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**Essais d'environnement –**

**Partie 3-8:  
Documentation d'accompagnement  
et lignes directrices –  
Sélection d'essais de vibrations**

**Environmental testing –**

**Part 3-8:  
Supporting documentation and guidance –  
Selecting amongst vibration tests**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ENVIRONMENTAL TESTING –**

**Part 3-8: Supporting documentation and guidance –  
Selecting amongst vibration tests**

FOREWORD

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International Standard IEC 60068-3-8 has been prepared by IEC technical committee 104: Environmental conditions, classification and methods of test.

The text of this standard is based on the following documents:

|              |                  |
|--------------|------------------|
| FDIS         | Report on voting |
| 104/308/FDIS | 104/324/RVD      |

Full information on the voting for the approval of this standard 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.

It has the status of a basic safety publication in accordance with IEC Guide 104.

The committee has decided that the contents of this publication will remain unchanged until 2007. At this date, the publication will be

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- withdrawn;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

IEC 60068 consists of the following parts, under the general title *Environmental testing*:

Part 1: General and guidance

Part 2: Tests

Part 3: Supporting documentation and guidance

Part 4: Information for specification writers – Test summaries

Part 5: Guide to drafting of test methods

## INTRODUCTION

Components, equipment and other electrotechnical products, hereinafter called specimens, can be subjected to different kinds of vibration during manufacture, transportation or in service. In the IEC 60721-3 standards, those different vibration environments are tabulated into classes characterizing stationary and transient vibration conditions. The standards in the IEC 60068-2 series describe methods for testing with stationary or transient vibration. There will be three standards in the IEC 60068-2 series for environmental testing that specify test methods employing stationary vibration:

Part 2-6 Test Fc: Vibration (sinusoidal),

Part 2-64 Test Fh: Vibration, broad-band random (digital control) and guidance, and

Part 2-80 Test F-: Mixed mode testing<sup>1</sup>

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<sup>1</sup> Under consideration.

## ENVIRONMENTAL TESTING –

### Part 3-8: Supporting documentation and guidance – Selecting amongst vibration tests

#### 1 Scope

This part of IEC 60068 provides guidance for selecting amongst the IEC 60068-2 stationary vibration test methods  $F_c$  sinusoidal,  $F_h$  random and  $F(x)$  Mixed mode vibration. The different steady-state test methods and their aims are briefly described in Clause 4. Transient test methods are not included.

For vibration testing, the environmental conditions, especially the dynamic conditions for the specimen, should be known. This standard helps to collect information about the environmental conditions (Clause 5), to estimate or measure the dynamic conditions (Clause 6) and gives examples to enable decisions to be made on the most applicable environmental vibration test method. Starting from the condition, the method of selecting the appropriate test is given. Since real life vibration conditions are dominated by vibration of a random nature, random testing should be the commonly used method, see Table 1, Clause 7.

The methods included hereafter may be used to examine the vibration response of a specimen under test before, during and after vibration testing. The selection for the appropriate excitation method is described in Clause 8 and tabulated in Table 2.

In this standard specification, writers will find information concerning vibration test methods and guidance for their selection. For guidance on test parameters, or severities of one of the test methods, reference should be made to the normative references.

#### 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60068-1, *Environmental testing – Part 1: General and guidance*

IEC 60068-2-6, *Environmental testing – Part 2-6: Tests – Test  $F_c$ : Vibration (sinusoidal)*

IEC 60068-2-64, *Environmental testing – Part 2-64: Test methods – Test  $F_h$ : Vibration, broad-band random (digital control) and guidance*

IEC 60068-2-80, *Environmental testing – Part 2-80: Tests – Test  $F$  -: Mixed mode testing*<sup>2</sup>

IEC 60721-3 (all parts), *Classification of environmental conditions – Part 3: Classification of groups of environmental parameters and their severities*

IEC 60721-4 (all parts), *Classification of environmental conditions – Part 4: Guidance for the correlation and transformation of environmental condition classes of IEC 60721-3 to the environmental tests of IEC 60068-2*

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<sup>2</sup> Under consideration.

*IEC Guide 104:1997, The preparation of safety publications and the use of basic safety publications and group safety publications*

ISO 2041, *Vibration and shock – Vocabulary*

ISO 5348, *Mechanical vibration and shock – Mechanical mounting of accelerometers*