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**Information technology –
Small computer system interface (SCSI) –
Part 223: Fibre channel protocol, third version (FCP-3)**

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INFORMATION TECHNOLOGY – SMALL COMPUTER SYSTEM INTERFACE (SCSI) –

Part 223: Fibre channel protocol, third version (FCP-3)

FOREWORD

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International Standard ISO/IEC 14776-223 was prepared by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology.

The list of all currently available parts of the ISO/IEC 14776 series, under the general title *Information*

technology – Small computer system interface, can be found on the IEC web site.

This International Standard has been approved by vote of the member bodies and the voting results may be obtained from the address given on the second title page.

INTRODUCTION

The Small Computer System Interface (SCSI) command set is widely used and applicable to a wide variety of device types. The transmission of SCSI command set information across Fibre Channel links allows the large body of SCSI application and driver software to be successfully used in the high performance Fibre Channel environment.

This standard describes the protocol for transmitting SCSI commands, data and status using Fibre Channel FC-FS-2 Exchanges and Information Units. Fibre Channel is a high speed serial architecture that allows either optical or electrical connections. The topologies supported by Fibre Channel include point-to-point, fabric switched and arbitrated loop. All Fibre Channel connections use the same standard frame format and standard hierarchy of transmission units to transmit the Information Units that carry SCSI information.

This standard is divided into the following clauses:

Clause 1 is the scope of this standard.

Clause 2 enumerates the normative references that apply to this standard.

Clause 3 describes the definitions, abbreviations and conventions used in this standard.

Clause 4 provides an overview of the protocol for transmitting SCSI information over Fibre Channel.

Clause 5 describes the Information Units used to transfer SCSI commands, data and status across a Fibre Channel connection.

Clause 6 describes the Basic Link Services and Extended Link Services used by the protocol for transmitting SCSI information over Fibre Channel.

Clause 7 describes the FC-GS-4 Name Server objects defined for FCP-3.

Clause 8 describes the FCP FC-4 Link Service definitions for the protocol for transmitting SCSI information over Fibre Channel.

Clause 9 describes the details of the Information Unit formats.

Clause 10 defines the SCSI management features for Fibre Channel, including the SCSI mode pages used by the protocol for transmitting SCSI information over Fibre Channel.

Clause 11 defines the timers used for FCP-3 error recovery algorithms.

Clause 12 defines the error recovery algorithms for FCP-3.

The Fibre Channel Protocol for SCSI, Third revision (FCP-3) standard has the following annexes:

Annex A is a normative description of the relationship between the services defined by SAM-3 and the corresponding functions defined by this standard.

Annex B is an informative annex that provides examples of the protocol for transmitting SCSI information over Fibre Channel.

Annex C is an informative annex providing examples of the FCP-3 error recovery mechanisms.

Annex D is an informative annex describing techniques for discovering SCSI device capabilities over Fibre Channel.

Annex E is an informative annex providing examples of the content of ELSs used during FCP-3 recovery operations.

This standard is part of the SCSI family of standards developed to facilitate the use of the SCSI command sets for many different types of devices across many different types of physical interconnects. The architectural

model for the family of standards is ISO/IEC 14776-413, *Information technology - SCSI Architecture Model - 3 (SAM-3)*.

INFORMATION TECHNOLOGY – SMALL COMPUTER SYSTEM INTERFACE (SCSI) –

Part 223: Fibre channel protocol, third version (FCP-3)

1 Scope

This standard defines a third version of the SCSI Fibre Channel Protocol (FCP). This standard is a mapping protocol for applying the SCSI command set to Fibre Channel. This standard defines how the Fibre Channel services and the defined Information Units (IUs) are used to perform the services defined by the SCSI Architecture Model - 3 (SAM-3). This third version includes additions and clarifications to the second version, removes information that is now contained in other standards, and describes additional error recovery capabilities for the Fibre Channel Protocol.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document, including any amendments, applies.

The provisions of the referenced specifications other than ISO/IEC, IEC, ISO and ITU documents, as identified in this clause, are valid within the context of this International Standard. The reference to such a specification within this International Standard does not give it any further status within ISO or IEC. In particular, it does not give the referenced specification the status of an International Standard.

ISO/IEC 14165-122, *Information technology - Fibre Channel - Part 122: Arbitrated Loop - 2 (FC-AL-2)* [INCITS 332:1999]

ISO/IEC 14165-252, *Information technology - Fibre Channel - Part 252: Framing and Signaling - 2 (FC-FS-2) (under consideration)* [ANSI/INCITS 424-2007/AM1-2007]

ISO/IEC 14165-261, *Information technology - Fibre Channel - Part 261: Link Services (FC-LS) (under consideration)* [ANSI/INCITS 433-2007]

ISO/IEC 14165-414, *Information technology - Fibre Channel - Part 414: Generic Services - 4 (FC-GS-4)* [ANSI/INCITS 414-2007]

ISO/IEC 14165-341, *Information technology - Fibre Channel - Part 341: Device Attach (FC-DA) (under consideration)* [INCITS TR-36-2004]

ISO/IEC 14776-413, *Information technology - Small Computer System Interface - Part 413: SCSI Architecture Model - 3 (SAM-3)* [ANSI/INCITS 402-2005]

ISO/IEC 14776-453, *Information technology - Small Computer System Interface - Part 453: SCSI Architecture Model - SCSI Primary Commands-3 (SPC-3)(under consideration)* [ANSI/INCITS 408-2005]

INCITS Project 1683-D, *SCSI Architecture Model - 4 (SAM-4)*

SFF document SFF-8067, *40-pin SCA-2 Connector w/Bidirectional ESI*