

# LM-79

## Test Report

LM79\_ULTIMA\_3000K\_CRI80\_30DEG

### General Discription

Item number	U-X-X-X-02-3
Date and time	17-2-2017 14:29:43
CCT (Kelvin)	2931 K
Beam angle	28,3°
Luminous flux	1776 lm
Efficiency	99 lm/watt
Weighted energy	18,0 kWh/1000h
Power factor	0,9
CRI (RA)	83,7
Fidelity index Rf	Rf 84,3
Gammut index Rg	Rg 97,1



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Beam details	1m	2m	3m	4m	5m														
Lux*	5922 lx	1480 lx	658 lx	370 lx	237 lx														
*measured at center of beam																			
Footcandles*	550,2 fcd	137,5 fcd	61,1 fcd	34,4 fcd	22,0 fcd														
Beam width (meter)	0,5 m	1 m	1,5 m	2 m	2,5 m														
Beam width (Feet)	1,7 ft	3,3 ft	5 ft	6,6 ft	8,3 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
5922lx	1480lx	658lx	370lx	237lx	164lx	121lx	93lx	73lx	59lx	49lx	41lx	35lx	30lx	26lx	23lx	20lx	18lx	16lx	15lx
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
550,2fcd	137,5fcd	61,1fcd	34,4fcd	22fcd	15,3fcd	11,2fcd	8,6fcd	6,8fcd	5,5fcd	4,5fcd	3,8fcd	3,3fcd	2,8fcd	2,4fcd	2,1fcd	1,9fcd	1,7fcd	1,5fcd	1,4fcd
<b>Intensities in 0° c-plane</b>																			
0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°
5922	5705	5488	5103	4576	4048	3499	2950	2445	1967	1514	1183	851	633	461	313	236	159	118	86
100%	96%	93%	86%	77%	68%	59%	50%	41%	33%	26%	20%	14%	11%	8%	5%	4%	3%	2%	1%
<b>Intensities in 90° c-plane</b>																			
0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°
5922	5742	5526	5142	4624	4104	3578	3053	2566	2103	1655	1298	941	701	509	346	261	176	131	95
100%	97%	93%	87%	78%	69%	60%	52%	43%	36%	28%	22%	16%	12%	9%	6%	4%	3%	2%	2%
<b>Intensities in 180° c-plane</b>																			
0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°
5922	5705	5488	5103	4576	4048	3499	2950	2445	1967	1514	1183	851	633	461	313	236	159	118	86
100%	96%	93%	86%	77%	68%	59%	50%	41%	33%	26%	20%	14%	11%	8%	5%	4%	3%	2%	1%
<b>Intensities in 270° c-plane</b>																			
0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°
5922	5742	5526	5142	4624	4104	3578	3053	2566	2103	1655	1298	941	701	509	346	261	176	131	95
100%	97%	93%	87%	78%	69%	60%	52%	43%	36%	28%	22%	16%	12%	9%	6%	4%	3%	2%	2%
Beam angle 50%		Field angle 10%				Cutoff angle 2,5%				Intensity ratio in 120° cone				Intensity ratio in 90° cone					
28,3°		53,6°				{C_ANG}°				97,0%				95,7%					



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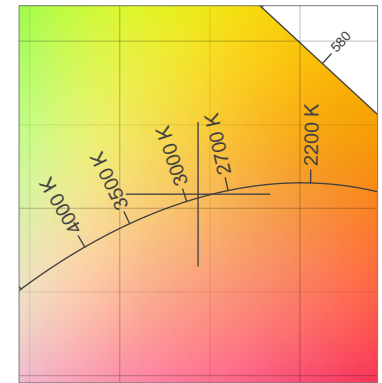
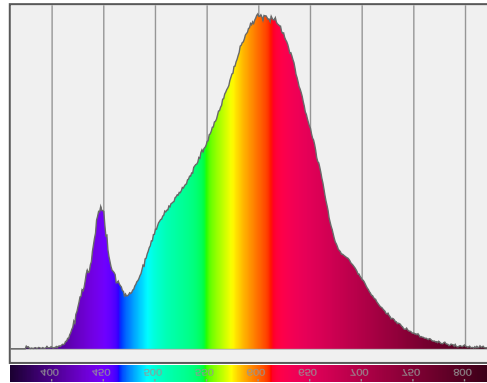
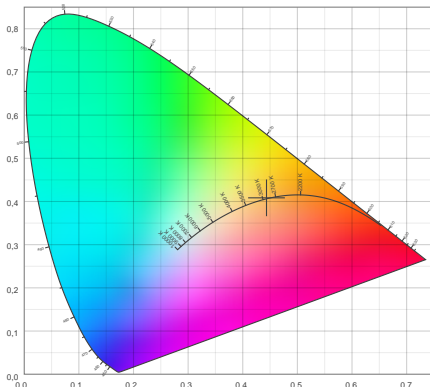
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### Color details



CIE 1931

x: 0,443



Spectra

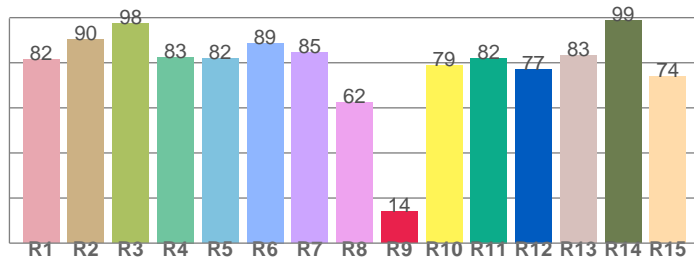
CIE 1931 ZOOM

2931 K

y: 0,408

$\Delta uv$ : 0,0009

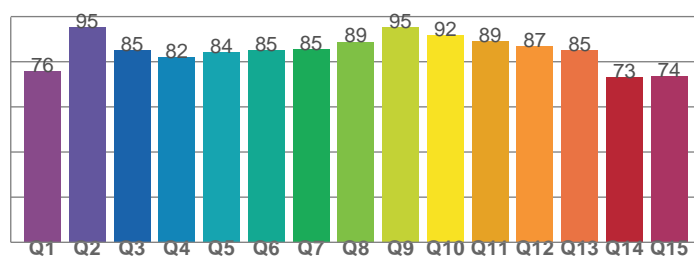
CRI: **83,7** (R1-R8)



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

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

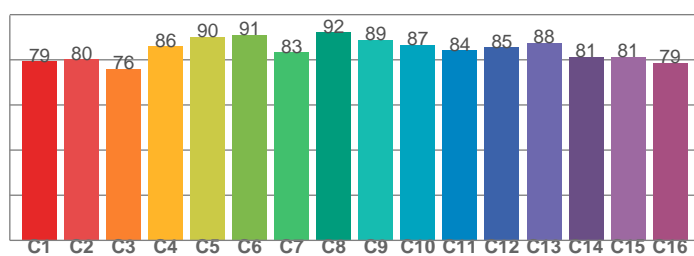
CQS: **83,5**



CQS values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
75,6	95,2	84,9	81,9	84,3	85,0	85,4	88,9
Q9	Q10	Q11	Q12	Q13	Q14	Q15	
95,3	91,7	89,1	86,8	85,2	73,0	73,7	

TM30: **84,3**



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

C1	C2	C3	C4	C5	C6	C7	C8
79,3	80,1	76,1	85,9	90,3	90,9	83,3	92,1
C9	C10	C11	C12	C13	C14	C15	
88,7	86,5	84,1	85,4	87,6	81,2	81,2	

### 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	$\Delta uv$
2931 K	83,7	14,2	84,3	97,1	83,5	0,443	0,408	0,253	0,349	0,0009



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### TM30 details

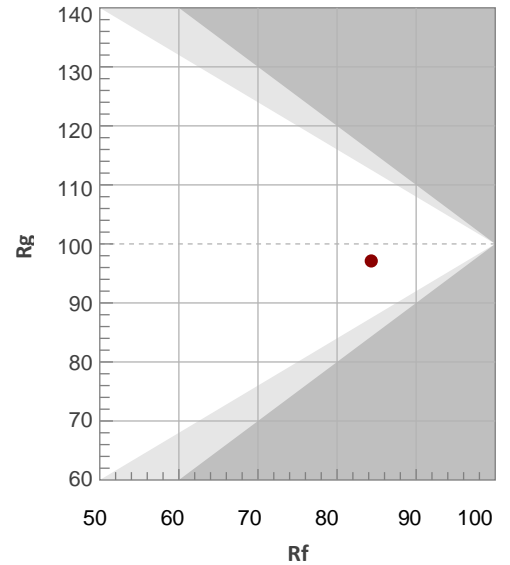
Rf 84,3

Fidelity index Rf

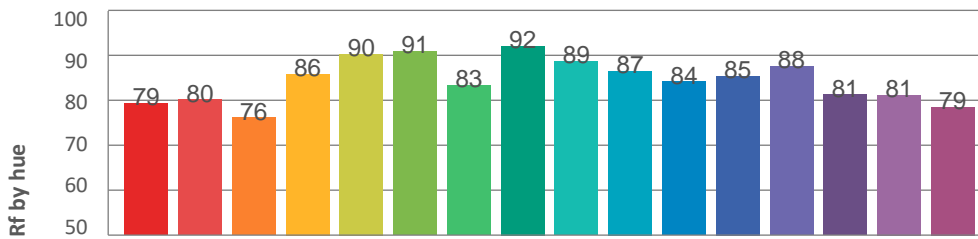
Rg 97,1

Gamut index Rg

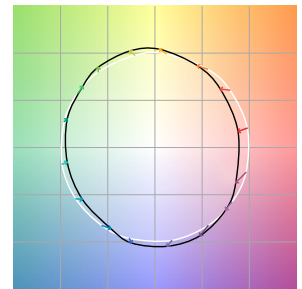
Hue Bin	R <sub>f</sub>	Graphic shifts (%)	
		Chroma	Hue
1	79	-10%	-2%
2	80	-8%	7%
3	76	-3%	11%
4	86	3%	8%
5	90	5%	5%
6	91	4%	-3%
7	83	0%	-10%
8	92	-3%	-3%
9	89	-6%	-1%
10	87	-6%	4%
11	84	-3%	9%
12	85	4%	3%
13	88	5%	-6%
14	81	4%	-13%
15	81	-1%	-10%
16	79	-8%	-13%



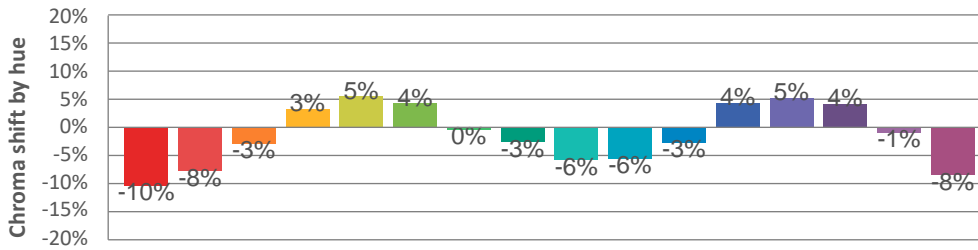
### Hue binH



### Color vector graphics



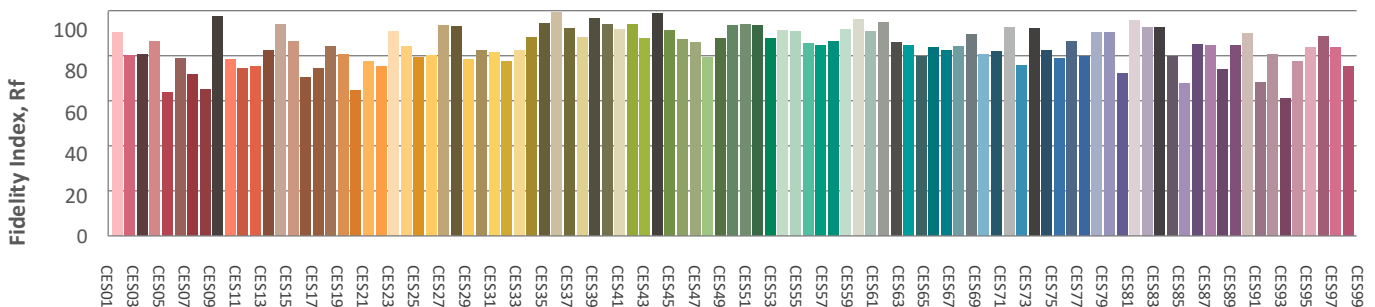
### Hue bin



### 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	8,3	9,0	8,6	9,2	9,5	8,7	9,3	8,9	9,5	9,8
	3H	8,4	9,0	8,7	9,3	9,5	8,7	9,3	9,0	9,6	9,8
	4H	8,4	9,0	8,8	9,3	9,6	8,7	9,3	9,1	9,6	9,9
	6H	8,6	9,1	9,0	9,4	9,8	8,9	9,5	9,3	9,8	10,1
	8H	8,9	9,4	9,3	9,7	10,0	9,2	9,7	9,6	10,0	10,3
	12H	9,4	9,9	9,8	10,2	10,6	9,7	10,2	10,1	10,5	10,9
4H	2H	8,3	8,8	8,6	9,1	9,4	8,6	9,1	8,9	9,4	9,7
	3H	8,4	8,9	8,8	9,2	9,5	8,7	9,1	9,1	9,5	9,8
	4H	8,5	8,9	8,9	9,3	9,7	8,8	9,2	9,2	9,6	9,9
	6H	8,8	9,2	9,3	9,6	10,0	9,1	9,5	9,6	9,9	10,3
	8H	9,3	9,6	9,8	10,0	10,5	9,6	9,9	10,0	10,3	10,7
	12H	10,2	10,4	10,6	10,8	11,3	10,4	10,7	10,9	11,1	11,6
8H	4H	8,5	8,8	9,0	9,2	9,7	8,8	9,1	9,2	9,5	10,0
	6H	9,1	9,3	9,6	9,8	10,2	9,4	9,6	9,8	10,0	10,5
	8H	9,8	10,0	10,3	10,5	11,0	10,0	10,2	10,5	10,7	11,2
	12H	11,0	11,2	11,5	11,7	12,2	11,2	11,4	11,8	11,9	12,4
12H	4H	8,5	8,8	9,0	9,2	9,7	8,8	9,1	9,3	9,5	10,0
	6H	9,2	9,4	9,7	9,9	10,4	9,5	9,7	10,0	10,1	10,7
	8H	10,0	10,2	10,6	10,7	11,2	10,3	10,4	10,8	10,9	11,5

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

S = 1,0H	+2,6 / -1,3	+2,8 / -1,4
S = 1,5H	+4,8 / -1,7	+5,1 / -1,9
S = 2,0H	+6,8 / -2,3	+7,0 / -2,4
Standard table	---	---
Correction summand	---	---

Corrected glare indices referring to 1776lm total luminous flux

