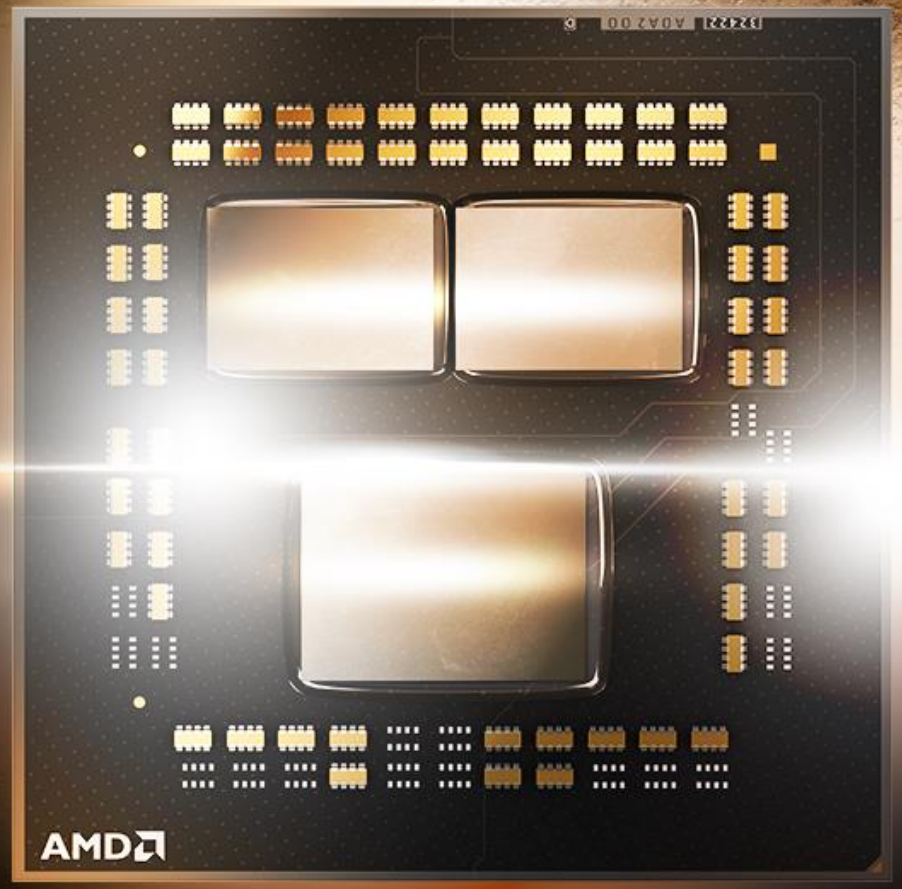
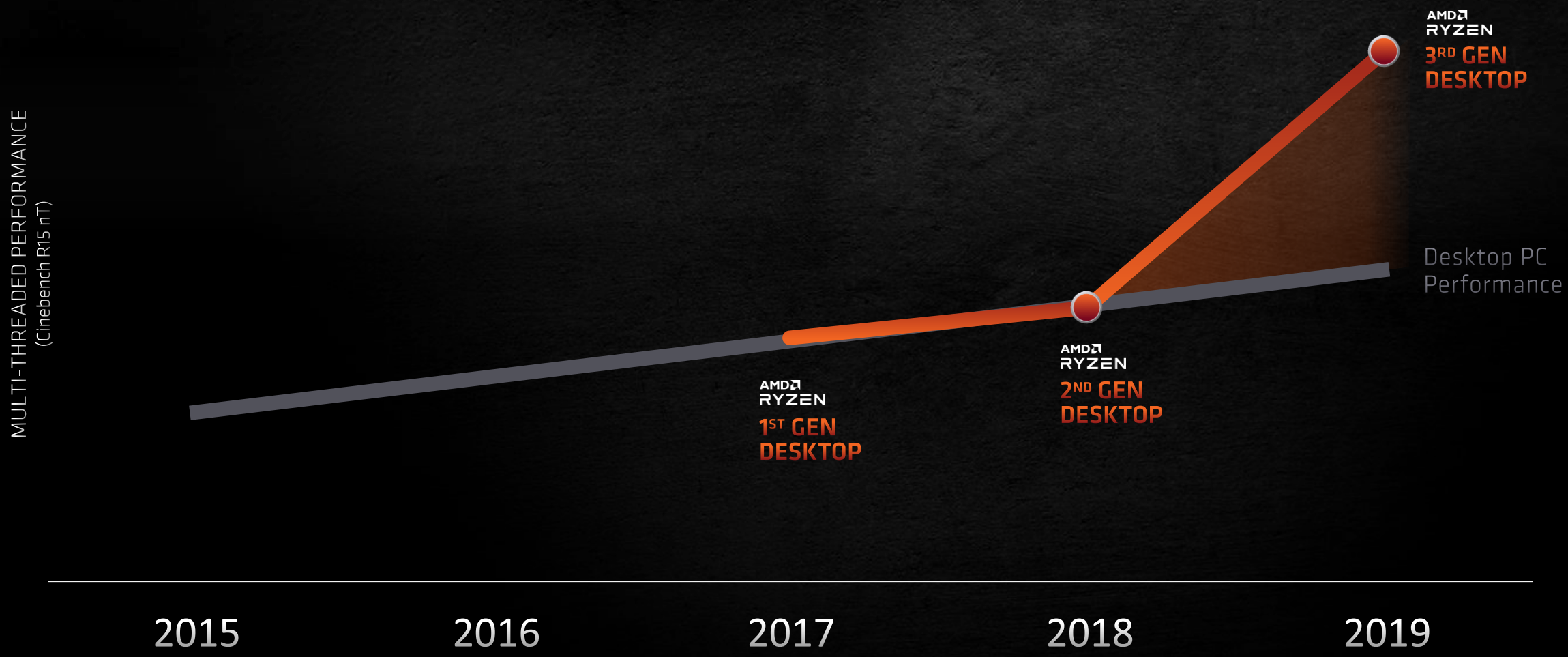


AMD

WHERE GAMING BEGINS

DISRUPTING DESKTOP PERFORMANCE



AMD

DELIVERING AS PROMISED

14nm / 12nm
Shipped

7nm
Shipping **July 2019**

7nm
Shipping **Q4 2020**

2017 — 2020

AMD

OUR "ZEN" JOURNEY

"ZEN"/"ZEN+"

- Up to 4.35GHz max boost[3]
- +52% IPC[1]
- 4-core complex
- 8MB L3 per complex
- SMT enabled
- New boost algorithms
- 14nm/12nm

"ZEN 2"

- Up to 4.7GHz max boost
- +15% IPC[2]
- 4-core complex
- 16MB L3 per complex
- Chiplet design
- FP-256
- 7nm

"ZEN 3"

- Higher max boost
- Significant IPC uplift
- New core layout
- New cache topology
- 7nm

2017 — 2020

* 1. GD-108; 2. RZ3-24; 3. See endnote GD-150 for max boost.

AMD

"ZEN 3" CORE ARCHITECTURE

WIDER, FASTER, AND EVEN MORE EFFICIENT

8 CORE COMPLEX

Lower Latency

Significant Accelerator for PC Gaming Applications

2X

Direct Access L3 Cache

Reduced Memory Latency for Gaming

~19%

Desktop IPC Uplift[1]

Greater Performance Across All Applications

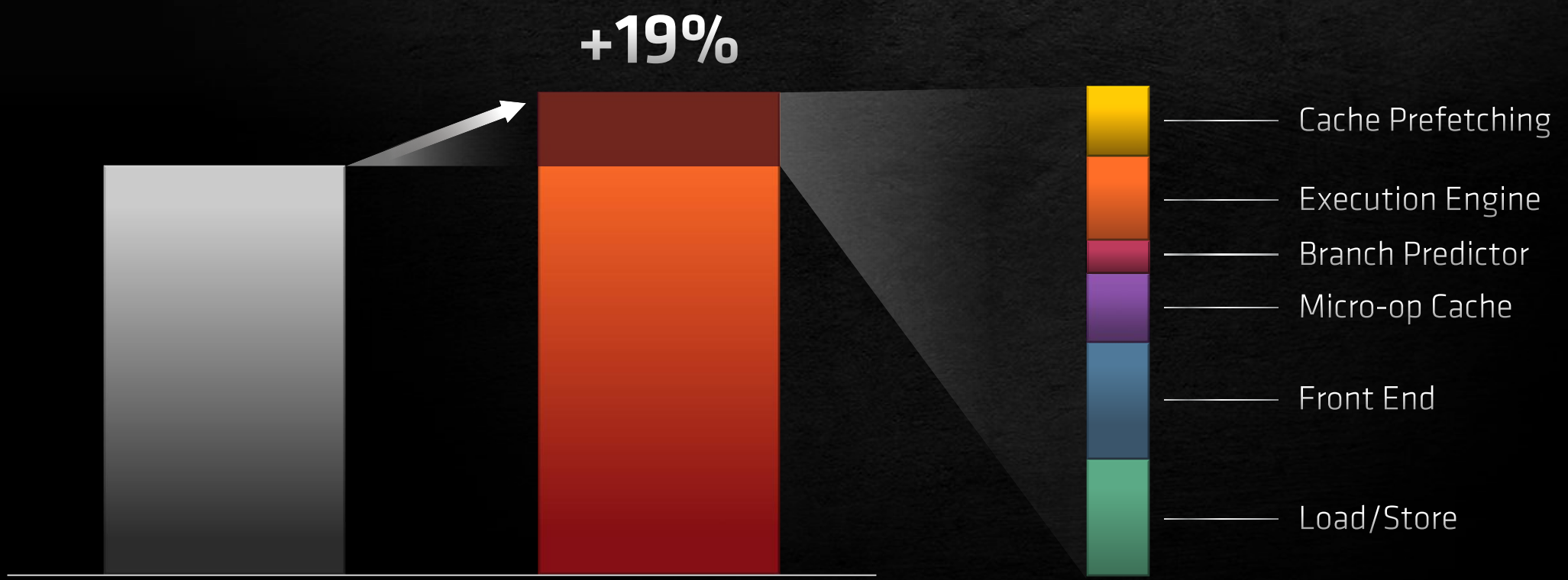
* 1. See endnotes: R5K-003

AMD

INDUSTRY LEADERSHIP

"ZEN 3" 19% IPC UPLIFT FOR PCs

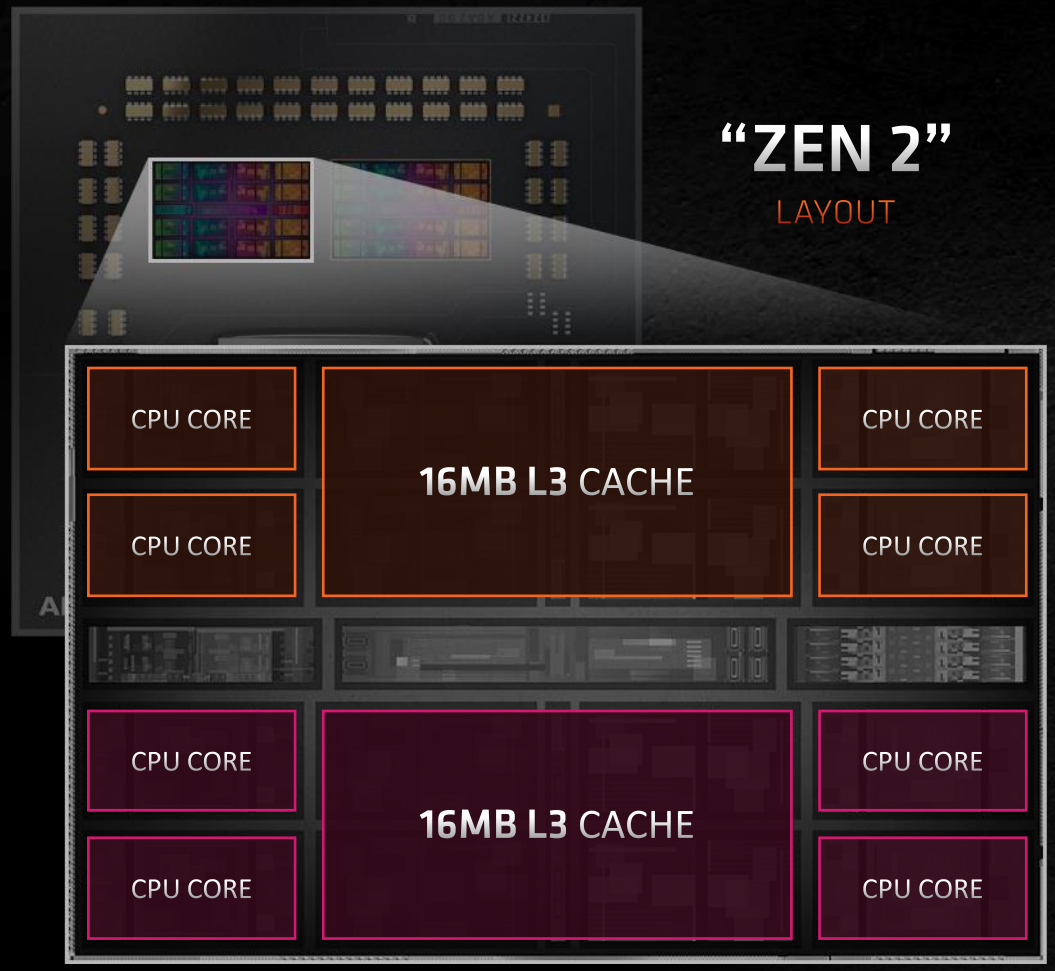
GEOMEAN OF 25 WORKLOADS[1]
(Fixed 4GHz Frequency, 8 Cores)

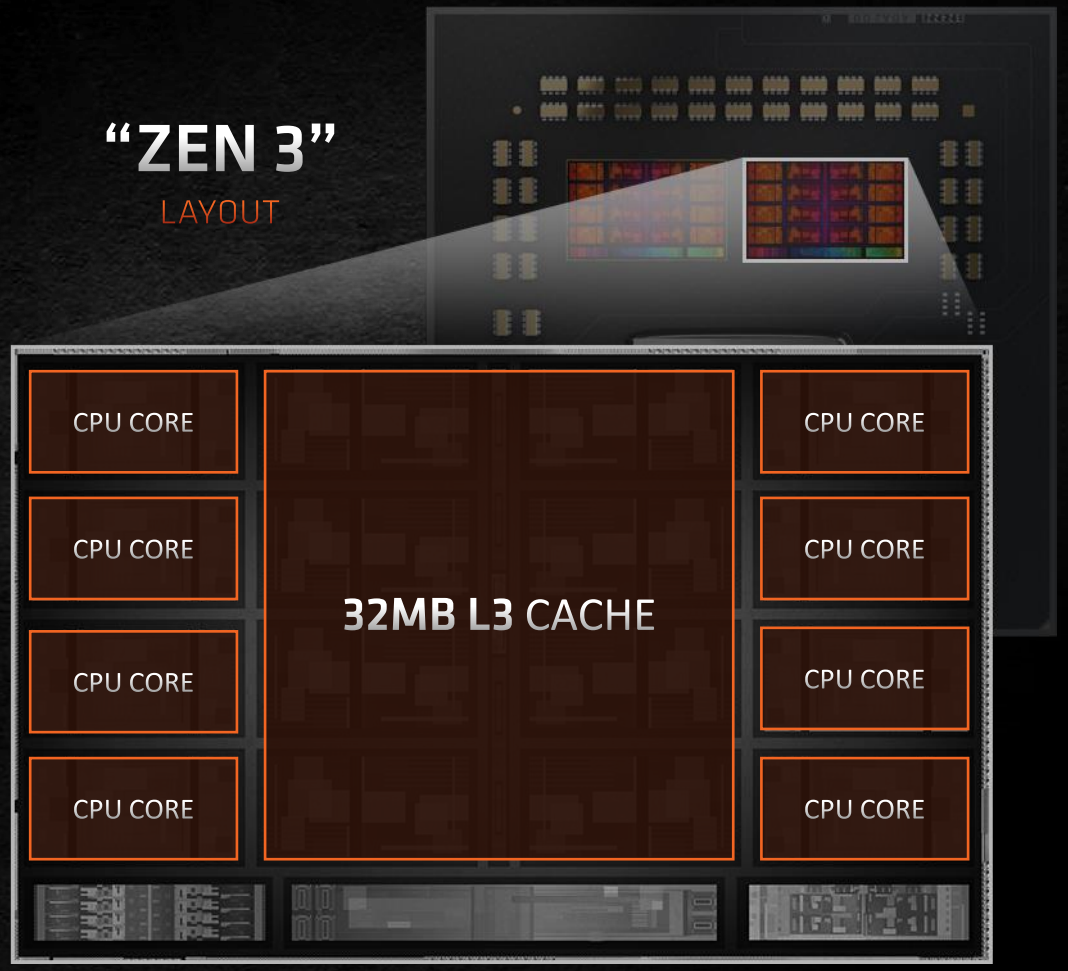


"ZEN 3" PERFORMANCE CONTRIBUTORS

* 1. See endnotes: R5K-003.

AMD





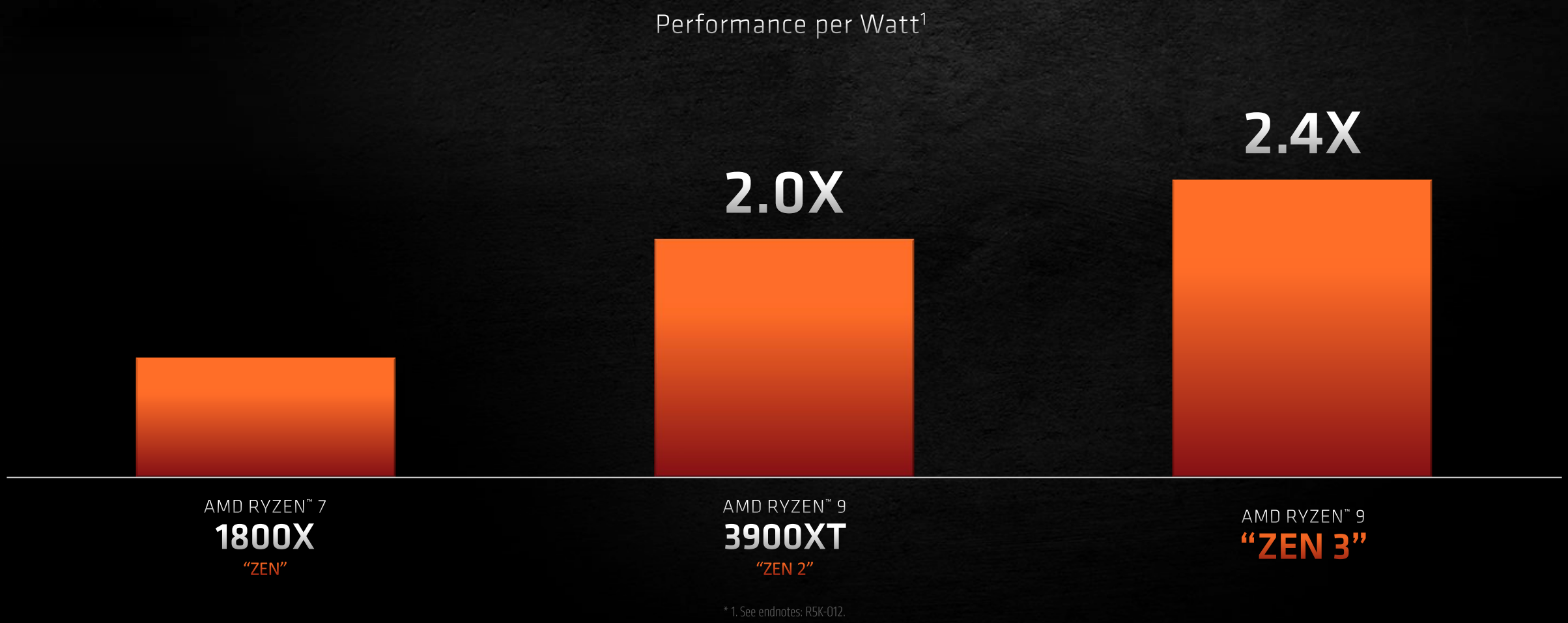
2X L3 Cache Directly Accessible Per Core

Accelerates Core and Cache Communication for Gaming

Reduction in Effective Memory Latency

LEADERSHIP POWER EFFICIENCY

"ZEN 3" STRENGTHENS OUR LEAD



* 1. See endnotes: R5K-012.

AMD

LEADERSHIP POWER EFFICIENCY

"ZEN 3" STRENGTHENS OUR LEAD

* 1. See endnotes: R5K-007.

AMD

INTRODUCING THE

AMD RYZEN™ 9 5900X

12 Cores
24 Threads

UP TO **4.8 GHz** Boost

70 MB
L2+L3 Cache

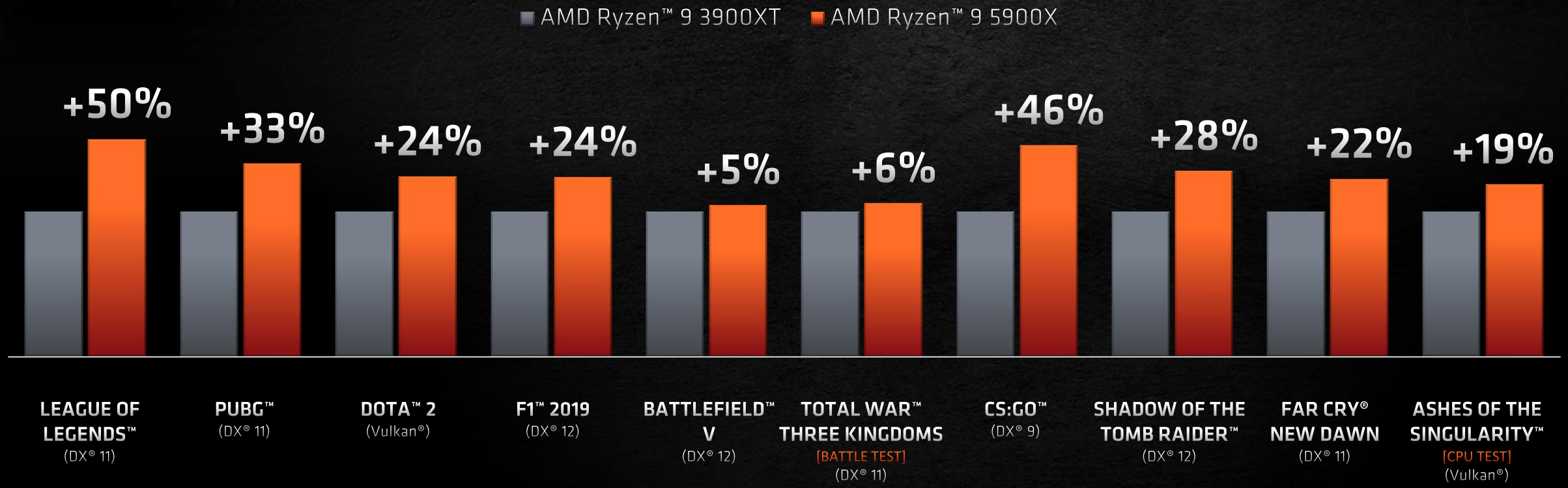
105W
TDP

AMD

AMD RYZEN™ 9 5900X

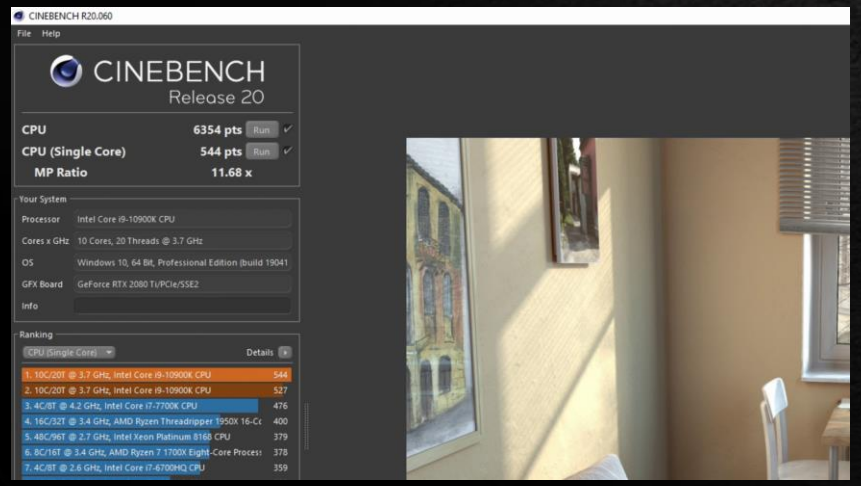
1920x1080 Resolution

High Image Quality Preset



AMD

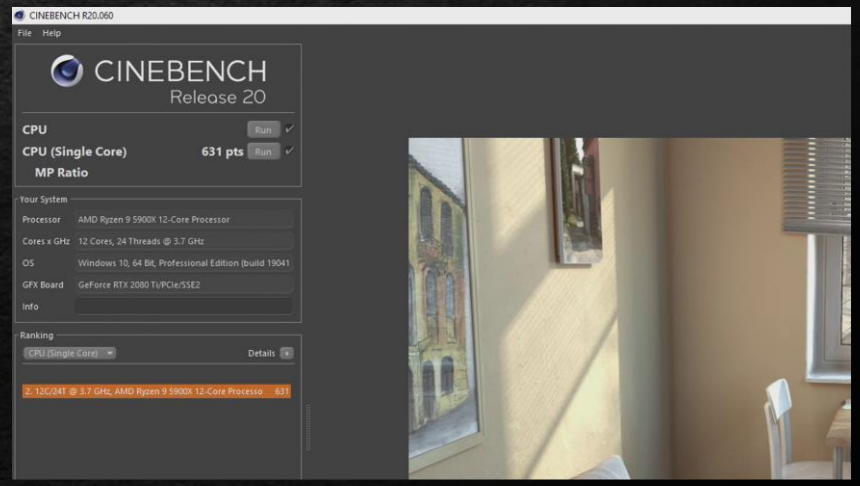
AMD RYZEN™ 9 5900X



Cinebench 1T Run

TIMELAPSED DEMO

631



CORE i9-10900K

First desktop processor to break 600 points in single-thread performance

AMD RYZEN™ 9 5900X

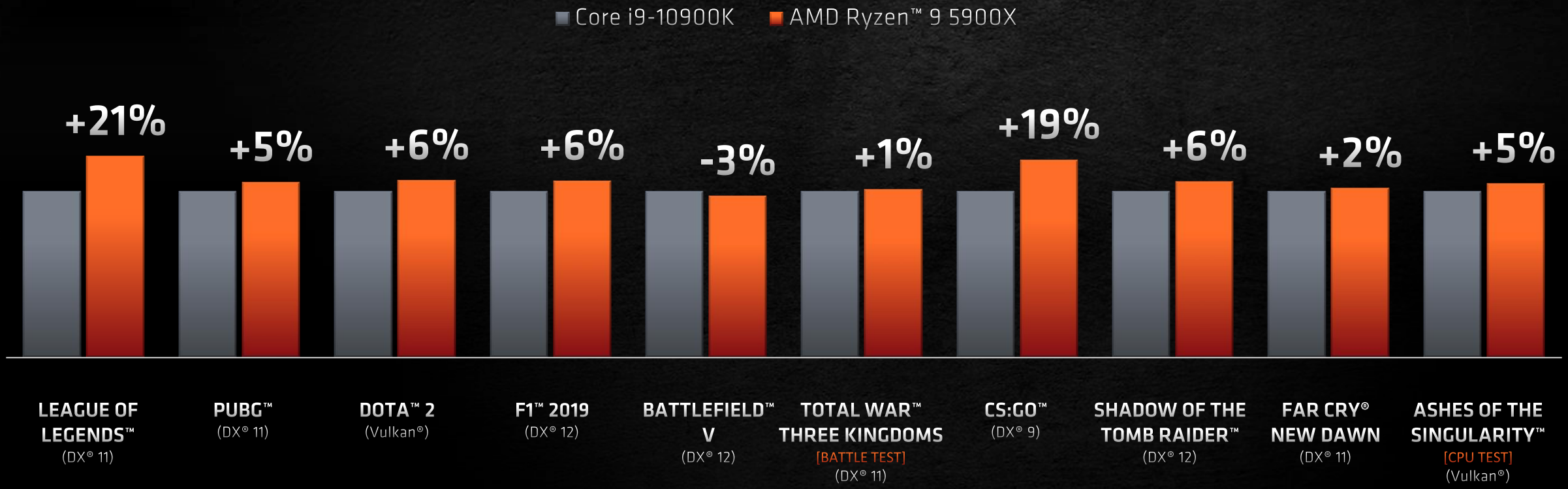
* 1. See endnotes: R5K-004.

AMD

AMD RYZEN™ 9 5900X

1920x1080 Resolution

High Image Quality Preset



* 1. See endnotes: R5K-010.

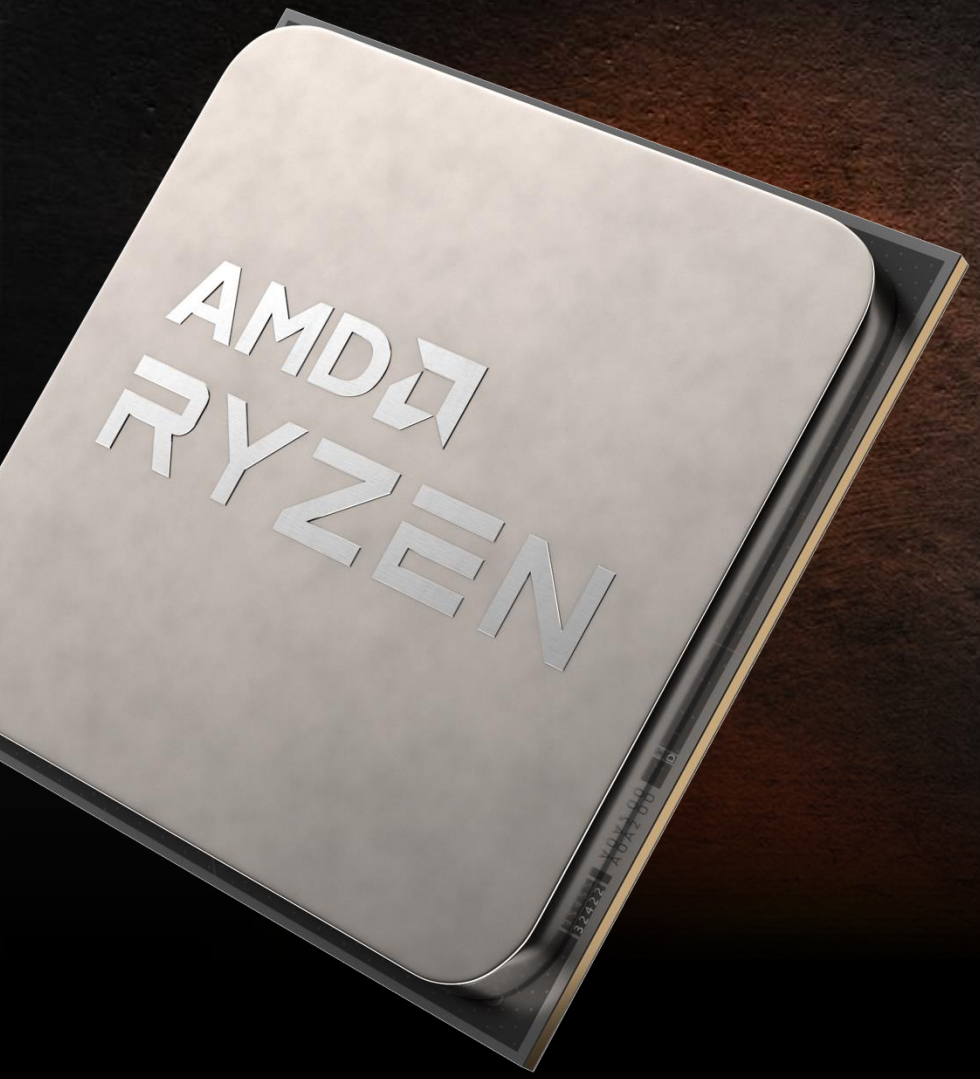
AMD

AMD RYZEN™ 9 5900X

THE WORLD'S BEST GAMING CPU

* 1. See endnotes: R5K-002.

AMD



≥95W
DIY
Cooling

9 5900X

12-Core 24-Thread	4.8 GHz 3.7 GHz	70MB Cache	105W TDP

$549 USD

7 5800X

8-Core 16-Thread	4.7 GHz 3.8 GHz	36MB Cache	105W TDP

$449 USD

≤65W
In-Box
Cooler

5 5600X

6-Core 12-Thread	4.6 GHz 3.7 GHz	35MB Cache	65W TDP

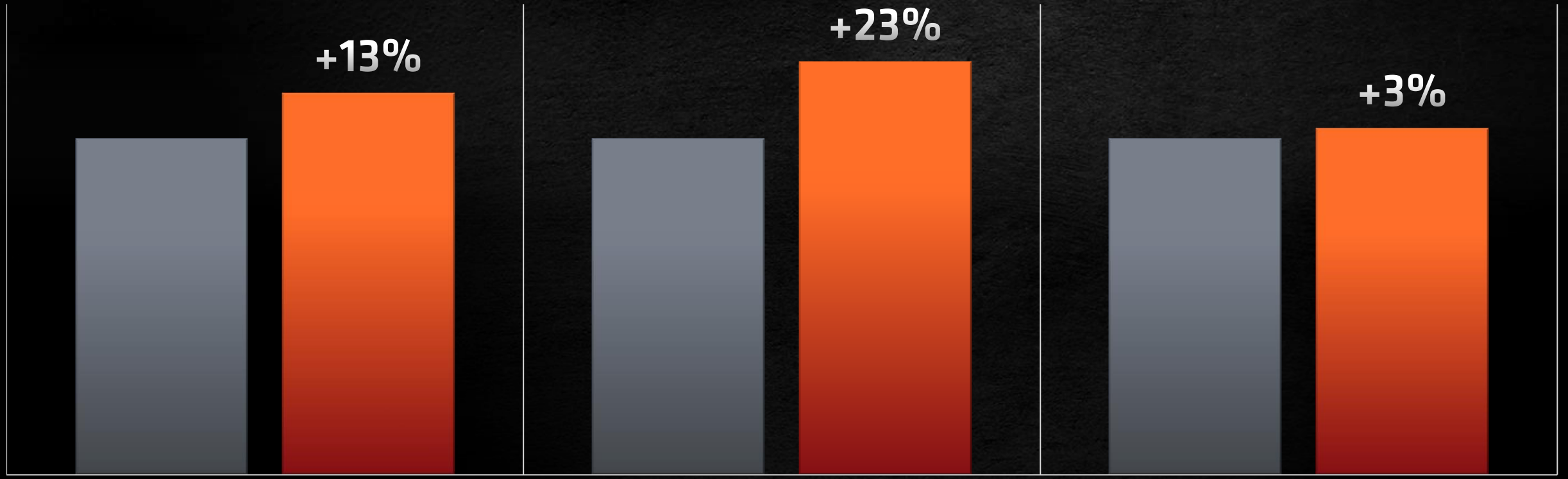
$299 USD

AVAILABLE **NOVEMBER 5**

AMD

AMD RYZEN™ 9 5900X

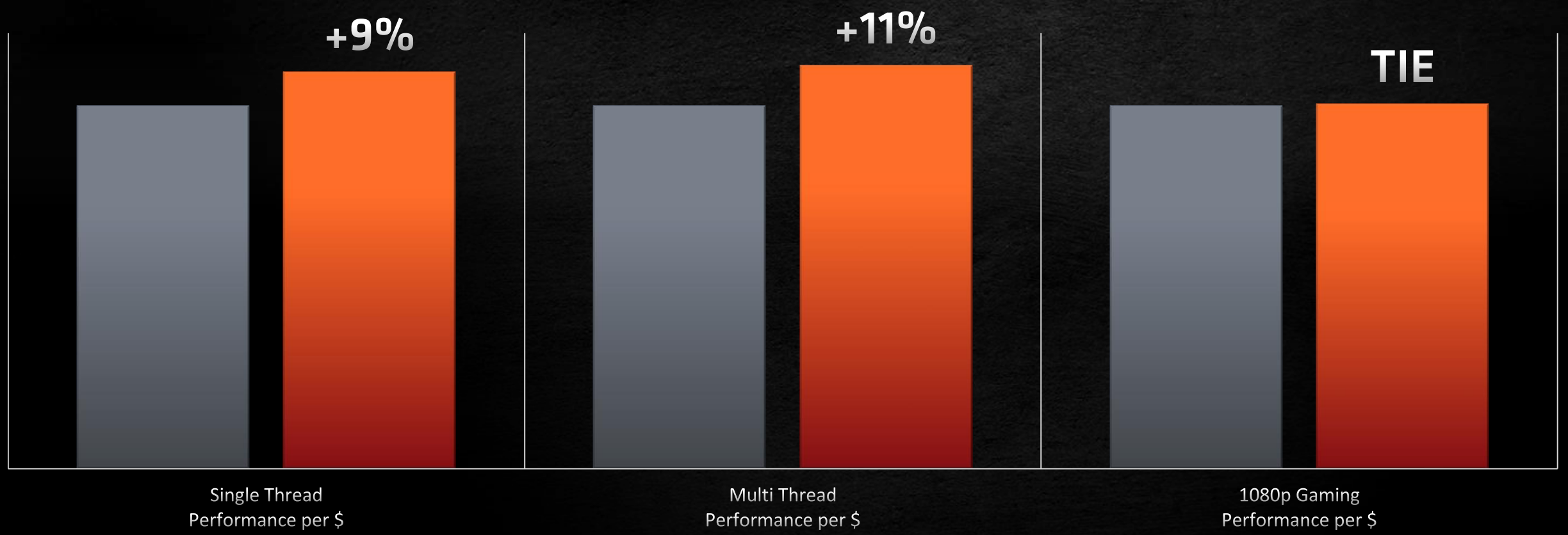
Performance Per Dollar Leadership



AMD

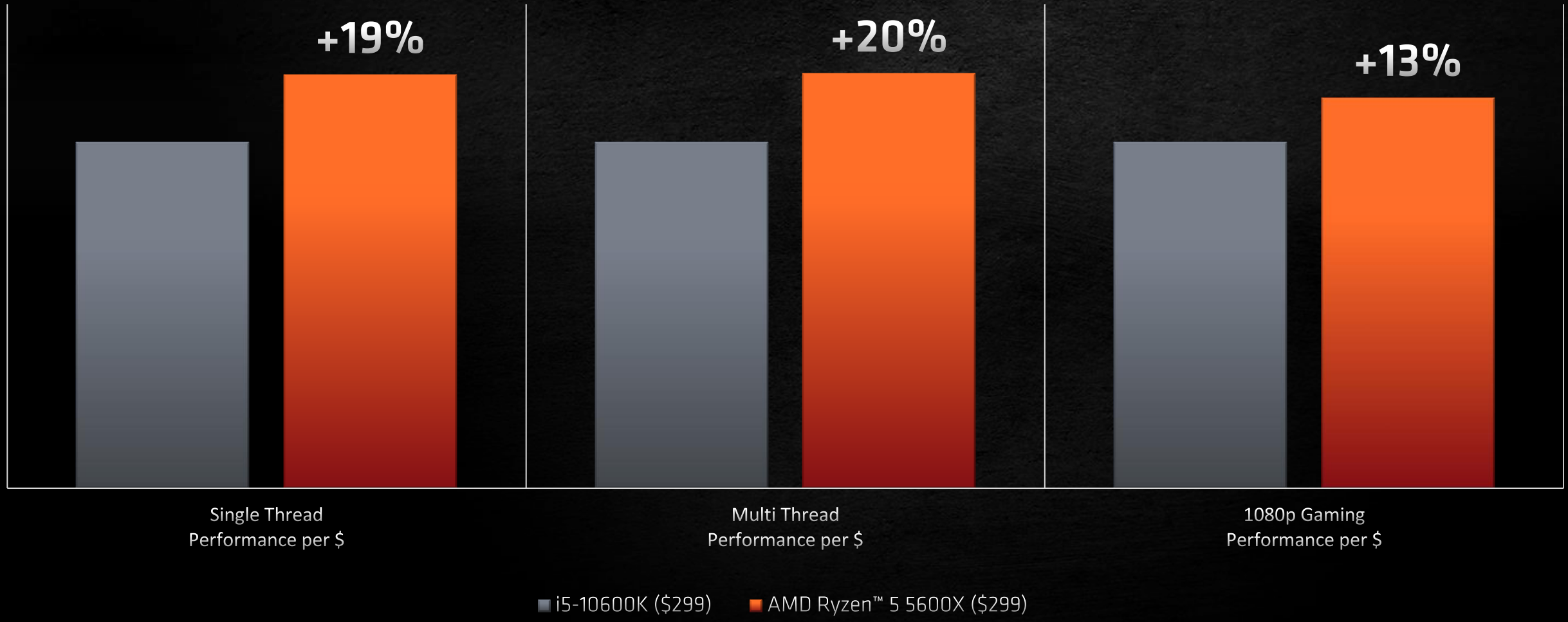
AMD RYZEN™ 7 5800X

Performance Per Dollar Leadership



AMD RYZEN™ 5 5600X

Performance Per Dollar Leadership



AMD RYZEN™ 9 5950X

THE BEST FOR GAMERS MEETS THE BEST FOR CREATORS

16 Cores
32 Threads

UP TO **4.9 GHz** Boost

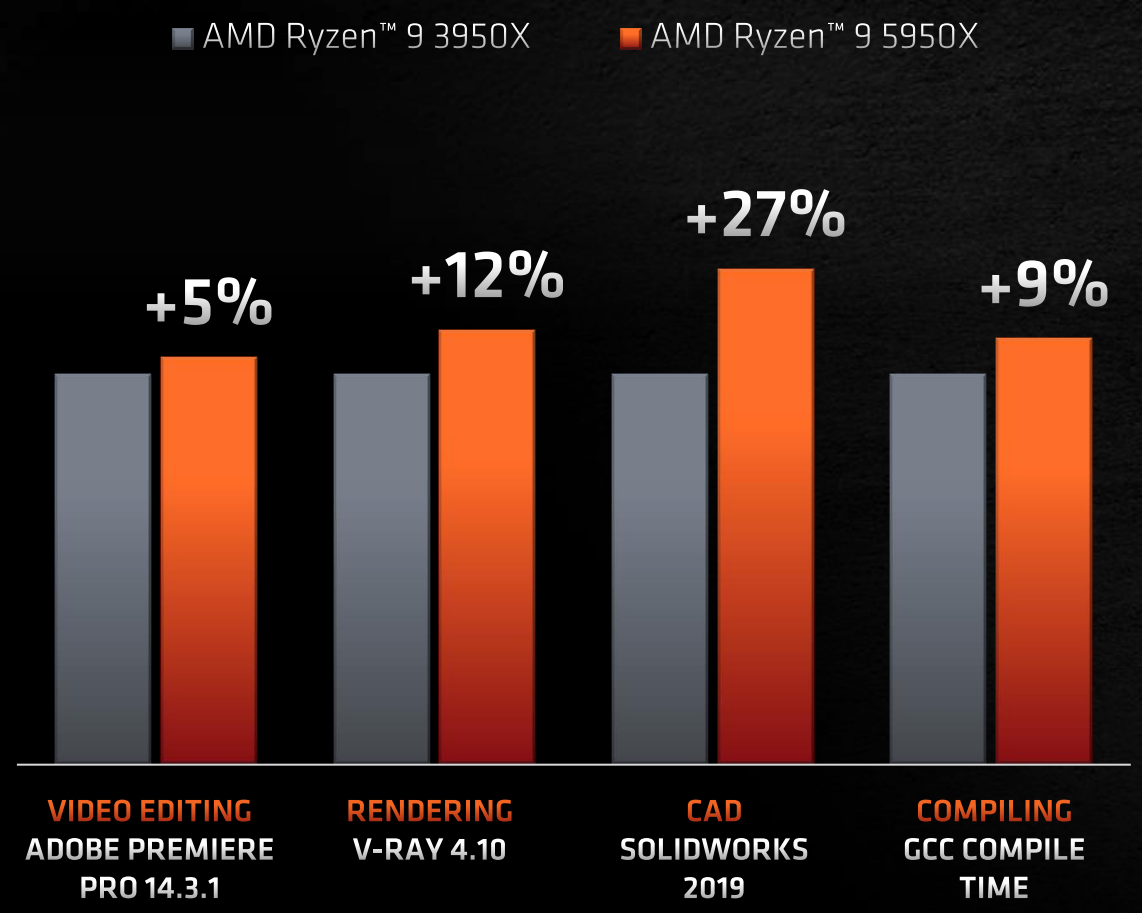
72 MB
L2+L3 Cache

105W
TDP

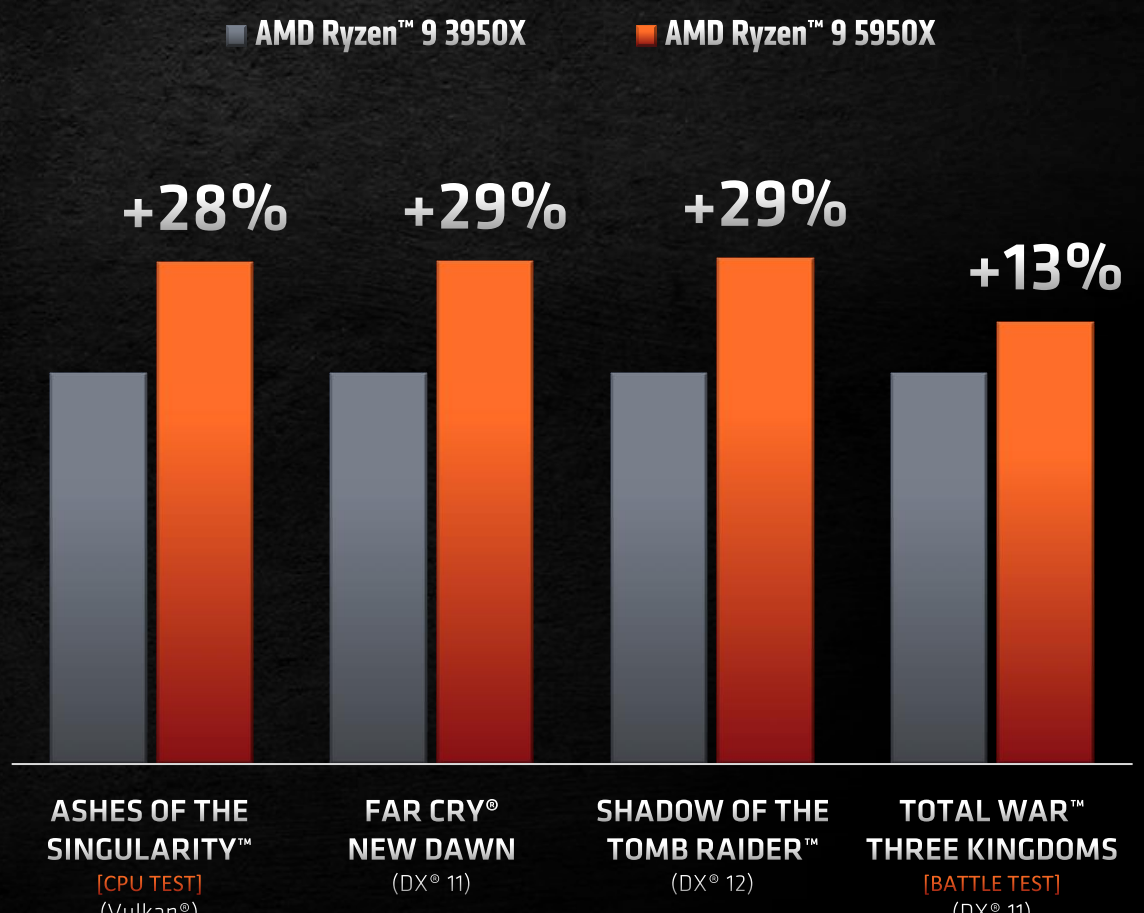
AMD

AMD RYZEN™ 9 5950X

CONTENT CREATION PERFORMANCE



GAMING PERFORMANCE

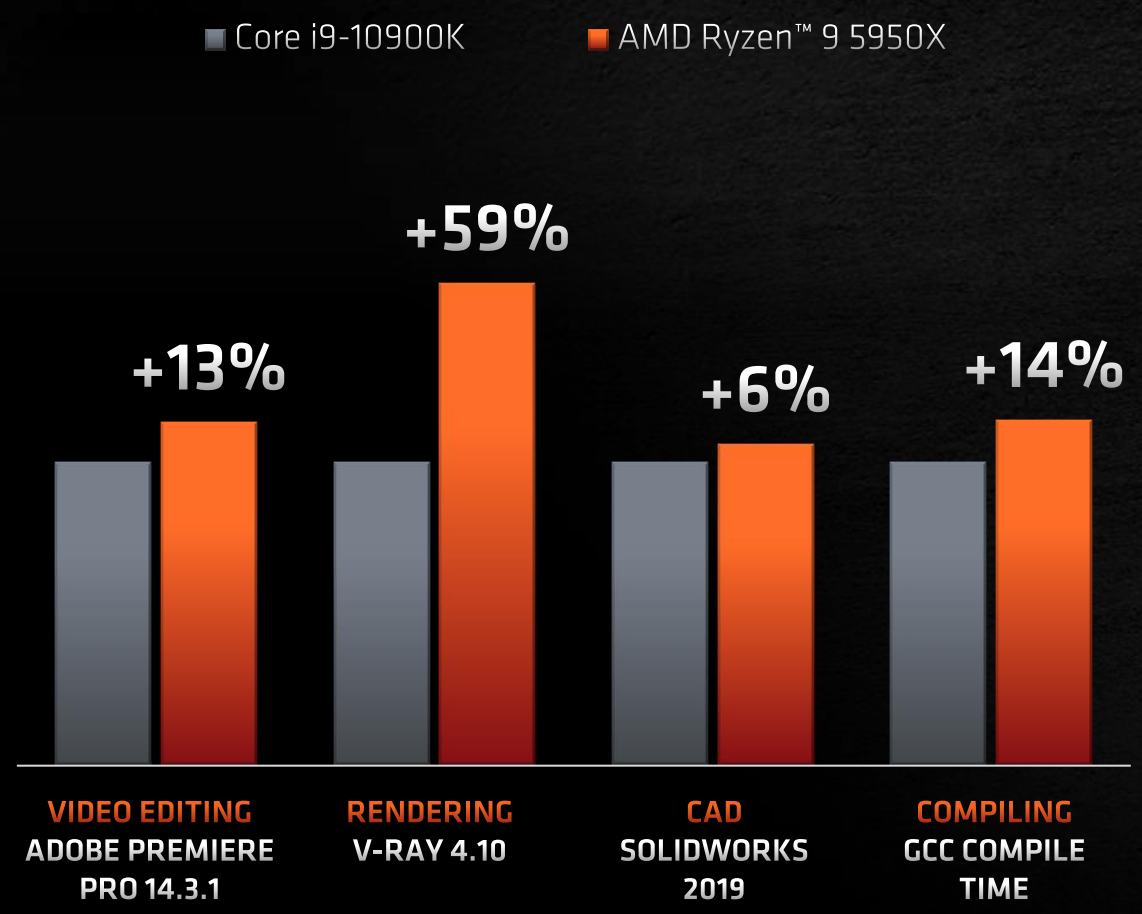


* 1. See endnotes: R5K-013.

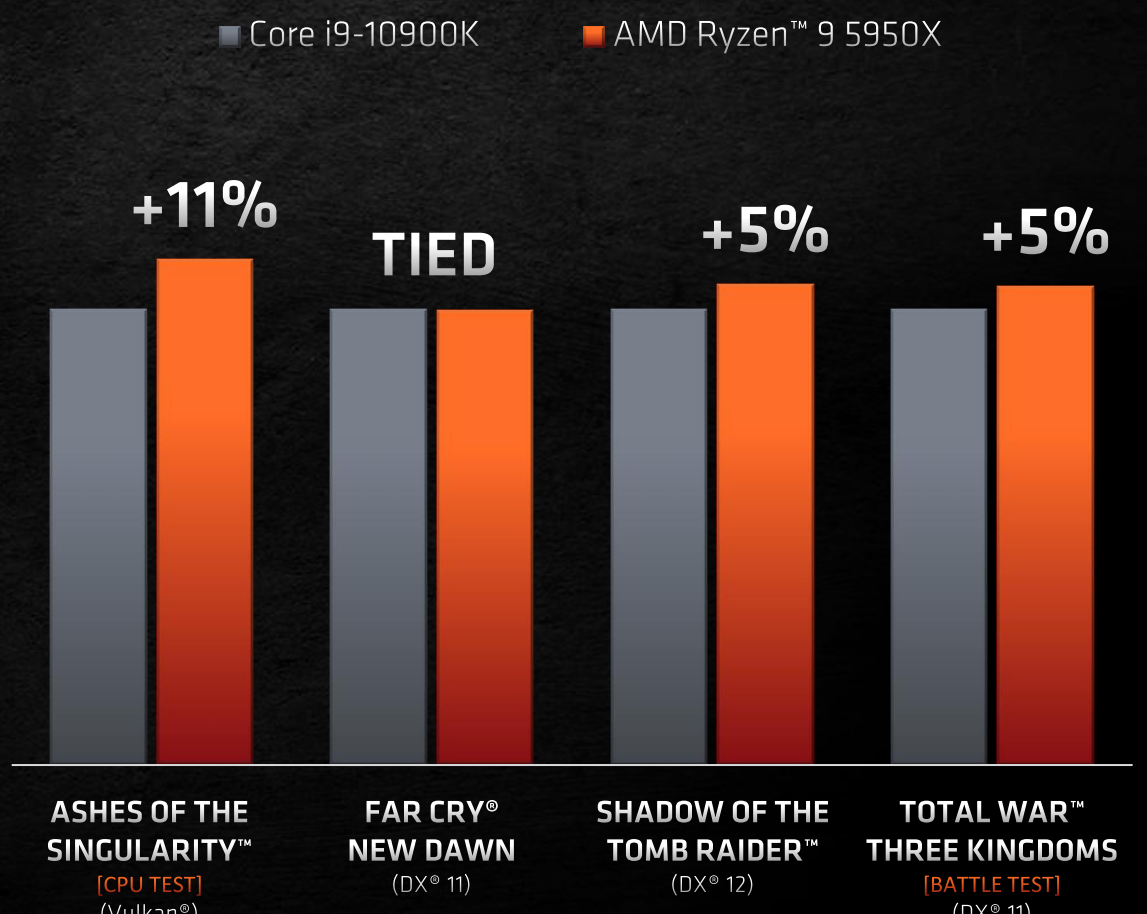
AMD

AMD RYZEN™ 9 5950X

CONTENT CREATION PERFORMANCE



GAMING PERFORMANCE



* 1. See endnotes: R5K-014

AMD

AMD RYZEN™ 9 5950X

THE BEST FOR GAMERS MEETS THE BEST FOR CREATORS

$799

AVAILABLE **NOVEMBER 5**

AMD

BIOS UPDATES FOR RYZEN™ 5000 SERIES

GETTING YOUR MOTHERBOARD DROP-IN READY

AMD 500 Series Chipsets

- **GET READY:** AMD 500 Series motherboards require a BIOS with AGESA 1.0.8.0 (or newer) for POST/boot (already available)
- **AT LAUNCH:** Users should upgrade to a BIOS with AGESA 1.1.0.0 (or newer) for the best experience on November 5

AMD 400 Series Chipsets

- BIOS updates for AMD Ryzen 5000 Series processors currently in development with motherboard partners
- Customers should expect first beta releases for AMD 400 Series motherboards starting in January, 2021

AMD

A RELENTLESS PACE OF INNOVATION

RYZEN™ 5000 SERIES DELIVERS WHAT GAMERS WANT

Metric	Market Leader
1080p Gaming	AMD
Core Architecture IPC	AMD
Power Efficiency	AMD
Single-Thread Performance	AMD
Multi-Thread Performance	AMD
Performance per Dollar	AMD
Backwards Compatibility	AMD

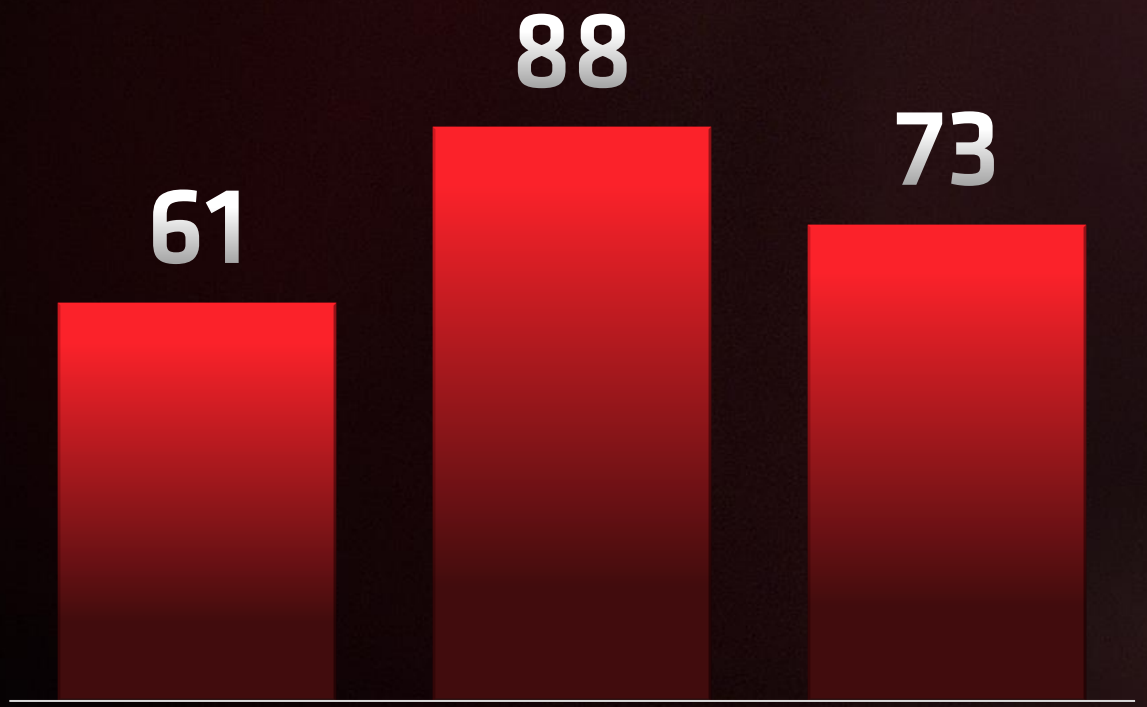
AMD

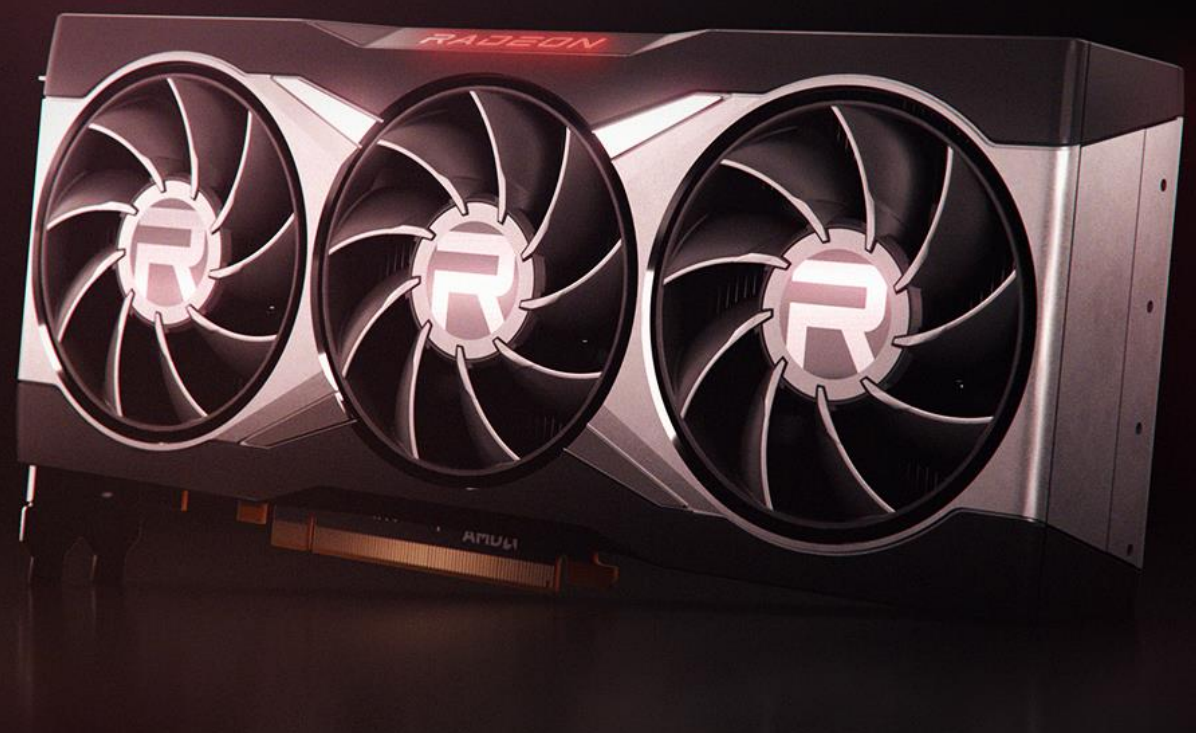

RADEON

AMD RADEON
RX 6000 SERIES

3840x2160 (4K)

Frames Per Second





* 1. See endnotes: RX-532.

ENDNOTES

- **RZ3-24:** Based on AMD Labs testing in May 2019, an AMD "Zen 2"-based system configured with a "Matisse" B0 sample, AMD Reference Mobo, AMD Reference Cooler, 4x8GB DDR4-2667 RAM, Ubuntu O/S, and GeForce GTX 1080 GPU vs. a similarly configured "Summit Ridge" B2 sample, scored an estimated 15% higher using estimated SPECint®_base2006 results. SPEC and SPECint are registered trademarks of the Standard Performance Evaluation Corporation. See www.spec.org.

- **GD-108:** Generational IPC uplift for the "Zen" architecture vs. "Piledriver" architecture is +52% with an estimated SPECint_base2006 score compiled with GCC 4.6 –O2 at a fixed 3.4GHz. Generational IPC uplift for the "Zen" architecture vs. "Excavator" architecture is +64% as measured with Cinebench R15 1T, and also +64% with an estimated SPECint_base2006 score compiled with GCC 4.6 –O2, at a fixed 3.4GHz. System configs: AMD reference motherboard(s), AMD Radeon™ R9 290X GPU, 8GB DDR4-2667 ("Zen")/8GB DDR3-2133 ("Excavator")/8GB DDR3-1866 ("Piledriver"), Ubuntu Linux 16.x (SPECint_base2006 estimate) and Windows® 10 x64 RS1 (Cinebench R15). SPECint_base2006 estimates: "Zen" vs. "Piledriver" (31.5 vs. 20.7 | +52%), "Zen" vs. "Excavator" (31.5 vs. 19.2 | +64%). Cinebench R15 1t scores: "Zen" vs. "Piledriver" (139 vs. 79 both at 3.4G | +76%), "Zen" vs. "Excavator" (160 vs. 97.5 both at 4.0G| +64%).

- **R5K-002:** Testing by AMD performance labs as of 9/2/2020 based on the average FPS of 40 PC games at 1920x1080 with the High image quality preset using an AMD Ryzen™ 9 5900X processor vs. Core i9-10900K. Results may vary.

- **R5K-003:** Testing by AMD performance labs as of 09/01/2020. IPC evaluated with a selection of 25 workloads running at a locked 4GHz frequency on 8-core "Zen 2" Ryzen 7 3800XT and "Zen 3" Ryzen 7 5800X desktop processors configured with Windows® 10, NVIDIA GeForce RTX 2080 Ti (451.77), Samsung 860 Pro SSD, and 2x8GB DDR4-3600. Results may vary.

- **R5K-004:** Testing by AMD performance labs as of 09/01/2020 with a Ryzen 9 5950X processor vs a Core i9-10900K configured with NVIDIA GeForce GTX 2080 Ti graphics, Samsung 860 Pro SSD, 2X8 DDR4-3600, Windows 10 and a Noctua NH-D15s cooler. Single-core performance evaluated with Cinebench R20 1T benchmark. Results may vary.

- **R5K-007:** Testing by AMD Performance Labs as of 09/01/2020 using Cinebench R20 nT versus system wall power during full load CPU test using a Core i9--10900K, Ryzen 9 3900XT, Ryzen 9 5900XT, Ryzen 9 3950X, and a Ryzen 9 5950XT configured with: 2x8GB DDR4-3600, GeForce RTX 2080 Ti, Samsung 860 Pro SSD, Noctua NH-D15s cooler, and an open-air test bench with no additional power draw sources. Results may vary.

ENDNOTES

- **R5K-012:** Testing by AMD Performance Labs as of 09/01/2020 using a Ryzen 7 1800X, Ryzen 9 3900XT, and a Ryzen 9 5900X CPU in Cinebench R20 nT versus system wall power during full load CPU test. All systems configured with: 2x8GB DDR4-3600, GeForce RTX 2080 Ti, Samsung 860 Pro SSD, Noctua NH-D15s cooler, and an open-air test bench with no additional power draw sources. Results may vary.

- **R5K-013:** Testing by AMD Performance Labs as of 9/25/2020 with a Ryzen 9 3950X vs a Ryzen 9 5950X CPU. All systems configured with: 2x8GB DDR4-3600, GeForce RTX 2080 Ti (451.77), Samsung 860 Pro SSD, Noctua NH-D15s cooler, Windows® 10 build 2004. Games tested at 1080p resolution with High image quality preset and the newest graphics API available to the title (e.g. DirectX® 12 or Vulkan™ or DirectX® 11). Results may vary.

- **R5K-014:** Testing by AMD Performance Labs as of 9/25/2020 with the Ryzen 9 5950X vs Core i9-10900K. All systems configured with: 2x8GB DDR4-3600, GeForce RTX 2080 Ti (451.77), Samsung 860 Pro SSD, Noctua NH-D15s cooler, Windows® 10 build 2004. Games tested at 1080p resolution with High image quality preset and the newest graphics API available to the title (e.g. DirectX® 12 or Vulkan™ or DirectX® 11). Results may vary.

- **RX-532:** Testing done by AMD performance labs 09/26/20 on a system configured with a new AMD graphics card, graphics driver 2009241322_20.45, Ryzen 9 5900X CPU, 16GB DDR4-3200MHz, engineering motherboard and bios, on Win 10 Pro x64 19041.508. Games tested at 4K as follows: Borderlands 3 (DX12, Badass), Call of Duty: Modern Warfare (DX 12, Ultra), Gears of War 5 (DX 12, Ultra). Performance may vary. GPU redacted AMD Confidential. RX- 532