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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 39354-2020

Space data and information transfer systems. Proximity space link protocol. Physical layer

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard uses the redrafting method to amend and adopt ISO 21460.2015 "Space Data and Information Transmission System Proximity-1 Space Link Agreement"

Discussion on the physical layer.

Compared with ISO 21460.2015, this standard has many structural adjustments. Appendix A lists this standard and ISO 21460.2015.

The chapter number comparison list.

Compared with ISO 21460.2015, there are technical differences between this standard and the clauses involved in these differences have been passed on the outer margins.

The set vertical single line (?) is marked, and a list of corresponding technical differences and their reasons is given in Appendix B.

This standard also made the following editorial changes.

---Change the standard name. Change the standard name from "Space Data and Information Transmission System Adjacent-1 Space Link Protocol Physical Layer"

For "Space Data and Information Transmission System Neighboring Space Link Protocol Physical Layer";

--- Deleted part of the document structure and references in Chapter 1 of ISO 21460.2015;

---Changed "Abbreviations" in Appendix D of ISO 21460.2015 to Chapter 4 of the main text;

--- Deleted Appendix A of ISO 21460.2015 "Protocol Implementation Conformance Statement Format";

--- Deleted Appendix B of ISO 21460.2015 "Security, SANA and Patent Description";

--- Deleted Appendix C "References" of ISO 21460.2015.

This standard was proposed and managed by the National Aerospace Technology and Application Standardization Technical Committee (SAC/TC425).

Drafting organizations of this standard. Beijing Space Vehicle General Design Department, China Aerospace Standardization Institute, Hefei Bolei Electric Co., Ltd.

1 Scope

This standard specifies the general rules, basic functions, and radio frequency settings of the physical layer in the adjacent space link protocol of the spatial data and information transmission system.

Controlled characteristics and performance requirements of communication channels, etc.

This standard applies to communications between adjacent spacecraft. It is recommended to be used together with GB/T 39352 and GB/T 39353.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this article

Pieces. For undated references, the latest version (including all amendments) applies to this document.

GB/T 39352 Space Data and Information Transmission System Adjacent Space Link Protocol Data Link Layer (GB/T 39352-2020,

ISO 22663.2015, MOD)

GB/T 39353 Space Data and Information Transmission System Adjacent Space Link Protocol Synchronization and Coding Sublayer (GB/T 39353-

2020, ISO 21459.2015, MOD)

3 Terms and definitions

The following terms and definitions apply to this document.

3.1

Conversation

A conversation between two (or more) adjacent link transceivers.

Note. A complete session includes three typical working phases. session establishment, data service (may include resynchronization, reconnection sub-phases), and session termination.

Session termination can be determined by negotiation (for example, sending no-more-data-to-send command), or when communication is interrupted (cannot resynchronize or reconnect)

The time is determined by the transceiver itself.

3.2

Space link

Communication links between spacecraft and between spacecraft and the ground.

Note. A space link includes one or more one-way or two-way physical channels.

3.3

Adjacent space link

Adjacent link

It is a communication link for direct communication between spacecraft in the distance range of 1m to 100,000km.

Used for the communication link between the main spacecraft and the auxiliary spacecraft.

Note. Short-distance, two-way, fixed or mobile radio frequency links are mainly used to carry out between detectors, landers, patrol devices, orbital constellations, and orbital repeaters.

Communication has the characteristics of small delay, medium signal energy (not weak signal), independent conversation and short time.

3.4

Caller

The initiator of the adjacent space link establishment process and the management subject of the session negotiation process.