

Intel D54250WYK NUC Kit

Here at CPU, we love getting our hands on high-performance components. But as enthusiasts know, not every computer in our homes needs to be a gaming rig. In fact, we get just as excited about the latest small form factor PCs as we do about the raw compute from the next-gen GPUs, the overclocking potential of an unlocked processor, and the timings of our next kit of DRAM. That's why, when Intel asked us what we'd like to see from them this month, we said four little words, Next Unit of Computing.

Intel obliged, and as a result we have the Wilson Canyon-based NUC. This is Intel's third-generation NUC. The first relied on a Sandy Bridge-based

Celeron 847, which launched in mid-2011. That processor was a dual-core 17W unit that ran at a clock speed of 1.1GHz.

Skip ahead to Haswell, and Intel now has a powerful processor architecture that was practically tailor-made for extremely small form factor systems. And no, we didn't forget the Atom, but the operative word here is "powerful." The 4th Generation Intel Core i5-4250U processor inside this diminutive box is also a dual-core processor, only it has Hyper-Threading enabled as well as Intel Turbo Boost Technology 2.0. It's clocked at 1.3GHz, but this processor can hit 2.6GHz when Turbo Boost opens up the throttle, yet it has a 15W TDP.

This is a 22nm processor containing 1.3 billion transistors. Each core can tap into 256KB L2 cache, and there's a 3MB pool of shared L3. The processor graphics in this unit is Intel's HD Graphics 5000, which has a GPU frequency between 200MHz and 1GHz. Other supported features include MMX, up to SSE 4.2, AVX, AVX2, FMA3 instructions, Enhanced Intel SpeedStep Technology, Intel 64, XD bit, Intel VT-x, AES-NI, and Smart Cache.

On the board, which measures 4 inches square, you'll find a surprising number of connectivity and I/O options. There are a total of four USB 3.0 ports, a headphone and mic jack, a mini DisplayPort (DP 1.2), a mini HDMI port (HDMI 1.4a),



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an Intel Gigabit LAN port, a consumer infrared sensor, and a DC power port that connects to the external 65-watt power supply (included with the kit). You heard that right—no matter how much you plug into the headers, ports, and slots of this little wonder, you’re unlikely draw much juice from the wall. At idle, a fully stocked Wilson Canyon NUC will draw wattage in the single digits; under load, expect it to consume less than 50% of the power brick’s total capacity.

Inside the unit are a pair of 1.35V DDR3 SO-DIMM slots capable of supporting up to 16GB of DRAM (up to DDR3-1600), an internal header for two USB 2.0 ports, a PCI-E full-mini card connector, a PCI-E half-mini card connector, and a standard 6Gbps SATA port. Our test system had a 120GB SSD installed in the full-mini PCI-E slot and a Wi-Fi module in the half-mini PCI-E slot.

For us, the NUC screams “HTPC,” but in the quietest possible way. It’s small enough to hide (it even ships with a VESA mount that lets you hang it from the back of your HDTV) but has enough connectors that you may run into more

problems trying to hide all the cables. It’s also extremely quiet. As you can see, we ran it through our benchmark suite, but the NUC only ever got noisy during the GPU-thrashing tests. Tucked behind our HDTV, with its speakers pumping out 5.1-channel audio, we didn’t hear a peep from this Haswell-based NUC. Although the benchmarks prove that this unit is by no means a gaming system, we played through a couple dozen rounds of Trackmania Valley, running at 1,920 x 1,080, and it looked as smooth as silk.

Of course, as a full-fledged PC, streaming media is just a quick browser click away. We were running Windows 8.1 on our test unit, and being able to tap into the music, photos, and home videos hosted on the other PCs on our network is one of the primary reasons we just won’t settle for one of those off-the-shelf media streaming boxes. Add being able to access a full-featured browser, the whole Internet, and even our Steam libraries for the occasional light gaming session, and you can start to see why this little box goes so well with your HDTV. As we went to press, we could find the

Benchmark Results	D54250WYK NUC Kit
3DMark Professional (Fire Strike Extreme)	4915
Graphics Score	5146
Physics Score	11170
PCMark 8	
Creative Score	4852
SiSoftware Sandra 2013 SP6 Lite	
Dhrystone AVX2 (GIPS)	124.86
Whetstone iSSE3 (GFLOPS)	96.8
Multi-Media Integer AVX2 x32 (Mpixels/s)	445.84
Multi-Media Float FMA3 x16 (Mpixels/s)	400.45
Multi-Media Double FMA3 x8 (Mpixels/s)	231.83
Multi-Media Float/Double FMA3 x8 (Mpixels/s)	304.69
Integer B/F AVX/128 (GBps)	26.17
Floating B/F AVX/128 (GBps)	26.23
POV-Ray 3.7 Beta*	1623.09
Cinebench 11.5**	8.61
Games (2,560 x 1,600)	
Metro: Last Light (16XAF)	48fps
Aliens vs. Predator (4XAA, 16XAF)	55.5fps
* pixels per second	
** points	

D54250WYK barebones kit (memory, Wi-Fi, and SSD are not included in retail kit) available for just less than \$400. ■

BY ANDREW LEIBMAN

Specs: Processor: 1.3GHz dual-core Intel Core i5-4250U; Motherboard: D54250WYK; Graphics: Intel HD 5000; Memory: 8GB Kingston DDR3-1600; SSD: 120GB Intel 525 Series