

ICS 07.040
CCS A76



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

GB/T 44488-2024

**Specification for data processing of the reference stations
using global navigation satellite system**

卫星导航定位基准站网数据处理规范

Issued on: September 29, 2024

Implemented on: April 1, 2025

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

Table of Contents

1 Scope	1
2 Normative references	1
3 Terms and Definitions	1
4 Abbreviations	2
5 Basic Requirements	2
6 Classification and Process	2
6.1 Data processing categories	2
6.2 Data processing flow	3
7 Preprocessing	3
7.1 Base station information collection	3
7.2 Data and Documentation	4
7.3 Observation data quality check	4
8 Single-day solution data processing	4
8.1 Selection of starting point	4
8.2 Subnetting	5
8.3 Data Analysis	5
8.4 Result Output	5
8.5 Quality Check	5
9 Comprehensive Solution Data Processing	6
9.1 Basic Requirements	6
9.2 Coordinate frame station selection	6
9.3 Processing strategy	6
9.4 Result Output	6
9.5 Quality Check	6
10 Coordinate time series and velocity field calculation	7
10.1 Calculation Strategy	7
10.2 Quality Check	7
10.3 Result Output	7
11 Results acceptance and submission of materials	7
11.1 Results Acceptance	7
17 Reference	18

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 is proposed by the Ministry of Natural Resources of the People's Republic of China. This document is under the jurisdiction of the National Technical Committee for Geographic Information Standardization (SAC/TC230). This document was drafted by: Jiangsu Institute of Surveying and Mapping, National Basic Geographic Information Center, Wuhan University, Geodetic Data of the Ministry of Natural Resources Processing Center, Shandong Provincial Institute of Surveying and Mapping. The main drafters of this document are: Wang Yong, Wu Junli, Jiang Weiping, Chen Hua, Dong Chuansheng, Huang Gongwen, Wang Xiaoqing, Wang Kaifeng, Chen Ming, Gao Shimin, An Yanhui, Xie Fang, and Li Xiaohua. Data processing specifications for satellite navigation and positioning base station network

1 Scope

GB/T 44488-2024 specifies how the observation data of a GNSS reference station network is processed. China operates one of the densest continuously operating reference station networks in the world, and it is the frame on which the national coordinate system, the deformation monitoring of dams and faults, and every centimetre-level positioning service ultimately rest. The processing is what converts raw carrier phase into coordinates, and it is where the errors live: an unnoticed antenna change, a badly chosen datum station or an unmodelled troposphere propagates silently into everything downstream. The standard sets the basic requirements, the classification of the processing and the overall flow, then the preprocessing - base station information collection, data and documentation, and observation data quality checking - the single-day solution processing including the choice of starting point, the subnetting and the data analysis, the multi-day combination and adjustment, the coordinate time series and velocity field, the quality evaluation and the deliverables. It takes effect on 1 April 2025.

This document specifies the basic requirements, classification and process, preprocessing, single-day solution data processing, Comprehensive solution to data processing, coordinate time series and velocity field calculation, results acceptance and submission of materials, etc. This document applies to data processing work for national, regional and professional satellite navigation and positioning base station networks.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 18314-2009 Global Positioning System (GPS) Measurement Specification

GB/T 24356 Quality inspection and acceptance of surveying and mapping results

GB/T 28588 Technical specification for the continuously operating reference station network of the global navigation satellite system

GB/T 35767 Basic product specification for satellite navigation and positioning reference station network

GB/T 39611 Terminology of Satellite Navigation and Positioning Base Stations

GB/T 39618 Technical Specification for Operation and Maintenance of Satellite Navigation and Positioning Base Station Network

3 Terms and definitions

The terms and definitions defined in GB/T 39611 and the following apply to this document.

3.1 multipatherror In GNSS observations, measurement errors are caused by multipath effects.

3.2 cycleslipratio The ratio of the number of cycle slips in the GNSS carrier phase observation data observed by the satellite navigation positioning base station within a certain period of time to the total number of cycle slips ratio.

3.3 Prior constraint When processing GNSS data, the coordinates, speed, and satellite orbit estimation parameters of the base station are set according to their known accuracy and other conditions. control.

3.4 Daily solution The coordinates of each base station and their variance-covariance are calculated by solving the observation data of the base station network with an observation period of one year. Difference matrix and other results.

3.5 The results are obtained by taking multiple single-day solutions (3.4) as a set of input data and using certain strategies to process them.