

## ANNEX IV

### Verification procedure for market surveillance purposes

The verification tolerances defined in this Annex relate only to the verification of the measured parameters by Member State authorities. These tolerances shall not be used by the manufacturer, importer or authorised representative as an allowed tolerance to establish the values in the technical documentation or in interpreting these values with a view to achieving compliance or to communicate better performance by any means.

Where a model has been designed to be able to detect it is being tested (e.g. by recognising the test conditions or test cycle), and to react specifically by automatically altering its performance during the test with the objective of reaching a more favourable level for any of the parameters specified in this Regulation or included in the technical documentation or included in any of the documentation provided, the model and all equivalent models shall be considered not compliant.

When verifying the compliance of a product model with the requirements laid down in this Regulation pursuant to Article 3(2) of Directive 2009/125/EC, the authorities of the Member States shall apply the following procedure:

1. The Member State authorities shall verify one single unit of the model for points 2(a) and 2(b) of this Annex.

The Member State authorities shall verify 10 units of the light source model or 3 units of the separate control gear model. The verification tolerances are laid down in Table 6 of this Annex.

2. The model shall be considered to comply with the applicable requirements if:
  - (a) the values given in the technical documentation pursuant to point 2 of Annex IV to Directive 2009/125/EC (declared values), and, where applicable, the values used to calculate these values, are not more favourable for the manufacturer, importer or authorised representative than the results of the corresponding measurements carried out pursuant to paragraph (g) thereof; and
  - (b) the declared values meet any requirements laid down in this Regulation, and any required product information published by the manufacturer, importer or authorised representative does not contain values that are more favourable for the manufacturer, importer or authorised representative than the declared values; and
  - (c) when the authorities of the Member State test the units of the model, the determined values comply with the respective verification tolerances as given in Table 6 of this Annex, where 'determined value' means the arithmetic mean over the tested units of the measured values for a given parameter or the arithmetic mean of parameter values calculated from measured values.
3. If the results referred to in point 2(a), (b) or (c) are not achieved, the model and all equivalent models shall be considered not to comply with this Regulation.
4. The authorities of the Member State shall provide all relevant information to the authorities of the other Member States and to the Commission without delay after a decision is taken on the non-compliance of the model in accordance with point 3 of this Annex.

The authorities of the Member State shall only apply the verification tolerances that are set out in Table 6 and shall use only the procedure described in this Annex. For the parameters in Table 6, no other tolerances, such as those set out in harmonised standards or in any other measurement method, shall be applied.

TABLE 6

**Verification tolerances**

<b>Parameter</b>	<b>Sample size</b>	<b>Verification tolerances</b>
<b>Full-load on-mode power</b> <b><math>P_{on}</math> [W]:</b>		
$P_{on} \leq 2W$	10	The determined value shall not exceed the declared value by more than 0,2 W.
$2W < P_{on} \leq 5W$	10	The determined value shall not exceed the declared value by more than 10 %.
$5W < P_{on} \leq 25W$	10	The determined value shall not exceed the declared value by more than 5 %.
$25W < P_{on} \leq 100W$	10	The determined value shall not exceed the declared value by more than 5 %.
$100W < P_{on}$	10	The determined value shall not exceed the declared value by more than 2,5 %.
<b>Displacement factor [0-1]</b>	10	The determined value shall not be less than the declared value minus 0,1 units.
<b>Useful luminous flux <math>\Phi_{use}</math></b> <b>[lm]</b>	10	The determined value shall not be less than the declared value minus 10 %.
<b>No-load power <math>P_{no}</math>, Standby power <math>P_{sb}</math> and Networked standby power <math>P_{net}</math> [W]</b>	10	The determined value shall not exceed the declared value by more than 0,1 W.
<b>CRI [0-100]</b>	10	The determined value shall not be less than the declared value by more than 2,0 units.
<b>Flicker [<math>P_{st}</math> LM] and stroboscopic effect [SVM]</b>	10	The determined value shall not exceed the declared value by more than 10 %.
<b>Colour consistency</b> <b>[MacAdam ellips steps]</b>	10	The determined number of steps shall not exceed the declared number of steps.

**a** There is no tolerance associated with this metric, as it is a fixed requirement and it is up to the manufacturer to declare an  $L_{70}B_{50}$  value to meet it.

*Status: This is the original version (as it was originally adopted).*

		The centre of the MacAdam ellipse shall be the centre declared by the supplier with a tolerance of 0,005 units.
<b>Beam angle (degrees)</b>	10	The determined value shall not deviate from the declared value by more than 25 %.
<b>Control gear efficiency [0-1]</b>	3	The determined value shall not be less than the declared value minus 0,05 units.
<b>Lumen maintenance factor (for LED and OLED)</b>	10	The determined $X_{LMF}\%$ of the sample following the test in Annex V of this Regulation shall not be less than $X_{LMF, MIN}\%a$ .
<b>Survival factor (for LED and OLED)</b>	10	At least 9 light sources of the test sample must be operational after completing the test in Annex V of this Regulation.
<b>Excitation purity [%]</b>	10	The determined value shall not be less than the declared value minus 5 %.
<b>Correlated colour temperature [K]</b>	10	The determined value shall not deviate from the declared value by more than 10 %.

**a** There is no tolerance associated with this metric, as it is a fixed requirement and it is up to the manufacturer to declare an  $L_{70}B_{50}$  value to meet it.

For light sources with linear geometry which are scalable but of very long length, such as LED strips or strings, verification testing of market surveillance authorities shall consider a length of 50 cm, or, if the light source is not scalable there, the nearest value to 50 cm. The light source manufacturer or importer shall indicate which separate control gear is suitable for this length.

When verifying if a product is a light source, market surveillance authorities shall compare the measured values for chromaticity coordinates (x and y), luminous flux, luminous flux density, and colour rendering index directly with the limit values set out in the definition for light source of Article 2 of this Regulation, without applying any tolerances. If any of the 10 units in the sample satisfies the conditions for being a light source, the product model shall be considered to be a light source.

Light sources that allow the end-user to control, manually or automatically, directly or remotely, the luminous intensity, colour, correlated colour temperature, spectrum, and/or beam angle of the emitted light shall be evaluated using the reference control settings.