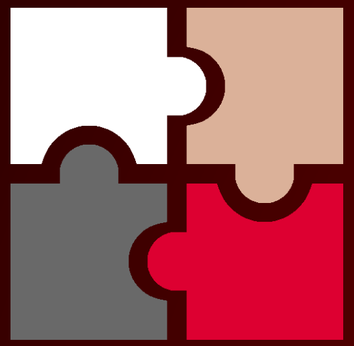


PROJECT HYDRA

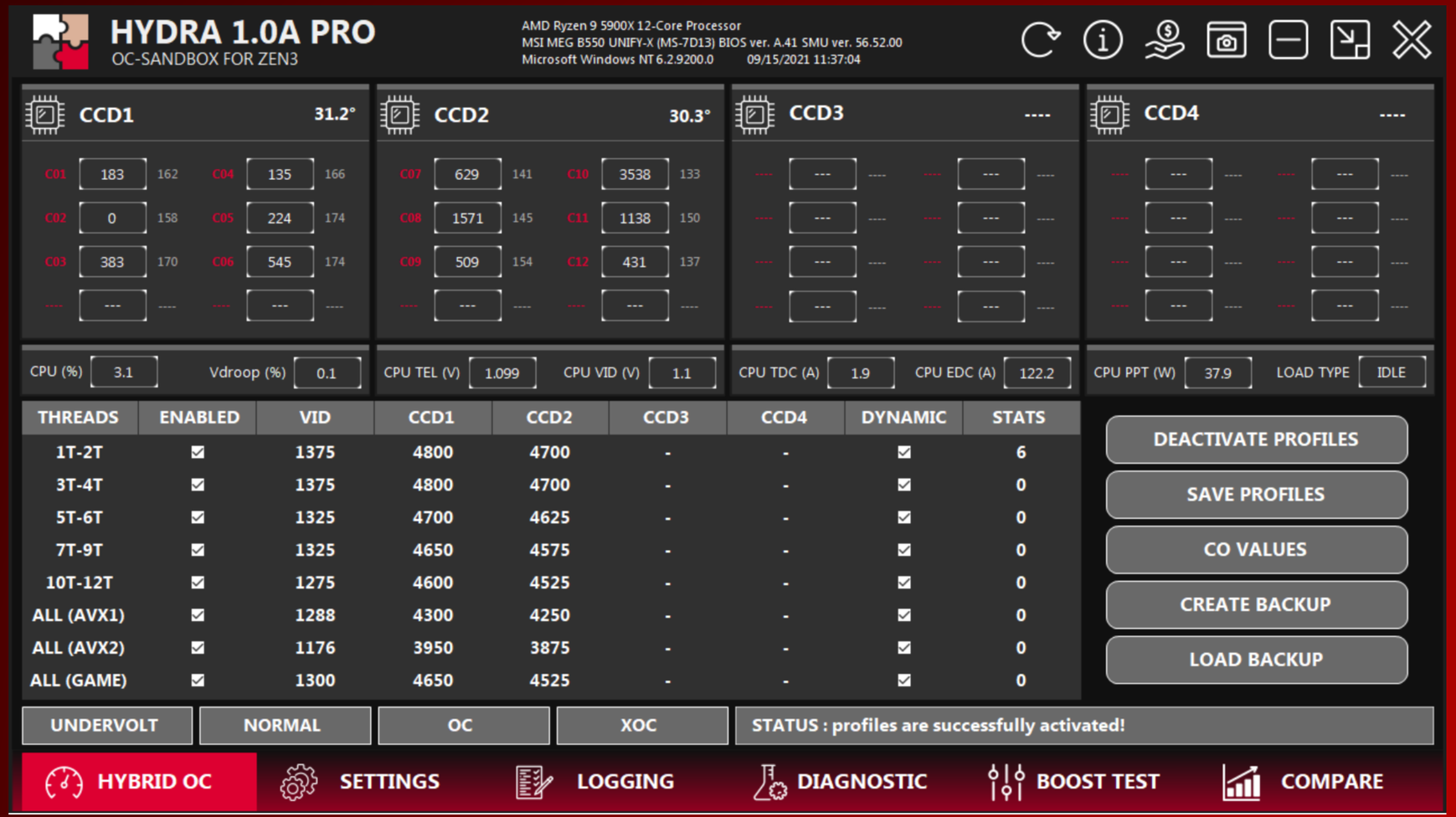
OC-SANDBOX FOR ZEN3+ PROCESSORS

HYDRA 1.0A PRO IS ALREADY AVAILABLE FOR PATREON SUBSCRIBERS

1USMUS 2021

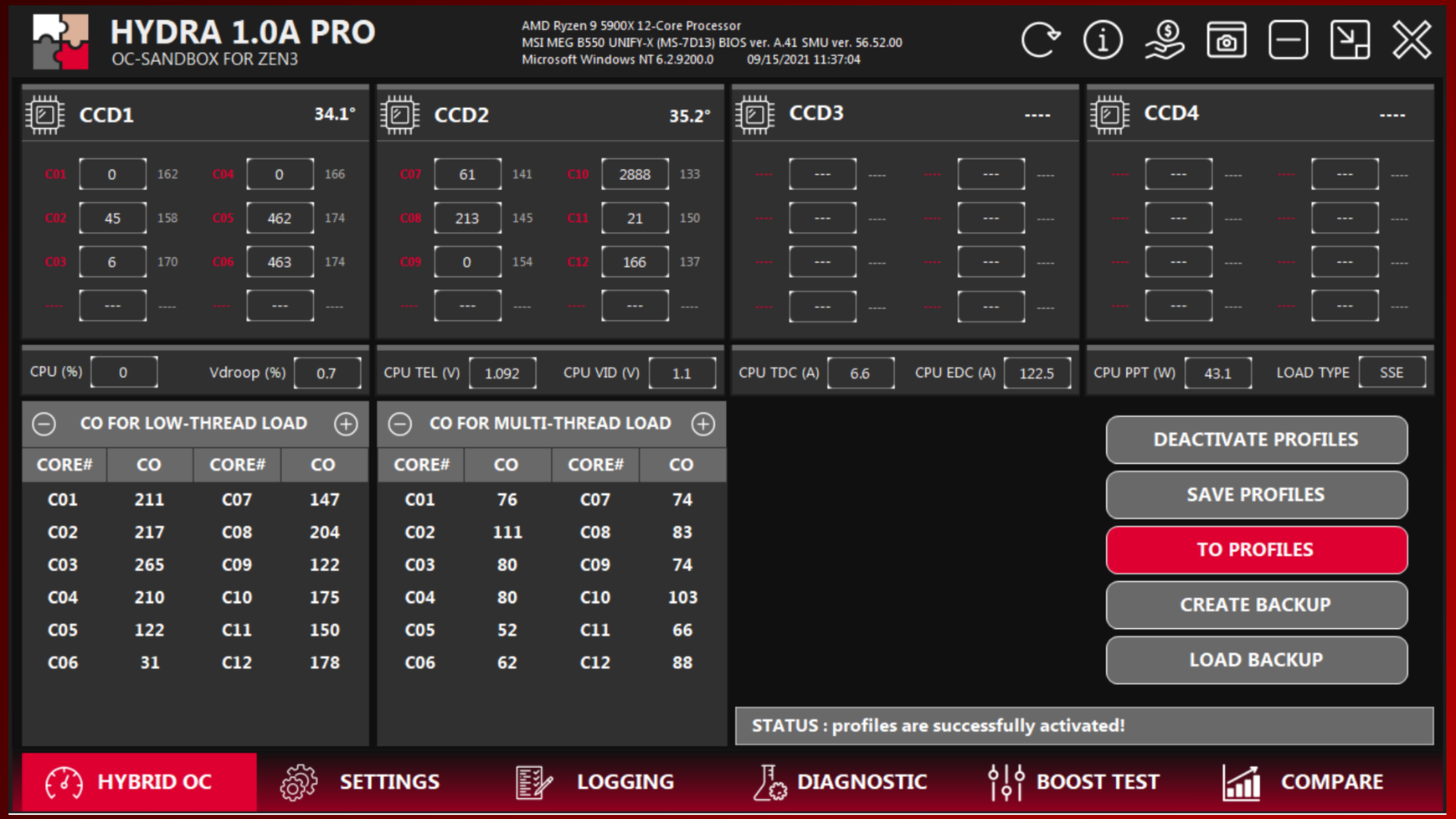
PROJECT HYDRA – NEW PLATFORM, NEW FEATURES

- Exclusive APP for ZEN 3 and ZEN 3+ processors
- New platform, new core, new UI, compact size
- Powerful customization for each profile
- 4 voltage curves (presets) for all profiles (undervolt, normal, OC and XOC)
- Save up to 9 profiles
- Individual profiles for Gaming and AVX2
- New Diagnostics (all values are filled in automatically)
- All profiles can work in dynamic mode (unlocked CO in PRO version)



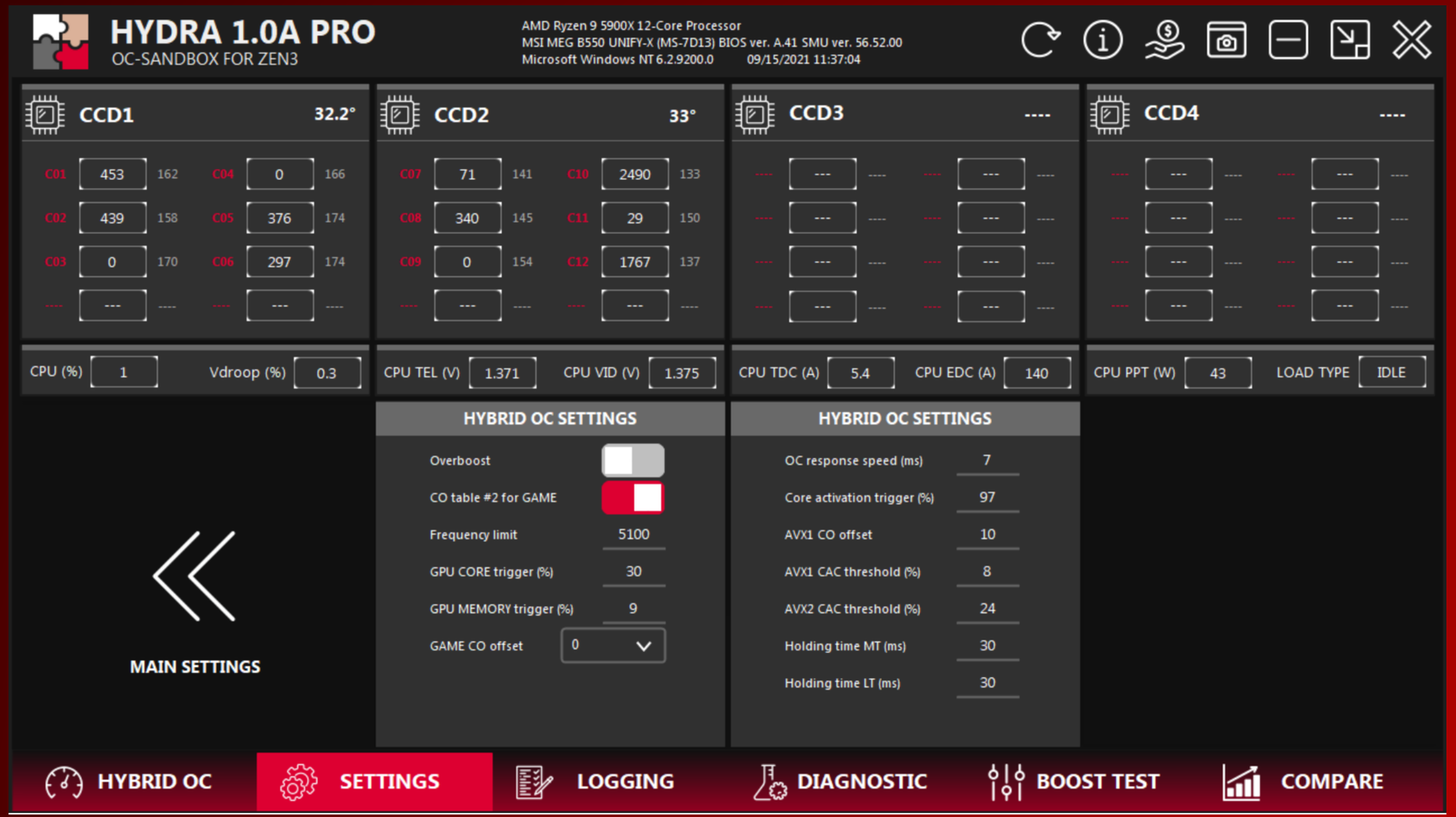
PROJECT HYDRA – NEW PLATFORM, NEW FEATURES

- 2 CO tables for different types of tasks allows for maximum performance (created automatically during diagnostics)
- Complete independence from CPPC
- Real-time CO control, allowing you to change V/F on the fly, without rebooting
- Each CCD has its own differentiated frequency control
- Curve Optimizer search tool for each core
- Real-time CO bottle-neck information
- Profile backup management system



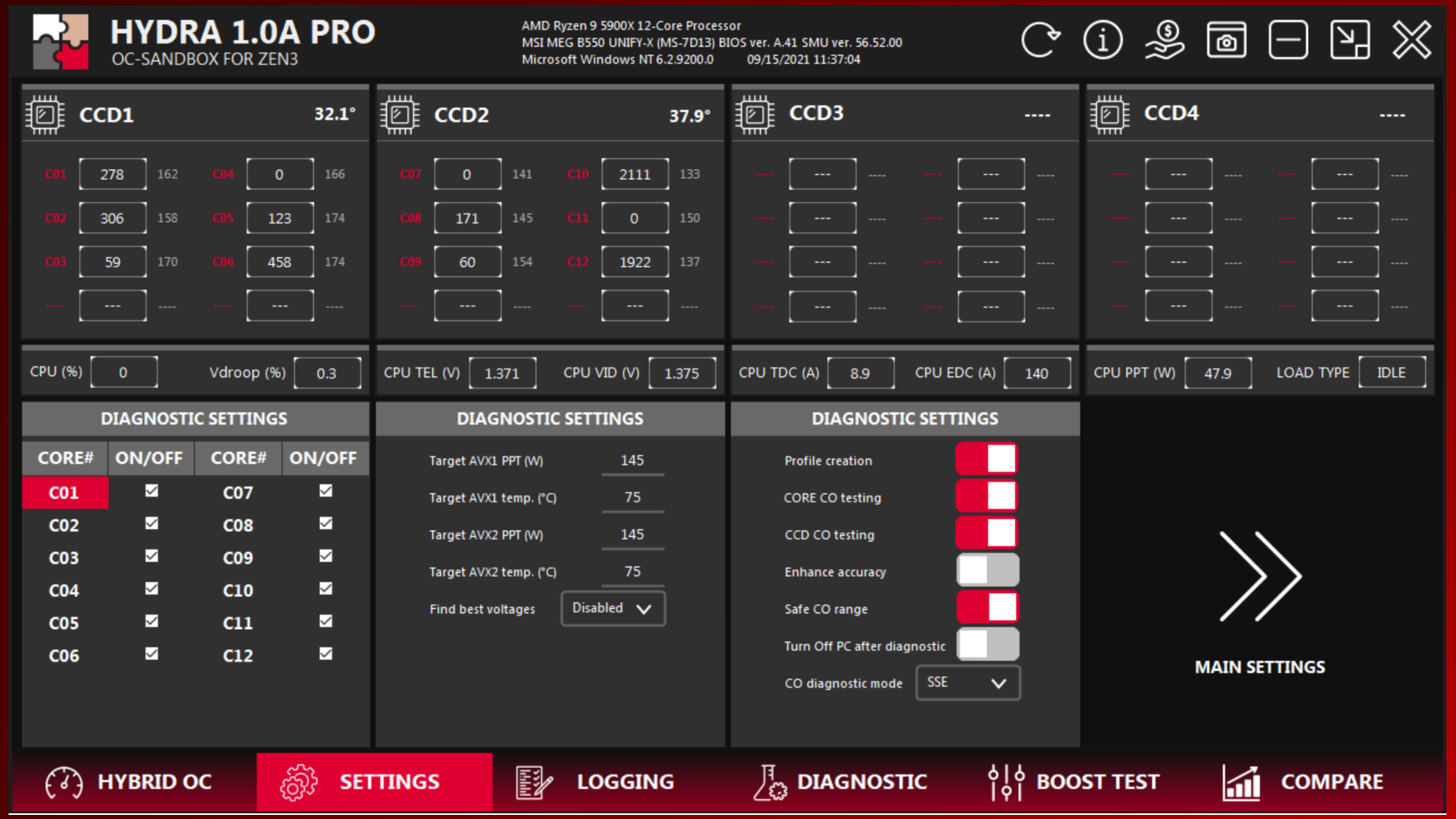
PROJECT HYDRA – NEW PLATFORM, NEW FEATURES

- Modular setup storage system (protection against configuration file corruption)
- Ability to adjust the response speed and CAC-tolerances of the dynamic mode
- Event notification system
- Built-in fail-safes against system and user errors
- 24/7 monitoring of processor parameters and automatic shutdown of profiles during critical situations



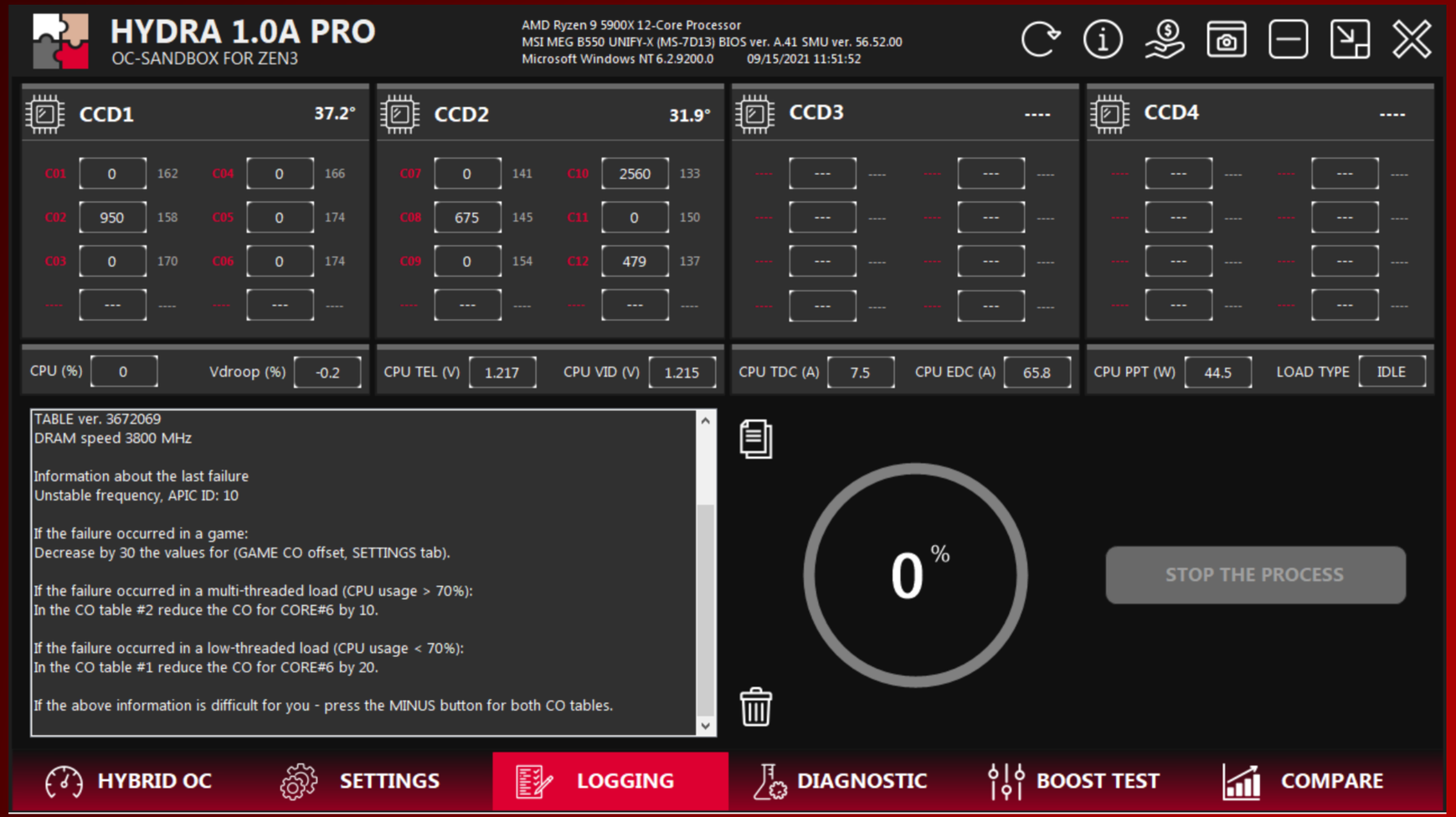
PROJECT HYDRA – NEW PLATFORM, NEW FEATURES

- Automatic loading of profiles upon Windows startup
- Clear standby cache - maximum smoothness in games (higher FPS for 0.1% and 1% events)
- Many configurations that allows the user to control all HYDRA processes more accurately (including advanced trigger settings for the GAME profile)
- Frequency limiting mechanisms in ultralight loads (overboost protection)
- Auto updates (PRO version)
- Automatic search individual voltages for AVX1 and AVX2 loads



PROJECT HYDRA – NEW PLATFORM, NEW FEATURES

- Updated logging system
- Simplified and more intuitive interface
- A new way to evaluate processor quality
- Real-time monitoring
- Real-time Vdroop and LOAD TYPE information
- CO correction prompt upon failure



PROJECT HYDRA – QUICK START, REQUIREMENTS

- Zen 3 CPU : Ryzen 9 5950X, Ryzen 9 5900X, Ryzen 7 5800X, Ryzen 7 5700G, Ryzen 5 5600X and Ryzen 5 5600G.
- Stable, overclocked (or XMP) DRAM.
- PBO settings – no matter. Disabled Curve Optimizer (in UEFI).
- Recommended values for Manual CPU LLC (Load Line Calibration). ASUS - 3, MSI - 4, ASRock - 2, GIGABYTE - High.
- CPU Voltage - Auto (in BIOS). Offset is forbidden.
- Windows 10 build 2004 or newer. Windows 11 fully supported.
- Chipset drivers or Ryzen Master – Not required.
- Actual GPU drivers (GeForce 471.68 / AMD Radeon Adrenalin 21.6.1 or newer).
- Power plan – Balanced (recommended).

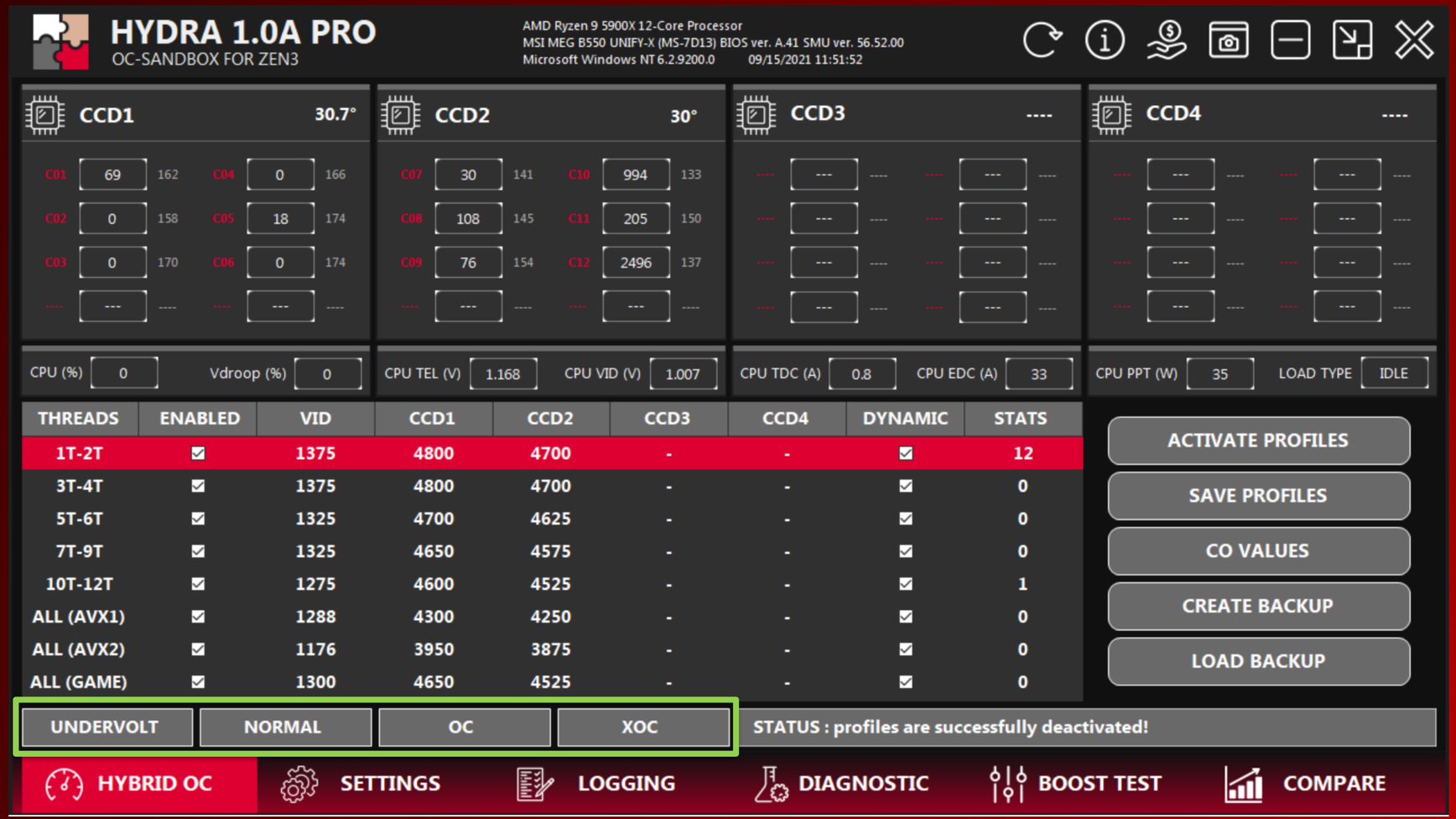
PROJECT HYDRA – QUICK START, DIAGNOSTIC

STEP 1:

Click on "HYBRID OC" and select the voltage preset (UNDERVOLT, NORMAL, OC or XOC) you want to use. You may also enter custom voltages.

For AIO and air cooling system I do not recommend using the OC and XOC presets due to the risk of overheating.

If indecisive, skip this step - the base voltages HYDRA offers are safe for any cooling system and weak VRM.



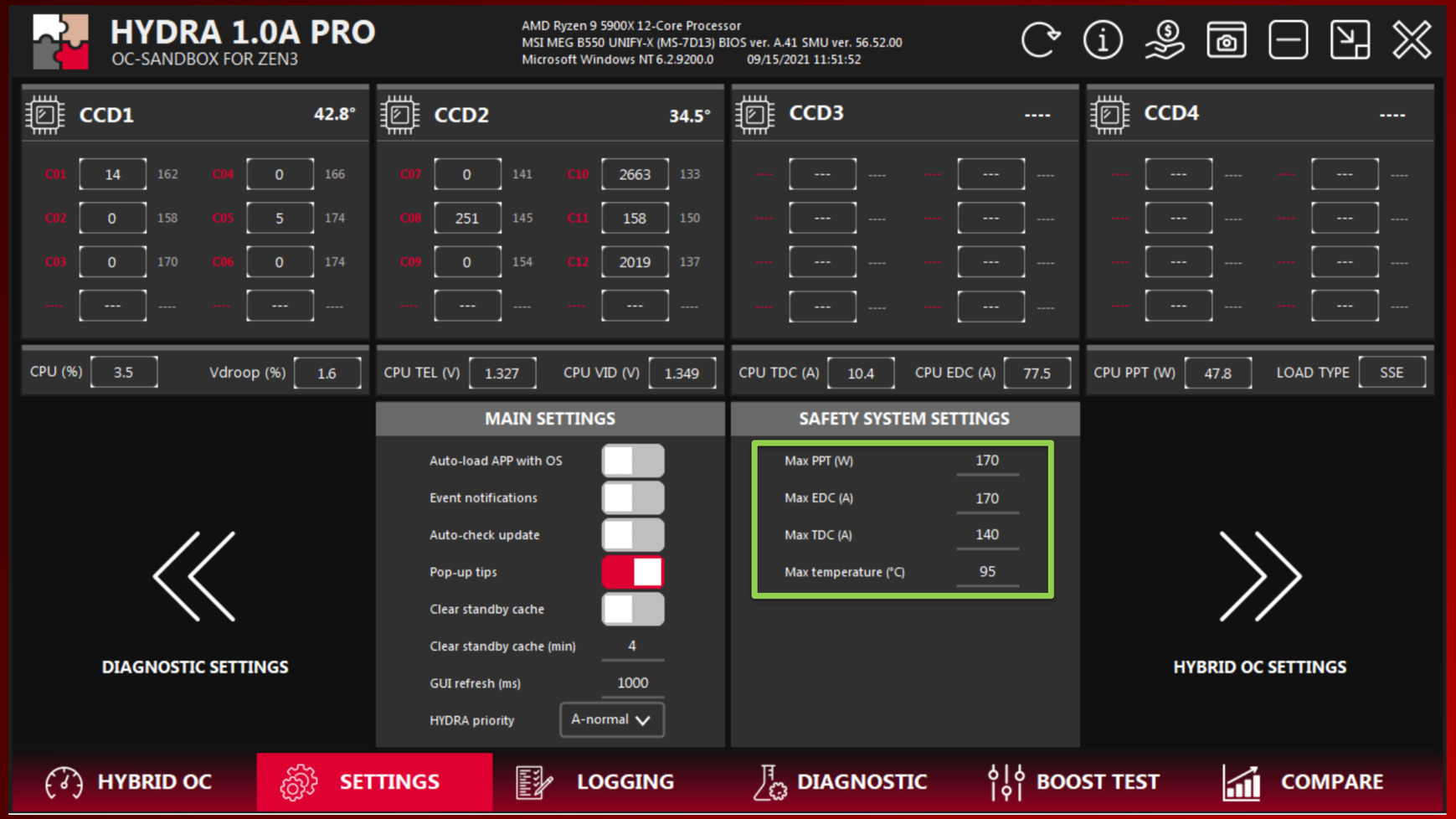
PROJECT HYDRA – QUICK START, DIAGNOSTIC

STEP 2:

If you have selected NORMAL, OC or XOC presets, you must carefully review the rest of HYDRA's settings in order to protect the system from overheating or excessive power consumption.

For example, do not forget to increase the Max EDC, Max TDC and Max PPT limits in the SETTINGS tab. In most cases, it is sufficient to increase these values by 30-40.

If one of the limits is reached during HYDRA operation, the profiles will automatically throttle mode or HYBRID OC will be disabled (AMD standard boost will be enabled). These safeguards also work under Diagnostics.



PROJECT HYDRA – QUICK START, DIAGNOSTIC

STEP 3:

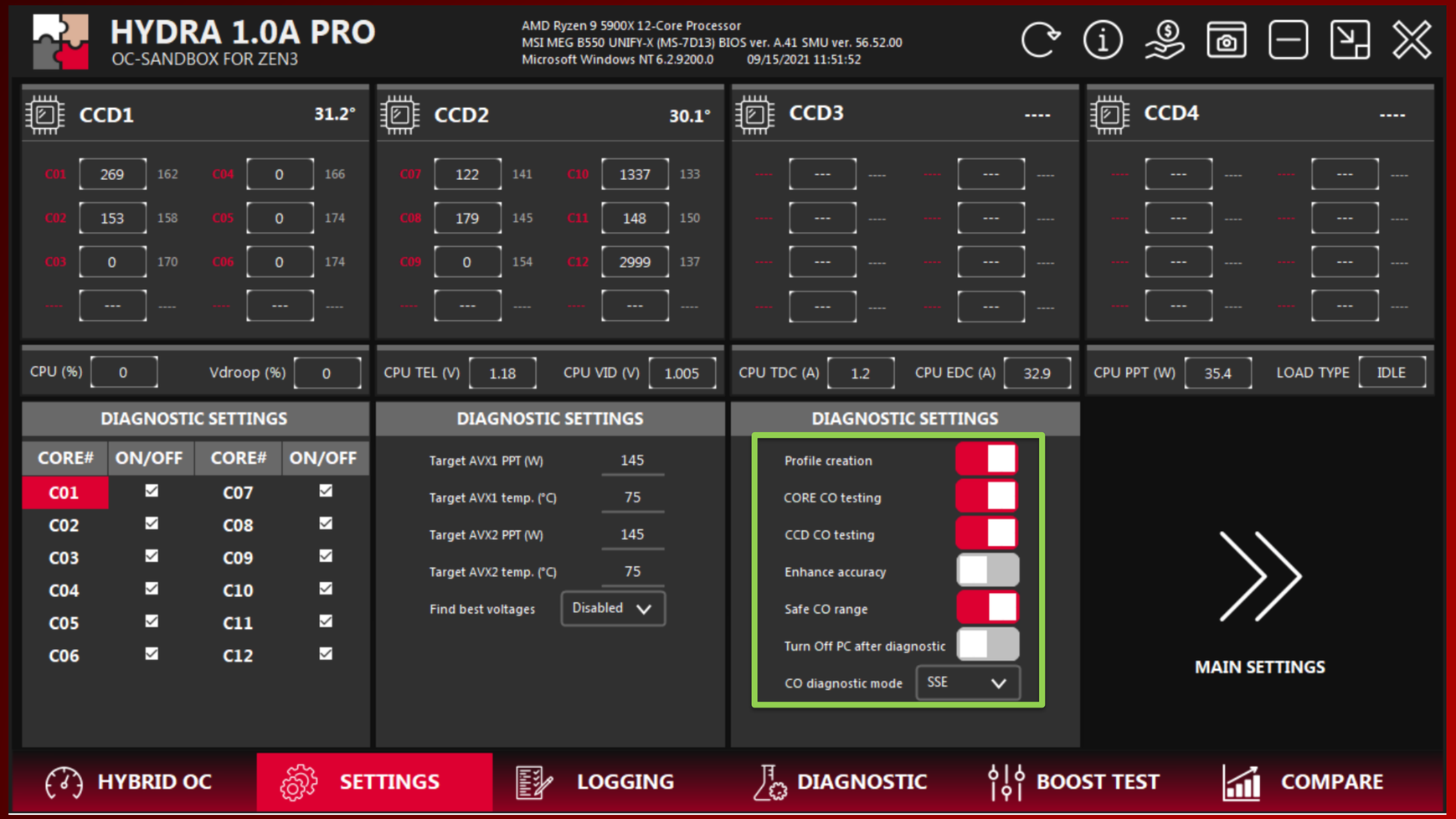
You can choose which tests to perform (CORE CO testing, CCD CO testing and Profile creation) under the DIAGNOSTIC tab. The order of testing does not matter.

CORE CO testing - defines the limits at which HYBRID OC will stop frequency ramping (GAME and low-thread load).

CCD CO testing - defines the limits at which HYBRID OC will stop frequency ramping (AVX1 and AVX2 profiles).

Profile creation - searches for stable base frequencies for all profiles.

CO diagnostic mode – SSE. In most cases it is highly accurate and is recommended for use. AVX mode runs hotter.

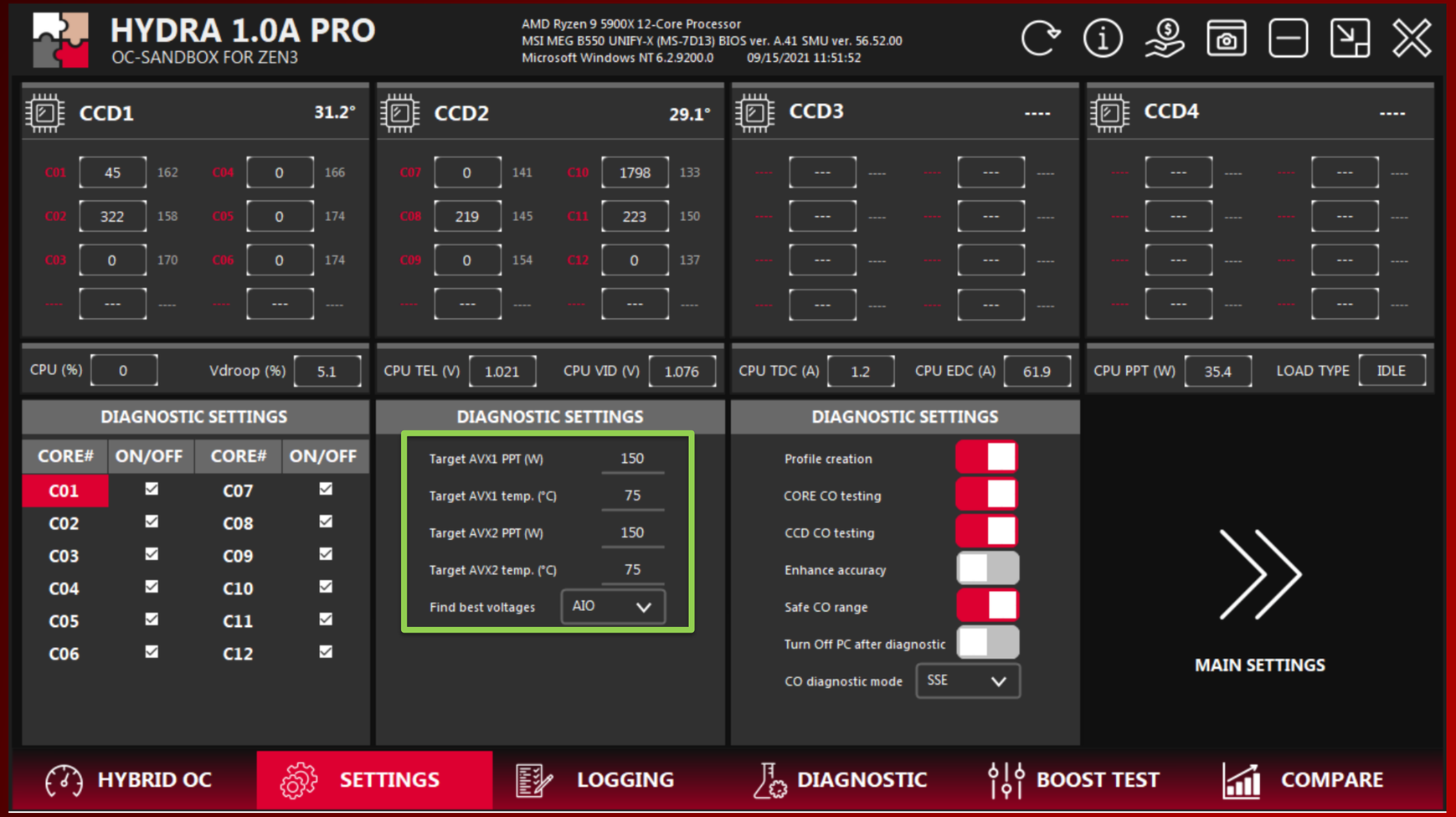


PROJECT HYDRA – QUICK START, DIAGNOSTIC

STEP 3 (OPTIONAL):

The user has the option of combining any preset voltages with the automatic search ideal voltages for AVX1 and AVX2 loads.

In order to use this function, the user must specify the cooling system (AIR/AIO/CUSTOM) as well as set the power and temperature limits for each load type.

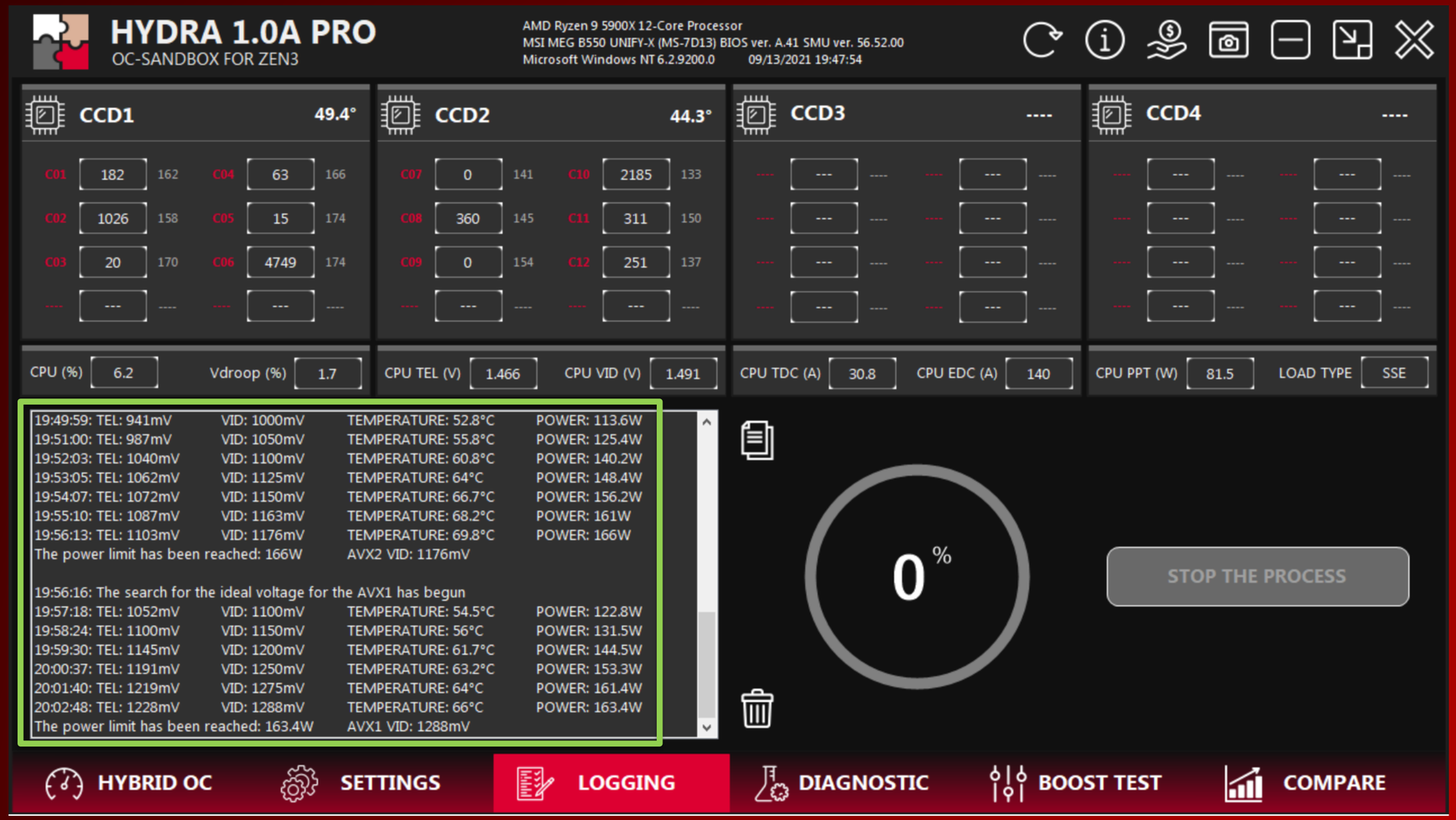


PROJECT HYDRA – QUICK START, DIAGNOSTIC

STEP 3 (OPTIONAL):

NOTE: the duration of the auto voltage selection will depend on the cooling system used (each type of cooling has its own preheating phase) and on the limits (PPT and temperature) that the user has selected.

If you don't need the automatic voltage selection, turn it off before starting a new diagnostic.



PROJECT HYDRA – QUICK START, DIAGNOSTIC

STEP 4:

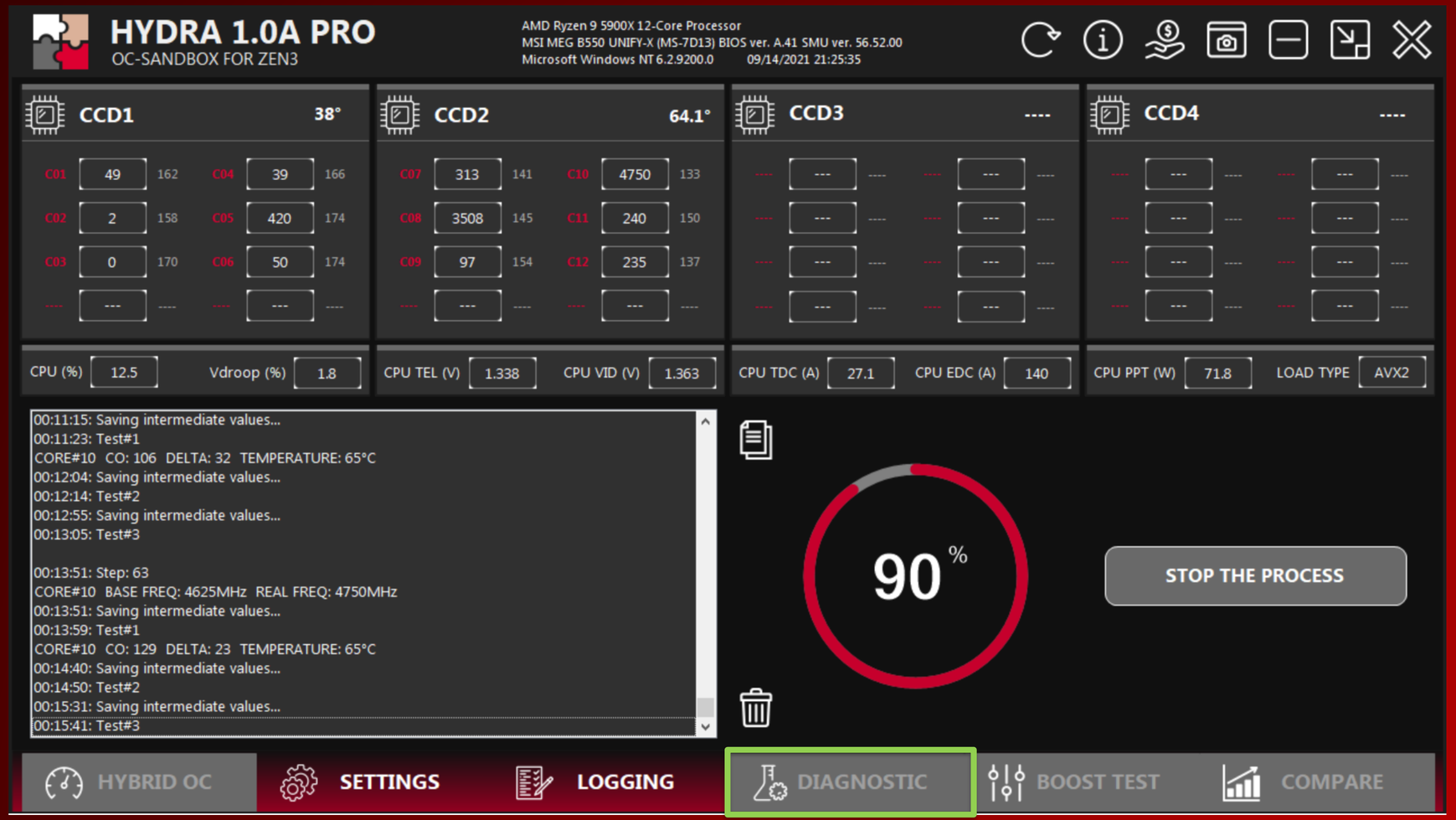
Once you have decided on the settings and preset voltages, run the diagnostics by pressing the DIAGNOSTIC button.

This process can take from 2-5 hours, depending on the quality of the sample (higher the quality, the longer it takes).

The system may periodically reboot during diagnostics – this is completely normal.

Once the diagnostics are completed, the corresponding tables under HYBRID OC will be automatically entered and saved. The user will also receive a message that the diagnostic process is complete.

NOTE: re-diagnostics is recommended only if you have changed the CPU VRM or DRAM OC settings.



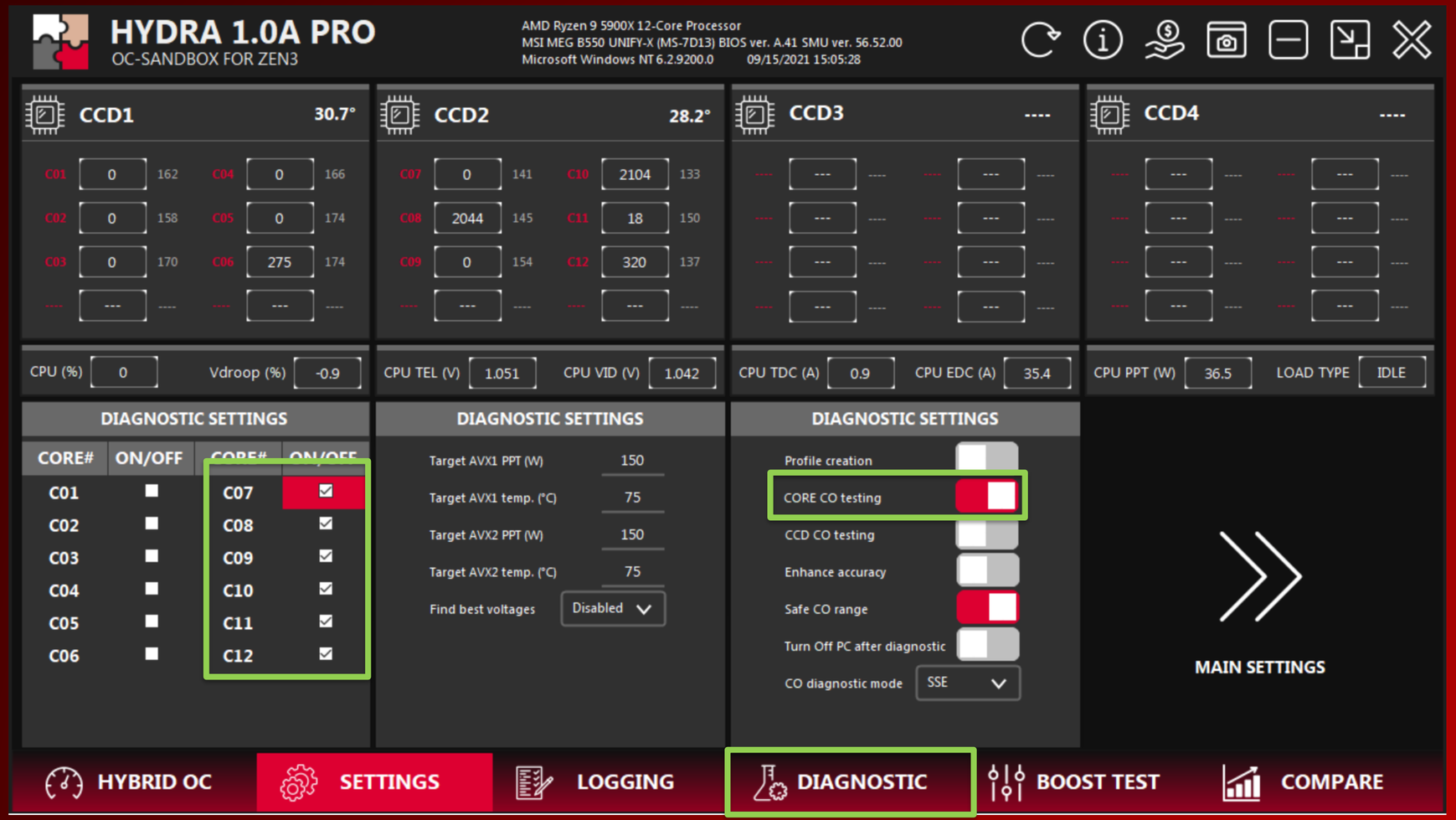
PROJECT HYDRA – QUICK START, DIAGNOSTIC

OPTIONAL STEP:

You may want to re-test specific cores – in order to do this, go to the SETTINGS tab and select the cores that you want to test.

Enhance accuracy - intended for more accurate diagnosis of cores or CCDs. Doubles the testing time. Not recommended by default.

Safe CO range - frequency vs. voltage curves for cores are not always smooth (according to SMU info). To avoid abnormal CO results, it is recommended to activate this option. Otherwise, it may cause malfunctions during the operation of the HYBRID OC.



PROJECT HYDRA – QUICK START, HYBRID OC

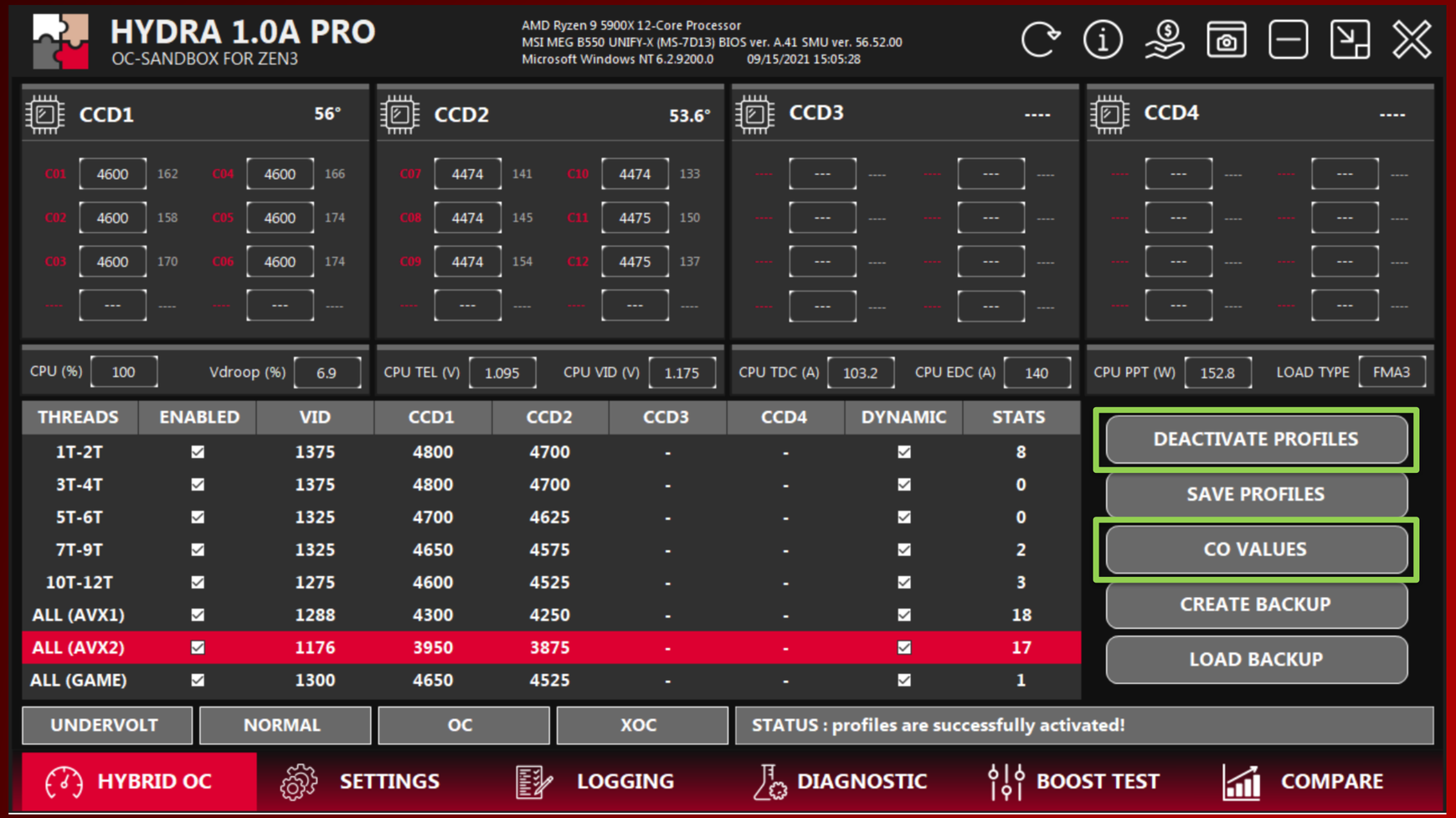
STEP 1:

Under the HYBRID OC tab, press the ACTIVATE PROFILES button to activate the enabled profiles. This button acts as a switch and will also serve to DEACTIVATE PROFILES. The state of the button is saved automatically.

The active profile is highlighted red in the profile table. The STATS column shows the statistics of the number profile activations.

Changing any of the parameters in this table requires that you first disable the profiles using the DEACTIVATE PROFILES button.

You can see and edit the CO tables for the profiles by pressing the CO VALUES button.



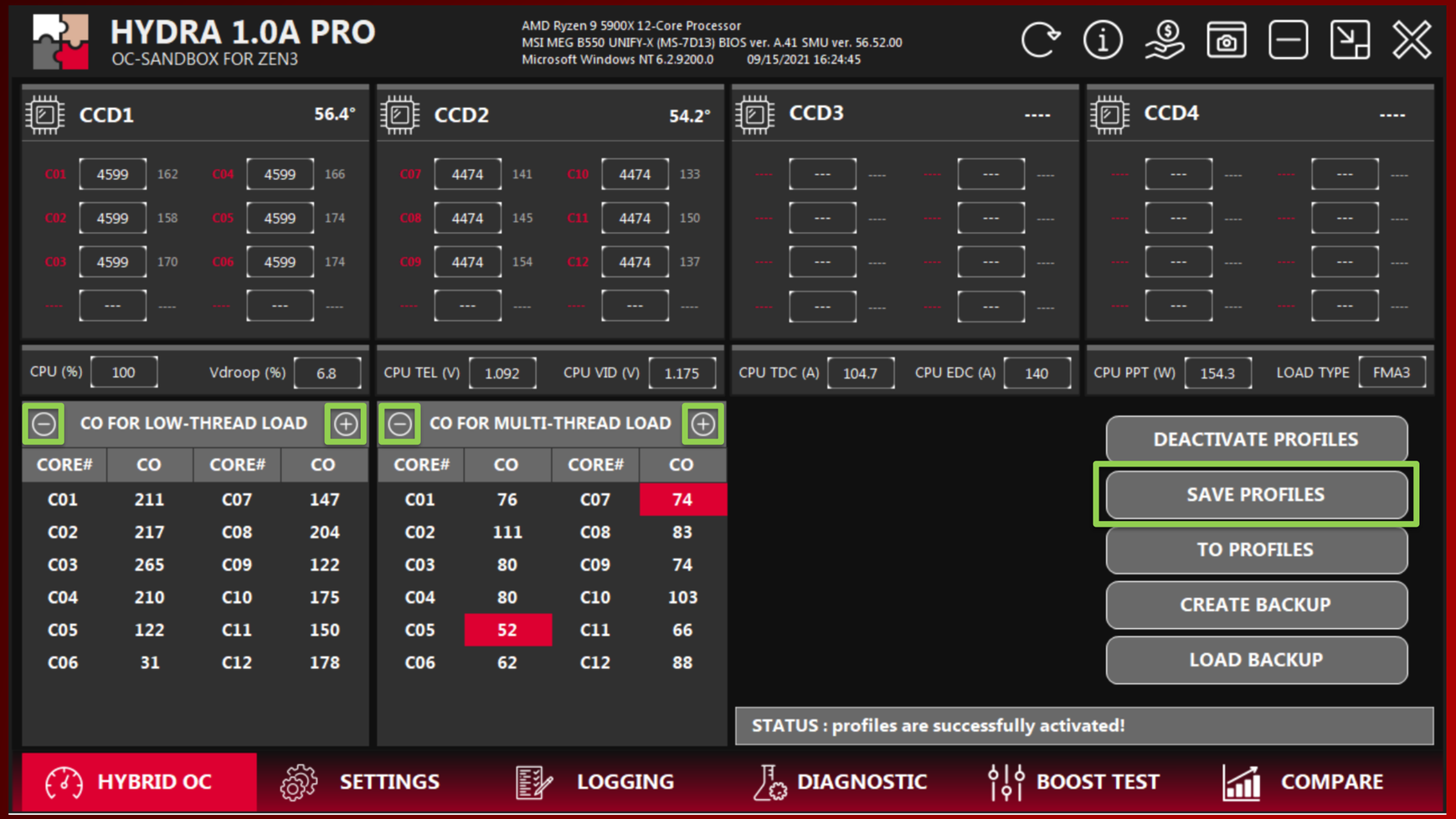
PROJECT HYDRA – QUICK START, HYBRID OC

STEP 2:

As previously mentioned, the CO tables are designed to change the resulting frequency (frequency curve relative to voltage). The unit of measure is millivolts (mV).

You can change the resulting frequency for both CCDs in real-time without deactivating the profiles by pressing the "+" and "-" buttons. You can also change the CO value for each core individually in real-time. Once satisfied with the results press the SAVE PROFILES button.

A key feature of HYDRA is the real-time analysis of the bottle-neck CO. The cores that are highlighted in red prevent frequency growth for the entire CCD or CORE, i.e. these are the worst cores. This mechanism will easily help you calibrate the CO table to achieve a higher frequency.



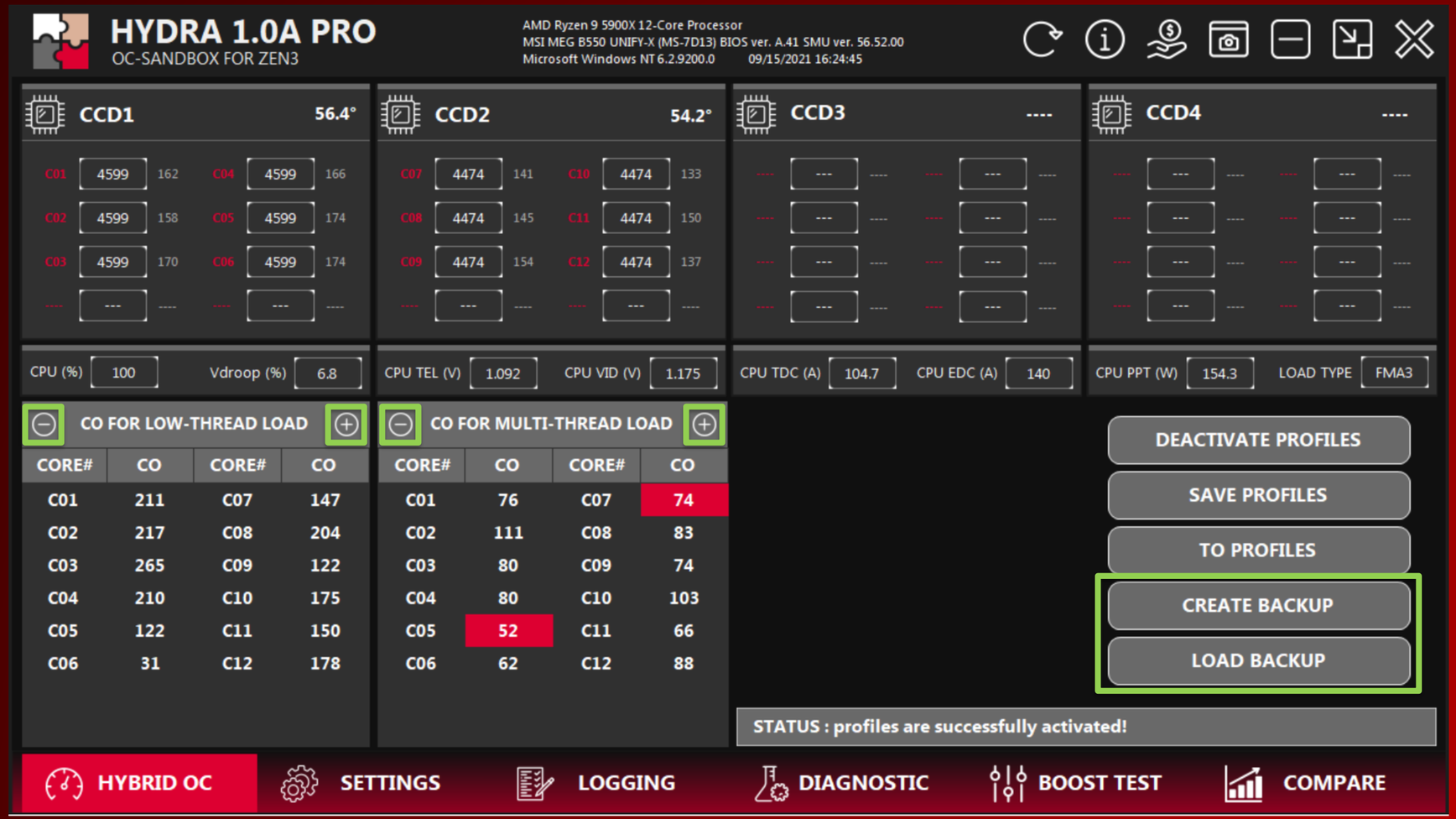
PROJECT HYDRA – QUICK START, HYBRID OC

STEP 2:

Want more frequency? Increase the highlighted value. If you want more stability, decrease the highlighted value. The step for the left table (#1) is 15, for the right (#2) - 10.

You may also find information on what core caused a crash under the LOGGING tab. Here you will find information on which cores crashed, and recommended actions.

For your convenience, you can save and load intermediate profiles with the CREATE BACKUP and LOAD BACKUP buttons. The files that are generated are compatible between all versions of HYDRA.



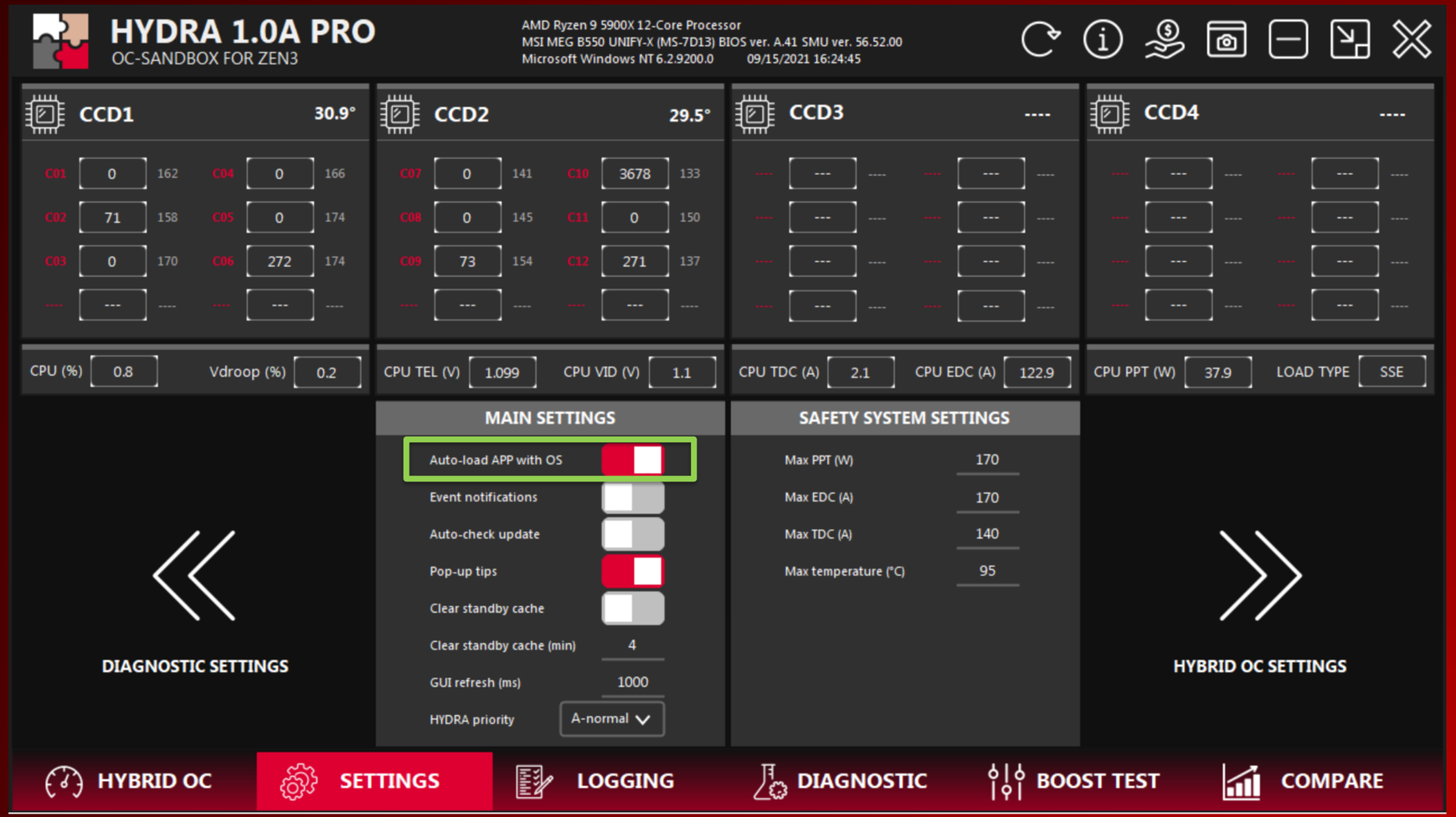
PROJECT HYDRA – QUICK START, HYBRID OC

STEP 3:

If you are satisfied with your profiles, you may want to enable HYDRA upon Windows startup. Go to the SETTINGS page and enable Auto-load APP with OS.

NOTE: Do not enable this option for while running Diagnostics - “Phoenix” will automatically recover upon a crash. Doing so will break the continuation of diagnostics.

All settings changed here are saved automatically.

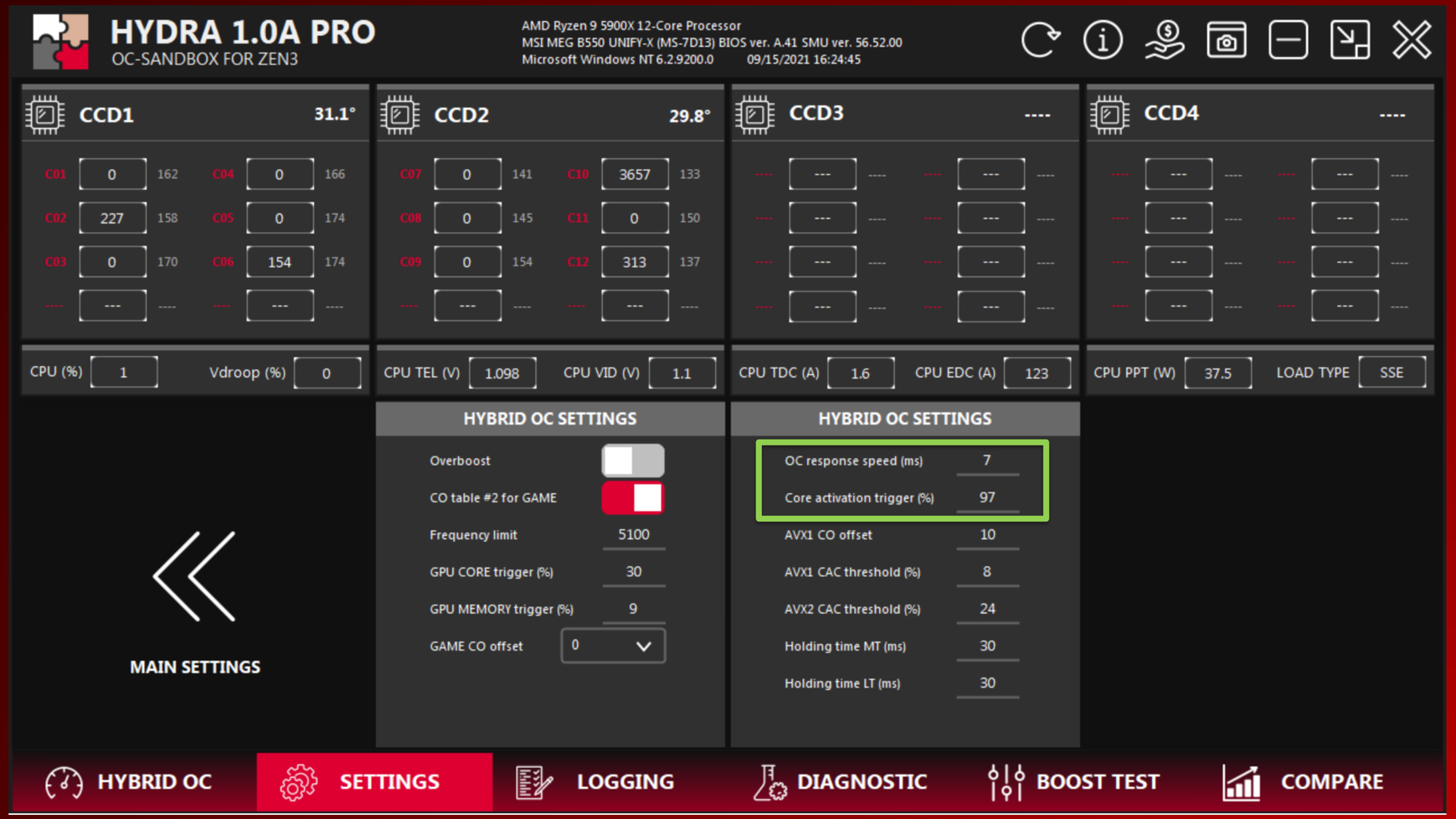


PROJECT HYDRA – QUICK START, HYBRID OC

TIPS AND TRICKS:

OC response speed - this parameter determines the response time at which the profile/frequency is activated. The optimal value is 8-15ms. The minimum value is 6 ms. A lower value allows you to more accurately evaluate the current state of the cores in order to adjust the frequency. Lower values will also cause HYDRA to use more CPU.

Core activation trigger – C0 core state. The utilization condition under which the core should receive maximum frequency. The recommended value is >92%. With lower values, cores that process background tasks or are idle will be considered active and will activate. This has a negative effect on low-thread performance.



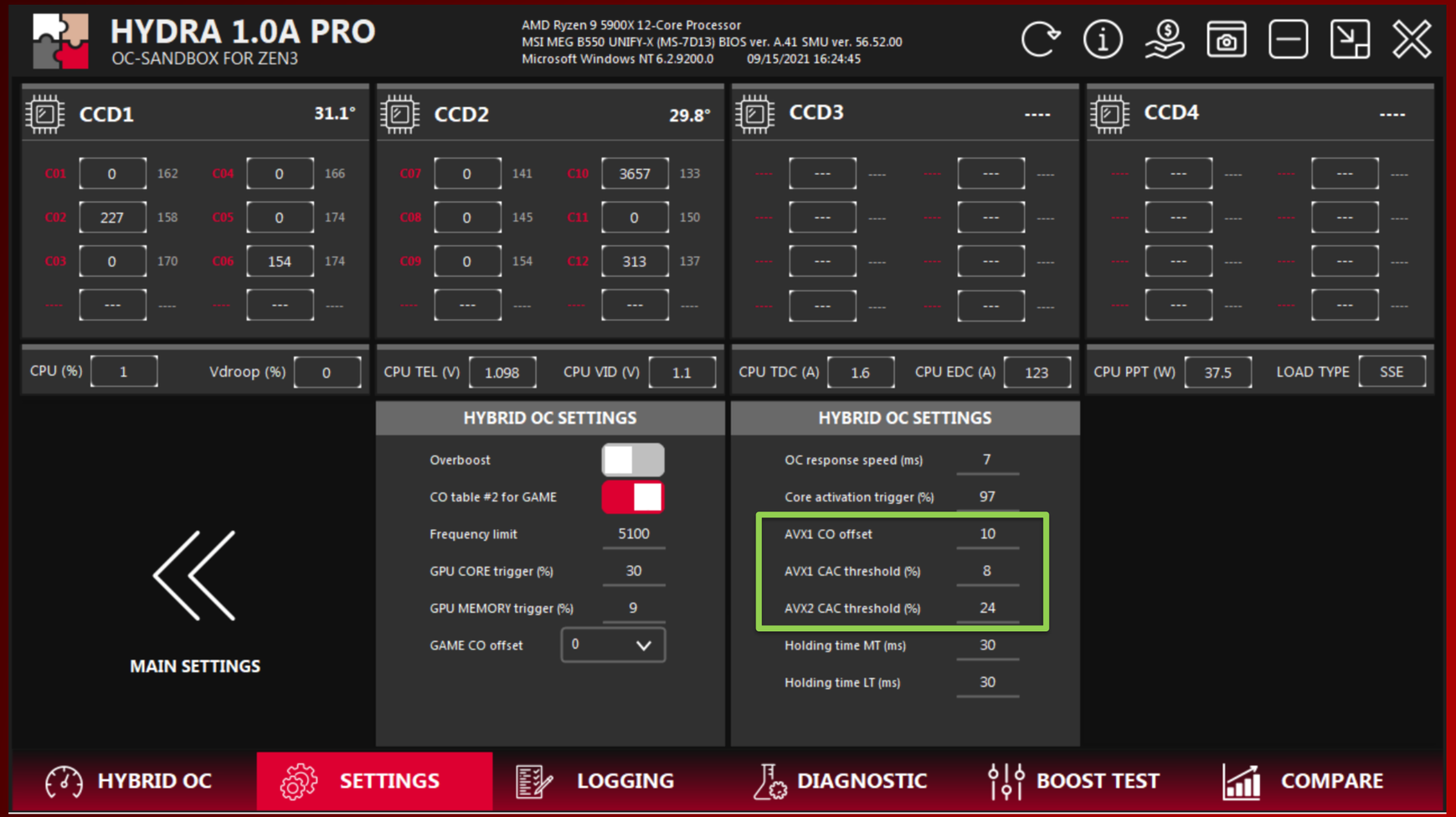
PROJECT HYDRA – QUICK START, HYBRID OC

TIPS AND TRICKS:

AVX1 CAC threshold and AVX2 CAC threshold – Ryzen processors evaluate the load type using EDC throttling info, conventionally referred to as the “CAC” trigger. HYDRA allows to automatically adjust the frequency depending on the type of load. Light (SSE), medium (AVX1) and heavy (AVX2/FMA3). By default, the optimal thresholds are already defined, but the user has the ability to adjust this.

Be careful, as too low AVX1 CAC thresholds can increase the aggressiveness of the boost in ultra-light tasks (idle state too). You may end up crashing the system (reboot). The optimal value is between 7 and 10.

AVX1 CO offset - determines the size of the positive CO offset relative to CO table #2 for AVX1 tasks. That is, for tasks of “medium difficulty” you can increase the boost. The optimal value is between 0 and 30. If you experience issues with stability, use 0.



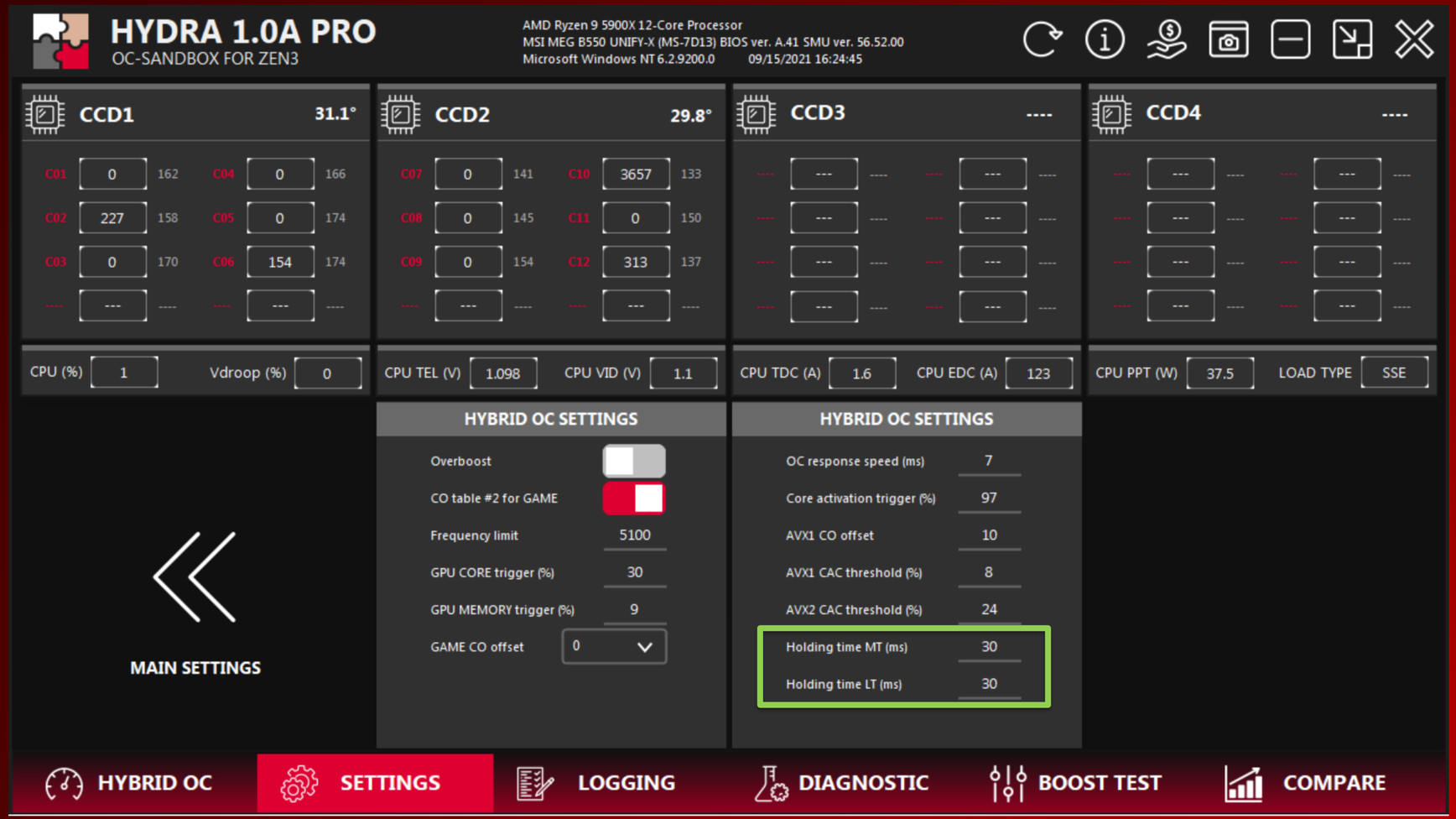
PROJECT HYDRA – QUICK START, HYBRID OC

TIPS AND TRICKS:

Holding time MT – the duration (ms) of which the profile (AVX1 or AVX2) remains active after the load has partially or completely disappeared. Allows you to reduce the number of false profile reactivations due to impulse load.

Holding time LT – the duration (ms) of which the profile (low-thread load) remains active after the load has partially or completely disappeared. Allows you to reduce the number of false profile reactivations due to impulse load.

NOTE: larger values will have a negative effect on the speed of activation of the optimal profile (delayed profile switching).



PROJECT HYDRA – QUICK START, HYBRID OC

TIPS AND TRICKS:

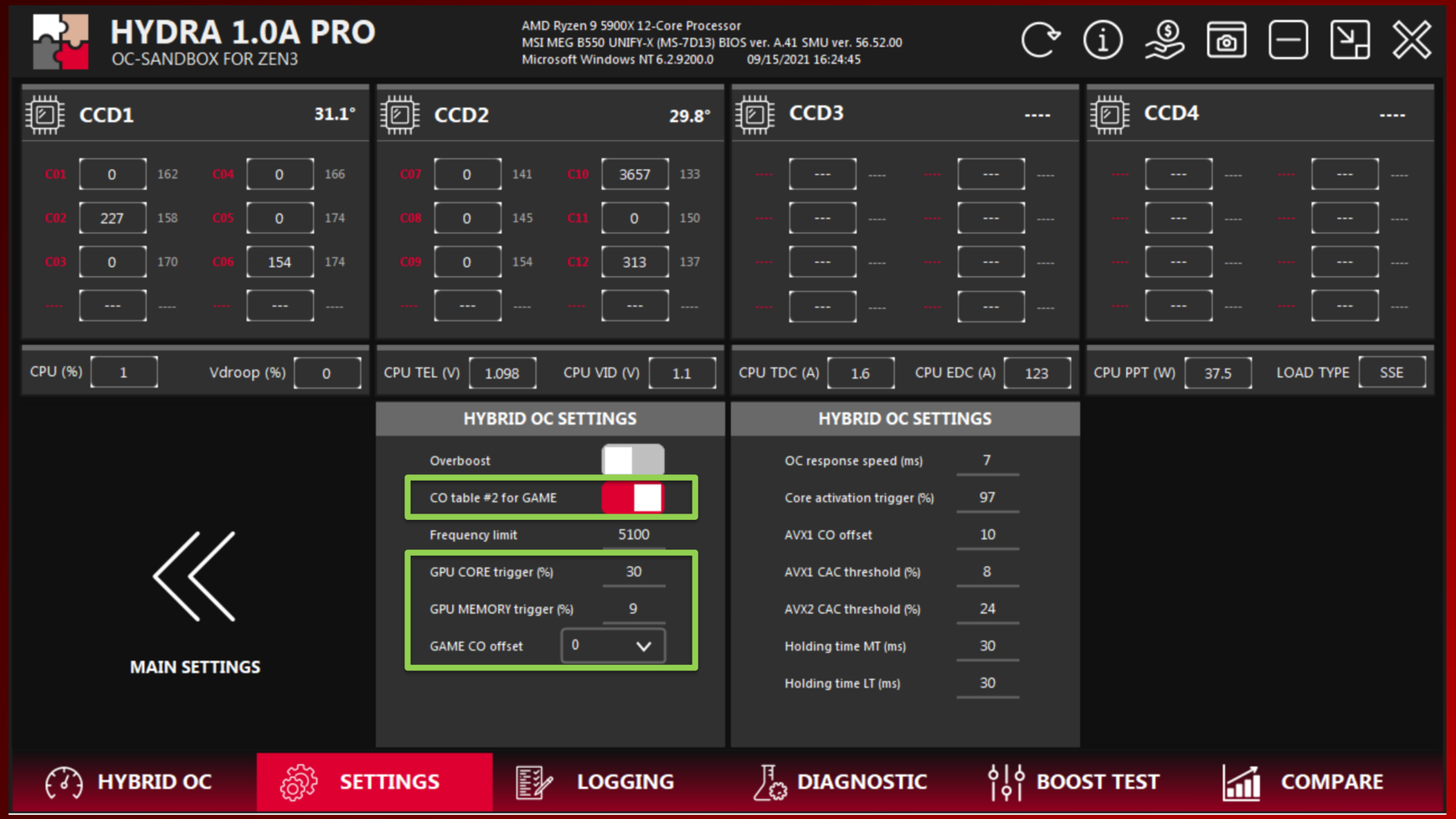
GPU CORE trigger - GPU core usage threshold at which the GAME profile will be activated.

GPU MEMORY trigger - GPU memory usage threshold at which the GAME profile will be activated.

NOTE: thresholds that are too low may trigger may cause unwanted GAME profile activations during usage of browsers or other hardware-accelerated applications.

CO table #2 for GAME - CO table #2 is used by default, but you can also try to use the first table for better performance. Using the first table increases system instability.

GAME CO offset - determines the size of the positive CO offset relative to CO table #2 or #1 for the GAME profile. You can increase the frequency or improve stability.

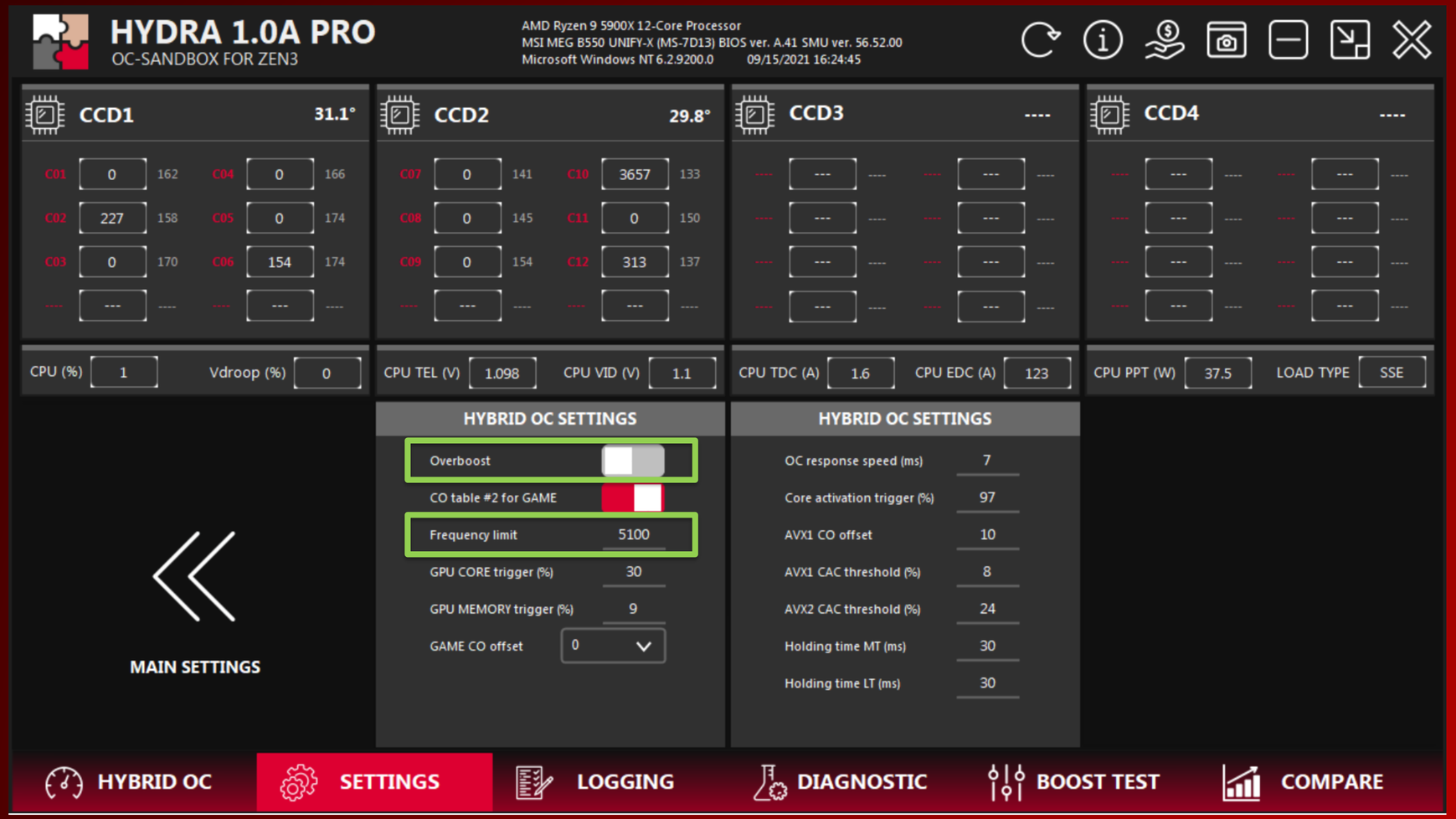


PROJECT HYDRA – QUICK START, HYBRID OC

TIPS AND TRICKS:

Overboost - state of the cores at which an abnormally high frequency in light tasks is achieved. This may increase system instability.

Frequency limit - this mechanism allows you to limit the maximum boost frequency. The need for limiting occurs when the system reboots during a very light load or idle. You may also control this with CO table #1.

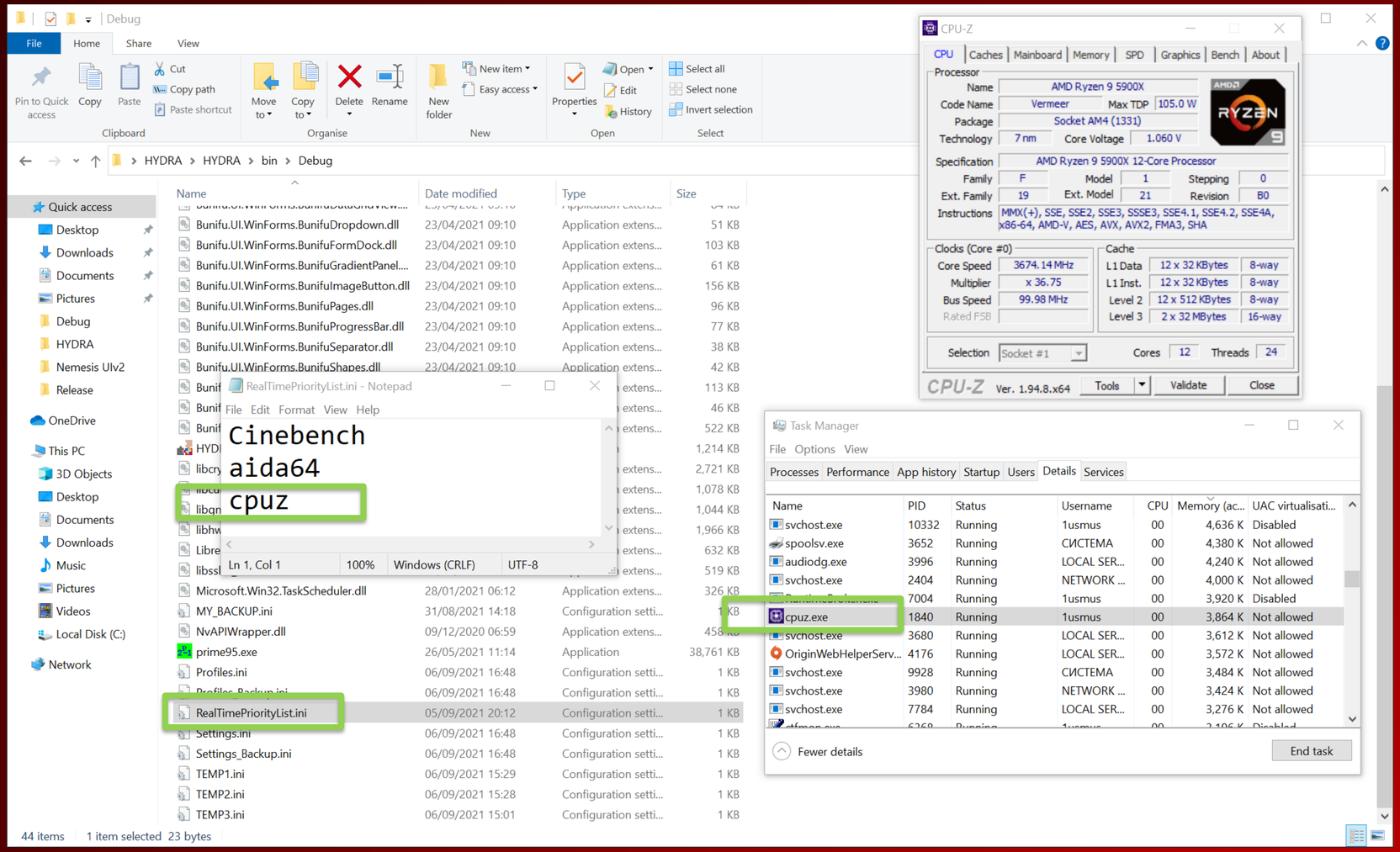


PROJECT HYDRA – QUICK START, HYBRID OC

TIPS AND TRICKS:

Some benchmarks (with built-in monitoring) can negatively affect the performance of HYDRA and the system as a whole. To solve this problem, the user only needs to add the application to the list of programs which will provoke HYDRA to increase its priority in the system. As a result, the user will get extra performance while changing the priority of HYDRA has no negative impact on the system.

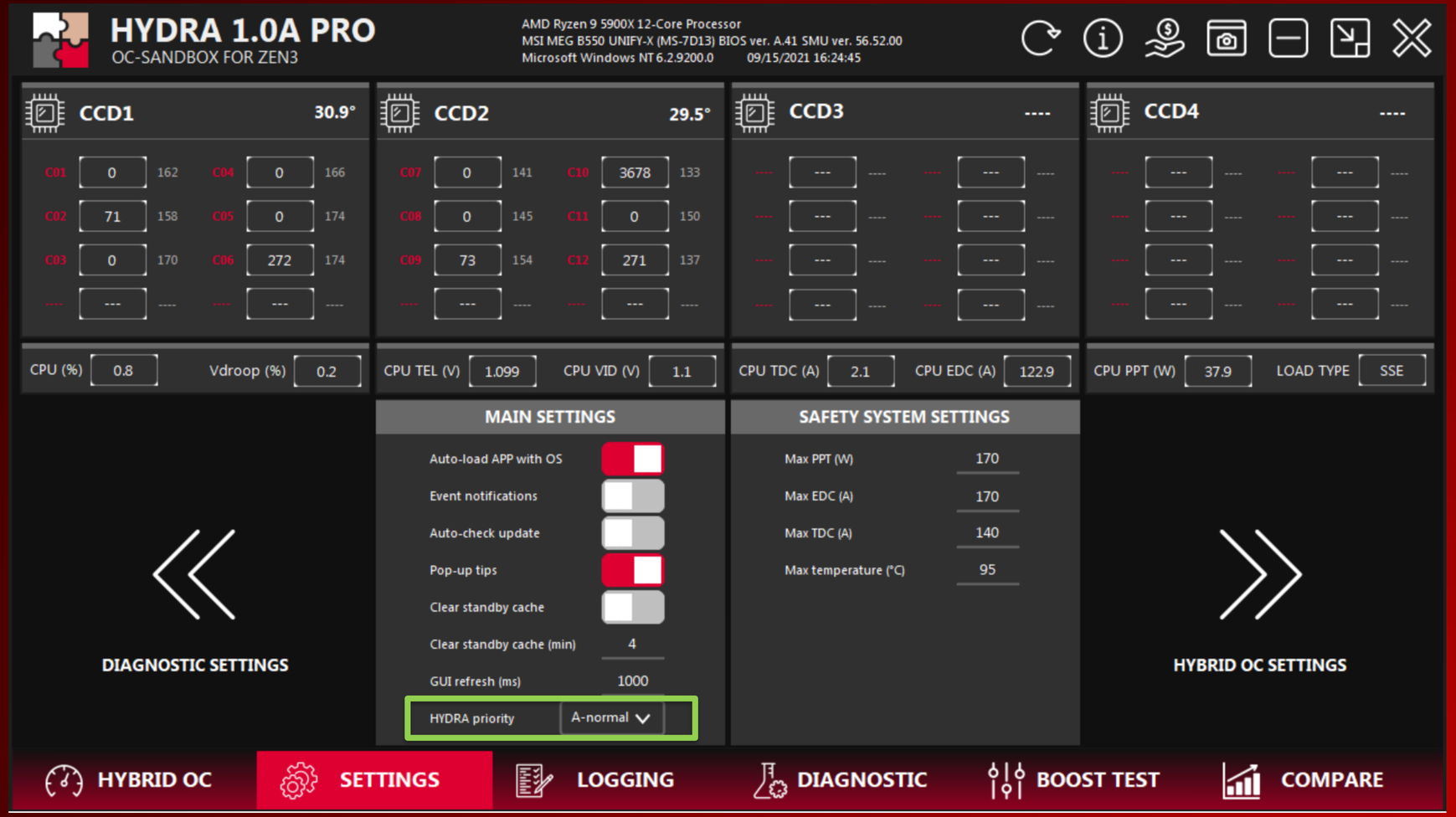
The user can add any application to the configurator file himself. An example can be clearly seen in the picture.



PROJECT HYDRA – QUICK START, HYBRID OC

TIPS AND TRICKS:

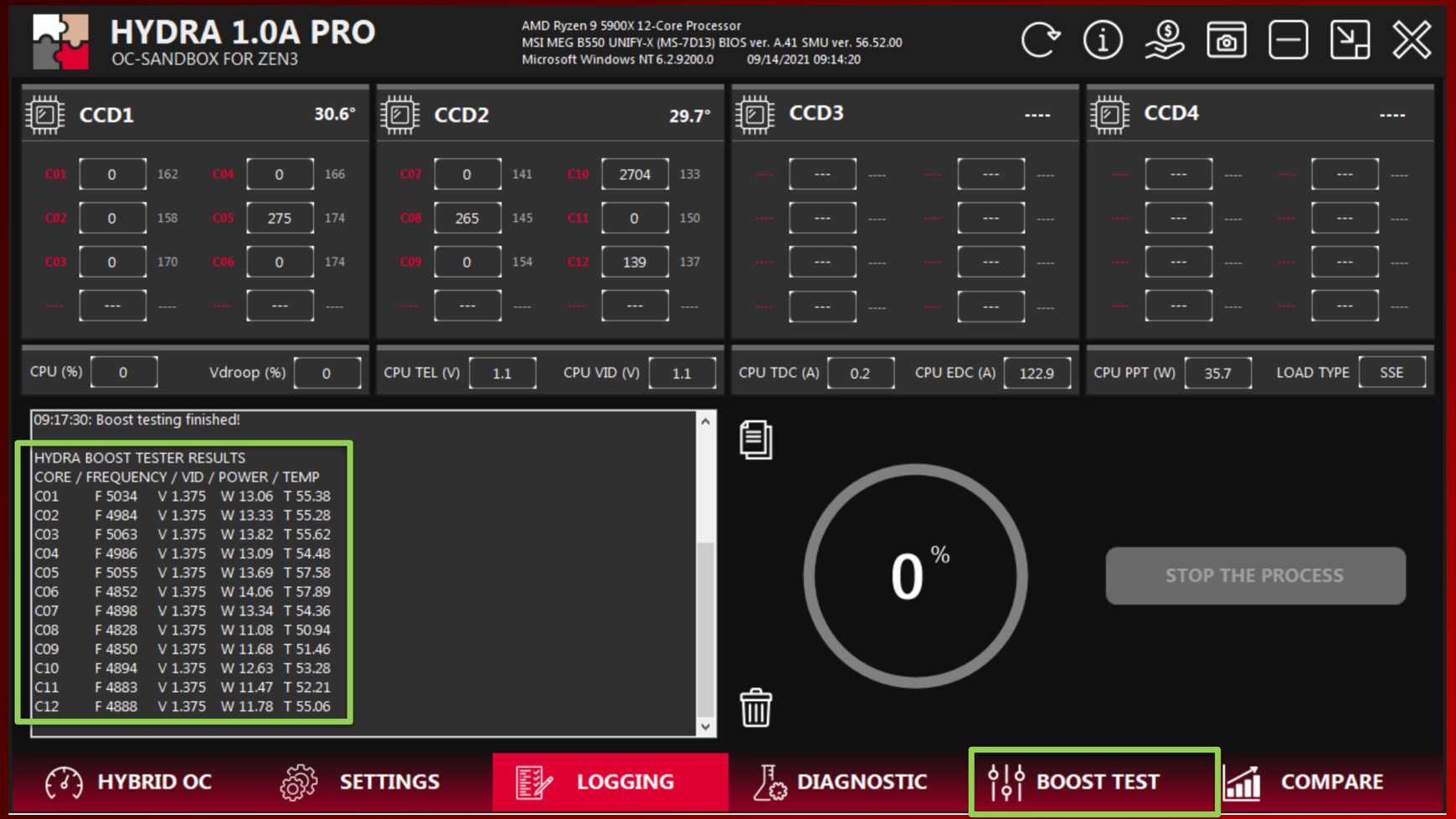
Also the user can configure the basic priority of HYDRA in the settings section. The default value is optimal (A-normal).



PROJECT HYDRA – BOOST TEST

BOOST TEST

Diagnostic test which will check the single-threaded performance of each core individually. Fully compatible with AMD Curve Optimizer, HYDRA HYBRID OC and PBO/PB2.



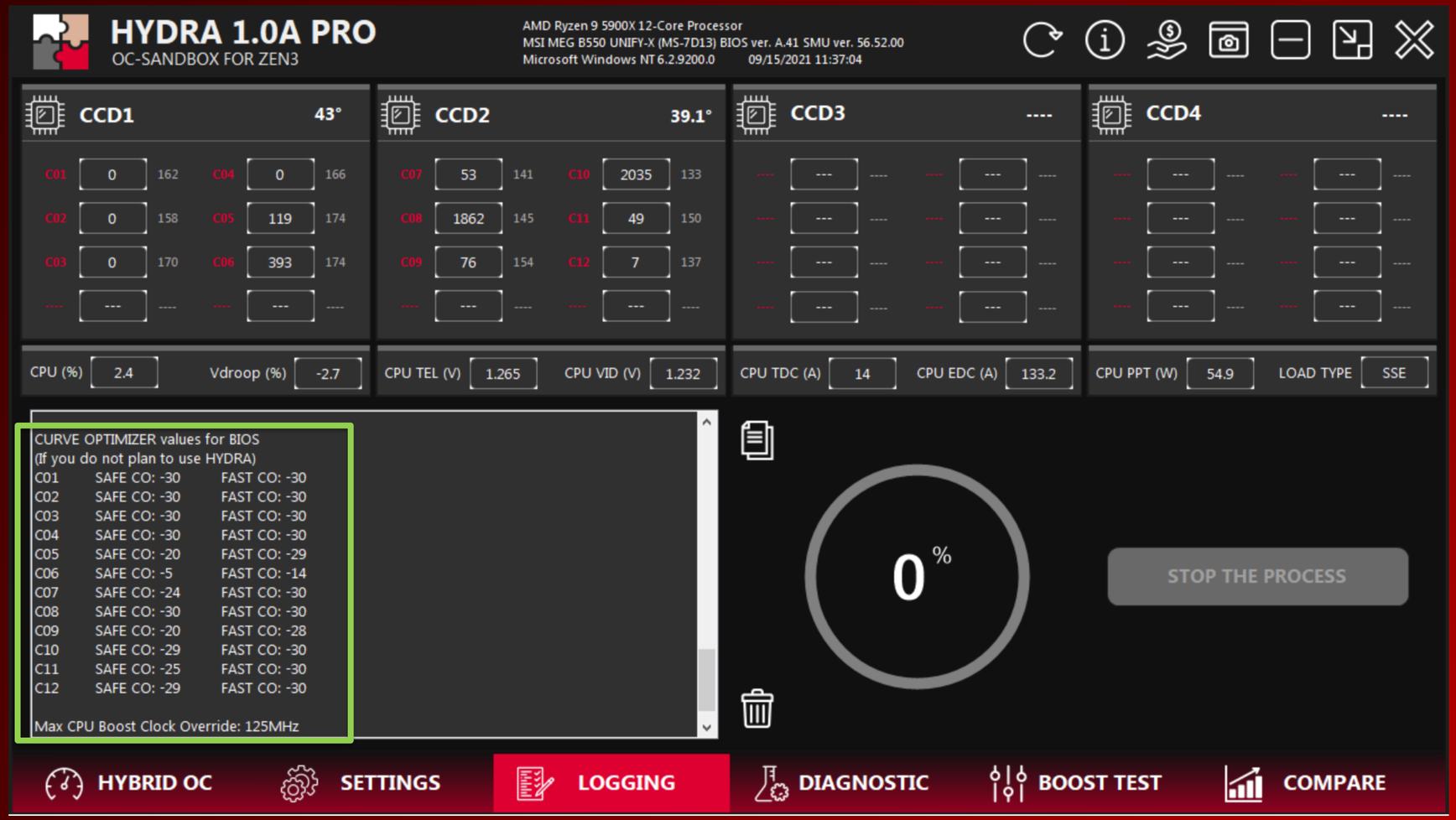
PROJECT HYDRA – UEFI CURVE OPTIMIZER

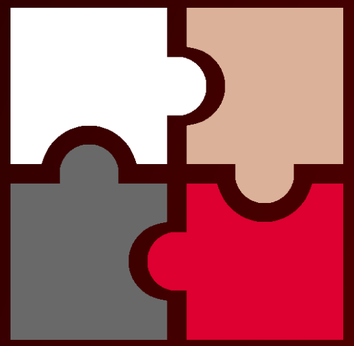
UEFI CURVE OPTIMIZER

HYDRA is also able to provide information about CO values for UEFI after diagnostics. This is optimal for situations where the user only wants to use the standard frequency management tools.

It is recommended to use the SAFE preset because it can guarantee the user stability in any task.

NOTE: the best cores (the highest CPPC value) have the lowest CO value. It's natural. There is also a small reserve for these cores and you can combine SAFE and FAST presets.





PROJECT HYDRA

OC-SANDBOX FOR ZEN3+ PROCESSORS

NEW FEATURES EVERY MONTH

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