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Translation

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Railway radio equipment

Technical specifications

Équipement radioélectrique du Chemin de fer

Spécifications techniques

Technische Vorschriften für Funkeinrichtungen im Eisenbahnbetrieb



UNION INTERNATIONALE DES CHEMINS DE FER
INTERNATIONALER EISENBAHNVERBAND
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Important: the articles (points) in this leaflet have been renumbered in the new edition. The first digit of each point has been increased by one (i.e. 0 becomes 1, 1 becomes 2, and so on). Please take account of this when using cross-reference from other leaflets.

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Summary

This leaflet describes the technical rules governing analogue radio equipment in the rail sector.

The leaflet does not detail the specific conditions for digital radio operations nor technical regulations governing GSM-R.

The leaflet describes first of all the general framework conditions and refers to national regulations in force and corresponding national and international standards. The different characteristics of the radio links are then listed.

The next section refers to regulations governing radio equipment utilisation and interference reduction. Regulations for the protection of personnel from dangerous electrical currents as well as regulations governing rail applications are also mentioned.

Conditions specific to the railway environment, such as supply voltage for fixed stations, vehicle-mounted sets as well as portable sets and the required temperature ranges, are listed and explained.

Chapter 3 goes on to describe other environmental conditions such as vibrations, shocks, dust, water, humidity and recommends corresponding degrees of protection.

A further paragraph defines a minimum performance rating to protect against intermodulation effects.

The leaflet then looks at type testing as carried out by the national regulatory authorities as well as aptitude testing by the railways. This chapter gives details of operational tests under extreme supply voltage and within different predefined temperature ranges.

Further parameters for vibrations and shocks are also mentioned, such as tests for checking the different degrees of protection. Before the final operational test is mentioned, values are defined for radio-electric characteristics.

Chapter 6 describes the reliability of the radio sets, e.g. MTBF, accelerated ageing, temperature test, shock and vibration test and minimum values as well as permanent testing of sets and equipment.

The test programme ends with a final check after accelerated ageing.

As stated above, digital radio equipment is not covered by this leaflet. As such, an additional leaflet describing the same requirements for this type of equipment will be necessary.

1 - General

The use of radio communications by the railways is covered by *UIC Leaflet 750* (see Bibliography - page 15).

The present leaflet:

- provides recommendations and technical specifications for radio equipment for land mobile services,
- describes the environmental conditions in which radio equipment has to operate on the railways,
- recommends additional checks on the radio sets and equipment to ensure that they are suitable for railway service.

As far as the railway environment is concerned, only typical values are indicated which could apply to most radio equipment. Values which are encountered only rarely or extreme typical values (for example vibrations on a tamping machine) are not included in the leaflet. The railways should stipulate these in each specific case.

This leaflet refers to the following recommendations and provisions:

- National regulations of the Post and Telecommunications Administrations for mobile radio equipment;
- IEC (International Electrotechnical Commission) - Publications 364-4-41, 529 and 571;
- National standards corresponding to these IEC Publications.