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**Opto-electronic measurement - Performance test methods of
laser tracking measurement system**

光电测量 激光跟踪测量系统性能检测方法

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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.

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents.

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This document was drafted by: Institute of Microelectronics, Chinese Academy of Sciences,

China Institute of Metrology, China Jiliang University, Haining Integrated Circuit and Advanced Manufacturing Research Institute, Shenzhen Zhongtu Instrument Co., Ltd., and Beijing Great Wall Metrology and Testing Technology Research Institute of China Aviation Industry Corporation Institute of Aerospace Information Innovation of the Chinese Academy of Sciences, Chengdu Aircraft Industry (Group) Co., Ltd., China Aerospace Science and Industry Corporation 31st Research Institute Institute, Nanjing University of Aeronautics and Astronautics, Beijing Satellite Manufacturing Co., Ltd., Beijing University of Aeronautics and Astronautics, Shanghai Aircraft Manufacturing Co., Ltd., Shenyang Aircraft Industry (Group) Co., Ltd., Xi'an Aircraft Industry (Group) Co., Ltd., China University of Petroleum (East China), Jiangsu Jicui Microelectronics Nano-Automation System and Equipment Technology Research Institute Co., Ltd., Hefei University of Technology, Zhejiang Sci-Tech University, Changchun University of Science and Technology, Aviation Industry of China Beijing Institute of Aeronautical Precision Machinery, Xi'an Depusike Metrology Equipment Co., Ltd., Beijing Aerospace Metrology and Testing Technology Research Co., Ltd.

Institute, Beijing University of Technology, Lixin Measurement (Shanghai) Co., Ltd.

The main drafters of this document are: Zhou Weihu, Dong Dengfeng, Wang Shan, Cheng Zhi, Zhang Zili, Li Yang, Ji Rongyi, Huang Yao, He Mingzhao, Wang Binrui, Wang Ling, Yin Lin, Zhou Peisong, Ma Junjie, Zhang Hejun, Sun Anbin, Wang Pu, Zhu Xusheng, Chen Daixin, Zhang Yourui, Wang Qinzhi, Zhang Zhongqing, Tian Wei, Yang Fenglong, Zhou Fuqiang, Xing Hongwen, Sun Chaohai, Zheng Wei, Yu Liandong, Ru Changhai, Xia Haojie, Yan Liping, Liu Zhiying, Li Di, Dai Mancang, Liu Ke, Chen Hongfang, Zhang Xiaori.

Photoelectric measurement laser tracking measurement system Performance testing methods

1 Scope

This document describes the ranging accuracy and measurement range, target tracking speed and acceleration, and spatial length measurement accuracy of the laser tracking measurement system.

The test principles, test conditions and requirements, test instruments and test methods for performance parameters such as degree and attitude angle measurement accuracy and measurement range.

This document is applicable to the performance test of three-degree-of-freedom laser tracking measurement system and six-degree-of-freedom laser tracking measurement system.

The radius of the enclosure shall not exceed 160m.

2 Normative references

GB/T 7247.1

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1

A measurement system that tracks a target using a laser beam and determines its position coordinates by distance (polar diameter) and two angles.

Note 1. The two angles are called horizontal angle (rotation around the vertical axis, i.e. the vertical axis of the laser tracking measurement system) and vertical angle (angle with the horizontal plane, the horizontal plane).

perpendicular to the vertical axis).

Note 2. The target attitude angle is measured by combining the attitude angle measurement accessories.

3.2 Laser interferometer

The laser interferometer measurement unit built into the laser tracking measurement system is used to measure the target distance (polar diameter).

Note. Laser interferometer is used to measure distance difference and has a reference distance (starting point).

3.3

Absolute distance measurement unit built into the laser tracking measurement system.

Note. The absolute distance measurement unit is used for target distance (polar diameter) measurement and to provide a distance reference after light interruption and reconnection during laser tracking measurement.

3.4 [Source. GB/T 16857.10-2022, 3.5, with modifications]

A reflective target fixed in a spherical shell.

Note 1. A reflective target is a passive reflector that can parallel reflect incident light within the acceptable range and is the cooperative target of the laser tracking measurement system.

Note 2 to entry. For an open corner cube, the vertex is usually adjusted to coincide with the centre of the sphere.

NOTE 3 The tests in this document generally use spherical targets.