

Specification of Competency Standards
for the Testing, Inspection and Certification Industry
Unit of Competency

Functional Area - Testing Operations

Title	Estimate and report measurement uncertainty
Code	105768L4
Range	This unit of competency (UoC) covers the abilities to estimate and report measurement uncertainty for laboratory / on-site testing activities or calibration activities relative to specified limits/tolerance of the test / calibration and specifications of customer's request according to the predetermined procedures.
Level	4
Credit	2 (For Reference Only)
Competency	<p>Performance Requirements</p> <p>1. Possess knowledge of procedures for estimating measurement uncertainty and determine the need for reporting measurement uncertainty</p> <ul style="list-style-type: none"> • Differentiate the applications of various statistical tests • Identify steps in the measurement, test or calibration involved. • Determine customer's request for need of reporting measurement uncertainty. • Relate validity of test results in association with measurement uncertainty. • Determine the uncertainty interval and results that are considered as inconclusive. <p>2. Estimate and report measurement uncertainty</p> <ul style="list-style-type: none"> • Specify an equation for the measurement and list uncertainty components that are associated with each input in the equation. • Use calibration reports, manufacturer's specifications, quality control and validation data, and experimental data to collect other available information on the uncertainty components. • Calculate the standard uncertainty of each input factor and the combined uncertainty. • Calculate the expanded uncertainty of the reported results. • Obtain the uncertainty interval as stated in the test standard. • Report results and measurement uncertainty (expanded uncertainty) according to the test standard/specifications. • State all necessary information for the interpretation of the reported uncertainty including coverage factor and confidence interval. • Report compliance against specifications/limits taking into consideration of measurement uncertainty and state compliance only for conclusive results. <p>3. Exhibit professionalism</p> <ul style="list-style-type: none"> • Report measurement uncertainty and necessary information as required by the test / calibration.
Assessment Criteria	<p>The integrated outcome requirements of this UoC are the abilities to:</p> <ul style="list-style-type: none"> • determine whether the uncertainty in results should be reported by analysing the customer's request and considering the validity of test results and inconclusive interval, • estimate the uncertainty of measurement, test or calibration and necessary information relative to the tolerance or required accuracy of the test or calibration, • report the compliance of the sample under test against specifications for results outside the inconclusive interval.
Remark	