NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 45307-2025

Opto-electronic measurement - Test methods for the main parameters of LiDAR for intelligent control

光电测量 智能操控类激光雷达主要参数测试方法

Issued on: February 28, 2025 **Implemented on: September 1, 2025**

Issued by: the State Administration for Market Regulation, Standardization Administration of the People's Republic of China

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1 Scope

GB/T 45307-2025 specifies how the main parameters of a LiDAR used for intelligent control are measured. LiDAR datasheets are notoriously incomparable: range is quoted at different target reflectivities, resolution at different distances, and point rate with and without multiple returns, so two units that look alike on paper behave very differently on a vehicle or a robot. This document supplies the agreed test methods: the measurement of the maximum and minimum detection range against targets of stated reflectivity, the ranging accuracy and precision, the angular resolution and the field of view, the point rate and the frame rate, the beam divergence and spot size, the ranging behaviour under interference from another LiDAR and under ambient light, the performance in rain and fog, and the laser safety related measurements, together with the test conditions, the targets and the instrumentation each requires. For a LiDAR maker, an integrator or a buyer comparing units in China, this is the basis on which a comparison can actually be made.

This document defines the relevant terms and definitions of the test methods for the main parameters of intelligent control laser radars, and describes the Test conditions for radar main parameter test methods, performance parameter test methods and environmental adaptability test methods, etc. This document is applicable to intelligent control automated production lines, intelligent control warehousing and logistics vehicles, intelligent control road vehicles, and intelligent control rail vehicles. Laser radars used in vehicles, special vehicles and special vehicles, and laser radars for other purposes are used for reference.

Note. For intelligent control laser radar, see Appendix A.

2 Xenon arc lamp

GB/T 18655-2018 Radio disturbance characteristics of vehicles, ships and internal combustion engines - Limits and measurements for the protection of on-board receivers method

GB/T 19951-2019 Test method for immunity of electrical/electronic components of road

vehicles to electrostatic discharge

GB/T 21437.2-2021 Test methods for electrical disturbances caused by conduction and coupling of electrical/electronic components of road vehicles Part

3 Mechanical loads

GB/T 28046.4-2011 Environmental conditions and tests for electrical and electronic equipment of road vehicles Part

4 Points. Bulk Current Injection (BCI) method

GB 34660-2017 Requirements and test methods for electromagnetic compatibility of road vehicles

ISO 20567-1.2017 Determination of the scratch resistance of paints and varnishes to stone chips Part

1.Multiple impact test and varnishes-Determination of stonechip resistance of coatings-Part

13 Classification and measurement of laser products

GB/T 16422.2-2022 Plastics laboratory light source exposure test method Part