

powerMAX
2018 – CPUID
<https://www.cpuid.com/>

Legal Disclaimer

!! Please use powerMAX at your own risks !!

powerMAX stresses your PC in such a way that it may reveal the weakness of some of the components, and cause non-reversible damage to mainboard VRMs, video card VRM, PSU, or any other component. For that reason, powerMAX has to be used at your entire responsibility and CPUID shall not be liable for any damage which may arise as a result of your use of powerMAX.

What is (and what is not) powerMAX ?

powerMAX is a CPU and GPU burn-in test. It is aimed to maximize the power dissipation and the temperature of these two components. There are several ways to use powerMAX :

- CPU test : allows to check the CPU stability (in case of overclocking for example), and if the CPU cooling system does its job correctly.
- GPU test : same, but for GPU.
- CPU + GPU tests in the same time : maximizes the full system power consumption, and therefore ensures that the PSU can handle the peak power required by the CPU and GPU simultaneously.

powerMAX generates no performance or stability score, and therefore is not a benchmark.

System Requirements

Hardware :

The CPU test requires a processor that supports at least the SSE instructions set (every CPU since the Intel Pentium III does). The GPU test requires a graphic card that supports OpenGL 2.0 or more.

Software :

The full version of powerMAX requires at least Windows 7 because of the AVX CPU test.

How to use powerMAX ?

powerMAX is a very easy-to-use utility with minimalist functions. It requires no installation, and generates no file or registry entry in the system. It does not require administrator rights to run.

CPU burn-in test

The program proposes two CPU tests : SSE, and AVX for the CPUs that support it. Depending on your CPU model, one of the two tests will generate more power dissipation and a higher temperature (please refer to the "Hardware Monitoring" paragraph below to see how to monitor the power and temperature values). The tests will automatically use all available CPUs in the system, and will cause a 100% CPU load.

GPU burn-in test

The GPU test runs a complex 3D scene designed to stress the GPU. If your system combines an integrated IGP and a discrete GPU, the discrete GPU will be automatically used for the test. It is possible to choose the

resolution in a set of predefined values, and the GPU stress increases with the resolution. The test uses the maximum multisampling value (MSAA) supported by your graphics device.

Important note : if you run the GPU test in windowed modes, the maximum efficiency is obtained when the test window has the focus.

Simultaneous CPU and GPU burn-in tests

When the CPU and the GPU tests are ran in the same time, you may notice lower CPU power and temperature values than the CPU test alone, simply because a part of the CPU power is used to drive the GPU test. The more powerful your CPU is, the less you will notice that side effect.

Hardware Monitoring

powerMAX includes no built-in hardware monitoring features to monitor the main components health sensors. There are several options depending in what data you want to look at :

- CPU and GPU activity and temperature can be tracked with any hardware monitoring software like HWMonitor or HWMonitor PRO.
- CPU and GPU powers can also be tracked by those software, but in some cases the values reported by the component are not accurate. In order to get reliable values, or if your CPU or your GPU does not report its power, we recommend that you use a plug wattmeter (especially if you plan to run the CPU and GPU tests in the same time and wants to check the total power consumption of your PC). Alternatively, you can use one of the PSUs with built-in hardware monitoring. Most of them are supported by HWMonitor & PRO (see the list here).

Frequently Asked Questions

Q1 - Is there a risk to use powerMAX on my computer ? Can it really destroy my mainboard, my graphic card or my PSU ?

Generally speaking, there is no risk to run powerMAX on your system. The program uses no special trick but only common instructions that could be found in any other application, but in an intensive way that loads the target components. Most of these components are protected against overload and over heating, by reducing their activity or by switching a security fuse (shut down). However, on some very low-end and cheap devices (graphics cards, PSUs), the protection mechanism may not work properly, and that could definitely cause damage.

Q2 – On my non-overclocked processor, the CPU power sensor reports a power that is largely above the CPU TDP when powerMAX's CPU test runs. How is that possible ?

The processor TDP (Thermal Design Power) is not the peak power the CPU can generate, but rather the minimum power that the cooling system should be able to evacuate. In general, the peak power of a desktop CPU is around 1.5 times the TDP, but that ratio may vary depending on the CPU model.

Q3 – If a common application can not generate that level of dissipation, what is the point of powerMAX ?

Most applications will stress your components with values that are below their TDP, but there are exceptions : scientific applications, rendering tools, video encoders can generate very high load levels. The

aim of powerMAX is to check the stability of your system in extreme conditions. If your system passes the test, then it will support the stress level of common applications without problem, and if required, more than that.

Q4- Does powerMAX support multiple processors ? Multiple GPUs ?

PowerMAX supports an unlimited number of CPUs, as long as they are recognized by Windows. Only one GPU is supported.

Q5- Can I use powerMAX on a laptop ?

Most mobile components are much more restrictive concerning the power management than their desktop counterparts, mostly because the laptops have a very limited capacity to dissipate power and heat. The components usually keep their power very close to their TDP in order to keep temperatures as low as possible. In an homogeneous laptop, the cooling mechanism should handle any situation, and no component should throttle, even in extreme conditions. The powerMAX software is a good way to check.

Q6- The fullscreen option is checked but the GPU test starts in windowed mode, why ?

The fullscreen mode does not support all resolutions.