

## Review Intel D410PT & Intel D510MO

### Introduction

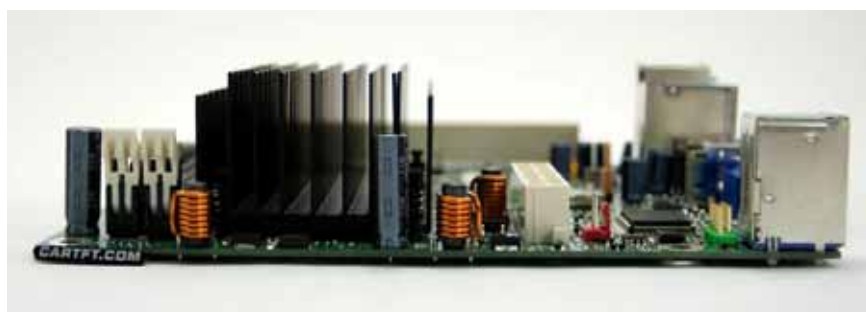
#### **Intel ATOM the next Generation!**

Intel continually sets the standard with the Atom platform in the MiniITX sector.

With the two mainboards D410PT and D510MO Intel stays ahead of the pack of competitors.

#### **D410PT**



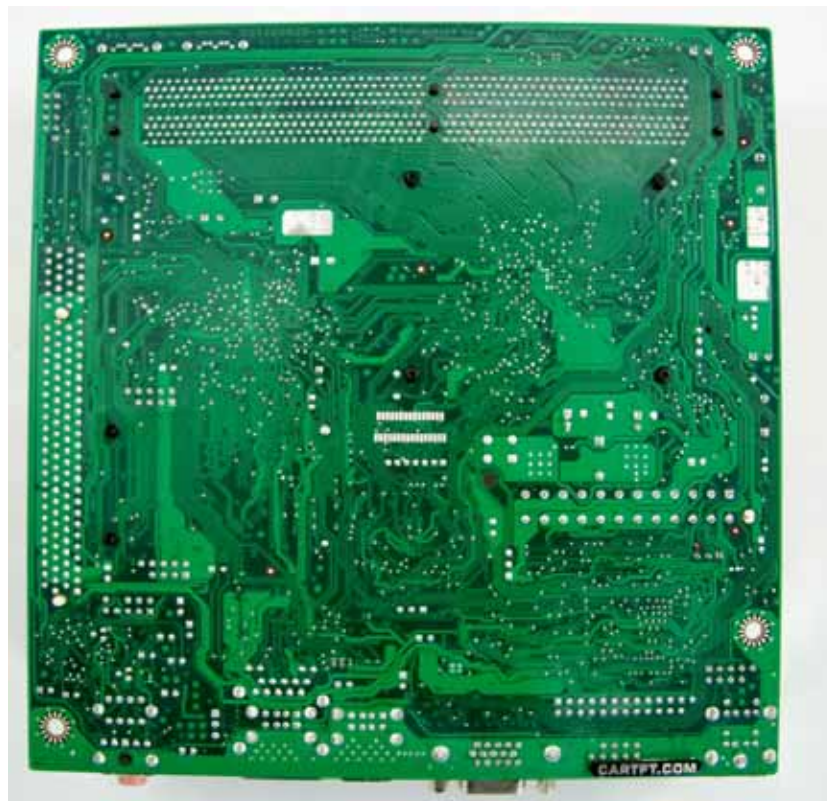


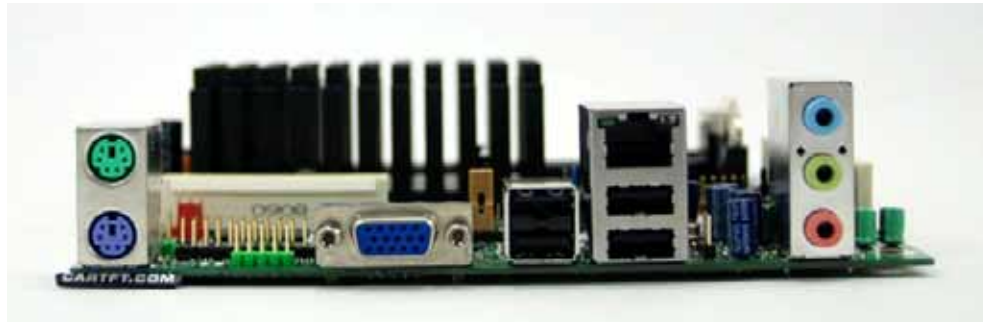


D510MO









### What are the new mainboards capable of?

The D410PT as well as the D510MO offer passive cooling and hide on the one hand a -single Core Atom processor (D410) and on the other hand a Dual Core Atom processor (D510 – also used in numerous new netbooks) of the newest generation.

In the area of power consumption (~30 watts) the new mainboards range within the low, classic Intel Atom level. The major advantage of the new mainboard ist he possibility to utilize the 24 pin ATX jack, which makes the use of an additional P4 connector unnecessary.

As with the other mainboard generations, Intel again, focuses on the extension possibilities. Therefore, both mainboards offer a willingly utilized PCI slot, and the D510MO additionally offers a Mini PCIe socket and a LPT extension slot.

With these possibilities up their sleeve, with minimum effort they offer variable fields of application.

Paper is generally known very patient, and if the mainboards truly hold what they promise, we shall see in the following tests.

### Specification

Model	D410PT	D510MO
Design	MiniITX	MiniITX
CPU / Chipset	Intel Atom CPU D410 “passive cooling” –onboard— NM10 express chipset	Intel Atom CPU D510 “passive cooling” –onboard— NM10 express chipset
Graphic	Intel GMA 3150	Intel GMA3150
Audio	2 + 2 Channel HD Audio	6 Channel HD Audio
RAM	2 x DDR2 DIMM, 667/800 Mhz, up to 4GB	2 x DDR2 DIMM, 667/800 Mhz, up to 4GB
Power supply	24 pin ATX	24 pin ATX
External connectors	1 x VGA 4 x USB 1 x Audio 1 x 10/100 Mb/s Ethernet 1 x PS2	1 x VGA 4 x USB 1 x Audio 1 x 10/100/1000 Mb/s (Gigabit) Ethernet 1 x PS2
Internal connectors	4 x USB 2 x SATA 2 x serial 1 x PCI	4 x USB (1x for optional WLAN) 2 x SATA 2 x serial 1 x Parallel 1 x PCI 1 x Mini PCIe 1 x LPT
Software	Driver – CD	Driver – CD
Dimensions	17 cm x 17 cm	17 cm x 17 cm

### Mainboard and connectors

Intel continuous the histories of developing powerful Atom mainboards, with the D410PT and the D510MO the successors of the D945GCLF and D945GCLF2 type were released.

**D410PT** - The “new” D945GCLF had the privilege to receive the new D410 Atom processor in connection with a NM10 express chipset.

**D510MO** - The younger brother of the D945GCLF2 received the new D510 Dual Atom processor. For the chipset, the choice is again the NM10 express. As mentioned before, this combination will be widely used in new Netbooks as well.

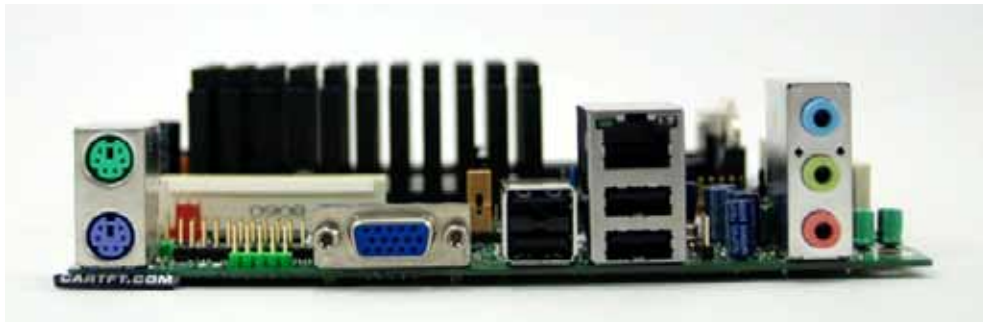
Intel bets with the new Atom mainboards on a well-tried receipt and to top it of with whipped cream – it comes with passive cooling.



### D410PT



### D510MO



The rear panel offers everything a PC could need. Therefore, you will find a VGA connector, 4 x USB, PS2, LAN and one audio connector. Here, both mainboards are identical.

### D410PT





If additional connections are needed the D410PT was equipped with enough onboard slots. Hence, you will find, 4 USB, 2 serial ports and 1 PCI slot.

## D510MO



The D510MO offers even a bit more, additionally to the 4 USB, 2 serial and the PCI slot, a parallel, Mini PCIe and a LPT socket were added as well.

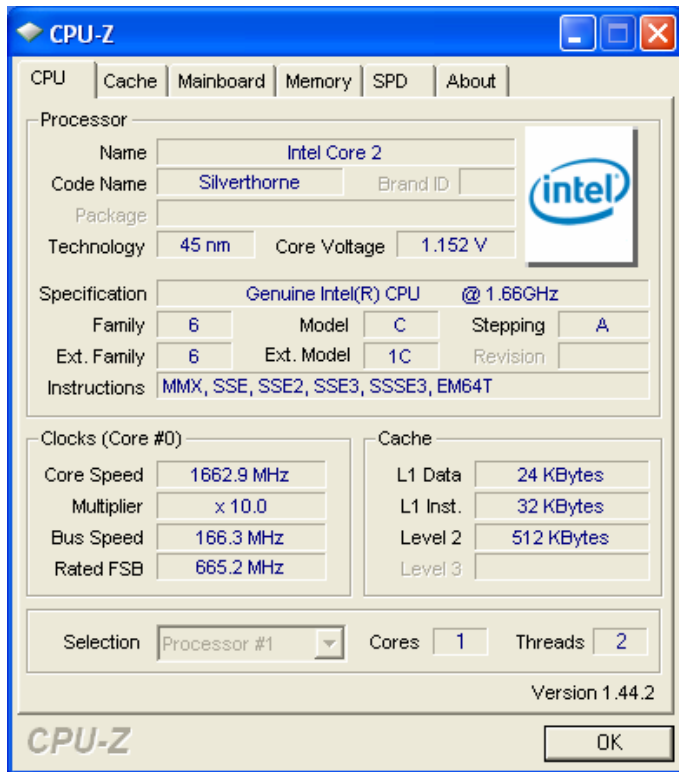
### Installation, used hardware and operation

The following hardware was used for our test system:

- D410PT / D510MO
- 2 x 2GB DDR2 DIMM 800 Mhz
- HDD 2,5" SATA 80GB AC (Seagate)
- Slimline Combo drive CW-8124-B
- Pico 150
- 84 watts AC adapter




## D410PT



**CPU-Z**

CPU | Cache | Mainboard | Memory | SPD | About

Processor

Name: Intel Core 2  
Code Name: Silverthorne  
Brand ID:   
Package:   
Technology: 45 nm  
Core Voltage: 1.152 V

Specification: Genuine Intel(R) CPU @ 1.66GHz  
Family: 6  
Model: C  
Stepping: A  
Ext. Family: 6  
Ext. Model: 1C  
Revision:   
Instructions: MMX, SSE, SSE2, SSE3, SSSE3, EM64T

Clocks (Core #0)

Core Speed: 1662.9 MHz  
Multiplier: x 10.0  
Bus Speed: 166.3 MHz  
Rated FSB: 665.2 MHz

Cache

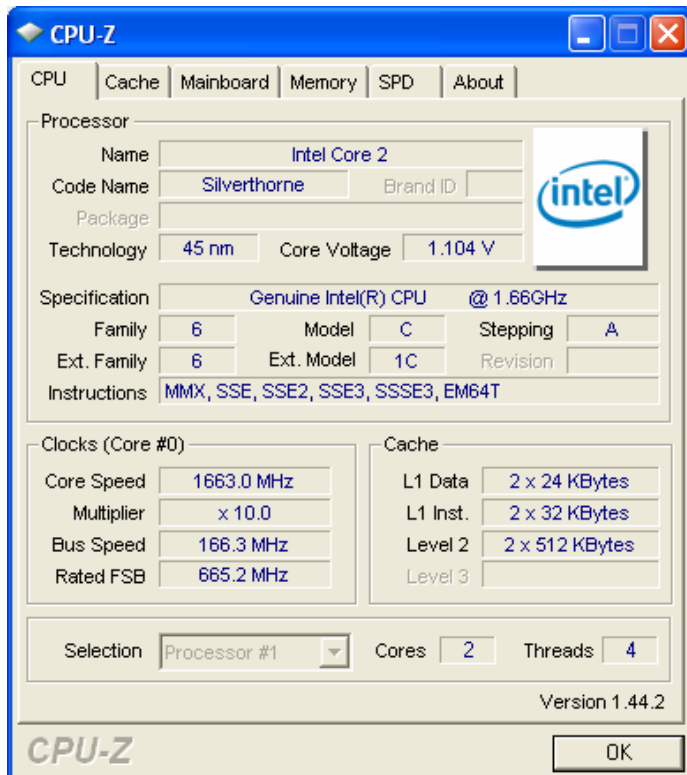
L1 Data: 24 KBytes  
L1 Inst.: 32 KBytes  
Level 2: 512 KBytes  
Level 3:

Selection: Processor #1  
Cores: 1  
Threads: 2

Version 1.44.2

**CPU-Z** OK


## D510MO



**CPU-Z**

CPU | Cache | Mainboard | Memory | SPD | About

Processor

Name: Intel Core 2  
Code Name: Silverthorne  
Brand ID:   
Package:   
Technology: 45 nm  
Core Voltage: 1.104 V

Specification: Genuine Intel(R) CPU @ 1.66GHz  
Family: 6  
Model: C  
Stepping: A  
Ext. Family: 6  
Ext. Model: 1C  
Revision:   
Instructions: MMX, SSE, SSE2, SSE3, SSSE3, EM64T

Clocks (Core #0)

Core Speed: 1663.0 MHz  
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Cache

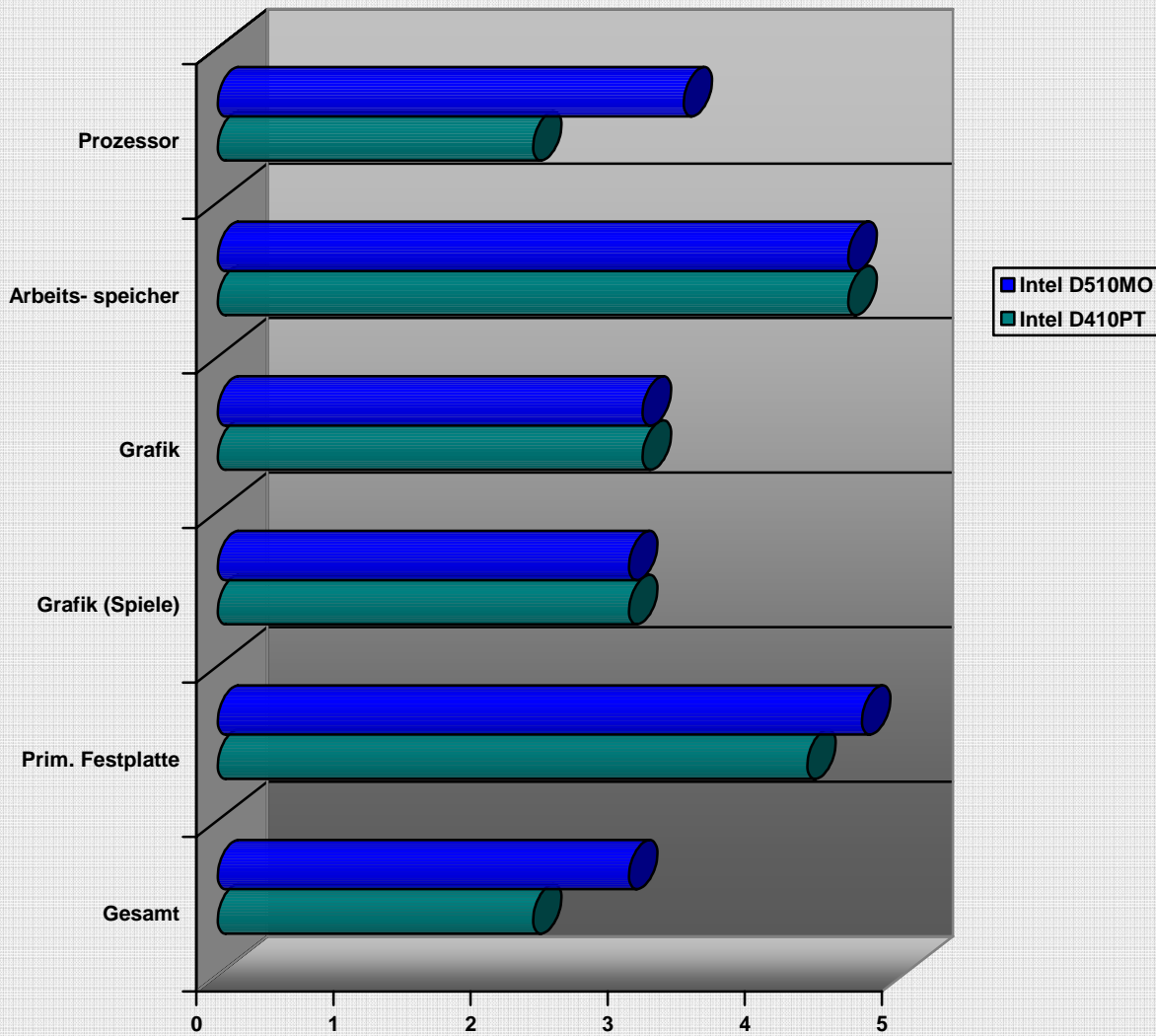
L1 Data: 2 x 24 KBytes  
L1 Inst.: 2 x 32 KBytes  
Level 2: 2 x 512 KBytes  
Level 3:

Selection: Processor #1  
Cores: 2  
Threads: 4

Version 1.44.2

**CPU-Z** OK

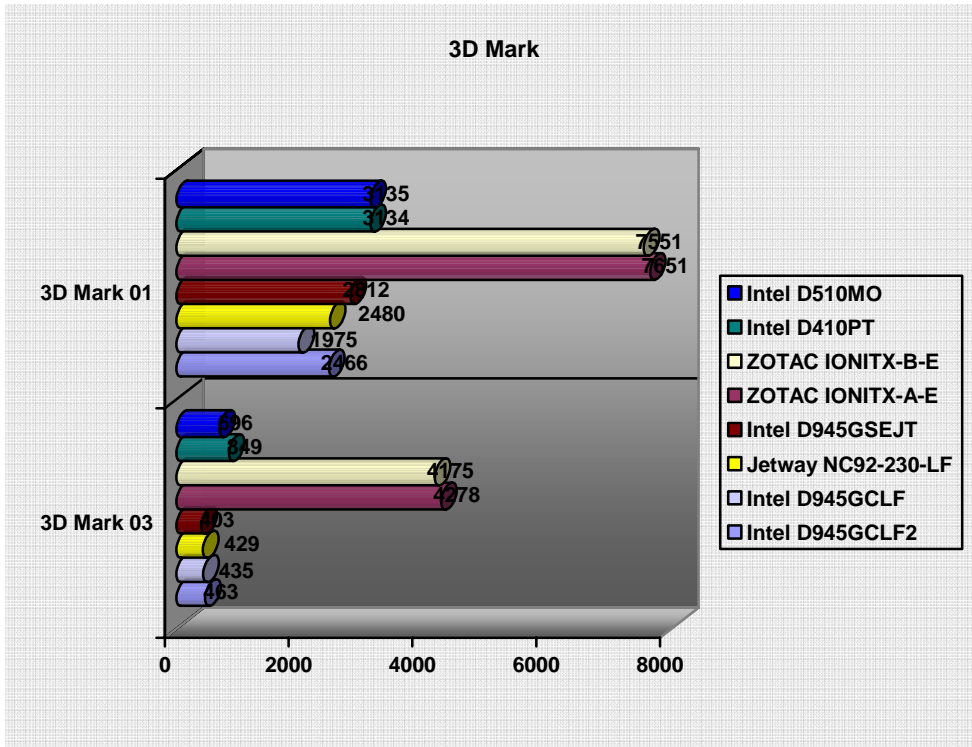
Windows 7 Leistungsindex



	Gesamt	Prim. Festplatte	Grafik (Spiele)	Grafik	Arbeits- speicher	Prozessor
■ Intel D510MO	3	4,7	3	3,1	4,6	3,4
■ Intel D410PT	2,3	4,3	3	3,1	4,6	2,3

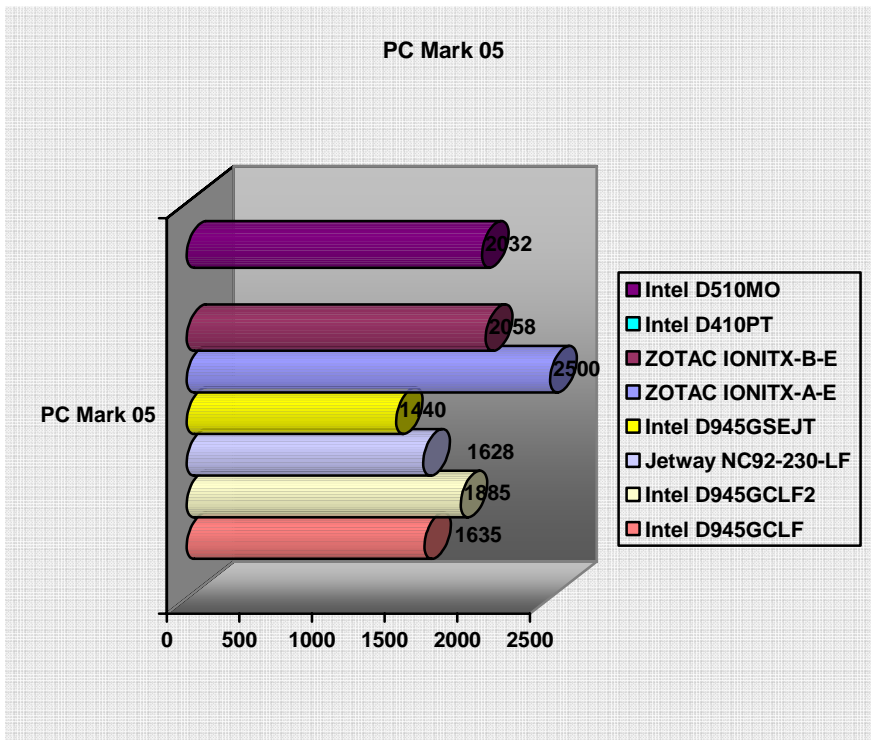
**Windows 7 performance index**

In our Windows 7 performance index you can see that the Dual Core Atom D510MO variant has a slight advance versus the Single Atom variant D410PT.



### 3D Mark Test

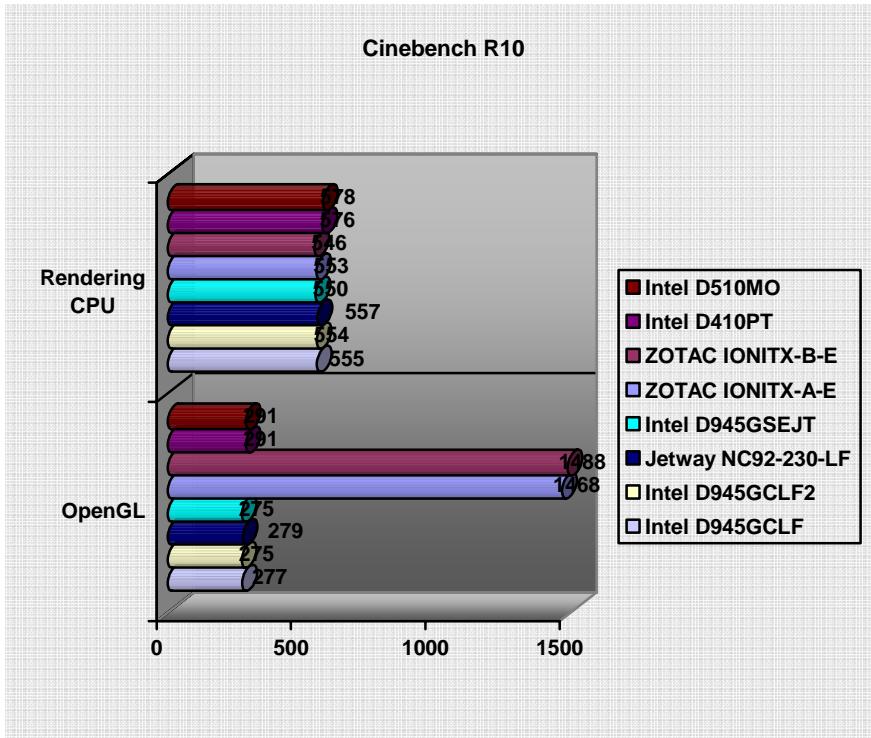
In the 3D Mark Test both new Intel mainboards landed on second place. The lead of the competitor Zotac only resulted, due to the fact that Zotac prioritize in the graphic capacities.



### PC Mark 05 Test

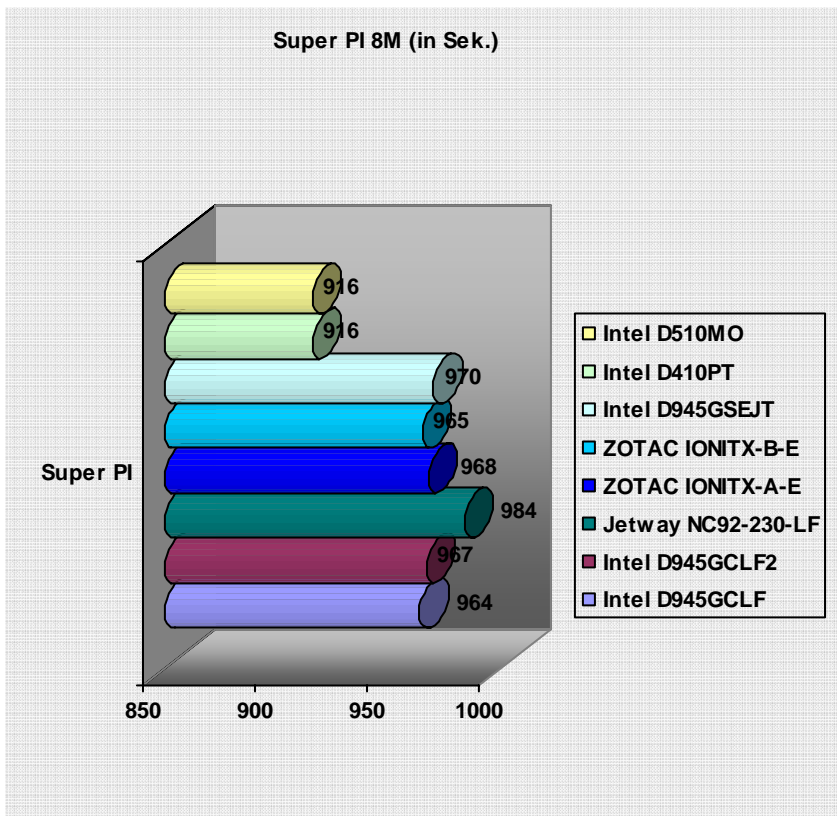
In the PC Mark 05 Test, the D510MO placed on a good third place and for the D410PT we couldn't ascertain a place.





**Cinebench R10 Test**

In the area of rendering CPU, the new Intel boards are able to lead the pack. In the test area OpenGL similar results will be achieved as in the 3D Mark Test.



**Super PI 8M Test**

Other than in the Super PI 8M Test, the new Intel mainboards come through as the clear winners, no competitor mainboard can keep up with them here.

### Power consumption

	<b>D410PT</b>	<b>D510MO</b>
<b>Bootphase</b>	<b>31W</b>	<b>30W</b>
<b>Idle</b>	<b>26W</b>	<b>26W</b>
<b>Last</b>	<b>33W</b>	<b>33W</b>
<b>CD/DVD Load</b>	<b>28W</b>	<b>28W</b>
<b>DVD</b>	<b>28W</b>	<b>28W</b>

### Acoustic level

Due to the passive cooling there is basically no noise.

### Compatible cases

Thanks to the visibly identical form factor of the Intel mainboards, almost every case can be used which fits for the D945 variant.

### Conclusion

Intel offers with its new mainboards another stable Atom platform which is well suited for home users as well for CarPC user. Intel continues its success story and offers constant PC performance in form of a low priced alternative. With this new platform, Intel designed a worthy successor for its D945 variant and you can be curious for what comes next.

The only small, negative aspect would be the missing IDE port, which can be neglected in the age of SATA HDDs and compatible connection possibilities of hard drives.

Written by Marcel Idler (09.11.2009)