

# LM-79

## Test Report

LM79\_ULTIMA\_2700K\_CRI80\_12DEG

### General Discription

Item number	U-X-X-X-01-1
Date and time	17-2-2017 16:01:03
CCT (Kelvin)	2691 K
Beam angle	15,4°
Luminous flux	1565 lm
Efficiency	86 lm/watt
Weighted energy	18,1 kWh/1000h
Power factor	0,9
CRI (RA)	81,5
Fidelity index Rf	Rf 79,2
Gammut index Rg	Rg 99,5



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Beam details	1m	2m	3m	4m	5m														
Lux*	16477 lx	4119 lx	1831 lx	1030 lx	659 lx														
*measured at center of beam																			
Footcandles*	1530,8 fcd	382,7 fcd	170,1 fcd	95,7 fcd	61,2 fcd														
Beam width (meter)	0,3 m	0,5 m	0,8 m	1,1 m	1,3 m														
Beam width (Feet)	0,9 ft	1,8 ft	2,7 ft	3,5 ft	4,4 ft														
<b>Beam intensities</b>																			
1m	2m	3m	4m	5m	6m	7m	8m	9m	10m	11m	12m	13m	14m	15m	16m	17m	18m	19m	20m
16477lx	4119lx	1831lx	1030lx	659lx	458lx	336lx	257lx	203lx	165lx	136lx	114lx	97lx	84lx	73lx	64lx	57lx	51lx	46lx	41lx
3,3ft	6,6ft	9,8ft	13,1ft	16,4ft	19,7ft	23ft	26,2ft	29,5ft	32,8ft	36,1ft	39,4ft	42,7ft	45,9ft	49,2ft	52,5ft	55,8ft	59,1ft	62,3ft	65,6ft
1530,8fcd	382,7fcd	170,1fcd	95,7fcd	61,2fcd	42,5fcd	31,2fcd	23,9fcd	18,9fcd	15,3fcd	12,7fcd	10,6fcd	9,1fcd	7,8fcd	6,8fcd	6fcd	5,3fcd	4,7fcd	4,2fcd	3,8fcd
<b>Intensities in 0° c-plane</b>																			
0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°
16,5K	16,5K	16,3K	15,5K	14,0K	12,5K	11,0K	9,5K	8,1K	6,9K	5,7K	4,6K	3,6K	2,8K	2,4K	1,9K	1,5K	1,1K	0,9K	0,7K
100%	100%	99%	94%	85%	76%	67%	58%	49%	42%	35%	28%	22%	17%	14%	12%	9%	7%	5%	4%
<b>Intensities in 90° c-plane</b>																			
0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°
16,5K	15,6K	14,7K	13,7K	12,8K	11,8K	10,4K	8,9K	7,5K	6,1K	4,8K	4,2K	3,5K	2,8K	2,1K	1,6K	1,3K	1,1K	0,9K	0,6K
100%	95%	89%	83%	78%	71%	63%	54%	46%	37%	29%	25%	21%	17%	13%	9%	8%	7%	5%	4%
<b>Intensities in 180° c-plane</b>																			
0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°
16,5K	16,5K	16,3K	15,5K	14,0K	12,5K	11,0K	9,5K	8,1K	6,9K	5,7K	4,6K	3,6K	2,8K	2,4K	1,9K	1,5K	1,1K	0,9K	0,7K
100%	100%	99%	94%	85%	76%	67%	58%	49%	42%	35%	28%	22%	17%	14%	12%	9%	7%	5%	4%
<b>Intensities in 270° c-plane</b>																			
0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°
16,5K	15,6K	14,7K	13,7K	12,8K	11,8K	10,4K	8,9K	7,5K	6,1K	4,8K	4,2K	3,5K	2,8K	2,1K	1,6K	1,3K	1,1K	0,9K	0,6K
100%	95%	89%	83%	78%	71%	63%	54%	46%	37%	29%	25%	21%	17%	13%	9%	8%	7%	5%	4%
Beam angle 50%		Field angle 10%			Cutoff angle 2,5%			Intensity ratio in 120° cone				Intensity ratio in 90° cone							
15,4°		30,4°			{C_ANG}°			97,9%				97,2%							



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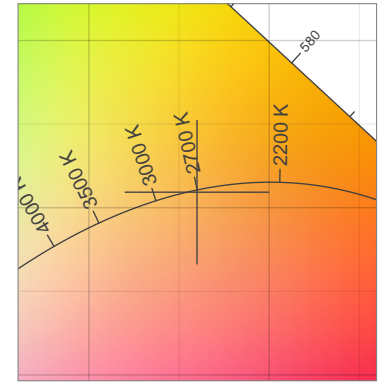
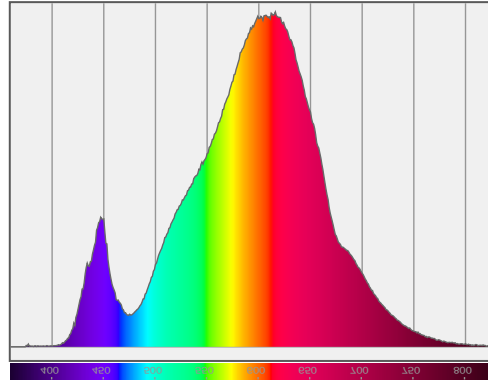
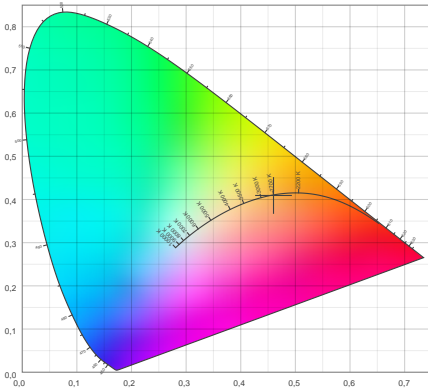
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### Color details



CIE 1931

x: 0,460



Spectra

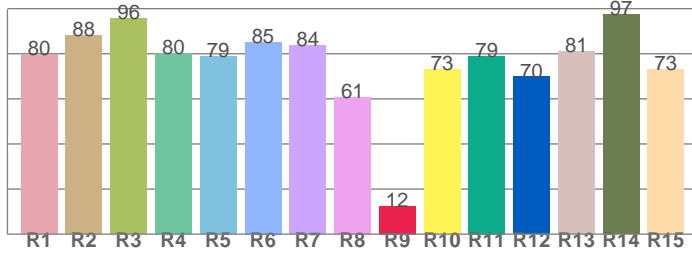
CIE 1931 ZOOM

2691 K

y: 0,409

$\Delta uv$ : 0,0005

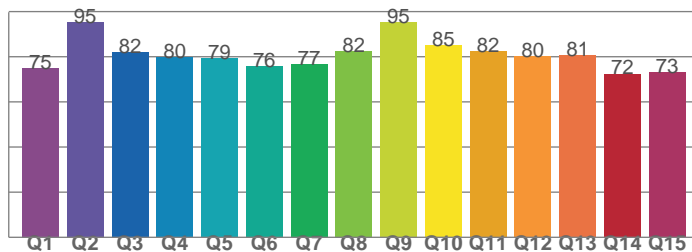
CRI: 81,5 (R1-R8)



CRI values, R1-R8 are used to calculate final CRI value

R1	R2	R3	R4	R5	R6	R7	R8
79,6	88,2	95,8	80,2	78,9	85,2	83,6	60,7
R9	R10	R11	R12	R13	R14	R15	
12,5	73,2	79,0	69,8	81,2	97,3	72,9	

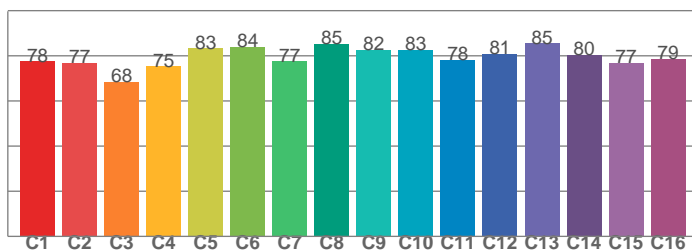
CQS: 79,8



CQS values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
74,9	95,4	82,0	79,7	79,2	75,9	76,7	82,4
Q9	Q10	Q11	Q12	Q13	Q14	Q15	
95,4	85,1	82,5	80,3	80,6	72,4	73,0	

TM30: 79,2



TM30 values, 16 binned values out of total of 99 values

C1	C2	C3	C4	C5	C6	C7	C8
77,6	76,8	68,3	75,3	83,2	83,9	77,4	85,2
C9	C10	C11	C12	C13	C14	C15	
82,5	82,6	78,3	80,7	85,4	80,5	76,7	

### Color parameters

Color temperature	Color rendering index	Red component	Color fidelity	Color gamut	Color quality scale	Color coordinate cie 1931	Color coordinate cie 1931	Color coordinate	Color coordinate	Color deviation from black body
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	$\Delta uv$
2691 K	81,5	12,5	79,2	99,5	79,8	0,460	0,409	0,263	0,351	0,0005



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### TM30 details

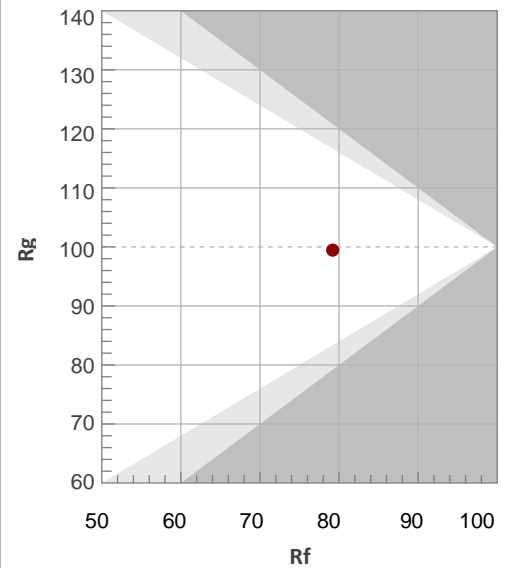
Rf 79,2

Fidelity index Rf

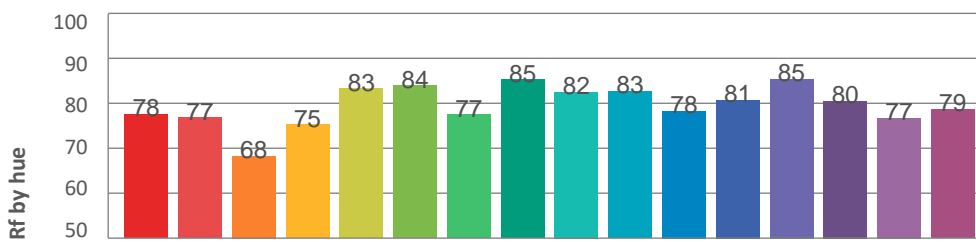
Rg 99,5

Gamut index Rg

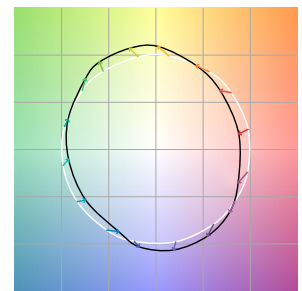
Hue Bin	R <sub>f</sub>	Graphic shifts (%)	
		Chroma	Hue
1	78	-11%	-3%
2	77	-9%	8%
3	68	-2%	15%
4	75	8%	13%
5	83	11%	7%
6	84	10%	-2%
7	77	4%	-12%
8	85	-2%	-8%
9	82	-7%	-5%
10	83	-8%	3%
11	78	-6%	12%
12	81	5%	6%
13	85	8%	-4%
14	80	7%	-12%
15	77	2%	-13%
16	79	-8%	-13%



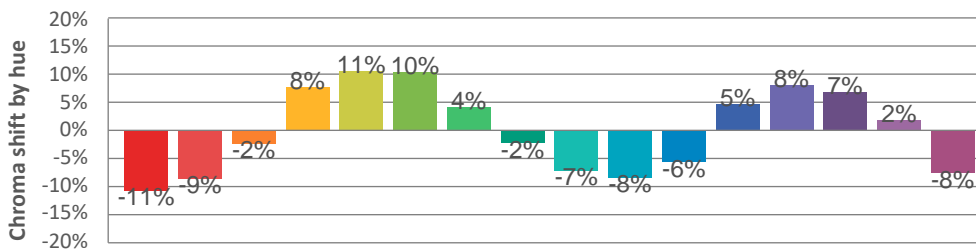
### Hue binH



### Color vector graphics



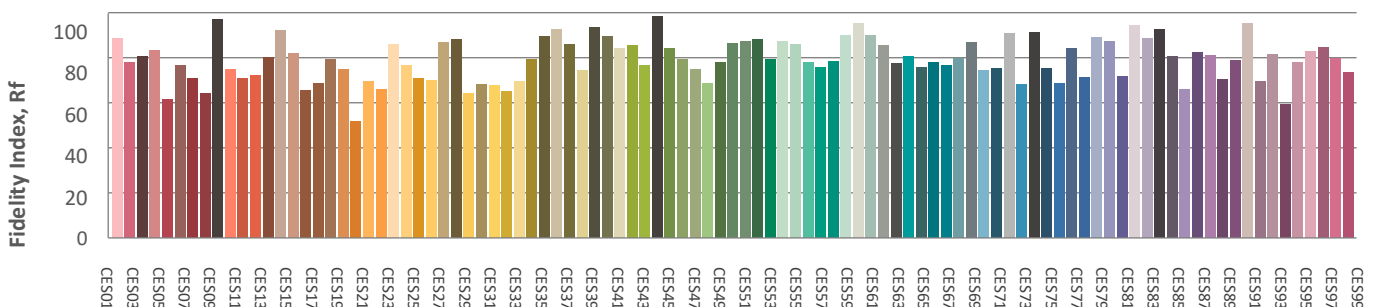
### Hue bin



### Color distortion graphics



### Color Evaluation Sample



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### Glare Evaluation According to UGR

p Ceiling	70	70	50	50	30	70	70	50	50	30	
p Walls	50	30	50	30	30	50	30	50	30	30	
p Floor	20	20	20	20	20	20	20	20	20	20	
Room size X Y	Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis					
2H	2H	1,4	2,0	1,6	2,2	2,4	1,1	1,7	1,3	1,9	2,1
	3H	1,5	2,1	1,8	2,3	2,6	1,2	1,8	1,5	2,1	2,3
	4H	1,7	2,3	2,0	2,6	2,8	1,5	2,1	1,8	2,3	2,6
	6H	3,2	3,7	3,5	4,0	4,3	3,1	3,6	3,5	3,9	4,2
	8H	5,0	5,5	5,3	5,8	6,1	5,0	5,5	5,4	5,8	6,1
	12H	7,0	7,5	7,4	7,8	8,2	7,2	7,7	7,6	8,0	8,4
4H	2H	1,4	1,9	1,7	2,2	2,5	1,1	1,7	1,4	2,0	2,2
	3H	1,6	2,1	2,0	2,4	2,7	1,4	1,9	1,8	2,2	2,5
	4H	2,1	2,5	2,5	2,8	3,2	1,9	2,3	2,3	2,7	3,0
	6H	4,2	4,6	4,7	5,0	5,4	4,3	4,6	4,7	5,0	5,4
	8H	6,5	6,8	6,9	7,2	7,6	6,6	6,8	7,0	7,3	7,7
	12H	8,8	9,1	9,3	9,5	10,0	9,1	9,3	9,5	9,7	10,2
8H	4H	2,5	2,8	2,9	3,2	3,6	2,4	2,6	2,8	3,1	3,5
	6H	5,5	5,7	5,9	6,1	6,6	5,5	5,7	5,9	6,1	6,6
	8H	8,0	8,2	8,5	8,6	9,1	8,1	8,2	8,5	8,7	9,2
	12H	10,5	10,7	11,0	11,1	11,7	10,7	10,9	11,2	11,4	11,9
12H	4H	2,9	3,1	3,3	3,6	4,0	2,8	3,0	3,2	3,4	3,9
	6H	6,1	6,3	6,6	6,8	7,3	6,1	6,3	6,6	6,8	7,3
	8H	8,7	8,9	9,2	9,3	9,9	8,8	8,9	9,3	9,4	9,9

### Variation of the observer position for the luminaire distance S

S = 1,0H	+0,3 / -0,3	+0,3 / -0,3
S = 1,5H	+0,5 / -0,6	+0,4 / -0,6
S = 2,0H	+1,0 / -1,0	+0,8 / -1,0
Standard table	---	---
Correction summand	---	---

Corrected glare indices referring to 1565lm total luminous flux

