Contacts:
George Millington
AMD Communications
+1 408-547-7481
George.Millington@amd.com

Jason Schmidt
AMD Investor Relations
+1 408-749-6688
Jason.Schmidt@amd.com

AMD Launches World's First 7nm Professional PC Workstation Graphics Card for 3D Designers, Architects and Engineers

— AMD Radeon™ Pro W5700 graphics card harnesses high-performance AMD RDNA architecture, industry-leading process technology and enterprise-grade software to help professionals increase productivity, improve product quality and accelerate time-to-market —

— AMD RDNA architecture delivers up to 25 percent higher performance-per-clock[1] and up to 41 percent higher average performance-per-watt[2] than the previous-generation AMD architecture to power demanding 3D design, real-time visualization and VR workloads —

Santa Clara, Calif. — November 19, 2019 — AMD (NASDAQ: AMD) today announced the AMD Radeon™ Pro W5700, the world's first 7nm professional PC workstation graphics card. It delivers new levels of performance and advanced features that enable 3D designers, architects and engineers to visualize, review and interact with their designs in real time, dramatically accelerating decision-making processes and product development cycles.

The AMD Radeon Pro W5700 workstation graphics card features the high-performance, energy-efficient AMD RDNA architecture and state-of-the-art GDDR6 memory to handle large models and datasets, and is the first PC workstation graphics card to support high-bandwidth PCIe® 4.0 technology. It is ideal for professionals who push performance beyond traditional 3D design by generating photorealistic renders of their concepts and reviewing virtual prototypes of their designs in virtual reality (VR) environments.

"Today's professionals need high-performance professional graphics hardware to better interact with their product concepts and make more informed decisions sooner in the design process," said Scott Herkelman, corporate vice president and general manager, Radeon Technologies Group at AMD. "We designed the AMD Radeon Pro W5700 to deliver significant performance gains in top design and

manufacturing applications. Architects, designers and engineers now have the horsepower to drive demanding real-time and VR experiences, enabling a better and faster design creation process."

Key capabilities and features of the AMD Radeon Pro W5700 graphics card include:

- **High-Performance AMD RDNA Architecture** – Features a redesigned geometry engine and compute units, delivering up to 25 percent higher performance-per-clock[1] and up to 41 percent higher average performance-per-watt[2] than the previous-generation Graphics Core Next (GCN) architecture.

- **Exceptional Power Efficiency –** AMD Radeon™ Pro Software for Enterprise's intelligent power optimization, coupled with the power-efficient AMD RDNA architecture and 7nm process technology, enables the Radeon Pro W5700 graphics card to provide up to 18 percent better system efficiency than the competitive product[3].

- **Accelerated CPU/GPU Multitasking –** Provides outstanding multitasking performance even in the most demanding situations, such as continuing to model while rendering a visualization in the background, providing up to 5.6X the application workflow performance with CPU load than the competition in the SPECviewperf® 13 benchmark[4].

- **Professional-grade Software** – AMD Radeon Pro Software for Enterprise delivers professional-grade quality, continuous performance improvements and robust security as well as industry-leading features, including AMD Remote Workstation[5] that allows professionals to work virtually from anywhere with feature and performance parity with the workstation GPU on their desk[6].

- **Innovative VR Software Features –** AMD Radeon™ ReLive for VR enables professionals using AMD Radeon Pro W5700 graphics cards to wirelessly visualize their creations with VR-capable applications and select standalone VR headsets, such as the HTC VIVE Focus™ Plus[7].

- **High-bandwidth PCIe® 4.0** – The AMD Radeon Pro W5700 is the first PC workstation graphics card to support PCIe 4.0, delivering double the bandwidth of PCIe® 3.0 to enable smooth performance for GPU-intensive applications.

- **Professional Application Certification –** Optimized and certified with leading Design and Manufacturing, and Architecture, Engineering and Construction applications to deliver the stability and reliability required by workstation professionals. The list of Radeon Pro Software certified ISV applications can be found here.

- **High-speed USB-C®** – The AMD Radeon™ Pro W5700 is the first PC workstation graphics card to include a USB-C® connector, supporting a growing selection of USB-C® based monitors and head-mounted displays (HMD).

	Compute Units	TFLOPS (FP32)	GDDR6	Memory Bandwidth	Memory Interface	Display Outputs
Radeon™ Pro W5700 graphics	36	Up to 8.89	8GB	Up to 448 GB/s	256-bit	6

AMD Radeon Pro W5700 graphics card is expected to available starting today for USD $799 SEP from the following retailers including:

- North America – B&H Photo and Newegg
- EMEA – Elmtec, Schneider and Tarox
- Asia Pacific – JD.com and Mwave

The AMD Radeon Pro W5700 graphics card will be demonstrated in the AMD booth (#AE310) at Autodesk University 2019, Nov. 19 to 21 in Las Vegas, Nevada.

Supporting Resources
- Learn more about AMD Radeon™ Pro W5700 graphics card here
- Become a fan of AMD on Facebook
- Follow AMD on Twitter
- Follow Radeon™ Pro graphics on Twitter

About AMD
For 50 years AMD has driven innovation in high-performance computing, graphics and visualization technologies — the building blocks for gaming, immersive platforms and the datacenter. Hundreds of

millions of consumers, leading Fortune 500 businesses and cutting-edge scientific research facilities around the world rely on AMD technology daily to improve how they live, work and play. AMD employees around the world are focused on building great products that push the boundaries of what is possible. For more information about how AMD is enabling today and inspiring tomorrow, visit the AMD (NASDAQ: AMD) website, blog, Facebook and Twitter pages.

[1] RDNA provides up to 1.25x higher performance per clock over GCN. Testing done by AMD performance labs 5/23/19, showing a geomean of 1.25x per/clock across 30 different games @ 4K Ultra, 4xAA settings. Performance may vary based on use of latest drivers. RX-327
[2] The AMD RDNA architecture delivers up to 41% higher average performance per watt than the previous AMD GCN architecture when tested with the SPECviewperf® 13 benchmark sw-04 viewset, creo-02 viewset, 3dsmax-06 viewset, Enscape "Mansion" demo, Unity internal automotive benchmark, and the Unity VR demo "London Office". Testing as of October 25, 2019 by AMD Performance Labs on a production system comprised of an Intel® Xeon® W-2125, 32GB DDR4 RAM, Windows® 10 Pro for Workstations, 64-bit, System BIOS 1.11.1, AMD Radeon™ Pro W5700 graphics powered by the RDNA architecture, AMD Radeon™ Pro Software for Enterprise 19.Q4 versus AMD Radeon™ Pro WX 8200 graphics card powered by the GCN architecture. Metric: Calculate performance per watt with benchmark application score divided by GPU wattage, and then average across a variety of benchmark applications. AMD Radeon™ Pro W5700 graphics power TDP: 190W. AMD Radeon™ Pro WX8200 graphics power TDP: 230W. Note: TDP of the AMD Radeon™ Pro W5700 was adjusted to 190W to reflect actual TDP for graphics, and not include TDP for USB (the WX 8200 does not have USB) for parity. Benchmark Application: SPECviewperf 13 snx-03. AMD Radeon™ Pro W5700 score: 342.49. AMD Radeon™ Pro WX8200 score: 297.47. Benchmark Application: SPECviewperf 13 creo-02. AMD Radeon™ Pro W5700 score: 219.99. AMD Radeon™ Pro WX8200 score: 196.49. Benchmark Application: SPECviewperf 13 3dsmax-06. AMD Radeon™ Pro W5700 score: 181.98. AMD Radeon™ Pro WX8200 score: 161.34. Additional information about the SPEC benchmarks can be found at www.spec.org/gwpg. SPEC® and SPECviewperf® are registered trademarks of the Standard Performance Evaluation Corporation. RPW-262
[3] The same computer equipped with AMD Radeon™ Pro Software for Enterprise 19.Q4 with Radeon™ Pro W5700 consumes up to 18% less power in SOLIDWORKS® solid modelling workflows compared to the NVIDIA Quadro® driver 440.97 with NVIDIA Quadro RTX™ 4000. Testing conducted by AMD Performance Labs as of October 24th 2019 on AMD Radeon™ Pro Software for Enterprise 19.Q4 with Radeon™ Pro W5700 and NVIDIA Quadro® driver 440.97 with NVIDIA Quadro RTX™ 4000, on a test system comprising an Intel® Core™ i9-9900K, 32 GB 2133 MHz DDR4 RAM, MSI Z370-A Pro motherboard with BIOS version 7B48v2A, 512 GB Intel 760p SSD, and Windows 10 May 2019 Update. Power was measured using the average of second-by-second value readouts from a Kill A Watt P3 P3IP4400 wattmeter over a 30 second timespan spent in a SOLIDWORKS® 2019 solid modelling workflow. Results may vary. RPS-110
[4] The AMD Radeon™ Pro W5700 graphics card when using AMD Radeon™ Pro Software for Enterprise 19.Q4 provides up to 5.6x the application workflow performance while multitasking in the SPECviewperf® 13 sw-04 SW2012_shaded benchmark when compared to the NVIDIA Quadro RTX™ 4000 graphics card using the NVIDIA Quadro® Optimal Driver for Enterprise (ODE) R430 U4 (431.02). Testing as of October 25, 2019 by AMD Performance Labs on production system comprised of an Intel® Xeon® W-2125, 32GB DDR4 RAM, Windows® 10 Pro for Workstations, 64-bit, System BIOS 1.11.1, AMD Radeon™ Pro W5700, AMD Radeon™ Pro Software for Enterprise 19.Q4/NVIDIA Quadro RTX™ 4000, NVIDIA Quadro® Optimal Driver for Enterprise (ODE) R430 U4 (431.02). Benchmark application and derived metric calculation: ran the SPECviewperf® 13 benchmark sw-04 SW2012_shaded test with the Corona Renderer 1.3 CPU benchmark running simultaneously to generate the application workflow performance with multitasking. Calculated the performance when multitasking as a percentage then calculated the ratio between the two percentages. AMD RADEON™ PRO W5700 RESULTS: AMD Radeon™ Pro W5700 with SPECviewperf® 13 sw-04 SW2012_shaded test results with the Corona Renderer 1.3 CPU benchmark running simultaneously: AMD Radeon™ Pro W5700 SPECviewperf® 13 sw-04 SW2012_shaded test results: 1075.51 FPS. AMD Radeon™ Pro W5700 with SPECviewperf® 13 sw-04 SW2012_shaded test results with the Corona Renderer 1.3 CPU benchmark running simultaneously: 957.07 FPS. 88.99% of the workflow performance compared to the performance when not multitasking on the AMD Radeon™ Pro W5700 graphics card. NVIDIA QUADRO RTX™ 4000 RESULTS: NVIDIA Quadro RTX™ 4000 with SPECviewperf® 13 sw-04 SW2012_shaded test results with the Corona Renderer 1.3 CPU benchmark running in the background: NVIDIA Quadro RTX™ 4000 SPECviewperf® 13 sw-04 SW2012_shaded test results: 868.09 FPS. NVIDIA Quadro RTX™ 4000 with SPECviewperf® 13 sw-04 SW2012_shaded test with the Corona Renderer 1.3 CPU benchmark running in the background: 138.66 FPS. 15.97% of the workflow performance compared to the performance when not multitasking on the NVIDIA Quadro RTX™ 4000 graphics card. Results may vary. Additional information about the SPEC benchmarks can be found at www.spec.org/gwpg. SPEC® and SPECviewperf® are registered trademarks of the Standard Performance Evaluation Corporation. RPW-264

[5] Compatible with AMD Radeon™ Pro WX 3200, WX 4100, WX 5100, WX 7100, WX 8200, WX 9100 and W5700 GPUs. Remote Workstation functionality requires AMD Radeon™ Pro Software for Enterprise driver 18.Q4 or newer plus purchase and installation of Citrix Virtual Apps & Desktops™ or Microsoft® Remote Desktop Services. RPS-50

[6] Radeon™ Pro Software for Enterprise 19.Q2 with AMD Remote Workstation delivers comparable performance on SPECviewperf® 13 3dsmax-06 when compared local (non-remoted) performance. Testing conducted by AMD labs as of April 22nd, 2019 on a test system comprising of Intel® Core i5 8400 CPU, MSI Z370-A PRO motherboard, ADATA XPG Z1 16 GB DDR4 RAM, Samsung 860 EVO 250GB SSD, Windows® 10 Pro October 2018 Update with a RadeoRadeon™ Pro Software for Enterprise 19.Q2 with AMD Remote Workstation delivers comparable performance on SPECviewperf® 13 3dsmax-06 when compared local (non-remoted) performance. Testing conducted by AMD labs as of April 22nd, 2019 on a test system comprising of Intel® Core i5 8400 CPU, MSI Z370-A PRO motherboard, ADATA XPG Z1 16 GB DDR4 RAM, Samsung 860 EVO 250GB SSD, Windows® 10 Pro October 2018 Update with a Radeon™ Pro WX 4100 graphics card using Radeon™ Pro Software for Enterprise 19.Q2. Test was conducted using running benchmark the application SPECviewperf® 13 benchmark for its "3dsmax-06" viewset subtest. Radeon Pro Software Adrenalin 2019 Edition for Enterprise 19.Q2 with Radeon™ Pro Remote Workstation: 50.22. 19.Q2 run locally: 51.36 resulting in only up to a 2% drop. The results are the average of 3 iterations. The AMD Remote Workstation solution was implemented using the Citrix® XenDesktop® 7.18 application on an HP ZBook 17 G5 Client. Performance Differential: 51.36-50.22 = ~2.0% performance drop with the AMD Remote Workstation solution on Radeon™ Pro Software for Enterprise 19.Q2 versus running locally. Additional information about the SPEC benchmarks can be found at www.spec.org/gwpg. RPS-53 n™ Pro WX 4100 graphics card using Radeon™ Pro Software for Enterprise 19.Q2. Test was conducted using running benchmark the application SPECviewperf® 13 benchmark for its "3dsmax-06" viewset subtest. Radeon Pro Software Adrenalin 2019 Edition for Enterprise 19.Q2 with Radeon™ Pro Remote Workstation: 50.22. 19.Q2 run locally: 51.36 resulting in only up to a 2% drop. The results are the average of 3 iterations. The AMD Remote Workstation solution was implemented using the Citrix® XenDesktop® 7.18 application on an HP ZBook 17 G5 Client. Performance Differential: 51.36-50.22 = ~2.0% performance drop with the AMD Remote Workstation solution on Radeon™ Pro Software for Enterprise 19.Q2 versus running locally. Additional information about the SPEC benchmarks can be found at www.spec.org/gwpg. RPS-53

[7] Radeon™ ReLive for VR for workstation wireless VR use requires HTC VIVE Focus™ Plus headset. For VR connectivity, an 802.11ac 5 GHz router or access point is required. Compatible with AMD Radeon™ VR Ready Creator products (learn more at https://www.amd.com/en/technologies/vr-ready-creator). Supports: Windows® 10. RPS-108

What Industry Experts Say About AMD Radeon™ Pro W5700

"USB Type-C® is quickly becoming the predominant connector in the industry given its sleek form factor in support of evolving design trends as well as its scalable power and performance capabilities. We are excited to see the AMD Radeon™ Pro W5700 achieve USB-IF Certification, which is a significant milestone in the overall advancement of USB-C® technology in the professional workstation market."
Jeff Ravencraft, President and COO, USB Implementers Forum (USB-IF)

"Here at ACCA® software, performance tests with our BIM application Edificius, equipped with AMD Radeon™ ProRender, proves that AMD has one of the most powerful professional graphics cards that we've ever put our hands on. We're pleased with the efforts that AMD is making in this highly competitive market."
Giuseppe Pizza, Edificius Graphics & Visualization Team Manager, ACCA Software

"Unity exists to empower the success of the world's creators with the most accessible and powerful real-time 3D development platform. Combining the AMD Radeon™ Pro W5700 graphics with Unity's revolutionary tools, we enable creators from a diverse range of industries to build high-performance, high-fidelity experiences, all in real-time."
Tim McDonough, General Manager of Industrial, Unity

"As an engineering service provider and certified Dassault Systèmes, Siemens PLM and MSC Software Value Solutions Partner for the aerospace & defense industry, TEN TECH LLC values the high quality, reliability and thorough certification that AMD delivers in their professional workstation graphics cards, including the AMD Radeon™ Pro W5700 graphics. Our core values revolve around quality of delivery, attention to detail and speed of execution for our customers. Together with AMD, we always look to providing customers with exceptional service and results."
William Villers, VP of Engineering, TEN TECH LLC

"The AMD Radeon™ Pro W5700 graphics packs in amazing performance for a fantastic price. Artists using Foundry's Modo should find this card to be a great solution for rendering with Radeon™ ProRender."
Shane Griffith, Director of Product, Digital Design, Foundry