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

Nata

Client:
LumCAT: 3-1942-M
Luminaire:
Report No:
Test No: GC2019081203
LampCAT: TRIDONIC SLE G7 17MM
Lamp flux(lm): 1190.0
Number of Lamps: 1
Length(mm): 86
Phm Type: C

Voltage(V): 32.8500
Current(A): 0.2970
Power (W): 9.7600
PF: 0.0000
Ballast type: DC
Width(mm): 86
Height(mm): 0

Photometric Results

Lumens(lm): 1013.23, Efficiency(%): 85.15% , Luminous Efficacy(lm/W): 103.81
Central intensity(cd): 4067.437, Maximum intensity(cd): 4067.437
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=17.6
[C90/270]Total=17.6
Field angle(10%Imax): [C0/180]Total=60.6
[C90/270]Total=60.6
Maximum s/h(1/2): C0_180=0.30 C90_270=0.30
Maximum s/h(1/4): C0_180=0.39 C90_270=0.39
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 85.15%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.548%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	4067.438	0.000	0	.000%	.000%
1.0	4043.180	3.881	3.881	.326%	.383%
2.0	3956.414	11.482	15.363	.965%	1.516%
3.0	3796.313	18.542	33.905	1.558%	3.346%
4.0	3583.758	24.703	58.608	2.076%	5.784%
5.0	3282.609	29.539	88.147	2.482%	8.700%
6.0	2953.406	32.772	120.919	2.754%	11.934%
7.0	2600.016	34.470	155.389	2.897%	15.336%
8.0	2271.586	34.865	190.254	2.930%	18.777%
9.0	1981.758	34.471	224.725	2.897%	22.179%
10.0	1756.266	33.828	258.553	2.843%	25.518%
11.0	1579.781	33.334	291.887	2.801%	28.808%
12.0	1454.133	33.165	325.052	2.787%	32.081%
13.0	1336.163	33.114	358.165	2.783%	35.349%
14.0	1250.058	33.103	391.269	2.782%	38.616%
15.0	1173.164	33.267	424.536	2.796%	41.899%
16.0	1094.611	33.229	457.765	2.792%	45.179%
17.0	1031.161	33.104	490.869	2.782%	48.446%
18.0	964.034	32.896	523.765	2.764%	51.693%
19.0	902.039	32.466	556.231	2.728%	54.897%
20.0	841.830	31.918	588.149	2.682%	58.047%
21.0	783.703	31.214	619.362	2.623%	61.128%
22.0	731.623	30.451	649.814	2.559%	64.133%
23.0	679.964	29.619	679.432	2.489%	67.056%
24.0	631.688	28.677	708.11	2.410%	69.887%
25.0	587.728	27.727	735.837	2.330%	72.623%
26.0	548.951	26.831	762.668	2.255%	75.271%
27.0	511.706	25.949	788.617	2.181%	77.832%
28.0	480.755	25.127	813.744	2.112%	80.312%
29.0	449.353	24.334	838.079	2.045%	82.714%
30.0	416.749	23.385	861.463	1.965%	85.022%
31.0	379.245	22.151	883.615	1.861%	87.208%
32.0	335.208	20.468	904.083	1.720%	89.228%
33.0	290.939	18.447	922.529	1.550%	91.049%
34.0	246.073	16.252	938.781	1.366%	92.653%
35.0	200.229	13.860	952.641	1.165%	94.021%
36.0	146.939	11.054	963.695	.929%	95.112%
37.0	107.944	8.313	972.008	.699%	95.932%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	71.121	5.977	977.985	.502%	96.522%
39.0	43.608	3.916	981.901	.329%	96.908%
40.0	27.492	2.480	984.381	.208%	97.153%
41.0	18.225	1.628	986.009	.137%	97.314%
42.0	14.759	1.198	987.207	.101%	97.432%
43.0	13.170	1.035	988.242	.087%	97.534%
44.0	11.967	0.949	989.19	.080%	97.628%
45.0	10.723	0.872	990.062	.073%	97.714%
46.0	9.598	0.795	990.857	.067%	97.792%
47.0	8.585	0.723	991.58	.061%	97.864%
48.0	7.784	0.662	992.242	.056%	97.929%
49.0	7.172	0.614	992.856	.052%	97.990%
50.0	6.701	0.578	993.434	.049%	98.047%
51.0	6.398	0.554	993.989	.047%	98.101%
52.0	6.159	0.539	994.528	.045%	98.155%
53.0	5.941	0.526	995.054	.044%	98.207%
54.0	5.752	0.515	995.569	.043%	98.257%
55.0	5.604	0.507	996.076	.043%	98.307%
56.0	5.463	0.500	996.576	.042%	98.357%
57.0	5.316	0.493	997.069	.041%	98.405%
58.0	5.203	0.486	997.556	.041%	98.453%
59.0	5.119	0.483	998.038	.041%	98.501%
60.0	5.041	0.480	998.518	.040%	98.548%
61.0	4.985	0.478	998.997	.040%	98.596%
62.0	4.936	0.478	999.475	.040%	98.643%
63.0	4.894	0.478	999.953	.040%	98.690%
64.0	4.845	0.478	1000.431	.040%	98.737%
65.0	4.816	0.478	1000.909	.040%	98.784%
66.0	4.795	0.480	1001.388	.040%	98.832%
67.0	4.767	0.481	1001.869	.040%	98.879%
68.0	4.746	0.482	1002.351	.040%	98.927%
69.0	4.718	0.483	1002.834	.041%	98.974%
70.0	4.704	0.484	1003.318	.041%	99.022%
71.0	4.697	0.486	1003.804	.041%	99.070%
72.0	4.676	0.487	1004.291	.041%	99.118%
73.0	4.655	0.488	1004.779	.041%	99.166%
74.0	4.669	0.490	1005.269	.041%	99.215%
75.0	4.697	0.495	1005.764	.042%	99.264%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	4.704	0.499	1006.263	.042%	99.313%
77.0	4.753	0.504	1006.767	.042%	99.363%
78.0	4.697	0.506	1007.273	.043%	99.412%
79.0	4.655	0.502	1007.775	.042%	99.462%
80.0	4.641	0.501	1008.277	.042%	99.512%
81.0	4.613	0.500	1008.777	.042%	99.561%
82.0	4.605	0.500	1009.277	.042%	99.610%
83.0	4.598	0.500	1009.777	.042%	99.660%
84.0	4.598	0.501	1010.278	.042%	99.709%
85.0	4.584	0.501	1010.779	.042%	99.759%
86.0	4.563	0.500	1011.279	.042%	99.808%
87.0	4.507	0.496	1011.776	.042%	99.857%
88.0	4.430	0.490	1012.265	.041%	99.905%
89.0	4.373	0.483	1012.748	.041%	99.953%
90.0	4.345	0.478	1013.226	.040%	100.000%

Zonal flux distribution table

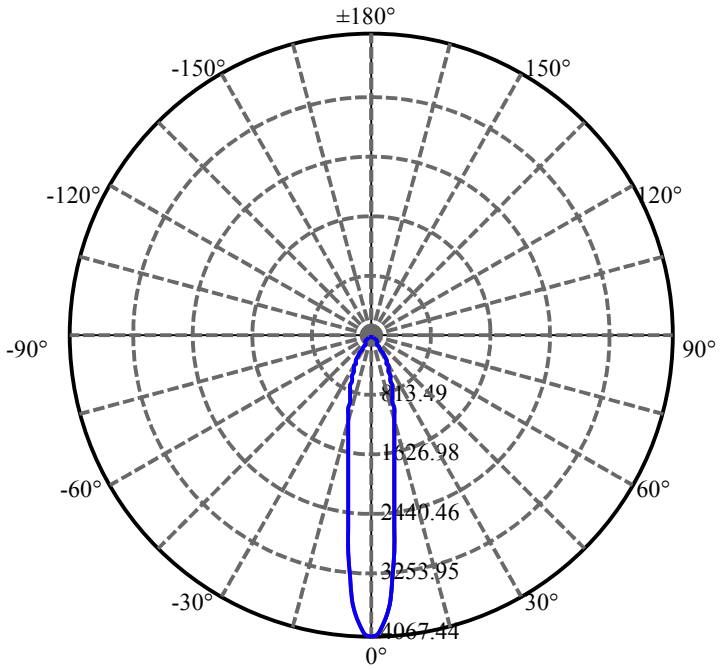
ZONAL LUMEN SUMMARY

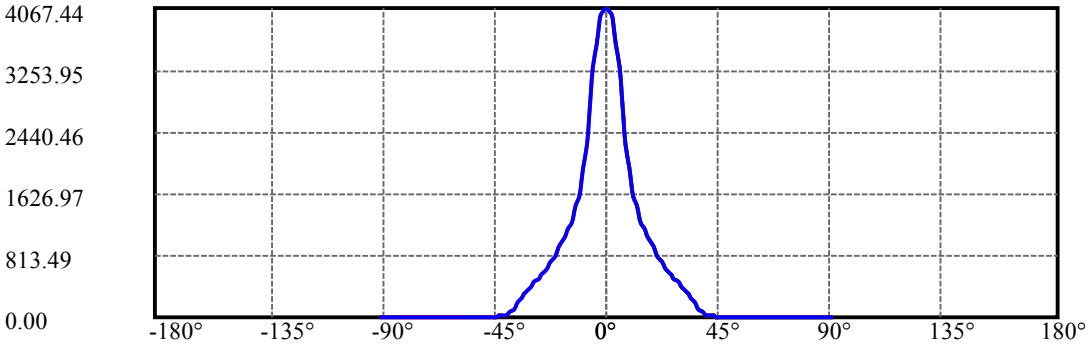
Zone	Lumens	%Lamp	%Fixt
0-30	861.46	72.39%	85.02%
0-40	984.38	82.72%	97.15%
0-60	998.52	83.91%	98.55%
0-90	1012.75	85.10%	99.95%
0-120	1012.75	85.10%	99.95%
0-180	1013.23	85.15%	100.00%
60-90	14.71	1.24%	1.45%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-27.87	810.58	68.12%	80.00%

ZONAL LUMEN SUMMARY

0-10	258.55
10-20	329.60
20-30	273.31
30-40	122.92
40-50	9.05
50-60	5.08
60-70	4.80
70-80	4.96
80-90	4.47
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):

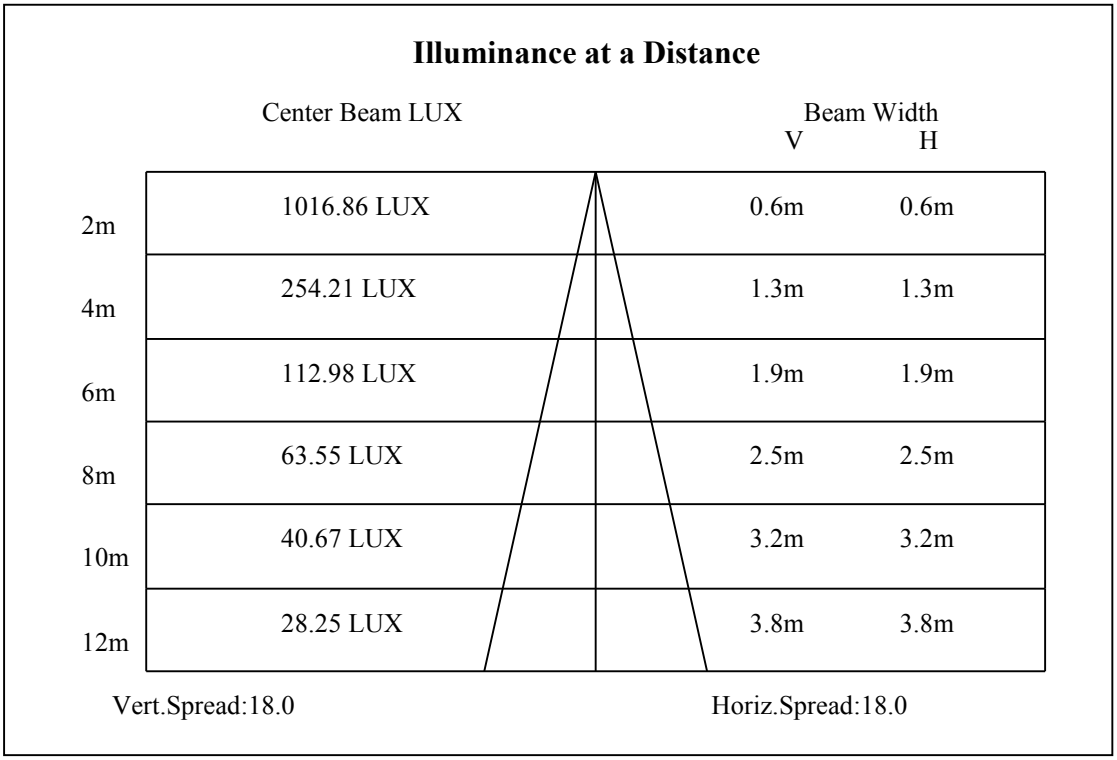
C0/C180:

C90/C270:

Field angle(10%Imax):C0/180Left:30.3 Right:30.3
:C90/270Left:30.3 Right:30.3

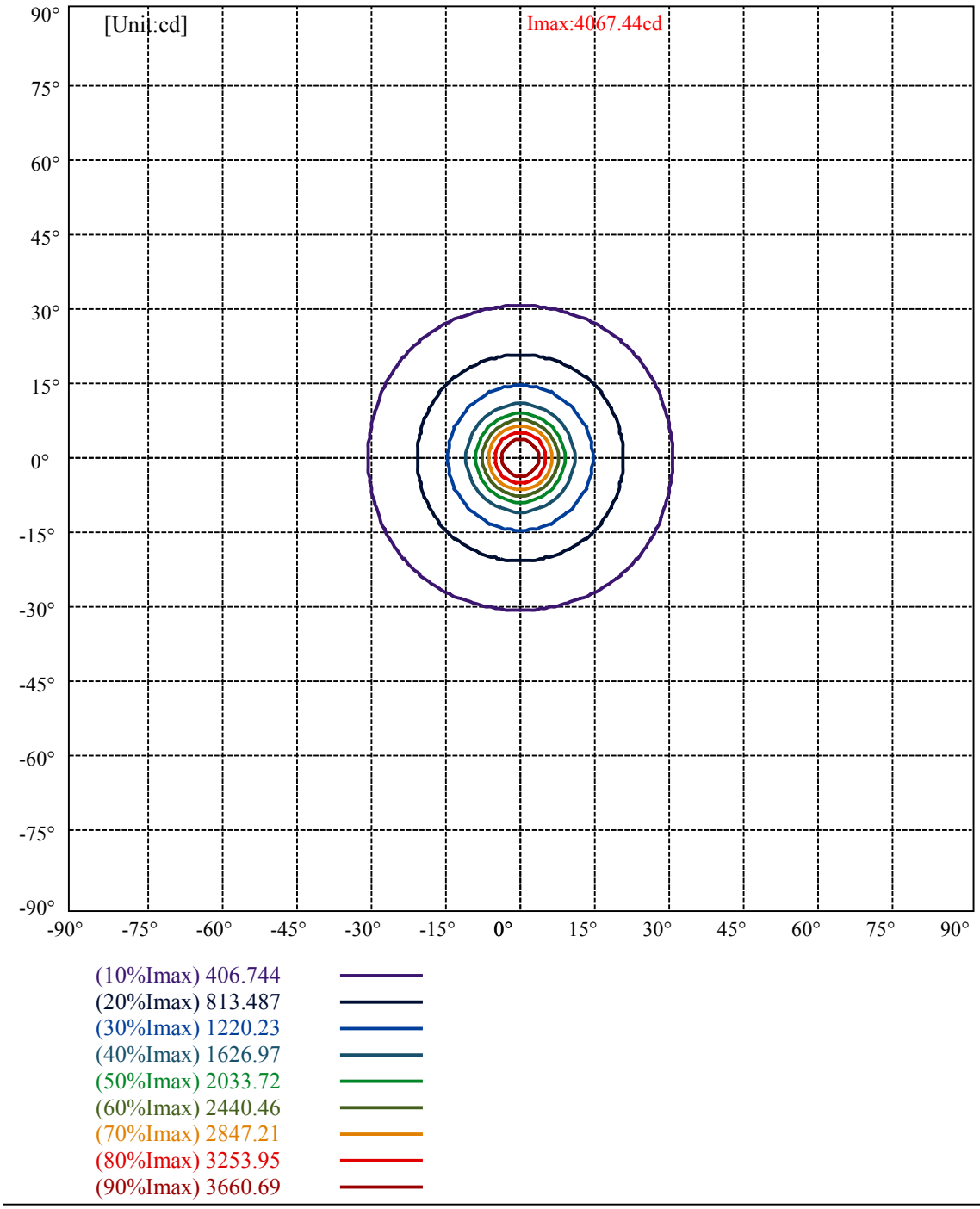
Beam Angle(50%Imax):C0/180Left:8.8 Right:8.8
:C90/270Left:8.8 Right:8.8

Lux distance Curve



Equipment: GMS1980 Date: 2019/8/12 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

ISO-Intensity(V-H)

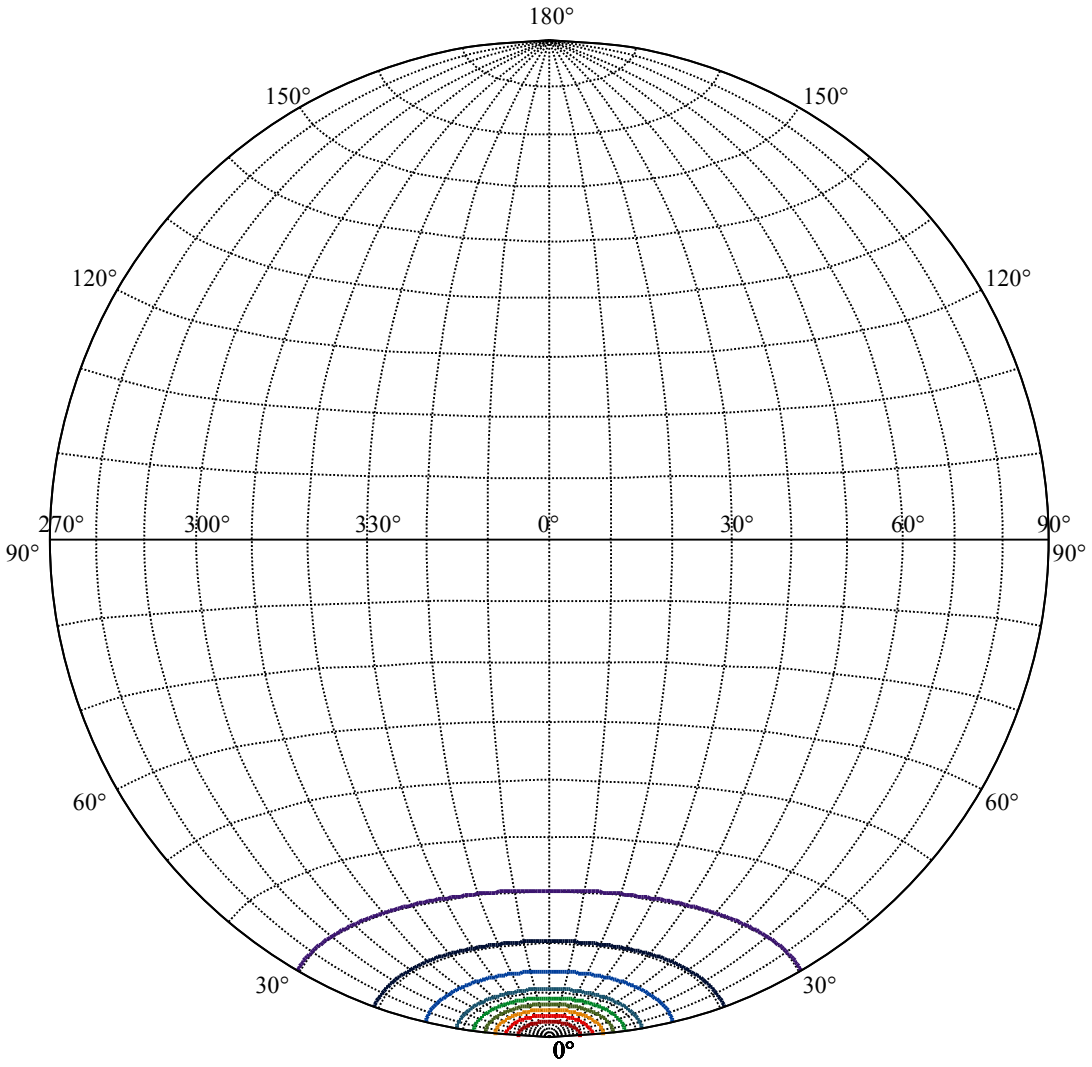


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/8/12
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

ISO candela diagram on circular web



House [Unit:cd] Road

Imax:4067.44

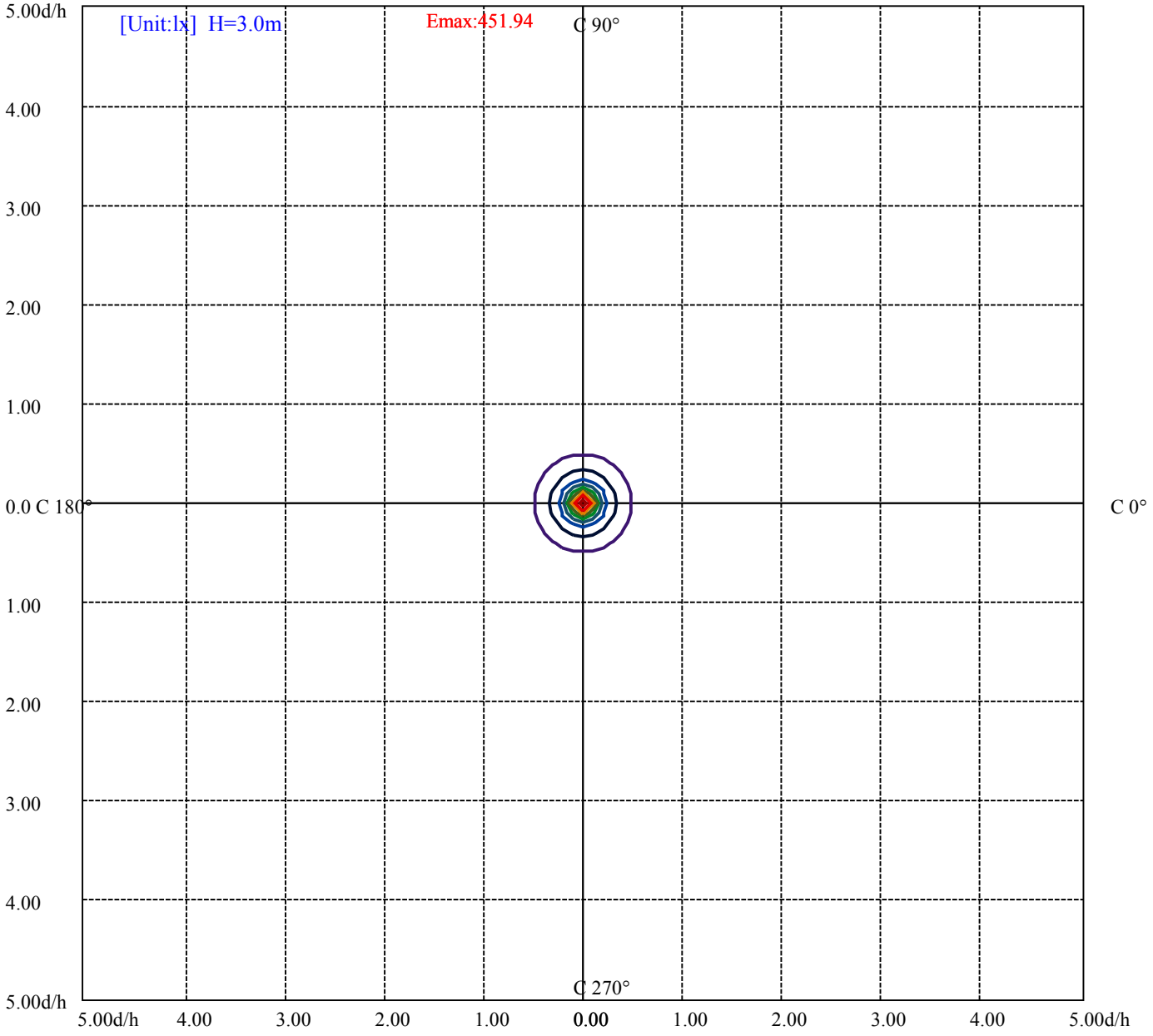
(10%Imax) 406.744
(20%Imax) 813.487
(30%Imax) 1220.23
(40%Imax) 1626.97
(50%Imax) 2033.72
(60%Imax) 2440.46
(70%Imax) 2847.21
(80%Imax) 3253.95
(90%Imax) 3660.69

Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/8/12
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

ISO illuminance diagram

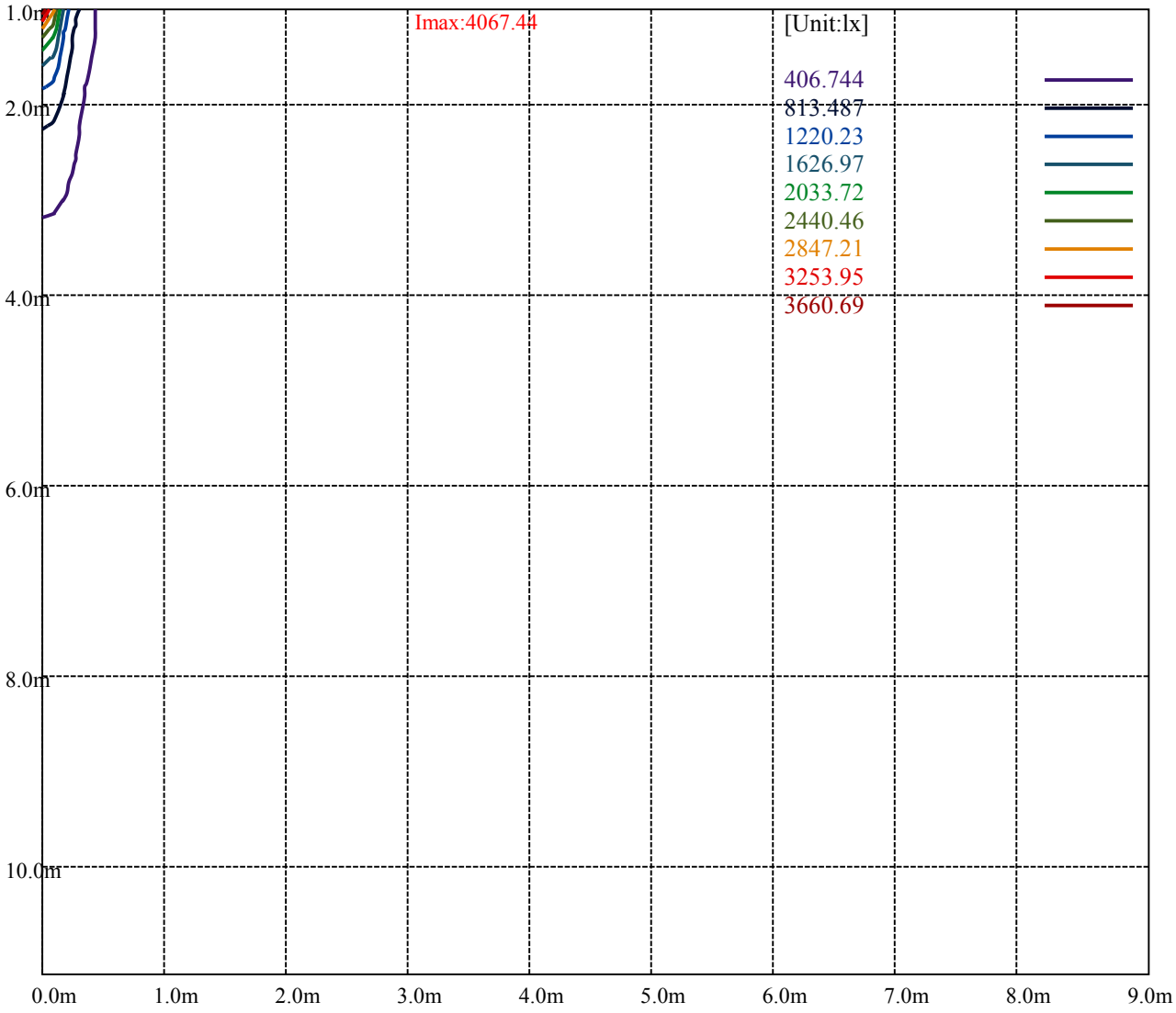


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/8/12
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Space ISO Lux diagram



Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/8/12
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Nata 3-1942-M

Luminance Limitting Curve(no luminous side)

Luminance Table

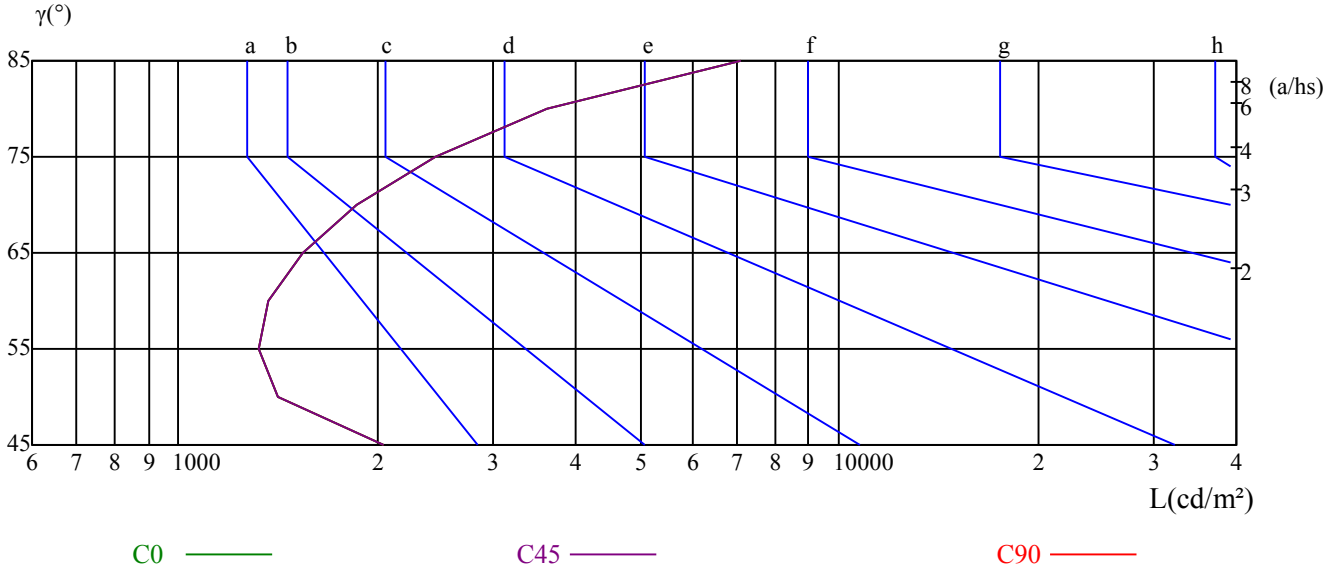
γ	45	50	55	60	65	70	75	80	85
C0	2050	1409	1321	1363	1541	1860	2454	3613	7112
C45	2050	1409	1321	1363	1541	1860	2454	3613	7112
C90	2050	1409	1321	1363	1541	1860	2454	3613	7112

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
1541	1541	1541	2454	2454	2454	7112	7112	7112

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

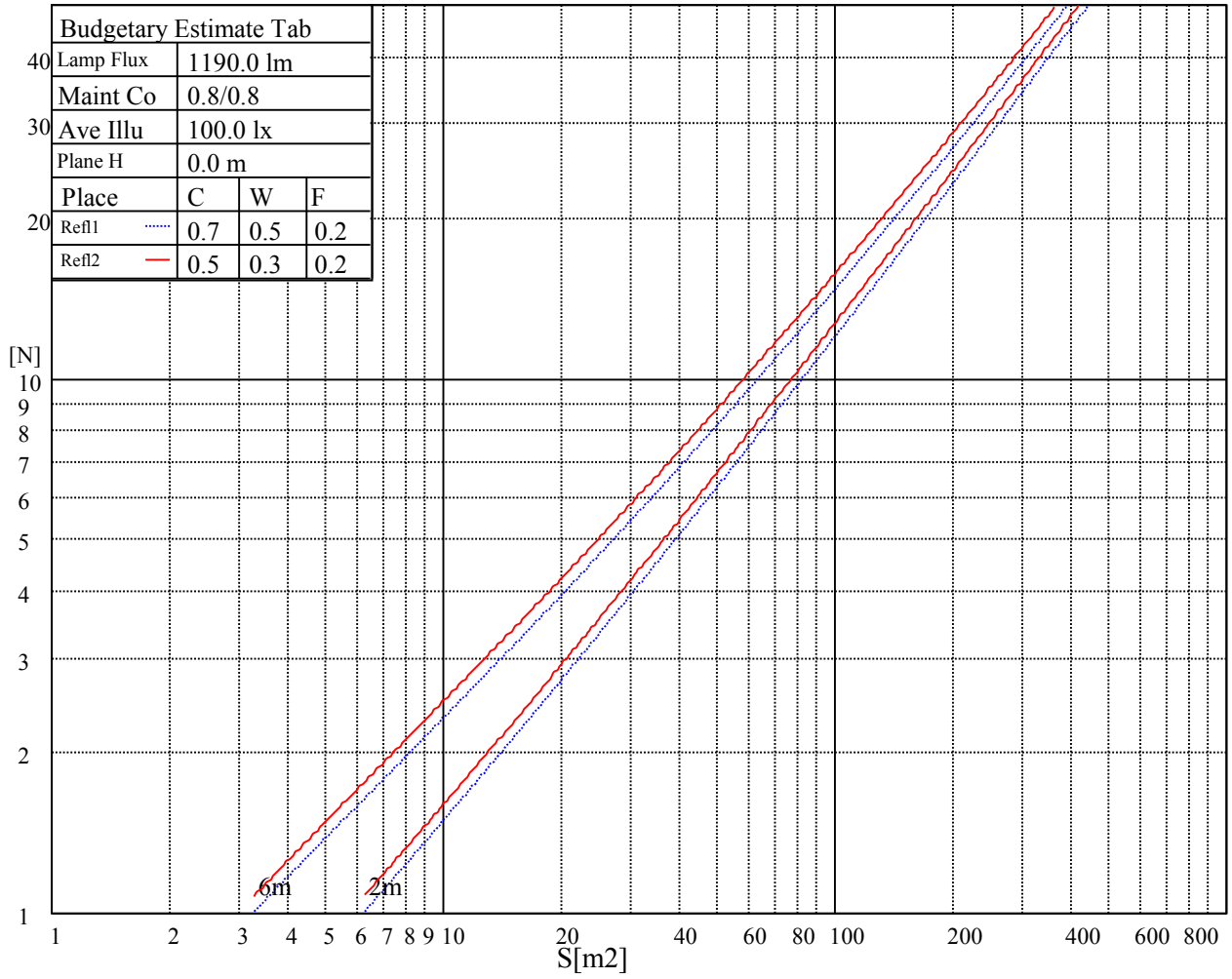


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/8/12
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Budgetary Estimate Table

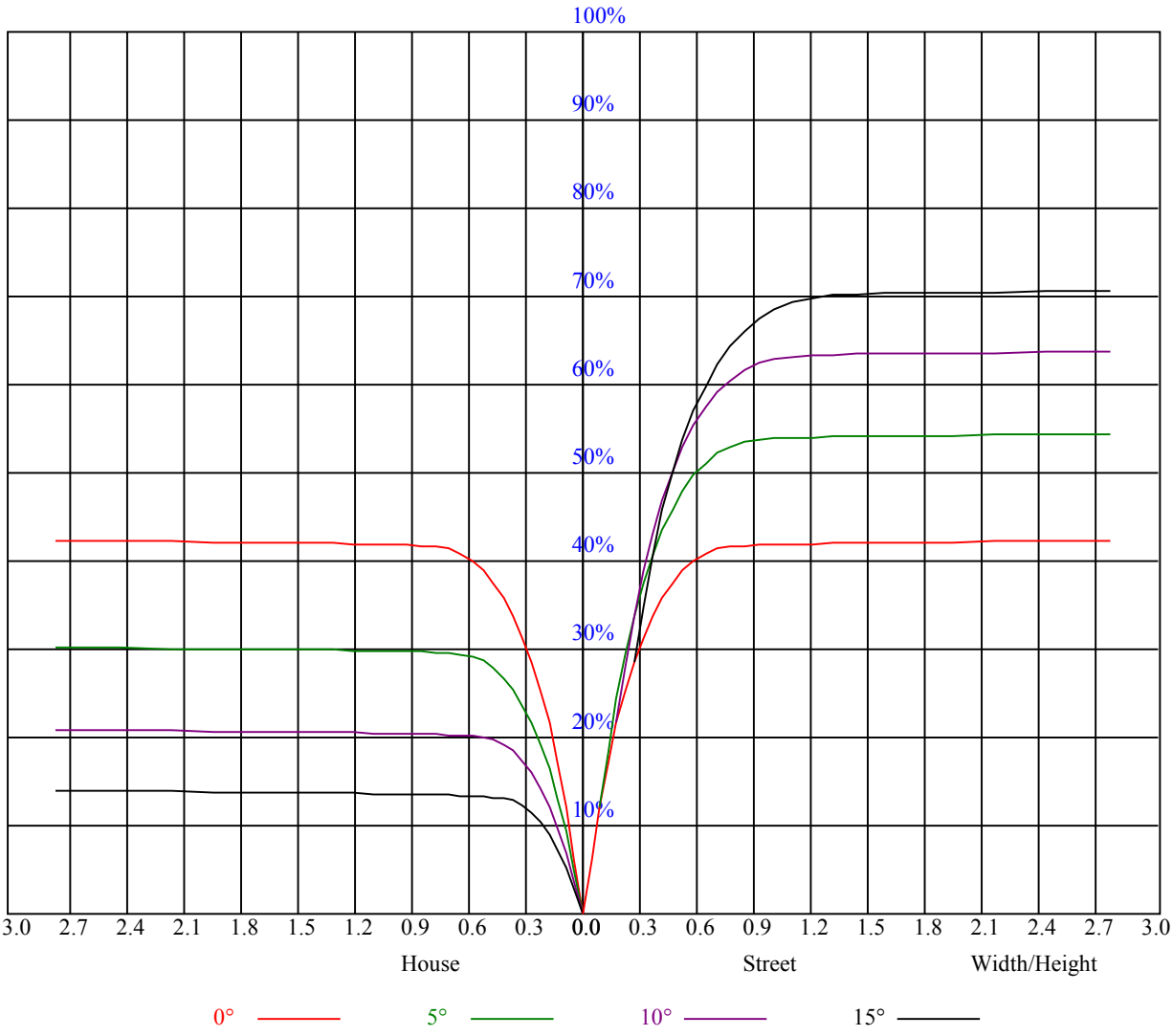


Equipment: GMS1980 Date: 2019/8/12 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

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	1.01	1.01	1.01	0.99	0.99	0.99	0.95	0.95	0.95	0.91	0.91	0.91	0.87	0.87	0.87	0.85
1	0.95	0.93	0.91	0.93	0.91	0.90	0.90	0.88	0.87	0.87	0.86	0.85	0.84	0.83	0.82	0.81
2	0.90	0.87	0.84	0.88	0.85	0.83	0.85	0.83	0.81	0.83	0.81	0.80	0.81	0.79	0.78	0.77
3	0.85	0.81	0.78	0.84	0.80	0.78	0.81	0.79	0.76	0.79	0.77	0.75	0.78	0.76	0.74	0.73
4	0.80	0.76	0.73	0.80	0.76	0.73	0.78	0.75	0.72	0.76	0.74	0.71	0.75	0.72	0.71	0.69
5	0.77	0.72	0.69	0.76	0.72	0.69	0.74	0.71	0.68	0.73	0.70	0.68	0.72	0.69	0.67	0.66
6	0.73	0.69	0.66	0.73	0.69	0.66	0.71	0.68	0.65	0.70	0.67	0.65	0.69	0.66	0.64	0.63
7	0.70	0.66	0.63	0.69	0.65	0.63	0.68	0.65	0.62	0.68	0.64	0.62	0.67	0.64	0.62	0.61
8	0.67	0.63	0.60	0.67	0.63	0.60	0.66	0.62	0.60	0.65	0.62	0.59	0.64	0.61	0.59	0.58
9	0.64	0.60	0.57	0.64	0.60	0.57	0.63	0.60	0.57	0.63	0.59	0.57	0.62	0.59	0.57	0.56
10	0.62	0.58	0.55	0.62	0.58	0.55	0.61	0.57	0.55	0.60	0.57	0.55	0.60	0.57	0.55	0.54

Coefficient Utilization Curve

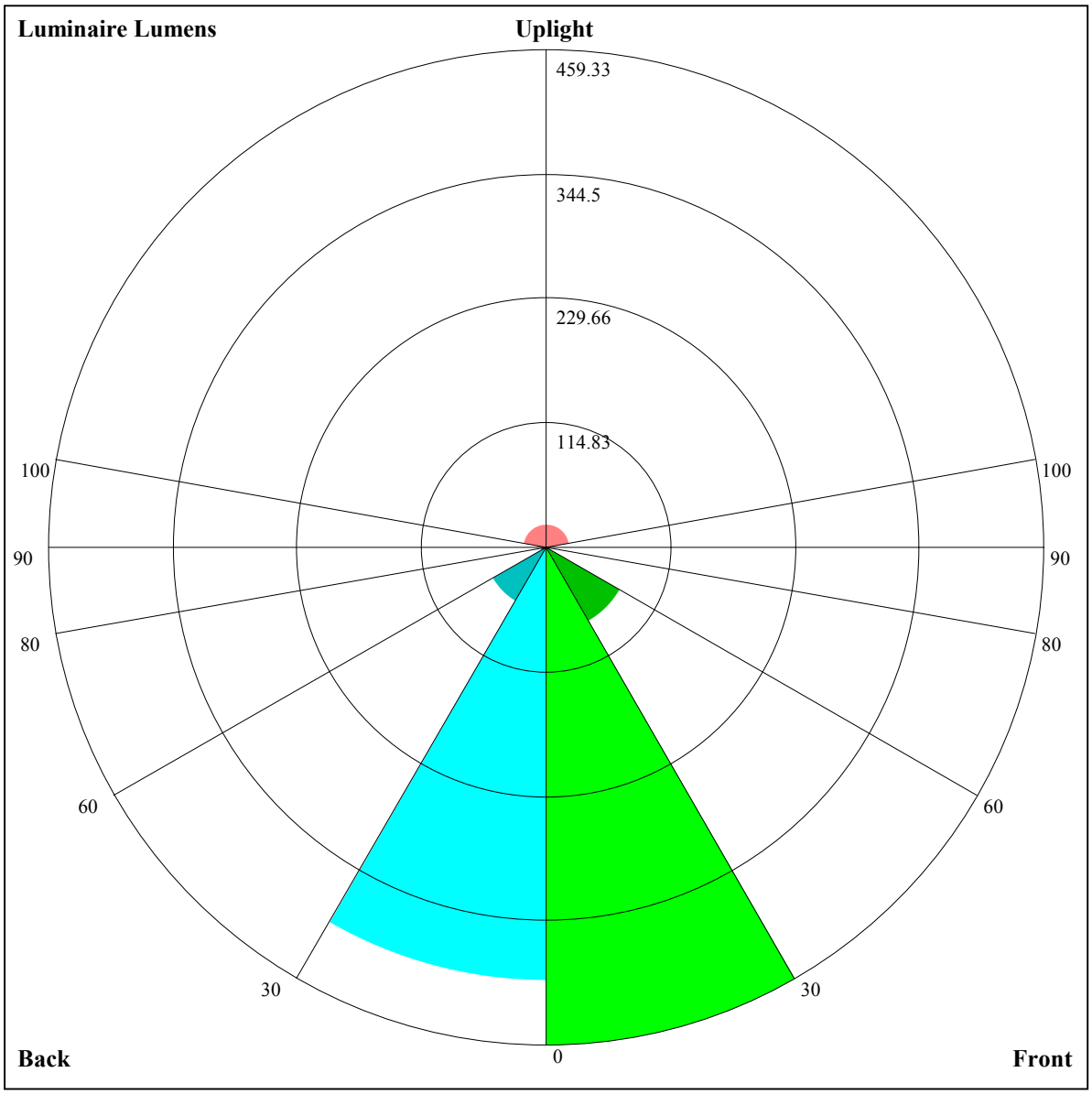


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/8/12
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

LCS Graph



Luminaire Lumens:

FL=459.33,FM=79.43,FH=4.83,FVH=2.46

BL=400.6,BM=58.24,BH=4.9,BVH=2.48

UL=4.74,UH=22.56

BUG Rating:B1-U2-G0

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	4061.81	4126.50	4140.56	4104.56	4020.75	3872.25	3620.25	3285.56	2946.38
45.0	4035.94	4086.00	4091.63	4042.69	3940.31	3722.63	3479.63	3168.00	2790.00
90.0	4071.94	4029.75	3916.13	3727.13	3492.56	3195.56	2820.94	2449.69	2146.50
135.0	4100.06	4030.88	3879.56	3680.44	3373.88	2993.06	2639.25	2259.56	1968.19
180.0	4061.81	3954.94	3782.81	3463.88	3128.63	2760.75	2363.06	2001.94	1746.56
225.0	4035.94	3942.56	3769.31	3499.88	3168.56	2754.56	2405.25	2040.75	1746.00
270.0	4071.94	4065.19	3990.94	3873.38	3715.31	3345.19	3001.50	2688.19	2271.94
315.0	4100.06	4109.63	4080.38	3978.56	3830.06	3616.88	3297.38	2906.44	2557.13
360.0	4061.81	4126.50	4140.56	4104.56	4020.75	3872.25	3620.25	3285.56	2946.38

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	2568.38	2213.44	1942.31	1755.56	1553.06	1441.69	1357.31	1248.75	1159.88
45.0	2430.00	2133.56	1852.88	1665.00	1508.06	1386.56	1294.31	1205.44	1122.19
90.0	1864.13	1659.38	1508.06	1403.44	1311.19	1212.19	1118.87	1067.63	1003.84
135.0	1718.44	1543.50	1427.06	1334.81	1234.13	1164.38	1099.13	1020.94	962.44
180.0	1553.06	1423.13	1332.00	1246.50	1118.93	1104.69	1039.78	981.56	925.93
225.0	1574.44	1438.88	1337.06	1260.56	1191.94	1111.89	1052.66	995.91	940.39
270.0	1951.31	1749.38	1551.94	1440.56	1350.00	1254.38	1183.50	1118.25	1041.19
315.0	2194.31	1888.88	1686.94	1526.63	1422.00	1324.69	1239.75	1118.42	1093.44
360.0	2568.38	2213.44	1942.31	1755.56	1553.06	1441.69	1357.31	1248.75	1159.88

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1096.88	1012.50	939.38	886.50	816.19	763.88	713.81	657.56	616.50
45.0	1055.25	986.06	915.75	859.50	803.81	735.75	684.56	639.56	594.00
90.0	926.21	868.44	812.70	745.88	695.19	649.97	603.90	561.88	528.24
135.0	903.94	838.13	783.00	731.25	684.56	630.56	590.06	554.63	514.69
180.0	857.53	805.78	754.43	696.60	652.28	609.86	569.48	522.51	490.44
225.0	874.91	824.40	775.07	716.40	671.34	628.76	582.08	539.55	505.29
270.0	982.69	928.13	860.63	809.44	758.81	703.69	652.50	610.31	565.31
315.0	1014.86	952.88	893.70	824.06	770.79	717.24	657.11	615.83	577.13
360.0	1096.88	1012.50	939.38	886.50	816.19	763.88	713.81	657.56	616.50

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	578.25	534.94	504.00	475.88	447.19	421.88	384.19	335.25	289.13
45.0	552.94	519.19	483.75	458.44	430.31	396.00	353.81	303.19	291.38
90.0	493.76	465.41	437.06	405.39	365.96	315.34	264.09	219.60	177.53
135.0	477.56	448.88	423.00	385.31	335.81	284.63	256.05	193.56	142.48
180.0	462.83	436.73	399.71	358.14	308.59	257.01	212.18	162.79	122.40
225.0	473.23	446.18	416.76	373.28	328.56	277.26	225.34	178.82	135.90
270.0	522.56	488.81	456.19	433.13	394.88	348.75	304.31	288.00	202.33
315.0	532.52	505.91	474.36	444.43	422.66	380.81	327.54	287.38	240.69
360.0	578.25	534.94	504.00	475.88	447.19	421.88	384.19	335.25	289.13

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	233.55	181.80	137.93	93.21	55.12	30.15	18.39	15.64	14.29
45.0	205.26	163.01	114.41	78.02	46.35	22.67	17.38	15.53	14.23
90.0	127.35	91.13	58.56	27.68	17.49	15.24	13.73	12.26	11.14
135.0	104.34	69.58	35.16	18.56	15.81	14.01	12.71	11.64	10.58
180.0	80.21	45.17	23.40	16.99	14.68	13.39	12.15	10.91	9.90
225.0	86.63	52.09	24.86	17.72	15.47	14.23	12.83	11.53	10.46
270.0	159.13	118.29	71.83	41.29	22.05	17.38	15.02	13.73	12.26
315.0	179.04	142.48	102.83	55.41	32.96	18.73	15.86	14.12	12.88
360.0	233.55	181.80	137.93	93.21	55.12	30.15	18.39	15.64	14.29

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	12.99	11.53	10.29	9.23	8.33	7.65	7.14	6.69	6.36
45.0	12.71	11.64	10.46	9.28	8.10	7.43	6.98	6.64	6.30
90.0	9.84	8.78	7.88	7.14	6.69	6.30	6.02	5.85	5.68
135.0	9.39	8.33	7.43	6.92	6.47	6.13	6.02	5.85	5.63
180.0	9.00	7.99	7.37	6.92	6.53	6.24	6.08	5.91	5.79
225.0	9.23	8.21	7.54	6.98	6.64	6.24	6.02	5.85	5.74
270.0	11.03	9.90	8.72	7.71	7.09	6.64	6.41	6.19	5.96
315.0	11.59	10.41	9.00	8.10	7.54	6.98	6.53	6.30	6.08
360.0	12.99	11.53	10.29	9.23	8.33	7.65	7.14	6.69	6.36

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	6.13	5.91	5.79	5.57	5.40	5.29	5.18	5.12	5.06
45.0	6.13	5.96	5.74	5.51	5.34	5.23	5.12	5.01	4.95
90.0	5.51	5.40	5.23	5.12	5.01	4.95	4.89	4.84	4.78
135.0	5.46	5.40	5.23	5.12	5.06	5.01	4.95	4.89	4.89
180.0	5.63	5.46	5.40	5.29	5.29	5.23	5.18	5.12	5.06
225.0	5.51	5.40	5.29	5.18	5.06	5.01	4.95	4.89	4.89
270.0	5.79	5.63	5.46	5.34	5.23	5.12	5.01	5.01	4.89
315.0	5.85	5.68	5.57	5.40	5.23	5.12	5.06	5.01	4.95
360.0	6.13	5.91	5.79	5.57	5.40	5.29	5.18	5.12	5.06

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	5.01	4.89	4.89	4.84	4.84	4.78	4.78	4.73	4.73
45.0	4.89	4.84	4.78	4.78	4.73	4.73	4.67	4.67	4.61
90.0	4.78	4.73	4.73	4.67	4.67	4.61	4.61	4.56	4.61
135.0	4.78	4.78	4.78	4.73	4.73	4.67	4.67	4.67	4.67
180.0	5.06	5.01	5.01	5.01	5.01	5.01	4.95	5.01	4.95
225.0	4.84	4.84	4.78	4.73	4.73	4.73	4.67	4.67	4.67
270.0	4.89	4.84	4.78	4.84	4.73	4.73	4.67	4.67	4.67
315.0	4.89	4.84	4.78	4.78	4.73	4.73	4.73	4.67	4.67
360.0	5.01	4.89	4.89	4.84	4.84	4.78	4.78	4.73	4.73

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	4.73	4.73	4.73	4.67	4.67	4.67	4.67	4.67	4.73
45.0	4.61	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56
90.0	4.56	4.56	4.50	4.56	4.50	4.50	4.50	4.50	4.50
135.0	4.61	4.61	4.61	4.61	4.61	4.61	4.61	4.61	4.61
180.0	4.95	4.95	5.12	5.34	5.51	5.91	5.40	5.12	4.95
225.0	4.67	4.61	4.61	4.61	4.67	4.67	4.67	4.67	4.67
270.0	4.67	4.61	4.61	4.61	4.56	4.56	4.61	4.56	4.56
315.0	4.61	4.61	4.61	4.61	4.56	4.56	4.56	4.56	4.56
360.0	4.73	4.73	4.73	4.67	4.67	4.67	4.67	4.67	4.73

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	4.67	4.67	4.67	4.67	4.67	4.67	4.56	4.50	4.44
45.0	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.44	4.39
90.0	4.50	4.50	4.50	4.50	4.50	4.44	4.44	4.39	4.33
135.0	4.61	4.61	4.61	4.67	4.67	4.61	4.50	4.50	4.39
180.0	4.89	4.84	4.73	4.67	4.67	4.61	4.56	4.39	4.39
225.0	4.61	4.61	4.67	4.67	4.56	4.56	4.50	4.33	4.33
270.0	4.56	4.56	4.56	4.56	4.56	4.56	4.50	4.44	4.33
315.0	4.56	4.56	4.56	4.56	4.56	4.56	4.50	4.44	4.39
360.0	4.67	4.67	4.67	4.67	4.67	4.67	4.56	4.50	4.44

Intensity data(cd)

C/γ(°)	90.0
0.0	4.39
45.0	4.33
90.0	4.33
135.0	4.33
180.0	4.39
225.0	4.33
270.0	4.33
315.0	4.33
360.0	4.39