

**EMI in the Railway Environment: The Experience of Rete Ferroviaria Italiana S.p.A.
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Abstract:

New electrical and electronic technology applications in power supply and signalling railway systems are going to increase dramatically, in the next future, electromagnetic complexity of the whole railway infrastructure and vehicle environment. Thus, studies of the interaction between on board new technologies and infrastructure signaling installations have become more and more important both from the technical and the economical point of view.

Accordingly, RFI has undertaken investigations in order to assess potential EMC problems related to electromagnetic interaction between the 25 kV- 50 Hz power supply system and the new kind of audio-frequency track circuits (adopted in the new high speed lines of the Italian Railway System) and the existing equipment installed on the traditional railway network supplied with 3 kV dc, in case of interconnection or close proximity of the two types of infrastructure. Recent results based on experimental characterization of the railway environment allow quantitative verification of the EM interaction between 25kV ac and 3kVdc systems and provide guidelines for controlling the immunity level of AF track circuits. In particular, technical provisions and precautions against worst-case EMI environments have been successfully tested.