



Clock Tuner for Ryzen™ 2.1 RC6

- **Updated more accurate OB diagnostics**, you don't have to adjust anything. The OB values will be set for each profile + saved automatically.
- During the OB diagnostics information about **CO (Curve Optimizer) coefficients** is presented to the user. If for some reason you can not use **CTR HYBRID OC** - you have an alternative. Simply enter these CO coefficients in the BIOS. I know that there are some scripts that help find the CO. My solution is simpler, faster and more accurate. Why? I get an answer from SMU, i.e. the processor tells me which base curve it has and what it likes and what it doesn't like. For testing I also use AVX multi-core load. This allows me to get optimal results not only for each core individually, but also the result of interaction of all cores simultaneously. There are no alternatives to this function.
- **Automatic update for CTR**. Every time, when you start CTR, a secure TSL connection will be made to the github server where updates are stored. If an update is found, you will be notified. The process is fully automatic. After confirmation, the files are updated and the CTR is started.
About the github server. It is protected from hacker attacks and also has anti-virus software. Your system will always be safe.
- **Load type detection system**. This system allows real-time dynamic profiles to change their settings for maximum stability and performance. Now you can find out which application uses FMA3 and which uses AVX1 (for example).
- **The response speed of dynamic profiles has doubled**. That is, the frequency change speed is 8ms instead of the usual 16ms. This allows you to increase or decrease the frequency faster in relation to load and conditions.
- **Windows notification**. If the CTR is minimized or minimized to the tray you will not miss important messages. In the bottom right corner you will receive different kinds of notifications. In most cases this information is not critical, but it is worth writing to Discord about it. At the moment there are compatibility problems with the following programs: **AIDA 64** (blocks global PCI mutex), **Aquaero** (does not allow for the use of global PCI mutex), **Corsair iCUE** (does not allow for the use of global PCI mutex) and **AMD Ryzen Master** (does not use a secure connection to the SMU).
- **EXTRA BOOST** - superstructure for OB, which allows dynamic profiles to run at higher frequencies in SSE - AVX1 loads. On average this is an extra 25-50 MHz without increasing the voltages.
- **Full adaptation to CPU LLC (Load Line Calibration) Auto**. More stability and more performance if you use CPU LLC Auto. **This is my new recommendation for RC6.**



Clock Tuner for Ryzen™ 2.1 – CO INFO

In order to get **CO (Curve Optimizer)** coefficients it is enough to press 1 button – “**CALCULATE OB**”. The process can take up to 15-20 minutes. **Important! The CO must be turned off in the BIOS.**

The screenshot displays the CTR 2.1 RC6 interface with the following sections:

- CTR 2.1 RC6** Optimization for ZEN2+ CPUs
- TUNER** (selected)
- PROFILES**
- RESULTS**
- ABOUT & HELP**
- SCREENSHOT**
- DONATE & UPGRADE**
- MINIMIZE**
- TO TRAY**
- EXIT**

PX PROFILE

HIGH (MHz)	4950	MID (MHz)	4825	LOW (MHz)	4725	CALCULATE PX PROFILE	
HIGH (mV)	1375	MID (mV)	1375	LOW (mV)	1350		SAVE PX PROFILE
OB HIGH (mV)	94	OB MID (mV)	95	OB LOW (mV)	99		ACTIVATE PX PROFILE

P2 PROFILE

VID (mV)	1150	CCX1 OB (mV)	99	CCX2 OB (mV)	63	CPU usage min (%)	28	CALCULATE P2 PROFILE	
CCX1 (MHz)	4525								SAVE P2 PROFILE
CCX2 (MHz)	4400								ACTIVATE P2 PROFILE

P1 PROFILE

VID (mV)	1050	CCX1 OB (mV)	99	CCX2 OB (mV)	63	CPU usage min (%)	81	CALCULATE P1 PROFILE	
CCX1 (MHz)	4250								SAVE P1 PROFILE
CCX2 (MHz)	4125								ACTIVATE P1 PROFILE

PROFILES SETTINGS

Autoload profile(s)	<input type="checkbox"/>	PX OB LIMIT	+300	EXTRA BOOST	<input type="checkbox"/>	CALCULATE OB
CTR HYBRID OC	<input type="checkbox"/>	PX PRESET	AVX			

PROFILES STATISTIC

PX HIGH: 0	P2: 0
PX MID: 0	P1: 0
PX LOW: 0	IDLE: 0

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Clock Tuner for Ryzen™ 2.1 – CO INFO

If you want to use **CO (Curve Optimizer)** - just enter these coefficients in the BIOS. Max CPU Boost Clock Override in the range 100 – 175 MHz. PBO Limits - Disabled. This will help increase the performance of your system without changing the base TDP. The most preferred mode. If you turn on PBO Limits, you get a red-hot iron.

CTR 2.1 RC6
Optimization for ZEN2+ CPUs

CCX1 52.4°	CCX1 52.4°	CCX2 52°	CCX2 52°	CCX3 -	CCX3 -	CCX4 -	CCX4 -
C01 4175 212	C05 4175 190	C09 3975 167	C13 3975 158	- - -	- - -	- - -	- - -
C02 4175 203	C06 4175 194	C10 3974 181	C14 3974 154	- - -	- - -	- - -	- - -
C03 4175 199	C07 4175 185	C11 3974 172	C15 3974 163	- - -	- - -	- - -	- - -
C04 4175 212	C08 4175 208	C12 3975 149	C16 3974 176	- - -	- - -	- - -	- - -

CPU usage (%) 100 CPU TEL (V) 0.934 CPU VID (V) 1.025 CPU TEL (A) 115.7 CPU TDC (A) 115.8 CPU TEL (W) 108.1 CPU PPT (W) 148.5 CPU EDC (A) 140

Settings mode Default CLEAR CONFIG & CLOSE

Testing mode AVX Light
Cycle time (s) 360
CCX delta (MHz) 125
Polling period (ms) 1000

IFSO 1.0 / IFSO 2.0 OB testing CB20 testing Autoshare stats
Enhance accuracy Notification

DIAGNOSTIC TUNE STOP CHECK STABILITY BOOST TESTER

Info ACTIVE PROFILE: N/A LOAD TYPE: AVX2

AMD Ryzen 9 5950X 16-Core Processor
ASUS ROG CROSSHAIR VIII DARK HERO

19:24:07: Step: 8
CCX1 FREQ 4175MHz
CCX2 FREQ 3975MHz

PX HIGH OB: 101
PX MID OB: 101
PX LOW OB: 103
P2 CCX1 OB: 95
P2 CCX2 OB: 65
P1 CCX1 OB: 95
P1 CCX2 OB: 65

Curve Optimizer (negative values)

C01 23	C09 16
C02 24	C10 15
C03 24	C11 16
C04 24	C12 15
C05 25	C13 17
C06 25	C14 17
C07 25	C15 17
C08 24	C16 16

19:24:17: Test#1

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Clock Tuner for Ryzen™ 2.1 – LOAD TYPE

I know that many of you were curious to know what type of load is currently present in the system. CTR will tell you about it. At the moment there is a definition of light (SSE) load, AVX1 (or heavy SSE), AVX2 and FMA3.

CTR 2.1 RC6
Optimization for ZEN2+ CPUs

TUNER
PROFILES
RESULTS
ABOUT & HELP
SCREENSHOT
DONATE & UPGRADE
MINIMIZE
TO TRAY
EXIT

CCX1	52.4°	CCX1	52.4°	CCX2	52°	CCX2	52°	CCX3	-	CCX3	-	CCX4	-	CCX4	-
C01	4175	212	C05	4175	190	C09	3975	167	C13	3975	158	-	-	-	-
C02	4175	203	C06	4175	194	C10	3974	181	C14	3974	154	-	-	-	-
C03	4175	199	C07	4175	185	C11	3974	172	C15	3974	163	-	-	-	-
C04	4175	212	C08	4175	208	C12	3975	149	C16	3974	176	-	-	-	-

CPU usage (%) 100 CPU TEL (V) 0.934 CPU VID (V) 1.025 CPU TEL (A) 115.7 CPU TDC (A) 115.8 CPU TEL (W) 108.1 CPU PPT (W) 148.5 CPU EDC (A) 140

Settings mode Default CLEAR CONFIG & CLOSE

Testing mode: AVX Light
Cycle time (s): 360
CCX delta (MHz): 125
Polling period (ms): 1000

IFSO 1.0 / IFSO 2.0 OB testing CB20 testing Autoshare stats
Enhance accuracy Notification

DIAGNOSTIC **TUNE** **STOP** **CHECK STABILITY** **BOOST TESTER**

Info ACTIVE PROFILE: N/A **LOAD TYPE: AVX2**

AMD Ryzen 9 5950X 16-Core Processor
ASUS ROG CROSSHAIR VIII DARK HERO

```
19:24:07: Step: 8
CCX1 FREQ 4175MHz
CCX2 FREQ 3975MHz

PX HIGH OB: 101
PX MID OB: 101
PX LOW OB: 103
P2 CCX1 OB: 95
P2 CCX2 OB: 65
P1 CCX1 OB: 95
P1 CCX2 OB: 65

Curve Optimizer (negative values)
C01 23   C09 16
C02 24   C10 15
C03 24   C11 16
C04 24   C12 15
C05 25   C13 17
C06 25   C14 17
C07 25   C15 17
C08 24   C16 16

19:24:17: Test#1
```

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Clock Tuner for Ryzen™ 2.1 – NOTIFICATION

If the CTR is minimized or minimized to the tray you will not miss important messages. In the bottom right corner (where the clock is located) you will receive different kinds of notifications. In most cases this information is not critical. **Please note, if you have disabled Windows notifications you will not be able to receive notifications from CTR.**

The screenshot displays the CTR 2.1 RC6 application interface. The top section shows a grid of CPU core data for CCX1, CCX2, CCX3, and CCX4, including core IDs (C01-C16), frequencies, and temperatures. Below this is a summary row for various CPU metrics like usage, voltage, and power. The main settings area includes options for testing mode (AVX Light), cycle time (360s), CCX delta (125MHz), and polling period (1000ms). There are also toggle switches for IFSO 1.0 / IFSO 2.0, OB testing, CB20 testing, Autoshare stats, Enhance accuracy, and Notification (highlighted with a red box). At the bottom, there are buttons for DIAGNOSTIC, TUNE, STOP, CHECK STABILITY, and BOOST TESTER. The right sidebar shows system information and a log window with test results.

CCX1	52.4°	CCX1	52.4°	CCX2	52°	CCX2	52°	CCX3	-	CCX3	-	CCX4	-	CCX4	-
C01	4175	212	C05	4175	190	C09	3975	167	C13	3975	158	-	-	-	-
C02	4175	203	C06	4175	194	C10	3974	181	C14	3974	154	-	-	-	-
C03	4175	199	C07	4175	185	C11	3974	172	C15	3974	163	-	-	-	-
C04	4175	212	C08	4175	208	C12	3975	149	C16	3974	176	-	-	-	-

CPU usage (%)	CPU TEL (V)	CPU VID (V)	CPU TEL (A)	CPU TDC (A)	CPU TEL (W)	CPU PPT (W)	CPU EDC (A)
100	0.934	1.025	115.7	115.8	108.1	148.5	140

Settings mode: Default

Testing mode: AVX Light

Cycle time (s): 360

CCX delta (MHz): 125

Polling period (ms): 1000

IFSO 1.0 / IFSO 2.0:

OB testing:

CB20 testing:

Autoshare stats:

Enhance accuracy:

Notification:

DIAGNOSTIC TUNE STOP CHECK STABILITY BOOST TESTER

Info: ACTIVE PROFILE: N/A LOAD TYPE: AVX2

AMD Ryzen 9 5950X 16-Core Processor
ASUS ROG CROSSHAIR VIII DARK HERO

19:24:07: Step: 8
CCX1 FREQ 4175MHz
CCX2 FREQ 3975MHz

PX HIGH OB: 101
PX MID OB: 101
PX LOW OB: 103
P2 CCX1 OB: 95
P2 CCX2 OB: 65
P1 CCX1 OB: 95
P1 CCX2 OB: 65

Curve Optimizer (negative values)

C01	23	C09	16
C02	24	C10	15
C03	24	C11	16
C04	24	C12	15
C05	25	C13	17
C06	25	C14	17
C07	25	C15	17
C08	24	C16	16

19:24:17: Test#1



Clock Tuner for Ryzen™ 2.1 – EXTRA BOOST

EXTRA BOOST - superstructure for OB, which allows dynamic profiles to run at higher frequencies in SSE - AVX1 loads. On average this is an extra 25-50 MHz without increasing the voltages. Not available for PX HIGH only.

CTR 2.1 RC6
Optimization for ZEN2+ CPUs

- TUNER
- PROFILES
- RESULTS
- ABOUT & HELP
- SCREENSHOT
- DONATE & UPGRADE
- MINIMIZE
- TO TRAY
- EXIT

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PX PROFILE

HIGH (MHz)	4950	MID (MHz)	4825	LOW (MHz)	4725	CALCULATE PX PROFILE	
HIGH (mV)	1375	MID (mV)	1375	LOW (mV)	1350		SAVE PX PROFILE
OB HIGH (mV)	94	OB MID (mV)	95	OB LOW (mV)	99		ACTIVATE PX PROFILE

P2 PROFILE

VID (mV)	1150	CCX1 OB (mV)	99	CCX2 OB (mV)	63	CPU usage min (%)	28	CALCULATE P2 PROFILE
CCX1 (MHz)	4525	SAVE P2 PROFILE						
CCX2 (MHz)	4400	ACTIVATE P2 PROFILE						

P1 PROFILE

VID (mV)	1050	CCX1 OB (mV)	99	CCX2 OB (mV)	63	CPU usage min (%)	81	CALCULATE P1 PROFILE
CCX1 (MHz)	4250	SAVE P1 PROFILE						
CCX2 (MHz)	4125	ACTIVATE P1 PROFILE						

PROFILES SETTINGS

Autoload profile(s)	<input type="checkbox"/>	PX OB LIMIT	+300	CALCULATE OB
CTR HYBRID OC	<input type="checkbox"/>	PX PRESET	AVX	

EXTRA BOOST

PROFILES STATISTIC

PX HIGH: 0	P2: 0
PX MID: 0	P1: 0
PX LOW: 0	IDLE: 0



Clock Tuner for Ryzen™ 2.1 – TESTING

Stock settings. 4256 / 4256 MHz, VID 1.233V, PPT 142W, 21545 pts.

The screenshot displays the Clock Tuner for Ryzen 2.1 RC6 interface. The top section shows system settings for various CCX units (CCX1, CCX2, CCX3, CCX4) with columns for core IDs (C01-C12), clock speeds (all at 4256 MHz), and temperatures (ranging from 137°C to 174°C). Below this, a summary row shows CPU usage at 100%, CPU TEL (V) at 1.159, CPU VID (V) at 1.233, CPU TEL (A) at 93.8, CPU TDC (A) at 93.7, CPU TEL (W) at 108.7, CPU PPT (W) at 142, and CPU EDC (A) at 140.

The interface includes a sidebar with navigation options: TUNER, PROFILES, RESULTS, ABOUT & HELP, SCREENSHOT, DONATE & UPGRADE, MINIMIZE, TO TRAY, and EXIT. The main area is divided into 'Settings mode' (Advanced) and 'Testing mode'. The 'Testing mode' section shows the CINEBENCH R23.200 test results, including cycle time, CCX delta, polling period, and system information (AMD Ryzen 9 5900X 12-Core Processor, 12 Cores, 24 Threads @ 3.7 GHz, Windows 10, 64 Bit, Core (build 19041)).

The 'Ranking' section displays a list of system configurations and their scores:

Rank	Configuration	Score
1.	32C/64T @ 3 GHz, AMD Ryzen Threadripper 2990V	30054
2.	24C/48T @ 2.7 GHz, Intel Xeon W-3265M CPU	24243
3.	12C/24T @ 3.7 GHz, AMD Ryzen 9 5900X 12-Core	21545*
4.	16C/32T @ 3.4 GHz, AMD Ryzen Threadripper 195C	16315
5.	8C/16T @ 2.3 GHz, Intel Core i9-9880H CPU	9087
6.	8C/16T @ 3.4 GHz, AMD Ryzen 7 1700X Eight-Core I	8889

The 'Your Score' is 21545, and the 'Identical System' score is 8889. The interface also features a 3D rendering scene of a dining room, with the text 'Performing Render Test ... Rendering (Pass 1)' at the bottom.



Clock Tuner for Ryzen™ 2.1 – TESTING

Curve Optimizer, PBO Limits – Disabled, Boost Override + 175MHz. 4410 / 4410 MHz, VID 1.215V, PPT 142W, 22481 pts.

The screenshot displays the Clock Tuner for Ryzen 2.1 RC6 interface. The top section shows system settings for various cores (CCX1, CCX2, CCX3, CCX4) with columns for core ID, frequency (4410 MHz), and temperature (60.3° to 60.4°). Below this, a summary row shows CPU usage at 100%, CPU TEL (V) at 1.14, CPU VID (V) at 1.215, CPU TEL (A) at 95, CPU TDC (A) at 95, CPU TEL (W) at 108.3, CPU PPT (W) at 141.4, and CPU EDC (A) at 140.

The CINEBENCH R23.200 window shows the following details:

- Test: CPU (Multi Core) Running ...
- Processor: AMD Ryzen 9 5900X 12-Core Processor
- Cores x GHz: 12 Cores, 24 Threads @ 3.7 GHz
- OS: Windows 10, 64 Bit, Core (build 19041)
- Ranking: CPU (Multi Core) - Your Score: 22481*

The 3D rendering window shows a scene with a table, chairs, and a window, with the status "Performing Render Test ... Rendering (Pass 1)".



Clock Tuner for Ryzen™ 2.1 – TESTING

CTR HYBRID OC, EXTRA BOOST – Enabled, default settings. 4624 / 4475 MHz, VID 1.175V, PPT 135W, 23150 pts.

The screenshot displays the Clock Tuner for Ryzen 2.1 RC6 interface. The top section shows a grid of CCX (Core Complex) settings for CCX1, CCX2, CCX3, and CCX4, with individual core frequencies and temperatures. Below this, system metrics are shown: CPU usage (100%), CPU TEL (V) (1.101), CPU VID (V) (1.175), CPU TEL (A) (93.7), CPU TDC (A) (93), CPU TEL (W) (103.1), CPU PPT (W) (135.6), and CPU EDC (A) (140).

The interface includes a sidebar with navigation options: TUNER, PROFILES, RESULTS, ABOUT & HELP, SCREENSHOT, DONATE & UPGRADE, MINIMIZE, TO TRAY, and EXIT. The main area is divided into 'Settings mode' (Advanced) and 'Info' (ACTIVE PROFILE: P1, LOAD TYPE: AVX1). The 'Testing mode' is set to AVX Light, with a Reference voltage of 1150 mV and Max PPT of 300 W.

A CINEBENCH R23.200 test window is open, showing the following system information:
Processor: AMD Ryzen 9 5900X 12-Core Processor
Cores x GHz: 12 Cores, 24 Threads @ 3.7 GHz
OS: Windows 10, 64 Bit, Core (build 19041)

The test results show a CPU (Multi Core) score of 23150, highlighted in orange. The ranking table is as follows:

Rank	Processor	Score
1.	32C/64T @ 3 GHz, AMD Ryzen Threadripper 2990V	30054
2.	24C/48T @ 2.7 GHz, Intel Xeon W-3265M CPU	24243
3.	12C/24T @ 3.7 GHz, AMD Ryzen 9 5900X 12-Core	23150*
4.	16C/32T @ 3.4 GHz, AMD Ryzen Threadripper 1950C	16315
5.	8C/16T @ 2.3 GHz, Intel Core i9-9880H CPU	9087
6.	8C/16T @ 3.4 GHz, AMD Ryzen 7 1700X Eight-Core I	8889

The interface also features a 3D rendering window showing a scene with a table and chairs, and a Maxon logo with the slogan '3D FOR THE REAL WORLD'. The rendering status is 'Performing Render Test ... Rendering (Pass 1)'.