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NATA

Client:
LumCAT: 3-2042-M
Luminaire: 92.70.135.00

Report No: NT2018010516	Voltage(V): 220.4000
Test No: GC2018010516	Current(A): 0.0950
LampCAT: BXRV-DR-1830-H-3000-A-13	Power (W): 19.2600
Lamp flux(lm): 1355.0	PF: 0.9190
Number of Lamps: 1	Ballast type: AC
Length(mm): 85	Width(mm): 85
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 1214.63, Efficiency(%): 89.64% , Luminous Efficacy(lm/W): 63.06
Central intensity(cd): 10891.470, Maximum intensity(cd): 10891.470
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=13.4
[C90/270]Total=13.4
Field angle(10%Imax): [C0/180]Total=27.2
[C90/270]Total=27.2
Maximum s/h(1/2): C0_180=0.23 C90_270=0.23
Maximum s/h(1/4): C0_180=0.23 C90_270=0.23
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 89.83%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 99.370%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	10891.468	2.606	2.606	.192%	.215%
1.0	10630.844	20.346	22.952	1.502%	1.890%
2.0	10127.008	38.757	61.709	2.860%	5.080%
3.0	9228.732	52.966	114.674	3.909%	9.441%
4.0	8503.042	65.044	179.719	4.800%	14.796%
5.0	7400.904	70.735	250.453	5.220%	20.620%
6.0	6246.563	71.602	322.056	5.284%	26.515%
7.0	5064.380	67.682	389.738	4.995%	32.087%
8.0	3986.256	60.838	450.575	4.490%	37.096%
9.0	3077.795	52.799	503.374	3.897%	41.443%
10.0	2502.683	47.657	551.031	3.517%	45.366%
11.0	1945.588	40.710	591.741	3.004%	48.718%
12.0	1559.970	35.567	627.308	2.625%	51.646%
13.0	1268.766	31.298	658.607	2.310%	54.223%
14.0	975.845	25.889	684.495	1.911%	56.354%
15.0	899.917	25.542	710.037	1.885%	58.457%
16.0	792.993	23.969	734.006	1.769%	60.430%
17.0	713.440	22.874	756.881	1.688%	62.314%
18.0	657.193	22.270	779.151	1.644%	64.147%
19.0	606.341	21.648	800.799	1.598%	65.929%
20.0	569.166	21.347	822.146	1.575%	67.687%
21.0	541.846	21.294	843.44	1.572%	69.440%
22.0	518.859	21.315	864.754	1.573%	71.195%
23.0	500.495	21.445	886.199	1.583%	72.960%
24.0	487.293	21.735	907.934	1.604%	74.750%
25.0	476.557	22.086	930.02	1.630%	76.568%
26.0	465.901	22.397	952.417	1.653%	78.412%
27.0	457.491	22.776	975.193	1.681%	80.287%
28.0	449.387	23.136	998.329	1.707%	82.192%
29.0	441.423	23.468	1021.797	1.732%	84.124%
30.0	434.045	23.799	1045.596	1.756%	86.083%
31.0	422.160	23.843	1069.439	1.760%	88.047%
32.0	403.210	23.431	1092.87	1.729%	89.976%
33.0	373.680	22.318	1115.189	1.647%	91.813%
34.0	331.291	20.315	1135.504	1.499%	93.486%
35.0	286.204	18.002	1153.506	1.329%	94.968%
36.0	243.890	15.720	1169.226	1.160%	96.262%
37.0	203.850	13.453	1182.68	.993%	97.370%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	128.241	8.658	1191.338	.639%	98.082%
39.0	87.412	6.032	1197.37	.445%	98.579%
40.0	43.271	3.050	1200.42	.225%	98.830%
41.0	22.987	1.654	1202.074	.122%	98.966%
42.0	13.097	0.961	1203.035	.071%	99.045%
43.0	9.014	0.674	1203.709	.050%	99.101%
44.0	7.152	0.545	1204.254	.040%	99.146%
45.0	6.096	0.473	1204.727	.035%	99.185%
46.0	5.348	0.422	1205.149	.031%	99.219%
47.0	5.041	0.404	1205.553	.030%	99.253%
48.0	4.687	0.382	1205.935	.028%	99.284%
49.0	4.414	0.365	1206.3	.027%	99.314%
50.0	4.205	0.353	1206.653	.026%	99.343%
51.0	4.025	0.343	1206.996	.025%	99.372%
52.0	3.811	0.329	1207.326	.024%	99.399%
53.0	3.556	0.311	1207.637	.023%	99.424%
54.0	3.376	0.299	1207.937	.022%	99.449%
55.0	3.208	0.288	1208.225	.021%	99.473%
56.0	3.045	0.277	1208.502	.020%	99.495%
57.0	2.912	0.268	1208.769	.020%	99.518%
58.0	2.744	0.255	1209.025	.019%	99.539%
59.0	2.639	0.248	1209.273	.018%	99.559%
60.0	2.552	0.242	1209.515	.018%	99.579%
61.0	2.419	0.232	1209.747	.017%	99.598%
62.0	2.309	0.224	1209.971	.016%	99.616%
63.0	2.216	0.216	1210.187	.016%	99.634%
64.0	2.175	0.214	1210.401	.016%	99.652%
65.0	2.088	0.208	1210.609	.015%	99.669%
66.0	1.978	0.198	1210.807	.015%	99.685%
67.0	1.903	0.192	1210.999	.014%	99.701%
68.0	1.885	0.192	1211.191	.014%	99.717%
69.0	1.821	0.186	1211.377	.014%	99.732%
70.0	1.723	0.178	1211.555	.013%	99.747%
71.0	1.700	0.176	1211.731	.013%	99.761%
72.0	1.676	0.175	1211.906	.013%	99.776%
73.0	1.642	0.172	1212.078	.013%	99.790%
74.0	1.595	0.168	1212.246	.012%	99.804%
75.0	1.566	0.166	1212.412	.012%	99.817%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	1.549	0.165	1212.577	.012%	99.831%
77.0	1.526	0.163	1212.74	.012%	99.844%
78.0	1.508	0.162	1212.902	.012%	99.858%
79.0	1.456	0.157	1213.058	.012%	99.871%
80.0	1.444	0.156	1213.214	.012%	99.883%
81.0	1.444	0.156	1213.371	.012%	99.896%
82.0	1.410	0.153	1213.524	.011%	99.909%
83.0	1.398	0.152	1213.676	.011%	99.921%
84.0	1.375	0.150	1213.826	.011%	99.934%
85.0	1.346	0.147	1213.973	.011%	99.946%
86.0	1.346	0.147	1214.12	.011%	99.958%
87.0	1.322	0.145	1214.265	.011%	99.970%
88.0	1.334	0.146	1214.411	.011%	99.982%
89.0	1.328	0.146	1214.557	.011%	99.994%
90.0	1.334	0.073	1214.63	.005%	100.000%

Zonal flux distribution table

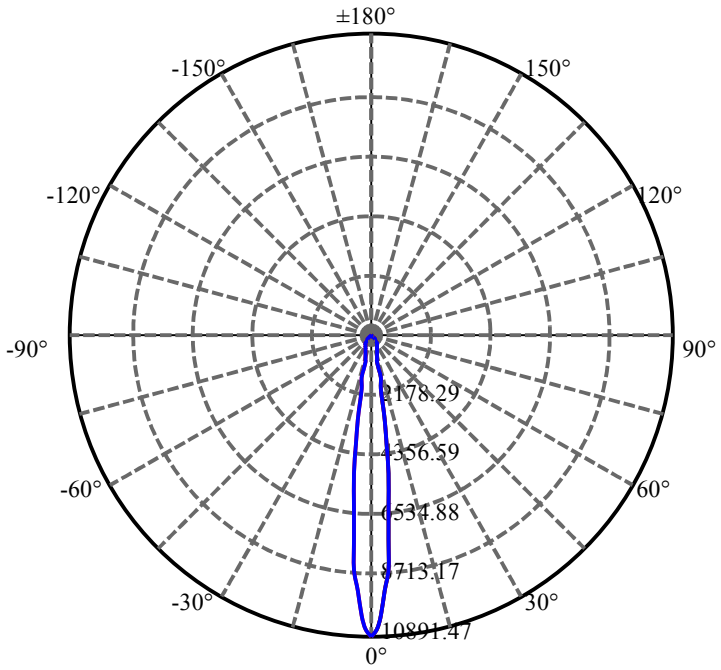
ZONAL LUMEN SUMMARY

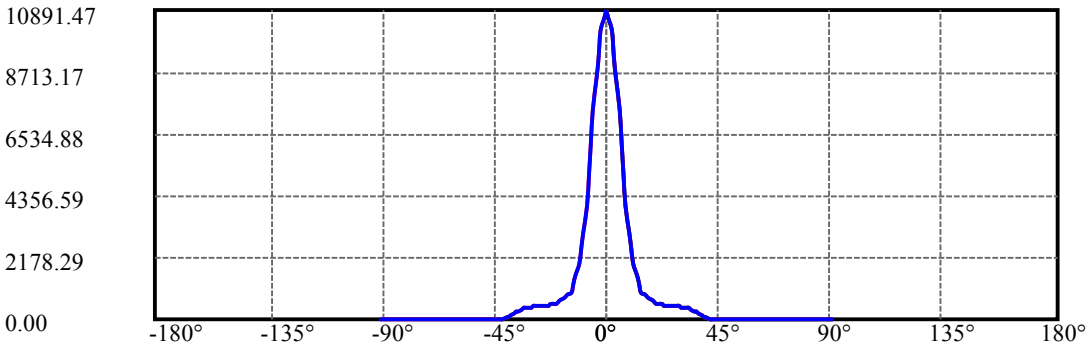
Zone	Lumens	%Lamp	%Fixt
0-30	1045.60	77.17%	86.08%
0-40	1200.42	88.59%	98.83%
0-60	1209.52	89.26%	99.58%
0-90	1214.56	89.64%	99.99%
0-120	1214.56	89.64%	99.99%
0-180	1214.63	89.64%	100.00%
60-90	5.28	0.39%	0.44%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-26.85	971.70	71.71%	80.00%

ZONAL LUMEN SUMMARY

0-10	551.03
10-20	271.11
20-30	223.45
30-40	154.82
40-50	6.23
50-60	2.86
60-70	2.04
70-80	1.66
80-90	1.34
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):

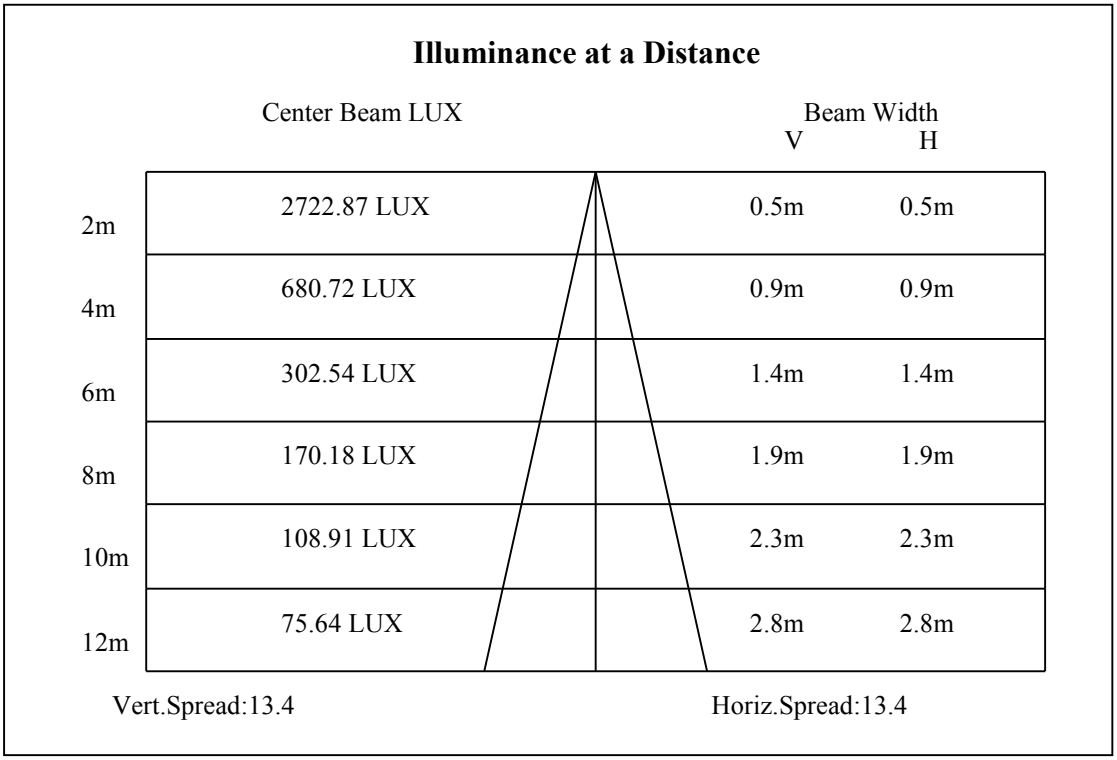
C0/C180:

C90/C270:

Field angle(10%Imax):C0/180Left:13.6 Right:13.6
:C90/270Left:13.6 Right:13.6

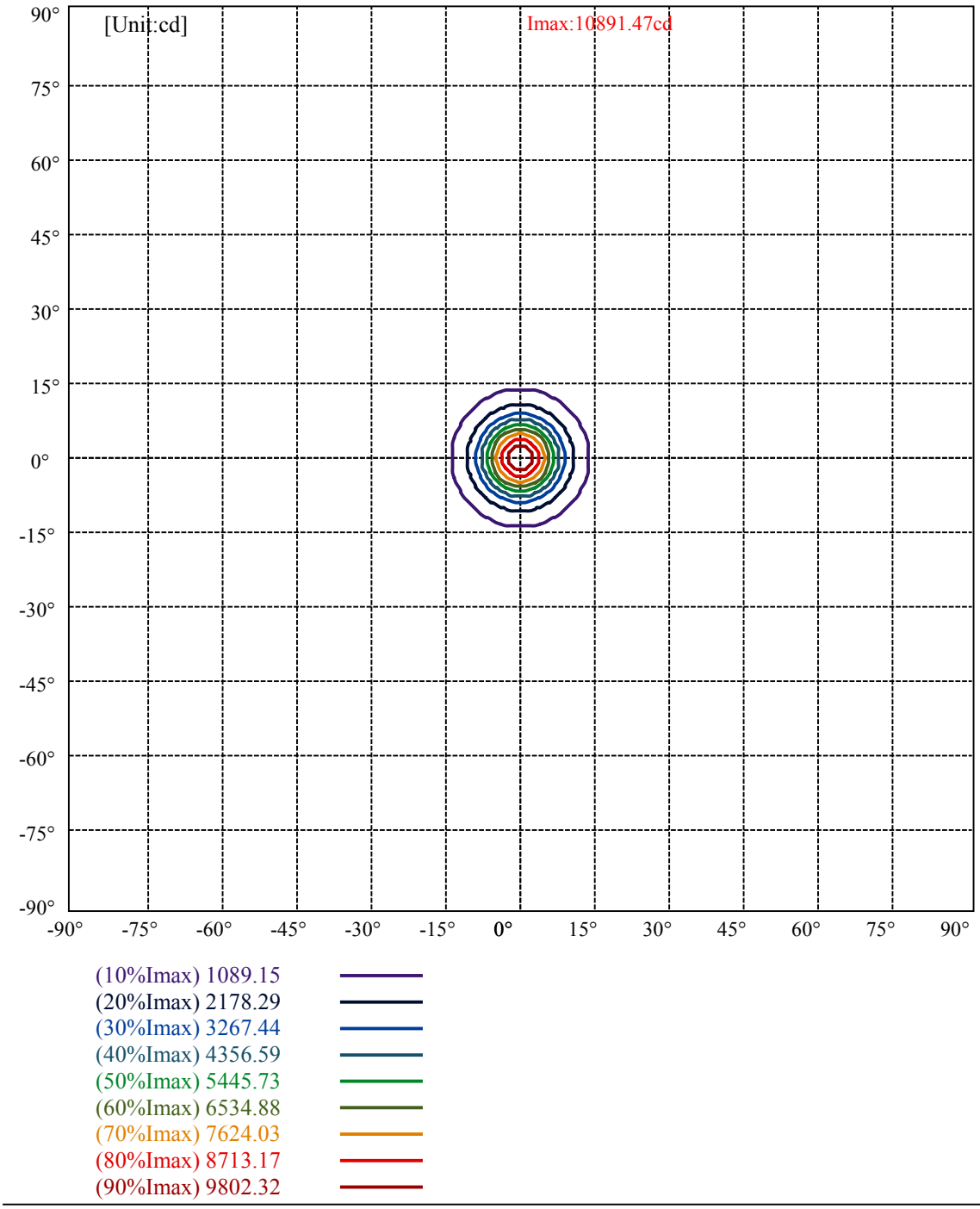
Beam Angle(50%Imax):C0/180Left:6.7 Right:6.7
:C90/270Left:6.7 Right:6.7

Lux distance Curve



Equipment: GMS 1800 Date: 2018/1/2 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 6.81

ISO-Intensity(V-H)

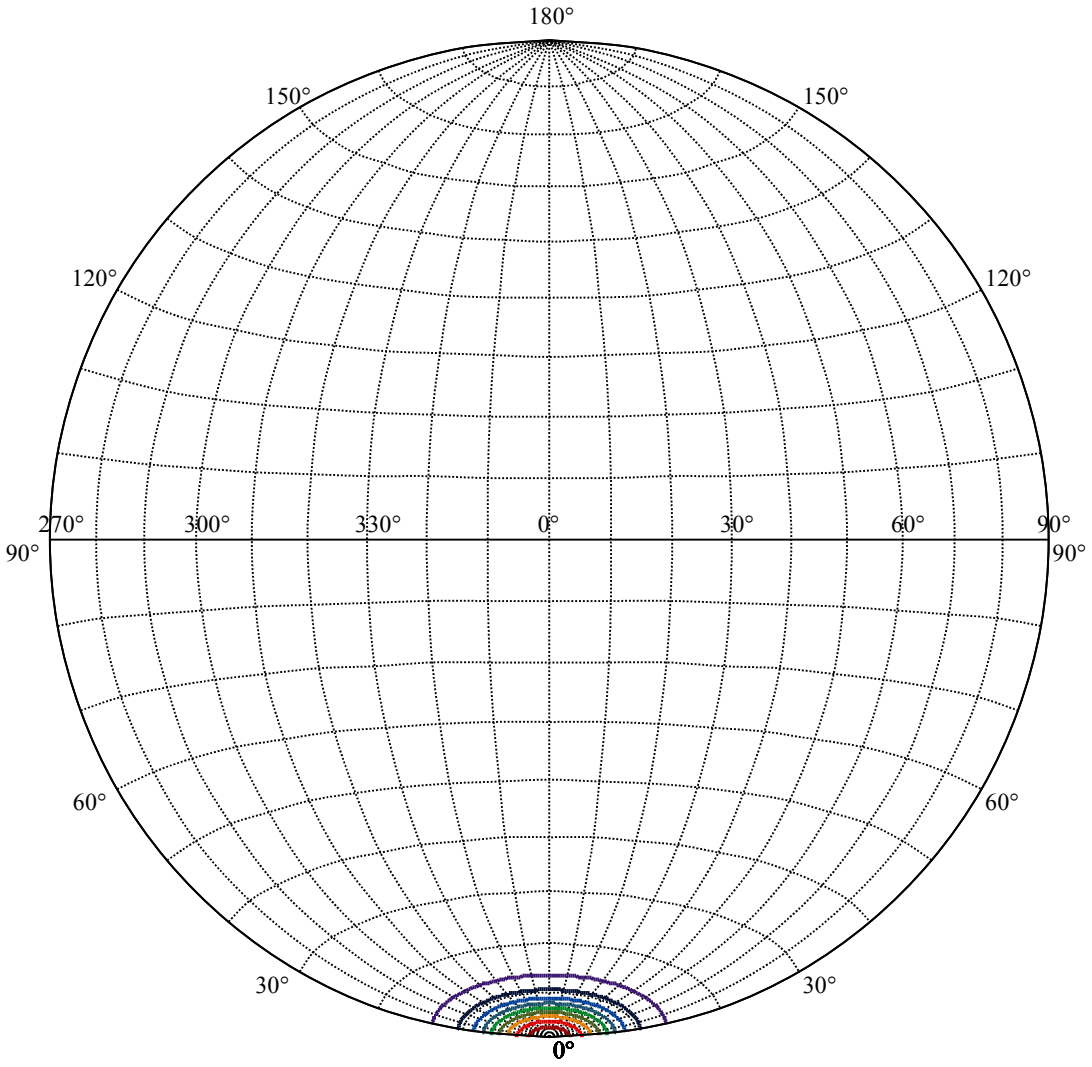


Equipment: GMS 1800
Temperature(°C): 25.0

Date: 2018/1/2
Humidity(%): 60.0%

Operator: NT07
Distance(m): 6.81

ISO candela diagram on circular web



House [Unit:cd] Road

Imax:10891.47

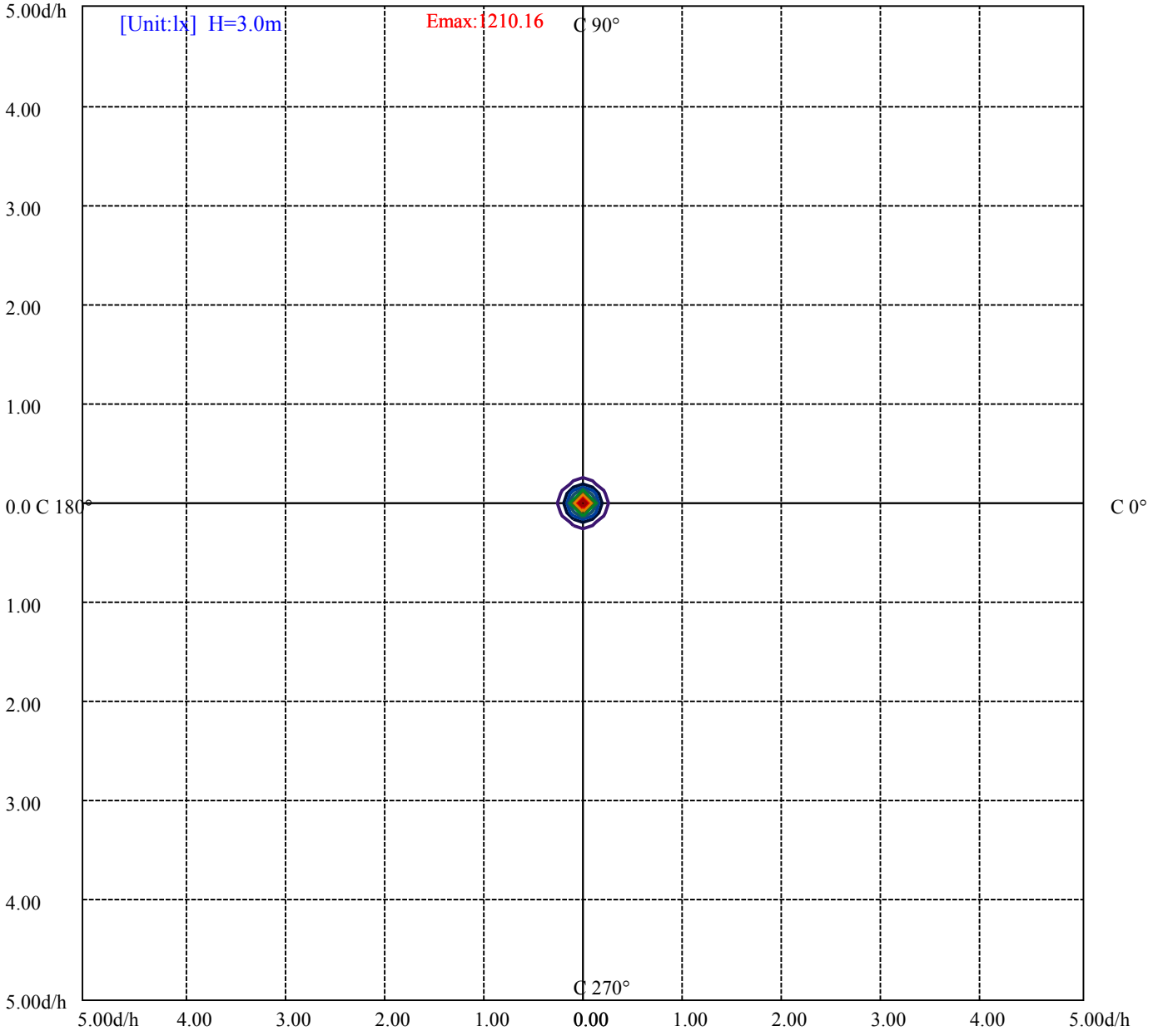
(10%Imax) 1089.15
(20%Imax) 2178.29
(30%Imax) 3267.44
(40%Imax) 4356.59
(50%Imax) 5445.73
(60%Imax) 6534.88
(70%Imax) 7624.03
(80%Imax) 8713.17
(90%Imax) 9802.32

Equipment: GMS 1800
Temperature(°C): 25.0

Date: 2018/1/2
Humidity(%): 60.0%

Operator: NT07
Distance(m): 6.81

ISO illuminance diagram

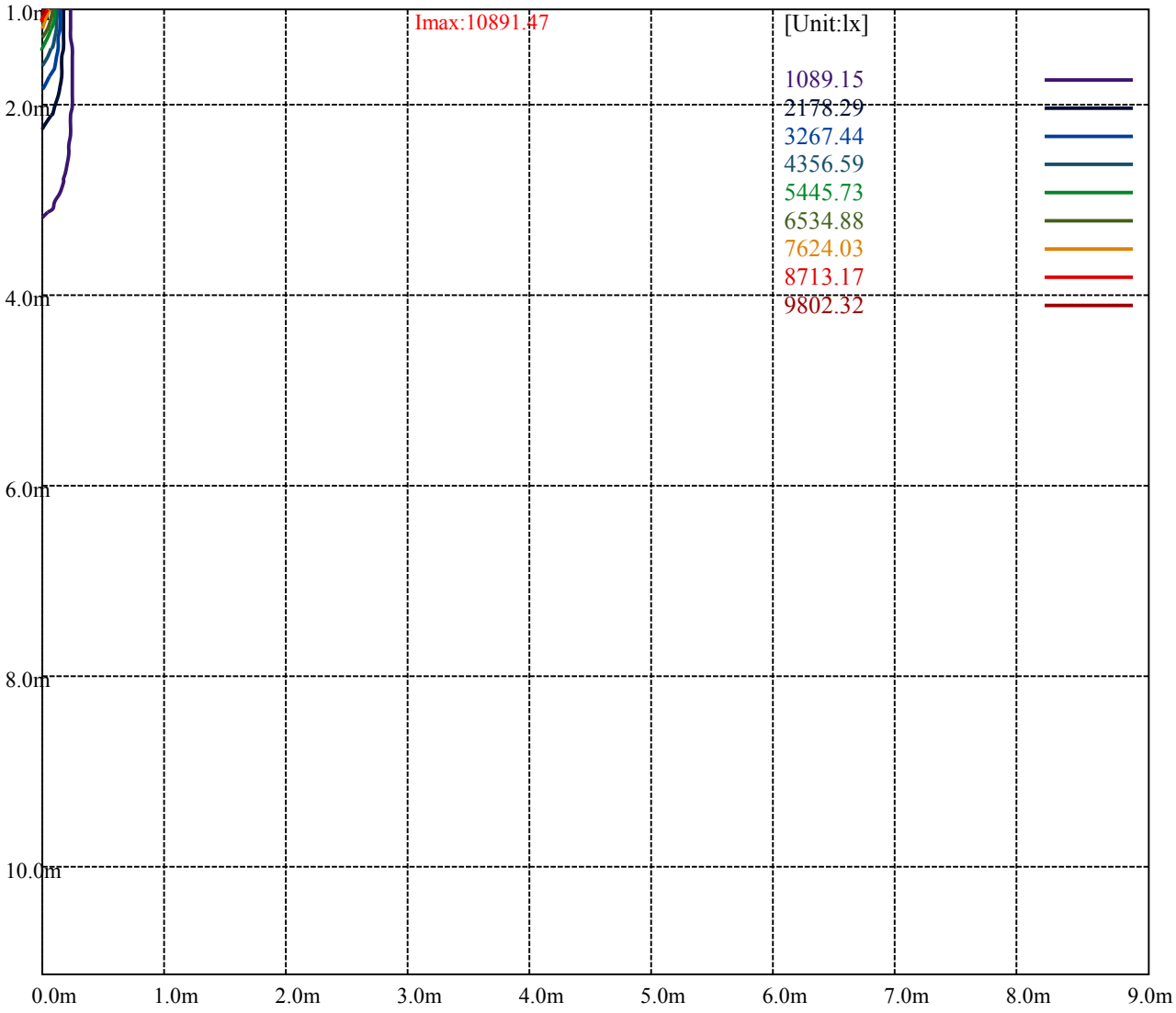


Equipment: GMS 1800
Temperature(°C): 25.0

Date: 2018/1/2
Humidity(%): 60.0%

Operator: NT07
Distance(m): 6.81

Space ISO Lux diagram



Equipment: GMS 1800
Temperature(°C): 25.0

Date: 2018/1/2
Humidity(%): 60.0%

Operator: NT07
Distance(m): 6.81

Luminance Limitting Curve(no luminous side)

Luminance Table

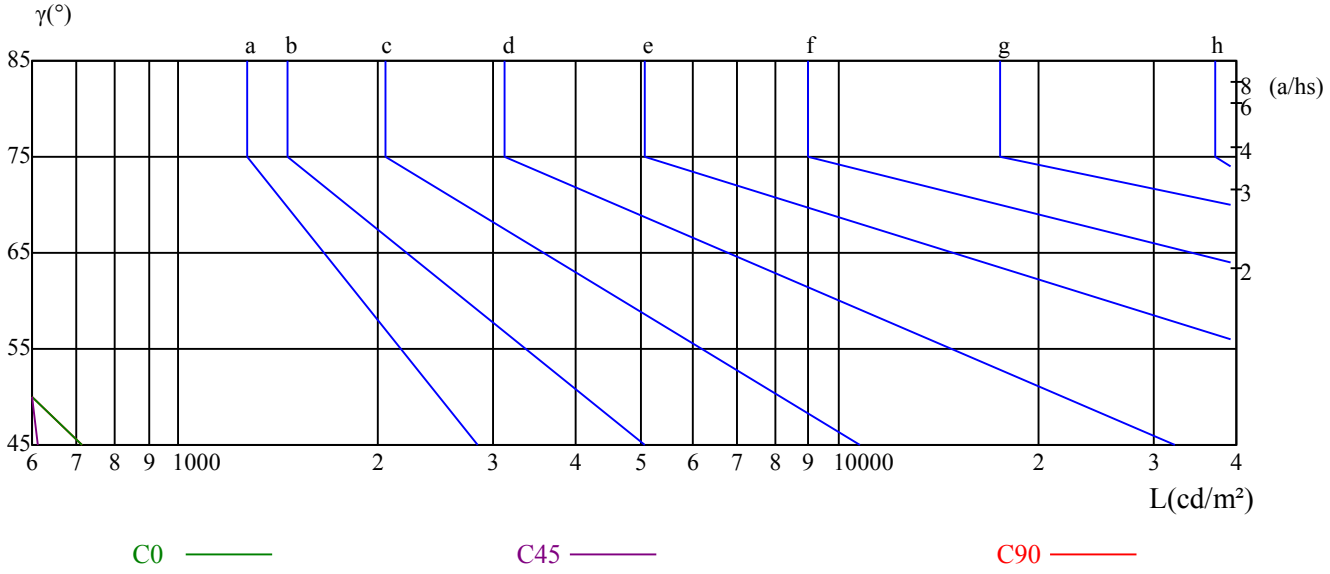
γ	45	50	55	60	65	70	75	80	85
C0	714	503	395	327	280	245	239	240	247
C45	612	425	329	267	225	193	185	180	180
C90	714	503	395	327	280	245	239	240	247

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
684	684	684	838	838	838	2137	2137	2137

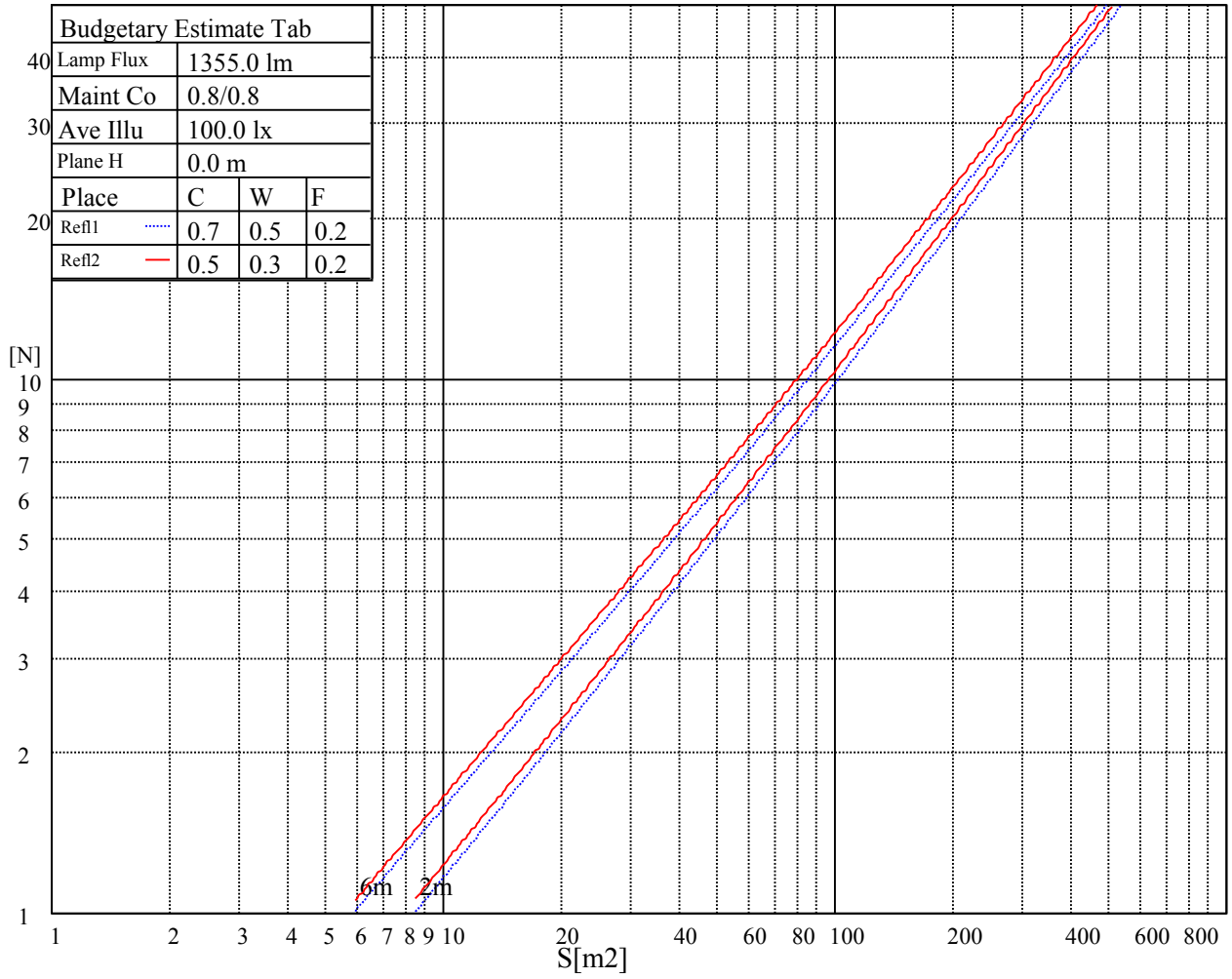
Glare Table

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

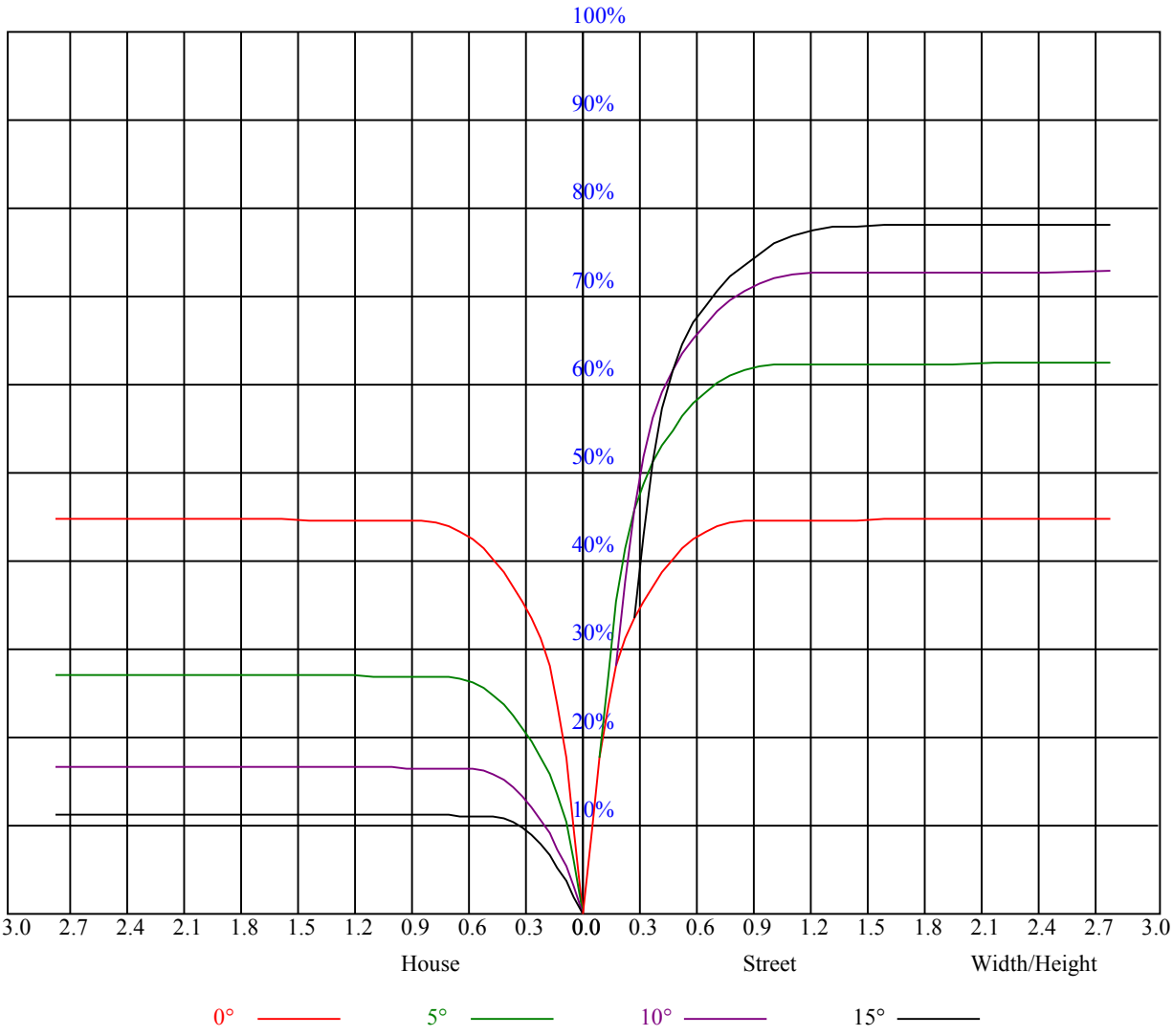


Equipment: GMS 1800 Date: 2018/1/2 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 6.81

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	1.07	1.07	1.07	1.04	1.04	1.04	1.00	1.00	1.00	0.96	0.96	0.96	0.92	0.92	0.92	0.90
1	1.01	0.99	0.98	0.99	0.97	0.96	0.95	0.94	0.93	0.92	0.91	0.90	0.89	0.88	0.88	0.86
2	0.96	0.93	0.91	0.95	0.92	0.90	0.92	0.90	0.88	0.89	0.88	0.86	0.87	0.85	0.84	0.83
3	0.92	0.88	0.86	0.91	0.87	0.85	0.88	0.86	0.84	0.86	0.84	0.82	0.84	0.83	0.81	0.80
4	0.88	0.84	0.81	0.87	0.84	0.81	0.85	0.82	0.80	0.84	0.81	0.79	0.82	0.80	0.78	0.77
5	0.85	0.81	0.78	0.84	0.80	0.78	0.82	0.79	0.77	0.81	0.78	0.76	0.80	0.78	0.76	0.75
6	0.82	0.78	0.75	0.81	0.77	0.75	0.80	0.77	0.74	0.79	0.76	0.74	0.78	0.75	0.73	0.72
7	0.79	0.75	0.72	0.78	0.75	0.72	0.77	0.74	0.72	0.76	0.74	0.71	0.76	0.73	0.71	0.70
8	0.76	0.73	0.70	0.76	0.72	0.70	0.75	0.72	0.70	0.74	0.71	0.69	0.74	0.71	0.69	0.68
9	0.74	0.70	0.68	0.74	0.70	0.68	0.73	0.70	0.68	0.72	0.69	0.67	0.72	0.69	0.67	0.66
10	0.72	0.68	0.66	0.72	0.68	0.66	0.71	0.68	0.66	0.71	0.68	0.66	0.70	0.67	0.65	0.65

Coefficient Utilization Curve

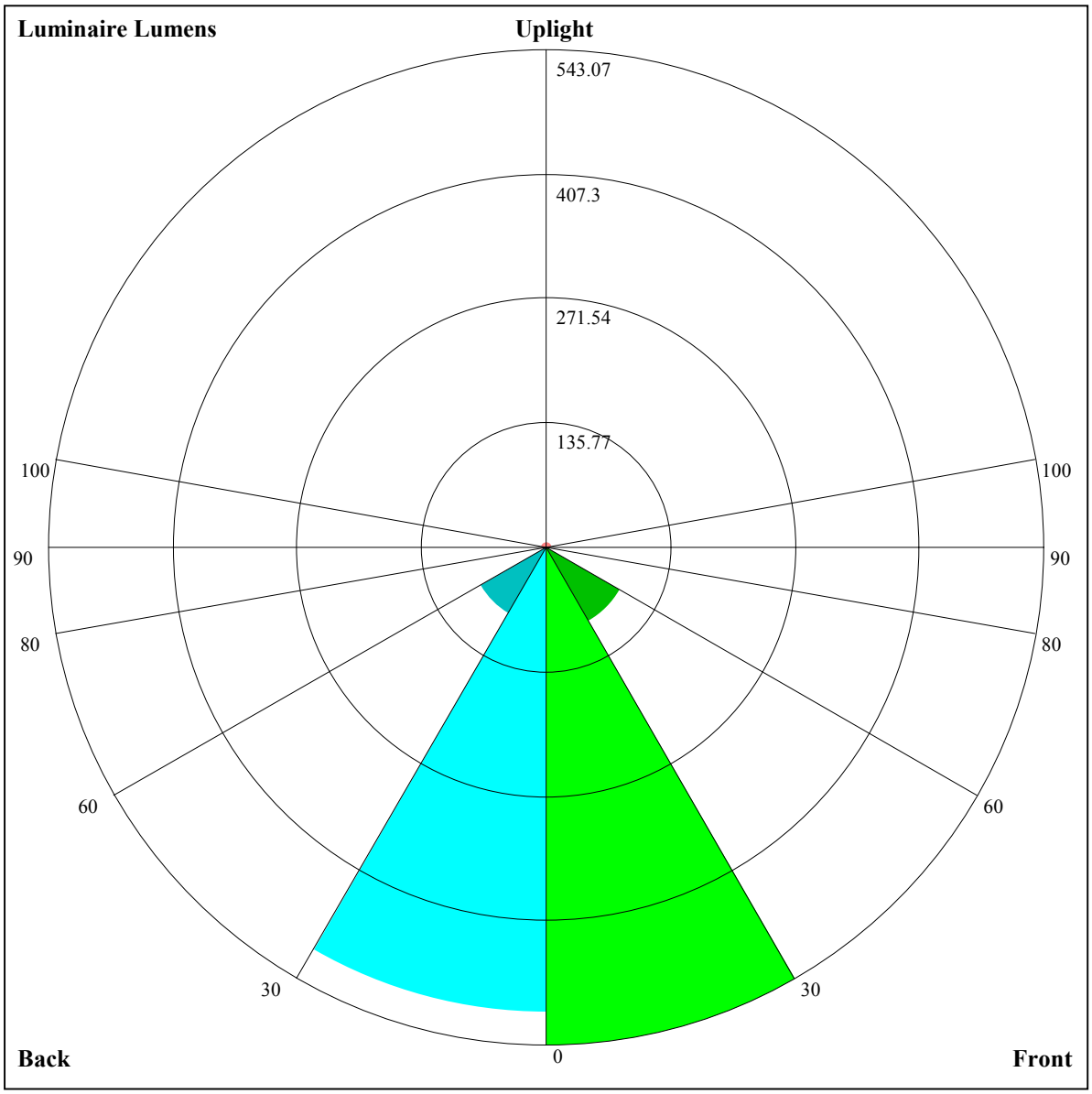


Equipment: GMS 1800
Temperature(°C): 25.0

Date: 2018/1/2
Humidity(%): 60.0%

Operator: NT07
Distance(m): 6.81

LCS Graph



Luminaire Lumens:

FL=543.07,FM=92.19,FH=1.92,FVH=0.75

BL=506.91,BM=83.29,BH=1.84,BVH=0.74

UL=1.46,UH=6.93

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	10863.63	10858.99	10594.49	9070.51	9070.51	7965.18	6741.52	5501.16	4338.30
45.0	10798.66	10770.82	10422.79	9759.23	8817.24	7661.80	6418.19	5197.78	4088.74
90.0	10733.70	9038.49	9038.49	7830.61	6547.56	5296.06	4153.15	3173.57	2419.05
135.0	11169.89	10886.83	10079.41	9299.83	8125.83	6854.38	5578.29	4395.00	3369.49
180.0	10863.63	10622.33	10070.13	9197.75	8093.35	6872.94	5647.89	4487.81	3453.01
225.0	10798.66	10524.88	8763.32	8763.32	8073.76	6841.76	5611.60	4448.27	3419.97
270.0	10733.70	11095.64	11151.33	10882.19	10269.66	9374.08	8729.07	7504.02	6214.01
315.0	11169.89	11248.77	10896.11	9026.42	9026.42	8341.05	7092.80	5807.42	4587.48
360.0	10863.63	10858.99	10594.49	9070.51	9070.51	7965.18	6741.52	5501.16	4338.30

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	3329.49	2535.06	1962.44	1556.88	1273.82	897.67	897.67	832.62	746.12
45.0	3137.47	2408.94	2408.94	2292.93	1358.27	1142.03	979.62	858.97	766.63
90.0	1889.13	1517.44	1299.34	897.90	897.90	834.29	746.58	675.77	619.35
135.0	2562.07	2432.14	1832.05	1246.44	1039.02	893.31	826.03	706.31	644.12
180.0	2631.67	2631.67	1523.93	1238.09	1038.09	897.95	832.99	716.05	653.41
225.0	2596.31	2006.53	1600.50	1314.19	909.92	866.68	866.68	756.88	684.50
270.0	4970.40	3847.44	2919.37	2348.61	2348.61	1350.85	1125.79	964.31	846.44
315.0	3505.82	2642.25	2018.13	1584.72	1284.49	923.98	923.98	833.03	746.95
360.0	3329.49	2535.06	1962.44	1556.88	1273.82	897.67	897.67	832.62	746.12

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	676.61	621.06	580.92	549.32	523.99	504.13	488.40	475.73	465.80
45.0	693.31	634.84	590.30	554.57	527.19	506.77	490.99	478.93	470.11
90.0	577.44	545.98	522.13	504.54	490.76	484.17	471.69	466.68	453.92
135.0	615.82	580.09	551.32	528.12	509.56	495.63	484.50	475.22	466.40
180.0	623.24	583.34	552.71	528.12	509.09	494.24	483.11	473.82	465.47
225.0	636.70	580.83	552.99	526.45	506.82	492.39	481.39	472.76	463.89
270.0	754.56	680.78	622.32	596.33	561.99	525.33	512.80	496.10	478.00
315.0	679.86	623.80	580.65	547.33	521.48	501.30	485.47	473.22	463.62
360.0	676.61	621.06	580.92	549.32	523.99	504.13	488.40	475.73	465.80

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	456.19	446.49	438.65	431.37	423.76	414.20	403.01	355.40	326.91
45.0	460.83	451.55	443.20	437.17	426.96	418.60	391.23	351.32	304.45
90.0	445.94	440.92	432.99	423.48	398.05	357.03	308.44	255.82	201.16
135.0	457.58	449.69	442.73	435.31	425.10	401.90	368.02	323.48	265.47
180.0	457.12	449.69	442.73	434.85	424.17	399.12	361.99	312.34	255.26
225.0	455.12	447.24	439.53	431.46	418.28	385.84	341.85	292.81	242.18
270.0	471.97	463.15	452.94	444.59	437.17	429.74	421.39	398.65	359.67
315.0	455.17	446.35	438.60	434.15	423.80	419.25	393.50	360.51	334.52
360.0	456.19	446.49	438.65	431.37	423.76	414.20	403.01	355.40	326.91

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	272.71	213.64	153.78	98.38	55.17	26.54	13.87	10.72	8.03
45.0	253.87	243.66	184.96	101.44	58.14	25.29	13.83	10.49	7.89
90.0	147.05	96.19	52.48	21.90	12.58	9.98	7.66	6.40	5.57
135.0	265.47	238.10	78.47	42.60	19.95	11.18	9.14	7.19	6.17
180.0	231.14	231.14	86.91	44.73	20.28	10.67	8.63	6.77	5.71
225.0	190.76	140.23	91.60	65.24	30.16	11.23	9.84	7.47	6.03
270.0	312.34	260.37	239.02	239.02	100.79	64.92	29.23	13.27	10.44
315.0	277.77	207.47	138.70	85.99	49.09	24.08	12.58	9.79	7.38
360.0	272.71	213.64	153.78	98.38	55.17	26.54	13.87	10.72	8.03

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	6.73	5.61	5.29	4.97	4.64	4.41	4.27	4.04	3.76
45.0	7.19	5.61	5.43	5.10	4.83	4.55	4.36	4.18	3.90
90.0	5.34	5.06	4.83	4.45	4.27	4.08	3.90	3.67	3.39
135.0	5.38	5.06	4.78	4.45	4.22	4.13	3.85	3.62	3.39
180.0	5.01	4.73	4.50	4.22	3.99	3.81	3.67	3.43	3.20
225.0	5.15	4.87	4.64	4.36	4.08	3.90	3.71	3.53	3.29
270.0	7.89	6.54	5.80	5.15	4.83	4.55	4.36	4.18	3.94
315.0	6.08	5.29	5.06	4.78	4.45	4.22	4.08	3.85	3.57
360.0	6.73	5.61	5.29	4.97	4.64	4.41	4.27	4.04	3.76

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	3.53	3.39	3.16	3.06	2.88	2.78	2.69	2.55	2.41
45.0	3.62	3.43	3.25	3.11	2.92	2.78	2.74	2.64	2.46
90.0	3.20	3.06	2.97	2.78	2.64	2.55	2.51	2.37	2.23
135.0	3.25	3.06	2.97	2.83	2.64	2.55	2.46	2.37	2.27
180.0	3.06	2.92	2.83	2.69	2.55	2.46	2.41	2.27	2.13
225.0	3.11	2.97	2.83	2.64	2.55	2.51	2.37	2.18	2.13
270.0	3.71	3.57	3.29	3.20	2.92	2.83	2.69	2.51	2.51
315.0	3.53	3.25	3.06	2.97	2.83	2.64	2.55	2.46	2.32
360.0	3.53	3.39	3.16	3.06	2.88	2.78	2.69	2.55	2.41

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	2.27	2.27	2.18	2.04	1.95	1.95	1.90	1.76	1.72
45.0	2.32	2.32	2.23	2.13	2.04	1.95	1.95	1.86	1.81
90.0	2.18	2.13	2.04	1.90	1.86	1.86	1.76	1.72	1.72
135.0	2.18	2.13	2.04	1.90	1.86	1.86	1.76	1.67	1.67
180.0	2.09	2.04	1.90	1.86	1.81	1.81	1.72	1.62	1.67
225.0	2.04	2.00	2.00	1.90	1.76	1.76	1.72	1.62	1.58
270.0	2.37	2.27	2.23	2.09	2.00	2.00	1.90	1.81	1.72
315.0	2.27	2.23	2.09	2.00	1.95	1.90	1.86	1.72	1.72
360.0	2.27	2.27	2.18	2.04	1.95	1.95	1.90	1.76	1.72

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	1.72	1.72	1.62	1.67	1.53	1.58	1.53	1.44	1.48
45.0	1.72	1.72	1.72	1.67	1.58	1.53	1.58	1.53	1.44
90.0	1.67	1.62	1.62	1.58	1.53	1.44	1.48	1.48	1.44
135.0	1.67	1.62	1.58	1.53	1.58	1.53	1.48	1.44	1.39
180.0	1.62	1.53	1.48	1.48	1.53	1.48	1.48	1.39	1.35
225.0	1.58	1.58	1.53	1.44	1.44	1.48	1.48	1.39	1.39
270.0	1.76	1.72	1.62	1.58	1.62	1.58	1.48	1.44	1.53
315.0	1.67	1.62	1.58	1.58	1.58	1.58	1.53	1.53	1.53
360.0	1.72	1.72	1.62	1.67	1.53	1.58	1.53	1.44	1.48

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	1.48	1.44	1.39	1.44	1.35	1.30	1.30	1.35	1.30
45.0	1.44	1.44	1.44	1.44	1.35	1.35	1.30	1.39	1.39
90.0	1.39	1.44	1.35	1.39	1.35	1.30	1.30	1.30	1.44
135.0	1.44	1.39	1.35	1.35	1.39	1.39	1.39	1.35	1.35
180.0	1.39	1.35	1.35	1.30	1.30	1.30	1.30	1.30	1.30
225.0	1.44	1.35	1.39	1.35	1.35	1.35	1.30	1.30	1.25
270.0	1.48	1.44	1.44	1.35	1.35	1.39	1.35	1.35	1.30
315.0	1.48	1.44	1.48	1.39	1.35	1.39	1.35	1.35	1.30
360.0	1.48	1.44	1.39	1.44	1.35	1.30	1.30	1.35	1.30

Intensity data(cd)

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