

## TASCO Electronics TSC-70U Slow-Scan TV System

Reviewed by Larry Wolfgang, WR1B  
Senior Assistant Technical Editor

Slow-scan TV is a mode I've wanted to try for some time, so I didn't hesitate when the opportunity arose to check out the TASCO system. When the modest stack of boxes showed up, however, I began to wonder what I was getting into. It turned out that the boxes contained the basic SSTV system (less a monitor) and several accessories.

For a simple system, you can begin with the TSC-70U Telereader Color Scan Converter and a TV set. Connect the audio output from your transceiver or receiver to the TSC-70U and a video cable from the '70U to the video input of the TV. If your TV doesn't have a video input, you can run it through a VCR or RF modulator (fortunately, I had one of those). The TSC-70U requires an external power source of 11 to 15 V dc at "more than 300 mA." With this basic system you can copy pictures off the air to your heart's content. You can also retransmit pictures that you receive simply by connecting a line from the 9-pin D connector **RADIO** jack on the back of the TSC-70U to your transceiver's microphone input; after all, SSTV signals are comprised of audio frequencies in the range of 1500 to 2300 Hz (with a 1200-Hz sync signal).

You must use the remote control unit to select receive or transmit functions, select the slow-scan operating mode (Robot 36 or 72-second color, Martin 1 or 2 or Scottie 1 or 2), select the memory page 1 or 2 picture and acquire a picture from a video source.

Yes, you can capture video frames and send pictures from a video source, such as your video camera, VCR or other video signal source. Simply plug the video source into the phono jack on the back of the TSC-70U. Press the **ACQUIRE** button on the remote to tell the unit you are going to capture an image, then press the button again as the desired picture appears. Easy!

Our review unit had the optional module to add a second page of memory to the TSC-70U. This was quite simple to install. This lets you have two images ready to send. Or you can keep one page for receiving and the other for sending.

To simplify the connection to your mike plug, you may want the "Radio Box" accessory. If you have an ICOM, Kenwood or Yaesu radio, the appropriate radio box is ready to connect between the TSC-70U and your mike input (we purchased the ICOM radio box with our system). Connect your mike to the radio box, and you can talk and



send pictures without having to change connections. If your radio doesn't use one of these standard mike wiring patterns, you can always rewire the mike connector.

### The Computer Connection

The proliferation of home computers has helped to renew the popularity of SSTV in the last few years. As you copy a few pictures you will discover a wide range of graphics effects. Some operators add fancy type with their call sign, name, location or CQ message to basic pictures. Other operators have created cartoons or added special effects to the pictures they transmit.

Before long you will want to join in this creative fun, and for that you will need to connect your TSC-70U Telereader to a computer. If your computer has an unused serial port, you can use the EB-232V accessory. The EB-232V package includes a cable to connect between your computer and the TSC-70U's **COM** port, plus a disk of PC control software.

If you don't have an available serial port, but have an open slot in your computer, then the EB-70V accessory is for you. This unit comes with an interface card to plug into your computer, a cable to connect between

the card and the TSC-70U **RADIO** connector and, of course, the required software, which runs under DOS or in a DOS window in *Windows 3.x* or in a DOS session under *Windows 95*. I tried both accessories for this review, and both worked without problems.

The software for the EB-232V and the EB-70V is identical except for the computer port it addresses. With either software you can load graphics files from your computer to the TSC-70U and save pictures from the TSC-70U to the computer. The TSC-70U works with files in "SSV" format—apparently Tasco's own format—but the software can convert files to and from JPEG (JPG) and bit-mapped (BMP) files. The bit-mapped files can be in a variety of resolutions. You can load the JPEG or BMP files directly into the TSC-70U memory, or you can convert them to the SSV format first. The pictures seem to load into the unit a bit faster from the SSV format; other than that, I noticed no particular difference.

Obviously this capability presents many options for creating images for SSTV transmission. I had a couple of rolls of 35 mm slide film processed with Seattle Film Works' "Photos on Disk" (many photo finishers now provide this service—*Ed*) and used the software that came with those photos to convert them to JPEG format. There are numerous images available from a variety of sources, and these can provide plenty of picture material to transmit. Animal pictures and cartoon drawings seem to be quite popular. Computer programs for manipulating and modifying such images also are

### BOTTOM LINE

The TASCO Telereader TSC-70U is a plug-and-play SSTV system that you can take almost anywhere. It worked great—with or without a computer!



Figure 1—Bert, W5ZR, was one of the first SSTV operators I met on the air. He uses a computer system to add many special effects to his pictures.

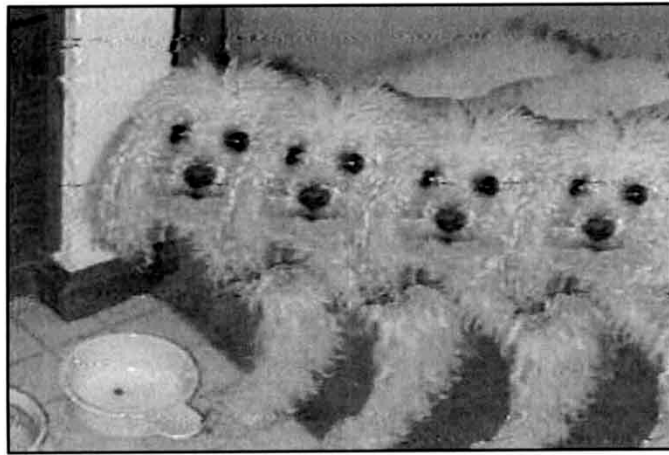


Figure 2—The operator who sent this pictures used his digital camera to capture an image of his dog. Then he duplicated the image several times to create an interesting special effect.

readily available (you can edit .BMP files using the *Windows Paintbrush* program—*Ed*). You can add lettering and other special effects and then save the modified file for use with your slow-scan system. TASCOS says that SSTVer Tom Jenkins, N9AMR, has developed graphic software for the TSC-70U. It's a TASCOS version of the Robot 1200C *HighRes* program, called *HighRes-70*.

### Using the Software

Some editing features are included on the control software. For instance, you can enter your call sign and the call sign of the station you are working, and these will be placed on the picture in memory. You can also create text files using the *Vtype* command, and then insert them into pictures later. While you can use several colors for the letters in your type, and even use a different color for each letter, I found this capability rather limited. The letters are quite large, and only nine characters fit across the screen, with no more than six lines per screen. You can move a small block on the TV screen to select the position where the text will be placed, but this is rather limited because of the size.

When you are loading a picture from computer disk to the TSC-70U, you can select to place it on the full screen, or you can place a smaller image in any quadrant of the screen. This means you can actually load four pictures to a single frame.

When saving an image from the TSC-70U, you can select either the full frame or you can cut only part of the screen. This cut image can then be placed onto another image in the TSC-70U. This presents a number of interesting possibilities.

Other software features include the ability to convert files between various formats, place a color-bar pattern or rainbow effect on the screen as a background and change the default directories where the program looks for image files. Press the Shift key to reach a second set of menu options. This list matches those items you can control with the remote, such as changing memory pages, switching to transmit or receive mode, and

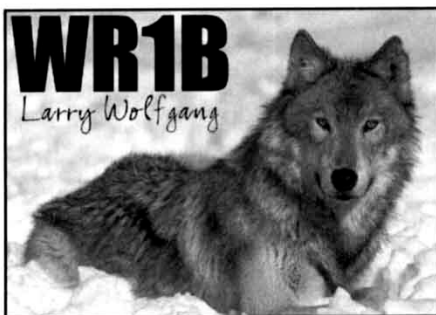


Figure 3—My son, Dan, developed this "wolf" image for me to use on the air.

acquiring an image from live video.

The software control offers two additional slow-scan operating modes—the AVT 90-second and AVT 94-second Amiga Video Transceiver modes, from an interface and software written for the Amiga computer. (The basic TSC-70U will receive and retransmit AVT-format images.)

### Documentation

The TSC-70U comes with a small 12-page booklet that contains minimal operating details. Most of the booklet describes how to connect the system to your radio and computer. There is detailed information about the connections at the **RADIO** port, which is most helpful if you're wiring your own cable for your radio.

The EB-232V and EB-70V computer interface accessories come with 9 photocopied pages of instructions. These had all the information I needed to operate the software, although I had to read several sections a few times and practice with the software to fully understand it. There is a list of files on the two software disks, and both list a .DOC file of "technical documentation," although neither disk with the review unit included such a file.

The radio box was pretty simple to hook up, with clear labels on the various jacks to

help you make the appropriate connections. It's a good thing, because the only documentation with the radio box was a small sheet printed in Japanese (it does have a hookup diagram).

### Look, Ma! I'm on SSTV!

This was my first stab at SSTV, and I found it really interesting. A lot of SSTV operation takes place on 20 meters or around the calling frequency of 14.230 MHz (14.233, 14.236 and 14.239 MHz also are used when 14.230 is especially crowded; other SSTV calling frequencies include 3.845, 7.171, 21.340 and 28.680 MHz). Stations sometimes contact each other on voice first, but more often than not, stations will just send images, then identify on voice or CW. Copying the pictures exchanged on the weekend slow-scan nets was a *lot* of fun! It also was a great learning experience. After my first few transmissions, I was told that my images lacked a header. I wasn't sure what this meant, but I learned that most SSTVers place a section of text at the top of each picture that typically contains their call sign, name and location. The documentation doesn't mention it, but the TASCOS unit does not support headers. Since I hadn't even seen headers on the pictures I was copying, I investigated further. Because of the overscan typical of many TV sets, my TV wasn't displaying the full picture area—the top 10 or so scan lines didn't show up on screen, and I probably missed some from the bottom as well. Another TV set gave the same results. I did sometimes get to see the header on a picture, though. By *manually* starting the receive mode before the picture began, I could copy a few lines of noise at the top of the screen, and the actual picture image would start part way down the screen. Of course this resulted in more picture lost at the bottom of the screen.

Tascos's *Vtype* editor produces text that is coarse and crude compared to a lot of the character generator—type text I copied off the air. While I could use a graphics program to edit the files before loading them into the

TSC-70U, this makes it nearly impossible to receive a picture, personalize it, and retransmit it—something I saw quite a bit of on the air. Retransmitting the original image makes it available to other SSTVers who didn't (or couldn't) copy the original transmission.

Typically, SSTV systems use information encoded digitally in the vertical sync period (called vertical-interval signaling or VIS) to set the correct mode. The TSC-70U can automatically determine the SSTV mode of the received signal as soon as it copies the first part of the picture transmission. Most of the time this worked very well, although occasionally I copied garbage from what sounded like a perfect signal.

By the way, some amateur TV enthusiasts send live SSTV images as audio along with their ATV images, so the TSC-70U might appeal to the ATV crowd also.

TASCO SSTV gear is now available from a mainland supplier as well as directly from TASCO in Hawaii. TASCO's Izumi Soma, KH6JDU/JA1KZS told us that Wyman Research Inc—run by SSTV pioneer Don Miller, W9NTP, and his wife, Sue, W9YL—now handles and distributes TASCO products on the US mainland. (Don says he's even taken his TASCO '70U mobile!)

TASCO plans to soon debut a little "docking station," model TDL-70K, for the TSC-70U scan converter. It will include a

four-inch LCD color display and a microphone patch. It's expected to sell for \$295.

**Manufacturer:** TASCO Electronics USA, Box 11106, Honolulu, HI 96828; tel/fax 808-524-7788 (SSTV). **Mainland US distributor-retailer:** Wyman Research Inc, 8339 S 850 W, Waldron, IN 46182; tel 317-525-6452; fax 317-525-4810; e-mail [w9ntpdon@ind.tds.net](mailto:w9ntpdon@ind.tds.net). **Manufacturer's suggested retail price:** TSC-70U NTSC scan converter, \$498; EB-70V SSTV PC interface, \$98; MR-70 radio box, \$85; EB-232 PC interface cable accessory and software, \$68; EM-70 second-page memory, \$98; *HighRes-70* software, \$100 (available from Wyman Research Inc).

## ICOM IC-R8500 Communications Receiver

By Bill Moore, NC1L  
DXCC Supervisor

At first glance, the average ham might easily confuse the IC-R8500 with a typical HF transceiver—indeed it sells in the same price class as some of today's better transceivers. Despite its transceiver look and feel, the ICOM IC-R8500 is a communications receiver that covers the proverbial "dc to daylight"—from 0.1 to 2000 MHz—in all modes (with cellular telephone frequencies blocked out). While some monitoring enthusiasts might call it a "mega-receiver," ICOM calls it a "super wideband all-mode receiver."

The IC-R8500 is the heir apparent to ICOM's IC-R7100 (see "Product Review," *QST*, Apr 1993), which tuned from 25 to 2000 MHz, so one big change is the inclusion of the LF and MF bands and the complete HF spectrum in the later receiver. Another improvement (among many) is the smaller minimum tuning step available on the R8500—10 Hz vs 100 Hz. Our Lab tests also indicate improved dynamic range (see Table 1). Our dynamic range measurements on the IC-R8500, taken at 20-kHz spacing, were better than those taken on the R7100 at 50-kHz spacing. Something you might miss if you're considering "upgrading" to the R8500 is the five-event timer in the earlier receiver. The R8500 is not equipped for timer-operated, unattended recording.

### Memories

The R8500 offers 1000 channels of memory within 20 storage banks (the R7100 offered 900 channels plus 20 band-edge memories in nine banks). Complementing this huge memory capacity is a large, easy-to-read display that details all that the radio can do. Alphanumeric memory naming lets you label everything you listen to, something that comes in handy when you start trying to remember what you've got in those 1000 channels and 20 storage banks. You can label each 40-channel bank with up to five characters (names can include the period, apostrophe, hyphen, asterisk and the colon).



ICOM has applied default bank names (USR-A through USR-T) to get you started. Individual channel names can have up to eight characters (also including the same punctuation marks). So, you might have a memory bank called "POLICE" and, within it, the names of the different departments whose frequencies you've put in to individual memories.

A word of caution: it's almost *too* easy to write to or to clear data from a memory—you just hold in the appropriate button until you hear three beeps. Each channel individually stores frequency, mode, tuning step, attenuator setting, name and even passband width—all of this without affecting the scanning rate of the radio. You can readily "cut and paste" data from one memory to another.

In addition to its 20 memory banks, the receiver has an *Auto* bank for storing up to

100 frequencies located during a programmed scan; a *Skip* bank to temporarily store another 100 frequencies you want to keep, but not scan through, perhaps because they are frequently too busy; and a *Free* bank to place frequencies you do not want to lose, for later memory reassignment. The R8500 lets you delete channels (one at a time) from a memory bank. Deleted channels go into the *Free* bank.

You also can add up to 10 programmable upper-and-lower search limits, so your favorite bands or frequency ranges will be programmed for searching anytime you want. The R8500 lets you move easily among search ranges, too.

### Front Panel Controls

Prominent on the front panel is the large tuning knob, which has an indentation for fast finger-spinning and a screwdriver adjustment to set the amount of "drag." An **AUTO TS** (tuning speed) selection on the Quick Set menu lets you choose if you want the tuning rate to increase when you spin the knob rapidly—a nice touch for a receiver that lets you cover so much territory. Buttons adjacent to the tuning knob let you set the

### BOTTOM LINE:

A top-notch receiver/scanner with quality and features to please the discriminating and serious SWL or monitoring buff.