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Nata

LumCAT: 1-0918-M
Luminaire: 92.70.127.00

Report No: NATA0100	Voltage(V): 37.8800
Test No: GC2019091810	Current(A): 0.2510
LampCAT: CREE CXA1507	Power (W): 9.5100
Lamp flux(lm): 670.0	PF: 1.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 39	Width(mm): 39
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 533.22
Efficiency(%): 79.58%
Lumens(lm)/Power(W): 56.07
Central intensity(cd): 3783.375
Maximum intensity(cd): 3783.375
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=18.3
[C90/270]Total=18.3
Field angle(10%Imax): [C0/180]Total=39.1
[C90/270]Total=39.1
Maximum s/h(1/2): C0_180=0.31 C90_270=0.31
Maximum s/h(1/4): C0_180=0.34 C90_270=0.34
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 79.58%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.545%

Equipment: GMS1980	Date: 2019/9/18	Operator: NT07
Temperature(°C): 25.0	Humidity(%): 65.0%	Distance(m): 7.50

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	3783.375	0.000	0	.000%	.000%
1.0	3753.633	3.606	3.606	.538%	.676%
2.0	3661.383	10.643	14.249	1.588%	2.672%
3.0	3502.758	17.134	31.383	2.557%	5.886%
4.0	3300.961	22.774	54.158	3.399%	10.157%
5.0	3052.125	27.331	81.488	4.079%	15.282%
6.0	2776.430	30.631	112.119	4.572%	21.027%
7.0	2484.352	32.654	144.772	4.874%	27.151%
8.0	2214.914	33.632	178.404	5.020%	33.458%
9.0	1933.313	33.619	212.023	5.018%	39.763%
10.0	1658.784	32.507	244.53	4.852%	45.859%
11.0	1458.120	31.144	275.675	4.648%	51.700%
12.0	1260.914	29.723	305.398	4.436%	57.274%
13.0	1082.257	27.808	333.205	4.150%	62.489%
14.0	934.924	25.820	359.025	3.854%	67.332%
15.0	804.663	23.882	382.907	3.564%	71.810%
16.0	690.870	21.914	404.82	3.271%	75.920%
17.0	590.055	19.947	424.768	2.977%	79.661%
18.0	497.538	17.932	442.7	2.676%	83.024%
19.0	420.244	15.968	458.668	2.383%	86.019%
20.0	342.183	13.955	472.622	2.083%	88.636%
21.0	281.623	11.978	484.6	1.788%	90.882%
22.0	208.062	9.840	494.441	1.469%	92.728%
23.0	158.660	7.695	502.136	1.148%	94.171%
24.0	99.485	5.644	507.78	.842%	95.229%
25.0	61.819	3.668	511.447	.547%	95.917%
26.0	35.100	2.288	513.735	.341%	96.346%
27.0	19.441	1.334	515.069	.199%	96.596%
28.0	11.841	0.792	515.861	.118%	96.745%
29.0	9.007	0.545	516.407	.081%	96.847%
30.0	7.889	0.456	516.863	.068%	96.933%
31.0	7.151	0.419	517.282	.062%	97.011%
32.0	6.539	0.392	517.674	.059%	97.085%
33.0	6.040	0.371	518.044	.055%	97.154%
34.0	5.632	0.353	518.398	.053%	97.220%
35.0	5.245	0.338	518.735	.050%	97.284%
36.0	4.943	0.324	519.06	.048%	97.345%
37.0	4.676	0.314	519.373	.047%	97.403%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	4.437	0.304	519.678	.045%	97.460%
39.0	4.219	0.295	519.973	.044%	97.516%
40.0	4.036	0.288	520.261	.043%	97.570%
41.0	3.895	0.282	520.543	.042%	97.623%
42.0	3.734	0.277	520.821	.041%	97.675%
43.0	3.614	0.272	521.093	.041%	97.726%
44.0	3.509	0.269	521.362	.040%	97.776%
45.0	3.417	0.266	521.628	.040%	97.826%
46.0	3.333	0.264	521.892	.039%	97.876%
47.0	3.234	0.261	522.153	.039%	97.925%
48.0	3.178	0.259	522.412	.039%	97.973%
49.0	3.094	0.258	522.67	.038%	98.022%
50.0	3.038	0.256	522.925	.038%	98.070%
51.0	2.974	0.254	523.18	.038%	98.117%
52.0	2.939	0.254	523.433	.038%	98.165%
53.0	2.897	0.254	523.687	.038%	98.212%
54.0	2.855	0.254	523.941	.038%	98.260%
55.0	2.820	0.253	524.194	.038%	98.307%
56.0	2.777	0.253	524.447	.038%	98.355%
57.0	2.756	0.253	524.7	.038%	98.402%
58.0	2.728	0.254	524.954	.038%	98.450%
59.0	2.693	0.253	525.207	.038%	98.497%
60.0	2.665	0.253	525.46	.038%	98.545%
61.0	2.651	0.254	525.714	.038%	98.592%
62.0	2.630	0.254	525.968	.038%	98.640%
63.0	2.609	0.255	526.223	.038%	98.688%
64.0	2.580	0.255	526.478	.038%	98.736%
65.0	2.566	0.255	526.732	.038%	98.783%
66.0	2.552	0.255	526.988	.038%	98.831%
67.0	2.545	0.256	527.244	.038%	98.879%
68.0	2.524	0.257	527.501	.038%	98.928%
69.0	2.496	0.256	527.757	.038%	98.976%
70.0	2.496	0.256	528.013	.038%	99.024%
71.0	2.482	0.257	528.271	.038%	99.072%
72.0	2.482	0.258	528.529	.039%	99.120%
73.0	2.475	0.259	528.788	.039%	99.169%
74.0	2.454	0.259	529.047	.039%	99.218%
75.0	2.440	0.259	529.306	.039%	99.266%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	2.433	0.259	529.564	.039%	99.315%
77.0	2.419	0.259	529.823	.039%	99.363%
78.0	2.433	0.260	530.083	.039%	99.412%
79.0	2.426	0.261	530.344	.039%	99.461%
80.0	2.412	0.261	530.605	.039%	99.510%
81.0	2.412	0.261	530.865	.039%	99.559%
82.0	2.412	0.262	531.127	.039%	99.608%
83.0	2.398	0.261	531.388	.039%	99.657%
84.0	2.412	0.262	531.65	.039%	99.706%
85.0	2.405	0.263	531.913	.039%	99.755%
86.0	2.384	0.262	532.175	.039%	99.804%
87.0	2.384	0.261	532.436	.039%	99.853%
88.0	2.384	0.261	532.697	.039%	99.902%
89.0	2.377	0.261	532.958	.039%	99.951%
90.0	2.384	0.261	533.219	.039%	100.000%

Zonal flux distribution table

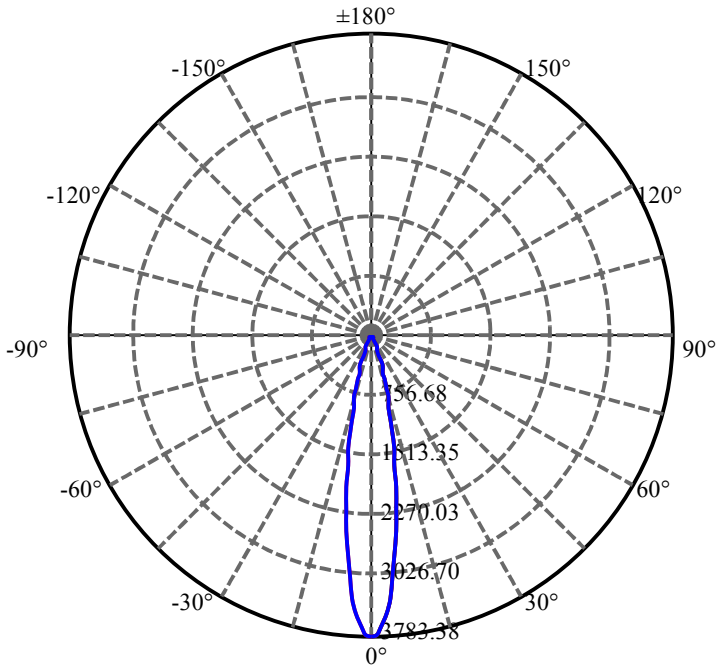
ZONAL LUMEN SUMMARY

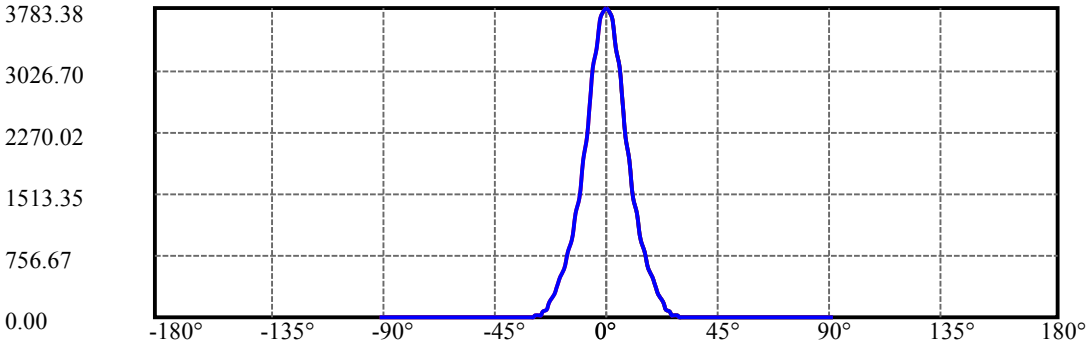
Zone	Lumens	%Lamp	%Fixt
0-30	516.86	77.14%	96.93%
0-40	520.26	77.65%	97.57%
0-60	525.46	78.43%	98.54%
0-90	532.96	79.55%	99.95%
0-120	532.96	79.55%	99.95%
0-180	533.22	79.58%	100.00%
60-90	7.75	1.16%	1.45%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-17.10	426.58	63.67%	80.00%

ZONAL LUMEN SUMMARY

0-10	244.53
10-20	228.09
20-30	44.24
30-40	3.40
40-50	2.66
50-60	2.53
60-70	2.55
70-80	2.59
80-90	2.35
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):

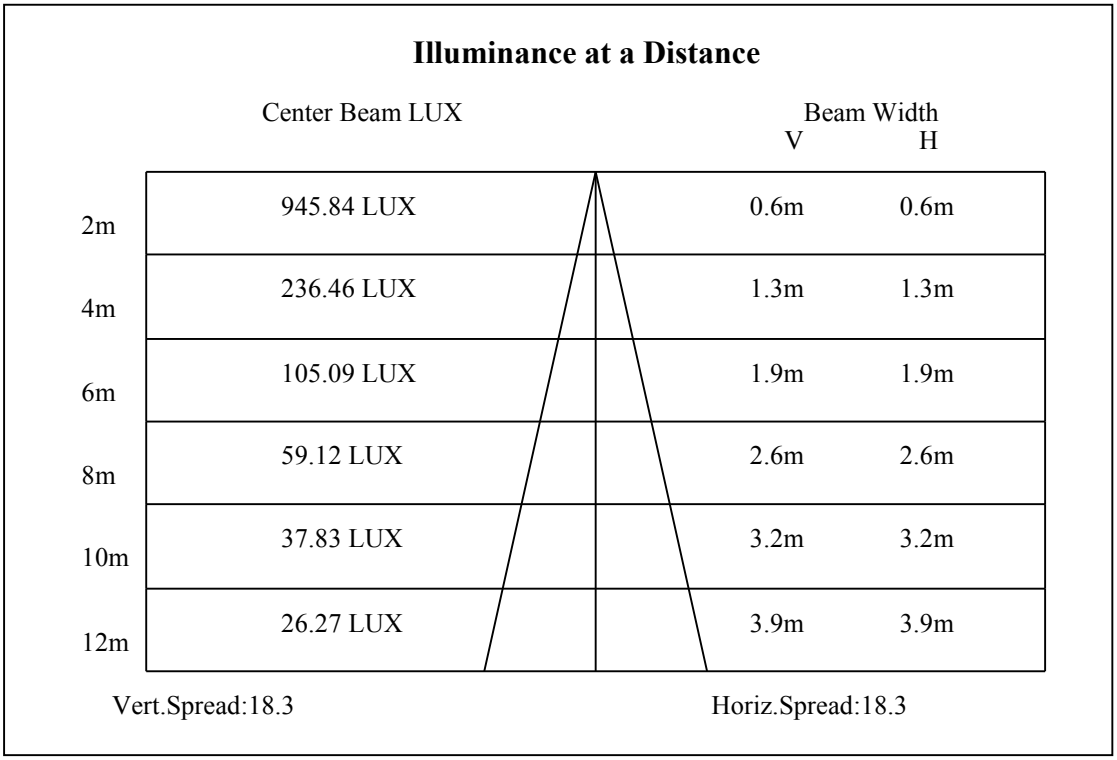
C0/C180:

C90/C270:

Field angle(10%Imax):C0/180Left:19.5 Right:19.5
:C90/270Left:19.5 Right:19.5

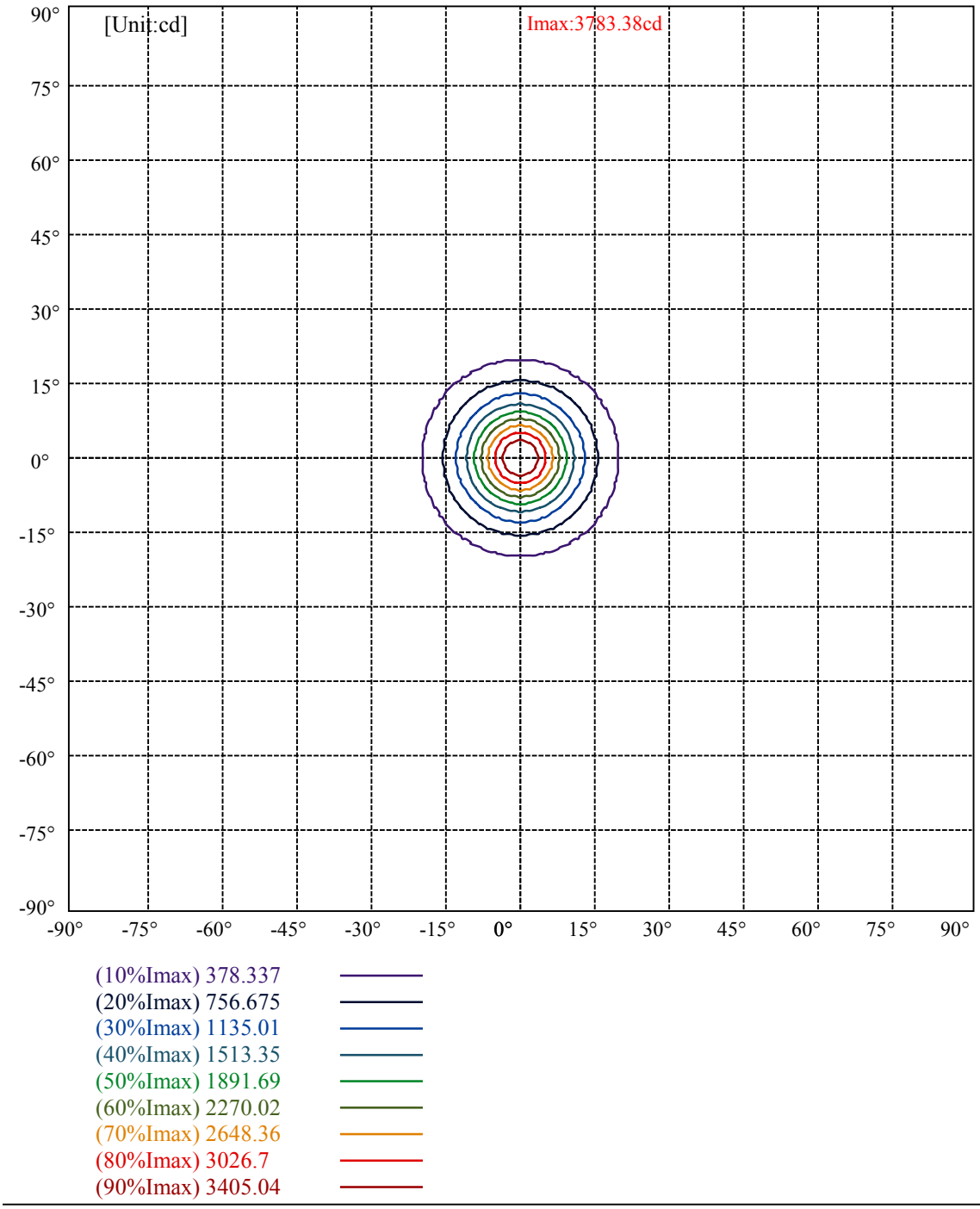
Beam Angle(50%Imax):C0/180Left:9.2 Right:9.2
:C90/270Left:9.2 Right:9.2

Lux distance Curve



Equipment: GMS1980 Date: 2019/9/18 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

ISO-Intensity(V-H)

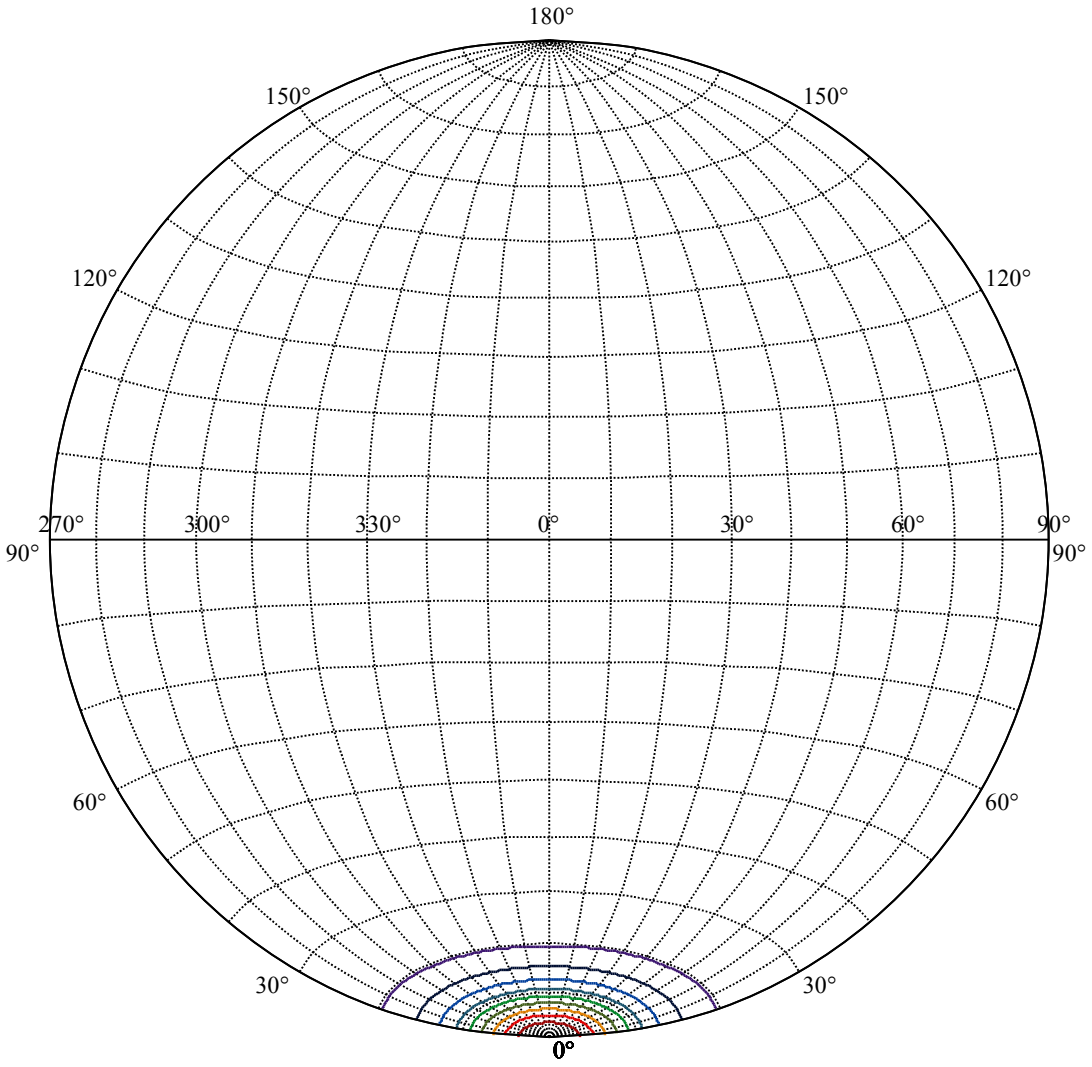


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/9/18
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

ISO candela diagram on circular web



House [Unit:cd] Road

Imax:3783.38

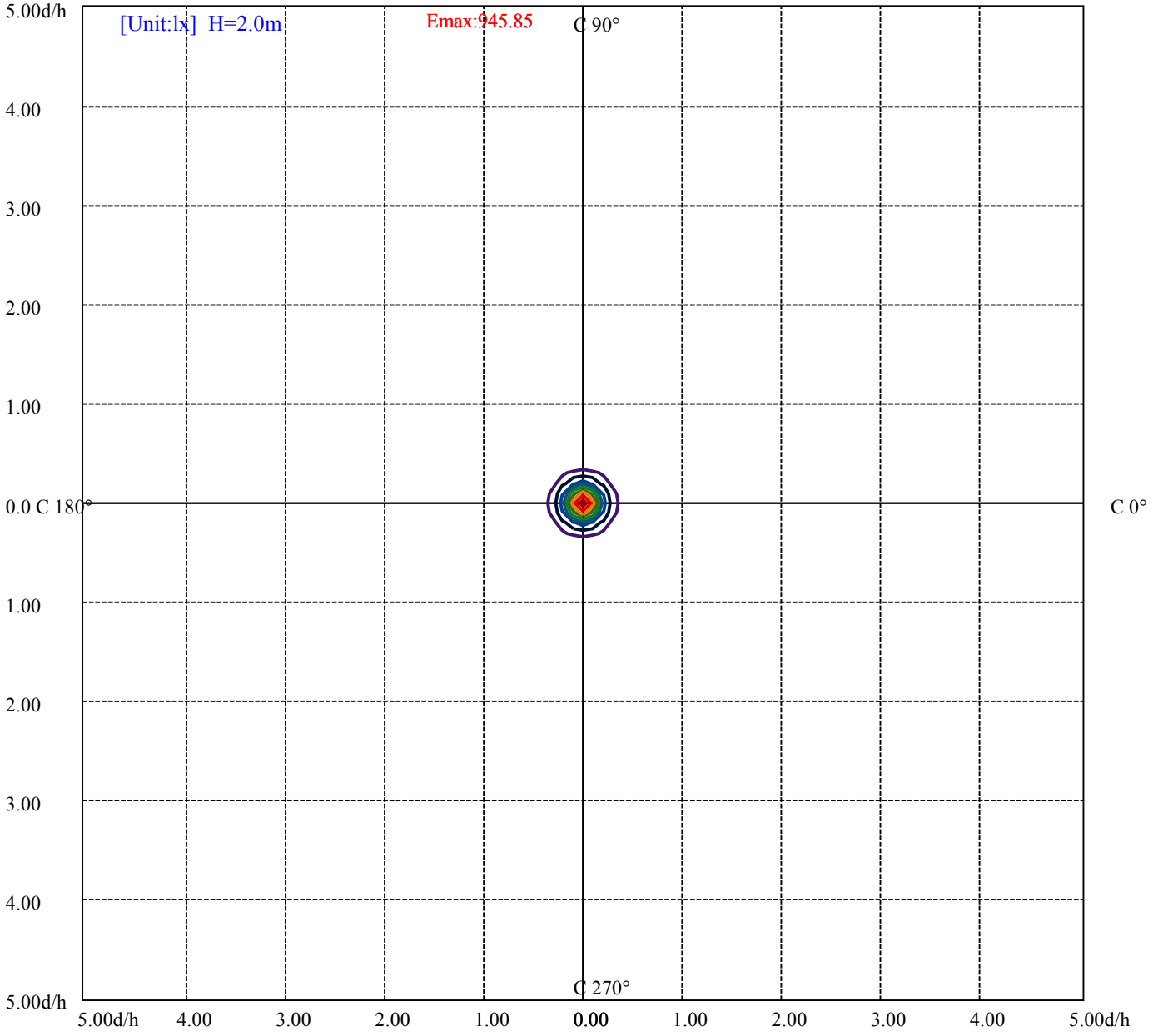
(10%Imax) 378.337
(20%Imax) 756.675
(30%Imax) 1135.01
(40%Imax) 1513.35
(50%Imax) 1891.69
(60%Imax) 2270.02
(70%Imax) 2648.36
(80%Imax) 3026.7
(90%Imax) 3405.04

Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/9/18
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

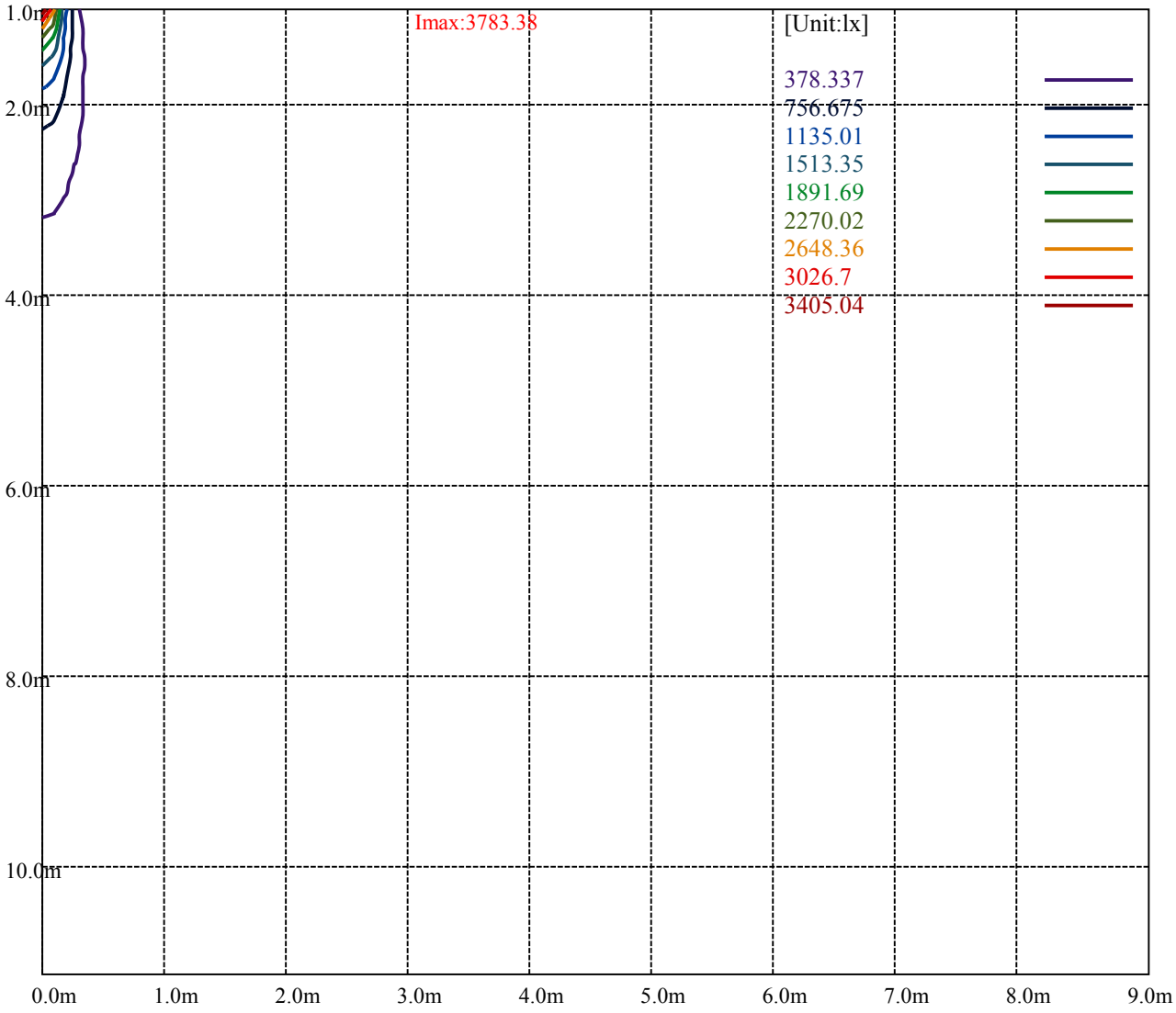
ISO illuminance diagram



(10%Emax) 94.58425
(20%Emax) 189.1685
(30%Emax) 283.7525
(40%Emax) 378.3375
(50%Emax) 472.9225
(60%Emax) 567.505
(70%Emax) 662.09
(80%Emax) 756.675
(90%Emax) 851.2575

Equipment: GMS1980
Temperature(°C): 25.0
Date: 2019/9/18
Humidity(%): 65.0%
Operator: NT07
Distance(m): 7.50

Space ISO Lux diagram



Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/9/18
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Luminance Limitting Curve(no luminous side)

Luminance Table

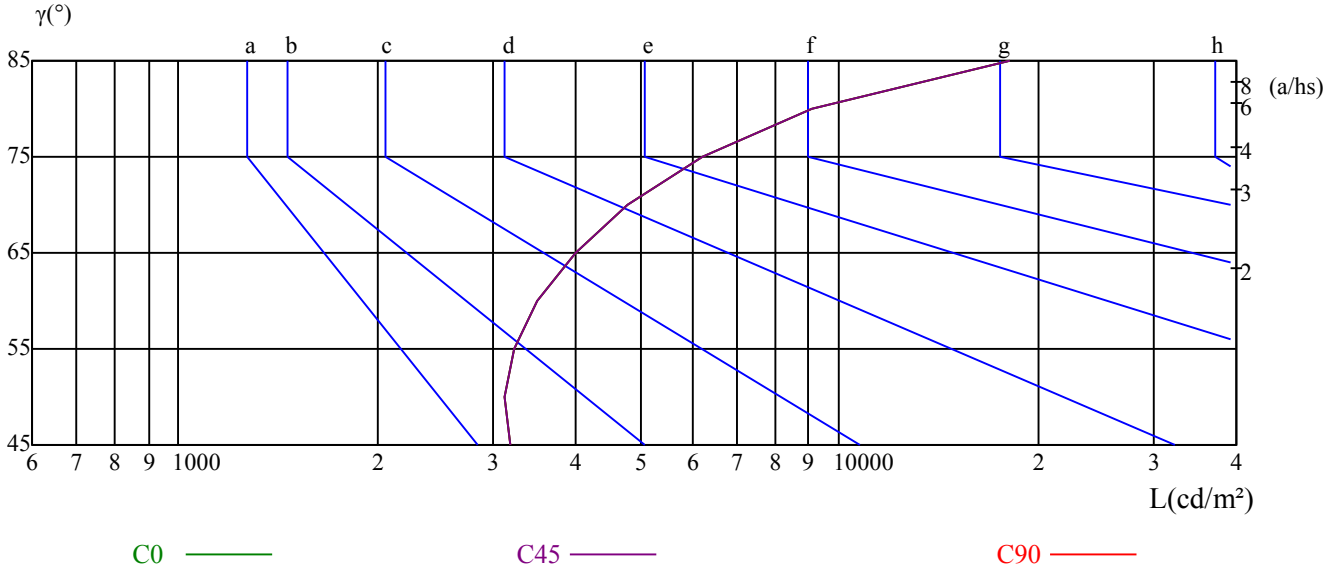
γ	45	50	55	60	65	70	75	80	85
C0	3177	3107	3232	3504	3993	4798	6198	9131	18140
C45	3177	3107	3232	3504	3993	4798	6198	9131	18140
C90	3177	3107	3232	3504	3993	4798	6198	9131	18140

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
3993	3993	3993	6198	6198	6198	18140	18140	18140

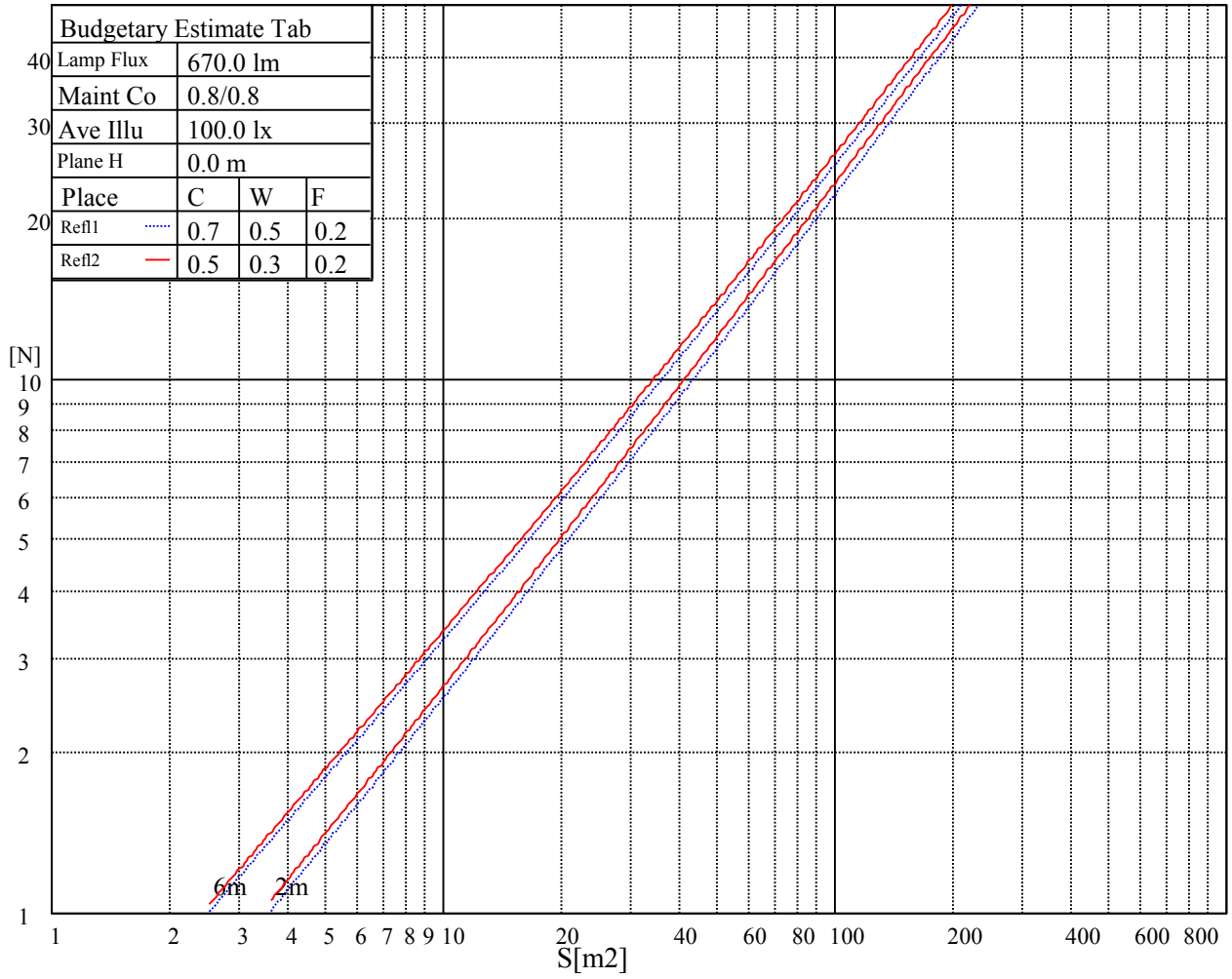
Glare Table

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

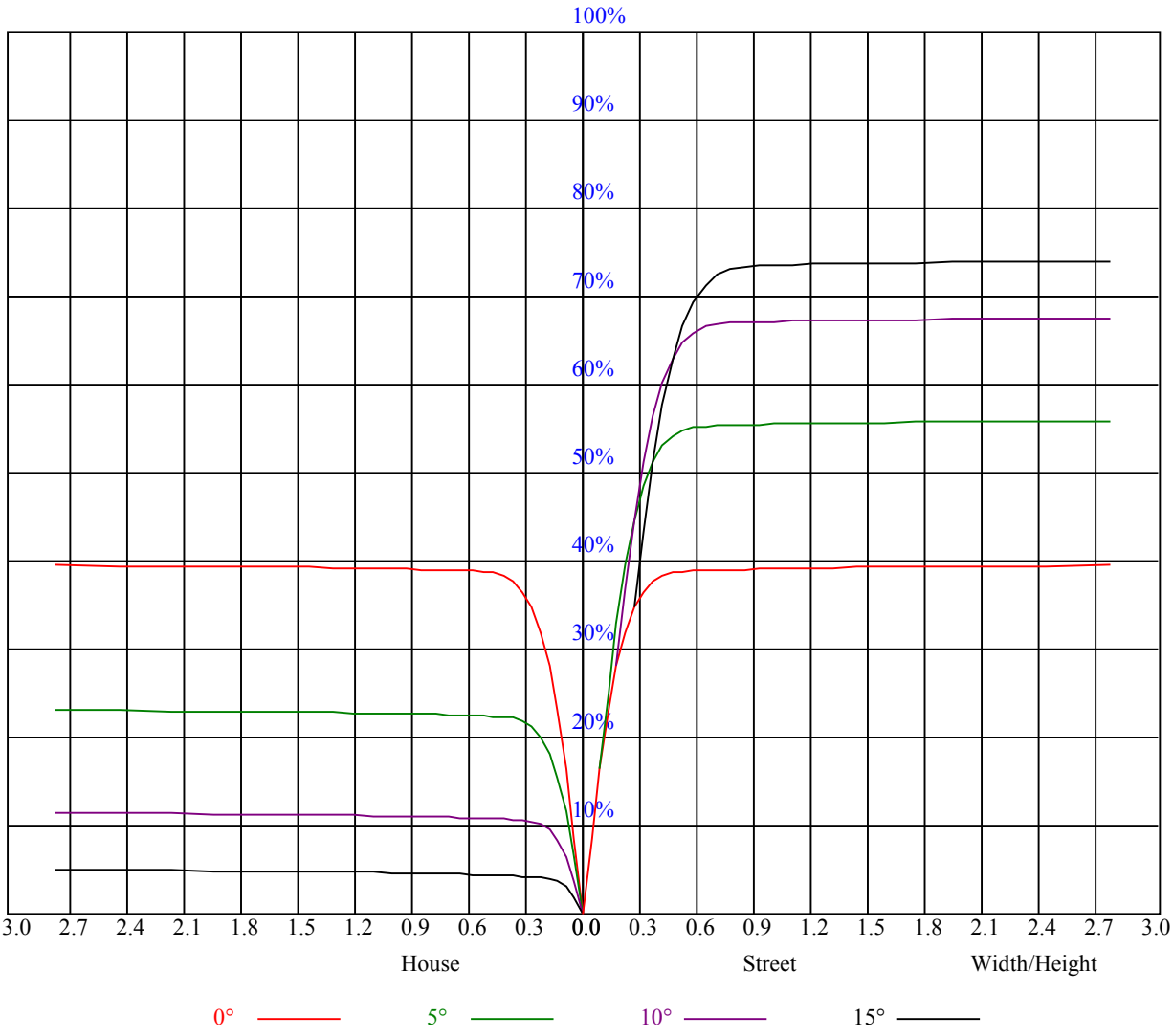


Equipment: GMS1980	Date: 2019/9/18	Operator: NT07
Temperature(°C): 25.0	Humidity(%): 65.0%	Distance(m): 7.50

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	0.95	0.95	0.95	0.93	0.93	0.93	0.88	0.88	0.88	0.85	0.85	0.85	0.81	0.81	0.81	0.80
1	0.90	0.88	0.87	0.88	0.87	0.86	0.85	0.84	0.83	0.82	0.81	0.81	0.79	0.79	0.78	0.77
2	0.86	0.84	0.82	0.85	0.83	0.81	0.82	0.81	0.79	0.80	0.79	0.78	0.78	0.77	0.76	0.75
3	0.83	0.80	0.78	0.82	0.79	0.77	0.80	0.78	0.76	0.78	0.76	0.75	0.76	0.75	0.74	0.73
4	0.80	0.77	0.75	0.79	0.77	0.74	0.78	0.75	0.74	0.76	0.74	0.73	0.75	0.73	0.72	0.71
5	0.78	0.75	0.72	0.77	0.74	0.72	0.76	0.73	0.71	0.75	0.73	0.71	0.73	0.72	0.70	0.70
6	0.75	0.72	0.70	0.75	0.72	0.70	0.74	0.71	0.70	0.73	0.71	0.69	0.72	0.70	0.69	0.68
7	0.73	0.70	0.68	0.73	0.70	0.68	0.72	0.70	0.68	0.71	0.69	0.68	0.71	0.69	0.67	0.67
8	0.72	0.69	0.67	0.71	0.69	0.67	0.71	0.68	0.66	0.70	0.68	0.66	0.69	0.67	0.66	0.65
9	0.70	0.67	0.65	0.70	0.67	0.65	0.69	0.67	0.65	0.69	0.66	0.65	0.68	0.66	0.65	0.64
10	0.69	0.66	0.64	0.68	0.66	0.64	0.68	0.65	0.64	0.67	0.65	0.64	0.67	0.65	0.63	0.63

Coefficient Utilization Curve



Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/9/18
Humidity(%): 65.0%

Operator: NT07
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	3796.88	3845.81	3829.50	3759.19	3613.50	3420.56	3157.31	2871.56	2599.88
45.0	3737.25	3814.88	3840.75	3799.69	3703.50	3528.56	3292.31	3037.50	2755.69
90.0	3786.75	3785.63	3732.75	3592.69	3388.50	3155.06	2896.88	2536.31	2250.56
135.0	3812.63	3775.50	3665.25	3506.06	3290.63	2979.56	2703.94	2410.31	2098.69
180.0	3796.88	3696.19	3516.19	3265.88	3014.44	2737.13	2370.94	2093.63	1839.38
225.0	3737.25	3589.31	3388.50	3126.38	2827.69	2550.94	2274.19	1962.56	1728.56
270.0	3786.75	3733.88	3617.44	3421.69	3205.69	2938.50	2647.69	2383.88	2162.81
315.0	3812.63	3787.88	3700.69	3550.50	3363.75	3106.69	2868.19	2579.06	2283.75
360.0	3796.88	3845.81	3829.50	3759.19	3613.50	3420.56	3157.31	2871.56	2599.88

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	2297.25	2006.44	1775.25	1558.69	1317.38	1146.38	995.06	865.69	726.75
45.0	2400.19	2122.88	1869.75	1614.94	1386.56	1208.81	1038.38	891.00	778.50
90.0	1984.50	1684.13	1476.00	1230.75	1120.73	943.48	822.15	716.06	607.89
135.0	1816.31	1591.88	1363.50	1183.50	1011.38	860.63	748.13	635.63	538.31
180.0	1580.63	1348.31	1105.71	994.67	849.60	735.98	623.64	535.78	451.29
225.0	1511.44	1119.15	1099.69	955.52	814.78	694.52	597.66	502.71	429.53
270.0	1842.19	1623.38	1443.94	1213.88	1037.81	914.06	763.88	646.88	566.44
315.0	2034.00	1774.13	1531.13	1335.38	1119.83	975.54	848.42	733.22	621.73
360.0	2297.25	2006.44	1775.25	1558.69	1317.38	1146.38	995.06	865.69	726.75

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	627.75	540.00	446.63	375.75	306.56	290.25	166.16	114.08	66.09
45.0	663.19	569.81	486.00	406.13	333.00	286.31	194.51	134.61	87.98
90.0	513.06	440.33	361.29	285.92	223.65	159.58	110.25	64.41	32.91
135.0	462.38	389.25	304.31	289.13	177.81	123.19	73.41	42.30	22.11
180.0	371.14	303.92	240.64	168.30	116.94	74.98	37.35	18.73	11.64
225.0	350.55	275.51	214.99	152.27	97.48	57.71	30.21	14.01	10.01
270.0	467.44	394.88	325.13	285.19	182.93	123.02	74.08	41.85	20.42
315.0	524.81	448.26	358.48	290.31	226.13	154.24	109.91	64.58	29.64
360.0	627.75	540.00	446.63	375.75	306.56	290.25	166.16	114.08	66.09

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	36.00	16.99	11.03	9.39	8.38	7.54	6.98	6.47	5.91
45.0	47.08	22.28	12.99	10.01	8.72	8.04	7.37	6.75	6.24
90.0	16.59	10.86	9.17	8.38	7.71	6.98	6.47	6.02	5.57
135.0	11.19	9.28	8.49	7.65	7.03	6.58	5.96	5.63	5.29
180.0	9.00	7.99	7.26	6.64	6.13	5.68	5.23	4.95	4.67
225.0	8.44	7.59	6.69	6.13	5.68	5.18	4.89	4.61	4.33
270.0	10.80	8.78	7.71	6.92	6.30	5.85	5.40	5.01	4.73
315.0	16.43	10.97	8.72	7.99	7.26	6.47	6.02	5.63	5.23
360.0	36.00	16.99	11.03	9.39	8.38	7.54	6.98	6.47	5.91

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	5.51	5.18	4.84	4.56	4.33	4.16	3.99	3.83	3.71
45.0	5.85	5.40	5.12	4.84	4.56	4.39	4.16	3.99	3.83
90.0	5.23	4.95	4.67	4.44	4.28	4.05	3.88	3.77	3.60
135.0	4.95	4.73	4.50	4.28	4.11	3.94	3.71	3.66	3.54
180.0	4.44	4.22	4.05	3.88	3.71	3.66	3.49	3.38	3.32
225.0	4.16	3.99	3.83	3.66	3.54	3.43	3.38	3.26	3.21
270.0	4.50	4.28	4.11	3.94	3.77	3.71	3.54	3.43	3.38
315.0	4.89	4.67	4.39	4.16	3.99	3.83	3.71	3.60	3.49
360.0	5.51	5.18	4.84	4.56	4.33	4.16	3.99	3.83	3.71

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	3.60	3.49	3.38	3.32	3.21	3.15	3.04	3.04	2.98
45.0	3.71	3.60	3.49	3.43	3.32	3.21	3.15	3.09	3.04
90.0	3.49	3.43	3.32	3.26	3.15	3.09	3.04	2.98	2.93
135.0	3.43	3.32	3.26	3.15	3.09	3.04	2.98	2.93	2.93
180.0	3.26	3.21	3.09	3.04	2.98	2.93	2.93	2.87	2.81
225.0	3.15	3.09	2.98	2.98	2.93	2.87	2.81	2.81	2.81
270.0	3.26	3.21	3.15	3.09	2.98	2.98	2.93	2.87	2.81
315.0	3.43	3.32	3.21	3.15	3.09	3.04	2.93	2.93	2.87
360.0	3.60	3.49	3.38	3.32	3.21	3.15	3.04	3.04	2.98

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	2.93	2.93	2.87	2.81	2.81	2.76	2.70	2.70	2.70
45.0	2.98	2.93	2.87	2.87	2.81	2.76	2.76	2.76	2.70
90.0	2.87	2.81	2.81	2.76	2.76	2.70	2.70	2.64	2.64
135.0	2.87	2.81	2.76	2.76	2.70	2.70	2.64	2.64	2.64
180.0	2.81	2.76	2.70	2.70	2.70	2.64	2.64	2.59	2.59
225.0	2.76	2.76	2.70	2.70	2.64	2.64	2.59	2.59	2.59
270.0	2.81	2.76	2.76	2.70	2.70	2.64	2.64	2.64	2.59
315.0	2.81	2.81	2.76	2.76	2.70	2.70	2.64	2.64	2.59
360.0	2.93	2.93	2.87	2.81	2.81	2.76	2.70	2.70	2.70

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	2.64	2.64	2.64	2.59	2.59	2.59	2.53	2.53	2.53
45.0	2.70	2.64	2.64	2.59	2.59	2.53	2.53	2.53	2.53
90.0	2.59	2.59	2.59	2.59	2.53	2.53	2.53	2.48	2.48
135.0	2.59	2.59	2.53	2.53	2.53	2.53	2.48	2.48	2.48
180.0	2.59	2.59	2.53	2.53	2.53	2.53	2.48	2.53	2.48
225.0	2.59	2.53	2.53	2.53	2.53	2.48	2.48	2.48	2.42
270.0	2.59	2.53	2.53	2.53	2.53	2.53	2.48	2.48	2.48
315.0	2.59	2.53	2.53	2.53	2.53	2.48	2.48	2.48	2.48
360.0	2.64	2.64	2.64	2.59	2.59	2.59	2.53	2.53	2.53

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	2.53	2.53	2.48	2.48	2.48	2.42	2.48	2.48	2.48
45.0	2.48	2.48	2.48	2.48	2.48	2.48	2.48	2.42	2.42
90.0	2.48	2.48	2.48	2.48	2.42	2.42	2.42	2.42	2.42
135.0	2.48	2.48	2.42	2.42	2.42	2.42	2.42	2.42	2.36
180.0	2.48	2.48	2.48	2.42	2.42	2.42	2.42	2.42	2.42
225.0	2.48	2.48	2.42	2.42	2.42	2.42	2.42	2.42	2.42
270.0	2.48	2.48	2.48	2.42	2.42	2.42	2.42	2.42	2.42
315.0	2.48	2.42	2.42	2.42	2.42	2.36	2.42	2.42	2.36
360.0	2.53	2.53	2.48	2.48	2.48	2.42	2.48	2.48	2.48

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	2.48	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.36
45.0	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42
90.0	2.42	2.42	2.36	2.42	2.42	2.36	2.36	2.36	2.36
135.0	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36
180.0	2.42	2.42	2.42	2.42	2.42	2.42	2.36	2.42	2.36
225.0	2.42	2.42	2.42	2.42	2.42	2.36	2.42	2.36	2.36
270.0	2.42	2.42	2.42	2.48	2.42	2.36	2.36	2.36	2.36
315.0	2.36	2.42	2.36	2.36	2.36	2.36	2.36	2.36	2.42
360.0	2.48	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.36

Intensity data(cd)

C/γ(°)	90.0
0.0	2.42
45.0	2.42
90.0	2.36
135.0	2.36
180.0	2.42
225.0	2.36
270.0	2.36
315.0	2.36
360.0	2.42