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NATA

Client:
LumCAT: 2-1678-M
Luminaire: 92.70.123.00

Report No: GC2019091909	Voltage(V): 34.6400
Test No: GC2020011601	Current(A): 0.1970
LampCAT: LUMINUS CXM-6 AC40	Power (W): 6.8200
Lamp flux(lm): 844.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 0	Width(mm): 0
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 760.56, Efficiency(%): 90.11% , Luminous Efficacy(lm/W): 111.52
Central intensity(cd): 14788.130, Maximum intensity(cd): 14788.130
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=8.2
[C90/270]Total=8.2
Field angle(10%Imax): [C0/180]Total=16.0
[C90/270]Total=16.0
Maximum s/h(1/2): C0_180=0.14 C90_270=0.14
Maximum s/h(1/4): C0_180=0.14 C90_270=0.14
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 90.11%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.643%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	14788.125	0.000	0	.000%	.000%
1.0	14132.109	13.838	13.838	1.640%	1.819%
2.0	12456.914	38.163	52.001	4.522%	6.837%
3.0	10102.781	53.955	105.956	6.393%	13.931%
4.0	7739.016	59.722	165.678	7.076%	21.784%
5.0	5311.055	56.141	221.819	6.652%	29.165%
6.0	3376.266	45.654	267.473	5.409%	35.168%
7.0	2198.559	34.603	302.076	4.100%	39.718%
8.0	1473.082	26.277	328.353	3.113%	43.173%
9.0	999.956	20.043	348.396	2.375%	45.808%
10.0	762.012	15.945	364.341	1.889%	47.905%
11.0	619.214	13.801	378.142	1.635%	49.719%
12.0	538.080	12.651	390.793	1.499%	51.383%
13.0	482.302	12.109	402.903	1.435%	52.975%
14.0	444.150	11.858	414.761	1.405%	54.534%
15.0	415.083	11.796	426.557	1.398%	56.085%
16.0	392.815	11.838	438.395	1.403%	57.641%
17.0	371.130	11.897	450.292	1.410%	59.206%
18.0	355.514	11.981	462.273	1.420%	60.781%
19.0	342.921	12.151	474.424	1.440%	62.378%
20.0	330.694	12.329	486.753	1.461%	64.000%
21.0	320.280	12.500	499.253	1.481%	65.643%
22.0	312.546	12.717	511.97	1.507%	67.315%
23.0	304.995	12.958	524.928	1.535%	69.019%
24.0	297.752	13.178	538.106	1.561%	70.752%
25.0	292.430	13.419	551.525	1.590%	72.516%
26.0	287.655	13.693	565.218	1.622%	74.316%
27.0	283.655	13.977	579.195	1.656%	76.154%
28.0	279.211	14.251	593.446	1.688%	78.028%
29.0	274.282	14.481	607.927	1.716%	79.932%
30.0	269.529	14.683	622.61	1.740%	81.862%
31.0	265.957	14.902	637.512	1.766%	83.822%
32.0	262.041	15.127	652.638	1.792%	85.810%
33.0	257.309	15.300	667.938	1.813%	87.822%
34.0	252.098	15.416	683.354	1.827%	89.849%
35.0	237.319	15.199	698.554	1.801%	91.848%
36.0	205.102	14.087	712.641	1.669%	93.700%
37.0	159.420	11.889	724.529	1.409%	95.263%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	107.930	8.924	733.453	1.057%	96.436%
39.0	51.827	5.453	738.906	.646%	97.153%
40.0	23.815	2.638	741.544	.313%	97.500%
41.0	11.475	1.257	742.801	.149%	97.665%
42.0	8.515	0.726	743.527	.086%	97.761%
43.0	6.778	0.566	744.094	.067%	97.835%
44.0	5.681	0.470	744.564	.056%	97.897%
45.0	5.041	0.412	744.976	.049%	97.951%
46.0	4.711	0.381	745.357	.045%	98.001%
47.0	4.507	0.367	745.724	.043%	98.050%
48.0	4.402	0.360	746.084	.043%	98.097%
49.0	4.310	0.358	746.442	.042%	98.144%
50.0	4.205	0.355	746.797	.042%	98.191%
51.0	4.099	0.351	747.148	.042%	98.237%
52.0	4.036	0.349	747.497	.041%	98.283%
53.0	3.959	0.348	747.845	.041%	98.329%
54.0	3.888	0.346	748.191	.041%	98.374%
55.0	3.811	0.344	748.534	.041%	98.419%
56.0	3.769	0.343	748.877	.041%	98.464%
57.0	3.698	0.341	749.218	.040%	98.509%
58.0	3.649	0.340	749.558	.040%	98.554%
59.0	3.614	0.340	749.898	.040%	98.598%
60.0	3.572	0.339	750.237	.040%	98.643%
61.0	3.523	0.339	750.576	.040%	98.688%
62.0	3.488	0.338	750.914	.040%	98.732%
63.0	3.466	0.338	751.252	.040%	98.776%
64.0	3.438	0.339	751.591	.040%	98.821%
65.0	3.410	0.339	751.93	.040%	98.866%
66.0	3.375	0.339	752.268	.040%	98.910%
67.0	3.368	0.339	752.607	.040%	98.955%
68.0	3.347	0.340	752.947	.040%	98.999%
69.0	3.326	0.340	753.288	.040%	99.044%
70.0	3.305	0.341	753.628	.040%	99.089%
71.0	3.298	0.341	753.969	.040%	99.134%
72.0	3.277	0.342	754.311	.041%	99.179%
73.0	3.284	0.343	754.654	.041%	99.224%
74.0	3.263	0.344	754.999	.041%	99.269%
75.0	3.248	0.344	755.343	.041%	99.314%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	3.241	0.345	755.687	.041%	99.360%
77.0	3.227	0.345	756.032	.041%	99.405%
78.0	3.227	0.346	756.377	.041%	99.450%
79.0	3.227	0.347	756.724	.041%	99.496%
80.0	3.220	0.348	757.072	.041%	99.542%
81.0	3.213	0.348	757.42	.041%	99.587%
82.0	3.206	0.348	757.768	.041%	99.633%
83.0	3.213	0.349	758.117	.041%	99.679%
84.0	3.206	0.350	758.467	.041%	99.725%
85.0	3.185	0.349	758.815	.041%	99.771%
86.0	3.206	0.349	759.165	.041%	99.817%
87.0	3.178	0.349	759.514	.041%	99.863%
88.0	3.178	0.348	759.862	.041%	99.909%
89.0	3.164	0.348	760.21	.041%	99.954%
90.0	3.171	0.347	760.557	.041%	100.000%

Zonal flux distribution table

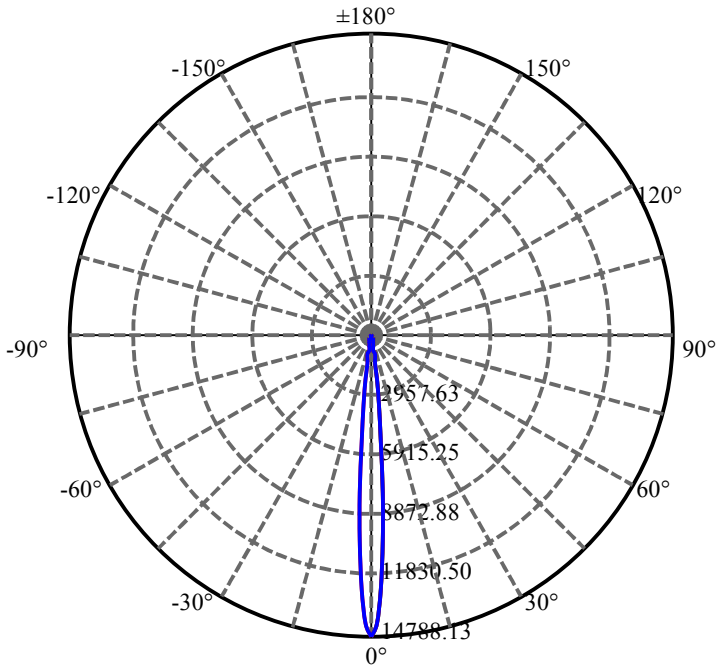
ZONAL LUMEN SUMMARY

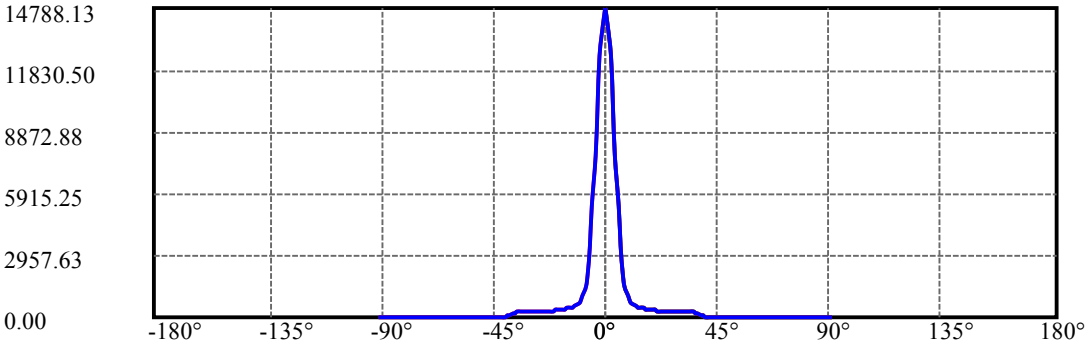
Zone	Lumens	%Lamp	%Fixt
0-30	622.61	73.77%	81.86%
0-40	741.54	87.86%	97.50%
0-60	750.24	88.89%	98.64%
0-90	760.21	90.07%	99.95%
0-120	760.21	90.07%	99.95%
0-180	760.56	90.11%	100.00%
60-90	10.31	1.22%	1.36%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-29.04	608.45	72.09%	80.00%

ZONAL LUMEN SUMMARY

0-10	364.34
10-20	122.41
20-30	135.86
30-40	118.93
40-50	5.25
50-60	3.44
60-70	3.39
70-80	3.44
80-90	3.14
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):

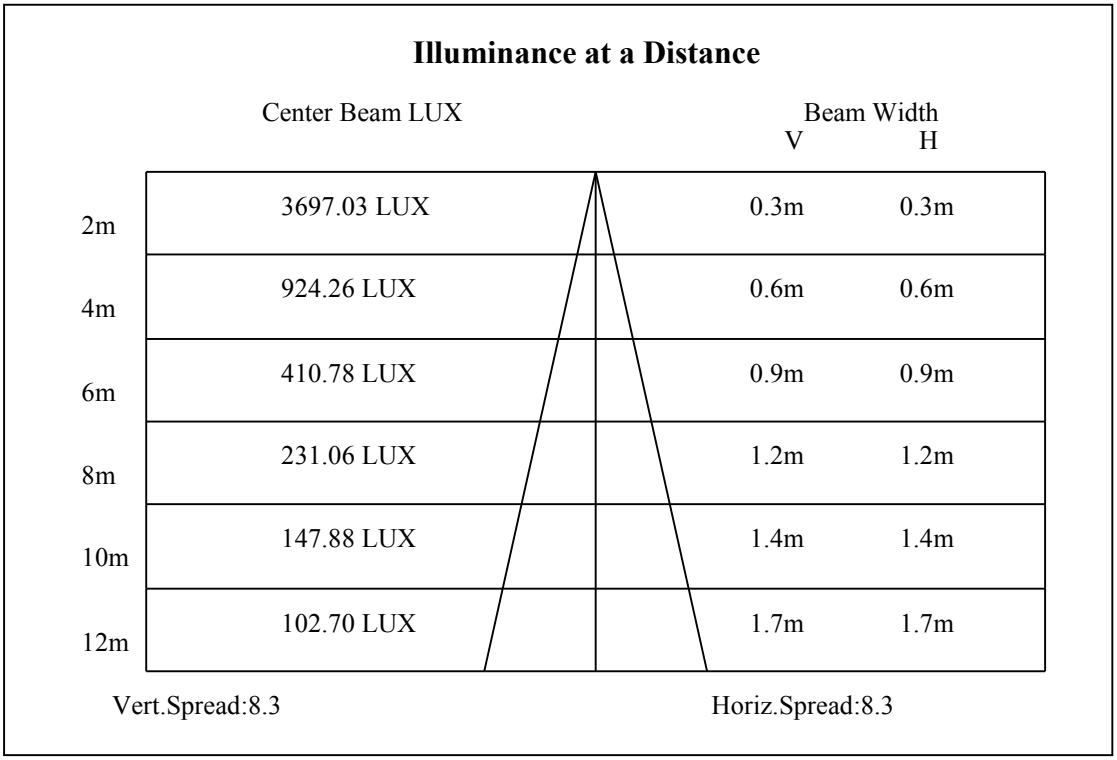
C0/C180:

C90/C270:

Field angle(10%Imax):C0/180Left:8.0 Right:8.0
:C90/270Left:8.0 Right:8.0

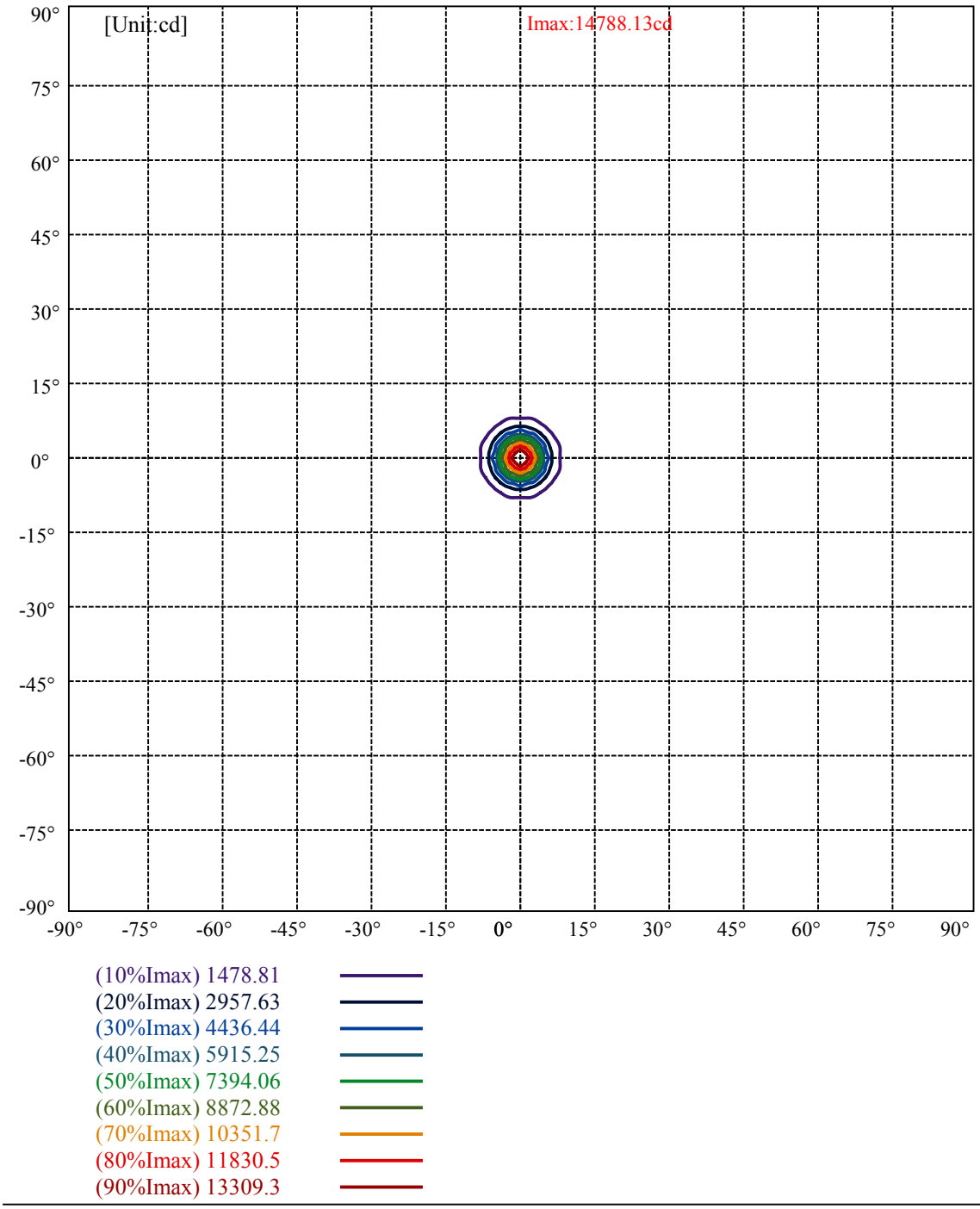
Beam Angle(50%Imax):C0/180Left:4.1 Right:4.1
:C90/270Left:4.1 Right:4.1

Lux distance Curve



Equipment: GMS1980 Date: 2020/1/16 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

ISO-Intensity(V-H)

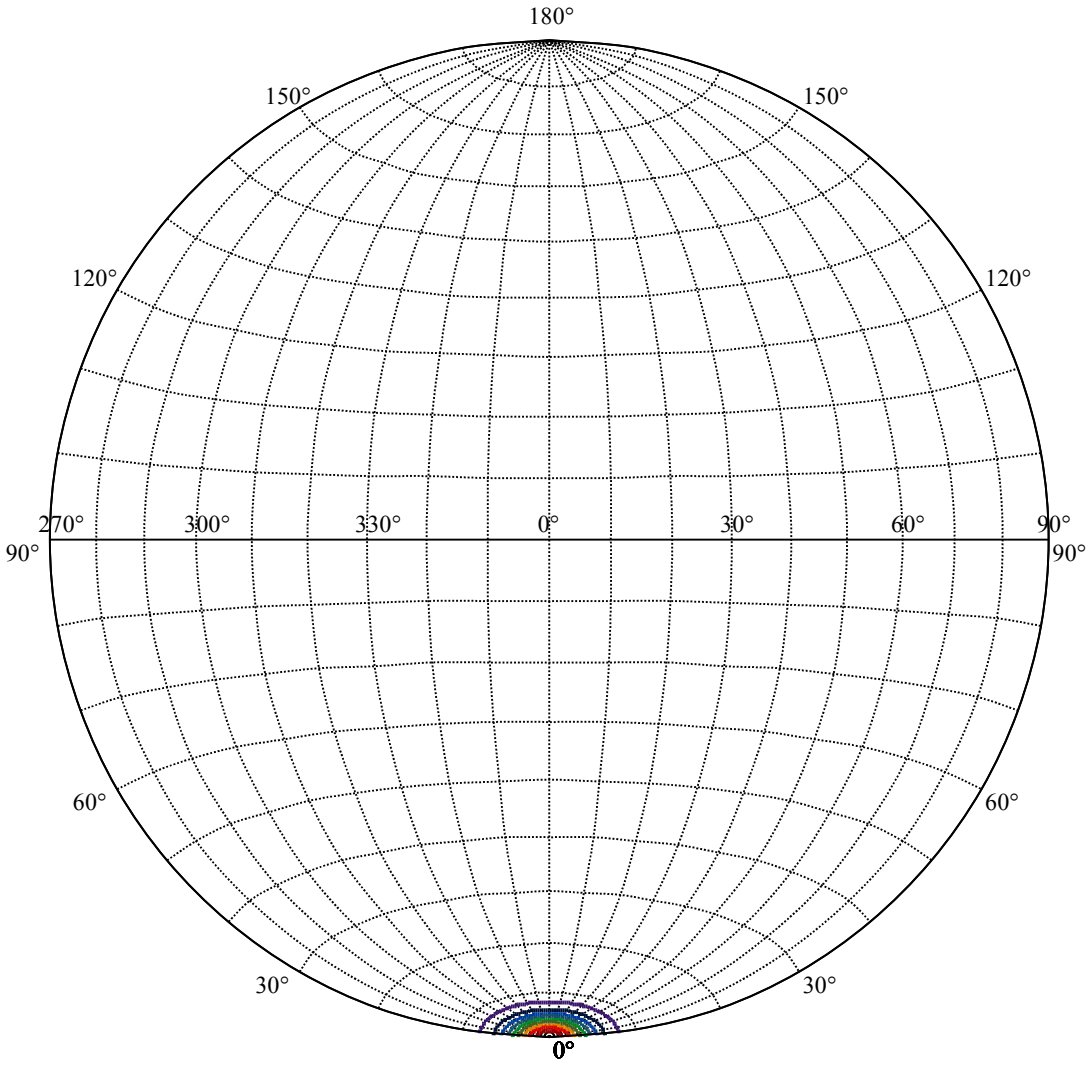


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2020/1/16
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

ISO candela diagram on circular web



[Unit:cd]

Imax:14788.13

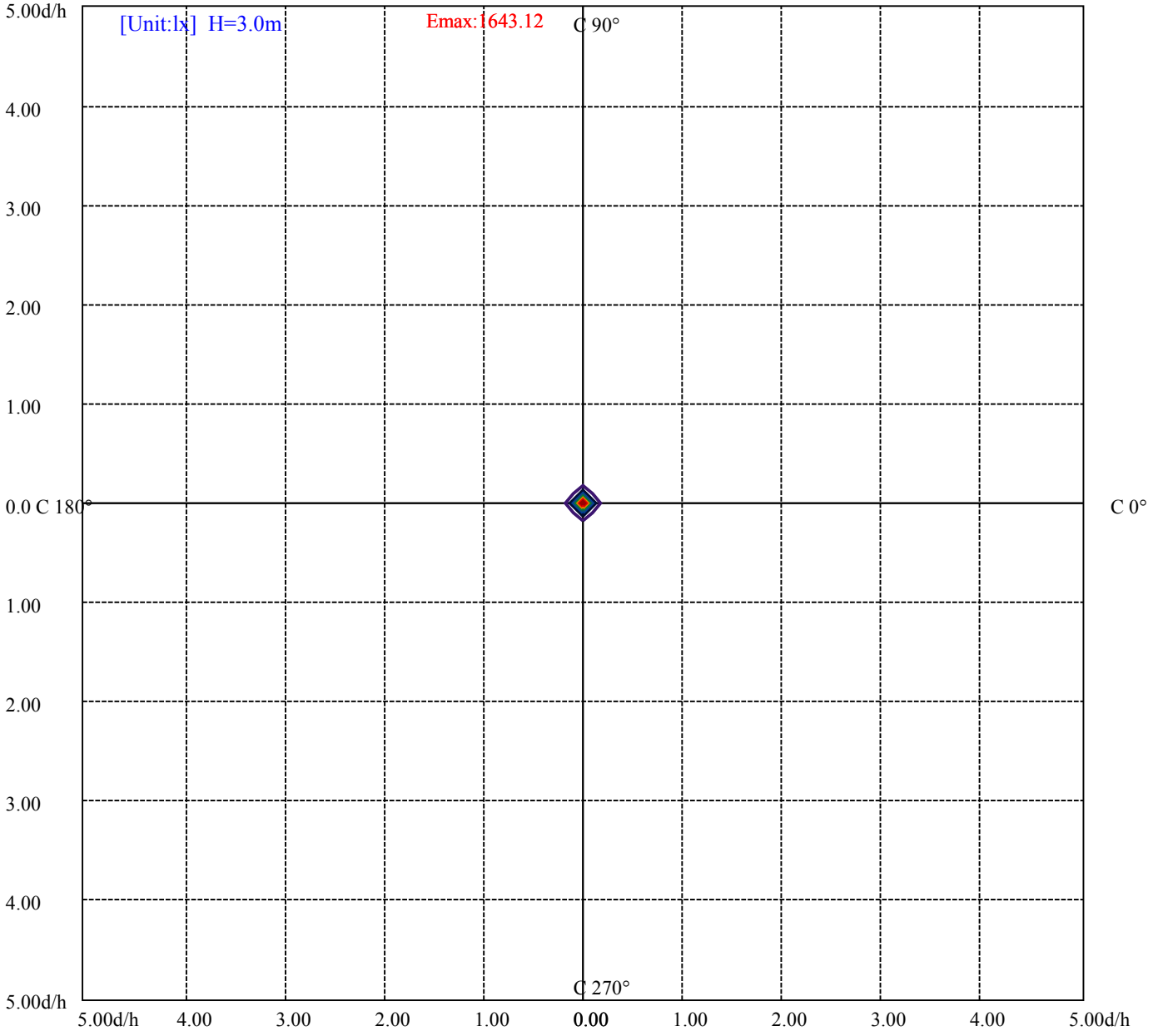
(10%Imax) 1478.81
(20%Imax) 2957.63
(30%Imax) 4436.44
(40%Imax) 5915.25
(50%Imax) 7394.06
(60%Imax) 8872.88
(70%Imax) 10351.7
(80%Imax) 11830.5
(90%Imax) 13309.3

Equipment: GMS1980
Temperature(°C): 25.0

Date: 2020/1/16
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

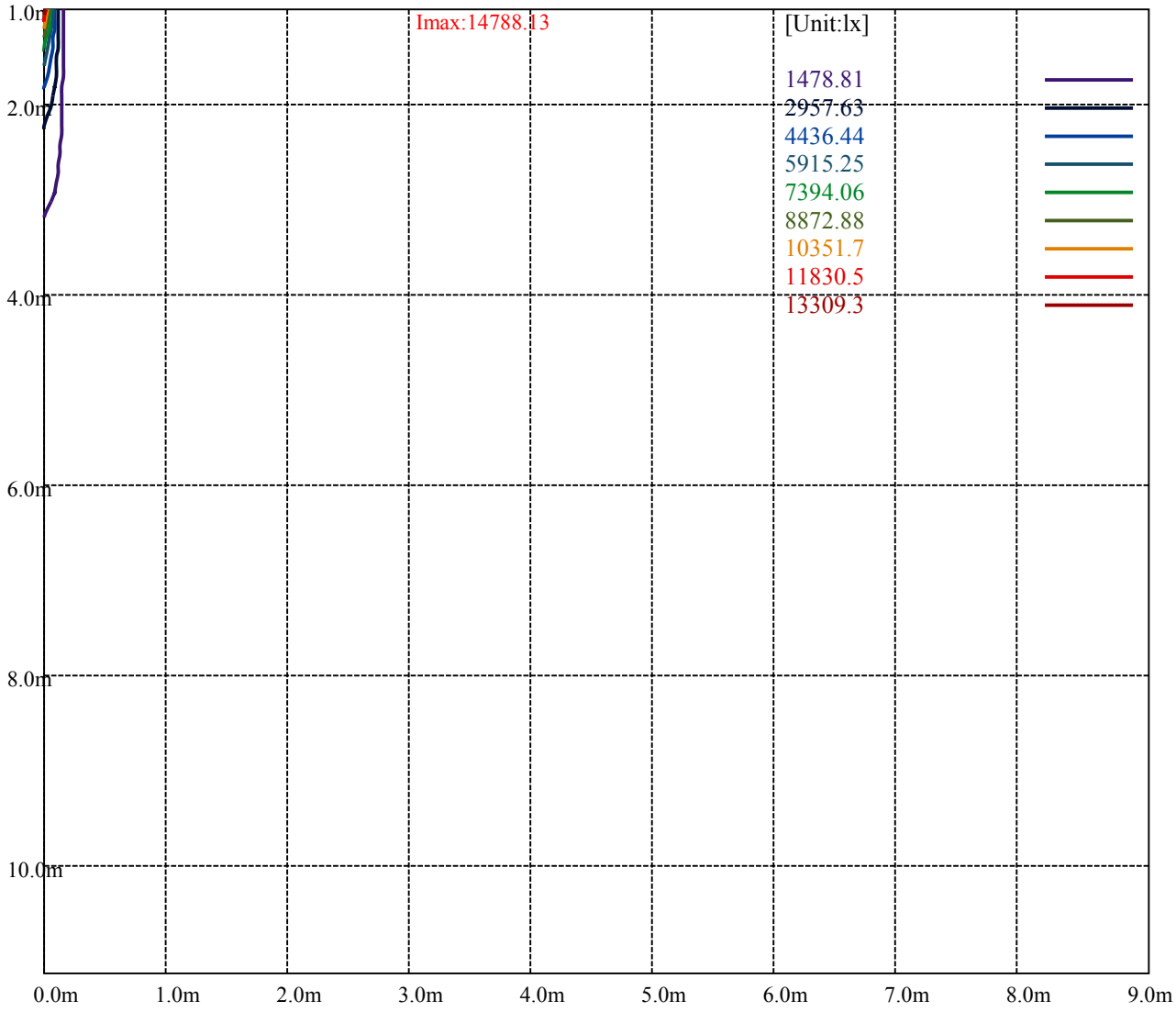
ISO illuminance diagram



(10%Emax) 164.3111
(20%Emax) 328.6234
(30%Emax) 492.9344
(40%Emax) 657.2455
(50%Emax) 821.5566
(60%Emax) 985.8689
(70%Emax) 1150.178
(80%Emax) 1314.489
(90%Emax) 1478.8

Equipment: GMS1980
Temperature(°C): 25.0
Date: 2020/1/16
Humidity(%): 65.0%
Operator: NT07
Distance(m): 7.50

Space ISO Lux diagram



Equipment: GMS1980
Temperature(°C): 25.0

Date: 2020/1/16
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Luminance Limitting Curve(no luminous side)

Luminance Table

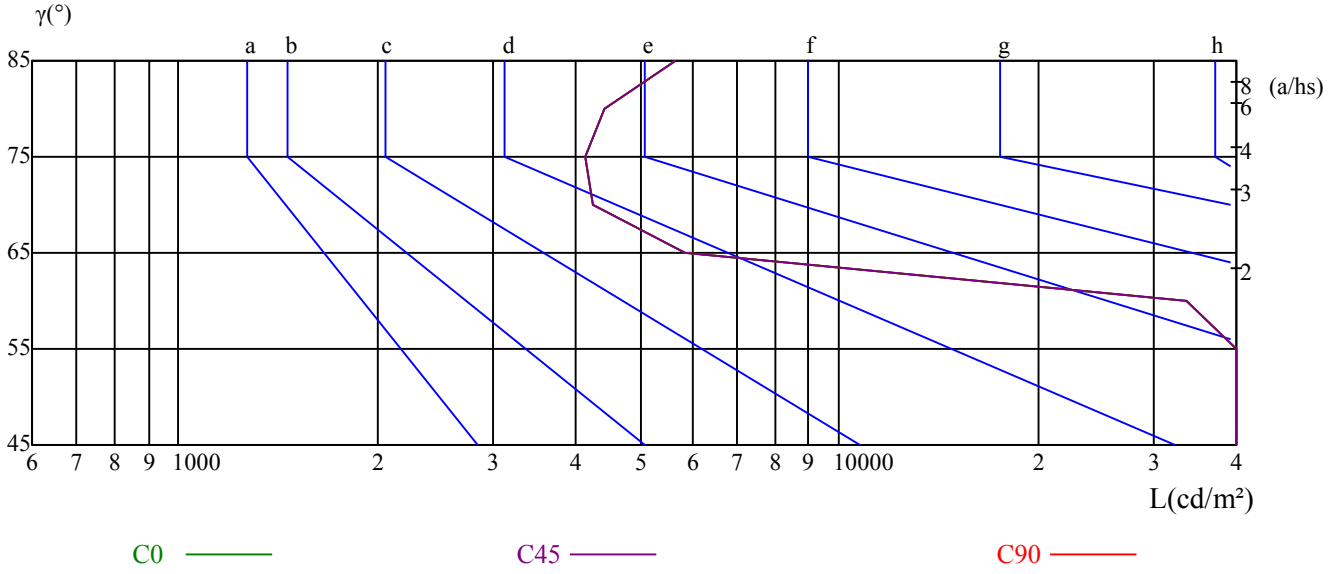
γ	45	50	55	60	65	70	75	80	85
C0	46650	52836	53885	33658	5848	4245	4131	4405	5640
C45	46650	52836	53885	33658	5848	4245	4131	4405	5640
C90	46650	52836	53885	33658	5848	4245	4131	4405	5640

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
5848	5848	5848	4131	4131	4131	5640	5640	5640

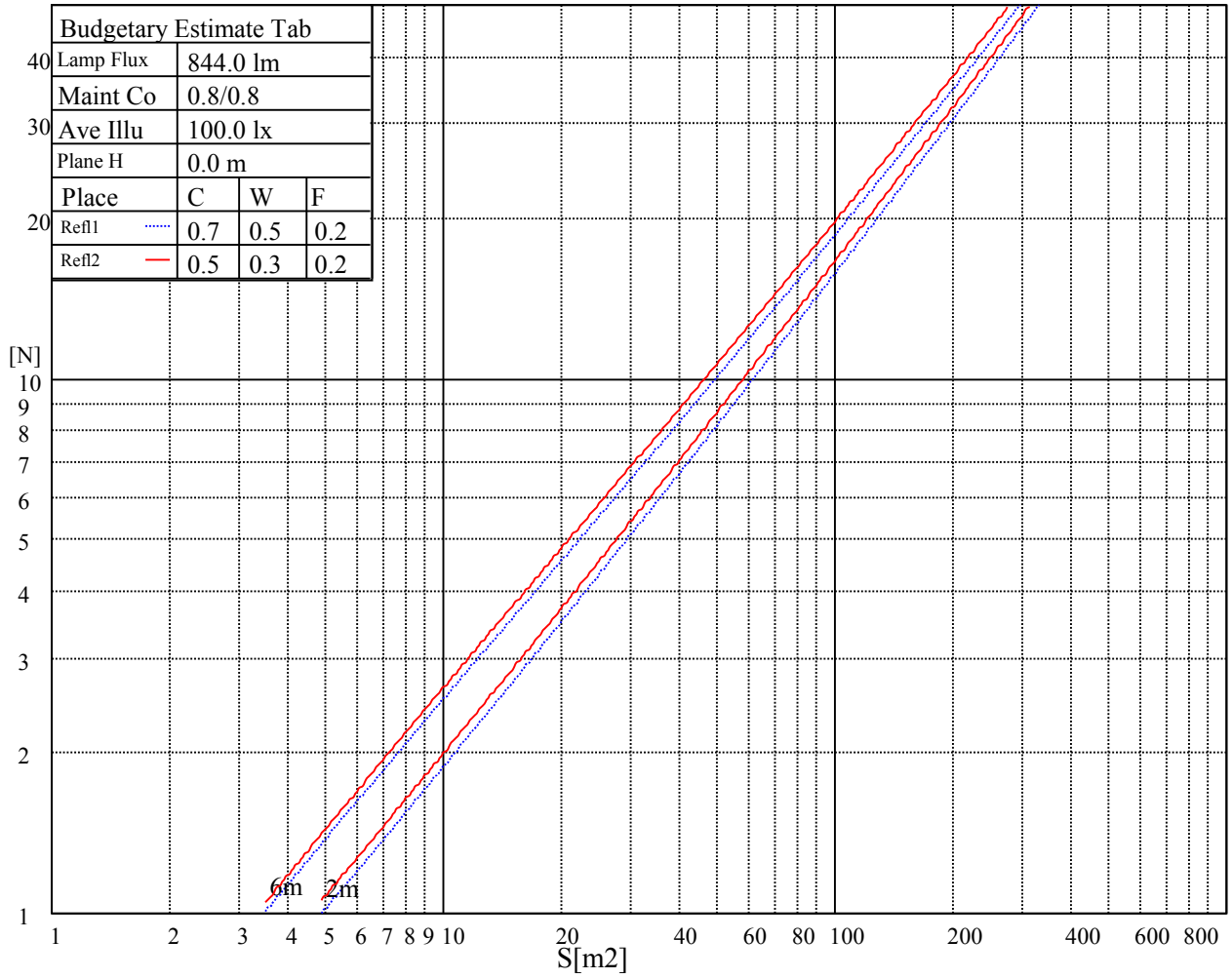
Glare Table

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

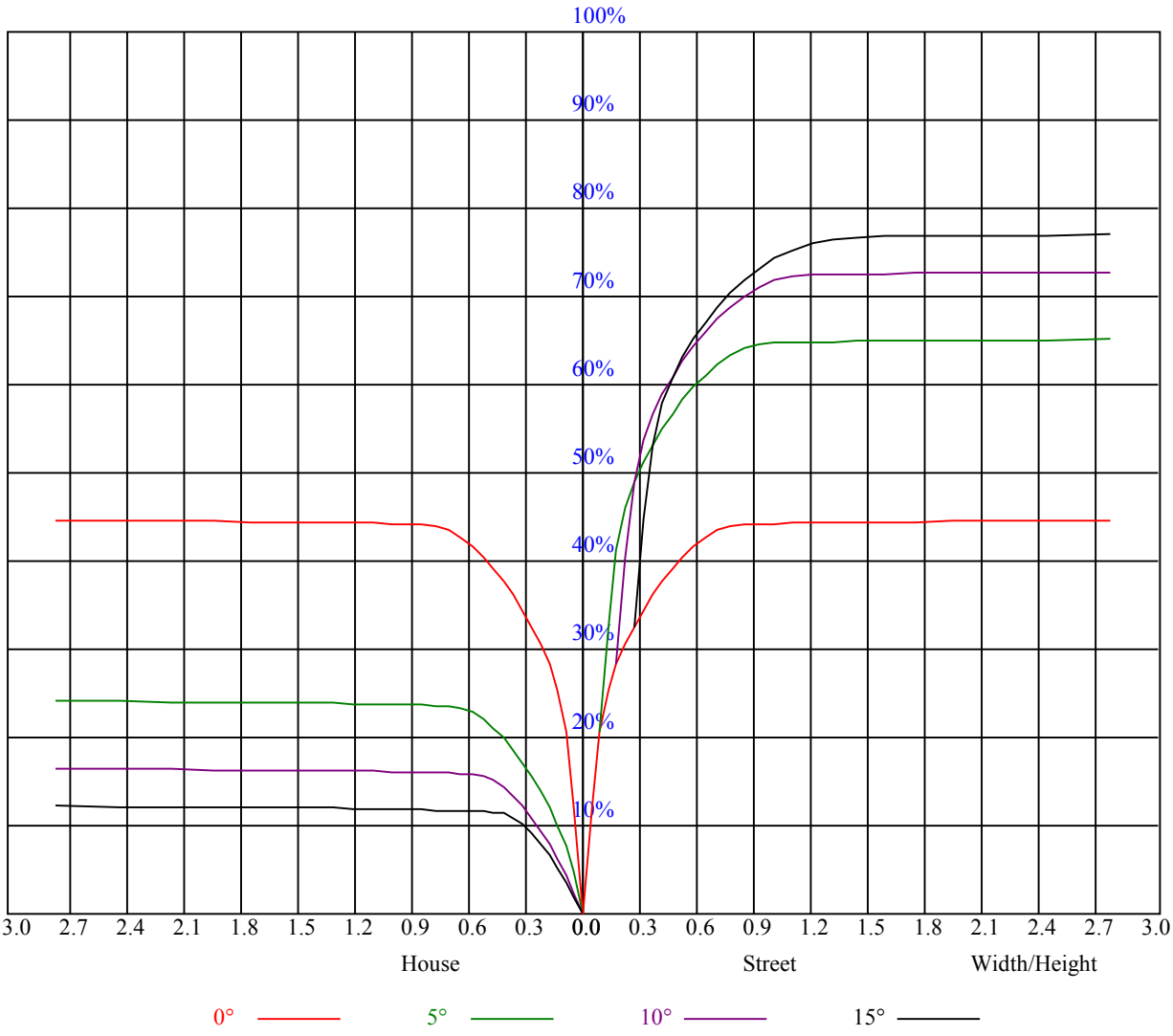


Equipment: GMS1980 Date: 2020/1/16 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

Utilization factor table for indoor luminaire

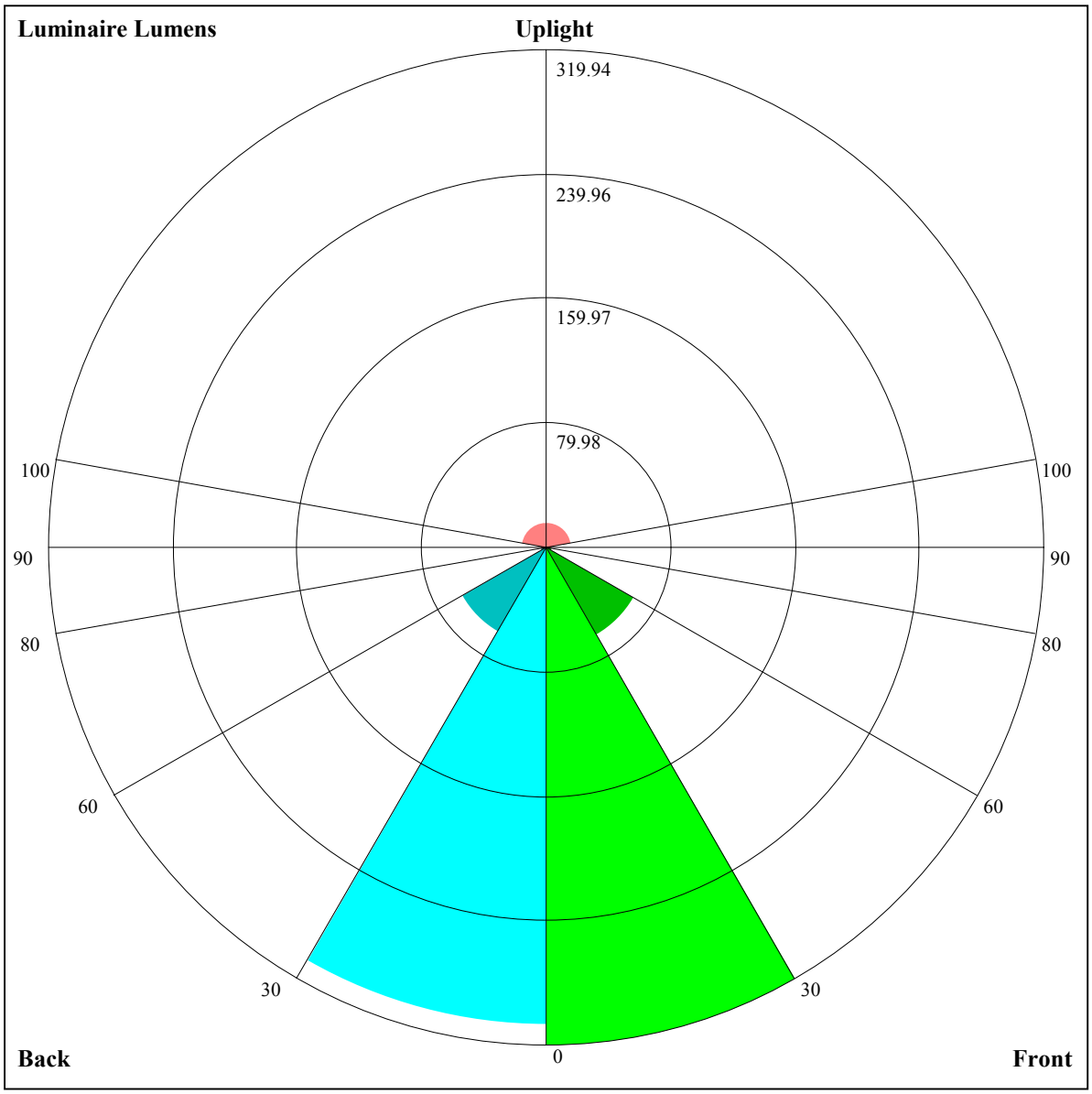
RHOCC	80			70			50			30			10			0
RHOW	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR	COEFFCIENTS OF UTILIZATION RHOFC=20 CU															
0	1.07	1.07	1.07	1.05	1.05	1.05	1.00	1.00	1.00	0.96	0.96	0.96	0.92	0.92	0.92	0.90
1	1.01	0.99	0.98	0.99	0.98	0.96	0.96	0.94	0.93	0.92	0.91	0.90	0.89	0.89	0.88	0.86
2	0.96	0.93	0.91	0.95	0.92	0.90	0.92	0.90	0.88	0.89	0.87	0.86	0.87	0.85	0.84	0.83
3	0.92	0.88	0.85	0.90	0.87	0.85	0.88	0.86	0.83	0.86	0.84	0.82	0.84	0.82	0.81	0.80
4	0.88	0.84	0.81	0.87	0.83	0.81	0.85	0.82	0.80	0.83	0.81	0.79	0.82	0.80	0.78	0.77
5	0.84	0.80	0.77	0.84	0.80	0.77	0.82	0.79	0.76	0.81	0.78	0.76	0.79	0.77	0.75	0.74
6	0.81	0.77	0.74	0.81	0.77	0.74	0.79	0.76	0.74	0.78	0.75	0.73	0.77	0.75	0.73	0.72
7	0.79	0.75	0.72	0.78	0.74	0.72	0.77	0.74	0.71	0.76	0.73	0.71	0.75	0.73	0.71	0.70
8	0.76	0.72	0.69	0.76	0.72	0.69	0.75	0.71	0.69	0.74	0.71	0.69	0.73	0.71	0.69	0.68
9	0.74	0.70	0.67	0.73	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.67	0.71	0.69	0.67	0.66
10	0.72	0.68	0.66	0.71	0.68	0.65	0.71	0.68	0.65	0.70	0.67	0.65	0.70	0.67	0.65	0.64

Coefficient Utilization Curve



Equipment: GMS1980	Date: 2020/1/16	Operator: NT07
Temperature(°C): 25.0	Humidity(%): 65.0%	Distance(m): 7.50

LCS Graph



Luminaire Lumens:

FL=319.94,FM=65.35,FH=3.42,FVH=1.74

BL=306.48,BM=62.62,BH=3.41,BVH=1.74

UL=3.46,UH=16.46

BUG Rating:B1-U2-G0

Equipment: GMS1980	Date: 2020/1/16	Operator: NT07
Temperature(°C): 25.0	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	14900.63	14602.50	12903.75	10794.38	8330.63	5647.50	3571.88	2880.00	1528.88
45.0	14591.25	15018.75	14085.00	12391.88	9804.38	7312.50	4815.00	2970.00	2334.38
90.0	15035.63	15035.63	13843.13	11001.38	9066.94	6549.19	3954.38	2548.13	1671.19
135.0	14625.00	15046.88	14056.88	12206.25	10096.88	6969.38	4550.63	3133.13	1856.25
180.0	14900.63	14180.63	11064.38	9499.50	6962.06	4532.63	2814.19	1839.94	1119.43
225.0	14591.25	12504.38	10923.19	7722.56	5348.81	3498.75	2069.44	1114.54	1034.49
270.0	15035.63	14000.63	11553.75	9022.50	6480.00	4100.63	2958.75	1762.31	1145.81
315.0	14625.00	12667.50	11225.25	8183.81	5822.44	3877.88	2275.88	1340.44	1094.23
360.0	14900.63	14602.50	12903.75	10794.38	8330.63	5647.50	3571.88	2880.00	1528.88

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	1050.75	797.63	640.69	558.00	500.63	457.31	430.31	405.56	383.63
45.0	1299.38	946.69	708.75	591.75	514.13	464.63	431.44	406.13	377.44
90.0	1121.68	808.82	656.72	559.86	499.50	463.73	430.43	406.91	383.29
135.0	1228.50	905.63	690.19	582.19	504.56	455.63	423.56	399.94	374.06
180.0	898.48	686.53	583.54	506.93	458.89	424.97	397.74	374.96	355.50
225.0	770.29	627.08	553.73	499.95	459.34	432.23	404.66	385.03	367.20
270.0	835.31	688.50	568.13	511.31	468.56	428.06	401.63	380.25	360.00
315.0	795.26	635.23	551.98	494.66	452.81	426.66	400.89	383.74	367.93
360.0	1050.75	797.63	640.69	558.00	500.63	457.31	430.31	405.56	383.63

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	370.13	357.75	343.69	333.56	325.13	316.69	309.38	302.63	296.44
45.0	359.44	344.81	330.19	320.63	313.31	305.44	298.69	293.63	288.56
90.0	364.89	350.78	338.06	324.39	315.17	307.07	298.01	291.77	286.59
135.0	356.63	342.56	327.94	317.81	310.50	301.50	295.31	290.25	285.19
180.0	339.98	328.16	318.09	307.69	300.49	294.08	287.44	283.11	279.28
225.0	351.79	339.69	329.12	317.98	309.94	302.57	294.75	290.03	286.14
270.0	347.06	336.38	325.13	317.81	311.06	304.88	298.69	293.63	289.13
315.0	354.21	343.24	333.34	322.37	314.78	307.74	299.76	294.41	289.91
360.0	370.13	357.75	343.69	333.56	325.13	316.69	309.38	302.63	296.44

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	291.38	286.88	284.06	276.19	272.53	269.27	264.77	259.43	253.18
45.0	284.06	280.29	274.73	270.06	265.73	262.13	258.81	254.42	247.16
90.0	281.03	277.26	273.83	267.81	264.88	261.34	256.73	252.11	246.04
135.0	284.06	275.57	271.86	267.36	263.25	259.54	256.16	251.44	244.63
180.0	275.40	271.80	266.96	262.97	259.59	255.88	250.76	245.31	233.61
225.0	282.04	276.81	272.53	268.82	265.61	261.00	255.26	248.96	213.13
270.0	285.75	284.06	274.56	271.13	267.41	262.97	257.85	252.45	230.40
315.0	285.53	281.03	275.74	271.91	268.65	264.21	258.13	252.68	230.40
360.0	291.38	286.88	284.06	276.19	272.53	269.27	264.77	259.43	253.18

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	229.73	185.85	138.21	64.97	25.99	11.76	9.11	7.37	6.13
45.0	237.15	202.61	149.40	94.50	47.47	14.91	9.45	7.65	5.79
90.0	220.39	182.76	134.27	66.94	31.61	11.98	9.56	7.43	6.02
135.0	230.51	192.88	143.04	78.24	36.17	13.84	9.56	7.59	5.85
180.0	191.81	142.20	90.06	35.94	14.01	10.13	7.88	6.02	5.12
225.0	164.31	107.27	57.88	20.14	11.36	9.34	7.37	5.91	5.57
270.0	186.13	135.11	76.89	29.36	12.15	9.84	7.54	5.96	5.18
315.0	180.79	126.68	73.69	24.53	11.76	10.01	7.65	6.30	5.79
360.0	229.73	185.85	138.21	64.97	25.99	11.76	9.11	7.37	6.13

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	5.51	4.84	4.67	4.56	4.44	4.28	4.22	4.11	4.05
45.0	4.95	4.67	4.50	4.39	4.33	4.22	4.11	4.05	3.99
90.0	5.34	5.12	4.39	4.33	4.22	4.11	4.05	3.94	3.88
135.0	4.95	4.56	4.44	4.39	4.28	4.16	4.05	3.99	3.94
180.0	4.61	4.44	4.33	4.22	4.16	4.11	3.99	3.94	3.88
225.0	5.12	4.56	4.44	4.33	4.22	4.16	4.05	3.99	3.88
270.0	4.89	4.73	4.61	4.50	4.39	4.28	4.16	4.11	3.99
315.0	4.95	4.78	4.67	4.50	4.44	4.33	4.16	4.16	4.05
360.0	5.51	4.84	4.67	4.56	4.44	4.28	4.22	4.11	4.05

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	3.94	3.83	3.83	3.77	3.71	3.66	3.54	3.54	3.49
45.0	3.94	3.83	3.83	3.71	3.66	3.60	3.60	3.54	3.49
90.0	3.83	3.77	3.71	3.66	3.60	3.60	3.54	3.49	3.49
135.0	3.88	3.83	3.77	3.71	3.66	3.60	3.60	3.54	3.54
180.0	3.83	3.77	3.71	3.60	3.60	3.54	3.54	3.49	3.43
225.0	3.83	3.77	3.71	3.66	3.60	3.60	3.54	3.49	3.43
270.0	3.94	3.83	3.77	3.77	3.71	3.66	3.60	3.54	3.49
315.0	3.94	3.88	3.83	3.71	3.66	3.66	3.60	3.54	3.54
360.0	3.94	3.83	3.83	3.77	3.71	3.66	3.54	3.54	3.49

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	3.49	3.43	3.43	3.38	3.38	3.38	3.38	3.38	3.32
45.0	3.49	3.43	3.38	3.38	3.38	3.38	3.32	3.32	3.32
90.0	3.43	3.43	3.43	3.38	3.38	3.32	3.32	3.26	3.26
135.0	3.49	3.43	3.43	3.38	3.38	3.38	3.32	3.32	3.32
180.0	3.43	3.38	3.38	3.32	3.32	3.32	3.32	3.26	3.32
225.0	3.43	3.43	3.38	3.38	3.38	3.32	3.32	3.26	3.26
270.0	3.49	3.49	3.43	3.43	3.38	3.32	3.32	3.32	3.32
315.0	3.49	3.49	3.43	3.38	3.38	3.38	3.32	3.32	3.26
360.0	3.49	3.43	3.43	3.38	3.38	3.38	3.38	3.38	3.32

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	3.26	3.32	3.26	3.26	3.26	3.26	3.26	3.26	3.26
45.0	3.26	3.32	3.26	3.26	3.26	3.21	3.26	3.21	3.21
90.0	3.32	3.26	3.26	3.21	3.21	3.21	3.21	3.21	3.21
135.0	3.26	3.32	3.26	3.26	3.26	3.26	3.21	3.26	3.21
180.0	3.32	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.21
225.0	3.26	3.26	3.26	3.26	3.26	3.21	3.21	3.21	3.26
270.0	3.26	3.26	3.26	3.21	3.21	3.21	3.21	3.21	3.21
315.0	3.26	3.26	3.26	3.26	3.21	3.21	3.21	3.21	3.21
360.0	3.26	3.32	3.26	3.26	3.26	3.26	3.26	3.26	3.26

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	3.21	3.21	3.26	3.21	3.21	3.21	3.21	3.21	3.15
45.0	3.21	3.21	3.21	3.21	3.21	3.21	3.15	3.21	3.15
90.0	3.21	3.21	3.21	3.21	3.15	3.21	3.15	3.21	3.15
135.0	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.15	3.15
180.0	3.26	3.21	3.21	3.21	3.21	3.21	3.15	3.15	3.15
225.0	3.21	3.21	3.21	3.21	3.15	3.21	3.21	3.15	3.21
270.0	3.21	3.21	3.21	3.21	3.15	3.21	3.21	3.15	3.15
315.0	3.21	3.21	3.21	3.21	3.21	3.21	3.15	3.21	3.21
360.0	3.21	3.21	3.26	3.21	3.21	3.21	3.21	3.21	3.15

Intensity data(cd)

C/γ(°)	90.0
0.0	3.21
45.0	3.15
90.0	3.15
135.0	3.21
180.0	3.15
225.0	3.15
270.0	3.15
315.0	3.21
360.0	3.21