AMD

RYZEN Master 2.9 – Reference Guide

APRIL 2022

[Public]

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- This information describes methods to change factory settings and operate the processor outside of AMD's published operating specifications. Recipient understands that operation of the product outside of AMD's published specifications will void any AMD warranty and that overclocking of the processor may impact its functionality and longevity.

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RYZEN MASTER INSTALLATION AND CONFIGURATION

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PREPARING TO INSTALL RYZEN MASTER

- The Ryzen Master application installer is available to download from AMD here
  - Along with this Quick Reference Guide

- Ryzen Master will only install on a Microsoft Windows 10 PC running an AMD Ryzen Threadripper or AMD Ryzen processor

- Before installing Ryzen Master
  - AMD recommends upgrading the system motherboard to the latest BIOS offered by the motherboard manufacturer
  - AMD recommends selecting the motherboard BIOS's default settings
  - Windows 10 Virtualization-Based Security (VBS) must be disabled for Ryzen Master to function

- Ryzen Master installation on non-OC supported/enabled systems:
  - In this case, Ryzen Master will install, but launching it will only display the Home page for monitoring purposes
  - If the APU/CPU is restricted from overclocking, Ryzen Master will indicate that limitation and will not install

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INSTALLING RYZEN MASTER

- The Ryzen Master installer will install the appropriate version of Ryzen Master for the Ryzen processor in the system
  - Not all features will be available to systems with legacy processors.

- During the installation process, a legal disclaimer and click-through license agreement must be accepted
  - Ryzen Master allows the user to configure the processor beyond stock operating conditions which may result in system instability, loss of or corruption of data from open applications, processor failure and system damage
  - The user must accept these risks to proceed with the installation

- If Ryzen Master fails to uninstall or upgrade properly when a new version is being installed
  - Use the Microsoft install/uninstall troubleshooter to clean up the Ryzen Master elements so that Ryzen Master can be cleanly installed
  - See Microsoft application installation troubleshooter

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USING RYZEN MASTER

- On the first use after installation, Ryzen Master copies the current processor parameters to create default reset parameters
  - If the processor is first configured in BIOS to other than default parameters, these changes will be reflected in the Ryzen Master default settings
  - If the processor is changed after Ryzen Master installation, Ryzen Master will notice and will advise that the default configuration will be reset to the new processor
  - If the system BIOS is updated, please uninstall then re-install Ryzen Master to link supporting BIOS elements for Ryzen Master to use
    - If you have favorite profiles set up, use the profiles Export feature to save them, then Import them after re-installing Ryzen Master
  - These steps will assure that Ryzen Master is accessing the correct information for the new processor and new BIOS

- Ryzen Master checks for updates
  - After installation, Ryzen Master checks for new updates every 15 days automatically
  - Users can check manually by starting Ryzen Master under the Settings > Updates section and click on the “Check for Updates” button

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A NOTE ON RYZEN MASTER GENERAL USAGE

- AMD Ryzen processors are designed for outstanding performance out-of-the-box, on first use, with any Windows application, without needing AMD Ryzen Master

- AMD Ryzen Master is a tool for enthusiast users who:
  - Use the controls to experiment with processor and system configurations
  - May with to use their system outside of the normal warrantied range of operation
  - Attempt to further optimize general performance or performance of a specific application or set of tasks
  - Accept the risk that some control settings may result in lower performance or system instability

- The Ryzen Master ‘Game Mode’ profile is offered as a preconfigured group of settings
  - Intended only for Ryzen processors offering more than 8 cores when running games
  - Not necessary for Ryzen 3, Ryzen 5, and Ryzen 7 processors
  - Only use Game Mode if the stock processor settings, also pre-configured as the ‘Creator Mode’ profile, produce less-than-expected game performance

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RYZEN MASTER USAGE TIPS

- AMD recommends the following Windows 10 Power Options settings when using Ryzen Master to maximize performance
  - High Performance power plan selected
  - Uncheck “Turn on fast startup” under Power Options > Choose what the power buttons do > Shutdown Settings

- For a Ryzen Master configuration change that requires a restart or shutdown
  - Ryzen Master will always tell you if a restart requires you to push the system power button and restart Ryzen Master
  - If Ryzen Master causes the system to power off, you must restart using the power button, and then restart Ryzen Master after booting to Windows
  - If Ryzen Master doesn’t prompt the user to power off the system, the system will restart without user intervention, and Ryzen Master will automatically start; wait for it

    In this case, it may take on the order of 10 seconds for Ryzen Master to appear, depending on core and performance settings

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RYZEN MASTER – SYSTEM RESTARTS AND PERSISTENCE OF SETTINGS

- Ryzen Master will automatically restart the system and re-open when certain features are Applied
- Some Ryzen Master configurations do not persist after a user-initiated restart or BIOS actions

CONFIGURATION CHANGES, RESTARTS AND SHUTDOWNS

These Ryzen Master configuration changes	Require this system change and user action.
• Control Mode set to Precision Boost Overdrive(1) or Manual • Set Core speed, core voltage	No restart or shutdown required, activated on Apply
• Control Mode changed to or from Eco-Mode (3000-Series CPUs only excluding Threadripper) • Control Mode changed to or from Auto Overclocking mode • Control Mode changed from Manual mode (except 3000-Series CPUs) • Disabling any cores • Disabling Simultaneous Multithreading • Disabling or Enabling Memory Access Mode or Legacy Compatibility Mode • Any Memory Voltage or Memory Control change	Ryzen Master initiates a system restart and Ryzen Master self-starts, no user action required
• Enabling all cores • Enabling Simultaneous Multithreading	Ryzen Master-initiated shutdown then user must power on system and re-start Ryzen Master(2)

CONFIGURATION PERSISTENCE

Type of reboot	State of processor configuration after reboot to Windows		
	Active cores, SMT setting	Control Mode & frequency	Memory speed and parameters
Ryzen Master restart	Per profile Applied	Per profile Applied	Per profile if Included
Ryzen Master shutdown to enable cores or SMT	Per profile Applied	Default. Please re-apply the profile.	No change
User-initiated Windows Restart Shutdown	No change	Default (stock)	No change
User loads BIOS defaults & restarts	Default (stock)	Default (stock)	Default (stock)

1) If “Persistent PCD Values” option is “on” in Settings, system restart will be requested prior to applying

2) Required for older Ryzen 200, 1000, 2000 Series CPU/APUs and Ryzen Threadripper 1000, 2000 Series CPUs. Newer products requests restart before enabling these features.

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AMD RYZEN MASTER 2.9
FEATURE REVIEW

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NEW TO RYZEN MASTER 2.9

RELEASE HIGHLIGHTS:

- Includes all previous AMD Ryzen™ Master V2.6 features
- Adds support for Desktops utilizing AMD Ryzen™ 5000 processors
- Adds Memory Overclocking support for AMD Ryzen™ 7 5800X3D
- Adds support for AMD Ryzen™ Threadripper™ PRO 5000WX processors
- Added Bug Reporting Tool for easy feedback and issue reporting
- Introducing both Auto-Curve optimizer and Manual Curve optimizer for AMD Ryzen™ 5000 processors and AMD Ryzen™ PRO 5000WX processors

RELEASE LIMITATIONS:

- Not all features are visible on Legacy Processors

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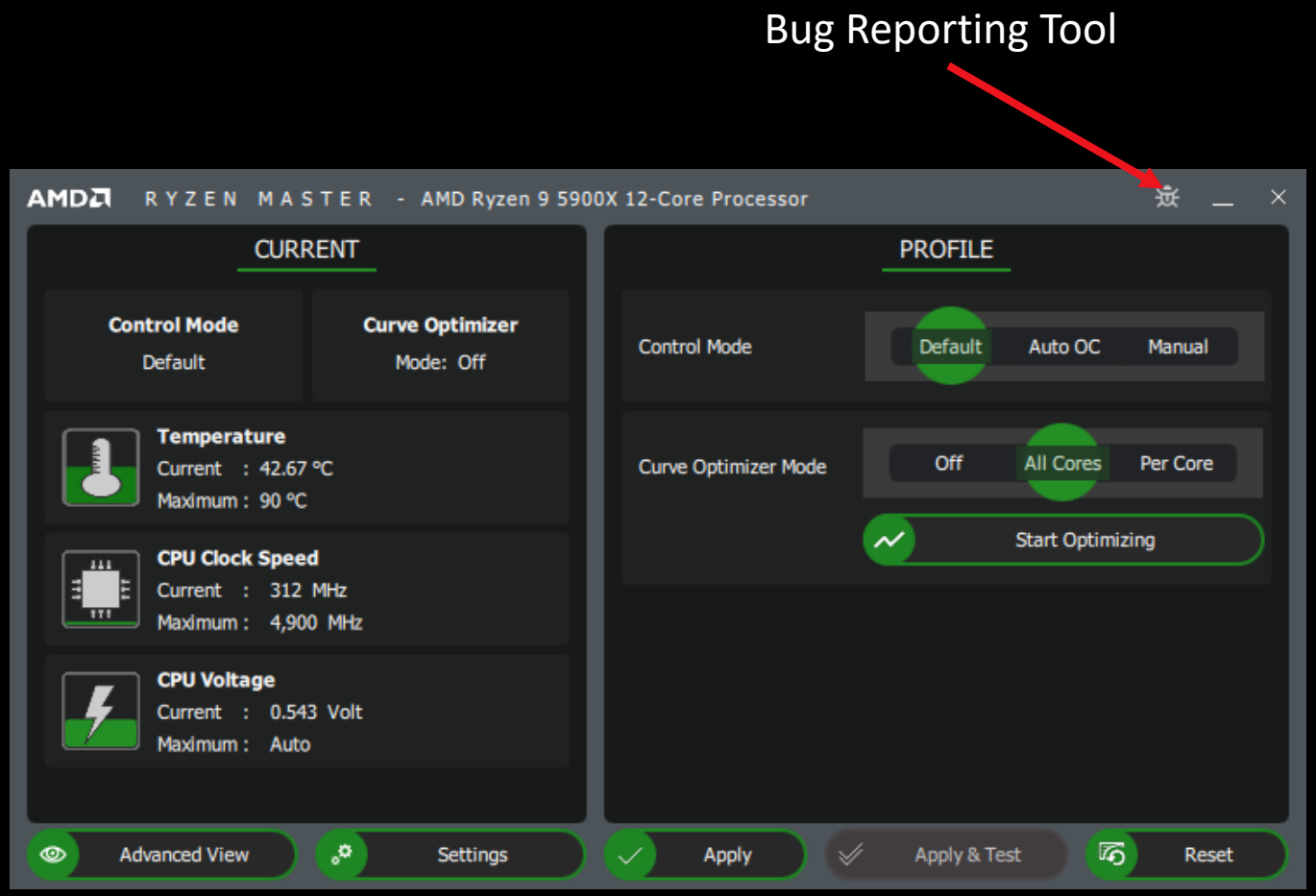
WELCOME TO AMD RYZEN MASTER 2.9

- Bug Reporting Tool:
- Ryzen Master now supports AMD Bug Reporting tool
- User can now report issues or concerns directly by clicking on the icon shown



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WELCOME TO AMD RYZEN MASTER 2.9

- Curve Optimizer:
- Updated dashboard for Curve Optimizer in both All Core mode and Per Core mode
- When All Cores option is selected, curve optimizer algorithm is run on all cores simultaneously
- When Per Core option is selected, curve optimizer algorithm is run on each core optimizing for best performance

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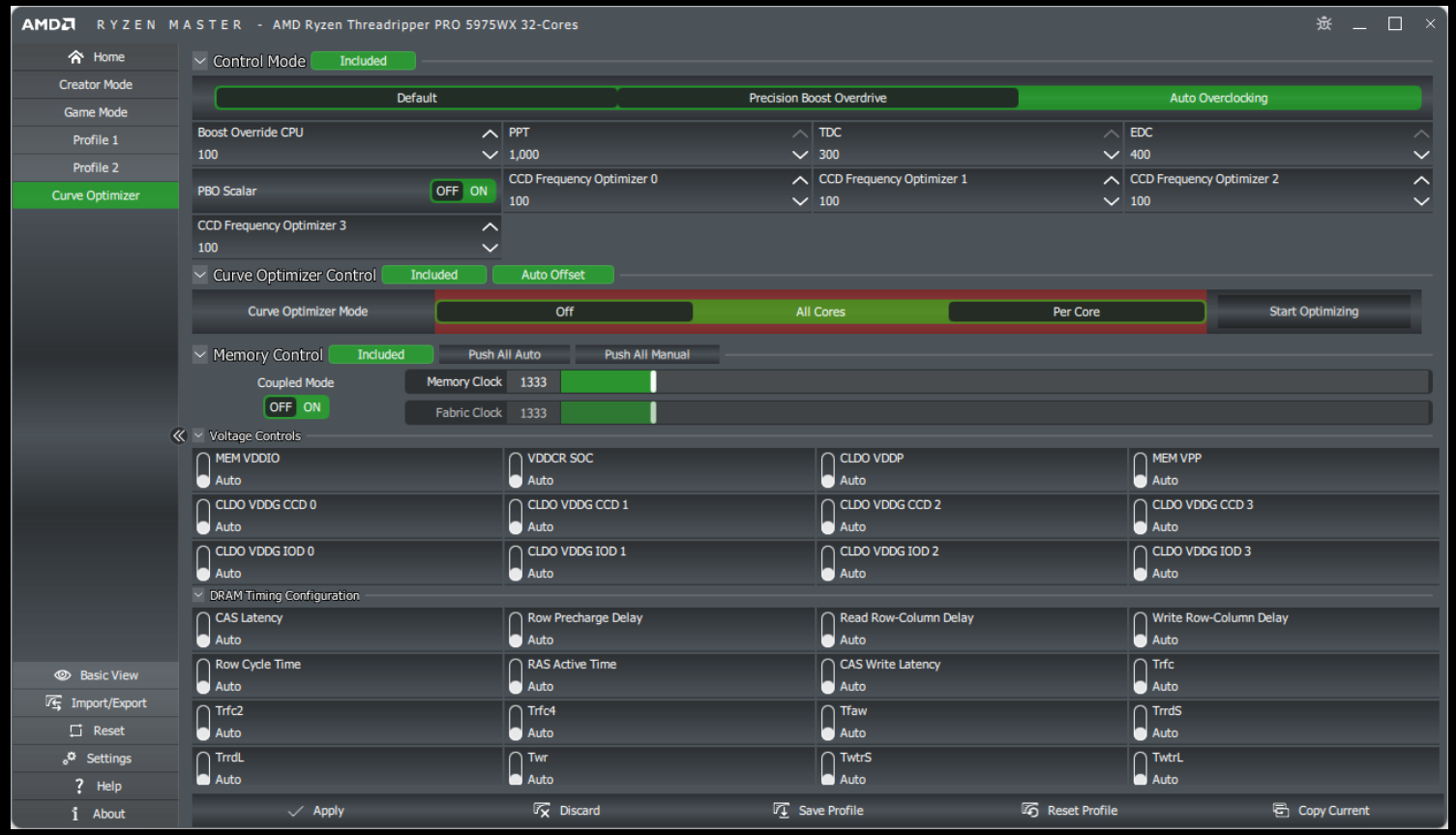
WELCOME TO AMD RYZEN MASTER 2.9

- Curve Optimizer:
- In the advanced view both auto-curve optimizer and manual curve-optimizer can be done
- On the right, image shows “Auto Offset” selected, curve optimizer algorithm can be run in both per core and all core mode
- Algorithm automatically finds the stable value and asks the user if they wish to apply



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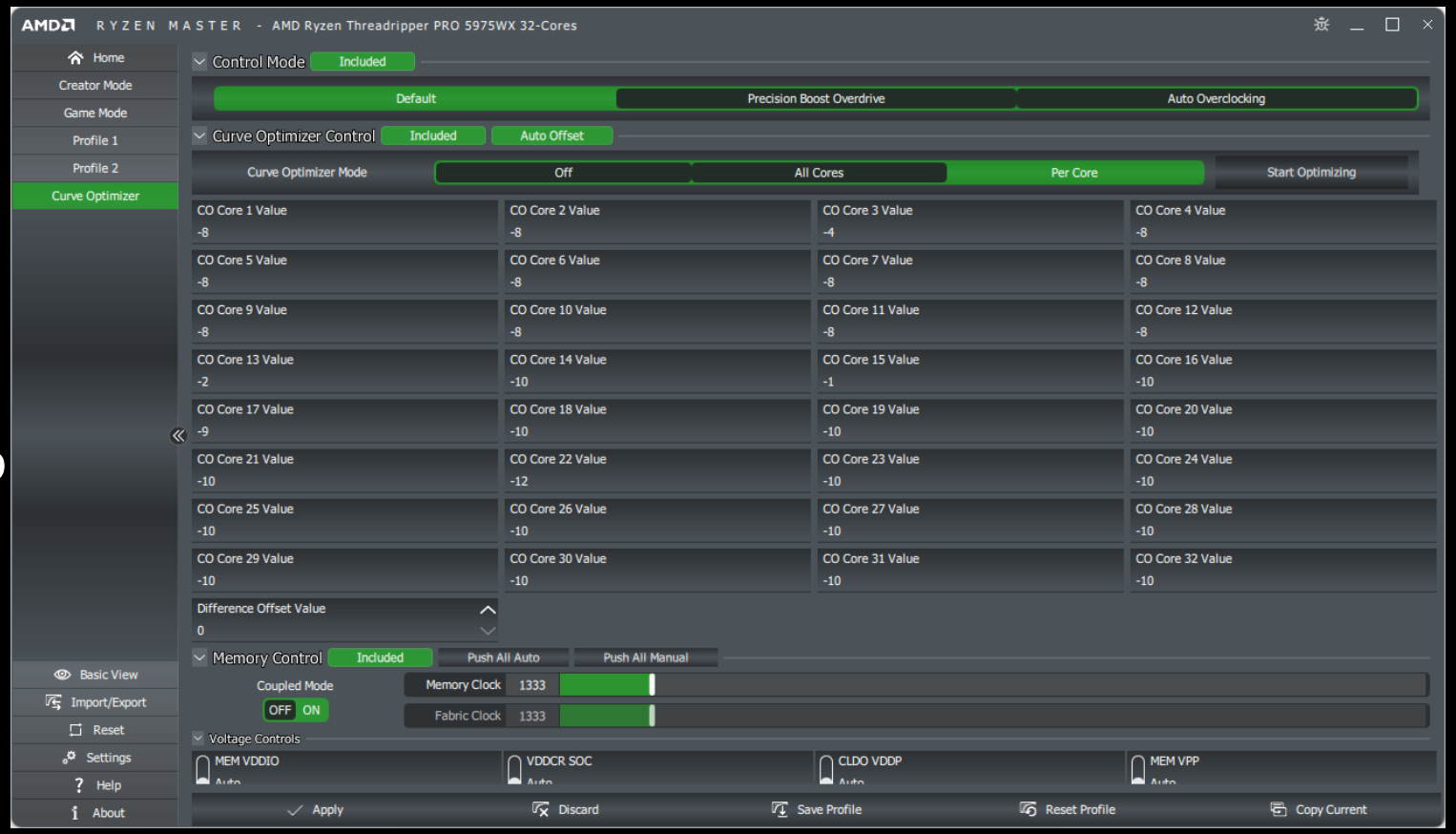
WELCOME TO AMD RYZEN MASTER 2.9

Curve Optimizer:

- This is snapshot of a result after curve optimizer operation is done on per core
- Based on the stability, each value is derived. This derived value can be applied or manually changed to test a different offset.



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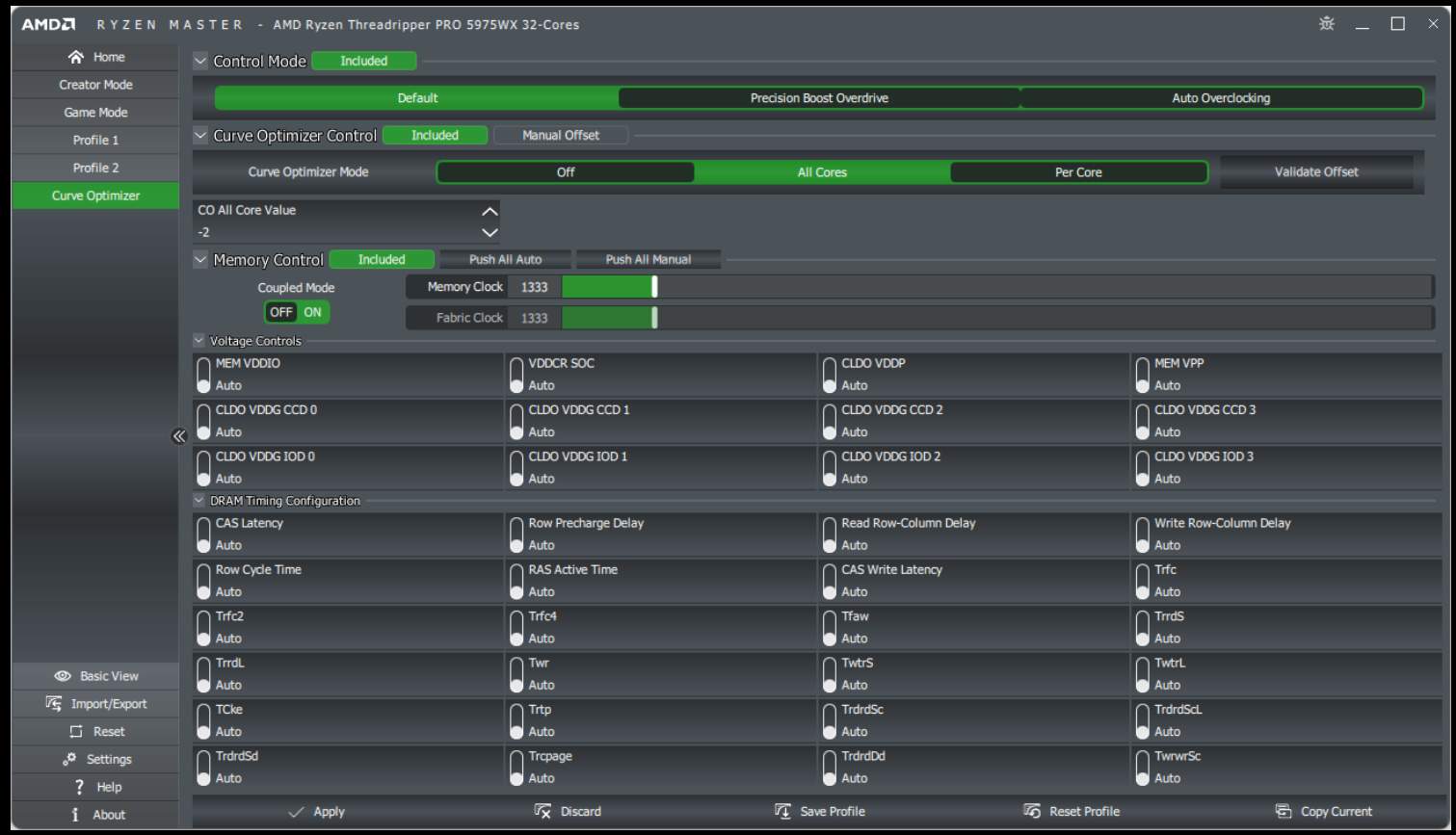
WELCOME TO AMD RYZEN MASTER 2.9

- Curve Optimizer:
- After offset values are derived, user can choose to use a different offset.
- Snapshot shows a scenario in which “All Cores” mode is selected and offset value selected is -2.
- User can validate this offset and test the stability before applying.



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RYZEN MASTER FEATURE SUPPORT FOR RYZEN PROCESSORS

Feature	Ryzen Threadripper per 5000 Series CPU Processors	Ryzen 5000 Series CPU Processors	Ryzen Threadripper per 3000-Series CPU Processors	Ryzen 3000-Series CPU Processors	Ryzen 3000-Series APU Processors	Ryzen Threadripper per 2000-Series CPU Processors	Ryzen 2000-Series CPU Processors	Ryzen 2000-Series APU Processors	Ryzen Threadripper 1000-Series CPU Processors
Core speed overclocking	Per-core	Per-core	Per-core	Per-core	Per-core	Per-core	Per-core	All cores	All cores
Precision Boost Overdrive Mode	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Auto Overclocking Mode	Yes	Yes	Yes	Yes	Yes	No	No	No	No
Fastest cores indicators (★ and ●) – OC Method Fastest pair indicators (★) – OS Method	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes No	Yes No	No No	No No
Manual to Default mode change without restart	Yes	Yes	Yes	Yes	No	No	No	No	No
Integrated GPU overclocking	NA	NA	NA	NA	Yes	NA	NA	Yes	NA
Core and Memory stress test	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Power and current monitoring	Yes	Yes	Yes	Yes	Yes	Yes (No EDC)	Yes	Yes	No
Dynamic Local Mode memory control	No	NA	No	NA	NA	Yes	NA	NA	NA
Eco-Mode	No	Yes	No	Yes	No	No	No	No	No
Extended memory parameters control	Yes	Yes	Yes	Yes	No	No	No	No	No
Auto and Manual Curve Optimizer	Yes	Yes	No	No	No	No	No	No	No

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WELCOME TO AMD RYZEN MASTER 2.3 AND ABOVE WITH BASIC VIEW

SUPPORTING AMD 3RD GEN RYZEN PROCESSORS WITH NEW PROFILES CONTROL INTERFACE

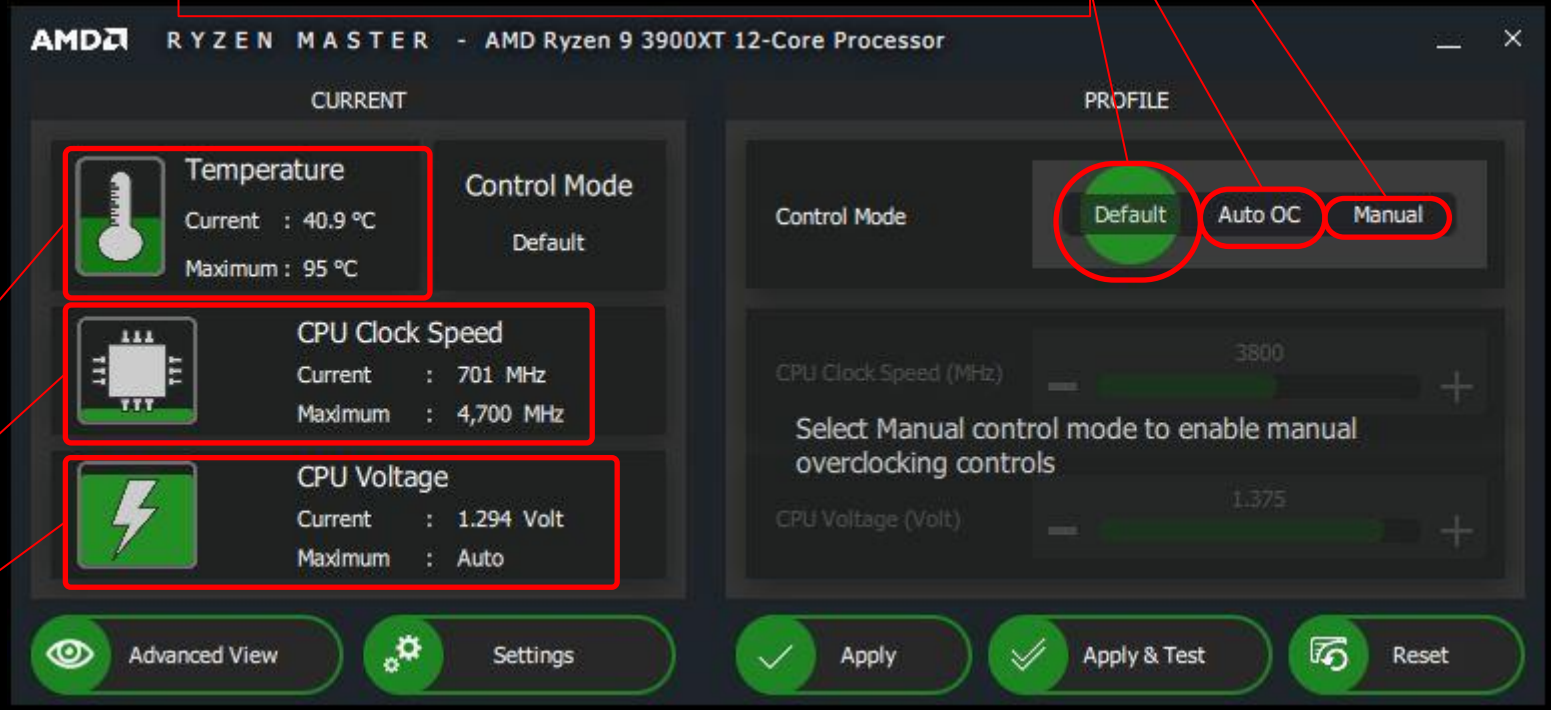
As AMD Ryzen Master has evolved to support an increasingly diverse set of CPU products and features, the user interface has also grown increasingly complex. It could useful to develop a “basic view” that provides quick access to the most essential features and telemetry.

The new basic view provides you a quick snapshot of your system:

- CPU Temperature showing the current temperature and the maximum advisable temperature.
- CPU Clock Speed showing the current frequency of the CPU core cluster and the maximum allowable in the present control mode.
- CPU Core Voltage showing the current average core voltage and the maximum allowable voltage set by the present control mode.

Select which control mode you wish to use:

- Manual overclocking allows you to set the CPU frequency and CPU voltage control
- Auto OC enables the Automatic Overclocking of your system. If you wish to use Precision Boost Overdrive, select that option within Advanced View.
- Default returns your system to a non-overclocked state.



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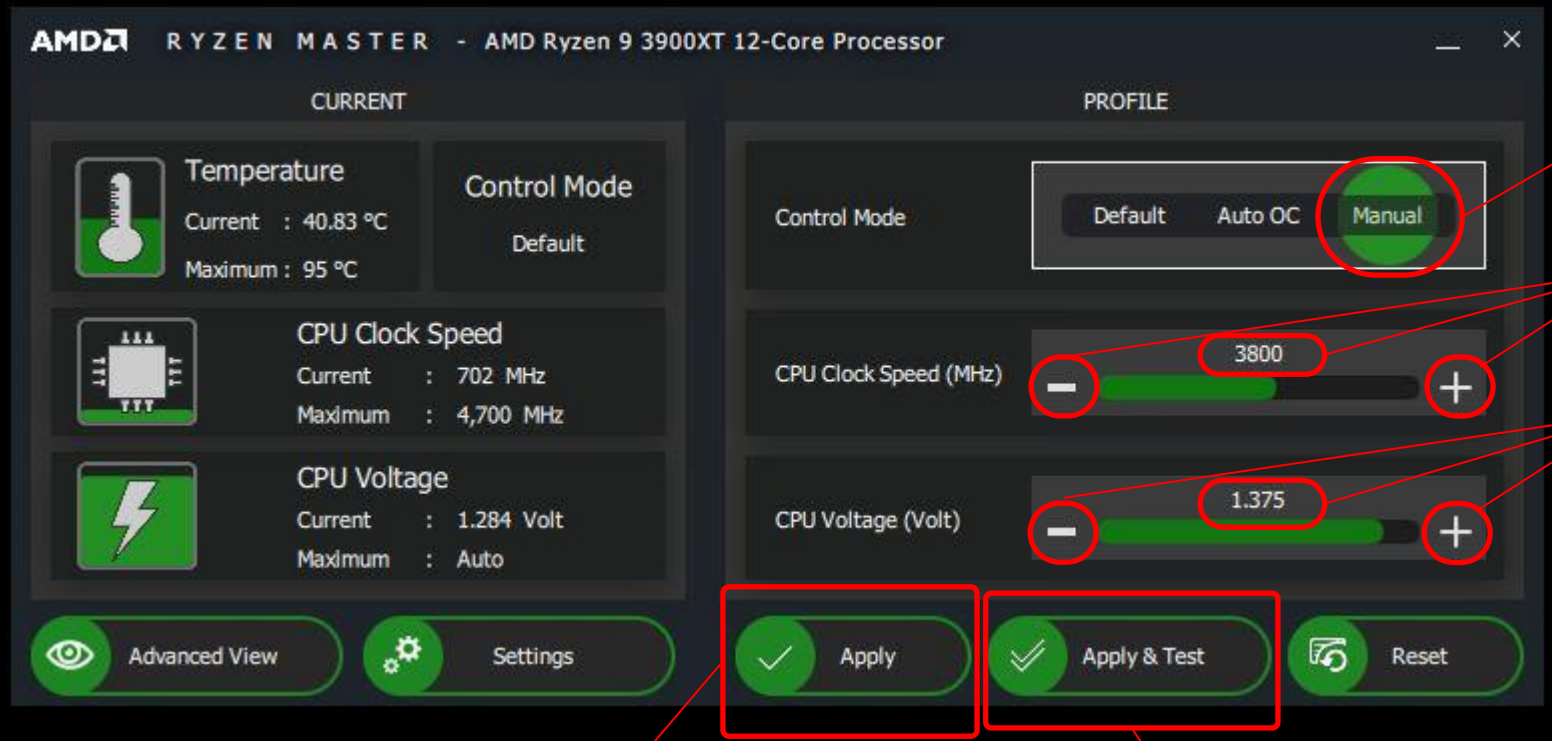
AMD RYZEN MASTER 2.3 WITH BASIC VIEW – MANUAL MODE

NEW PROFILE CONTROL INTERFACE



Manual Control Mode allows you to select the clock speed and voltage for the CPU:

- Select the clock speed in MHz by either typing in a value (e.g., 3800) or by pressing the Plus (+) or Minus (-) keys until the desired clock speed is reached.
- Select the CPU voltage in Volts either typing in a value (e.g., 3800) or by pressing the Plus (+) or Minus (-) keys until the desired clock speed is reached

CPU voltage must be applied carefully. Permanent system damage can occur if this setting is not used correctly. AMD's product warranty does not cover damages caused by overclocking, even when overclocking is enabled via AMD hardware and/or software. GD-26

Select Apply to enable Auto OC from Default.

Select Apply & Test to help determine if your system will be stable with the settings you have chosen.

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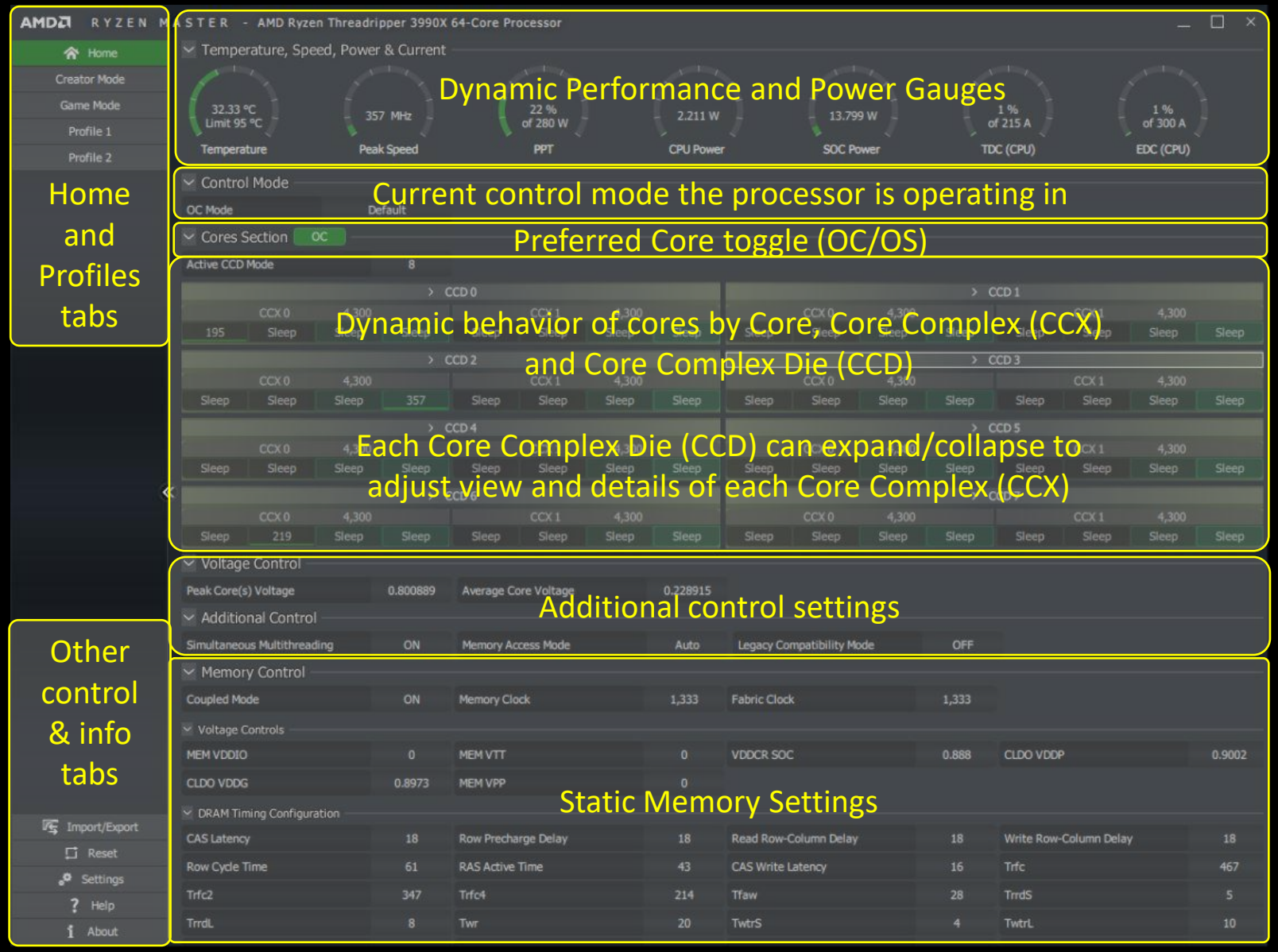
DASHBOARD PERFORMANCE MONITORING AND SETTINGS AT A GLANCE

[Public]

HOME – THE DASHBOARD

- The new dashboard view supporting AMD 5000-Series CPUs and APUs now organizes more information for the user
- Use the expand/collapse controls for any section to view only the information of interest.
  - Updated to add expand/collapse on a per-CCD basis.



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RYZEN MASTER – UNDERSTANDING PROCESSOR POWER DOMAINS

CPU Power Domain

TDC (CPU)

EDC (CPU)

Each at reported at % of capacity setting

CPU Voltage setting

CPU Cores

Core speed control

Core Disable control

SMT control

SOC Power Domain

SOC Voltage setting

Memory Controller

APU GFX Voltage setting

Graphics

TDC (SOC)

EDC (SOC)

Each at reported at % of capacity setting

Memory Clock control

Board memory VDDIO & VTT settings

APU GFX Clock control

- The CPU Voltage setting influences how far the CPU Cores frequency can be driven to a point of instability
- Platform Power Threshold (PPT) is the total power capacity in Watts at the processor socket and includes Memory controller power for a CPU (not for an APU)
- Thermal Design Current (TDC) is the total current capacity in Amps at the thermal throttling limit of the processor
- Electrical Design Current (EDC) is the total current capacity in Amps that can be supplied to the socket

- The SOC Voltage setting drives the overclocking potential for the memory controller and, if an APU, for the APU Graphics (GFX)
  - The APU GFX Voltage is derived from the SOC Voltage and determines how far the GFX frequency can be driven to the point of instability
- Power information is separated for CPU and SOC for APUs
  - Total System Power (TSP) replaces PPT – CPU and SOC power are reported separately
  - TDC and EDC are reported for the SOC domain separately from CPU

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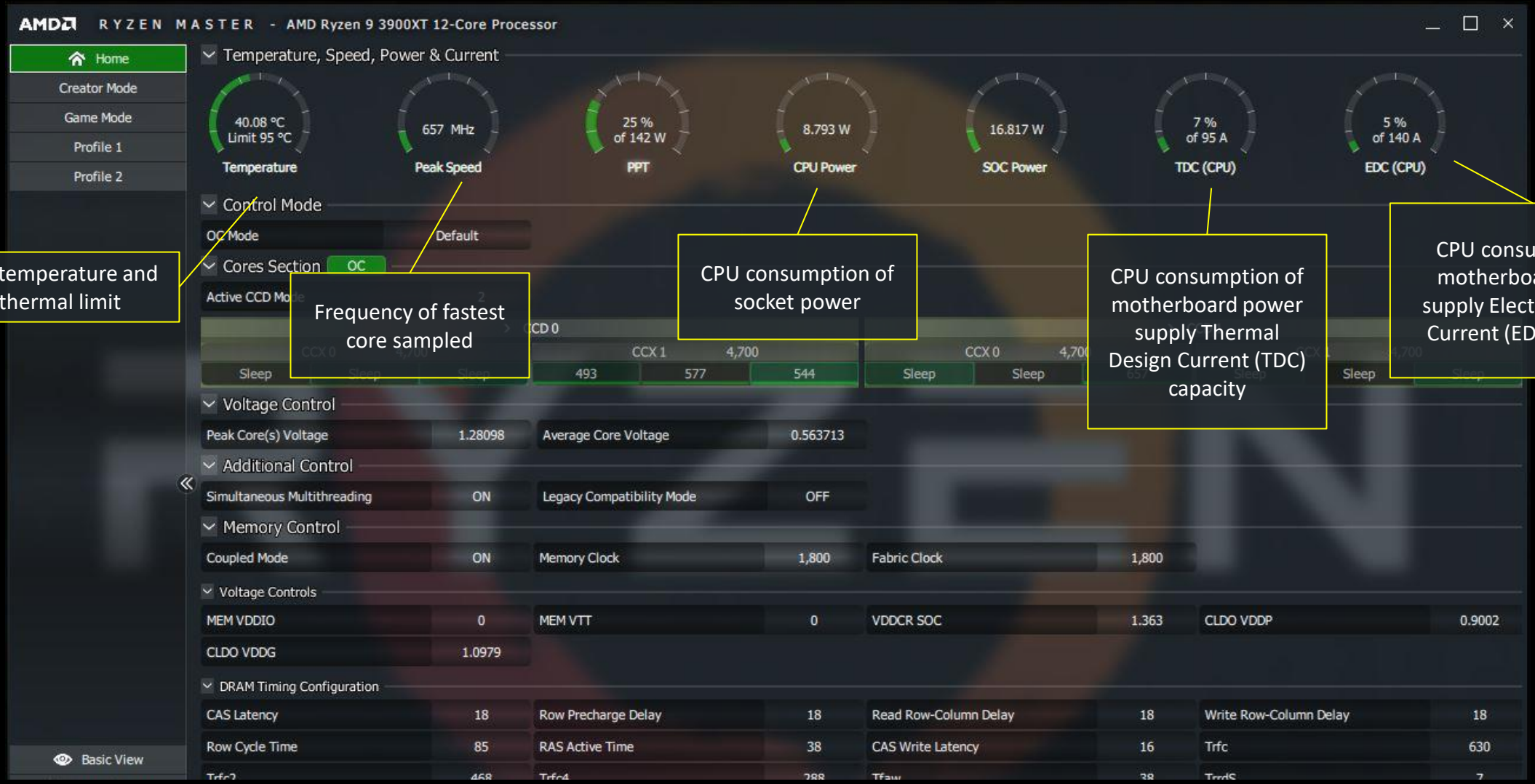
HOME– DYNAMIC PERFORMANCE GAUGES FOR CPUS



Die temperature and thermal limit

Frequency of fastest core sampled

CPU consumption of socket power

CPU consumption of motherboard power supply Thermal Design Current (TDC) capacity

CPU consumption of motherboard power supply Electrical Design Current (EDC) capacity

- Parameter sampling rate controlled in Settings

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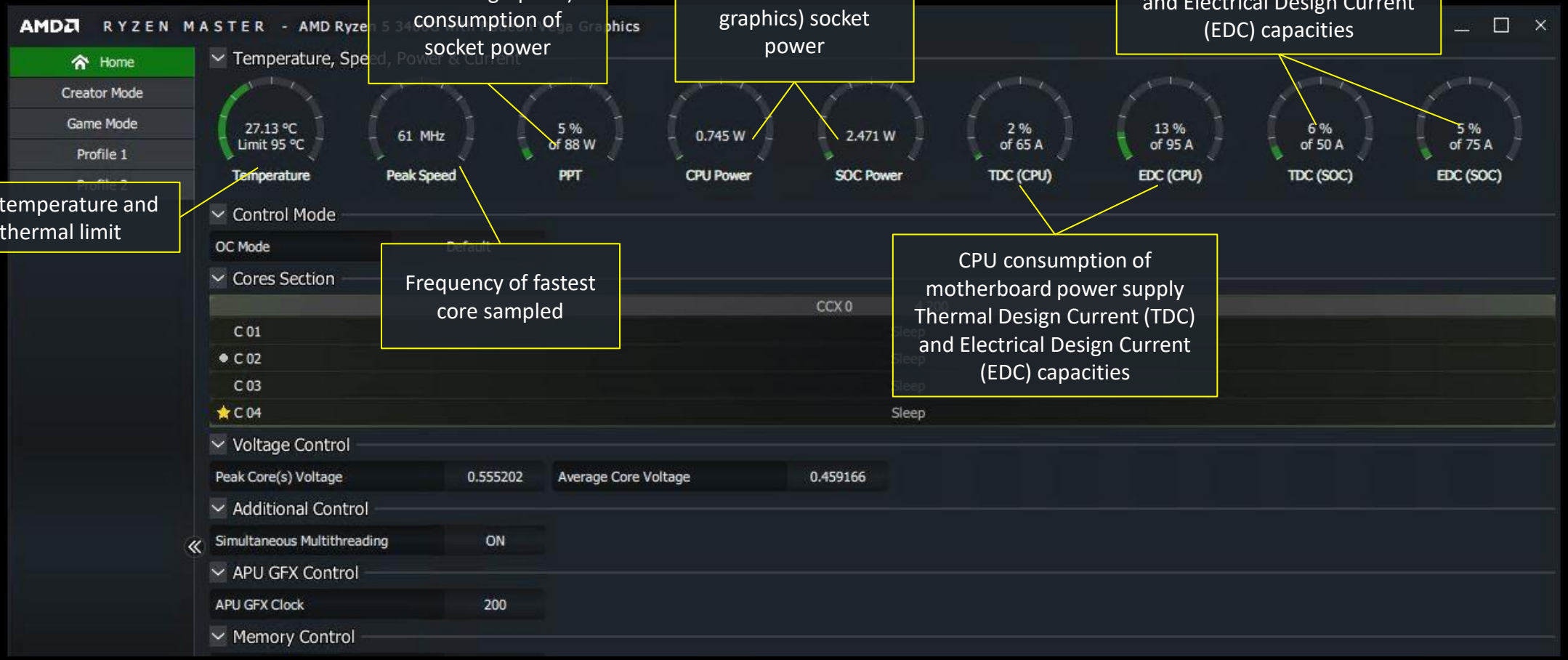
HOME– DYNAMIC PERFORMANCE GAUGES FOR APUS



- Parameter sampling rate controlled in Settings

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PROFILES FOR SETTING PROCESSOR OPERATION

[Public]

RYZEN MASTER 2.3 AND ABOVE PROFILES

SUPPORTING AMD 3RD GEN RYZEN PROCESSORS

The Game Mode profile may be useful for legacy games that cannot run on more than 8 cores, 16 threads, such as on the AMD Ryzen 9 3900X

Precision Boost Overdrive and Auto Overclocking modes may extend performance while the processor remains under automatic control

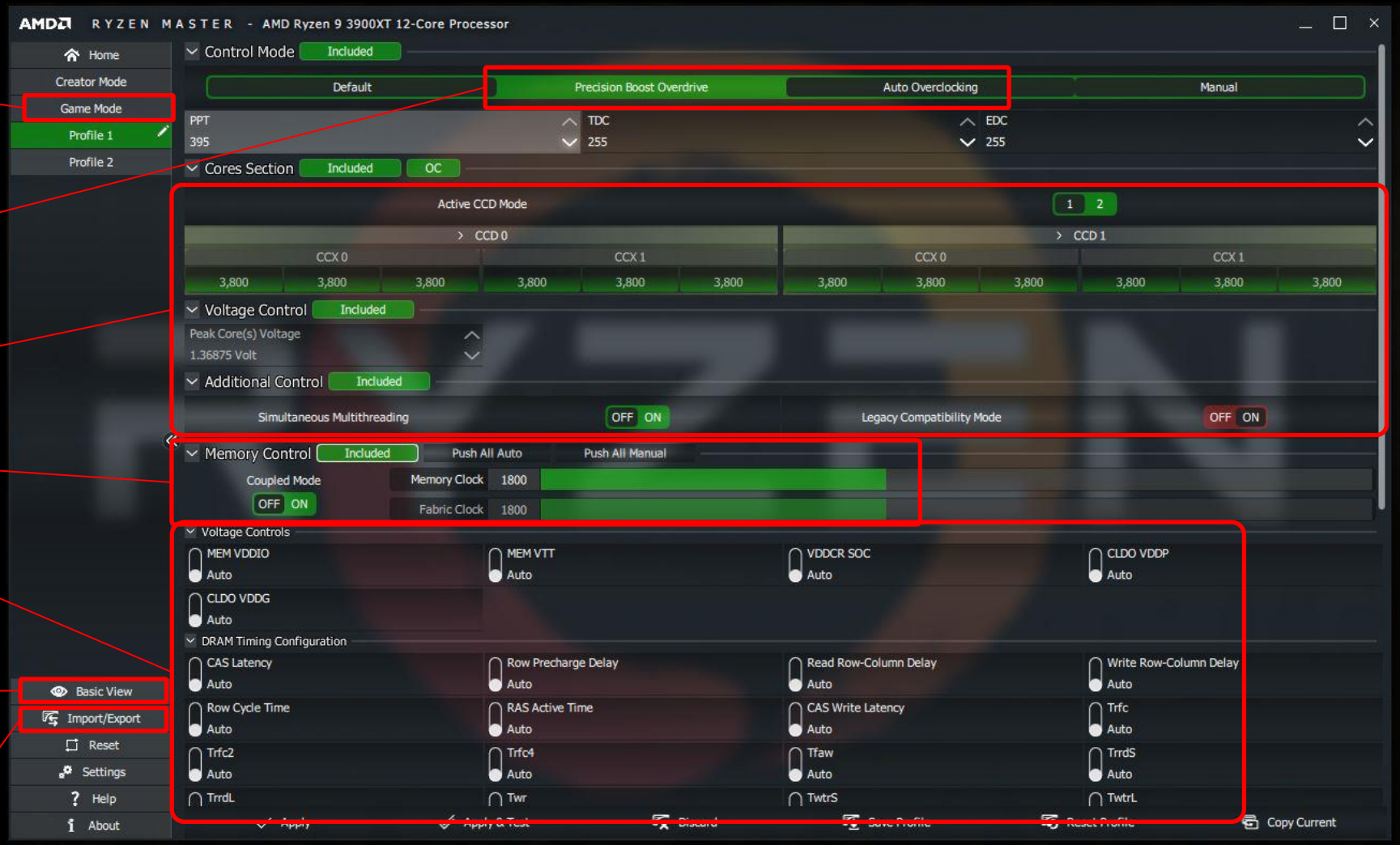
New, compact cores control interface includes Core Complex Die (CCD), Core Complex (CCX) and per-die control of core activation and frequency

Independent control of memory and fabric clocks for enthusiast memory overclocking

Extended memory voltage and DRAM timing parameter control – every BIOS memory parameter now available in Ryzen Master

Toggle to return to Basic View. Return to the most essential features and telemetry

Full parameter Export and Import allows users to share memory configurations, processor configurations, or both



See the Quick Reference Guide for feature and functional details

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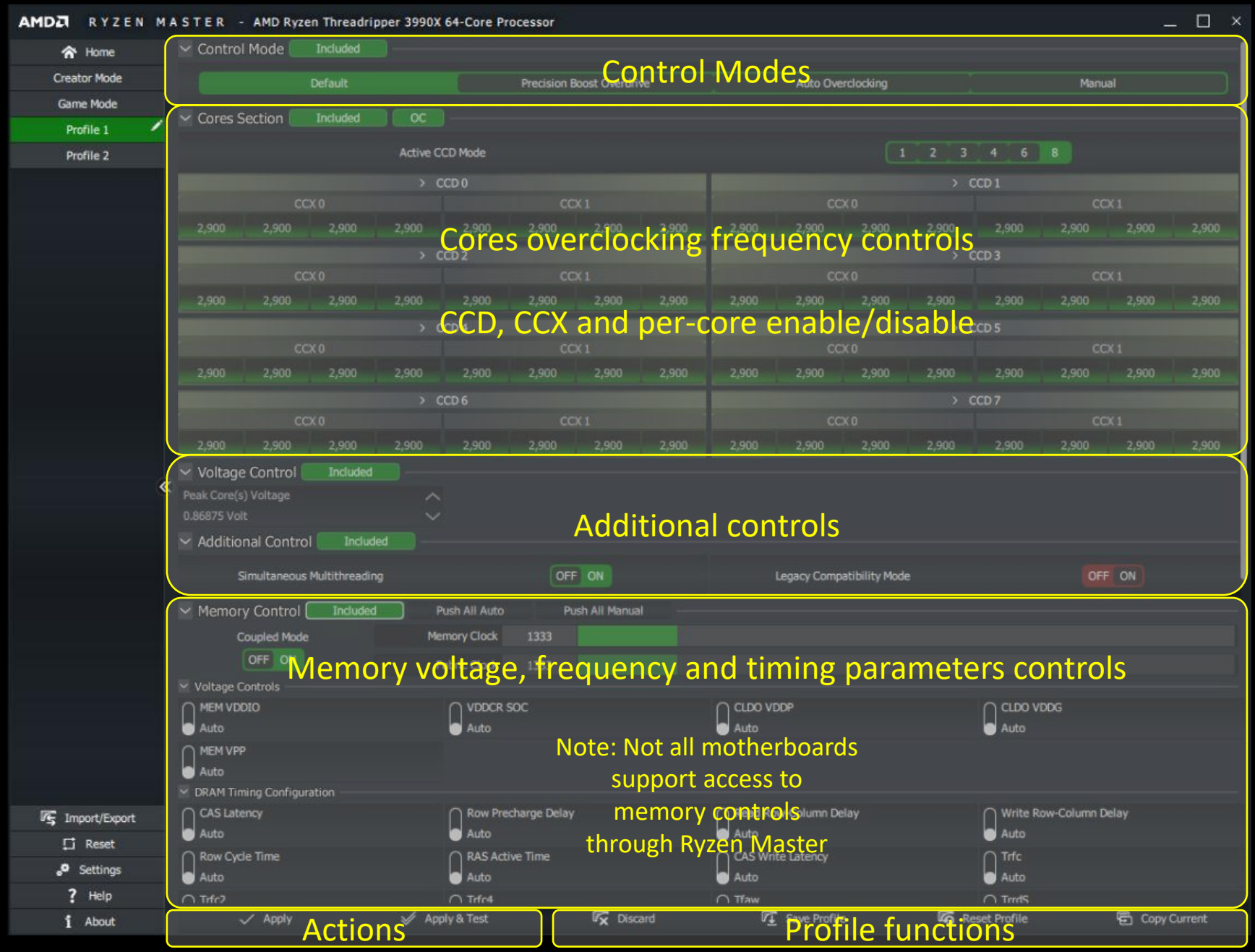
GETTING AROUND THE PROFILES INTERFACE

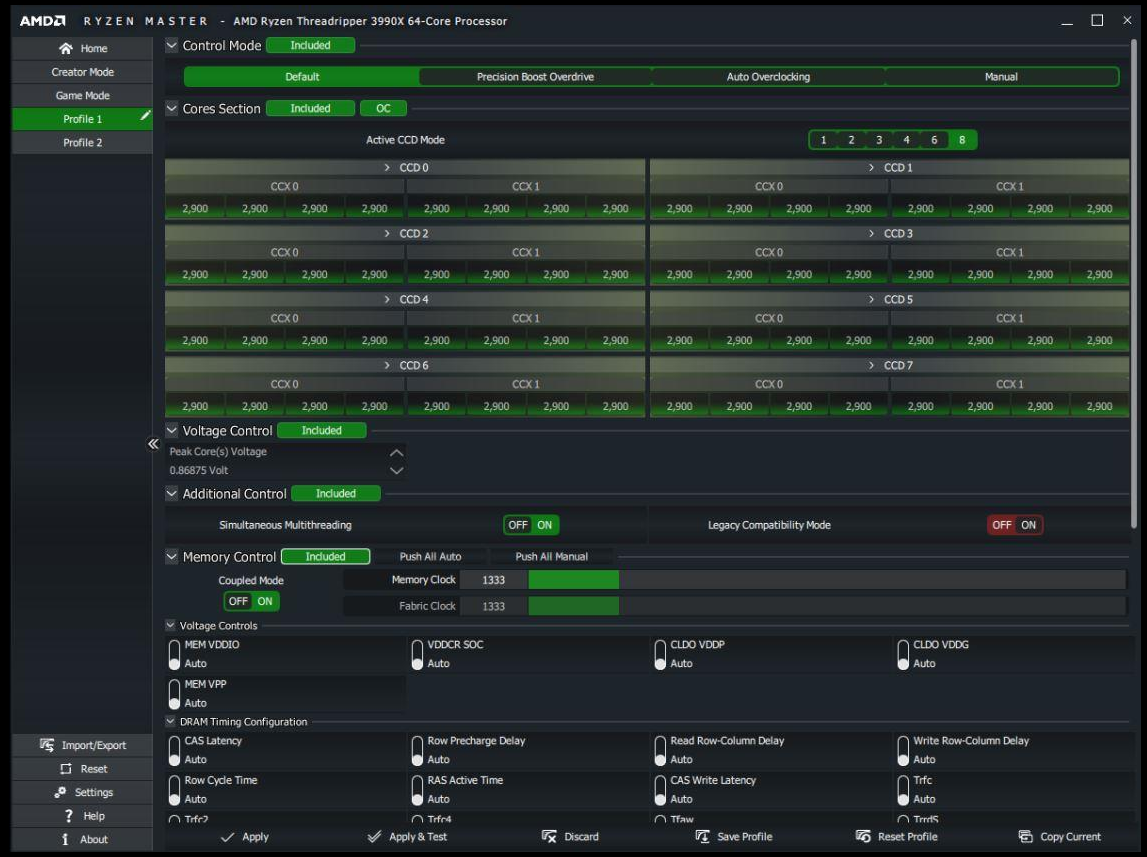
- Profiles are where the user creates groups of settings for performance optimization.
- Different profiles can be created for different applications.



[Public]

PROFILE USAGE DETAILS

- The “Included” buttons determine whether the control group is considered for changes when Applied
  - Selected (green): Apply group on Apply
  - De-selected (gray): Ignore group on Apply
  - This can be useful when you have multiple changes across groups but wish to apply them one group at a time to test for effect
- Changes to the following parameters require a system restart:
  - Auto Overclocking
  - Cores disabled or enabled, SMT, any Memory setting
- Ryzen Master presents the comprehensive memory over-clocking parameters
  - Support of memory overclocking from Ryzen Master depends on motherboard BIOS enablement
  - Parameters that are not active indicate the BIOS does not support them at the application level
  - The BIOS also controls how many memory training attempts are made with the overclocked settings before reverting to a default setting
- Influence of Windows Power Options/Power Plans
  - In High Performance mode, cores will run at the top, overclocked power-state speed they are set for
    This mode is key for the Copy Current function to capture the top speeds
  - In Balanced mode, cores will modulate between the top, overclocked speed and the lower-speed power states.
    Using Copy Current in this mode may result in sampling lower power-state speeds



- After selecting Manual Control Mode and setting the speed of all or some CPU cores
  - Always set or confirm the core voltage THEN Apply
  - A core voltage too low for the frequency requested will be instable
- For Ryzen APUs, the GFX Voltage is referenced to the SOC Voltage
  - The GFX Voltage can be raised above the SOC Voltage without reset
  - If the GFX Voltage is lowered below the SOC Voltage, the GFX Voltage will be automatically set to the SOC Voltage
  - If SOC Voltage is raised, a restart will then reset GFX Voltage to the new SOC Voltage

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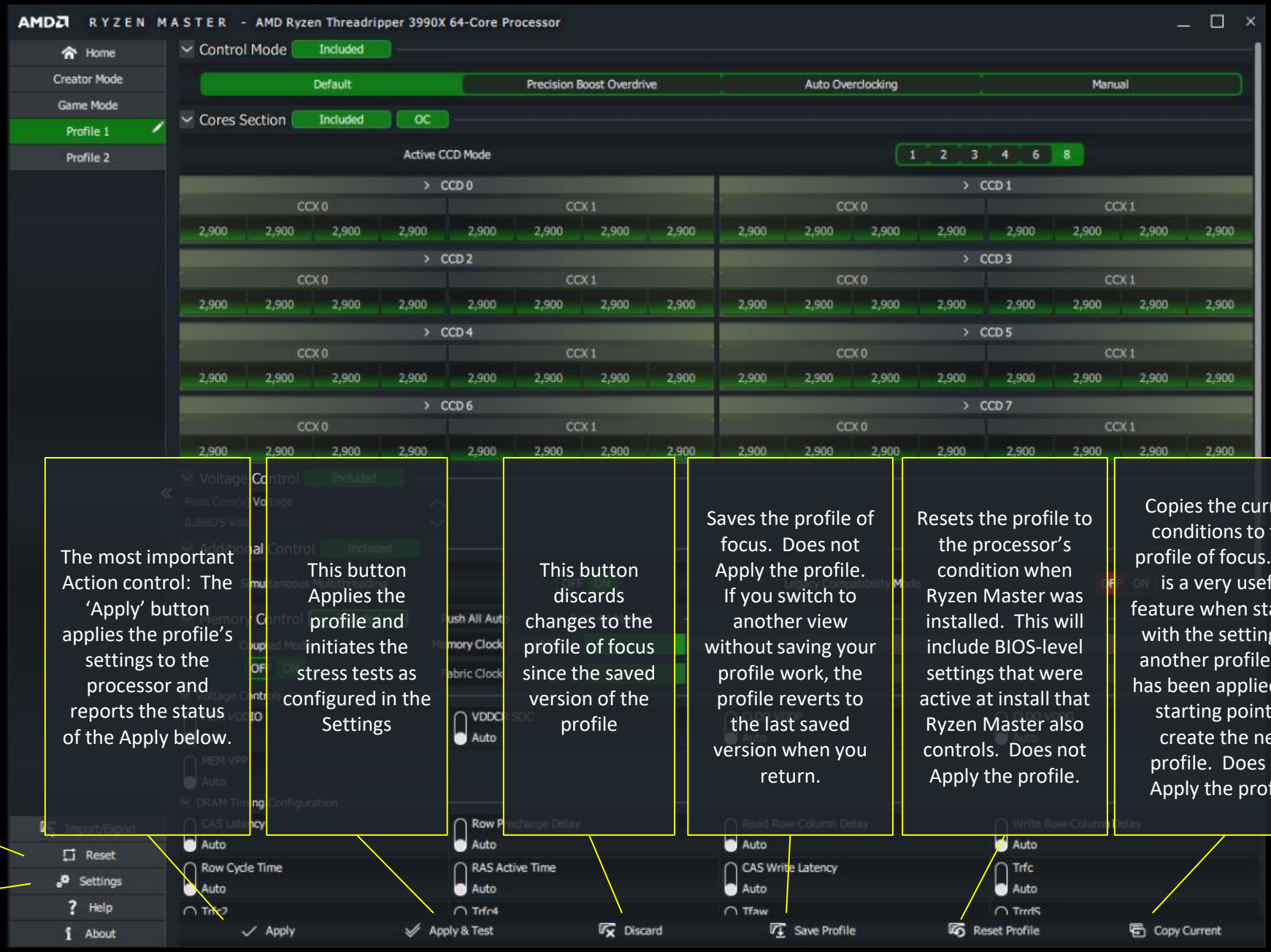
PROFILE ACTIONS

Four profiles provide user configurations to edit, save and apply now or later

- Profiles 1 & 2 are general purpose.
- Creator Mode enables all cores and stock processor configuration
- For processors with more than 8 cores, Game Mode reduces cores by half and constrains memory access such that some legacy games may perform better.
- All profiles can be renamed – just click the name and enter a new name



The most important Action control: The 'Apply' button applies the profile's settings to the processor and reports the status of the Apply below.

This button Applies the profile and initiates the stress tests as configured in the Settings

This button discards changes to the profile of focus since the saved version of the profile

Saves the profile of focus. Does not Apply the profile. If you switch to another view without saving your profile work, the profile reverts to the last saved version when you return.

Resets the profile to the processor's condition when Ryzen Master was installed. This will include BIOS-level settings that were active at install that Ryzen Master also controls. Does not Apply the profile.

Copies the current conditions to the profile of focus. This is a very useful feature when starting with the settings of another profile that has been applied as a starting point to create the new profile. Does not Apply the profile.

Resets the system to the default configuration

Opens the application Settings page

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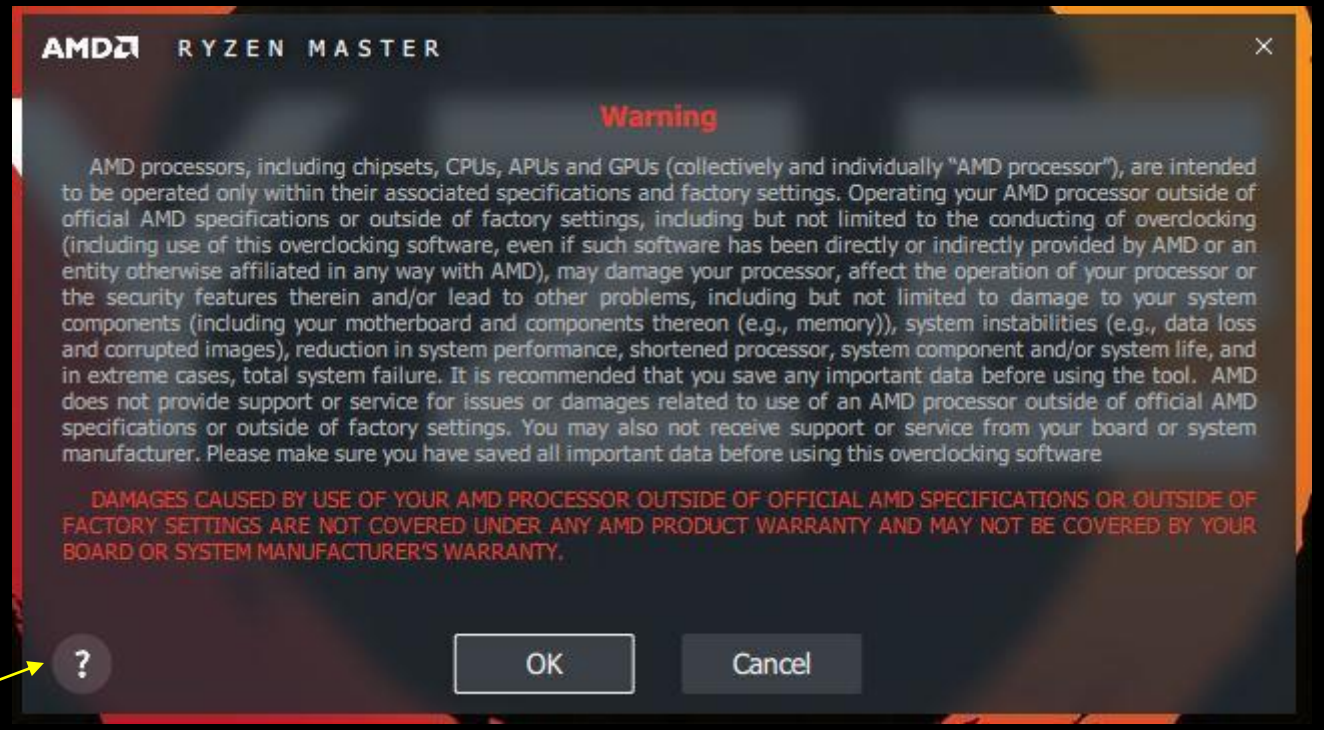
IN CASE OF INSTABILITY AFTER APPLY

- Ryzen Master can usually sense if an applied profile was not stable, such as if the display locks or the system crashes.
  - The user will be told that the last profile was unstable and will not be applied when Ryzen Master is opened.
- Some overclocking conditions can be marginally stable such that Ryzen Master can't tell and opens then loops trying to re-apply an unstable profile.
- If you get into such a loop, use the ? button on the opening warning page to stop Ryzen Master from applying the profile and break the loop.



[Public]

SETTINGS CONTROL BEHAVIOR OF FEATURES

Master toggle for Speed, Temperature and Histogram functions

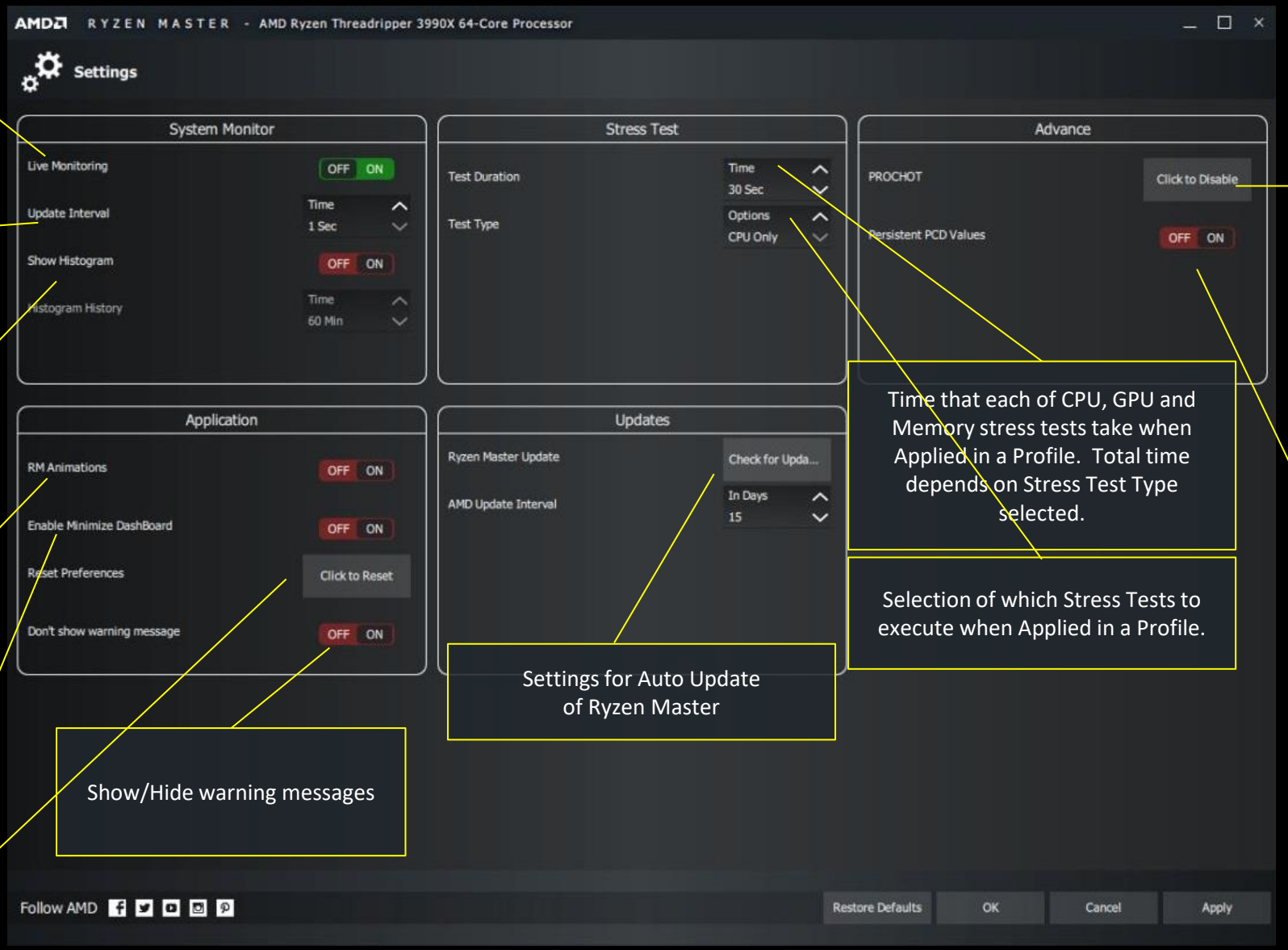
Update Interval sets the performance parameter sample rate

Toggle for displaying histogram on Current view. Enabling histogram display can present a small but noticeable load on the processor cores.

Ryzen Master normally consumes very little processor resource. Turning animations off can further reduce resource consumption by the Historgram.

The Minimize Dashboard feature is a realtime view of performance parameters from within a profile

Reset Dashboard and Minimized Dashboard to their default settings



FOR EXTREME AND EXPERT USE ONLY:
Disabling PROHOT causes the processor to ignore the temperature of the board's voltage regulators and assumes the user is monitoring and cooling the regulators separately, typically for extreme overclocking record-setting only.

Toggle to allow EDC/TDC/PPT settings to persist in system BIOS after a reboot.

Time that each of CPU, GPU and Memory stress tests take when Applied in a Profile. Total time depends on Stress Test Type selected.

Selection of which Stress Tests to execute when Applied in a Profile.

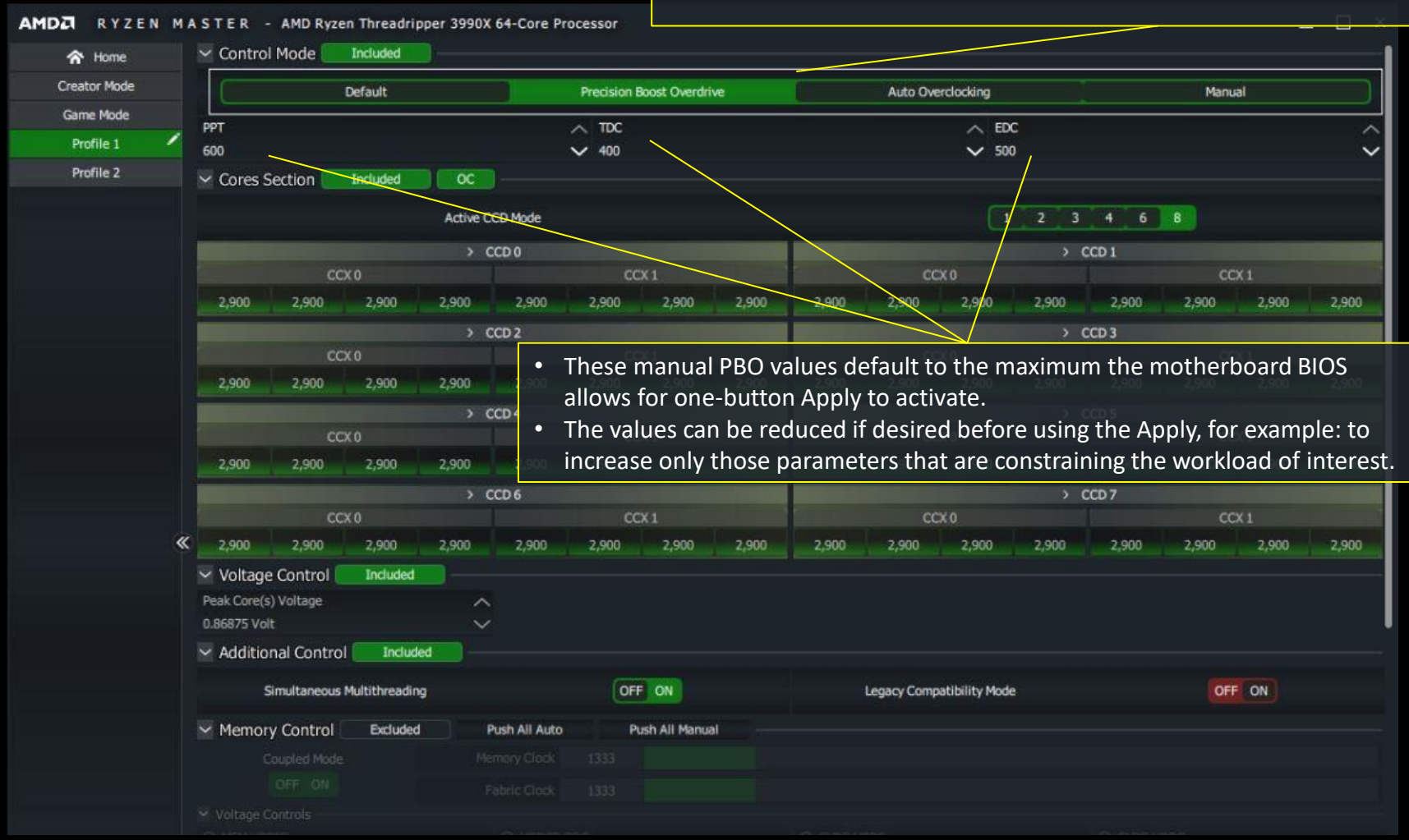
Settings for Auto Update of Ryzen Master

Show/Hide warning messages

[Public]

PRECISION BOOST OVERDRIVE (PBO)

- Precision Boost Overdrive allows the processor to automatically use the power design margin reported by the motherboard above warrantied CPU limits, potentially increasing maximum and average core speed.
- This feature works best with a premium overclocking motherboard, a premium cooler, and a cool ambient environment.
- With the AMD 5000-Series CPUs, the user can return to Default without a system restart if Persistent PCD Values is set of OFF. In ON, then a restart will be requested

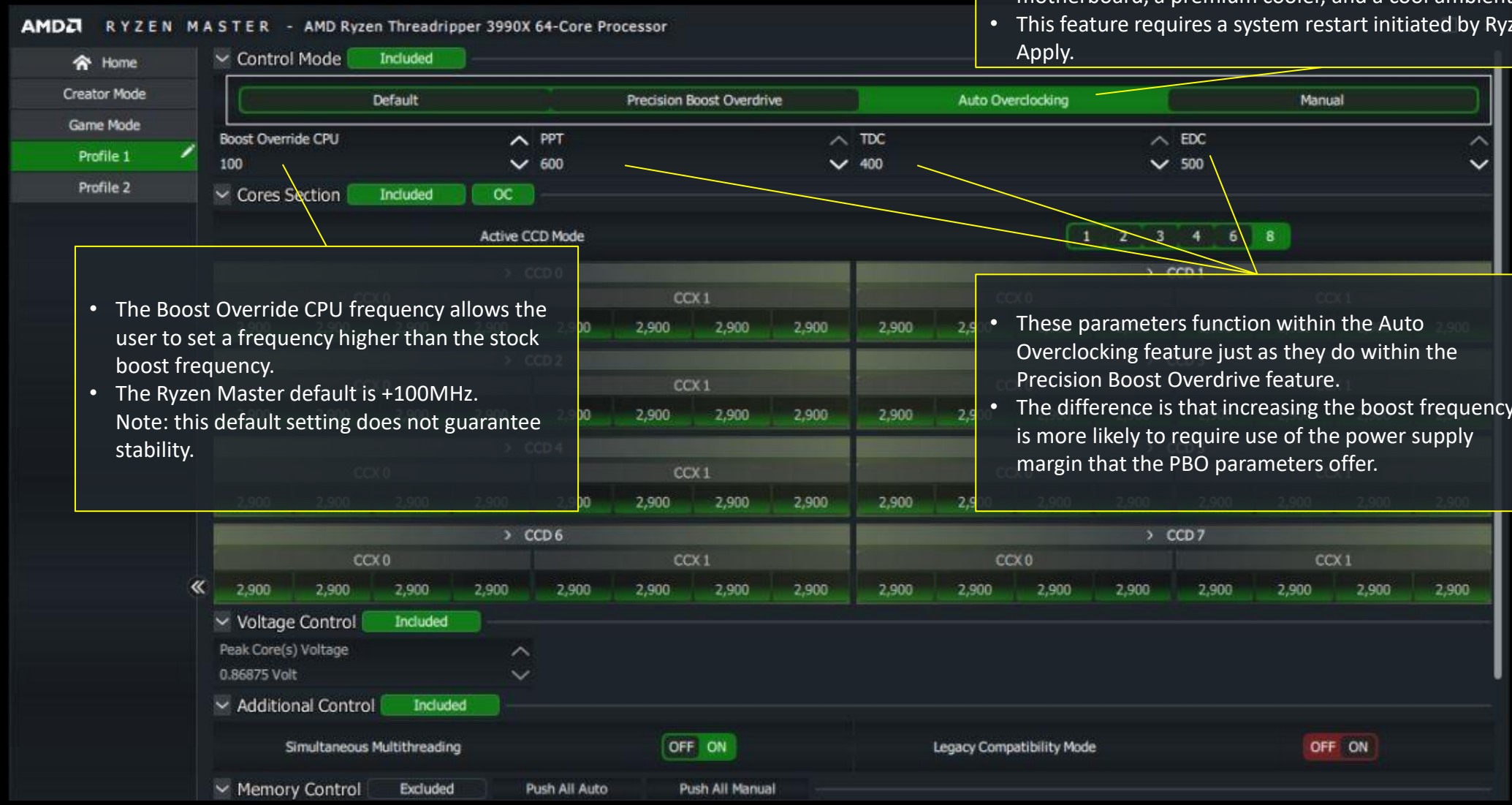


- These manual PBO values default to the maximum the motherboard BIOS allows for one-button Apply to activate.
- The values can be reduced if desired before using the Apply, for example: to increase only those parameters that are constraining the workload of interest.

[Public]

AUTO OVERCLOCKING (AOC) – WITH A 3000-SERIES CPU

- Auto Overclocking allows the processor to automatically manage to a boost frequency higher than the stock value while remaining under automatic control.
- This feature works best with a premium overclocking motherboard, a premium cooler, and a cool ambient environment.
- This feature requires a system restart initiated by Ryzen Master on Apply.



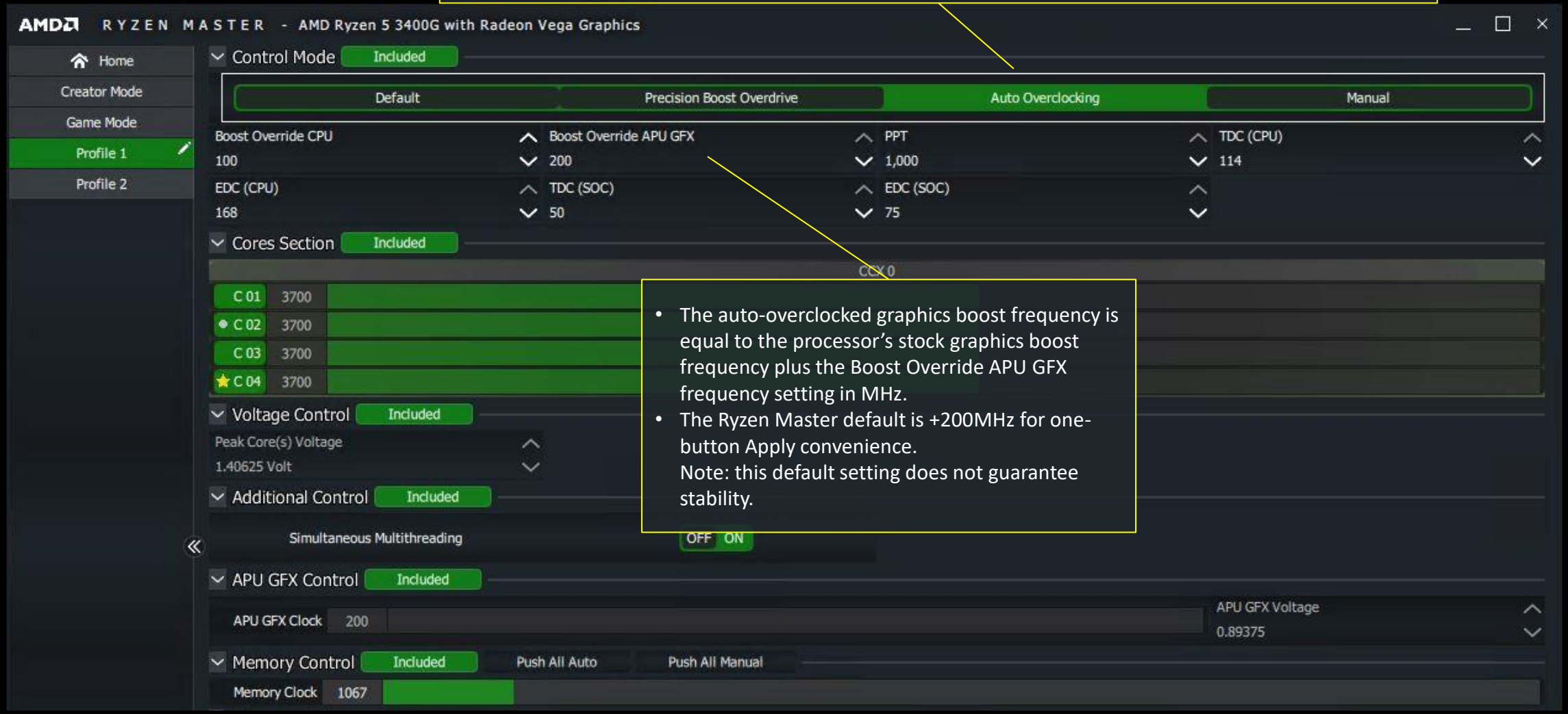
- The Boost Override CPU frequency allows the user to set a frequency higher than the stock boost frequency.
- The Ryzen Master default is +100MHz.
  Note: this default setting does not guarantee stability.

- These parameters function within the Auto Overclocking feature just as they do within the Precision Boost Overdrive feature.
- The difference is that increasing the boost frequency is more likely to require use of the power supply margin that the PBO parameters offer.

[Public]

AUTO OVERCLOCKING (AOC) – WITH A 3000-SERIES APU

- Auto Overclocking for 3000-Series APUs includes automatically managing to an increased APU GFX clock



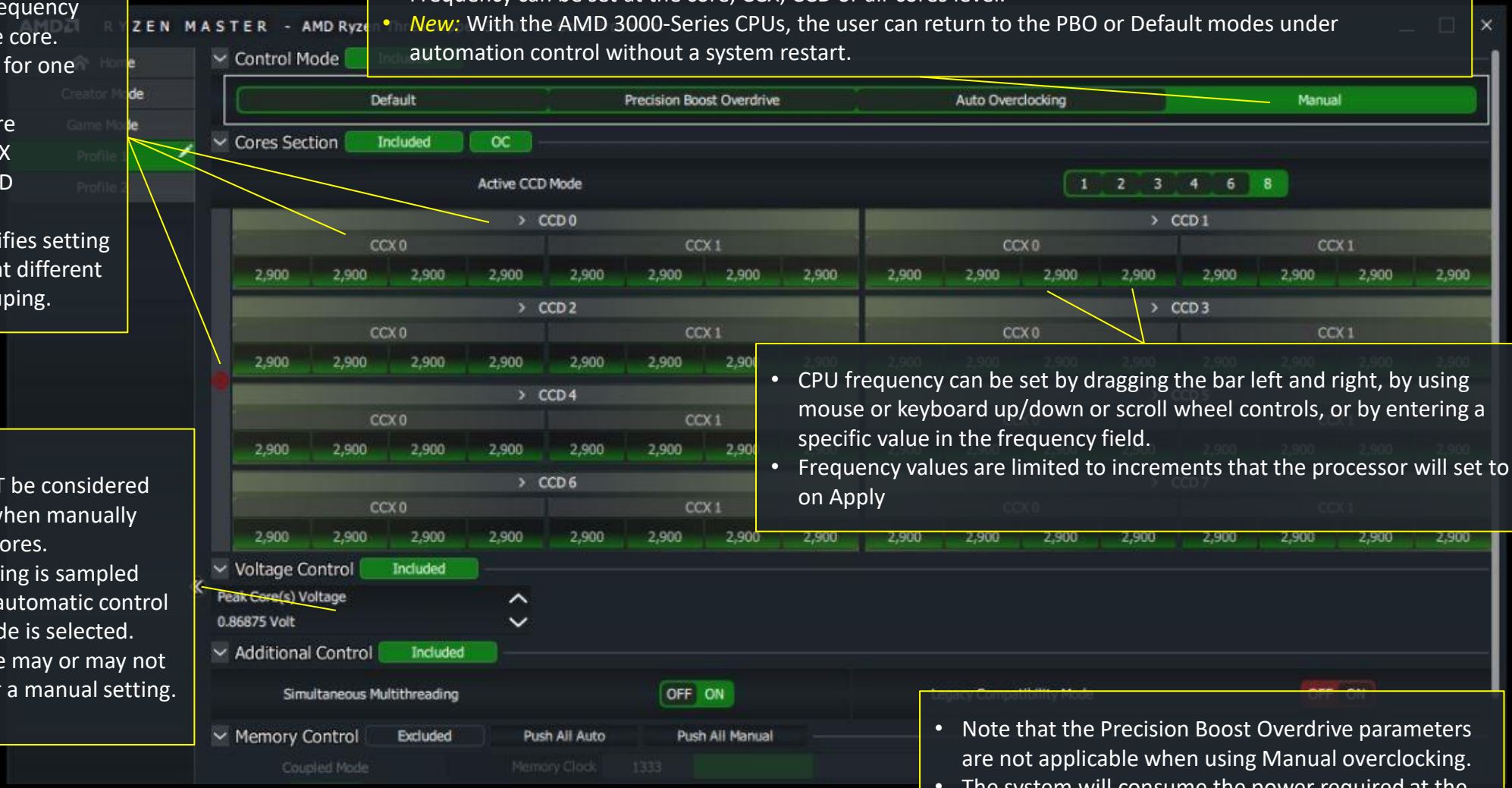
- The auto-overclocked graphics boost frequency is equal to the processor's stock graphics boost frequency plus the Boost Override APU GFX frequency setting in MHz.
- The Ryzen Master default is +200MHz for one-button Apply convenience.
  Note: this default setting does not guarantee stability.

[Public]

MANUAL OVERCLOCKING WITH A 3000-SERIES CPU

- Manual overclocking allows the user to experiment with higher clock speeds outside of the processor's automatic management.
- Frequency can be set at the core, CCX, CCD or all-cores level.
- *New:* With the AMD 3000-Series CPUs, the user can return to the PBO or Default modes under automation control without a system restart.

- These symbols control which cores react to a frequency setting on any one core.
- The frequency set for one core can apply
  - to only that core
  - to only that CCX
  - to only that CCD
  - to all cores
- This feature simplifies setting core frequencies at different levels of core grouping.



- CPU frequency can be set by dragging the bar left and right, by using mouse or keyboard up/down or scroll wheel controls, or by entering a specific value in the frequency field.
- Frequency values are limited to increments that the processor will set to on Apply

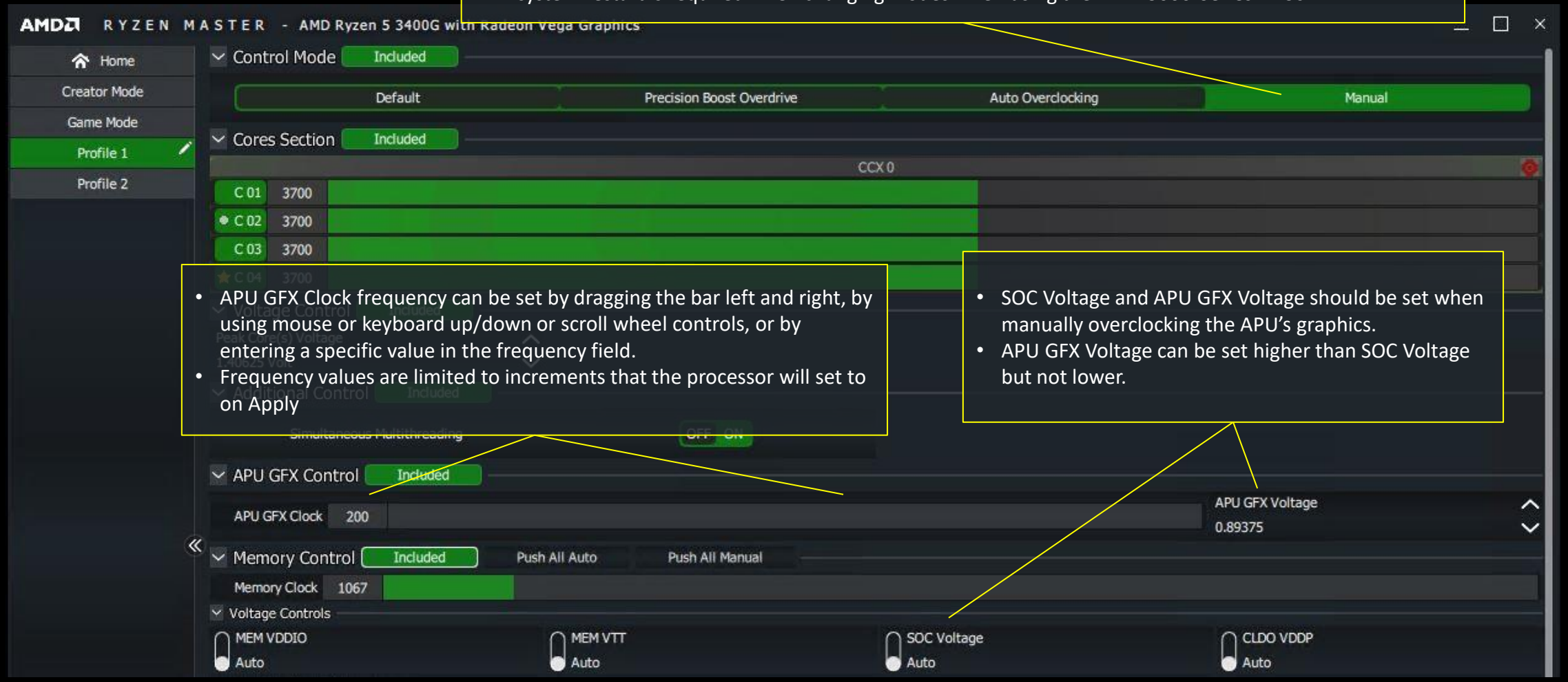
- CPU voltage MUST be considered and typically set when manually overclocking the cores.
- The displayed setting is sampled from the state of automatic control when Manual mode is selected. The sampled value may or may not be appropriate for a manual setting.

- Note that the Precision Boost Overdrive parameters are not applicable when using Manual overclocking.
- The system will consume the power required at the manual settings up to the point of instability.

[Public]

MANUAL OVERCLOCKING WITH A 3000-SERIES APU

- A system restart is required when changing modes when using the AMD 3000-Series APUs.



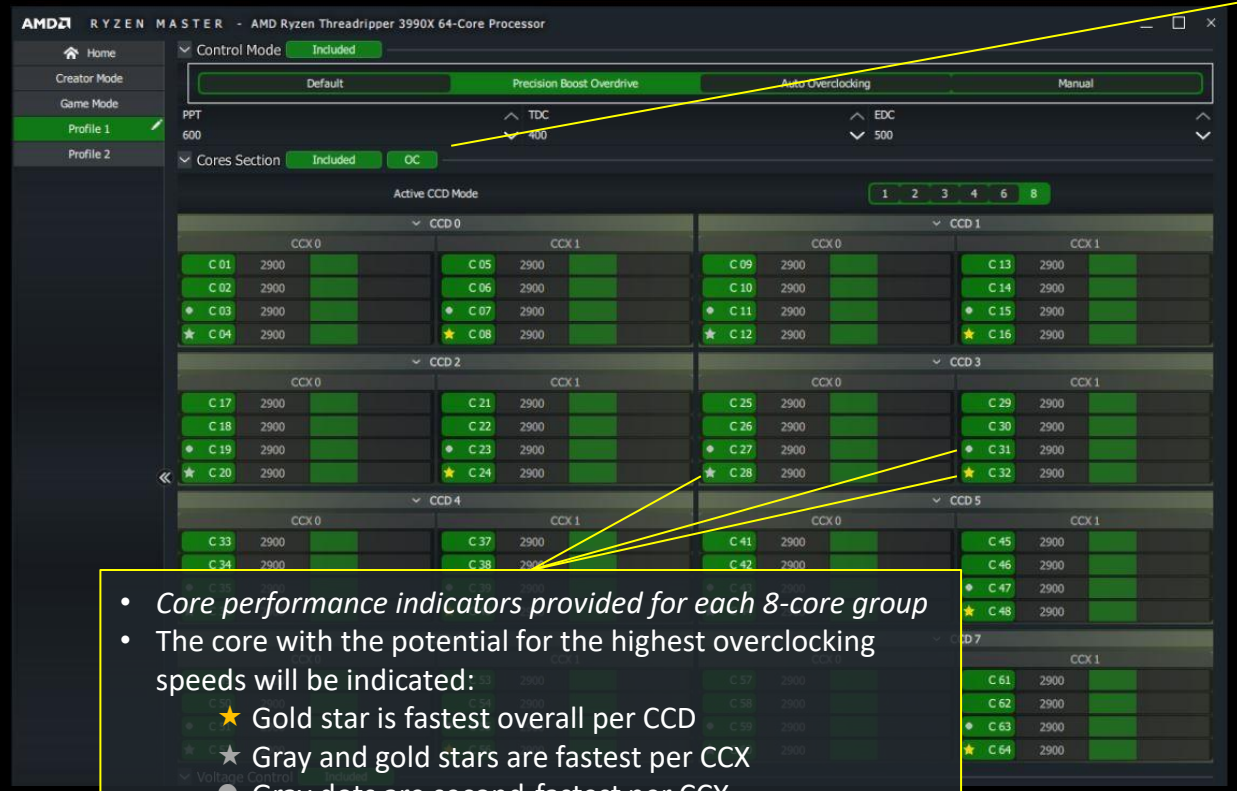
- APU GFX Clock frequency can be set by dragging the bar left and right, by using mouse or keyboard up/down or scroll wheel controls, or by entering a specific value in the frequency field.
- Frequency values are limited to increments that the processor will set to on Apply

- SOC Voltage and APU GFX Voltage should be set when manually overclocking the APU's graphics.
- APU GFX Voltage can be set higher than SOC Voltage but not lower.

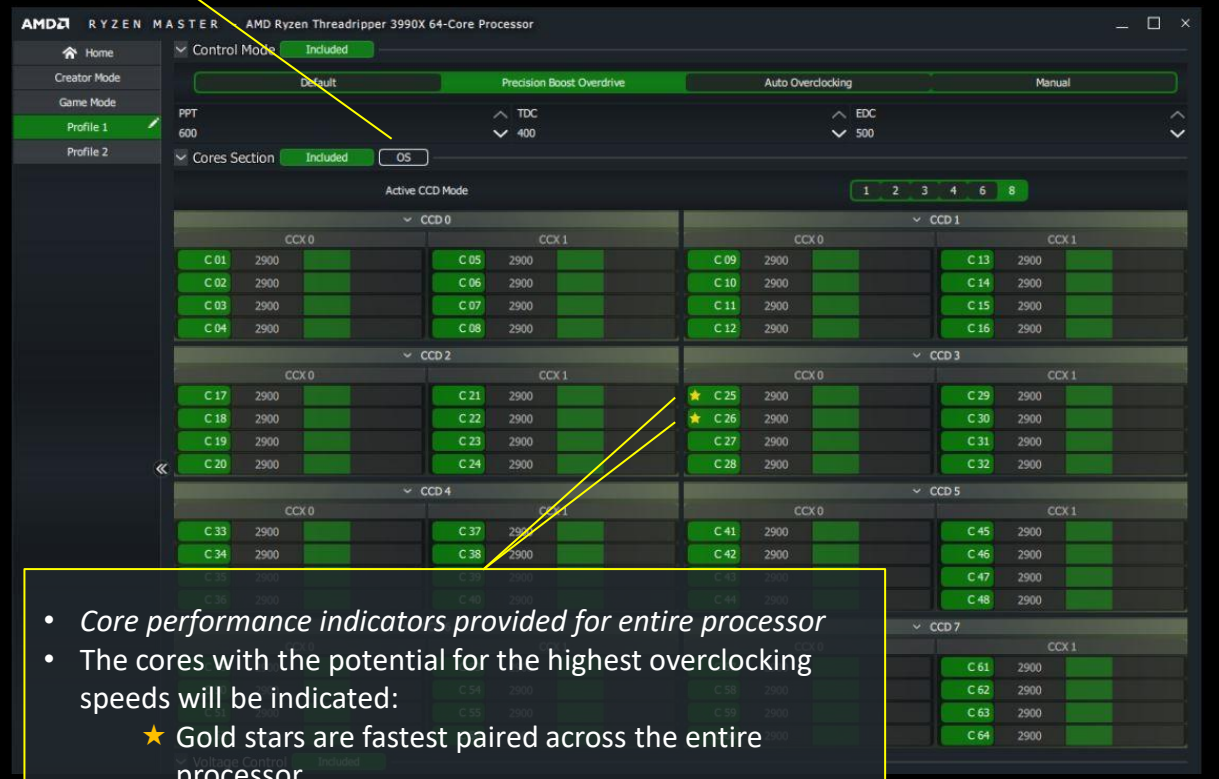
[Public]

CORE SPEED INDICATORS

- ***New:*** Toggle option added to switch between Ryzen Master method (OC) or Window Preferred Core method (OS).



- *Core performance indicators provided for each 8-core group*
- The core with the potential for the highest overclocking speeds will be indicated:
  - ★ Gold star is fastest overall per CCD
  - ★ Gray and gold stars are fastest per CCX
  - ● Gray dots are second-fastest per CCX



- *Core performance indicators provided for entire processor*
- The cores with the potential for the highest overclocking speeds will be indicated:
  - ★ Gold stars are fastest paired across the entire processor

- Cores with the least overclocking margin can be disabled to potentially increase core speeds from the remaining active cores
- Be careful – many multi-threaded applications run best on a full CCX
- Consider disabling the slower CCX instead of cores from each CCD
  - Disabling entire CCX is only supported on 2000 Series CPU and 2000 Series Threadripper CPU

[Public]

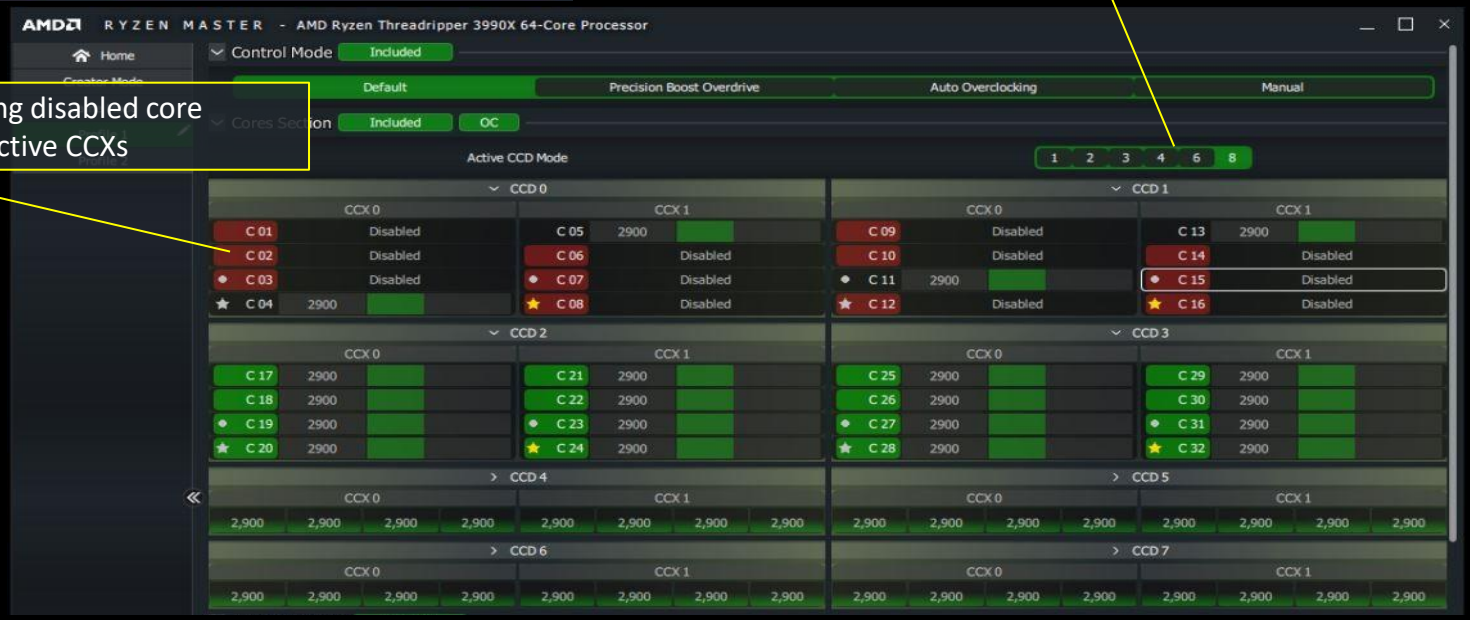
DISABLING CORES AND CCXS(1)

- Cores must be disabled with symmetry across active CCXs
- A disabled CCX or CCD is not considered in the symmetry requirement.

- Cores can be disabled under any Control Mode

- For AMD 3000-Series processors with more than on CCD (more than 8 cores), such as the Ryzen 9 3900X, the Active CCD Mode can be used to disable entire CCDs to focus power and cooling on specific cores of interest.

- An entire CCX can be disabled, requiring disabled core symmetry only across the remaining active CCXs

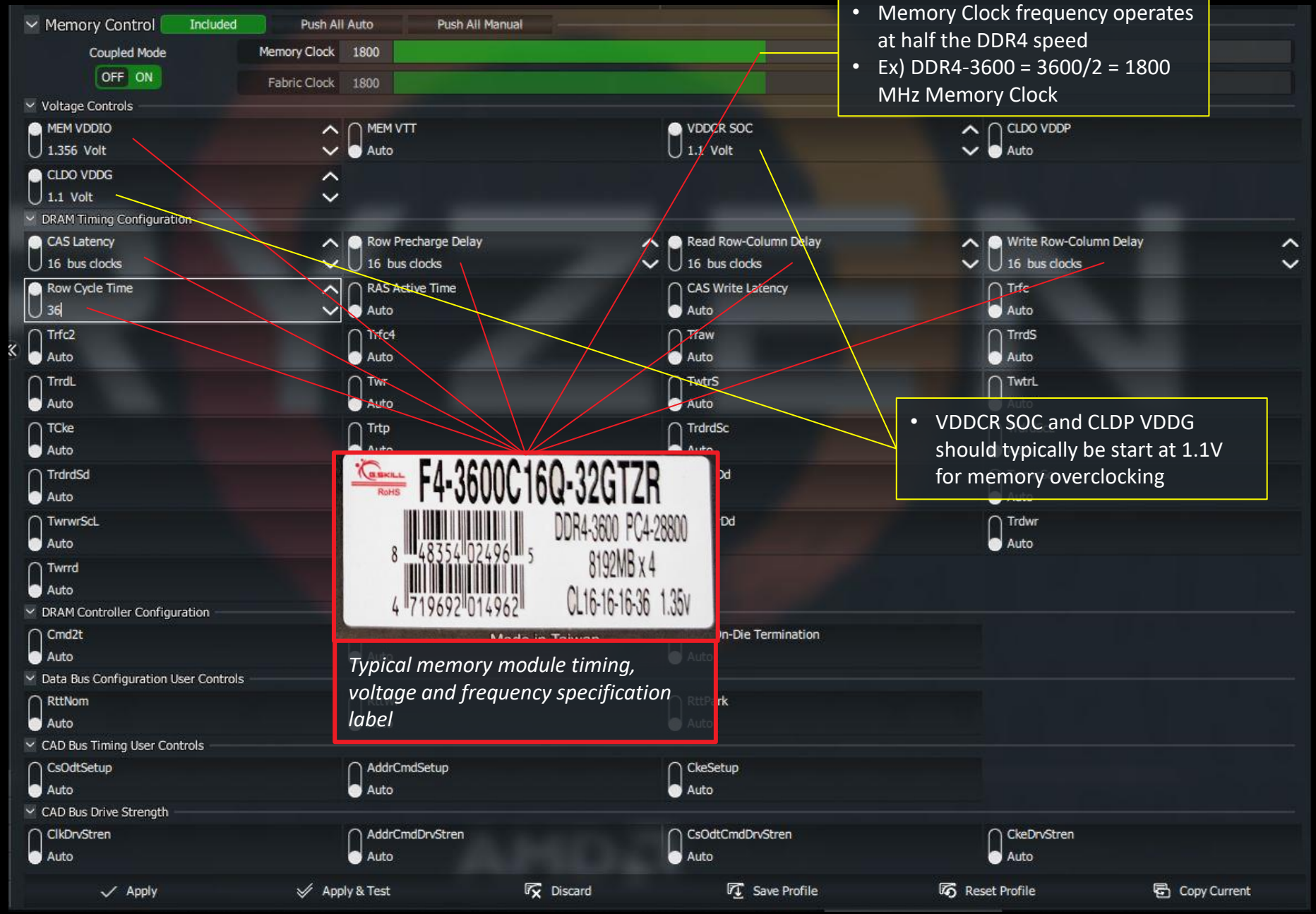


1) Only supported on Ryzen and Ryzen Threadripper 2000 Series CPU products.

[Public]

MEMORY OVERCLOCKING CONTROL

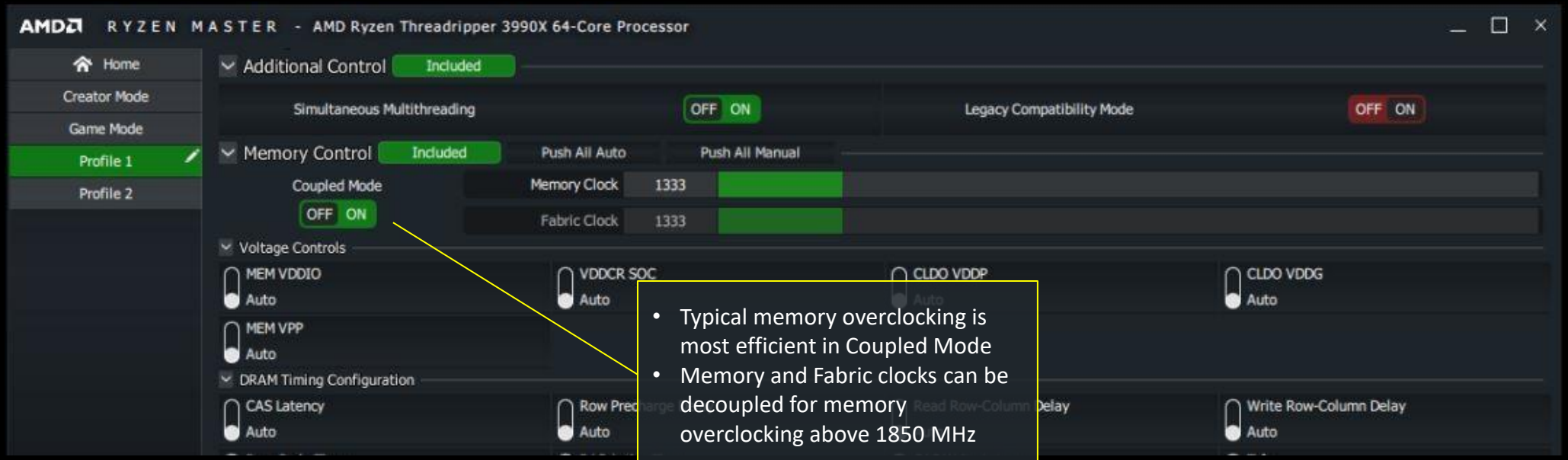
- New for 3000-Series processors
- Extensive memory parameter settings for enthusiast use – typically all BIOS memory parameters are now available in Ryzen Master
- Simple memory overclocking remains – just enter the module's label parameters, use 'Auto' settings for the rest



[Public]

RYZEN 3000-SERIES CPUS – MEMORY AND FABRIC OVERCLOCKING

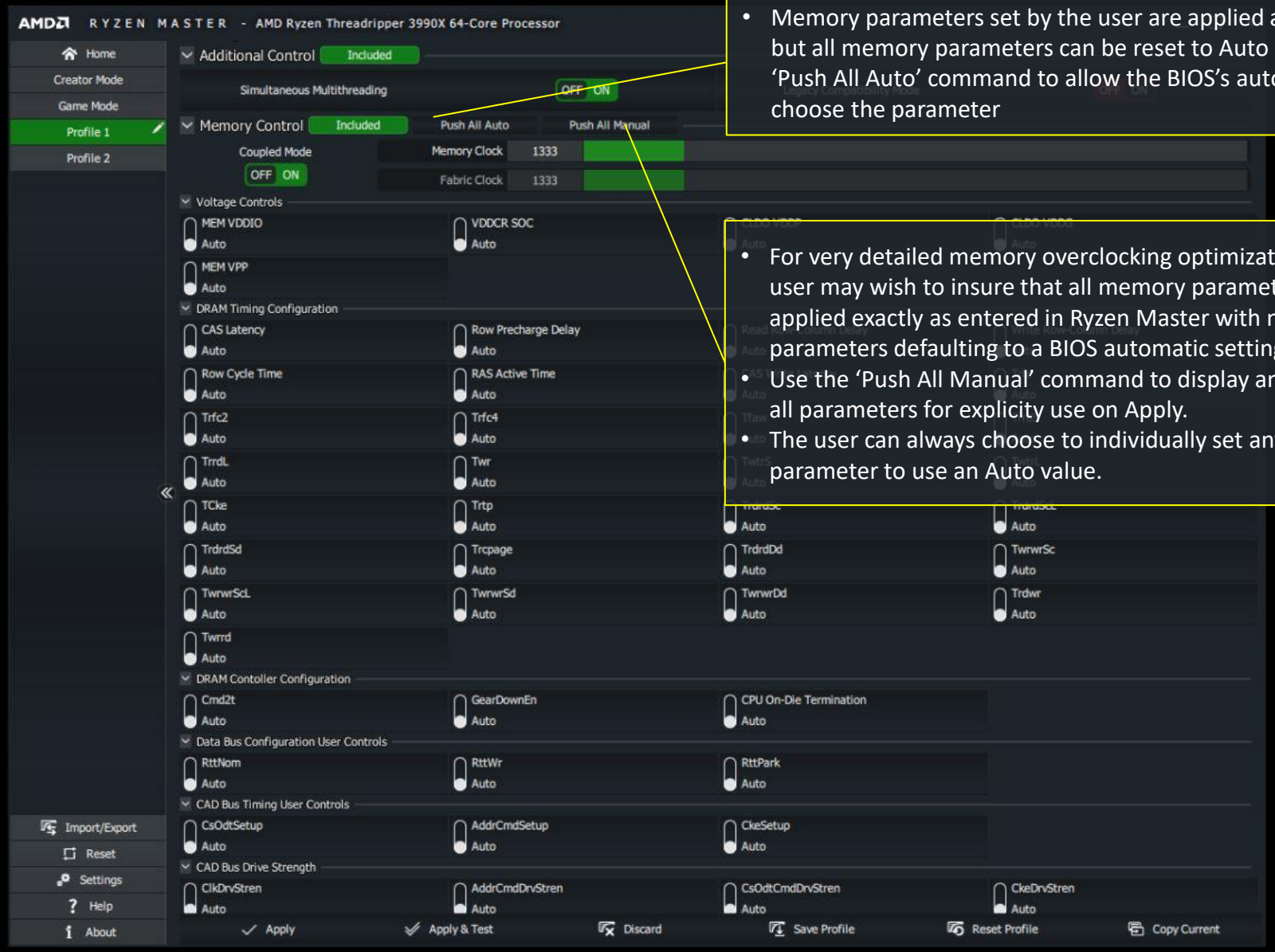
- Ryzen 3000-Series CPU's Zen2 architecture allows for independent overclocking of the Infinity Fabric and the Memory clock
  - Typical memory overclocking performance up to 1866 MHz is most efficient with the fabric and memory clocks coupled at 1:1 ratio
  - Above a memory clock of 1866 MHz, turning Coupled Mode off and setting Fabric Clock to half the Memory Clock will likely be necessary for further memory timing parameter optimization toward system stability*



* Memory overclocking not supported by AMD product warranty

[Public]

MANAGING MEMORY PARAMETER APPLICATION IN PROFILES

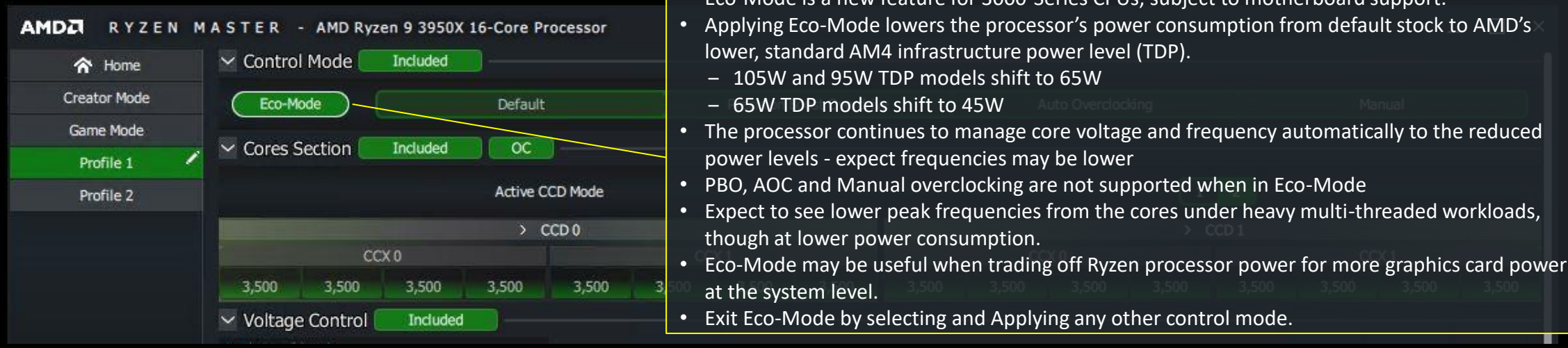


- Memory parameters set by the user are applied as entered, but all memory parameters can be reset to Auto by the 'Push All Auto' command to allow the BIOS's automation to choose the parameter

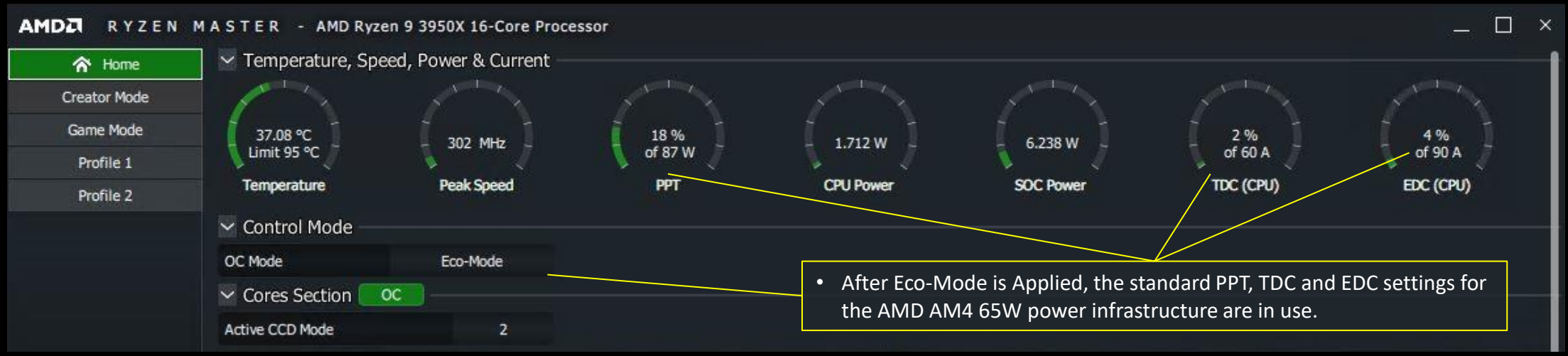
- For very detailed memory overclocking optimization, the user may wish to insure that all memory parameters are applied exactly as entered in Ryzen Master with no parameters defaulting to a BIOS automatic setting.
- Use the 'Push All Manual' command to display and prepare all parameters for explicity use on Apply.
- The user can always choose to individually set any parameter to use an Auto value.

[Public]

ECO-MODE – LOWER-POWER OPERATION FOR 3000-SERIES CPUS



- Eco-Mode is a new feature for 3000-Series CPUs, subject to motherboard support.
- Applying Eco-Mode lowers the processor's power consumption from default stock to AMD's lower, standard AM4 infrastructure power level (TDP).
  - 105W and 95W TDP models shift to 65W
  - 65W TDP models shift to 45W
- The processor continues to manage core voltage and frequency automatically to the reduced power levels - expect frequencies may be lower
- PBO, AOC and Manual overclocking are not supported when in Eco-Mode
- Expect to see lower peak frequencies from the cores under heavy multi-threaded workloads, though at lower power consumption.
- Eco-Mode may be useful when trading off Ryzen processor power for more graphics card power at the system level.
- Exit Eco-Mode by selecting and Applying any other control mode.

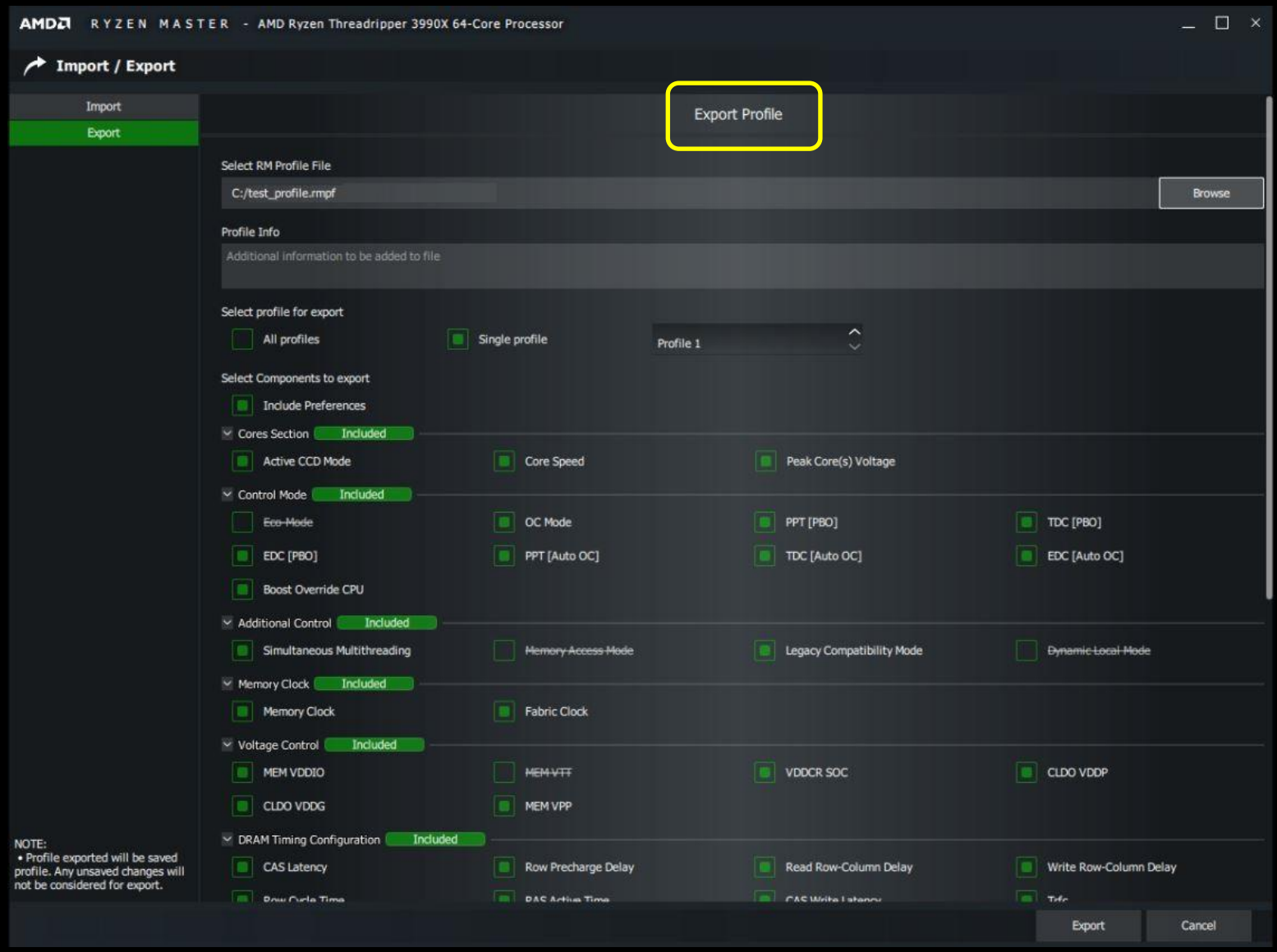


- After Eco-Mode is Applied, the standard PPT, TDC and EDC settings for the AMD AM4 65W power infrastructure are in use.

[Public]

PROFILE EXPORT

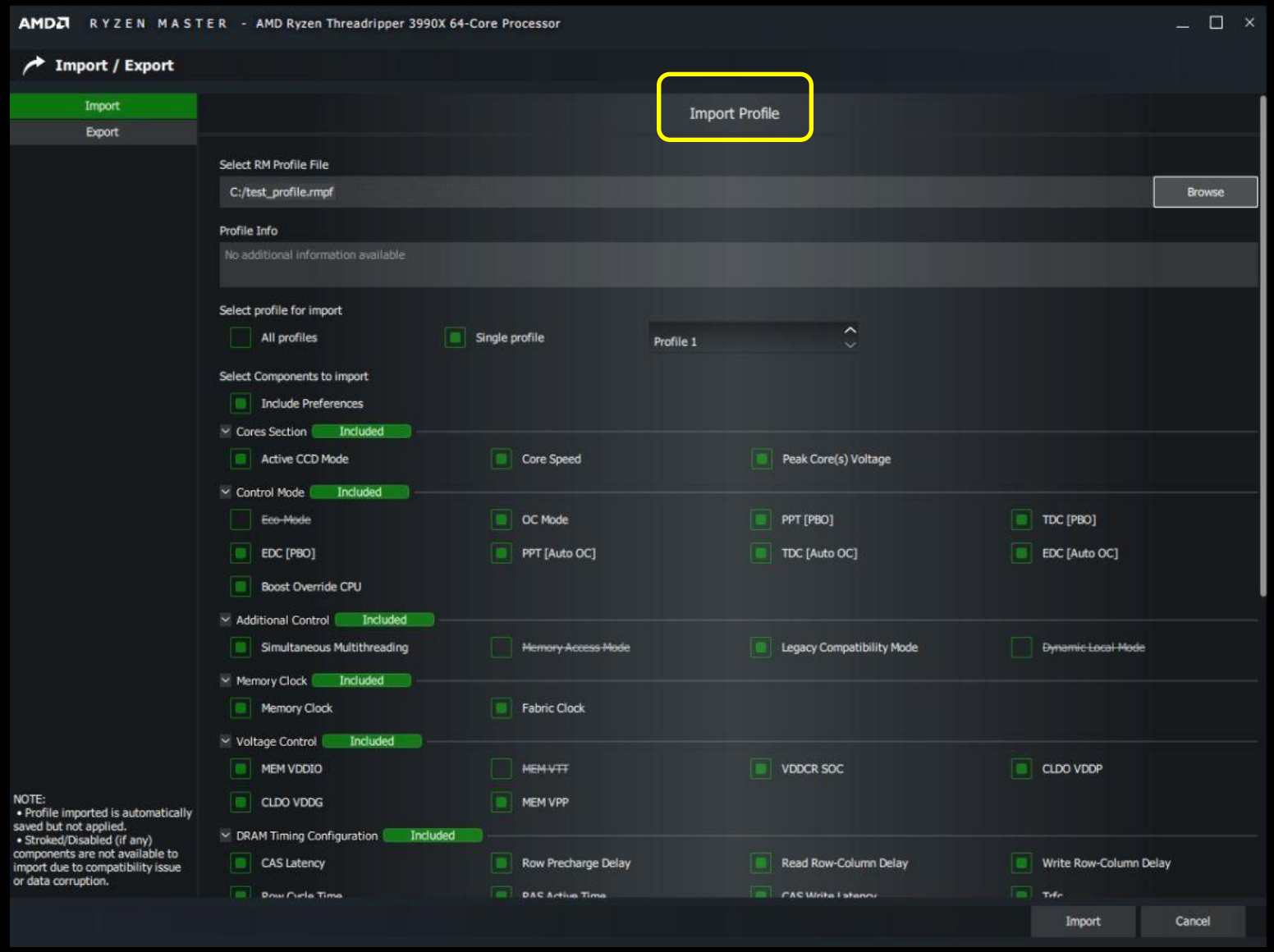
- User's may wish to save profiles to load later or share
- Each profile tab offers export of
  - All profiles or specific profiles
  - All parameters or user-selected parameters
  - With a field for describing the profiles
- Use the Export button to complete the profile export
- The exported file is encrypted to discourage tampering



[Public]

PROFILE IMPORT

- A profile file can be loaded for the user to Apply
- After selecting the profile file to load, the user can select which parameters to load
- Use the Import button to load the profile's parameters and insert them into the current profile
- The user select the profile's tab and 'Apply' for the imported profile to take effect



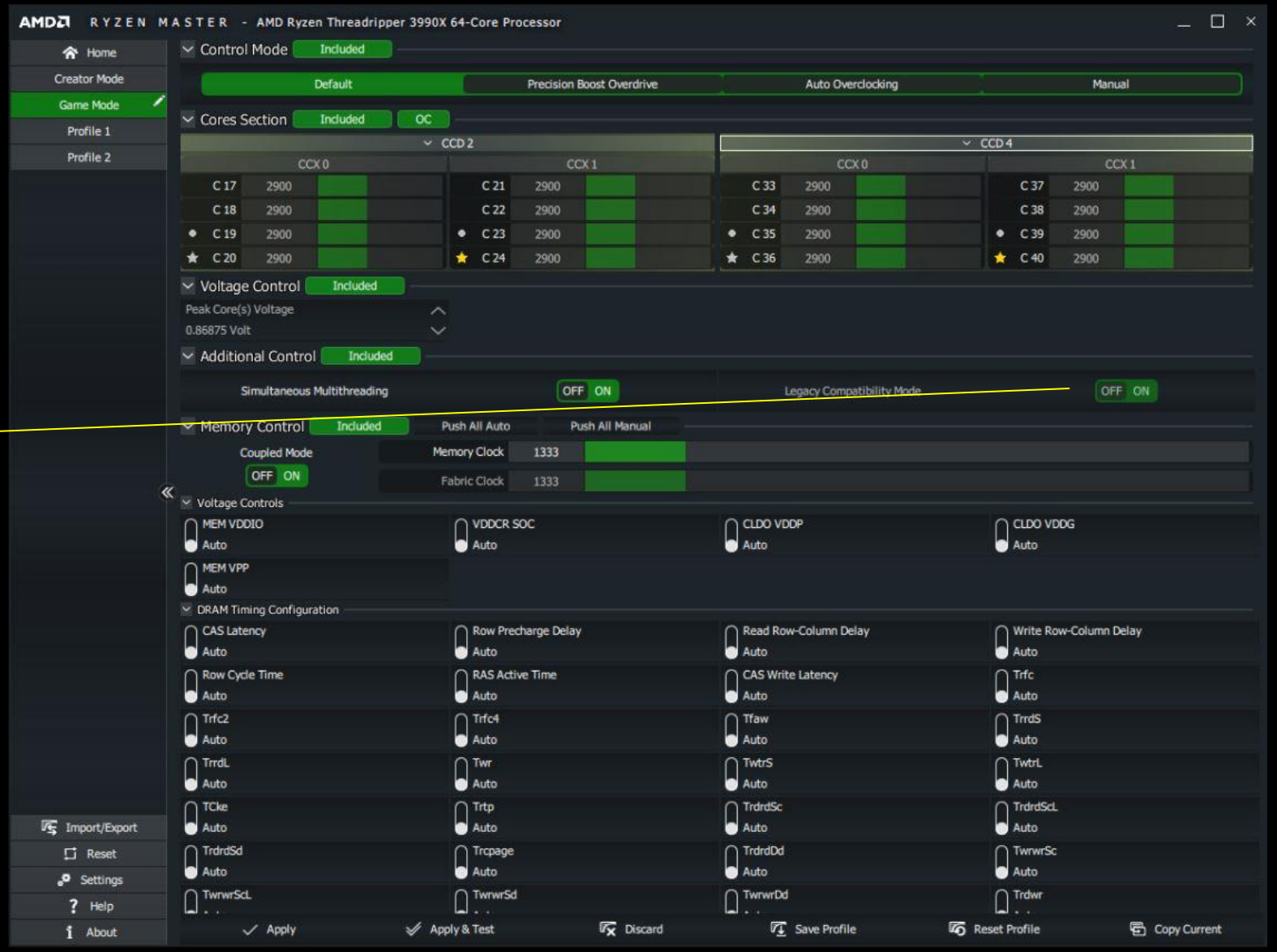
[Public]

PRE-DEFINED PROFILES

[Public]

GAME MODE PROFILE – FOR RYZEN PROCESSORS > 8 CORES

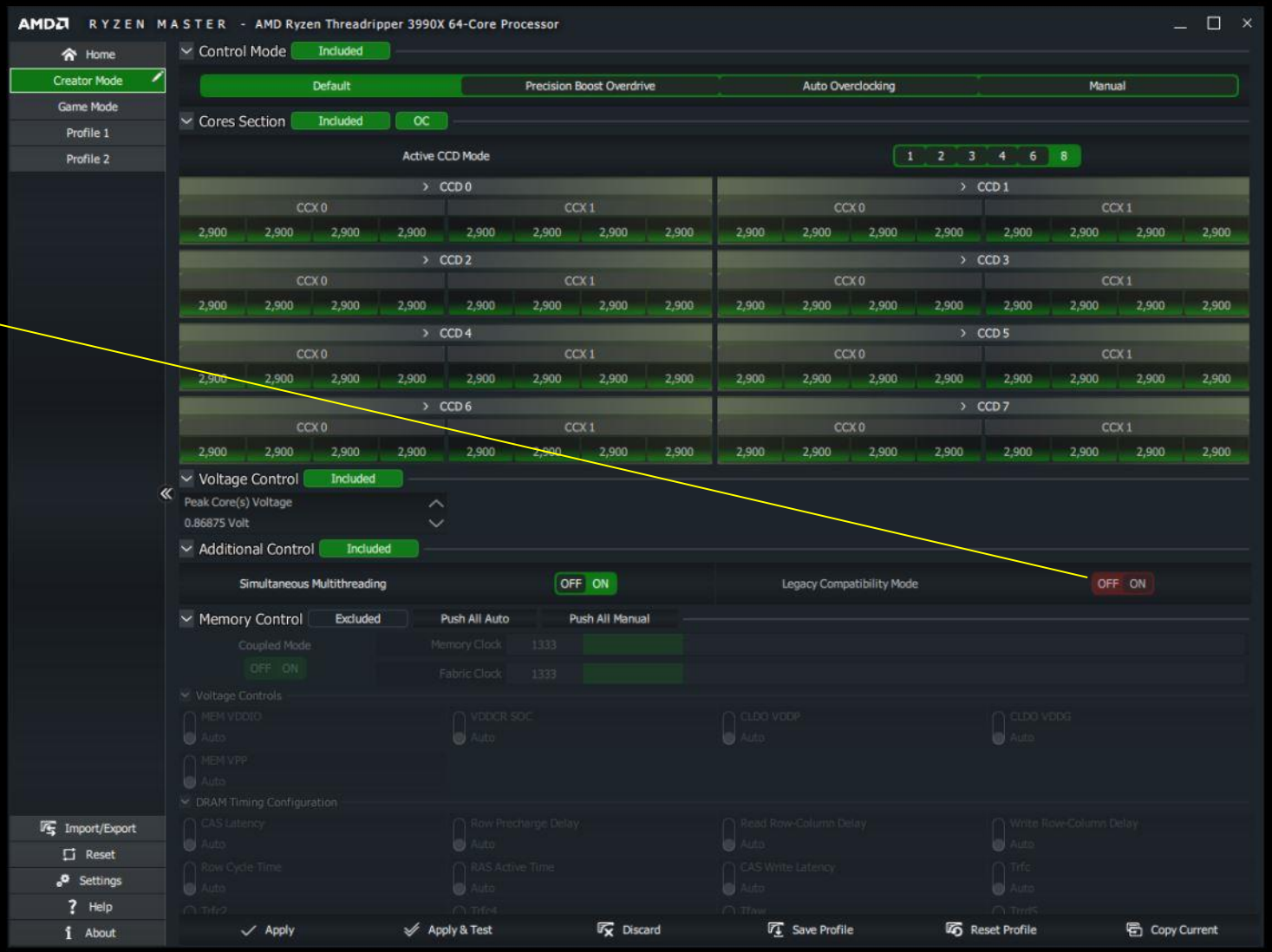
- The Game Mode profile is only useful if a legacy game will not run with a processor of more than 8 cores supporting SMT (16 logical processors)
- Try all applications first before using Game Mode
- The Game Mode profile is a preconfigured setting that enables Legacy Compatibility Mode for processors with more than 8 cores (such as the Ryzen 9 3900X)
- Applying the profile reduces the active cores count
- All other controls can be used as with any profile
- For example, the user may choose to be more aggressive with core and memory overclocking set in Game Mode for a legacy game



[Public]

CREATOR MODE PROFILE – FOR ANY RYZEN PROCESSOR

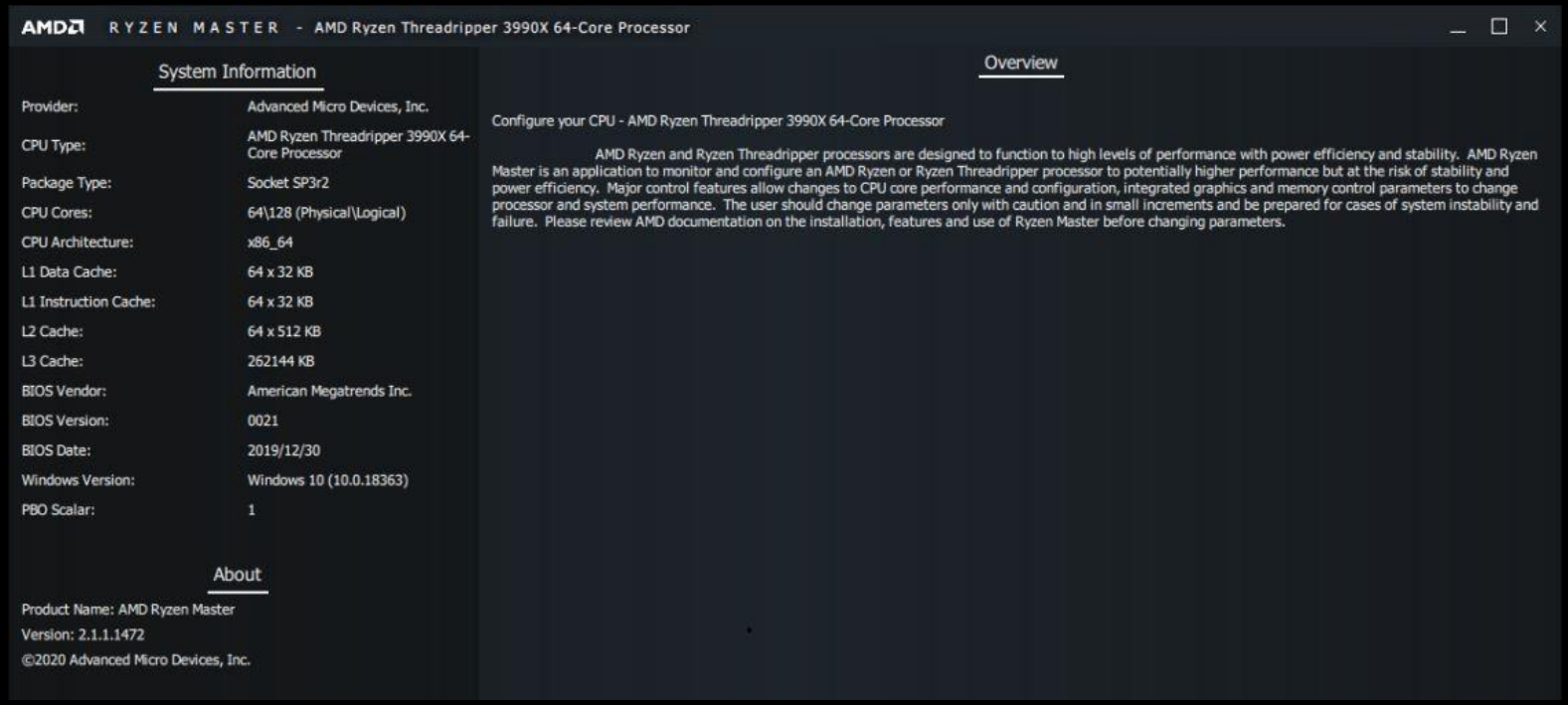
- The Creator Mode profile is simply a pre-defined profile with all processor resources enabled
  - Legacy Compatibility Mode is hard-wired off
- All other controls can be used as with any profile
- For example, the user may choose to be less aggressive with core and memory overclocking when using content creation applications and multi-tasking in favor of system stability



[Public]

ABOUT

- The Ryzen Master About tab is a convenient place for system and software information
  - CPU model and core resources
  - Motherboard BIOS version
  - Windows version
  - Ryzen Master version and build number
- A snapshot of this About information is helpful to AMD if you need to report an issue



[Public]