

Prime Computer PrimeMini 5 i7 (Intel Provo Canyon NUC8v7PNB) Mini PC Review: Passively-Cooled Whiskey Lake for Enterprise

Fanless mini PC from the Swiss Alps. Featuring a passively-cooled Whiskey Lake vPro processor and good connectivity options, the Prime Computer PrimeMini 5 aims to offer a sustainable, low-maintenance, and long-term desktop computing solution for businesses. While the PrimeMini 5 has the potential to deliver on these promises, it comes with some performance compromises that should not be overlooked.

Vaidyanathan Subramaniam,  Klaus Hinum, 01/25/2021 NL FR ... Business Desktop Mini PC Whiskey Lake



The PrimeMini 5 looks to offer fanless Whiskey Lake vPro goodness for the enterprise. (Image Source: Prime Computer)

Last October, Swiss IT company Prime Computer **launched the PrimeMini 5** fanless mini PC based on the Intel NUC8 Provo Canyon platform. The PrimeMini 5 can be purchased by individuals but is primarily geared towards enterprises who need an easily deployable and serviceable solution with the peace of mind of a five-year support period.

The PrimeMini 5's configuration can be customized to a large extent. Buyers can choose between **Core i3-8145U**, **Core i5-8365U**, and **Core i7-8665U** (the Core i5 and Core i7 are offered as vPro options) processors, 8 GB to 32 GB of DDR4-2400 RAM, and a desired combination of NVMe and SATA storage. A choice of Microsoft Windows 10 Pro, Windows Server 2016/2019, or Ubuntu can also be availed.

Our PrimeMini 5 unit is equipped with a passively-cooled Core i7-8665U Whiskey Lake vPro processor, 16 GB of DDR4-2400 RAM in dual-channel mode, 256 GB Samsung 860 EVO M.2 SSD, and comes with Windows 10 Pro pre-installed. At a retail price of €1,322 (US\$1,548) that includes a Windows 10 Pro license, the PrimeMini 5 isn't exactly a low-cost offering. Can it perform well to tackle the vagaries of daily office work? Let's find out.

Changelog:

01/25 - Added photos of device internals.

Prime Computer PrimeMini 5 i7 NUC8v7PNB

Processor: Intel Core i7-8665U 4 x 1.9 - 4.8 GHz, 16 W PL2 / Short Burst, 16 W PL1 / Sustained (Intel Core i7), vPro

Graphics adapter: Intel UHD Graphics 620, Intel Graphics Driver DCH 27.20.100.9126

Memory: 16384 MB ■, DDR4-2400 17-17-17-39, Dual-Channel SO-DIMM

Mainboard: Intel Cannon Point-LP

Storage: Samsung SSD 860 Evo 256GB M.2, 256 GB ■, 196 GB free

Weight: 1.3 kg (= 45.86 oz / 2.87 pounds) (= 0 oz / 0 pounds)

Price: 1322 Euro

Note: The manufacturer may use components from different suppliers including display panels, drives or memory sticks with similar specifications.

[see all specifications](#)

Competitors in comparison

Rating	Date	Model	Weight	Height	Size	Resolution	Best Price
	01/2021	Prime Computer PrimeMini 5 i7 NUC8v7PNB i7-8665U, UHD Graphics 620	1.3 kg	55 mm		x	from EUR 1322
	02/2020	Intel NUC10i7FNH i7-10710U, UHD Graphics 620	697 g	51 mm	0.00"	0x0	from EUR 849
	11/2018	Intel NUC8i7BE i7-8559U, Iris Plus Graphics 655	683 g	51 mm		x	from EUR 480
	06/2019	Intel NUC8i7BEH Asura NVMe SSD i7-8559U, Iris Plus Graphics 655	683 g	51 mm		x	from EUR
	12/2020	Beelink SEi10 i3-1005G1, UHD Graphics G1 (Ice Lake 32 EU)	350 g	41 mm		x	Alternative specs CHF 465.12
	10/2020	Zotac ZBOX MI642 Nano i5-10210U, UHD Graphics 620	472 g	51 mm		x	Alternative specs CHF 393.82
	12/2019	Lenovo ThinkCentre M90n-1 Nano i5-8265U, UHD Graphics 620	499 g	22 mm	0.00"	x	Alternative specs CHF 539.89

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Case

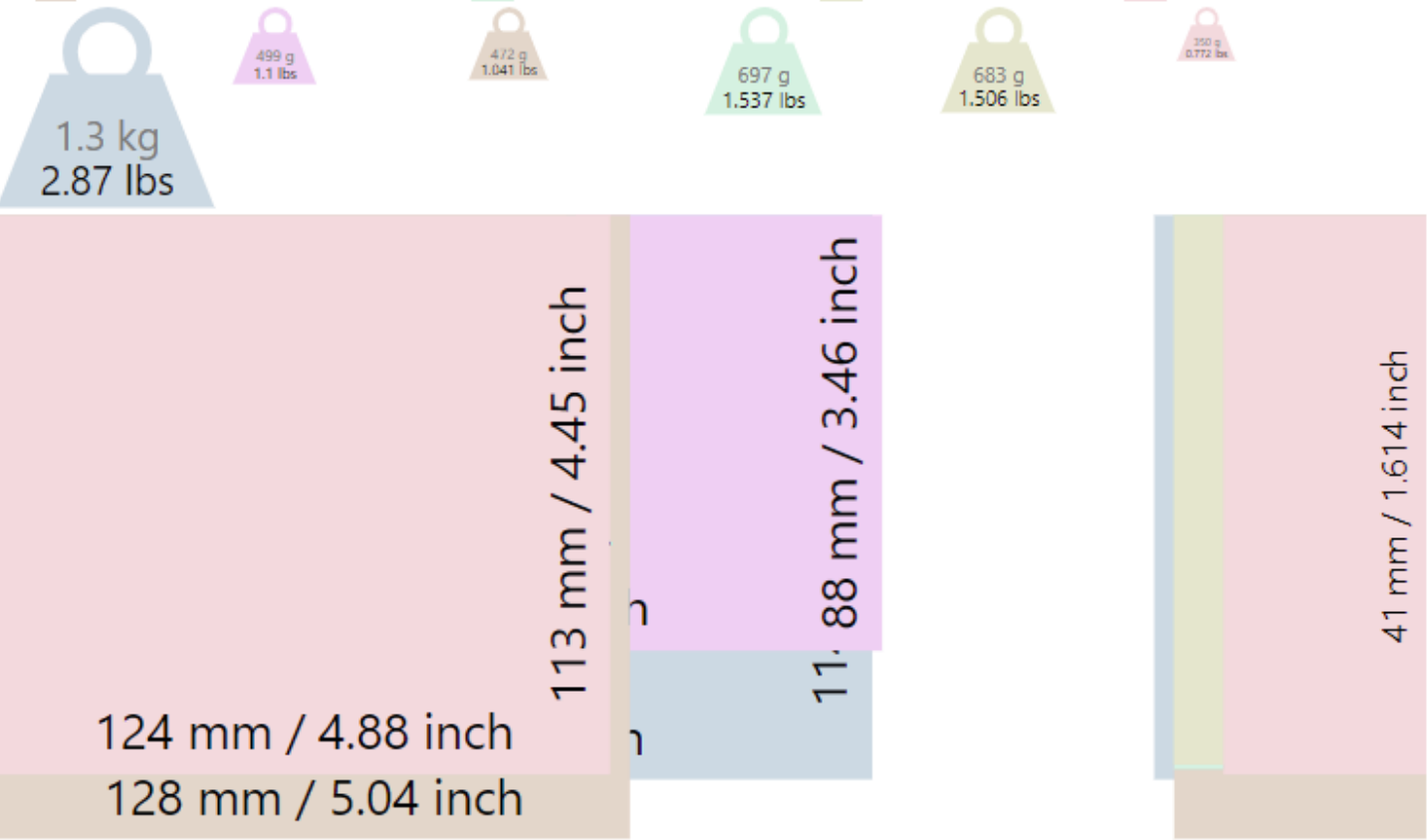
The PrimeMini 5 sports a premium design and this can be felt right from the time of unboxing to using the actual product itself. Having a length of nearly seven inches and weighing about 1.3 kg, the PrimeMini 5 is not the sleekest mini PC on the market. Having said that, the device still has a small footprint with a minimalist design and will easily fit in most workspaces.

The PrimeMini 5 sports an all-aluminum construction, and we didn't observe any cracks or creaks. The top side of the device has a finned design possibly to keep the device light and also help with better heat dissipation. There is provision for VESA mounting on the bottom plate, but no mounting accessory is provided in the packaging itself.

The PrimeMini 5 is IP51-rated for limited dust ingress and water condensation protection.



- ☒ Prime Computer PrimeMini 5 i7 NUC8v7PNB
- ☒ Lenovo ThinkCentre M90n-1 Nano
- ☒ Zotac ZBOX MI642 Nano
- ☒ Intel NUC10i7FNH
- ☒ Intel NUC8i7BE
- ☒ Beelink SEi10 ☒



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Connectivity

The PrimeMini 5 offers a decent port selection. Apart from the standard set of ports that includes Thunderbolt 3, buyers can also choose to have an additional RJ-45 LAN port, RS-232 serial port, VGA port, and a set of USB 3.0 and USB 2.0 ports if desired. The ports are upside-down because of the way the motherboard is oriented inside the chassis.

Unfortunately, an SD card slot, IR port, and audio jacks are not available.



Front (left to right): Power, 2x USB 3.1 Type-A.



Rear (left to right): Wi-Fi antenna port, Power, Protected UHD HDMI, VGA, 2x RJ-45, USB 3.1 Type-A, USB 2.0 Type-A, Thunderbolt 3, HDMI, Wi-Fi antenna port.



Reference Intel Provo Canyon board. (Image Source: Simply NUC)

Maintenance

Update 01/25: Upgrading the PrimeMini 5 is easy and only requires removing four screws at the bottom. Unfortunately, our review sample came with two of the four screws stripped, which meant that we could not remove them with the available tools at hand. Therefore, we had requested Prime Computer to send us a few pictures of the innards and are including them below.



Communication

The PrimeMini 5 comes equipped with an Intel Wireless AC 9260 WLAN card with Bluetooth 4.2 support. While a more modern wireless AX solution would have been preferable, the wireless AC 9260 can still offer a total theoretical throughput of up to 1.73 Gbps on the 5 GHz band in the 160 MHz channel.

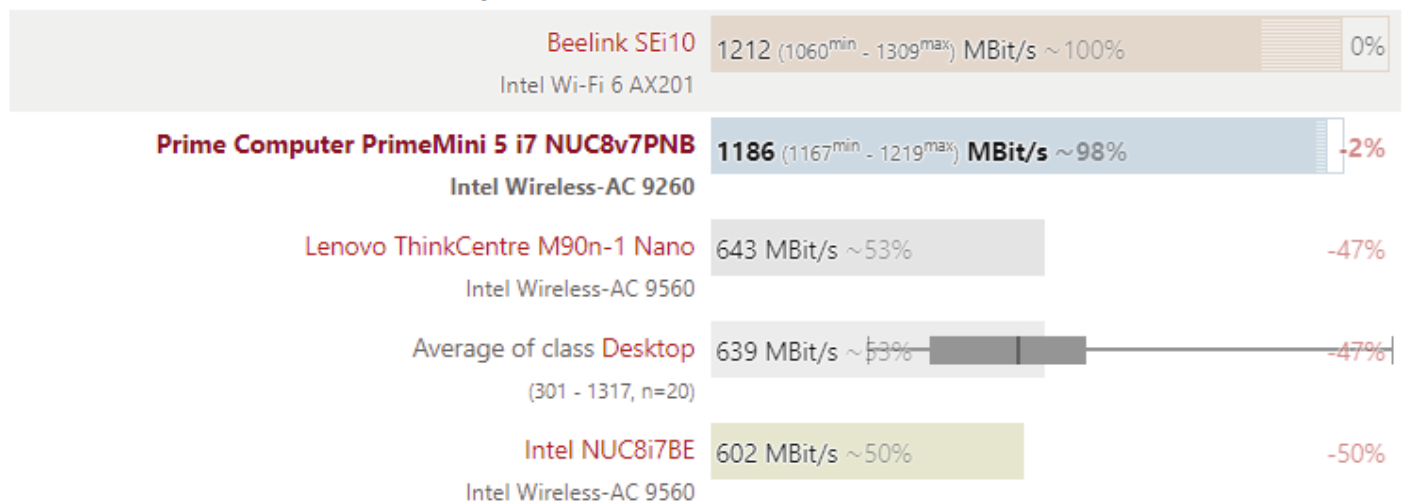
The PrimeMini 5's Intel 9260 WLAN card showed a highly consistent send and receive performance offering up to 1.2 Gbps throughput when placed exactly at a distance of 1 m from our Netgear Nighthawk RAX120 router.



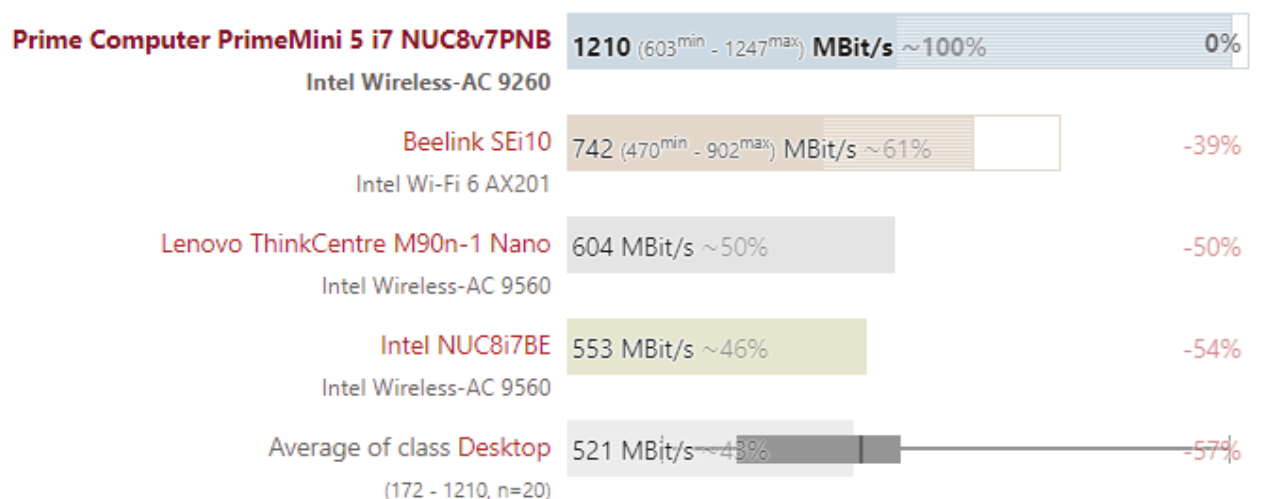
The Intel Wireless AC 9260 Wi-Fi card can be easily replaced.

Networking

iperf3 Client (receive) TCP 1 m 4M x10

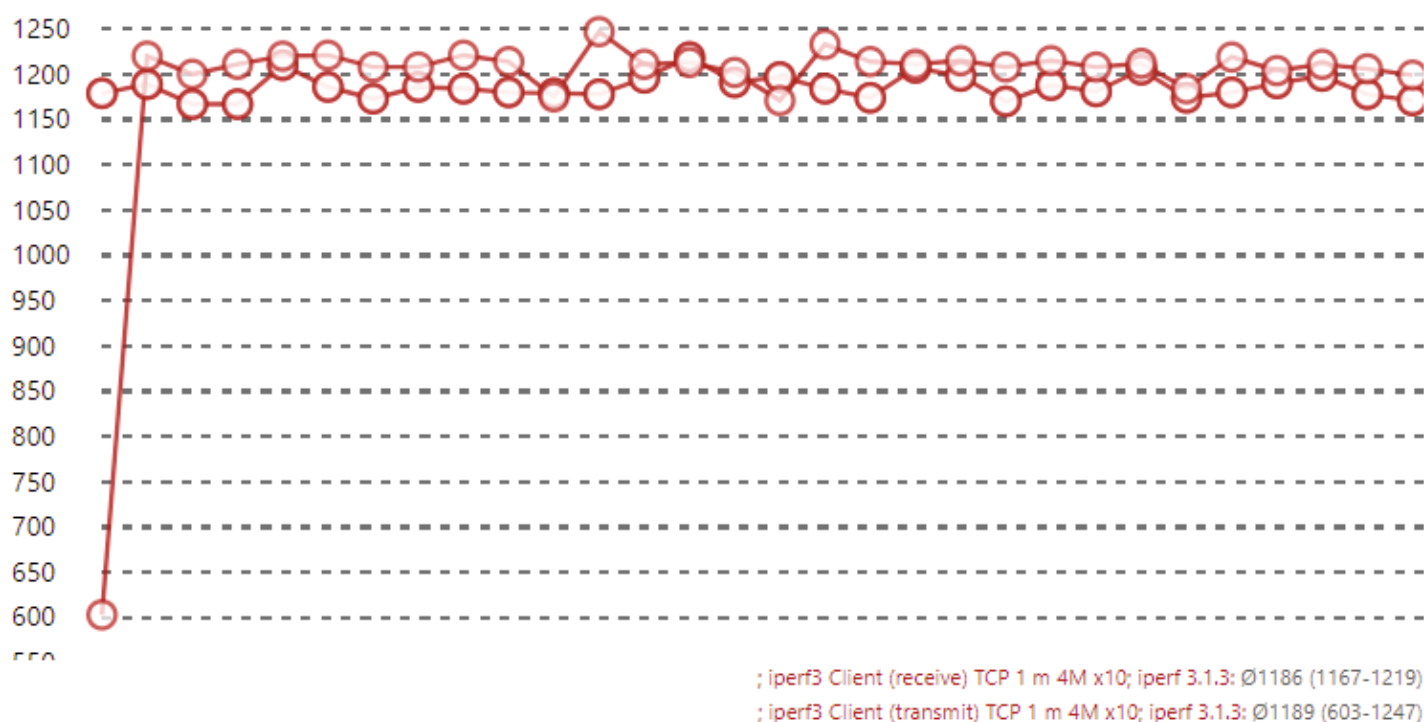


iperf3 Client (transmit) TCP 1 m 4M x10



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Accessories

Inside the box, we find the PrimeMini 5 unit itself, the AC adapter, two antennas for Wi-Fi connectivity, and a VGA to HDMI adapter along with some paperwork.

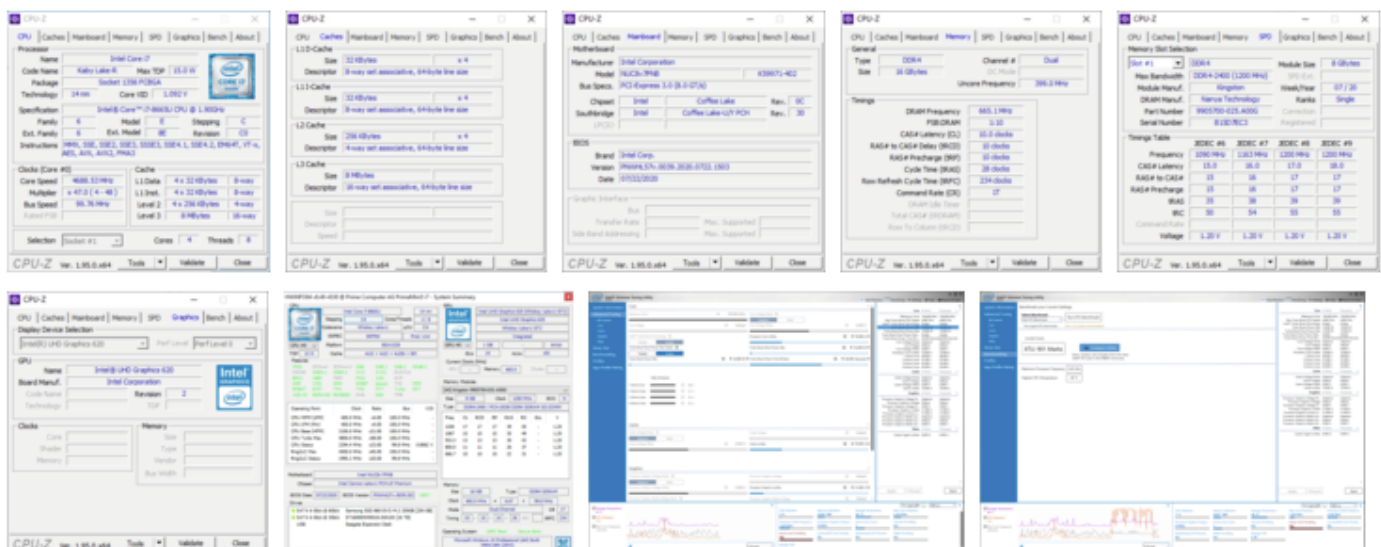
Warranty

Prime Computer offers a neat five-year warranty for all kinds of customers. B2B customers can also lease the PrimeMini 5 for periods ranging from three to five years as part of the [Prime Computer as a Service](#) program.

Performance

The PrimeMini 5 is based on the Intel NUC Provo Canyon platform. We checked with Prime Computer as to why it didn't opt for the newer Comet Lake-based Frost Canyon base. The company said that Provo Canyon boards were the only ones available with 15 W vPro processors, which is an important factor when catering to B2B customers.

Apparently, Intel ran into some issues that delayed the Provo Canyon Pro launch, which meant that it would be available only around the time the PrimeMini 5 was being developed. Prime Computer said that it is focused on offering long-term support for businesses rather than chasing the newest CPU generation.



Processor

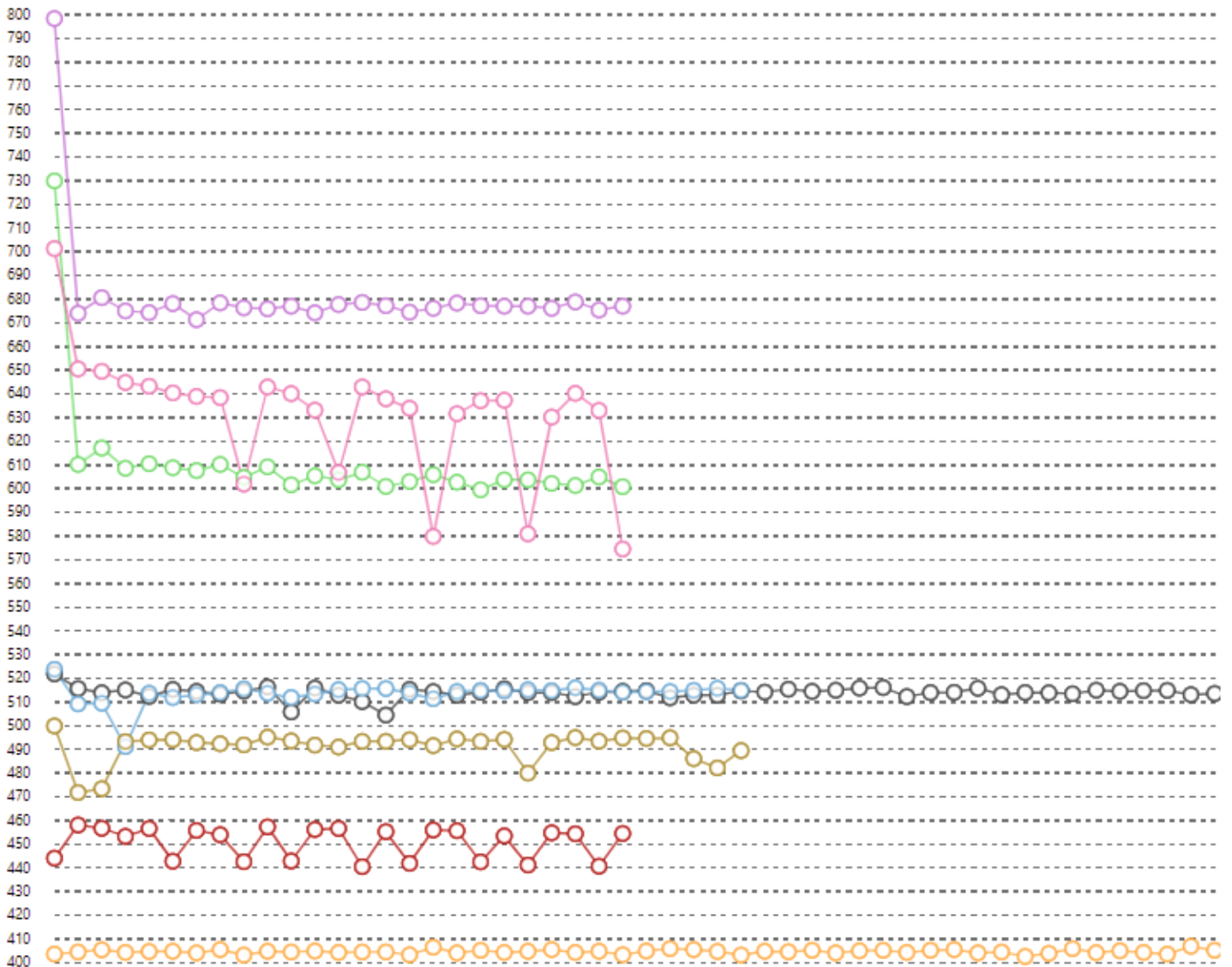
Since the PrimeMini 5 is a fanless PC, we do see some reduction in performance of the Core i7-8665U compared to its implementation in conventional laptops such as the [Dell Latitude 5500](#) or the [Lenovo ThinkPad X1 Carbon 2019](#). Both the PL1 and PL2 of the Core i7-8665U have been restricted to 16 W.

Though the PL1 and PL2 can be changed in the BIOS, Prime Computer tells us that these values have been found to be optimal for this design keeping in mind the five-year warranty. The company cautioned that raising the PL1/PL2 values may damage the M.2 SSD over time if the system runs at full load. We conducted our testing at the factory-default PL1/PL2 values.

In the Cinebench R15 loop, we see that the PrimeMini 5 does not sustain too well, but the performance drop isn't drastic either. The lack of a fan and the constrained TDPs clearly show their effects as even the Coffee Lake [Core i7-8559U](#)-powered [Intel NUC8i7BEH](#) shows higher scores and a more consistent performance in the Cinebench R15 multi-core loop test.

Understandably, the same Core i7-8665U in laptops performs better overall with consistent sustained performance.

Check out our dedicated page on the [Core i7-8665U](#) for more technical information and benchmark comparisons.



[Prime Computer PrimeMini 5 i7 NUC8v7PNB](#) Intel Core i7-8665U; CPU Multi 64Bit: Ø451 (440.42-458.07)

[Beelink SEi10](#) Intel Core i3-1005G1; CPU Multi 64Bit: Ø405 (402.55-406.84)

[Zotac ZBOX MI642 Nano](#) Intel Core i5-10210U; CPU Multi 64Bit: Ø514 (504.41-521.83)

[Lenovo ThinkCentre M90n-1 Nano](#) Intel Core i5-8265U; CPU Multi 64Bit: Ø513 (491.14-523.79)

[Dell Latitude 5500](#) Intel Core i7-8665U; CPU Multi 64Bit: Ø611 (599.53-729.94)

[Lenovo ThinkPad X1 Carbon 2019-20QE000VGE](#) Intel Core i7-8665U; CPU Multi 64Bit: Ø632 (574.56-701.36)

[Dynabook Tecra X50-F](#) Intel Core i7-8665U; CPU Multi 64Bit: Ø491 (471.7-499.81)

[Intel NUC8i7BE](#) Intel Core i7-8559U; CPU Multi 64Bit: Ø681 (671.37-798.44)

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The Core i7-8665U's in the PrimeMini 5 lags behind the overall processor average in benchmarks such as Cinebench R15 and R20, 7-zip, Blender, and HWBOT x265. That being said, those using this mini PC for regular office work should find no major troubles as long as the workload does not involve highly complicated spreadsheets or documents.

Cinebench R20: **CPU (Single Core) | CPU (Multi Core)**

Cinebench R15: **CPU Single 64Bit | CPU Multi 64Bit**

Blender 2.79: **BMW27 CPU**

7-Zip 18.03: **7z b 4 -mmt1 | 7z b 4**

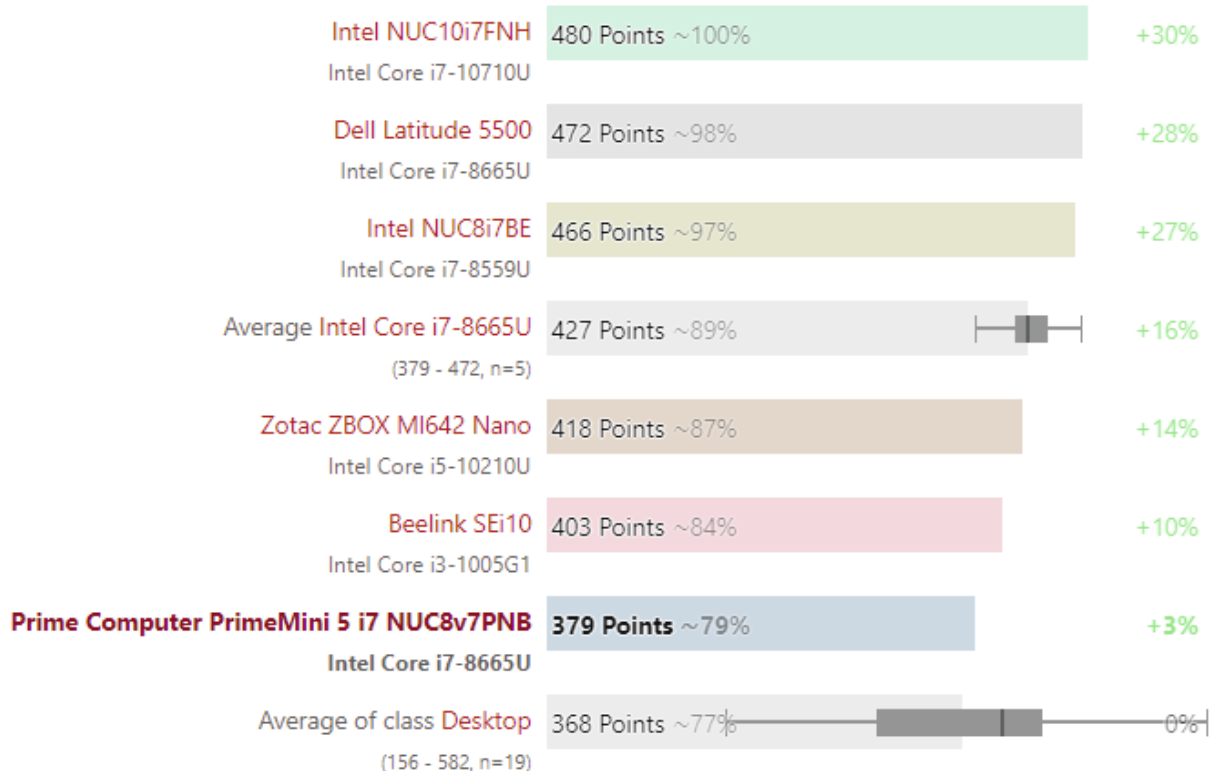
Geekbench 5.3: **64 Bit Single-Core Score | 64 Bit Multi-Core Score**

HWBOT x265 Benchmark v2.2: **4k Preset**

LibreOffice : **20 Documents To PDF**

R Benchmark 2.5: **Overall mean**

Cinebench R20 / CPU (Single Core)



* ... smaller is better

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Cinebench R15 CPU Multi 64Bit	458 Points
Cinebench R15 OpenGL 64Bit	47.8 fps
Cinebench R15 Ref. Match 64Bit	97.8 %
Cinebench R15 CPU Single 64Bit	154 Points

Help

... in comparison

System Performance

Though the effects of the power and cooling limitations imposed upon the processor are evident, the overall system performance is good. The PrimeMini 5 shows marginal advantages over the **Beelink SEi10** and the **Zotac ZBOX MI642 Nano** in most PCMark tests.



PCMark 8 Home Accelerated



PCMark 8 Work Accelerated



PCMark 10 Standard

PCMark 10 | PCMark 8

PCMark 10

Digital Content Creation

Intel NUC8i7BE	4007 Points ~26%	+37%
Iris Plus Graphics 655, i7-8559U		
Average of class Desktop	3981 Points ~26%	+36%
(972 - 11987, n=31)		
Intel NUC10i7FNH	3777 Points ~24%	+29%
UHD Graphics 620, i7-10710U, Kingston RBUSNS8154P3256GJ1		
Dell Latitude 5500	3506 Points ~23%	+20%
UHD Graphics 620, i7-8665U, Toshiba XG6 KXG60ZNV1T02		
Average Intel Core i7-8665U, Intel UHD Graphics 620	3016 Points ~19%	+3%
(2677 - 3506, n=7)		
Zotac ZBOX MI642 Nano	3000 Points ~19%	+3%
UHD Graphics 620, i5-10210U, Western Digital WD Blue 3D WDBNCE5000PNC		
Lenovo ThinkCentre M90n-1 Nano	2917 Points ~19%	0%
UHD Graphics 620, i5-8265U, Samsung SSD PM981 MZVLB512HAJQ		
Prime Computer PrimeMini 5 i7 NUC8v7PNB	2677 Points ~17%	-8%
UHD Graphics 620, i7-8665U, Samsung SSD 860 Evo 256GB M.2		
Beelink SEi10	2614 Points ~17%	-10%
UHD Graphics G1 (Ice Lake 32 EU), i3-1005G1, Silicon Motion AZW 256G M.228 NVMe 4X 200725 D		

Productivity

Dell Latitude 5500 UHD Graphics 620, i7-8665U, Toshiba XG6 KXG60ZNV1T02	7281 Points ~65%	+5%
Intel NUC8i7BE Iris Plus Graphics 655, i7-8559U	7236 Points ~65%	+4%
Average Intel Core i7-8665U, Intel UHD Graphics 620 (6506 - 7281, n=7)	6946 Points ~62%	0%
Intel NUC10i7FNH UHD Graphics 620, i7-10710U, Kingston RBUSNS8154P3256GJ1	6876 Points ~62%	-1%
Prime Computer PrimeMini 5 i7 NUC8v7PNB UHD Graphics 620, i7-8665U, Samsung SSD 860 Evo 256GB M.2	6694 Points ~60%	-4%
Lenovo ThinkCentre M90n-1 Nano UHD Graphics 620, i5-8265U, Samsung SSD PM981 MZVLB512HAJQ	6337 Points ~57%	-9%
Zotac ZBOX MI642 Nano UHD Graphics 620, i5-10210U, Western Digital WD Blue 3D WDBNCE5000PNC	6333 Points ~57%	-9%
Average of class Desktop (2883 - 8515, n=31)	6175 Points ~55%	-11%
Beelink SEi10 UHD Graphics G1 (Ice Lake 32 EU), i3-1005G1, Silicon Motion AZW 256G M.228 NVMe 4X 200725 D	5353 Points ~48%	-23%

Essentials

Dell Latitude 5500 UHD Graphics 620, i7-8665U, Toshiba XG6 KXG60ZNV1T02	9790 Points ~85%	0%
Intel NUC10i7FNH UHD Graphics 620, i7-10710U, Kingston RBUSNS8154P3256GJ1	9013 Points ~79%	-8%
Intel NUC8i7BE Iris Plus Graphics 655, i7-8559U	8994 Points ~79%	-8%
Average Intel Core i7-8665U, Intel UHD Graphics 620 (8071 - 9790, n=7)	8758 Points ~76%	-11%
Lenovo ThinkCentre M90n-1 Nano UHD Graphics 620, i5-8265U, Samsung SSD PM981 MZVLB512HAJQ	8551 Points ~75%	-13%
Prime Computer PrimeMini 5 i7 NUC8v7PNB UHD Graphics 620, i7-8665U, Samsung SSD 860 Evo 256GB M.2	8071 Points ~70%	-18%
Average of class Desktop (4418 - 10598, n=31)	7865 Points ~69%	-20%
Zotac ZBOX MI642 Nano UHD Graphics 620, i5-10210U, Western Digital WD Blue 3D WDBNCE5000PNC	7787 Points ~68%	-20%
Beelink SEi10 UHD Graphics G1 (Ice Lake 32 EU), i3-1005G1, Silicon Motion AZW 256G M.228 NVMe 4X 200725 D	7766 Points ~68%	-21%

Score		
Intel NUC8i7BE Iris Plus Graphics 655, i7-8559U	4580 Points ~52%	0%
Dell Latitude 5500 UHD Graphics 620, i7-8665U, Toshiba XG6 KXG60ZNV1T02	4515 Points ~51%	-1%
Intel NUC10i7FNH UHD Graphics 620, i7-10710U, Kingston RBUSNS8154P3256G1	4418 Points ~50%	-4%
Average Intel Core i7-8665U, Intel UHD Graphics 620 (3763 - 4515, n=7)	4070 Points ~46%	-11%
Average of class Desktop (1658 - 7329, n=31)	4063 Points ~46%	-11%
Lenovo ThinkCentre M90n-1 Nano UHD Graphics 620, i5-8265U, Samsung SSD PM981 MZVLB512HAJQ	3876 Points ~44%	-15%
Zotac ZBOX MI642 Nano UHD Graphics 620, i5-10210U, Western Digital WD Blue 3D WDBNCE5000PNC	3791 Points ~43%	-17%
Prime Computer PrimeMini 5 i7 NUC8v7PNB UHD Graphics 620, i7-8665U, Samsung SSD 860 Evo 256GB M.2	3763 Points ~43%	-18%
Beelink SEi10 UHD Graphics G1 (Ice Lake 32 EU), i3-1005G1, Silicon Motion AZW 256G M.228 NVMe 4X 200725 D	3420 Points ~39%	-25%

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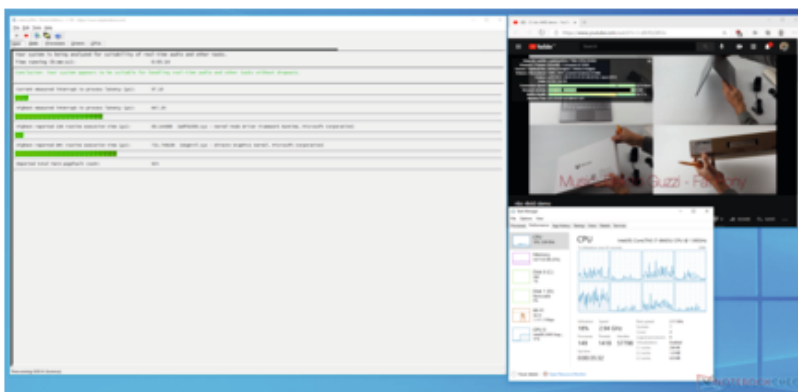


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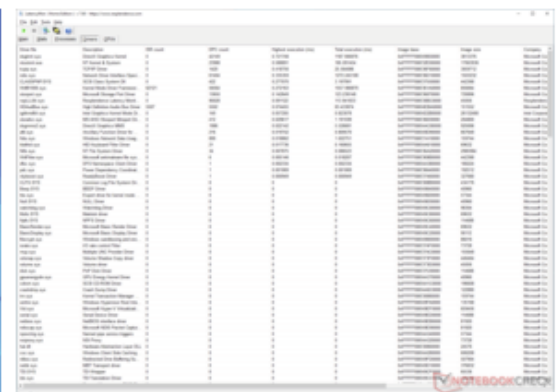
DPC Latency

Since the PrimeMini 5 runs on standard Intel hardware without any additional third-party driver overheads, we see that the highest measured latency is just 647.20 μ s in LatencyMon.

Frame drops in our sample YouTube 4K playback test were minimal at about 9 frames out of a total of 2,098. That being said, the integrated UHD Graphics 620 looks to be stretching itself in order to ensure fairly smooth 4K playback.



Measured DPC latency during YouTube 4K playback



The dxgkrnl.sys is the driver with the highest execution time.

DPC Latencies / LatencyMon - interrupt to process latency (max), Web, Youtube, Prime95

Beelink SEi10	1230.84 μ s * ~100%	-90%
UHD Graphics G1 (Ice Lake 32 EU), i3-1005G1, Silicon Motion AZW 256G M.228 NVMe 4X 200725 D		
Prime Computer PrimeMini 5 i7 NUC8v7PNB	647.2 μ s * ~53%	
UHD Graphics 620, i7-8665U, Samsung SSD 860 Evo 256GB M.2		

* ... smaller is better

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Storage Devices

Our PrimeMini 5 unit came equipped with a 256 GB Samsung 860 EVO M.2 SSD. The read/write performance is on par with what can be expected from a high-performing SATA SSD. Users can also install an NVMe SSD and/or a SATA 2.5-inch drive if desired.

The Samsung 860 EVO showed no throttling in the DiskSpd read loop test.

Refer to our dedicated [HDD/SSD benchmarks page](#) for more storage performance comparisons.



Full-length M.2 2280 SSDs can be installed.

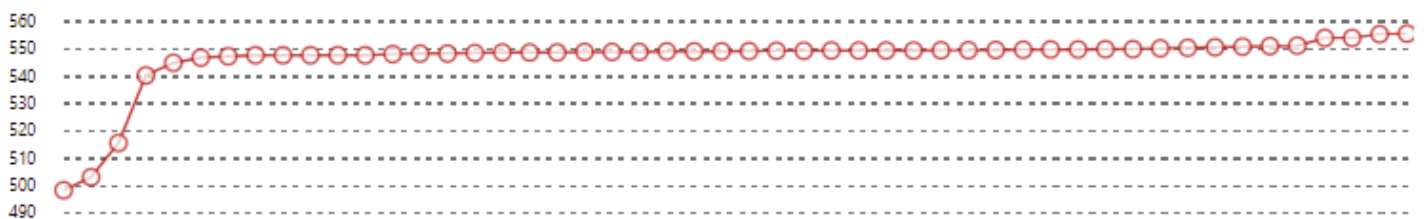
	Prime Computer PrimeMini 5 i7 NUC8v7PNB Samsung SSD 860 Evo 256GB M.2	Intel NUC10i7FNH Kingston RBUSNS8154P3256GJ1	Beelink SEi10 Silicon Motion AZW 256G M.228 NVMe 4X 200725 D	Zotac ZBOX MI642 Nano Western Digital WD Blue 3D WDBNCE5000PNC	Lenovo ThinkCentre M90n-1 Nano Samsung SSD PM981 MZVLB512HAJQ
AS SSD		37%	-40%	-23%	108%
Copy Game MB/s	383.93	734.57 91%	364.42 -5%	248.87 -35%	
Copy Program MB/s	377.53	346.04 -8%	121.07 -68%	191.93 -49%	
Copy ISO MB/s	488.75	976.28 100%	1159.86 137%	482.52 -1%	
Score Total	1200	1944 62%	983 -18%	1023 -15%	2716 126%
Score Write	477	762 60%	253 -47%	324 -32%	1305 174%
Score Read	469	804 71%	501 7%	457 -3%	942 101%
Access Time Write *	0.104	0.07 33%	0.616 -492%	0.095 9%	0.032 69%
Access Time Read *	0.048	0.114 -138%	0.066 -38%	0.103 -115%	0.039 19%
4K-64 Write	331.76	647.56 95%	154.8 -53%	193.74 -42%	1073.77 224%
4K-64 Read	372.16	651.73 75%	357.28 -4%	369.37 -1%	726.4 95%
4K Write	95.8	53.52 -44%	66.16 -31%	88.54 -8%	116.47 22%
4K Read	43.79	21.53 -51%	33.1 -24%	36.75 -16%	48.46 11%
Seq Write	492.76	611 24%	323.54 -34%	413.77 -16%	1150.28 133%
Seq Read	526.39	1306 148%	1110.96 111%	506.95 -4%	1668.47 217%

CrystalDiskMark 5.2 / 6		170%	117%	-3%	144%
Write 4K	113.7	442.4 289%	203 79%	105.9 -7%	130 14%
Read 4K	44.61	371.1 732%	63.23 42%	39.15 -12%	45.61 2%
Write Seq	408.1	900.2 121%	1114 173%		
Read Seq	541	1582 192%	1765 226%		
Write 4K Q32T1	318.8	373.8 17%	423.9 33%	320.5 1%	365.3 15%
Read 4K Q32T1	342.6	374.9 9%	389.2 14%	342.1 0%	350.2 2%
Write Seq Q32T1	517.2	893 73%	1104 113%	513.7 -1%	2985.9 477%
Read Seq Q32T1	559.3	1581.5 183%	1990 256%	554.3 -1%	3564.9 537%
Write 4K Q8T8	348.2	399.1 15%		330.8 -5%	368.7 6%
Read 4K Q8T8	396.9	687.9 73%		391.8 -1%	789.7 99%
Total Average (Program / Settings)		104% / 93%	39% / 17%	-13% / -16%	126% / 123%

* ... smaller is better

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Disk Throttling: DiskSpd Read Loop, Queue Depth 8



: Ø547 (498.34-555.68)

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GPU Performance

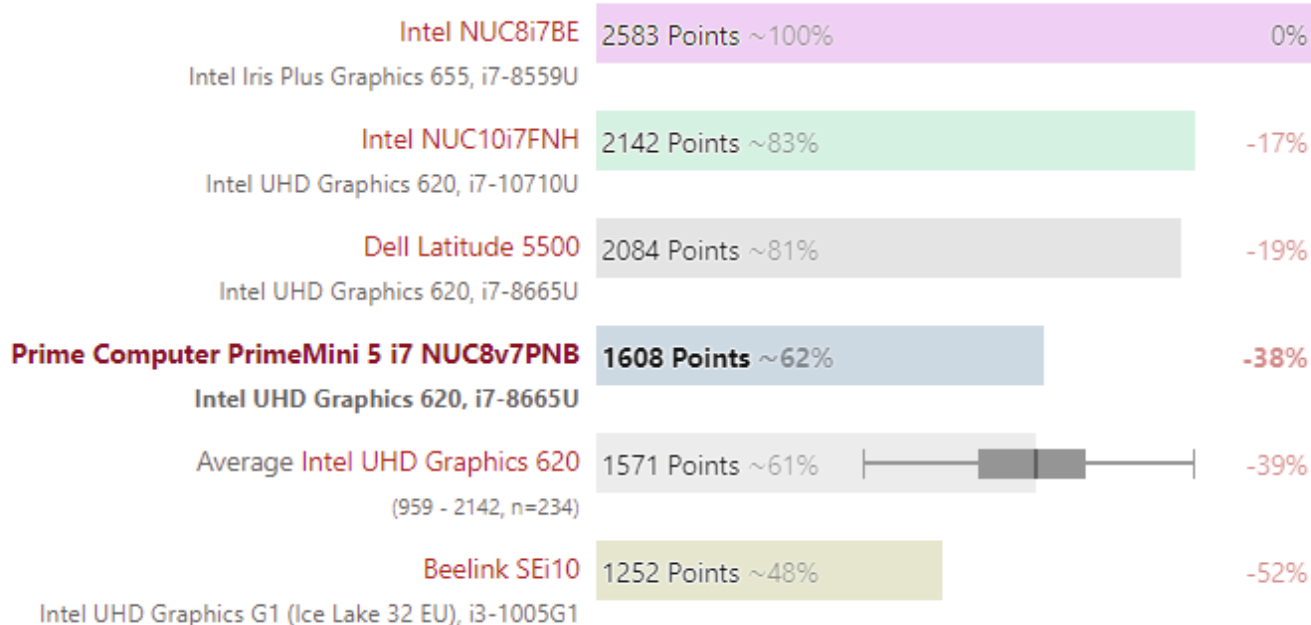
There is no discrete graphics in the PrimeMini 5, and the mini PC relies solely on the integrated **UHD Graphics 620** in the Core i7-8665U. Given the TDP limitations, the performance is not surprising. Additionally, the slower DDR4-2400 RAM also impacts the scores.

The same UHD Graphics 620 in the **Intel Frost Canyon NUC10i7FNH** and the **Zotac ZBOX MI642 Nano** is between 10% and 18% faster as these mini PCs do not have such stringent TDP restrictions and also come with faster DDR4-2666 RAM.

3DMark 11 | 3DMark

3DMark 11

1280x720 Performance Combined




1280x720 Performance GPU

Intel NUC8i7BE Intel Iris Plus Graphics 655, i7-8559U	3081 Points ~100%	+83%
Dell Latitude 5500 Intel UHD Graphics 620, i7-8665U	2006 Points ~65%	+19%
Intel NUC10i7FNH Intel UHD Graphics 620, i7-10710U	1983 Points ~64%	+18%
Average Intel UHD Graphics 620 (1235 - 2006, n=234)	1743 Points ~57%	+4%
Prime Computer PrimeMini 5 i7 NUC8v7PNB Intel UHD Graphics 620, i7-8665U	1717 Points ~56%	+2%
Beelink SEi10 Intel UHD Graphics G1 (Ice Lake 32 EU), i3-1005G1	1684 Points ~55%	0%

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3DMark 11 Performance		1912 points
3DMark Cloud Gate Standard Score		8187 points
3DMark Fire Strike Score		1111 points
3DMark Time Spy Score		432 points

[Help](#)

... in comparison

The PrimeMini 5 is not a gaming machine by any stretch. The UHD Graphics 620 can only play older titles such as *Dota 2 Reborn* at low settings. Those seeking a mini PC capable of gaming should look elsewhere.

	low	med.	high	ultra	
Dota 2 Reborn (2015)	76	45.9	20.1	18	fps
Final Fantasy XV Benchmark (2018)	12.3				fps
X-Plane 11.11 (2018)	12.6	12.2	11		fps

Emissions

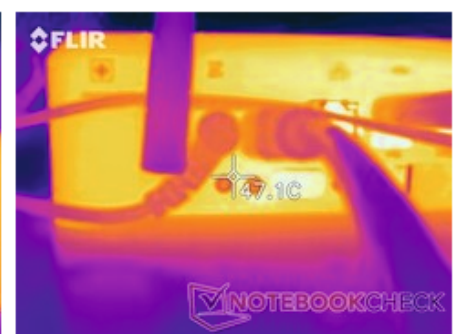
System Noise

The PrimeMini 5 is a fanless mini PC, so the operation is pretty much silent. We also did not notice any whine or sounds emanating from other internal components during stress testing with a combination of Prime95 and FurMark for about an hour.

Temperature

Being power-limited does have its advantages at least when it comes to temperatures. We recorded a maximum of 50.5 °C surface temperature under stress. The bulk of this heat seemed to localize mostly around the middle region of the device.

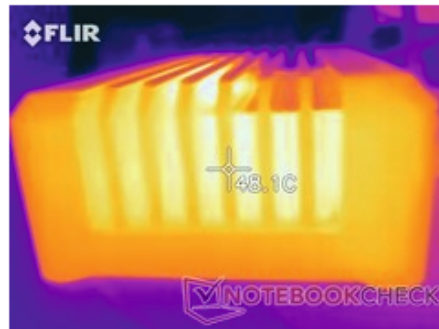
As a result, the PrimeMini 5 can be handled away from the center without much discomfort if the device is under stress. The AC adapter warmed up to just 40.1 °C under full load.



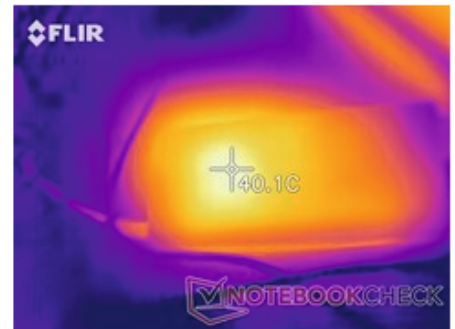
PrimeMini 5 - Temperature - Top PrimeMini 5 - Temperature - Front PrimeMini 5 - Temperature - Rear



PrimeMini 5 - Temperature - Left



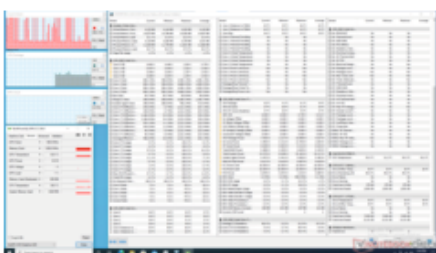
PrimeMini 5 - Temperature - Right



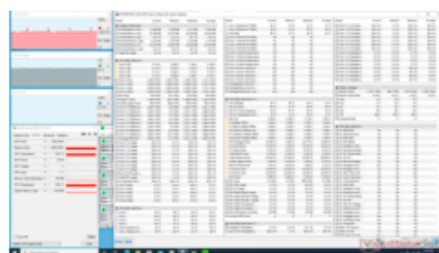
PrimeMini 5 - Temperature - AC
Adapter

Stress Test

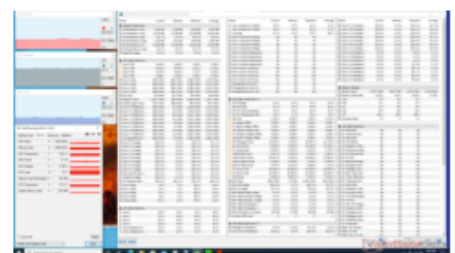
We stressed the PrimeMini 5 with Prime95 and FurMark for about an hour to see how they affected clocks and temperatures. Though the Core i7-8665U can boost up to 4.8 GHz, it can do so only momentarily. Prime95 stress showed the CPU clocks settling around 1.7 GHz on all four cores resulting in an average core temperature of about 62 °C. Adding FurMark to the mix results in a reduction of clocks to 0.89 GHz as the available thermal headroom needs to be shared with the iGPU.



System idle



Prime95 stress



Prime95+FurMark stress

	CPU Clock (GHz)	GPU Clock (MHz)	Average CPU Temperature (°C)	Average GPU Temperature (°C)
System Idle	0.69	--	44	37
Prime95 Stress	1.7	--	62	54
Prime95+FurMark Stress	0.89	698.3	62	56

Energy Management

Power Consumption

The PrimeMini 5's power consumption is generally economical though the consumption at idle seems to be a little on the higher side as evidenced by the occasional spikes seen.

Under a combined Prime95+FurMark stress, the consumption peaks to a maximum of 38.38 W but later averages out at 33.1 W.

In 3DMark 06, we see an average power consumption of 29.95 W during the entire benchmark run. The average consumption drops to about 26.16 W during the CPU phase of the benchmark (between 3 min and 4 min) as the GPU clocks down to nearly zero.

The PrimeMini 5 cannot run on USB power and must be used with the supplied 90 W power brick. The AC adapter uses a standard 2-pin power connector though a 3-pin one would have been preferable for proper earthing.



PrimeMini 5 - Power Consumption
- Off



PrimeMini 5 - Power Consumption
- Standby



PrimeMini 5 - Power Consumption
- Idle



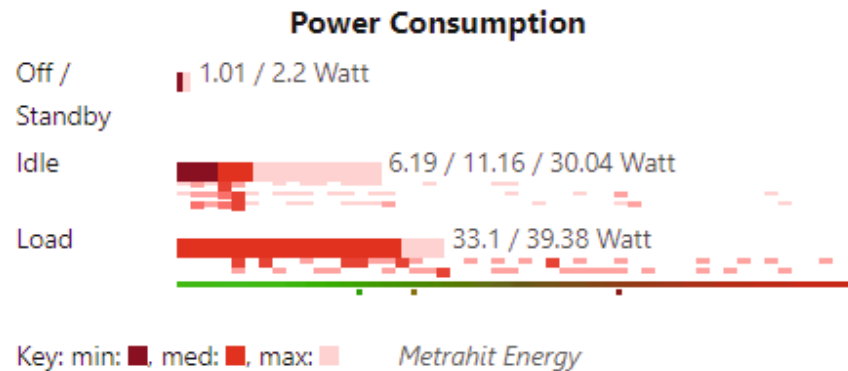
PrimeMini 5 - Power Consumption
- Prime95



PrimeMini 5 - Power Consumption
- Prime95+FurMark



PrimeMini 5 - Power Consumption
- 3DMark 06



	Prime Computer PrimeMini 5 i7 NUC8v7PNB i7-8665U, UHD Graphics 620, Samsung SSD 860 Evo 256GB M.2, , x,	Beelink SEi10 i3-1005G1, UHD Graphics G1 (Ice Lake 32 EU), Silicon Motion AZW 256G M.228 NVMe 4X 200725 D, , x,	Zotac ZBOX MI642 Nano i5-10210U, UHD Graphics 620, Western Digital WD Blue 3D WDBNCE5000PNC, , x,	Lenovo ThinkCentre M90n-1 Nano i5-8265U, UHD Graphics 620, Samsung SSD PM981 MZVLB512HAJQ, , x, 0.00	Intel NUC8i7BE i7-8559U, Iris Plus Graphics 655, , , x,
Power Consumption		24%	-1%	33%	6%
Idle Minimum *	6.19	6.3 -2%	8.9 -44%	4.4 29%	2.7 56%
Idle Average *	11.16	6.6 41%	9 19%	4.4 61%	3.1 72%
Idle Maximum *	30.04	6.7 78%	9.9 67%	4.7 84%	6.3 79%
Load Average *	33.1	25.9 22%	33 -0%	27.7 16%	59.7 -80%
Load Maximum *	39.38	46.7 -19%	58 -47%	49.9 -27%	78 -98%
Witcher 3 ultra *					47.2

* ... smaller is better

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Verdict

With configuration choices up to the Core i7-8665U vPro, up to 32 GB of RAM, and a combination of NVMe and SATA storage, the PrimeMini 5 has a lot to offer for businesses that require a robust computing solution that can be deployed with minimum fuss. The all-aluminum construction lends a premium look to the device while also offering IP51 protection to keep dust out.

Connectivity options are good, and buyers will be glad to know that Prime Computer also allows adding a few additional ports in addition to what the Intel NUC8 Provo Canyon Pro board already offers.



PrimeMini 5. Review unit courtesy of Prime Computer AG, Switzerland.

// *The PrimeMini 5 will appeal to enterprises looking for simple IT administration and long-lasting product support, and to those who don't mind an older generation platform as long as it offers an overall low total operating cost. This is definitely not a mini PC aimed at performance connoisseurs.*

There is still room for improvement, though. For the asking price, we would like to see more accessories in the box such as a VESA mounting plate, for example. Though additional peripherals can be added via USB docks, presence of an SD card slot, 3.5 mm audio jacks, and a Kensington lock slot would have been welcome. Some users may also feel the need for an IR port and biometric authentication.

On the processing side, the overall performance should be just about sufficient to cater to regular office work such as word processing, basic spreadsheets, and presentations. The passively-cooled, TDP-limited chip means that there's only so much performance that can be squeezed out of the machine before hitting throttling thresholds. That being said, a slightly higher power limit may be useful for that occasional boost.

Price and availability

Prime Computer confirmed that it is no longer selling products via its webshop. Individuals and B2B customers can purchase the PrimeMini 5 from the company's list of official [resellers](#) and [distributors](#).

Pros

- + Durable aluminum construction
- + Decent configuration options
- + Good port selection
- + Consistent Wi-Fi speeds
- + Five-year warranty
- + Fanless silent performance
- + Low DPC latency
- + Consistent SATA SSD performance
- + Manageable surface temperatures under stress

Cons

- No VESA mounting accessory in the box
- No SD card reader, 3.5 mm audio jacks, and IR port
- Still on Whiskey Lake
- No Wi-Fi 6
- PL1/PL2 capped at 16 W by default
- Throttling under stress
- CPU performance lower than most other Core i7-8665U devices
- Slightly higher power consumption in idle