Cree LMH2 LED Modules

Introduction – LMH2 Module PTM

Purpose

- Provide an overview of the Cree LMH2 Module

Objective

- Give an overview of the Cree LMH2 Module
- Detail the different Optic Options Available
- Provide a design example comparing the LMH2 Module to a CFL based solution in an 8” Open Reflector Downlight
- Provide further examples comparing the LMH2 to incumbent sources for an 8” Parabolic Downlight, a 6” Specular Downlight, and a Spot Accent Luminaire
- Show the Design Resources Available on Cree.com
- Review the LMH2 LM-80 Summary

Content

- 10 slides
- 15 minutes

LMH2 LED Modules

LMH2 Flat Lens	Beam Angle:	82°
	LES:	60 mm, round
LMH2 Dome Lens	Beam Angle:	100°
	LES:	60 mm, round

Unparalleled efficacy & quality of light available in fully integrated modules

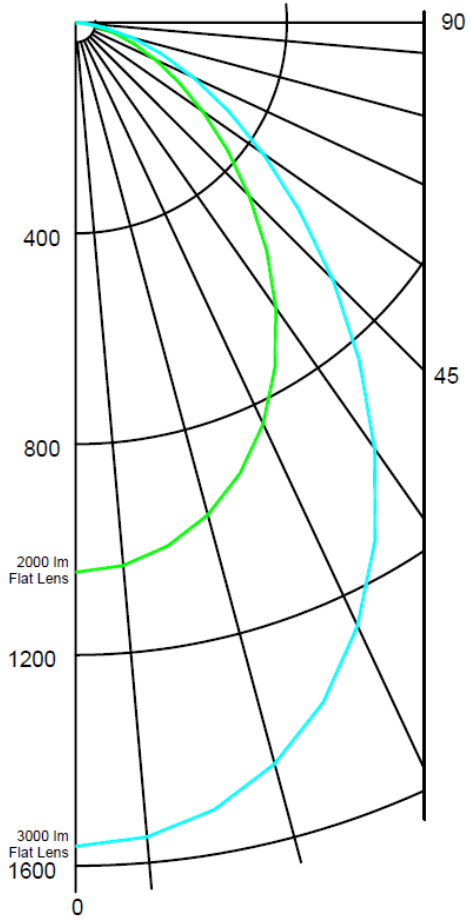
- Beautiful 90+ CRI light in 4000K, 3500K, 3000K & 2700K
- Delivers 97 LPW efficacy across all CCT & lumen options
- Unique Driver Compatibility Program recommends tested drivers
- 5 year warranty, even with third-party drivers
- Aluminum housing provides thermal design flexibility

Lighting Apps
Non-Directional
Directional
Downlight
Linear
Outdoor/High Bay
Portable

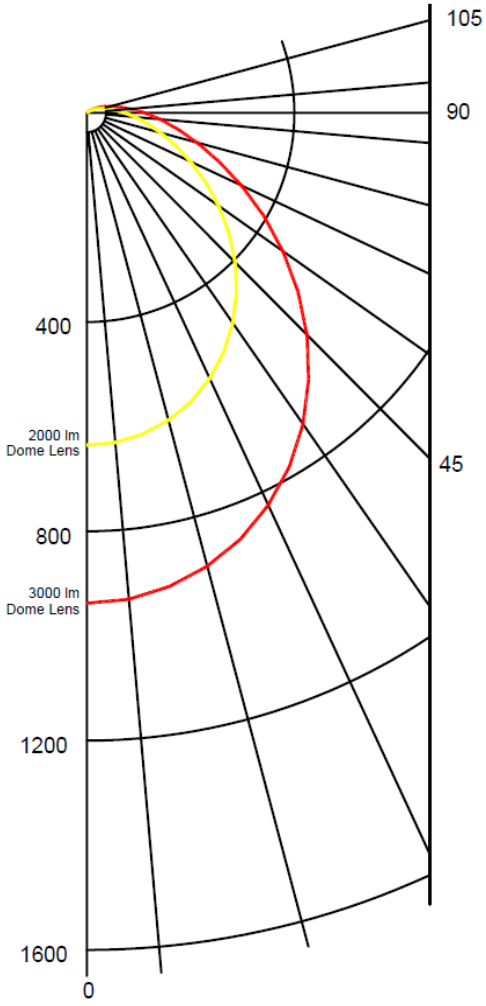
LMH2 Optic Options

Flat Lens (82° FWHM)

- Provides more directional light
- Ideal for downlights



Dome Lens (100° FWHM)

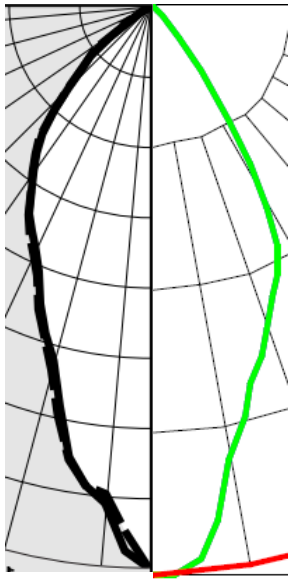


- Provides more light directed sideways
- Ideal for reflectors or non-directional lighting

Design Example: 8” Open Reflector Downlight (LMH2)

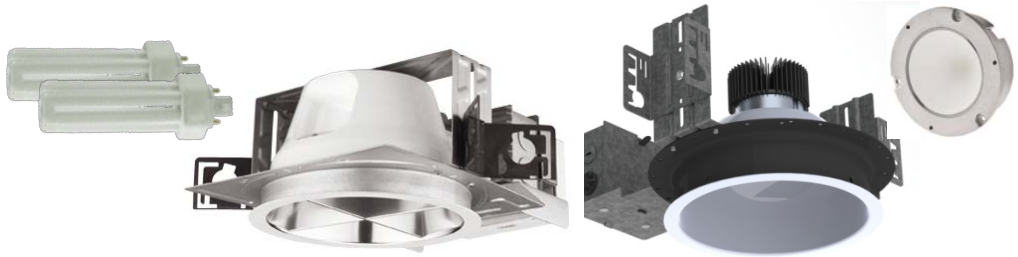
		26W CFL	LMH2
Light Source	Lumens	1800 lm	1250 lm
	CRI	80+	90+
Luminaire	Efficiency	62%	89%
	Lumens	**1116 lm**	**1113 lm**
	Efficacy	**40 LPW**	**73 LPW**
	Power	**28 W**	**15.2 W**
	Beam Angle	45°	45°
	Lifetime	**~10k hrs**	**50k hrs**

CFL LMH2



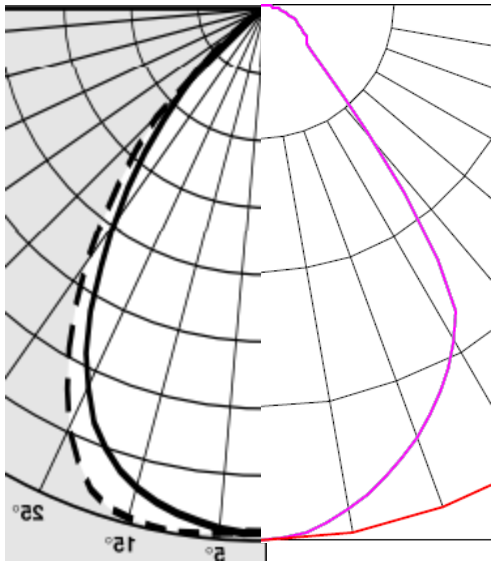
- Maintain the same lumens as CFL at half the power consumption
- Cree LMH2 provides higher CRI & R9 than CFL; instant-on; 5x lifetime

Design Example: 8” Parabolic Downlight (LMH2)



		2x32W CFL	LMH2
Light Source	Lumens	4800 lm	3000 lm
	CRI	82	90+
Luminaire	Efficiency	46.5%	87%
	Lumens	**2232 lm**	**2618 lm**
	Efficacy	**32 LPW**	**72 LPW**
	Power	**69 W**	**36.5 W**
	Beam Angle	73°	75°
	CBCP	1673 cd	1826 cd

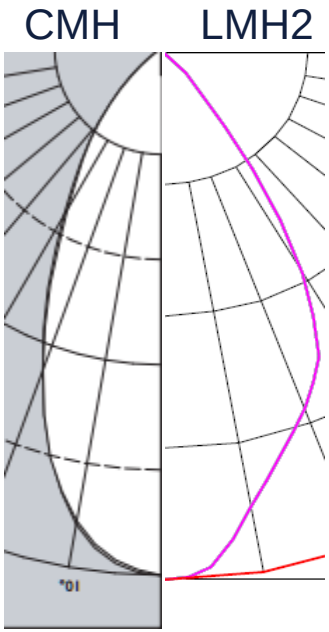
CFL LMH2



- More lumens, more intensity, same light distribution @ 50% power!
- Much higher CRI & R9 than CFL; instant-on; 5x lifetime

Design Example: 6” Specular Downlight (LMH2)

		39W T6 CMH	LMH2	
Light Source	Lumens	3400 lm	2000 lm	3000 lm
	CRI	80+	90+	
Luminaire	Efficiency	60%	90%	
	Lumens	**2040 lm**	**1809 lm**	**2714 lm**
	Efficacy	**45 LPW**	**74 LPW**	**74 LPW**
	Power	**45 W**	**24.3 W**	**36.5 W**
	Beam Angle	50°	60°	60°
	CBCP	2227 cd	2276 cd	3415 cd



- Maintain the same peak intensity as CMH at half the power consumption
- Cree LMH2 provides higher CRI & R9 than CMH @ 3000K & 2700K

Design Example: Spot Accent Luminaire (LMH2)

		Competitor	LMH2-3000
Luminaire	Lumens	900 lm	2498 lm
	Efficacy	11 LPW	73 LPW
	Power	**82 W**	**33.9 W**
	Beam Angle	**24°**	**25°**
	CBCP	**5318 cd**	**7596 cd**

- Smaller physical track head
- Similar CRI & R9 to halogen

LMH2 LED Module Design Resources

Reference Designs

[Spot Accent Luminaire]

2500 lm, 7600 cd CBCP, 25°, 3000K, 90 CRI

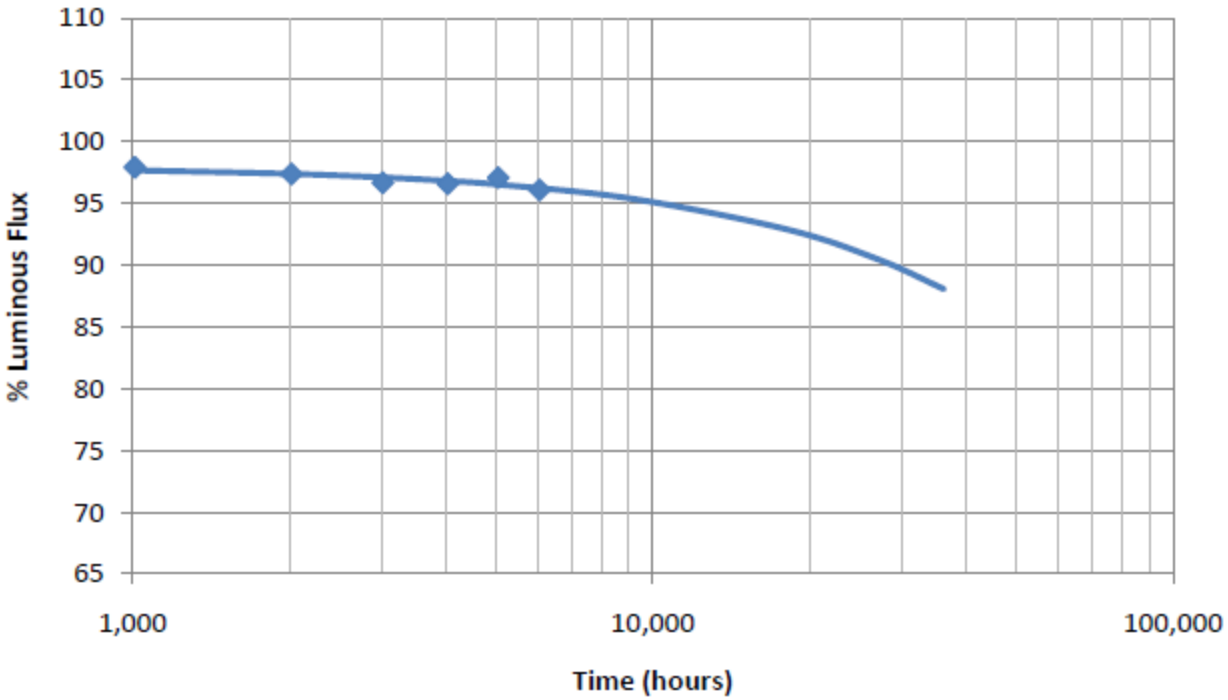
Application Notes

[Design Guide - LMH2 LED Module] (Mechanical, Optical, Thermal design & design examples)

[STEP Files – LMH2 LED Module]

[STEP Files – 4-inch, 7-inch, 8-inch & faceted reflectors for LMH2]

LMH2 LED Module LM-80 Summary



Module	Lumens	Operating Tc
LMH2	850 lm	70°C
	1250 lm	70°C
	2000 lm	70°C
	3000 lm	70°C

Test Duration	α	β	Calculated L70	Reported L70
6,048 hrs	2.939E-06	9.796E-01	114,000 hrs	**L70(6k) > 36,300 hrs**

Notes:

- Extrapolated lifetime is valid up to the listed maximum case temperature (Tc). The specific location of Tc for each Module product is defined its respective Design Guide document.
- Extrapolated lifetime shown is calculated from BSY + RDO LED package data at a higher current level than is used in the Modules product line, and thus is a conservative estimation of lifetime for the Modules products.
- These extrapolations are for informational purposes only and are not a warranty or a specification.
- Extrapolated lifetimes are subject to change without notice.

Cree LMH2 Module – Summary

The Cree LMH2 Module

- Beautiful 90 + CRI Light in Cool and Warm White utilizing True White Technology
- 97 Lumens Per Watt Efficacy Across All CCT and Lumen Options
- Dome and Flat Lens Options
- LMH2 Module based designs offer extensive advantages vs. designs using incumbent light sources including; better efficacy, lower wattage, more lumens and longer lifetimes
- There are extensive design resources for the LMH2 available on cree.com
- Excellent LM-80 Data is available for the LMH2 with calculated L70 projections over 100,000 hours.