Affordable 166MHz MMX PCs

MMX-enabled PCs have been flooding onto the market and are now available at truly affordable prices. We sample eight new models and their accompanying software bundles

MMX rated

You can hardly have missed the hype surrounding Intel's new MMX processor technology. From headlines in broadsheet newspapers to glitzy adverts during the *Coronation Street* break, the MMX moniker is everywhere – and apparently it's all in the name of 'fun'.

The MMX stands for 'multimedia extensions' and, to put it simply, PCs fitted with an MMX chip are geared up to run multimedia and games software better than any other type of machine.

Since Intel launched the first MMX processors at the beginning of this year their success has been huge and, unless you have really tight purse strings, you'd now be ill advised to buy a new PC fitted with any other type of processor. Intel is also no longer the only supplier of MMX processors. Following a scrap in the law courts, rival chip manufacturer AMD has been given the all-clear to launch its own range of MMX-compatible processors, known as K6.

Now there's some competition the prices have started to drop, and PCs with MMX processors are little more expensive than their non-MMX equivalents of just a few months ago. You can get an MMX PC with a processor speed of 166MHz for just a fraction over £1,400 – and that's including the dreaded VAT.

We decided it was about time to try out this new generation of machines – and put the generosity of PC manufacturers to the test at the same time. So, we asked eight of them – large and small – to furnish us with a high-value, low-cost PC fitted with a 166MHz MMX processor.

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Benefits of MMX technology

What makes MMX processors better than their non-MMX counterparts, and is it really worth splashing out the extra money to get an MMX PC?

The first point to note is that MMX processors do not represent the quantum leap forward in technology that some might have you believe. Indeed, as far as running existing software is concerned, the benefits are minimal. By Intel's own reckoning, the applications you might already own and use on a non-MMX PC will only receive a performance boost of around 10-20 percent when installed on an equivalent MMX machine. So why all the fuss?

The answer lies mainly with some extra commands that have been engineered into the processors, designed specifically to provide software developers with better, faster ways of manipulating graphics, sounds and video.

The amount of on-chip cache has also been doubled to 32Kb on MMX processors. What on earth does that mean? Well, the cache is a special area of memory built into the processor where frequently used instructions and information are stored. If the processor needs to work on a certain command or piece of data stored in the cache, then it can get to it much quicker than the information stored elsewhere. Of course, at the speed computers work nowadays, the increases at this level are measured in nanoseconds. However, the millions of nanoseconds saved combined with the use of the new commands mean that programs can be made to run at anything up to 60 percent faster than they could before.

At the end of the day all these technical details aren't really important: at the moment it makes sense to buy MMX PCs simply because they are the fastest around. Software support for MMX processors is growing rapidly, with new titles being released every day, and within a few months you'll find it hard to buy any other type of PC.

Compaq Presario 4760

Depending on your viewpoint, the unconventional cases that surround Compaq's Presario PC range are either highly stylish or just plain ugly. Whatever your opinion, the look hasn't done any harm to the sales of the corporate giant's flagship consumer PC brand, and it is one of the most easily recognisable in the high street.

The top of the case is dotted with a number of shortcut buttons that, along with a couple of other uses, give users fingertip control of the 16-speed CD-ROM drive's audio functions. This drive goes as fast as you could want but it does make a bit of a din while it cranks up to speed, vibrating against the Presario's steel case.

Powering the machine up doesn't bring any real surprises: a colourful Compaq start-up screen appears before being replaced by the oh-so-familiar face of Windows 95. Compaq has added a few of its own programs, such as an on-line help system, which sit quietly in the background until you press one of the shortcut buttons.

Most manufacturers now seem to be moving towards 32Mb of memory (RAM) rather than 16Mb as the designated amount for their machines at 'entry level', but Compaq has only gone half way by fitting 24Mb. Even so, this is still a more than reasonable amount for everyday tasks.

Software is an important part of any PC but it must be said that the 'free' packages bundled with most new systems often leave a lot to be desired. Compaq's offering is not bad, although it does look a little thin in comparison to what some of the other manufacturers throw in. Microsoft Works (basic office software) makes one of its regular bundle appearances, along with the excellent image-editing package CorelDRAW 5 and Intuit's good but ageing personal finance tool, Quicken 4.

Compaq's PCs are usually well thought out and easy to use, and the Presario 4760 is just that. An otherwise attractive PC, its price is on the high side.

○ £1,799 (inc VAT)
○ Compaq: 0990 134456

Compaq Presario 4760	
Build quality	★★★★★
Features	★★★★☆
Performance	★★★☆☆
Value for money	★★★☆☆
Overall	★★★☆☆

Dan Xplora Plus/166XE

North London-based Dan Technology's PCs make frequent appearances in the pages of *What PC?* and over the years we have, by and large, been impressed by their performances.

The Xplora Plus/166XE is probably physically the largest machine we've yet seen from Dan. The case is a full tower, the sort that typically gets buried under your desk and ends up serving as a useful shelf.

Under the 'shelf' is a PC of suitable magnitude: 32Mb of RAM (memory); a 4Gb hard disk drive; an AWE64, the latest sound card from leading manufacturer Creative Labs; and a television tuner card. This last item, although not unusual or expensive to buy, will be welcomed by anyone after a PC for family use – you're effectively getting an extra telly for no extra cost.

The Dan-badged 15in monitor accompanying the machine gives a perfect picture at a screen resolution of 800x600. Naturally, it can display resolutions beyond this; although, as with all 15in monitors, you'd probably find it quite uncomfortable to use for long periods.

To give the Xplora a voice, Dan has supplied a pair of Yamaha speakers. These are supported by a sub-woofer that is bulky enough to make it the Xplora's chief companion under the desk. The powerful effect of speakers and sub-woofer combined is not easy to put into words, but with the bass turned up high games playing becomes a near-physical experience.

Dan has seen fit to throw in Microsoft's new Intellimouse, a move we applaud. The Intellimouse is simply a standard Microsoft mouse with a small rubber wheel set between the two buttons. This wheel can be used in applications like Word and Internet Explorer to scroll through documents, and once you've used it you'll soon wonder how you ever managed without it.

Dan has made a habit of consistently producing excellent PCs. The Xplora Plus/166XE scores highly on all counts bar its ominous appearance and price.

○ £1,800 (inc VAT)
○ Dan: 0181 830 1100

Dan Xplora Plus/166XE	
Build quality	★★★★★
Features	★★★☆☆
Performance	★★★★★
Value for money	★★★☆☆
Overall	★★★★☆

HM Systems Minstrel XL971

HM Systems started life in 1979 in a small industrial unit in north-west London. The company is still in the same locale, although it has moved to larger premises, and it has opened a retail showroom that has example systems up and running for customers to try out before making a decision to buy.

The XL971 is one of three machines in this test to be powered by a K6, the Pentium MMX-equivalent processor from Intel's arch-rival AMD. The primary advantage of fitting non-Intel processors – from the point of view of both the manufacturer and the consumer – is that they are cheaper, and therefore result in lower-priced PCs; but does it make any difference to the way you work with the machine? The simple answer is no. Windows 95, office applications and games all run in exactly the same way on an AMD (or one from rival chip maker Cyrix, for that matter) processor as they do on an equivalent Intel model. Of course, compatibility problems might arise with the odd one or two programs but they're unlikely to affect major applications and should be easily fixed.

Another interesting facet of the XL971 is found at its rear: a pair of USB ports. USB, which is short for Universal Serial Bus, is a new connection port standard drawn up by a number of industry giants including Intel, Microsoft and IBM. It allows all sorts of external peripherals, such as digital cameras and scanners, to be hooked up to a PC with minimum fuss. Unfortunately, at the moment USB devices are few and far between but that is likely to change over time.

The 32Mb of memory fitted should be sufficient for most people's needs over the next couple of years, which is fortunate because access to the free memory slots is hindered by the power supply unit. The rest of the interior is open enough though, so adding expansion cards and so forth shouldn't cause any headaches.

The Minstrel XL971 is an unexceptional PC package, but not a bad one. The software pack, though short on titles, is certainly a major plus point.

○ £1,698 (inc VAT)
○ HM Systems: 0181 830 1300

HM Systems Minstrel XL971	
Build quality	★★★★☆
Features	★★★☆☆
Performance	★★★★☆
Value for money	★★★☆☆
Overall	★★★☆☆

KT Computers MicroHome MidiTower 166MMX

KT Computers is typical of many of today's smaller PC makers. It was formed in 1987 and has been trading from a London industrial unit ever since. Systems can be built to order and the company has a showroom which potential customers can visit for advice or to test machines.

The MicroHome MidiTower 166MMX's name gives you a good idea of what sort of system it is. Aimed at home users, the PC has an AMD K6 166MMX processor at its heart and comes in a short, wide case. But obviously there's more to it than that, and, although typical of this gathering of MMX PCs, the rest of the specifications are more than adequate.

One of the best parts of the system is the monitor, made by Sony. It's a Multiscan Trinitron model, which gives exceptionally crisp images at the expense of a couple of feint horizontal lines across the screen. Such lines are often visible on Trinitron tubes and are caused by support wires which hold the aperture grille (the part that controls the amount of light that passes onto the screen) in place. It sounds unlikely, but you soon forget they're there.

The bundled software is a predictable Microsoft line-up but it's nonetheless welcome. You get the ubiquitous Works, Money and Encarta 97, and route planning software AutoRoute Express also makes an appearance. Armchair golfers are catered for with Microsoft Golf, and younger family members get Dangerous Creatures and Explore the Solar System.

One final note: KT Computers is obviously confident about the reliability of its machines because the company is currently offering a five-year warranty with the MicroHome PC.

The MicroHome MidiTower 166MMX is well-built, a great performer and priced competitively. If there is a downside it's the keyboard, which looks as though it was pulled from a time capsule buried during the early 1980s.

- £1,643.83 (inc VAT)
- KT Computers: 0181 961 8897

MicroHome MidiTower

Build quality	★★★★★
Features	★★★★☆
Performance	★★★★★
Value for money	★★★★☆
Overall	★★★★☆

Mesh Titan 166MMX Pro

Yet another company with its headquarters based in London, Mesh has been producing PCs for over 10 years. If you are looking for a trusted mail-order supplier then you might find better than Mesh, but you'd spend an awful lot of time doing so.

The Titan 166MMX Pro takes on Mesh's trademark case design: big, sturdy and distinguished by an expanse of 'decorative' black meshing. But the case is not the only thing that sets Mesh's PC apart in this test. Just when you thought CD-ROM drives had got as fast as they needed to be at 16 times the speed of the first devices, Mesh steps it up a gear by fitting the very latest 24-speed model. In truth, it's probably much faster than anybody could possibly need right now, but we cannot criticise a company for adopting leading-edge technology.

The monitor, too, is unique among this bunch of MMX PCs because is has a 17in tube. Naturally, this means that it can comfortably display high resolutions (1,024x768 pixels and beyond) but image quality is a much more important factor. Fortunately, it does not disappoint in this respect either. Made by ADI and called the MicroScan, it holds a superb picture: crisp, clear and rock steady.

As far as the performance goes, the AMD K6-powered Titan 166MMX was right up near the top of the chart (*see the graph on page 64*). However, with the exception of the Compaq machine (which only has 24Mb of memory), the speed differences between the top and bottom machines were so small as to be almost insignificant.

Along with many other softwre titles, Mesh is currently giving away Lotus SmartSuite 97 with the Titan. This comprises a great bunch of office software including the all-important word processor and spreadsheet programs.

Mesh's machine is not cheap, although that does not mean it isn't good value for money. The specification is almost beyond criticism and the bundled software is actually worth having.

- £1,761.33 (inc VAT)
- Mesh: 0181 452 1111

Mesh Titan 166MMX Pro

Build quality	★★★★★
Features	★★★★★
Performance	★★★★★
Value for money	★★★★★
Overall	★★★★★

MJN Best Buy 76G

The MJN of today is not the MJN of yesterday. After the original company hit financial difficulties a few years ago, a large, UK-based PC manufacturer bought the MJN brand name and has been trading successfully with it ever since.

Cheekily and somewhat optimistically named the Best Buy 76G, MJN's submission for this MMX group test is typical of many PCs available through mail order. The case is an unremarkable mini-tower with the usual couple of buttons and line-up of flashing lights, and it houses a reasonable, but hardly excessive, set of specifications.

As well as the Pentium 166MHz MMX processor, you get 32Mb of memory, a roomy 3Gb hard disk and a 12-speed CD-ROM drive. The graphics power comes from an ATI mach64 card with a healthy 4Mb of video memory.

Nowadays, PCs fitted with modems are the norm rather than the exception and the 76G's 33.6Kbits/s model is as good as any other you're likely to buy. However, we did discover a problem with it. The pass-through socket for the telephone (which lets the modem and telephone share the same socket) is partly blocked by the chassis, so it's actually not possible to plug a phone into it. To be perfectly fair, when we opened up the machine we found the problem was easily solved by repositioning the modem card, but this is something the average user should not have to do.

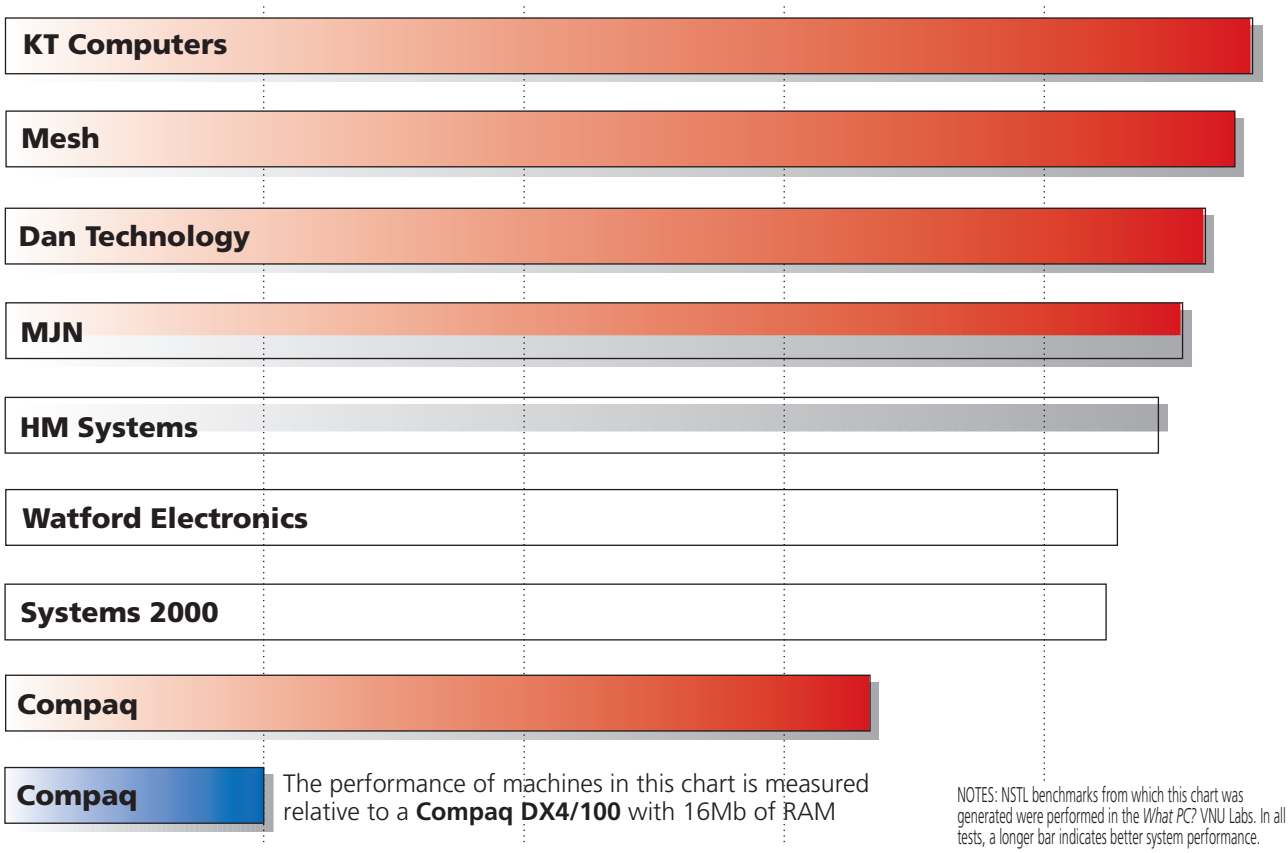
MJN produces a wide range of machines, some of which are very desirable, but the 76G is decidedly average. In fact, the only thing that makes this machine stand out from the others reviewed here is that it comes bundled with a joystick. Unfortunately, it's not a great one. **Best Buy 76G by name, but simply 76G (whatever that might mean) by nature. An acceptable machine at a good price, but not outstanding by any means.**

○ £1,408.83 (inc VAT)
○ MJN: 01282 777555

MJN Best Buy 76G

Build quality	★★★☆☆
Features	★★★★☆
Performance	★★★★☆
Value for money	★★★★☆
Overall	★★★★☆

Speed tests



The performance of machines in this chart is measured relative to a **Compaq DX4/100** with 16Mb of RAM

NOTES: NSTL benchmarks from which this chart was generated were performed in the *What PC?* VNU Labs. In all tests, a longer bar indicates better system performance.

Systems 2000 S2-MMX 166

Systems 2000 is probably not a name you've come across before. This small company started life in the capital around eight years ago before relocating, lock, stock and barrel, to Portsmouth. The company's PCs are built to order in a workshop situated within the company's retail shop.

The problem with some group tests is that after a while one machine seems very much like another. And with the S2-MMX-166 that feeling was stronger than ever because it comes in exactly the same case as the PC from HM Systems (*see page 61*). This is not a criticism though – after all a case is just a case. In fact, it's quite a neat design with just a single screw releasing a slide-off side panel making it very easy to get inside should you need to. Security hasn't been overlooked, however, as a padlock loop at the rear has been included.

When we took the S2-MMX 166's side panel off we were greeted by a rather messy tangle of cables, one of which completely and rather tautly crosses the four free SIMM (Single In-line Memory Module) sockets. Directly below these are two ISA and two of the more modern PCI expansion slots, which is pretty much standard issue these days.

The included software is barely worth mentioning, with just a couple of mediocre CD-ROM-based computer tutorials being the sum total. On the plus side, Systems 2000 has made a wise decision in its choice of Yamaha speakers. These are similar to the pair that are supplied with Dan's Xplora 166/XE machine (*see page 61*), but they are even more powerful, meaning the reproduction is even more impressive.

There's nothing wrong with the S2-MMX 166 per se, but at the same price why not buy a similarly featured machine from one of the big-name manufacturers?

- £1,709.63 (inc VAT)
- Systems 2000: 01705 293000

Systems 2000 S2-MMX 166

Build quality	★★★★☆
Features	★★★☆☆
Performance	★★★★☆
Value for money	★★★☆☆
Overall	★★★☆☆

Watford Electronics Perfecta TX97

Watford Electronics is one the UK's largest mail-order operations with a multi-million pound turnover and advertisements that are almost magazines in themselves. The company sells all sorts of computer-related goods, everything from software to scanners, but its main source of income is still from PCs and the Perfecta TX97 is one of its most recent models.

The outstanding feature of this PC is not its Pentium 166MMX processor, nor the 32Mb of memory. No, the most impressive component is the whopping 6.4Gb hard disk drive. Many manufacturers are still offering 2Gb or 3Gb on top-of-the-range models, so that gives you an idea of just how capacious a 6.4Gb drive is.

A modem is a noticeable omission in the Perfecta, which is something we probably wouldn't have said a year ago. However, most new PC buyers are likely to want to connect to the Internet at some point, and given that every other machine in this test has one, we think it is now a fair criticism.

The machine is exceptionally tidy inside and everything you might need to get your hands on is easy to get to. The memory is on a single DIMM (Dual In-line Memory Module) and two spare sockets are available, meaning there's plenty of scope for expansion.

The keyboard is a bit of a spongy disappointment, although it has a couple of unusual features. A single key at the top right emulates the three-key combination required to reset a PC, and a clip-on wrist rest is also supplied.

Watford hasn't gone overboard on the extras, with just a few games and the admittedly excellent Encarta 97 in the box. However, where the system cannot fail to score is on the price. At just a few pounds over £1,400, you'd be hard pushed (at the moment) to find a same-specification PC at a lower price.

The Perfecta TX97 makes the grade as a good-value system, particularly when you take the massive hard disk and long warranty into account. But the keyboard is tacky and documentation could be improved.

- £1,404.13 (inc VAT)
- Watford Electronics: 01582 487777

Perfecta TX97

Build quality	★★★★☆
Features	★★★☆☆
Performance	★★★★☆
Value for money	★★★★★
Overall	★★★★☆

166MMX PCs compared

	Compaq	Dan Technology	HM Systems	KT Computers	Mesh	MJN	Systems 2000	Watford Electronics
Model	Presario 4760	Xplora Plus/166XE	Minstrel XL971	MicroHome 166MMX	Titan 166MMX Pro	Best Buy 76G	S2-MMX 166	Perfecta TX97
Processor	Intel Pentium 166MMX	Intel Pentium 166MMX	AMD K6 166MMX	AMD K6 166MMX	AMD K6 166MMX	Intel Pentium 166MMX	Intel Pentium 166MMX	Intel Pentium 166MMX
Memory	24Mb	32Mb	32Mb	32Mb	32Mb	32Mb	32Mb	32Mb
Case type	Customised tower	Tower	Midi-tower	Midi-tower	Midi-tower	Mini-tower	Midi-tower	Mini-tower
Hard disk	2.1Gb	4Gb	2.5Gb	3.2Gb	2.1Gb	3Gb	2.5Gb	6.4Gb
CD-ROM	16-speed	16-speed	16-speed	16-speed	24-speed	12-speed	10-speed	16-speed
Sound card	ESS AudioDrive (Sound Blaster-compatible)	Sound Blaster 64	Sound Blaster 64	Sound Blaster 64	Sound Blaster 64	Sound Blaster 32	Sound Blaster 32	Sound Blaster 32
Speakers	●	●	●	●	●	●	●	●
Graphics card	S3 Trio 64+	Matrox Mystique (2Mb)	Matrox Millenium (2Mb)	Diamond Stealth 3D 2000 (4Mb)	ATI 3D Rage II+ (2Mb)	ATI mach64 (4Mb)	VideoLogic GrafixStar 600 PCI (2Mb)	Matrox Mystique (2Mb)
Monitor	15in	15in	15in	15in	17in	15in	15in	15in
Modem	33.6Kbits/s	33.6Kbits/s	33.6Kbits/s	33.6Kbits/s	33.6Kbits/s	33.6Kbits/s	33.6Kbits/s	n/a
Other	n/a	TV tuner; Microsoft Intellimouse	n/a	n/a	Iomega Zip Drive, TV Tuner	Quickshot Joystick	n/a	n/a
Warranty	1 year, on-site	1 year, return to base	3 years (first year on-site, return to base thereafter)	5 years (first year parts and labour return to base; then labour only)	1 year, return to base	1 year, return to base	3 years (first year parts and labour return to base; then labour only)	6 years (first year on-site, return to base thereafter)
Software	Works; CorelDRAW 5; PGA Tour Golf; Magic Carpet; POD; Ultimate Human 2.0; Encarta 96; Quicken 4	Works; PagePlus 3.0; Quicken 6; 3D Movie Maker; Creative Writer 2; Fury 3; Magic School Bus Explores The Oceans; Musical Instruments	SmartSuite 97; AutoRoute; Works; Money 97	Encarta 97; Works; Money 97; MS Golf; Explore the Solar System AutoRoute Express; Wine Guide; Dangerous Creatures; Fine Artist	SmartSuite 97; WipeOut; Assault Rigs; AND Route 97; Hutchinson Multimedia Encyclopaedia 1997; Egon Ronay's Visa Guide 1997; Helicop Investigates Words and Numbers; Quicken 6; Grand Prix; PagePlus 4.0; Gourmet French Cuisine	Ultimate Human 2.0; Timetables of Technology; Third Dimension; Space Station Simulator; POD; Softpack 10-CD-ROM bundle	Easy Tutor Learn Computing; Easy Tutor Learn Windows 95	Encarta 97; Scorched Planet; Mech Warrior 2; Destruction Derby 2

● = Yes ❍ = No

This has been one of the more interesting PC group tests of the last few months. While no one company can claim to have supplied a trail-blazing system, there has been a definite and not insignificant shift in the price:specification ratio. The lowest-priced machine is a smidgen over £1,400, but for that reasonable amount you're getting components that are very much today's rather than those of last Christmas.

There was very little to choose between any of the PCs in terms of performance (although interestingly, the two top performers both had AMD rather than Intel processors). There was one exception: Compaq's Presario 4760. On the surface, the 24Mb machine appears to have fared badly against the others (all 32Mb models), but this must be taken in context: a 24Mb 166MMX PC is a desirable system whatever its comparative performance.

Deciding which machine deserves the Best Buy status has been difficult. After much consideration and discussion it came down to two machines: Mesh's Titan 166MMX Pro and the MicroHome 166MMX from KT Computers. Both PCs have fine specifications, and the MicroHome has price and a lengthy warranty in its favour. However, for the hundred or so extra pounds invested in Mesh's machine, you'll get a Zip drive, a TV tuner card, a 17in monitor and the fastest CD-ROM drive currently available. For these reasons the Titan wins the award.

For a PC to win an accolade from us it must strike a careful balance between value, performance and quality. On its first submission to a What PC? group test, KT Computers has achieved this and gets our vote for Recommended status.

Scott Colvey