

ICS 49.090
CCS V40



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

GB/T 42833-2023

**Minimum operational performance standard for airborne
equipment of BeiDou Satellite-based Augmentation System
single frequency augmentation service**

北斗星基增强系统单频增强服务机载设备最低性能规范

Issued on: August 6, 2023

Implemented on: March 1, 2024

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

Table of Contents

1	Scope
2	Normative reference documents
3	Terms, definitions and abbreviations
3.1	Terms and definitions The terms and definitions defined in
3.2	Abbreviations
4	Beidou satellite enhancement system
4.1	System Introduction
4.2	Coordinate system
4.3	Time system
5.1	Equipment composition
5.2	Device Type
5.3	Constraints
6	Equipment performance requirements
6.1	General requirements

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 be subject to patents. The publisher of this document assumes no responsibility for identifying patents. This document is proposed by the Equipment Development Department of the Central Military Commission. This document is under the jurisdiction of the National Beidou Satellite Navigation Standardization Technical Committee (SAC/TC544). This document was drafted by: China Electronics Technology Group Corporation 20th Research Institute, China Satellite Navigation Engineering Center. The main drafters of this document. Ding Qun, Shao Bo, Gao Weiguang, Zhang Jian, Su Chengeng, Li Yu, Wu Xianbing, Lu Jun, Liu Cheng, Geng Yongchao, Xiong Shuai, Chen Ying, Zhou Wei, Wang Wei.

Beidou Satellite Based Augmentation System (BDSBAS) provides single-frequency enhancement services and dual-frequency multi-constellation enhancement services. The service signals pass through Beidou satellites. Navigation System (BDS) broadcast from geostationary orbit (GEO) satellites. The enhancement object of the BDSBAS single-frequency enhancement service is the GPS L1C/A frequency point, which meets the

requirements for precise flight stages such as route, terminal area and approach. Indicator requirements for accuracy, integrity, continuity and availability. Within the BDSBAS single-frequency enhanced service area, the service level is determined by the system service capability Determined jointly with onboard equipment. BDSBAS airborne equipment is used to implement route, terminal area, lateral navigation (LNAV) and positioning performance (LP) approaches without vertical guidance. It provides horizontal navigation for moving aircraft and implements Positioning Performance with Vertical Guidance (LPV) and Lateral Navigation/Vertical Navigation (LNAV/ VNAV) aircraft approach flight provides horizontal and vertical navigation. When the aircraft is outside the BDSBAS single-frequency enhanced service area, the aircraft Onboard equipment needs to adopt fault detection and isolation (FDE) mode to ensure integrity. In order to maintain the compliance of BDSBAS airborne equipment with international standards, this document contains information on the composition and categories of BDSBAS airborne equipment. The model, constraints, general requirements and equipment performance requirements under different flight modes are consistent with RTCADO-229F. Beidou satellite enhancement system single frequency enhancement service Minimum Performance Specifications for Airborne Equipment

1 Scope

GB/T 42833-2023 is the minimum operational performance standard for airborne receivers using the single frequency service of the BeiDou Satellite-based Augmentation System. BDSBAS is China's equivalent of WAAS and EGNOS: it broadcasts corrections and, more importantly, integrity information that tells the aircraft when the position cannot be trusted, which is what allows satellite navigation to be used for approach. An MOPS is what makes that airworthy - it fixes the minimum the receiver must do so that an aircraft certified against it behaves predictably wherever it flies. The standard describes the BDSBAS system, its coordinate and time systems, the equipment types and the constraints on them, and then the equipment performance requirements, covering the general requirements, the accuracy, integrity, continuity and availability, the acquisition and tracking behaviour and the alerts, together with the test methods. It took effect on 1 March 2024.

This document specifies the use of the Beidou Satellite Based Augmentation System (BDSBAS) single frequency augmentation service BDSBAS-B1C signals and GPSL1C/A. The signal's airborne equipment composition, type, constraints, general requirements and equipment performance requirements under different flight modes, etc. This document is applicable to the development and testing of single-frequency enhancement service airborne equipment for the Beidou satellite-based enhancement system and other related work for other satellite-based enhancement systems. Airborne equipment is used for reference.

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, the dated quotations For undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to this document.

GB/T 39267-2020 Beidou Satellite Navigation Terminology

GB/T 42832.1-2023 Beidou satellite-based augmentation system space signal interface specification Part

1.Single-frequency augmentation service signal BDSBAS-B1C IS-GPS-200M NAVSTAR GPS SpaceSegment/Navigation UserInterfaces, Version M, May2021 December2011

3.1 Terms and definitions The terms and definitions defined in

GB/T 39267-2020 and the following apply to this document.

3.1.1 A global satellite navigation system developed, constructed and managed by China that provides users with real-time three-dimensional position, speed and time information.

Note. The services provided include basic navigation services, short message communication services, satellite-based enhanced services, international search and rescue services and precision single-point positioning services. [Source: GB/T 39267-2020,2.1.11]