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NATA

LumCAT: 3-1742-N
Luminaire: 92.70.045.00+92.70.061.00
Report No: NATA0100
Test No: GC2018110813
LampCAT: PHILIPS 1205 G7
Lamp flux(lm): 2969.0
Number of Lamps: 1
Length(mm): 86
Phm Type: C

Voltage(V): 35.8000
Current(A): 0.6000
Power (W): 31.4800
PF: 0.0000
Ballast type: DC
Width(mm): 86
Height(mm): 0

Photometric Results

Lumens(lm): 2334.13
Efficiency(%): 78.62%
Lumens(lm)/Power(W): 74.21
Central intensity(cd): 9180.563
Maximum intensity(cd): 9180.563
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=23.4
[C90/270]Total=23.4
Field angle(10%Imax): [C0/180]Total=46.6
[C90/270]Total=46.6
Maximum s/h(1/2): C0_180=0.39 C90_270=0.39
Maximum s/h(1/4): C0_180=0.40 C90_270=0.40
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 78.69%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 97.410%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	9180.563	2.196	2.196	.074%	.094%
1.0	9126.211	17.466	19.663	.588%	.842%
2.0	8984.109	34.383	54.046	1.158%	2.315%
3.0	8734.430	50.129	104.174	1.688%	4.463%
4.0	8417.320	64.389	168.563	2.169%	7.222%
5.0	8030.602	76.753	245.316	2.585%	10.510%
6.0	7588.125	86.980	332.297	2.930%	14.236%
7.0	7071.891	94.511	426.807	3.183%	18.285%
8.0	6587.859	100.543	527.35	3.386%	22.593%
9.0	6031.055	103.461	630.811	3.485%	27.026%
10.0	5450.766	103.796	734.607	3.496%	31.472%
11.0	4943.109	103.431	838.038	3.484%	35.904%
12.0	4431.516	101.038	939.076	3.403%	40.232%
13.0	3870.844	95.487	1034.563	3.216%	44.323%
14.0	3390.047	89.936	1124.499	3.029%	48.176%
15.0	2955.727	83.890	1208.389	2.826%	51.770%
16.0	2514.656	76.010	1284.399	2.560%	55.027%
17.0	2176.523	69.783	1354.182	2.350%	58.016%
18.0	1849.219	62.665	1416.847	2.111%	60.701%
19.0	1567.695	55.970	1472.817	1.885%	63.099%
20.0	1356.574	50.880	1523.697	1.714%	65.279%
21.0	1177.467	46.273	1569.97	1.559%	67.261%
22.0	1036.512	42.580	1612.549	1.434%	69.086%
23.0	942.975	40.405	1652.954	1.361%	70.817%
24.0	859.500	38.336	1691.29	1.291%	72.459%
25.0	777.923	36.053	1727.343	1.214%	74.004%
26.0	718.770	34.553	1761.896	1.164%	75.484%
27.0	661.542	32.935	1794.831	1.109%	76.895%
28.0	606.087	31.203	1826.033	1.051%	78.232%
29.0	559.378	29.739	1855.773	1.002%	79.506%
30.0	519.813	28.502	1884.274	.960%	80.727%
31.0	476.571	26.917	1911.191	.907%	81.880%
32.0	439.882	25.562	1936.753	.861%	82.975%
33.0	409.999	24.487	1961.24	.825%	84.024%
34.0	377.283	23.136	1984.376	.779%	85.016%
35.0	351.942	22.137	2006.513	.746%	85.964%
36.0	327.762	21.127	2027.639	.712%	86.869%
37.0	305.023	20.130	2047.769	.678%	87.731%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	283.275	19.125	2066.894	.644%	88.551%
39.0	262.800	18.136	2085.031	.611%	89.328%
40.0	244.139	17.209	2102.24	.580%	90.065%
41.0	226.751	16.313	2118.553	.549%	90.764%
42.0	209.749	15.391	2133.944	.518%	91.423%
43.0	191.334	14.310	2148.254	.482%	92.036%
44.0	175.964	13.404	2161.658	.451%	92.611%
45.0	160.741	12.464	2174.122	.420%	93.145%
46.0	146.229	11.535	2185.657	.389%	93.639%
47.0	132.286	10.609	2196.267	.357%	94.093%
48.0	120.663	9.833	2206.1	.331%	94.515%
49.0	108.661	8.993	2215.093	.303%	94.900%
50.0	97.833	8.218	2223.311	.277%	95.252%
51.0	88.959	7.581	2230.893	.255%	95.577%
52.0	80.079	6.920	2237.813	.233%	95.873%
53.0	72.162	6.320	2244.133	.213%	96.144%
54.0	65.088	5.774	2249.907	.194%	96.392%
55.0	58.838	5.285	2255.192	.178%	96.618%
56.0	52.924	4.811	2260.004	.162%	96.824%
57.0	48.305	4.443	2264.446	.150%	97.014%
58.0	43.622	4.057	2268.503	.137%	97.188%
59.0	39.930	3.753	2272.257	.126%	97.349%
60.0	36.570	3.473	2275.729	.117%	97.498%
61.0	33.546	3.217	2278.947	.108%	97.636%
62.0	31.289	3.030	2281.977	.102%	97.765%
63.0	29.545	2.887	2284.863	.097%	97.889%
64.0	28.076	2.767	2287.631	.093%	98.008%
65.0	26.951	2.679	2290.309	.090%	98.122%
66.0	26.016	2.606	2292.915	.088%	98.234%
67.0	25.045	2.528	2295.444	.085%	98.342%
68.0	24.180	2.459	2297.902	.083%	98.448%
69.0	23.351	2.391	2300.293	.081%	98.550%
70.0	22.556	2.324	2302.617	.078%	98.650%
71.0	21.741	2.254	2304.871	.076%	98.746%
72.0	20.995	2.190	2307.061	.074%	98.840%
73.0	20.229	2.121	2309.182	.071%	98.931%
74.0	19.491	2.055	2311.237	.069%	99.019%
75.0	18.802	1.992	2313.228	.067%	99.104%

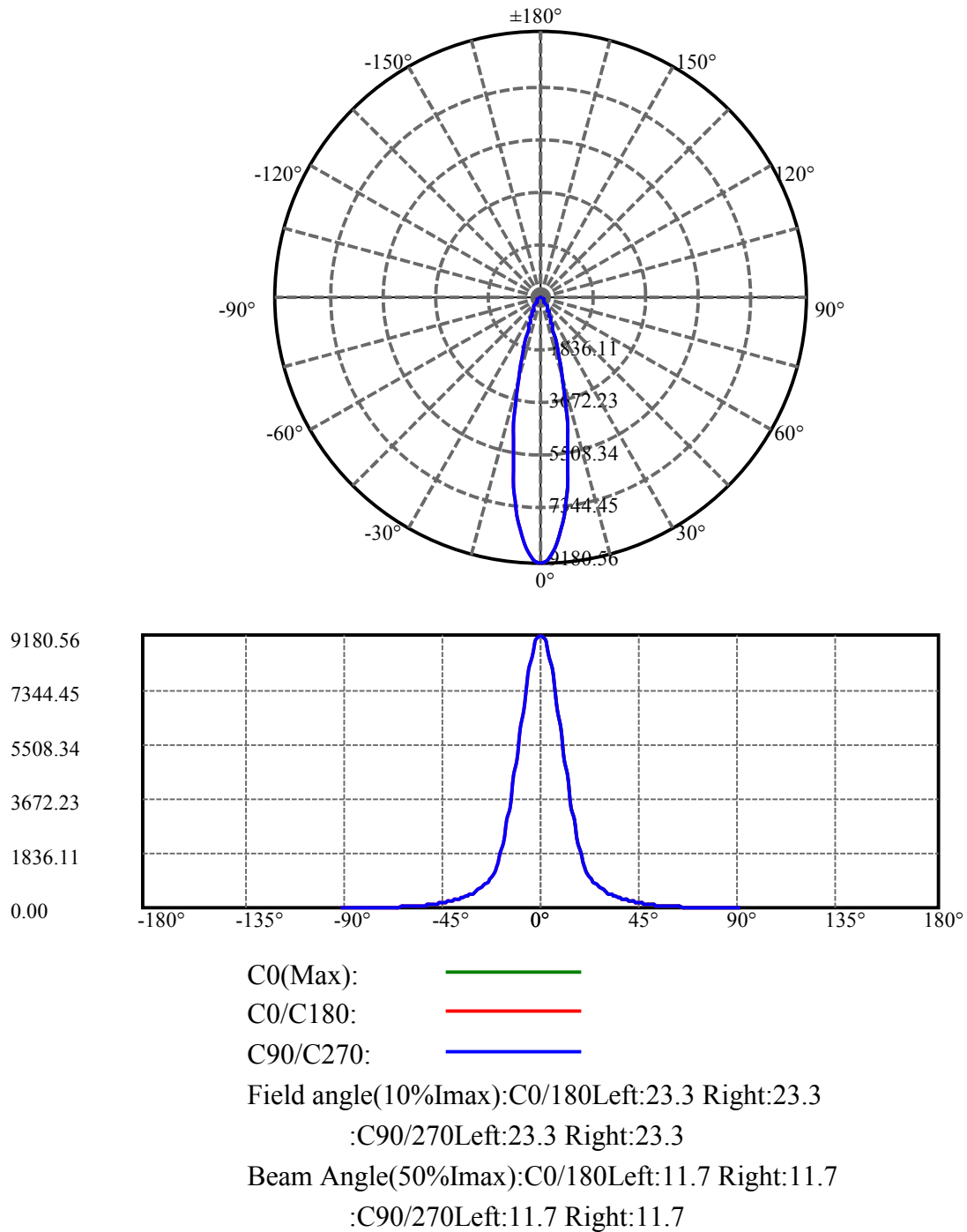
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	18.035	1.919	2315.147	.065%	99.187%
77.0	17.353	1.854	2317.002	.062%	99.266%
78.0	16.587	1.779	2318.781	.060%	99.342%
79.0	15.884	1.710	2320.491	.058%	99.416%
80.0	15.131	1.634	2322.125	.055%	99.486%
81.0	14.393	1.559	2323.684	.053%	99.552%
82.0	13.676	1.485	2325.169	.050%	99.616%
83.0	12.980	1.413	2326.581	.048%	99.676%
84.0	12.298	1.341	2327.923	.045%	99.734%
85.0	11.524	1.259	2329.182	.042%	99.788%
86.0	10.863	1.188	2330.37	.040%	99.839%
87.0	10.245	1.122	2331.492	.038%	99.887%
88.0	9.851	1.080	2332.571	.036%	99.933%
89.0	9.548	1.047	2333.618	.035%	99.978%
90.0	9.394	0.515	2334.133	.017%	100.000%

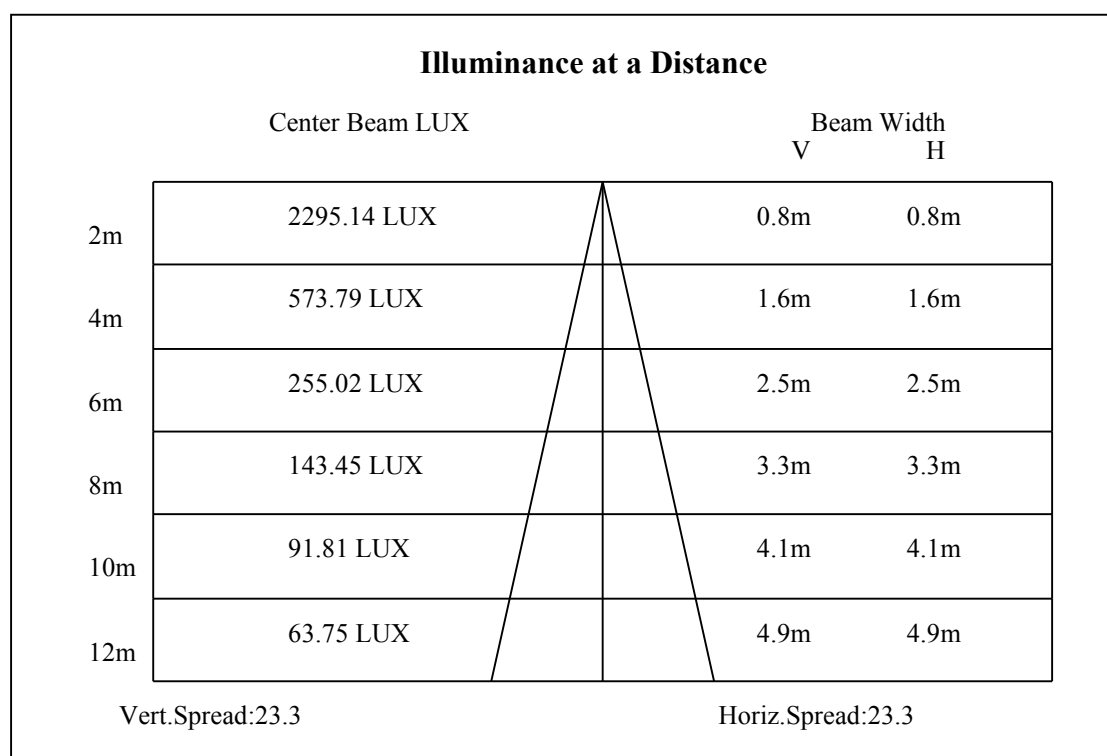
ZONAL LUMEN SUMMARY

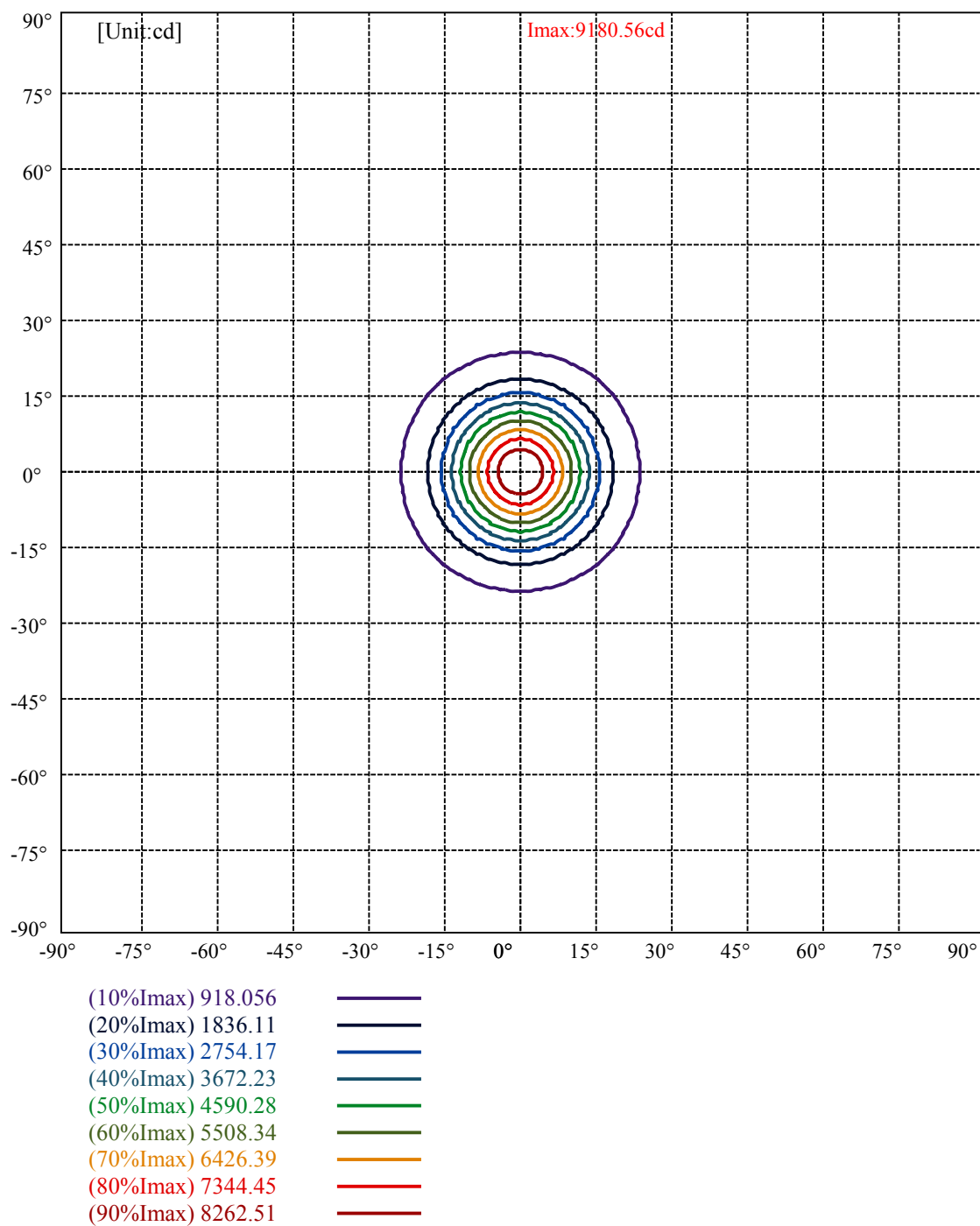
Zone	Lumens	%Lamp	%Fixt
0-30	1884.27	63.46%	80.73%
0-40	2102.24	70.81%	90.07%
0-60	2275.73	76.65%	97.50%
0-90	2333.62	78.60%	99.98%
0-120	2333.62	78.60%	99.98%
0-180	2334.13	78.62%	100.00%
60-90	61.36	2.07%	2.63%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-29.40	1867.31	62.89%	80.00%

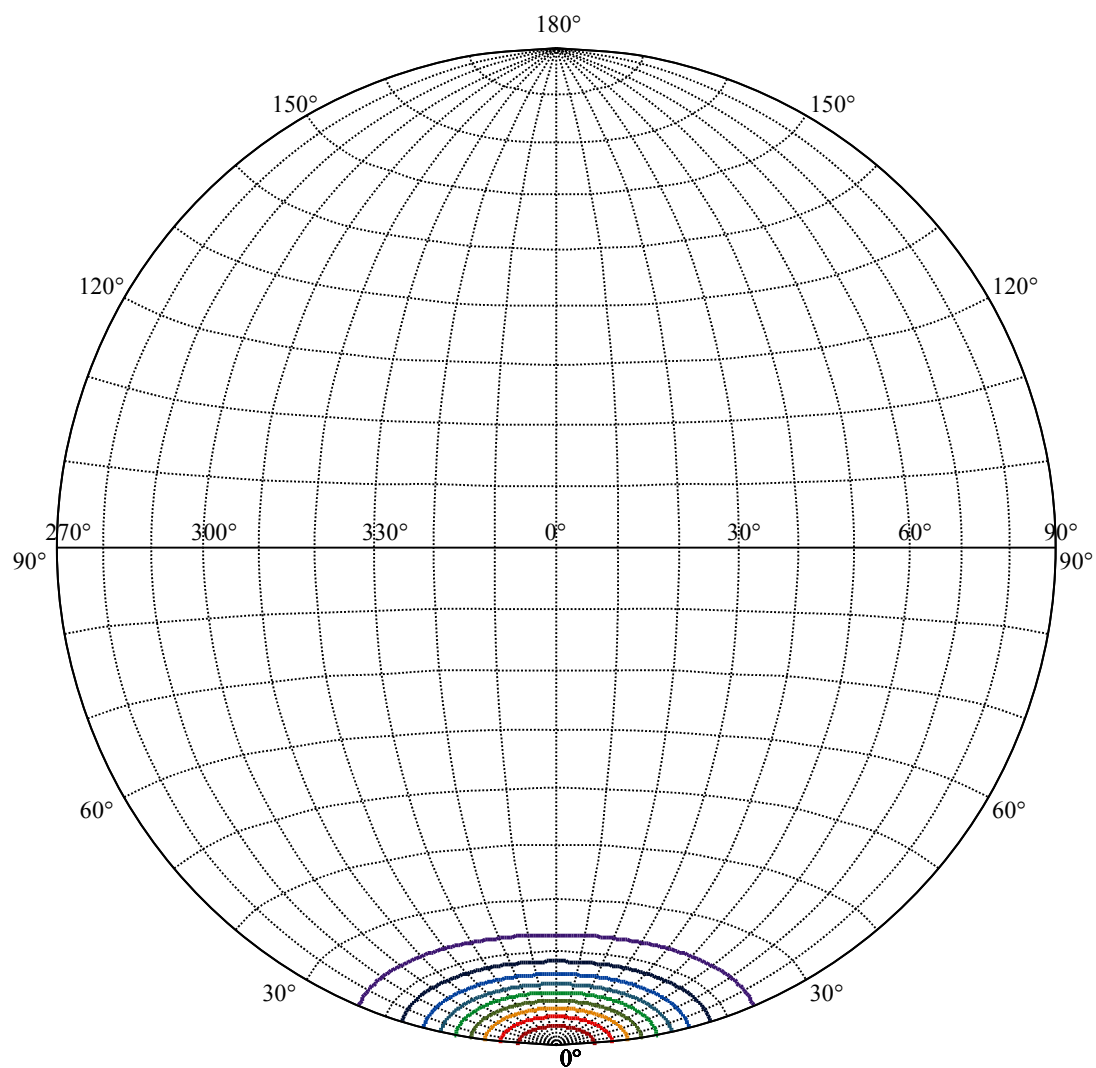
ZONAL LUMEN SUMMARY

0-10	734.61
10-20	789.09
20-30	360.58
30-40	217.97
40-50	121.07
50-60	52.42
60-70	26.89
70-80	19.51
80-90	11.49
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









House

[Unit:cd]

Road

Imax:9180.56

(10%Imax) 918.056

(20%Imax) 1836.11

(30%Imax) 2754.17

(40%Imax) 3672.23

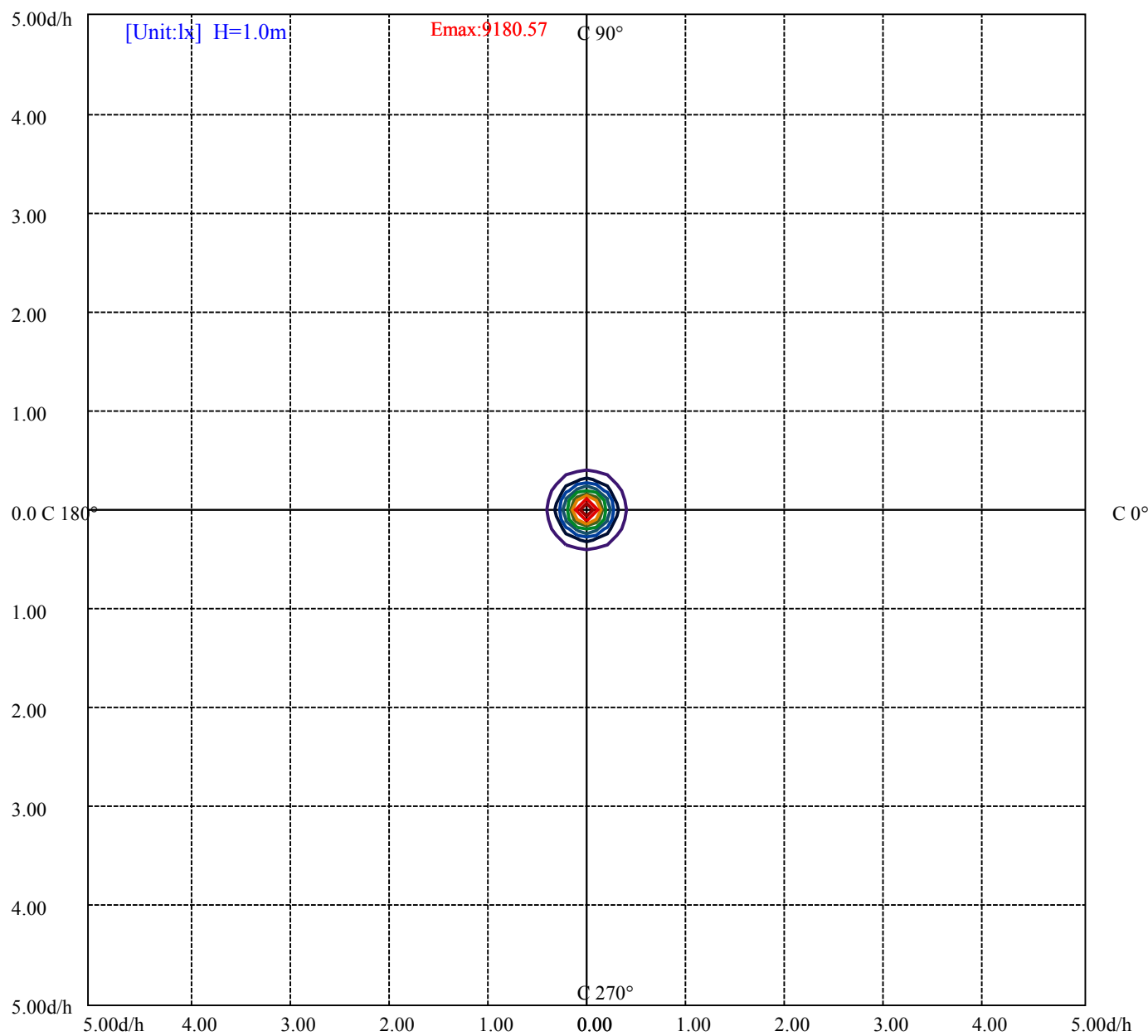
(50%Imax) 4590.28

(60%Imax) 5508.34

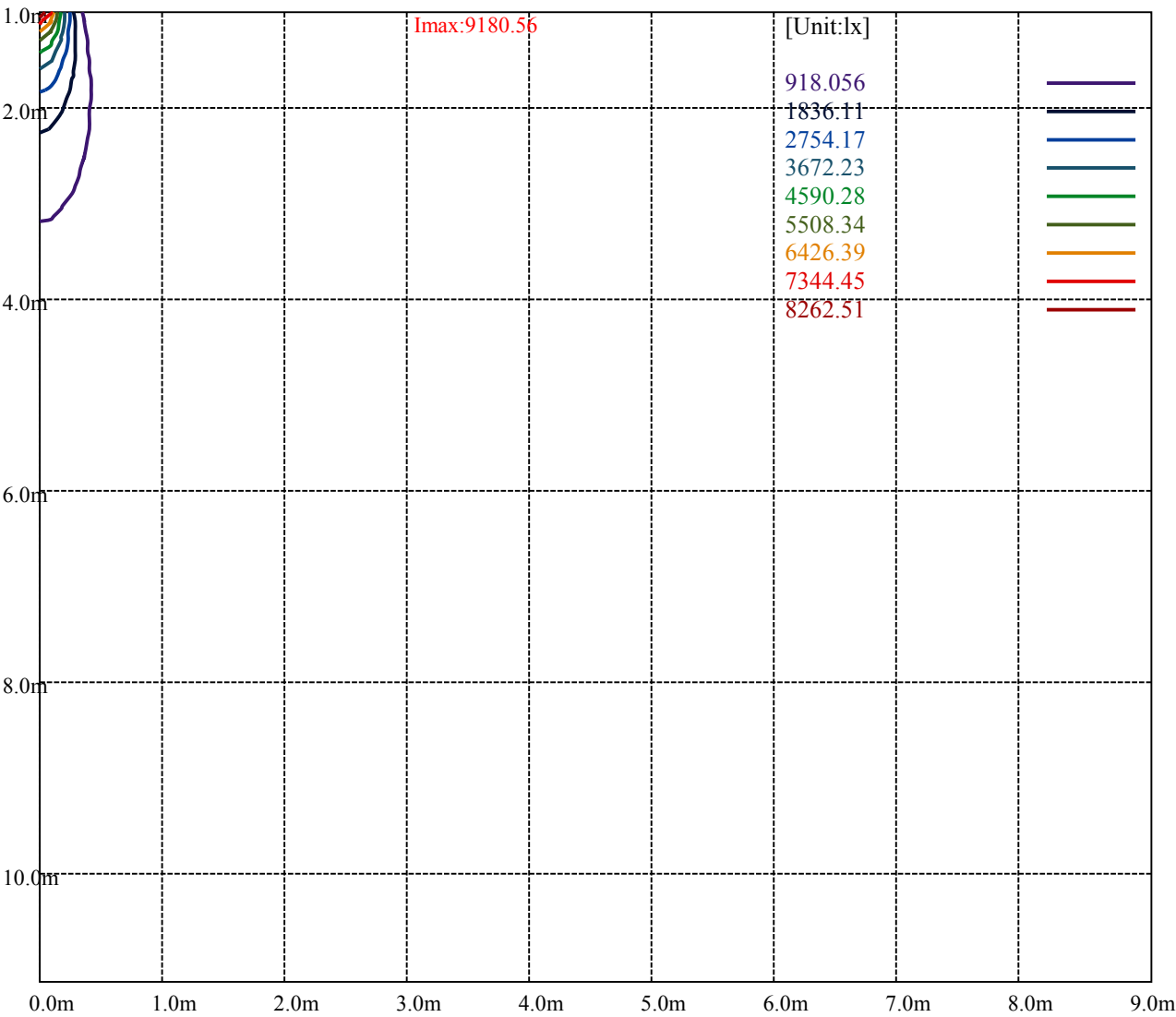
(70%Imax) 6426.39

(80%Imax) 7344.45

(90%Imax) 8262.51



(10%Emax) 918.055	—
(20%Emax) 1836.11	—
(30%Emax) 2754.17	—
(40%Emax) 3672.22	—
(50%Emax) 4590.28	—
(60%Emax) 5508.33	—
(70%Emax) 6426.39	—
(80%Emax) 7344.44	—
(90%Emax) 8262.5	—



Luminance Table

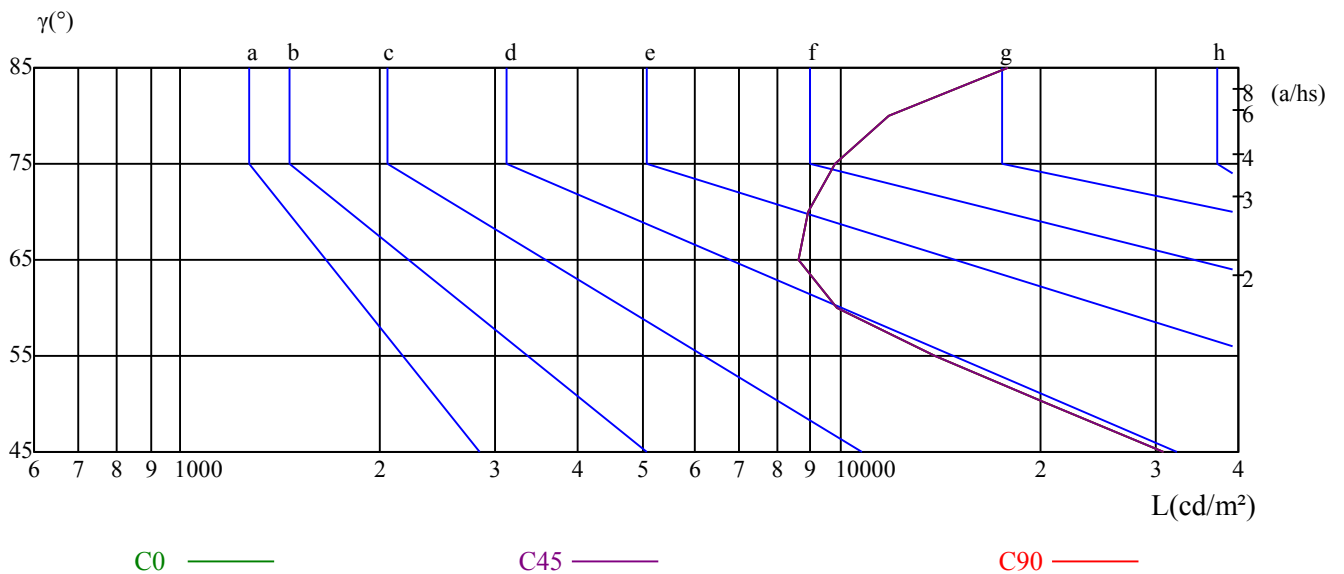
γ	45	50	55	60	65	70	75	80	85
C0	30736	20579	13870	9889	8622	8917	9822	11782	17878
C45	30736	20579	13870	9889	8622	8917	9822	11782	17878
C90	30736	20579	13870	9889	8622	8917	9822	11782	17878

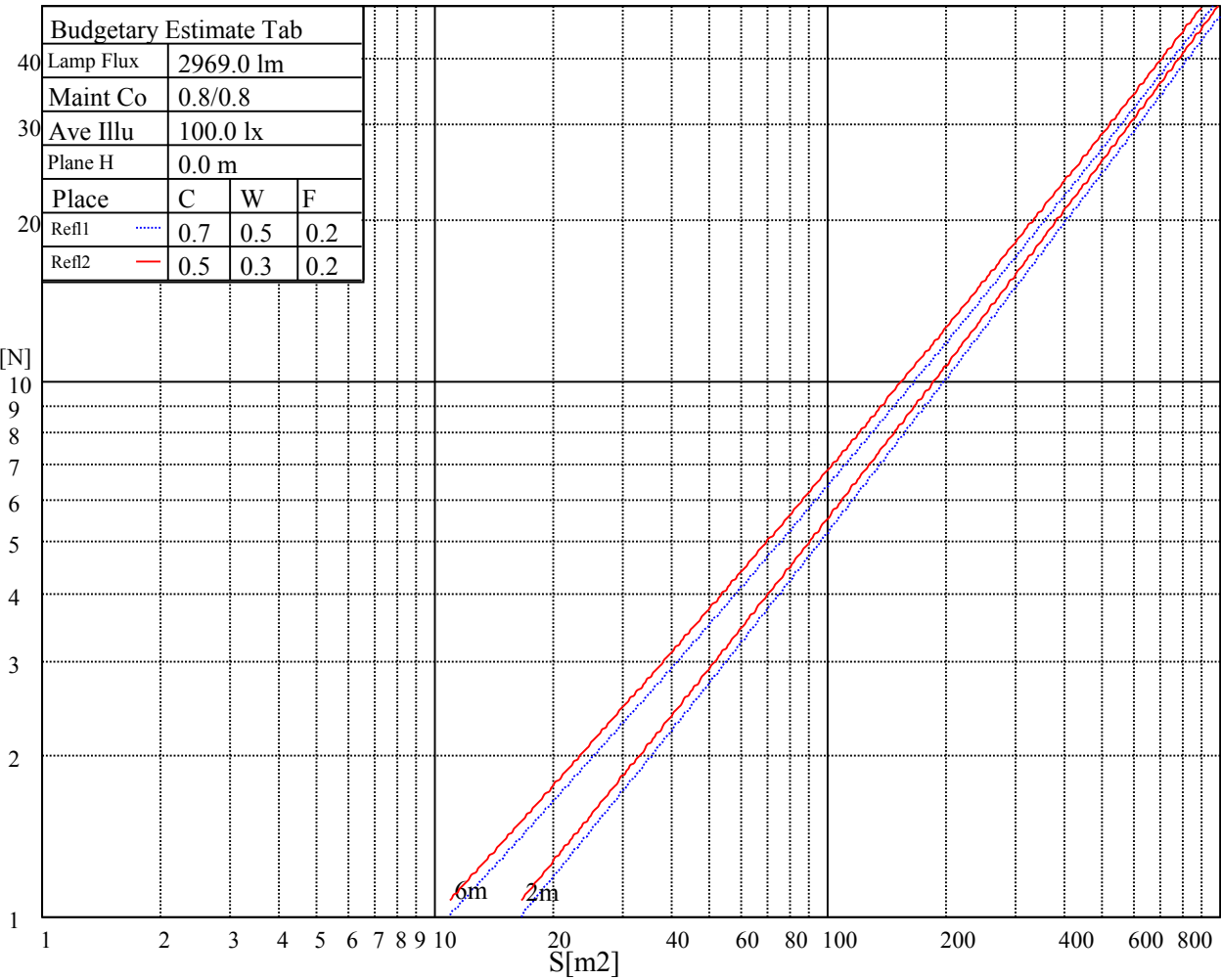
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
8622	8622	8622	9822	9822	9822	17878	17878	17878

Glare Table

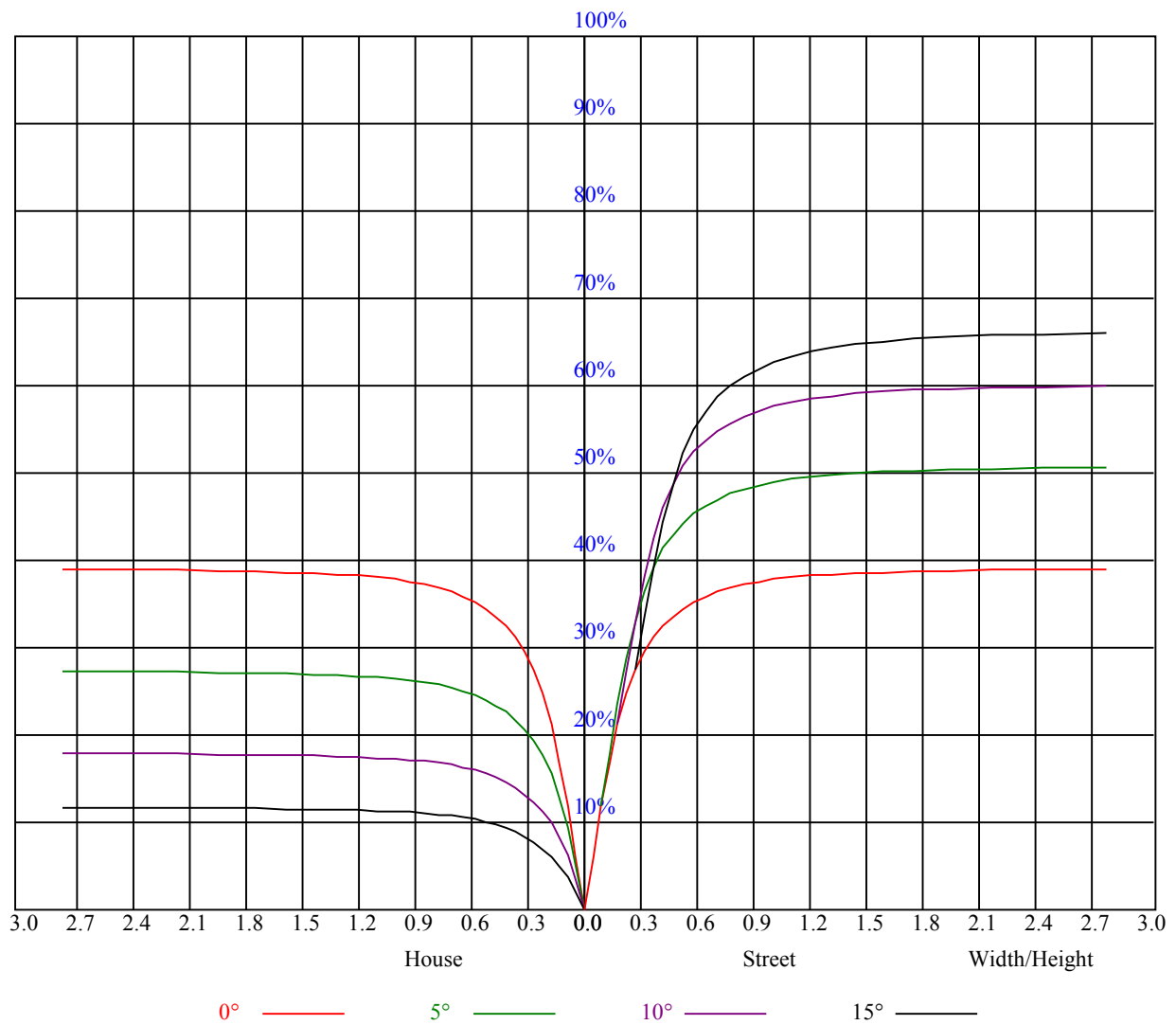
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

Luminance Limiting Curve





RHOCC	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	0.94	0.94	0.94	0.91	0.91	0.91	0.87	0.87	0.87	0.84	0.84	0.84	0.80	0.80	0.80	0.79
1	0.88	0.86	0.84	0.86	0.84	0.83	0.83	0.81	0.80	0.80	0.79	0.78	0.77	0.76	0.76	0.74
2	0.82	0.80	0.77	0.81	0.79	0.76	0.79	0.76	0.75	0.76	0.75	0.73	0.74	0.73	0.72	0.70
3	0.78	0.75	0.72	0.77	0.74	0.71	0.75	0.72	0.70	0.73	0.71	0.69	0.71	0.70	0.68	0.67
4	0.74	0.70	0.67	0.73	0.70	0.67	0.72	0.69	0.66	0.70	0.68	0.66	0.69	0.67	0.65	0.64
5	0.71	0.67	0.64	0.70	0.66	0.64	0.69	0.65	0.63	0.67	0.65	0.63	0.66	0.64	0.62	0.61
6	0.68	0.64	0.61	0.67	0.63	0.61	0.66	0.63	0.60	0.65	0.62	0.60	0.64	0.61	0.59	0.59
7	0.65	0.61	0.58	0.64	0.61	0.58	0.63	0.60	0.58	0.63	0.60	0.57	0.62	0.59	0.57	0.56
8	0.62	0.59	0.56	0.62	0.58	0.56	0.61	0.58	0.56	0.61	0.58	0.55	0.60	0.57	0.55	0.54
9	0.60	0.56	0.54	0.60	0.56	0.54	0.59	0.56	0.54	0.59	0.56	0.53	0.58	0.55	0.53	0.52
10	0.58	0.55	0.52	0.58	0.54	0.52	0.57	0.54	0.52	0.57	0.54	0.52	0.56	0.54	0.52	0.51



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Intensity data(cd)									Appendix Page: 16 Total:18	
C/γ(°)	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	
0.0	9129.94	9196.88	9188.44	9078.75	8880.19	8559.00	8168.63	7764.19	7340.06	
45.0	9214.88	9153.56	8983.69	8694.56	8364.94	7926.19	7437.38	6958.13	6461.44	
90.0	9185.06	9045.56	8821.13	8476.88	8066.25	7632.00	7161.75	6539.63	6010.88	
135.0	9192.38	9101.25	8878.50	8571.94	8235.56	7780.50	7264.13	6788.25	6286.50	
180.0	9129.94	8934.19	8675.44	8308.13	7863.19	7433.44	6948.00	6309.56	5783.06	
225.0	9214.88	9173.81	9046.69	8795.25	8460.00	8096.06	7678.13	7089.19	6590.25	
270.0	9185.06	9206.44	9146.81	8984.25	8755.88	8409.38	7989.75	7569.56	7116.19	
315.0	9192.38	9198.00	9132.19	8965.69	8712.56	8408.25	8057.25	7556.63	7114.50	
360.0	9129.94	9196.88	9188.44	9078.75	8880.19	8559.00	8168.63	7764.19	7340.06	
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	
0.0	6815.25	6266.25	5764.50	5193.56	4632.19	4145.06	3611.81	3117.94	2710.13	
45.0	5807.25	5280.19	4762.13	4257.00	3654.00	3213.56	2800.69	2331.00	2027.25	
90.0	5484.94	4843.13	4338.56	3851.44	3328.88	2852.44	2477.25	2100.38	1799.44	
135.0	5631.19	5097.38	4565.25	4053.38	3438.56	2986.88	2540.81	2151.56	1842.75	
180.0	5264.44	4624.88	4131.00	3652.31	3138.19	2676.38	2313.56	1953.00	1671.75	
225.0	6075.56	5438.81	4926.38	4430.81	3877.31	3353.06	2928.94	2503.69	2164.50	
270.0	6528.38	6035.63	5541.75	4998.38	4445.44	3979.13	3519.56	2982.94	2603.81	
315.0	6641.44	6019.88	5515.31	5015.25	4452.19	3913.88	3453.19	2976.75	2592.56	
360.0	6815.25	6266.25	5764.50	5193.56	4632.19	4145.06	3611.81	3117.94	2710.13	
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	
0.0	2313.56	2003.63	1700.44	1444.50	1265.63	1116.56	1004.63	919.69	846.56	
45.0	1735.88	1479.38	1260.56	1116.56	1001.25	912.38	829.13	756.00	699.75	
90.0	1512.00	1290.94	1121.06	1011.66	901.35	836.72	770.40	690.47	646.14	
135.0	1580.63	1338.19	1155.94	1022.63	927.56	840.38	770.63	702.56	651.38	
180.0	1402.31	1110.99	1066.22	953.16	860.06	790.43	728.10	659.36	611.61	
225.0	1828.69	1544.06	1336.50	1121.18	1023.19	928.18	847.80	760.22	698.63	
270.0	2214.00	1906.31	1609.88	1389.94	1198.69	1060.88	963.00	872.44	801.56	
315.0	2206.69	1868.06	1602.00	1360.13	1114.37	1058.29	962.33	862.65	794.53	
360.0	2313.56	2003.63	1700.44	1444.50	1265.63	1116.56	1004.63	919.69	846.56	
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0	
0.0	772.88	705.38	653.63	608.06	557.44	519.75	484.88	442.69	412.31	
45.0	641.81	588.38	546.19	511.31	462.38	429.75	404.44	367.88	344.25	
90.0	600.86	553.84	510.69	474.86	436.56	401.96	374.18	346.39	324.06	
135.0	599.06	550.69	508.50	469.13	424.13	394.31	368.44	339.19	318.38	
180.0	568.91	529.43	483.53	449.72	417.77	381.60	355.84	330.47	308.87	
225.0	645.13	584.89	542.36	503.72	463.73	427.78	398.59	368.44	343.63	
270.0	731.25	667.13	617.63	573.75	524.81	488.25	453.38	413.44	385.88	
315.0	732.43	668.98	612.51	567.96	525.77	475.65	440.27	409.78	378.17	
360.0	772.88	705.38	653.63	608.06	557.44	519.75	484.88	442.69	412.31	
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0	
0.0	384.75	356.06	329.06	306.00	284.63	260.38	241.59	222.81	205.65	
45.0	324.56	299.25	285.19	259.37	241.59	226.29	206.61	189.06	174.09	
90.0	300.49	278.89	260.21	241.54	224.16	207.11	191.81	173.59	159.53	
135.0	298.13	284.06	257.40	242.55	226.58	210.43	192.71	175.73	161.33	
180.0	286.37	267.19	247.50	229.89	215.33	195.86	180.84	164.64	149.18	
225.0	318.54	295.88	276.92	257.29	239.46	226.63	209.98	190.13	174.94	
270.0	359.44	331.88	306.56	284.63	260.44	242.72	225.17	207.06	191.42	
315.0	349.82	326.98	303.36	281.14	260.94	244.58	229.28	207.68	191.59	
360.0	384.75	356.06	329.06	306.00	284.63	260.38	241.59	222.81	205.65	

Intensity data(cd)

C/γ(°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0
0.0	187.93	171.11	156.83	143.33	127.74	116.10	105.53	94.84	85.22
45.0	158.18	143.55	131.18	119.64	106.54	97.31	88.48	79.20	70.99
90.0	146.25	133.71	119.36	108.90	99.23	87.98	79.82	71.38	64.69
135.0	145.80	131.96	120.21	109.74	97.65	89.27	81.45	72.62	65.31
180.0	136.35	124.48	110.93	100.97	91.91	81.68	74.25	67.28	60.24
225.0	160.59	144.96	130.61	118.97	108.39	96.30	87.47	78.86	71.83
270.0	174.60	158.57	144.84	132.02	117.51	106.76	97.09	87.36	78.69
315.0	176.23	161.49	144.34	131.74	120.32	107.27	97.59	89.10	80.33
360.0	187.93	171.11	156.83	143.33	127.74	116.10	105.53	94.84	85.22
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	77.46	69.47	62.16	56.53	50.96	46.52	42.19	38.31	35.33
45.0	63.68	57.15	51.41	46.80	42.53	38.98	35.38	32.57	30.54
90.0	57.83	52.65	47.42	43.31	38.87	35.78	33.08	30.60	29.03
135.0	59.06	53.16	47.93	43.93	39.94	36.73	33.53	30.83	29.42
180.0	54.06	49.28	44.66	41.06	37.58	34.48	32.18	29.98	28.69
225.0	64.52	58.61	52.76	48.09	42.92	39.38	36.23	33.30	30.71
270.0	71.72	64.52	57.94	52.82	47.64	43.65	39.66	36.11	33.24
315.0	72.39	65.87	59.12	53.89	48.54	43.93	40.33	36.68	33.36
360.0	77.46	69.47	62.16	56.53	50.96	46.52	42.19	38.31	35.33
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	32.79	30.54	29.36	28.29	27.11	26.21	25.31	24.36	23.51
45.0	29.19	27.79	26.78	25.88	24.81	24.08	23.29	22.44	21.66
90.0	27.96	26.89	25.76	24.92	24.13	23.23	22.39	21.71	20.98
135.0	28.29	27.06	26.10	25.09	24.19	23.34	22.61	21.83	21.04
180.0	27.62	26.66	25.54	24.69	23.91	23.06	22.28	21.54	20.70
225.0	28.74	27.56	26.38	25.48	24.58	23.68	22.84	22.11	21.32
270.0	30.83	28.74	27.68	26.72	25.54	24.75	23.91	23.06	22.22
315.0	30.94	29.36	28.01	27.06	26.10	25.09	24.19	23.40	22.50
360.0	32.79	30.54	29.36	28.29	27.11	26.21	25.31	24.36	23.51
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	22.73	21.83	21.09	20.36	19.52	18.84	18.06	17.33	16.65
45.0	20.93	20.25	19.46	18.79	18.00	17.38	16.59	15.75	15.13
90.0	20.25	19.52	18.79	18.17	17.33	16.65	15.92	15.24	14.40
135.0	20.36	19.58	18.84	18.17	17.38	16.76	15.86	15.13	14.46
180.0	19.91	19.18	18.45	17.72	16.99	16.20	15.41	14.74	13.89
225.0	20.53	19.86	19.07	18.45	17.78	17.10	16.43	15.81	14.96
270.0	21.54	20.70	20.03	19.29	18.56	17.89	17.21	16.43	15.75
315.0	21.71	20.93	20.19	19.46	18.73	18.00	17.21	16.65	15.81
360.0	22.73	21.83	21.09	20.36	19.52	18.84	18.06	17.33	16.65
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	15.75	14.96	14.23	13.44	12.71	11.98	11.25	10.63	10.01
45.0	14.40	13.67	13.05	12.43	11.42	10.69	10.01	9.62	9.28
90.0	13.78	13.16	12.43	11.64	10.74	10.13	9.62	9.39	9.28
135.0	13.67	12.88	12.26	11.59	10.86	10.24	9.73	9.39	9.34
180.0	13.16	12.54	11.81	11.14	10.46	10.07	9.56	9.39	9.39
225.0	14.29	13.61	12.88	12.32	11.53	10.91	10.29	9.90	9.51
270.0	15.08	14.23	13.61	13.05	12.38	11.48	10.74	10.24	9.79
315.0	15.02	14.34	13.56	12.77	12.09	11.42	10.74	10.24	9.79
360.0	15.75	14.96	14.23	13.44	12.71	11.98	11.25	10.63	10.01

Intensity data(cd)

Appendix Page: 18 Total:18

C/ γ (°)	90.0
0.0	9.62
45.0	9.28
90.0	9.28
135.0	9.34
180.0	9.39
225.0	9.34
270.0	9.45
315.0	9.45
360.0	9.62