

LM-79

Test Report

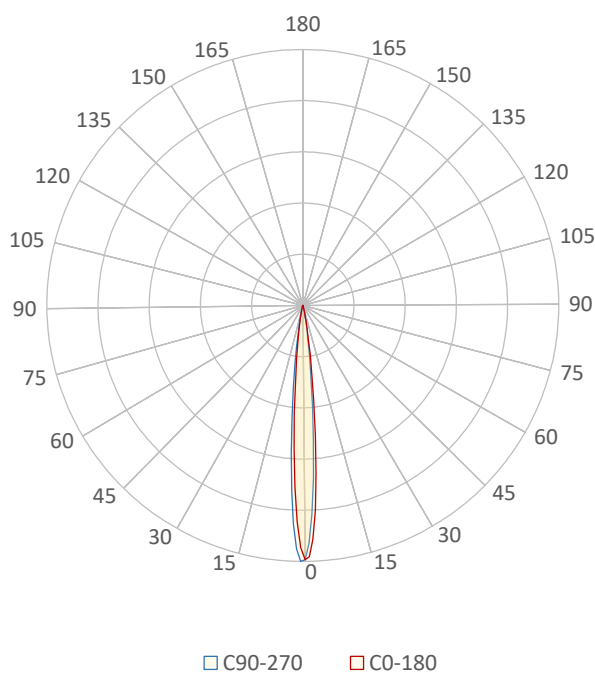
LM79-SAPPHIRE-ZOOM-3000K-CRI96-SPOT

General Discription

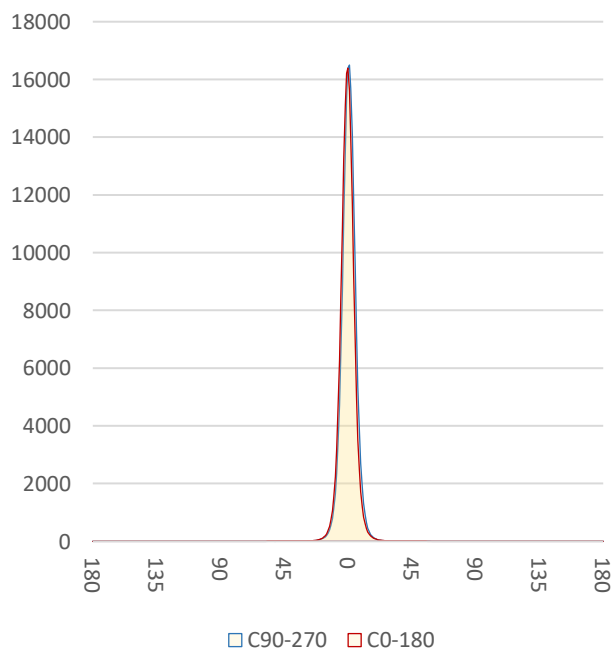
Item number	S-X-XX-22-03-Z
Date and time	24-10-2017 17:21:34
CCT (Kelvin)	3093 K
Beam angle	8,6°
Luminous flux	666 lm
Efficiency	23 lm/watt
Weighted energy	28,9 kWh/1000h
Power factor	0,95
CRI (RA)	95,8
Fidelity index Rf	Rf 89,6
Gammut index Rg	Rg 106,0
Peak	16569 cd



Polar diagram



Cartesian diagram



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Beam details	1m	2m	3m	4m	5m
Lux*	16391 lx	4098 lx	1821 lx	1024 lx	656 lx

8,6°

*measured at center of beam

Footcandles*	1522,8 fcd	380,7 fcd	169,2 fcd	95,2 fcd	60,9 fcd
Beam width (meter)	0,2 m	0,3 m	0,5 m	0,6 m	0,8 m
Beam width (Feet)	0,5 ft	1 ft	1,5 ft	2 ft	2,5 ft

Beam intensities																			
1m	2m	3m	4m	5m	6m	7m	8m	9m	10m	11m	12m	13m	14m	15m	16m	17m	18m	19m	20m
16391lx	4098lx	1821lx	1024lx	656lx	455lx	335lx	256lx	202lx	164lx	135lx	114lx	97lx	84lx	73lx	64lx	57lx	51lx	45lx	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
1522,8fcd	380,7fcd	169,2fcd	95,2fcd	60,9fcd	42,3fcd	31,1fcd	23,8fcd	18,8fcd	15,2fcd	12,6fcd	10,6fcd	9fcd	7,8fcd	6,8fcd	5,9fcd	5,3fcd	4,7fcd	4,2fcd	3,8fcd

Intensities in 0° c-plane																			
0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°
16,4K	16,2K	15,1K	13,2K	10,9K	8,5K	6,3K	4,5K	3,2K	2,2K	1,5K	1,1K	0,7K	0,5K	0,4K	0,3K	0,2K	0,1K	0,1K	0,1K
100%	99%	92%	81%	66%	52%	38%	28%	20%	14%	9%	6%	5%	3%	2%	2%	1%	1%	1%	1%

Intensities in 90° c-plane																			
0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°
16,4K	15,3K	13,5K	11,1K	8,7K	6,5K	4,7K	3,3K	2,4K	1,6K	1,1K	0,8K	0,6K	0,4K	0,3K	0,2K	0,2K	0,1K	0,1K	0,1K
100%	94%	82%	68%	53%	40%	29%	20%	14%	10%	7%	5%	3%	2%	2%	1%	1%	1%	1%	0%

Intensities in 180° c-plane																			
0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°
16,4K	15,6K	14,0K	11,7K	9,2K	6,9K	5,0K	3,5K	2,5K	1,7K	1,2K	0,8K	0,6K	0,4K	0,3K	0,2K	0,2K	0,1K	0,1K	0,1K
100%	95%	85%	71%	56%	42%	30%	21%	15%	10%	7%	5%	4%	3%	2%	1%	1%	1%	1%	1%

Intensities in 270° c-plane																			
0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°
16,4K	16,5K	15,7K	14,1K	11,9K	9,5K	7,3K	5,3K	3,8K	2,7K	1,9K	1,3K	0,9K	0,6K	0,5K	0,3K	0,2K	0,2K	0,1K	0,1K
100%	101%	96%	86%	73%	58%	44%	33%	23%	16%	12%	8%	6%	4%	3%	2%	1%	1%	1%	1%

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
8,6°	19,1°	27°	98,7%	97,7%



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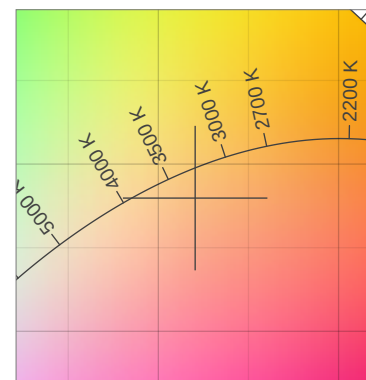
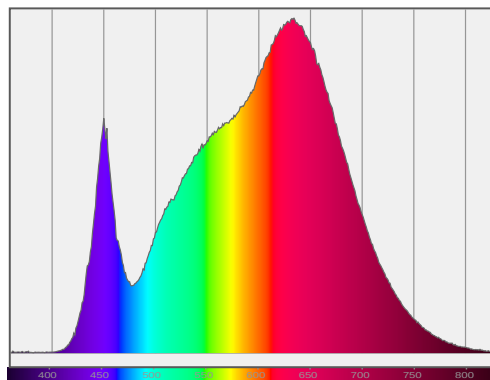
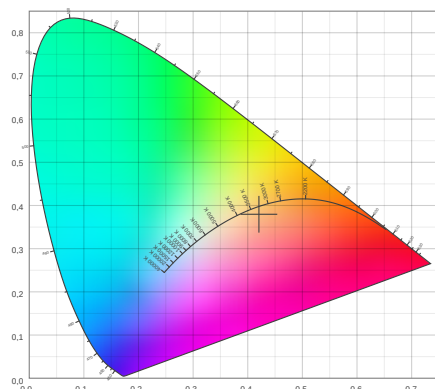
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Color details



CIE 1931

x: 0,420

3093 K

y: 0,380



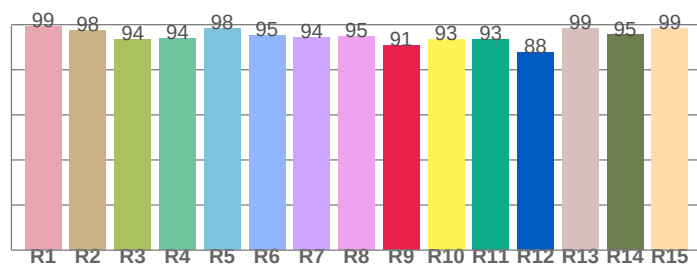
Spectra

CIE 1931 ZOOM

Δuv : 0,0077

CRI: 95,8 (R1-R8)

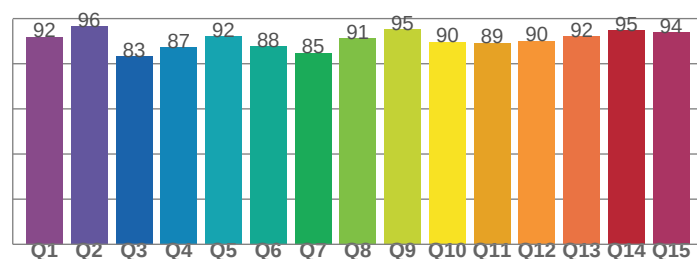
CRI values, R1-R8 are used to calculate final CRI value



R1	R2	R3	R4	R5	R6	R7	R8
99,2	97,6	93,7	93,8	98,2	95,3	94,2	94,8
R9	R10	R11	R12	R13	R14	R15	
90,9	93,3	93,4	87,9	98,6	95,5	98,6	

CQS: 89,9

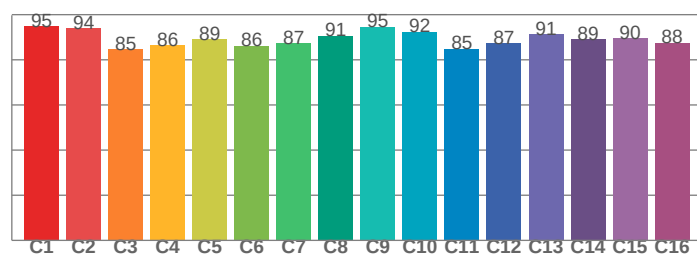
CQS values



Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
92,0	96,4	83,4	87,2	92,0	87,7	84,9	91,3
Q9	Q10	Q11	Q12	Q13	Q14	Q15	
95,4	89,7	89,3	90,2	92,3	94,7	94,0	

TM30: 89,6

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



C1	C2	C3	C4	C5	C6	C7	C8
94,8	93,9	84,6	86,4	89,1	86,2	87,2	90,6
C9	C10	C11	C12	C13	C14	C15	
94,6	92,2	84,9	87,2	91,2	89,1	89,5	

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	Δuv
3093 K	95,8	90,9	89,6	106,0	89,9	0,420	0,380	0,250	0,339	0,0077



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TM30 details

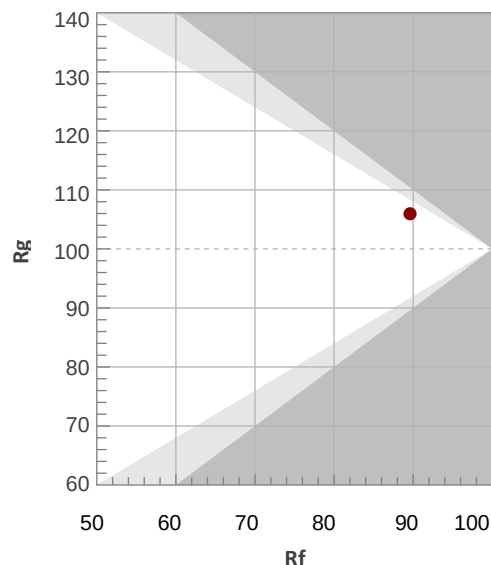
Rf 89,6

Fidelity index Rf

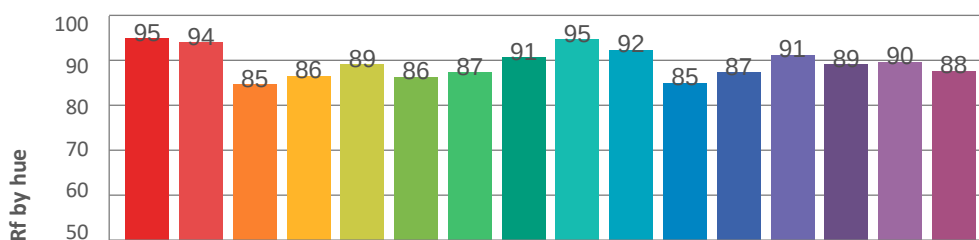
Rg 106,0

Gamut index Rg

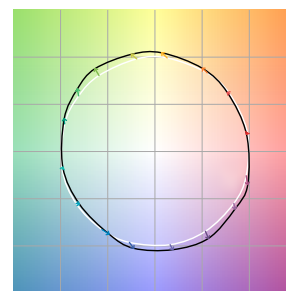
Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	95	-1%	-2%
2	94	-1%	3%
3	85	1%	7%
4	86	4%	7%
5	89	6%	5%
6	86	8%	0%
7	87	5%	-5%
8	91	2%	-5%
9	95	-1%	-2%
10	92	-3%	2%
11	85	0%	9%
12	87	5%	6%
13	91	6%	2%
14	89	8%	-1%
15	90	4%	-4%
16	88	3%	-9%



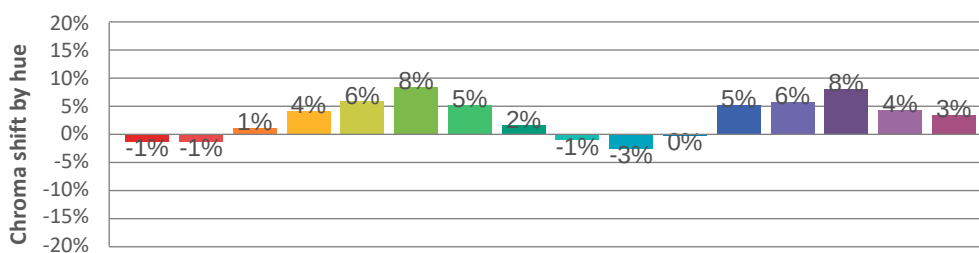
Hue binH



Color vector graphics



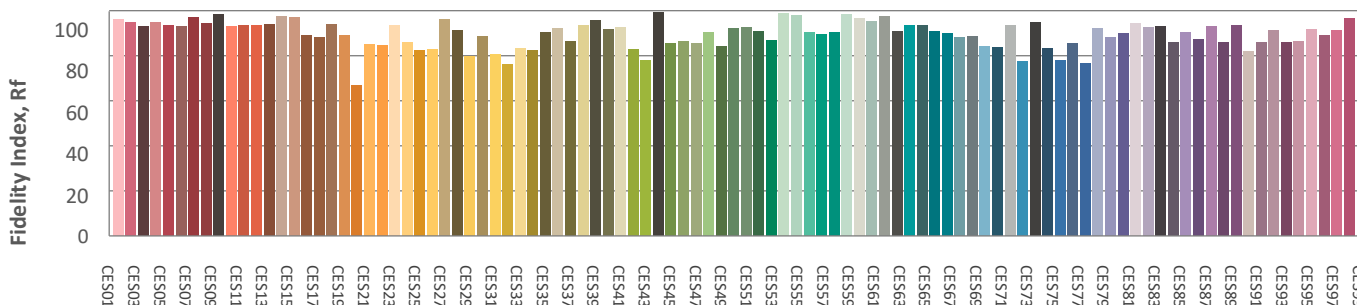
Hue bin



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	17,2	17,8	17,4	18,0	18,2	16,3	17,0	16,6	17,2	17,4
	3H	17,8	18,4	18,1	18,7	18,9	17,0	17,6	17,3	17,8	18,1
	4H	18,1	18,6	18,4	18,9	19,2	17,3	17,8	17,6	18,1	18,4
	6H	18,2	18,7	18,5	19,0	19,3	18,1	18,6	18,5	18,9	19,2
	8H	18,3	18,8	18,6	19,1	19,4	18,6	19,1	19,0	19,4	19,7
	12H	18,6	19,1	19,0	19,4	19,7	19,0	19,4	19,3	19,7	20,1
4H	2H	17,5	18,1	17,8	18,3	18,6	16,8	17,4	17,1	17,6	17,9
	3H	18,3	18,8	18,7	19,1	19,4	17,7	18,1	18,0	18,4	18,8
	4H	18,7	19,1	19,0	19,4	19,8	18,1	18,5	18,5	18,8	19,2
	6H	18,9	19,2	19,3	19,6	20,0	19,2	19,5	19,6	19,9	20,3
	8H	19,0	19,3	19,4	19,7	20,1	19,8	20,1	20,2	20,5	20,9
	12H	19,6	19,8	20,0	20,2	20,7	20,2	20,5	20,7	20,9	21,3
8H	4H	18,8	19,1	19,2	19,5	19,9	18,4	18,7	18,8	19,1	19,5
	6H	19,1	19,3	19,6	19,8	20,2	19,7	19,9	20,1	20,3	20,8
	8H	19,4	19,6	19,8	20,0	20,5	20,4	20,6	20,9	21,1	21,6
	12H	20,2	20,4	20,7	20,8	21,3	21,0	21,2	21,5	21,6	22,2
12H	4H	18,8	19,1	19,3	19,5	19,9	18,4	18,7	18,9	19,1	19,5
	6H	19,2	19,4	19,7	19,8	20,3	19,8	20,0	20,3	20,4	20,9
	8H	19,5	19,7	20,0	20,1	20,7	20,6	20,7	21,1	21,2	21,7
Variation of the observer position for the luminaire distance S											
S = 1,0H		+0,2 / -0,3					+0,2 / -0,3				
S = 1,5H		+0,8 / -1,2					+0,3 / -0,6				
S = 2,0H		+1,5 / -1,8					+0,6 / -1,1				
Standard table		BK04					BK06				
Correction summand		2,0					2,8				
Corrected glare indices referring to 666lm total luminous flux											

