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NATA

LumCAT: 3-2322-M
Luminaire: 92.70.135.00
Report No: NATA0100
Test No: GC2019041512
LampCAT: LUMILEDS LUXEON1205
Lamp flux(lm): 2043.0
Number of Lamps: 1
Length(mm): 85
Phm Type: C

Voltage(V): 35.5200
Current(A): 0.5030
Power (W): 17.8670
PF: 0.0000
Ballast type: DC
Width(mm): 85
Height(mm): 0

Photometric Results

Lumens(lm): 1766.20
Efficiency(%): 86.45%
Lumens(lm)/Power(W): 98.85
Central intensity(cd): 11293.740
Maximum intensity(cd): 11293.740
Angle of maximum intensity: $C=0.0$ $\gamma=0.0$
Beam Angle(50%Imax): [C0/180]Total=15.9
[C90/270]Total=15.9
Field angle(10%Imax): [C0/180]Total=36.5
[C90/270]Total=36.5
Maximum s/h(1/2): C0_180=0.27 C90_270=0.27
Maximum s/h(1/4): C0_180=0.28 C90_270=0.28
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 86.45%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.818%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	11293.734	0.000	0	.000%	.000%
1.0	11176.383	10.752	10.752	.526%	.609%
2.0	10867.500	31.639	42.391	1.549%	2.400%
3.0	10357.594	50.763	93.154	2.485%	5.274%
4.0	9710.930	67.176	160.33	3.288%	9.078%
5.0	8765.578	79.485	239.815	3.891%	13.578%
6.0	7736.836	86.725	326.54	4.245%	18.488%
7.0	6683.555	89.507	416.047	4.381%	23.556%
8.0	5583.094	87.790	503.837	4.297%	28.527%
9.0	4586.836	82.422	586.259	4.034%	33.193%
10.0	3819.797	76.077	662.336	3.724%	37.501%
11.0	3170.602	69.848	732.184	3.419%	41.455%
12.0	2637.422	63.490	795.674	3.108%	45.050%
13.0	2269.266	58.230	853.904	2.850%	48.347%
14.0	1881.141	53.125	907.029	2.600%	51.355%
15.0	1639.617	48.335	955.364	2.366%	54.092%
16.0	1440.211	45.128	1000.492	2.209%	56.647%
17.0	1258.010	42.019	1042.51	2.057%	59.026%
18.0	1153.055	39.753	1082.263	1.946%	61.276%
19.0	1054.547	38.408	1120.671	1.880%	63.451%
20.0	973.287	37.115	1157.786	1.817%	65.552%
21.0	903.649	36.041	1193.827	1.764%	67.593%
22.0	851.843	35.277	1229.104	1.727%	69.590%
23.0	804.909	34.763	1263.868	1.702%	71.559%
24.0	764.993	34.324	1298.191	1.680%	73.502%
25.0	736.298	34.136	1332.327	1.671%	75.435%
26.0	712.477	34.198	1366.526	1.674%	77.371%
27.0	692.100	34.363	1400.889	1.682%	79.317%
28.0	676.097	34.640	1435.529	1.696%	81.278%
29.0	661.380	34.992	1470.521	1.713%	83.259%
30.0	644.829	35.267	1505.789	1.726%	85.256%
31.0	621.893	35.251	1541.04	1.725%	87.252%
32.0	584.866	34.572	1575.612	1.692%	89.209%
33.0	529.770	32.838	1608.449	1.607%	91.069%
34.0	462.291	30.023	1638.472	1.470%	92.768%
35.0	378.570	26.114	1664.586	1.278%	94.247%
36.0	293.330	21.393	1685.98	1.047%	95.458%
37.0	218.813	16.703	1702.683	.818%	96.404%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	145.216	12.151	1714.834	.595%	97.092%
39.0	81.028	7.722	1722.556	.378%	97.529%
40.0	44.543	4.379	1726.935	.214%	97.777%
41.0	24.898	2.473	1729.408	.121%	97.917%
42.0	18.323	1.570	1730.978	.077%	98.006%
43.0	15.659	1.259	1732.237	.062%	98.077%
44.0	13.310	1.093	1733.331	.054%	98.139%
45.0	11.573	0.956	1734.287	.047%	98.193%
46.0	10.596	0.867	1735.154	.042%	98.242%
47.0	9.984	0.819	1735.972	.040%	98.289%
48.0	9.548	0.790	1736.762	.039%	98.333%
49.0	9.218	0.771	1737.533	.038%	98.377%
50.0	8.873	0.754	1738.287	.037%	98.420%
51.0	8.571	0.738	1739.025	.036%	98.462%
52.0	8.332	0.725	1739.75	.036%	98.503%
53.0	8.114	0.715	1740.466	.035%	98.543%
54.0	7.917	0.707	1741.172	.035%	98.583%
55.0	7.770	0.700	1741.873	.034%	98.623%
56.0	7.629	0.696	1742.568	.034%	98.662%
57.0	7.488	0.691	1743.26	.034%	98.701%
58.0	7.362	0.687	1743.946	.034%	98.740%
59.0	7.277	0.684	1744.631	.033%	98.779%
60.0	7.193	0.684	1745.314	.033%	98.818%
61.0	7.095	0.682	1745.996	.033%	98.856%
62.0	7.038	0.681	1746.677	.033%	98.895%
63.0	6.975	0.682	1747.359	.033%	98.933%
64.0	6.919	0.682	1748.04	.033%	98.972%
65.0	6.877	0.683	1748.723	.033%	99.011%
66.0	6.827	0.684	1749.407	.033%	99.049%
67.0	6.792	0.685	1750.092	.034%	99.088%
68.0	6.757	0.686	1750.778	.034%	99.127%
69.0	6.715	0.687	1751.465	.034%	99.166%
70.0	6.680	0.688	1752.153	.034%	99.205%
71.0	6.659	0.689	1752.843	.034%	99.244%
72.0	6.645	0.692	1753.534	.034%	99.283%
73.0	6.623	0.694	1754.228	.034%	99.322%
74.0	6.616	0.696	1754.924	.034%	99.362%
75.0	6.574	0.697	1755.621	.034%	99.401%

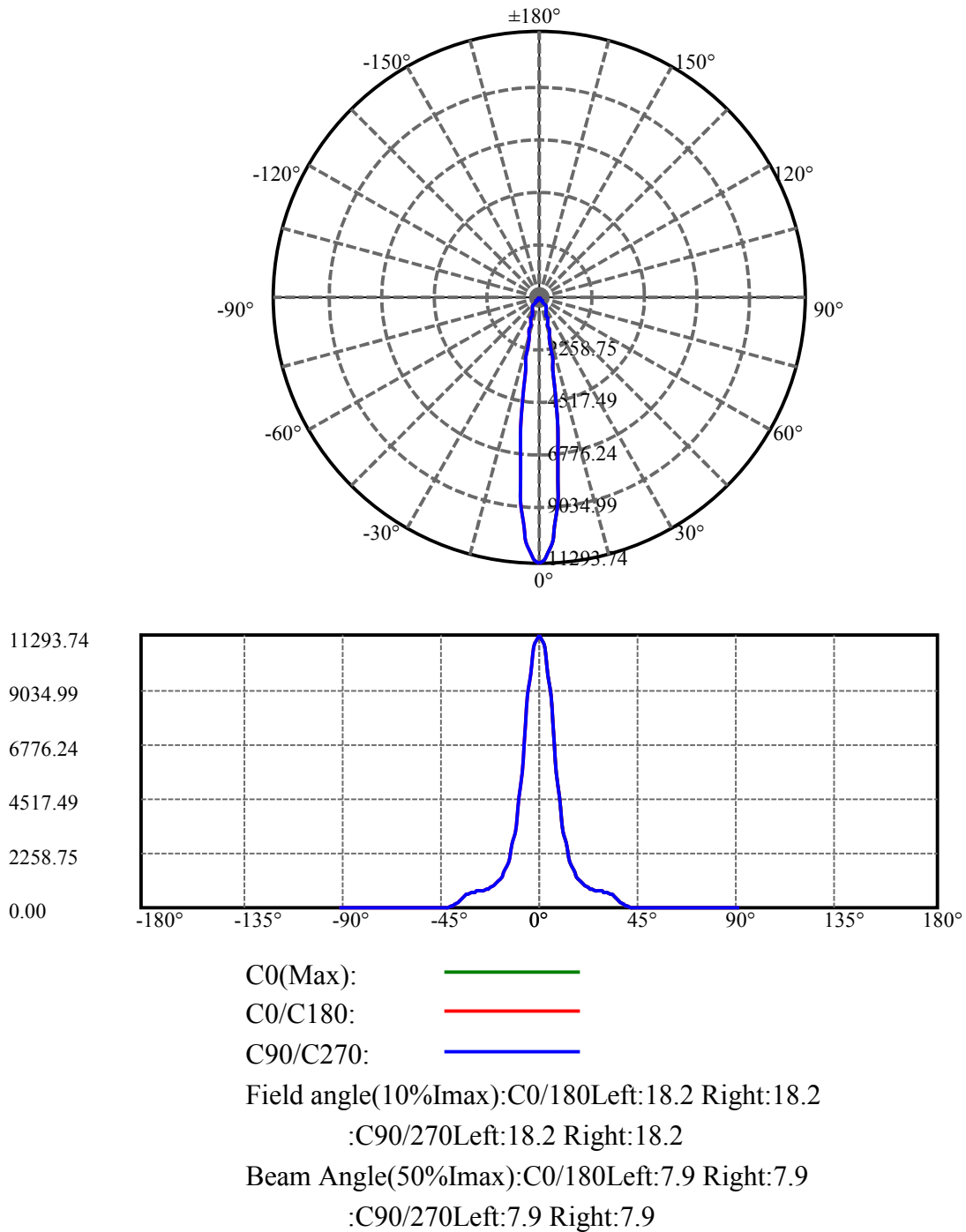
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	6.574	0.698	1756.319	.034%	99.441%
77.0	6.539	0.699	1757.018	.034%	99.480%
78.0	6.560	0.701	1757.719	.034%	99.520%
79.0	6.532	0.703	1758.423	.034%	99.560%
80.0	6.511	0.703	1759.126	.034%	99.600%
81.0	6.511	0.704	1759.83	.034%	99.640%
82.0	6.504	0.706	1760.536	.035%	99.679%
83.0	6.511	0.708	1761.244	.035%	99.720%
84.0	6.476	0.707	1761.951	.035%	99.760%
85.0	6.483	0.707	1762.658	.035%	99.800%
86.0	6.476	0.708	1763.367	.035%	99.840%
87.0	6.462	0.708	1764.075	.035%	99.880%
88.0	6.448	0.707	1764.782	.035%	99.920%
89.0	6.455	0.707	1765.489	.035%	99.960%
90.0	6.455	0.708	1766.197	.035%	100.000%

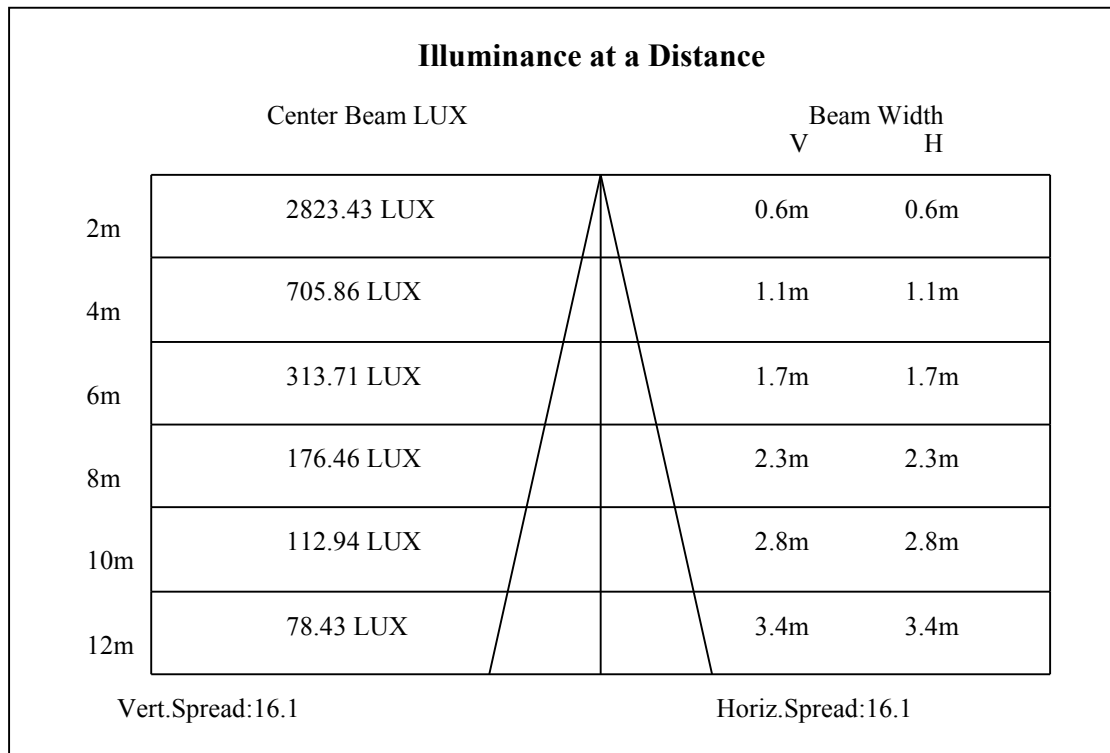
ZONAL LUMEN SUMMARY

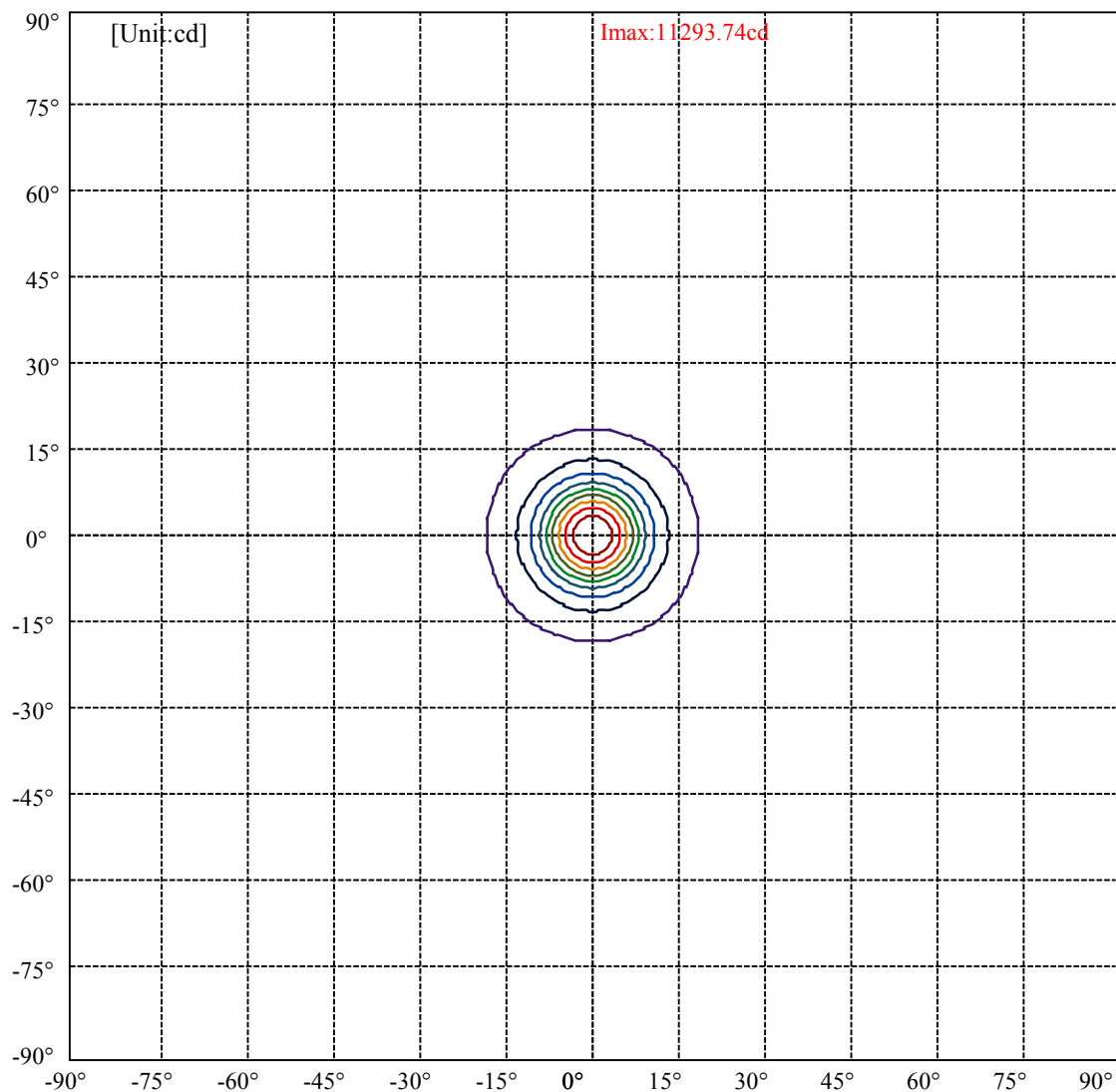
Zone	Lumens	%Lamp	%Fixt
0-30	1505.79	73.70%	85.26%
0-40	1726.94	84.53%	97.78%
0-60	1745.31	85.43%	98.82%
0-90	1765.49	86.42%	99.96%
0-120	1765.49	86.42%	99.96%
0-180	1766.20	86.45%	100.00%
60-90	20.86	1.02%	1.18%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-27.35	1412.96	69.16%	80.00%

ZONAL LUMEN SUMMARY

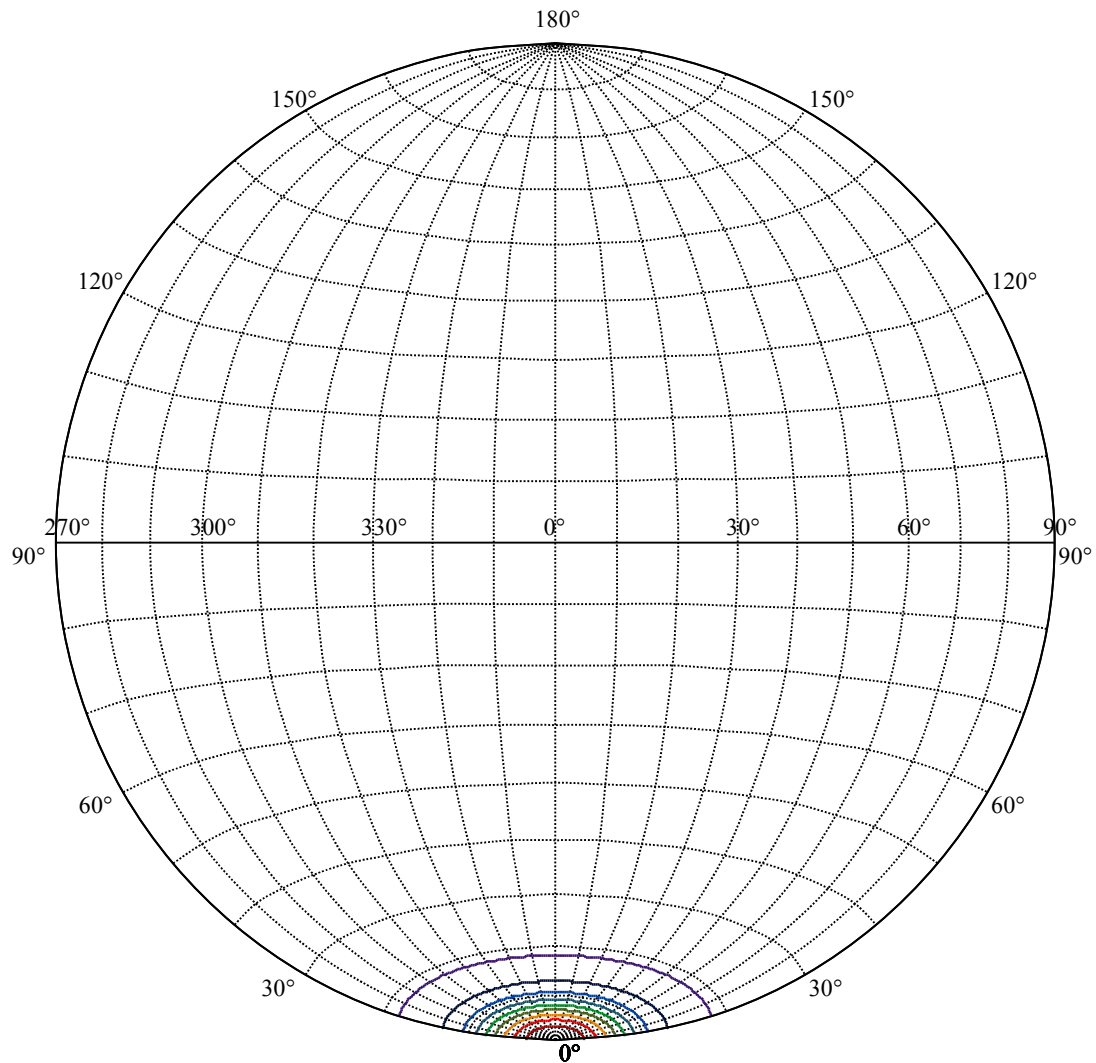
0-10	662.34
10-20	495.45
20-30	348.00
30-40	221.15
40-50	11.35
50-60	7.03
60-70	6.84
70-80	6.97
80-90	6.36
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00







(10%Imax) 1129.37	—
(20%Imax) 2258.75	—
(30%Imax) 3388.12	—
(40%Imax) 4517.49	—
(50%Imax) 5646.87	—
(60%Imax) 6776.24	—
(70%Imax) 7905.61	—
(80%Imax) 9034.99	—
(90%Imax) 10164.4	—



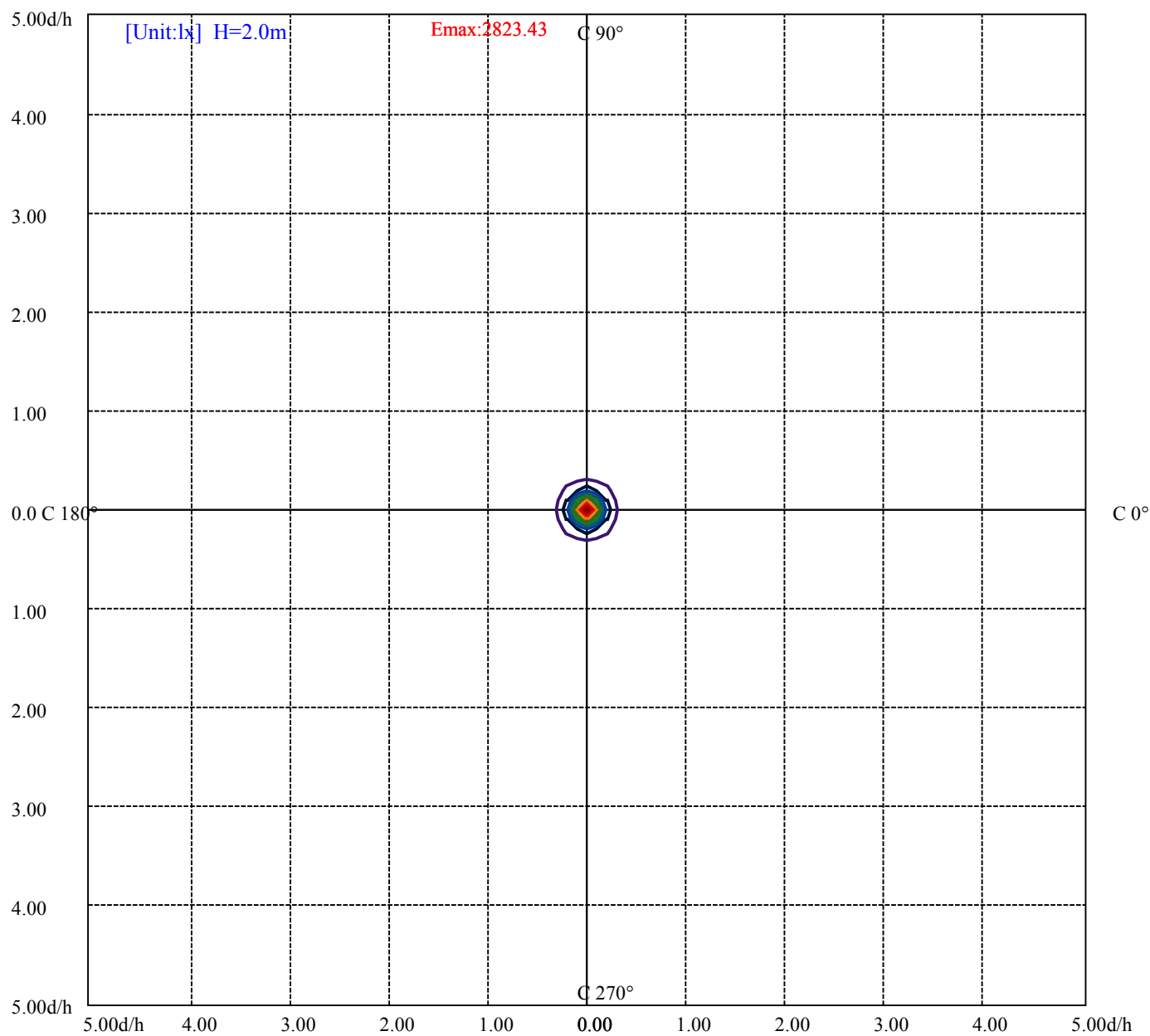
House

[Unit:cd]

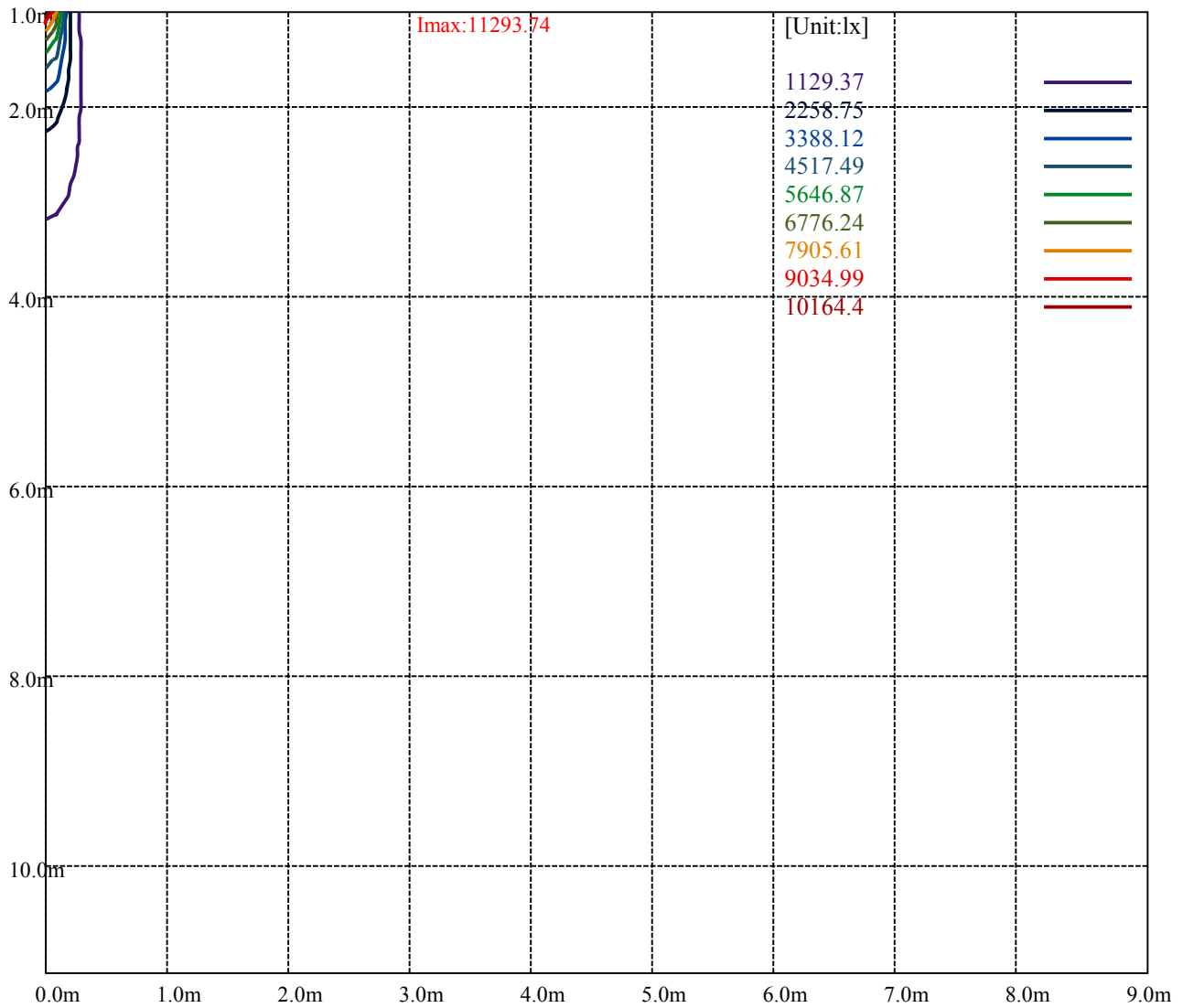
Road

Imax:11293.74

(10%Imax)	1129.37	—
(20%Imax)	2258.75	—
(30%Imax)	3388.12	—
(40%Imax)	4517.49	—
(50%Imax)	5646.87	—
(60%Imax)	6776.24	—
(70%Imax)	7905.61	—
(80%Imax)	9034.99	—
(90%Imax)	10164.4	—



(10%Emax) 282.3425	—
(20%Emax) 564.685	—
(30%Emax) 847.03	—
(40%Emax) 1129.373	—
(50%Emax) 1411.715	—
(60%Emax) 1694.057	—
(70%Emax) 1976.4	—
(80%Emax) 2258.742	—
(90%Emax) 2541.075	—



Luminance Table

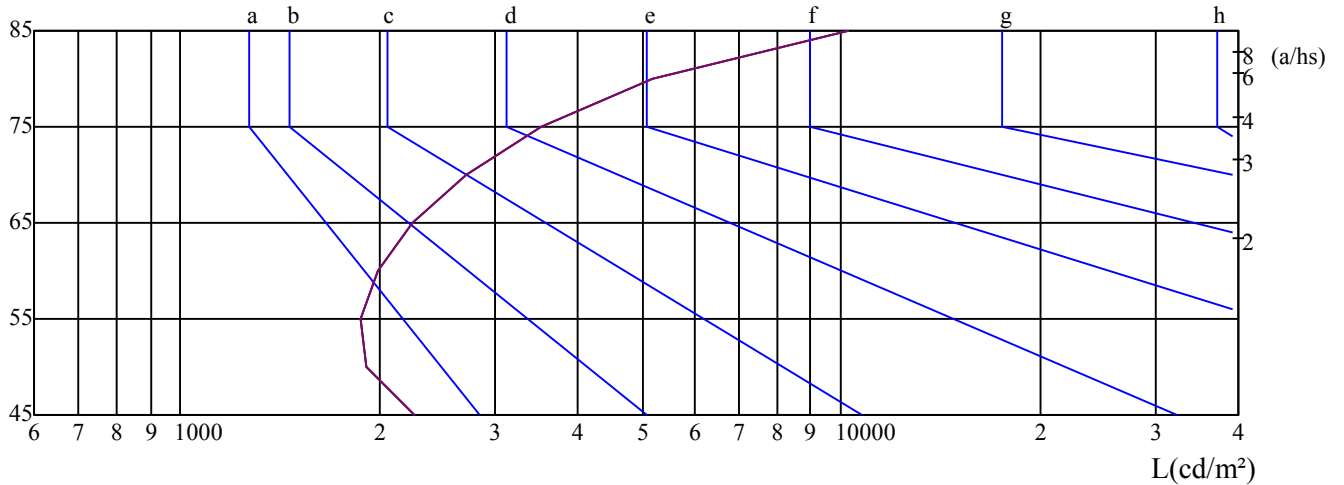
γ	45	50	55	60	65	70	75	80	85
C0	2265	1911	1875	1991	2252	2703	3516	5190	10295
C45	2265	1911	1875	1991	2252	2703	3516	5190	10295
C90	2265	1911	1875	1991	2252	2703	3516	5190	10295

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
2252	2252	2252	3516	3516	3516	10295	10295	10295

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

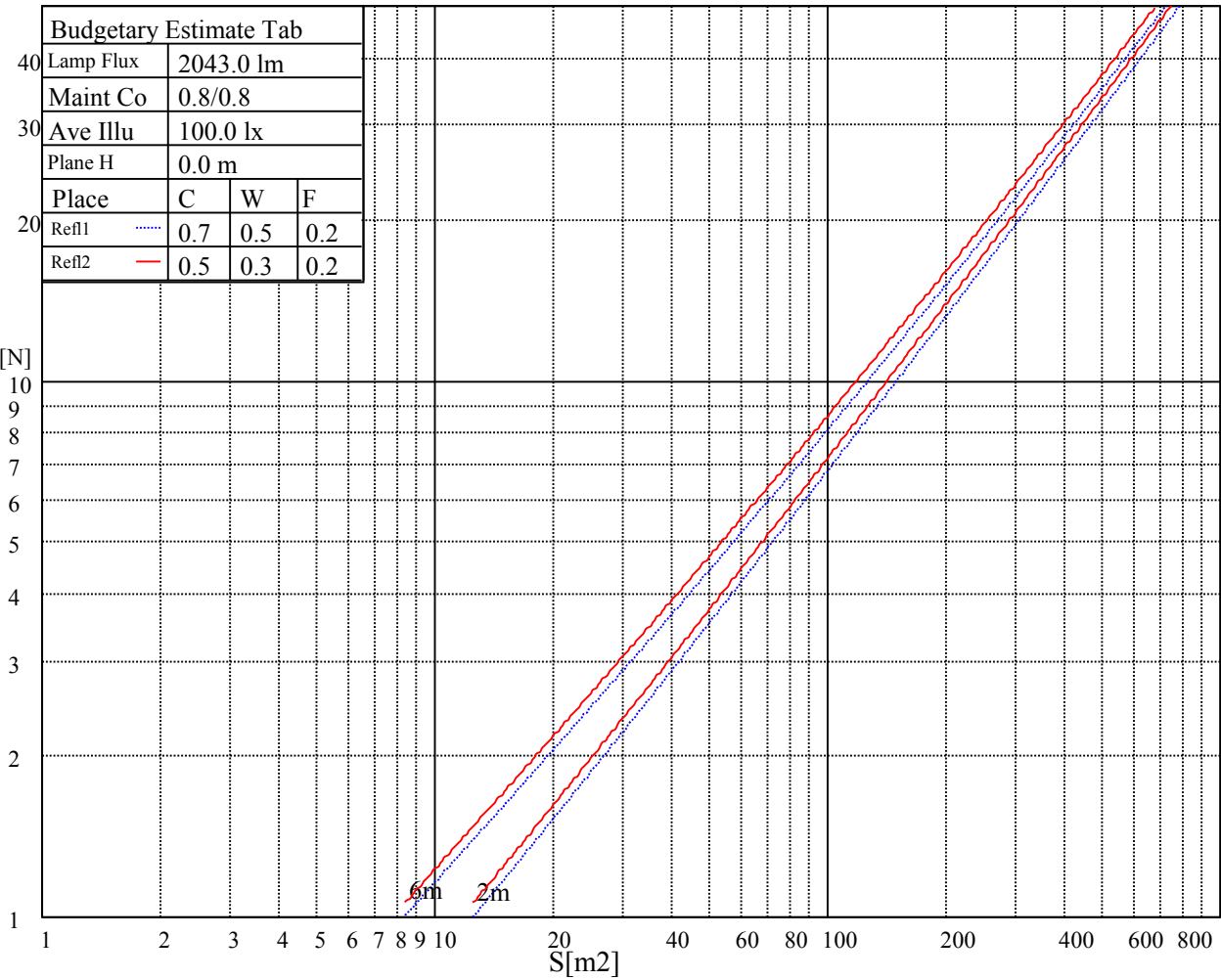
Luminance Limiting Curve

 $\gamma(^{\circ})$ 

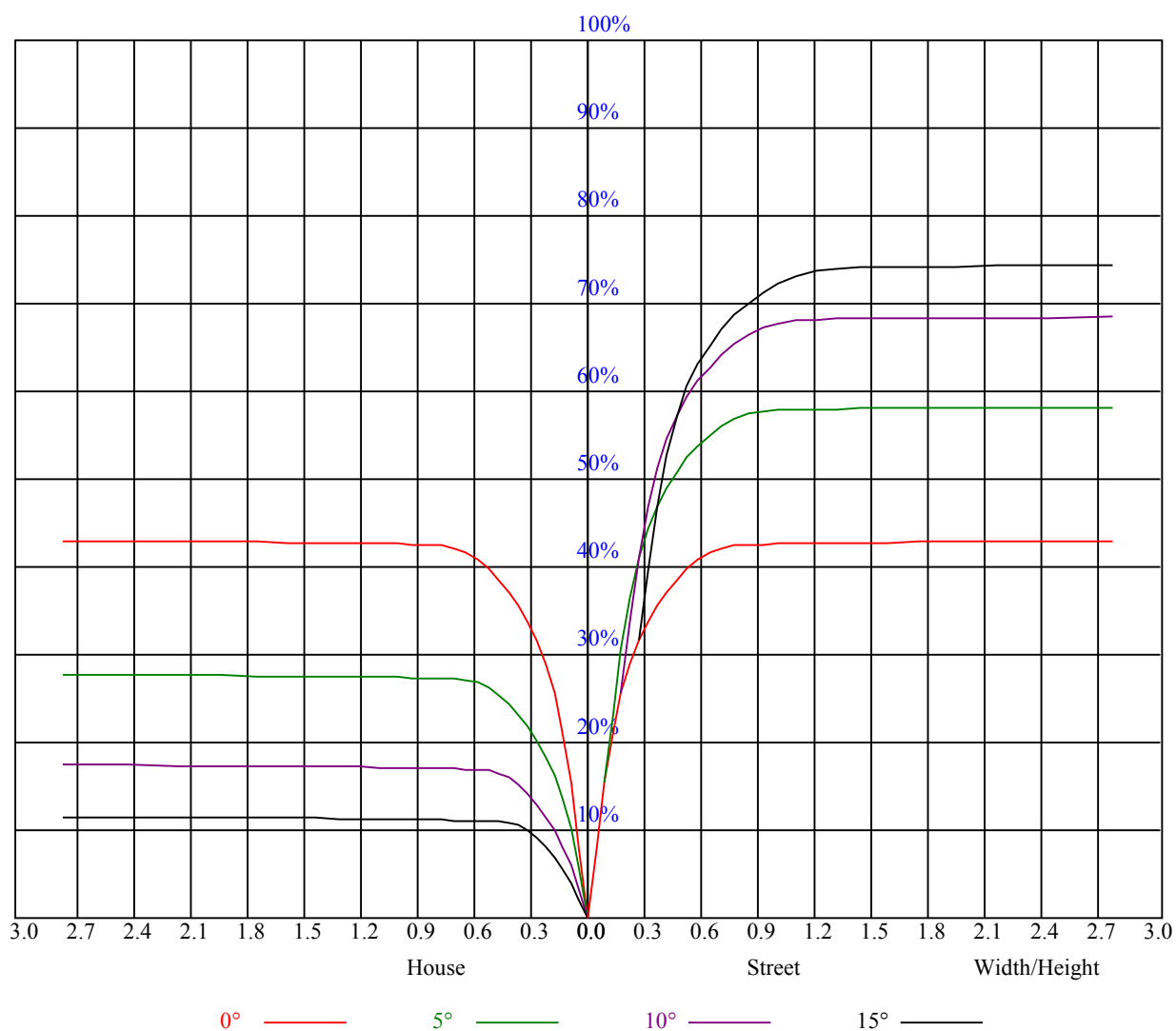
C0 ———

C45 ———

C90 ———



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	1.03	1.03	1.03	1.01	1.01	1.01	0.96	0.96	0.96	0.92	0.92	0.92	0.88	0.88	0.88	0.86
1	0.97	0.95	0.94	0.95	0.94	0.92	0.92	0.90	0.89	0.88	0.87	0.87	0.86	0.85	0.84	0.83
2	0.92	0.89	0.87	0.90	0.88	0.86	0.88	0.86	0.84	0.85	0.84	0.82	0.83	0.82	0.80	0.79
3	0.87	0.84	0.81	0.86	0.83	0.81	0.84	0.82	0.79	0.82	0.80	0.78	0.80	0.79	0.77	0.76
4	0.84	0.80	0.77	0.83	0.79	0.77	0.81	0.78	0.76	0.79	0.77	0.75	0.78	0.76	0.74	0.73
5	0.80	0.76	0.73	0.79	0.76	0.73	0.78	0.75	0.72	0.77	0.74	0.72	0.75	0.73	0.71	0.70
6	0.77	0.73	0.70	0.76	0.73	0.70	0.75	0.72	0.70	0.74	0.71	0.69	0.73	0.71	0.69	0.68
7	0.74	0.70	0.68	0.74	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.67	0.71	0.68	0.66	0.65
8	0.72	0.68	0.65	0.71	0.68	0.65	0.70	0.67	0.65	0.70	0.67	0.64	0.69	0.66	0.64	0.63
9	0.69	0.65	0.63	0.69	0.65	0.63	0.68	0.65	0.63	0.68	0.65	0.62	0.67	0.64	0.62	0.61
10	0.67	0.63	0.61	0.67	0.63	0.61	0.66	0.63	0.61	0.66	0.63	0.61	0.65	0.62	0.60	0.60



NATA 3-2322-M

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	11149.31	11224.69	11424.38	11261.25	10940.63	10293.75	9590.63	8696.25	7492.50
45.0	11508.75	11351.25	11148.75	10760.63	10203.75	9286.88	8364.38	7318.13	6091.88
90.0	11210.63	11075.63	10667.81	9905.06	9106.88	8170.88	6987.38	5789.81	4848.19
135.0	11306.25	11041.88	10456.88	9787.50	8943.75	7807.50	6525.00	5467.50	4471.88
180.0	11149.31	10733.06	9951.75	9109.69	8101.69	6692.06	5713.88	4623.19	3666.38
225.0	11508.75	11225.81	10866.38	10173.38	9413.44	8476.88	7274.25	6053.06	5057.44
270.0	11210.63	11351.25	11199.38	10878.75	10445.63	9495.00	8600.63	7711.88	6361.88
315.0	11306.25	11407.50	11224.69	10984.50	10531.69	9901.69	8838.56	7808.63	6674.63
360.0	11149.31	11224.69	11424.38	11261.25	10940.63	10293.75	9590.63	8696.25	7492.50
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	6176.25	5130.00	4168.13	3487.50	2868.75	2397.38	2061.56	1762.31	1528.88
45.0	4972.50	4134.38	3369.38	2891.25	2409.75	1987.31	1726.31	1495.13	1321.88
90.0	3969.00	3333.94	2757.38	2307.38	1993.50	1712.81	1494.56	1339.31	1104.47
135.0	3667.50	3071.25	2880.00	2178.00	1854.00	1602.56	1425.38	1283.06	1143.56
180.0	3131.44	2581.31	2115.56	1863.00	1631.25	1383.75	1260.00	1118.25	1050.58
225.0	4111.88	3431.25	2818.13	2336.06	1998.56	1703.25	1480.50	1323.56	1113.47
270.0	5214.38	4449.38	3560.63	2998.13	2874.38	2095.88	1814.63	1566.56	1371.94
315.0	5451.75	4426.88	3695.63	3038.06	2523.94	2166.19	1854.00	1633.50	1429.31
360.0	6176.25	5130.00	4168.13	3487.50	2868.75	2397.38	2061.56	1762.31	1528.88
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1364.06	1233.00	1103.63	1018.69	947.81	887.63	828.00	789.75	757.69
45.0	1194.19	1090.13	992.25	925.88	869.06	810.56	772.31	744.19	714.94
90.0	1081.80	1000.80	933.81	863.38	817.82	780.47	743.96	715.22	695.76
135.0	1052.44	977.63	901.13	850.50	809.44	768.94	734.06	713.25	694.13
180.0	956.03	895.56	844.20	793.86	760.73	730.58	705.32	686.36	672.19
225.0	1069.43	992.19	927.51	860.51	816.41	780.47	746.44	718.59	699.86
270.0	1235.81	1129.50	1022.63	951.75	892.69	831.94	793.13	760.50	729.56
315.0	1270.69	1117.58	1061.16	964.63	900.79	848.70	796.73	762.53	735.69
360.0	1364.06	1233.00	1103.63	1018.69	947.81	887.63	828.00	789.75	757.69
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	726.19	707.06	691.88	675.56	660.38	648.56	632.81	581.63	509.06
45.0	693.56	678.38	662.63	648.00	635.63	622.13	581.06	528.75	429.75
90.0	677.98	663.81	648.39	634.28	619.03	570.32	496.63	423.62	346.44
135.0	679.50	663.19	648.00	635.63	595.13	526.50	456.75	373.50	284.06
180.0	657.11	643.56	630.00	598.73	541.01	466.09	382.56	302.34	223.82
225.0	682.71	668.93	654.19	641.59	626.34	578.42	506.64	431.61	353.53
270.0	707.06	690.19	676.69	661.50	646.88	631.69	592.88	531.00	439.31
315.0	712.69	693.68	679.28	663.36	650.76	635.23	588.83	525.88	442.58
360.0	726.19	707.06	691.88	675.56	660.38	648.56	632.81	581.63	509.06
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	435.38	353.81	290.81	170.78	104.01	49.61	23.06	20.36	17.38
45.0	354.38	288.00	183.38	114.19	57.88	23.68	20.36	17.21	13.78
90.0	250.76	176.57	108.00	43.71	23.06	20.25	16.54	13.73	11.98
135.0	193.16	119.70	62.94	25.59	20.76	18.23	14.51	12.83	11.08
180.0	136.97	74.64	33.02	20.64	18.23	15.36	12.83	11.08	10.18
225.0	264.21	178.99	109.58	55.24	22.84	19.97	17.33	13.73	11.93
270.0	361.69	291.38	182.03	111.60	56.53	26.78	20.98	18.28	15.02
315.0	350.10	267.41	191.98	106.48	53.04	25.31	20.98	18.06	15.13
360.0	435.38	353.81	290.81	170.78	104.01	49.61	23.06	20.36	17.38

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Intensity data(cd)										Appendix Page: 17 Total:18	
C/ γ (°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0		
0.0	13.73	12.09	10.86	10.29	9.84	9.45	9.06	8.78	8.49		
45.0	11.98	10.52	9.84	9.51	9.17	8.83	8.55	8.27	8.04		
90.0	10.63	10.24	9.84	9.39	9.11	8.78	8.49	8.27	8.04		
135.0	10.46	9.96	9.62	9.23	9.00	8.66	8.38	8.16	7.99		
180.0	9.73	9.34	9.00	8.72	8.44	8.21	7.99	7.88	7.71		
225.0	10.35	9.84	9.45	9.06	8.78	8.49	8.27	8.04	7.88		
270.0	12.99	11.48	10.52	10.07	9.62	9.23	8.89	8.61	8.33		
315.0	12.71	11.31	10.74	10.13	9.79	9.34	8.94	8.66	8.44		
360.0	13.73	12.09	10.86	10.29	9.84	9.45	9.06	8.78	8.49		
C/ γ (°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0		
0.0	8.27	8.10	7.93	7.71	7.54	7.43	7.37	7.26	7.20		
45.0	7.88	7.71	7.59	7.48	7.37	7.26	7.20	7.09	7.03		
90.0	7.82	7.76	7.59	7.48	7.31	7.26	7.14	7.09	6.98		
135.0	7.82	7.71	7.54	7.43	7.31	7.26	7.14	7.09	7.03		
180.0	7.54	7.43	7.31	7.26	7.14	7.09	7.03	6.98	6.92		
225.0	7.71	7.54	7.43	7.26	7.14	7.14	7.03	6.92	6.92		
270.0	8.16	7.93	7.76	7.65	7.54	7.43	7.31	7.14	7.09		
315.0	8.16	7.99	7.88	7.65	7.54	7.37	7.31	7.20	7.14		
360.0	8.27	8.10	7.93	7.71	7.54	7.43	7.37	7.26	7.20		
C/ γ (°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0		
0.0	7.09	6.98	6.98	6.92	6.86	6.81	6.81	6.75	6.75		
45.0	6.98	6.92	6.86	6.81	6.81	6.75	6.69	6.69	6.64		
90.0	6.98	6.92	6.86	6.81	6.75	6.75	6.69	6.64	6.64		
135.0	6.98	6.92	6.86	6.81	6.81	6.75	6.75	6.69	6.64		
180.0	6.86	6.81	6.81	6.75	6.75	6.69	6.69	6.69	6.64		
225.0	6.81	6.81	6.75	6.75	6.69	6.69	6.64	6.58	6.58		
270.0	7.03	6.98	6.92	6.86	6.81	6.81	6.69	6.69	6.69		
315.0	7.09	7.03	6.98	6.92	6.86	6.81	6.75	6.69	6.69		
360.0	7.09	6.98	6.98	6.92	6.86	6.81	6.81	6.75	6.75		
C/ γ (°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0		
0.0	6.69	6.69	6.69	6.64	6.64	6.58	6.64	6.58	6.58		
45.0	6.64	6.64	6.58	6.58	6.58	6.53	6.53	6.53	6.47		
90.0	6.64	6.58	6.58	6.53	6.53	6.53	6.53	6.47	6.47		
135.0	6.64	6.64	6.64	6.58	6.58	6.53	6.58	6.58	6.53		
180.0	6.64	6.58	6.58	6.58	6.58	6.58	6.58	6.58	6.53		
225.0	6.58	6.58	6.58	6.53	6.53	6.47	6.53	6.47	6.47		
270.0	6.64	6.64	6.64	6.58	6.58	6.58	6.53	6.53	6.53		
315.0	6.69	6.64	6.64	6.58	6.58	6.53	6.58	6.53	6.53		
360.0	6.69	6.69	6.69	6.64	6.64	6.58	6.64	6.58	6.58		
C/ γ (°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0		
0.0	6.53	6.58	6.58	6.53	6.53	6.53	6.53	6.53	6.53		
45.0	6.47	6.47	6.53	6.47	6.47	6.47	6.47	6.41	6.47		
90.0	6.53	6.53	6.47	6.47	6.41	6.47	6.41	6.41	6.41		
135.0	6.53	6.47	6.53	6.53	6.47	6.47	6.47	6.47	6.47		
180.0	6.53	6.53	6.53	6.47	6.53	6.47	6.47	6.47	6.47		
225.0	6.47	6.47	6.47	6.41	6.47	6.41	6.41	6.41	6.41		
270.0	6.53	6.47	6.47	6.47	6.47	6.47	6.47	6.41	6.41		
315.0	6.53	6.53	6.53	6.47	6.53	6.53	6.47	6.47	6.47		
360.0	6.53	6.58	6.58	6.53	6.53	6.53	6.53	6.53	6.53		

Intensity data(cd)

Appendix Page: 18 Total:18

C/ $\gamma(^{\circ})$	90.0
0.0	6.47
45.0	6.47
90.0	6.41
135.0	6.47
180.0	6.47
225.0	6.41
270.0	6.47
315.0	6.47
360.0	6.47