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

GB/T 29302-2012

**Non-destructive testing instruments -- Characterization and
verification of phased array ultrasonic examination systems**

无损检测仪器 相控阵超声检测 系统的性能与检验

(English Translation)

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Foreword

This standard was drafted in accordance with GB/T 1.1-2009 given rules.

The standard adopted by the United States to redraft the law to modify the standard ASTM E2491-06 "phased array ultrasonic detector and system performance characteristics Evaluation".

This standard compared with ASTM E2491-06 made the following technical corrections.

--- Table G.1 "report linearity correction table" corresponding data "linear amplitude control" in the first line of a paragraph 7 of the original 40, and G4.7 Test Description "100% amplitude adjustment signal to" inconsistent, according to the test described in this standard G4.7 is changed to 100.

This standard also made the following editorial changes.

--- Standard name was changed to "non-destructive inspection equipment performance and phased array ultrasonic testing system";

--- Deleted ASTM E2491-06 foreword, and re-write the foreword;

- Use the "standard" instead of the word "this guide";
- Amend the introductory phrase in Chapter 2, "Normative references" in;
- Chapter 2, "Normative references" added GB/T 12604.1-2005 "Terminology for nondestructive testing Ultrasonic testing", delete in addition ASTM E1316 "Terminology for nondestructive testing";
- Delete Chapter VII of the keyword feature, focus, phased array, phased array probes, beam profile, ultrasound.
- The normative appendices are numbered from A1 to A7 modify A to G.

The standard proposed by China Machinery Industry Federation.

This standard by the National Testing Machine Standardization Technical Committee (SAC/TC122) centralized.

This standard is mainly drafted by. Shantou Institute of Ultrasonic Instruments Co., Ltd., Nantong Union Digital Technology Development Co., Ltd., Shenzhen, China Testing International Corporation, Wuhan Branch Innovation and Technology Co., Ltd., Liaoning Instrument Research Institute, Shantou Ultrasonic Electronics shares Ltd. Ultrasonic Instrument Branch, Zhongshan City, Guangdong Province Special Equipment Inspection, Changzhou ultrasound Electronics Co., Edson (Xiamen) Electronics Ltd., Taiyuan Heavy Machinery Group Co., Ltd.

1 Scope

1.1

standard specifies the method for the evaluation of phased array ultrasonic detector and system performance characteristics.

1.2

Evaluation of the performance of these aims compare phased array ultrasonic detector and system, or through regular performance evaluation, detecting a specific phase Long-term changes in phased array ultrasonic detector or system performance, evaluate these changes, it is possible to identify potential phased array ultrasonic detector and systems Barrier, and once these changes exceed certain limit, we need to correct maintenance. This standard is based on the ultrasonic detection size of the role played by the relevant it highlighted the need to measure the project. The electrical characteristics similar to other aspects of performance and non-phased array means, in accordance with ASTM E1065 "Characteristics of Ultrasonic Evaluation Guide" or ASTM E1324 "ultrasonic testing instrument for some electronic characteristic measurement Guide" described measurements.

1.3

This standard can be used to evaluate the use of pulse wave trains and A-Scan display (RF or video) of the ultrasonic testing system.

Alarm 1.4 standard can be used to evaluate the integrity of the testing system comprises a probe, phased array ultrasonic detector, coupler, scanning devices, connected and auxiliary equipment, was used to assess the use of the system without changing the case of replacement or duplicate test performance. This standard is not suitable as replacements Phased Array Ultrasonic calibration or standardized procedures or detector system to check for a specific material is carried out.

1.5

standard does not set the test system performance requirements. For such acceptance criteria, to be designated by the consumer. If the text relates to inspection Acceptance criteria, do illustrative purposes only, and always strictly limited customers and end users control file required.

1.6

needs to evaluate specific parameters, conditions and frequency of testing and reporting requirements of the data by the user decide.

1.7

In addition to the phased array ultrasonic testing devices or systems need to be evaluated, the required equipment also includes a test specimen and position encoders.

1.8

standard also includes procedures related to the applicability and interpretation of results Notes.

1.9

Only the customer agrees, can use alternative procedures, such as the example described in this document.

Subject 1.10 standard is not intended to solve all the security problems associated with its use. Responsibility of the user of this standard to establish appropriate safety Whole and healthy practices, prior to use to determine the applicability of restrictions.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document.

GB/T 12604.1 Terminology for nondestructive testing Ultrasonic testing (GB/T

12604.1-2005, ISO 5577:2000, IDT) ASTM E317 implementation methods do not use electronic measuring instruments assessment ultrasonic pulse echo type detection equipment and systems operating characteristics Method of implementation ASTM E494 material measuring ultrasonic velocity ASTM E1065 ultrasound probe characteristics Assessment Guide ASTM E1324 ultrasonic testing equipment for some electronic characteristic measurement guide

3 Terms and Definitions

GB/T 12604.1 defined and the following terms and definitions apply to this document.

Angle correction gain (ACG) anglecorrectedgain Also known as ACG, used during the S-scan calibration, signal amplitude compensation received from the fixed horizontal hole depth changes. Compensation generally electrically