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BSI Standards Publication

Space data and information transfer systems — Pseudo-Noise (PN) Ranging Systems

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National foreword

This British Standard is the UK implementation of ISO 18423:2013.

The UK participation in its preparation was entrusted to Technical Committee ACE/68/-/7, Space systems and operations - Space data and information transfer systems.

A list of organizations represented on this committee can be obtained on request to its secretary.

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INTERNATIONAL STANDARD

ISO 18423

First edition
2013-06-01

Space data and information transfer systems — Pseudo-Noise (PN) Ranging Systems

Systèmes de transfert des informations et données spatiales — Systèmes de mesure du pseudo-bruit

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. www.iso.org/directives

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ISO 18423 was prepared by the Consultative Committee for Space Data Systems (CCSDS) (as CCSDS 414.1-B-1, March 2009) and was adopted (without modifications except those stated in Clause 2 of this International Standard) by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 13, *Space data and information transfer systems*.

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INTERNATIONAL STANDARD ISO 18423:2013(E)

Space data and information transfer systems — Pseudo-Noise (PN) Ranging Systems

1 Scope

This International Standard provides a Recommendation for Space Data System Standards in the area of transparent and regenerative Pseudo-Noise (PN) ranging systems. The PN ranging system is used to measure the round-trip light time between a ground station and a spacecraft. Regenerative ranging is primarily relevant for low Signal-to-Noise Ratio (SNR) cases like those seen in deep space missions; transparent ranging is more suitable for high SNR cases or when high accuracy ranging is not required.

This International Standard defines both transparent and regenerative PN ranging systems for non–data relay satellite users. The specification for PN code components and generation, on-board spacecraft regenerative/transparent processing, ground station processing, and uplink and downlink signal modulation are defined. This International Standard does not specify a) individual implementations or products, b) implementation of service interfaces within real systems, or c) the management activities required to configure and control the protocol.

2 Requirements

Requirements are the technical recommendations made in the following publication (reproduced on the following pages), which is adopted as an International Standard:

CCSDS 414.1-B-1, March 2009, Pseudo-Noise (PN) Ranging Systems.

For the purposes of international standardization, the modifications outlined below shall apply to the specific clauses and paragraphs of publication CCSDS 414.1-B-1.

Pages i to vi

This part is information which is relevant to the CCSDS publication only.

3 Revision of publication CCSDS 414.1-B-1

It has been agreed with the Consultative Committee for Space Data Systems that Subcommittee ISO/TC 20/SC 13 will be consulted in the event of any revision or amendment of publication CCSDS 414.1-B-1. To this end, NASA will act as a liaison body between CCSDS and ISO.

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The Consultative Committee for Space Data Systems

Recommendation for Space Data System Standards

PSEUDO-NOISE (PN) RANGING SYSTEMS

RECOMMENDED STANDARD

CCSDS 414.1-B-1

BLUE BOOK

March 2009

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AUTHORITY

Issue:	Recommended Standard, Issue 1
Date:	March 2009
Location:	Washington, DC, USA

This document has been approved for publication by the Management Council of the Consultative Committee for Space Data Systems (CCSDS) and represents the consensus technical agreement of the participating CCSDS Member Agencies. The procedure for review and authorization of CCSDS documents is detailed in the *Procedures Manual for the Consultative Committee for Space Data Systems*, and the record of Agency participation in the authorization of this document can be obtained from the CCSDS Secretariat at the address below.

This document is published and maintained by:

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The Consultative Committee for Space Data Systems (CCSDS) is an organization officially established by the management of its members. The Committee meets periodically to address data systems problems that are common to all participants, and to formulate sound technical solutions to these problems. Inasmuch as participation in the CCSDS is completely voluntary, the results of Committee actions are termed **Recommended Standards** and are not considered binding on any Agency.

This **Recommended Standard** is issued by, and represents the consensus of, the CCSDS members. Endorsement of this **Recommendation** is entirely voluntary. Endorsement, however, indicates the following understandings:

- Whenever a member establishes a CCSDS-related **standard**, this **standard** will be in accord with the relevant **Recommended Standard**. Establishing such a **standard** does not preclude other provisions which a member may develop.
- Whenever a member establishes a CCSDS-related **standard**, that member will provide other CCSDS members with the following information:
  - The **standard** itself.
  - The anticipated date of initial operational capability.
  - The anticipated duration of operational service.
- Specific service arrangements shall be made via memoranda of agreement. Neither this **Recommended Standard** nor any ensuing **standard** is a substitute for a memorandum of agreement.

No later than five years from its date of issuance, this **Recommended Standard** will be reviewed by the CCSDS to determine whether it should: (1) remain in effect without change; (2) be changed to reflect the impact of new technologies, new requirements, or new directions; or (3) be retired or canceled.

In those instances when a new version of a **Recommended Standard** is issued, existing CCSDS-related member standards and implementations are not negated or deemed to be non-CCSDS compatible. It is the responsibility of each member to determine when such standards or implementations are to be modified. Each member is, however, strongly encouraged to direct planning for its new standards and implementations towards the later version of the Recommended Standard.

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FOREWORD

Through the process of normal evolution, it is expected that expansion, deletion, or modification of this document may occur. This Recommended Standard is therefore subject to CCSDS document management and change control procedures, which are defined in the *Procedures Manual for the Consultative Committee for Space Data Systems*. Current versions of CCSDS documents are maintained at the CCSDS Web site:

http://www.ccsds.org/

Questions relating to the contents or status of this document should be addressed to the CCSDS Secretariat at the address indicated on page i.

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- China National Space Administration (CNSA)/People's Republic of China.
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