NATA LIGHTING CO.,LTD.
www.nata.cn
Email:info@nata.com
Tel:+86-750-3770000 Fax:+86-750-3771111
Address:380JinOu Road,GaoXin Zone,Jiang Men City,Guangdong,China

Nata

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

Report No:	Voltage(V): 34.2900
Test No: GC2019083004	Current(A): 0.3550
LampCAT: XICATO XOB LES 9.8MM	Power (W): 12.1700
Lamp flux(lm): 1120.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 35	Width(mm): 35
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 1007.92, Efficiency(%): 89.99% , Luminous Efficacy(lm/W): 82.82
Central intensity(cd): 9322.031, Maximum intensity(cd): 9322.031
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=13.2
[C90/270]Total=13.2
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(%): 89.99%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.090%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	9322.031	0.000	0	.000%	.000%
1.0	9190.125	8.858	8.858	.791%	.879%
2.0	8789.273	25.806	34.663	2.304%	3.439%
3.0	8100.773	40.395	75.059	3.607%	7.447%
4.0	7261.734	51.423	126.482	4.591%	12.549%
5.0	6319.828	58.427	184.909	5.217%	18.346%
6.0	5280.469	60.963	245.872	5.443%	24.394%
7.0	4243.992	59.118	304.99	5.278%	30.259%
8.0	3396.234	54.680	359.67	4.882%	35.685%
9.0	2610.773	48.684	408.353	4.347%	40.515%
10.0	1977.609	41.523	449.876	3.707%	44.634%
11.0	1542.333	35.171	485.048	3.140%	48.124%
12.0	1268.227	30.723	515.771	2.743%	51.172%
13.0	1032.715	27.306	543.078	2.438%	53.881%
14.0	873.281	24.397	567.474	2.178%	56.302%
15.0	753.729	22.336	589.811	1.994%	58.518%
16.0	651.038	20.584	610.394	1.838%	60.560%
17.0	583.952	19.232	629.627	1.717%	62.468%
18.0	532.744	18.412	648.038	1.644%	64.295%
19.0	491.787	17.825	665.863	1.591%	66.063%
20.0	463.106	17.477	683.34	1.560%	67.797%
21.0	441.851	17.377	700.717	1.552%	69.521%
22.0	426.129	17.442	718.16	1.557%	71.252%
23.0	414.984	17.649	735.809	1.576%	73.003%
24.0	406.287	17.956	753.765	1.603%	74.784%
25.0	398.791	18.306	772.07	1.634%	76.601%
26.0	393.434	18.701	790.771	1.670%	78.456%
27.0	386.761	19.088	809.858	1.704%	80.350%
28.0	379.055	19.389	829.247	1.731%	82.273%
29.0	371.784	19.644	848.891	1.754%	84.222%
30.0	361.821	19.807	868.699	1.768%	86.188%
31.0	338.906	19.500	888.199	1.741%	88.122%
32.0	305.023	18.448	906.647	1.647%	89.953%
33.0	269.775	16.934	923.58	1.512%	91.633%
34.0	216.654	14.721	938.301	1.314%	93.093%
35.0	159.328	11.677	949.978	1.043%	94.252%
36.0	112.809	8.665	958.643	.774%	95.111%
37.0	71.058	5.997	964.639	.535%	95.706%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	40.830	3.735	968.374	.333%	96.077%
39.0	25.636	2.269	970.643	.203%	96.302%
40.0	19.357	1.569	972.212	.140%	96.458%
41.0	15.877	1.255	973.467	.112%	96.582%
42.0	13.500	1.067	974.534	.095%	96.688%
43.0	12.291	0.955	975.489	.085%	96.783%
44.0	11.391	0.894	976.383	.080%	96.871%
45.0	10.920	0.857	977.24	.077%	96.957%
46.0	10.470	0.836	978.077	.075%	97.040%
47.0	9.998	0.814	978.891	.073%	97.120%
48.0	9.626	0.793	979.684	.071%	97.199%
49.0	9.260	0.776	980.46	.069%	97.276%
50.0	8.993	0.761	981.221	.068%	97.351%
51.0	8.810	0.753	981.974	.067%	97.426%
52.0	8.655	0.749	982.724	.067%	97.501%
53.0	8.508	0.747	983.47	.067%	97.575%
54.0	8.374	0.744	984.214	.066%	97.648%
55.0	8.213	0.740	984.955	.066%	97.722%
56.0	8.086	0.736	985.691	.066%	97.795%
57.0	8.023	0.737	986.428	.066%	97.868%
58.0	7.966	0.739	987.167	.066%	97.941%
59.0	7.938	0.744	987.911	.066%	98.015%
60.0	7.910	0.749	988.659	.067%	98.089%
61.0	7.861	0.753	989.412	.067%	98.164%
62.0	7.791	0.754	990.166	.067%	98.239%
63.0	7.643	0.751	990.917	.067%	98.313%
64.0	7.432	0.740	991.656	.066%	98.387%
65.0	7.235	0.726	992.382	.065%	98.459%
66.0	7.066	0.714	993.096	.064%	98.530%
67.0	6.898	0.702	993.798	.063%	98.599%
68.0	6.743	0.691	994.489	.062%	98.668%
69.0	6.623	0.682	995.171	.061%	98.736%
70.0	6.476	0.673	995.844	.060%	98.802%
71.0	6.370	0.664	996.508	.059%	98.868%
72.0	6.251	0.656	997.164	.059%	98.933%
73.0	6.159	0.649	997.813	.058%	98.998%
74.0	6.117	0.645	998.458	.058%	99.062%
75.0	6.040	0.642	999.101	.057%	99.125%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	5.984	0.638	999.739	.057%	99.189%
77.0	5.913	0.634	1000.373	.057%	99.252%
78.0	5.843	0.629	1001.002	.056%	99.314%
79.0	5.745	0.623	1001.625	.056%	99.376%
80.0	5.674	0.616	1002.241	.055%	99.437%
81.0	5.618	0.611	1002.851	.055%	99.498%
82.0	5.534	0.605	1003.456	.054%	99.558%
83.0	5.449	0.597	1004.053	.053%	99.617%
84.0	5.337	0.588	1004.641	.052%	99.675%
85.0	5.217	0.576	1005.217	.051%	99.732%
86.0	5.112	0.565	1005.781	.050%	99.788%
87.0	5.020	0.555	1006.336	.050%	99.843%
88.0	4.859	0.541	1006.877	.048%	99.897%
89.0	4.718	0.525	1007.402	.047%	99.949%
90.0	4.655	0.514	1007.916	.046%	100.000%

Zonal flux distribution table

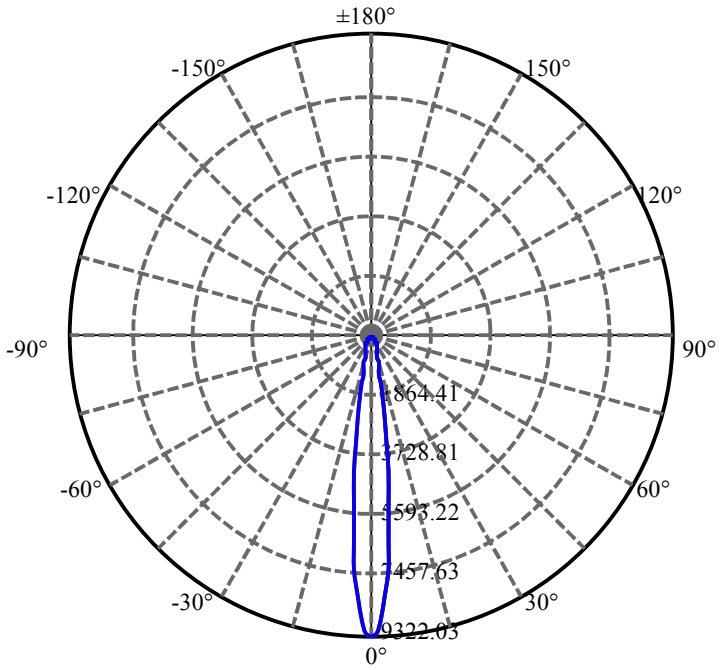
ZONAL LUMEN SUMMARY

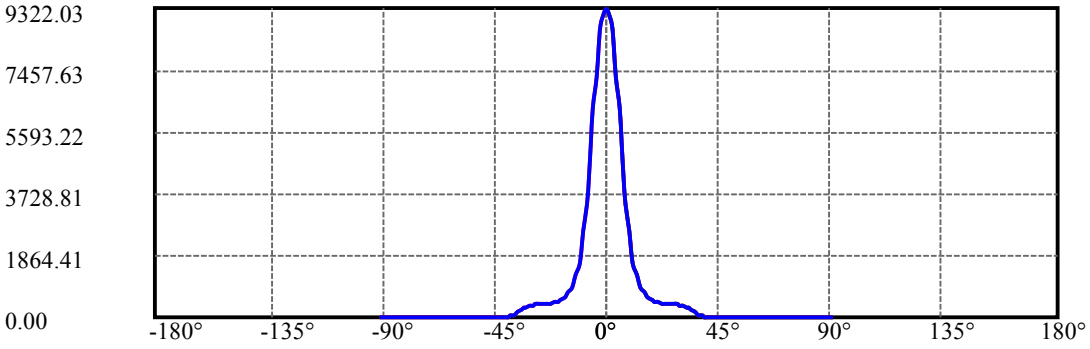
Zone	Lumens	%Lamp	%Fixt
0-30	868.70	77.56%	86.19%
0-40	972.21	86.80%	96.46%
0-60	988.66	88.27%	98.09%
0-90	1007.40	89.95%	99.95%
0-120	1007.40	89.95%	99.95%
0-180	1007.92	89.99%	100.00%
60-90	19.49	1.74%	1.93%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-26.82	806.33	71.99%	80.00%

ZONAL LUMEN SUMMARY

0-10	449.88
10-20	233.46
20-30	185.36
30-40	103.51
40-50	9.01
50-60	7.44
60-70	7.18
70-80	6.40
80-90	5.16
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):

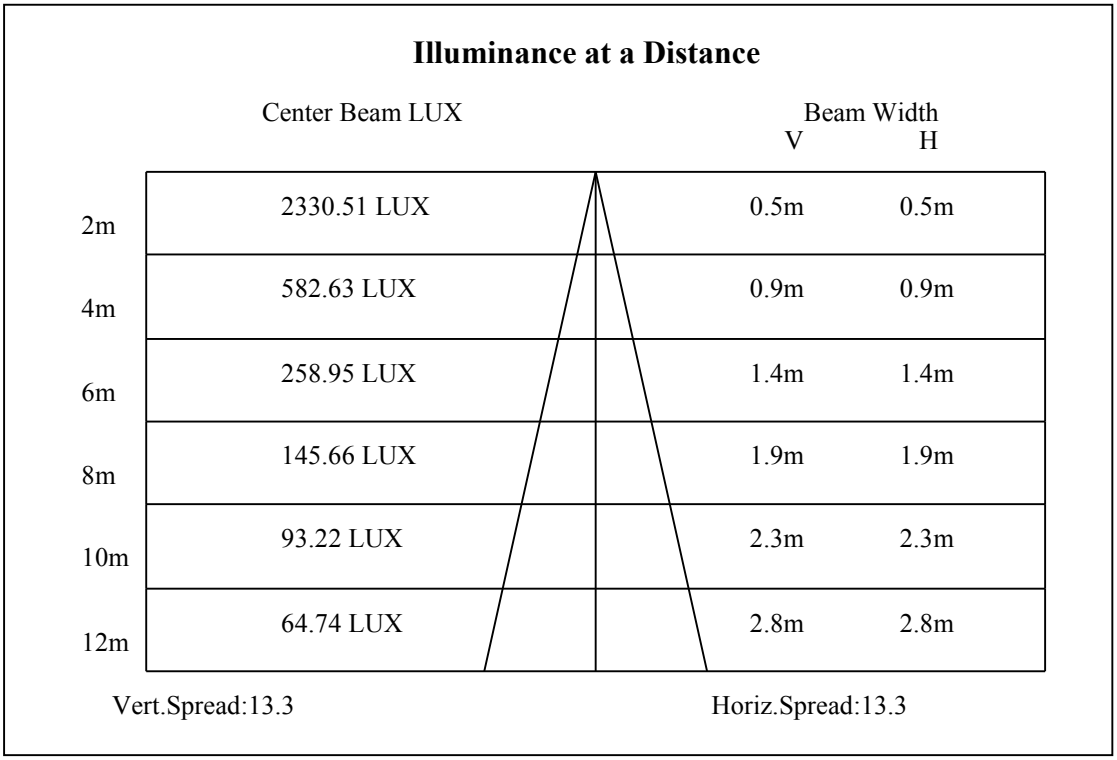
C0/C180:

C90/C270:

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

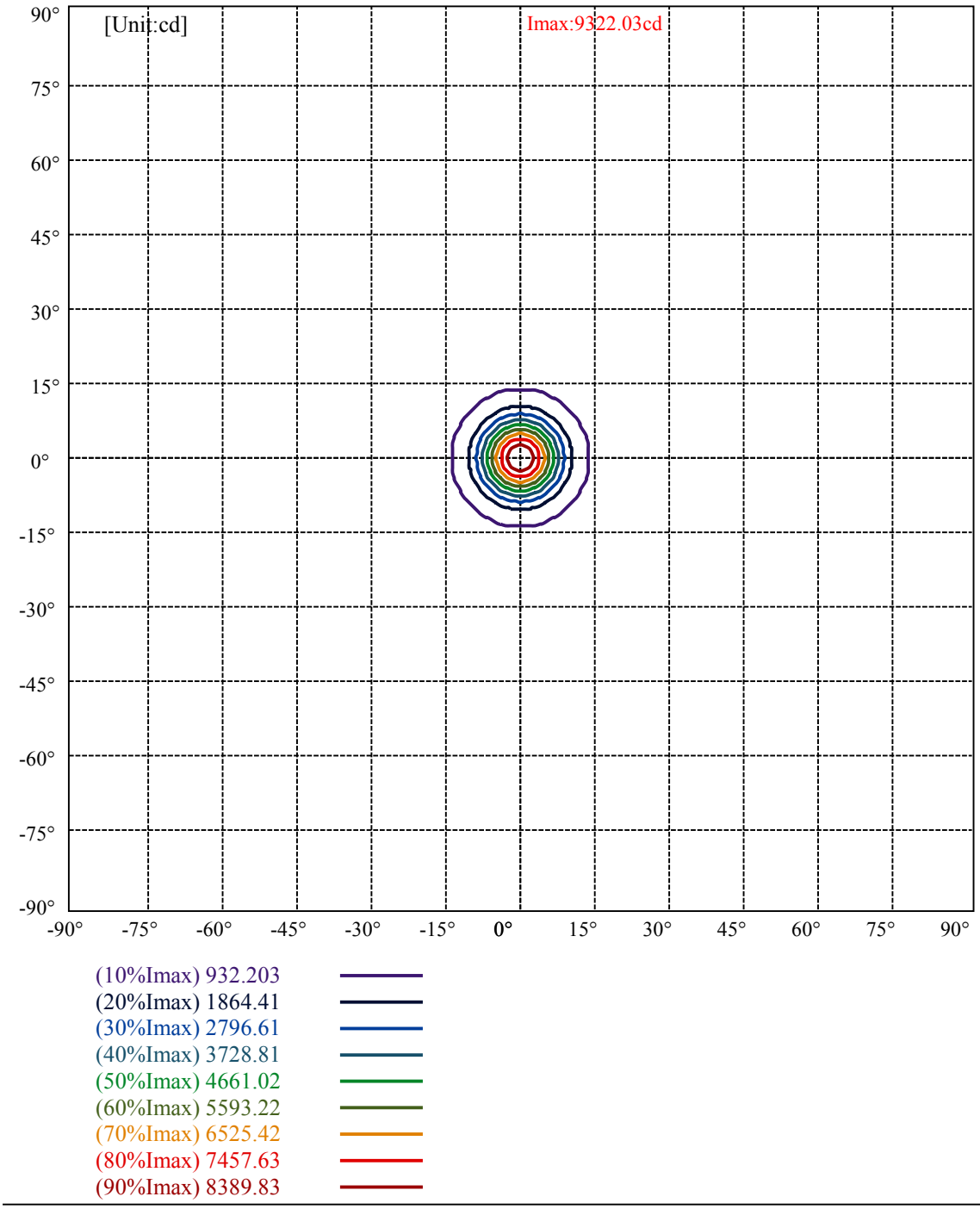
Beam Angle(50%Imax):C0/180Left:6.6 Right:6.6
:C90/270Left:6.6 Right:6.6

Lux distance Curve



Equipment: GMS1980 Date: 2019/8/30 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

ISO-Intensity(V-H)

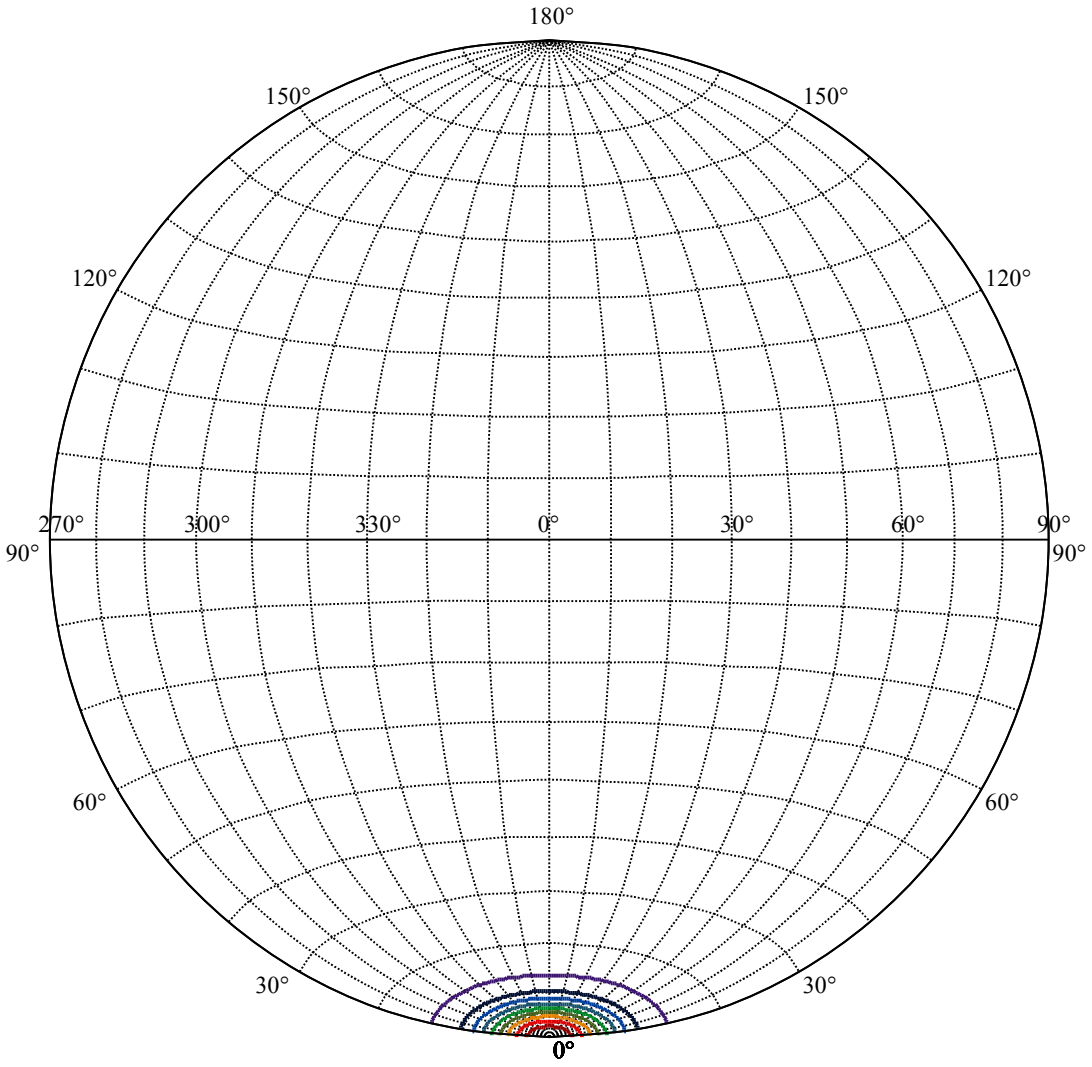


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/8/30
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

ISO candela diagram on circular web



House [Unit:cd] Road

Imax:9322.03

(10%Imax) 932.203
(20%Imax) 1864.41
(30%Imax) 2796.61
(40%Imax) 3728.81
(50%Imax) 4661.02
(60%Imax) 5593.22
(70%Imax) 6525.42
(80%Imax) 7457.63
(90%Imax) 8389.83

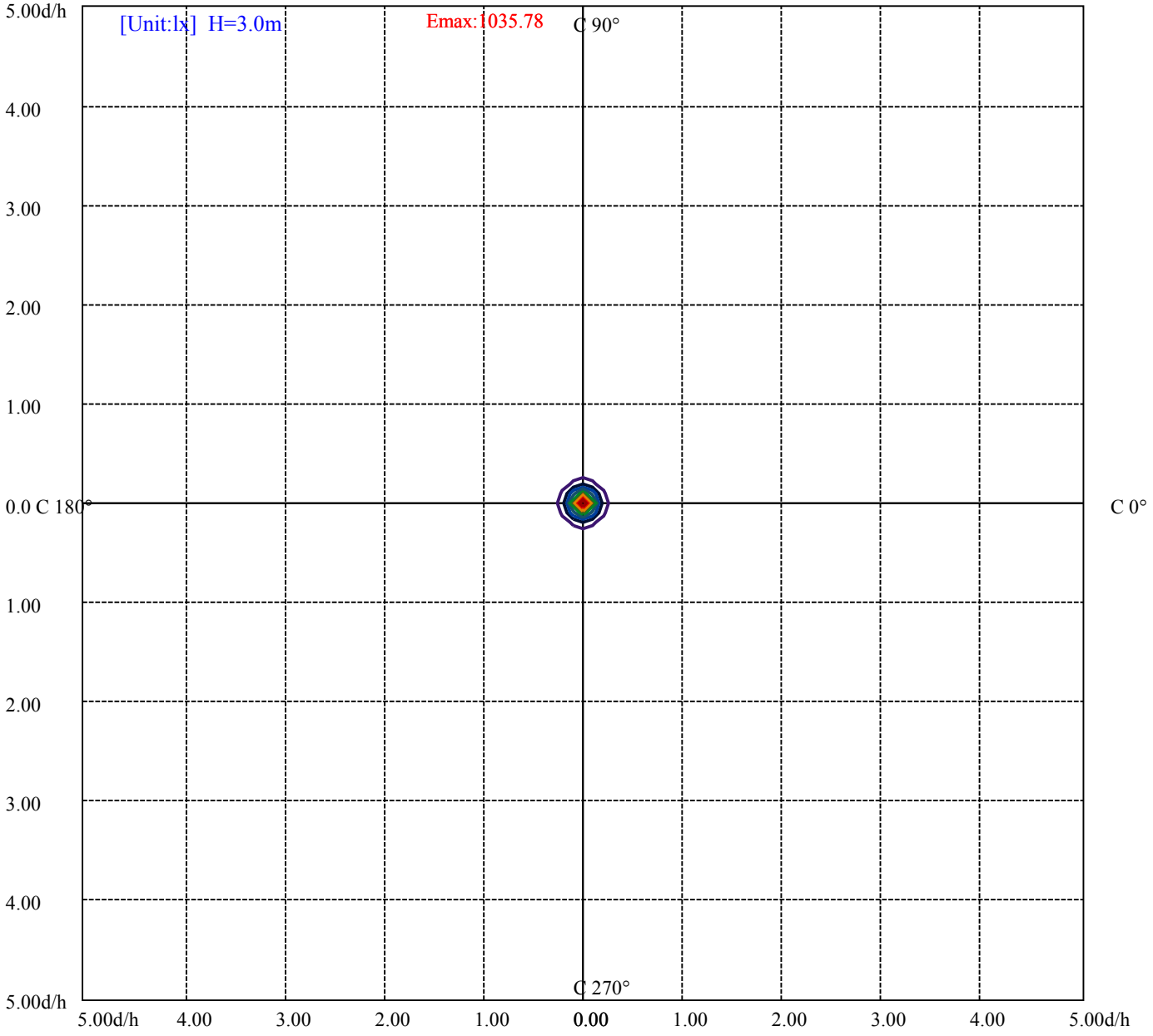
Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/8/30
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Nata 2-1316-E

ISO illuminance diagram

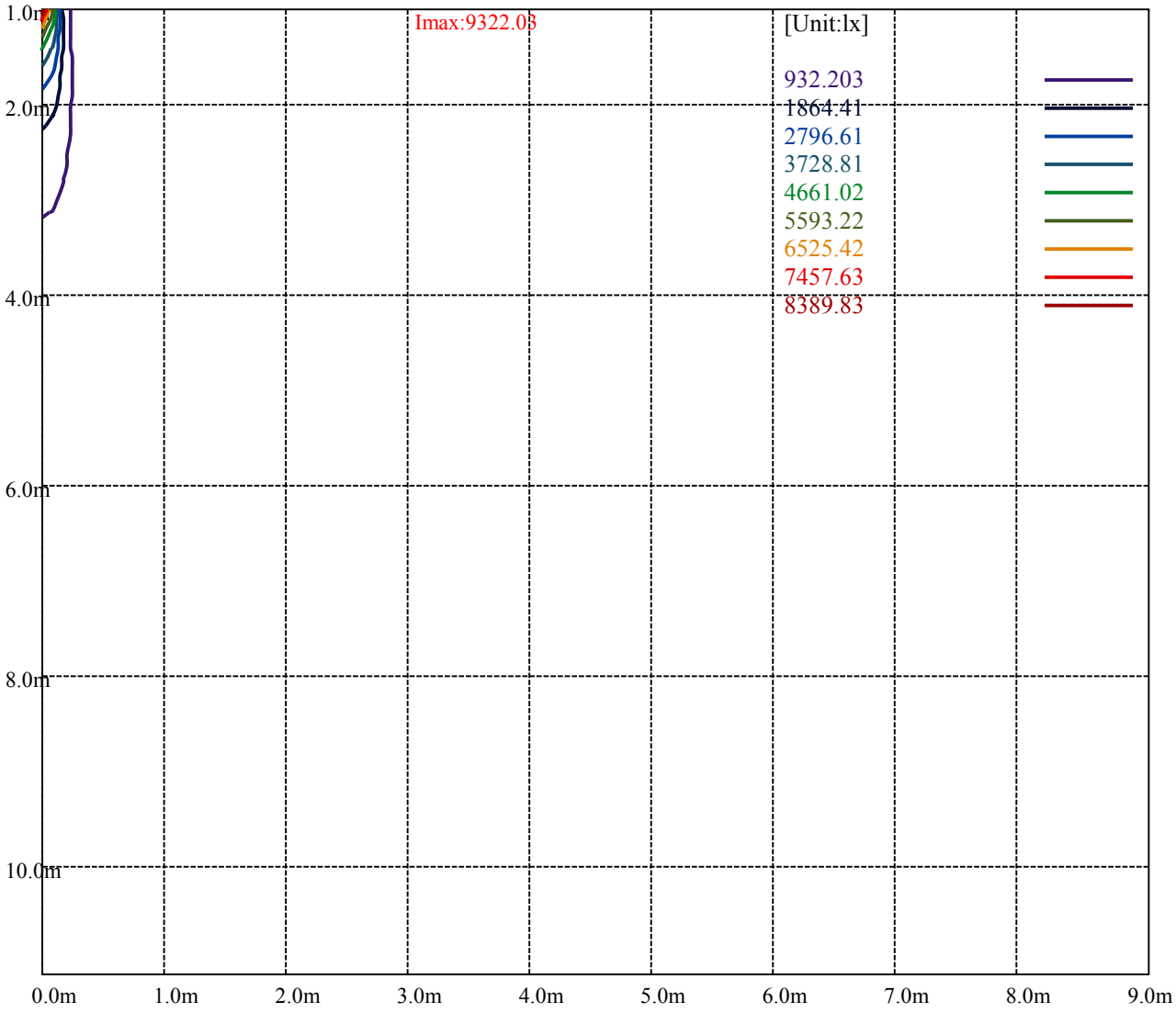


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/8/30
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Space ISO Lux diagram



Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/8/30
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Luminance Limitting Curve(no luminous side)

Luminance Table

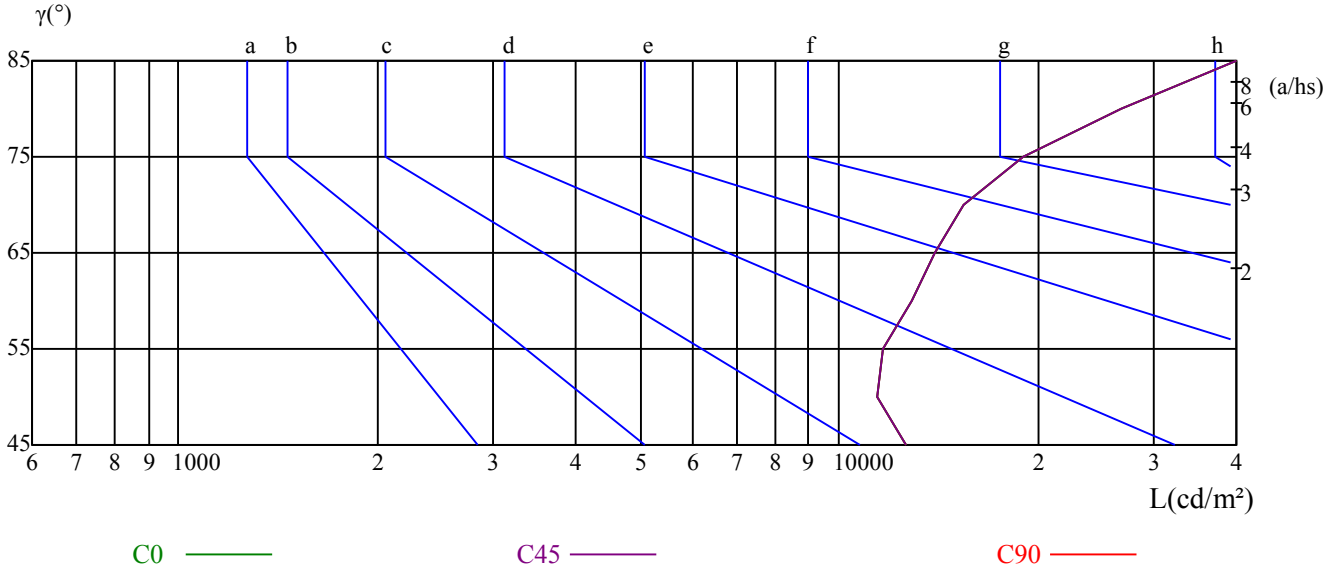
γ	45	50	55	60	65	70	75	80	85
C0	12606	11421	11688	12915	13975	15456	19050	26675	48866
C45	12606	11421	11688	12915	13975	15456	19050	26675	48866
C90	12606	11421	11688	12915	13975	15456	19050	26675	48866

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
13975	13975	13975	19050	19050	19050	48866	48866	48866

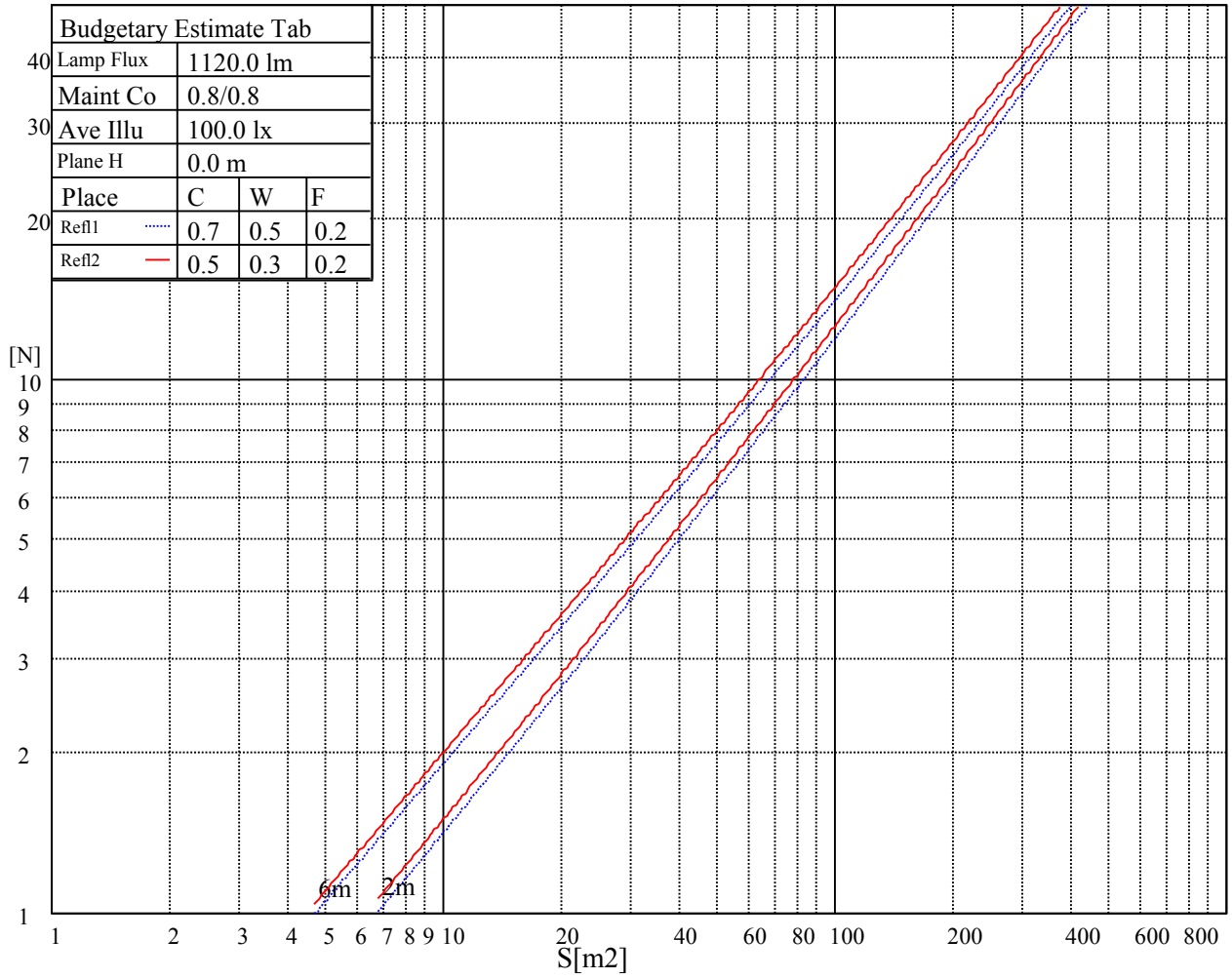
Glare Table

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

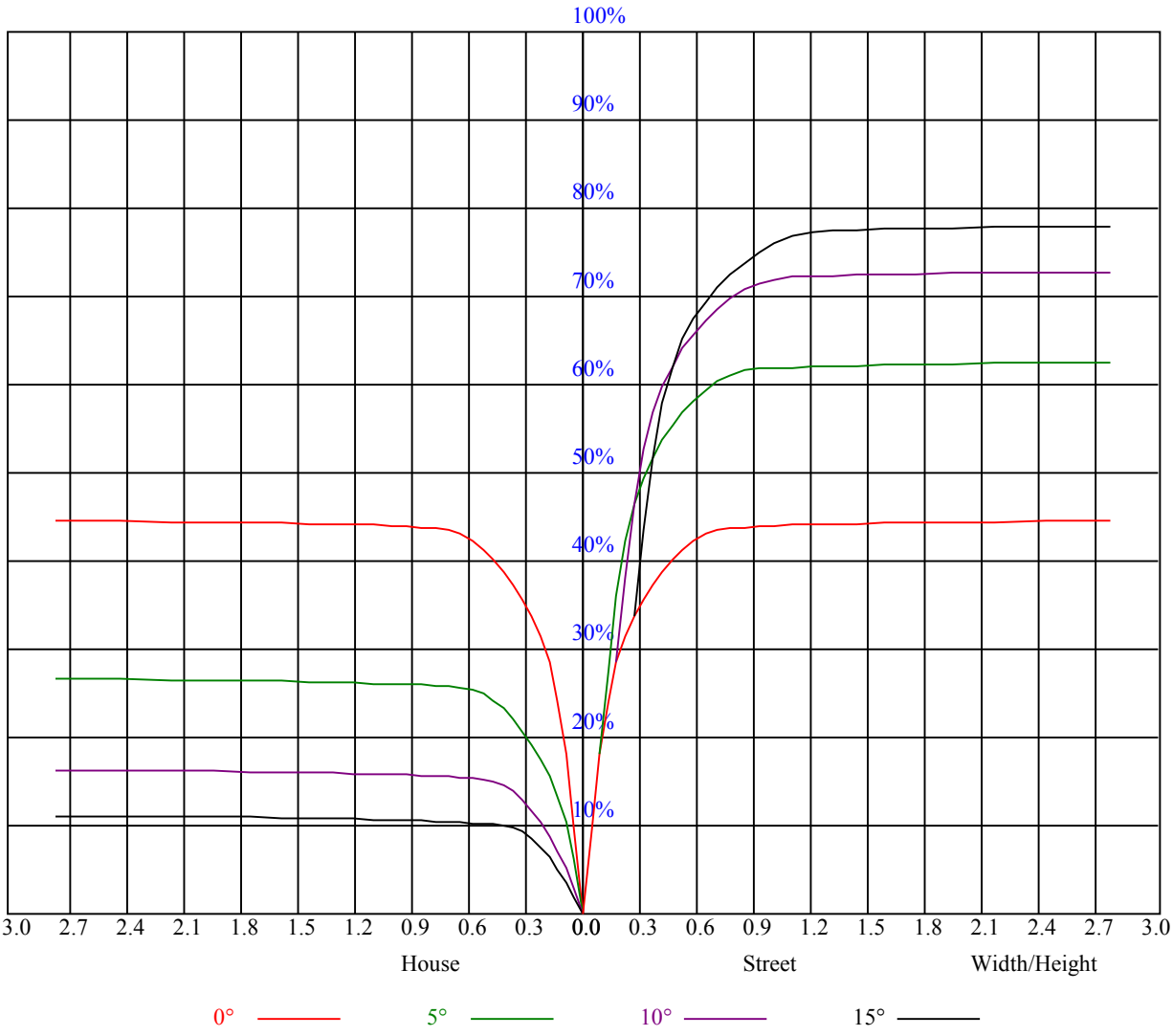


Equipment: GMS1980 Date: 2019/8/30 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

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	0.97	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	0.90	0.94	0.92	0.89	0.92	0.89	0.88	0.89	0.87	0.86	0.87	0.85	0.84	0.83
3	0.91	0.88	0.85	0.90	0.87	0.85	0.88	0.85	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	0.70	0.76	0.72	0.70	0.75	0.72	0.69	0.74	0.71	0.69	0.73	0.71	0.69	0.68
9	0.74	0.70	0.68	0.74	0.70	0.68	0.73	0.70	0.67	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	0.70	0.67	0.65	0.70	0.67	0.65	0.64

Coefficient Utilization Curve

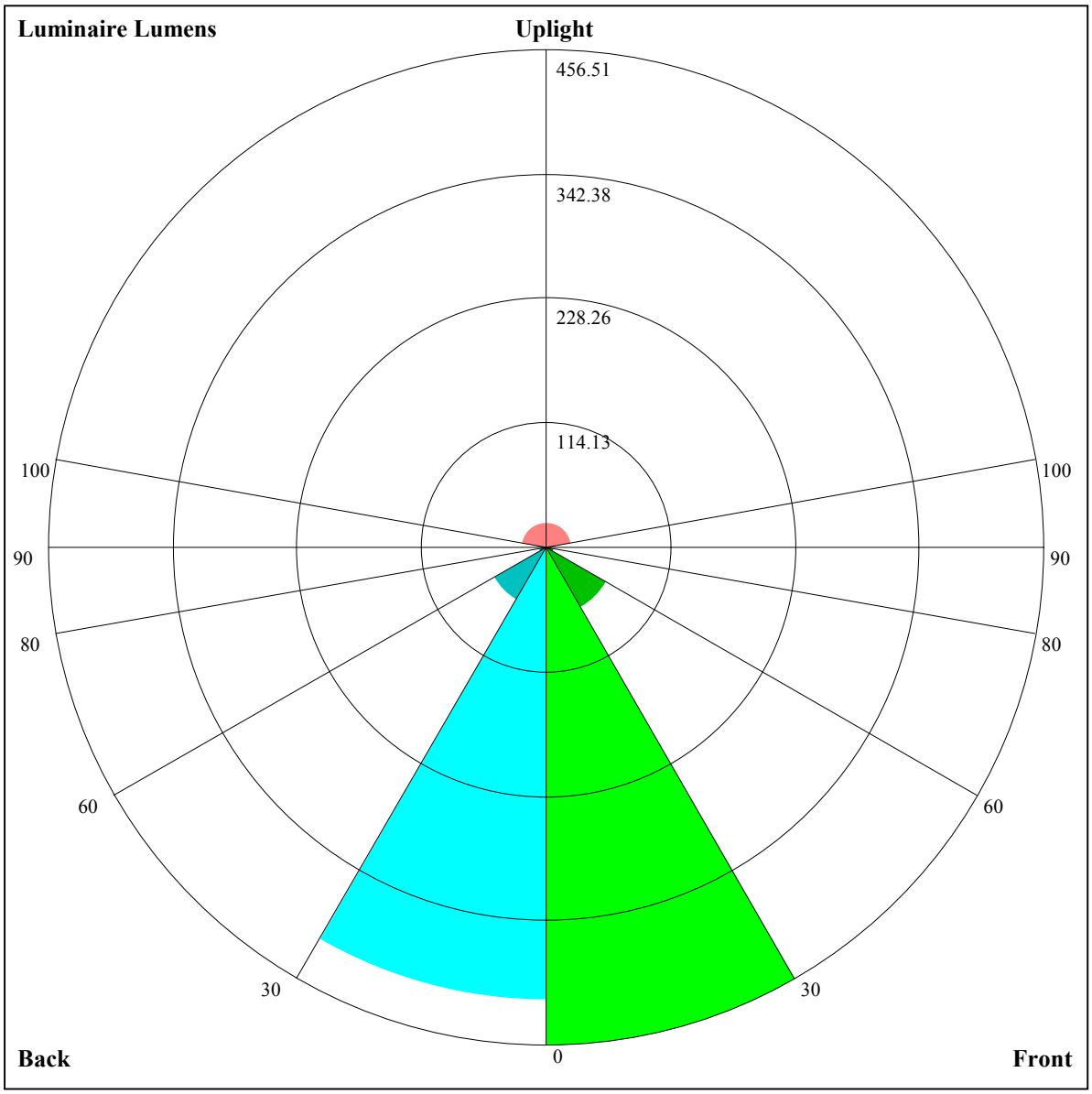


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/8/30
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

LCS Graph



Luminaire Lumens:

FL=456.51,FM=64.43,FH=6.84,FVH=2.83

BL=414.78,BM=55.55,BH=6.5,BVH=2.77

UL=5.08,UH=24.17

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	9352.13	9389.25	9132.19	8595.00	7900.88	6956.44	5892.75	4961.25	4057.88
45.0	9221.06	9332.44	9146.25	8731.13	8050.50	7155.56	6268.50	5177.25	4257.00
90.0	9336.94	9164.25	8764.31	7995.94	7195.50	6307.31	5121.56	4181.06	3322.69
135.0	9378.00	9251.44	8817.19	8197.88	7301.25	6406.31	5459.63	4251.94	3375.56
180.0	9352.13	9025.88	8505.00	7678.13	6669.56	5713.31	4722.75	3557.25	2766.94
225.0	9221.06	8878.50	8285.63	7314.75	6399.00	5400.56	4309.88	3317.06	2574.00
270.0	9336.94	9238.50	8812.13	8216.44	7306.31	6264.00	5295.38	4240.13	3393.56
315.0	9378.00	9240.75	8851.50	8076.94	7270.88	6355.13	5173.31	4266.00	3422.25
360.0	9352.13	9389.25	9132.19	8595.00	7900.88	6956.44	5892.75	4961.25	4057.88

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	3054.38	2397.38	1892.81	1527.19	1202.06	1014.75	873.56	741.38	663.19
45.0	3305.81	2499.19	1940.06	1537.88	1184.63	984.38	825.19	676.13	586.69
90.0	2509.31	1893.38	1513.13	1103.74	1011.99	851.96	744.13	657.90	599.68
135.0	2647.13	1950.19	1549.69	1269.56	1017.00	866.25	751.50	659.25	591.19
180.0	2136.38	1580.06	1103.01	1052.61	867.77	729.51	636.13	557.94	509.12
225.0	1938.94	1497.94	1113.47	998.16	847.69	721.41	629.10	565.20	517.44
270.0	2593.13	1989.56	1600.88	1312.31	1054.69	898.31	776.81	663.19	596.25
315.0	2701.13	2013.19	1625.63	1344.38	1075.89	919.69	793.41	687.32	608.06
360.0	3054.38	2397.38	1892.81	1527.19	1202.06	1014.75	873.56	741.38	663.19

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	603.00	554.63	518.06	492.75	471.38	456.19	442.69	429.75	420.19
45.0	516.94	452.25	406.69	378.00	358.31	347.06	346.50	348.19	352.69
90.0	548.49	508.67	480.15	457.43	439.65	427.67	416.25	405.34	397.86
135.0	543.94	504.56	474.75	453.94	437.06	425.25	414.56	405.56	399.38
180.0	469.29	439.82	422.33	409.84	401.34	395.10	389.64	385.93	382.44
225.0	476.10	452.31	435.21	419.18	411.64	404.55	397.58	390.99	385.48
270.0	545.06	504.56	476.44	456.19	440.44	428.63	419.63	410.63	403.88
315.0	559.13	517.50	491.23	467.49	449.21	435.43	423.45	413.94	405.56
360.0	603.00	554.63	518.06	492.75	471.38	456.19	442.69	429.75	420.19

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	410.06	401.06	391.50	385.88	374.06	354.38	325.69	289.13	212.85
45.0	353.81	353.25	348.19	340.88	331.88	318.38	293.06	284.63	207.23
90.0	390.26	381.77	372.26	365.23	348.98	314.21	274.05	221.79	172.86
135.0	392.06	381.94	374.63	367.31	344.25	311.63	284.63	209.93	152.66
180.0	376.37	369.23	363.99	349.82	316.46	268.65	219.54	163.97	116.72
225.0	376.03	368.55	360.11	339.02	300.60	252.06	205.31	151.03	104.85
270.0	396.56	387.00	380.81	372.38	342.56	306.00	284.63	196.82	148.05
315.0	398.93	389.64	382.78	374.06	352.46	314.89	271.29	215.94	159.41
360.0	410.06	401.06	391.50	385.88	374.06	354.38	325.69	289.13	212.85

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	161.33	105.81	59.34	32.23	21.43	18.00	13.95	11.70	11.14
45.0	166.05	129.71	76.05	45.68	30.32	24.47	20.19	17.44	15.81
90.0	119.98	73.41	41.29	23.40	17.89	14.40	11.64	10.24	9.34
135.0	109.07	63.06	35.44	22.16	18.51	15.24	13.33	12.71	10.35
180.0	71.10	38.48	24.98	19.97	15.86	13.22	12.49	11.93	11.81
225.0	61.43	33.86	24.58	20.14	16.03	13.95	13.28	12.71	12.21
270.0	101.64	57.71	28.35	19.07	15.81	12.09	9.90	9.23	8.72
315.0	111.88	66.43	36.62	22.44	19.01	15.64	13.22	12.38	11.76
360.0	161.33	105.81	59.34	32.23	21.43	18.00	13.95	11.70	11.14

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	10.58	10.07	9.56	9.00	8.44	7.99	7.71	7.48	7.31
45.0	15.02	14.46	13.73	13.16	12.66	12.04	11.59	11.03	10.29
90.0	9.06	8.72	8.38	8.10	7.93	7.88	7.88	7.99	8.10
135.0	10.01	9.56	9.17	8.89	8.49	8.27	8.10	7.99	7.99
180.0	11.70	11.53	11.25	11.03	10.74	10.58	10.41	10.13	9.79
225.0	11.64	10.97	10.18	9.56	9.00	8.55	8.27	8.04	7.88
270.0	8.10	7.71	7.31	7.09	6.92	6.92	6.92	7.09	7.26
315.0	11.25	10.74	10.41	10.18	9.90	9.73	9.62	9.51	9.45
360.0	10.58	10.07	9.56	9.00	8.44	7.99	7.71	7.48	7.31

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	7.20	7.09	6.98	6.92	6.81	6.64	6.53	6.41	6.41
45.0	9.62	8.89	8.10	7.65	7.31	7.09	7.03	6.98	7.03
90.0	8.38	8.72	9.11	9.45	9.79	10.01	9.96	9.68	9.17
135.0	8.04	8.10	8.27	8.49	8.83	9.11	9.34	9.51	9.51
180.0	9.23	8.49	8.04	7.59	7.14	6.92	6.81	6.69	6.64
225.0	7.65	7.37	7.09	6.92	6.75	6.69	6.69	6.75	6.81
270.0	7.43	7.54	7.54	7.48	7.31	7.20	7.03	6.92	6.81
315.0	9.45	9.51	9.56	9.68	9.79	9.84	9.90	9.96	9.96
360.0	7.20	7.09	6.98	6.92	6.81	6.64	6.53	6.41	6.41

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	6.36	6.30	6.30	6.24	6.24	6.24	6.19	6.19	6.19
45.0	7.09	7.09	7.03	6.92	6.75	6.64	6.53	6.47	6.36
90.0	8.49	7.88	7.31	6.86	6.58	6.36	6.13	5.96	5.79
135.0	9.28	8.72	8.38	8.10	7.88	7.65	7.48	7.26	7.03
180.0	6.58	6.41	6.24	6.13	6.02	5.91	5.85	5.79	5.79
225.0	6.81	6.75	6.58	6.47	6.30	6.19	6.19	6.08	6.13
270.0	6.64	6.47	6.24	6.02	5.85	5.63	5.51	5.40	5.34
315.0	9.90	9.84	9.79	9.79	9.56	9.34	9.11	8.66	8.33
360.0	6.36	6.30	6.30	6.24	6.24	6.24	6.19	6.19	6.19

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	6.13	6.08	6.02	5.96	5.91	5.79	5.68	5.51	5.34
45.0	6.36	6.36	6.47	6.53	6.58	6.69	6.69	6.69	6.64
90.0	5.63	5.46	5.34	5.23	5.18	5.12	5.12	5.01	5.01
135.0	6.81	6.69	6.58	6.47	6.36	6.30	6.24	6.19	6.19
180.0	5.74	5.68	5.68	5.57	5.46	5.29	5.18	5.06	4.89
225.0	6.13	6.13	6.13	6.08	6.02	5.96	5.96	5.91	5.91
270.0	5.29	5.23	5.18	5.12	5.12	5.06	5.01	4.95	4.89
315.0	7.93	7.65	7.54	7.37	7.26	7.09	6.86	6.64	6.53
360.0	6.13	6.08	6.02	5.96	5.91	5.79	5.68	5.51	5.34

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	5.34	5.23	5.12	5.06	5.01	4.95	4.89	4.89	4.61
45.0	6.58	6.47	6.30	5.85	5.18	4.84	4.78	4.67	4.56
90.0	5.01	5.01	5.01	5.01	5.01	4.95	4.89	4.84	4.67
135.0	6.13	6.13	6.13	6.13	6.19	6.02	5.85	5.68	5.46
180.0	4.89	4.89	4.84	4.78	4.73	4.73	4.61	4.56	4.50
225.0	5.79	5.46	5.18	5.01	4.89	4.84	4.67	4.61	4.50
270.0	4.78	4.78	4.84	4.78	4.78	4.78	4.84	4.67	4.67
315.0	6.41	6.30	6.19	6.08	5.96	5.79	5.63	4.95	4.78
360.0	5.34	5.23	5.12	5.06	5.01	4.95	4.89	4.89	4.61

Intensity data(cd)

C/γ(°)	90.0
0.0	4.61
45.0	4.50
90.0	4.61
135.0	5.29
180.0	4.50
225.0	4.44
270.0	4.56
315.0	4.73
360.0	4.61