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Measurement of quartz crystal unit parameters –

Part 9:
Measurement of spurious resonances of piezoelectric crystal units

International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch

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Part 9: Measurement of spurious resonances of piezoelectric crystal units

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International Standard IEC 60444-9 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
49/764/FDIS	49/774/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.

A list of all parts of IEC 60444 series, published under the general title *Measurement of quartz crystal unit parameters,* can be found on the IEC website.

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- withdrawn,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 of this standard may be issued at a later date.

MEASUREMENT OF QUARTZ CRYSTAL UNIT PARAMETERS –

Part 9: Measurement of spurious resonances of piezoelectric crystal units

1 Scope

This part of IEC 60444 describes two methods for determining the spurious (unwanted) modes of piezoelectric crystal resonators. It extends the capabilities and improves the reproducibility and accuracy compared to previous methods.

The previous methods described in IEC 60283 (1968) were based on the use of a measuring bridge, which applies to non-traceable components such as variable resistors and a hybrid transformer, which are no longer commercially available.

Method A (Full parameter determination)

Full parameter determination allows the determination of the equivalent parameters of the spurious resonances and is based on the methods described in IEC 60444-5 using the same measurement equipment. It is the preferred method which can be applied to the measurement of low and medium impedance spurious resonances up to several kΩ.

Method B (Resistance determination)

Resistance determination should be used for the determination of high impedance spurious resonances as specified, for example for certain filter crystals. It uses the same test equipment as method A in conjunction with a test fixture, which consists of commercially available microwave components such as a 180° hybrid coupler and a 10 dB attenuator, which are well-defined in a 50 Ω environment. This method is an improvement to the “reference method” of the obsolete IEC 60283.