HEALTHCARE LIGHTING

Application Guide

Facilities That Work For You While Supporting Patient Recovery and Employee Satisfaction
Healthcare Spaces

LIGHTING THAT’S HEALTHY FOR YOUR PATIENTS — AND YOUR BUDGET

Hospitals and other healthcare facilities are among the most energy-intensive buildings in the country and also have some of the most rigorous lighting requirements of any setting. Doctors and nurses must have clean, clear, bright light with superior color rendering to make accurate diagnoses, while warm, welcoming lighting promotes a tranquil atmosphere for patients and visitors.

Cree is committed to delivering industry-leading LED lighting solutions that will enhance your healthcare facility — from precision task lighting for clinical spaces to soft, ambient lighting in visitor areas and patient rooms, to bright parking and area lighting outside. With energy reductions of up to 85 percent and virtually no maintenance, your facility can promote better healing while improving your bottom line.

BETTER LIGHT THAT:

- Improves the healthcare environment
- Is intelligent by design, adapting to the environment and users
- Is intuitively simple to design and implement
- Is ultra-efficient, offering lifetime energy and maintenance savings
Lobbies & Waiting Rooms
LIGHTING THAT CREATES A PLEASANT, POSITIVE HEALING ENVIRONMENT

Healthcare consumers are increasingly setting higher standards for both the quality of their medical care and the healthcare facilities. As a result, improving patient satisfaction and well-being as part of the HCAHPS initiative, while controlling costs, is critical for today’s healthcare providers.

Quality of light plays an essential role in creating healthcare spaces that address both the clinical and emotional needs of patients, family and staff. Cree® LED lighting solutions help to create an inviting appearance, providing your visitors with a sense of comfort, safety and security that sets the tone for their experience.

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<tr>
<th>KR Series Downlights</th>
<th>LN Series Suspended Ambient</th>
<th>LR Series Troffers</th>
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<tr>
<td>Cree TrueWhite® Technology</td>
<td>Cree WaveMax® Technology</td>
<td>Cree TrueWhite® Technology</td>
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<tr>
<td>Cree WaveMax® Technology (8”)</td>
<td>Cree TrueWhite® Technology</td>
<td>Deliver 3,400 lumens</td>
</tr>
<tr>
<td>Deliver up to 8,000 lumens</td>
<td>Deliver 3,700 lumens</td>
<td>Efficacy up to 100 lumens per watt</td>
</tr>
<tr>
<td>Efficacy up to 77 lumens per watt</td>
<td>Efficacy up to 115 lumens per watt</td>
<td>Dimming: 0-10V to 5%</td>
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<tr>
<td>Dimming: Triac to 5%, 0-10V to 10%, Cree Sunset Dimming</td>
<td>Dimming: 0-10V to 5%</td>
<td>4” or 6” round and square, 8” round</td>
</tr>
</tbody>
</table>
SUPPORT BETTER PATIENT OUTCOMES WITH THE ACCURACY OF CREE TRUEWHITE® TECHNOLOGY

Healthcare facilities are high-performance environments. Your staff needs high levels of light and color rendering to see the smallest details in their true hues. Better visibility with dimming functionality in diagnostic and clinical areas enables staff to make fewer errors, perform more accurate evaluations and provide more efficient treatment.

With industry-leading color rendering, Cree delivers dependable lighting with superior light quality for more accurate skin and wound care assessment. Cree interior LED luminaires provide increased light levels with uniform light distribution and high color performance — essential for areas where high-detail, color-critical work requires greater visual acuity.
**CR Series Troffers**
- Cree TrueWhite® Technology
- Deliver up to 5,000 lumens
- Efficacy up to 130 lumens per watt
- Dimming: 0-10V to 5%
- Field adjustable CCT

**ZR Series Troffers**
- 90 CRI or 80+ CRI
- Deliver up to 5,000 lumens
- Efficacy up to 130 lumens per watt
- Matte finish for reduced glare
- Dimming: 0-10V to 5%
- Retrofit Kit option available

**LR Series Troffers**
- Cree TrueWhite® Technology
- Deliver 3,400 lumens
- Efficacy up to 100 lumens per watt
- Dimming: 0-10V to 5%
In laboratories, pharmacies and offices, optimum lighting is more than an asset. It’s a necessity. Because the work in these areas requires precision and attention to detail, these settings demand high-quality lighting to create a productive and comfortable environment.

Cree LED lighting solutions help improve accuracy and productivity while minimizing eye strain and fatigue by offering flicker-free, low-glare lighting with exceptional clarity, uniformity and superb color rendering. Dimming capabilities also allow staff to easily adjust the lighting to the specific task at hand.
### ZR Series Troffers
- 90 CRI or 80+ CRI
- Deliver up to 5,000 lumens
- Efficacy up to 130 lumens per watt
- Matte finish for reduced glare
- Dimming: 0-10V to 5%
- Retrofit Kit option available

### LS Series Surface Ambient
- Cree TrueWhite® Technology
- Deliver up to 10,000 lumens
- Efficacy up to 130 lumens per watt
- Dimming: 0-10V to 5%
- Occupancy sensor and thru-wiring available

### Essentia® Series Flat Panel
- 90 CRI
- Deliver up to 5000 lumens
- Efficacy of 100 LPW
- 0-10V dimming to 10%
- IP40 rated
MAKE PATIENTS FEEL AT HOME WHILE AWAY FROM HOME

Soft, low-glare lighting fosters a restful treatment and recovery environment with a calm, soothing atmosphere for patients and families. Less stressed, more comfortable patients have better outcomes, spend less time in the healthcare facility and leave with a greater feeling of satisfaction.

Efficient, dimmable and available in a variety of color temperatures, Cree LED lighting produces a tranquil environment with quiet ceilings that minimize eye strain and patient stress, encourages high alertness during overnight work hours, and provides the ability to synchronize circadian rhythms.

CR Series Troffers
- Cree TrueWhite® Technology
- Deliver up to 5,000 lumens
- Efficacy up to 130 lumens per watt
- Dimming: 0-10V to 5%
- Field adjustable CCT

ZR Series Troffers
- 90 CRI or 80+ CRI
- Deliver up to 5,000 lumens
- Efficacy up to 130 lumens per watt
- Matte finish for reduced glare
- Dimming: 0-10V to 5%
- Retrofit Kit option available

KR Series Downlights
- Cree TrueWhite® Technology
- Cree WaveMax® Technology (8”)
- Deliver up to 8,000 lumens
- Efficacy up to 77 lumens per watt
- Dimming: TRIAC to 5%, 0-10V to 10%, Cree Sunset Dimming
- 4” or 6” round and square, 8” round
HIGH-QUALITY ILLUMINATION WITH NO COMPROMISE

Indoor Products

1. KR Series Downlight
2. CR Series Downlight
3. Essentia® Series Downlight
4. ZR Series Troffer*
5. LN Series Suspended Ambient
6. LS Series Surface Ambient
7. UR Series Upgrade Kit
8. KBL Series High-Bay/Low-Bay Luminaire

* ZR Series Troffers with SmartCast® Technology are used in the hallways of the hospital illustration.
66% ENERGY SAVINGS

$546K LIFETIME ENERGY & MAINTENANCE SAVINGS

2.6 Yr. PAYBACK

* Payback and energy savings are based on the national average electricity rate, recommended maintenance schedule, and typical maintenance costs over common assessment periods (application life).

Outdoor Products

9. CPY Series Canopy
10. Cree Edge™ Series Pathway
11. 10 Series Parking Structure
12. OSQ Series Area and Flood
13. XSP Series Wall Pack
14. OL Series™ Linear Flood
EFFICIENT LIGHTING FOR MORE EFFICIENT NON-CLINICAL AREAS

Bright, reliable, low-glare lighting for high-traffic areas such as reception, corridors and restrooms shows patients and staff that you care about every aspect of their experience. Cree® LED troffers and downlights provide significantly higher efficacy and longer service life, with better light quality than you can expect from traditional fluorescent and incandescent lighting.

Cree LED luminaires offer energy-efficient and near maintenance-free lighting for spaces that require both high efficiency and high-quality general purpose lighting — providing rapid payback and real long-term savings for your healthcare facility.
CR Series Troffers
- Cree TrueWhite® Technology
- Deliver up to 5,000 lumens
- Efficacy up to 130 lumens per watt
- Dimming: 0-10V to 5%
- Field adjustable CCT

Essentia® Series Downlights
- 90 CRI
- Deliver up to 6,300 lumens
- Efficacy up to 83 lumens per watt
- Dimming: 0-10V to 1%; Triac to 10%
- Narrow, medium and wide beam angles
- 4”, 6” and 8” round with wall wash and adjustable accent configurations

ZR Series Troffers
- 90 CRI or 80+ CRI
- Deliver up to 5,000 lumens
- Efficacy up to 130 lumens per watt
- Matte finish for reduced glare
- Dimming: 0-10V to 5%
- Retrofit Kit option available
CREATE APPEALING SPACES THAT INVITE SUBSTANTIAL SAVINGS

Patients aren’t the only ones who need recovery time. With a variety of distribution, color quality and light output options, Cree indoor lighting creates an inviting and relaxing atmosphere for spaces used by visitors and staff, including cafeterias, waiting areas and chapels.

Cree LED lighting solutions blend both efficiency and visual appeal, creating interesting and inviting spaces that offer staff, visitors and families a respite from stress, noise and visual chaos — all while using up to 85 percent less energy than traditional lighting.

**MR16 Series**
- 50W MR16 equivalent
- Utilizes Cree TrueWhite® Technology
- 15°, 25° and 40° beam angles
- Dimming: to 5%

**KR Series Downlights**
- Cree TrueWhite® Technology
- Cree WaveMax® Technology [8”]
- Deliver up to 8,000 lumens
- Efficacy up to 77 lumens per watt
- Dimming: TRIAC to 5%, 0-10V to 10%, Cree Sunset Dimming
- 4” or 6” round and square, 8” round

**ZR Series Troffers**
- 90 CRI or 80+ CRI
- Deliver up to 5,000 lumens
- Efficacy up to 130 lumens per watt
- Matte finish for reduced glare
- Dimming: 0-10V to 5%
- Retrofit Kit option available
HELP YOUR VISITORS FEEL SAFE INSIDE AND OUT

First impressions count — lighting is a critical element in shaping visitors’ perceptions of your healthcare facility. With optimum illumination and unobtrusive architectural blending, Cree® exterior LED lighting enables effective wayfinding for ambulances, employees and visitors while promoting driver and pedestrian safety and security.

Cree exterior LED systems offer proven energy and maintenance savings while improving illumination performance. Put light exactly where you want it, not where you don’t, while using a fraction of the energy of traditional lighting solutions.
<table>
<thead>
<tr>
<th>Product</th>
<th>Minimum CRI</th>
<th>Maximum Lumens</th>
<th>Efficacy (lumens per watt)</th>
<th>UL Listed</th>
<th>IP Rating</th>
<th>Additional Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>VG Series Parking Structure</td>
<td>70</td>
<td>3,870</td>
<td></td>
<td>Wet listed, IP66</td>
<td></td>
<td>Low-glare, indirect view LEDs, Integrated occupancy sensor</td>
</tr>
<tr>
<td>IG Series Parking Structure</td>
<td>80</td>
<td>7,500</td>
<td>118</td>
<td>Wet listed, IP66</td>
<td></td>
<td>Precise low-glare optics</td>
</tr>
<tr>
<td>OSQ Series Area</td>
<td>70</td>
<td>27,103</td>
<td>139</td>
<td>Listed</td>
<td></td>
<td>Efficacy of 139 lumens per watt, Versatile mounting</td>
</tr>
</tbody>
</table>
CREE SMARTCAST INTELLIGENCE PLATFORM™

What if you could easily transform your existing facilities into energy-efficient spaces with automated intelligence that optimizes light levels and improves the effectiveness and productivity of your spaces — all in a way that’s so intuitive and simple, it just works.

With SmartCast® Technology, Cree is providing value beyond illumination, enabling smart buildings that are more efficient, deliver improved energy savings and lower maintenance costs. Within each SmartCast®-enabled luminaire, integrated sensors, cutting-edge electronics and software all work together using the language of light and intelligent algorithms to automatically learn and interact with each other and with your space.

The result is a seamless application of scalable intelligent light strategies that can save you up to 70% in energy costs while delivering more comfortable, personalized lighting experiences, with the assurance of an industry-leading 10-year limited warranty. The best part — all of this is employed with OneButton™ Setup, enabling an entire building to be commissioned and connected at one time.

And with Cree SmartCast® Technology, you can now expand beyond making lighting more efficient to making buildings more efficient and businesses more profitable. Cree combines smart lighting products with the Internet of Things and innovative applications to create the SmartCast Intelligence Platform, where smart lighting enables smart building solutions that amplify savings and further optimize environments, delivering even more value.

So Easy, the Building of the Future Can Be the One You’re Already In.

Environmental Awareness and Control
Embedded sensors continually detect and share data on room occupancy, ambient light and energy consumption to fine-tune your environment and energy-saving strategies in real time.

Simple Set-Up and Commissioning
OneButton™ Setup commissions hundreds of luminaires in a single step, providing smart lighting that meets existing and emerging buildings codes, wirelessly and over Power over Ethernet (PoE) — operational in minutes, not weeks.

Innovative Connectivity
SmartCast® PoE embraces imagination and collaboration with the open, standards-based SmartCast® API that invites endless third-party app development and ensures seamless integration.

A platform for Intelligent Lighting
SmartCast® Technology orchestrates the optimal environment for energy efficiency and productivity by setting parameters for brightness and color, adjusting color temperatures to tasks and personal preferences, and tracking improvements.
PROVEN PERFORMANCE AND SUPERIOR VALUE.

The innovative technologies that make up Cree products have revolutionized the lighting industry by making high-quality, sustainable LED lighting affordable and available to all. With this advantage, we remain at the forefront today, dedicated to developing new LED lighting solutions that improve both our customers’ spaces and their bottom lines, and all backed by an incredible warranty.

Cree WaveMax® Technology

Cree WaveMax® Technology is a breakthrough in the execution of waveguide technology that challenges industry-standard assumptions of how light is delivered. Featuring up to 90% optical efficiency and precise optical control, Cree WaveMax® Technology enables customers to obtain unmatched visual comfort and improved color quality without sacrificing performance. This transformative technology redefines the limits of fixture design to optimize performance and provides more aesthetic options at an unmatched customer value.

Traditional Metal Halide solution versus Cree IG Series Parking Structure LED lighting solution

Cree 10-Year Limited Warranty

Light your healthcare facility with confidence. Cree offers a 10-year limited warranty that covers the broadest product range in the industry. To learn more, please visit lighting.cree.com/warranty.
**Cree TrueWhite® Technology**

Your healthcare spaces need to be properly illuminated to provide better, safer clinical environments. Don’t let insufficient color rendering from poor lighting get in the way of quality patient care. A well-lit, aesthetically pleasing environment promotes more efficient healing, resulting in shorter stays, faster recovery and improved staff performance. Powered by Cree TrueWhite® Technology, only Cree® indoor LED fixtures can deliver our exclusive combination of industry-leading efficacy, 90+ CRI with high R9, and consistent warm or cool color temperatures.

**Comparison: Fluorescent Lighting vs. Cree TrueWhite® Technology LED Lighting**

![Before: Fluorescent Lighting](image1)

![After: Cree TrueWhite® Technology LED Lighting](image2)

**NanoOptic® Technology**

With patented NanoOptic® Technology available in more than 20 distributions, Cree® outdoor LED fixtures provide precise optical control for exceptional application performance and energy savings. The NanoOptic® refractor system offers superior light control with more lumens delivered in the target area, improved uniformity ratios and controlled high-angle brightness.

**DeltaGuard® Finish**

Exclusive to Cree LED outdoor fixtures and poles, the DeltaGuard® finish protects our LED outdoor fixtures without compromise. Immersive conditioning across 18 stages delivers an e-coat epoxy primer with an ultra-durable powder topcoat, providing unmatched protection against corrosion, UV light, fading and weathering complete with a 10-year limited warranty.

**Traditional High Pressure Sodium solution versus Cree LED lighting solution**

![Before](image3)

![After](image4)

**Before**

**Cree LED lighting solution**

Excellent color quality — full color spectrum source with high CRI

**Traditional High Pressure Sodium solution**

Typical high pressure sodium discharge color quality
FACILITIES FEATURED IN THIS BROCHURE INCLUDE:

- Kaiser Permanente - Fresno, CA
- McLaren Health Care - Michigan
- Presence Saint Francis Hospital - Evanston, IL
- Raleigh Orthopaedic Clinic - Raleigh, NC
- Reston Hospital Center - Reston, VA
- Riverview Hospital - Noblesville, IN
- Watson Clinic - Lakeland, FL

Learn more at: lighting.cree.com/healthcare | healthcare@cree.com | 800.236.6800