

Reviewer: Steven Walton

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Manufacturer: [Kingston](#)

Price: \$240 US

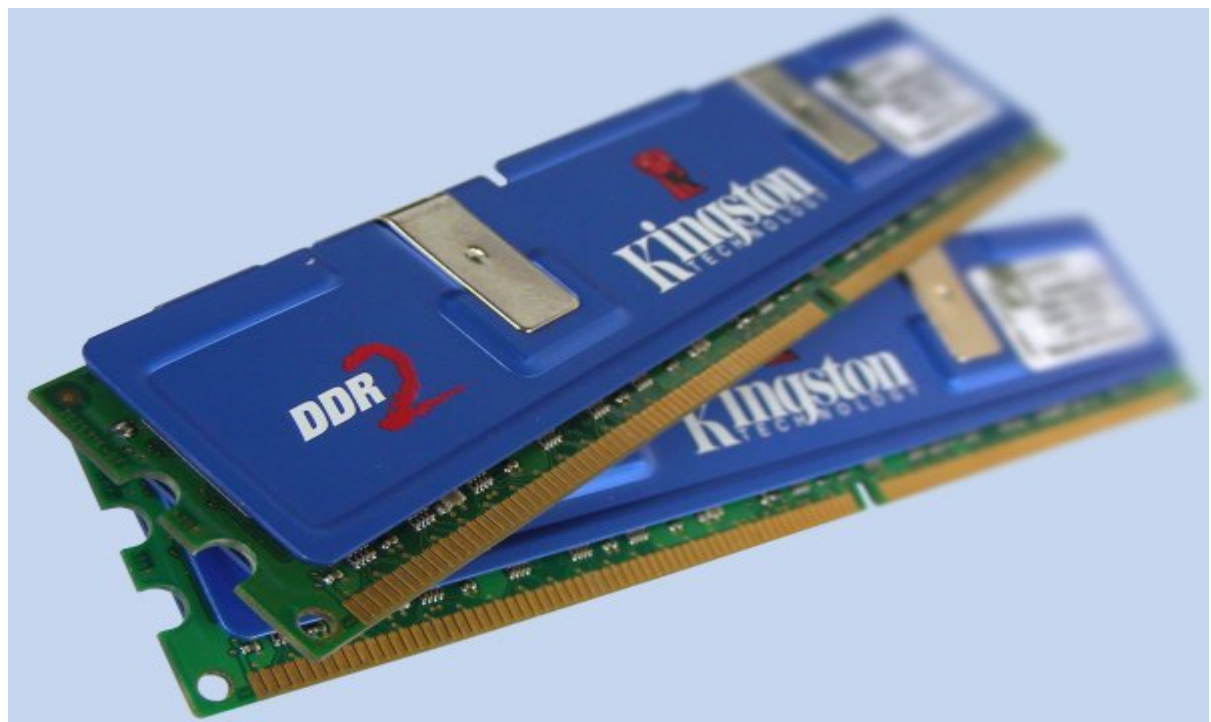
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Date: 14/02/2007

[Introduction]

Kingston has been in the memory business for a long time now, in fact they are probably one of the longest established memory manufacturers. Well before I was into computers, some 18 years ago now Kingston began testing all their memory modules, at the time no other manufacturer tested 100% of their memory. This helped Kingston establish a strong reputation that they have successfully carried on to this day. Amazingly, while Legion Hardware has been around for 8 years now we have never had the pleasure of testing a Kingston product.



Of course I have purchased and owned many Kingston memory modules in my time, though I have never used any of their performance memory. That was until a week ago, when I began testing the Kingston HyperX PC2-6400 2GB dual-channel memory kit on our latest Core 2 Duo platform. The exact kit that we have here today is the "KHX6400D2LLK2/2GN" which is designed to support Nvidia SLI systems. This being the case we decided to throw this memory at the recently reviewed ASUS Striker Extreme motherboard.

This is a low latency kit and while it is programmed to work at the 800MHz DDR2 JEDEC specification of CAS 5-5-5-15 2T with 1.9v, the timings can be manually improved. Kingston guarantees that this memory can operate at CAS 4-4-4-12 2T with just 2.0v of power. These are quite good timings for DDR2-800 memory and should allow the modules to be quite flexible when it comes time to overclock them. However, after further inspection we realized that the Kingston HyperX KHX6400D2LLK2/2GN modules use Elpida chips, meaning they probably will not overclock very well.

Nevertheless, being performance based memory from the "HyperX" family, the KHX6400D2LLK2/2GN modules feature attractive blue heat spreaders. While heat spreaders are not entirely necessary for DDR2-800 memory working with just 2.0v, they will ensure that the memory remains at a safe operating temperature. Furthermore, while we have been put off in the past by memory from OCZ for example, that have very poorly attached heat spreaders, I am impressed with how well Kingston have installed their heat spreaders. A very fine piece of double sided tape has been applied to the heat spreader first and then Kingston has stuck them over the memory chips.

Finishing off the installation are two strong retaining clips designed to ensure that the heat spreaders never move or damage the modules when users press down on them to install the modules. Furthermore this method also improves contact, allowing the heat spreaders to remove heat from all the memory chips. The PCB itself is still green which is a shame as blue would have looked that little bit better, though overall the modules do look impressive. Priced at around \$240 US the HyperX KHX6400D2LLK2/2GN is not the cheapest 2GB dual-channel memory kit going around, but it is fairly well priced.

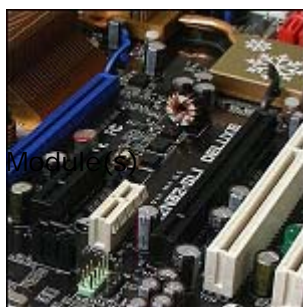
Given that 2GB DDR2-800 memory kits start around \$200 US, with the majority of low-latency kits costing upward of \$240 US, we recon Kingston are pretty spot on with their pricing. The Corsair CAS 4-4-4-12 2T kit starts around \$250 US so the

Kingston pricing is very competitive. So the price seems to be pretty well spot on and they certainly look the part. The next big question is of course how well do they perform? Well without wasting anymore time, let's move on to the next section of this review where we put these modules to the test using our nForce 680i SLI system!

[Photography]



[Memory Performance]



Hardware

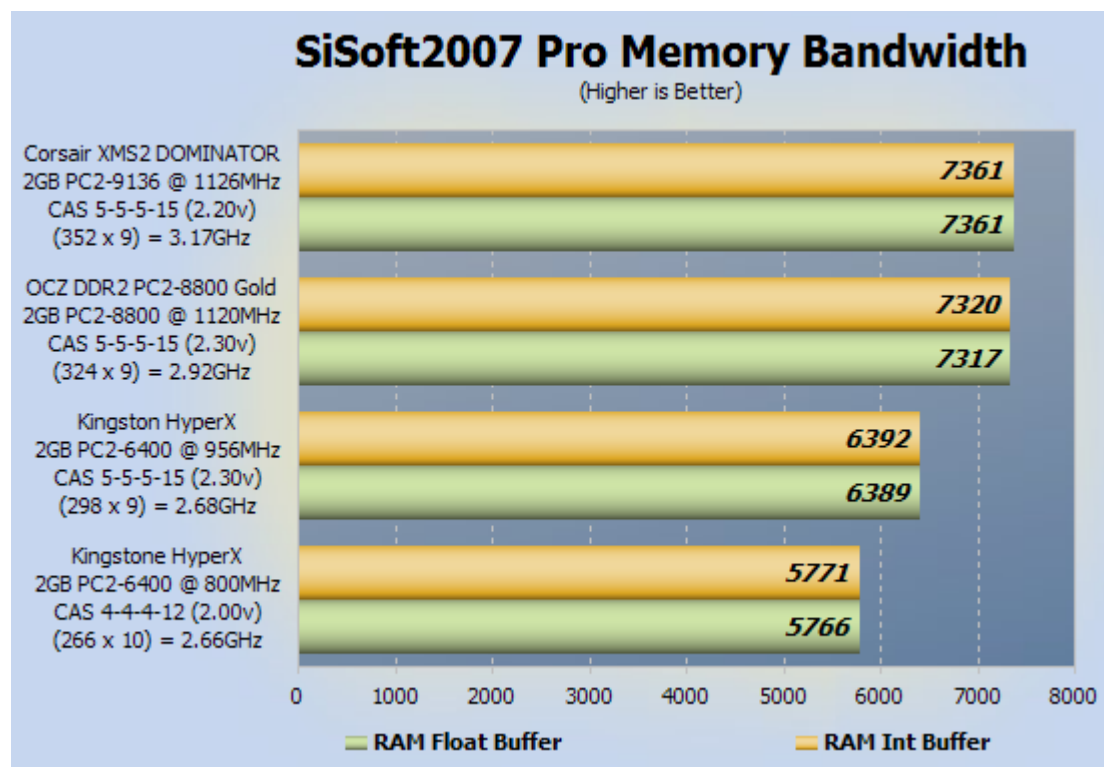
- Intel Core 2 Duo E6700 (2.66GHz) LGA775
- x2 1024MB Kingston HyperX PC2-6400 CAS4
- x2 1024MB OCZ DDR2 PC2-8800 Gold CAS5 Module(s)
- x2 1024MB Corsair XMS2 DOMINATOR PC2-9136 CAS5 Module(s)
- Seagate 250GB 7200RPM (Serial ATAII)

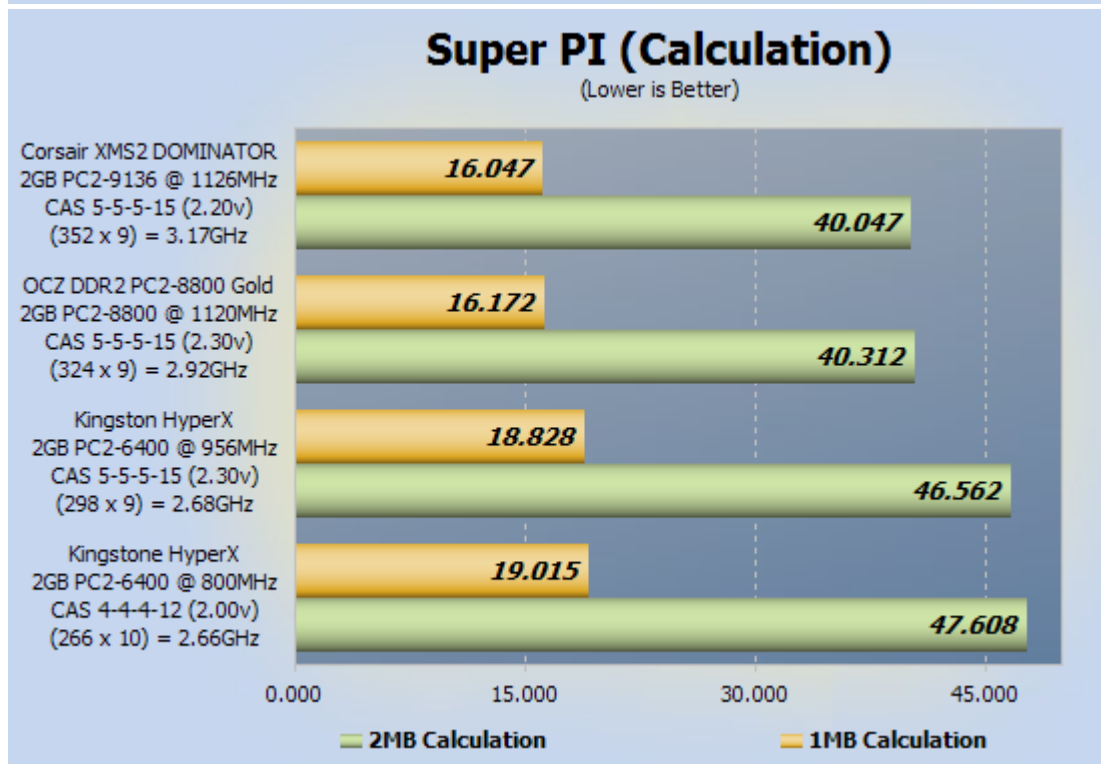
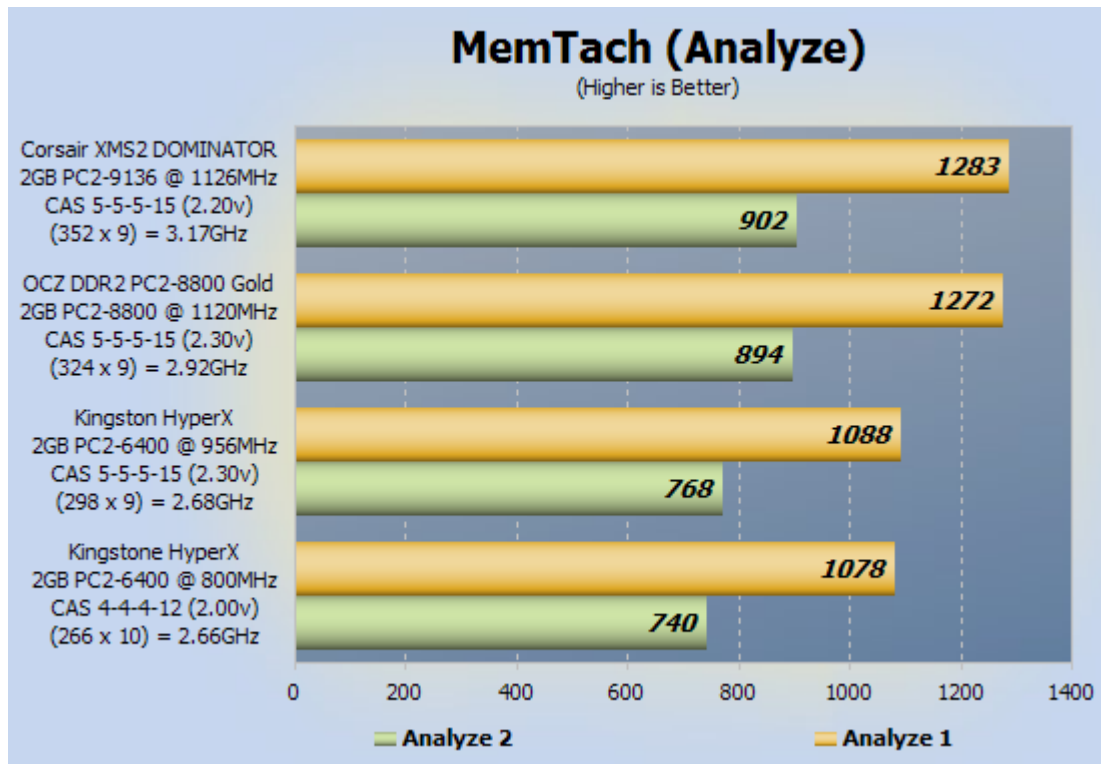
- ASUS GeForce 8800 GTX (768MB)
- ASUS Striker Extreme (Nvidia nForce 680i SLI)
- OCZ GameXStream (700 watt)

Software

- WinXP 32bit - Microsoft Windows XP Pro (SP2)
- Nvidia nForce 680i SLI (9.53)
- Nvidia Forceware (97.92)

The Kingston HyperX 2GB PC2-6400 has been compared to a 2GB PC2-8800 and 2GB PC2-9136 kit, both of which cost over \$400 US. The Kingston HyperX 2GB kit on the other hand costs just \$240 US. So for the same amount of DDR2 memory this PC2-6400 kit is roughly 43% cheaper. Let's see how much difference that makes, keeping in mind the OCZ and Corsair overlocking memory is running on a much higher FSB resulting in a higher overclock processor clock frequency. The idea of this OCZ and Corsair memory is to allow overclockers to push their system to the max. But what are those that cannot afford this ultra expensive memory missing out on?

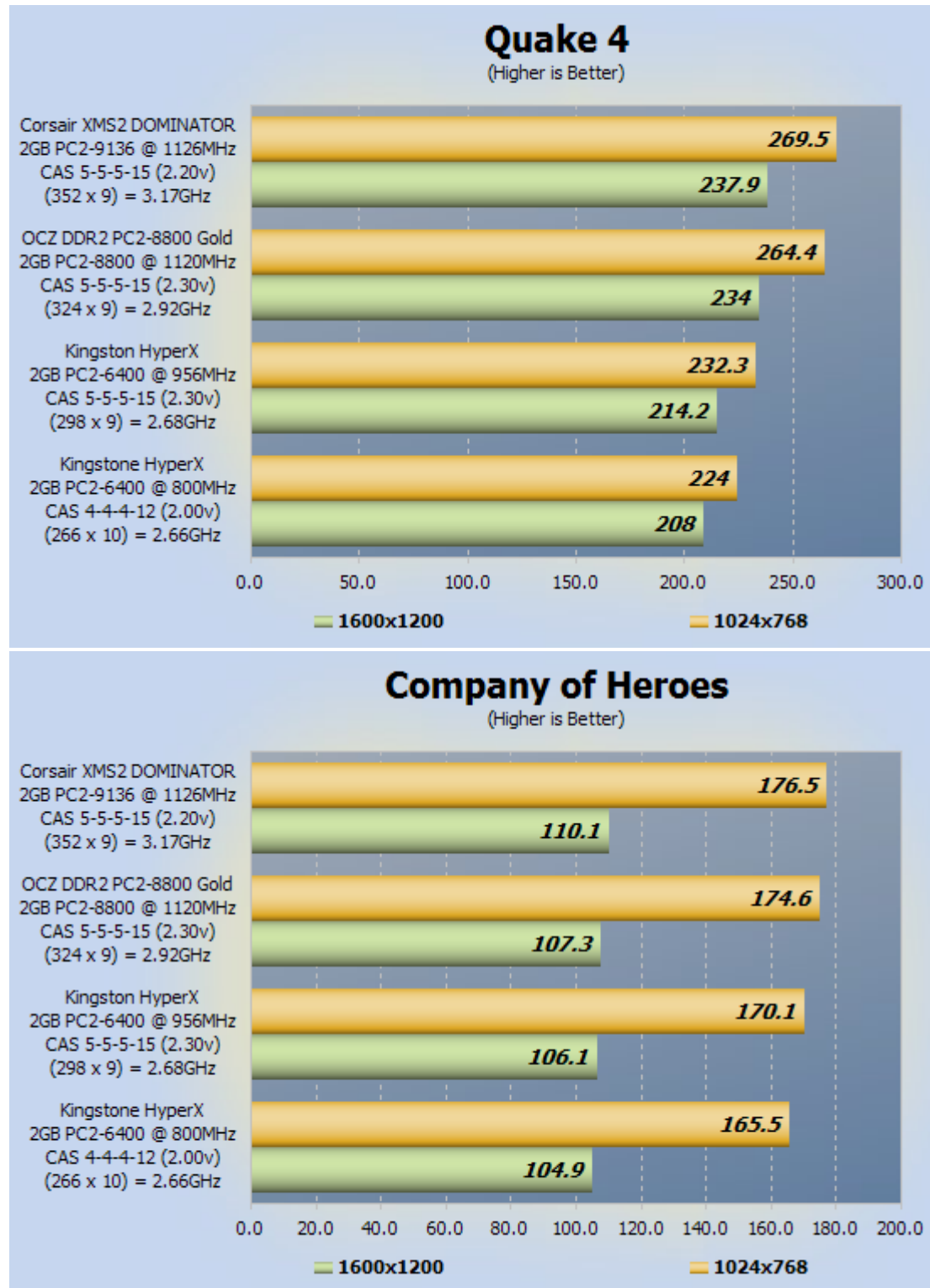


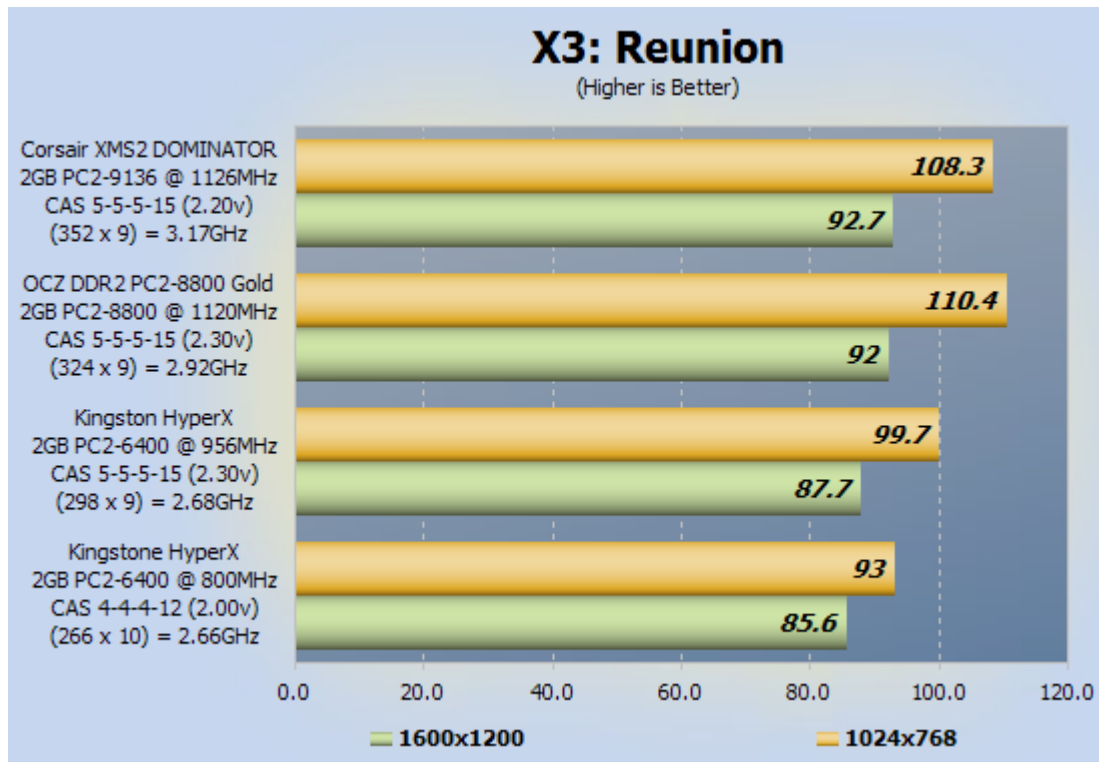


As you can see, in SiSoft2007 the high performance OCZ and Corsair memory produce quite impressive memory bandwidths of around 7.3GB/s. However, the Kingston PC2-6400 memory still does quite well, generating a memory bandwidth of 5.7GB/s. The Kingston HyperX memory was able to operate at 956MHz with a bit more voltage and much weaker timings. This helped extend the memory bandwidth

by 12% to 6.4GB/s. Keeping a 9x clock multiplier the OCZ and Corsair memory modules did allow for much better overclocks, as they would handle the higher FSB.

[Gaming Performance]





Quake 4 and X3: Reunion saw decent performance gains from the higher clocked memory, where as Company of Heroes was not as affected by the overclock. While the OCZ and Corsair configurations did deliver better results, this was primarily because they were running the processor at a much greater frequency. However, the point is without the memory that can go the distance the huge overclocks might not be possible, or at least as easy to achieve.

However from a value perspective, the much cheaper Kingston HyperX memory is the way to go. While this memory costs 43% less it was never more than 17% slower in any of the gaming tests. Furthermore, the frame rates were so high that a 17% difference in performance had literally no impact.

[Conclusion]

The Kingston HyperX PC2-6400 2GB is an excellent memory kit and while it might not be the fastest memory we have ever tested or the best overclocking memory, it is great value memory. While this is not the cheapest 2GB kit money can buy, it is one of the cheapest performance kits available. Priced at just \$240 US these DDR2-800 memory modules are great value, offering gamers excellent stability and performance. Although we were able to push these modules to 956MHz, we do not recommend this memory for anyone planning on overclocking their system. For overclocking there are better solutions out there, though they do cost more!

Over the years I have viewed gamers and overclockers as being much the same. By this I mean if you are a gamer you are probably an overclocker and vice versa. However, many gamers these days seem to be steering clear of overclocking for one reason or another. Having looked at past articles there is some evidence to why gamers might not worry about overclocking. After recently testing the GeForce 8800 GTX with every single Core 2 Duo processor available, we noticed that the performance difference between the E6300 and E6700 was quite minimal in most games. With the thermal output of today's processors, graphics cards and various other system components, overclocking them to generate even more heat should be avoided in most cases.

Furthermore, memory such as the OCZ PC2-8800 and Corsair PC2-9138 used for comparison purposes, costs significantly more and initially the idea behind overclocking was to save money. Therefore I believe the HyperX PC2-6400 2GB kit is an ideal solution for gamers looking at unlocking the full potential of their gaming system without having to overclock it and more importantly, without having to take out a personal loan. Of course we here at Legion Hardware love to overclock and we really love to overclock Intel's Core 2 processors. However, those that are not interested in overclocking will appreciate what these Kingston HyperX modules have to offer.



Bottom-line is for \$240 US the Kingston "KHX6400D2LLK2/2GN" modules perform very well at their specified frequencies, allow for a little overclocking, look impressive and are of excellent quality. It has been some time since we looked at a "sensible" memory kit that doesn't cost more than some entire systems. While not as exciting when compared to extreme memory, these practical memory kits are typically what most gamers will turn to. That said, this Kingston memory kit is by far one of the best DDR2-800 alternatives we have ever seen and I highly recommend it to anyone building a gaming system on a budget.

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