



Transport
for NSW

T HR RS 00860 ST

Standard

RSU Appendix F - Communication System

Version 1.0

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Standard governance

Owner: Lead Engineer Rolling Stock, Asset Standards Authority
Authoriser: Chief Engineer Rail, Asset Standards Authority
Approver: Director, Asset Standards Authority on behalf of ASA Configuration Control Board

Document history

Version	Summary of change
1.0	First issue

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Preface

The Asset Standards Authority (ASA) is an independent unit within Transport for NSW (TfNSW) and is the network design and standards authority for defined NSW transport assets.

The ASA is responsible for developing engineering governance frameworks to support industry delivery in the assurance of design, safety, integrity, construction, and commissioning of transport assets for the whole asset life cycle. In order to achieve this, the ASA effectively discharges obligations as the authority for various technical, process, and planning matters across the asset life cycle.

The ASA collaborates with industry using stakeholder engagement activities to assist in achieving its mission. These activities help align the ASA to broader government expectations of making it clearer, simpler, and more attractive to do business within the NSW transport industry, allowing the supply chain to deliver safe, efficient, and competent transport services.

The ASA develops, maintains, controls, and publishes a suite of standards and other documentation for transport assets of TfNSW. Further, the ASA ensures that these standards are performance based to create opportunities for innovation and improve access to a broader competitive supply chain.

This document supersedes RailCorp standard ESR 0001-F - *Minimum Operating Standards for Rolling Stock – Appendix F - Communication System*, version 1.0. The changes to previous content include the following:

- replacement of RailCorp organisation roles and processes with those applicable to the current ASA organisational context
- minor amendments and clarification to content
- conversion of the standard to ASA format and style

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1. Introduction

Vehicles and trains shall generate no energy capable of interfering with the signalling and communications equipment operating within the RailCorp network.

1.1. Copper communication cables

Copper communication cables are primarily used for local distribution of services from nodes fed by optic fibre cables. These services include both telephone and digital data services.

Frequencies in use range from dc to 2 MHz ac plus harmonics.

1.1.1. Cable construction and installation

New cable is of unit twin, jelly filled construction, with a moisture barrier sheath but no screening. The capacitance unbalance to earth for these cables is typically less than 1%.

There is a small (and decreasing) amount of screened quad cable still in use.

In the Sydney metropolitan area, many of the cable routes are above ground in troughing and drawings are not always available. Cable route plans of buried cables are available if required. Cable routes may be anywhere within (and at times are outside) the railway easement, but are typically close to the boundary fence line on one or both sides of the easement.

2. Railway radio systems

Radio systems to be considered from an interference viewpoint include MetroNet, without brake-van radio system (WB), government radio network (GRN), police radio, station radio, worksite radio and the digital train radio system (DTRS).

MetroNet operates in the 403 MHz – 420 MHz band on 12.5 kHz spaced analogue channels.

WB is a simplex single analogue channel system operating at 450.05 MHz.

GRN operates in the 403 MHz – 420 MHz band on 12.5 kHz spaced analogue channels, and is migrating to digital.

Police radio operates in the 450 MHz – 470 MHz band on 12.5 kHz spaced analogue channels, and is migrating to digital.

Station radio operates in the 400 MHz – 470 MHz band on 12.5 kHz spaced analogue channels.

Worksite radio operates in the 450 MHz – 470 MHz band on 12.5 kHz spaced analogue channels.

The DTRS is a global system for mobile communications – railway (GSM-R) circuit switched system that operates in the 1800 MHz band. On commissioning this system will replace the

MetroNet train radio system. The system operates in the following frequency bands: 1770 MHz – 1785 MHz, and 1865 MHz – 1880 MHz.

Interference to and from external public carrier networks and other radio services should also be considered.

3. Interference tests

Type tests shall be conducted using the train set to measure vehicle generated disturbance effects in signalling track circuits, telecommunication cables, and line side telecommunication systems.

Refer to T HR RS 00200 ST, section 33, *Signal and communication system interference test – RSU 296* and to T HR SC 00006 ST *Rolling Stock Signalling Interface Requirements*.