



EMC Management



Train Control Systems Standard



This Australian Standard® AS 7722 EMC Management was prepared by a RISSB Development Group consisting of representatives from the following organisations:

- Asset Standards Authority (TfNSW)
- ARTC
- Metro Trains Melbourne
- John Aitken & Partners

The Standard was approved by the Development Group and the Train Control Systems Standing Committee in May, 2016. On June 15, 2016 the RISSB Board approved the Standard for release.

This standard was issued for public review and was independently validated before being approved.

Development of the standard was undertaken in accordance with RISSB's accredited process, which includes the independent validation mentioned earlier. As part of the approval process, the Standing Committee verified that proper process was followed in developing the standard.

RISSB wishes to acknowledge the positive contribution of subject matter experts in the development of this standard. Their efforts ranged from membership of the EMC Development Group through to individuals providing comment on a draft of the standard during the public review.

I commend this standard to the Australasian Rail Industry as it represents industry good practice and has been developed through a rigorous process.



Paul Daly
Chief Executive Officer
Rail Industry Safety and Standards Board

Keeping Standards up-to-date

Australian Standards developed by RISSB are living documents that reflect progress in science, technology and systems. To maintain their currency, Standards are reviewed every seven years, and new editions are published. Between editions, amendments may be issued. Australian Standards developed by RISSB may also be withdrawn.

It is important that readers assure themselves they are using a current RISSB Standard, which should include any amendments that may have been issued since the Standard was published. Information about Australian Standards developed by RISSB, including amendments, can be found by visiting www.rissb.com.au

RISSB welcomes suggestions for improvements, and asks readers to notify us immediately of any apparent inaccuracies or ambiguities. Members are encouraged to use the change request feature of the RISSB website at: <http://www.rissb.com.au/products/>. Otherwise, please contact us via email at rissb@rissb.com.au or write to Rail Industry Safety and Standards Board, PO Box 4271, Kingston, ACT 2604.

AS 7722:2016

EMC Management

Document Details

First published as: AS 7722:2016 EMC Management

ISBN 978-1-76035-530-2

Published by Rail Industry Safety and Standards Board (RISSB) ABN: 58 105 001 465

PO Box 4271, Kingston, ACT, Australia 2604

Copyright

©RISSB

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of RISSB, unless otherwise permitted under the Copyright Act 1968.

Notice to Users

This RISSB product has been developed using input from rail experts from across the rail industry and represents good practice for the industry. The reliance upon or manner of use of this RISSB product is the sole responsibility of the user who is to assess whether it meets their organisation's operational environment and risk profile.

Document Control

Identification

Document Title
AS 7722:2016 EMC Management

Document History

Publication Version	Effective Date	Reason for and Extent of Change(s)
2016	June 15, 2016	First Publication

Authoring and Approval

Name	Date
Approved Rail Industry Safety and Standards Board (RISSB)	15/06/2016

Contents

1	Introduction.....	6
1.1	Purpose	6
1.2	Scope	6
1.3	Application.....	6
1.4	Justification.....	7
1.5	Compliance.....	7
1.6	Referenced documents	7
1.7	Definitions.....	10
1.8	Acronyms.....	11
2	EMC Management Requirements	13
2.1	EMC Management Planning Requirements.....	13
2.1.1	General.....	13
2.1.2	Responsibility and competence.....	13
2.1.3	Policy, Plans and Processes	13
2.2	Legislative and Safety Requirements.....	13
2.3	Standards Compliance	13
2.3.1	General.....	13
2.3.2	Lightning Protection.....	14
2.3.3	Rolling Stock.....	14
2.3.4	Fixed Electrical Installations	15
2.3.5	Fixed Telecommunications.....	15
2.4	EMC Interface Management.....	15
2.4.1	General.....	15
2.4.2	Intra-system Interfaces.....	15
2.4.3	Inter-system and Environment Interfaces.....	15
2.4.4	EMC Threat Matrix	15
2.5	Human Effects	16
2.6	EMC and New Product Type Approval.....	16
2.7	Functional Safety.....	16
2.8	EMC in Design and Construction	16
2.8.1	General.....	16
2.8.2	Design	16
2.8.3	Construction	17
2.9	EMC in Testing and Commissioning	17
2.9.1	Test Planning.....	17
2.9.2	Test Execution.....	17
2.9.3	Third party works.....	17
2.9.4	Test reporting	18
2.10	EMC in Maintenance	18

2.10.1	Maintenance planning	18
2.10.2	Maintenance execution.....	18
2.10.3	Configuration Management During Maintenance	18
2.11	EMC in Decommissioning	18
2.11.1	Decommissioning Planning	18
2.11.2	Configuration Management During Decommissioning	19
2.12	EMC Management Records	19

Appendix Contents

Appendix A	EMC Threat Matrix (Unmitigated Risk).....	20
Appendix B	EMC Control Plan Contents (Example).....	21
Appendix C	EMC Test Plan Contents (Example).....	22
Appendix D	Guidance for integrators and regulators (informative).....	23
Appendix E	Relevant hazards addressed by this standard	24

EMC Management
Preview

1 Introduction

1.1 Purpose

The purpose of this standard is to define requirements for the management of electromagnetic emissions and susceptibility of devices used in the railway so that all systems used in the railway are electromagnetically compatible.

These requirements define the minimum effort required to manage the risk associated with EMC and to ensure compliance with legal and regulatory, safety and reliability requirements; particular situations may require more detailed assessment.

Advisory information is also provided to support mandatory requirements

Rail Transport Operators (RTOs) remain responsible for ensuring that any EMC risks introduced by new or altered systems and products are controlled so far as is reasonably practicable (SFAIRP).

1.2 Scope

The scope of this document covers requirements for the management of EMC as applicable to:

- (a) Planning EMC management
- (b) Introduction of new rail assets (new products or integrated systems)
- (c) Alterations to existing rail assets (existing products or integrated systems)
- (d) Novel alterations to existing rail system configurations or layouts
- (e) Maintenance of operational rail systems
- (f) Decommissioning of rail systems

The scope of this standard is limited to rail systems and assets under the scope and control of the Australian railway networks. This scope includes potential EMC issues existing or introduced between the Australian railway network and any third parties, as a result of action by Australian railway network assets, for example as discussed in AS 2344.

This document will assist RTOs to apply harmonised management of EMC risks to meet their legal and regulatory obligations.

Heritage railways are excluded from this standard, unless there is a physical and operational interface with a non-heritage railway that may affect EMC.

1.3 Application

This standard applies to organisations engaged in provision of engineering services over the full asset lifecycle for the whole railway, covering all internal and external interfaces.

This standard is intended to be applied by Railway Infrastructure Managers (RIM), Rolling Stock Operators (RSO) and the supply chain involved in provision of railway systems and products.

This standard is intended to be applied for introducing new or altered systems and products; it is not intended to be applied retrospectively.

Not all requirements in this standard will apply to every organisation on every project. The need for compliance depends on where in the asset lifecycle the engineering services are provided, and the type of systems or products to be implemented.

While the management of EMC rests predominantly with electrical and electronic systems, it is important to note that other infrastructure has an impact on establishing and maintaining EMC