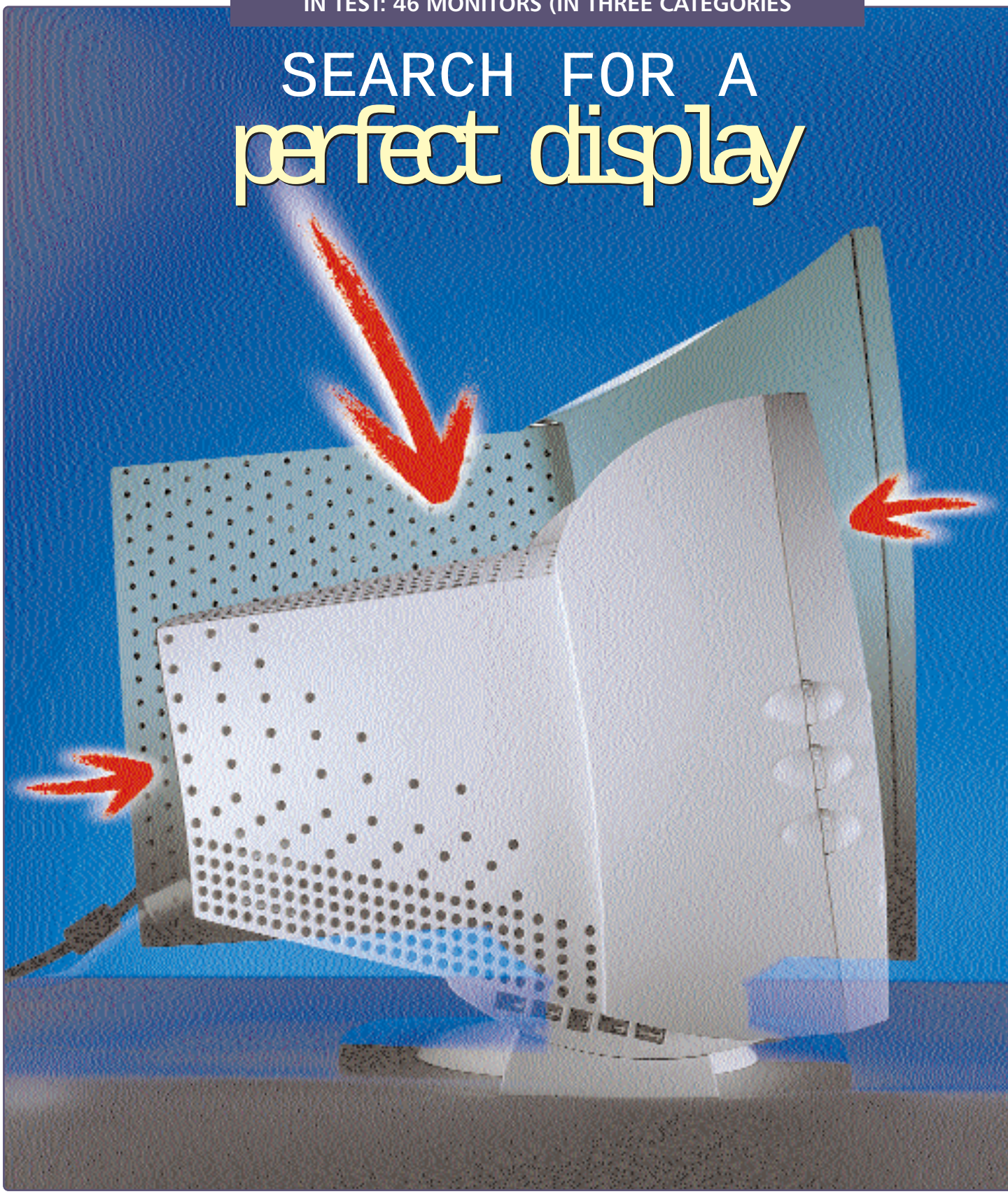
IN TEST: 46 MONITORS (IN THREE CATEGORIES

# SEARCH FOR A perfect display



**Size does matter, especially when you are talking about the monitor. As the screen sizes get more expansive and prices fall, a buyer is presented with a wider choice than ever before....**

Probably the most popular hardware component in the market, monitors are also one of the most expensive parts of your computer and thus need to be chosen with great care. The two types of screen technologies available today are Shadow Mask and Aperture Grille. The latter is best known under the brand name Trinitron from Sony and Diamondtron from Mitsubishi. In addition, there is a third type of picture tube that was introduced by NEC and is called the ChromaClear tube.

### How an image is formed

A Cathode Ray Tube (CRT) forms the main part of the monitor. The CRT is not as confusing and enigmatic as it seems; it is in fact a very primitive device and the only advancements have been in terms of the mask and the phosphor coatings—the basic operation has remained nearly constant. A phosphor coating is applied to the inner front surface of the tube. An extremely fine grid, called the mask, is placed before this screen and is used to direct the electron beam to the desired phosphor spot. This electron beam is created by an electron gun, which continuously fires a stream of electrons that sweeps across the surface of the screen.

The red, green and blue electron beams should strike only the red, green and the blue phosphor dots respectively. When these dots are struck with the correct intensity, the requisite image is formed on the screen due to the phenomenon of phosphorescence. This is the property of phosphor-based substances to emit light when they are subjected to a stream of electron beams.

In order to produce accurate colour pictures, the electron gun should illuminate only the pixel that it is aimed at. To achieve this, the screen has to block out adjacent pixels, so that they do not light up as well, causing blurring and interference.

### Mask or Grille

In the shadow mask, screen holes are placed in rows behind a triad of pixels. Aperture Grille CRTs use a frame with vertically stretched wires (threads) without any horizontal division. Depending on the size of the tube, one or two somewhat darker, horizontal stripes can be seen running through the length of the screen. These are found only in Aperture Grille monitors due to the shadow of the stabilising stripes that are supposed to prevent interference between screen from interfering with the flow of electrons.

In Aperture Grille CRTs, the pixels of each triad are arranged next to each other in a recurring pattern. Here, the dot pitch of the tube is specified by the distance between the two dots of the same colour. Each of the individual electron guns strike a coloured dot triad. This is the prime difference between Aperture Grille and Shadow Mask CRTs.

Pixellation disappears noticeably when dot pitches are contracted up to 0.22 mm. Each of these tubes have distinct advantages in specific areas. In principle, shadow masks gain an edge over the others because of their lesser step-formed presentation of diagonal lines and lower costs. On the other hand, Aperture Grilles allow greater passage of light, thus enabling brighter and more vivid colours with higher contrast. In addition, they are free of Moiré effects due to the lack of horizontal divisions in the screen.

Contents

# Comparison Test

## HOW A MONITOR WORKS...
**The technology of individual screens:**

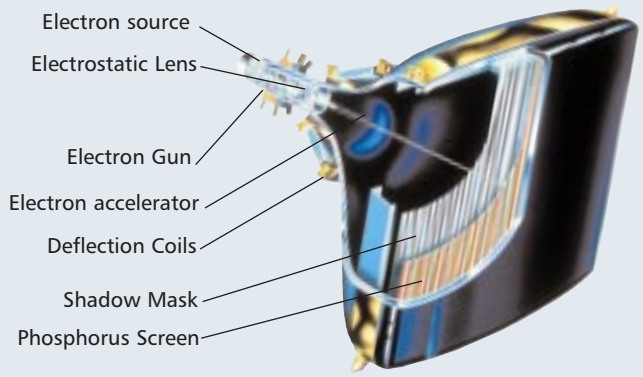



Image 1: The Shadow mask is composed of a triad of coloured dots arranged in recurring triangles. Three electron beams strike these phosphor dots and depending upon their intensity, produce colour.

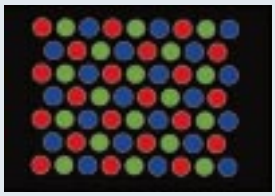


Image 2: The slotted mask combines its light yield with the stability of a shadow mask. Here, the dots are arranged as triads but are also striped like the aperture grille.

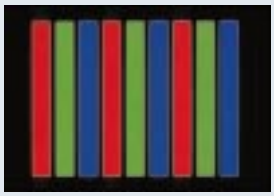


Image 3: In the Aperture Grille CRT tube, the primary colour stripes flow vertically over the entire length of the screen.

## CHIP TEST PROCESS

The monitors were evaluated for features, usability, ergonomy, price and performance on the standards laid down by the International Test Center at Munich, Germany. The base system was a 350 MHz PII-based system with a 6.3 GB hard disk and 128 MB of 100 MHz SDRAM. The graphics card used was an ASUS Riva TNT with 16 MB of SDRAM. This card was chosen for its purity of output signal and its capability for supporting high resolutions at high refresh rates.

Before testing, a monitor is left to run for about 20 minutes in order to stabilise and warm up the CRT. Also, the test bench was chosen such that the monitor is aligned in an East-West direction—to eliminate 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 any 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 report of the performance. All the monitors follow exactly the same procedure for evaluation and whenever possible, the drivers and the software required by the monitors were loaded. These were uninstalled from the system after each test.

## Types of raster distortion

Pincushion distortion

Raster rotation

Trapezoidal distortion

Parallelogram distortion

VERDICT B-

+ Detailed documentation
- Ghosting at high resolutions

Resolution: 1024x768
Horizontal freq: 54 KHz
Vertical freq: 90 Hz
Dot Pitch: 0.28mm
CRT type: Shadow Mask
Price: Rs 8,600+taxes
Contact: Allied Electronics
Phone: 022-8363370 Fax: 022-8375218

## Amkette Netview 56K

# Reasonably priced, compromises on quality

Targeted at the home user, this monitor does not boast of high performance and features. The performance was lower than others in its range and the curvature of the picture tube is very apparent. It lacks a clean finish as is common with the other monitors in this range. The On Screen Display (OSD) controls too are rather arcane and difficult to get used to.

Apart from the parallelogram, rotation and trapezoidal correction, all other screen control corrections are possible. The monitor displayed correct horizontal and vertical patterns in all the areas of the display. However, in the screen geometry test, the vertical dimension along the upper edge of the screen was not proportional to the other areas. While switching from one video mode to another, the clicking of the monitor relay was audible.

At a resolution of 1024x768, the signal quality was not too good and there was visible ghosting in the display. In the signal on/off switching test, the raster displayed a very slight pumping. The documentation is fairly good and explains in detail, all the major features of the display.

Only those users for whom budget is a major constraint, should go in for this monitor.

VERDICT B

+ Sharp, stable display
- Slight pumping during switching

Resolution: 1280x1024
Horizontal freq: 69 KHz
Vertical freq: 90 Hz
Dot Pitch: 0.28 mm
CRT type: Shadow mask
Price: Rs 10,600+taxes
Contact: Allied Electronics
Phone: 022-8363370 Fax: 022-8375218

## Amkette Netview 70K

# Misleading branding, average performance

The most striking feature of the monitor is the intuitive OSD control in the shape of two large knobs on the front that have to be rotated and depressed to access the required features. These knobs are much more effective than the other more commonly used knobs and buttons. All the major features like pincushioning, horizontal and vertical sizing and phase, parallelogram and raster rotation can be controlled.

This 15-inch monitor performed well in the test. In the convergence and the screen geometry tests, the monitor showed a very slight blurring in the right upper and lower corners of the screen. In the screen geometry tests, the monitor did not display any distortion in any of the dimensions. However, in the signal on/off test, a bit of pumping of the raster was evident.

The monitor is being marketed as an 'Internet ready' monitor, but surprisingly there was no additional feature in this monitor that could warrant its being so. Despite the misnomer, it is a good choice for the home and office user who are not very fussy about observing visual detail in their work.

VERDICT A

+ Good signal switching
- Edges of phosphor visible

Resolution: 1024x768
Horizontal freq: 54 KHz
Vertical freq: 120 Hz
Dot Pitch: 0.28 mm
CRT type: Shadow Mask
Price: Rs 7,100
Contact: Kinetic Communications
Phone: 020-775841 Fax: 020-770567

## Daewoo 431X

# Good features at a low cost

One of the better-looking monitors in this lineup, it also turned out to be a good performer. Apart from parallelogram and raster rotation, the monitor features control of all important functions of the display like horizontal and vertical pincushioning, raster sizing and phase control (raster movement). Like a few other 14-inch monitors, the corners of the phosphor coating are visible from the front of the tube and despite adjustments the raster did not fit to the edges. How-ever, the display was very sharp at the tested resolution of 800x600 and 72Hz.

In the convergence test, the horizontal and vertical patterns were displayed without blurring in any area. However, in the screen geometry test, the horizontal aspect was not centred perfectly on all the corners of the screen. In the signal-switching test, the display was very accurate and there was virtually no pumping in the raster.

This monitor, with its reasonably low price and good performance, is a very good buy in the 14-inch segment. This montior could find applications in the home and the office segment in which extreme detail is not of prime importance.

VERDICT A+

+ Sharp at 800x600, convenient OSD
- Slightly flawed screen geometry

**Resolution**: 1024x768
**Horizontal freq:** 54 KHz
**Vertical freq:** 120 Hz
**Dot Pitch:** 0.28 mm
**CRT type**: Shadow Mask
**Price:** Rs 8,900
**Contact:** Kinetic Communications
**Phone:** 020-775841 **Fax**: 020-770567

## Daewoo 518X

# For crystal clear visuals

Like its smaller counterpart, the Daewoo 518X outshone others in its class in performance and looks. Apart from parallelogram and raster rotation, all the other usual image and screen control functions like horizontal and vertical size and phase, pincushioning and trapezoidal corrections were available. These are controlled through the OSD by the four buttons on the front. The monitor also features built-in degaussing and colour temperature control.

518X performed very well in all the tests. The convergence test revealed that there was no visible distortion or blurring in any part of the screen and the horizontal and vertical patterns were sharp and distinct. However, in the screen geometry test, there was a slight anomaly in the horizontal dimension at the centre and the upper right corner of the screen. The monitor did very well in the signal on/off switching program with no visible pumping of the raster. While changing video modes, there was no audible clicking from the monitor.

With good performance and attractive pricing, this monitor is well suited to applications that require clarity and refresh rates at 1024x768.

VERDICT A+

+ Stable and sharp display
- Clicks while switching modes

Resolution: 1280 x 1024
Horizontal freq: 70 KHz
Vertical freq: 150 Hz
Dot Pitch: 0.28 mm
CRT type: Shadow mask
Price: Rs 11,500
Contact: Compugram Infoworld
Phone: 022-6286283 Fax: 022-6206028

## Hansol Mazellan 501P

# The prize performer

This 15-inch display from Hansol excelled in all the tests. The screen and geometry functions are controlled via the On Screen Display. Navigation is effected through three buttons which allow the user to change parameters such as colour temperature, parallelogram, raster rotation and moiré correction apart from the other usual controls. The brightness and contrast are provided as separate knobs. This allows quick access to those features, without having to use the OSD. The users manual is just a huge sheet of paper that folds out to outline the various features of the display system.

The Mazellan 501P showed the horizontal and vertical details clearly in the convergence test, along with the correct display of both the dimensions in the screen geometry test program. There was a very slight pumping of the raster in the signal on/off test. Also, there was an audible clicking sound while switching from the complete high to zero signal.

With stable performance and a solid display, the Hansol Mazellan 501P is clearly aimed at discerning professionals who need accuracy and clarity in their display systems.

VERDICT A

+ Good convergence
- Curvature of phosphor coat visible

Resolution: 1024 x 768
Horizontal freq: 48 KHz
Vertical freq: 90 Hz
Dot Pitch: 0.28 mm
CRT type: Shadow Mask
Price: Rs 7,350+taxes
Contact: Aditya Promoters
Phone: 022-2692583 Fax: 022-2692583

## LG Studioworks 440Si

# Good performer, low-priced solution

The cheapest of the LG monitors, this 14-inch was a satisfactory performer. The edge of the phosphor was visible from the front of the monitor and the raster did not fit perfectly to the extremities of the display. It features a maximum resolution of 1024x768, with a maximum vertical refresh rate of 90 Hz. Apart from parallelogram and raster rotation, all the other screen and image controls are available. This monitor does not allow you to change the colour temperature of the screen and change horizontal and vertical convergence.

In the convergence test, the display was sharp and the horizontal and vertical details were clearly visible in all the extremities of the screen. However, in the screen geometry test, the centre of the screen displayed a slight imbalance in the horizontal and vertical dimensions. In the signal on/off switching test, the raster was clear and stable. There was no noticeable flicker and pumping of the edges of the display.

This monitor is a good choice for a not-too-demanding home user. However, now with 15-inch monitors being so affordable, the days of this monitor are numbered.

VERDICT A

+ Sharp raster at 1024x768
- No parallelogram and raster rotation

Resolution: 1024 x 768
Horizontal freq: 54 KHz
Vertical freq: 90 Hz
Dot Pitch: 0.28 mm
CRT type: Shadow mask
Price: Rs 9,250+taxes
Contact: Aditya Promoters
Phone: 022-2692583Fax: 022-2692583

## LG Studioworks 520Si

# Ideal choice for SOHO

One of the finest monitors in its range, this 15-inch monitor performed well in the tests. The image and screen controls allow the raster to fit perfectly to the screen extremities. Apart from the brightness and the contrast controls, all the other controls are through the push buttons on the front surface. Screen geometry controls, like vertical and horizontal sizing and phase, pincushioning, trapezoidal corrections are possible. However, there is no facility for parallelogram and raster rotation.

The monitors fared very well in both the convergence and the screen geometry tests. The horizontal and vertical patterns were clearly discernable and the horizontal and vertical dimensions were well balanced. There was a very slight pumping of the raster in the signal on/off test but this was hardly noticeable and not very severe. The LG Studioworks is capable of displaying a resolution of 1024x768 and a maximum vertical frequency of 90 Hz.

This monitor is best-suited for general-purpose use, where high resolutions and refresh rates are not a primary concern.

VERDICT B-

+ FM radio receiver
- Average image quality

Resolution: 1024 x 768
Horizontal freq: 56 KHz
Vertical freq: 120 Hz
Dot Pitch: 0.28 mm
CRT type: Shadow Mask
Price: Rs 8,000
Contact: Microtek International
Phone: 022-8392971 Fax: 022-8210988

## Microtek 1465MF

# The FM connection

This monitor stood apart from the others—it has an integrated FM radio receiver. The receiver is part of the base of the monitor and features a volume control knob with headphone and line-in connections. A wire that attaches to a contact on the monitor for picking up FM transmissions is supplied with the monitor. However, excessive static was perceived in the FM reception and we were unable to receive clear transmission.

The picture quality is average and is not suited to professional applications. The rounded corners of the phosphor coating are visible and the raster does not perfectly fit all the extremities of the screen. Also, in the convergence test, the corners were blurred and the horizontal lines were difficult to differentiate. In the screen geometry test, the vertical dimension was not balanced in the extremities and the raster displayed slight pumping in the signal on/off switching test.

Picture quality is average and is not high on clarity and detail. Even though the reception of the integrated FM radio is not the best, it can be used in a home system.

VERDICT A

+ Stable raster
- No visual appeal

Resolution:1280x1024
Horizontal freq: 64 KHz
Vertical freq: 100 Hz
Dot Pitch: 0.28 mm
CRT type: Shadow Mask
Price: Rs 9,500
Contact: Compugram Infoworld
Phone: 022-6286283 Fax: 022-6206028

## NEC Multisync V500

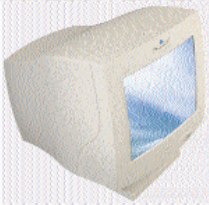
# Good, but a little outdated

Though the NEC Multisync V500 does not look as good as the others, it performed ably in the tests. The OSD controls allow good raster adjustment. Essential features like parallelogram, pincushioning, colour temperature, and horizontal and vertical size and phase control and image controls can be accessed through the OSD. This monitor can support a maximum vertical refresh rate of 100 Hz and a maximum resolution of 1280x1024.

In the convergence test, the horizontal and vertical patterns were very sharp and no blurring was visible in any corner. The screen geometry test was displayed accurately and without distortion in any of the areas tested in the raster. In the signal on/off switching test, there was no pumping of the raster at all and the display was very stable and strong. While switching from one video mode to another, there was a very slight clicking from the relay of the monitor.

Though, many new and more advanced models are available in the NEC range, this V500 is an able performer, though it is slightly outdated.

VERDICT A



+ Intuitive OSD control
- Slight blurring in corners
Resolution: 1280 x 1024
Horizontal freq: 70 KHz
Vertical freq: 160 Hz
Dot Pitch: 0.26 mm
CRT type: Shadow Mask
Price: Rs 11,990+taxes
Contact: Neoteric Informatique
Phone: 022-4162700 Fax:022-4163679

## Philips 105MB

# Convenient and feature-packed

With integrated speakers and a very intuitive OSD control (in the form of a rotary knob), this monitor is very well suited for multimedia applications. The geometric and image controls are effected through an OSD that is activated by rotating a knob on the front of the monitor. This knob also allows the user to scroll through the screen functions. When first connected, the screen displayed a very strange shade of pink. However, after adjusting the screen controls, especially the colour temperature, the display was satisfactory. The power switch is unconventional and is located on top of the monitor. Line-in, line-out and microphone-in ports are provided for interfacing external audio equipment.

The display was slightly blurred in the corners for the convergence test and slight pumping was noticed in the signal on/off switching test. It excelled in the screen geometry test, where it showed a uniformity in the raster at all extremities. Image quality was sharp at 1024x768 and 72Hz.

The integrated speakers are sufficiently loud for a single user but will not wake up the neighbours.

VERDICT B-

+ Good overall performance
- No speakers supplied
Resolution: 1024 x 768
Horizontal freq: 50 KHz
Vertical freq: 100 Hz
Dot Pitch: 0.26 mm
CRT type: Shadow mask
Price: Rs 7,000
Contact: Proview Electronics
Phone: 022-8224207 Fax: 022-8224207

## Proview PV1455

# A sound multimedia monitor

The built-in 15V DC connector, which powers the external stereo speakers that can be attached to the sides, enables this monitor to be used as a multimedia monitor. However, the catch is that the speakers have to be purchased separately. In addition to an integrated microphone, there is a microphone-in socket for connecting external microphones. An audio cable has been supplied for connecting the monitor to a soundcard.

Image controls include centering, horizontal and vertical sizing and phase. This monitor also features a self-test mode to ensure that the various image and geometry adjustments are working correctly. Except for the vertical dimension in the centre of the screen, the monitor showed no discrepancies anywhere on the raster in the screen geometry test. The horizontal and the vertical patterns in the convergence test were clearly visible and there was no visible blurring in the raster.

With reasonably good image quality and performance, this monitor is a good choice for normal use in home computer systems and regular office desktops.

VERDICT B

+ Clip-on 15W speakers
- Integrated power cord
Resolution: 1280 x 1024
Horizontal freq: 64 KHz
Vertical freq: 100 Hz
Dot Pitch: 0.28 mm
CRT type: Shadow Mask
Price: Rs 8,200
Contact: Proview Electronics
Phone: 022-8224207 Fax: 022-8224207

## Proview PV1564

# Quality that 'speaks' for itself

Unlike its sibling, the PV1564 comes with a pair of 15W PMPO stereo speakers, which clip on to the edge of the screen. It supports resolutions of up to 1280x1024 and a vertical refresh rate of up to 100 Hz. A stereo audio cable connects the monitor to a soundcard.

Besides parallelogram correction, the monitor incorporates most of the commonly used features like pincushioning, trapezoidal correction and raster sizing and phase. There is a provision for programming the monitor to retain individual settings and user modes. One downside is the power cord, which is integrated into the monitor. This could be an inconvenience if, for any reason the power cord were to fail and needs to be replaced.

The monitor did fairly well in the tests and displayed virtually no blurring in the convergence tests. The screen geometry was also found to be balanced in both the horizontal and the vertical dimensions. In the signal on/off switching test however, there was a very noticeable swinging of the raster at the peripherals.

A useful monitor for home computers and office systems.

VERDICT B

+ Very attractively priced
- Pumping of raster

Resolution: 1024x768
Horizontal freq: 54 KHz
Vertical freq: 120 Hz
Dot Pitch: 0.28 mm
CRT type: Shadow Mask
Price: Rs 6,500
Contact: Salora International
Phone: 022-4936732 Fax: 022-4950415

## Salora DT 1454D

# Small, pretty monitor that fits tight budgets

This very attractively priced monitor is very classy—it has a smooth and curvaceous casing. Horizontal and vertical size and phase, pincushioning, raster size and the other usual functions are controlled through buttons on the front. With support for a refresh rate of up to 100 Hz and a horizontal frequency of 54 KHz, the monitor is capable of displaying a maximum resolution of 1024x768. Physically, this was also one of the smallest monitors in the roundup.

The performance of the monitor was quite good, in the display all the details of the test patterns showed correctly. The screen geometry was accurate except for the centre of the screen, where the horizontal aspect of the display was incorrect.

In the signal on/off test, there was a slight pumping in the raster during the change of the signal levels with audible clicking.

In the home and small office segment, this is a very economical choice that will suit applications which are not demanding on resolution and high refresh rates. It is also a very sensible choice for applications in which space is a restriction.

VERDICT B

+ Good overall performance
- Rather expensive

Resolution: 1024x768
Horizontal freq: 69 KHz
Vertical freq: 120 Hz
Dot Pitch: 0.28 mm
CRT type: Shadow Mask
Price: Rs 8,500
Contact: Salora International
Phone: 022-4936732 Fax: 022-4950415

## Salora DT 1569D

# A little over-priced for average features

This 15-inch monitor was a satisfactory performer. Apart from parallelogram pin balancing and raster rotation, all other image and screen control functions like horizontal and vertical size and phase and trapezoidal corrections are available. These screen control parameters are accessed through the OSD that is controlled via three buttons. A single dedicated button on the front panel is assigned for degaussing. This function could have been integrated along with the rest of the controls.

The convergence test revealed no noticeable flaws in the horizontal and vertical patterns and the display was sharp in all the corners of the screen. In the screen geometry test, a slight anomaly was noticed in the horizontal dimension along the left edge of the display, where there was minor distortion. The monitor did well in the signal on/off switching program where it displayed only a very slight pumping of the raster.

This monitor could be utilised for regular home and office use, but does not impress as other monitors in the same price range offer better performance.

# Comparison Test


+ Stable and sharp image
- Too many control buttons

Resolution: 1024x768
Horizontal freq: 55 KHz
Vertical freq: 120 Hz
Dot Pitch: 0.28 mm
CRT type: Shadow Mask
Price: Rs 8,000
Contact: Savex Computers
Phone: 022-2029864 Fax: 022-2041656

## Samsung Samtron 40Bn

## Worthy features, but too many buttons

One of the most popular monitor brands, the Samtron Samsung 40Bn is very reliable and delivered a good performance. All the display controls like horizontal and vertical phase, sizing, pincushioning, brightness and contrast are effected through the buttons on the front of the monitor. The more advanced functions like parallelogram, vertical linearity and degaussing are reached through combinations of the buttons which are clearly explained in the user's manual, but would have been more useful if the functions were indicated above the buttons itself.

The monitor displayed all the details of the convergence pattern correctly in all the corners of the screen. However, in the screen geometry test, a slight distortion was noticed in the centre and the upper right corner of the screen. This was a minor error and did not result in any visible difference during normal use. In the signal on/off switching test, there was a very slight pumping of the raster along the side edges.

A good monitor for home and office, Samtron Samsung 40Bn combines a clear display, good looks and price.


+ Good overall performance
- Difficult access to advanced features

Resolution: 1024x768
Horizontal freq: 61 KHz
Vertical freq: 120 KHz
Dot Pitch: 0.28mm
CRT type: Shadow Mask
Price: Rs 10,000
Contact: Savex Computers
Phone: 022-2029864 Fax: 022-2041656

## Samsung 50E

## Ideal in its range, though slightly expensive

The Samsung 50E displayed very good performance. Apart from raster rotation, all the other usual image and screen control functions like horizontal and vertical size and phase, pincushioning and trapezoidal corrections are available. These screen controls are invoked through the array of buttons on the front panel of the monitor and are used to individually control the more commonly used image parameters. For accessing the more advanced functions, the keys have to be pressed in combinations. This is explained in the instruction manual but it would have been much easier to use if these controls were indicated on the front of the monitor near the buttons.

The monitor showed no blurring in the horizontal or vertical patterns at all. In the screen geometry test, there was no visible disturbance in the centre or the corners of the raster. The monitor did very well in the signal on/off switching program where the high and low intensity screens were displayed without any noticeable pumping of the raster.

The Samsung 50E provides good image quality at a slightly high price.


+ Low price
- Curvature of screen apparent

Resolution: 1024x768
Horizontal freq: 54 KHz
Vertical freq: 120 Hz
Dot Pitch: 0.28 mm
CRT type: Shadow Mask
Price: Rs 7,100
Contact: Samtel India
Phone: 022-6437432 Fax: 022-6422965

## Samtel SV 350

## Average performer, good price

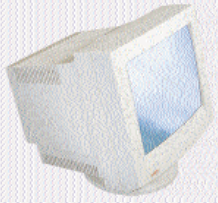
This low-priced monitor is targeted at the budget-conscious home user, and gave an average performance. The curvature of the picture tube is very apparent and the edges of the phosphor coating can be seen from the front of the monitor.

Apart from parallelogram correction, all screen control corrections are possible. In the convergence and screen geometry test, the monitor displayed the horizontal and vertical pattern correctly throughout the display.

While switching from one video mode to another, the clicking of the monitor relay was audible. In the signal on/off switching test, the raster displayed a very slight pumping but was not very pronounced when compared to most other 14-inch monitors. The documentation is fairly comprehensive and all major features of the display are explained in detail.

However, this monitor is not suited for very intensive graphical and detailed work and is a viable option only if a 15-inch monitor is not considered.With the advent of cheaper 15-inch monitors, this one will find applications in limited areas.

VERDICT B



+ Sharp display
- Loud clicking while changing modes

Resolution: 1024x768
Horizontal freq: 54 KHz
Vertical freq: 120 Hz
Dot Pitch: 0.28 mm
CRT type: Shadow Mask
Price: Rs 7,900
Contact: Samtel India
Phone: 022-6437432 Fax: 022-6422965

## Samtel SV 400

# For a sharp, stable display

This 15-inch display from Samtel performed well in all the tests. The screen and geometry functions are controlled via the front control buttons. Parameters like pincushioning, raster rotation and horizontal and vertical phase correction can also be controlled.

The display was sharp and was clear from edge to edge. The display was also very stable at the frequency and the resolution (800x600) tested.

The Samtel SV 400 performed well in the convergence test, showing the horizontal and vertical details clearly in all areas of the raster in which it was tested. In the screen geometry test program, there were anomalies in the horizontal dimension of the display in all the corners causing a very slight distortion. There was a very slight pumping of the raster in the signal on/off test. Also, while switching from complete high to zero signal, the relay in the monitor produced a very audible clicking sound.

With stable performance and reasonably good picture and raster quality, the Samtel SV 400 is a system that is suited to home and general office use.

VERDICT B-

+ Very inexpensive
- Blurry at 800x600

Resolution: 1024x768
Horizontal freq: 54 KHz
Vertical freq: 100 Hz
Dot Pitch: 0.28 mm
CRT type: Shadow Mask
Price: Rs 6,800
Contact: NDS Computers
Phone: 022-6365878 Fax: 022-6360148

## Smile CB-6415DS

# A cheap, strained Smile

One of the cheapest monitors in this roundup, the Smile CB 6415DS offers very mediocre performance. Except for parallelogram correction, this 14-inch monitor featured all the other common image and raster controls like horizontal and vertical size and phase control, pincushion correction and trapezoidal correction. The display quality was not exceptional and there was noticeable blurring at the tested resolution of 800x600 and 72 Hz refresh rate.

The monitor performed acceptably well in the convergence test, where the horizontal and vertical stripe pattern was visible in all the corners of the screen except for the upper left corner where there was slight blurring. In the screen geometry tests, the monitor showed distortion in the vertical dimension along the right edge of the screen. In the signal on/off switching test, the raster was very unstable and there was a noticeable amount of pumping while switching from high to low intensity levels.

This monitor is a very cheap and mediocre display and should be considered only if price is a very severe constraint.

# Comparison Test

VERDICT A

## Smile CB 6515DS Chromaclear

### Puts a smile on your face

The Chromaclear 6515DS is the best among the Smile range of monitors. It displayed excellent picture clarity, primarily due to NEC's Chromaclear tube that is used by this monitor. This piture tube consists of a slotted shadow mask that eliminates the need for having dampening wires (as used by aperture grille CRTs). This results in a sharper image without any shadow of dampening wires.

Except for the convergence test, where the monitor did not perform very well, the tests were satisfactory. In the screen geometry test, the horizontal and vertical aspects of the display were correct and without distortion. For the signal on/off switching test, the pumping of the raster was very slight and barely noticeable.

The OSD allows control over the image and geometry of the raster except for parallelogram correction. This monitor displayed very stable and sharp images, even at high resolutions of 1024x768.

For the price, this monitor is a very good performer and will appeal to the budget user who needs a sharp display.

+ Stable at high refresh rates
- Slight blurring at the left corner

Resolution: 1024x768
Horizontal freq: 54 KHz
Vertical freq: 100 Hz
Dot Pitch: 0.28 mm
CRT type: NEC Chromaclear
Price: Rs 7,300
Contact: NDS Computers
Phone: 022-6365878 Fax: 022-6360148

VERDICT B

## Smile CB 6536SL

### Low cost, mediocre performance

Another 'cheap' 14-inch monitor from Smile, this one also did not show satisfactory performance. In the convergence and the screen geometry tests, the monitor showed very good results. There was a very slight blurring in the horizontal dimension of the upper left corner. The area in which it did perform badly, however, was in the signal on/off switching program. Here, the raster was pumping excessively (by 2.5 mm around the periphery) producing a very unstable display.

This monitor comes with very skimpy documentation. There were no bundled drivers. The monitor needs to be configured to a 1024x768 resolution. There are the usual image and geometry corrections like pincushioning, trapezoidal, horizontal and vertical phase and size. However, there was no facility for parallelogram correction.

This monitor showed very mediocre performance in the tests and with all the newer and more advanced 15-inch monitors available, this monitor could probably find applications where price is a constraint and performance is not.

+ Very affordable
- Average performance

Resolution: 1024 x 768
Horizontal freq: 69 KHz
Vertical freq: 120 Hz
Dot Pitch: 0.28 mm
CRT type: Shadow Mask
Price: Rs 8,600
Contact: NDS Computers
Phone: 022-6365878 Fax: 022-6360148

VERDICT A+

## Sony Multiscan 100ES

### The Overpriced, good display

The smallest in the range of Multiscan monitors from Sony, the 100ES turned out to be a very able performer. However, in the unit that was received for test, the image had a slight trapezoidal error that could not be corrected using the buttons. Also, there was a very mild colour patch in the upper right corner, which could not be removed by the built-in degaussing function. Apart from trapezoidal and parallelogram correction, the usual image and screen control functions like horizontal and vertical size and phase, pincushioning and trapezoidal corrections were available.

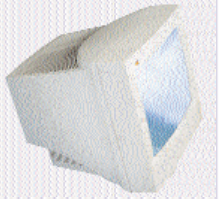
The monitor displayed all details of the horizontal and vertical patterns correctly and without any blurring in the corners. For the convergence test, a slight error was noticed in the horizontal dimension along the upper edge. There was a slight pumping of the raster during the signal on/off switching program.

This monitor featured sharp and clear images at resolutions 1024x768 and 82 Hz. However, the excessively high price could be a deterrent to buying this otherwise worthy monitor.

+ Good convergence
- High price, visible dampening lines

Resolution: 1024x768
Horizontal freq: 70 KHz
Vertical freq: 120 Hz
Dot Pitch: 0.25mm
CRT type: Aperture Grille
Price: Rs 17,900+taxes
Contact: Sony India
Phone: 022-8313333 Fax: 022-8312935

VERDICT A



+ Attractively priced
- No degaussing
Resolution: 1024x768
Horizontal freq: 54 KHz
Vertical freq: 100 Hz
Dot Pitch: 0.28mm
CRT type: Shadow Mask
Price: Rs 7,840+taxes
Contact: Vintron Industries
Phone: 022-4030540 Fax: 022-4030641

## Viewsonic E40

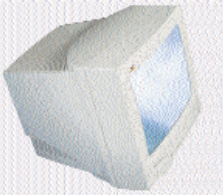
# Able performer for the home user

This monitor exhibited a very able performance and did very well in the tests. The image and raster control is through buttons on the front of the monitor that correspondingly light up LEDs to indicate the function used. Apart from parallelogram correction and raster rotation, all usual image and screen control functions like horizontal and vertical size and phase, pincushioning and trapezoidal corrections are available.

For the convergence test, there was no noticeable blurring in any of the areas of the screen and the horizontal and vertical patterns were distinctly visible. In the screen geometry test, there was no distortion in the horizontal and the vertical dimensions of the display. The monitor showed a very slight pumping in the raster during the signal on/off switching test. While changing from one video mode to another, there was a very slight clicking.

For the price and the performance, the Viewsonic E40 is a very able monitor and is a very good choice for home and office systems that run normal applications that are not very graphically intensive.

VERDICT B



+ Good overall performance
- No built-in degaussing
Resolution: 1024x768
Horizontal freq: 54 KHz
Vertical freq: 100 Hz
Dot Pitch: 0.28mm
CRT type: Shadow Mask
Price: Rs 9,945+taxes
Contact: Vintron Industries
Phone: 022-4030540 Fax: 022-4030641

## Viewsonic E651

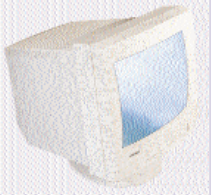
# Good 'views' for a sound price

In keeping with the performance exhibited by the smaller Viewsonic E40, the E651 turned out to be a good performer. Besides the parallelogram and raster rotation functions, all usual image and screen controls like horizontal and vertical size and phase, pincushioning and trapezoidal corrections are available. These parameters are controlled through buttons on the front of the monitor that light up the corresponding LEDs to indicate the function being used.

The monitor showed a very good display in the convergence test, in which all details of the horizontal and vertical patterns were sharp. In the screen geometry test, there was no distortion in the horizontal and vertical dimensions and the aspect ratio of the raster was correct in all the areas of the screen. A very slight pumping of the raster was noticed in the signal on/off switching test of about 1-mm. with audible clicking from the relay in the monitor while changing video modes.

The Viewsonic E651 is a very good 15-inch monitor that does very well in image quality and raster performance and is well suited to home and office use.

VERDICT B



+ Reasonable price
- Slight vertical distortion

Resolution: 1024x768
Horizontal freq: 54 KHz
Vertical freq: 120 Hz
Dot Pitch: 0.28 mm
CRT type: Shadow Mask
Price: Rs 7,800+taxes
Contact: Vintron Industries
Phone: 022-4030540 Fax: 022-4030641

## Vintron VIN 6415DS

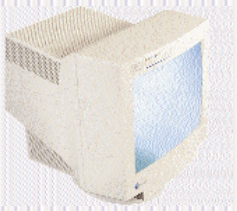
# A mediocre performer

The only monitor received from Vintron, the VIN 6415DS was a very average performer. Besides parallelogram and raster rotation, this monitor featured all the usual image and geometry controls like horizontal/vertical size and phase, pincushioning etc which are accessed through the buttons on the front of the system.

In the convergence test, the horizontal and vertical patterns were clearly distinguishable and there was no blurring in any of the regions of the raster. The monitor did however, show distortion in the screen geometry test where there were anomalies in the vertical dimension in the four corners and at the centre. In the signal on/off switching test, there was a loud clicking while changing from the signal states from high to low. This also caused a slight pumping of the display, causing it to swing by 1mm at the periphery.

Since it does not support higher resolutions and frequencies, this monitor can be used in home and regular office applications that do not require a very high accuracy and sharpness and also where price is a constraint.

VERDICT A+



+ Excellent convergence and sharpness
- Rather expensive

Resolution: 1280x1024
Horizontal freq: 82 KHz
Vertical freq: 120 Hz
Dot Pitch: 0.28 mm
CRT type: Shadow Mask
Price: Rs 28,300+Taxes
Contact: Minicomp
Phone: 022-8367273 Fax: 022-8362424

## Eizo FlexScan F55S

# Impeccable display, though at a price

This 17-inch monitor from Eizo was outstanding in performance and features. Though slightly more expensive compared with the others in its range, the results of the FlexScan F55S were commendable.

The sharpness of the display at 1024x768 was excellent and the image was solid. The CRT features a special anti-reflective coating that imparts a bluish tint to the screen. A special cleaning cloth has also been provided for removing lint and dirt from this screen. The monitor is detected at startup and a floppy disk carries the drivers for the monitor. The OSD is controlled through a single button that controls the various features of the display such as raster sizing, horizontal and vertical phase, pincushioning, raster rotation, colour temperature etc.

The horizontal and the vertical patterns in the convergence test were clearly distinguishable. A good balance was observed in the horizontal and vertical dimensions in the screen geometry test. While switching from a high intensity white screen to a completely black screen, there was no visible pumping of the raster.

VERDICT A

+ Excellent clarity, solid display

Resolution: 1280x1024
Horizontal freq: 70 KHz
Vertical freq: 150 Hz
Dot Pitch: 0.28 mm
CRT type: Shadow Mask
Price: Rs 18,250
Contact: Compugram Infoworld
Phone: 022-6286283 Fax: 022-6206028

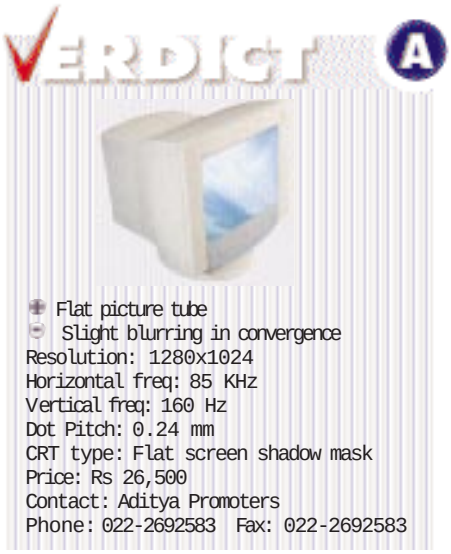
## Hansol Mazellan 701A

# Perfect price-worthiness and performance

Like its small-sized counterpart, the Hansol Mazellan 701A was an excellent performer. The display is very stable and clear, and for the price gives a very good value.

The raster can be very finely adjusted and wraps accurately to the periphery of the screen with the OSD control. All parameters of the display like horizontal and vertical size and phase, moiré correction, parallelogram and raster rotation can be controlled. The display in the convergence and the screen geometry tests was extremely good and the test patterns showed very well. The horizontal and the vertical patterns in the convergence test were sharp in all the corners of the screen with no blurring. Aspect ratio in the screen geometry test was well balanced and dimensions of the patterns were found correct throughout the areas of the screen in which it was tested.

With outstanding performance and clarity in the display, the Hansol Mazellan 701A is a very good choice for use in graphical applications and is also very competitively priced compared to the others in its range.




+ Flat picture tube
- Slight blurring in convergence
Resolution: 1280x1024
Horizontal freq: 85 KHz
Vertical freq: 160 Hz
Dot Pitch: 0.24 mm
CRT type: Flat screen shadow mask
Price: Rs 26,500
Contact: Aditya Promoters
Phone: 022-2692583 Fax: 022-2692583

## LG Flatron 78FT

# Floors you with brilliant performance

One of the most stunning monitors in this lineup, the LG Flatron has a truly flat picture tube. There is no visible curvature on the picture screen and it also features a special anti-glare and anti-static coating.

A 5-point BNC connection for interfacing such cables along with the usual 15-pin D-sub connector has also been provided. There is also built-in degaussing. The OSD controls every image setting and allows geometry correction like parallelogram, raster rotation and moiré correction. These controls are effected through a very intuitive four-button control. Customisation is provided and the users get the ability to save up to 32 user modes. In the convergence test, a slight blurring was noticeable in the four corners in the horizontal pattern. There were virtually no anomalies in the screen geometry test with all the corners and the centre showing perfect balance in the horizontal and vertical dimensions.

This monitor is highly recommended for applications like CAD, multimedia and prepress workstations where precision and accurate colour is of prime importance.


+ Good sound, stable display
- No parallelogram correction
Resolution: 1280x1024
Horizontal freq: 70 KHz
Vertical freq: 160 Hz
Dot Pitch: 0.28 mm
CRT type: Shadow mask
Price: 17,900
Contact: Aditya Promoters
Phone: 022-2692583 Fax: 022-2692583

## LG Studioworks 77M

# Fits into tight corners

Part of its multimedia series, the LG Studioworks 77M features integrated speakers that provide clear and well-defined sound with good bass response. There are other audio connections for mic-out and audio-in connections. The monitor provides very good raster adjustment through the OSD controls and can support a maximum vertical refresh rate of 160 Hz and a maximum resolution of 1280x1024. Apart from parallelogram correction, all the commonly used image and screen geometry controls are available.

In the convergence test, the display of the horizontal and vertical patterns was very sharp and there was no visible blurring in any of the corners. The screen geometry test was displayed accurately with no visible distortion in any corner of the raster. In the signal on/off switching test, there was no pumping of the raster at all and the display was very stable and strong.

For space-constrained environments, this 17-inch monitor with integrated speakers is a very good choice. With very good display quality and features and sound, the monitor will find favour with hardcore gamers.

VERDICT B

+ Solid display at high frequencies
- Slight pumping of raster

Resolution: 1280x1024
Horizontal freq: 70 KHz
Vertical freq: 130 Hz
Dot Pitch: 0.28 mm
CRT type: Shadow Mask
Price: Rs 16,300+taxes
Contact: Neoteric Informatique
Phone: 022-4162700 Fax: 022-4163679

## Philips 107E

# Flicker-free display, allows high refresh rates

The Philips 107E is a very slick and able performer and did fairly well in the performance tests. The screen controls are effected through the OSD and are controlled through a very simple and intuitive interface consisting of four buttons. These allow very accurate control over the raster and enable the image to perfectly align to the periphery of the screen.

At the tested resolution of 1024x768, the display was very stable and sharp. In the convergence and screen control tests, the display of the horizontal and vertical patterns was accurate without blurring in any part of the screen. In the screen geometry test, a slight difference was observed in the horizontal aspect of the screen in the upper right and the lower left corners of the screen. In the signal on/off switching test, there was a slight pumping of the raster along the left edge of the display area.

The Philips 107E turned out to be a very able performer and is an excellent choice for graphical applications that require clarity in the display at high refresh rates. Especially attractive to the professional user is the very high video bandwidth.

VERDICT A

+ USB bay, low dot pitch
- Very average sounding speakers

Resolution: 1600x1200
Horizontal freq: 95 KHz
Vertical freq: 160 Hz
Dot Pitch: 0.22 mm
CRT type: Shadow Mask
Price: Rs 29,700
Contact: Neoteric Informatique
Phone: 022-4162700 Fax: 022-4163679

## Philips Brilliance 107MB

# A shade less than the most brilliant

With features that are very close to those of the 19-inch counterpart, the Brilliance 107MB exhibits very good display quality and features. A USB bay is present along with the integrated speakers and the audio ports.

The Kodak Colorific software and the drivers for the monitor are included on the accompanying CD. OSD control, as in the rest of the Brilliance range, is effected through the rotational knob and a button, making controlling these functions very simple. The monitor did well in the convergence program, where there was virtually no distortion in the horizontal and vertical patterns. All the lines were clearly visible at the extremities with no greying or blurring.

In the screen geometry test, the aspect ratios of the patterns were correct and there was no distortion in any corner. Also, in the signal on/off switching test, the raster was very stable and there was no visible pumping of the image.

Like the Brilliance 109, this monitor is well suited for graphical and multimedia applications where clarity and image stability are of importance.

VERDICT B

+ Good price/performance
- Excessive oscillation during switching

Resolution: 1280x1024
Horizontal freq: 75 KHz
Vertical freq: 120 Hz
Dot Pitch: 0.28 mm
CRT type: Shadow Mask
Price: Rs 15,000
Contact: Proview Electronics
Phone: 022-8224207 Fax: 022-8224207

## Proview 770M

# Good display, multimedia capabilities

The Proview 770M is a good multimedia monitor with attachable speakers. The OSD is controlled through a rotary button that seemed slightly hard to depress. However, it does allow very intuitive navigation of the various image control functions. Through the OSD, parameters like parallelogram, pincushioning, horizontal and vertical sizing and phase of the raster and the other usual functions can be controlled.

In the tests, the monitor performed reasonably well. In the convergence test, the horizontal and vertical patterns were clearly visible and the details were clear in all the corners of the screen. However, in the screen geometry test, there was a slight difference in the horizontal aspect ratio at the right corner of the screen. In the signal on/off switching test, the pumping was drastic (3mm) and was a definite negative point in the performance. Sound quality was good and acceptable for most audio applications.

This monitor is a good choice with its good integrated sound and image clarity.

VERDICT B+

+ Good overall performance

Resolution: 1280x1024
Horizontal freq: 70 KHz
Vertical freq: 160 Hz
Dot Pitch: 0.28 mm
CRT type: Shadow Mask
Price: Rs 17,500
Contact: Savex Computers
Phone: 022-2029864 Fax: 022-2041656

## Samsung Samtron 70E

# Slick monitor, good OSD controls

This monitor strikes a perfect balance between price and performance. The Samsung 70E was priced in the middle of its range and performs quite well. The OSD allows very accurate control over the raster and the image can be controlled to perfectly fit the available screen area. Parameters like parallelogram, moiré and convergence correction have been provided besides the usual image and screen control functions like horizontal and vertical size and phase, pincushioning and trapezoidal corrections.

In the tests, this monitor performed quite well. In the convergence test, there was clarity in all the areas of the screen and the horizontal and vertical patterns were clearly distinguishable. In the screen geometry test, the horizontal and the vertical aspects of the display were correct and no distortion was noticed anywhere. The raster was rock solid in the signal on/off switching program where there was no visible pumping of the display. While changing from one video mode to another, the monitor was almost noiseless.

With good sharpness, this monitor is very well suited to graphics.

VERDICT A

+ Intuitive OSD, sharp display
- High pricing

Resolution: 1600x1200
Horizontal freq: 96 KHz
Vertical freq: 160 Hz
Dot Pitch: 0.26mm
CRT type: Shadow Mask
Price: Rs 26,000
Contact: Samsung Electronics
Phone: 011-6932517 Fax: 011-6932607

## Samsung Syncmaster 700P Plus

# Trendy display with intuitive controls

Like its bigger brother, the 900P, this 17-inch monitor from Samsung is not only good to look at, it also performed very well. The OSD controls are very intuitive. The image and raster controls and all the other image and screen control functions like horizontal and vertical size and phase, pincushioning and trapezoidal corrections are available.

The performance of the monitor in all the tests was commendable. In the convergence test, there was no discernable blurring in the horizontal and vertical patterns in any of the zones. The screen geometry tests showed that there were no anomalies in the horizontal and vertical aspects and there was no visible distortion. The monitor did extremely well in the signal on/off switching program and the display was rock solid during the switching of the display from a high intensity to dark screen. While changing from one video mode to another, there was virtually no audible clicking.

This monitor is an extremely good choice for applications that require accuracy in the display with support for high resolutions, though it is priced rather high.

# Comparison Test

VERDICT B-

+ Low price
- Reddish display during mode change

Resolution: 1280x1024
Horizontal freq: 70 KHz
Vertical freq: 120 Hz
Dot Pitch: 0.26 mm
CRT type: Shadow Mask
Price: Rs 13,900
Contact: Samtel India
Phone: 022-6437432 Fax: 022-6422965

## Samtel CB6746SL

## Low-priced average performer

This low priced 17-inch monitor was an average performer. The image controls include raster rotation, parallelogram correction and the usual image and screen control functions like horizontal and vertical size and phase, pincushioning and trapezoidal correction. At first glance, the display was excessively whitish and needed to be adjusted to acquire an acceptable image. Also, while switching from one video mode to another, the monitor produced a very strange reddish display momentarily. This, however, stabilised after the video mode changed.

In the convergence test, four blurry areas were observed in the display with the horizontal and vertical patterns being very obscure in the corners. In the screen geometry test, the horizontal dimension in the centre and the upper and lower right edge was incorrect and showed variation from the normal. While changing from one video mode to another, there was a very slight audible clicking and there was visible pumping in the display.

This monitor is a viable option in areas where a cheap 17-inch monitor with average performance is required.

VERDICT B-

+ Priceworthy
- Blurred at high resolutions

Resolution: 1280x1024
Horizontal freq: 69 KHz
Vertical freq: 120 Hz
Dot Pitch: 0.26 mm
CRT type: Shadow Mask
Price: Rs 13,500
Contact: NDS Computers
Phone: 022-6365878 Fax: 022-6360148

## Smile CB6736SL

## A bigger display with no other features

This 17-inch monitor from Smile is a price-effective solution and is one of the cheapest monitors in its range. This monitor features an On Screen Display for all the image and geometry corrections. All the normal parameters can be controlled like horizontal and vertical size, phase and pincushioning. However, the parallelogram correction is missing. It features a microprocessor that senses the input signal and displays the present horizontal and vertical frequencies if they have been changed during operation.

In the tests, the monitor performed satisfactorily. In the convergence test, some blurring was visible in the upper left corner of the screen and in the screen geometry test, the horizontal dimension was found to be incorrect in the upper left corner, while the vertical dimension was incorrect in the lower right corner. There was very visible pumping of the raster (3mm) in the signal on/off test making the display extremely jerky. Also, at a resolution of 1024x768 and 72 Hz, the display was rather blurry.

Because of low price, this monitor is a viable solution for price-conscious buyers.

VERDICT B+

+ Stable and clear display
- Two horizontal shadows visible

Resolution: 1280x1024
Horizontal freq: 64 KHz
Vertical freq: 120 Hz
Dot Pitch: 0.25 mm
CRT type: Aperture Grille
Price: Rs. 20,250
Contact: S S Computers
Phone: 022-4323696 Fax: 022-4323887

## Sony CPD-17F03

## Clear, stable and sharp display

This 17-inch monitor from Sony was a very good performer. Because of the Trinitron tube, the display quality was sharp and the image, very stable. The image properties and geometry are controlled through individual controls on the front panel. It also features a single button for reverting to factory defaults. Apart from the usual controls like pincushioning, parallelogram etc, raster rotation is also possible. A flap on the front covers the image controls. Though the front flap is prone to breakage, this one was quite sturdy and did not give way under stress.

In the geometry tests a slight distortion was observed on the horizontal dimension in the centre. In the signal on/off switching test, the monitor did well, showing virtually no sign of any pumping of the raster. Also, in the convergence test, the horizontal and the vertical pattern was clear even at the extremities of the raster.

However, since it featured an Aperture Grille picture tube, the shadow of the two dampening wires that are used to hold the grille between the phosphors, were visible. This monitor is very well suited for professionals who need detail.

VERDICT A

+ Sharp at high resolutions
- Damper wires visible
Resolution: 1280x1024
Horizontal freq: 70 KHz
Vertical freq: 120 Hz
Dot Pitch: 0.25mm
CRT type: Aperture Grille
Price: Rs 29,900+taxes
Contact: Sony India
Phone: 022-8313333 Fax: 022-8312935

## Sony Multiscan 200ES

# Highly expensive, good display

This 17-inch Trinitron tube-based monitor from Sony was a very good performer. The OSD control of this monitor is very intuitive and easy to get used to. Four buttons control colour, geometry, size and centering and four more buttons control the brightness and contrast. Apart from parallelogram and trapezoidal correction, all the other image and screen control functions like horizontal and vertical size and phase, pincushioning and trapezoidal corrections are available.

In the tests, this monitor performed very well and showed no blurring in the convergence test. The horizontal and vertical patterns were distinctly displayed in all areas of the screen.

In the screen geometry test, there was a slight anomaly in the horizontal aspect at the left edge of the screen. The monitor did fairly well in the signal on/off switching program and the raster displayed very mild pumping. While changing from one video mode to another, there was an audible clicking.

For applications that require detailed graphics with good resolution and refresh, the Sony Multiscan 200ES is a good choice.

VERDICT B

+ Good price/performance
- Excessive pumping in signal change
Resolution: 1280x1024
Horizontal freq: 70 KHz
Vertical freq: 120 Hz
Dot Pitch: 0.27mm
CRT type: Shadow Mask
Price: Rs 17,725+taxes
Contact: Vintron Industries
Phone: 022-4030540
Fax: 022-4030641

## Viewsonic E771

# Middle-range monitor with average display

This 17-inch monitor from Viewsonic was a fairly good performer even though it did not have many of the features found on the more expensive monitors in its range. The image controls are effected through four buttons that were rather hard to operate. Apart from parallelogram correction, all the other usual image and screen control functions like horizontal and vertical size and phase, pincushioning and trapezoidal corrections are available. The picture tube of this monitor features an Invar mask that reduces glare and facilitates readability. The convergence of the monitor was found to be good and all the details of the horizontal and vertical patterns were clearly visible without any blurring. Also, in the screen geometry test, the aspect ratio was found to be correct and did not display any distortion. In the signal on/off switching test, there was a very noticeable pumping of the raster and the edges of the screen were oscillating by about 1.5mm during the change in the intensity of the signal.

This monitor is a reasonable choice for applications that require resolutions not more than 1280x1024.

VERDICT A+

+ Outstanding image quality
- Very high price
Resolution: 1600x1200
Horizontal freq: 95 KHz
Vertical freq: 160 Hz
Dot Pitch: 0.28mm
CRT type: Shadow Mask
Price: Rs 77,600+Taxes
Contact: Minicomp
Phone: 022-8367273 Fax: 022-8362424

## Eizo Flexscan F77

# Simply irresistible, flawless display

Aimed strictly at the very discerning professional, the Eizo Flexscan F77 offers unparalleled, rock solid display at even the highest supported resolution and refresh rate. The clear winner in this roundup of monitors, it did extremely well in all the tests.

The OSD provides very intuitive control over the various screen and image control parameters through one button. All the major functions like moiré correction, colour temperature control, built-in degaussing are provided, along with the more commonly used functions. There are both BNC and D-sub inputs for use in professional environments.

The horizontal and vertical patterns in the convergence tests were sharp and defined in all areas of the screen. Also, in the screen geometry test, the horizontal and vertical dimensions were correctly displayed with near-perfect balancing in the aspect ratio. For the signal on/off switching test, the raster was perfectly displayed with no visible pumping anywhere in the screen.

Due to its impeccable display quality and image stability, this monitor is perfectly suited to professional applications where performance is of utmost concern.

VERDICT B+

+ Stable performer
Resolution: 1600x1200
Horizontal freq: 95 KHz
Vertical freq: 160 Hz
Dot Pitch: 0.26 mm
CRT type: Shadow Mask
Price: Rs 35,100+Taxes
Contact: Neoteric Informatique
Phone: 022-4162700 Fax: 022-4163679

## Philips 109S

# A bundle of features at a bargain

For the demanding multimedia and CAD user, the Philips Brilliance 109 S is a very good choice. It is packed with features like BNC connectors and audio ports and also has an unusually high video bandwidth of 203 MHz.

The On Screen Display is controlled through a rotating knob and a single button makes navigation through the various features and image corrections very intuitive. Besides the usual geometry and image controls, corrections like parallelogram, raster rotation, moiré correction are also allowed. In order to obtain the best results from the monitor, Kodak's Colorific software is also supplied on the accompanying CD. The Brilliance 109S showed virtually no distortion in the screen geometry test.

The upper left corner did show a slight blurring in the upper left corner. The raster was very sharp and stable at 1600x1200 at 72 Hz and there was no visible pumping of the raster in the signal on/off test. This monitor is highly recommended for graphics and CAD professionals who require high performance and more screen area.

VERDICT A+

+ Good performance/software, USB
- Average sounding speakers
Resolution: 1600 x 1200
Horizontal freq: 70 KHz
Vertical freq: 160 Hz
Dot Pitch: 0.22 mm
CRT type: Shadow Mask
Price: Rs 45,000
Contact: Neoteric Informatique
Phone: 022-4162700 Fax: 022-4163679

## Philips Brilliance 109

# Has the USB advantage

The Philips Brilliance 109 is packed with a plethora of features and also has an optional USB bay that can be used to connect other USB peripherals, BNC connectors, audio ports and integrated speakers.

The audio ports consist of microphone, left and right channels on both the side and the rear of the unit. The On Screen Display is controlled through a rotating knob and a single button. Navigation through the various features and image corrections is very intuitive. Besides the usual geometry and image controls, corrections like parallelogram, raster rotation, moiré correction are also allowed. Especially striking is the user manual which is highly graphical and explains various features and capabilities of the monitors in a very lucid manner. Kodak's Colorific software is also supplied on the accompanying CD.

The Brilliance 109 did well in the tests where it showed virtually no distortion in the screen geometry test. The upper left corner did show a slight blurring in the displayed pattern.

This monitor is a good choice for the graphics power user.

VERDICT A+

+ High video bandwidth
- High price
Resolution: 1600x1200
Horizontal freq: 107 KHz
Vertical freq: 160 Hz
Dot Pitch: 0.22mm
CRT type: Shadow Mask
Price: Rs 69,300+Taxes
Contact: Neoteric Informatique
Phone: 022-4162700 Fax: 022-4163679

## Philips Brilliance 201B

# Sheer brilliance

Coming in a close second in this shootout, this 21-inch monitor exhibited very good screen quality. Like the other Brilliance monitors, the 201B includes special screen management software from Kodak called Colorific. Another similarity is the locations of the power button and the intuitive rotary control button for controlling the OSD. One speciality of this monitor is that, like the other Brilliance displays, it features a USB bay. Also, especially impressive is the high video bandwidth of 229 MHz.

This monitor performed commendably, and in the convergence test all the areas of the screen and the horizontal and vertical patterns were observed without any visible blurring. In the screen geometry test, the horizontal and vertical aspect ratios were correct and there was no distortion in the display. The monitor also did well in the signal on/off switching program where there was no visible pumping of the raster during the change in signal intensity level. There was no audible clicking while mode switching.

The Philips 201B is a good choice for intensive graphical applications like CAD.

VERDICT B-

+ Low price
- Very average performance
Resolution: 1280x1024
Horizontal freq: 98 KHz
Vertical freq: 150 Hz
Dot Pitch: 0.28 mm
CRT type: Shadow Mask
Price: Rs 31,500
Contact: Proview Electronics
Phone: 022-8224207 Fax: 022-8224207

## Proview 998M

# Low in quality at a very low price

This multimedia 19-inch display offers average performance at a low price. It was the cheapest monitor in its range, but also came last in performance. The image control functions are effected through four circularly arranged buttons that are used to invoke the OSD and navigate through the display. Here, all the major image control features like horizontal and vertical size and phase, pincushioning and trapezoidal correction can be accessed. The power saving feature of this monitor enables it to go into suspend state when there is no signal detected. In the convergence test the details were not clearly visible.

The multimedia features include a provision for attaching special external speakers with a microphone. In the screen geometry test, the horizontal and vertical dimensions of the right corner were not proportional and there was visible distortion in this area. For the signal on/off switching program, there was a very visible pumping of the raster with the left and right edges oscillating by nearly 2mm.

This monitor could serve graphical applications that are not very taxing.

VERDICT A

+ Good price/performance
Resolution: 1600x1200
Horizontal freq: 96 KHz
Vertical freq: 160 Hz
Dot Pitch: 0.26mm
CRT type: Shadow Mask
Price: Rs 33,000
Contact: Samsung Electronics
Phone: 011-6932517 Fax: 011-6932607

## Samsung Syncmaster 900P

# Best combination of looks, price and features

This 19-inch monitor was impressive both in looks and in performance. Like the smaller 700P, this monitor features a very intuitive and well-designed OSD control system in which the controls are located in a panel that retracts into the casing of the monitor. The OSD allows access to features like raster rotation, colour temperature, moiré correction and the other image and screen control functions like horizontal and vertical size and phase, pincushioning and trapezoidal correction. With its attractive pricing and performance, this monitor bagged the award for the 'Best Value'.

This monitor performed very well and in the convergence test, no blurring was visible in any part of the screen and the horizontal and vertical patterns were sharp and distinct. In the screen geometry test, the monitor did not show any noticeable distortion in the aspect ratio in any of the areas it was tested. There was also no measurable pumping of the raster during the signal on/off switching test and the raster was stable.

With good looks and powerful features, this monitor proved to be a very able performer.

VERDICT A

+ Flat tube, sharp at edges
- Excessively priced
Resolution: 1600x1200
Horizontal freq: 94 KHz
Vertical freq: 160 Hz
Dot Pitch: 0.25mm
CRT type: Aperture Grille
Price: Rs 63,900+taxes
Contact: Sony India
Phone: 022-8313333 Fax: 022-8312935

## Sony Multiscan 400PS

# Sharp display, confusing controls

With its Trinitron technology, this Aperture Grille monitor exhibited a good performance. The display was sharp and well defined with good edge to edge clarity. This monitor also featured a very flat picture tube. However, the OSD control, due to the awkward layout of buttons was a little difficult to get used to.

All the usual image control parameters and others like moiré correction, colour temperature control and raster rotation, are allowed. There are BNC as well as D-sub connectors for use with appropriate signal generators and these are useful in professional environments.

The horizontal and vertical patterns were clearly distinguishable with clarity at all corners. In the screen geometry test, there was a sight distortion in the central area of the screen along the horizontal and vertical dimensions. The monitor did very well in the signal on/off switching program with no visible raster pumping.

For applications requiring dependable and sharp displays, the Multiscan 400PS is a good choice but is a little expensive compared with the other monitors in its range.

## Philips Brilliance 151AX

# Flattering looks and awesome clarity

With the prices of TFT display panels plummeting abroad, it will not be long before these visual desirables move within the reach of the Indian consumer. Initiating this new wave of display systems, Philips has introduced this 15.1-inch LCD display system which incorporates some of the finest features available in its Brilliance range of conventional monitors.

High brightness levels as compared with conventional CRT-based display systems are the most striking observation of this display system. The Brilliance 151AX is compatible with all standard video cards with its 15-pin D-sub connector. It features a 160-degree front viewing angle and resolutions up to 1024x768 at a vertical refresh rate of 75 Hz. The 15.1-inch viewable screen size puts it in the size range of 17-inch CRT monitors. This Active Matrix TFT monitor also includes multimedia capabilities with the two 1+1 Watt front firing speakers that are built into the base of the unit along with a microphone.

The 151AX also features an intuitive OSD control system, typical of the Brilliance series, comprising of the rotary knob for navigation through the various screen control parameters. A USB bay that allows the user to plug in a USB module enables the user to connect up to four USB devices to the display is also present. However the module is not included in the package and has to be purchased separately.

A special screen is available for additional protection to the LCD display, but this too has to be separately purchased. The screen can tilt up to 32 degrees upward and 2 degrees downwards.

The Brilliance 151AX is compatible with all the standard video display modes like VGA, VESA and Macintosh. It can be used with operating systems like Windows 95/98 and includes drivers for these operating systems. Standard accessories include an audio and microphone cable, video interface cable, power cable and headphone socket. A Kensington lock has also been provided, for applications that expose the LCD to theft-prone locations. Philips provides a 2-year warranty but with the Rs 75,000 price tag, it is still way out of reach of the common user.

This TFT display system is indicative of the trend of monitors and if international standards are anything to go by, it should not be long before you find this on your desktop.