

ICS 19.100
CCS N 77



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 42399.2-2023

**Non-destructive testing instruments - Characterization and
verification of ultrasonic phased array equipment - Part 2:
Probes**

Issued on: March 17, 2023

Implemented on: October 1, 2023

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

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foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part 1: Structure and Drafting Rules for Standardization Documents"

drafting:

This document is the second part of GB/T 42399 "Performance and Inspection of Phased Array Ultrasonic Equipment for Nondestructive Testing Instruments": GB/T 42399

The following parts have been released:

- Part 1: Instruments;
- Part 2: Probes;
- Part 3: Combined system:

This document is equivalent to ISO 18563-2:2017 "Performance and Inspection of Phased Array Ultrasonic Equipment for Nondestructive Testing Part 2:

Probe":

This document has made the following minimal editorial changes:

- In order to be consistent with the existing standard series, the name of the standard is changed to "Performance and Inspection of Phased Array Ultrasonic Equipment for Nondestructive Testing Instruments No:

Part 2: Probes:

Please note that some contents of this document may refer to patents: The issuing agency of this document assumes no responsibility for identifying patents:

Introduction

Like the A-type conventional detector, the phased array ultrasonic is based on the pulse reflection method for detection, and the same flaw quantitative and qualitative methods are used:

bit method: However, the phased array ultrasonic detector is a high-performance digital instrument, which can record the signal of the whole detection process:

The system can generate and display high-quality images projected in different directions,

so its unique measurement calibration and verification methods need to be specified:

Certainly: GB/T 42399 aims to pass the testing methods and acceptance criteria for phased array ultrasonic detectors including instruments, probes and combined systems

Standard regulations, so as to unify product technical requirements, so that it can be better applied in actual production and testing:

GB/T 42399 "Performance and Inspection of Phased Array Ultrasonic Equipment for Nondestructive Testing Instruments" is divided into the following three parts:

--- Part 1: Instruments: The purpose is to specify the detection frequency of multi-channel phased array ultrasound in the range of 0.5MHz~10MHz

The detection method and acceptance criteria of the main technical performance of the detector:

--- Part 2: Probes: The purpose is to specify the use of contact method or liquid immersion method, the center frequency range is 0.5MHz~10MHz

The detection methods and acceptance criteria for the main technical performance of phased array probes that need to be inspected after fabrication is completed:

--- Part 3: Combined system: The purpose is to specify the use of linear phased array probes, contact (with or without wedge) or water immersion, center

The performance detection method of phased array combination equipment (that is, connected instruments, probes and cables) with a frequency in the range of 0.5MHz~10MHz

laws and acceptance criteria:

The three parts of GB/T 42399 "Performance and Inspection of Phased Array Ultrasonic Equipment for Nondestructive Testing Instruments" are independent of each other, but they echo each other and form a

into a complete set of standards:

Nondestructive Testing Instruments

Performance and Inspection of Phased Array Ultrasonic Equipment

Part 2: Probes

1 Scope

This document specifies the performance tests to be performed on phased array probes after they have been manufactured: This document also specifies test methods and acceptance criteria:

This document is applicable to phased array probes of contact method (with or without wedge) or liquid immersion method in the following non-destructive testing, center frequency range from

0:5MHz to 10MHz:

a) Non-matrix probes

--- line array;

--- ring array;

--- Partial ring fan array (chrysanthemum type):

b) Two-dimensional matrix probe

This document does not provide testing methods and acceptance criteria for the characteristics of phased array ultrasonic testing instruments or combined systems: These are separately in

Given in ISO 18563-1 and ISO 18563-3:

Note: In the case of not causing confusion, "standardized documents" in this document are referred to as "documents" for short:

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text: Among them, dated references

For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to

this document:

ISO 2400 Non-destructive testing ultrasonic testing No: 1 calibration test block
(Non-destructive testing-Ultrasonic testing-

Note: GB/T 19799:1-2015 Nondestructive Testing Ultrasonic Testing No: 1 Calibration Test Block (ISO 2400:2012, IDT)

ISO 5577 Ultrasonic Testing Terminology for Nondestructive Testing
(Non-destructivetesting-Ultrasonic testing-Vocabulary)

Note: GB/T 12604:1-2020 Nondestructive Testing Terminology Ultrasonic Testing (ISO 5577:2017, MOD)

EN16018 Non-destructive testing terminology for phased array ultrasonic testing
(Non-destructivetesting-Terminology-