

Overview

This standard identifies the competences you need to assist in the tests and checks of signalling systems and equipment, including the use of correct tools and test equipment in accordance with your organisation's procedures to establish compliance with specifications. The signalling equipment in this standard can be for over ground or underground rail transportation systems and can be applicable for the new European Train Control System (ETCS).

You will be required to use the appropriate tools and equipment throughout the test and checking activities, and to apply a range of methods and techniques to test and check the equipment, and to make connections as appropriate to the equipment installed. Where appropriate, you may also assist in working with computers or electronic controllers, making connections, testing hardware and loading and updating software. The testing and checking activities will include making checks and adjustments, in line with your permitted authority, and assisting others to ensure that the signalling equipment functions to the required specification.

Your responsibilities will require you to comply with organisational policy and procedures for the testing and checking activities undertaken, and to report any problems with the activities, tools or equipment used that you cannot personally resolve, or are outside your permitted authority, to the relevant people. You must check that all tools, equipment and materials used in the testing and checking activities are removed from the work area on completion of the work, and that the relevant job/task documentation is completed accurately and legibly. You will be expected to work to instructions in conjunction with others, taking personal responsibility for your own actions, and for the quality and accuracy of the work that you carry out.

The test and checking activity may be carried out as a team effort, but you must demonstrate a significant personal contribution to the activities, in order to satisfy the requirements of the standard, and you must demonstrate competence in all the areas required by the standard.

Your underpinning knowledge will be sufficient to provide a sound basis for your work, and will enable you to adopt an informed approach to applying procedures for the testing and checking of signalling

equipment. You will have an understanding of the equipment being tested, and its necessary checking requirements, in adequate depth to provide a sound basis for carrying out the process safely and effectively.

You will understand the safety precautions required when carrying out the testing and checking activities, especially those for ensuring the safe isolation of services. You will be required to demonstrate safe working practices throughout, and will understand your responsibility for taking the necessary safeguards to protect yourself and others in the workplace.

Safety is a key theme throughout this standard and you will be able to identify all the necessary safety requirements and take the relevant action to ensure the safety of yourself, others and railway operations.

Performance criteria

You must be able to:

1. work safely at all times, complying with your organisation's procedures
2. follow all relevant diagrams, specifications and procedures for the equipment being checked or tested, including any previous compliance information, if applicable
3. identify the tests/checks to be carried out, the sequence in which they are to be performed and the methods to be used
4. select and use all the correct tools and inspection equipment and check that they are in a useable condition and calibrated
5. assist in carrying out the checks and tests in an appropriate sequence, within appropriate timescales and using approved methods and procedures
6. report any instances where the test and/or checks cannot be completed
7. take suitable precautions to ensure your activities do not interfere with the operational system
8. ensure all testing and checking equipment and tools are removed or stored in line with your organisation's procedures
9. report completion of compliance activities in line with your organisation's procedures
10. deal promptly and effectively with problems within your control and report those which cannot be resolved

Knowledge and understanding

You need to know and understand:

1. the relevant health and safety legislation, regulations and safe working practices and procedures as appropriate to the activity such as the Safe System of Work (SSOW)
2. how to locate and safely access the site
3. the isolation and lock-off procedure or permit-to-work procedure that applies to the system (such as electrical isolation, locking off switchgear, placing of warning notices, proving the isolation has been achieved and secured)
4. the classification of different voltage levels and the authority requirements for working on them
5. what constitutes a hazardous voltage/current and how to recognise victims of electric shock
6. how to reduce the risks of an electric shock (such as insulated tools, rubber mating and isolating transformers)
7. the importance of wearing protective clothing and other appropriate safety equipment (PPE) during the testing activities
8. hazards associated with carrying out signalling test activities (such as stored energy, radio frequency radiation, electrical supplies, electrical/electronic interfaces, using damaged or badly maintained tools and equipment, not following laid-down procedures), and how to minimise these and reduce any risks
9. the activities which may compromise system functionality and integrity including the operational constraints to carrying out testing/checking activities
10. how to source and follow engineering diagrams and specifications relevant to the activity
11. how to locate and identify the equipment to be tested and/or checked
12. the methods, techniques and procedures for assisting with tests and checks to establish compliance
13. the operational constraints and authorisation procedures for carrying out tests and checks
14. how to select the correct tools and confirm that they are calibrated
15. your organisation's procedures for the use, care and control of inspection tools and equipment
16. the procedures and precautions to be adopted to eliminate electrostatic discharge (ESD) hazards when working with and

handling electronic devices

17. how to use test equipment so as to ensure true and accurate measurements are taken
18. the correct mode of operation of the equipment being tested and/or checked
19. the relevant reporting lines and procedures that are approved by your organisation
20. the limits of your own authority and responsibility and those of others involved such as the Safe Work Leader (SWL)

Scope/range related to performance criteria

1. Follow the health and safety legislation, regulations and safe working practices and procedures, from the following as applicable to the work location and activities:
 1. your organisation's safety management system
 2. relevant sections of the HASWA
 3. COSHH
 4. safe work plans
 5. SWL (Safe Work Leader)
 6. track access restrictions
 7. track work instructions
 8. track possession
 9. task risk control sheets
 10. current rule book
 11. regulations for working under OHLE and in the vicinity of DC lines (where appropriate)
 12. equipment disconnections
 13. manual handling regulations
 14. RIDDOR
 15. safety sign regulations
 16. PPE

2. Identify the access requirements related to **one** of the following types of site testing locations:
 1. trackside
 2. internal (such as signal box, equipment room)
 3. areas to which the public have access
 4. confined spaces
 5. elevated structures

3. Assist in the testing of **one** of the following types of signalling equipment:
 1. points
 2. train control (such as signals, balises or other method of authorising train movements)
 3. train detection (such as track circuits or axle counters)
 4. power supplies
 5. ETCS
 6. other industry specific signalling equipment

4. Use the following types of tools and equipment as applicable to

the equipment being tested:

1. calibrated hand tools
2. un-calibrated hand tools
3. calibrated test leads/loads
4. computerised test equipment
5. test recording equipment
6. other specific signalling testing equipment

5. Assist in the following checks as applicable to the type of signalling equipment being tested:

1. inspection
2. wire count
3. security
4. profile
5. labelling
6. correlation
7. compliance to diagrams
8. physical condition
9. other industry specific signalling checks

6. Assist in the following tests as applicable to the type of signalling equipment being tested:

1. continuity
2. insulation
3. earth arrangements
4. interference
5. correspondence
6. function
7. other industry specific signalling tests

7. Ensure that testing activities comply with **one** of the following:

1. infrastructure guidelines and standard operating procedures
2. equipment manufacturer's documents
3. BS, ISO and/or BS EN standards
4. other industry specific signalling standards/specifications

8. Assist in completion of the relevant test records, to include **one** of the following, and pass it to the appropriate people:

1. job card
2. test certificates
3. test checklists
4. test log and action report
5. marked-up engineering drawings

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6. company reporting procedures
 7. other industry specific test/compliance records

Glossary

COSHH

Control of Substances Hazardous to Health Regulations

COSS

Controller of Site Safety

DC

Direct Current

ETCS

European Train Control System

ERTMS

European Train Traffic Management System

HASWA

Health and Safety at Work Act

IDC

Insulation Displacement Connection

OHLE

Overhead Line Equipment

PPE

Personal Protective Equipment

PTS

Personal track safety certificate

RIDDOR

Reporting of Injuries, Diseases and Dangerous Occurrences Regulations

SSOW

Safe System of Work

SWL

Safe Work Leader

SMTH

Signalling Maintenance Testing Handbook

Your organisation

This is the company you work for or are contracted to, or, if you are self-employed, the rules you have set for yourself to ensure that you comply with relevant legal and licensing requirements

Organisation's procedures

These are the procedures your organisation has in place to ensure compliance to the relevant rules, regulations, instructions, policies, procedures and laws relevant to the activity

SEMRES217

Assist with establishing compliance with specifications for signalling equipment



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