Top of the Charts

Your guide to the best monitors and motherboards available in the market

At the CHIP Test Centre, products are tested in two categories—the individual tests and the comparison tests. Software and hardware are tested using the latest benchmarks and test procedures developed by the International CHIP Test Centre in Munich, Germany, in conformance with industry standards. For a comparison test, the products are tested in comparison with the other products of the same kind and then rated according to their performance.

But how do you know how a new product, which did not feature in the comparison test of its category, rates against the others of its kind? For example, if CHIP has tested 18 motherboards in the comparison test in January and has carried out an individual test of a motherboard in the following months. How would the reader know where that particular motherboard stands in comparision to those already tested?

To answer this, you have the CHIP Top Ten, featuring ten best products in a category (rated according to the performance in the CHIP Tests).

The tables provide all details needed to make a purchase: Technical data, test values and prices.

WHAT THE NUMBERS MEAN

CHIP TEST lists the points for the product as well as total points. The results from the individual tests are analysed to give the

These two columns consist of qualitative information regarding the product

Under Technical Details, you will find the important specifications

Place	Mainboard and price	Contact	Phone	Processor Interface	Chipset	AGP Slot	Max Memory	Productivity	Creativity	Entertainment	Total score	Remarks (+)	Remarks (-)
1	Chaintech 6BTM Rs 9,600	Ideal Concepts	011-6216225	Slot-1	440BX	Yes	512	149.6	168	131	151	Optical sensor connectivity	NA
2	GVC SP-P II LXB Rs 3,600	Priya Int	022-2663611	Slot-1	440LX	Yes	768	152.8	168.6	124.4	150.9	Versatile performer	Less number of PCI slots
3	ASUS P2B Rs 8,500	Mnemonic	022-8010871	Slot-1	440BX	Yes	384	151.3	167	128.7	150.8	Extensive documentation	Too expensive
4	ASUS P2L97 Rs 4,500	Mnemonic	022-8010871	Slot-1	440LX	Yes	384	152	168.6	124.7	150.6	Comprehensive documentation	Single ISA slot
5	Mercury KOB7LX-AT Rs 3,700	Mnemonic	022-8010871	Slot-1	440LX	Yes	256	151.8	168.1	125.4	150.5	Attractively priced	Low expandability
6	GVC SP-P II EXB Rs 3,400	Mnemonic	022-8010871	Slot-1	440EX	Yes	768	151.5	168	125.3	150.3	Economical price	Low expandability
7	ACORP 6BX86 Rs 4,200	ACE Micro Electronics	011-6201276	Slot-1	440BX	Yes	768	150.3	168.5	128.8	150.2	Protective static sheet	Only 2 DIMM slots
8	Gigabyte GA-6BXE R 5,500	Nebula Tech	022-6347158	Slot-1	440BX	YES	1024	149	167	130.3	150.2	Supports large amount of RAM	No drivers
9	ACORP 6LX Rs 3,300	ACE Micro Electronics	011-6201276	Slot-1	440LX	Yes	256	151.1	168.1	124.3	149.9	Easy to install	Only 2 DIMM slots
10	Transcend TS-ABX NA	Wales Tech	022-3828100	Slot-1	440BX	Yes	768	149.7	166.7	127.5	149.7	Quick performer in DOS	Skimpy documentation

*The results are based solely upon the performance of the product. Price has not been considered a criterion
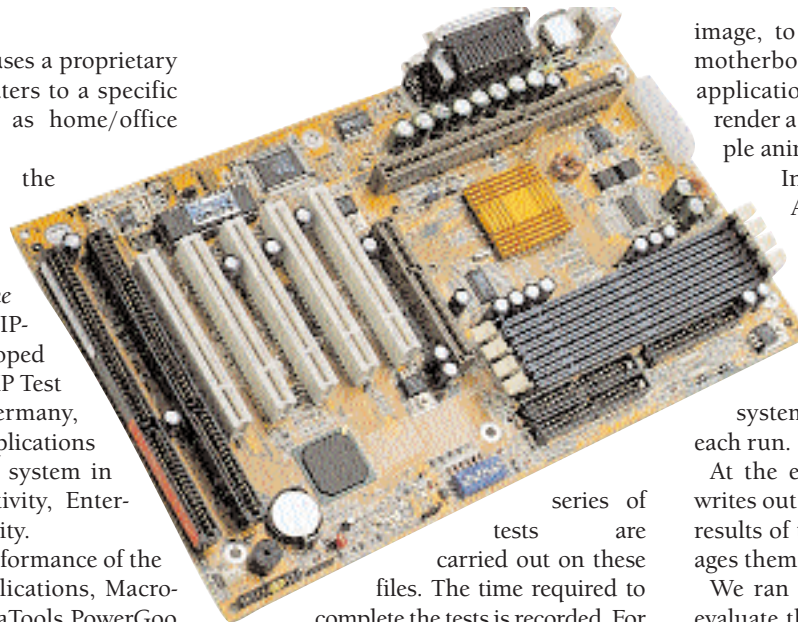
MOTHERBOARDS

Each motherboard uses a proprietary technology that caters to a specific application (such as home/office /enterprise).

For benchmarking the motherboards, we ran a test suite composed of two separate tests: CHIPmark 1.0 and *Quake* game test for DOS. CHIPmark, a test suite developed at the International CHIP Test Centre in Munich, Germany, consists of a suite of applications that test the computer system in three categories—Creativity, Entertainment and Productivity.

For measuring the performance of the system in creative applications, Macromedia Extreme3D, MetaTools PowerGoo and Adobe PhotoDeluxe were executed.

For Productivity, the Microsoft Works Word Processor, SpreadSheet and Database, and Intuit Quicken were executed. In each of these tests, a set of macros automatically loads pre-saved files that are typically used in these applications and a series of tests are carried out on these files. The time required to complete the tests is recorded. For example, in the Microsoft Works Word processor test, a typical text file was opened and a series of Search & Replace operations are carried out.

An image file was opened in Kai's Power Goo and effects like enlarging, twisting and whirlpool effects were applied to the image, to test the performance of the motherboard while running creative applications. Extreme3D was used to render a sample 3D file and create a simple animation.

In the Entertainment suite, an AVI clip was executed and its frame rate was recorded, while gaming capabilities of the system were determined by measuring the performance of the game *Speedboat Attack.* This test is run thrice on a system, rebooting the system after each run.

At the end of these tests, CHIPmark writes out a text file that incorporates the results of these three runs and also averages them.

We ran the DOS version of *Quake* to evaluate the performance of the CPU-to-PCI bridge. This game was run at a resolution of 640 x 480 (in the systems that supported it). Otherwise, it was run at 360 x 200. In both cases, the frame rates were recorded.

(*For additional information refer to "The Board Wars" in CHIP January 1999*).

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2	GVC SP-PII LXB Rs 3,600	Priya Int	022-2663611	Slot – 1	i440LX	Yes	768	152.8	168.6	124.4	150.9	Versatile performer	Fewer PCI slots
3	ASUS P2B Rs 8,500	Mnemonic	022-8010871	Slot – 1	i440BX	Yes	384	151.3	167	128.7	150.8	Extensive documentation	Too expensive
4	ASUS P2L97 Rs 4,500	Mnemonic	022-8010871	Slot – 1	i440LX	Yes	384	152	168.6	124.7	150.6	Comprehensive documentation	Single ISA slot
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TECHNICAL DETAILS · **CHIP TEST**

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CHIP Top Ten

MONITORS (14- & 15-INCH)

The monitors in the Top Ten list were evaluated for features, usability, ergonomy, price and performance.

The base system was a 350 MHz PII-with a 6.3 GB hard disk and 128 MB of 100 MHz SDRAM. The graphics card used was Asus Riva TNT with 16 MB of SDRAM. This card was chosen for the purity of output signal and its capability for supporting high resolutions at high refresh rates.

Before the test, a monitor is left to run for about 20 minutes in order to stabilise and warm up the CRT. The test bench was chosen such that the monitor is aligned in an East-West direction. This eliminates the effects of the Earth's magnetic field on the performance of the monitor.

In the test for convergence, a program that generates very fine horizontal and vertical patterns on the screen was run. Various areas of the screen such as corners and the ventral areas were observed for blurring (indicative of incorrect convergence). The grid test checks the geometry of the screen for any imbalances in the horizontal and the vertical dimensions of the display.

In the Signal On/Off test, the program sends a high (white screen) signal to the monitor, followed by a low (black screen) signal. This is repeated at 60 Hz. The older monitors did not respond well to this signal and the raster pumped very noticeably. Also, while changing video modes some monitors produce a loud clicking sound.

Observed results of these tests are entered in a standard Excel spreadsheet that automatically reads these values and generates a tabular report of the performance.

For all monitors the same test procedure was followed for evaluation and whenever possible, the individual drivers and the software required by the monitors were loaded. These were uninstalled from the system after each test.

(*See "Search for a Perfect Display," CHIP April, 1999*)

					TECHNICAL DETAILS					CHIP TEST						
Place	Name of Prod-	Contact and Phone	Screen size	CRT Type	Horizontal frequency (Max)	Vertical frequency (Max)	Resolution (Max)	Dot pitch (in mm)	Screen quality	Ergonomy	Construction	Documentation	*Total score	Remarks (+)	Remarks (-)
1 ing	Hansol Mazellan 501P Rs 11,500	Compugram Infoworld 022-6286283	13.8	Shadow Mask	70 KHz	150 Hz	1280 x 1024	0.28	22	25	15	11	2.64	Stable sharp display modes	Clicks while switch-
2 14	Sony Multiscan 100ES 12	Sony India 2.69		Good convergence	14.0	Aperture Grille High price, visible		70 KHz	120 Hz		1024 x 768	0.25		20	24
3 13	Rs 17,900+Tax 12	022-8313333	Savex Computers 2.71	Good overall performance	13.8	Shadow Mask Difficult to access		61 KHz	120 Hz		1024 x 768	0.28		22	dampening lines 25 advanced fea-
tures	Rs 10,000	022-2029864													
4	Daewoo 518X Rs 8,900	Kinetic Commn. 020-775841	14.0	Shadow Mask	54 KHz	120 Hz	1024 x 768	0.28	22	23	15	12	2.74	Sharp at 800 x 600, convenient OSD	Slightly flawed screen geometry
5 Slight bluming at	Smile Chromaclear (CB6515DS) Rs 7,300	NDS Computers 022-6365878	13.8	Chromaclear	54 KHz	100 Hz	1024 x 768	0.28	17	22	14	12	2.83	Stable at high refresh rates	the left corners
6 ble	LG Studioworks 440Si Rs 7,350+Tax	Aditya Promotors 022-2692583	13.2	Shadow Mask	48 KHz	90 Hz	1024 x 768	0.28	23	22	13	12	2.84	Good convergence	Curvature of the phosphor coat visi-
7	NEC Multisync V500 Rs 9,500	Compugram Infoworld 022-6286283	13.7	Shadow Mask	64 KHz	100 Hz	1280 x 1024	0.28	21	25	15	9	2.84	Stable raster	No visual appeal

*Lower number indicates better performance