

## Design & Operational Parameters When Purchasing LED Lighting

Design & Operational Parameter	Industry Standards & Reliability Implications	ALLED™ Lighting, manufactured by Appalachian Lighting Systems, Inc.
1. <i>What is the LED junction temperature of your luminaire?</i>	Successful heat dissipation is very critical for expected / rated life and quite variable across LED lighting manufacturers. LED manufacturers specify maximum junction temperatures between 135°C and 150°C junction temperature. For every 10°C reduction in operating temperature we can expect the life of the led to be doubled. Life test data is often presented at a lower temperature than maximum.	An effective thermal design insures proper removal of heat from the LEDs. This minimizes LED junction temperature and increases the useful life of the luminaire. ALLED™ luminaires are designed to limit LED junction temperatures to 85°C at an ambient temperature of 25°C. Industry data suggests this will extend the LED operating life to 4 times longer than the LED chip manufacturer's data indicates.
2. <i>What is the total harmonic distortion produced by your luminaire?</i>	20% total harmonic distortion is typical for fixtures below 50 Watts. High levels of distortion can indicate a power supply designed for minimum cost rather than performance and typically indicate low efficiency.	ALLEDS™ luminaires with power greater than 50 Watts are designed for less than 10% total harmonic distortion.
3. <i>What LED Circuitry Design is used in your luminaire?</i>	Some manufacturers' designs use series-wiring. Such designs create unnecessary limitations on the useful life of the luminaire, since loss of one LED usually results in loss of the entire luminaire	ALSI-manufactured ALLEDS™ high power luminaires are design to utilize parallel power circuits. The unlikely failure of one LED will not cause the subsequent failure of the luminaire.
4. <i>What technology is used to shape and focus the light output</i>	Some manufacturers use enclosed lenses to focus the light output. Lenses tend to contain LED-generated heat, thereby increasing LED junction temperature. Such designs increase the LED lumen depreciation, and result in shorter useful life of the luminaire.	ALSI-manufactured ALLEDS™ luminaires are design to use highly efficient shaped-reflectors. These reflectors allow greater dissipation of LED-generated heat and also permit easily tailored light patterns that may be required for a client's application.
5. <i>What options are available for luminaire repair or upgrade</i>	Most manufacturers require that defective luminaires be returned to the factory for repair or upgrade. Field-serviceable luminaires can greatly reduce the downtime and expense associated with factory-repair. The overall cost of ownership is therefore reduced.	ALSI-manufactured ALLEDS™ luminaires are designed to be serviced onsite by the installer, in the unlikely event of a malfunction.
6. <i>What IEEE testing has been completed?</i>	A LED-based luminaire designed for long term reliability will meet or exceed all surge immunity requirements specified in IEEE Standard C62.41.2 and the longer over-voltage conditions present on utility power lines. To obtain the benefits of LEDs the power supplies must survive these over-voltage conditions.	ALSI-manufactured ALLEDS™ luminaires are designed to meet the surge immunity requirements specified in IEEE Standard C62.41.2 category B3 and C1. They will also withstand utility created over-voltage conditions.
7. <i>What FCC testing has been completed?</i>	Most luminaires will meet Class A emissions requirements specified in FCC Part 15, Subpart B. Meeting this industrial standard insures the luminaire is not likely to interfere with nearby radio of television receivers.	ALSI-manufactured ALLEDS™ luminaires are design to insure compliance with the more stringent Class B emission requirements specified in FCC Part 15, Subpart B.
8. <i>How long is the warranty for your luminaire?</i>	Typical warranties are 2 to 5 years. Stated warranty can represent the warranty for the housing of the luminaire versus the electronics, LEDs or other components, and often there is fine print denying warranty from lightning or other improper application of the product.	ALSI-manufactured ALLEDS™ luminaires are warranted for a minimum of 5 years.