




Flat-screen PCs

Good things come in small packages, so we decided to check out some posh PCs to find out if a computer really has to be big be powerful

Small is beautiful... apparently, especially if you're a PC user and you're talking about flat-screen PCs. If you've been wondering of late just why you need so much empty space in the beige box underneath your desk, then perhaps now is the time to slim down. This month, we take an in-depth look at five of the smallest, most desirable PCs on the market. Each has a flat-panel display, some of which stretch to 17in, which in CRT terms makes them the equivalent of a regular 19in monitor.

But can a thin computer really be as powerful as the full-size equivalent? At first you might think not, but with Firewire, networking and even 5.1-channel sound capabilities in evidence in many of these PCs, you might be convinced.

Over the next few pages, we weigh up your options if you're looking for a compact system that costs no more than £1,200 ex VAT. So, if you're ready to put your PC on the digital equivalent of the Slim Fast plan, read on to find out which tipped the scales in their favour. 

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GROUP TEST COMPACT COMPUTERS



Evesham Crusader 1700TFT

DETAILS

PRICE £1,408.83

(£1,199 ex VAT)

CONTACT Evesham

0870 160 9500

www.evesham.com

PROS Small base unit with an excellent 17in flat-panel monitor

CONS Sound setup

OVERALL This is one of the smallest Pentium 4 systems we've seen to date and it has a fair amount to offer

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Evesham kicks off this compact computer group test with one of the most diminutive Pentium 4 systems we've ever seen at PCW. It's quite amazing that it has managed to squeeze all that hardware into such a small case and still produce a good PC.

Unfortunately, you always have to make some kind of a compromise in a slimline system such as this, and it's the graphics in the Crusader that suffer, because you can only install a low-profile card. However, there aren't many good-quality cards of this type around.

The case can be used as a tower by placing it on its side, although additional stands are required, but there's no extra cost for these. This will hardly be an issue for most people, who will use the case as a monitor stand anyway. But, if you'd rather not, the 17in Samsung Syncmaster 171s panel comes with an adjustable stand so you can position the monitor at the correct height.

This is possibly the best display on test. It has a native resolution of 1,280 x 1,024 and comes with pivot software so you can tilt the display 90 degrees. This is very useful if you write a lot of letters on your PC or work with large spreadsheets, as you get an A4-portrait-sized screen. But we experienced problems with the pivot software, which made the supplied Windows XP Home crash every

time we tried to use it. The only other manufacturer to supply a 17in flat panel for this group test is Intellect, although its AOC display lacked this tilting ability.

Inside the system unit you'll find a 1.7GHz Pentium 4 processor attached to an FIC VC31 motherboard. As specified in our brief, it conforms to the MicroATX form factor. This board is based on the i845 chipset and so supports SD-Ram. One of its strongest features, though, has to be the onboard 10/100Mbit Lan interface, which gives you an easy way of attaching this system to a network or a cable modem without having to fiddle around inside. There is also a Smart Link 56K V.90 PCI modem.

The sound is also onboard, but sadly it's nothing more than a standard AC97 solution, which is good enough for your everyday needs, but not great for games or DVDs. As a result, you'll only find a pair of stereo speakers – Creative SBS52 – included with this system. The case design necessitates the use of half-height expansion cards, so if you want to upgrade the sound or graphics, you might find yourself hunting around to get appropriate cards. In this instance, the installed graphics solution is a Geforce2 MX200. This is far from the fastest 3D card on the market, but it still comes out ahead of the Radeon VE cards installed in the Intellect and NEC

systems. However, if 2D image quality is more important than gameplay, the Radeon VE may prove to be a better choice. It has a faster Ramdac so it can produce a better image.

If you can find anything else you want to install, you'll be able to put the Crusader's two free half-height PCI slots to good use. One thing you might like to consider is the Firewire card that Evesham will be offering as an upgrade option. This will pipe out to the rear, and there will be further Firewire ports at the front of the system case. You'd find these, along with two standard USB ports, behind a small plate that can be slid across to hide them.

Behind the main front flap you'll find an LG combo DVD/CD-RW drive, capable of writing CDs at 12-speed, CD-RWs at eight-speed, and reading DVDs at eight-speed. It's also here that you'll find the floppy drive. The flap is a bit on the flimsy side but if you don't like it, it can easily be removed.

Primary storage is handled by a 60GB Maxtor hard drive; not one of the biggest drives around but still enough for all but the most capacity-hungry users.

This is not a bad system for the price. It's not an all-singing, all-dancing PC, but something for the home office or for those users after a system for Internet access and email.



IBM Netvista A22p KD36GUK

If you're after something that's not your average looking PC, then the IBM Netvista might just float your boat. It's not the sexiest looking computer ever made, but its distinctive black colour and overall appearance makes it stand out from the crowd with typical IBM panache.

IBM supplied a 15in TFT panel with the review system; other options are available, but the interesting point about this flat panel is that it comes with a wall mount as standard. This makes it a bit awkward to unpack, as the mount is attached to the normal stand in the box and has to be removed if you're going to use the display in a more conventional desk-mounted position. Thankfully once you've had a glance in the manual, it's easy to figure out how to set it up.

The resolution of the display, as with most 15in flat panels, is limited to 1,024 x 768. This is a shame, since although this is a high-quality panel, its appeal is somewhat dulled when compared to the 17in units supplied by Evesham and Intellect. In common with the Evesham panel, it can be rotated through 90 degrees, which is great for web browsing and word processing, allowing you to see more of each page without the need to scroll.

We were excited to see that the panel features DVI, and IBM even supplies the necessary cabling, but the graphical

output of the machine didn't feature the necessary outputs. Although the graphics card is an aging Geforce2 Pro, it features 64MB of Ram and was still the fastest on test.

Sound is provided by an onboard AC97 solution from Soundmax, which is one of the best software sound solutions on the market, although it can't compete with a fully fledged sound card. The speakers are comparable in quality to those that come with the Evesham, but can still be judged only as a fairly average set of stereo speakers.

You'll also find onboard 10/100Mbit Ethernet and a 56K V.92 PCI modem in this system, which makes it easy to connect to the Internet. But what impresses us the most is the 2GHz Pentium 4 processor that IBM has supplied, as it is the fastest processor in terms of raw gigahertz in this test. Sadly, the motherboard of choice, based on the i845 chipset, doesn't really show this processor in all its glory. This is very apparent if you take a look at the Sysmark scores, as the IBM is outperformed by the Intellect, which has only a 1.7GHz Pentium 4, but comes with 512MB of RD-Ram on an i850-based motherboard.

A single stick of 256MB SD-Ram is fitted to one of the three memory slots on this board, so there is plenty of space

for upgrades. You'll also find two free PCI slots, one free 5.25in and an empty 3.5in drive bay around the front.

Storage is taken care of by a 40GB IBM Deskstar hard drive spinning at 7,200rpm and a Samsung combo DVD/CD-RW drive. We encountered some problems with this drive, though, as it was very slow at detecting all CDs and at reading some others.

We hadn't specifically asked for any software, but IBM has supplied a copy of Microsoft Works Suite 2001 and Fifa 2002; maybe not the best bundle going, but at least Works Suite 2001 comes with a full-version copy of Word.

Performance-wise, the Netvista is not great, although it is the fastest machine in our 3D benchmarks thanks to its graphics card.

There are two reasons this system didn't earn itself an award. Number one is the price, which is £167 plus VAT over our £1,200 budget, and the second one is the poor warranty, which in spite of it running for three years is only a return to base warranty.

Overall, we're slightly disappointed with this system. We feel it could have been much better if a bit more thought had been put into it. There are far better options around, but remember the saying that nobody ever got fired for buying IBM?

DETAILS

PRICE £1,606.23
(£1,367 ex VAT)

CONTACT IBM 0800 169 1458
www.pc.ibm.com/uk

PROS Fast processor; decent graphics card; good display

CONS Processor let down by choice of motherboard; no DVI on the graphics card; price

OVERALL There are better options out there costing a lot less money

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Intellect Quattro 17 TFT

DETAILS

PRICE £1,410 (£1,200 ex VAT)

CONTACT Intellect

0161 429 9911

www.intellect.co.uk

PROS Good Sysmark performance; fast CD-RW; 17in flat panel

CONS Poor 3D performance

OVERALL Not the best looking machine on test, but it does have plenty of memory and a quality 17in flat-panel monitor

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If you're after a massive flat panel you really only have two choices: Intellect or Evesham. Each of these manufacturers supplies a 17in unit. However, Intellect's AOC LM-700 is not nearly as feature-rich as the Samsung 171s that comes with the Evesham. It lacks the swivel facility of the Samsung and there are no other extras with the AOC to help it stand out from the crowd. However, this will hardly be an issue for many users, as most of us are accustomed to using landscape screens. The image quality of the AOC LM-700 is still quite impressive and we didn't see any dead pixels or other problems that sometimes afflict flat panels.

Like most other manufacturers in this month's group test, Intellect has chosen to house its MicroATX motherboard inside a small tower. This one, though, looks average compared to the machine supplied by IBM. The rest of the system specifications are pretty much in line with the rather normal display, although Intellect has added a few touches of its own.

The Quattro 17 TFT comes with an i850-based Intel D850MD motherboard and a whopping 512MB of RD-Ram, which does give it an edge in the benchmarks, but adds quite a lot to the price tag. To compensate, Intellect has made cuts in other areas of the system,

although these parts are usually less expensive than the 512MB of RD-Ram. The processor is less impressive, as it's only a 1.7GHz Pentium 4, which is not the fastest on test this month.

Oddly enough, even though the Quattro 17 TFT has a slower processor it still manages to beat the IBM Netvista in Sysmark 2001, although not by a great deal. This proves that memory bandwidth is still as important as any other part of today's high-performance PC. The motherboard features integrated sound and 10/100Mbit Ethernet, as well as four USB ports around the back, which allows you to connect to a wide range of peripherals.

Our biggest complaint about this system has to be the choice of graphics card – a Radeon VE, which is one of the slowest 3D cards around. This is confirmed in our 3D benchmarks, as the Quattro 17 TFT produced an average score in 3Dmark 2001 and was the slowest running in Quake III Team Arena test. That said, the Radeon VE boasts excellent 2D quality and offers both a DVI connector and TV-out on top of the normal D-Sub. It is a shame that the 17in AOC flat panel lacks support for DVI, as this would have made for a much better combination. The only other expansion card is a 56K PCI modem, which is pretty much the standard this month.

Around the front is a Samsung 16-speed DVD-Rom drive and a Lite-On 24x 10x 40x CD-RW, both of which are better than average in this month's lineup. The Lite-On drive features Burnproof technology, which should stop it chucking out useless coasters when what you actually want is perfect discs. Primary storage is handled by a Seagate Barracuda ATA IV hard drive that can hold 80GB. Again, this is above average.

There's a set of stereo speakers and subwoofer from Hercules which, although better than those from Evesham and IBM, is far from the best set on test. You also get a Microsoft Internet keyboard and an excellent Microsoft optical mouse. Sadly, there is no software bundled with this PC which, although stingy, is not unusual in a business package.

Probably the least appealing aspect of this system is the case. It's a very plain-looking MicroATX tower that you would probably want to hide away. However, one redeemable feature is the retractable carry handle on the top of the case, ideal if you plan to move your PC around a lot.

Performance-wise, the Intellect is not a winner, although it's the fastest of the Pentium 4 systems in Sysmark 2001. If you don't plan on playing games, then this is still a good system for the home.



NEC Powermate I-select ML3 P1500

NEC and Evesham are the only two companies to supply a desktop/tower conversion case this month, which does have its benefits if you're pushed for space. It means that you can use the base unit as either a monitor stand or as a small tower unit next to your display.

At first glance this system looked like it had a good chance of becoming this month's winner, but further investigations revealed the specs were a bit on the low side. The 1.5GHz Pentium 4, which is the slowest on test, is fitted to an i845-based MSI motherboard, which is slightly smaller than a standard MicroATX board. This will create problems if you wanted to change the motherboard at a later stage, unless you could find some kind of a FlexATX solution that will fit the case.

The real letdown with a board of this size is the limited number of slots you get. The Powermate only has two PCI slots in total, one of which is shared with a CNR slot, leaving just one slot free. As with the Evesham, the slots around the back are low profile so you may have a hard time finding expansion cards to fit.

There is currently a limited number of graphics cards, modems and network cards available, but, as this form factor is becoming increasingly popular, we expect to see new accessories in the future that will fit these low-profile slots.

You'll find 256MB of SD-Ram fitted to one of the two memory slots, both of which are awkward to reach as they are underneath the DVD/CD-RW combo drive inside the case. If you want to get at the memory, you'll have to remove this drive first.

Graphics are handled by a low-profile ATI Radeon VE card featuring D-Sub and S-Video connectors. This is the first time we've seen a low-profile card with an ATI chipset, and it's the slowest in our 3Dmark test. However, the Radeon VE does offer high-quality 2D graphics. So, while gamers might not like this card, business users, whether in the office or the home, have something to smile about.

The only other card fitted is an Aztech 56K V.92 modem in the CNR slot, which makes this system slightly less appealing than the Evesham as it lacks any kind of network connectivity. Sound is yet again provided by an onboard AC97 solution, which is fine for standard stereo output, but won't give you any kind of surround sound for DVDs or games. Catering for aural output is a set of Labtec LCS 1060 speakers, which is a fair set of stereo units but nothing out of the ordinary.

As is the case with many modern systems, you'll find four USB ports on the Powermate, two of which are on the

front of the case, which makes it easy to connect MP3 players and digital cameras to the system without having to dig around at the back. Storage is provided by a 40GB Maxtor Fireball hard drive; not the most spacious drive on test, but it should be enough for most buyers of this kind of system. The optical drive is a Samsung DVD/CD-RW combo drive, which works well but won't be a speed demon when it comes to writing CDs or CD-RWs. Nor is it a very fast DVD-Rom drive.

The monitor is one of NEC's own Multisync LS15 units, which is a reasonable 15in TFT flat panel. This is the same as the unit selected by Panrix and is capable of resolutions up to 1,024 x 768, which is the norm for a panel of this size. NEC has supplied a reasonable software package consisting of Word 2000, Money 2000, Encyclopedia Britannica 2001 Deluxe and Midtown Madness.

The Powermate is let down by its lower specifications, although it's not a bad machine and it takes up little in the way of desk space. And, at £1,042.23 including VAT, it comes at a great price, too. So, if you're after something less pricey with a flat panel, then this is the way to go. Bear in mind, though, that this system will perhaps appeal more to the business user than someone buying for home use.

DETAILS

PRICE £1,042.23 (£887 ex VAT)

CONTACT NEC 0870 010 6328

www.nec-online.co.uk

PROS Well proportioned case; good display; price

CONS Slow performance; slow processor; difficult to access the memory

OVERALL Not the fastest system on test, but for the price it's not a bad choice for the office or the less power-hungry home user

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Panrix Edge 1800+

DETAILS

PRICE £1,232.58
(£1,049 ex VAT)

CONTACT Panrix 0113 244 4958
www.panrix.com

PROS Price; good speakers;
six-channel sound

CONS Poor 3D performance;
image quality issues with the
review system

OVERALL A very fast system in
Sysmark, sadly not quite as good
in our 3D benchmarks, but
nonetheless a good-value setup

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The Panrix Edge 1800+ is probably the most interesting system on test this month as far as new technology is concerned. It features the first Nvidia Nforce 420D-based motherboard we've seen, with all the extra riser cards for six-channel audio and TV-out. The chipset has Dolby Digital decoding built into the southbridge.

To be able to take advantage of the 5.1 output with any Nforce 420D board you need an optional riser card. Depending on the board manufacturer this will either be a CNR or an AMR card. In this case, MSI has gone for a CNR solution and fitted the outputs for the rear channels, the centre and sub-woofer, as well as an S/PDIF connector for pure digital output to a standalone decoder in a small riser card. Panrix has also included a TV-out board, which rather conveniently fits the AGP slot and gives you the choice of either S-Video or composite output. The VGA connector sits next to the serial port on the motherboard back plate.

There's a 10/100Mbit Ethernet port above the two USB ports to the back, providing an easy way to connect the system to a network, cable modem or the more expensive variety of ADSL. If you don't have access to a high-speed Internet connection, Panrix has supplied a Diamond Supra 56K V.90 PCI modem.

The processor in this system is the only AMD Athlon XP we've seen this month, an 1800+ unit, running at 1.53GHz. This has been bundled with 512MB of DDR memory, taking the form of two 256MB modules to make the most of the Nforce 420 chipset. The reason this has been done is because the chipset supports 128bit data bus access to the memory if you install two modules in the correct slots. This gives the system a small advantage in memory-intensive tasks, although it hasn't been proven to give quite as big a boost as expected. However, the 3D performance of the onboard graphics is increased if you install the memory this way.

The onboard graphics have been allocated 32MB of the system memory, leaving 480MB free. If you want to tweak this, you can only do so in a downwards direction and your options are restricted to 8MB, 16MB or 32MB. This is a bit on the slim side considering you can get reasonably cheap Geforce2 MX400 cards today with 64MB that perform better than the Nforce 420.

Storage comes in the form of a 40.9GB Maxtor Diamondmax Plus 40 hard drive, which is not that large by today's standards. Around the front is a Cyberdrive 16x 12x 40x CD writer, which is one of a few 12-speed CD-RW drives so far, but don't expect a huge speed

increase writing CD-RWs with this drive over one of the slower models. You also get an LG 16-speed DVD-Rom drive.

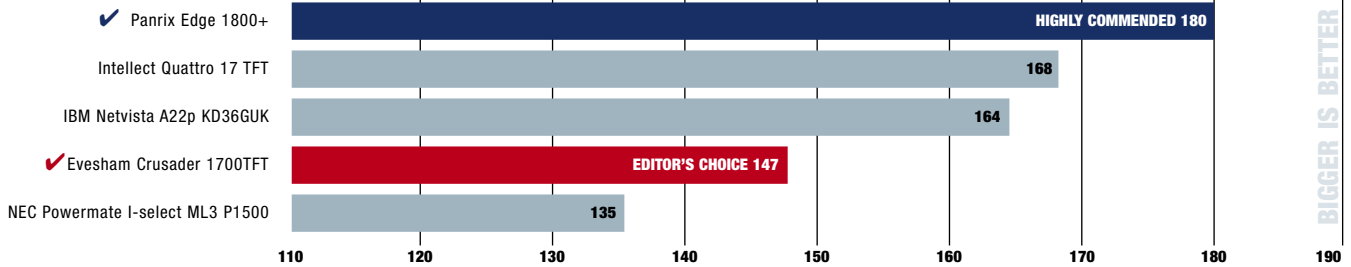
Panrix is the only manufacturer to supply a set of 5.1 speakers this month, as well as a 5.1-channel sound card. There's a set of Cambridge Soundworks DTT 2200 speakers which, although a bit dated, are still the best speakers on test and give that extra little bit of value for money.

The display is a 15in Panrix-labelled NEC Multisync LS15. Label aside, it's identical to the unit supplied by NEC. Our main concern, though, is the Nforce chipset, as the MSI board was suffering from major interference. The result was a picture that looked like a poorly tuned TV. This is very annoying, but Panrix has assured us that it's only an issue on the review machine as it is using an early pre-production motherboard. The company says it has tested production boards that don't show any sign of this problem.

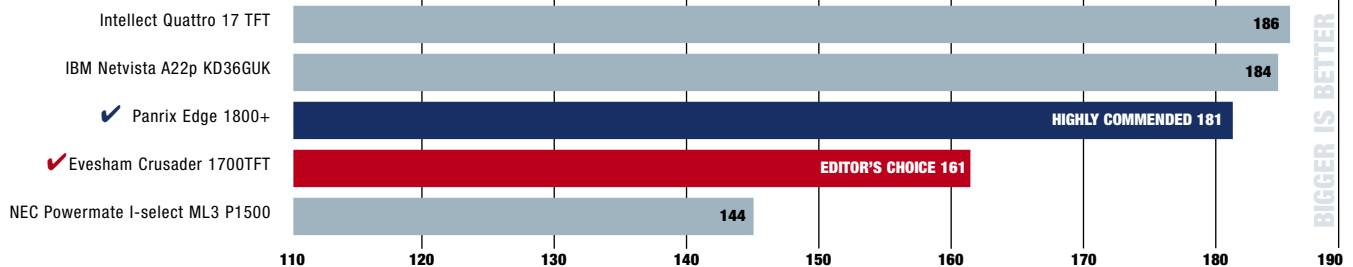
The Panrix Edge 1800+ is the fastest system in Sysmark 2001 this month, beating the competition by far and making this a great PC for any tasks apart from games, which is a bit strange as gamers make up a fair proportion of the target market of the Nforce chipset. However, the low asking price makes it worthy of consideration.

LAB RESULTS

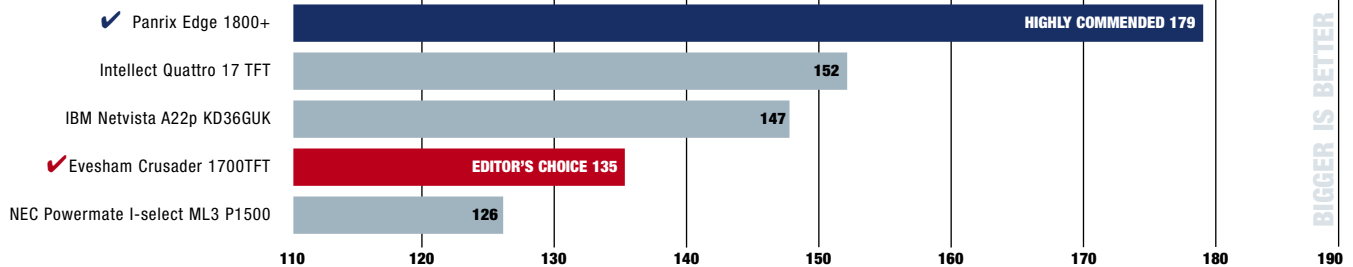
Sysmark 2001 overall



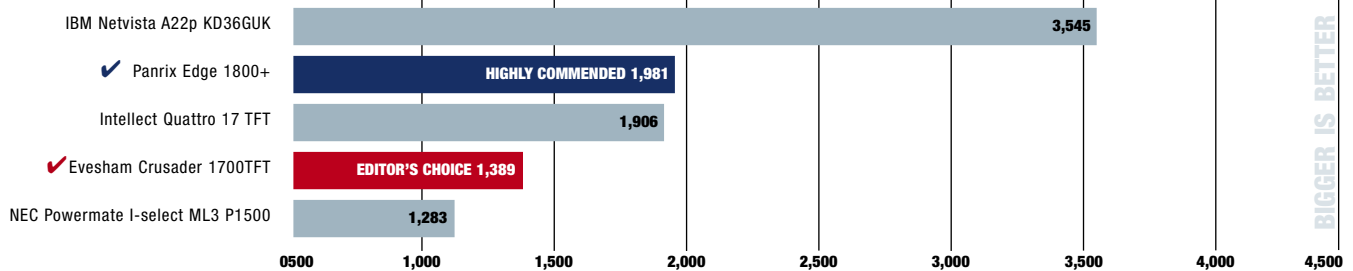
Sysmark 2001 Internet content creation



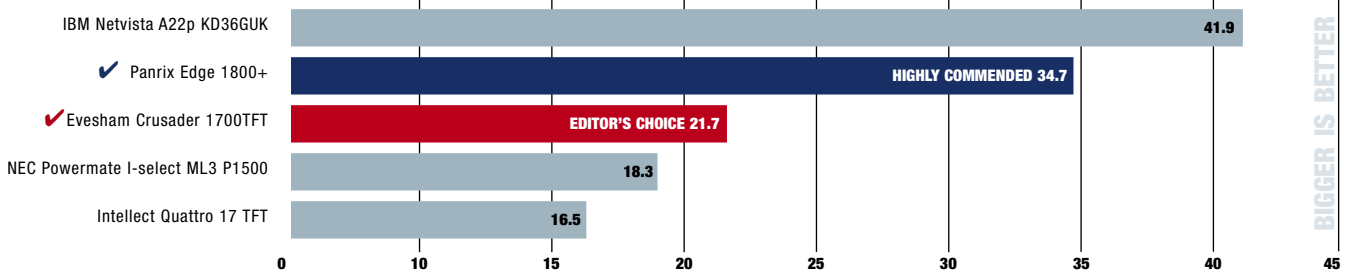
Sysmark 2001 office productivity



3Dmark 2001 (1,280 x 1,024 at 32bit)



Quake III Team Arena (fps) (1,280 x 1,024 at 32bit)



Please see page 46 for an explanation of how we tested the PCs

TABLE OF FEATURES



MANUFACTURER	EVESHAM	IBM	INTELLECT	NEC	PANRIX
MODEL NAME	CRUSADER 1700TFT	NETVISTA A22P KD36GUK	QUATTRO 17 TFT	POWERMATE I-SELECT ML3 P1500	EDGE 1800+
Price inc VAT (ex VAT)	£1,408.83 (£1,199)	£1,606.23 (£1,367)	£1,410 (£1,200)	£1,042.23 (£887)	£1,232.58 (£1,049)
Sales telephone	0870 160 9500	0800 169 1458	0161 429 9911	0870 010 6328	0113 244 4958
Website	www.evesham.com	www.pc.ibm.com/uk	www.intellect.co.uk	www.nec-online.co.uk	www.panrix.com
HARDWARE SPECS					
Processor	Pentium 4 1.7GHz	Pentium 4 2GHz	Pentium 4 1.7GHz	Pentium 4 1.5GHz	AMD Athlon XP 1800+
Ram/type	256MB PC133 SD-Ram	256MB PC133 SD-Ram	512MB RD-Ram	256MB PC133 SD-Ram	512MB PC2100 DDR SD-Ram
Occupied/spare Ram slots	1/2	1/2	2/2	1/1	2/1
Max memory in this configuration	2.2GB	2.2GB	1.5GB	1.77GB	2GB
Maximum memory supported by motherboard	3GB	3GB	2GB	2GB	3GB
Hard disk manufacturer and model	Maxtor 6L060J3	IBM Deskstar	Seagate Barracuda ATA IV	Maxtor Fireball Plus AS	Maxtor Diamondmax Plus 40
Hard disk size/interface	60GB/UltraDMA100	40GB/UltraDMA100	80GB/UltraDMA100	40GB/UltraDMA100	40.9GB/UltraDMA100
Hard drive spin speed	5,400rpm	7,200rpm	7,200rpm	7,200rpm	7,200rpm
Storage drive manufacturer and model	LG GCC-4120B	Samsung SM-308B	Lite-On 24x 10x 40x	Samsung SM-308B	Cyberdrive CW038D
Size of storage drive media/interface	650MB/EIDE	650MB/EIDE	650MB/EIDE	650MB/EIDE	650MB/EIDE
MOTHERBOARD COMPONENTS					
Motherboard manufacturer	FIC	IBM	Intel	MSI	MSI
Model/chipset	VC31/i845	N/A/i845	D850MD/i850	MS-6506/i845	MS-6367/Nforce 420D
EXPANSION AND I/O					
No of 3.5/5.25in bays	2/1	3/2	3/2	2/1	2/2
No of free 3.5/5.25in bays	0/0	1/1	1/0	0/0	0/0
No of PCI/ISA/shared/AMR slots	2/0/1/0*	3/0/0/0	3/0/0/0	1/0/1/0*	2/0/1/0
No of free PCI/ISA/shared/AMR slots	2/0/0/0*	2/0/0/0	2/0/0/0	1/0/0/0*	2/0/0/0
No of USB/serial/parallel/PS/2	4/2/1/2	4/2/1/2	4/2/1/2	4/2/1/2	2/2/1/2
MULTIMEDIA					
DVD manufacturer and model	LG GCC-4120B	Samsung SM-308B	Samsung SD-616	Samsung SM-308B	LG DRD-8160
DVD speed/interface	8x/EIDE	8x/EIDE	16x/EIDE	8x/EIDE	16x/EIDE
Sound card manufacturer	Onboard	Onboard	Onboard	Onboard	Onboard
Sound card model	AC97	AC97	AC97	AC97	Nforce 420D
Speakers manufacturer and model	Creative SBS52	IBM Infinity speakers	Hercules XPS210	Labtec LCS 1060	Cambridge Soundworks DIT 2200
Graphics card manufacturer and model	Pixelview G2 MX200	IBM	ATI Radeon VE	ATI Radeon VE	Onboard Nforce 420D
Chipset	Nvidia Geforce2 MX200	Nvidia Geforce2 Pro	ATI Radeon VE	ATI Radeon VE	Nforce 420D
Memory and type	32MB SD-Ram	64MB DDR SG-Ram	32MB DDR SD-Ram	32MB DDR SD-Ram	32MB shared
Graphics card interface	AGP	AGP	AGP	AGP	AGP
Monitor manufacturer and model	Samsung Syncmaster 171s	IBM 6656-HG2	AOC LM-700	NEC Multisync LS15	NEC Multisync LS15
Monitor size/max viewable diagonal	17in/17in	15in/15in	17in/17in	15in/15in	15in/15in
Native resolution	1,280 x 1,024	1,024 x 768	1,280 x 1,024	1,024 x 768	1,024 x 768
OTHER INFORMATION					
Modem manufacturer and model	Smart Link 56K V.90	USI PCI 56K V.92 modem	Bestdata 56K V.90 PCI	Aztech V.92 56K CNR	Diamond Supra Express 56i
Misc hardware	Onboard 10/100Mbit Realtek Ethernet	Onboard Integrated Intel Pro/100 Ethernet	Onboard Integrated Intel Pro/100 Ethernet	N/A	Nforce 420D 10/100Mbit Ethernet
Bundled software	Sun Star Office	Microsoft Works Suite 2001 Fifa 2002	N/A	Microsoft Word 2000, Money 2000, Encyclopedia Britannica 2001 Deluxe, Midtown Madnes	MS Works Suite 2001
Standard warranty	2 years on site, 1 year RTB	3 years RTB	2 years on site	3 years on site	2 years on site

RTB = return to base, C&R = collect and return

*Low-profile slots

Editor's Choice

Slimline desktop systems have been around for the past 10 or 15 years. Remember those old Apple Mac computers that arrived in a small beige box with integrated 9in screen? Then you'll know exactly what we mean. Today's designs are far more appealing. Take, for example, the Imac. It looks good, it is stylish enough to be in your lounge, but is still lacking something when it comes to display size.

In the past year or so we've seen quite a few all-in-one PCs built into the back of a flat-panel monitor. We're also seeing an increased interest in small form-factor motherboards, although they tend to sell better in Japan than in Europe. Most MicroATX boards today are as well equipped as any full-size board, although they usually have fewer PCI slots and so lack some of the expansion capabilities. However, with integrated sound, graphics and often even networking capabilities this is clearly something that many manufacturers are now starting to address and, with many expansion options switching to legacy-free USB connections, the future once again looks bright.

Take Asus, for instance. It offers a Pentium 4 MicroATX motherboard based on the i845 chipset with support for Firewire, and an S/PDIF connector for digital sound output. Likewise, Via offers proprietary ITX boards, which are even smaller than the FlexATX standard. The latest, the Mini-ITX, comes with a built-in processor, which is great for one-box devices such as set-top boxes and firewalls.

These are not products you'd expect to find in your average PC, though, as their performance is not up to today's standards. Sadly, this is the issue with most all-in-one units as well: there is always something that suffers in systems of this kind. The most commonly under-specified provisions are sound and graphics, as so far there haven't really been any good integrated chipsets offering a good combination of both.

For this reason, Nvidia is hoping that its new Nforce chipset will take a big market share. But this too is not quite what it was expected to be. Although it offers the best 3D graphics of any chipset to date, it's not

fast enough to beat one of Nvidia's own Geforce2 MX400 products. The sound on the Nforce 420D is, however, the best soft audio solution by far and it even surpasses that of some conventional sound cards.

These sound and graphics worries are in part why the low-profile PCI standard was developed; it allows for compact systems that still have some expansion capabilities. The problem is the limited range of cards released to date. So far we've only seen a small number of low-profile graphics cards, modems and network cards, but Evesham has assured us that it will have a Firewire card soon.

The reason the small form-factor PC hasn't taken off is due, in part at least, to the fact that it still looks like any other PC and if it's to be a big seller then it needs a radical facelift. They should be more of a fashion accessory than just another PC.

Winners

As there are so few players in this market, we are awarding just one Editor's Choice and a Highly Commended gong. After some contemplation, the **Evesham Crusader 1700TFT** came out ahead of the crowd to win the **Editor's Choice** award. Its 3D performance may have been disappointing, and its sound setup less than ideal, but for non-gamers, which is the intended market for a system of this kind, it has everything you could want. This includes a 17in flat-panel display, which can easily rival a conventional 19in CRT-based monitor, without hoarding nearly as much desk space. The system unit is minuscule enough to fit just about anywhere.

Our **Highly Commended** award goes to the **Panrix Edge 1800+**. This system is excellent value for money, offers reasonable games performance and provides this month's best Sysmark 2001 score. Being the only system to feature 5.1-channel sound, it is the only machine you would really want to use for DVD playback. However, as is the case with all of these systems, whether you'd want to do this through a panel display, with its often inferior video playback performance, is a matter for debate.



Evesham Crusader 1700TFT



Panrix Edge 1800+

The Crusader unit is minuscule enough to fit just about anywhere