NATA OPTICS
www.nata.cn
Email:info@nata.cn
Tel:+86 750 377 0000 Fax:+86 750 377 1111
Address:380 JinOuRoad,JiangMenCticy,GuangDong,China

NATA

Client:
LumCAT: 2-2006-M
Luminaire: 92.70.135.00

Report No: GC2019031803	Voltage(V): 35.5100
Test No: GC2019041214	Current(A): 0.5010
LampCAT: LUMILEDS LUXEON1205	Power (W): 17.7910
Lamp flux(lm): 2032.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 75	Width(mm): 75
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 1766.73, Efficiency(%): 86.95% , Luminous Efficacy(lm/W): 99.30
Central intensity(cd): 6223.781, Maximum intensity(cd): 6223.781
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=25.2
[C90/270]Total=25.2
Field angle(10%Imax): [C0/180]Total=62.2
[C90/270]Total=62.2
Maximum s/h(1/2): C0_180=0.43 C90_270=0.43
Maximum s/h(1/4): C0_180=0.41 C90_270=0.41
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 86.95%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.794%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	6223.781	0.000	0	.000%	.000%
1.0	6208.031	5.948	5.948	.293%	.337%
2.0	6148.758	17.736	23.684	.873%	1.341%
3.0	6054.258	29.186	52.87	1.436%	2.993%
4.0	5931.000	40.118	92.988	1.974%	5.263%
5.0	5735.883	50.190	143.178	2.470%	8.104%
6.0	5527.617	59.193	202.371	2.913%	11.455%
7.0	5267.953	67.008	269.379	3.298%	15.247%
8.0	4962.234	73.215	342.595	3.603%	19.392%
9.0	4616.930	77.634	420.228	3.821%	23.786%
10.0	4238.719	80.140	500.369	3.944%	28.322%
11.0	3800.109	80.324	580.693	3.953%	32.868%
12.0	3389.273	78.590	659.283	3.868%	37.317%
13.0	2955.516	75.297	734.58	3.706%	41.579%
14.0	2490.961	69.714	804.295	3.431%	45.525%
15.0	2137.289	63.539	867.833	3.127%	49.121%
16.0	1822.500	58.022	925.855	2.855%	52.405%
17.0	1543.430	52.417	978.272	2.580%	55.372%
18.0	1311.926	47.079	1025.35	2.317%	58.037%
19.0	1155.888	42.935	1068.285	2.113%	60.467%
20.0	1019.363	39.813	1108.098	1.959%	62.720%
21.0	921.466	37.268	1145.366	1.834%	64.830%
22.0	851.400	35.627	1180.993	1.753%	66.846%
23.0	792.246	34.488	1215.481	1.697%	68.799%
24.0	749.243	33.702	1249.183	1.659%	70.706%
25.0	718.453	33.372	1282.556	1.642%	72.595%
26.0	694.238	33.347	1315.902	1.641%	74.483%
27.0	675.605	33.513	1349.416	1.649%	76.380%
28.0	661.683	33.857	1383.273	1.666%	78.296%
29.0	647.599	34.255	1417.528	1.686%	80.235%
30.0	635.295	34.638	1452.165	1.705%	82.195%
31.0	623.602	35.033	1487.199	1.724%	84.178%
32.0	603.499	35.155	1522.354	1.730%	86.168%
33.0	573.244	34.667	1557.021	1.706%	88.130%
34.0	526.226	33.273	1590.294	1.637%	90.014%
35.0	463.226	30.729	1621.023	1.512%	91.753%
36.0	393.652	27.283	1648.306	1.343%	93.297%
37.0	328.395	23.549	1671.855	1.159%	94.630%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	251.473	19.355	1691.21	.953%	95.726%
39.0	191.461	15.119	1706.329	.744%	96.581%
40.0	121.134	10.902	1717.231	.537%	97.199%
41.0	71.634	6.864	1724.096	.338%	97.587%
42.0	37.252	3.956	1728.052	.195%	97.811%
43.0	22.296	2.206	1730.257	.109%	97.936%
44.0	17.810	1.514	1731.771	.074%	98.022%
45.0	15.307	1.273	1733.044	.063%	98.094%
46.0	13.507	1.127	1734.171	.055%	98.157%
47.0	11.700	1.003	1735.173	.049%	98.214%
48.0	10.744	0.907	1736.08	.045%	98.265%
49.0	10.005	0.852	1736.933	.042%	98.314%
50.0	9.668	0.820	1737.753	.040%	98.360%
51.0	9.380	0.806	1738.559	.040%	98.406%
52.0	9.148	0.795	1739.354	.039%	98.451%
53.0	8.916	0.786	1740.139	.039%	98.495%
54.0	8.684	0.776	1740.915	.038%	98.539%
55.0	8.515	0.768	1741.683	.038%	98.583%
56.0	8.304	0.760	1742.443	.037%	98.626%
57.0	8.135	0.752	1743.195	.037%	98.668%
58.0	7.980	0.745	1743.94	.037%	98.710%
59.0	7.847	0.740	1744.68	.036%	98.752%
60.0	7.720	0.735	1745.415	.036%	98.794%
61.0	7.608	0.731	1746.147	.036%	98.835%
62.0	7.509	0.728	1746.875	.036%	98.876%
63.0	7.411	0.726	1747.601	.036%	98.918%
64.0	7.320	0.723	1748.324	.036%	98.958%
65.0	7.214	0.719	1749.043	.035%	98.999%
66.0	7.130	0.716	1749.758	.035%	99.040%
67.0	7.073	0.714	1750.473	.035%	99.080%
68.0	6.996	0.713	1751.185	.035%	99.120%
69.0	6.947	0.711	1751.897	.035%	99.161%
70.0	6.884	0.710	1752.607	.035%	99.201%
71.0	6.834	0.709	1753.316	.035%	99.241%
72.0	6.785	0.708	1754.024	.035%	99.281%
73.0	6.736	0.707	1754.731	.035%	99.321%
74.0	6.701	0.706	1755.438	.035%	99.361%
75.0	6.666	0.706	1756.144	.035%	99.401%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	6.623	0.705	1756.849	.035%	99.441%
77.0	6.602	0.705	1757.554	.035%	99.481%
78.0	6.595	0.706	1758.261	.035%	99.521%
79.0	6.546	0.706	1758.967	.035%	99.561%
80.0	6.546	0.706	1759.673	.035%	99.601%
81.0	6.518	0.706	1760.379	.035%	99.641%
82.0	6.497	0.706	1761.085	.035%	99.681%
83.0	6.483	0.706	1761.791	.035%	99.721%
84.0	6.483	0.706	1762.497	.035%	99.761%
85.0	6.441	0.705	1763.202	.035%	99.801%
86.0	6.448	0.704	1763.907	.035%	99.840%
87.0	6.441	0.705	1764.612	.035%	99.880%
88.0	6.427	0.705	1765.317	.035%	99.920%
89.0	6.420	0.704	1766.021	.035%	99.960%
90.0	6.420	0.704	1766.725	.035%	100.000%

Zonal flux distribution table

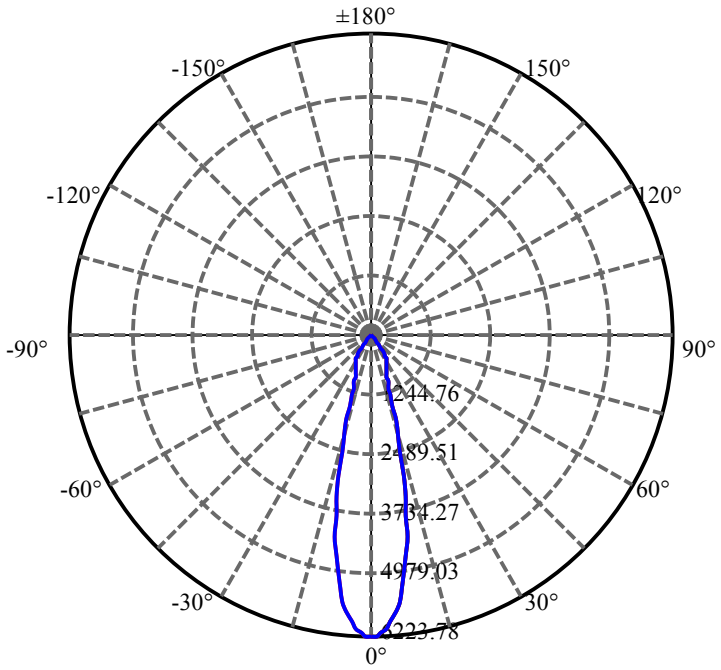
ZONAL LUMEN SUMMARY

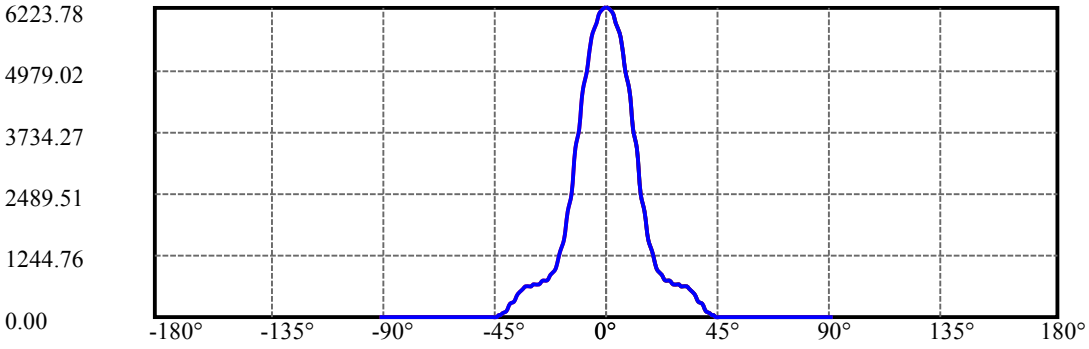
Zone	Lumens	%Lamp	%Fixt
0-30	1452.17	71.46%	82.20%
0-40	1717.23	84.51%	97.20%
0-60	1745.42	85.90%	98.79%
0-90	1766.02	86.91%	99.96%
0-120	1766.02	86.91%	99.96%
0-180	1766.73	86.95%	100.00%
60-90	21.34	1.05%	1.21%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-28.88	1413.38	69.56%	80.00%

ZONAL LUMEN SUMMARY

0-10	500.37
10-20	607.73
20-30	344.07
30-40	265.07
40-50	20.52
50-60	7.66
60-70	7.19
70-80	7.07
80-90	6.35
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):

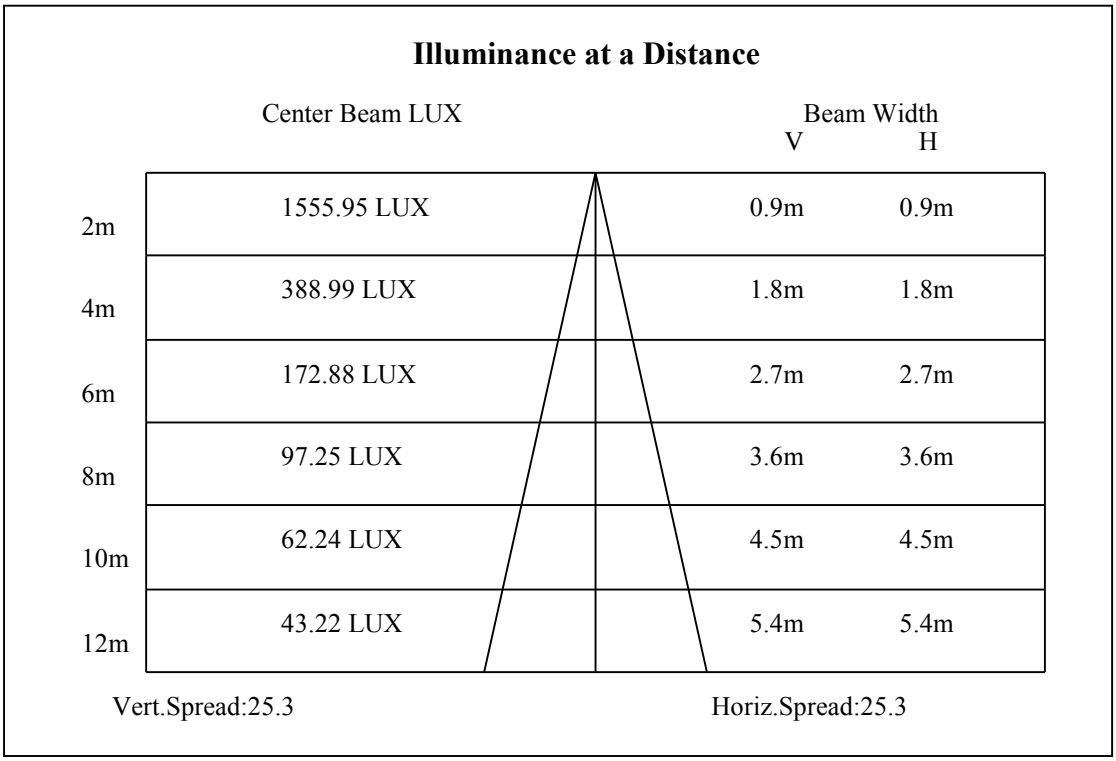
C0/C180:

C90/C270:

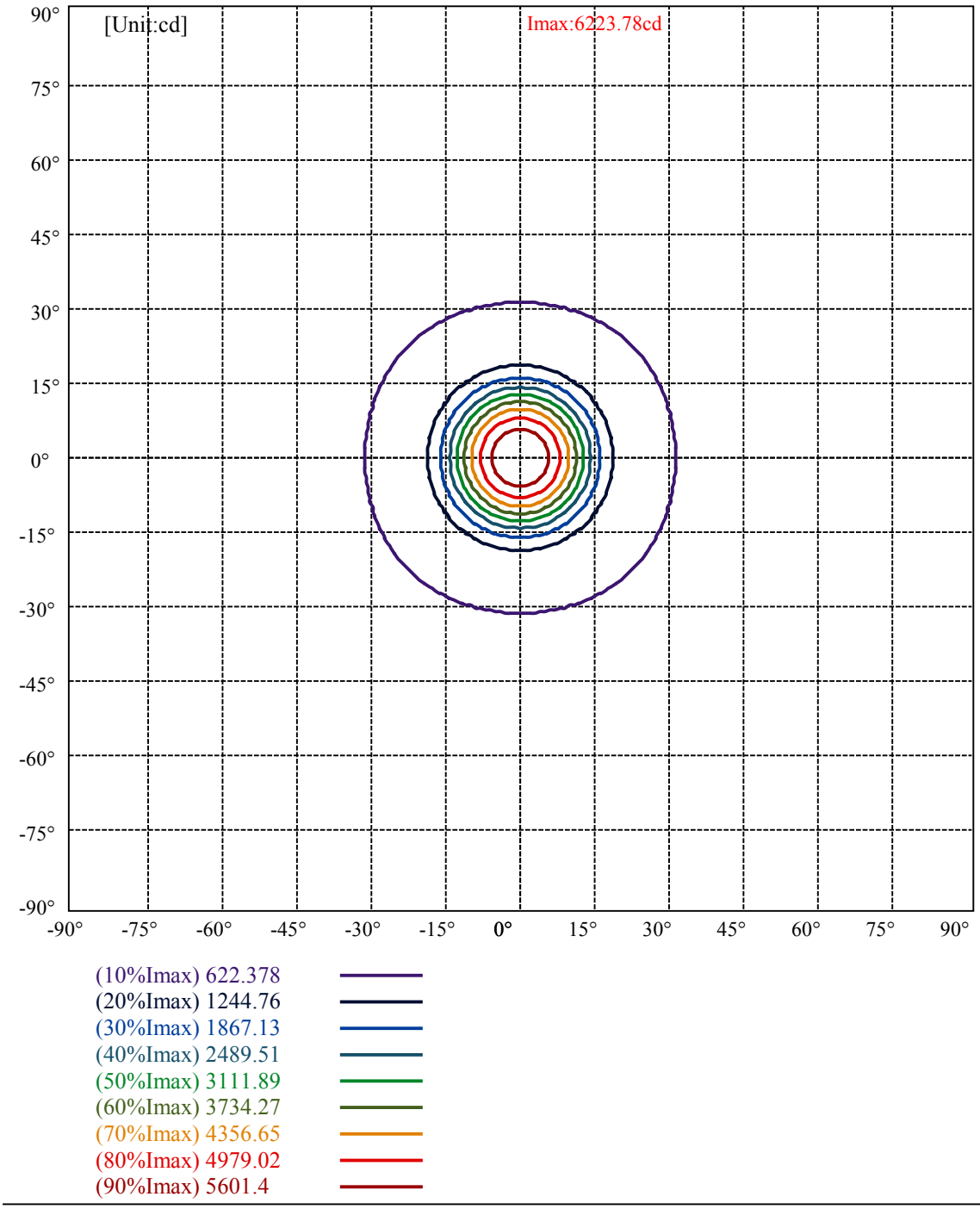
Field angle(10%Imax):C0/180Left:31.1 Right:31.1
:C90/270Left:31.1 Right:31.1

Beam Angle(50%Imax):C0/180Left:12.6 Right:12.6
:C90/270Left:12.6 Right:12.6

Lux distance Curve



ISO-Intensity(V-H)

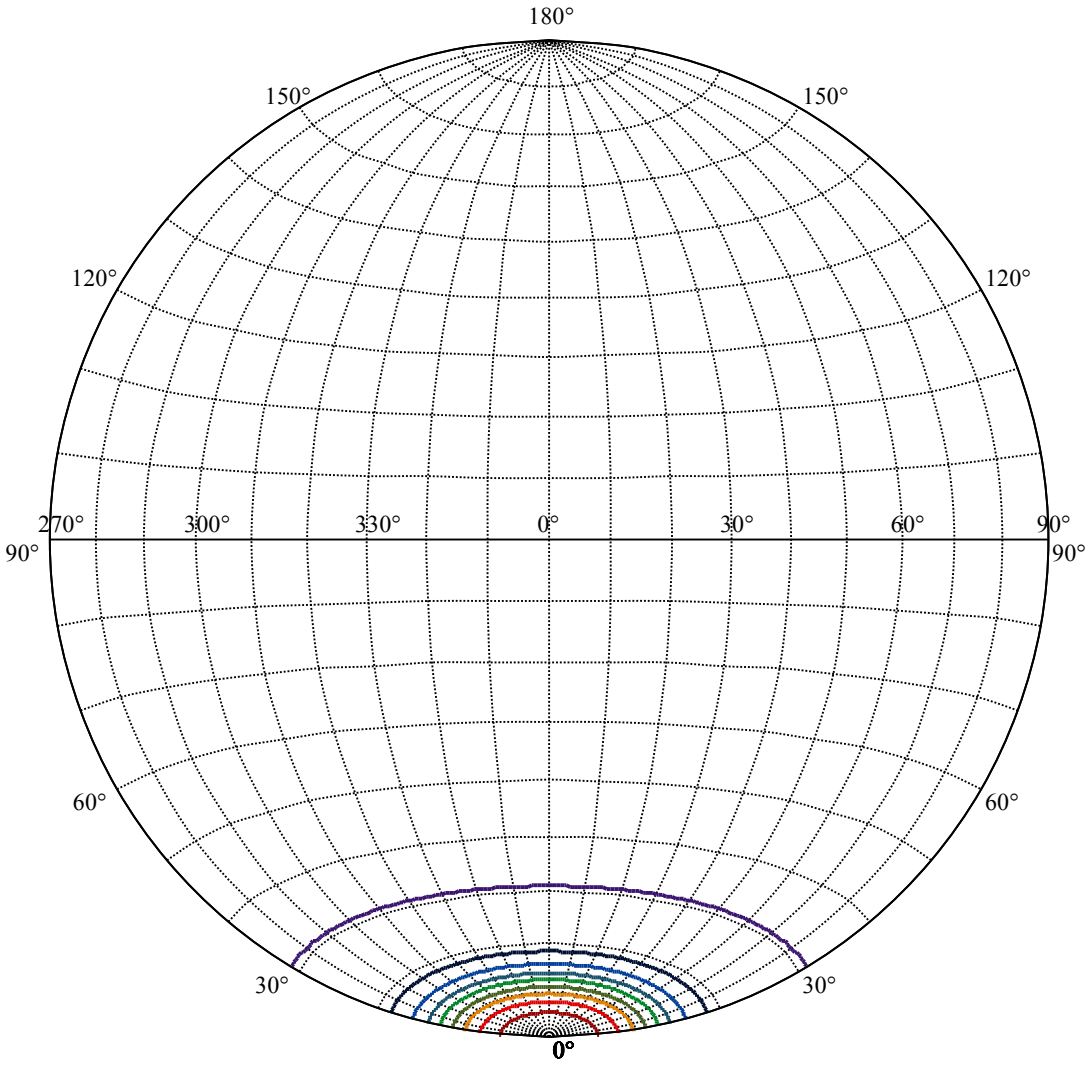


Equipment: GMS1980
Temperature(°C): 10.0

Date: 2019/4/12
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

ISO candela diagram on circular web



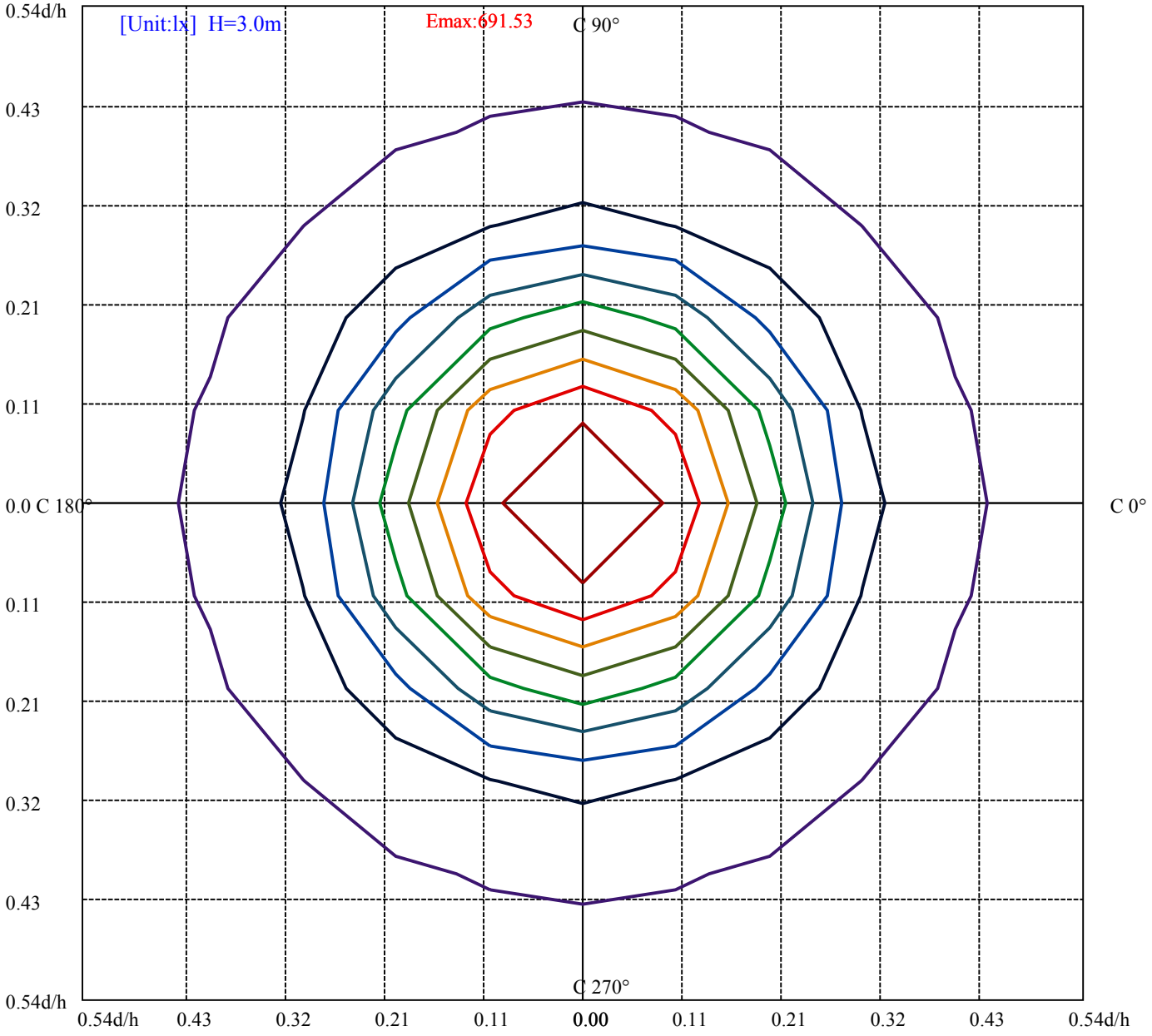
House [Unit:cd] Road

Imax:6223.78

(10%Imax) 622.378
(20%Imax) 1244.76
(30%Imax) 1867.13
(40%Imax) 2489.51
(50%Imax) 3111.89
(60%Imax) 3734.27
(70%Imax) 4356.65
(80%Imax) 4979.02
(90%Imax) 5601.4

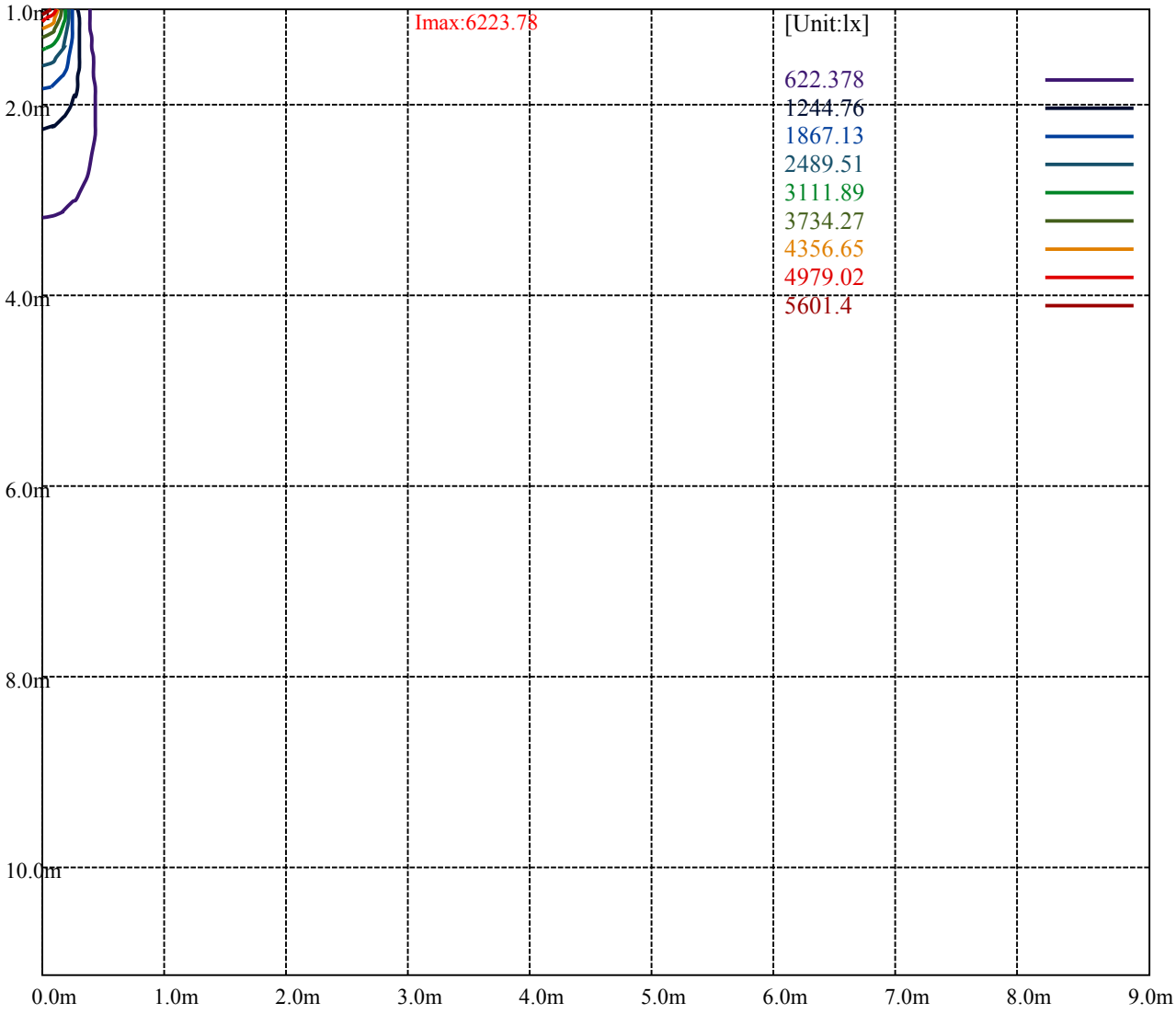
Equipment: GMS1980 Date: 2019/4/12 Operator: NT07
Temperature(°C): 10.0 Humidity(%): 65.0% Distance(m): 7.50

ISO illuminance diagram



Equipment: GMS1980 Date: 2019/4/12 Operator: NT07
Temperature(°C): 10.0 Humidity(%): 65.0% Distance(m): 7.50

Space ISO Lux diagram



Equipment: GMS1980
Temperature(°C): 10.0

Date: 2019/4/12
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Luminance Limitting Curve(no luminous side)

Luminance Table

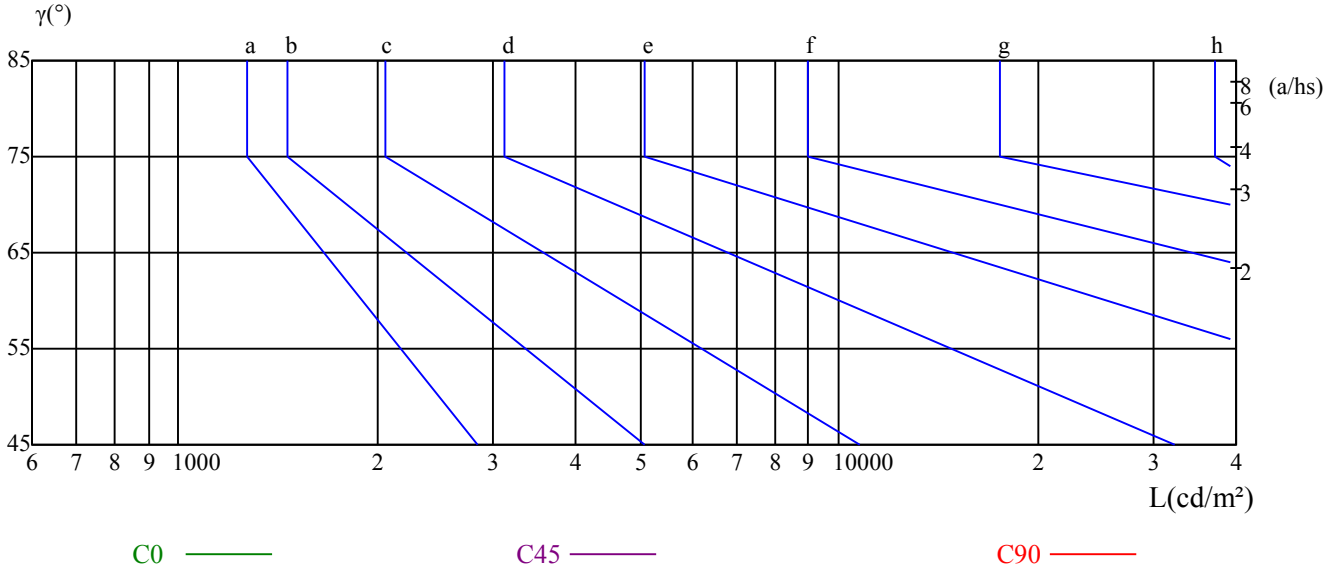
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

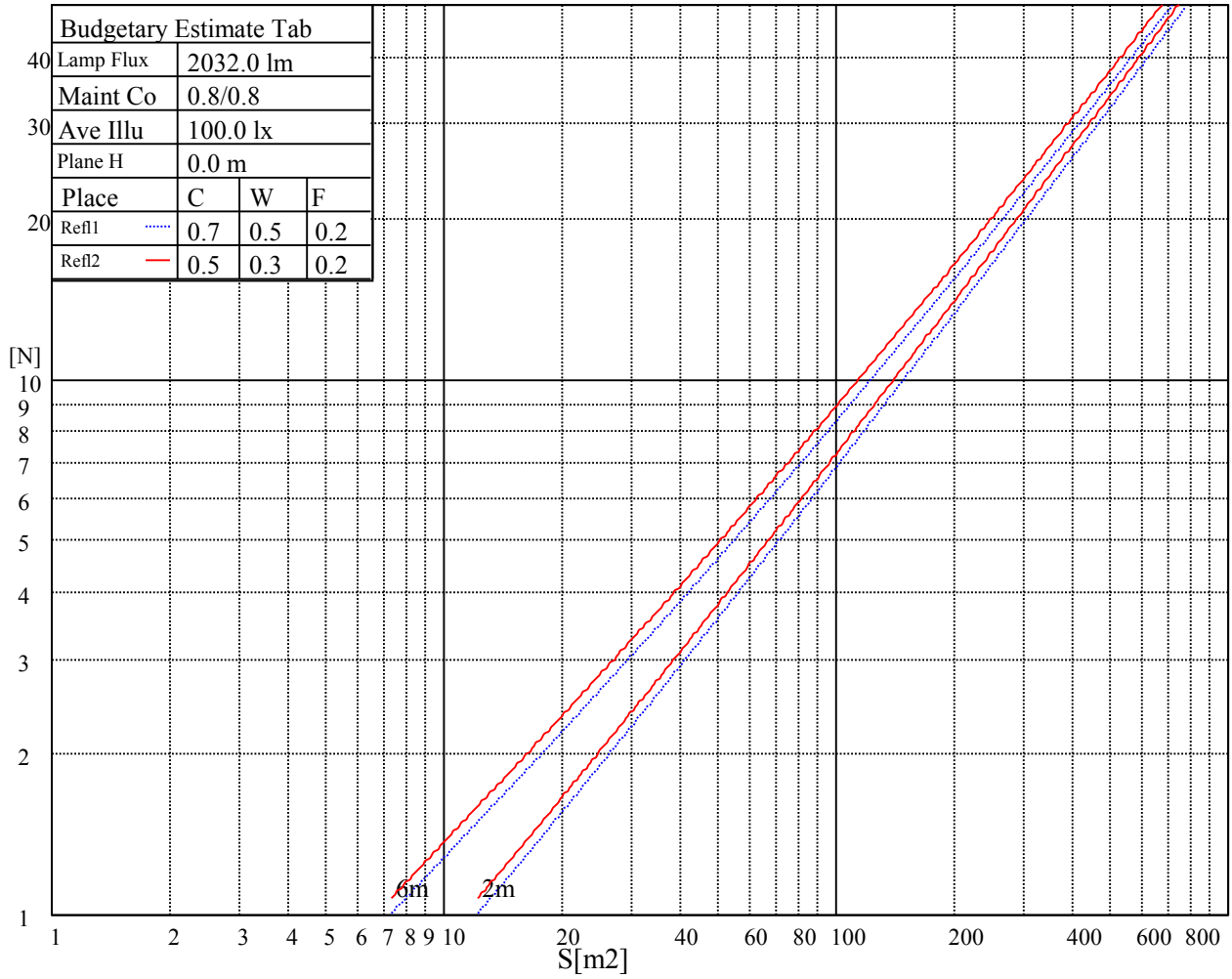
Glare Table

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

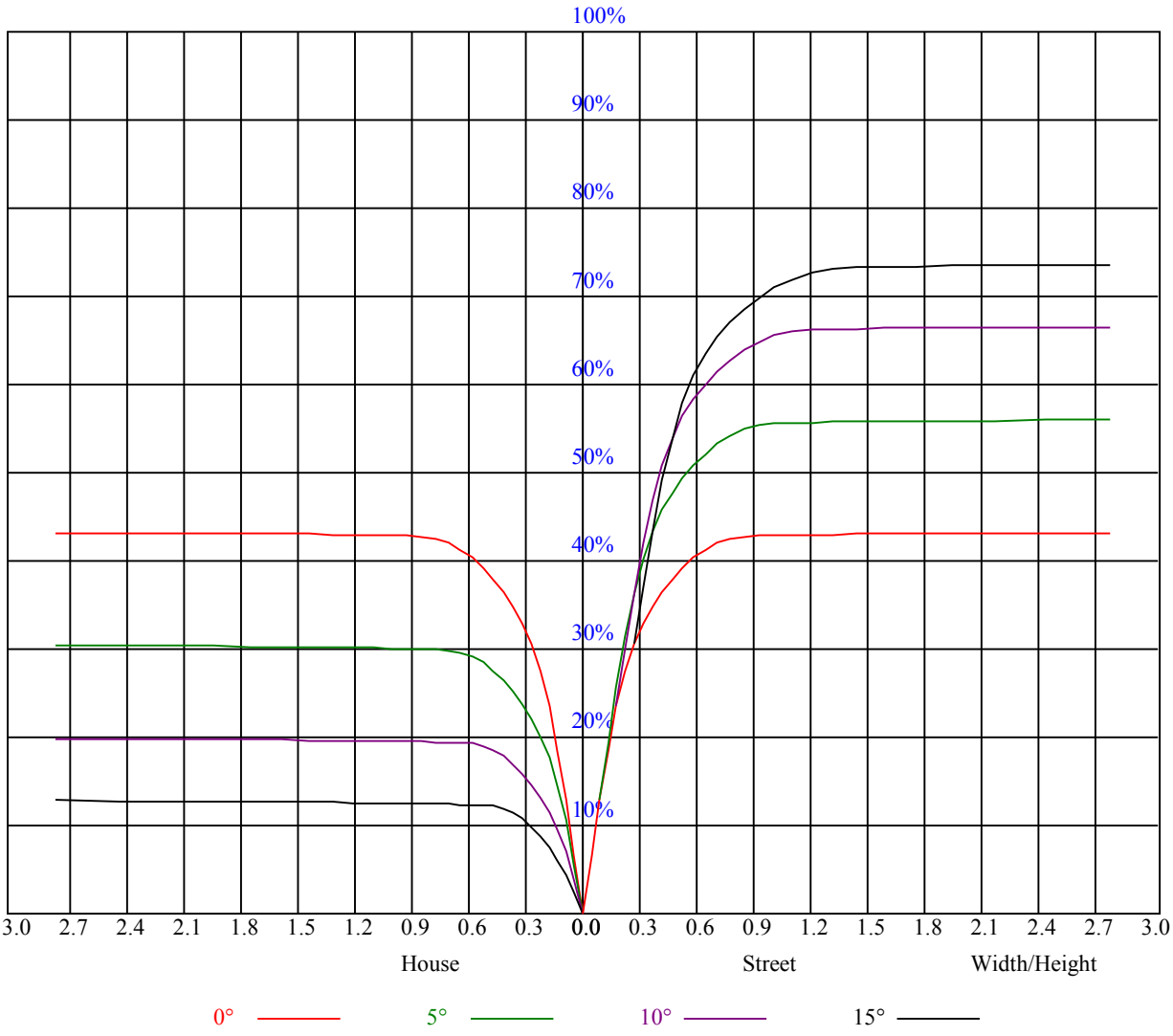


Equipment: GMS1980 Date: 2019/4/12 Operator: NT07
Temperature(°C): 10.0 Humidity(%): 65.0% Distance(m): 7.50

Utilization factor table for indoor luminaire

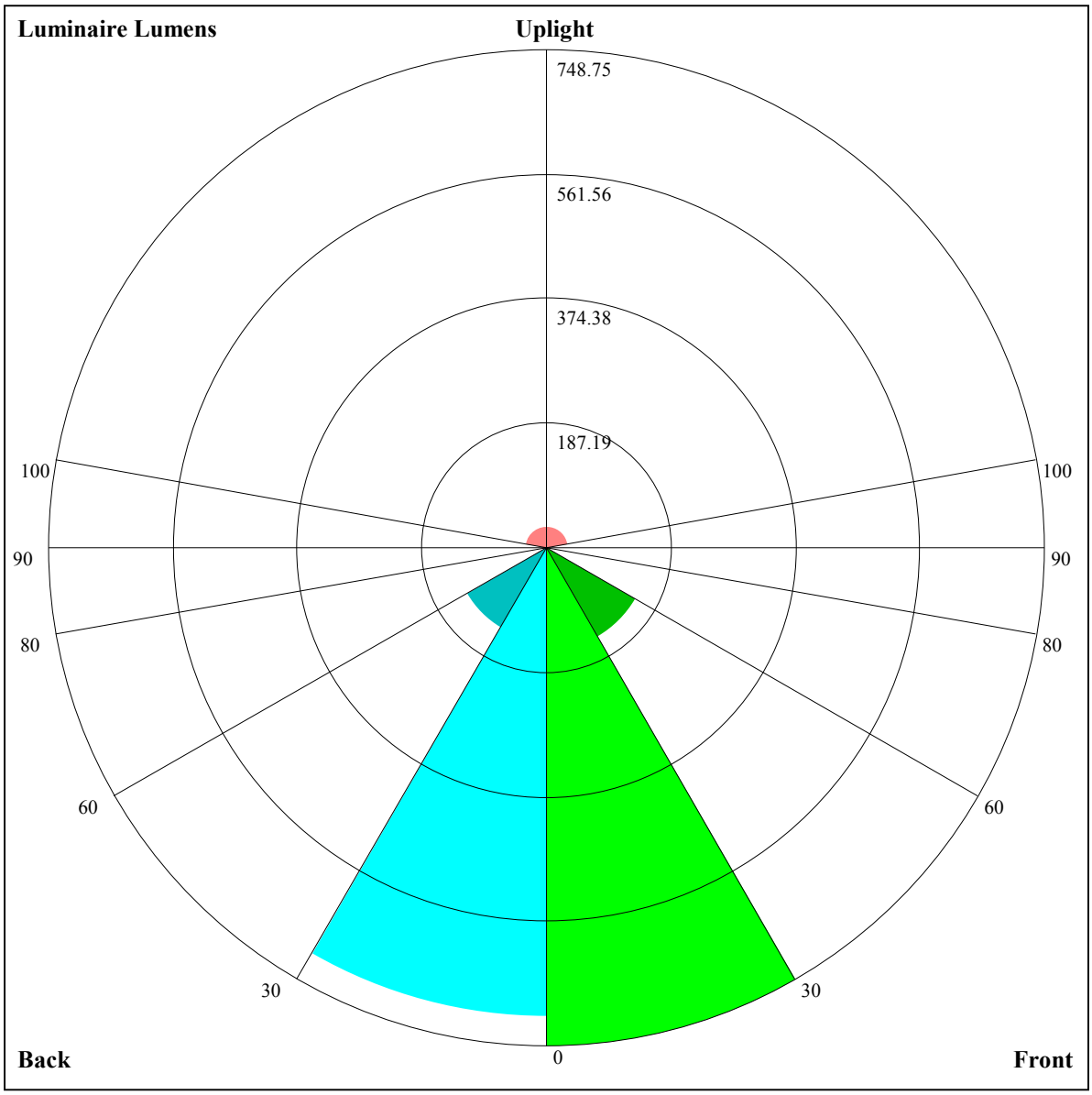
RHOCC	80			70			50			30			10			0
RHOW	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR	COEFFCIENTS OF UTILIZATION RHOFC=20 CU															
0	1.04	1.04	1.04	1.01	1.01	1.01	0.97	0.97	0.97	0.92	0.92	0.92	0.89	0.89	0.89	0.87
1	0.97	0.95	0.94	0.95	0.94	0.92	0.92	0.90	0.89	0.89	0.88	0.87	0.86	0.85	0.84	0.83
2	0.92	0.89	0.86	0.90	0.88	0.85	0.88	0.85	0.83	0.85	0.83	0.82	0.83	0.81	0.80	0.79
3	0.87	0.83	0.80	0.86	0.82	0.80	0.84	0.81	0.78	0.82	0.79	0.77	0.80	0.78	0.76	0.75
4	0.83	0.79	0.76	0.82	0.78	0.75	0.80	0.77	0.74	0.78	0.76	0.73	0.77	0.75	0.73	0.72
5	0.79	0.75	0.72	0.78	0.74	0.71	0.77	0.73	0.71	0.75	0.72	0.70	0.74	0.72	0.69	0.68
6	0.75	0.71	0.68	0.75	0.71	0.68	0.74	0.70	0.67	0.72	0.69	0.67	0.71	0.69	0.67	0.66
7	0.72	0.68	0.65	0.72	0.68	0.65	0.71	0.67	0.65	0.70	0.67	0.64	0.69	0.66	0.64	0.63
8	0.69	0.65	0.62	0.69	0.65	0.62	0.68	0.65	0.62	0.67	0.64	0.62	0.67	0.64	0.61	0.60
9	0.67	0.63	0.60	0.66	0.62	0.60	0.66	0.62	0.60	0.65	0.62	0.59	0.64	0.61	0.59	0.58
10	0.64	0.60	0.58	0.64	0.60	0.58	0.63	0.60	0.57	0.63	0.60	0.57	0.62	0.59	0.57	0.56

Coefficient Utilization Curve



Equipment: GMS1980	Date: 2019/4/12	Operator: NT07
Temperature(°C): 10.0	Humidity(%): 65.0%	Distance(m): 7.50

LCS Graph



Luminaire Lumens:

FL=748.75,FM=153.47,FH=7.15,FVH=3.53

BL=705.64,BM=139.92,BH=7.1,BVH=3.52

UL=7,UH=33.33

BUG Rating:B2-U2-G0

Equipment: GMS1980	Date: 2019/4/12	Operator: NT07
Temperature(°C): 10.0	Humidity(%): 65.0%	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	6203.25	6219.00	6194.81	6143.63	6061.50	5904.00	5736.94	5532.75	5263.31
45.0	6221.81	6242.63	6229.13	6188.06	6116.63	5979.38	5825.81	5631.19	5397.75
90.0	6246.00	6256.69	6232.50	6170.63	6078.94	5932.69	5759.44	5513.63	5222.81
135.0	6224.06	6230.81	6192.56	6122.25	6019.88	5839.88	5648.63	5422.50	5133.38
180.0	6203.25	6153.19	6069.94	5911.31	5743.13	5509.69	5258.81	4933.69	4611.94
225.0	6221.81	6171.19	6070.50	5927.06	5762.81	5526.56	5275.69	4961.81	4603.50
270.0	6246.00	6206.06	6111.00	5995.13	5841.00	5590.13	5347.69	5077.13	4733.44
315.0	6224.06	6184.69	6089.63	5976.00	5824.13	5604.75	5367.94	5070.94	4731.75
360.0	6203.25	6219.00	6194.81	6143.63	6061.50	5904.00	5736.94	5532.75	5263.31

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	4953.38	4638.94	4243.50	3861.00	3450.94	2928.38	2533.50	2175.19	1789.31
45.0	5060.81	4742.44	4333.50	3936.94	3468.38	3047.63	2597.06	2196.00	1888.31
90.0	4929.19	4553.44	4133.25	3731.63	3309.75	2785.50	2394.56	2050.31	1721.25
135.0	4802.63	4466.81	4039.31	3628.69	3150.00	2678.63	2295.56	1924.88	1619.44
180.0	4214.25	3778.88	3366.00	2887.88	2485.13	2083.50	1749.94	1507.50	1308.38
225.0	4244.06	3800.81	3325.50	2897.44	2487.38	2043.56	1755.56	1517.06	1297.69
270.0	4341.38	3960.00	3497.63	3076.31	2612.81	2193.75	1877.63	1582.31	1344.38
315.0	4389.75	3968.44	3462.19	3094.31	2679.75	2166.75	1894.50	1626.75	1378.69
360.0	4953.38	4638.94	4243.50	3861.00	3450.94	2928.38	2533.50	2175.19	1789.31

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1541.81	1341.00	1145.25	1023.19	929.25	849.94	791.44	752.06	720.00
45.0	1590.19	1371.94	1171.13	1046.81	947.25	860.06	797.63	754.31	722.25
90.0	1452.94	1211.06	1095.36	971.66	889.03	817.93	770.18	730.86	701.49
135.0	1391.63	1206.56	1045.13	946.13	872.44	806.63	758.25	727.31	699.75
180.0	1111.22	994.67	905.74	824.23	774.90	738.23	708.13	685.63	669.60
225.0	1110.60	1012.39	914.29	838.46	787.39	745.88	717.98	694.74	675.00
270.0	1179.56	1053.00	933.19	860.63	806.63	758.81	725.06	703.13	683.44
315.0	1117.46	1056.49	944.83	860.63	804.32	760.50	725.29	699.58	682.37
360.0	1541.81	1341.00	1145.25	1023.19	929.25	849.94	791.44	752.06	720.00

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	696.38	680.06	665.44	654.19	641.81	629.44	619.31	586.69	531.00
45.0	693.56	676.69	662.06	646.88	633.38	621.00	610.88	583.88	528.75
90.0	682.48	666.73	650.81	638.61	626.85	613.24	600.24	567.62	517.84
135.0	679.50	666.00	651.94	639.00	626.06	614.81	601.88	559.69	498.38
180.0	654.58	642.26	628.82	616.28	605.48	574.93	518.46	461.03	397.63
225.0	663.69	651.26	636.47	625.73	614.76	575.27	525.04	462.21	379.97
270.0	667.69	655.31	642.38	631.13	619.88	595.13	552.94	486.56	413.44
315.0	666.96	655.14	642.88	630.56	620.61	604.18	557.21	502.14	438.81
360.0	696.38	680.06	665.44	654.19	641.81	629.44	619.31	586.69	531.00

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	473.06	407.25	319.50	284.06	178.37	112.73	57.71	28.46	19.74
45.0	463.50	401.06	326.81	284.63	189.11	124.20	61.82	31.39	21.49
90.0	444.71	381.26	316.41	234.79	170.49	110.25	55.29	24.86	19.69
135.0	441.00	375.75	286.88	246.32	154.91	89.78	40.44	20.76	18.34
180.0	314.78	248.51	183.94	111.09	60.64	28.13	19.46	17.04	14.57
225.0	311.29	242.72	163.63	105.08	58.16	24.98	21.15	18.68	15.69
270.0	347.06	286.88	198.84	128.19	74.03	41.57	20.87	18.84	16.76
315.0	353.81	283.73	215.78	137.53	83.36	41.46	21.26	18.34	16.20
360.0	473.06	407.25	319.50	284.06	178.37	112.73	57.71	28.46	19.74

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	17.61	15.36	12.88	11.76	10.24	9.84	9.56	9.34	9.00
45.0	18.96	16.71	14.29	12.54	10.97	10.63	10.29	10.01	9.73
90.0	17.61	15.36	12.88	11.31	10.29	9.79	9.51	9.23	9.00
135.0	15.86	13.61	11.64	10.29	9.68	9.39	9.11	8.94	8.72
180.0	12.15	11.03	10.07	9.79	9.51	9.23	9.00	8.78	8.61
225.0	13.44	12.26	10.80	10.52	10.24	9.84	9.56	9.34	9.06
270.0	13.39	11.87	10.69	10.01	9.68	9.45	9.11	8.89	8.72
315.0	13.44	11.87	10.35	9.73	9.45	9.17	8.89	8.66	8.49
360.0	17.61	15.36	12.88	11.76	10.24	9.84	9.56	9.34	9.00

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	8.78	8.61	8.38	8.21	8.10	7.93	7.76	7.65	7.54
45.0	9.45	9.23	8.94	8.72	8.49	8.38	8.21	8.04	7.93
90.0	8.78	8.61	8.38	8.21	8.04	7.88	7.76	7.65	7.54
135.0	8.49	8.33	8.10	7.99	7.82	7.71	7.59	7.54	7.43
180.0	8.33	8.21	8.04	7.93	7.76	7.65	7.54	7.43	7.37
225.0	8.83	8.66	8.44	8.27	8.10	7.93	7.82	7.71	7.54
270.0	8.49	8.33	8.16	7.93	7.82	7.71	7.59	7.48	7.43
315.0	8.33	8.16	7.99	7.82	7.71	7.59	7.48	7.37	7.31
360.0	8.78	8.61	8.38	8.21	8.10	7.93	7.76	7.65	7.54

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	7.48	7.37	7.26	7.20	7.09	7.03	6.98	6.92	6.86
45.0	7.82	7.65	7.54	7.43	7.37	7.26	7.20	7.09	7.03
90.0	7.43	7.37	7.26	7.14	7.09	6.98	6.98	6.92	6.86
135.0	7.31	7.26	7.14	7.09	7.03	6.98	6.92	6.86	6.81
180.0	7.26	7.20	7.09	7.03	6.98	6.92	6.86	6.81	6.75
225.0	7.48	7.37	7.26	7.14	7.09	7.03	6.98	6.92	6.86
270.0	7.31	7.20	7.14	7.03	6.98	6.92	6.86	6.81	6.81
315.0	7.20	7.14	7.03	6.98	6.98	6.86	6.81	6.75	6.69
360.0	7.48	7.37	7.26	7.20	7.09	7.03	6.98	6.92	6.86

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	6.81	6.81	6.75	6.69	6.64	6.64	6.64	6.58	6.58
45.0	6.92	6.92	6.86	6.81	6.75	6.69	6.69	6.64	6.64
90.0	6.81	6.69	6.69	6.64	6.64	6.58	6.58	6.53	6.53
135.0	6.75	6.69	6.69	6.64	6.58	6.58	6.58	6.53	6.53
180.0	6.75	6.69	6.64	6.64	6.64	6.58	6.58	6.58	6.53
225.0	6.81	6.75	6.69	6.69	6.58	6.64	6.58	6.53	6.53
270.0	6.75	6.69	6.64	6.64	6.58	6.58	6.58	6.53	6.53
315.0	6.69	6.64	6.64	6.58	6.58	6.53	6.53	6.47	6.53
360.0	6.81	6.81	6.75	6.69	6.64	6.64	6.64	6.58	6.58

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	6.53	6.53	6.53	6.53	6.47	6.47	6.53	6.47	6.41
45.0	6.58	6.58	6.53	6.53	6.47	6.53	6.47	6.41	6.41
90.0	6.53	6.47	6.47	6.47	6.47	6.47	6.41	6.41	6.41
135.0	6.53	6.47	6.47	6.47	6.41	6.47	6.41	6.47	6.41
180.0	6.53	6.53	6.47	6.47	6.41	6.41	6.47	6.41	6.41
225.0	6.53	6.47	6.53	6.47	6.47	6.41	6.41	6.41	6.47
270.0	6.47	6.47	6.47	6.47	6.41	6.41	6.41	6.41	6.41
315.0	6.47	6.47	6.41	6.47	6.41	6.41	6.41	6.41	6.41
360.0	6.53	6.53	6.53	6.53	6.47	6.47	6.53	6.47	6.41

Intensity data(cd)

C/γ(°)	90.0
0.0	6.47
45.0	6.41
90.0	6.41
135.0	6.41
180.0	6.41
225.0	6.41
270.0	6.41
315.0	6.41
360.0	6.47