

R27 Decision Rule for the Conformity of Test Results

Light Science has established a document for the Decision Rule according to the requirement of ISO/IEC 17025:2017. If no decision rule is demanded by the regulations, standards, specifications and customers but a statement of conformity is required, the statement of conformity will be made according to the Light Science Decision Rule.

Unless inherent in the requested specification or standard, the decision rule selected shall be communicated to, and agreed with the customer:

Pass: If the specification limit is not breached by the measurement of result plus the expanded uncertainty with a 95% coverage probability, then compliance with the specification can be stated. This can be reported as 'Pass'. The measurement result is within (or below) the specification limit when the measurement uncertainty is taken into account. See Measurement A, Fig. 1.

Fail: If the specification limit is breached by the measurement of result minus the expanded uncertainty with a 95% coverage probability, then non-compliance with the specification can be stated. This can be reported as 'Fail'. The measurement result is outside (or above) the specification limit when the measurement uncertainty is taken into account. See Measurement B, Fig. 1.

If the measurement result plus/minus the expanded uncertainty with a 95% coverage probability overlaps the limit, it is not possible to state Pass or Fail. The measurement result and the expanded uncertainty with 95% coverage probability should then be reported together with a statement indicating that neither compliance nor non-compliance was demonstrated. See Measurement C, Fig. 1.

If taking uncertainty into account would result in a possible failure where the measured value actually passes, the following compliance statement can be used: "It is not possible to state compliance using a 95% coverage probability for the expanded uncertainty although the measurement result falls within specified limit." or "It is not possible to state compliance." See Measurement D, Fig. 1.

If taking uncertainty into account would result in a possible pass where the measured value actually failed, the following compliance statement can be used. "It is not possible to state non-compliance although the measurement result falls outside specified limits. Using a 95% coverage probability for the expanded uncertainty may produce values within specified limit." or "It is not possible to state non-compliance." See Measurement E, Fig. 1.

Accounting for the uncertainty will be taken to mean that at a 95% confidence level the measurement result plus and minus the expanded uncertainty ($k=2$) shall be totally within the specification limits.

Example: Tc limit = 80°C, MU = ±0.4°C @ 95% coverage probability

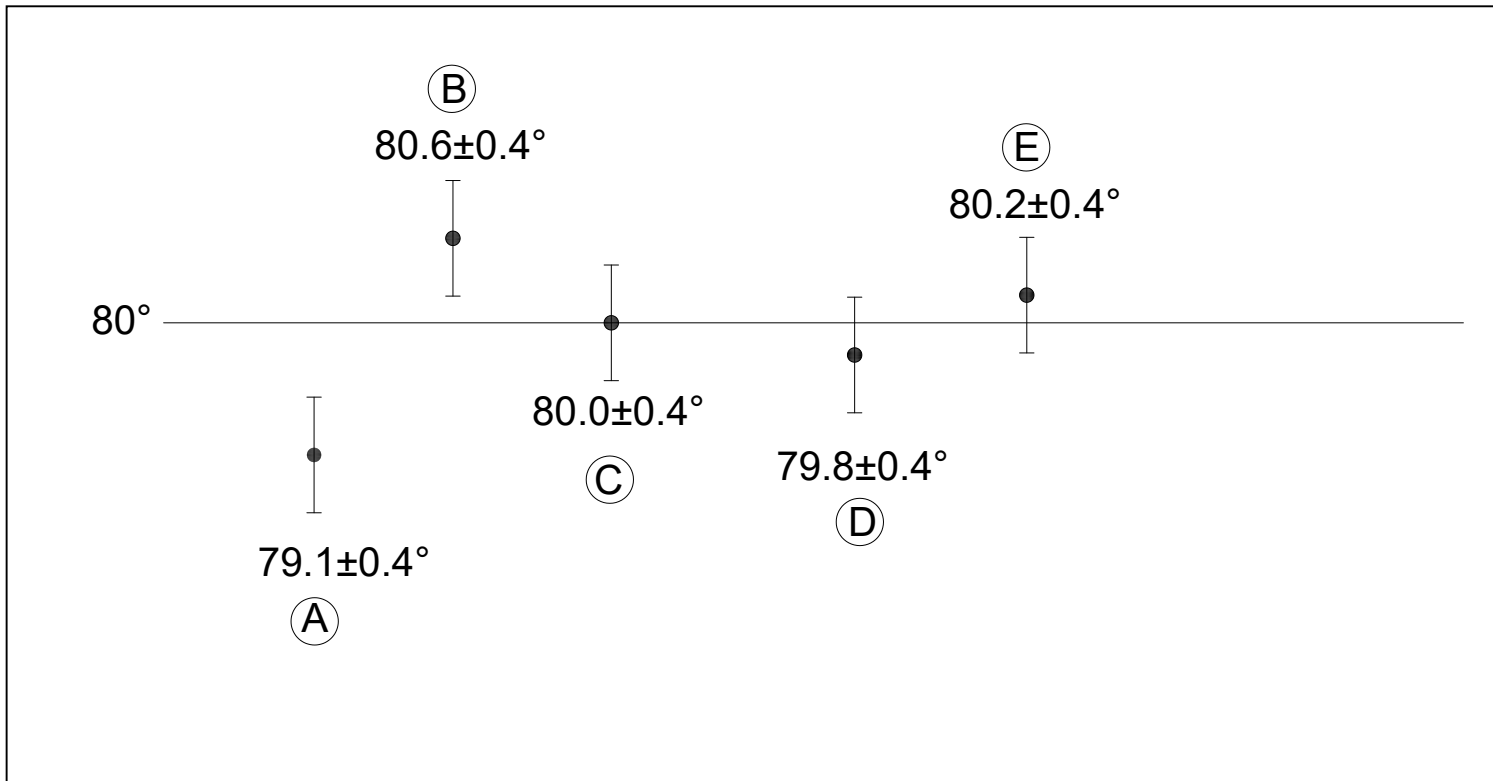


Figure 1. Examples of possible measurement results

Measurement A:	$79.1 + 0.4^{\circ}\text{C} = 79.5^{\circ}\text{C} < 80^{\circ}\text{C}$	PASS
Measurement B:	$80.6 - 0.4^{\circ}\text{C} = 80.2^{\circ}\text{C} > 80^{\circ}\text{C}$	FAIL
Measurement C:	$80.0 - 0.4^{\circ}\text{C} = 79.6^{\circ}\text{C} < 80^{\circ}\text{C}$	Neither compliance nor non-compliance
Measurement D:	$79.8 + 0.4^{\circ}\text{C} = 80.2^{\circ}\text{C} > 80^{\circ}\text{C}$	Not possible to state compliance
Measurement E:	$80.2 - 0.4^{\circ}\text{C} = 79.8^{\circ}\text{C} < 80^{\circ}\text{C}$	Not possible to state non-compliance