Maximus x formula manual

MotherboardMAXIMUS v FORMULASeriesPage 2iiE7295First issueMay 2012Copireit © 2012 ASUSTeK COMPUTER INC. All rights Reserved.No part of this manual, including the products and software described in it, can be reproduced, transferred, transcribed, stored in the search engine, or translated into any form or by any means, except for the documentation stored by the buyer for backup purposes, without explicit written permission from ASUSTeK COMPUTER INC. (ASUS). The warranty on products or service will not be extended if: (1) the product is repaired, modified or modified, if such repairs, change changes are allowed in writing ASUS; or (2) the product serial number is spoiled or missing. ASUS PROVIDES THIS GUIDE AS IS WITHOUT A GUARANTEE OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED GUARANTEES OR TERMS OF TRADE OR SUITABILITY FOR A SPECIFIC PURPOSE. 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If, however, you run into any problems in getting the full relevant source code, we will be very obligated if you give us a notification to the email address gpl@asus.com stating the product and describing the problem (please do not send large attachments such as source code archives etc to that email address). © 1996-2014, Amazon.com, Inc. or its affiliates for each Intel chipset and series recently ROG Maximus Formula Motherboards were among the best that money could buy. Nothing seems to have changed with Intel No.370 as the latest iteration of Formula One is just as all-around, stylish and desirable as ever. Starting with the Maximus V Formula, released for Intel Ivy Bridge, the unique tilt on the Maximus Formula was an integrated water flush unit on the vrM processor. The Maximus X continues the unique theme with an integrated EC water unit and a stylish armour from above and below. This armor was clearly called thermal armor in the previous generation of Formula Motherboards, but these days ROG adopt its stylistic function rather than a solution that brings thermal benefits. No stylish design will be complete in the current DIY PC market without the generous application of RGB LEDs, which Maximus X Formula has galore. The connection is well taken into account with the dual M.2, USB 3.1 of all varieties, eight fan headbands and enough PCIe bands for any high-end GPU configuration, although the specifications of only the Maximus X Formula do not double the motherboard of other motherboards that cost twice as much. However, the value of the ROG brand has always been in premium style, innovative design touches and value-added features that are rarely found on other motherboards. The newest innovative feature is the integrated OLED display, called LiveDash, at the center of the motherboard, which can display hardware monitoring information or custom images and animations. With this said let's take a closer look at all asUS ROG Maximus X Formula has to offer. ASUS Maximus X Formula Form Factor ATX, 30.5 cm 24.4 cm Intel LGA 1151 Version 2 Chipset Intel No370 Memory DDR4, 4 DIMMs, up to 64GB, 4133 MHz with OC on board Intel HD Graphics (supported processors), maximum total video memory 1024MB discrete graphics up to 3-way CrossFire /quad CrossFire, up to 2-way SLI, quad SLI Expansion Slots 3 x PCIe 3.0 X16 (16/0/4, 8/8/4) - 3 x PCIe 3.0 X1 PCIe X16 (x4 Electrical) slot number 3 shares bandwidth with PCIe 1X slot number 3 Storage 1 x M.2 PCIe 3.0 X4 32Gbps or SATA III 6Gbps 1 x M.2 PCIe 3.0 X4 322GB /s 6 x SATA III 6 Gbps via Intel No.370 When running in SATA mode, SATA port 1 is disabled Share bandwidth with SATA 5 ports and 6 USB 3 x USB 3.1 (2 Rear Type-A and C, 1 Front, via dual controllers ASM3142) 6 x USB 3.0 (4 Rear Type-A and C, 1 Front, via dual controllers ASM3142) 6 x USB 3.0 (4 Rear , 2 Фронт, через No 370) 6 x USB 2.0 (4 Задний, 2 Фронт) Сеть 1 x Intel I219V Gigabit Ethernet Realtek RTL8822BE двух-диапазонный 802.11AC WiFi с Bluetooth 4.2 Аудио Realtek ALC1220 7.1 Канал HD аудио » Из-за ограничений в пропускной способности HDA, 32-битный/192kHz не поддерживается для 8-канал аудио Вентилятор Headers 8, 7 поддержки 3/4pin вентиляторы, 1 поддерживает только 3 вентилятора контактный (1 x процессор, 1 x CPU_OPT, 3 x CHA, 1 x H_AMP, 1 x W_PUMP, 1 x AIO_PUMP) Rear I/O 1 x DisplayPort 1 x HDMI 1 x LAN (RJ45) порт (ы) 1 x USB 3.1 Type-A 1 x USB 3.1 USB Type-C 4 x USB 3.0 4 x USB 2.0 1 x Оптический S/PDIF из 5 x Аудио гнездо (ы) 1 x Кнопка Ясного CMOS (ы) 1 x USB BIOS Flashback Button (ы) 1 x ASUS 2×2 Wi-Fi 802.11 a/b/g /n/ac и Bluetooth v4.2 модуль UEFI 1 x 128Mb UEFI AMI BIOS Formula ASUS ROG Maximus X comes in a larger-than-usual box to accommodate a significant set of accessories. The box outlines the title features for the Formula Maximus X including the M.2 heatsing up, customizable LiveDash OLED display, EK CrossChill II water unit and RGB address headlines, The accessory bundle includes the following elements: manual user driver and utility DVD CableMod Discount Code ROG Coaster ROG Case sticker sheet ROG stickers/ WiFi Antenna labels with stand SLI HB Bridge (2-WAY-M) processor Installation Tool ROG Motherboard sticker Logo Plate 6 x SATA III Cable 80cm Expansion Cable for RGB Bands 80cm Expansion Cable for address LED bands USB 2.0 Adapter M.2 bracket and screw adapter th-Connector Aesthetics, no doubt subjective in nature, but it's hard to argue that Formula Maximus X is not a stylish motherboard. There are several motherboards that have such a distinctive appearance, but ROG Armor and CrossChill II Waterblock give Formula a unique and recognizable design. The red and black colour scheme for motherboard Republic gamers has disappeared for a while now that no270 has been an equally neutral palette and No.170 has already reduced the red to a simple accentuation. This shift to black, grey and silver with additional RGB lighting has been witnessed across the motherboard industry and ASUS have been brand in determining this market change. Maximus X's lighting covers numerous areas, including chipset PCIe lanes, rear I/O area and power/reset button area, as well as additional LED paddocks (type RGB or address). ASUS ROG provides AURA companion software to manage all of the functionality of the LED lighting used with the motherboard. Improve this aspect of the customization further With a LiveDash OLED display that can be modified to show any number of system settings, but in our case ASUS was pre-loaded to display the KitGuru logo. The setup can be controlled with the provided companion software, which we will cover later. Positioned as a high-quality motherboard it is fitting that the Maximus X Formula has so many buttons - Retry, Safe Boot, MemOK, Slow Mode, Power and Reset in addition to the code reader, diagnostic LEDs (LED) and LN2 jumper mode. ASUS also includes four LED paddocks, two of the 12V G R B type and two address types (5V, D, q). The front USB 3.1 port is provided by the second CONTROLLER ASM3142 USB 3.1, in addition to the rear USB 3.1. At the top of the motherboard is one 8 contact EPS for processor power and H_AMP fan connector. The H_AMP connector, along with W_PUMP, supports up to 3 12 volt power output amplifiers for maximum power delivery of 36wh. All other fan connections support 1A/12W. There are a number of caveats for each of the fan blanks so that users should refer to the appropriate portion of the manual when setting up the system. The rear i/O consists of the following connections and comes with an I/O screen: 1 x DisplayPort 1.2 1 x HDMI 1.4b (ASMedia ASM1442K) 1 x LAN (RJ45) port (s) (Intel I219V) 1 x USB 3.1 Type-A (ASMedia ASM3142) 1 x USB 3.1 USB Type-C (ASMedia ASM3142M1543) 4 x USB 3.0 4 x USB 2.0 1 x Optical S/PDIF of 5 x Audio Nest (s) 1 x Pure CMOS Button (s) 1 x USB BIOS Flashback Button (s)1 x ASUS 2×2 Wi-Fi 802.11 a/b/g/n/ac and Bluetooth v4.2 Module There are dual M.2 slots for Formula One which is horizontal and the other vertical. The horizontal connection of M.2 is located below the heat drain with a heat pad, the heatsing heat drainage jointly cools the PCH chipset and the M.2 drive. In this slot, UP to 110mm of drives are supported in PCIe or SATA mode. The second M.2 slot, which only supports PCIe and up to 110mm drives, sets upright using the supplied M.2 bracket. This is a new solution and should not interfere with anything else except the graphics card in the latest PCIe 16X slot - which seems unlikely given that it is only wired to 4X. On the underside of the motherboard is the second part of the ROG Armor, which is metal rather than plastic as the top, and includes electrically insulating coatings. Plastic cover on top removed, screwing all the screws from the lower armor. Integrated into plastic armor are two separate PCDs one that provides LED lighting function, and the other is a LiveDash OLED display, both of these PCCs connect directly in The VRM heats processor was then removed to reveal the Maximus X Formula in all its undisclosed glory. The EK CrossChill II water unit uses G1/4 fittings and internally uses copper water channels. The base co-refers to contact through thermal pads and the water block is integrated into a large aluminum heat drain, so it is an effective hybrid solution that can work on air or water. ASUS claim up to 35 degrees Celsius lower temperatures when using cooling water. KitGuru has observed peak VRM temperatures, after 10 minutes of sustained AIDA64 processor and memory load, 53 degrees Celsius in stock and 59 degrees Celsius on acceleration from THEUS EC VRM sensor (read using HWiNFO64). The Maximus X formula uses a specially packaged PWM controller marked DIGI by EPU ASP1405I F76G C730P, which is most likely the IR35201 controller with 10 common phases. These stages use ten inductors, ten IR3535 drivers, ten Vishay Siliconix qF906 MOSFETs and a number of Nichicon FPCAP capacitors. There are four International Rectifier IR3599 phase understudy to use too, three for row six and one for a row of four. Thus, the likely configuration is that the PWM controller works like a VRM with four phases of IR3599, turning these four phases into eight in total 8'2. These ten stages are probably divided into eight stages for vCore and two for iGPU. ASUS also uses the base lock generator (BCLK), IDT6V41638B, to increase the maximum capacity of the base CPU lock when accelerating. The VCCSA and VCCIO processor rails are formed from a number of other MOSFETs and regulators distributed between the processor socket and the PCIe front band, including some ON-SemiConductor MOSFETs (4C09B, 4C06B). Memory performs one two-stage configuration using the ASP1103 VRM controller. Custom IC, branded with the ROG logo, next to the back of the I/O position ROG Keybot hardware level management, where most motherboard providers provide functionality at the software level only. The audio components are of high quality and consist of Realtek ALC1220 codec (custom-packed as ROG S1220), ESS Saber DAC ES9023P, Texas Instruments RC4580 operational amplifier and Nichicon Gold Series audio condensers. Everything sits on a separated PCB and audio tire sockets too. The Wi-Fi and Bluetooth combination module is based on the Realtek RTL8822BE solution, which is a 802.11ac 2T2R solution that supports MU-MIMO with Bluetooth 4.2. ASUS UEFI enters directly into the elinpi mode splash screen, which has a selection of commonly used settings including XMP profiles, ordering download devices and fan speeds. Clicking F7 takes the user into the advanced UEFI section, but there are some additional tools that can be accessed with a screen splash, how to control fans and set up the equalizer system. The first is the MyFavorites tab, which stores the most commonly available UEFI settings. The next tab, Main, contains a detailed detail and information about the BIOS version. If you can't display some images on these pages, disable the ad blocker because it interferes with our gallery code. The AI Tweaker is a UEFI tab that contains the vast majority of processor and DRAM performance settings. From here, you can set XMP profiles, cPU acceleration, set all different voltage and voltage modes, change the load line calibration (LLC) and much more. THE LLC has 8 levels using the 0-based index, with 0 being the least aggressive and 7 most. Voltage modes include override, adaptability, and displacement. Unlike MSI, ASUS does not offer combined voltage modes such as override and displacement. UEFI provides a clear warning that when you provide XMP there is a choice to opt out of Turbo's advanced functionality and stick to Intel's default specification. There is a significant selection of performance and compatibility options that can be found in The Advanced section if the need arises. As well as a number of other specific settings related to the functions of onboard devices, LEDs, USB and storage controllers and more. The Monitor tab will allow you to instruct UEFI how to process temperature data from different sensors, as well as what to do with fan speed profiles. For example, if the fan speed profile depends on the temperature, you can choose which temperature sensor to use. If you buy an additional ASUS Fan Extension card, which can also be configured from this section. The Boot tab, as expected, provides key download options such as secure downloading, download priority, and download compatibility settings. Users who need to update UEFI (through the equalizer flash utility), save, import, or export BIOS settings, or safely remove the storage drive should refer to the Tool tab. The Flash equalizer is very easy to use and allows you to update UEFI from your local drive or internet through the Intel I219V Gigabit Ethernet adapter. Fan control is a must-use utility because it will calculate fan speed ranges of all PWM or DC fans on 8 managed fans. Once the voltage values up to fan speeds have been calculated the user can assign a preferred profile to each fan of the four presets (standard, quiet, turbo, full speed) or simply set a custom profile using manual mode. We've tried the automated ASUS tool to break up the Tuning Wizard equalizer in the past, and this will provide your system with automatic acceleration depending on which options you choose. However, it applies The voltage to account for changes in the quality of the processors, so it often applies more voltage than necessary, users are better off trying a manual acceleration as it is very simple with 370 pounds. A new addition to the Maximus X Formula is a software called LiveDash. This allows you to customize the on-board OLED display to display a specific range of system parameters monitoring functions) like text or show a monochrome image or animation. Users can upload custom images or animations or choose from a range of pre-loaded options. The musical function turns the sound output into an equalizer wave-shaped animation on the display. LiveDash is a new addition to the ROG lineup and offers additional customization and personalization options. The fact that it's low resolution (128×32) and monochrome reduces its functionality, but it's still an innovative inclusion. The main utility of ass motherboard range software as THEUS is the multifunctional AI Suite III. It contains a significant number of utilities including EPU and TPU, Turbo App for basic and application-specific turbo behavior, Fan Xpert 4, on-the-fly acceleration support, cleaning utility and ASUS software update tool. ASUS has reviewed the design of its AURA RGB software since we valued it at 270 pounds. Gone is the confusing use of the word Independent for being turned off by LED behavior, ASUS is being labelled as such. The range of LED modes is still the same, but the way LED bands are captured and controlled as individual objects is an improvement over the previous AURA software which the band was simply seen as another zone on the motherboard. Notice the option to Add a strip at the top. With the Maximus X Formula, you can add four more bands, two of the RGB type and two from the digital address type. AURA is capable and functionally useful, but we might like to see some integration with LiveDash that can only happen if ASUS has made the RGB OLED display rather than monochrome, ROG GameFirst software is now in version IV and supports Multi-Gate Teaming technology and smart mode when used with Windows 8.1 and Windows 10 64-bit. The Multi-Gate team allows you to use on-board WiFi at the same time as a wired network to maximize network bandwidth, as well as the ability to prioritize different applications for different interfaces. For example, gaming apps can take priority use of a wired connection while torrent downloads can be pushed to wireless. ROG Clone Drive is an ASUS disk cloning tool similar to that offered by many other visualization programs, such as Macrium Reflect. It has less functionality than specialized disk visualization solutions, so it's probably worth going through. The ROG RAMCache II software, which complements the existing ROG RAMDisk software, is designed to help download programs and files of regularly available data. Users just need to highlight the amount of RAM they would like to cache and RAM Cache II software handles everything else behind the scenes when in Smart mode. There is an extended mode that gives some additional parameters to manage the behavior of the software. In a previous review, KitGuru conducted a brief software test and saw a noticeable performance performance to drive an operating system based on SATA after it has been cached. ROG RAMDisk performs a different function by effectively creating a new RAM system drive that users can use in Windows Explorer to deposit files as they wish. RAMCache II, by contrast, reserves the amount of system memory to use as a cache and which files are written for this are largely controlled by the application. RAMDisk protects the data written on it by asynchronously writing it back to the system disk, but RAMDisk data should always be backed up elsewhere. There is a short period of time when RAMDisk data waiting for the command to record on the system drive is vulnerable to being lost in the event of an unexpected power outage. We will be presenting the ASUS Maximus X Formula motherboard performance with the Intel Core i7 8700K processor, 32GB 3200 MHz G.Skill Trident and DDR4 and GT GigabyteX 1080 G1 Gaming. 16GB for mini-ITX motherboards. No370 Motherboard Testing System: Comparison of 370 motherboards: ASUS ROG Maximus X Formula (No370) Gigabyte No370N WiFi Drivers and UEFI: Intel Chipset 10.1.1.44 Nvidia GeForce 390.77 VGA Drivers. ASUS UEFI Version 1003 (21/12/2017) Tests: Cinebench R15 – All-core CPU benchmark (CPU) SiSoft Sandra 2017– Processor Arithmetic Test (CPU) and Memory Bandwidth Test (Memory) 7-Zip 18.01 x64 – Built-in 7-Zip benchmark test (CPU) AIDA64 Engineer 5.95 – System cache & memory benchmark and stress test (Memory and Power Consumption) 3DMark v2.4.4264 – Time Spy (1440p) test (Gaming) Ashes of the Singularity: Escalation – Built-in benchmark tool CPU-Focused test, 1920 x 1080, Extreme quality preset, DX12 mode (Gaming) Deus Ex: Mankind Divided – Built-in benchmark tool, 1920 x 1080, Ultra quality preset, DX12 mode (Gaming) ATTO 3.05 – M.2, USB 3.0, USB 3.1, and SATA 6Gbps transfer rates (Motherboard) Rightmark Audio Analyzer 6.4.1 – Record and playback test using a line-in to line-out loopback with a 3.5mm audio cable (Motherboard) 7-Zip 7-Zip is an open source Windows utility for manipulating archives. We measure overall rating performance with a built-in benchmark tool. The test emphasizes all the cores of the processor up to 100% and shows an affinity for memory bandwidth. Cinebench R15 Cinebench is an application that makes photorealistic 3D scenes to compare computer rendering performance, on a single core processor, all CPU cores or using a GPU. We run the test using the entire main CPU mode. Sandra Processor Arithmetic SiSoft Sandra 2017 is a multifunctional utility that supports remote analysis, benchmarking and diagnostic features for PCs, servers, mobile devices, and networks. We're launching the app's CPU arithmetic to evaluate processor on each motherboard being tested. The performance of the processor is as good as you'd expect for Intel i7-8700K shares. Engineer AIDA64 AIDA64 engineer is a multifunctional software package for stress testing, benchmarking, software auditing and various other measurement parameters. We use the AIDA64 engineer to compare bandwidth and memory latency. Sandra Memory Bandwidth SiSoft Sandra 2017 is a multifunctional utility that supports remote analysis, benchmarking and diagnostics for PCs, servers, mobile devices, and networks. We use the SiSoft Sandra memory test to provide a set of memory bandwidth results. Memory performance varied slightly from benchmark to benchmark, although the Maximus X formula used two more modules than Gigabyte WiFi (ITX), which explains some of the changes. 3DMark 3DMark is a multi-platform hardware benchmark designed to test different permissions and levels of 3D game performance detail. We are launching a Test windows platform and in particular the Time Spy test, which indicates the high end of 1440p PC Gaming. Ash Singularity: Escalating Ash Singularity: Escalation is a sci-fi real-time strategy game built for the PC platform. The game includes a built-in reference tool and was one of the first available benchmark DirectX 12. We're running a processor-focused test using DirectX 12, 1080p resolution and pre-installed extreme quality. Deus Ex: Mankind Divided Deus Ex: Mankind Divided is a stealth video game released in August 2016. The built-in reference utility is built in, and we test with pre-installed Ultra quality and Ani DirectX 12 with a resolution of 1080p. The ATTO Disk Benchmark drive ATTO is a Windows-based utility to test the storage performance of any storage drive or controller. We use the default benchmark setting. M.2 PCIe Performance for M.2 testing we use Toshiba OK RD400 256 GB M.2 PCIe NVMe SSD. The performance of M.2 was the maximum that the drive was capable of, and thermal regulation was prevented by a heat cooling solution. After ten minutes of constant ATTO load, we still haven't been able to reach the Toshiba RD400 regulatory threshold. USB PERFORMANCE We test USB 3.0 and 3.1 performance using a pair of Transcend SSD370S 512GB SSDs in RAID 0 connected to the icy Box RD2253-U31 2-Bay USB 3.1 body powered by the CONTROLLER ASMediaM1352R. The performance of USB 3.1 and 3.0 matched what we saw from the other X299 and No.370 motherboards that ran the same tests. SATA 6Gbps performance to test SATA 6Gbps we use O'C Trion 150 480GB SSD. SATA performance was standard. Audio Rightmark Audio Analyzer a free benchmarking tool designed to objectively test the performance performance of audio solutions. We set up a string loop in a row and run a record/play test before creating the results report you see below. Sampling The 24-bit, 192 kHz is tested where it is available. If unavailable, the nearest alternative mode of operation is used and clearly marked. Audio performance is representative of the well-executed realtek ALC1220 codec implementation. Maximus X Formula owners will be pleased with the sound quality, especially the benefits of the Sabre ESS DAC and Texas Instruments. Manual Processor Overclocking: To test the ASUS Maximus X Formula Mother board processor acceleration potential, we installed a vCore processor no higher than 1.3V and click on the highest stable clock speed. We support the DRAM at 3200 MHz to pull memory stability out of the acceleration equation. Once the highest clock speed for 1.3V is reached, we see if there is a potential to roll back to the voltage while maintaining the stability of the system. ASUS Maximus X Formula had no problems achieving a 5GHz acceleration with a moderate voltage of 1.28 volts, at 1.27 and below we experienced stability problems. However, we have had significant problems trying to get a UEFI-defined manual core voltage to keep constantly when under load in the operating system. We've tested a number of voltage combinations and ANS, to prove our point of view: Guide 1.3 volts - Auto Ltd. - 1.34 volts led by Cinebench Load Manual 1.3 volts - LLC Level 6 - 1,312 volts led by Cinebench Load Manual 1.3 volts - LLC Level 5 - 1,264 volts under Cinebench Load Guide 1,275 volts - Level 7 Ltd. - 1,312 volts under Cinebench 1,275 volts - Level 6 Ltd. - 1,296 volts led by Cinebench Load 1.275 volts - Level 5 Ltd . - 1,232 volts under Cinebench Load and System Crash Guide 1,275 Volt - Auto Ltd. - 1,312 volts led by Cinebench Load Manual 1.31 volts - Level 5 Ltd. - 1.28 volts under cinebench Load As our results show that there was no possible cost of the LLC, which would allow the 1,275 volt UEFI-defined manual voltage core to translate into a 1,275 volt vCore in the operating system, the same for 1.3 volts. In the end the closest we could get to 1,275 volts is by setting 1.31 volts off Level 5 Ltd as Level 5 Ltd. drops the voltage down. Some voltages over supplied vCore significantly when using Level 6, 7 and Auto LLC settings. KitGuru informed ASUS of its findings prior to publication and was informed that in engineering terms our voltages are still within 1% of the target value, which in some cases is not true as the 1,296 volts is 1.6 percent of 1,275 volts. ASUS also told KitGuru that there may be inaccuracies recorded in the CPU-I because of things like CPU contact contacts, processor connector and traces and that the voltage you write down is not an excess and damage the processor. Based on our findings, no UEFI update was announced, and we used the latest available version of UEFI at number 1003 on December 21, 2017. Ultimately the motherboard of this this should be able to ensure the ideal vCore consistency between UEFI and the operating system with the minimum effort required by the user. However, it is still possible to achieve the desired vCore with some creative accounting of the use of higher voltage UEFI than required with Level 5 LLC to abandon it. The acceleration of performance acceleration reflects the frequency of 5 GHz. Power We leave the system idling on your Windows 10 desktop for 5 minutes before taking a statement. For CPU download results, we run the AIDA64, FPU, cache and memory tests and read it in 5 minutes. The energy consumption of our entire test system (on the wall) is shown in the graph. Power consumption for ASUS Maximus X Formula was quite high at load due to higher than vCore values required for Intel stock settings - with a steady stable load it was 1.22, but rose to 1.26-1.3 under some load scenarios. In the acceleration settings, the gap between the ASUS and Gigabyte motherboards narrowed to almost nothing, as manual voltages were used to install both boards to about 1.28v on vCore. KitGuru has observed peak VRM temperatures, after 10 minutes of sustained AIDA64 processor and memory load, 53 degrees Celsius in stock and 59 degrees Celsius on acceleration from THEUS EC VRM sensor (read using HWiNFO64). The ASUS Maximus X formula is, for the most part, in line with the reputation of the Formula One model and the high expectations of the Republic of Gamers brand. The formula excels most in the field of styling and customization, where unique ROG Armor and extensive lighting options give DIY system builders complete flexibility. The VRM processor is becoming increasingly important for high-quality motherboards and the Maximus X Formula is strong in this area with strong performance of hybrid air or water cooling heats, as well as a 8'2 phase VRM solution using high-quality components. The potency of this VRM hardware has partly summed up the inconsistency between the UEFI vCore settings and the actual vCore behavior in Windows under load, something we hope that ASUS will once again take a look at. The link is fairly typical of the mid-range motherboard with USB well equipped for all standards (2.0, 3.0, 3.1), enough SATA and M.2 provided for the needs of most users and competent wired and wireless network options. For example, ASUS ROG Strix No370-E Gaming is as well equipped in terms of USB, storage and networks as the Maximus X formula is almost twice the price of the year ago. Where the Maximus X is ahead of the competition, it has a range of acceleration and diagnostic utilities, including numerous buttons (power, reset, reuse, safe, memOK, etc.), diagnostic LEDs and code reader. The formula is also its niche as an individual motherboard for water with an integrated water processor unit, eight fans, two of which can easily easily enough energy to support high-quality water pumps (up to 36 W) and water flow sensors. Some of the improvements in Formula are more subtle, such as the Digital Analog Converter (DAC) and the special hardware IC to offer ROG Keybot features. Most motherboard providers offer Keybot-equivalent functionality like software only, which lacks perks like being able to wake up the system from the sleep S5 and interact directly with UEFI with the keyboard. An innovative feature of the day is the integrated OLED LiveDash display, which provides a new way to visualize the parameters of monitoring equipment or custom images and animations, perfect for adding that touch to any individual system build. It is in these main areas - tuning, water hypothermia and acceleration/diagnosis - Formula Maximus X cements itself as a premium offer in the demanding but niche segment of the market. However, its high price and middle-class connectivity may well discourage a number of potential buyers from favoring more affordable or better-related motherboard options. It's also worth noting that the Maximus X code is almost identical to the Maximus X Formula, minus the water block and LiveDash display, for those with limited interest in setting up a water-powered system with a tighter budget. AsUS Maximus X Formula has a retail price of 379.99 pounds from Overclockers UK and is sold with a 3-year warranty as standard. Discuss on our Facebook page NEXT. Pros: Stylish Design Effective Cooling M.2 and Dual M.2 Quality VRM Implementation with VRM Waterblock Processor Excellent Audio System Abundant Acceleration and Diagnostic Tools Extensive RGB and LED lighting options Dual USB 3.1 controllers and generally enough USB connectivity Abundant fan headbands with granular controls Innovative OLED LiveDash display On board WiFi and Bluetooth Cons: UEFI's behavior prevents specified vCore voltage being achieved under the load of the Buoyant Price tag Vertically located M.2 slot embarrassing No double or 5/10G LAN OLED LiveDash display only monochrome KitGuru says: Formula Maximus X is a worthy foundation for custom and prestigious builds involving waterboarding. Become a patron! Pages: 1 2 3 4 5 6 7 8 9 10 11 12 12

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