SSTV TODAY

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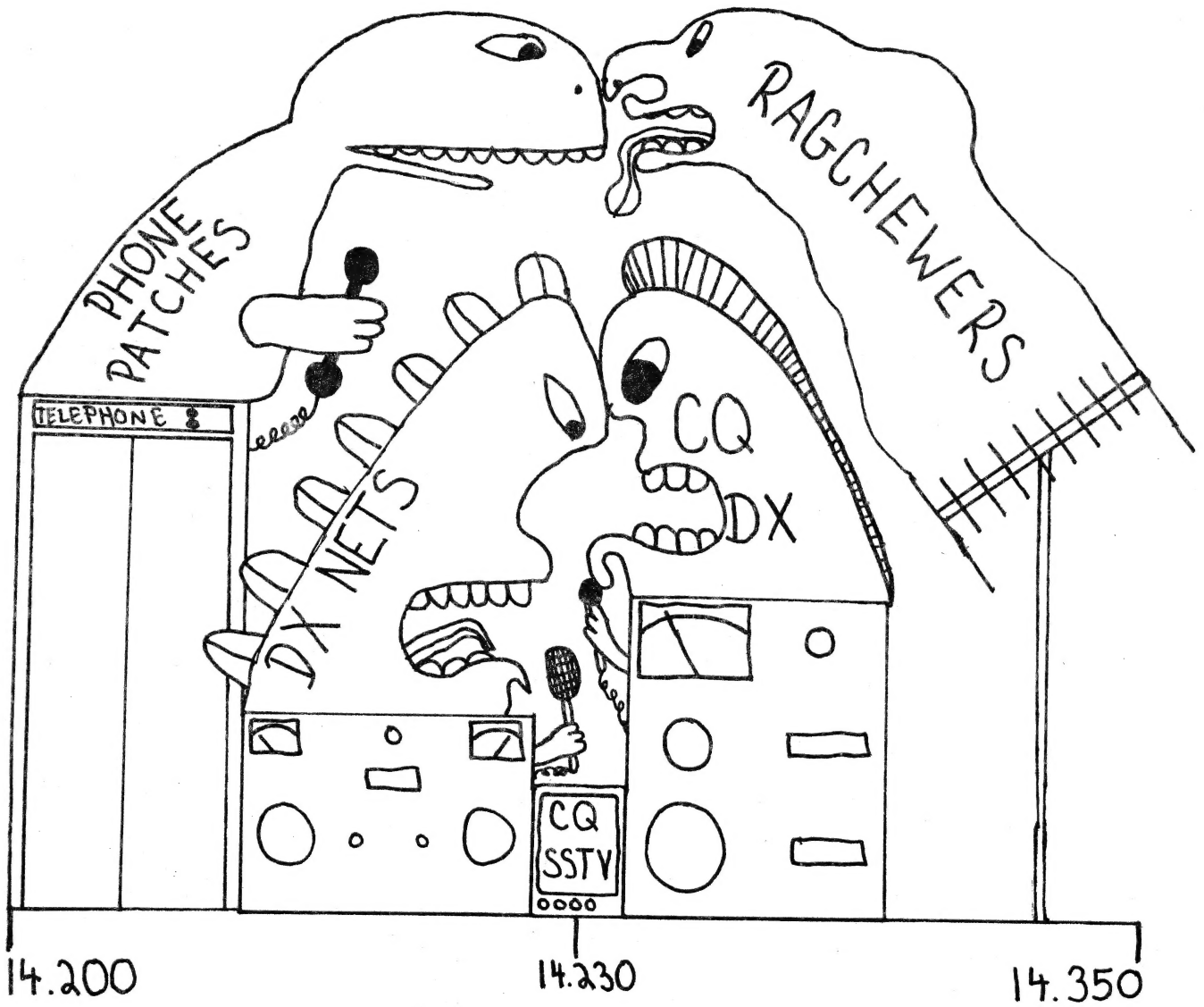
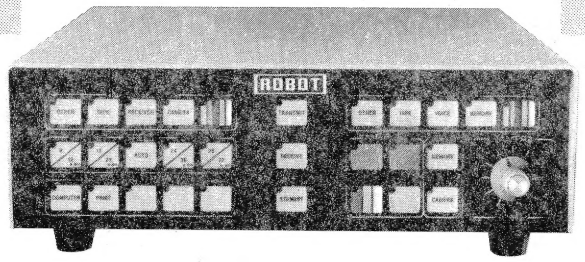


HELP !!!

Why is Robot's 12 second color SSTV *better* than 25 second line or frame sequential color SSTV?

LUMINANCE!



You may think that a color picture is made up of red, green and blue, but that's not really so. It's made up of luminance and chrominance. Now those aren't just big words, they're the way your own eye acts: lots of high resolution luminance sensors for those key, sharp details; a lesser number of chrominance sensors for that important color information.

When you send a color picture by RGB line or frame sequential methods, you're sending *part* of the luminance in one line (R), part in another (G) and part in still a third (B). The receiver has to take these time separated *pieces* of the luminance (subject to the inherent uncertainties of sync recovery and channel characteristics), and put the pieces back together again. It never quite makes it.

In Robot's 12 second (and 24 second) modes, the key luminance information is never partitioned for transmission; it's kept all in one piece, and then followed by the chrominance, all in one piece.

More particularly, if a line of SSTV is slightly misaligned due to noise, etc., in Robot's 12 second color, so be it. At least the luminance information on that line is not scattered all over the place; it's still crisp and clear. If a line of line sequential (or a frame of frame sequential) RGB is misaligned, it's now put a key *piece* of the luminance information in the wrong place.

And your eye can see the difference! Laboratory tests conducted under ideal conditions (no channel interference) show that Robot's 12 second color system really does have more resolution on a TV test chart than 25.5 second line or frame sequential systems. And the difference can only get larger for noisy on-the-air transmissions.

Of course, the same holds true whether you're operating Robot's 12 second (or 24 second) fast modes with 128 pixels and 120 lines, or Robot's 36 second (or 72 second) high resolution modes with 256 pixels and 240 lines.

So think *luminance*. And let your eye be the judge.

And if that's not enough, remember *speed*: 12 seconds is just plain twice as fast as line or frame sequential. And remember black and white compatibility. Luminance and black & white translate back and forth without a hitch. You don't even have to throw a switch. All those thousands of SSTV'ers worldwide you've already worked will appreciate you.

For more information on the Robot Models 450C and 1200C, see your dealer, or write:

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SSTV COMMENTS

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This is the first issue of SSTV TODAY to be mailed ONLY to you, our subscribers. From the cards and letters many of you sent in along with your subscriptions, we have a very good idea of what you want to see, and what you do not want to see, in YOUR SSTV magazine. You want a factual, no-nonsense, and interesting SSTV magazine that is filled with SSTV news, stories, and original articles. You DON'T want to read about gossip, rumors, bickering, controversy, reprints from other magazines to fill the pages, and far fetched unproven schemes.

We made every effort to see that everyone who subscribed to SSTV TODAY had a copy of this issue mailed to them. In fact, we hand addressed and mailed copies of this issue to persons whose subscriptions were received in our P.O. box on the very day this issue was mailed. If you know of someone, or talk with someone on the air, who is a subscriber and did not receive this issue, it is because we did not receive their subscription in time. Their subscription will start with the next issue. They can send in the money for a back issue.

On our cover -

The cartoon on the cover was sent in by a subscriber who wishes to remain anonymous. It was redrawn for the cover by a local artist. It reflects our thoughts and feelings. Make no mistake, we will stick up for SSTV. See the stories on page 10 of this issue. Copies have been sent to the two DX net managers and to ARRL. Thanks again to subscriber #00412 for this month's cover.

A word about mods -

Many of you have requested that more mods be published in SSTV TODAY. A year or so ago, mods were coming out right and left. Now, few if any are being developed. Those that are developed are usually for specific systems and of no use to SSTVers in general.

We realize that new SSTVers come along regularly and many of them are interested in putting in a mod or two to enhance their SSTV capabilities. We have in the past, and will continue in the future, to regularly publish mods. For those mods which have wide general usefullness, we will explain, illustrate, diagram, and provide easy instructions to help you with the installation. For more commplicated and specific mods that only a few can use, we will print schematics and some comments. It is assumed that hams have the technical knowhow and skills to build up a mod from a schematic.

We rely on the developers of SSTV mods to send them into us for publication. With the development of the new Robot microprocessor controlled SSTV equipment, and the use of microprocessors and computers in virtually all other SSTV systems today, we suspect that the mods of the future will come in the form of software changes to programs controlling the various SSTV systems.

Subscription rates and back issues -

U.S.-$8.00 per year via third class mail, Canada/Mexico-$12.00 per year, All other Countries-$26.00 per year via AIRMAIL. BACK ISSUES: U.S./Canada/Mexico $1.00 each ppd, all other countries $2.00 each ppd AIRMAIL.

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SSTV NEWS

QM Electronics Closes!

In a letter received by SSTV TODAY, Dwayne Girton, N7QM, owner of QM Electronics confirms that after two years, has closed his doors. He will no longer build SSTV interfaces for the Color Computer. Dwayne states that he will continue to repair and service interface units that he has built for customers.

QM Electronics had made a number of different interfaces for the TRS-80C computer for SSTV, FAX, RTTY, and CW. Dwayne is assembling the gear and looking forward to working on Oscar and Weather FAX Satellites

New Multimode Boards

Multimode Corp. has received and will start shipping a revised display board as part of their SSTV hardware package for the TRS-80C computer. Many "modifications" , including jumper wires, were required to make earlier versions of the boards work. With the new boards, no changes are necessary. Install the components and plug it in.

Clay Abrams, K6AEP, has recently developed a simple modification to the Multimode display board. It involves piggybacking additional RAM chips onto the ones already on the display board, inccreasing the display board memory to 32K.

During the weekend of September 17-18, 1983, Clay traveled to Arlington, Texas to get together with Ron Adair of Multimode and Bob Blackstock, WB5MRG, who built the hardware for Clay's 7.6 program. With the 32K piggybacked on the display board, they experimented with receiving and displaying high resolution B&W SSTV pictures using the Microcraft 17 and 34 second formats.

September IVCA Meeting

by Ron Flynn, KB8LU

On Friday, September 23, I traveled to Chicago's O'Hare Holiday Inn to attend the International Visual Communications Association meeting. Four IVCA members were in attendance and they were all a part of the temporary steering committee: Beb WB0UNB, Bill W4CVS, Lou W6FVV, and Mike N9CRN. We all met in the dining room for dinner and were later joined by K9BVW, Bob Flynn (no relation).

Many things and issues were discussed that evening over dinner and later in the lounge. It was announced that Sam Mormino, WA7WOD, was stepping down as Chairman of the steering committee, for business reasons. Bill Wells, W4CVS, has been appointed temporary Chairman of the IVCA steering committee. The next IVCA meeting will take place in conjunction with the 1984 Dayton Hamvention. At that time, permanent officers will be elected.

The formal Saturday IVCA meeting was cancelled. IVCA members attended the Chicago FM Club's Radio Expo Hamfest that day. They were to meet informally later in the day to finalize some plans.

Advance copies of the first issue of the IVCA quarterly journal, VISION, were given out by editor/publisher Beb Bebermeyer, WB0UNB. Beb did a super job on the 40 page first issue which features W4CVS on the cover. Articles by several IVCA members plus republishment of several popular Robot 400 mods are all in the first issue. Plans for distribution of this issue had not been finalized.

THE NEW ROBOT COLOR SSTV SYSTEM

PART II

by John P. Stahler, WB6DCN

Last month we discussed the philosophy behind the new Robot color SSTV system. In this final article on the system we will discuss in detail the inner workings of the system and give a description of the transmission formats employed.

In addition to the original 8 second black & white slow scan television standard, the Robot color system utilizes new SSTV formats for the transmission of black & white and color slow scan television images. These formats provide the operator with the flexibility of trading transmission time for image quality. An image aspect ratio of 4:3 instead of the original 1:1 was chosen for all formats as the color image will typically be displayed on a 4:3 aspect ratio color closed circuit television monitor or receiver. Similarly, line transmission formats of 120 and 240 lines were selected as most color television cameras and monitors only have about 240 active lines per field.

Referring to Figure 1, the formats are shown as they apply to the new transmission speed groupings. The formats provide for the transmission of a black & white compatible component called luminance, labled as "Y" in the figure. Luminance is the brightness variation in an image as perceived by the human eye and can be computed according to the following equation.

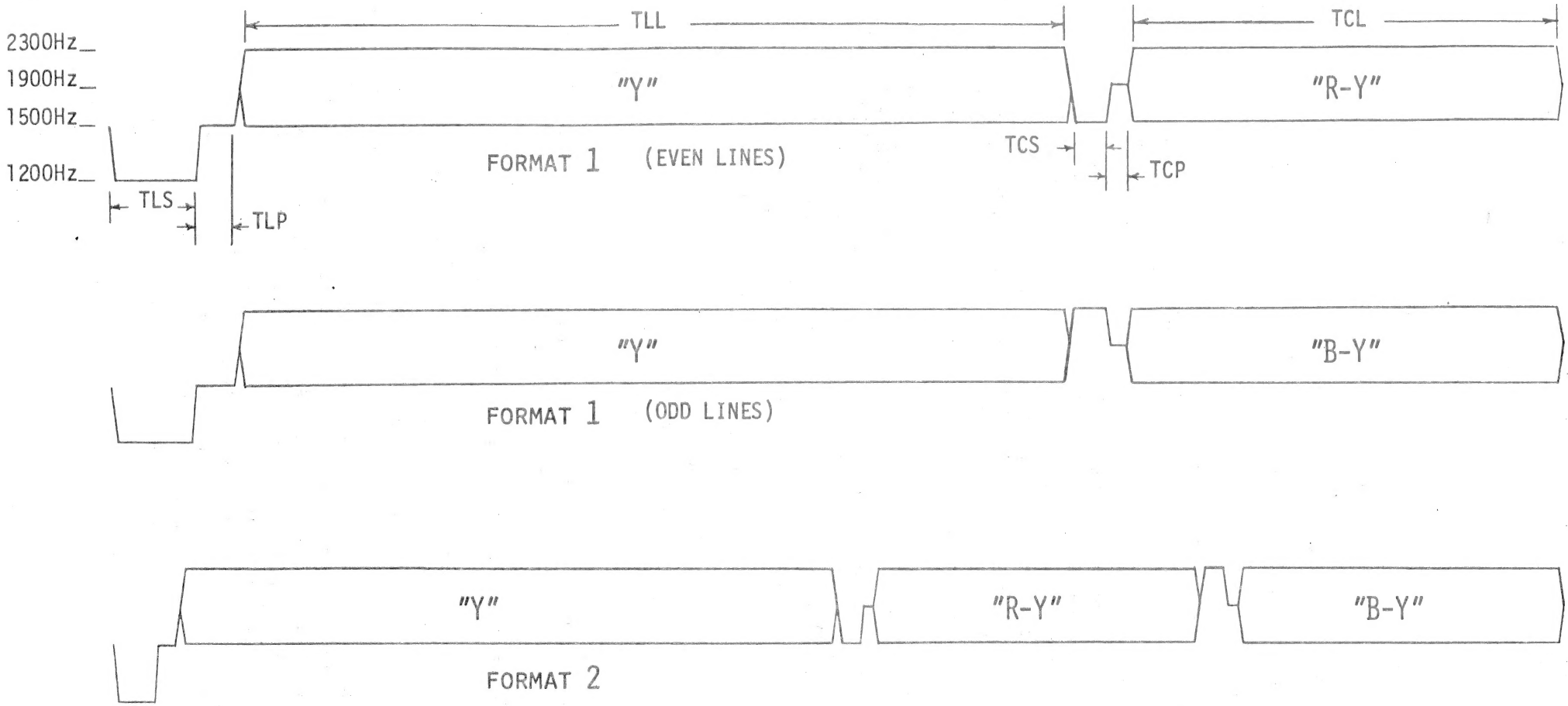
$$Y = .30(RED) + .59(GREEN) + .11(BLUE)$$

Minimum luminance is transmitted as an audio frequency of 1500Hz (black), with maximum luminance at a frequency of 2300Hz (white). Intermediate values of luminance are assigned linear values between 1500Hz and 2300Hz.

The luminance information is followed by the color or chrominance information contained in the line. In Format 1 this component is either the red minus luminance information, "R-Y", or the blue minus luminance information referred to as "B-Y". The "R-Y" and "B-Y" components are transmitted in an alternating line fashion as indicated. "R-Y" information is transmitted on even slow scan lines and "B-Y" information on odd lines. The alternating transmission of the color components results in a slight reduction in vertical color resolution, however since the human eye is much more sensitive to brightness or luminance variations than color variations and since a full resolution luminance image is transmitted, the resultant image is virtually identical to the original. Color errors due to the alternating chrominance components become apparent however on synthesized color video such as from a slow scan graphics generator or computer where sharp vertical color transitions may occur. Format 2 transmissions eliminate this artifact by transmitting both "R-Y" and "B-Y" information on every line and therefore are superior for transmissions of artificially generated color images. "R-Y"

continued on page 8

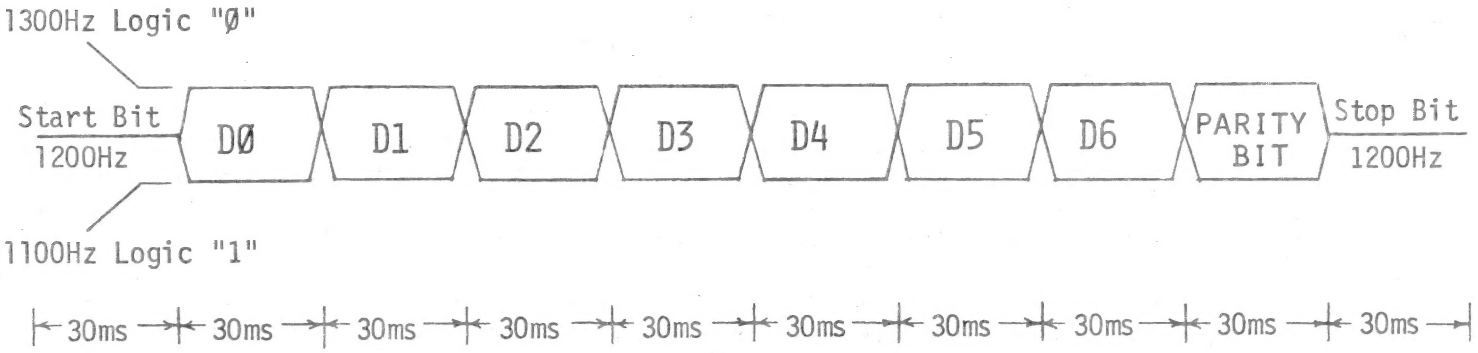
Figures 1-3 appear on pages 6-7.



	8/12 SEC	12/24 SEC	24/36 SEC	36/72 SEC
LUMA SYNC TIME "TLS"	6.0ms	6.0ms	9.0ms	9.0ms
LUMA PORCH TIME "TLP"	2.0ms	2.0ms	3.0ms	3.0ms
LUMA LIVE TIME "TLL"	58.7ms	92.0ms	88.0ms	138.0ms
CHROMA SYNC TIME "TCS"	3.0ms	3.0ms	4.5ms	4.5ms
CHROMA PORCH TIME "TCP"	1.0ms	1.0ms	1.5ms	1.5ms
CHROMA LIVE TIME "TCL"	29.3ms	46.0ms	44.0ms	69.0ms
TOTAL LINE TIME	66.7/100ms	100/200ms	100/150ms	150/300ms
LINES PER FRAME	120	120	240	240
FORMAT	1	2	1	2

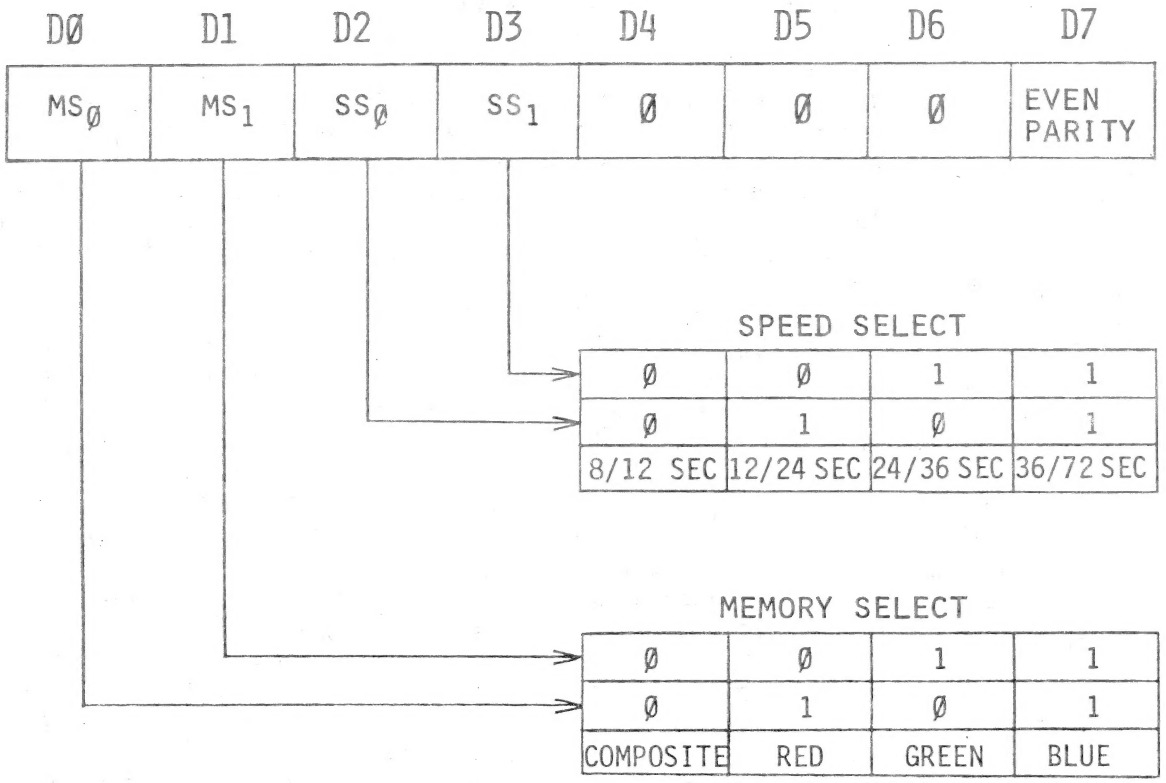
LINE TRANSMISSION FORMATS

FIGURE 1



VIS TRANSMISSION FORMAT

FIGURE 2



VIS CODE FORMAT

FIGURE 3

and "B-Y" information consist of positive and negative values with a maximum positive value assigned a frequency of 2300Hz and maximum negative value assigned to 1500Hz. Zero chrominance information generates a resting frequency of 1900Hz.

As shown in Figure 1, synchronization pulses for the black & white compatible luminance component use the standard sync frequency of 1200Hz, however a short burst of 1500Hz, called a back porch, follows the sync pulse. The sync back porch provides more reliable sync detection than earlier systems without a porch by clearly defining the trailing edge of the sync pulse. An analogous synchronization system is employed for the chrominance components. The "R-Y" sync pulse has a frequency of 1500Hz for a duration equal to half that of the luminance sync pulse and a 1900Hz back porch with a duration equal to half that of the luminance back porch. The "B-Y" sync pulse is identical to the "R-Y" pulse with the exception that it has a sync frequency of 2300Hz.

As shown in the table, the sync and porch times for 120 line and 240 line transmissions are different. For either one of the two 120 line formats, the corresponding 240 line format line time is fifty percent longer. Similarly, the sync and porch times have proportionally greater durations. This provides not only greater sync noise immunity, desirable for the longer line and frame times, but also provides a means for automatic receiver determination of 120 line or 240 line mode.

It can be seen from the illustrations in Figure 1, that a black & white only receiver can receive a compatible image from a color transmission by responding to the luminance sync pulse, loading the luminance and ignoring the subsequent chrominance information. In a similar manner, the transmitter can also send a black & white image by transmitting only the luminance sync and picture information. The four dual-speed catagories in the table indicate this. The number left of the "/" in the table headings indicates the black & white transmission time if only the luminance portion of the image is sent. The number to the right of the "/" indicates the color transmission time if both luminance and chrominance information are transmitted.

Figure 2 illustrates transmission of the vertical interval signaling (VIS). The VIS transmission serves a dual purpose, most importantly to provide vertical synchronization of the receiver and secondly to furnish the means for receiver control by the transmitter. Presently, as shown in Figure 3, four of the available seven bits of signaling are utilized. These bits indicate the memory source in the transmitter, thereby identifying the transmission as black & white or color, and indicate the ensuing frame's transmission time. The eigth bit, the parity bit, provides a means for checking the validity of the received VIS code. The sum of the eight bits in the code word must equal an even number to be considered a valid VIS code.

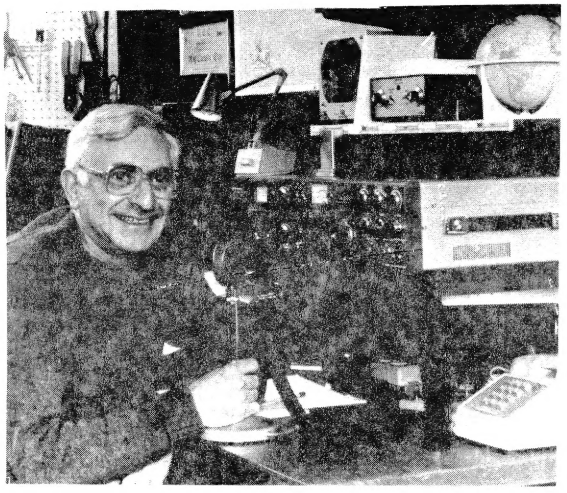
This description of the Robot color SSTV system should help unravel the mystery behind the new signals appearing on the air!

Figures 1-3 appear on pages 6-7.

WHO'S WHO IN SSTV

W8ASF

Fred Sharp



Meet Fred Sharp, W8ASF, of Cleveland, Ohio, the man behind "Blinky" plus many popular and useful SSTV mods.

Fred was born in 1922. He first became interested in radio in 1933, building some 5 meter equipment. He became a manufacturer's agent in electronic automation control equipment. He has been doing that for 28 years and is still going strong.

He has been a jazz guitar player for 45 years and has played with the likes of Jimmy Dorsey and Red Norvo. Fred also has an extensive jazz record collection. He enjoys traveling in Europe. Photography and circuit design are among his other hobbies.

W8ASF was first licensed in 1946 and got into SSTV in 1979. His equipment includes the Robot 400/3000C high resolution board modified with a 4X3 aspect ratio, moving cursor, and many other familiar 400 mods. Fred has developed an automated color filter wheel with automated snatch and loading of RGB pictures from his B&W Panasonic camera. This system will be featured in an upcoming article in SSTV TODAY. Fred uses a K-Mart color monitor plus a 9" B&W and twin BIC 2 speed cassette tape recorders. His rig is the TS830S with Clipperton L amp and Drake tuner. He uses a 3 element trap beam and Butternut vertical.

Fred's other Amateur radio interests include a little SSB DX, plus FAX and RTTY. His new manufacturing company, Timekit, makes "Blinky" a SSTV/RTTY/FAX tuner. He has developed several SSTV mods plus made boards to simplify the installation of other mods. One of Fred's latest mods appears in this issue of SSTV TODAY.

Fred says that, "SSTV is a specialized communications mode that leaves room for experimentation and growth. There are new developments daily in framing speeds, lost sync restoration, high resolution, digital memories, and many other avenues left to explore."

HF Activity

HF SSTV activity during the month of September picked up noticeably following the long hot summer of 1983. Many stations who hadn't been seen on the air in awhile, blew the dust off their SSTV gear, and got on 14.230 or 28.680.

Several reports were received that 10 meters has begun to open up. Good SSTV contacts within the U.S. as well as DX were made by many SSTVers during the month. Even a small amount of 15 meter SSTV activity was reported on 21.340. Due to band conditions, stations have QSYed to 15 meters from 14.230 to find better band conditions. To the surprise of some, while on 15, they were able to work some DX SSTV.

SSTVers who have upgraded their Robot 400s to color with the new Robot 400C kit are now appearing on the air and sending RGB as well as 12 second Robot color. Other stations that monitor the 12 second Robot color transmissions are able to see a full frame B&W version of the color picture with no adjustments to their scan converters. Rick KE6DO, Gary K8BKB, Rich N6GMZ, Joe K4KUG, Frank W6WI, P.T. W8QZ, and Bill W4CVS all have the new Robot 400C.

SSTVers have been having a rough go of it at times lately on 14.230 and 14.340. Some of this is due to deliberate organized interference, some to the crowding on the bands, and some to ignorance. Many generals, new to the 14.230 area of the band, refer to SSTV transmissions as RTTY. Take a look at the cover of this issue plus the comments on page 3 and the story below. There is a lot of work to be done to educate and inform our fellow Amateurs about SSTV and 14.230. LET'S GET ON THE AIR AND SEND SOME SSTV!

DX Net Moves!

The DX net, operated by W7PHO and WB0TEC for many years on 14.225, has now moved to 14.227 and above. One day in early September, they set up on 14.229. What has happened on numerous occasions in late August and September is that members and participants of this DX net have come up on 14.230 and tried to run off the SSTVers there. They claim the SSTVers are "interfering" with their net. What actually is happening is that the DX net sets up close enough to 14.230 that they get some normal 20 meter splatter and they cannot hear their rare faint DX stations.

This is NOT interference. SSTVers should not be intimidated. Don't let them chase you off 14.230. Some members of the DX net expect it to be as quiet as a ghost town for 5 Khz on either side of their net, so they can hear the faint DX reports. This is unrealistic and too much to hope for on 20 meters at any time.

These same DXers claim that no one on their net splatters onto the SSTV frequency. Do you believe that? If you were working rare DX and wanted to get through and get a good report, you'd turn on everything you had and throw in the kitchen sink for a 5/9 report.

This is a unique situation for SSTVers. Our voice and video transmissions on 14.230 seem to bother the DXers more than they bother us. DXers and SSTVers can and should cooperate in this matter, however. SSTVers are not going to give up 14.230. It isn't known why the DX net moved off 14.225. If the DX net could operate on 14.227 or below and not creep closer to 14.230, we could co-exist with very few problems and difficulties as we did for many many years when the DX net was on 14.225.

Oscar 10 Experiments Continue

On August 25, 1983, Gale Sells, W7AM0, first transmitted his B&W CQ SSTV at 0200Z on the 145.888 downlink of Amsat's Oscar 10. His video was copied and confirmed by KB8LU.

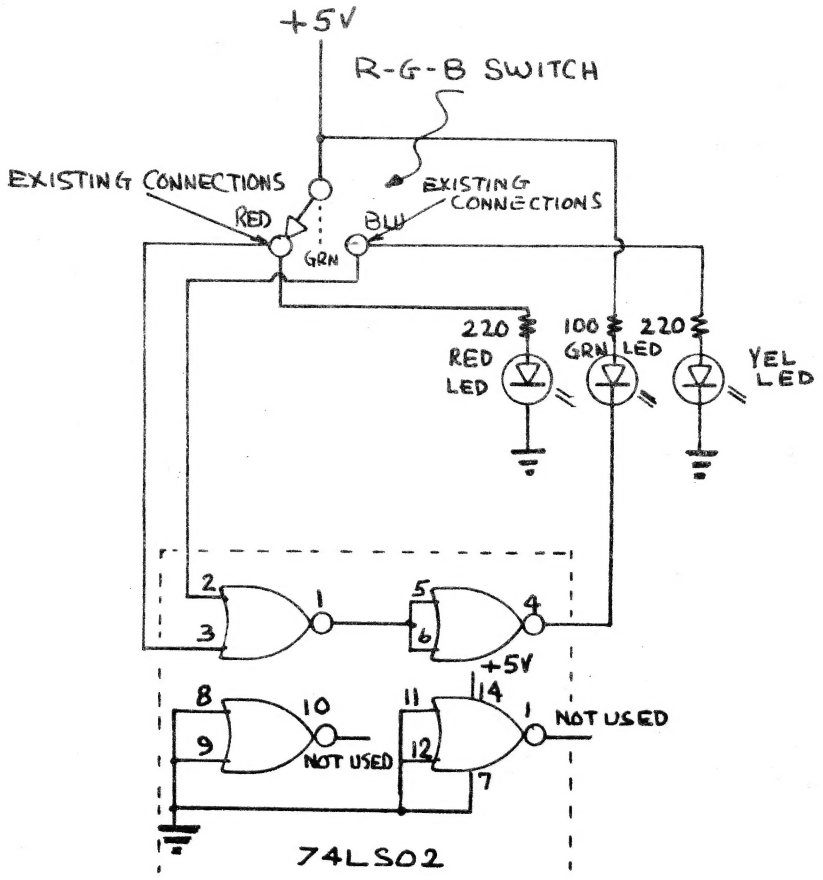
On September 10 at 0100Z, Ron Flynn, KB8LU, sucessfully transmitted six B&W graphic CQs also on the 145.888 downlink of Oscar 10. On September 11, KB8LU first transmitted color SSTV over Oscar 10. He tried both RGB and 25.5 second color transmissions. The fading or spin modulation of Oscar 10 kept knocking the 25.5 second color pictures out of color sync. However, the RGB 2, 2, and 2 color pictures were received nearly closed circuit with just minor noise in the pictures.

Experiments are continuing. Many HF SSTVers and users of earlier Oscars have become interested in SSTV on Oscar 10 due to the long periods each day of access to the bird. Some JAs and ZSs are reportedly also experimenting with SSTV on Oscar 10.

Free Oscar 10 Printouts

For all SSTV TODAY subscribers who are interested in tuning in on Oscar 10, we will send you a complete computer printout covering any two week period you desire. This printout will show times plus beam azimuth and elevation headings and other information for your specific location.

To receive this printout, send a business size SASE with 37 cents postage attached to SSTV TODAY. Include the following information for your location: your latitude and longitude in degrees, your elevation above sea level in meters, and the date you wish the two week printout to begin. The SSTV TODAY P.O. box is checked every Wednesday and Saturday. Your printout will be made and mailed back to you on the same day it is found in our P.O. box. Please allow some turn around time in the mails when choosing the starting date for your printout.



INDICATOR LED'S FOR WA7WOD COLOR SYSTEM R.G.B. SWITCH

by

FRED SHARP - W8ASF

If you have your Robot 400 modified with the WA7WOD 3000C color SSTV system, you may wish to install this mod which allows you to see at a glance which of the three RGB memories you are in.

A 74LS02 IC, 3 colored LEDs, some resistors, and hookup wire are all that is needed. The 74LS02 can be mounted most anywhere that is convenient, on a small board either with an IC socket or glued to the board with pins bent up. There are several locations on the front panel of the 400 where the three LEDs could be mounted.

Nearly all owners of the 3000C system are familiar with mods and have inatalled at least one. Therefore, those wishing to install this mod should have no difficulty in working with the schematic and coming up with their own custom iinstallation.

A Short SSTV Quiz

1. Which SSTV system provides full color prints?

2. Which SSTV system allows the use of a light pen, graphics tablet, or joy stick--and dozens of graphics programs to manipulate images?

3. Which SSTV system can store up to 20 photos on-line for instant recall?

4. Which SSTV system was used by the winner of the 1983 A5 WAS contest?

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