NATA LIGHTING CO.,LTD
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Nata

LumCAT: 2-1678-M
Luminaire: 92.70.125.00
Report No: NT2017100702
Test No: GC2017100702
LampCAT: NICHIA NVNWS007Z-V1
Lamp flux(lm): 810
Number of Lamps: 1
Length(mm): 70
Phm Type: C

Voltage(V): 19.9000
Current(A): 0.3000
Power (W): 5.9700
PF: 0.0000
Ballast type: DC
Width(mm): 70
Height(mm): 0

Photometric Results

Lumens(lm): 731.08
Efficiency(%): 90.24%
Lumens(lm)/Power(W): 122.46
Central intensity(cd): 16178.320
Maximum intensity(cd): 16178.320
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=7.7
[C90/270]Total=7.7
Field angle(10%Imax): [C0/180]Total=15.4
[C90/270]Total=15.4
Maximum s/h(1/2): C0_180=0.13 C90_270=0.13
Maximum s/h(1/4): C0_180=0.14 C90_270=0.14
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 0.00%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.745%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	16178.323	0.000	0	.000%	.000%
1.0	15231.078	15.029	15.029	.000%	2.056%
2.0	12957.524	40.459	55.488	.000%	7.590%
3.0	10079.863	55.098	110.586	.000%	15.126%
4.0	7703.767	59.527	170.113	.000%	23.269%
5.0	4916.537	54.292	224.405	.000%	30.695%
6.0	3320.314	43.287	267.692	.000%	36.616%
7.0	2119.093	33.762	301.454	.000%	41.234%
8.0	1418.645	25.319	326.773	.000%	44.698%
9.0	932.112	19.052	345.825	.000%	47.304%
10.0	727.082	15.015	360.84	.000%	49.357%
11.0	588.587	13.146	373.986	.000%	51.156%
12.0	507.778	11.985	385.971	.000%	52.795%
13.0	453.809	11.412	397.382	.000%	54.356%
14.0	413.515	11.102	408.484	.000%	55.874%
15.0	384.445	10.955	419.439	.000%	57.373%
16.0	359.856	10.906	430.345	.000%	58.865%
17.0	340.703	10.910	441.255	.000%	60.357%
18.0	325.927	10.991	452.246	.000%	61.860%
19.0	315.342	11.157	463.403	.000%	63.386%
20.0	305.233	11.358	474.761	.000%	64.940%
21.0	296.782	11.560	486.321	.000%	66.521%
22.0	289.934	11.790	498.111	.000%	68.134%
23.0	284.745	12.058	510.169	.000%	69.783%
24.0	278.764	12.320	522.49	.000%	71.469%
25.0	274.683	12.584	535.074	.000%	73.190%
26.0	271.125	12.884	547.958	.000%	74.952%
27.0	266.659	13.157	561.115	.000%	76.752%
28.0	263.101	13.412	574.527	.000%	78.587%
29.0	259.419	13.671	588.198	.000%	80.457%
30.0	254.643	13.880	602.077	.000%	82.355%
31.0	251.092	14.074	616.151	.000%	84.280%
32.0	247.430	14.282	630.433	.000%	86.234%
33.0	243.219	14.455	644.888	.000%	88.211%
34.0	237.912	14.560	659.448	.000%	90.203%
35.0	226.158	14.412	673.861	.000%	92.174%
36.0	196.276	13.450	687.311	.000%	94.014%
37.0	152.389	11.372	698.683	.000%	95.569%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	97.649	8.346	707.029	.000%	96.711%
39.0	44.740	4.860	711.889	.000%	97.376%
40.0	20.047	2.260	714.148	.000%	97.685%
41.0	10.708	1.095	715.243	.000%	97.834%
42.0	7.639	0.667	715.91	.000%	97.926%
43.0	6.153	0.511	716.421	.000%	97.996%
44.0	5.196	0.428	716.849	.000%	98.054%
45.0	4.528	0.374	717.223	.000%	98.105%
46.0	4.212	0.342	717.565	.000%	98.152%
47.0	4.012	0.327	717.892	.000%	98.197%
48.0	3.909	0.320	718.212	.000%	98.241%
49.0	3.813	0.317	718.529	.000%	98.284%
50.0	3.730	0.314	718.844	.000%	98.327%
51.0	3.654	0.312	719.156	.000%	98.370%
52.0	3.592	0.311	719.467	.000%	98.412%
53.0	3.510	0.309	719.776	.000%	98.454%
54.0	3.448	0.307	720.083	.000%	98.496%
55.0	3.400	0.306	720.388	.000%	98.538%
56.0	3.338	0.304	720.693	.000%	98.580%
57.0	3.290	0.303	720.996	.000%	98.621%
58.0	3.248	0.302	721.298	.000%	98.663%
59.0	3.193	0.301	721.599	.000%	98.704%
60.0	3.159	0.300	721.899	.000%	98.745%
61.0	3.124	0.300	722.199	.000%	98.786%
62.0	3.104	0.300	722.499	.000%	98.827%
63.0	3.076	0.301	722.8	.000%	98.868%
64.0	3.049	0.301	723.1	.000%	98.909%
65.0	3.028	0.301	723.401	.000%	98.950%
66.0	3.014	0.301	723.703	.000%	98.992%
67.0	2.987	0.302	724.004	.000%	99.033%
68.0	2.980	0.302	724.307	.000%	99.074%
69.0	2.959	0.303	724.61	.000%	99.116%
70.0	2.939	0.303	724.913	.000%	99.157%
71.0	2.939	0.304	725.216	.000%	99.199%
72.0	2.918	0.305	725.521	.000%	99.240%
73.0	2.911	0.305	725.826	.000%	99.282%
74.0	2.911	0.306	726.132	.000%	99.324%
75.0	2.897	0.307	726.439	.000%	99.366%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	2.884	0.307	726.746	.000%	99.408%
77.0	2.890	0.308	727.053	.000%	99.450%
78.0	2.863	0.308	727.361	.000%	99.492%
79.0	2.870	0.308	727.669	.000%	99.534%
80.0	2.863	0.309	727.978	.000%	99.576%
81.0	2.863	0.310	728.288	.000%	99.619%
82.0	2.863	0.311	728.599	.000%	99.661%
83.0	2.849	0.311	728.909	.000%	99.704%
84.0	2.849	0.310	729.22	.000%	99.746%
85.0	2.842	0.311	729.53	.000%	99.789%
86.0	2.835	0.310	729.841	.000%	99.831%
87.0	2.815	0.309	730.15	.000%	99.873%
88.0	2.822	0.309	730.459	.000%	99.916%
89.0	2.808	0.309	730.767	.000%	99.958%
90.0	2.808	0.308	731.075	.000%	100.000%

Zonal flux distribution table

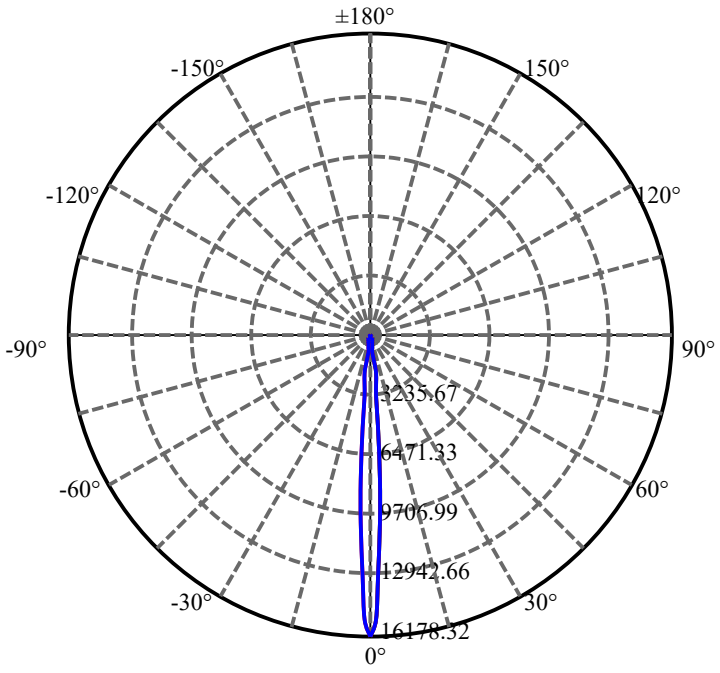
ZONAL LUMEN SUMMARY

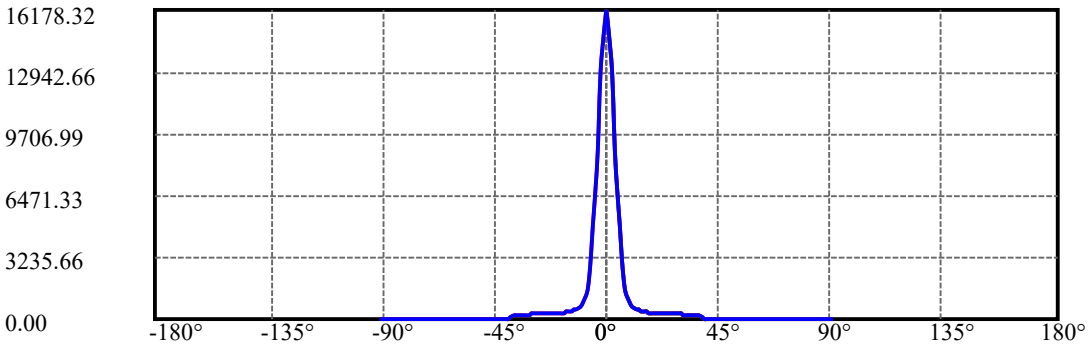
Zone	Lumens	%Lamp	%Fixt
0-30	602.08	N.A.	82.36%
0-40	714.15	N.A.	97.68%
0-60	721.90	N.A.	98.74%
0-90	730.77	N.A.	99.96%
0-120	730.77	N.A.	99.96%
0-180	731.08	N.A.	100.00%
60-90	9.17	N.A.	1.25%
90-120	0.00	N.A.	0.00%
90-130	0.00	N.A.	0.00%
90-150	0.00	N.A.	0.00%
90-180	0.00	N.A.	0.00%
0-28.76	584.86	N.A.	80.00%

ZONAL LUMEN SUMMARY

0-10	360.84
10-20	113.92
20-30	127.32
30-40	112.07
40-50	4.70
50-60	3.06
60-70	3.01
70-80	3.07
80-90	2.79
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):

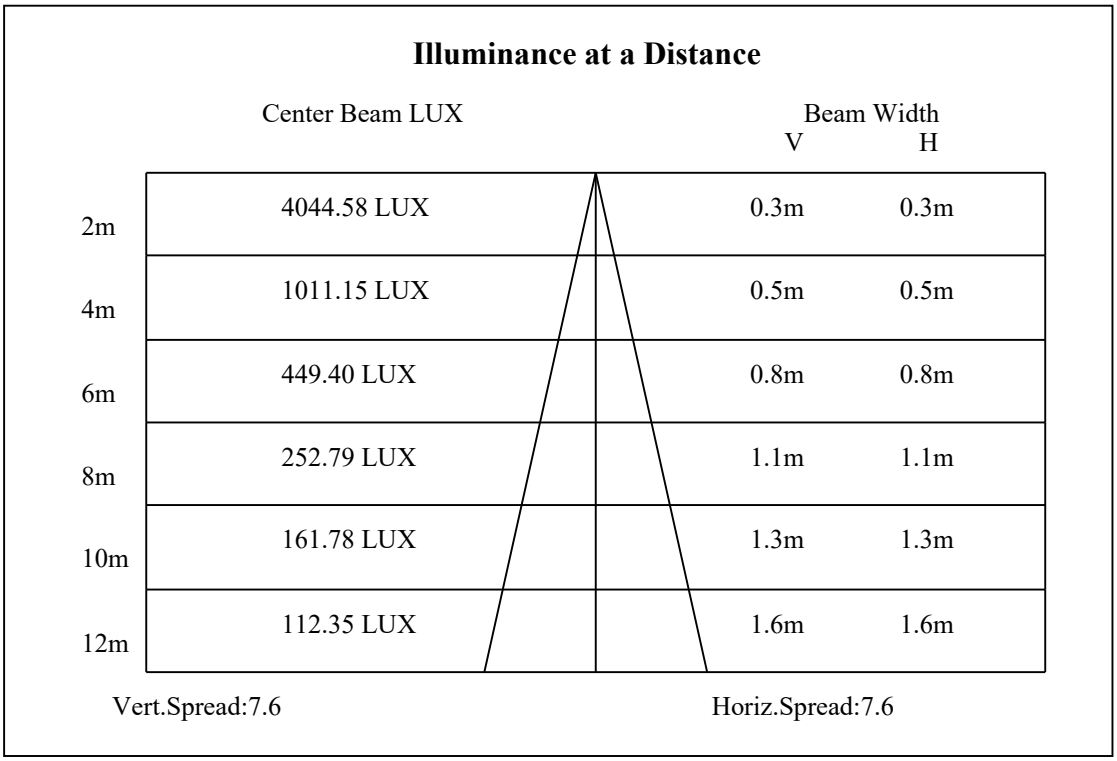
C0/C180:

C90/C270:

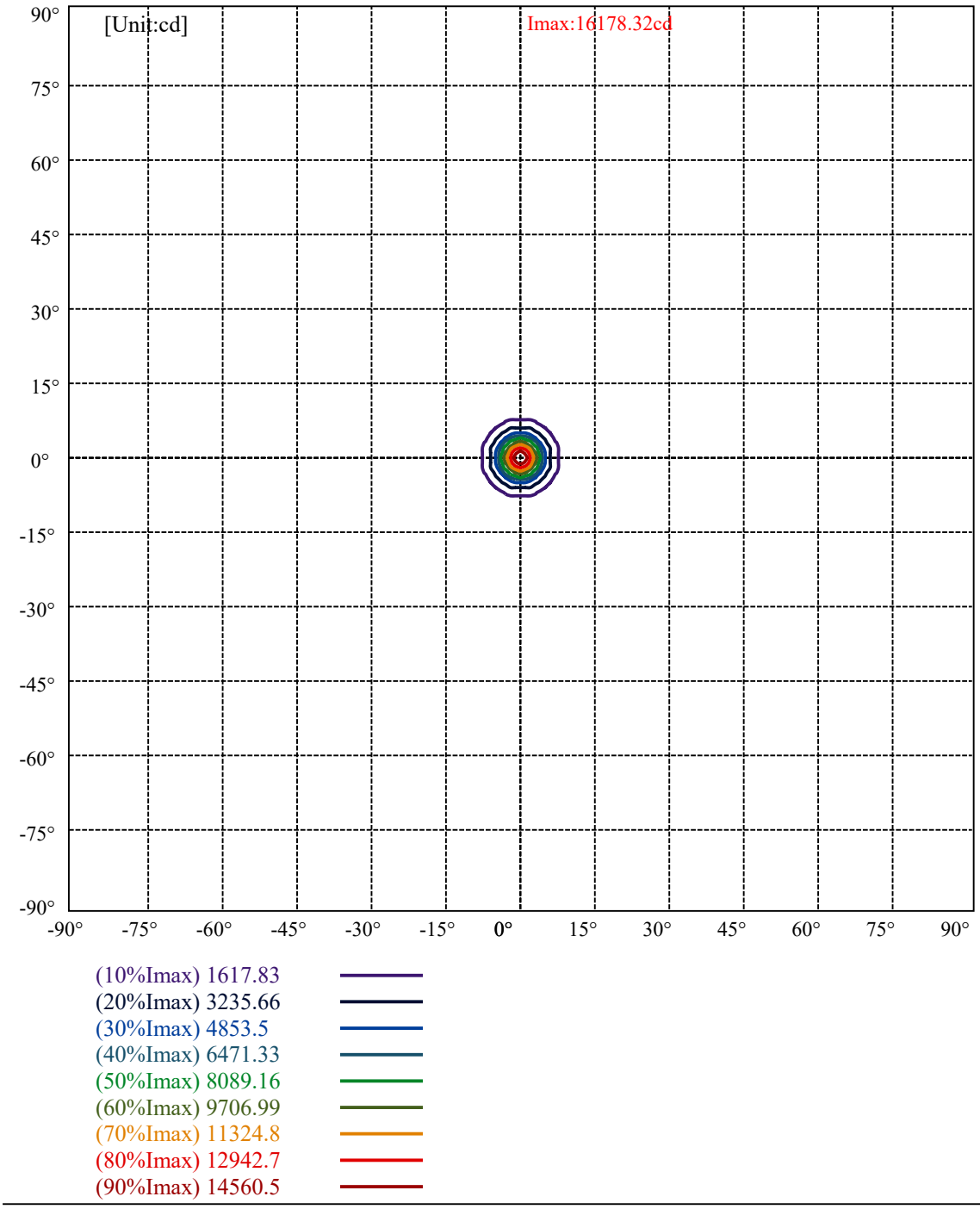
Field angle(10%Imax):C0/180Left:7.7 Right:7.7
:C90/270Left:7.7 Right:7.7

Beam Angle(50%Imax):C0/180Left:3.8 Right:3.8
:C90/270Left:3.8 Right:3.8

Lux distance Curve



ISO-Intensity(V-H)



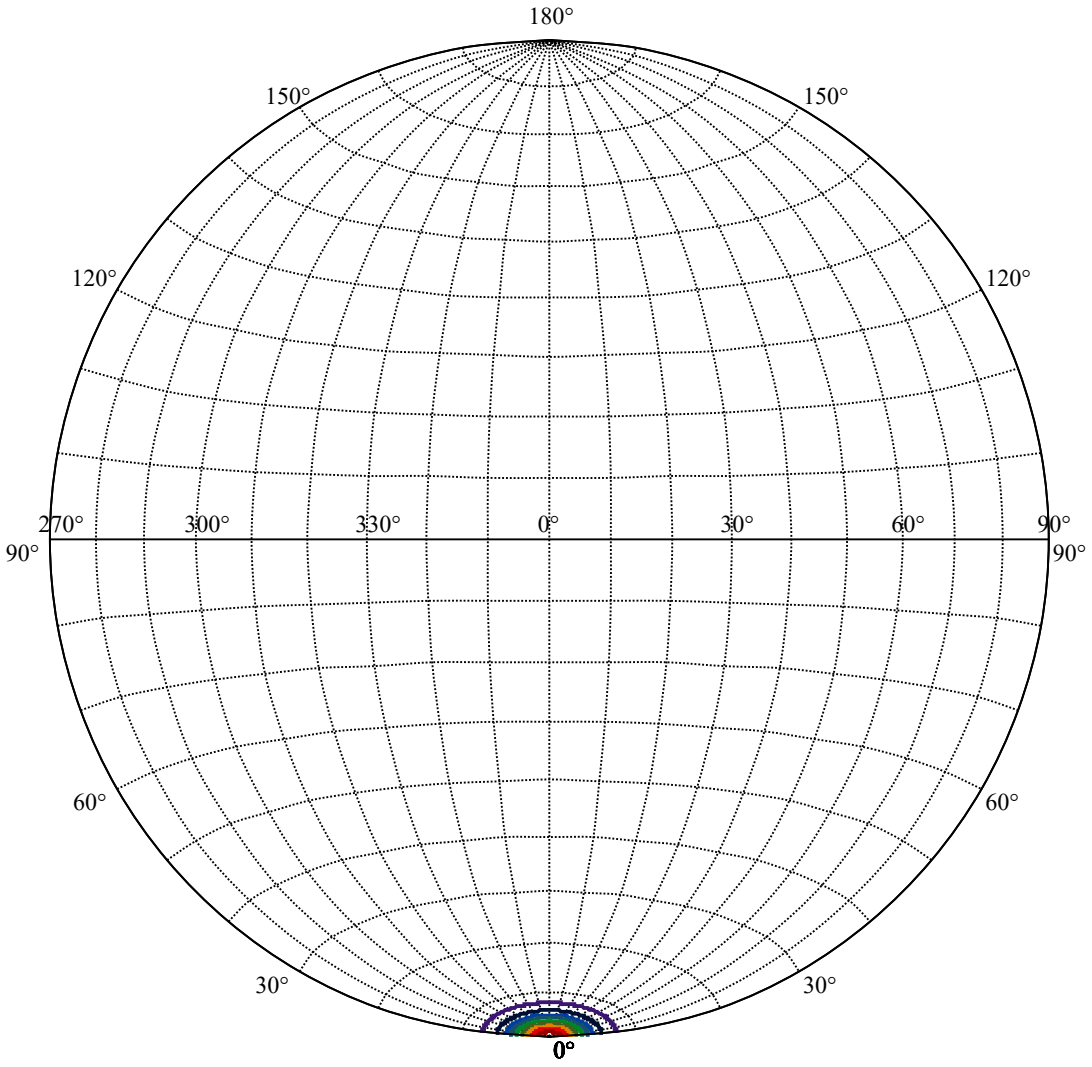
(10%Imax) 1617.83
(20%Imax) 3235.66
(30%Imax) 4853.5
(40%Imax) 6471.33
(50%Imax) 8089.16
(60%Imax) 9706.99
(70%Imax) 11324.8
(80%Imax) 12942.7
(90%Imax) 14560.5

Equipment: GMS1980
Temperature(°C): 25.0

Date: 2017/10/7
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

ISO candela diagram on circular web



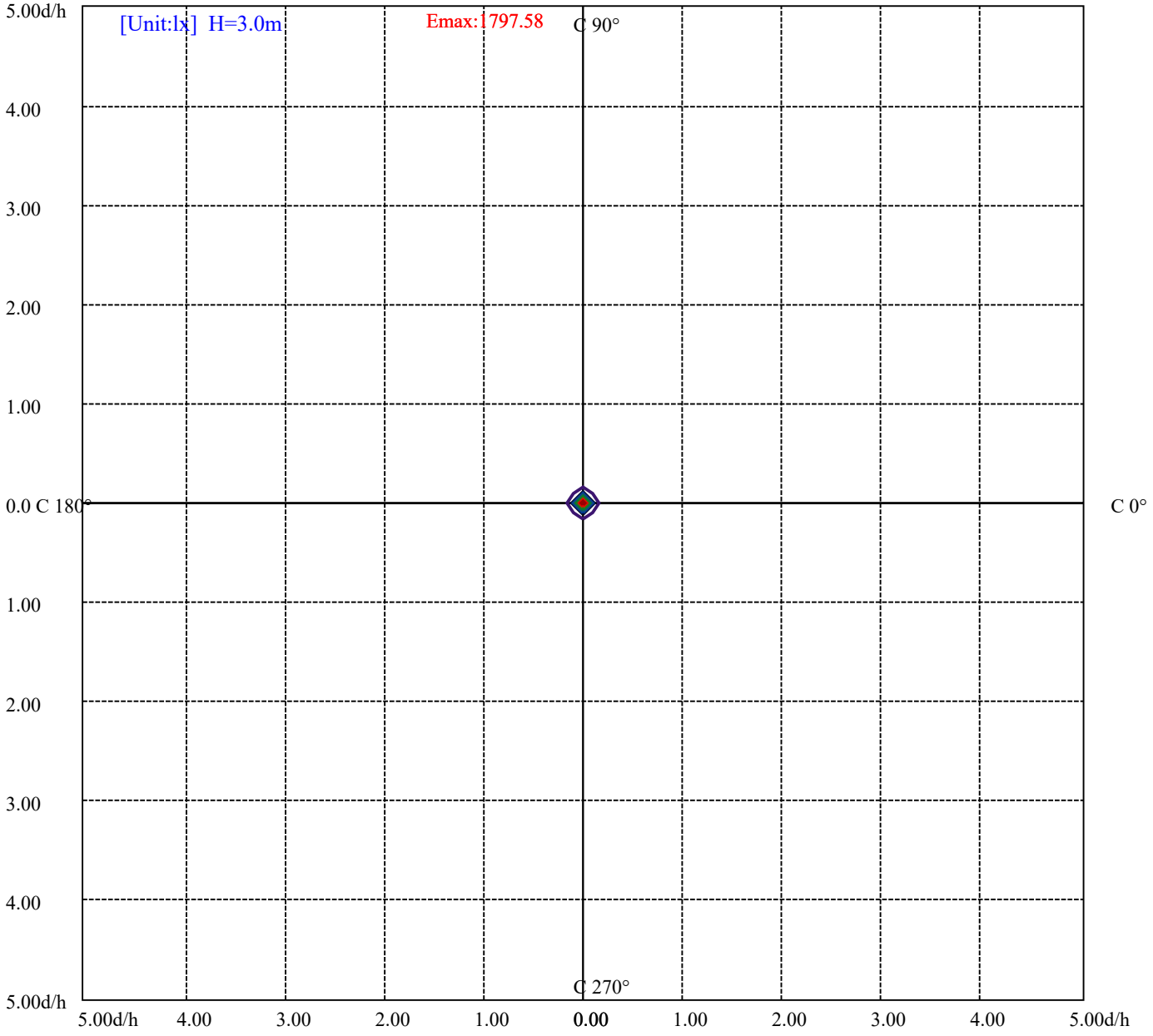
House [Unit:cd] Road

Imax:16178.32

(10%Imax) 1617.83
(20%Imax) 3235.66
(30%Imax) 4853.5
(40%Imax) 6471.33
(50%Imax) 8089.16
(60%Imax) 9706.99
(70%Imax) 11324.8
(80%Imax) 12942.7
(90%Imax) 14560.5

Equipment: GMS1980 Date: 2017/10/7 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

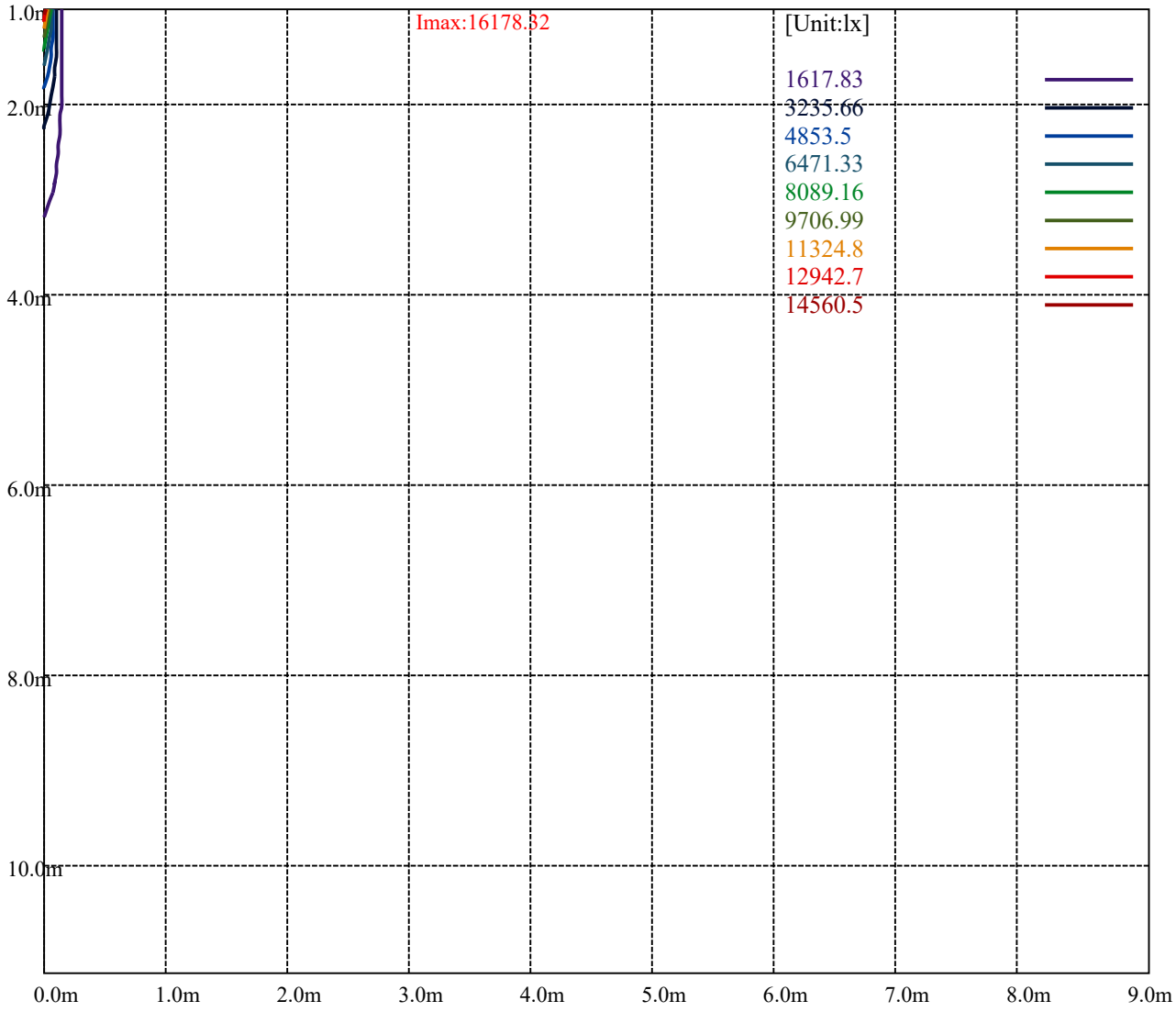
ISO illuminance diagram



(10%Emax) 179.7578
(20%Emax) 359.5155
(30%Emax) 539.2722
(40%Emax) 719.03
(50%Emax) 898.7878
(60%Emax) 1078.546
(70%Emax) 1258.3
(80%Emax) 1438.056
(90%Emax) 1617.822

Equipment: GMS1980
Temperature(°C): 25.0
Date: 2017/10/7
Humidity(%): 60.0%
Operator: NT07
Distance(m): 7.42

Space ISO Lux diagram



Equipment: GMS1980
Temperature(°C): 25.0

Date: 2017/10/7
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

Luminance Limitting Curve(no luminous side)

Luminance Table

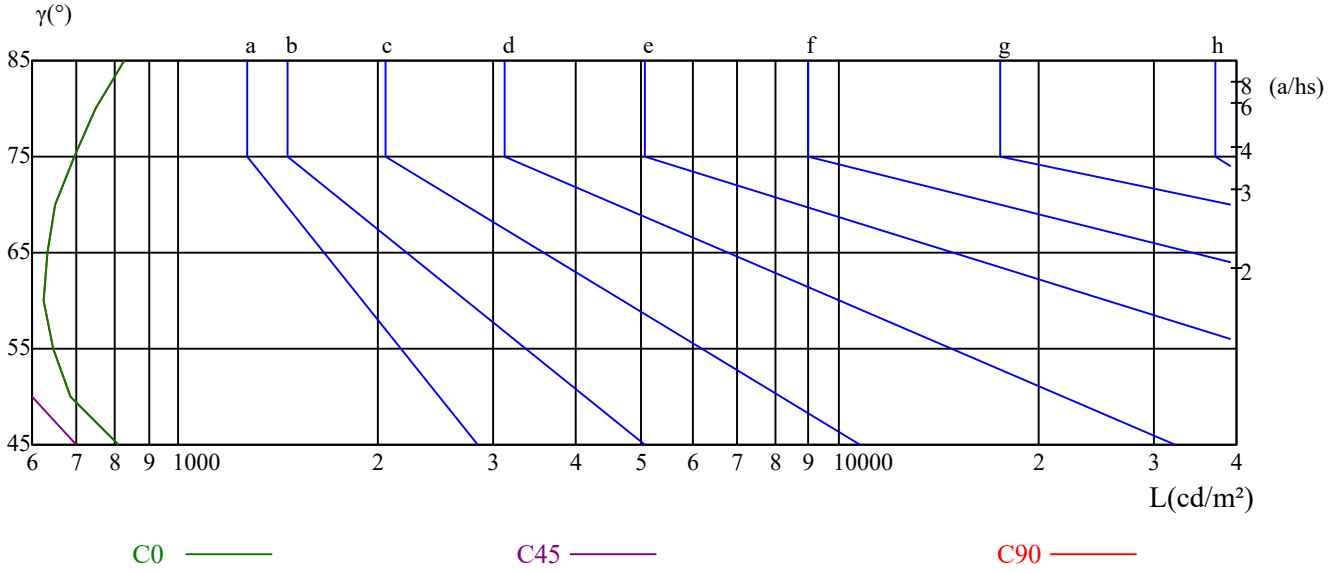
γ	45	50	55	60	65	70	75	80	85
C0	810	684	644	625	631	652	694	750	830
C45	699	582	540	515	511	518	539	568	609
C90	810	684	644	625	631	652	694	750	830

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
1462	1462	1462	2285	2285	2285	6655	6655	6655

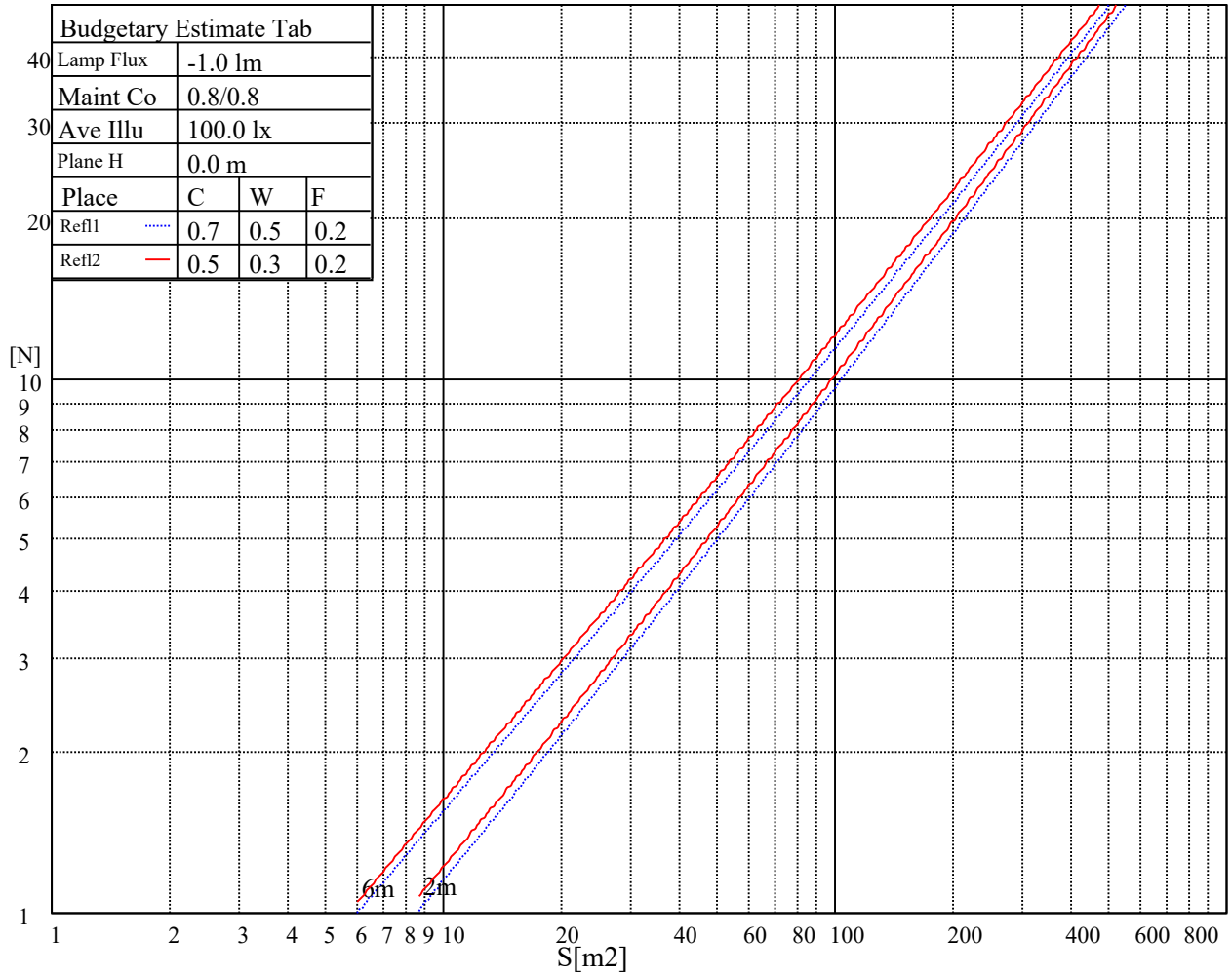
Glare Table

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

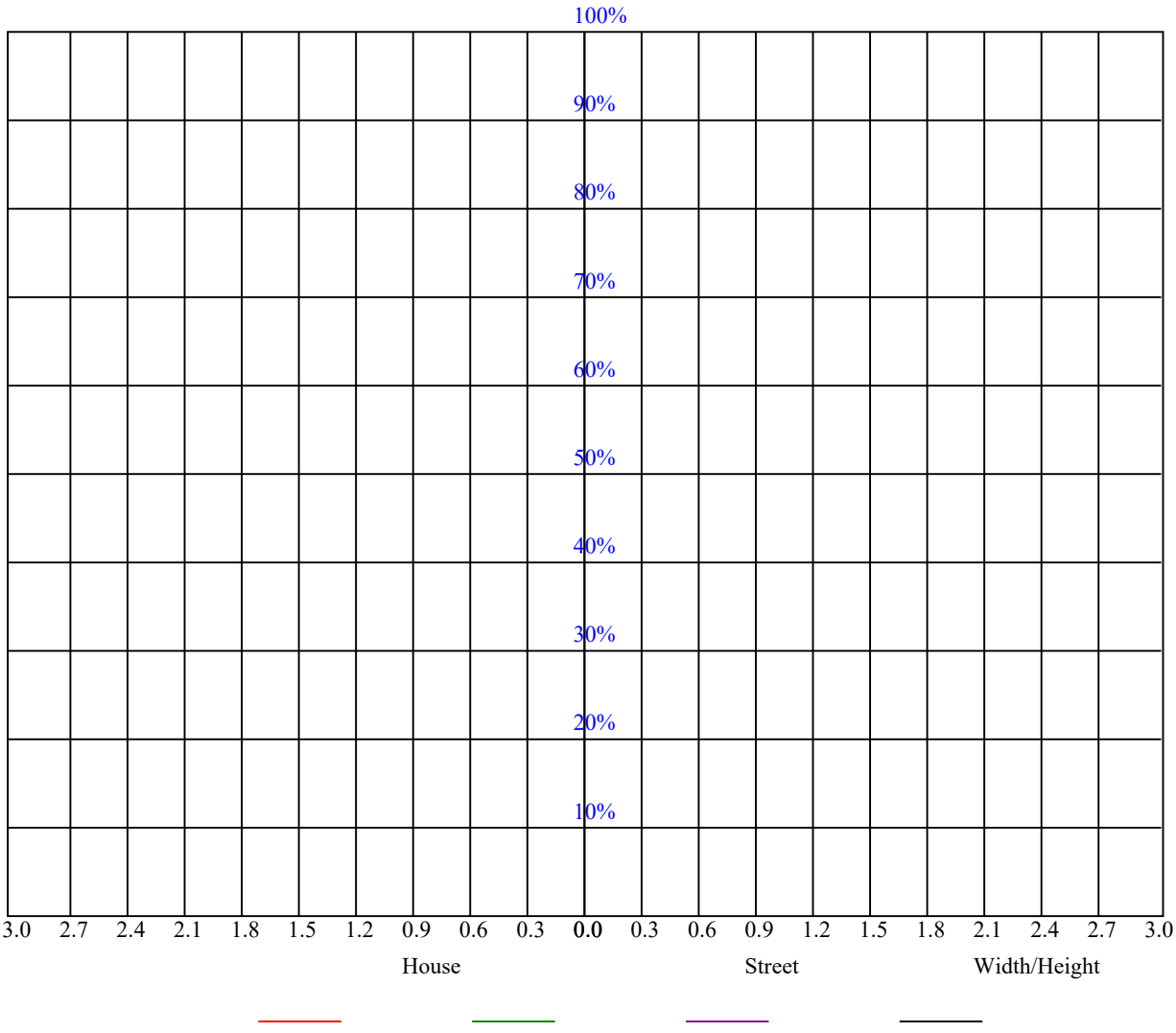


Equipment: GMS1980 Date: 2017/10/7 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Coefficient Utilization Curve



Equipment: GMS1980
Temperature(°C): 25.0

Date: 2017/10/7
Humidity(%): 60.0%

Operator: NT07
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	16395.80	16004.90	13736.57	10961.73	7994.19	5125.75	3088.66	2917.99	1392.38
45.0	16362.76	14595.45	11055.33	7977.67	5356.99	3061.14	2895.97	1352.19	970.09
90.0	15520.40	10733.80	9201.58	6364.52	4133.63	2465.43	1614.25	1087.69	810.49
135.0	16434.34	15184.56	12117.91	9205.43	6491.15	3842.94	2890.46	1599.94	1116.54
180.0	16395.80	15454.33	10844.46	9743.33	6955.83	4373.68	2625.09	1698.49	1088.80
225.0	16362.76	16726.13	15470.85	10822.99	9670.11	6390.40	4138.59	2494.61	1573.51
270.0	15520.40	16814.22	16494.90	14744.10	12035.33	8137.34	5478.11	3501.59	3110.69
315.0	16434.34	16335.23	14738.60	10819.13	8992.91	5935.63	3831.37	2300.26	1286.67
360.0	16395.80	16004.90	13736.57	10961.73	7994.19	5125.75	3088.66	2917.99	1392.38

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	974.50	770.79	633.70	537.35	482.84	441.55	407.97	378.79	357.32
45.0	733.90	603.42	506.52	454.22	414.02	384.84	361.72	342.45	327.59
90.0	634.58	530.41	480.70	435.99	404.11	376.81	351.54	337.11	325.27
135.0	780.15	630.40	527.44	475.69	433.29	398.06	375.48	350.71	336.39
180.0	838.73	644.60	514.17	462.03	415.18	378.24	359.08	337.66	318.12
225.0	1062.92	833.99	668.88	548.80	486.15	438.14	401.20	374.93	352.25
270.0	1363.20	1009.18	748.77	612.78	516.43	460.27	422.83	389.25	360.62
315.0	1068.92	793.86	628.52	535.37	478.44	430.21	395.75	367.94	348.07
360.0	974.50	770.79	633.70	537.35	482.84	441.55	407.97	378.79	357.32

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	340.25	328.69	317.68	308.87	300.06	294.55	284.64	281.34	278.03
45.0	316.02	306.11	295.10	287.94	280.24	278.03	268.46	265.10	261.30
90.0	312.67	303.25	295.54	287.67	283.16	278.64	274.29	269.94	266.80
135.0	322.08	311.62	300.06	292.35	286.29	281.89	278.03	271.76	267.90
180.0	308.26	298.24	289.54	282.49	278.59	274.84	271.26	269.72	266.31
225.0	334.19	324.94	314.70	303.20	295.71	288.94	283.32	279.52	275.56
270.0	343.00	329.79	317.68	309.97	300.61	291.80	286.84	281.34	278.03
315.0	330.94	320.10	311.56	301.76	294.83	289.27	283.27	278.75	275.06
360.0	340.25	328.69	317.68	308.87	300.06	294.55	284.64	281.34	278.03

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	271.70	268.07	265.37	257.77	255.52	252.05	248.19	243.84	238.94
45.0	257.39	253.75	249.35	245.77	242.30	238.56	234.38	230.41	209.16
90.0	261.57	255.96	253.09	249.13	244.73	239.66	233.82	223.47	189.23
135.0	263.28	260.03	254.09	250.23	246.27	242.74	237.95	231.57	221.00
180.0	264.38	262.01	257.61	254.75	252.38	248.19	245.06	239.77	230.47
225.0	272.64	269.01	265.65	259.98	256.23	253.53	249.90	245.39	240.38
270.0	271.54	268.23	265.76	261.52	256.40	253.31	249.46	245.83	241.86
315.0	270.77	267.74	264.44	257.99	254.91	251.39	246.98	243.02	238.23
360.0	271.70	268.07	265.37	257.77	255.52	252.05	248.19	243.84	238.94

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	222.37	176.46	116.55	47.73	17.01	10.79	8.31	6.55	5.51
45.0	157.08	99.82	43.88	13.60	9.74	8.09	5.67	4.68	4.46
90.0	124.43	72.51	29.12	10.57	8.92	7.10	5.56	4.90	4.29
135.0	178.00	125.31	66.23	22.46	10.30	8.86	6.88	5.67	5.07
180.0	196.33	143.70	83.19	26.43	10.08	8.37	6.88	5.40	4.68
225.0	230.19	193.91	139.73	66.40	25.27	10.63	8.70	6.94	5.67
270.0	236.41	222.10	178.49	108.63	55.50	20.65	10.08	8.26	6.44
315.0	225.40	185.32	123.99	62.10	23.56	11.18	9.03	6.83	5.45
360.0	222.37	176.46	116.55	47.73	17.01	10.79	8.31	6.55	5.51

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	5.12	4.40	4.18	4.07	3.96	3.85	3.74	3.69	3.58
45.0	4.07	3.96	3.91	3.80	3.69	3.69	3.58	3.52	3.47
90.0	3.96	3.91	3.74	3.69	3.63	3.52	3.52	3.41	3.36
135.0	4.24	4.02	3.91	3.85	3.74	3.69	3.58	3.58	3.47
180.0	4.18	4.07	3.96	3.85	3.80	3.69	3.63	3.58	3.52
225.0	4.96	4.62	4.07	3.96	3.85	3.74	3.69	3.58	3.52
270.0	5.07	4.46	4.18	4.02	3.91	3.85	3.74	3.69	3.58
315.0	4.62	4.24	4.13	4.02	3.91	3.80	3.74	3.69	3.58
360.0	5.12	4.40	4.18	4.07	3.96	3.85	3.74	3.69	3.58

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	3.52	3.47	3.41	3.30	3.30	3.25	3.19	3.14	3.14
45.0	3.36	3.36	3.25	3.25	3.19	3.19	3.14	3.08	3.08
90.0	3.30	3.25	3.25	3.19	3.19	3.08	3.08	3.08	3.03
135.0	3.41	3.36	3.30	3.30	3.25	3.19	3.14	3.14	3.14
180.0	3.47	3.41	3.36	3.30	3.25	3.19	3.19	3.14	3.08
225.0	3.47	3.41	3.36	3.30	3.25	3.19	3.19	3.14	3.08
270.0	3.52	3.47	3.41	3.36	3.30	3.25	3.19	3.14	3.14
315.0	3.52	3.47	3.36	3.30	3.25	3.19	3.14	3.14	3.14
360.0	3.52	3.47	3.41	3.30	3.30	3.25	3.19	3.14	3.14

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	3.08	3.08	3.03	3.03	2.97	3.03	2.97	2.97	2.97
45.0	3.03	3.03	2.97	2.97	2.97	2.97	2.92	2.92	2.92
90.0	3.03	2.97	2.97	2.97	2.97	2.92	2.92	2.92	2.92
135.0	3.08	3.03	3.08	3.03	2.97	2.97	2.97	2.92	2.97
180.0	3.08	3.08	3.03	3.03	3.03	3.03	2.97	2.97	2.92
225.0	3.08	3.03	3.03	3.03	2.97	2.97	2.97	2.92	2.92
270.0	3.14	3.08	3.08	3.03	3.03	2.97	2.97	2.97	2.92
315.0	3.08	3.08	3.03	3.03	2.97	2.97	2.97	2.92	2.97
360.0	3.08	3.08	3.03	3.03	2.97	3.03	2.97	2.97	2.97

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	2.92	2.92	2.92	2.92	2.92	2.92	2.86	2.86	2.86
45.0	2.92	2.92	2.92	2.86	2.86	2.86	2.86	2.86	2.86
90.0	2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.86
135.0	2.92	2.92	2.92	2.92	2.92	2.92	2.86	2.92	2.86
180.0	2.92	2.92	2.92	2.92	2.92	2.86	2.86	2.86	2.86
225.0	2.92	2.92	2.92	2.86	2.86	2.92	2.86	2.86	2.86
270.0	2.97	2.92	2.92	2.92	2.86	2.86	2.86	2.86	2.86
315.0	2.92	2.92	2.92	2.92	2.86	2.92	2.86	2.86	2.86
360.0	2.92	2.92	2.92	2.92	2.92	2.92	2.86	2.86	2.86

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.81	2.81
45.0	2.86	2.86	2.86	2.86	2.81	2.81	2.81	2.81	2.81
90.0	2.86	2.86	2.81	2.86	2.86	2.81	2.81	2.81	2.81
135.0	2.86	2.86	2.86	2.86	2.86	2.86	2.81	2.86	2.81
180.0	2.86	2.86	2.86	2.81	2.86	2.86	2.81	2.81	2.81
225.0	2.86	2.86	2.81	2.86	2.81	2.81	2.81	2.81	2.81
270.0	2.86	2.86	2.86	2.86	2.81	2.86	2.81	2.81	2.81
315.0	2.86	2.86	2.86	2.81	2.86	2.81	2.81	2.86	2.81
360.0	2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.81	2.81

Intensity data(cd)

C/γ(°)	90.0
0.0	2.81
45.0	2.81
90.0	2.81
135.0	2.81
180.0	2.81
225.0	2.81
270.0	2.81
315.0	2.81
360.0	2.81