



SGSO

Address: LIT by CARDI

Client:

LumCAT: 0017440227 KAI 20W 4000K 2400lm

Luminaire:

Report No:

Voltage(V): 230.0000

Test No: KYZ-A250930027-01-001

Current(A): 0.0900

LampCAT: LED

Power (W): 20.0000

Lamp flux(lm)

PF: 0.9674

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): 1165.326

Maximum intensity(cd): 1176.935

Angle of maximum intensity: $C=135.0$ $\gamma=0.0$

Beam Angle(50%Imax): [C0/180]Total=85.5

[C90/270]Total=85.3

Field angle(10%Imax): [C0/180]Total=143.6

[C90/270]Total=140.7

Maximum s/h(1/2): C0_180=1.20 C90_270=1.16

Maximum s/h(1/4): C0_180=1.22 C90_270=1.19

Up flux rate of LUM(%): 0.28%

Down flux rate of LUM(%): 99.72%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 86.903%

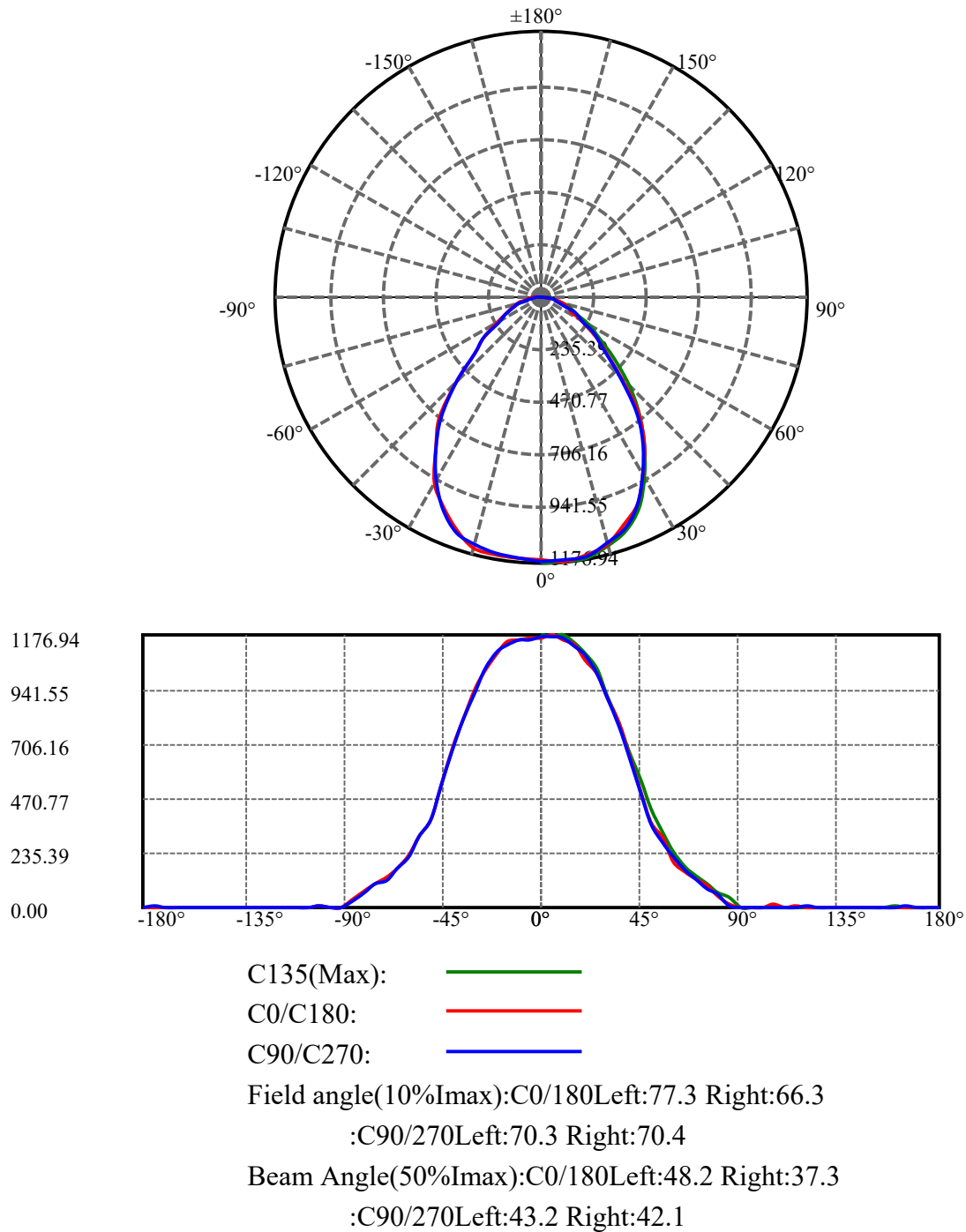
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	1289.696	0.000	0	.000%	.000%
5.0	1288.465	27.819	27.819	1.159%	1.159%
10.0	1281.958	82.994	110.813	3.458%	4.617%
15.0	1262.212	136.216	247.029	5.676%	10.293%
20.0	1210.761	183.953	430.982	7.665%	17.958%
25.0	1128.911	221.483	652.465	9.228%	27.186%
30.0	1013.523	244.714	897.179	10.196%	37.382%
35.0	887.633	252.685	1149.864	10.529%	47.911%
40.0	749.459	246.528	1396.392	10.272%	58.183%
45.0	587.242	223.390	1619.782	9.308%	67.491%
50.0	448.917	188.974	1808.756	7.874%	75.365%
55.0	337.799	154.394	1963.15	6.433%	81.798%
60.0	249.493	122.526	2085.677	5.105%	86.903%
65.0	189.776	96.384	2182.061	4.016%	90.919%
70.0	144.204	76.328	2258.388	3.180%	94.100%
75.0	105.314	58.866	2317.255	2.453%	96.552%
80.0	73.685	43.229	2360.484	1.801%	98.354%
85.0	29.896	25.403	2385.887	1.058%	99.412%
90.0	0.075	7.407	2393.294	.309%	99.721%
95.0	1.306	0.341	2393.636	.014%	99.735%
100.0	1.558	0.702	2394.338	.029%	99.764%
105.0	1.156	0.655	2394.994	.027%	99.791%
110.0	0.201	0.320	2395.314	.013%	99.805%
115.0	1.533	0.396	2395.71	.017%	99.821%
120.0	1.608	0.689	2396.399	.029%	99.850%
125.0	2.512	0.860	2397.258	.036%	99.886%
130.0	0.201	0.532	2397.791	.022%	99.908%
135.0	0.452	0.119	2397.91	.005%	99.913%
140.0	0.302	0.126	2398.036	.005%	99.918%
145.0	1.332	0.246	2398.282	.010%	99.928%
150.0	2.085	0.454	2398.736	.019%	99.947%
155.0	0.779	0.327	2399.063	.014%	99.961%
160.0	1.708	0.235	2399.299	.010%	99.971%
165.0	2.613	0.321	2399.62	.013%	99.984%
170.0	1.809	0.237	2399.857	.010%	99.994%
175.0	1.683	0.113	2399.97	.005%	99.999%
180.0	1.105	0.030	2400	.001%	100.000%

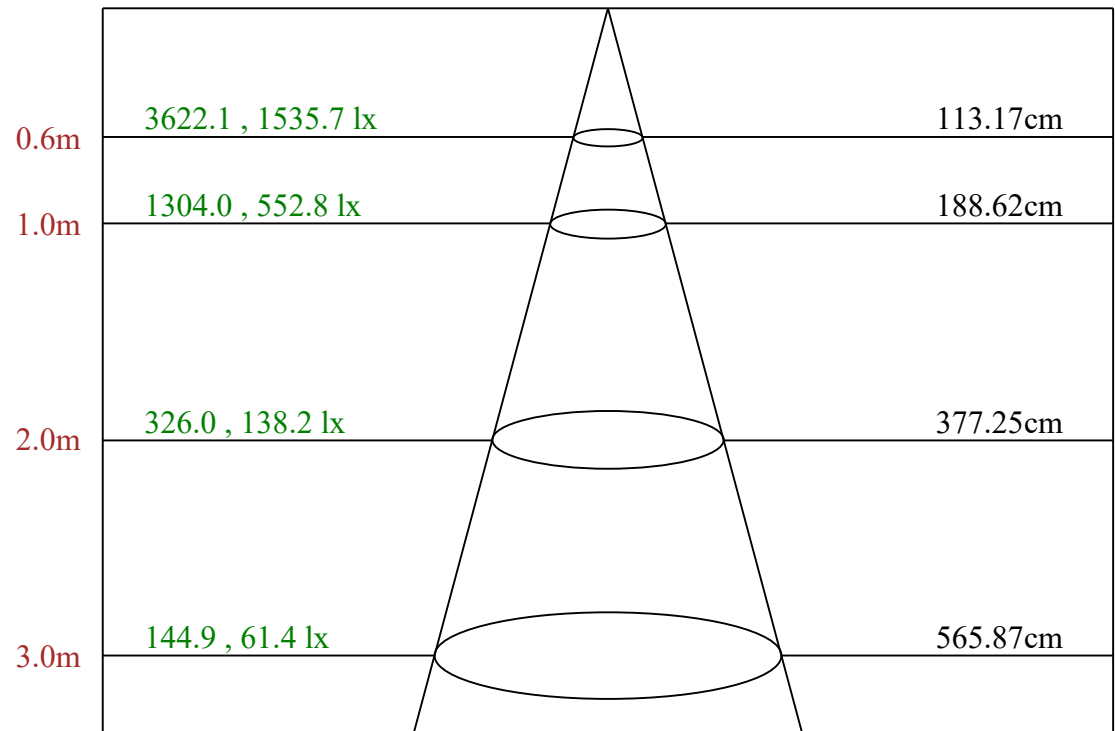
ZONAL LUMEN SUMMARY

Zone	Lumens	%Fixt
0-30	897.18	37.38%
0-40	1396.39	58.18%
0-60	2085.68	86.90%
0-90	2393.29	99.72%
0-120	2396.40	99.85%
0-180	2400.00	100.00%
60-90	430.14	17.92%
90-120	10.51	0.44%
90-130	11.90	0.50%
90-150	12.85	0.54%
90-180	14.08	0.59%
0-53.60	1920.00	80.00%

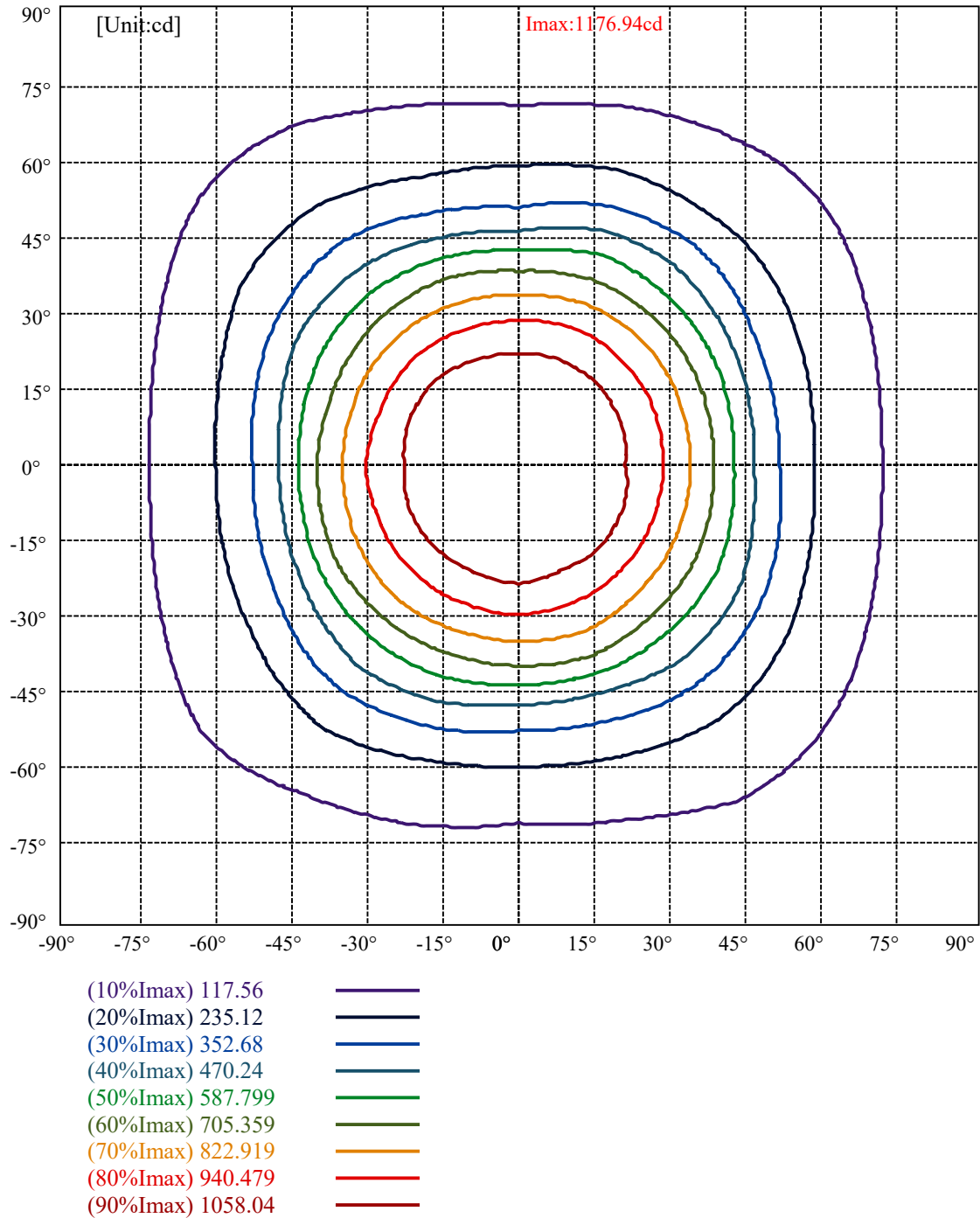
ZONAL LUMEN SUMMARY

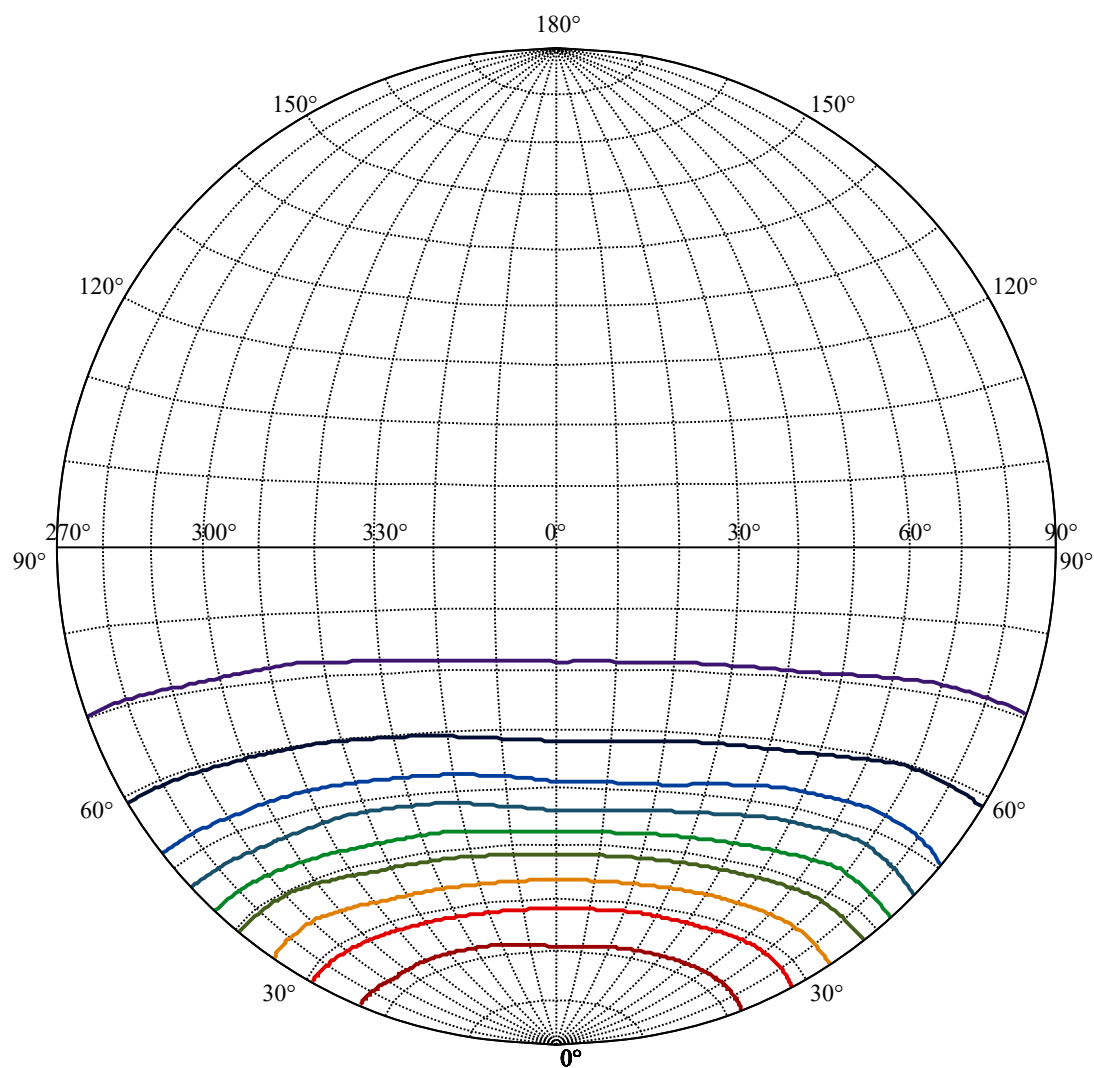
0-10	110.81
10-20	320.17
20-30	466.20
30-40	499.21
40-50	412.36
50-60	276.92
60-70	172.71
70-80	102.10
80-90	32.81
90-100	1.04
100-110	0.98
110-120	1.09
120-130	1.39
130-140	0.25
140-150	0.70
150-160	0.56
160-170	0.56
170-180	0.11





Max , Ave Beam angle of C135 plane 86.65





House

[Unit:cd]

Road

Imax:1176.94

(10%Imax) 106.2284

(20%Imax) 212.4559

(30%Imax) 318.6843

(40%Imax) 424.9118

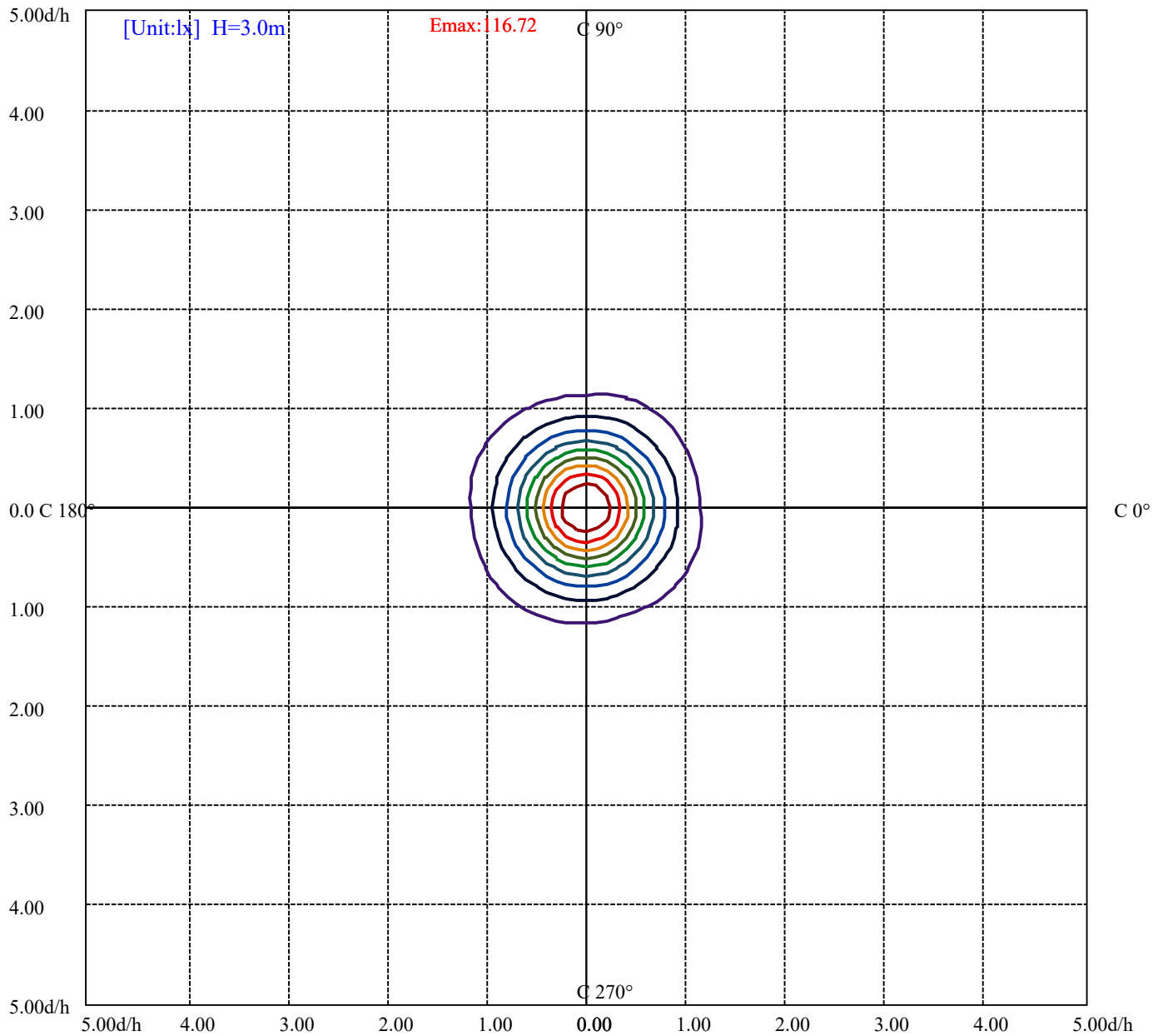
(50%Imax) 531.1403

(60%Imax) 637.3678

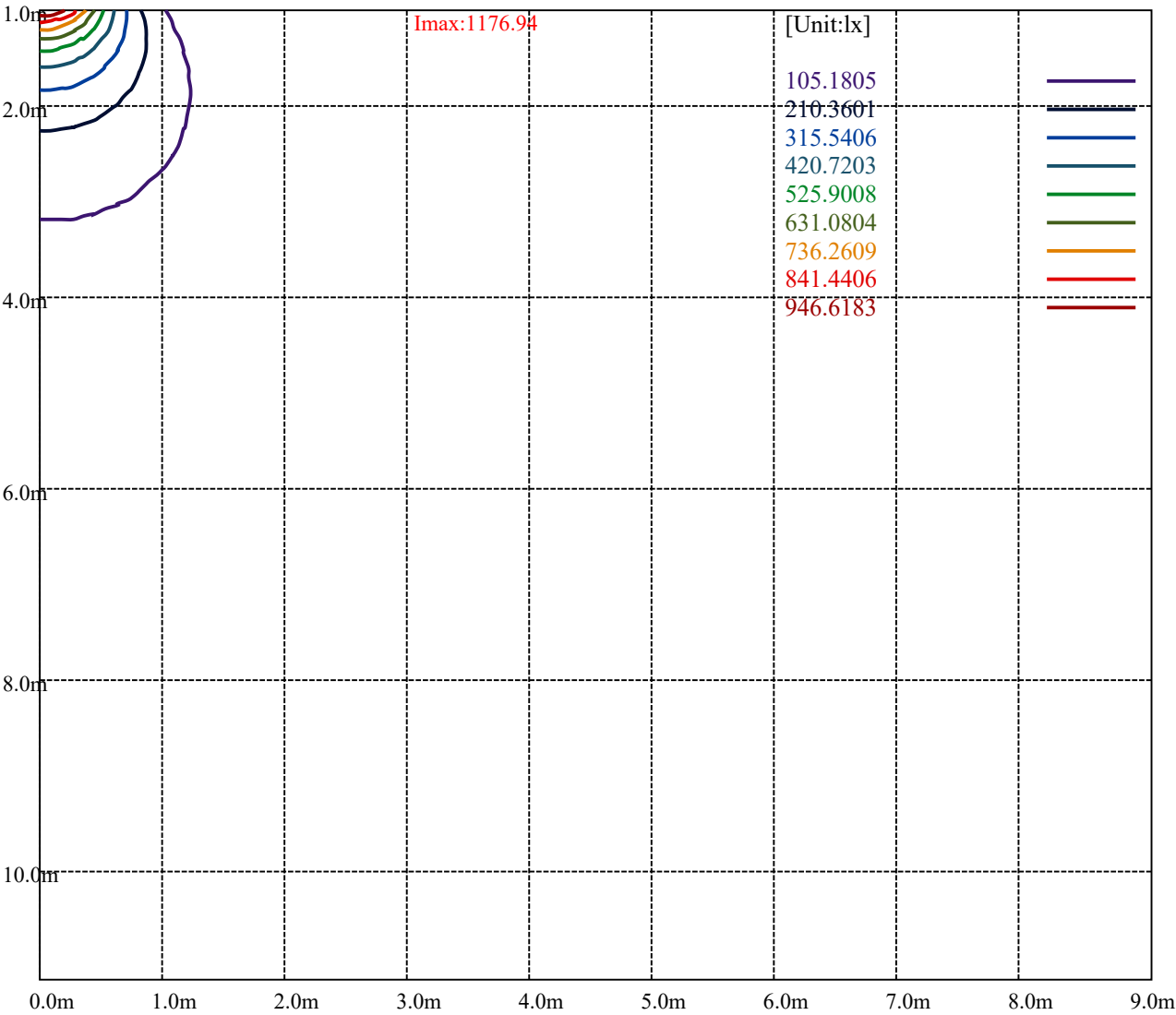
(70%Imax) 743.5962

(80%Imax) 849.8237

(90%Imax) 956.0503



(10%Emax) 11.67208	—
(20%Emax) 23.34426	—
(30%Emax) 35.01635	—
(40%Emax) 46.68843	—
(50%Emax) 58.36051	—
(60%Emax) 70.03269	—
(70%Emax) 81.70478	—
(80%Emax) 93.37686	—
(90%Emax) 105.0494	—



Luminance Table

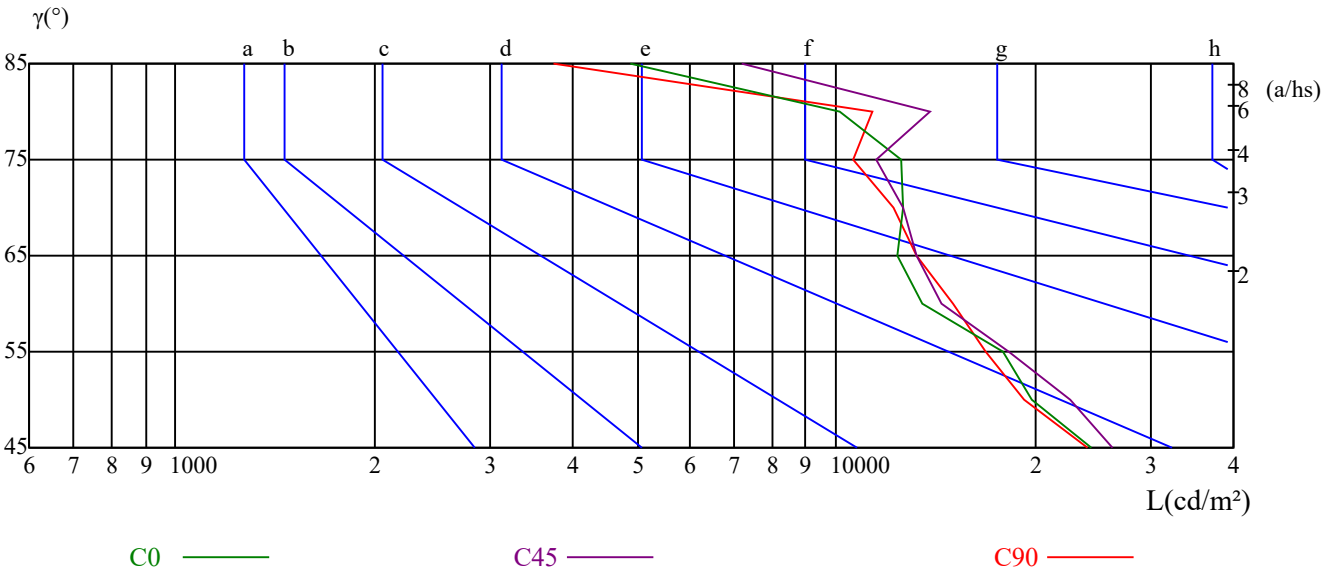
γ	45	50	55	60	65	70	75	80	85
C0	24402	19767	17849	13508	12364	12677	12588	10103	4888
C45	26316	22672	18264	14486	13283	12640	11474	13855	7189
C90	23977	19300	16909	15037	13283	12200	10651	11329	3738

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
12972	13624	14477	12975	12370	12939	10280	7045	12940

Glare Table

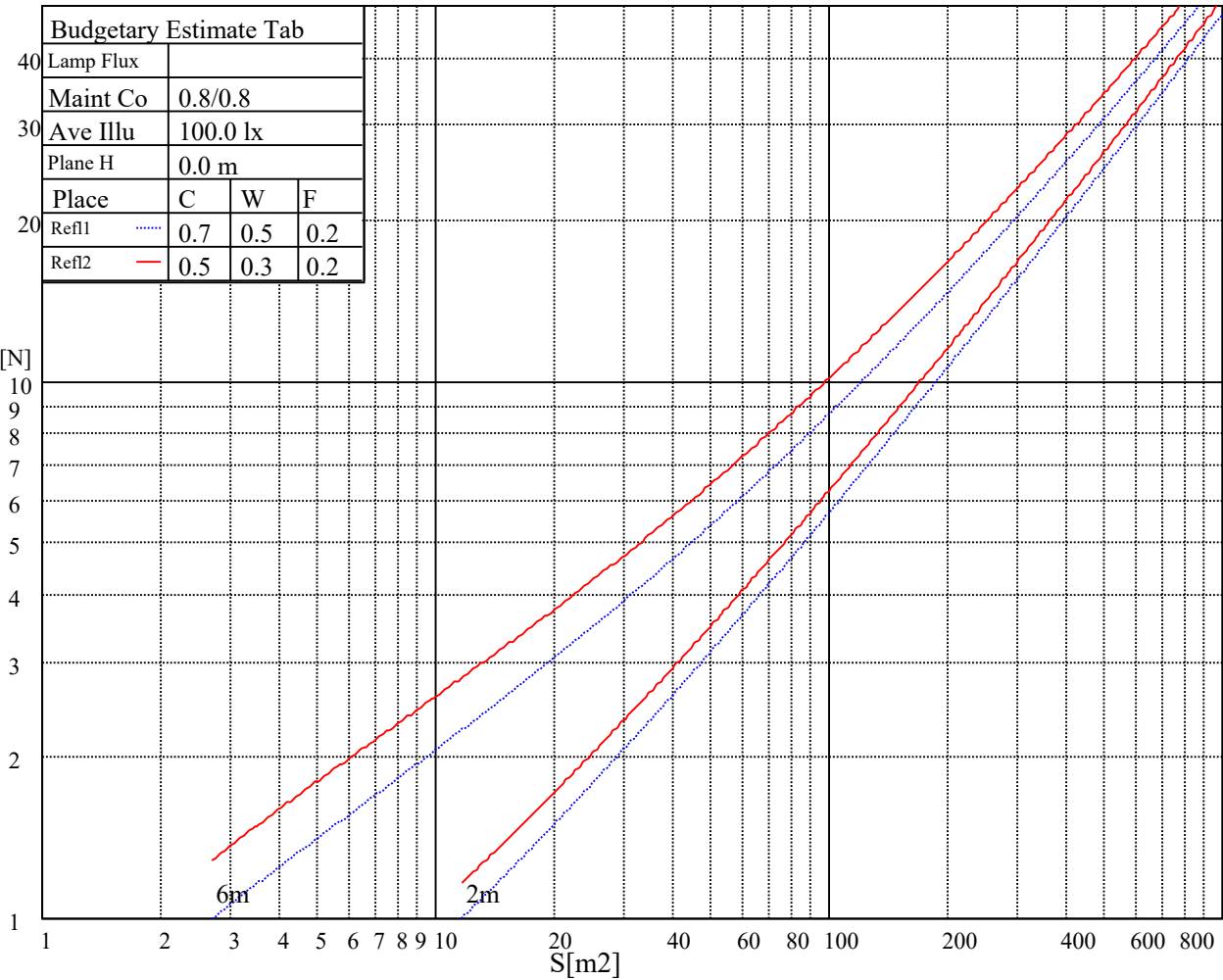
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

Luminance Limiting Curve

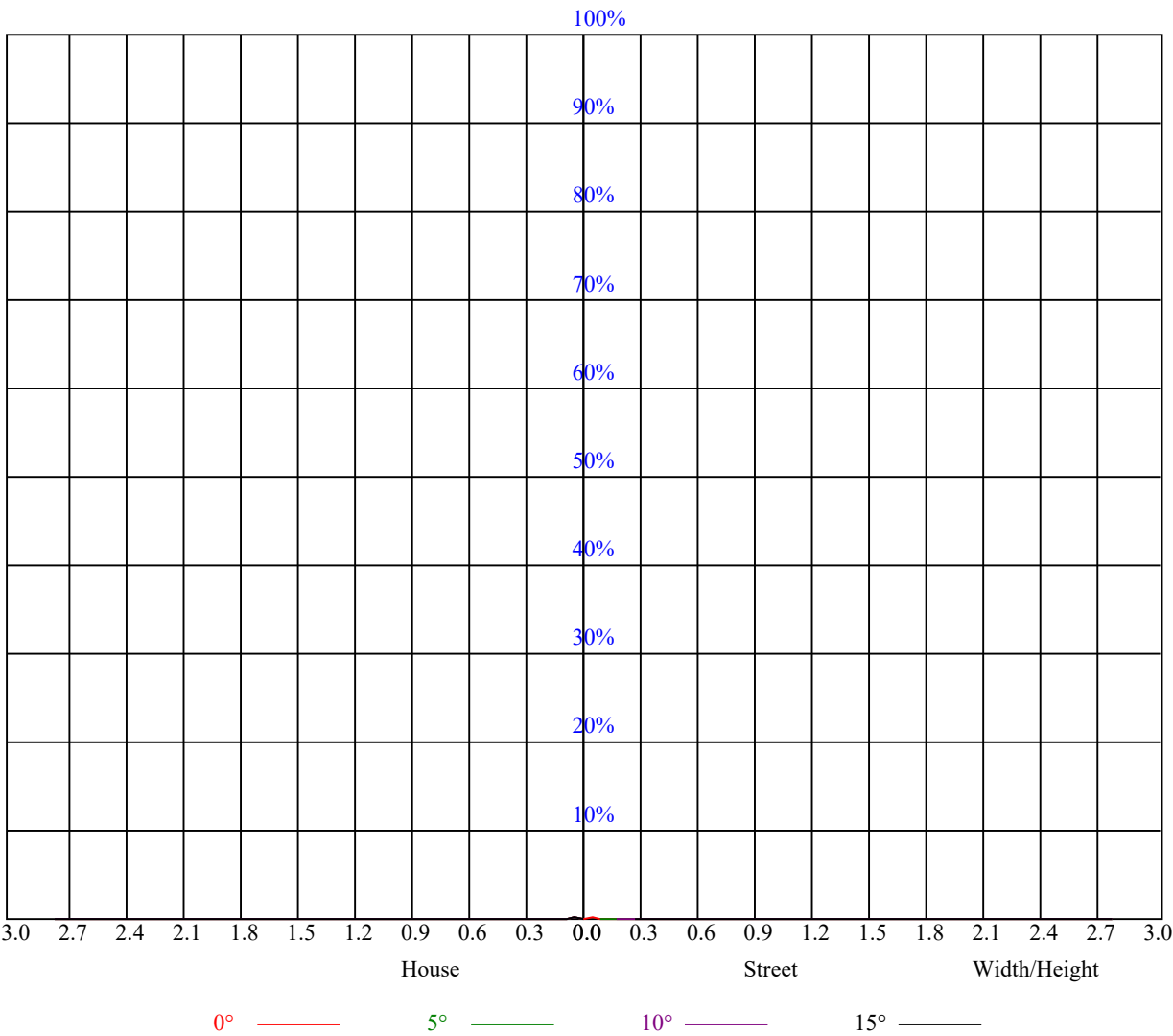


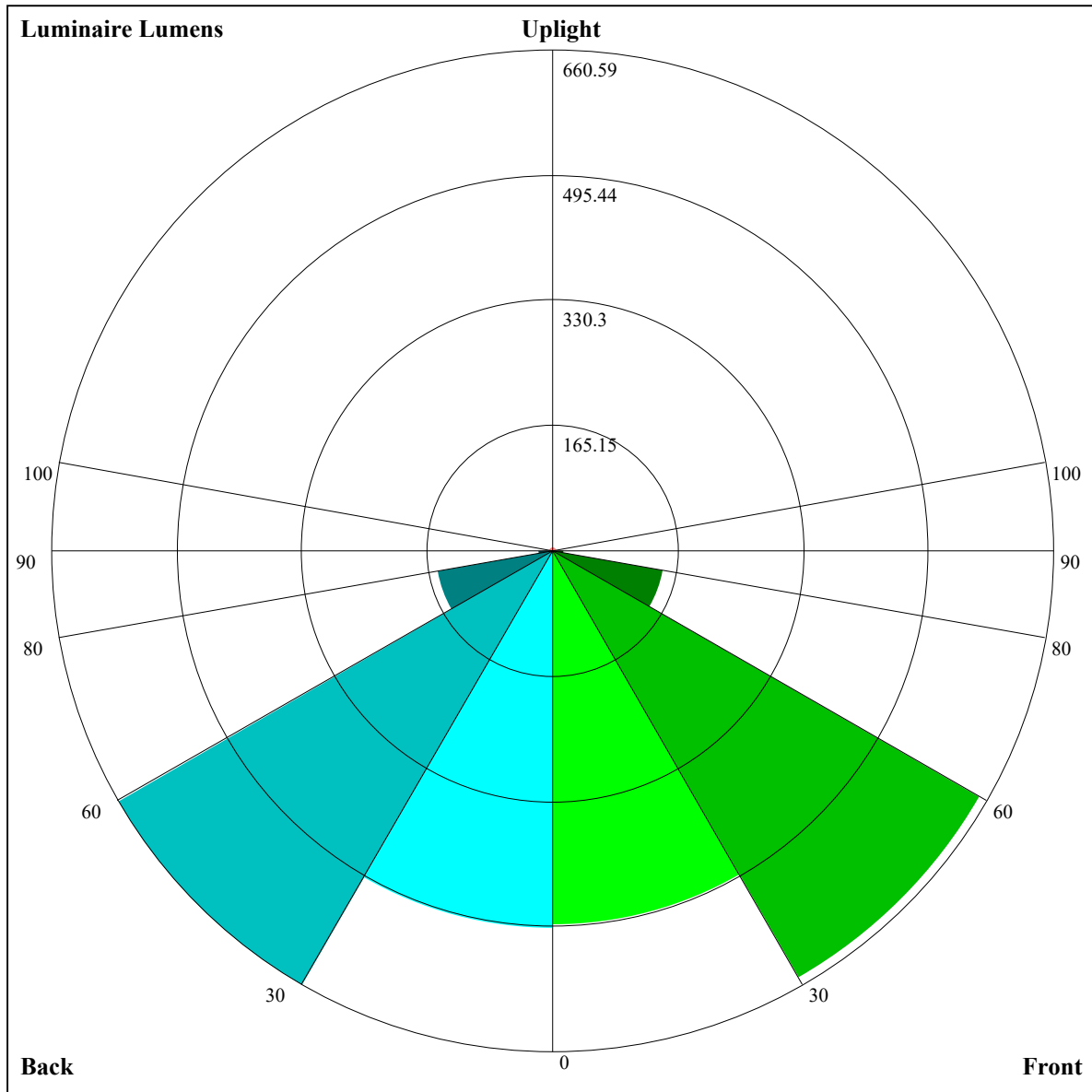
Illumination assessment according UGR											
Rf of Ceiling		70	70	50	50	30	70	70	50	50	30
Rf of Wall		50	30	50	30	30	50	30	50	30	30
Rf of Floor		20	20	20	20	20	20	20	20	20	20
Room dimensions		Viewed crosswise					Viewed endwise				
X	Y										
2H	2H	17.58	19.04	17.95	19.36	19.68	17.87	19.32	18.23	19.64	19.96
	3H	18.55	19.86	18.94	20.20	20.55	18.85	20.16	19.23	20.50	20.85
	4H	19.05	20.27	19.45	20.63	21.00	19.21	20.43	19.61	20.79	21.16
	6H	19.41	20.55	19.82	20.92	21.32	19.56	20.70	19.97	21.07	21.47
	8H	19.47	20.57	19.89	20.95	21.36	19.64	20.73	20.05	21.11	21.52
	12H	19.47	20.52	19.89	20.91	21.33	19.62	20.67	20.05	21.06	21.48
4H	2H	17.99	19.21	18.39	19.57	19.94	18.23	19.46	18.63	19.81	20.18
	3H	19.16	20.20	19.59	20.59	21.01	19.41	20.45	19.84	20.84	21.26
	4H	19.85	20.76	20.29	21.18	21.63	19.95	20.86	20.39	21.28	21.73
	6H	20.29	21.10	20.76	21.55	22.00	20.41	21.22	20.88	21.67	22.12
	8H	20.42	21.17	20.90	21.63	22.10	20.56	21.31	21.04	21.77	22.24
	12H	20.46	21.17	20.95	21.61	22.13	20.58	21.29	21.07	21.73	22.25
8H	4H	20.06	20.81	20.54	21.27	21.74	20.14	20.90	20.62	21.35	21.82
	6H	20.63	21.27	21.13	21.74	22.25	20.76	21.40	21.26	21.87	22.38
	8H	20.87	21.42	21.39	21.94	22.43	21.02	21.57	21.54	22.09	22.58
	12H	20.95	21.41	21.48	21.93	22.45	21.07	21.53	21.60	22.04	22.56
12H	4H	20.08	20.79	20.57	21.23	21.75	20.16	20.87	20.65	21.31	21.83
	6H	20.75	21.30	21.27	21.82	22.31	20.87	21.42	21.39	21.94	22.43
	8H	20.97	21.44	21.50	21.95	22.47	21.11	21.57	21.64	22.09	22.61
Variation with the observer position at spacings:											
S = 1.0H		0.3/-0.8					0.4/-0.7				
S = 1.5H		0.8/-1.2					0.7/-1.2				
S = 2.0H		1.5/-1.3					1.8/-1.4				
Standard tables:		BK3					BK3				
Uncorrected UGR		6.3					6.1				

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	1.00	0.97	0.94	0.96	0.93	0.91	0.92	0.90	0.89	0.87
2	0.94	0.88	0.83	0.93	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	0.72	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	0.65	0.60	0.68	0.63	0.59	0.57
5	0.69	0.61	0.55	0.68	0.60	0.55	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	0.49	0.60	0.53	0.48	0.58	0.52	0.48	0.57	0.52	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	0.44	0.39	0.49	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	0.40	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	0.37	0.33	0.31





Luminaire Lumens:

FL=494.56,FM=650.01,FH=147.55,FVH=15.31

BL=498.33,BM=660.59,BH=155.13,BVH=20.22

UL=1.16,UH=6.27

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	1165.33	1173.67	1155.89	1131.58	1068.82	1008.23	905.56	793.81	659.58
22.5	1157.34	1159.16	1146.82	1125.05	1083.69	1003.88	914.27	788.74	663.57
45.0	1163.87	1153.72	1166.78	1133.76	1089.86	1003.52	909.55	794.54	659.58
67.5	1156.26	1153.35	1151.90	1145.73	1086.96	1016.21	916.44	793.09	673.36
90.0	1172.58	1167.14	1163.51	1124.69	1087.32	1008.59	903.74	780.75	653.77
112.5	1161.33	1168.23	1149.72	1130.13	1079.70	1027.10	896.13	795.27	675.90
135.0	1176.94	1172.22	1174.40	1142.47	1098.21	1029.64	915.72	797.44	673.00
157.5	1158.80	1171.13	1163.51	1149.72	1105.10	1031.09	914.99	807.24	670.46
180.0	1165.33	1161.70	1155.17	1148.64	1094.58	1020.93	941.11	809.05	694.04
202.5	1157.34	1162.42	1170.04	1161.33	1114.90	1021.29	925.88	816.31	702.03
225.0	1163.87	1160.25	1162.42	1141.74	1098.21	1024.56	919.71	819.57	683.16
247.5	1156.26	1156.98	1147.19	1141.38	1096.03	1025.28	921.52	809.05	683.16
270.0	1172.58	1158.43	1152.63	1136.30	1106.19	1032.90	926.60	813.41	690.42
292.5	1161.33	1167.50	1153.72	1131.95	1085.15	1024.20	916.81	819.57	696.95
315.0	1176.94	1162.42	1148.64	1146.82	1091.31	1023.47	901.20	792.36	669.01
337.5	1158.80	1158.80	1150.81	1136.66	1098.93	1002.06	907.37	788.37	675.18
360.0	1165.33	1173.67	1155.89	1131.58	1068.82	1008.23	905.56	793.81	659.58
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	499.58	367.88	296.41	195.55	151.29	125.53	94.33	50.79	12.34
22.5	522.07	373.32	286.98	215.87	146.94	126.98	94.69	52.97	18.50
45.0	538.76	421.94	303.30	209.70	162.54	125.17	85.98	69.66	18.14
67.5	556.18	420.49	300.04	233.28	171.61	132.79	84.17	63.13	10.16
90.0	490.87	359.18	280.81	217.68	162.54	120.81	79.82	56.96	9.43
112.5	511.55	378.04	292.42	209.70	148.02	134.60	86.71	63.85	33.02
135.0	546.02	421.94	322.53	244.53	171.97	138.59	105.94	68.93	41.00
157.5	554.36	442.26	313.82	251.42	200.99	144.40	107.39	83.44	40.63
180.0	526.43	383.48	310.56	224.94	166.16	132.06	100.13	74.74	39.55
202.5	527.15	392.92	310.56	219.86	170.15	136.05	109.20	64.58	36.64
225.0	543.48	446.97	325.80	245.26	187.57	125.89	94.33	73.65	29.02
247.5	549.65	433.91	312.37	229.65	190.11	128.07	98.68	72.56	35.92
270.0	529.69	383.48	310.56	219.50	170.88	117.91	105.58	64.94	26.12
292.5	519.53	384.57	314.19	222.04	170.15	125.89	83.44	62.40	21.77
315.0	524.25	439.72	300.40	234.73	186.48	133.87	101.58	76.55	42.45
337.5	540.94	432.82	297.50	229.29	183.22	133.87	88.89	64.94	17.05
360.0	499.58	367.88	296.41	195.55	151.29	125.53	94.33	50.79	12.34
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	11.97	0.00	5.08	0.73	0.00	0.00
22.5	0.00	0.00	1.81	0.00	0.00	0.00	0.00	0.00	0.00
45.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
67.5	0.00	4.35	0.00	0.00	0.00	3.27	0.00	0.00	0.00
90.0	0.00	0.00	1.81	1.81	0.00	0.00	5.80	0.00	0.00
112.5	0.00	0.00	0.00	0.00	2.90	1.81	0.00	5.44	0.00
135.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.90
157.5	0.00	1.45	0.00	0.00	0.00	0.00	0.00	9.43	0.00
180.0	0.00	0.00	10.52	0.00	0.00	0.00	0.73	0.00	0.00
202.5	0.00	0.00	0.36	0.00	0.00	0.00	0.00	8.71	0.00
225.0	0.00	1.09	0.00	0.00	0.00	0.00	3.63	12.70	0.00
247.5	0.36	2.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00
270.0	0.73	0.00	7.98	0.00	0.00	0.00	0.00	0.00	0.00
292.5	0.00	5.80	0.00	2.90	0.00	8.71	2.54	0.00	0.00
315.0	0.00	3.63	0.00	0.00	0.00	0.00	9.80	0.00	0.00
337.5	0.00	0.00	0.00	0.00	0.00	3.27	0.00	0.00	0.00
360.0	0.00	0.00	0.00	11.97	0.00	5.08	0.73	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	3.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
22.5	0.00	0.00	0.00	3.63	0.00	14.87	0.73	0.00	2.90	
45.0	1.81	0.00	4.35	0.00	3.27	1.09	0.00	0.00	0.00	
67.5	4.72	0.00	0.00	1.45	0.00	0.00	9.43	12.70	4.72	
90.0	0.00	0.00	0.00	0.00	0.00	0.00	5.80	1.81	0.00	
112.5	0.00	0.00	0.00	0.00	0.00	0.00	5.44	0.00	7.62	
135.0	0.00	0.00	0.00	0.73	0.00	3.99	0.00	0.00	0.00	
157.5	0.00	0.00	0.00	0.00	7.98	0.00	5.44	0.00	0.00	
180.0	0.00	0.00	0.00	0.00	0.00	0.00	3.27	2.18	0.00	
202.5	0.00	0.00	0.00	4.72	0.00	0.00	0.00	1.09	0.00	
225.0	0.00	0.00	0.00	9.43	0.00	0.00	0.00	0.00	0.00	
247.5	0.00	1.09	3.99	0.00	0.00	0.00	0.00	5.80	0.00	
270.0	0.00	0.00	0.00	0.00	0.00	0.00	3.63	2.54	8.34	
292.5	0.00	0.00	4.72	1.81	0.00	4.72	3.99	0.00	0.00	
315.0	0.00	0.00	5.44	0.00	0.00	0.00	0.00	0.00	0.73	
337.5	0.00	0.00	0.73	8.34	0.00	0.00	0.00	0.00	0.00	
360.0	0.00	3.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
C/ γ (°)	180.0									
0.0	0.00									
22.5	0.00									
45.0	6.53									
67.5	0.00									
90.0	0.00									
112.5	0.00									
135.0	1.45									
157.5	0.00									
180.0	0.00									
202.5	0.00									
225.0	6.53									
247.5	0.00									
270.0	0.00									
292.5	0.00									
315.0	1.45									
337.5	0.00									
360.0	0.00									