ICS 33.060
CCS M36

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 44863-2024

Technical requirements and test methods for in-band and co-band positioning based on mobile communication networks

基于移动通信网的带内与共频带定位技术要求及测试方法

Issued on: October 26, 2024 **Implemented on: February 1, 2025**

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

Table of Contents

1 Scope
2 Normative references
3 Terms and Definitions
4 Abbreviations
5 In-band and co-band positioning technology system architecture
5.1 Overall Logical Structure
5.2 Overall Network Architecture
5.3 Signal sending entity structure
5.4 Positioning terminal structure
6 Device Function
6.1 Signalling Entity Function
6.2 Terminal Function
7 Equipment Performance
7.1 Signalling Entity Performance
7.2 Positioning Terminal Performance
8 Positioning Signaling Process
8.1 In-band Positioning Signaling Process
8.2 Co-band positioning signaling process
9 Test Method
9.1 Test Environment
9.2 Signalling Entity Test Method
9.3 Positioning Terminal Test Method
16.6.0 NG-RAN;NR Positioning Protocol A (NRPPa) [NG-RAN;NRPositioning
24 Reference

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 Industry and Information Technology of the People's Republic of China. This document is under the jurisdiction of the National Communications Standardization Technical Committee (SAC/TC485). This document was drafted by: Beijing University of Posts and Telecommunications, ZTE Corporation, China Academy of Information and Communications Technology, Beijing Shouke Xintong Co., Ltd. Company, Beijing Oriental Metrology and Testing Institute, China Information and Communications Technology Group Corporation, China Telecom Group Corporation, China Unicom Network Communications Group Co., Ltd. The main drafters of this document are. Deng Zhongliang, Chen Shijun, Yin Lu, Wan Yi, Zheng Xinyu, Luo Kai, Ma Ziyao, Liu Jingrong, Gao Yanbiao, Wang Jizhou, Chen Dawei, Li Junqiang, Quan Haiyang, Liu Qi, Song Meng, Liang Peng, Liu Chen, Wang Hanhua, Zhang Shizhuang, Li Gang, Xue Bing, Xue Renkui, Huang Lanchi, Hu Changjun, Jiao Jichao, Li Xiayu, Liu Shuo, Tang Shihao, Jia Buyun, Mo Jun, and Gong Minqiang.

With the continuous development of mobile communication network technology and the gradual improvement of market requirements for positioning accuracy, positioning technology based on mobile communication network has become increasingly popular. Among the numerous mobile communication network positioning technologies, in-band positioning technology and co-band positioning technology (see Appendix A) are both used. Compared with other mobile communication network positioning technologies, these two positioning technologies have better time synchronization accuracy. The two technologies have high positioning principles and architectures. There is no domestic standard to regulate the two technologies. In order to prevent the overlap of the two technologies in the process of formulating standards, This document will standardize the architecture of in-band and co-band positioning systems, co-band positioning signal structure, system interface requirements, The summation test method is standardized. In-band and co-band positioning based on mobile communication networks Technical requirements and test methods

1 Scope

GB/T 44863-2024 sets the technical requirements and test methods for positioning a device using the mobile network itself, in band and in the same frequency band as the communication traffic. Satellite positioning fails indoors, in tunnels, in urban canyons and underground, which is exactly where a great deal of positioning is now needed, for emergency call location, for asset tracking in warehouses and factories and for the location services a 5G network is expected to provide. Doing it with the network rather than with added infrastructure is the attraction. The standard sets the positioning architecture and the methods covered, the requirements on the positioning accuracy in the horizontal and vertical planes and on the latency, the availability and the update rate, the requirements on the network elements, on the terminal and on the interfaces and signalling between them, the requirements on the interference between positioning and communication in the shared

band, and the corresponding test methods, test environments and evaluation. For an operator, a network equipment maker or a chipset supplier in China, this is the specification.

This document specifies the system architecture and functional requirements of each part, positioning signal structure, positioning process and other technical requirements of the in-band and co-band positioning system. Technical requirements and describes the test methods. This document applies to the co-band positioning and in-band positioning of downlink positioning methods in the terrestrial beacon system (TBS) of LTE and 5G mobile communication networks. position.

2 Normative references

The contents of the following documents constitute the 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 39414.2-2020 BeiDou Navigation Satellite System Signal-in-Space Interface Specification Part

2.Public Service Signal B2a YD/T 3936-2021 General technical requirements for high-precision positioning based on mobile communication networks 3GPP TS

16.6.0 Evolved Universal Terrestrial Radio Access (E-UTRA); Physical Channels and Modulation [Evolved 3GPP TS

16.3.0 Evolved Universal Terrestrial Radio Access Network (E-UTRAN); User Equipment in E-UTRAN 3GPP TS 37.571-2 v

16.8.0 Universal Terrestrial Radio Access (UTRA) and Evolved (UTRACE-UTRA) and Evolved Packet Core 3GPPTS38.305v

16.5.0 NG Radio Access Network (NG-RAN); Second Edition of User Equipment (UE) Positioning in NG-RAN 3GPPTS38.455v

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 Positioning technology that broadcasts positioning signals in the frequency band where communication signals operate at low power without affecting the normal operation of communication signals.