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ECOS/ANEC Position Paper on measurement uncertainty and verification tolerances under Ecodesign and Energy Labelling Regulations

Background

Measurement uncertainty derives from the observation that, due to uncontrollable factors, results of the same repeated tests vary, without the possibility of knowing which of these results is the ''true'' one, if any is. A range of different results also occurs when the tests are conducted in different laboratories, even if the test method, as well as the equipment, is the same.

For the implementation of the verification procedure, as described in Ecodesign regulations, **verification tolerances** are set, i.e. for each measured parameter during the verification procedure, the value shall be within the permitted tolerance from the value as required (Ecodesign measures) or declared (energy labelling measures). Therefore, although measurement uncertainty is due to uncontrollable factors in measurements, the decision of whether to apply verification tolerances and what range to allow is a political one.

It has been acknowledged that some manufacturers use tolerances to achieve higher energy labelling classes or to meet the Ecodesign requirements by adding the value of tolerances on top of the measured values. Tolerances should under no circumstances be used by the manufacturer as a means to achieve a more efficient energy class, but only by Member State authorities to allow for a fair verification of declared values of products. This should be explicitly stressed in the European Commission guidance.

Verification tolerance based on the measurement uncertainty

We firmly believe that prescribed tolerances for products should not exceed the established extended uncertainty. Measurement uncertainty is unavoidable and related to the measurement procedure, but setting the verification tolerance is a political decision and should not be mandated to the European Standardisation Bodies. If the political decision is still to introduce a tolerance any higher than the measurement uncertainty, this action must be clearly justified.

Product variation

We believe that product variation, as a result of the manufacturing process, should be outside of the scope of extended uncertainty for the purposes of setting verification tolerances. These variations are the responsibility of the manufacturer and should therefore not be taken into account when establishing expanded uncertainty for a product category. Measurement uncertainty is a reflection of the limitations in terms of precision for measurement methods; distorting this assessment with product variation would not incentivise manufacturers to improve precision and reduce product variation.

Assess Repeatability before Reproducibility

We encourage the practice of establishing repeatability; ensuring the minimisation of variation when performing multiple tests within a single laboratory, before reproducibility; ensuring the minimisation of variation when performing tests on the same product in 2 or more laboratories. Only then is it sensible to do the RRT. Otherwise there is a possibility of a large reproducibility standard deviation being calculated from a poorly set up and supervised RRT. Consequently, the risk emerges that the RRT becomes accepted, creating a big uncertainty (maybe +/-15%) for that particular standard whereas the standard is in fact much more reproducible (+/-5%).

Round Robin Tests to assess and improve methodologies

We encourage Member States and the European Commission to coordinate regular Round Robin/ring Tests (RRT)[1], in order to increase the competencies of laboratories in Europe and to ensure the validity, precision and accuracy of the measurement methods used to enforce European product policy. The extended uncertainty for each product category, and each relevant parameter of the product should be established in a clear and scientific manner, utilising available round-robin/ring testing data (as much as possible), or where that data is

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[1] A Round Robin Test is a test on the same product taking place in several laboratories several times, in order to assess the reliability of the methodology and the test results in practice.

lacking, the EC should consider round-robin/ring testing for the specific purpose of specifying in the regulatory text the verification tolerances. At the same time, we also recognise that for some complex products and integrated systems, factors such as installation and maintenance can affect measurements.

Ensure the reliability and reflect measurements improvements in regulations

Verification tolerances should be updated at the earliest available opportunity when new and accurate/reliable data has become available on the expanded uncertainties of a particular product category. Appropriate times may include the initial drafting or revision of the regulations.

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