Proposed Draft

Serial ATA International Organization

Version 03
1/3/2018

Serial ATA Technical Proposal # TPR 082
Title : Obsolete SATA Express in Serial ATA Specification, Revision 3.3

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Document History

Version	Date	Comments
01	11/14/2017	First draft for CabCon internal review
02	12/13/2017	Second draft based on CabCon feedback

Background
Since SATA Express was introduced around 2013, there has been minimum industry adoption for a variety of reasons. To avoid unnecessary form factor proliferation, it is proposed to obsolete SATA Express from the SATA spec.

Changes Requested
Note that all changes are mark in red, as below:

1. *Page 5, Table of Contents*

2. *Page 5, Table of Contents*

3. *Page 16, List of Figures*

4. *Page 23, List of Tables*

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5. *Page 23, List of Tables*

6. Page 29, Revision History

j) TPR044 - Synch with ACS-3;
k) TPR045 - Rebuild Assist;
l) TPR046 - Transitional Energy Reporting;
m) TPR047 - SATA Express Specification (obsolete);
n) TPR049 - Add QPM to SATA logs;
o) TPR050 - SATA MicroSSD Footprint Update;

7. *Page 30, Revision History*

1.6 Revision 3.3 (ratification date January xx, 2016)

Release that incorporates errata against Revision 3.2:

a) ECN073 - CIC Clarification;
b) ECN074 - SATA Express Pin Sequencing (obsolete);
c) ECN075 - Identify Device data log and Word correction;
d) ECN076 - Flow control;
e) ECN077 - Automatic Partial to Slumber No NCQ;

8. Page 53, Section 4.1.2 Abbreviations

SATA	Serial ATA
SATA Express	SATA Express usage model (see 6.10) (obsolete)
SCSI	Small Computer System Interface

9. Page 71, Section 5.3.1

Table 3 – SATA Express usage models (obsolete)

Characteristic [a b c]	Usage model section number	Host side connector	Device side connector	Cable length	Cable and connector electrical	PCIe lanes	SATA Lanes
SATA Express Internal 1 m Cabled Host to Device	6.10	6.10.10	6.10.7	≤ 1 m	6.10.15	x2	SL (single lane) muxed with PCIe
SATA Express Direct Connection to Device	6.10	6.10.9	6.10.7	BP	6.10.15	x2	SL (single lane) muxed with PCIe
SATA Express Short Backplane to Device	6.10	6.10.9	6.10.7	BP	6.10.15	x2	SL (single lane) muxed with PCIe

Key:
SL = single lane
ML = multi-lane
BP = Backplane
x2 = PCIe x2 (see 4.1.1.100)

NOTE - Many of the references in the table are section numbers or notations of clarification that do not require Key values.

[a] The SATA Express cabled topology requires the use of the PCIe Phy that supports SRIS since no RefClk is sent over the cable. PCIe Phys without SRIS capability do not support the cabled application.
[b] Optional RefClk pins are provided in the SATA Express host receptacle connector, that allows use of the PCIe Phy that requires common RefClk.
[c] System OEM is responsible for the management of PCIe devices with or without common RefClk.

10. Page 72, Section 5.3.1

Table 4 – SATA Express usage model electrical requirements (obsolete)

Characteristic	PCIe Gen2 [a b c]	PCIe Gen3 [a b c]	SATA Gen1i and SATA Gen2i	SATA Gen3i
SATA Express Interenal 1 m Cabled Host to Device	R	FS 1	R	FS 1
SATA Express Direct Connection to Device	R	FS 1	R	FS 1
SATA Express Short Backplane to Device	R	FS 1	R	FS 1

Key:
R = Required configuration requires appropriate capabilities
FS = Feature specific configuration is supported by specification but may be tied to an optional capability

NOTE 1 - Feature specific is intended to indicate that Gen1 is required but higher data rates are optional.

[a] The SATA Express cabled topology requires the use of the PCIe Phy that supports SRIS since no RefClk is sent over the cable. PCIe Phys without SRIS capability do not support the cabled application.
[b] Optional RefClk pins are provided in the SATA Express host receptacle connector, that allows use of the PCIe Phy that requires common RefClk.
[c] System OEM is responsible for the management of PCIe devices with or without common RefClk.

11. Page 216, Section 6.10

6.10 SATA Express connector (obsolete)

6.10.1 SATA Express connector overview

SATA Express defines electrical and mechanical requirements for SATA Express that is a PCI Express (PCIe) connection to the existing standard 3.5 inch and 2.5 inch disk drive form factors for client applications. It is intended for providing a smooth transition path from SATA to PCIe storage, leveraging both PCIe specifications and 3.5 inch and 2.5 inch drive mechanical standards.

6.10.2 SATA Express connector goals

SATA Express is developed with the following characteristics:

a) PCIe (see 3.2) connection to client PCIe storage devices;
b) standardized connectors and form factors, fitting in the existing 3.5 inch and 2.5 inch drive mechanical enclosures;

12. Page 288, Section 7.3

7.3 SATA Express system electrical requirements (obsolete)

7.3.1 SATA Express system electrical requirements overview

The SATA Express system electrical requirements cover:

a) AC coupling capacitance;
b) PCIe sidebands; and
c) power.

Most electrical characteristics that are defined as part of other standards, particularly PCIe, are referenced, rather than defined in SATA Express.

Obsolete per TP-C001