

Title	Prevent electrostatic damage to electronic components		
Level	2	Credits	1

Purpose	<p>This unit standard is for electronics technicians and others who have to handle electronic components and equipment where the possibility of damage by electrostatic discharge exists.</p> <p>People credited with this unit standard are able to demonstrate:</p> <ul style="list-style-type: none"> – knowledge of the causes of static electricity in the electronics workplace, and the damage it can do to semiconductors; – knowledge of the precautions to minimise electrostatic discharge; and – the use of anti-static precautions.
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Classification	Electronic Engineering > Core Electronics
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Available grade	Achieved
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Guidance Information

- 1 This unit standard has been developed for learning and assessment off-job or on-job.
- 2 References
Health and Safety in Employment Act 1992 and associated regulations; and all subsequent amendments and replacements.
- 3 Definitions
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.
PCB – printed circuit board.
- 4 Range
 - a Electrical, radiation, and workshop or laboratory safety practices are to be observed at all times.
 - b All activities and evidence presented for all outcomes and performance criteria 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.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of the causes of static electricity in the electronics workplace, and the damage it can do to semiconductors.

Performance criteria

- 1.1 Generation of a static charge is explained in terms of separation of electrons.
- 1.2 Significant factors contributing to the generation of static electricity in the electronics workplace are identified.
- Range poor air conditioning, low humidity, choice of carpet, clothing, aerosol sprays, solder suckers, packaging materials.
- 1.3 The practical mechanism that causes damage to semiconductors, and how the damage can be prevented, are described.
- Range prevention – reduce generation of electrostatics, discharge to earth.
- 1.4 The effect of damage to semiconductor devices is described.
- Range effect – permanent damage, latent defects, intermittent faults.
- 1.5 The possibility of a significant static electric charge being present without the person being aware of it is described.

Outcome 2

Demonstrate knowledge of the precautions to minimise electrostatic discharge.

Performance criteria

- 2.1 Basic rules for handling of components and PCBs are stated.
- 2.2 Selection of clothing, personal grounding, furnishings, and floor coverings, and use of antistatic sprays to reduce electrostatic generation are stated.
- 2.3 Use of ionising air blowers is described with respect to worst case conditions.
- 2.4 A static safe work station is described in terms of the minimum requirements.
- 2.5 Precautions for use in temporary work situations are described.

Outcome 3

Demonstrate the use of anti-static precautions.

Performance criteria

- 3.1 Basic requirements for handling of components and PCBs are applied in accordance with industry practice.
- 3.2 Anti-static mats are placed on the workbench, and on the floor in front of the workbench, racks, and cabinets being worked upon, in accordance with the requirements for a static safe workstation.
- 3.3 Anti-static mats are connected together, and to an earth connector, with a resistance value of 1 MΩ to ground to form a minimum resistance path to bleed static charge.
- 3.4 Approved anti-static wrist or ankle straps, connected through a resistance lead of 1 MΩ to 10 MΩ to an earthed mat, are worn when handling components and PCBs.
- 3.5 Components and PCBs are transported and stored in approved anti-static containers or bags.
- 3.6 Tools with approved electrostatic conducting handles are used.
- 3.7 Wrist and foot straps are tested in accordance with manufacturers' recommendations.

This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	1 May 1996	31 December 2011
Revision	2	3 April 2001	31 December 2011
Review	3	24 November 2003	31 December 2011
Rollover and Revision	4	22 August 2008	31 December 2012
Review	5	21 July 2011	31 December 2024
Review	6	25 May 2023	31 December 2024

Consent and Moderation Requirements (CMR) reference

0003

This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.