

£999 notebooks

How we tested	81
Quality and performance graphs ..	83
Feature table	84
Inside graphics	94
ACi Perfecta	86
AJP 7321	86
Atlas Flyer 3400-1200	88
Evesham Voyager 5500A	88
Fujitsu Siemens LifeBook C-6387 ..	93
Hi-Grade Notino 2200-1GHz	93
IBM ThinkPad R30 TR017UK	94
Panrix GoBook 1G	95
Pico Spirit-2200	95
Rock Sigma Si	98
Sony VAIO PCG-FX501	98
Time Traveller A4-1000	100
Tiny MediaBook Power	100
Toshiba Satellite 1800-254S	102
Twinhead Efio-A2300	102
The winners	103

We round up 15 of the best £999 notebooks around

The notebook vs desktop battle will continue to rage throughout 2002, with the same themes as prevalent as ever. In a desktop, performance per pound is significantly better, especially in 3D. Take a look at Inside graphics (p94) for confirmation of this. You also receive larger hard disks, faster and better-featured optical drives, not to mention much more upgradability.

But last year, the number of desktop PCs sold in the UK dropped, while the notebook market continues to grow. And it's obvious why. Notebooks are increasingly popular to those who just want to use their computer for Web browsing and general work; in other words, a huge chunk of buyers.

Plus, everything most people need is now

included in a £999 notebook. Processors are reaching 1GHz and beyond, 256Mb of RAM is almost the standard, and three notebooks here even include combo DVD/CD-RW drives. What else do you need? Those buying for business are also attracted to the notebook, and while this round-up isn't targeted at professional users – look out for a business notebooks group test later this year – all but one of these laptops include a 10/100 Ethernet adaptor and could be customised for the office.

In order to separate the great from the merely good, we not only tested these notebooks' speed but also asked a panel of judges to rate their style, build quality and more – see opposite for full details. So if you're thinking of buying a budget notebook, look no further than this comprehensive group test.

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How we tested

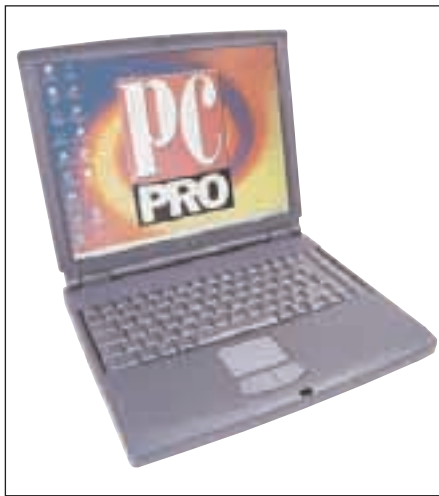
Notebooks demand a completely different approach to reviewing than desktop PCs. There's more than raw processing speed and on-paper specification to consider, so we used some extra tests to help decide the machines worthy of your money.

Ergonomics and build quality

Manufacturers have a habit of photographing their products at the most flattering angles and in the most complimentary light, making a decision from a Web site slightly dubious. We therefore selected a panel of four notebook users to judge the quality of each machine's keyboard, TFT screen and the build quality itself.

Although these aspects of a notebook's usability may not appear to be as important as out-and-out speed, they will probably be the biggest influence on your feelings about your purchase in the long run. For example, a rattly keyboard will be annoying to a regular typist, while a high-quality TFT screen makes gazing at a spreadsheet full of figures more pleasurable.

Our panel's final assessment was for style. Although this shouldn't be the overriding factor when making your decision, a notebook's styling is the first thing you and your colleagues will see.



■ Our panel of judges liked the look of the Sony VAIO.

Battery life

How long the battery lasts is vital to those who need to work for long periods away from the office. Some of the notebooks on test take this aspect more seriously than others, allowing a second battery to be installed in place of one of the optical drives.

To give each notebook an independent battery rating, we used our own battery rundown tests. These are based on the *PC Pro* benchmarks. We ran the Microsoft Word

and Excel tests until the machines ran out of juice; when the notebook eventually shut down, it recorded the time it lasted in minutes. We made sure that the brightness of the screen was set to maximum, and switched off all power-saving options apart from SpeedStep. We tested each machine three times, to ensure consistency of results.

Features

All these categories contributed to the notebooks' overall features score. See right for a breakdown of the feature points, and see the quality and performance graphs (p83) for an at-a-glance insight into the notebooks' performance.

Feature points

Our feature point scores are based on the value and quality of the components and warranty provided with the notebook in question.

- 0-3** for warranty.
- 0-3** for weight.
- 1** for spare SODIMM socket.
- 2** for lithium ion battery.
- 0-5** for screen size and resolution.
- 1** for Extended Desktop support.
- 0-1** for video outputs.
- 0-6** for size of hard disk.
- 1** for integrated floppy drive.
- 1-7** for optical drives.
- 0.5** per drive option.
- 0.3** per basic port.
- 1** for IEEE-1394 port.
- 1** for modem.
- 1.5** for NIC.
- 1** for carry case.
- 1-2** for additional peripherals.
- 1-3** for bonus features.
- 0-5** for software bundle.
- 1-5** for keyboard rating.
- 1-4** for build quality.
- 1-3** for style rating.
- 1-6** for TFT quality.
- 0-4** for battery life.

Ratings explained

The star ratings at the bottom of each product review are intended to give an at-a-glance appraisal of each system or peripheral. To achieve as objective a comparison between systems and peripherals as possible, these scores are calculated using a weighted combination of the feature point score, the price and test results. The latter includes our performance benchmarks where applicable, as well as any other tests we may carry out (ergonomics, build quality and battery life in the case of notebooks, for instance).

It's important to remember that these star ratings are relative only to the products on test in any particular Labs. A one out of six

therefore doesn't mean that the product is the worst ever of its type to be produced, just the least impressive that month. Likewise, a six out of six isn't necessarily an indication of perfection.

A brief explanation of what each of the categories mean follows:

Performance How fast was the notebook in our tests compared to its rivals?

Features How does its feature set compare to everything else on test?

Value for money A weighted combination of features, expansion and price.

Overall A weighted blend of all the ratings to produce a balanced choice.

The awards

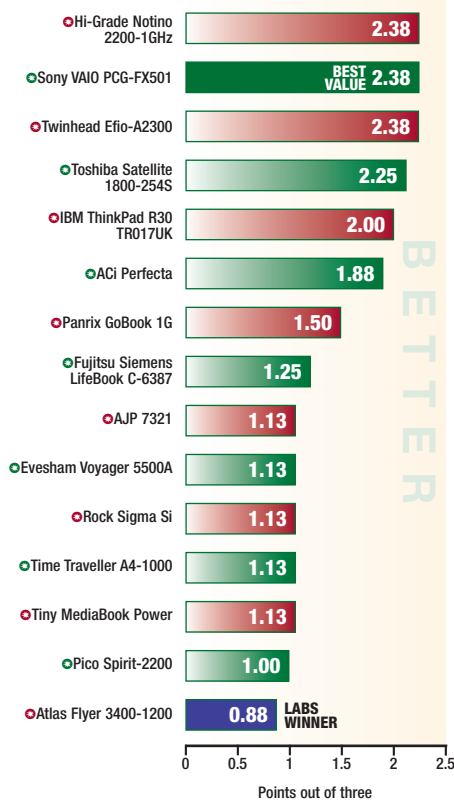
Each month in Labs we give one or two major awards. This month's main award for £999 notebooks is Labs Winner: the best combination of quality, features and price.

We'll also be handing out a best Value award this Labs to the laptop that runs the main award-winning notebook very close.

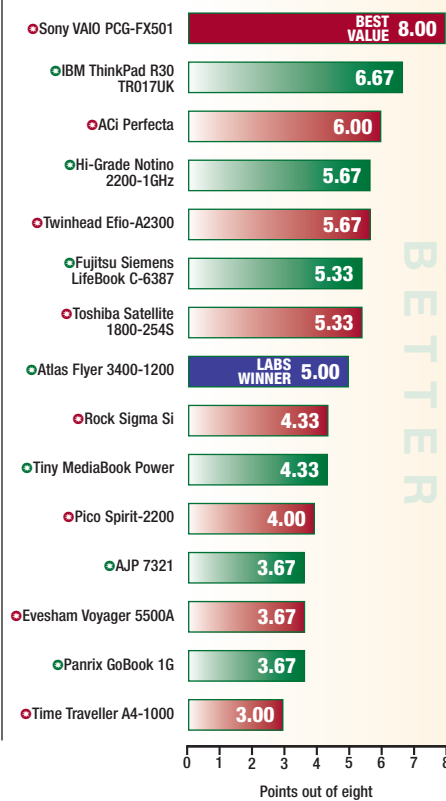


Quality and performance graphs

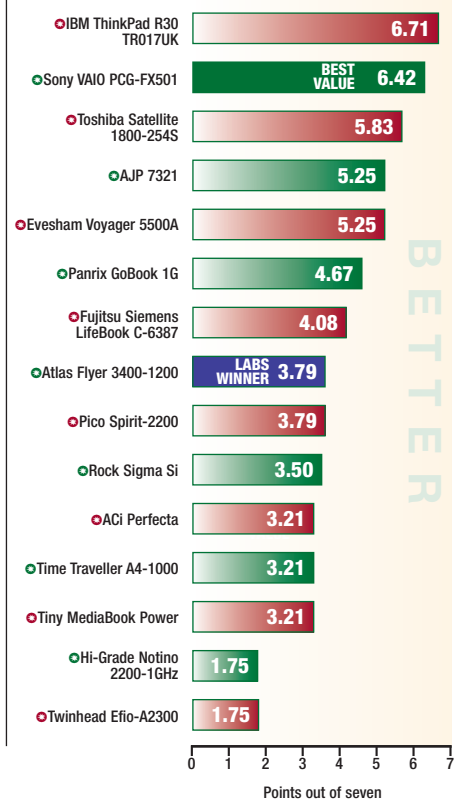
STYLE RATING



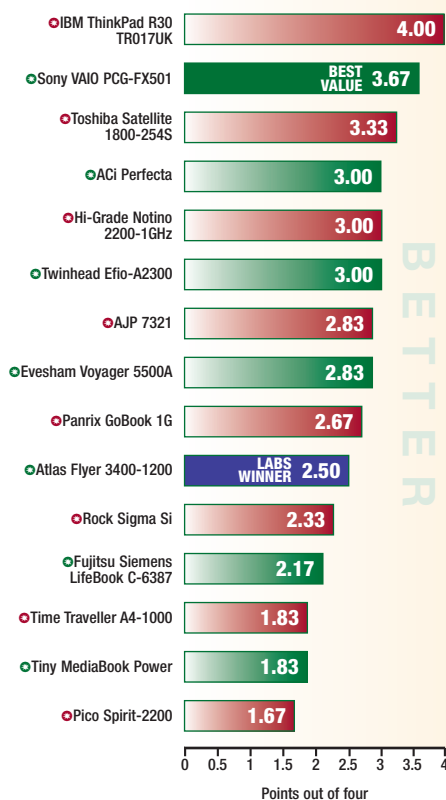
TFT QUALITY



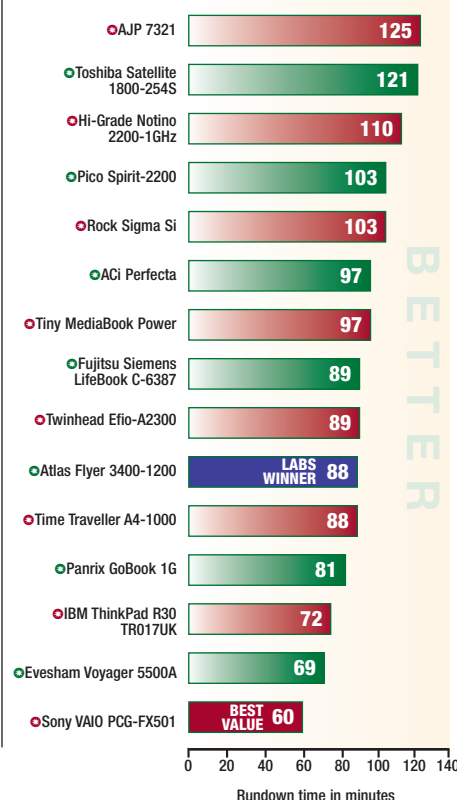
KEYBOARD QUALITY



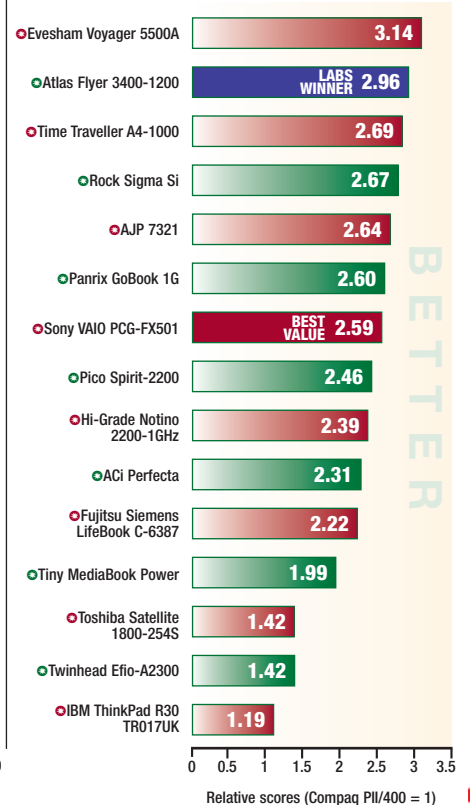
BUILD QUALITY



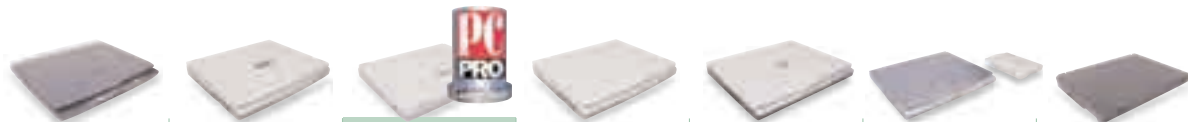
BATTERY LIFE



2D PERFORMANCE

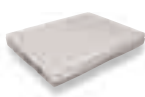


Specifications & features



	ACi Perfecta	AJP 7321	Atlas Flyer 3400-1200	Evesham Voyager 5500A	Fujitsu Siemens LifeBook C-6387	Hi-Grade Notino 2200-1GHz	IBM ThinkPad R30 TR017UK
Overall rating	○○○○○○	○○○○○○	○○○○○○	○○○○○○	○○○○○○	○○○○○○	○○○○○○
Price* (inc VAT)	£999 (£1,174)	£999 (£1,174)	£999 (£1,174)	£999 (£1,174)	£850 (£999)	£999 (£1,174)	£933 (£1,096)
Cost of delivery (inc VAT)	£20 (£24)	£29 (£34)	£29 (£34)	£34 (£40)	Dependent on reseller	£29 (£34)	£45 (£53)
Supplier	ACi 020 8830 1958 www.aciplc.com	AJP 020 8208 9747 www.ajp.co.uk	Hi-Grade/Atlas 020 8532 6111 www.higrade.com/atlas	evesham.com 0870 160 9500 www.evesham.com	Fujitsu Siemens 01344 475555 www.fujitsu-siemens.co.uk	Hi-Grade/Atlas 020 8532 6111 www.higrade.com	IBM 0800 169 1458 www.pc.ibm.com/uk
Web site							
Basic warranty**	1yr C&R, lifetime labour	2yrs RTB	1yr C&R	2yrs RTB	1yr C&R international	2yrs C&R	1yr RTB
Size: W × D × H (mm)	324 × 280 × 49	310 × 268 × 45	316 × 258 × 45	310 × 268 × 45	308 × 265 × 39	270 × 240 × 30	313 × 254 × 39
System weight with battery (kg)	3.2	3.3	3.4	3.3	3.2	1.9	2.8
Core components							
Processor type	1GHz Intel Pentium III	1.1GHz AMD Athlon 4	1.2GHz Intel Celeron	1.2GHz AMD Athlon 4	1GHz Intel mobile Pentium III	1GHz Intel mobile Pentium III	Intel Celeron/900
Mobile/desktop chip	Desktop	Mobile	Desktop	Mobile	Mobile	Mobile	Desktop
Level 2 cache size	256Kb	256Kb	128Kb	256Kb	256Kb	128Kb	128Kb
RAM fitted	192Mb	384Mb	256Mb	384Mb	128Mb	192Mb	64Mb
Maximum RAM in current configuration	192Mb	384Mb	768Mb	384Mb	640Mb	192Mb	576Mb
SODIMM sockets free/total	0/1	0/1	1/2	0/1	1/2	0/1	1/2
Battery technology	Lithium ion	Lithium ion	Lithium ion	Lithium ion	Lithium ion	Lithium ion	Lithium ion
List price of spare battery	£119	£125	£95	£109	£86	£95	£95
Display							
LCD technology	TFT	TFT	TFT	TFT	TFT	TFT	TFT
Display size (in)	14.1	14.1	14.1	14.1	14.1	12.2	13.3
Native resolution	1,024 × 768	1,024 × 768	1,024 × 768	1,024 × 768	1,024 × 768	1,024 × 768	1,024 × 768
Graphics chipset	S3 Twister	S3 Twister K	SiS630	S3 Twister K	Intel 815	SiS630	Trident CyberBlade Ai1
Video memory	32Mb shared	32Mb shared	32Mb shared	32Mb shared	4Mb shared	8Mb shared	8Mb shared
Extended Desktop support	X	X	X	X	X	X	✓
Other output	S-Video out	S-Video out	S-Video out	S-Video out	S-Video out	X	S-Video out
Drives							
Hard disk (make and model)	Fujitsu MHN2200AT	Hitachi DK23CA-20	Hitachi DK23DA-40F	Fujitsu MHN2200AT	Fujitsu MHN2100AT	Hitachi DK23CA-30	IBM Travelstar IC25
Nominal capacity	20Gb	20Gb	40Gb	20Gb	10Gb	30Gb	10Gb
Formatted capacity	18.6Gb	18.6Gb	37.2Gb	18.6Gb	9.3Gb	27.9Gb	8.5Gb
Floppy disk drive	Internal	Internal	Internal	Internal	Internal	External (USB)	X
Optical drive and speed (DVD read/CD write/re-write/CD read)	Toshiba SD-C2202 (4x/24x)	Toshiba SD-R2002 (6x/4x/4x/24x)	Torisan DRW-U88424 (8x/8x/4x/24x)	QSI SDR-081 (8x/24x)	QSI SDR-081 (8x/24x)	QSI SDR-081 (8x/24x)	TEAC CD-224E (24x)
Simultaneous optical and floppy drives possible	✓	✓	✓	✓	✓	✓	✓
Optical drive options	X	DVD, CD-RW	X	CD-RW	X	DVD/CD-RW combo	DVD-ROM, CD-RW, DVD/CD-RW combo, Zip 250, SuperDisk
Ports							
VGA	1	1	1	1	1	X	1
PC Card slots	2	2	2	2	2	1	1 (Type II or III)
Serial	X	1	1	1	1	X	X
Parallel	1	1	1	1	1	X	1
USB	2	2	1	2	2	3	2
FireWire (IEEE-1394)	1	X	X	X	X	1	X
PS/2 mouse	Combined	Combined	Combined	Combined	Combined	X	X
PS/2 keyboard	Combined	Combined	Combined	Combined	Combined	X	X
Fast infrared	✓	✓	✓	✓	✓	X	✓
Pointing device type	Trackpad	Trackpad	Trackpad	Trackpad	Trackpad	Trackpad	Trackpoint
Docking station port	X	X	X	X	✓	X	✓
Communications							
Modem (speed)	Lucent (V.90)	SmartLink (V.90)	Uniwill (V.90)	PCTel (V.90)	PCTel (V.90)	SmartLink (V.90)	Lucent (V.92)
Network (speed)	Accon EN2242 (10/100)	VIA Fast Ethernet (10/100)	SiS900 (10/100)	VIA Fast Ethernet (10/100)	Realtek RTL8139 (10/100)	SiS900 (10/100)	Intel 8255x (10/100)
Other peripherals							
Sound chipset	VIA AC97	VIA AC97	SiS7018	VIA AC97	SigmaTel AC97	SiS7018	ALI Audio Accelerator
Speakers location	Wrist rest	Wrist rest	Above keyboard	Wrist rest	Wrist rest	Wrist rest	Chin
Internal microphone	✓	✓	✓	✓	✓	✓	✓
Carry case supplied	✓	✓	✓	X	X	✓	X
Additional peripherals	Modem cable	Modem cable	Modem cable	Modem cable	Modem cable, international modem connectors	Modem cable, USB printer cable	Modem cable
Software supplied							
Operating system	Windows XP Home	Windows XP Home	Windows XP Home	Windows XP Home	Windows ME	Windows XP Home	Windows 98 SE
Recovery/Windows CD provided	Windows CD	Windows CD	Recovery CD	Recovery CD	Recovery CD	Recovery CD	Recovery CD
Main titles	Lotus SmartSuite Millennium	Microsoft Works 6	Microsoft Works Suite 2002	Sun StarOffice 5.2	Microsoft Works 6, Microsoft Word 2000	Microsoft Works Suite 2002	Lotus SmartSuite Millennium
Company information							
Location	London	London	Barking, Essex	Evesham, Worcestershire	Bracknell, Berkshire	Barking, Essex	Greenock, Scotland
Number of permanent sales/support staff	20	65/10	22/36	598	40	22/36	Not applicable
Cost of telephone technical support***	Local rate (London)	Local rate (London)	Local rate (London)	National rate	National rate	Local rate (London)	National rate
Technical support times	Mon-Fri 8.45am-5.30pm	Mon-Fri 9am-5.30pm, Sat 9am-2pm	Mon-Fri 9am-5pm	Mon-Sat 9am-5.30pm	Mon-Fri 9am-5.30pm, Sat 10am-4pm	Mon-Fri 9am-5pm	Mon-Fri 9am-6pm

*This price doesn't include delivery. **Warranty is parts and labour unless otherwise stated. ***Hardware support only.



**Panrix
GoBook 1G**

**Pico
Spirit-2200**

**Rock
Sigma Si**

**Sony
VAIO PCG-FX501**

**Time
Traveller A4-1000**

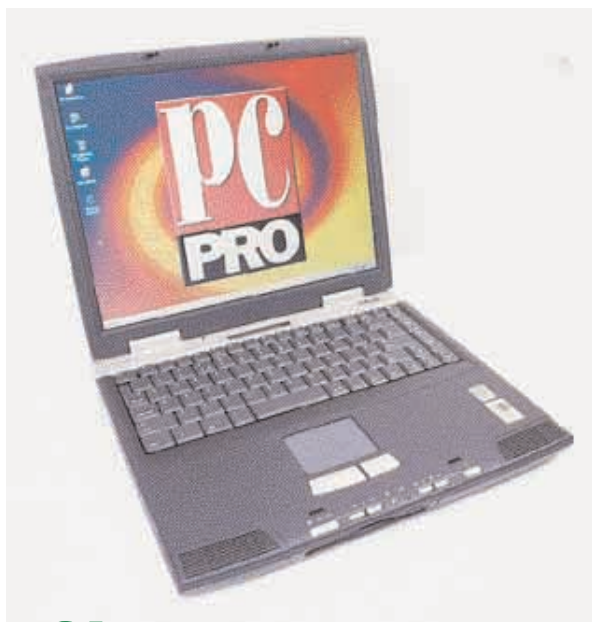
**Tiny
MediaBook Power**

**Toshiba Satellite
1800-254S**

**Twinhead
Efic-A2300**

○○○○○○	○○○○○○	○○○○○○	○○○○○○	○○○○○○	○○○○○○	○○○○○○	○○○○○○
£999 (£1,174)	£975 (£1,146)	£999 (£1,174)	£849 (£998)	£999 (£1,174)	£999 (£1,174)	£799 (£939)	£762 (£872)
£20 (£24)	£25 (£29)	£12 (£14)	Dependent on reseller	£43 (£50)	£15 (£18)	Dependent on reseller	£20 (£24)
Panrix	Pico Systems	rockdirect.com	Sony	Time	Tiny	Toshiba	Twinhead
01132 444958	0870 729 6111	0870 990 9010	08705 424424	0870 830 3101	0800 072 8788	0870 444 8944	01256 300310
www.panrix.com	www.picosystems.co.uk	www.rockdirect.com	www.vaio.sony-europe.com	www.timecomputers.com	www.tinyprofessional.com	www.toshiba.co.uk	www.twinhead.co.uk
1yr C&R	1yr RTB	1yr C&R	1yr RTB	1yr RTB	1yr C&R	1yr RTB international	1yr RTB
322 x 275 x 44	307 x 253 x 47	312 x 257 x 47	324 x 265 x 46	315 x 265 x 46	315 x 265 x 46	312 x 280 x 46	270 x 240 x 30
3.5	3.1	3.3	3.3	3.3	3.3	3	1.9
1GHz Intel mobile Pentium III	1.13GHz Intel Pentium III	1.2GHz Intel Pentium III	1GHz AMD Duron	1GHz AMD Athlon 4	Intel Pentium III/750	1GHz Intel Celeron	Intel mobile Celeron/800
Mobile	Desktop	Desktop	Mobile	Mobile	Desktop	Desktop	Mobile
256Kb	256Kb	256Kb	64Kb	256Kb	256Kb	128Kb	128Kb
256Mb	512Mb	256Mb	256Mb	256Mb	256Mb	128Mb	64Mb
256Mb	512Mb	768Mb	768Mb	768Mb	768Mb	640Mb	576Mb
0/2	0/2	1/2	1/2	1/2	1/2	1/2	1/1
Lithium ion	Lithium ion	Lithium ion	Lithium ion	Lithium ion	Lithium ion	Lithium ion	Lithium ion
£90	£125	£99	£144	£119	£75	£75	£85
TFT	TFT	TFT	TFT	TFT	TFT	TFT	TFT
15.1	14.1	14.1	14.1	14.1	14.1	13.3	12.2
1,400 x 1,050	1,024 x 768	1,024 x 768	1,024 x 768	1,024 x 768	1,024 x 768	1,024 x 768	1,024 x 768
ATI Mobility 128	SIS630	SIS630	ATI Rage Mobility-M1	S3 Twister K	S3 Twister	Trident CyberBlade Ai1	SIS630
8Mb	8Mb shared	16Mb shared	8Mb	32Mb shared	32Mb shared	8Mb shared	8Mb shared
X	X	X	✓	X	X	✓	X
Composite out	S-Video out	S-Video out	X	Composite out	Composite out	Composite out	X
Fujitsu MHL2300AT	Hitachi DK23CA-30	Fujitsu MHN2300AT	IBM Travelstar 30GN	Toshiba MK2018GAP	Fujitsu MHN2200AT	Toshiba MK1017GAP	Fujitsu MHN2100AT
30Gb	30Gb	30Gb	20Gb	20Gb	20Gb	10Gb	10Gb
27.9Gb	27.9Gb	27.9Gb	18.5Gb	18.3Gb	18.6Gb	9.3Gb	9.3Gb
Internal	Internal	Internal	Internal	Internal	Internal	Internal	External (USB)
Matsushita SR8175 (8x/24x)	QSI SDR-081 (8x/24x)	QSI SDR-081 (8x/24x)	Generic (8x/24x)	Matsushita SR8175 (8x/24x)	Matsushita UJDA710 (8x/8x/4x/24x)	Toshiba XM-7002Bc (24x)	QSI SCR-242 (24x)
✓	✓	✓	✓	✓	✓	✓	✓
X	X	DVD/CD-RW combo	X	X	X	X	X
1	1	1	1	1	1	1	X
2	1	1	2	2	2	2	1
1	X	X	1	1	1	1	X
1	1	1	1	1	1	1	X
2	2	2	2	2	2	2	3
X	1	1	1	1	1	X	1
Combined	Combined	Combined	X	Combined	Combined	Combined	X
Combined	Combined	Combined	X	Combined	Combined	Combined	X
✓	✓	✓	X	✓	✓	✓	X
Trackpad	Trackpad	Trackpad	Trackpad	Trackpad	Trackpad	Trackpad	Trackpad
X	X	X	X	X	X	X	X
PCTel (V.90)	SmartLink (V.90)	SmartLink (V.90)	Sony T62M159 (V.90)	LT Winmodem (V.90)	LT Winmodem (V.90)	Toshiba SoftModem (V.90)	SmartLink (V.90)
Davicom 9102 (10/100)	SIS900 (10/100)	SIS900 (10/100)	Realtek RTL8139 (10/100)	Accton EN2242 (10/100)	X	Toshiba Fast Ether (10/100)	SIS900 (10/100)
C-Media CM18738	SIS7018	SIS7018	VIA AC97	SoundMax	Avance Logic	Avance Logic	SIS7018
Wrist rest	Wrist rest	Wrist rest	Above keyboard	Chin	Chin	Wrist rest	Wrist rest
✓	✓	✓	X	✓	✓	✓	✓
✓	X	✓	X	✓	✓	✓	✓
X	Modem cable	Modem cable	Modem cable, composite video cable	Modem cable	Modem cable	Modem cable	Modem cable, USB printer cable
Windows XP Home	Windows XP Home	Windows XP Home	Windows XP Home	Windows XP Home	Windows XP Professional	Windows 98	Windows ME
Windows CD	Windows CD	Windows CD	Recovery CD	Recovery CD	Recovery CD	Recovery CD	Recovery CD
Microsoft Works 6	X	McAfee VirusScan 5	Adobe Photoshop Elements, Norton AntiVirus	X	Microsoft Works Suite 2002	Microsoft Works Suite 2000	BMA Family Health Encyclopaedia
Leeds, Yorkshire 8/5	Guildford, Surrey 4/15	Warwick, Warwickshire 25	Worldwide Not applicable	Burnley, Lancashire 35/230	Redhill, Surrey 16/200+	Worldwide Not applicable	Basingstoke, Hampshire 2/4
Local rate	National rate	National rate	Local rate	National rate	National rate	Dependent on reseller	Local rate (Basingstoke)
Mon-Fri 9.30am-5.30pm	Mon-Fri 9am-5.30pm, Sat 9am-2pm	Mon-Fri 9.30am-5pm	Mon-Fri 9am-6pm (GMT)	Mon-Fri 8.30am-6pm	Mon-Fri 9am-5.30pm	Dependent on reseller	Mon-Fri 9am-5.30pm





ACi Perfecta

verdict Good design, a great screen and solid performance make the Perfecta a decent choice for both home and business users.
price £999 (£1,174 inc VAT) **supplier** ACi 020 8330 1958

ACi will be familiar to many *PC Pro* readers as the company that brought corporate imaging to notebooks via the Ethos (see *Reviews*, issue 83, p147). This allows you to permanently add your own design to the notebook's lid, both enhancing your company's brand and deterring theft. The Perfecta is a more down-to-earth offering, but there's a huge amount to like about this particular laptop.

Top of the list is its design. The two-tone blue/silver finish works well, while the extra-wide chassis provides more space for the keyboard. It's generally a pleasure to type on, but was too rattly for our judges' tastes, while the oddly positioned Windows key also counts against it. This chassis includes a number of shortcut keys that can be used when the lid is shut – useful if you want to use the Perfecta as a mobile CD player.

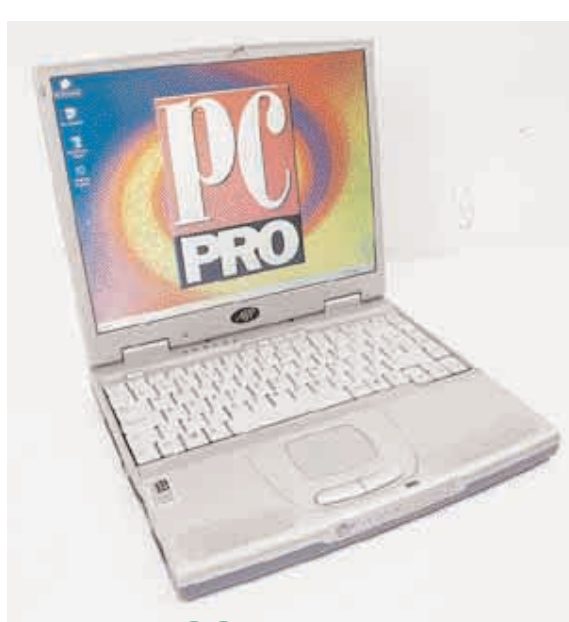
Our judges liked the Perfecta's screen, although its contrast can't match that of the IBM ThinkPad, giving white backgrounds a slight off-white appearance. Good brightness levels and the 14.1in screen diagonal both add to this machine's allure, however. The screen's also well protected by the lid, and the Perfecta feels well built.

There's plenty of hardware to be protected. A 20Gb Fujitsu hard disk is accompanied by a Toshiba DVD-ROM, albeit a quad-speed device rather than the eight-speed we've come to expect. For processing power, ACi opts for the desktop version of Intel's 1GHz Pentium III processor. This isn't as efficient at power management as its mobile equivalent, but the Perfecta still obtained a respectable 97 minutes in our battery rundown tests.

Intel's mobile chips also tend to outpace their desktop equivalents when placed in notebooks, and this rang true with the Perfecta despite its 192Mb of memory. A result of 2.31 in our benchmarks was only enough for tenth place. With S3's Twister graphics chipset in place, you can expect decent 3D performance, but if you want to play Quake III, for example, you'll need to drop down to 800 × 600 and 16-bit colour.

As a work-orientated machine, however, the Perfecta doesn't disappoint. The statutory 10/100 Ethernet adaptor is in place, together with a V.90 modem, and it's also good to see a one-year, collect-and-return warranty. The only problem for ACi is the better-featured and award-winning Atlas Flyer.

OVERALL	○○○○○○
PERFORMANCE	○○○○○○
FEATURES	○○○○○○
VALUE FOR MONEY	○○○○○○



AJP 7321

verdict By coupling a combo DVD/CD-RW drive with AMD's 1.1GHz Athlon 4, AJP has produced a worthy £999 notebook.
price £999 (£1,174 inc VAT) **supplier** AJP 020 8208 9747

AJP is one of the biggest names in the UK notebook market. Not only does it sell a wide range of laptops itself, but it also provides a number of British suppliers with notebooks for them to market themselves. Evidently, it likes to keep a couple of tricks up its own sleeve, with the 7321 packing a dual punch that knocks the majority of the competition out: fast performance and a combo DVD/CD-RW drive.

As the 7321 only has one optical drive bay, the combo drive is a great inclusion – why choose between a CD-RW or a DVD-ROM when you can have both? Only Tiny and Atlas can match AJP here, and it's notable that these notebooks can burn CD-Rs at eight-speed compared to quad-speed for the 7321. Atlas also boasts a bigger hard disk, with 40Gb on offer rather than 20Gb.

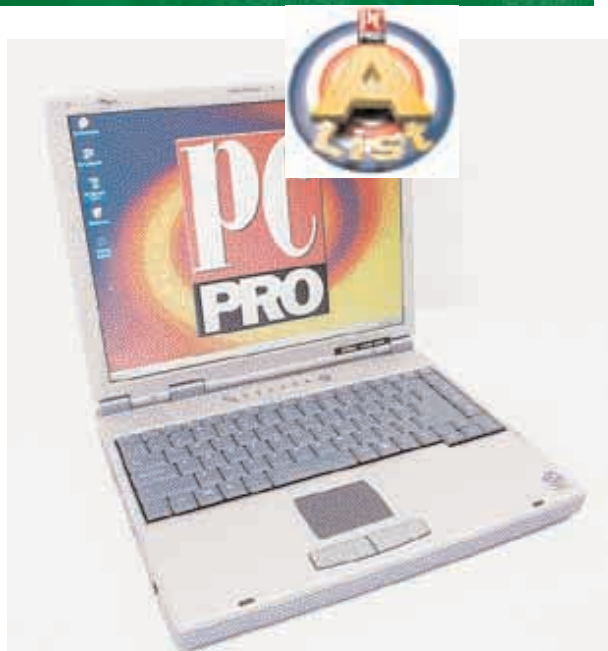
Where Atlas again pulls slightly ahead from AJP is raw horsepower. The 7321 scored 2.64 in our benchmarks, while the Flyer squeezed out a score of 2.96. Both are commendable results, with the AJP's coming courtesy of AMD's 1.1GHz version of the Athlon 4, while the Atlas boasts a 1.2GHz Celeron. It's worth noting the huge amount of RAM AJP includes as well – 384Mb to be precise. If you want a notebook for intense number crunching or image manipulation, the 7321 will be well up to the job.

Initially, we also liked the 7321's screen. It's bright and has good contrast. The only trouble is uneven backlighting, which can make the image look unbalanced. This is compensated for by a nice keyboard, which performs much better than it looks. The keys are responsive and well laid out; only IBM's ThinkPad is notably more pleasant to type on. If we were to nitpick, we'd criticise the mouse buttons, which feel cheap and make an annoying click noise when pressed.

And if you're the type of person put off by such niceties, be warned that the 7321 isn't the prettiest of notebooks. It comes from the breeze block school of notebook design and has a silver plastic finish that won't fool anyone into thinking it's a metal alloy. But this is a notebook built for serious use, either for work or pleasure, and is a worthy alternative to our award winners – the Atlas Flyer 3400-1200 and Sony VAIO PCG-FX501 – this month.

OVERALL	○○○○○○
PERFORMANCE	○○○○○○
FEATURES	○○○○○○
VALUE FOR MONEY	○○○○○○





Atlas Flyer 3400-1200

verdict Short on looks, but strong performance and a combo DVD/CD-RW drive help the Flyer soar away from its competition.
price £999 (£1,174 inc VAT) **supplier** Hi-Grade/Atlas 020 8532 6111



We can't pretend that a notebook will match an identically priced PC for performance, but the Flyer is definitive proof that you don't have to sacrifice any vital features. Most crucially, Atlas includes both DVD and CD-RW functionality via a Torisan combo drive. It's true this can't match a desktop drive for speed, with eight-speed burning compared to 24-speed in the Evesham Axis 1900+ (see Labs, p58), but most people don't need instant results.

Most users also won't need a huge amount of processing power either, but the 1.2GHz Celeron coupled with 256Mb of RAM ensures that the Flyer will continue to fly even after three or four years. This was duly reflected in our benchmarks, with the Atlas claiming second place overall with 2.96. Only the Evesham Voyager could beat it.

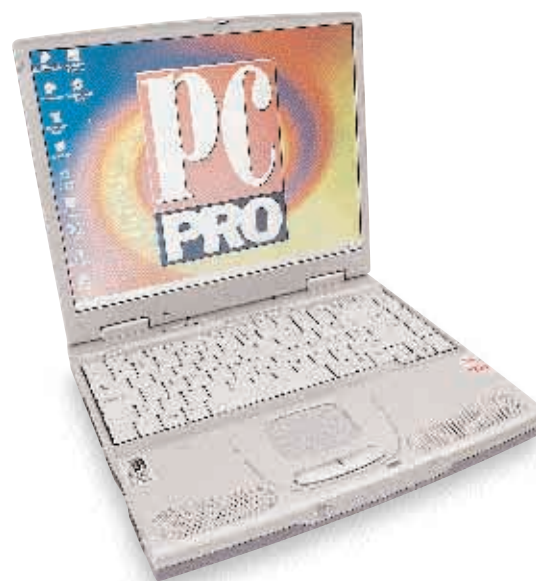
Few people will ever need more than the supplied 40Gb of hard disk space, especially as the Flyer isn't designed with video editing in mind – note the lack of a FireWire port. All the standard ports are here, though, with a modem and network adaptor both integrated, and there's even an S-Video output for hooking up to a TV.

Moving the Flyer around the house or office is about the limit of its portability, despite the bundled carry case. This notebook weighs 3.4kg, and wasn't overly impressive in our battery rundown test: a time of 88 minutes suggests a two-hour limit in general use.

But as a desktop replacement, this notebook has everything you need. The keyboard is well laid out, even if it can't match the responsiveness of the best offerings. There's little reason to criticise the screen, with good levels of brightness matched by decent contrast. Admittedly, Sony and IBM's entries are better, but in use you'll be more than happy with the Atlas.

More discerning buyers might be put off by the Flyer's appearance, as its styling – such that it is – is more functional than frilly. But there's compensation in the form of Works Suite 2002, which includes Word XP and Money 2002 Standard, matched with Windows XP Home. This adds up to an excellent package for the price. If you're more interested in a notebook to use than one to show off to your friends, the Flyer is the one to buy.

OVERALL	*****
PERFORMANCE	*****
FEATURES	*****
VALUE FOR MONEY	*****



Evesham Voyager 5500A

verdict The fastest notebook here thanks to a 1.2GHz Athlon 4, but the screen's dullness and lacklustre looks hold it back.
price £999 (£1,174 inc VAT) **supplier** evesham.com 0870 160 9500

Evesham.com is no stranger to winning awards for desktop PCs – in fact, it's done it again this month (see Labs, p58) – but the company has never shown such good form in our notebooks Labs.

As ever, we were looking for an upset, and the Voyager started off well. As it uses the same chassis as AJP's 7321, it benefits from the same sturdy keyboard. Unlike some other models on test, the keyboard base is solid enough not to sink when keys are struck with force, cursor keys are set apart and the Enter key remains full height. For these reasons, our judges voted the 5500A joint-fourth for keyboard quality.

Things got even better when it came to performance, thanks in the main to the 1.2GHz AMD Athlon 4 processor. It was no surprise when the Voyager topped the benchmarks, scoring a magnificent 3.14. To some extent, this score was a reflection of the generous 384Mb of RAM, which will help to run Windows XP Home smoothly. The large chunk of memory also minimises any effect the S3 Twister K graphics chipset might have, sharing 32Mb of RAM.

So far, so good, but the bright picture dulls both metaphorically and physically when looking at the 14.1in TFT screen. It's not the brightest, and is also unevenly lit, making the screen look smudged. The Voyager's appearance didn't overly impress our judges either, with its plastic-looking silver finish placing the 5500A near the bottom of the style pile.

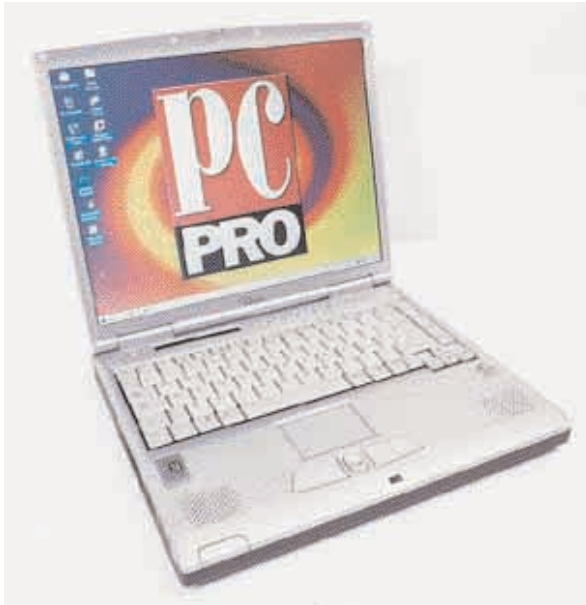
The rest of the specification is solid rather than cutting edge. Fujitsu's 20Gb hard disk lives up to its silent branding with none of the customary disk-crunching noises, and it's accompanied by an eight-speed QSI DVD drive. The integrated floppy drive reflects this notebook's desktop replacement aspirations, and all the ports you'd expect are on show – literally, as none are covered for protection. This shouldn't be a problem if you intend to use the notebook on a desk rather than on the move, and considering the lack of a carry case and the considerable 3.3kg weight we suggest this isn't a notebook for the road.

This opinion was reaffirmed in our battery tests, with the Voyager's sub-70-minute tally disappointing. Even with AMD's PowerNow! enabled you'll be lucky to get two hours on a single charge.

So the Voyager 5500A promised great things, but speed alone can't earn evesham.com that elusive notebook award.

OVERALL	****
PERFORMANCE	*****
FEATURES	****
VALUE FOR MONEY	****





Fujitsu Siemens LifeBook C-6387

verdict The LifeBook offers good value at just £850. Only Sony's similarly priced VAIO steals its thunder.

price £850 (£999 inc VAT) **supplier** Fujitsu Siemens 01344 475555

Normally you have to sacrifice one of three things with budget notebooks: performance, quality or a big name. This LifeBook rewrites the rules, with the Fujitsu Siemens brand backed up by a 1GHz mobile Pentium III processor and quality components all round.

The latter is exemplified by the TFT. It lost some marks in our subjective testing due to mediocre viewing angles, but it's evenly lit and boasts good contrast – so whites are white. The keyboard is less distinguished, with slim Enter and Backspace keys, making touch-typing more difficult than we'd like. Nevertheless, the main keys are well sized, and there are four shortcut keys above the keyboard for launching favoured applications.

When it comes to style, the LifeBook isn't going to win any awards, but the silver plastic chassis looks respectable enough, so you won't be ashamed to be seen with it on the train. Not that this notebook was built with an upwardly mobile life in mind. There's no carry case as standard, and its 3.2kg weight and relatively poor battery life – expect under two hours in general use – both count against it. Compensation comes in the form of an integrated floppy drive and DVD-ROM.

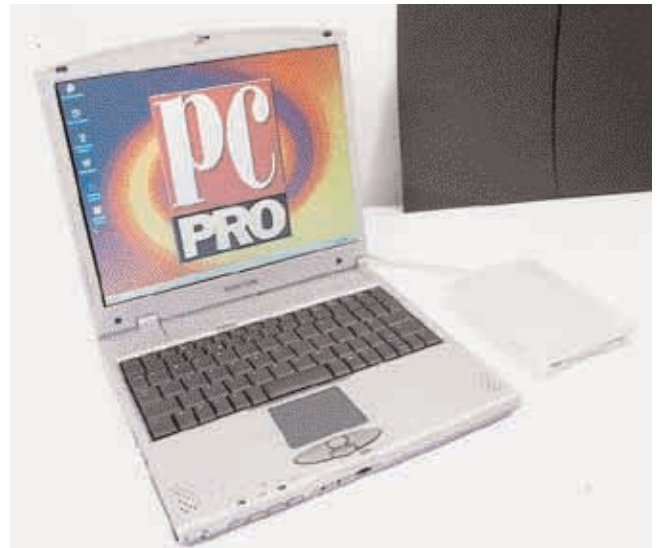
Despite its low price, the LifeBook offers plenty of number-crunching prowess. The 1GHz mobile Pentium III chip is backed up by 128Mb of RAM, upgradable to 640Mb using the spare SODIMM socket. This specification was duly reflected in the C-6387's score of 2.22 in our benchmarks. Not quite a match for the 1.1GHz Athlon 4-powered AJP, but more than enough for most applications you're likely to throw at it.

A greater limitation stems from the hard disk – at 10Gb, this could be filled quickly. Some of the space is immediately consumed by Microsoft's Works 6 and Word 2000, with the latter particularly praiseworthy. However, it's worth trying to buy the LifeBook with Windows XP rather than Windows ME.

With a modem and network adaptor included in the price, the C-6387 is a great solution for both the office and the home, and Fujitsu Siemens even offers a docking station (for £169) for added convenience. Add the international one-year, collect-and-return warranty, and the

LifeBook is a superb buy for the budget-conscious user, with only Sony's VAIO standing in the way of it and an award.

OVERALL	○○○○○○
PERFORMANCE	○○○○○○
FEATURES	○○○○○○
VALUE FOR MONEY	○○○○○○



Hi-Grade Notino 2200-1GHz

verdict Hi-Grade packs in a huge amount of hardware for the money, but the Notino is let down by a poorly designed keyboard.

price £999 (£1,174 inc VAT) **supplier** Hi-Grade/Atlas 020 8532 6111

Despite using the same ultra-portable chassis, Hi-Grade and Twinhead took two very different approaches to this Labs: Twinhead played the minimalist game, while Hi-Grade squeezed in as many features as it could for the money.

So exactly what do you get for the extra £237 that Hi-Grade is charging? The most obvious benefit is a 1GHz mobile Pentium III processor, as opposed to the mobile Celeron/800 in the Twinhead. Then there's the 192Mb of memory – 128Mb more than the Eflo. These enhancements were reflected in our benchmarks, with Hi-Grade's notebook returning a 2.39 score compared to 1.42 from the Twinhead.

Hi-Grade also outguns Twinhead for storage, opting for a 30Gb hard disk and DVD-ROM drive to accompany the floppy drive. Both the DVD-ROM and the floppy drive are external USB devices, which shouldn't be any surprise when you take the Notino's 1.9kg weight into account. Providing you don't need the external drives, this notebook's slim dimensions and rugged build mean it can be carried in almost any bag without undue strain.

The Notino's ultra-portable claims were further enhanced in our battery tests, with a time of 110 minutes among the best here. This means it should last for around two and a half hours in general use. We also liked the screen. It may only have a 12.2in diagonal, but good contrast matched by even lighting means it's a pleasure to use.

But then we come to this machine's big problem: the keyboard. Naturally, when you buy an ultra portable you must expect a smaller keyboard, but both the Notino and Twinhead's Eflo become annoying to use as soon as you veer away from the main character keys. The Backspace key is nigh-on impossible to hit, which is made all the more agonising as the comma, full stop and cursor keys are so small you'll need to use it often. However, this is a responsive keyboard, and the more we used the Notino the better we got at hitting the right keys.

If it wasn't for the keyboard, we wouldn't hesitate in recommending the Notino, especially as it's backed up by a two-year warranty and Works Suite 2002, not to mention the integrated V.90 modem and 10/100 Ethernet adaptor, (which help to compensate for the solitary PC Card slot). As it is, only the nimble fingered need apply.

OVERALL	○○○○○○
PERFORMANCE	○○○○○○
FEATURES	○○○○○○
VALUE FOR MONEY	○○○○○○

Inside graphics

We see if the Twister, CyberBlade and Rage graphics chipsets live up to their names

Until recently, one area where notebook technology significantly lagged behind desktop machines was graphics. Only in recent months have chips capable of dealing with 3D images at higher resolutions been introduced: the GeForce2 Go from Nvidia and ATI's Radeon Mobility. None of the notebooks in this Labs possess either of these chipsets, though.

There are six chipsets represented here, and all but one are capable of rendering 3D graphics. The guilty party is the Trident CyberBlade Ai1. Both the IBM ThinkPad and Toshiba Satellite are equipped with the chip, making them non-starters for any 3D work.

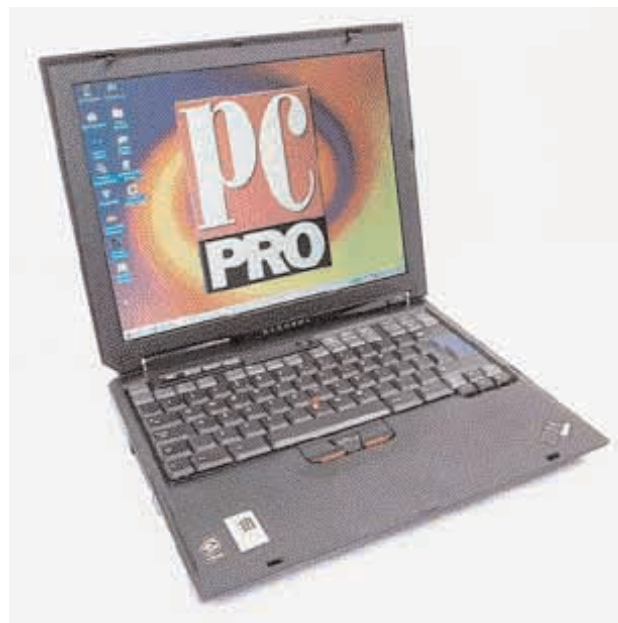
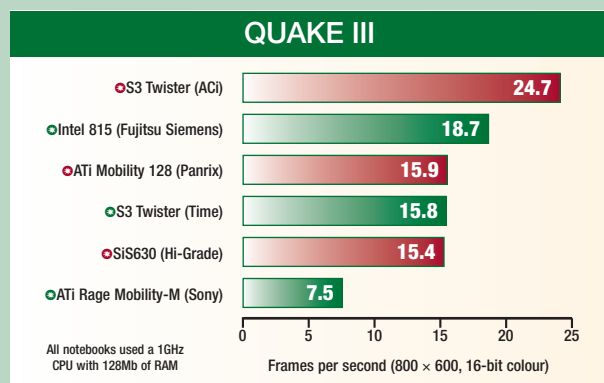
For the other chips, we ran Quake III at a resolution of 800 x 600 in 16-bit colour. For the fairest test conditions, we used laptops with 1GHz CPUs, and set memory at 128Mb. The results can be seen below, and it's clear that VIA's S3 Twister, matched with a 1GHz Pentium III, was the best performer. However, even at this low resolution, it still doesn't manage to achieve 30fps (frames per second) – the generally accepted minimum playable frame rate.

A notebook's CPU makes a major difference, as we saw when testing the ACi and Time. Both are fitted with the S3 Twister graphics core, but delivered 24.7fps and 15.8fps when allied to Pentium III and Athlon 4 chips respectively. Both ran at 1GHz and had 128Mb of RAM.

With many notebooks boasting DVD drives, it's also important to consider the quality of movie playback. The main CPU is used to decode the compressed video and audio, and this determines the quality. We found the Tiny's playback was slightly jerkier on fast-moving scenes than the Evesham's, but neither was a match for black-box DVD players. This was due to visible artefacts – blocks of solid colour where there should be fine detail. The same problem affected ATI-equipped machines, showing the decoding prowess of ATI's desktop cards isn't completely carried over to its older mobile counterparts.

Ultimately, it's clear from our testing that none of the notebooks on test here will satisfactorily run 3D applications and games. For decent 3D performance, we recommend spending more and choosing a GeForce2 Go or a Radeon Mobility-equipped model.

Alyn Sparkes



IBM ThinkPad R30 TR017UK

verdict A high-quality notebook, but the lack of performance or exciting features make it poor value for money.

price £933 (£1,096 inc VAT) **supplier** IBM 0800 169 1458

IBM is famous for its solidly constructed notebooks. It's consistently walked away from our annual awards with top position for reliability, and matches this with an excellent record for service and support. This skill isn't necessarily mirrored in the design stakes, but despite the ageing angular design the R30 emanates quality and scored well with our panel of judges. This is partially thanks to the brand recognition acquired by the ThinkPad range.

IBM also invests in two of the most important aspects of any notebook; namely, the screen and the keyboard. Our judges gave IBM runners-up position for this bright, evenly lit TFT panel. It may only boast a 13.3in screen diagonal, but the excellent contrast means that whites are truly white, rather than the off-grey we sometimes see.

The ThinkPad went one better in the keyboard rating battle, winning top position by a clear margin. The R30 is a joy to type on, with an exemplary layout closely matching that of a 'proper' keyboard. Our only criticism is the lack of a Windows key. The ThinkPad again took top position for build quality, with the whole unit boasting a rugged feel.

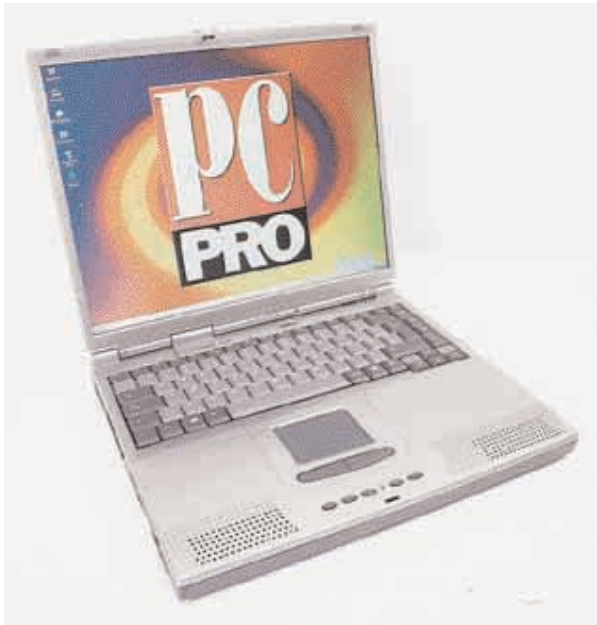
But, sadly for IBM, that's where the good news ends. The first disappointment was the processor: Intel's Celeron/900. Coupled with a lowly 64Mb of RAM and Trident's CyberBlade Ai1 graphics chipset (which contributed to Toshiba's relatively poor score), the ThinkPad came last in our benchmarks. The R30 doesn't feel slow in general use, but you'll regret trying to do any demanding graphical work on it.

This lack of speed is mirrored by a lack of features. The 10Gb hard disk is no match for the 30Gb drives we see elsewhere, and a CD-ROM – as opposed to DVD-ROM – is again disappointing. What's more, you'll need to spend another £46 if you want to use a floppy drive as there isn't one included as standard.

IBM doesn't even make any attempt to give added value to this notebook. There's just a single year's return-to-base warranty, and the bundled software is limited to Lotus SmartSuite Millennium. We'd also prefer to see Windows XP Home rather than Windows 98 SE.

We don't dispute that this is a well-made laptop, and IBM has won a plethora of awards for its notebook reliability. But at this price, we can't recommend the ThinkPad.

results	OVERALL	○○○○○●
	PERFORMANCE	○○○○○●
	FEATURES	○○○○○●
	VALUE FOR MONEY	○○○○○●



Panrix GoBook 1G

verdict The titanium chassis marks the GoBook out from the silver plastic crowd, but others offer more hardware for your money.
price £999 (£1,174 inc VAT) **supplier** Panrix 01132 444958

When we last saw a Panrix notebook in *PC Pro* (see *Labs*, issue 81, p131) we were impressed by the screen, but found the performance uninspiring. Again, the screen goes one step beyond the majority, with its native resolution of 1,400 × 1,050 the highest on test. However, it didn't win top marks for quality, as our judges found it a little grainy and downgraded it for uneven brightness.

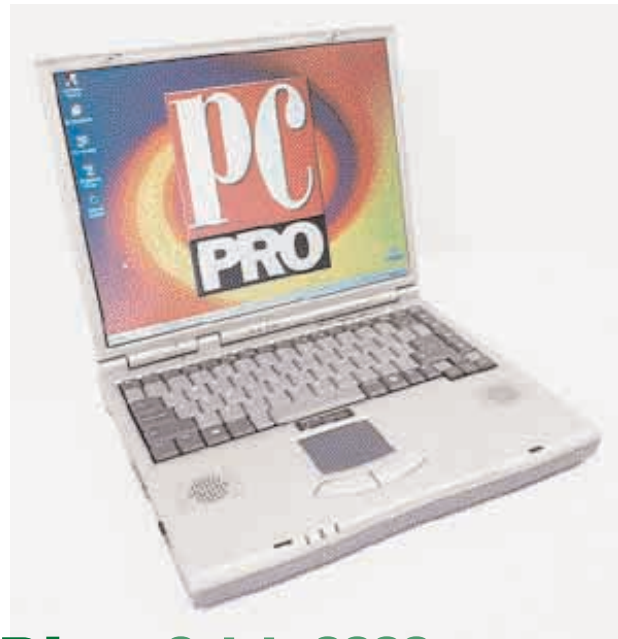
The performance certainly can't be described as uninspiring this time around. In our benchmarks, the Panrix managed a strong score of 2.60, thanks to a 1GHz mobile Pentium III chip and 256Mb of memory. But what separates the GoBook from the crowd is its titanium chassis. It's certainly a lot more stylish than the silver plastic affairs seen elsewhere, but it means the Panrix is the heaviest laptop on test at 3.5kg. The battery life – just 81 minutes in our intensive tests – also means this notebook shouldn't stray too far from a power socket.

The 30Gb hard disk is among the largest here, and with an option to go to 40Gb even the most demanding users should be satisfied. There's no CD-RW – and no option for one either – but the eight-speed DVD-ROM and integrated floppy drive are what we'd expect for this price. If you want to listen to CDs, the sound provided by the C-Media chip and wrist-rest-mounted speakers is of reasonable quality, but the speakers are covered by your arms when typing, affecting volume and quality.

The screen is controlled by an ATI Mobility 128 chip, which unlike most of the other chips this month has its own 8Mb of memory. It also allows for output to a TV as well as an external monitor, although the expected S-Video socket is missing – the composite connection loses some quality. The GoBook also lacks FireWire and docking station ports. The absence of a FireWire port is only important if you have a compatible peripheral, although the number available is increasing all the time.

Overall, the GoBook 1G is a nice machine. The larger screen is a bonus, while the titanium chassis lends the notebook some grandeur. However, the feature set isn't as impressive as that of the award-winning Atlas Flyer 3400-1200, while the excess weight and short battery life will be significant issues for computing on the move.

OVERALL	○○○○○○
PERFORMANCE	○○○○○○
FEATURES	○○○○○○
VALUE FOR MONEY	○○○○○○



Pico Spirit-2200

verdict A mid-table placing for an uninspiring machine. The Pico is adequate rather than exceptional.
price £975 (£1,146 inc VAT) **supplier** Pico Systems 0870 729 6111

The Spirit-2200 from Pico uses a chassis we've seen many times before, most recently masquerading as the AJP 2200C (see *Labs*, issue 83, p92). Unfortunately, its popularity isn't a reflection of its quality, as our panel of judges was again disappointed by the rattly keyboard, which sinks every time a key is pressed.

The 14.1in TFT screen also came in for criticism from our judges, with poor viewing angles and an uninspiring image, even at full brightness. Being built inside such a universal case certainly didn't help the Pico in the style ratings, where it was placed second from bottom. This was a better score than that for overall build quality, where it was placed last.

Perhaps conscious that the Spirit-2200 wasn't going to win any awards for style, Pico has concentrated on power. Using a 1.13GHz Pentium III of the desktop variety, and coupled with a massive 512Mb of RAM – the most on test – we expected great things. Unfortunately, the Spirit only managed a middle-of-the-pack rating in our benchmarks with a score of 2.46. This was slightly behind the Panrix, which boasts a mobile 1GHz chip and half the memory.

A 30Gb hard disk from Hitachi takes care of permanent storage and offers plenty of space. The commonly used QSI DVD-ROM drive is fitted and brings with it eight-speed DVD read and 24-speed CD read speeds.

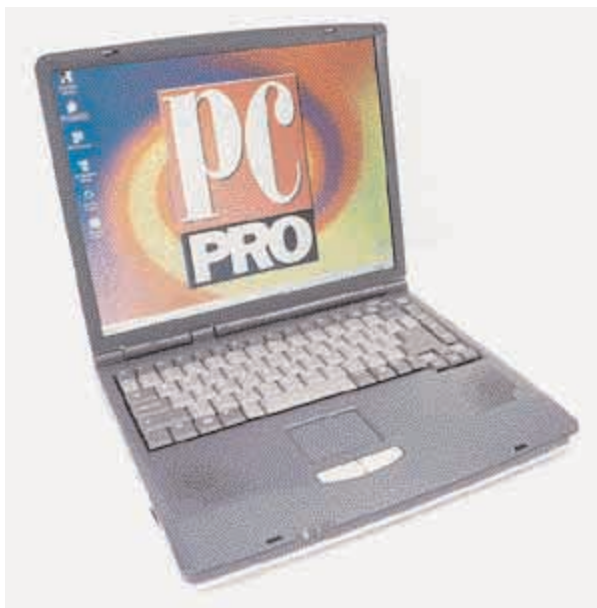
The only port missing from the Spirit-2200 is a serial connector, which would be a problem if you wanted to sync an older PDA or connect to another system via a direct cable. Countering this is the full-sized FireWire port, compared to the miniature ones on several of the other machines.

Both graphics and audio are handled by the SiS chipset, which steals a user-configurable 8Mb to provide frame buffers for the former. With speakers in the wrist-rest just managing to remain uncovered when typing, the audio quality is as good as most notebooks manage, and the inclusion of a hardware volume wheel is a bonus for usability.

It's good to see the almost ubiquitous Windows XP Home Edition included, but with no extra software and a very expensive replacement battery there are several better buys than the Pico Spirit-2200. Most notably, the Atlas Flyer is a more attractive all-round package, while Sony steals the style-conscious vote.

OVERALL	○○○○○○
PERFORMANCE	○○○○○○
FEATURES	○○○○○○
VALUE FOR MONEY	○○○○○○





Rock Sigma Si

verdict A well-specified notebook with performance to match, but the Sigma Si can't equal the Atlas Flyer for features.

price £999 (£1,174 inc VAT) **supplier** rockdirect.com 0870 990 9010

Rock stole an Honourable Mention in our last round-up of budget notebooks (see *Labs*, issue 83, p92), thanks to great performance and features at a competitive price. The Sigma Si continues Rock's powerful trend, with a desktop 1.2GHz Pentium III processor under the hood. It came a well-placed fourth in our benchmarks, with its score of 2.67 just ahead of the AJP with its 1.1GHz Athlon 4. However, the Rock uses a standard FC-PGA desktop chip that generates a lot of heat to match its performance. This means the cooling fan is running more often than we'd like, and it makes a fair amount of noise.

Even with Rock corraling 16Mb of the 256Mb SDRAM as frame buffers for the SiS630 integrated graphics chip, there's plenty left for apps, and you can decrease the reserved amount in the BIOS. Rock has left one spare SODIMM socket, so adding RAM won't be a problem.

A 30Gb Fujitsu hard disk and the common QSI SDR-081 DVD-ROM drive provide the storage solutions, along with an internal floppy drive. The hard disk will keep up with the storage demands of any application this laptop is likely to see, and the eight-speed DVD drive will also read CDs at up to 24-speed. A DVD/CD-RW combo drive is available as an option on the Rock for those needing to author on the move, but it will eat up more power when writing than the included DVD drive.

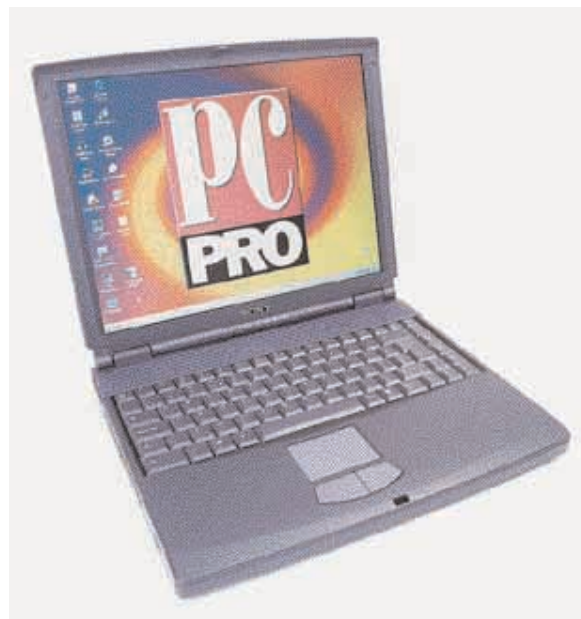
Still, with no mobile processor to control power consumption, we were surprised when the Rock managed over 100 minutes in our intensive battery test. This indicates good power optimisation elsewhere in the machine, and means you can expect over two hours of use. However, at 3.3kg this notebook won't win any prizes for mobility.

The Sigma Si didn't challenge for prizes when it came to style either, with our panel of judges remaining unmoved by its two-tone, grey plastic finish. It scored slightly better in our other subjective tests. While the TFT couldn't equal the IBM's or Sony's for quality, it's perfectly pleasant to use, as is the keyboard. Our only real criticism of the latter was that it bounced slightly when typing.

With full network and modem connectivity provided and Windows XP Home installed, the Rock Sigma Si is a solid system.

However, Atlas offers more features for the same price, while Sony combines style with similar levels of performance.

OVERALL	○○○○○○
PERFORMANCE	○○○○○○
FEATURES	○○○○○○
VALUE FOR MONEY	○○○○○○



Sony VAIO PCG-FX501

verdict A surprisingly low price makes the FX501 the clear winner for value in this Labs.

price £849 (£998 inc VAT) **supplier** Sony 08705 424424



When most people think about Sony's VAIO range, the glamorous ultra portables spring to mind, but a large proportion of its sales come via the more workmanlike FX series. The FX501 is its latest budget incarnation and deserves equal praise to its glitzy counterparts.

The first praiseworthy area is the screen. It's the best on test, balancing great brightness with high contrast, so there's a solid white in the background of Office applications, but no loss of vividness with colours. This is matched with one of the top keyboards on test, making this notebook a joy to use. Although the cursor keys aren't set apart, they're the same size as normal keys, so aren't difficult to hit. The keys themselves also provide plenty of feedback, and the keyboard's backplate doesn't sag. Only IBM betters Sony here.

Performance was better than expected for a 1GHz Duron processor. The FX501 scored 2.59 in our benchmarks, beating nominally faster chips. One of the reasons for this speed was the healthy 256Mb of RAM – IBM should learn a lesson here – which can be expanded further to 768Mb via the spare SODIMM socket. None of the memory is siphoned off by the graphics chipset, with Sony opting for the solid but unspectacular ATi Rage Mobility-M1, which has its own 8Mb of RAM.

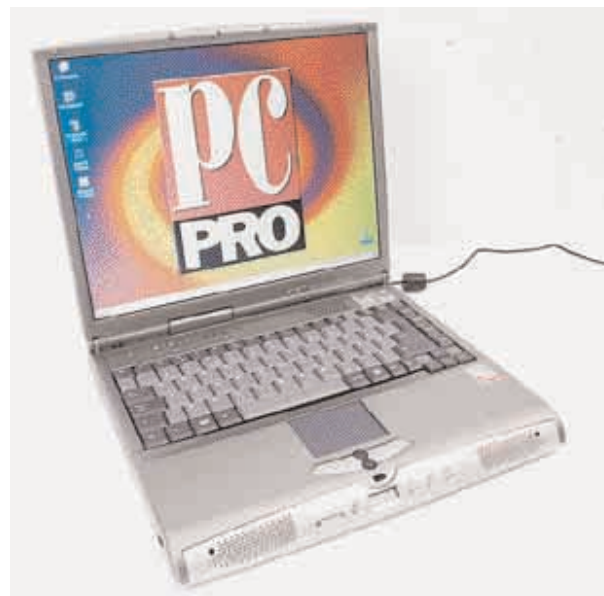
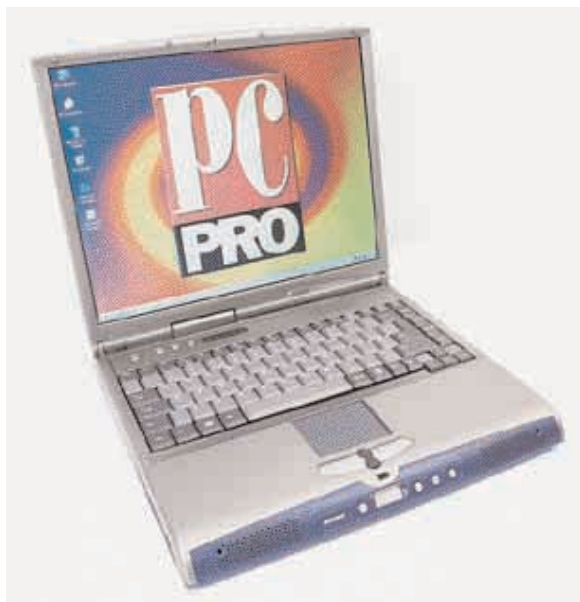
The most likely use for all this power is video editing, and as usual Sony includes an i.LINK (four-pin FireWire) port for attaching a DV camera. There's a 20Gb hard disk in situ; for more than this you have to move up Sony's range. The eight-speed DVD-ROM is another reflection of this notebook's starter status – a combo DVD/CD-RW drive is fitted as standard with the FX501's more expensive sister models.

The only real criticism we have of this notebook is its battery life. Sony came bottom of the pile in our intensive rundown test, with the battery giving up after 60 minutes. The FX501 is therefore more suited to a life on the desk than on the move. But if you're after a highly portable notebook, you should wait for next month's ultra-portables

Labs. If, on the other hand, you want a great-value desktop replacement that also looks good, the FX501 is the answer.

OVERALL	○○○○○○
PERFORMANCE	○○○○○○
FEATURES	○○○○○○
VALUE FOR MONEY	○○○○○○





Time Traveller A4-1000

verdict One of the best performers on test, but the Traveller is let down by a poor combination of keyboard and screen.

price £999 (£1,174 inc VAT) **supplier** Time 0870 830 3101

The ingeniously named Time Machine was a serious challenger for awards in our £999 PCs Labs this month, so we were eager to see if the Time Traveller could repeat the achievement for the company's £999 notebook. Unfortunately, any chances of another success were short-lived.

The first disappointment was the keyboard. This bows and sinks however lightly you press the keys, making for a laborious experience when attempting to work on the machine. The cursor keys are separated, but the Enter key is shaped like a reversed 'L', which means it's easy to hit the right bracket key in error.

The screen was another chink in this notebook's armour. It's dull and washed out, polling the worst result in our panel vote. No amount of adjustment improved the Traveller's patently off-white appearance. Tiny, using the same basic chassis, supplied a better screen.

Internal specs, aside from one port, aren't revolutionary. Toshiba supplies the 20Gb hard disk, which is accompanied by an integrated DVD-ROM and floppy drive. The surprise inclusion is a Sony i.LINK-style FireWire connector, so you can attach fast, external drives or even a DV camera, but the 20Gb disk limits any greater ambitions. Another bonus is the CD player buttons at the front, but the speakers are only passable.

The Time Traveller's finest hour came from performance: it scored five stars thanks to AMD's 1GHz Athlon 4 chip. Accompanied by 256Mb of RAM, the Traveller zipped into third place with 2.69 in our benchmarks. You could add another 512Mb of memory for a maximum of 768Mb.

For graphics, Time opts for the familiar S3 Twister K chipset – the K means it's been adapted for the Athlon 4 – which shares 32Mb of the memory complement in our review machine; you can adjust this in the BIOS as necessary. Even with 32Mb, the Twister isn't as fast as it sounds (see *Inside graphics*, p94), but does provide moderate 3D acceleration.

The Traveller's travelling ambitions are limited by a mediocre battery life – 88 minutes in our rundown tests translates to around two hours with PowerNow! management – not to mention a weight of 3.3kg. Combine this with the lacklustre keyboard, poor screen and one-year, return-to-base warranty and you have another speedy notebook let down by its supporting cast.

OVERALL	★★★★★
PERFORMANCE	★★★★★
FEATURES	★★★★★
VALUE FOR MONEY	★★★★★

Tiny MediaBook Power

verdict It's got a better battery life, a better screen and more software than Time, but retains the poor keyboard.

price £999 (£1,174 inc VAT) **supplier** Tiny 0800 072 8788

As you can see from the photograph, Tiny uses the same chassis – apart from a colour change – for its MediaBook Power as Time does for its Traveller A4-1000. As such, it shares a couple of the same disadvantages, but could it distinguish itself from the attack of the clones?

Sadly, not where the keyboard is concerned. The base is still saggy, and whole sections of the keyboard bow when single keys are pressed. Putting the PgUp and PgDn keys next to the L-shaped Enter button can cause an annoying miss-strike, placing you elsewhere in the document rather than on the next line. While Tiny's TFT screen isn't as bad as Time's, it's still some way off the shining lights from IBM and Sony. However, its only real problem is slightly uneven backlighting, and few people will have any complaints in general use.

Due to the choice of the desktop Pentium III processor running at 750MHz, 1.99 is all the inappropriately named MediaBook Power could muster in our benchmarks. This should be fast enough for any applications you want to run for now, but beware the only upgrade path is adding more memory to the 256Mb supplied.

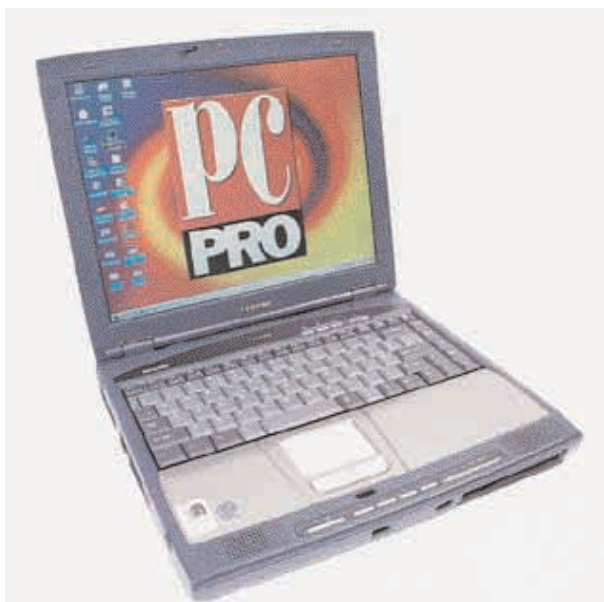
The slower processor did help the MediaBook last for 97 minutes in our rundown test, making it joint-sixth. With power saving and the brightness set to minimum, this should stretch comfortably over two hours. As with the Time Traveller, though, this isn't a notebook we'd care to carry around all day, with a 3.3kg weight limiting its portability.

Tiny supplies a 20Gb silent Fujitsu hard disk, but instead of Time's mere DVD-ROM this time there's a combo DVD/CD-RW drive on offer – the reason Tiny had to sacrifice processor speed to meet the £999 price limit. The CD-RW burns CD-Rs at eight-speed and re-writes at quad-speed, allowing a backup facility on the move. The floppy drive and other ports are present as expected, including the FireWire port.

We were also pleased to see Microsoft's Works Suite 2002 supplied as standard, together with the only copy of Windows XP Professional we saw this Labs. The warranty is less impressive, as it lasts for just a year, but at least it provides collect-and-return rather than return-to-base cover. This helps to make the MediaBook one of the best featured notebooks on test. Sadly for Tiny, the Atlas Flyer steals its thunder.

OVERALL	★★★★★
PERFORMANCE	★★★★★
FEATURES	★★★★★
VALUE FOR MONEY	★★★★★





Toshiba Satellite 1800-254S

verdict Sacrifices in specification duly affect the Satellite's performance, but it remains a quality notebook.

price £799 (£939 inc VAT) **supplier** Toshiba 0870 444 8944

At £799, the Toshiba Satellite is one of the cheapest laptops on test, beaten to this title only by the Twinhead. However, this low price has left its mark on the 1800-254S – many of the components are of lower specification than those in the machines that take full advantage of our price limit.

For example, the processor in the Satellite is a 1GHz Celeron, which combined with 128Mb of memory led to a poor benchmark score of 1.42. This was equal with the Twinhead with its mobile Celeron/850 chip and 64Mb of RAM. On the surface, this was a surprising result, but we suspect that the Trident CyberBlade Ai1 chipset takes some of the blame. This is a factor shared with the IBM ThinkPad, which suffered similarly in our 2D graphics tests. Unlike most of the other chips employed this month, however, it does have the advantage of being able to extend the Windows Desktop onto two screens.

At just 13.3in, the Satellite's screen is smaller than most of the other offerings in this Labs. While it offers a native resolution of 1,024 × 768, our panel of judges found that the TFT display didn't have the overall quality seen in the Sony, IBM or ACi screens. The keyboard was a different story, impressing all with its feel and solidity, while the good-looking chassis earned it a high style score.

But the low price was in evidence in Toshiba's choice of storage subsystems. With just a 10Gb hard disk, the Satellite is lacking in storage capacity compared with most of the more expensive machines, and with just a 24-speed CD-ROM drive this notebook loses out to those with DVD or CD-RW drives as standard.

Where Toshiba pulled back some kudos was with this machine's battery life. At 121 minutes, this was the second best on test, and at 3kg the Satellite is lighter than many of its competitors this month. What's more, with Toshiba's excellent power management software, which allows you to change the power usage of the screen and CPU to four levels, you should be able to glean over three hours of use per charge.

If battery life and cost are the most important aspects of your notebook purchase, the Toshiba is worth a look. Core specifications aside, this doesn't feel like a budget notebook, and it may well meet your needs despite its lack of performance.

OVERALL	○○○○○○
PERFORMANCE	○○○○○○
FEATURES	○○○○○○
VALUE FOR MONEY	○○○○○○



Twinhead Elio-A2300

verdict Despite a very attractive price, the Elio-A2300 loses out in this Labs due to a lack of performance and features.

price £762 (£872 inc VAT) **supplier** Twinhead 01256 300310

Unlike desktop PCs, where there are hundreds of cases for a system integrator to choose from, the number of notebook chassis is severely limited. British manufacturers are forced to choose an off-the-shelf Taiwanese design, and it's easy to see why both Hi-Grade and Twinhead were attracted to this particular chassis.

True, there are lighter ultra portables around than this 1.9kg offering, but it's ruggedly built and looks quite stylish thanks to its silver finish inside and a metallic blue lid to match. And as the lid is made from a metal alloy rather than plastic, it offers good protection to the screen. Just make sure you don't slam the lid shut with a pen sitting on the palm rest. We're also fans of the TFT panel itself. Although it only boasts a 12.2in diagonal, it's both bright and evenly lit.

Unfortunately, this feeling of quality isn't matched by the keyboard's layout. The problem stems from incorporating the cursor keys into the main keyboard body rather than separating them out, which means the comma, full stop, semi-colon and apostrophe keys are slimmed down and difficult to hit.

Battery life on this unit was slightly disappointing too. Even though it uses precisely the same battery as Hi-Grade's Notino, it lasted 21 minutes less in our tests. The biggest factor here is the processor. Hi-Grade's Pentium III drops down to 700MHz when using the battery, while the Celeron/800 inside the Elio sticks at 800MHz. Having just 64Mb of RAM will also affect the machine, as Windows will have to page to the hard disk more frequently for Virtual Memory.

The Celeron/800 and 64Mb of RAM also had an impact on performance, with the Elio scoring 1.42 in our 2D benchmarks. Nevertheless, it's fast enough for an ultra portable. Plus, at just £762, the Elio is the cheapest notebook on test. Unfortunately for Twinhead, there are some obvious signs of cutbacks: just a 10Gb hard disk, an external CD-ROM rather than DVD-ROM, and a basic one-year, return-to-base warranty. Hi-Grade also wins when it comes to software, with Works Suite 2002 against Twinhead's medical encyclopaedia, not to mention Hi-Grade's inclusion of Windows XP Home rather than Windows ME.

If you can afford it, pay the extra £237 for the Notino. Or just wait until next month's ultra-portables group test.

OVERALL	○○○○○○
PERFORMANCE	○○○○○○
FEATURES	○○○○○○
VALUE FOR MONEY	○○○○○○

The winners

Fifteen notebooks left the starting line, but two sprinted ahead of the rest

Atlas Flyer 3400-1200



Big names like IBM, Sony and Toshiba may dominate sales of notebooks, but there's still room for the UK's smaller and leaner outfits to custom-build a laptop to a tight budget. That's exactly what Atlas managed to do with the Flyer 3400-1200, and the result is a fast unit that packs in every component most people need.

The undoubted highlight is the optical drive: not content with a mere DVD-ROM, Atlas includes a combo DVD/CD-RW drive. This burns CD-Rs at a respectable eight-speed and writes to CD-RWs at quad-speed, while also providing a means of reading DVD-ROMs and playing DVD movies.

Only AJP and Tiny could match this inclusion.

Although the Flyer is never going to win any awards for style – in fact, our panel of judges voted it the least stylish notebook

on test – don't be fooled into thinking that it uses poor components. Both the keyboard and the screen gained respectable marks in our subjective tests. Although not a match for the Sony V. PCG-FX501's quality in these respects, the Atlas Flyer certainly a notebook that won't mind working on for periods at a time.

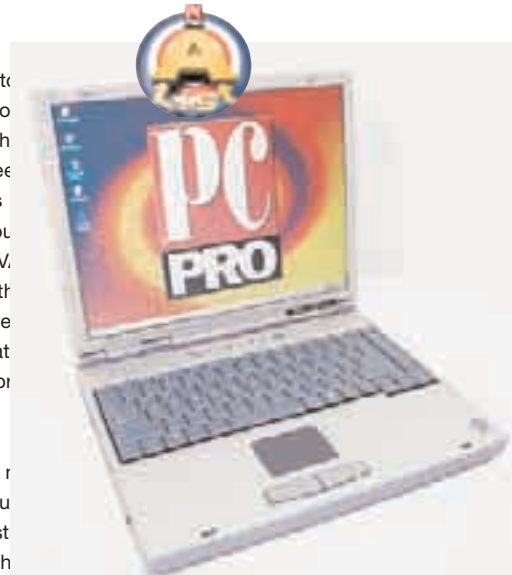
It also benefits from performance, thanks in the 1.2GHz Celeron chip could 256Mb of RAM. Only the st

of pace from th

Voyager 5000 and its 1.2GHz Athlon 4 chip prevented Atlas from taking top spot here.

We were also pleased to see a

■ **Not the most stylish notebook, but it's powerful and packed with features.**



place. This is the best notebook but provides for the future disk-hungry

Atlas provides 12, which is a solution for the This includes XP, Encarta Encyclopaedia Standard and Money 2002 not to st version of for a £999

notebook that has everything, the Atlas Flyer 3400-1200 is definitely the one to choose this month.

overall ★★★★★★

price £999 (£1,174 inc VAT)

supplier Hi-Grade/Atlas 020 8532 6111

For more details, see p88

Sony VAIO PCG-FX501



Where the Atlas wins on its sheer quantity and range of features, the Sony wins for value and style. Our panel of judges placed the VAIO runner up for its keyboard and build standard, and it went one better the quality of its TFT and its styling. This notebook is a pleasure to use from start to finish, which is remarkable considering its £849 asking price.

You don't lose out on speed either. The mobile Duron has proved in the past to be a chip, and the VAIO's score of 2.59



comes in the form of battery life, only lasting for 60 minutes in its – the worst score of all

notebook for life on the move, but the features most people need for replacement. There's the floppy drive matched by a COM – note the composite port and cables Sony includes for connection to a TV – while a 20Gb hard disk should appeal to most buyers. If you want a more powerful machine, look at the FX505.

But for the majority of potential notebook users, the Sony VAIO PCG-FX501 includes every vital feature. At under £1,000 even including VAT, it's simply a bargain.

overall ★★★★★★

price £849 (£998 inc VAT)

supplier Sony 08705 424424

For more details, see p98

was quite suitable for a 1GHz processor, even taking 256Mb of RAM into account.

judges voted the stylish laptops.



Ultra portables

Next month, we test and rate the latest ultra portables, switching the emphasis onto mobility rather than speed and features.

