

Decision Rules Policy

Definitions

Decision Rule - a rule that describes how measurement uncertainty is accounted for when stating conformity with a specified requirement.

Statement of Conformity - evaluation of a reported value against a documented specification, for example Pass/Fail.

Simple Acceptance Rule – a decision rule in which the acceptance limit (allowing for measurement uncertainty) is equal to the tolerance limit (as defined in the specification or standard).

Measurement Uncertainty and Decision Risk

The purpose of a measurement is to provide information about a quantity of interest. However, no measurement is exact. When a quantity is measured, the outcome is dependent on the measuring system, the procedure for measurement, the skill of the operator, the environment in which the measurement is made and other effects. Even if the quantity were measured several times, in the same way, under the same circumstances, a different value would in general be obtained each time, assuming the resolution of the measurement system was sufficient to distinguish between the values. The measurement uncertainty is an expression of the statistical dispersion of these measured values.

When performing a measurement, and making a statement of conformity of that measurement in relation to a given specification, there are two possible outcomes;

- A correct decision is made regarding conformance to the specification.
- An incorrect decision is made regarding conformance to the specification.

The risk of an incorrect decision being made is directly proportional to the uncertainty associated with the measurement.

Decision Rules

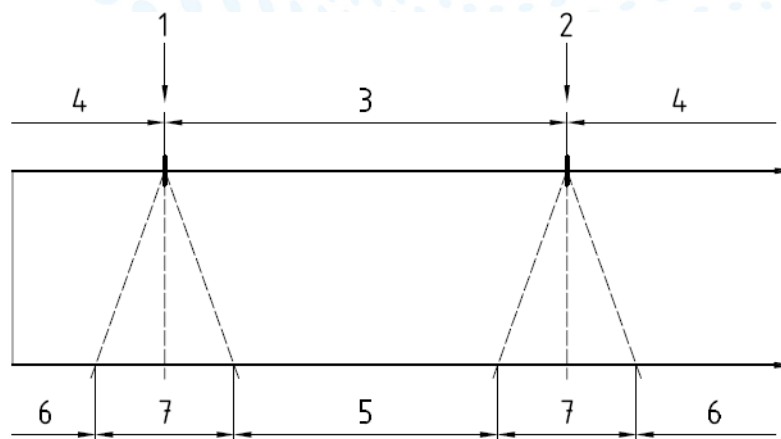
The decision rule defines how measurement uncertainty is accounted for when stating conformity of a measurement with a specified requirement.

Decision rules are only required when a statement of conformity is to be reported along with a measured value.

If the decision rule is inherent in the requested specification or standard, the specification or standard describes how to account for measurement uncertainty, this must be followed. Therefore, a decision rule is only required for reports which include a statement of conformity to a specification or standard which does not define how to account for measurement uncertainty.



Simple Acceptance Rule



Key

- 1 indicates the lower specification limit (LSL)
- 2 indicates the upper specification limit (USL)
- 3 indicates the specification zone, also considered as the tolerance zone
- 4 indicates out the specification
- 5 indicates the conformity zone
- 6 indicates the non-conformity zone
- 7 indicates the uncertainty of measurement

Figure B.1 — Schematic representation of the relationship between “specification zone” and “conformity zone”

In the diagram above the section labelled 3 is the tolerance or specification zone. This is the area between upper and lower specification limits. The section labelled 5 is the conformity zone, the area between the upper and lower acceptance limits. The difference between the specification limits and the acceptance limits is the measurement uncertainty. The simple acceptance rule assumes the acceptance limits are equal to the specification limits.

Shirley Technologies Limited Policy for Decision Rules

The Shirley Technologies Limited policy for decision rules is as follows;

If no statement of conformity is requested no decision rule is required.

If a statement of conformity to a defined specification or standard is requested, and the defined specification or standard describes how to account for measurement uncertainty, no decision rule is required.

If a statement of conformity to a defined specification or standard is requested, and the defined specification or standard does not describe how to account for measurement uncertainty, the simple acceptance rule will be employed and the associated measurement uncertainty will be included in the report. This is communicated to the client during contract review, if the client requests an alternative decision rule this will be discussed and documented at the contract review stage. The measured value, statement of conformity, decision rule and measurement uncertainty will all be included in the report.