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

Nata

Client:
LumCAT: 2-2004-M
Luminaire: 92.70.129.00

Report No: GC2019091909	Voltage(V): 220.4000
Test No: NATA07	Current(A): 0.0700
LampCAT: CREE CXA1830	Power (W): 14.2500
Lamp flux(lm): 1602.0	PF: 0.9180
Number of Lamps: 1	Ballast type: AC
Length(mm): 70	Width(mm): 70
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 1413.74, Efficiency(%): 88.25% , Luminous Efficacy(lm/W): 99.21
Central intensity(cd): 7515.996, Maximum intensity(cd): 7515.996
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=17.8
[C90/270]Total=17.8
Field angle(10%Imax): [C0/180]Total=41.6
[C90/270]Total=41.6
Maximum s/h(1/2): C0_180=0.30 C90_270=0.30
Maximum s/h(1/4): C0_180=0.31 C90_270=0.31
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 88.25%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 99.648%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	7515.996	0.000	0	.000%	.000%
1.0	7455.208	7.163	7.163	.447%	.507%
2.0	7284.791	21.156	28.32	1.321%	2.003%
3.0	6999.817	34.164	62.484	2.133%	4.420%
4.0	6602.082	45.530	108.014	2.842%	7.640%
5.0	6131.668	54.780	162.794	3.419%	11.515%
6.0	5529.991	61.285	224.079	3.826%	15.850%
7.0	4908.940	64.794	288.873	4.045%	20.433%
8.0	4267.530	65.674	354.547	4.100%	25.079%
9.0	3675.713	64.376	418.923	4.018%	29.632%
10.0	3045.266	60.822	479.745	3.797%	33.935%
11.0	2592.601	56.334	536.079	3.516%	37.919%
12.0	2208.150	52.479	588.558	3.276%	41.631%
13.0	1843.419	48.082	636.64	3.001%	45.032%
14.0	1578.688	43.803	680.443	2.734%	48.131%
15.0	1333.185	39.975	720.418	2.495%	50.958%
16.0	1161.777	36.558	756.976	2.282%	53.544%
17.0	1056.883	34.550	791.527	2.157%	55.988%
18.0	933.310	32.814	824.341	2.048%	58.309%
19.0	860.544	31.209	855.55	1.948%	60.517%
20.0	794.332	30.289	885.839	1.891%	62.659%
21.0	738.364	29.431	915.27	1.837%	64.741%
22.0	692.686	28.758	944.028	1.795%	66.775%
23.0	652.454	28.225	972.252	1.762%	68.772%
24.0	620.128	27.823	1000.075	1.737%	70.740%
25.0	593.476	27.595	1027.67	1.723%	72.692%
26.0	571.741	27.505	1055.175	1.717%	74.637%
27.0	554.880	27.563	1082.738	1.721%	76.587%
28.0	539.381	27.704	1110.443	1.729%	78.547%
29.0	529.207	27.957	1138.4	1.745%	80.524%
30.0	517.345	28.257	1166.657	1.764%	82.523%
31.0	505.350	28.460	1195.117	1.777%	84.536%
32.0	485.779	28.395	1223.511	1.772%	86.545%
33.0	458.709	27.825	1251.336	1.737%	88.513%
34.0	425.229	26.751	1278.087	1.670%	90.405%
35.0	381.325	25.049	1303.135	1.564%	92.177%
36.0	329.974	22.648	1325.783	1.414%	93.779%
37.0	278.345	19.840	1345.623	1.238%	95.182%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	230.688	16.991	1362.614	1.061%	96.384%
39.0	170.196	13.683	1376.297	.854%	97.352%
40.0	136.855	10.709	1387.006	.668%	98.109%
41.0	84.529	7.883	1394.89	.492%	98.667%
42.0	45.005	4.706	1399.596	.294%	99.000%
43.0	24.431	2.572	1402.168	.161%	99.182%
44.0	12.210	1.383	1403.551	.086%	99.280%
45.0	8.469	0.795	1404.346	.050%	99.336%
46.0	6.241	0.575	1404.921	.036%	99.376%
47.0	4.919	0.444	1405.365	.028%	99.408%
48.0	4.321	0.374	1405.738	.023%	99.434%
49.0	3.863	0.336	1406.074	.021%	99.458%
50.0	3.503	0.307	1406.382	.019%	99.480%
51.0	3.277	0.287	1406.668	.018%	99.500%
52.0	3.080	0.273	1406.941	.017%	99.519%
53.0	2.923	0.261	1407.202	.016%	99.538%
54.0	2.749	0.250	1407.452	.016%	99.555%
55.0	2.599	0.239	1407.691	.015%	99.572%
56.0	2.465	0.229	1407.92	.014%	99.589%
57.0	2.367	0.221	1408.141	.014%	99.604%
58.0	2.256	0.214	1408.355	.013%	99.619%
59.0	2.135	0.205	1408.56	.013%	99.634%
60.0	2.053	0.198	1408.758	.012%	99.648%
61.0	1.972	0.192	1408.95	.012%	99.661%
62.0	1.903	0.187	1409.137	.012%	99.675%
63.0	1.827	0.181	1409.318	.011%	99.687%
64.0	1.763	0.176	1409.494	.011%	99.700%
65.0	1.734	0.173	1409.667	.011%	99.712%
66.0	1.682	0.170	1409.838	.011%	99.724%
67.0	1.636	0.167	1410.005	.010%	99.736%
68.0	1.607	0.164	1410.169	.010%	99.748%
69.0	1.566	0.162	1410.331	.010%	99.759%
70.0	1.560	0.161	1410.491	.010%	99.770%
71.0	1.526	0.159	1410.651	.010%	99.782%
72.0	1.491	0.157	1410.808	.010%	99.793%
73.0	1.485	0.156	1410.963	.010%	99.804%
74.0	1.473	0.156	1411.119	.010%	99.815%
75.0	1.479	0.156	1411.275	.010%	99.826%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	1.439	0.155	1411.43	.010%	99.837%
77.0	1.439	0.153	1411.583	.010%	99.848%
78.0	1.450	0.155	1411.738	.010%	99.859%
79.0	1.456	0.156	1411.894	.010%	99.870%
80.0	1.433	0.156	1412.049	.010%	99.881%
81.0	1.433	0.155	1412.204	.010%	99.892%
82.0	1.456	0.157	1412.361	.010%	99.903%
83.0	1.427	0.157	1412.518	.010%	99.914%
84.0	1.450	0.157	1412.675	.010%	99.925%
85.0	1.462	0.159	1412.833	.010%	99.936%
86.0	1.508	0.162	1412.996	.010%	99.948%
87.0	1.578	0.169	1413.165	.011%	99.960%
88.0	1.723	0.181	1413.345	.011%	99.972%
89.0	1.839	0.195	1413.541	.012%	99.986%
90.0	1.734	0.196	1413.737	.012%	100.000%

Zonal flux distribution table

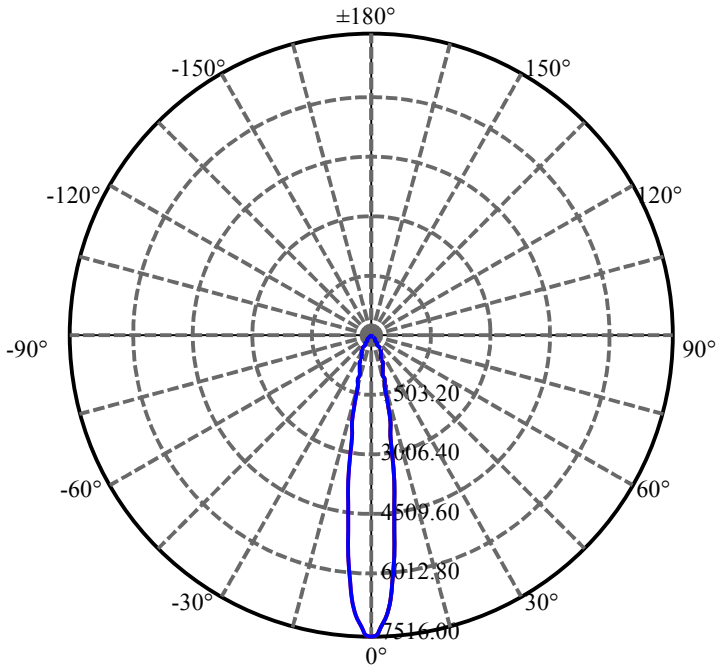
ZONAL LUMEN SUMMARY

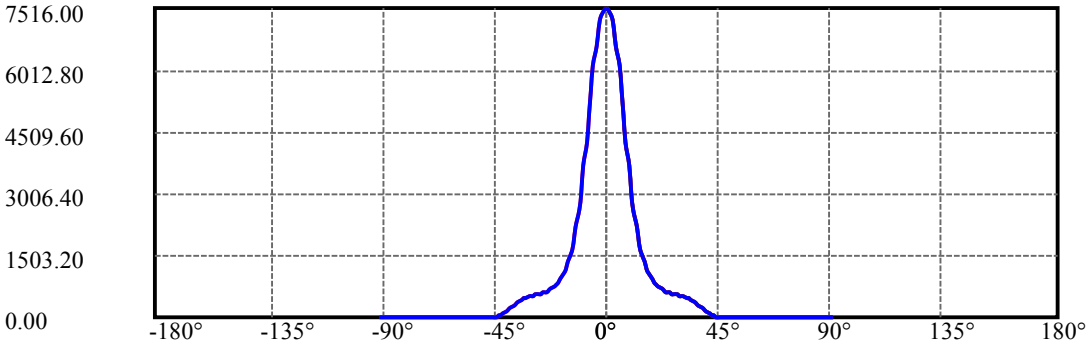
Zone	Lumens	%Lamp	%Fixt
0-30	1166.66	72.83%	82.52%
0-40	1387.01	86.58%	98.11%
0-60	1408.76	87.94%	99.65%
0-90	1413.54	88.24%	99.99%
0-120	1413.54	88.24%	99.99%
0-180	1413.74	88.25%	100.00%
60-90	4.98	0.31%	0.35%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-28.73	1130.99	70.60%	80.00%

ZONAL LUMEN SUMMARY

0-10	479.75
10-20	406.09
20-30	280.82
30-40	220.35
40-50	19.38
50-60	2.38
60-70	1.73
70-80	1.56
80-90	1.49
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):

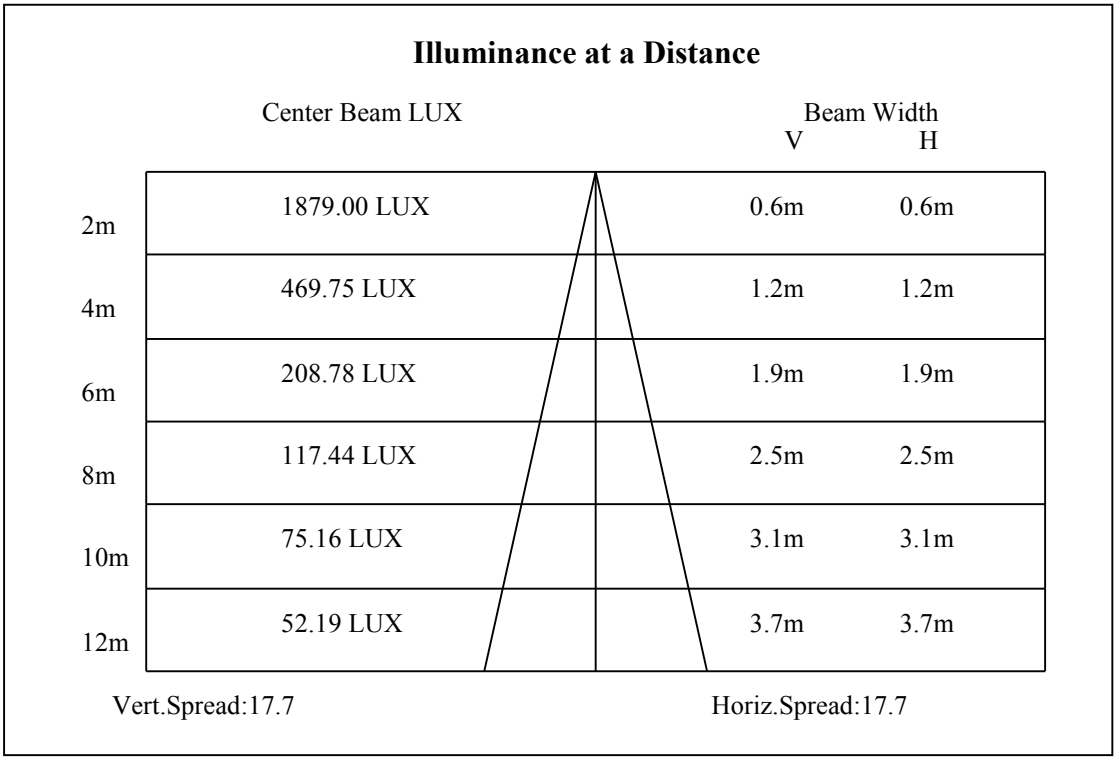
C0/C180:

C90/C270:

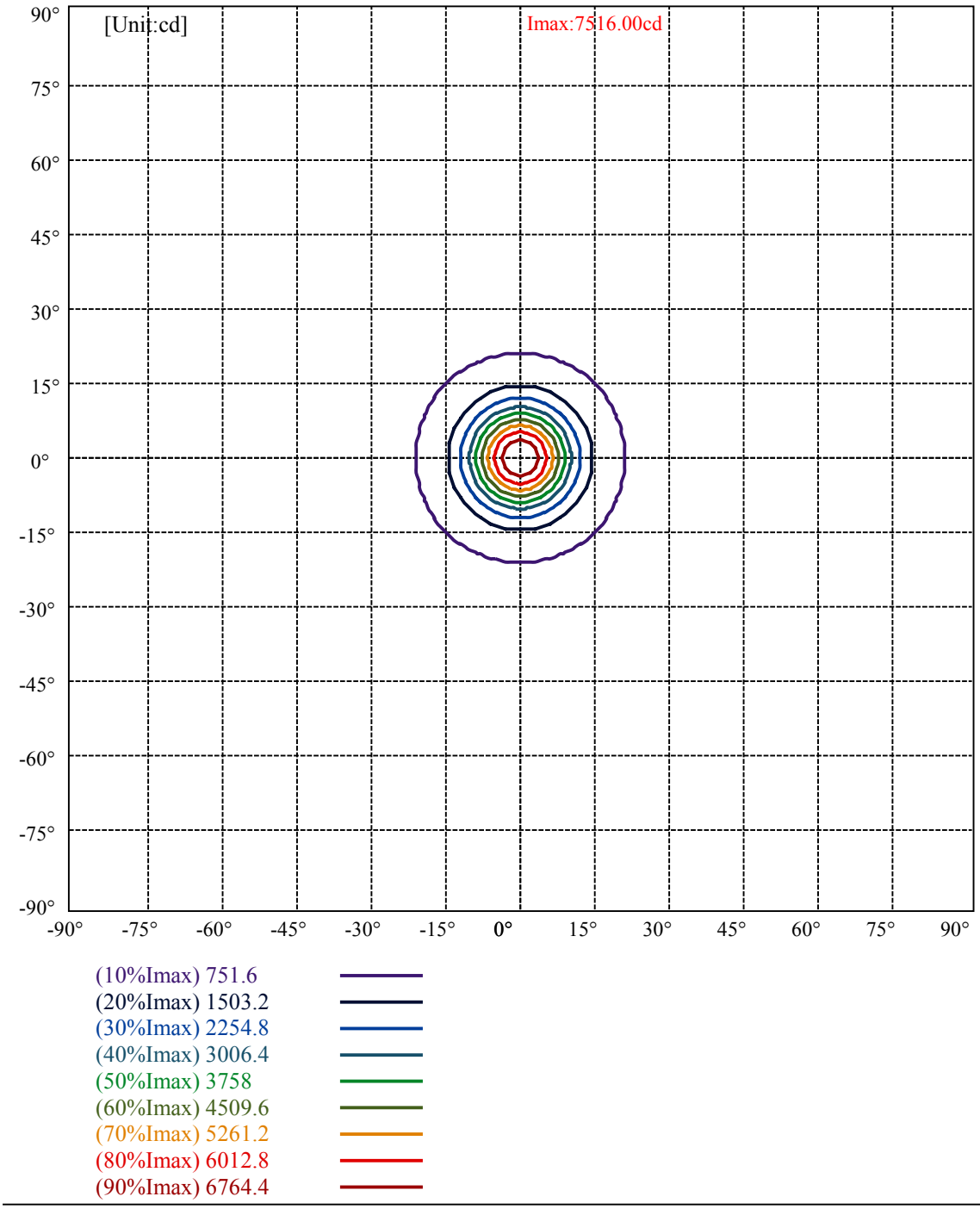
Field angle(10%Imax):C0/180Left:20.8 Right:20.8
:C90/270Left:20.8 Right:20.8

Beam Angle(50%Imax):C0/180Left:8.9 Right:8.9
:C90/270Left:8.9 Right:8.9

Lux distance Curve



ISO-Intensity(V-H)

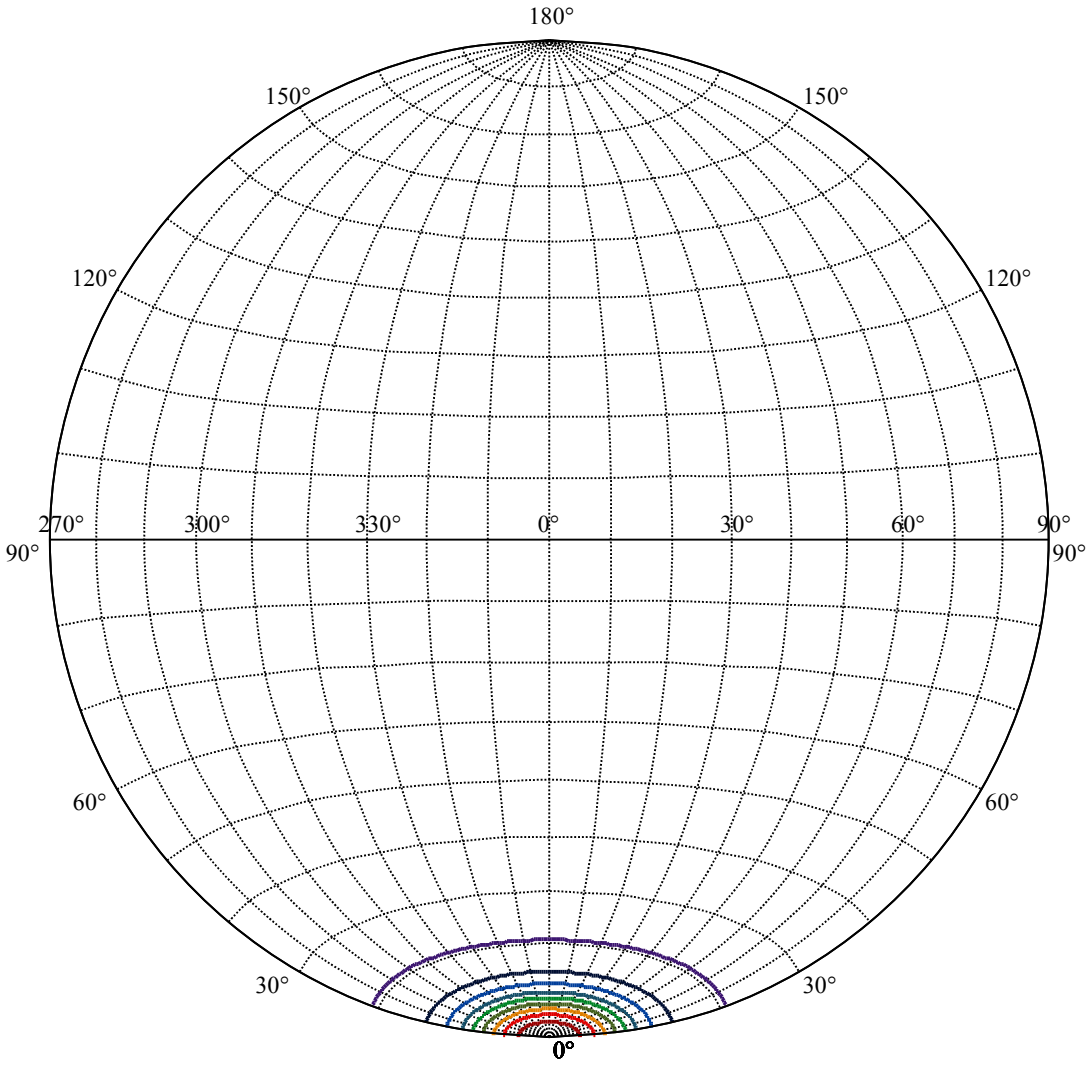


Equipment: GMS 1800
Temperature(°C): 25.0

Date: 2019/9/20
Humidity(%): 60.0%

Operator: GC2019092003
Distance(m): 6.81

ISO candela diagram on circular web



House [Unit:cd] Road

Imax:7516.00

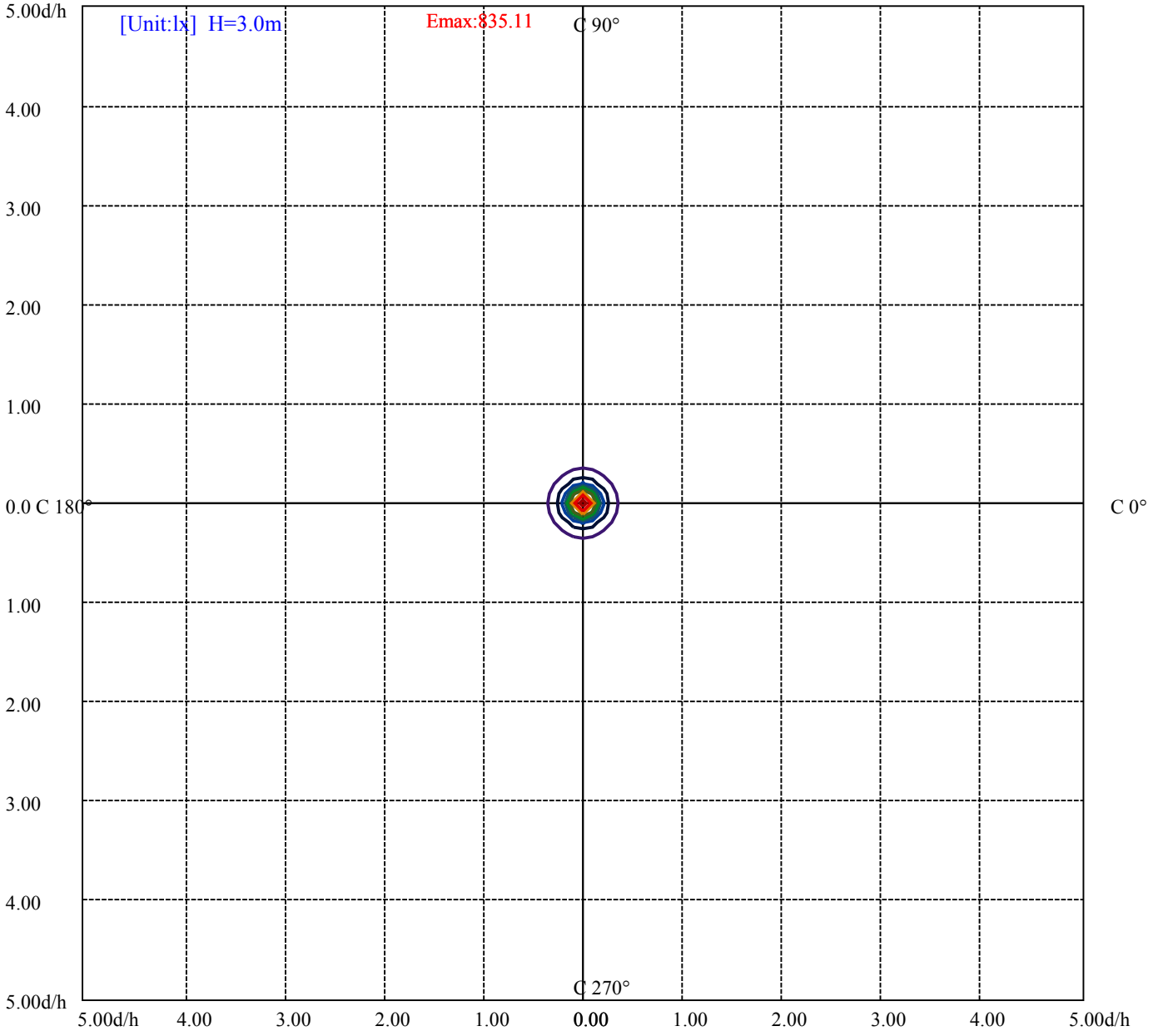
(10%Imax) 751.6
(20%Imax) 1503.2
(30%Imax) 2254.8
(40%Imax) 3006.4
(50%Imax) 3758
(60%Imax) 4509.6
(70%Imax) 5261.2
(80%Imax) 6012.8
(90%Imax) 6764.4

Equipment: GMS 1800
Temperature(°C): 25.0

Date: 2019/9/20
Humidity(%): 60.0%

Operator: GC2019092003
Distance(m): 6.81

ISO illuminance diagram

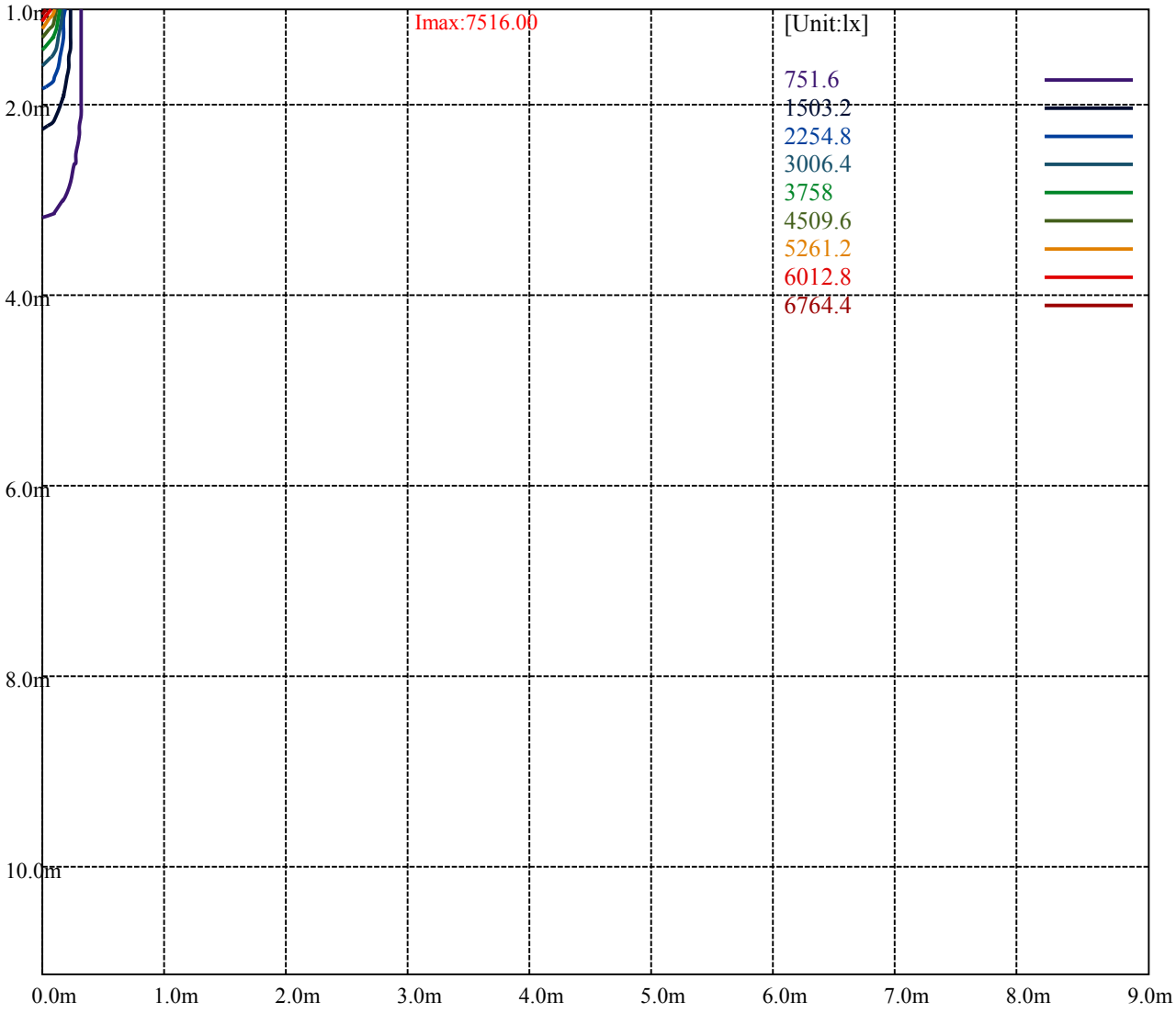


Equipment: GMS 1800
Temperature(°C): 25.0

Date: 2019/9/20
Humidity(%): 60.0%

Operator: GC2019092003
Distance(m): 6.81

Space ISO Lux diagram



Equipment: GMS 1800
Temperature(°C): 25.0

Date: 2019/9/20
Humidity(%): 60.0%

Operator: GC2019092003
Distance(m): 6.81

Nata 2-2004-M

Luminance Limitting Curve(no luminous side)

Luminance Table

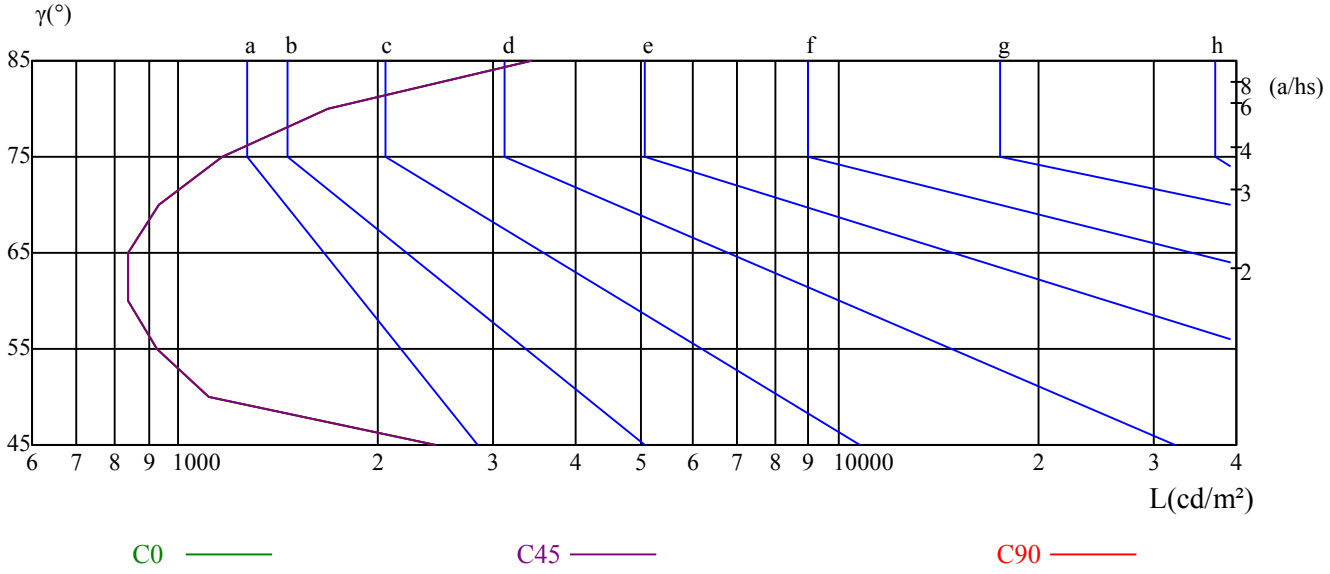
γ	45	50	55	60	65	70	75	80	85
C0	2444	1112	925	838	838	931	1166	1684	3423
C45	2444	1112	925	838	838	931	1166	1684	3423
C90	2444	1112	925	838	838	931	1166	1684	3423

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
838	838	838	1166	1166	1166	3423	3423	3423

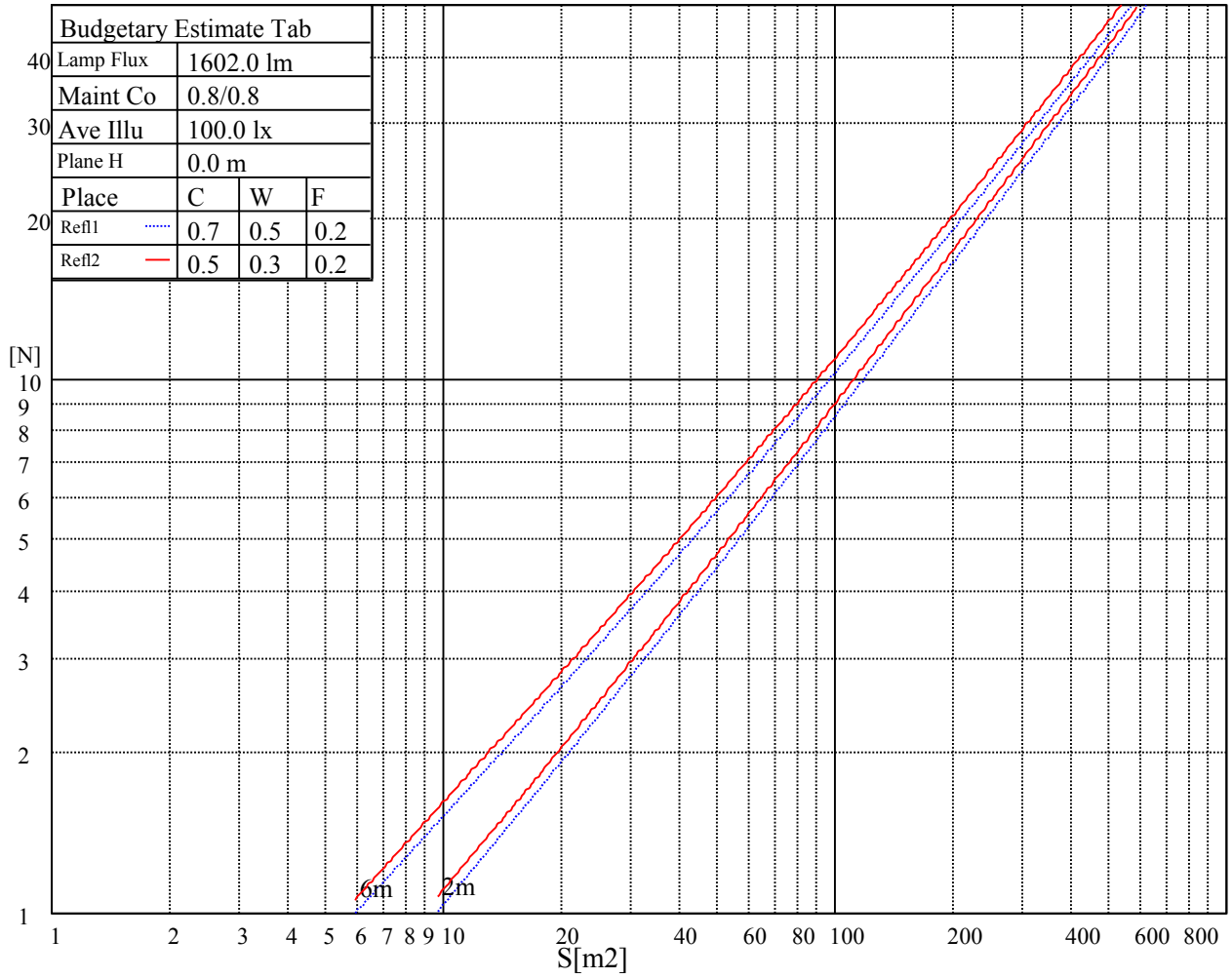
Glare Table

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: GMS 1800
Temperature(°C): 25.0

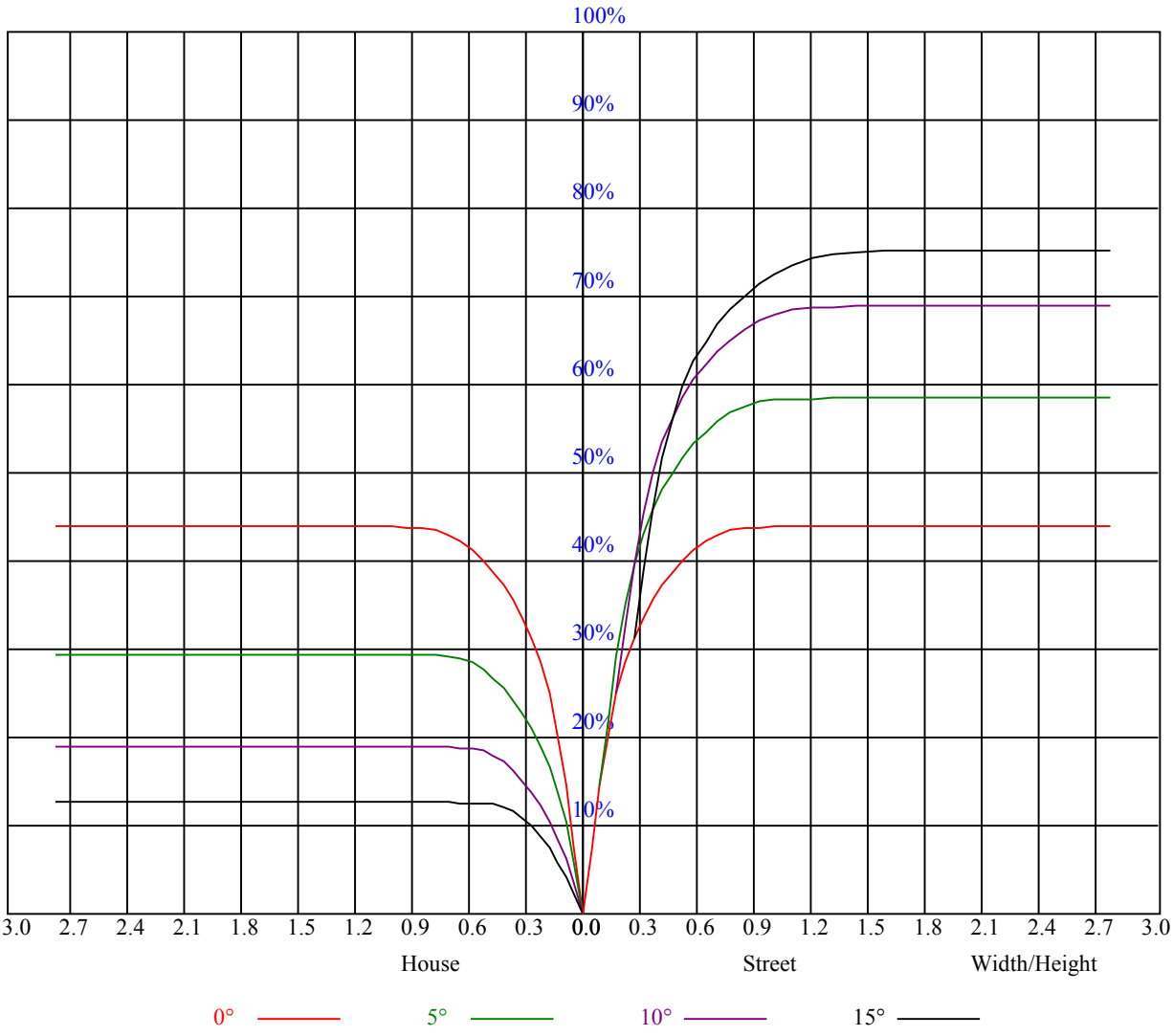
Date: 2019/9/20
Humidity(%): 60.0%

Operator: GC2019092003
Distance(m): 6.81

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	0.88
1	0.99	0.97	0.96	0.97	0.96	0.94	0.94	0.92	0.91	0.90	0.89	0.88	0.87	0.87	0.86	0.84
2	0.94	0.91	0.88	0.92	0.90	0.87	0.89	0.87	0.85	0.87	0.85	0.84	0.85	0.83	0.82	0.81
3	0.89	0.85	0.83	0.88	0.85	0.82	0.86	0.83	0.81	0.84	0.81	0.79	0.82	0.80	0.78	0.77
4	0.85	0.81	0.78	0.84	0.80	0.78	0.82	0.79	0.77	0.80	0.78	0.76	0.79	0.77	0.75	0.74
5	0.81	0.77	0.74	0.80	0.77	0.74	0.79	0.76	0.73	0.78	0.75	0.72	0.76	0.74	0.72	0.71
6	0.78	0.74	0.71	0.77	0.73	0.70	0.76	0.72	0.70	0.75	0.72	0.69	0.74	0.71	0.69	0.68
7	0.75	0.70	0.68	0.74	0.70	0.67	0.73	0.70	0.67	0.72	0.69	0.67	0.71	0.69	0.66	0.65
8	0.72	0.68	0.65	0.71	0.67	0.65	0.71	0.67	0.65	0.70	0.67	0.64	0.69	0.66	0.64	0.63
9	0.69	0.65	0.63	0.69	0.65	0.62	0.68	0.65	0.62	0.68	0.64	0.62	0.67	0.64	0.62	0.61
10	0.67	0.63	0.60	0.67	0.63	0.60	0.66	0.63	0.60	0.65	0.62	0.60	0.65	0.62	0.60	0.59

Coefficient Utilization Curve

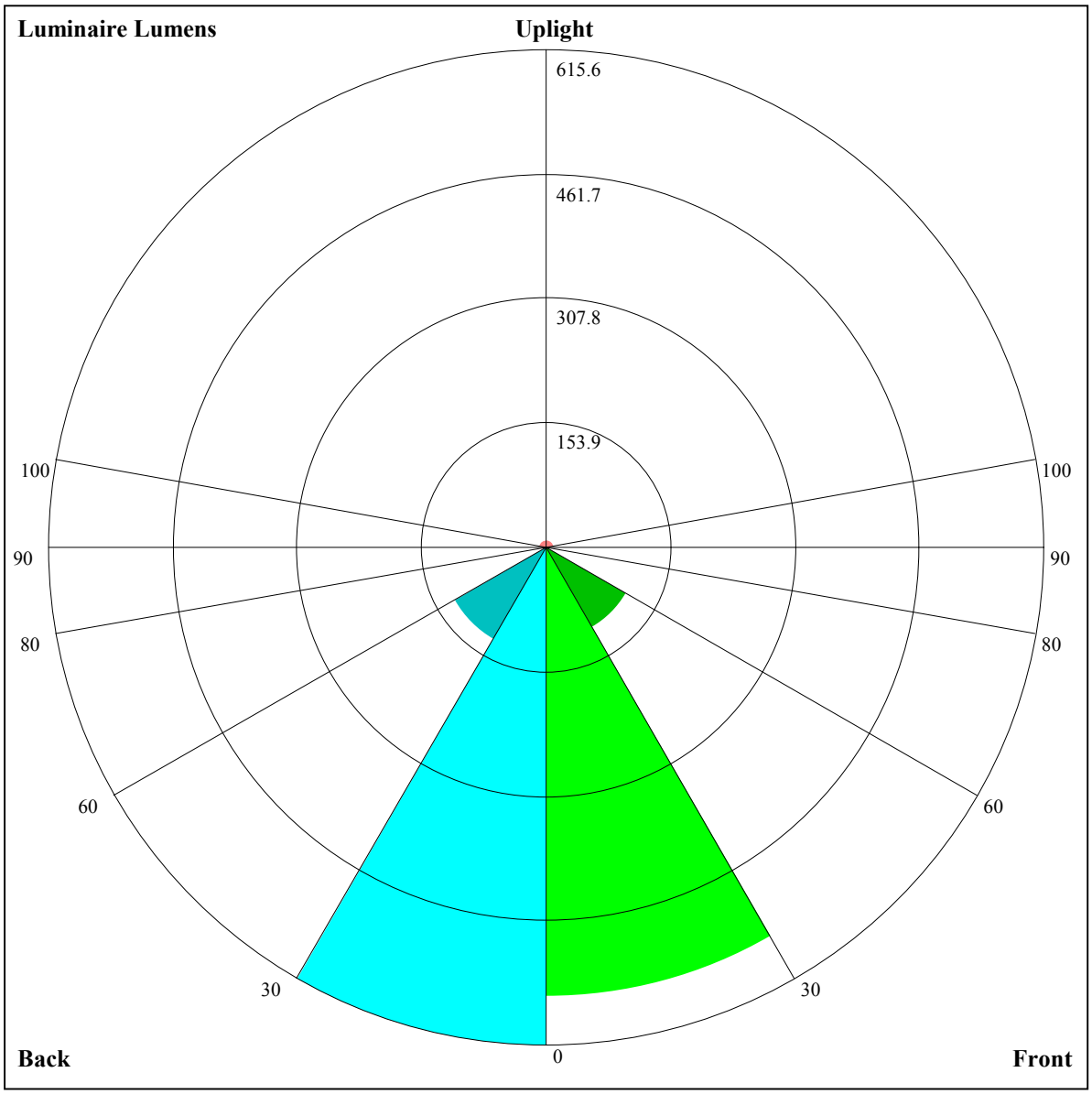


Equipment: GMS 1800
Temperature(°C): 25.0

Date: 2019/9/20
Humidity(%): 60.0%

Operator: GC2019092003
Distance(m): 6.81

LCS Graph



Luminaire Lumens:

FL=554.8,FM=113.86,FH=1.65,FVH=0.9

BL=615.6,BM=130.55,BH=1.7,BVH=0.81

UL=1.89,UH=9

BUG Rating:B2-U1-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	7447.78	7227.83	6888.16	6428.30	5857.54	5205.11	4508.13	3808.83	3175.89
45.0	7447.32	7523.88	7490.01	7345.70	7086.77	6699.30	6302.08	5580.98	5046.41
90.0	7641.75	7686.30	7649.17	7490.01	7198.60	6789.78	6263.57	5629.24	4935.97
135.0	7527.13	7690.94	7749.87	7715.07	7575.39	7307.18	6905.79	6379.11	5754.99
180.0	7447.78	7550.33	7535.49	7412.98	7181.89	6829.23	6354.98	5774.48	5107.20
225.0	7447.32	7250.10	6944.77	6520.18	5978.19	5345.25	4668.69	3969.39	3310.00
270.0	7641.75	7475.63	7198.13	6793.96	6278.88	5918.33	4990.73	4574.02	3866.37
315.0	7527.13	7236.65	6822.73	6292.34	5659.40	4959.17	4245.95	3555.47	2943.41
360.0	7447.78	7227.83	6888.16	6428.30	5857.54	5205.11	4508.13	3808.83	3175.89

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	2650.61	2224.62	1940.17	1591.68	1363.84	1219.06	916.19	916.19	883.80
45.0	4347.11	3531.34	3048.28	2542.95	2131.35	1796.32	1523.47	1308.62	1144.35
90.0	4215.79	3527.16	2926.71	2617.66	2032.05	1712.33	1554.09	1263.61	1168.48
135.0	5341.54	4323.91	3603.27	3212.09	2656.17	2203.74	1845.51	1555.49	1333.68
180.0	4680.75	3683.54	3291.90	2733.20	2273.81	1904.90	1611.17	1380.08	1201.89
225.0	2748.05	2291.91	1923.93	1632.05	1399.57	1286.81	1133.22	922.03	922.03
270.0	2974.96	2660.35	2222.77	1864.53	1582.86	1360.59	1191.22	1057.58	952.71
315.0	2446.89	2119.29	1783.79	1471.03	1307.69	1145.74	890.62	890.62	848.11
360.0	2650.61	2224.62	1940.17	1591.68	1363.84	1219.06	916.19	916.19	883.80

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	812.80	753.87	705.47	664.40	629.28	601.02	577.35	558.42	543.94
45.0	1019.53	921.62	842.27	777.77	723.47	678.93	641.80	610.71	585.66
90.0	910.06	910.06	849.46	787.60	731.64	687.84	650.06	618.23	592.94
135.0	1163.84	1033.45	930.43	850.16	784.73	730.90	686.35	645.52	614.43
180.0	1062.22	953.64	869.18	799.58	742.96	695.17	654.33	620.00	593.08
225.0	846.03	781.90	727.98	684.08	645.05	613.59	587.33	565.19	548.81
270.0	869.18	800.50	745.28	696.56	657.12	623.24	595.87	573.13	557.35
315.0	782.82	729.32	684.59	646.77	627.23	588.95	567.93	556.61	537.72
360.0	812.80	753.87	705.47	664.40	629.28	601.02	577.35	558.42	543.94

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	532.39	525.52	516.28	502.46	490.44	456.38	412.43	360.93	304.64
45.0	573.13	547.14	540.18	529.97	516.52	510.95	500.27	475.22	435.31
90.0	569.97	554.57	544.96	529.28	518.56	512.11	501.62	476.61	437.31
135.0	589.37	566.17	550.39	536.47	529.51	514.20	509.09	499.35	479.86
180.0	569.42	550.85	536.93	529.51	514.66	509.09	499.81	485.89	455.73
225.0	534.38	522.78	514.47	502.87	494.61	469.00	417.17	376.61	322.83
270.0	539.25	527.65	519.30	507.70	501.20	479.39	444.13	395.87	342.04
315.0	531.13	520.37	511.13	500.51	477.30	435.12	385.15	331.37	272.90
360.0	532.39	525.52	516.28	502.46	490.44	456.38	412.43	360.93	304.64

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	247.01	189.84	135.64	86.64	46.82	19.72	10.58	7.80	5.06
45.0	385.19	330.44	275.68	241.34	241.34	109.19	63.15	28.68	14.48
90.0	386.08	330.35	274.38	218.98	161.34	107.75	62.37	29.70	13.92
135.0	443.20	395.87	342.04	285.89	242.27	242.27	108.82	62.46	28.45
180.0	413.50	363.38	307.24	249.23	249.23	125.71	77.82	40.19	16.98
225.0	265.01	207.61	153.04	101.07	55.82	24.45	11.88	9.00	6.40
270.0	283.11	247.84	247.84	114.89	68.96	33.55	15.73	11.18	7.70
315.0	216.70	161.44	109.65	63.53	29.05	13.60	9.70	6.45	4.69
360.0	247.01	189.84	135.64	86.64	46.82	19.72	10.58	7.80	5.06

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	4.22	3.76	3.39	3.25	3.06	2.83	2.64	2.55	2.46
45.0	9.37	7.29	5.15	4.55	4.04	3.57	3.43	3.16	2.97
90.0	10.77	7.61	5.66	5.10	4.36	4.13	3.90	3.62	3.53
135.0	17.96	10.21	7.10	5.75	4.83	4.32	3.76	3.48	3.34
180.0	10.81	7.80	6.03	4.92	4.36	3.62	3.39	3.20	3.02
225.0	4.87	4.32	3.76	3.57	3.29	3.06	2.97	2.78	2.69
270.0	5.61	5.20	4.73	4.18	3.85	3.62	3.39	3.20	2.97
315.0	4.13	3.76	3.53	3.25	3.11	2.88	2.74	2.64	2.41
360.0	4.22	3.76	3.39	3.25	3.06	2.83	2.64	2.55	2.46

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	2.37	2.23	2.09	2.04	2.00	1.86	1.76	1.76	1.72
45.0	2.88	2.69	2.55	2.41	2.32	2.23	2.13	2.00	2.00
90.0	3.29	3.06	2.88	2.78	2.60	2.46	2.32	2.27	2.18
135.0	3.11	2.88	2.74	2.64	2.51	2.32	2.23	2.13	2.04
180.0	2.78	2.64	2.55	2.41	2.27	2.18	2.13	2.04	1.90
225.0	2.46	2.37	2.27	2.23	2.18	2.04	1.95	1.90	1.90
270.0	2.78	2.69	2.55	2.37	2.27	2.18	2.09	1.95	1.90
315.0	2.32	2.23	2.09	2.04	1.90	1.81	1.81	1.72	1.58
360.0	2.37	2.23	2.09	2.04	2.00	1.86	1.76	1.76	1.72

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	1.62	1.58	1.58	1.53	1.48	1.44	1.44	1.44	1.39
45.0	1.95	1.81	1.86	1.72	1.76	1.72	1.67	1.62	1.58
90.0	2.04	1.95	1.90	1.90	1.81	1.72	1.72	1.76	1.72
135.0	1.90	1.86	1.81	1.72	1.67	1.62	1.58	1.58	1.48
180.0	1.81	1.81	1.76	1.67	1.58	1.62	1.58	1.58	1.53
225.0	1.86	1.72	1.72	1.72	1.72	1.62	1.58	1.58	1.58
270.0	1.86	1.81	1.72	1.72	1.67	1.67	1.53	1.53	1.58
315.0	1.58	1.58	1.53	1.48	1.39	1.44	1.44	1.39	1.35
360.0	1.62	1.58	1.58	1.53	1.48	1.44	1.44	1.44	1.39

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	1.35	1.39	1.30	1.30	1.35	1.35	1.35	1.30	1.30
45.0	1.62	1.62	1.58	1.58	1.62	1.67	1.67	1.76	1.76
90.0	1.62	1.62	1.62	1.67	1.58	1.62	1.58	1.62	1.67
135.0	1.44	1.44	1.44	1.44	1.35	1.35	1.39	1.35	1.25
180.0	1.44	1.44	1.48	1.48	1.39	1.35	1.39	1.39	1.35
225.0	1.58	1.53	1.58	1.48	1.48	1.53	1.53	1.48	1.48
270.0	1.58	1.53	1.48	1.53	1.48	1.44	1.44	1.48	1.44
315.0	1.30	1.30	1.30	1.35	1.25	1.21	1.25	1.25	1.21
360.0	1.35	1.39	1.30	1.30	1.35	1.35	1.35	1.30	1.30

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	1.30	1.35	1.30	1.30	1.25	1.25	1.39	1.62	1.44
45.0	1.81	1.72	1.72	1.76	1.90	2.23	2.60	2.74	2.92
90.0	1.62	1.72	1.72	1.76	1.76	1.86	1.86	2.32	3.29
135.0	1.30	1.35	1.25	1.25	1.30	1.30	1.25	1.25	1.21
180.0	1.30	1.30	1.25	1.30	1.35	1.39	1.25	1.30	1.30
225.0	1.48	1.48	1.48	1.44	1.44	1.39	1.35	1.53	1.44
270.0	1.44	1.44	1.48	1.53	1.44	1.39	1.35	1.48	1.58
315.0	1.21	1.30	1.21	1.25	1.25	1.25	1.58	1.53	1.53
360.0	1.30	1.35	1.30	1.30	1.25	1.25	1.39	1.62	1.44

Intensity data(cd)

C/γ(°)	90.0
0.0	1.44
45.0	2.64
90.0	2.97
135.0	1.35
180.0	1.25
225.0	1.35
270.0	1.58
315.0	1.30
360.0	1.44