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Guidelines for the measurement method of nonlinearity for surface acoustic wave(SAW) and bulk acoustic wave(BAW) devices in radio frequency(RF)

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Table of Contents

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1.Structure and Drafting Rules of Standardization Documents"

Drafting.

This document is equivalent to IEC 62761.2014 "Nonlinear Measurements of Radio Frequency Surface Acoustic Wave (SAW) Devices and Bulk Acoustic Wave (BAW) Devices"

guide".

This document has made the following minimal editorial changes.

---"OIP" in Figure 3 is corrected to "OIP2" based on the technical content of the context.

Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents.

1 Scope

This document specifies radio frequency (RF) surface acoustic wave (SAW) devices and components used in communications, measuring instruments, radar systems, and consumer electronics products.

Measurement method of nonlinear signals of acoustic wave (BAW) devices (such as filters, duplexers, etc.).

This document includes the basic characteristics and measurement guidelines of nonlinearity, and is suitable for the establishment and corresponding measurement system

of RF SAW/BAW devices.

Development of measurement procedures.

The purpose of this document is not to explain theory, nor to attempt to cover all possible situations that may arise in actual environments. It is intended to enable users to prepare for new

Application Note some more basic issues before ordering RF SAW/BAW devices to ensure that users get satisfactory device performance.

2 Normative reference documents

This document has no normative references.

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 General terminology

3.1.1

Antenna duplexer composed of radio frequency bulk acoustic wave resonators.

3.1.2

Filters characterized by bulk acoustic waves. Bulk acoustic waves are usually generated by a pair of electrodes and propagate along the thickness direction.

3.1.3

bulkacousticwavebulkacousticwave;BAW

A sound wave that travels along the upper and lower surfaces of a piezoelectric material and through the entire thickness of the piezoelectric body.

Note. This sound wave is excited by metal electrodes made on the upper and lower surfaces of the piezoelectric layer.

3.1.4

cut-offfrequency

The relative attenuation value reaches the passband frequency corresponding to the specified amplitude value.

3.1.5

duplexer duplexer

A device used in frequency division duplex systems that enables the system to send and receive signals simultaneously through a common antenna.

3.1.6

It consists of a piezoelectric layer sandwiched between two electrode layers. The top and bottom electrodes have no stress on their surfaces, and the bottom consists of a cavity or cavity as shown in Figure 1.