

This is a preview - click here to buy the full publication



IEC/TR 62131-1

Edition 1.0 2011-02

TECHNICAL REPORT

**Environmental conditions – Vibration and shock of electrotechnical equipment –
Part 1: Process for validation of dynamic data**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

PRICE CODE

H

ICS 19.040

ISBN 978-2-88912-380-3

CONTENTS

FOREWORD.....	3
INTRODUCTION.....	5
1 Scope.....	6
2 Normative references	6
3 Data source and quality (undertaken on a single data item).....	6
4 Intra data source comparison (undertaken on a data ensemble)	7
5 Inter data source comparison (undertaken on several data sources).....	7

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ENVIRONMENTAL CONDITIONS – VIBRATION AND SHOCK OF ELECTROTECHNICAL EQUIPMENT –

Part 1: Process for validation of dynamic data

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

The main task of IEC technical committees is to prepare International Standards. However, a technical committee may propose the publication of a technical report when it has collected data of a different kind from that which is normally published as an International Standard, for example "state of the art".

IEC/TR 62131-1, which is a technical report, has been prepared by IEC technical committee 104: Environmental conditions, classification and methods of test.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
104/506/DTR	104/535/RVC

Full information on the voting for the approval of this technical report can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all the parts in the IEC 62131 series, under the general title *Environmental conditions – Vibration and shock of electrotechnical equipment*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this standard may be issued at a later date.

INTRODUCTION

A major reservation, identified early in the work of IEC technical committee 104 (working group 15) to collate dynamic environmental data, was the lack of fully validated data sets. In the absence of fully validated dynamic information, an essentially empirical data validation procedure has had to be adopted. The process set out in this technical report is intended to be generic in nature and is normally expected to be adopted as far as is practical within the circumstances of any particular data item.

In most cases, a fully quantified validation approach is not possible; as a consequence, the alternative approach set out in this technical report has been adopted. The approach is fundamentally an exercise in building confidence that the data were acquired and analysed in a competent manner. Such confidence is essential if the data is to form a reasonable basis for establishing trends and quantifying environmental conditions. A fundamental consequence of the absence of fully validated data sets is that no single data set can be entirely relied upon to quantify any dynamic environmental condition. As will be seen, a minimum of three independent data sets are required to complete the third phase of the verification process. All of these data sets should have met the preceding two data verification phases.

The validation process is set out in three phases. The intent is that each phase builds on the one preceding it and are normally undertaken in the order indicated. The data are firstly reviewed as individual records, then as a complete data set and lastly as compared with other similar data sets. The process set out in this technical report retains some quantitative requirements but becomes increasingly more subjective as the process proceeds.

The process, as set out, is neither novel nor innovative but is rather the logical check list that the majority of assessors of dynamical data work through prior to utilizing any measured information. The process as described below is primarily that for vibration data; the process for shock is essentially identical.

The verification process as described within this technical report is intrinsically embedded within the technical reports which assess the available measured dynamic data from various sources. In those reports the verification process is undertaken prior to the derivation of any environmental descriptions or test severity derivation. The verification process is not used to reject data but rather to categorize confidence in that data. In the assessment reports, the three phases of verification are undertaken under the headings “Data source and quality”, “Intra data source comparison” and “Inter data source comparison”. Under these headings the reports summarize how well each data source meets the criteria set out in this technical report.

ENVIRONMENTAL CONDITIONS – VIBRATION AND SHOCK OF ELECTROTECHNICAL EQUIPMENT –

Part 1: Process for validation of dynamic data

1 Scope

IEC/TR 62131-1, which is a technical report, reviews the essentially empirical data validation procedure adopted to establish confidence in the data utilized by the other Parts of IEC/TR 62131. The adoption of a validation procedure was necessary, due the lack of fully validated data sets.

This technical report is intended to be generic in nature and is normally expected to be adopted as far as is practical within the circumstances of any particular data item.