
Nata

Client:

LumCAT: 2-1793-N

Luminaire: 92.70.131.00

Report No: nata-0100

Test No: GC2018051901

LampCAT: LUMINUS CHM9 XH20

Lamp flux(lm): 1576.5

Number of Lamps: 1

Length(mm): 69

Phm Type: C

Voltage(V): 35.3000

Current(A): 0.4100

Power (W): 14.4730

PF: 0.0000

Ballast type: DC

Width(mm): 69

Height(mm): 0

Photometric Results

Lumens(lm): 1338.80, Efficiency(%): 84.92% , Luminous Efficacy(lm/W): 92.50

Central intensity(cd): 11578.360, Maximum intensity(cd): 11578.360

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=14.6

[C90/270]Total=14.6

Field angle(10%Imax): [C0/180]Total=30.6

[C90/270]Total=30.6

Maximum s/h(1/2): C0_180=0.25 C90_270=0.25

Maximum s/h(1/4): C0_180=0.26 C90_270=0.26

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 85.61%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 97.469%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	11578.361	11.080	11.08	.703%	.828%
2.0	10991.529	84.128	95.208	5.336%	7.111%
4.0	9413.268	144.009	239.218	9.135%	17.868%
6.0	7192.086	164.875	404.092	10.458%	30.183%
8.0	5051.494	154.184	558.277	9.780%	41.700%
10.0	3247.295	123.668	681.945	7.844%	50.937%
12.0	2241.208	102.194	784.139	6.482%	58.570%
14.0	1427.200	75.723	859.862	4.803%	64.226%
16.0	1024.118	61.909	921.77	3.927%	68.850%
18.0	772.579	52.359	974.129	3.321%	72.761%
20.0	628.008	47.107	1021.236	2.988%	76.280%
22.0	554.735	45.575	1066.811	2.891%	79.684%
24.0	515.603	45.993	1112.804	2.917%	83.119%
26.0	491.571	47.260	1160.064	2.998%	86.649%
28.0	469.466	48.337	1208.401	3.066%	90.260%
30.0	371.238	40.709	1249.11	2.582%	93.300%
32.0	214.128	24.886	1273.995	1.579%	95.159%
34.0	71.284	8.742	1282.738	.555%	95.812%
36.0	35.752	4.609	1287.346	.292%	96.156%
38.0	29.028	3.920	1291.266	.249%	96.449%
40.0	23.550	3.320	1294.586	.211%	96.697%
42.0	19.800	2.906	1297.491	.184%	96.914%
44.0	16.483	2.511	1300.002	.159%	97.102%
46.0	14.094	2.224	1302.226	.141%	97.268%
48.0	12.546	2.045	1304.271	.130%	97.421%
50.0	11.521	1.935	1306.206	.123%	97.565%
52.0	10.901	1.884	1308.09	.120%	97.706%
54.0	10.447	1.854	1309.944	.118%	97.844%
56.0	10.185	1.852	1311.796	.117%	97.983%
58.0	9.993	1.859	1313.654	.118%	98.121%
60.0	9.834	1.868	1315.522	.118%	98.261%
62.0	9.676	1.874	1317.396	.119%	98.401%
64.0	9.518	1.876	1319.272	.119%	98.541%
66.0	9.112	1.826	1321.098	.116%	98.677%
68.0	8.658	1.760	1322.858	.112%	98.809%
70.0	8.300	1.710	1324.568	.108%	98.937%
72.0	7.928	1.654	1326.222	.105%	99.060%
74.0	7.618	1.606	1327.828	.102%	99.180%

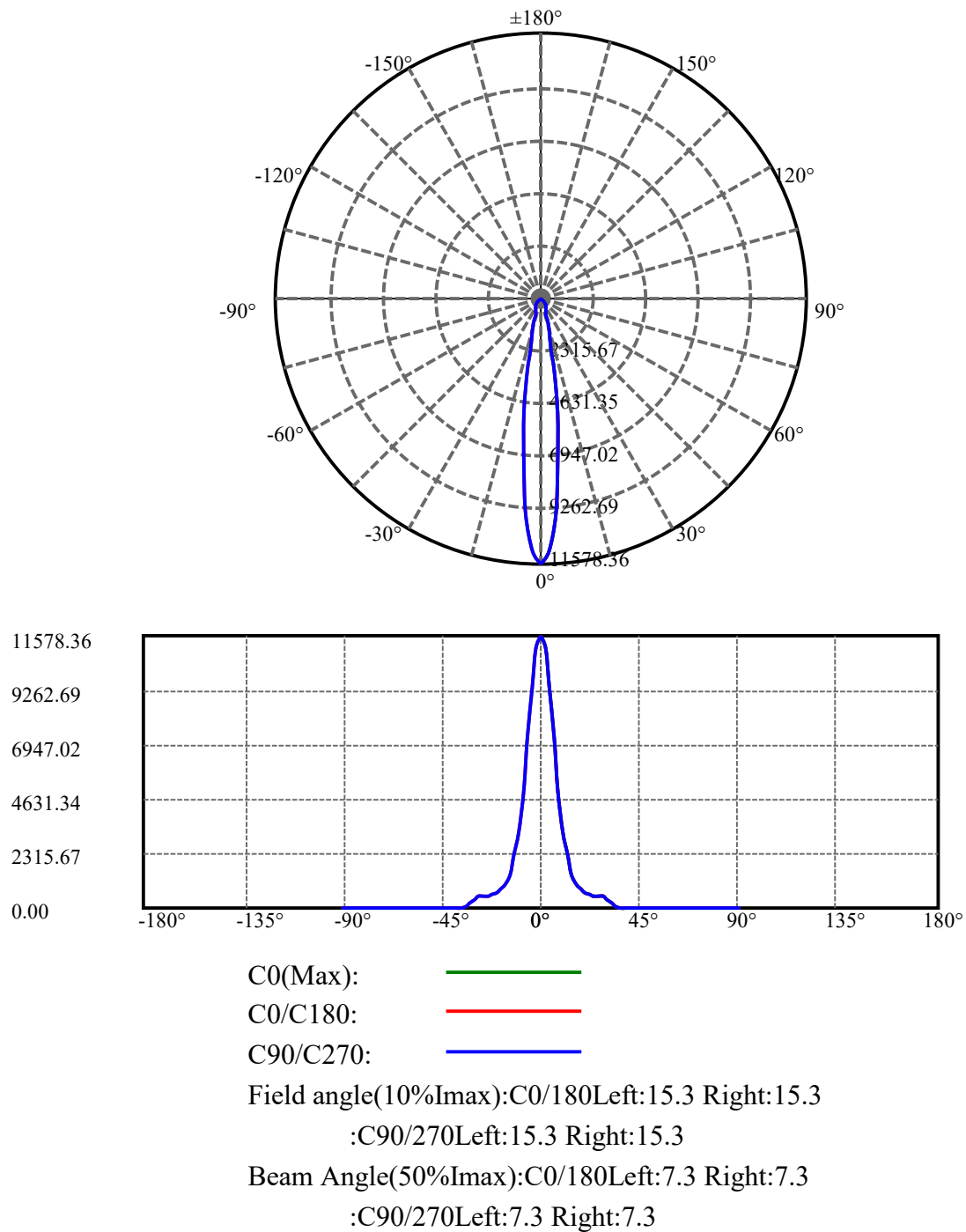
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	7.371	1.568	1329.397	.099%	99.297%
78.0	7.192	1.543	1330.939	.098%	99.413%
80.0	7.033	1.519	1332.459	.096%	99.526%
82.0	6.875	1.493	1333.952	.095%	99.638%
84.0	6.696	1.461	1335.412	.093%	99.747%
86.0	6.524	1.427	1336.84	.091%	99.853%
88.0	6.063	1.329	1338.169	.084%	99.953%
90.0	5.795	0.635	1338.804	.040%	100.000%

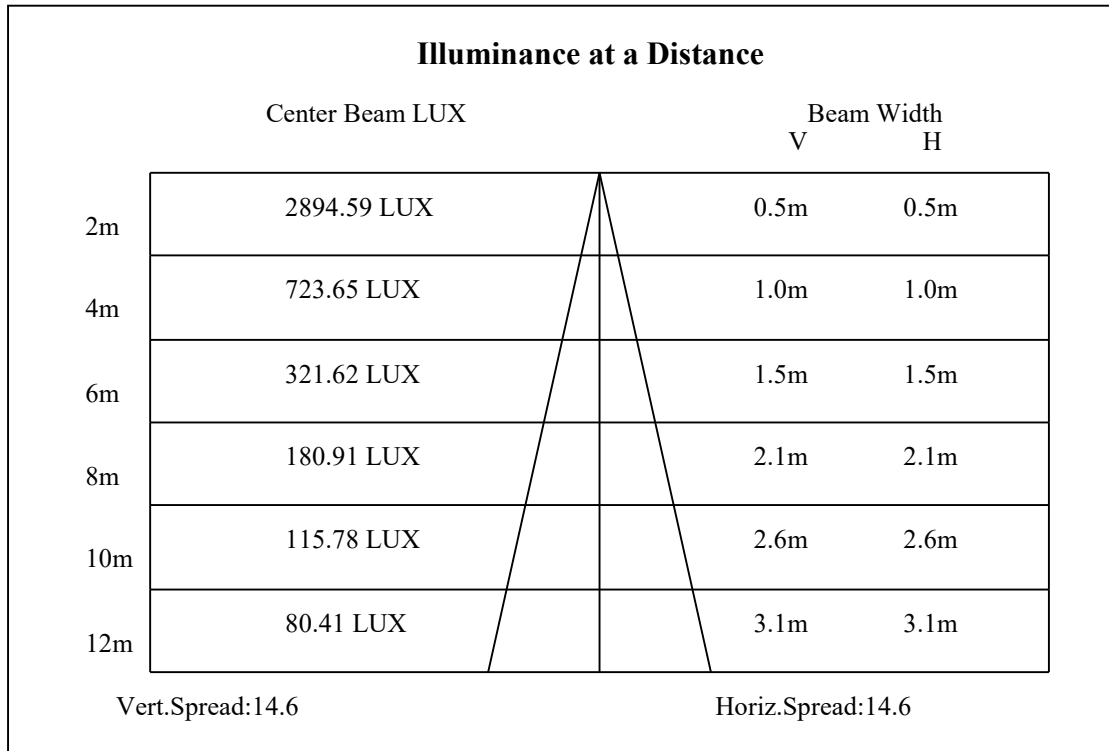
ZONAL LUMEN SUMMARY

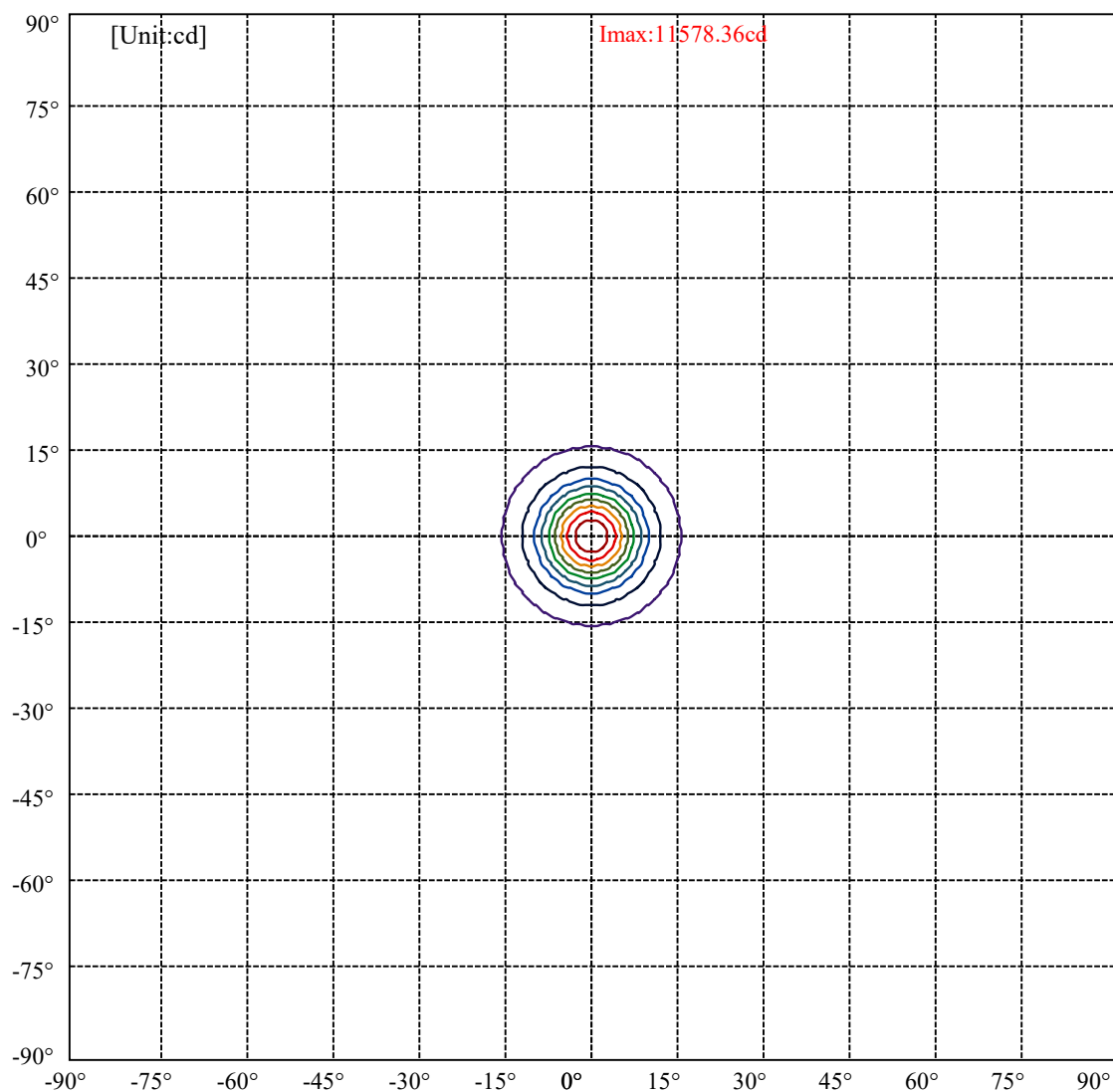
Zone	Lumens	%Lamp	%Fixt
0-30	1249.11	79.23%	93.30%
0-40	1294.59	82.12%	96.70%
0-60	1315.52	83.45%	98.26%
0-90	1338.17	84.88%	99.95%
0-120	1338.17	84.88%	99.95%
0-180	1338.80	84.92%	100.00%
60-90	24.51	1.55%	1.83%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-22.18	1071.04	67.94%	80.00%

ZONAL LUMEN SUMMARY

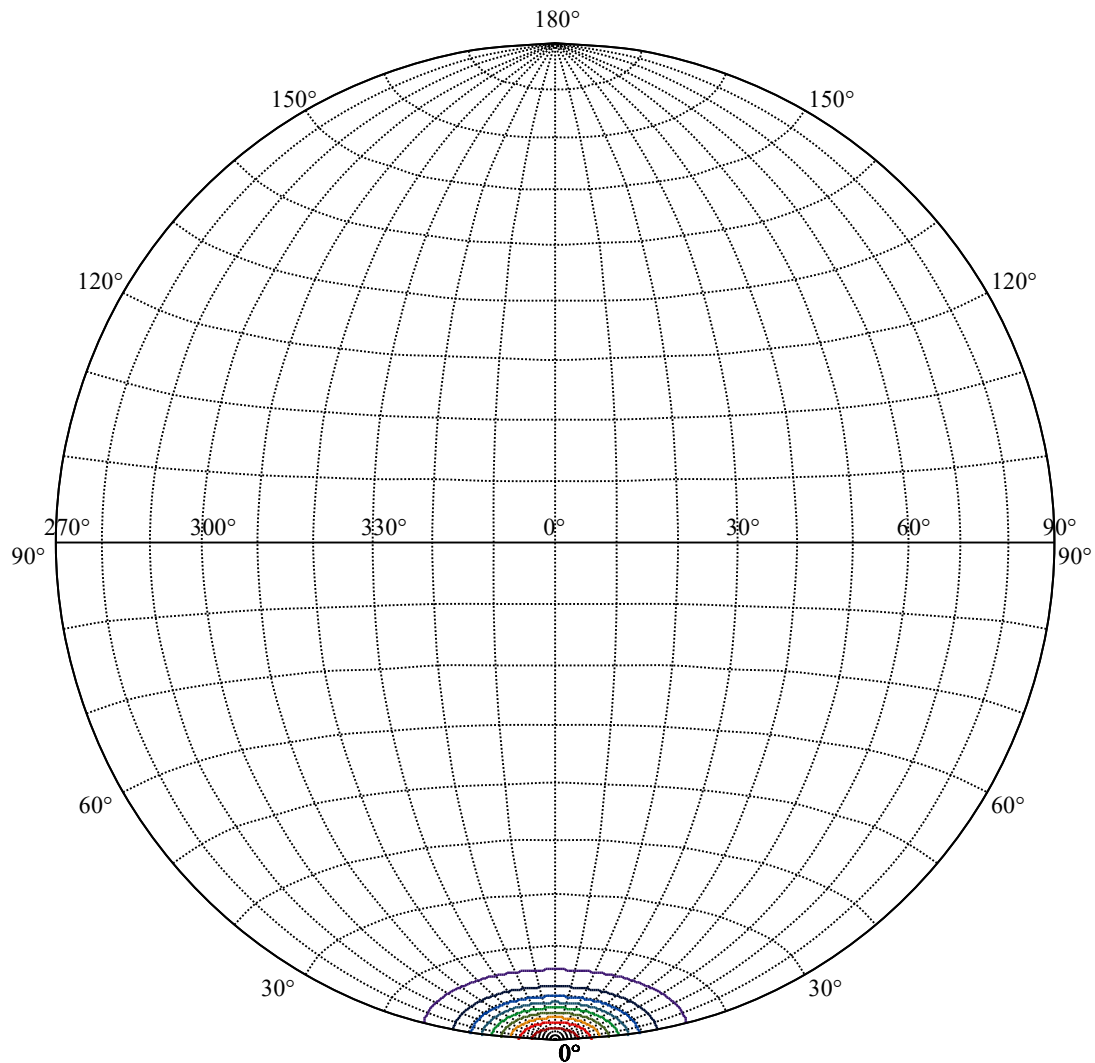
0-10	681.94
10-20	339.29
20-30	227.87
30-40	45.48
40-50	11.62
50-60	9.32
60-70	9.05
70-80	7.89
80-90	5.71
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00







(10%I _{max}) 1157.84	—
(20%I _{max}) 2315.67	—
(30%I _{max}) 3473.51	—
(40%I _{max}) 4631.34	—
(50%I _{max}) 5789.18	—
(60%I _{max}) 6947.02	—
(70%I _{max}) 8104.85	—
(80%I _{max}) 9262.69	—
(90%I _{max}) 10420.5	—



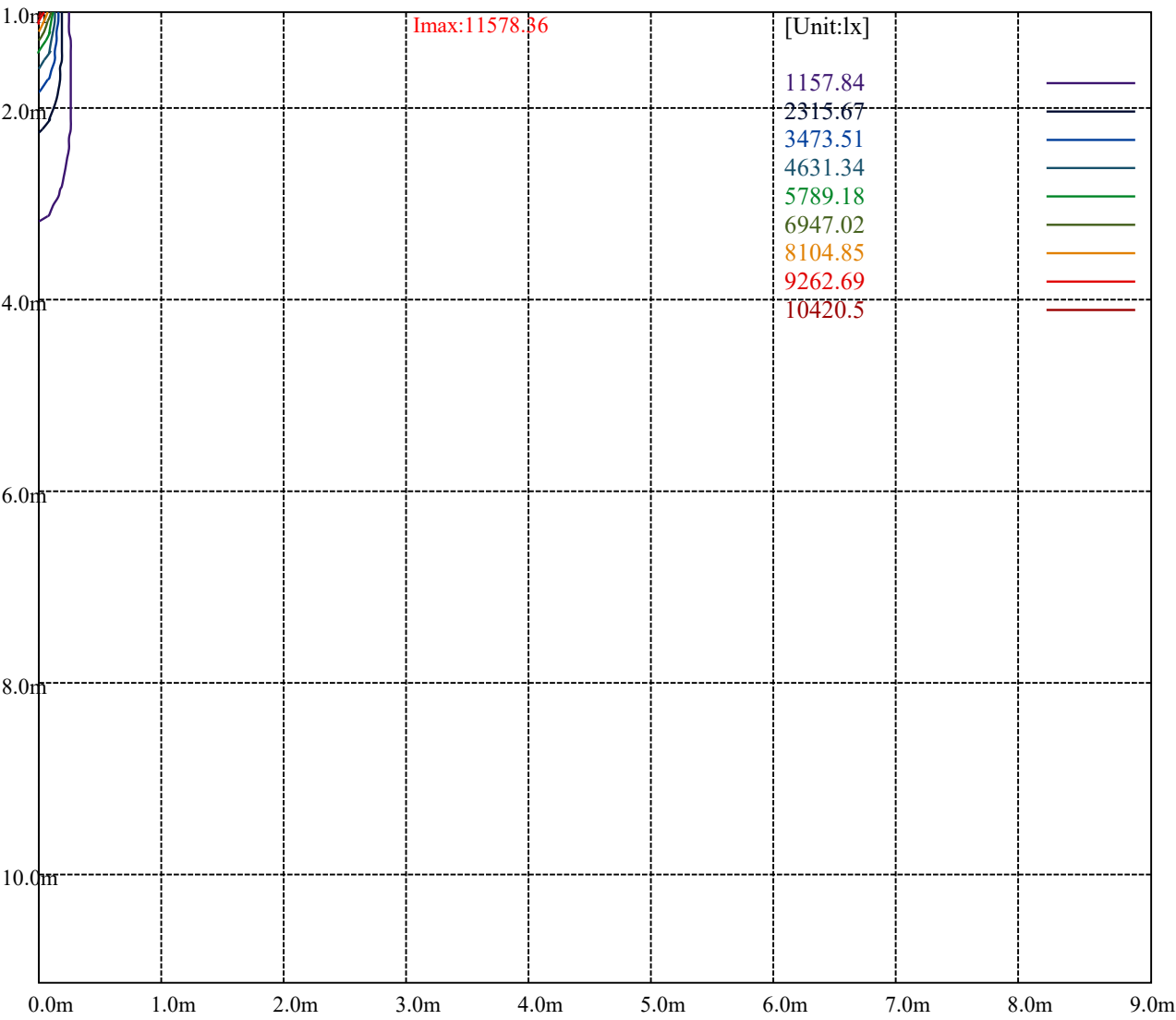
House

[Unit:cd]

Road

Imax:11578.36

(10%Imax)	1157.84	—
(20%Imax)	2315.67	—
(30%Imax)	3473.51	—
(40%Imax)	4631.34	—
(50%Imax)	5789.18	—
(60%Imax)	6947.02	—
(70%Imax)	8104.85	—
(80%Imax)	9262.69	—
(90%Imax)	10420.5	—



Luminance Table

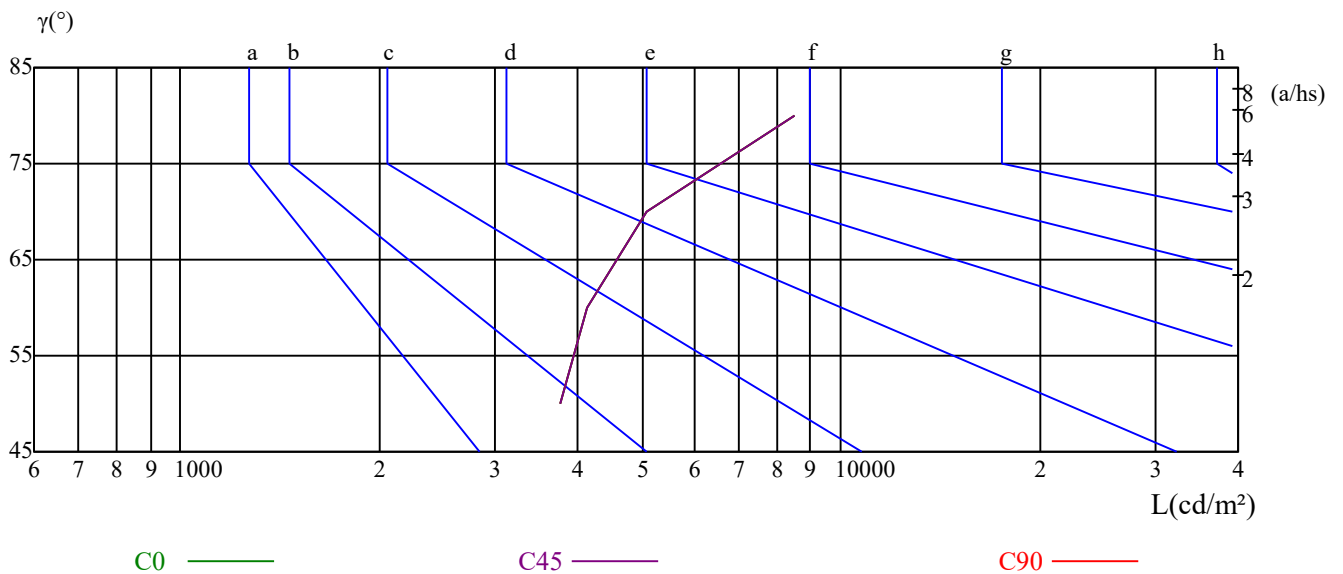
γ	45	50	55	60	65	70	75	80	85
C0	0	3765	0	4131	0	5097	0	8507	0
C45	0	3765	0	4131	0	5097	0	8507	0
C90	0	3765	0	4131	0	5097	0	8507	0

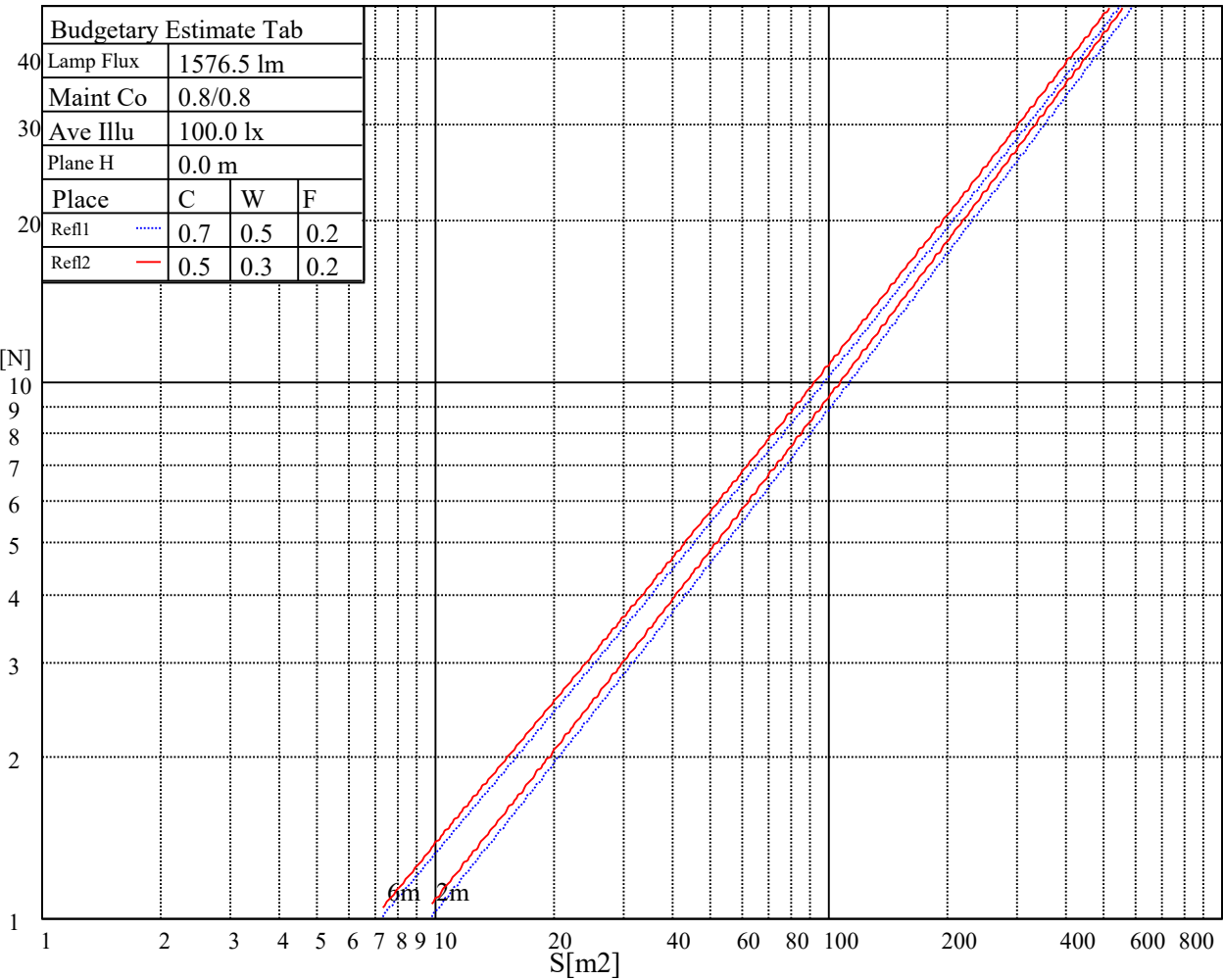
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
103350	103131	103220	75264	72873	73342	20433	20632	20566

Glare Table

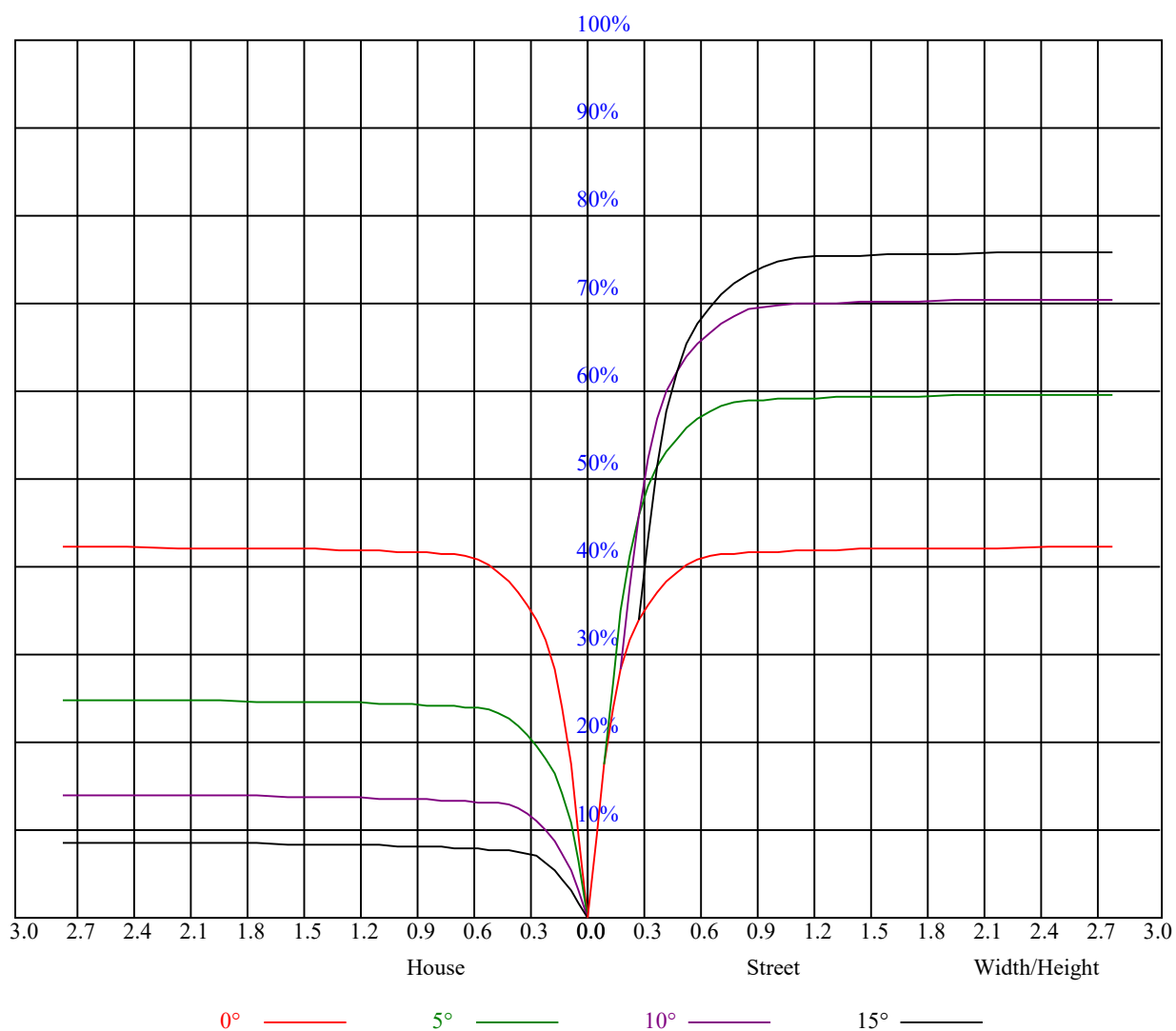
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

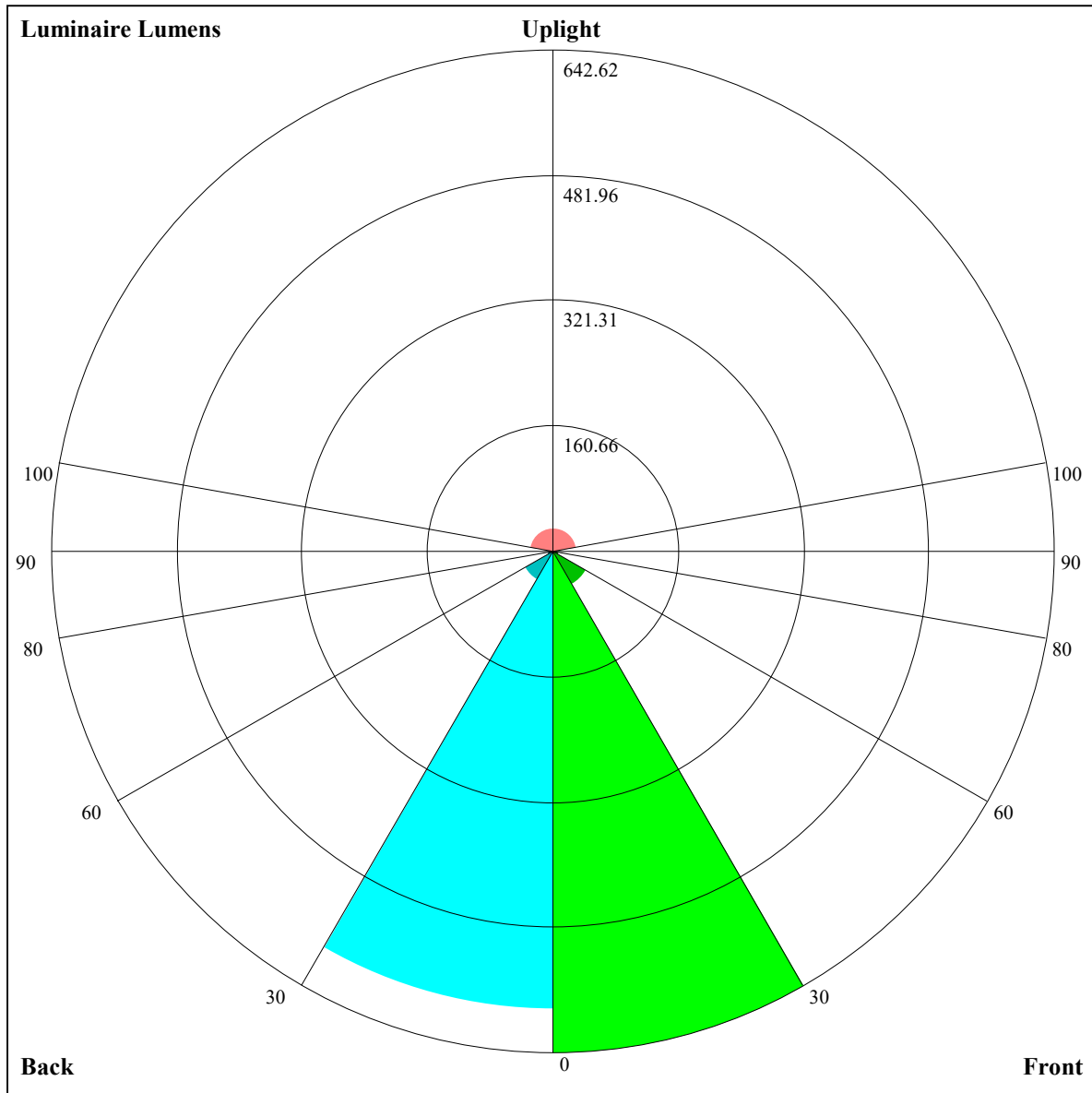
Luminance Limiting Curve





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 RHOFC=20 CU															
0	1.02	1.02	1.02	1.00	1.00	1.00	0.95	0.95	0.95	0.91	0.91	0.91	0.87	0.87	0.87	0.86
1	0.96	0.94	0.92	0.94	0.92	0.90	0.90	0.89	0.88	0.87	0.86	0.85	0.84	0.83	0.83	0.81
2	0.91	0.88	0.86	0.90	0.87	0.85	0.87	0.85	0.83	0.85	0.83	0.81	0.82	0.81	0.80	0.79
3	0.87	0.84	0.82	0.86	0.83	0.81	0.84	0.82	0.80	0.82	0.80	0.79	0.80	0.79	0.77	0.76
4	0.84	0.81	0.78	0.83	0.80	0.78	0.82	0.79	0.77	0.80	0.78	0.76	0.79	0.77	0.75	0.74
5	0.81	0.78	0.75	0.81	0.77	0.75	0.79	0.77	0.74	0.78	0.76	0.74	0.77	0.75	0.73	0.72
6	0.79	0.75	0.73	0.78	0.75	0.73	0.77	0.74	0.72	0.76	0.74	0.72	0.75	0.73	0.71	0.70
7	0.77	0.73	0.71	0.76	0.73	0.71	0.75	0.72	0.70	0.74	0.72	0.70	0.74	0.71	0.70	0.69
8	0.75	0.71	0.69	0.74	0.71	0.69	0.74	0.71	0.69	0.73	0.70	0.68	0.72	0.70	0.68	0.67
9	0.73	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.67	0.71	0.69	0.67	0.71	0.68	0.67	0.66
10	0.71	0.68	0.66	0.71	0.68	0.66	0.70	0.68	0.66	0.70	0.67	0.65	0.69	0.67	0.65	0.65





Luminaire Lumens:

FL=642.62,FM=49.04,FH=8.68,FVH=3.6

BL=587.64,BM=40.95,BH=8.41,BVH=3.48

UL=6.32,UH=30.09

BUG Rating:B2-U2-G0

Intensity data(cd)									
Appendix Page: 16 Total:17									
C/γ(°)	0.0	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0
0.0	11490.27	11440.72	10312.06	8302.51	6067.22	4035.63	2785.85	1803.65	1238.22
45.0	11583.87	11281.06	9926.67	7713.40	5555.19	3578.67	2824.39	1536.62	1051.03
90.0	11633.42	10942.46	9335.36	7054.93	4833.95	3049.57	2042.59	1358.79	970.70
135.0	11605.89	11022.29	9370.60	7135.31	4938.56	3138.21	2113.62	1414.95	1013.04
180.0	11490.27	10530.09	8507.31	6100.80	4173.83	2645.46	1734.83	1080.76	905.02
225.0	11583.87	10666.08	8827.19	6541.25	4460.12	2822.74	1902.75	1212.34	918.07
270.0	11633.42	11060.83	9469.70	7416.10	5114.74	3270.35	2204.46	1460.10	1009.18
315.0	11605.89	10988.71	9557.24	7272.40	5268.35	3437.72	2321.18	1550.39	1087.69
360.0	11490.27	11440.72	10312.06	8302.51	6067.22	4035.63	2785.85	1803.65	1238.22
C/γ(°)	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0
0.0	910.08	698.12	603.97	546.71	516.43	493.31	441.55	285.74	129.66
45.0	747.12	551.67	475.14	448.16	438.25	425.04	361.72	242.30	88.75
90.0	749.98	633.53	567.14	527.83	497.49	473.43	364.31	193.85	58.64
135.0	775.19	643.61	564.88	522.49	489.45	464.13	359.52	181.80	58.52
180.0	718.54	610.91	545.66	508.17	483.51	454.22	316.35	134.56	38.04
225.0	738.86	633.15	568.02	527.28	500.41	468.31	342.34	169.74	50.76
270.0	741.06	599.01	534.60	507.07	497.71	491.65	387.60	282.44	71.02
315.0	799.80	654.07	578.48	537.13	509.33	485.65	396.52	222.59	74.88
360.0	910.08	698.12	603.97	546.71	516.43	493.31	441.55	285.74	129.66
C/γ(°)	36.0	38.0	40.0	42.0	44.0	46.0	48.0	50.0	52.0
0.0	40.58	32.65	26.26	22.35	18.39	15.69	13.71	12.61	11.89
45.0	45.26	35.73	28.13	23.34	19.66	16.96	15.14	14.09	13.27
90.0	34.19	27.80	22.41	18.77	15.58	13.10	11.62	10.57	10.02
135.0	32.10	25.77	20.98	17.34	14.26	12.39	11.01	10.02	9.58
180.0	28.96	23.51	19.38	16.13	13.32	11.51	10.52	9.86	9.36
225.0	32.26	26.26	21.75	18.11	14.87	12.83	11.78	10.79	10.30
270.0	37.05	30.78	25.33	21.53	17.84	15.20	13.27	11.95	11.29
315.0	35.62	29.73	24.17	20.81	17.95	15.09	13.32	12.28	11.51
360.0	40.58	32.65	26.26	22.35	18.39	15.69	13.71	12.61	11.89
C/γ(°)	54.0	56.0	58.0	60.0	62.0	64.0	66.0	68.0	70.0
0.0	11.18	10.74	10.46	10.19	10.02	9.97	9.41	8.92	8.64
45.0	12.66	12.22	11.62	11.07	10.52	10.08	9.47	8.86	8.42
90.0	9.80	9.86	9.91	10.02	9.91	9.74	9.41	8.75	8.26
135.0	9.25	9.08	8.97	8.92	8.92	8.97	8.70	8.37	8.09
180.0	9.14	8.97	8.92	8.86	8.97	8.86	8.64	8.42	8.04
225.0	10.08	9.91	9.86	9.97	10.08	9.80	9.30	8.81	8.42
270.0	10.68	10.30	10.13	9.86	9.47	9.30	8.92	8.48	8.15
315.0	10.79	10.41	10.08	9.80	9.52	9.41	9.03	8.64	8.37
360.0	11.18	10.74	10.46	10.19	10.02	9.97	9.41	8.92	8.64
C/γ(°)	72.0	74.0	76.0	78.0	80.0	82.0	84.0	86.0	88.0
0.0	8.20	7.87	7.65	7.49	7.38	7.27	7.05	6.83	6.39
45.0	8.09	7.76	7.49	7.32	7.05	6.88	6.61	6.39	5.95
90.0	7.82	7.49	7.27	7.05	6.88	6.72	6.50	6.39	5.89
135.0	7.71	7.43	7.16	6.99	6.83	6.72	6.61	6.55	6.11
180.0	7.65	7.38	7.16	7.05	6.88	6.66	6.55	6.22	5.89
225.0	7.98	7.65	7.38	7.10	6.94	6.66	6.39	6.17	5.84
270.0	7.82	7.49	7.27	7.05	6.88	6.77	6.66	6.61	6.11
315.0	8.15	7.87	7.60	7.49	7.43	7.32	7.21	7.05	6.33
360.0	8.20	7.87	7.65	7.49	7.38	7.27	7.05	6.83	6.39

Intensity data(cd)

Appendix Page: 17 Total:17

C/ γ (°)	90.0
0.0	6.06
45.0	5.73
90.0	5.67
135.0	5.73
180.0	5.62
225.0	5.67
270.0	5.84
315.0	6.06
360.0	6.06