

## Review Intel DG41MJ

### Introduction

After the DG45FC and DQ45EK mainboards, Intel has released a bit of a pared-down version now, which primarily will be more affordable. Mainly, the differences of the **DG41MJ** are with the chip set as well as the external and internal connectivity. Even though the chip set got pared-down, it can nevertheless keep up with the previous versions.

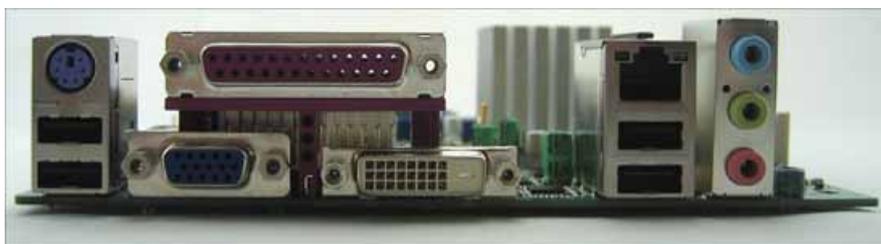
### Specifications

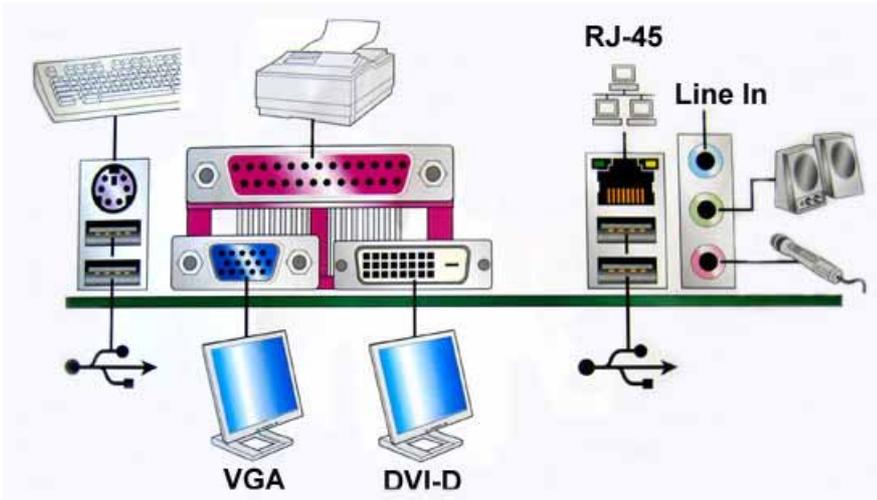


Model	DG41MJ
Type	Mini-ITX mainboard
CPU	Intel Core 2 Duo wit up to 13333FSB (socket 775)
Chip set	Intel G41 Express
graphic	Intel GMA X4500
RAM	2x DDR2 667/800 Dual Channel (8 GB max.)
Display connection	1x DVI, 1x VGA
PCI	1x PCI
SATA	3x SATA II
Audio	6-channels (5.1) Realtek-Audio-Codec ALC888VC
LAN	1x 1000Mbit
USB 2.0	4+4x USB 2.0
External connectors	DVI, VGA, 4x USB 2.0, 1x GigaLAN, Audio, PS2 (keyboard), printer
Internal connectors	1x PCI, 4x USB 2.0, 3x SATA, Serial, Audio
Power supply	24 Pin ATX, P4-jack
Accessories and delivery content	I/O panel, 2x SATA data cable, quick guide
Software	driver CD
Measurements (length x width)	17cm x 17cm

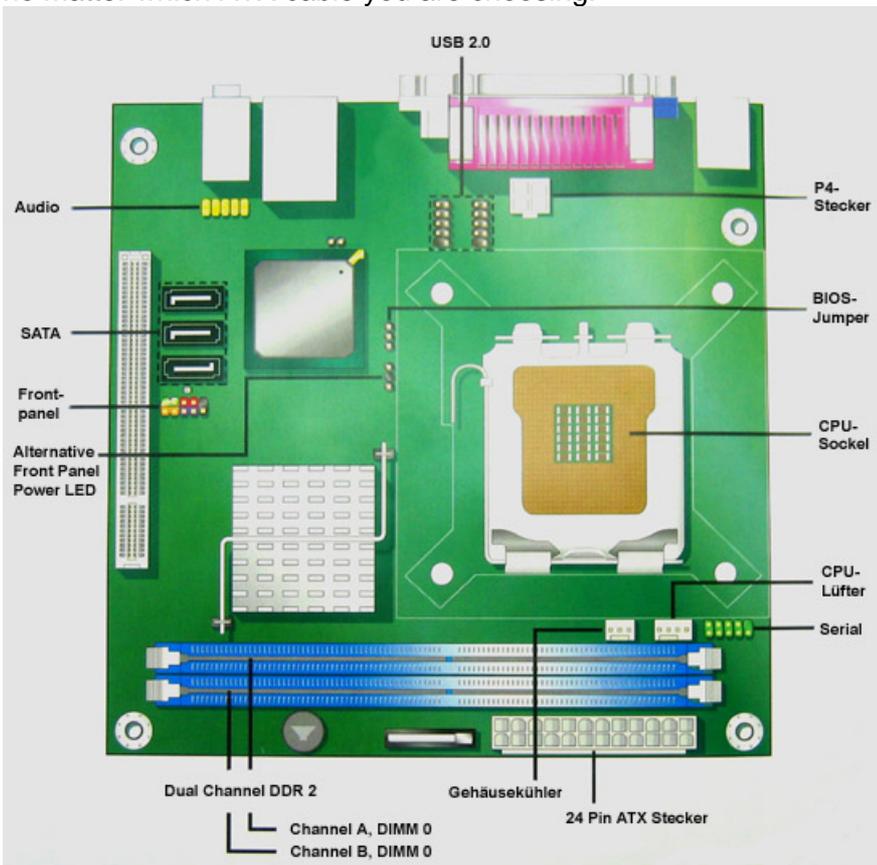
### Mainboard and connections

The socket 775 mini-ITX mainboard DG41MJ is powered by a G41 chip set, where an Intel Core2Duo CPU with up to 1333MHz FSB can be placed. Additionally a X4500 graphic chip has been integrated. The basic configuration presents the boards as not so connectivity friendly as the previous versions. But, it is very stable and is good enough for all basic assignments.





On the I/O panel you will find the following connections: DVI output, VGA, four USB 2.0 ports, one GigaLAN bush as well as the standard audio ports. Internal there are four more USB 2.0 ports, three SATA connectors, one PCI slot, serial and audio. Here you also have the possibility to use the two DDR2 slots in dual channel, if you have integrated two of a kind RAM. You can choose between a 24pin or 20pin ATX jack power supply. The P4 connector cable is still necessary, no matter which ATX cable you are choosing.



All slots are placed well for easy access; no modification of the cables is required. Right on the socket are parts that only allow the specific 775 heatsink / fan to be placed on the board.



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### Installation, used hardware and operation

The following hardware was used for our test system:

- Intel DG41MJ with Intel Core 2 Duo E8500
- 2x 1GiB DDR2 800 RAM from Aeon
- 80 GB SATA HDD with 5400U/min from WD
- DVD R/RW drive from Pioneer
- M2-ATX supplied with power by a 110W AC adapter

**CPU-Z**

Cache | Mainboard | Memory | SPD | About

Processor

Name	Intel Core 2 Duo E8500		
Code Name	Wolfdale	Brand ID	
Package	Socket 775 LGA		
Technology	45 nm	Core Voltage	1.136 V

Specification: Intel(R) Core(TM)2 Duo CPU E8500 @ 3.16GHz

Family	6	Model	7	Stepping	6
Ext. Family	6	Ext. Model	17	Revision	C0

Instructions: MMX, SSE, SSE2, SSE3, SSSE3, SSE4.1, EM64T

Clocks (Core #0)

Core Speed	2000.1 MHz
Multiplier	x 6.0
Bus Speed	333.3 MHz
Rated FSB	1333.4 MHz

Cache

L1 Data	2 x 32 KBytes
L1 Inst.	2 x 32 KBytes
Level 2	6144 KBytes
Level 3	

Selection: Processor #1 | Cores: 2 | Threads: 2

Version 1.44.2

**CPU-Z** [OK]

We installed Windows XP Professional and Windows Vista Ultimate 32bit for our test – as usual. The pre-released drivers are running already very stable and no problems occurred so far in our test runs.

If this mainboard is neither at home in the multimedia environment, nor in the industrial environment, and despite missing interfaces it offers very high performance, it is a valid question to ask for what you could possibly need all the performance then - especially because the power consumption is respectively higher.

When installing operation systems like Windows Vista or in the near future Windows 7, the platforms have to be up-to-date; particularly because the support for Windows XP will run out sooner or later. To be able to use all the new functions of the new eye candy operating systems, you need a high performance system.

2 gigabyte RAM are obligatory for the new operating systems. If you install a 64 bit system, you would want to have even 4 gigabyte of RAM. The two DDR2 RAM sockets, which can be run as dual channel, are coming in handy here. You can possibly install up to 8 gigabyte. For our test we were using two times 1 gigabyte, to not falsify the performance index.

Of course everything is running smooth with Windows XP. Our focus was therefore aggrandized on Windows Vista and soon Windows 7. Aero Glass, the taskbar, animated windows and effects are default settings of Windows Vista, and with exactly those settings we tested our applications. The Office 2007 Enterprise Edition for example, is running with our test system equally flawless and without any delay as the image processing application Adobe Photoshop. Tasks such as converting audio, picture and video material, unzipping files and other common everyday jobs are double the fun with a computer like this. In a nutshell, fast systems are fun and they are saving the user oftentimes a lot of time and nerves.

Nevertheless the DG41MJ has a 6-channel audio output. You can't expect too much from this on board solution – some people might want to use a PCI card or an external USB solution – but for most this audio chip will be adequate.

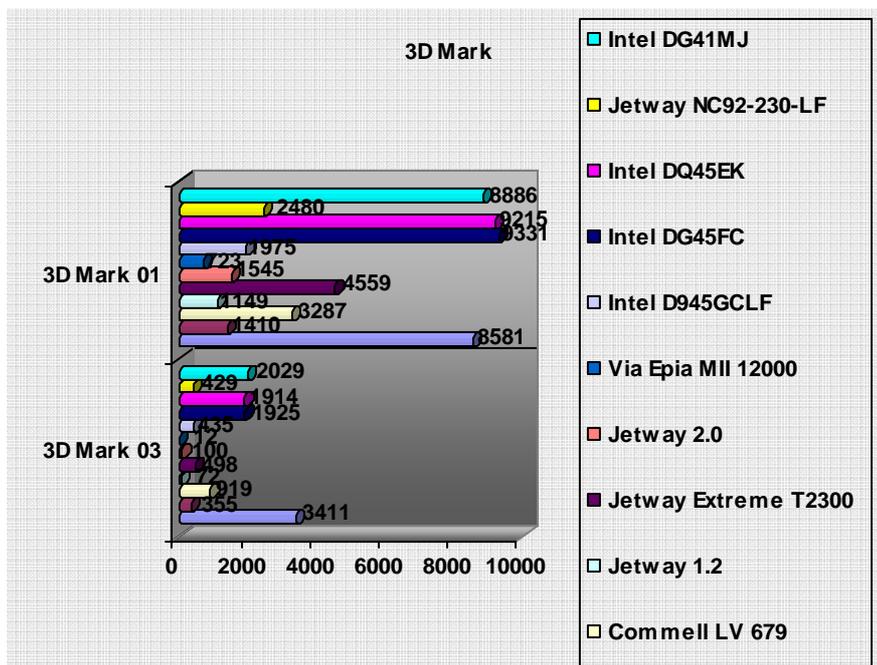
Video with high resolution up to full HD is definitely possible with the DG41MJ. Due to the missing HDMI slot 'true' full HD with 1080p is not possible. We were playing a high definition movie with 1080i and 5.1 Dolby digital which was converted and at no time we recognized a substantial capacity.

Important for the car PC environment is the energy saving mode S1 and S3, which are selectable via BIOS. We tested them with our most common car power supply and they were fully functioning. The typical Windows problem that USB devices couldn't be found after waking up the system, which is an important part regarding car PCs, wasn't the case here.

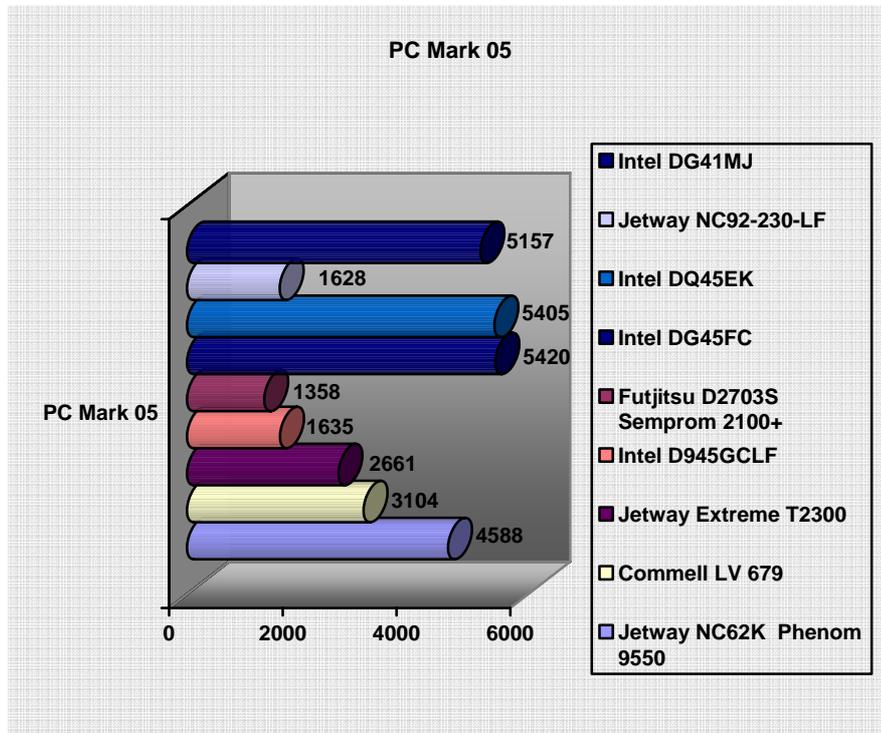
### Performance, power consumption

The Intel DG41MJ with the considerably smaller chip set is keeping up with our reference board and only has to surrender by a hair's breadth. Thanks to the Core2Duo 8500, which was tested with the DG45FC as well. All in all, the performance is bombastic for the price. Other manufacturers should take a leaf out of Intel's book.

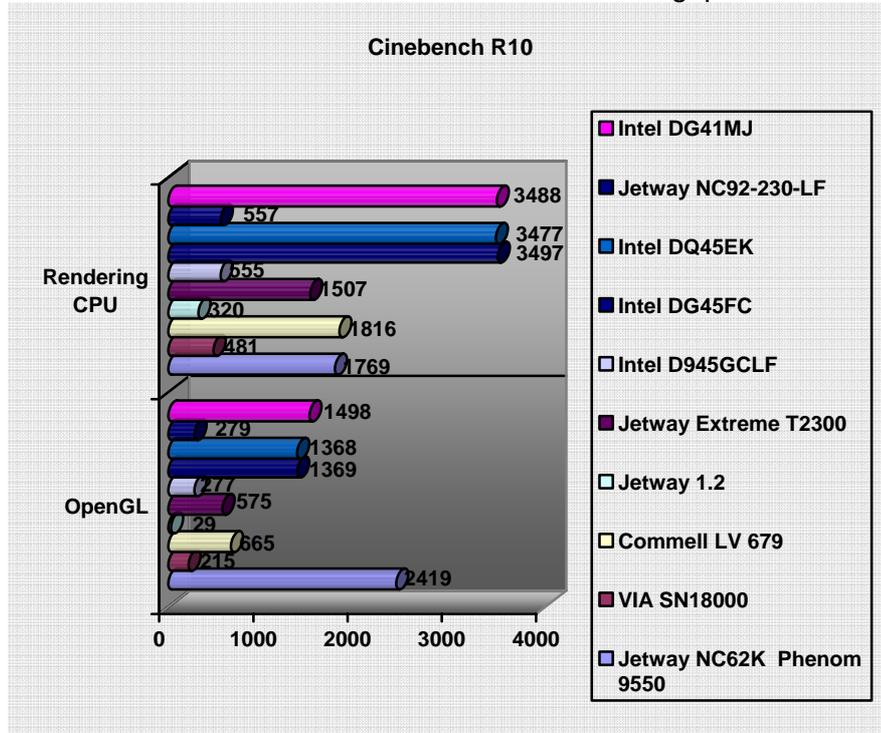
Due to the almost identical configuration in regard to the hardware, there are only minimal differences in the graphics department on the Vista performance index.



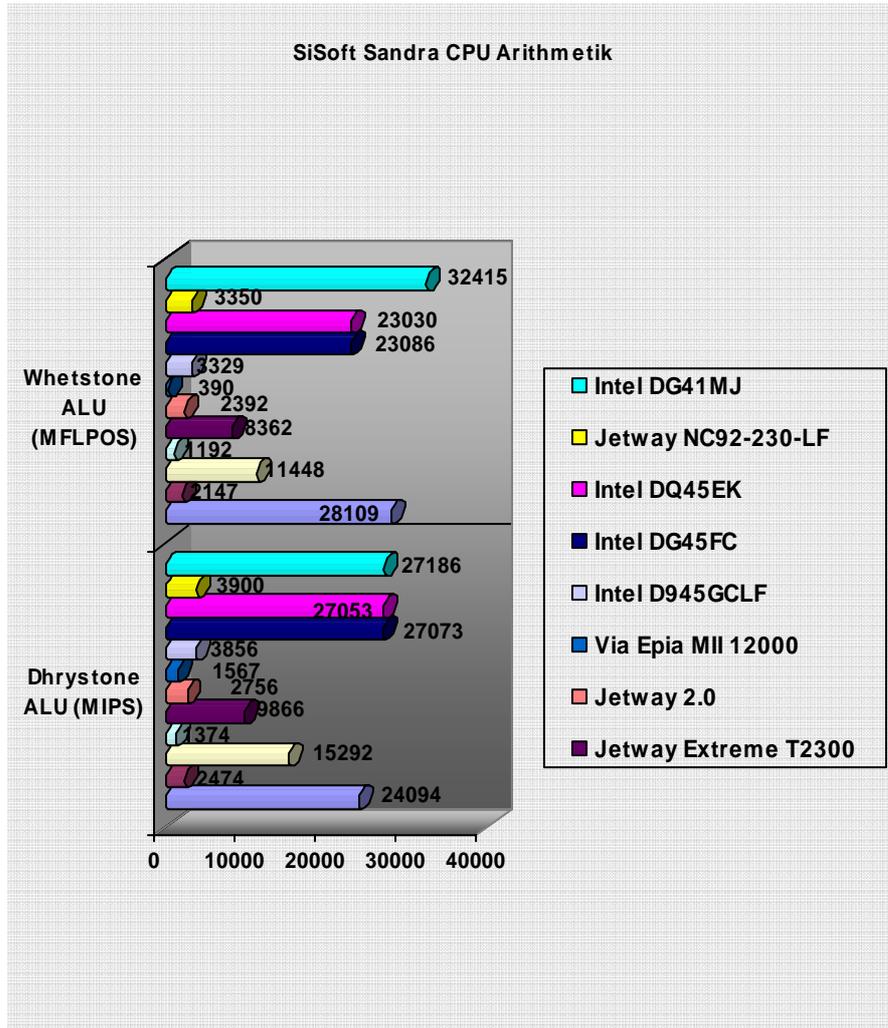
When displaying game graphics, the Intel DG41MJ limping a little bit behind the frontrunners.



On the PC Mark 05 the board is about to close the gap to our references in the mini ITX environment.

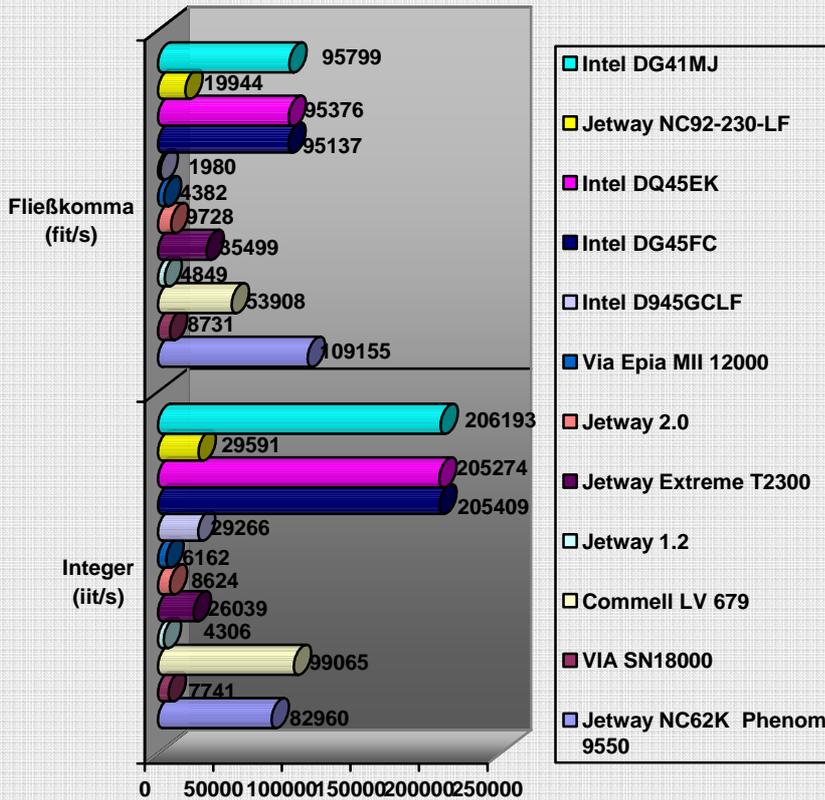


A similar situation is given at the Cinebench test.



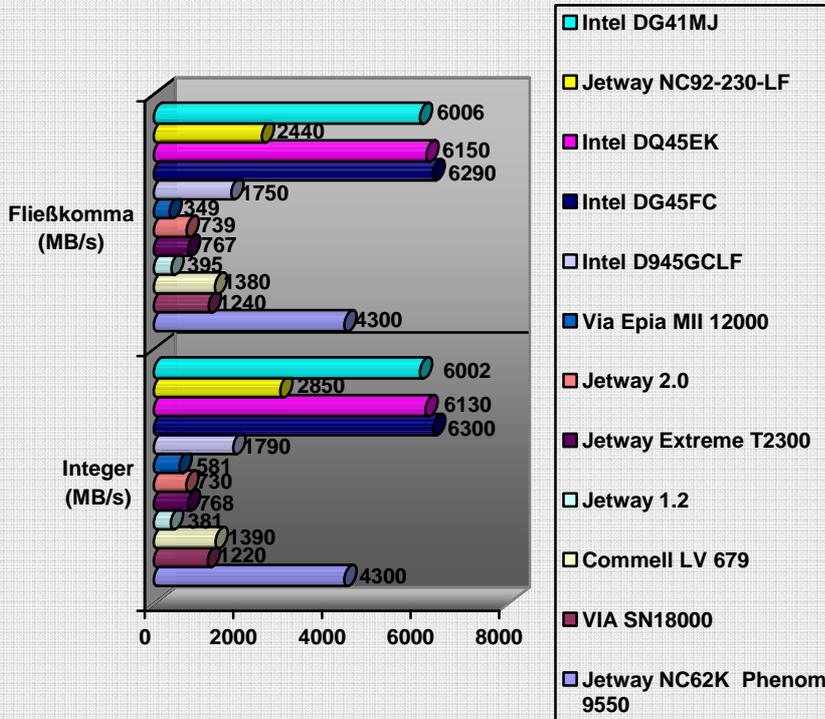
In this test the DG41MJ was able to take the lead.

SiSoft Sandra CPU Multimedia



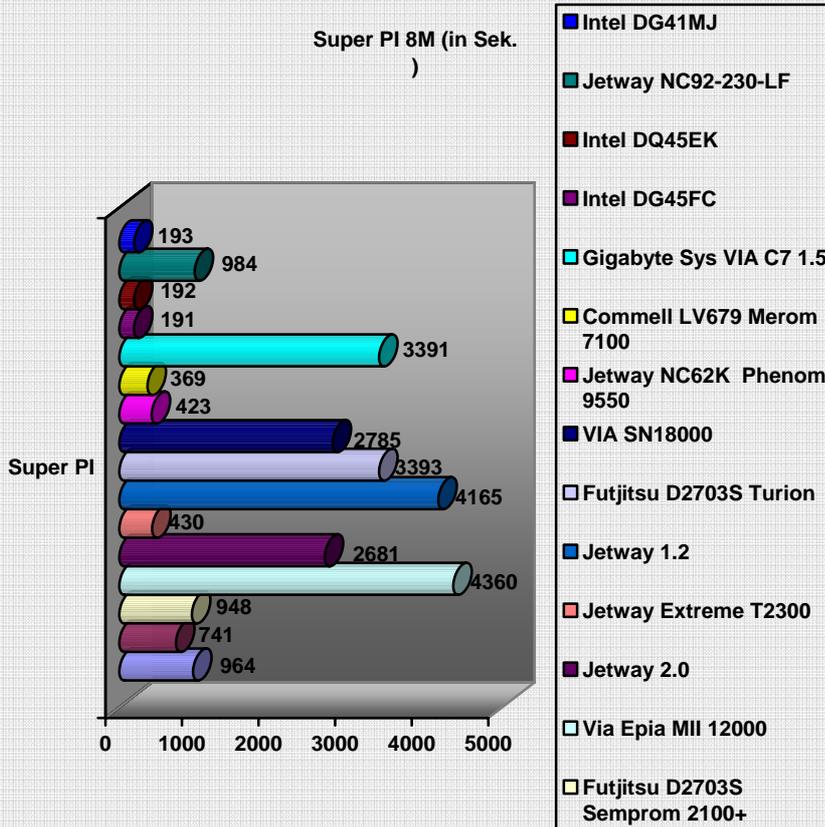
Equally astounding was that the Intel DG41MJ also was ahead by a nose in the CPU Multimedia Test.

SiSoft Sandra Speicherbandbreite



In the memory bandwidth, it had to acknowledge defeat by a little bit.

Super PI 8M (in Sek.)



With the Benchmark Super PI there are virtually no differences to the DG45FC.

## Power consumption

<b>Bootphase</b>	62W
<b>Idle</b>	39W
<b>Last</b>	71W
<b>CD/DVD</b>	
<b>Load</b>	55W
<b>DVD</b>	56W

## Conclusion

Intel is continually cutting the cost in the area of performance Mini-ITX platform. Their target group are people who want performance, but only with the most important interface.

The board isn't a good fit for neither the multimedia area, nor for the industrial area. Maybe that is exactly why it is so suitable for the CarPC environment. Even though the power consumption is a bit higher than the consumption of the Atom platform, it's still reasonable. Everything is available to give you the possibility to build-in an Intel Core2Duo CPU in connection with a dual channel RAM, to be forearmed for future operating systems such as Windows 7.

The Intel DG41MJ is more for minimalists with the ambition to potent systems. It is not really possible to file the DG41MJ in any category. It is now available at [CarTFT.com](http://CarTFT.com).

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