	1.85	0.00	0.00	1.11	0.00
157.5	0.00	0.00	0.00	4.07	0.00	1.85	4.81	0.00	0.00
180.0	0.00	0.00	0.00	2.22	0.00	0.00	0.00	0.00	12.95
202.5	0.00	0.00	6.29	0.00	0.00	1.85	0.00	1.11	13.69
225.0	0.00	1.85	0.00	0.00	1.11	9.99	0.00	0.00	0.00
247.5	0.00	0.00	0.00	5.18	0.00	0.00	0.00	1.48	2.59
270.0	0.00	4.81	0.00	0.00	0.00	0.00	9.99	0.00	0.00
292.5	0.00	0.00	0.00	0.00	1.11	0.00	0.00	0.00	0.00
315.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
337.5	0.00	0.00	0.00	4.07	0.00	0.00	0.00	7.40	0.37
360.0	0.00	0.00	0.00	0.00	12.21	0.00	4.44	0.00	0.00

Intensity data(cd)

Appendix Page: 17 Total:17

C/γ(°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	0.00	0.00	2.96	3.33	6.66	0.00	0.00	0.00	0.00
22.5	0.00	3.70	0.00	0.74	0.00	0.00	2.22	0.00	0.00
45.0	0.00	0.00	0.37	0.00	0.00	0.00	0.74	0.00	6.66
67.5	0.00	9.99	0.00	0.00	0.00	5.55	0.00	0.00	0.00
90.0	6.29	0.00	2.22	0.00	2.22	14.43	0.00	0.00	3.70
112.5	1.11	0.00	1.11	0.00	4.07	0.00	4.44	4.07	0.00
135.0	0.00	9.62	11.47	0.00	0.00	0.00	8.51	0.00	0.00
157.5	0.00	0.00	5.92	0.00	0.37	0.00	0.00	0.00	0.00
180.0	0.00	0.00	1.48	0.00	1.11	0.00	0.00	3.70	6.66
202.5	8.88	0.00	0.00	0.00	11.84	0.00	0.00	0.00	1.85
225.0	1.11	0.00	0.00	0.00	0.00	5.92	0.00	0.00	14.43
247.5	8.14	2.96	2.59	0.00	0.00	7.03	0.00	0.00	0.00
270.0	0.00	2.59	0.00	2.22	0.00	0.00	0.00	0.00	0.00
292.5	4.44	8.51	4.81	0.00	0.00	0.00	0.00	0.00	3.33
315.0	0.00	0.00	0.00	0.00	4.81	0.00	0.00	2.22	0.00
337.5	0.00	6.29	0.00	0.00	0.00	2.22	0.00	0.00	2.96
360.0	0.00	0.00	2.96	3.33	6.66	0.00	0.00	0.00	0.00

C/γ(°)	180.0
0.0	0.00
22.5	0.00
45.0	0.00
67.5	0.00
90.0	0.00
112.5	7.77
135.0	0.00
157.5	0.00
180.0	0.00
202.5	0.00
225.0	0.00
247.5	0.00
270.0	0.00
292.5	7.77
315.0	0.00
337.5	0.00
360.0	0.00