

# LM-79

## Test Report

### LM79-REVO-COMPACT-INGROUND-AMBER-DEG12

#### General Discription

|                   |                   |                                                                                     |
|-------------------|-------------------|-------------------------------------------------------------------------------------|
| Item number       | RC-I-2-31-1       |  |
| Date and time     | 5-8-2016 12:15:31 |                                                                                     |
| CCT (Kelvin)      | 1825 K            |                                                                                     |
| Beam angle        | 14,9°             |                                                                                     |
| Luminous flux     | 491 lm            |                                                                                     |
| Efficiency        | 46 lm/watt        |                                                                                     |
| Weighted energy   | 10,7 kWh/1000h    |                                                                                     |
| Power factor      | 0,96              |                                                                                     |
| CRI (RA)          | 37,9              |                                                                                     |
| Fidelity index Rf | Rf 35,2           |                                                                                     |
| Gammut index Rg   | Rg 40,1           |                                                                                     |



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| Beam details | 1m      | 2m      | 3m     | 4m     | 5m     |
|--------------|---------|---------|--------|--------|--------|
| Lux*         | 5642 lx | 1411 lx | 627 lx | 353 lx | 226 lx |

14,9°

\*measured at center of beam

|                    |           |           |          |          |          |
|--------------------|-----------|-----------|----------|----------|----------|
| Footcandles*       | 524,2 fcd | 131,1 fcd | 58,2 fcd | 32,8 fcd | 21,0 fcd |
| Beam width (meter) | 0,3 m     | 0,5 m     | 0,8 m    | 1 m      | 1,3 m    |
| Beam width (Feet)  | 0,9 ft    | 1,7 ft    | 2,6 ft   | 3,4 ft   | 4,3 ft   |

#### Beam intensities

| 1m       | 2m       | 3m      | 4m      | 5m     | 6m      | 7m      | 8m     | 9m     | 10m    | 11m    | 12m    | 13m    | 14m    | 15m    | 16m    | 17m    | 18m    | 19m    | 20m    |
|----------|----------|---------|---------|--------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 5642lx   | 1411lx   | 627lx   | 353lx   | 226lx  | 157lx   | 115lx   | 88lx   | 70lx   | 56lx   | 47lx   | 39lx   | 33lx   | 29lx   | 25lx   | 22lx   | 20lx   | 17lx   | 16lx   | 14lx   |
| 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 |
| 524,2fcd | 131,1fcd | 58,2fcd | 32,8fcd | 21fcd  | 14,6fcd | 10,7fcd | 8,2fcd | 6,5fcd | 5,2fcd | 4,3fcd | 3,6fcd | 3,1fcd | 2,7fcd | 2,3fcd | 2fcd   | 1,8fcd | 1,6fcd | 1,5fcd | 1,3fcd |

#### 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° |
|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|
| 5642 | 5642 | 5394 | 5061 | 4671 | 4140 | 3608 | 3078 | 2549 | 2065 | 1667 | 1269 | 1010 | 773 | 581 | 456 | 332 | 263 | 200 | 152 |
| 100% | 100% | 96%  | 90%  | 83%  | 73%  | 64%  | 55%  | 45%  | 37%  | 30%  | 22%  | 18%  | 14% | 10% | 8%  | 6%  | 5%  | 4%  | 3%  |

#### 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° |
|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|
| 5642 | 5622 | 5283 | 4945 | 4607 | 4089 | 3569 | 3039 | 2508 | 1984 | 1599 | 1239 | 1011 | 782 | 564 | 442 | 332 | 271 | 209 | 152 |
| 100% | 100% | 94%  | 88%  | 82%  | 72%  | 63%  | 54%  | 44%  | 35%  | 28%  | 22%  | 18%  | 14% | 10% | 8%  | 6%  | 5%  | 4%  | 3%  |

#### 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° |
|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|
| 5642 | 5642 | 5394 | 5061 | 4671 | 4140 | 3608 | 3078 | 2549 | 2065 | 1667 | 1269 | 1010 | 773 | 581 | 456 | 332 | 263 | 200 | 152 |
| 100% | 100% | 96%  | 90%  | 83%  | 73%  | 64%  | 55%  | 45%  | 37%  | 30%  | 22%  | 18%  | 14% | 10% | 8%  | 6%  | 5%  | 4%  | 3%  |

#### 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° |
|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|
| 5642 | 5622 | 5283 | 4945 | 4607 | 4089 | 3569 | 3039 | 2508 | 1984 | 1599 | 1239 | 1011 | 782 | 564 | 442 | 332 | 271 | 209 | 152 |
| 100% | 100% | 94%  | 88%  | 82%  | 72%  | 63%  | 54%  | 44%  | 35%  | 28%  | 22%  | 18%  | 14% | 10% | 8%  | 6%  | 5%  | 4%  | 3%  |

|                |                 |                   |                              |                             |
|----------------|-----------------|-------------------|------------------------------|-----------------------------|
| Beam angle 50% | Field angle 10% | Cutoff angle 2,5% | Intensity ratio in 120° cone | Intensity ratio in 90° cone |
| 14,9°          | 28,1°           | {C_ANG}°          | 98,6%                        | 97,7%                       |



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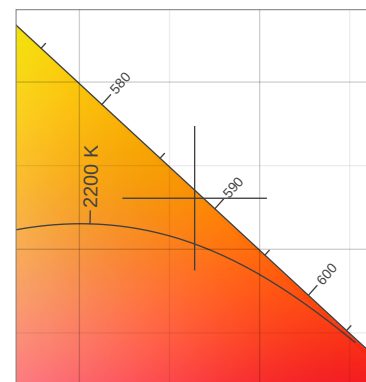
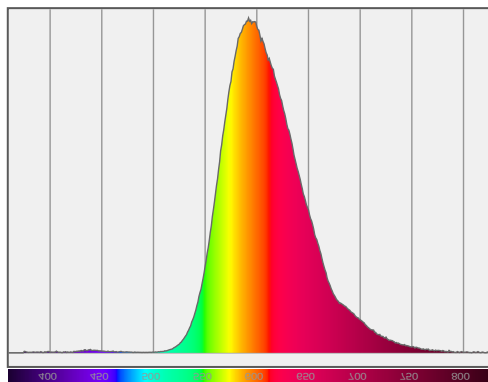
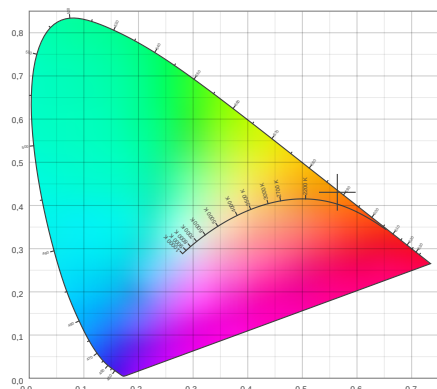
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#### Color details



CIE 1931

x: 0,564



Spectra

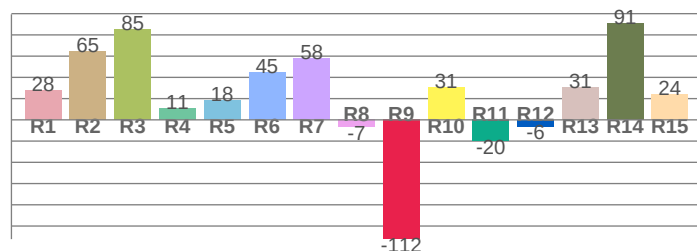
CIE 1931 ZOOM

1825 K

y: 0,431

$\Delta uv$ : 0,0069

CRI: 37,9 (R1-R8)



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

| R1     | R2   | R3    | R4   | R5   | R6   | R7   | R8   |
|--------|------|-------|------|------|------|------|------|
| 27,9   | 64,6 | 85,0  | 11,2 | 18,1 | 45,0 | 57,7 | -6,6 |
| R9     | R10  | R11   | R12  | R13  | R14  | R15  |      |
| -112,3 | 30,7 | -20,0 | -5,9 | 30,8 | 90,8 | 24,0 |      |

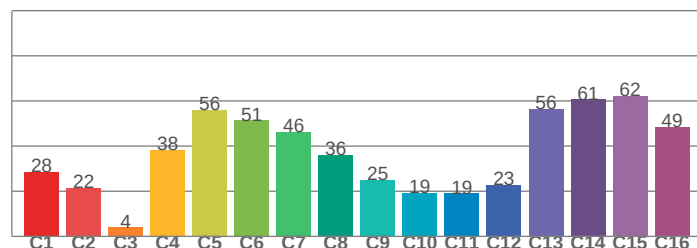
CQS: 0,0



CQS values

| Q1  | Q2   | Q3   | Q4  | Q5  | Q6  | Q7  | Q8  |
|-----|------|------|-----|-----|-----|-----|-----|
| 0,0 | 51,8 | 43,6 | 2,3 | 0,1 | 0,0 | 0,0 | 0,0 |
| Q9  | Q10  | Q11  | Q12 | Q13 | Q14 | Q15 |     |
| 0,0 | 0,0  | 0,0  | 0,0 | 0,0 | 0,0 | 0,0 |     |

TM30: 35,2



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

| C1   | C2   | C3   | C4   | C5   | C6   | C7   | C8   |
|------|------|------|------|------|------|------|------|
| 28,5 | 21,6 | 4,0  | 38,4 | 56,1 | 51,4 | 46,2 | 36,1 |
| C9   | C10  | C11  | C12  | C13  | C14  | C15  |      |
| 25,1 | 19,4 | 19,0 | 22,8 | 56,4 | 60,7 | 62,2 |      |

#### 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                | $\Delta uv$                     |
| 1825 K            | 37,9                  | -112,3        | 35,2           | 40,1        | 0,0                 | 0,564                     | 0,431                     | 0,321            | 0,367            | 0,0069                          |



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### LM79-REVO-COMPACT-INGROUND-AMBER-DEG12

#### TM30 details

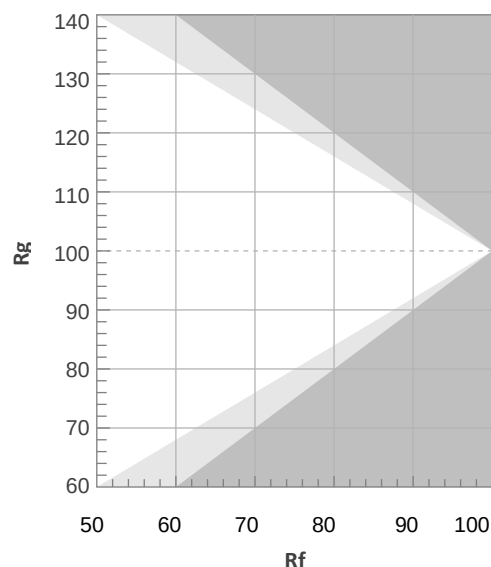
Rf 35,2

Fidelity index Rf

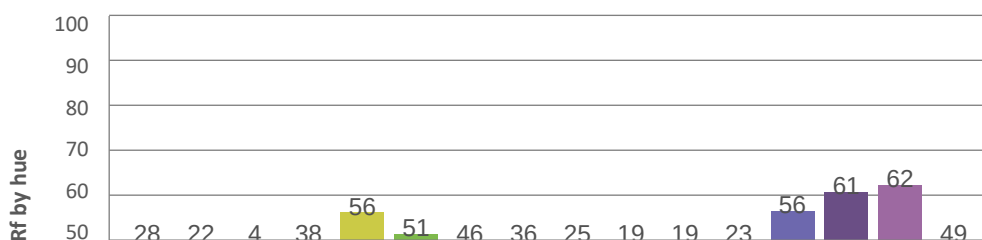
Rg 40,1

Gamut index Rg

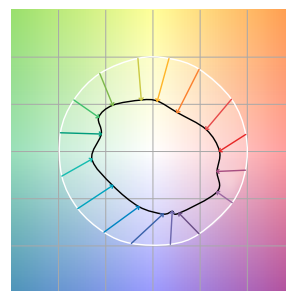
| Hue Bin | R <sub>f</sub> | Graphic shifts (%) |      |
|---------|----------------|--------------------|------|
|         |                | Chroma             | Hue  |
| 1       | 28             | -31%               | -12% |
| 2       | 22             | -40%               | -12% |
| 3       | 4              | -51%               | -6%  |
| 4       | 38             | -47%               | 3%   |
| 5       | 56             | -44%               | 5%   |
| 6       | 51             | -36%               | 7%   |
| 7       | 46             | -32%               | 1%   |
| 8       | 36             | -43%               | -7%  |
| 9       | 25             | -35%               | -11% |
| 10      | 19             | -44%               | 0%   |
| 11      | 19             | -43%               | 16%  |
| 12      | 23             | -37%               | 27%  |
| 13      | 56             | -34%               | 9%   |
| 14      | 61             | -30%               | -6%  |
| 15      | 62             | -20%               | 0%   |
| 16      | 49             | -29%               | -7%  |



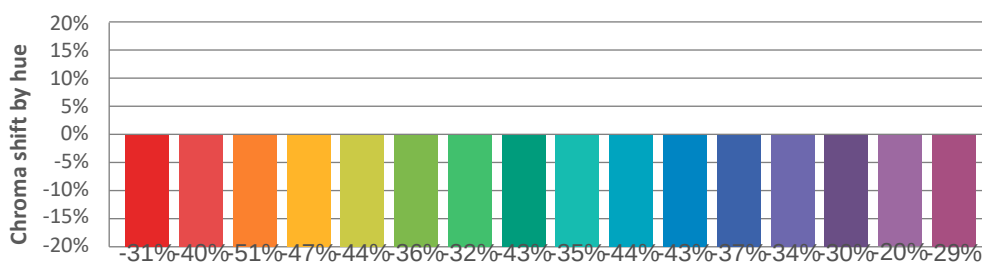
#### Hue binH



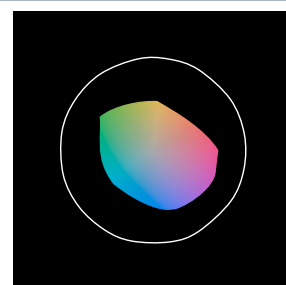
#### Color vector graphics



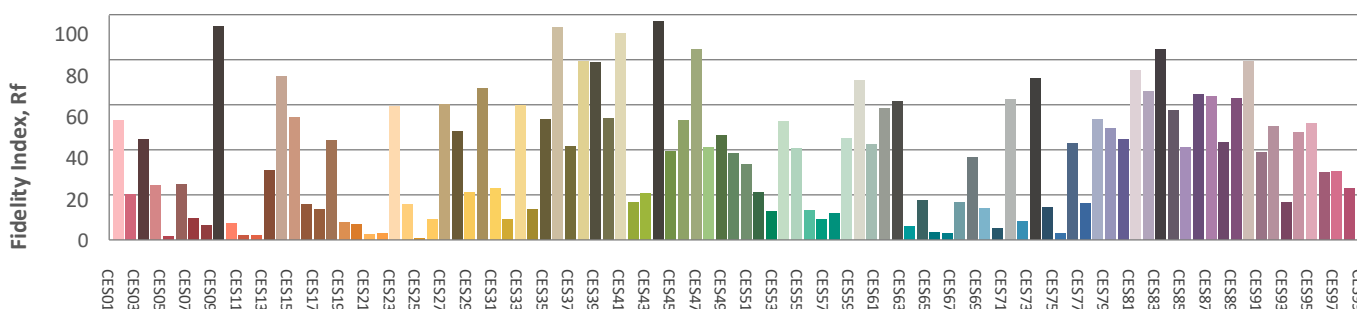
#### Hue bin



#### 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<br>X Y |     | Viewing direction at right angles to lamp axis |     |     |     |     | Viewing direction parallel to lamp axis |     |     |     |      |
| 2H               | 2H  | 4,6                                            | 5,2 | 4,8 | 5,4 | 5,6 | 4,9                                     | 5,6 | 5,2 | 5,8 | 6,0  |
|                  | 3H  | 5,4                                            | 6,0 | 5,7 | 6,3 | 6,5 | 5,7                                     | 6,3 | 6,0 | 6,6 | 6,8  |
|                  | 4H  | 5,8                                            | 6,4 | 6,1 | 6,6 | 6,9 | 6,1                                     | 6,7 | 6,4 | 6,9 | 7,2  |
|                  | 6H  | 6,2                                            | 6,7 | 6,5 | 7,0 | 7,3 | 6,5                                     | 7,0 | 6,8 | 7,3 | 7,6  |
|                  | 8H  | 6,4                                            | 6,9 | 6,8 | 7,2 | 7,5 | 6,8                                     | 7,3 | 7,1 | 7,6 | 7,9  |
|                  | 12H | 6,8                                            | 7,3 | 7,2 | 7,6 | 7,9 | 7,1                                     | 7,6 | 7,5 | 7,9 | 8,2  |
| 4H               | 2H  | 4,9                                            | 5,5 | 5,2 | 5,7 | 6,0 | 5,2                                     | 5,8 | 5,5 | 6,0 | 6,3  |
|                  | 3H  | 6,0                                            | 6,5 | 6,4 | 6,8 | 7,1 | 6,3                                     | 6,7 | 6,6 | 7,0 | 7,4  |
|                  | 4H  | 6,5                                            | 6,9 | 6,9 | 7,2 | 7,6 | 6,8                                     | 7,2 | 7,1 | 7,5 | 7,9  |
|                  | 6H  | 7,0                                            | 7,4 | 7,4 | 7,7 | 8,1 | 7,3                                     | 7,6 | 7,7 | 8,0 | 8,4  |
|                  | 8H  | 7,4                                            | 7,7 | 7,8 | 8,0 | 8,5 | 7,7                                     | 8,0 | 8,1 | 8,4 | 8,8  |
|                  | 12H | 7,9                                            | 8,2 | 8,4 | 8,6 | 9,0 | 8,2                                     | 8,4 | 8,6 | 8,8 | 9,3  |
| 8H               | 4H  | 6,7                                            | 7,0 | 7,1 | 7,4 | 7,8 | 6,9                                     | 7,2 | 7,4 | 7,6 | 8,0  |
|                  | 6H  | 7,4                                            | 7,6 | 7,9 | 8,1 | 8,5 | 7,7                                     | 7,9 | 8,1 | 8,3 | 8,8  |
|                  | 8H  | 7,9                                            | 8,1 | 8,4 | 8,5 | 9,0 | 8,2                                     | 8,4 | 8,7 | 8,9 | 9,3  |
|                  | 12H | 8,7                                            | 8,9 | 9,2 | 9,3 | 9,8 | 8,9                                     | 9,1 | 9,4 | 9,5 | 10,1 |
| 12H              | 4H  | 6,7                                            | 7,0 | 7,2 | 7,4 | 7,8 | 7,0                                     | 7,2 | 7,4 | 7,6 | 8,1  |
|                  | 6H  | 7,5                                            | 7,7 | 8,0 | 8,2 | 8,6 | 7,8                                     | 7,9 | 8,2 | 8,4 | 8,9  |
|                  | 8H  | 8,1                                            | 8,3 | 8,6 | 8,7 | 9,2 | 8,4                                     | 8,6 | 8,9 | 9,0 | 9,5  |

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

|                    |             |             |
|--------------------|-------------|-------------|
| S = 1,0H           | +0,6 / -0,5 | +0,7 / -0,5 |
| S = 1,5H           | +1,5 / -0,8 | +1,5 / -0,8 |
| S = 2,0H           | +2,5 / -1,2 | +2,6 / -1,2 |
| Standard table     | BK05        | BK05        |
| Correction summand | -9,5        | -9,3        |

Corrected glare indices referring to 491lm total luminous flux



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