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Nata

LumCAT: 3-2042-M
Luminaire: 92.70.135.00
Report No: NATA0100
Test No: GC2018062008
LampCAT: NICHIA NFCW108B-V3
Lamp flux(lm): 2255.0
Number of Lamps: 1
Length(mm): 84
Phm Type: C

Voltage(V): 33.7000
Current(A): 0.4900
Power (W): 16.5130
PF: 0.0000
Ballast type: DC
Width(mm): 84
Height(mm): 0

Photometric Results

Lumens(lm): 1981.57
Efficiency(%): 87.87%
Lumens(lm)/Power(W): 120.00
Central intensity(cd): 17330.380
Maximum intensity(cd): 17330.380
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=14.0
[C90/270]Total=14.0
Field angle(10%Imax): [C0/180]Total=27.4
[C90/270]Total=27.4
Maximum s/h(1/2): C0_180=0.24 C90_270=0.24
Maximum s/h(1/4): C0_180=0.24 C90_270=0.24
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 88.60%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 97.896%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	17330.379	16.584	16.584	.735%	.837%
2.0	16674.520	127.626	144.21	5.660%	7.278%
4.0	14409.223	220.440	364.65	9.776%	18.402%
6.0	10648.458	244.111	608.76	10.825%	30.721%
8.0	6719.634	205.100	813.861	9.095%	41.072%
10.0	3943.828	150.194	964.055	6.660%	48.651%
12.0	2457.649	112.063	1076.118	4.970%	54.306%
14.0	1606.959	85.260	1161.378	3.781%	58.609%
16.0	1209.706	73.128	1234.506	3.243%	62.299%
18.0	1010.182	68.462	1302.968	3.036%	65.754%
20.0	898.328	67.383	1370.351	2.988%	69.155%
22.0	827.174	67.958	1438.309	3.014%	72.584%
24.0	777.562	69.361	1507.669	3.076%	76.085%
26.0	743.991	71.528	1579.197	3.172%	79.694%
28.0	712.581	73.368	1652.565	3.254%	83.397%
30.0	684.840	75.097	1727.663	3.330%	87.187%
32.0	634.745	73.769	1801.432	3.271%	90.909%
34.0	510.800	62.644	1864.075	2.778%	94.071%
36.0	336.188	43.338	1907.413	1.922%	96.258%
38.0	171.941	23.216	1930.629	1.030%	97.429%
40.0	52.200	7.359	1937.988	.326%	97.801%
42.0	18.416	2.703	1940.69	.120%	97.937%
44.0	12.388	1.887	1942.578	.084%	98.032%
46.0	10.385	1.638	1944.216	.073%	98.115%
48.0	10.013	1.632	1945.848	.072%	98.197%
50.0	9.752	1.638	1947.486	.073%	98.280%
52.0	9.511	1.644	1949.13	.073%	98.363%
54.0	9.311	1.652	1950.782	.073%	98.446%
56.0	9.139	1.662	1952.444	.074%	98.530%
58.0	9.002	1.674	1954.118	.074%	98.615%
60.0	8.898	1.690	1955.808	.075%	98.700%
62.0	8.795	1.703	1957.511	.076%	98.786%
64.0	8.713	1.717	1959.229	.076%	98.873%
66.0	8.644	1.732	1960.961	.077%	98.960%
68.0	8.554	1.739	1962.7	.077%	99.048%
70.0	8.513	1.754	1964.455	.078%	99.136%
72.0	8.486	1.770	1966.224	.078%	99.226%
74.0	8.431	1.777	1968.002	.079%	99.315%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	8.403	1.788	1969.79	.079%	99.406%
78.0	8.382	1.798	1971.588	.080%	99.496%
80.0	8.369	1.807	1973.396	.080%	99.588%
82.0	8.341	1.812	1975.207	.080%	99.679%
84.0	8.334	1.818	1977.025	.081%	99.771%
86.0	8.307	1.817	1978.842	.081%	99.862%
88.0	8.293	1.818	1980.66	.081%	99.954%
90.0	8.293	0.909	1981.569	.040%	100.000%

Zonal flux distribution table

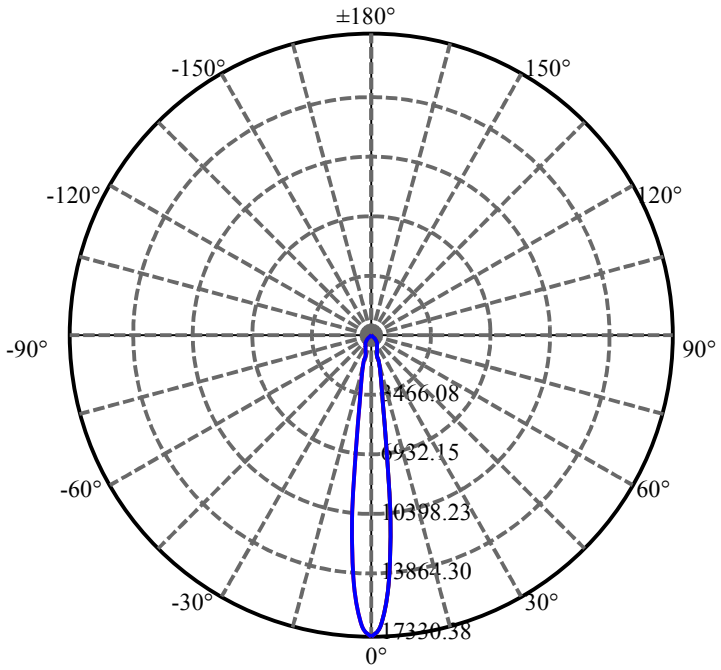
ZONAL LUMEN SUMMARY

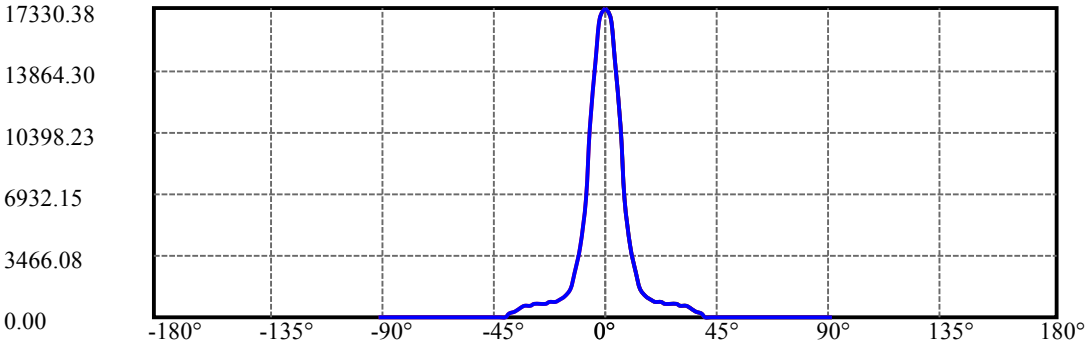
Zone	Lumens	%Lamp	%Fixt
0-30	1727.66	76.61%	87.19%
0-40	1937.99	85.94%	97.80%
0-60	1955.81	86.73%	98.70%
0-90	1980.66	87.83%	99.95%
0-120	1980.66	87.83%	99.95%
0-180	1981.57	87.87%	100.00%
60-90	26.54	1.18%	1.34%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-26.17	1585.26	70.30%	80.00%

ZONAL LUMEN SUMMARY

0-10	964.05
10-20	406.30
20-30	357.31
30-40	210.33
40-50	9.50
50-60	8.32
60-70	8.65
70-80	8.94
80-90	7.26
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):

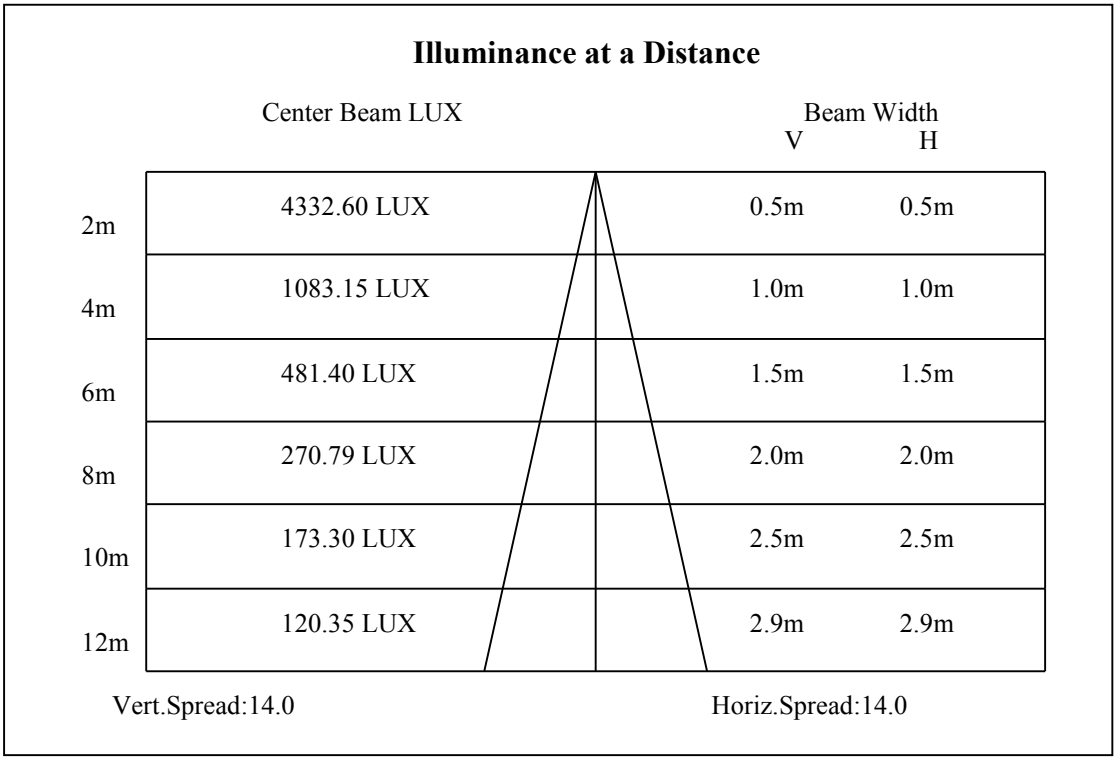
C0/C180:

C90/C270:

Field angle(10%Imax):C0/180Left:13.7 Right:13.7
:C90/270Left:13.7 Right:13.7

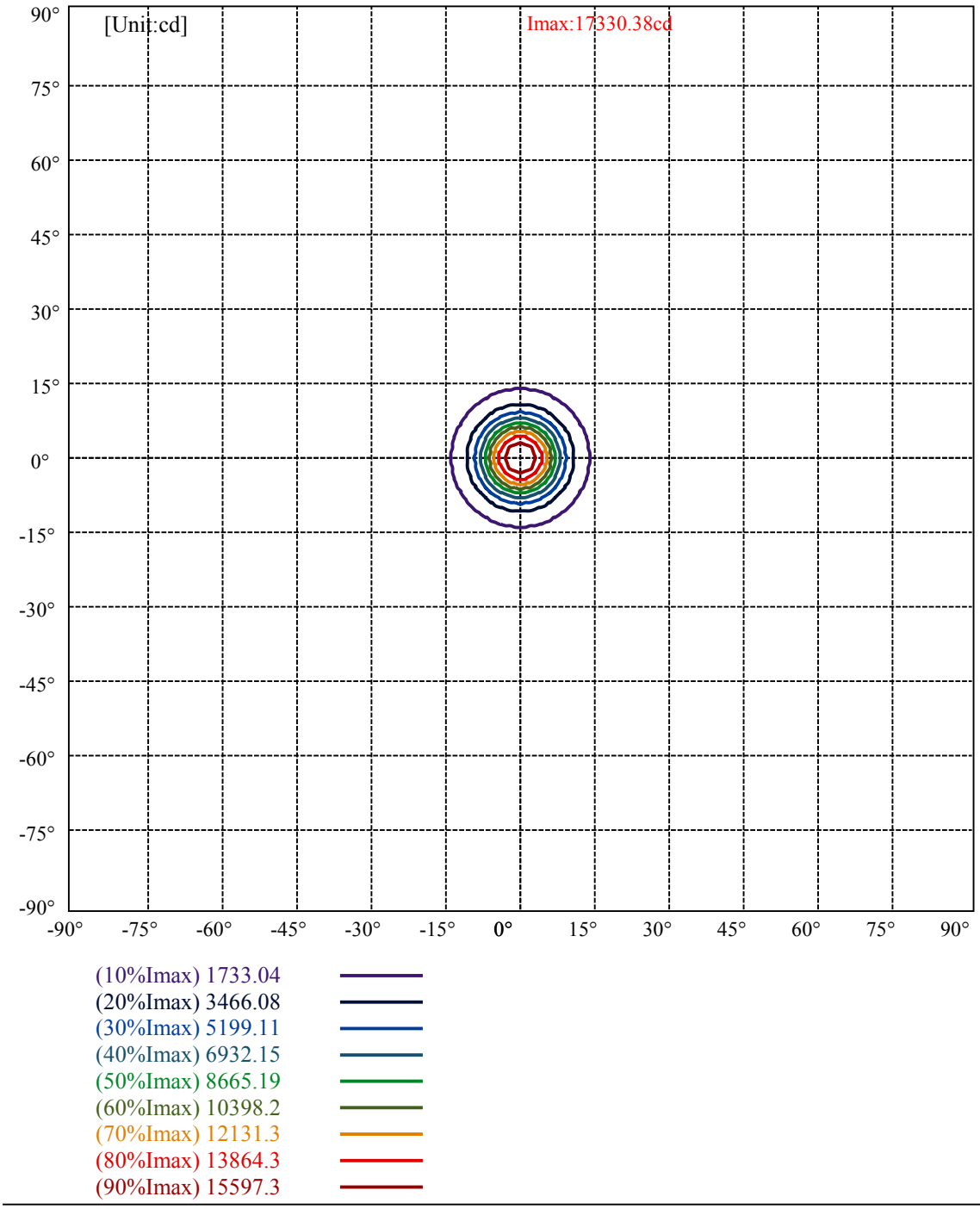
Beam Angle(50%Imax):C0/180Left:7.0 Right:7.0
:C90/270Left:7.0 Right:7.0

Lux distance Curve



Equipment: GMS1980 Date: 2018/6/20 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

ISO-Intensity(V-H)

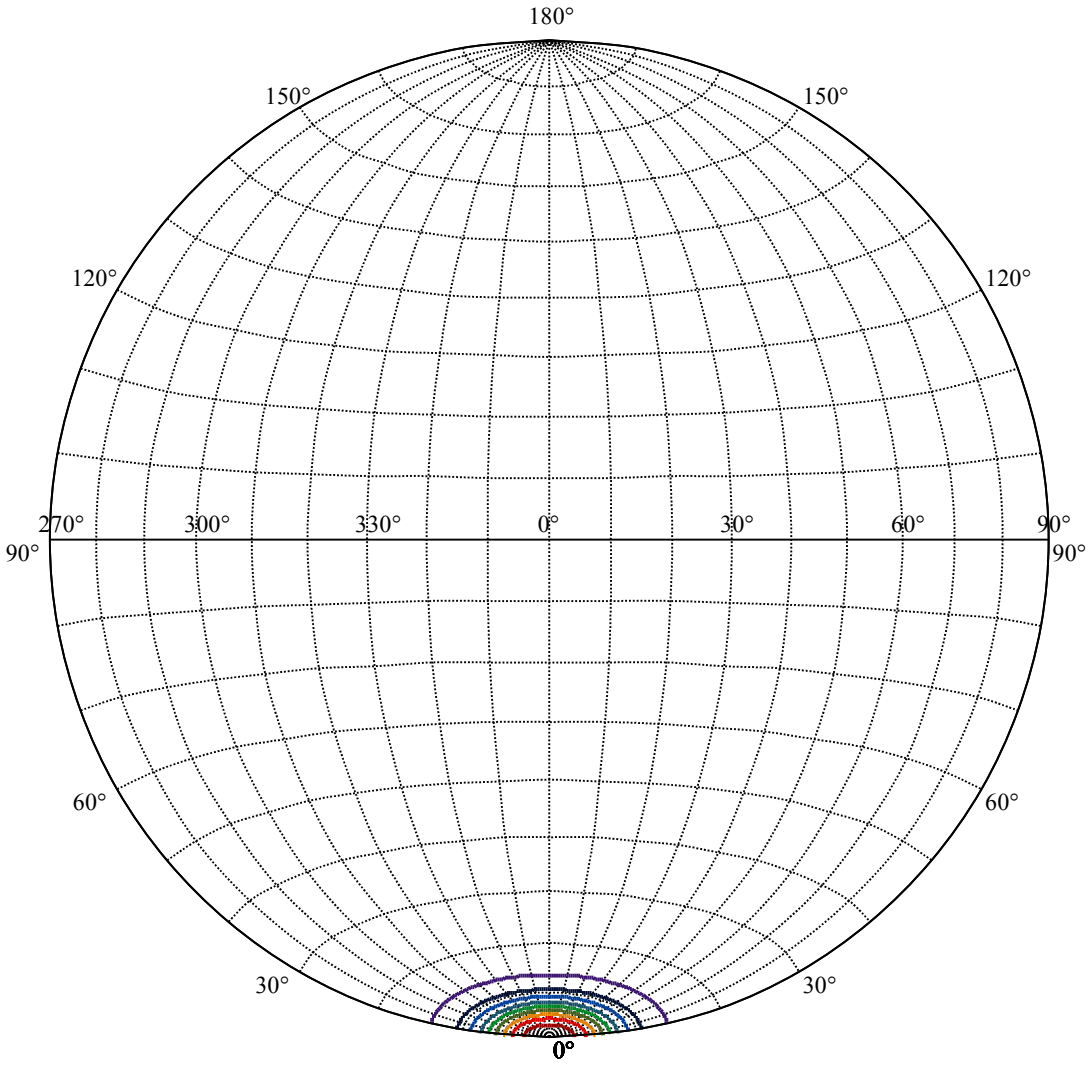


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2018/6/20
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

ISO candela diagram on circular web



House [Unit:cd] Road

Imax:17330.38

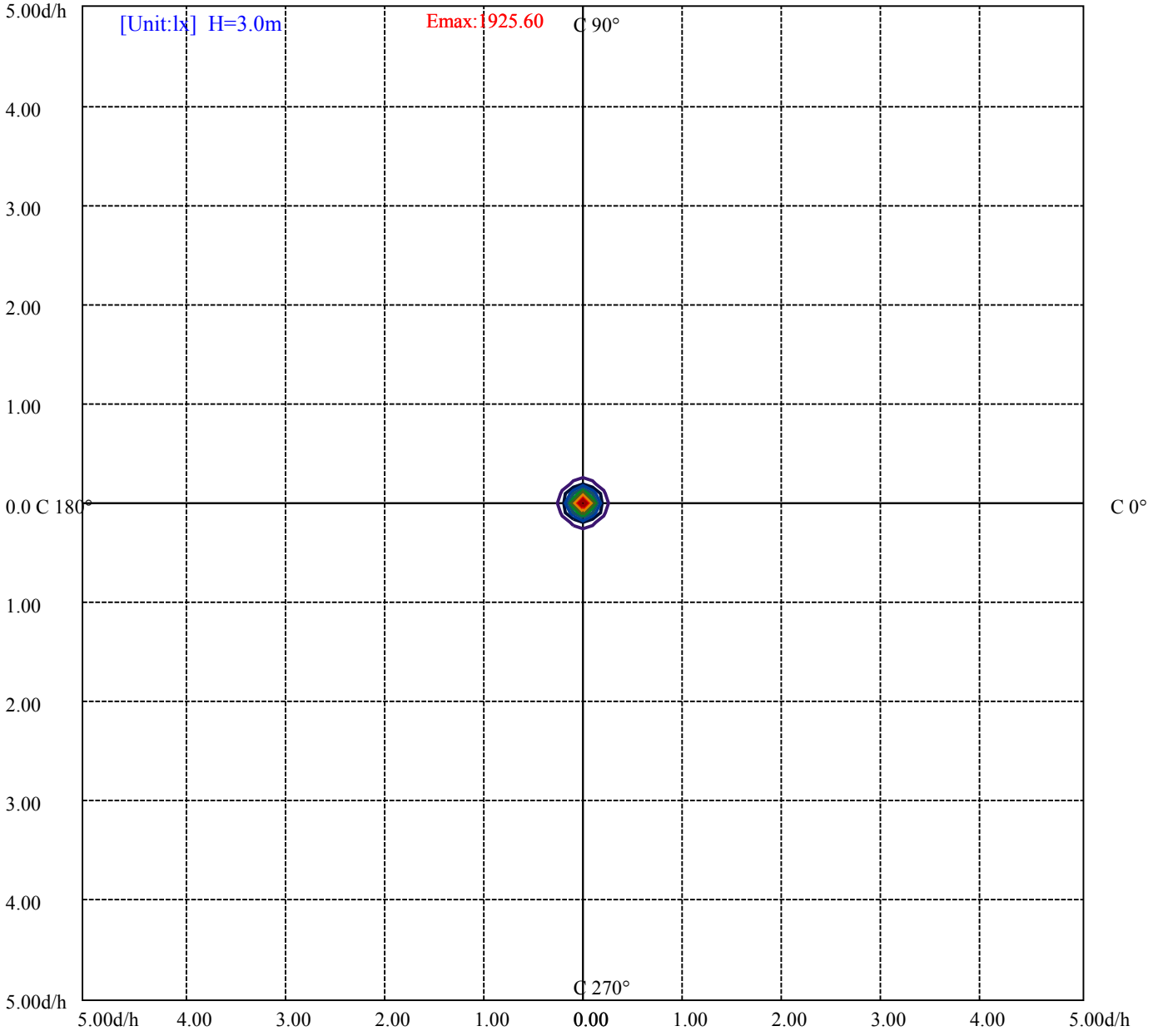
(10%Imax) 1733.04
(20%Imax) 3466.08
(30%Imax) 5199.11
(40%Imax) 6932.15
(50%Imax) 8665.19
(60%Imax) 10398.2
(70%Imax) 12131.3
(80%Imax) 13864.3
(90%Imax) 15597.3

Equipment: GMS1980
Temperature(°C): 25.0

Date: 2018/6/20
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

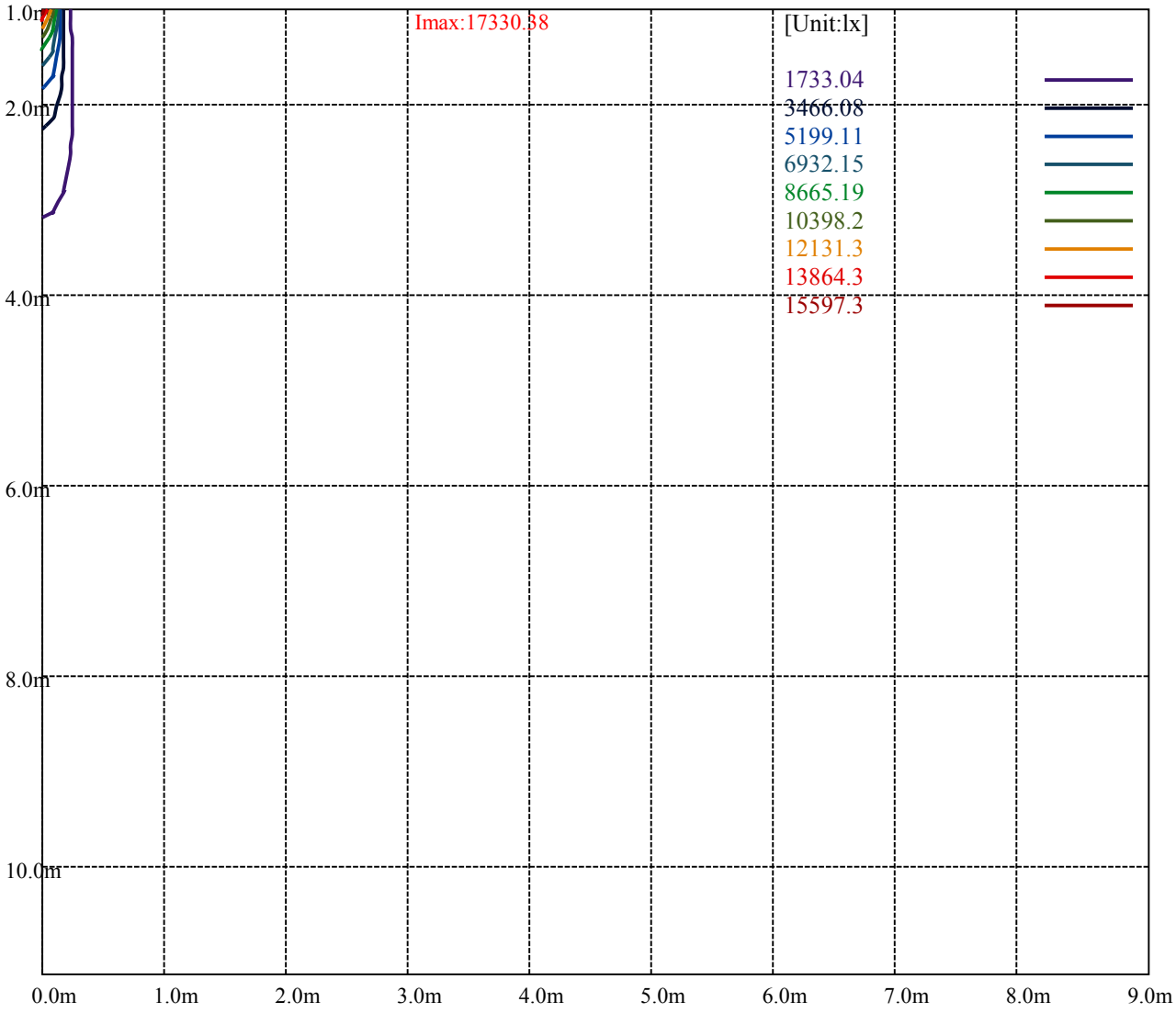
ISO illuminance diagram



(10%Emax) 192.5589
(20%Emax) 385.1189
(30%Emax) 577.6778
(40%Emax) 770.2366
(50%Emax) 962.7966
(60%Emax) 1155.356
(70%Emax) 1347.911
(80%Emax) 1540.478
(90%Emax) 1733.033

Equipment: GMS1980
Temperature(°C): 25.0
Date: 2018/6/20
Humidity(%): 60.0%
Operator: NT07
Distance(m): 7.42

Space ISO Lux diagram



Equipment: GMS1980
Temperature(°C): 25.0

Date: 2018/6/20
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

Luminance Limitting Curve(no luminous side)

Luminance Table

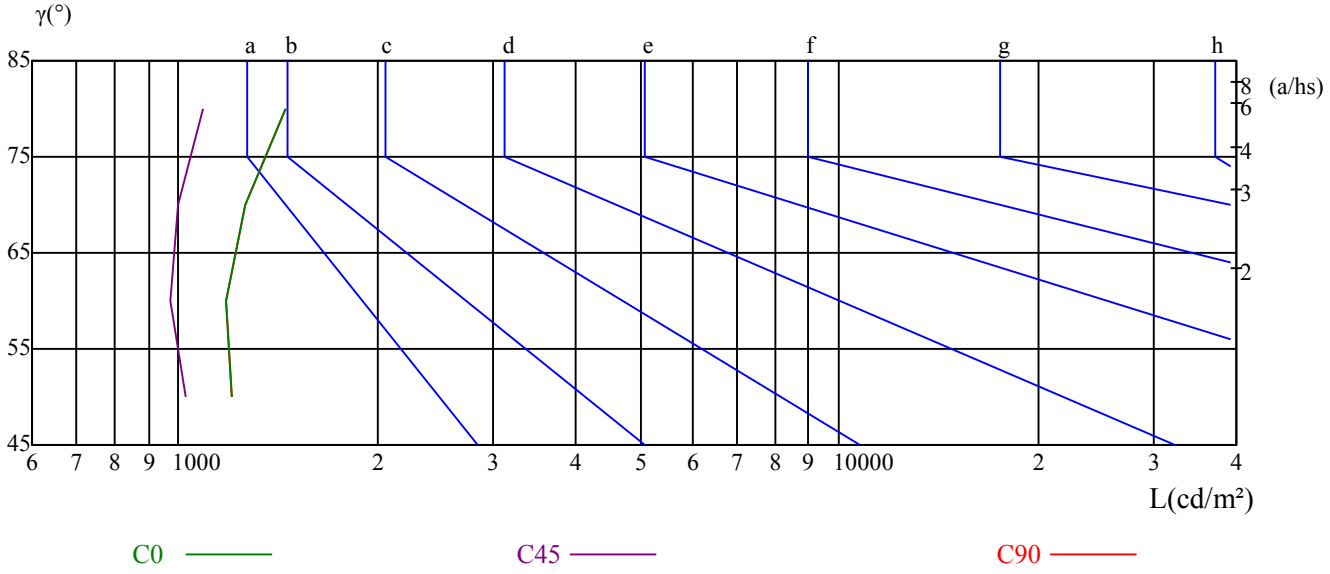
γ	45	50	55	60	65	70	75	80	85
C0	0	1208	0	1182	0	1260	0	1449	0
C45	0	1022	0	969	0	995	0	1093	0
C90	0	1208	0	1182	0	1260	0	1449	0

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
3102	3111	3102	4854	4824	4831	14100	14056	14100

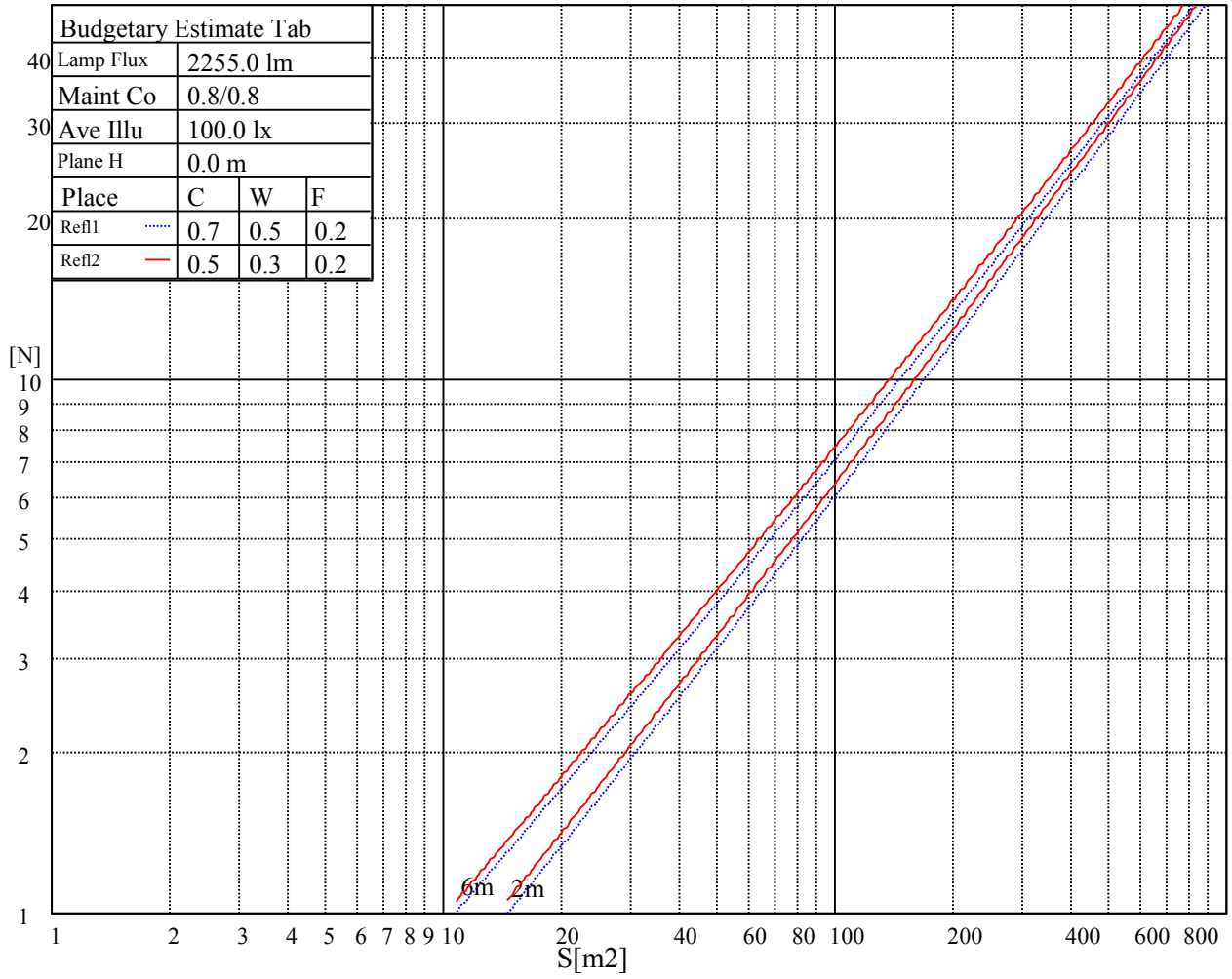
Glare Table

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

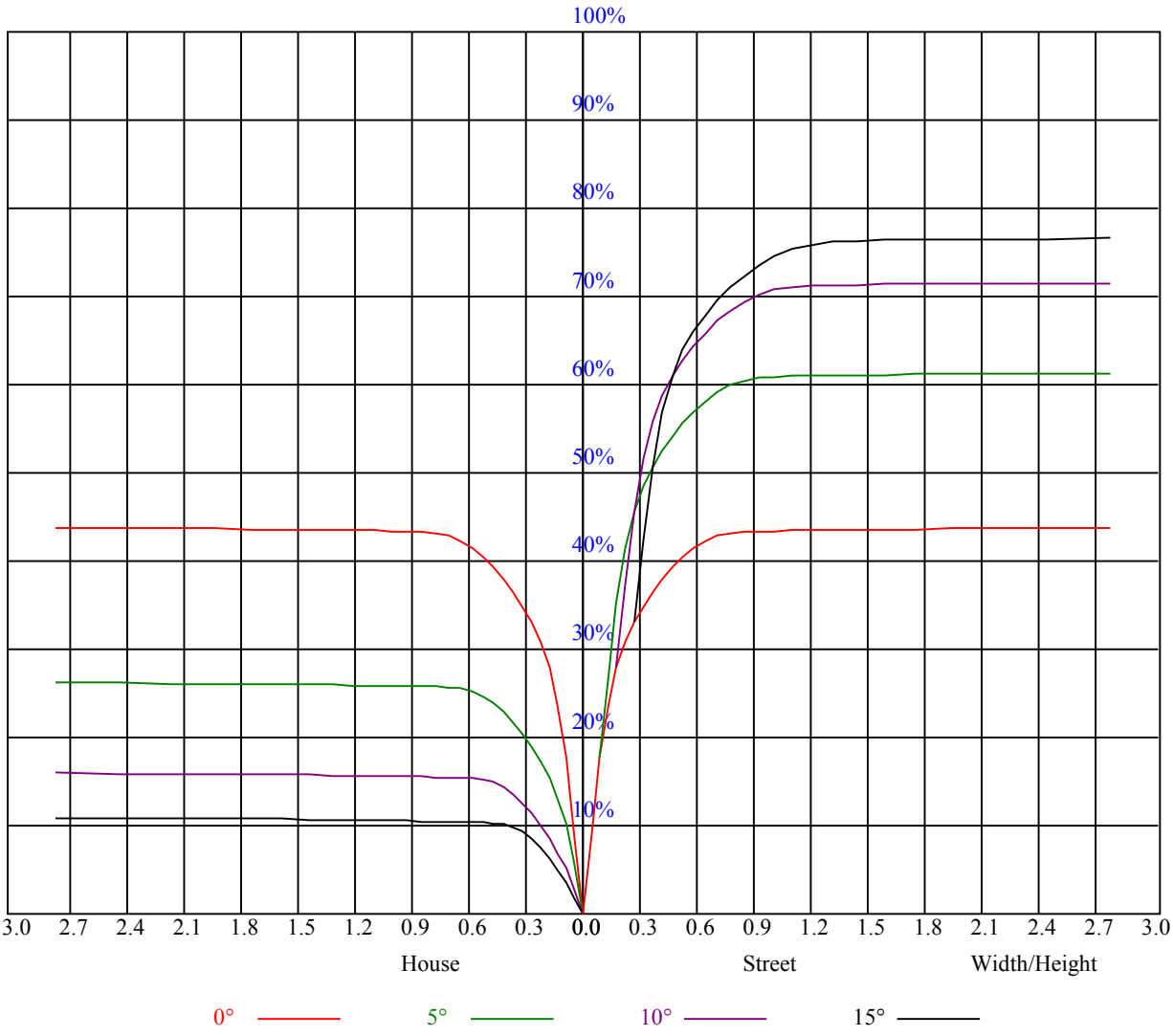


Equipment: GMS1980 Date: 2018/6/20 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

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	0.99	0.97	0.95	0.97	0.95	0.93	0.93	0.92	0.91	0.90	0.89	0.88	0.87	0.86	0.85	0.84
2	0.94	0.91	0.88	0.92	0.90	0.87	0.90	0.87	0.86	0.87	0.85	0.84	0.85	0.83	0.82	0.81
3	0.90	0.86	0.83	0.89	0.85	0.83	0.86	0.84	0.82	0.84	0.82	0.80	0.82	0.81	0.79	0.78
4	0.86	0.82	0.80	0.85	0.82	0.79	0.83	0.81	0.78	0.82	0.79	0.77	0.80	0.78	0.76	0.75
5	0.83	0.79	0.76	0.82	0.79	0.76	0.81	0.78	0.75	0.79	0.77	0.75	0.78	0.76	0.74	0.73
6	0.80	0.76	0.73	0.80	0.76	0.73	0.78	0.75	0.73	0.77	0.74	0.72	0.76	0.74	0.72	0.71
7	0.78	0.74	0.71	0.77	0.73	0.71	0.76	0.73	0.71	0.75	0.72	0.70	0.74	0.72	0.70	0.69
8	0.75	0.72	0.69	0.75	0.71	0.69	0.74	0.71	0.69	0.73	0.70	0.68	0.73	0.70	0.68	0.67
9	0.73	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.67	0.72	0.69	0.67	0.71	0.68	0.66	0.66
10	0.71	0.68	0.65	0.71	0.68	0.65	0.70	0.67	0.65	0.70	0.67	0.65	0.69	0.67	0.65	0.64

Coefficient Utilization Curve



Equipment: GMS1980
Temperature(°C): 25.0

Date: 2018/6/20
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

Intensity data(cd)

C/γ(°)	0.0	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0
0.0	17117.03	17282.20	16236.13	13219.04	9260.49	5643.28	3330.91	2172.53	1517.35
45.0	17436.36	16918.83	15327.70	11358.14	7377.56	4426.53	2818.89	1702.89	1263.54
90.0	17403.33	16605.01	14204.55	10272.42	6132.18	3545.63	2195.10	1496.98	1095.79
135.0	17364.79	16511.41	14188.03	10031.28	6144.29	3490.58	2126.28	1424.31	1112.69
180.0	17117.03	15542.42	10980.45	7996.94	4401.21	2634.45	1678.12	1231.61	1024.43
225.0	17436.36	16671.08	14221.07	10231.13	6293.50	3468.55	2131.23	1476.61	1094.91
270.0	17403.33	16962.88	15135.00	11231.51	7195.87	4178.78	2824.39	1675.92	1259.14
315.0	17364.79	16902.31	14980.85	10847.21	6951.97	4162.81	2556.27	1674.82	1309.79
360.0	17117.03	17282.20	16236.13	13219.04	9260.49	5643.28	3330.91	2172.53	1517.35

C/γ(°)	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0
0.0	1187.02	1003.68	892.46	814.83	774.09	735.00	704.72	682.15	623.79
45.0	1027.35	896.32	825.85	775.19	741.06	710.78	686.00	657.92	550.01
90.0	942.51	853.48	793.14	754.49	726.30	700.65	676.20	628.30	492.09
135.0	943.67	849.52	799.97	760.33	733.35	704.72	681.60	619.94	461.37
180.0	896.48	831.85	782.96	748.44	717.00	692.94	653.46	533.28	367.12
225.0	980.11	892.30	825.63	779.38	745.24	712.71	687.82	630.40	482.51
270.0	1045.52	924.95	852.27	797.22	760.33	723.99	697.56	665.08	561.02
315.0	1058.79	934.53	845.12	790.61	754.55	719.86	691.34	660.90	548.47
360.0	1187.02	1003.68	892.46	814.83	774.09	735.00	704.72	682.15	623.79

C/γ(°)	36.0	38.0	40.0	42.0	44.0	46.0	48.0	50.0	52.0
0.0	475.14	315.47	134.45	26.76	15.58	10.85	10.35	9.97	9.69
45.0	377.14	189.89	61.61	19.32	12.99	10.46	10.13	9.86	9.63
90.0	310.08	149.53	31.99	17.67	11.78	10.24	9.91	9.69	9.47
135.0	295.65	134.23	28.68	16.74	11.51	10.24	9.86	9.69	9.41
180.0	191.38	65.02	19.27	13.10	10.35	9.97	9.69	9.52	9.30
225.0	288.99	130.15	27.09	15.80	11.23	10.30	9.91	9.69	9.47
270.0	376.59	180.42	53.13	18.50	12.99	10.57	10.19	9.86	9.58
315.0	374.55	210.81	61.39	19.43	12.66	10.46	10.08	9.74	9.52
360.0	475.14	315.47	134.45	26.76	15.58	10.85	10.35	9.97	9.69

C/γ(°)	54.0	56.0	58.0	60.0	62.0	64.0	66.0	68.0	70.0
0.0	9.47	9.25	9.14	8.97	8.86	8.75	8.70	8.59	8.53
45.0	9.47	9.25	9.08	9.03	8.92	8.81	8.75	8.64	8.59
90.0	9.25	9.08	8.97	8.92	8.81	8.70	8.64	8.53	8.53
135.0	9.25	9.08	8.97	8.86	8.75	8.70	8.59	8.53	8.48
180.0	9.14	8.97	8.86	8.81	8.70	8.64	8.59	8.53	8.48
225.0	9.25	9.14	8.97	8.86	8.75	8.70	8.64	8.53	8.53
270.0	9.36	9.19	9.03	8.92	8.81	8.70	8.64	8.53	8.48
315.0	9.30	9.14	8.97	8.81	8.75	8.70	8.59	8.53	8.48
360.0	9.47	9.25	9.14	8.97	8.86	8.75	8.70	8.59	8.53

C/γ(°)	72.0	74.0	76.0	78.0	80.0	82.0	84.0	86.0	88.0
0.0	8.48	8.48	8.42	8.37	8.37	8.37	8.37	8.31	8.31
45.0	8.53	8.48	8.42	8.42	8.42	8.37	8.37	8.31	8.31
90.0	8.48	8.42	8.42	8.37	8.37	8.31	8.31	8.31	8.26
135.0	8.48	8.42	8.37	8.37	8.37	8.31	8.31	8.31	8.31
180.0	8.48	8.42	8.42	8.42	8.37	8.37	8.37	8.26	8.26
225.0	8.48	8.42	8.42	8.42	8.37	8.37	8.37	8.37	8.31
270.0	8.48	8.42	8.37	8.37	8.37	8.31	8.31	8.31	8.31
315.0	8.48	8.37	8.37	8.31	8.31	8.31	8.26	8.26	8.26
360.0	8.48	8.48	8.42	8.37	8.37	8.37	8.37	8.31	8.31

Intensity data(cd)

C/γ(°)	90.0
0.0	8.31
45.0	8.31
90.0	8.26
135.0	8.26
180.0	8.26
225.0	8.37
270.0	8.31
315.0	8.26
360.0	8.31