SSL Technical Requirements V5.1

Navigating the DLC QPL: Family Grouping and Product Data

Introduction

The Qualified Products List (QPL) serves as a comprehensive database that provides detailed information on various lighting products, ensuring they meet specific performance and quality standards set by the DesignLights Consortium (DLC). This guide will explore the types of product data available on the QPL, how products are grouped into families, and the distinction between parent and child products. Additionally, it will cover the rationale behind product family groupings, testing requirements, and the criteria for calculating reported performance. Understanding these elements is crucial for QPL users, manufacturers, and submitters navigating the QPL, submitting applications, and understanding the compliance requirements and how product performance is represented on the QPL.

Table of Contents

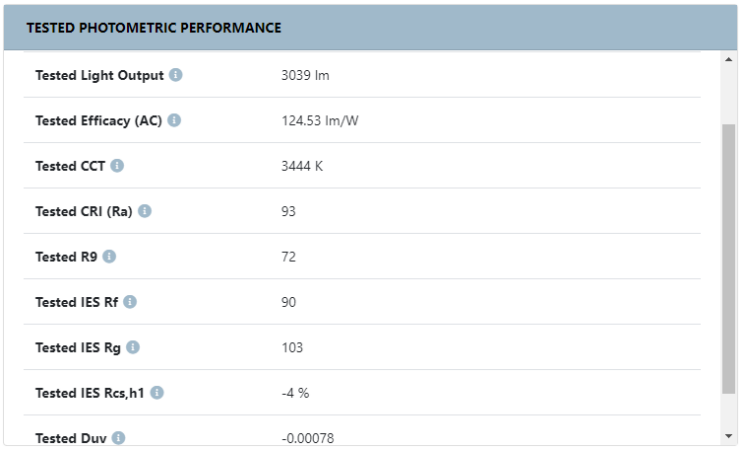
- What types of product data is available on the QPL and how is it arranged?
- How are products grouped into families on the QPL?
- What is the difference between parents and children?
- Why group products into families?
- Why don't all products need to be tested?
- What are the requirements for calculating or estimating the Reported (or nominal) Performance?
- What products need to be tested within a family?
- What if test results don't match the reported performance data?
- Does performance data on product specification sheets need to match the reported and/or tested performance data on the QPL?
- What are the different application types for submitters?

What types of product data is available on the QPL and how is it arranged?

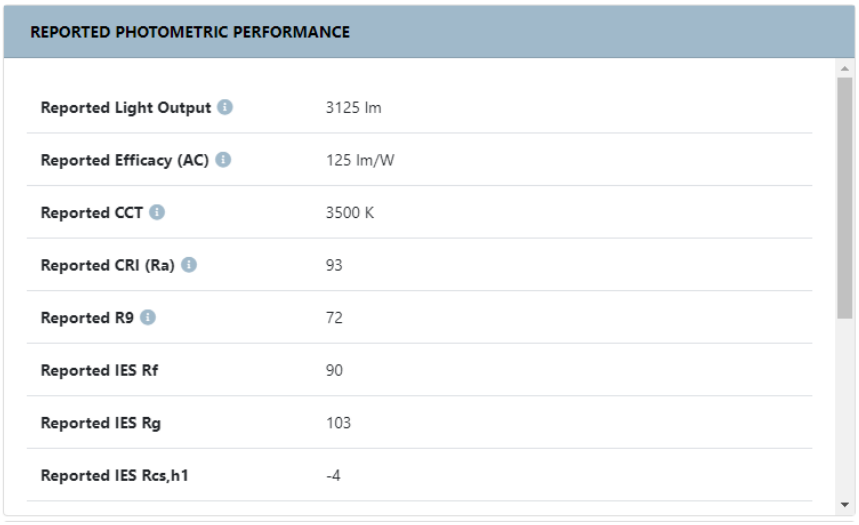
Product data on the QPL is listed in properties, or fields that can hold product information, or other media such as images or photometric files, and can be identifying information, characterization information generally specific to the DLC program, information on product capabilities, and tested and/or reported performance data. This information can be found on the Product Detail page, accessible by clicking on the listing on the QPL search page which provides information specific to that product listing under each of the following headers by clicking "View Details" on each header.

- Product Information
    - Identifying information including: model number, Product ID (unique identifier), manufacturer, brand, and DLC family code
    - DLC product listing information, e.g. Technical Requirements Version classification (standard or premium), parent (yes/no)
- Product Categorization
    - Product use information; Category, General Application, Primary Use Designation

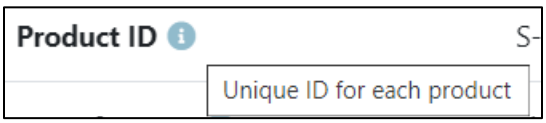
- Control Features
    - Information on how a product can be controlled, e.g. color tuning capability, dimming protocols, and available sensor options.
- Tested Performance Data (Photometric & Electrical)
    - Data from the output of a single test of the specific product
    - Metrics or Properties starting with “Tested” in the name.



- Reported Performance data (Photometric & Electrical)
    - Metrics or Properties starting with “Reported” in the name.
    - Also referred to as nominal performance unless indicated otherwise, e.g. Reported Minimum Voltage
        - Manufacturers have broad latitude in determining and reporting this performance. Please review the [“What are the requirements for calculating or estimating the reported (or nominal) performance”] for more information.



To assist with understanding of specific properties, help text popups will show if hovering over the “i” icon when viewing the products on the QPL as shown in the screenshot below.



How are products grouped into families on the QPL?

Products can be grouped, submitted, and listed together as a family of products. These products will share a DLC family code on the QPL. Requirements to include products within the same family are detailed on the SSL and LUNA Level 2 Application Submission Page under eligibility for Level 2 Applications. Families of products will typically include Parents and Children.

What is the difference between parents and children?

Within each family, products are categorized as parents or children and noted on each product on the QPL shown in the image below.

The key principle in determining if a product is categorized as a parent is if, during the product qualification, photometric test reports were required, provided, and reviewed for that product. Not all qualified products need to be tested to be listed on the QPL. In general, by testing worst case or representative products to frame up the boundaries for the family group for each metric, and child products have better scaled or estimated performance than the tested parent products it is possible to qualify the whole group.

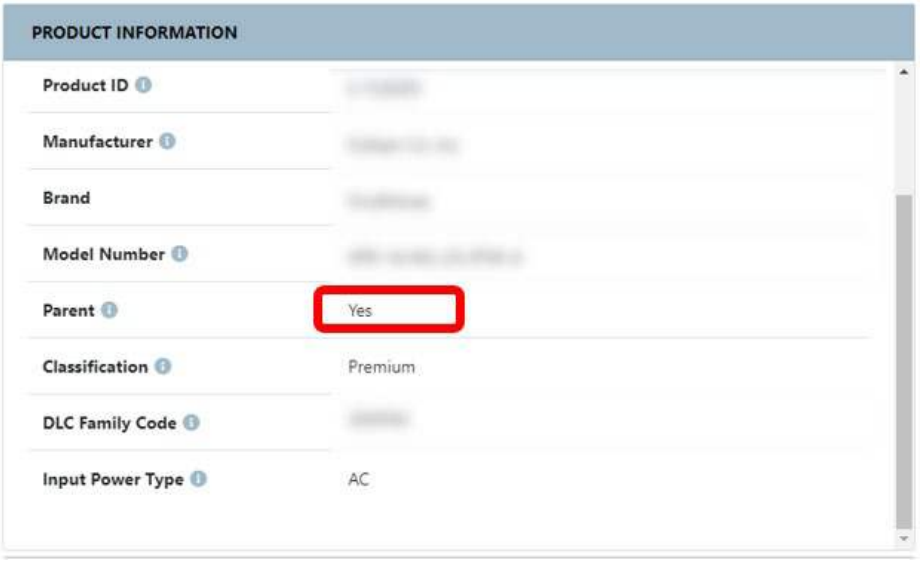
Products tested for photometric performance are referred to as parent products. Products that were not tested for photometric performance, and bracketed by testing of the parent products, are generally called child products.

Parent Products

- Tested to produce a Full LM-79/Color or Full LM-79/Distribution Report
- Worst-case products which have been tested to demonstrate compliance with any of the metrics in the table below.
- Data on the QPL will show both Tested Performance, resulting from the full LM-79/Color or Distribution Report, and Reported Performance, i.e. the nominal performance of the product.

Child Products

- Not tested, compliance to the technical requirements demonstrated by worst-case testing or representative testing of other products in the family.
- Data on the QPL will only show Reported Performance.



Why group products into families?

When grouping products into families, each family can be submitted in a single application. For groups of products of sufficient size, family grouping rules allow **fewer tests** to qualify the group of products than if they were submitted separately.

Typically, application **fees are also reduced** in a family group compared to products submitted separately.

Testing is only required on sufficient products within the group to establish that all products meet the technical requirements. Products tested to establish worst-case or representative performance within the group is dependent on the metric, and described in the technical requirements.

Why don't all products need to be tested?

When products are grouped into a family, the manufacturer or manufacturer representative estimate or calculate the performance of each product variant which is also known as the reported performance.

The reported performance data help identify which specific models are considered worst-case to test for specific metrics[1]. Once tested and qualified those models will be listed as parent products.

Only the identified models within a family would require tested data within a family as passing results on the parent models demonstrates that all products within the family meet the technical requirements.

What are the requirements for calculating or estimating the Reported (or nominal) Performance?

There are no strict DLC requirements or prescriptive method to estimate and/or calculate reported performance. This process is commonly referred to as scaling and the methods used to estimate performance are referred to as scaling methodology.

All reported performance values must meet the technical requirements and the method used to produce the reported performance values must be understood and based in engineering logic.

The DLC relies on manufacturers and representatives to accurately estimate and/or calculate the reported performance and fully understand the factors that contribute to product performance based on input from the product manufacturers, their component suppliers, and test laboratories. This scaling methodology must be fully described within the DLC application process. DLC product evaluation includes a review of this scaling methodology to ensure it is sound and consistent with experience in how the technology performs. Any aspect of the scaling methodology may be questioned and requested to be supported with data or deeper analysis during the application review process.

[1] Or identification of models for which representative testing is deemed sufficient for other metrics.

What products need to be tested within a family?

Please see the table below for a guide on which models need to be tested for each metric. These provide the boundaries for the family group.

Criterion	Which Model(s)	Test Required
Minimum Light Output	Worst-case light output	Full LM-79/color report
Minimum Efficacy	Worst-case efficacy	
Maximum CCT	Highest CCT at lowest color rendition option	
Minimum CCT	Lowest CCT at lowest color rendition option	
Minimum Color Rendering	Lowest color rendition option	
Chromaticity	Lowest CCT at lowest color rendition option	
	Highest CCT at lowest color rendition option	
	Lowest CCT at highest color rendition option (Premium only)	
Minimum L70 Lumen Maintenance (L90 for Premium)	ISTMT, In-situ thermal temperature test at worst case thermal conditions of LED as required for Lumen Maintenance projection	ISTMT, LM-80/LM-84, TM-21/TM-28

Criterion	Which Model(s)	Test Required
Color Maintenance	LM-80 for single LED package/module/array that is evaluated for color shift	LM-80/LM-84
Driver ISTMT (Premium)*	Worst-case driver temperature for each unique driver	ISTMT
Zonal Lumen Distribution/ Spacing Criteria	Each unique optical and distribution pattern	Full LM-79/distribution report
BUG Ratings (outdoor only)	Each unique optical and distribution pattern	
UGR (specific Indoor PUDs and premium only)	Each unique optical and distribution pattern at the highest lumen output without consideration of the effect of color properties	
THD/PF	Worst-case performance for each unique driver	Benchtop electrical testing

Why doesn't the tested performance data match the reported performance data?

A single test conducted on a single sample may have results that deviate from the reported or nominal performance data due to a number of factors, including but not limited to lab equipment tolerances and production product/component variation.

Reported performance data is **not required** to match the tested performance data, however, must meet the technical requirements.

The tested performance data may deviate from the reported data substantially such that the method to estimate or calculate the reported data is called into question and needs adjustment or additional clarification.

During the product qualification process, reviewers may need to confirm the reported performance data is accurate (e.g. typos or misapplication of scaling methodology).

- If the reported performance data is inaccurate due to typos or an inaccurate method, new reported performance data will need to be provided.
    - Based on the updated performance data, if a different model now represents a model for worst-case testing than previously identified and tested, then this new model will need to be tested.
- If the reported performance data is accurate and the discrepancy between the tested performance data and the reported performance data is explained, no changes are needed.
    - The DLC reserves the right to ask additional questions for clarity to ensure all products demonstrate compliance with the technical requirements.

Does performance data on the product specification sheet need to match the reported and/or tested performance data on the QPL?

The DLC evaluates reported performance claims based on the information manufacturers choose to report in their product specification sheets and/or other marketing materials.

- Performance claims reported in specification sheets and/or other marketing material cannot be worse than any threshold values in the Technical Requirements
- Performance claims reported in specification sheets and/or other marketing materials do not need to match the tested or reported performance data, however during product qualification reviewers may need to confirm the data is accurate (e.g. typos or misapplication of scaling methodology).
    - The DLC reserves the right to ask additional questions for clarity to ensure all products demonstrate compliance with the technical requirements. Mismatching data between multiple sources may require explanation and delay application completion.

What are the different application types for submitters?

Applications are differentiated into a few different types. Once the applications are completed, the application type used for product qualification is not published to the QPL.

The different application types are;

- OEM or Private Label Applications
    - OEM (Original Equipment Manufacturer) - Intended for submitters who manufacturer luminaires or submitters submitting on behalf of a manufacturer of luminaires. Applications contain all necessary reported data, documentation, and test reports to confirm products meet the DLC technical requirements.
        - Level 1 - OEM applications with a single product to be qualified or a set of products with limited variations, e.g. CCT or correlated color temperature but not multiple optical variations. Please refer to the link for additional details on specific allowable variations
        - Level 2 – OEM applications with a broader set of variations between products. Please refer to the link for details on the acceptable variations within a single Level 2 application

    - Private Label applications – Intended for organizations purchasing luminaires from an OEM manufacturer and selling the product under their manufacturer name. OEM products must first be qualified in order to submit a private label manufacturer. Documentation to confirm the relationship between the OEM manufacturer and OEM product to the Private Labeler and Private Labeled product must be submitted in the application.
- New or Update Applications
    - New – Applications to qualify products which have not yet been qualified or products that have been previously delisted. Applications are further categorized as OEM Level 1 or OEM Level 2 or Private Label applications.
    - Update – Applications to update currently qualified products or to add new products to a currently qualified family.