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Nata

LumCAT: 3-2044-M
Luminaire: 92.70.129.00
Report No: GC2017061909
Test No: NT-0010
LampCAT: CREE CXA1830
Lamp flux(lm): 2036.0
Number of Lamps: 1
Length(mm): 84
Phm Type: C

Voltage(V): 218.3000
Current(A): 0.1000
Power (W): 19.7000
PF: 0.9010
Ballast type: DC
Width(mm): 84
Height(mm): 0

Photometric Results

Lumens(lm): 1824.07
Efficiency(%): 89.59%
Lumens(lm)/Power(W): 92.59
Central intensity(cd): 6810.752
Maximum intensity(cd): 6810.752
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=25.2
[C90/270]Total=25.2
Field angle(10%Imax): [C0/180]Total=55.9
[C90/270]Total=55.9
Maximum s/h(1/2): C0_180=0.43 C90_270=0.43
Maximum s/h(1/4): C0_180=0.41 C90_270=0.41
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 89.59%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.746%

Equipment: gms1980
Temperature(°C): 25.0
Date: 2017/6/3
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	6810.752	0.000	0	.000%	.000%
1.0	6802.218	6.514	6.514	.320%	.357%
2.0	6762.302	19.469	25.983	.956%	1.424%
3.0	6685.912	32.164	58.146	1.580%	3.188%
4.0	6564.375	44.353	102.499	2.178%	5.619%
5.0	6376.908	55.673	158.172	2.734%	8.671%
6.0	6135.348	65.755	223.927	3.230%	12.276%
7.0	5818.636	74.198	298.125	3.644%	16.344%
8.0	5460.907	80.726	378.851	3.965%	20.770%
9.0	5050.324	85.188	464.039	4.184%	25.440%
10.0	4606.156	87.388	551.426	4.292%	30.231%
11.0	4142.856	87.421	638.847	4.294%	35.023%
12.0	3680.245	85.518	724.365	4.200%	39.712%
13.0	3208.274	81.749	806.114	4.015%	44.193%
14.0	2729.559	76.004	882.118	3.733%	48.360%
15.0	2350.082	69.736	951.853	3.425%	52.183%
16.0	2013.275	63.935	1015.789	3.140%	55.688%
17.0	1713.493	58.036	1073.825	2.850%	58.870%
18.0	1478.264	52.625	1126.45	2.585%	61.755%
19.0	1291.348	48.186	1174.635	2.367%	64.396%
20.0	1083.359	43.464	1218.099	2.135%	66.779%
21.0	982.247	39.664	1257.763	1.948%	68.954%
22.0	890.358	37.631	1295.394	1.848%	71.017%
23.0	816.817	35.821	1331.215	1.759%	72.981%
24.0	771.492	34.726	1365.941	1.706%	74.884%
25.0	741.018	34.391	1400.332	1.689%	76.770%
26.0	719.312	34.471	1434.803	1.693%	78.660%
27.0	698.280	34.682	1469.485	1.703%	80.561%
28.0	680.387	34.905	1504.39	1.714%	82.474%
29.0	664.558	35.188	1539.578	1.728%	84.404%
30.0	651.111	35.523	1575.1	1.745%	86.351%
31.0	635.874	35.815	1610.915	1.759%	88.314%
32.0	594.100	35.237	1646.153	1.731%	90.246%
33.0	525.486	32.983	1679.136	1.620%	92.054%
34.0	444.539	29.356	1708.492	1.442%	93.664%
35.0	355.898	24.859	1733.35	1.221%	95.027%
36.0	280.168	20.252	1753.603	.995%	96.137%
37.0	182.154	15.078	1768.681	.741%	96.964%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	103.396	9.531	1778.213	.468%	97.486%
39.0	41.994	4.963	1783.175	.244%	97.758%
40.0	21.816	2.225	1785.401	.109%	97.880%
41.0	17.370	1.395	1786.796	.069%	97.957%
42.0	13.571	1.124	1787.92	.055%	98.018%
43.0	11.190	0.917	1788.837	.045%	98.069%
44.0	10.130	0.805	1789.642	.040%	98.113%
45.0	9.428	0.752	1790.394	.037%	98.154%
46.0	9.153	0.727	1791.12	.036%	98.194%
47.0	8.933	0.719	1791.84	.035%	98.233%
48.0	8.809	0.717	1792.557	.035%	98.273%
49.0	8.644	0.717	1793.274	.035%	98.312%
50.0	8.520	0.716	1793.989	.035%	98.351%
51.0	8.369	0.715	1794.704	.035%	98.390%
52.0	8.258	0.713	1795.417	.035%	98.429%
53.0	8.176	0.715	1796.132	.035%	98.469%
54.0	8.093	0.717	1796.849	.035%	98.508%
55.0	8.024	0.719	1797.569	.035%	98.547%
56.0	7.914	0.720	1798.289	.035%	98.587%
57.0	7.818	0.719	1799.008	.035%	98.626%
58.0	7.790	0.722	1799.73	.035%	98.666%
59.0	7.722	0.725	1800.455	.036%	98.706%
60.0	7.708	0.729	1801.184	.036%	98.745%
61.0	7.653	0.733	1801.917	.036%	98.786%
62.0	7.584	0.734	1802.651	.036%	98.826%
63.0	7.543	0.736	1803.387	.036%	98.866%
64.0	7.488	0.738	1804.125	.036%	98.907%
65.0	7.488	0.741	1804.866	.036%	98.947%
66.0	7.446	0.745	1805.611	.037%	98.988%
67.0	7.419	0.747	1806.358	.037%	99.029%
68.0	7.391	0.750	1807.109	.037%	99.070%
69.0	7.350	0.752	1807.861	.037%	99.112%
70.0	7.309	0.753	1808.614	.037%	99.153%
71.0	7.309	0.756	1809.369	.037%	99.194%
72.0	7.295	0.759	1810.128	.037%	99.236%
73.0	7.267	0.762	1810.89	.037%	99.278%
74.0	7.226	0.762	1811.652	.037%	99.319%
75.0	7.212	0.763	1812.415	.037%	99.361%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	7.240	0.767	1813.182	.038%	99.403%
77.0	7.212	0.771	1813.952	.038%	99.445%
78.0	7.240	0.774	1814.726	.038%	99.488%
79.0	7.226	0.777	1815.503	.038%	99.530%
80.0	7.185	0.777	1816.28	.038%	99.573%
81.0	7.157	0.776	1817.056	.038%	99.616%
82.0	7.171	0.777	1817.833	.038%	99.658%
83.0	7.171	0.780	1818.613	.038%	99.701%
84.0	7.157	0.781	1819.393	.038%	99.744%
85.0	7.157	0.781	1820.174	.038%	99.787%
86.0	7.116	0.780	1820.955	.038%	99.829%
87.0	7.116	0.779	1821.734	.038%	99.872%
88.0	7.102	0.779	1822.512	.038%	99.915%
89.0	7.089	0.778	1823.29	.038%	99.957%
90.0	7.089	0.777	1824.067	.038%	100.000%

Zonal flux distribution table

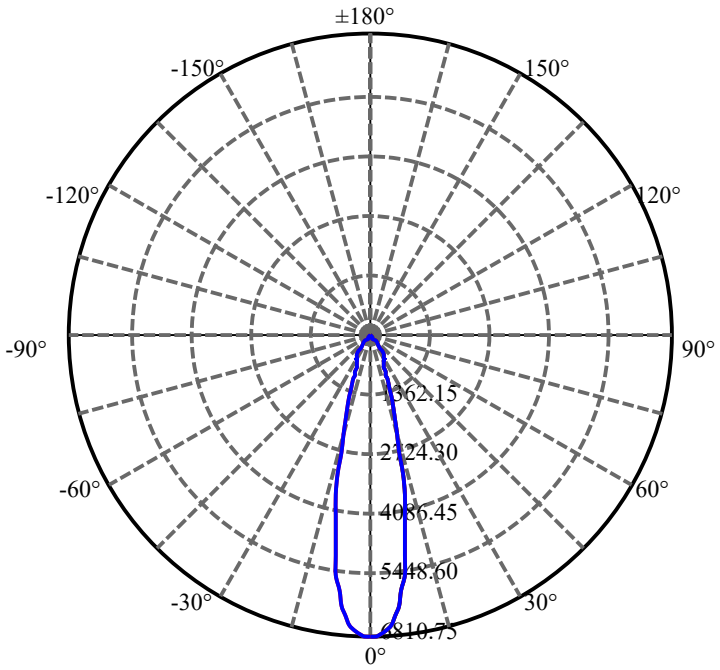
ZONAL LUMEN SUMMARY

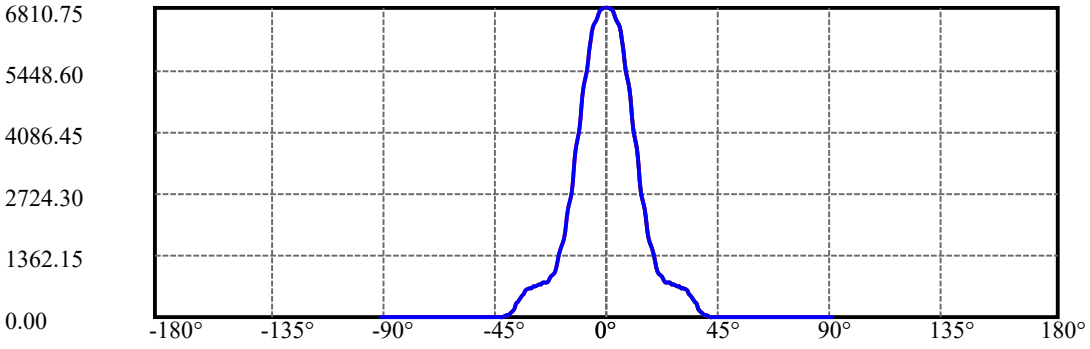
Zone	Lumens	%Lamp	%Fixt
0-30	1575.10	77.36%	86.35%
0-40	1785.40	87.69%	97.88%
0-60	1801.18	88.47%	98.75%
0-90	1823.29	89.55%	99.96%
0-120	1823.29	89.55%	99.96%
0-180	1824.07	89.59%	100.00%
60-90	22.83	1.12%	1.25%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-26.71	1459.25	71.67%	80.00%

ZONAL LUMEN SUMMARY

0-10	551.43
10-20	666.67
20-30	357.00
30-40	210.30
40-50	8.59
50-60	7.19
60-70	7.43
70-80	7.67
80-90	7.01
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:

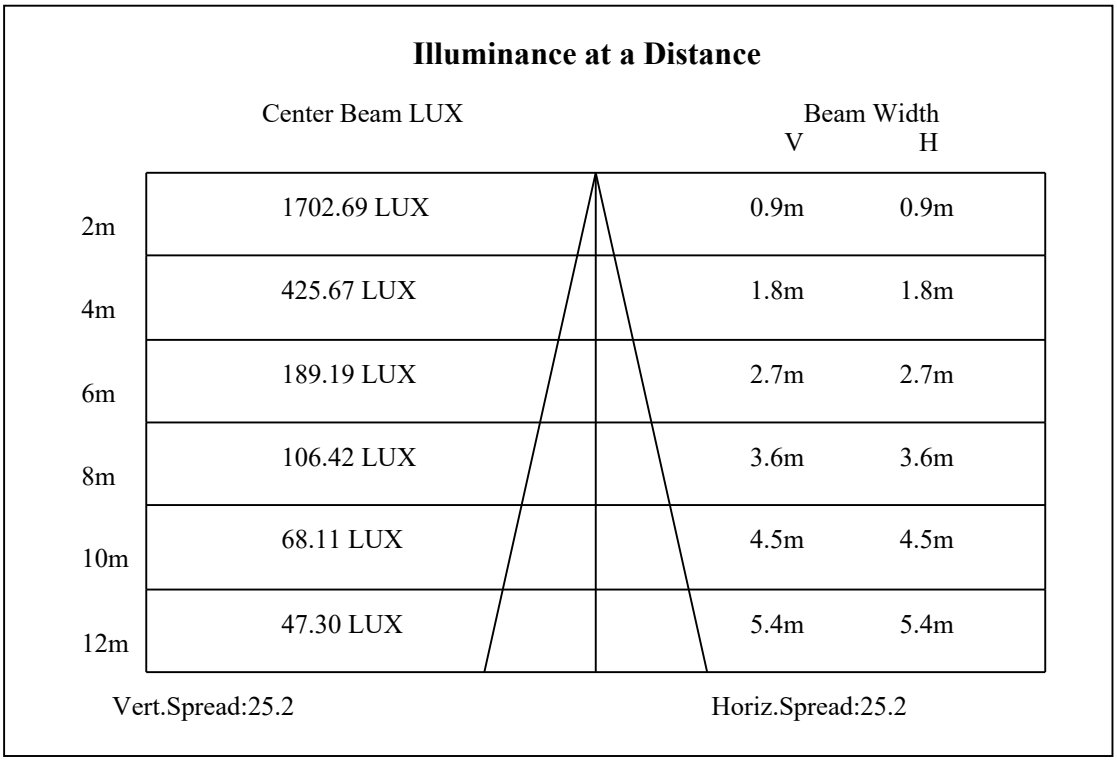
C90/C270:

Field angle(10%Imax):C0/180Left:28.0 Right:28.0
:C90/270Left:28.0 Right:28.0

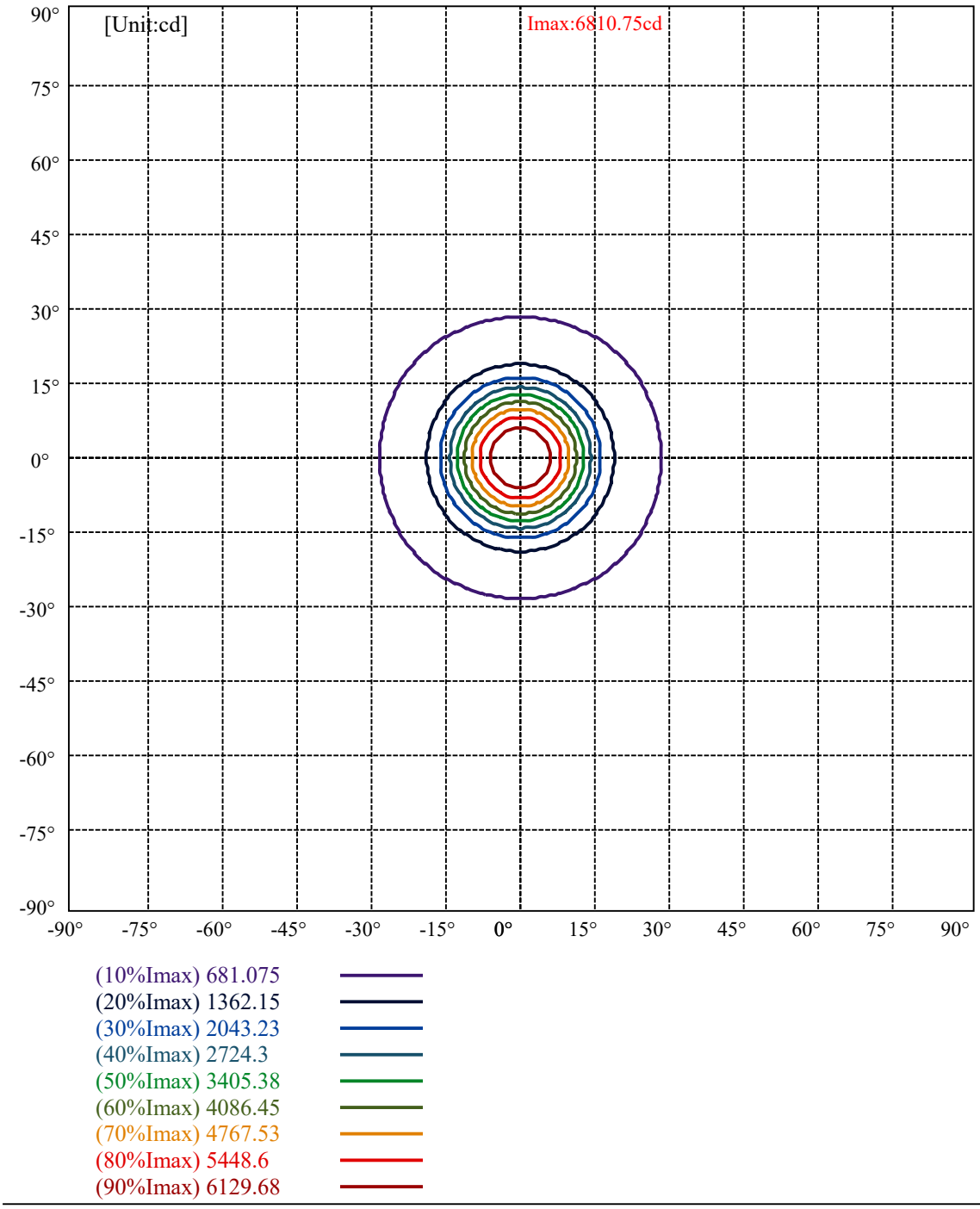
Beam Angle(50%Imax):C0/180Left:12.6 Right:12.6
:C90/270Left:12.6 Right:12.6

Equipment: gms1980 Date: 2017/6/3 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

Lux distance Curve



ISO-Intensity(V-H)

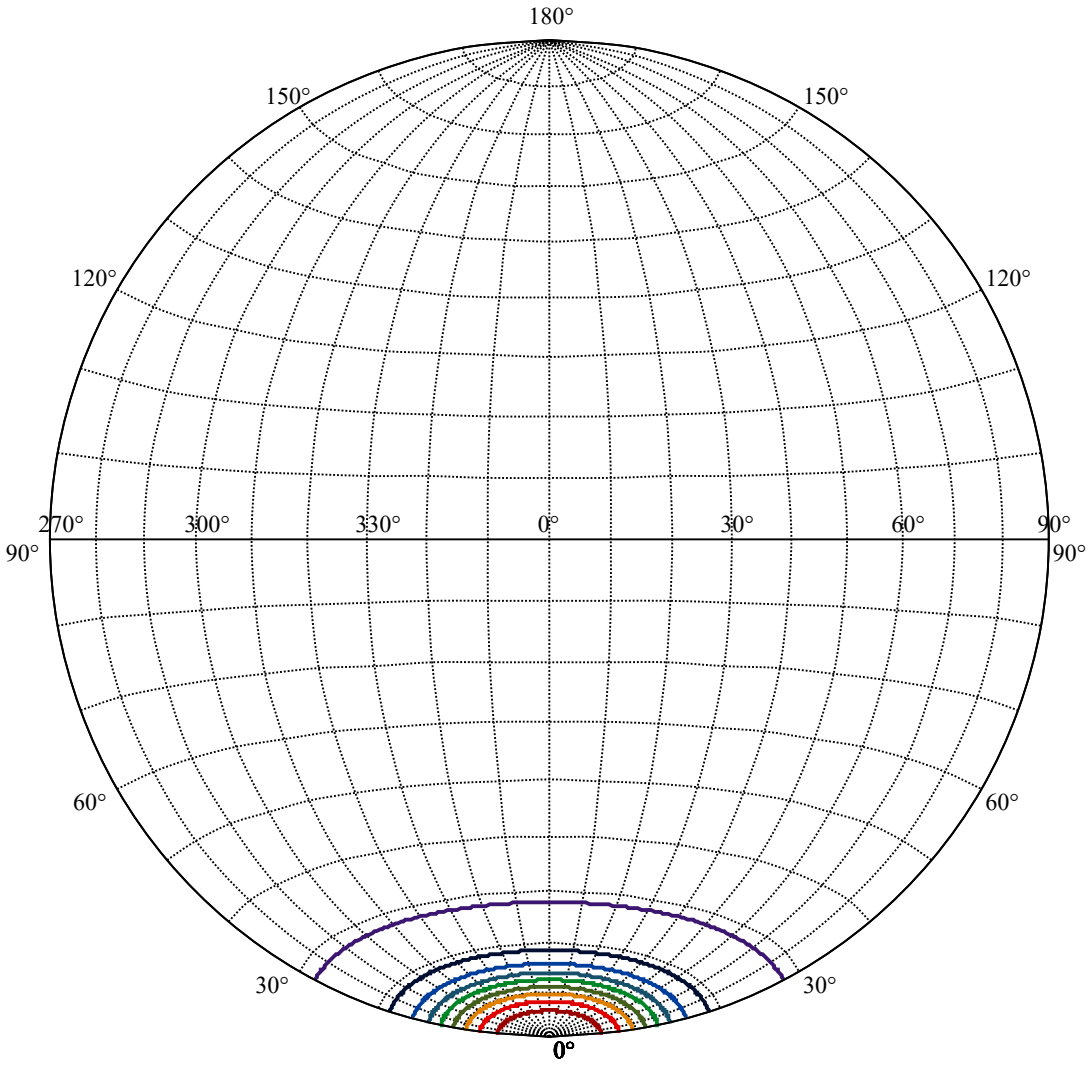


Equipment: gms1980
Temperature(°C): 25.0

Date: 2017/6/3
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

ISO candela diagram on circular web



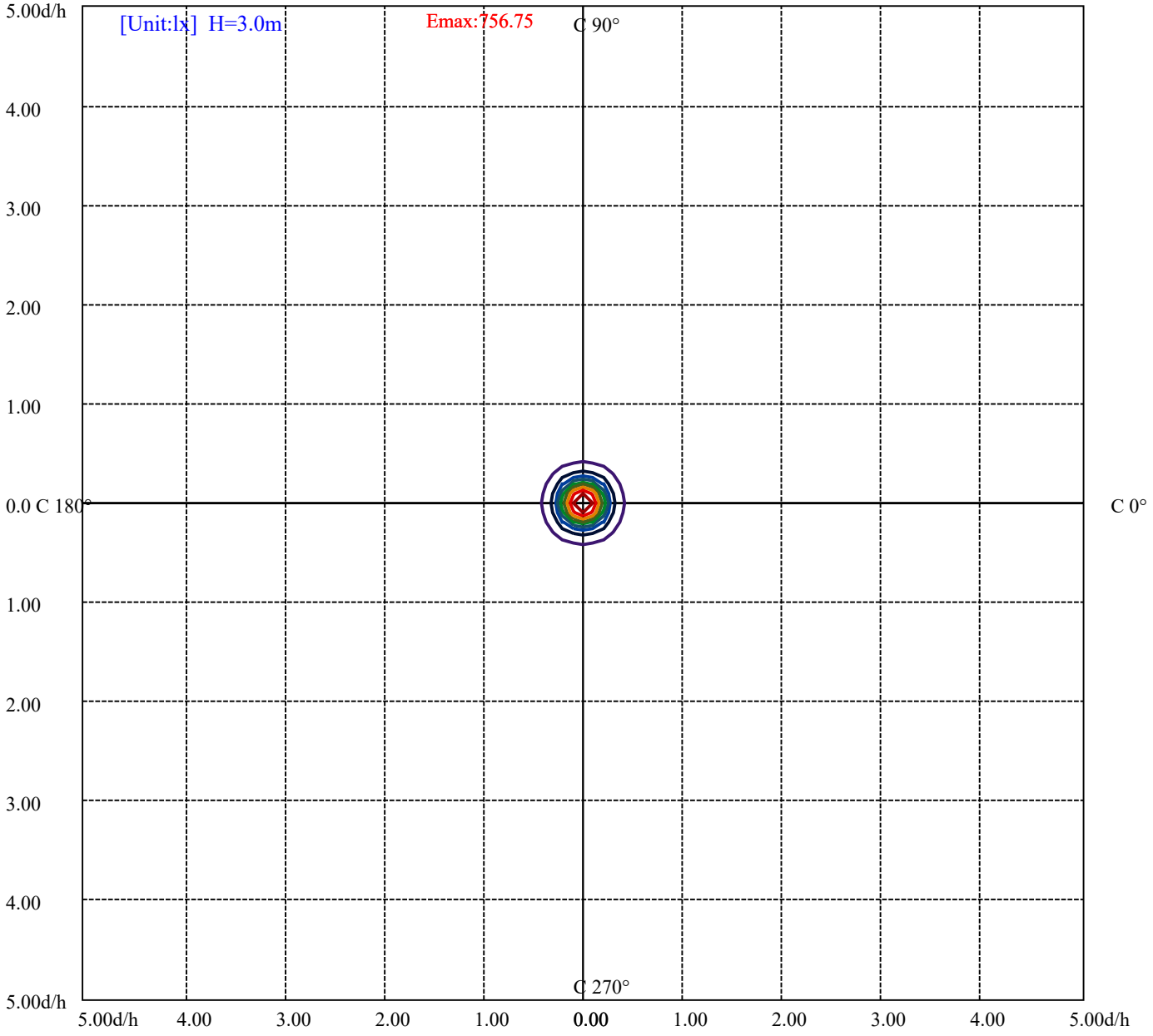
House [Unit:cd] Road

Imax:6810.75

(10%Imax) 681.075
(20%Imax) 1362.15
(30%Imax) 2043.23
(40%Imax) 2724.3
(50%Imax) 3405.38
(60%Imax) 4086.45
(70%Imax) 4767.53
(80%Imax) 5448.6
(90%Imax) 6129.68

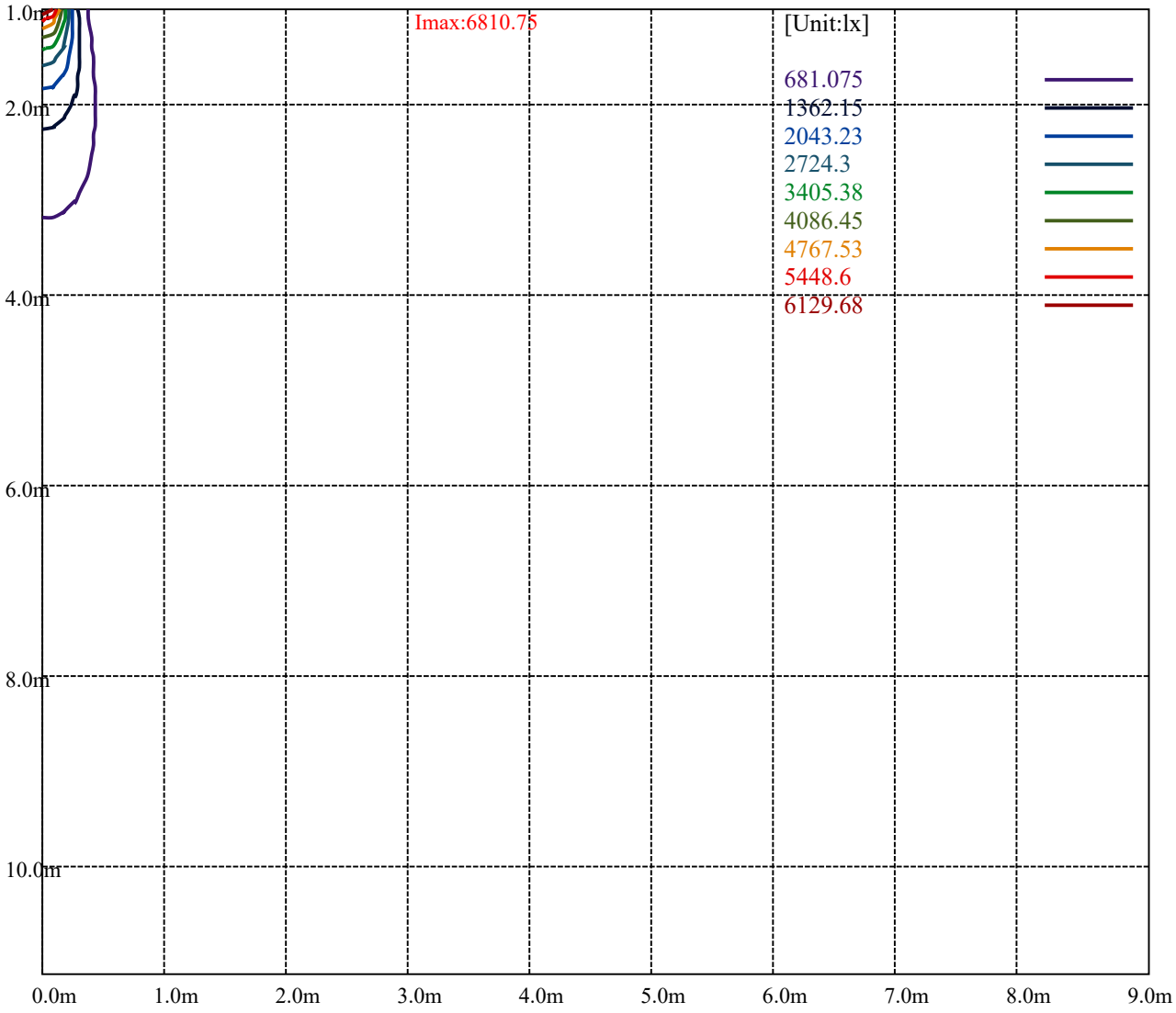
Equipment: gms1980	Date: 2017/6/3	Operator: NT07
Temperature(°C): 25.0	Humidity(%): 60.0%	Distance(m): 7.42

ISO illuminance diagram



Equipment: gms1980 Date: 2017/6/3 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

Space ISO Lux diagram



Equipment: gms1980
Temperature(°C): 25.0

Date: 2017/6/3
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

Nata 3-2044-M

Luminance Limitting Curve(no luminous side)

Luminance Table

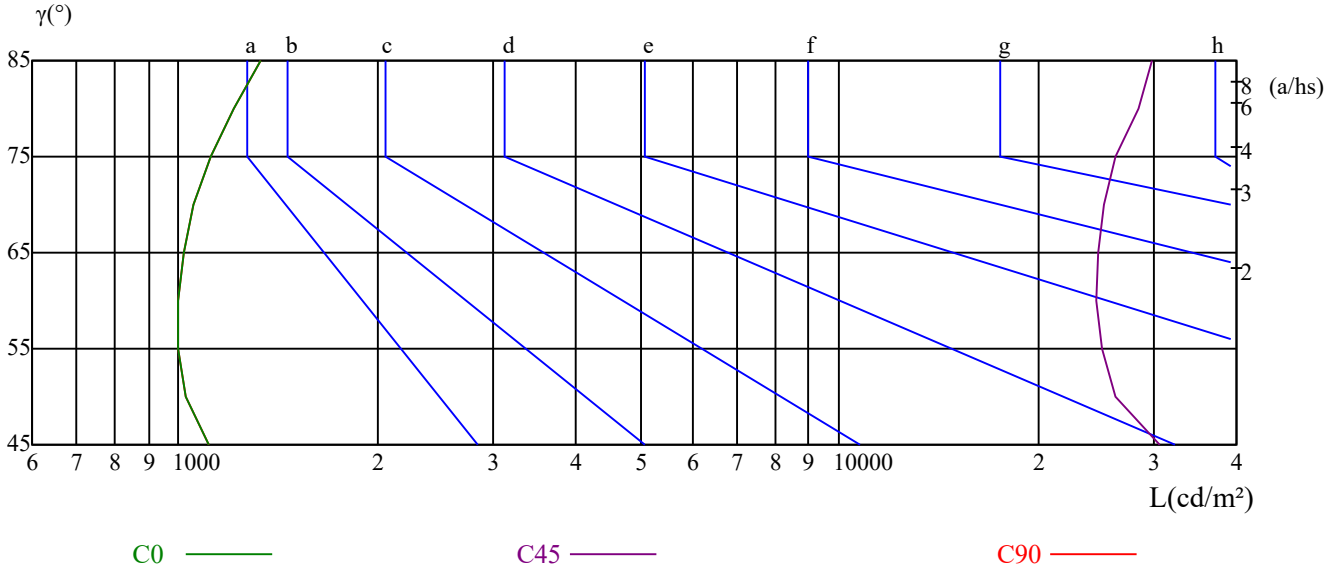
γ	45	50	55	60	65	70	75	80	85
C0	1113	1028	998	997	1016	1053	1115	1209	1332
C45	30513	26198	24946	24527	24704	25206	26261	28340	29693
C90	1113	1028	998	997	1016	1053	1115	1209	1332

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
2452	2452	74065	3857	3857	117578	11366	11366	345906

Glare Table

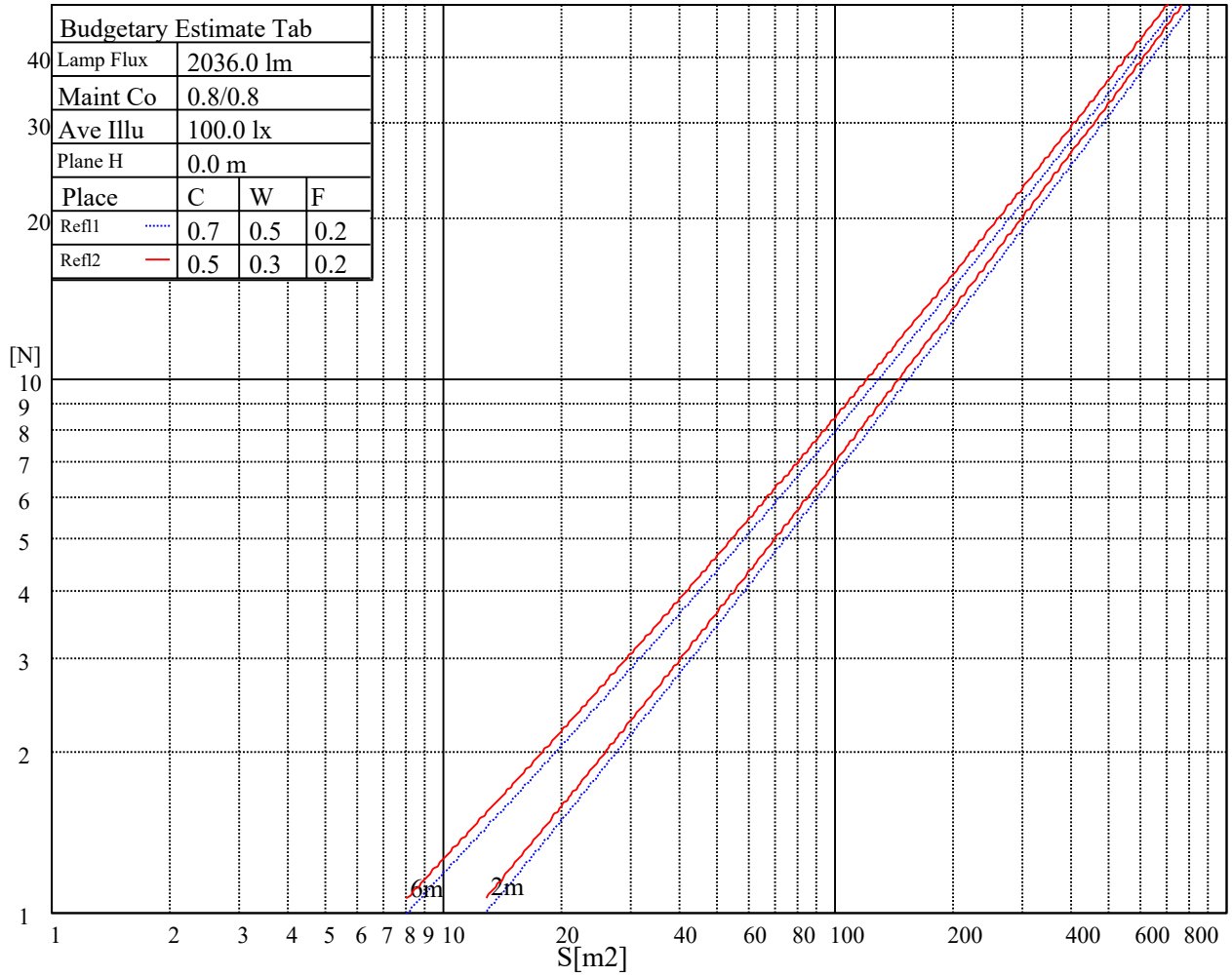
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

Luminance Limitting Curve



Equipment: gms1980 Date: 2017/6/3 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

Budgetary Estimate Table

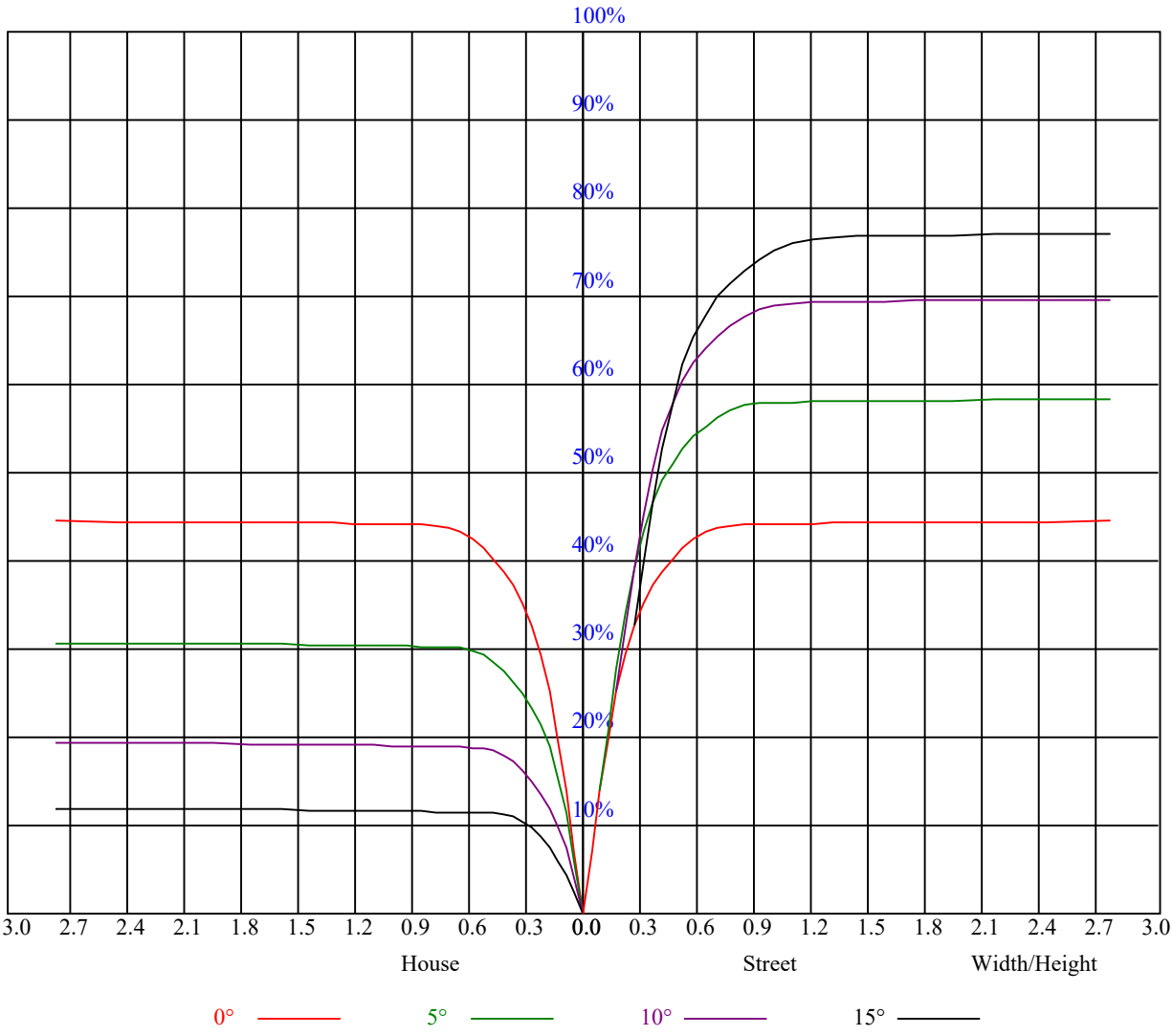


Equipment: gms1980 Date: 2017/6/3 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

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	1.07	1.07	1.07	1.04	1.04	1.04	1.00	1.00	1.00	0.95	0.95	0.95	0.91	0.91	0.91	0.90
1	1.00	0.98	0.97	0.98	0.97	0.95	0.95	0.93	0.92	0.92	0.90	0.89	0.88	0.88	0.87	0.85
2	0.95	0.92	0.89	0.93	0.91	0.88	0.91	0.88	0.86	0.88	0.86	0.85	0.86	0.84	0.83	0.82
3	0.90	0.87	0.84	0.89	0.86	0.83	0.87	0.84	0.82	0.85	0.82	0.81	0.83	0.81	0.79	0.78
4	0.86	0.82	0.79	0.85	0.81	0.79	0.83	0.80	0.78	0.82	0.79	0.77	0.80	0.78	0.76	0.75
5	0.82	0.78	0.75	0.82	0.78	0.75	0.80	0.77	0.74	0.79	0.76	0.74	0.77	0.75	0.73	0.72
6	0.79	0.75	0.72	0.78	0.74	0.72	0.77	0.74	0.71	0.76	0.73	0.71	0.75	0.72	0.70	0.69
7	0.76	0.72	0.69	0.75	0.71	0.69	0.74	0.71	0.68	0.73	0.70	0.68	0.72	0.70	0.68	0.67
8	0.73	0.69	0.66	0.73	0.69	0.66	0.72	0.68	0.66	0.71	0.68	0.65	0.70	0.67	0.65	0.64
9	0.71	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	0.61	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

Coefficient Utilization Curve



Equipment: gms1980	Date: 2017/6/3	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	6813.23	6785.70	6736.15	6650.26	6521.98	6344.15	6046.29	5752.29	5423.61
90.0	6808.27	6817.63	6779.65	6704.77	6585.85	6360.67	6120.07	5810.10	5410.94
180.0	6813.23	6819.84	6789.56	6712.48	6579.24	6411.87	6189.44	5825.52	5480.31
270.0	6808.27	6785.70	6743.86	6676.14	6570.43	6390.95	6185.59	5886.63	5528.76
360.0	6813.23	6785.70	6736.15	6650.26	6521.98	6344.15	6046.29	5752.29	5423.61

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	4956.18	4552.06	4118.77	3621.61	3132.16	2726.39	2317.87	1963.31	1698.49
90.0	4964.44	4536.10	4020.22	3550.59	3038.01	2575.54	2217.12	1874.12	1589.48
180.0	5101.53	4590.60	4160.06	3717.96	3272.00	2742.91	2367.43	2046.45	1743.09
270.0	5179.16	4745.86	4272.38	3830.82	3390.92	2873.39	2497.91	2169.22	1822.92
360.0	4956.18	4552.06	4118.77	3621.61	3132.16	2726.39	2317.87	1963.31	1698.49

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1457.34	1282.81	1118.75	982.21	888.61	814.28	767.49	739.41	719.04
90.0	1375.86	1196.93	1024.60	921.64	842.91	784.55	747.67	725.09	706.37
180.0	1489.28	1293.83	1094.63	977.14	891.42	821.94	779.76	747.50	724.82
270.0	1590.58	1391.83	1095.46	1048.00	938.49	846.49	791.05	752.07	727.02
360.0	1457.34	1282.81	1118.75	982.21	888.61	814.28	767.49	739.41	719.04

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	693.71	676.09	662.88	647.46	630.40	590.76	519.18	433.84	352.91
90.0	686.00	671.14	657.37	644.71	624.89	573.14	500.46	414.57	313.82
180.0	704.34	686.99	668.44	654.51	642.18	594.99	529.86	453.28	362.33
270.0	709.07	687.32	669.54	657.76	646.03	617.51	552.44	476.46	394.53
360.0	693.71	676.09	662.88	647.46	630.40	590.76	519.18	433.84	352.91

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	280.79	176.90	95.91	37.77	20.65	17.84	13.87	11.56	10.57
90.0	280.79	152.29	74.99	28.74	18.66	15.91	11.29	10.08	9.47
180.0	269.39	189.72	107.97	45.20	21.97	17.23	13.76	10.85	9.58
270.0	289.71	209.71	134.72	56.27	25.99	18.50	15.36	12.28	10.90
360.0	280.79	176.90	95.91	37.77	20.65	17.84	13.87	11.56	10.57

C/γ(°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0
0.0	9.63	9.36	9.14	9.03	8.81	8.70	8.53	8.42	8.31
90.0	9.14	8.92	8.75	8.64	8.53	8.42	8.26	8.15	8.09
180.0	9.36	9.14	8.92	8.81	8.64	8.48	8.37	8.26	8.20
270.0	9.58	9.19	8.92	8.75	8.59	8.48	8.31	8.20	8.09
360.0	9.63	9.36	9.14	9.03	8.81	8.70	8.53	8.42	8.31

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	8.26	8.15	8.04	7.93	7.93	7.82	7.82	7.76	7.71
90.0	7.98	7.93	7.87	7.76	7.71	7.65	7.65	7.60	7.54
180.0	8.09	8.04	7.87	7.82	7.82	7.76	7.71	7.65	7.54
270.0	8.04	7.98	7.87	7.76	7.71	7.65	7.65	7.60	7.54
360.0	8.26	8.15	8.04	7.93	7.93	7.82	7.82	7.76	7.71

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	7.60	7.60	7.60	7.54	7.49	7.43	7.43	7.38	7.38
90.0	7.54	7.43	7.43	7.38	7.38	7.38	7.32	7.27	7.27
180.0	7.54	7.49	7.49	7.49	7.43	7.38	7.32	7.32	7.32
270.0	7.49	7.43	7.43	7.38	7.38	7.38	7.32	7.27	7.27
360.0	7.60	7.60	7.60	7.54	7.49	7.43	7.43	7.38	7.38

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	7.38	7.32	7.27	7.32	7.32	7.27	7.21	7.21	7.21
90.0	7.27	7.27	7.21	7.16	7.16	7.16	7.21	7.21	7.21
180.0	7.32	7.27	7.21	7.21	7.27	7.21	7.21	7.27	7.21
270.0	7.21	7.21	7.21	7.16	7.21	7.21	7.32	7.21	7.10
360.0	7.38	7.32	7.27	7.32	7.32	7.27	7.21	7.21	7.21

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	7.21	7.16	7.21	7.16	7.16	7.16	7.16	7.10	7.16
90.0	7.16	7.21	7.21	7.21	7.21	7.05	7.05	7.10	7.05
180.0	7.16	7.16	7.16	7.16	7.16	7.16	7.16	7.16	7.10
270.0	7.10	7.16	7.10	7.10	7.10	7.10	7.10	7.05	7.05
360.0	7.21	7.16	7.21	7.16	7.16	7.16	7.16	7.10	7.16

C/γ(°)	90.0
0.0	7.16
90.0	7.05
180.0	7.10
270.0	7.05
360.0	7.16