

Quartz crystal controlled oscillators of assessed quality —

Part 6: Phase jitter measurement method for quartz crystal oscillators and SAW oscillators — Application guide

ICS 31.140

National foreword

This Draft for Development is the UK implementation of IEC/PAS 60679-6:2008.

This publication is not to be regarded as a British Standard.

It is being issued in the Draft for Development series of publications and is of a provisional nature. It should be applied on this provisional basis, so that information and experience of its practical application can be obtained.

A PAS is a Technical Specification not fulfilling the requirements for a standard, but made available to the public and established in an organization operating under a given procedure.

A review of this Draft for Development will be carried out not later than three years after its publication.

Notification of the start of the review period, with a request for the submission of comments from users of this Draft for Development, will be made in an announcement in the appropriate issue of *Update Standards*. According to the replies received, the responsible BSI Committee will judge whether the validity of the PAS should be extended for a further three years or what other action should be taken and pass their comments on to the relevant international committee.

Observations which it is felt should receive attention before the official call for comments will be welcomed. These should be sent to the Secretary of the responsible BSI Technical Committee at British Standards House, 389 Chiswick High Road, London W4 4AL.

The UK participation in its preparation was entrusted to Technical Committee EPL/49, Piezoelectric devices for frequency control and selection.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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and SAW oscillators – Application guide**

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INTRODUCTION

With the advance of information and telecommunication technologies, such information and telecommunication devices as measuring instruments and computers have played important roles in society. Recently, these devices have been digitized and proliferated on a worldwide basis. For these devices, crystal oscillators with low phase noise are necessary. This standard deals with the phase jitter measurement method.

International standardization of industrial standards regarding electronic devices is conducted by many technical committees in the International Electrotechnical Commission (IEC), located in Geneva. TC 49 works on standardization of international trade regarding piezoelectric and dielectric devices for frequency control and selection. There are 10 working groups (WG) in TC49, and WG6 formulates and deliberates international standards regarding measurement methods.

The special committee for piezoelectric and dielectric devices for frequency control and selection in the standard investigatory panel of the electronic information communication society has been working as a domestic deliberative body of IEC/TC49. The activities of the domestic committee for TC49/WG6 are conducted in the measurement method committee of the technical committee in the Quartz Industry Association of Japan (QIAJ) which consists of crystal device manufacturers.

This PAS was formulated as QIAJ technical standard QIAJ-B-011. Phase jitter is a kind of electronic noise. Other major electronic noise is phase noise. Therefore, the IEC document should cover both phase jitter and phase noise. However, the phase noise measurement method has not yet been organized completely. Taking into account the fact that the phase jitter measurement method is increasingly important due to the advance in digitization, we considered that we should proceed with the standardization without waiting for the completion of the study of the phase noise measurement method so that the phase jitter measurement method can be used in as wide a range as possible. In this context, we requested the technical committee of the QIAJ to formulate a standard. As a result, the guideline for phase jitter measurement method of crystal oscillators and SAW oscillators was prepared and this will be issued as a standard of the Standard Investigatory Panel of the Electronic Information Communication Society.

This standard is the result of collected wisdom in the field of advanced technology in Japan, and it is open to the public as a standard of the Institute of Electronics, Information and Communication Engineers. It is expected that this standard will contribute to the development of technology in this fast-growing field.

QUARTZ CRYSTAL CONTROLLED OSCILLATORS OF ASSESSED QUALITY –

Part 6: Phase jitter measurement method for quartz crystal oscillators and SAW oscillators – Application guide

1 Scope

This PAS applies to the phase jitter measurement of quartz crystal oscillators and SAW oscillators used for electronic devices and gives guidance for phase jitter that allows the accurate measurement of r.m.s. jitter.

In the measurement method, phase noise measurement equipment or a phase noise measurement system is used.

The measuring frequency range is from 10 MHz to 700 MHz.

This PAS applies to quartz crystal oscillators and SAW oscillators used in electronic devices and modules that have the multiplication or division functions based on these oscillators. The type of phase jitter applied to these oscillators is the r.m.s. jitter. In the following text, these oscillators and modules will be referred to as “oscillator(s)” for simplicity.

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 60679-1, *Quartz crystal controlled oscillators of assessed quality – Part 1: Generic specification*

3 Terms, definitions, glossary and general terms

In the event of contradictory/inconsistent descriptions in the specification that arise due to certain reasons, the following priority applies.

- Specific standard
- IEC 60679-1
- General rule by product type
- General rule by item
- Other quoted international standard criteria (for example, IEC)

The same prioritization also applies to the equivalent domestic standard.

Annex A gives a description of the terms with regard to phase jitter.

Unit, drawing, codes, and characters are based on IEC 60679-1.

4 Measurement method

The measurement method applied to oscillators is based on the following.