NATA LIGHTING CO.,LTD
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Address:380JinOu Road,Gaoxin Zone,Jiang Men City,Guangdong,China

Nata

LumCAT: 3-2033-M
Luminaire: 92.76.129.00
Report No: GC2017061704
Test No: NT-0010
LampCAT: CREE CXA1820
Lamp flux(lm): 2283.0
Number of Lamps: 1
Length(mm): 79
Phm Type: C

Voltage(V): 36.0000
Current(A): 0.5000
Power (W): 18.0000
PF: 0.0000
Ballast type: DC
Width(mm): 79
Height(mm): 0

Photometric Results

Lumens(lm): 2043.74
Efficiency(%): 89.52%
Lumens(lm)/Power(W): 113.54
Central intensity(cd): 19575.300
Maximum intensity(cd): 19575.300
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=25.7
[C90/270]Total=25.7
Maximum s/h(1/2): C0_180=0.22 C90_270=0.22
Maximum s/h(1/4): C0_180=0.23 C90_270=0.23
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 89.52%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.774%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	19575.303	0.000	0	.000%	.000%
1.0	19101.818	18.506	18.506	.811%	.906%
2.0	18238.809	53.595	72.101	2.348%	3.528%
3.0	16764.674	83.717	155.818	3.667%	7.624%
4.0	14712.446	105.364	261.182	4.615%	12.780%
5.0	12999.091	119.214	380.395	5.222%	18.613%
6.0	10765.316	124.888	505.284	5.470%	24.723%
7.0	8383.025	118.853	624.137	5.206%	30.539%
8.0	6981.152	109.958	734.096	4.816%	35.919%
9.0	5365.797	100.065	834.161	4.383%	40.815%
10.0	4039.350	85.113	919.274	3.728%	44.980%
11.0	3049.712	70.834	990.108	3.103%	48.446%
12.0	2431.291	59.915	1050.024	2.624%	51.378%
13.0	1874.670	51.101	1101.125	2.238%	53.878%
14.0	1591.818	44.371	1145.495	1.944%	56.049%
15.0	1392.789	40.974	1186.469	1.795%	58.054%
16.0	1228.955	38.416	1224.885	1.683%	59.933%
17.0	1129.551	36.728	1261.613	1.609%	61.731%
18.0	1030.587	35.616	1297.229	1.560%	63.473%
19.0	989.295	35.142	1332.371	1.539%	65.193%
20.0	943.749	35.380	1367.751	1.550%	66.924%
21.0	908.307	35.563	1403.315	1.558%	68.664%
22.0	881.480	35.967	1439.281	1.575%	70.424%
23.0	858.384	36.507	1475.788	1.599%	72.210%
24.0	836.376	37.054	1512.842	1.623%	74.023%
25.0	814.766	37.543	1550.385	1.644%	75.860%
26.0	793.872	37.972	1588.357	1.663%	77.718%
27.0	774.465	38.370	1626.727	1.681%	79.596%
28.0	754.686	38.715	1665.442	1.696%	81.490%
29.0	737.797	39.048	1704.489	1.710%	83.400%
30.0	723.069	39.443	1743.932	1.728%	85.330%
31.0	699.657	39.592	1783.525	1.734%	87.268%
32.0	659.810	38.947	1822.472	1.706%	89.173%
33.0	609.584	37.397	1859.869	1.638%	91.003%
34.0	536.442	34.682	1894.551	1.519%	92.700%
35.0	445.737	30.503	1925.054	1.336%	94.193%
36.0	343.524	25.130	1950.184	1.101%	95.422%
37.0	249.708	19.348	1969.532	.847%	96.369%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	177.392	14.256	1983.788	.624%	97.066%
39.0	96.913	9.363	1993.151	.410%	97.525%
40.0	53.763	5.255	1998.406	.230%	97.782%
41.0	28.216	2.919	2001.325	.128%	97.925%
42.0	19.091	1.719	2003.044	.075%	98.009%
43.0	16.104	1.304	2004.347	.057%	98.072%
44.0	13.984	1.136	2005.483	.050%	98.128%
45.0	12.264	1.009	2006.492	.044%	98.177%
46.0	11.273	0.920	2007.412	.040%	98.222%
47.0	10.585	0.869	2008.282	.038%	98.265%
48.0	10.130	0.837	2009.119	.037%	98.306%
49.0	9.855	0.821	2009.94	.036%	98.346%
50.0	9.621	0.812	2010.752	.036%	98.386%
51.0	9.456	0.807	2011.559	.035%	98.425%
52.0	9.263	0.803	2012.362	.035%	98.465%
53.0	9.084	0.798	2013.16	.035%	98.504%
54.0	8.933	0.794	2013.954	.035%	98.542%
55.0	8.795	0.791	2014.746	.035%	98.581%
56.0	8.644	0.788	2015.534	.035%	98.620%
57.0	8.534	0.785	2016.319	.034%	98.658%
58.0	8.451	0.785	2017.104	.034%	98.697%
59.0	8.369	0.786	2017.891	.034%	98.735%
60.0	8.314	0.788	2018.679	.035%	98.774%
61.0	8.258	0.791	2019.47	.035%	98.812%
62.0	8.203	0.793	2020.263	.035%	98.851%
63.0	8.162	0.796	2021.059	.035%	98.890%
64.0	8.107	0.798	2021.857	.035%	98.929%
65.0	8.052	0.800	2022.657	.035%	98.968%
66.0	8.038	0.803	2023.46	.035%	99.008%
67.0	7.969	0.805	2024.265	.035%	99.047%
68.0	7.969	0.807	2025.072	.035%	99.086%
69.0	7.942	0.812	2025.884	.036%	99.126%
70.0	7.942	0.816	2026.7	.036%	99.166%
71.0	7.887	0.818	2027.518	.036%	99.206%
72.0	7.873	0.819	2028.337	.036%	99.246%
73.0	7.859	0.823	2029.16	.036%	99.286%
74.0	8.024	0.835	2029.995	.037%	99.327%
75.0	8.190	0.857	2030.852	.038%	99.369%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	8.245	0.872	2031.724	.038%	99.412%
77.0	8.231	0.878	2032.602	.038%	99.455%
78.0	8.258	0.883	2033.485	.039%	99.498%
79.0	8.286	0.889	2034.374	.039%	99.542%
80.0	8.135	0.885	2035.259	.039%	99.585%
81.0	7.956	0.870	2036.129	.038%	99.628%
82.0	7.846	0.857	2036.986	.038%	99.669%
83.0	7.790	0.850	2037.836	.037%	99.711%
84.0	7.818	0.850	2038.687	.037%	99.753%
85.0	7.722	0.848	2039.535	.037%	99.794%
86.0	7.722	0.844	2040.379	.037%	99.835%
87.0	7.680	0.843	2041.222	.037%	99.877%
88.0	7.653	0.840	2042.062	.037%	99.918%
89.0	7.667	0.840	2042.901	.037%	99.959%
90.0	7.667	0.841	2043.742	.037%	100.000%

Zonal flux distribution table

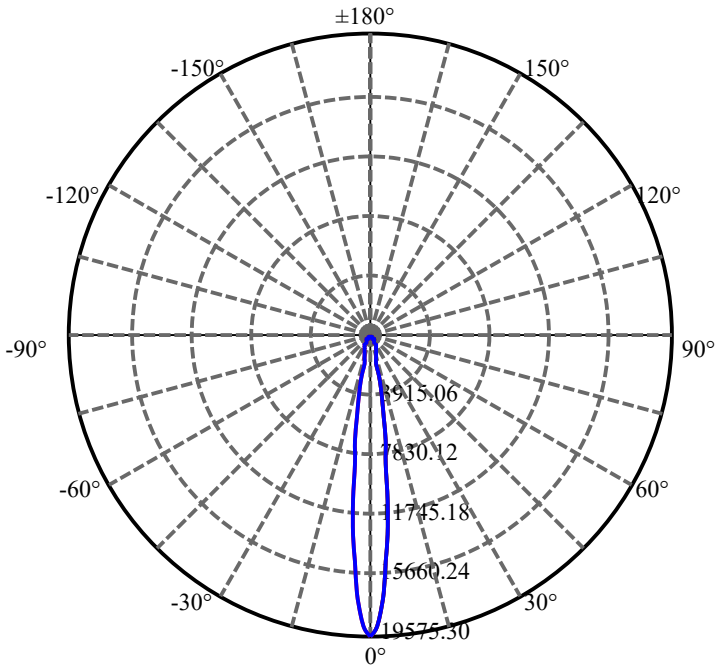
ZONAL LUMEN SUMMARY

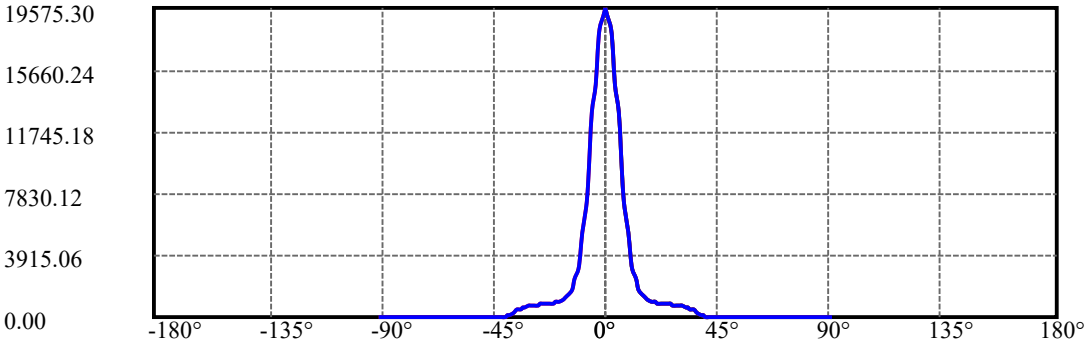
Zone	Lumens	%Lamp	%Fixt
0-30	1743.93	76.39%	85.33%
0-40	1998.41	87.53%	97.78%
0-60	2018.68	88.42%	98.77%
0-90	2042.90	89.48%	99.96%
0-120	2042.90	89.48%	99.96%
0-180	2043.74	89.52%	100.00%
60-90	25.01	1.10%	1.22%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-27.21	1634.99	71.62%	80.00%

ZONAL LUMEN SUMMARY

0-10	919.27
10-20	448.48
20-30	376.18
30-40	254.47
40-50	12.35
50-60	7.93
60-70	8.02
70-80	8.56
80-90	7.64
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:

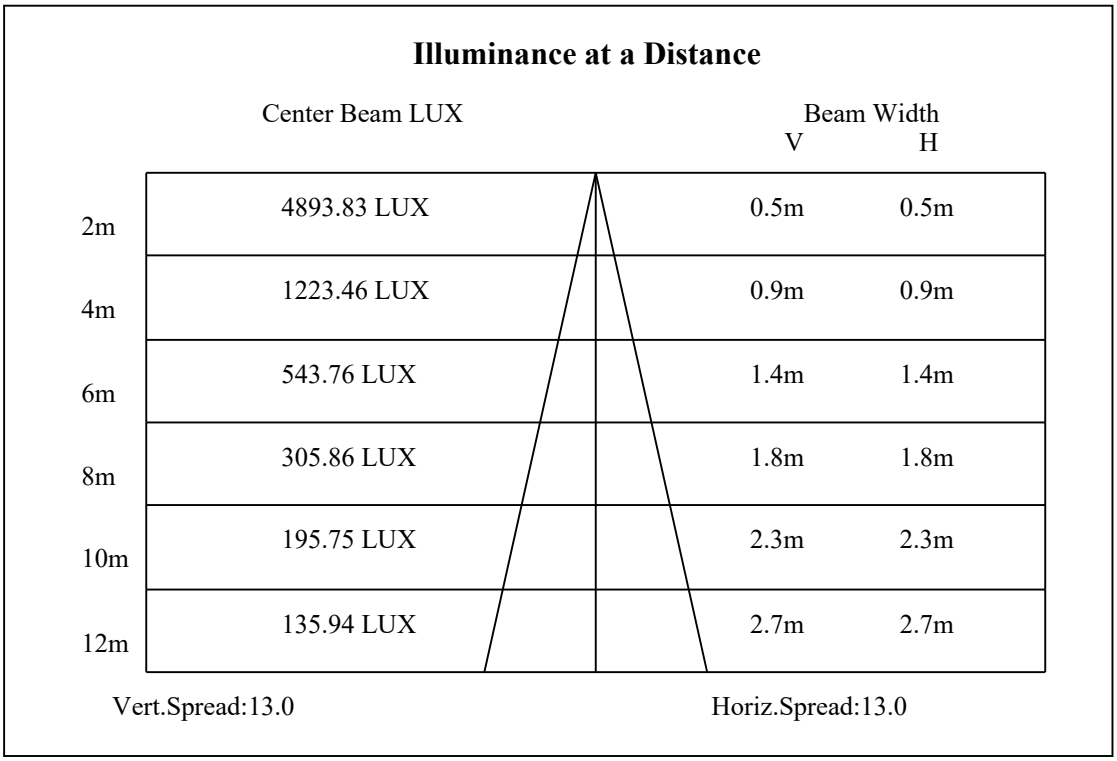
C90/C270:

Field angle(10%Imax):C0/180Left:12.9 Right:12.9
:C90/270Left:12.9 Right:12.9

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

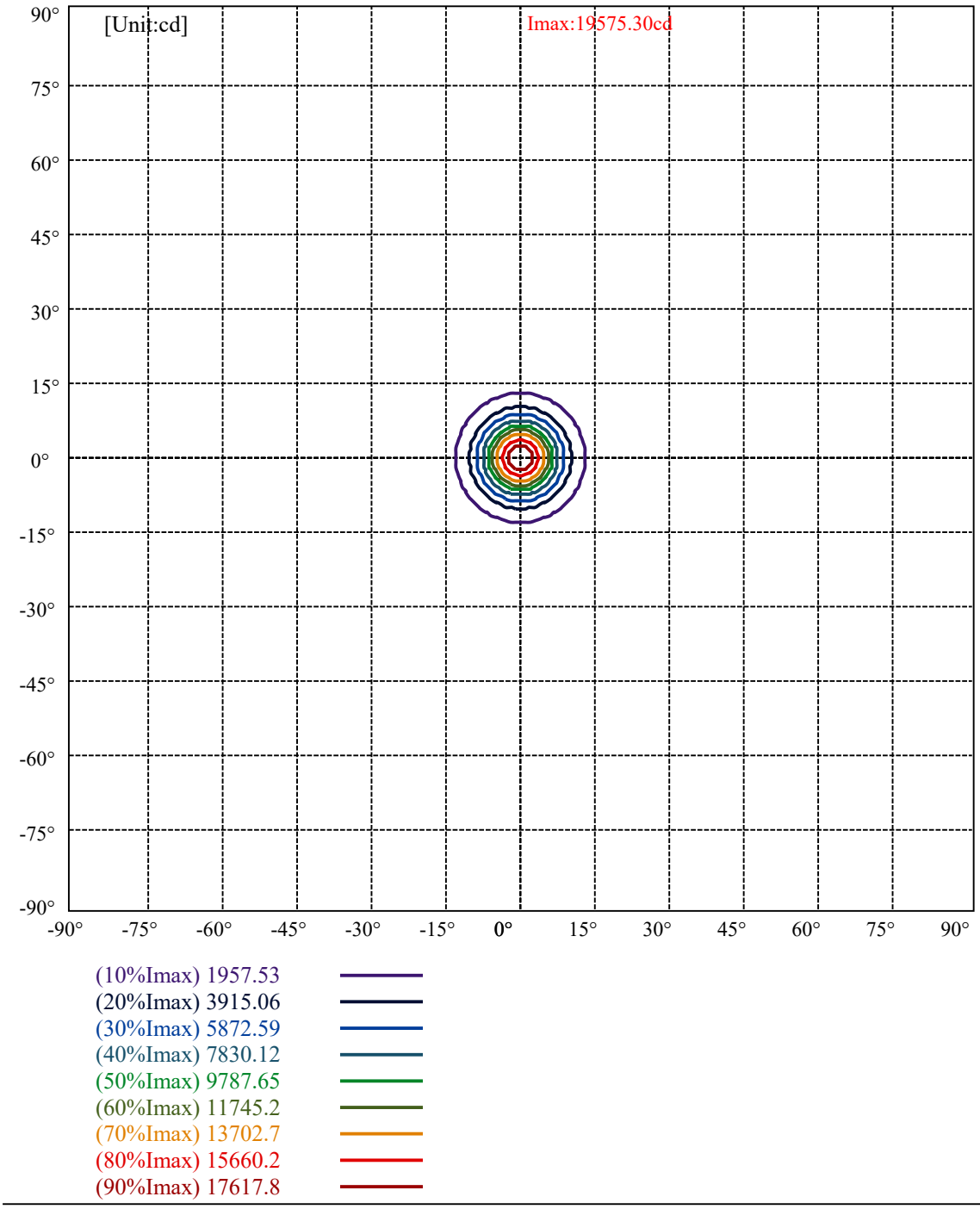
Equipment: gms1980 Date: 2017/6/13 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

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)



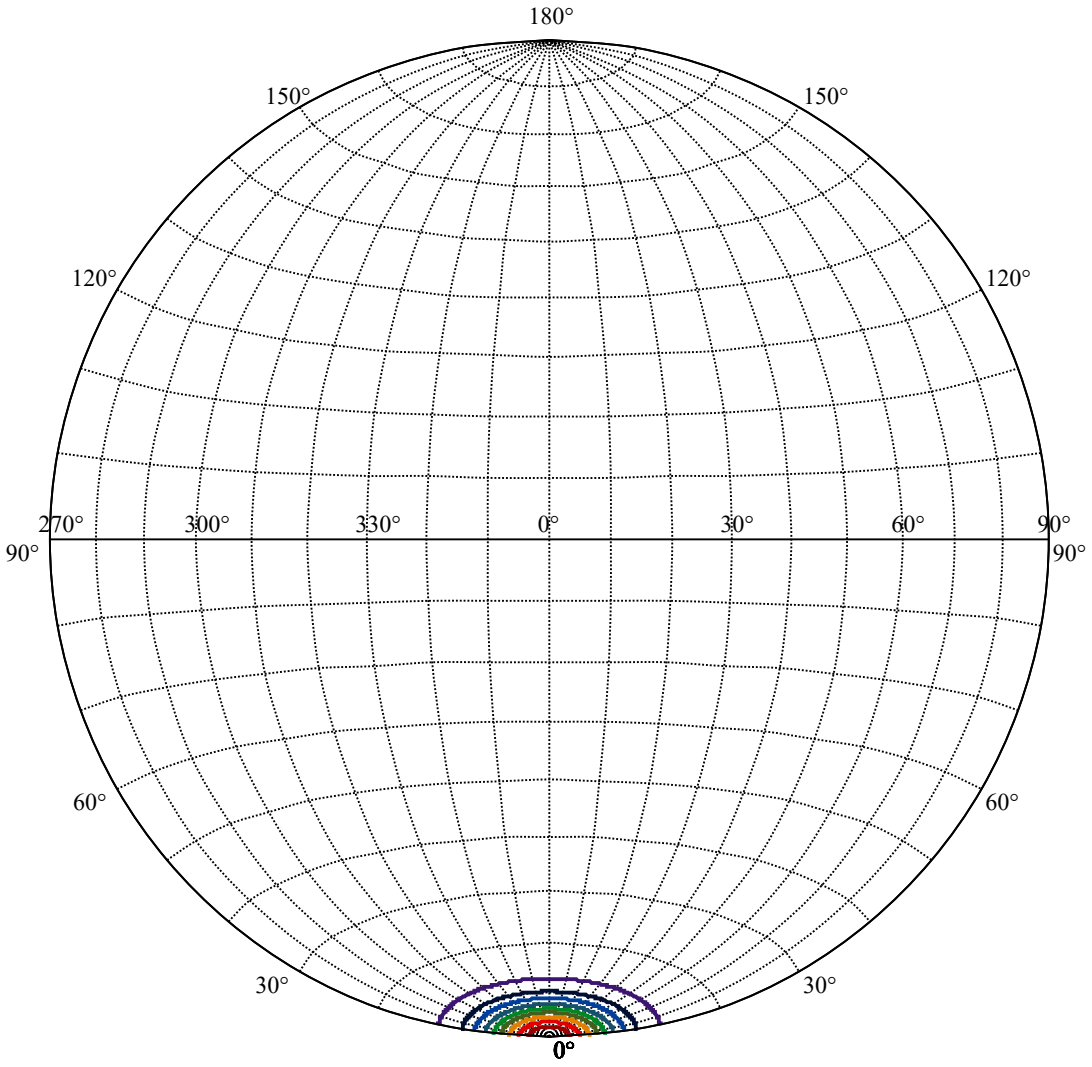
(10%Imax) 1957.53
(20%Imax) 3915.06
(30%Imax) 5872.59
(40%Imax) 7830.12
(50%Imax) 9787.65
(60%Imax) 11745.2
(70%Imax) 13702.7
(80%Imax) 15660.2
(90%Imax) 17617.8

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



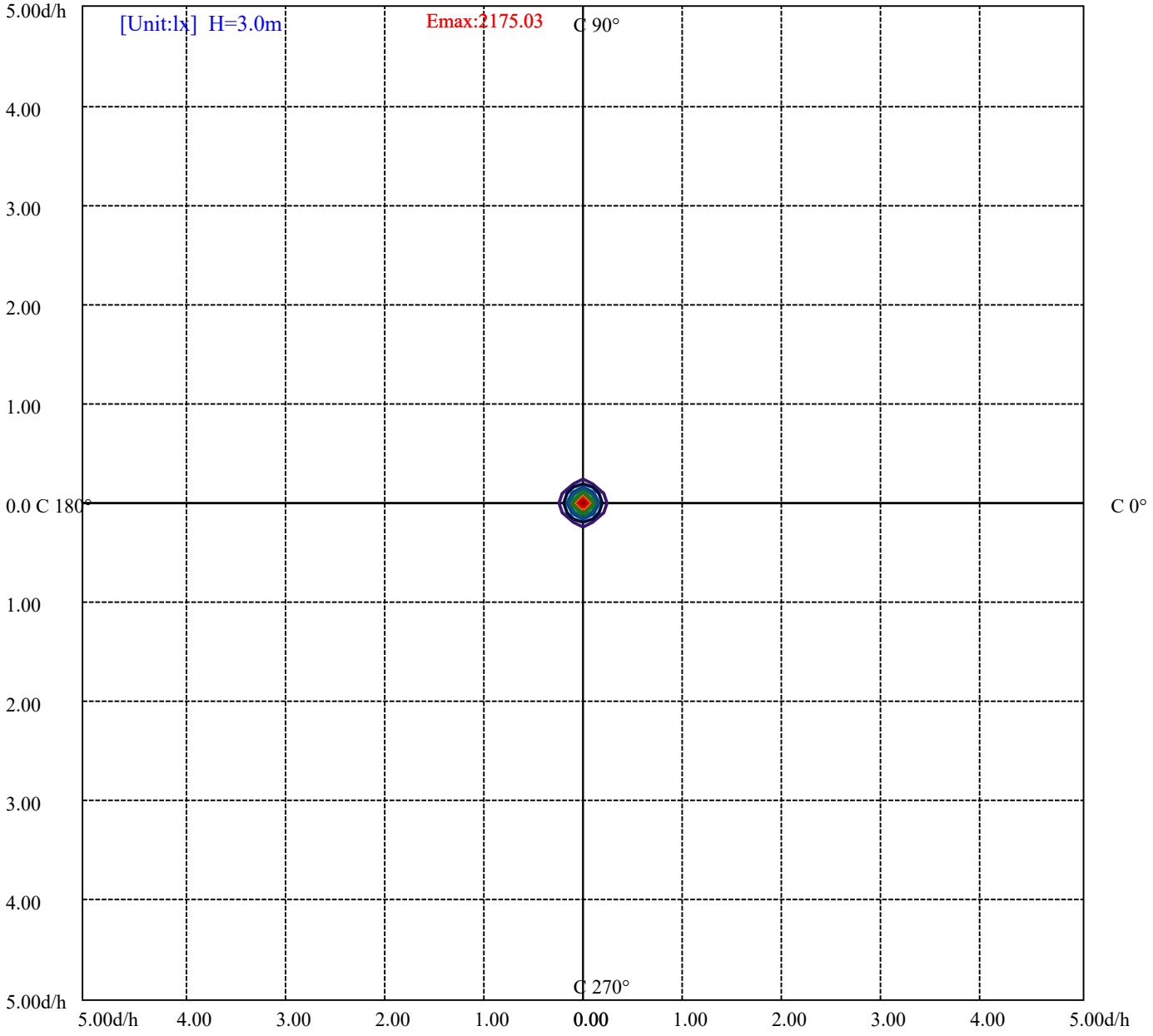
House [Unit:cd] Road

Imax:19575.30

(10%Imax) 1957.53
(20%Imax) 3915.06
(30%Imax) 5872.59
(40%Imax) 7830.12
(50%Imax) 9787.65
(60%Imax) 11745.2
(70%Imax) 13702.7
(80%Imax) 15660.2
(90%Imax) 17617.8

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

ISO illuminance diagram

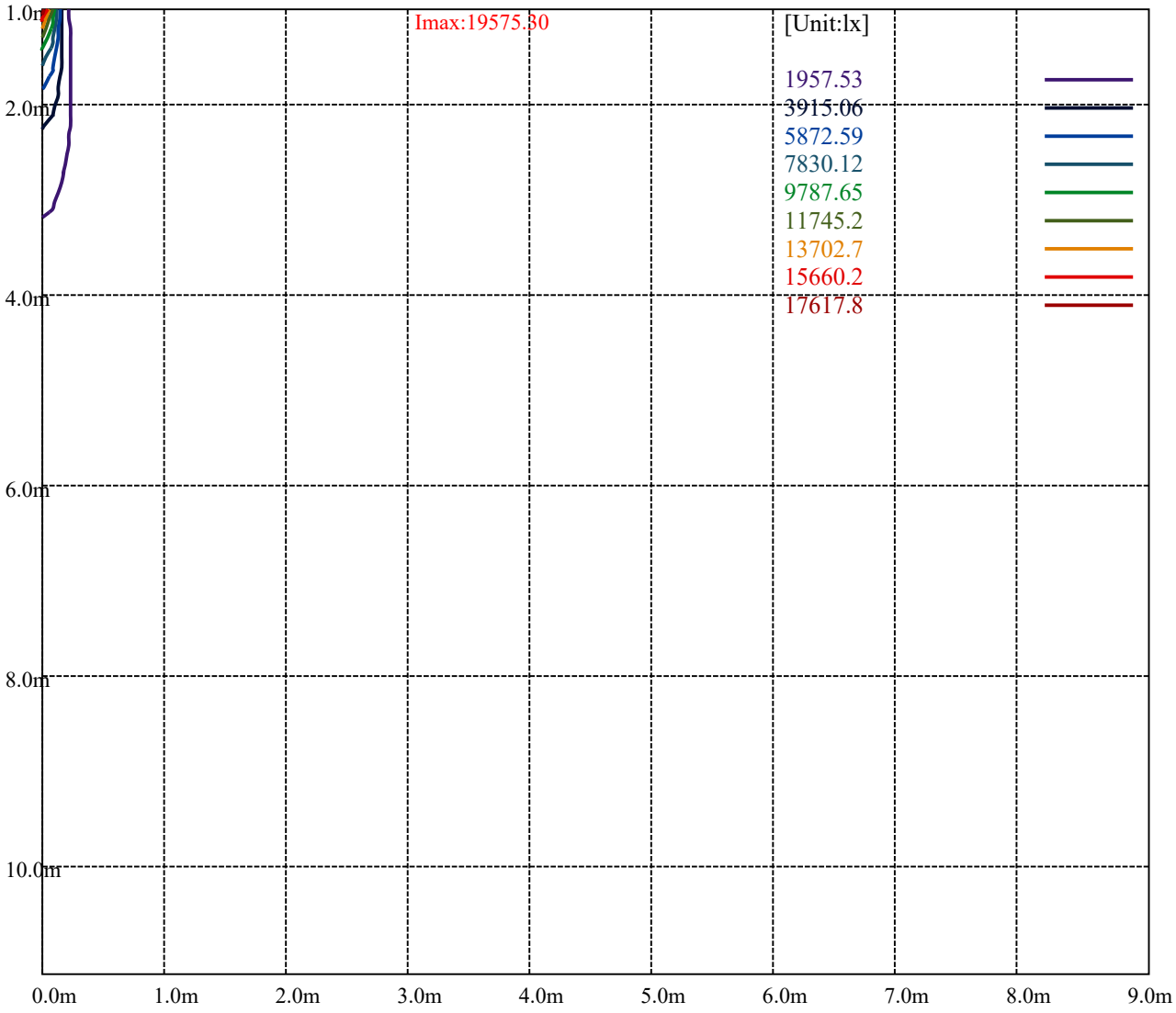


Equipment: gms1980
Temperature(°C): 25.0

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

Luminance Limitting Curve(no luminous side)

Luminance Table

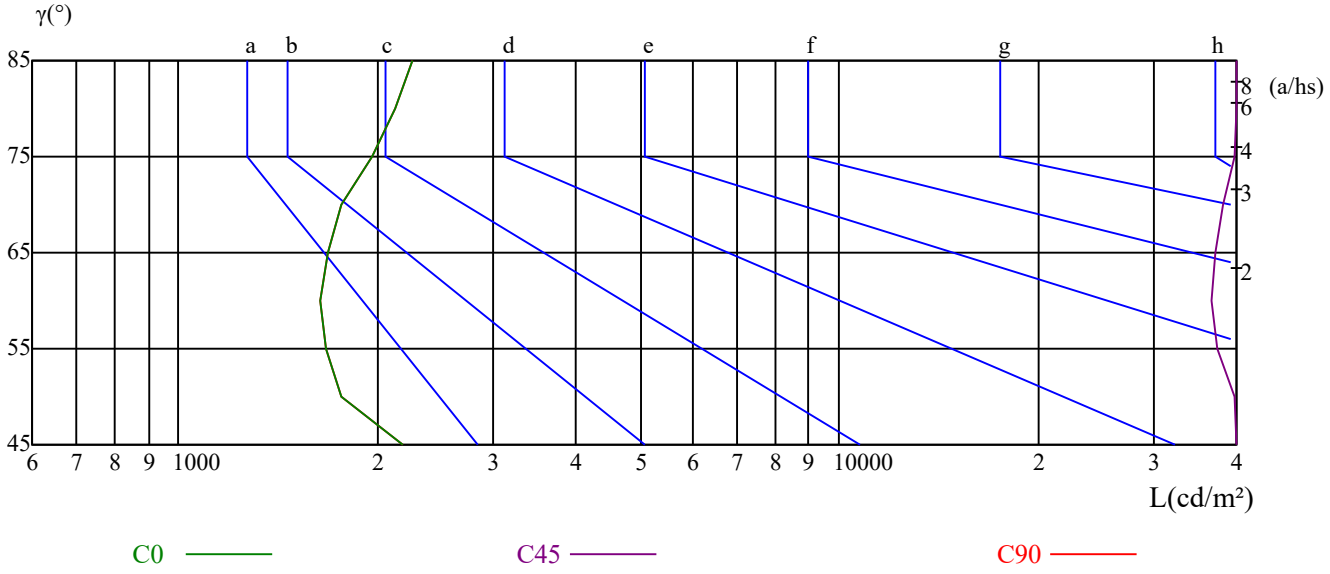
γ	45	50	55	60	65	70	75	80	85
C0	2193	1764	1667	1644	1678	1763	1961	2132	2254
C45	50887	39656	37312	36738	37077	38190	39848	42511	45710
C90	2193	1764	1667	1644	1678	1763	1961	2132	2254

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
3888	3888	106151	6458	6458	169043	18081	18081	499592

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

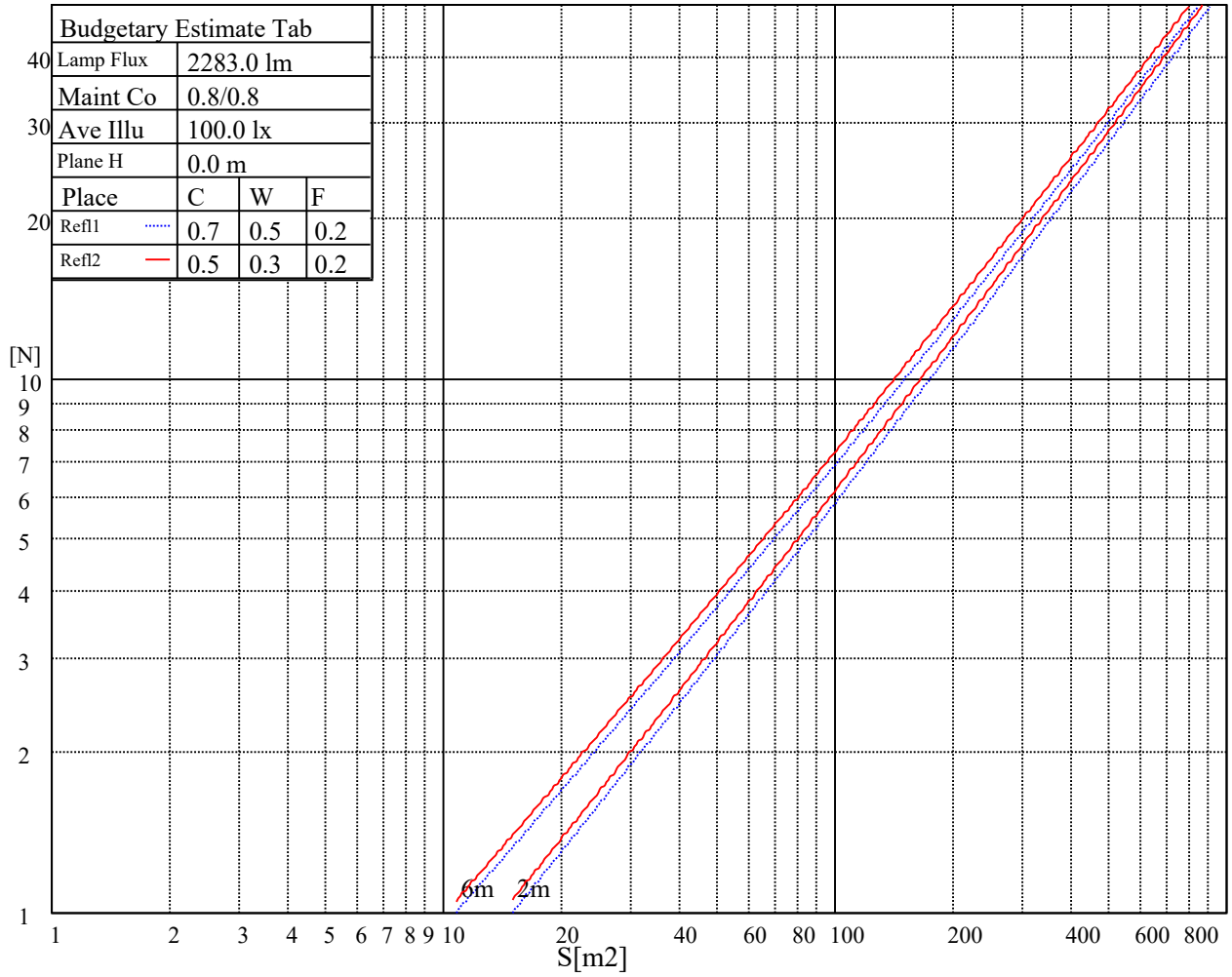


Equipment: gms1980
Temperature(°C): 25.0

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

Operator: NT07
Distance(m): 7.42

Budgetary Estimate Table

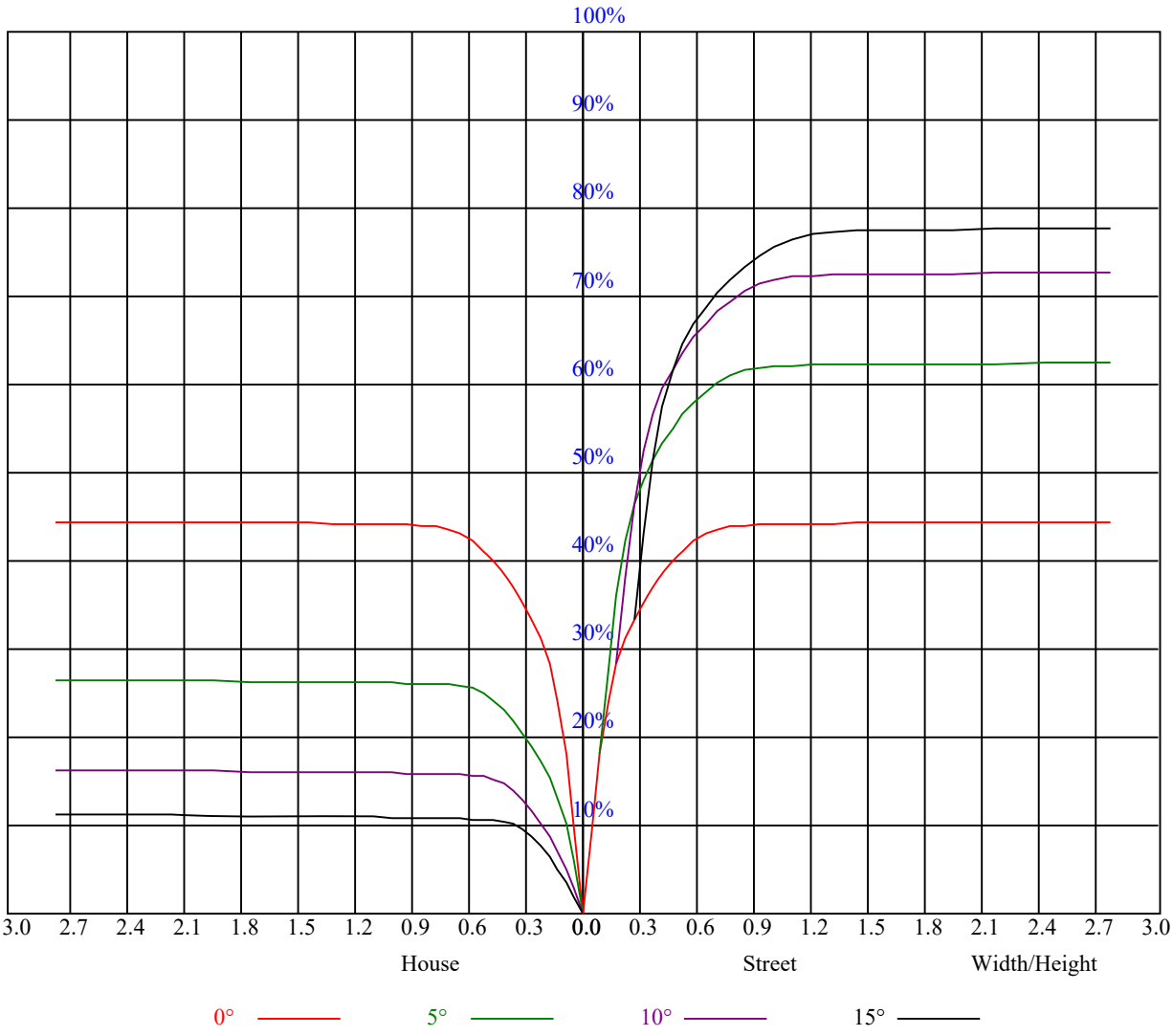


Equipment: gms1980 Date: 2017/6/13 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

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	1.07	1.07	1.07	1.04	1.04	1.04	0.99	0.99	0.99	0.95	0.95	0.95	0.91	0.91	0.91	0.90
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	0.87	0.86
2	0.96	0.93	0.90	0.94	0.92	0.89	0.91	0.89	0.87	0.89	0.87	0.86	0.86	0.85	0.84	0.82
3	0.91	0.88	0.85	0.90	0.87	0.84	0.88	0.85	0.83	0.86	0.84	0.82	0.84	0.82	0.81	0.79
4	0.87	0.84	0.81	0.86	0.83	0.80	0.85	0.82	0.79	0.83	0.81	0.79	0.81	0.79	0.78	0.77
5	0.84	0.80	0.77	0.83	0.80	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	0.72	0.71	0.70
8	0.76	0.72	0.69	0.75	0.72	0.69	0.75	0.71	0.69	0.74	0.71	0.69	0.73	0.70	0.69	0.68
9	0.74	0.70	0.67	0.73	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.67	0.71	0.69	0.67	0.66
10	0.72	0.68	0.65	0.71	0.68	0.65	0.71	0.67	0.65	0.70	0.67	0.65	0.70	0.67	0.65	0.64

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	19605.58	17876.81	15817.70	14000.84	11319.60	9277.00	7405.09	5379.01	4030.13
90.0	19545.02	19792.78	19374.35	18052.99	16511.41	14672.53	12194.99	10179.93	8263.97
180.0	19605.58	20348.85	20596.60	19759.74	18680.64	17078.50	14419.27	10951.27	10422.18
270.0	19545.02	18388.84	17166.59	15245.12	12338.14	10968.34	9041.91	7021.89	5208.34
360.0	19605.58	17876.81	15817.70	14000.84	11319.60	9277.00	7405.09	5379.01	4030.13

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	3044.62	2507.82	1906.60	1639.58	1404.49	1268.50	1161.69	1074.15	1008.63
90.0	6127.78	4663.28	3479.56	2835.40	2049.75	1729.32	1479.37	1301.53	1184.26
180.0	8409.31	6154.75	4621.43	3419.00	2457.17	2001.30	1691.88	1446.88	1274.56
270.0	3881.48	2831.55	2191.24	1831.18	1587.28	1368.15	1238.22	1093.25	1050.75
360.0	3044.62	2507.82	1906.60	1639.58	1404.49	1268.50	1161.69	1074.15	1008.63

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	965.14	926.05	894.67	870.44	845.67	825.30	803.27	778.50	756.47
90.0	1086.81	1020.75	966.79	927.15	901.27	876.50	853.37	833.00	814.83
180.0	1081.31	1063.08	1001.92	951.21	914.93	890.32	865.82	844.12	825.79
270.0	989.09	947.30	911.62	884.43	864.06	841.43	823.04	803.44	778.39
360.0	965.14	926.05	894.67	870.44	845.67	825.30	803.27	778.50	756.47

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	739.41	722.89	711.33	700.87	654.07	581.40	493.31	384.84	286.29
90.0	791.71	768.04	750.42	733.90	717.94	706.92	686.55	622.69	541.75
180.0	807.90	786.37	764.46	747.23	731.48	716.01	703.57	675.27	600.56
270.0	758.84	741.44	724.98	710.28	695.14	634.91	554.91	462.97	354.34
360.0	739.41	722.89	711.33	700.87	654.07	581.40	493.31	384.84	286.29

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	178.27	98.55	38.70	23.12	20.21	16.63	13.60	11.95	11.01
90.0	434.95	334.19	282.99	126.52	60.29	27.36	21.75	18.22	15.25
180.0	514.12	407.75	312.61	207.67	111.82	49.11	24.11	20.10	17.18
270.0	246.76	158.34	75.26	30.34	22.74	19.77	16.90	14.15	12.50
360.0	178.27	98.55	38.70	23.12	20.21	16.63	13.60	11.95	11.01

C/γ(°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0
0.0	10.57	10.13	9.80	9.58	9.41	9.19	9.08	8.92	8.70
90.0	12.88	11.67	11.29	10.90	10.46	10.19	9.97	9.74	9.58
180.0	14.48	12.55	11.07	10.13	9.80	9.58	9.41	9.19	9.03
270.0	11.12	10.74	10.19	9.91	9.74	9.52	9.36	9.19	9.03
360.0	10.57	10.13	9.80	9.58	9.41	9.19	9.08	8.92	8.70

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	8.59	8.53	8.37	8.31	8.26	8.20	8.15	8.09	8.04
90.0	9.41	9.19	8.97	8.81	8.70	8.59	8.48	8.42	8.42
180.0	8.86	8.70	8.59	8.48	8.37	8.26	8.26	8.20	8.15
270.0	8.86	8.75	8.64	8.53	8.48	8.42	8.37	8.31	8.20
360.0	8.59	8.53	8.37	8.31	8.26	8.20	8.15	8.09	8.04

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	8.04	7.98	7.93	7.93	7.87	7.87	7.87	7.87	7.82
90.0	8.31	8.26	8.20	8.20	8.09	8.09	8.04	8.04	7.98
180.0	8.09	8.04	7.98	7.93	7.87	7.87	7.87	7.87	7.82
270.0	8.20	8.15	8.09	8.09	8.04	8.04	7.98	7.98	7.93
360.0	8.04	7.98	7.93	7.93	7.87	7.87	7.87	7.87	7.82

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	7.82	7.87	8.53	9.14	9.36	8.97	8.53	8.09	7.98
90.0	7.98	7.93	7.93	7.93	7.93	7.93	8.09	8.53	8.15
180.0	7.82	7.76	7.76	7.76	7.76	7.76	7.76	8.09	8.26
270.0	7.87	7.87	7.87	7.93	7.93	8.26	8.64	8.42	8.15
360.0	7.82	7.87	8.53	9.14	9.36	8.97	8.53	8.09	7.98

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	7.98	7.93	7.87	7.98	7.65	7.65	7.60	7.60	7.60
90.0	7.98	7.87	7.82	7.82	7.82	7.82	7.76	7.71	7.76
180.0	7.93	7.71	7.65	7.65	7.65	7.65	7.65	7.60	7.60
270.0	7.93	7.87	7.82	7.82	7.76	7.76	7.71	7.71	7.71
360.0	7.98	7.93	7.87	7.98	7.65	7.65	7.60	7.60	7.60

C/γ(°)	90.0
0.0	7.60
90.0	7.76
180.0	7.60
270.0	7.71
360.0	7.60