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

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ENVIRONMENTAL CONDITIONS – VIBRATION AND SHOCK OF ELECTROTECHNICAL EQUIPMENT –

Part 1: Process for validation of dynamic data

FOREWORD

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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- withdrawn,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.