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# AMD Unveils World's Most Advanced Gaming Graphics Cards, Built on Groundbreaking AMD RDNA 3 Architecture with Chiplet Design

*– Highly efficient AMD RDNA 3 architecture delivers world-class performance, and features new unified compute units, world's fastest interconnect, second-generation AMD Infinity Cache technology, new display and media engines, and more –*

*– AMD Radeon RX 7900 Series graphics cards deliver up to 1.7X higher 4K gaming performance than the previous flagship graphics cards –*

LAS VEGAS, Nov. 03, 2022 (GLOBE NEWSWIRE) -- [AMD](#) (NASDAQ: AMD) today unveiled new graphics cards built on the next-generation high-performance, energy-efficient AMD RDNA™ 3 architecture – the AMD Radeon™ RX 7900 XTX and Radeon RX 7900 XT graphics cards. Following on the highly successful AMD “Zen”-based AMD Ryzen™ chiplet processors, the new graphics cards are the world's first gaming graphics cards to feature an advanced AMD chiplet design. They deliver exceptional performance and superb energy efficiency to power high-framerate 4K and higher resolution gaming in the most demanding titles.

The AMD RDNA 3 architecture's chiplet design combines 5nm and 6nm process nodes, each optimized for specific jobs. The breakthrough architecture delivers up to 54% more performance per watt than AMD RDNA 2 architecture<sup>1</sup>, and features the world's fastest interconnect linking the graphics and memory system chiplets at up to 5.3 TB/s<sup>2</sup>. It also offers up to 96 new unified compute units, second-generation AMD Infinity Cache™ technology, and up to 24 GB of high-speed GDDR6 memory with up to a 384-bit memory interface. It also includes increased AI throughput that delivers up to 2.7X higher AI performance, and second-generation raytracing technology that provides up to 1.8X higher raytracing performance than AMD RDNA 2 architecture<sup>3</sup>.

Altogether, these features and advancements deliver up to a 1.7X performance uplift in select titles at 4K compared to AMD RDNA 2 architecture<sup>4</sup>. The new graphics cards also support DisplayPort™ 2.1 displays capable of delivering ultra-high framerates and stunning visuals at up to 4K 480Hz and 8K 165Hz refresh rates.

“These new graphics cards are designed by gamers for gamers. As we were developing the new cards, we not only incorporated feedback from our customers, but we built in the features and capabilities we wanted to use,” said Scott Herkelman, senior vice president & general manager, Graphics Business Unit at AMD. “We also realized that we needed to do something different to continue pushing the envelope of the technology, and I'm proud of what the team has accomplished with AMD RDNA 3 and the Radeon RX 7900 Series

graphics cards. I can't wait for gamers to experience the powerhouse performance, incredibly vivid visuals and amazing new features these new graphics cards offer.”

### **Radeon RX 7900 Series Graphics Cards**

The Radeon RX 7900 Series are the industry's most advanced gaming graphics cards, unlocking new levels of performance and efficiency and delivering a host of new and enhanced features that supercharge the gaming experience. The AMD Radeon RX 7900 XTX graphics card delivers up to 1.7X higher native 4K performance than the Radeon RX 6950 XT graphics card in select titles, while the Radeon RX 7900 XT provides up to 1.5X higher performance than the Radeon RX 6900 XT graphics card in select titles<sup>5</sup>. Key features include:

- **AMD RDNA 3 Architecture** – Featuring an advanced chiplet design, new compute units and second-generation AMD Infinity Cache technology, AMD RDNA 3 architecture delivers up to 54% more performance per watt than the previous-generation AMD RDNA 2 architecture<sup>6</sup>. New compute units share resources between rendering, AI and raytracing to make the most effective use of each transistor for faster, more efficient performance than the previous generation.
- **Chiplet Design** – The world's first gaming GPU with a chiplet design delivers up to 15% higher frequencies<sup>7</sup> at up to 54% better power efficiency. It includes the new 5nm 306mm<sup>2</sup> Graphics Compute Die (GCD) with up to 96 compute units that provide the core GPU functionality. It also includes six of the new 6nm Memory Cache Die (MCD) at 37.5mm<sup>2</sup>, each with up to 16MB of second-generation AMD Infinity Cache technology.
- **Ultra-Fast Chiplet Interconnect** – Unleashing the benefits of second-generation AMD Infinity Cache technology, the new chiplets leverage AMD Infinity Links and high-performance fanout packaging to deliver up to 5.3TB/s of bandwidth.
- **Expanded Memory and Wider Memory Bus** – To meet the growing requirements of today's demanding titles, the new graphics cards feature up to 24GB of high-speed GDDR6 memory running at 20Gbps over a 384-bit memory bus.
- **Dedicated AI Acceleration and Second-Generation Raytracing** – New AI instructions and increased AI throughput deliver up to 2.7X more performance than the previous AMD RDNA 2 architecture<sup>8</sup>, while second-generation raytracing technology delivers up to 1.8X more performance than the previous generation<sup>9</sup>.
- **DisplayPort™ 2.1 Support** – The industry's only high-end gaming graphics cards to support DisplayPort 2.1 technology with UHBR 13.5, offering up to 54Gbps of display link bandwidth and enabling high-refresh 4K (up to 480Hz) or 8K (up to 165Hz) gaming on next-gen displays.
- **New AMD Radiance Display™ Engine** – Provides 12 bit-per-channel color for up to 68 billion colors and higher refresh rate displays compared to AMD RDNA 2 architecture and includes support for DisplayPort 2.1 and HDMI 2.1a.
- **High-Refresh Gaming** – DisplayPort 2.1 provides increased display bandwidth compared to DisplayPort 1.4<sup>10</sup>, with the ability to support up to 900Hz, 480Hz and 165Hz refresh rates for 1440p, 4K and 8K displays, respectively.
- **Dual Media Engine** – Supports simultaneous encode or decode streams up to 8K60 for HEVC and supports AV1 encode<sup>11</sup>, delivering up to 1.8X higher engine frequency than AMD RDNA 2 architecture<sup>12</sup>.

## **AMD FidelityFX™ Super Resolution 2.2 and AMD Software: Adrenalin Edition™ Technology**

To support the new graphics cards, AMD is also announcing several updates to its software suite, including:

- **AMD FidelityFX Super Resolution (FSR) 2.2** – FSR is now available and upcoming in 216 games, and the next iteration of the popular FSR temporal upscaling technology, FSR 2.2, features enhancements that are designed to improve visual quality. It is expected to be available in the first title on November 8, 2022, *Forza Horizon 5*. It will also be available to game developers soon at GPUOpen.com.
- **AMD FSR 3** – AMD plans to release a new version of AMD FSR featuring AMD Fluid Motion Frames technology in 2023, expected to deliver up to 2X more FPS compared to AMD FSR 2 in select games<sup>13</sup>.
- **AMD HYPR-RX** – Targeted in the first half of 2023, a one-click preset which enables various AMD Software features – including AMD Radeon Anti-Lag, AMD Radeon Boost and AMD Radeon Super Resolution technologies – to work together at the same time, reducing latency and delivering up to 85% higher FPS in *Dying Light 2 Stay Human* with the Radeon RX 7900 XTX graphics card and AMD Software: Adrenalin Edition™ 22.40.00.24, than stock settings<sup>14</sup>.
- **New AMD RDNA 3 Media Engine** – Features AV1 hardware encoding enabling up to 7X faster video encoding at 8K compared to a software-only solution<sup>15</sup>, and integrates Xilinx Content Adaptive Machine Learning technology to enhance text quality for lower resolutions and bitrate streams.
- **Improved Video Recording and Streaming** – AMD collaborated with OBS to improve video streaming quality on AMD Radeon RX 6000 and Radeon RX 7000 Series graphics cards. In addition, the AMD RDNA 3 Media Engine includes AV1 hardware encoding to help improve quality and transform live streaming.

## **AMD Advantage™ for Desktop PCs**

Building on the success of AMD Advantage laptops, AMD is bringing the AMD Advantage framework to desktops, fusing together the top-of-the-line AMD Ryzen 7950x processors and AMD Radeon RX 7900 XTX graphics cards with AMD Software: Adrenalin Edition technology and AMD's smart technologies to deliver the ultimate platform for gamers and creators. AMD Advantage certified desktops will feature select AMD smart technologies that amplify performance, including AMD Smart Access Memory™ technology and the new AMD SmartAccess Video technology that intelligently divides the decoding and encoding workloads across AMD Ryzen processors and AMD Radeon graphics cards, delivering up to 30% uplift in 4K multi-stream encoding<sup>16</sup>.

AMD Advantage desktops feature world-class performance, stunning graphics with the AMD Radiance Display Engine and supported AMD FreeSync™ Premium technology-enabled monitors. They are built to game with high-quality chassis, CPU liquid cooling, a minimum of 2TB of NVMe SSD storage, 32GB or more of DDR5 AMD EXPO™ memory<sup>17</sup>, 80 plus gold power supplies, and optimized acoustics, and are designed to be easily customizable. New AMD Advantage desktop systems are expected to be available soon from leading SI partners, including CSL, Cyberpower, eBuyer, Falcon Northwest, Maingear, Origin PC, and Xldax.

## **AMD Radeon RX 7900 Series Product Specifications**

Model	Compute Units	GDDR6	Game Clock (GHz)	Boost Clock <sup>18</sup> (GHz)	Memory Interface	Infinity Cache	TBP	Price (USD SEP)
AMD Radeon RX 7900 XTX	96	24 GB	2.3	Up to 2.5	384-bit	96 MB	355W	\$999
AMD Radeon RX 7900 XT	84	20 GB	2.0	Up to 2.4	320-bit	80 MB	300W	\$899

### Pricing and Availability

AMD Radeon RX 7900 Series graphics cards are expected to be available from AMD.com beginning December 13, 2022, and from leading board partners including ASRock, ASUS, Biostar, Gigabyte, MSI, PowerColor, Sapphire, Vastarmor, XFX and Yeston beginning mid-December. The AMD Radeon RX 7900 XTX has an SEP of \$999 USD, while the AMD Radeon RX 7900 XT has an SEP of \$899 USD.

### Supporting Resources

- Learn more about the Radeon RX 7900 XTX and Radeon RX 7900 XT graphics cards [here](#)
- Learn more about AMD RDNA 3 architecture [here](#)
- Learn more about AMD Advantage Desktops [here](#)
- Learn more about AMD Software: Adrenalin Edition application [here](#)
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### About AMD

For more than 50 years AMD has driven innovation in high-performance computing, graphics and visualization technologies. Billions of people, leading Fortune 500 businesses and cutting-edge scientific research institutions around the world rely on AMD technology daily to improve how they live, work and play. AMD employees are focused on building leadership high-performance and adaptive 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](#), [LinkedIn](#) and [Twitter](#) pages.

### Cautionary Statement

This press release contains forward-looking statements concerning Advanced Micro Devices, Inc. (AMD) such as the features, functionality, performance, availability, timing and expected benefits of AMD products and technology including the AMD Radeon™ RX 7900 Series graphics cards, AMD RDNA™ 3 architecture, FidelityFX™ Super Resolution, AMD HYPR-RX, Adrenalin Edition Technology, and AMD Advantage™ for desktop PCs, 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," "may," "expects," "believes," "plans," "intends," "projects" and other terms with similar meaning. Investors are cautioned that the forward-looking statements in this press release are based on current beliefs, assumptions and expectations, speak only as of the date of this press release 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; global economic uncertainty; cyclical nature of the semiconductor industry; market conditions of the industries in which AMD products are sold; loss of a significant customer; impact of the COVID-19 pandemic on AMD's business, financial condition and results of operations; competitive markets in which AMD's products are sold; quarterly and seasonal sales patterns; AMD's ability to adequately protect its technology or other intellectual property; unfavorable currency exchange rate fluctuations; ability of third party manufacturers to manufacture AMD's products on a timely basis in sufficient quantities and using competitive technologies; availability of essential equipment, materials, substrates or manufacturing processes; ability to achieve expected manufacturing yields for AMD's products; AMD's ability to introduce products on a timely basis with expected features and performance levels; AMD's ability to generate revenue from its semi-custom SoC products; potential security vulnerabilities; potential security incidents including IT outages, data loss, data breaches and cyber-attacks; potential difficulties in upgrading and operating AMD's new enterprise resource planning system; uncertainties involving the ordering and shipment of AMD's products; AMD's reliance on third-party intellectual property to design and introduce new products in a timely manner; AMD's reliance on third-party companies for design, manufacture and supply of motherboards, software and other computer platform components; AMD's reliance on Microsoft and other software vendors' support to design and develop software to run on AMD's products; AMD's reliance on third-party distributors and add-in-board partners; impact of modification or interruption of AMD's internal business processes and information systems; compatibility of AMD's products with some or all industry-standard software and hardware; costs related to defective products; efficiency of AMD's supply chain; AMD's ability to rely on third party supply-chain logistics functions; AMD's ability to effectively control sales of its products on the gray market; impact of government actions and regulations such as export administration regulations, tariffs and trade protection measures; AMD's ability to realize its deferred tax assets; potential tax liabilities; current and future claims and litigation; impact of environmental laws, conflict minerals-related provisions and other laws or regulations; impact of acquisitions, joint ventures and/or investments, including acquisitions of Xilinx and Pensando, on AMD's business and AMD's ability to integrate acquired businesses; impact of any impairment of the combined company's assets on the combined company's financial position and results of operation; restrictions imposed by agreements governing AMD's notes, the guarantees of Xilinx's notes and the revolving credit facility; AMD's indebtedness; AMD's ability to generate sufficient cash to meet its working capital requirements or generate sufficient revenue and operating cash flow to make all of its planned R&D or strategic investments; political, legal, economic risks and natural disasters; future impairments of goodwill and technology license purchases; AMD's ability to attract and retain qualified personnel; AMD's stock price volatility; and worldwide political conditions. 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 most recent reports on Forms 10-K and 10-Q.

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<sup>1</sup> RX-816 – Based on AMD internal analysis November 2022, on a system configured with a Radeon RX 7900 XTX GPU, driver 31.0.14000.24040, AMD Ryzen 9 5900X CPU, 32 GBDDR4-7200MHz, ROG CROSSHAIR VIII HERO (WI-FI) motherboard, set to 300W TBP, on Win10 Pro, versus a similarly configured test system with a 300W Radeon 6900 XT GPU and driver 31.0.12019.16007. System manufacturers may vary configurations,

yielding different results.

<sup>2</sup> RX-817 – Based on AMD internal analysis, November 2022, comparing the published chiplet interconnect speeds of Radeon RX 7900 Series GPUs to Intel Ponte Vecchio GPU and Apple M1 Ultra.

<sup>3</sup> RX-839 – Testing done by AMD performance labs as of 10/30/2022, on a test system with a Radeon 7900 XTX GPU, Ryzen 9 7900X CPU, 32GB DDR5, MSI X670E Ace motherboard, Win 11 Pro vs. a similarly configured test system with a Ryzen 9 5900X, a Radeon RX 6950 XT GPU, a ASRock X570 Taichi motherboard, using the 3DMark SpeedWay application, testing the following titles: Cyberpunk 2077 (3840x2160), Dying Light 2 Staying Human (3840x2160), Fortnite Saving the World (3840x2160), Minecraft Bedrock Neon District RTX (3840x2160). System manufacturers may vary configurations, yielding different results. Performance may vary.

<sup>4</sup> RX-848 – Based on AMD performance labs internal benchmarks as of November 2022 comparing Radeon RX 7900 XTX and RX 6950 XT graphics similarly configured with AMD Ryzen 9 7900X, AM5 motherboard, 32GB DDR-6000MT, and Windows 11 Pro. System manufacturers may vary configurations, yielding different results. Performance may vary.

<sup>5</sup> RX-849: Based on AMD performance labs internal benchmarks as of November 2022 comparing Radeon RX 7900 XT and Radeon RX 6900 XT graphics similarly configured with AMD Ryzen 9 7900X, AM5 motherboard, 32GB DDR-6000MT, and Windows 11 Pro. System manufacturers may vary configurations, yielding different results. Performance may vary.

<sup>6</sup> RX-816 – Based on AMD internal analysis November 2022, on a system configured with a Radeon RX 7900 XTX GPU, driver 31.0.14000.24040, AMD Ryzen 9 5900X CPU, 32 GBDDR4-7200MHz, ROG CROSSHAIR VIII HERO (WI-FI) motherboard, set to 300W TBP, on Win10 Pro, versus a similarly configured test system with a 300W Radeon 6900 XT GPU and driver 31.0.12019.16007, measuring FPS performance in select titles. Performance per watt calculated using the total board power (TBP) of the AMD GPUs listed herein. System manufacturers may vary configurations, yielding different results.

<sup>7</sup> RX-838 – Based on AMD internal analysis, November 2022, comparing the game clock frequencies at launch of RDNA 2 vs. RDNA 3.

<sup>8</sup> RX-821 – Based on AMD internal measurements, November 2022, comparing the Radeon RX 7900 XTX at 2.505GHz boost clock with 96 CUs issuing 2X the Bfloat16 math operations per clocks vs. the RX 6900 XT GPU at 2.25 GHz boost clock and 80 CUs issue 1X the Bfloat16 math operations per clock.

<sup>9</sup> RX-839 – Testing done by AMD performance labs as of 10/30/2022, on a test system with a Radeon 7900 XTX GPU, Ryzen 9 7900X CPU, 32GB DDR5, MSI X670E Ace motherboard, Win 11 Pro vs. a similarly configured test system with a Ryzen 9 5900X, a Radeon RX 6950 XT GPU, a ASRock X570 Taichi motherboard, using the 3DMark SpeedWay application, testing the following titles: Cyberpunk 2077 (3840x2160), Dying Light 2 Staying Human (3840x2160), Fortnite Saving the World (3840x2160), Minecraft Bedrock Neon District RTX (3840x2160). System manufacturers may vary configurations, yielding different results. Performance may vary.

<sup>10</sup> Information current as of November 2022, see: <https://www.displayport.org/faq/#tab-displayport-1-4-standard>

<sup>11</sup> Video codec acceleration (including at least the HEVC (H.265), H.264, VP9, and AV1 codecs) is subject to and not operable without inclusion/installation of compatible media players. GD-176

<sup>12</sup> Based on AMD Labs calculation, November 2022, using the Radeon 7900 XTX media engine frequency vs.

the Radeon 6960XT media engine frequency. RX-837

<sup>13</sup> RX-835 – Testing conducted by AMD performance labs as of November 2022, on a test system configured with a Ryzen 7950X CPU, AM5 motherboard, 32GB DDR5, Radeon RX 7900 XTX GPU, Windows 11 Pro, using AMD Software: Adrenalin Edition 22.40.00.24 with AMD Smart Access Memory technology enabled with FSR 3 with Fluid Motion Frames enabled vs. a similarly configured system with FS2 enabled, both running the Unreal Engine 5 City application. System manufacturers may vary configurations, yielding different results. Performance may vary. RX-835

<sup>14</sup> RS-511 – Testing conducted by AMD Performance Labs, as of October 28, 2022, on a test system configured with a Ryzen 7900X CPU engineering sample, MSI ACE X670 motherboard, 32GB 5200MHz DDR5, Radeon RX 7900XTX GPU, Windows 11, and HYPR-RX enabled with AMD Software: Adrenalin Edition 22.40.00.24 on the game Dying Light 2. Game tested on high preset (DX12) at 1080p resolution (upscaled to 1440p through HYPR-RX). System manufacturers may vary configurations, yielding different results. Performance may vary.

<sup>15</sup> RX-813 – Testing done by AMD performance labs October 2022, on a test system configured with an AMD Ryzen 9 5900X CPU, Radeon RX 7900 XTX GPU, 16GB DDR4-2666MHz, Windows 11 22H2, Samsung SSD 870 Evo 1TB, Graphics Driver Build 2210252212-22.40-221025n-230356E-ATI, VBIOS BRP 072. Testing using an FFmpeg internal build incorporating AV1 hardware encoding at 8K vs. the publicly available build, transcoding 21Mbps HVEC 8k 60fps video to 12Mbps SW AV1 video. System manufacturers may vary configurations, yielding different results.

<sup>16</sup> RX-814 – Testing done by AMD performance labs October 2022, on Radeon™ RX 7900 XTX GPU, on 22.40.00.24 driver, AMD Ryzen 9 7950X processor, 32GB DDR5-6000MT, AM5 motherboard, Win11 Pro. Using a parallel batch transcode of 3 4K 30Mbps H264 streams into AV1. System manufacturers may vary configurations, yielding different results. Performance may vary. RX-814

<sup>17</sup> GD-106 – Overclocking and/or Undervolting AMD processors and memory, including without limitation, altering clock frequencies / multipliers or memory timing / voltage, to operate outside of AMD's published specifications will void any applicable AMD product warranty, even when enabled via AMD hardware and/or software. This may also void warranties offered by the system manufacturer or retailer. Users assume all risks and liabilities that may arise out of overclocking / undervolting AMD processors, including, without limitation, failure of or damage to hardware, reduced system performance and/or data loss, corruption or vulnerability.

<sup>18</sup> GD-151 – '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.

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