

Report No.: 103820-7001

Test Time: 22.05.2017 10:45

## Luminaire Property

Luminaire Manufacturer:

Luminaire Category: LED-MML

Lamp Catalog: LED-MML-M9R-16-CW

Number of Lamps: 1

Luminous Length (mm): 600

Luminous Height (mm): 60

Current: 0.942 A

Power Factor: 0.723

Luminaire Description: LED-MML

Lamp Description: LED-MML-M9R-16-CW

Lumens per Lamp: 1600

Luminous Width (mm): 60

Voltage: 23.6 V

Power: 16.13 W

## Photometric Results

CIE Class: Direct

Measurement Flux: 1580 lm

Downward Ratio: 97.78%

Field Angle: H154.8 V144.9

Luminaire Efficacy Rating (LER): 98

Max. Intensity: 634.53 cd

Total Rated Lamp Lumens: 1600.0 lm

Efficiency: 98.75%

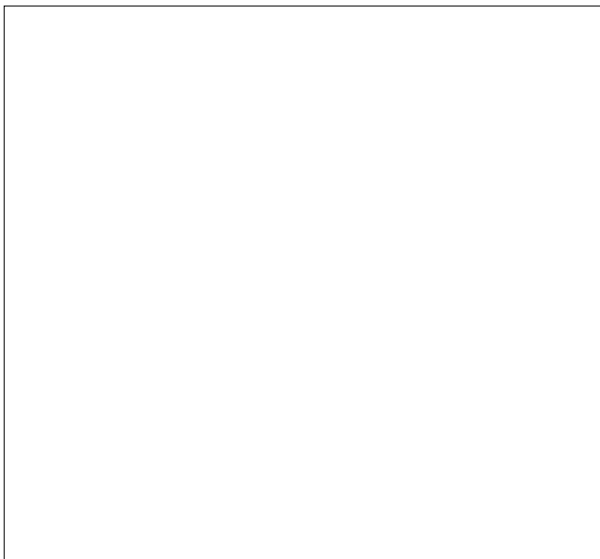
Upward Ratio: 0.97%

Beam Angle: H114.6 V85.4

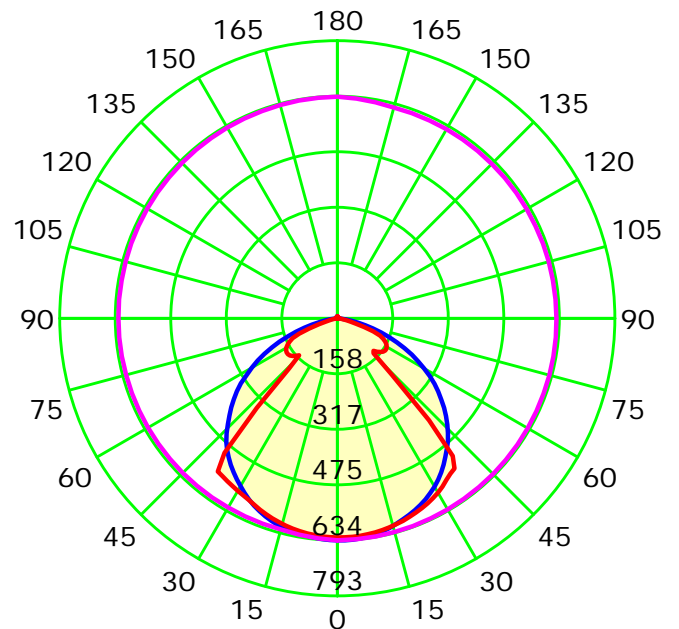
Central Intensity: 634.43 cd

Pos of Max. Intensity: H0 V2

Picture Of Luminaire



Luminous Intensity Distribution Curve



Average Diffuse Angle(50%): 100.0° Unit: cd

— C0-C180 — C90-C270 — G2

C Plane (°):0.0-360.0: 15.0

Test Lab: Metolight

Test Type: TYPE C

Temperature: 22,4

Operator: BFR

Gamma Plane (°):0.0-180.0:2.0

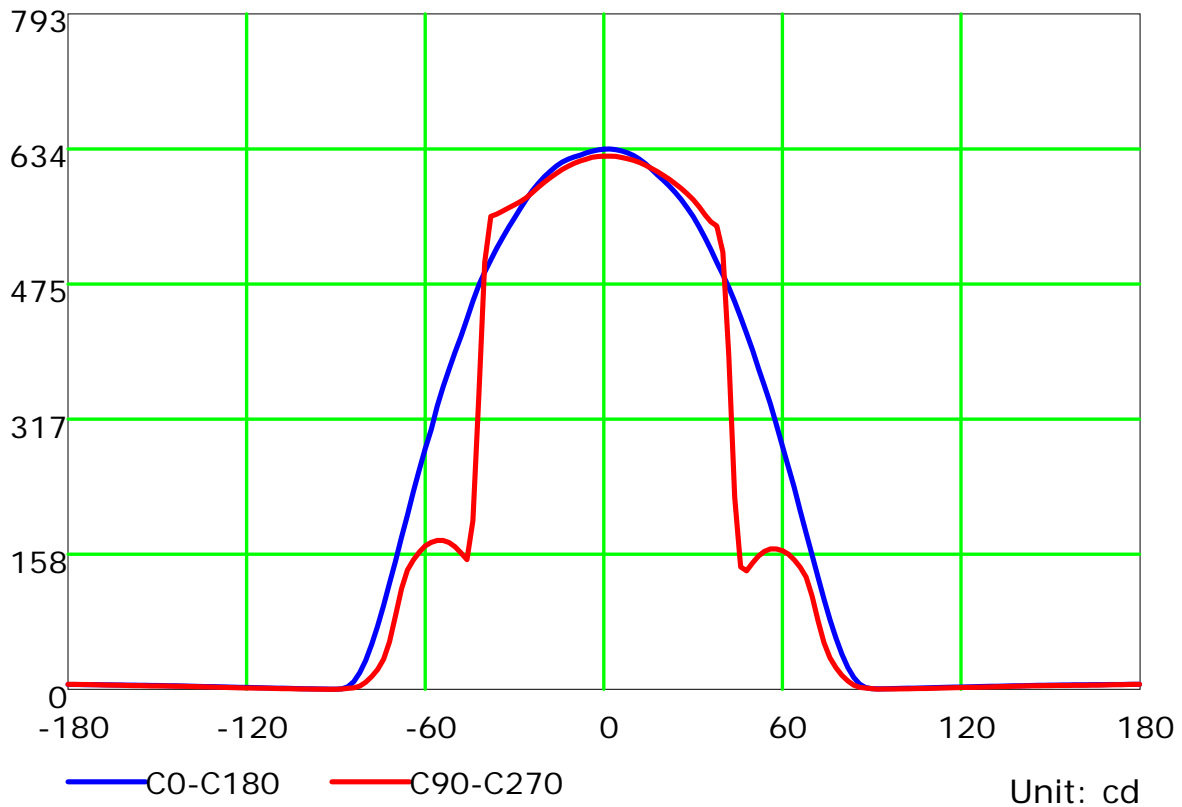
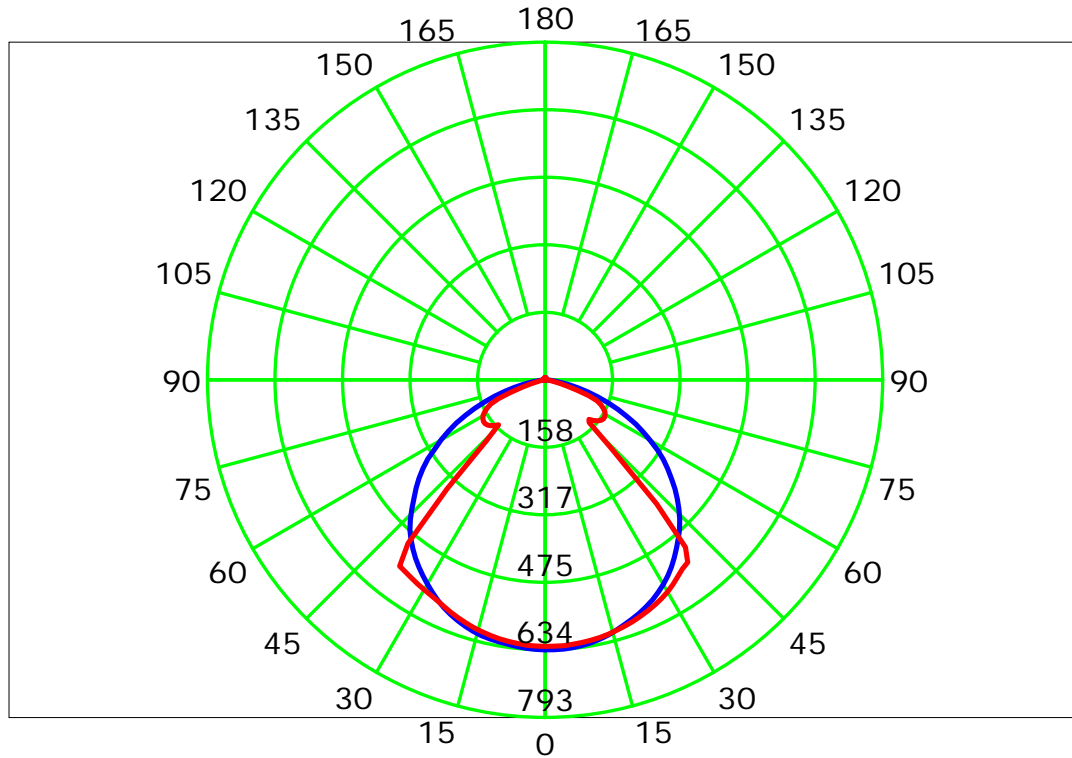
Test Device: LSG-1800B

Distance: 6.500 m

Humidity: 45,6

Inspector:

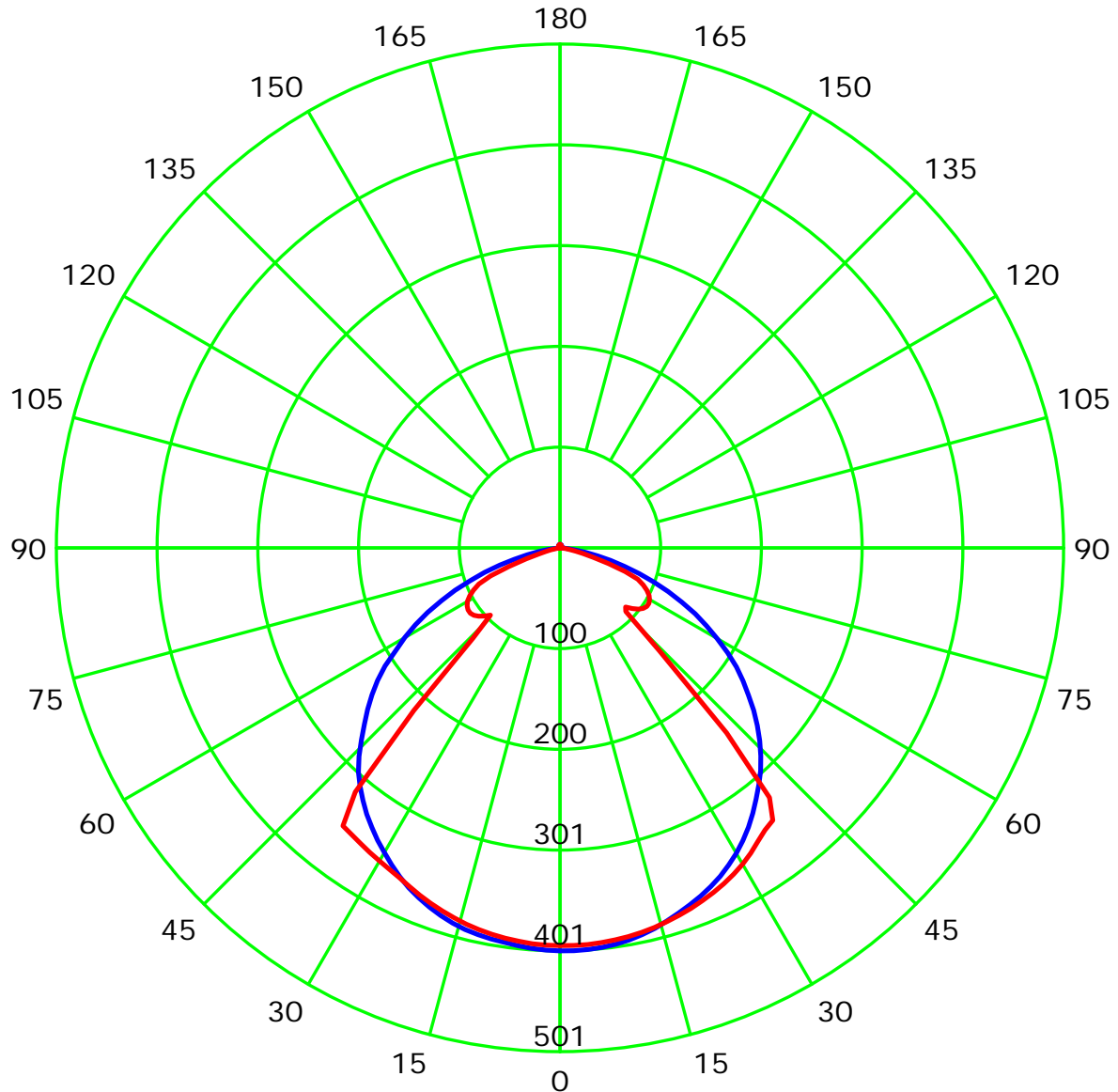
## Luminous Intensity Distribution Curve



C Plane (°): 0.0-360.0: 15.0  
 Test Lab: Metolight  
 Test Type: TYPE C  
 Temperature: 22,4  
 Operator: BFR

Gamma Plane (°): 0.0-180.0: 2.0  
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 Inspector:

## Luminous Intensity Distribution Curve(cd/klm)



cd/klm

— C0-C180  
 — C90-C270

LED-MML-M9R-16-CW/LED-MML-M9R-16-CW

$I_C = 98.75\%$

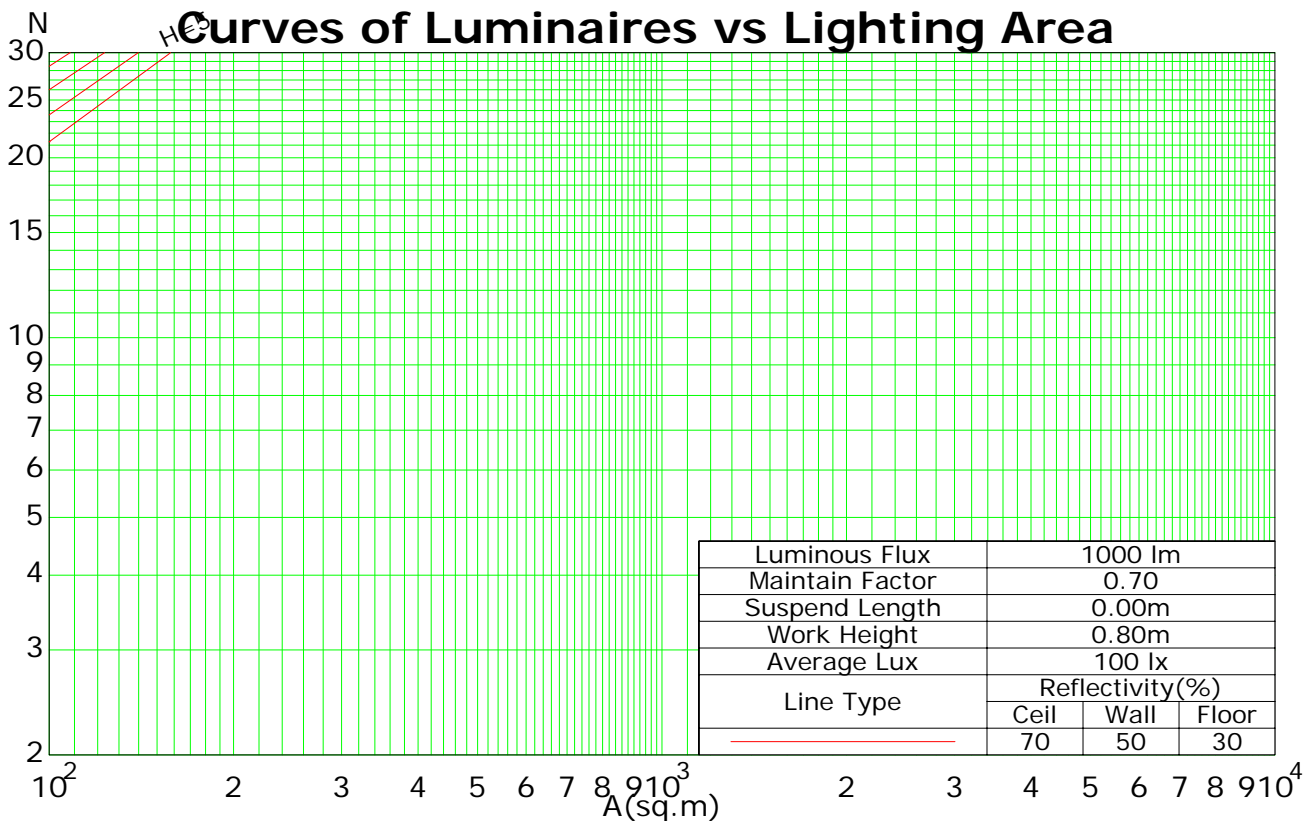
C Plane (°): 0.0-360.0: 15.0  
 Test Lab: Metolight  
 Test Type: TYPE C  
 Temperature: 22,4  
 Operator: BFR

Gamma Plane (°): 0.0-180.0: 2.0  
 Test Device: LSG-1800B  
 Distance: 6.500 m  
 Humidity: 45,6  
 Inspector:

## Coefficients Of Utilization - Zonal Cavity Method

RC	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.5	0.5	0.5	0.3	0.3	0.3	0.1	0.1	0.1	0
RW	0.7	0.5	0.3	0.1	0.7	0.5	0.3	0.1	0.5	0.3	0.1	0.5	0.3	0.1	0.5	0.3	0.1	0
RCR	RF = 0.2																	
0	117	117	117	117	114	114	114	114	109	109	109	104	104	104	100	100	100	98
1	109	105	101	98	106	102	99	96	98	95	93	94	92	90	90	89	87	85
2	100	93	86	81	97	91	85	80	87	82	78	84	80	77	81	77	75	73
3	92	82	75	69	89	81	74	68	78	72	67	75	70	66	72	68	65	62
4	84	73	65	59	82	72	65	59	70	63	58	67	62	57	65	60	56	54
5	78	66	58	52	76	65	57	51	63	56	51	61	55	50	59	54	49	47
6	72	60	51	45	70	59	51	45	57	50	45	55	49	44	54	48	44	42
7	67	54	46	40	65	53	46	40	52	45	40	50	44	39	49	43	39	37
8	62	50	42	36	61	49	41	36	48	41	36	46	40	35	45	39	35	33
9	58	46	38	33	57	45	38	33	44	37	32	43	37	32	42	36	32	30
10	55	42	35	30	53	42	34	30	41	34	29	40	34	29	39	33	29	27

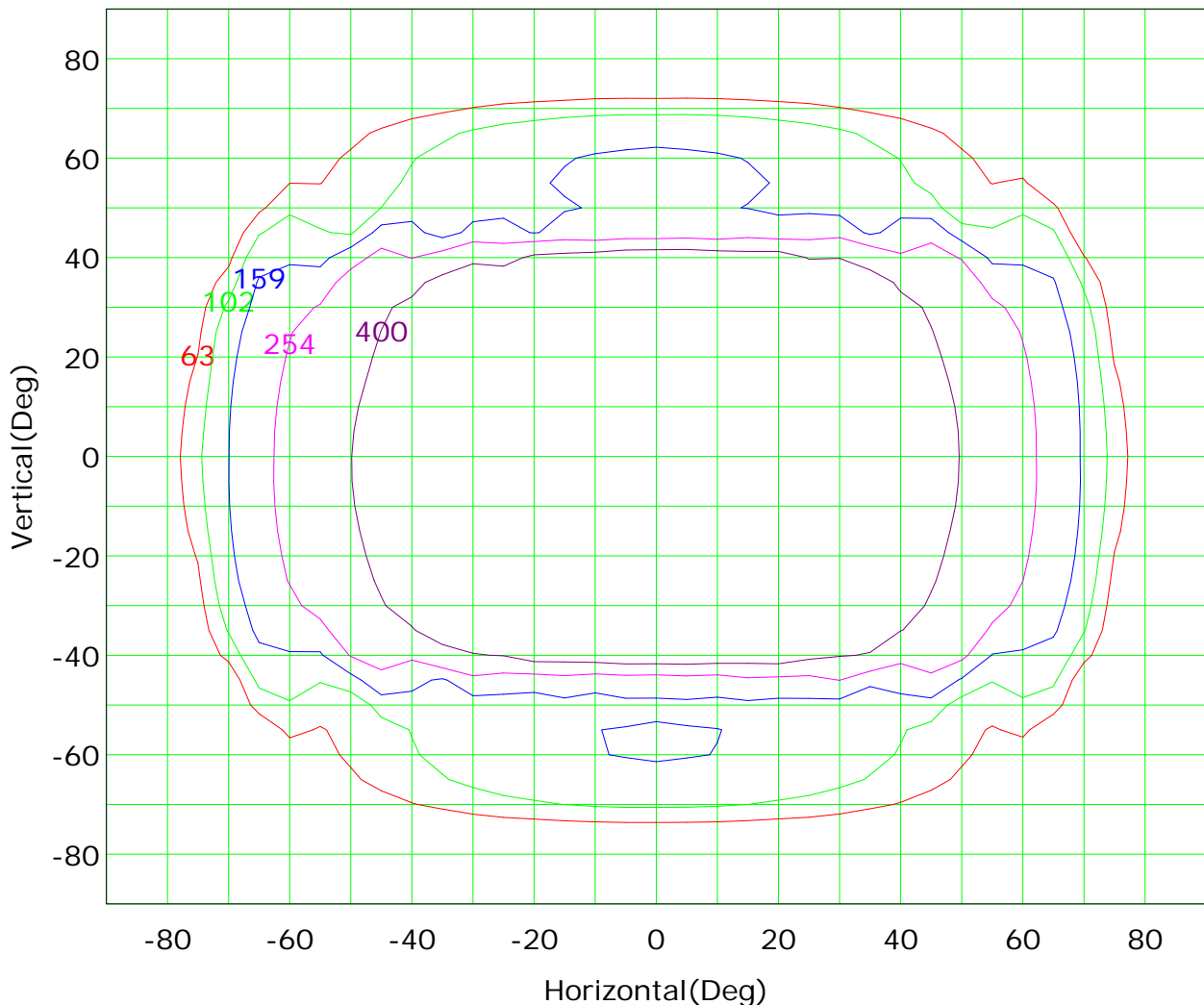
Spacing Criteria (0-180): 1.30  
 Spacing Criteria (90-270): 1.37  
 Spacing Criteria (Diagonal): 1.46



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## Isocandela (rectangle)



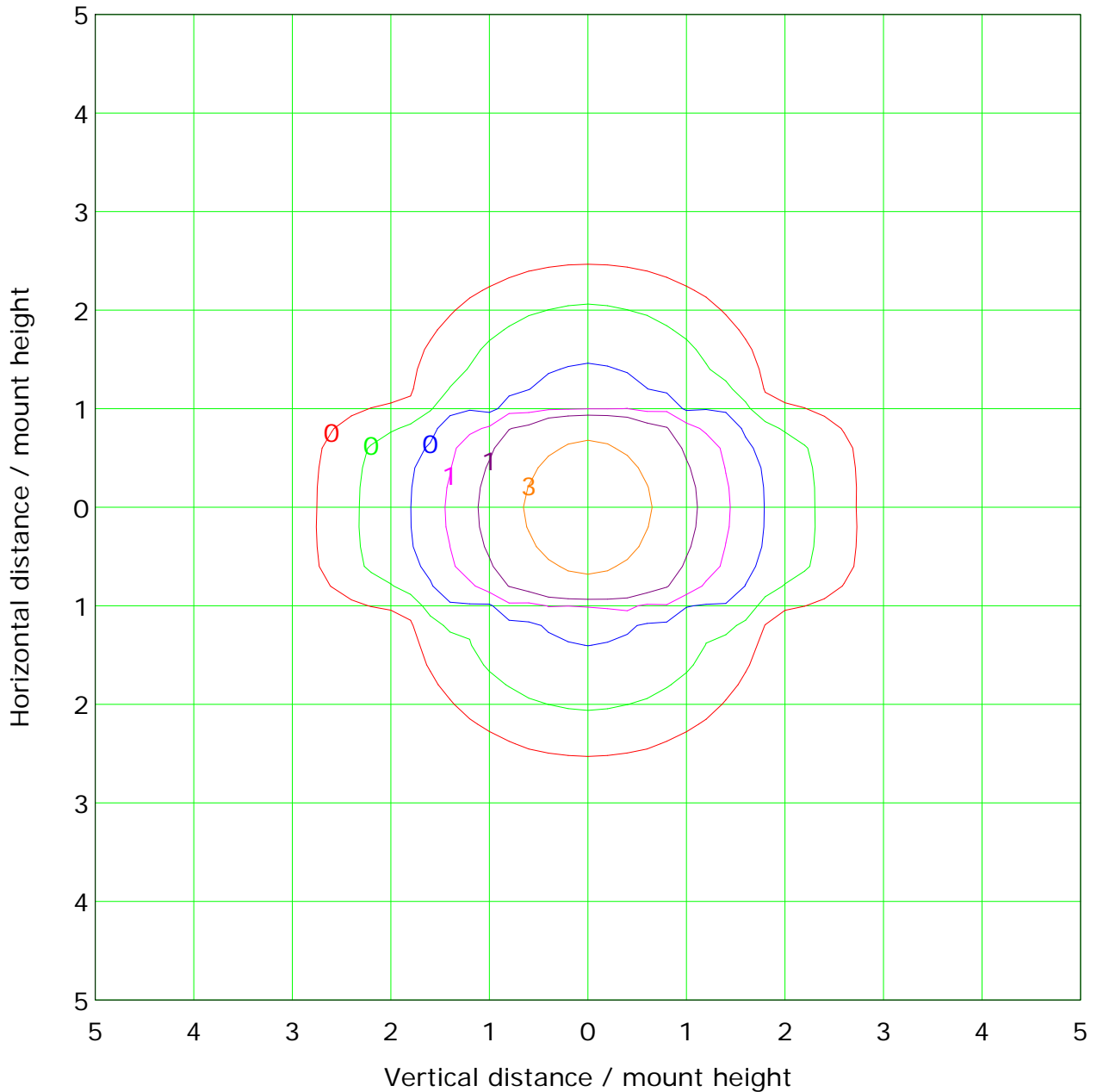
Imax (100%): 635 cd

— ( 10%):	63 cd	— ( 16%):	102 cd
— ( 25%):	159 cd	— ( 40%):	254 cd
— ( 63%):	400 cd	— (100%):	635 cd

C Plane (°):0.0-360.0: 15.0  
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 Test Type: TYPE C  
 Temperature: 22,4  
 Operator: BFR

Gamma Plane (°):0.0-180.0:2.0  
 Test Device: LSG-1800B  
 Distance: 6.500 m  
 Humidity: 45,6  
 Inspector:

## IsoLux Plot



Mounting Height: 10.0m    Max Lux(100%): 6.3 lx

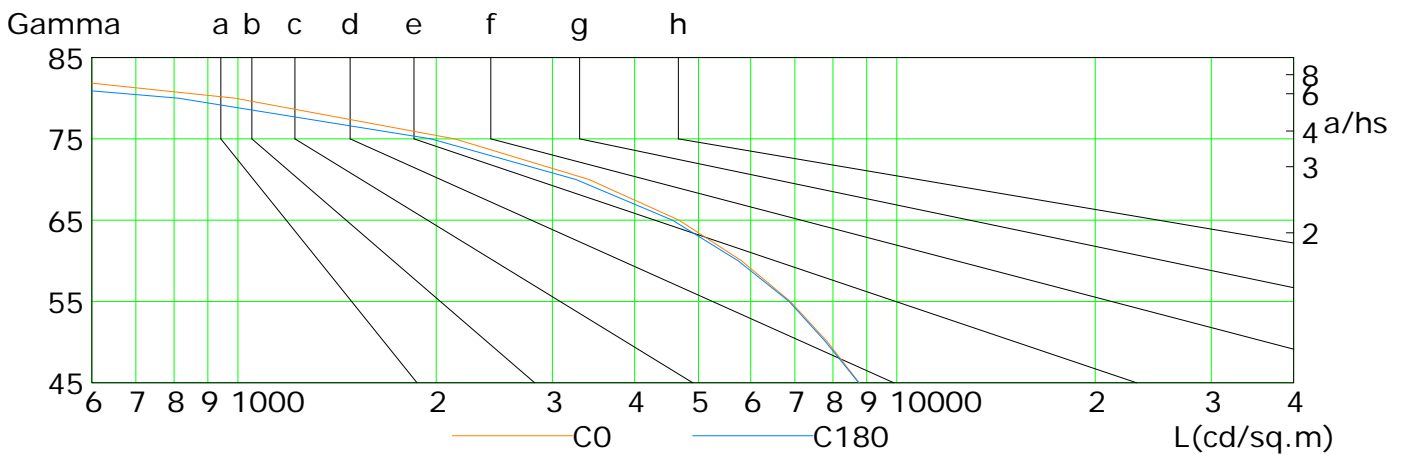
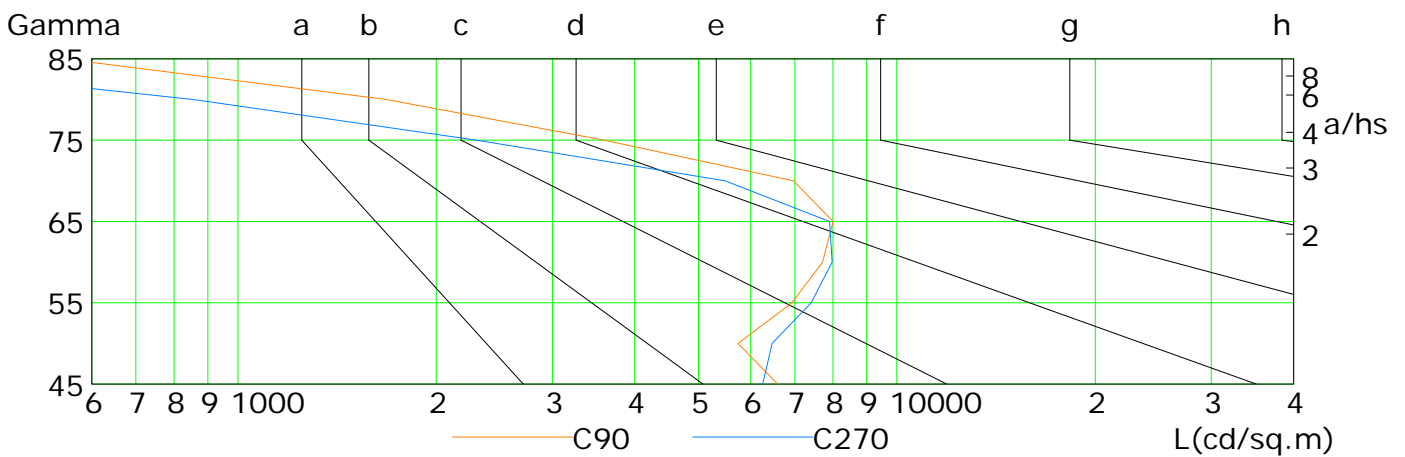
— ( 1%): 0.1 lx	— ( 2%): 0.1 lx
— ( 5%): 0.3 lx	— (10%): 0.6 lx
— (20%): 1.3 lx	— (50%): 3.2 lx
— (100%): 6.3 lx	

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 Temperature: 22,4  
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 Distance: 6.500 m  
 Humidity: 45,6  
 Inspector:

## Lum Limit Curve

Dazzle	Quality	Illuminance (lx)							
		a	b	c	d	e	f	g	h
1.15	A	2000	1000	500	<=300				
1.50	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.20	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300

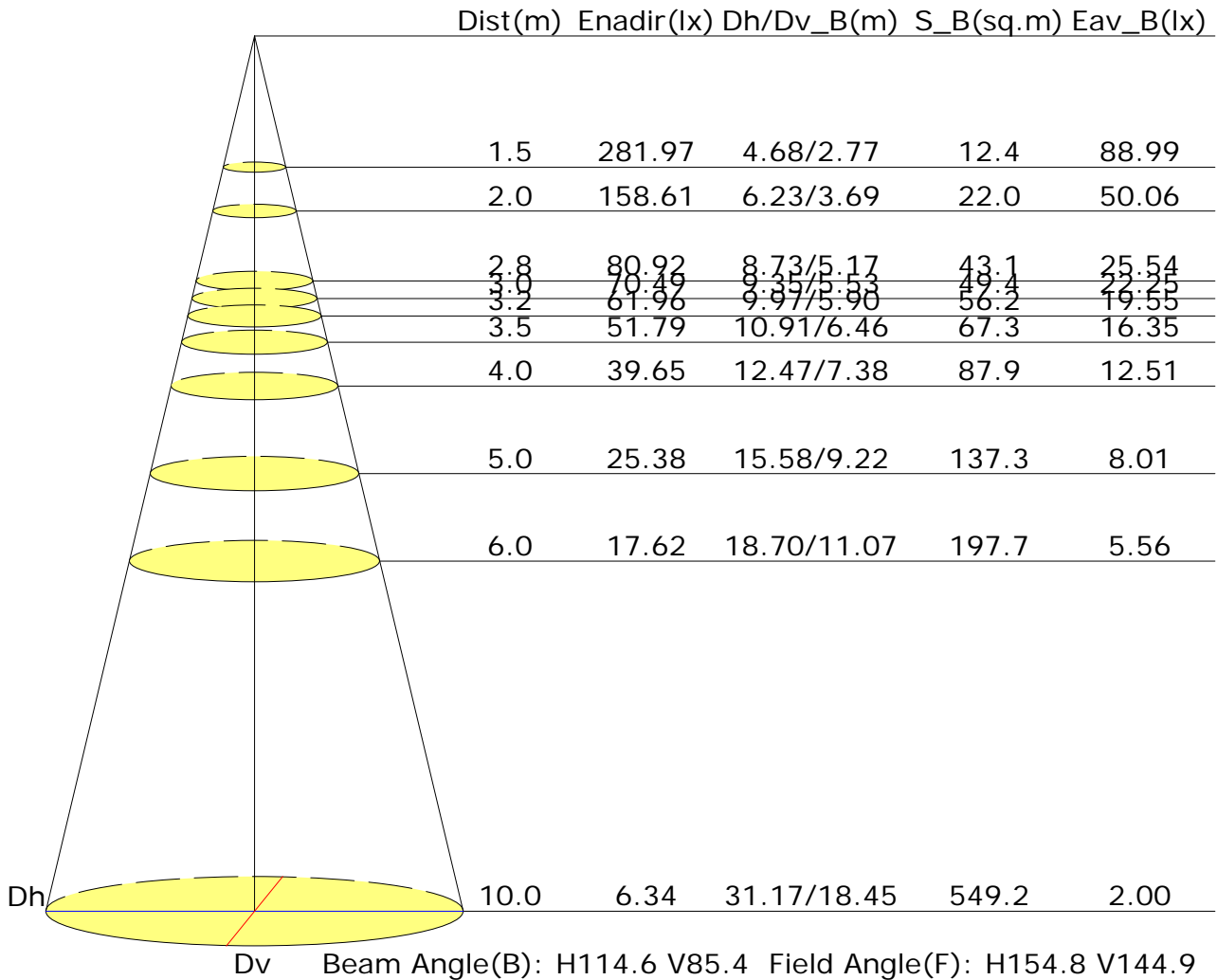


L(cd/sq.m)	G45	G50	G55	G60	G65	G70	G75	G80	G85
C0	8765	7850	6894	5812	4670	3411	2132	990	259
C90	6595	5739	6929	7712	8001	6966	3596	1680	544
C180	8749	7802	6861	5745	4564	3258	1963	813	158
C270	6257	6468	7412	7977	7903	5486	2302	855	230

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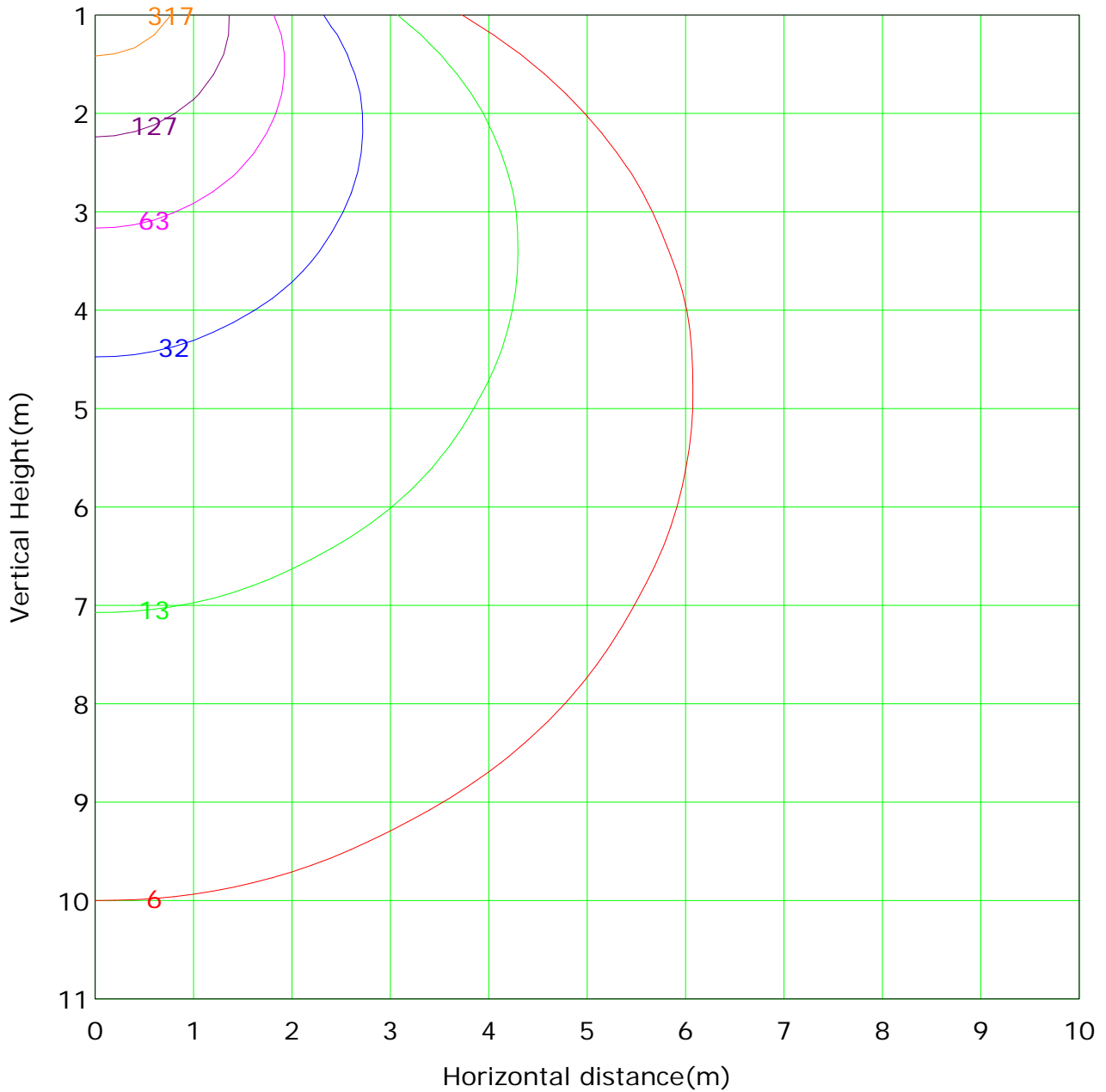
Gamma Plane (°): 0.0-180.0: 2.0  
 Test Device: LSG-1800B  
 Distance: 6.500 m  
 Humidity: 45,6  
 Inspector:

## Illuminance at a Distance





## Vertical IsoLux Plot



Lowest(m): 1.0m    Highest(m): 11.0m    Max Lux: 634.4 lx

— ( 1%): 6.3 lx	— ( 2%): 12.7 lx
— ( 5%): 31.7 lx	— ( 10%): 63.4 lx
— ( 20%): 126.9 lx	— ( 50%): 317.2 lx
— (100%): 634.4 lx	

C Plane (°): 0.0-360.0: 15.0  
 Test Lab: Metolight  
 Test Type: TYPE C  
 Temperature: 22,4  
 Operator: BFR

Gamma Plane (°): 0.0-180.0: 2.0  
 Test Device: LSG-1800B  
 Distance: 6.500 m  
 Humidity: 45,6  
 Inspector:

## Area Flux Table

Unit: lm

		Vertical plane																				
		-90	-80	-70	-60	-50	-40	-30	-20	-10	0	10	20	30	40	50	60	70	80	90		
Flux(E)	Flux(T)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Flux(E)	Flux(T)
0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
3.4	5.5	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.8	3.6	5.8
23.1	24.8	0.0	0.0	0.1	0.3	0.3	0.6	0.6	0.8	0.9	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.5	1.6	1.6	84.1	85.9
48.4	51.0	0.0	0.0	0.1	0.3	0.3	0.6	0.6	0.8	0.9	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.5	1.6	1.6	48.0	50.7
85.1	86.9	0.0	0.0	0.1	0.3	0.3	0.6	0.6	0.8	0.9	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.5	1.6	1.6	23.3	25.1
117.7	119.3	0.0	0.0	0.1	0.3	0.3	0.6	0.6	0.8	0.9	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.5	1.6	1.6	0.0	0.4
147.0	148.6	0.0	0.0	0.1	0.3	0.3	0.6	0.6	0.8	0.9	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.5	1.6	1.6	0.0	1564
167.8	169.5	0.0	0.0	0.1	0.3	0.3	0.6	0.6	0.8	0.9	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.5	1.6	1.6	1534	
177.8	179.5	0.0	0.0	0.1	0.3	0.3	0.6	0.6	0.8	0.9	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.5	1.6	1.6		
177.6	179.3	0.0	0.0	0.1	0.3	0.3	0.6	0.6	0.8	0.9	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.5	1.6	1.6		
165.9	167.6	0.0	0.0	0.1	0.3	0.3	0.6	0.6	0.8	0.9	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.5	1.6	1.6		
144.9	146.5	0.0	0.0	0.1	0.3	0.3	0.6	0.6	0.8	0.9	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.5	1.6	1.6		
115.8	117.4	0.0	0.0	0.1	0.3	0.3	0.6	0.6	0.8	0.9	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.5	1.6	1.6		
84.1	85.9	0.0	0.0	0.1	0.3	0.3	0.6	0.6	0.8	0.9	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.5	1.6	1.6		
48.0	50.7	0.0	0.0	0.1	0.3	0.3	0.6	0.6	0.8	0.9	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.5	1.6	1.6		
23.3	25.1	0.0	0.0	0.1	0.3	0.3	0.6	0.6	0.8	0.9	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.5	1.6	1.6		
3.6	5.8	0.0	0.0	0.1	0.3	0.3	0.6	0.6	0.8	0.9	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.5	1.6	1.6		
0.0	0.4	0.0	0.0	0.1	0.3	0.3	0.6	0.6	0.8	0.9	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.5	1.6	1.6		
0.0	1564	0.0	0.0	0.1	0.3	0.3	0.6	0.6	0.8	0.9	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.5	1.6	1.6		
1534		0.0	0.0	0.1	0.3	0.3	0.6	0.6	0.8	0.9	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.5	1.6	1.6		

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 Humidity: 45,6  
 Inspector:

## UGR Table

Reflectance:										
Ceiling (cavity)	0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
Wall	0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
Reference plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions	Viewed crosswise					Viewed endwise				
X=2H Y=2H	19.5	21.0	19.9	21.3	21.7	12.9	14.4	13.2	14.7	15.0
3H	21.0	22.3	21.4	22.6	23.0	15.0	16.3	15.4	16.6	17.0
4H	21.2	22.5	21.6	22.8	23.2	15.2	16.4	15.6	16.8	17.2
6H	21.3	22.4	21.7	22.8	23.2	15.2	16.3	15.6	16.7	17.1
8H	21.3	22.4	21.7	22.8	23.2	15.2	16.3	15.6	16.7	17.1
12H	21.2	22.3	21.7	22.7	23.1	15.1	16.2	15.6	16.6	17.0
X=4H Y=2H	19.4	20.7	19.8	21.0	21.4	13.3	14.6	13.7	14.9	15.3
3H	20.9	21.9	21.3	22.3	22.8	15.6	16.7	16.1	17.1	17.5
4H	21.2	22.1	21.6	22.5	23.0	15.9	16.8	16.4	17.3	17.7
6H	21.2	22.0	21.7	22.5	23.0	15.9	16.7	16.4	17.2	17.7
8H	21.2	22.0	21.7	22.4	22.9	15.9	16.7	16.4	17.1	17.6
12H	21.2	21.9	21.7	22.4	22.9	15.9	16.5	16.4	17.0	17.5
X=8H Y=4H	21.1	21.8	21.6	22.3	22.8	16.0	16.8	16.5	17.2	17.7
6H	21.2	21.8	21.7	22.3	22.8	16.0	16.7	16.6	17.2	17.7
8H	21.2	21.7	21.7	22.2	22.8	16.0	16.6	16.6	17.1	17.6
12H	21.2	21.6	21.7	22.1	22.7	16.0	16.5	16.5	17.0	17.6
X=12H Y=4H	21.1	21.7	21.6	22.2	22.7	16.0	16.7	16.5	17.2	17.6
6H	21.1	21.7	21.7	22.2	22.7	16.0	16.6	16.6	17.1	17.6
8H	21.1	21.6	21.7	22.1	22.7	16.0	16.5	16.5	17.0	17.6

Calculate in accordance with CIE 190:2010

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