MEGATASK TO THE EXTREME

Edit 4K video, render 3D effects, and compose soundtracks simultaneously without compromising system performance

1 Adobe Premiere Pro CC Workload: The project folder contains 7 4K H.264 MP4 video clips recorded approx. 80Mbps, totalling 1.90GB. The video stream is 3840x2160 (4K) in H.264 format with a framerate of 29.97 FPS. The audio stream is 1536 Kbps, 48.0 KHz, 16 bit Stereo in WAV format. The performance test measures the time to export the entire clip to a 4K H.264 MP4 format. The output is a high quality 4K video file.

2 HandBrake 0.10.2.7286 The workload video file is a ~6.27 GB, 3840 x 1714, 73.4 Mbps, 24fps, H.264, .mov video file that is transcoded to a ~1480 MB, 1920x858, ~17.1 Mbps, 24fps, H.264, .mp4 video file.

3 Blender 2.78b is a popular open-source 3D renderer. This benchmark workload consists of a render of a ~3MB character model of BMW cars.

Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more complete information about performance and benchmark results, visit http://www.intel.com/benchmarks *Other names and brands may be claimed as the property of others. Copyright © 2017 Intel Corporation. All rights reserved.
MULTI-CORE = MEGATASKING

The Intel® Core™ X-series processor family with 8, 12 or even 18 cores delivers amazing performance when multiple real-time workloads are stacked.

QUAD-CHANNEL MEMORY

Quad channel memory delivers improved responsiveness and decreases start up time when you are working with large files and content creation applications.

PCI EXPRESS*

Up to 68 platform PCIe lanes and support for multiple discrete graphics cards, Thunderbolt® technology, and high-speed storage like Intel® 3D NAND Solid State Drives.

MULTIPLE GRAPHICS CARDS

Extreme configuration flexibility with support for multiple discrete graphics cards.

Configurations: Intel® Core™ i9-7980XE Processor (2.6GHz up to 4.4GHz, 18C/36T, 24.75MB, 165W TDP) measured on - Motherboard: ASUS PRIME* X299-DELUXE BIOS 702, Memory: 4x8GB DDR4-2666, Storage: Intel SSD 600p 512GB, OS: Windows® 10 (RS2); Intel® Turbo Boost Max Technology Driver Version 1.0.0.1031, System Power Management Policy: High Performance; Intel® Core™ i7-7700K Processor (4.2GHz up to 2.5GHz, 4C/8T, 91W TDP) measured on - Motherboard: ASUS Prime X270-A, Memory: 4x8GB DDR4-2400, Storage: Intel 750 PCIe 550-400GB, OS: Windows® 10 (RS2), Graphics: Nvidia GTX 1080Ti (Driver 22.21.13. 8233), BIOS: BIOS 0906, System Power Management Policy: High Performance. Copyright © 2017 Intel Corporation. All rights reserved. *Other names and brands may be claimed as the property of others.
EXTREME MEGA-TASKING FOR GAMING


Frames per second\(^1\) in Ghost Recon: Wildlands* >125

Faster encoding\(^2\) while maintaining 60 FPS at 4K game playability on Overwatch* and 1080 Twitch* stream and recording locally

\(^1\) Based on measured average FPS on Ghost Recon: Wildlands -1080p, High setting on Intel Core™ i9-7980XE Processor w/ Nvidia® GTX 1080Ti

\(^2\) As measured by “Extreme Mega-tasking” workload on Intel Core™ i9-7980XE Processor w/ Nvidia® GTX 1080Ti vs. Intel Core™ i7-6950X w/ Nvidia® GTX 1080Ti.

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Extreme Mega-tasking workload: Overwatch (1.11.1.2 – 37270) is played using 'Ultra' graphics quality settings at 3840x2140 resolution with Vsync on. OBS Studio 19.0.2 64-bit is used to stream gameplay to Twitch* at 1920x1080 60fps as well as for recording video locally. A project in Adobe Premiere Pro CC (11.1.2) using a source video of gameplay (3840x2160, 60fps, 50Mbps, H.264, .mp4, 6 min. 29 sec.) is edited into a 2 min. video with transition effects. Adobe Media Encoder (11.1.2.35) is used to export the video using the "YouTube 2160p 4K" profile.

Metric is the time it takes to perform the video encode while playing Overwatch and recording+streaming to Twitch*. Configurations: Intel® Core™ i9-7900X (3.3GHz up to 4.5GHz, 10C/20T, 13.75MB, 140W TDP), Intel® Core™ i9-7920X (2.9GHz up to 4.4GHz, 12C/24T, 16.5MB, 140W TDP), Core i9-7960X (2.8GHz up to 4.4GHz, 16C/32T, 22MB, 165W TDP) and Core i9-7980XE (2.6GHz up to 4.4GHz, 18C/36T, 24.75MB, 165W TDP) measured on - Motherboard: ASUS PRIME X299-DELUXE Bios 702, Memory: 4x8GB DDR4-2666, Storage: Intel SSD 600p 512GB, OS: Windows* 10 (RS2), Graphics: Nvidia GTX 1080Ti (Driver 384.94), Intel® Turbo Boost Max Driver Version 1.0.0.1031, System Power Management Policy: High Performance. Intel® Core™ i7-7700K Processor (4.2GHz up to 2.5GHz, 4C/8T, 91W TDP) measured on - Motherboard: ASUS Prime X270-A, Memory: 4x8GB DDR4-2400, Storage: Intel 750 PCIe SSD -400GB, OS: Windows* 10 (RS2), Graphics: Nvidia GTX 1080Ti (Driver 22.2.1.12, 8333), BIOS/BIOS 0906, System Power Management Policy: High Performance. Warning: Altering PC clock or memory frequency and/or voltage may (i) reduce system stability and use life of the system, memory and processor; (ii) cause the processor and other system components to fail; (iii) cause reductions in system performance; (iv) cause additional heat or other damage; and (v) affect system data integrity. Intel assumes no responsibility that the memory, included if used with altered clock frequencies and/or voltages, will be fit for any particular purpose. Check with memory manufacturer for warranty and additional details.

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**QUAD-CHANNEL MEMORY**

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**OVERCLOCKING**

Overclock each core individually, utilize AVX ratio controls for more stability, and VccU voltage control for extreme scenario.

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Overclock each core individually, utilize AVX ratio controls for more stability, and VccU voltage control for extreme scenario.
**SCALE PERFORMANCE TO POWER EXTREME MEGATASKING**

<table>
<thead>
<tr>
<th>Core Features</th>
<th>Performance Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cores</strong></td>
<td>- Edit 4K video, render 3D effects, and compose soundtracks simultaneously</td>
</tr>
<tr>
<td><strong>Memory Channels</strong></td>
<td>- Quad channel memory delivers improved responsiveness and decreases start up time</td>
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<td><strong>Overclocking</strong></td>
<td>- Overclock each core individually, utilize AVX ratio controls for more stability, and VccU voltage control for extreme scenarios</td>
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</tbody>
</table>

**UP TO 2.4X Faster 4K Video Editing**

- Adobe Premiere Pro CC vs Intel® Core™ i7-7700K Processor

**UP TO 3X Better Performance**

- in Blender vs Intel® Core™ i7-7700K Processor

**>125 Frames per second**

- in Ghost Recon: Wildlands*

**UP TO 2X Faster encoding**

- while maintaining 60 FPS at 4K game playability on Overwatch* and 1080 Twitch* stream and recording locally

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1. Adobe Premiere Pro CC Workload: The project folder contains 7 4K H.264 MP4 video clips recorded approx. 80Mbps, totalling 1.90GB. The video stream is 3840x2160 (4K) in H.264 format with a framerate of 29.97 FPS. The audio stream is 1536 Kbps, 48.0 KHz, 16 bit Stereo in WAV format. The performance test measures the time to export the entire clip to a 4K H.264 MP4 format. The output is a high quality 4K video file. Blender 2.78b is a popular open-source 3D renderer. This benchmark workload consists of a render of a ~3MB character model of BMW cars. Based on measured average FPS on Ghost Recon: Wildlands - 1080p, High setting on Intel® Core™ i9-7980XE Processor w/ Nvidia® GTX 1080Ti. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more complete information about performance and benchmark results, visit http://www.intel.com/benchmarks.

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Higher processor frequency can improve performance.

Supported Technologies

**Intel® Turbo Boost Max Technology 3.0**

Higher TDP for more compute performance

Intel® Turbo Boost Technology 2.0; Intel® Hyper-Threading Technology; Intel® Smart Cache; Intel® Virtualization Technology

**SCALE PERFORMANCE TO UNLEASH CREATIVITY & POWER EXTREME GAMEPLAY**

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<table>
<thead>
<tr>
<th>Processor</th>
<th>Overclocking Enabled</th>
<th>Overclocking</th>
<th>Overclocking Enabled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel® Core™ i5-7640X (4 Cores)</td>
<td></td>
<td>4.0 GHz</td>
<td></td>
</tr>
<tr>
<td>Intel® Core™ i7-7740X (4 Cores)</td>
<td></td>
<td>4.2 GHz</td>
<td></td>
</tr>
<tr>
<td>Intel® Core™ i7-7800X (6 Cores)</td>
<td></td>
<td>4.3 GHz</td>
<td></td>
</tr>
<tr>
<td>Intel® Core™ i7-7820X (8 Cores)</td>
<td></td>
<td>3.5 GHz</td>
<td></td>
</tr>
<tr>
<td>Intel® Core™ i9-7900X (10 Cores)</td>
<td></td>
<td>3.6 GHz</td>
<td></td>
</tr>
<tr>
<td>Intel® Core™ i9-7920X (12 Cores)</td>
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</tr>
<tr>
<td>Intel® Core™ i9-7940X (14 Cores)</td>
<td></td>
<td>2.9 GHz</td>
<td></td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>Intel® Core™ i9-7980XE (18 Cores)</td>
<td></td>
<td>2.8 GHz</td>
<td></td>
</tr>
<tr>
<td>Intel® Core™ i9-7980XE (20 Cores)</td>
<td></td>
<td>2.6 GHz</td>
<td></td>
</tr>
</tbody>
</table>

**Overclocking**

An increased number of cores allows more work to be done simultaneously.

Intel® Smart Cache (L3 Shared)

Memory Channels

Platform PCI Express* Lanes

Higher TDP for more compute performance

Intel® Turbo Boost Max Technology 3.0

Supported Technologies

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