NATA LIGHTING CO.,LTD.
www.nata.cn
Email:info@nata.com
Tel:+86-750-3770000 Fax:+86-750-3771111
Address:380JinOu Road,GaoXin Zone,Jiang Men City,Guangdong,China

Nata

LumCAT: 4-2109-E
Luminaire: 92.76.323.00
Report No: NATA0100
Test No: GC2019111520
LampCAT: LUMENS EDC-57-20W
Lamp flux(lm): 1515.0
Number of Lamps: 1
Length(mm): 0
Phm Type: C

Voltage(V): 17.6000
Current(A): 0.9940
Power (W): 50.0000
PF: 1.2180
Ballast type: DC
Width(mm): 0
Height(mm): 0

Photometric Results

Lumens(lm): 1319.03
Efficiency(%): 87.06%
Lumens(lm)/Power(W): 26.38
Central intensity(cd): 5250.234
Maximum intensity(cd): 5250.234
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=23.5
[C90/270]Total=23.5
Field angle(10%Imax): [C0/180]Total=53.8
[C90/270]Total=53.8
Maximum s/h(1/2): C0_180=0.40 C90_270=0.40
Maximum s/h(1/4): C0_180=0.38 C90_270=0.38
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 87.06%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.454%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	5250.234	0.000	0	.000%	.000%
1.0	5239.055	5.019	5.019	.331%	.381%
2.0	5189.203	14.968	19.987	.988%	1.515%
3.0	5087.602	24.579	44.565	1.622%	3.379%
4.0	4956.891	33.622	78.187	2.219%	5.928%
5.0	4775.133	41.867	120.054	2.763%	9.102%
6.0	4551.539	49.014	169.068	3.235%	12.818%
7.0	4280.836	54.822	223.891	3.619%	16.974%
8.0	3997.688	59.248	283.138	3.911%	21.466%
9.0	3656.109	62.030	345.168	4.094%	26.168%
10.0	3281.414	62.782	407.95	4.144%	30.928%
11.0	2913.117	61.896	469.846	4.086%	35.621%
12.0	2535.117	59.557	529.403	3.931%	40.136%
13.0	2155.078	55.661	585.064	3.674%	44.356%
14.0	1807.031	50.715	635.779	3.348%	48.200%
15.0	1523.109	45.718	681.497	3.018%	51.666%
16.0	1217.391	40.156	721.653	2.651%	54.711%
17.0	1083.825	35.836	757.489	2.365%	57.428%
18.0	935.536	33.295	790.784	2.198%	59.952%
19.0	830.391	30.724	821.507	2.028%	62.281%
20.0	749.166	28.910	850.417	1.908%	64.473%
21.0	687.488	27.587	878.004	1.821%	66.564%
22.0	642.424	26.725	904.729	1.764%	68.590%
23.0	607.915	26.235	930.965	1.732%	70.579%
24.0	581.020	25.994	956.959	1.716%	72.550%
25.0	557.698	25.892	982.851	1.709%	74.513%
26.0	539.670	25.903	1008.754	1.710%	76.477%
27.0	523.470	26.010	1034.764	1.717%	78.449%
28.0	509.365	26.149	1060.914	1.726%	80.431%
29.0	497.995	26.355	1087.269	1.740%	82.429%
30.0	486.274	26.575	1113.844	1.754%	84.444%
31.0	475.580	26.767	1140.611	1.767%	86.473%
32.0	466.073	26.977	1167.588	1.781%	88.519%
33.0	441.091	26.725	1194.314	1.764%	90.545%
34.0	383.766	24.963	1219.276	1.648%	92.437%
35.0	308.763	21.507	1240.784	1.420%	94.068%
36.0	242.402	17.549	1258.333	1.158%	95.398%
37.0	142.938	12.568	1270.901	.830%	96.351%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	72.155	7.180	1278.08	.474%	96.895%
39.0	31.620	3.542	1281.622	.234%	97.164%
40.0	24.075	1.942	1283.565	.128%	97.311%
41.0	20.777	1.597	1285.162	.105%	97.432%
42.0	16.411	1.351	1286.513	.089%	97.535%
43.0	12.270	1.062	1287.575	.070%	97.615%
44.0	9.752	0.831	1288.406	.055%	97.678%
45.0	8.796	0.713	1289.119	.047%	97.732%
46.0	8.381	0.672	1289.791	.044%	97.783%
47.0	8.142	0.657	1290.448	.043%	97.833%
48.0	7.924	0.649	1291.098	.043%	97.882%
49.0	7.720	0.642	1291.74	.042%	97.931%
50.0	7.559	0.637	1292.377	.042%	97.979%
51.0	7.404	0.633	1293.01	.042%	98.027%
52.0	7.263	0.629	1293.64	.042%	98.075%
53.0	7.137	0.626	1294.266	.041%	98.123%
54.0	7.038	0.625	1294.891	.041%	98.170%
55.0	6.940	0.624	1295.515	.041%	98.217%
56.0	6.848	0.623	1296.138	.041%	98.264%
57.0	6.778	0.623	1296.761	.041%	98.312%
58.0	6.722	0.624	1297.385	.041%	98.359%
59.0	6.652	0.625	1298.01	.041%	98.406%
60.0	6.595	0.626	1298.636	.041%	98.454%
61.0	6.553	0.627	1299.264	.041%	98.501%
62.0	6.525	0.630	1299.894	.042%	98.549%
63.0	6.483	0.633	1300.526	.042%	98.597%
64.0	6.462	0.635	1301.162	.042%	98.645%
65.0	6.469	0.640	1301.802	.042%	98.694%
66.0	6.462	0.645	1302.447	.043%	98.743%
67.0	6.469	0.650	1303.097	.043%	98.792%
68.0	6.455	0.655	1303.752	.043%	98.842%
69.0	6.441	0.658	1304.409	.043%	98.892%
70.0	6.504	0.665	1305.074	.044%	98.942%
71.0	6.715	0.683	1305.757	.045%	98.994%
72.0	7.151	0.721	1306.478	.048%	99.048%
73.0	7.573	0.770	1307.248	.051%	99.107%
74.0	7.826	0.810	1308.058	.053%	99.168%
75.0	7.819	0.827	1308.884	.055%	99.231%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	7.221	0.798	1309.683	.053%	99.291%
77.0	6.694	0.742	1310.425	.049%	99.348%
78.0	6.434	0.703	1311.127	.046%	99.401%
79.0	6.279	0.683	1311.81	.045%	99.453%
80.0	6.152	0.670	1312.481	.044%	99.503%
81.0	6.117	0.664	1313.144	.044%	99.554%
82.0	6.075	0.661	1313.805	.044%	99.604%
83.0	6.054	0.659	1314.465	.044%	99.654%
84.0	6.026	0.658	1315.123	.043%	99.704%
85.0	6.005	0.657	1315.779	.043%	99.754%
86.0	5.977	0.655	1316.434	.043%	99.803%
87.0	5.955	0.653	1317.087	.043%	99.853%
88.0	5.920	0.651	1317.738	.043%	99.902%
89.0	5.885	0.647	1318.385	.043%	99.951%
90.0	5.885	0.645	1319.03	.043%	100.000%

Zonal flux distribution table

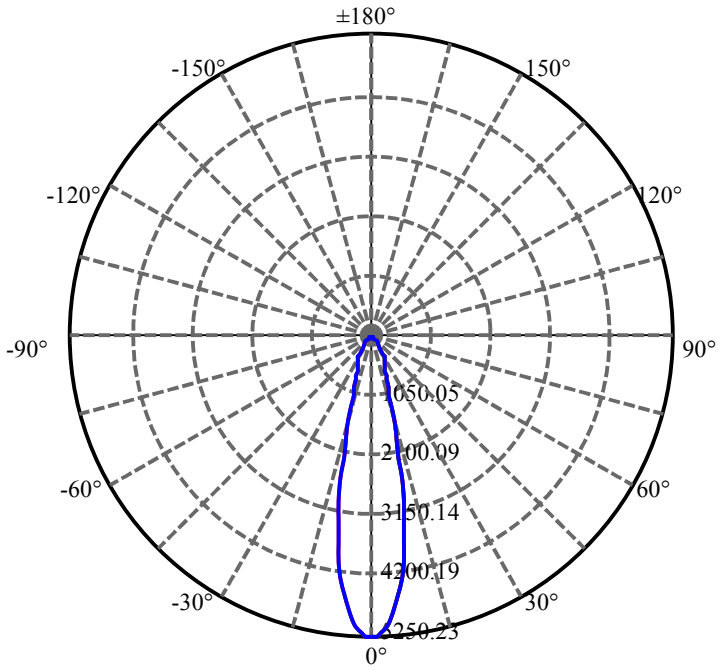
ZONAL LUMEN SUMMARY

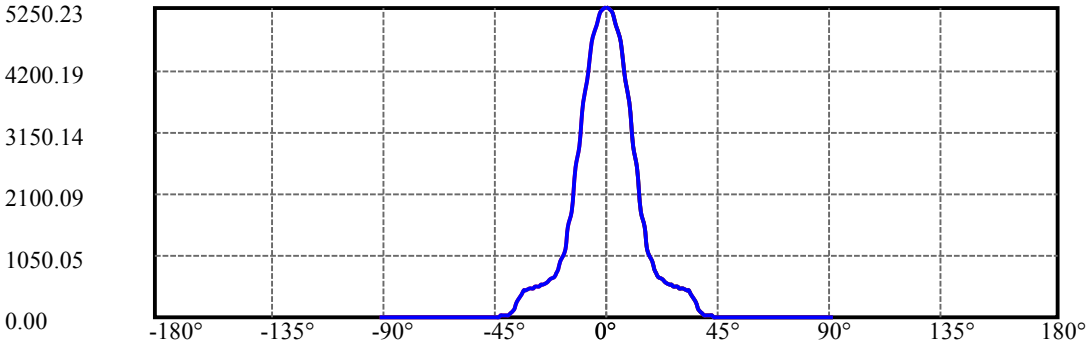
Zone	Lumens	%Lamp	%Fixt
0-30	1113.84	73.52%	84.44%
0-40	1283.56	84.72%	97.31%
0-60	1298.64	85.72%	98.45%
0-90	1318.38	87.02%	99.95%
0-120	1318.38	87.02%	99.95%
0-180	1319.03	87.06%	100.00%
60-90	20.37	1.34%	1.54%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-27.78	1055.22	69.65%	80.00%

ZONAL LUMEN SUMMARY

0-10	407.95
10-20	442.47
20-30	263.43
30-40	169.72
40-50	8.81
50-60	6.26
60-70	6.44
70-80	7.41
80-90	5.90
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):

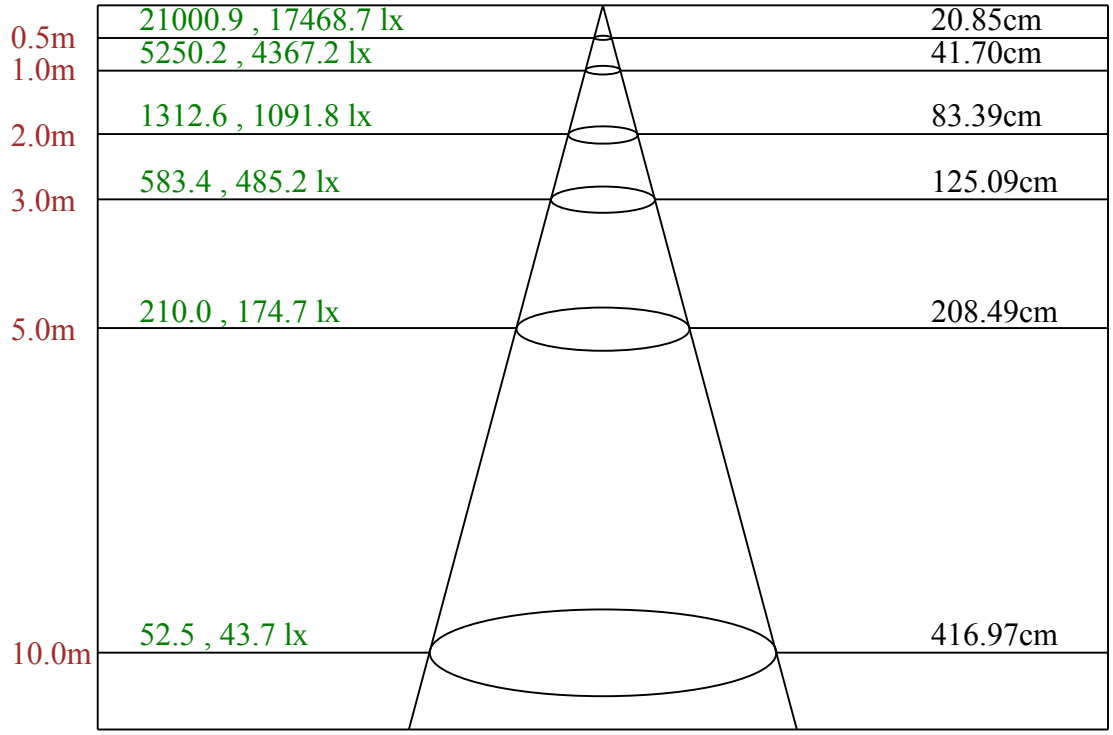
C0/C180:

C90/C270:

Field angle(10%Imax):C0/180Left:26.9 Right:26.9
:C90/270Left:26.9 Right:26.9

Beam Angle(50%Imax):C0/180Left:11.8 Right:11.8
:C90/270Left:11.8 Right:11.8

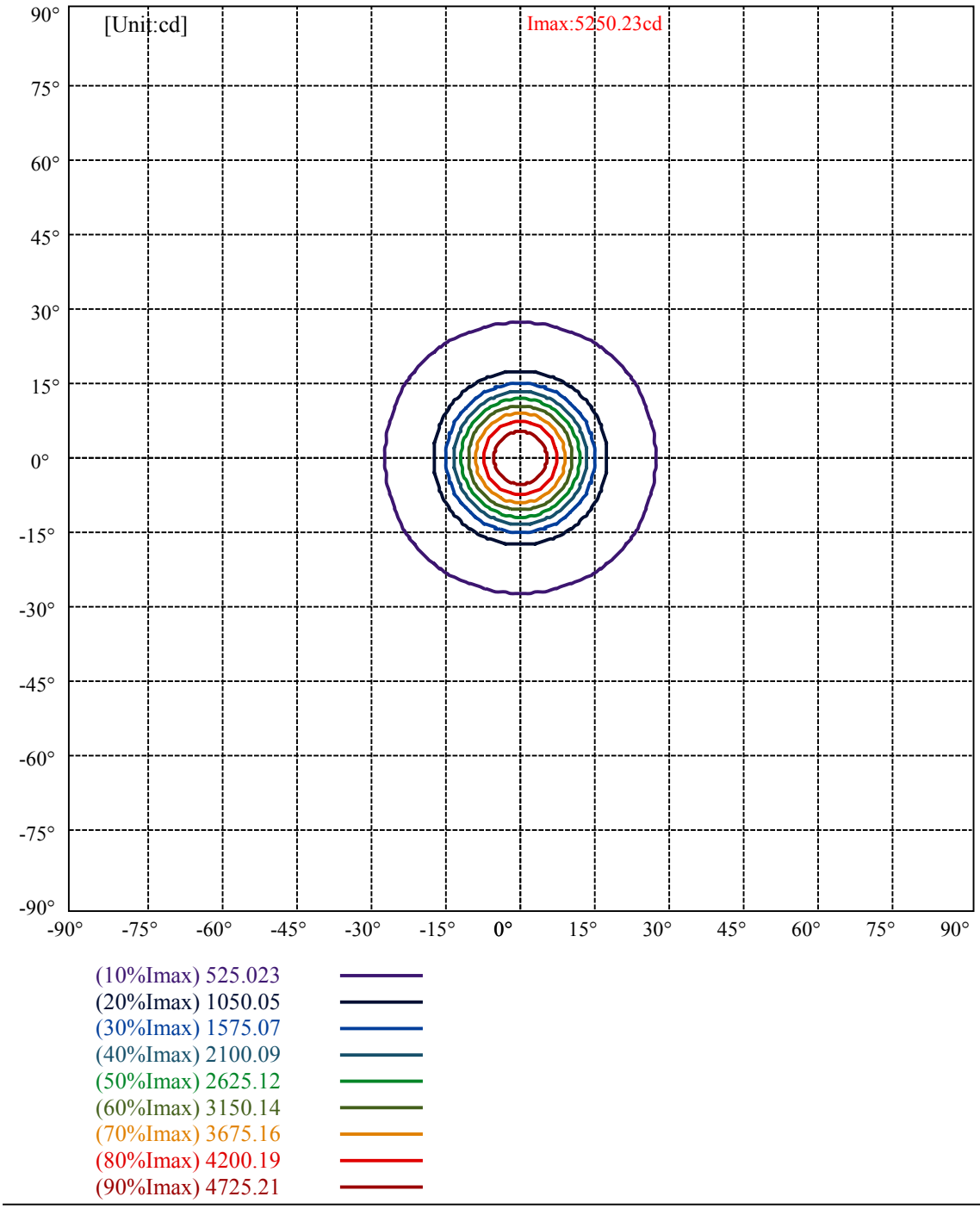
Lux distance Curve



Max , Ave

Beam angle of C0 plane 23.55

ISO-Intensity(V-H)

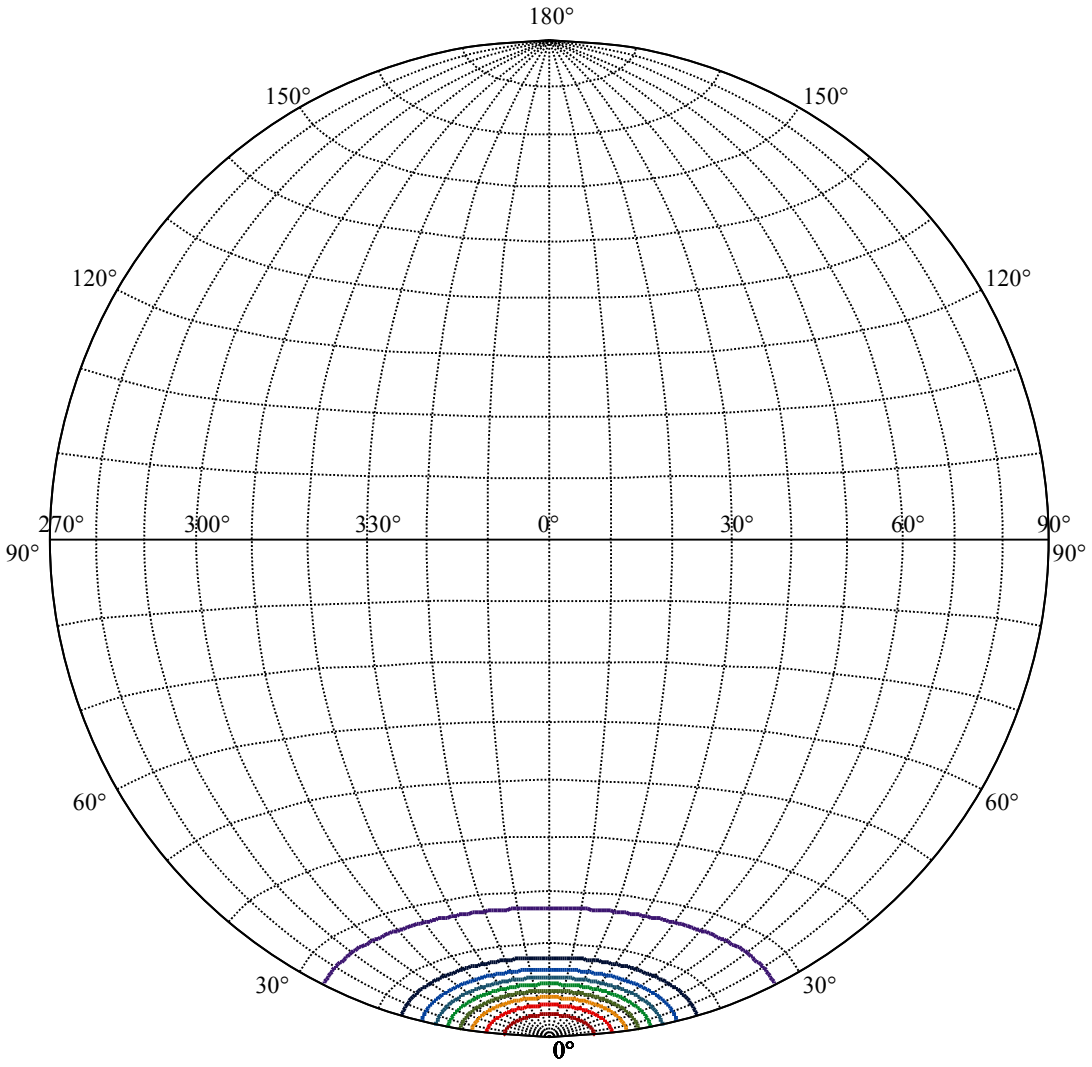


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/11/15
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

ISO candela diagram on circular web



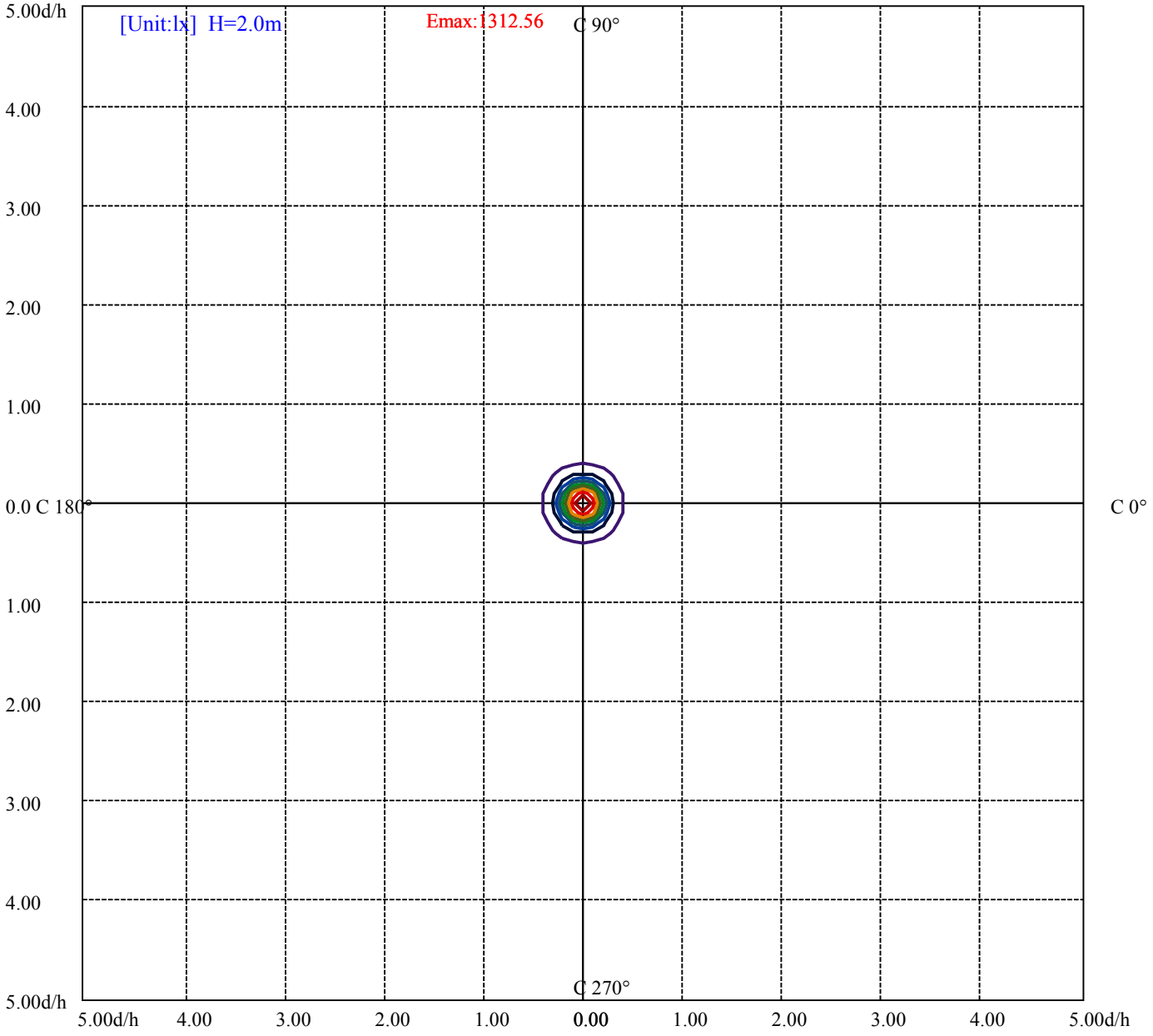
House [Unit:cd] Road

Imax:5250.23

(10%Imax) 525.023
(20%Imax) 1050.05
(30%Imax) 1575.07
(40%Imax) 2100.09
(50%Imax) 2625.12
(60%Imax) 3150.14
(70%Imax) 3675.16
(80%Imax) 4200.19
(90%Imax) 4725.21

Equipment: GMS1980 Date: 2019/11/15 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

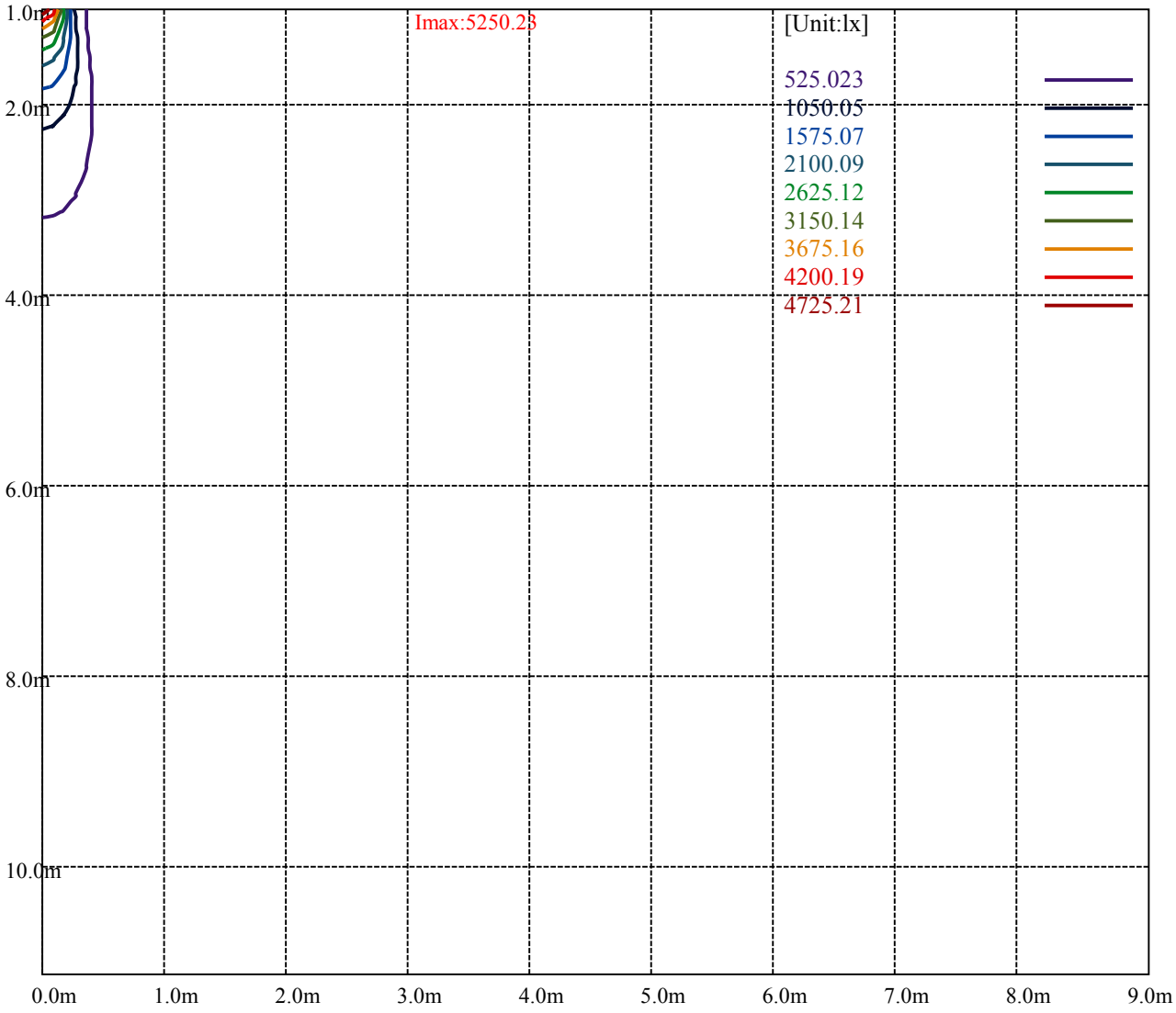
ISO illuminance diagram



(10%Emax) 131.2558
(20%Emax) 262.5125
(30%Emax) 393.7675
(40%Emax) 525.0225
(50%Emax) 656.28
(60%Emax) 787.535
(70%Emax) 918.79
(80%Emax) 1050.047
(90%Emax) 1181.302

Equipment: GMS1980
Temperature(°C): 25.0
Date: 2019/11/15
Humidity(%): 65.0%
Operator: NT07
Distance(m): 7.50

Space ISO Lux diagram



Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/11/15
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Luminance Limitting Curve(no luminous side)

Luminance Table

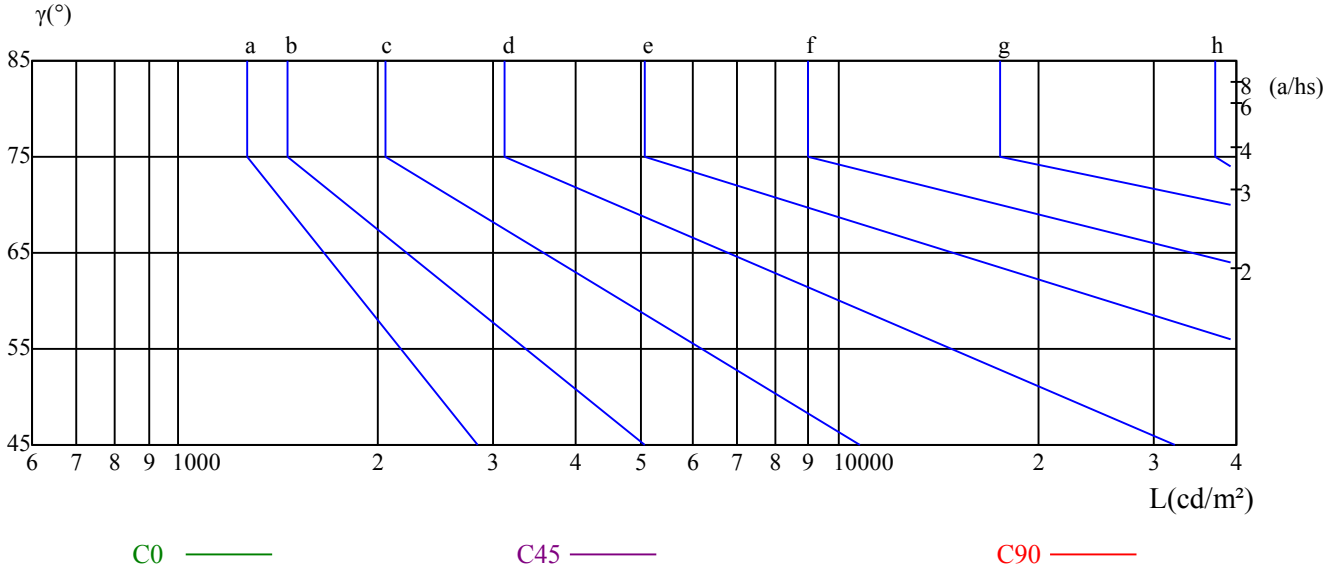
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

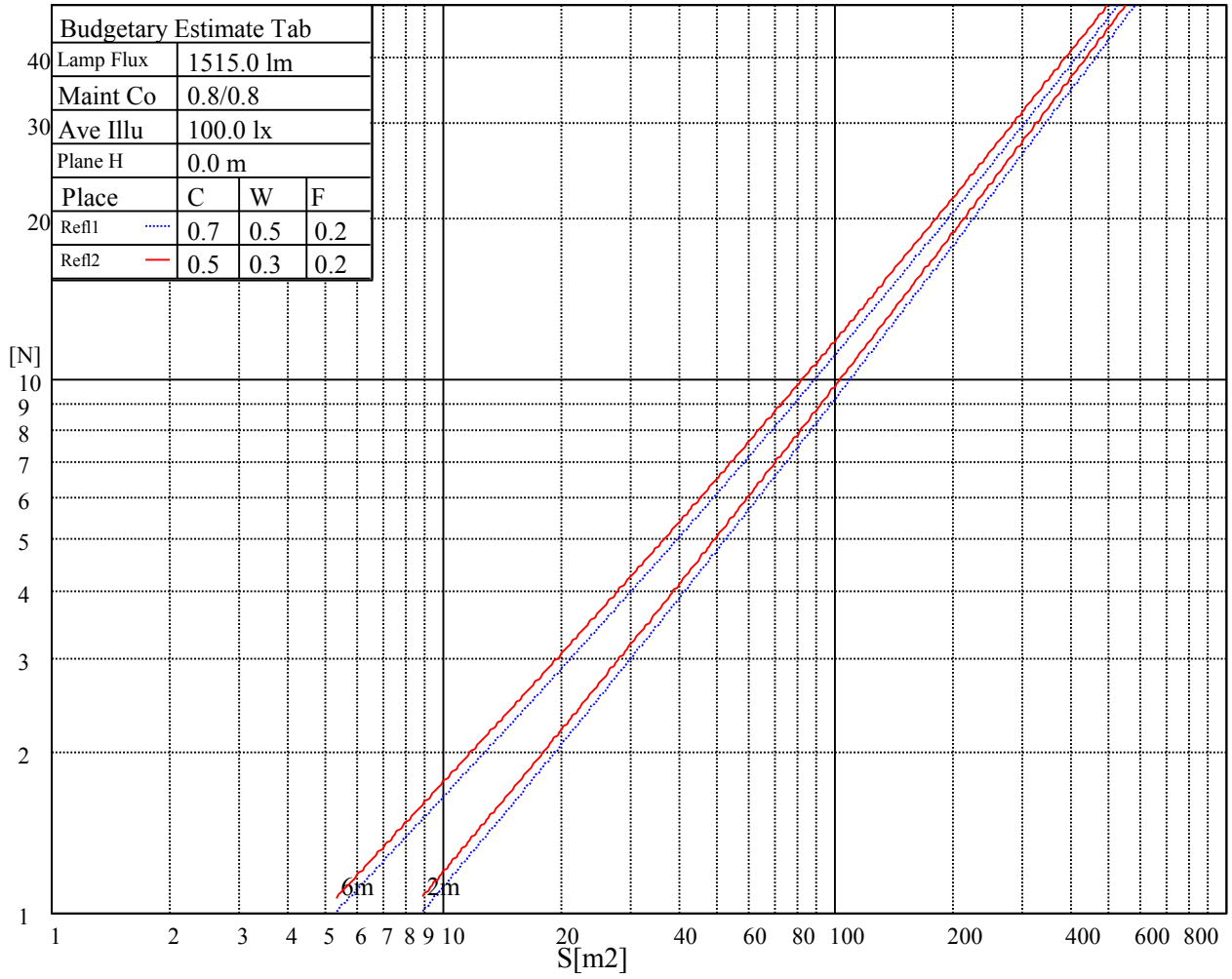
Glare Table

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



Budgetary Estimate Table

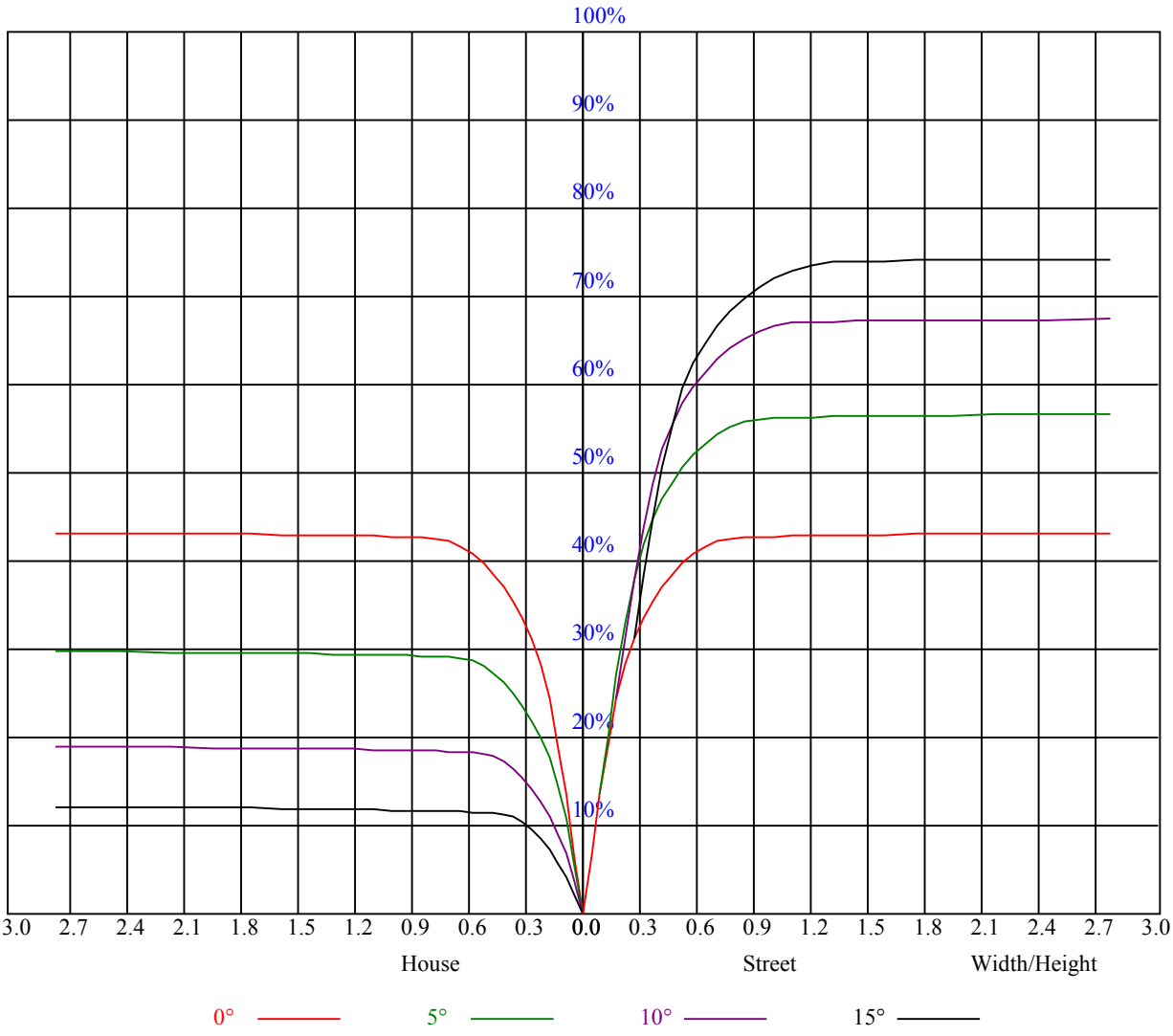


Equipment: GMS1980 Date: 2019/11/15 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

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	1.04	1.04	1.04	1.01	1.01	1.01	0.97	0.97	0.97	0.93	0.93	0.93	0.89	0.89	0.89	0.87
1	0.97	0.95	0.94	0.96	0.94	0.92	0.92	0.91	0.89	0.89	0.88	0.87	0.86	0.85	0.84	0.83
2	0.92	0.89	0.87	0.91	0.88	0.86	0.88	0.86	0.84	0.85	0.84	0.82	0.83	0.82	0.80	0.79
3	0.87	0.84	0.81	0.86	0.83	0.80	0.84	0.81	0.79	0.82	0.80	0.78	0.80	0.78	0.77	0.75
4	0.83	0.79	0.76	0.82	0.79	0.76	0.81	0.77	0.75	0.79	0.76	0.74	0.77	0.75	0.73	0.72
5	0.80	0.75	0.72	0.79	0.75	0.72	0.77	0.74	0.72	0.76	0.73	0.71	0.75	0.72	0.70	0.69
6	0.76	0.72	0.69	0.76	0.72	0.69	0.74	0.71	0.68	0.73	0.70	0.68	0.72	0.70	0.68	0.67
7	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
8	0.71	0.66	0.64	0.70	0.66	0.63	0.69	0.66	0.63	0.68	0.65	0.63	0.68	0.65	0.63	0.62
9	0.68	0.64	0.61	0.68	0.64	0.61	0.67	0.63	0.61	0.66	0.63	0.61	0.66	0.63	0.61	0.60
10	0.66	0.62	0.59	0.65	0.62	0.59	0.65	0.61	0.59	0.64	0.61	0.59	0.64	0.61	0.59	0.58

Coefficient Utilization Curve



Equipment: GMS1980	Date: 2019/11/15	Operator: NT07
Temperature(°C): 25.0	Humidity(%): 65.0%	Distance(m): 7.50

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	5243.06	5237.44	5201.44	5139.56	5004.00	4835.81	4671.56	4395.94	4140.00
45.0	5252.06	5244.75	5201.44	5122.13	5009.63	4807.69	4598.44	4362.75	4070.81
90.0	5253.75	5235.75	5164.88	5051.81	4913.44	4739.06	4467.94	4209.75	3913.88
135.0	5252.06	5249.25	5202.56	5112.56	4977.56	4795.31	4587.75	4310.44	4034.81
180.0	5243.06	5223.38	5162.63	5013.56	4883.63	4693.50	4440.38	4141.13	3842.44
225.0	5252.06	5237.44	5176.13	5059.13	4925.81	4727.81	4510.13	4224.38	3908.25
270.0	5253.75	5250.38	5220.00	5133.38	4998.94	4833.56	4606.31	4343.06	4079.25
315.0	5252.06	5234.06	5184.56	5068.69	4942.13	4768.31	4529.81	4259.25	3992.06
360.0	5243.06	5237.44	5201.44	5139.56	5004.00	4835.81	4671.56	4395.94	4140.00

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	3821.63	3458.25	3111.19	2750.63	2304.00	1968.75	1665.00	1343.81	1145.25
45.0	3740.06	3404.81	2998.13	2628.00	2223.56	1857.38	1577.25	1317.94	1114.31
90.0	3495.38	3137.63	2775.38	2373.75	2000.25	1704.94	1420.31	1100.36	1025.16
135.0	3687.75	3305.81	2945.25	2579.63	2139.75	1823.63	1553.63	1278.00	1101.38
180.0	3475.13	3082.50	2727.56	2337.19	2010.94	1684.69	1407.38	1113.19	1036.35
225.0	3594.38	3214.13	2809.69	2444.06	2097.00	1713.94	1452.94	1121.23	1042.09
270.0	3783.38	3374.44	3026.25	2670.75	2320.88	1914.19	1625.06	1345.50	1127.81
315.0	3651.19	3273.75	2911.50	2496.94	2144.25	1788.75	1483.31	1119.09	1078.26
360.0	3821.63	3458.25	3111.19	2750.63	2304.00	1968.75	1665.00	1343.81	1145.25

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	990.00	860.63	766.13	704.25	651.94	614.25	588.94	566.44	547.88
45.0	969.75	863.44	766.69	705.94	662.63	618.19	589.50	567.56	547.31
90.0	890.89	804.43	729.73	674.10	635.85	605.59	573.19	550.63	532.24
135.0	959.06	842.63	757.69	696.38	646.88	611.44	585.00	560.81	542.25
180.0	897.58	795.77	729.96	673.59	629.27	598.16	572.12	545.96	528.92
225.0	899.38	806.74	730.07	671.34	632.19	599.63	575.49	550.58	531.62
270.0	978.19	852.19	769.50	700.88	649.13	614.81	589.50	565.31	548.44
315.0	899.44	817.31	743.57	673.43	631.52	601.26	574.43	554.29	538.71
360.0	990.00	860.63	766.13	704.25	651.94	614.25	588.94	566.44	547.88

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	531.56	517.50	506.81	497.81	484.31	476.44	464.63	414.00	351.00
45.0	528.75	515.81	501.75	489.38	477.00	468.00	449.44	392.63	312.75
90.0	514.18	502.31	492.19	478.46	469.86	460.58	416.03	366.41	282.66
135.0	522.56	506.25	493.88	480.94	468.56	460.13	441.00	371.81	299.25
180.0	514.80	499.95	489.77	478.07	468.56	456.92	420.19	355.73	282.49
225.0	517.78	506.25	494.89	484.03	475.71	464.63	434.03	371.42	295.26
270.0	533.25	516.38	504.56	493.88	482.63	472.50	457.31	416.25	338.06
315.0	524.87	510.47	500.12	487.63	478.01	469.41	446.12	381.88	308.64
360.0	531.56	517.50	506.81	497.81	484.31	476.44	464.63	414.00	351.00

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	292.50	177.08	96.92	45.79	25.65	22.56	18.39	13.67	10.80
45.0	284.63	159.58	73.63	32.12	24.41	21.43	16.71	12.77	9.23
90.0	176.51	112.67	58.56	25.76	22.56	19.24	14.57	10.58	9.51
135.0	290.25	151.71	69.69	31.73	24.98	21.43	16.76	12.88	9.51
180.0	193.33	111.09	57.60	26.55	23.01	19.74	15.47	10.97	8.89
225.0	199.91	126.51	62.72	26.61	23.34	19.74	14.85	11.36	10.29
270.0	288.00	165.83	87.69	37.46	25.54	22.11	18.45	14.06	9.90
315.0	214.09	139.05	70.43	26.94	23.12	19.97	16.09	11.87	9.90
360.0	292.50	177.08	96.92	45.79	25.65	22.56	18.39	13.67	10.80

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	9.51	8.55	8.33	8.10	7.82	7.65	7.48	7.31	7.20
45.0	8.66	8.27	8.10	7.88	7.65	7.54	7.37	7.26	7.09
90.0	8.49	8.21	7.99	7.76	7.65	7.48	7.31	7.14	7.09
135.0	8.55	8.27	8.04	7.88	7.65	7.54	7.37	7.26	7.09
180.0	8.44	8.16	7.93	7.76	7.54	7.43	7.26	7.14	7.09
225.0	8.72	8.38	8.16	7.88	7.71	7.54	7.37	7.26	7.14
270.0	9.11	8.66	8.38	8.16	7.93	7.71	7.59	7.43	7.26
315.0	8.89	8.55	8.21	7.99	7.82	7.59	7.48	7.31	7.14
360.0	9.51	8.55	8.33	8.10	7.82	7.65	7.48	7.31	7.20

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	7.09	6.98	6.86	6.81	6.75	6.64	6.58	6.58	6.53
45.0	7.03	6.92	6.81	6.75	6.75	6.64	6.58	6.58	6.53
90.0	6.98	6.86	6.81	6.75	6.69	6.64	6.58	6.53	6.53
135.0	7.03	6.98	6.81	6.75	6.69	6.64	6.58	6.58	6.53
180.0	6.92	6.86	6.75	6.75	6.69	6.58	6.58	6.47	6.47
225.0	7.03	6.92	6.86	6.75	6.69	6.64	6.58	6.53	6.53
270.0	7.14	7.03	6.98	6.86	6.81	6.75	6.64	6.58	6.58
315.0	7.09	6.98	6.92	6.81	6.69	6.69	6.64	6.58	6.53
360.0	7.09	6.98	6.86	6.81	6.75	6.64	6.58	6.58	6.53

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	6.47	6.41	6.41	6.41	6.41	6.41	6.41	6.41	6.41
45.0	6.47	6.47	6.41	6.41	6.41	6.41	6.36	6.30	6.30
90.0	6.47	6.47	6.53	6.53	6.53	6.47	6.36	6.36	6.36
135.0	6.47	6.41	6.41	6.36	6.36	6.36	6.36	6.30	6.30
180.0	6.47	6.47	6.47	6.47	6.47	6.47	6.53	6.75	7.20
225.0	6.47	6.47	6.53	6.53	6.58	6.58	6.58	6.92	7.76
270.0	6.53	6.47	6.47	6.41	6.41	6.36	6.41	6.41	6.41
315.0	6.53	6.53	6.53	6.58	6.58	6.58	6.53	6.58	6.98
360.0	6.47	6.41	6.41	6.41	6.41	6.41	6.41	6.41	6.41

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	6.47	6.64	6.86	6.92	6.92	6.81	6.53	6.24	6.19
45.0	6.30	6.30	6.24	6.36	6.19	6.19	6.13	6.13	6.08
90.0	7.03	7.99	8.10	6.30	6.19	6.13	6.13	6.08	6.08
135.0	6.36	6.36	6.24	6.30	6.24	6.19	6.19	6.19	6.13
180.0	7.88	8.49	8.94	9.28	8.55	7.88	7.65	6.92	6.19
225.0	8.78	9.39	9.96	10.52	9.73	7.65	6.30	6.19	6.19
270.0	6.41	6.47	6.47	6.47	6.47	6.41	6.36	6.30	6.24
315.0	7.99	8.94	9.79	10.41	7.48	6.30	6.19	6.19	6.13
360.0	6.47	6.64	6.86	6.92	6.92	6.81	6.53	6.24	6.19

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	6.13	6.08	6.08	6.02	6.02	5.96	5.96	5.91	5.91
45.0	6.08	6.02	5.96	5.96	5.96	5.96	5.91	5.91	5.91
90.0	6.08	6.02	6.02	6.02	6.02	5.96	5.96	5.85	5.85
135.0	6.08	6.08	6.02	6.02	5.96	5.96	5.96	5.91	5.85
180.0	6.13	6.08	6.08	6.02	5.96	5.96	5.96	5.96	5.85
225.0	6.13	6.13	6.08	6.02	6.02	5.96	5.96	5.96	5.96
270.0	6.19	6.13	6.13	6.08	6.02	6.02	5.96	5.96	5.91
315.0	6.13	6.08	6.08	6.08	6.08	6.02	5.96	5.91	5.85
360.0	6.13	6.08	6.08	6.02	6.02	5.96	5.96	5.91	5.91

Intensity data(cd)

C/γ(°)	90.0
0.0	5.91
45.0	5.91
90.0	5.85
135.0	5.85
180.0	5.91
225.0	5.91
270.0	5.91
315.0	5.85
360.0	5.91