

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

Functional Area - Testing Operations

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| Title | Perform radio-frequency measurements |
| Code | 105829L4 |
| Range | This unit of competency (UoC) covers the abilities to carry out radio-frequency measurements on electrical and electronic products independently by applying suitable testing instruments and conditions and record accurate test data in testing laboratories. |
| Level | 4 |
| Credit | 6 (For Reference Only) |
| Competency | <p>Performance Requirements</p> <p>1. Possess knowledge of radio-frequency (RF) measurements</p> <ul style="list-style-type: none"> • Employ the operating principles of transmitter and receiver and identify relevant types of radio-frequency measurements. • Employ the principles of transmitter tests, e.g. carrier power, frequency error, frequency deviation, adjacent channel power, and spurious emissions. • Employ the principles of receiver tests, e.g. usable sensitivity, amplitude characteristic, co-channel rejection, adjacent channel selectivity, intermodulation response rejection, blocking or desensitisation, spurious response rejection and receiver spurious emissions. • Describe the methods of measuring radio-frequency of selected electrical and electronic product. • Identify relevant categories of standards in relation to radio-frequency measurements, e.g.: <ul style="list-style-type: none"> ○ basic/generic standards, product family standards, ○ international, national and industrial standards such as IEC, CISPR, EN, ANSI, ETSI, GB, HKTA, OFCA, AS/NZS. • Describe the principles and operation of instruments used for transmitter and receiver tests, e.g. artificial antenna and frequency meter, spectral analyser, modulating signal generator, power measuring receiver, distortion factor/SINAD meter, acoustic coupler, rms voltmeter, oscilloscope, psophometric weighting network. • Apply the basic mathematical concepts, e.g. decibel usage, linear scale, log scale, units in the measurement. • Apply the concepts of uncertainty and instrument calibration to radio-frequency measurements. <p>2. Perform radio-frequency measurements</p> <ul style="list-style-type: none"> • Select appropriate test methods/standards, test plans, test conditions, and accessories for radio-frequency measurements. • Apply appropriate testing instruments and test site for the measurements. • Apply appropriate conditions to the testing instruments, e.g.: <ul style="list-style-type: none"> ○ normal and extreme operating conditions specified in product standards such as temperature and humidity, required accessories. • Apply appropriate conditions to the sample under test, e.g.: <ul style="list-style-type: none"> ○ test voltage and power, ○ number of measurements and measurement arrangement, ○ period of measurement for transient frequency behaviour, frequency with modulation. • Carry out radio-frequency measurements on the test sample independently according to the test methods/standards. • Carry out required validation checks to confirm the system and instrumental requirements (e.g. elimination of unwanted signal) are met. |

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| | <ul style="list-style-type: none"> • Record accurate measurement data, test configuration and conditions and conclude test results to confirm the compliance of the test sample. <p>3. Exhibit professionalism</p> <ul style="list-style-type: none"> • Ensure all measurements are carried out in compliance with good industry practices and relevant categories of standards. • Ensure appropriate measures have been taken to minimise the health and safety risks of radio-frequency arising from the test procedures and testing instruments. • Ensure integrity and confidentiality of laboratory data and information by observing the code of conduct as required by the standards and the organisation. |
| Assessment Criteria | <p>The integrated outcome requirements of this UoC are the abilities to:</p> <ul style="list-style-type: none"> • carry out radio-frequency measurements on selected electrical and electronic product independently by applying appropriate testing instruments and test conditions according to the requirements of relevant test methods/standards, • record accurate and reliable measurement data by data validation and verifying instrument calibration status • conclude test results to confirm the compliance of radio-frequency of the product against the relevant specifications of test methods/standards. |
| Remark | |