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## Filters using waveguide type dielectric resonators –

### Part 2: Guidance for use

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**FILTERS USING WAVEGUIDE TYPE DIELECTRIC RESONATORS –**

**Part 2: Guidance for use**

FOREWORD

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International Standard IEC 61337-2 has been prepared by IEC technical committee 49: Piezoelectric and dielectric devices for frequency control and selection.

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

FDIS	Report on voting
49/665/FDIS	49/683/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.

IEC 61337 consists of the following parts under the general title *Filters using waveguide type dielectric resonators*:

- Part 1: Generic specification;<sup>1</sup>
- Part 1-1: General information, standard values and test conditions – General information and standard values;<sup>2</sup>
- Part 1-2: General information, standard values and test conditions – Test conditions;<sup>2</sup>
- Part 2: Guidance for use;
- Part 3: Standard outlines<sup>3</sup>.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result 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- withdrawn;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 may be issued at a later date.

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1 To be published.

2 To be merged and replaced by IEC 61337-1 in the near future.

3 Under consideration.

## INTRODUCTION

This part of IEC 61337 gives practical guidance on the use of filters using waveguide type dielectric resonators that are used in telecommunications and radar systems. Refer to IEC 61337-1-1 and IEC 61337-1-2 for general information, standard values and test conditions.

These dielectric filters have the features of small size, low loss, high reliability and high stability against temperature and ageing. Dielectric filters are suitable for applications such as mobile communication service, mobile satellite communication service, microwave terrestrial communication service, and fixed satellite communication service. In particular, they are now widely used for duplexers and filters of portable phones and cellular base stations.

This standard has been compiled in response to a generally expressed desire on the part of both users and manufacturers for guidance for the use of filters using waveguide type dielectric resonators, so that the filters may be used to their best advantage. For this purpose, general and fundamental characteristics have been explained in this standard.

# FILTERS USING WAVEGUIDE TYPE DIELECTRIC RESONATORS –

## Part 2: Guidance for use

### 1 Scope

The scope of this part of IEC 61337 is limited to filters using waveguide type dielectric resonators that are used for microwave applications such as portable phones, cellular base stations and radio links.

It is not the aim of this standard either to explain the theory or to attempt to cover all the eventualities that may arise in practical circumstances. This standard draws attention to some of the more fundamental questions which should be considered by the user before he places an order for dielectric filters for a new application. Such a procedure will be the user's insurance against unsatisfactory performance.

Standard specifications, such as those given in IEC 61337, and national specifications or detail specifications issued by manufacturers, will define the available combinations of mid-band frequency, pass band, insertion attenuation, pass-band ripple, return attenuation, spurious response, operating power, and so on. These specifications are compiled to include a wide range of dielectric filters with standardized performances. It cannot be over-emphasized that the user should, wherever possible, select his dielectric filters from these specifications, when available, even if it involves making small modifications to his circuit to enable standard filters to be used.

### 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 60068-1:1988, *Environmental testing – Part 1: General and guidance*

IEC 60068-2-1:1990, *Environmental testing – Part 2: Tests. Tests A – Cold*

IEC 60068-2-2:1974, *Environmental testing – Part 2: Tests. Tests B – Dry heat*

IEC 60068-2-3:1995, *Environmental testing – Part 2: Tests. Test Fc: Vibration (sinusoidal)*

IEC 60068-2-7:1983, *Environmental testing – Part 2: Tests. Test Ga: Acceleration, steady state*

IEC 60068-2-13:1983, *Environmental testing – Part 2: Tests. Test M: Low air pressure*

IEC 60068-2-14:1984, *Environmental testing – Part 2: Tests. Test N: Change of temperature*

IEC 60068-2-20:1979, *Environmental testing – Part 2: Tests. Test T: Soldering*

IEC 60068-2-21:1999, *Environmental testing – Part 2-21: Tests – Test U: Robustness of terminations and integral mounting devices*

IEC 60068-2-27:1987, *Environmental testing – Part 2: Tests. Test Ea and guidance: Shock*

IEC 60068-2-30:1980, *Environmental testing – Part 2: Tests. Test Db and guidance: Damp heat, cyclic (12 + 12-hour cycle)*

IEC 60068-2-58:1999, *Environmental testing – Part 2-58: Tests – Test Td – Test methods for solderability, resistance to dissolution of metallization and to soldering heat of surface mounting devices (SMD)*

IEC 60068-2-78:2001, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state*

IEC 61337-1-1, *Filters using waveguide type dielectric resonators – Part 1-1: General information, standard values and test conditions – General information and standard values*

IEC 61337-1-2, *Filters using waveguide type dielectric resonators – Part 1-2: General information, standard values and test conditions – Test conditions*