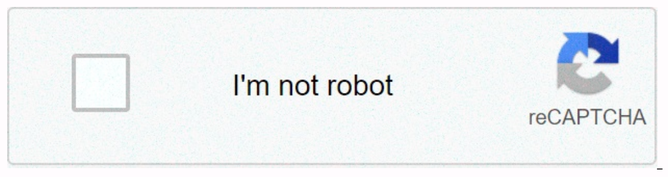

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Single channel vs dual channel ram fps

If you are creating or upgrading your system, your system's RAM must be one of the most important things on your mind. Most people take the view that RAM helps the processor work faster. But contrary to public opinion, random access memory, or RAM, basically accelerates the system by achieving its maximum potential performance. This is because the processor is always going to be faster than the RAM, which results in the processor having to wait for the RAM to deliver the data. During this standby time, the CPU sits idle, thus wasting power and time. Recent advances in technology have tried to overcome the speed barrier by switching to dual, triple and even quad-channel techniques to increase speed, with the most common being double channel. But how much increase does it really bring? Today, we compare the Single Channel vs Dual Channel Memory Units, to see if the hype around Dual Channel is real or not, and is the upgrade even worth it? But before we get to that, let's first see how memory works in a system. How memory works System RAM is controlled by a circuit that is referred to as a memory controller. Ram and memory controller are connected via a series of cables, collectively known as the memory channel. Now, these cables are further divided into three groups - Control, Data and Address. Control cables are responsible for sending commands to memory drives that contain information about the type of operation performed by the system. Data cables will transfer data that is either read from memory to the memory controller or written by the memory controller to memory. The memory controller is also responsible for determining the memory speeds (or clock rates) for that memory unit. For example, if the memory controller reports that the maximum clock rate it supports is 1333 MHz, even if you install a 2400 MHz memory module, the system will be able to use the potential of just 1333 MHz only, thus underclocking the RAM. Now that you understand how basically a RAM works, let's move on to compare a channel vs Dual Channel Memory. Single Channel vs Dual Channel Memory: Architecture A single stick of RAM works on a single 64-bit data channel, which means it can push the data down into a single tube that is 64-bit in total width. The architecture for a channel memory is shown below. Single channel architecture Called, today, modern systems support the platforms as well. In the case of dual channel memory, the system uses not one but two memory channels. Now, we have 2×64-bit channels available for memory. This means that we doubled the data traces running on the memory channel and now we have an effective 128-bit channel. Two-channel architecture If you take a closer look above image, you will see that both channels support data bit ports from D00 to D63, i.e. 64 ports. That said, essentially, ports on Channel 2 are taken from D64 to D127, thus mimicking the next set of 64 ports. As a result, the system assumes that the channel width is a total width of 128-bit rather than 64-bit. Effective dual channel architecture As you can see above, the D0-D63 represents the first channel, D64-D127 represents the second channel. This way, modules can process 64 bits of data at any time, so dual-channel platforms will read and write in two sections at once (saturation of the large 128-bit bus). Bandwidth is the maximum theoretical transfer rate of a communication channel and is measured in megabytes per second (MB/s) or gigabytes per second (GB/s). Current technologies such as DDR (Double Data Rate) can transfer two bits of data per clock cycle. As a result, they achieve twice the transfer rate compared to traditional memory technologies. For example, the DDR3-1333 MHz module can actually run at 666.6 MHz, but carry two bits of data per clock cycle. Additionally, bandwidth also depends on the width of the data bus. A single channel uses a 64-bit device width, which essentially means that 64 bits of data are transferred to each transfer cycle. So, theoretically, bandwidth can be calculated as: bandwidth = DDR clock percentage x data bus width / 8 So, for a single DDR3-1333 Memory channel, the theoretical bandwidth comes out to be bandwidth in a single channel = 1333 x 64/8 = 10,664 MB/s or 10.6 GB/s Newer technologies such as dual channel technologies focus on doubling the data channel width by increasing the number of data cables available on the memory channel. A double channel makes use of the width of the 128-bit device, that is, 128 bits of data are transferred to each transfer cycle (as shown in the above architectural differences). This, in turn, affects the system by theoretically doubling bandwidth. For example, for a dual channel DDR3-1333 Memory, the theoretical bandwidth when calculating comes out to be bandwidth in dual channel = 1333 x (64 x 2) / 8 = 21,328 MB / s or 21.3 GB / s Note: While the difference between bandwidth is impressive, keep in mind that this is only a theoretical calculation of both values. The actual performance between the memory of a channel versus two channels may vary, which is further discussed. Inter-attack memory is a design designed to compensate for the relatively slow speed of dynamic memory (DRAM) or kernel memory. This is done by spreading memory addresses evenly across memory banks. The memory bank consists of multiple columns and rows of storage units distributed across various chips. Each memory unit can have two or more memory banks to store programs and data. Broken memory results in continuous reading and write. This uses each memory bank in turn, instead of using the same repeatedly. Ultimately, it leads to significantly higher memory performance, as each bank has a minimum waiting time between reads and writes. Interleaving Memory Reading and Recording Using a dual channel memory increases the number of memory banks, so, in turn, improving the interpolation design to lead to better multitasking. Benchmarks While benchmarking is not equivalent to real-life performance, it is much more realistic than theoretical calculation. Therefore, we compared a single Corsair Revenge channel 8GB DDR3 RAM with a dual channel Corsair Revenge 8GB (4×2 kit) DDR3 RAM, both costing the same $64.99. The following benchmarks were made on our test engine. Euler 3D RAM CFD Benchmark – Higher is better in our Euler 3D benchmark, the two-channel memory configuration performs about 17% better than the memory configuration of a channel. The difference between the two puts the two-channel memory ahead of its competitor. This advantage should prove useful for users who perform heavy-duty calculation, simulation and collections. MaxxMem Copy Read Write Bandwidth - Higher is better After our tests with MaxxMem, we tested memory copy, memory reading, memory write, and memory bandwidth performance. These tests are measured in Megabytes per second. As a result, we have seen significant performance differences between the memory modules of a vs dual channel, with Dual Channel having a clear lead in any case. That said, it's worth pointing out that performance is no way close to theoretical calculation, considering bandwidth should have doubled when instead we noticed a ~20% increase on average. MaxxMem Memory Latency - Lower is better Latency refers to the delay before a data transfer begins after a instruction to transfer it. In our memory latency test at MaxxMem, we found that there was a simple difference of ~2.7% in delays, with the dual channel memory module still performing slightly better than the Single Channel. Transcoding Video Handbrake – Lower is better In our handbrake benchmarking, we almost saw a 4.5% advantage in favor of dual channel memory. That said, handbrake in itself is a really powerful tool, pushing the system to its limits. Even for most heavy-duty users who make video copying or transcoding, the small difference won't make much difference. For video editing, Adobe Premiere is one of the most demanding software Out. In the benchmarking test, we found that setting the Dual Channel saves about 8 seconds in total performance time, thus giving it the small advantage. While the difference here is quite insignificant, for systems that perform all day, the performance time gap could prove larger, thus saving a few crucial minutes off the shelf. Real life While the above benchmarks turned out to be in little favor of the dual channel memory unit, in the real use of my life, I found that there is a negligible difference between the two. Pages loaded slightly faster and my software, such as iTunes, Google Chrome and Microsoft Office, ran at equivalent speeds. And yes, I made sure to clear the cache before testing each memory setting to ensure accurate results. In addition, I also ran a few games to test their performance. The results are shown in the chart below. Gaming Benchmarks - FPS - Highest is best We tried the Dying

Light, Metro Last Light, Grand Theft Auto V, and The Witcher 3: Wild Hunt on our system when combined with the MSI NVIDIA GTX 1060. The results were pretty much the same, with Dual Channel having a slight advantage over a channel's memory units. That said, there were instances where the Dual Channel function experienced performance drops, which was pretty evident in Witcher 3. Even so, the difference between the two is still negligible. Single channel vs dual channel memory: Which is better? To sum up, I would say that yes, in comparing the Single Channel vs Dual Channel Memory, Dual Channel comes out as the winner. That said, the benchmark and the actual results of life are very different from the differences calculated on paper. In theory, there should be a 2x difference, whereas in fact, the Dual Channel seems to have only a 16-17% advantage at best in overall use. While achieving a 12-13% difference is also desirable, it certainly isn't worth the hype surrounding Dual Channel Memory. In most cases, the normal user will not even notice the difference between the two. And as far as energy users are concerned, even if Dual Channel comes out on top, they won't sacrifice anything important. SEE ALSO: DDR3 vs DDR4 RAM: Is it worth the upgrade? Single channel vs dual channel memory: What's best for you? As you can see, while dual channel memory performs better than a channel's memory modules, the difference between the two is by no means shocking. In the end, it all comes down to the point of honor. There may be cases where you may be able to buy a dual channel kit cheaper than the single memory module, or vice versa. That said, buying a single memory channel leaves the door open for future Dual Channel Exploiting. The only thing to keep in mind is the fact that your future purchase should be similar, if not identical, to existing memory in order to ensure proper operation. Finally, the Your focus should be on RAM capacity and clock speeds. In real-world use, these two factors are going to make the biggest difference, regardless of whether they are used on a single channel or dual channel. Our proposal would be to finalize finalize Capacity and speed of your RAM clock and then just watch the market for a better deal on either single or dual channel to finalize your purchase. So that's all there is to Single Channel vs Dual Memory Channel on our side. Be sure to share with us your thoughts on this, as well as your experiences, in the comments section below. Following.

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