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NATA

Client:
LumCAT: 2-1316-E
Luminaire: 99.02.73.171

Report No: nt0100	Voltage(V): 34.1100
Test No: GC2019122621	Current(A): 0.2970
LampCAT: LUMINUS CXM-9-AC40	Power (W): 10.1300
Lamp flux(lm): 1106.0	PF: 1.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 0	Width(mm): 0
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 989.74, Efficiency(%): 89.49% , Luminous Efficacy(lm/W): 97.70
Central intensity(cd): 7201.547, Maximum intensity(cd): 7201.547
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=16.0
[C90/270]Total=16.0
Field angle(10%Imax): [C0/180]Total=31.4
[C90/270]Total=31.4
Maximum s/h(1/2): C0_180=0.27 C90_270=0.27
Maximum s/h(1/4): C0_180=0.27 C90_270=0.27
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 89.49%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.455%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	7201.547	0.000	0	.000%	.000%
1.0	7151.133	6.867	6.867	.621%	.694%
2.0	6998.695	20.309	27.177	1.836%	2.746%
3.0	6726.727	32.827	60.003	2.968%	6.063%
4.0	6323.203	43.682	103.686	3.950%	10.476%
5.0	5796.844	52.140	155.825	4.714%	15.744%
6.0	5064.328	57.078	212.904	5.161%	21.511%
7.0	4287.867	58.049	270.953	5.249%	27.376%
8.0	3574.828	56.272	327.225	5.088%	33.062%
9.0	2834.156	51.941	379.166	4.696%	38.309%
10.0	2195.438	45.516	424.682	4.115%	42.908%
11.0	1715.330	39.077	463.758	3.533%	46.856%
12.0	1399.268	34.047	497.805	3.078%	50.296%
13.0	1093.690	29.585	527.391	2.675%	53.286%
14.0	936.865	25.991	553.382	2.350%	55.912%
15.0	799.334	23.835	577.217	2.155%	58.320%
16.0	693.647	21.876	599.093	1.978%	60.530%
17.0	616.001	20.395	619.488	1.844%	62.591%
18.0	558.366	19.363	638.851	1.751%	64.547%
19.0	516.818	18.706	657.557	1.691%	66.437%
20.0	485.543	18.346	675.903	1.659%	68.291%
21.0	460.048	18.157	694.06	1.642%	70.125%
22.0	441.387	18.115	712.175	1.638%	71.955%
23.0	426.459	18.210	730.384	1.646%	73.795%
24.0	413.712	18.369	748.753	1.661%	75.651%
25.0	403.819	18.589	767.342	1.681%	77.529%
26.0	396.408	18.889	786.232	1.708%	79.438%
27.0	388.568	19.205	805.436	1.736%	81.378%
28.0	381.199	19.489	824.925	1.762%	83.347%
29.0	371.580	19.695	844.62	1.781%	85.337%
30.0	355.029	19.618	864.238	1.774%	87.319%
31.0	325.533	18.939	883.177	1.712%	89.233%
32.0	288.281	17.585	900.763	1.590%	91.010%
33.0	242.796	15.646	916.408	1.415%	92.590%
34.0	200.749	13.423	929.831	1.214%	93.947%
35.0	150.483	10.908	940.739	.986%	95.049%
36.0	110.123	8.298	949.037	.750%	95.887%
37.0	70.024	5.875	954.912	.531%	96.481%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	41.941	3.737	958.65	.338%	96.858%
39.0	23.963	2.249	960.899	.203%	97.086%
40.0	15.089	1.362	962.261	.123%	97.223%
41.0	12.059	0.967	963.228	.087%	97.321%
42.0	9.914	0.798	964.026	.072%	97.402%
43.0	8.747	0.691	964.717	.063%	97.471%
44.0	8.395	0.647	965.364	.058%	97.537%
45.0	7.966	0.629	965.993	.057%	97.600%
46.0	7.678	0.612	966.605	.055%	97.662%
47.0	7.411	0.600	967.205	.054%	97.723%
48.0	7.179	0.590	967.795	.053%	97.782%
49.0	6.954	0.580	968.375	.052%	97.841%
50.0	6.743	0.571	968.946	.052%	97.899%
51.0	6.574	0.563	969.51	.051%	97.956%
52.0	6.391	0.556	970.066	.050%	98.012%
53.0	6.251	0.550	970.616	.050%	98.067%
54.0	6.145	0.546	971.162	.049%	98.123%
55.0	6.047	0.544	971.707	.049%	98.178%
56.0	5.984	0.544	972.25	.049%	98.232%
57.0	5.941	0.545	972.796	.049%	98.288%
58.0	5.913	0.548	973.344	.050%	98.343%
59.0	5.892	0.552	973.896	.050%	98.399%
60.0	5.885	0.556	974.452	.050%	98.455%
61.0	5.857	0.560	975.012	.051%	98.512%
62.0	5.843	0.564	975.576	.051%	98.569%
63.0	5.794	0.566	976.142	.051%	98.626%
64.0	5.667	0.562	976.705	.051%	98.683%
65.0	5.541	0.555	977.259	.050%	98.739%
66.0	5.379	0.545	977.804	.049%	98.794%
67.0	5.203	0.532	978.336	.048%	98.847%
68.0	5.084	0.521	978.857	.047%	98.900%
69.0	4.957	0.512	979.369	.046%	98.952%
70.0	4.887	0.506	979.875	.046%	99.003%
71.0	4.838	0.503	980.378	.045%	99.054%
72.0	4.802	0.501	980.879	.045%	99.104%
73.0	4.760	0.500	981.379	.045%	99.155%
74.0	4.725	0.499	981.878	.045%	99.205%
75.0	4.704	0.498	982.376	.045%	99.256%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	4.676	0.498	982.874	.045%	99.306%
77.0	4.655	0.497	983.371	.045%	99.356%
78.0	4.641	0.498	983.869	.045%	99.406%
79.0	4.613	0.497	984.366	.045%	99.457%
80.0	4.598	0.497	984.862	.045%	99.507%
81.0	4.563	0.495	985.358	.045%	99.557%
82.0	4.556	0.495	985.852	.045%	99.607%
83.0	4.521	0.493	986.346	.045%	99.657%
84.0	4.507	0.492	986.838	.044%	99.706%
85.0	4.472	0.490	987.328	.044%	99.756%
86.0	4.451	0.488	987.815	.044%	99.805%
87.0	4.437	0.486	988.302	.044%	99.854%
88.0	4.388	0.483	988.785	.044%	99.903%
89.0	4.373	0.480	989.265	.043%	99.952%
90.0	4.359	0.479	989.744	.043%	100.000%

Zonal flux distribution table

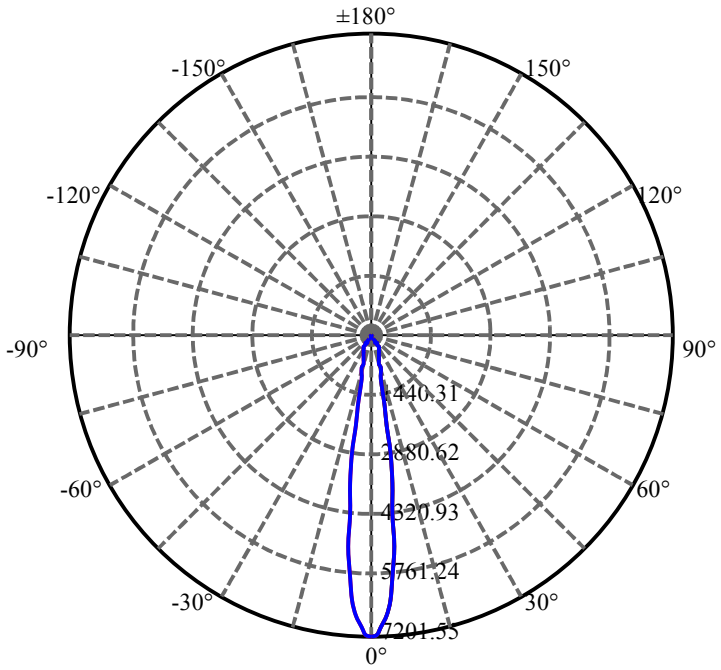
ZONAL LUMEN SUMMARY

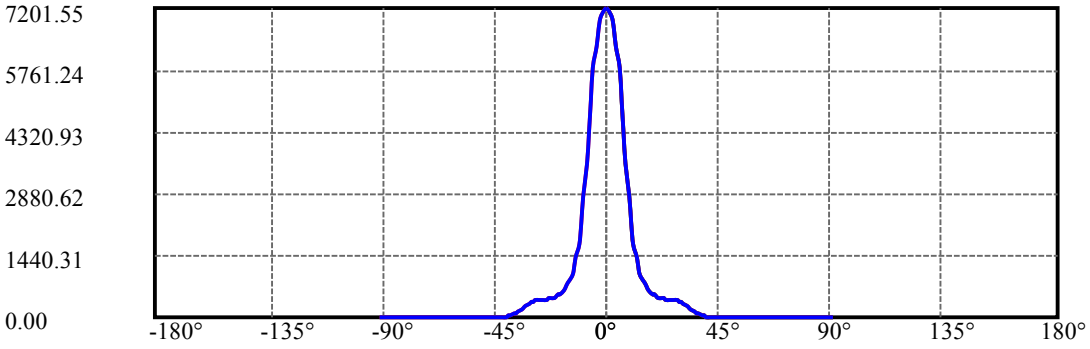
Zone	Lumens	%Lamp	%Fixt
0-30	864.24	78.14%	87.32%
0-40	962.26	87.00%	97.22%
0-60	974.45	88.11%	98.45%
0-90	989.27	89.45%	99.95%
0-120	989.27	89.45%	99.95%
0-180	989.74	89.49%	100.00%
60-90	15.37	1.39%	1.55%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-26.29	791.80	71.59%	80.00%

ZONAL LUMEN SUMMARY

0-10	424.68
10-20	251.22
20-30	188.34
30-40	98.02
40-50	6.69
50-60	5.51
60-70	5.42
70-80	4.99
80-90	4.40
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):

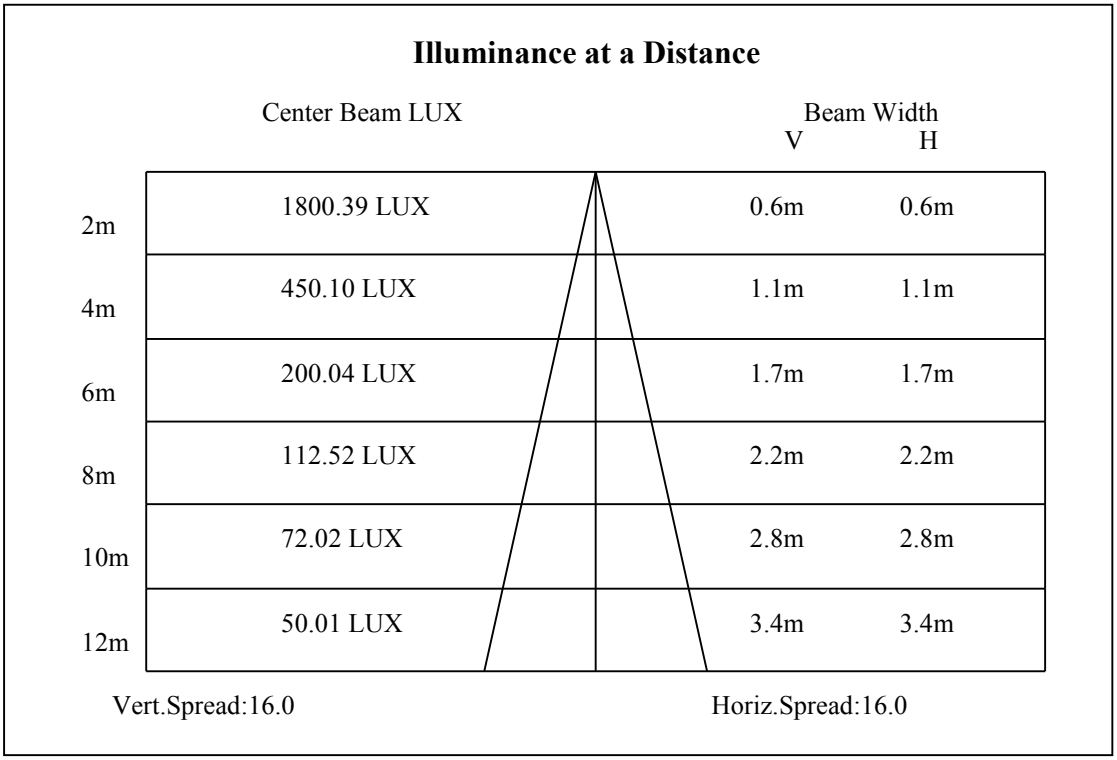
C0/C180:

C90/C270:

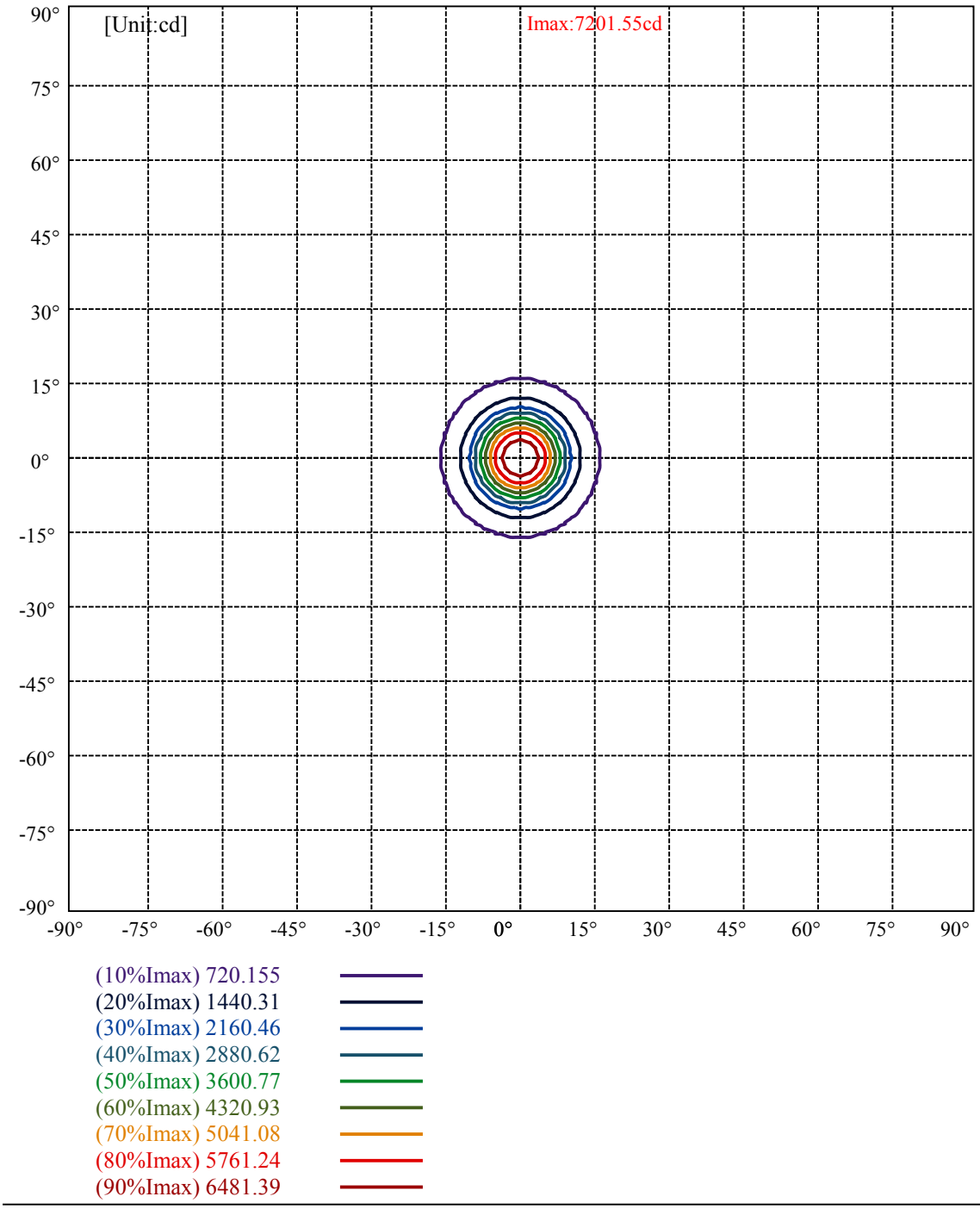
Field angle(10%Imax):C0/180Left:15.7 Right:15.7
:C90/270Left:15.7 Right:15.7

Beam Angle(50%Imax):C0/180Left:8.0 Right:8.0
:C90/270Left:8.0 Right:8.0

Lux distance Curve



ISO-Intensity(V-H)

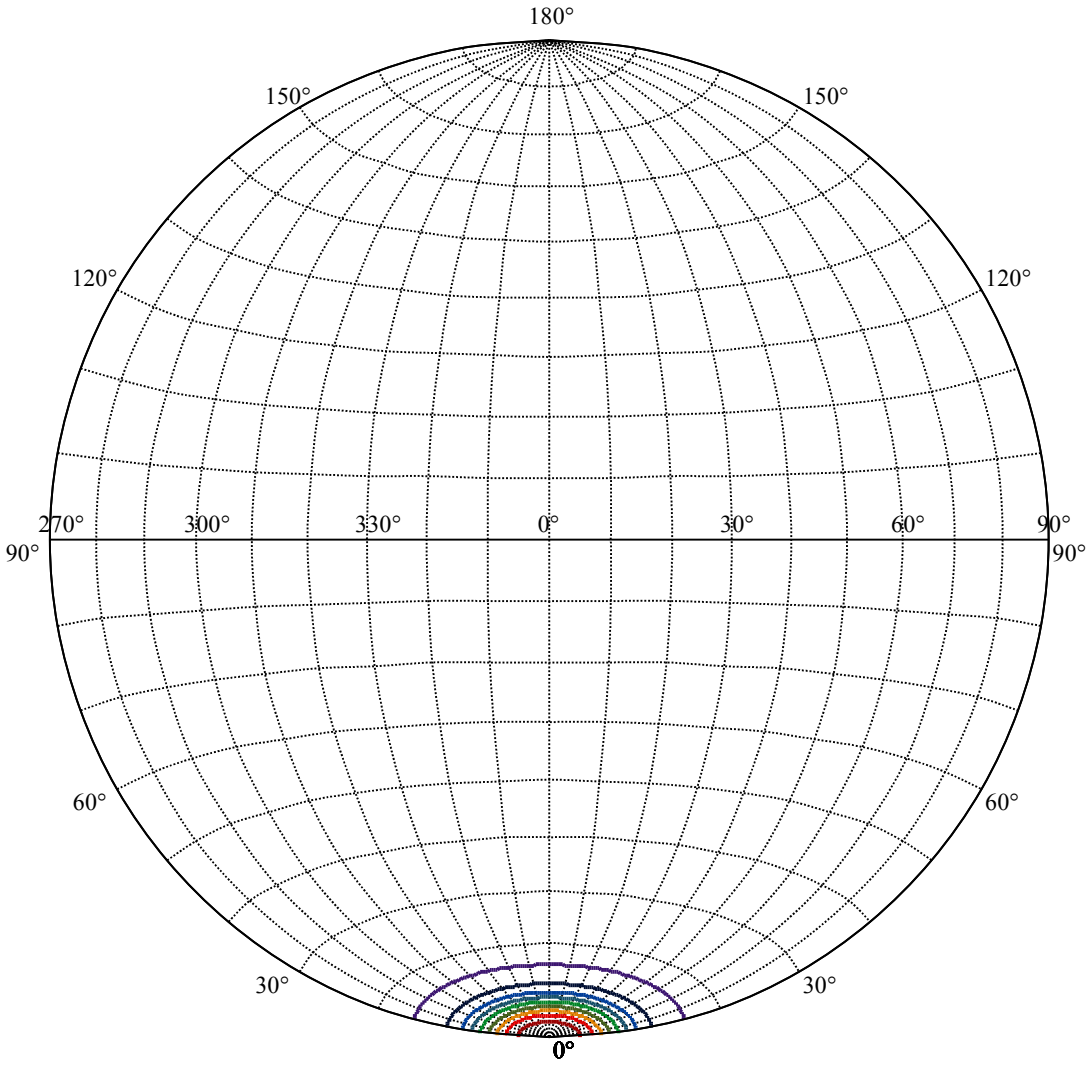


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/12/26
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

ISO candela diagram on circular web



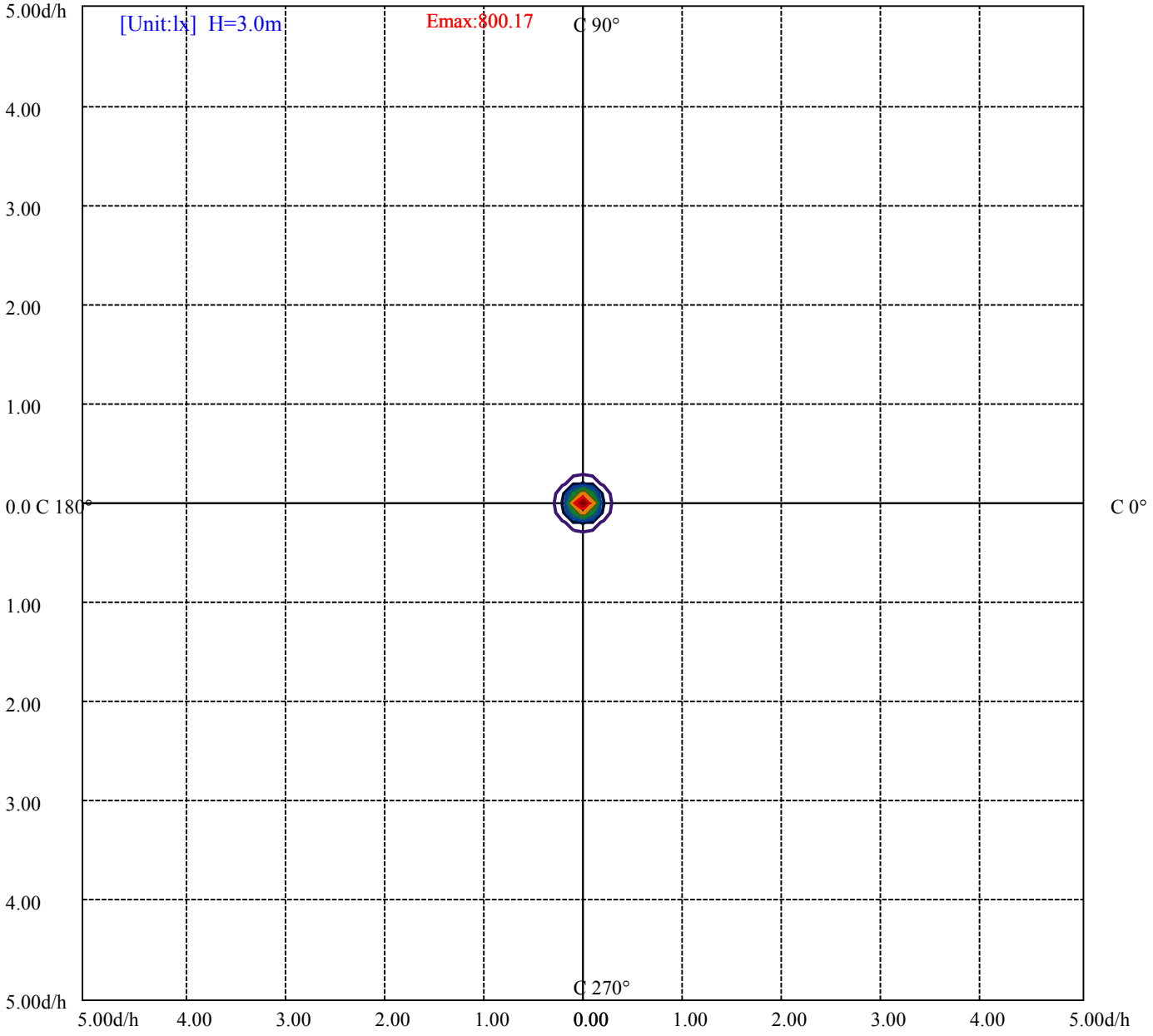
House [Unit:cd] Road

Imax:7201.55

(10%Imax) 720.155
(20%Imax) 1440.31
(30%Imax) 2160.46
(40%Imax) 2880.62
(50%Imax) 3600.77
(60%Imax) 4320.93
(70%Imax) 5041.08
(80%Imax) 5761.24
(90%Imax) 6481.39

Equipment: GMS1980 Date: 2019/12/26 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

ISO illuminance diagram

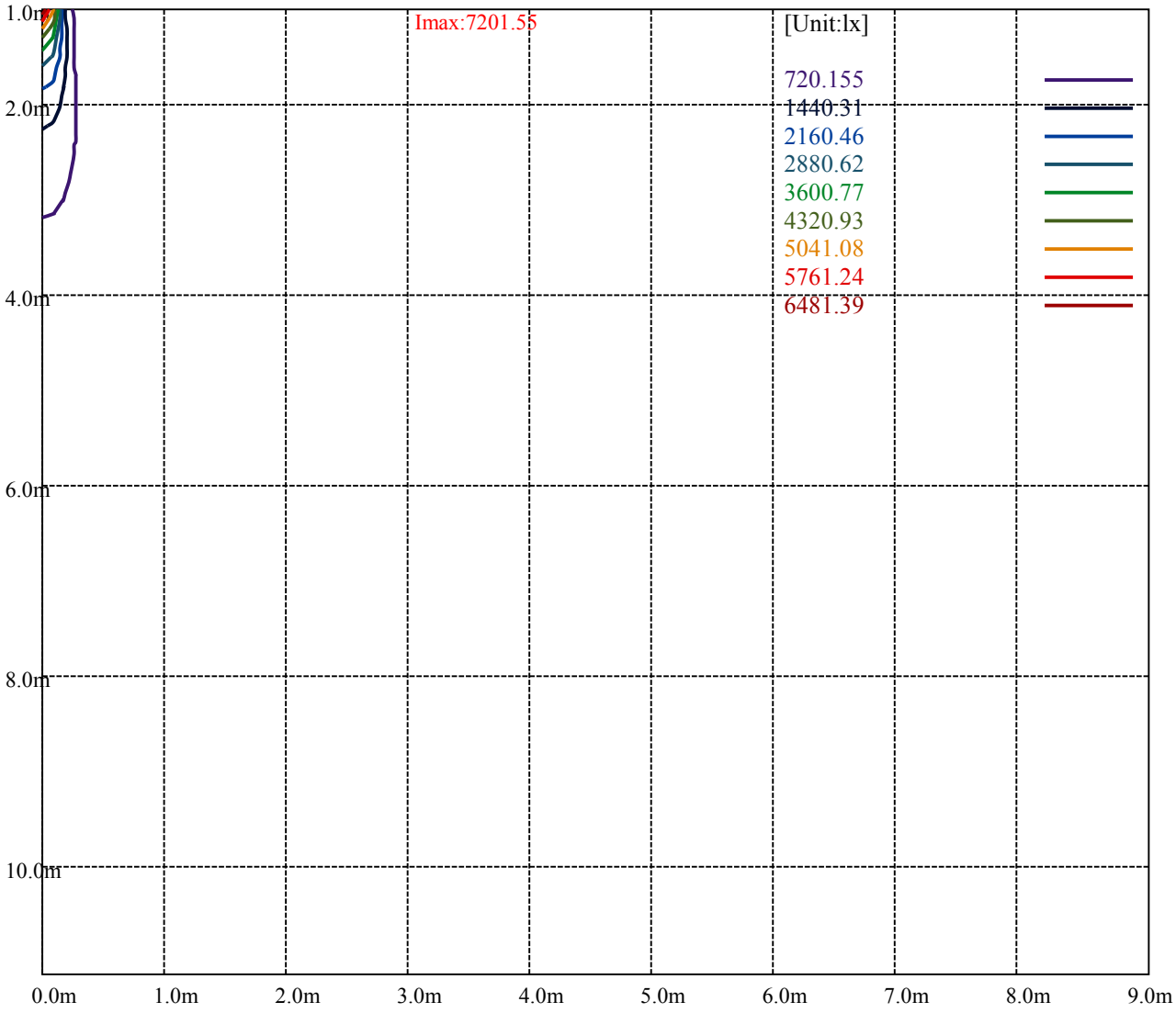


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/12/26
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Space ISO Lux diagram



Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/12/26
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Luminance Limitting Curve(no luminous side)

Luminance Table

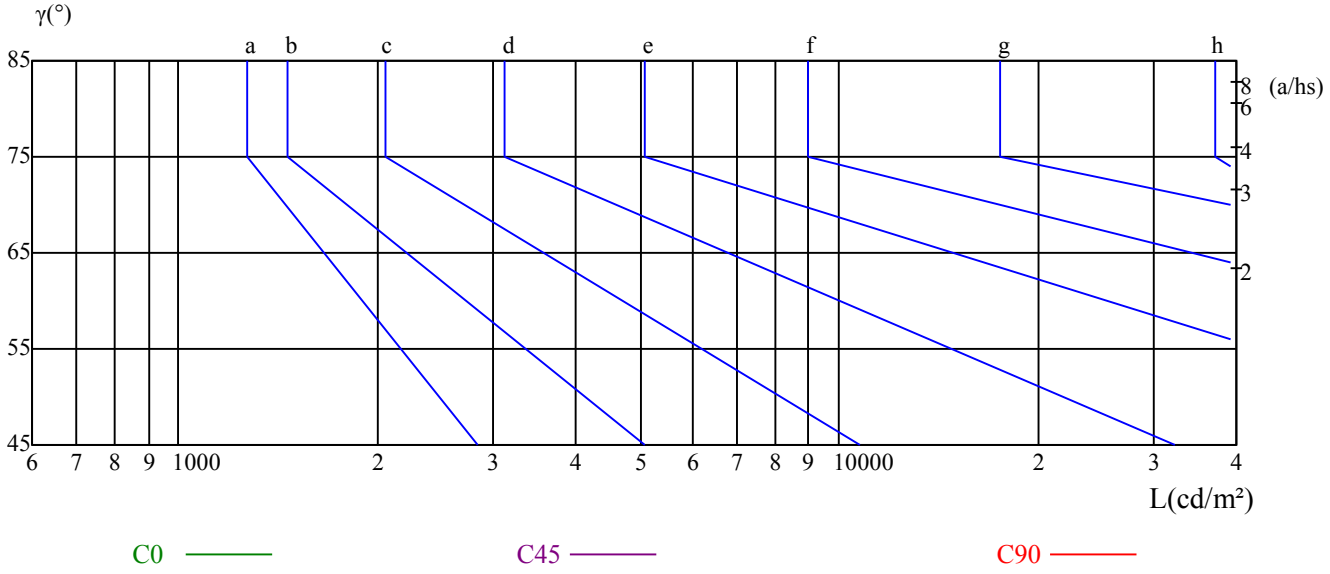
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

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

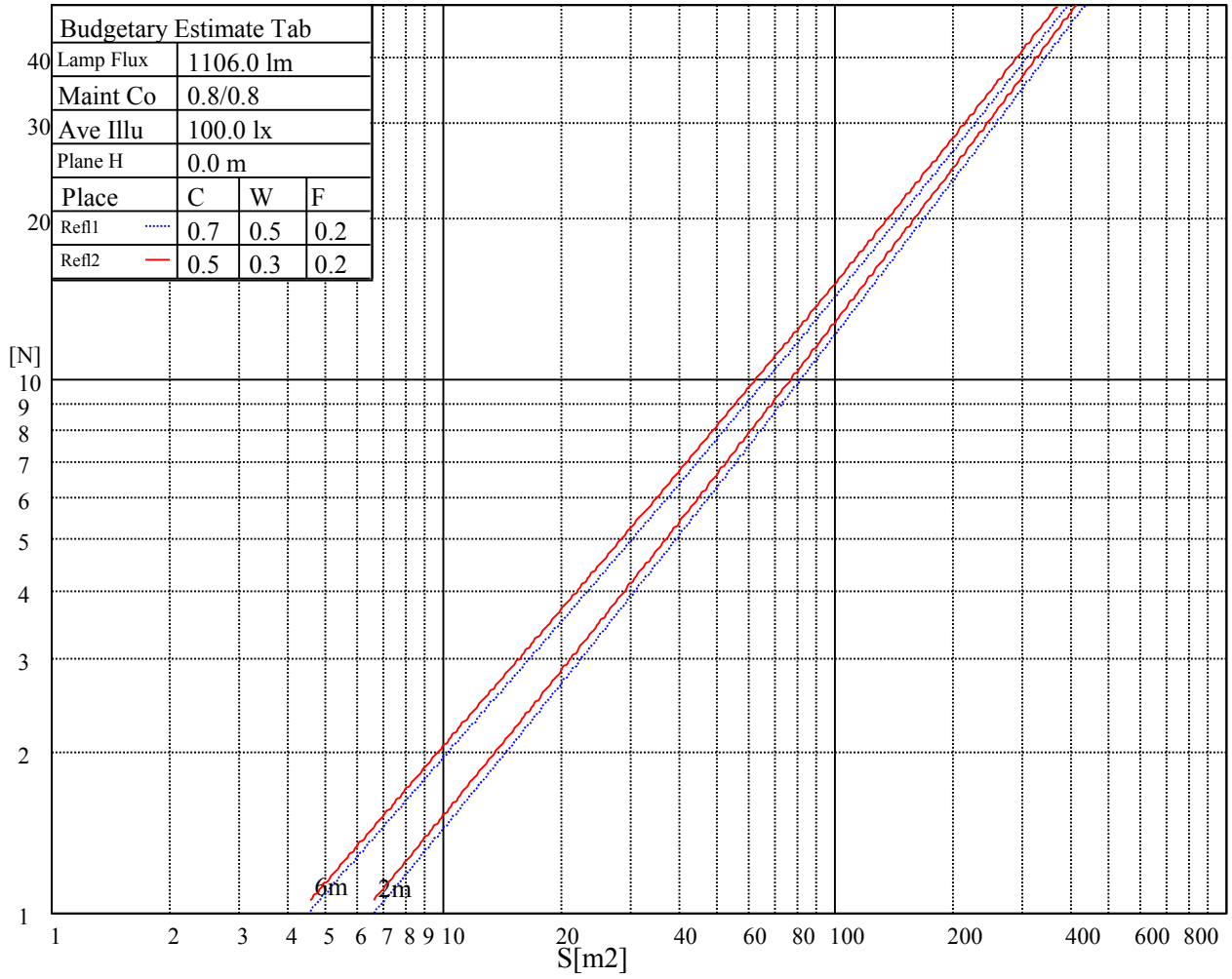
Glare Table

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

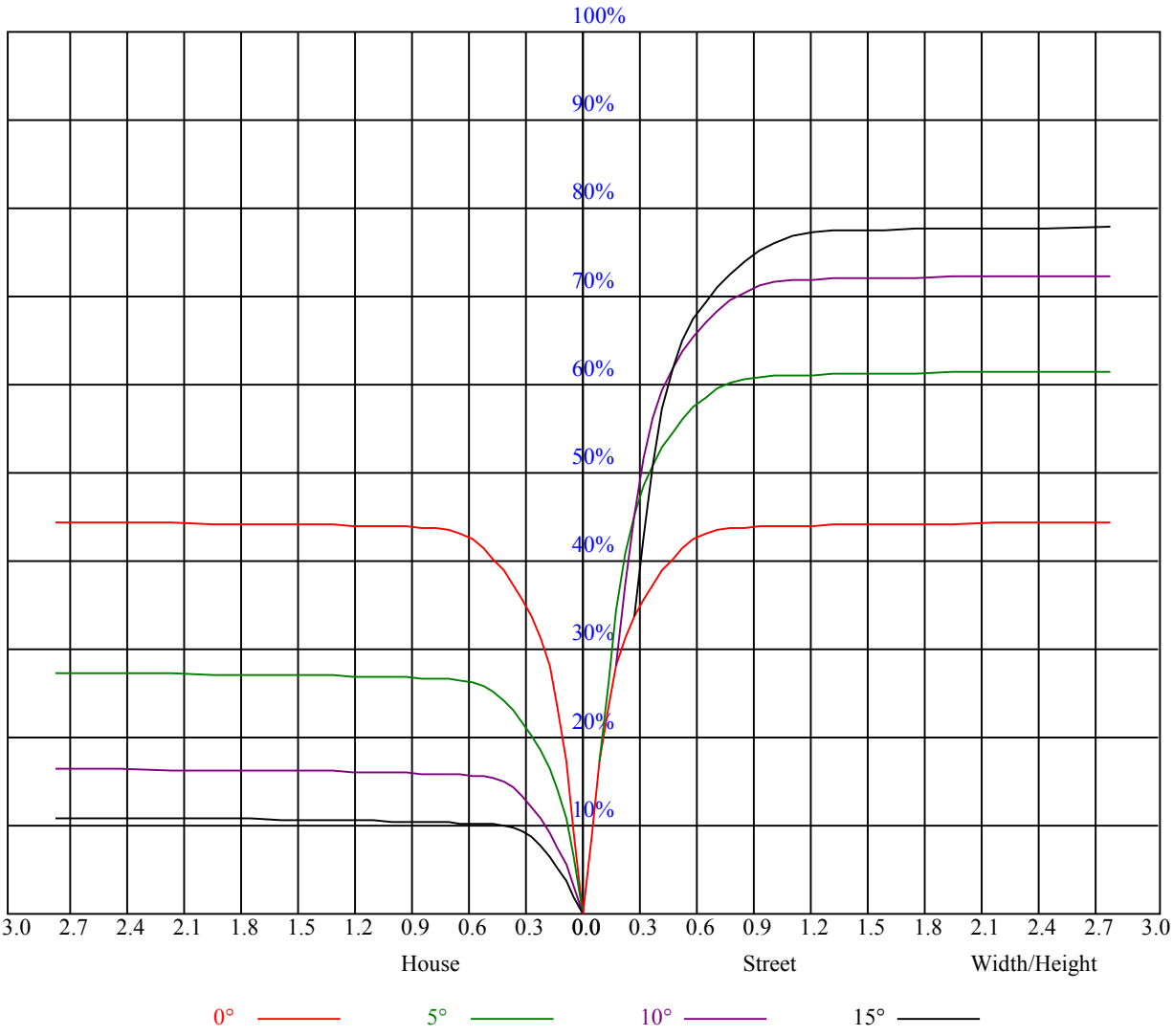


Equipment: GMS1980 Date: 2019/12/26 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

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	1.07	1.07	1.07	1.04	1.04	1.04	0.99	0.99	0.99	0.95	0.95	0.95	0.91	0.91	0.91	0.89
1	1.00	0.99	0.97	0.99	0.97	0.95	0.95	0.94	0.93	0.92	0.91	0.90	0.89	0.88	0.87	0.86
2	0.95	0.93	0.90	0.94	0.91	0.89	0.91	0.89	0.87	0.89	0.87	0.85	0.86	0.85	0.84	0.82
3	0.91	0.88	0.85	0.90	0.87	0.84	0.88	0.85	0.83	0.86	0.83	0.82	0.84	0.82	0.80	0.79
4	0.87	0.84	0.81	0.86	0.83	0.80	0.85	0.82	0.79	0.83	0.80	0.78	0.81	0.79	0.78	0.76
5	0.84	0.80	0.77	0.83	0.80	0.77	0.82	0.79	0.76	0.80	0.78	0.76	0.79	0.77	0.75	0.74
6	0.81	0.77	0.74	0.80	0.77	0.74	0.79	0.76	0.73	0.78	0.75	0.73	0.77	0.74	0.73	0.72
7	0.78	0.74	0.72	0.78	0.74	0.71	0.77	0.73	0.71	0.76	0.73	0.71	0.75	0.72	0.70	0.69
8	0.76	0.72	0.69	0.75	0.72	0.69	0.75	0.71	0.69	0.74	0.71	0.69	0.73	0.70	0.68	0.67
9	0.74	0.70	0.67	0.73	0.70	0.67	0.72	0.69	0.67	0.72	0.69	0.67	0.71	0.68	0.67	0.66
10	0.72	0.68	0.65	0.71	0.68	0.65	0.71	0.67	0.65	0.70	0.67	0.65	0.69	0.67	0.65	0.64

Coefficient Utilization Curve

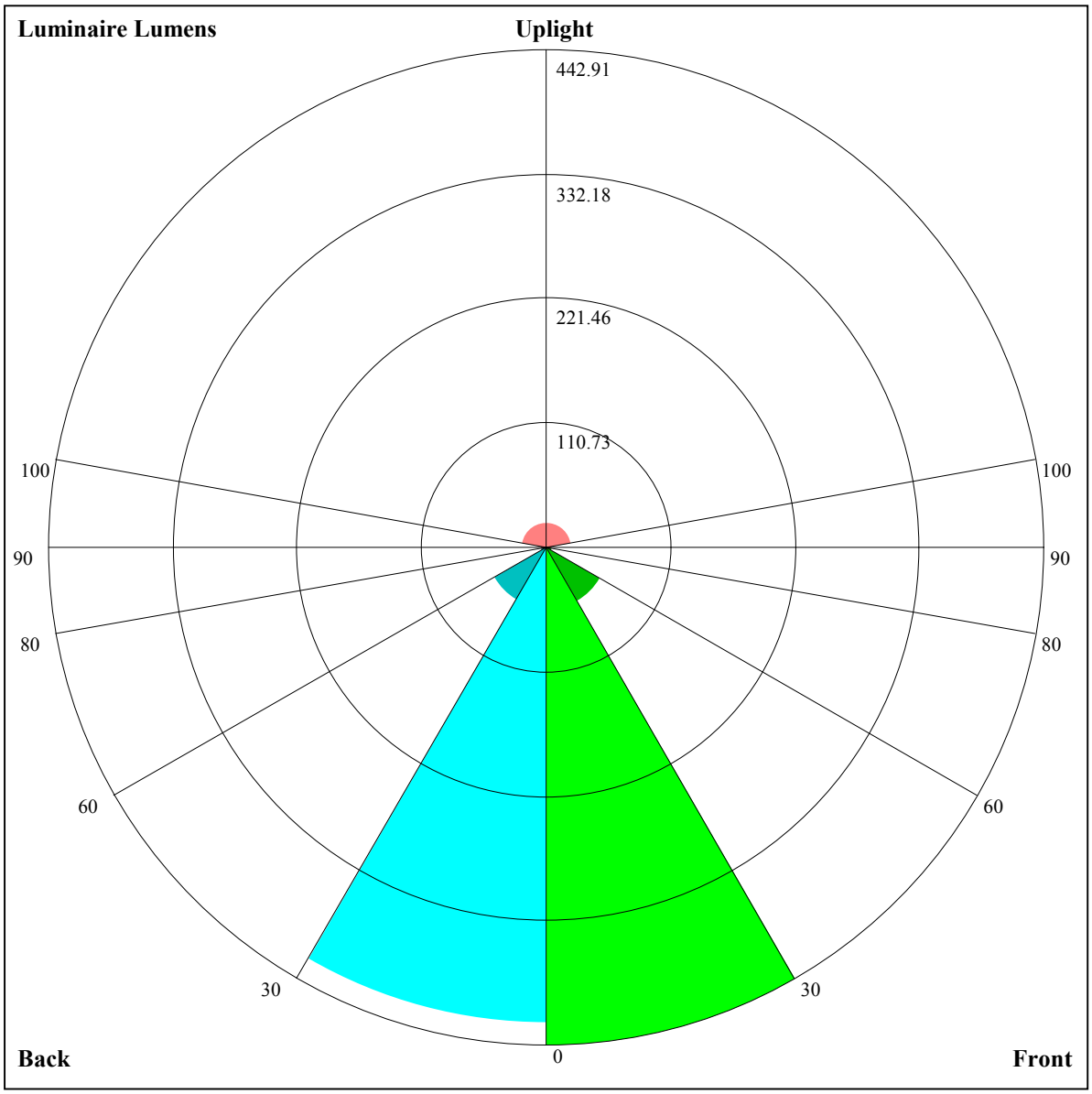


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/12/26
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

LCS Graph



Luminaire Lumens:

FL=442.91,FM=56.19,FH=5.26,FVH=2.45

BL=422.63,BM=54.32,BH=5.22,BVH=2.44

UL=4.76,UH=22.63

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	7157.25	7263.00	7273.69	7199.44	7029.56	6741.00	5976.00	5257.13	4487.06
45.0	7263.00	7158.38	6922.13	6489.00	5929.88	5158.13	4288.50	3524.63	2820.38
90.0	7170.75	6948.00	6645.38	6160.50	5511.38	4813.88	4062.38	3150.00	2503.13
135.0	7215.19	7043.06	6751.69	6356.81	5875.88	5256.56	4351.50	3620.25	2941.31
180.0	7157.25	6933.38	6627.94	6253.31	5650.88	4962.94	4114.13	3276.56	2598.75
225.0	7263.00	7297.88	7231.50	7043.06	6753.94	6402.38	5906.81	5094.56	4367.81
270.0	7170.75	7277.06	7286.06	7175.81	6970.50	6600.94	6062.63	5441.63	4726.69
315.0	7215.19	7288.31	7251.19	7135.88	6863.63	6438.94	5752.69	4938.19	4153.50
360.0	7157.25	7263.00	7273.69	7199.44	7029.56	6741.00	5976.00	5257.13	4487.06

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	3512.25	2793.38	2193.75	1692.00	1337.63	1108.69	919.13	794.81	691.31
45.0	2153.25	1658.81	1347.75	1117.13	908.44	786.94	696.38	610.88	564.19
90.0	1982.81	1515.38	1114.99	1045.97	853.26	737.49	647.21	564.69	520.65
135.0	2194.31	1739.81	1417.50	1152.56	968.06	839.81	731.81	659.81	593.44
180.0	2043.56	1544.63	1110.71	1064.93	894.94	768.21	686.93	622.63	563.29
225.0	3625.88	2750.06	2166.19	1717.31	1256.06	1082.19	910.18	764.49	667.35
270.0	3782.25	3048.75	2404.69	1837.69	1431.00	1166.06	949.50	790.88	689.63
315.0	3378.94	2512.69	1967.06	1566.56	1100.14	1005.53	853.54	740.98	638.16
360.0	3512.25	2793.38	2193.75	1692.00	1337.63	1108.69	919.13	794.81	691.31

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	615.94	566.44	523.69	491.06	468.00	450.00	432.56	421.88	412.88
45.0	524.25	490.50	465.19	447.19	430.31	417.38	407.81	398.25	390.94
90.0	476.72	442.18	425.64	407.64	391.95	383.18	373.39	363.60	360.45
135.0	549.56	514.69	489.94	468.00	452.81	437.06	421.88	412.31	403.31
180.0	528.64	501.19	479.03	459.06	443.03	429.02	417.15	408.09	399.43
225.0	585.84	529.14	489.77	455.06	432.11	415.58	403.59	391.50	385.31
270.0	607.50	556.31	514.13	482.63	461.81	444.94	431.44	421.88	414.00
315.0	578.48	534.09	496.97	469.74	451.07	434.53	421.88	413.04	404.94
360.0	615.94	566.44	523.69	491.06	468.00	450.00	432.56	421.88	412.88

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	404.44	397.69	389.25	380.81	363.38	330.19	288.56	231.75	197.27
45.0	383.06	375.19	362.81	336.38	285.19	258.86	196.48	142.43	103.11
90.0	352.18	344.70	333.28	307.80	268.82	223.09	178.71	130.05	91.58
135.0	394.31	385.88	378.56	356.63	316.69	285.75	228.04	176.74	128.14
180.0	391.39	383.12	370.58	341.89	299.81	237.60	196.20	175.61	119.08
225.0	380.03	373.89	365.63	360.56	349.20	317.76	281.64	235.13	191.42
270.0	404.44	398.25	391.50	383.06	371.25	345.38	304.31	289.13	205.03
315.0	398.70	390.88	381.04	373.11	349.93	307.63	268.43	225.17	168.24
360.0	404.44	397.69	389.25	380.81	363.38	330.19	288.56	231.75	197.27

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	163.52	113.74	69.86	30.60	18.28	14.23	9.56	7.76	7.37
45.0	67.67	33.47	19.63	15.75	11.48	9.51	9.06	8.66	8.38
90.0	54.68	29.08	19.97	15.69	12.21	10.97	10.46	9.96	9.62
135.0	84.99	51.41	26.33	16.37	12.15	9.39	8.49	8.16	7.88
180.0	76.22	41.23	19.97	14.63	10.69	8.44	8.04	7.71	7.48
225.0	144.23	96.86	68.18	38.25	20.03	16.31	12.66	10.29	9.90
270.0	164.59	108.73	65.19	38.36	19.91	16.14	12.49	9.84	9.34
315.0	125.10	85.67	46.41	22.05	15.98	11.48	8.55	7.59	7.20
360.0	163.52	113.74	69.86	30.60	18.28	14.23	9.56	7.76	7.37

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	7.03	6.81	6.64	6.41	6.24	6.08	5.96	5.85	5.74
45.0	7.99	7.71	7.43	7.14	6.86	6.69	6.58	6.41	6.30
90.0	9.11	8.78	8.38	8.10	7.88	7.65	7.43	7.20	7.03
135.0	7.59	7.26	7.03	6.81	6.64	6.41	6.30	6.13	5.96
180.0	7.20	6.98	6.75	6.58	6.36	6.13	6.02	5.91	5.79
225.0	9.11	8.83	8.55	8.33	8.04	7.76	7.43	7.09	6.92
270.0	8.78	8.38	8.04	7.76	7.43	7.20	6.98	6.75	6.58
315.0	6.92	6.69	6.47	6.30	6.19	6.02	5.91	5.79	5.68
360.0	7.03	6.81	6.64	6.41	6.24	6.08	5.96	5.85	5.74

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	5.63	5.57	5.51	5.46	5.40	5.34	5.29	5.23	5.23
45.0	6.19	6.19	6.30	6.30	6.47	6.58	6.81	6.98	7.03
90.0	7.03	6.98	6.98	6.98	6.92	6.81	6.75	6.53	6.24
135.0	5.91	5.74	5.68	5.57	5.46	5.46	5.40	5.34	5.34
180.0	5.74	5.63	5.57	5.46	5.40	5.34	5.29	5.23	5.23
225.0	6.64	6.47	6.30	6.30	6.19	6.13	6.13	6.13	6.30
270.0	6.41	6.24	6.08	6.08	6.08	6.13	6.13	6.19	6.19
315.0	5.63	5.57	5.46	5.40	5.40	5.34	5.29	5.23	5.18
360.0	5.63	5.57	5.51	5.46	5.40	5.34	5.29	5.23	5.23

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	5.18	5.12	5.12	5.01	5.01	5.01	4.95	4.89	4.84
45.0	6.86	6.41	6.08	5.68	5.34	5.12	5.01	4.95	4.89
90.0	5.96	5.63	5.40	5.18	5.06	4.95	4.84	4.84	4.78
135.0	5.34	5.23	5.18	5.12	5.01	4.89	4.89	4.78	4.78
180.0	5.18	5.12	5.06	5.01	4.95	4.89	4.84	4.78	4.73
225.0	6.36	6.47	6.24	6.02	5.57	5.34	5.01	4.89	4.84
270.0	6.30	6.24	6.13	5.96	5.63	5.46	5.18	5.06	5.01
315.0	5.18	5.12	5.12	5.06	5.06	5.01	4.95	4.89	4.84
360.0	5.18	5.12	5.12	5.01	5.01	5.01	4.95	4.89	4.84

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	4.78	4.73	4.73	4.73	4.67	4.67	4.67	4.61	4.61
45.0	4.84	4.84	4.78	4.78	4.78	4.73	4.73	4.73	4.67
90.0	4.78	4.73	4.67	4.67	4.61	4.61	4.56	4.50	4.56
135.0	4.73	4.73	4.67	4.61	4.61	4.56	4.61	4.56	4.56
180.0	4.73	4.67	4.61	4.61	4.61	4.61	4.56	4.56	4.56
225.0	4.78	4.73	4.73	4.67	4.61	4.61	4.61	4.56	4.56
270.0	4.95	4.89	4.89	4.89	4.84	4.84	4.78	4.78	4.73
315.0	4.84	4.78	4.73	4.67	4.67	4.61	4.61	4.61	4.56
360.0	4.78	4.73	4.73	4.73	4.67	4.67	4.67	4.61	4.61

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