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NATA

LumCAT: 2-1536-A	
Luminaire:92.76.323.00	
Report No: NATA0100	Voltage(V): 36.1000
Test No: GC2018111008	Current(A): 0.6000
LampCAT: Philips SLM 1205 G7	Power (W): 21.6600
Lamp flux(lm): 2840.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 70	Width(mm): 70
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 2527.43
Efficiency(%): 88.99%
Lumens(lm)/Power(W): 116.87
Central intensity(cd): 16729.450
Maximum intensity(cd): 16729.450
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=15.0
[C90/270]Total=15.0
Field angle(10%Imax): [C0/180]Total=33.2
[C90/270]Total=33.2
Maximum s/h(1/2): C0_180=0.26 C90_270=0.26
Maximum s/h(1/4): C0_180=0.27 C90_270=0.27
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 89.13%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.425%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	16729.453	4.002	4.002	.141%	.158%
1.0	16557.188	31.688	35.69	1.116%	1.412%
2.0	16038.281	61.380	97.071	2.161%	3.841%
3.0	15120.703	86.781	183.851	3.056%	7.274%
4.0	13874.766	106.136	289.987	3.737%	11.474%
5.0	12440.672	118.903	408.89	4.187%	16.178%
6.0	10790.438	123.687	532.577	4.355%	21.072%
7.0	9112.008	121.776	654.353	4.288%	25.890%
8.0	7634.109	116.511	770.863	4.102%	30.500%
9.0	6168.938	105.827	876.69	3.726%	34.687%
10.0	4948.383	94.229	970.919	3.318%	38.415%
11.0	4071.727	85.198	1056.117	3.000%	41.786%
12.0	3397.359	77.459	1133.576	2.727%	44.851%
13.0	2808.844	69.289	1202.866	2.440%	47.592%
14.0	2400.188	63.675	1266.541	2.242%	50.112%
15.0	2061.773	58.518	1325.059	2.060%	52.427%
16.0	1778.625	53.762	1378.821	1.893%	54.554%
17.0	1597.500	51.219	1430.039	1.803%	56.581%
18.0	1452.727	49.229	1479.268	1.733%	58.529%
19.0	1340.648	47.864	1527.132	1.685%	60.422%
20.0	1265.625	47.469	1574.601	1.671%	62.300%
21.0	1210.219	47.560	1622.161	1.675%	64.182%
22.0	1168.052	47.983	1670.144	1.690%	66.081%
23.0	1135.385	48.649	1718.793	1.713%	68.006%
24.0	1105.327	49.301	1768.094	1.736%	69.956%
25.0	1079.852	50.045	1818.14	1.762%	71.936%
26.0	1058.562	50.887	1869.027	1.792%	73.950%
27.0	1033.580	51.457	1920.484	1.812%	75.986%
28.0	1007.297	51.858	1972.342	1.826%	78.037%
29.0	981.865	52.201	2024.543	1.838%	80.103%
30.0	960.286	52.653	2077.196	1.854%	82.186%
31.0	934.052	52.755	2129.95	1.858%	84.273%
32.0	899.023	52.243	2182.194	1.840%	86.340%
33.0	849.734	50.751	2232.945	1.787%	88.348%
34.0	767.827	47.084	2280.029	1.658%	90.211%
35.0	680.618	42.810	2322.839	1.507%	91.905%
36.0	581.667	37.493	2360.332	1.320%	93.389%
37.0	472.465	31.181	2391.512	1.098%	94.622%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	374.140	25.260	2416.772	.889%	95.622%
39.0	280.884	19.384	2436.156	.683%	96.389%
40.0	185.182	13.053	2449.21	.460%	96.905%
41.0	110.025	7.916	2457.125	.279%	97.218%
42.0	64.645	4.744	2461.869	.167%	97.406%
43.0	41.970	3.139	2465.008	.111%	97.530%
44.0	35.177	2.680	2467.687	.094%	97.636%
45.0	30.938	2.399	2470.086	.084%	97.731%
46.0	27.183	2.144	2472.23	.076%	97.816%
47.0	23.899	1.917	2474.147	.067%	97.892%
48.0	21.480	1.751	2475.898	.062%	97.961%
49.0	18.464	1.528	2477.426	.054%	98.022%
50.0	16.587	1.393	2478.819	.049%	98.077%
51.0	15.659	1.334	2480.154	.047%	98.130%
52.0	15.166	1.311	2481.464	.046%	98.181%
53.0	14.766	1.293	2482.757	.046%	98.233%
54.0	14.428	1.280	2484.037	.045%	98.283%
55.0	14.077	1.264	2485.302	.045%	98.333%
56.0	13.774	1.252	2486.554	.044%	98.383%
57.0	13.507	1.242	2487.796	.044%	98.432%
58.0	13.233	1.231	2489.027	.043%	98.481%
59.0	13.036	1.225	2490.252	.043%	98.529%
60.0	12.818	1.217	2491.47	.043%	98.577%
61.0	12.614	1.210	2492.68	.043%	98.625%
62.0	12.452	1.206	2493.885	.042%	98.673%
63.0	12.312	1.203	2495.088	.042%	98.720%
64.0	12.185	1.201	2496.289	.042%	98.768%
65.0	12.136	1.206	2497.495	.042%	98.816%
66.0	12.263	1.228	2498.724	.043%	98.864%
67.0	12.558	1.268	2499.991	.045%	98.914%
68.0	12.769	1.298	2501.29	.046%	98.966%
69.0	12.649	1.295	2502.585	.046%	99.017%
70.0	12.277	1.265	2503.85	.045%	99.067%
71.0	11.974	1.242	2505.091	.044%	99.116%
72.0	11.777	1.228	2506.32	.043%	99.165%
73.0	11.728	1.230	2507.55	.043%	99.213%
74.0	11.735	1.237	2508.787	.044%	99.262%
75.0	11.756	1.245	2510.032	.044%	99.312%

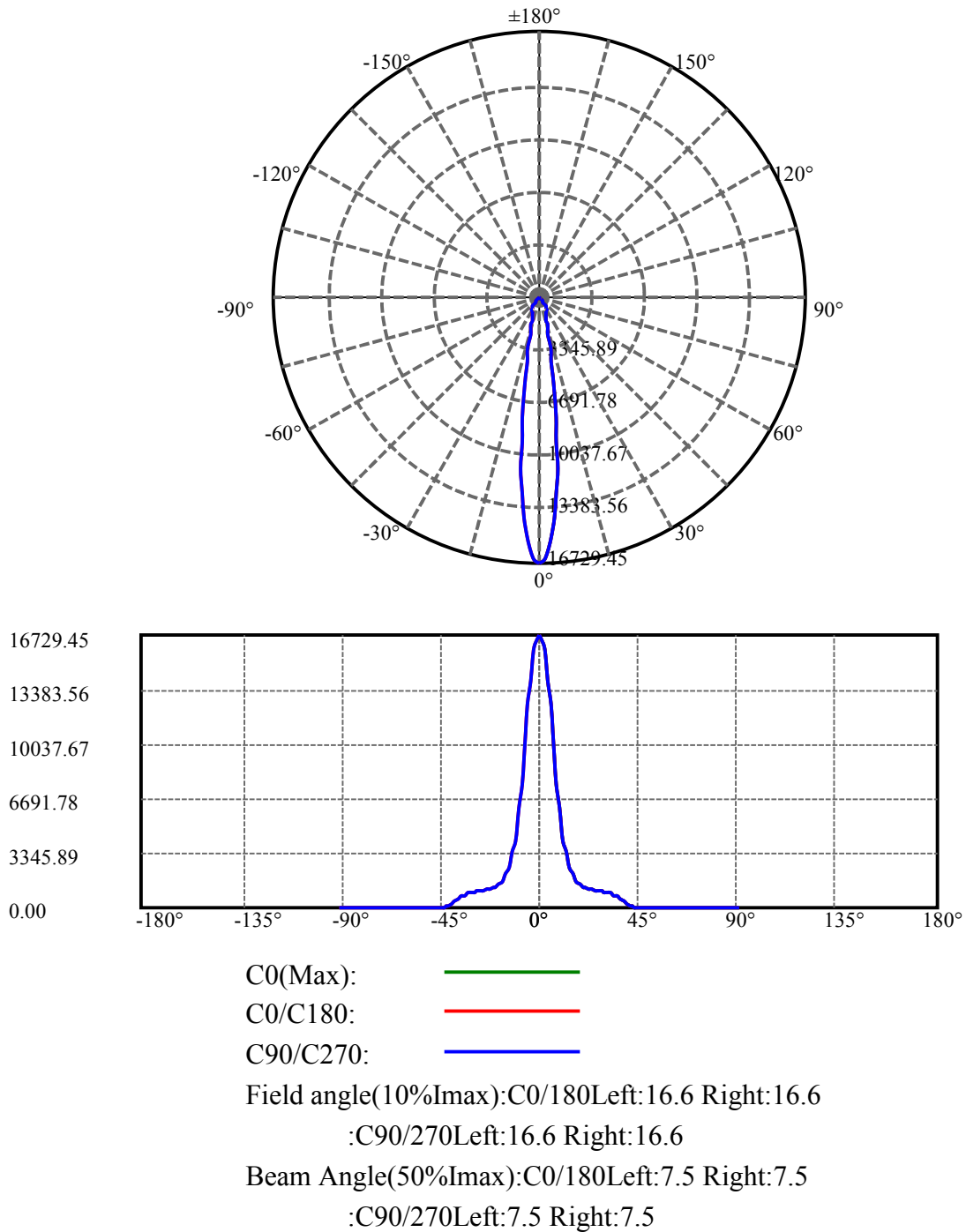
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	11.728	1.248	2511.28	.044%	99.361%
77.0	11.735	1.254	2512.534	.044%	99.411%
78.0	11.749	1.260	2513.794	.044%	99.461%
79.0	11.756	1.266	2515.06	.045%	99.511%
80.0	11.672	1.261	2516.32	.044%	99.560%
81.0	11.285	1.222	2517.542	.043%	99.609%
82.0	11.060	1.201	2518.743	.042%	99.656%
83.0	10.948	1.192	2519.935	.042%	99.703%
84.0	10.835	1.182	2521.117	.042%	99.750%
85.0	10.730	1.172	2522.289	.041%	99.797%
86.0	10.652	1.165	2523.454	.041%	99.843%
87.0	10.540	1.154	2524.608	.041%	99.888%
88.0	10.364	1.136	2525.744	.040%	99.933%
89.0	10.252	1.124	2526.868	.040%	99.978%
90.0	10.230	0.561	2527.429	.020%	100.000%

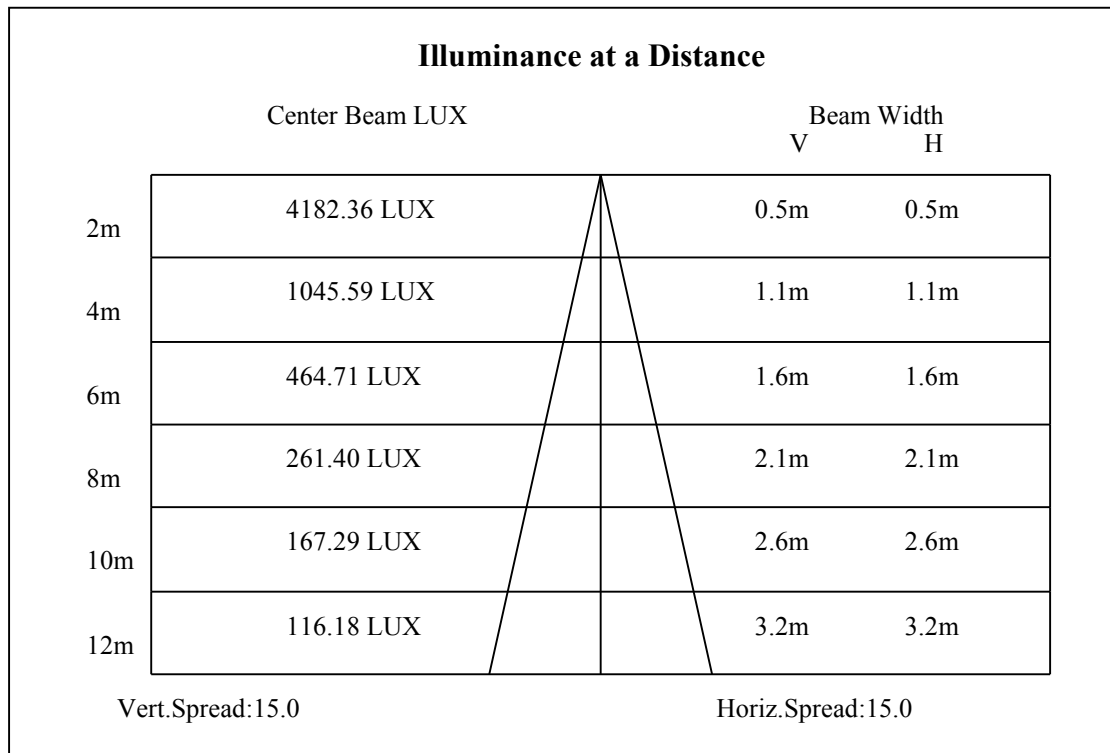
ZONAL LUMEN SUMMARY

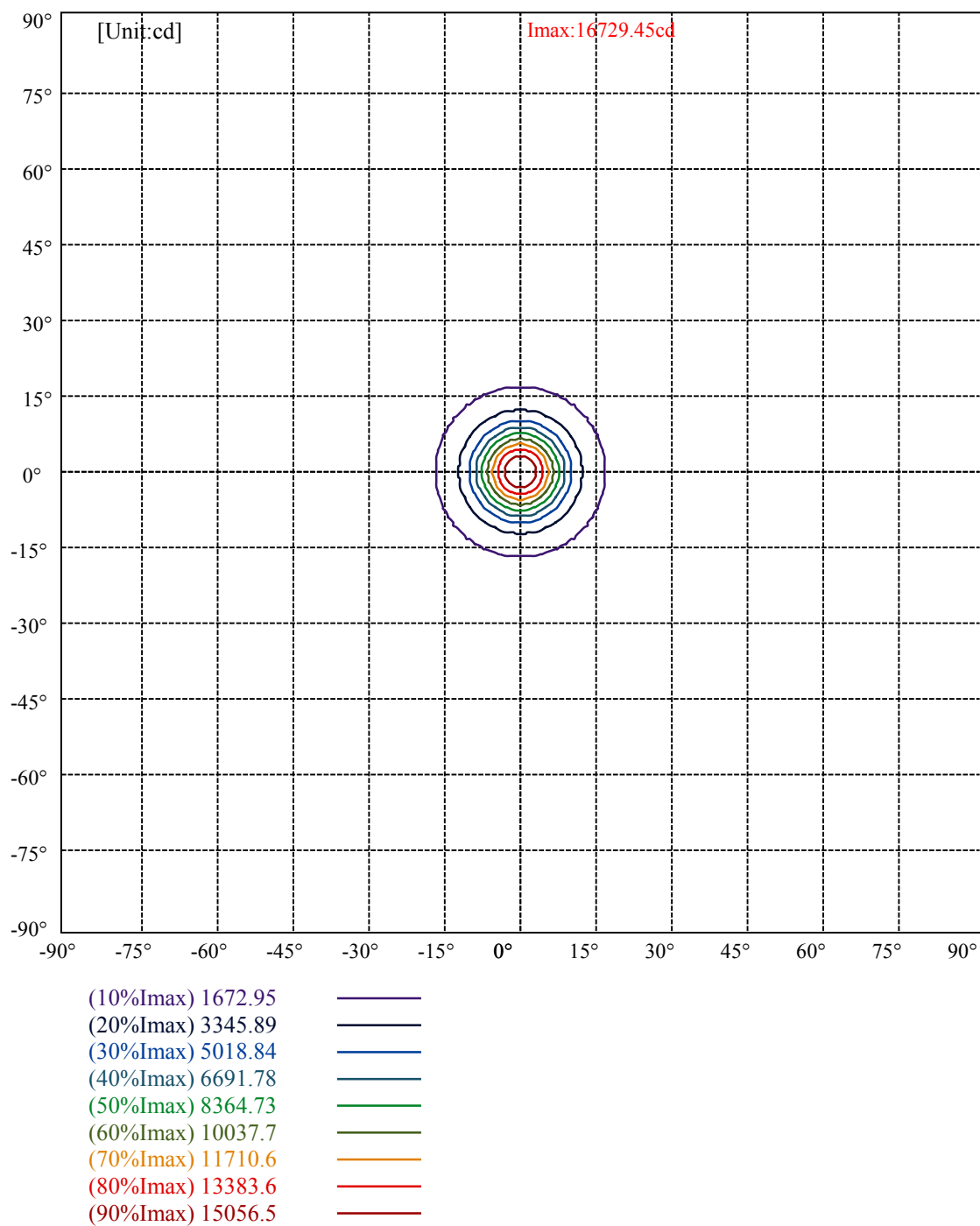
Zone	Lumens	%Lamp	%Fixt
0-30	2077.20	73.14%	82.19%
0-40	2449.21	86.24%	96.91%
0-60	2491.47	87.73%	98.58%
0-90	2526.87	88.97%	99.98%
0-120	2526.87	88.97%	99.98%
0-180	2527.43	88.99%	100.00%
60-90	36.62	1.29%	1.45%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-28.95	2021.94	71.20%	80.00%

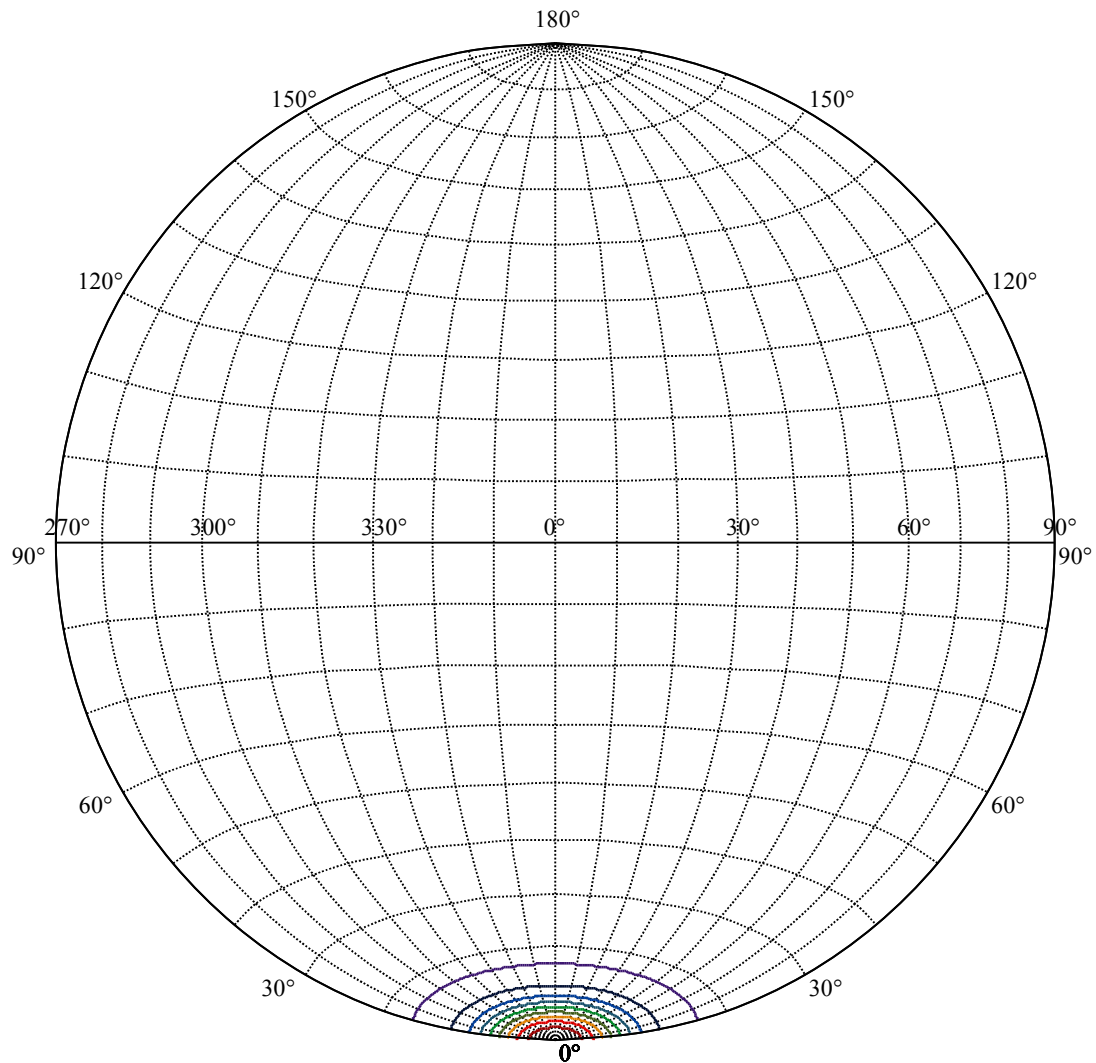
ZONAL LUMEN SUMMARY

0-10	970.92
10-20	603.68
20-30	502.59
30-40	372.01
40-50	29.61
50-60	12.65
60-70	12.38
70-80	12.47
80-90	10.55
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









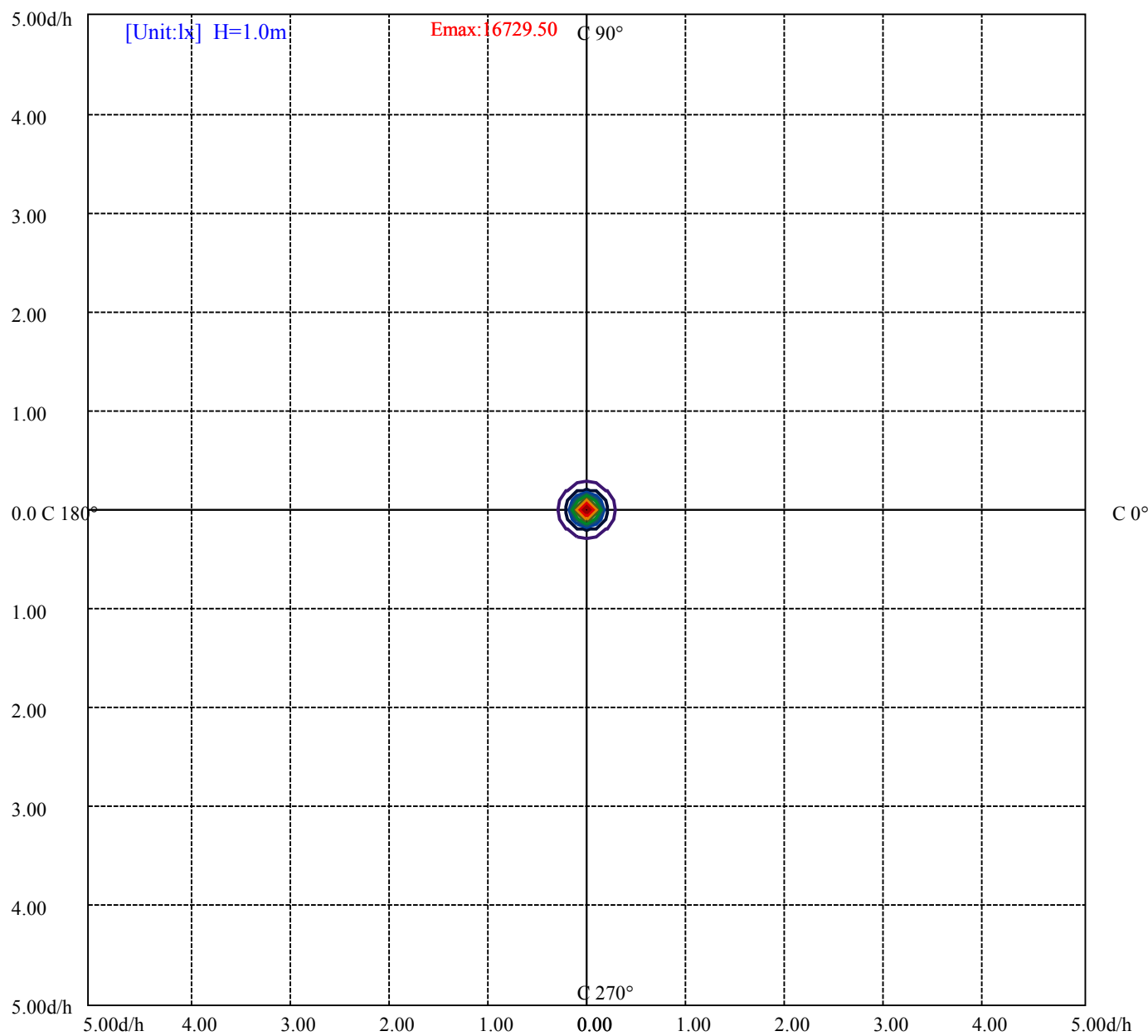
House

[Unit:cd]

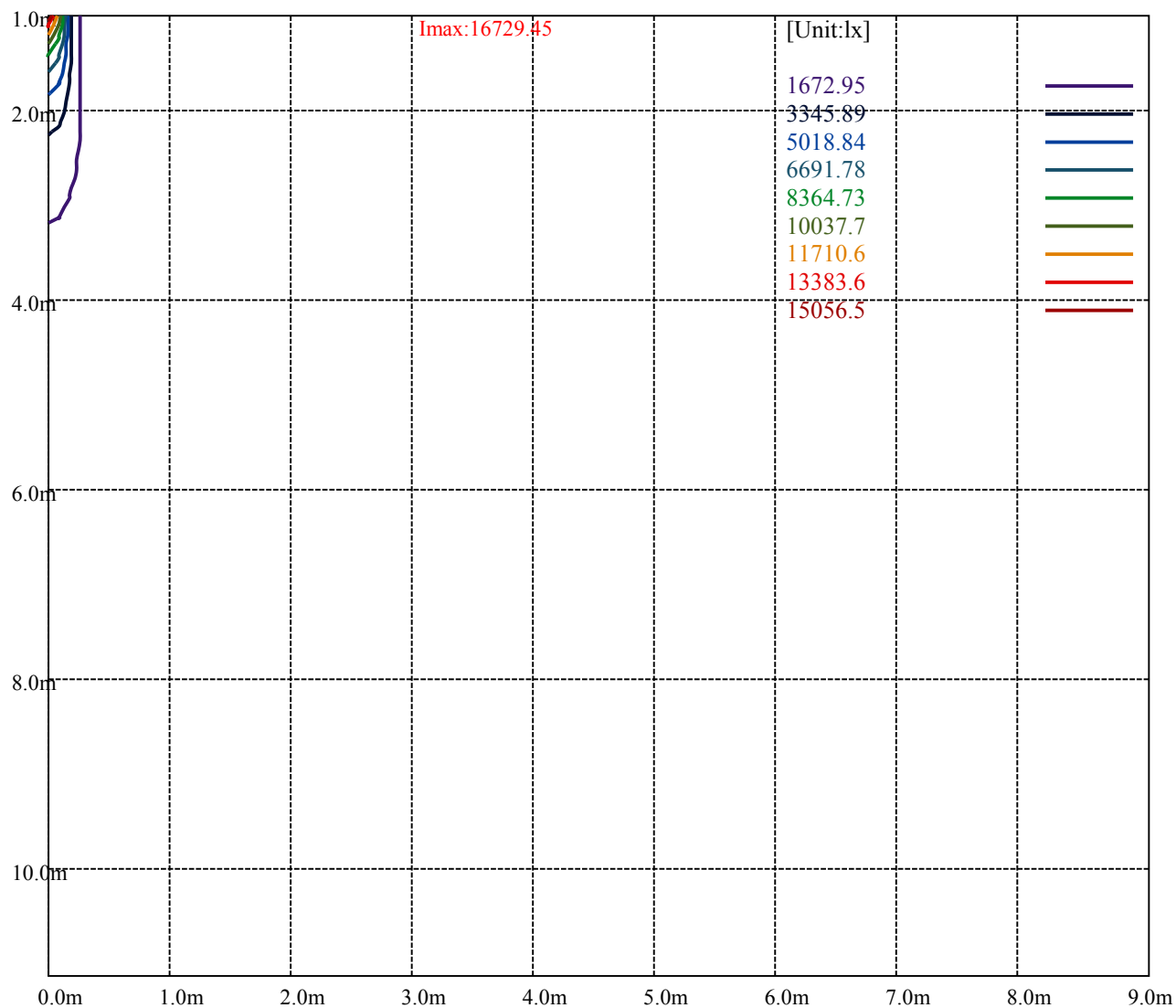
Road

Imax:16729.45

(10%Imax)	1672.95	—
(20%Imax)	3345.89	—
(30%Imax)	5018.84	—
(40%Imax)	6691.78	—
(50%Imax)	8364.73	—
(60%Imax)	10037.7	—
(70%Imax)	11710.6	—
(80%Imax)	13383.6	—
(90%Imax)	15056.5	—



(10%E _{max}) 1672.94	—
(20%E _{max}) 3345.89	—
(30%E _{max}) 5018.83	—
(40%E _{max}) 6691.77	—
(50%E _{max}) 8364.71	—
(60%E _{max}) 10037.7	—
(70%E _{max}) 11710.6	—
(80%E _{max}) 13383.5	—
(90%E _{max}) 15056.5	—



Luminance Table

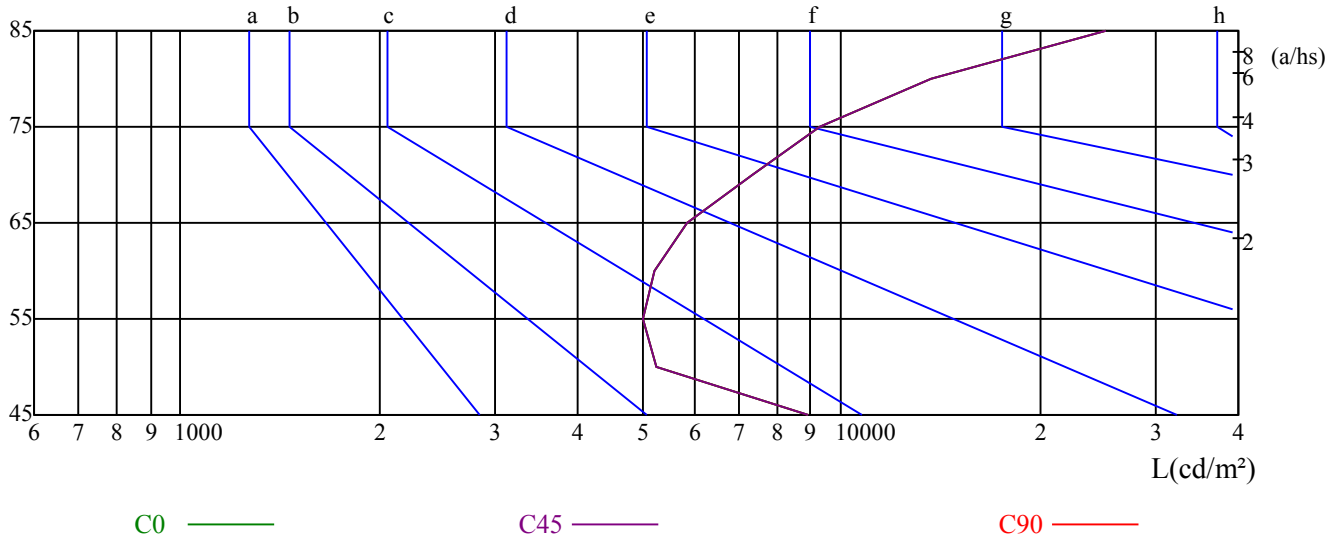
γ	45	50	55	60	65	70	75	80	85
C0	8929	5266	5009	5232	5860	7325	9270	13717	25124
C45	8929	5266	5009	5232	5860	7325	9270	13717	25124
C90	8929	5266	5009	5232	5860	7325	9270	13717	25124

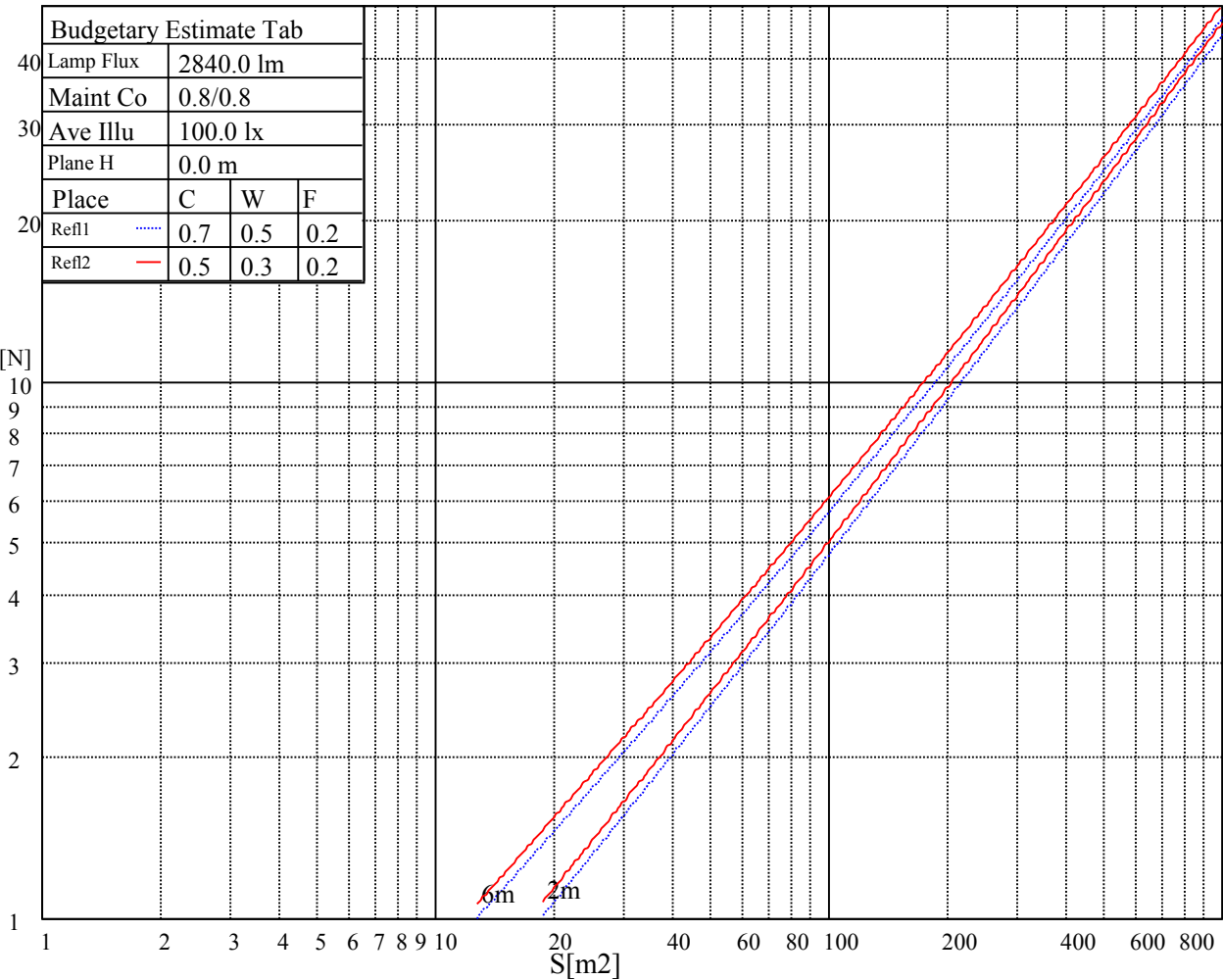
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
5860	5860	5860	9270	9270	9270	25124	25124	25124

Glare Table

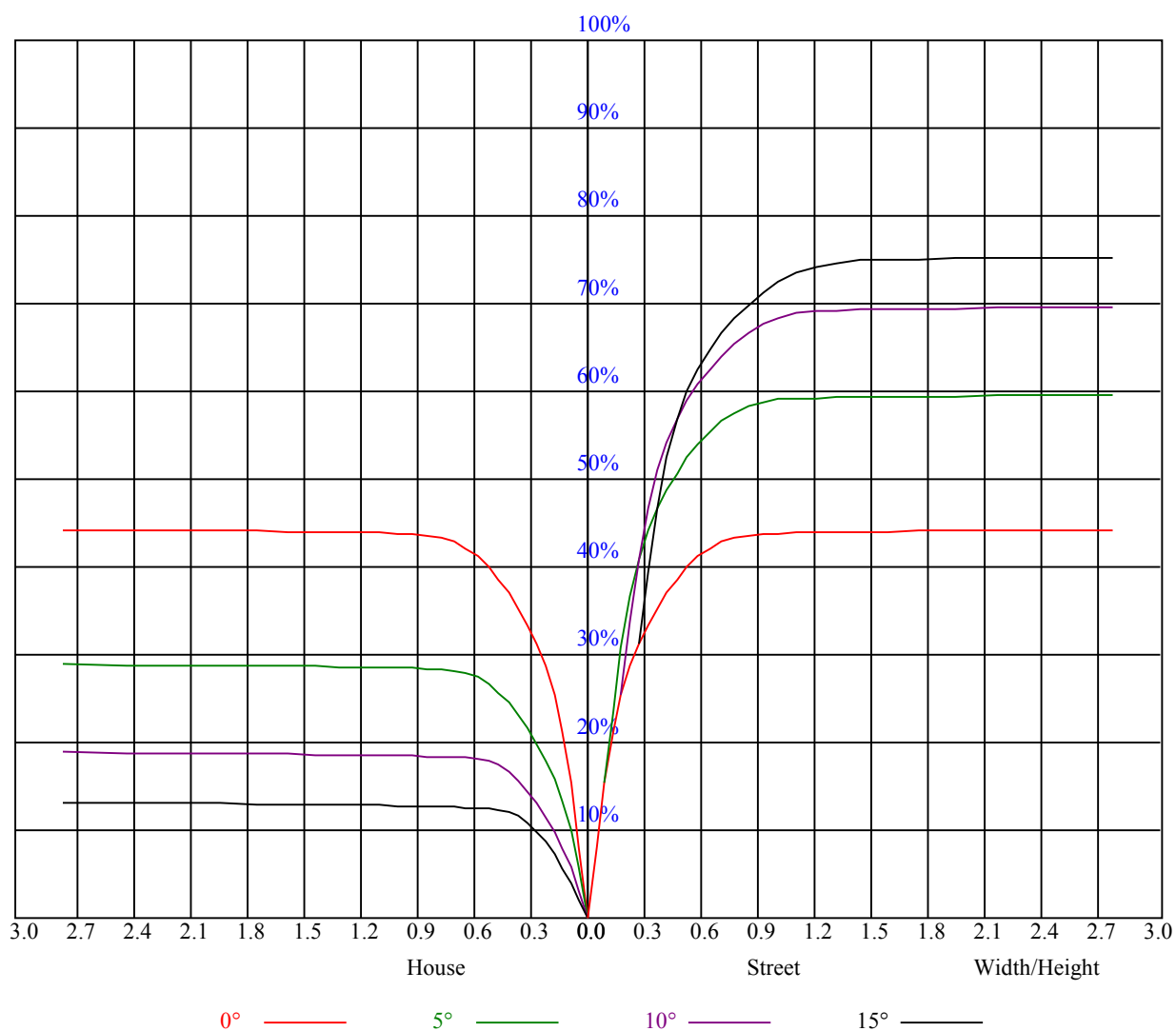
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

Luminance Limiting Curve

 $\gamma(^{\circ})$ 



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	1.06	1.06	1.06	1.04	1.04	1.04	0.99	0.99	0.99	0.95	0.95	0.95	0.91	0.91	0.91	0.89
1	1.00	0.98	0.96	0.98	0.96	0.94	0.94	0.93	0.91	0.91	0.90	0.89	0.88	0.87	0.86	0.85
2	0.94	0.91	0.89	0.93	0.90	0.88	0.90	0.88	0.86	0.87	0.86	0.84	0.85	0.84	0.82	0.81
3	0.90	0.86	0.83	0.88	0.85	0.82	0.86	0.83	0.81	0.84	0.82	0.80	0.82	0.80	0.79	0.77
4	0.85	0.81	0.78	0.84	0.81	0.78	0.83	0.80	0.77	0.81	0.78	0.76	0.79	0.77	0.75	0.74
5	0.82	0.78	0.75	0.81	0.77	0.74	0.80	0.76	0.74	0.78	0.75	0.73	0.77	0.74	0.72	0.71
6	0.79	0.74	0.71	0.78	0.74	0.71	0.77	0.73	0.71	0.75	0.72	0.70	0.74	0.72	0.70	0.69
7	0.76	0.71	0.68	0.75	0.71	0.68	0.74	0.70	0.68	0.73	0.70	0.68	0.72	0.69	0.67	0.66
8	0.73	0.69	0.66	0.72	0.68	0.66	0.72	0.68	0.65	0.71	0.68	0.65	0.70	0.67	0.65	0.64
9	0.70	0.66	0.64	0.70	0.66	0.64	0.69	0.66	0.63	0.69	0.65	0.63	0.68	0.65	0.63	0.62
10	0.68	0.64	0.62	0.68	0.64	0.61	0.67	0.64	0.61	0.67	0.63	0.61	0.66	0.63	0.61	0.60



NATA 2-1536-A

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	16970.63	16650.00	15952.50	14945.63	13516.88	11840.63	10237.50	8448.75	7014.38
45.0	16441.88	15868.13	14855.63	13550.63	12172.50	10659.38	8673.75	7222.50	5968.13
90.0	16644.38	16284.38	15648.75	14585.63	13241.25	11222.44	10224.00	8240.06	6780.94
135.0	16869.38	16987.50	16773.75	16188.75	15345.00	14062.50	12465.00	10918.13	9337.50
180.0	16953.75	16920.00	16560.00	15738.75	14748.75	13460.63	11137.50	9930.94	8343.56
225.0	16441.88	16734.38	16655.63	16166.25	15260.63	14169.38	12802.50	10895.63	9312.75
270.0	16644.38	16650.00	16295.63	15502.50	14445.00	12943.13	11244.38	9646.88	8077.50
315.0	16869.38	16363.13	15564.38	14287.50	12268.13	11167.31	9538.88	7593.19	6238.13
360.0	16970.63	16650.00	15952.50	14945.63	13516.88	11840.63	10237.50	8448.75	7014.38
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	5664.38	4595.63	3841.88	3318.75	2885.63	2304.56	2007.56	1717.88	1542.38
45.0	4668.75	3858.75	3234.38	2857.50	2277.56	1990.13	1737.56	1541.81	1416.38
90.0	5529.38	4316.06	3594.94	3027.94	2535.19	2168.44	1920.38	1690.31	1518.75
135.0	7402.50	6035.63	4921.88	3948.75	3217.50	2840.63	2396.25	1977.19	1758.94
180.0	6864.75	5315.63	4353.75	3591.00	2932.31	2436.75	2102.06	1819.13	1624.50
225.0	7781.06	6216.19	4936.50	4058.44	3309.75	2741.06	2357.44	2036.25	1813.50
270.0	6316.88	5191.88	4286.25	3493.13	2891.25	2651.63	2148.19	1838.25	1645.88
315.0	5123.81	4057.31	3404.25	2883.38	2421.56	2068.31	1824.75	1608.19	1459.69
360.0	5664.38	4595.63	3841.88	3318.75	2885.63	2304.56	2007.56	1717.88	1542.38
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1417.50	1321.88	1258.88	1216.69	1178.44	1150.31	1122.75	1095.19	1072.13
45.0	1315.69	1252.13	1198.69	1157.63	1130.63	1104.19	1076.06	1052.44	1031.63
90.0	1373.63	1274.63	1211.63	1161.56	1121.23	1095.41	1073.19	1049.68	1027.63
135.0	1597.50	1427.06	1316.25	1251.00	1187.44	1146.94	1121.63	1090.69	1070.44
180.0	1459.69	1340.44	1261.69	1199.25	1156.50	1120.11	1094.18	1066.22	1045.52
225.0	1615.50	1458.56	1356.19	1273.50	1216.69	1179.00	1121.57	1109.14	1088.27
270.0	1499.63	1384.88	1302.75	1242.56	1200.38	1166.63	1135.13	1107.00	1082.81
315.0	1342.69	1265.63	1218.94	1179.56	1153.13	1120.50	1098.11	1068.47	1050.08
360.0	1417.50	1321.88	1258.88	1216.69	1178.44	1150.31	1122.75	1095.19	1072.13
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	1044.56	1013.63	990.00	967.50	941.63	907.88	841.50	740.25	652.50
45.0	997.31	972.56	949.50	925.31	893.81	830.25	743.06	655.31	550.69
90.0	1006.54	983.36	958.33	939.32	919.63	883.35	820.52	742.67	642.15
135.0	1050.19	1025.44	999.56	977.63	950.06	929.25	909.00	847.69	772.31
180.0	1025.83	998.61	975.21	954.45	929.87	910.58	882.45	798.92	725.34
225.0	1064.76	1038.88	1009.80	986.23	960.47	936.79	916.09	863.04	788.46
270.0	1056.94	1030.50	1002.38	982.13	953.44	933.75	900.00	806.63	721.69
315.0	1022.51	995.40	970.14	949.73	923.51	860.34	785.25	688.11	591.81
360.0	1044.56	1013.63	990.00	967.50	941.63	907.88	841.50	740.25	652.50
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	559.13	447.19	335.81	290.81	148.11	81.62	43.88	36.84	32.40
45.0	441.56	348.75	284.06	176.68	91.24	50.46	40.84	34.99	28.46
90.0	534.15	433.58	323.38	222.02	142.99	74.14	42.30	36.17	32.18
135.0	685.13	577.13	466.88	364.50	291.94	170.38	93.49	46.58	37.69
180.0	623.48	504.06	418.44	309.77	201.21	135.68	74.19	41.57	38.19
225.0	691.14	584.04	487.01	389.14	270.84	187.59	116.49	59.74	42.86
270.0	638.44	515.25	401.63	314.44	234.51	125.16	65.64	44.21	39.43
315.0	480.32	369.73	275.91	179.72	100.63	55.18	40.33	35.66	30.21
360.0	559.13	447.19	335.81	290.81	148.11	81.62	43.88	36.84	32.40

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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	27.17	24.58	22.39	18.96	16.99	16.03	15.53	15.08	14.63
45.0	25.48	22.95	20.31	18.34	15.81	15.36	14.96	14.57	14.23
90.0	28.91	26.61	21.94	17.94	16.99	15.53	15.08	14.74	14.34
135.0	33.86	29.48	26.72	24.19	20.59	18.28	15.98	15.30	14.91
180.0	33.92	28.41	26.61	24.58	19.18	16.14	15.41	14.91	14.51
225.0	38.70	32.96	29.03	28.13	21.21	18.11	16.37	15.69	15.24
270.0	32.68	27.28	24.92	22.16	20.31	17.21	16.37	15.81	15.41
315.0	26.78	25.20	19.29	17.55	16.65	16.03	15.58	15.24	14.85
360.0	27.17	24.58	22.39	18.96	16.99	16.03	15.53	15.08	14.63
C/ γ (°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	14.29	13.95	13.67	13.39	13.16	12.94	12.71	12.60	12.43
45.0	13.95	13.61	13.33	13.11	12.83	12.66	12.49	12.26	12.15
90.0	14.01	13.67	13.39	13.16	12.88	12.71	12.54	12.38	12.21
135.0	14.57	14.18	13.84	13.50	13.22	12.99	12.77	12.49	12.32
180.0	14.12	13.78	13.50	13.22	12.88	12.71	12.49	12.26	12.09
225.0	14.79	14.46	14.06	13.73	13.44	13.16	12.94	12.66	12.43
270.0	15.13	14.74	14.40	14.18	13.89	13.73	13.44	13.28	13.11
315.0	14.57	14.23	14.01	13.78	13.56	13.39	13.16	12.99	12.88
360.0	14.29	13.95	13.67	13.39	13.16	12.94	12.71	12.60	12.43
C/ γ (°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	12.26	12.15	12.04	11.93	11.81	11.76	11.64	11.59	11.53
45.0	12.04	11.87	11.76	11.64	11.53	11.42	11.31	11.25	11.19
90.0	12.09	11.98	11.87	11.81	11.70	11.59	11.48	11.36	11.25
135.0	12.15	11.98	11.81	11.70	11.53	11.42	11.31	11.19	11.14
180.0	11.93	11.76	11.64	11.48	11.42	11.31	11.19	11.14	11.08
225.0	12.26	12.15	11.98	11.81	11.70	11.64	11.59	11.53	11.48
270.0	12.99	12.88	13.16	14.79	17.55	19.58	18.96	16.14	13.78
315.0	12.77	12.71	12.83	12.94	13.22	13.44	13.73	14.01	14.34
360.0	12.26	12.15	12.04	11.93	11.81	11.76	11.64	11.59	11.53
C/ γ (°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	11.48	11.42	11.31	11.25	11.14	11.08	11.03	10.97	10.91
45.0	11.08	11.03	10.97	10.91	10.86	10.86	10.74	10.74	10.69
90.0	11.14	11.03	10.97	10.91	10.86	10.80	10.80	10.80	10.80
135.0	11.03	10.97	10.91	10.80	10.74	10.74	10.69	10.63	10.58
180.0	11.03	10.91	10.86	10.80	10.74	10.69	10.63	10.58	10.52
225.0	11.36	11.19	11.03	10.97	10.91	10.86	10.80	10.74	10.69
270.0	12.49	12.04	11.98	11.93	11.19	11.03	10.97	10.91	10.91
315.0	14.63	15.24	15.86	16.48	17.38	17.83	18.34	18.68	18.28
360.0	11.48	11.42	11.31	11.25	11.14	11.08	11.03	10.97	10.91
C/ γ (°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	10.86	10.80	10.74	10.69	10.63	10.58	10.58	10.52	10.29
45.0	10.63	10.58	10.58	10.52	10.52	10.52	10.41	10.29	10.29
90.0	10.80	10.69	10.69	10.63	10.58	10.52	10.29	10.24	10.24
135.0	10.58	10.58	10.58	10.46	10.46	10.41	10.35	10.24	10.24
180.0	10.46	10.46	10.35	10.41	10.41	10.29	10.24	10.18	10.13
225.0	10.63	10.63	10.58	10.52	10.52	10.46	10.46	10.46	10.29
270.0	10.86	10.80	10.74	10.74	10.69	10.63	10.58	10.52	10.29
315.0	15.47	13.95	13.33	12.71	12.04	11.81	11.42	10.46	10.24
360.0	10.86	10.80	10.74	10.69	10.63	10.58	10.58	10.52	10.29

Intensity data(cd)

Appendix Page: 18 Total:18

C/ γ (°)	90.0
0.0	10.18
45.0	10.29
90.0	10.24
135.0	10.18
180.0	10.18
225.0	10.29
270.0	10.29
315.0	10.18
360.0	10.18