January 6, 2020

AMD Unveils Four New Desktop and Mobile GPUs, including AMD Radeon™ RX 5600 Series: Ultimate 1080p Gaming, Breath-Taking Visuals and Game-Changing Software Features

– Purpose-built for legions of 1080p gamers, AMD Radeon™ RX 5600 series offers up to 20 percent faster performance on average[1] across select AAA games and up to 10 percent faster performance on average[2] across select esports games than the competition –

– AMD Radeon™ RX 5600 series graphics to deliver incredible gameplay in next-generation Alienware™ Aurora gaming desktop PCs and Dell G5 15 SE gaming laptops –

– New AMD FreeSync™ Premium[3] and AMD FreeSync™ Premium Pro[4] to help gamers easily identify the ideal displays for the best high-refresh rate gaming experiences –

LAS VEGAS, Jan. 06, 2020 (GLOBE NEWSWIRE) -- **CES** – AMD (NASDAQ: AMD) today introduced AMD Radeon™ RX 5600 series graphics products, harnessing the power of groundbreaking AMD RDNA architecture and innovative software features to provide the ultimate in high-performance, high-fidelity experiences for 1080p gamers.

The new AMD Radeon™ RX 5600 series lineup includes the AMD Radeon™ RX 5600 XT graphics card, available in custom designs from AMD board partners, as well as the AMD Radeon™ RX 5600 graphics card, available in pre-configured desktop systems, including the new Alienware™ Aurora gaming PC. The new family also includes the AMD Radeon™ RX 5600M GPU, designed to deliver world-class 1080p gaming for laptop PCs, including the new Dell G5 15 SE. AMD also introduced the AMD Radeon™ RX 5700M GPUs to power the most advanced high-performance gaming laptop PCs.

Built on AMD RDNA architecture and industry-leading 7nm process technology, alongside high-bandwidth PCIe® 4.0 technology and high-speed GDDR6 memory, AMD Radeon™ RX 5600 series graphics deliver ultra-high levels of performance and power efficiency. The flagship AMD Radeon™ RX 5600 XT graphics card delivers up to 20 percent higher performance on average across today's top AAA games[1], and up to 10 percent higher performance on average across popular esports titles[2] versus the competition.

"From heart-pounding esports competitions to eye-popping AAA blockbusters, today's games demand more performance, higher framerates and lower latency than ever before," said Scott Herkelman, corporate vice president and general manager, Radeon Technologies Group at AMD. "There are 90 million active users on Steam[5], and over 64 percent of gamers who participated in a recent Steam survey reported playing at 1080p[6]. We're committed to

providing all 1080p gamers with the raw horsepower and incredible features that enable the absolute best gaming experiences with all settings maxed out. The AMD Radeon™ RX 5600 XT more than delivers, powering the ultimate in 1080p gaming at a price point that is sure to delight gamers everywhere."

"Holding true to Dell and Alienware's commitment to a no-compromise experience, the AMD Radeon™ RX 5600M GPU allows Dell G5 15 SE users enjoy high-quality, high-performance, immersive gaming on the go, using low power," said Vivian Lien, vice president of Alienware and Dell Gaming. "Our desktop users will also benefit from the AMD Radeon™ RX 5600 graphics card by bringing top-notch performance and rich features to our newly designed Alienware Aurora."

Delivering world-class performance and power efficiency, AMD Radeon™ RX 5600 series graphics offer all the capabilities and advanced Radeon™ Software features of the higher-end AMD Radeon™ RX 5700 series graphics, including:

- **AMD RDNA Architecture** – Built for superior performance, scalability and power efficiency, and designed to power the future of gaming. The AMD RDNA-powered Radeon™ RX 5600 series provides up to 2.1X higher gaming performance-per-watt than the Radeon™ RX 590 graphics card based on the prior-generation Graphics Core Next (GCN) architecture[7].
- **Radeon™ Boost**[8] – Delivers a performance increase during fast-motion gaming scenarios, including up to a 37 percent boost in *Overwatch* at 1440p*,* by dynamically reducing image resolution, increasing framerates and fluidity, as well as bolstering responsiveness with little to no perceptible change in image quality[9].
- **Radeon™ Anti-Lag**[10] – Radeon Anti-Lag significantly decreases input-to-display response times, including making *Apex Legends* up to 22 percent more responsive[11], and offers a competitive edge in gameplay.
- **Radeon™ Image Sharpening (RIS)**[12] – Brings crispness and clarity to in-game visuals that have been softened by upscaling and post-process effects in DirectX® 9, 11, 12 and Vulkan® titles. When paired with Radeon™ GPU upscaling, RIS enables sharp visuals and fluid frame rates on high-resolution displays.
- **AMD FidelityFX** – An open-source toolkit for game developers making it easier for them to add high-quality post-process effects that make games look beautiful while offering the optimal balance of visual fidelity and performance. Available on GPUOpen, FidelityFX features Contrast-Adaptive Sharpening (CAS), which draws out detail in low-contrast areas while minimizing artifacts caused by typical image sharpening routines.

Model	Compute Units	Stream Processors	TFLOPS	GDDR6	Game Clock[13] (MHz)	Boost Clock[14] (MHZ)	Memory Interface
Radeon™ RX 5600 XT	36	2304	Up to 7.19	6GB	Up to 1375	Up to 1560	192-bit
Radeon™ RX 5600	32	2048	Up to 6.39	6GB	Up to 1375	Up to 1560	192-bit
Radeon™ RX 5700M	36	2304	Up to 7.93	8GB	Up to 1620	Up to 1720	256-bit
Radeon™ RX 5600M	36	2304	Up to 5.83	6GB	Up to 1190	Up to 1265	192-bit

AMD FreeSync™ Premium and FreeSync™ Premium Pro

The world's largest adaptive sync display ecosystem, expected to reach 1,000 certified displays this month[15], has grown exponentially since its introduction six years ago. Simultaneously, the performance and variety of gaming components has increased

dramatically while gamers' expected experiences have evolved. Adding to the baseline AMD FreeSync™ tier, AMD is introducing new AMD FreeSync™ Premium tiers to make it easier for gamers to identify and select displays that deliver the best, high-refresh, ultra-smooth gaming experience:

- **AMD FreeSync™ Technology**[16] – Delivers smooth, tear-free and low-latency performance for monitors, laptop PCs and TVs that meet AMD's comprehensive certification process.
- **AMD FreeSync™ Premium Technology**[3] – Building upon the FreeSync™ tier, equips serious gamers with fluid, tear-free gameplay at peak performance, with at least a 120hz refresh rate at minimum FHD resolution and support for low framerate compensation (LFC) technology.
- **AMD FreeSync™ Premium Pro Technology**[4] – Provides the true HDR experience, combining smooth gaming at peak performance with stunning high dynamic range (HDR) visuals.

Availability
AMD Radeon™ RX 5600 XT graphics cards are expected to be available beginning January 21, 2020, for an SEP of $279 USD from AMD board partners, including ASRock, ASUS, Gigabyte, MSI, PowerColor, SAPPHIRE and XFX. The AMD Radeon™ RX 5600, RX 5600M and RX 5700M are expected to be available in OEM systems beginning in the first quarter of 2020. The Dell G5 15 SE gaming laptop is expected to be available in April, and the new Alienware™ Aurora gaming desktop is expected to be available in the coming weeks.

Supporting Resources

- Learn more about the AMD Radeon™ RX 5600 and RX 5600 XT here
- Learn more about the AMD Radeon™ RX 5600M and RX 5700M here
- Learn more about AMD FreeSync™ technology here
- Become a fan of AMD on Facebook
- Follow AMD on Twitter

Cautionary Statement
This press release contains forward-looking statements concerning Advanced Micro Devices, Inc. (AMD) including the features, functionality, availability, timing and expectations of AMD Radeon™ RX 5600 graphics products and technologies and the Radeon™ RX 5700M GPU, which are made pursuant to the Safe Harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements are commonly identified by words such as "would," "intends," "believes," "expects," "may," "will," "should," "seeks," "intends," "plans," "pro forma," "estimates," "anticipates," or the negative of these words and phrases, other variations of these words and phrases or comparable terminology. Investors are cautioned that the forward-looking statements in this document are based on current beliefs, assumptions and expectations, speak only as of the date of this document and involve risks and uncertainties that could cause actual results to differ materially from current expectations. Such statements are subject to certain known and unknown risks and uncertainties, many of which are difficult to predict and generally beyond AMD's control, that could cause actual results and other future events to differ materially from those expressed in, or implied or projected by, the forward-looking information and statements. Material factors that could cause actual results to differ materially from current expectations include, without limitation, the following: Intel Corporation's dominance of the microprocessor market and its aggressive business practices may limit AMD's ability to compete effectively; AMD

relies on third parties to manufacture its products, and if they are unable to do so on a timely basis in sufficient quantities and using competitive technologies, AMD's business could be materially adversely affected; failure to achieve expected manufacturing yields for AMD's products could negatively impact its financial results; AMD has a wafer supply agreement with GF with obligations to purchase all of its microprocessor and APU product requirements, and a certain portion of its GPU product requirements, from GLOBALFOUNDRIES Inc. (GF) with limited exceptions. If GF is not able to satisfy AMD's manufacturing requirements, its business could be adversely impacted; the success of AMD's business is dependent upon its ability to introduce products on a timely basis with features and performance levels that provide value to its customers while supporting and coinciding with significant industry transitions; if AMD cannot generate sufficient revenue and operating cash flow or obtain external financing, it may face a cash shortfall and be unable to make all of its planned investments in research and development or other strategic investments; the loss of a significant customer may have a material adverse effect on AMD; AMD's receipt of revenue from its semi-custom SoC products is dependent upon its technology being designed into third-party products and the success of those products; global economic uncertainty may adversely impact AMD's business and operating results; AMD's operations are subject to political, legal and economic risks and natural disasters which could have a material adverse effect on AMD; government actions and regulations such as export administration regulations, tariffs and trade protection measures, may limit AMD's ability to export its products to certain customers; AMD products may be subject to security vulnerabilities that could have a material adverse effect on AMD; IT outages, data loss, data breaches and cyber-attacks could compromise AMD's intellectual property or other sensitive information, be costly to remediate and cause significant damage to its business and reputation; AMD's operating results are subject to quarterly and seasonal sales patterns; AMD may not be able to generate sufficient cash to service its debt obligations or meet its working capital requirements; AMD has a large amount of indebtedness which could adversely affect its financial position and prevent it from implementing its strategy or fulfilling its contractual obligations; the agreements governing AMD's notes and the Secured Revolving Line of Credit impose restrictions on AMD that may adversely affect its ability to operate its business; the markets in which AMD's products are sold are highly competitive; the conversion of the 2.125% Convertible Senior Notes due 2026 may dilute the ownership interest of its existing stockholders, or may otherwise depress the price of its common stock; uncertainties involving the ordering and shipment of AMD's products could materially adversely affect it; the demand for AMD's products depends in part on the market conditions in the industries into which they are sold. Fluctuations in demand for AMD's products or a market decline in any of these industries could have a material adverse effect on its results of operations; AMD's ability to design and introduce new products in a timely manner is dependent upon third-party intellectual property; AMD depends on third-party companies for the design, manufacture and supply of motherboards, software and other computer platform components to support its business; if AMD loses Microsoft Corporation's support for its products or other software vendors do not design and develop software to run on AMD's products, its ability to sell its products could be materially adversely affected; and AMD's reliance on third-party distributors and AIB partners subjects it to certain risks. Investors are urged to review in detail the risks and uncertainties in AMD's Securities and Exchange Commission filings, including but not limited to AMD's Quarterly Report on Form 10-Q for the quarter ended September 28, 2019.

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.

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Contacts:
George Millington
AMD Communications
(408) 547-7481
George.Millington@amd.com

Jason Schmidt
AMD Investor Relations
(408) 749-6688
Jason.Schmidt@amd.com

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[1] Testing done by AMD performance labs 12/17/2019 on RX 5600 XT (Driver: AMD 19.50), GTX 1660Ti (Driver: Nvidia 441.41 WHQL), Ryzen 7 3800X, 16GB DDR4-3200MHz, GIGABYTE X570 AORUS MASTER, F10 bios, Win10 Pro x64 18362. PC manufacturers may vary configurations yielding different results. Games tested include Battlefield 5, Borderlands 3, Call of Duty: Modern Warfare, The Division 2, Gears of War 5, Monster Hunter World, Red Dead Redemption, Star Wars Jedi: Fallen Order, and Ghost Recon Breakpoint.Performance may vary. RX-418

[2] Testing done by AMD performance labs 12/17/2019 on RX 5600 XT (Driver: AMD 19.50), GTX 1660Ti (Driver: Nvidia 441.41 WHQL), Ryzen 7 3800X, 16GB DDR4-3200MHz, GIGABYTE X570 AORUS MASTER, F10 bios, Win10 Pro x64 18362. PC manufacturers may vary configurations yielding different results. Games tested include Apex Legends, Fortnite, Overwatch, PLAYERUNKOWN'S BATTLEGROUNDS, Tom Clancy's Rainbow Six Siege, and World of Warcraft: Battle for Azeroth. Performance may vary. RX-419

[3] Requires a monitor and AMD Radeon™ graphics, both with FreeSync Premium support. AMD FreeSync Premium requires mandatory low framerate compensation and at least 120 Hz refresh rate at minimum FHD. See www.amd.com/freesync for complete details. Confirm capability with your system manufacturer before purchase. GD-161.

[4] FreeSync Premium Pro does not require HDR capable monitors; driver can set monitor in native mode when FreeSync Premium Pro supported HDR content is detected. Otherwise, HDR content requires that the system be configured with a fully HDR-ready content chain, including: graphics card, graphics driver and application. Video content must be graded in HDR and viewed with an HDR-ready player. Windowed mode content requires operating

system support. GD-162.

[5] Source: https://variety.com/2019/gaming/news/steam-one-billion-accounts-1203201159/

[6] November 2019 Steam survey reported 64.63% of gamers are playing at 1080p - https://store.steampowered.com/hwsurvey/

[7] Testing done by AMD performance labs 12/20/2019 on RX 5600 XT and RX 590 (Driver: AMD 19.50), Ryzen 7 3800X, 16GB DDR4-3200MHz, GIGABYTE X570 AORUS MASTER, F10 bios, Win10 Pro x64 18362. PC manufacturers may vary configurations yielding different results. All scores are an average of 3 runs with the same settings. Performance may vary based on use of latest drivers. RX-421

[8] Radeon™ Boost is compatible with Windows 7 and 10 in select titles only. Hardware compatibility includes RX 400 and newer consumer dGPUs, Ryzen 2000 and newer APUs, including hybrid and detachable graphics configurations. No mGPU support. For a list of compatible titles see https://www.amd.com/en/technologies/radeon-boost. GD-158

[9] Testing done by AMD performance labs 12/19/2019 on Ryzen 5 3600X, 16GB DDR4-3200MHz, GIGABYTE X570 AORUS MASTER, F5g bios, Win10 Pro Build 1903, AMD Driver 19.12.2 Dec2 Press Driver, RX 5600 XT with Radeon Boost ON vs OFF in Overwatch at 1440p. PC manufacturers may vary configurations yielding different results. Performance may vary. RX-415

[10] Radeon™ Anti-Lag is compatible with DirectX 9 and DirectX 11 APIs, Windows 7 and 10. Hardware compatibility includes GCN and newer consumer dGPUs Ryzen 2000 and newer APUs, including hybrid and detachable graphics configurations. No mGPU support. GD-157

[11] Testing done by AMD performance labs 12/13/2019 on Ryzen 5 3600X, 16GB DDR4-3200MHz, GIGABYTE X570 AORUS MASTER, F5g bios, Win10 Pro x64 18362.175, AMD Driver 19.50, RX 5600 XT with Anti-Lag OFF vs ON. PC manufacturers may vary configurations yielding different results. Performance may vary. RX-414

[12] Radeon™ Image Sharpening is compatible with DirectX 11, 12, & Vulkan APIs and DirectX 9 for RX 5000 Series only, and Windows 10. Hardware compatibility includes GCN and newer consumer dGPUs, Ryzen 2000 and newer APUs, including hybrid and detachable graphics configurations. No mGPU support. GD-156

[13] Game clock is the expected GPU clock when running typical gaming applications, set to typical TGP (Total Graphics Power). Actual individual game clock results may vary. GD-147

[14] Boost Clock Frequency is the maximum frequency achievable on the GPU running a bursty workload. Boost clock achievability, frequency, and sustainability will vary based on several factors, including but not limited to: thermal conditions and variation in applications and workloads. GD-151

[15] As of Dec. 2019, the number of FreeSync technology enabled screens available (950+) at https://www.amd.com/en/products/freesync-monitors - Largest ecosystem when compared to publicly available listings of competing product solutions at https://www.144hzmonitors.com/list-of-g-sync-monitors/ and https://www.blurbusters.com/gsync/list-of-gsync-monitors/ which list 58 screens respectively. GD-130.

[16] FreeSync requires a monitor and AMD Radeon™ graphics, both with FreeSync support. See www.amd.com/freesync for complete details. Confirm capability with your system manufacturer before purchase. GD-127



Source: Advanced Micro Devices