

Radioware SSTV Explorer

Reviewed by Paul Pagel, N1FB

The world we live in is truly graphics-oriented. We've come a long way from the pinhole camera to the CCD (charge-coupled device); still cameras, motion-picture cameras, then TV, minicams and computers are all part of it. Along the way, Amateur Radio fell into step, too. Early on, there were the primitive—as well as amazingly inventive and complex—RTTY pictures. Then came fast-scan TV (FSTV or A'V) and slow-scan TV (SSTV); even packet radio got into the picture.¹

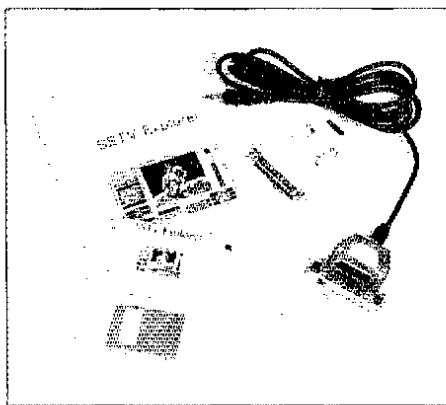
For many years, Robot was the dominant force in Amateur Radio's world of video. Although Robot's machines and modes will be with SSTV for years to come, the evolution of the personal computer has changed SSTV's orientation. With the introduction of several commercially available SSTV systems that operate in conjunction with a PC, operating fax and SSTV became cheaper and more flexible. And, because of their relatively low cost and ease of implementation, fax and SSTV are arguably the more popular of the video modes. John (WA2PYJ) Montalbano's ViewPort VGA,² Ralph (WB8DQT) Taggart's FAX-480 software series,³ John (WB2OSZ) Langner's Pasokon TV,⁴ and most recently, Ben (K3BC) Vester's inexpensive SSTV system⁵ have contributed greatly to the growth and popularity of amateur fax and SSTV.

Generally speaking, hams are always itching to try something new. It's understandable that when hams have a yen to try a new mode of operation, they like to do so with a minimal investment of time and money. If SSTV is new to you, perhaps all you'd like to do at first is eavesdrop—hear and see what's going on and copy a few pictures. With the \$50 SSTV Explorer, you can do just that.

The SSTV Explorer is a development of John Langner, WB2OSZ, creator of the popular Pasokon SSTV system. In fact, the screen display is *almost* identical to that of the original Pasokon software display. A close inspection reveals the main difference: The transmit capabilities are absent and not all of the modes the Pasokon covers are present. A list of the Explorer's features and the equipment needed to use the SSTV Explorer is presented in the sidebar "The Explorer's Features and Requirements."

What's in the Box?

The SSTV Explorer package contains four items: a 5 1/2-foot black cable terminated with a metallized-hood, DB25F connector at one end, and a 1/4-inch-diameter, two-conductor audio plug at the other end;



The SSTV Explorer.

a 3.5-inch, 1.44-Mbyte floppy disk (you can get a 5.25-inch disk, too) and a 27-page instruction manual. As with most software, there's a READ.ME file and some .DOC files (four, to be exact) that you should read in addition to the instruction manual. Once you've filled out a simple program-configuration file (*SSTV.CFG*), you run the DOS-based software (this is not a Windows program), tune in an SSTV signal and *presto!* you're receiving SSTV pictures!

The electronics are contained on a small

The Bottom Line

The SSTV Explorer is an easy and inexpensive way to sample the fun of SSTV and interest others in Amateur Radio.

PC board mounted within the DB25 connector that attaches to your IBM-compatible computer's serial port. The 1/8-inch plug at the other end of the line attaches to the audio output of your receiver (use your receiver's auxiliary audio output for convenience).

Don't expect a lot of detail from the manual. It sufficiently covers the necessities of operating the Explorer and that's about it. There are no technical details of the hardware, software or file formats included. There's no schematic of the demodulator circuit either. In short, the manual does its job for the important points, but there may be times when you wish it contained a bit more detail.

Playing With the Explorer

Figure 1 is a shot of the SSTV Explorer's main screen. The software uses a low-resolution display mode (320x240 pixels and 256 colors), so the lettering and mouse arrow are large and easy to read. Much like a Microsoft Windows program, you can use a mouse and/or the keyboard to control the Explorer. To receive a picture, you select the mode being sent (Function keys F1-F7 can be employed here), point the arrow to the **Receive** button and press a mouse button (or press the **Enter** key). The mouse arrow disappears and the incoming picture presents itself in the main menu's window. If you're not autosaving pictures, you press a mouse button (or a keyboard key), to return to standby mode.

I'll step through a quick overview of the important pull-down-menu actions:

- **Desk**—Allows you to shell to DOS.
- **File**—You can open or save a file;

SSTV Explorer's Features and Requirements

- Reception of the most popular SSTV modes: Robot color (12, 24, 36 and 72 second); Robot black and white (8, 12, 24 and 36 second); Martin (M1, M2, M3 and M4); Scottie (S1, S2, S3 and S4) and Wrasse SC-1 (24, 48 and 96 second).
- A compact interface that plugs into the computer's serial port. No power supply is required.
- Color (and B&W) pictures are displayed in real time during reception.
- The vertical-bar on-screen tuning indicator is both an aid and a conversation piece for visitors.
- Automatic receive-mode selection using vertical-interval signal (VIS) coding.
- Automatic fine-tuning of signals that are up to 100 Hz off frequency.
- 320x240-pixel resolution real-time display window with up to 32,768 colors.
- Full-screen VGA captured-image display with 256 colors and two optional dithering modes.
- Full-screen, 32,768-color, VGA captured-image display with appropriately equipped video-display adapters.
- Ability to save images in .GIF, .PCX and Targa file formats.

Hardware Requirements

• IBM PC/AT or compatible with an 80286 or better CPU and 640 kbytes of RAM. (I'd add a hard disk drive to that; the bigger and faster, the better.—*Ed.*); one free serial port; VGA display adapter (for optimum results, cards equipped with a Tseng ET-4000, S3 86C911 or equivalent chip set and HiColor feature are recommended); color monitor. A mouse is recommended, but not absolutely required. And, of course, a receiver tuned to an SSTV station!

¹Notes appear on page 81.

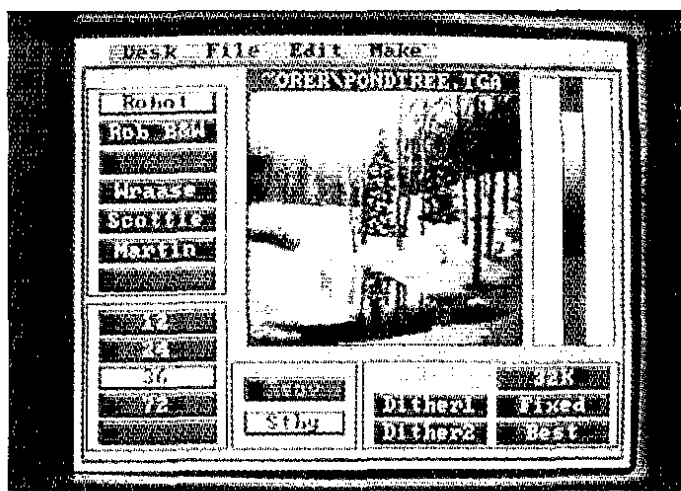


Figure 1—The Explorer's main menu. The top-left box displays the reception modes. Below that the mode variants of the selected mode are shown. At the far right side is a tuning bar that provides a real-time spectral display of the incoming signal and helps you zero-in on the frequency.



This scenic shot was received off the air with the SSTV Explorer.

print a picture; select automatic reception and received-image saving; quit the program.

- **Edit**—Allows you to manipulate an image: Invert, mirror, rotate (in 90-degree increments), zoom, screen dump, apply noise reduction, remove all color, or filter with a low-pass filter. If you make an error, you can undo the last action (sometimes two actions) taken.

- **Make**—This is basically a test-pattern generation area.

As just briefly described, in the **Edit** menu you can manipulate the picture in several ways. More than likely, you'll find yourself using the noise-reduction feature and low-pass filter more often than anything else. Don't expect miracles; this is not an artist's tool kit. But I think you'll be surprised to see just how much the software can clean up a noisy picture, although the picture's sharpness suffers a bit.

The fastest way to save a picture is to select the AutoSave option. (The program doesn't save parameters when you quit, so you must select AutoSave at the beginning of—or during—each session.) You can save the picture in several formats: .GIF, .HRZ, .PCX and .TGA. (.HRZ is a Robot 1200C version of N9AMR's high-resolution mode.) The fastest save mode is .TGA (that to which **AutoSave** defaults). TGA files also have the largest file size of all (153,618 bytes each—which is also the maximum file size any format can have) as well as the most detailed and colorful reproduction of all the file formats. AutoSaved files are given sequential file names starting with SSTV0000.TGA. The program does keep track of the AutoSaved picture numbers, so it will pick up where it left off from day to day.

If you have a video card capable of displaying 32,768 colors (or more), selecting the **32K** button expands the received image to cover the entire screen and puts those

colors to work. Not only is the picture easier to view because of its increased size, it loses the "pixelish" appearance it has in the small window. The attractiveness of the image is enhanced tremendously. If you don't yet have a video graphics card capable of 32,768 (or 16.7 million) colors, get one! The number of 32k color cards presently supported by the program is limited to the more popular graphics chips, with expanded support promised in the future. Chances are if you've got one of the commonly available 32k color cards with 1 MB of video memory (such as those using the Tseng ET4000 or S3 Inc 86C911 chips), you'll be set. If not, the program defaults to a 640×480 256-color mode with dithering. This mode requires an SVGA card with at least 512 kbytes of video memory capable of 640×480 256-color display.

The pictures shown here are color originals and reflect the use of a 32k color card. (They look much better in color than as reproduced here in black-and-white.) A minimal radio station configuration was used during reception. That is, no large antennas on high towers, just a transceiver fed by a low dipole (10 feet above ground) or a Cushcraft R7 vertical.

What can you expect? The answer to that question is: It depends on your receiving system (that includes the antenna) and the existing band conditions. Good and poor conditions make for good and poor pictures. Don't expect picture-perfect conditions always, even if you have a big-gun station. There'll be interference, fading, multipath reception, variable propagation conditions and so on. It was the QRM, though, that annoyed me the most: swooshing VFOs, and all too many "tune-ups" and nonsensical CW transmissions within the small range of frequencies used by the SSTVers. You'll have times of S0 signal strength and be amazed by a gorgeous picture—a real keeper—appearing

on your screen. When signals are solid S9 or better, you'll probably be in SSTV heaven.

Here's my wish list for the next software version: Inclusion of the AVT 90 mode, increased printer and video-graphics card coverage; file deletion without the need to shell to DOS; automatic saving of the program's last configuration and pull-down menus that hang so it's not necessary to keep the mouse button pressed. According to Radioware, upgraded software will be released by the time you read this. It will be interesting to see what the changes are.

Chances are that after you've had fun with the SSTV Explorer, you'll get the itch to *transmit* pictures, not just receive them. You'll want to get into the picture-swapping and join the friendly SSTV crowd. In that case, I recommend you dig out those back issues of *QST* and *73 Amateur Radio Today*, and do a bit of reading. If you *really* get involved, you could wind up turning your ham shack into a video production studio!

Manufacturer: Radioware, 225 Stedman St. No. 27, Lowell, MA 01851, tel 800-950-9273 or 508-452-5555. Manufacturer's suggested retail price: \$49.95.

Notes

- ¹C. Pratt and V. Yarbrough, "Pictures by Packet," *QST*, May 1988, pp 15-17.
- ²J. Montalbano, "The ViewPort VGA Color SSTV System," *73 Amateur Radio Today*, Aug 1992, pp 42-44. See also R. Taggart, "A&A Engineering ViewPort VGA Slow-Scan TV System," Product Review, *QST*, Feb 1993, pp 72-74.
- ³R. Taggart, "A New Standard for Amateur Radio Analog Facsimile," *QST*, Feb 1993, pp 31-36.
- ⁴J. Langner, "Slow-Scan TV—It Isn't Expensive Anymore!," *QST*, Jan 1993, pp 21-30.
- ⁵B. Vester, "An Inexpensive SSTV System," *QST*, Feb 1994, pp 27-29.