

Information for users

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Alternatively, you may use the search facility to search for a specific document by using the complete document reference number – such as NR/L3/SIG/30082/002 – in the search field.

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Issue:	9
Date:	5 March 2016
Compliance date:	4 June 2016

Level 3

Work Instruction

Signal Maintenance Testing Handbook

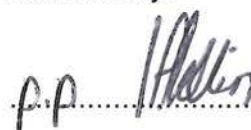
Endorsement and Authorisation

Endorsed by:



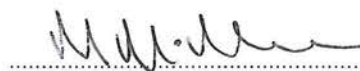
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Documents

Document Sharing Hub

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User information

This Network Rail standard contains colour-coding according to the following Red–Amber–Green classification.

Red requirements – no variations permitted

- Red requirements are to be complied with and achieved at all times.
- Red requirements are presented in a red box.
- Red requirements are monitored for compliance.
- Non-compliances will be investigated and corrective actions enforced.

Amber requirements – variations permitted subject to approved risk analysis and mitigation

- Amber requirements are to be complied with unless an approved variation is in place.
- Amber requirements are presented with an amber sidebar.
- Amber requirements are monitored for compliance.
- Variations can only be approved through the national non-compliance process.
- Non-approved variations will be investigated and corrective actions enforced.

Green guidance – to be used unless alternative solutions are followed

- Guidance should be followed unless an alternative solution produces a better result.
- Guidance is presented with a dotted green sidebar.
- Guidance is not monitored for compliance.
- Alternative solutions should be documented to demonstrate effective control.

Amendment marks

- First document amendments are presented with a single black line to the right of the affected text.
- Second document amendments are presented with a double black line to the right of the affected text.

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Issue record

Issue	Date	Comments
6	March 2016	Updated for new and amended SMTH Items

Compliance

This Network Rail standard is mandatory and shall be complied with by Network Rail and its contractors if applicable from 4 June 2016.

Disclaimer

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1 Purpose

This document contains the index to the Signal Maintenance Testing (NR/SMTH).

The SMTH provides a maintenance testing regime for the replacement or installation of signalling equipment that does not affect the application logic of the system, or the controls of the system that have previously been tested to signal works testing specifications.

2 Scope

Signalling equipment that is replaced or renewed on a like for like basis under corrective maintenance, temporary design as a result of an incident or engineering works and minor signalling renewals that do not affect the application logic of the system or the controls of the system that have previously been tested to signal works testing specifications.

3 Definitions

Definition	Meaning
Application Logic	Any technology based method that configures a product so as to provide site specific command and control instructions. Application logic includes: a) mechanical logic (e.g. in lever frames); b) electro-mechanical logic (e.g. in relay interlocking); c) electronic switching or code (e.g. in electronic interlocking, telephone concentrators or cab secure radio); d) any combination of the above.
Maintenance Testing	Known also as Like-for-Like replacement. The removal and restoration of a product in a previously operational system, where the work does not change the configuration or functionality of the system. Engineering details are not provided for the work, and instead the existing infrastructure records are used as the reference documents. Typically, such work is carried out to replace/repair defective or life-expired products. The work may involve replacing the original item of equipment with the exact same new or refurbished item or replacing it with a different make that is identical in all areas (apart from visual appearance) to the original. Work undertaken by maintenance testing shall not exceed the definition of extensive and simultaneous, as shown in SMTH Part 2 clause 4.1.
Works Testing	Works testing consists of the construction/installation of new or modified products and/or application logic where the work changes, or potentially changes, the configuration or functionality of the system. The work is carried out in accordance with engineering details supplied for the purpose. For the purposes of this document, the definition includes: a) the installation of totally new systems;

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Definition	Meaning
	b) the alteration of existing systems; and c) the abolition (also known as 'recovery') of existing systems.
Maintenance Tester	An individual with the competencies and authority to work appropriate to the required work assigned to specify and/or perform the tests necessary to ensure that the physical implementation of a design is correct and meets all the specified test and acceptance criteria.
Test Plan	A test plan comprises any document or suite of documents that determines and defines the processes, resources and specifications required for the testing and commissioning of a product at a specific location.

4 Index of NR/SMTH Suite

The indexes show the latest (current) issues of the individual SMTH documents.
Updated NR/SMTH documents take time to introduce into service due to briefing and the requirement to implement at the correct point in the maintenance cycle.

Compliance shall be achieved by the date shown, but the SMS may be implemented and the previous version withdrawn on or before the compliance date.

4.1 NR/SMTH/Part 01 – Reference Documents & Definitions

Section	Description	Issue No.	Issue Date	Compliance Date
Index		03	06/09/14	07/03/15
Appendix A	References	06	02/03/13	07/09/13
Appendix B	Signal Maintenance Testing Related Documents	06	06/09/14	07/03/15
Appendix E	Action Definitions	02	02/03/13	07/09/13

4.2 NR/SMTH/Part 02 – SMT Process

Section	Description	Issue No.	Issue Date	Compliance Date
Index		03	05/03/16	04/06/16
Part 02	Introduction and Overview	07	05/03/16	04/06/16
Appendix A	Maintenance Testing Guidance	05	05/03/11	03/09/11
Appendix B	Test Plan Requirements	05	05/03/11	03/09/11
Appendix C	Test Record Requirements	07	05/03/16	04/06/16
Appendix C01	Maintenance Test Plan Tick Sheet	01	05/03/11	03/09/11

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Appendix D	Diversion of Circuits and Cable Renewal	02	02/03/13	07/09/13
Appendix D01	Cable Core Temporary Label	01	05/03/11	03/09/11
Appendix E	Procedure for Monitoring a Damaged Cable	01	05/03/11	03/09/11

4.3 NR/SMTH/Part 03 – Defined Checks & Tests

Section	Description	Issue No.	Issue Date	Compliance Date
Index		03	05/03/16	04/06/16
Part 03	Defined Checks and Tests	05	05/03/11	03/09/11
Check A01	Defined Check: Check for Correct Type	05	05/03/11	03/09/11
Check A02	Defined Check: Check for Damage	05	05/03/11	03/09/11
Check A03	Defined Check: Check for Safe Insulation	05	05/03/11	03/09/11
Check A04	Defined Check: Check for Correct Installation	05	05/03/11	03/09/11
Check A05	Defined Check: Check for Isolation	05	05/03/11	03/09/11
Check A06	Defined Check: Check for Correct Labelling	05	05/03/11	03/09/11
Check A07	Defined Check: Correlation Check	05	05/03/11	03/09/11
Test B01	Defined Test: Wire Count	05	05/03/11	03/09/11
Test B01 Appendix A	Wire Count Grid Sheet	01	05/03/11	03/09/11
Test B02	Defined Test: Continuity Test	05	05/03/11	03/09/11
Test B03	Defined Test: Insulation Test	06	05/03/16	04/06/16
Test B04	Defined Test: Cable Function Test	05	05/03/11	03/09/11
Test B05	Defined Test: Earth Test (DC up to a nominal 120V)	05	05/03/11	03/09/11
Test B06	Defined Test: Earth Test (AC up to a nominal 110V)	05	05/03/11	03/09/11
Test B07	Defined Test: Aspect Test	05	05/03/11	03/09/11
Test B08	Defined Test: Point Detection and	06	06/09/14	07/03/15

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	Correspondence Test			
Test B08 Appendix A	Point Permutation Chart: One Point End	01	05/03/11	03/09/11
Test B08 Appendix B	Point Permutation Chart: Two Point Ends	01	05/03/11	03/09/11
Test B08 Appendix C	Point Permutation Chart: Three Point Ends	01	05/03/11	03/09/11
Test B08 Appendix D	Point Permutation Chart: Four Point Ends	01	05/03/11	03/09/11
Test B08 Appendix E	Point Permutation Chart: Five Point Ends	01	05/03/11	03/09/11
Test B08 Appendix F	Point Permutation Chart: Six Point Ends	01	05/03/11	03/09/11
Test B09	Defined Test: Absolute Block Controls Test	05	05/03/11	03/09/11
Test B10	Defined Test: Tokenless Block Controls Test (BRB Type)	05	05/03/11	03/09/11
Test B11	Defined Test: Tokenless Block Controls Test (Open/Sealed Cancel Type)	05	05/03/11	03/09/11
Test B12	Defined Test: Tokenless Block Controls Test (Direction Lever)	05	05/03/11	03/09/11
Test B13	Defined Test: Token Block Controls Test	05	05/03/11	03/09/11
Test B14	Defined Test: Tablet Block Controls Test	05	05/03/11	03/09/11
Test B15	Defined Test: No Signaller Key-Token Block Controls Test	05	05/03/11	03/09/11
Test B16	Defined Test: No Signaller Token Remote (NSTR), No Signaller Token (NST) Block Controls Test	05	05/03/11	03/09/11
Test B17	Defined Test: Absolute Block Recovery Test	05	05/03/11	03/09/11
Test B18	Defined Test: Tokenless Co-operative Cancel Test (Direction Lever)	05	05/03/11	03/09/11
Test B19	Defined Test: FREDDY Test	05	05/03/11	03/09/11
Test B20	Defined Test: TPWS Trackside	05	05/03/11	03/09/11