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Universal Flash Storage (UFS)

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Foreword

This standard has been prepared by JEDEC. The purpose of this standard is definition of an UFS Universal Flash Storage electrical interface and an UFS memory device. This standard defines a unique UFS feature set and includes the feature set of eMMC Specification as a subset. This standard references also several other standard specifications by MIPI (M-PHY and UniPro Specifications) and INCITS T10 (SBC, SPC and SAM Specifications) organizations.

Introduction

The UFS electrical interface is a universal serial communication bus which can be utilized for different type of applications. It's based on MIPI M-PHY standard as physical layer for optimized performance and power. Architectural model references the INCITS T10 SAM model for ease of adoption.

The UFS device is a universal data storage and communication media. It is designed to cover a wide area of applications as smart phones, cameras, organizers, PDAs, digital recorders, MP3 players, internet tablets, electronic toys, etc.

UNIVERSAL FLASH STORAGE (UFS)

(From JEDEC Board Ballot JCB-12-21, formulated under the cognizance of the JC-64.1 Committee on Electrical Specifications and Command Protocols)

1 SCOPE

This standard specifies the characteristics of the UFS electrical interface and the memory device. Such characteristics include (among others) low power consumption, high data throughput, low electromagnetic interference and optimization for mass memory subsystem efficiency. The UFS electrical interface is based on an advanced differential interface by MIPI M-PHY standard which together with the MIPI UniPro standard forms the interconnect of the UFS interface. The architectural model is referencing the INCITS T10 SAM standard and the command protocol is based on INCITS T10 (SCSI) SPC and SBC standards.

2 NORMATIVE REFERENCE

The following normative documents contain provisions that, through reference in this text, constitute provisions of this standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies.

[MIPI-M-PHY] , MIPI Alliance Specification for M-PHYSM Specification, Version 1.00.00

[MIPI-UniPro] , MIPI Alliance Specification for Unified Protocol (UniProSM), Version 1.40.00

[MIPI-DDB], MIPI Alliance Specification for Device Descriptor Block (DDB), Version

[SAM], SCSI Architecture Model – 5 (SAM-5), Revision 05, 19 May 2010

[SPC], T10 Specification: SCSI Primary Commands – 4 (SPC-4), Revision 27, 11 October 2010

[SBC] T10 Specification: SCSI Block Commands - 3 (SBC-3), Revision 24, 05 August 2010