

# WHAT TO ASK

Below are some helpful questions for lighting designers and specifiers to ask when evaluating LED lighting products. Also be sure to look for products that are registered with [LED Lighting Facts<sup>®</sup>](#).

## INPUT/OUTPUT

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- What are the delivered lumens at each correlated color temperature (CCT)? (Note that flux and efficacy usually vary with CCT.)
- What is the real input power?
- Do you have LM-79 photometric reports and IES files from an independent testing lab?

## COLOR

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- What is the color rendering index (CRI) at each color temperature?
- How do you ensure color consistency among fixtures built today or a year from now? Do you have test data demonstrating color stability over time?
- Does the thermal management system keep the LED junction temperature below specified maximums in all applications?
- May I see at least two samples of the same CCT?
- Were your chromaticity measurements performed according to LM-79 by an independent lab? (Be sure the lab is accredited by the National Voluntary Laboratory Accreditation Program or CALiPER-recognized.)
- Is there a written color binning policy?

## LIFE/WARRANTY

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- Is there a written end-of-life policy, and how will spares be made available?
- How long is the warranty? What exactly is covered?
- Has LM-80 testing been performed by your LED or LED module manufacturer? What does it say about lumen maintenance?
- Do you have test data to verify that your system operates at a temperature and drive current consistent with those LM-80 test results?
- Is the expected life of the driver different from the LEDs?

## DIMMING/FLICKER

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- Are your luminaires or lamps dimmable?
- On what kinds of dimmers? Do you have lists of compatible dimmers?
- What is the dimming range? To 50%? To 10%?
- Is dimming smooth? Linear?
- Is there any visual flicker when full on or at any point during dimming?
- What is light output frequency and depth of modulation?
- Is there color shift during dimming? Which direction?

As available on <http://energy.gov/eere/ssl/what-ask> by US Department of Energy.