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**Non-destructive testing of welds - Phased array ultrasonic
testing (UT-PA) for thin-walled steel components -
Acceptance levels**

焊缝无损检测 薄壁钢构件相控阵超声检测 验收等级

(ISO 4761:2022, IDT)

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Foreword

This document was drafted in accordance with the provisions of GB/T 1.1-2020 “*Directives for standardization - Part 1: Rules for the structure and drafting of standardizing documents*”.

This document is identical to ISO 4761:2022 “*Non-destructive testing of welds - Phased array ultrasonic testing (UT-PA) for thin-walled steel components - Acceptance levels*”.

This document has made the following minimal editorial changes:

- Add notes (see Clause 5).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. The issuing authority of this document shall not be held responsible for identifying any or all such patent rights.

This document was proposed by China Machinery Industry Federation.

This document shall under the jurisdiction of National Technical Committee on Welding of Standardization Administration of China (SAC/TC 55).

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Non-destructive testing of welds - Phased array ultrasonic testing (UT-PA) for thin-walled steel components - Acceptance levels

1 Scope

This document specifies the acceptance levels for phased array ultrasonic testing (PAUT) of complete penetration welded joints of low alloy and/or ferritic steels with a wall thickness between 3.2 mm and 8.0 mm, based on the weld quality levels established in ISO 5817.

This document applies to the acceptance levels classified according to the indications given in ISO 20601.

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.

ISO 5577 Non-destructive testing - Ultrasonic testing - Vocabulary

NOTE: GB/T 12604.1-2020 Non-destructive testing – Terminology - Ultrasonic testing (ISO 5577:2017, MOD)

ISO 20601 Non-destructive testing of welds - Ultrasonic testing - Use of automated phased array technology for thin-walled steel components

NOTE: GB/T 43320-2023 Non-destructive testing of welds - Ultrasonic testing - Use of automated phased array technology for thin-walled steel components (ISO 20601:2018, IDT)

ISO 23243 Non-destructive testing - Ultrasonic testing with arrays - Vocabulary

NOTE: GB/T 12604.13-2023 Non-destructive testing – Terminology - Part 13: Ultrasonic testing with arrays (ISO 23243:2020, IDT)

3 Terms and definitions

For the purpose of this document, the terms and definitions defined in ISO 5577, ISO 20601, and ISO 23243 apply.

4 Symbols

The following symbols apply to this document:

l - indication length;

l_1, l_2 - length of individual indication;

l_c - corrected length;

l_{cu} - cumulative length;

l_w - weld length;

t - wall thickness.

5 Sensitivity setting and levels

The sensitivity setting shall be in accordance with the provisions of ISO 20601, with a 1 mm diameter transverse hole as the reference reflector, and this sensitivity is also the reference level. The sensitivity setting shall be used for the subsequent testing.

The following three levels defined in ISO 5577 are used.

- a) Reference level. The echo amplitude level determined by the echo amplitude of a defined reference reflector.

NOTE 1: The reference grade is also called the reference level.

- b) Acceptance level. The limit value of acceptance indicators such as echo height, position, classification (if applicable) and number of indications or size of discontinuities.

NOTE 2: The acceptance grade is also called the acceptance level.

- c) Evaluation level. The amplitude limit above or below which indications shall be further evaluated or tested.

NOTE 3: The evaluation grade is also called the evaluation level.

All levels are related to the reference reflector and are specified in Clauses 8 and 9.

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