



Connected Bulb Outshines Rivals

Leedarson's smart bulb features superior colors and the broadest line of functional white light in an affordable 9.5W A19 bulb.

Challenge

To develop an ODM smart bulb that meets or exceeds the performance metrics of the market-leading bulb but at a more affordable price.

Solution

Developed a bulb with strategically positioned LUXEON 3535L Color LEDs in Red, Green, Blue and White for optimal color mixing.

Results and Benefits

The smart bulb produces tunable white light at 2700K-6500K and 16 million brilliant colors. The bulb delivers 600 lumens at 2700K and consistent color from one lamp to another lamp.

Challenge

Smart bulbs represent a revolution in many areas, including home and school lighting. Using a friendly app on one's handheld device, you can personalize your lighting environment at any time based on your needs or mood. However, a high entry level price has limited the accessibility of this nascent technology. Leedarson (<http://www.leedarson.com/iot.php>), a lighting specialist and ODM of energy efficient bulbs, recently set out to design an LED connected bulb that performs as well or better than the leading smart bulb but is available for a more affordable price. This smart bulb delivers the widest range of tunable white light on the market and millions of brilliant colors. In choosing LEDs for the bulb, Leedarson pursued the most impressive light quality available while also stressing high energy efficiency and reliability. They designed the bulb to have the look and feel of a standard A19 incandescent bulb. Finally, the smart bulb communicates using wireless and is easily set up and controlled via a free app.

"The LUXEON 3535L Color Line provided the high color gamut, beam structure and color mixing capability needed to produce the highest quality smart bulb at a reasonable cost to our customers."

— John Liu, VP of Engineering, IoT Product Line,
Leedarson



Solution

Today, LEDs are capable of achieving unprecedented efficiency while also being offered in a range of individually packaged colors for ease of design. Following an evaluation of the best LEDs on the market, Leedarson chose the LUXEON 335L Color Line to illuminate its smart bulb. Relative to its competitors, the LUXEON 3535L Color Line offers a broader color range with higher flux and better price performance. The LUXEON 3535L Color Line also excels in efficiency. Cool white efficacy is 165 lm/W and warm white efficacy is 150 lm/W when driven at 100mA. The LEDs can also be driven at 200mA to achieve higher flux.

The smart bulb combines a total of 31 Red, Green, Blue and White LEDs (7:5:5:14) arranged strategically around the perimeter of the bulb for excellent color mixing. Modeling of the LEDs in various positions produced the optimum LED arrangement. To reduce unnecessary heat build-up and optimize performance, the driver electronics were designed specifically for use with the LED configuration in the bulb. A further design optimization revolved around positioning the radio antenna used for wireless communication. In previous designs, the antenna stood at the top center of the bulb with LEDs around it. However, that real estate is now needed for LEDs. The antenna had to be integrated into the lower portion of the bulb while maintaining effectiveness.

“LED choice can mean the difference between good light and excellent light. The less expensive connected bulbs cannot pass ErP regulations for 6 SDCM, whereas our bulbs consistently measure less than 3 SDCM at 20 points in production.”

— John Liu, VP of Engineering, IoT Product Line, Leedarson



Results and Benefits

Performance of the Leedarson bulb meets or exceeds that of the smart bulb market leader. For instance, the Leedarson bulb achieves 600 lumens at 2700K color temperature, features a tunable white light range of 2700K-6500K, and delivers 80 lm/W efficacy at 4000K. Because of the company's proprietary color calibration technique, color differences between multiple bulbs with identical settings are negligible. Tight color binning of the LUXEON 3535L LEDs further leads to better color control within the lamp, as well as from lamp to lamp. Due to the full color range from the LUXEON 3535L, the bulb can deliver up to 16 million colors, providing more choices for consumers than with other bulbs. Light is distributed at a 240° beam angle from the smart bulb.

In addition to excellent light quality, consumers demand a reliable product. The Leedarson bulb is rated for 25,000 hours of operation. The LUXEON 3535L Color Line is the only line of its type to pass 35,000 hours of lumen maintenance testing at test conditions as high as 105°C and 150mA.

About Lumileds

Lumileds is the global leader in light engine technology. The company develops, manufactures and distributes groundbreaking LEDs and automotive lighting products that shatter the status quo and help customers gain and maintain a competitive edge. With a rich history of industry “firsts,” Lumileds is uniquely positioned to deliver lighting advancements well into the future by maintaining an unwavering focus on quality, innovation and reliability.

To learn more about our portfolio of light engines, visit www.lumileds.com.

About Leedarson

Leedarson Lighting is a leading green lighting solution provider in China with 11 years of LED research and manufacturing experience. Established in 2000, Leedarson Lighting has transformed from a simple device provider to a professional provider of lighting solutions and IOT control systems. The vast array of products works in many applications, and can be easily assimilated in homes, hotels, office parks, stadiums, outdoor, school lighting projects and other commercial and public ventures.

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