



Clock Tuner for Ryzen™ Roadmap

CTR 2.0

Release: End of January
Early access: December 28 *

- Support for Ryzen 5000 Series (X processors)
- Support for Ryzen Renoir (AM4)
- Updated Tuning and Diagnostic modes
- New Monitoring (No longer needs Ryzen Master)
- Phoenix feature (Restores the operation after reboot or BSOD)
- CTR HYBRID OC (Utilizes both, manual OC and PBO simultaneously)
- Initial Frequency Smart Offset 2.0
- Improvements in software performance and safety. Improved profile management

CTR 2.1

Release: End of 1Q

- Auto Curve Optimizer (Zen 3)
- Measurement mode
- CTR HYBRID OC 2.0 (Zen 3)
- Additional optimization for Ryzen 5000 Series

CTR 2.2

Release: 3Q

- Support for Threadripper Genesis
- Support for Ryzen APU Cezanne



Clock Tuner for Ryzen™ 2.0 – new GUI

CTR 2.0 follows modern trends and gets support for a special dark theme, which in particular will be convenient for people who have problems with color blindness.

CTR 2.0 beta 1
Optimization for ZEN2+ CPUs

- HOME PAGE
- TUNER
- BENCHMARK
- ABOUT & HELP
- SCREENSHOT
- DONATE
- MINIMIZE
- EXIT

CCX1	28.7°	CCX2	28.7°	CCX3	31.8°	CCX4	29.8°	CCX5	34.2°	CCX6	35°	CCX7	30.2°	CCX8	30.3°								
C01	455	145	C04	471	134	C07	624	123	C10	1043	120	C13	1321	120	C16	544	171	C19	462	167	C22	673	156
C02	51	142	C05	632	131	C08	1617	120	C11	994	120	C14	981	120	C17	907	174	C20	489	163	C23	486	152
C03	444	138	C06	542	127	C09	1302	120	C12	1028	120	C15	940	120	C18	1661	174	C21	627	160	C24	489	149
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CPU usage (%)	1.7	CPU TEL (V)	1.385	CPU VID (V)	1.39	CPU TEL (A)	23.9	CPU TDC (A)	19.6	CPU TEL (W)	33.7	CPU PPT (W)	87.6	CPU EDC (A)	269.8
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Settings mode: **Advanced** RESET SETTINGS

Testing mode	AVX Light	Reference voltage (mV)	1225	Max PPT (W)	340	CPU usage trigger (%)	70
Cycle time (s)	360	Reference frequency (MHz)	4075	Max EDC (A)	360	CCX usage max (%)	70
CCX delta (MHz)	75	Max frequency (MHz)	4675	Max TDC (A)	250	CCX usage min (%)	30
Polling period (ms)	500	Diagnostic voltage (mV)	1181	Max temperature (°C)	88	Holding time (ms)	4000

IFSO 1.0 / IFSO 2.0 Enhance accuracy CB20 testing CTR HYBRID OC
Autoload profile with OS To tray Autoshare stats

DIAGNOSTIC **TUNE** **STOP** **CHECK STABILITY** **PROFILE MANAGEMENT**

Log & System Information

AMD Ryzen Threadripper 3960X 24-Core Processor
ASUS ROG ZENITH II EXTREME

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***ClockTuner for Ryzen 2.0 beta 1 by 1usmus***  
AMD Ryzen Threadripper 3960X 24-Core Processor  
ASUS ROG ZENITH II EXTREME  
BIOS ver. 1303 SMU ver. 36.23.00  
DRAM speed 3200 MHz  
12/23/2020 16:01:56
```

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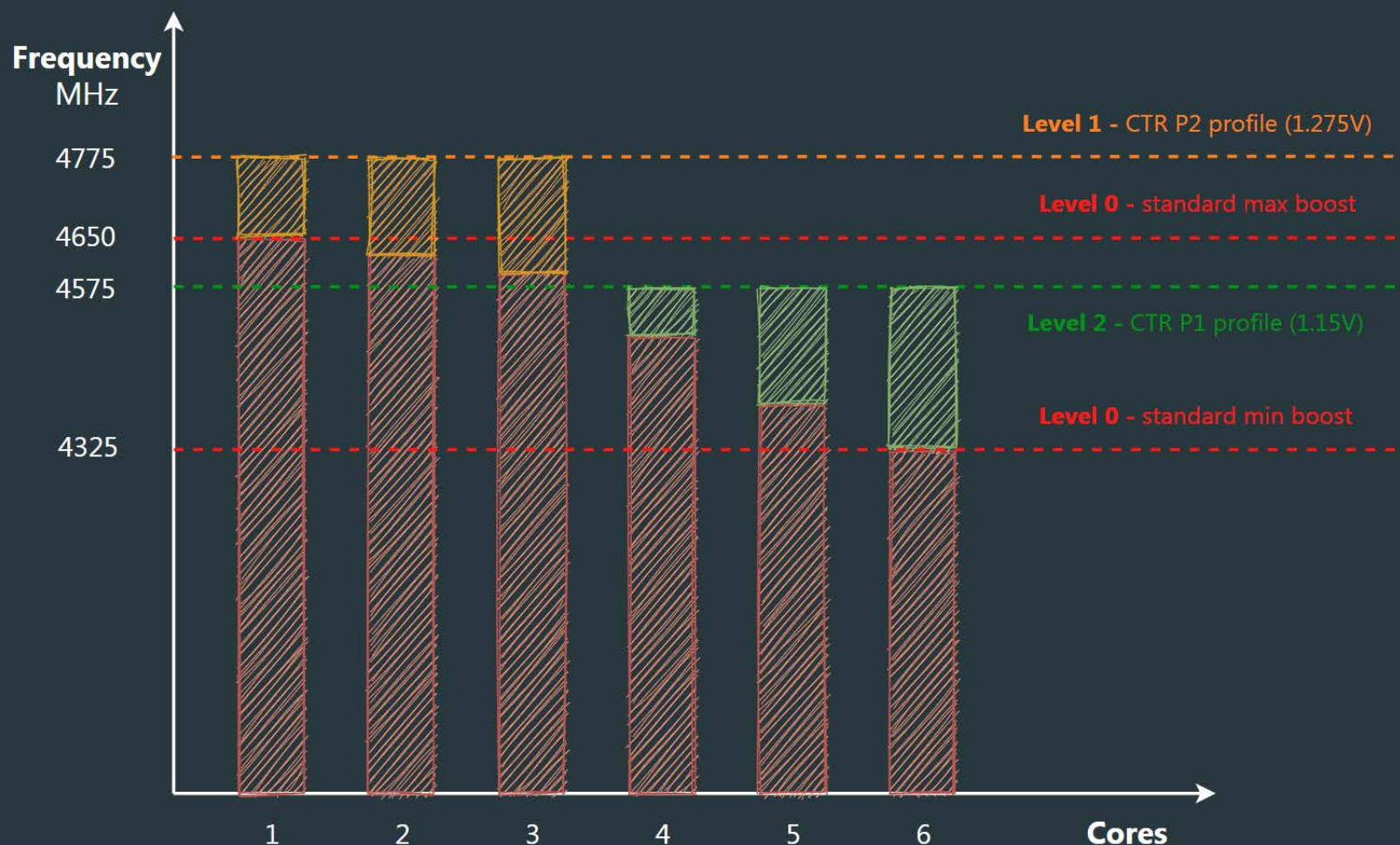
Clock Tuner for Ryzen™ 2.0 - HYBRID OC

(example: AMD Ryzen 5 5600X)

CTR HYBRID OC - now you don't have to worry about choosing between standard boost and manual overclocking. Hybrid OC is a combination of two custom profiles and auto boost.

P1 profile is designed for maximum all-core load, while the P2 profile is capable of delivering the highest performance of the best CCX (or multiple CCXs). P2 profile can also be called a "game profile", which will allow you to achieve higher frequencies for multiple cores than standard single-core boost. Both profiles can be configured by the user as well as the "holding" time.

The activation of the profiles depends only on the load on the CCX or CPU. This means that this control method does not have all disadvantages of technologies that estimate the load based on EDC or TDC values.



HYBRID OC Advantages:

- Better performance at any workload. CB20 results:
 - 12 threads 4289 / 4616 **+8%**
 - 6 threads 2842 / 3144 **+10%**
 - 1 thread 599 / 597 **identical**
- Easy to use, CTR controls everything in a minimized state.
- A special approach to profile customization.
- Profile activation time is less than 35ms.
- Energy Efficiency. Standard TDP value for P1 and for P2 profiles.
- Active energy-saving functions in all profiles.
- Only the best cores or CCXs are used for P2 profile. Controlled by the operating system.
- Zen 2 and Zen 3 supported.



Clock Tuner for Ryzen™ 2.0 – best choice for media creation workloads

(example: AMD Ryzen 9 5900X)

Each processor has individual silicon characteristics. Because of this, CTR adjusts the frequency for each CCX individually. This allows for unprecedented levels of energy efficiency or performance. **+ 7.5% performance*** at the same power consumption for all-core load.

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Optimization for ZEN2+ CPUs

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Cinebench 20 , score

Higher is better

Ryzen TR 3970X	16890
Ryzen TR 3960X	13581
Ryzen 9 5950X	10309
This system - Tuned	9093
Ryzen 9 3950X	9066
Core i9 10980XE	8797
Ryzen 9 5900X	8535
This system - Default	8470
Ryzen 9 3900XT	7108
Ryzen 9 3900X	7097
Core i9 10900K	6155
Ryzen 7 5800X	6012
Core i9 9900KS	5409
Ryzen 7 3800XT	5005
Core i7 10700K	4974
Ryzen 7 3800X	4965
Core i9 9900K	4853
Ryzen 7 3700X	4760
Ryzen 5 5600X	4290
Ryzen 5 3600XT	3805
Ryzen 5 3600X	3714
Core i5 10600K	3605
Ryzen 5 3600	3575
Ryzen 5 3500X	2617
Ryzen 5 3500	2603
Ryzen 3 3300X	2486
Ryzen 3 3100	2326

Cinebench 20 , CPU Voltage

Less is better

This system - Tuned	1.175
This system - Default	1.208

Cinebench 20 , CPU PPT

Less is better

This system - Tuned	143
This system - Default	142

System Information

Frequency per CCX - DEFAULT	4249	4249
Frequency per CCX - TUNING	4675	4500

@1usmus
Windows 10.0.19041
AMD Ryzen 9 5900X 12-Core Processor
ASUS ROG STRIX B550-I GAMING BIOS ver. 1401 SMU ver. 56.37.00
Corsair CMK16GX4M2K4133C19 16GB
12/24/2020 18:43:18

[SEND STATS](#)

THREADRIPPER STATS
RYZEN 9 STATS
RYZEN 7 STATS
RYZEN 5 STATS
RYZEN 3 STATS



Clock Tuner for Ryzen™ 2.0 - UNDERVOLTING

(example: AMD Ryzen 9 5900X)

All users has a choice. To get more performance with the same TDP or to reduce the TDP without loss of performance. **-28% power consumption*** this is reality. With **HYBRID OC** you can also create a super super-efficient system for workload and at the same time super-performance for games or applications that do not use all cores.

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Optimization for ZEN2+ CPUs

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Cinebench 20 , score

Higher is better

Ryzen TR 3970X	16890
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Ryzen 7 3800XT	5005
Core i7 10700K	4974
Ryzen 7 3800X	4965
Core i9 9900K	4853
Ryzen 7 3700X	4760
Ryzen 5 5600X	4290
Ryzen 5 3600XT	3805
Ryzen 5 3600X	3714
Core i5 10600K	3605
Ryzen 5 3600	3575
Ryzen 5 3500X	2617
Ryzen 5 3500	2603
Ryzen 3 3300X	2486
Ryzen 3 3100	2326

Cinebench 20 , CPU Voltage

Less is better

This system - Tuned	1.013
This system - Default	1.215

Cinebench 20 , CPU PPT

Less is better

This system - Tuned	102.8
This system - Default	142

System Information

Frequency per CCX - DEFAULT	4278	4278
Frequency per CCX - TUNING	4300	4150

@1usmus
Windows 10.0.19041
AMD Ryzen 9 5900X 12-Core Processor
ASUS ROG STRIX B550-I GAMING BIOS ver. 1401 SMU ver. 56.37.00
Corsair CMK16GX4M2K4133C19 16GB
12/25/2020 13:51:38

[SEND STATS](#)

THREADRIPPER STATS
RYZEN 9 STATS
RYZEN 7 STATS
RYZEN 5 STATS
RYZEN 3 STATS



Clock Tuner for Ryzen™ 2.0 – Curve Optimization

(example: AMD Ryzen 9 5900X)

A surprise that many people don't know about. Processors based on the Zen 3 architecture have differentiated power management for each core. Thanks to AMD for this fantastic feature. This allows the processor to be tuned more accurately, making it cooler and more efficient. In CTR 2.1 we have planned an automated tuner for voltage curve, but now you can experiment manually. You can see the basic coefficients of the voltage curve in the diagnostic mode.

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Optimization for ZEN2+ CPUs

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CCX1 37.5°			CCX1 37.5°			CCX2 37.1°			CCX2 37.1°			CCX3 -			CCX3 -			CCX4 -			CCX4 -		
C01	4449	162	C04	4449	166	C07	4449	141	C10	4449	133	-	-	-	-	-	-	-	-	-	-	-	-
C02	4449	158	C05	4449	174	C08	4449	145	C11	4449	150	-	-	-	-	-	-	-	-	-	-	-	-
C03	4449	170	C06	4449	174	C09	4449	154	C12	4449	137	-	-	-	-	-	-	-	-	-	-	-	-

CPU usage (%) **100**

CPU TEL (V) **1.078**

CPU VID (V) **1.119**

CPU TEL (A) **55.6**

CPU TDC (A) **55.6**

CPU TEL (W) **59.9**

CPU PPT (W) **100.8**

CPU EDC (A) **140**

Settings mode Advanced RESET SETTINGS

Testing mode AVX Light	Reference voltage (mV) 1175	Max PPT (W) 200	CPU usage trigger (%) 70
Cycle time (s) 360	Reference frequency (MHz) 4400	Max EDC (A) 190	CCX usage max (%) 70
CCX delta (MHz) 150	Max frequency (MHz) 4800	Max TDC (A) 150	CCX usage min (%) 30
Polling period (ms) 500	Diagnostic voltage (mV) 1121	Max temperature (°C) 88	Holding time (ms) 4000

IFSO 1.0 / IFSO 2.0

Enhance accuracy

CB20 testing

CTR HYBRID OC

Autoload profile with OS

To tray

Autoshare stats

DIAGNOSTIC

TUNE

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PROFILE MANAGEMENT

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ASUS ROG STRIX B550-I GAMING

Default Curve Coefficient

CORE#1 21
CORE#2 15
CORE#3 20
CORE#4 20
CORE#5 24
CORE#6 22
CORE#7 6
CORE#8 3
CORE#9 5
CORE#10 0
CORE#11 7
CORE#12 3

AVX light mode
Cycle time: 60000 ms
Reference frequency: 4450MHz
Reference voltage: 1121 mV
Voltage step: 6 mV

Manual overclocking mode enabled
11:14:20: CCX1 (158): 4450 MHz, 1121 mV

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Clock Tuner for Ryzen™ 2.0 other features

- **New Monitoring** - has the highest response time of all existing monitoring programs: 1ms (avg) in idle and 7ms (avg) in all-core load mode. Does not require AMD chipset drivers. Additional information about processor telemetry, the temperature, and the VID of each core (Zen3).
- **Phoenix feature** –BSOD or reboot happened? Worry not! CTR will automatically recover and will finish the diagnostic or profile creation. If necessary, it will test in Cinebench R20 as well.
- **Initial Frequency Smart Offset 2.0** - diagnostic mode will predict the recommended frequencies more accurately, so you can significantly reduce tuning time. Important for processors that have 4 and 8 CCX. The evaluation is based on dynamic FIT, not static data.
- **Improvements in software performance** - most of the code has been rewritten. CTR now uses less CPU time, particularly when minimized. Special attention was paid to safety when communicating with SMU.
- **Diagnostic mode** now provides information about the basic coefficients of the voltage curve (Zen 3) as well as information about the values that are recommended for P1 and P2 profiles.
- **Advanced logging system** allows you to create a logbook individually for each CTR startup.
- Improved **profile management** system for more comfort.