Monitoring Excellence

ViewSonic, Sony, and Radius on Display

By Andrew Rodney

When the time comes to budget for imaging workstation components, the first consideration is usually the speed of the CPU, followed by the amount of RAM and hard disk space. The display is often low on the list, perhaps just a notch above the keyboard. However, when you consider the importance of display quality, you may want to rethink its priority. Many critical decisions about how an image is illuminated and captured depend on the quality and accuracy of the computer monitor. The same can be said for imaging workstations used for scanning and color correction. Given the choice between predictable color output or speed to process the job, which is more important to you?

There are dozens of displays on the market, available in sizes up to 24 inches (larger if you have the budget). To narrow the playing field for this article, I decided to look at 17-inch displays, the minimum size necessary for imaging. Most of my imaging workstations are configured as dual monitor systems with a 17-inch monitor for retouching and a 15-inch display for viewing Photoshop palettes. Two workstations are configured with 21- and 15-inch displays. In general, 17-inch displays are sharper than their 21-inch cousins, need less video RAM to display millions of colors, redraw video faster, and cost significantly less. I looked at three 17-inch displays from ViewSonic, Sony, and Radius.

What to Look For

Picking a display can be difficult if you consider only the manufacturer specs. Once the size of the display has been decided, what most users consider next is dot pitch. Display manufacturers would have you believe that this is the one spec that matters most. Dot pitch is the measure of distance between the centers of two adjoining dots of the same color. In theory, if the dot pitch figures are smaller, the distance between the two centers is less, and the display appears sharper. Manufacturers measure dot pitch in various ways, so take this spec with a grain of salt.

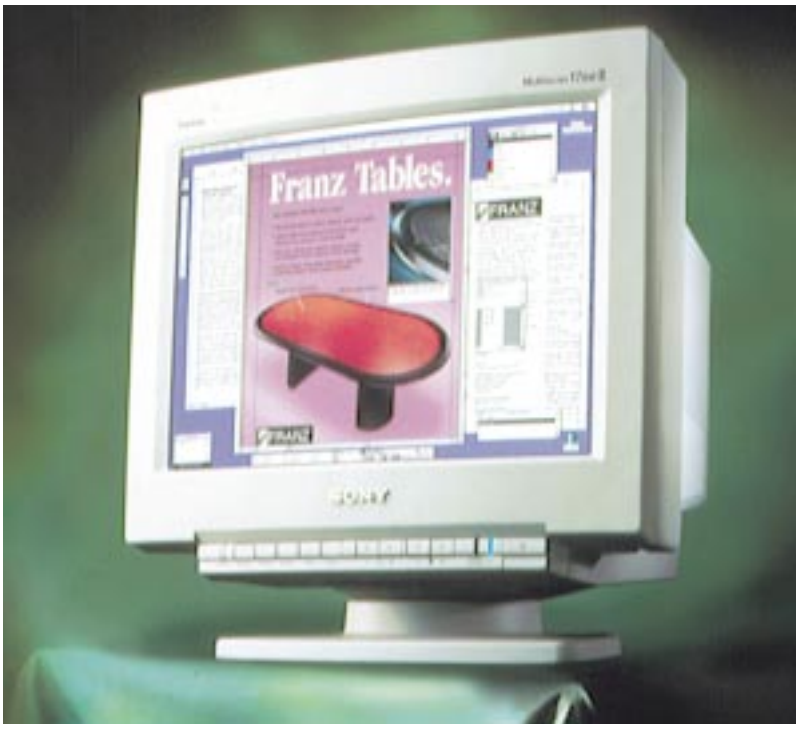
Thanks to new technologies, some displays don't even have dot pitch, although specs are still given. For example, aperture grille displays using Trinitron and Diamondtron technology have very thin vertical stripes instead of dots (also known as stripe pitch). Be aware that strip pitche and dot pitche are not comparable specifications. An aperture grille display may have a larger strip pitch figure and still be sharper than a display with a lower dot pitch specification. In fact, all three displays reviewed here use aperture grille technology. But for those who insist on dot pitch specs, I've supplied them for each unit.

The best way to determine the quality of a display is to take a good hard look at it. This can tell you far more than anything else. Of course, there is a great deal of

ViewSonic PT775

subjective evaluation involved. Look at the layout of the controls. Are there enough to set the display to your satisfaction? Be on the lookout for more than just brightness and contrast controls. Can you set the display's geometry? If so, to what degree? Does the display have unique calibration capabilities?

In order to evaluate the displays for this article, we hooked each one up to the same system and set them all with a hardware calibrator (either the supplied one or a third-party device). Several members of our staff looked at the same image on the displays. We then hooked up two of the displays side by side on the same machine (a dual monitor system) running the same resolution, and placed the same image on each. Some of our staff preferred the look of one display over another, but all the displays are good choices. Price and additional capabilities were the deciding factors in determining our choice of display.



Sony 17SE II

ViewSonic PT775

At first, I was skeptical that ViewSonic would have a display as impressive as the PT775. I was familiar with the name ViewSonic, but I had the impression their displays were aimed toward consumers, rather than professional imagers. Nothing could be further from the truth, at least with the PT775. This is a gorgeous display. With what ViewSonic calls a SonicTron tube, the advertised dot pitch is 0.25mm. The unit has a viewable area of 16 inches, and can be driven to 1,600x1,280-pixel resolution. What I found surprising was just how sharp and bright the tube is. I also found the design and layout of the PT775 to be ergonomical, as well as pleasing to the eye. Tech support was excellent in answering questions. Our panel of judges gave this display very high marks. Estimated street price is $749 (MSRP is $849).

I was a bit less impressed by ViewSonic's hardware colorimeter. The software seems dated. It's a far cry from Optical/Optimate product from The Color Partnership (see *PEI* March 1997), and the ProSense calibrator from Radius is light years ahead. Either product could be used with the ViewSonic, which I would recommend.

What is intriguing is that ViewSonic sent us a Windows version of the hardware and software colorimeter, something that is rare. We hooked up both the ViewSonic display and the Windows version of the colorimeter to a PC, and it seemed to do a reasonable job. While this solution is cruder than what we have on the Macintosh platform with other third-party solutions, at least we have found an out-of-the-box hardware/software device that can be used to overcome the bias in a display.

Sony 17SE II

This top-of-the-line 17-inch color display from Sony has been designed for imaging and desktop publishing fields. It features a very sharp Trinitron grill design with a viewable area of 15.9 and 0.25mm dot pitch. Digital Multiscan technology enables the 17SE II to support multiple PC and Macintosh resolutions up to 1,600x1,200 pixels. The unit operates on both Mac and PC platforms (Sony says it's Windows 95 plug-and-play compatible), as well as UNIX, with an optional cable.

As you would expect from Trinitron, the 17SE II display is very sharp and bright. Many users ask about the two thin, almost invisible wires seen on the displays. These are quite normal and are also seen on other aperture

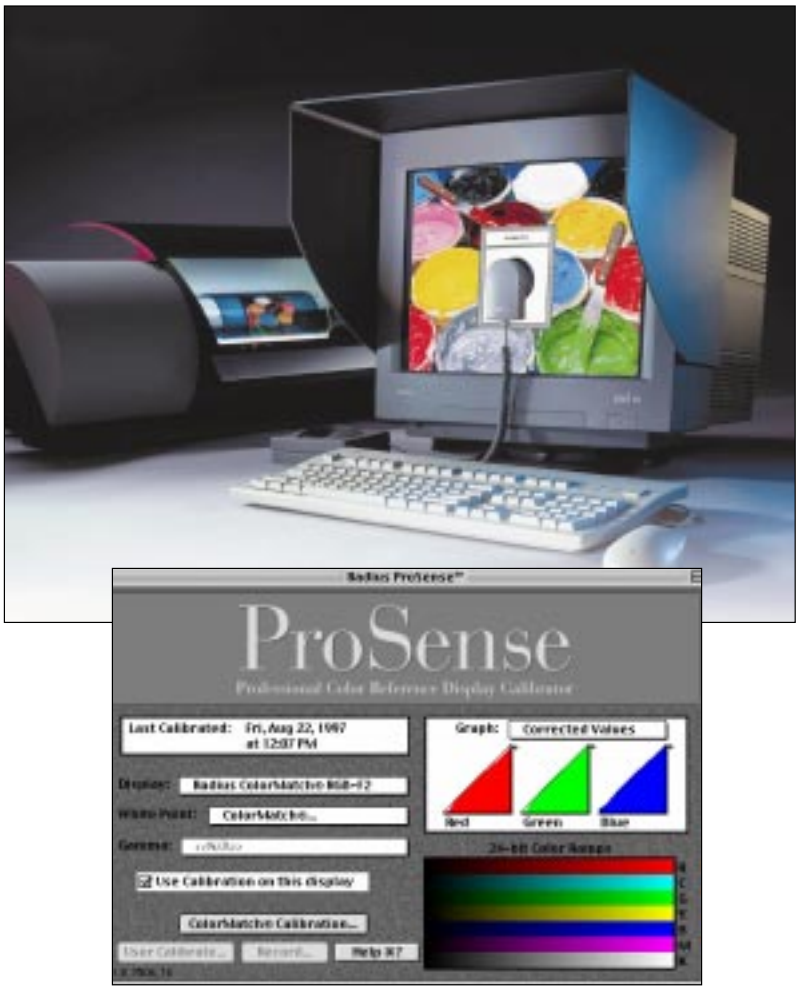
grille displays. Called damper wires, the lines are used to stabilize the aperture grille. A large number of controls are on the front of the unit, but I think 10 of them are overkill, especially when both Radius and ViewSonic have managed to supply as many (or more) controls with far less clutter.

Among the controls available are a user-adjustable color temperature that ranges from 5,000˚K to 9,300˚K Kelvin, although, hardware calibration is ideal for setting this option. Users in our shop liked the Sony display, once we set it up to our liking and didn't have to mess with the controls. Estimated street price is $900.

Radius PressView 17SR

The PressView 17SR is *the* color display for imaging. It's the most expensive of the group, but certainly the most capable. Street price for the 17SR is $1,999, but you get what you pay for. The 17SR uses a Diamondtron display with a 0.25mm dot pitch and can be driven to 1,200x1,600-pixel resolution. We recently replaced one of our older Apple Trinitron displays with our third PressView. What makes this display so good? Radius has created a fully calibrated unit that is designed for consistent and accurate color soft-proofing. It also happens to be a very sharp display with myriad controls.

The PressView has internal electronics and microprocessors that constantly monitor the calibration of the display and a hood to protect the screen from ambient light. It ships with its own hardware colorimeter, ProSense. This Tri-stimulus colorimeter reads colors generated by the ProSense software and sets the display to the Radius ColorMatch RGB standard. This standard is a color temperature of D50 and tonal response of gamma 1.8 (proofing standards). While the ProSense calibrator is sold separately ($900) for displays other than the PressView, and you could use another third-party colorimeter to calibrate it, there is a significant advantage to using the entire PressView system.



Top, Radius PressView 17 SR. Inset, the interface for Radius' ProSense calibration software. When the user clicks on the ColorMatch button, the one-step calibration process starts. When the user calibrates to the ColorMatch RGB colorspace, the white point, black level, luminance, tonal response, and gray tracking are set.

What is unique about PressView is the way it sets calibration. All other displays measure only luminance, then make adjustments to the actual graphics card by means of a look-up table. Nearly all displays come blue-tinted. When a display is calibrated, it's usually necessary to overcome this blue cast, as well as bring up the white point of the display. However, once the cast is eliminated and the color temperature is set to D50, the white point is generally lower than we would like. PressView, on the other hand, adjusts the amplifier gain of the red, green, and blue guns inside the display with an internal microprocessor.

The result is more detail, accuracy, and a wider color gamut,

from brightest white to blackest black. Once calibrated to D50, the PressView is capable of 85 candela per square meter at a tonal response of gamma 1.8. This means we are setting not only the color temperature of white, but the luminance as well, resulting in superior monitor-to-print matching.

The PressView is also capable of providing a 10-bit, digital-to-analog conversion (DAC) when mated with one of the Thunder PCI video cards made by Radius. If you happen to use a Radius card with 10-bit DAC, the result is even better gray tracking. The number of controls given on the PressView for configuring geometry is staggering. You can control up to 15 functions from either the display itself using a hidden button panel, or using software. You can lock and password-protect the software so that the custom settings can't be altered. As if this weren't enough, Radius includes a black smock for the user to keep the reflection of clothing colors off the screen.

Radius also supplies a series of ColorSync profiles, as well as Photoshop separation tables for converting RGB to CMYK. Called ColorMatch 3.0, the current tables consist of 3M Matchprints, SWOP coated and uncoated, Fuji ColorArt, Euroscale, AgfaProof, Japan Color Matchprint, and ToyoColor. The tables were created by measuring more than 25,000 color patches from multiple press sheets. Since the display is calibrated in the Radius ColorMatch RGB reference colorspace, you can then load a ColorMatch CMYK separation table into Photoshop and get an accurate screen display of how the file will look when converted to CMYK (see sidebar).

When calibrated, our three PressView systems are visually and perceptually identical. But when calibrated, the other displays weren't identical. The slight differences seem most apparent in the white points of the displays (the luminance). Therefore, the PressView system is ideal for remote proofing. Imagine you are working on a file in New York for an art director in Los Angeles. In theory, if both of you had a PressView, you would see an identical file. You could work on the high-resolution image, while the art director works on the low-resolution version. The art director could comment on color, even apply some color corrections, and e-mail you both the low-res file and the saved correction file. You could then apply those changes to the high-res file.

No More Sweating Bullets

The Radius PressView is more than just a display; it's a complete, calibrated display system. If you work in CMYK, the ability to accurately display CMYK can be critical. Realize that all displays are RGB devices, so accurately presenting CMYK data is a real challenge. Photoshop is what most use to convert files from RGB to CMYK. Don't assume you just go to the Mode menu, select CMYK, and everything will be fine. You should understand the important role Photoshop's Color Preferences play in the conversion process.

There are three preferences that determine not only how Photoshop creates a CMYK conversion, but also how the file will look on the display. Pay close attention to the Monitor Setup, the Printing Inks Setup, and the Separation Setup in the Color Settings submenu. These preferences control how Photoshop converts RGB to CMYK and how Photoshop displays CMYK data.

The Monitor Setup tells Photoshop how to display CMYK files, but this data is also used to create the conversions from RGB. In truth, this preference window controls the way Photoshop displays everything *except* RGB. It attempts to understand the RGB values in order to convert the data to CMYK. Since the Radius system creates a custom Photoshop monitor table as part of the calibration process, this data is simply loaded into Photoshop. This ensures a highly accurate display of the CMYK data. The PressView also creates a custom ColorSync table and supports CMS from Agfa and Kodak.

Printing Inks Setup tells Photoshop what inks you intend to use. This affects the CMYK values as you convert the file, so it's important to pick the right ink colors, such as SWOP or Toyo, depending on output. However, the PressView system controls this by supplying the ColorMatch 3.0 tables mentioned above, which are loaded using the Separation Table menu. In fact, once you load a custom table, such as those that come with the PressView, the Printing Inks preference is out of the loop, and the PressView tables handle it.

Separation Setup controls the way the black plate is generated and the total amount of ink that ends up on the paper. It's critical to how well the CMYK file will output. This preference controls the relationship between black and colors and with UCR or GCR (the amount of black ink replacing color inks). When you pick a custom separation table that comes with the PressView, this menu item is grayed out. PressView has control.

When all these preferences are set, you can edit a file in RGB while viewing how it will look in CMYK by simply selecting CMYK Preview from the View menu. The PressView's accuracy and the various tables ensure that what you see is what you get. This is an ideal situation for the digital photographer. You can have a PressView connected to a digital camera system and, while working on the shot, see on screen how the image will look in CMYK.

I prefer to use the ColorSync tables to do the actual mode change, since I can now bypass Photoshop's separation engine, which tends to clip out-of-gamut colors. We used to sweat bullets dealing with CMYK conversions and output, but it's no longer a problem with the Radius PressView system's supplied CMYK tables or custom tables we create.

Remote proofing is also becoming a reality in printing. I know of one documented case in which the press proof matched the display closer than the actual contact proof. As we see more direct-to-press and filmless printing, the display will play a stronger role as a proofing device.

Radius PressView is easily the finest display of the group, due in large part to the fact that it is designed to be a color reference display. The ProSense calibrator alone sells for nearly $900, so, while this system seems expensive compared to the others, there is far more value added in the package. Additionally, the internal electronics, the ColorSync and Photoshop profiles, the hood, and the handy black smock make the PressView superior for imaging. Mate the display with a 10-bit Radius Thunder card, and none comes close at any price. Those who do high-quality color work, especially in CMYK, and those considering doing remote proofing should buy the PressView system.

The ViewSonic is a gorgeous display. I would consider buying it in a second, but I would have to factor in the cost of a third-party colorimeter, rather than the one made by ViewSonic. While I prefer the ViewSonic, the Sony is also an excellent choice, with a third-party calibrator. Some of our staff members preferred the look of the Sony over the ViewSonic.

If we learned anything from this experience, we learned that, like TVs, displays should be selected based on first-hand evaluation. ◀

More info? Circle Reader Service No.:

Radius Inc.	**(150)**
Sony Electronics Inc.	**(151)**
ViewSonic Corporation	**(152)**

Andrew Rodney operates Camera & Darkroom Digital in Santa Fe, New Mexico. Camera & Darkroom runs a full-service digital imaging service bureau and training center. He can be reached at rodney@peimag.com.