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GB/T 46851-2025

**Intelligent ships - Technical requirements and test methods for
collision avoidance systems**

智能船舶 避碰系统技术要求及测试方法

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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. Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed and is under the jurisdiction of the National Technical Committee on Standardization of Marine Ships (SAC/TC12). This document was drafted by: China Classification Society, Jiangtong (Shanghai) Technology Co., Ltd., and the Waterborne Transportation Equipment Safety Research Institute (Ningbo) Co., Ltd. Company, Qingdao Hengtianyi Artificial Intelligence Co., Ltd., China Shipbuilding (Beijing) Intelligent Equipment Technology Co.,

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1 Scope

GB/T 46851-2025 is the Chinese national standard covering the collision avoidance system of an autonomous or assisted ship - the fusion of radar, AIS and vision, the assessment of risk against the collision regulations, the manoeuvre proposed or executed, and the tests in simulation and at sea. The COLREGs were written for humans and say things like 'good seamanship'; encoding them is the hard part. First edition, 20,500 words. It was issued on 31 December 2025 and has been in force since 1 July 2026, as a first edition. The document is under the responsibility of the Standardization Administration of China. This page is published from the official record of the 2025 edition; the clause text of a standard

this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This document specifies the structure, design requirements, functional and performance requirements, and testing methods for intelligent ship collision avoidance systems. This document applies to the design and testing of intelligent ship collision avoidance systems in open waters.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 11711 Performance requirements, test methods and test results for marine automatic radar plotting apparatus (ARPA).

GB/T 27889-2023 Terminology, Abbreviations, Graphic Symbols and Concepts for Ship and Maritime Technical Navigation

GB/T 43942 Risk Assessment Methods for Intelligent Ships IEC 61996-

1 Marine navigation and radio communication equipment and systems - Shipborne voyage data recorder (VDR) - Part

3 Terms and Definitions

The terms and definitions defined in GB/T 11711, GB/T 27889-2023, and GB/T 43942, as well as the following terms and definitions, apply to this document.

3.1 open water Waters whose depth and extent do not impose any restrictions on the collision avoidance actions that a vessel intends to take.

Note. In this document, the longitudinal range of the water area is a value associated with the ship's stroke, and the lateral range is a value associated with the turning circle.

3.2 operator Personnel operating the collision avoidance system.

3.3 It processes and analyzes relevant perception information acquired from sensors and navigation information services in real time, plans safe and compliant local paths, and sends them out. A system that controls a vessel to avoid all obstructions to navigation.

3.4 ownvessel Intelligent ships equipped with collision avoidance systems.

3.5 target vessel Other vessels besides our own in the test scenario.