

Decision Rules and Conformity to Specification Statements

Vaisala calibration certificates sometimes have statements of conformity to a specification using one of the following decision rules:

Simple Decision Rules

The conformity status for each measurement point is determined by comparing the measured error to the specification limit. In the As Found results a Pass is noted with a dash and a Fail is noted with an asterisk.

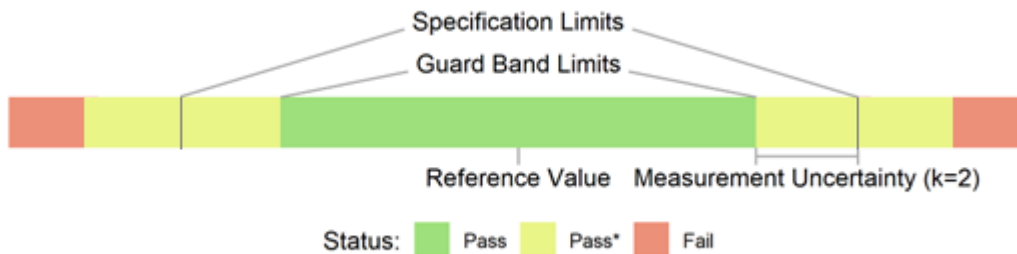
- - or Pass: Error is less or equal to the specification limit.
- * or Fail: Error is more than the specification limit.

Measurement Uncertainty Guard Band Decision Rule

(Used for Data Loggers)

The conformity status for each measurement point is determined using a guard band equal to the expanded ($k=2$, 95% confidence level) measurement uncertainty.

- Pass: Error is less than or equal to the specification limit minus the measurement uncertainty.
- Pass* or N/A: Error is less than the specification limit plus the measurement uncertainty.
- Fail: Error is more than or equal the specification limit plus the measurement uncertainty.



Measurement Risk

Because of the measurement uncertainty inherent in any calibration, there is always some risk of false accept (labeling a non-conforming result as Pass) or false reject (labeling a conforming result as Fail). With the simple decision rule the probability of false accept can be as large as 50% when the measured error is close to the specification limit. With the expanded measurement uncertainty guard band, the probability of false accept is less than 2.5%.

The probability of conformity is determined by calculating what percentage of the measurement uncertainty distribution is within the specification limits, as shown in the figure below.

