

Guideline on worst case testing of projectors

For projectors, worst case testing according to TCO Certified is accepted. This means that a worst case sample is configured and tested. The test results of the worst case sample may then cover other configurations of the product with declared equal or better performance of the criteria in TCO Certified.

The worst case sample must be determined by the verification partner based on the guidelines provided by TCO Development for each product group. These guidelines state what product aspects that shall be considered and prioritized.

Product aspects that are not mentioned in the guidelines for a product group is considered by TCO Development to have a negligible effect on TCO Certified criteria and does not have to be taken into account by the verification partner when choosing a worst case sample.

Product aspects are declared and signed by the applicant. This declaration form a part of the source material of the verification of conformity VOC.

Projector sampling guideline

If a brand owner want to certify a number of projectors belonging to the same product family with the same chassis, lamp and panel technology/color wheel then the following worst case testing procedure may be used.

The worst case sample(s) shall be chosen according to the following guideline:

1. First the worst case model from a visual ergonomics perspective is determined by choosing the model with the lowest lumen output and lowest resolution. This model is tested only for visual ergonomics (not emission and energy). This will result in a worst case "TCO Certified image size" for the whole product family.

(If it is not possible to combine both the lowest lumen and the lowest resolution then the model with the lowest lumen should be chosen. The resolution impact on the TCO Certified Image size can then be calculated).

During an evaluation period TCO Development will investigate if the aspect ratio and resolution may have any significant impact on the visual ergonomics criteria (light flux uniformity) in TCO Certified. Therefore each resolution and aspect ratio must also be checked for the criterion light flux uniformity. This may require the applicant to send extra samples for testing of light flux uniformity. When enough data is collected TCO Development will decide if this will still be necessary or not.

2. Secondly the worst case model from an emission and energy perspective is determined by choosing the model with the highest power consumption. To avoid a new visual ergonomics test of also this model the "TCO Certified image size" that was determined in the previous test of the worst case visual ergonomics model may be used in the calculation for the evaluation of pass or fail.
3. If the worst case model from an emission and energy perspective does not pass this calculated evaluation and this other model has a higher lumen, then a new visual ergonomics test must be made on this model also to determine it's "TCO Certified Image size" based on the higher lumen and use it in the calculation instead.

The verification partner will then write a verification of conformity VOC for all products that shall be certified. All products must then (if possible) be considered to comply in the VOC by the verification partner based on:

1. the products aspects declared by the applicant
2. the worst case testing report
3. this worst case testing guideline by TCO Development

If the applicant does not feel comfortable in signing declarations of some product aspects then extra testing may be done to verify the product aspect.

If any stakeholder feel the need to update this guideline. Contact TCO Development and explain the reasons.

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