

# LM-79

## Test Report

LM79\_ULTIMA\_3000K\_CRI80\_8DEG

### General Discription

Item number	U-X-X-X-02-5
Date and time	17-2-2017 14:16:14
CCT (Kelvin)	2916 K
Beam angle	11,2°
Luminous flux	1889 lm
Efficiency	104 lm/watt
Weighted energy	18,1 kWh/1000h
Power factor	0,89
CRI (RA)	83,7
Fidelity index Rf	Rf 84,2
Gammut index Rg	Rg 97,2



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Beam details	1m	2m	3m	4m	5m														
Lux*	34547 lx	8637 lx	3839 lx	2159 lx	1382 lx														
*measured at center of beam																			
Footcandles*	3209,6 fcd	802,4 fcd	356,6 fcd	200,6 fcd	128,4 fcd														
Beam width (meter)	0,2 m	0,4 m	0,6 m	0,8 m	1 m														
Beam width (Feet)	0,6 ft	1,3 ft	1,9 ft	2,6 ft	3,2 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
34547lx	8637lx	3839lx	2159lx	1382lx	960lx	705lx	540lx	427lx	345lx	286lx	240lx	204lx	176lx	154lx	135lx	120lx	107lx	96lx	86lx
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
3209,6fcd	802,4fcd	356,6fcd	200,6fcd	128,4fcd	89,2fcd	65,5fcd	50,1fcd	39,6fcd	32,1fcd	26,5fcd	22,3fcd	19fcd	16,4fcd	14,3fcd	12,5fcd	11,1fcd	9,9fcd	8,9fcd	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°
34,5K	31,4K	28,2K	24,9K	21,6K	18,4K	15,7K	12,9K	10,2K	7,4K	5,0K	4,1K	3,3K	2,4K	1,5K	0,9K	0,7K	0,6K	0,5K	0,3K
100%	91%	82%	72%	63%	53%	45%	37%	29%	21%	15%	12%	9%	7%	4%	3%	2%	2%	1%	1%
<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°
34,5K	34,4K	31,0K	27,5K	24,1K	20,3K	16,7K	13,7K	10,7K	7,9K	6,1K	4,5K	3,5K	2,6K	1,7K	1,2K	0,8K	0,6K	0,5K	0,3K
100%	100%	90%	80%	70%	59%	48%	40%	31%	23%	18%	13%	10%	7%	5%	3%	2%	2%	1%	1%
<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°
34,5K	31,4K	28,2K	24,9K	21,6K	18,4K	15,7K	12,9K	10,2K	7,4K	5,0K	4,1K	3,3K	2,4K	1,5K	0,9K	0,7K	0,6K	0,5K	0,3K
100%	91%	82%	72%	63%	53%	45%	37%	29%	21%	15%	12%	9%	7%	4%	3%	2%	2%	1%	1%
<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°
34,5K	34,4K	31,0K	27,5K	24,1K	20,3K	16,7K	13,7K	10,7K	7,9K	6,1K	4,5K	3,5K	2,6K	1,7K	1,2K	0,8K	0,6K	0,5K	0,3K
100%	100%	90%	80%	70%	59%	48%	40%	31%	23%	18%	13%	10%	7%	5%	3%	2%	2%	1%	1%
Beam angle 50%		Field angle 10%			Cutoff angle 2,5%			Intensity ratio in 120° cone				Intensity ratio in 90° cone							
11,2°		23,9°			{C_ANG}°			98,0%				97,4%							



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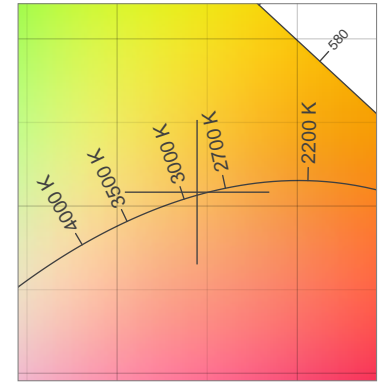
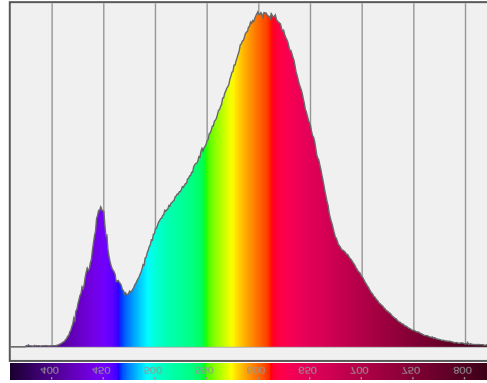
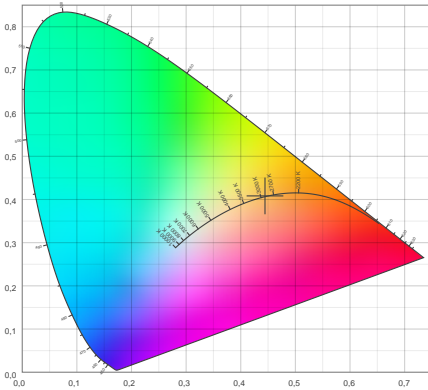
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### Color details



CIE 1931

x: 0,444



Spectra

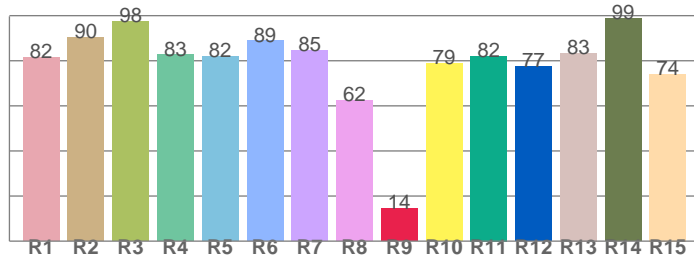
CIE 1931 ZOOM

2916 K

y: 0,408

$\Delta uv$ : 0,0007

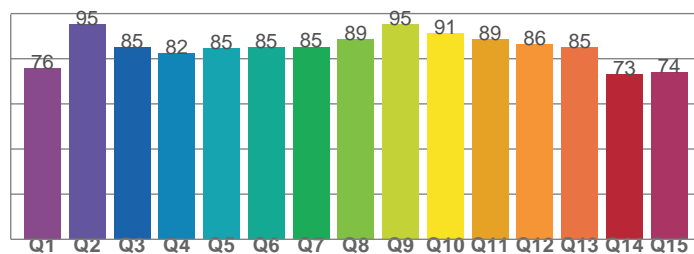
CRI: **83,7** (R1-R8)



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

R1	R2	R3	R4	R5	R6	R7	R8
81,6	90,4	97,5	82,6	81,9	88,8	84,5	62,3
R9	R10	R11	R12	R13	R14	R15	
14,4	78,7	82,1	77,4	83,4	98,8	74,2	

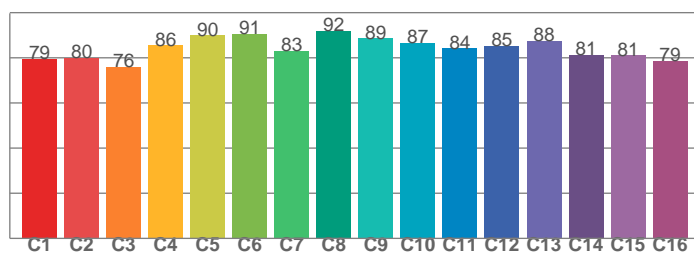
CQS: **83,5**



CQS values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
75,9	95,2	85,1	82,4	84,6	85,0	85,3	88,6
Q9	Q10	Q11	Q12	Q13	Q14	Q15	
95,4	91,2	88,6	86,4	84,9	73,1	73,8	

TM30: **84,2**



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

C1	C2	C3	C4	C5	C6	C7	C8
79,4	80,1	75,9	85,5	90,0	90,6	83,0	91,9
C9	C10	C11	C12	C13	C14	C15	
88,6	86,5	84,1	85,3	87,5	81,3	81,1	

### 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	$\Delta uv$
2916 K	83,7	14,4	84,2	97,2	83,5	0,444	0,408	0,254	0,349	0,0007



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### TM30 details

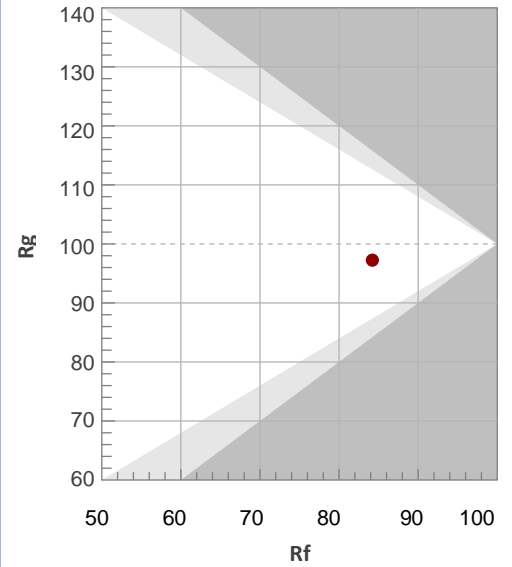
Rf 84,2

Fidelity index Rf

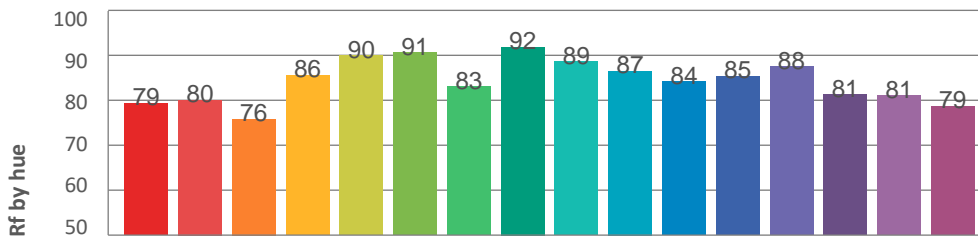
Rg 97,2

Gamut index Rg

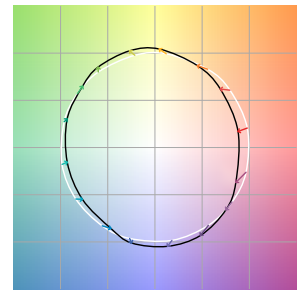
Hue Bin	R <sub>f</sub>	Graphic shifts (%)	
		Chroma	Hue
1	79	-10%	-2%
2	80	-8%	7%
3	76	-3%	11%
4	86	4%	8%
5	90	6%	5%
6	91	4%	-3%
7	83	0%	-10%
8	92	-3%	-3%
9	89	-6%	-1%
10	87	-6%	4%
11	84	-3%	9%
12	85	4%	3%
13	88	5%	-6%
14	81	4%	-13%
15	81	-1%	-11%
16	79	-8%	-13%



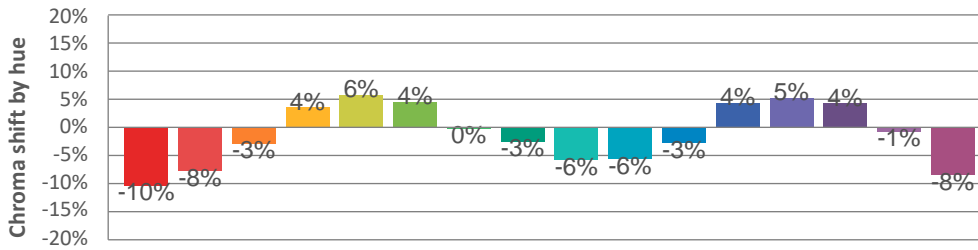
### Hue binH



### Color vector graphics



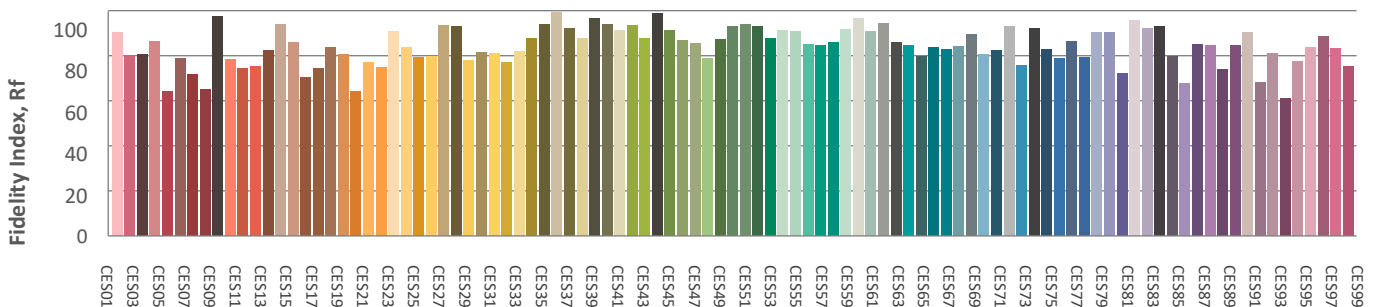
### Hue bin



### 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	0,1	0,7	0,3	0,9	1,1	0,6	1,3	0,9	1,5	1,7
	3H	0,6	1,2	0,9	1,5	1,7	1,3	1,9	1,6	2,2	2,4
	4H	1,2	1,8	1,5	2,0	2,3	1,5	2,1	1,8	2,4	2,6
	6H	3,2	3,7	3,5	4,0	4,3	3,0	3,5	3,4	3,8	4,1
	8H	5,0	5,5	5,3	5,8	6,1	4,7	5,2	5,1	5,5	5,8
	12H	7,2	7,7	7,6	8,0	8,3	6,7	7,1	7,0	7,4	7,8
4H	2H	0,3	0,8	0,6	1,1	1,4	0,8	1,4	1,1	1,6	1,9
	3H	1,1	1,5	1,4	1,8	2,2	1,7	2,1	2,0	2,4	2,8
	4H	1,9	2,3	2,3	2,7	3,1	2,0	2,4	2,4	2,8	3,2
	6H	4,5	4,8	4,9	5,2	5,6	4,2	4,5	4,6	4,9	5,3
	8H	6,6	6,9	7,1	7,3	7,7	6,3	6,6	6,7	7,0	7,4
	12H	9,1	9,3	9,5	9,7	10,2	8,5	8,7	8,9	9,1	9,6
8H	4H	2,5	2,8	2,9	3,2	3,6	2,6	2,8	3,0	3,3	3,7
	6H	5,7	5,9	6,2	6,4	6,8	5,4	5,6	5,9	6,1	6,6
	8H	8,1	8,3	8,6	8,7	9,2	7,8	7,9	8,2	8,4	8,9
	12H	10,7	10,9	11,2	11,3	11,9	10,2	10,3	10,7	10,8	11,3
12H	4H	2,9	3,1	3,3	3,5	4,0	3,0	3,2	3,4	3,6	4,1
	6H	6,3	6,4	6,7	6,9	7,4	6,0	6,2	6,5	6,7	7,2
	8H	8,7	8,9	9,2	9,4	9,9	8,5	8,6	9,0	9,1	9,6
Variation of the observer position for the luminaire distance S											
S = 1,0H	+0,2 / -0,3					+0,2 / -0,2					
S = 1,5H	+0,4 / -0,6					+0,4 / -0,6					
S = 2,0H	+0,5 / -0,9					+0,7 / -0,8					
Standard table	---					---					
Correction summand	---					---					
Corrected glare indices referring to 1889lm total luminous flux											

