

Calibration Certificates

Uncertainties and Statements of Compliance on Calibration Certificates

ISO 17025:2005, Section 5.10.4.1: In addition to the requirements listed in 5.10.2, calibration certificates shall include the following, where necessary for the interpretation of calibration results:..

b) the uncertainty of measurement and/or a statement of compliance with an identified metrological specification or clauses thereof; ...

Therefore:

- Acceptable: Measurement Uncertainty listed
 - Note: A Test-Uncertainty-Ratio with a specification can be converted to an uncertainty using the Guide to the Expression of Uncertainty in Measurement
- Acceptable: Specification listed, and in-or-out of tolerance given
- Not acceptable: No measurement uncertainty and no indication of compliance to a specification.

Calibration Certificates

Low Test Uncertainty Ratios

Test Uncertainty Ratio (TUR): Ratio of the specification to the expanded uncertainty

Examples: TURs of 10:1, 4:1, or 1:1 are often found on certificates

- Low TURs: Sometimes these can meet the customer's needs.
 - Note a 1:1 TUR does **not** mean it is 100% uncertain if the instrument is in or out of tolerance!
 - *Extreme example: If you only take measurements very near the center of the specification as passing you could have a very high confidence of and instrument being in tolerance with a 1:1 TUR*
- Test labs should specify as best they can the needed TUR or measurement uncertainty to make sure they get the calibration they need.

Calibration Certificates

Guardbanding

- **ISO 17025:2005** Section 5.10.4.2: ... When statements of compliance are made, the uncertainty of measurement shall be taken into account
- Allows for variations if agreed upon in Section 5.10.1, and should be covered during the contracting process

Guardbanding: setting the test limits to different values than the specification limits when determining pass/fail or in/out statements

Zero guardbanding: test limits = spec. limits. Measured in is in spec., measured out is out of spec.

-Note this pass/fail decision in and of itself does not take uncertainty into account, both parties share risk that the instrument may or may not be out of spec.

Therefore:

- Labs are allowed to use zero guardbanding if they previously gain consent from the customer during the contracting process. Further information is available in the A2LA February newsletter.