

Lutron’s “Best Dimming” Logo and Program

This program is a collaborative effort between Lutron and lamp manufacturers. It pairs compatible LED dimmers and bulbs that have been Lutron tested and verified to perform great together.

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1 Abstract

Over the past five years, the LED lighting industry has gone through unprecedented changes. With the ban on incandescent lamps, LED bulb manufacturers are competing to replace the bulb in the socket as the last of the incandescent bulbs burn out. The wide variety of manufacturers, coupled with the fast-moving state of the industry, means there are thousands of different LED bulbs to choose from. Not all LED bulbs have the same dimming performance. Lutron's "Best Dimming" program provides guidance on selecting a dimmer and LED bulb combination that will result in the highest level of dimming performance. This white paper includes the following:

- Requirements for LED bulb manufacturers
- Performance criteria for dimmer/lamp combinations

2 Overview of Lutron's "Best Dimming" program

Both LED bulb manufacturers and end users benefit from this program. Bulbs and dimmers in the program have special marks on their packages.

On bulb packages:



On dimmer packages:



2.1 Requirements for LED bulb manufacturers

LED bulb manufacturers that are part of Lutron's "Best Dimming" program are recognized as designing some of the best-performing LED bulbs in the industry. They have relationships with Lutron and collaborate with Lutron to ensure the best dimming performance of their products.

These manufacturers must:

Provide pre-production samples: The manufacturer must provide early samples to the Lutron LED Control Center of Excellence for dimmer compatibility testing.

Feature Lutron dimmers in promotional material: The manufacturer must exclusively feature Lutron dimmers in all literature, sales demos, displays, and other marketing material.

Use the “Best Dimming” mark: The manufacturer must display the mark on the front of the package and equal-to or larger than other compatibility markings for bulbs that perform to the outlined criteria on all the dimmers covered under this program.

List Lutron dimmers as preferred: The manufacturer must indicate Lutron dimmers as preferred on packaging and websites.

De-list Lutron incandescent dimmers: The manufacturer must remove dimmers that are not UL-Listed to control LED bulbs from all packaging and literature.

2.2 Benefits for LED bulb manufacturers

An LED bulb manufacturer who is part of Lutron’s “Best Dimming” program is entitled to receive the following benefits:

Access to “Best Dimming” mark: The mark will be made available to participating LED bulb manufacturers so that they may include it in product literature and packaging for approved SKUs.

Company logo featured on Lutron website: Lutron will include the logo of a participating manufacturer on Lutron’s website and feature them as preferred bulb brands.

Referrals from Lutron hotline: Customers calling Lutron looking for LED bulb recommendations will be pointed to “Best Dimming” solutions from manufacturers in the program.

LED report cards posted to website: LED bulbs that meet the performance criteria will be issued report cards, which will be posted to a dedicated Lutron website.

Lutron dimmers for testing: Lutron will provide dimmers to lamp manufacturers so that they may conduct dimmable performance tests.

Access to co-promotion: Bulb manufacturers may be included for co-merchandising and co-promotional opportunities in retail and electrical distribution channels.

2.3 Benefits for end users

A customer who selects a bulb and dimmer with the “Best Dimming” mark will experience excellent dimming performance. The mark may be found on bulb packaging, literature, or the Lutron compatibility tool (lutron.com/compatibility)

2.4 “Best Dimming” compliant bulb manufacturers

A “Best Dimming” compliant bulb may brand their literature and packaging with the mark. A bulb is considered compliant if it meets the performance criteria in section 3.1 on the following Lutron dimmers:

- Lutron C•L 150W slide dimmers: DVCL* (or electrical equivalents AYCL*, TGCL*, CTCL*, LECL*, SCL*)
- Lutron C•L 150W Maestro dimmers: MACL*
- Lutron C•L 150W Maestro sensor dimmers: MSCL*
- Lutron 150W Caséta in-wall dimmers: PD-6WCL*

2.5 “Best Dimming” solution

Any bulb and dimmer combination which meets the “Best Dimming” performance criteria will be considered compliant. That combined solution will be promoted on Lutron’s compatibility tool, even if the bulb is not marked as “Best Dimming” compliant (for example, it meets the “best dimming” criteria on 3 out of the 4 dimmers in section 2.4 of this document).

3 “Best Dimming” performance

Dimmed LED bulb performance can vary. “Best Dimming” performance is reserved for the bulbs with the dimming characteristics outlined below.

3.1 Dimmable criteria

A dimmer and bulb together will meet the highest degree of dimming quality if the following criteria are met.

Summary of Tests				
Test Name		Minimum Pass / Fail Criteria for Basic Dimming Compatibility	Load	Notes
1	High-End Light Level	≥ 80% of light (as measured on a mechanical switch) with dimmer set to its maximum setting	• Maximum Load • 1 lamp	Measure switched level and high-end level immediately in succession
2	Low-End Light Level	≤ 10% of light (as measured on a mechanical switch) with dimmer low-end setting adjusted to the lowest setting that meets all other test criteria and starts in one second	• Maximum Load • 1 lamp	Measure switched level and low-end level immediately in succession
3	Audible Bulb Noise	Not audible from two feet away	• Maximum Load	Maximum load contained within approximately 20 ft ² space
4	Turn-On Time	Turns directly on and to 10% in < 1 second (from first phase angle to first light)	• Maximum Load • 1 lamp	
5	Turn-Off Time	Emits no measurable light after five seconds when the dimmer is both off and in an electrical standby state (if applicable)	• 1 lamp	
6	Repetitive Peak Current	Repetitive peak current < 25A at any dimmed level	• Maximum Load (per SSL7A)	
7	Inrush Current	Inrush current 190A at peak of line	• Maximum Load (per SSL7A)	
8	RMS Current	RMS current is < SSL-7A limits at any dimmed level, based off of load wattage (section 4.4 in NEMA SSL-7A-2015)	• 1 lamp	
9a	On-State Current	Meets on-state current requirements of NEMA SSL-7A (section 4.10) with one lamp (or specified minimum load)	• Per SSL7A	
9b	Off-State Current	Meets off-state current requirements of NEMA SSL-7A-2015 (section 4.9) with one lamp (or specified minimum load)	• Per SSL7A	
10	Flicker	No objectionable flicker on incoming building power between high-end light level and low- end light level as perceived by a trained operator.	• Maximum Load • 50% Load • 1 lamp	Observing indirect light on a white surface may help show instability.

3.2 Test conditions

Power source: Unless otherwise specified, test setup shall be powered directly from the building power.

Ambient noise: Audible noise tests shall be conducted in an office environment. HVAC systems and test equipment may be present. Maximum bulb loads are arranged on a test wall approximately 3' x 6' in size.

Flicker: A maximum load of lights shall shine on white surfaces to evaluate flicker. Flicker shall be observed both directly and indirectly.

Line impedance: Line impedance characteristics shall match those specified in NEMA SSL-7A-2015, table 4.1.

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