Foreword

The long-awaited release of the Intel atom successor D945GCLF2 has started. There was much discussion about the new „Low Cost“ motherboard beforehand.
Not much has changed compared with the successor. D945GCLF2 got the new Intel Atom 330 CPU, which beats with 2 hearts: 2x 1,6 GHz. What the new motherboard can do and as it stands its ground, we have tested for you in the form of benchmarks.

Specifications

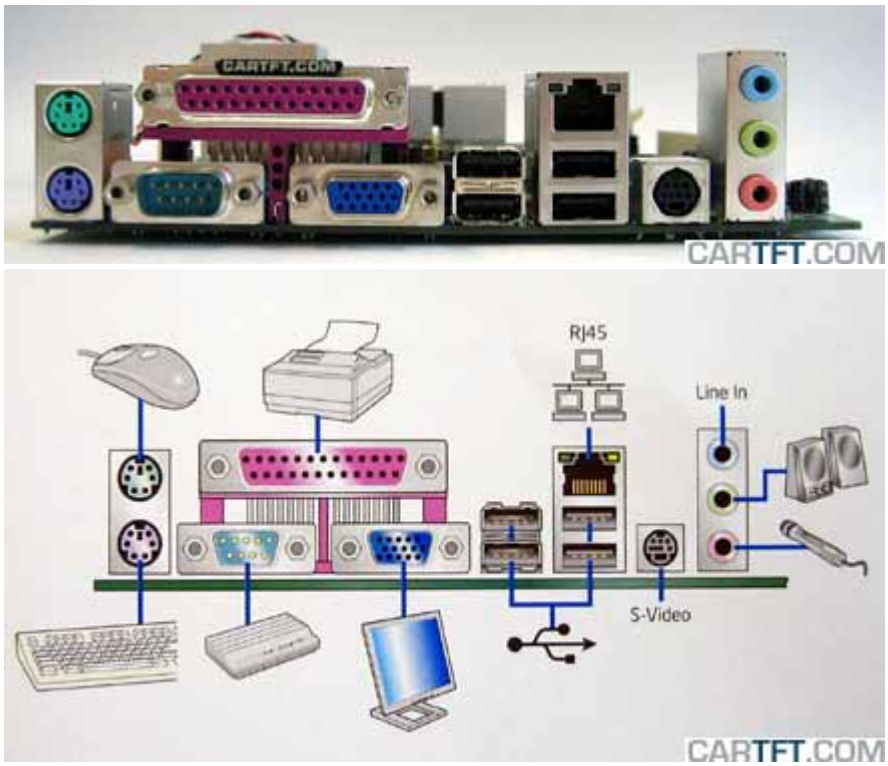
Model	Intel D945GCLF2
Type	Mini-ITX motherboard
CPU	Intel Atom 330 @ 2x 1.60GHz (Silverthorne 45nm), passive cooled
Chipset	i945GC/iCH7
GPU	Intel GMA 950
RAM	1x DDR2 667MHz
Display input	VGA
PCI	1x PCI
SATA	2x SATA
Audio	Realtek High Definition Audio
LAN	1x 1000Mbit
USB 2.0	4+4x USB 2.0
External I/O port	S-Video, 4x USB 2.0 PS2 keyboard/mouse, Parallel port, RJ45, COM Port, Line Out, Line In, Microphone
Internal I/O port	1x IDE, 1x PCI, 2x2 USB 2.0, Audio
Power supply	24 Pin ATX, P4 connector cable
Accessories and scope of supply	I/O panel, IDE cable, SATA cable, quick guide
Software	Drivers CD
Dimensions (Lenght x Width)	17cm x 17cm

Motherboard and connectivity

The layout of the board is kept very simple again and seems to come only with the most necessary things. On the whole everything you need is there and even still has got the one or other feature.

The most decisive difference is the CPU compared with the model of the successor, which owns 2 DIEs now and works with 2x 1.6GHz. The consumption of the CPU correspondingly increases to 8W. The cache doubled to 2x 512kb.

Additionally Intel upgrades the D945GCLF2 with Gigabit Ethernet, S-Video port and two internal USB2.0 ports instead of only one. Apart from that, everything of the connectivity will remain unaffected.



So the new Atom board is offering the following external connections: VGA port, PS2 for keyboard and mouse, COM port and serial port, four USB ports, RJ45, S-Video and the common audio connections.
You can connect an Audio front panel internally, IDE cable and a PCI card also beside the 2x2 USB ports mentioned.

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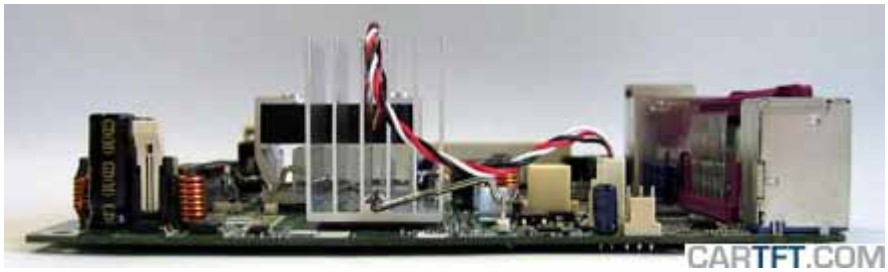
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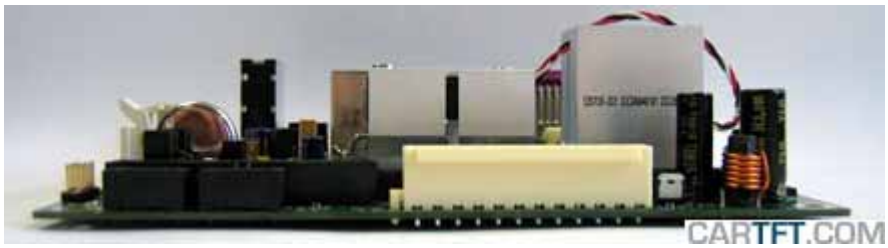
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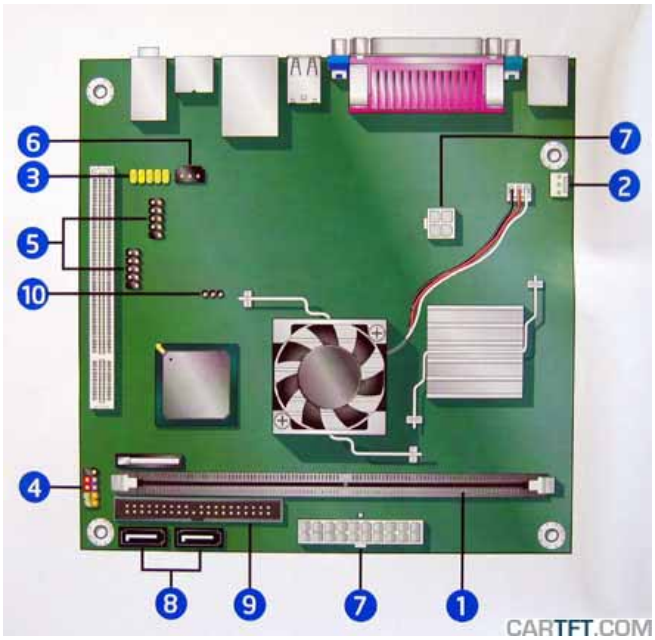
CarTFT.com offers an replacement heatsink for the D945GCLF, which fits onto the D945GLCF2 so the board fits into the most usual mini ITX enclosures, too.



Installation, used hardware and operating

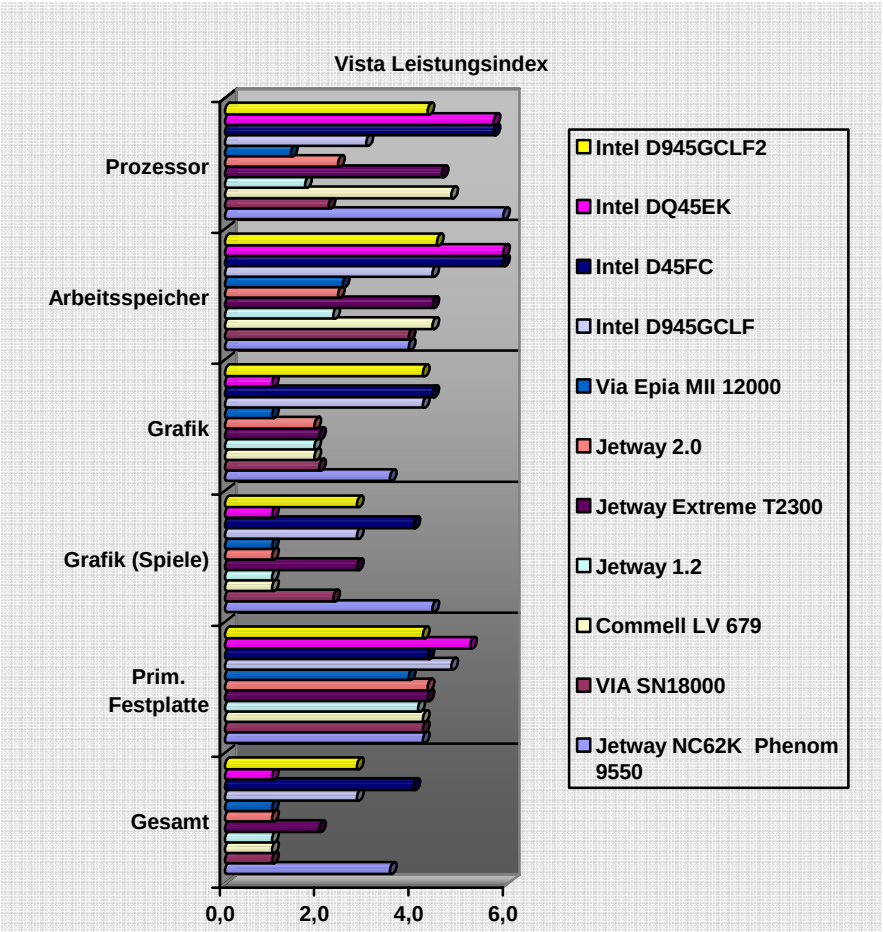
Following hardware is used in this test system:

- Intel D945GCLF2
- 1GiB DDR2 667 RAM by Aenon
- HDD 80 GiB SATA with 5400rpm by WD
- DVD R/RW-ROM by Pioneer
- M2-ATX supplied with a 84W AC adapter

Windows XP Professional and Windows Vista Ultimate 32bit were used as operating system for the tests. Several drivers to install made a very stable impression. But the performance wasn't that good compared with the predecessor. We had expected more. However, we must note, that this is no bluff package. The D945GCLF2 is what it is. The same chipset had been used as in the case of the D945GCLF and only the CPU had been upgraded. If you are working with programs, which are supporting multi core CPUs, the Atom 330 shows itself from a good side and profits from the two cores with 1.6GHz each.

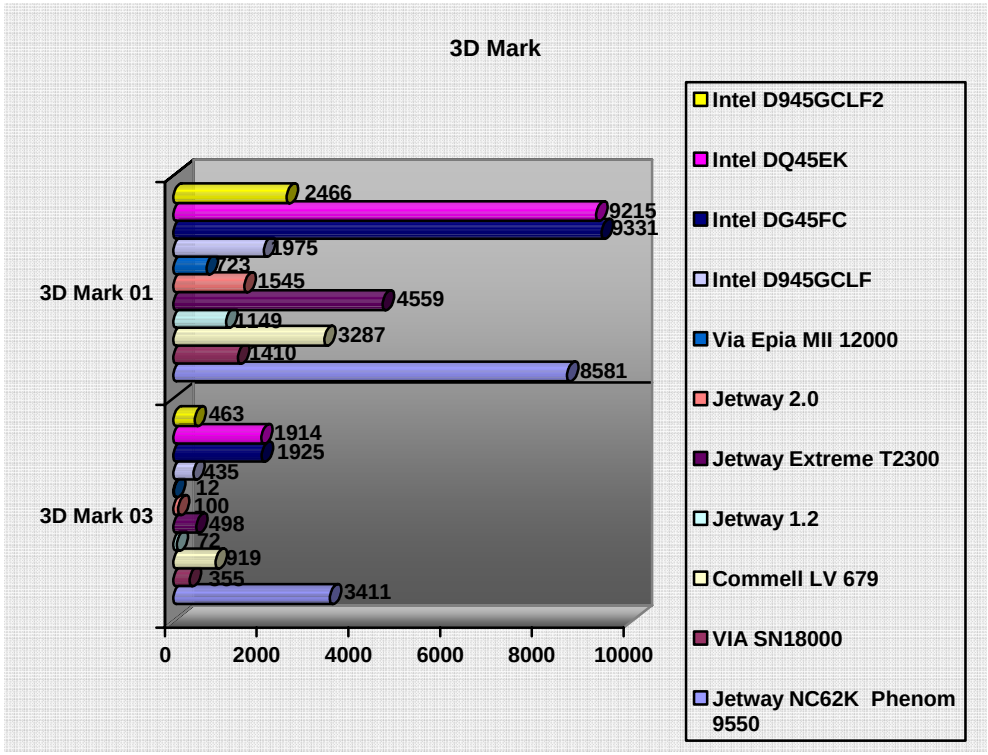
Performance, power consumption

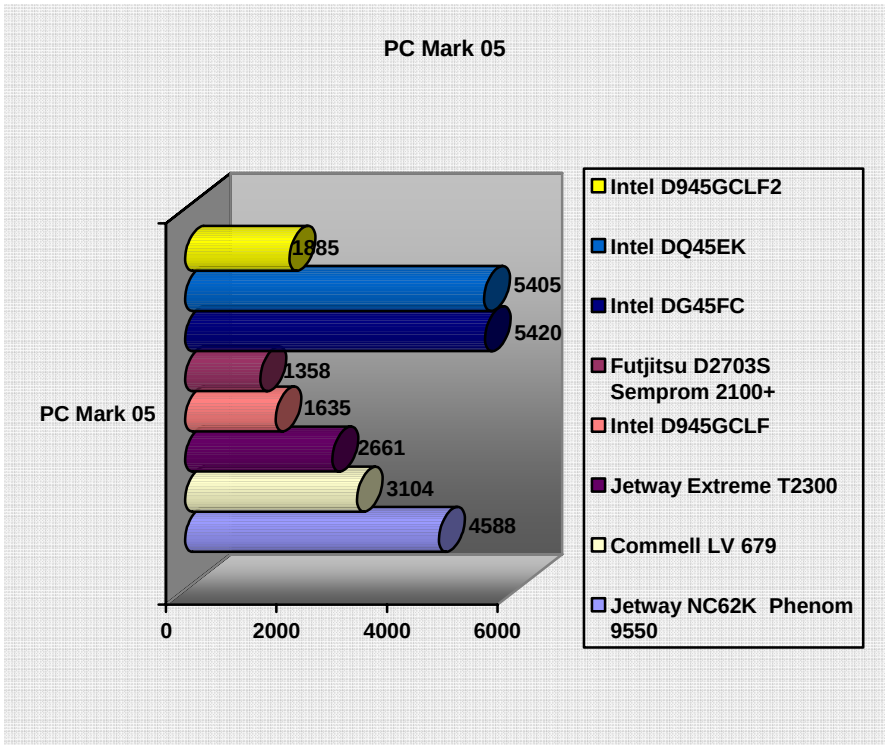
The D945GCLF can distinguish only a bit in its performance compared with “equal“ motherboards. But it can join nowhere really, because the values of the benchmarks turn out too different.

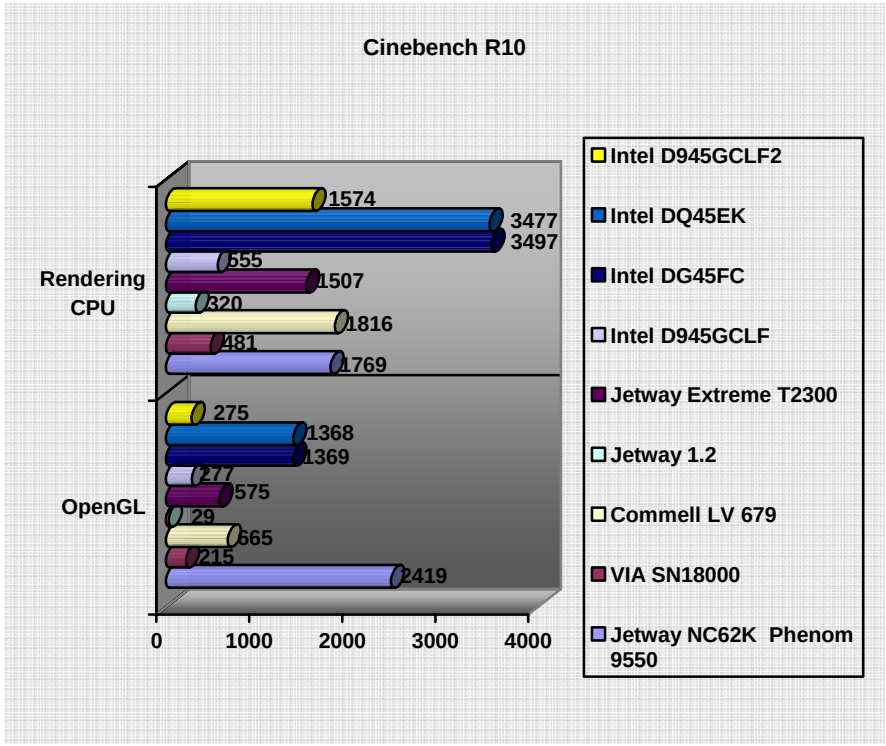


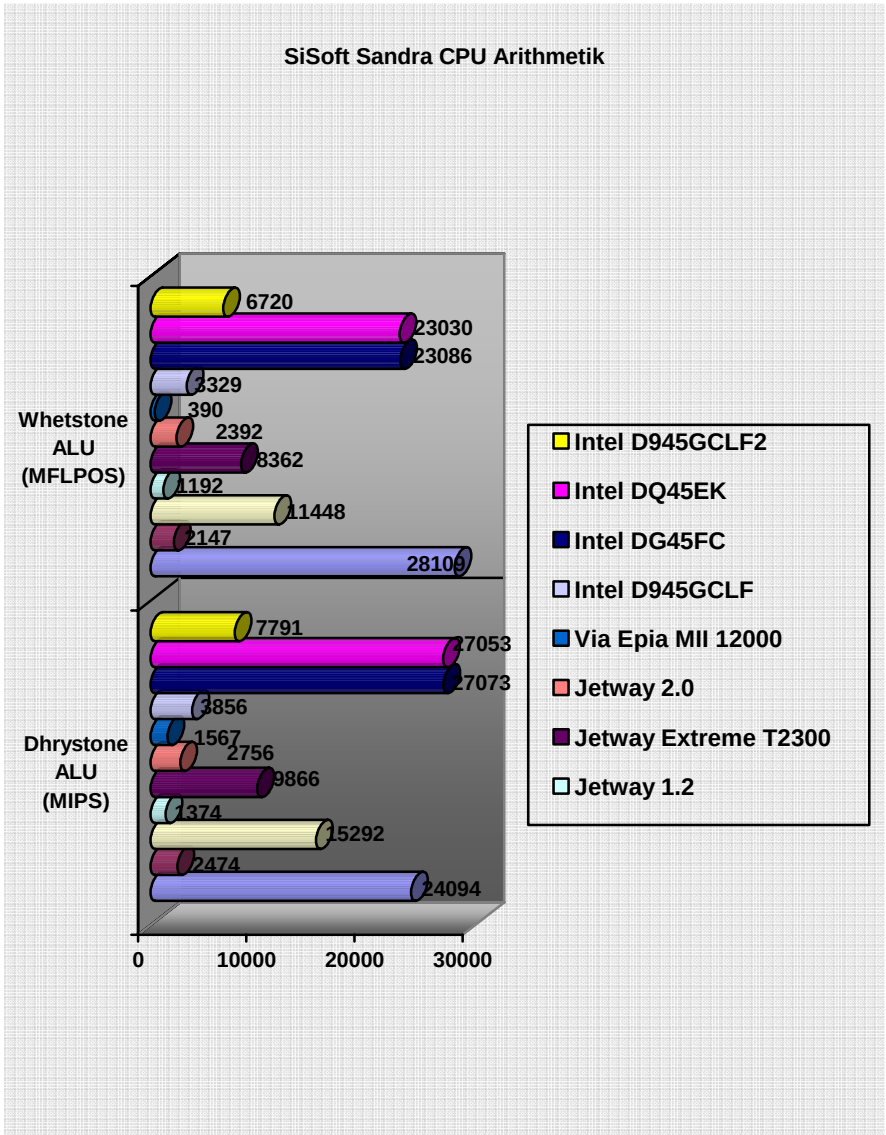
	Gesamt	Prim. Fest	Grafik (Spi	Grafik	Arbeitsspeich	Prozessor
Intel D945GCLF2	2,8	4,2	2,8	4,2	4,5	4,3
Intel DQ45EK	1	5,2	1	1	5,9	5,7
Intel D45FC	4,0	4,3	4,0	4,4	5,9	5,7
Intel D945GCLF	2,8	4,8	2,8	4,2	4,4	3,0
Via Epia MII 12000	1,0	3,9	1,0	1,0	2,5	1,4
Jetway 2.0	1,0	4,3	1,0	1,9	2,4	2,4
Jetway Extreme T2300	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	2,3	2,0	3,9	2,2
Jetway NC62K Phenom 9550	3,5	4,2	4,4	3,5	3,9	5,9

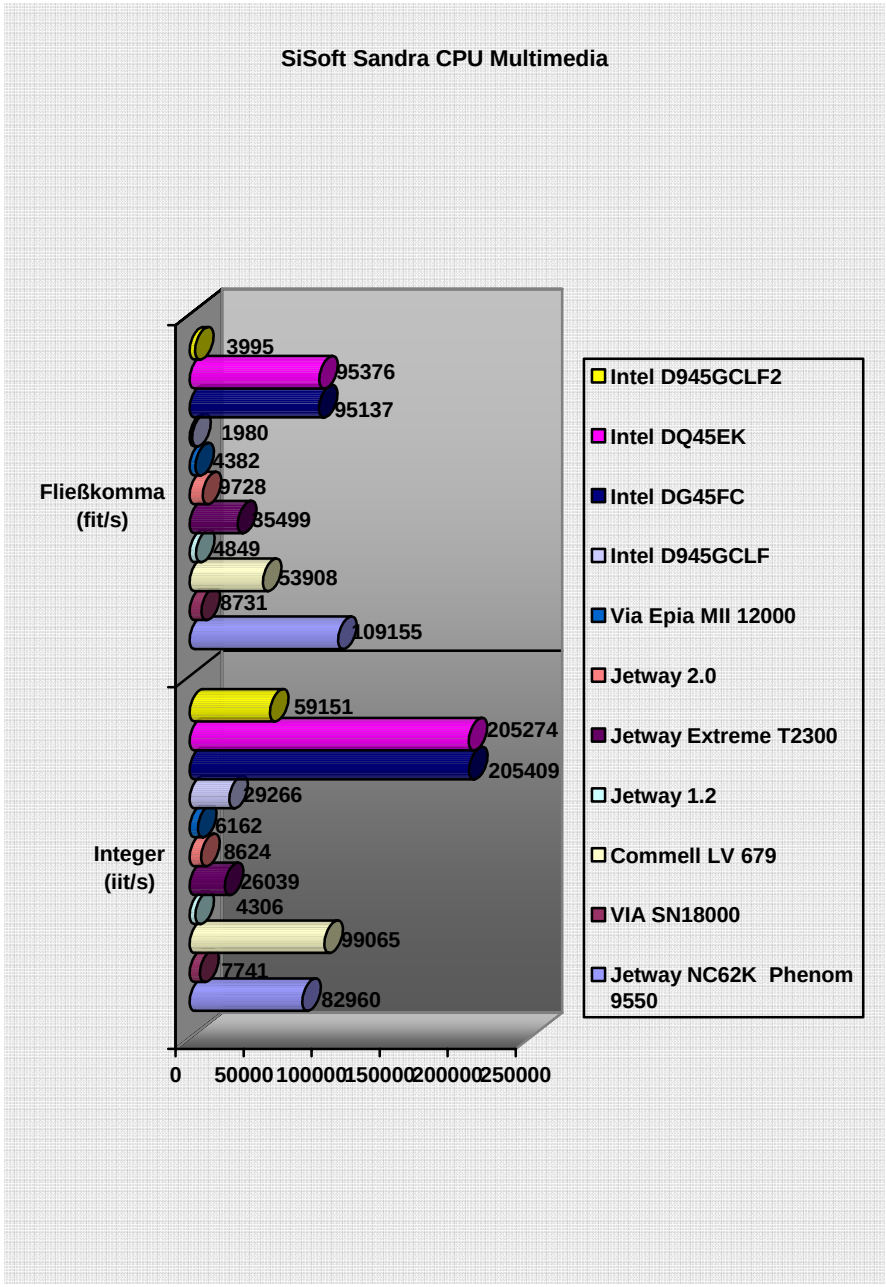
Primarily the comparison of the predecessor is interesting in this case. Despite same chipset the D945GCLF2 has little advantages. This is because of the quicker CPU.

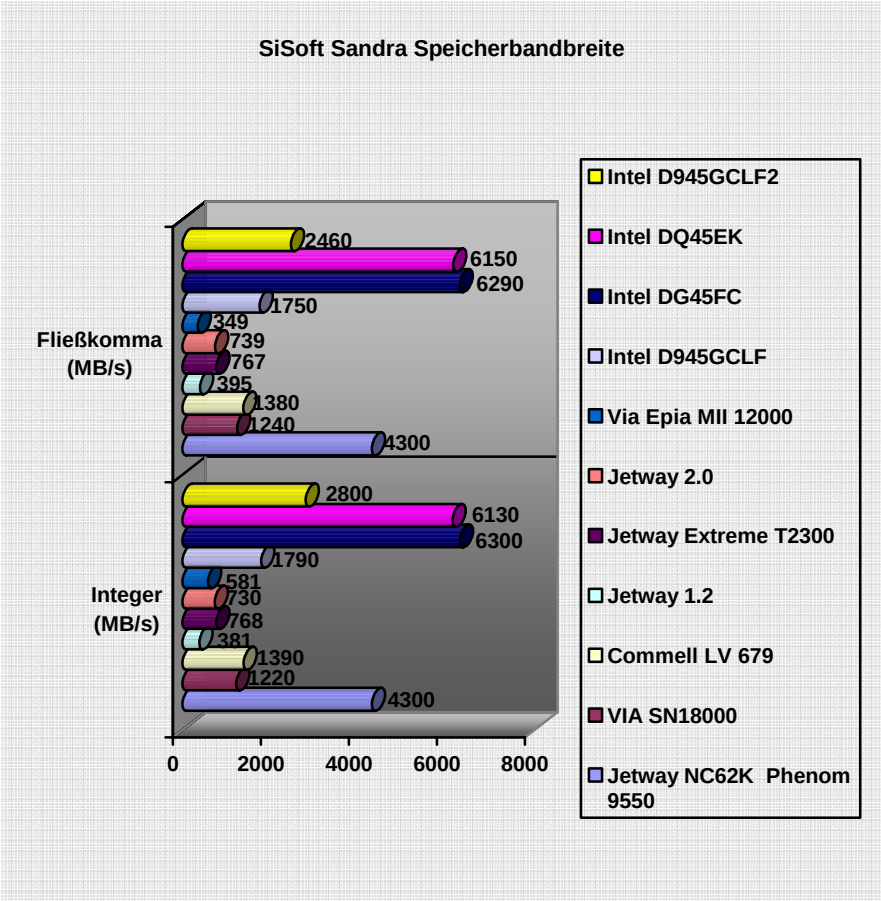

3D Mark
3D Mark 01
3D Mark 03
2466
9215
9331
1975
723
1545
4559
1149
3287
1410
8581
463
1914
1925
435
12
100
498
72
919
355
3411
0
2000
4000
6000
8000
10000
Intel D945GCLF2
Intel DQ45EK
Intel DG45FC
Intel D945GCLF
Via Epia MII 12000
Jetway 2.0
Jetway Extreme T2300
Jetway 1.2
Commell LV 679
VIA SN18000
Jetway NC62K Phenom 9550


PC Mark 05
PC Mark 05
1885
5405
5420
1358
1635
2661
3104
4588
0
2000
4000
6000
Intel D945GCLF2
Intel DQ45EK
Intel DG45FC
Futjitsu D2703S Semprom 2100+
Intel D945GCLF
Jetway Extreme T2300
Commell LV 679
Jetway NC62K Phenom 9550

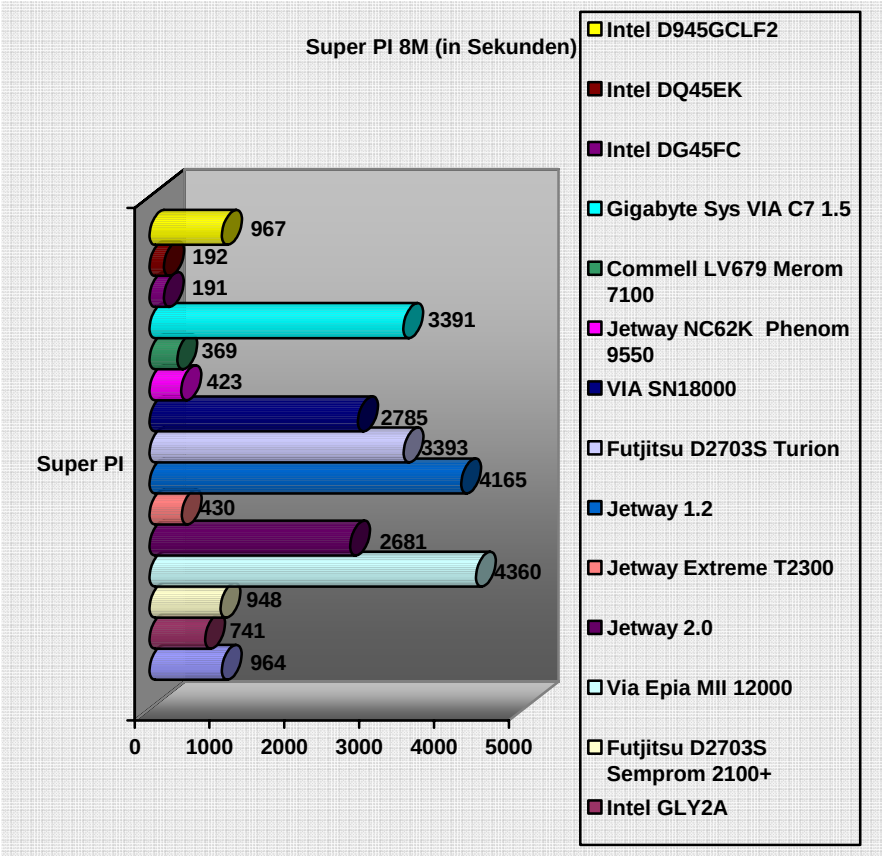

Cinebench R10
Rendering CPU
OpenGL
1574
3477
3497
555
1507
320
1816
481
1769
275
1368
1369
277
575
29
665
215
2419
0
1000
2000
3000
4000
Intel D945GCLF2
Intel DQ45EK
Intel DG45FC
Intel D945GCLF
Jetway Extreme T2300
Jetway 1.2
Commell LV 679
VIA SN18000
Jetway NC62K Phenom 9550


SiSoft Sandra CPU Arithmetik
Whetstone ALU (MFLPOS)
Dhrystone ALU (MIPS)
6720
23030
23086
3329
390
2392
8362
1192
11448
2147
28109
7791
27053
27073
3856
1567
2756
9866
1374
15292
2474
24094
0
10000
20000
30000
Intel D945GCLF2
Intel DQ45EK
Intel DG45FC
Intel D945GCLF
Via Epia MII 12000
Jetway 2.0
Jetway Extreme T2300
Jetway 1.2


SiSoft Sandra CPU Multimedia
Fließkomma (fit/s)
Integer (iit/s)
3995
95376
95137
1980
4382
9728
35499
4849
53908
8731
109155
59151
205274
205409
29266
6162
8624
26039
4306
99065
7741
82960
0
50000
100000
150000
200000
250000
Intel D945GCLF2
Intel DQ45EK
Intel DG45FC
Intel D945GCLF
Via Epia MII 12000
Jetway 2.0
Jetway Extreme T2300
Jetway 1.2
Commell LV 679
VIA SN18000
Jetway NC62K Phenom 9550



We were a little disappointed of this super pi benchmark performance. Pure performance is in demand here and people would have been allowed to expect more from a multi core CPU. The value is to be classified as „completely properly“, if you draw however comparisons of the competition, you ask yourself, what lives at the performance. We assume it’s the chipset, which is the bottleneck.



Power consumtion

Boot	35W
Idle	32W
Load	38W
CD/DVD Load	44W
DVD	43W

Temperatures, noise level

In the area of temperature and noise levels the motherboard shows itself as extremely uncomplicated and quiet in operation. Because of the passive cooler of the CPU, only the chipset is cooled with a 30x30mm silent fan. The temperatures moved between 42°C Idle up to 45°C Load.

Conclusion

After noticing that nothing serious but the CPU has changed, it was clear not to expect too much of the D945GCLF2. You'll have advantages in the performance, if programs are supporting multi core and hyperthreading. The performance increase otherwise turns out rather marginal.
Intel has set at the customer wishes and obstructed an S-Video port at the I/O. Furthermore you can connect now 4 instead of heretofore 2 USB devices internally. If you want to upgrade for example Bluetooth and W-LAN internally, you do not have to make a compromise by giving away 2 USB ports, which are available in many enclosures.
All in all the whole package is very respectable and unbeatable in price (78.95 EUR incl. VAT) compared with the competitors.

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