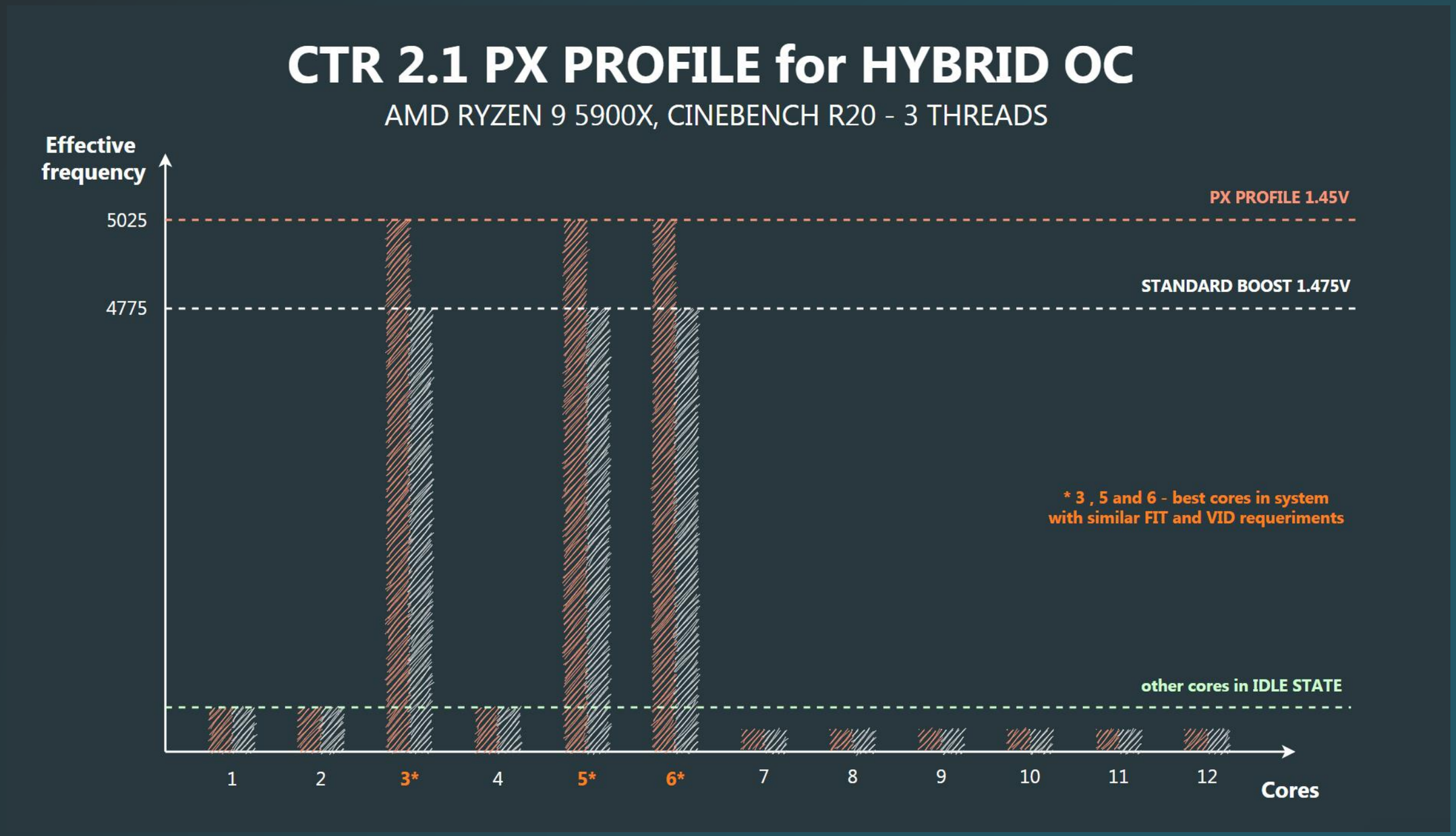
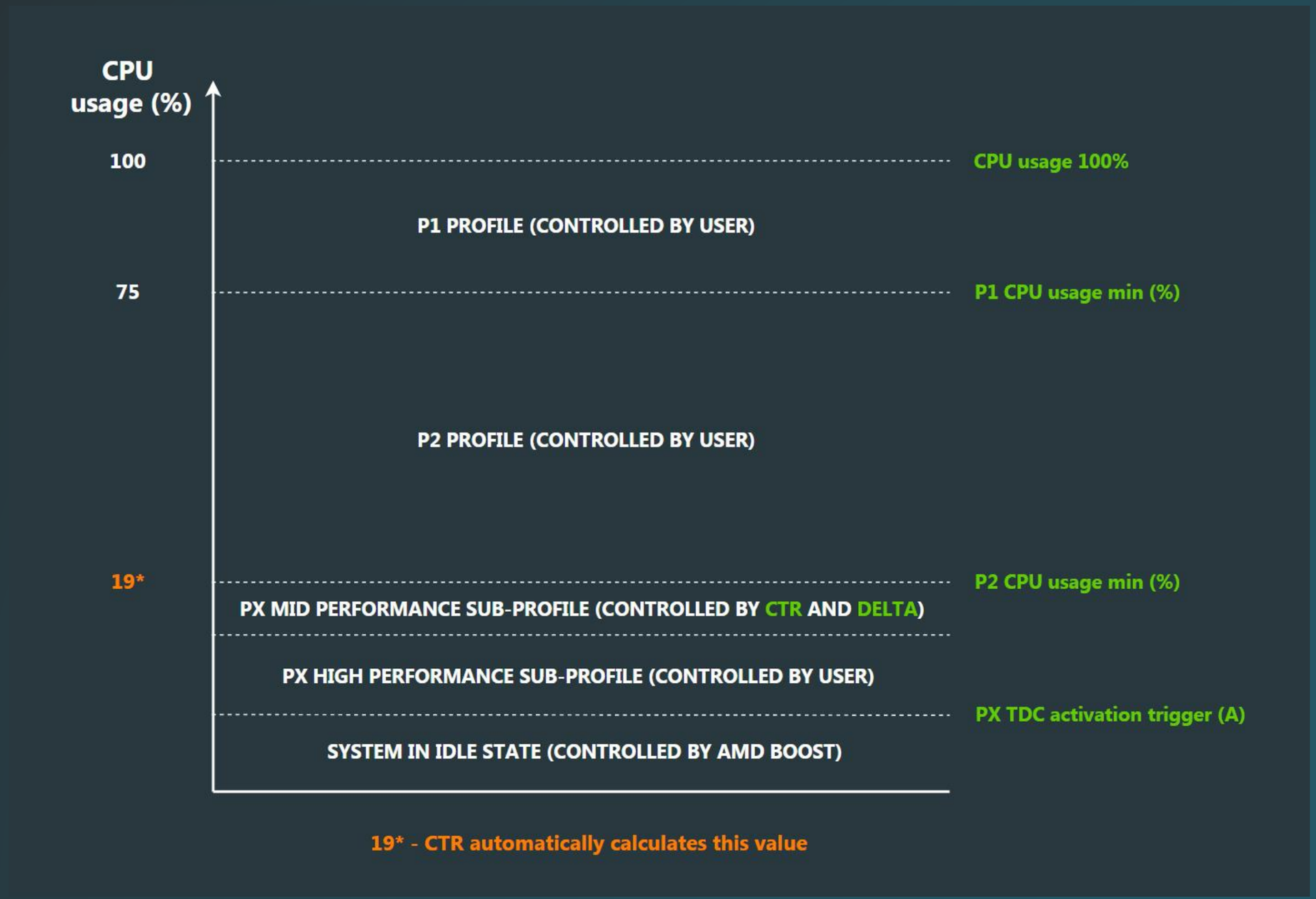
# Clock Tuner for Ryzen™ 2.1 – NEW HYBRID OC

- PX PROFILE is the best solution for games, benchmarks and workload. Stable fixed effective frequency, which is not affected by any limits. No EDC throttling, no temperature throttling and no stretching. The recommended voltage is 25mV lower than the standard voltage.  Safe and easy.



# HYBRID OC – PROFILES STRUCTURE

- PX PROFILE consists of two sub-profiles. This allows efficient use of cores for a load that does not exceed 6 threads. The number of cores involved depends on the processor.



# Clock Tuner for Ryzen™ 2.1 – INTRO

**System requirements:**

- .NET Framework 4.8
- BIOS for Zen 3 with AGESA 1.1.0.0 path B or newer
- BIOS for Zen 2 with AGESA (any)
- BIOS for APU with AGESA 1.1.8.0 or newer
- Windows 10 x64 (with all updates)
- BIOS settings **without** manual CPU OC, **without** PBO (Fmax too) and **without** Performance Enhancer (or other similar technologies)
- **Stable RAM overclocking!**
- **My advice is to have all settings in Auto mode, except the settings for RAM.**

**Supported CPU:**

- Zen 3: Ryzen 9 5950X, Ryzen 9 5900X, Ryzen 7 5800X, Ryzen 5 5600X
- Zen 2: Threadripper 3970X, Threadripper 3960X, Ryzen 9 3950X, Ryzen 9 3900X, Ryzen 9 3900XT, Ryzen 9 3900, Ryzen 7 3800XT, Ryzen 7 3800X, Ryzen 7 3700X, Ryzen 5 3600XT , Ryzen 5 3600X, Ryzen 5 3600, Ryzen 5 3500X, Ryzen 5 3500, Ryzen 3 3300X, Ryzen 3 3100
- APU: Ryzen 7 PRO 4750G , Ryzen 7 PRO 4650G, Ryzen 3 PRO 4350G

# Clock Tuner for Ryzen™ 2.1 – NEW HYBRID OC

- CTR will automatically find the best cores for PX PROFILE during the diagnostic (for 5900X and 5600X – 4 maximum, for 5950X and 5800X – 6 and for Zen 2 – 2 temporary maximum). There is no increase in diagnostic time. You will see the result on the PROFILES page.

- CTR will automatically set the frequency for all recommended cores (it also happens during diagnostics). All other cores that are not in the group will run at a reduced frequency. Due to this maximum stability and fault tolerance is achieved.

- Since the processor very often works with a combined load of 1-6 cores, a high speed of load evaluation is needed to switch profiles as accurately as possible. Depending on the current operating profile, the sensor polling rate also changes. PX PROFILE is the most sensitive, the sensor polling period is every 150ms (for P1 – 250 and for P2 - 200).

- The updated HYBRID OC has a reduced profile activation time. For processors with 6, 12 or 24 cores P1 or P2 activation time is reduced by 30%.

- Updated priority system. P1 PROFILE has a higher priority than P2. P2 PROFILE has a higher priority than PX. This makes it possible to avoid frequent or false profile switching. It also allows you to significantly reduce the temperature of the processor.

- PX PROFILE has holding settings just like the other profiles. This will avoid false shutdown of the profile if the load on the cores is pulsed.

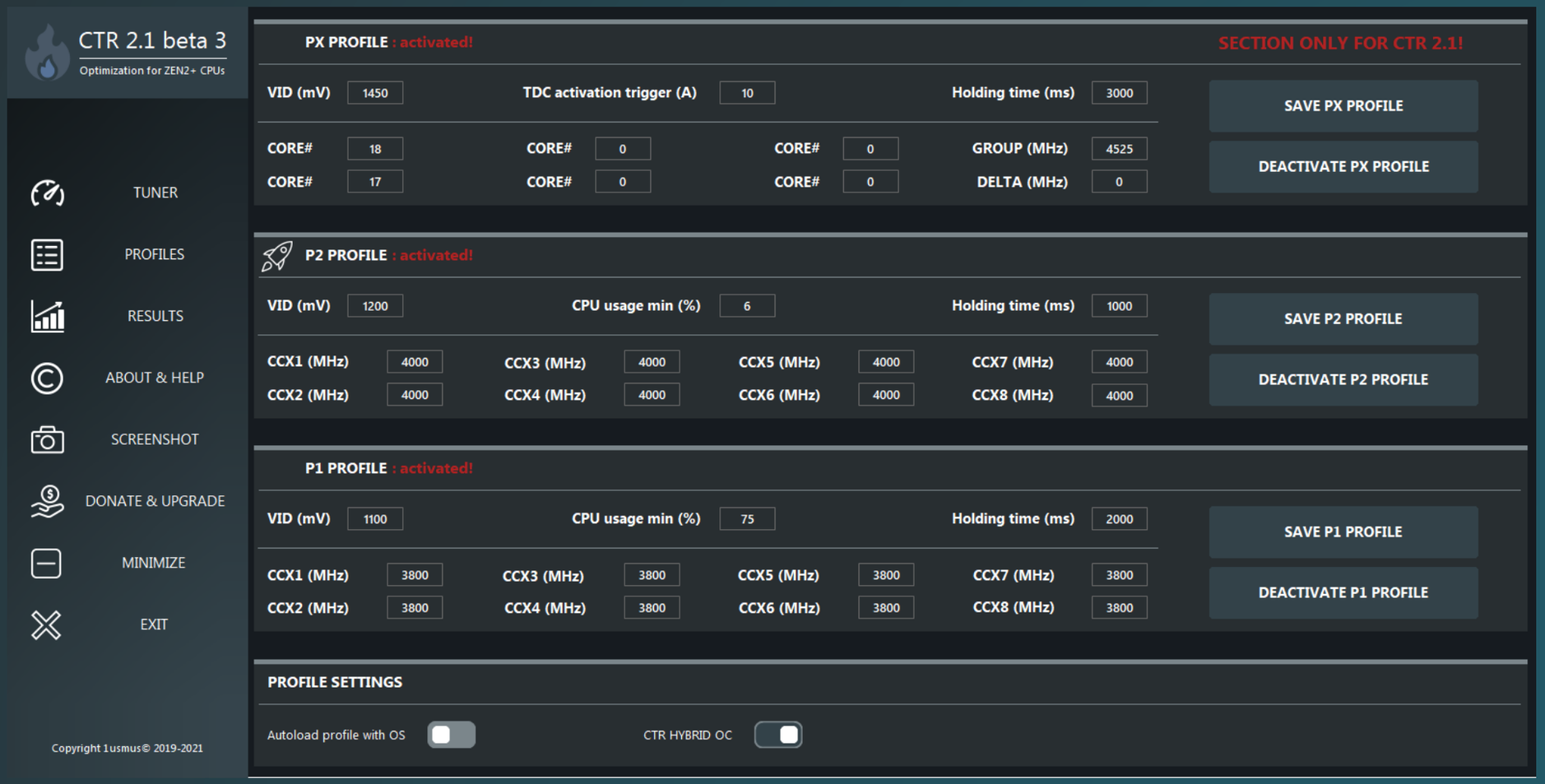
- If the current TDC value is lower than the TDC trigger (A), PX PROFILE will automatically be disabled and the processor will go into standard boost mode. That is, in this mode the maximum power saving is maintained.

- Improved security. While HYBRID OC is running, CTR will monitor the current voltage. If this value exceeds 1.525V - CTR will automatically restart the system without user confirmation. I believe that some users may ignore the instructions, so I have updated the rules for the security system.

- Checking stuck sensors. There are situations when a sensor stops responding. At this point, the user may see an abnormal temperature, frequency, or voltage value. I have implemented a system that analyzes the state of the sensor.

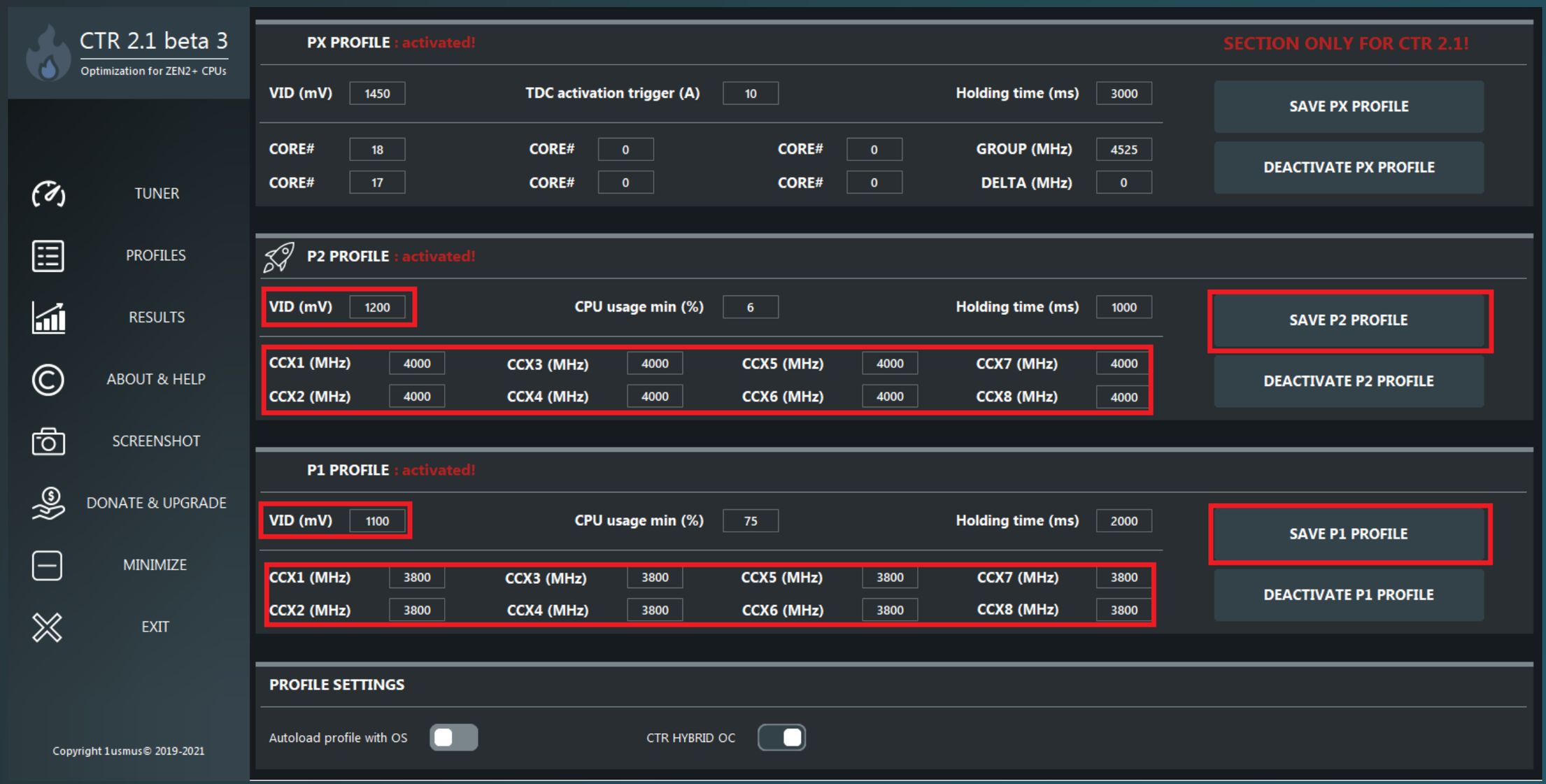
# Clock Tuner for Ryzen™ 2.1 – NEW PROFILES TAB

- Minimalism is what everyone needs. Not just for beginners. I have completely redesigned the profile system so that you (even without a manual) can interact comfortably with CTR.
- Each button now has two functions. For example: ACTIVATE PX PROFILE / DEACTIVATE PX PROFILE and FILL & SAVE P2 PROFILE / SAVE P2 PROFILE. FILL & SAVE P2 PROFILE will only be available when you have finished tuning or PHOENIX has created a profile. In all other cases only SAVE P2 PROFILE.
- The ROCKET icon will tell you which profile is currently active.
- Now all the profile settings are on one page.



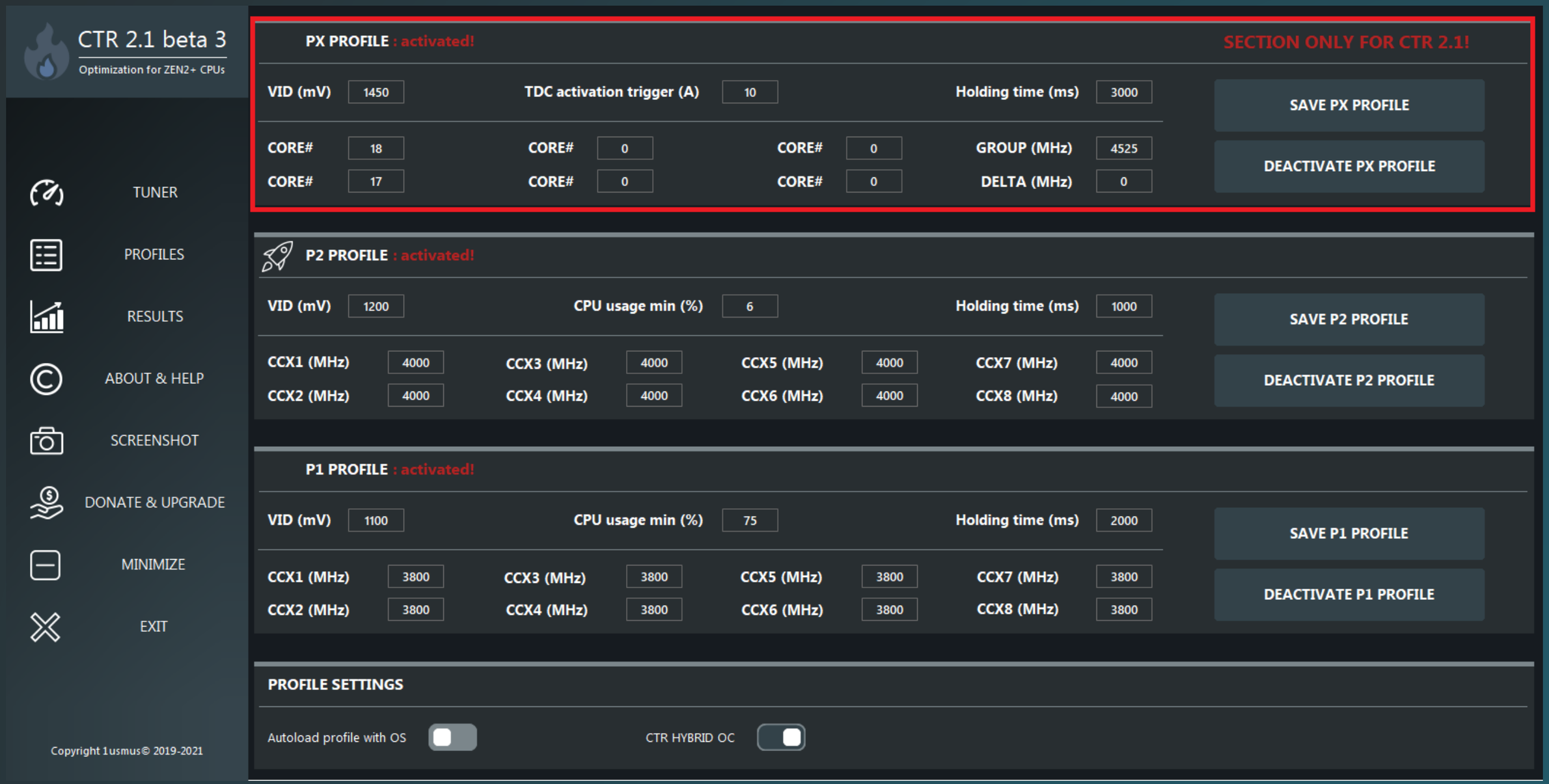
# How to configure PX PROFILE? STEP-1

- P1 and P2 PROFILES from CTR 2.0 RC3 or CTR 2.1 beta (1-2-3) are fully compatible with CTR 2.1 beta 4. Just copy the values manually.
- If you don't already have a profiles, create them. You can find a detailed instruction here https://www.guru3d.com/articles_pages/clocktuner_2_for_ryzen_(ctr)_guide,7.html



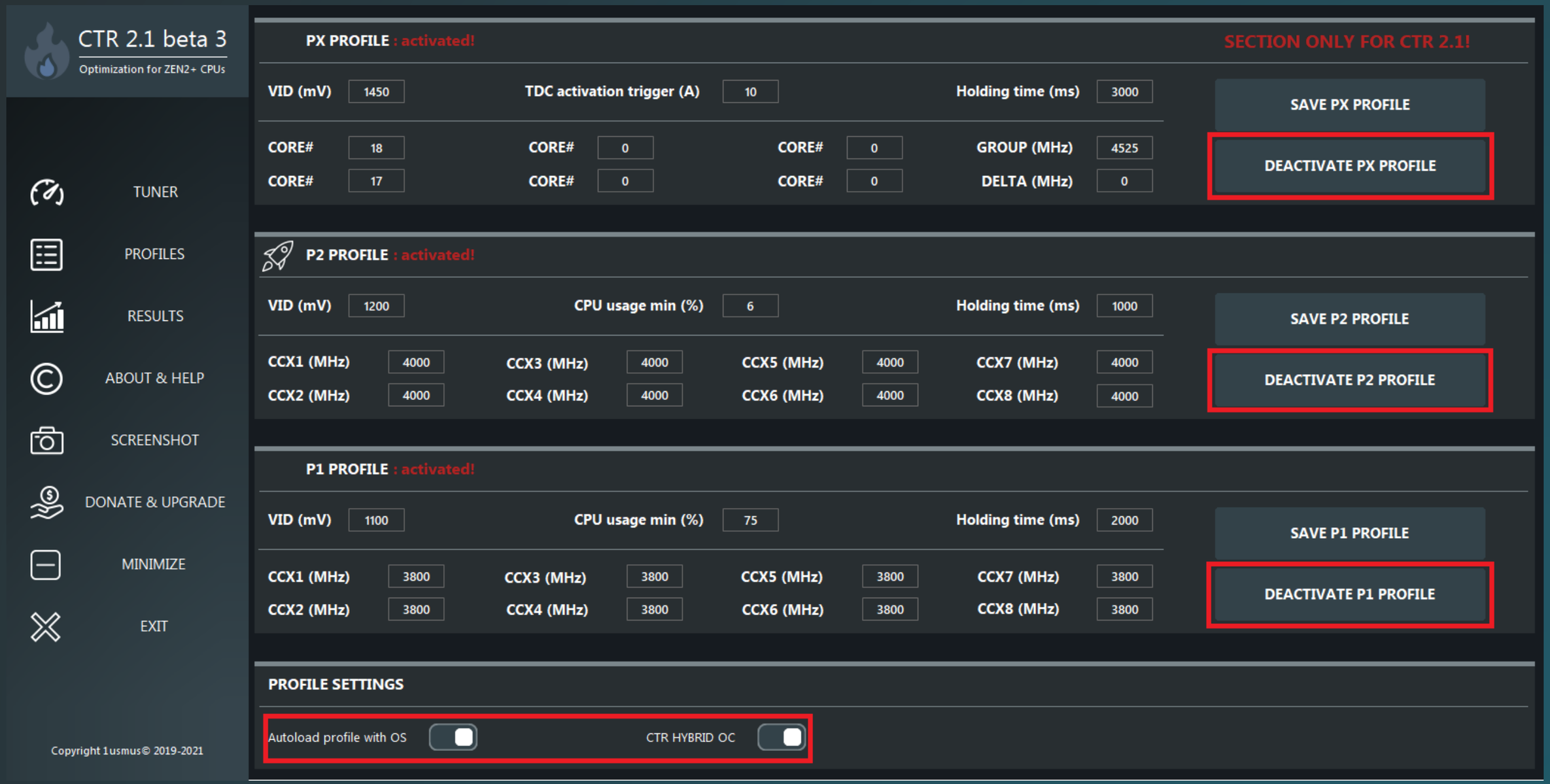
# How to configure PX PROFILE? STEP-2

- All settings for the PX PROFILE are created automatically during the diagnostic phase. Perform the diagnosis by pressing the DIAGNOSTIC button.



# How to configure PX PROFILE? STEP-3

- Activate CTR HYBRID OC as well as all profiles. All buttons are multifunctional, if you press ACTIVATE, the button will change its function to DEACTIVATE (for the next press). That's all ☺
- If you want to change something, first DEACTIVATE the profile and then change the settings in it.



# How to configure PX PROFILE? TIPS

- I do not recommend using Curve with PX PROFILE. For some unknown reason these settings may negatively affect the stability of PX PROFILE. My recommendation for Curve 0 and PBO is Auto.

- After you have activated the profiles, save them. Why save the profile a second time? You must save the activation status otherwise the profile will not be loaded (the next time you start Windows) and will not be used by HYBRID OC. Read this sentence several times. This is the main problem 90% of users have.

- Also don't forget to enable Autoload profile with OS or else the profile or profile won't load.

- My advice. First, turn on Autoload profile with OS, CTR HYBRID OC then activate the profiles and only then save the profiles.

- If you don't want to use the core, set it to "0".

- Why isn't the PX ROFILE turned on? Decrease the TDC trigger (A) by several steps (1 step = 1). Do not make this value too low or the power saving will not work.

- Do I have to set up the PX PROFILE myself? In most cases CTR will do it better than you, but keep in mind that there is now a small margin of stability. You can try increasing the frequency by 25-50 MHz. If the attempt is unsuccessful, return all settings or re-run the diagnostics.

- What is the DELTA for? PX PROFILE consists of two sub-profiles. The first is the best cores (minimum 2). The second is the good cores which can also run at high frequencies. The user has access to control only the best performing cores from the first sub-profile. Cores of the second sub-profile operate at a frequency which is lower than the frequency of the first sub-profile by the delta value.

- How many cores can be used in a PX profile? For 5950X up to 6, for 5900X and 5800X up to 4, for 5600X up to 3 and for all other processors - 2 (this is a temporary limit).

# Clock Tuner for Ryzen™ 2.1 – NOTES

- Is PX PROFILE better than PBO + CO? Definitely. PX PROFILE is not limited by PBO/PB limits and there is no EDC throttling, temperature throttling and frequency stretching. The effective frequency always reaches the requested value.
- Windows dispatches which cores to use. No affinity masks, no extra CPU resources are needed for this.
- PX PROFILE available only for HYBRID OC and only for early access subscribers.
- CTR 2.1 is under development. The final concept is subject to change.
- PX PROFILE will require more calibration. All values that CTR offers you can change at will.
- Zen 3 has the best compatibility with PX PROFILE. Zen 2 requires research.
- I haven't given up on the idea of automatic curve-tuning. At the moment there is no access to this feature from Windows because the feature is still under development. It all depends on AMD, but I think it will be in March or April.
- In addition to all these changes, there are many minor bug fixes (CPPC detection, addition stability for CTR config, the ability to run only one CTR sample, etc).
- How fast are the profiles switched? On average, a few ms. That is, the maximum profile switching speed is hundreds of times per second. There are no software counterparts that can do this.