

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.

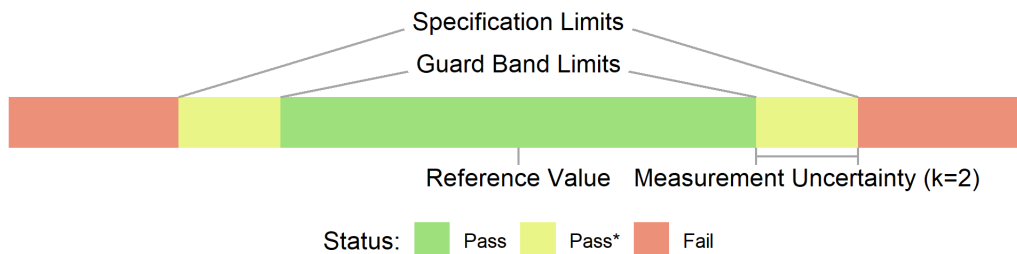
- - or Pass: Error is less or equal to the specification limit.
- * or Fail: Error is more than the specification limit.

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



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.

