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Nata

LumCAT: 3-2042-M	
Luminaire: 92.70.131.00	
Report No: GC2017061702	Voltage(V): 34.2000
Test No: NT-0010	Current(A): 0.5000
LampCAT: CITIZEN CLU038	Power (W): 17.1000
Lamp flux(lm): 2365.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 84	Width(mm): 84
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 2124.07
Efficiency(%): 89.81%
Lumens(lm)/Power(W): 124.21
Central intensity(cd): 20836.090
Maximum intensity(cd): 20836.090
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=12.8
 [C90/270]Total=12.8
Field angle(10%Imax): [C0/180]Total=26.0
 [C90/270]Total=26.0
Maximum s/h(1/2): C0_180=0.22 C90_270=0.22
Maximum s/h(1/4): C0_180=0.22 C90_270=0.22
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 89.81%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.607%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	20836.096	0.000	0	.000%	.000%
1.0	20435.559	19.748	19.748	.835%	.930%
2.0	19594.572	57.455	77.203	2.429%	3.635%
3.0	18087.404	90.123	167.326	3.811%	7.878%
4.0	15782.605	113.374	280.699	4.794%	13.215%
5.0	13892.657	127.661	408.361	5.398%	19.225%
6.0	11368.596	132.755	541.115	5.613%	25.475%
7.0	8984.516	126.331	667.447	5.342%	31.423%
8.0	7112.048	115.200	782.647	4.871%	36.847%
9.0	5363.594	101.108	883.755	4.275%	41.607%
10.0	4018.016	84.900	968.655	3.590%	45.604%
11.0	3250.392	72.626	1041.282	3.071%	49.023%
12.0	2507.681	62.944	1104.226	2.661%	51.986%
13.0	2077.691	54.417	1158.642	2.301%	54.548%
14.0	1698.490	48.335	1206.977	2.044%	56.824%
15.0	1459.958	43.361	1250.338	1.833%	58.865%
16.0	1281.562	40.171	1290.509	1.699%	60.756%
17.0	1170.100	38.179	1328.688	1.614%	62.554%
18.0	1067.034	36.885	1365.573	1.560%	64.290%
19.0	1019.865	36.308	1401.881	1.535%	66.000%
20.0	974.719	36.506	1438.387	1.544%	67.718%
21.0	941.341	36.792	1475.18	1.556%	69.451%
22.0	917.295	37.350	1512.53	1.579%	71.209%
23.0	896.043	38.049	1550.578	1.609%	73.000%
24.0	877.998	38.787	1589.365	1.640%	74.826%
25.0	858.384	39.482	1628.847	1.669%	76.685%
26.0	838.977	40.066	1668.913	1.694%	78.572%
27.0	818.771	40.557	1709.47	1.715%	80.481%
28.0	797.630	40.924	1750.394	1.730%	82.408%
29.0	777.961	41.222	1791.616	1.743%	84.348%
30.0	755.567	41.405	1833.021	1.751%	86.298%
31.0	716.284	40.959	1873.981	1.732%	88.226%
32.0	660.759	39.451	1913.431	1.668%	90.083%
33.0	592.723	36.928	1950.359	1.561%	91.822%
34.0	498.797	33.033	1983.392	1.397%	93.377%
35.0	404.623	28.057	2011.449	1.186%	94.698%
36.0	319.534	23.057	2034.506	.975%	95.783%
37.0	214.954	17.432	2051.938	.737%	96.604%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	144.275	11.991	2063.929	.507%	97.169%
39.0	79.942	7.653	2071.582	.324%	97.529%
40.0	41.788	4.245	2075.827	.180%	97.729%
41.0	24.211	2.350	2078.178	.099%	97.839%
42.0	17.990	1.533	2079.711	.065%	97.912%
43.0	14.191	1.192	2080.903	.050%	97.968%
44.0	12.154	0.994	2081.897	.042%	98.015%
45.0	10.750	0.880	2082.777	.037%	98.056%
46.0	10.007	0.812	2083.589	.034%	98.094%
47.0	9.690	0.783	2084.372	.033%	98.131%
48.0	9.456	0.774	2085.146	.033%	98.168%
49.0	9.305	0.770	2085.917	.033%	98.204%
50.0	9.153	0.770	2086.686	.033%	98.240%
51.0	9.029	0.769	2087.456	.033%	98.276%
52.0	8.919	0.770	2088.226	.033%	98.313%
53.0	8.809	0.771	2088.997	.033%	98.349%
54.0	8.713	0.772	2089.769	.033%	98.385%
55.0	8.658	0.775	2090.545	.033%	98.422%
56.0	8.575	0.779	2091.323	.033%	98.458%
57.0	8.520	0.782	2092.105	.033%	98.495%
58.0	8.451	0.785	2092.89	.033%	98.532%
59.0	8.410	0.788	2093.678	.033%	98.569%
60.0	8.382	0.793	2094.471	.034%	98.607%
61.0	8.355	0.799	2095.27	.034%	98.644%
62.0	8.314	0.803	2096.073	.034%	98.682%
63.0	8.286	0.807	2096.881	.034%	98.720%
64.0	8.245	0.811	2097.692	.034%	98.758%
65.0	8.231	0.815	2098.507	.034%	98.797%
66.0	8.217	0.821	2099.328	.035%	98.835%
67.0	8.217	0.826	2100.154	.035%	98.874%
68.0	8.203	0.832	2100.986	.035%	98.913%
69.0	8.217	0.838	2101.824	.035%	98.953%
70.0	8.203	0.843	2102.667	.036%	98.992%
71.0	8.369	0.857	2103.524	.036%	99.033%
72.0	9.043	0.905	2104.429	.038%	99.075%
73.0	10.240	1.008	2105.437	.043%	99.123%
74.0	10.942	1.114	2106.551	.047%	99.175%
75.0	11.631	1.193	2107.744	.050%	99.231%

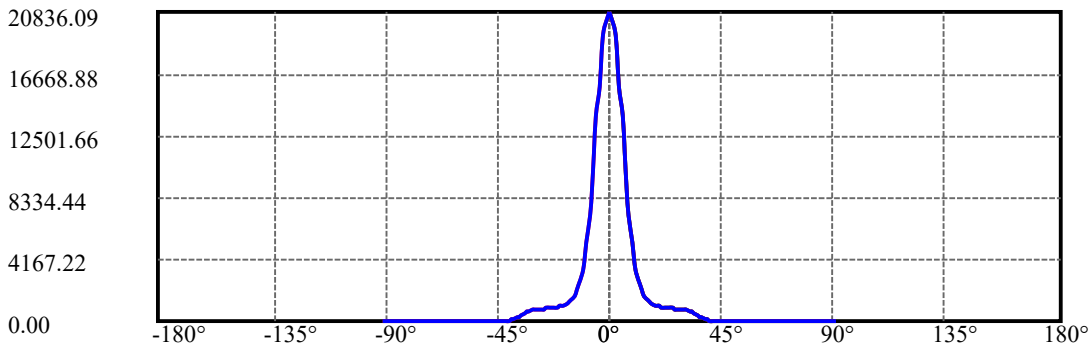
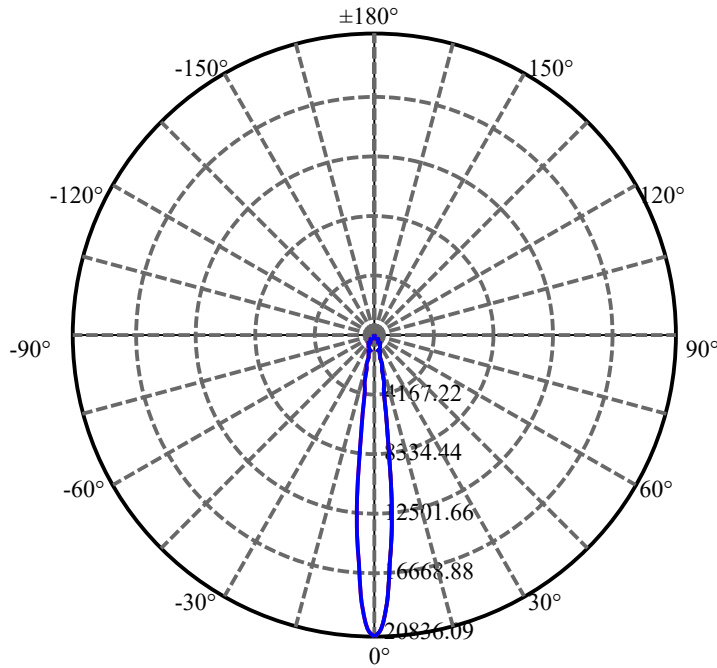
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	12.622	1.287	2109.031	.054%	99.292%
77.0	13.062	1.369	2110.4	.058%	99.356%
78.0	13.103	1.401	2111.801	.059%	99.422%
79.0	12.333	1.367	2113.168	.058%	99.487%
80.0	10.929	1.254	2114.422	.053%	99.546%
81.0	9.883	1.125	2115.547	.048%	99.599%
82.0	9.373	1.044	2116.591	.044%	99.648%
83.0	9.470	1.024	2117.616	.043%	99.696%
84.0	9.483	1.033	2118.648	.044%	99.745%
85.0	9.098	1.014	2119.662	.043%	99.793%
86.0	8.024	0.936	2120.598	.040%	99.837%
87.0	7.942	0.874	2121.472	.037%	99.878%
88.0	7.887	0.867	2122.339	.037%	99.919%
89.0	7.887	0.865	2123.204	.037%	99.959%
90.0	7.901	0.866	2124.069	.037%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1833.02	77.51%	86.30%
0-40	2075.83	87.77%	97.73%
0-60	2094.47	88.56%	98.61%
0-90	2123.20	89.78%	99.96%
0-120	2123.20	89.78%	99.96%
0-180	2124.07	89.81%	100.00%
60-90	29.53	1.25%	1.39%
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%
0-26.75	1699.26	71.85%	80.00%

ZONAL LUMEN SUMMARY

0-10	968.66
10-20	469.73
20-30	394.63
30-40	242.81
40-50	10.86
50-60	7.78
60-70	8.20
70-80	11.75
80-90	8.78
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



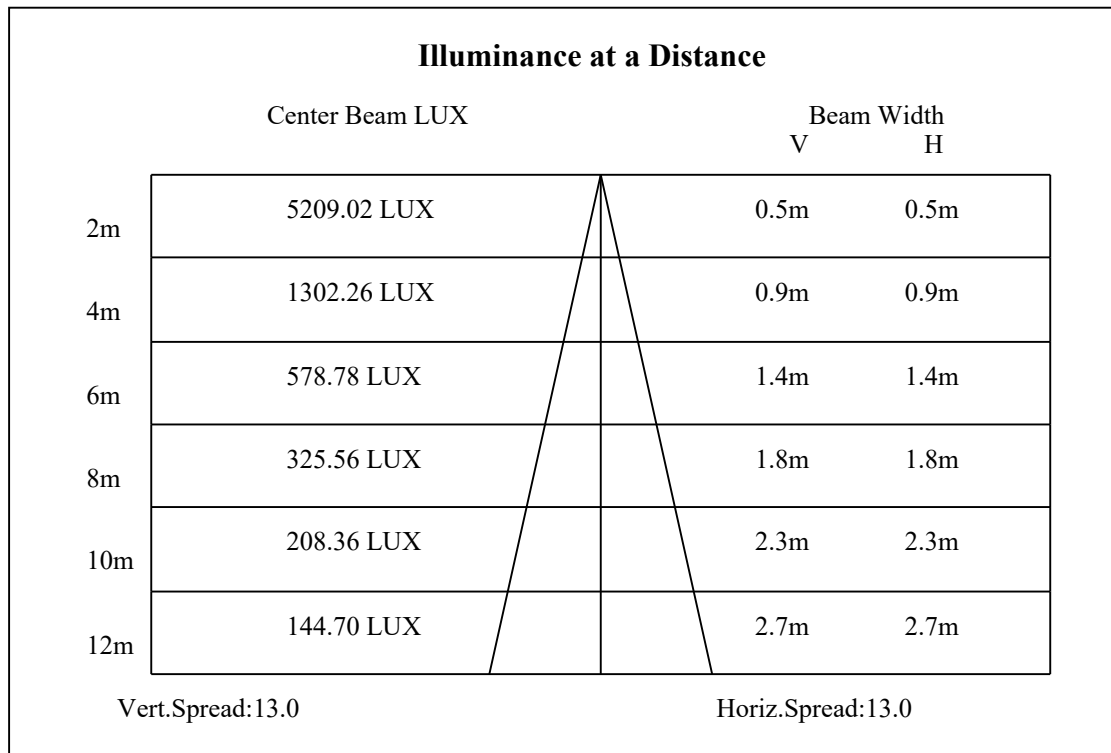
C0(Max): —————

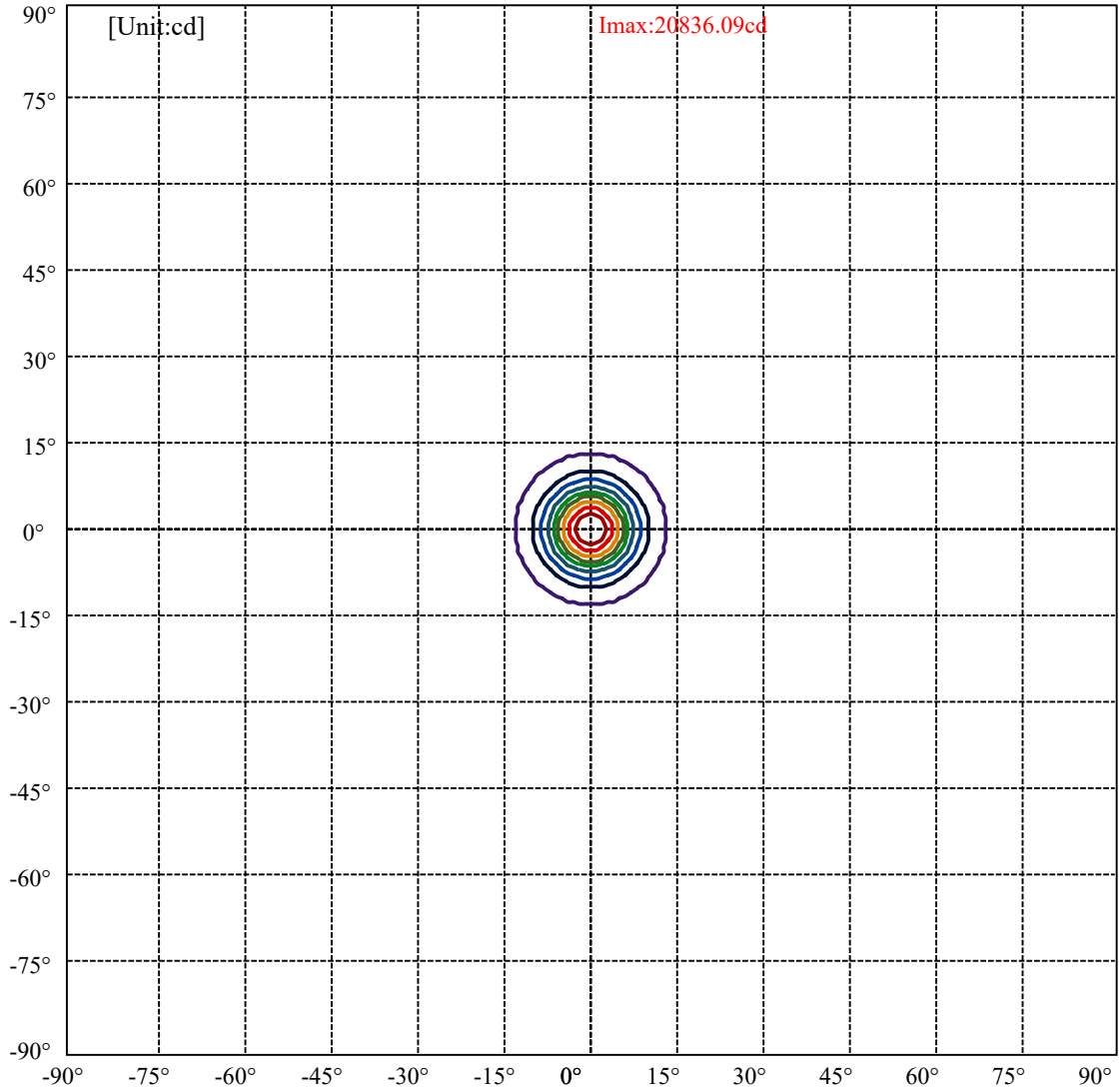
C0/C180: —————

C90/C270: —————

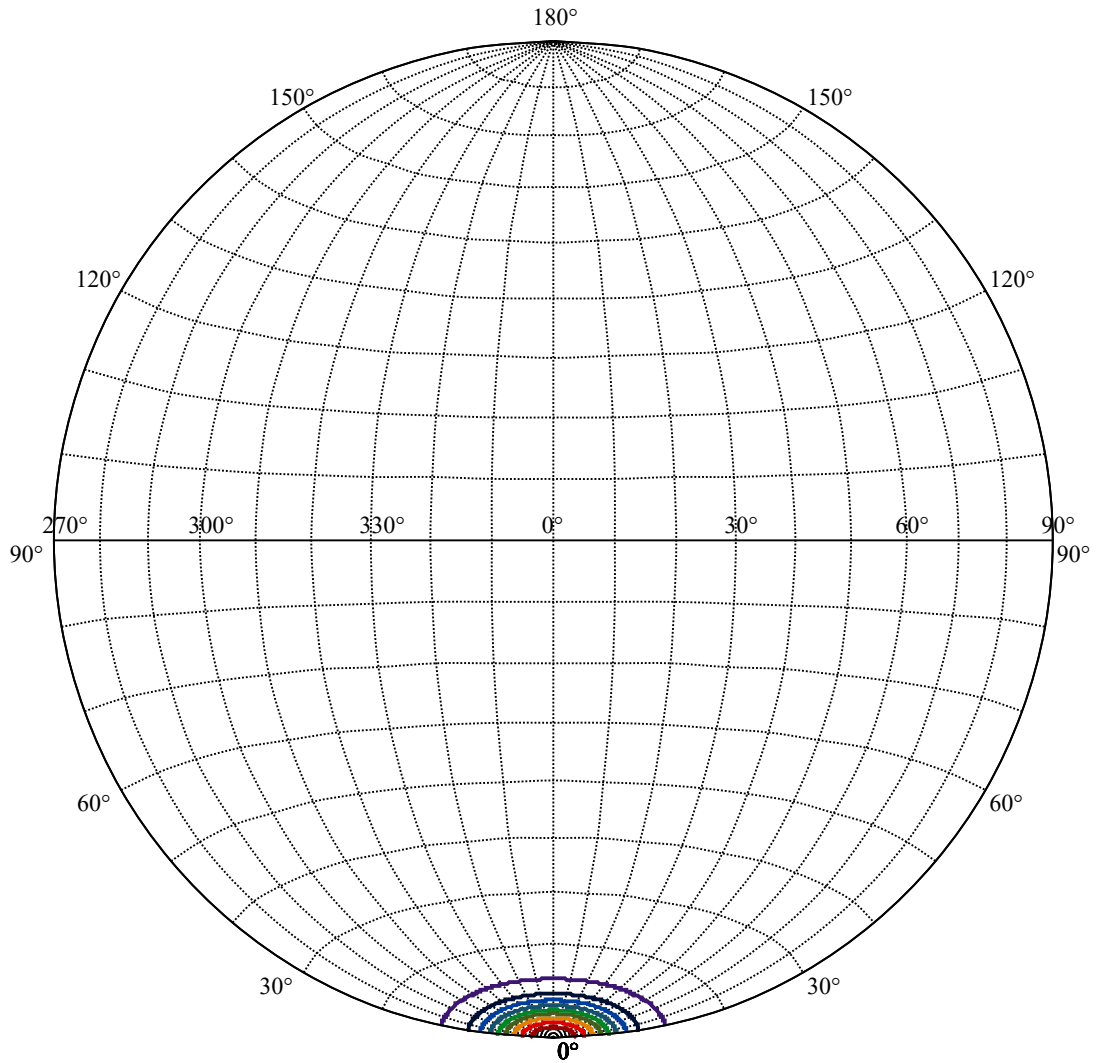
Field angle(10%Imax):C0/180Left:13.0 Right:13.0
:C90/270Left:13.0 Right:13.0

Beam Angle(50%Imax):C0/180Left:6.4 Right:6.4
:C90/270Left:6.4 Right:6.4





(10%I _{max}) 2083.61	—
(20%I _{max}) 4167.22	—
(30%I _{max}) 6250.83	—
(40%I _{max}) 8334.44	—
(50%I _{max}) 10418	—
(60%I _{max}) 12501.7	—
(70%I _{max}) 14585.3	—
(80%I _{max}) 16668.9	—
(90%I _{max}) 18752.5	—



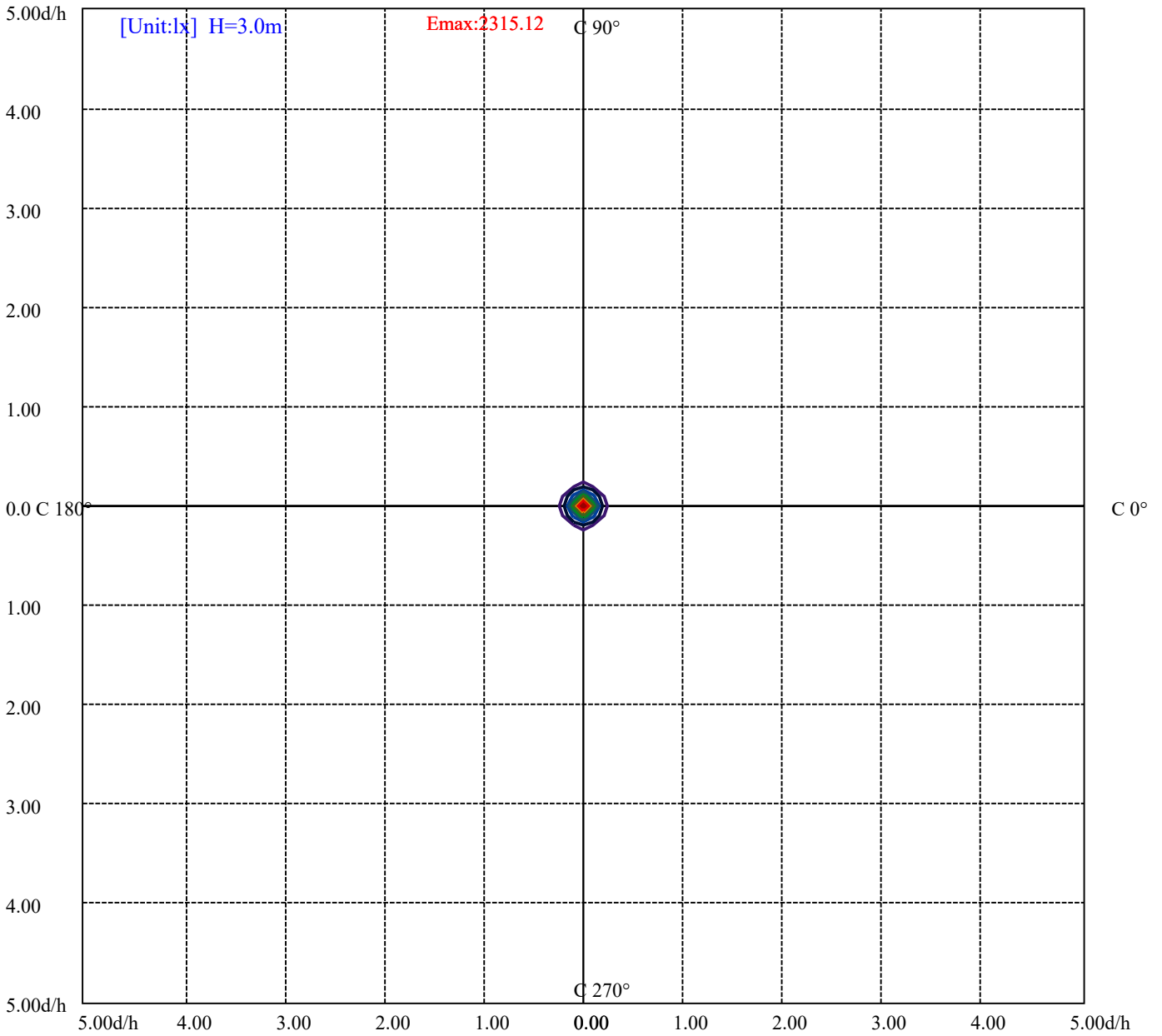
House

[Unit:cd]

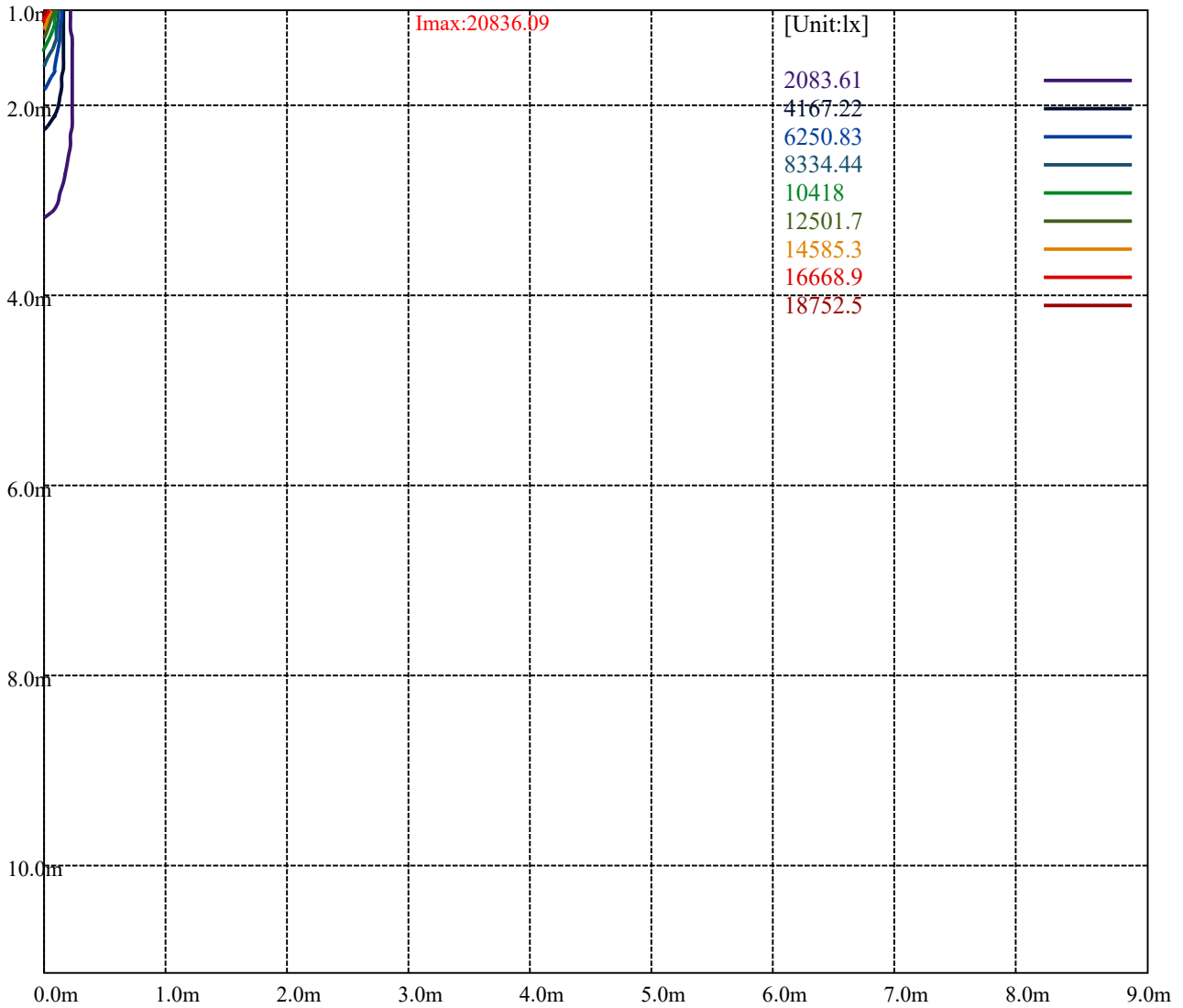
Road

Imax:20836.09

(10%Imax)	2083.61	—
(20%Imax)	4167.22	—
(30%Imax)	6250.83	—
(40%Imax)	8334.44	—
(50%Imax)	10418	—
(60%Imax)	12501.7	—
(70%Imax)	14585.3	—
(80%Imax)	16668.9	—
(90%Imax)	18752.5	—



- (10%Emax) 231.5111
- (20%Emax) 463.0233
- (30%Emax) 694.5344
- (40%Emax) 926.0456
- (50%Emax) 1157.556
- (60%Emax) 1389.067
- (70%Emax) 1620.578
- (80%Emax) 1852.089
- (90%Emax) 2083.6



Luminance Table

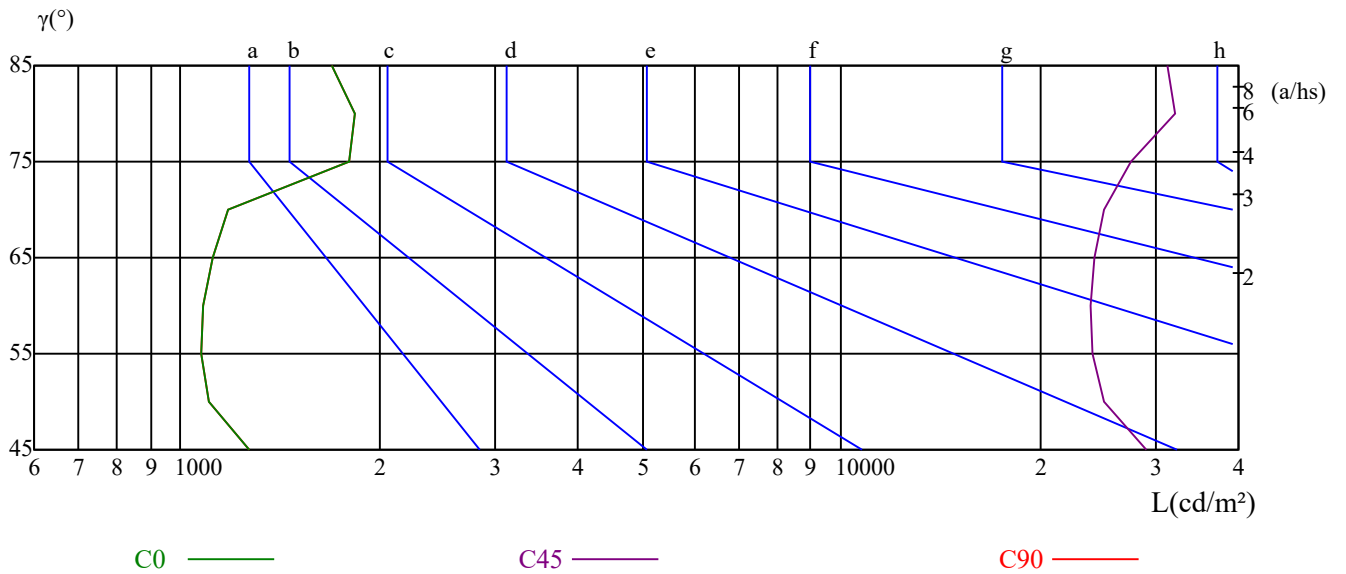
γ	45	50	55	60	65	70	75	80	85
C0	1268	1104	1076	1084	1117	1181	1798	1839	1694
C45	29019	25068	24046	23886	24222	24988	27410	32039	31211
C90	1268	1104	1076	1084	1117	1181	1798	1839	1694

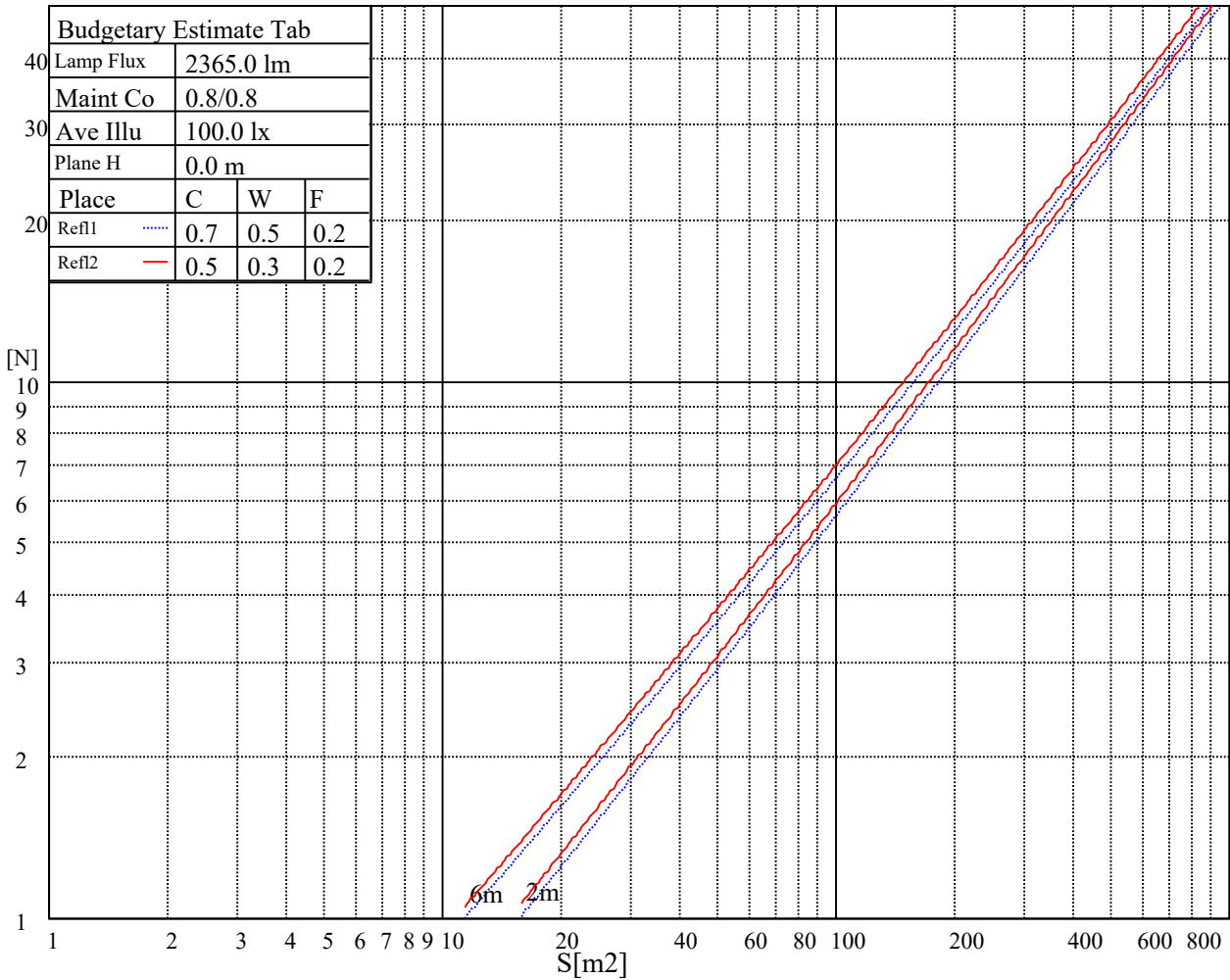
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
2696	2696	72618	6220	6220	122720	14448	14448	363600

Glare Table

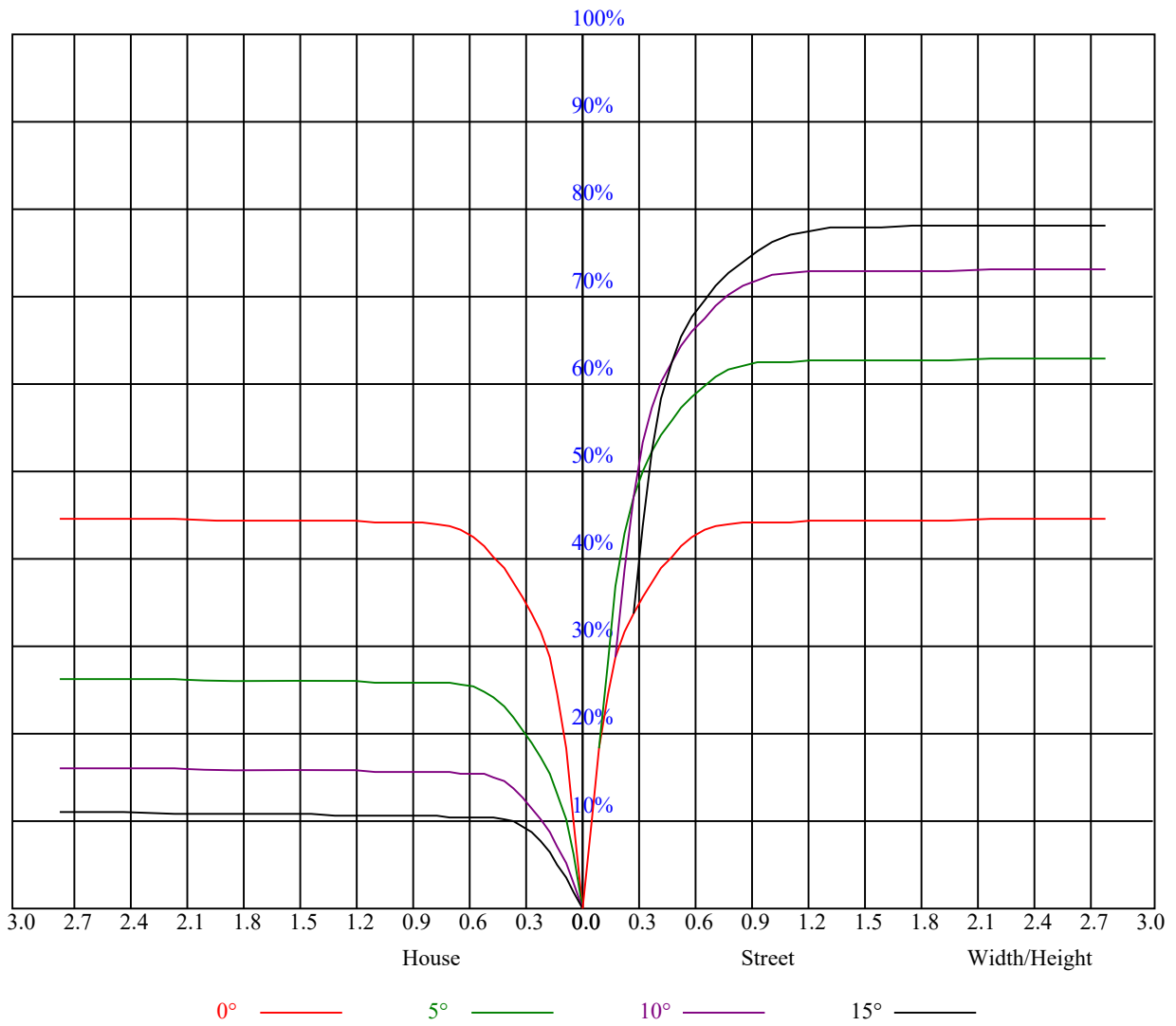
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	1.07	1.07	1.07	1.04	1.04	1.04	1.00	1.00	1.00	0.96	0.96	0.96	0.92	0.92	0.92	0.90
1	1.01	0.99	0.97	0.99	0.97	0.96	0.95	0.94	0.93	0.92	0.91	0.90	0.89	0.88	0.88	0.86
2	0.96	0.93	0.91	0.94	0.92	0.90	0.92	0.90	0.88	0.89	0.87	0.86	0.87	0.85	0.84	0.83
3	0.92	0.88	0.85	0.90	0.87	0.85	0.88	0.86	0.83	0.86	0.84	0.82	0.84	0.82	0.81	0.80
4	0.88	0.84	0.81	0.87	0.83	0.81	0.85	0.82	0.80	0.83	0.81	0.79	0.82	0.80	0.78	0.77
5	0.85	0.81	0.78	0.84	0.80	0.78	0.82	0.79	0.77	0.81	0.78	0.76	0.80	0.77	0.76	0.75
6	0.82	0.78	0.75	0.81	0.77	0.75	0.80	0.77	0.74	0.79	0.76	0.74	0.78	0.75	0.73	0.72
7	0.79	0.75	0.72	0.78	0.75	0.72	0.77	0.74	0.72	0.76	0.74	0.71	0.76	0.73	0.71	0.70
8	0.76	0.73	0.70	0.76	0.72	0.70	0.75	0.72	0.70	0.74	0.72	0.69	0.74	0.71	0.69	0.68
9	0.74	0.71	0.68	0.74	0.70	0.68	0.73	0.70	0.68	0.73	0.70	0.68	0.72	0.69	0.67	0.66
10	0.72	0.69	0.66	0.72	0.68	0.66	0.71	0.68	0.66	0.71	0.68	0.66	0.70	0.68	0.66	0.65



Intensity data(cd)

C/γ(°)	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0
0.0	21020.53	20117.61	18482.43	16472.87	13764.10	10950.72	8627.34	6403.06	4900.02
90.0	20651.66	21323.34	21477.50	20987.50	20001.99	18432.88	15773.66	13274.10	10747.01
180.0	21020.53	21279.30	21031.54	20029.52	18587.04	16621.53	13665.00	10788.30	8686.25
270.0	20651.66	19021.99	17386.81	14859.72	10777.29	9565.50	7408.39	5472.61	4114.92
360.0	21020.53	20117.61	18482.43	16472.87	13764.10	10950.72	8627.34	6403.06	4900.02
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	3727.32	2934.51	2796.87	2040.94	1690.23	1492.03	1335.67	1176.00	1085.16
90.0	7845.54	5924.07	4476.09	3341.92	2802.37	2109.21	1730.97	1474.41	1315.30
180.0	6585.85	4642.91	3588.58	2841.46	2247.95	1837.78	1558.10	1383.57	1252.53
270.0	3295.68	2570.58	2140.04	1806.40	1570.21	1354.94	1215.09	1092.26	1027.41
360.0	3727.32	2934.51	2796.87	2040.94	1690.23	1492.03	1335.67	1176.00	1085.16
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1024.05	977.80	945.32	923.85	904.58	885.86	868.79	847.32	824.74
90.0	1182.06	1093.97	1024.60	977.25	947.52	922.19	902.37	885.31	870.99
180.0	1081.69	1057.30	1004.83	962.72	933.54	912.61	895.11	874.46	857.72
270.0	980.33	950.38	924.12	901.55	883.55	863.50	845.72	826.45	802.45
360.0	1024.05	977.80	945.32	923.85	904.58	885.86	868.79	847.32	824.74
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	799.42	777.40	759.78	741.06	686.55	611.68	525.79	414.02	318.23
90.0	850.62	833.00	810.98	788.96	769.69	753.17	717.38	639.76	557.17
180.0	840.66	815.50	795.34	778.22	758.24	729.72	674.00	586.19	497.93
270.0	784.39	764.62	745.74	714.03	650.66	548.47	453.72	355.22	245.17
360.0	799.42	777.40	759.78	741.06	686.55	611.68	525.79	414.02	318.23
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	282.99	134.45	55.06	29.57	22.79	17.23	13.21	11.07	10.30
90.0	457.52	358.97	287.39	158.67	79.61	39.20	24.67	19.10	15.09
180.0	391.34	287.83	197.65	107.36	44.98	25.00	21.20	16.02	13.21
270.0	146.28	78.57	37.00	24.17	19.77	15.42	12.88	10.57	10.02
360.0	282.99	134.45	55.06	29.57	22.79	17.23	13.21	11.07	10.30
C/γ(°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0
0.0	9.86	9.63	9.47	9.30	9.08	8.97	8.86	8.81	8.70
90.0	12.55	10.79	10.24	9.80	9.69	9.52	9.41	9.19	9.08
180.0	10.79	10.02	9.63	9.41	9.25	9.14	8.97	8.86	8.75
270.0	9.80	9.58	9.41	9.30	9.19	8.97	8.86	8.81	8.70
360.0	9.86	9.63	9.47	9.30	9.08	8.97	8.86	8.81	8.70
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	8.64	8.59	8.48	8.42	8.42	8.37	8.37	8.31	8.26
90.0	8.97	8.92	8.81	8.75	8.64	8.59	8.53	8.53	8.48
180.0	8.59	8.53	8.48	8.42	8.31	8.31	8.26	8.26	8.20
270.0	8.64	8.59	8.53	8.48	8.42	8.37	8.37	8.31	8.31
360.0	8.64	8.59	8.48	8.42	8.42	8.37	8.37	8.31	8.26
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	8.26	8.26	8.20	8.20	8.20	8.20	8.20	8.20	8.75
90.0	8.42	8.37	8.37	8.37	8.31	8.31	8.31	8.26	8.37
180.0	8.20	8.09	8.09	8.09	8.09	8.09	8.09	8.09	8.04
270.0	8.26	8.26	8.26	8.20	8.26	8.20	8.26	8.26	8.31
360.0	8.26	8.26	8.20	8.20	8.20	8.20	8.20	8.20	8.75

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Intensity data(cd)										Appendix Page: 17 Total:17
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0	
0.0	10.24	11.95	14.20	16.41	16.96	16.35	14.92	13.65	11.18	
90.0	8.37	8.37	8.42	8.86	10.13	11.89	13.43	13.60	11.89	
180.0	8.09	8.09	8.20	9.19	12.28	13.98	14.81	13.38	11.95	
270.0	9.47	12.55	12.94	12.06	11.12	10.02	9.25	8.70	8.70	
360.0	10.24	11.95	14.20	16.41	16.96	16.35	14.92	13.65	11.18	
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0	
0.0	9.74	10.19	10.85	11.29	11.84	7.93	7.82	7.82	7.87	
90.0	10.35	8.97	8.59	8.48	8.37	8.20	8.15	8.04	7.93	
180.0	10.57	9.36	9.19	8.75	8.15	7.98	7.87	7.76	7.82	
270.0	8.86	8.97	9.25	9.41	8.04	7.98	7.93	7.93	7.93	
360.0	9.74	10.19	10.85	11.29	11.84	7.93	7.82	7.82	7.87	
C/γ(°)	90.0									
0.0	7.87									
90.0	7.93									
180.0	7.82									
270.0	7.98									
360.0	7.87									