

ICS 49.020
CCS V 04



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

GB/T 45446-2025

**Interface specification for signal in space of Beidou navigation
satellite system precise point positioning service**

北斗卫星导航系统精密单点定位服务空间信号接口规范

Issued on: March 28, 2025

Implemented on: March 28, 2025

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

Table of Contents

Preface	III
Introduction	IV
1 Scope	1
2 Normative references	1
3 Terms and Definitions	1
4 Abbreviations	1
5 Overview of BeiDou Satellite Navigation System	2
5.1 Space Constellation	2
5.2 Coordinate system	2
5.3 Time system	3
6 Signal characteristics	3
6.1 Signal Structure	3
6.2 Signal Modulation	3
6.3 Logic Level	4
6.4 Polarization	4
6.5 Carrier Phase Noise	4
6.6 Spurious	4
6.7 Correlation loss	4
6.8 Data/Code Consistency	4
6.9 Signal Consistency	4
6.10 Ground receiving power level	4
7 Ranging Code Characteristics	5
8 Navigation message	6
8.1 Information Format	6
8.2 Information Content	9
8.3 Information validity period	23
8.4 PPP-B2b Information Enhancement Object	23
8.5 Time-Space Coordinate System	23
8.6 Satellite code bias correction	23
8.7 Satellite Orbit Correction	24
8.8 Satellite clock correction	24
8.9 User distance measurement accuracy	24

8.10 System time calculation	24
Appendix A (Informative) Multi-binary LDPC encoding and decoding method and examples	25
A.1 Multi-level LDPC coding	25
A.2 Multi-ary LDPC decoding	26

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.

This document was 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 Satellite Navigation Engineering Center, China Satellite Navigation System Management Office, Beijing Satellite Navigation Center, China Institute of Aerospace Standardization, Wuhan University, Shanghai Astronomical Observatory, Chinese Academy of Sciences, Huazhong University of Science and Technology, and Beijing Institute of Telemetry Technology.

The main drafters of this document are: Gao Weiguang, Su Chengeng, Chen Liang, Guo Shuren, Wang Chenglong, Lu Yun, Li Xing, Gao Yang, Lou Yidong, Song Weiwei, Tang Chengpan, Tang Zuping, Gao Lifeng, Zheng Fu, Wang Weijia, Chen Ying, Li Gang, Zhou Wei, Yang Xiaoheng, Chen Zhengkun, Su Mudan, Zhu Zhiyong, Sun Weibin.

Introduction

The BeiDou satellite navigation system is divided into three stages of construction and development. BeiDou-1, BeiDou-2 and BeiDou-3. The BeiDou-3 system provides multiple services. The system provides a variety of services, including: providing global positioning, navigation and timing (RNSS), global short message communication (GSMC) and international search and rescue (SAR) Services. Provide precise point positioning (PPP), satellite-based augmentation (SBAS), ground-based augmentation (GAS) and regional short message in China and surrounding areas Communication (RSMC) service. Among them, the BeiDou-3 system PPP service is provided through the PPP-B2b of the BeiDou-3 geostationary orbit (GEO) satellite.

Signal provision, PPP-B2b signal is used as a data broadcast channel to broadcast the BeiDou-3 system and other global satellite navigation systems (GNSS) precision Satellite orbit and clock correction parameters are used to provide PPP services to users in China and surrounding areas.

This document is a technical document issued by the China Satellite Navigation System Management Office, "BeiDou Satellite Navigation System Space Signal Interface Control Document" It is compiled based on the Precision Point Positioning Service Signal PPP-B2b (Version 1.0) of the BeiDou-3 system, which mainly defines the PPP service space of the BeiDou-3 system.

Signal PPP-B2b related content, including space signal characteristics, ranging code characteristics, navigation message structure, navigation message parameters and user algorithm The formulation and implementation of this document will provide reference and guidance for the development, production and inspection of satellite navigation products using PPP-B2b signals. Guiding effect.

BeiDou satellite navigation system precise point positioning service space Signal interface specifications

1 Scope

This document specifies the signal characteristics, ranging code characteristics, Navigation message structure and user algorithm.

This document applies to the development, production and inspection of satellite navigation products using PPP-B2b signals.

2 Normative references

GB/T 39267

3 Terms and definitions

The terms and definitions defined in GB/T 39267 apply to this document.

4 Abbreviations

The following abbreviations apply to this document.

BDCS. BeiDou Coordinate System BDS. BeiDou Navigation Satellite System BDT. BeiDou Time (BDSTime) BPSK. Binary Phase Shift Keying CGCS2000 2000 China Geodetic Coordinate System (ChinaGeodeticCoordinateSystem2000) CRC. Cyclic Redundancy Check DCB. Differential Code Biases GALILEO.Galileo satellite navigation system GEO. Geostationary Earth Orbit GF. Galois Field GLONASS. Global Navigation Satellite System

GNSS. Global Navigation Satellite System GPS. Global Positioning System IERS.
International Earth Rotation and Reference Systems Service IGSO. Inclined
GeoSynchronous Orbit IOD. Issue of Data IODC. Issue of Data Clock

chinastandards.org - PREVIEW