
**Road vehicles — Electrical disturbances
from conduction and coupling —**

**Part 1:
Definitions and general considerations**

*Véhicules routiers — Perturbations électriques par conduction et par
couplage —*

Partie 1: Définitions et généralités



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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this part of ISO 7637 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 7637-1 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 3, *Electrical and electronic equipment*.

This second edition of ISO 7637-1 cancels and replaces ISO 7637-0:1990, which has been technically revised. The first editions of ISO 7637-1 and ISO 7637-2 (both published in 1990) have been combined to form the second edition of ISO 7637-2.

ISO 7637 consists of the following parts, under the general title *Road vehicles — Electrical disturbances from conduction and coupling*:

- *Part 1: Definitions and general considerations*
- *Part 2: Electrical transient conduction along supply lines only*
- *Part 3: Vehicles with nominal 12 V or 24 V supply voltage — Electrical transient transmission by capacitive and inductive coupling via lines other than supply lines*

Introduction

Electrical and radio-frequency disturbances occur during normal operation of many items of motor vehicle equipment. They are generated over a wide frequency range, and can be distributed to on-board electronic devices and systems by conduction, coupling or radiation.

In recent years, an increasing number of electronic devices for controlling, monitoring and displaying a variety of functions have been introduced into vehicle designs. It is necessary to consider the electrical and electromagnetic environment in which these devices operate and, in particular, the disturbances generated in the vehicle electrical system itself. Such disturbances can cause degradation (temporary malfunction or even permanent damage) of the electronic equipment. Moreover, "worst-case" situations are usually those resulting from disturbances generated inside the vehicle by, for example, ignition systems, generator and alternator systems, electric motors and actuators.

While narrowband signals generated on or outside the vehicle (by broadcasting and radio transmitters) can also affect the performance of electronic devices, and recognizing that protection from such potential disturbances has to be considered as part of total system certification, these matters are nevertheless outside the scope of ISO 7637 and are not covered by it.

See ISO 11451 [1] and ISO 11452 [2] for immunity to radiated disturbances for vehicles and for components, respectively, ISO 10605 [3] for immunity to electrostatic discharge (ESD).

Road vehicles — Electrical disturbances from conduction and coupling —

Part 1:

Definitions and general considerations

1 Scope

This part of ISO 7637 defines the basic terms relating to electrical disturbances from conduction and coupling used in its other parts, and gives general information on the whole of ISO 7637 and common to all parts.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 7637. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 7637 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

IEC 60050-151, *International Electrotechnical Vocabulary — Part 151: Electrical and magnetic devices*

IEC 60050-161, *International Electrotechnical Vocabulary — Chapter 161: Electromagnetic compatibility*

3 Terms and definitions

For the purposes of this part of ISO 7637, the terms and definitions given in IEC 60050-151 and the following apply.

3.1

electromagnetic compatibility

EMC

ability of equipment or system to function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic disturbance to anything in that environment

[IEC 60050-161]

3.2

electromagnetic disturbance

any electromagnetic phenomenon which may degrade the performance of a device, equipment or system, or adversely affect living or inert matter

NOTE An electromagnetic disturbance may be an electromagnetic noise, an unwanted signal or a change in the propagation medium itself.

[IEC 60050-161]