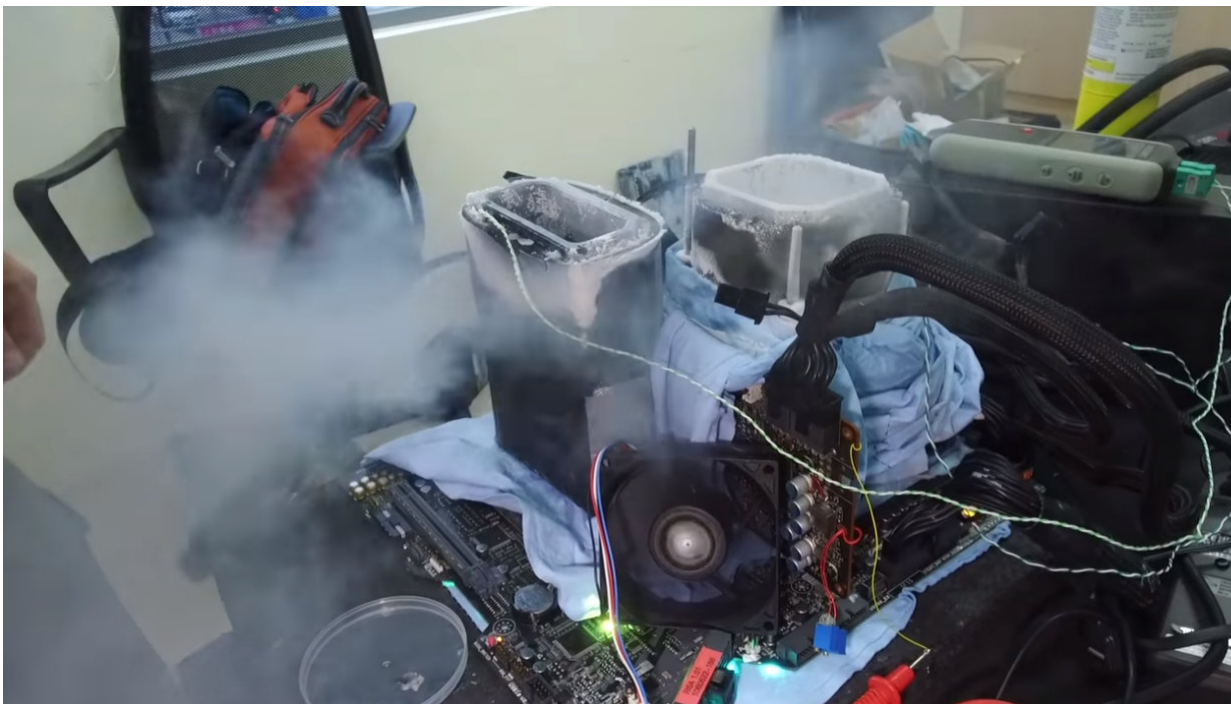


# Overclocker uses liquid nitrogen in Intel i9-7980XE push to 6.1 GHz

October 2 2017, by Nancy Owano

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(Tech Xplore)—Joel Hruska in *ExtremeTech* notes that the all-core clock on a Core i9-7980XE drops to 3.4GHz under full load, to keep power consumption at a manageable level. But then there is liquid nitrogen and an overclocker with his own set of smarts.

He is Roman "der8auer" [Hartung](#), an engineer from [Germany](#), who goes to the extreme—extreme overclocking. His recent adventure achieved news-making results.

*PC Perspective* remarked that he managed to break a few records "with more than a bit of LN2 and thermal [paste](#)."

Craig Ward, *Notebookcheck*: "To achieve this level of overclocking der8auer and other top overclockers will drown the CPU die and PCB in thermal paste underneath the heat spreader, a [scenario](#) that is unique to LN2 overclocking."

Invited to an event in Taiwan, der8auer did some "extreme overclocking." He pushed the new Intel i9-7980XE to 6.1 GHz.

"The new i9-7980XE is here and we already pushed it to 6100 Megahertz on all 36 threads," he said on Facebook on Sept. 25.

He said he used the Asus Rampage VI Apex. He said in his video that the Asus was his "go-to board" for extreme overclocking. Why? He said it was fairly easy to use in extreme overclocking and in the video elaborated on that.

He worked with liquid nitrogen. The way he worked drew several explanations from others:

*PC Perspective* elaborated, saying "while most people apply a thin layer of thermal paste to the direct die or HIS, when extreme overclocking he 'drowns' the processor die and PCB in the TIM [Thermal Interface Material] to get as much contact as possible with the cooler as every bit of heat transfer helps even the small amount he can transfer through the PCB [Printed Circuit Board]."

Paul Lilly in *PC Gamer*. "He was able to push all 18 cores past 6GHz, not just one of them. Not only did this require extreme cooling, der8auer also had to apply a generous [portion](#) of thermal paste—both to the CPU die itself, which he exposed by slicing off a section of the integrated heatspreader (IHS), and the surrounding sections of the [printed circuit board](#)."

Ashley Allen, *eTeknix*: "First, he delidded the processor. Then, he broke out the [thermal](#) paste and plenty of it. He slathered it everywhere: both on the die and the PCB itself. The idea is to let the paste draw the heat away from the die and around the PCB. The larger the paste's surface area, the greater the heat dissipation. Finally, out comes the liquid nitrogen."

At this point it's helpful to re-visit the word "extreme" overclocking to get a handle on all this excitement. Darren Allan in *TechRadar*: "As ever, these sort of [liquid nitrogen](#) shenanigans are a far-cry from real-world overclocking and [performance](#), but you can still gauge the relative power of Intel's new monster processors in terms of how much they blew away the previous (equally super-cooled) records."

"Obviously," said Ward in *Notebookcheck*, "these results aren't going to be duplicated by anyone with a standard home setup, but it is always fascinating to see what can be achieved in extreme scenarios."

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