

## Review: Intel D945GSEJT half-height ITX mainboard

### Introduction

**Intel sets a new standard in the area of green-IT and small form factor!**



With its price sensitive MiniITX mainboards (D201GLY2(A), D945GCLF(2)), Intel caused some movement on the market within the last couple of years. Until now, Intel is still waiting for competition when it comes to the new mainboard generation with regard to the performance and form factor.

Unlike its big brothers (D945 – series), the power consumption of the new Intel „half – height“ mainboard decreased from over 30 watt to under 20 watt according to the data sheets. These results can be achieved thanks to the improvement of the Atom mobile CPU, which was specifically designed for the mobile sector and operated completely passive.

Additionally, Intel thought a lot about the form factor and made it possible to create a mainboard with a height of only 2 cm – all CarPC users will be happy to hear this. This creates space for add-ons which weren't possible up to now, due to the dimensions.

Intel successfully came up with ideas to make more add-ons possible. Therefore they are offering two new and interesting modules for the mainboard (optional).

1. Mini-PCI-express UMTS – Module with integrated WLAN
2. USB SSD Module as HDD replacement for integration on the internal USB connector

Both modules can be added without increasing the general height to more than 2cm.

We are excited to see if the mainboard will keep what it promises.





### Specifications

Model	Intel D945GSEJT
Type	Low-profile Mini-ITX
CPU / Chipset	Intel Atom CPU N270 “passive cooling” –onboard— Mobile Intel 945GSE Express Chipset
Graphic	Intel GMA 950 <ul style="list-style-type: none"> <li>• analogue displays (VGA)</li> <li>• digital displays (DVI-D)</li> </ul>
Audio	RealTek ALC662 audio codec
RAM	1 x 200-pin DDR2 SO-DIMM, 533Mhz, up to 2GB DDR2 800 MHz and DDR2 667 MHz only 533 MHz possible)
Power supply	12 VDC onboard
External connections	1 x 12 VDC 1 x VGA 1 x DVI 3 x USB 1 x Audio 1 x 10/100/1000 Mb/s (Gigabit) Ethernet LAN
Internal connections	4 x USB 1 x IDE (44Pin) 2 x SATA 1 x Parallel 2 x Serial 1 x PS2 1 x PCI 1 x Mini-PCI Express 1 x SPDIF
Software	Driver CD
Dimensions	17 cm x 17 cm x <b>2cm</b>

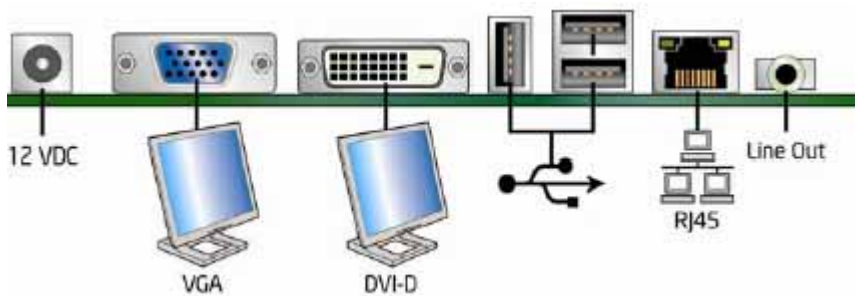


Mainboard and ports

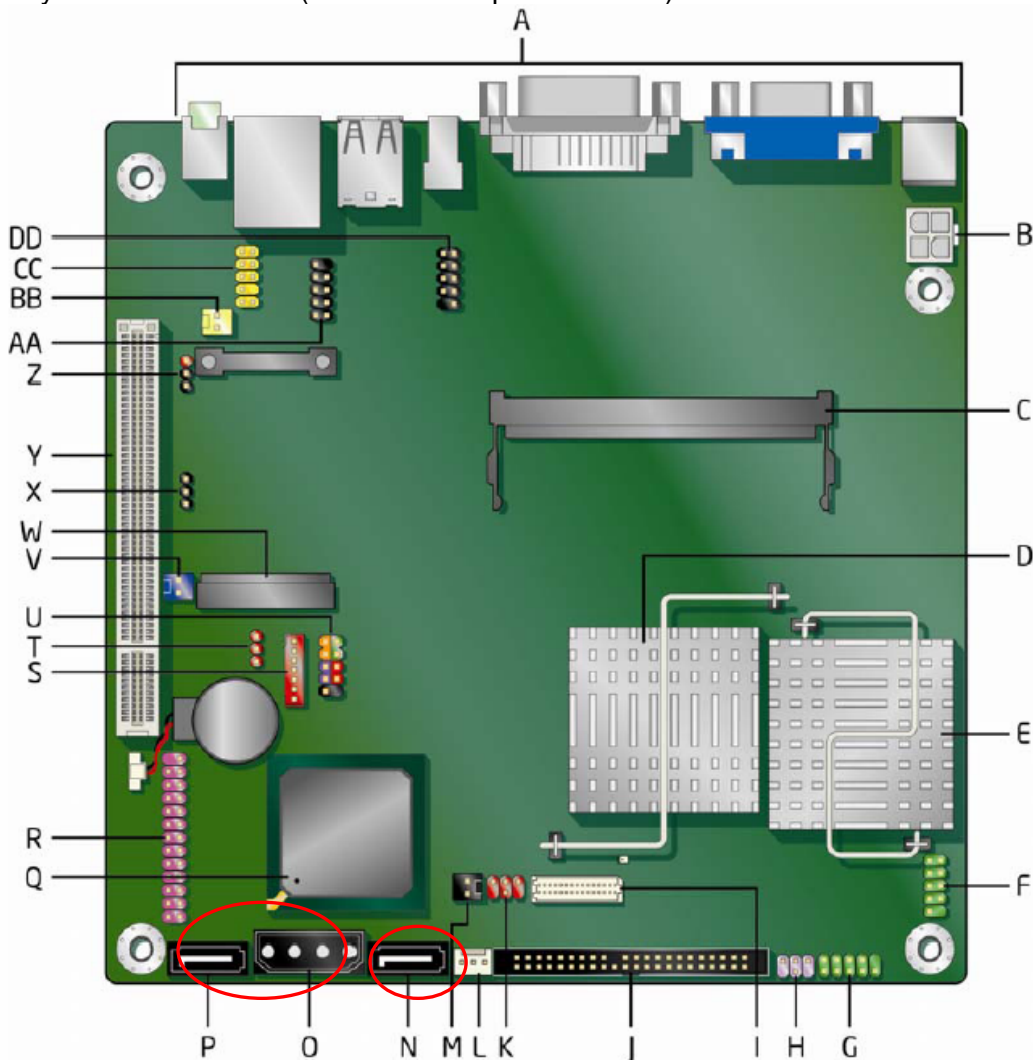
Intel gave the new D945GSEJT a combination of single mobile Atom N270 CPU and a 945GSE Express Chipset as engine, which already been used by successfully by manufacturers of netbooks (for example Acer, Gigabyte).

It is also very famous in the industrial area due to the combination of low power consumption and passive cooling.

Intel bets on stable performance in connection with innovative design with the new MiniITX mainboard.

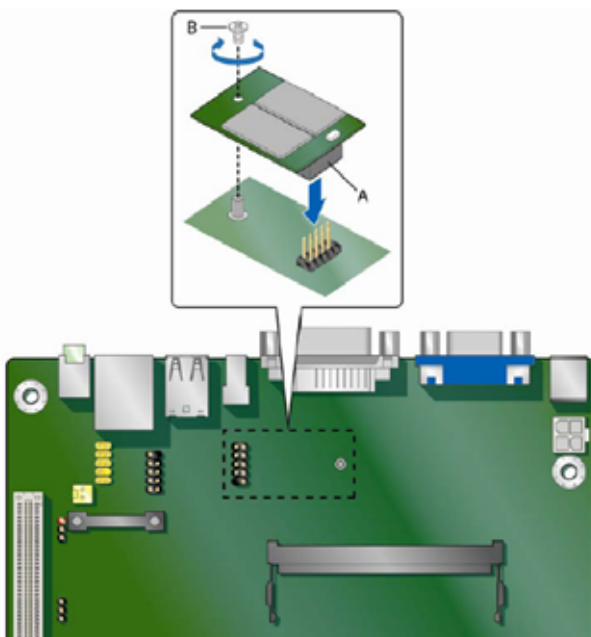


On the back side of the system you will find all necessary ports (VGA, DVI, USB, LAN) and the direct 12 Volt input. The GSEJT therefore doesn't require an additional internal power supply and can be supplied with power from the external power supply directly. The power supply of the HDD and the drive are directly on the mainboard (see left in the picture below).

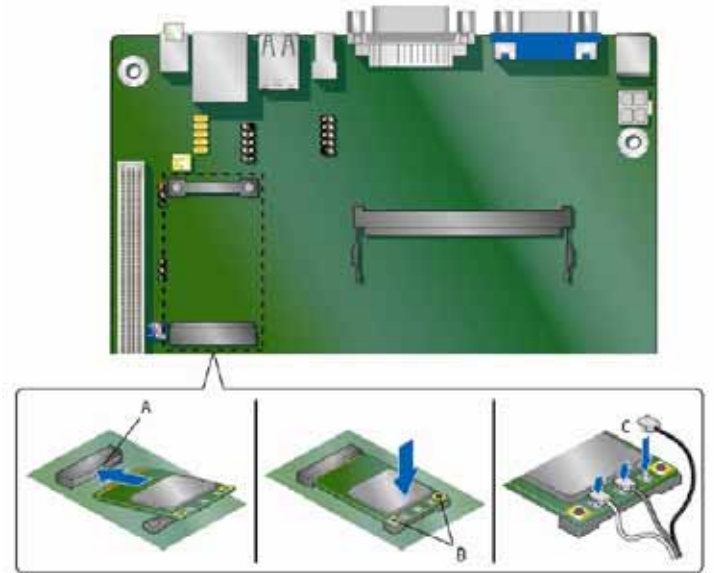


A	Back panel connectors	P	SATA 1 connector
B	12 V processor core voltage connector (2 x 2)	Q	Intel 82801GBM I/O Controller Hub (ICH7-M)
C	SO-DIMM Connector	R	Parallel port header
D	Intel 82945GSE GMCH	S	Reserved
E	Intel Atom processor N270	T	Reserved
F	Serial port (COM 2)	U	Front panel header
G	Serial port (COM 1)	V	Front panel wireless activity LED header
H	PS/2 keyboard port header	W	PCI Express Mini Card connector
I	Reserved	X	BIOS configuration jumper block
J	PATA connector (44 pin)	Y	PCI bus connector
K	Reserved	Z	S/PDIF header
L	Chassis fan header	AA	Front panel USB header
M	Chassis intrusion header	BB	Internal mono speaker header
N	SATA 0 connector	CC	Front panel audio header
O	SATA power connector	DD	Front panel USB header with Intel Z-U130 USB Solid-State Drive support

For additionally required ports the Intel has pinheader onboard. Consequently, the system can be extended with for example up to 4 USB, 2 serial, 1 parallel and one SPDIF interface. The USB port seen in the top right hand corner of the picture is the USB port for the USB SSD (see below).



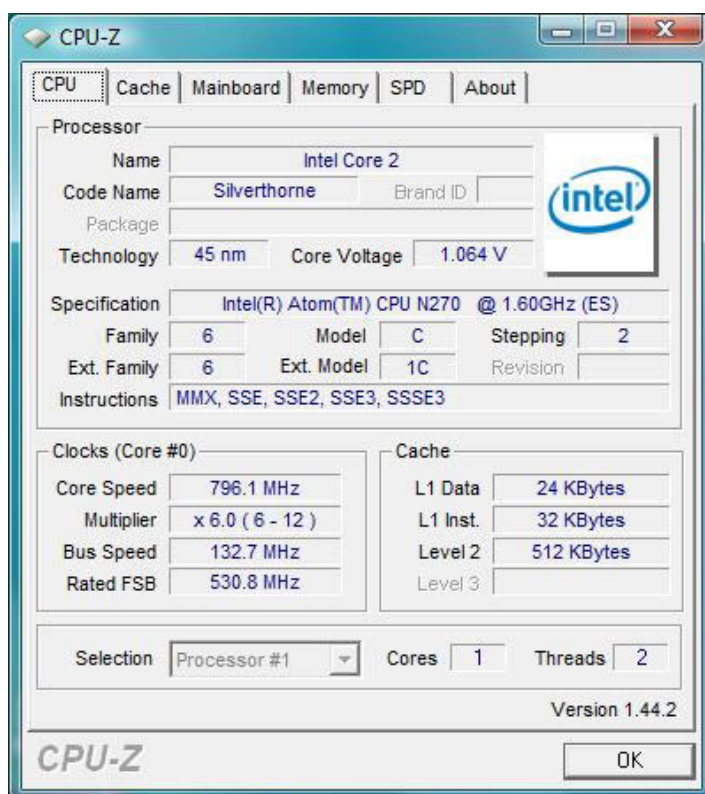
An extension of the system via PCI and Mini-PCI express is also possible, whereat the Mini-PCI express connector is destined for the WLAN respectively the combined WLAN/UMTS module (see below). If this possibility is not being used, the option is available for other components.

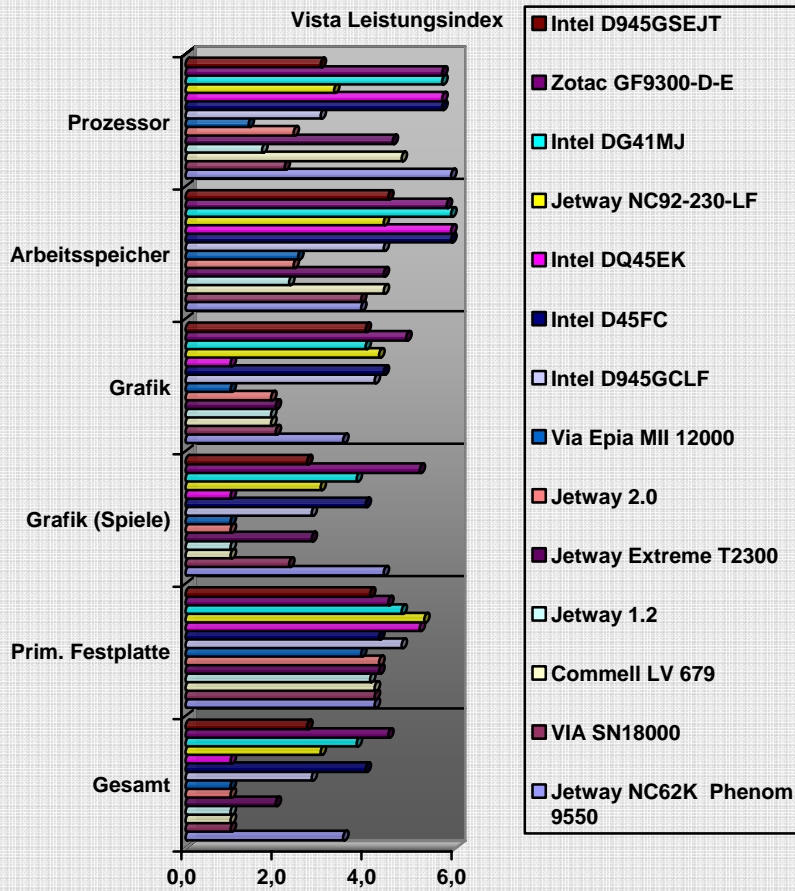


Installation, used hardware and operation

Following hardware was used for the test system:

- D945GSEJT
- 2GB DDR2 SO-DIMM 667Mhz
- HDD 2,5" SATA 100GB
- Combo drive
- 60 Watt AC adapter

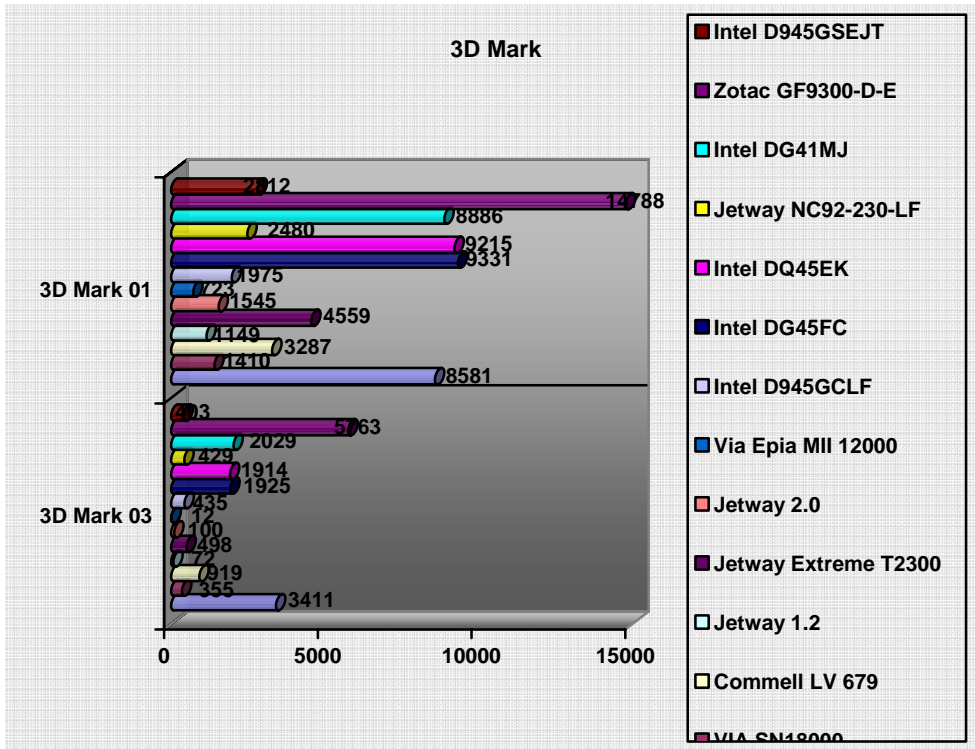




	Gesamt	Prim. Fest	Grafik (Spie)	Grafik	Arbeitsspeicher	Prozessor
Intel D945GSEJT	2,7	4,1	2,7	4	4,5	3
Zotac GF9300-D-E	4,5	4,5	5,2	4,9	5,8	5,7
Intel DG41MJ	3,8	4,8	3,8	4	5,9	5,7
Jetway NC92-230-LF	3	5,3	3	4,3	4,4	3,3
Intel DQ45EK	1	5,2	1	1	5,9	5,7
Intel D45FC	4,0	4,3	4,0	4,4	5,9	5,7
Intel D945GCLF	2,8	4,8	2,8	4,2	4,4	3,0
Via Epia MII 12000	1,0	3,9	1,0	1,0	2,5	1,4
Jetway 2.0	1,0	4,3	1,0	1,9	2,4	2,4
Jetway Extreme T2300	2,0	4,3	2,8	2,0	4,4	4,6
Jetway 1.2	1,0	4,1	1,0	1,9	2,3	1,7
Commell LV 679	1,0	4,2	1,0	1,9	4,4	4,8
VIA SN18000	1,0	4,2	1,0	1,9	4,4	4,8
Jetway NC62K Phenom 9550	4,0	4,0	2,0	2,0	2,0	2,0

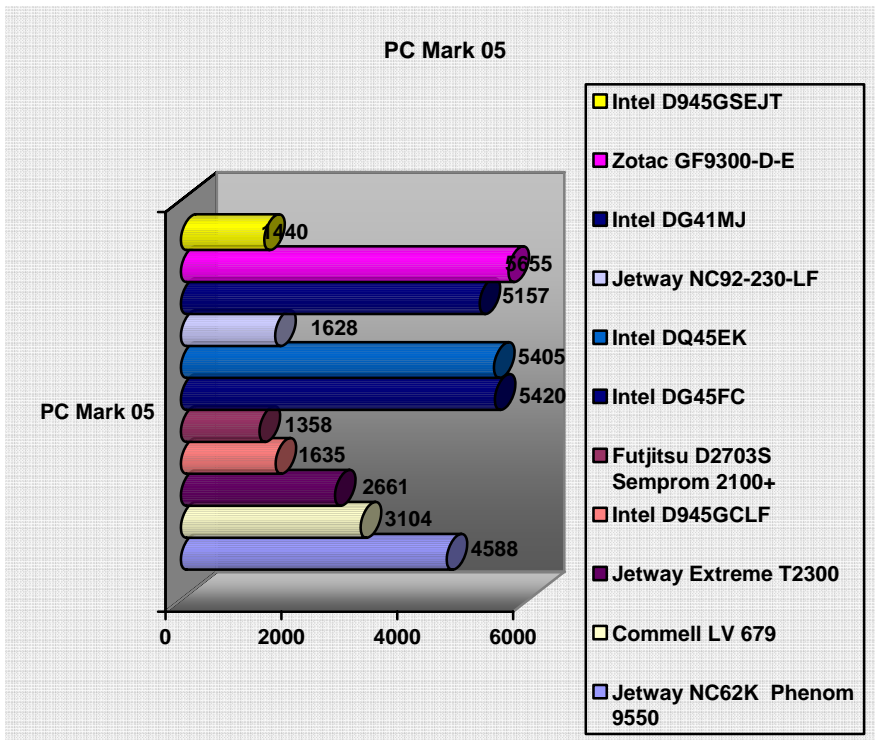
**Vista Performance Index Test**

General comparison of all mainboards: Midfield  
Atom mainboards: 3<sup>rd</sup> place



### 3D Mark Test

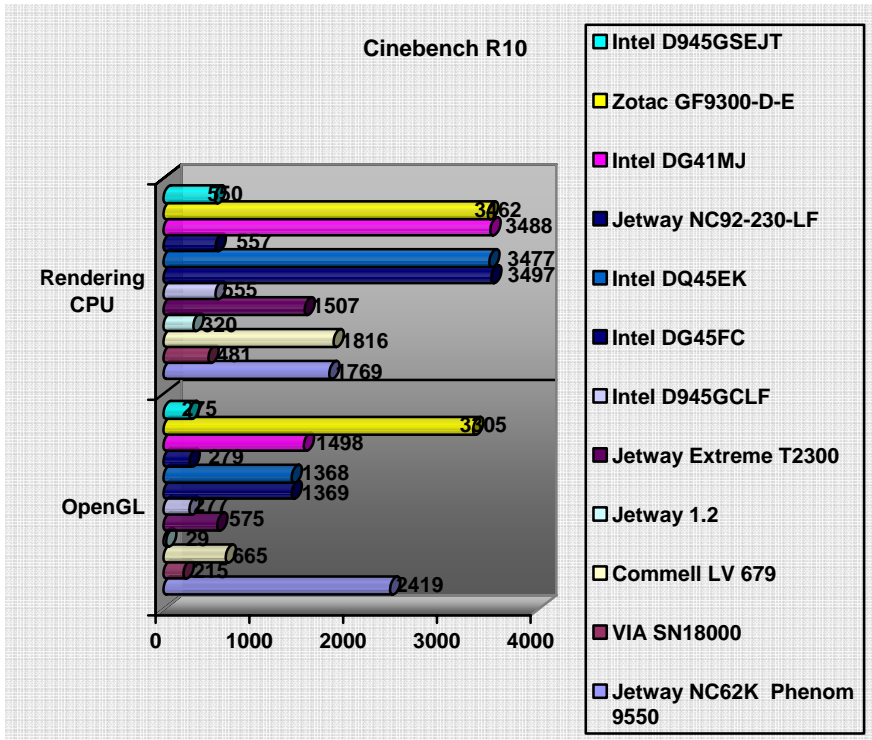
General comparison of all mainboards: Midfield  
 Atom mainboards: 3<sup>rd</sup> place



### PC Mark 05 Test

General comparison of all mainboards: Lower third  
 Atom mainboards: 1<sup>st</sup> place

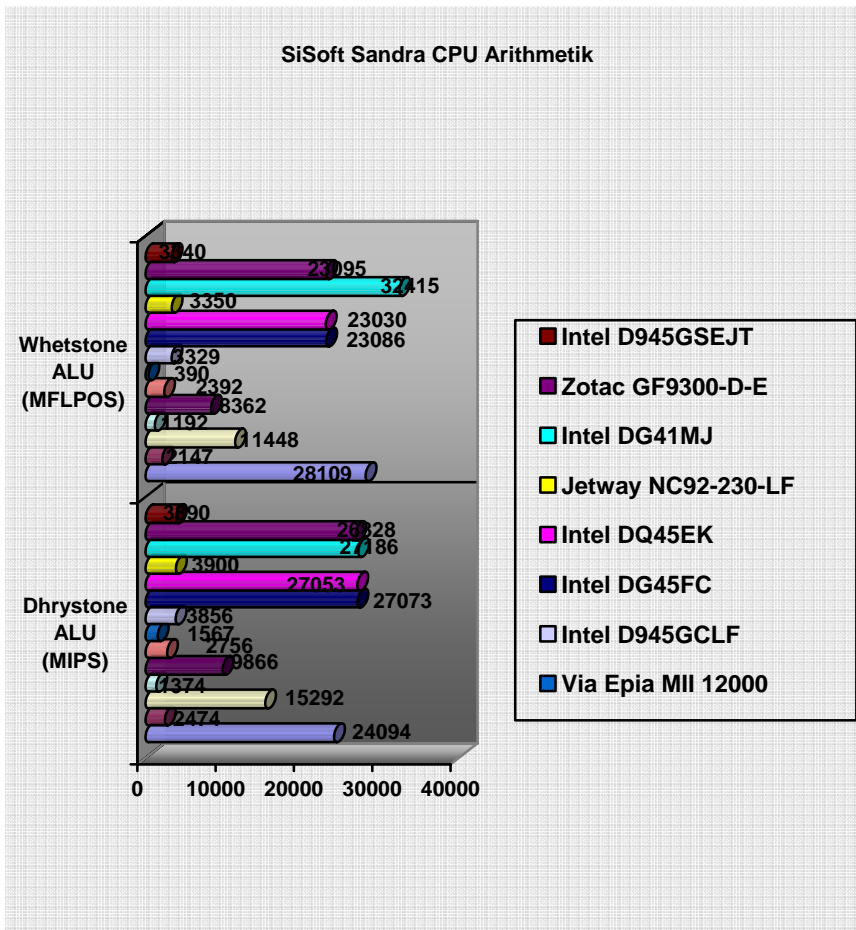




### Cinebench R10 Test

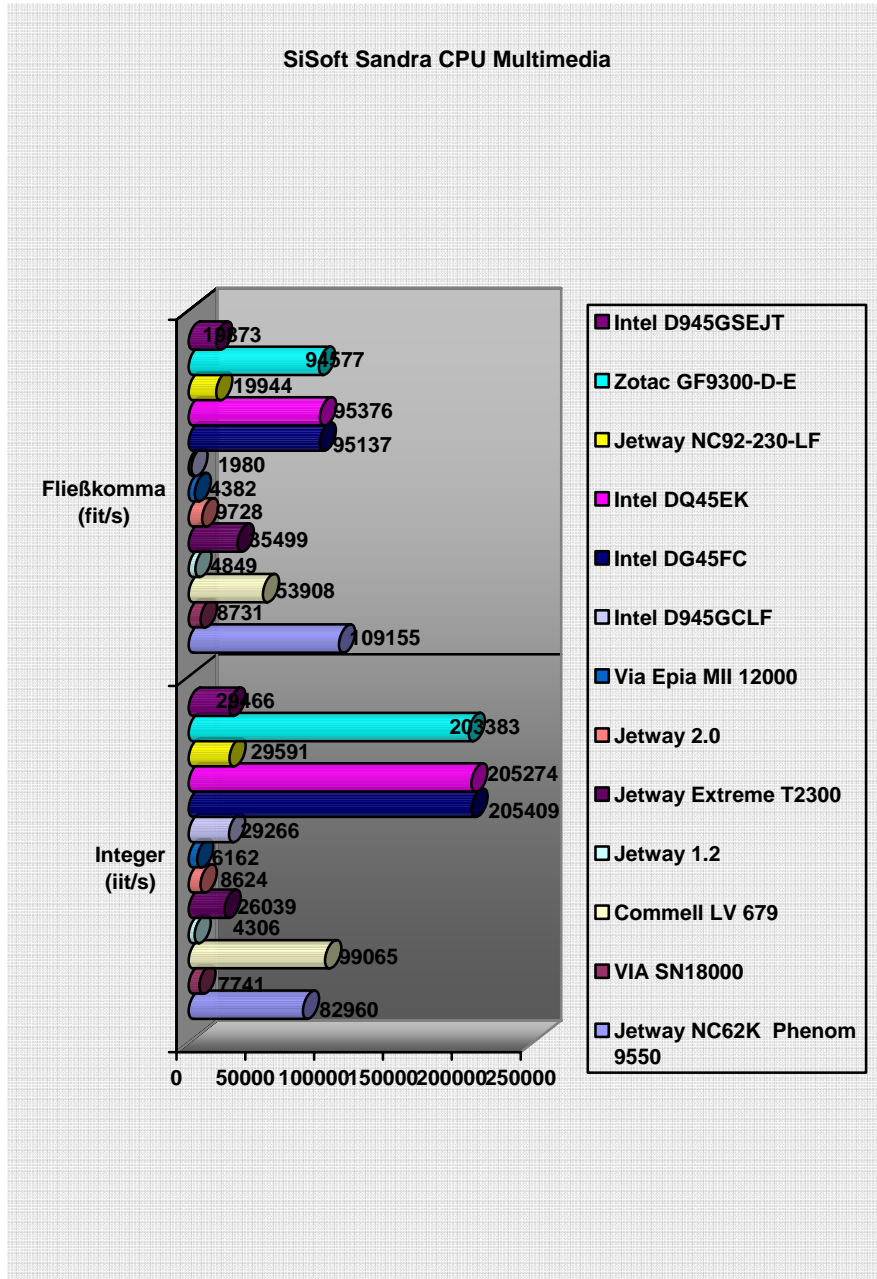
General comparison of all mainboards: Lower third

Atom mainboards: 3<sup>rd</sup> place



**SiSoft Sandra CPU Arithmetic Test**

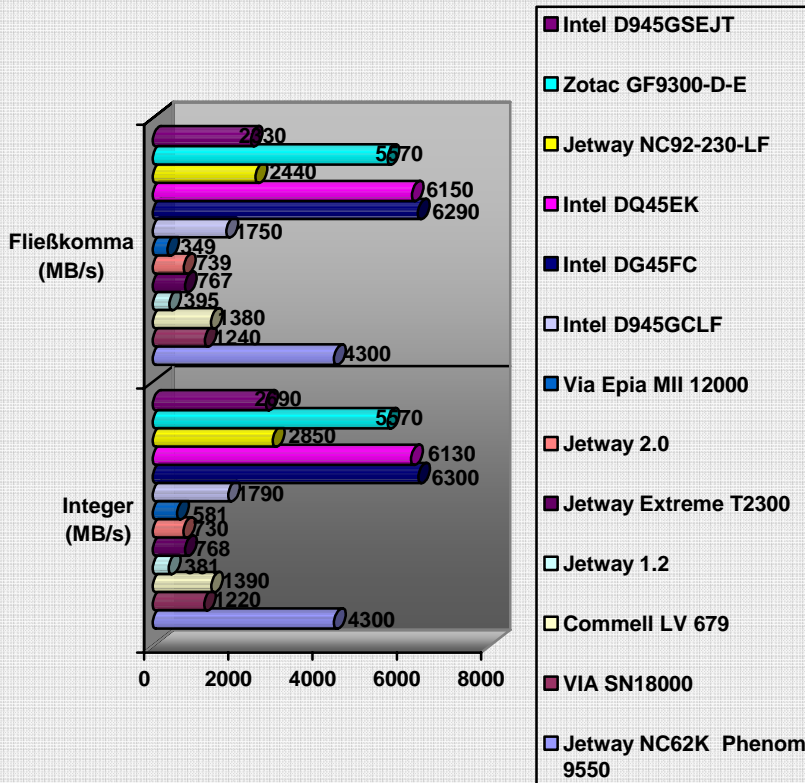
General comparison of all mainboards: Lower midfield  
 Atom mainboards: 2<sup>nd</sup> place



**SiSoft Sandra CPU Multimedia Test**

General comparison of all mainboards: Midfield  
 Atom mainboards: 2<sup>nd</sup> place

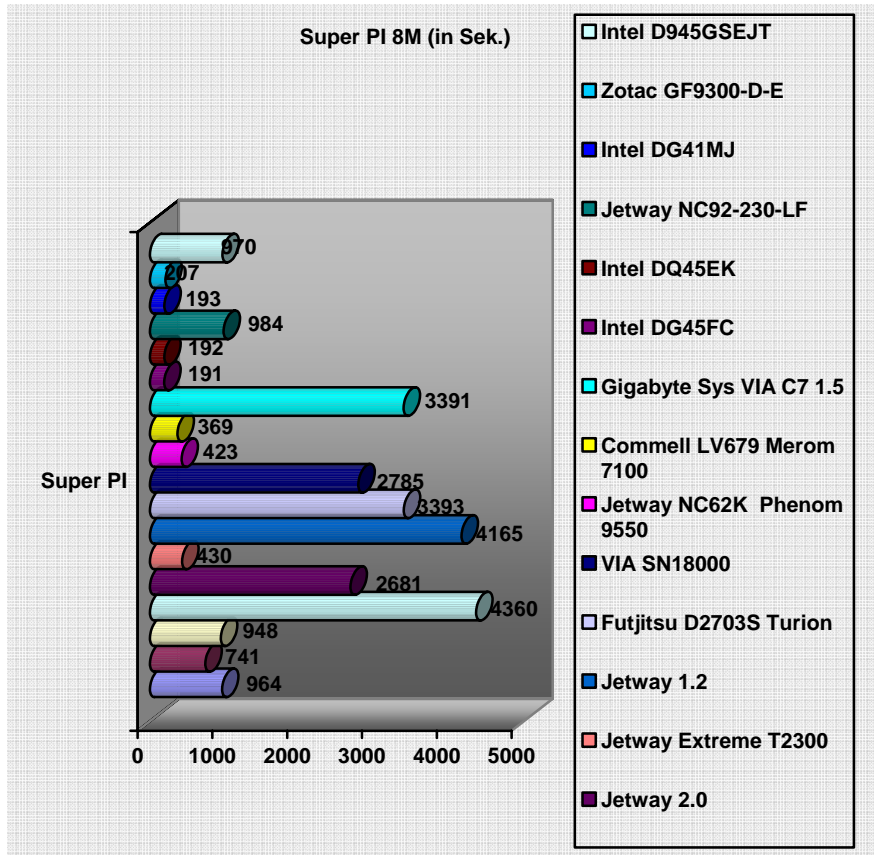
SiSoft Sandra Speicherbandbreite



**SiSoft Sandra CPU memory band width Test**

General comparison of all mainboards: higher midfield

Atom mainboards: 2<sup>nd</sup> place



**Super PI 8M Test**

General comparison of all mainboards: Midfield

Atom Mainboards: 3<sup>rd</sup> place (behind the two older brothers D945GCLF(2))

**Power consumption**

<b>Bootphase</b>	<b>19W</b>
<b>Idle</b>	<b>16W</b>
<b>Last</b>	<b>18W</b>
<b>CD/DVD</b>	
<b>Load</b>	<b>25W</b>
<b>DVD</b>	<b>25W</b>

**Acoustic level**

Due to the passive cooling the acoustic level is not even worth mentioning.

**Compatible cases**

There will be special cases for this new mainboard to use this form factor optimal. An example is shown below.





## Conclusion

Summarizing you can say, the new D945GSEJT is a very well designed mainboard. The combination of the small form factor with the stable Atom performance will make some users hearts skip a beat. In our opinion after the tests, this mainboard definitely has the right to exist and many customers will equip their new CarPC, thin client or home PC with it

The newly designed form factor by Intel will bet he future of the MiniITX mainboards. Intel made a big step towards green IT with this mainboard.

The board is doing well in the cost/performance ratio. Due to the real Atom mobile chipset and the very small form factor the somewhat higher price is explainable.