microSD EXPRESS – THE FASTEST MEMORY CARD FOR MOBILE DEVICES

microSD Express joins SD Express in integrating PCIe® and NVMe™ for up to 985 MB/sec transfer rate with backwards compatibility

BARCELONA — Mobile World Congress Booth #CS120 — Feb. 25, 2019 — The SD Association announced today microSD Express, offering the popular PCI Express® and NVMe™ interfaces alongside the legacy microSD interface for backwards compatibility. Like SD Express, microSD Express uses the PCIe interface delivering a 985 megabytes per second (MB/s) maximum data transfer rate and the NVMe upper layer protocol enables advanced memory access mechanism, enabling a new world of opportunities for mobile devices.

microSD Express cards defined in the SD 7.1 specification will be offered in a variety of capacities such as microSDHC Express, microSDXC Express and microSDUC Express. An updated video provides an overview of microSD Express and SD Express.

"microSD Express gives the mobile industry a compelling new choice to equip mobile devices with removable SSDs," said Hiroyuki Sakamoto, SDA president. "SD 7.1 prepares consumers and mobile device manufacturers to meet ever increasing storage demands for years to come."

"PCI-SIG is pleased to continue our collaboration with the SDA on this newest innovation for the world's leading removable memory card – microSD," said Al Yanes, PCI-SIG president and chairman. "PCIe specification conformance tests are available today by major test vendors, offering a significant advantage for any new PCIe adopter."

microSD Express delivers speeds necessary to transfer large amounts of information generated by data-intense wireless communication, speed hungry applications running on cards and mobile computing devices, ever evolving gaming systems, multi-channel IoT devices, numerous automotive uses, higher resolution mobile videos, action cameras , 360º videos, VR and more.

"NVMe is the industry-recognized performance SSD interface from the client to the data center to mobile, shipping in millions of units," said Amber Huffman, NVM Express® Inc. president. "By SDA adopting NVMe technology into the new microSD Express cards, users can experience lower latency and increasingly fast transfer speeds across various applications."

microSD Express uses the well-known PCIe 3.1 and NVMe v1.3 specifications defined by PCI-SIG® and NVM Express, respectively, on the second row of pins. PCIe 3.1 includes the low power sub-states (L1.1, L1.2) enabling low power implementations of SD Express for the mobile market. In addition, SD Express cards with significantly higher speed data transfer rates are expected to consume less energy than traditional

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microSD memory cards while keeping the same maximum consumed power. The cards provide system developers new options offered by PCIe and NVMe capabilities, such as Bus Mastering, Multi Queue (without locking mechanism) and Host Memory Buffer. By relying on successful protocols already in the marketplace, the SDA gives the industry an advantage allowing utilization of existing test equipment and saving in development process by usage of existing building blocks used in existing designs.

The SDA released visual marks to denote microSD Express memory cards to make matching the card and device easier for optimal device performance.

The SDA revised its white paper, "SD Express Memory Cards with PCIe and NVMe Interfaces," that provides more details on the new capabilities and features found in the SD 7.1 specification. It also introduced a new white paper "SD Express and microSD Express Memory Cards: The Best Choice for Your Future Product Designs" providing product engineers with an in-depth look at the opportunities now available. More information is available on our website.

Find the SDA at Mobile World Congress Barcelona in Booth CS 120 February 25-28, 2019, in the Fira Gran Via, Barcelona, Spain. The SDA is also at embedded world in Booth 3A-524 February 26-28, in the Exhibition Centre Nuremberg, Nuremberg, Germany.

SD Association

The SD Association is a global ecosystem of nearly 900 technology companies charged with setting interoperable SD standards. The Association encourages the development of consumer electronic, wireless communication, digital imaging and networking products that utilize market-leading SD technology. The SD standard is the number one choice for consumers and has earned more than 90 percent of the memory card market with its reliable interoperability and its easy-to-use format. Today, smartphones, tablets, drones, IoT devices, HDTVs, audio players, automotive systems, computers, digital cameras and digital video cameras feature SD interoperability. For more information about SDA or to join, please visit the Association's website, https://www.sdcard.org.

SD Logos are trademarks licensed by SD-3C LLC.

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PCI-SIG

PCI-SIG is the consortium that owns and manages PCI specifications as open industry standards. The organization defines industry standard I/O (input/output) specifications consistent with the needs of its members. Currently, PCI-SIG is comprised of nearly 800 industry-leading member companies. To learn more about PCI-SIG, and for a list of the Board of Directors, visit www.pcisig.com. PCI Express® is a registered trademark of PCI-SIG.

PCIe® - PCI Express, is a standard developed by PCI-SIG® and PCIe® is a trademark owned by PCI-SIG®

NVMe™ - NVM Express™, is a standard developed by NVM Express Inc. and NVMe™ is a trademark owned by NVM Express Inc.

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