

Technical Requirements V5.1: Testing Guidance for Color Metrics

In order to meet SSL V5.1, products must meet requirements for chromaticity (CCT and D_{uv}), color rendition, and color maintenance. This guidance document will help you understand the appropriate **chromaticity and color rendition testing** to perform on your products to meet Technical Requirements V5.1.



An **optimized test plan** allows you to use one test to meet multiple requirements. For example, a test report used to represent the lowest lumen output or lowest efficacy product can also demonstrate compliance with the color requirements. Optimizing your test plan will minimize the number of tests being performed, evaluated, and invoiced during the submission and review process.

The following is a summary of the chromaticity and color rendition metrics reports required to meet Technical Requirements V5.1:

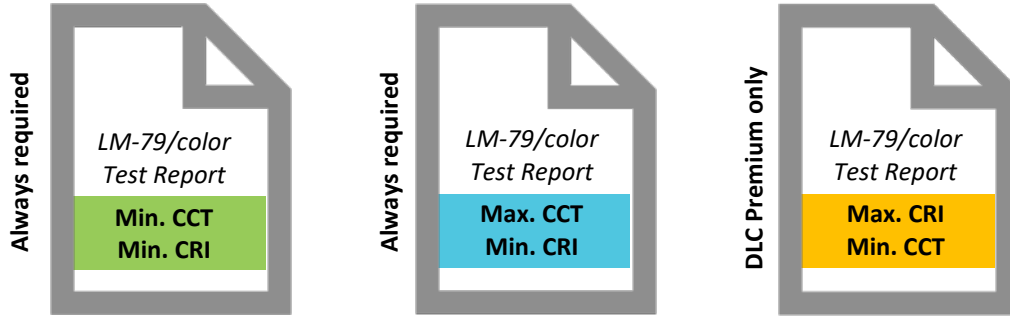
	Which Models?	Required Test Report
Chromaticity	Minimum CCT at minimum color rendition option	LM-79/color report (full test report that includes color and spectral data), including accompanying .SPDX document. Note: A single full LM-79/color report may fulfill multiple criteria beyond color metrics requirements.
	Maximum CCT at minimum color rendition option	
Color Rendition	Minimum color rendition option in family	
	Maximum color rendition option at the minimum CCT (PREMIUM ONLY)	

Refer to Table 3 of [Technical Requirements V5.1](#) for the required thresholds to meet the chromaticity and color rendition requirements.

Note that all color rendition options must meet or exceed *either* the IES TM-30-18 color rendition requirements or the CIE 13.3.-1995 color rendition requirements, for both the highest and lowest CCTs, however *both* sets of color rendition measures must be reported in your full LM-79/color report and in the Reported Performance Table in the V5.1 application form.

Chromaticity and Color Rendition Testing

For DLC Standard products, a full LM-79/color report must be provided for the lowest and highest CCT options offered, both at the minimum color rendition option. For DLC Premium products, a full LM-79/color report for the lowest CCT option at the maximum color rendition option is required as well.



Below, examples of the required LM-79/color reports are defined for the following types of product families:

- **More than one CCT option and one CRI option** (*Example Product Family A*)
- **One CCT option and more than one CRI option** (*Example Product Family B*)
- **More than one CCT option and more than one CRI option** (*Example Product Family C*)

Example Product Family A

Correlated Color Temperature (CCT)	Color Rendering Index (CRI)
3000K	80 CRI
4000K	
5000K	



Full LM-79/color reports required for:

DLC Standard	DLC Premium
3000K / 80 CRI	3000K / 80 CRI
5000K / 80 CRI	5000K / 80 CRI

Example Product Family B

Correlated Color Temperature (CCT)	Color Rendering Index (CRI)
4000K	70 CRI
	80 CRI
	90 CRI



Full LM-79/color reports required for:

DLC Standard	DLC Premium
4000K / 70 CRI	4000K / 70 CRI
	4000K / 90 CRI

Example Product Family C

Correlated Color Temperature (CCT)	Color Rendering Index (CRI)
3000K	70 CRI
4000K	80 CRI
5000K	90 CRI



Full LM-79/color reports required for:

DLC Standard	DLC Premium
3000K / 70 CRI	3000K / 70 CRI
5000K / 70 CRI	3000K / 90 CRI
	5000K / 70 CRI

The following two scenarios show examples of situations where **not all** of the possible CCT and CRI combinations are produced by the manufacturer.

Scenario 1:

In this situation, there are nine potential product combinations, but the manufacturer only produces the following five:

- 3000K / 70 CRI
- 4000K / 80 CRI
- 4000K / 90 CRI
- 5000K / 80 CRI
- 5000K / 90 CRI

Example Product Family D

Correlated Color Temperature (CCT)	Color Rendering Index (CRI)
3000K	70 CRI
4000K	80 CRI
5000K	90 CRI



Full LM-79/color reports required for:

DLC Standard	DLC Premium
3000K / 70 CRI	3000K / 70 CRI
5000K / 80 CRI	5000K / 80 CRI
	4000K / 90 CRI

For DLC Standard, the CCT requirement takes precedence over the minimum CRI requirement, so the required tests would be for the 3000K / 70 CRI combination (min CCT at min CRI option), and the 5000K / 80 CRI combination (max CCT at min CRI option).

For DLC Premium, in addition to the DLC Standard configurations, the 4000K / 90 CRI combination (max CRI at min CCT option) would be a required test. The maximum CRI requirement takes precedence over the minimum CCT requirement.

Scenario 2:

In this situation, there are ten potential product combinations, but the manufacturer only produces the following eight:

- 3000K / 70 CRI
- 3500K / 70 CRI
- 4000K / 70 CRI
- 5000K / 70 CRI
- 2700K / 80 CRI
- 3000K / 80 CRI
- 3500K / 80 CRI
- 4000K / 80 CRI

Example Product Family E

Correlated Color Temperature (CCT)	Color Rendering Index (CRI)
2700K	70 CRI
3000K	80 CRI
3500K	
4000K	
5000K	



Full LM-79/color reports required for:

DLC Standard	DLC Premium
2700K / 80 CRI	2700K / 80 CRI
5000K / 70 CRI	5000K / 70 CRI

For DLC Standard, the required tests would be for the 2700K / 80 CRI combination (min CCT at min CRI option), and the 5000K / 70 CRI combination (max CCT at min CRI option).

The DLC Premium testing requirement (max CRI at min CCT option) would be the 2700K / 80 CRI configuration; however, since it is captured in the DLC Standard tests, no additional color testing would be required to qualify for DLC Premium.

In the case that the minimum CRI offered is not included in the required color configurations to test (i.e. the min CCT at min CRI, max CCT at min CRI, or max CRI at min CCT), a separate full LM-79/color report must be provided for the overall minimum CRI at the minimum CCT, with CRI taking precedence, to confirm all configurations meet the color rendering requirements per the [Technical Requirements Table](#).

*Note: If a family contains both Standard and Premium products, configurations tested to meet the Standard or Premium **color** requirements can be listed as either Standard or Premium in the Reported Performance Table.*