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Nata

LumCAT: 1497-E
Luminaire: 92.70.043.00
Report No: NT2016041204
Test No: GC2016041204
LampCAT: CREE CXA1304
Lamp flux(lm): 359.0
Number of Lamps: 1
Length(mm): 44
Phm Type: C

Voltage(V): 9.4000
Current(A): 0.3500
Power (W): 3.2900
PF: 0.0000
Ballast type: DC
Width(mm):44
Height(mm): 0

Photometric Results

Lumens(lm): 326.89
Efficiency(%): 91.06%
Lumens(lm)/Power(W): 99.36
Central intensity(cd): 440.300
Maximum intensity(cd): 440.300
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=51.2
[C90/270]Total=51.2
Field angle(10%Imax): [C0/180]Total=81.3
[C90/270]Total=81.3
Maximum s/h(1/2): C0_180=0.78 C90_270=0.78
Maximum s/h(1/4): C0_180=0.82 C90_270=0.82
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 91.06%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.611%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	440.300	0.000	0	.000%	.000%
1.0	439.749	0.421	0.421	.117%	.129%
2.0	438.517	1.261	1.682	.351%	.514%
3.0	436.425	2.093	3.774	.583%	1.155%
4.0	433.328	2.911	6.686	.811%	2.045%
5.0	429.467	3.712	10.397	1.034%	3.181%
6.0	425.049	4.491	14.888	1.251%	4.554%
7.0	419.915	5.245	20.133	1.461%	6.159%
8.0	413.515	5.965	26.097	1.661%	7.984%
9.0	406.640	6.647	32.744	1.852%	10.017%
10.0	399.317	7.294	40.038	2.032%	12.248%
11.0	390.976	7.897	47.935	2.200%	14.664%
12.0	380.364	8.432	56.366	2.349%	17.243%
13.0	370.261	8.908	65.274	2.481%	19.968%
14.0	360.034	9.348	74.622	2.604%	22.828%
15.0	348.693	9.730	84.352	2.710%	25.804%
16.0	336.071	10.034	94.386	2.795%	28.874%
17.0	324.544	10.288	104.673	2.866%	32.021%
18.0	313.016	10.512	115.185	2.928%	35.237%
19.0	300.601	10.676	125.861	2.974%	38.502%
20.0	288.048	10.774	136.635	3.001%	41.798%
21.0	275.385	10.819	147.454	3.014%	45.108%
22.0	263.466	10.828	158.282	3.016%	48.421%
23.0	250.768	10.790	169.072	3.006%	51.721%
24.0	238.085	10.688	179.76	2.977%	54.991%
25.0	226.874	10.572	190.332	2.945%	58.225%
26.0	215.477	10.442	200.774	2.909%	61.419%
27.0	203.495	10.250	211.024	2.855%	64.555%
28.0	192.223	10.019	221.043	2.791%	67.620%
29.0	181.721	9.783	230.827	2.725%	70.613%
30.0	171.652	9.541	240.368	2.658%	73.532%
31.0	160.717	9.249	249.617	2.576%	76.361%
32.0	150.228	8.908	258.525	2.481%	79.086%
33.0	139.719	8.542	267.067	2.379%	81.699%
34.0	128.522	8.118	275.185	2.261%	84.183%
35.0	114.655	7.552	282.737	2.104%	86.493%
36.0	102.109	6.902	289.639	1.923%	88.604%
37.0	90.052	6.267	295.906	1.746%	90.522%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	76.948	5.574	301.48	1.553%	92.227%
39.0	63.721	4.801	306.282	1.337%	93.696%
40.0	51.898	4.032	310.314	1.123%	94.929%
41.0	40.212	3.280	313.594	.914%	95.933%
42.0	28.499	2.496	316.09	.695%	96.696%
43.0	17.893	1.718	317.809	.479%	97.222%
44.0	9.993	1.052	318.861	.293%	97.544%
45.0	5.733	0.604	319.466	.168%	97.729%
46.0	4.088	0.384	319.85	.107%	97.846%
47.0	3.482	0.301	320.151	.084%	97.938%
48.0	3.042	0.264	320.415	.073%	98.019%
49.0	2.650	0.234	320.648	.065%	98.091%
50.0	2.347	0.208	320.857	.058%	98.154%
51.0	2.058	0.186	321.043	.052%	98.211%
52.0	1.906	0.170	321.213	.047%	98.263%
53.0	1.776	0.160	321.373	.045%	98.312%
54.0	1.672	0.152	321.525	.042%	98.359%
55.0	1.610	0.147	321.672	.041%	98.404%
56.0	1.542	0.142	321.814	.040%	98.447%
57.0	1.480	0.138	321.952	.038%	98.489%
58.0	1.431	0.135	322.087	.037%	98.531%
59.0	1.397	0.132	322.219	.037%	98.571%
60.0	1.363	0.130	322.35	.036%	98.611%
61.0	1.335	0.129	322.478	.036%	98.650%
62.0	1.314	0.128	322.606	.036%	98.689%
63.0	1.287	0.127	322.733	.035%	98.728%
64.0	1.266	0.125	322.858	.035%	98.766%
65.0	1.266	0.125	322.983	.035%	98.805%
66.0	1.259	0.126	323.109	.035%	98.843%
67.0	1.246	0.126	323.235	.035%	98.882%
68.0	1.239	0.126	323.361	.035%	98.920%
69.0	1.232	0.126	323.487	.035%	98.959%
70.0	1.204	0.125	323.612	.035%	98.997%
71.0	1.218	0.125	323.737	.035%	99.035%
72.0	1.211	0.126	323.864	.035%	99.074%
73.0	1.225	0.127	323.991	.035%	99.113%
74.0	1.197	0.127	324.118	.035%	99.152%
75.0	1.204	0.127	324.245	.035%	99.191%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	1.225	0.129	324.374	.036%	99.230%
77.0	1.294	0.134	324.509	.037%	99.271%
78.0	1.411	0.145	324.653	.040%	99.316%
79.0	1.624	0.163	324.816	.045%	99.366%
80.0	1.844	0.187	325.003	.052%	99.423%
81.0	2.161	0.217	325.22	.060%	99.489%
82.0	2.347	0.244	325.464	.068%	99.564%
83.0	2.367	0.256	325.721	.071%	99.642%
84.0	2.264	0.252	325.973	.070%	99.719%
85.0	1.851	0.225	326.198	.063%	99.788%
86.0	1.370	0.176	326.374	.049%	99.842%
87.0	1.197	0.140	326.514	.039%	99.885%
88.0	1.142	0.128	326.642	.036%	99.924%
89.0	1.122	0.124	326.766	.035%	99.962%
90.0	1.136	0.124	326.89	.034%	100.000%

Zonal flux distribution table

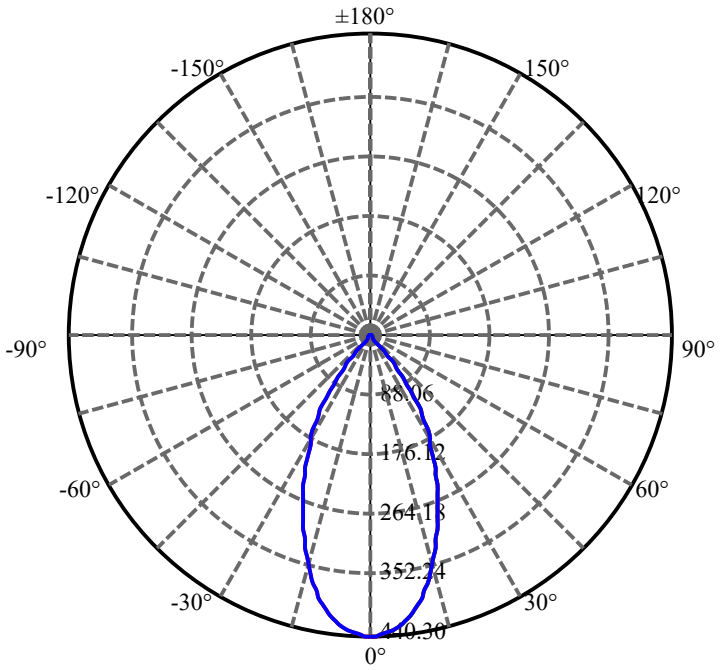
ZONAL LUMEN SUMMARY

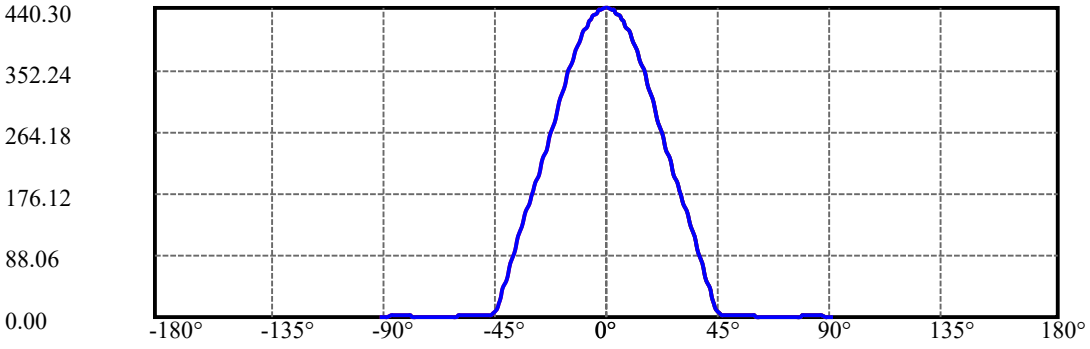
Zone	Lumens	%Lamp	%Fixt
0-30	240.37	66.95%	73.53%
0-40	310.31	86.44%	94.93%
0-60	322.35	89.79%	98.61%
0-90	326.77	91.02%	99.96%
0-120	326.77	91.02%	99.96%
0-180	326.89	91.06%	100.00%
60-90	4.55	1.27%	1.39%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-32.35	261.51	72.84%	80.00%

ZONAL LUMEN SUMMARY

0-10	40.04
10-20	96.60
20-30	103.73
30-40	69.95
40-50	10.54
50-60	1.49
60-70	1.26
70-80	1.39
80-90	1.76
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

Light Distribution Curve [Unit:cd]





C0(Max):

C0/C180:

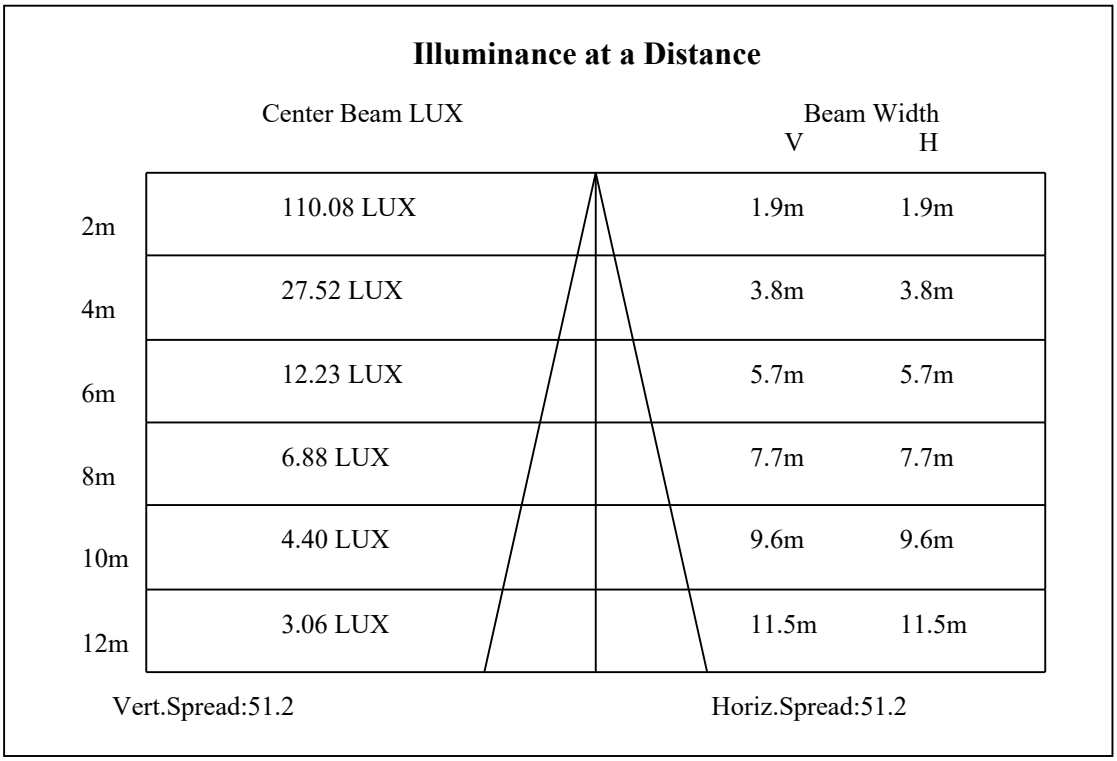
C90/C270:

Field angle(10%Imax):C0/180Left:40.7 Right:40.7
:C90/270Left:40.7 Right:40.7

Beam Angle(50%Imax):C0/180Left:25.6 Right:25.6
:C90/270Left:25.6 Right:25.6

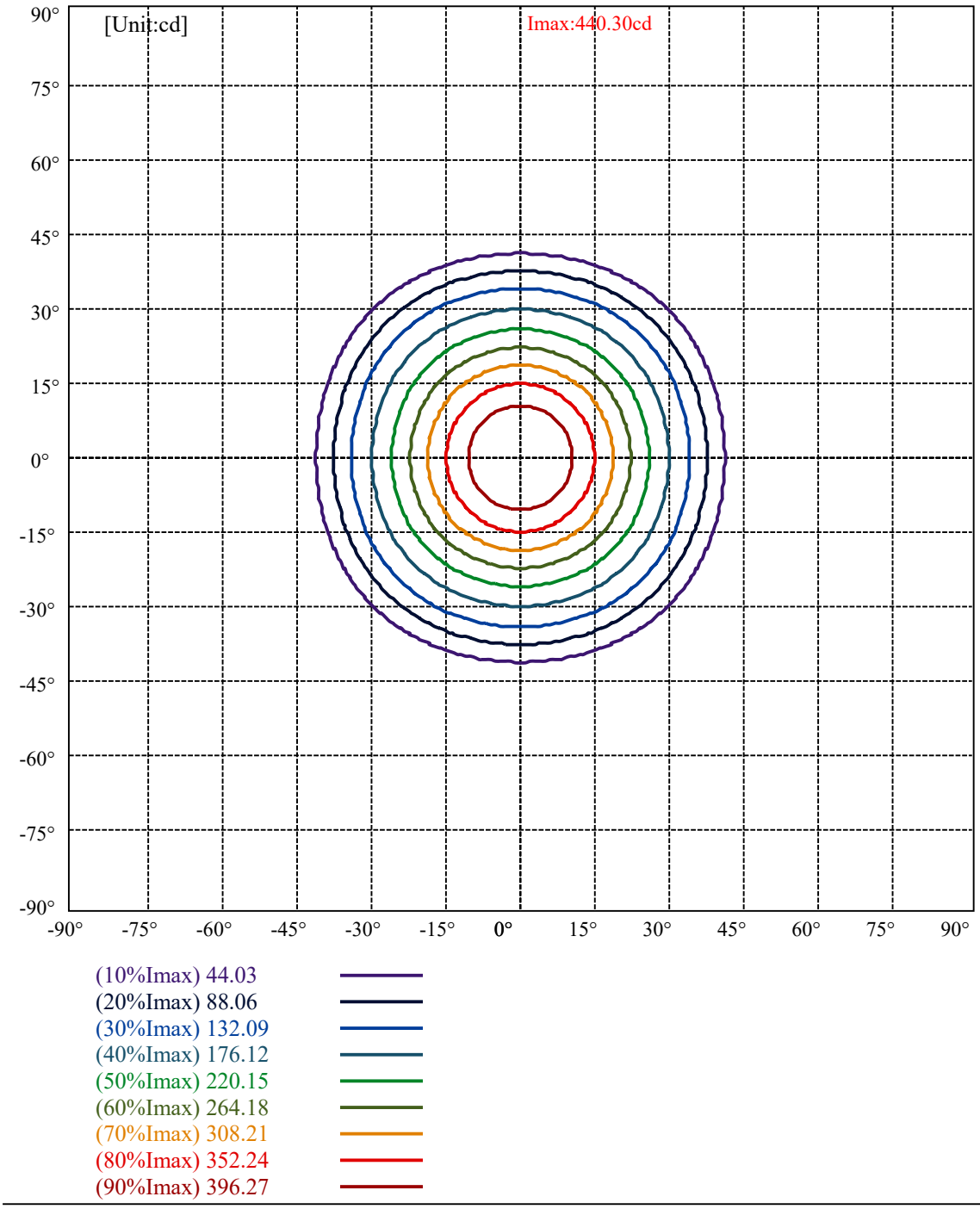
Equipment: GMS1980 Date: 2016-4-12 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 80.0% Distance(m): 7.42

Lux distance Curve



Equipment: GMS1980 Date: 2016-4-12 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 80.0% Distance(m): 7.42

ISO-Intensity(V-H)

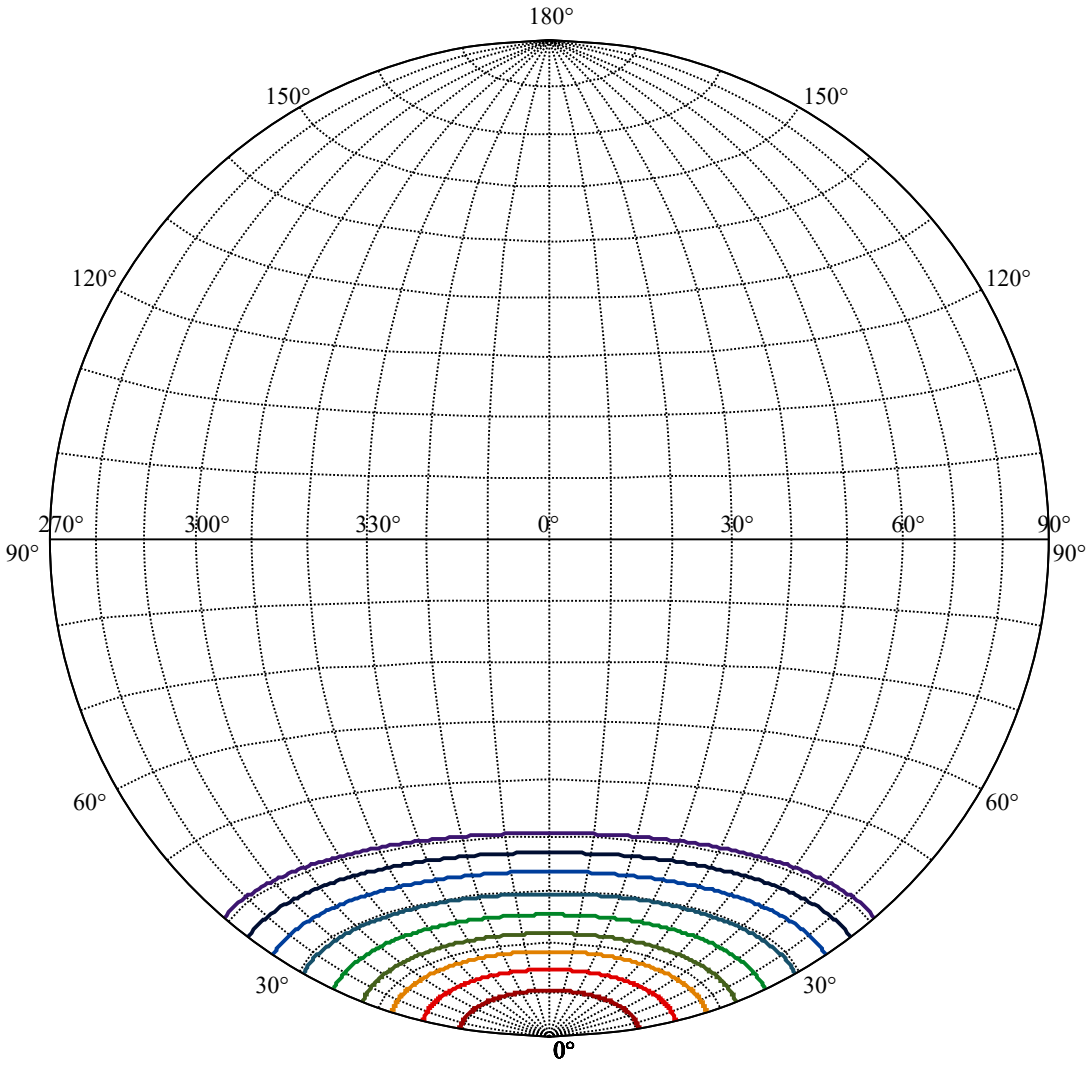


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2016-4-12
Humidity(%): 80.0%

Operator: NT07
Distance(m): 7.42

ISO candela diagram on circular web



House [Unit:cd] Road

Imax:440.30

(10%Imax) 44.03
(20%Imax) 88.06
(30%Imax) 132.09
(40%Imax) 176.12
(50%Imax) 220.15
(60%Imax) 264.18
(70%Imax) 308.21
(80%Imax) 352.24
(90%Imax) 396.27

Equipment: GMS1980 Date: 2016-4-12 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 80.0% Distance(m): 7.42

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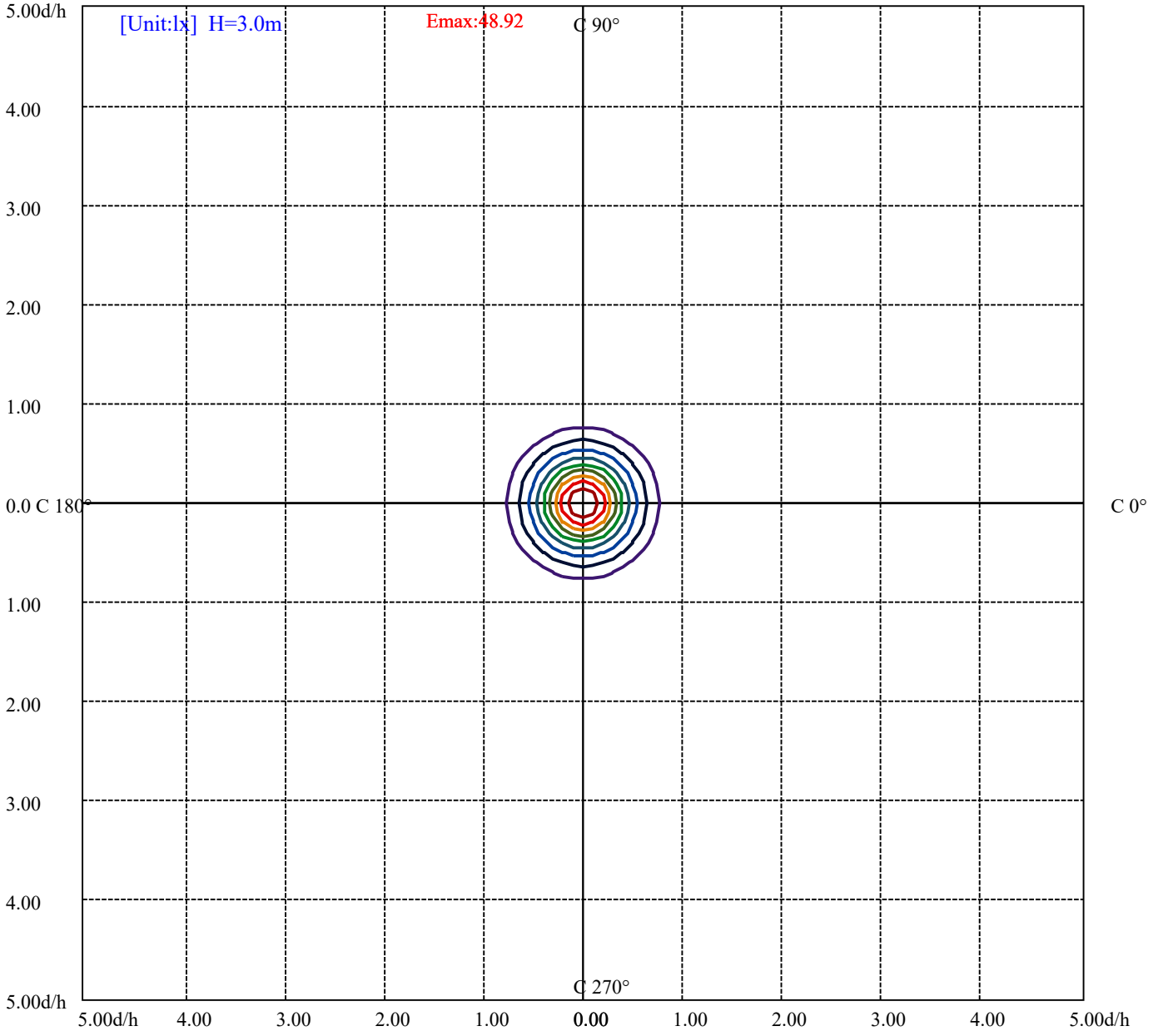
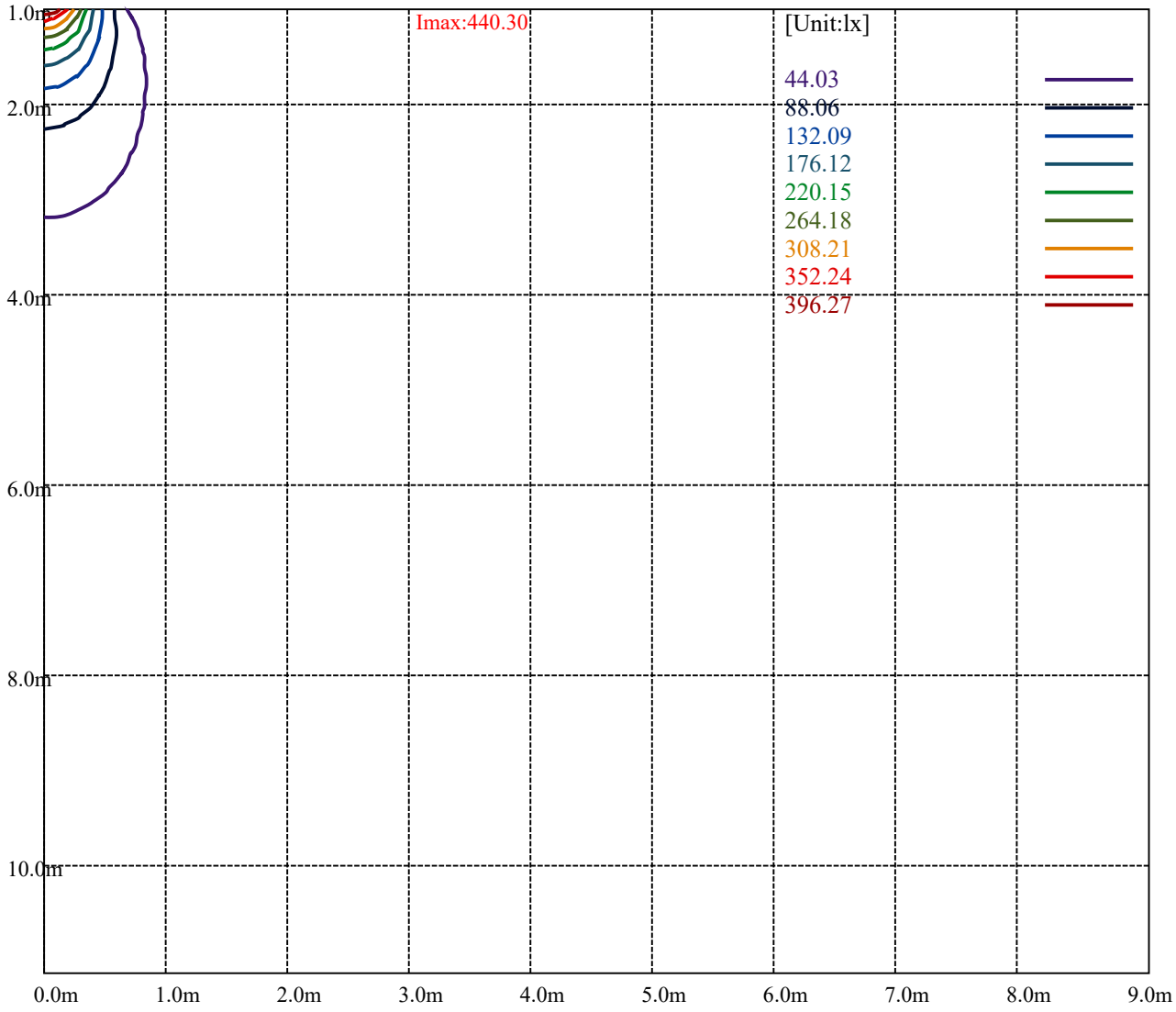
ISO illuminance diagram



Equipment: GMS1980 Date: 2016-4-12 Operator: NT07

Temperature(°C): 25.0 Humidity(%): 80.0% Distance(m): 7.42

Space ISO Lux diagram



Equipment: GMS1980
Temperature(°C): 25.0

Date: 2016-4-12
Humidity(%): 80.0%

Operator: NT07
Distance(m): 7.42

Nata 1497-E

Luminance Limitting Curve(no luminous side)

Luminance Table

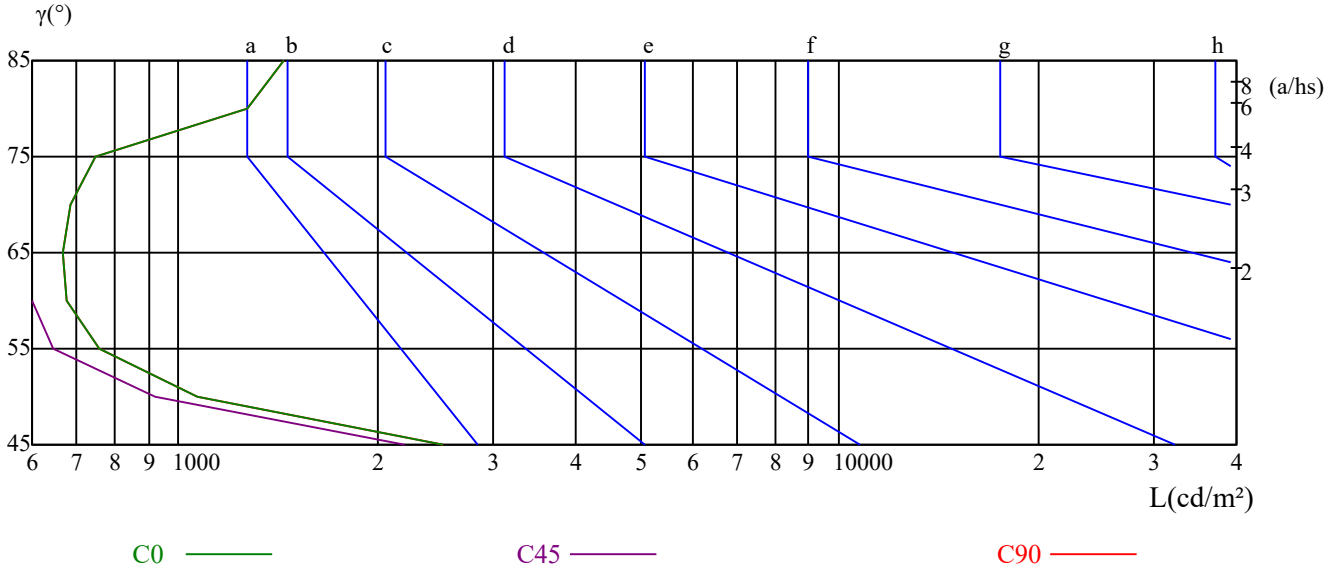
γ	45	50	55	60	65	70	75	80	85
C0	2518	1064	760	677	668	684	746	1268	1442
C45	2205	918	646	565	548	550	586	968	1064
C90	2518	1064	760	677	668	684	746	1268	1442

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
1416	1416	1416	2199	2199	2199	10038	10038	10038

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 Limitting Curve

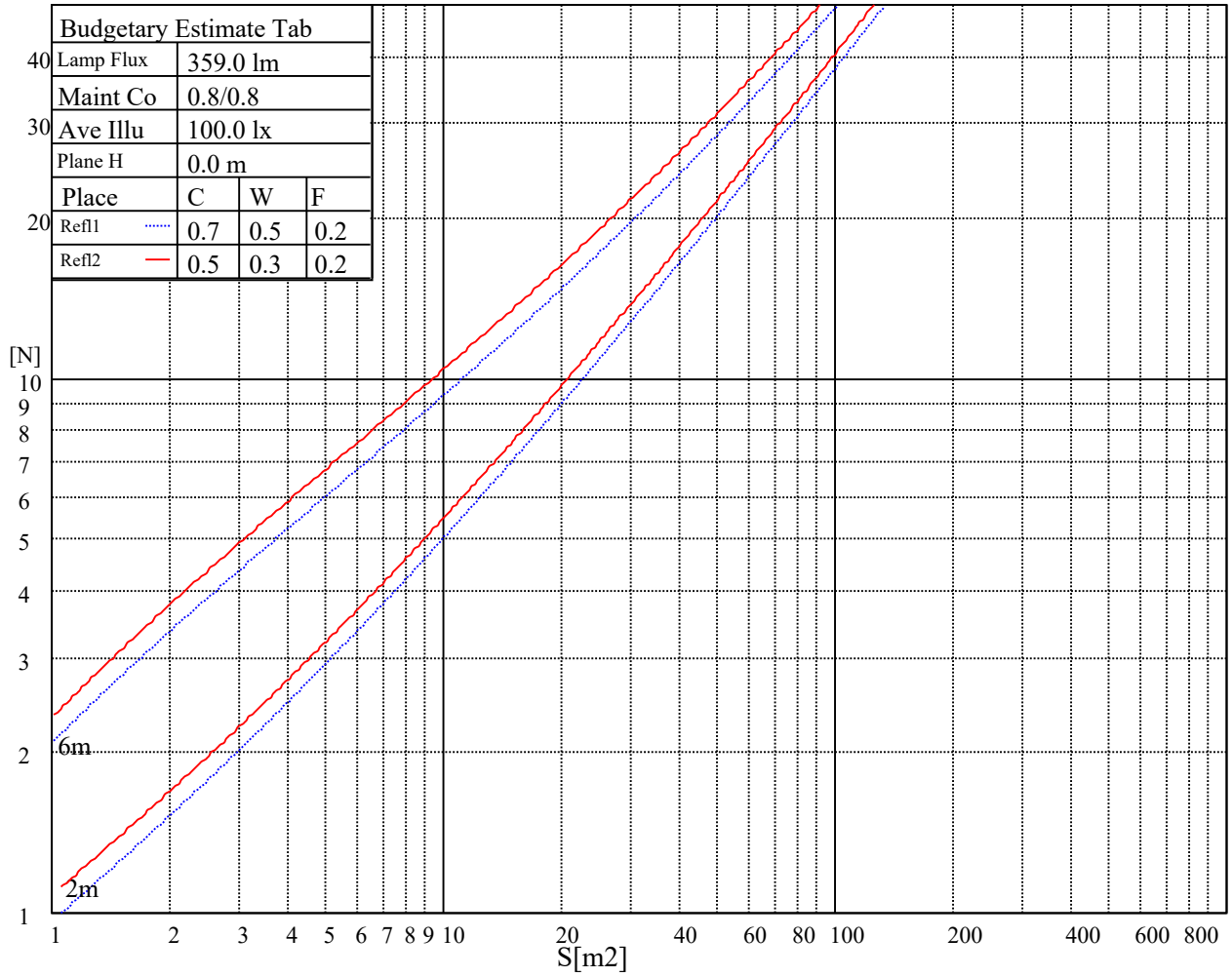


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2016-4-12
Humidity(%): 80.0%

Operator: NT07
Distance(m): 7.42

Budgetary Estimate Table



Equipment: GMS1980	Date: 2016-4-12	Operator: NT07
Temperature(°C): 25.0	Humidity(%): 80.0%	Distance(m): 7.42

Utilization factor table for indoor luminaire

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	COEFFCIENTS OF UTILIZATION RHOFC=20 CU															
0	1.08	1.08	1.08	1.06	1.06	1.06	1.01	1.01	1.01	0.97	0.97	0.97	0.93	0.93	0.93	0.91
1	1.01	0.98	0.96	0.99	0.97	0.95	0.95	0.93	0.92	0.92	0.90	0.89	0.89	0.88	0.87	0.85
2	0.94	0.90	0.87	0.92	0.89	0.86	0.89	0.87	0.84	0.87	0.85	0.83	0.84	0.82	0.81	0.79
3	0.88	0.83	0.80	0.87	0.82	0.79	0.84	0.81	0.78	0.82	0.79	0.77	0.80	0.78	0.76	0.74
4	0.82	0.77	0.74	0.81	0.77	0.73	0.79	0.75	0.72	0.78	0.74	0.72	0.76	0.73	0.71	0.69
5	0.77	0.72	0.68	0.77	0.72	0.68	0.75	0.71	0.67	0.73	0.70	0.67	0.72	0.69	0.66	0.65
6	0.73	0.68	0.64	0.72	0.67	0.64	0.71	0.66	0.63	0.69	0.66	0.63	0.68	0.65	0.62	0.61
7	0.69	0.63	0.60	0.68	0.63	0.59	0.67	0.62	0.59	0.66	0.62	0.59	0.65	0.61	0.59	0.57
8	0.65	0.60	0.56	0.64	0.59	0.56	0.63	0.59	0.56	0.63	0.58	0.55	0.62	0.58	0.55	0.54
9	0.61	0.56	0.53	0.61	0.56	0.53	0.60	0.56	0.52	0.59	0.55	0.52	0.59	0.55	0.52	0.51
10	0.58	0.53	0.50	0.58	0.53	0.50	0.57	0.53	0.50	0.57	0.52	0.49	0.56	0.52	0.49	0.48

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	440.78	438.74	436.32	433.13	428.01	423.16	417.88	411.60	404.94
45.0	440.56	440.18	438.80	436.38	433.57	430.32	426.03	421.40	415.90
90.0	440.67	441.94	442.16	441.77	440.73	438.47	435.22	431.42	424.93
135.0	439.18	441.33	442.71	442.93	442.43	441.11	438.91	435.88	430.65
180.0	440.78	441.83	441.83	440.67	439.13	436.32	432.03	428.12	422.06
225.0	440.56	440.18	438.85	436.76	433.57	429.44	425.26	419.69	413.20
270.0	440.67	438.30	435.44	431.92	426.47	421.29	415.62	408.85	401.58
315.0	439.18	435.50	432.03	427.84	422.72	415.62	409.45	402.35	394.86
360.0	440.78	438.74	436.32	433.13	428.01	423.16	417.88	411.60	404.94

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	397.62	390.85	383.25	372.57	363.21	353.19	341.13	328.74	317.84
45.0	409.34	402.19	394.04	382.64	372.40	362.88	349.44	337.00	325.71
90.0	418.70	411.38	401.86	391.45	381.38	369.37	358.75	346.08	331.77
135.0	425.09	418.48	409.62	399.76	390.40	378.95	368.49	356.10	343.22
180.0	413.64	406.98	398.50	386.94	376.92	366.68	354.84	342.40	331.22
225.0	405.99	398.66	390.57	379.28	369.48	359.30	347.46	335.24	324.45
270.0	394.70	386.55	378.73	369.10	358.97	349.28	339.15	325.99	315.47
315.0	388.04	379.45	371.25	361.17	349.33	340.63	330.28	317.01	306.66
360.0	397.62	390.85	383.25	372.57	363.21	353.19	341.13	328.74	317.84

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	305.89	294.22	283.32	271.43	260.42	248.19	236.47	226.06	215.88
45.0	312.56	298.90	287.01	272.91	260.69	247.31	234.26	222.76	211.58
90.0	320.87	308.37	292.13	278.48	265.43	250.89	236.47	223.80	209.93
135.0	331.38	317.46	303.31	289.76	276.00	259.59	246.76	235.70	220.50
180.0	318.23	306.11	292.40	277.92	265.59	253.70	239.22	227.71	216.54
225.0	312.22	301.71	289.65	276.33	266.42	255.30	241.59	230.85	220.45
270.0	306.33	292.40	282.49	272.09	260.64	248.97	239.05	227.99	218.41
315.0	296.64	285.63	274.07	264.16	252.54	242.19	230.85	220.12	210.54
360.0	305.89	294.22	283.32	271.43	260.42	248.19	236.47	226.06	215.88

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	203.10	193.41	185.43	174.25	164.45	155.70	145.02	134.61	121.51
45.0	197.98	187.25	175.52	165.55	154.43	142.65	132.69	121.01	105.93
90.0	197.98	184.77	172.11	161.54	149.92	138.19	127.57	116.77	102.96
135.0	207.12	195.23	182.40	171.39	159.77	147.88	138.30	127.51	113.47
180.0	204.31	192.48	180.58	170.62	159.66	148.38	138.47	128.06	114.19
225.0	208.50	197.16	187.52	176.95	166.27	156.64	145.18	134.34	121.45
270.0	207.67	197.43	188.68	180.03	169.24	159.99	148.54	137.48	123.88
315.0	201.29	190.05	181.52	172.88	161.98	152.40	141.99	128.39	113.86
360.0	203.10	193.41	185.43	174.25	164.45	155.70	145.02	134.61	121.51

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	107.80	95.41	79.28	66.62	54.45	41.95	30.61	20.98	12.28
45.0	94.97	82.80	69.76	57.26	45.75	33.31	20.81	13.05	5.34
90.0	91.72	80.82	68.49	55.99	43.88	33.14	21.80	9.47	4.40
135.0	102.02	89.25	76.91	65.96	52.52	41.35	28.41	15.97	7.82
180.0	102.57	90.90	78.24	65.08	52.80	38.04	28.19	15.80	7.54
225.0	108.19	96.18	84.35	69.81	59.19	48.39	36.34	24.94	14.81
270.0	110.17	98.11	84.51	70.86	59.30	48.61	35.73	26.32	17.67
315.0	99.43	86.93	74.05	58.19	47.29	36.89	26.10	16.63	10.08
360.0	107.80	95.41	79.28	66.62	54.45	41.95	30.61	20.98	12.28

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	7.43	5.01	4.40	3.96	3.58	3.14	2.81	2.64	2.48
45.0	3.30	2.81	2.48	2.26	1.98	1.76	1.65	1.60	1.54
90.0	3.08	2.70	2.37	2.15	1.82	1.71	1.60	1.49	1.43
135.0	3.85	3.03	2.70	2.42	2.15	1.87	1.76	1.65	1.54
180.0	4.29	3.63	3.03	2.64	2.37	2.15	1.98	1.82	1.71
225.0	8.37	5.29	4.35	3.80	3.25	2.81	2.31	2.09	1.87
270.0	10.08	5.84	4.84	4.07	3.36	2.97	2.42	2.20	1.98
315.0	5.45	4.40	3.69	3.03	2.70	2.37	1.93	1.76	1.65
360.0	7.43	5.01	4.40	3.96	3.58	3.14	2.81	2.64	2.48

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	2.37	2.20	2.09	2.04	1.93	1.82	1.76	1.65	1.60
45.0	1.49	1.43	1.43	1.38	1.32	1.32	1.27	1.27	1.27
90.0	1.43	1.43	1.38	1.32	1.32	1.27	1.27	1.27	1.21
135.0	1.49	1.49	1.43	1.38	1.32	1.32	1.32	1.32	1.27
180.0	1.60	1.54	1.49	1.43	1.38	1.38	1.32	1.32	1.32
225.0	1.76	1.65	1.54	1.49	1.43	1.38	1.38	1.32	1.32
270.0	1.76	1.65	1.54	1.49	1.43	1.38	1.32	1.27	1.27
315.0	1.49	1.49	1.43	1.32	1.32	1.32	1.27	1.27	1.27
360.0	2.37	2.20	2.09	2.04	1.93	1.82	1.76	1.65	1.60

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	1.54	1.49	1.49	1.43	1.38	1.27	1.27	1.21	1.21
45.0	1.27	1.27	1.27	1.21	1.21	1.27	1.27	1.21	1.27
90.0	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
135.0	1.27	1.21	1.21	1.27	1.27	1.27	1.27	1.27	1.21
180.0	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.21	1.27
225.0	1.27	1.27	1.27	1.27	1.21	1.21	1.21	1.21	1.27
270.0	1.27	1.21	1.21	1.21	1.21	1.21	1.16	1.16	1.16
315.0	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.16	1.16
360.0	1.54	1.49	1.49	1.43	1.38	1.27	1.27	1.21	1.21

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	1.21	1.21	1.16	1.16	1.16	1.21	1.16	1.16	1.16
45.0	1.21	1.27	1.27	1.27	1.27	1.32	1.54	1.98	2.42
90.0	1.21	1.21	1.21	1.21	1.21	1.21	1.38	1.60	1.76
135.0	1.21	1.27	1.21	1.21	1.32	1.49	1.82	2.31	2.81
180.0	1.27	1.27	1.21	1.27	1.32	1.54	1.87	2.37	2.92
225.0	1.27	1.21	1.21	1.21	1.21	1.27	1.21	1.27	1.38
270.0	1.16	1.21	1.16	1.16	1.16	1.16	1.16	1.16	1.16
315.0	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
360.0	1.21	1.21	1.16	1.16	1.16	1.21	1.16	1.16	1.16

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	1.21	1.27	1.21	1.21	1.16	1.16	1.10	1.16	1.10
45.0	3.03	3.25	3.08	2.64	1.65	1.16	1.16	1.16	1.16
90.0	1.98	2.09	1.98	1.76	1.27	1.21	1.16	1.16	1.16
135.0	3.63	3.91	4.18	4.13	3.58	2.09	1.38	1.16	1.10
180.0	3.52	4.07	4.24	4.18	3.25	1.76	1.38	1.16	1.10
225.0	1.49	1.60	1.65	1.65	1.54	1.27	1.21	1.16	1.10
270.0	1.16	1.21	1.27	1.27	1.16	1.16	1.10	1.10	1.10
315.0	1.27	1.38	1.32	1.27	1.21	1.16	1.10	1.10	1.16
360.0	1.21	1.27	1.21	1.21	1.16	1.16	1.10	1.16	1.10

Intensity data(cd)

C/γ(°)	90.0
0.0	1.10
45.0	1.16
90.0	1.16
135.0	1.16
180.0	1.10
225.0	1.16
270.0	1.16
315.0	1.10
360.0	1.10