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NATA

LumCAT: 1451-E
Luminaire: 92.70.043.00

Report No: NATA0100	Voltage(V): 9.5000
Test No: GC2019010208	Current(A): 0.3000
LampCAT: CREE CXA1304	Power (W): 2.8500
Lamp flux(lm): 322.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 44	Width(mm): 44
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 288.54
Efficiency(%): 89.61%
Lumens(lm)/Power(W): 102.64
Central intensity(cd): 711.886
Maximum intensity(cd): 711.886
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=29.1
[C90/270]Total=29.1
Field angle(10%Imax): [C0/180]Total=73.4
[C90/270]Total=73.4
Maximum s/h(1/2): C0_180=0.49 C90_270=0.49
Maximum s/h(1/4): C0_180=0.52 C90_270=0.52
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 90.85%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 96.958%

Equipment: GMS1980	Date: 2019/1/2	Operator: NT07
Temperature(°C): 10.0	Humidity(%): 65.0%	Distance(m): 7.50

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	711.886	4.257	4.257	1.322%	1.475%
5.0	645.377	30.832	35.089	9.575%	12.161%
10.0	505.730	48.137	83.226	14.949%	28.844%
15.0	341.831	48.495	131.721	15.061%	45.651%
20.0	216.211	40.534	172.255	12.588%	59.699%
25.0	143.220	33.177	205.432	10.303%	71.197%
30.0	112.732	30.896	236.328	9.595%	81.905%
35.0	86.970	27.343	263.672	8.492%	91.381%
40.0	40.359	14.220	277.892	4.416%	96.310%
45.0	5.576	2.161	280.053	.671%	97.059%
50.0	3.129	1.314	281.367	.408%	97.514%
55.0	2.573	1.155	282.522	.359%	97.914%
60.0	2.320	1.101	283.624	.342%	98.296%
65.0	2.088	1.037	284.661	.322%	98.656%
70.0	2.039	1.050	285.711	.326%	99.020%
75.0	1.870	0.990	286.701	.308%	99.363%
80.0	1.498	0.808	287.51	.251%	99.643%
85.0	1.294	0.706	288.216	.219%	99.888%
90.0	1.181	0.324	288.54	.101%	100.000%

Zonal flux distribution table

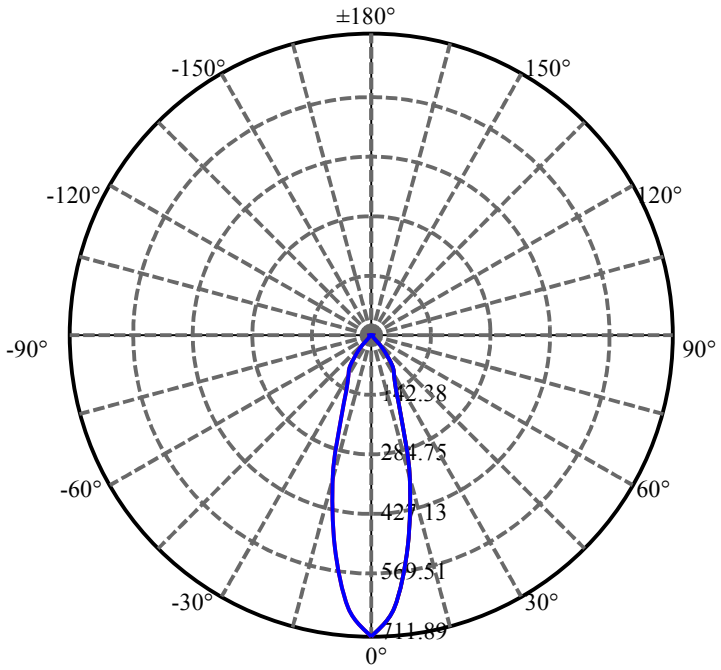
ZONAL LUMEN SUMMARY

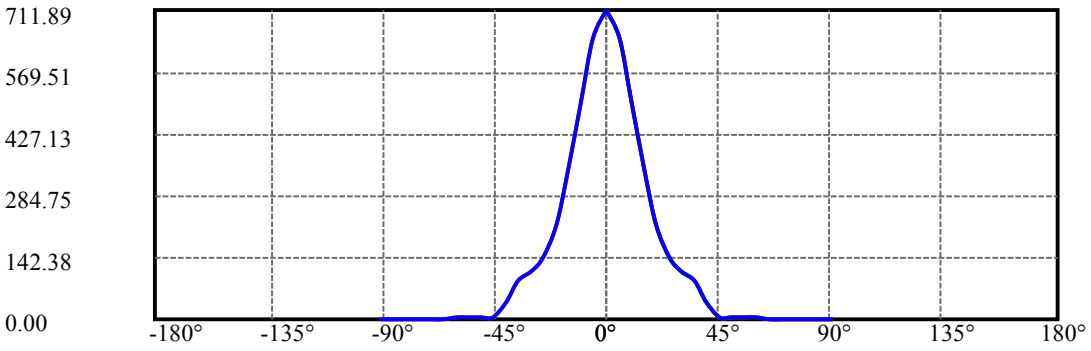
Zone	Lumens	%Lamp	%Fixt
0-30	236.33	73.39%	81.90%
0-40	277.89	86.30%	96.31%
0-60	283.62	88.08%	98.30%
0-90	288.22	89.51%	99.89%
0-120	288.22	89.51%	99.89%
0-180	288.54	89.61%	100.00%
60-90	5.69	1.77%	1.97%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-29.11	230.83	71.69%	80.00%

ZONAL LUMEN SUMMARY

0-10	83.23
10-20	89.03
20-30	64.07
30-40	41.56
40-50	3.47
50-60	2.26
60-70	2.09
70-80	1.80
80-90	0.71
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:

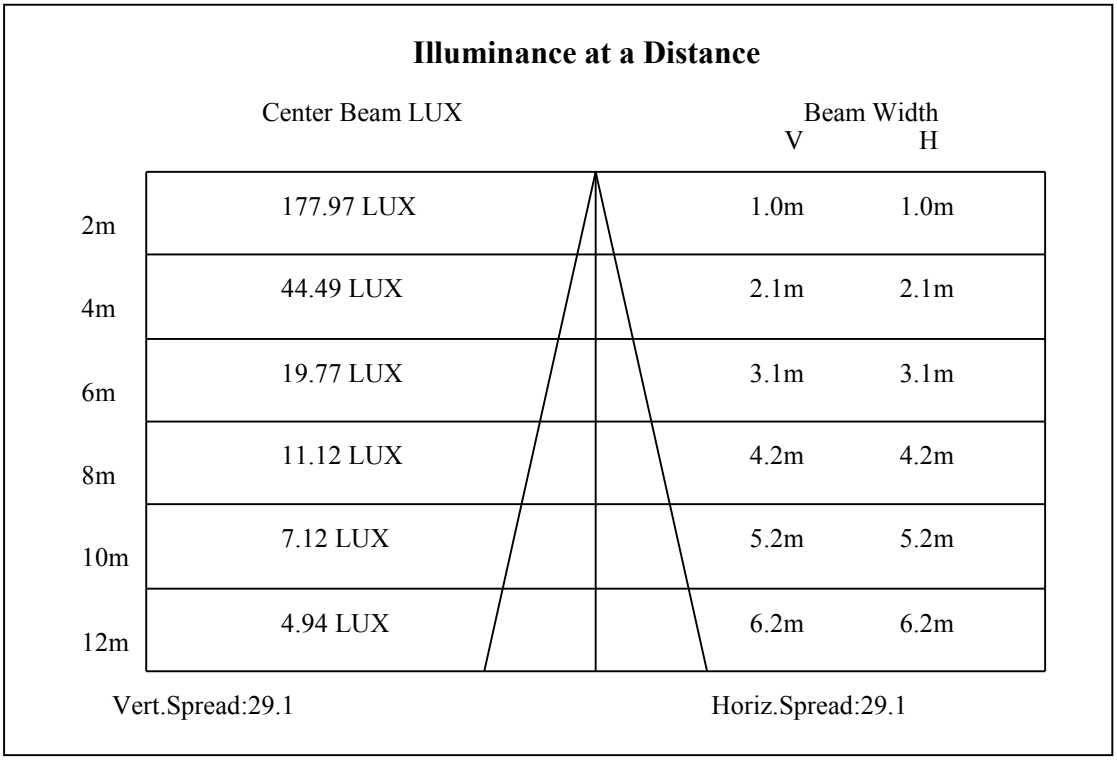
C90/C270:

Field angle(10%Imax):C0/180Left:36.7 Right:36.7
:C90/270Left:36.7 Right:36.7

Beam Angle(50%Imax):C0/180Left:14.6 Right:14.6
:C90/270Left:14.6 Right:14.6

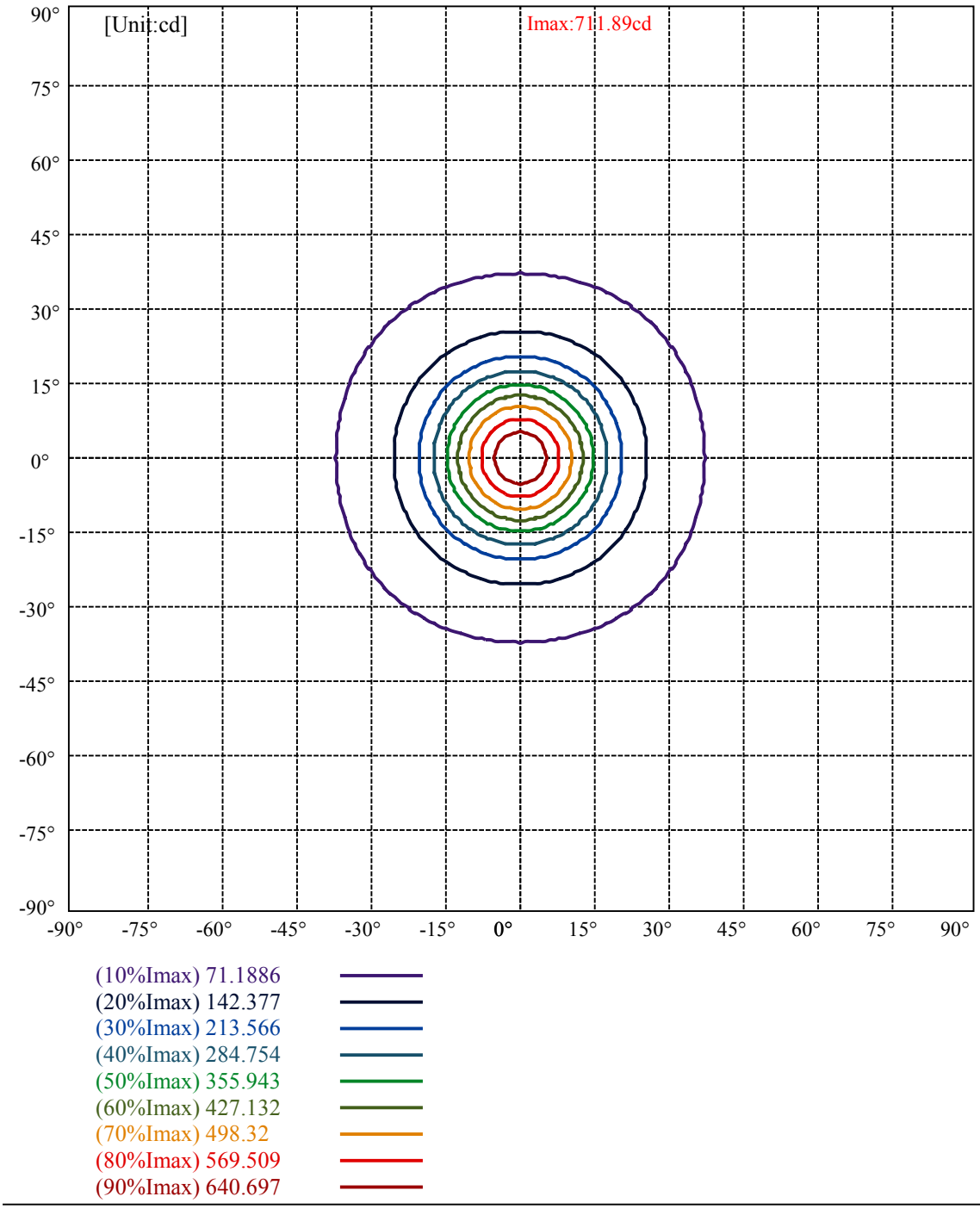
Equipment: GMS1980 Date: 2019/1/2 Operator: NT07
Temperature(°C): 10.0 Humidity(%): 65.0% Distance(m): 7.50

Lux distance Curve



Equipment: GMS1980 Date: 2019/1/2 Operator: NT07
Temperature(°C): 10.0 Humidity(%): 65.0% Distance(m): 7.50

ISO-Intensity(V-H)



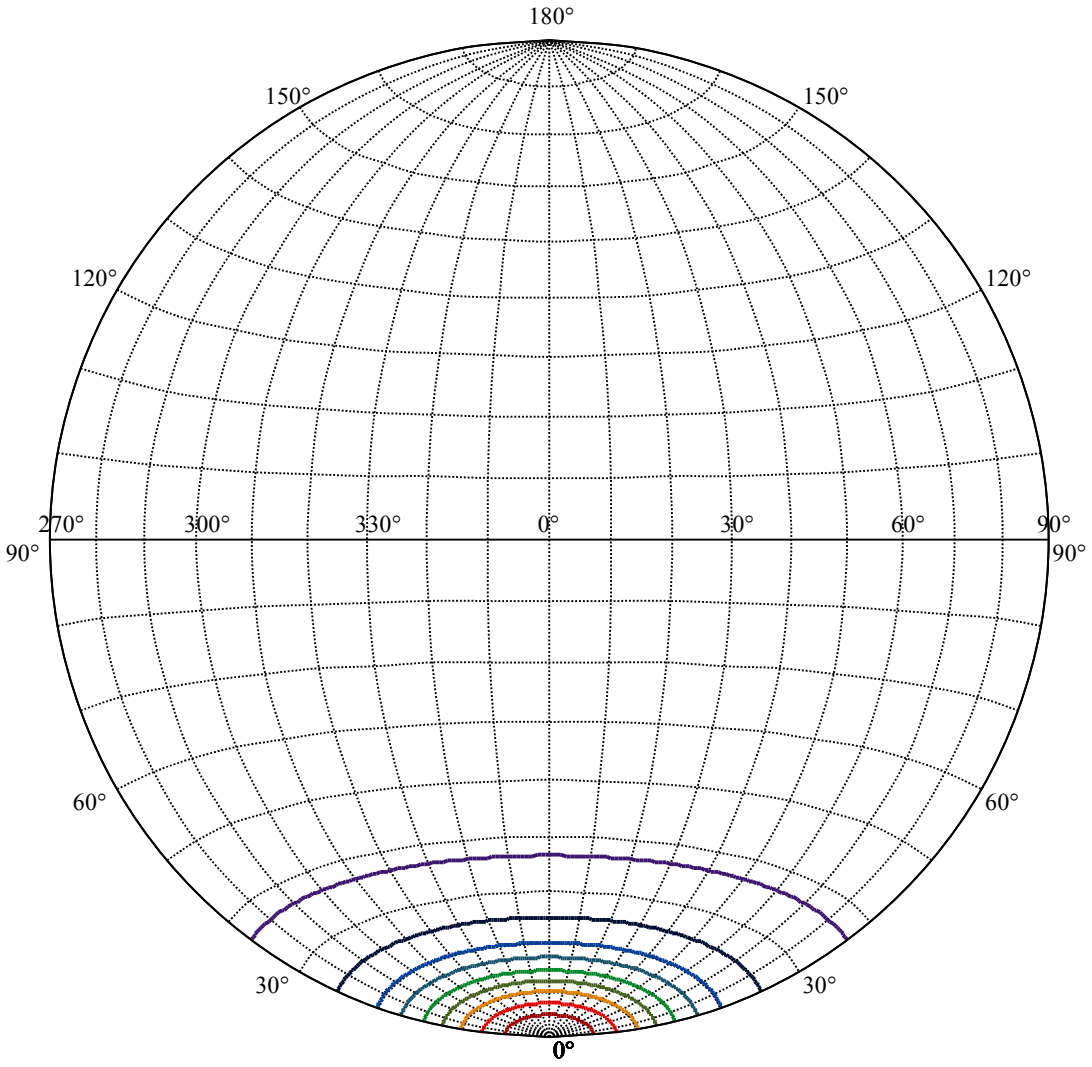
(10%Imax) 71.1886
(20%Imax) 142.377
(30%Imax) 213.566
(40%Imax) 284.754
(50%Imax) 355.943
(60%Imax) 427.132
(70%Imax) 498.32
(80%Imax) 569.509
(90%Imax) 640.697

Equipment: GMS1980
Temperature(°C): 10.0

Date: 2019/1/2
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

ISO candela diagram on circular web



House [Unit:cd] Road

Imax:711.89

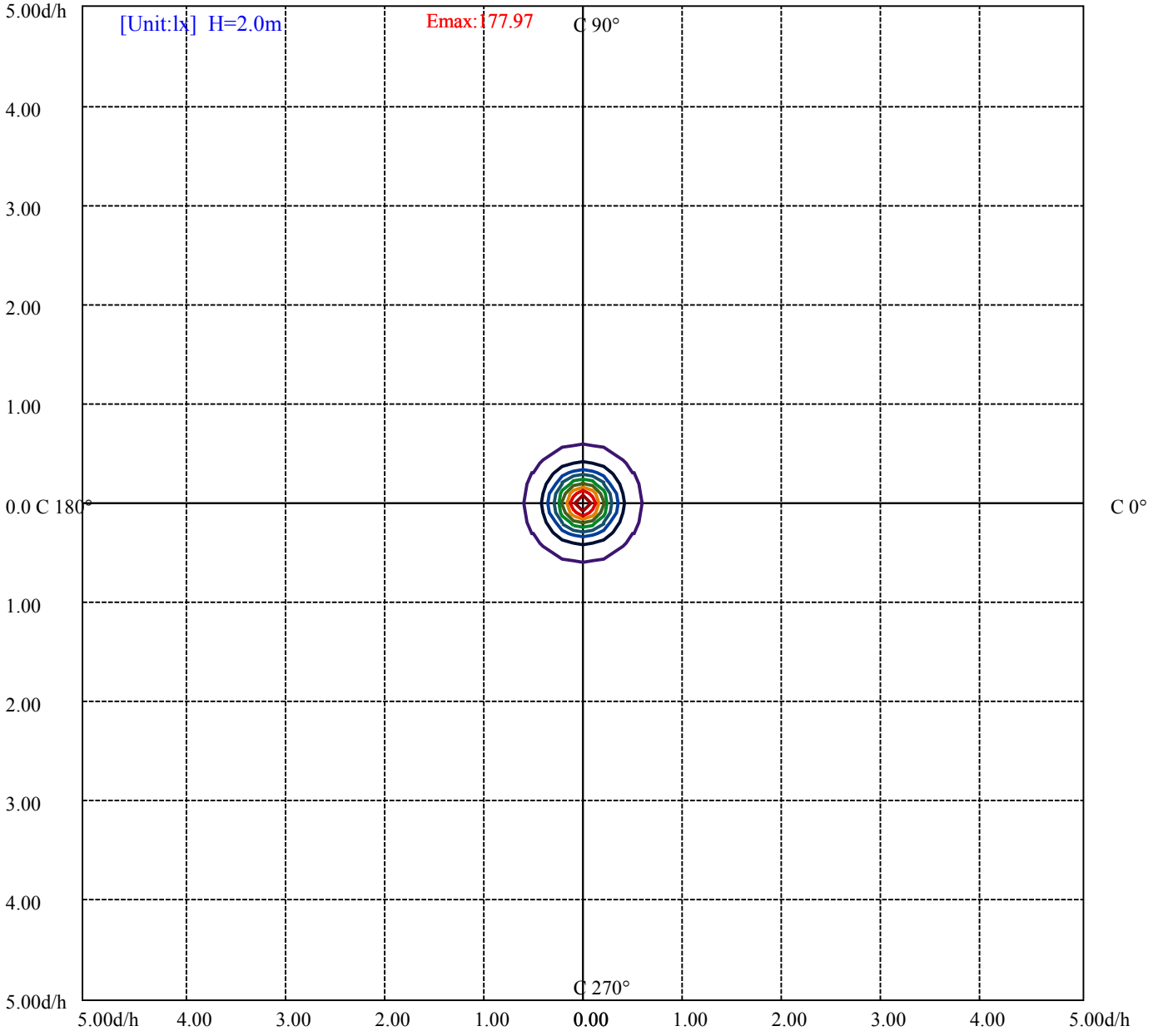
(10%Imax) 71.1886
(20%Imax) 142.377
(30%Imax) 213.566
(40%Imax) 284.754
(50%Imax) 355.943
(60%Imax) 427.132
(70%Imax) 498.32
(80%Imax) 569.509
(90%Imax) 640.697

Equipment: GMS1980
Temperature(°C): 10.0

Date: 2019/1/2
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

ISO illuminance diagram

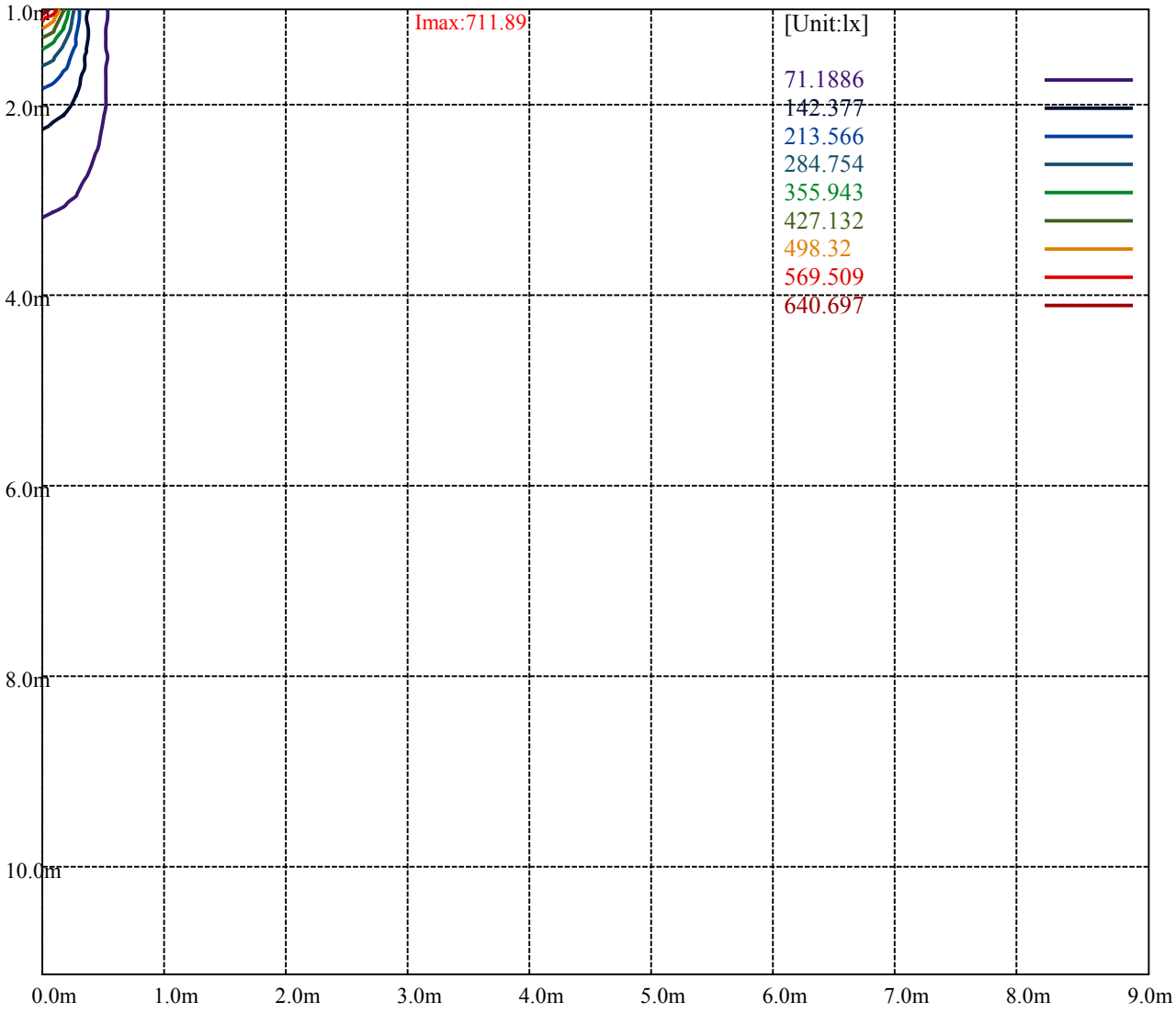


Equipment: GMS1980
Temperature(°C): 10.0

Date: 2019/1/2
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Space ISO Lux diagram



Equipment: GMS1980
Temperature(°C): 10.0

Date: 2019/1/2
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Luminance Limitting Curve(no luminous side)

Luminance Table

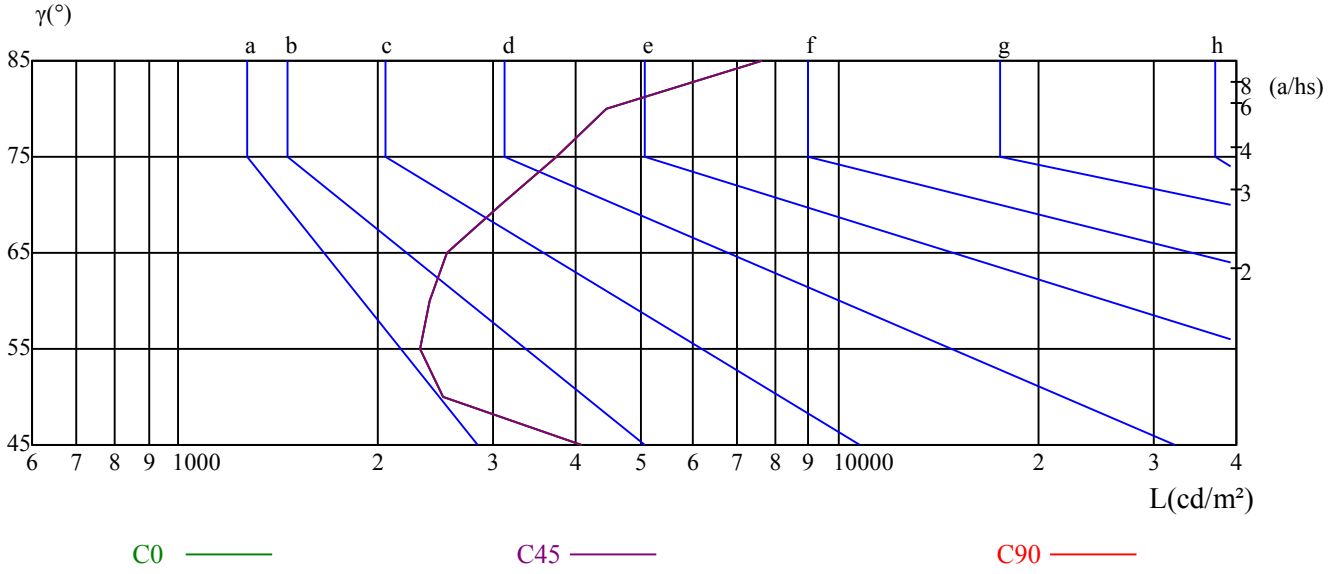
γ	45	50	55	60	65	70	75	80	85
C0	4073	2514	2317	2397	2552	3079	3733	4455	7667
C45	4073	2514	2317	2397	2552	3079	3733	4455	7667
C90	4073	2514	2317	2397	2552	3079	3733	4455	7667

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
2552	2552	2552	3733	3733	3733	7667	7667	7667

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

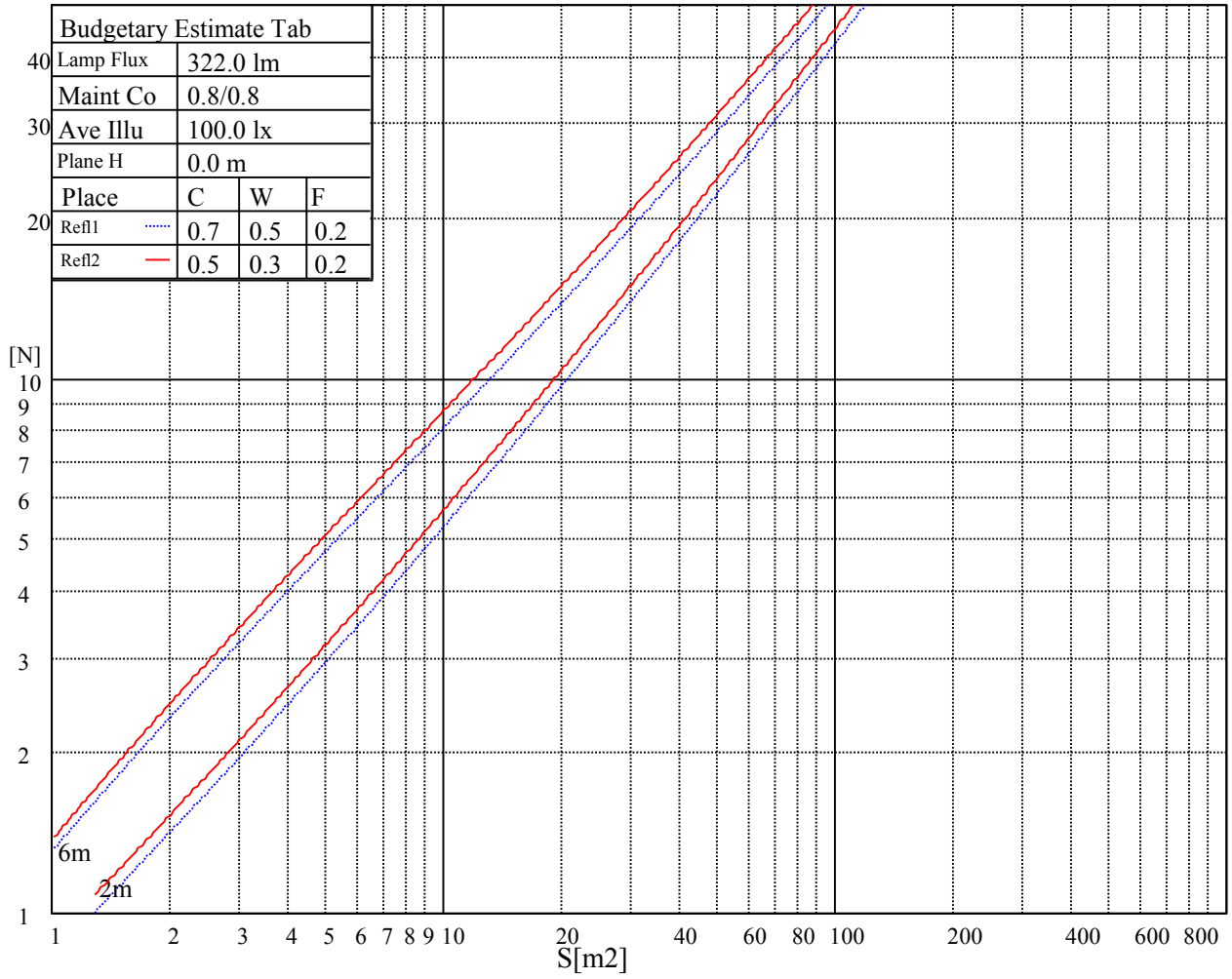


UGR Glare

Illumination assessment according UGR											
Rf of Ceiling		70	70	50	50	30	70	70	50	50	30
Rf of Wall		50	30	50	30	30	50	30	50	30	30
Rf of Floor		20	20	20	20	20	20	20	20	20	20
Room dimensions		Viewed crosswise					Viewed endwise				
X	Y										
2H	2H	11.20	12.14	11.57	12.45	12.77	8.76	9.70	9.12	10.01	10.33
	3H	14.48	15.31	14.86	15.64	16.01	11.20	12.03	11.58	12.36	12.73
	4H	16.12	16.89	16.53	17.24	17.63	12.59	13.35	12.99	13.71	14.10
	6H	17.21	17.91	17.63	18.29	18.69	14.44	15.14	14.86	15.51	15.91
	8H	17.67	18.33	18.11	18.72	19.13	15.44	16.10	15.87	16.49	16.90
	12H	18.49	19.12	18.92	19.50	19.93	16.95	17.58	17.39	17.97	18.40
4H	2H	11.54	12.31	11.95	12.66	13.05	9.66	10.43	10.07	10.78	11.17
	3H	15.11	15.74	15.53	16.15	16.56	12.45	13.08	12.87	13.49	13.90
	4H	16.94	17.50	17.38	17.93	18.37	14.02	14.58	14.45	15.00	15.45
	6H	18.13	18.62	18.61	19.07	19.54	15.85	16.34	16.33	16.79	17.26
	8H	18.71	19.16	19.19	19.61	20.09	16.95	17.40	17.43	17.85	18.33
	12H	19.58	19.97	20.08	20.46	20.94	18.38	18.77	18.88	19.26	19.74
8H	4H	17.21	17.66	17.69	18.11	18.58	14.85	15.30	15.33	15.75	16.22
	6H	18.64	18.99	19.15	19.50	19.98	16.90	17.25	17.41	17.76	18.24
	8H	19.41	19.73	19.94	20.25	20.75	18.13	18.44	18.66	18.97	19.47
	12H	20.60	20.87	21.12	21.37	21.95	19.70	19.97	20.22	20.47	21.05
12H	4H	17.26	17.65	17.75	18.14	18.61	15.03	15.41	15.52	15.90	16.38
	6H	19.00	19.09	19.31	19.56	20.11	17.40	17.49	17.71	17.96	18.51
	8H	19.66	19.93	20.19	20.43	21.01	18.52	18.79	19.04	19.29	19.87

Variation with the observer position at spacings:		
S = 1.0H	4.2/-6.1	4.2/-6.1
S = 1.5H	6.3/-4.6	6.3/-4.6
S = 2.0H	7.8/-3.8	7.8/-3.8
Standard tables:	BK2	BK2
Uncorrected UGR	-0.7	-0.7

Budgetary Estimate Table

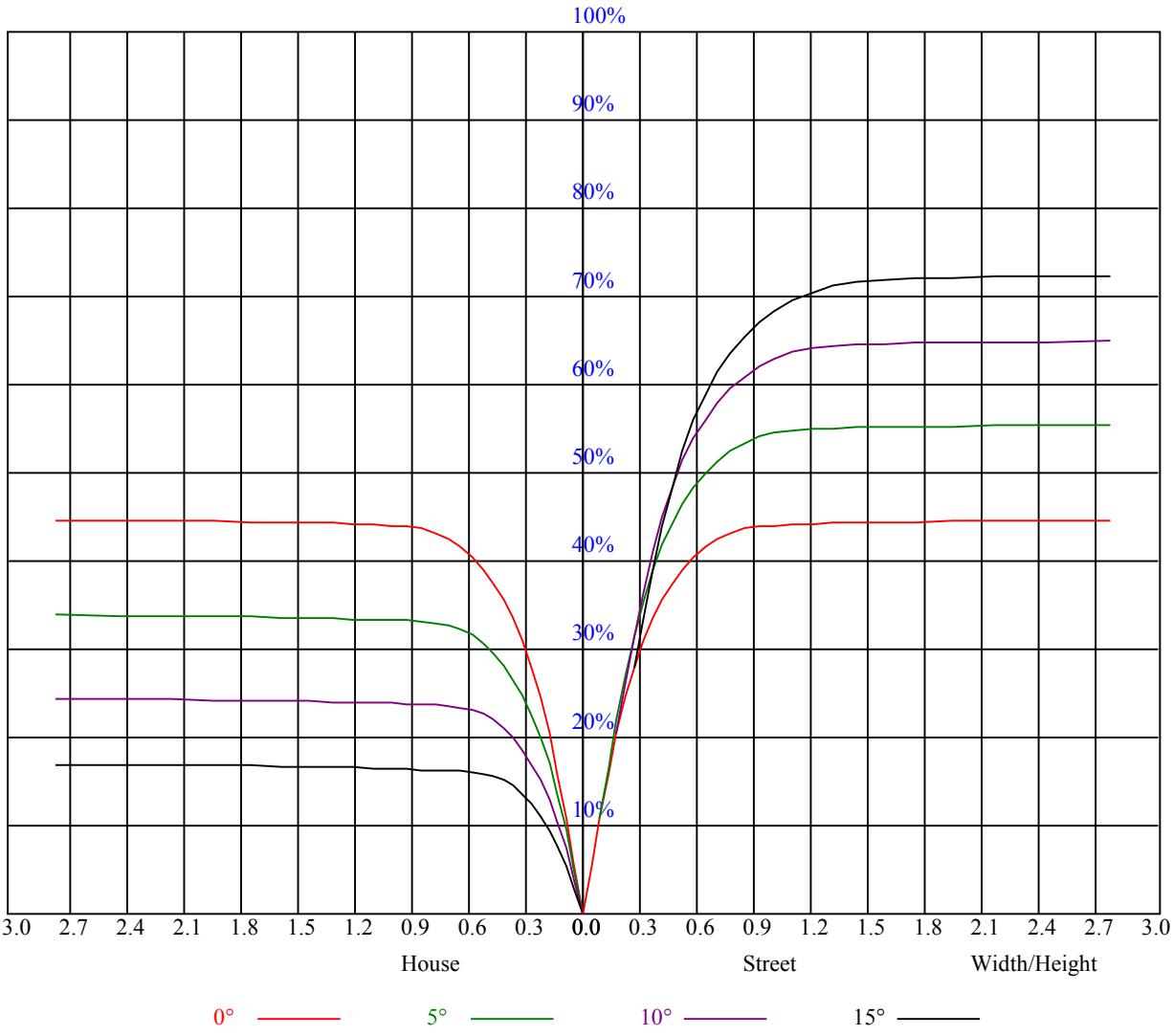


Equipment: GMS1980 Date: 2019/1/2 Operator: NT07
Temperature(°C): 10.0 Humidity(%): 65.0% Distance(m): 7.50

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	1.08	1.08	1.08	1.06	1.06	1.06	1.01	1.01	1.01	0.97	0.97	0.97	0.93	0.93	0.93	0.91
1	1.00	0.97	0.95	0.98	0.95	0.93	0.94	0.92	0.91	0.91	0.89	0.88	0.87	0.86	0.85	0.84
2	0.94	0.90	0.87	0.92	0.89	0.86	0.89	0.87	0.84	0.87	0.84	0.83	0.84	0.82	0.81	0.79
3	0.89	0.84	0.81	0.87	0.84	0.80	0.85	0.82	0.79	0.83	0.80	0.78	0.81	0.79	0.77	0.75
4	0.84	0.80	0.76	0.83	0.79	0.76	0.81	0.78	0.75	0.79	0.76	0.74	0.78	0.75	0.73	0.72
5	0.80	0.75	0.72	0.79	0.75	0.72	0.78	0.74	0.71	0.76	0.73	0.70	0.75	0.72	0.70	0.69
6	0.76	0.72	0.68	0.76	0.71	0.68	0.74	0.71	0.68	0.73	0.70	0.67	0.72	0.69	0.67	0.66
7	0.73	0.68	0.65	0.73	0.68	0.65	0.71	0.68	0.65	0.70	0.67	0.64	0.70	0.66	0.64	0.63
8	0.70	0.65	0.62	0.70	0.65	0.62	0.69	0.65	0.62	0.68	0.64	0.62	0.67	0.64	0.61	0.60
9	0.67	0.63	0.60	0.67	0.63	0.60	0.66	0.62	0.59	0.65	0.62	0.59	0.65	0.61	0.59	0.58
10	0.65	0.60	0.57	0.65	0.60	0.57	0.64	0.60	0.57	0.63	0.60	0.57	0.63	0.59	0.57	0.56

Coefficient Utilization Curve



Equipment: GMS1980	Date: 2019/1/2	Operator: NT07
Temperature(°C): 10.0	Humidity(%): 65.0%	Distance(m): 7.50

Intensity data(cd)

C/γ(°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0
0.0	711.23	670.28	530.27	375.98	242.66	154.46	118.91	97.48	54.28
45.0	709.82	666.84	539.21	368.44	233.38	149.96	116.66	95.01	52.03
90.0	714.21	648.11	502.43	335.48	206.38	132.30	104.40	81.00	36.90
135.0	712.29	659.42	519.86	351.17	222.81	150.41	116.49	91.24	47.31
180.0	711.23	620.33	473.06	326.87	208.80	139.39	111.99	80.10	29.53
225.0	709.82	621.34	478.18	311.85	198.68	136.80	111.49	78.69	26.16
270.0	714.21	644.57	510.13	339.19	210.54	141.81	107.89	83.36	38.76
315.0	712.29	632.14	492.69	325.69	206.44	140.63	114.02	88.88	37.91
360.0	711.23	670.28	530.27	375.98	242.66	154.46	118.91	97.48	54.28

C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	6.36	2.98	1.91	1.63	1.46	1.41	1.35	1.24	1.24
45.0	7.03	3.38	2.48	2.31	1.97	1.86	1.80	1.35	1.24
90.0	6.08	3.88	3.38	3.21	3.04	3.04	2.64	1.58	1.24
135.0	5.34	3.32	2.59	2.25	1.91	1.80	1.74	1.29	1.29
180.0	4.16	2.19	1.97	1.74	1.58	1.46	1.41	1.86	1.41
225.0	4.61	2.59	2.36	2.08	1.74	1.80	1.52	1.86	1.41
270.0	6.02	3.88	3.32	3.09	3.04	2.98	2.76	1.58	1.29
315.0	5.01	2.81	2.59	2.25	1.97	1.97	1.74	1.24	1.24
360.0	6.36	2.98	1.91	1.63	1.46	1.41	1.35	1.24	1.24

C/γ(°)	90.0
0.0	1.24
45.0	1.18
90.0	1.13
135.0	1.18
180.0	1.18
225.0	1.18
270.0	1.18
315.0	1.18
360.0	1.24