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NATA

Client:
LumCAT: 1709-M
Luminaire: 92.70.124.00

Report No: nt0100	Voltage(V): 33.2100
Test No: GC2019122305	Current(A): 0.2970
LampCAT: LUMINUS CXM-9-AC40	Power (W): 9.8600
Lamp flux(lm): 1036.0	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): 928.00, Efficiency(%): 89.58% , Luminous Efficacy(lm/W): 94.12
Central intensity(cd): 3229.172, Maximum intensity(cd): 3229.172
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=18.2
[C90/270]Total=18.2
Field angle(10%Imax): [C0/180]Total=70.6
[C90/270]Total=70.6
Maximum s/h(1/2): C0_180=0.31 C90_270=0.31
Maximum s/h(1/4): C0_180=0.34 C90_270=0.34
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 89.58%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.569%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	3229.172	0.000	0	.000%	.000%
1.0	3210.961	3.081	3.081	.297%	.332%
2.0	3138.469	9.113	12.195	.880%	1.314%
3.0	3028.852	14.750	26.945	1.424%	2.904%
4.0	2881.547	19.784	46.729	1.910%	5.035%
5.0	2657.531	23.829	70.558	2.300%	7.603%
6.0	2406.305	26.612	97.17	2.569%	10.471%
7.0	2153.531	28.303	125.472	2.732%	13.521%
8.0	1883.250	28.890	154.363	2.789%	16.634%
9.0	1637.297	28.532	182.895	2.754%	19.709%
10.0	1410.841	27.585	210.48	2.663%	22.681%
11.0	1206.070	26.148	236.628	2.524%	25.499%
12.0	1036.343	24.513	261.141	2.366%	28.140%
13.0	920.426	23.222	284.363	2.241%	30.643%
14.0	808.256	22.127	306.49	2.136%	33.027%
15.0	733.437	21.165	327.655	2.043%	35.308%
16.0	673.594	20.617	348.272	1.990%	37.529%
17.0	617.217	20.101	368.373	1.940%	39.695%
18.0	578.264	19.711	388.084	1.903%	41.819%
19.0	547.080	19.579	407.663	1.890%	43.929%
20.0	514.898	19.437	427.1	1.876%	46.024%
21.0	490.613	19.308	446.408	1.864%	48.104%
22.0	471.115	19.326	465.734	1.865%	50.187%
23.0	450.907	19.347	485.08	1.867%	52.272%
24.0	433.146	19.329	504.409	1.866%	54.355%
25.0	418.542	19.366	523.774	1.869%	56.441%
26.0	403.439	19.403	543.177	1.873%	58.532%
27.0	391.310	19.444	562.621	1.877%	60.627%
28.0	379.884	19.525	582.146	1.885%	62.731%
29.0	369.591	19.608	601.755	1.893%	64.844%
30.0	361.252	19.733	621.487	1.905%	66.971%
31.0	353.475	19.890	641.377	1.920%	69.114%
32.0	345.551	20.026	661.403	1.933%	71.272%
33.0	338.794	20.161	681.564	1.946%	73.445%
34.0	332.466	20.314	701.878	1.961%	75.634%
35.0	324.752	20.411	722.289	1.970%	77.833%
36.0	318.030	20.466	742.756	1.976%	80.039%
37.0	309.143	20.455	763.21	1.974%	82.243%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	296.712	20.223	783.433	1.952%	84.422%
39.0	273.670	19.469	802.902	1.879%	86.520%
40.0	250.959	18.297	821.199	1.766%	88.492%
41.0	223.706	16.903	838.102	1.632%	90.313%
42.0	193.627	15.162	853.264	1.464%	91.947%
43.0	164.081	13.251	866.515	1.279%	93.375%
44.0	135.295	11.299	877.814	1.091%	94.592%
45.0	105.834	9.267	887.081	.894%	95.591%
46.0	78.251	7.199	894.28	.695%	96.367%
47.0	54.563	5.282	899.562	.510%	96.936%
48.0	35.740	3.650	903.213	.352%	97.329%
49.0	23.407	2.429	905.642	.234%	97.591%
50.0	16.031	1.644	907.286	.159%	97.768%
51.0	12.727	1.217	908.503	.117%	97.899%
52.0	10.800	1.010	909.512	.097%	98.008%
53.0	9.035	0.863	910.375	.083%	98.101%
54.0	7.854	0.744	911.119	.072%	98.181%
55.0	7.235	0.674	911.793	.065%	98.254%
56.0	6.799	0.634	912.427	.061%	98.322%
57.0	6.413	0.604	913.031	.058%	98.387%
58.0	6.117	0.579	913.611	.056%	98.450%
59.0	5.913	0.562	914.173	.054%	98.510%
60.0	5.681	0.548	914.721	.053%	98.569%
61.0	5.498	0.534	915.254	.051%	98.627%
62.0	5.344	0.522	915.777	.050%	98.683%
63.0	5.161	0.511	916.288	.049%	98.738%
64.0	4.971	0.497	916.785	.048%	98.792%
65.0	4.838	0.485	917.27	.047%	98.844%
66.0	4.697	0.476	917.746	.046%	98.895%
67.0	4.591	0.467	918.213	.045%	98.946%
68.0	4.479	0.459	918.673	.044%	98.995%
69.0	4.373	0.452	919.124	.044%	99.044%
70.0	4.303	0.446	919.57	.043%	99.092%
71.0	4.219	0.440	920.01	.043%	99.139%
72.0	4.148	0.435	920.445	.042%	99.186%
73.0	4.092	0.431	920.876	.042%	99.233%
74.0	4.043	0.428	921.304	.041%	99.279%
75.0	3.994	0.425	921.729	.041%	99.324%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	3.966	0.423	922.151	.041%	99.370%
77.0	3.938	0.421	922.572	.041%	99.415%
78.0	3.923	0.421	922.993	.041%	99.461%
79.0	3.902	0.420	923.414	.041%	99.506%
80.0	3.881	0.420	923.833	.041%	99.551%
81.0	3.860	0.419	924.252	.040%	99.596%
82.0	3.832	0.417	924.669	.040%	99.641%
83.0	3.839	0.417	925.086	.040%	99.686%
84.0	3.839	0.418	925.504	.040%	99.731%
85.0	3.818	0.418	925.922	.040%	99.776%
86.0	3.797	0.416	926.339	.040%	99.821%
87.0	3.797	0.416	926.754	.040%	99.866%
88.0	3.776	0.415	927.169	.040%	99.911%
89.0	3.776	0.414	927.583	.040%	99.955%
90.0	3.783	0.414	927.997	.040%	100.000%

Zonal flux distribution table

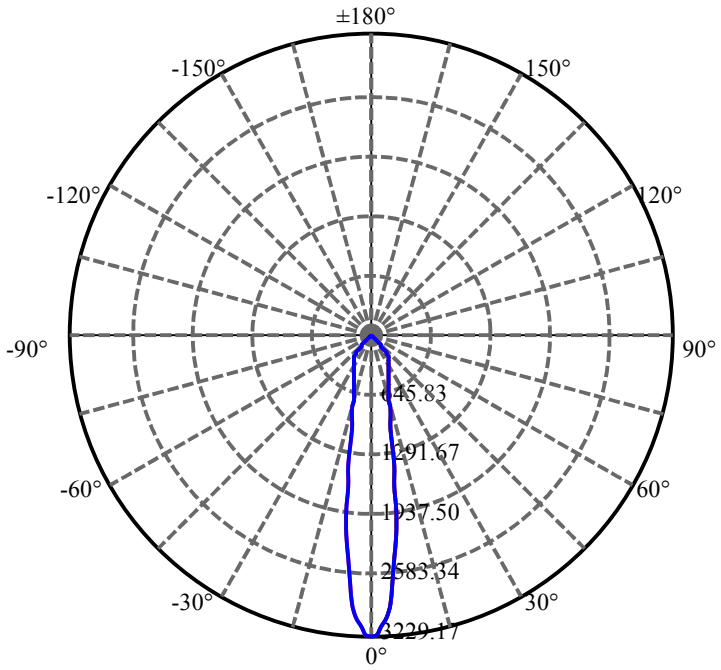
ZONAL LUMEN SUMMARY

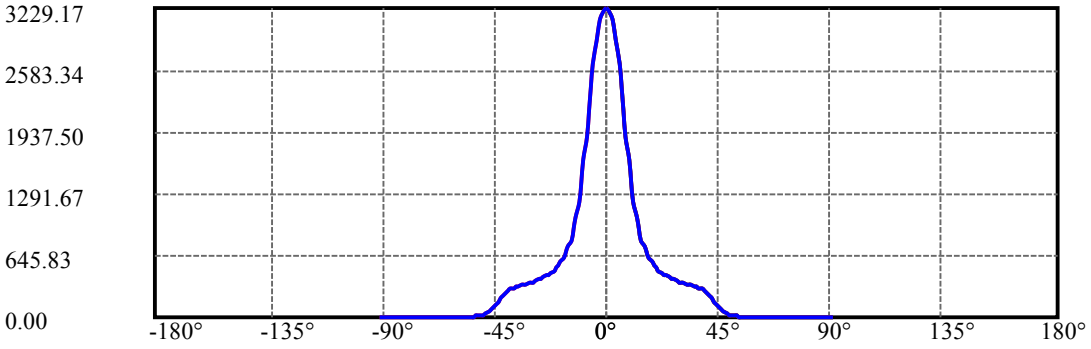
Zone	Lumens	%Lamp	%Fixt
0-30	621.49	59.99%	66.97%
0-40	821.20	79.27%	88.49%
0-60	914.72	88.29%	98.57%
0-90	927.58	89.54%	99.96%
0-120	927.58	89.54%	99.96%
0-180	928.00	89.58%	100.00%
60-90	13.41	1.29%	1.45%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-35.98	742.40	71.66%	80.00%

ZONAL LUMEN SUMMARY

0-10	210.48
10-20	216.62
20-30	194.39
30-40	199.71
40-50	86.09
50-60	7.43
60-70	4.85
70-80	4.26
80-90	3.75
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):

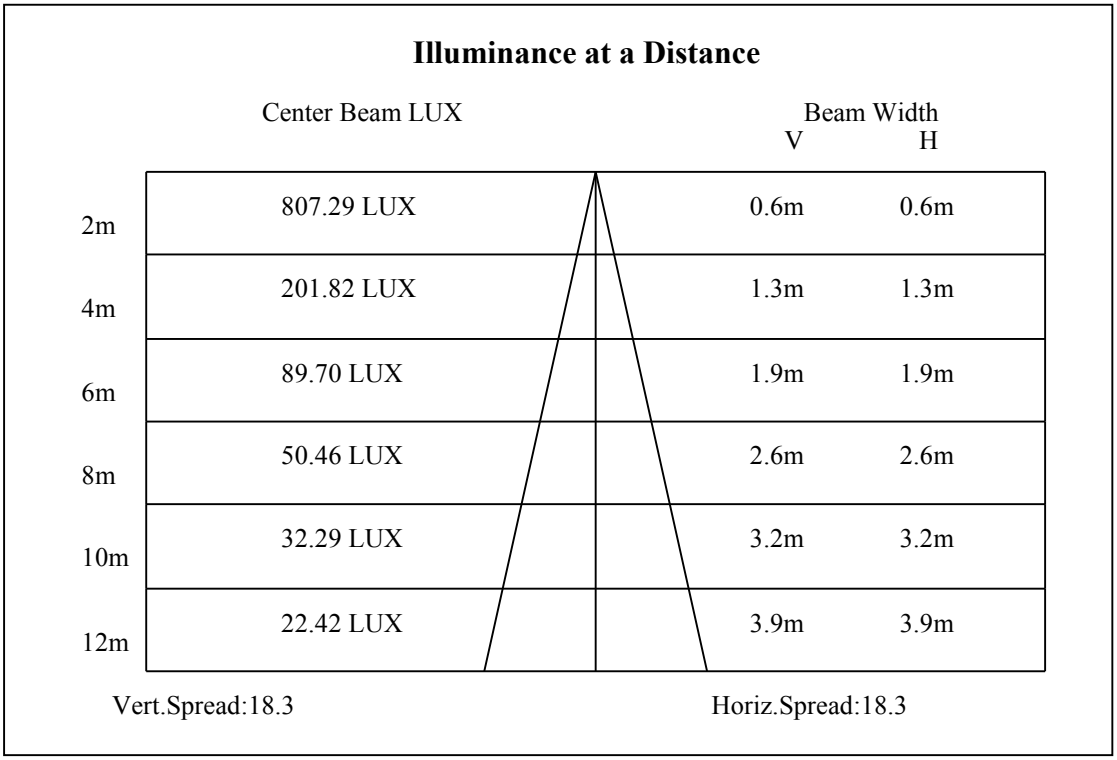
C0/C180:

C90/C270:

Field angle(10%Imax):C0/180Left:35.3 Right:35.3
:C90/270Left:35.3 Right:35.3

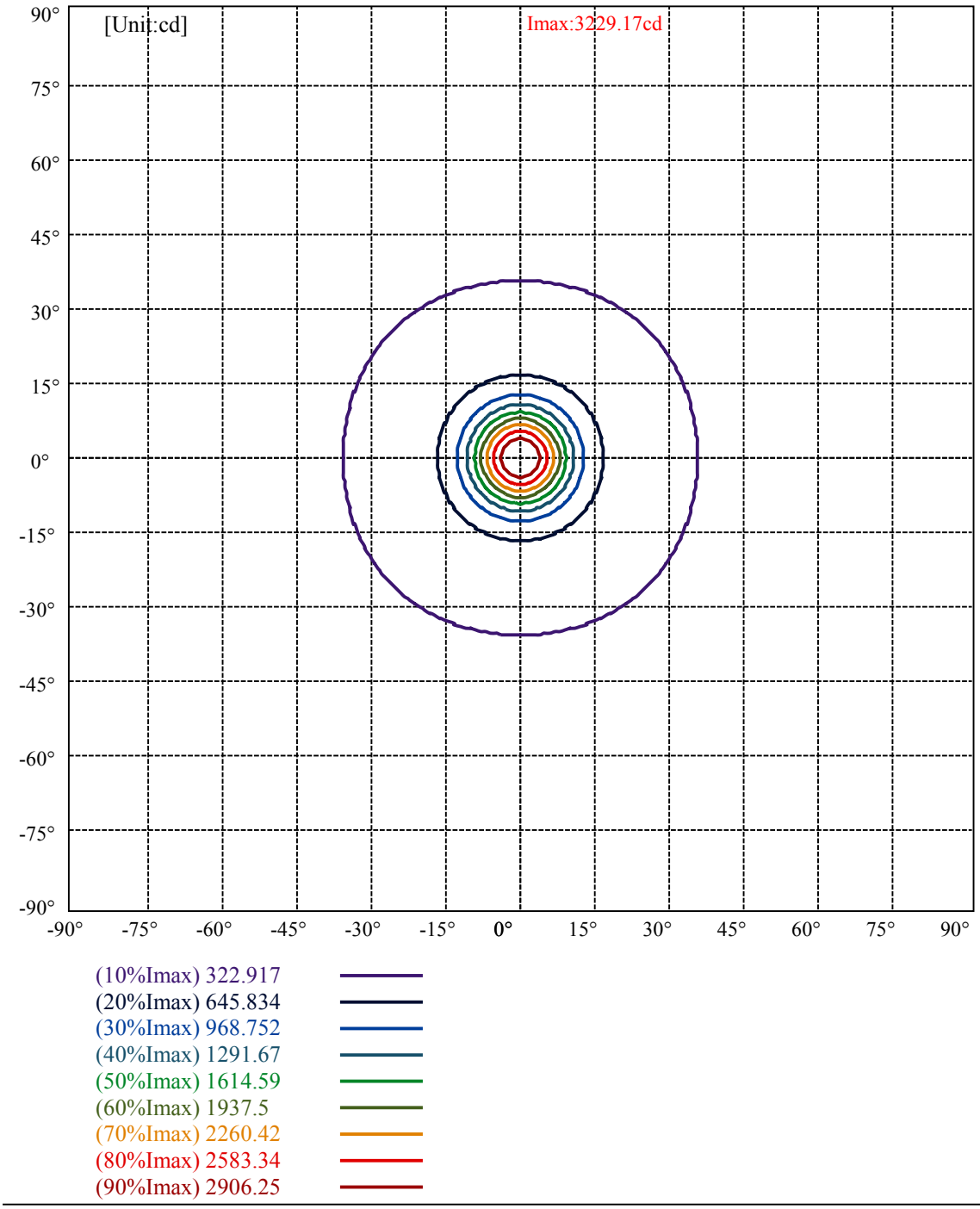
Beam Angle(50%Imax):C0/180Left:9.1 Right:9.1
:C90/270Left:9.1 Right:9.1

Lux distance Curve



Equipment: GMS1980 Date: 2019/12/23 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

ISO-Intensity(V-H)

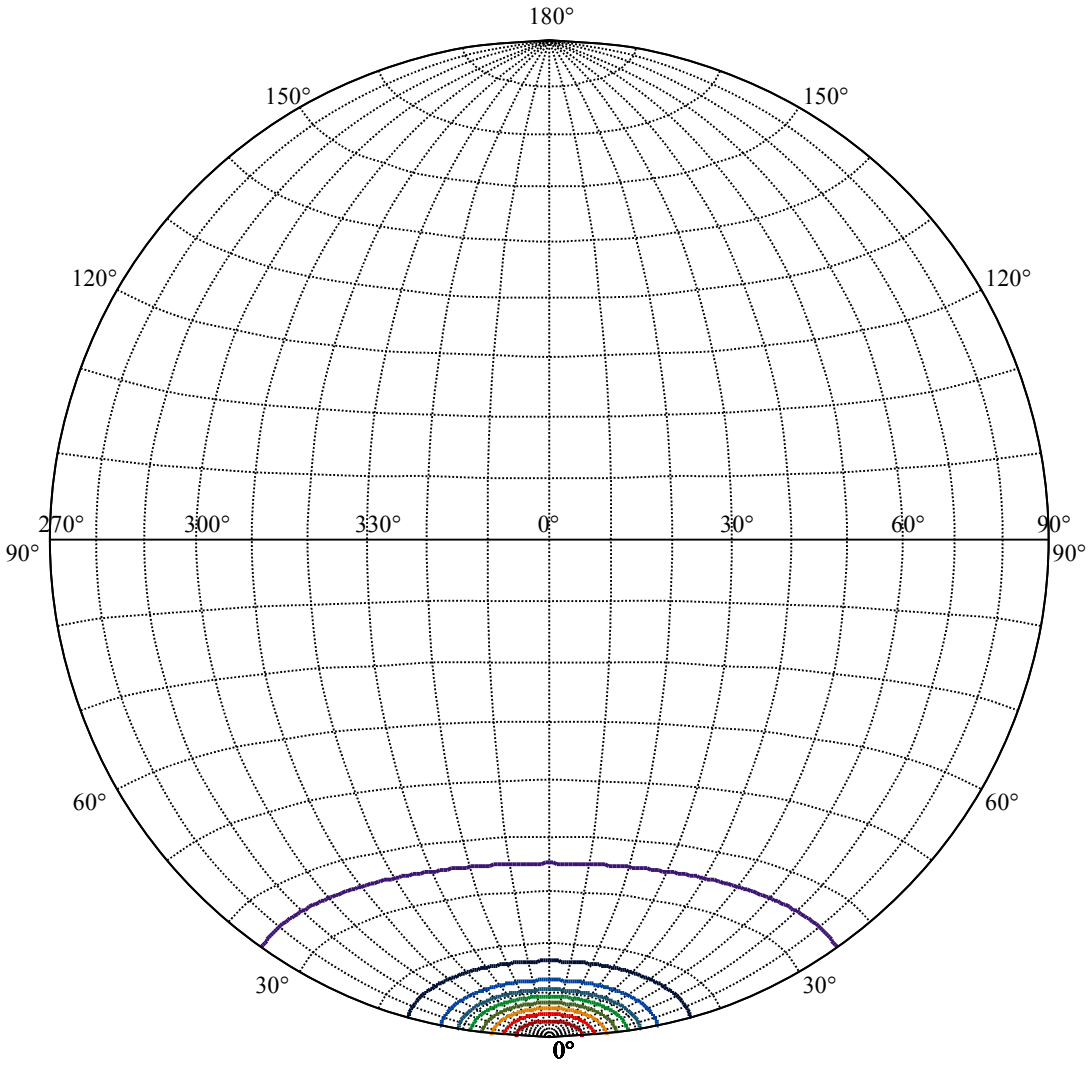


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/12/23
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

ISO candela diagram on circular web



House [Unit:cd] Road

Imax:3229.17

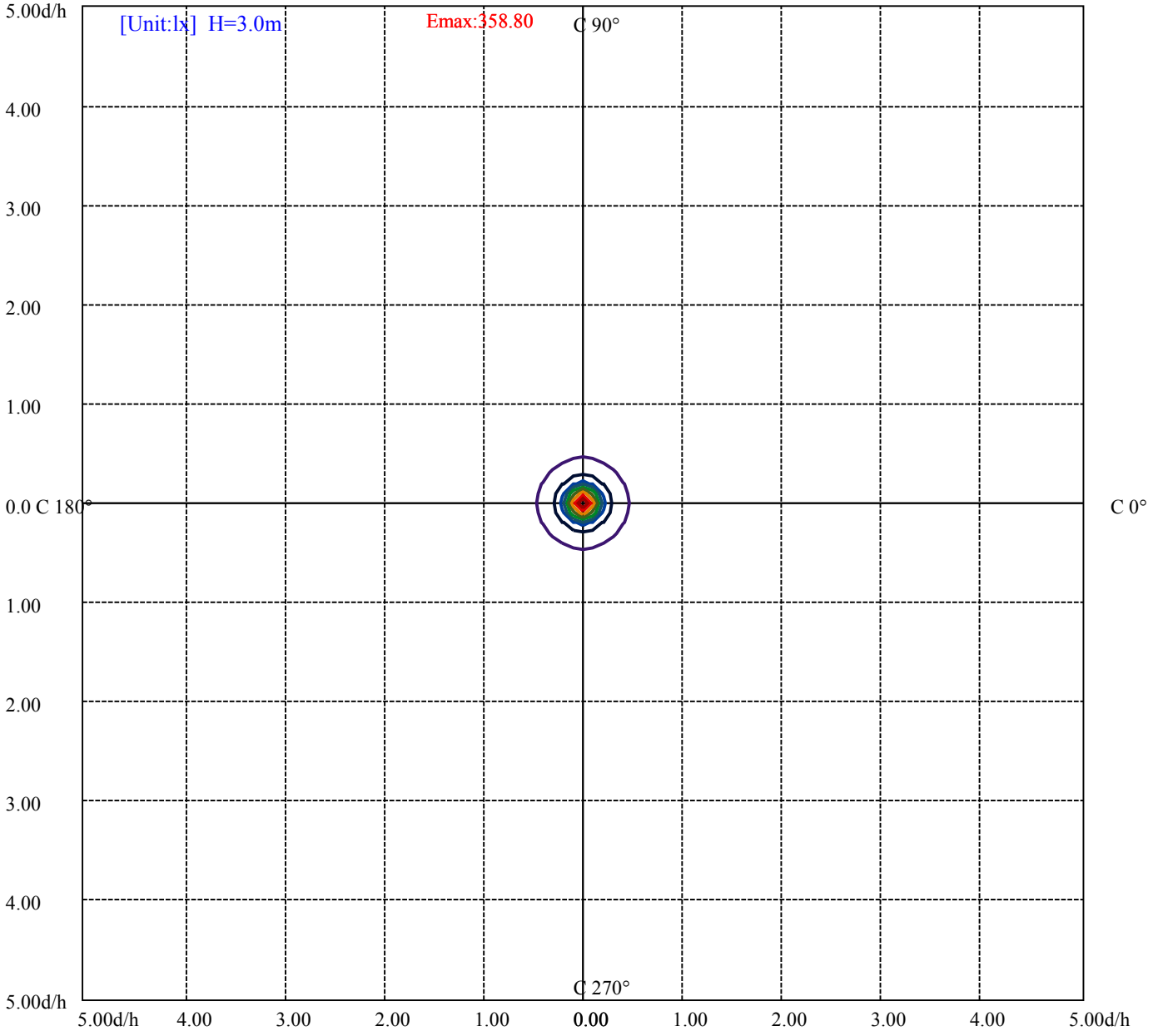
(10%Imax) 322.917
(20%Imax) 645.834
(30%Imax) 968.752
(40%Imax) 1291.67
(50%Imax) 1614.59
(60%Imax) 1937.5
(70%Imax) 2260.42
(80%Imax) 2583.34
(90%Imax) 2906.25

Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/12/23
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

ISO illuminance diagram

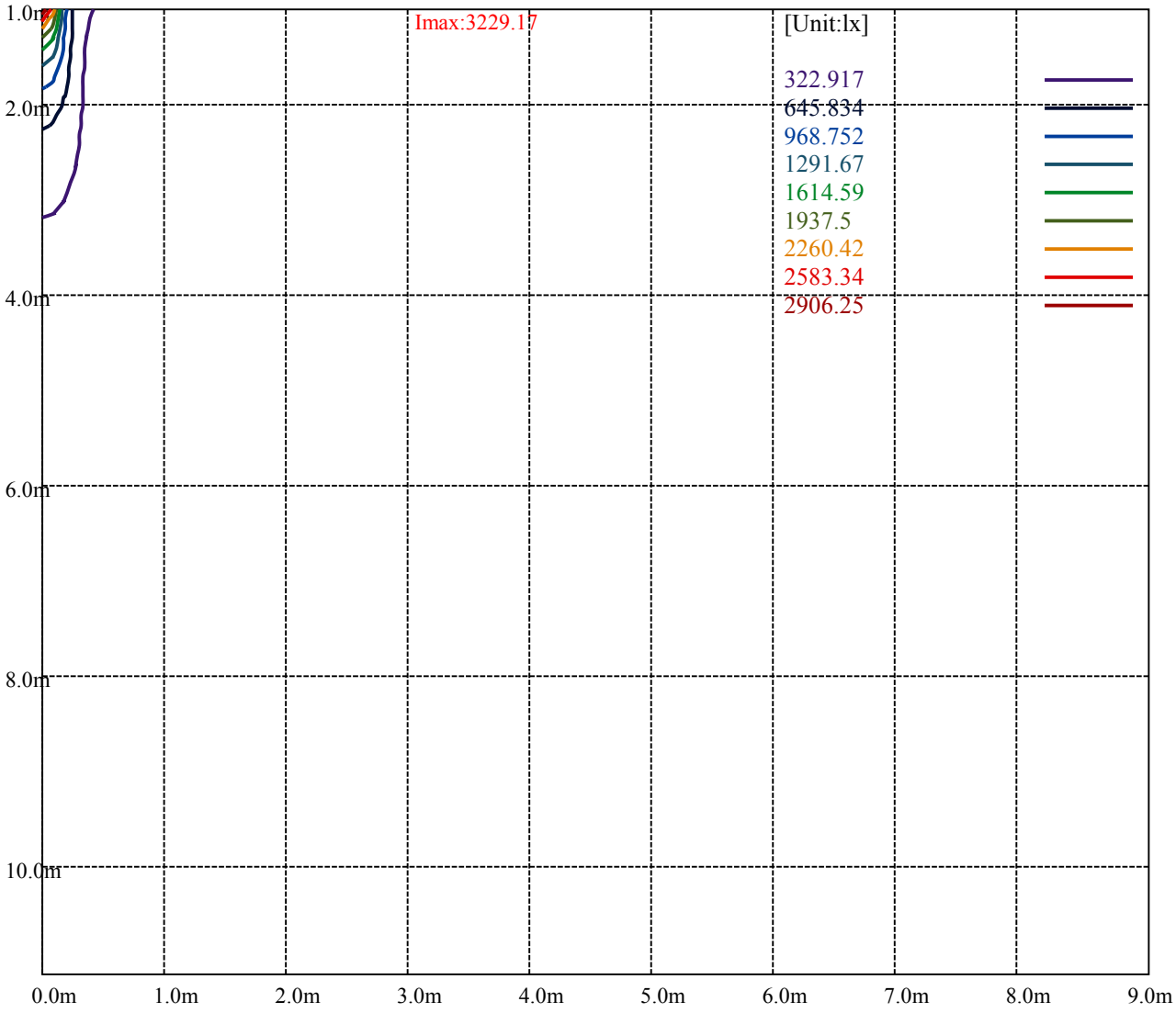


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/12/23
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Space ISO Lux diagram



Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/12/23
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Luminance Limitting Curve(no luminous side)

Luminance Table

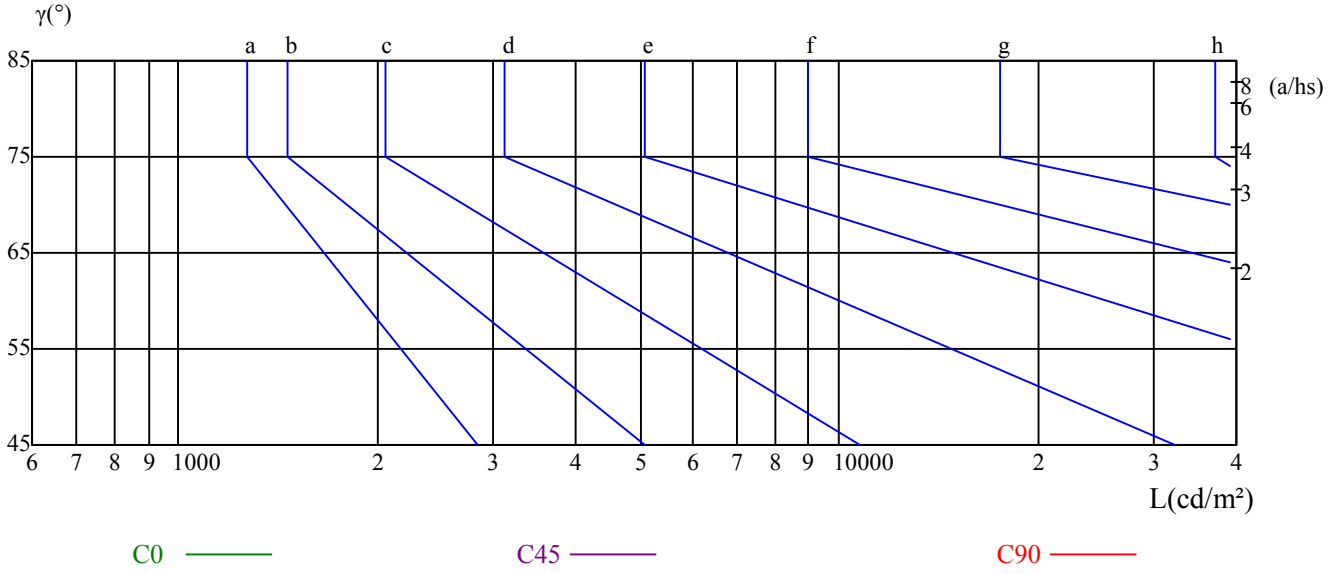
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

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

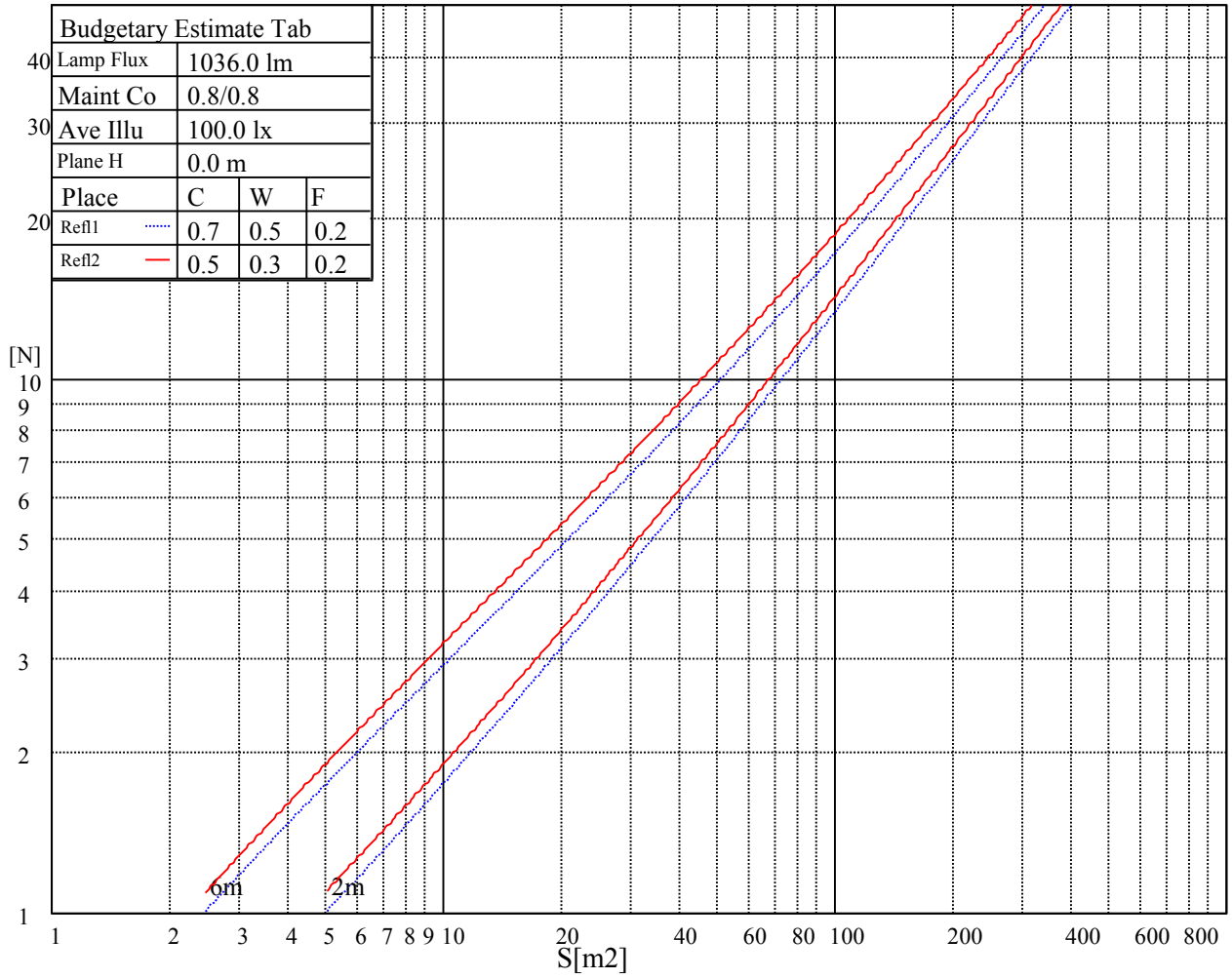
Glare Table

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

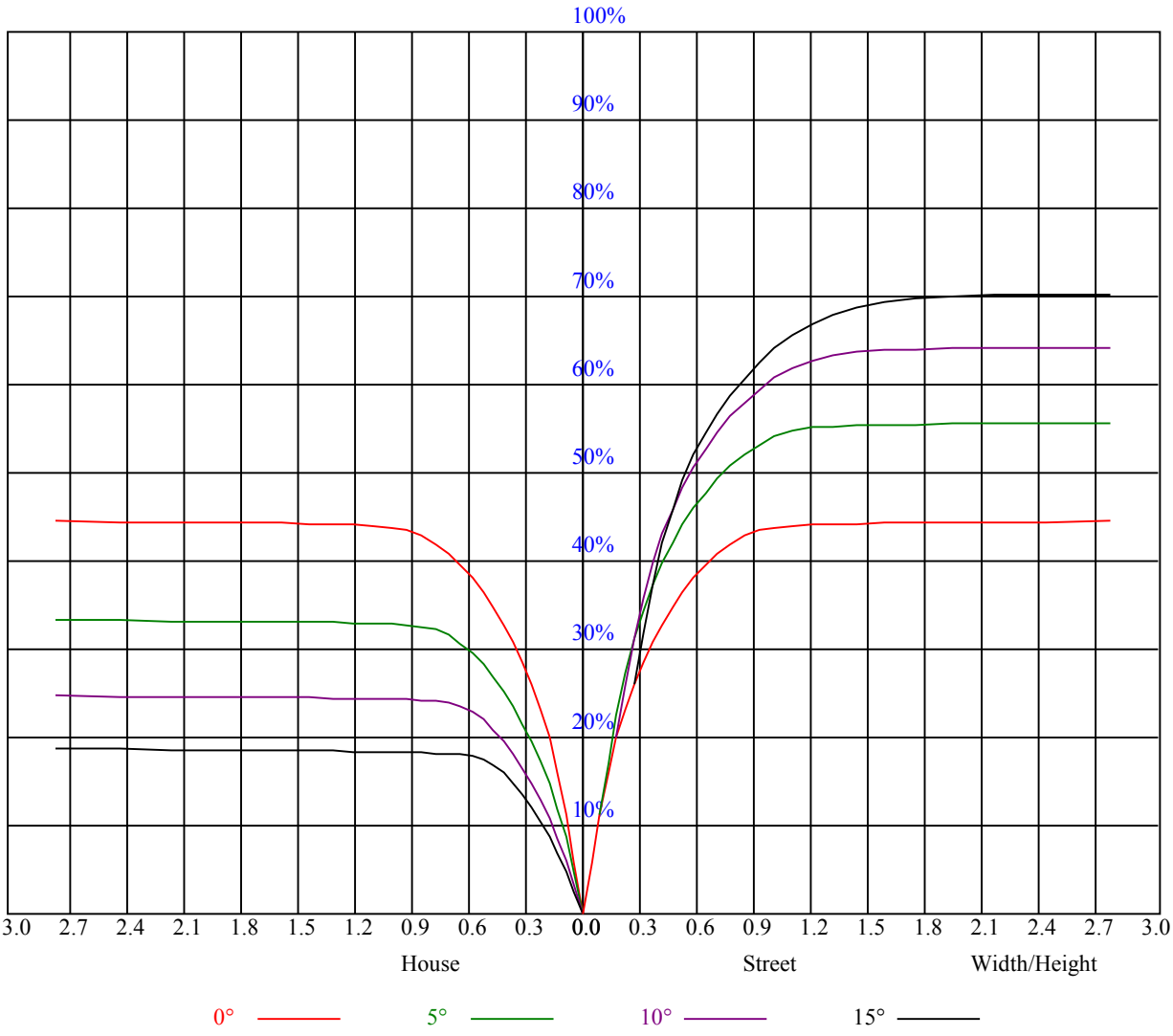


Equipment: GMS1980 Date: 2019/12/23 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

Utilization factor table for indoor luminaire

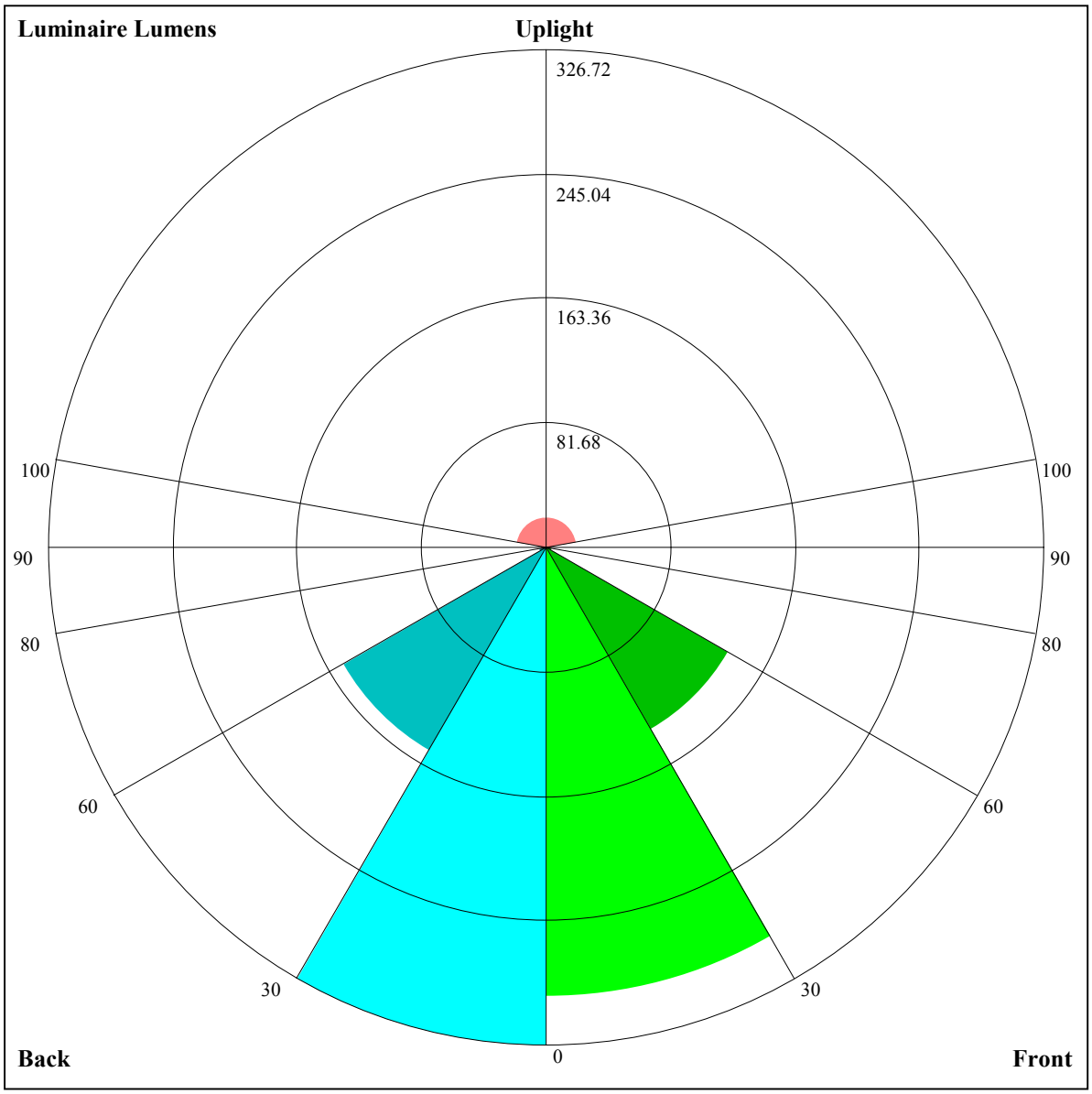
RHOCC	80			70			50			30			10			0
RHOW	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR	COEFFCIENTS OF UTILIZATION RHOFC=20 CU															
0	1.07	1.07	1.07	1.04	1.04	1.04	1.00	1.00	1.00	0.95	0.95	0.95	0.91	0.91	0.91	0.90
1	0.99	0.97	0.95	0.97	0.95	0.93	0.94	0.92	0.91	0.90	0.89	0.88	0.87	0.86	0.85	0.84
2	0.93	0.89	0.86	0.91	0.88	0.85	0.88	0.85	0.83	0.85	0.83	0.81	0.83	0.81	0.80	0.78
3	0.87	0.82	0.79	0.85	0.81	0.78	0.83	0.80	0.77	0.81	0.78	0.76	0.79	0.77	0.75	0.73
4	0.81	0.77	0.73	0.80	0.76	0.72	0.78	0.75	0.72	0.77	0.73	0.71	0.75	0.72	0.70	0.69
5	0.77	0.72	0.68	0.76	0.71	0.68	0.74	0.70	0.67	0.73	0.69	0.66	0.71	0.68	0.66	0.64
6	0.72	0.67	0.63	0.72	0.67	0.63	0.70	0.66	0.63	0.69	0.65	0.62	0.68	0.65	0.62	0.61
7	0.68	0.63	0.60	0.68	0.63	0.60	0.67	0.62	0.59	0.66	0.62	0.59	0.65	0.61	0.59	0.57
8	0.65	0.60	0.56	0.64	0.60	0.56	0.64	0.59	0.56	0.63	0.59	0.56	0.62	0.58	0.56	0.54
9	0.62	0.57	0.54	0.61	0.57	0.53	0.61	0.56	0.53	0.60	0.56	0.53	0.59	0.56	0.53	0.52
10	0.59	0.54	0.51	0.59	0.54	0.51	0.58	0.54	0.51	0.57	0.53	0.51	0.57	0.53	0.50	0.49

Coefficient Utilization Curve



Equipment: GMS1980	Date: 2019/12/23	Operator: NT07
Temperature(°C): 25.0	Humidity(%): 65.0%	Distance(m): 7.50

LCS Graph



Luminaire Lumens:

FL=294.72,FM=138.37,FH=4.51,FVH=2.08

BL=326.72,BM=154.56,BH=4.62,BVH=2.09

UL=4.13,UH=19.64

BUG Rating:B1-U2-G0

Equipment: GMS1980	Date: 2019/12/23	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	3233.81	3168.00	3026.81	2863.69	2655.00	2372.63	2076.19	1827.00	1575.00
45.0	3247.31	3200.06	3084.19	2943.00	2759.63	2510.44	2226.38	1967.63	1702.69
90.0	3228.75	3202.88	3129.19	3003.75	2845.13	2613.94	2364.75	2071.13	1793.81
135.0	3206.81	3241.13	3234.38	3187.13	3114.56	2955.94	2748.94	2512.13	2221.88
180.0	3233.81	3261.94	3256.31	3193.88	3099.94	2969.44	2738.81	2504.25	2243.25
225.0	3247.31	3260.25	3230.44	3151.13	3037.50	2853.56	2610.56	2361.94	2073.94
270.0	3228.75	3219.75	3159.56	3066.75	2928.94	2687.63	2448.00	2190.94	1910.81
315.0	3206.81	3133.69	2986.88	2821.50	2611.69	2296.69	2036.81	1793.25	1544.63
360.0	3233.81	3168.00	3026.81	2863.69	2655.00	2372.63	2076.19	1827.00	1575.00

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	1350.00	1173.38	1007.44	889.31	786.94	709.88	657.56	613.69	569.25
45.0	1466.44	1276.31	1091.81	958.50	840.94	751.50	690.19	640.69	588.94
90.0	1570.50	1343.25	1107.56	1004.18	889.88	769.39	711.11	657.39	608.34
135.0	1937.25	1696.50	1448.44	1256.06	1091.25	924.75	823.50	744.75	668.25
180.0	1950.75	1679.06	1435.50	1118.14	1061.38	930.26	817.03	741.21	675.23
225.0	1824.19	1566.56	1336.50	1115.83	988.37	860.18	774.11	706.16	639.34
270.0	1653.19	1442.81	1234.69	1076.06	930.38	819.00	743.06	676.13	624.38
315.0	1346.06	1108.86	986.63	872.66	774.28	701.10	650.93	608.74	564.02
360.0	1350.00	1173.38	1007.44	889.31	786.94	709.88	657.56	613.69	569.25

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	539.44	517.50	488.25	469.69	455.06	434.81	417.94	406.69	392.63
45.0	554.63	525.38	492.75	472.50	455.06	434.81	417.38	403.31	389.25
90.0	566.16	534.15	504.23	479.25	460.07	441.06	425.59	408.60	393.58
135.0	622.69	585.00	542.81	517.50	493.88	471.38	451.13	435.94	418.50
180.0	623.59	586.29	554.34	520.03	497.08	477.39	455.96	439.76	424.07
225.0	597.99	563.63	527.85	504.11	483.58	461.59	445.56	430.48	412.65
270.0	587.25	555.75	522.00	498.94	478.69	456.75	440.44	424.69	408.38
315.0	534.38	508.95	486.96	462.88	445.50	429.47	411.19	398.87	388.46
360.0	539.44	517.50	488.25	469.69	455.06	434.81	417.94	406.69	392.63

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	383.63	373.50	363.94	356.63	349.31	340.88	334.69	329.06	320.06
45.0	379.13	367.88	358.31	350.44	342.00	335.25	327.94	321.75	313.31
90.0	382.11	371.59	359.94	352.07	344.98	336.83	330.58	324.45	318.21
135.0	404.44	390.38	379.13	369.56	360.56	352.69	345.94	339.75	331.88
180.0	407.59	393.47	382.84	371.87	363.49	355.05	347.18	340.59	333.51
225.0	401.57	389.36	377.33	370.01	362.48	353.08	347.23	340.76	332.10
270.0	394.31	384.75	374.63	366.75	358.88	351.56	344.81	338.06	330.75
315.0	377.72	368.16	360.62	352.69	346.11	339.08	331.99	325.29	318.21
360.0	383.63	373.50	363.94	356.63	349.31	340.88	334.69	329.06	320.06

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	313.88	302.06	286.31	252.68	227.03	196.37	164.76	136.69	105.47
45.0	307.13	295.88	285.19	249.64	225.06	198.62	164.98	137.48	112.28
90.0	310.67	303.58	288.84	263.70	239.68	210.21	183.32	152.94	126.11
135.0	326.25	319.50	313.31	300.94	285.75	256.56	228.83	201.32	168.24
180.0	326.48	320.06	313.88	300.71	282.26	260.04	231.69	200.81	172.91
225.0	326.31	319.78	310.39	291.88	271.91	245.42	219.66	189.23	157.89
270.0	324.56	318.38	300.94	284.06	255.66	230.18	197.16	169.88	142.48
315.0	308.98	293.91	274.84	245.76	220.33	192.26	158.63	124.31	96.98
360.0	313.88	302.06	286.31	252.68	227.03	196.37	164.76	136.69	105.47

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	79.31	53.16	31.61	19.97	15.41	12.66	10.52	8.83	7.76
45.0	83.42	58.33	38.93	22.84	15.53	13.50	10.80	8.89	7.54
90.0	96.97	72.28	47.53	28.69	18.28	14.29	11.98	9.90	8.33
135.0	138.21	105.64	76.89	54.79	34.48	20.59	14.91	13.05	10.41
180.0	141.13	109.80	83.42	56.81	36.90	21.54	15.24	13.22	10.91
225.0	130.11	99.34	71.16	49.39	31.22	17.78	15.02	12.83	10.41
270.0	108.90	82.80	58.84	36.06	20.81	15.75	13.39	11.14	9.17
315.0	68.62	44.66	28.13	17.38	14.63	12.15	9.96	8.55	7.76
360.0	79.31	53.16	31.61	19.97	15.41	12.66	10.52	8.83	7.76

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	7.37	7.03	6.36	6.13	5.91	5.74	5.51	5.40	5.23
45.0	7.03	6.64	6.36	6.08	5.91	5.74	5.51	5.34	5.23
90.0	7.48	6.92	6.36	6.08	5.85	5.63	5.46	5.29	5.18
135.0	8.72	7.71	7.31	6.64	6.19	5.96	5.74	5.57	5.40
180.0	8.55	7.48	7.03	6.58	6.30	6.08	5.85	5.68	5.51
225.0	8.66	7.93	7.48	6.92	6.36	6.13	5.91	5.68	5.51
270.0	7.93	7.43	6.98	6.64	6.41	6.19	5.91	5.63	5.46
315.0	7.09	6.75	6.53	6.24	6.02	5.85	5.57	5.40	5.23
360.0	7.37	7.03	6.36	6.13	5.91	5.74	5.51	5.40	5.23

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	5.06	4.78	4.67	4.56	4.39	4.33	4.22	4.16	4.11
45.0	5.06	4.89	4.78	4.61	4.56	4.44	4.33	4.28	4.22
90.0	5.01	4.89	4.78	4.67	4.56	4.44	4.33	4.28	4.16
135.0	5.23	5.06	4.95	4.84	4.73	4.61	4.50	4.39	4.28
180.0	5.29	5.12	5.01	4.84	4.73	4.67	4.50	4.44	4.33
225.0	5.34	5.18	5.01	4.84	4.73	4.56	4.44	4.39	4.33
270.0	5.29	5.12	4.89	4.73	4.67	4.50	4.44	4.33	4.22
315.0	5.01	4.73	4.61	4.50	4.39	4.28	4.22	4.16	4.11
360.0	5.06	4.78	4.67	4.56	4.39	4.33	4.22	4.16	4.11

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	4.11	4.05	3.99	3.94	3.94	3.88	3.88	3.83	3.88
45.0	4.11	4.05	4.05	3.99	3.94	3.94	3.94	3.94	3.88
90.0	4.11	4.05	3.99	3.99	3.94	3.94	3.88	3.88	3.83
135.0	4.22	4.16	4.11	3.99	3.99	3.94	3.94	3.94	3.94
180.0	4.22	4.16	4.05	4.05	4.05	3.99	3.94	3.88	3.88
225.0	4.22	4.16	4.11	4.05	3.99	3.99	3.99	3.94	3.94
270.0	4.16	4.11	4.05	3.99	3.99	3.94	3.94	3.94	3.88
315.0	4.05	3.99	3.99	3.94	3.88	3.88	3.88	3.88	3.83
360.0	4.11	4.05	3.99	3.94	3.94	3.88	3.88	3.83	3.88

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	3.83	3.83	3.77	3.83	3.83	3.77	3.77	3.77	3.77
45.0	3.88	3.83	3.88	3.83	3.83	3.83	3.77	3.77	3.77
90.0	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.77	3.77
135.0	3.88	3.83	3.83	3.83	3.83	3.77	3.83	3.77	3.77
180.0	3.88	3.83	3.83	3.83	3.77	3.77	3.77	3.77	3.77
225.0	3.88	3.88	3.88	3.88	3.83	3.83	3.83	3.83	3.83
270.0	3.88	3.83	3.88	3.88	3.83	3.83	3.83	3.77	3.77
315.0	3.83	3.83	3.83	3.83	3.83	3.77	3.77	3.77	3.77
360.0	3.83	3.83	3.77	3.83	3.83	3.77	3.77	3.77	3.77

Intensity data(cd)

C/γ(°)	90.0
0.0	3.77
45.0	3.83
90.0	3.77
135.0	3.77
180.0	3.77
225.0	3.83
270.0	3.77
315.0	3.77
360.0	3.77