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Nata

LumCAT: 3-2042-M
Luminaire: 92.76.129.00
Report No: GC2017061703
Test No: NT-0010
LampCAT: CREE CXA1820
Lamp flux(lm): 2283.0
Number of Lamps: 1
Length(mm): 84
Phm Type: C

Voltage(V): 36.0000
Current(A): 0.5000
Power (W): 18.0000
PF: 0.0000
Ballast type: DC
Width(mm): 84
Height(mm): 0

Photometric Results

Lumens(lm): 2021.98
Efficiency(%): 88.57%
Lumens(lm)/Power(W): 112.33
Central intensity(cd): 25182.800
Maximum intensity(cd): 25182.800
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=11.2
[C90/270]Total=11.2
Field angle(10%Imax): [C0/180]Total=21.8
[C90/270]Total=21.8
Maximum s/h(1/2): C0_180=0.19 C90_270=0.19
Maximum s/h(1/4): C0_180=0.19 C90_270=0.19
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 88.57%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.621%

Equipment: gms1980
Temperature(°C): 25.0
Date: 2017/6/13
Humidity(%): 60.0%
Operator: NT07
Distance(m): 7.42

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	25182.797	0.000	0	.000%	.000%
1.0	24866.223	23.948	23.948	1.049%	1.184%
2.0	23445.768	69.342	93.289	3.037%	4.614%
3.0	21352.248	107.142	200.432	4.693%	9.913%
4.0	18373.697	132.975	333.407	5.825%	16.489%
5.0	14261.397	140.394	473.802	6.150%	23.433%
6.0	11438.931	135.062	608.864	5.916%	30.112%
7.0	8343.935	122.792	731.655	5.379%	36.185%
8.0	5857.175	101.635	833.29	4.452%	41.212%
9.0	4167.357	81.243	914.534	3.559%	45.230%
10.0	3015.714	65.004	979.538	2.847%	48.444%
11.0	2457.718	54.691	1034.229	2.396%	51.149%
12.0	1996.483	48.691	1082.919	2.133%	53.557%
13.0	1566.905	42.288	1125.208	1.852%	55.649%
14.0	1341.504	37.227	1162.435	1.631%	57.490%
15.0	1199.555	34.885	1197.32	1.528%	59.215%
16.0	1111.726	33.867	1231.187	1.483%	60.890%
17.0	1031.358	33.374	1264.56	1.462%	62.541%
18.0	972.447	33.038	1297.599	1.447%	64.175%
19.0	938.134	33.240	1330.839	1.456%	65.819%
20.0	911.899	33.861	1364.7	1.483%	67.493%
21.0	890.702	34.614	1399.313	1.516%	69.205%
22.0	875.823	35.499	1434.812	1.555%	70.961%
23.0	860.421	36.431	1471.243	1.596%	72.762%
24.0	844.056	37.266	1508.509	1.632%	74.606%
25.0	825.984	37.973	1546.482	1.663%	76.484%
26.0	806.232	38.529	1585.011	1.688%	78.389%
27.0	782.930	38.879	1623.89	1.703%	80.312%
28.0	757.893	39.010	1662.901	1.709%	82.241%
29.0	738.265	39.144	1702.044	1.715%	84.177%
30.0	721.087	39.402	1741.447	1.726%	86.126%
31.0	705.341	39.695	1781.142	1.739%	88.089%
32.0	671.055	39.432	1820.574	1.727%	90.039%
33.0	604.079	37.566	1858.14	1.645%	91.897%
34.0	515.121	33.870	1892.01	1.484%	93.572%
35.0	400.081	28.423	1920.433	1.245%	94.978%
36.0	286.651	21.866	1942.299	.958%	96.059%
37.0	211.031	16.232	1958.53	.711%	96.862%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	111.709	10.773	1969.303	.472%	97.395%
39.0	40.866	5.208	1974.511	.228%	97.652%
40.0	24.142	2.267	1976.778	.099%	97.764%
41.0	19.641	1.559	1978.337	.068%	97.842%
42.0	16.132	1.300	1979.637	.057%	97.906%
43.0	13.503	1.098	1980.735	.048%	97.960%
44.0	11.837	0.956	1981.691	.042%	98.007%
45.0	10.585	0.862	1982.553	.038%	98.050%
46.0	9.993	0.805	1983.357	.035%	98.090%
47.0	9.717	0.784	1984.141	.034%	98.129%
48.0	9.483	0.776	1984.918	.034%	98.167%
49.0	9.318	0.772	1985.69	.034%	98.205%
50.0	9.126	0.769	1986.459	.034%	98.243%
51.0	8.947	0.765	1987.223	.033%	98.281%
52.0	8.809	0.762	1987.985	.033%	98.319%
53.0	8.671	0.760	1988.746	.033%	98.356%
54.0	8.534	0.758	1989.504	.033%	98.394%
55.0	8.465	0.759	1990.263	.033%	98.431%
56.0	8.369	0.761	1991.023	.033%	98.469%
57.0	8.327	0.763	1991.787	.033%	98.507%
58.0	8.258	0.767	1992.554	.034%	98.545%
59.0	8.203	0.770	1993.323	.034%	98.583%
60.0	8.162	0.773	1994.097	.034%	98.621%
61.0	8.107	0.776	1994.873	.034%	98.659%
62.0	8.066	0.779	1995.652	.034%	98.698%
63.0	8.011	0.782	1996.434	.034%	98.737%
64.0	8.011	0.786	1997.22	.034%	98.775%
65.0	7.983	0.792	1998.012	.035%	98.815%
66.0	7.983	0.797	1998.808	.035%	98.854%
67.0	7.969	0.802	1999.611	.035%	98.894%
68.0	7.956	0.807	2000.417	.035%	98.934%
69.0	7.928	0.810	2001.228	.035%	98.974%
70.0	7.914	0.814	2002.041	.036%	99.014%
71.0	7.942	0.820	2002.861	.036%	99.054%
72.0	7.928	0.825	2003.686	.036%	99.095%
73.0	8.024	0.834	2004.52	.037%	99.136%
74.0	8.437	0.865	2005.386	.038%	99.179%
75.0	9.704	0.959	2006.344	.042%	99.227%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	11.149	1.107	2007.451	.048%	99.281%
77.0	11.741	1.220	2008.671	.053%	99.342%
78.0	11.837	1.262	2009.934	.055%	99.404%
79.0	11.410	1.249	2011.183	.055%	99.466%
80.0	10.915	1.204	2012.386	.053%	99.525%
81.0	10.117	1.137	2013.524	.050%	99.582%
82.0	9.139	1.044	2014.568	.046%	99.633%
83.0	8.314	0.949	2015.517	.042%	99.680%
84.0	8.520	0.917	2016.434	.040%	99.726%
85.0	8.850	0.948	2017.382	.042%	99.773%
86.0	9.181	0.986	2018.367	.043%	99.821%
87.0	9.346	1.014	2019.381	.044%	99.871%
88.0	7.625	0.930	2020.311	.041%	99.917%
89.0	7.612	0.835	2021.146	.037%	99.959%
90.0	7.612	0.835	2021.981	.037%	100.000%

Zonal flux distribution table

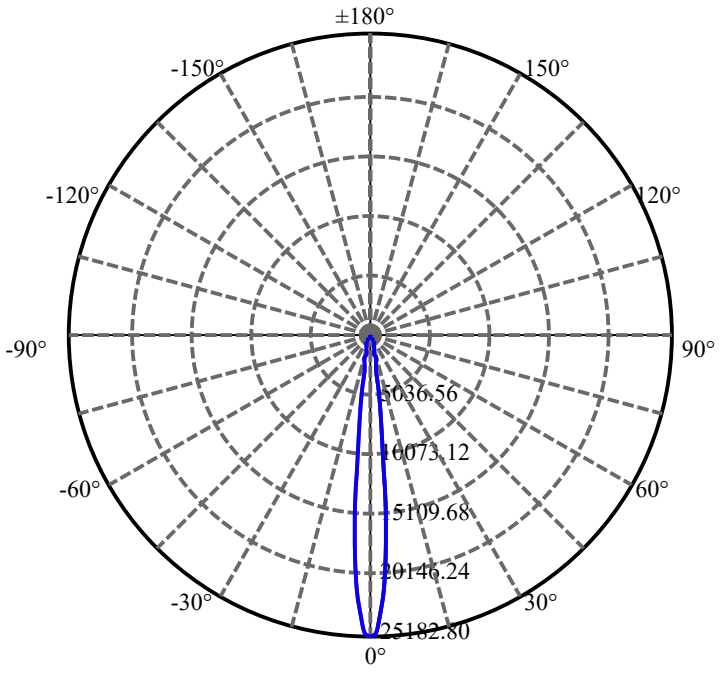
ZONAL LUMEN SUMMARY

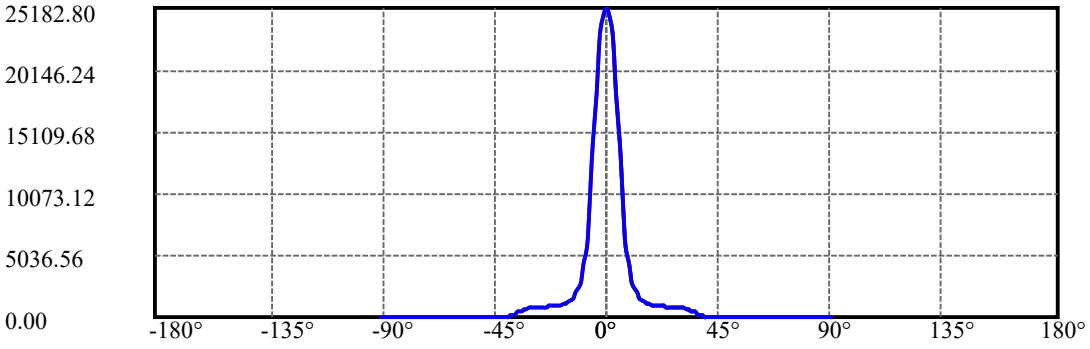
Zone	Lumens	%Lamp	%Fixt
0-30	1741.45	76.28%	86.13%
0-40	1976.78	86.59%	97.76%
0-60	1994.10	87.35%	98.62%
0-90	2021.15	88.53%	99.96%
0-120	2021.15	88.53%	99.96%
0-180	2021.98	88.57%	100.00%
60-90	27.82	1.22%	1.38%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-26.84	1617.58	70.85%	80.00%

ZONAL LUMEN SUMMARY

0-10	979.54
10-20	385.16
20-30	376.75
30-40	235.33
40-50	9.68
50-60	7.64
60-70	7.94
70-80	10.35
80-90	8.76
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:

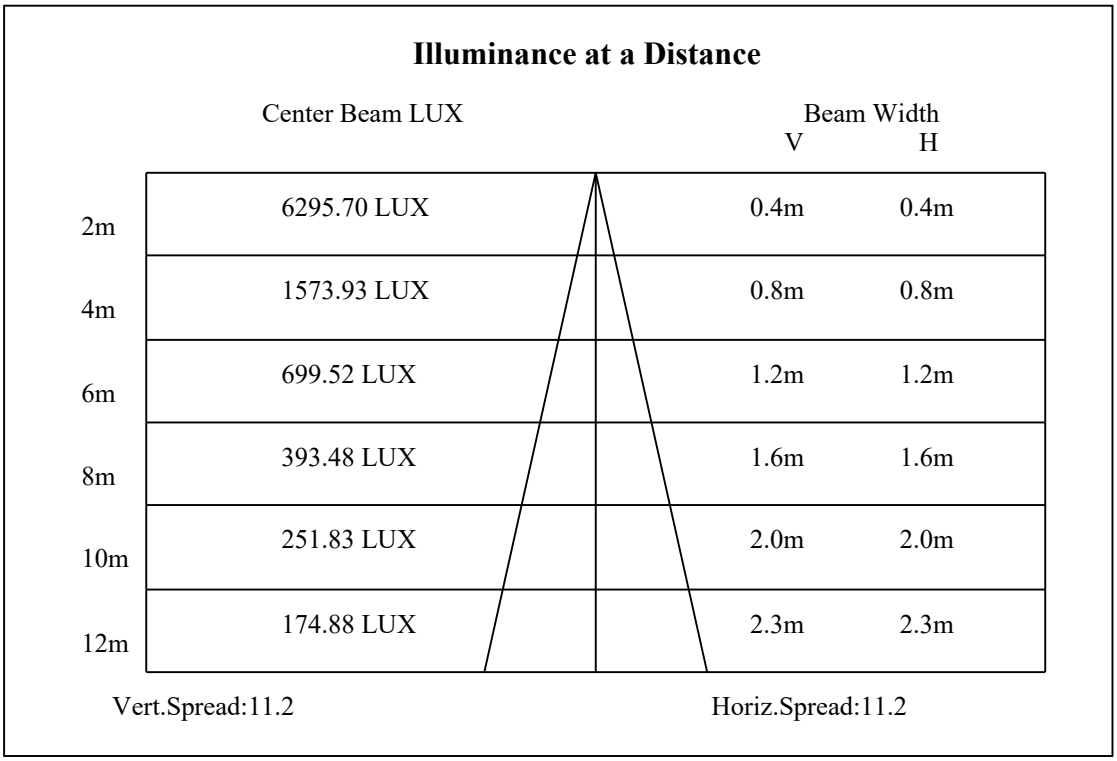
C90/C270:

Field angle(10%Imax):C0/180Left:10.9 Right:10.9
:C90/270Left:10.9 Right:10.9

Beam Angle(50%Imax):C0/180Left:5.6 Right:5.6
:C90/270Left:5.6 Right:5.6

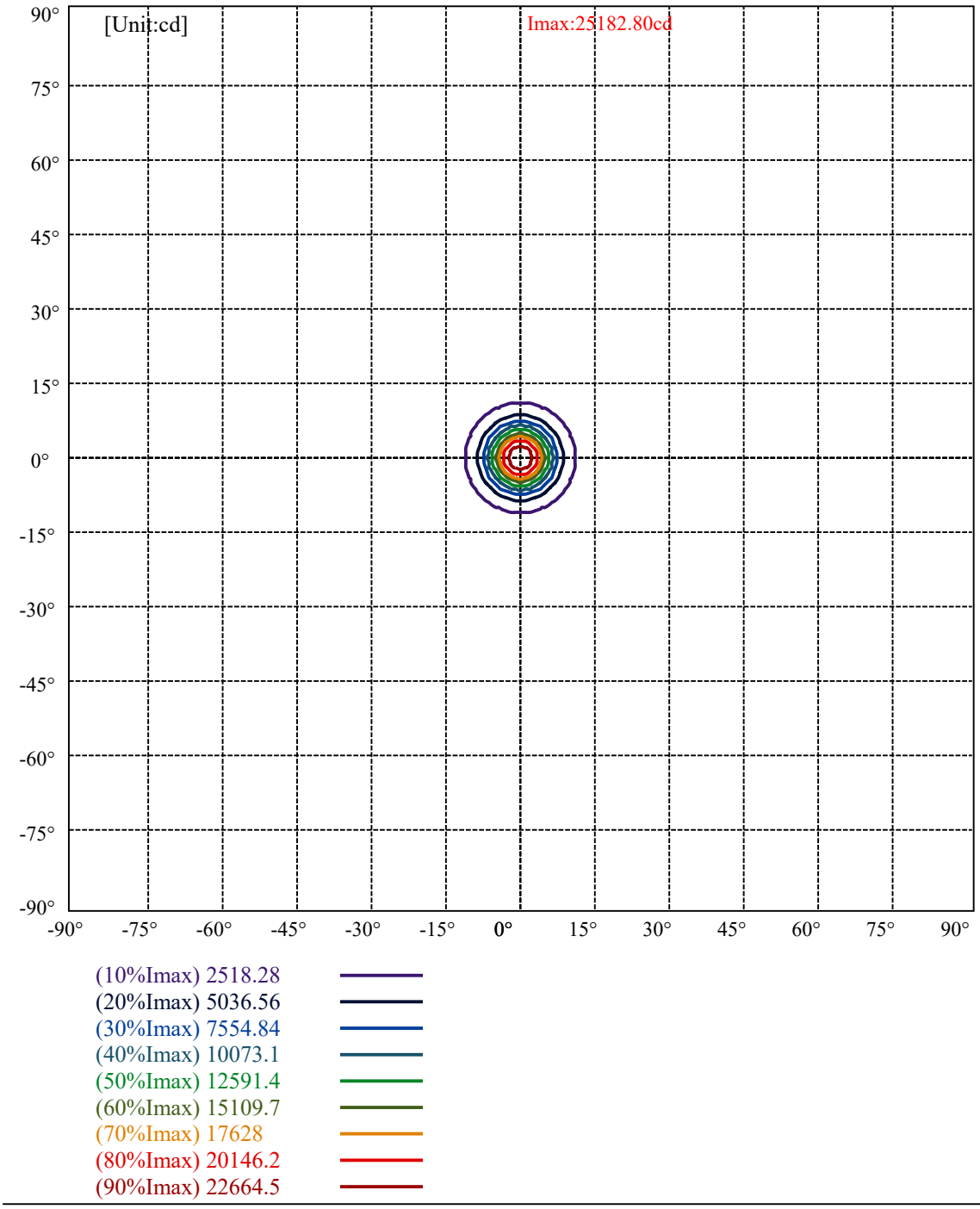
Equipment: gms1980 Date: 2017/6/13 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

Lux distance Curve



Equipment: gms1980 Date: 2017/6/13 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

ISO-Intensity(V-H)

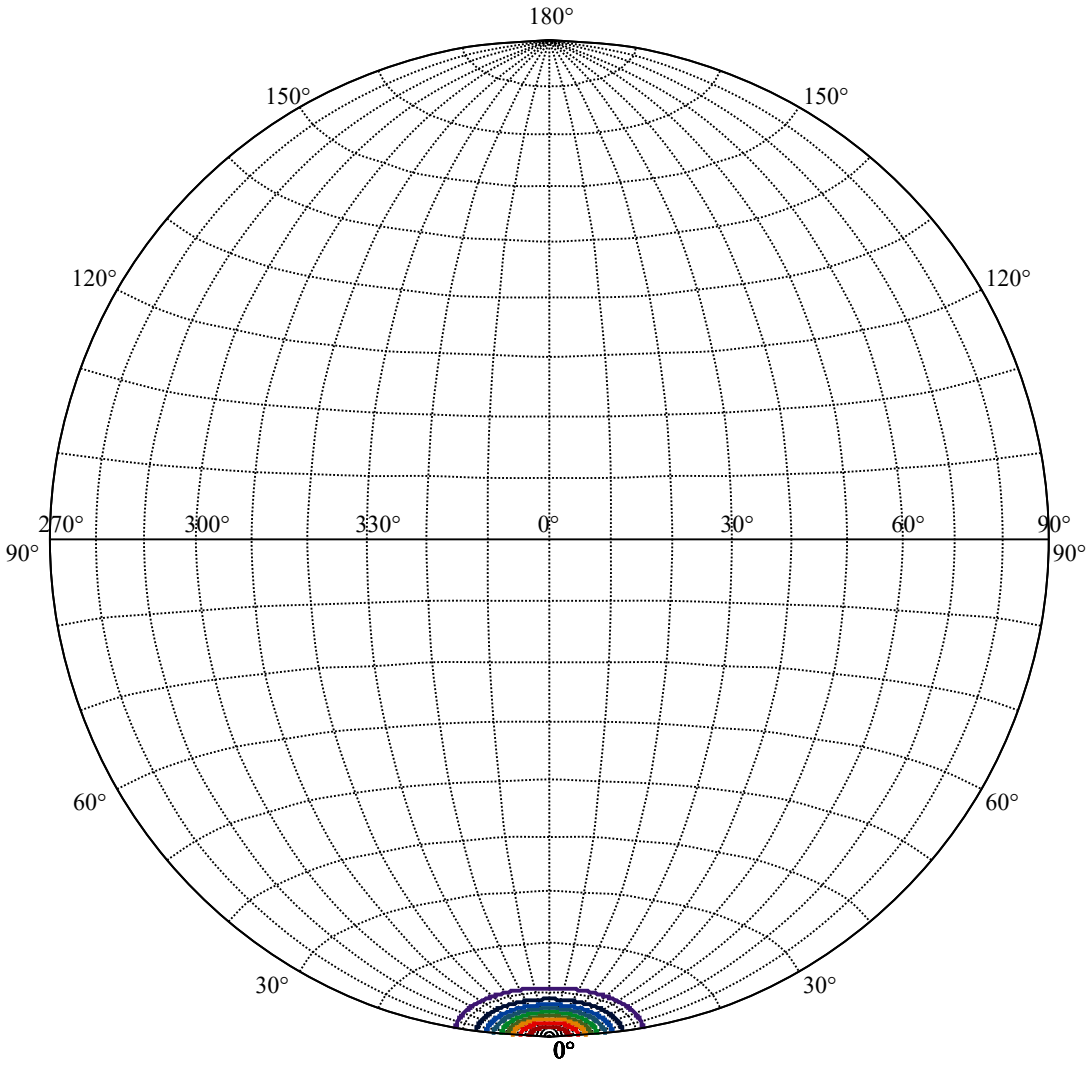


Equipment: gms1980
Temperature(°C): 25.0

Date: 2017/6/13
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

ISO candela diagram on circular web



House [Unit:cd] Road

Imax:25182.80

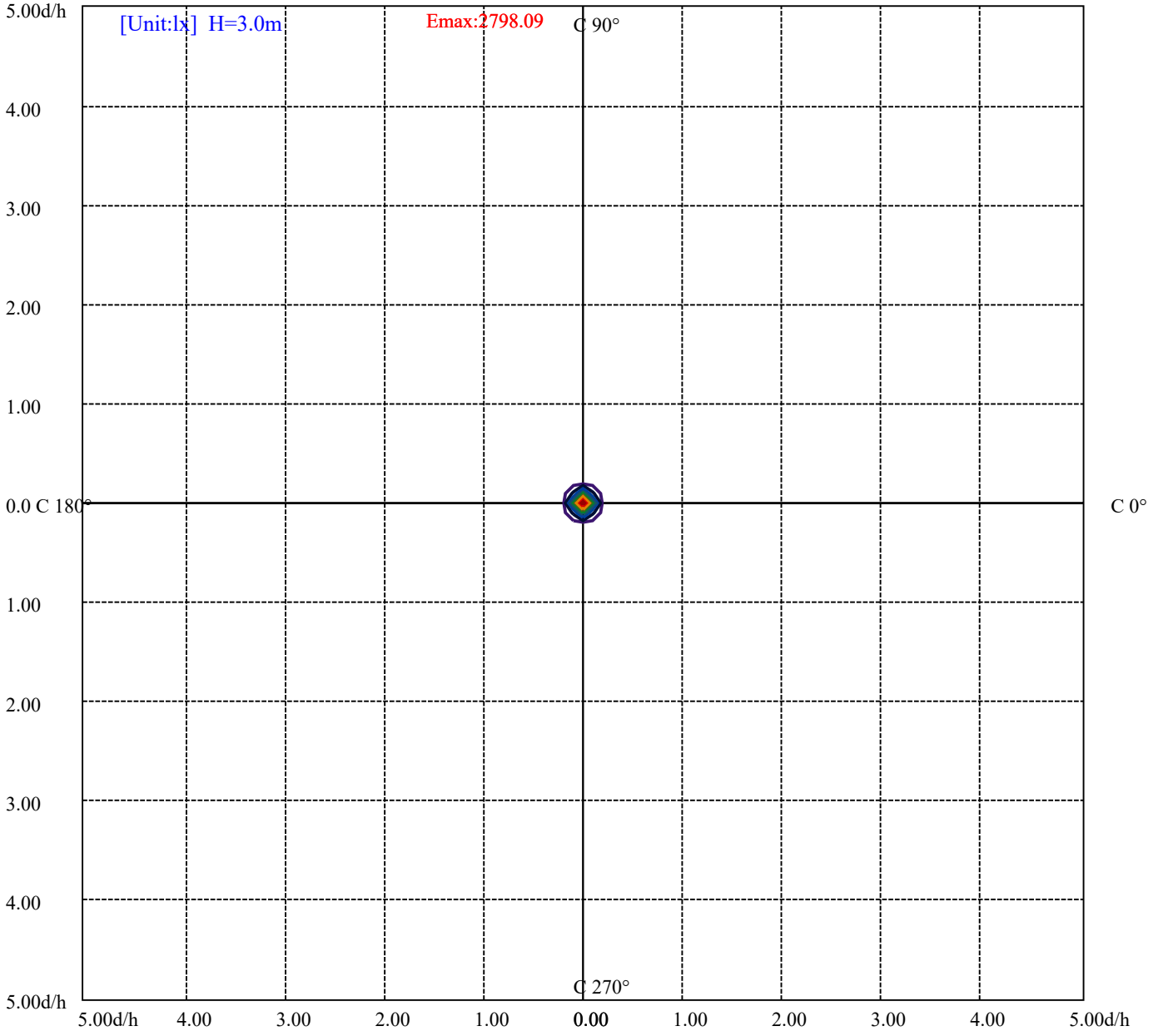
(10%Imax) 2518.28
(20%Imax) 5036.56
(30%Imax) 7554.84
(40%Imax) 10073.1
(50%Imax) 12591.4
(60%Imax) 15109.7
(70%Imax) 17628
(80%Imax) 20146.2
(90%Imax) 22664.5

Equipment: gms1980
Temperature(°C): 25.0

Date: 2017/6/13
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

ISO illuminance diagram

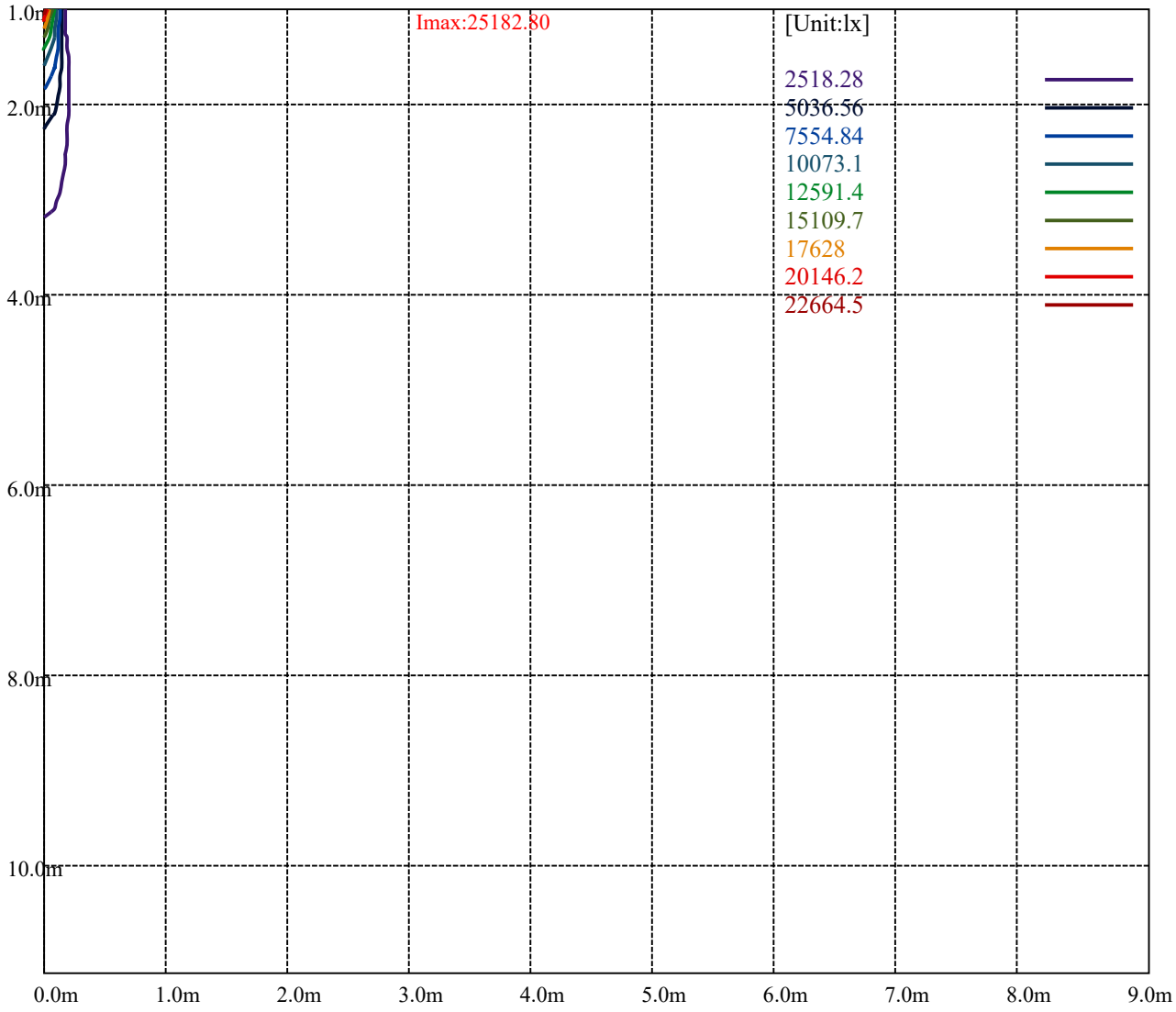


Equipment: gms1980
Temperature(°C): 25.0

Date: 2017/6/13
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

Space ISO Lux diagram



Equipment: gms1980
Temperature(°C): 25.0

Date: 2017/6/13
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

Nata 3-2042-M

Luminance Limitting Curve(no luminous side)

Luminance Table

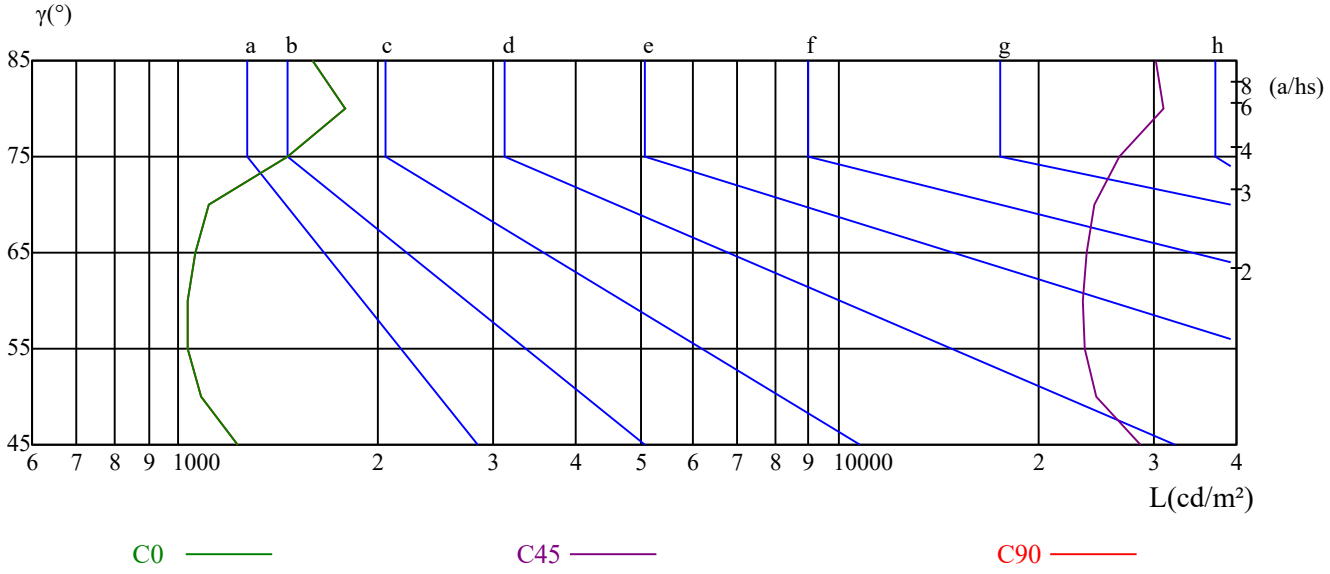
γ	45	50	55	60	65	70	75	80	85
C0	1231	1084	1035	1036	1061	1114	1463	1786	1597
C45	28527	24606	23566	23371	23658	24362	26670	31104	30225
C90	1231	1084	1035	1036	1061	1114	1463	1786	1597

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
2615	2615	72618	5189	5189	122720	14055	14055	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 Limitting Curve

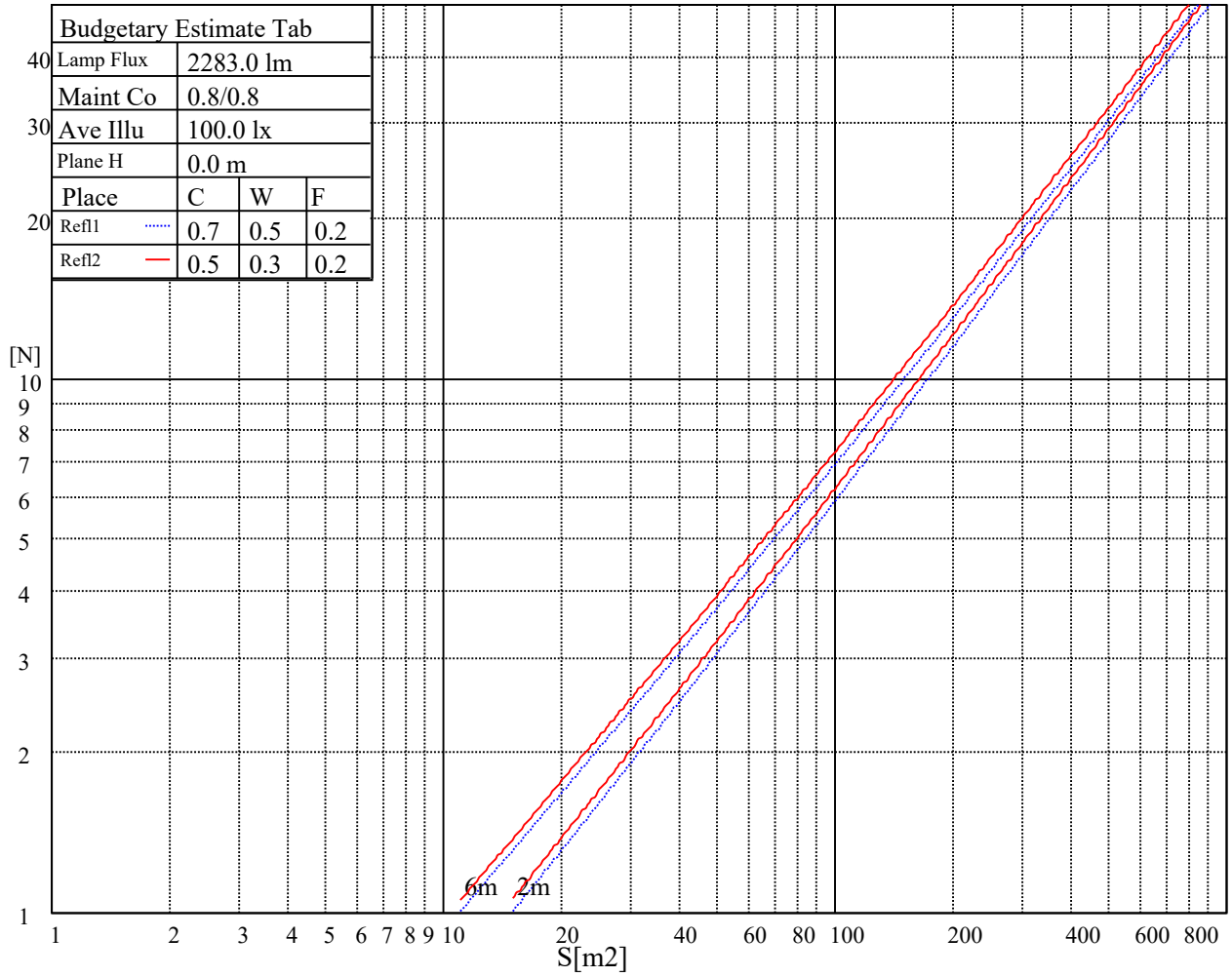


Equipment: gms1980
Temperature(°C): 25.0

Date: 2017/6/13
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

Budgetary Estimate Table

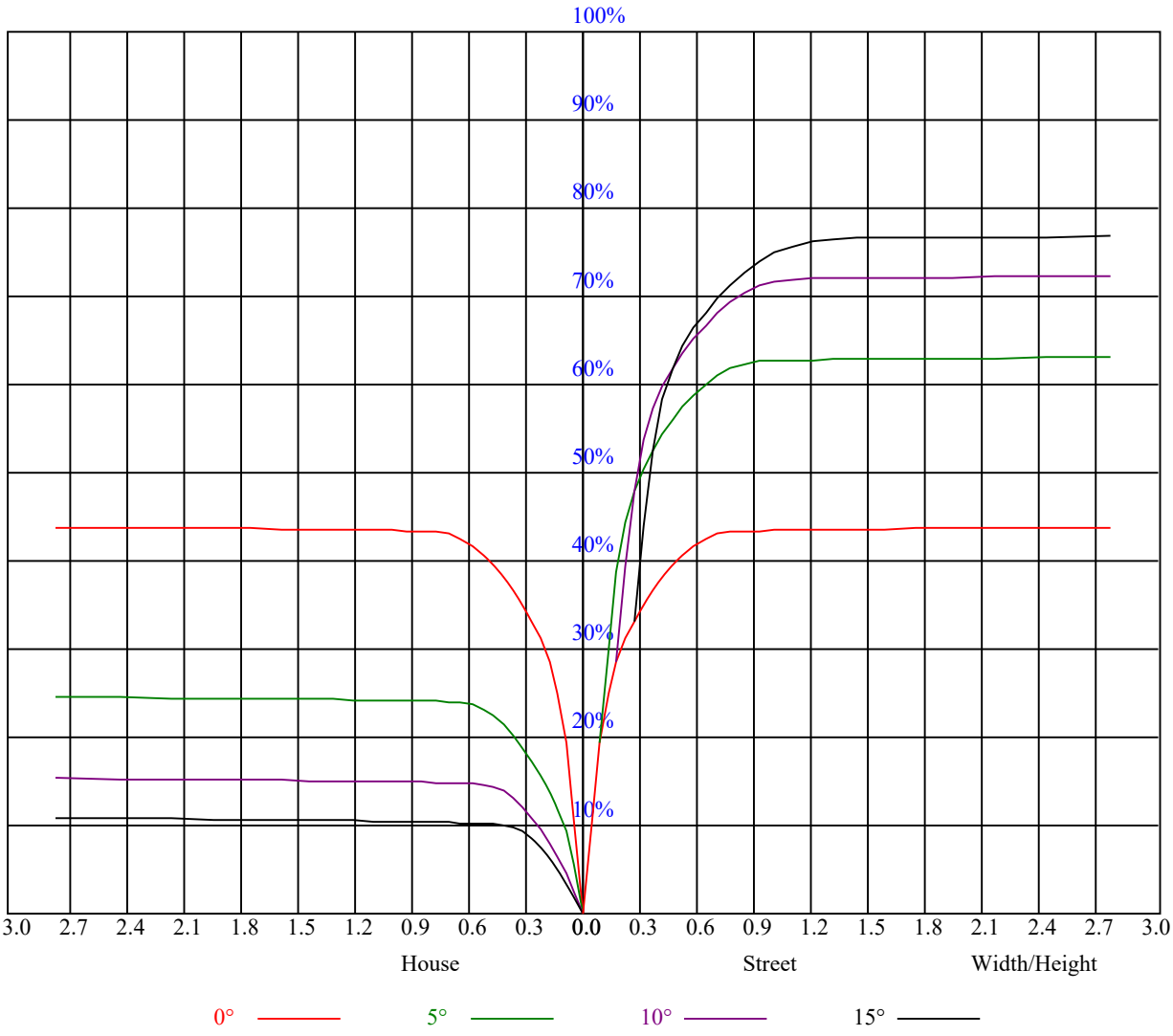


Equipment: gms1980 Date: 2017/6/13 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

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	1.05	1.05	1.05	1.03	1.03	1.03	0.98	0.98	0.98	0.94	0.94	0.94	0.90	0.90	0.90	0.89
1	1.00	0.98	0.96	0.98	0.96	0.95	0.94	0.93	0.92	0.91	0.90	0.89	0.88	0.87	0.87	0.85
2	0.95	0.92	0.90	0.93	0.91	0.89	0.90	0.88	0.87	0.88	0.86	0.85	0.86	0.84	0.83	0.82
3	0.91	0.87	0.85	0.89	0.86	0.84	0.87	0.85	0.83	0.85	0.83	0.81	0.83	0.82	0.80	0.79
4	0.87	0.83	0.81	0.86	0.83	0.80	0.84	0.81	0.79	0.83	0.80	0.78	0.81	0.79	0.77	0.76
5	0.84	0.80	0.77	0.83	0.79	0.77	0.82	0.79	0.76	0.80	0.78	0.76	0.79	0.77	0.75	0.74
6	0.81	0.77	0.74	0.80	0.77	0.74	0.79	0.76	0.74	0.78	0.75	0.73	0.77	0.75	0.73	0.72
7	0.78	0.74	0.72	0.78	0.74	0.72	0.77	0.74	0.71	0.76	0.73	0.71	0.75	0.73	0.71	0.70
8	0.76	0.72	0.70	0.76	0.72	0.70	0.75	0.72	0.69	0.74	0.71	0.69	0.73	0.71	0.69	0.68
9	0.74	0.70	0.68	0.73	0.70	0.68	0.73	0.70	0.67	0.72	0.69	0.67	0.71	0.69	0.67	0.66
10	0.72	0.68	0.66	0.72	0.68	0.66	0.71	0.68	0.66	0.70	0.68	0.66	0.70	0.67	0.65	0.65

Coefficient Utilization Curve



Equipment: gms1980	Date: 2017/6/13	Operator: NT07
Temperature(°C): 25.0	Humidity(%): 60.0%	Distance(m): 7.42

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	25287.40	25436.06	24791.90	23151.22	20816.82	17788.72	13698.03	10548.81	7432.61
90.0	25078.19	24990.10	23828.41	21917.95	19242.21	15691.07	12409.71	8891.61	6061.71
180.0	25287.40	24533.13	22385.93	19776.26	15779.16	10748.66	9209.83	6265.42	4422.13
270.0	25078.19	24505.60	22776.83	20563.57	17656.59	12817.13	10438.14	7669.91	5512.25
360.0	25287.40	25436.06	24791.90	23151.22	20816.82	17788.72	13698.03	10548.81	7432.61

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	5384.52	3842.94	2973.05	2807.88	1890.09	1637.38	1383.57	1245.38	1134.71
90.0	4338.44	3088.66	2780.35	1853.20	1556.99	1319.70	1198.58	1109.94	1023.50
180.0	3208.14	2276.58	1818.51	1516.80	1310.34	1096.94	1058.79	998.61	948.24
270.0	3738.33	2854.67	2258.96	1808.05	1510.20	1311.99	1157.29	1092.98	1018.98
360.0	5384.52	3842.94	2973.05	2807.88	1890.09	1637.38	1383.57	1245.38	1134.71

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1024.05	970.64	936.51	907.33	890.26	876.50	861.08	844.01	827.50
90.0	976.15	942.02	912.84	891.36	877.05	863.28	848.97	835.21	817.59
180.0	921.15	902.87	887.56	872.26	858.99	841.98	825.08	803.33	780.20
270.0	968.44	937.00	910.69	891.86	876.99	859.93	841.10	821.39	799.64
360.0	1024.05	970.64	936.51	907.33	890.26	876.50	861.08	844.01	827.50

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	808.78	783.45	763.63	744.36	728.40	711.88	679.95	608.37	503.22
90.0	798.87	771.89	749.87	732.25	715.73	692.06	620.49	525.24	399.71
180.0	753.78	731.09	712.10	698.72	682.81	609.47	521.11	423.55	308.10
270.0	770.29	745.13	727.46	709.02	694.43	670.81	594.77	503.33	389.30
360.0	808.78	783.45	763.63	744.36	728.40	711.88	679.95	608.37	503.22

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	384.84	279.69	219.62	73.89	31.22	23.56	19.93	16.35	14.15
90.0	291.25	278.59	103.12	36.17	22.90	20.04	16.46	13.65	11.95
180.0	195.89	108.35	41.62	23.23	20.15	16.24	13.71	11.89	10.52
270.0	274.62	177.50	82.47	30.17	22.30	18.72	14.42	12.11	10.74
360.0	384.84	279.69	219.62	73.89	31.22	23.56	19.93	16.35	14.15

C/γ(°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0
0.0	11.67	10.52	10.19	9.80	9.63	9.41	9.25	9.08	8.92
90.0	10.41	9.97	9.63	9.47	9.30	9.14	8.97	8.81	8.64
180.0	10.02	9.69	9.52	9.30	9.19	8.97	8.81	8.70	8.59
270.0	10.24	9.80	9.52	9.36	9.14	8.97	8.75	8.64	8.53
360.0	11.67	10.52	10.19	9.80	9.63	9.41	9.25	9.08	8.92

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	8.75	8.64	8.53	8.48	8.42	8.37	8.31	8.26	8.20
90.0	8.48	8.42	8.31	8.31	8.20	8.15	8.15	8.09	8.04
180.0	8.53	8.48	8.37	8.31	8.26	8.20	8.15	8.09	8.09
270.0	8.37	8.31	8.26	8.20	8.15	8.09	8.04	7.98	7.93
360.0	8.75	8.64	8.53	8.48	8.42	8.37	8.31	8.26	8.20

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	8.20	8.20	8.20	8.20	8.15	8.15	8.09	8.09	8.09
90.0	7.93	7.93	7.93	7.93	7.87	7.87	7.87	7.87	7.87
180.0	8.04	8.04	7.93	7.93	7.98	7.98	7.93	7.93	8.04
270.0	7.87	7.87	7.87	7.87	7.87	7.82	7.82	7.76	7.76
360.0	8.20	8.20	8.20	8.20	8.15	8.15	8.09	8.09	8.09

Intensity data(cd)

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	8.09	8.15	8.75	11.78	14.98	15.97	16.35	17.01	16.41
90.0	7.82	7.87	7.87	8.48	10.02	11.78	13.10	12.39	11.45
180.0	8.04	8.31	9.36	10.68	11.34	10.02	8.59	7.87	7.82
270.0	7.76	7.76	7.76	7.87	8.26	9.19	9.30	8.37	7.98
360.0	8.09	8.15	8.75	11.78	14.98	15.97	16.35	17.01	16.41

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	15.20	12.33	9.03	9.69	10.85	12.17	12.83	7.76	7.65
90.0	9.63	8.59	8.64	8.86	9.08	9.25	9.36	7.54	7.60
180.0	7.82	7.82	7.82	7.76	7.76	7.71	7.65	7.65	7.65
270.0	7.82	7.82	7.76	7.76	7.71	7.60	7.54	7.54	7.54
360.0	15.20	12.33	9.03	9.69	10.85	12.17	12.83	7.76	7.65

C/γ(°)	90.0
0.0	7.71
90.0	7.54
180.0	7.65
270.0	7.54
360.0	7.71