

## **Statement of Support for the UCle 2.0 Specification**

### **Advantest Corporation**

“As a manufacturer of automated test equipment (ATE), Advantest joined the UCle consortium to ensure the testability of individual chiplets and complex multi-die devices. As a result, the latest UCle spec now includes an optional, dedicated test access port (TAP) utilizing UCle-S channels for high-bandwidth production test access. We strongly believe that the industry needs such a standardized TAP and will continue to work with EDA vendors, foundries, and partners to enable the UCle ecosystem.”

*Juergen Serrer, CTO, Advantest Corporation*

### **Alphawave Semi**

“As chiplets increasingly gain adoption in hyperscalers, high-performance computing (HPC) and artificial intelligence (AI) systems, the heterogeneous approach demands diverse requirements tailored to a variety of applications. Alphawave Semi is dedicated to enhancing its UCle IP subsystem and chiplets according to the latest available UCle standards. The UCle 2.0 specification marks a significant advancement with the introduction of UCle-3D over hybrid bonding. Alphawave Semi aims to streamline its portfolio with the latest updates from the UCle 2.0 specification and to collaborate closely with customers and ecosystem partners to enable chiplet connectivity solutions.”

*Mohit Gupta, Senior VP & GM, Custom Silicon & IP, Alphawave Semi*

### **AMD**

“Enabling core density is a critical component of achieving, both, increased performance and energy efficiency for processors across consumer and commercial applications. The UCle 2.0 specification introduces support for advanced 3D packaging technologies that enable higher compute and bandwidth density in modern CPUs, GPUs and Accelerators. We are extremely proud to collaborate with our industry peers in the UCle Consortium in order to support a robust vendor-neutral chiplet ecosystem.”

*Anwar Kashem, Corporate Vice President, IO Architecture, AMD*

### **Arm**

“Arm is at the center of the industry’s leading multi-vendor chiplet ecosystem, delivering platforms and Compute Subsystems that maximize efficiency without compromising performance or driving up costs. Aligning our standardization efforts to UCle 2.0 exemplifies the kind of innovation that can be unlocked through industry collaboration, such as providing partners with a path to 3D packaging support to enable advanced system designs with higher bandwidth, lower latency, and significant cost savings.”

*Andy Rose, VP Technology Strategy and Fellow, Arm*



### **Astera Labs**

“Chiplets are a critical component to enable increased scalability, performance, and flexibility for accelerated computing platforms in AI infrastructure. The UCle 2.0 Specification is a significant milestone for the chiplet ecosystem as it delivers improvements to both overall performance and interoperability. Astera Labs is proud to continue supporting this important initiative, which offers an expanded range of solutions for our Intelligent Connectivity Platform to address an increasingly diverse set of AI platforms with faster deployment cycles.”

*Casey Morrison, Chief Product Officer, Astera Labs*

### **Ayar Labs**

“The UCle 2.0 specification is critical for the interconnect chiplet ecosystem and sets the stage for unleashing next-gen AI architectures. Ayar Labs is at the forefront of this movement, centering our TeraPHY™ optical I/O chiplet roadmap around the UCle specification. The UCle Consortium’s work is instrumental in driving broad adoption and manufacturability of optical I/O to deliver the high bandwidth, energy efficiency, and low latency required for AI innovation and application growth.”

*Lakshmikant (LK) Bhupathi, Vice President of Products, Strategy and Ecosystem, Ayar Labs*

### **Blue Cheetah**

"The enthusiasm for chiplets has never been higher, and the evolution of the UCle specification underscores that interest. Continued advancement in customizable die-to-die interconnects is critical to enabling multi-vendor chiplet ecosystems and products."

*Elad Alon, CEO, Blue Cheetah*

### **Cadence**

"Cadence has a strong history of working closely with the UCle Consortium to contribute to and develop the UCle standard. The changes in UCle 2.0, particularly enhanced interoperability through management mechanisms and the introduction of the UCle-3D solution, enable many more chiplet designers and SiP implementers to use UCle to achieve faster time to market while lowering design costs. These are the right steps toward making UCle a truly universal standard for chiplet interconnect that supports a thriving open chiplet ecosystem. Cadence is pleased to bring these innovations to our users."

*Boyd Phelps, Senior Vice President and General Manager of the Silicon Solutions Group, Cadence*

### **Eliyan**

“Eliyan congratulates the UCle Consortium on the UCle 2.0 release, and is pleased to contribute our expertise to the progress of the UCle specification, including authoring one of the ECNs in the 2.0 release. Eliyan developed a 32Gbps UCle PHY in standard packaging last year, and recently developed a beyond 32Gbps+ UCle PHY in advanced packaging. Eliyan will continue to offer a range of the highest performance and lowest power PHYs for standards-compliant and customized die-to-die solutions.”

*Farhad Tabrizi, Vice President of Standards & Alliances, Eliyan*



### **eTopus**

“UCle Spec Ver 1.1 established the foundation of a die-to-die specification that achieves high-bandwidth density, low latency, and high power-efficiency. With UCle 2.0, additional requirements for support blocks such as the reference clock are now clearly defined. The Management Transport Protocol establishes a framework beyond die-to-die data transfer toward System-in-Package management support of data and control between die utilizing this higher layer UCle protocol. This will enable our customers to architect more efficient SiP solutions with debug and test support. We applaud the work of the UCle Consortium and member companies and are pleased to be active contributors to this important work.”

*Harry Chan, CEO, eTopus*

### **Global UniChip Corporation (GUC)**

"In two years since its announcement UCle became an enabler of chiplet-based large-scale AI, HPC and Networking products. UCle-2.0 specification is the next step in implementing a vision of interoperable chiplets using the full spectrum of standard and advanced 2.5D and 3D packaging technologies. GUC, an advanced packaging expert, was an early UCle adopter and has a rich portfolio of interface IPs with UCle-2.0 compliant 32Gbps IP, which will be silicon proven in Q1/2025, as well as 64Gbps IP, currently in development. GUC was the earliest implementer of 3DIC technology with 3D interface IP supporting UCle-3D specification silicon proven at 5.0Gbps using TSMC's SoIC-X."

*Igor Elkanovich, CTO, GUC*

### **Google**

“Google is pleased to see the progress that UCle has made over the past two years to bring the industry together to deliver an open, interoperable and multi-vendor chiplet ecosystem. UCle 2.0 delivers three major features to advance the state of the art. The management protocol provides the foundation for serviceability and reliability, while the standard debug and test architecture fosters compliance to a common criteria amongst different vendors. Finally, Google is excited to see UCle introduce 3D capabilities to advance in-package IO technology for HPC and AI applications.”

*Partha Ranganathan, Fellow and Vice President, Google*

### **Intel**

“To realize the full potential of AI, we need an open and collaborative ecosystem that fosters advanced packaging and chip design innovation across market segments. Today marks another milestone of progress with the UCle 2.0 specification, which helps us push the boundaries of what’s possible and address what customers are asking for – AI compute solutions that deliver power-efficient performance.”

*Justin Hotard, Executive Vice President and General Manager of the Data Center and Artificial Intelligence Group, Intel*



**Kandou**

“Kandou is proud to be a Contributor member of the UCle Consortium. As a pioneer in chiplet technology, we believe strong partnerships and collaboration are key to establishing interoperability and furthering the advancement of the industry. The release of the UCle 2.0 specification shows that we are closer to achieving these interoperable solutions across multiple applications.”

*Dr. Amin Shokrollahi, CEO & Founder, Kandou*

### **Mercedes-Benz**

“Mercedes-Benz is thrilled about the ongoing progress of UCle and the advancements in the UCle 2.0 specification. Enhancements like 3D packaging promise higher bandwidth density and improved power efficiency, while optimized package designs ensure interoperability and compliance testing. With the Automotive Working Group addressing key automotive and safety requirements, Mercedes-Benz proudly supports the UCle Consortium’s efforts. We look forward to continuing our contribution to the standardization of the chiplet ecosystem.”

*Georges Massing, Vice President MB.OS Automated Driving & E/E Integration, Mercedes-Benz*

### **Microchip**

“UCle 2.0 enables a broad industry die-to-die interconnect ecosystem which allows for high function integration which we anticipate will add a great deal of value to Microchip’s industry-leading portfolio of compute and systems solutions. The new features in this open standard, enabling multi-die solutions, are optimized for performance, power and cost efficiency.”

*Pete Hazen, Vice President, Data Center Solutions Business Unit, Microchip*

### **MIPS Technology**

“MIPS Technology is very pleased with the UCle 2.0 specification, which enhances high-performance, cost-effective multi-chip solutions. Building on the robust features of UCle 1.1, UCle 2.0 improves debug capabilities, test methodologies, and packaging technologies, ensuring greater efficiency and reliability in advanced applications, including AI/ML use cases.”

*Durgesh Srivastava, CTO, MIPS Technology*

### **Neuron IP**

“Neuron IP is proud to be at the forefront of silicon interfaces with the development of UCle. The need for ‘standardized’ chiplet interfaces is paramount to the evolution of silicon industry and is an integral part to all rapidly-advancing application verticals including AI/ML, HPC/Data Center, 5G/6G, and Automotive. In the upcoming 2.0 Specification, UCle extends to 3D IC packaging; paving the way for cutting-edge logic die stacking. We are excited to enable incredibly dense, power-efficient systems-in-package.”

*Saman Sadr, President & CEO, Neuron IP*

### **NVIDIA**

“The release of the UCle 2.0 Specification marks a significant milestone in the evolution of chiplet-based system design, offering a standardized way of initializing, managing, and debugging systems-on-a-chip. As a member of the UCle Consortium, NVIDIA is committed to advancing all aspects of this specification to help drive innovation and performance in next-generation computing systems.”

*Ashish Karandikar, Vice President of Hardware Engineering, NVIDIA*



### **Rebellions**

“Rebellions is excited to support the UCle 2.0 Specification, which promises significant advancements in chiplet-based AI accelerators. Already utilizing UCle v1.1, Rebellions remains dedicated to expanding the chiplet ecosystem and will actively leverage and develop chiplet-based architectures in collaboration with various vendors across UCle layers. UCle 2.0's new features, including its manageability architecture and Debug and Test Architecture (UDA), will enhance our time-to-market and cost-effectiveness. This enables Rebellions to deliver cutting-edge AI accelerators with superior interoperability, performance, and security as we scale out our AI core chiplet developments.”

*Jinwook Oh, CTO, Rebellions*

### **Samsung Electronics**

"Chiplets have become an essential solution for all applications ranging from AI to automotive. As one of the founding members of the UCle Consortium, we are delighted to participate in the successful release of the UCle 2.0 specification. Samsung Foundry is actively building the UCle ecosystem with multiple partners through our Multi-Die Integration (MDI) Alliance, and we anticipate UCle 2.0 to expand our chiplet-based solution offerings, and add more value to Samsung Foundry's turnkey services."

*Jongshin Shin, Corporate Executive Vice President of Foundry IP Development, Samsung Electronics*

### **Siemens EDA**

“Building on our leadership in chiplets technology and strong track record of support for the standard, Siemens EDA is once again a key contributor for the newest version of UCle technology. With our UCle 2.0 Verification IP and Compliance Test Suite solutions, Siemens continues its UCle design verification leadership. And because version 2.0 of the UCle standard incorporates advances that support mainstream design for test (DFT) practices, it paves the way for next-generation products capable of fully leveraging Siemens’ industry-leading Tessent software.”

*Mike Ellow, CEO of Silicon Systems, Siemens EDA*

### **Synopsys**

“The latest advancements in the UCle 2.0 specification accelerate the industry’s adoption of 3D packaging for power efficiency and higher bandwidth density, while also addressing the complexities in testing and debug across the silicon lifecycle. As an active contributor to the UCle Consortium, Synopsys is helping to drive the development and adoption of the UCle standard for fast heterogeneous integration of chiplets with industry-leading, comprehensive UCle IP and multi-die solutions.”

*Michael Posner, Vice President of IP Product Management, Synopsys*



### **UniVista**

“As a contributor of the UCle Consortium and its working groups, Univista is proud to integrate our UCle 1.1 IP subsystem into customer’s design rapidly. The consortium has released UCle 1.1 which shows short latency, high bandwidth density and power efficiency, and enabled multiple companies to adopt UCle as Die-to-Die interface in their design. The newly released UCle 2.0 introduces UCle-3D, which provides interface specifications for 3D homogeneous and heterogeneous design. Univista will continue the IP development of new version UCle.”

*Mao Liu, Vice President, UniVista*

### **Untether AI**

“Untether AI is excited to incorporate the UCle 2.0 specification in our designs, enabling energy-efficient and seamless communication for our high-performance AI acceleration chiplets. This integration supports our groundbreaking at-memory compute architecture, enhancing our ability to deliver compact and high-performance systems for datacenter, automotive, and other key application.”

*Chris Walker, CEO, Untether AI*