

Title	Performance test and repair faulty radar equipment to unit or component level		
Level	4	Credits	12

Purpose	<p>This unit standard is intended for electronics technicians who are responsible for performance testing and the diagnosis and repair of faults in radar equipment to unit or component level.</p> <p>People credited with this unit standard are able to:</p> <ul style="list-style-type: none"> – performance test radar equipment; – diagnose faulty radar equipment; and – repair, test, and restore radar equipment to service.
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Classification	Electronic Engineering > Electronic Installation and Maintenance
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Available grade	Achieved
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Guidance Information

- 1 This unit standard has been developed for learning and assessment on-job or off-job.
- 2 References

AS/NZS 3760: 2022, *In-service safety inspection and testing of electrical equipment and RCDs* at [AS/NZS 3760:2022 Standards New Zealand](#);

AS/NZS 4836:2023, *Safe working on or near low-voltage and extra-low voltage electrical installations and equipments* at [AS/NZS 4836:2023 Standards New Zealand](#);

Electricity Act 1992;

Electricity (Safety) Regulations 2010;

Health and Safety at Work Act 2015 and associated regulations;

IPC 7711/7721B *Rework, Modification and Repair of Electronic Assemblies*, (November 2007) at [IPC-7711C-7721C table of contents](#);

Radiocommunications Act 1989;

Radiocommunications Regulations 2001;

Radio spectrum management licensing requirements available from the Ministry of Economic Development website at: [Licence compliance requirements | Radio Spectrum Management New Zealand \(rsm.govt.nz\)](#);

and all subsequent amendments and replacements.

3 Definitions

BITE – built in test equipment.

Enterprise practice – those practices and procedures that have been promulgated by the company or enterprise for use by their employees.

Industry practice – those practices that competent practitioners within the industry recognise as current industry best practice.

MDS – minimum detectable signal.

RF – radio frequency.

VSWR – voltage standing wave ratio.

4 Range

a The type of diagnosis and repair work required to achieve this unit standard must include:

- i diagnosis and repair of equipment to unit and/or component level depending on servicing data and enterprise policy;
- ii use of test instruments to identify faults, measure and adjust equipment, and confirm proper performance. Typical instruments include multimeters, oscilloscopes, signal generators, and signal tracers. More specialised instruments may be required depending on the nature of the equipment.

b Electrical, radiation, and workshop or laboratory safety practices are to be observed at all times.

c Measurements may be expressed in Système Internationale (SI) or Imperial units, and, where required, converted from Imperial units to SI units and vice versa.

d Recognised industrial standards are to be used for calculations.

e All activities and evidence presented for all outcomes and evidence requirements in this unit standard must be in accordance with legislation, policies, procedures, ethical codes, Standards, applicable site and enterprise practice, and industry practice; and, where appropriate, manufacturers' instructions, specifications, and data sheets.

f Evidence is required of at least 10 different types of repairs covering a variety of faults on a range of equipment or products. The number and type of equipment chosen are left to the discretion of the assessor, but must be sufficient to assess competence in all outcomes of the unit standard.

5 Recommended skills and knowledge:

Unit 26725, *Demonstrate and apply knowledge of electronic product reliability and advanced electronic measurement and diagnosis*, or demonstrate equivalent knowledge and skills.

Outcomes and performance criteria

Outcome 1

Performance test radar equipment.

Performance criteria

- 1.1 Equipment operation is tested and compared against specifications.
- Range includes but is not limited to – display operations, anti-sea clutter, variable range marker, bearing marker, markers, cursors, index error check, stabilising, cooling, ancillary equipment interfacing, modes of operation.
- 1.2 Equipment performance is tested and compared against specifications.
- Range includes but is not limited to – BITE tests, RF output power and VSWR, frequency, MDS, index error.
- 1.3 Test results are recorded in accordance with enterprise practice.

Outcome 2

Diagnose faulty radar equipment.

Performance criteria

- 2.1 Fault symptoms and/or substandard equipment performance are identified.
- 2.2 Efficient diagnostic techniques, tools, instruments, BITE where available, and servicing data are used in diagnosis.
- 2.3 The lowest replaceable or repairable faulty unit or component in accordance with servicing data and enterprise policy is identified in diagnosis.
- 2.4 Components are protected from static damage by anti-static precautions.
- 2.5 The equipment is not damaged by diagnostic processes.
- 2.6 Diagnostic report is written in accordance with enterprise practice.

Outcome 3

Repair, test, and restore radar equipment to service.

Performance criteria

- 3.1 Replacement or repair of faulty units or components is done in accordance with servicing data and enterprise practice.
- 3.2 The other parts of the equipment are not damaged by replacement or repair.
- 3.3 Equipment is reassembled in a manner that prevents damage and conforms to the manufacturer's layout.
- Range layout – lead dress, screw location, shields and screens, board positioning and securing, cover positioning and fastening.

- 3.4 Electrical safety is confirmed by testing.
- 3.5 The repaired equipment being ready for service is confirmed by testing.
- 3.6 All actions are recorded in accordance with enterprise practice.

Planned review date	31 December 2028
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	23 May 1996	31 December 2011
Revision	2	3 April 2001	31 December 2011
Review	3	26 July 2004	31 December 2012
Review	4	21 July 2011	31 December 2027
Review	5	24 August 2023	N/A

Consent and Moderation Requirements (CMR) reference	0003
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact Waihanga Ara Rau Construction and Infrastructure Workforce Development Council qualifications@waihangaararau.nz if you wish to suggest changes to the content of this unit standard.