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Premiere Pro CC 2018: NVIDIA GeForce RTX 2080 & 2080 Ti Performance

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Posted on [October 1, 2018](#) by [Matt Bach](#)

Introduction

Like most of Adobe's popular applications, Premiere Pro CC utilizes the GPU to enhance performance for a number of tasks but it is often more important to get the right CPU than it is to get a faster GPU. NVIDIA's new RTX series cards have general performance increases like you would expect, but much of what makes these cards interesting are the addition of two new features: Tensor cores and RT cores.

What are Tensor Cores?

While already available on the more expensive Titan V GPU, the RTX line introduces [tensor cores](#) at a more reasonable price point. These tensor cores operate alongside the normal CUDA cores that traditionally do the heavy lifting, but are designed specifically for machine learning inference (running already created and trained machine learning models). While not utilized in Adobe applications today, these cores may be used in the future – especially as Adobe continues to develop their "[Adobe Sensei](#)" AI and machine learning technology.

What are RT Cores?

RT cores are brand new in this generation of graphics cards, and are specialized for a single type of operation: ray tracing. It is possible that Adobe may utilize these cores in After Effects or even Photoshop to some extent, but we feel it is unlikely they will be used much in Premiere Pro.

What makes these new RTX cards hard to review and test is the fact that Premiere Pro currently does not use either of these new types of cores. We can (and will) look at straight performance gains with the current version of Premiere Pro, but really what you are paying for is technology that *might* give you significant performance gains in the future.



If you would like to skip over our test setup and benchmark result/analysis sections, feel free to jump right to the [Conclusion](#) section.

Test Setup & Methodology

Listed below is the test platforms we will be using in our testing:

Motherboard:	Gigabyte X299 Designare EX
CPU:	Intel Core i9 7980XE 2.6GHz (4.2/4.4GHz Turbo) 18 Core
CPU Cooler:	Noctua NH-U12DX i4
RAM:	8x DDR4-2666 16GB (128GB total)
Hard Drive:	Samsung 960 Pro 1TB M.2 PCI-E x4 NVMe SSD
OS:	Windows 10 Pro 64-bit
Software:	Premiere Pro CC 2018 (ver. 12.1.2)

To see how the new RTX cards perform in Premiere Pro, we tested it against a selection of cards from NVIDIA as well as AMD's Vega 64 GPU.

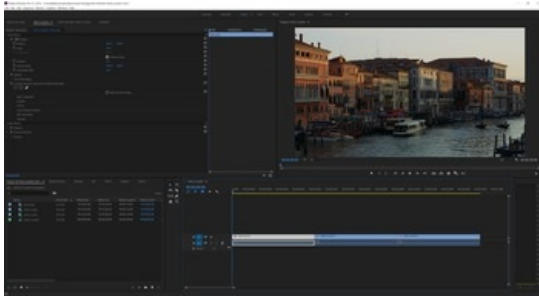
Gigabyte Radeon RX VEGA 64 GAMING OC 8G	NVIDIA GeForce GTX 1060 6GB
NVIDIA GeForce GTX 1070 8GB	NVIDIA GeForce GTX 1070 Ti 8GB
NVIDIA GeForce GTX 1080 8GB	NVIDIA GeForce GTX 1080 Ti 11GB
NVIDA Titan XP 12GB	NVIDIA Titan V 12GB
NVIDIA GeForce RTX 2080 8GB	NVIDIA GeForce RTX 2080 Ti 11GB

To thoroughly benchmark each processor, we used a range of codecs across 4K, 6K, and 8K resolutions:

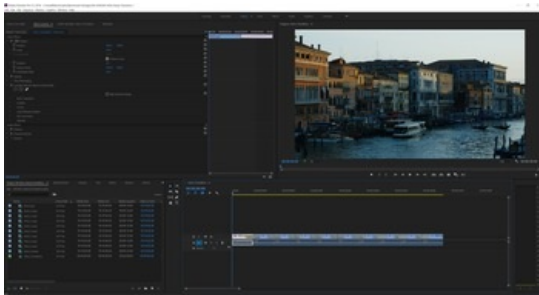
H.264	3840x2160	29.97 FPS	80 Mbps	Transcoded from RED 4K clip	
H.264 LongGOP	3840x2160	29.97 FPS	150 Mbps	Provided by Neil Purcell – www.neilpurcell.com	
DNxHR HQ 8-bit	3840x2160	29.97 FPS	870 Mbps	Transcoded from RED 4K clip	
ProRes 422 HQ	3840x2160	29.97 FPS	900 Mbps	Transcoded from RED 4K clip	
ProRes 4444	3840x2160	29.97 FPS	1,200 Mbps	Transcoded from RED 4K clip	
XAVC S	3840x2160	29.97 FPS	90 Mbps	Provided by Samuel Neff – www.neffvisuals.com	
RED (7:1)	4096x2304	29.97 FPS	300 Mbps	A004_C186_011278_001	RED Sample R3D Files
CinemaDNG	4608x2592	24 FPS	1,900 Mbps	Interior Office	Blackmagic Design [Direct Download]
RED (7:1)	6144x3077	23.976 FPS	840 Mbps	S005_L001_0220LI_001	RED Sample R3D Files
RED (9:1)	8192x4320	25 FPS	1,000 Mbps	B001_C096_0902AP_001	RED Sample R3D Files

Rather than just timing a simple export and calling it a day, we decided to create six different timelines for each codec that represent a variety of different type of workloads. For each of these timelines we tested both Live Playback performance in the program monitor as well as exporting via AME with the "H.264 – High Quality 2160p 4K" and "DNxHR HQ UHD" (matching media FPS) presets.

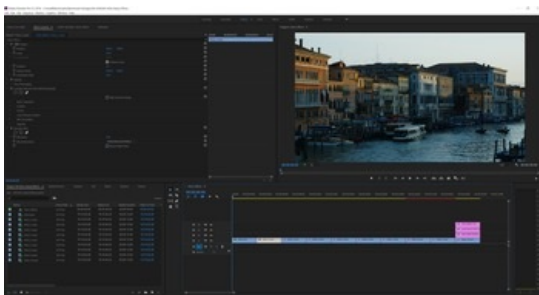
Lumetri Color



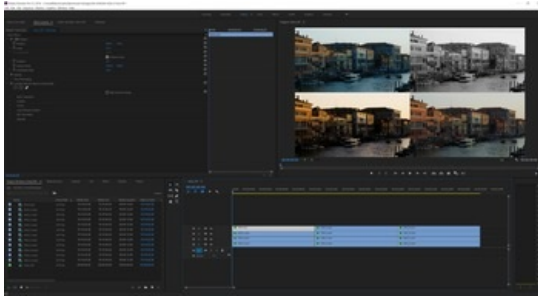
Heavy Transitions



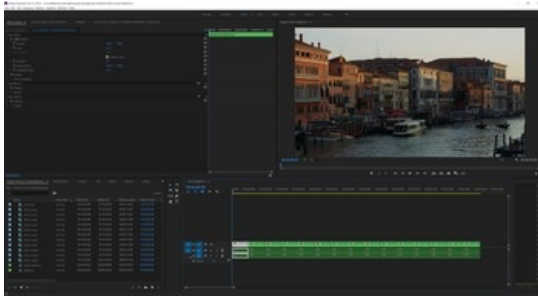
Heavy Effects



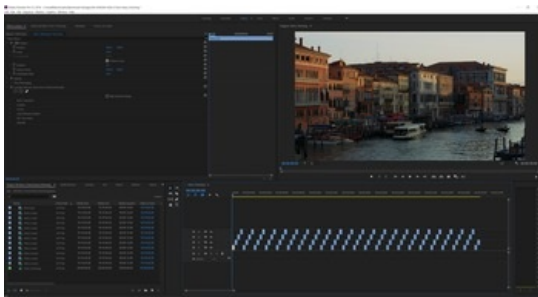
4 Track Picture in Picture



4 Track MultiCam



4 Track Heavy Trimming



Live Playback – Raw Benchmark Results

[\[Click Here\]](#) to skip ahead to analysis section

Premiere Pro CC 2018 - Live Playback FPS

(Lumetri Color)

	Radeon Vega 64 OC 8GB	GeForce GTX 1070 8GB	GeForce GTX 1070 Ti 8GB	GeForce GTX 1080 8GB	GeForce GTX 1080 Ti 11GB	Titan Xp 12GB	Titan V 12GB	GeForce RTX 2080 8GB	GeForce RTX 2080 Ti 11GB
4K H.264 29.97FPS	29.967	29.967	29.967	29.967	29.967	29.967	29.967	29.967	29.967
4K H.264 LongGOP 29.97FPS	29.567	29.533	29.4	29.567	29.567	29.433	29.4	29.467	29.433
4K XAVC S 29.97FPS	29.967	29.967	29.967	29.967	29.967	29.967	29.967	29.967	29.967
4K DNxHR HQ 29.97FPS	29.967	29.967	29.967	29.967	29.967	29.967	29.967	29.967	29.967
4K ProRes 422 HQ 29.97FPS	26.1	29.933	29.833	29.967	29.833	28.6	28.733	29.833	29.9
4K ProRes 4444 29.97FPS	21.9	29.6	29.567	29.633	29.6	25.267	25.567	29.433	29.633
4K RED 29.97FPS (Full Res. Premium)	21.633	29.833	29.933	29.967	29.967	27.933	27.967	29.967	29.933
4K CinemaDNG 24FPS (Full Res.)	16.533	18.8	18.367	19.667	19.4	16.4	16.567	20.267	20.6
6K RED 23.976FPS (Half Res. Good)	23.967	23.9	23.933	23.967	23.933	20.2	19.867	23.967	23.967
6K RED 23.976FPS (Full Res. Premium)	5.667	20.133	20.2	23.167	22.433	14.533	17.3	22.667	22.633
8K RED 25FPS (Half Res. Good)	25	24.933	25	25	25	15.967	19.467	25	25
8K RED 25FPS (Full Res. Premium)	3.1	12.8	13.533	15.533	18.033	9.967	9.9	17.167	18.133

Premiere Pro CC 2018 - Live Playback FPS
(Heavy Transitions)

	Radeon Vega 64 OC 8GB	GeForce GTX 1070 8GB	GeForce GTX 1070 Ti 8GB	GeForce GTX 1080 8GB	GeForce GTX 1080 Ti 11GB	Titan Xp 12GB	Titan V 12GB	GeForce RTX 2080 8GB	GeForce RTX 2080 Ti 11GB
4K H.264 29.97FPS	29.267	29.633	29.533	29.567	29.533	29.7	29.733	29.267	29.633
4K H.264 LongGOP 29.97FPS	29.2	29.3	28.967	28.833	28.967	29	29.233	29.133	28.933
4K XAVC S 29.97FPS	29.967	29.967	29.933	29.967	29.6	29.967	29.967	29.967	29.967
4K DNxHR HQ 29.97FPS	29.967	29.967	29.967	29.967	29.933	29.967	29.967	29.967	29.967
4K ProRes 422 HQ 29.97FPS	28	29.933	29.6	29.933	29.767	28.7	29	29.6	29.9
4K ProRes 4444 29.97FPS	24.133	28.867	28.067	28.333	28	25.767	26.467	28.1	27.933
4K RED 29.97FPS (Full Res. Premium)	12.6	24.767	25.333	26.6	27.9	23.667	23.333	27.9	27.467
4K CinemaDNG 24FPS (Full Res.)	20.233	18.2	18.3	20.033	20.233	20.033	19.5	19.667	20.133
6K RED 23.976FPS (Half Res. Good)	20.933	23.933	22.867	23.967	23.467	12.1	13.533	23.933	22.233
6K RED 23.976FPS (Full Res. Premium)	3.967	11.233	10.867	12.333	11.733	6.267	7.333	13.3	13.633
8K RED 25FPS (Half Res. Good)	16.233	21.033	19.633	21.3	19.433	8.667	12.9	20.967	19.8
8K RED 25FPS (Full Res. Premium)	1.933	5.867	5.933	7.2	8.333	5.067	4.7	7.167	8.733

Premiere Pro CC 2018 - Live Playback FPS
(Heavy Effects)

	Radeon Vega 64 OC 8GB	GeForce GTX 1070 8GB	GeForce GTX 1070 Ti 8GB	GeForce GTX 1080 8GB	GeForce GTX 1080 Ti 11GB	Titan Xp 12GB	Titan V 12GB	GeForce RTX 2080 8GB	GeForce RTX 2080 Ti 11GB
4K H.264 29.97FPS	25.667	24.167	23.533	23.6	24.8	25.733	26.6	25	23.967
4K H.264 LongGOP 29.97FPS	24.2	23.967	23.733	22.833	23.233	23.7	24.167	21.767	21.767
4K XAVC S 29.97FPS	25.367	23.867	23.667	23.967	24.133	25.3	25.333	23.533	24.133
4K DNxHR HQ 29.97FPS	25.367	22.367	22.067	21.933	22.467	25.133	25.467	21.6	21.867
4K ProRes 422 HQ 29.97FPS	25.1	25.733	25.667	25.867	25.7	25.067	25.4	25.467	26.033
4K ProRes 4444 29.97FPS	23.867	26.333	26.1	26	26.033	23.867	23.933	26.267	26.3
4K RED 29.97FPS (Full Res. Premium)	17.7	25.133	25.167	25.133	25.2	24.433	23.4	25.433	25.333
4K CinemaDNG 24FPS (Full Res.)	19.667	17.733	16.6	17.867	18	18.167	18.033	15.567	18
6K RED 23.976FPS (Half Res. Good)	23.833	23.8	23.533	23.633	23.933	20.033	20.2	23.6	23.267
6K RED 23.976FPS (Full Res. Premium)	4.933	14.733	14.9	17.2	17.767	12.767	13.667	18.233	18.667
8K RED 25FPS (Half Res. Good)	20.433	22.267	22.233	22.133	22.733	18.167	19.5	22.133	22.433
8K RED 25FPS (Full Res. Premium)	2.367	9.267	9.567	11.1	12.267	7.133	9.567	12.367	13.333

Premiere Pro CC 2018 - Live Playback FPS
(4 Track PiP)

	Radeon Vega 64 OC 8GB	GeForce GTX 1070 8GB	GeForce GTX 1070 Ti 8GB	GeForce GTX 1080 8GB	GeForce GTX 1080 Ti 11GB	Titan Xp 12GB	Titan V 12GB	GeForce RTX 2080 8GB	GeForce RTX 2080 Ti 11GB
4K H.264 29.97FPS	29.933	29.967	29.933	29.967	29.967	29.967	29.967	29.967	29.967
4K H.264 LongGOP 29.97FPS	0.067	0.067	0.1	0.067	0.067	0.067	0.067	0.067	0.1
4K XAVC S 29.97FPS	3.667	3.467	3.9	3.767	3.567	3.633	4.1	3.833	3.667
4K DNxHR HQ 29.97FPS	29.967	29.633	29.867	29.967	29.833	29.967	29.967	29.933	29.967
4K ProRes 422 HQ 29.97FPS	27.167	28.833	28.267	28.7	28.267	27.6	27.667	28.367	28.167
4K ProRes 4444 29.97FPS	24.367	26.067	25.367	25.833	25.333	24.567	23.967	25.4	25.1
4K RED 29.97FPS (Full Res. Premium)	24.1	21.833	17.033	24.9	18.233	10.033	9.533	17.6	14.367
4K CinemaDNG 24FPS (Full Res.)	13.833	8.7	9	10.833	13.433	12.967	17.033	13.867	16.033
6K RED 23.976FPS (Half Res. Good)	20.467	23	20.067	23.2	18.9	11.2	12.233	23.4	20.6
6K RED 23.976FPS (Full Res. Premium)	5.4	4.7	5.033	5.933	5.967	1.5	1.6	5.3	6.033
8K RED 25FPS (Half Res. Good)	19.233	22.767	21.467	23.2	18.467	17.267	12.767	23.133	21.533
8K RED 25FPS (Full Res. Premium)	5.7	3.167	2.7	3.233	3	0.9	1.267	3.467	3.267

Premiere Pro CC 2018 - Live Playback FPS
(4 Track Multicam)

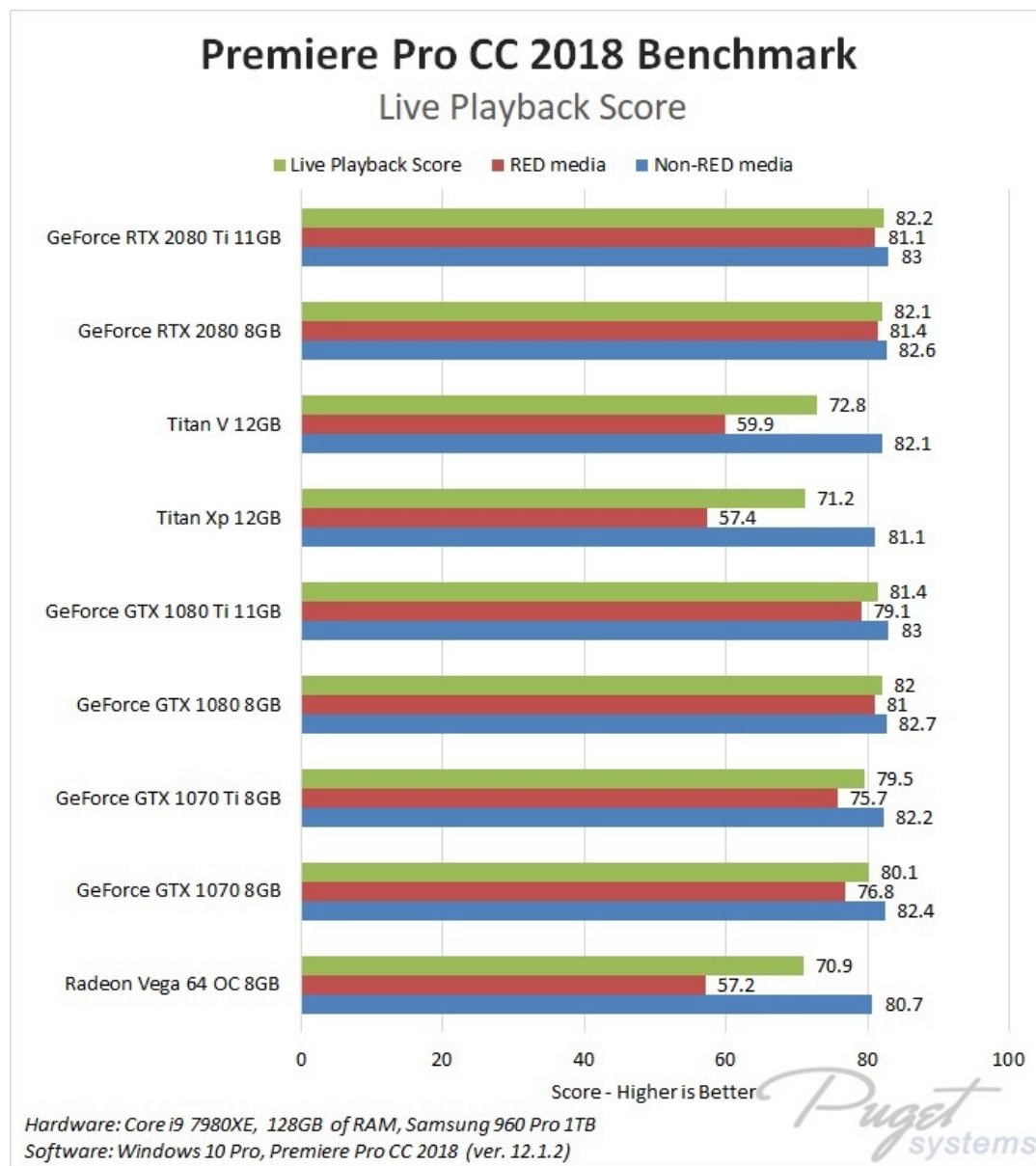
	Radeon Vega 64 OC 8GB	GeForce GTX 1070 8GB	GeForce GTX 1070 Ti 8GB	GeForce GTX 1080 8GB	GeForce GTX 1080 Ti 11GB	Titan Xp 12GB	Titan V 12GB	GeForce RTX 2080 8GB	GeForce RTX 2080 Ti 11GB
4K H.264 29.97FPS	29.967	29.967	29.967	29.967	29.967	29.967	29.967	29.967	29.933
4K H.264 LongGOP 29.97FPS	25.567	25.333	25.433	24.9	25.333	23.967	25.867	24.067	24.333
4K XAVC S 29.97FPS	29.967	29.967	29.8	29.567	29.6	29.967	29.967	29.967	29.833
4K DNxHR HQ 29.97FPS	29.967	29.967	29.967	29.967	29.967	29.967	29.967	29.967	29.967
4K ProRes 422 HQ 29.97FPS	28.133	29.967	29.967	29.967	29.967	28.833	28.667	29.933	29.967
4K ProRes 4444 29.97FPS	26.433	29.867	29.967	29.967	29.9	28.233	28.767	29.8	29.967
4K RED 29.97FPS (Full Res. Premium)	21.367	29.933	29.967	29.967	29.967	28.1	28.1	29.967	29.967
4K CinemaDNG 24FPS (Full Res.)	23.167	19.367	19.7	20.5	19.833	20.367	18.1	20.533	18.6
6K RED 23.976FPS (Half Res. Good)	23.967	23.967	23.967	23.967	23.967	18.467	19.5	23.967	23.967
6K RED 23.976FPS (Full Res. Premium)	7.567	20.167	20.333	23.033	19.733	14.9	15.9	23.4	23.867
8K RED 25FPS (Half Res. Good)	24.967	25	25	25	24.933	17.833	17.667	25	24.933
8K RED 25FPS (Full Res. Premium)	3.867	12.667	13.1	15.467	18	8.067	10.967	17.467	20.333

Premiere Pro CC 2018 - Live Playback FPS
(4 Track Heavy Trimming)

	Radeon Vega 64 OC 8GB	GeForce GTX 1070 8GB	GeForce GTX 1070 Ti 8GB	GeForce GTX 1080 8GB	GeForce GTX 1080 Ti 11GB	Titan Xp 12GB	Titan V 12GB	GeForce RTX 2080 8GB	GeForce RTX 2080 Ti 11GB
4K H.264 29.97FPS	17.467	18.3	17.867	14.867	14.633	15.033	18.733	14.167	14.567
4K H.264 LongGOP 29.97FPS	1.467	1.033	1	1.067	1.333	1.433	1.4	1.367	1.433
4K XAVC S 29.97FPS	7.1	6.267	7.7	6.667	7.9	7.867	7.633	7.4	7.767
4K DNxHR HQ 29.97FPS	29.967	29.967	29.967	29.967	29.967	29.967	29.967	29.967	29.967
4K ProRes 422 HQ 29.97FPS	25.867	29.967	29.933	29.933	29.4	28	28	29.6	29.933
4K ProRes 4444 29.97FPS	22.7	29.933	29.733	29.533	29.967	25.9	25.433	29.567	28.8
4K RED 29.97FPS (Full Res. Premium)	21.133	29.933	29.967	29.967	29.967	28.233	27.9	29.967	29.633
4K CinemaDNG 24FPS (Full Res.)	17.867	18.233	19.167	20.667	20.033	16.967	18.067	20.2	20.467
6K RED 23.976FPS (Half Res. Good)	23.967	23.9	23.933	23.967	23.933	18.033	20.067	23.967	23.9
6K RED 23.976FPS (Full Res. Premium)	6.933	20.2	20.567	23.167	21.933	14.733	17.533	23.4	23.933
8K RED 25FPS (Half Res. Good)	25	24.967	25	25	25	20	17.933	25	25
8K RED 25FPS (Full Res. Premium)	3.133	12.733	13.133	16.067	15.6	10.9	9.3	17.6	17.433

Live Playback – Benchmark Analysis

Often, whether the media we test is RED or not makes a big impact on performance since RED footage uses the GPU for the debayering of the RAW footage. Since this was a pretty big factor, we decided to look at the results depending on whether we were using RED media or non-RED media.



The "Live Playback Score" shown in the chart above is a representation of the average performance we saw with each processor for this test. In essence, a score of "80" would mean that on average that CPU was able to play our timelines at 80% of the tested media's FPS. A perfect score would be "100" which would mean that the system did not drop any frames even with the most difficult codecs and timelines.

There are a few interesting data points, but it mostly boils down to the AMD Vega 64 and the NVIDIA Titan cards under-performing with RED footage, but otherwise the cards performing very similarly. All the GPUs we tested (including the new RTX cards) were close to identical for non-RED footage, and even with RED media the RTX cards were only slightly faster than the current GTX cards.

AME Export – Raw Benchmark Results

[\[Click Here\]](#) to skip ahead to analysis section

Premiere Pro CC 2018 - AME Export FPS

(Lumetri Color - H.264 High Quality 2160p preset)

	Radeon Vega 64 OC 8GB	GeForce GTX 1070 8GB	GeForce GTX 1070 Ti 8GB	GeForce GTX 1080 8GB	GeForce GTX 1080 Ti 11GB	Titan Xp 12GB	Titan V 12GB	GeForce RTX 2080 8GB	GeForce RTX 2080 Ti 11GB
4K H.264 29.97FPS	27.2	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4
4K H.264 LongGOP 29.97FPS	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
4K XAVC S 29.97FPS	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1
4K DNxHR HQ 29.97FPS	28.1	27.2	27.2	27.2	27.2	27.2	28.1	27.2	27.2
4K ProRes 422 HQ 29.97FPS	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7
4K ProRes 4444 29.97FPS	24.3	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7
4K RED 29.97FPS	12.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7
4K CinemaDNG 24FPS	20	19.5	19.5	19.5	19.5	20	20	19.5	19.5
6K RED 23.976FPS	6.6	15	15	15	14.7	15	15	14.7	14.7
8K RED 25FPS	16.3	17.4	17.4	17.9	17.4	17.4	17.9	17.4	17.4

Premiere Pro CC 2018 - AME Export FPS

(Lumetri Color - DNxHR HQ UHD preset)

	Radeon Vega 64 OC 8GB	GeForce GTX 1070 8GB	GeForce GTX 1070 Ti 8GB	GeForce GTX 1080 8GB	GeForce GTX 1080 Ti 11GB	Titan Xp 12GB	Titan V 12GB	GeForce RTX 2080 8GB	GeForce RTX 2080 Ti 11GB
4K H.264 29.97FPS	40.9	42.8	40.9	40.9	40.9	40.9	42.8	40.9	40.9
4K H.264 LongGOP 29.97FPS	31	31	31	31	31	31	32.1	30	31
4K XAVC S 29.97FPS	39.1	39.1	39.1	40.9	39.1	39.1	40.9	39.1	39.1
4K DNxHR HQ 29.97FPS	36	34.6	36	34.6	36	36	36	36	36
4K ProRes 422 HQ 29.97FPS	36	37.5	39.1	37.5	37.5	37.5	37.5	37.5	36
4K ProRes 4444 29.97FPS	32.1	33.3	33.3	33.3	33.3	32.1	33.3	33.3	33.3
4K RED 29.97FPS	10.7	23.1	23.7	23.7	25	24.3	25	25	25
4K CinemaDNG 24FPS	11.4	12.9	12.4	12.6	12.9	12.2	13.6	12.6	13.1
6K RED 23.976FPS	5.4	16.7	16.7	17.1	17.1	17.1	18.4	17.1	18.9
8K RED 25FPS	15.6	17.9	17.9	17.4	18.3	18.8	18.8	18.8	18.8

Premiere Pro CC 2018 - AME Export FPS

(Heavy Transitions - H.264 High Quality 2160p preset)

	Radeon Vega 64 OC 8GB	GeForce GTX 1070 8GB	GeForce GTX 1070 Ti 8GB	GeForce GTX 1080 8GB	GeForce GTX 1080 Ti 11GB	Titan Xp 12GB	Titan V 12GB	GeForce RTX 2080 8GB	GeForce RTX 2080 Ti 11GB
4K H.264 29.97FPS	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7
4K H.264 LongGOP 29.97FPS	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	20.9
4K XAVC S 29.97FPS	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9
4K DNxHR HQ 29.97FPS	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4
4K ProRes 422 HQ 29.97FPS	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4
4K ProRes 4444 29.97FPS	24.3	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7
4K RED 29.97FPS	9.9	20.9	20.9	20.4	20.4	20.4	20.4	20.4	20.4
4K CinemaDNG 24FPS	20	18.9	19.5	20	20	20	20	19.5	20
6K RED 23.976FPS	4.9	12	12	12	12	12	12	12	11.8
8K RED 25FPS	12.1	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9

Premiere Pro CC 2018 - AME Export FPS

(Heavy Transitions - DNxHR HQ UHD preset)

	Radeon Vega 64 OC 8GB	GeForce GTX 1070 8GB	GeForce GTX 1070 Ti 8GB	GeForce GTX 1080 8GB	GeForce GTX 1080 Ti 11GB	Titan Xp 12GB	Titan V 12GB	GeForce RTX 2080 8GB	GeForce RTX 2080 Ti 11GB
4K H.264 29.97FPS	34.6	32.1	29	36	33.3	37.5	39.1	37.5	34.6
4K H.264 LongGOP 29.97FPS	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25	25.7
4K XAVC S 29.97FPS	31	28.1	28.1	30	32.1	32.1	32.1	31	32.1
4K DNxHR HQ 29.97FPS	36	33.3	34.6	36	37.5	37.5	39.1	37.5	37.5
4K ProRes 422 HQ 29.97FPS	39.1	34.6	34.6	37.5	39.1	39.1	40.9	39.1	39.1
4K ProRes 4444 29.97FPS	32.1	28.1	29	31	33.3	33.3	34.6	33.3	33.3
4K RED 29.97FPS	9.1	20	20.4	22.5	23.1	23.1	24.3	23.1	24.3
4K CinemaDNG 24FPS	19.5	17.1	18	18.9	19.5	20.6	22.5	20	21.2
6K RED 23.976FPS	4.3	13.1	13.6	13.8	14.4	14.4	14.7	14.4	14.7
8K RED 25FPS	13.4	15.3	15.6	15.6	16	16	16.3	15.6	16

Premiere Pro CC 2018 - AME Export FPS

(Heavy Effects - H.264 High Quality 2160p preset)

	Radeon Vega 64 OC 8GB	GeForce GTX 1070 8GB	GeForce GTX 1070 Ti 8GB	GeForce GTX 1080 8GB	GeForce GTX 1080 Ti 11GB	Titan Xp 12GB	Titan V 12GB	GeForce RTX 2080 8GB	GeForce RTX 2080 Ti 11GB
4K H.264 29.97FPS	20	20	20	20	20	20.4	20.4	20	20.4
4K H.264 LongGOP 29.97FPS	17	17	17	17.3	17.3	17	17.3	17.3	17.3
4K XAVC S 29.97FPS	19.1	18.7	18.7	19.1	18.7	19.1	19.1	19.1	19.1
4K DNxHR HQ 29.97FPS	20.4	20.4	20.4	20.4	20.4	20.4	20.9	20.4	20.4
4K ProRes 422 HQ 29.97FPS	20.9	20.4	20.4	20.9	20.4	20.4	20.4	20.4	20.4
4K ProRes 4444 29.97FPS	20	20	19.5	20	19.5	20	20	19.5	20
4K RED 29.97FPS	10.3	15	15.5	15.8	15.2	15.2	15.5	15.2	15.2
4K CinemaDNG 24FPS	9	9	9	9.1	9.2	9.1	9.5	9	9.1
6K RED 23.976FPS	5.9	10.4	10.1	10.3	10.3	10.1	10.3	10.3	10.1
8K RED 25FPS	13.7	15	15	15	15	15	15	15	15

Premiere Pro CC 2018 - AME Export FPS

(Heavy Effects - DNxHR HQ UHD preset)

	Radeon Vega 64 OC 8GB	GeForce GTX 1070 8GB	GeForce GTX 1070 Ti 8GB	GeForce GTX 1080 8GB	GeForce GTX 1080 Ti 11GB	Titan Xp 12GB	Titan V 12GB	GeForce RTX 2080 8GB	GeForce RTX 2080 Ti 11GB
4K H.264 29.97FPS	20.4	20.4	20	21.4	20.9	21.4	21.4	21.4	21.9
4K H.264 LongGOP 29.97FPS	16.7	16.3	16.3	16.3	16.7	16.7	16.7	16.3	16.7
4K XAVC S 29.97FPS	19.1	18.7	19.1	19.5	19.5	19.5	19.5	19.5	19.5
4K DNxHR HQ 29.97FPS	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.9	20.4
4K ProRes 422 HQ 29.97FPS	21.9	21.4	21.4	21.4	21.9	22.5	22.5	22.5	22.5
4K ProRes 4444 29.97FPS	20.4	20.9	21.4	20.4	21.4	20.9	20.9	21.4	20.4
4K RED 29.97FPS	8.6	13.2	13.2	13.6	13.4	13.6	13.4	13.2	13.4
4K CinemaDNG 24FPS	8	7.7	8.1	7.9	8	8.2	8.1	8.2	8.2
6K RED 23.976FPS	4.9	9.3	9.3	9.5	9.6	9.9	9.9	9.6	9.7
8K RED 25FPS	12.3	12.7	13.2	13.4	13.2	13.4	13.4	13.4	13.4

Premiere Pro CC 2018 - AME Export FPS

(4 Track PiP - H.264 High Quality 2160p preset)

	Radeon Vega 64 OC 8GB	GeForce GTX 1070 8GB	GeForce GTX 1070 Ti 8GB	GeForce GTX 1080 8GB	GeForce GTX 1080 Ti 11GB	Titan Xp 12GB	Titan V 12GB	GeForce RTX 2080 8GB	GeForce RTX 2080 Ti 11GB
4K H.264 29.97FPS	17.6	12.5	12.5	14.3	18.7	20.9	25.7	20.9	25.7
4K H.264 LongGOP 29.97FPS	13.6	10.7	10.7	11.7	14.3	14.5	16.3	15.8	16.1
4K XAVC S 29.97FPS	16.3	12	12.1	13.6	17.6	18.7	20.9	19.1	20.9
4K DNxHR HQ 29.97FPS	8	12.3	12.3	14	8.2	20	23.7	20	23.1
4K ProRes 422 HQ 29.97FPS	15.8	12.3	12.5	14.3	18.3	19.5	25	20.9	25
4K ProRes 4444 29.97FPS	14	12	12	13.8	17.3	17.6	22.5	18.7	22.5
4K RED 29.97FPS	4.9	7.7	8	9	11.4	12	13.2	11.7	13.6
4K CinemaDNG 24FPS	9.1	7.7	7.8	8.9	12	13.1	17.2	13.4	16.8
6K RED 23.976FPS	2.2	5.3	5.5	5.8	6.2	6	6.2	6.3	6.4
8K RED 25FPS	6.2	7.7	7.7	7.9	8	7.9	8	8	8.1

Premiere Pro CC 2018 - AME Export FPS

(4 Track PiP - DNxHR HQ UHD preset)

	Radeon Vega 64 OC 8GB	GeForce GTX 1070 8GB	GeForce GTX 1070 Ti 8GB	GeForce GTX 1080 8GB	GeForce GTX 1080 Ti 11GB	Titan Xp 12GB	Titan V 12GB	GeForce RTX 2080 8GB	GeForce RTX 2080 Ti 11GB
4K H.264 29.97FPS	17	12.3	12.3	14.3	18.7	20.9	25.7	21.4	25
4K H.264 LongGOP 29.97FPS	14	10.7	10.7	11.5	14.5	15.5	18.3	16.3	18.3
4K XAVC S 29.97FPS	15.8	12	12	13.6	17.6	19.5	23.1	19.1	23.1
4K DNxHR HQ 29.97FPS	16.7	12.3	12.3	14	18.3	20	23.7	19.5	23.1
4K ProRes 422 HQ 29.97FPS	16.3	12.3	12.3	14	18.7	20.4	25	20.9	25
4K ProRes 4444 29.97FPS	15	11.8	12	13.6	17.3	17.6	21.9	19.1	23.1
4K RED 29.97FPS	5.1	7.7	8	9.1	11.5	12.7	14.5	11.8	14.5
4K CinemaDNG 24FPS	8.6	7.6	7.8	8.7	10.8	10.3	12.2	10.4	12.2
6K RED 23.976FPS	2.3	5.1	5.3	5.7	6.1	5.9	6.2	6.3	6.6
8K RED 25FPS	6.9	8.1	8.3	8.4	8.8	8.5	8.7	8.8	8.9

Premiere Pro CC 2018 - AME Export FPS

(4 Track Multicam - H.264 High Quality 2160p preset)

	Radeon Vega 64 OC 8GB	GeForce GTX 1070 8GB	GeForce GTX 1070 Ti 8GB	GeForce GTX 1080 8GB	GeForce GTX 1080 Ti 11GB	Titan Xp 12GB	Titan V 12GB	GeForce RTX 2080 8GB	GeForce RTX 2080 Ti 11GB
4K H.264 29.97FPS	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4
4K H.264 LongGOP 29.97FPS	20.9	20.4	20.4	20.4	20.4	20.9	20.9	20.9	20.9
4K XAVC S 29.97FPS	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
4K DNxHR HQ 29.97FPS	29	28.1	28.1	28.1	28.1	28.1	29	28.1	28.1
4K ProRes 422 HQ 29.97FPS	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	25.7
4K ProRes 4444 29.97FPS	25	23.7	23.7	23.7	23.7	23.7	24.3	23.7	24.3
4K RED 29.97FPS	12.7	24.3	23.7	24.3	24.3	24.3	24.3	24.3	24.3
4K CinemaDNG 24FPS	20.6	20	20	20	20.6	20.6	21.2	20.6	20.6
6K RED 23.976FPS	6.5	15.6	15.3	15.3	15.3	15.3	15.3	15.3	15.3
8K RED 25FPS	16.3	17.9	18.3	17.9	17.9	17.9	18.3	18.3	17.9

Premiere Pro CC 2018 - AME Export FPS

(4 Track Multicam - DNxHR HQ UHD preset)

	Radeon Vega 64 OC 8GB	GeForce GTX 1070 8GB	GeForce GTX 1070 Ti 8GB	GeForce GTX 1080 8GB	GeForce GTX 1080 Ti 11GB	Titan Xp 12GB	Titan V 12GB	GeForce RTX 2080 8GB	GeForce RTX 2080 Ti 11GB
4K H.264 29.97FPS	32.1	33.3	32.1	31	32.1	32.1	33.3	32.1	33.3
4K H.264 LongGOP 29.97FPS	20	20	20	20	20.4	20	20.4	20	20
4K XAVC S 29.97FPS	27.2	26.4	27.2	27.2	27.2	27.2	27.2	27.2	27.2
4K DNxHR HQ 29.97FPS	34.6	34.6	36	36	34.6	36	36	34.6	36
4K ProRes 422 HQ 29.97FPS	36	37.5	37.5	36	36	36	37.5	37.5	37.5
4K ProRes 4444 29.97FPS	32.1	32.1	32.1	32.1	32.1	32.1	33.3	32.1	32.1
4K RED 29.97FPS	10.7	23.1	23.1	23.1	23.7	23.7	24.3	25	23.7
4K CinemaDNG 24FPS	17.6	16.7	18	16.7	17.1	16.7	18.9	17.6	15.7
6K RED 23.976FPS	5.4	16.7	16.7	16.7	17.5	17.5	18	17.1	18.4
8K RED 25FPS	15.3	17	17.4	17.4	18.3	18.3	18.3	17.9	18.3

Premiere Pro CC 2018 - AME Export FPS

(4 Track Heavy Trimming - H.264 High Quality 2160p preset)

	Radeon Vega 64 OC 8GB	GeForce GTX 1070 8GB	GeForce GTX 1070 Ti 8GB	GeForce GTX 1080 8GB	GeForce GTX 1080 Ti 11GB	Titan Xp 12GB	Titan V 12GB	GeForce RTX 2080 8GB	GeForce RTX 2080 Ti 11GB
4K H.264 29.97FPS	21.4	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1
4K H.264 LongGOP 29.97FPS	14	13.8	13.8	12.5	13.8	13.8	14	13.8	13.8
4K XAVC S 29.97FPS	18.3	18	18	18.3	18.3	18.3	18.3	18.3	18.3
4K DNxHR HQ 29.97FPS	27.2	26.4	26.4	26.4	27.2	27.2	27.2	27.2	27.2
4K ProRes 422 HQ 29.97FPS	25	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3
4K ProRes 4444 29.97FPS	23.1	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
4K RED 29.97FPS	12.5	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1
4K CinemaDNG 24FPS	18	18	18	18	18.5	18.5	18.5	18.5	18.5
6K RED 23.976FPS	6.5	14.7	14.4	14.7	14.4	14.4	14.7	14.4	14.4
8K RED 25FPS	15.6	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4

Premiere Pro CC 2018 - AME Export FPS

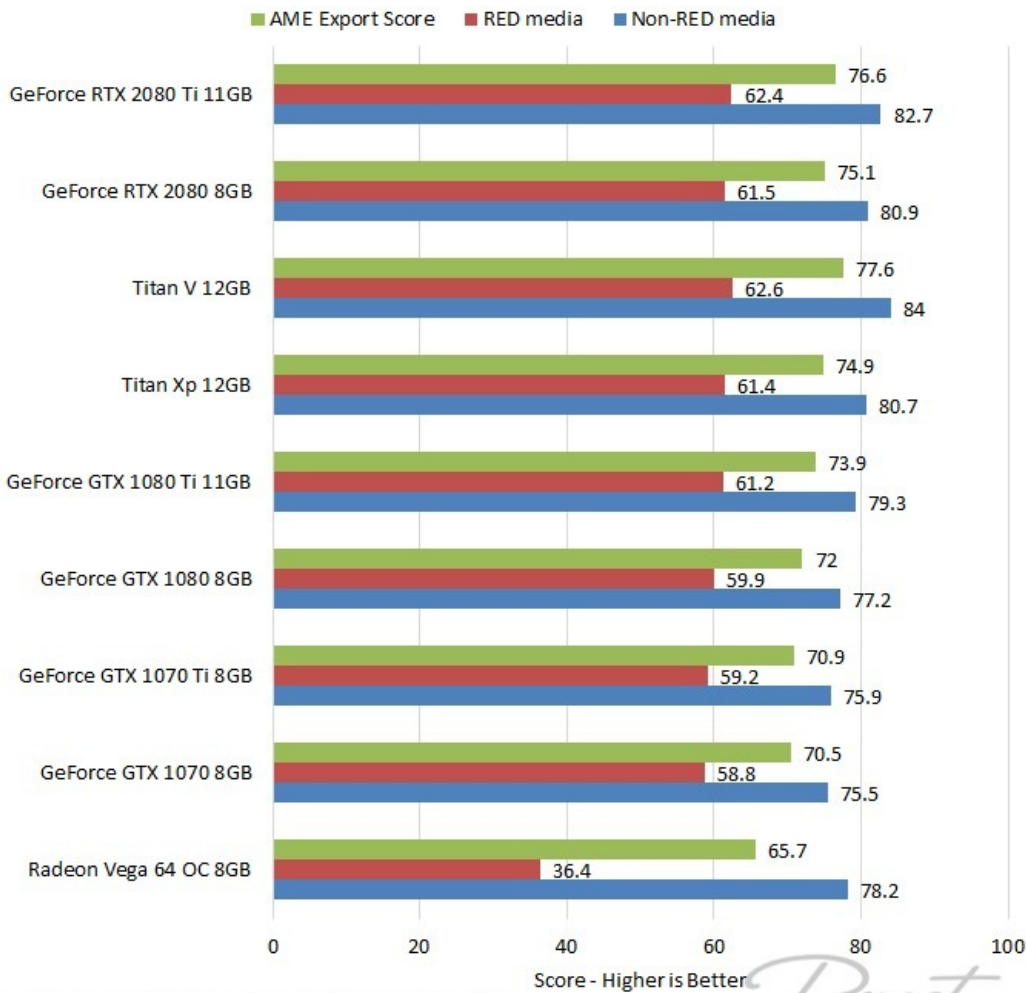
(4 Track Heavy Trimming - DNxHR HQ UHD preset)

	Radeon Vega 64 OC 8GB	GeForce GTX 1070 8GB	GeForce GTX 1070 Ti 8GB	GeForce GTX 1080 8GB	GeForce GTX 1080 Ti 11GB	Titan Xp 12GB	Titan V 12GB	GeForce RTX 2080 8GB	GeForce RTX 2080 Ti 11GB
4K H.264 29.97FPS	27.2	26.4	26.4	26.4	27.2	26.4	27.2	26.4	26.4
4K H.264 LongGOP 29.97FPS	13.2	13	13	13	13.2	13.2	13.4	13.2	13.2
4K XAVC S 29.97FPS	17.6	17.6	17.6	17.6	17.6	17.6	18	17.6	18
4K DNxHR HQ 29.97FPS	37.5	36	39.1	37.5	37.5	37.5	37.5	37.5	37.5
4K ProRes 422 HQ 29.97FPS	36	37.5	37.5	36	37.5	37.5	37.5	37.5	36
4K ProRes 4444 29.97FPS	32.1	31	31	32.1	32.1	32.1	32.1	32.1	32.1
4K RED 29.97FPS	11	23.7	23.1	23.1	24.3	24.3	24.3	23.7	24.3
4K CinemaDNG 24FPS	12.2	11.8	12.4	12.4	12.4	12.9	12.6	12.9	12.6
6K RED 23.976FPS	5.4	16.3	16	16.7	17.5	17.5	18.4	17.5	18
8K RED 25FPS	15.6	17	17.9	17.4	17.9	18.3	18.3	18.8	18.3

AME Export – Benchmark Analysis

Premiere Pro CC 2018 Benchmark

AME Export Score



Hardware: Core i9 7980XE, 128GB of RAM, Samsung 960 Pro 1TB
Software: Windows 10 Pro, Premiere Pro CC 2018 (ver. 12.1.2)

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Exporting through Adobe Media Encoder gives us a bit larger of a difference delta the cards we tested compared to Live Playback. Here we saw a small, but consistent, increase in performance with both RED and non-RED footage as you go up the NVIDIA GPU stack. Neither the RTX 2080 or 2080 Ti quite catch up to the more expensive Titan V, but both ended up being a tiny bit faster than the Titan Xp.

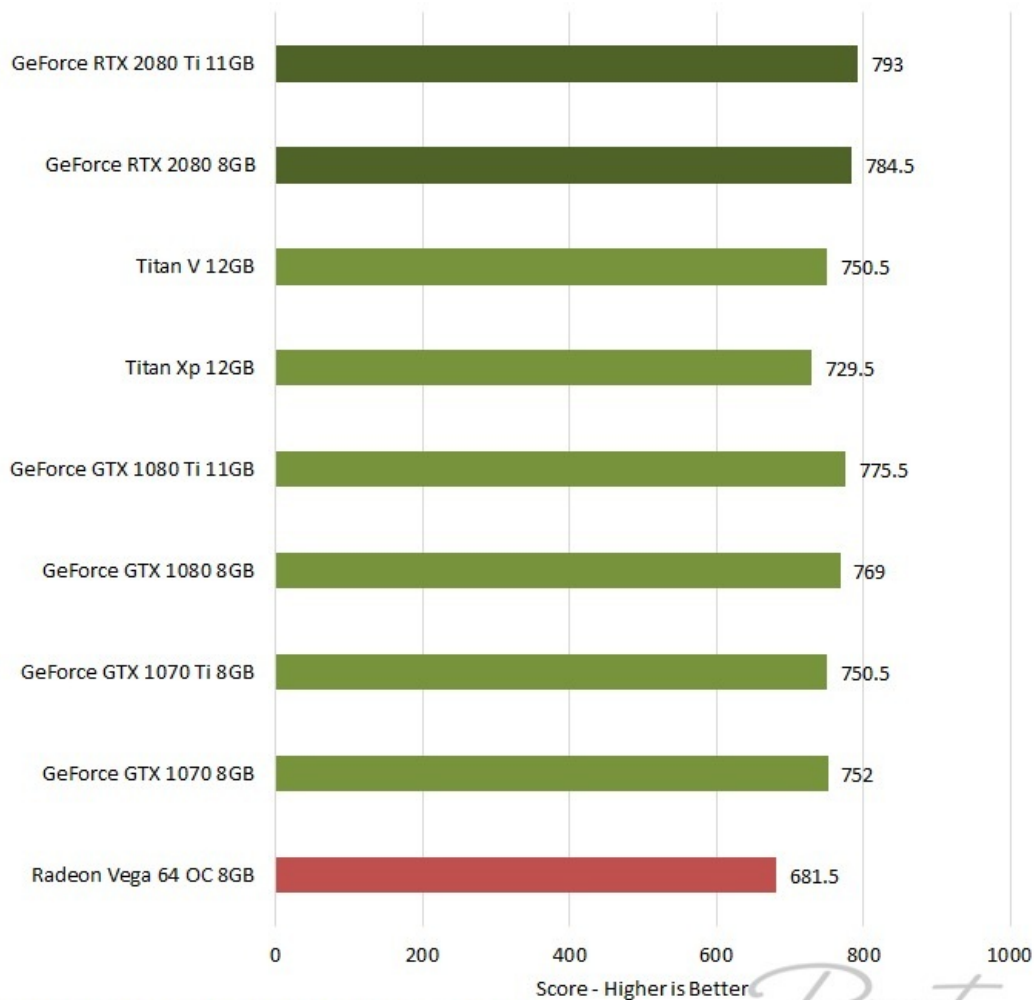
We are really talking about a ~5-10% difference in performance between the RTX 2080 Ti and the GTX 1070, however, so you likely won't notice a massive difference between any of the NVIDIA cards we tested unless you are doing exports that take several hours to complete.

Are the RTX video cards good for Premiere Pro?

The new RTX 2080 and 2080 Ti cards are certainly not bad for Premiere Pro, but the difference between any mid/high end NVIDIA GPU is going to be very minor. These cards are technically 1-2% faster than the GTX 1080 Ti, but you will likely not be able to tell the difference in Premiere Pro.

Premiere Pro CC 2018 Benchmark

Overall Score



Hardware: Core i9 7980XE, 128GB of RAM, Samsung 960 Pro 1TB
Software: Windows 10 Pro, Premiere Pro CC 2018 (ver. 12.1.2)

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While not exciting for Premiere Pro right now, the real question is whether the RTX GPUs will be good for Premiere Pro *in the future*. The new tensor cores in particular could have significant performance advantages for some tasks, or they might never be used at all. It really comes down to whether or not the Premiere Pro developers are willing or able to make effectively use of these new features. Our guess is that they will eventually be leveraged in some way via [Adobe Sensei](#), but whether it will happen in Premiere Pro CC 2019 or Premiere Pro CC 2030 is unknown at the moment.

Overall, the RTX cards are probably not worth using for their performance alone in Premiere Pro. However, but if you already need a high-end GPU for other applications (DaVinci Resolve, GPU-based rendering, etc.) we would highly recommend using one of these RTX cards if possible. The RTX 2080 does have less VRAM than the comparably priced GTX 1080 Ti (8GB vs 11GB) which is not ideal for 8K workflows, but the potential these cards offer is very hard to ignore.

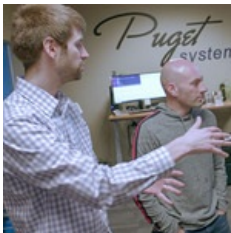
If you are interested in how the RTX cards perform in other applications, be sure to check out our [recent Video Card articles](#) as we have (or are working on) a number of other articles for the RTX 2080 and RTX 2080 Ti.



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